Yokogawa CX Ethernet Driver Help

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Yokogawa CX Ethernet Driver Help

Help version 1.021

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Overview

The Yokogawa CX Ethernet Driver provides an easy and reliable way to connect Yokogawa CX Ethernet 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 Ethernet TCP communications.

Device Setup

Supported Devices

CX1006
CX2410
CX1206
CX2420
CX2010
CX2610
CX2020
CX2620
CX2210
CX2220

Connection Timeout

This parameter specifies the time that the driver will wait for a connection to be made with a device. Depending on network load, the connect time may vary with each connection attempt. The valid range is 1 to 30 seconds. The default setting is 3 seconds.

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 retries.

Note: For more information on timeouts and retries, refer to the OPC server's help file.

Device ID

Yokogawa devices are networked using standard IP addressing. In general, the Device ID has the following format: *YYY.YYY.YYY.YYY*, where *YYY* designates the device IP address. Each *YYY* byte should be in the range of 0 to 255.

Device Settings

The CX unit should be configured with the Keep Alive function enabled. This allows the CX unit to drop the connection if there are no responses to periodic test packets at the TCP level. The function is set in the Communication (Control –Login Time out-) dialog in Setup Mode.

Note: For more information, refer to the Yokogawa CX instruction manual.

Cable Diagrams

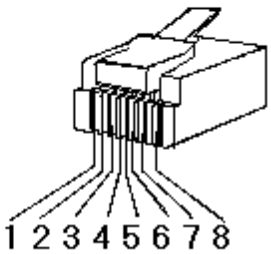
Patch Cable (Straight Through)

TD + 1	OR/WHT	OR/WHT	1 TD +
TD - 2	OR	OR	2 TD -
RD + 3	GRN/WHT	GRN/WHT	3 RD +
4	BLU	BLU	4
5	BLU/WHT	BLU/WHT	5
RD - 6	GRN	GRN	6 RD -
7	BRN/WHT	BRN/WHT	7
8	BRN	BRN	8
RJ45			RJ45

Crossover Cable

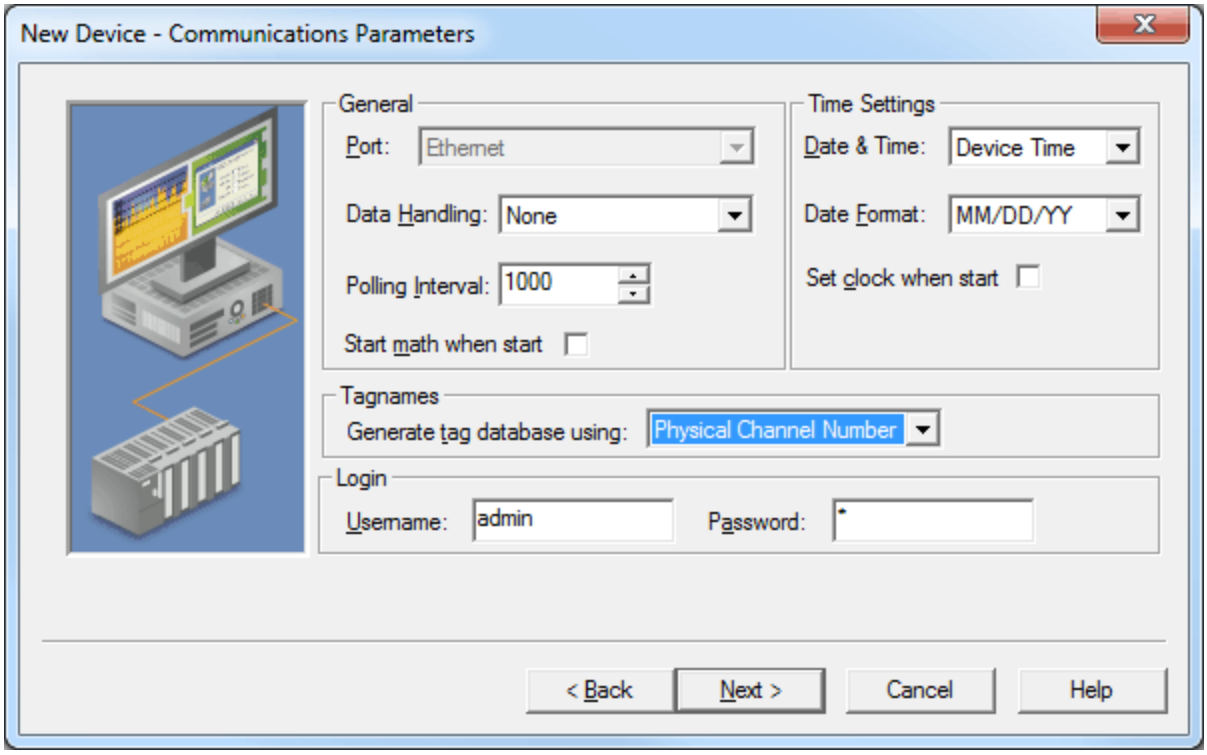
TD + 1	OR/WHT	GRN/WHT	1 TD +
TD - 2	OR	GRN	2 TD -
RD + 3	GRN/WHT	OR/WHT	3 RD +
4	BLU	BLU	4
5	BLU/WHT	BLU/WHT	5
RD - 6	GRN	OR	6 RD -
7	BRN/WHT	BRN/WHT	7
8	BRN	BRN	8
RJ45			RJ45

10 BaseT



8-pin RJ45

Communications Parameters



Descriptions of the parameters are as follows:

- **Port:** This parameter specifies the port number the remote device will be configured to use. This driver is currently set to use the Ethernet Exclusive port (Port Number 34150) only, and requires Winsock V1.1 or higher.
- **Data Handling:** This parameter specifies how the driver will return specific data values for numerical out of range and error conditions that are received from the device. Options include None, +INF, and -INF. The default setting is None. For more information, refer to **Data Handling**.
- **Polling Interval:** This parameter specifies a fixed time interval for all communications with a device. It can be used to prevent the driver from making excessive requests to the device, and to prevent the OPC client from forcing the driver to run at its maximum update rate. The default setting is 1000.
- **Start math when 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.

