



Orbit 60

What's New 24.1

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24.1 Features

- ✓ 6U Chassis
- ✓ Recorder Output Module
- ✓ Impulse Acceleration
- ✓ Recip Velocity
- ✓ Piston Rod Enhancements
- ✓ Multi CMM support
- ✓ Modbus Heartbeat
- ✓ Group level Protection State Control via Industrial Protocol
- ✓ Modbus Register mapping report – Phase 2
- ✓ Backwards Compatibility – Phase 1
- ✓ 3500 ETB installation to Orbit retrofit
- ✓ Buffered Output Breakout Cable and Box
- ✓ 3500 Retrofit Kit
- ✓ GAME Analyzer

6U Chassis Support



- ✓ System expansion / additional slots (Total 29 slots)
- ✓ 3500 form factor, making retrofiting easier and cheaper
- ✓ Built-in redundant Power Supply

The screenshot displays a software interface for configuring a 6U chassis. It includes a 'Chassis Type' selection window and a 'Characteristic Value Assignment' window.

Chassis Type Selection:

| S... | Char. Value | Description |
|-----------------------|-------------|----------------------|
| <input type="radio"/> | 01 | No Entry |
| <input type="radio"/> | 02 | Chassis: 3U Rack |
| <input type="radio"/> | 03 | Chassis: 3U Panel |
| <input type="radio"/> | 04 | Chassis: 3U Bulkhead |
| <input type="radio"/> | 05 | Chassis: 6U Rack |
| <input type="radio"/> | 06 | Chassis: 6U Panel |
| <input type="radio"/> | 06 | Chassis: 6U Bulkhead |

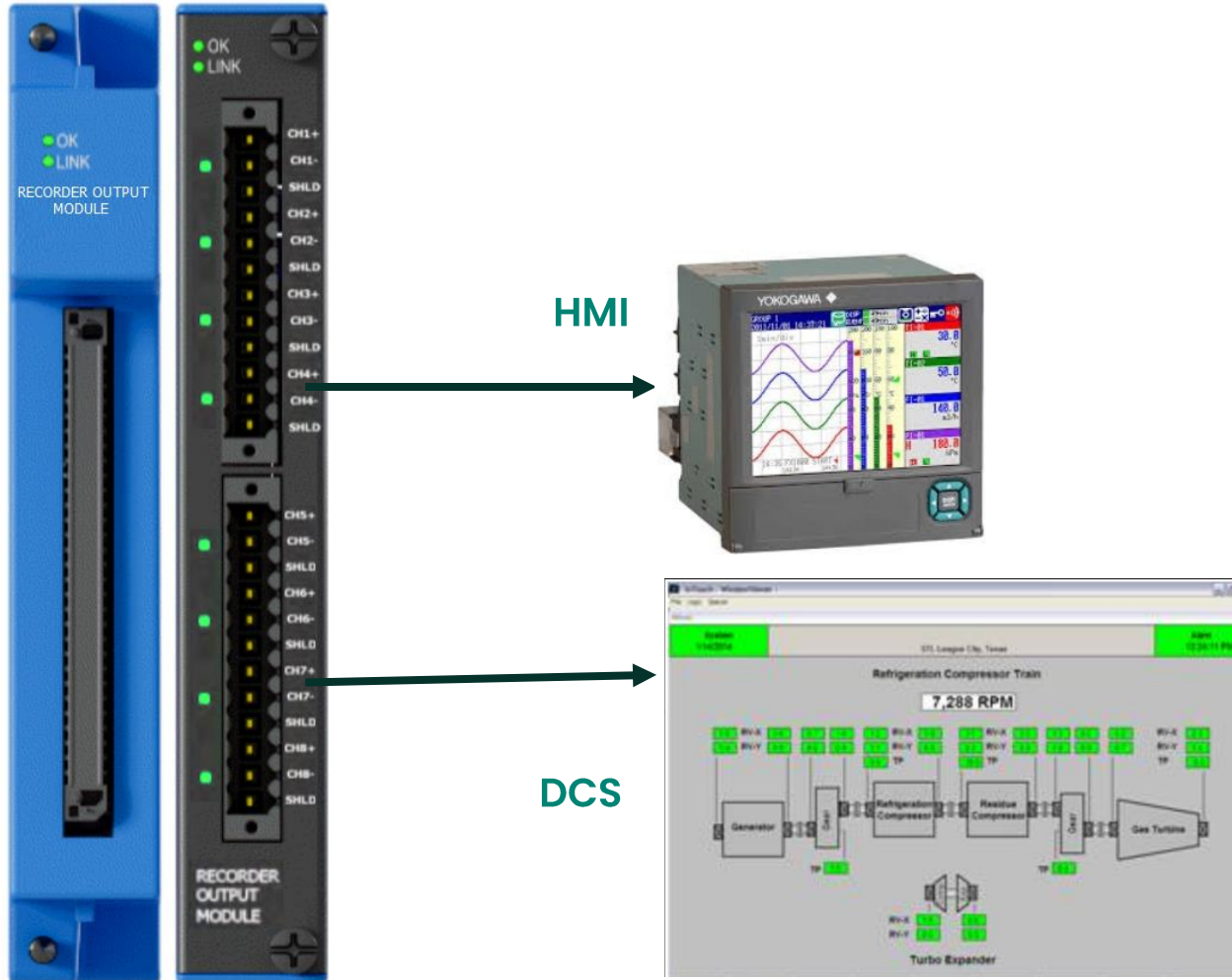
Characteristic Value Assignment (SLOT 01-11):

