Okuma America Corporation

Okuma MTConnect Adapter Software User Manual

Document No.: S5053-03-27

| OKUMA MTConnect Adapter | S5053-03-27 | |
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Revision History

| Date | Version | Description | Author |
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| 7/25/2011 | S5053-03-00 | Initial Release | Linh Huynh |
| 10/14/2011 | S5053-03-01 | Release 1.3 | Linh Huynh |
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| 08/04/2014 | S5053-03-10 | Revised session 2.0 and 2.5 | Linh Huynh |
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| | | Add session 8.5 | |
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| 09/24/2015 | S5053-03-18 | Revised session: | Linh Huynh |
| | | System Config. Menu, Monitoring Tags Configuration, and Trouble Shooting. | |
| | | Add session 2.5, 8.2.4.2, 8.2.6.4, 8.2.7, 12, and 13 | |
| 05/24/2016 | S5053-03-19 | Revised session: | Linh Huynh |
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| 09/26/2016 | S5053-03-20 | Revised sessions: | Linh Huynh |
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| 02/02/2017 | S5053-03-21 | Revised/Added sessions: | Linh Huynh |
| | | 2.3.2 Installation of Okuma MTConnect Adapter Software | |
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| | | Change all default installation folder to "D:\Program files\Okuma\OKUMA MT Connect Adapter" | |
| 04/28/2017 | S5053-03-22 | Revised 1.2 and 2.3 session | Linh Huynh |
| 07/16/2019 | S5053-03-23 | Revised | Linh Huynh |
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| 05/06/2022 | S5053-03-25 | 5.3.2.1 System Config. Menu | Linh Huynh |
| | | 5.3.2.12 Users Configuration | |
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| 05/17/2022 | S5053-03-26 | Supported Execution Not Active If Active IO Signals are not Asserted. | Linh Huynh |
| | | 5.3.2.1 System Config. Menu | |
| | | 5.3.2.14 Active I/O Configuration | |
| 04/05/2023 | S5053-03-27 | 5.3.2.1.3 MTConnect Tags Settings | Linh Huynh |
| | | 7.1.13 Version of MTConnect spec is not the same as specified in the System Configuration | |
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OKUMA MTConnect Adapter

User Manual

1. Introduction

1.1 Purpose

The purpose of this document is to provide the instruction of installing and operating Okuma MTConnect Adapter. It also provides information on how to repair, and uninstall this software.

1.2 Scope

This manual will cover the installation, operation and troubleshooting for Okuma MTConnect Adapter running on OSP P100II/P200/P300 controls or newer controls and on Windows XP, Windows 7, and Windows 10.

1.3 Definitions, Acronyms and Abbreviations

None

1.4 Overview

The Okuma MTConnect Adapter is an application that is specifically designed to support the communication interfaces between MTConnect Agent and Okuma OSP-P controls.



For OKUMA controls, Adapter and Agent are installed on the control by default. An application resided on the control or on the network can consume information from an agent to perform tasks. Okuma MTConnect Adapter uses THINC-API to obtain machine data as defined in Devices.xml file and sends changed data to MTConnect agent.

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1.5 Functions and Configuration

1.5.1 Function

- This application will start after NC is started up using Startup service.
- This application allows MTConnect Agent provided by MTConnect.org to collect machine data.
- The system performs the following tasks routinely:
 - Send changed data to connected Agents

1.6 Scope

Current version of OKUMA MTConnect Adapter only supports OKUMA P100II/P200/P300 controls or higher. This adapter must be used with an agent developed by MTConnect.org and can be download at <u>https://github.com/mtconnect/cppagent</u>

By default, agent is included and installed with OKUMA MTConnect Adapter. <u>The devices.xml used by MTConnect Adapter only supports text characters encoding in UTF-8.</u>

1.7 References

[1] Installation Manual for THINC-API

- [2] Installation Manual for Startup Service
- [3] MTConnect Agent <u>https://github.com/mtconnect/cppagent</u>

2. Installation

The following steps in section 2.0 need to be performed in the exact order:

- Installation of THINC API
- Installation of THINC Startup Service
- Installation of OKUMA MTConnect Adapter Software
- Installation of MTConnect Schemas (optional)

Note: All installation must be either installed directly from CD/DVD disks or copied to the local hard drive of the machine.

All security must be handled by end-user to allow the communications between client application, MTConnect agent, and OKUMA MTConnect Adapter.

To ensure that MTConnect Adapter and MTConnect Agent are working properly, it is highly recommended that the verification must be done using the default setting after finish the installation of MTConnect Adapter and all of its dependency application such as Startup Service and THINC-API if applicable. Please follow the section Verifying Agent and Adapter Connectivity for verification

2.1 Installation of THINC-API

This application requires THINC-API having the same version or greater to be installed on machine as specified in the Release Note of MTConnect Adapter.

Refer to THINC-API 'InstallationManual.pdf' provided on THINC-API Installation disk for instructions.

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Tip: Try to run THINC-API Demo Application and see if it runs normally to make sure THINC-API is properly installed.

It is always best to install the latest version of THINC-API on the machine if possible.

2.2 Installation of THINC Startup Service

This application requires THINC Startup Service having the same version or greater to be installed on machine as specified in the Release Note of MTConnect Adapter.

Refer to installation manual of Startup Service provided on Installation disk for instructions.

2.3 Installation of Okuma MTConnect Adapter Software

In Windows mode (while NC is starting one needs to press ESC % key on the control panel. The Cancel button will be shown on NC HMI screen to allow stopping NC from running. On newer controls, the start-up screen can be cancelled by keep tapping the SHIFT key.), Run the 'Setup.exe' program from the Okuma MTConnect Adapter DVD to install Okuma MTConnect Adapter software. The setup program automatically checks if Microsoft .NET framework 4.0 is installed. If it is not installed, continue to section 2.3.1, otherwise refer to section 2.3.2.

<u>OSP software should not be running during the installation of Okuma MTConnect Adapter or .NET Framework 4.0.</u> During the .NET installation, it will be necessary to reboot multiple times. OSP software launch should be cancelled and the installation media should remain connected during the reboot.

For Windows XP, it must have Service Pack 3 installed in order to support .NET Framework 4.0

This installation can only be installed on Windows XP, Windows 7, and Windows 10.

<u>Note: This setup will check to see if the required version of THINC-API, and Startup Service installed on target machine</u> <u>before installing OKUMA MTConnect Adapter.</u>

2.3.1 Installation of Microsoft .NET Framework 4.0

The next dialog will be displayed if Microsoft .NET framework 4.0 is not installed.

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Figure: .NET framework 4.0 license agreement dialog

Click 'Accept' to install .NET framework 4.0.

| OKUN | 1A TAMSA MA Setup | <u>></u> |
|------|---|-------------|
| Ö | Installing Microsoft .NET Framework 4 (x86 and x64) | |
| | | |
| | | |
| | | |

Figure: .NET framework 4.0 installation dialog

If the .NET installation requires rebooting, then it needs to reboot the machine to continue the installation again.

2.3.2 Installation of Okuma MTConnect Adapter Software

The following dialog will be displayed once all of the required .NET frameworks are installed.

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| 😸 OKUMA MT Connect Adapter | |
|---|---|
| Welcome to the OKUMA MT Connect Adapter Setup Wizard | OKUMA |
| The installer will guide you through the steps required to install OKUMA MT Con computer. | nect Adapter on your |
| WARNING: This computer program is protected by copyright law and internation Unauthorized duplication or distribution of this program, or any portion of it, may or criminal penalties, and will be prosecuted to the maximum extent possible und | nal treaties. result in severe civil ler the law. |
| Cancel < Back | Next > |

Figure: Installation welcome dialog

Click 'Next' to continue.

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| 😸 OKUMA MT Connect Adapter | |
|---|--------------------|
| Select Installation Folder | |
| | OKUMA |
| The installer will install OKUMA MT Connect Adapter to the following folder. | |
| To install in this folder, click "Next". To install to a different folder, enter it below (| or click "Browse". |
| | |
| <u>F</u> older: | |
| D:\Program Files\Okuma\OKUMA MT Connect Adapter\ | Browse |
| | Diale Coat |
| | DISK COSt |
| | |
| Install OKUMA MT Connect Adapter for yourself, or for anyone who uses this o | computer: |
| Everyone | |
| Just me | |
| - out ind | |
| Cancel < Back | Next > |

Figure: Installing Application folder

Click 'Next' to continue. User can also select a different folder other than the default one to install Okuma MTConnect Adapter Software.

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Figure: Installing Process

This dialog to inform user that the installation will completely remove any previous installation version before installing new version. It is necessary to note any custom agent/adapter information such as Adapter Device Name, Port, and Agent port number before proceeding the installation.

By default, all tags will not be monitoring. To enable monitoring tags, it is necessary to check the Enable Monitoring Tag box. It can also be enable or disable in <u>Tags Config. Menu</u>.

Click Next to continue

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Figure: Confirm Installation

Click 'Next' to continue.

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| 😸 OKUMA MT Connect Adapter | - • • |
|--|----------|
| Installing OKUMA MT Connect Adapter | OKUMA |
| OKUMA MT Connect Adapter is being installed. | |
| Please wait | |
| Cancel < Back |] Next > |

Figure: Installing OKUMA MTConnect Adapter

Application is installing.

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| Device Configuration Form | |
|---|--------|
| Device Information Device Serial: | |
| 123456 | |
| Device Name (no space allowed) : | |
| OKUMA.MachiningCenter | |
| Device Description: | |
| Okuma MT Connect Adapter - Machining Center | |
| ОК | Cancel |

Figure: Device Information

This dialog provides custom setup for Okuma MTConnect Adapter.

1/ Device Information:

- Device Name: Name of machine as specified in Devices.xml once it is configured per machine type. No space is allowed in device name.
- o Device Serial Number: Unique machine number
- Device Description: A description of this machine

2/ OK button:

The system will save the current setting and update the device configuration file accordingly.

3/ Cancel Button:

This will cancel current installation.

Click OK to move to next step

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| 😸 OKUMA MT Connect Adapter | |
|---|--------|
| Installation Complete | |
| OKUMA MT Connect Adapter has been successfully installed. Click "Close" to exit. | OKUMA |
| Please use Windows Update to check for any critical updates to the .NET Frame | ework. |
| Cancel < Back | Close |

Figure: Installation completed dialog

Click 'Close' to complete the installation.

It is necessary to reboot the machine after this step to complete the installation process.

OKUMA MTConnect Adapter application will be started automatically by THINC Startup Service after NC is completely started. By default, OKUMA MTConnect Adapter will be minimized to system tray after it runs without any

error. The application can be shown up by double clicking the OKUMA icon located in the lower left corner of screen.

2.4 Installation of MTConnect Schemas (Optional)

There are custom tags defined specifically for OKUMA controls. An extended schema, OkumaStreams_xyz.xsd where xyz is the actual version of MTConnect spec, for streaming data is included with the setup under the Schemas folder where application is installed on target machine.

If stream data output from Agent needs to be validated, then the standard and extended schemas files need to be copied to target location where client application needs to check if needed.

2.5 Installation of Agent on P100II only

below:

For P100II machines, agent must be installed by running the RunAgentAsService.bat file manually. The file is located in the installation folder, which is normally found in this default installation folder as shown

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D:\Program files\Okuma\OKUMA MT Connect Adapter\

For P100II machines, Run the DOS command under administrator account and change to the current installation directory of MTConnect Adapter and execute the RunAgentAsService.bat by typing it in the DOS command prompt as shown below

| Administrator: Command Prompt | |
|---|-----|
| D:\Program files\Okuma\OKUMA MT Connect Adapter>RunAgentAsService.bat | Â |
| D:\Program files\Okuma\OKUMA MT Connect Adapter>REM RUN THIS BAT FILE AFTER S TING OKUMAMTCONNECTADAPTER. | TAR |
| D:\Program files\Okuma\OKUMA MT Connect Adapter>agent install MTConnect Agent Version 1.3.0.15 - built on Mon Jun 15 16:36:51 2015 D:\Program files\Okuma\OKUMA MT Connect Adapter> | |
| | - |

Refer to <u>Installation and Configuration of MTConnect Agent</u> for more information how to install agent under administrator account on Windows XP.

Note: This routine must be executed in the D:\Program files\Okuma\OKUMA MT Connect Adapter\ Folder only.

3. Repair/Uninstall Okuma MTConnect Adapter Software

3.1 Un-install Okuma MTConnect Adapter Software

Start the machine in Windows only mode. Click 'Start' \rightarrow Settings \rightarrow 'Control Panel' to launch control panel. Double click 'Add or Remove Programs' in control panel, find the item 'Okuma MTConnect Adapter' and click 'Remove' to uninstall Okuma MTConnect Adapter Software.

Note: Before performing un-installing Okuma MTConnect Adapter application, please shutdown the Okuma MTConnect Adapter application if it is running.

| Organize 🔻 Uninstall Change Repair | | - 0 |
|--|---|-------------|
| Name 🔷 🔻 | Publisher | Installec 🔦 |
| NVIDIA WMI 2.14.0 | NVIDIA Corporation | 6/24/20 |
| 🕼 O2Micro Flash Memory Card Windows Driver | O2Micro International LTD. | 6/24/20 |
| 🔜 Okuma Coolant Monitoring System | OKUMA | 6/29/20 |
| V Student Adapter | OKUMA | 1/4/201 |
| UOkuma THINC Startup Service | Okuma America Corporation | 6/19/20 😑 |
| 💽 Okuma Tool Data System | OKUMA America Corporation | 6/12/20 |
| | | F (12 (20) |
| OKUMA Product version: 3.1.0 Support Help link: www.okuma.com | rt link: www.okuma.com Size: 39.4 MB | |

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Figure: Uninstall Okuma MTConnect Adapter software dialog

| Add or l | Remove Programs |
|----------|--|
| 2 | Are you sure you want to remove OKUMA MT Connect Adapter from your computer? |
| | Yes No |

Figure: Uninstall Okuma MTConnect Adapter software confirmation dialog

Click 'Yes' to confirm uninstalling Okuma MTConnect Adapter Software.

4. Installation Files

4.1 Okuma MTConnect Adapter Software

All the files are installed in the installation folder unless otherwise noted, by default, which is 'D:\Program Files\Okuma\Okuma MT Connect Adapter'.

The devices.xml configuration file will be created and configured per machine type and specification by OKUMA MTConnect Adapter. Once it is configured the device is available for communicating with an agent.

Note: In case of agent running on remote PC, the devices.xml must be manually copied to the target location where agent is running.

5. Usage

5.1 Start Okuma MTConnect Adapter Application

The Okuma MTConnect Adapter Software will be launched automatically by the Start-Up service after NC is started completely.

If user exits the software and wants to launch it again, press 'Ctrl + $\frac{1}{2}$ ' on the operation panel to pop up Start Menu, then click 'Programs' \rightarrow 'Okuma MTConnect Adapter' \rightarrow 'Okuma MTConnect Adapter Application' to run.

After the application is launched without error, it will be minimized in the system tray and shown as an icon If user performs a double-clicking on the icon or presses 'Show' from the pop-up menu, the main user interface will be displayed.

Note: MTConnect Adapter must be only run after THINC-API is ready. THINC-API is ready when the API icon is green in the system tray.

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Note: The detail messages displayed in the main user interface does depend on each machine configuration.

| System Events | Configurations | | |
|------------------------|-----------------------|--|---|
| Date:7/8/2019 Time:9 | 55:13 AM Information | - Adapter Received PING, sending PONG for * PONG 10000 | |
| Date:7/8/2019 Time:9 | 55:10 AM Information | - Adapter is monitoring | |
| Date:7/8/2019 Time:9 | 55:10 AM Information | - Adapter is waiting for Alarm Manager to finish reading alarm information | |
| Date:7/8/2019 Time:9 | 55:10 AM Information | - Finish reading alarm information | |
| Date:7/8/2019 Time:9 | 55:10 AM Information | - Finish reading PLC alarm information | |
| Date:7/8/2019 Time:9 | 55:10 AM Information | - PLC Alarm File: ALARM-48.HTM; Alarm Count = 44; Alarm obtain: 44 | |
| Date:7/8/2019 Time:9 | 55:09 AM Information | - PLC Alarm File: ALARM-47.HTM; Alarm Count = 95; Alarm obtain: 95 | |
| Date: 7/8/2019 Time:9 | 55:09 AM Information | - PLC Alarm File: ALARM-37.HTM; Alarm Count = 68; Alarm obtain: 68 | |
| Date:7/8/2019 Time:9 | 55:09 AM Information | - Adapter is waiting for Alarm Manager to finish reading alarm information | |
| Date:7/8/2019 Time:9 | 55:09 AM Information | - PLC Alarm File: ALARM-28.HTM; Alarm Count = 24; Alarm obtain: 24 | |
| Date:7/8/2019 Time:9 | 55:09 AM Information | - PLC Alarm File: ALARM-27.HTM; Alarm Count = 97; Alarm obtain: 97 | |
| Date: 7/8/2019 Time:9 | 55:09 AM Information | - PLC Alarm File: ALARM-18.HTM; Alarm Count = 8; Alarm obtain: 8 | |
| Date:7/8/2019 Time:9 | 55:09 AM Information | - PLC Alarm File: ALARM-17.HTM; Alarm Count = 96; Alarm obtain: 96 | |
| Date:7/8/2019 Time:9 | 55:09 AM Information | - Finish reading NC alarm information | |
| Date:7/8/2019 Time:9 | 55:09 AM Information | - NC Alarm File: ALARM-P.HTM; Alarm Count = 176; Alarm obtain: 176 | |
| Date:7/8/2019 Time:9 | :55:09 AM Information | - NC Alarm File: ALARM-ERR.HTM; Alarm Count = 847; Alarm obtain: 847 | |
| Date:7/8/2019 Time:9 | 55:08 AM Information | Adapter is waiting for Alarm Manager to finish reading alarm information | |
| Date: 7/8/2019 Time:9 | 55:08 AM Information | - NC Alarm File: ALARM-D.HTM; Alarm Count = 308; Alarm obtain: 308 | |
| Date: 7/8/2019 Time: 9 | 55:08 AM Information | - NC Alarm File: ALARM-C.HTM; Alarm Count = 178; Alarm obtain: 178 | |
| Date:7/8/2019 Time:9 | 55:07 AM Information | - NC Alarm File: ALARM-B.HTM; Alarm Count = 532; Alarm obtain: 532 | |
| Date:7/8/2019 Time:9 | 55:07 AM Information | Adapter is waiting for Alarm Manager to finish reading alarm information | |
| Date:7/8/2019 Time:9 | 55:07 AM Information | - NC Alarm File: ALARM-A.HTM; Alarm Count = 213; Alarm obtain: 213 | |
| Date 7/8/2019 Time 9 | 55:07 AM Information | - Finish updating System NC/PLC alarm information | ~ |

Figure: Okuma MTConnect Adapter Software main user interface

5.2 Exit Okuma MTConnect Adapter Application

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When user shuts down the machine, the software will be terminated automatically without user interaction. Click the button File/Exit will also terminate the software.

In normal operation, only user with administrative right can perform this operation.

5.3 Main User Interface

The main interface mainly contains two tabs:

System Events Configurations

5.3.1 System Events

By default, the system will write event messages to the System Events tab in the descending order such that newest event message will be displayed on the top of the list. If the 'Trace On' menu is checked, all messages will be displayed on the main user interface, otherwise only pre-selected event messages by the system will be displayed.

Event messages are categorized into different event types as following:

- Information – Indicate normal event messages. It is in black color.

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- Tracing Indicate tracing event messages when Trace On mode is enabled from menu. It is in blue color.
- Warning Indicate warning event message. It is in orange color.
- Error Indicate error event messages when system encounters. Error messages will be forced to display to main GUI and logged. It is in red color.
- Fatal Indicate critical error event messages when system encounters. Error messages will be forced to display to main GUI and logged. It is in violet color.

By double clicking on the event message in each row, a message box will be displayed contained the message in the current selected row.

Note: Error happened during initializing or applying new system configuration must be resolved in System Configuration.

The System Events tab contains two menu bars as shown below. The menu item can be activated by clicking on it or

pressing the correspond F Key from F1 to F9 if applicable. By clicking left provide or right riangle on the menu bar, the different menu will be displayed and function accordingly as shown below:

| FILE | CLEAR EVENTS | TRACE ON/OFF | MINIMIZE TO SYSTEM TRAY | GET CURRENT | GET TOOL ASSET | DISPLAY CHANGE | ABOUT | |
|------|--------------|--------------|----------------------------|-------------|----------------|----------------|-------|--|
| | | | | | | | | |
| | LOG OFF | TRACE ON/OFF | SYSTEM TRAY | GET CURRENT | GET TOOL ASSET | | | |

5.3.1.1 File Menu

The 'File' menu has one submenu item, which is 'Exit'.

When the 'Exit' menu item is activated, the application will be closed.



5.3.1.2 Clear Events Menu

When the 'Clear Events' menu item is activated, all the messages displayed in the client area of the main user interface are cleared.

5.3.1.3 Trace ON/OFF Menu

When the Trace menu is activated, it will toggle the TRACE mode. If Trace is ON tracing message is displayed when data item is changed.

5.3.1.4 System Tray Menu

When the 'System Tray' is activated, the main user interface is hidden and the icon for this application is shown in the system tray of windows task bar.

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5.3.1.5 Get Current Menu

When the 'Get Current' menu is activated, the system will display a message in the System Events tab. The message contains all current values of all data items currently supported by the device.

Note: Data item might be UNAVAILBLE if it is not configured for monitoring in the Configuration tab.

5.3.1.6 Help Menu

When the 'About' menu item is activated, a dialog is displayed to show the information about this application.

| Okuma MTConnect Adapter-About | |
|-------------------------------|-----------|
| | IA |
| Okuma MTConnect Adapter | |
| Version 2.2.0.0 | |
| Copyright © 2015 | |
| OKUMA | ок |

Figure: Okuma MTConnect Adapter About box

5.3.1.7 Log On



Click on the system as **Administrator-Level** account. From then all users can change any system configuration setting until the user selects to Log OFF. The system will automatically log off after the system has been restarted. The Log On dialog will appear as shown below. Enter **Windows User Name** and **User Password** and click **OK** to log on the system.

• In normal operation, only user with administrative right can perform this operation.

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| Log On |
|---------------|
| Computer Name |
| OKUMANT |
| User Name |
| |
| User Password |
| |
| OK Cancel |

The message box will display as shown. Click OK to close the message.



The background color of the title bar of this application will be changed to green color as shown below.

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| System Events Configurations Date:7/8/2019 Time:9:58:43 AM Information - Adapter Received PING, sending PONG for * PONG 10000 Date:7/8/2019 Time:9:58:37 AM Information - System Administrator is ON Date:7/8/2019 Time:9:58:33 AM Information - Adapter Received PING, sending PONG for * PONG 10000 PONG 10000 | C | KUMA MTO | CONNECT ADAPT | FER | . |
|--|--|---|--|-----------------------------|----------|
| Date:7/8/2019 Time:9:58:43 AM Information - Adapter Received PING, sending PONG for * PONG 10000 Date:7/8/2019 Time:9:58:37 AM Information - System Administrator is ON Date:7/8/2019 Time:9:58:33 AM Information - Adapter Received PING, sending PONG for * PONG 10000 | System Events | Configurations | | | . 60 |
| | Date: 7/8/2019 Time: 9 Date: 7/8/2019 Time: 9 Date: 7/8/2019 Time: 9 | 9:58:43 AM Informatio 9:58:37 AM Informatio 9:58:33 AM Informatio | n - Adapter Received PING, ser n - System Administrator is ON n - Adapter Received PING, ser | nding PONG for * PONG 10000 | - |

5.3.1.8 Log Off

LOG OFF

Click on the soft key or function key **[F2]** to log off the **Administrator-Level** account. The message box will display as shown. Click **OK** to close the message.

| Message Box | | |
|-------------|-----------------------------|----------|
| i | System Administrator is OFF | <u></u> |
| | ок | • |

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OKUMA MTCONNECT ADAPTER

System Events Configurations

| System Events | Configurations | | | | | | EOF |
|----------------------|---------------------|--------------------|--------------------|----------------|----------------|---|------|
| Date:7/8/2019 Time:1 | 10:01:33 AM Inform | ation - Adapter Re | ceived PING, sen | ding PONG for | * PONG 10000 | | |
| Date:7/8/2019 Time:1 | 10:01:29 AM Informa | ation - System Ad | ministrator is OFF | | | | |
| Date:7/8/2019 Time:1 | 10:01:23 AM Inform | ation - Adapter Re | ceived PING, sen | ding PONG for | * PONG 10000 | | |
| Date:7/8/2019 Time: | 10:01:13 AM Inform | ation - Adapter Re | ceived PING, sen | ding PONG for | * PONG 10000 | | |
| Date:7/8/2019 Time:1 | 10:01:03 AM Inform | ation - Adapter Re | ceived PING, sen | ding PONG for | * PONG 10000 | | |
| Date: 7/8/2019 Time: | 10:00:53 AM Inform | ation - Adapter Re | ceived PING, sen | ding PONG for | * PONG 10000 | | |
| Date:7/8/2019 Time:1 | 10:00:43 AM Inform | ation - Adapter Re | ceived PING, sen | ding PONG for | * PONG 10000 | | |
| Date:7/8/2019 Time:1 | 10:00:33 AM Inform | ation - Adapter Re | ceived PING, sen | ding PONG for | * PONG 10000 | | |
| Date:7/8/2019 Time:1 | 10:00:23 AM Inform | ation - Adapter Re | ceived PING, sen | ding PONG for | * PONG 10000 | | - |
| Date:7/8/2019 Time: | 10:00:13 AM Inform | ation - Adapter Re | ceived PING, sen | ding PONG for | * PONG 10000 | | |
| Date 7/8/2019 Time: | 10:00:03 AM Inform | ation - Adapter Re | ceived PING, sen | ding PONG for | * PONG 10000 | | |
| Date: 7/8/2019 Time: | 9:59:53 AM Informa | tion - Adapter Rec | eived PING, send | ing PONG for * | PONG 10000 | | |
| Date: 7/8/2019 Time: | 9:59:43 AM Informa | tion - Adapter Rec | eived PING, send | ing PONG for * | PONG 10000 | 6 | _ |
| Date:7/8/2019 Time: | 9:59:33 AM Informa | tion - Adapter Rec | eived PING, send | ing PONG for * | PONG 10000 | | |
| Date: 7/8/2019 Time: | 9:59:23 AM Informa | tion - Adapter Rec | eived PING, send | ing PONG for * | PONG 10000 | | |
| Date:7/8/2019 Time: | 9:59:13 AM Informa | tion - Adapter Rec | eived PING, send | ing PONG for * | PONG 10000 | | |
| Date: 7/8/2019 Time: | 9:59:03 AM Informa | tion - Adapter Rec | eived PING, send | ing PONG for * | PONG 10000 | | |
| Date: 7/8/2019 Time: | 9 58 53 AM Informa | tion - Adapter Rec | eived PING, send | ing PONG for * | PONG 10000 | - | |
| Date: 7/8/2019 Time: | 9:58:43 AM Informa | tion - Adapter Rec | eived PING, send | ing PONG for * | PONG 10000 | | |
| Date: 7/8/2019 Time: | 9:58:37 AM Informat | ion - System Adm | inistrator is ON | | | | 2 |
| Date: 7/8/2019 Time: | 9:58:33 AM Informa | tion - Adapter Rec | eived PING, send | ing PONG for * | PONG 10000 | | |
| | | all sectors of | | | | | EUE, |
| | | | | | | | * |
| | | | | | | | |
| LOG ON | LOG OFF | TRACE ON/OFF | MINIMIZETO | GET CURRENT | GET TOOL ASSET | | |
| | | | SYSTEM TRAY | | | | |
| | | | | | | | |

5.3.2 Configurations

This tab provides different configurations for the application. The actual number of configuration items will be available based on the version of MTConnect Adapter.

<u>Notes: Any change in the System or Device Configuration might update the Devices.xml file, accordingly</u> and requires updating agent configuration file.

It contains 2 menu bars as shown. The menu item can be activated by clicking on it or pressing the correspond F Key

from F1 to F9. F9 is used to advance to next menu if any. By clicking left **series** or right **series** triangle on the menu bar, the different menu will be displayed and function accordingly as shown below:

| SYSTEM CONFIG. | DEVICE CONFIG. | TAGS CONFIG. | FUNCTION MODE MAPPING | MINIMIZE TO TASKBAR | MINIMIZE TO SYSTEM TRAY | DISPLAY CHANGE | |
|----------------|-------------------|--------------|--------------------------|------------------------|----------------------------|---------------------------|--|
| PLC I/O | PROGRAM HEADER | PALLET ID | PART COUNT | | | MNIMIZE TO System tray | |

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| | OKUMA M | TCONNECT AD | APTER | | 1 |
|-------------------------|-------------------------|--|---|----------------------------|---|
| System Events Conf | figurations | | | | |
| offer a | | <pre></pre> | MTConnect Tag Functional Mode PRODUCTION SETUP PROCESS DEVELOPMENT PROCESS DEVELOPMENT | Mi Lc NC AC AC | |
| System Configuration | Device Configuration | Tags Configuration | Functional Mod Mapping | le | |
| SYSTEM CONFIG | VEVICE CONFIG | G FUNCTION MODE MINIMU MAPPING | ETO MINIMIZE TO SYSTEM TRAY | DISPLAY CHANGE | |

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| OKUMA MTCONNECT A | DAPTER |
|--|---|
| System Events Configurations | |
| ID IX Logical Input Addr Bit A Mak 0000 0 > > 09290 0000 1 0 (AFTER MAIN PART PROGRAM(EXEC)) 0000 2 0 (MAXIMUM OF 10 COMMENTS STAR (AFTER MAIN PART PROGR (MAXIMUM OF 10 COMMENT &T) Image: Comment Star 0000 3 0 0 0 Image: Comment Star Image: Comment Star | NC GPR MONITOR COUNT 1. WORK COUNTER A 1 2. WORK COUNTER B 2 3. WORK COUNTER C 3 4. WORK COUNTER D 4 |
| PLC Monitor I/O Program Header Pallet ID | Part Count |
| PLC 10 PROGRAM PALLET D PART COUNT HEADER System Events Configurations | MNUMIZE TO SYSTEM TRAY |
| User Messages Configuration Configuration | |
| | |

5.3.2.1 System Config. Menu

This configuration allows user to configure different settings for the application. Upon completion of configuration, the OKUMA America Corporation, 2023 Page 25

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system will try to re-initialize completely with new configuration. It requires an administrative level to perform. The system will verify the input user name and password before allowing user to save the configuration.

In normal operation, only user with administrative right can perform this operation.

5.3.2.1.1 System Config. Menu

| Okuma MTConnect Adapter - | Configuration Setting | | |
|---------------------------|------------------------|-----------------------|-------------------|
| System Settings | Server Settings | MTConnect Tags Settin | 1gs ₹ ∢ ► |
| Fast Scanning Interval | in msec (10 to 100 n | nsec): | 10 |
| Normal Scanning Inter | val in msec (100 to 1 | 1000msec): | 100 |
| Slow Scanning Interva | Il in msec (1000 to 10 | 0000 msec): | 1000 |
| 0 | < | Cano | el |

- Fast Scanning Interval: The default value is 10 msec for fast scanning interval. Approximately, this is the time between the completions of scanning all tags assigned in this group until the beginning of the next scanning of this group.

See Set Fast Scanning Interval.

Note: To achieve better sampling rate for any tag, it would be best to assign ONLY data items into this group that require faster scanning interval than other data items.

It is highly not recommended that all data items are assigned into this group.

- Normal Scanning Interval: The default value is 100 msec for normal scanning interval. Approximately, this is the time between the completions of scanning all tags assigned in this group until the beginning of the next scanning of this group. See <u>Set Normal Scanning Interval</u>

Note: It is recommended that all data items having category="EVENT" or category="CONDITION" are assigned into this group.

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If Tool Asset is configured to be monitored by the system, it will be associated to this group ONLY.

- Slow Scanning Interval: The default value is 1000 msec for slow scanning interval. Approximately, this is the time between the completions of scanning all tags assigned in this group until the beginning of the next scanning of this group. See <u>Set Slow Scanning Interval</u>.
- Note: It is recommended that all data items having category="SAMPLE" are assigned into this group.

5.3.2.1.2 Server Settings

| Okuma MTConnect Adapter - Configuration Setting | | |
|---|-----------------------|------|
| System Settings Server Settings MTC | Connect Tags Settings | |
| Max. Client Connections: | | 5 |
| TCP Server Listening Port: | | 7878 |
| Local Agents Only | | |
| Heartbeat Time (second): | | 10 |
| ОК | Cancel | |

- Max. Client Connections: Number of agents can connect to this Adapter. Default value is 5 agents.
- TCP Server Listening Port: The port number where it is listening for incoming connection of agents. Default value is 7878.
- Local Agents Only: By checking, it only accepts agents running on local machine.
- Heartbeat Time: The numbers of seconds the adapter will send a message back to the connected agent when it received a ping from the connected server.
 - Note: MTConnect Agent or machine must be restarted in order to accept the new value.

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5.3.2.1.3 MTConnect Tags Settings

| Okuma MTConnect Adapter - Configuration Setting | | | | | | |
|---|--------------|--|--|--|--|--|
| System Settings Server Settings MTConnect Tags Settings | | | | | | |
| Misc. Settings | | | | | | |
| MTConnect Specification: | 1.3 ~ | | | | | |
| Execution Not Active If Alarm ON | | | | | | |
| ☑ Full OSP Alarm Message | | | | | | |
| Using Execution NOT Active If signals are NOT ASSERTED 1 | | | | | | |
| Execution NOT Active If signals are NOT ASSERTE for AND Logic) | D 1 (Checked | | | | | |
| Using Execution NOT Active If signals are NOT ASSERTED 2 | | | | | | |
| Execution NOT Active If signals are NOT ASSERTE for AND Logic) | D 2 (Checked | | | | | |
| Using Execution State If signals are NOT ASSERTED | : ~ | | | | | |
| ОК | Cancel | | | | | |

- MTConnect specifications: By default, the system is installed with the latest version of MTConnect specification. Other MTConnect specifications can be specified by selecting one of the MTConnect specifications in the list.

If the MTConnect specification is changed, the <u>new devices.xml and agent.cfg</u> will be updated to support the current selected MTConnect specification. <u>It would require to restart the machine if MTConnect</u> <u>specification is changed.</u>

Note: All agents must connect to the OKUMA MTConnect Adapter again after system configuration is changed.

If agents configured not to run on the machine, then the new devices.xml must be copied to the location where agent is running on the network.

- Execution Not Active If Alarm ON: If alarm numbers are entered in this field, Execution state will enter INTERRUPT state if it is currently in ACTIVE state. Otherwise, it is functioning as normal.

Multiple alarm numbers can be entered into this field and separated by a space.

Ex: 2224 3322 3723

- Full OSP Alarm Message: If it is checked the system will send full alarm message to agent. By default, it is not checked and is applicable to all conditions defined in session <u>8.5 Conditions</u>

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| MDI (| PERATION | ۹ | UNSELECT.M | IN B-MTD | |
|---------|-----------|-------------|----------------|---------------------------------|---|
| 2217 | ALARM-B | Program bad | direct: use of | ^e character 6F | ADJUST |
| MacMan | HMI | | | ter state data data data series | City of the second s |
| | START | OPERATING | IN-PRO SETUP | | |
| MACHIN | AME:OSP-P | | | | |
| ALARM I | HISTORY | | | | |
| DATE | | TIME | ALARM ND. | ALARM CO | DE ALARM STRINGS |
| 2019/07 | 7/08 | 10:14:31 | 2217 | 6F | |
| 2019/07 | 7/08 | 10:04:29 | 1701 | o | |

• Default Alarm Message: Alarm number + ALARM Level + (Alarm Code) + (Alarm Strings)

| MTConnect Devic X ③ view-source:local X ③ view-source:local X | MTConnect Devic X | 🕲 view-sourcelocal X + | 2 | | × | |
|---|-------------------|--------------------------|----|-----|---|--|
| ← → C (i) localhost:5000/current | | | QT | 2 0 | : | |

Condition

| 2019-07- 08T14:14:32.2341860Z Fault system Msyste | m 517 | 2217 ALARM_B 6F |
|--|-------|--------------------|

 Full OSP Alarm Message: Alarm number + ALARM Level + (Alarm Code) + (Alarm Strings); Full Alarm Message

*

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| S MTConnect 🛛 🗙 🛛 S view-source: 🗙 🖉 view-source: 🗙 | MTConnect 🛙 🗙 | 😵 view-source: X 😒 view-source: X + | _ | - | | \times |
|---|---------------|---|---|---|---|----------|
| ← → C (i) localhost:5000/current | | | Ð | ☆ | С | : |

Condition

| Timestamp | Туре | Sub Type | Name | Id | Sequence | Value |
|----------------------------------|-------|-------------|--------|---------|----------|---|
| 2019-07- 08T14:47:17.0298456Z | Fault | | system | Msystem | 1388 | 2217 ALARM_B 6F; Date:2019/07/08 Time:10:14:31 2217 Program bad direct: use of character Illegal symbols are designated. Designatable symbols are "]", "; [", "=", "*", "/", "+", "-", ".", DEL, BS, CR, HT and SP.; [Index] None; [Character-string] None; [Code] Hexadecimal number of ASCII code of the designated symbol; [Probable Faulty Locations] Symbols in the program; [Measures to Take] Correct the commands. |

The content of Full OSP Alarm Message is based on alarms stored in the OSP P-Manual folder.

| Operation | 2217 Program bad direct: use of character | ^ |
|--------------------------|--|---|
| Program Operations | Illegal symbols are designated. | |
| Data Setting | Designatable symbols are "]", "[", "=", "*", "/", "+", "-", ".", DEL, BS [Index] | 1 |
| Program Format | [Character-string] None | |
| Alarm & Error | [Code] Hexadecimal number of ASCII code of the designated symbol | |
| Lookup Alarm,G/M code | <pre>[Probable Faulty Locations] Symbols in the program [Measures to Take] Correct the commands.</pre> | ~ |
| < > | < >> | |

The content of alarm message can support multi-languages.

- Using Execution NOT Active If signals are NOT ASSERTED 1/2: If checked, the system will check all the Active I/O signals selected in the combobox of *Execution NOT Active If signals are NOT ASSERTED 1/2*. If the Active I/O signals are evaluated to be NOT ASSERTED then the Execution state will be considered INTERRUPTED if it is currently in ACTIVE state. If no Active I/O signal is selected in the combobox, the Execute state will behave as normal.

