Yokogawa DX Serial Driver

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Yokogawa DX Serial Driver

Help version 1.015

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Overview

The Yokogawa DX Serial Driver provides a reliable way to connect Yokogawa DX Serial devices to OPC client applications; including HMI, SCADA, Historian, MES, ERP, and countless custom applications. It is intended for use with Yokogawa Data Acquisition and Data Recorder devices that support RS232 or RS422 communications.

Device Setup

Supported Yokogawa Devices
DX102
DX104
DX106
DX112
DX204
DX208
DX210
DX220
DX230
MV100
MV200

Supported Communication Parameters
Baud Rate: 300, 600, 1200, 2400, 9600, 19200, or 38400.
Parity: None, Even, or Odd.
Data Bits: 8
Stop Bits: 1 or 2.
Flow Control: None, RTS, or DTR.

Note 1: Software handshaking is not available.

Note 2: This driver makes use of binary data formatting when reading information from Yokogawa devices. This requires that a data bit setting of 8 be used.

RS-232 and RS-422/485 Operation
Yokogawa DX Serial devices can support either RS-232 or RS-422/485 operation. The mode that is used depends on the configuration of the OPC Server project.

If intending to connect to a DX device using RS-232, select a Device ID of zero (0). This tells the driver to use the RS-232 mode for communications. If intending to use either RS-422 or RS-485 communications, select a Device ID for each station that is between 1 and 16 for RS-422, and between 1 and 31 for RS-485. When using RS-232, only configure one device on the channel.

Request Timeout
This parameter specifies the amount of time that the driver will wait for a response from the device before giving up and going on to the next request. Long timeouts will only affect performance if a device is not responding. The valid range is 100 to 30000 milliseconds. The default setting is 1000 milliseconds.

Retry Attempts
This parameter specifies the number of times that the driver will retry a message before giving up and going on to the next message. The valid range is 1 to 10. The default setting is 3.

Note: For more information, refer to the server help documentation.

Device Configuration

General	
Special Data Handling	None
Start Math on Start	Disable
Time Settings	
Date and Time	Device Time
Date Format	MM/DD/YY
Set Clock on Start	Disable
Tagnames	
Generate Tag Database Using	Physical Channel Number

Descriptions of the properties are as follows:

- **Special Data Handling:** This property specifies how the driver will forward special ASCII strings to clients whenever special data is received from the device. Options include None, +INF, and -INF. The default setting is None. For more information, refer to **Special Data Handling**.
- **Start Math On Start:** When checked, this option will inform the driver to send a command to the device at communication startup that will start the math computation. The default setting is unchecked.
- **Date and Time:** This property specifies the origin of the data value of the Date and Time data types (which represent the date and time of the latest data). Options include Device Time and System Time. The default setting is Device Time. Descriptions of the options are as follows:

  - **Device Time:** When selected, the Date and Time tags will return the date and time read from the device. This date and time represents the date and time that the latest data was measured or computed based on the internal device clock.
  - **System Time:** When selected, the Date and Time tags will return the date and time that the requested data was returned from the device based on the PC system clock.
- **Date Format:** This property specifies the format of the return string for the Date data type. Options include MM/DD/YY (month/day/year), YY/MM/DD (year/month/day), or DD/MM/YY (day/month/year). The default setting is MM/DD/YY.
- **Set Clock on Start:** When checked, this option will inform the driver to send a command to the device at communication startup that will set the device clock to the date and time settings of the system clock. The default setting is unchecked.
- **Generate Tag Database Using:** This property specifies the origin of the tag name used when automatically generating a tag database. Options include Physical Channel Number and Device Tagname. The default setting is Physical Channel Number. Descriptions of the options are as follows:

  - **Physical Channel Number:** In this option, the driver will generate tag names based on an item's channel number. For example, "CH01 or CH01_alarm1."
  - **Device Tagname:** In this option, the driver will generate tag names using the tag name returned by the device for a channel. Special characters (such as slashes or pound signs) are not allowed. For example, "Flow" or "Flow_alarm1".

Special Data Handling

The Special Data Handling setting allows users to configure the driver to return specific data values for numerical out of range and error conditions that are returned from the device. Options include None, +INF, and -INF. Descriptions of the options are as follows:

- **None:** When selected, special data values will be returned with the actual data value received from the device. For example, the data value of a measuring channel Over Range would be returned as 32,767 and the data value of a math channel Over Range would be returned as 2,147,450,879.
- **+INF:** When selected, special data values will be returned as a numerical representation of positive infinity (#INF). The exception is an Under Range condition that is always returned as negative infinity.
- **-INF:** When selected, special data values will be returned as a numerical representation of negative infinity (-#INF). The exception is an Over Range condition that is always returned as positive infinity.

Modem Setup

This driver supports modem functionality. For more information, please refer to the topic "Modem Support" in the OPC Server Help documentation.

Data Types Description

Data Type	Description
Boolean	Single bit
Byte	Unsigned 8 bit value
Word	Unsigned 16 bit value
Short	Signed 16 bit value
Float	32 bit floating point value
Double	64 bit floating point value
String	Null terminated ASCII string

Address Descriptions

Address specifications vary depending on the model in use. Select a link from the following list to obtain specific address information for the model of interest.

DX102 Addressing

DX104 Addressing

DX106 Addressing

DX112 Addressing

DX204 Addressing

DX208 Addressing

DX210 Addressing

DX220 Addressing

DX230 Addressing

MV100 Addressing

MV200 Addressing

DX102 Addressing

The driver supports the following addresses for this device. The default data type for each address type is shown in **bold**.

Measured Channels

Address Type	Format	Range	Data Type	Access
Process Value of Channel	CHxx or CHxx.PV	01-02	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-02	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Channel	CHxx.Alarm1	01-02	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Channel	CHxx.Alarm2	01-02	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Channel	CHxx.Alarm3	01-02	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Channel	CHxx.Alarm4	01-02	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	01-02	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	01-02	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	01-02	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	01-02	**Double**, Float	Read/Write
Upper Scale Value of Channel*	CHxx.scale_Hi	01-02	**Double**, Float	Read Only
Lower Scale Value of Channel*	CHxx.scale_Lo	01-02	**Double**, Float	Read Only
Unit String of Channel*	CHxx.unit	01-02	**String**	Read Only
Tagname of Channel*	CHxx.tag	01-02	**String**	Read Only
Status of Channel*	CHxx.status	01-02	**String**	Read Only
Lowest Measuring Channel*	CH.Low		**Short**, Word, Byte	Read Only
Highest Measuring Channel*	CH.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Type	Access
Process Value of Math Channel	CHxx or CHxx.PV	31-34	**Double**, Float	Read Only
Alarm Summary of Math Channel	CHxx.Alarm	31-34	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Math Channel	CHxx.Alarm1	31-34	**Short**, Word, Byte	Read Only

Address Type	Format	Range	Data Type	Access
Alarm Level2 Status of Math Channel	CHxx.Alarm2	31-34	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Math Channel	CHxx.Alarm3	31-34	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Math Channel	CHxx.Alarm4	31-34	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	31-34	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	31-34	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	31-34	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	31-34	**Double**, Float	Read/Write
Upper Scale Value of Math Channel*	CHxx.scale_Hi	31-34	**Double**, Float	Read Only
Lower Scale Value of Math Channel*	CHxx.scale_Lo	31-34	**Double**, Float	Read Only
Unit String of Math Channel*	CHxx.unit	01-34	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	01-34	**String**	Read Only
Status of Math Channel*	CHxx.status	01-34	**String**	Read Only
Lowest Math Channel*	CHA.Low		**Short**, Word, Byte	Read Only
Highest Math Channel*	CHA.High		**Short**, Word, Byte	Read Only

*Data associated with these addresses are only read from the device at the start of a communications session. Once read, the values will not be refreshed until the server has been restarted or the "Reset" tag has been invoked. To invoke a reset, a non-zero value must be written to the Reset tag. Once the Reset tag has been invoked the driver will reinitialize all startup data from the device.

Alarm Setpoints
Data values for Alarm Setpoints that are undefined in the device will be returned as +INF. Data values can only be written to Alarm Setpoints that are defined in the device. Write operations to undefined Alarm Setpoints will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Alarm setpoint values are read one channel at a time. For devices with a large number of channels, increasing the scan rate of ASP items and/or reducing the number of active ASP items will increase the read performance of the PV and alarm data.

Scales
Data values for Scale_Hi and Scale_Lo for channels that are skipped will be returned as +INF.

Tag Names
For devices that do not support tag names and channels that have unspecified tag names, the driver will construct an internal tag name based on the channel number. For example, the tag name of address 'CH01' will be returned as 'CH01'.