| Char. description | Char. Value |
|--------------------------|-----------------------------|
| Slot 01 (Upper) - Module | 6U Power Input Module |
| Slot 01 (Lower) - Module | 6U Power Input Module |
| Slot 02 - Module | System Interface Module |
| Slot 02 - SIL | No SIL |
| Slot 03 - Module | Protection Processor Module |
| Slot 03 - SIL | SIL 2 |
| Slot 04 - Module | Input: Prox/Accel/Velomitor |
| Slot 04 - SIL | SIL 2 |
| Slot 05 - Module | |
| Slot 05 - SIL | |

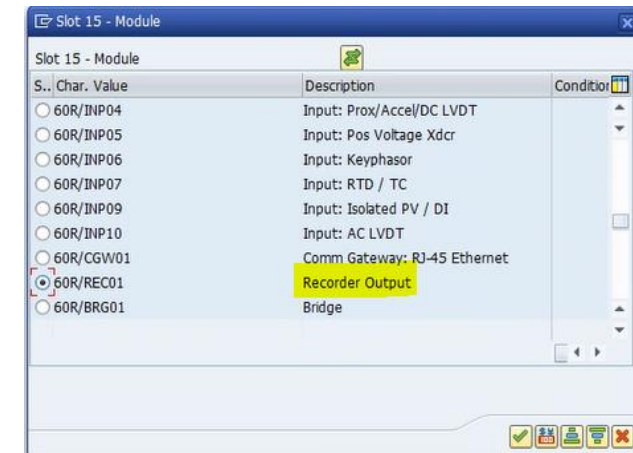
Characteristic Value Assignment (SLOT 21-29):

| Char. description | Char. Value | I... |
|-------------------|-------------------------------|------|
| Slot 21 - Module | Relay: Electro-Mechanical | i |
| Slot 22 - Module | Relay: Electro-Mechanicak2 | i |
| Slot 23 - Module | Relay: Electro-Mechanical | i |
| Slot 24 - Module | Relay: Electro-Mechanicak2 | i |
| Slot 25 - Module | Comm Gateway: RJ-45 Ethernet | i |
| Slot 26 - Module | Comm Gateway: RJ-45 Ethernet | i |
| Slot 27 - Module | Condition Monitoring Module | i |
| Slot 28 - Module | Condition Monitoring Modulex2 | i |
| Slot 29 - Module | Module Slot Blank Cover | i |