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The Active I/O signal is considered to be ASSERTED if the signal is HIGH for Normally-Open I/O signal type.

The Active I/O signal is considered to be ASSERTED if the signal is LOW for Normally-Closed I/O signal type.

The system will perform an AND logic on all selected Active I/O signals if the checkbox, *Execution NOT Active If signals are NOT ASSERTED1/2*, is checked. Otherwise, the system will perform an OR logic on all selected signals in the combobox.

The Execution NOT Active If signals are NOT ASSERTED 2 is only available for dual-side machine type.

All of the Active I/O signals must be defined in the <u>5.3.2.14 Active I/O Configuration</u>.

- Using Execution State If Signals are NOT ASSERTED: If 'Using Execution NOT Active If signals are NOT ASSERTED 1 or 2' is checked, the state of Execution will become one of the current selection of this setting when the Active I/O signals defined in the 'Using Execution NOT Active If signals are NOT ASSERTED 1 or 2' is not asserted.
- 5.3.2.1.4 Misc. Settings

| Okuma MTConnect Adapter - | Configuration Setting | | | | |
|---------------------------|-------------------------|----------------|---|---|---|
| Server Settings | MTConnect Tags Settings | Misc. Settings | Ŧ | • | • |
| ✓ Floating Windows | | | | | |
| O | K | Cancel | | | |

- Floating Windows: If it is enabled it will allow the application to freely move around.

5.3.2.2 Device Config. Menu

This configuration allows user to set MTConnect device configuration for the application. Upon completion of device configuration, the system will try to re-initialize completely with new configuration. It requires an administrative level to perform. The system will verify the input user name and password before allowing user to save the configuration.

Note: The system configuration must have been configured first before Device Configuration is allowed. It is based the

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current Devices.xml configuration file of current machine specification.

| Device Configuration Form | |
|----------------------------------|--------|
| Device Serial: | |
| 123456 | |
| Device Name (no space allowed) : | |
| OKUMA.Lathe | |
| Device Description: | |
| Okuma MTConnect Adapter - Lathe | |
| ОК | Cancel |

This dialog provides custom setup for Okuma MTConnect Adapter.

1/ Device Information:

- o Device Name: Name of machine or device name as specified in device.xml.
- Device Serial Number: Unique machine number
- o Device Description: A description of this machine

2/ OK button:

The system will save current setting and update Devices.xml accordingly. In normal operation, only user with administrative right can perform this operation.

3/ Cancel Button:

This will cancel current operation.

5.3.2.3 Tags Config. Menu

The actual configuration settings will be varied based on the version of MTConnect Adapter.

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| System | Events Config | urations | | | | |
|----------------|----------------------------|-------------|----------|--|----------------------------|------|
| Configurations | | | | | | |
| Common Varial | sie Starting/Ending Index: | 1 | 1 | Z Enable | Monitoring Tags | |
| Tool Assets | Asset Tool II | · · · · · · | 103466 | 1111 (11 (11 (11 (11 (11 (11 (1 | | |
| - rearrance | | B | 1,2,3400 | | | |
| Monitoring Tay | 29 | 0.17 | 0.1 | 0 | Concernance and the second | 1072 |
| Name | Type | Sub Type | Category | Current Value | Scanning Interval Type | |
| V III avail | AVAILABILITY | | EVENT | UNAVAILABLE | Normal | - |
| V III mode | PONCTIONAL_MODE | PROCEMBLED | EVENT | UNAVAILABLE | Normal | |
| C StMade | ROTARY_VELOCITY. | PHOGHAWMED | EVENT | UNAVAILABLE | Noma | |
| Z = S1Chuc | CHUCK STATE | | EVENT | UNAVAILABLE | Nomal | |
| J = S2out | POTARY VELOCITY | PROGRAMMED | EVENT | UNAVAILABLE | Normal | |
| V = S2Mode | ROTARY MODE | THOUGHTHINE | EVENT | LINAVAILABLE | Nomal | |
| V I S2Chuc | CHUCK STATE | | EVENT | UNAVAILABLE | Normal | |
| ✓ m C3Mode | ROTARY_MODE | | EVENT | UNAVAILABLE | Normal | |
| ✓ m C4Mode | ROTARY_MODE | | EVENT | UNAVAILABLE | Normal | |
| V I Seave | ROTARY_VELOCITY_ | PROGRAMMED | EVENT | UNAVAILABLE | Normal | |
| S6Mode | ROTARY_MODE | | EVENT | UNAVAILABLE | Normal | |
| V = STovr | ROTARY_VELOCITY_ | PROGRAMMED | EVENT | UNAVAILABLE | Normal | |
| ✓ I S7Mode | ROTARY_MODE | | EVENT | UNAVAILABLE | Normal | |
| ✓ Ⅲ B1Mode | ROTARY_MODE | | EVENT | UNAVAILABLE | Normal | |
| 2 m eston | EMERGENCY STOP | | EVENT | LINAVAILABI F | Normal | |

Note: Clicking the right most of the triangle menu button to advance to the next menu. The actual number of menu items will depend on the version of adapter.

5.3.2.3.1 Common Variable Starting/Ending Index

This configuration allows user to specify the range of common variables to be monitored by the system. The system can monitor from 1 to 200 common variables. The starting and ending index must be within the valid common variable supported by the control. Example: Start Index = 800 and Ending Index = 1000

Please see section Common Variables for more information

5.3.2.3.2 Tool Assets

If checked, machine tool data will report to agent as tool assets. Please see section <u>Tool Assets</u> for more information

5.3.2.3.3 Asset Tool ID

The unique identification number is used to create an asset ID for each tool asset. The same ID will be applied to all tool assets on the machine. It would be best to choose an ID that would not conflict with other tool assets monitoring by the same agent. It can be assigned to any ID or would be best to configure it as the actual machine serial number. It is default to "123456". It can have up to 32 alphanumeric characters.

Please see section Asset ID for more information

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5.3.2.3.4 Monitoring Tags Configuration

This configuration allows user to specify which data items to be monitored or not. By default, all data items are selected or enabled for monitoring.

Any tag is not checked or not monitored will be reported as UNAVAILABLE from agent.

5.3.2.3.4.1 Check All

Check all data items in the list

- 5.3.2.3.4.2 UnCheck All UnCheck all data items in the list
- 5.3.2.3.4.3 Check Selected Item(s) Check selected data items in the list
- 5.3.2.3.4.4 UnCheck Selected Item(s) UnCheck selected data items in the list

5.3.2.3.4.5 Get Current

Update value of all data items in the list that are currently monitoring in the system

5.3.2.3.4.6 Save & Close

Save current setting and apply the new setting

5.3.2.3.4.7 Close

Close dialog without saving current setting

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| System | Events Configur | ations | | | | |
|----------------|---------------------------|-------------|-----------|---------------|------------------------|-----|
| Configurations | | | | | | |
| Common Variat | le Starting/Ending Index: | 1 | 1 | Z Enable I | Monitoring Tags | |
| Tool Assets | Asset Tool ID | | 123456 | | | |
| Manager Tax | 10001000000 | | 100100 | | | |
| Nome | p Turne S | aub Turne | Cateriory | Current Value | Scanning Interval Type | 12 |
| Jan avail | AVAILABILITY | and a libra | EVENT | LINAVAILARI F | Nomal | 1.0 |
| / m fmode | FUNCTIONAL MODE | | EVENT | UNAVAILABLE | Namal | 1 |
| I Slovr | ROTARY VELOCITY P | ROGRAMMED | EVENT | UNAVAILABLE | Normal | |
| / S1Mode | ROTARY MODE | | EVENT | UNAVAILABLE | Normal | |
| / S1Chuc | CHUCK STATE | | EVENT | UNAVAILABLE | Normal | |
| 1 = S2ovr | ROTARY_VELOCITY_ P | ROGRAMMED | EVENT | UNAVAILABLE | Normal | |
| Z I S2Mode | ROTARY_MODE | | EVENT | UNAVAILABLE | Normal | |
| J I S2Chuc . | CHUCK_STATE | | EVENT | UNAVAILABLE | Normal | |
| ✓ m C3Mode | ROTARY_MODE | | EVENT | UNAVAILABLE | Nomal | |
| Z I C4Mode | ROTARY_MODE | | EVENT | UNAVAILABLE | Normal | |
| Seave | ROTARY_VELOCITY_ P | ROGRAMMED | EVENT | UNAVAILABLE | Normal | |
| S6Mode | ROTARY_MODE | | EVENT | UNAVAILABLE | Normal | |
| ✓ = S7ovr | ROTARY_VELOCITY_ P | ROGRAMMED | EVENT | UNAVAILABLE | Normal | |
| S7Mode | ROTARY_MODE | | EVENT | UNAVAILABLE | Normal | |
| ✓ Ⅲ B1Mode | ROTARY_MODE | | EVENT | UNAVAILABLE | Normal | |
| and estan | EMERGENCY STOP | | EVENT | LINAVAILABLE | Normal | |

Note: Clicking the right most of the triangle menu button to advance to the next menu. The actual number of menu items will depend on the version of adapter.

5.3.2.3.4.8 Check All Events

Check all Event type data items in the list

5.3.2.3.4.9 Check All Samples

Check all Samples type data items in the list

5.3.2.3.4.10 Check All Conditions

Check all Conditions type data items in the list

5.3.2.3.4.11 Check All

Check all data items in the list

5.3.2.3.4.12 UnCheck All

UnCheck all data items in the list

5.3.2.3.4.13 Get Current

Update value of all data items in the list that are currently monitoring in the system

5.3.2.3.4.14 Save & Close

Save current setting and apply the new setting

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5.3.2.3.4.15 Close

Close dialog without saving current setting

| System | Events Configu | rations | | | | |
|-----------------------|---------------------------|------------------|----------|------------------|--|-----|
| Configurations | - | | | | | |
| Common Variat | le Starting/Ending Index: | 1 | 1 | 2 Enable 1 | Monitorina Teas | |
| Trad Assess | And Territo | | | ter and a second | 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18 | |
| 100 Assets | Asset 10011D | | 123456 | | | |
| Nonitoring Tag | 3a | an an an Allan | | La constant of | The second s | |
| Name | Туре | Sub Type | Category | Current Value | Scanning Interval Type | |
| avail | AVAILABILITY | | EVENT | UNAVAILABLE | Nomai | |
| in fmode | FUNCTIONAL_MODE | 1011-01-0011-020 | EVENT | UNAVAILABLE | Nomal | |
| Slovr | ROTARY_VELOCITY_ | PROGRAMMED | EVENT | UNAVAILABLE | Nomai | |
| S 1Mode | ROTARY_MODE | | EVENT | UNAVAILABLE | Nomal | |
| S1Chuc_ | CHUCK_STATE | | EVENT | UNAVAILABLE | Nomal | |
| SZovr | ROTARY_VELOCITY_ | PROGRAMMED | EVENT | UNAVAILABLE | Nomal | |
| S2Mode | ROTARY_MODE | | EVENT | UNAVAILABLE | Nomal | |
| S2Chuc_ | CHUCK_STATE | | EVENT | UNAVAILABLE | Nomal | |
| C3Mode | ROTARY_MODE | | EVENT | UNAVAILABLE | Normal | |
| C4Mode | ROTARY_MODE | 220023338237 | EVENT | UNAVAILABLE | Nomal | |
| S6ovr | ROTARY_VELOCITY | PROGRAMMED | EVENT | UNAVAILABLE | Normal | |
| S6Mode | ROTARY_MODE | 202020000000 | EVENT | UNAVAILABLE | Nomal | |
| S7ovr | ROTARY_VELOCITY_ | PROGRAMMED | EVENT | UNAVAILABLE | Normal | |
| / I S7Mode | ROTARY_MODE | | EVENT | UNAVAILABLE | Nomial | |
| B1Mode | ROTARY_MODE | | EVENT | UNAVAILABLE | Nomal | - |
| and estion | EMERGENCY STOP | | EVENT | UNAVAILABLE | Normal | 153 |

5.3.2.3.4.16 Set Fast Scanning Interval

Set all current selected tags on the list to have Scanning Interval Type = Fast. All tags will be scanned at the defined interval as specified in the System Configuration. See <u>System Config. Menu</u>

Note: Part Count and Part Program must be set in the same scanning interval when MacMan is using to report these data items.

5.3.2.3.4.17 Set Normal Scanning Interval

Set all current selected tags on the list to have Scanning Interval Type = Normal. All tags will be scanned at the defined interval as specified in the System Configuration. See <u>System Config. Menu</u>

Note: Part Count and Part Program must be set in the same scanning interval when MacMan is using to report these data items.

5.3.2.3.4.18 Set Slow Scanning Interval

Set all current selected tags on the list to have Scanning Interval Type = Slow. All tags will be scanned at the defined interval as specified in the System Configuration. See <u>System Config. Menu</u>

Note: Part Count and Part Program must be set in the same scanning interval when MacMan is using to report these data items.

Although Part Count and Part Program are possible to be assigned to this scanning group, it is advised to assign
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these tags to a scanning group with faster scanning time to get the correct result from machine data.

5.3.2.3.4.19 Check All

Check all data items in the list

5.3.2.3.4.20 UnCheck All

UnCheck all data items in the list

5.3.2.3.4.21 Get Current

Update value of all data items in the list that are currently monitoring in the system

5.3.2.3.4.22 Save & Close

Save current setting and apply the new setting

5.3.2.3.5 Enable Monitoring Tags

To enable monitoring tags listed in the Monitoring Tags, it is necessary to check the Enable Monitoring Tag box.

5.3.2.4 Minimize To Taskbar Menu

When this menu item is activated, the main user interface is hidden and the icon for this application is minimized to system task bar.

5.3.2.5 Functional Mode Mapping Menu

For MTConnect 1.3 spec only and newer specs.

Display mapping between MacMan Not Operating mode and MTConnect Functional Mode

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| System Events | Configurations | | | |
|--------------------|----------------------------|---|--|-------|
| cMan Not Operating | To Functional Mode Mapping | | | -1 |
| N-PRO SETUP | SETUP | • | | |
| O OPERATOR | PROCESS_DEVELOPMENT | • | | |
| PART WAITING | PROCESS_DEVELOPMENT | • | | |
| MAINTENANCE | MAINTENANCE | • | | |
| OTHER | TEARDOWN | - | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | - 11- |

When the machine is not operating, it will automatically fall into one of the Not Operating modes currently selected on MacMan Not Operating screen as shown below. Based on the current selection of Not Operating mode on NC-HMI this application will map MacMan Not Operating mode to MTConnect Functional mode as configured in the Functional Mode Mapping dialog above.

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| STAKE | OPERATING | OTHER | 1 | | | |
|--------------------|---------------------|-------------------|----------------------|---------------------|-----------|--|
| CH NAME :MC. NAME | | | | | | |
| anging the Reason | of Not-operating | | | | | |
| flect the Reason o | f Not-operating. | | | | | |
| [F1] IN-PRO SETUP | For the set | up which require | es the machine to be | stopped. | | |
| **************** | 21.85 I (2019-18-03 | | | 0.057.000 | | |
| [F2] NO OPERATOR | Operator le | aves this machin | ne, because of take | care of two or more | machines. | |
| [F3] PART WAITING | A workpiece | , cutting tools | and/or workpiece hol | ding device is not | ready. | |
| [F4] MAINTENANCE | For the mai | ntenance. | | | | |
| | For the rea | ison not given al | bove. | | | |
| [F5] OTHER | | | | | | |
| [F5] OTHER | | | | | | |

5.3.2.6 System Tray Menu

When this menu item is activated, the main user interface is hidden and the icon for this application is shown in the system tray of windows task bar.

5.3.2.7 Display Change Menu

When this menu is activated, the system will display a dialog that allows user to switch to other tabs

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| Index | Screen Name | |
|-------|----------------|--------|
| ▶ 1 | System Events | |
| 2 | Configurations | |
| | 4 | Cancel |

5.3.2.8 PLC Monitor I/O Menu

The system can monitor up to 10 PLC I/O signals. Each can be configured as Input or Output signal. If an I/O signal is specified as NONE then it will not be monitored by the system. A valid input/output address must be specified for monitoring any PLC signal.

Input Signals:

Address: 0 to 511 Output Signals: Address: 512 to 1023

Note: An I/O signal must hold its current state, ON or OFF, for at least 500ms to be able to catch by the system and the signal must be assigned to group that has scanning interval of 100ms or less.

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| (| Okuma MTConnect Adapter - PLC Monitor I/O Setting | | | | | | | | | | |
|---|---|-----------------|---------|-----|---|-------------|---------|---|--|--|--|
| PLC I/O INPUT Address: 0 to 511 A maximum of 10 PLC I/O signal can be monitored by system. Note: An I/O signal must hold its current state, ON or OFF, for at least 500ms to be able to catch by the system. OUTPUT Address: 512 to 1023 Control of the system. | | | | | | | | | | | |
| | | Tags | Address | Bit | | Description | PLC I/O | | | | |
| | • | PlcMonitorIO_1 | 0 | 0 | • | | None | • | | | |
| | | PlcMonitorIO_2 | 0 | 0 | • | | None | - | | | |
| | | PlcMonitorIO_3 | 0 | 0 | • | | None | - | | | |
| | | PlcMonitorIO_4 | 0 | 0 | • | | None | - | | | |
| | | PlcMonitorIO_5 | 0 | 0 | • | | None | • | | | |
| | | PlcMonitorIO_6 | 0 | 0 | • | | None | • | | | |
| | | PlcMonitorIO_7 | 0 | 0 | • | | None | • | | | |
| | | PlcMonitorIO_8 | 0 | 0 | • | | None | • | | | |
| | | PlcMonitorIO_9 | 0 | 0 | • | | None | • | | | |
| | | PlcMonitorIO_10 | 0 | 0 | • | | None | • | | | |
| | | | | | | | | | | | |
| | | | OK | | _ | Cancel | | | | | |

PLC I/O signals are based on OSP IO Monitor.

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| L_Ac | ldr | QX0512. | 1 | | СН | | MA | C_ID | | | Addr | | SMAC_ |
|------|-----|---------|-----|---------------|-------|----|--------|--------|---------|--------|-----------|-----------------------------|-------|
| Addr | Bit | A | Msk | St | Label | ID | - | IX | Logical | Input | | Comment | |
| 0000 | 0 | | 0 | ipNCST | | | | | NC | start | .PB | | - |
| 0000 | 1 | | | ipNTS_E | 3 | | | | NC | feed h | nold/ .PI | В | ſ |
| 0000 | 2 | | | ipNCRT | | | | | NC | reset | .PB | | |
| 0000 | 3 | | | ipPNOP: | L | | | | Pan | el ope | eration : | 1.55 | |
| 0000 | 4 | | | ipPNOP2 | 2 | | | | Pan | el ope | ration 3 | 2.55 | |
| 0000 | 5 | | | ipDRIL | | | | | Doo | r inte | erlock O | FF .SS | |
| 0000 | 6 | | | ipMNPZ | | | | | Jog | feed | Z + .PB | | |
| 0000 | 7 | | 6 | ipMNPX | | | | | Jog | feed | X + .PB | | |
| (| | | | 111 | | | | | | | | | • |
| Addr | Bit | A | Msk | St | Label | ID | = | QX | Logical | Output | | Comment | |
| 0512 | 0 | L | 0 | opALAM | | | | | Ala | rm sta | ate lamp | | |
| 0512 | 1 | Ľ | • | OPLIMT | | | 100010 | 081007 | Lim | it sta | ate lamp | <u> I de Ride Ride Ride</u> | |
| 0512 | 2 | L | 0 | opPRSP | | | **** | | Pro | gram s | top stat | te Tamp | |
| 0512 | 3 | L | | opNTS | | | | | Fee | d hold | l(slide | hold) state | lamp |
| 0512 | 4 | L | 0 | opSTM | | | | | STM | run s | state la | mp | |
| 0512 | 5 | L | 0 | opNCST | | | | | NC | run st | ate lam | p | |
| 0512 | 6 | | | OPATRE | | | | | At | urret | selection | on lamp | |
| 0512 | 7 | | 0 | OPBTRE | | | | | Bt | urret | selection | on lamp | |
| | | | | 111 | | | | | | | | | • |

5.3.2.9 Program Header Menu

System will read program header starting from the first row or predefined starting row number of header in a part program file when part program is first loaded into NC only.

It can read up to the maximum number of rows. The output of data stream will be a single line that contains all comments of program header.

System only includes comments. A comment must be enclosed with an open and close parenthesis in a row.

Note 1: Part Program must be located directly under D:\MD1 folder only.

Note 2: This character "|" is not a valid character in any comment row.

Example: Output program header = (A comment line)(Next Comment Line)(comment 1) (comment 2)(End of program header)

O1234 N100 (A comment line) (Next Comment Line) N0200 (comment 1) (comment 2) N0300 (End of program header) N0500

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| Program Header Configuration | | |
|--|----------------|--|
| System will read program header starting from the first row or predefined starting row number of header in a part program file when part program is first loaded into NC only. It can read up to the maximum number of rows. The output of data stream will be a single line that contains all comments of program header. System only includes comments. A comment must be enclosed with an open and close parenthesis in a row. Note1: Part program must be located directly under D:\MD1 folder. Currently, program files are located in sub folders cannot be supported. Note2 : This character " " is not a valid character in any comment row. Example: Output program header = (A comment line)(Next Comment Line)(comment 1) (comment 2)(End of program header) O1234 N100 (A comment line) (Next Comment Line) N0200 (comment 1) (comment 2) N0300 (End of program header) N0500 | | |
| Configuration Max. Rows: | 20 (1 to 20) | |
| Starting row number: | (1 to 20) | |
| | | |
| <u>O</u> K | <u>C</u> ancel | |

5.3.2.10 Pallet ID Menu

If Pallet ID can be supported by OSP system, Pallet ID data will be provided as is. Besides, the system can provide Pallet ID by using Common Variable number. If '*Using Common Variable for Pallet ID*' is selected, the system will report Pallet ID based on the provided common variable numbers, instead.

Note:

- FMS system must use common variable number to report current Pallet ID inside the machine's cutting area.
- For Grinder, Machining Center, only first machine is using for Pallet ID.
- For Lathe machine equipped with 2 sides, both first and second machine are using for Pallet ID if applicable.
- It will be UNAVAILABLE if OSP system cannot support.

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| Okuma MTConnect Adapter - Pallet ID Configuration | | |
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| Pallet ID Systems that are not controlled by OSP System need to use Common Variable for current pallet ID in the machine. If the checkbox of 'Using Common Variable for Pallet ID' is checked then the value of the specified common variable will be used for pallet ID instead. | | |
| Using Common Variable for Pallet ID | | |
| Common Variable for Pallet ID on 1st 0 | | |
| Common Variable for Pallet ID on 2nd machine (applicable for 2SP machine type 0 only): | | |
| ОК | Cancel | |

5.3.2.11 Part Count Menu

By default, the system will use MacMan –Machining Report NO. OF WORK to obtain the total part count per running part program.

Optionally, it can be set to use Work Counter A/B/C/D as counter for part count if option is enable on NC. The system will report part count based on the current selection of Work Counter. The Work Counter will report part count of all running part programs and can be reset by user if needed.

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| AUTO OPERA | TION | | -TURR | ET 2 SPI | NDLE | |
|------------|---------------------|--------------------|-------|----------|-------|---------------------|
| 1700 ALARM | -A Emergency stop 1 | | | ADJUST | | Q |
| ACTUAL POS | ITION | 1mm | | N | 0 | 0 |
| | ACTUAL POSITION | DISTANCE REMAINING | | | (1/3) |) Fn Key Restart |
| XC | 360.000 | 0.000 | Fr | | 0.000 | - Contraction |
| ZC | 101.000 | 0.000 | ۷ | | 0 | D |
| CC | 1.918 | 0.000 | S | 0 | | Logs |
| WC | 965.000 | 0.000 | TC | 00000 | 000 | DataAdjust |
| | | 10 | | | - | CAS Parameter |
| | | | WORK | COUNTER | 1/3 | PIC |
| | | | | COUNT | SET | Data Dump |
| | | 1. WORK COUNTER | A | 16 | 0 | |
| | | 2. WORK COUNTER | в | 16 | 0 | Manitar |
| | | 3. WORK COUNTER | C | 16 | 0 | PIC |
| | | 4.WORK COUNTER | D | 16 | 0 | Namtor |
| | | | | | | -0 |

Besides, Common Variable can be used to create any custom part count logic if needed.

Note:

- For Grinder, Machining Center, only first machine is using for part count.
- For Lathe machine equipped with 2 sides, both first and second machine are using for part count if applicable.

Part Count and Part Program must be set in the same scanning interval when MacMan is using to report these data items.

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| Okuma MTConnect Adapter - Part Count Configuration | | | |
|--|-----------------------------------|--|--|
| By default, part count is configured to use MacMan-Machining Report-NO.OF WORK data per part program running on the control. Optionally, part count can be configured to use other data if available on the control such as WORK COUNTER A/B/C/D, or Common Variable to handle any custom couting logic. Note: Part Count using Work Counter or Common Variable must be reset by user if needed. | | | |
| Part Count setting: | MacMan-MachiningReport-NoOfWork ~ | | |
| Common Variable For Part Count on 1st machine: | 0 | | |
| Common Variable For Part Count on 2nd machine (applicable for 2SP machine type only): | 0 | | |
| ОК | Cancel | | |

5.3.2.12 Users Configuration

If User Configuration can be supported by the currect MTConnect specification, the menu item is enabled and the configuration dialog will be displayed when the menu item is clicked. A dialog is shown to allow setting different users ID. There are 3 different users that can be specified at the same time.

MTConnect Data Stream (MTConnect spec 1.4 and up only):

<ComponentStream component="Personnel" name="personnel" componentId="personnel">

(Events)

</user dataItemId="MachineMaintenance" timestamp="2022-05-06T14:08:08.73172122" name="MachineMaintenance" sequence="567" subType="MAINTENANCE">Machine Maintenance 2</User>
</user dataItemId="MachineOperator" timestamp="2022-05-06T14:08:08.73172122" name="MachineOperator" sequence="566" subType="OPERATOR">Machine Operator % timestamp="2022-05-06T14:08:08.73172122" name="MachineOperator" sequence="566" subType="OPERATOR">Machine Operator % timestamp="2022-05-06T14:08:08.73172122" name="MachineOperator" sequence="566" subType="OPERATOR">Machine Operator % timestamp="2022-05-06T14:08:08.73172122" name="MachineOperator" sequence="566" subType="SET_UP">Machine Operator % timestamp="2022-05-06T14:08:08.73172122" name="MachineOperator" sequence="566" subType="SET_UP">Machine Operator % timestamp="2022-05-06T14:08:08.73172122" name="MachineSetup" sequence="568" subType="SET_UP">Machine Setup 3</user>

</ComponentStream>

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| stem Events Configurations | | | |
|-------------------------------|-------------------------|-----------------------|-------------|
| | Okuma MTConnect Adapter | - User Configuration | |
| | Machine Operator | Machine Operator 1 | |
| User Messages Infiguration | Machine Maintenance | Machine Maintenance 2 | |
| | Machine Setup | Machine Setup 3 | |
| | ОК | Cancel | |
| | | | |
| | | | |
| | | | Mill SYS |

To clear the user data

5.3.2.13 User Messages Configuration

If User Messages Configuration can be in any current selection of MTConnect specification, the menu item is enabled and the configuration dialog will be displayed when the menu item is clicked.

5.3.2.13.1 Configuration

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| L Okuma MTCc | onnect Adapt <mark>er</mark> - User <mark>M</mark> essages Con | figuration | 3 3 | × |
|---------------------|--|----------------------------|-----------------|---------|
| Configuration | User Messages 1st machine | User Messages 2nd machine | | |
| Reset The | Value of Common Variable to 0 | After Sending User Message | | |
| Using Co Message | mmon Variable for User s on 1st machine: | 0 | | |
| Send An | Instant User <mark>M</mark> essage To 1st machine | Test Instant User Message | 0 | < > |
| Using Co Message | emmon Variable for User es on 2nd machine: | 0 | | |
| Send An | Instant User Message To 2nd machine | Test Instant User Message | | |
| | ОК | Cancel | | |

5.3.2.13.1.1 Reset The Value of Common Variable to 0 After Sending User Message

If checked it will allow the system to reset the value of the specified common variable 1/2 to zero once the value is changed. The setting is applied to both 1^{st} and 2^{nd} machine.

5.3.2.13.1.2 Using Common Variable for User Messages on 1st machine

If checked it will allow the system to send the pre-defined message in the 'User Message for 1st machine' when the specified value of common variable is met. The value of the common variable must be specified and greater than zero.

5.3.2.13.1.3 Send An Instant User Message To 1st machine

The system will send the message entered in the text box immediately to first machine.

5.3.2.13.1.4 Using Common Variable for User Messages on 2nd machine

If checked it will allow the system to send the pre-defined message in the 'User Message for 1st machine' when the specified value of common variable is met. The value of the common variable must be specified and greater than zero.

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5.3.2.13.1.5 Send An Instant User Message To 2nd machine

The system will send the message entered in the text box immediately to second machine.

5.3.2.13.1.6 OK and Cancel

The system will save information on the page setting only if OK button is selected. The system will not save information on the page setting only if Cancel button is selected.

5.3.2.13.2 User Messages 1st/2nd machine

The User Messages 2^{nd} machine is only enabled when the machine is a dual side machine. Individual setting for 1^{st} and 2^{nd} machine can be specified.

| L o | kuma MTCoi | 2 14 3 | | × | | | |
|------|--------------------|---------------------------|------------|--------------------|--|-------|--|
| Conf | igu r ation | User Messages 1st machine | User Messa | ges 2nd machine | | | |
| | ID 🔺 | Message | | | | | |
| | 0 | | | | | | |
| | 1 | Message 1 | | | | | |
| | 2 | Message 2 | | | | | |
| | 3 | Message 3 | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | ADD | EDIT | DELETE | APPLY AND CLOSE | | CLOSE | |

5.3.2.13.2.1 Add button

The system will display a dialog that allows user specifying the message for a particular common variable value. A maximum of 255 characters can be entered in the Message text box.

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| L Editing U | lser Message | × |
|-----------------|----------------------|--------|
| ID: Message: | 1 User Message 1 | ^ |
| | | |
| | | |
| | ОК | Cancel |

5.3.2.13.2.2 Edit button

The system will display a dialog that allows user editing the message for the current selected User Message.

5.3.2.13.2.3 Delete button

The system will delete the current selected User Message after confirming the operation from user.

5.3.2.13.2.4 Apply and Close button

The system will apply the new settings and close the dialog after confirming the operation from user. The system will be restarted.

5.3.2.13.2.5 Close button

The system will close the current User Messages Configuration dialog restarting the system. Any new settings will not be updated until the system is restarted.

5.3.2.14 Active I/O Configuration

The configuration dialog will be displayed when the menu item is clicked.



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5.3.2.14.1 Active I/O Signal List

| | Granal Mamia | Sinnel Label | Eddman | Address Br | On Time Delay | Description | 1/0 Simil | Time |
|-----|-----------------|--------------|---------|------------|---------------|-------------------------|-------------|------|
| 1 | Deets See 1 | Signa Label | Address | Address bi | On time belay | Description | 170 Signal | type |
| | Ortical Day | options. | 513 | - | 0 | Buck skp rc | NamalDan | |
| | Optional Stop | opeue | 513 | | 0 | Optional Stop Lamp | NomaOper | · |
| | Optional Stop 1 | opursu | 514 | 5 | U | Optional Stop Output s. | NomaOper | 1 |
| | Single Block | opSGB | 513 | 3 | 0 | Single Block Lamp | NormalClose | ε |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| rat | ons | | | | | | | |

This dialog provides an interface to add, edit, and delete the Active I/O signals.

ADD button: Allowed adding an Active I/O signal to the list

EDIT button: Allowed editing the selected Active I/O signal to the list

DELETE button: Allowed deleting the selected Active I/O signal to the list

APPLY AND CLOSE button: Allowed performing the system restart when the configuration dialog is closed CLOSE button: Allowed the configuration dialog is closed but not performing system restart. Any change will not be applied until the system is restarted.

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5.3.2.14.2 Editing Active I/O Signal

| L Editing Active I/O Signal | - 🗆 X |
|-----------------------------|--------------|
| Signal Name: | Block Skip 1 |
| Signal Label: | opBSKL |
| Address: | 513 |
| Address Bit: | 5 |
| On Time Delay: | 0 |
| Description: | <u></u> |
| I/O Signal Type: | NormalOpen ~ |
| Save | Close |

- Signal Name: A name to be displayed in the System Configuration for selecting Active I/O signal. Signal Name must be unique in the entire Active I/O signal list.
- Signal Label: A label for referencing purpose. Signal Label must be unique in the entire Active I/O signal list.
- Address: An address of the signal showing in the PLC I/O Monitor
- Address Bit: An address bit of the signal showing in the PLC I/O Monitor
- Description: A description for referencing purpose.
 - I/O Signal Type: It must be either Normally Open or Normally Closed signal.
 - Active I/O signal is considered to be ASSERTED if the signal is HIGH for Normally-Open I/O signal type.
 - Active I/O signal is considered to be ASSERTED if the signal is LOW for Normally-Closed I/O signal type.
- Save button: To save the current operation and close the form
- Close: To close the form without saving

_

In normal operation, only user with administrative right can perform any operation on this configuration dialog.

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| L_Ac | ldr | QX0512.1 | 2 | | СН | | М | AC_ID | | | Addr | | SMAC_ |
|------|-----|----------|-----|---------------|-----------|------------|------|-----------|-------|-------------------------|----------|-------------|----------|
| Addr | Bit | A | Msk | St | Label | , 10 |) = | IX | Logic | al Input | | Comment | |
| 0000 | 0 | | 0 | ipNCST | | | | | N | NC start | .PB | | |
| 0000 | 1 | | | ipNTS_E | 8 | | | | N | IC feed | hold/ . | РВ | 6 |
| 0000 | 2 | | 0 | ipNCRT | | | | | N | IC reset | .PB | | |
| 0000 | 3 | | ā | ipPNOP1 | | | | | P | anel op | eration | 1.55 | |
| 000 | 4 | | | ipPNOP2 | 2 | | | | P | anel op | eration | 2.55 | |
| 0000 | 5 | | | ipDRIL | | | | | C | oor int | erlock (| OFF .SS | |
| 0000 | 6 | | | ipMNPZ | | | | | J | log feed | Z + .PI | 3 | |
| 0000 | 7 | | 0 | ipMNPX | | | | | 3 | log feed | X + .PI | В | |
| | | | | 111 | | | | | | | | | * |
| Addr | Bit | A | Msk | St | Labe1 | I |) = | QX | Logic | al Outpu | t | Comment | |
|)512 | 0 | L | 0 | opALAM | | | | | A | larm st | ate lam | p | |
| 512 | 1 | Ľ | | OPLIMT | 0.0000000 | 1001000100 | 1000 | 010101010 | L | imit st | ate lam | p | |
| 512 | 2 | Ľ | 0 | opPRSP | | | | | F | rogram | stop sta | ate Tamp | |
| 512 | 3 | L | | opNTS | | | | | F | eed hol | d(slide | hold) state | e lamp |
| 512 | 4 | L | 0 | opSTM | | | | | S | TM run | state la | amp | |
| 512 | 5 | L | 0 | OPNCST | | | | | N | IC run s | tate la | np | |
|)512 | 6 | | | OPATRE | | | | | A | A t <mark>u</mark> rret | select | ion lamp | |
|)512 | 7 | | 0 | OPBTRE | | | | | B | 8 turret | select | ion lamp | |
| | | | i. | 111 | | | | | | | | | b |

5.3.3 Components/Data Items

The components and data items that can be supported by this adapter are described in the Devices.xml configuration file.

Note: This file is only configured once OKUMA MTConnect Adapter runs without error. It is also configured every time the MTConnect specification is changed.

Refer to section <u>MTConnect Tags</u> for more information

5.3.3.1 Data Items

The system will monitor all data items listed in Devices.xml per machine configuration and sends out only the data items having value being changed and being configured for monitoring to the connected agents.

Any agent first connects to the system will receive all data items values.

Notes: All data items listed for all analog/digital input sensors are not controlled by this adapter. Please refer to the section <u>8.4 Sensors</u> for more information

5.3.4 Agent & Adapter Communication

This adapter will send data to the connected MTConnect agents using socket in a pipe (|) delimited stream according to the descriptions given in the adapter guide by MTConnect.

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The agent can be configured to run on the same PC where the adapter running or on a remote PC.

It is up to the end user to configure the agent configuration file and adapter communication channel for local or network connection.

Each time an agent is connected or disconnected there is a message will be displayed in the System Events tab

<u>There are schemas of MTConnect included in the installation folder if needed by client applications. The OSP-P</u> <u>control does not natively include a compatible HTTP application for capturing the agent xml stream.</u>

Any web browser can be used to obtain data outputted from agent.

6. Event Log

6.1 Error Event Log

The error information for the application is logged in the Windows event log which user can read from windows system 'Event Viewer'. The source for this event log is 'Okuma MT Connect Adapter'.

To view the event log, press 'Ctrl + %' on the operation panel to pop up Start Menu, then click 'Settings' \rightarrow 'Control Panel' \rightarrow 'Administrative Tools' \rightarrow 'Event Viewer' to launch windows event viewer, click 'OACMTAdapter' under 'Event Viewer (Local)' to see a list of events logged for Okuma MTConnect Adapter application. To see the detail of each event, double click the event item.