General Device Data

Address Type	Format	Range	Data Type	Access
Administrator Level*	Admin		**Boolean**	Read Only
Date of Last Data	Date		**String**	Read Only
Time of Last Data	Time		**String**	Read Only
Model Name of Device*	Model		**String**	Read Only
Math Communication Data*	CDxx	01-04	**Float**	Read/Write
Control Math Execution	MathControl		**Short**, Word, Byte	Write Only
Reset Alarms	AlarmReset		**Boolean**	Write Only
Control Command and Response	Command		**String**	Read/Write

Address Type	Format	Range	Data Type	Access
Previous Screen	PreScreen		**Boolean**	Write Only
Direct Reloading of Configuration	Reset		**Boolean**	Write Only

*The Admin address type has a value of '1' or 'true' when the user has logged on at the Administrator level and a value of '0' or 'false' when the user has logged on at the User level.

Math Communication Data
The CD address type is only valid for devices equipped with the math option and write operations to CD addresses for non-math equipped devices will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Note that CD addresses are initialized (read) at startup and will not be reread unless the server is restarted or the Reset tag is invoked. For more information, refer to **Note on Initialized Data**.

Model Name of Device
The Model address type will have a string value of 'DX100' or 'DX200', indicating the model series returned by the device.

Control Math Execution
The MathControl address type is only available for devices equipped with the math option; otherwise, write operations to the MathControl tag for non-math equipped devices will return an error.

Control Command and Response
The Command address allows the user to send a string command and receive a string response to and from the device. This allows the user to send any command to the device, including commands not directly supported by the driver. This tag is only available to users logged in at the Administrator level; otherwise, write operations will return an error.

Caution: Write operations using the Command address should be performed with extreme care.

Note 1: The actual number of addresses available for of each type depends on the configuration of the Yokogawa device. If the driver finds at Runtime that an address is not present in the device, it will post an error message and remove the tag from its scan list.

Note 2: Addresses that have Write Only access are assigned a default access of Read/Write. However, data values are unreadable for these addresses and the associated tags are not included in the scan list. The current data value for these tags will always be 0 for numeric data types and null string for string data types.

DX104 Addressing

The driver supports the following addresses for this device. The default data type for each address type is shown in **bold**.

Measured Channels

Address Type	Format	Range	Data Type	Access
Process Value of Channel	CHxx or CHxx.PV	01-04	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-04	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Channel	CHxx.Alarm1	01-04	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Channel	CHxx.Alarm2	01-04	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Channel	CHxx.Alarm3	01-04	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Channel	CHxx.Alarm4	01-04	**Short**, Word, Byte	Read Only

Address Type	Format	Range	Data Type	Access
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	01-04	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	01-04	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	01-04	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	01-04	**Double**, Float	Read/Write
Upper Scale Value of Channel*	CHxx.scale_Hi	01-04	**Double**, Float	Read Only
Lower Scale Value of Channel*	CHxx.scale_Lo	01-04	**Double**, Float	Read Only
Unit String of Channel*	CHxx.unit	01-04	**String**	Read Only
Tagname of Channel*	CHxx.tag	01-04	**String**	Read Only
Status of Channel*	CHxx.status	01-04	**String**	Read Only
Lowest Measuring Channel*	CH.Low		**Short**, Word, Byte	Read Only
Highest Measuring Channel*	CH.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Type	Access
Process Value of Math Channel	CHxx or CHxx.PV	31-34	**Double**, Float	Read Only
Alarm Summary of Math Channel	CHxx.Alarm	31-34	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Math Channel	CHxx.Alarm1	31-34	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Math Channel	CHxx.Alarm2	31-34	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Math Channel	CHxx.Alarm3	31-34	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Math Channel	CHxx.Alarm4	31-34	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	31-34	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	31-34	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	31-34	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	31-34	**Double**, Float	Read/Write
Upper Scale Value of Math Channel*	CHxx.scale_Hi	31-34	**Double**, Float	Read Only
Lower Scale Value of Math Channel*	CHxx.scale_Lo	31-34	**Double**, Float	Read Only
Unit String of Math Channel*	CHxx.unit	31-34	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	31-34	**String**	Read Only
Status of Math Channel*	CHxx.status	31-34	**String**	Read Only
Lowest Math Channel*	CHA.Low		**Short,** Word, Byte	Read Only
Highest Math Channel*	CHA.High		**Short**, Word, Byte	Read Only

*Data associated with these addresses are only read from the device at the start of a communications session. Once read, the values will not be refreshed until the server has been restarted or the "Reset" tag has been invoked. To invoke a reset, a non-zero value must be written to the Reset tag. Once the Reset tag has been invoked the driver will reinitialize all startup data from the device.

Alarm Setpoints
Data values for Alarm Setpoints that are undefined in the device will be returned as +INF. Data values can only be written to Alarm Setpoints that are defined in the device. Write operations to undefined Alarm Setpoints will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Alarm setpoint values are read one channel at a time. For devices with a large number of channels, increasing the scan rate of ASP items and/or reducing the number of active ASP items will increase the read performance of the PV and alarm data.

Scales

Data values for Scale_Hi and Scale_Lo for channels that are skipped will be returned as +INF.

Tag Names

For devices that do not support tag names and channels that have unspecified tag names, the driver will construct an internal tag name based on the channel number. For example, the tag name of address 'CH01' will be returned as 'CH01'.

General Device Data

Address Type	Format	Range	Data Type	Access
Administrator Level*	Admin		**Boolean**	Read Only
Date of Last Data	Date		**String**	Read Only
Time of Last Data	Time		**String**	Read Only
Model Name of Device*	Model		**String**	Read Only
Math Communication Data*	CDxx	01-04	**Float**	Read/Write
Control Math Execution	MathControl		**Short**, Word, Byte	Write Only
Reset Alarms	AlarmReset		**Boolean**	Write Only
Control Command and Response	Command		**String**	Read/Write
Previous Screen	PreScreen		**Boolean**	Write Only
Direct Reloading of Configuration	Reset		**Boolean**	Write Only

*The Admin address type has a value of '1' or 'true' when the user has logged on at the Administrator level and a value of '0' or 'false' when the user has logged on at the User level.

Math Communication Data

The CD address type is only valid for devices equipped with the math option and write operations to CD addresses for non-math equipped devices will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Note that CD addresses are initialized (read) at startup and will not be reread unless the server is restarted or the Reset tag is invoked. For more information, refer to **Note on Initialized Data**.

Model Name of Device

The Model address type will have a string value of 'DX100' or 'DX200', indicating the model series returned by the device.

Control Math Execution

The MathControl address type is only available for devices equipped with the math option; otherwise, write operations to the MathControl tag for non-math equipped devices will return an error.

Control Command and Response

The Command address allows the user to send a string command and receive a string response to and from the device. This allows the user to send any command to the device, including commands not directly supported by the driver. This tag is only available to users logged in at the Administrator level; otherwise, write operations will return an error.

Caution: Write operations using the Command address should be performed with extreme care.

Note 1: The actual number of addresses available for of each type depends on the configuration of the Yokogawa device. If the driver finds at Runtime that an address is not present in the device, it will post an error message and remove the tag from its scan list.

Note 2: Addresses that have Write Only access are assigned a default access of Read/Write. However, data values are unreadable for these addresses and the associated tags are not included in the scan list. The current data value for these tags will always be 0 for numeric data types and null string for string data types.

DX106 Addressing

The driver supports the following addresses for this device. The default data type for each address type is shown in **bold**.

Measured Channels

Address Type	Format	Range	Data Type	Access
Process Value of Channel	CHxx or CHxx.PV	01-06	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-06	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Channel	CHxx.Alarm1	01-06	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Channel	CHxx.Alarm2	01-06	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Channel	CHxx.Alarm3	01-06	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Channel	CHxx.Alarm4	01-06	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	01-06	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	01-06	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	01-06	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	01-06	**Double**, Float	Read/Write
Upper Scale Value of Channel*	CHxx.scale_Hi	01-06	**Double**, Float	Read Only
Lower Scale Value of Channel*	CHxx.scale_Lo	01-06	**Double**, Float	Read Only
Unit String of Channel*	CHxx.unit	01-06	**String**	Read Only
Tagname of Channel*	CHxx.tag	01-06	**String**	Read Only
Status of Channel*	CHxx.status	01-06	**String**	Read Only
Lowest Measuring Channel*	CH.Low		**Short**, Word, Byte	Read Only
Highest Measuring Channel*	CH.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Type	Access
Process Value of Math Channel	CHxx or CHxx.PV	31-42	**Double**, Float	Read Only
Alarm Summary of Math Channel	CHxx.Alarm	31-42	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Math Channel	CHxx.Alarm1	31-42	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Math Channel	CHxx.Alarm2	31-42	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Math Channel	CHxx.Alarm3	31-42	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Math Channel	CHxx.Alarm4	31-42	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	31-42	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	31-42	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	31-42	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	31-42	**Double**, Float	Read/Write
Upper Scale Value of Math Channel*	CHxx.scale_Hi	31-42	**Double**, Float	Read Only
Lower Scale Value of Math Channel*	CHxx.scale_Lo	31-42	**Double**, Float	Read Only
Unit String of Math Channel*	CHxx.unit	01-42	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	01-42	**String**	Read Only
Status of Math Channel*	CHxx.status	01-42	**String**	Read Only
Lowest Math Channel*	CHA.Low		**Short,** Word, Byte	Read Only

Address Type	Format	Range	Data Type	Access
Highest Math Channel*	CHA.High		**Short**, Word, Byte	Read Only

*Data associated with these addresses are only read from the device at the start of a communications session. Once read, the values will not be refreshed until the server has been restarted or the "Reset" tag has been invoked. To invoke a reset, a non-zero value must be written to the Reset tag. Once the Reset tag has been invoked the driver will reinitialize all startup data from the device.