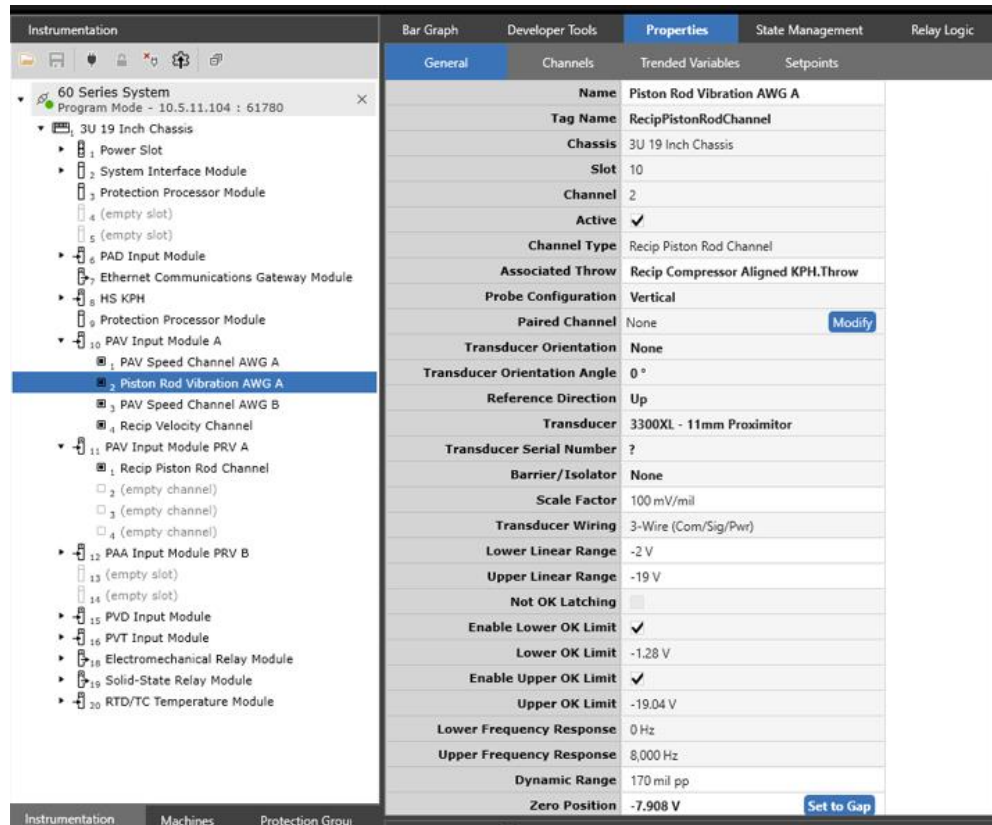
Recorder Output Module



- ✓ 8 channels per module
- ✓ SIL 2 capable
- ✓ Internal accuracy diagnostics
- ✓ 4 to 20 mA (NAMUR NE-43 output range)
- ✓ 1 to 5 V
- ✓ 0 to 10 V