Windows 7

| Vindows Logs | | | | | |
|--|---|--|----------------------|---|---|
| | Level | Date and Time | * | OACMTAdapter | - |
| Applications and Services Logs Cisco Cisco AnyConnect Secure Mobility Client CoolantMonitor Hardware Events Internet Explorer Key Management Service Media Center | Information Infor | 11/19/2014 11:44-52 AM 11/19/2014 11:44-52 AM 11/19/2014 11:44-46 AM 11/19/2014 11:44-46 AM 11/19/2014 11:44-45 AM 11/19/2014 11:44-45 AM 11/19/2014 11:44-45 AM 11/19/2014 11:44-45 AM | | Open Seved Log Create Custom View Import Custom View Clear Log Filter Current Log Properties Find | |
| Microsoft Office Alerts Microsoft Office Alerts Microsoft-SQLServerDataTools Microsoft-SQLServerDataToolsVS | Event 0, Okuma MTConnect Ada General Details | apter | × | hed Save All Events As Attach a Task To this Log. View | |
| OACMachineAlert OACMTAdapter Okuma Okuma Okuma Okuma PreEmptrive THINC Startup Service | Adapter sends all current da 19716-44:52.43366762[availA 152ModelSPINDLEICSModel Log Name OACMTA Source Okuma N | a to connected client (d.1 - 2014-11- VA& ARLE[Imode[SETUP[SLovr]D00[SLMode[SPINDLE]S2 NDEXlestoolARMEDIomode[AUTOMATICIecorooramiA.I Idepter 4TConnect Adapter Logged: 11/19/2014.11.44 | avr a MIN 52 i | Refresh Help Event 0, Okuma MTConnect A Event Properties | • |

Windows XP

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| → 🖻 💽 😭 🖻 | 3 😰 💷 | | | | |
|--------------------------------------|-----------------|----------------|----------|-------------------------|----------|
| Event Viewer (Local) | OACMTAdapte | r 125 event(s) | È | | |
| Application | Туре | Date | Time | Source | Category |
| System | Information | 11/19/2014 | 12:51:04 | Okuma MTConnect Adapter | None |
| Barcode Reader | Information | 11/19/2014 | 12:51:04 | Okuma MTConnect Adapter | None |
| | Information | 11/19/2014 | 12:50:58 | Okuma MTConnect Adapter | None |
| LatheInterface | Information | 11/19/2014 | 12:50:58 | Okuma MTConnect Adapter | None |
| OACCVButtons | Information | 11/19/2014 | 12:50:58 | Okuma MTConnect Adapter | None |
| OACMachineAlert | Information | 11/19/2014 | 12:50:57 | Okuma MTConnect Adapter | None |
| OACMTAdapter | Information | 11/19/2014 | 12:50:57 | Okuma MTConnect Adapter | None |
| Okuma API Notifier | Information | 11/19/2014 | 12:50:57 | Okuma MTConnect Adapter | None |
| ************************************ | Information | 11/19/2014 | 12:50:57 | Okuma MTConnect Adapter | None |
| | Information | 11/19/2014 | 12:50:57 | Okuma MTConnect Adapter | None |
| | Information | 11/19/2014 | 12:50:57 | Okuma MTConnect Adapter | None |
| | Information | 11/19/2014 | 12:50:57 | Okuma MTConnect Adapter | None |
| | Information | 11/19/2014 | 12:50:57 | Okuma MTConnect Adapter | None |
| | Information | 11/19/2014 | 12:50:57 | Okuma MTConnect Adapter | None |
| | Information | 11/19/2014 | 12:50:57 | Okuma MTConnect Adapter | None |
| | Information | 11/19/2014 | 12:50:57 | Okuma MTConnect Adapter | None |
| | (i) Information | 11/19/2014 | 12:50:57 | Okuma MTConnect Adapter | None |

7. Trouble Shooting

By default, the system will write event messages to the main user interface. If the 'Trace On' menu is checked, all messages will be displayed on the main user interface, otherwise only pre-selected event messages by the system will be displayed.

Note: When the Trace On menu is enabled, all process states monitored in the system will be displayed on the event message tab when the states are changed as shown:

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| | Configurations | System Events |
|---|--|--|
| ing PONG for * PONG 10000 | 19:04 PM Information - Adap 18:59 PM Information - Clien | Date 5/6/2019 Time 4 Date 5/6/2019 Time 4 |
| Information - Current Sampling = 2019 8:54:95673042. ali[AVAILABLE]tmode] ode[MAINTEN Mode[SPINDLE]S1ChuckState] ode[MAINTEN SPINDLE[S2ChuckState]CLOSED] ode[MAINTEN SXPGode[INDEX]S6ovr[100] ode[MAINTEN S7Mode[SPINDLE]S80vr[100] ode[MAINTEN SGERED]pmode]AUTOMATIC inde[MAINTEN [pFovr[100]ppartcount[0] 0 90 20 0 21 0 22:0 23:0 24:0 25:0 26:0 0 33 0 34:0 35:0 36:0 37:0 38:0 39:0 40:0 v 10 62:0 63:0 64:0 65:0 66:0 67:0 68:0 v | 18:54 T Message Box 18:54 18:54 18:50 18:50 18:50 18:49 18:49 18:47 | Date 5/6/2019 Time 4 Date 5/6/2019 Time 4 |
| uccessfully. | s: OFF 18:47 PM Information - New | Communication Statu Date 5/6/2019 Time 4 |

7.1 Common Errors

7.1.1 OKUMA MTConnect Adapter application failed to start correctly

OKUMA MTConnect Adapter does use THINC-API libraries to collect machine data.

Probable faulty locations:

- Older version of THINC-API is installed on control
- Invalid THINC-API license file for this particular machine serial number
- THINC-API License is expired
- NC is not started or not fully started yet
- OKUMA MTConnect Adapter started before THINC-API is ready
- THINC-API cannot be supported by current version OSP system

Measure to take:

- Install the required or higher version of THINC-API on control
- Install the correct THINC-API disk per machine serial
- Ensure that OKUMA MTConnect Adapter is registered with Startup Service so it can be started after THINC-API is ready.
- Ensure that OSP system can support the required version of THINC-API.

Please refer to section <u>THINC-API</u> and <u>Setup Okuma MTConnect Adapter Software to Startup Automatically</u> for more information

- 7.1.2 MTConnect client applications cannot get machine data from running Agent
- 7.1.2.1 Incorrect Device Name

Probable faulty locations:

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- MTConnect device name is case-sensitive.
- MTConnect device name have been changed in the devices.xml file

Measure to take:

Check Devices.xml file for correct device name

Refer to section Verifying Agent and Adapter Connectivity for more information

7.1.2.2 Incorrect Port Number

Probable faulty locations:

- By default, agent is running on port 5000
- Agent port number has been changed in agent.cfg file

Measure to take:

- Ensure that client application uses the port number specified in agent.cfg file
- Check network configuration for allowing connection with current setting port number in agent configuration file

Refer to section Installation and Configuration of MTConnect Adapter for more information

7.1.2.3 Network issues

Probable faulty locations:

• Firewall is enabled on remote PC where agent is running

Measure to take:

• Disable Firewall on remote PC

Note: End-user is responsible for setting proper network connection and security to allow exchanging data between entities according to MTConnect specification.

7.1.3 Unable to perform Device Configuration/Tag Configuration

In order to perform these configurations, the application must be able to connect to NC. The adapter will create and configure the Devices.xml once it can connect to NC without error on its first run.

Probable faulty locations:

- Devices.xml file is not available yet due to NC is not running yet
- THINC-API is not installed on target machine or does not run correctly
- NC is not started yet

Measure to take:

- Ensure the required version or higher version of THINC-API is installed on target machine
- Ensure that Startup Service is installed on target machine
- Registered Okuma MTConnect Adapter with Startup Service to allow the adapter to start after NC is fully
- Ensure that adapter runs without error.

Please refer to section <u>THINC-API</u> and <u>Setup Okuma MTConnect Adapter Software to Startup Automatically</u> for more information

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| tem Events Configuration | | | |
|--|--|--|---|
| and the second s | | <pre><!-- EVENT DATA <DataItem type= <DataItem type= <DataItem type= <DataItem type= <DataItem type= <DataItem type=</pre--></pre> | MT Connect Tag Functional Mode PRODUCTION SETUP PROCESS DEVELOPMENT PROCESS |
| System Configuration | Device Configuration | Tags Configuration | Functional Mode Mapping |
| Message Bo | Device has not been configu The application must be able application configure Devices | red by the application, yet to connect to NC first to allow the similifie correctly | |
| | | | - |

7.1.4 Unable to install MTConnect Agent as Windows Service

Installing agent as Windows service requires 2 files to be existed. One is agent.cfg for MTConnect Agent application, the other is Devices.xml which is specified in agent.cfg file. Devices.xml is generated automatically when OKUMA MTConnect Adapter first runs on target machine without error.

Probable faulty locations:

- Devices.xml file does not exist
- Agent.cfg file does not exist
- Required administrator privilege in Windows 7

Measure to take:

- Registered Okuma MTConnect Adapter with Startup Service to allow the adapter to start after NC is fully started so it can generate and configure Devices.xml file correctly.
- Verify if agent configuration has correct device file name such as Devices.xml
- If installing agent in Windows 7, it is necessary to run the bat file named RunAgentAsService.bat under administrator account.

Refer to section Installation and Configuration of MTConnect Agent for more information

7.1.5 No communication between running MTConnect agent and OKUMA MTConnect adapter

Once adapter is running it will listen for incoming connection from agent. Once an agent is connected the adapter will send first initial message to agent and display a message on System Event screen.

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If both agent and adapter are running but no data is sending, then it probably is the setting in the configuration of agent and adapter is not matched.

Probable faulty locations:

- Adapter port number specified Adapter System configuration
- Adapter port number specified Agent configuration file, agent.cfg

Measure to take:

- Check port number in adapter and agent configuration. Default port number is 7878
- Re-start agent service from Windows Services
- Ensure that adapter is running without error

Refer to section Installation and Configuration of MTConnect Adapter for more information

7.1.6 OKUMA MTConnect Adapter Not Running

In order for adapter to run automatically after NC is fully started, it is necessary to register the application with Startup Service.

By default, it is registered with Startup Service during setup.

Probable faulty locations:

- Startup Service is not running
- Adapter is not registered with Startup Service

Measure to take:

- Ensure that THINC-API is running without error.
- Re-start Startup Service
- Register MTConnect Adapter with Startup Service

Refer to section Setup Okuma MTConnect Adapter Software to Startup Automatically for more information

7.1.7 MTConnect Agent Not Running

Agent is installed as Windows service by default. It is necessary to re-start the machine to allow agent service to run automatically when Windows is started.

When agent is started the following files must be available:

Devices.xml Agent.cfg

Probable faulty locations:

- Agent.exe is missing
- Agent.exe is note registered as Windows Service yet
- Devices.xml is missing
- Agent.cfg is missing
- Machine has not been rebooted yet
- Invalid devices.xml file
- Invalid agent.cfg file

Measure to take:

- Ensure that devices.xml can be opened in any web browser without error
- Ensure that agent.cfg is configured with correct syntax. Please see README.pdf for detail information
- Ensure that agent service is configured to start automatically

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• Re-install MTConnect Adapter on target machine

Refer to section Installation and Configuration of MTConnect Agent for more information

7.1.8 Agent reports UNAVAILABLE in all tags

Initially, agent will report UNAVAILABLE to all tags when it first started. Once agent is running it will try to connect with adapter at the specified host and port number. If adapter is running and agent can connect with it, adapter will first send current value of all tags to the connected agent.

Probable faulty locations:

- Mismatch adapter port number specified in agent.cfg and adapter's system configuration
- Adapter is not running
- Adapter is running but in error state
- Tags are not configured for monitoring by adapter
- Enable Monitoring Tag is not checked
- Agent is installed in different locations

Measure to take:

- Check port number in adapter and agent configuration. Default port number is 7878
- Ensure that adapter is running without error
- Ensure tags are configured for monitoring by adapter. Tags are not monitoring will report as UNAVAILABLE.
- Ensure Enable Monitoring Tags box is checked. All tags will be reported as UNAVAILABLE if not checked.
- By default, agent is installed in the same folder that MTConnect Adapter is installed. The devices.xml file is updated by MTConnect Adapter once it first runs. Agent will detect the change in devices.xml file and will reload all tags configured for the devices specified in the agent configuration file, agent.cfg. If agent is installed in different locations, then the devices.xml file must be manually copied to the folders where agents are running.

Refer to section <u>Tags Config. Menu</u>, <u>Installation and Configuration of MTConnect Adapter</u>, and <u>Verifying Agent</u> <u>and Adapter Connectivity</u> for more information

7.1.9 Agent reports only **Availability** tag

After installing adapter and agent, agent service will run automatically when machine is rebooted. Agent reports tags defined in devices.xml file. Initially, the devices.xml will have default tags only and will be configured per machine specification after adapter is running without error. As a result, agent can report default tags only before adapter is running as shown below:

Note: By default, agent will wait for about 5 seconds or so before reloading the devices.xml or agent.cfg file if they are changed.

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| MTConnect Device Stream X | | | | | | |
|--|--|--------------------|------|--|--------------------|-----------------------------------|
| + → C 🗋 localhost5001/OK | UMA/current | | | | | Q 🕁 🖸 |
| creationTime: 2019 sender: DLT-LHUYI instanceId: 142324 version: 1.3.0.13 bufferSize: 131072 nextSequence: 4 firstSequence: 1 lastSequence: 3 | 5-02-06T18:31: NH32 47475 2 | 55Z | | | | |
| | | - | | | | |
| Device: OKUM Device: OKUMA Events | A; UUID: (| OKU | MA.1 | 123456 | | |
| Device: OKUMA Device : OKUMA Events Timestamp | A; UUID: (| Sub Type | MA.1 | 1 23456 Id | Sequence | Value |
| Device: OKUMA Device : OKUMA Events Timestamp 2015-02- 06T18:31:15.092690Z | A; UUID: • | OKU Sub Type | MA.1 | Id OKUMA_asset_chg | Sequence | Value UNAVAILABL |
| Device: OKUMA Device : OKUMA Events Timestamp 2015-02- 06T18:31:15.092690Z 2015-02- 06T18:31:15.092690Z | A; UUID: Type AssetChanged AssetRemoved | Sub Type | MA.1 | Id OKUMA_asset_chg OKUMA_asset_rem | Sequence 1 2 | Value UNAVAILABI UNAVAILABI |

Probable faulty locations:

- Devices.xml file has not been configured by adapter yet
- Agent is installed in different locations

Measure to take:

- Ensure that adapter is running without error
- By default, agent is installed in the same folder that MTConnect Adapter is installed. The devices.xml file is updated by MTConnect Adapter once it first runs. Agent will detect the change in devices.xml file and will reload all tags configured for the devices specified in the agent configuration file, agent.cfg. If agent is installed in different locations, then the devices.xml file must be manually copied to the folders where agents are running.

Refer to section <u>Installation and Configuration of MTConnect Adapter</u> and <u>Verifying Agent and Adapter</u> <u>Connectivity</u> for more information

7.1.10 Agent reports UNAVAILABLE in some tags

Probable faulty locations:

- Name of tags defined in Devices.xml has been changed
- Tags have been unchecked in the Tags Configuration dialog

Measure to take:

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- Ensure tags have been checked in Tags Configuration dialog
- Ensure name of tags displayed in the Tags Configuration dialog are the same in devices.xml

Refer to section <u>Tags Config. Menu</u> for more information Note: Devices.xml file should not be modified by any application.

7.1.11 Agent reports no Tool Assets

Probable faulty locations:

- Tool Assets can only be supported in MTConnect Adapter version 2.1 or above
- Tool Assets is not checked in the Tags Configuration yet
- Tool Life Management option is not supported by OSP system

Measure to take:

- Ensure that MTConnect Adapter version 2.1 or above installed on the target machine
- Ensure Tool Assets is checked in Tags Configuration dialog
- Ensure that Tool Life Management option is active

Refer to section <u>Tags Config. Menu</u> for more information Refer to section <u>Tool Assets</u> for more information

7.1.12 Kepware OPC cannot get data from Agent output

Probable faulty locations:

- Kepware OPC server cannot validate agent's xml output
- Configuration of MTConnect Agent in Kepware OPC server

Measure to take:

- Copy schema files from OKUMA MTConnect folder to Kepware OPC schema's folder
- Ensure that Kepware OPC server can support different versions of MTConnect schema.
- Check Kepware OCP server configuration for correct port and device name matching the device information in OKUMA MTConnect Adapter.

Refer to section <u>Installation of MTConnect Schemas (Optional)</u> for more information

7.1.13 Version of MTConnect spec is not the same as specified in the System Configuration

Probable faulty locations:

• MTConnect Adapter can support multiple version of MTConnect specificiation. It can be specified in the System Configuration.

Measure to take:

• Machine must be restarted after changing the MTConnect Specification in the System Configuration

7.1.14 System Database cannot be found

Probable faulty locations:

 Database files located in the D:\Program Files\Okuma\Okuma MT Connect Adapter\Database cannot be found

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| Message I | Box — 🗆 X | |
|-----------|--|--|
| | System database folder cannot be found. Please correct the problem and restarted the application | |
| | ОК | |

Measure to take:

• Copy the Database folder from the installation disk and place in the destination folder on the machine D:\Program Files\Okuma\Okuma MT Connect Adapter\Database

Restart the application after replacing the database folder

7.1.15 MTConnect Agent is disrupted by external sources

Probable faulty locations:

• MTConnect Agent could not communicate with MTConnect adapter or client applications.

Possible errors:

• By default, MTConnect Agent is running on port 5000 to communicate with client application. MTConnect Adapter is listening on port 7878 to communicate with MTConnect Agent. If these port numbers are colliding with other network ports, MTConnect will not be able to retain the connection with client applications or MTConnect Adapter.

If the connection between MTConnect Agent and Adapter is disrupted, MTConnect Adapter will not be able to send data to Agent. Any event messages showing in MTConnect Adapter needs to restart the connection with Agent will be likely the network environment that Agent and Adapter has an issue that needs to be examined by IT department.

Measure to take:

Ensure that the MTConnect Adapter, MTConnect Agent, and client applications are fully authorized to run and can run on machine and/or network without disruption by network security.

8. MTConnect Tags

All standard and custom tags are listed in the following files per machine type and MTConnect specification:

Standard Lathe: LatheDevices.xml Two Sides Lathe: Lathe2SPDevices.xml Machining Center: MCDevices.xml Grinder: GrinderDevices.xml

At run time the actual number of tags can be supported per machine and MTConnect specification will be changed and will be stored in Devices.xml file to be consumed by MTConnect agent.

Note: It is best to uncheck any tag in the Tag Configuration that client applications do not use to minimize the

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usage of CPU resource on the machine.

8.1 Functional Mode

Functional Mode will be available based on the version of MTConnect Adapter and only supports MTConnect spec. 1.3 spec and newer specs.

By default, MacMan Non-Operating modes will be mapped into MTConnect as shown below. It can be changed as needed.

Lathe:

<DataItem id="Lfmode" name="fmode" category="EVENT" type="FUNCTIONAL_MODE"/>

Two sides Lathe:

<DataItem id="L2f1mode" name="f1mode" category="EVENT" type="FUNCTIONAL_MODE"/> <DataItem id="L2f2mode" name="f2mode" category="EVENT" type="FUNCTIONAL_MODE"/>

Machining Center:

<DataItem id="Mfmode" name="fmode" category="EVENT" type="FUNCTIONAL_MODE"/>

Grinder:

<DataItem id="Gfmode" name="fmode" category="EVENT" type="FUNCTIONAL_MODE"/>

Logic Table:

| | | MACMAN OPERATING REPORT | | | | |
|-----------------|------------|----------------------------|-----------------------|--|--|--|
| MTConnect Tag | Machine | | | | | |
| Functional Mode | Lock | Operating | Not Operating | | | |
| PRODUCTION | NOT ACTIVE | ACTIVE | NOT ACTIVE | | | |
| SETUP | ACTIVE | DON'T CARE | ACTIVE (IN-PRO SETUP) | | | |
| PROCESS | | | ACTIVE (NO | | | |
| DEVELOPMENT | ACTIVE | DON'T CARE | OPERATOR) | | | |
| PROCESS | | | ACTIVE (PART | | | |
| DEVELOPMENT | ACTIVE | DON'T CARE | WAITING) | | | |
| TEAR DOWN | ACTIVE | DON'T CARE | ACTIVE (OTHER) | | | |
| | | | ACTIVE | | | |
| MAINTENANCE | ACTIVE | DON'T CARE | (MAINTENANCE) | | | |
| SETUP | NOT ACTIVE | NOT ACTIVE | ACTIVE (IN-PRO SETUP) | | | |
| PROCESS | | | ACTIVE (NO | | | |
| DEVELOPMENT | NOT ACTIVE | NOT ACTIVE | OPERATOR) | | | |
| PROCESS | | | ACTIVE (PART | | | |
| DEVELOPMENT | NOT ACTIVE | NOT ACTIVE | WAITING) | | | |
| TEAR DOWN | NOT ACTIVE | NOT ACTIVE | ACTIVE (OTHER) | | | |
| | | | ACTIVE | | | |
| MAINTENANCE | NOT ACTIVE | NOT ACTIVE | (MAINTENANCE) | | | |

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| →) # | S.T.M | 10 | े | ATC | ? | 8 | dir- | Cept Lock | 2014/ |
|---------------------|------------|-------|------------|------------|------------|-------------|---------|--------------|---------|
| TOOL DATA | | L | PART10.mi | n | | A-1 | TURRET | 1 SPIND | LE (|
| MacMan HMI | - | | | | - | - | _ | | |
| START | OPER | ATING | IN-PRO | SETUP | | | | | |
| HACH NAME (MC. NAME | | | | | | | | | |
| HAIN PROGRAM | PROG N | IAME | START DAY | START TIME | NO.OF WORK | OPERATING % | RUNNENG | OPERATENG | CUTTING |
| PART10.min | 0920 | | 2014/11/17 | 08:33:47 | 0 | 0 | 45:09 | 1 | 0 0 |
| SUM | | | 2014/11/17 | 08:20:58 | 0 | 0 | 51;53 | | 0 0 |
| PERATING REP:DA | LLY(TODAY) | | | 11 | | // | | | |
| | [H:M:5] | E%3 | | 25% | | 50% | | 75% | 100% |
| UNNING | 1:20:06 | 100 | | | | | | | |
| PERATING | 0 | 0 | | | | | | | |
| CUTTING | 0 | 0 | | | | | | | |
| OT OPERATNG | 1:20:06 | 100 | | | | | | | |
| IN-PRO SETUP | 1:19:10 | 98 | | | | | | | |
| NO OPERATOR | 12 | 0 | | | | | | | |
| PART WAITING | 6 | 0 | | | | | | | |
| MAINTENANCE | 6 | 0 | | | | | | | |
| OTHER | 32 | 0 | | | | | | | |
| SPINDLE RUN | 0 | 0 | | | | | | | |
| EXTRNL INPUT | 0 | 0 | | | | | | | |
| ALARM ON | 6:32 | 8 | | | | | | | _ |
| WHICH NON OP | | | REP INFO | TROUBL | | | | SETTINGS | |

8.2 Extended Tags

The following tags are defined by OKUMA only and will depend on the version of adapter. These extended tags will use OKUMA extended schema for validation.

Note: All extended tags can only be supported on MTConnect specification 1.3 and newer specs.

8.2.1 Block Number

8.2.1.1 Machining Center:

It is the current location of running part program.
<DataItem type="e:BLOCK_NUMBER" category="EVENT" id="Mp1BlockNumber" name="p1BlockNumber"/>

8.2.1.2 Lathe machines

```
<DataItem type="e:BLOCK_NUMBER" category="EVENT" id="Lp1BlockNumber" name="p1BlockNumber"/>
<DataItem type="e:BLOCK_NUMBER" category="EVENT" id="Lp2BlockNumber" name="p2BlockNumber"/>
<DataItem type="e:BLOCK_NUMBER" category="EVENT" id="Lp3BlockNumber" name="p3BlockNumber"/>
```

8.2.1.3 Lathe 2SP machines

```
<DataItem type="e:BLOCK_NUMBER" category="EVENT" id="L2p1BlockNumber" name="p1BlockNumber"/>
<DataItem type="e:BLOCK_NUMBER" category="EVENT" id="L2p2BlockNumber" name="p2BlockNumber"/>
```

8.2.1.4 Grinder

<DataItem type="e:BLOCK_NUMBER" category="EVENT" id="Gp1BlockNumber" name="p1BlockNumber"/>

| OKUMA MTConnect Adapter | S5053-03-27 |
|-------------------------|------------------|
| User Manual | Date: 04/05/2023 |

| | | S.T.M | [0] | 0 | Ŧ | | XI YI Z | | Capa Lock | | 2014/11/03 10:05:36 |
|------|----------------|---------------|--------------|----------------|-----------------|-------------|---------|-------|--------------|---------|---------------------|
| AUTO | OPERAT | ION | | P | ART11.m | in A-MTD |) | | _ | | |
| ACTU | AL POSI | TION | | | 1 | mm(PROGRAM) | 09 | 291 N | | | 3 |
| | | | ACT PO | DSI | DI | STANCE | | | - | 1/6 | |
| X | | | 0. | 000 | | 0.000 |) Co | | 1 | | |
| Y | (| | 0. | 000 | | 0.000 |) S | | 0 | | |
| Z | ! | 6 | 50. | 000 | | 0.000 |) Fm | | | 0.0 |) |
| A | | -17 | '5.0 | 000 | | 0.0000 |) TC | | | 200 | |
| >092 | 291 | | | | | | | | | Î | |
| G4 | F10 | | | | | | | | | | |
| MO | D | | | | | | | | | | |
| G4I | -10 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Ð | MAIN PRG_OP | ACT ER ENL | POSI ARGE | LOAD ON/OFF | ANIMAT ON/OF | F PROGRAM | QUIC | C NC | OPR ITOR | DISPLAY | |

Current Block number is 3 as shown in the captured image below:

8.2.2 Period Running/Operating/Cutting/Spindle Run Time

The accumulated time for total running/operating/cutting/spindle run time will be changed to HH:MM after reaching max value of 9999:59:59 (HH:MM:SS). The accumulated time will be reset to zero after reaching max value of 999999:59 (HH:MM).

All accumulated times are in seconds.

These custom tags are applicable to Lathe, Machining Center, and Grinder machines.

Reference Accumulated Time in MacMan HMI on control:

| OKUMA MTConnect Adapter | S5053-03-27 |
|-------------------------|------------------|
| User Manual | Date: 04/05/2023 |

| | | S.T.M | j. | ি | ŗ | 0 | | | ? | | | Caps Lock | 2 | 013/10/08 12:20:46 |
|----------|------------------|---------|----------------|--------|-----|--------|---------------------|-----|------|----|----------|--------------|-----------|-----------------------|
| TOOL | DATA | | | t | est | .min | | | • 70 | | A-TURRET | 1 SPIND | LE | |
| 4106 | ATTN | Colli | sior | 1 A | voi | dance | <mark>system</mark> | off | 11 | | A | DJUST | | |
| MacMan H | IMI | | | | | | | | | | | | | |
| - | START | 0 | PERAT | ING | | IN-PRO | SETUP | | | | | | | |
| MACH NA | WE:MC.NAM | 1E | | | | | | | | | | | | |
| | | | | R | 5 | | | | | | | | | Virus Protection |
| | | | | | | | | | | | | | | Î |
| COLOATI | | INTOR | | - | | | | | | | | | 2012/06/2 | Gather Logs |
| OPERATI | NG REPIPE | ERTOD | · <1 | [%] Q | 9% | | 2 5 9 | K | 5 | 0% | | 75% | 100 | x |
| RUNNING | | 2321:28 | :00 1 | 100 | | | | | | * | | * | | ▼ DataAdjust |
| OPERATI | NG | 26:49 | :24 | 1 | | | | | | | | | | |
| CUTTI | ING | 25:47 | :37 | 1 | | | | | | | | | | CAS Parameter |
| NOT OPE | ERATNG | 2294:38 | :35 | 98 | | | | | | | | | | P.C D.D |
| IN-PR | | 2294:38 | :35 | 98 | | | | | | | | | | PLC Data Dump |
| NO OF | PERATOR | | 0 | 0 | | | | | | | | | | i O |
| PART | WAITING | | 0 | 0 | | | | | | | | | | I/O Monitor |
| MAINT | ENANCE | | 0 | 0 | | | | | | | | | | |
| OTHER | ł | | 0 | 0 | | | | | | | | | | PLC Monitor |
| SPINDLE | E RUN | | 0 | 0 | | | | | | | | | | |
| EXTRNL | INPUT | | 0 | 0 | | | | | | | | | | |
| ALARM O | DN | 1377:04 | :36 | 59 | | | | | | | | | | |
| | DAILY (TODAY) | | DAIL) (PRE) | e) | | PERIOD | | | | | FILE | RETURN | | |

8.2.2.1 Period Running Time

Total Running Time: Total Length of time for which power supply to the NC has been ON. (Power ON (RUNNING) = OPERATING + NOT OPERATING)

Machining Center:

<DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_RUNNING_TIME" category="SAMPLE" id="Mp1TotalRunningTime"
name="p1TotalRunningTime" />

Lathe:

```
<DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_RUNNING_TIME" category="SAMPLE" id="LpTotalRunningTime"
name="pTotalRunningTime" />
```

For 2 sides Lathe:

```
<DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_RUNNING_TIME" category="SAMPLE" id="L2p1TotalRunningTime"
name="p1TotalRunningTime" />
<DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_RUNNING_TIME" category="SAMPLE" id="L2p2TotalRunningTime"
name="p2TotalRunningTime" />
```

For Grinder:

```
<DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_RUNNING_TIME" category="SAMPLE" id="Gp1TotalRunningTime"
name="p1TotalRunningTime" />
```

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|-------------------------|------------------|
| User Manual | Date: 04/05/2023 |

8.2.2.2 Period Operating Time

Total Operating Time: Total Length of time for which a main program has been executed. Length of time the main program has been executed in the machine lock mode or dry run mode (NC lathe) is not counted.

(OPERATING = CUTTING + Not cutting)

Machining Center:

<DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_OPERATING_TIME" category="SAMPLE" id="Mp1TotalOperatingTime"
name="p1TotalOperatingTime" />

Lathe:

```
<DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_OPERATING_TIME" category="SAMPLE" id="LpTotalOperatingTime"
name="pTotalOperatingTime" />
```

Two sides Lathe:

```
<DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_OPERATING_TIME" category="SAMPLE" id="L2p1TotalOperatingTime"
name="p1TotalOperatingTime" />
<DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_OPERATING_TIME" category="SAMPLE" id="L2p2TotalOperatingTime"
name="p2TotalOperatingTime" />
```

Grinder:

```
<DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_OPERATING_TIME" category="SAMPLE" id="Gp1TotalOperatingTime"
name="p1TotalOperatingTime" />
```

8.2.2.3 Period Cutting Time

Total Cutting Time: Total Length of time for which an axis has been moved at a cutting feedrate. Length of time an axis has been moved at a cutting feedrate in the machine lock mode or dry run mode (NC lathe) is not counted.

Machining Center:

```
<DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_CUTTING_TIME" category="SAMPLE" id="Mp1TotalCuttingTime"
name="p1TotalCuttingTime" />
```

Lathe:

```
<DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_CUTTING_TIME" category="SAMPLE" id="LpTotalCuttingTime"
name="pTotalCuttingTime" />
```

Two Sides Lathe:

```
<DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_CUTTING_TIME" category="SAMPLE" id="L2p1TotalCuttingTime"
name="p1TotalCuttingTime" />
```

```
<DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_CUTTING_TIME" category="SAMPLE" id="L2p2TotalCuttingTime"
name="p2TotalCuttingTime" />
```

Grinder:

```
<DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_CUTTING_TIME" category="SAMPLE" id="Gp1TotalCuttingTime"
name="p1TotalCuttingTime" />
```

8.2.2.4 Period Spindle Run Time

Total length of time for which the spindle has been rotating is recorded. Total length of time the spindle has been rotating in the machine lock mode is not recorded.

Machining Center:

```
<DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_SPINDLE_RUN_TIME"
category="SAMPLE" id="Mp1TotalSpindleRunTime" name=" p1TotalSpindleRunTime " />
OKUMA America Corporation, 2023
```

| OKUMA MTConnect Adapter | S5053-03-27 |
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| User Manual | Date: 04/05/2023 |

Lathe: <DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_SPINDLE_RUN_TIME" category="SAMPLE" id="LpTotalSpindleRunTime" name="pTotalSpindleRunTime"/> Two Sides Lathe: First side (R): <DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_SPINDLE_RUN_TIME" category="SAMPLE" id="L2p1TotalSpindleRunTime" name=" p1TotalSpindleRunTime " /> Second side (L): <DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_SPINDLE_RUN_TIME" category="SAMPLE" id="L2p2TotalSpindleRunTime" name=" p2TotalSpindleRunTime " />

```
Grinder:
<DataItem type="ACCUMULATED_TIME" subType="x:TOTAL_SPINDLE_RUN_TIME" category="SAMPLE"
id="Gp1TotalSpindleRunTime" name="p1TotalSpindleRunTime" />
```

8.2.3 Daily Running/Operating/Cutting/Spindle Run Time

All accumulated times are in seconds.

These custom tags are applicable to both Lathe and Machining Center machines.

Reference Accumulated Time in MacMan HMI on control:

| 5 1 | S.T.M | 0 | 0 | ÷ | | | Caps Lock | 2014/10/29 |
|-------------------|------------|----------|--------|----------|---------|------|--------------|------------|
| TOOL DATA | | _ | P | ART11.mi | n A-MTD | | | |
| MacMan HMI | | - | | _ | | | - | |
| START | OPERA | ATING | OTHER | R | | | | |
| RACH NARE:05P-P | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| OPERATING REPIDAT | LY (TODAY) | | | | | 00 | | 2014/10/29 |
| | [H:M:5] | [%] 00 | | 25% | 50 | 75. | 75% | 100% |
| RUNNING | 6:03:24 | 100 | | | | | | |
| OPERATING | o | 0 | | | | | | |
| CUTTING | 0 | 0 | | | | | | |
| NOT OPERATING | 6:03:24 | 100 | | | | | | |
| IN-PRO SETUP | 0 | 0 | | | | | | |
| NO OPERATOR | 0 | 0 | | | | | | |
| PART WAITING | 0 | 0 | | | | | | |
| MAINTENANCE | 0 | 0 | | | | | | |
| OTHER | 6:03:24 | 100 | | | | | | |
| SPINDLE RUN | 0 | 0 | | | | | | |
| EXTRNL INPUT | 0 | 0 | | | | | | |
| ALARM ON | 1 | 0 | | | | | | |
| DAILY (TODAY) | DAI (PR | LY E) | PERIOD | | | FILE | RETURN | |

| OKUMA MTConnect Adapter | S5053-03-27 | | | |
|-------------------------|------------------|--|--|--|
| User Manual | Date: 04/05/2023 | | | |

8.2.3.1 Daily Running Time

Daily Running Time: Length of time for which power supply to the NC has been ON. (Power ON (RUNNING) = OPERATING + NOT OPERATING)

Machining Center:

<DataItem type="ACCUMULATED_TIME" subType="x:RUNNING_TIME" category="SAMPLE" id="Mp1RunningTime"
name="p1RunningTime" />

Lathe:

<DataItem type="ACCUMULATED_TIME" subType="x:RUNNING_TIME" category="SAMPLE" id="LpRunningTime"
name="pRunningTime" />

Two sides Lathe:

<DataItem type="ACCUMULATED_TIME" subType="x:RUNNING_TIME" category="SAMPLE" id="L2p1RunningTime"
name="p1RunningTime" />

```
<DataItem type="ACCUMULATED_TIME" subType="x:RUNNING_TIME" category="SAMPLE" id="L2p2RunningTime"
name="p2RunningTime" />
```

Grinder:

```
<DataItem type="ACCUMULATED_TIME" subType="x:RUNNING_TIME" category="SAMPLE" id="Gp1RunningTime"
name="p1RunningTime" />
```

8.2.3.2 Daily Operating Time

Daily Operating Time: Length of time for which a main program has been executed. Length of time the main program has been executed in the machine lock mode or dry run mode (NC lathe) is not counted.

(OPERATING = CUTTING + Not cutting)
Machining Center:
<DataItem type="ACCUMULATED_TIME" subType="x:OPERATING_TIME" category="SAMPLE" id="Mp1OperatingTime"
name="p1OperatingTime" />

Lathe:

```
<DataItem type="ACCUMULATED_TIME" subType="x:OPERATING_TIME" category="SAMPLE" id="LpOperatingTime"
name="pOperatingTime" />
```

Two Sides Lathe:

```
<DataItem type="ACCUMULATED_TIME" subType="x:OPERATING_TIME" category="SAMPLE" id="L2p1OperatingTime" name="p1OperatingTime" />
```

```
<DataItem type="ACCUMULATED_TIME" subType="x:OPERATING_TIME" category="SAMPLE" id="L2p2OperatingTime"
name="p2OperatingTime" />
```

Grinder:

```
<DataItem type="ACCUMULATED_TIME" subType="x:OPERATING_TIME" category="SAMPLE" id="Gp10peratingTime"
name="p10peratingTime" />
```

8.2.3.3 Daily Cutting Time

Daily Cutting Time: Length of time for which an axis has been moved at a cutting feedrate. Length of time an axis has been moved at a cutting feedrate in the machine lock mode or dry run mode (NC lathe) is not counted.

```
Machining Center:
<DataItem type="ACCUMULATED_TIME" subType="x:CUTTING_TIME" category="SAMPLE" id="Mp1CuttingTime"
name="p1CuttingTime" />
```

| OKUMA MTConnect Adapter | S5053-03-27 | | | |
|-------------------------|------------------|--|--|--|
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Lathe:

```
<DataItem type="ACCUMULATED_TIME" subType="x:CUTTING_TIME" category="SAMPLE" id="LpCuttingTime"
name="pCuttingTime" />
```

```
<DataItem type="ACCUMULATED_TIME" subType="x:CUTTING_TIME" category="SAMPLE" id="L2p2CuttingTime"
name="p2CuttingTime" />
```

Grinder:

```
<DataItem type="ACCUMULATED_TIME" subType="x:CUTTING_TIME" category="SAMPLE" id="Gp1CuttingTime"
name="p1CuttingTime" />
```

8.2.3.4 Daily Spindle Run Time

Length of time for which the spindle has been rotating is recorded. Length of time the spindle has been rotating in the machine lock mode is not recorded.