  Note: When math is stopped manually on the device, the server must be restarted in order to initiate the command the next time a connection is made with a client application.
- **Date & Time:** This parameter 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, this option will cause the Date and Time tags to 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, this option will cause the Date and Time tags to return the date and time that the requested data was returned from the device based on the internal system clock.
- **Date Format:** This parameter 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).
- **Set clock when start:** When checked, this option informs 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 parameter specifies the origin of the tag name used when automatically generating a tag database. Options include Physical Channel Number and Device Tag Name. The default setting is Physical Channel Number. Descriptions of the options are as follows:

    - **Physical Channel Number:** When selected, the driver will generate tag names based on the channel number of an item. For example, "CH01" or " CH01_alarm1".
    - **Device Tag Name:** When selected, the driver will generate tag names using the tag name returned by the device for a channel. For example, "Flow" or "Flow_alarm1".
- **Username:** This parameter specifies the registered username that is required by CX devices for login. When the device is configured with the login function enabled, only users that are registered can login to the CX. A maximum of 16 alphanumeric characters are allowed. The username is case sensitive. The default setting is admin.

  Note: Users must specify a user level in order to communicate with CX devices regardless of whether it is configured with the login function disabled. Enter the username "admin" or "user" to indicate the user level. In this case, a password is not required.
- **Password:** This parameter specifies the username's registered password for when the device is configured with the login function enabled. A maximum of 6 alphanumeric characters are allowed. The password entry will not be displayed on the screen.

Data Handling

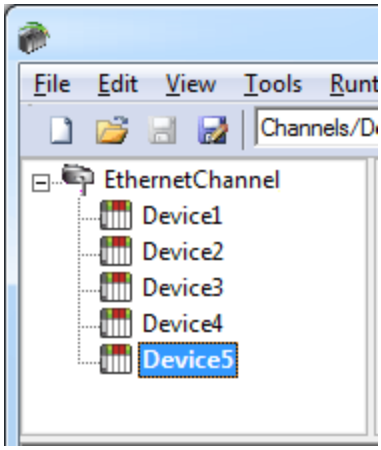
The Data Handling parameter specifies how the driver will return specific data values for numerical out of range and error conditions that are received from the device. Options include None, +INF, and -INF. Descriptions of the options are as follows:

- **None:** When selected, the 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, the special data values will be returned as a numerical representation of positive infinity (#INF). The exception is an Under Range condition, which will always be returned as negative infinity.
- **-INF:** When selected, the special data values will be returned as a numerical representation of negative infinity (-#INF). The exception is an Over Range condition, which will always be returned as positive infinity.

Optimizing Ethernet Communications

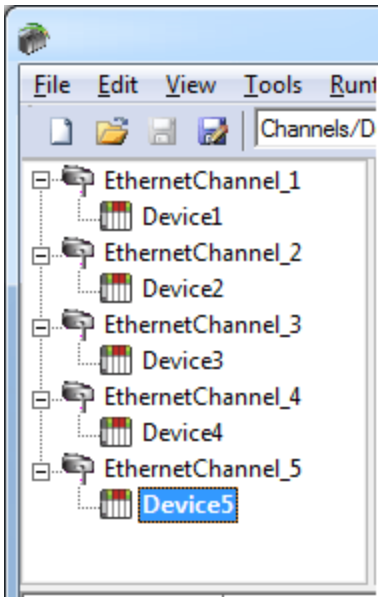
The Yokogawa CX Ethernet Driver has been designed to provide the best performance with the least amount of impact on the system's overall performance. While the Yokogawa CX Ethernet Driver is fast, there are a couple of guidelines that can be used in order to control and optimize the application and gain maximum performance.

This server refers to communications protocols like Yokogawa CX Ethernet Device as a channel. Each channel defined in the application represents a separate path of execution in the server. Once a channel has been defined, a series of devices must then be defined under that channel. Each of these devices represents a single Yokogawa CX Ethernet Device from which data will be collected. While this approach to defining the application will provide a high level of performance, it won't take full advantage of the Yokogawa CX Ethernet Driver or the network. An example of how the application may appear when configured using a single channel is shown below.



Each device appears under a single Yokogawa CX Ethernet Device channel. In this configuration, the driver must move from one device to the next as quickly as possible in order to gather information at an effective rate. As more devices are added or more information is requested from a single device, the overall update rate begins to suffer.

If the Yokogawa CX Ethernet Driver could only define one single channel, then the example shown above would be the only option available; however, the Yokogawa CX Ethernet Driver can define multiple channels. Using multiple channels distributes the data collection workload by simultaneously issuing multiple requests to the network. An example of how the same application may appear when configured using multiple channels to improve performance is shown below.



Each device has now been defined under its own channel. In this new configuration, a single path of execution is dedicated to the task of gathering data from each device. If the application has 16 or fewer devices, it can be optimized exactly how it is shown here.

The performance will improve even if the application has more than 16 devices. While 16 or fewer devices may be ideal, the application will still benefit from additional channels. Although by spreading the device load across all channels will cause the server to move from device to device again, it can now do so with far less devices to process on a single channel.