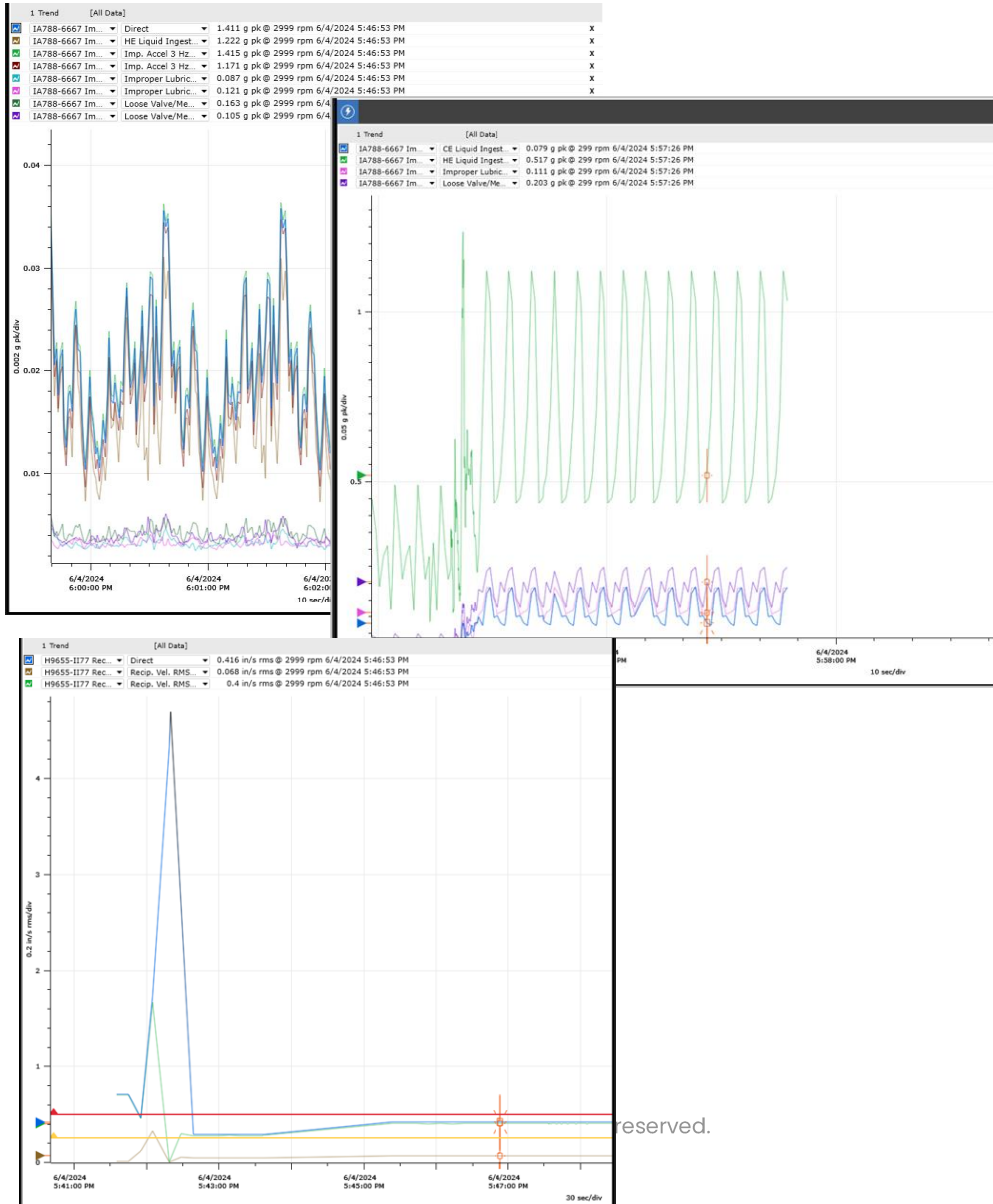


Recip Piston Rod Channel Enhancements



- ✓ Position of Piston Rod Relative to the Center of Cylinder Bore (23.1)
- ✓ Support configurations without a speed signal plus other enhancements (24.1)

Recip Impulse Accel & Recip Velocity enhancements



- ✓ Direct & Bias Measurements (23.1 Service Pack)
- ✓ Bandpass & Static Segmental Bands (24.1) – Required to monitor specific machinery malfunction frequencies
- ✓ Crosshead Guide monitoring to detect impact events
- ✓ Mechanical problems such as looseness in the crosshead or piston assembly
- ✓ Early indication of running gear problems (low frequency vibration)
- ✓ Assess the health of the cylinder valves (high frequency vibration)
- ✓ Cylinder Stretch Monitoring of the Head-End Outer Cylinder (24.1)

Group Level Protection State Control

The screenshot shows the 'Properties' window for the 'SSC-All Groups State Control' channel. The 'Channels' tab is active, showing the following configuration:

- Name: SSC-All Groups State Control
- Tag Name: SystemSwitchChannel
- Chassis: 3U 19 Inch Chassis
- Slot: 11
- Channel: 1
- Active:
- Channel Type: System Switch Channel
- System Switch: Group Protection State Control
- Protection Group Impact: All Groups

The 'Trigger Definition' dialog box is also visible, showing the following configuration:

- Trigger Selection: Trigger: SSC-All Groups State Control, Field: Active
- State Definition table:

| State | Operator | Condition |
|-------------------|----------|-----------|
| Trip Multiply | = | 1 |
| Running | = | 2 |
| Operating State 1 | = | 3 |
| Off | = | 4 |