Machining Center:

<DataItem type="ACCUMULATED_TIME" subType="x:SPINDLE_RUN_TIME"
category="SAMPLE" id="Mp1SpindleRunTime" name="p1SpindleRunTime" />

Lathe: <DataItem type="ACCUMULATED_TIME" subType="x:SPINDLE_RUN_TIME" category="SAMPLE" id="LpSpindleRunTime" name="pSpindleRunTime"/>

Two Sides Lathe: First side (R): <DataItem type="ACCUMULATED_TIME" subType=" x:SPINDLE_RUN_TIME " category="SAMPLE" id="L2p1SpindleRunTime" name=" p1SpindleRunTime " />

```
Second side (L):
<DataItem type="ACCUMULATED_TIME" subType=" x:SPINDLE_RUN_TIME "
category="SAMPLE" id="L2p2SpindleRunTime" name="p2SpindleRunTime" />
```

Grinder:

```
<DataItem type="ACCUMULATED_TIME" subType="x:SPINDLE_RUN_TIME" category="SAMPLE" id="Gp1SpindleRunTime"
name="p1SpindleRunTime" />
```

8.2.4 Variables

The following tags are defined as event and extended (custom) tags and will be available based on the current version of MTConnect Adapter.

8.2.4.1 Common Variables

The value will be a collection of key-value pairs. The number of items will be defined in Tag Configuration screen.

In case of the value of common variable is EMPTY as shown in NC-HMI screen, the actual value reporting to the agent will be x:Infinity where X is the common variable index.

8.2.4.1.1 Machining Center

<DataItem type="e:VARIABLES" subType="x:COMMON" category="EVENT" id="Mp1CommonVariable" name="p1CommonVariable"/>

8.2.4.1.2 Single Side Lathe

| OKUMA MTConnect Adapter | S5053-03-27 | | | |
|-------------------------|------------------|--|--|--|
| User Manual | Date: 04/05/2023 | | | |

8.2.4.1.3 Two sides Lathe

First machine or R side machine:

<DataItem type="e:VARIABLES" subType="x:COMMON" category="EVENT" id="L2p1CommonVariable"
name="p1CommonVariable"/>

Second machine or L side machine:

<DataItem type="e:VARIABLES" subType="x:COMMON" category="EVENT" id="L2p2CommonVariable"
name="p2CommonVariable"/>

8.2.4.1.4 Grinder

<DataItem type="e:VARIABLES" subType="x:COMMON" category="EVENT" id="Gp1CommonVariable" name="p1CommonVariable"/>

| | S.Т.М | ţo | \Box | Ŧ | ● 2 ● 2 ● | | | 1 | Caps Lock | 20 20 | 014/05/06 11:46:17 |
|----------------------------|---------------|-----|----------|-----|-----------|-----|--------|-----|--------------|-------------------|-----------------------|
| PARAMETER PART12.MIN A-MTD | | | | | | | | | | | |
| SCHEDULE | | | | | | | | | | | |
| COMM | ON VARIABLE | 5 | | | | | | | | | |
| | | | | | | | | | μī, (| 0 1 | |
| NO. | | NO. | | NO. | | NO. | | | x | -355.578 | |
| 1 | 2001 | 11 | EMPTY(*) | 21 | EMPTY(*) | 31 | EMPTY | (*) | Y | 45.376 | |
| 2 | 2 2001 | 12 | EMPTY(*) | 22 | EMPTY(*) | 32 | EMPTY(| (*) | z | 115.682 | |
| 3 | 3 2001 | 13 | EMPTY(*) | 23 | EMPTY(*) | 33 | EMPTY(| (*) | В | 47.8932 | |
| 4 | F O | 14 | EMPTY(*) | 24 | EMPTY(*) | 34 | EMPTY(| (*) | | | COOLANT |
| 5 | EMPTY(*) | 15 | EMPTY(*) | 25 | EMPTY(*) | 35 | EMPTY(| (*) | / | | MONITOR |
| 6 | 6 4 56 | 16 | EMPTY(*) | 26 | EMPTY(*) | 36 | EMPTY(| (*) | (DIS | TANCE) | 0kuma Contasta |
| 7 | EMPTY(*) | 17 | EMPTY(*) | 27 | EMPTY(*) | 37 | EMPTY | (*) | X | 0.000 | |
| 8 | EMPTY(*) | 18 | EMPTY(*) | 28 | EMPTY(*) | 38 | EMPTY(| (*) | 7 | 0.000 | MTCONNECT ADAPTER |
| 9 | EMPTY(*) | 19 | EMPTY(*) | 29 | EMPTY(*) | 39 | EMPTY(| (*) | B | 0.0000 | |
| 10 | EMPTY(*) | 20 | EMPTY(*) | 30 | EMPTY(*) | 40 | EMPTY | (*) | | | MACHINE ALERT |
| • | | -h | | | | | | Þ | - | | |
| | | | | | | | | - | | | Startup Settings |
| | | | | | | | | | | | |
| | N | | | | | | | | | | للحصار |
| Ð | SET | ADD | | FI | ND | | ITEM ↑ | ITE | M↓ | DISPLAY CHANGE | |

Sample output from agent for Common Variables with starting index from 1 and ending index at 20:

<e:Variables dataItemId="p1CommonVariable" timestamp="2014-06-20T12:12:51.0427812Z" name="p1CommonVariable" sequence="365" subType="x:COMMON">1:1E-07 2:0 3:0 4:0 5:0 6:0 7:0 8:0 9:0 10:0 11:0 12:0 13:0 14:0 15:0 16:0 17:Infinity 18:0 19:0 20:Infinity</e:Variables>
| OKUMA MTConnect Adapter | S5053-03-27 |
|-------------------------|------------------|
| User Manual | Date: 04/05/2023 |

8.2.4.2 Current Workpiece Offset Variables

The current workpiece offset are for X, Y, Z, A, B, and C axis if applicable. It has default unit of millimeter for linear axes such as X, Y, and Z, and degrees for rotary axes such as A, B, and C axis.

8.2.4.2.1 Machining Center

```
<DataItem type="e:VARIABLES" subType="x:WORKOFFSET_X_AXIS" category="EVENT" id="Mp1WorkOffsetXAxis"
name="p1WorkOffsetXAxis" units="MILLIMETER"/>
<DataItem type="e:VARIABLES" subType="x:WORKOFFSET_Y_AXIS" category="EVENT" id="Mp1WorkOffsetYAxis"
name="p1WorkOffsetYAxis" units="MILLIMETER"/>
<DataItem type="e:VARIABLES" subType="x:WORKOFFSET_Z_AXIS" category="EVENT" id="Mp1WorkOffsetZAxis"
name="p1WorkOffsetZAxis" units="MILLIMETER"/>
<DataItem type="e:VARIABLES" subType="x:WORKOFFSET_Z_AXIS" category="EVENT" id="Mp1WorkOffsetZAxis"
name="p1WorkOffsetZAxis" units="MILLIMETER"/>
<DataItem type="e:VARIABLES" subType="x:WORKOFFSET_A_AXIS" category="EVENT" id="Mp1WorkOffsetZAxis"
name="p1WorkOffsetAxis" units="DEGREE"/>
<DataItem type="e:VARIABLES" subType="x:WORKOFFSET_B_AXIS" category="EVENT" id="Mp1WorkOffsetBAxis"
name="p1WorkOffsetBAxis" units="DEGREE"/>
<DataItem type="e:VARIABLES" subType="x:WORKOFFSET_B_AXIS" category="EVENT" id="Mp1WorkOffsetBAxis"
name="p1WorkOffsetBAxis" units="DEGREE"/>
<DataItem type="e:VARIABLES" subType="x:WORKOFFSET_C_AXIS" category="EVENT" id="Mp1WorkOffsetBAxis"
name="p1WorkOffsetBAxis" units="DEGREE"/>
<DataItem type="e:VARIABLES" subType="x:WORKOFFSET_C_AXIS" category="EVENT" id="Mp1WorkOffsetCAxis"
name="p1WorkOffsetCAxis" units="DEGREE"/>
<DataItem type="e:VARIABLES" subType="x:WORKOFFSET_C_AXIS" category="EVENT" id="Mp1WorkOffsetCAxis"
name="p1WorkOffsetCAxis" units="DEGREE"/>
<DataItem type="e:VARIABLES" subType="x:WORKOFFSET_C_AXIS" category="EVENT" id="Mp1WorkOffsetCAxis"
name="p1WorkOffsetCAxis" units="DEGREE"/>
```

8.2.5 MacMan

The following tags are defined as event and extended (custom) tags.

8.2.5.1 Panel History

These tags will send out panel history data as it is recorded from MacMan on NC HMI screen as shown. Only one record can be sent out at a time if there are some changes.

Note: MacMan only records while NC HMI has focus. As a result, MacMan will not record any keystroke while other applications are in focus.

All "|" character will be converted to "PIPE" to be supported by MTConnect Agent, currently.

| START | OPERATING | IN-PRO SETUP | | | | | | | |
|-------------------|------------------------------------|------------------|---------------------------------|------|--------|--|--|--|--|
| MACH NAME:MC. NAM | E | 12 C | | | | | | | |
| OPERATION HISTOR | Y:OPERATE PANEL | | | | | | | | |
| DATE | TIME | | | | | | | | |
| 2014/05/13 | 09:19:54 | One-touch Window | Dne-touch window Close:RUN DISP | | | | | | |
| 2014/05/13 | 09:19:53 | Mode change:RUN | DISP | | | | | | |
| 2014/05/13 | 09:19:53 | 8-Turret | | | | | | | |
| 2014/05/13 | 09:19:53 | Mode Change:RUN | DISP | | | | | | |
| 2014/05/13 | 09:19:49 | SELECT SHEET:NC | PROGRAM | | | | | | |
| 2014/05/09 | 15:49:32 | F8[CLOSE] | | | | | | | |
| 2014/05/09 | 15:49:31 | F9[SCHEDULEPRG_O | PER] | | | | | | |
| 2014/05/09 | 15:49:30 | > EXT. | | | | | | | |
| 2014/05/09 | 15:49:26 | One-touch window | Close:RUN DISP | | | | | | |
| 2014/05/09 | 5/09 15:49:26 Mode change:RUN DISP | | | | | | | | |
| 2014/05/09 | 9 15:49:14 Run mode Change:AUTO | | | | | | | | |
| 2014/05/09 | 10:43:11 | Run mode Change: | Run mode Change:MANUAL | | | | | | |
| 2014/05/09 | 10:43:02 | > Pagekey_NEXT | | | | | | | |
| 2014/05/09 | 10:42:58 | A-Turret | A-Turret | | | | | | |
| 2014/05/09 | 10:42:55 | > Pagekey_NEXT | | - 27 | 17: AV | | | | |
| Operate Panel | : I/O Signals | | | FILE | RETURN | | | | |

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Machining Center:

<DataItem type="e:MACMAN" subType="x:PANEL_HISTORY" category="EVENT" id="Mp1MacManPanelHistory"
name="p1MacManPanelHistory"/>

Lathe:

<DataItem type="e:MACMAN" subType="x:PANEL_HISTORY" category="EVENT" id="Lp1MacManPanelHistory"
name="p1MacManPanelHistory"/>

Two Sides Lathe:

R side machine: <DataItem type="e:MACMAN" subType="x:PANEL_HISTORY" category="EVENT" id="L2p1MacManPanelHistory" name="p1MacManPanelHistory"/>

L side machine:

<DataItem type="e:MACMAN" subType="x:PANEL_HISTORY" category="EVENT" id="L2p2MacManPanelHistory"
name="p2MacManPanelHistory"/>

Grinder:

<DataItem type="e:MACMAN" subType="x:PANEL_HISTORY" category="EVENT" id="Gp1MacManPanelHistory"
name="p1MacManPanelHistory"/>

Sample Output from agent on first side of machine:

<e:Macman dataItemId="p1MacManPanelHistory" timestamp="2014-06-20T12:40:48.4996172Z" name="p1MacManPanelHistory"
sequence="2914" subType="x:PANEL_HISTORY">2014/06/20 08:40:45 F8[CLOSE] / No.2[COMMON VARIABLE]// Common variable in the sequence is the sequence in the sequence is the sequence

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| ••) 🛗 👘 | Б.Т.М [О]. |) <u>†</u> ? | No. | Cape Lock | 2014/06/20 08:44:36 |
|--------------------|----------------|----------------------------------|----------------------|--------------|------------------------|
| PARAMETER | A.M | IN | A-TURRET | 1 SPINDLE | |
| MacMan HMI | | | Country Inc. | | S |
| START | OPERATING | IN-PRO SETUP | | | |
| HACH NAME MC. NAME | | | | | |
| OPERATION HISTORY: | OPERATE PANEL | | | | |
| DATE | TIME | | | | |
| 2014/06/20 | 08:40:45 | FB[CLOSE] / NO.2[COMMON VARIABLE | [] | | |
| 2014/06/20 | 08:40:44 | ListBox:No.2[COMMON VARIABLE] | | | |
| 2014/06/20 | 08:40:44 | ListBox:No.3[USER PARAMETER] | | | |
| 2014/06/20 | 08:40:42 | FB[DISPLAY CHANGE] / TEXTBOX:[| 0](Table(1,19 | 4)) | |
| 2014/06/20 | 08:27:26 | > EXT. | | | |
| 2014/06/20 | 08:27:25 | > EXT. | | | |
| 2014/06/20 | 08:27:21 | F8[CLOSE] / No.2[COMMON VARIABLE | [] | | |
| 2014/06/20 | 08:27:20 | LISTBOX:NO.2[COMMON VARIABLE] | | | |
| 2014/06/20 | 08:27:20 | LISTBOX:NO.3[USER PARAMETER] | | | |
| 2014/06/20 | 08:27:19 | F8[DISPLAY CHANGE] / TEXTBOX:[| 238.0000](Table(1,2) |) | |
| 2014/06/20 | 08:27:18 | Mode Change:PARAMETER | | | |
| 2014/06/20 | 08:08:05 | One-touch window Close:RUN DISP | | | |
| 2014/06/20 | 08:08:05 | Mode Change:RUN DISP | | | |
| 2014/06/20 | 08:08:05 | Mode change:RUN DISP | | | |
| 2014/06/20 | 08:08:04 | SELECT SHEET:NC PROGRAM | | | |
| Operate Panel | I/O Signals | | FILE | RETURN | |

8.2.6 Machine Operation Panel Signals

8.2.6.1 Machine Lock

The following tags are custom MTConnect tags. When it is active the tag's value is ON otherwise, it is OFF.



Machining Center: <DataItem type="e:OUTPUT_SIGNAL" subType="x:MACHINE_LOCK" category="EVENT" id="Mp1MachineOperationPanelOutputMachineLock" name="p1MachineOperationPanelOutputMachineLock"/>

Lathe:

```
<DataItem type="e:OUTPUT_SIGNAL" subType="x:MACHINE_LOCK" category="EVENT"
id="Lp1MachineOperationPanelOutputMachineLock" name="p1MachineOperationPanelOutputMachineLock"/>
```

Two Sides Lathe:

R side machine: <DataItem type="e:OUTPUT_SIGNAL" subType="x:MACHINE_LOCK" category="EVENT" id="L2p1MachineOperationPanelOutputMachineLock" name="p1MachineOperationPanelOutputMachineLock"/>

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L side machine:

```
<DataItem type="e:OUTPUT_SIGNAL" subType="x:MACHINE_LOCK" category="EVENT"
id="L2p2MachineOperationPanelOutputMachineLock" name="p2MachineOperationPanelOutputMachineLock"/>
```

Grinder:

```
<DataItem type="e:OUTPUT_SIGNAL" subType="x:MACHINE_LOCK" category="EVENT"
id="Gp1MachineOperationPanelOutputMachineLock" name="p1MachineOperationPanelOutputMachineLock"/>
```

8.2.6.2 Dry Run

The following tag is custom MTConnect tag. When it is active the tag's value is ON otherwise, it is OFF.



Machining Center:

<DataItem type="e:OUTPUT_SIGNAL" subType="x:DRY_RUN" category="EVENT" id="Mp1MachineOperationPanelOutputDryRun"
name="p1MachineOperationPanelOutputDryRun"/>

Lathe:

<DataItem type="e:OUTPUT_SIGNAL" subType="x:DRY_RUN" category="EVENT" id="Lp1MachineOperationPanelOutputDryRun"
name="p1MachineOperationPanelOutputDryRun"/>

Two Sides Lathe:

R side machine:

<DataItem type="e:OUTPUT_SIGNAL" subType="x:DRY_RUN" category="EVENT"
id="L2p1MachineOperationPanelOutputDryRun" name="p1MachineOperationPanelOutputDryRun"/>

L side machine:

<DataItem type="e:OUTPUT_SIGNAL" subType="x:DRY_RUN" category="EVENT"
id="L2p2MachineOperationPanelOutputDryRun" name="p2MachineOperationPanelOutputDryRun"/>

Grinder:

<DataItem type="e:OUTPUT_SIGNAL" subType="x:DRY_RUN" category="EVENT" id="Gp1MachineOperationPanelOutputDryRun" name="p1MachineOperationPanelOutputDryRun"/>

8.2.7 Spindle Surface Speed

The following tags are custom MTConnect tags. It reports spindle surface speed

8.2.7.1 Lathe

Spindle Surface speed for path 1, 2, 3 related to first spindle

Spindle Surface speed for path 1, 2, 3 related to second spindle

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<DataItem type="e:SURFACE_SPEED" subType="x:PATH_3" category="SAMPLE" id="LS2SurfaceSpeedC"
name="S2SurfaceSpeedC" units="MILLIMETER/SECOND"/>

8.2.7.2 Lathe 2SP Machines

Spindle Surface speed for path 1 related to first spindle of first machine <DataItem type="e:SURFACE_SPEED" subType="x:PATH_1" category="SAMPLE" id="L2S1SurfaceSpeedA" name="S1SurfaceSpeedA" units="MILLIMETER/SECOND"/>

Spindle Surface speed for path 2 related to first spindle of second machine

<DataItem type="e:SURFACE_SPEED" subType="x:PATH_2" category="SAMPLE" id="L2S2SurfaceSpeedA"
name="S2SurfaceSpeedA" units="MILLIMETER/SECOND"/>

8.2.8 Path Feedrate per revolution

The following tags are custom MTConnect tags. It reports spindle surface speed

8.2.8.1 Lathe

Actual and program path federate per revolution related to Path 1 or H1/A turret <DataItem type="e:PATH_FEEDRATE_PER_REV" subType="ACTUAL" name="p1Fract" category="SAMPLE" id="Lp1Fract" /> <DataItem type="e:PATH_FEEDRATE_PER_REV" subType="PROGRAMMED" name="p1Frcmd" category="SAMPLE" id="Lp1Frcmd" />

Actual and program path federate per revolution related to Path 2 or B turret <DataItem type="e:PATH_FEEDRATE_PER_REV" subType="ACTUAL" name="p2Fract" category="SAMPLE" id="Lp2Fract" /> <DataItem type="e:PATH_FEEDRATE_PER_REV" subType="PROGRAMMED" name="p2Frcmd" category="SAMPLE" id="Lp2Frcmd" />

Actual and program path federate per revolution related to Path 3 or C turret on left spindle <DataItem type="e:PATH_FEEDRATE_PER_REV" subType="ACTUAL" name="p3Fract" category="SAMPLE" id="Lp3Fract" /> <DataItem type="e:PATH_FEEDRATE_PER_REV" subType="PROGRAMMED" name="p3Frcmd" category="SAMPLE" id="Lp3Frcmd" />

Actual and program path federate per revolution related to Path 3 or C turret on right spindle <DataItem type="e:PATH_FEEDRATE_PER_REV" subType="ACTUAL" name="p3FractR" category="SAMPLE" id="Lp3FractR" /> <DataItem type="e:PATH_FEEDRATE_PER_REV" subType="PROGRAMMED" name="p3FrcmdR" category="SAMPLE" id="Lp3FrcmdR" />

8.2.8.2 Lathe 2SP Machines

Actual and program path federate per revolution related to first spindle of first machine <DataItem type="PROGRAM_HEADER" name="p1ProgramHeader" category="EVENT" id="L2p1ProgramHeader"/> <DataItem type="PALLET_ID" name="p1PalletID" category="EVENT" id="L2p1PalletID"/>

Actual and program path federate per revolution related to first spindle of second machine <DataItem type="e:PATH_FEEDRATE_PER_REV" subType="ACTUAL" name="p2Fract" category="SAMPLE" id="L2p2Fract" /> <DataItem type="e:PATH_FEEDRATE_PER_REV" subType="PROGRAMMED" name="p2Frcmd" category="SAMPLE" id="L2p2Frcmd" />

8.2.9 Analog/Digital Input Sensors

Please see the Sensor section 8.4 Sensors for more information

8.3 Tool Assets

Tool Assets cannot be supported on P100II, and all turning machines such as P200L/P300S/P300L and newer controls with special 8 Digits Tool ID option.

For P300S(LP):

Tool Asset, Current Tool for A/B/C turret, and ToolAssetID tags will not be available when one of the following conditions are met:

- Tool ID NC SPEC CODE (32,6) is ON

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- TMIM NC SPEC CODE 2 (3,6) is OFF

For P300L:

Tool Asset, Current Tool for A/B/C turret, and ToolAssetID tags will not be available when the specification of LTIM NC SPEC CODE 2 (27,2) is OFF.

Tool Assets do require Tool Life Management option spec on OSP-P controls to provide Cutting Tool Life information.

Machining Center Tool Life Management option spec code: TLLF (21, 1)

| | S.T. | M | ি | | | ? | | | Caps Lock | | 201 | 4/11/21 |
|------|-----------|-----|------|--------|-------|----------------------------|-------|------|--------------|-------|---------|------------------------|
| | | | | | 14 | <u>2</u> ⊒¥ <u></u> ∆_M | | | 4 | | | 1:24:40 |
| AUTO | OFERATION | | | SCHEDI | | A-1* | | | | | _ | |
| SPEC | CODE | | | SCHEDU | 1mn | | M) | | N | | 1 | |
| JILC | CODE | | | | | | u*i y | | N | | - | |
| | Т | 1 | _ | | - | 1 | T | - | 1 | 1 | 7 | |
| NO. | DATA BIN | HEX | BIT7 | BIT6 | BIT5 | BIT4 | BIT3 | BIT2 | BIT1 | BITO | (and (| |
| 21 | 00000011 | 03 | TPRB | TSNS | ATRT | DRME | DNCE | PRNT | TLLF | TLCH | - | |
| 22 | 10101010 | AA | CV10 | CV2 | DNT1 | PRMI | DNT3 | MSSV | DNDT | OHSP | | |
| 23 | 01100001 | 61 | YAEC | NSRC | 2TOF | | | | ITPG | TRNC | | |
| 24 | 00000000 | 00 | MSB7 | MSB6 | MSB 5 | MSB4 | MSB3 | MSB2 | MSB1 | MSBO | | okuma COOLANT |
| 25 | 10100111 | A7 | LSVP | MOPB | LNRP | VAUT | VADV | SHNC | NBS | SHSI | | |
| 26 | 10000011 | 83 | TWRC | STRC | PHDG | MSKP | SATM | SAMS | MNMS | SPAE | | okuma CV Buttons |
| 27 | 01001001 | 49 | ANCR | EXIO | PHAR | | SRAC | NACF | | SYTP | | |
| 28 | 10011001 | 99 | CLM | Z100 | G68S | CLDC | CHMF | BITL | | PB12 | | MTCONNECT ADAPTER |
| 29 | 00000000 | 00 | PHD6 | PHD5 | PHD4 | THSB | Z200 | F1FD | IGFD | THCM | | |
| 30 | 00100010 | 22 | | | NRSP | TNDM | WIOP | NTHC | HELP | PHD7 | | MACHINE |
| 31 | 10100000 | AO | OACS | EXMC | IGFA | 2SLT | MSUS | PE10 | PER5 | NRV2 | | |
| 32 | 10100101 | A5 | NOPN | MFCE | P300 | | BRLT | CAPI | SCRT | KKMN | - | Startup |
| | 1 | | | - | | | - | | | | | |
| | N | | | | | | | | | | | |
| | | | [| | | | | | | DISPL | AY | |
| (i) | | | | | | | | | | CHAN | IGE | |

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| Lathe Tool Life I | Management optior | n spec code: | TLFC | (21, | 3) |
|-------------------|-------------------|--------------|------|------|----|
|-------------------|-------------------|--------------|------|------|----|

| | ŢŢ | S.T.M | ৃত্ | 0 | ÷ | ? | YA | | | | 201 | .4/11/21 00:39:55 |
|------|---------------------|----------|-------|--------|-------|-------|-------|--------|--------|-------|------------|----------------------|
| AUTO | OPER | ATION | A: | | | • * | C- | TURRET | 1 SPIN | DLE | 4 | |
| NC S | C SPEC CODE 1mm N 0 | | | | | | | | | | | |
| 1 | NO. | DATA | BTT7 | BTT6 | BTT5 | RTT4 | BTT3 | BTT2 | BTT1 | BTT0 | | |
| | 21 | 00111001 | т800 | TLPO | TWOF | T200 | TLFC | TOF3 | TOF2 | TRPT | | |
| | 22 | 00000001 | AXCC | INDC | IDXB | IDZB | IDXA | IDZA | AXIC | AXCM | | |
| | 23 | 10111011 | MSPR | OPSN | YAXM | CAOS | TCSN | TSCA | TS2S | TSC | | JkumaUtil: |
| | 24 | 00000000 | | - | TSCC | ХМВ | XMSC | CEJ | XMR | XMS | 7 | DZ |
| | 25 | 00010001 | TSIL | TZAWI | XBWI | ZAWI | 1PCIL | PCIL | SOIL | SRIC | | ramLoader |
| | 26 | 00010001 | HOB | RCCM | LCCM | MAOT | CSYNC | BCWOM | МСТ4 | SPRH | | MACHINE |
| | 27 | 00000000 | MCT12 | NCTSTQ | NCTST | NTCL | NCTS | TATSB | ETTS | TATS | 2.8 | ALERT |
| | 28 | 00000000 | | | FCNV | NCPC2 | | SYSD | NCLD | ROBT | | |
| | 29 | 01010110 | EDOS | PTST | NOSV | NOPN | ОН | STST | NTST | NCMS | | |
| | 30 | 01100000 | THCM | THCN | NRSP | | PKOS | BLDR | AXCS | СЕМК | | COOLANT MONITOR |
| | 31 | 00000000 | SRET | SREN | SRAT | SRTB | | | SRB | SRBZ | | |
| | 32 | 10000010 | IVTF | TLID | SRAC | SHNC | NBS | SHSI | НСТ2 | TCPC | | Startup Settings |
| | | | | | | | | | | | | È. |
| | | N | | | | | | | | | | |
| Ð | | | | | | | | | | DISPL | .AY IGE | |

The following tags can be supported in Tool Assets and can be varied per machine/control type:

<Assets> <CuttingTool> <CuttingToolLifeCycle> <CutterStatus/> <ToolLife/> <ProgramToolGroup/> <ProgramToolNumber/>

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<Location/> <CuttingItems> <ItemLife/> <x: ItemCutterStatus/> <x: ItemProgramToolGroup/> </CuttingItem> </CuttingItems> </CuttingToolLifeCycle> </CuttingTool> </Assets>

The following tags are supported in Tool Assets if Tool Life Management is not available on the control:

<Assets> <CuttingTool> <CuttingToolLifeCycle> <CutterStatus/> <ProgramToolGroup/> <ProgramToolNumber/> <Location/> </CuttingToolLifeCycle> </CuttingTool> </Assets>

There are extended tags defined specifically for OKUMA machines for multi-edges tool types which are: <<u>x: ItemCutterStatus</u>/>

<x: ItemProgramToolGroup/>

A multi-edges tool can have tool life status and program tool group number assigned to each edge.

When pot number specified in Location tag is zero it implies that the tool is currently in the spindle.

Note: The actual number of available tags will be varied for each tool based on control type, machine specification, and tool type as shown below per machine type.

8.3.1 Asset ID

Currently, Asset ID will be assigned automatically using Asset Tool ID and tool/station number. Asset Tool ID is predefined as 123456 for all tool assets, and tool/station number will be varied based on control type, machine spec., and tool type. Asset Tool ID can be changed in the <u>Tag Configuration</u>.

The table below shows how an Asset Id created to ensure a unique asset ID in the entire Tool Assets collection per machine.

Note: It is necessary to use a unique Asset Tool ID per machine if multiple machines are configured to send data to the same agent.

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| Controls | Asset Id | Attached Tool Number/ Wheel Number | Pot / Location | A Turret - Station No. | B Turret - Station No. | C Turret - Station No. |
|---------------------------------------|--------------|--|-------------------|---------------------------------|---------------------------------|---------------------------------|
| P200 L | 123456.10C | N/A | N/A | N/A | N/A | 10 |
| | 123456.10B | N/A | N/A | N/A | 10 | N/A |
| | 123456.10A | N/A | N/A | 10 | N/A | N/A |
| P200 M | 123456.100 | 100 | 1 | N/A | N/A | N/A |
| P200/P300 M (Tool ID Fixed ATC) | 123456.1 | N/A | 1 | N/A | N/A | N/A |
| P200/P300 M (Tool ID Random | | | | | | |
| ATC) | 123456.100 | 100 | 1 | N/A | N/A | N/A |
| P300 L | 123456.502 | 502 | N/A | N/A | N/A | 1 |
| | 123456.501 | 501 | N/A | N/A | 1 | N/A |
| | 123456.500 | 500 | N/A | 1 | N/A | N/A |
| P300 M | 123456.45678 | 45678 | 1 | N/A | N/A | N/A |
| P300 S | 123456.1001 | 1001 | N/A | N/A | 1 | N/A |
| | 123456.1000 | 1000 | 1 | N/A | N/A | N/A |
| P300 G | 123456.1 | 1 | 1 | N/A | N/A | N/A |

On P200 L control, there is no tool number assigned to each station for each turret. Therefore, the station number is used instead of actual tool number for creating an asset ID. A letter is also attached to the asset ID per turret to ensure unique asset ID on all stations. The system will report each station as a tool asset with or without an attached tool.

On P300 controls, a tool is created but not attached to a magazine, or turret will not be considered a tool asset. Meanwhile detaching a tool from its location is considered removing a tool asset from machine's tool assets collection.

On P300G controls, each wheel is considered as a tool.

8.3.2 Cutter Status

The cutter status of a tool depends on the condition of gauge and life status.

| Cutter Status | Gauges | Life |
|-----------------------------|--------|------|
| AVAILABLE | OK | ОК |
| BROKEN | NG | ОК |
| EXPIRED | OK | NG |
| BROKEN & EXPIRED | NG | NG |

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| TOOL LIFE MANA | GE | | |
|-----------------|-----|----------------|------|
| GROUP NUMBER | 200 | | |
| N. SET | 100 | LIFE | 🔜 ОК |
| N. ACTUAL | 200 | GAUGE | 🔜 ОК |
| REMAINING(%) | 0 | | |
| | | | |
| | | | 1 |
| JCORT. TOOL NO. | • | CURI. MG NU. : | 1 |

The table below shows cutter status of a multi-edges tool based on status of individual tool edge. Individual item cutter status is also reported per tool and machine type if supported.

<x: ItemCutterStatus> <Status>EXPIRED</Status> <Status>BROKEN</Status> </x: ItemCutterStatus>

Cutter Status Logic:

| Cutter Status | Gauge (OK/NG) | Life (OK/NG) | |
|-----------------------------|--|-----------------------|--|
| AVAILABLE | No Broken Edge | No Expired Edge | |
| AVAILABLE | At least one edge is neither broken nor expired. | | |
| BROKEN | All Edges are broken | N/A | |
| EXPIRED | N/A | All Edges are expired | |
| BROKEN & EXPIRED | All edges are either broken or expired | | |

8.3.2.1 Grinder

Only active tool/wheel number can be checked for its cutter status – AVAILABLE or EXPIRED Active tool/wheel number will use one of the wheel data numbers and its status is determined as following:

| | Wheel | Wheel | Conditions | |
|---------------|--------|----------|------------|----------------------------------|
| Cutter Status | No. | Data | | Wheel Manage Data |
| | ACTIVE | OUTSIDE | ~- | |
| AVAILABLE | | DIAMETER | /- | OUTSIDE DIAMETER - CHANGE |
| | ACTIVE | OUTSIDE | | |
| EXPIRED | | DIAMETER | | OUTSIDE DIAMETER - CHANGE |
| | NOT | NI/A | NI/A | N/A |
| UNKNOWN | ACTIVE | IN/A | IN/A | IN/A |

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| NAGE TOOLS INFORMAT | TION | | 1mm | WH | HL.DATA(INDIV) | HL.DATA(ALL) |
|---------------------|---------------|-----------|-------------|-------|----------------|--------------|
| WHEEL DATA NO. 🙆 | 6 WH | EEL TYPE | ANGLE WHEEL | | | |
| SHAPE 🙆 | 1 | | 1 | | - 10 | |
| HEEL DATA | | | | W | s | |
| | | OFFSET X | 0,0000 | | | |
| | | OFFSET Z | 0.0000 | W | | <hr/> |
| | OUTSIDE DIAM | ETER OD 🙆 | 0,0000 | | | |
| | WIDTH, SIDE | FACE WS | 0,0000 | · · . | | |
| | WIDTH, PERIP | HERY WP | 0,0000 | | | 1 |
|) | LENGTH, SIDE | FACE TLS | 0,0000 | | | 1 |
| | LENGTH, PERIP | HERY TLP | 0,0000 | TOC | A | / |
| | RADIUS, | LEFT RL 🔂 | 0,0000 | | W | • / |
| TAPER | ANGLE, SIDE | FACE TOS | 0.0000 | | | 00 |
| TAPER | ANGLE, PERIP | HERY TOP | 0.0000 | | | / 00 |
| | TILT A | NGLE WA | 30,0000 | TIS A | | / |
| MA | KIMUM UPEKAT | ING SPEEU | 8 | | | |
| HEEL MANAGE DATA | INITIAL | CHANGE | FORECAST | 2 | | |
| OUTSIDE DIAMETER | 0.0000 | 0.0000 | 0,0000 | | TDP / | |
| WIDTH, LEFT | | | | TI | P | |
| WIDTH, RIGHT | | | | | | |
| WIDTH, SIDE FACE | 0.0000 | | | | | |
| WIDTH, PERIPHERY | 0.0000 | | 21 | | | |

8.3.3 Output Tool Assets

http://IPAddress:port/assets

- IPAddress: localhost or IP address of running agent
- Port: Default to port 5000 of running agent. It can be changed in agent.cfg configuration file.

Examples:

http://localhost:5000/assets for getting all machine tool assets

8.3.4 P200 M

8.3.4.1 Standard Tool Life Management:

<? xml version="1.0" encoding="UTF-8"?>

<MTConnectAssets xmlns:m="urn:mtconnect.org:MTConnectAssets:1.3"</pre>

xmlns="urn:mtconnect.org:MTConnectAssets:1.3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:x="urn:okuma.com:OkumaToolAssets:1.3" xsi:schemaLocation="urn:okuma.com:OkumaToolAssets:1.3" xsi:schema.com:OkumaToolAssets:1.3" xsi:sche

<Header creationTime="2014-11-03T19:50:46Z" sender="OKUMA-33FEA7808" instanceId="1415044217" version="1.3.0.9" assetBufferSize="1024" assetCount="4"/>

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<Assets><CuttingTool serialNumber="1" toolId="XXX" timestamp="2014-11-03T19:48:32.8125000Z"</p> deviceUuid="OKUMA.MachiningCenter.123456" assetId="XXX.1"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ToolLife countDirection="DOWN" initial="1" limit="0" type="MINUTES">1</ToolLife> <ProgramToolGroup>100</ProgramToolGroup> <ProgramToolNumber>1</ProgramToolNumber> <Location negativeOverlap="1" positiveOverlap="1" type="POT">2</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="2" toolId="XXX" timestamp="2014-11-03T19:48:51.1093750Z" deviceUuid="OKUMA.MachiningCenter.123456" assetId="XXX.2"> <CuttingToolLifeCycle> <CutterStatus> <Status>BROKEN</Status> </CutterStatus> <ToolLife countDirection="DOWN" initial="1" limit="0" type="MINUTES">0</ToolLife> <ProgramToolGroup>200</ProgramToolGroup> <ProgramToolNumber>2</ProgramToolNumber> <Location negativeOverlap="1" positiveOverlap="1" type="POT">5</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="3" toolId="XXX" timestamp="2014-11-03T19:49:15.6562500Z" deviceUuid="OKUMA.MachiningCenter.123456" assetId="XXX.3"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ToolLife countDirection="DOWN" initial="50" limit="0" type="PART COUNT">30</ToolLife> <ProgramToolGroup>300</ProgramToolGroup> <ProgramToolNumber>3</ProgramToolNumber> <Location negativeOverlap="1" positiveOverlap="1" type="POT">9</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="4" toolId="XXX" timestamp="2014-11-03T19:49:30.5625000Z" deviceUuid="OKUMA.MachiningCenter.123456" assetId="XXX.4"> <CuttingToolLifeCycle> <CutterStatus> <Status>BROKEN</Status> </CutterStatus> <ToolLife countDirection="DOWN" initial="1000" limit="0" type="PART COUNT">50</ToolLife> <ProgramToolGroup>400</ProgramToolGroup> <ProgramToolNumber>4</ProgramToolNumber> <Location negativeOverlap="1" positiveOverlap="1" type="POT">11</Location> </CuttingToolLifeCycle> </CuttingTool> </Assets> </MTConnectAssets>

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| | | S.T. | M | 0 | | ⊇) ₫ | 剥 | ? 影 ② 除 | | | Caj Loc | s k | | 20 11 | 014/11/03 14:52:21 |
|------|---------|----------|------------|------------|-----------|----------------|--------|------------|--------------------|-------|------------|--------|-------------|----------|-----------------------|
| TOOL | DATA | | | | ľ | SCHEDULE | | A-MID | Fl | MS OI | ++(0++- | LIN | E) | | |
| TOOL | MANAG | EMEN | pi | | | SCHEDOLL | 14 | | | | | | | | Ī |
| TOOL | LIFE | MANA | GEMEN | F | | | | | | | | | | | |
| | TC N | 0L 0. | POT NO. | GRP NO. | | MNG.MODE | | OK/NG | SET | Γ | LEF | Т | | | MTCONNECT |
| OF | RG 1 | LM | 2 | 100 | 0 | TIME | Ok | (| 100 | MIN | 100 | | 0 | | |
| | 2 | LM | 5 | 200 | 0 | TIME(SPAR | E) NO | G2(USER) | 100 | MIN | 10 | • | 0 | | MACHINE |
| OF | RG 3 | L | 9 | 300 | C | COUNT | Ok | < | 50 | PCS | 30 | | | | Gauging |
| | 4 | L | 11 | 400 | C | COUNT(SPA | RE) NO | G2(USER) | 1000 | PCS | 50 | | | | |
| OF | RG 5 | | NA | 0 | 0 | NOT MODE | Ok | < | ** | | ** | | | | Startup |
| | 6 | | NA | 0 | C | NOT MODE | Ok | < | ** | | ** | | | | |
| | 7 | | NA | 0 | 0 | NOT MODE | Ok | K | ** | | ** | | | | Constant |
| | 8 | | NA | 0 | 2 | NOT MODE | Ok | K | ** | | ** | | | | |
| | 9 | | NA | 0 | C | NOT MODE | Ok | < | ** | | ** | | | | Panel Mod |
| | 10 | | NA | 0 | 0 | NOT MODE | Ok | (| ** | | ** | | - | | 15 |
| тоој | life I | nanag | g.mode |) | - T] | ME, COUNT, | spare | tool sele | ction - PRE(SET |) | 4 | | | | |
| Ð | € [* | UN] | | | H/D NO | COMP F .2,3 | IND | | ITEM | 1 | ITEM ↓ | | DISF CHA | 'LAY | |

8.3.4.2 Tool Life Management for 8 Digits Tool ID with Random ATC:

By default, the system only reports Program Tool Number as defined by program tool group and serial number of each tool.