Alarm Setpoints
Data values for Alarm Setpoints that are undefined in the device will be returned as +INF. Data values can only be written to Alarm Setpoints that are defined in the device. Write operations to undefined Alarm Setpoints will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Alarm setpoint values are read one channel at a time. For devices with a large number of channels, increasing the scan rate of ASP items and/or reducing the number of active ASP items will increase the read performance of the PV and alarm data.

Scales
Data values for Scale_Hi and Scale_Lo for channels that are skipped will be returned as +INF.

Tag Names
For devices that do not support tag names and channels that have unspecified tag names, the driver will construct an internal tag name based on the channel number. For example, the tag name of address 'CH01' will be returned as 'CH01'.

General Device Data

Address Type	Format	Range	Data Type	Access
Administrator Level*	Admin		**Boolean**	Read Only
Date of Last Data	Date		**String**	Read Only
Time of Last Data	Time		**String**	Read Only
Model Name of Device*	Model		**String**	Read Only
Math Communication Data*	CDxx	01-12	**Float**	Read/Write
Control Math Execution	MathControl		**Short**, Word, Byte	Write Only
Reset Alarms	AlarmReset		**Boolean**	Write Only
Control Command and Response	Command		**String**	Read/Write
Previous Screen	PreScreen		**Boolean**	Write Only
Direct Reloading of Configuration	Reset		**Boolean**	Write Only

*The Admin address type has a value of '1' or 'true' when the user has logged on at the Administrator level and a value of '0' or 'false' when the user has logged on at the User level.

Math Communication Data
The CD address type is only valid for devices equipped with the math option and write operations to CD addresses for non-math equipped devices will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Note that CD addresses are initialized (read) at startup and will not be reread unless the server is restarted or the Reset tag is invoked. For more information, refer to **Note on Initialized Data**.

Model Name of Device
The Model address type will have a string value of 'DX100' or 'DX200', indicating the model series returned by the device.

Control Math Execution
The MathControl address type is only available for devices equipped with the math option; otherwise, write operations to the MathControl tag for non-math equipped devices will return an error.

Control Command and Response
The Command address allows the user to send a string command and receive a string response to and from the device. This allows the user to send any command to the device, including commands not directly supported by the driver. This tag is only available to users logged in at the Administrator level; otherwise, write operations will return an error.

Caution: Write operations using the Command address should be performed with extreme care.

Note 1: The actual number of addresses available for of each type depends on the configuration of the Yokogawa device. If the driver finds at Runtime that an address is not present in the device, it will post an error message and remove the tag from its scan list.

Note 2: Addresses that have Write Only access are assigned a default access of Read/Write. However, data values are unreadable for these addresses and the associated tags are not included in the scan list. The current data value for these tags will always be 0 for numeric data types and null string for string data types.

DX112 Addressing

The driver supports the following addresses for this device. The default data type for each address type is shown in **bold**.

Measured Channels

Address Type	Format	Range	Data Type	Access
Process Value of Channel	CHxx or CHxx.PV	01-12	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-12	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Channel	CHxx.Alarm1	01-12	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Channel	CHxx.Alarm2	01-12	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Channel	CHxx.Alarm3	01-12	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Channel	CHxx.Alarm4	01-12	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	01-12	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	01-12	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	01-12	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	01-12	**Double**, Float	Read/Write
Upper Scale Value of Channel*	CHxx.scale_Hi	01-12	**Double**, Float	Read Only
Lower Scale Value of Channel*	CHxx.scale_Lo	01-12	**Double**, Float	Read Only
Unit String of Channel*	CHxx.unit	01-12	**String**	Read Only
Tagname of Channel*	CHxx.tag	01-12	**String**	Read Only
Status of Channel*	CHxx.status	01-12	**String**	Read Only
Lowest Measuring Channel*	CH.Low		**Short**, Word, Byte	Read Only
Highest Measuring Channel*	CH.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Type	Access
Process Value of Math Channel	CHxx or CHxx.PV	31-42	**Double**, Float	Read Only

Address Type	Format	Range	Data Type	Access
Alarm Summary of Math Channel	CHxx.Alarm	31-42	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Math Channel	CHxx.Alarm1	31-42	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Math Channel	CHxx.Alarm2	31-42	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Math Channel	CHxx.Alarm3	31-42	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Math Channel	CHxx.Alarm4	31-42	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	31-42	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	31-42	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	31-42	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	31-42	**Double**, Float	Read/Write
Upper Scale Value of Math Channel*	CHxx.scale_Hi	31-42	**Double**, Float	Read Only
Lower Scale Value of Math Channel*	CHxx.scale_Lo	31-42	**Double**, Float	Read Only
Unit String of Math Channel*	CHxx.unit	01-42	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	01-42	**String**	Read Only
Status of Math Channel*	CHxx.status	01-42	**String**	Read Only
Lowest Math Channel*	CHA.Low		**Short,** Word, Byte	Read Only
Highest Math Channel*	CHA.High		**Short**, Word, Byte	Read Only

*Data associated with these addresses are only read from the device at the start of a communications session. Once read, the values will not be refreshed until the server has been restarted or the "Reset" tag has been invoked. To invoke a reset, a non zero value must be written to the Reset tag. Once the Reset tag has been invoked the driver will reinitialize all startup data from the device.

Alarm Setpoints
Data values for Alarm Setpoints that are undefined in the device will be returned as +INF. Data values can only be written to Alarm Setpoints that are defined in the device. Write operations to undefined Alarm Setpoints will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Alarm setpoint values are read one channel at a time. For devices with a large number of channels, increasing the scan rate of ASP items and/or reducing the number of active ASP items will increase the read performance of the PV and alarm data.

Scales
Data values for Scale_Hi and Scale_Lo for channels that are skipped will be returned as +INF.

Tag Names
For devices that do not support tag names and channels that have unspecified tag names, the driver will construct an internal tag name based on the channel number. For example, the tag name of address 'CH01' will be returned as 'CH01'.

General Device Data

Address Type	Format	Range	Data Type	Access
Administrator Level*	Admin		**Boolean**	Read Only
Date of Last Data	Date		**String**	Read Only
Time of Last Data	Time		**String**	Read Only
Model Name of Device*	Model		**String**	Read Only
Math Communication Data*	CDxx	01-12	**Float**	Read/Write
Control Math Execution	MathControl		**Short**, Word, Byte	Write Only

Address Type	Format	Range	Data Type	Access
Reset Alarms	AlarmReset		**Boolean**	Write Only
Control Command and Response	Command		**String**	Read/Write
Previous Screen	PreScreen		**Boolean**	Write Only
Direct Reloading of Configuration	Reset		**Boolean**	Write Only

*The Admin address type has a value of '1' or 'true' when the user has logged on at the Administrator level and a value of '0' or 'false' when the user has logged on at the User level.

Math Communication Data

The CD address type is only valid for devices equipped with the math option and write operations to CD addresses for non-math equipped devices will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Note that CD addresses are initialized (read) at startup and will not be reread unless the server is restarted or the Reset tag is invoked. For more information, refer to **Note on Initialized Data**.

Model Name of Device

The Model address type will have a string value of 'DX100' or 'DX200', indicating the model series returned by the device.

Control Math Execution

The MathControl address type is only available for devices equipped with the math option; otherwise, write operations to the MathControl tag for non-math equipped devices will return an error.

Control Command and Response

The Command address allows the user to send a string command and receive a string response to and from the device. This allows the user to send any command to the device, including commands not directly supported by the driver. This tag is only available to users logged in at the Administrator level; otherwise, write operations will return an error.

Caution: Write operations using the Command address should be performed with extreme care.

Note 1: The actual number of addresses available for of each type depends on the configuration of the Yokogawa device. If the driver finds at Runtime that an address is not present in the device, it will post an error message and remove the tag from its scan list.

Note 2: Addresses that have Write Only access are assigned a default access of Read/Write. However, data values are unreadable for these addresses and the associated tags are not included in the scan list. The current data value for these tags will always be 0 for numeric data types and null string for string data types.

DX204 Addressing

The driver supports the following addresses for this device. The default data type for each address type is shown in **bold**.