Data Types Description

Data Type	Description
Boolean	Single bit
Byte	Unsigned 8 bit value bit 0 is the low bit bit 7 is the high bit
Word	Unsigned 16 bit value bit 0 is the low bit bit 15 is the high bit
Short	Signed 16 bit value bit 0 is the low bit bit 14 is the high bit bit 15 is the sign bit
Float	32 bit floating point value
Double	64 bit floating point value
String	Null terminated ASCII string

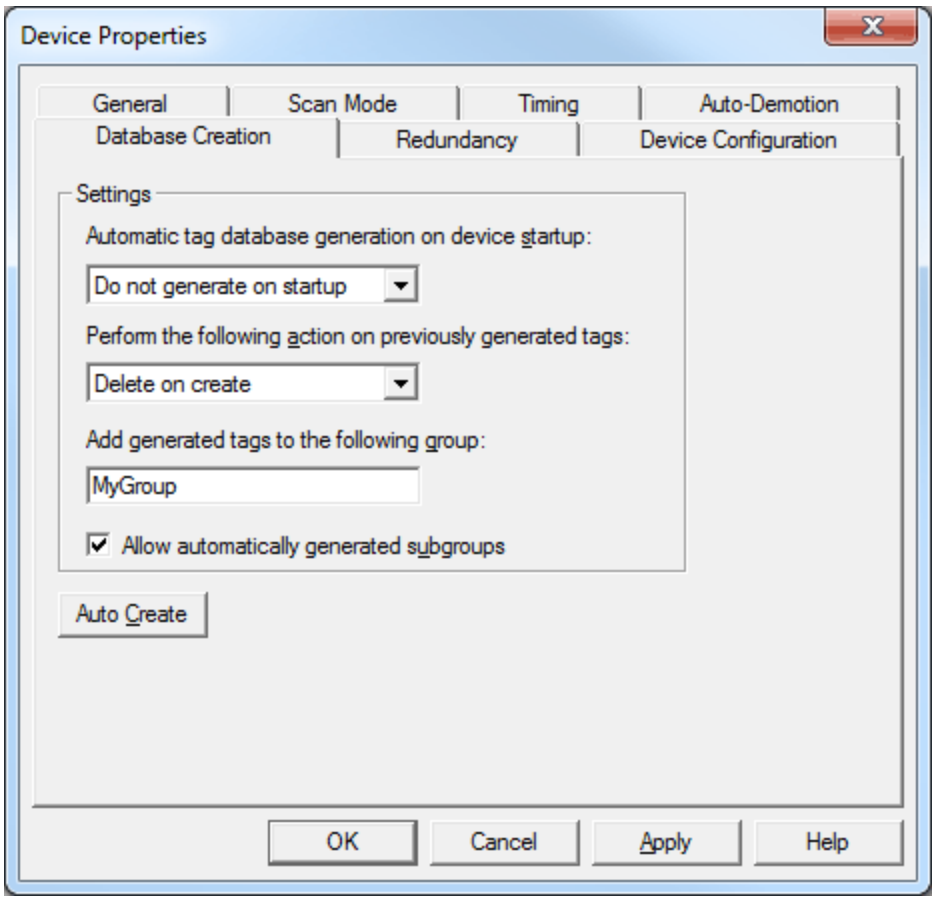
Automatic Tag Database Generation

This driver's Automatic OPC Tag Database Generation features have been designed to make configuring the OPC application a plug-and-play operation. This driver 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 OPC 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 then 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 information specific to the driver. An example of these two conditions may be as follows:

1. A Data acquisition system that supports its own local tag database. The driver will use the tags names found in the device to build the OPC server's OPC tags.
2. An Ethernet I/O system that supports the detection of an I/O module type. The driver in this case will automatically generate OPC tags in the OPC server that are based on the types of I/O modules 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 OPC 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. It 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.

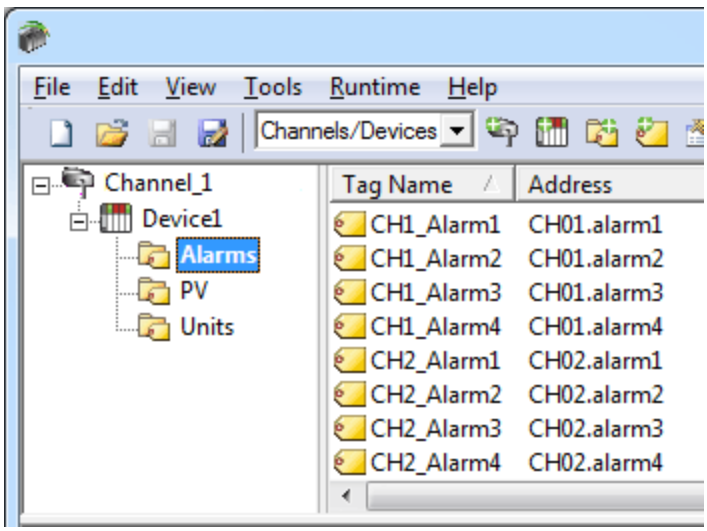
Note: Any tags that are added to the server's tag space must be saved with the project. The OPC Server project can be configured to automatically save from the **Tools** | **Options** menu.