For example, asset ID: 123456789.10

<ProgramToolNumber>679906085566</ProgramToolNumber>

where Group No: 67990608

Serial No: 5566

<?xml version="1.0" encoding="UTF-8"?>

<MTConnectAssets xmlns:m="urn:mtconnect.org:MTConnectAssets:1.3"</pre>

xmlns="urn:mtconnect.org:MTConnectAssets:1.3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:x="urn:okuma.com:OkumaToolAssets:1.3" xsi:schemaLocation="urn:okuma.com:OkumaToolAssets:1.3" /schemas/OkumaToolAssets_1.3.xsd">

<Header creationTime="2014-11-05T01:43:58Z" sender="OKUMA-MA600" instanceId="1415003277" version="1.3.0.9" assetBufferSize="1024" assetCount="18"/>

<<u>Assets</u><<u>CuttingTool serialNumber</u>="10" toolld="123456789" timestamp="2014-11-05T01:43:17.7796768Z" deviceUuid="OKUMA.MachiningCenter.123456" assetId="123456789.10"></u>

<CuttingToolLifeCycle>

<CutterStatus>

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<Status>BROKEN</Status> </CutterStatus> <ToolLife countDirection="DOWN" initial="531" limit="0" type="PART COUNT">-531</ToolLife> <ProgramToolGroup>67990608</ProgramToolGroup> <ProgramToolNumber>679906085566</ProgramToolNumber> <Location negativeOverlap="1" positiveOverlap="1" type="POT">10</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="8" toolld="123456789" timestamp="2014-11-05T01:43:17.77967682"</p> deviceUuid="OKUMA.MachiningCenter.123456" assetId="123456789.8"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ToolLife countDirection="DOWN" initial="256" limit="0" type="PART COUNT">-256</ToolLife> <ProgramToolGroup>23351856</ProgramToolGroup> <ProgramToolNumber>233518565411</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="POT">8</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="6" toolld="123456789" timestamp="2014-11-05T01:43:17.77967682"</p> deviceUuid="OKUMA.MachiningCenter.123456" assetId="123456789.6"> <CuttingToolLifeCycle> <CutterStatus> <Status>BROKEN</Status> </CutterStatus> <ToolLife countDirection="DOWN" initial="749" limit="0" type="MINUTES">-749</ToolLife> <ProgramToolGroup>86208600</ProgramToolGroup> <ProgramToolNumber>862086003670</ProgramToolNumber> <Location negativeOverlap="1" positiveOverlap="1" type="POT">6</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="4" toolId="123456789" timestamp="2014-11-05T01:43:17.7796768Z" deviceUuid="OKUMA.MachiningCenter.123456" assetId="123456789.4"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ToolLife countDirection="DOWN" initial="100" limit="0" type="MINUTES">-100</ToolLife> <ProgramToolGroup>24987358</ProgramToolGroup> <ProgramToolNumber>249873586692</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="POT">4</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="2" toolld="123456789" timestamp="2014-11-05T01:43:17.7796768Z"</p> deviceUuid="OKUMA.MachiningCenter.123456" assetId="123456789.2"> <CuttingToolLifeCycle> <CutterStatus> <Status>BROKEN</Status> </CutterStatus> <ToolLife countDirection="DOWN" initial="890" limit="0" type="PART_COUNT">-890</ToolLife> <ProgramToolGroup>13681049</ProgramToolGroup> <ProgramToolNumber>136810499154</ProgramToolNumber> <Location negativeOverlap="1" positiveOverlap="1" type="POT">2</Location> </CuttingToolLifeCycle> </CuttingTool>

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</MTConnectAssets>

| Sur E | <u> </u> | S.T.M [0] | ् | ÷ | ? | ĨŇ | Z | 4 | Caps Lock | | 21 | 014/11/03 15:47:47 |
|-------------|----------|----------------------|---------|----------|----------------|------|-------|------|--------------|------|--------|-----------------------|
| TOOL D | ATA | | | | A-MTD | 9.92 | | | | | | |
| | | | | | | | | | | | | V |
| TOOL I | DIN | FORMATION | | | | | | | | | | |
| TOOL | -POT | TABLE TO | OL / | POT | · \ LIFE \ | 0 | =s1 \ | OFS2 | ,3 \ | SHAF | 'Е 丨 | |
| TOOL | USE | GROUP | SER. | POT | TOOL | | TOOL | CARR | STD | ADJ | | |
| NO. | | NO. | NO. | NO. | NAME | | KIND | IER | TOOL | TOOL | | |
| 1 | | NA | | | | NA | | NO | | | | |
| 2 | | 13681049 | 9154 | 2 | 2 | | L | NO | | | | |
| 3 | | NA | | | | NA | | NO | | | | |
| 4 | | 24987358 | 6692 | 4 | 4 | | | NO | | | | |
| 5 | | NA | | | | NA | | NO | | | | |
| 6 | | 86208600 | 3670 | 6 | 6 | | L | NO | | | - | |
| 7 | | NA | | | | NA | | NO | | | | |
| 8 | | 23351856 | 5411 | 8 | 8 | | | NO | | | | |
| 9 | | NA | | | | NA | | NO | | | - | |
| 10 | | 67990608 | 5566 | 10 | 10 | | L | NO | | | | |
| | | | | | SET: 1mm | | TD: | | | | NA | |
| | | 1819 C | | | | | | | | | | |
| | | | | | | T. | | | | | | |
| | | | | | | | | | | | | |
| 🛃 Start 🏾 🉇 | 0 | 👋 🏹 ОКU 🔯 Rele 🥳 Sak | . 🧮 OSP | . 🧐 Admi | 🦓 Serv 🚾 C:\ 🥰 | Serv | 🦉 P20 | | わか聞す | | ₹) 🖳 🗹 | 2 3:47 PM |

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| OOL D | ATA | | <u> </u> | | A-MTD | | | Lock | <u>//</u> | | 14/1 |
|-------------|------|---------------|-------------|----------------|-------------------|-----------|---------|------------|-----------|--------------|------|
| OOL I | DINF | ORMATION | | | | | | | | | |
| TOOL | LIFE | MANAGEMENT TO | OL / | POT | LIFE \ O | FS1 \ | OFS2 | 2,3 \ 3 | SHAI | PE \ | |
| TOOL NO. | USE | GROUP NO. | SER. NO. | MANAGE MODE | STATUS | SE TII | T ME | LEF TIM | T E | | |
| 1 | | NA | | NO | OK | ** | | ** | | | |
| 2 | | 13681049 | 9154 | NUM. (CHG | NG2(USER) | 890 | PCS | -890 | | | |
| 3 | | NA | | NO | OK | ** | | ** | | | |
| 4 | | 24987358 | 6692 | TIME | OK | 100 | MIN | -100 | | 0 | |
| 5 | | NA | | NO | ОК | ** | | ** | | | |
| 6 | | 86208600 | 3670 | TIME | NG2(USER) | 749 | MIN | -749 | : | 0 | |
| 7 | | NA | | NO | OK | ** | | ** | | | |
| 8 | | 23351856 | 5411 | NUM. (CHG | ОК | 256 | PCS | -256 | | | • |
| 9 | | NA | | NO | OK | ** | | ** | | | |
| 10 | | 67990608 | 5566 | NUMB ER | NG2(USER) | 531 | PCS | -531 | | | |
| | | | | S | ET: 1mm | TD: | | | | NA | • |
| | | | | | | | | | | 2 | |
| Ð | SET | | | SEARCH | ITEM ID CHANGE | DATA | | | DIS CH | PLAY ANGE | |

8.3.4.3 Tool Life Management for 8 Digits Tool ID with Fixed ATC:

By default, the system only reports Program Tool Number as define by program tool group and serial number of each tool.

For example, Asset ID: 123456.10

<ProgramToolNumber>602229803820</ProgramToolNumber>

where Group No: 60222980

Serial No: 3820

<?xml version="1.0" encoding="UTF-8"?>

MTConnectAssets xmlns:m="urn:mtconnect.org:MTConnectAssets:1.3"

xmlns="urn:mtconnect.org:MTConnectAssets:1.3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:x="urn:okuma.com:OkumaToolAssets:1.3" xsi:schemaLocation="urn:okuma.com:OkumaToolAssets:1.3" /schemas/OkumaToolAssets_1.3.xsd">

<Header creationTime="2014-11-05T02:12:58Z" sender="OKUMAOK-0SGH2MN" instanceId="1415078532" version="1.3.0.9" assetBufferSize="1024" assetCount="5"/>

<Assets>

<CuttingTool serialNumber="10" toolId="123456" timestamp="2014-11-04T07:03:01.8261718Z"

deviceUuid="OKUMA.MachiningCenter.123456" assetId="123456.10">

<CuttingToolLifeCycle>

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<CutterStatus> <Status>BROKEN</Status> </CutterStatus> <ToolLife countDirection="DOWN" initial="120" limit="0" type="PART COUNT">-120</ToolLife> <ProgramToolGroup>60222980</ProgramToolGroup> <ProgramToolNumber>602229803820</ProgramToolNumber> <Location negativeOverlap="1" type="POT">10</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="8" toolId="123456" timestamp="2014-11-04T07:03:01.8261718Z"</p> deviceUuid="OKUMA.MachiningCenter.123456" assetId="123456.8"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ToolLife countDirection="DOWN" initial="937" limit="0" type="MINUTES">-937</ToolLife> <ProgramToolGroup>69086880</ProgramToolGroup> <ProgramToolNumber>690868800035</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="POT">8</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="6" toolId="123456" timestamp="2014-11-04T07:03:01.8261718Z"</p> deviceUuid="OKUMA.MachiningCenter.123456" assetId="123456.6"> <CuttingToolLifeCycle> <CutterStatus> <Status>BROKEN</Status> </CutterStatus> <ToolLife countDirection="DOWN" initial="781" limit="0" type="PART COUNT">-781</ToolLife> <ProgramToolGroup>28476066</ProgramToolGroup> <ProgramToolNumber>284760668006</ProgramToolNumber> <Location negativeOverlap="1" positiveOverlap="1" type="POT">6</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="4" toolId="123456" timestamp="2014-11-04T07:03:01.8261718Z" deviceUuid="OKUMA.MachiningCenter.123456" assetId="123456.4"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ToolLife countDirection="DOWN" initial="714" limit="0" type="MINUTES">-714</ToolLife> <ProgramToolGroup>55059236</ProgramToolGroup> <ProgramToolNumber>550592369609</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="POT">4</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="2" toolId="123456" timestamp="2014-11-04T07:03:01.8261718Z"</p> deviceUuid="OKUMA.MachiningCenter.123456" assetId="123456.2"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ToolLife countDirection="DOWN" initial="824" limit="0" type="PART COUNT">-824</ToolLife> <ProgramToolGroup>61696500</ProgramToolGroup> <ProgramToolNumber>616965007860</ProgramToolNumber> <Location negativeOverlap="1" positiveOverlap="1" type="POT">2</Location> </CuttingToolLifeCycle> </CuttingTool>

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</Assets> </MTConnectAssets>

| 2 TOOL D | DATA | Б.Т.М <mark>[⊙]</mark> | o) Par | 王 [1]10.min | ? | | | Caps Lock | | STM | 2014/11/03 16:19:37 |
|-------------|--------|------------------------|-------------|----------------|-------------------|----------|---------|--------------|-----------|------------|------------------------|
| TOOL I | D INFC | RMATION | | | | | | | | | |
| TOOL | LIFE | MANAGEMENT | 1 | РОТ | LIFE \ O | FS1 \ | OFS | 2,3 \ 9 | SHA | PE | 1 |
| POT NO. | USE | GROUP NO. | SER. NO. | MANAGE MODE | STATUS | SE TI | T ME | LEF TIM | T E | | |
| 1 | | DUMMY | | NO | ОК | ** | | ** | | | |
| 2 | | 61696500 | 7860 | NUM. (CHG | NG2(USER) | 824 | PCS | -824 | | | |
| 3 | | DUMMY | | NO | ОК | ** | | ** | | | |
| 4 | | 55059236 | 9609 | TIME | ОК | 714 | MIN | -714 | - | 0 | |
| 5 | | DUMMY | | NO | ОК | ** | | ** | | | |
| 6 | | 28476066 | 8006 | NUMBER | NG2(USER) | 781 | PCS | -781 | | | |
| 7 | | DUMMY | | NO | ОК | ** | | ** | | | |
| 8 | | 69086880 | 0035 | TIME | ОК | 937 | MIN | -937 | • | 0 | |
| 9 | | DUMMY | | NO | ОК | ** | | ** | | | MTCONNECT |
| 10 | | 60222980 | 3820 | NUMBER | NG2(USER) | 120 | PCS | -120 | | | Browsen |
| | | | | S | ET: 1mm | TD: | | | DU | MMY | / Browser |
| | | | | | DBE | CFT)- | | 200 | | | |
| Ð | SET | | | SEARCH | ITEM ID CHANGE | DATA | | 500 | DIS CH | PLA ANG | Y JE |

8.3.5 P200 L

8.3.5.1 Standard Tool Life Management and Tool Life Management 2 (optional)

<?xml version="1.0" encoding="UTF-8"?> <MTConnectAssets xmlns:m="urn:mtconnect.org:MTConnectAssets:1.3" xmlns="urn:mtconnect.org:MTConnectAssets:1.3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:x="urn:okuma.com:OkumaToolAssets:1.3" xsi:schemaLocation="urn:okuma.com:OkumaToolAssets:1.3" /schemas/OkumaToolAssets_1.3.xsd"> <Header creationTime="2014-11-05T02:17:51Z" sender="OKUMA-AA24F6A11" instanceld="1415153109" version="1.3.0.9" assetBufferSize="1024" assetCount="20"/> <Assets><CuttingTool serialNumber="100" toolld="123456" timestamp="2014-11-05T02:14:19.9608912Z" deviceUuid="OKUMA.Lathe.123456" assetId="123456.100"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus>

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<ToolLife countDirection="UP" initial="0" limit="0" type="PART COUNT">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ToolLife> <ProgramToolGroup>0</ProgramToolGroup> <ProgramToolNumber>100</ProgramToolNumber> <Location negativeOverlap="1" positiveOverlap="1" type="POT">5</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="12B" toolId="123456" timestamp="2014-11-05T02:05:09.419251Z"</p> deviceUuid="OKUMA.Lathe.123456" assetId="123456.12B"> <CuttingToolLifeCycle> <CutterStatus> <Status>EXPIRED</Status> <Status>BROKEN</Status> </CutterStatus> <ToolLife countDirection="UP" initial="12" limit="0" type="PART COUNT">12</ToolLife> <ToolLife countDirection="UP" initial="12" limit="0" type="MINUTES">12</ToolLife> <ToolLife countDirection="UP" initial="0.12" limit="0" type="WEAR">0.12</ToolLife> <ProgramToolGroup>12</ProgramToolGroup> <ProgramToolNumber>12</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="STATION">12</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="11B" toolld="123456" timestamp="2014-11-05T02:05:09.419251Z" deviceUuid="OKUMA.Lathe.123456" assetId="123456.11B"> <CuttingToolLifeCycle> <CutterStatus> <Status>EXPIRED</Status> <Status>BROKEN</Status> </CutterStatus> <ToolLife countDirection="UP" initial="11" limit="0" type="PART COUNT">11</ToolLife> <ToolLife countDirection="UP" initial="11" limit="0" type="MINUTES">11</ToolLife> <ToolLife countDirection="UP" initial="0.11" limit="0" type="WEAR">0.11</ToolLife> <ProgramToolGroup>11</ProgramToolGroup> <ProgramToolNumber>11</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="STATION">11</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="10B" toolld="123456" timestamp="2014-11-05T02:05:09.419251Z"</p> deviceUuid="OKUMA.Lathe.123456" assetId="123456.10B"> <CuttingToolLifeCycle> <CutterStatus> <Status>EXPIRED</Status> <Status>BROKEN</Status> </CutterStatus> <ToolLife countDirection="UP" initial="10" limit="0" type="PART COUNT">10</ToolLife> <ToolLife countDirection="UP" initial="10" limit="0" type="MINUTES">10</ToolLife> <ToolLife countDirection="UP" initial="0.1" limit="0" type="WEAR">0.1</ToolLife> <ProgramToolGroup>10</ProgramToolGroup> <ProgramToolNumber>10</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="STATION">10</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="9B" toolld="123456" timestamp="2014-11-05T02:05:09.419251Z"</p> deviceUuid="OKUMA.Lathe.123456" assetId="123456.9B"> <CuttingToolLifeCycle> <CutterStatus>

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<Status>EXPIRED</Status> <Status>BROKEN</Status> </CutterStatus> <ToolLife countDirection="UP" initial="9" limit="0" type="PART COUNT">9</ToolLife> <ToolLife countDirection="UP" initial="9" limit="0" type="MINUTES">9</ToolLife> <ToolLife countDirection="UP" initial="0.09" limit="0" type="WEAR">0.09</ToolLife> <ProgramToolGroup>9</ProgramToolGroup> <ProgramToolNumber>9</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="STATION">9</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="8B" toolld="123456" timestamp="2014-11-05T02:05:09.419251Z"</p> deviceUuid="OKUMA.Lathe.123456" assetId="123456.8B"> <CuttingToolLifeCycle> <CutterStatus> <Status>EXPIRED</Status> <Status>BROKEN</Status> </CutterStatus> <ToolLife countDirection="UP" initial="8" limit="0" type="PART COUNT">8</ToolLife> <ToolLife countDirection="UP" initial="8" limit="0" type="MINUTES">8</ToolLife> <ToolLife countDirection="UP" initial="0.08" limit="0" type="WEAR">0.08</ToolLife> <ProgramToolGroup>8</ProgramToolGroup> <ProgramToolNumber>8</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="STATION">8</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="7B" toolld="123456" timestamp="2014-11-05T02:05:09.419251Z"</p> deviceUuid="OKUMA.Lathe.123456" assetId="123456.7B"> <CuttingToolLifeCycle> <CutterStatus> <Status>EXPIRED</Status> <Status>BROKEN</Status> </CutterStatus> <ToolLife countDirection="UP" initial="7" limit="0" type="PART COUNT">7</ToolLife> <ToolLife countDirection="UP" initial="7" limit="0" type="MINUTES">7</ToolLife> <ToolLife countDirection="UP" initial="0.07" limit="0" type="WEAR">0.07</ToolLife> <ProgramToolGroup>7</ProgramToolGroup> <ProgramToolNumber>7</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="STATION">7</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="6B" toolld="123456" timestamp="2014-11-05T02:05:09.419251Z" deviceUuid="OKUMA.Lathe.123456" assetId="123456.6B"> <CuttingToolLifeCycle> <CutterStatus> <Status>EXPIRED</Status> <Status>BROKEN</Status> </CutterStatus> <ToolLife countDirection="UP" initial="6" limit="0" type="PART COUNT">6</ToolLife> <ToolLife countDirection="UP" initial="6" limit="0" type="MINUTES">6</ToolLife> <ToolLife countDirection="UP" initial="0.06" limit="0" type="WEAR">0.06</ToolLife> <ProgramToolGroup>6</ProgramToolGroup> <ProgramToolNumber>6</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="STATION">6</Location> </CuttingToolLifeCycle> </CuttingTool>

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</MTConnectAssets>

ATC Tool Data:

| | | | magi | | | | Tool | | |
|-----|---------|-----------|------|------------|------|--------|------|---|----|
| 10. | 100L | NO. | TOOL | NO. | TOOL | NO. | 1000 | < | |
| 1 | 201 01 | 11 | 0 | 21 | 0 | 22 | 0 | | |
| 2 | 0 | 12 | 0 | 22 | 0 | 32 | 0 | _ | |
| 5 | 0 | 15 | 0 | 23 | 0 | 33 | 0 | _ | |
| 4 | D | 14 | 0 | 24 | 0 | 34 | 0 | | |
| 5 | 100 M E | 15 | 0 | 25 | 0 | 35 | 0 | _ | |
| 6 | D | 16 | 0 | 26 | 0 | 36 | 0 | | |
| 7 | 0 | 17 | 0 | 27 | 0 | 37 | 0 | | |
| 8 | 0 | 18 | 0 | 28 | 0 | 38 | 0 | | |
| 9 | 0 | 19 | 0 | 29 | 0 | 39 | 0 | | T |
| 10 | 0 | 20 | 0 | 30 | 0 | 40 | 0 | | 43 |
| | | dinamasah | 1000 | - nuceral. | - 33 | - Paid | | | |

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Tool Life Management 2 for H1 Turret or tools in ATC table:

| 0 0 0 0 0 | 0 | 0 | | C NG | | | |
|-----------|---|-------------------------|--|--|---------------------------------------|---|---------------------------------------|
| 0 0 | 0 | 0 | C NG | A 140 | | 10.0 | 12.1 |
| 0 0 | | 1001 | 0 110 | NG | | | |
| | 0 | 0 | C NG | C NG | | | |
| 0 0 | 0 | 0 | C NG | C NG | 1 | | |
| 0 0 | 0 | 0 | C NG | C NG | | | |
| 0 0 | 0 | 0 | C NG | C NG | 1 | 1 1 | |
| 0 0 | 0 | 0 | C NG | C NG | | 1 1 | |
| 0 0 | 0 | 0 | C NG | C NG | 1 | 1 1 | |
| | | 0 0 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 NG 0 0 0 0 0 0 NG 0 0 0 0 0 0 NG | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 0 0 0 0 0 NG O NG 0 0 0 0 O NG NG ' 0 0 0 0 O NG ' NG ' 0 0 0 O NG O NG ' 0 0 0 O NG O NG ' | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 |

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Standard Tool Life Management for B Turret:

| OOL GRP SET ACTUAL OG1 OG2 OG3 GAUGE LIFE REMAINING(%) 1 1 1 0 0 0 NG NG 1 1 1 1 1 0 0 0 NG NG 1 1 1 1 0 0 0 NG NG 1 1 1 1 1 0 0 0 NG NG 1 1 1 1 1 0 0 0 NG NG 1 1 1 1 1 0 0 0 NG 1 | (NO. | OF V | WORK) | | | | | | | | | | | | | 2.000 | |
|---|------|------|-------|--------|-----|-----|-----|---|-------|---|------|---|------|-------|------|-------|--|
| 1 1 1 0 0 0 NG 1 1 1 1 1 0 0 0 NG 1 1 1 1 1 0 0 0 NG 1 1 1 1 1 0 0 0 NG 1 <th>OOL</th> <th>GRP</th> <th>SET</th> <th>ACTUAL</th> <th>0G1</th> <th>OG2</th> <th>OG3</th> <th></th> <th>GAUGE</th> <th>T</th> <th>LIFE</th> <th></th> <th>REM/</th> <th>AININ</th> <th>G(%)</th> <th>1</th> <th></th> | OOL | GRP | SET | ACTUAL | 0G1 | OG2 | OG3 | | GAUGE | T | LIFE | | REM/ | AININ | G(%) | 1 | |
| 2 2 2 2 0 0 O NG I | 1 | 1 | 1 | 1 | 0 | 0 | 0 | С | NG | 0 | NG | | 1 | | | | |
| 3 3 3 3 0 0 0 NG 1 1 1 4 4 4 0 0 0 NG NG 1 1 1 5 5 5 5 0 0 0 NG NG 1 1 1 6 6 6 0 0 0 NG NG 1 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | C | NG | 0 | NG | | 1 | 1 | 1 | | |
| 4 4 4 0 0 0 0 NG 1 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | NG | 0 | NG | | 1 | 1 | 1 | | |
| 5 5 5 5 0 0 0 0 NG 1 1 1 6 6 6 6 0 0 0 0 NG 1 <td>4</td> <td>4</td> <td>4</td> <td>4</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>NG</td> <td>0</td> <td>NG</td> <td></td> <td>1</td> <td>1</td> <td></td> <td></td> <td></td> | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | NG | 0 | NG | | 1 | 1 | | | |
| 6 6 6 0 0 0 Image: Second se | 5 | 5 | 5 | 5 | 0 | 0 | 0 | 0 | NG | 0 | NG | | 1 | 1 | | | |
| 7 7 7 7 0 0 O Image: NG Image: NG 8 8 8 8 0 0 O Image: NG Image: NG Image: NG 9 9 9 9 0 0 O Image: NG Image: NG Image: NG | 6 | 6 | 6 | 6 | 0 | 0 | 0 | C | NG | 0 | NG | | .4 | 1 | 1 | | |
| 8 8 8 8 0 0 0 0 0 NG 0 NG | 7 | 7 | 7 | 7 | 0 | 0 | 0 | 0 | NG | 0 | NG | | 1 | 1 | 1 | | |
| 9 9 9 9 0 0 0 C NG C NG | 8 | 8 | 8 | 8 | 0 | 0 | 0 | 0 | NG | 0 | NG | A | 1 | 1 | 1 | | |
| | 9 | 9 | 9 | 9 | 0 | 0 | 0 | C | NG | 0 | NG | | 1 | 1 | .1 | | |
| 10 10 10 10 0 0 0 0 NG | 10 | 10 | 10 | 10 | 0 | 0 | 0 | 0 | NG | 0 | NG | | 18 | 1 | | | |
| 11 11 11 11 0 0 0 O NG | 11 | 11 | 11 | 11 | 0 | 0 | 0 | C | NG | 0 | NG | - | 1 | 1 | | | |
| 12 12 12 12 0 0 0 0 NG | 12 | 12 | 12 | 12 | 0 | 0 | 0 | C | NG | 0 | NG | | 1 | 1 | 12.1 | | |

8.3.5.2 Standard Tool Life Management and Double Tooling spec ON:

```
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<MTConnectAssets xmlns:m="urn:mtconnect.org:MTConnectAssets:1.3"</p>
xmlns="urn:mtconnect.org:MTConnectAssets:1.3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:x="urn:okuma.com:OkumaToolAssets:1.3" xsi:schemaLocation="urn:okuma.com:OkumaToolAssets:1.3
/schemas/OkumaToolAssets 1.3.xsd">
 <Header creationTime="2004-02-19T12:04:16Z" sender="OKUMA-270F94457" instanceId="1077124937"</p>
version="1.3.0.9" assetBufferSize="1024" assetCount="48"/>
 <Assets><CuttingTool serialNumber="2A" toolId="54321" timestamp="2004-02-19T12:04:03.173726Z"</pre>
deviceUuid="OKUMA.Lathe.123456" assetId="54321.2A">
 <CuttingToolLifeCycle>
  <CutterStatus>
   <Status>EXPIRED</Status>
  </CutterStatus>
  <ToolLife countDirection="UP" initial="200" limit="0" type="PART COUNT">20</ToolLife>
  <ToolLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ToolLife>
  <ToolLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ToolLife>
  <ProgramToolGroup>2</ProgramToolGroup>
  <ProgramToolNumber>2</ProgramToolNumber>
  <Location negativeOverlap="0" positiveOverlap="0" type="STATION">2</Location>
```

```
</CuttingToolLifeCycle>
```

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<CuttingTool serialNumber="26A" toolld="54321" timestamp="2004-02-18T17:23:21.575056Z"</p> deviceUuid="OKUMA.Lathe.123456" assetId="54321.26A"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ToolLife countDirection="UP" initial="0" limit="0" type="PART COUNT">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ToolLife> <ProgramToolGroup>0</ProgramToolGroup> <ProgramToolNumber>26</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="STATION">6</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="25A" toolId="54321" timestamp="2004-02-18T17:23:21.575056Z"</p> deviceUuid="OKUMA.Lathe.123456" assetId="54321.25A"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ToolLife countDirection="UP" initial="0" limit="0" type="PART COUNT">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ToolLife> <ProgramToolGroup>0</ProgramToolGroup> <ProgramToolNumber>25</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="STATION">5</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="24A" toolld="54321" timestamp="2004-02-18T17:23:21.575056Z"</p> deviceUuid="OKUMA.Lathe.123456" assetId="54321.24A"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ToolLife countDirection="UP" initial="0" limit="0" type="PART COUNT">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ToolLife> <ProgramToolGroup>0</ProgramToolGroup> <ProgramToolNumber>24</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="STATION">4</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="23A" toolld="54321" timestamp="2004-02-18T17:23:21.565041Z"</p> deviceUuid="OKUMA.Lathe.123456" assetId="54321.23A"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ToolLife countDirection="UP" initial="0" limit="0" type="PART_COUNT">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ToolLife> <ProgramToolGroup>0</ProgramToolGroup> <ProgramToolNumber>23</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="STATION">3</Location> </CuttingToolLifeCycle> </CuttingTool>

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<CuttingTool serialNumber="22A" toolld="54321" timestamp="2004-02-18T17:23:21.565041Z"</p> deviceUuid="OKUMA.Lathe.123456" assetId="54321.22A"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ToolLife countDirection="UP" initial="0" limit="0" type="PART COUNT">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ToolLife> <ProgramToolGroup>0</ProgramToolGroup> <ProgramToolNumber>22</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="STATION">2</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="21A" toolId="54321" timestamp="2004-02-18T17:23:21.565041Z"</p> deviceUuid="OKUMA.Lathe.123456" assetId="54321.21A"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ToolLife countDirection="UP" initial="0" limit="0" type="PART COUNT">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ToolLife> <ProgramToolGroup>0</ProgramToolGroup> <ProgramToolNumber>21</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="STATION">1</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="12A" toolld="54321" timestamp="2004-02-18T17:23:21.565041Z"</p> deviceUuid="OKUMA.Lathe.123456" assetId="54321.12A"> <CuttingToolLifeCycle> <CutterStatus> <Status>EXPIRED</Status> </CutterStatus> <ToolLife countDirection="UP" initial="0" limit="0" type="PART COUNT">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ToolLife> <ProgramToolGroup>0</ProgramToolGroup> <ProgramToolNumber>12</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="STATION">12</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="11A" toolId="54321" timestamp="2004-02-18T17:23:21.565041Z"</p> deviceUuid="OKUMA.Lathe.123456" assetId="54321.11A"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ToolLife countDirection="UP" initial="0" limit="0" type="PART_COUNT">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ToolLife> <ProgramToolGroup>0</ProgramToolGroup> <ProgramToolNumber>11</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="STATION">11</Location> </CuttingToolLifeCycle> </CuttingTool>

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<CuttingTool serialNumber="10A" toolId="54321" timestamp="2004-02-18T17:23:21.565041Z"</p> deviceUuid="OKUMA.Lathe.123456" assetId="54321.10A"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ToolLife countDirection="UP" initial="0" limit="0" type="PART COUNT">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ToolLife> <ProgramToolGroup>0</ProgramToolGroup> <ProgramToolNumber>10</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="STATION">10</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="9A" toolld="54321" timestamp="2004-02-18T17:23:21.565041Z" deviceUuid="OKUMA.Lathe.123456" assetId="54321.9A"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ToolLife countDirection="UP" initial="0" limit="0" type="PART COUNT">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ToolLife> <ProgramToolGroup>0</ProgramToolGroup> <ProgramToolNumber>9</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="STATION">9</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="8A" toolld="54321" timestamp="2004-02-18T17:23:21.565041Z"</p> deviceUuid="OKUMA.Lathe.123456" assetId="54321.8A"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ToolLife countDirection="UP" initial="0" limit="0" type="PART COUNT">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ToolLife> <ProgramToolGroup>0</ProgramToolGroup> <ProgramToolNumber>8</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="STATION">8</Location> </CuttingToolLifeCycle> </CuttingTool> </Assets> </MTConnectAssets>

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| (NO. | OF V | WANAGE | MENT | | | | | | | | | | Thun | |
|------|------|--------|--------|-----|-----|-----|----|------|---|------|-----|-----------|------|---|
| TOOL | GRP | SET | ACTUAL | 0G1 | OG2 | OG3 | G | AUGE | T | LIFE | RE | MAINING(% |) | |
| 1 | 1 | 100 | 10 | 0 | 0 | 0 | 0 | NG | 0 | ОК | | 1 1 | | |
| 2 | 2 | 200 | 20 | 0 | 0 | 0 | 0 | ОК | 0 | NG | | 1 1 | | |
| 3 | 3 | 300 | 30 | 0 | 0 | 0 | 0 | NG | 0 | NG | | | | |
| 4 | 4 | 400 | 40 | 0 | 0 | 0 | 0 | ок | 0 | OK | | | | |
| 5 | 5 | 500 | 50 | 0 | 0 | 0 | 0 | NG | 0 | OK | | | | |
| 6 | 6 | 600 | 60 | 0 | 0 | 0 | 0 | ок | 0 | NG | | | | |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | OK | 0 | OK | | | | |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ок | 0 | ОК | 1 | 3 94 | | |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ок | 0 | OK | 1 1 | 1 1 | | |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ок | 0 | ок | 11 | 1 1 | | 1 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ОК | 0 | ОК | 1 | 1 1 | | |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | ок | 0 | NG | 1 | 2.1 | | |

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| (NO. | OF V | WANAGE | MENT | | | | | | | | | | | | TWW | |
|------|------|--------|--------|-----|-----|-----|---|-------|---|------|---|-----|--------|------|-----|------|
| TOOL | GRP | SET | ACTUAL | 0G1 | OG2 | OG3 | | GAUGE | T | LIFE | Ĩ | REM | AINING | 5(%) | | |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | C | OK | 0 | OK | | 1 | 1 | 1 | | |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | OK | 0 | OK | | 1 | 1 | 1 | | |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | C | ОК | 0 | ОК | 1 | 1 | 1 | | 1 | |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | OK | 0 | OK | 1 | 1 | 1 | | | |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | OK | 0 | OK | | 1 | 1 | 1 | | |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | OK | 0 | OK | 1 | .4 | | | | |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ОК | 0 | OK | | 1 | 1 | 110 | | |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ок | 0 | OK | 1 | 1 | 1 | | - | |
| 29 | 29 | 290 | 29 | 0 | 0 | 0 | 0 | OK | 0 | OK | | .1 | 1 | 1 | | |
| 30 | 30 | 300 | 30 | 0 | 0 | 0 | 0 | ОК | 0 | OK | | 1 | | | | MTCO |
| 31 | 31 | 310 | 31 | 0 | 0 | 0 | C | ОК | 0 | OK | | 1 | - 1 | 1 | | 1 |
| 32 | 32 | 320 | 32 | 0 | 0 | 0 | C | OK | 0 | OK | | | 1 | | | Bro |

8.3.6 P300 S(LP)

<?xml version="1.0" encoding="UTF-8"?>

<MTConnectAssets xmlns:m="urn:mtconnect.org:MTConnectAssets:1.3"</pre>

xmlns="urn:mtconnect.org:MTConnectAssets:1.3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:x="urn:okuma.com:OkumaToolAssets:1.3" xsi:schemaLocation="urn:okuma.com:OkumaToolAssets:1.3" /schemas/OkumaToolAssets_1.3.xsd">

<Header creationTime="2014-11-17T16:38:45Z" sender="DLT-LHUYNH32" instanceId="1416242285" version="1.3.0.9" assetBufferSize="1024" assetCount="3"/>

<Assets><CuttingTool serialNumber="5000" toolId="9876543210" timestamp="2014-11-17T16:28:05.8760095Z"
deviceUuid="OKUMA.Lathe.123456" assetId="9876543210.5000">

<CuttingToolLifeCycle>

<CutterStatus>

<Status>AVAILABLE</Status>

</CutterStatus>

<ProgramToolNumber>5000</ProgramToolNumber>

<Location negativeOverlap="0" positiveOverlap="0" type="STATION">1</Location>

<CuttingItems count="3">

<CuttingItem indices="1">

<ItemLife countDirection="UP" initial="0" limit="0" type="PART_COUNT">0</ItemLife>

```
<ItemLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ItemLife>
```

```
<ItemLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ItemLife>
```

```
<x:ItemCutterStatus><Status>AVAILABLE</Status></x:ItemCutterStatus>
```

```
<x:ItemProgramToolGroup>0</x:ItemProgramToolGroup>
```

```
</CuttingItem>
```

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<CuttingItem indices="4"> <ItemLife countDirection="UP" initial="0" limit="0" type="PART COUNT">0</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ItemLife> <x:ItemCutterStatus><Status>AVAILABLE</Status></x:ItemCutterStatus> <x:ItemProgramToolGroup>0</x:ItemProgramToolGroup> </CuttingItem> <CuttingItem indices="8"> <ItemLife countDirection="UP" initial="0" limit="0" type="PART COUNT">0</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ItemLife> <x:ItemCutterStatus><Status>AVAILABLE</Status></x:ItemCutterStatus> <x:ItemProgramToolGroup>0</x:ItemProgramToolGroup> </CuttingItem> </CuttingItems> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="200" toolId="9876543210" timestamp="2014-11-17T16:28:05.7409960Z" deviceUuid="OKUMA.Lathe.123456" assetId="9876543210.200"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ProgramToolNumber>200</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="POT">10</Location> <CuttingItems count="4"> <CuttingItem indices="1"> <ItemLife countDirection="UP" initial="0" limit="0" type="PART COUNT">0</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ItemLife> <x:ItemCutterStatus><Status>AVAILABLE</Status></x:ItemCutterStatus> <x:ItemProgramToolGroup>0</x:ItemProgramToolGroup> </CuttingItem> <CuttingItem indices="2"> <ItemLife countDirection="UP" initial="0" limit="0" type="PART_COUNT">0</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ItemLife> <x:ItemCutterStatus><Status>AVAILABLE</Status></x:ItemCutterStatus> <x:ItemProgramToolGroup>0</x:ItemProgramToolGroup> </Cuttingltem> <CuttingItem indices="3"> <ItemLife countDirection="UP" initial="0" limit="0" type="PART COUNT">0</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ItemLife> <x:ItemCutterStatus><Status>AVAILABLE</Status></x:ItemCutterStatus> <x:ItemProgramToolGroup>0</x:ItemProgramToolGroup> </CuttingItem> <CuttingItem indices="4"> <ItemLife countDirection="UP" initial="0" limit="0" type="PART_COUNT">0</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ItemLife> <x:ItemCutterStatus><Status>AVAILABLE</Status></x:ItemCutterStatus> <x:ItemProgramToolGroup>0</x:ItemProgramToolGroup> </CuttingItem> </CuttingItems> </CuttingToolLifeCycle> </CuttingTool>