- ✓ Currently only TM state at the system level (like SIM TM contact) can be activated using System Switch Channel configured under CGW
- ✓ This feature enables functionality to control all protection group states
- ✓ Will benefit 3500 retrofits as users could drive TM state of all protection groups independently and achieve 3500 like functionality

The screenshot shows the 'Protocols' window for the 'SSC-All Groups State Control' channel. The 'Protocol Configuration' tab is active, showing the following configuration:

- Server: [Empty]
- Register Settings: Send configuration fails if you modify active System Switch Channel mapping.
- Register Offset: 40091, 40092, 40093, 40094, 40095, 40096, 40097, 40098, 40099, 40100
- Name: 1.11.SSC-All Groups State Control.SSC-All Groups State Control

The 'Channel' configuration dialog box is also visible, showing the following configuration:

- Channel: 1
- Active:
- Channel Type: System Switch Channel
- System Switch: System Reset
- Protection Group Impact: System Reset, System Alarm Inhibit, Protection State (Trip Multiply), Group Reset, Group Alarm Inhibit ALL, Group Alarm Inhibit Severity 4 (Danger), Group Alarm Inhibit Severity 3 (Alert), Group Alarm Inhibit Severity 2, Group Alarm Inhibit Severity 1, Group Protection State Control

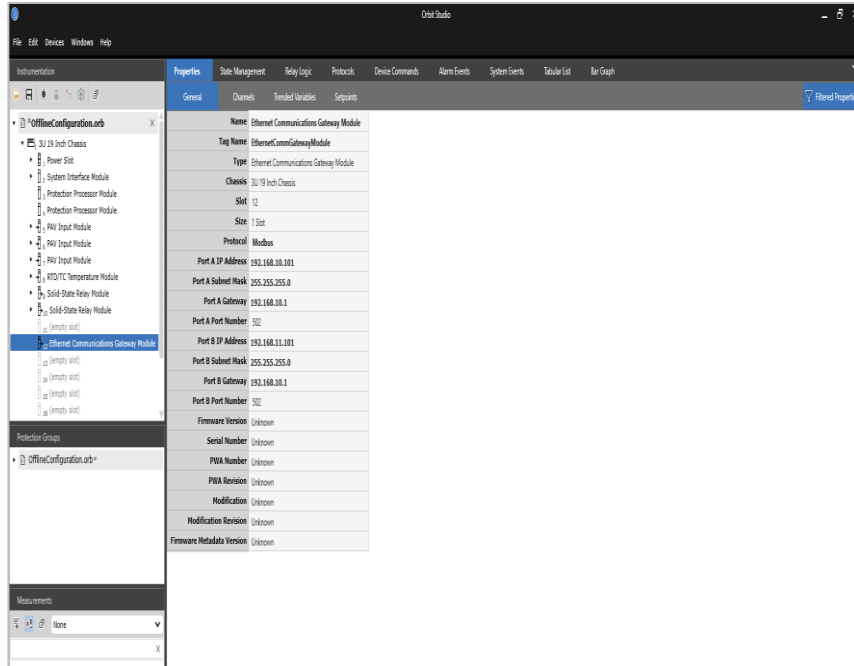
Modbus Heartbeat

| General | | Protocol Configuration | |
|---|--------------------------|--------------------------|--|
| Protocol | Modbus | | |
| Active | <input type="checkbox"/> | | |
| Device ID | 1 | | |
| Communication Interface | Server | | |
| Holding Register Configuration | Floating Point | | |
| Floating Point Holding Register Starting Offset | 40001 | | |
| Fixed Point Input Register Starting Offset | 30001 | | |
| Full Scale Range | 65535 | | |
| Most Significant Word First | <input type="checkbox"/> | | |
| Default Clamp Value | Bottom Scale | | |
| Status Export Definition | 16-bit Status | | |
| Status Selection | Edit... | | |
| Heartbeat Signal | Active | <input type="checkbox"/> | |
| | Start Value | 1 | |
| | End Value | 100 | |
| | Increment By | 1 | |
| | Update Rate | 1000 ms | |

- ✓ 3500 is not supporting dedicated heartbeat. Customers use "seconds" register as alternate solution.
- ✓ Dedicated register to send incrementing counter values to third party Modbus clients
- ✓ When communication is lost client will not receive incremental data and will mark data stale or invalid and report lost communication event
- ✓ Requested by ExxonMobil, CP Chemicals

Backwards Compatibility

Orbit Studio 24.1



Orbit 60 system V23.2



Orbit 60 system V24.1



- ✓ Ability to use 24.1 Orbit Studio software to connect to and configure a 23.2 or later version devices.