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 the 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:

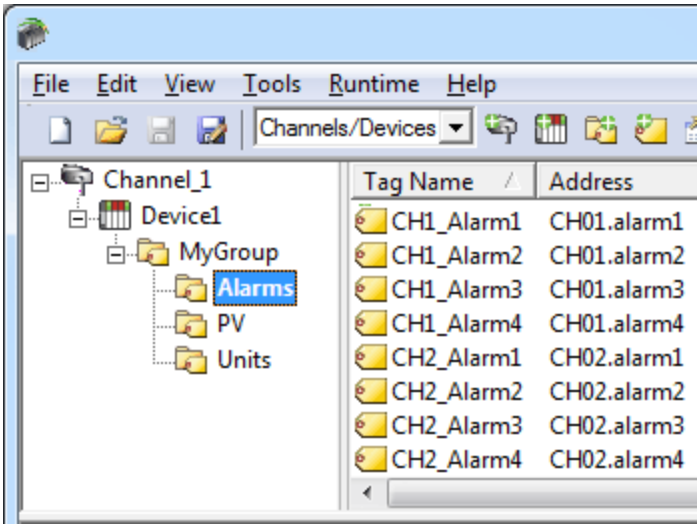
1. **Delete on create:** This option allows the server to remove any tags that have previously been added to the tag space before any new tags can be added by the communications driver.
2. **Overwrite as necessary:** This option allows the server to only remove tags that the communications driver will 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 option, 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 demonstrate 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 be accessed from the System Tags, thus allowing the OPC client application to initiate tag database creation.

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.

CX1006 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 Types	Access
Process Value of Channel	CHxx or CHxx.PV	01-06	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-06	**DWord**, 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
Precision of Channel*	CHxx.Precision	01-06	**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

External Loops

Address Type	Format	Range	Data Types	Access
Process Value of External Loop	LPExx or LPExx.PV	01-04	**Double**, Float	Read Only
Setpoint Value of External Loop	LPExx.SP	01-04	**Double**, Float	Read/Write
Output Value of External Loop	LPExx.OUT	01-04	**Double**, Float	Read/Write
Alarm Summary of External Loop	LPExx.Alarm	01-04	**DWord**, Short, Word, Byte	Read Only
Alarm Level1 Status of External Loop	LPExx.Alarm1	01-04	**Short**, Word, Byte	Read Only
Alarm Level2 Status of External Loop	LPExx.Alarm2	01-04	**Short**, Word, Byte	Read Only
Alarm Level3 Status of External Loop	LPExx.Alarm3	01-04	**Short**, Word, Byte	Read Only
Alarm Level4 Status of External Loop	LPExx.Alarm4	01-04	**Short**, Word, Byte	Read Only
Upper Scale Value of External Loop*	LPExx.scale_Hi	01-04	**Double**, Float	Read Only
Lower Scale Value of External	LPExx.scale_Lo	01-04	**Double**, Float	Read Only

Loop*				
Unit String of External Loop (PV)*	LPExx.unit or LPExx.PV.unit	01-04	**String**	Read Only
Unit String of External Loop SP*	LPExx.SP.unit	01-04	**String**	Read Only
Unit String of External Loop OUT*	LPExx.OUT.unit	01-04	**String**	Read Only
Tagname of External Loop*	LPExx.tag	01-04	**String**	Read Only
Tagname of External Loop PV*	LPExx.PV.tag	01-04	**String**	Read Only
Tagname of External Loop SP*	LPExx.SP.tag	01-04	**String**	Read Only
Tagname of External Loop OUT*	LPExx.OUT.tag	01-04	**String**	Read Only
Status of External Loop (PV)*	LPExx.status or LPExx.PV.status	01-04	**String**	Read Only
Status of External Loop SP*	LPExx.SP.status	01-04	**String**	Read Only
Status of External Loop OUT*	LPExx.OUT.status	01-04	**String**	Read Only
Precision of External Loop (PV)*	LPExx.Precision or LPExx.PV.P-recision	01-04	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.SP.Precision	01-04	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.OUT.Precision	01-04	**Short**, Word, Byte	Read Only
Lowest External Loop Number*	LPE.Low		**Short**, Word, Byte	Read Only
Highest External Loop Number*	LPE.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Types	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	**DWord**, 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	31-42	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	31-42	**String**	Read Only
Status of Math Channel*	CHxx.status	31-42	**String**	Read Only
Precision of Math Channel*	CHxx.Precision	31-42	**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

*The data associated with these addresses is 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, write a non zero value to the Reset Tag. Once the Reset Tag has been invoked, the driver will reinitialize all startup data from the device.

DI/DO DATA and Internal Switch Status (Style Number S3 or Later)

Address Type	Format	Range	Data Types	Access
Control Digital Inputs	DI	DI001-DI006	**Boolean**	Read Only
Control Digital Outputs	DO	DO001-DO006	**Boolean**	Read/Write
Internal Switches	SW	SW001-SW018	**Boolean**	Read/Write

Alarm Setpoints

Data associated with the addresses denoted 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.

Scales

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

Tag Names

For devices 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 Types	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
Host Name of Device	Hostname		**String**	Read Only
Serial Number of Device	SerialNumber		**String**	Read Only
IP Address of Device	IP		**String**	Read Only
Math Communication Data	CDxx	01-12	**Float**	Write Only
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
SetTime*	Tag		**Boolean**	Write Only

*The SetTime tag will cause the the device time to be updated. Writing 0 or 1 to the tag will update the Device Date and Time, which can be verified from the Date tag and the Time tag. The SetTime tag will always display 0 as it is a Write Only tag. After a successful update, the following message will be posted: "Device Clock set to system time [Device <device_name>]."

Administrator Level

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. 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.

Model Name of Device

The Model address type will have a string value of 'CX1000' or 'CX2000,' 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. 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: Use caution when performing write operations using the Command address.

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

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.