Measured Channels

Address Type	Format	Range	Data Type	Access
Process Value of Channel	CHxx or CHxx.PV	01-04	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-04	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Channel	CHxx.Alarm1	01-04	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Channel	CHxx.Alarm2	01-04	**Short**, Word, Byte	Read Only

Address Type	Format	Range	Data Type	Access
Alarm Level3 Status of Channel	CHxx.Alarm3	01-04	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Channel	CHxx.Alarm4	01-04	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	01-04	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	01-04	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	01-04	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	01-04	**Double**, Float	Read/Write
Upper Scale Value of Channel*	CHxx.scale_Hi	01-04	**Double**, Float	Read Only
Lower Scale Value of Channel*	CHxx.scale_Lo	01-04	**Double**, Float	Read Only
Unit String of Channel*	CHxx.unit	01-04	**String**	Read Only
Tagname of Channel*	CHxx.tag	01-04	**String**	Read Only
Status of Channel*	CHxx.status	01-04	**String**	Read Only
Lowest Measuring Channel*	CH.Low		**Short**, Word, Byte	Read Only
Highest Measuring Channel*	CH.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Type	Access
Process Value of Math Channel	CHxx or CHxx.PV	31-38	**Double**, Float	Read Only
Alarm Summary of Math Channel	CHxx.Alarm	31-38	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Math Channel	CHxx.Alarm1	31-38	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Math Channel	CHxx.Alarm2	31-38	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Math Channel	CHxx.Alarm3	31-38	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Math Channel	CHxx.Alarm4	31-38	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	31-38	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	31-38	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	31-38	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	31-38	**Double**, Float	Read/Write
Upper Scale Value of Math Channel*	CHxx.scale_Hi	31-38	**Double**, Float	Read Only
Lower Scale Value of Math Channel*	CHxx.scale_Lo	31-38	**Double**, Float	Read Only
Unit String of Math Channel*	CHxx.unit	01-38	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	01-38	**String**	Read Only
Status of Math Channel*	CHxx.status	01-38	**String**	Read Only
Lowest Math Channel*	CHA.Low		**Short,** Word, Byte	Read Only
Highest Math Channel*	CHA.High		**Short**, Word, Byte	Read Only

*Data associated with these addresses are only read from the device at the start of a communications session. Once read, the values will not be refreshed until the server has been restarted or the "Reset" tag has been invoked. To invoke a reset, a non-zero value must be written to the Reset tag. Once the Reset tag has been invoked the driver will reinitialize all startup data from the device.

Alarm Setpoints
Data values for Alarm Setpoints that are undefined in the device will be returned as +INF. Data values can only be written to Alarm Setpoints that are defined in the device. Write operations to undefined Alarm Setpoints will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Alarm setpoint values are read one channel at a time. For devices

with a large number of channels, increasing the scan rate of ASP items and/or reducing the number of active ASP items will increase the read performance of the PV and alarm data.

Scales
Data values for Scale_Hi and Scale_Lo for channels that are skipped will be returned as +INF.

Tag Names
For devices that do not support tag names and channels that have unspecified tag names, the driver will construct an internal tag name based on the channel number. For example, the tag name of address 'CH01' will be returned as 'CH01'.

General Device Data

Address Type	Format	Range	Data Type	Access
Administrator Level*	Admin		**Boolean**	Read Only
Date of Last Data	Date		**String**	Read Only
Time of Last Data	Time		**String**	Read Only
Model Name of Device*	Model		**String**	Read Only
Math Communication Data*	CDxx	01-08	**Float**	Read/Write
Control Math Execution	MathControl		**Short**, Word, Byte	Write Only
Reset Alarms	AlarmReset		**Boolean**	Write Only
Control Command and Response	Command		**String**	Read/Write
Previous Screen	PreScreen		**Boolean**	Write Only
Direct Reloading of Configuration	Reset		**Boolean**	Write Only

*The Admin address type has a value of '1' or 'true' when the user has logged on at the Administrator level and a value of '0' or 'false' when the user has logged on at the User level.

Math Communication Data
The CD address type is only valid for devices equipped with the math option and write operations to CD addresses for non-math equipped devices will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Note that CD addresses are initialized (read) at startup and will not be reread unless the server is restarted or the Reset tag is invoked. For more information, refer to **Note on Initialized Data**.

Model Name of Device
The Model address type will have a string value of 'DX100' or 'DX200', indicating the model series returned by the device.

Control Math Execution
The MathControl address type is only available for devices equipped with the math option; otherwise, write operations to the MathControl tag for non-math equipped devices will return an error.

Control Command and Response
The Command address allows the user to send a string command and receive a string response to and from the device. This allows the user to send any command to the device, including commands not directly supported by the driver. This tag is only available to users logged in at the Administrator level; otherwise, write operations will return an error.

Caution: Write operations using the Command address should be performed with extreme care.

Note 1: The actual number of addresses available for of each type depends on the configuration of the Yokogawa device. If the driver finds at Runtime that an address is not present in the device, it will post an error message and remove the tag from its scan list.

Note 2: Addresses that have Write Only access are assigned a default access of Read/Write. However, data values are unreadable for these addresses and the associated tags are not included in the scan list. The current data value for these tags will always be 0 for numeric data types and null string for string data types.

DX208 Addressing

The driver supports the following addresses for this device. The default data type for each address type is shown in **bold**.

Measured Channels

Address Type	Format	Range	Data Type	Access
Process Value of Channel	CHxx or CHxx.PV	01-08	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-08	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Channel	CHxx.Alarm1	01-08	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Channel	CHxx.Alarm2	01-08	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Channel	CHxx.Alarm3	01-08	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Channel	CHxx.Alarm4	01-08	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	01-08	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	01-08	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	01-08	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	01-08	**Double**, Float	Read/Write
Upper Scale Value of Channel*	CHxx.scale_Hi	01-08	**Double**, Float	Read Only
Lower Scale Value of Channel*	CHxx.scale_Lo	01-08	**Double**, Float	Read Only
Unit String of Channel*	CHxx.unit	01-08	**String**	Read Only
Tagname of Channel*	CHxx.tag	01-08	**String**	Read Only
Status of Channel*	CHxx.status	01-08	**String**	Read Only
Lowest Measuring Channel*	CH.Low		**Short**, Word, Byte	Read Only
Highest Measuring Channel*	CH.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Type	Access
Process Value of Math Channel	CHxx or CHxx.PV	31-38	**Double**, Float	Read Only
Alarm Summary of Math Channel	CHxx.Alarm	31-38	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Math Channel	CHxx.Alarm1	31-38	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Math Channel	CHxx.Alarm2	31-38	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Math Channel	CHxx.Alarm3	31-38	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Math Channel	CHxx.Alarm4	31-38	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	31-38	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	31-38	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	31-38	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	31-38	**Double**, Float	Read/Write
Upper Scale Value of Math Channel*	CHxx.scale_Hi	31-38	**Double**, Float	Read Only
Lower Scale Value of Math Channel*	CHxx.scale_Lo	31-38	**Double**, Float	Read Only

Address Type	Format	Range	Data Type	Access
Unit String of Math Channel*	CHxx.unit	01-38	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	01-38	**String**	Read Only
Status of Math Channel*	CHxx.status	01-38	**String**	Read Only
Lowest Math Channel*	CHA.Low		**Short**, Word, Byte	Read Only
Highest Math Channel*	CHA.High		**Short**, Word, Byte	Read Only

*Data associated with these addresses are only read from the device at the start of a communications session. Once read, the values will not be refreshed until the server has been restarted or the "Reset" tag has been invoked. To invoke a reset, a non-zero value must be written to the Reset tag. Once the Reset tag has been invoked the driver will reinitialize all startup data from the device.

Alarm Setpoints
Data values for Alarm Setpoints that are undefined in the device will be returned as +INF. Data values can only be written to Alarm Setpoints that are defined in the device. Write operations to undefined Alarm Setpoints will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Alarm setpoint values are read one channel at a time. For devices with a large number of channels, increasing the scan rate of ASP items and/or reducing the number of active ASP items will increase the read performance of the PV and alarm data.

Scales
Data values for Scale_Hi and Scale_Lo for channels that are skipped will be returned as +INF.

Tag Names
For devices that do not support tag names and channels that have unspecified tag names, the driver will construct an internal tag name based on the channel number. For example, the tag name of address 'CH01' will be returned as 'CH01'.

General Device Data

Address Type	Format	Range	Data Type	Access
Administrator Level*	Admin		**Boolean**	Read Only
Date of Last Data	Date		**String**	Read Only
Time of Last Data	Time		**String**	Read Only
Model Name of Device*	Model		**String**	Read Only
Math Communication Data*	CDxx	01-08	**Float**	Read/Write
Control Math Execution	MathControl		**Short**, Word, Byte	Write Only
Reset Alarms	AlarmReset		**Boolean**	Write Only
Control Command and Response	Command		**String**	Read/Write
Previous Screen	PreScreen		**Boolean**	Write Only
Direct Reloading of Configuration	Reset		**Boolean**	Write Only

*The Admin address type has a value of '1' or 'true' when the user has logged on at the Administrator level and a value of '0' or 'false' when the user has logged on at the User level.

Math Communication Data
The CD address type is only valid for devices equipped with the math option and write operations to CD addresses for non-math equipped devices will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Note that CD addresses are initialized

(read) at startup and will not be reread unless the server is restarted or the Reset tag is invoked. For more information, refer to **Note on Initialized Data**.