Multi CMM support in System 1

The screenshot shows the software interface with the following components:

- Tree View:** MultiCMM > Orbit 60 Series Systems > 60 Series System > 3U 19 Inch Chassis > CM Module (highlighted in yellow). Below it, 'CM Module-33' is selected.
- Property Table:**

| Property | Value |
|-----------------|---------------|
| Name | CM Module-33 |
| Tag Name | CMModule |
| Type | CM Module |
| Slot | 12 |
| Data Collection | Enabled |
| Status | Communicating |
| IP Address | 10.5.75.33 |
| Port Number | 61780 |
| Authentication | Credentials |
- CM Module Utilization Window:** A window titled '60 Series System 1 - CM Module Utilization' showing six bar charts for 'Swordfish CM Module' utilization. Each chart displays Processing Power, Memory, and Bandwidth utilization percentages.

- ✓ Up to 4 CMM under one O60 device in System 1
- ✓ Drive scalability
- ✓ No duplicate data and events
- ✓ Distribute S1 collection groups and channels among different CMMs
- ✓ CMM utilization for user reference

Modbus register mapping report

| Rack Type \ Name \ Tag: Orbit 60 Rack \ Remote Base \ RemoteBase | | | | | | | | | | | | | | | | |
|---|-----|---------|------|---------|----------------------------|--------------------------|--------------------------|-----------------------------------|----------------|------------------------|------------------------|---------------------|---------------------|---------|------------|---------------|
| Gateway Module Name \ Tag: CGW-Remote \ CGW-Remote | | | | | | | | | | | | | | | | |
| Communication Parameters: Port A - IP: 192.168.10.103, Subnet: 255.255.255.0, Gateway: 192.168.10.1 | | | | | | | | | | | | | | | | |
| Port B - IP: 192.168.11.104, Subnet: 255.255.255.0, Gateway: 192.168.10.1 | | | | | | | | | | | | | | | | |
| Address | Bit | Chassis | Slot | Channel | Point Name | Tag Name | Channel Type | Register Description | Data Type | Register Minimum Value | Register Maximum Value | Units Minimum Value | Units Maximum Value | Units | Read/Write | Register Size |
| 30001 | | 2 | 9 | 1 | Discrete Channel-1 | DiscreteChannel-1 | Discrete Channel | Discrete Channel | Analog Value | 0 | 1 | 0 | 1 | - | Read | Fixed |
| 30002 | | 2 | 9 | 2 | Discrete Channel-2 | DiscreteChannel-2 | Discrete Channel | Discrete Channel | Analog Value | 0 | 1 | 0 | 1 | - | Read | Fixed |
| 30003 | | 2 | 9 | 3 | Process Channel-1 | ProcessChannel-1 | Process Variable Channel | Direct | Analog Value | 0 | 65535 | 0 | 50 | MMV | Read | Fixed |
| 30004 | | 2 | 9 | 4 | Process Channel-2 | ProcessChannel-2 | Process Variable Channel | Direct | Analog Value | 0 | 65535 | 0 | 80 | psi (a) | Read | Fixed |
| 30005 | | 2 | 10 | 1 | Temperature-1 | TemperatureChannel-1 | Temperature Channel | Temperature | Analog Value | 0 | 65535 | 0 | 150 | °C | Read | Fixed |
| 30006 | | 2 | 3 | 3 | Speed Channel-2 | SpeedChannel | Speed Channel | Speed | Analog Value | 0 | 65535 | 0 | 5000 | rpm | Read | Fixed |
| 30007 | | 2 | 9 | 3 | Process Channel-1 | ProcessChannel-1 | Process Variable Channel | Level 4 (Danger) Over Direct | Setpoint | 0 | 65535 | 0 | 50 | MW | Read | Fixed |
| 30008 | | 2 | 9 | 4 | Process Channel-2 | ProcessChannel-2 | Process Variable Channel | Level 4 (Danger) Over Direct | Setpoint | 0 | 65535 | 0 | 80 | psi (a) | Read | Fixed |
| 30009 | | 2 | 10 | 1 | Temperature-1 | TemperatureChannel-1 | Temperature Channel | Level 4 (Danger) Over Temperature | Setpoint | 0 | 65535 | 0 | 150 | °C | Read | Fixed |