CX1206 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 Types	Access
Process Value of Channel	CHxx or CHxx.PV	01-06	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-06	**DWord**, 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
Precision of Channel*	CHxx.Precision	01-06	**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

Internal Loops

Address Type	Format	Range	Data Types	Access
Process Value of Internal Loop	LPxx or LPxx.PV	01-02	**Double**, Float	Read Only
Setpoint Value of Internal Loop forcurrent SP number	LPxx.SP	01-02	**Double**, Float	Read/Write
Setpoint Value of Internal Loop for specified SP number	LPxx.SP.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Current SP number for Internal Loop	LPxx.SP.Num	01-02	**Short**, Word,	Read/Write
Output Value of Internal Loop	LPxx.OUT	01-02	**Double**, Float	Read/Write
Alarm Summary of Internal Loop	LPxx.Alarm	01-02	**DWord**, Short, Word, Byte	Read Only
Alarm Level1 Status of Internal Loop	LPxx.Alarm1	01-02	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Internal Loop	LPxx.Alarm2	01-02	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Internal Loop	LPxx.Alarm3	01-02	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Internal Loop	LPxx.Alarm4	01-02	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	LPxx.ASP1	01-02	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	LPxx.ASP2	01-02	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	LPxx.ASP3	01-02	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	LPxx.ASP4	01-02	**Double**, Float	Read/Write
Set and Read Level1 Alarm Setpoint of specified PID#	LPxx.ASP1.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint of specified PID#	LPxx.ASP2.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint of specified PID#	LPxx.ASP3.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint of specified PID#	LPxx.ASP4.n	xx=01-	**Double**, Float	Read/Write

		02 n=1-8		
Upper Scale Value of Internal Loop*	LPxx.scale_Hi	01-02	**Double**, Float	Read Only
Lower Scale Value of Internal Loop*	LPxx.scale_Lo	01-02	**Double**, Float	Read Only
Unit String of Internal Loop (PV)*	LPxx.unit or LPxx.PV.unit	01-02	**String**	Read Only
Unit String of Internal Loop SP*	LPxx.SP.unit	01-02	**String**	Read Only
Unit String of Internal Loop OUT*	LPxx.OUT.unit	01-02	**String**	Read Only
Tagname of Internal Loop*	LPxx.tag	01-02	**String**	Read Only
Tagname of Internal Loop PV*	LPxx.PV.tag	01-02	**String**	Read Only
Tagname of Internal Loop SP*	LPxx.SP.tag	01-02	**String**	Read Only
Tagname of Internal Loop OUT*	LPxx.OUT.tag	01-02	**String**	Read Only
Status of Internal Loop (PV)*	LPxx.status or LPxx.PV.status	01-02	**String**	Read Only
Status of Internal Loop SP*	LPxx.SP.status	01-02	**String**	Read Only
Status of Internal Loop OUT*	LPxx.OUT.status	01-02	**String**	Read Only
Precision of Internal Loop (PV)*	LPxx.Precision or LPxx.PV.Precision	01-02	**Short**, Word, Byte	Read Only
Precision of Internal Loop SP*	LPxx.SP.Precision	01-02	**Short**, Word, Byte	Read Only
Precision of Internal Loop OUT*	LPxx.OUT.Precision	01-02	**Short**, Word, Byte	Read Only
Proportional band value of Internal Loop for current PID number	LPxx.PID.P	01-02	**Double**, Float	Read/Write
Proportional band value of Internal Loop for specified PID number	LPxx.PID.P.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Integral time value of Internal Loop for current PID number	LPxx.PID.I	01-02	**Double**, Float	Read/Write
Integral time value of Internal Loop for specified PID number	LPxx.PID.I.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Derivative time value of Internal Loop for current PID number	LPxx.PID.D	01-02	**Double**, Float	Read/Write
Derivative time value of Internal Loop for specified PID number	LPxx.PID.D.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Current PID number for Internal Loop	LPxx.PID.Num	01-02	**Short**, Word, Byte	Read Only
Set and Read Run/Stop (0=Stop, 1=Run)	LPxx.RUN	01-02	**Short**, Word, Byte	Read/Write
Set and Read Remote/Local (0=Local, 1=Remote)	LPxx.Remote	01-02	**Short**, Word, Byte	Read/Write
Set and Read auto/manual/cascade (0=Auto, 1=Manual, 2=Cascade)	LPxx.Mode	01-02	**Short**, Word, Byte	Read/Write
Lowest Internal Loop Number*	LP.Low		**Short**, Word, Byte	Read Only
Highest Internal Loop Number*	LP.High		**Short**, Word, Byte	Read Only
Ramp Up Rate**	LPxx.RUR xx=loop number	01-02	**Double**, Float	Read/Write
Ramp Down Rate**	LPxx.RDR xx=loop number	01-02	**Double**, Float	Read/Write

External Loops

Address Type	Format	Range	Data Types	Access
Process Value of External Loop	LPExx or LPExx.PV	01-04	**Double**, Float	Read Only
Setpoint Value of External Loop	LPExx.SP	01-04	**Double**, Float	Read/Write
Output Value of External Loop	LPExx.OUT	01-04	**Double**, Float	Read/Write
Alarm Summary of External Loop	LPExx.Alarm	01-04	**DWord**, Short, Word, Byte	Read Only
Alarm Level1 Status of External Loop	LPExx.Alarm1	01-04	**Short**, Word, Byte	Read Only
Alarm Level2 Status of External Loop	LPExx.Alarm2	01-04	**Short**, Word, Byte	Read Only
Alarm Level3 Status of External Loop	LPExx.Alarm3	01-04	**Short**, Word, Byte	Read Only
Alarm Level4 Status of External Loop	LPExx.Alarm4	01-04	**Short**, Word, Byte	Read Only
Upper Scale Value of External Loop*	LPExx.scale_Hi	01-04	**Double**, Float	Read Only
Lower Scale Value of External Loop*	LPExx.scale_Lo	01-04	**Double**, Float	Read Only
Unit String of External Loop (PV)*	LPExx.unit or LPExx.PV.unit	01-04	**String**	Read Only
Unit String of External Loop SP*	LPExx.SP.unit	01-04	**String**	Read Only
Unit String of External Loop OUT*	LPExx.OUT.unit	01-04	**String**	Read Only
Tagname of External Loop*	LPExx.tag	01-04	**String**	Read Only
Tagname of External Loop PV*	LPExx.PV.tag	01-04	**String**	Read Only
Tagname of External Loop SP*	LPExx.SP.tag	01-04	**String**	Read Only
Tagname of External Loop OUT*	LPExx.OUT.tag	01-04	**String**	Read Only
Status of External Loop (PV)*	LPExx.status or LPExx.PV.status	01-04	**String**	Read Only
Status of External Loop SP*	LPExx.SP.status	01-04	**String**	Read Only
Status of External Loop OUT*	LPExx.OUT.status	01-04	**String**	Read Only
Precision of External Loop (PV)*	LPExx.Precision or LPExx.PV.P-recision	01-04	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.SP.Precision	01-04	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.OUT.Precision	01-04	**Short**, Word, Byte	Read Only
Set and Read auto/manual/cascade (0=Auto, 1=Manual, 2=Cascade)	LPExx.MODE	01-02	**Short**, Word, Byte	Read/Write
Lowest External Loop Number*	LPE.Low		**Short**, Word, Byte	Read Only
Highest External Loop Number*	LPE.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Types	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	**DWord**, 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	31-42	**String**	Read Only