Model Name of Device
The Model address type will have a string value of 'DX100' or 'DX200', indicating the model series returned by the device.

Control Math Execution
The MathControl address type is only available for devices equipped with the math option; otherwise, write operations to the MathControl tag for non-math equipped devices will return an error.

Control Command and Response
The Command address allows the user to send a string command and receive a string response to and from the device. This allows the user to send any command to the device, including commands not directly supported by the driver. This tag is only available to users logged in at the Administrator level; otherwise, write operations will return an error.

Caution: Write operations using the Command address should be performed with extreme care.

Note 1: The actual number of addresses available for of each type depends on the configuration of the Yokogawa device. If the driver finds at Runtime that an address is not present in the device, it will post an error message and remove the tag from its scan list.

Note 2: Addresses that have Write Only access are assigned a default access of Read/Write. However, data values are unreadable for these addresses and the associated tags are not included in the scan list. The current data value for these tags will always be 0 for numeric data types and null string for string data types.

DX210 Addressing

The driver supports the following addresses for this device. The default data type for each address type is shown in **bold**.

Measured Channels

Address Type	Format	Range	Data Type	Access
Process Value of Channel	CHxx or CHxx.PV	01-10	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-10	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Channel	CHxx.Alarm1	01-10	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Channel	CHxx.Alarm2	01-10	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Channel	CHxx.Alarm3	01-10	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Channel	CHxx.Alarm4	01-10	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	01-10	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	01-10	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	01-10	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	01-10	**Double**, Float	Read/Write
Upper Scale Value of Channel*	CHxx.scale_Hi	01-10	**Double**, Float	Read Only
Lower Scale Value of Channel*	CHxx.scale_Lo	01-10	**Double**, Float	Read Only
Unit String of Channel*	CHxx.unit	01-10	**String**	Read Only
Tagname of Channel*	CHxx.tag	01-10	**String**	Read Only
Status of Channel*	CHxx.status	01-10	**String**	Read Only
Lowest Measuring Channel*	CH.Low		**Short**, Word, Byte	Read Only

Address Type	Format	Range	Data Type	Access
Highest Measuring Channel*	CH.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Type	Access
Process Value of Math Channel	CHxx or CHxx.PV	31-60	**Double**, Float	Read Only
Alarm Summary of Math Channel	CHxx.Alarm	31-60	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Math Channel	CHxx.Alarm1	31-60	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Math Channel	CHxx.Alarm2	31-60	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Math Channel	CHxx.Alarm3	31-60	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Math Channel	CHxx.Alarm4	31-60	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	31-60	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	31-60	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	31-60	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	31-60	**Double**, Float	Read/Write
Upper Scale Value of Math Channel*	CHxx.scale_Hi	31-60	**Double**, Float	Read Only
Lower Scale Value of Math Channel*	CHxx.scale_Lo	31-60	**Double**, Float	Read Only
Unit String of Math Channel*	CHxx.unit	01-60	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	01-60	**String**	Read Only
Status of Math Channel*	CHxx.status	01-60	**String**	Read Only
Lowest Math Channel*	CHA.Low		**Short,** Word, Byte	Read Only
Highest Math Channel*	CHA.High		**Short**, Word, Byte	Read Only

*Data associated with these addresses are only read from the device at the start of a communications session. Once read, the values will not be refreshed until the server has been restarted or the "Reset" tag has been invoked. To invoke a reset, a non-zero value must be written to the Reset tag. Once the Reset tag has been invoked the driver will reinitialize all startup data from the device.

Alarm Setpoints
Data values for Alarm Setpoints that are undefined in the device will be returned as +INF. Data values can only be written to Alarm Setpoints that are defined in the device. Write operations to undefined Alarm Setpoints will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Alarm setpoint values are read one channel at a time. For devices with a large number of channels, increasing the scan rate of ASP items and/or reducing the number of active ASP items will increase the read performance of the PV and alarm data.

Scales
Data values for Scale_Hi and Scale_Lo for channels that are skipped will be returned as +INF.

Tag Names
For devices that do not support tag names and channels that have unspecified tag names, the driver will construct an internal tag name based on the channel number. For example, the tag name of address 'CH01' will be returned as 'CH01'.

General Device Data

Address Type	Format	Range	Data Type	Access
Administrator Level*	Admin		**Boolean**	Read Only

Address Type	Format	Range	Data Type	Access
Date of Last Data	Date		**String**	Read Only
Time of Last Data	Time		**String**	Read Only
Model Name of Device*	Model		**String**	Read Only
Math Communication Data*	CDxx	01-30	**Float**	Read/Write
Control Math Execution	MathControl		**Short**, Word, Byte	Write Only
Reset Alarms	AlarmReset		**Boolean**	Write Only
Control Command and Response	Command		**String**	Read/Write
Previous Screen	PreScreen		**Boolean**	Write Only
Direct Reloading of Configuration	Reset		**Boolean**	Write Only

*The Admin address type has a value of '1' or 'true' when the user has logged on at the Administrator level and a value of '0' or 'false' when the user has logged on at the User level.

Math Communication Data
The CD address type is only valid for devices equipped with the math option and write operations to CD addresses for non-math equipped devices will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Note that CD addresses are initialized (read) at startup and will not be reread unless the server is restarted or the Reset tag is invoked. For more information, refer to **Note on Initialized Data**.

Model Name of Device
The Model address type will have a string value of 'DX100' or 'DX200', indicating the model series returned by the device.

Control Math Execution
The MathControl address type is only available for devices equipped with the math option; otherwise, write operations to the MathControl tag for non-math equipped devices will return an error.

Control Command and Response
The Command address allows the user to send a string command and receive a string response to and from the device. This allows the user to send any command to the device, including commands not directly supported by the driver. This tag is only available to users logged in at the Administrator level; otherwise, write operations will return an error.

Caution: Write operations using the Command address should be performed with extreme care.

Note 1: The actual number of addresses available for of each type depends on the configuration of the Yokogawa device. If the driver finds at Runtime that an address is not present in the device, it will post an error message and remove the tag from its scan list.

Note 2: Addresses that have Write Only access are assigned a default access of Read/Write. However, data values are unreadable for these addresses and the associated tags are not included in the scan list. The current data value for these tags will always be 0 for numeric data types and null string for string data types.

DX220 Addressing

The driver supports the following addresses for this device. The default data type for each address type is shown in **bold**.

Measured Channels

Address Type	Format	Range	Data Type	Access
Process Value of Channel	CHxx or CHxx.PV	01-20	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-20	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Channel	CHxx.Alarm1	01-20	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Channel	CHxx.Alarm2	01-20	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Channel	CHxx.Alarm3	01-20	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Channel	CHxx.Alarm4	01-20	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	01-20	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	01-20	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	01-20	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	01-20	**Double**, Float	Read/Write
Upper Scale Value of Channel*	CHxx.scale_Hi	01-20	**Double**, Float	Read Only
Lower Scale Value of Channel*	CHxx.scale_Lo	01-20	**Double**, Float	Read Only
Unit String of Channel*	CHxx.unit	01-20	**String**	Read Only
Tagname of Channel*	CHxx.tag	01-20	**String**	Read Only
Status of Channel*	CHxx.status	01-20	**String**	Read Only
Lowest Measuring Channel*	CH.Low		**Short**, Word, Byte	Read Only
Highest Measuring Channel*	CH.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Type	Access
Process Value of Math Channel	CHxx or CHxx.PV	31-60	**Double**, Float	Read Only
Alarm Summary of Math Channel	CHxx.Alarm	31-60	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Math Channel	CHxx.Alarm1	31-60	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Math Channel	CHxx.Alarm2	31-60	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Math Channel	CHxx.Alarm3	31-60	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Math Channel	CHxx.Alarm4	31-60	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	31-60	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	31-60	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	31-60	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	31-60	**Double**, Float	Read/Write
Upper Scale Value of Math Channel*	CHxx.scale_Hi	31-60	**Double**, Float	Read Only
Lower Scale Value of Math Channel*	CHxx.scale_Lo	31-60	**Double**, Float	Read Only
Unit String of Math Channel*	CHxx.unit	01-60	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	01-60	**String**	Read Only
Status of Math Channel*	CHxx.status	01-60	**String**	Read Only
Lowest Math Channel*	CHA.Low		**Short,** Word, Byte	Read Only
Highest Math Channel*	CHA.High		**Short**, Word, Byte	Read Only

*Data associated with these addresses are only read from the device at the start of a communications session. Once read, the values will not be refreshed until the server has been restarted or the "Reset" tag has been invoked. To invoke a reset, a non-zero value must be written to the Reset tag. Once the Reset tag has been invoked the driver will reinitialize all startup data from the device.

Alarm Setpoints

Data values for Alarm Setpoints that are undefined in the device will be returned as +INF. Data values can only be written to Alarm Setpoints that are defined in the device. Write operations to undefined Alarm Setpoints will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Alarm setpoint values are read one channel at a time. For devices with a large number of channels, increasing the scan rate of ASP items and/or reducing the number of active ASP items will increase the read performance of the PV and alarm data.