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<CuttingTool serialNumber="100" toolId="9876543210" timestamp="2014-11-17T16:28:05.7409960Z" deviceUuid="OKUMA.Lathe.123456" assetId="9876543210.100">

<CuttingToolLifeCycle>

<CutterStatus>

<Status>AVAILABLE</Status>

</CutterStatus>

<ToolLife countDirection="UP" initial="0" limit="0" type="PART_COUNT">0</ToolLife>

<ToolLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ToolLife> <ToolLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ToolLife>

<ProgramToolGroup>0</ProgramToolGroup>

<ProgramToolNumber>100</ProgramToolNumber>

<Location negativeOverlap="1" positiveOverlap="1" type="POT">0</Location>

</CuttingToolLifeCycle>

</CuttingTool>

</Assets>

</MTConnectAssets>

Tool Data:

| 100000 | 1.1.1.1.1 | 11027 | 225 | | _ | | | | - | | | | Y | | |
|--------|-----------|-------|----------------------|------|---------|-----|-------|------|----------------|-------------|-----------|------------|----------------|---------|---|
| OL DA | TA S | 311 | ING | | | | | 1 mm | MAGAZINE IN | FO . | TOOL | DATA (ALL) | TOOL. | LIFE DA | |
| TNO E | No P | No | T-COMMENT / P-KIND | CL | IT POS. | MG/ | T USE | 1 | TOOL NO. | | 5000 | TOOL POSIT | ION NO. | : 1 | |
| 100 | 0 | 1 | | 1 | BASE A | A | A | | EDGE NO. | 1 | 1 | | | | |
| 200 | 10 | 1 | | 3 | BASE A | A] | .0 | | BASIC POS. O | CUT | P05. : | 1 | | | |
| 200 | 20 | 1 | | | BASE A | A 1 | 0 | | | | XB | ZB | | | |
| 200 | 30 | 1 | | 1 | BASE A | A] | 0 | | TOOL OFFSET | 0 | 0.0000 | 0.0000 | | | |
| 200 | 40 | 1 | | 1 | BASE A | A I | .0 | | ADJUSTMENT | | 0.0000 | 0.0000 | | | |
| 5000 | 10 | 1 | | | 1 | В | 1 | | TOOL WEAR | - | 0.0000 | 0.0000 | | | |
| 5000 | 40 | 1 | | | 3 | В | 1 | | | | XB | ZB | | | |
| 5000 | 80 | -1 | | | 3 | В | 1 | | NOSE-R COMP | - | 0.0000 | 0.0000 | | | |
| | | | | | | | | | TOOL POSIT | ION (| COMMENT | | | | |
| | | | | | | | | | TOOL TYPE | | | | | | |
| | | | | | | | | | TOOL SHAPE | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | 1 | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | _ | _ | |
| | | | | | | | | | TOOL LIFE MANA | GE (| N. ACTUAL |) | 0 | 200201 | |
| | | | | | | | | | GROUP NUMBER | 300 | | I. SET | U N.A. | TUAL | _ |
| 101 | 1004010 | | | | 22.27 | _ | | - | KEMMINING(%) | 100 | 100 | | 10. Name 21 | 10 | |
| OL Ca | n be | 601 | ted by pressing Ente | er k | ey. | | | _ | CORT. TOOL NO | | 100 | CURT. MO | 3 NU. 1 | 1 | |
| | | | | | | | | | | 00 | E (CET | | 200 1 | 8 | |

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8.3.7 P300 S(MP)/ P300M
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| - · | D (| |
|-----|------------|--|
| 001 | Data: | |

| | | | 100 | MAGAZINE | INFO. | TOOL DATA | TOOL | LIFE |
|---------------------|------------|-----------|-----|--------------|-------------|-----------|-----------------|-------|
| NTSP. TYPE ALL TOOL | DISP NI | est. | 7 | TOOL NO. | 846866 | 5 | _ | |
| Adventive pec rove | perse rece | Males - N | | TOOL NAME | 010000 | | -1 ⁰ | |
| TOOL NO. ATT. KIND | DIA | POT | | 1 | 13 | | 12 | |
| 1 UNDEF. | | 10 | - | | TOOL-L OFST | | CUTTER R COMP | |
| 6408000 UNDEF. | | SP. | _ | | GEOMETRY | WEAR | GEOMETRY | WEAR |
| | | | | HA/DA | 0.000 | 0,000 | 0.000 | 0.000 |
| | | | | HD/UB | 0.000 | 0.000 | 0.000 | 0.000 |
| | | | | 11.70 | 0.000 | 0,000 | 0.000 | 0.000 |
| | | | | TOOL GEOMETH | tV. | INCOM | | |
| | | | | TTPE | | UNUEP . | | |
| | | | | | | | | |
| | | | | 4 | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | EUITES | | 0 | | |
| | | | | TON LITER IN | ALCONCHT. | <u></u> | | |
| | | | | GROUP NO | S23 | AND MOTOR | COUNT | 2 |
| | | | | SET | 1000 PC | LEFT | 400 | 10 |
| | | | | | | | | |
| | | | | OK/NG | 01 | | | 40% |

8.3.8 P300 L

<?xml version="1.0" encoding="UTF-8"?>

<MTConnectAssets xmlns:m="urn:mtconnect.org:MTConnectAssets:1.3"</p>

xmlns="urn:mtconnect.org:MTConnectAssets:1.3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:x="urn:okuma.com:OkumaToolAssets:1.3" xsi:schemaLocation="urn:okuma.com:OkumaToolAssets:1.3" /schemas/OkumaToolAssets_1.3.xsd">

<Header creationTime="2014-11-04T18:30:53Z" sender="OKUMA-FD4D28845" instanceId="1415030042" version="1.3.0.9" assetBufferSize="1024" assetCount="3"/>

<Assets><CuttingTool serialNumber="500" toolld="123456" timestamp="2014-11-03T15:56:27.562500Z" deviceUuid="OKUMA.Lathe.123456" assetId="123456.500">

- <CuttingToolLifeCycle>
- <CutterStatus>

<Status>EXPIRED</Status>

</CutterStatus>

<ToolLife countDirection="UP" initial="1" limit="0" type="PART_COUNT">1</ToolLife>

<ToolLife countDirection="UP" initial="1" limit="0" type="MINUTES">1</ToolLife>

<ToolLife countDirection="UP" initial="0.01" limit="0" type="WEAR">0.01</ToolLife>

<ProgramToolGroup>1</ProgramToolGroup>

```
<ProgramToolNumber>1</ProgramToolNumber>
```

<Location negativeOverlap="0" positiveOverlap="0" type="STATION">1</Location>

<CuttingItems count="3">

<CuttingItem indices="1"/>

```
<CuttingItem indices="4"/>
```

```
<CuttingItem indices="8"/>
```

```
</CuttingItems>
```

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```
</CuttingToolLifeCycle>
</CuttingTool>
<CuttingTool serialNumber="200" toolld="123456" timestamp="2014-11-03T15:56:06.984375Z"
deviceUuid="OKUMA.Lathe.123456" assetId="123456.200">
 <CuttingToolLifeCycle>
  <CutterStatus>
   <Status>EXPIRED</Status>
  </CutterStatus>
  <ToolLife countDirection="UP" initial="1" limit="0" type="PART_COUNT">1</ToolLife>
  <ToolLife countDirection="UP" initial="1" limit="0" type="MINUTES">1</ToolLife>
  <ToolLife countDirection="UP" initial="0.01" limit="0" type="WEAR">0.01</ToolLife>
  <ProgramToolGroup>1</ProgramToolGroup>
  <ProgramToolNumber>1</ProgramToolNumber>
  <Location negativeOverlap="0" positiveOverlap="0" type="STATION">1</Location>
  <CuttingItems count="1">
   <CuttingItem indices="1"/>
  </CuttingItems>
 </CuttingToolLifeCycle>
</CuttingTool>
<CuttingTool serialNumber="100" toolld="123456" timestamp="2014-11-03T15:54:02.921875Z"</p>
deviceUuid="OKUMA.Lathe.123456" assetId="123456.100">
 <CuttingToolLifeCycle>
  <CutterStatus>
   <Status>EXPIRED</Status>
   <Status>BROKEN</Status>
  </CutterStatus>
  <ToolLife countDirection="UP" initial="1000" limit="0" type="PART COUNT">1000</ToolLife>
  <ToolLife countDirection="UP" initial="1" limit="0" type="MINUTES">1</ToolLife>
  <ToolLife countDirection="UP" initial="0.01" limit="0" type="WEAR">0.01</ToolLife>
  <ProgramToolGroup>1</ProgramToolGroup>
  <ProgramToolNumber>1</ProgramToolNumber>
  <Location negativeOverlap="0" positiveOverlap="0" type="STATION">1</Location>
  <CuttingItems count="4">
   <CuttingItem indices="1"/>
   <CuttingItem indices="2"/>
   <CuttingItem indices="3"/>
   <CuttingItem indices="4"/>
  </CuttingItems>
 </CuttingToolLifeCycle>
</CuttingTool>
</Assets>
</MTConnectAssets>
```

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Tool Data:

| EG. EDGE NO. SPIN DLE T-COMMENT / P-KIND T NO. USE REG. NO. : 100 EDGE NO. : 1 100 1 1 A 1 Image: Second Seco | IAGE | INFO | RMATIO | N PROCESSING TOOLS | | - 1 | limm | | TU | RET INFO. | TOOL D | ATA (ALL) |
|---|------------|-------------|-------------|--------------------|----------|-----|------|--|----------|-----------|------------|-----------|
| 100 1 1 A 1 F 100 2 1 A 1 SELECT HOLDER SELECT HOLDER 100 4 1 A 1 SELECT HOLDER SELECT HOLDER 200 1 1 B 10 SELECT HOLDER SELECT HOLDER 200 1 1 C 4 SELECT HOLDER SELECT HOLDER 500 4 2 C 4 SELECT HOLDER SELECT HOLDER 500 8 2 C 4 SELECT HOLDER SELECT HOLDER 500 8 2 C 4 SELECT HOLDER SELECT HOLDER 500 8 2 C 4 SELECT HOLDER SELECT HOLDER 500 8 2 C 4 SELECT HOLDER SELECT HOLDER 500 8 2 C 4 SELECT HOLDER SELECT HOLDER 500 8 2 C 4 SELECT HOLDER SELECT HOLDER SELECT HOLDER 500 8 2 C <th>EG. IO.</th> <th>EDGE NO.</th> <th>SPIN DLE</th> <th>T-COMMENT / P-KIND</th> <th>T NO.</th> <th>USE</th> <th>]</th> <th>REG. NO. : EDGE NO. :</th> <th>100 1</th> <th></th> <th></th> <th></th> | EG. IO. | EDGE NO. | SPIN DLE | T-COMMENT / P-KIND | T NO. | USE |] | REG. NO. : EDGE NO. : | 100 1 | | | |
| 100 2 1 A 1 100 3 1 A 1 100 4 1 A 1 200 1 1 B 10 500 1 1 C 4 500 4 2 C 4 500 8 2 C 4 500 1 1 1 1 500 1 1 1 1 1 | 100 | 1 | 1 | | A 1 | | | TOOL COMMENT | 1 | | | |
| 100 3 1 A 1 100 4 1 A 1 200 1 1 B 10 500 1 1 C 4 500 4 2 C 4 500 8 2 C 4 500 1 1 P 100L 0FFSET 700L WER NOSE-R CMP NO NO 100L 0FFSET 1 | 100 | 2 | 1 | | A 1 | | | SELECT HOLDER | | | | |
| 100 4 1 A 1 200 1 1 B 10 500 1 1 C 4 500 4 2 C 4 500 8 2 C 4 500 9 7 7 7 500 9 7 7 7 500 9 7 7 7 | 100 | 3 | 1 | | A 1 | | | SELECT TOOL | | | | |
| 200 1 1 B 10 500 1 1 C 4 500 4 2 C 4 500 8 2 C 4 500 8 2 C 4 NO. 0 XA ZA YIA P TOOL OFFSET TOOL OFFSET TOOL OFFSET | 100 | 4 | 1 | | A 1 | | | TOOL TYPE | | | | |
| 500 1 1 c 4 500 4 2 c 4 500 8 2 c 4 500 8 2 c 4 NO. 0 XA ZA YIA P TOOL OFFSET 700L WEAR NO. 0 XA ZA YIA P TOOL OFFSET 700L WEAR NO. 0 XA ZA YIA P TOOL OFFSET 700L WEAR NO. 0 XA ZA YIA P TOOL OFFSET 700L WEAR NOTOL WEAR 700L WEAR | 200 | 1 | 1 | | 8 10 | | | TOOL SHAPE | 2 | 4 | | |
| 500 4 2 C 4 500 8 2 C 4 NO. 0 XA ZA YIA P TOOL OFFSET | 500 | 1 | 1 | | C 4 | | | | | | | |
| 500 8 2 C 4 NO. 0 XA ZA YIA P TOOL OFFSET 700L WEAR 700L WEAR </td <td>500</td> <td>4</td> <td>2</td> <td></td> <td>C 4</td> <td></td> <td>-</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> | 500 | 4 | 2 | | C 4 | | - | | | - | | |
| NO. 0 XA ZA YIA P TOOL OFFSET | 500 | 8 | 2 | | C 4 | | | | | | _ | |
| THUSE-K CUMP | | | | | | | - | ND. 0 TOOL OFFSET TOOL WEAR NOSE-R COMP NO. 0 TOOL OFFSET TOOL WEAR NOSE-R COMP | XA XA | ZA | YIA YIA | P |

8.3.9 P300 G

Sample Tool Asset output from P300G control that has 4 wheels. Wheel number 1 is active wheel and its cutter status is AVAILABLE. The cutter status of other wheels is UNKNOWN.

<?xml version="1.0" encoding="UTF-8"?>

<MTConnectAssets xmlns:m="urn:mtconnect.org:MTConnectAssets:1.3"</pre>

xmlns="urn:mtconnect.org:MTConnectAssets:1.3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:x="urn:okuma.com:OkumaToolAssets:1.3" xsi:schemaLocation="urn:okuma.com:OkumaToolAssets:1.3" /schemas/OkumaToolAssets_1.3.xsd">

<Header creationTime="2016-09-30T07:38:33Z" sender="OKUMAOK-QG083MA" instanceId="1475221108" version="1.3.0.17" assetBufferSize="1024" assetCount="4"/>

<Assets><CuttingTool serialNumber="4" toolld="123456" timestamp="2016-09-30T07:38:07.3623046Z" deviceUuid="OKUMA.Grinder.123456" assetId="123456.4">

<CuttingToolLifeCycle>

<CutterStatus>

<Status>UNKNOWN</Status>

</CutterStatus>

<ToolLife countDirection="DOWN" initial="0" limit="0" type="WEAR" warning="0">0</ToolLife>

<ProgramToolNumber>4</ProgramToolNumber>

```
<Location negativeOverlap="0" positiveOverlap="0" type="POT">4</Location>
```

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</CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="3" toolId="123456" timestamp="2016-09-30T07:38:07.3623046Z" deviceUuid="OKUMA.Grinder.123456" assetId="123456.3"> <CuttingToolLifeCycle> <CutterStatus> <Status>UNKNOWN</Status> </CutterStatus> <ToolLife countDirection="DOWN" initial="0" limit="0" type="WEAR" warning="0">0</ToolLife> <ProgramToolNumber>3</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="POT">3</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="2" toolId="123456" timestamp="2016-09-30T07:38:07.3623046Z" deviceUuid="OKUMA.Grinder.123456" assetId="123456.2"> <CuttingToolLifeCycle> <CutterStatus> <Status>UNKNOWN</Status> </CutterStatus> <ToolLife countDirection="DOWN" initial="0" limit="0" type="WEAR" warning="0">0</ToolLife> <ProgramToolNumber>2</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="POT">2</Location> </CuttingToolLifeCycle> </CuttingTool> <CuttingTool serialNumber="1" toolId="123456" timestamp="2016-09-30T07:38:07.3623046Z" deviceUuid="OKUMA.Grinder.123456" assetId="123456.1"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ToolLife countDirection="DOWN" initial="90" limit="60" type="WEAR" warning="65">80</ToolLife> <ProgramToolNumber>1</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="POT">1</Location> </CuttingToolLifeCycle> </CuttingTool> </Assets> </MTConnectAssets>

8.3.10 P300 L Multi-Tool specification

For P300L machines with Multi-Tool spec (NC Spec Code 2 [24, 7] MLTL = ON), the cutter status of each cutting tool item will depend on the tool life and gauge status on each edge of each tool as shown below.

Example:

Registered tool number 10 having 8 cutting items is inserted into station number 16 of C turret.

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_

| NAGE | INFO | RMATIO | N PROCESSING TOOLS | | 1 | 1.00 | | | TURRET INFO. | TOOL | DATA (ALL |
|-------------|-------------|--------|--------------------|----------|-----|------|--------------------------|-----|--------------|-------|-----------|
| REG. NO. | EDGE NO. | SPIN | T-COMMENT / P-KIND | T NO. | USE | | REG. NO. : EDGE NO. : | 8 | 3 | | |
| 3 | 1 | 2 | | A | | ^ | TOOL COMMEN | т | | | |
| 4 | 1 | 1 | | В | | 0 | SELECT HOLDE | R | | | |
| 5 | 1 | 1 | | в | | | SELECT TOO | L | | 8 8 | |
| б | 1 | 1 | | в | | | TOOL TYPE | | | | |
| б | 1 | 2 | | в | | | TOOL SHAPE | 9 | | | |
| 7 | 1 | 1 | | с | | | | | | | |
| 8 | 1 | 2 | | c | | | 1 | | 3 | | |
| 9 | 1 | 1 | | c | | | | | - | | |
| 9 | 1 | 2 | | c | | | - | | | _ | |
| 10 | 1 | 1 | | c 16 | | | | | | _ | |
| 10 | 2 | 2 | | C 16 | | | NO 0 | VA. | 7.4 | VTA | P |
| 10 | 3 | 2 | | C 16 | | | TOOL OFFSET | | 24 | 140 | 10 15 |
| 10 | 4 | 2 | | C 16 | | | TOOL WEAR | | | | |
| 10 | 5 | 1 | | C 16 | | | NOSE-R COMP | | | | |
| 10 | 6 | 2 | | C 16 | | | NO. 0 | XA | ZA | VIA | P |
| 10 | 7 | 1 | | C 16 | | | TOOL OFFSET | | | | |
| 10 | 8 | 1 | | C 16 | | | TOOL WEAR | | | | |
| 10 | 8 | 2 | | C 16 | | ~ | NOSE-R COMP | | | | |
| | | | | | | | CURT. T NO. : | 1 | CURT. REG. | NO. : | |



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<MTConnectAssets xmlns:m="urn:mtconnect.org:MTConnectAssets:1.3"</p> xmlns="urn:mtconnect.org:MTConnectAssets:1.3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:x="urn:okuma.com:OkumaToolAssets:1.3" xsi:schemaLocation="urn:okuma.com:OkumaToolAssets:1.3" /schemas/OkumaToolAssets 1.3.xsd"> <Header creationTime="2019-05-06T13:39:03Z" sender="DP-LHUYNH" instanceId="1557148088"</p> version="1.3.0.17" assetBufferSize="1024" assetCount="10"/> <Assets> <CuttingTool serialNumber="10" toolld="123456" timestamp="2019-05-06T13:38:59.5535430Z" deviceUuid="OKUMA.123456" assetId="123456.10"> <CuttingToolLifeCycle> <CutterStatus> <Status>AVAILABLE</Status> </CutterStatus> <ProgramToolNumber>16</ProgramToolNumber> <Location negativeOverlap="0" positiveOverlap="0" type="STATION">16</Location> <CuttingItems count="8"> <CuttingItem indices="1"> <ItemLife countDirection="UP" initial="1000" limit="0" type="PART_COUNT">900</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ItemLife> <x:ItemCutterStatus> <Status>BROKEN</Status> </x:ItemCutterStatus> <x:ItemProgramToolGroup>100</x:ItemProgramToolGroup> </CuttingItem> <CuttingItem indices="2"> <ItemLife countDirection="UP" initial="1100" limit="0" type="PART_COUNT">800</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ItemLife> <x:ItemCutterStatus> <Status>EXPIRED</Status> </x:ItemCutterStatus> <x:ItemProgramToolGroup>100</x:ItemProgramToolGroup> </CuttingItem> <CuttingItem indices="3"> <ItemLife countDirection="UP" initial="1200" limit="0" type="PART_COUNT">700</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ItemLife> <x:ItemCutterStatus> <Status>EXPIRED</Status> <Status>BROKEN</Status> </x:ItemCutterStatus> <x:ItemProgramToolGroup>100</x:ItemProgramToolGroup> </CuttingItem> <CuttingItem indices="4"> <ItemLife countDirection="UP" initial="1300" limit="0" type="PART_COUNT">600</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ItemLife> <x:ItemCutterStatus> <Status>AVAILABLE</Status> </x:ItemCutterStatus> <x:ItemProgramToolGroup>100</x:ItemProgramToolGroup> </CuttingItem> <CuttingItem indices="5"> <ItemLife countDirection="UP" initial="1400" limit="0" type="PART_COUNT">500</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="MINUTES">0</ItemLife> <ItemLife countDirection="UP" initial="0" limit="0" type="WEAR">0</ItemLife>

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| <x:itemcutterstatus></x:itemcutterstatus> |
|--|
| <status>BROKEN</status> |
| |
| <x.itemprogram oolgroup="">100</x.itemprogram> |
| |
| <pre></pre> /// count/Direction="LIP" initial="1500" limit="0" type="PART_COUNT">400//teml ife> |
| <pre></pre> |
| <pre></pre> /// contDirection="UP" initial="0" limit="0" type="WEAR">0/// contDirection="UP" initial="0" limit="0" type="WEAR">0 |
| <x:itemcutterstatus></x:itemcutterstatus> |
| <status>BROKEN</status> |
| |
| <x:itemprogramtoolgroup>100</x:itemprogramtoolgroup> |
| |
| <cuttingitem indices="7"></cuttingitem> |
| <itemlife countdirection="UP" initial="1600" limit="0" type="PART_COUNT">300</itemlife> |
| <itemlife countdirection="UP" initial="0" limit="0" type="MINUTES">0</itemlife> |
| <itemlife countdirection="UP" initial="0" limit="0" type="WEAR">0</itemlife> |
| <x:itemcutterstatus></x:itemcutterstatus> |
| <status>EXPIRED</status> |
| |
| <x:itemprogramtoolgroup>TOU</x:itemprogramtoolgroup> |
| Cuttingtem indices="8"> |
| <pre></pre> <pre></pre> <pre></pre> <pre></pre> <pre>Cuture indices= 0 ></pre> <pre></pre> <pre></pre> <pre>//teml ife countDirection="LIP" initial="1700" limit="0" type="PART_COUNT">200</pre> |
| <pre></pre> //temLife countDirection="UP" initial="0" limit="0" type="NANCOUNT">200//temLife> |
| <pre></pre> /// contDirection="UP" initial="0" limit="0" type="WEAR">0//temLife> |
| <x:itemcutterstatus></x:itemcutterstatus> |
| <status>EXPIRED</status> |
| |
| <x:itemprogramtoolgroup>100</x:itemprogramtoolgroup> |
| |
| |
| |
| |
| |
| /INT CONNECTASSELS> |

8.4 Sensors

</M

All of analog and digital input sensors defined in the Devices.xml are designed specifically to work with OKUMA Monitoring Control System. By default, all sensor tags are disable (comment out). All sensors are configured to receive the data from different Adapter. OKUMA Monitoring Control System application will function as an adapter for all of these data items. For more information about this, please refer to the Installation Manual of OKUMA MONITORING CONTROL SYSTEM in section '8. Setup MTConnect for OKUMA Monitoring Control System' on how to setup the Adapter to provide sensor data.

Notes:

- All of these data items will not be listed in Tags Configuration dialog
- All sensors are configured for extended types, by default
- Each sensor must be manually configured and mapped to an actual component or system on the machine if needed
- Can only be supported if MTConnect specification is 1.3 or newer.

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8.4.1 Default Sensor Data Items

By default, all data items are configured for generic analog/digital input as shown below. A maximum of 8 units of analog/digital input can be configured.

8.4.1.1 Analog Input sensors

All sensors are identified in the following format for SAMPLE analog input sensors: sensorAIX_Y where X is sensor unit and Y is sensor channel. Each sensor unit has 8 channels

All sensors are identified in the following format for CONDITION analog input sensors: sensorAIX_Y_Cond where X is sensor unit and Y is sensor channel. Each sensor unit has 8 channels

8.4.1.1.1 Sample Data Items

<DataItems>

```
<DataItem type="e:ANALOG_INPUT_OUTPUT" id="sensorAI1_1" category="SAMPLE" name="AI1_1" /> <DataItem type="e:ANALOG_INPUT_OUTPUT" id="sensorAI1_2" category="SAMPLE" name="AI1_2" />
```

</DataItems>

8.4.1.1.2 Conditions

<DataItems>

```
<DataItem type="e:ANALOG_INPUT_OUTPUT" id="sensorAI1_1_Cond" category="CONDITION"
name="AI1_1_Cond" />
<DataItem type="e:ANALOG_INPUT_OUTPUT" id="sensorAI1_2_Cond" category="CONDITION"
name="AI1_2_Cond" />
```

</DataItems>

8.4.1.2 Digital Input sensors

All sensors are identified in the following format for EVENT digital input sensors: sensorDIX_Y where X is sensor unit and Y is sensor channel. Each sensor unit has 8 channels

All sensors are identified in the following format for CONDITION digital input sensors: sensorDIX_Y_Cond where X is sensor unit and Y is channel. Each sensor unit has 8 channels

8.4.1.2.1 Event Data Items

```
<DataItems>
```

```
<DataItem type="e:INPUT_OUTPUT_SIGNAL" id="sensorDI1_1" category="EVENT" name="DI1_1" /> <DataItem type="e:INPUT_OUTPUT_SIGNAL" id="sensorDI1_2" category="EVENT" name="DI1_2" />
```

```
</DataItems>
```

8.4.1.2.2 Conditions

<DataItems>

```
<DataItem type="e:INPUT_OUTPUT_SIGNAL" id="sensorDI1_1_Cond" category="CONDITION" name="DI1_1_Cond" />
```

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<DataItem type="e:INPUT_OUTPUT_SIGNAL" id="sensorDI1_2_Cond" category="CONDITION" name="DI1_2_Cond" />

</DataItems>

8.4.2 Specific Sensor Data Items

Any sensor can be manually mapped to any component or system on the machine. The sensor must be removed from the default configuration above if it is mapped to other.

Example of analog/digital input sensors mapped to different components and systems on the machine:

8.4.2.1 Coolant System

The following sensors are reported its data in Coolant System if applicable.

<!-- Coolant System sensors --> <Coolant id="coolantsystem" name="coolantsystem"> <DataItems> <!-- Coolant concentration level (refractometer) and condition --> <DataItem type="CONCENTRATION" category="CONDITION" id="sensorAl1 1 Cond"</p> name="Al1 1 Cond" /> <DataItem type="CONCENTRATION" id="sensorAl1 1" category="SAMPLE" name="Al1 1"</p> units="PERCENT" nativeUnits="PERCENT" /> <!-- Coolant flow 1 --> <DataItem type="FLOW" id="sensorAl1 2" category="SAMPLE" name="Al1 2" units="LITER/SECOND"</p> nativeUnits="LITER/SECOND" /> <DataItem type="FLOW" category="CONDITION" id="sensorAI1 2 Cond" name="AI1 2 Cond" /> <!-- Coolant flow 2 --> <DataItem type="FLOW" id="sensorAI1_3" category="SAMPLE" name="AI1_3" units="LITER/SECOND" nativeUnits="LITER/SECOND" /> <DataItem type="FLOW" category="CONDITION" id="sensorAl1 3 Cond" name="Al1 3 Cond" /> <!-- Coolant temperature --> <DataItem type="TEMPERATURE" id="sensorAl1 8" category="SAMPLE" name="Al1 8"</p> units="CELSIUS" nativeUnits="CELSIUS" /> <DataItem type="TEMPERATURE" category="CONDITION" id="sensorAl1 8 Cond"</p> name="Al1 8 Cond" /> <!-- Coolant Level --> <DataItem type="e:INPUT_OUTPUT_SIGNAL" id="sensorDI1_2" category="EVENT" name="DI1_2" /> <DataItem type="e:INPUT_OUTPUT_SIGNAL" category="CONDITION" id="sensorDI1_2_Cond"</pre> name="DI1 2 Cond" /> <!-- FILL LEVEL OF COOLANT IN PERCENT sensors --> <DataItem type="FILL LEVEL" id="sensorAl1 6" category="SAMPLE" name="Al1 6" units="PERCENT"</p> nativeUnits="PERCENT" /> <DataItem type="FILL LEVEL" category="CONDITION" id="sensorAl1 6 Cond" name="Al1 6 Cond" /> </DataItems> </Coolant>

8.4.2.2 Pneumatic System

The following sensors are reported its data in Pneumatic System if applicable.

<!-- Pneumatic System sensors -->

<Pneumatic id="pneumaticsystem" name="pneumaticsystem">

```
<DataItems>
```

<DataItem type="PRESSURE" id="sensorAI1_4" category="SAMPLE" name="AI1_4" units="PASCAL" nativeUnits="POUND/INCH^2" />

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<DataItem type="PRESSURE" category="CONDITION" id="sensorAl1_4_Cond" name="Al1_4_Cond" />
</DataItems>

</Pneumatic>

8.4.2.3 Hydraulic System

The following sensors are reported its data in Hydraulic System if applicable.

<!-- Hydraulic System sensors -->

<Hydraulic id="hydraulicsystem" name="hydraulicsystem">

<DataItems>

<DataItem type="PRESSURE" id="sensorAI1_5" category="SAMPLE" name="AI1_5" units="PASCAL"
nativeUnits="POUND/INCH^2" />

```
<DataItem type="PRESSURE" category="CONDITION" id="sensorAI1_5_Cond" name="AI1_5_Cond" /> </DataItems>
```

</Hydraulic>

8.4.2.4 Lubrication System

The following sensors are reported its data in Hydraulic System if applicable.

```
<!-- Sample Lubrication System sensors -->
<Lubrication id="lubricationsystem" name="lubricationsystem">
<Lubrication id="lubricationsystem" name="lubricationsystem">
<DataItems>
<!-- Lube Tank Level -->
<DataItem type="FILL_LEVEL" id="sensorAl2_1" category="SAMPLE" name="Al2_1" units="PERCENT"
nativeUnits="PERCENT" />
<DataItem type="FILL_LEVEL" category="CONDITION" id="sensorAl2_1_Cond" name="Al2_1_Cond" />
</DataItems>
</Lubrication>
```

8.4.2.5 Electrical System

The following sensors are reported its data in Lubrication System if applicable.

```
<!-- Electrical System sensors -->
    <Electric id="electricsystem" name="electricsystem">
     <DataItems>
      <DataItem type="POWER_STATE" id="sensorDI1_1" category="EVENT" name="DI1_1" />
      <DataItem type="POWER_STATE" category="CONDITION" id="sensorDI1_1_Cond" name="DI1_1_Cond" />
      <!-- Control Cabinet Temp 1 sensors -->
      <DataItem type="e:INPUT_OUTPUT_SIGNAL" id="sensorDI1_3" category="EVENT" name="DI1_3" />
      <DataItem type="e:INPUT_OUTPUT_SIGNAL" category="CONDITION" id="sensorDI1_3_Cond"</p>
name="DI1 3 Cond" />
      <!-- Control Cabinet Temp 2 sensors -->
      <DataItem type="e:INPUT_OUTPUT_SIGNAL" id="sensorDI1_4" category="EVENT" name="DI1_4" />
      <DataItem type="e:INPUT_OUTPUT_SIGNAL" category="CONDITION" id="sensorDI1_4 Cond"</p>
name="DI1 4 Cond" />
      <!-- Control Cabinet Temp 3 sensors -->
      <DataItem type="TEMPERATURE" id="sensorAI1_7" category="SAMPLE" name="AI1_7" units="CELSIUS"</pre>
nativeUnits="CELSIUS" />
      <DataItem type="TEMPERATURE" category="CONDITION" id="sensorAI1_7_Cond" name="AI1_7_Cond" />
     </DataItems>
    </Electric>
```

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8.5 Conditions

The system will report any alarm condition at the time it is scanned for. In cases of multiple alarm conditions happening on the machine, the system will report the first alarm and other alarms occurring after the first one if any. The system will clear all alarms if only when:

- No current alarm is detected on NC-HMI and no new alarm in MacMan Alarm History

- NC RESET. When NC is reset explicitly or implicitly, one or more alarms will be cleared and one or more will be added to MacMan Alarm History if alarm conditions are still active. As a result, all alarms will be cleared out in the current scanning cycle, and all new alarms will be added in the next scanning cycle if any.

The system uses the current alarm displayed on NC-HMI and MacMan Alarm History for reporting alarm conditions. Normally, the exact alarm number(s) will not be added to MacMan Alarm History list unless NC has been reset explicitly or implicitly.

When one or more the same alarm number(s) are added to MacMan Alarm History, the system detects it as a NC Reset condition if only current alarm is the duplicated alarm or one of the subsequent alarms occurring after the duplicated alarm listed in MacMan Alarm History.

Duplicated alarm will be ignored if it is not detected as a RESET condition on NC.

Note:

It highly recommends that all alarm conditions should be assigned to scanning group that has scanning interval 100ms in order to interpret alarm conditions, correctly.

All alarm messages will be reported by the current language selected in OSP system VKEY.

Ex: If the current language selected in the Select Language dialog is Italian, all alarm messages will be reported in that language only.

| ->) | S.T.M | (C) (C) (C) | 1 | "PA | | â |
|---|---|--------------------------------|---------------------------|----------------------------|---|-----------------|
| AUTO 1700 | OPERATION ALARM-A | SB: Emergency | S-TEST.M stop | MIN 1 | C-TURRET 2 SPINDLE ADJUST | B |
| • xc • zc • y10 c0 | ACT POSIT 360 101 0 0 | DISTANCE 0 0 0 | TARGET 360 101 0 | N 0 0 | ACT POS (1/3) 1-SPIN. SETUP 2-SPIN. SETUP | ate and Time |
| © MC O SPI O MC Fr 017234 > 01 #3 | 965 NDLE STOP AXIS STOP 0,000 [# 214 0 | 0 5 GEAR M41 M/rev] V | 965 | 0 = % 0 = TC00000 | N If you want to change language, then you need to select language, to push the OK button, to shut down, and to power on. N N N | Arte ap |
| | | | | | | |

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| ← → C ▲ Not sec creationTime: 2020-10-2: sender: OKUMAOK-KT. instanceId: 1603849361 version: 1.5.0.14 bufferSize: 131072 nextSequence: 25413 firstSequence: 1 lastSequence: 25412 Device: MC-P300; U Controller: Controller vents | ure 192.1 8T05:42:142 JL7QG | 68.1.20-50 z MC-P3 | 000/cur | rent?j | path=//Co | ontroller | | Q | A | 9 | 1 |
|---|-------------------------------------|--------------------------|---------|--------|---|---|--|---|---|-----------------------------------|---|
| creationTime: 2020-10-2: sender: OKUMAOK-KT. instanceId: 1603849361 version: 1.5.0.14 bufferSize: 131072 nextSequence: 25413 firstSequence: 1 lastSequence: 25412 Device: MC-P300; U Controller: Controller vents | 8T05:42:142 JL7QG | Z MC-P3 | 00.45 | 5612 | 23 | | | | | | |
| Device: MC-P300; U Controller : Controller vents | UUID: N | MC-P3 | 00.45 | 5612 | 23 | | | | | | |
| TT. | | | 1 T | 37. | | 6 | | | | | |
| Timestamp | Тур | e Su | ib Type | Nam | ie Id | Sequence | Value | | | | |
| 020-10-28T01:42:43.3916552 | 2Z Emergen | cyStop | | estop | Mestop | 167 | TRIGGERED | | | | |
| ondition | | | | | | | | | | | |
| Timestamp Type | Sub Type Name | e Id | Seque | ence | | | Value | | | | |
| 1020-10- 18T01:42:43.5257499Z Fault | systen | n Msysten | n 193 | | 1701 ALA emergenci Ninguno : [Medidas i pulsó el bo continuaci | RM_A; Da a Se pulsó e [Cadena de a adoptar] T stón de para ón el botón | tte:2020/10/28 Time el botón de parada d e caracteres] Ningur tras haber soluciona ada de emergencia, i de CONTROL EN | e:10:23:50 170 de emergencia. na ; [Código] N ado el motivo j reinicielo y pu CENDIDO. | 1 Para ; [İnd Vingur por el İse a | ida de fice] io ; que se | |

A) When the system is first started, it will only report current alarm condition and any alarms happened after the current alarm number if any.

Ex: The system will report alarm 1701, 2127, 3127, and 4127 when it is first started.

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| 2 II S.T | M [0] 0) | ₩ ? <u>^</u> | | Lock 2019/07/08 11:35:22 | ^ |
|-----------------|-------------|--------------|------------|-----------------------------|---------------------|
| MANUAL OPERA | TION | UNSELECT.MIN | B-MTD | | |
| 1701 ALARM-A | Emergency s | top | | ADJUST | B |
| MacMan' HMI | | | | | |
| START | OPERATING | IN-PRO SETUP | | | -0 |
| MACH NAME:OSP-P | | | | | EOE |
| ALARN HISTORY | | | | | -0- |
| DATE | TIME | ALARM ND. | ALARM CODE | ALARM STRINGS | Ŵ |
| 2019/07/08 | 11:23:26 | 4127 | 0 | D Alarm | 2 |
| 2019/07/08 | 11:23:26 | 3127 | o | C Alarm | |
| 2019/07/08 | 11:23:26 | 2127 | 0 | 8 Alarm | - B We |
| 2019/07/08 | 11:23:19 | 1701 | 0 | | 5 |
| 2019/07/08 | 11:23:09 | 2127 | 0 | 8 Alarm | |
| 2019/07/08 | 11:23:09 | 3127 | 0 | c Alarm | 檃 |
| 2019/07/08 | 11:23:09 | 4127 | 0 | D Alarm | 1000 |
| 2019/07/08 | 11:22:30 | 1701 | o | | į. |
| 2019/07/08 | 10:14:31 | 2217 | 6F | | |
| 2019/07/08 | 10:04:29 | 1701 | 0 | | 6 ^{mm} lie |
| 2019/07/08 | 09:38:13 | 4101 | 6 | | |
| 2019/07/08 | 08:54:12 | 4080 | 10003 | | |
| 2019/07/08 | 08:53:58 | 4080 | 10003 | | EOE, |
| 2019/07/08 | 08:52:59 | 1701 | 0 | | ·* |
| 2019/07/08 | 08:52:59 | 4080 | 10003 | | |

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```
😧 M%connectDeviceStreams 🛛 🗙 🕲 mew-sourceSpiceStreams5000/curve 🛪 | 🔶
```

```
← → C @ tocalhost5000/current
```

Condition

| Timestamp | Туре | Sub Type | Name | Id | Sequence | Value |
|----------------------------------|---------|-------------|--------|---------|----------|---|
| 2019-07- 08T15:37:16.6714911Z | Fault | | system | Msystem | 97 | 1701 ALARM_A; Date:2019/07/08 Time:11:23:19 1701 Emergency stop Emergency stop button is pressed.; [Index] None; [Character-string] None; [Code] None ; [Measures to Take] After removing the cause for which the emergency stop button has been pressed, reset it and then press the CONTROL ON button. |
| 2019-07- 08T15:37:16.6714911Z | Fault | | system | Msystem | 98 | 2127 ALARM_B B Alarm; Date:2019/07/08 Time:11:23:26 2127 THINC Alarm An alarm notification was given by the THINC application.; [Index] None; [Character- string] Character string notified by THINC application; [Code] None; [Probable Faulty Locations] Determine from the alarm character string. |
| 2019-07- 08T15:37:16.6714911Z | Fault | | system | Msystem | 99 | 3127 ALARM_C C Alarm; Date:2019/07/08 Time:11:23:26 3127 THINC Alarm An alarm notification was given by the THINC application.; [Index] None; [Character- string] Character string notified by THINC application; [Code] None; [Probable Faulty Locations] Determine from the alarm character string. |
| 2019-07- 08T15:37:16.6714911Z | Warning | B | system | Msystem | 100 | 4127 ALARM_D D Alarm; Date:2019/07/08 Time:11:23:26 4127 THINC Alarm An alarm notification was given by the THINC application.; [Index] None; [Character- string] Character string notified by THINC application; [Code] None; [Probable Faulty Locations] Determine from the alarm character string. |

B) Once an alarm is happening on NC the system will continue to report the current alarm and any other alarm conditions if any until there is no current alarm on NC.