| 30010 | 0 | 2 | 2 | 0 | Fiber Bridge Module-Remote | FiberBridgeModule-Remote | | Not OK | Module Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30010 | 1 | 2 | 2 | 0 | Fiber Bridge Module-Remote | FiberBridgeModule-Remote | | Hardware Alarm Three | Module Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30010 | 2 | 2 | 2 | 0 | Fiber Bridge Module-Remote | FiberBridgeModule-Remote | | Hardware Alarm Four | Module Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30011 | 0 | 2 | 2 | 0 | Fiber Bridge Module-Remote | FiberBridgeModule-Remote | | Protection Fault | Module Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30011 | 1 | 2 | 2 | 0 | Fiber Bridge Module-Remote | FiberBridgeModule-Remote | | Attention | Module Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30012 | 0 | 2 | 2 | 1 | Bridge Connection | BridgeConnection | Bridge Connection | Not OK | Channel Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30012 | 1 | 2 | 2 | 1 | Bridge Connection | BridgeConnection | Bridge Connection | Hardware Alarm Three | Channel Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30012 | 2 | 2 | 2 | 1 | Bridge Connection | BridgeConnection | Bridge Connection | Hardware Alarm Four | Channel Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30013 | 0 | 2 | 2 | 1 | Bridge Connection | BridgeConnection | Bridge Connection | Protection Fault | Channel Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30013 | 1 | 2 | 2 | 1 | Bridge Connection | BridgeConnection | Bridge Connection | Attention | Channel Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30014 | 0 | 2 | 3 | 0 | PAV Input Module | PAVInputModule | | Not OK | Module Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30014 | 1 | 2 | 3 | 0 | PAV Input Module | PAVInputModule | | Hardware Alarm Three | Module Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30014 | 2 | 2 | 3 | 0 | PAV Input Module | PAVInputModule | | Hardware Alarm Four | Module Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30015 | 0 | 2 | 3 | 0 | PAV Input Module | PAVInputModule | | Protection Fault | Module Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30015 | 1 | 2 | 3 | 0 | PAV Input Module | PAVInputModule | | Attention | Module Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30016 | 0 | 2 | 3 | 1 | Acceleration Channel-2 | AccelerationChannel-2 | Acceleration Channel | Not OK | Channel Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30016 | 1 | 2 | 3 | 1 | Acceleration Channel-2 | AccelerationChannel-2 | Acceleration Channel | Hardware Alarm Three | Channel Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30016 | 2 | 2 | 3 | 1 | Acceleration Channel-2 | AccelerationChannel-2 | Acceleration Channel | Hardware Alarm Four | Channel Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30017 | 0 | 2 | 3 | 1 | Acceleration Channel-2 | AccelerationChannel-2 | Acceleration Channel | Protection Fault | Channel Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30017 | 1 | 2 | 3 | 1 | Acceleration Channel-2 | AccelerationChannel-2 | Acceleration Channel | Attention | Channel Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30018 | 0 | 2 | 3 | 2 | Velocity Channel-2 | VelocityChannel-2 | Velocity Channel | Not OK | Channel Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30018 | 1 | 2 | 3 | 2 | Velocity Channel-2 | VelocityChannel-2 | Velocity Channel | Hardware Alarm Three | Channel Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |
| 30018 | 2 | 2 | 3 | 2 | Velocity Channel-2 | VelocityChannel-2 | Velocity Channel | Hardware Alarm Four | Channel Status | 0 | 1 | 0 | 1 | Bits | Read | 32 Bit |

- ✓ Generate Modbus mapping report in .xlsx format (create Reports dialog)
- ✓ Standard report format used by Projects/services team
- ✓ Captures all required details for quick configuration of the client