Tagname of Math Channel*	CHxx.tag	31-42	**String**	Read Only
Status of Math Channel*	CHxx.status	31-42	**String**	Read Only
Precision of Math Channel*	CHxx.Precision	31-42	**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

*The data associated with these addresses is 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, write a non zero value to the Reset Tag. Once the Reset Tag has been invoked, the driver will reinitialize all startup data from the device.

**Zero (0) can be written to the tag to disable the ramp parameters. When a 0 is written to the tag, the tag will display +1.inf upon successful disabling.

DI/DO DATA and Internal Switch Status (Style Number S3 or Later)

Address Type	Format	Range	Data Types	Access
Control Digital Inputs	DI	DI001-DI006	**Boolean**	Read Only
Control Digital Outputs	DO	DO001-DO006	**Boolean**	Read/Write
Internal Switches	SW	SW001-SW018	**Boolean**	Read/Write

Alarm Setpoints

Data associated with the addresses denoted 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.

Scales

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

Tag Names

For devices 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 Types	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
Host Name of Device	Hostname		**String**	Read Only
Serial Number of Device	SerialNumber		**String**	Read Only
IP Address of Device	IP		**String**	Read Only
Math Communication Data	CDxx	01-12	**Float**	Write Only
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
SetTime*	Tag		**Boolean**	Write Only

*The SetTime tag will cause the the device time to be updated. Writing 0 or 1 to the tag will update the Device Date and Time, which can be verified from the Date tag and the Time tag. The SetTime tag will always display 0 as it is a Write Only tag. After a successful update, the following message will be posted: "Device Clock set to system time [Device <device_name>]."

Administrator Level

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. 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.

Model Name of Device

The Model address type will have a string value of 'CX1000' or 'CX2000,' 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. 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: Use caution when performing write operations using the Command address.

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

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.

CX2010 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 Types	Access
Process Value of Channel	CHxx or CHxx.PV	01-10	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-10	**DWord**, 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
Precision of Channel*	CHxx.Precision	01-10	**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

External Loops

Address Type	Format	Range	Data Types	Access
Process Value of External Loop	LPExx or LPExx.PV	01-16	**Double**, Float	Read Only
Setpoint Value of External Loop	LPExx.SP	01-16	**Double**, Float	Read/Write
Output Value of External Loop	LPExx.OUT	01-16	**Double**, Float	Read/Write
Alarm Summary of External Loop	LPExx.Alarm	01-16	**DWord**, Short, Word, Byte	Read Only

Alarm Level1 Status of External Loop	LPExx.Alarm1	01-16	**Short**, Word, Byte	Read Only
Alarm Level2 Status of External Loop	LPExx.Alarm2	01-16	**Short**, Word, Byte	Read Only
Alarm Level3 Status of External Loop	LPExx.Alarm3	01-16	**Short**, Word, Byte	Read Only
Alarm Level4 Status of External Loop	LPExx.Alarm4	01-16	**Short**, Word, Byte	Read Only
Upper Scale Value of External Loop*	LPExx.scale_Hi	01-16	**Double**, Float	Read Only
Lower Scale Value of External Loop*	LPExx.scale_Lo	01-16	**Double**, Float	Read Only
Unit String of External Loop (PV)*	LPExx.unit or LPExx.PV.unit	01-16	**String**	Read Only
Unit String of External Loop SP*	LPExx.SP.unit	01-16	**String**	Read Only
Unit String of External Loop OUT*	LPExx.OUT.unit	01-16	**String**	Read Only
Tagname of External Loop*	LPExx.tag	01-16	**String**	Read Only
Tagname of External Loop PV*	LPExx.PV.tag	01-16	**String**	Read Only
Tagname of External Loop SP*	LPExx.SP.tag	01-16	**String**	Read Only
Tagname of External Loop OUT*	LPExx.OUT.tag	01-16	**String**	Read Only
Status of External Loop (PV)*	LPExx.status or LPExx.PV.status	01-16	**String**	Read Only
Status of External Loop SP*	LPExx.SP.status	01-16	**String**	Read Only
Status of External Loop OUT*	LPExx.OUT.status	01-16	**String**	Read Only
Precision of External Loop (PV)*	LPExx.Precision or LPExx.PV.P-recision	01-16	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.SP.Precision	01-16	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.OUT.Precision	01-16	**Short**, Word, Byte	Read Only
Lowest External Loop Number*	LPE.Low		**Short**, Word, Byte	Read Only
Highest External Loop Number*	LPE.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Types	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	**DWord**, 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	31-60	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	31-60	**String**	Read Only
Status of Math Channel*	CHxx.status	31-60	**String**	Read Only
Precision of Math Channel*	CHxx.Precision	31-60	**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

*The data associated with these addresses is 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, write a non zero value to the Reset Tag. Once the Reset Tag has been invoked, the driver will reinitialize all startup data from the device.