Scales
Data values for Scale_Hi and Scale_Lo for channels that are skipped will be returned as +INF.

Tag Names
For devices that do not support tag names and channels that have unspecified tag names, the driver will construct an internal tag name based on the channel number. For example, the tag name of address 'CH01' will be returned as 'CH01'.

General Device Data

Address Type	Format	Range	Data Type	Access
Administrator Level*	Admin		**Boolean**	Read Only
Date of Last Data	Date		**String**	Read Only
Time of Last Data	Time		**String**	Read Only
Model Name of Device*	Model		**String**	Read Only
Math Communication Data*	CDxx	01-30	**Float**	Read/Write
Control Math Execution	MathControl		**Short**, Word, Byte	Write Only
Reset Alarms	AlarmReset		**Boolean**	Write Only
Control Command and Response	Command		**String**	Read/Write
Previous Screen	PreScreen		**Boolean**	Write Only
Direct Reloading of Configuration	Reset		**Boolean**	Write Only

*The Admin address type has a value of '1' or 'true' when the user has logged on at the Administrator level and a value of '0' or 'false' when the user has logged on at the User level.

Math Communication Data
The CD address type is only valid for devices equipped with the math option and write operations to CD addresses for non-math equipped devices will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Note that CD addresses are initialized (read) at startup and will not be reread unless the server is restarted or the Reset tag is invoked. For more information, refer to **Note on Initialized Data**.

Model Name of Device
The Model address type will have a string value of 'DX100' or 'DX200', indicating the model series returned by the device.

Control Math Execution
The MathControl address type is only available for devices equipped with the math option; otherwise, write operations to the MathControl tag for non-math equipped devices will return an error.

Control Command and Response
The Command address allows the user to send a string command and receive a string response to and from the device. This allows the user to send any command to the device, including commands not directly

supported by the driver. This tag is only available to users logged in at the Administrator level; otherwise, write operations will return an error.

Caution: Write operations using the Command address should be performed with extreme care.

Note 1: The actual number of addresses available for of each type depends on the configuration of the Yokogawa device. If the driver finds at Runtime that an address is not present in the device, it will post an error message and remove the tag from its scan list.

Note 2: Addresses that have Write Only access are assigned a default access of Read/Write. However, data values are unreadable for these addresses and the associated tags are not included in the scan list. The current data value for these tags will always be 0 for numeric data types and null string for string data types.

DX230 Addressing

The driver supports the following addresses for this device. The default data type for each address type is shown in **bold**.

Measured Channels

Address Type	Format	Range	Data Type	Access
Process Value of Channel	CHxx or CHxx.PV	01-30	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-30	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Channel	CHxx.Alarm1	01-30	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Channel	CHxx.Alarm2	01-30	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Channel	CHxx.Alarm3	01-30	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Channel	CHxx.Alarm4	01-30	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	01-30	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	01-30	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	01-30	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	01-30	**Double**, Float	Read/Write
Upper Scale Value of Channel*	CHxx.scale_Hi	01-30	**Double**, Float	Read Only
Lower Scale Value of Channel*	CHxx.scale_Lo	01-30	**Double**, Float	Read Only
Unit String of Channel*	CHxx.unit	01-30	**String**	Read Only
Tagname of Channel*	CHxx.tag	01-30	**String**	Read Only
Status of Channel*	CHxx.status	01-30	**String**	Read Only
Lowest Measuring Channel*	CH.Low		**Short**, Word, Byte	Read Only
Highest Measuring Channel*	CH.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Type	Access
Process Value of Math Channel	CHxx or CHxx.PV	31-60	**Double**, Float	Read Only
Alarm Summary of Math Channel	CHxx.Alarm	31-60	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Math Channel	CHxx.Alarm1	31-60	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Math Channel	CHxx.Alarm2	31-60	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Math Channel	CHxx.Alarm3	31-60	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Math Channel	CHxx.Alarm4	31-60	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	31-60	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	31-60	**Double**, Float	Read/Write

Address Type	Format	Range	Data Type	Access
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	31-60	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	31-60	**Double**, Float	Read/Write
Upper Scale Value of Math Channel*	CHxx.scale_Hi	31-60	**Double**, Float	Read Only
Lower Scale Value of Math Channel*	CHxx.scale_Lo	31-60	**Double**, Float	Read Only
Unit String of Math Channel*	CHxx.unit	01-60	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	01-60	**String**	Read Only
Status of Math Channel*	CHxx.status	01-60	**String**	Read Only
Lowest Math Channel*	CHA.Low		**Short,** Word, Byte	Read Only
Highest Math Channel*	CHA.High		**Short**, Word, Byte	Read Only

*Data associated with these addresses are only read from the device at the start of a communications session. Once read, the values will not be refreshed until the server has been restarted or the "Reset" tag has been invoked. To invoke a reset, a non-zero value must be written to the Reset tag. Once the Reset tag has been invoked the driver will reinitialize all startup data from the device.

Alarm Setpoints
Data values for Alarm Setpoints that are undefined in the device will be returned as +INF. Data values can only be written to Alarm Setpoints that are defined in the device. Write operations to undefined Alarm Setpoints will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Alarm setpoint values are read one channel at a time. For devices with a large number of channels, increasing the scan rate of ASP items and/or reducing the number of active ASP items will increase the read performance of the PV and alarm data.

Scales
Data values for Scale_Hi and Scale_Lo for channels that are skipped will be returned as +INF.

Tag Names
For devices that do not support tag names and channels that have unspecified tag names, the driver will construct an internal tag name based on the channel number. For example, the tag name of address 'CH01' will be returned as 'CH01'.

General Device Data

Address Type	Format	Range	Data Type	Access
Administrator Level*	Admin		**Boolean**	Read Only
Date of Last Data	Date		**String**	Read Only
Time of Last Data	Time		**String**	Read Only
Model Name of Device*	Model		**String**	Read Only
Math Communication Data*	CDxx	01-30	**Float**	Read/Write
Control Math Execution	MathControl		**Short**, Word, Byte	Write Only
Reset Alarms	AlarmReset		**Boolean**	Write Only
Control Command and Response	Command		**String**	Read/Write
Previous Screen	PreScreen		**Boolean**	Write Only
Direct Reloading of Configuration	Reset		**Boolean**	Write Only

*The Admin address type has a value of '1' or 'true' when the user has logged on at the Administrator level and a value of '0' or 'false' when the user has logged on at the User level.

Math Communication Data
The CD address type is only valid for devices equipped with the math option and write operations to CD addresses for non-math equipped devices will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Note that CD addresses are initialized (read) at startup and will not be reread unless the server is restarted or the Reset tag is invoked. For more information, refer to **Note on Initialized Data**.

Model Name of Device
The Model address type will have a string value of 'DX100' or 'DX200', indicating the model series returned by the device.

Control Math Execution
The MathControl address type is only available for devices equipped with the math option; otherwise, write operations to the MathControl tag for non-math equipped devices will return an error.

Control Command and Response
The Command address allows the user to send a string command and receive a string response to and from the device. This allows the user to send any command to the device, including commands not directly supported by the driver. This tag is only available to users logged in at the Administrator level; otherwise, write operations will return an error.

Caution: Write operations using the Command address should be performed with extreme care.

Note 1: The actual number of addresses available for of each type depends on the configuration of the Yokogawa device. If the driver finds at Runtime that an address is not present in the device, it will post an error message and remove the tag from its scan list.

Note 2: Addresses that have Write Only access are assigned a default access of Read/Write. However, data values are unreadable for these addresses and the associated tags are not included in the scan list. The current data value for these tags will always be 0 for numeric data types and null string for string data types.

MV100 Addressing

The driver supports the following addresses for this device. The default data type for each address type is shown in **bold**.