Q \$

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```
MTConvect Device Streams K +
```

€ → C ③ locahost5000/umint

Condition

| Timestamp | Туре | Sub Type | Name | Id | Sequence | Value |
|----------------------------------|---------|-------------|--------|---------|----------|--|
| 2019-07- 08T17:00:59.4321842Z | Warning | | system | Msystem | 1806 | 4127 ALARM_D D Alarm; Date:2019/07/08 Time:13:00:58 4127 THINC Alarm An alarm notification was given by the THINC application.; [Index] None; [Character-string] Character string notified by THINC application; [Code] None; [Probable Faulty Locations] Determine from the alarm character string. |
| 2019-07- 08T17:00:59.4321842Z | Fault | | system | Msystem | 1807 | 3127 ALARM_C C Alarm; Date:2019/07/08 Time:13:00:58 3127 THINC Alarm An alarm notification was given by the THINC application. ; [Index] None ; [Character-string] Character string notified by THINC application ; [Code] None ; [Probable Faulty Locations] Determine from the alarm character string. |
| 2019-07- 08T17:00:59.9188818Z | Fault | | system | Msystem | 1818 | 2127 ALARM_B B Alarm; Date:2019/07/08 Time:13:00:58 2127 THINC Alarm An alarm notification was given by the THINC application.; [Index] None; [Character-string] Character string notified by THINC application; [Code] None; [Probable Faulty Locations] Determine from the alarm character string. |
| 2019-07- 08T17:01:02.0402056Z | Fault | | system | Msystem | 1827 | 1701 ALARM_A; Date:2019/07/08 Time:13:01:01 1701 Emergency stop Emergency stop button is pressed. ; [Index] None ; [Character-string] None ; [Code] None ; [Measures to Take] After removing the cause for which the emergency stop button has been pressed, reset it and then press the CONTROL ON button. |

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| OKUMA MTConnect Adapter | S5053-03-27 |
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| | | | | 13:04:15 | A 🏠 |
|-----------------|-------------|---------------|------------|---------------|-----------------------|
| MANUAL OPERAT | TION | UNSELECT. MIN | N B-MTD | ADJUCT | |
| 1701 ALAKM-A | Emergency s | сор | | ADJUST | |
| START | OPERATING | IN-PRO SETUP | | | ۰. |
| MACH NAME:OSP-P | | ļ | | | EOE |
| ALARM HISTORY | | | | | -0- |
| DATE | TIME | ALARM NO | ALARM CODE | ALARM STRENGS | Ŵ |
| 2019/07/08 | 13:01:01 | 1701 | 0 | | 2 |
| 2019/07/08 | 13:00:58 | 2127 | 0 | 6 Alarm | - WS |
| 2019/07/08 | 13:00:58 | 3127 | 0 | c Alarm | B W4 |
| 2019/07/08 | 13:00:58 | 4127 | 0 | D Alarm | - |
| 2019/07/08 | 11:23:26 | 4127 | 0 | D Alarm | 1.1 |
| 2019/07/08 | 11:23:26 | 3127 | 0 | c Alarm | |
| 2019/07/08 | 11:23:26 | 2127 | 0 | 8 Alarm | E-mail |
| 2019/07/08 | 11:23:19 | 1701 | 0 | | |
| 2019/07/08 | 11:23:09 | 2127 | o | B Alarm | |
| 2019/07/08 | 11:23:09 | 3127 | 0 | C Alarm | (¹¹¹¹ 04) |
| 2019/07/08 | 11:23:09 | 4127 | o | D Alarm | |
| 2019/07/08 | 11:22:30 | 1701 | 0 | | 1 |
| 2019/07/08 | 10:14:31 | 2217 | 6F | | EOE |
| 2019/07/08 | 10:04:29 | 1701 | 0 | | -i |
| 2019/07/08 | 09:38:13 | 4101 | 6 | | |

C) All alarm conditions from the time the system is first started to the current time is showing below. Notice that there is no alarm at sequence 1796. As a result, all conditions are removed and the system reports normal at that time until it has an alarm again as shown.

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| En 🗉 S.T | .M [0] 0) | ÷ ? | ECO | Lock 2019/07/08 13:04:15 | A |
|-----------------|-------------|--------------|------------|-----------------------------|---------------|
| MANUAL OPERA | TION | UNSELECT.MIN | B-MTD | | |
| 1701 ALARM-A | Emergency s | top | | ADJUST | B |
| MacMan HMI | | | | | |
| START | OPERATING | IN-PRO SETUP | | | -0 |
| MACH NAME:OSP-P | | | | | =OF |
| ALARM HISTORY | | | | | -0: |
| DATE | TIME | ALARM NO. | ALARM CODE | ALARM STRINGS | WI |
| 2019/07/08 | 13:01:01 | 1701 | 0 | | 2 |
| 2019/07/08 | 13:00:58 | 2127 | o | 8 Alarm | |
| 2019/07/08 | 13:00:58 | 3127 | 0 | c Alarm | B We |
| 2019/07/08 | 13:00:58 | 4127 | 0 | D Alarm | 5 |
| 2019/07/08 | 11:23:26 | 4127 | 0 | D Alarm | · · · · |
| 2019/07/08 | 11:23:26 | 3127 | 0 | c Alarm | |
| 2019/07/08 | 11:23:26 | 2127 | 0 | 8 Alarm | <u>िल्ल</u> ा |
| 2019/07/08 | 11:23:19 | 1701 | 0 | | <u>ا</u> شتار |
| 2019/07/08 | 11:23:09 | 2127 | 0 | B Alarm | |
| 2019/07/08 | 11:23:09 | 3127 | 0 | C Alarm | C.m. |
| 2019/07/08 | 11:23:09 | 4127 | 0 | D Alarm | |
| 2019/07/08 | 11:22:30 | 1701 | 0 | | |
| 2019/07/08 | 10:14:31 | 2217 | 6F | | EOE, |
| 2019/07/08 | 10:04:29 | 1701 | 0 | | * |
| 2019/07/08 | 09:38:13 | 4101 | 6 | | |

| S STEascert Device Steams K S | Millionent Devis Steams 14 | ÷ |
|-------------------------------|----------------------------|---|
|-------------------------------|----------------------------|---|

€ → C © locahost/500/sample/paths//Controller//Datathem//Datathem/@types/SYSTEM*]

Controller : Controller

Condition

| Timestamp | Туре | Sub Type | Name | Id | Sequence | Value |
|----------------------------------|-------------|-------------|--------|---------|----------|--|
| 2019-07- 08715:34:40,539040Z | Unavailable | | system | Msystem | 69 | |
| 2019-07- 08715:37:16.6714911Z | Fault | | system | Msystem | 97 | 1761 ALARM_A: Date:2019/07/08 Time:11:23:19 1701 Emergency stop Emergency stop button is preseed. ; [Index] None ; [Character-string] None ; [Code] None ; [Measures to Take] After removing the cause for which the emergency stop button has been presed, reset if and then press the CONTROL ON button. |
| 2019-07- 08T15:37:16.6714911Z | Fault | | system | Msystem | 98 | 2127 ALARM_B 8 Alarm; Date:2019/07/08 Time:11:23:26 2127 THINC Alarm An alarm notification was given by the THINC application. ; [Index] None ; [Character-string] Character string notified by THINC application ; [Code] None ; [Probable Faulty Locations] Determine from the alarm character string. |
| 2019-07- 08715:37:16.6714911Z | Fault | | system | Maystem | 99 | 3127 ALARM_C C Alarm; Date:2019/07/08 Time:11:23:26 3127 THINC Alarm An alarm notification was given by the THINC application. ; [Index] None ; [Character-string] Character string notified by THINC application ; [Code] None ; [Probable Faulty Locations] Determine from the alarm character string. |
| 2019-07- 08715:37:16.67149112 | Warning | | system | Msystem | 100 | 4127 ALARM_D D Alarm; Date:2019/07/08 Time:11:33:26 4127 THINC Alarm An alarm notification was given by the THINC application. : [Index] None : [Character-string] Character string notified by THINC application ; [Code] None : [Probable Faulty Locations] Determine from the alarm character string. |
| 2019-07- 08717:00:47.7404305Z | Normal | | system | Msystem | 1796 | |
| 2019-07- 08717:00:59.43218422 | Warning | | system | Msystem | 1806 | 4127 ALARM_D D Alarm; Date:2019/07/08 Time:13:00:58 4127 THINC Alarm An alarm notification was given by the THINC application. ; [Index] None ; [Character-string] Character string notified by THINC application; [Code] None ; [Probable Faulty Locations] Determine from the alarm character string. |
| 2019-07- 08717:00:59.43218422 | Fault | | system | Msystem | 1807 | 3127 ALARM_C C Alarm; Date:2019/02/08 Time:13:00:58 3127 THINC Alarm An alarm notification was given by the THINC application. ; [Index] None ; [Character-string] Character string notified by THINC application ; [Code] None ; [Probable Faulty Locations] Determine from the alarm character string. |
| 2019-07- 08717:00:59.9188818Z | Fault | | system | Msystem | 1818 | 2127 ALARM_6 6 Alarm; Date:2019/07/08 Time:13:00:58 2127 THINC Alarm An alarm hotification was given by the THINC application. ; [Index] Nane ; [Character-string] Character string notified by THINC application ; [Code] None ; [Probable Faulty Locations] Determine from the alarm character string. |
| 2019-07- 08T17:01:02.0402056Z | Fault | | system | Msystem | 1827 | 1701 ALARM_A; Date:2019/07/08 Time:12:01:01 1701 Emergency stop Emergency stop button is pressed. ; [Index] None ; [Character-string] None ; [Code] None ; [Measures to Take] After removing the cause for which the emergency stop button has been pressed, reset it and then press the CONTROL ON button. |

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D) NC is reset explicitly or implicitly and E-STOP condition is still active. As a result, all alarm conditions are cleared and the system reports the latest alarm condition as shown

| MTConnect Device Streams | × 🔇 MTConn | ect Device S | Streams | × + | - 🗆 X | |
|--|-----------------------|--------------|--------------|---------------|--|---|
| \leftrightarrow \rightarrow C (i) localhos | st:5000/sample?path=, | //Controlle | er//Dataltem | s//DataItem[@ | @type="SYSTEM"] Q 🖈 🖸 🗄 | |
| 2019-07- 08T17:01:02.0402056Z | Fault | system | Msystem | 1827 | 1701 ALARM_A; Date:2019/07/08 Time:13:01:01 1701 Emergency stop Emergency stop button is pressed. ; [Index] None ; [Character-string] None ; [Code] None ; [Measures to Take] After removing the cause for which the emergency stop button has been pressed, reset it and then press the CONTROL ON button. | * |
| 2019-07- 08T17:44:42.5367412Z | Normal | system | Msystem | 2677 | | |
| 2019-07- 08T17:44:43.0034958Z | Fault | system | Msystem | 2683 | 1701 ALARM_A; Date:2019/07/08 Time:13:44:41 1701 Emergency stop Emergency stop button is pressed. ; [Index] None ; [Character-string] None ; [Code] None ; [Measures to Take] After removing the cause for which the emergency stop button has been pressed, reset it and then press the CONTROL ON button. | |

| MANUAL OPERA | ATION | UNSELECT.MIN | B-MTD | |
|-----------------|---------------|--------------|------------|---------------|
| 1701 ALARM-A | A Emergency s | top | | ADJUST |
| MacMan HMI | | | | |
| START | OPERATING | IN-PRO SETUP | | |
| MACH NAME:OSP-P | | | | |
| ALARM HISTORY | | | | |
| DATE | TIME | ALARM NO. | ALARM CODE | ALARM STRINGS |
| 2019/07/08 | 13:44:41 | 1701 | o | |
| 2019/07/08 | 13:01:01 | 1701 | 0 | |
| 2019/07/08 | 13:00:58 | 2127 | 0 | 8 Alarm |
| 2019/07/08 | 13:00:58 | 3127 | 0 | C Alarm |
| 2019/07/08 | 13:00:58 | 4127 | 0 | D Alarm |
| 2019/07/08 | 11:23:26 | 4127 | 0 | D Alarm |
| 2019/07/08 | 11:23:26 | 3127 | o | C Alarm |
| 2019/07/08 | 11:23:26 | 2127 | 0 | 8 Alarm |
| 2019/07/08 | 11:23:19 | 1701 | o | |
| 2019/07/08 | 11:23:09 | 2127 | 0 | 8 Alarm |
| 2019/07/08 | 11:23:09 | 3127 | o | C Alarm |
| 2019/07/08 | 11:23:09 | 4127 | o | D Alarm |
| 2019/07/08 | 11:22:30 | 1701 | 0 | |
| 2019/07/08 | 10:14:31 | 2217 | 6F | |
| 2019/07/08 | 10:04:29 | 1701 | 0 | |

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E) No alarm on NC and system reports all normal.

| En LL S.T | .M [0] 0) | 田 ? | | Lock 2019/07/08 14:04:17 | |
|-----------------|-----------|--------------|------------|-----------------------------|---------------------|
| MANUAL OPERA | TION | UNSELECT.MIN | B-MTD | ADJUST | |
| MadMan HMI | | | | 000001 | |
| START | OPERATING | IN-PRO SETUP | | | ¢. |
| MACH NAME:OSP-P | | () | | | E93 |
| ALARN HESTORY | | | | | -01 |
| DATE | TIME | ALARM NO. | ALARM CODE | ALARM STRINGS | - Wi |
| 2019/07/08 | 13:44:41 | 1701 | 0 | | N |
| 2019/07/08 | 13:01:01 | 1701 | 0 | | WS |
| 2019/07/08 | 13:00:58 | 2127 | 0 | 8 Alarm | E WA |
| 2019/07/08 | 13:00:58 | 3127 | o | C Alarm | |
| 2019/07/08 | 13:00:58 | 4127 | 0 | D Alarm | 1_1 |
| 2019/07/08 | 11:23:26 | 4127 | 0 | D Alarm | |
| 2019/07/08 | 11:23:26 | 3127 | 0 | C Alarm | |
| 2019/07/08 | 11:23:26 | 2127 | o | 8 Alarm | , a |
| 2019/07/08 | 11:23:19 | 1701 | 0 | | |
| 2019/07/08 | 11:23:09 | 2127 | o | 8 Alarm | R ^{HHI} 54 |
| 2019/07/08 | 11:23:09 | 3127 | 0 | C Alarm | |
| 2019/07/08 | 11:23:09 | 4127 | 0 | D Alarm | 1 |
| 2019/07/08 | 11:22:30 | 1701 | 0 | | EOH |
| 2019/07/08 | 10:14:31 | 2217 | 6F | | R |
| 2019/07/08 | 10:04:29 | 1701 | o | | |

S MTConnect Device Streams × + - - - ×

| \leftrightarrow \rightarrow C (i) localhos | st:5000/sample?path= | //Controlle | er//Dataltem | s//Dataltem[@ | @type="SYSTEM"] 🔍 🛱 📀 🗄 | |
|--|----------------------|-------------|--------------|---------------|--|---|
| 2019-07- 08T17:01:02.0402056Z | Fault | system | Msystem | 1827 | Emergency stop button is pressed. ; [Index] None ; [Character-string] None ; [Code] None ; [Measures to Take] After removing the cause for which the emergency stop button has been pressed, reset it and then press the CONTROL ON button. | • |
| 2019-07- 08T17:44:42.5367412Z | Normal | system | Msystem | 2677 | | |
| 2019-07- 08T17:44:43.0034958Z | Fault | system | Msystem | 2683 | 1701 ALARM_A; Date:2019/07/08 Time:13:44:41 1701 Emergency stop Emergency stop button is pressed. ; [Index] None ; [Character-string] None ; [Code] None ; [Measures to Take] After removing the cause for which the emergency stop button has been pressed, reset it and then press the CONTROL ON button. | |
| 2019-07- 08T18:00:06.2874328Z | Normal | system | Msystem | 3002 | | |

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8.5.1 *Controller Condition*

The following tags are defined for Machining Center, Lathe, Lathe 2SP, and Grinder machine, respectively.

```
Machining Center:
<DataItem category="CONDITION" id="Msystem" name="system" type="SYSTEM"/>
```

Lathe:

```
<DataItem category="CONDITION" id="Lsystem" name="system" type="SYSTEM"/>
```

Lathe 2SP:

```
<DataItem category="CONDITION" id="L2p1ystem" name="system" type="p1SYSTEM"/>
<DataItem category="CONDITION" id="L2p2ystem" name="system" type="p2SYSTEM"/>
```

Grinder:

```
<DataItem category="CONDITION" id="Gsystem" name="system" type="SYSTEM"/>
```

8.5.2 Systems Condition

The following tags of System Condition are defined for Machining Center, Lathe, Lathe 2SP, and Grinder machine, respectively.

Notes:

- These data items will have exactly the same alarm message as defined for Controller condition if applicable.
- The ENG subfolder under the C:\OSP-P\P-MANUAL\ is required for all of Systems Condition.
- The actual number of systems can be supported per MTConnect specification will be varied, accordingly.

The actual number of conditions can be supported will be varied based on the current MTConnect specification selected in the System Configuration. The table shown below lists all conditions that can be supported per MTConnect specification.

| Conditions | Top Level Component | MTConnect Specifications |
|-----------------------|---------------------|--------------------------|
| Coolant Condition | Systems | 1.2 – 1.5 and newer |
| Electric Condition | Systems | 1.2 – 1.5 and newer |
| Hydraulic Condition | Systems | 1.2 – 1.5 and newer |
| Lubrication Condition | Systems | 1.2 – 1.5 and newer |
| Pneumatic Condition | Systems | 1.3 – 1.5 and newer |

8.5.2.1 Machining Center

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```
<Hydraulic id="MHydraulicSystem1" name="HydraulicSystem1">
              <DataItems>
                <DataItem category="CONDITION" id="MHydraulicSystem1_cond"</pre>
name="HydraulicSystem1 cond" type="SYSTEM"/>
              </DataItems>
            </Hydraulic>
            <Lubrication id="MLubricationSystem1" name="LubricationSystem1">
              <DataItems>
                <DataItem category="CONDITION" id="MLubricationSystem_cond"</pre>
name="LubricationSystem1 cond" type="SYSTEM"/>
              </DataItems>
            </Lubrication>
            <Pneumatic id="MPneumaticSystem1" name="PneumaticSystem1">
              <DataItems>
                 <DataItem category="CONDITION" id="MPneumaticSystem1_cond"</pre>
name="PneumaticSystem1_cond" type="SYSTEM"/>
              </DataItems>
            </Pneumatic>
          </Components>
```

```
8.5.2.2 Lathe
```

```
<Systems id="LSystems1" name="Systems1">
          <Components>
            <Coolant id="LCoolantSystem1" name="LCoolantSystem1">
              <DataItems>
                 <DataItem category="CONDITION" id="LCoolantSystem1 cond"</pre>
name="CoolantSystem1 cond" type="SYSTEM"/>
              </DataItems>
            </Coolant>
            <Electric id="LElectricSystem1" name="ElectricSystem1">
              <DataItems>
                <DataItem category="CONDITION" id="LElectricSystem1_cond"</pre>
name="ElectricSystem1_cond" type="SYSTEM"/>
              </DataItems>
            </Electric>
            <Hydraulic id="LHydraulicSystem1" name="HydraulicSystem1">
              <DataItems>
                <DataItem category="CONDITION" id="LHydraulicSystem1_cond"</pre>
name="HydraulicSystem1_cond" type="SYSTEM"/>
              </DataItems>
            </Hydraulic>
            <Lubrication id="LLubricationSystem1" name="LubricationSystem1">
              <DataItems>
                 <DataItem category="CONDITION" id="LLubricationSystem_cond"</pre>
name="LubricationSystem1_cond" type="SYSTEM"/>
              </DataItems>
            </Lubrication>
            <Pneumatic id="LPneumaticSystem1" name="PneumaticSystem1">
              <DataItems>
                <DataItem category="CONDITION" id="LPneumaticSystem1 cond"</pre>
name="PneumaticSystem1 cond" type="SYSTEM"/>
              </DataItems>
            </Pneumatic>
          </Components>
```

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</Systems>

8.5.2.3 Lathe 2SP

8.5.2.3.1 First System or R side of machine

```
<Systems id="LSystems1" name="Systems1">
          <Components>
            <Coolant id="LCoolantSystem1" name="LCoolantSystem1">
              <DataItems>
                <DataItem category="CONDITION" id="LCoolantSystem1_cond"</pre>
name="CoolantSystem1_cond" type="SYSTEM"/>
              </DataItems>
            </Coolant>
            <Electric id="LElectricSystem1" name="ElectricSystem1">
              <DataItems>
                 <DataItem category="CONDITION" id="LElectricSystem1_cond"</pre>
name="ElectricSystem1 cond" type="SYSTEM"/>
              </DataItems>
            </Electric>
            <Hydraulic id="LHydraulicSystem1" name="HydraulicSystem1">
              <DataItems>
                <DataItem category="CONDITION" id="LHydraulicSystem1 cond"</pre>
name="HydraulicSystem1_cond" type="SYSTEM"/>
              </DataItems>
            </Hydraulic>
            <Lubrication id="LLubricationSystem1" name="LubricationSystem1">
              <DataItems>
                <DataItem category="CONDITION" id="LLubricationSystem1_cond"</pre>
name="LubricationSystem1_cond" type="SYSTEM"/>
              </DataItems>
            </Lubrication>
            <Pneumatic id="LPneumaticSystem1" name="PneumaticSystem1">
              <DataItems>
                <DataItem category="CONDITION" id="LPneumaticSystem1_cond"</pre>
name="PneumaticSystem1 cond" type="SYSTEM"/>
              </DataItems>
            </Pneumatic>
          </Components>
        </Systems>
```

8.5.2.3.2 Second System or L side of machine

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```
<DataItem category="CONDITION" id="LElectricSystem2_cond"</pre>
name="ElectricSystem2_cond" type="SYSTEM"/>
              </DataItems>
            </Electric>
            <Hydraulic id="LHydraulicSystem2" name="HydraulicSystem2">
              <DataItems>
                 <DataItem category="CONDITION" id="LHydraulicSystem2 cond"</pre>
name="HydraulicSystem2_cond" type="SYSTEM"/>
              </DataItems>
            </Hydraulic>
            <Lubrication id="LLubricationSystem2" name="LubricationSystem2">
              <DataItems>
                <DataItem category="CONDITION" id="LLubricationSystem2 cond"</pre>
name="LubricationSystem2 cond" type="SYSTEM"/>
              </DataItems>
            </Lubrication>
            <Pneumatic id="LPneumaticSystem2" name="PneumaticSystem2">
              <DataItems>
                <DataItem category="CONDITION" id="LPneumaticSystem2 cond"</pre>
name="PneumaticSystem2 cond" type="SYSTEM"/>
              </DataItems>
            </Pneumatic>
          </Components>
        </Systems>
```

```
8.5.2.4 Grinder
```

```
<Systems id="GSystems1" name="Systems1">
          <Components>
            <Coolant id="GCoolantSystem1" name="GCoolantSystem1">
              <DataItems>
                <DataItem category="CONDITION" id="GCoolantSystem1_cond"</pre>
name="CoolantSystem1 cond" type="SYSTEM"/>
              </DataItems>
            </Coolant>
            <Electric id="GElectricSystem1" name="ElectricSystem1">
              <DataItems>
                <DataItem category="CONDITION" id="GElectricSystem1_cond"</pre>
name="ElectricSystem1_cond" type="SYSTEM"/>
              </DataItems>
            </Electric>
            <Hydraulic id="GHydraulicSystem1" name="HydraulicSystem1">
              <DataItems>
                 <DataItem category="CONDITION" id="GHydraulicSystem1 cond"</pre>
name="HydraulicSystem1_cond" type="SYSTEM"/>
              </DataItems>
            </Hydraulic>
            <Lubrication id="GLubricationSystem1" name="LubricationSystem1">
              <DataItems>
                <DataItem category="CONDITION" id="GLubricationSystem_cond"</pre>
name="LubricationSystem1 cond" type="SYSTEM"/>
              </DataItems>
            </Lubrication>
            <Pneumatic id="GPneumaticSystem1" name="PneumaticSystem1">
              <DataItems>
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                                                                           Page 131
```

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8.5.3 Auxiliaries Condition

The following tags of System Condition are defined for Machining Center, Lathe, Lathe 2SP, and Grinder machine, respectively.

Notes:

- These data items will have exactly the same alarm message as defined for Controller condition if applicable.
- The ENG subfolder under the C:\OSP-P\P-MANUAL\ is required for all of Systems Condition.
- The actual number of systems can be supported per MTConnect specification will be varied, accordingly.

The actual number of conditions can be supported will be varied based on the current MTConnect specification selected in the System Configuration. The table shown below lists all conditions that can be supported per MTConnect specification.

| Conditions | Top Level Component | MTConnect Specifications |
|--------------------------|---------------------|--------------------------|
| Loader Condition | Auxiliaries | 1.4 – 1.5 and newer |
| Waste Disposal Condition | Auxiliaries | 1.4 – 1.5 and newer |
| Tool Delivery Condition | Auxiliaries | 1.4 – 1.5 and newer |
| Bar Feeder Condition | Auxiliaries | 1.4 – 1.5 and newer |

8.5.3.1 Machining Center

```
<Auxiliaries id="MAux1">
          <Components>
            <Loader id="MLoaderSystem1" name="LoaderSystem1">
              <DataTtems>
                <DataItem category="CONDITION" id="MLoaderSystem1_cond" name="LoaderSystem1_cond"</pre>
type="SYSTEM" />
              </DataItems>
            </Loader>
            <WasteDisposal id="MWasteDisposalSystem1" name="WasteDisposalSystem1">
              <DataItems>
                 <DataItem category="CONDITION" id="MWasteDisposalSystem1_cond"</pre>
name="WasteDisposalSystem1 cond" type="SYSTEM" />
              </DataItems>
            </WasteDisposal>
            <ToolingDelivery id="MToolingDeliverySystem1" name="ToolingDeliverySystem1">
              <DataItems>
                 <DataItem category="CONDITION" id="MToolingDeliverySystem1_cond"</pre>
name="ToolingDeliverySystem1 cond" type="SYSTEM" />
              </DataItems>
            </ToolingDelivery>
            <BarFeeder id="MBarFeederSystem1" name="BarFeederSystem1">
              <DataItems>
                 <DataItem category="CONDITION" id="MBarFeederSystem1_cond" name="BarFeederSystem1_cond"</pre>
type="SYSTEM" />
              </DataItems>
            </BarFeeder>
        </Components>
        </Auxiliaries>
```

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```
8.5.3.2 Lathe
        <Auxiliaries id="LAux1">
          <Components>
            <Loader id="LLoaderSystem1" name="LoaderSystem1">
              <DataTtems>
                <DataItem category="CONDITION" id="LLoaderSystem1 cond" name="LoaderSystem1 cond"</pre>
type="SYSTEM" />
              </DataItems>
            </Loader>
            <WasteDisposal id="LWasteDisposalSystem1" name="WasteDisposalSystem1">
              <DataItems>
                <DataItem category="CONDITION" id="LWasteDisposalSystem1 cond"</pre>
name="WasteDisposalSystem1 cond" type="SYSTEM" />
              </DataItems>
            </WasteDisposal>
            <ToolingDelivery id="LToolingDeliverySystem1" name="ToolingDeliverySystem1">
              <DataItems>
                <DataItem category="CONDITION" id="LToolingDeliverySystem1 cond"</pre>
name="ToolingDeliverySystem1_cond" type="SYSTEM" />
              </DataItems>
            </ToolingDelivery>
            <BarFeeder id="LBarFeederSystem1" name="BarFeederSystem1">
              <DataItems>
                <DataItem category="CONDITION" id="LBarFeederSystem1_cond" name="BarFeederSystem1_cond"</pre>
type="SYSTEM" />
              </DataItems>
            </BarFeeder>
           </Components>
        </Auxiliaries>
8.5.3.3 Grinder
        <Auxiliaries id="GAux1">
          <Components>
            <Loader id="GLoaderSystem1" name="LoaderSystem1">
              <DataItems>
                <DataItem category="CONDITION" id="GLoaderSystem1_cond" name="LoaderSystem1_cond"</pre>
type="SYSTEM" />
              </DataItems>
            </Loader>
            <WasteDisposal id="GWasteDisposalSystem1" name="WasteDisposalSystem1">
              <DataItems>
                 <DataItem category="CONDITION" id="GWasteDisposalSystem1_cond"</pre>
name="WasteDisposalSystem1 cond" type="SYSTEM" />
              </DataItems>
            </WasteDisposal>
            <ToolingDelivery id="GToolingDeliverySystem1" name="ToolingDeliverySystem1">
              <DataItems>
                 <DataItem category="CONDITION" id="GToolingDeliverySystem1 cond"</pre>
name="ToolingDeliverySystem1 cond" type="SYSTEM" />
              </DataItems>
            </ToolingDelivery>
          </Components>
        </Auxiliaries>
```

9. Installation and Configuration of MTConnect Agent

By default, MTConnect Agent is already installed and configured with default values during installation.

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MTConnect Agent, agent.exe, is installed into the same location of OKUMA MTConnect Adapter. It is, however, up to user to decide to run agent on the same or different PC. On either case, the same configuration information in agent.cfg must be used.

9.1 Installation of MTConnect Agent as Service

Manually, it can be quickly installed as Windows Service by running the BAT file named RunAgentAsService.bat at the installation folder on the machine as shown in the captured image below:

Note: It is necessary to run the BAT file named RunAgentAsService.bat under administrator account by selecting the BAT file and running it as administrator as shown in the captured image below.

| ile Edit View Tools Help | | | | |
|---|---|---------------------------|---|---|
| Organize • 💼 Open Print Burn New folder | 18 | - 1 | 1 | 6 |
| Favorites Disktop Downloadu Recent Places Documents Music RunAgentAsService: Oute modified: 4/28/2014 7/25 AM Windows Batch File Soc: 145 bytes | Data modified us as / must read earning 6/18/2004 12:57 PM Type Priprimation 1/00/2014 6:29 AM 1/10/2014 6:29 AM Adubs Acobat D 6/18/2014 7:20 AM Adubs Acobat D 6/18/2014 7:20 AM Adubs Acobat D 6/18/2014 7:20 AM Adubs Acobat D 6/18/2014 7:20 AM Adubs Acobat D 9/18/2014 7:20 AM Adubs Acobat D 9/18/2014 7:20 AM Adubs Acobat D 9/18/2014 7:20 AM Toubleshoot compatibility 7-21p Convert to Adobe PDF 9/20 Convert to Adobe PDF Convert to Adobe PDF 9/20 Convert to Adobe PDF Compress to "RunAgentAsService.rar" 10/20 Compress to "RunAgentAsService.rar" and email 10/20 Copy 10/20 Copy 10/20 Copy 10/20 Copy 10/20 Convert to Adobe PDF | 5100 4,411 37 77 | | |

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| C:\WINDOWS\system32\cmd.exe | - 🗆 🗙 |
|--|----------------------|
| C:\Documents and Settings\TEMP>D: | _ |
| D:\>CD D:\Program Files\Okuma\OKUMA MT Connect Adapter | |
| D:\Program Files\Okuma\OKUMA MT Connect Adapter>agent install agent.cfg M\Connect Agent Version 1.2.0.13 - built on Wed Jun 20 12:23:52 2012 | |
| 2013-11-07T16:32:45.0964Z: INFO [0] init.config: Starting agent on port 500 2013-11-07T16:32:46.0105Z: INFO [0] init.config: Adding adapter for OKUMA. ningCenter1234 on localhost:7878 2013-11-07T16:32:46.0777Z: INFO [0] init.service: Service installed success y. | 00 Machi sfull |
| D:\Program Files\Okuma\OKUMA MT Connect Adapter> | |
| | • |

The agent now will run automatically when machine first boots up.

For Windows XP:

To run DOS command prompt under administrator account:

- Enter cmd.exe in Windows Start/Run and click OK button as shown below

| | | Programs | • | | |
|-------|-------|------------------|---|-------|--|
| | 2º | Favorites | • | | |
| onal | 3 | Documents | • | | |
| essic | 2 | Settings | • | Run | ? X |
| Prof | P | Search | • | | Type the name of a program folder document or |
| XP | ? | Help and Support | | | Internet resource, and Windows will open it for you. |
| smop | 1-1 | Run | | Open: | cmd.exe |
| Win | 0 | Shut Down | | | OK Cancel Browse |
| 1 | start | 0 6 0 | 1 | | |

- Enter the following lines to enable DOS command prompt to run under administrator account:
 - Runas /user:administrator cmd.exe
 - o Enter the password for administrator: enter password for administrator account here
- The system will open a new DOS command prompt that is run under administrator account
- Enter the command lines as shown in the captured image below to change to MTConnect installation folder
 - D:
 - o CD "D:\Program files\Okuma\OKUMA MT Connect Adapter"
 - RunAgentAsService.bat

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9.2 Un-installation of MTConnect Agent Service

Note: If needed current agent installed in Windows services can be removed by issuing the following command from command prompt or running the bat file named UninstallAgentAsService.bat:

agent remove

9.3 Configuration of MTConnect Agent

Please refer to the MTConnect Agent installation file named, README.pdf, for further instruction how to configure it to connect to adapter.

The default agent configuration file, named agent.cfg, is installed in the same folder with MTConnect Adapter and having default information as shown below:

| Devices = Devices.xml | |
|--|--|
| SchemaVersion = 1.5 | # using schema version 1.5 |
| Port=5000 | # default port number for agent |
| UpcaseDataItemValue = false | |
| MonitorConfigFiles = true | # True = reload devices.xml and agent.cfg if they are changed |
| MinimumConfigReloadAge = 1 config files | # Number of seconds agent service will wait before performing reload |
| Adapters | |
| { | |

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9.3.1 Agent Running Port

By default, agent is binding to port 5000 for accepting client requests and connecting to OKUMA MTConnect Adapter at port 7878.

The information can be changed by editing agent.cfg as shown below:

Port=5001

default port number for agent

Agent is now running on port 5001.

Example: http://localhost:5001/current to get current data reported by agent at port 5001

9.3.2 Adapter Host

In case of agent is configured to run on remote PC, Adapter 'Host' must be configured to where adapter is running.

For agent running on the same PC as adapter:

Host = localhost

For agent running on the remote PC:

Host = IPAddress

Where IPAddress is the IP address of the machine that adapter is running.