DI/DO DATA and Internal Switch Status (Style Number S3 or Later)

Address Type	Format	Range	Data Types	Access

Control Digital Inputs	DI	DI001-DI006	**Boolean**	Read Only
Control Digital Outputs	DO	DO001-DO006	**Boolean**	Read/Write
Expansion Digital Inputs	RI	RI001-RI012	**Boolean**	Read/Write
Expansion Digital Outputs	Read Only	RO001-RO012	**Boolean**	Read/Write
Internal Switches	SW	SW001-SW036	**Boolean**	Read/Write

Alarm Setpoints
Data associated with the addresses denoted 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.

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

Tag Names
For devices 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 Types	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
Host Name of Device	Hostname		**String**	Read Only
Serial Number of Device	SerialNumber		**String**	Read Only
IP Address of Device	IP		**String**	Read Only
Math Communication Data	CDxx	01-30	**Float**	Write Only
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
SetTime*	Tag		**Boolean**	Write Only

*The SetTime tag will cause the the device time to be updated. Writing 0 or 1 to the tag will update the Device Date and Time, which can be verified from the Date tag and the Time tag. The SetTime tag will always display 0 as it is a Write Only tag. After a successful update, the following message will be posted: "Device Clock set to system time [Device <device_name>]."

Administrator Level
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. 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.

Model Name of Device
The Model address type will have a string value of 'CX1000' or 'CX2000,' 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. 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: Use caution when performing write operations using the Command address.

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

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.

CX2020 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 Types	Access
Process Value of Channel	CHxx or CHxx.PV	01-20	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-20	**DWord**, 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
Precision of Channel*	CHxx.Precision	01-20	**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

External Loops

Address Type	Format	Range	Data Types	Access
Process Value of External Loop	LPExx or LPExx.PV	01-16	**Double**, Float	Read Only
Setpoint Value of External Loop	LPExx.SP	01-16	**Double**, Float	Read/Write
Output Value of External Loop	LPExx.OUT	01-16	**Double**, Float	Read/Write
Alarm Summary of External Loop	LPExx.Alarm	01-16	**DWord**, Short, Word, Byte	Read Only
Alarm Level1 Status of External Loop	LPExx.Alarm1	01-16	**Short**, Word, Byte	Read Only
Alarm Level2 Status of External Loop	LPExx.Alarm2	01-16	**Short**, Word, Byte	Read Only
Alarm Level3 Status of External Loop	LPExx.Alarm3	01-16	**Short**, Word, Byte	Read Only
Alarm Level4 Status of External Loop	LPExx.Alarm4	01-16	**Short**, Word, Byte	Read Only
Upper Scale Value of External Loop*	LPExx.scale_Hi	01-16	**Double**, Float	Read Only
Lower Scale Value of External Loop*	LPExx.scale_Lo	01-16	**Double**, Float	Read Only
Unit String of External Loop (PV)*	LPExx.unit or LPExx.PV.unit	01-16	**String**	Read Only
Unit String of External Loop SP*	LPExx.SP.unit	01-16	**String**	Read Only

Unit String of External Loop OUT*	LPExx.OUT.unit	01-16	**String**	Read Only
Tagname of External Loop*	LPExx.tag	01-16	**String**	Read Only
Tagname of External Loop PV*	LPExx.PV.tag	01-16	**String**	Read Only
Tagname of External Loop SP*	LPExx.SP.tag	01-16	**String**	Read Only
Tagname of External Loop OUT*	LPExx.OUT.tag	01-16	**String**	Read Only
Status of External Loop (PV)*	LPExx.status or LPExx.PV.status	01-16	**String**	Read Only
Status of External Loop SP*	LPExx.SP.status	01-16	**String**	Read Only
Status of External Loop OUT*	LPExx.OUT.status	01-16	**String**	Read Only
Precision of External Loop (PV)*	LPExx.Precision or LPExx.PV.P-recision	01-16	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.SP.Precision	01-16	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.OUT.Precision	01-16	**Short**, Word, Byte	Read Only
Lowest External Loop Number*	LPE.Low		**Short**, Word, Byte	Read Only
Highest External Loop Number*	LPE.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Types	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	**DWord**, 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	31-60	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	31-60	**String**	Read Only
Status of Math Channel*	CHxx.status	31-60	**String**	Read Only
Precision of Math Channel*	CHxx.Precision	31-60	**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

*The data associated with these addresses is 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, write a non zero value to the Reset Tag. Once the Reset Tag has been invoked, the driver will reinitialize all startup data from the device.

DI/DO DATA and Internal Switch Status (Style Number S3 or Later)

Address Type	Format	Range	Data Types	Access
Control Digital Inputs	DI	DI001-DI006	**Boolean**	Read Only
Control Digital Outputs	DO	DO001-DO006	**Boolean**	Read/Write
Expansion Digital Inputs	RI	RI001-RI012	**Boolean**	Read/Write
Expansion Digital Outputs	Read Only	RO001-RO012	**Boolean**	Read/Write
Internal Switches	SW	SW001-SW036	**Boolean**	Read/Write

Alarm Setpoints

Data associated with the addresses denoted 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.