Measured Channels

Address Type	Format	Range	Data Type	Access
Process Value of Channel	CHxx or CHxx.PV	01-12	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-12	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Channel	CHxx.Alarm1	01-12	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Channel	CHxx.Alarm2	01-12	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Channel	CHxx.Alarm3	01-12	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Channel	CHxx.Alarm4	01-12	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	01-12	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	01-12	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	01-12	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	01-12	**Double**, Float	Read/Write
Upper Scale Value of Channel*	CHxx.scale_Hi	01-12	**Double**, Float	Read Only
Lower Scale Value of Channel*	CHxx.scale_Lo	01-12	**Double**, Float	Read Only

Address Type	Format	Range	Data Type	Access
Unit String of Channel*	CHxx.unit	01-12	**String**	Read Only
Tagname of Channel*	CHxx.tag	01-12	**String**	Read Only
Status of Channel*	CHxx.status	01-12	**String**	Read Only
Precision of Channel*	CHxx.Precision	01-12	**Short,** Word, Byte	Read Only
Lowest Measuring Channel*	CH.Low		**Short**, Word, Byte	Read Only
Highest Measuring Channel*	CH.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Type	Access
Process Value of Math Channel	CHxx or CHxx.PV	31-42	**Double**, Float	Read Only
Alarm Summary of Math Channel	CHxx.Alarm	31-42	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Math Channel	CHxx.Alarm1	31-42	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Math Channel	CHxx.Alarm2	31-42	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Math Channel	CHxx.Alarm3	31-42	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Math Channel	CHxx.Alarm4	31-42	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	31-42	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	31-42	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	31-42	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	31-42	**Double**, Float	Read/Write
Upper Scale Value of Math Channel*	CHxx.scale_Hi	31-42	**Double**, Float	Read Only
Lower Scale Value of Math Channel*	CHxx.scale_Lo	31-42	**Double**, Float	Read Only
Unit String of Math Channel*	CHxx.unit	01-42	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	01-42	**String**	Read Only
Status of Math Channel*	CHxx.status	01-42	**String**	Read Only
Precision of Channel*	CHxx.Precision	01-42	**Short,** Word, Byte	Read Only
Lowest Math Channel*	CHA.Low		**Short,** Word, Byte	Read Only
Highest Math Channel*	CHA.High		**Short**, Word, Byte	Read Only

*Data associated with these addresses are only read from the device at the start of a communications session. Once read, the values will not be refreshed until the server has been restarted or the "Reset" tag has been invoked. To invoke a reset, a non-zero value must be written to the Reset tag. Once the Reset tag has been invoked the driver will reinitialize all startup data from the device.

Alarm Setpoints
Data values for Alarm Setpoints that are undefined in the device will be returned as +INF. Data values can only be written to Alarm Setpoints that are defined in the device. Write operations to undefined Alarm Setpoints will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Alarm setpoint values are read one channel at a time. For devices with a large number of channels, increasing the scan rate of ASP items and/or reducing the number of active ASP items will increase the read performance of the PV and alarm data.

Scales
Data values for Scale_Hi and Scale_Lo for channels that are skipped will be returned as +INF.

Tag Names

For devices that do not support tag names and channels that have unspecified tag names, the driver will construct an internal tag name based on the channel number. For example, the tag name of address 'CH01' will be returned as 'CH01'.

General Device Data

Address Type	Format	Range	Data Type	Access
Administrator Level*	Admin		**Boolean**	Read Only
Date of Last Data	Date		**String**	Read Only
Time of Last Data	Time		**String**	Read Only
Model Name of Device*	Model		**String**	Read Only
Math Communication Data*	CDxx	01-30	**Float**	Read/Write
Control Math Execution	MathControl		**Short**, Word, Byte	Write Only
Reset Alarms	AlarmReset		**Boolean**	Write Only
Control Command and Response	Command		**String**	Read/Write
Previous Screen	PreScreen		**Boolean**	Write Only
Direct Reloading of Configuration	Reset		**Boolean**	Write Only

* The Admin address type has a value of '1' or 'true' when the user has logged on at the Administrator level and a value of '0' or 'false' when the user has logged on at the User level.

Math Communication Data
The CD address type is only valid for devices equipped with the math option and write operations to CD addresses for non-math equipped devices will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Note that CD addresses are initialized (read) at startup and will not be reread unless the server is restarted or the Reset tag is invoked. For more information, refer to **Note on Initialized Data**.

Model Name of Device
The Model address type will have a string value of 'DX100' or 'DX200', indicating the model series returned by the device.

Control Math Execution
The MathControl address type is only available for devices equipped with the math option; otherwise, write operations to the MathControl tag for non-math equipped devices will return an error.

Control Command and Response
The Command address allows the user to send a string command and receive a string response to and from the device. This allows the user to send any command to the device, including commands not directly supported by the driver. This tag is only available to users logged in at the Administrator level; otherwise, write operations will return an error.

Caution: Write operations using the Command address should be performed with extreme care.

Note 1: The actual number of addresses available for of each type depends on the configuration of the Yokogawa device. If the driver finds at Runtime that an address is not present in the device, it will post an error message and remove the tag from its scan list.

Note 2: Addresses that have Write Only access are assigned a default access of Read/Write. However, data values are unreadable for these addresses and the associated tags are not included in the scan list. The current data value for these tags will always be 0 for numeric data types and null string for string data types.

MV200 Addressing

The driver supports the following addresses for this device. The default data type for each address type is shown in **bold**.

Measured Channels

Address Type	Format	Range	Data Type	Access
Process Value of Channel	CHxx or CHxx.PV	01-30	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-30	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Channel	CHxx.Alarm1	01-30	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Channel	CHxx.Alarm2	01-30	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Channel	CHxx.Alarm3	01-30	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Channel	CHxx.Alarm4	01-30	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	01-30	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	01-30	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	01-30	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	01-30	**Double**, Float	Read/Write
Upper Scale Value of Channel*	CHxx.scale_Hi	01-30	**Double**, Float	Read Only
Lower Scale Value of Channel*	CHxx.scale_Lo	01-30	**Double**, Float	Read Only
Unit String of Channel*	CHxx.unit	01-30	**String**	Read Only
Tagname of Channel*	CHxx.tag	01-30	**String**	Read Only
Status of Channel*	CHxx.status	01-30	**String**	Read Only
Precision of Channel*	CHxx.Precision	01-30	**Short,** Word, Byte	Read Only
Lowest Measuring Channel*	CH.Low		**Short**, Word, Byte	Read Only
Highest Measuring Channel*	CH.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Type	Access
Process Value of Math Channel	CHxx or CHxx.PV	31-60	**Double**, Float	Read Only
Alarm Summary of Math Channel	CHxx.Alarm	31-60	**Short**, Word, Byte	Read Only
Alarm Level1 Status of Math Channel	CHxx.Alarm1	31-60	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Math Channel	CHxx.Alarm2	31-60	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Math Channel	CHxx.Alarm3	31-60	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Math Channel	CHxx.Alarm4	31-60	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	CHxx.ASP1	31-60	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	CHxx.ASP2	31-60	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	CHxx.ASP3	31-60	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	CHxx.ASP4	31-60	**Double**, Float	Read/Write
Upper Scale Value of Math Channel*	CHxx.scale_Hi	31-60	**Double**, Float	Read Only
Lower Scale Value of Math Channel*	CHxx.scale_Lo	31-60	**Double**, Float	Read Only
Unit String of Math Channel*	CHxx.unit	01-60	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	01-60	**String**	Read Only
Status of Math Channel*	CHxx.status	01-60	**String**	Read Only
Precision of Channel*	CHxx.Precision	01-60	**Short,** Word, Byte	Read Only
Lowest Math Channel*	CHA.Low		**Short,** Word, Byte	Read Only

Address Type	Format	Range	Data Type	Access
Highest Math Channel*	CHA.High		**Short**, Word, Byte	Read Only

*Data associated with these addresses are only read from the device at the start of a communications session. Once read, the values will not be refreshed until the server has been restarted or the "Reset" tag has been invoked. To invoke a reset, a non-zero value must be written to the Reset tag. Once the Reset tag has been invoked the driver will reinitialize all startup data from the device.

Alarm Setpoints
Data values for Alarm Setpoints that are undefined in the device will be returned as +INF. Data values can only be written to Alarm Setpoints that are defined in the device. Write operations to undefined Alarm Setpoints will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Alarm setpoint values are read one channel at a time. For devices with a large number of channels, increasing the scan rate of ASP items and/or reducing the number of active ASP items will increase the read performance of the PV and alarm data.

Scales
Data values for Scale_Hi and Scale_Lo for channels that are skipped will be returned as +INF.

Tag Names
For devices that do not support tag names and channels that have unspecified tag names, the driver will construct an internal tag name based on the channel number. For example, the tag name of address 'CH01' will be returned as 'CH01'.

General Device Data

Address Type	Format	Range	Data Type	Access
Administrator Level*	Admin		**Boolean**	Read Only
Date of Last Data	Date		**String**	Read Only
Time of Last Data	Time		**String**	Read Only
Model Name of Device*	Model		**String**	Read Only
Math Communication Data*	CDxx	01-30	**Float**	Read/Write
Control Math Execution	MathControl		**Short**, Word, Byte	Write Only
Reset Alarms	AlarmReset		**Boolean**	Write Only
Control Command and Response	Command		**String**	Read/Write
Previous Screen	PreScreen		**Boolean**	Write Only
Direct Reloading of Configuration	Reset		**Boolean**	Write Only

*The Admin address type has a value of '1' or 'true' when the user has logged on at the Administrator level and a value of '0' or 'false' when the user has logged on at the User level.

Math Communication Data
The CD address type is only valid for devices equipped with the math option and write operations to CD addresses for non-math equipped devices will return an error. Write operations are available only for users logged in at the Administrator level and will return an error otherwise. Note that CD addresses are initialized (read) at startup and will not be reread unless the server is restarted or the Reset tag is invoked. For more information, refer to **Note on Initialized Data**.

Model Name of Device
The Model address type will have a string value of 'DX100' or 'DX200', indicating the model series returned by the device.

Control Math Execution

The MathControl address type is only available for devices equipped with the math option; otherwise, write operations to the MathControl tag for non-math equipped devices will return an error.