For example:

Host = 172.22.50.10

9.3.3 Adapter Running Port

By default, agent is communicating with adapter at port 7878. If adapter port is changed to different port number, then it is necessary to change agent configuration file to the same port number such as port 7979 as shown below:

Adapter system configuration setting:

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| System Settings: | | | | | |
|---|-----------------|-----------|---------------------|-----------|---|
| Fast Scanning Interval in msec (10 to 1 | 100 msec): | 10 | MTConnect Specif | fication: | |
| Normal Scanning Interval in msec (10 | 0 to 1000msec): | 100 | Spec1_5 | | ~ |
| Slow Scanning Interval in msec (1000) | to 10000 msec): | 1000 | | | |
| Server Setting: | | Misc. Set | tings | | |
| Max. Client Connections: | 5 | Floatin | g Windows | | |
| TCP Server Listening Port | 7878 | Execution | Not Active If Alarm | ON | |
| Local Agents Only | | | | | |
| Heartbeat Time (second): | 10 | Full OS | P Alarm Message | | |
| ОК | | 3 | Ca | ncel | |

Port = 7879

default port number for OKUMA MTConnect Adapter

9.3.4 Start and Stop Agent Service

MTConnect Agent is a Windows service that can be started and stopped from Services dialog as shown below

| File Action View | · Help | | | | |
|--------------------|---|--|--|--------------------|--|
| (= =) 🛅 🖸 | G 🛃 🛛 📷 🕨 🔳 🖬 | D | | | |
| 🔍 Services (Local) | 🔕 Services (Local) | | | | |
| | MTConnect Agent | Name 🔺 | Description | Status | Startup Type |
| | <u>Stop</u> the service <u>Restart</u> the service | Microsoft .NET Framework NGEN Microsoft .NET Framework NGEN Microsoft iSCSI Initiator Service | I v2.0.5 Microsoft I v4.0.3 Microsoft Manages I | | Disabled Automatic (D Manual |
| | | Microsoft Software Shadow Cop MTConnect Agent Multimedia Class Scheduler Net.Msmq Listener Adapter Net.Pipe Listener Adapter Net.Tcp Listener Adapter Net.Tcp Port Sharing Service Netlogon | Start Stop Pause- Resume Restart All Tasks Provider Manages s. es rel. ves a. ves a. | Started | Manual Automatic Automatic Disabled Disabled Disabled Manual Manual |
| | | Network Connections | Refresh ges o. Properties fies t. | Started Started | Manual Manual |
| | | <u> </u> | Help | * | |

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| Samáras (Lasal) | | IV | | | | |
|------------------|---------------------------|-----------------------------------|---------------|-----------|---------|----------------|
| pervices (cocar) | Q Services (Local) | <u> </u> | | | | |
| | MTConnect Agent | Name 🔺 | De | scription | Status | Startup Type |
| | | 🧠 Microsoft .NET Framework NGEN | v2.0.5 Mic | rosoft | | Disabled |
| | Start the service | Microsoft .NET Framework NGEN | v4.0.3 Mic | rosoft | | Automatic (D., |
| | 1 | Microsoft iSCSI Initiator Service | Ma | nages I | | Manual |
| | 1 | Microsoft Software Shadow Copy | / Provider Ma | nages s | | Manual |
| | 1 | MIConnect Agent | art | | e | Automatic |
| | 1 | Multimedia Class Scheduler | | bles rel | Started | Automatic |
| | 1 | Net Pipe Listener Adapter | euse | eives a | | Disabled |
| | 1 | Net. Tcp Listener Adapter | esume | eives a | | Disabled |
| | 1 | Net, Tcp Port Sharing Service Re | estart | vides a | | Disabled |
| | 1 | Netlogon | I Taalka 🔉 🕨 | htains a | | Manual |
| | 1 | Network Access Protection | | Netwo | | Manual |
| | 1 | Setwork Connections | efresh | hages o | Started | Manual |
| | | Network List Service | roperties | htifies t | Started | Manual |
| | | | 4 | | | |

10. Setup Okuma MTConnect Adapter Software to Startup Automatically

By default, OKUMA MTConnect Adapter is automatically registered with Startup Service so it will be run after NC is fully started.

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| THINC Startup Service 4.4.0.0 | | | |
|---------------------------------|-----------------|----------------------------|-------------------------------|
| Startup Items System Events | | | |
| OkumaMTConnectAdapter | Name | C | OkumaMTConnectAdapter |
| | Path | T ADAPTER\OKUMAMTO | CONNECTADAPTER.EXE |
| | Arguments | | |
| | | | |
| | | Delay (ms) | 0 |
| | | Sequence | |
| | | User Name | |
| | | Password | |
| | | Launch Type | ONCE ~ |
| | ✓ Wait For A | РІ Туре | PROCESS |
| | ✓ Enabled | X Require M After Setti | Machine Restart ings Saved |
| | 839c2a45-6c95-4 | 3b4-8f9f-ee02fe9314b7 | |
| | Status: READY | | |
| 日前 | | Ш | — • |
| | API Res | dy. | |

The following steps are only needed if the registration of OKUMA MTConnect Adapter has been removed.

To enable the Okuma MTConnect Adapter Software run automatically when NC OSP system is started, user needs to setup THINC Startup Service properly. Click 'Start' \rightarrow 'Programs' \rightarrow 'Okuma' \rightarrow 'THINC Startup Service' \rightarrow 'THINC Start Settings' to activate the startup service setup dialog as follows.

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| HINC Startu | p Service 4.4.0.0 | | | |
|---------------|---------------------|----------|----|--------|
| Startup Items | System Events | | | |
| | | | | |
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Figure 1 THINC startup settings dialog

Click button at the lower left side of the dialog to add an entry for the Okuma MTConnect Adapter application.



Figure: THINC startup settings add item dialog



In the 'TSS Choose Item Type' window, select 'Process' for the startup type, then click will pop up to allow user to browse which application to startup.

button and a new dialog

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| Organize • New folder Image: This PC This PC Dobjects Desktop Documents Downloads Music Pictures Videos Videos ReleaseNotes.pdf RightLogoOkuma.bmp | | |
|--|--|--|
| This PC Name OkumaLogo.jpg OkumaLogo.jpg OkumaLogo.jpg OkumaMT2.ico OkumaMT2.ico OkumaMTConnect.zip OkumaMTConnectAdapter.exe Music OkumaMTConnectAdapter.exe.config README.pdf ReleaseNotes.pdf RightLogoOkuma.bmp | | (HE + III 🤅 |
| Videos ReleaseNotes.pdf | Date modified 1/10/2017 9:14 PM 1/10/2017 9:14 PM 1/10/2017 9:13 PM 10/25/2020 1:12 PM 10/25/2020 9:47 AM 10/25/2020 1:12 PM 10/25/2020 1:12 PM | Type JPG File JPG File ICO File Compressed (zipp Application XML Configuration Adobe Acrobat De |
| DATA (D:) RightLogoOkuma.jpg DATA (D:) RunAgentAsService.bat scratch.tmp (\\n ThincLogo.bmp wm (\\nsfiler1\d \vee < | 10/26/2020 2:54 PM 1/10/2017 9:14 PM 1/10/2017 9:14 PM 1/10/2017 9:14 PM 1/10/2017 9:13 PM | Adobe Acrobat Do BMP File JPG File Windows Batch Fi BMP File |

Figure: THINC startup settings add item destination dialog

Select the file 'OkumaMTConnectAdapter.exe' in the Okuma MTConnect Adapter installation folder (By default, it is 'D:\Program Files\Okuma\Okuma MT Connect Adapter\'.). Click Open to accept the selection.

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| THINC Startup Service 4.4.0.0 | | | |
|---------------------------------|------------------|----------------------------|-------------------------------|
| Startup Items System Events | 1 | | |
| | Name | C | kumaMTConnectAdapter |
| | Path | D:\PROGRAM FILES\OK | JMA\OKUMA MT CONNE(|
| | Arguments | | |
| | | | |
| | | Delay (ms) | 0 |
| | | Sequence | |
| | | User Name | |
| | | Password | |
| | | Launch Type | ONCE ~ |
| | ✓ Wait For A | PI Type | PROCESS |
| | Enabled | X Require M After Setti | Aachine Restart ings Saved |
| | 691ca031-effe-4a | 6b-9588-b475e801ef22 | |
| | | | |
| ⊡ 前 | | | |
| | API Rea | ady. | |

Figure: THINC startup settings add item completed dialog

Click button to save the settings and exit the setup process. The Okuma MTConnect Adapter Software should be launched automatically after the NC OSP system is started.

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| Design and the second | Career and the second | | | | |
|-----------------------|-----------------------|----------------------------|---------------|-----------|---|
| Startup items | System Events | | | | |
| | | Name | Oku | maMTConne | ctAdapter |
| | | Path D.\PROGR | AM FILES\OKUM | AIOKUMA M | T CONNE |
| 1 | | Accuraces | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | Start OkumaMTConnectAdapte | rnow? | | |
| | | | | | ~ |
| | | | | | 5 |
| | | | | | T () |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | YES | NO | |
| | | | | 111.571. | |
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| 6 | | | 7 | | |
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Select No in this dialog so MTConnect will be started after NC is reboot.
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| THINC Startup Service 4.4.0.0 | | | |
|---------------------------------|-----------------|---------------------------|-----------------------|
| Startup Items System Events | | | |
| OkumaMTConnectAdapter | Name | (|)kumaMTConnectAdapter |
| | Path | D:\PROGRAM FILES\OK | JMA\OKUMA MT CONNE |
| | Arguments | | |
| | | | |
| | | Delay (ms) | 0 |
| | | Sequence | |
| | | User Name | |
| | | Password | |
| | | Launch Type | ONCE ~ |
| | ✓ Wait For A | .РІ Туре | PROCESS |
| | Enabled | X Require M After Sett | Aachine Restart |
| | 0b517e4d-0cb4-4 | 709-97e0-16f94b724c21 | |
| | Status: READY | | |
| ⊡ क | | Ш | - |
| | API Res | idy | |

Figure: MTConnect Adapter is added to THINC Startup service

Note: User needs to restart the machine to ensure that the startup service works properly.

11. Verifying Agent and Adapter Connectivity

The following steps are to check if:

- Adapter runs without error.
- Adapter can get machine data
- Agent can communicate with adapter
- o MTConnect data can be obtained from agent

Assuming that MTConnect Adapter is installed and the 'Enable Monitoring Tags' checkbox has been checked during the installation process and machine has been restarted. If 'Enable Monitoring Tags' checkbox is not checked then it can be set in the Tags Configuration dialog. Please see the <u>Tags Config. Menu</u>

11.1 OKUMA MTConnect Adapter

Once the adapter is running, it is normally minimized to system tray. It can be shown by double clicking the





in the system tray located on the lower left corner of the screen. The main application will show

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as seen below.

If OKUMA MTConnect adapter is running without error, the system is ready for accepting agent connections.

| System Events | Configurations | | | | | |
|-----------------------|--------------------|-------------------|----------------------|--------------------------|--------------------------------|--|
| ate:5/13/2019 Time: | 10:44:43 AM Inform | nation - Auto Sys | stem Restart is Tr | ue | | |
| Date:5/13/2019 Time | 10:44:43 AM Infom | nation - Normal | polling is running | at 100ms interval and | monitoring data items = True | |
| Communication Statu | s: OK | | | | | |
| ate 5/13/2019 Time | 10:44:43 AM Inform | nation - Adapter | start monitoring | | | |
| Date 5/13/2019 Time. | 10:44:43 AM Inform | nation - Slow pol | ling is running at | 2000ms interval and m | ionitoring data items = True | |
| Date:5/13/2019 Time | 10:44:43 AM Inform | nation - No moni | itoring data items | for fast scanning interv | val. | 1. I I I I I I I I I I I I I I I I I I I |
| Date:5/13/2019 Time: | 10:44:43 AM Infom | nation - Adapter | stops monitoring | | | |
| Date:5/13/2019 Time | 10:44:43 AM Infom | nation - Closing | Monitoring Thread | 1.3 | | |
| Date:5/13/2019 Time: | 10:44:43 AM Infon | mation - Closing | Monitoring Thread | d b | | |
| Communication Statu | s: OFF | | | | | |
| Communication Statu | s: OFF | | | | | |
| Date 5/13/2019 Time | 10:44:43 AM Infon | nation - New cor | nfiguration is appli | ied successfully. | | |
| Date:5/13/2019 Time: | 10:44:43 AM Inform | nation - System : | starts monitoring | | | |
| oading application of | onfiguration - OK | | | | | |
| Date:5/13/2019 Time | 10:44:43 AM Infon | nation - Created | data item named | : p1Fcmd, Sample Inte | rvał Type: Słow | |
| Date:5/13/2019 Time | 10:44:43 AM Infor | mation - Created | data item named | t p1LPathPos, Sample | Interval Type: Slow | |
| Date:5/13/2019 Time | 10:44:43 AM Infon | nation - Created | data item named | pTFact, Sample Interv | al Type: Slow | |
| Date 5/13/2019 Time | 10:44:43 AM Infor | mation - Created | I data item named | d: p1SpindleRunTime, S | Sample Interval Type: Slow | |
| Date 5/13/2019 Time | 10:44:43 AM Infon | mation - Created | data item named | 1 p1CuttingTime, Samp | ble Interval Type: Slow | |
| Date:5/13/2019 Time | 10:44:43 AM Infon | mation - Created | data item named | 1. p1RunningTime, Sam | ple Interval Type: Slow | |
| Jate:5/13/2019 Time: | 10:44:43 AM Infon | mation - Created | I data item named | 1 p1OperatingTime, Sa | mple Interval Type: Slow | 2.21 |
| Jate:5/13/2019 Time. | 10:44:43 AM Infon | mation - Created | t data item name | a: p11ota/SpindleRunTi | me, Sample Interval Type: Slov | W: |
| Date:5/13/2019 Time | 10:44:43 AM Infon | mation - Created | data item named | g) fotalCuttingTime. | Sample Interval Type: Slow | Y |

11.2 Obtaining Current Monitoring Machine Data

OKUMA MTConnect Adapter is using THINC-API for obtaining machine data. By clicking the 'Get Current' from menu bar, the system will get current monitoring data and display a message under System Events screen. A detail message is shown in the message box by double clicking on the '*Current Sampling*' message in the System Events.

If there is no error message in the System Events tab as shown below then Adapter can communicate with machine.

It also shows the number of client connections that are currently connected with the adapter. If no agent is connected with adapter a zero will be shown.

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| | | | OK | UMA MTC | |
|------------------------|--------------------|--|----------------------------------|-----------------|-------------------|
| System Events | Configurations | | | | |
| Date 5/13/2019 Time: | 9:59:16 AM Informa | tion - Client Connections= 0 | | | - |
| Date:5/13/2019 Tim | e 9:59:16 AM Infor | mation - Current Sampling = 2019-05-13 | 13:59:16:3485914Z[avail]AVAIL/ | ABLE[fmode]SETU | P[|
| Date:5/13/2019 Time: | 9:59:13 AM Informa | tion - Auto System Restart is True | | | W |
| Date 5/13/2019 Time: | 9.59.13 AM Informa | tion - Normal polling is running at 100ms in | terval and monitoring data item: | s = True | |
| Communication Statu | s: OK | | | | W |
| Date:5/13/2019 Time: | 9:59:13 🙁 Message | Box | - 0 | × | |
| Date:5/13/2019 Time: | 9.59.13 | Date 5/13/2019 Time 9 59 16 AM Infor | mation - Current Sampling = | A 2 | |
| Date:5/13/2019 Time: | 9:59:13 | 2019-05-13T13 59 16 3485914Zlavail | AVAILABLEIfmodelSETUPI | | |
| Date:5/13/2019 Time: | 9:59:13 | S1ovr1100/S1Mode/SPINDLE/estop/A | RMED p1CommonVariable 1 | | 5 |
| Date:5/13/2019 Time: | 9:59:13 | p1MacManPanelHistory/2019/05/13 09 | 34.29 @Change Window | | |
| Date:5/13/2019 Time: | 9.59.13 | [26003][p1MachineOperationPanelOut | putDryRun[OFF] | | The second second |
| Date:5/13/2019 Time: | 9.59.13 | p1MachineOperationPanelOutputMacl | nneLock[OFF]p1BlockNumber | 1 | |
| Communication Statu | s: OFF | 1/PlcMonitorIO_1/UNAVAILABLE/Plcf | MonitorIO_2[UNAVAILABLE] | | / course |
| Communication Statu | s: OFF | PlcMonitorIO_3[UNAVAILABLE PlcMo | onitorIO_4 UNAVAILABLE | | |
| Date:5/13/2019 Time: | 9.59.13 | PicMonitorIO_5 UNAVAILABLE PicMo | nitorIO_6 UNAVAILABLE | | • • • |
| Date:5/13/2019 Time: | 9:59:13 | PicMonitorIO_7 UNAVAILABLE PicMo | nitorIO_8 UNAVAILABLE | | |
| Loading application co | onfigurati | PicMonitorIO_9 UNAVAILABLE PicMo | nitorIO_10 UNAVAILABLE | | attt: |
| Date:5/13/2019 Time: | 9:59:13 | pmode/AUTOMATIC/pprogram/UNAV | AILABLE [pexecution]READY | | |
| Date:5/13/2019 Time: | 9:59:13 | ppartcounti=[p line]UNAVAILABLE[p | Tblock[]pFovr[100]pFrpovr[100 | 21 | 1 |
| Date:5/13/2019 Time: | 9:59:13 | p (current rooi) p (rooiAssetta) p (wor | KOIISECAXIS[0] | | |
| Date:5/13/2019 Time: | 9.59:13 | p TworkOnset TXXIsjup TworkOnset27 | ader/le1PallettDi=US1cpaed/ | | EO- |
| Date:5/13/2019 Time: | 9:59:13 | LINAVAILABLEIS1cmdil INAVAILABL | EIS lipadii INAVAII ARI E | | |
| Date 5/13/2019 Time: | 9.59.13 | | | × | ¥ |
| | | | | | |
| ERE | a | OK | | ABO | TUC |
| - 10 M | | | | | |

11.3 Agent and Adapter Connectivity

When an MTConnect agent runs and first connects to the adapter, a message will be displayed in the System Events. Adapter will send an initial message of the current monitoring data to the connected agent.

Note: Double clicking on the System Event message to have a detail message displaying on a message box. For more information on setting up agent to run on local machine please refer to section <u>Installing MTConnect Agent</u>

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| System Events Configurations | | |
|--|--|-------|
| ate:5/13/2019 Time:10:50:06 AM Information - Adapter Received PING, s | sending PONG for * PONG 10000 | |
| Date 5/13/2019 Time 10:49:56 AM Information - Adapter sends all curren | nt data to connected client ld 1 - 2019-05-13T14:49:56.7 | 03633 |
| Date:5/13/2019 Time 10:49:56 AM Information - Client ID 1 is connected h | having lp address = 127.0.0.1.1180 | |
| Date 5/13/2019 Time: 10:49:56 AM Information - Adapter Received PING, s | sending PONG for * PONG 10000 | |
| Date:5/13/2019 Time:10:49:47 AM Information - Auto System Restart is Tri | מעז | |
| Date:5/13/2019 Time:10.4 | - I × True | |
| Communication Status: Of | | |
| Date 5/13/2019 Time: 10:4 | AM Information - Adapter sends all | |
| Date 5/13/2019 Time 10/4 | Id 1 - 2019-05- | |
| Date:5/13/2019 Time:10:4 | VAILABLE Imodel SETUPISTOV T00 | |
| Date 5/13/2019 Time: 10.4 | EDip (Common Vanable) 1 | |
| Date 5/13/2019 Time 10.4 | srts 09.34 29 g/change window | |
| Date 5/13/2019 Time: 10:41 D1MachineOperationPapelOutry | utMachinel.ock/OEEInTBlockNumber | |
| Communication Status: OF UPIcMonitorIO_UUNAVAILABI | EPEMonitoriO 20 INAVAILABLE | |
| Date 5/13/2019 Time 10.45 PleMonitorIO_3IUNAVAILABLE | PicMonitoriO 4/UNAVAILABLE | |
| Communication Status: OF PicMoniforIO_SIUNAVAILABLE | IPIcMonitorIO GIUNAVAILABLEI | |
| Date 5/13/2019 Time 10:41 PIcMonitorIO_7/UNAVAILABLE | PlcMonitorIO_BIUNAVAILABLE | |
| Date:5/13/2019 Time:10.45 PtcMonitorIO_9/UNAVAILABLE | PlcMonitorIO 10/UNAVAILABLE | |
| cading application configue priode(AUTOMATIC)pprogram(| UNAVAILABLE pexecution [READY] | |
| Date 5/13/2019 Time 10.46 | see a second second second second second second second second second second second second second second second | |
| Date:5/13/2019 Time:10:41 OK | | |
| Date:5/13/2019 Time:10:4 | and the second second second second second second second second second second second second second second second | |
| ate 5/13/2019 Time 10:49:47 AM Information - Created data item named | f p1SpindleRunTime, Sample Interval Type: Slow | |

11.4 MTConnect Data

Once agent is running and connecting to adapter, current monitoring machine data can be getting by issuing the following command from a web browser for getting current data or device information in the following format:

http://IPAddress:port/DeviceName/MTConnectCommand

- IPAddress: localhost or IP address of computer running agent
- Port: Default to port 5000 of running agent. It can be changed in agent.cfg configuration file.
- Device Name: A case-sensitive of device name specified in the Devices.xml file or adapter device information
- MTConnect Command: A valid MTConnect Command such as 'current' to get current monitoring machine data.

Examples:

<u>http://localhost:5000/OKUMA.MachiningCenter/current</u> for getting monitoring machine data <u>http://localhost:5000/OKUMA.MachiningCenter/probe</u> for getting device information

Device information:

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| the Edit. | View Payottes | Tools Hi | dų – | | | | | | | | | | | |
|---|--|--|--|--------------------------|---|---|---|---|--|------------------------------|---|---|-----------------------------------|------------|
| crea sen inst vers asse asse buff | tionTime: 2015 der: DLT-LHUYN anceld: 142315 ion: 1.3.0.13 etBufferSize: 10 etCount: 0 ierSize: 131072 | -02-05T16:2 H32 2919 24 | 1:00Z | | | | | | | | | | | |
| Device: OK • mar • seri • Oku | CUMA.Machinin hufacturer: OKU alNumber: 1234 ma MT Connect | gCenter; U MA 56 Adapter - M | UID: OKU | MA.Machin enter | ningCente | r.123456 | | | | | | | | |
| Category | Туре | Sub Type | | | Id | | Name | Units | Native Units | Represe | ntation | Sample Rate | Native Scale | Statistic |
| 10115.0 | AVAILABILITY | 2 | Mavail | | | | avail | | | | | | | |
| EVENT | Concentration (| | | | | | | | | | | | | |
| EVENT EVENT | FUNCTIONAL_I | MODE | Mfmode | 4 | | | fmode | - | | | | | | |
| event Event Event | FUNCTIONAL_I | HODE ED | Mfmode OKUMA, | MachiningC | Center.123 | 456_asset_cl | fmode ig | | | | | | | |
| EVENT EVENT EVENT EVENT • Axe | FUNCTIONAL_I ASSET_CHANG ASSET_REMOV | HODE ED ED | Mfmode OKUMA, OKUMA, | MachiningC MachiningC | Center 123 Center 123 | 156_asset_cl 156_asset_n | fmode ig m | | | | | | | |
| EVENT EVENT EVENT EVENT • Axe | FUNCTIONAL_1 ASSET_CHANG ASSET_REMOV s: Axes () Rotary: C (Category | MODE ED ED 5) | Mfmode OKUMA, OKUMA, | MachiningC MachiningC | enter.123 enter.123 | 156_asset_cl 156_asset_n De Id | m Nan | ie l | Unit | 15 | Nat | tive Units | R | epresenta |
| EVENT EVENT EVENT EVENT • Axe | FUNCTIONAL_1 ASSET_CHANG ASSET_REMOV s: Axes () • Rotary: C (Category SAMPLE | NODE ED ED S) | Mfmode OKUMA, OKUMA, OKUMA, | MachiningC MachiningC | Center.123 Center.123 Sub Typ ACTUAL | 456_asset_cl 456_asset_re De Id MS1sp | m Nan | eed RE | Unit | IS N/MINUTE | Nat | tive Units | | epresenta |
| EVENT EVENT EVENT • Axe | FUNCTIONAL_I ASSET_CHANG ASSET_REMOV Is: Axes () • Rotary: C (Category SAMPLE SAMPLE | NODE ED ED S) ROTARY_VI ROTARY_VI | Mfmode OKUMA, OKUMA, Type ELOCITY ELOCITY | MachiningC MachiningC | Sub Typ ACTUAL PROGRAM | 156_asset_cl 156_asset_n ne Id MS1sp MED MS1cn | m Nan eed Sisp d Sicm | eed REP | | IS N/MENUTE | Nat REVOLU REVOLU | tive Units | | epresenta |
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| event Event Event Event • Axe | FUNCTIONAL_I ASSET_CHANG ASSET_REMOV Is: Axes () Rotary: C (Category SAMPLE SAMPLE EVENT SAMPLE | ROTARY_VI ROTARY_VI ROTARY_VI ROTARY_VI LOAD | Mfmode OKUMA, OKUMA, OKUMA, ELOCITY ELOCITY ELOCITY_O | MachiningC MachiningC | Sub Typ ACTUAL PROGRAM | 156_asset_cl 156_asset_n 16 MS1sp MED MS1sp MED MS1so MS1so MS1so | fmode g / m / keed Sispe d Sispe f Siove f Siove d Siloa | eed RE d RE PEF d PEF | Unit VOLUTION VOLUTION RCENT | IS 4/MINUTE 4/MINUTE | Nat REVOLU PERCEN PERCEN | tive Units ITION/MIN ITION/MIN ITI ITI | | epresental |
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| EVENT EVENT EVENT EVENT • Axe | FUNCTIONAL_I ASSET_CHANG ASSET_REMOV Is: Axes () • Rotary: C (Category SAMPLE SAMPLE EVENT SAMPLE EVENT • Linear: X (| NODE ED ED S) ROTARY_VI ROTARY_VI ROTARY_VI LOAD ROTARY_M) | Mfmode OKUMA, OKUMA, OKUMA, ELOCITY ELOCITY_O ODE | MachiningC MachiningC | Sub Typ ACTUAL PROGRAM | 456_asset_ct 456_asset_re MED MS1sp MED MS1cn MED MS1ko MS1ko | fmode m Nan eed Sispe d Sicm r Slovi d Siloa d Siloa | eed REV d REV d REV d PEF d PEF de | Unit VOLUTION VOLUTION RCENT | IS I//MINUTE | Nat REVOLU PERCEN PERCEN | tive Units ITION/MIN ITION/MIN ITI IT | | epresental |
| Event Event Event Event • Axe | FUNCTIONAL_I ASSET_CHANG ASSET_REMOV Is: Axes () • Rotary: C (Category SAMPLE EVENT SAMPLE EVENT • Linear: X (Category | MODE ED S) ROTARY_VI ROTARY_VI ROTARY_VI LOAD ROTARY_M) Type | Mfmode OKUMA, OKUMA, OKUMA, OKUMA, OKUMA, Sub Type | MachiningC MachiningC | Sub Typ ACTUAL PROGRAM | 156_asset_cl 156_asset_m 16 MS1sp MED MS1ov MS1ov MS1ov MS1ov | fmode g m Nan eed Sispi d Sicm r Slovi d Siloa de Siloa | eed REV d REV d REV d PEF d PEF | Unit VOLUTION VOLUTION RCENT RCENT | tation | Nat REVOLU PERCEN PERCEN Sample Rate | tive Units TTION/MIN TTION/MIN TT T T S | i Ri JUTE J JUTE J ative | epresental |
| Event Event Event Event • Axe | FUNCTIONAL_I ASSET_CHANG ASSET_REMOV Is: Axes () • Rotary: C (Category SAMPLE EVENT • Linear: X (Category SAMPLE | NODE ED S) ROTARY_VI ROTARY_VI ROTARY_VI LOAD ROTARY_M) Type POSITION | Mfmode OKUMA, OKUMA, OKUMA, OKUMA, COUTY ELOCITY ELOCITY_O ODE Sub Type ACTUAL | MachiningC MachiningC | Sub Typ ACTUAL PROGRAM PROGRAM | 156_asset_cl 156_asset_n 16 MS1sp MED MS1sp MED MS1so MS1No MS1No MS1No MS1No MS1No | fmode g m Nan eed Sispe d Sicm r Siovi d Siloa d Siloa d Siloa Math Unit MILLIME | eed RE d RE d RE d PEF de FER | Unit VOLUTION VOLUTION RCENT RCENT | IS I//MINUTE I//MINUTE | Nat REVOLU REVOLU PERCEN PERCEN Sample Rate | tive Units ITION/MIN ITION/MIN ITI IT IT | iUTE | epresentat |
| Event Event Event Event • Axe | FUNCTIONAL_I ASSET_CHANG ASSET_REMOV Is: Axes () • Rotary: C (Category SAMPLE EVENT • Linear: X (Category SAMPLE SAMPLE SAMPLE SAMPLE | MODE ED ED S) ROTARY_VI ROTARY_VI ROTARY_VI ROTARY_VI LOAD ROTARY_M POSITION POSITION | Mfmode OKUMA, OKUMA, OKUMA, OKUMA, COUTY ELOCITY ELOCITY ELOCITY ODE Sub Type ACTUAL ACTUAL | MachiningC MachiningC | Sub Tyr ACTUAL PROGRAM PROGRAM Name X1actm X1actw | 456_asset_d 456_asset_m MED MS1sp MED MS1w MS1w MS1w MS1M MS1M | fmode g m Nan ed Sispe d Sispe d Siloa de Siloa de Siloa de Siloa de Math | eed RE' eed RE' d RE' per per e s t e s t e r e s | Unit VOLUTIOP VOLUTIOP RCENT RCENT | IS IVER INVITE | Nat REVOLU PERCEN PERCEN Sample Rate | tive Units TTON/MIN TTON/MIN TT T T | IUTE IUTE | Statistic |

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Current Monitoring Data:

| - Marcalhort Stot Christian La | | | | | | | | | |
|--|----------------------------------|--|-----------------------|---------------------------|--|---|---|--|------------|
| incipe/inciperiosci.vol/) Ordinaetin | lachiningCa | nter/current | , p | - C 🤤 | MTConnect I | Device Streams | × | | 6.44 |
| e Edit View Favorites Touls Halp | | | | | | | | | |
| creationTime: 2015-02 | -05T16 | 5:21:4 | 2Z | | | | | | |
| sender: DLT-LHUYNH3 | 2 | | | | | | | | |
| instanceId: 142315291 | 19 | | | | | | | | |
| version: 1.3.0.13 | | | | | | | | | |
| bufferSize: 131072 | | | | | | | | | |
| nextSequence: 483 | | | | | | | | | |
| InstSequence: 482 | | | | | | | | | |
| | | | | | | | | | |
| JKUMA.Machinin | igCe | nter | .12 | 345 | 6 | | | | |
| Potary · A | | | | | | | | | |
| Notaly . A | | | | | | | | | |
| | | | | | | | | | |
| Samples | | | | | | | | | |
| Samples Timestamp | | Туре | Sub | Туре | Name | Id | Sequence | Value | |
| Samples Timestamp 2015-02-05T16:15:19.192 | 7989Z | Type Angle | Sub T | Type JAL | Name A1actm | Id Alactm | Sequence 83 | Value -175 | |
| Samples Timestamp 2015-02-05T16:15:19.192 2015-02-05T16:15:19.192 | 7989Z 7989Z | Type Angle Angle | Sub T ACTU ACTU | Type JAL JAL | Name Alactm Alactw | Id A1actm A1actw | Sequence 83 84 | Value -175 -175 | |
| Samples Timestamp 2015-02-05T16:15:19.192 2015-02-05T16:15:19.192 2015-02-05T16:15:19.192 | 7989Z 7989Z 7989Z | Type Angle Load | Sub T ACTU ACTU | Type JAL JAL | Name A1actm A1actw A1load | Id A1actm A1actw A1load | Sequence 83 84 85 | Value -175 -175 0 | |
| Samples Timestamp 2015-02-05T16:15:19.192 2015-02-05T16:15:19.192 2015-02-05T16:15:19.192 | 7989Z 7989Z 7989Z | Type Angle Angle Load | Sub 1 ACTU ACTU | Type JAL JAL | Name A1actm A1actw A1load | Id A1actm A1actw A1load | Sequence 83 84 85 | Value -175 -175 0 | |
| Samples Timestamp 2015-02-05T16:15:19.192 2015-02-05T16:15:19.192 2015-02-05T16:15:19.192 Rotary : C | 7989Z 7989Z 7989Z | Type Angle Load | Sub 1 ACTU ACTU | Type JAL JAL | Name Alactm Alactw Alload | Id A1actm A1actw A1load | Sequence 83 84 85 | Value -175 -175 0 | |
| Samples Timestamp 2015-02-05T16:15:19.192 2015-02-05T16:15:19.192 2015-02-05T16:15:19.192 Rotary : C | 7989Z 7989Z 7989Z | Type Angle Load | Sub T ACTU ACTU | Type JAL JAL | Name A1actm A1actw A1load | Id A1actm A1actw A1load | Sequence 83 84 85 | Value -175 -175 0 | |
| Samples Timestamp 2015-02-05T16:15:19.192 2015-02-05T16:15:19.192 2015-02-05T16:15:19.192 Rotary : C Samples | 7989Z 7989Z 7989Z | Type Angle Angle Load | Sub 1 ACTU ACTU | Type JAL JAL | Name A1actm A1actw A1load | Id A1actm A1actw A1load | Sequence 83 84 85 | Value -175 -175 0 | |
| Samples Timestamp 2015-02-05T16:15:19.192 2015-02-05T16:15:19.192 2015-02-05T16:15:19.192 Rotary : C Samples Timestamp | 7989Z 7989Z 7989Z | Type Angle Load | Sub 1 ACTU ACTU | Type JAL JAL Sub | Name A1actm A1actw A1load | Id A1actm A1actw A1load | Sequence 83 84 85 Id | Value -175 -175 0 Sequence | Value |
| Timestamp 2015-02-05T16:15:19.192 2015-02-05T16:15:19.192 2015-02-05T16:15:19.192 Rotary : C Samples Timestamp 2015-02-05T16:15:19.192 | 7989Z 7989Z 7989Z 7989Z | Type Angle Load Type | Sub 1 ACTU ACTU | Type JAL JAL Sub | Name A1actm A1actw A1load | Id A1actm A1actw A1load | Sequence 83 84 85 V Id MS1cmd | Value -175 -175 0 Sequence 72 | Value 0 |
| Samples Timestamp 2015-02-05T16:15:19.192 2015-02-05T16:15:19.192 2015-02-05T16:15:19.192 Rotary : C Samples Timestamp 2015-02- 05T16:15:19.19279892 2015-02- | 7989Z 7989Z 7989Z Rota | Type Angle Load Type aryVelo | Sub 1 ACTU ACTU | Type JAL JAL Sub | Name A1actm A1actw A1load Type | Id A1actm A1actw A1load Name S1cmd | Sequence 83 84 85 Id MS1cmd | Value -175 -175 0 Sequence 72 | Value 0 |

By turning the Trace ON from menu bar, any change of current monitoring data by adapter will be displayed on the System Events screen for verifying purpose. There is also a message displaying heartbeat (PING PONG

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message) to connected agents for every pre-determined number of seconds for checking connectivity.

| | | | | OKUM/ | |
|---|---|--|--|--|-----|
| System Events | Configurations | | | | EDE |
| System Events Date 5/6/2019 Time Date 5/6/2019 Time Date 5/6/2019 Time Date 5/6/2019 Time Date 5/6/2019 Time | Configurations 422:27 PM Tracing 22:24 PM Information 22:22 PM Tracing 22:22 PM Tracing 22:22 PM Tracing 22:23 PM Information | Sampling/Event Data Items Sampling/Event Data Items Adapter Received PING, si Sampling/Event Data Items Sampling/Event Data Items n - Trace on. | 2019-05-06T20.22.27.8209963Z pR 2019-05-06T20.22.27.7691685Z pT ending PONG for * PONG 10000 2019-05-06T20.22.22.8791787Z pR 2019-05-06T20.22.22.8253218Z pT | unningTime 18921 otalRunningTime 43558 unningTime 18916 otalRunningTime 43551 | |
| | | | | | |
| | | NG 18-2 | 100 Max - 100 | NS | - |
| - FILE | CLEAR EVENTS | TRACE ON/OFF MINIMIZE TO SYSTEM TRAY | GET CURRENT GET TOOL ASSET | DISIPLAY CHANGE ABOUT | |

<u>Any web browser can be functioned as an MTConnect client application to obtain machine data from a</u> <u>MTConnect agent.</u> If machine data can be obtained from the web browser with a MTConnect Agent, then MTConnect Adapter

<u>If machine data can be obtained from the web browser with a MTConnect Agent, then MTConnect Adapter</u> and MTConnect Agent are configured and running correctly.

12. THINC-API

12.1 Running Statuses

After NC is fully started, THINC-API Notifier Status should have a green icon displayed at the lower right corner of the screen as shown below:

Windows XP:



Windows 7:

Note: The API icon status can only be supported on Windows 7 if THINC-API installed on target has a version 1.17.1.0 or greater.

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If the color of icon is red, THINC-API has encountered an error state. By clicking on the API icon, a dialog will display and show detail error message as shown in the captured image below:

| 8 | 0 | | | × | |
|-------|---|---|---------|----|--|
| (EPP) | 9 | 0 | \odot | 00 | |
| 0 | ٨ | 0 | | | |
| 0 | ٢ | - | 6 | V | |
| 0 | | | | | |

| 👢 API Notifier Status | | 8 | |
|--|---------------------|---|--|
| Name | API Notifier Status | | |
| Version | 1.1.2.0 | | |
| Machine Type | MACHINING CENTER | | |
| API Version | 1.17.2.0 | | |
| API Falied Exception message: E01080013006 Failed to check out license feature name 'Okuma.CMDATAPI.All', feature version '2.6' at location 'D:\Program files\Okuma\Licenses \okuma.api.lic' - No such feature exists. (-5,357) Exception full message: System.ApplicationException: E01080013006 T | | | |
| | ОК | | |

Please contact OKUMA distributor for further assistant on THINC-API error.

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12.2 Version

The version of THINC-API can be checked by clicking on the API icon. A dialog will be displayed and showing API version number.

| 👢 API Notifier Status | | - |
|-----------------------|---------------------|----------|
| Name | API Notifier Status | |
| Version | 1.1.2.0 | |
| Machine Type | MACHINING CENTER | |
| API Version | 1.17.2.0 | |
| API Initialized | | * |
| | | Ŧ |
| , | ОК | |

13. SCOUT

To quickly check if the machine can be compatible with any version of MTConnect Adapter, SCOUT application can be downloading from https://www.myokuma.com/scout page and runs on the control. SCOUT will identify if certain version of MTConnect Adapter can be installed the target machine or not. A green check icon is OK to install the program on the target machine. A red check icon is not compatible and requires update of other program.

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Double-clicking on the application to get more information about what not compatible with current installation:

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