Control Command and Response

The Command address allows the user to send a string command and receive a string response to and from the device. This allows the user to send any command to the device, including commands not directly supported by the driver. This tag is only available to users logged in at the Administrator level; otherwise, write operations will return an error.

Caution: Write operations using the Command address should be performed with extreme care.

Note 1: The actual number of addresses available for of each type depends on the configuration of the Yokogawa device. If the driver finds at Runtime that an address is not present in the device, it will post an error message and remove the tag from its scan list.

Note 2: Addresses that have Write Only access are assigned a default access of Read/Write. However, data values are unreadable for these addresses and the associated tags are not included in the scan list. The current data value for these tags will always be 0 for numeric data types and null string for string data types.

Automatic Tag Database Generation

This driver's Automatic Tag Database Generation features have been designed to make configuring the OPC application a plug-and-play operation. It can be configured to automatically build a list of OPC tags within the OPC Server that correspond to device-specific data. The automatically-generated OPC tags can then be browsed from the OPC client.

The tags that are generated depend on the nature of the driver. If the target device supports its own local tag database, the driver will read the device's tag information and use this data to generate OPC tags within the OPC Server. If the device does not natively support its own named tags, the driver will create a list of tags based on driver-specific information. An example of these two conditions is as follows:

1. A data acquisition system that supports its own local tag database. The driver will use the tag names found in the device to build the OPC Server's OPC tags.

2. An Ethernet I/O system that supports I/O module type detection. The driver will automatically generate OPC tags in the OPC Server that are based on the types of I/O modules that are plugged into the Ethernet I/O rack.

Automatic tag database generation is completely configurable. The following dialog is used to define how the OPC Server and the associated communications driver will handle Automatic Tag Database Generation.

The **Automatic tag database generation on device startup** selection is used to configure when OPC tags will be automatically generated. Descriptions of the options are as follows:

- **Do not generate on startup:** This option prevents the driver from adding any OPC tags to the OPC Server's tag space. This is the default setting.
- **Always generate on startup:** This option causes the driver to evaluate the device for tag information. OPC tags will be added to the tag space of the server each time the server is launched.
- **Generate on first startup:** This option causes the driver to evaluate the target device for tag information the first time the OPC Server project runs. OPC tags will be added to the server tag space as needed.

Note: Any tags that are added to the server's tag space must be saved with the project. The OPC Server project can be configured to automatically save from the **Tools** | **Options** menu.

When automatic tag generation is enabled, the server needs to know what to do with the OPC tags that were added from previous runs (or with OPC tags that have been added or modified after being added by the communications driver originally). The selection **Perform the following action** controls how the server will handle OPC tags that were automatically generated and currently exist in the OPC Server project. This feature prevents automatically-generated tags from piling up in the server. In the Ethernet I/O example above, this would occur if users continued to change the I/O modules in the rack while the OPC Server was configured to always generate new OPC tags on startup. Under this condition, tags would be added to the server every time the communications driver detected a new I/O module. If the old tags are not removed, they will accumulate in the server's tag space. Descriptions of the selections are as follows:

1. **Delete on create:** This option allows the server to remove any tags that had previously been added to the tag space before the communications driver can add any new tags. This is the default setting.

2. **Overwrite as necessary:** This option allows the server to only remove tags that the communications driver will replace with new tags. Any tags that are not being overwritten will remain in the server's tag space.

3. **Do not overwrite:** This option prevents the server from removing any tags that had previously been generated or that already exist in the server. With this selection, the communications driver can only add tags that are completely new.

4. **Do not overwrite, log error:** This option has the same effect as the third, but also posts an error message to the OPC Server's Event Log when a tag overwrite would have occurred.

Note: The removal of OPC tags not only affects tags that have been automatically generated by the communications driver, but also any tags that have been added using names that match generated tags. It is recommended that users avoid adding tags to the server using names that match tags that may be automatically generated by the driver.

Add generated tags to the following group can be used to keep automatically-generated tags from mixing with tags that have been entered manually. This parameter specifies a sub group that will be used when adding all automatically-generated tags for this device. The name of the sub group can be up to 31 characters in length. The following image displays how this parameter affects where automatically-generated tags are placed in the server's tag space. It provides a root branch to which all automatically-generated tags will be added.
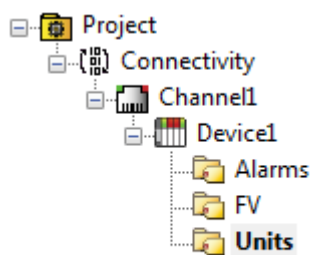
No sub group specified.
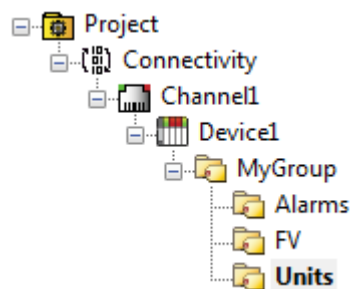
Sub group named MyGroup specified.

Auto Create manually initiates the creation of automatically-generated OPC tags, and also forces the communications driver to reevaluate the device for possible tag changes. It can also be accessed from the System Tags, thus allowing the OPC client application to initiate tag database creation.

Error Descriptions

The following error/warning messages may be generated. Click on the link for a description of the message.

Address Validation
Address '<address>' is out of range for the specified device or register
Data Type '<type>' is not valid for device address '<address>'
Device address '<address>' contains a syntax error
Device address '<address>' is Read Only
Missing address

Serial Communications
Communications error on '<channel name>' [<error mask>]
COMn does not exist
COMn is in use by another application
Error opening COMn
Unable to set comm parameters on COMn

Device Status Messages
Device '<device name>' is not responding
Unable to write to '<address>' on device '<device name>

Address '<address>' is out of range for the specified device or register

Error Type:
Warning

Possible Cause:
A tag address that has been specified dynamically references a location that is beyond the range of supported locations for the device.

Solution:
Verify the address is correct; if it is not, re-enter it in the client application.

Data Type '<type>' is not valid for device address '<address>'

Error Type:
Warning

Possible Cause:
A tag address that has been specified dynamically has been assigned an invalid data type.

Solution:
Modify the requested data type in the client application.

Device address '<address>' contains a syntax error

Error Type:
Warning

Possible Cause:

A tag address that has been specified dynamically contains one or more invalid characters.

Solution:
Re-enter the address in the client application.

Device address '<address>' is Read Only

Error Type:
Warning

Possible Cause:
A tag address that has been specified dynamically has a requested access mode that is not compatible with what the device supports for that address.

Solution:
Change the access mode in the client application.

Missing address

Error Type:
Warning

Possible Cause:
A tag address that has been specified dynamically has no length.

Solution:
Re-enter the address in the client application.

Communications error on '<channel name>' [<error mask>]

Error Type:
Serious

Error Mask Definitions:
B = Hardware break detected.
F = Framing error.
E = I/O error.
O = Character buffer overrun.
R = RX buffer overrun.
P = Received byte parity error.
T = TX buffer full.

Possible Cause:

1. The serial connection between the device and the host PC is bad.

2. The communications parameters for the serial connection are incorrect.

Solution:

1. Verify the cabling between the PC and the PLC device.

2. Verify that the specified communications parameters match those of the device.

COMn does not exist

Error Type:
Fatal

Possible Cause:
The specified COM port is not present on the target computer.

Solution:
Verify that the proper COM port has been selected.

COMn is in use by another application

Error Type:
Fatal

Possible Cause:
The serial port assigned to a device is being used by another application.

Solution:
1. Verify that the correct port has been assigned to the channel.

2. Verify that only one copy of the current project is running.

Error opening COMn

Error Type:
Fatal

Possible Cause:
The specified COM port could not be opened due to an internal hardware or software problem on the target computer.

Solution:
Verify that the COM port is functional and may be accessed by other Windows applications.

Unable to set comm parameters on COMn

Error Type:
Fatal

Possible Cause:
The serial parameters for the specified COM port are not valid.

Solution:
Verify the serial parameters and make any necessary changes.

Device '<device name>' is not responding

Error Type:
Serious

Possible Cause:

1. The connection between the device and the host PC is broken.

2. The IP address assigned to the device is incorrect.

3. The connection cannot be established in the specified timeout period.

4. The response from the device took longer to receive than the amount of time specified in the "Request Timeout" device setting.

Solution:

1. Verify the cabling between the PC and the PLC device.

2. Verify the IP address given to the named device matches that of the actual device.

3. Increase the Connect Timeout value in the Timeout page of Device Properties.

4. Increase the Request Timeout setting so that the entire response can be handled.

Unable to write to '<address>' on device '<device name>'

Error Type:
Serious

Possible Cause:

1. The connection between the device and the host PC is broken.

2. The named device may have been assigned an incorrect IP address.

3. The address specified may be Read Only or may not exist in the current device.

Solution:

1. Verify the cabling between the PC and the PLC device.

2. Verify the IP address given to the named device matches that of the actual device.

3. Check address availability for the device.

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