Scales

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

Tag Names

For devices 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 Types	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
Host Name of Device	Hostname		**String**	Read Only
Serial Number of Device	SerialNumber		**String**	Read Only
IP Address of Device	IP		**String**	Read Only
Math Communication Data	CDxx	01-30	**Float**	Write Only
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
SetTime*	Tag		**Boolean**	Write Only

*The SetTime tag will cause the the device time to be updated. Writing 0 or 1 to the tag will update the Device Date and Time, which can be verified from the Date tag and the Time tag. The SetTime tag will always display 0 as it is a Write Only tag. After a successful update, the following message will be posted: "Device Clock set to system time [Device <device_name>]."

Administrator Level

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. 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.

Model Name of Device

The Model address type will have a string value of 'CX1000' or 'CX2000,' 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. 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: Use caution when performing write operations using the Command address.

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

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.

CX2210 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 Types	Access
Process Value of Channel	CHxx or CHxx.PV	01-10	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-10	**DWord**, 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
Precision of Channel*	CHxx.Precision	01-10	**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

Internal Loops

Address Type	Format	Range	Data Types	Access
Process Value of Internal Loop	LPxx or LPxx.PV	01-02	**Double**, Float	Read Only
Setpoint Value of Internal Loop for current SP number	LPxx.SP	01-02	**Double**, Float	Read/Write
Setpoint Value of Internal Loop for specified SP number	LPxx.SP.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Current SP number for Internal Loop	LPxx.SP.Num	01-02	**Short**, Word,	Read/Write
Output Value of Internal Loop	LPxx.OUT	01-02	**Double**, Float	Read/Write
Alarm Summary of Internal Loop	LPxx.Alarm	01-02	**DWord**, Short, Word, Byte	Read Only
Alarm Level1 Status of Internal Loop	LPxx.Alarm1	01-02	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Internal Loop	LPxx.Alarm2	01-02	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Internal Loop	LPxx.Alarm3	01-02	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Internal Loop	LPxx.Alarm4	01-02	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	LPxx.ASP1	01-02	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	LPxx.ASP2	01-02	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	LPxx.ASP3	01-02	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	LPxx.ASP4	01-02	**Double**, Float	Read/Write
Set and Read Level1 Alarm Setpoint of specified PID#	LPxx.ASP1.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint of specified PID#	LPxx.ASP2.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint of specified PID#	LPxx.ASP3.n	xx=01-02	**Double**, Float	Read/Write

		n=1-8		
Set and Read Level4 Alarm Setpoint of specified PID#	LPxx.ASP4.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Upper Scale Value of Internal Loop*	LPxx.scale_Hi	01-02	**Double**, Float	Read Only
Lower Scale Value of Internal Loop*	LPxx.scale_Lo	01-02	**Double**, Float	Read Only
Unit String of Internal Loop (PV)*	LPxx.unit or LPxx.PV.unit	01-02	**String**	Read Only
Unit String of Internal Loop SP*	LPxx.SP.unit	01-02	**String**	Read Only
Unit String of Internal Loop OUT*	LPxx.OUT.unit	01-02	**String**	Read Only
Tagname of Internal Loop*	LPxx.tag	01-02	**String**	Read Only
Tagname of Internal Loop PV*	LPxx.PV.tag	01-02	**String**	Read Only
Tagname of Internal Loop SP*	LPxx.SP.tag	01-02	**String**	Read Only
Tagname of Internal Loop OUT*	LPxx.OUT.tag	01-02	**String**	Read Only
Status of Internal Loop (PV)*	LPxx.status or LPxx.PV.status	01-02	**String**	Read Only
Status of Internal Loop SP*	LPxx.SP.status	01-02	**String**	Read Only
Status of Internal Loop OUT*	LPxx.OUT.status	01-02	**String**	Read Only
Precision of Internal Loop (PV)*	LPxx.Precision or LPxx.PV.P-recision	01-02	**Short**, Word, Byte	Read Only
Precision of Internal Loop SP*	LPxx.SP.Precision	01-02	**Short**, Word, Byte	Read Only
Precision of Internal Loop OUT*	LPxx.OUT.Precision	01-02	**Short**, Word, Byte	Read Only
Proportional band value of Internal Loop for current PID number	LPxx.PID.P	01-02	**Double**, Float	Read/Write
Proportional band value of Internal Loop for specified PID number	LPxx.PID.P.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Integral time value of Internal Loop for current PID number	LPxx.PID.I	01-02	**Double**, Float	Read/Write
Integral time value of Internal Loop for specified PID number	LPxx.PID.I.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Derivative time value of Internal Loop for current PID number	LPxx.PID.D	01-02	**Double**, Float	Read/Write
Derivative time value of Internal Loop for specified PID number	LPxx.PID.D.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Current PID number for Internal Loop	LPxx.PID.Num	01-02	**Short**, Word, Byte	Read Only
Set and Read Run/Stop (0=Stop, 1=Run)	LPxx.RUN	01-02	**Short**, Word, Byte	Read/Write
Set and Read Remote/Local (0=Local, 1=Remote)	LPxx.Remote	01-02	**Short**, Word, Byte	Read/Write
Set and Read auto/manual/cascade (0=Auto, 1=Manual, 2=Cascade)	LPxx.Mode	01-02	**Short**, Word, Byte	Read/Write
Lowest Internal Loop Number*	LP.Low		**Short**, Word, Byte	Read Only
Highest Internal Loop Number*	LP.High		**Short**, Word, Byte	Read Only
Ramp Up Rate**	LPxx.RUR xx=loop number	01-02	**Double**, Float	Read/Write
Ramp Down Rate**	LPxx.RDR xx=loop number	01-02	**Double**, Float	Read/Write

External Loops

Address Type	Format	Range	Data Types	Access

Process Value of External Loop	LPExx or LPExx.PV	01-16	**Double**, Float	Read Only
Setpoint Value of External Loop	LPExx.SP	01-16	**Double**, Float	Read/Write
Output Value of External Loop	LPExx.OUT	01-16	**Double**, Float	Read/Write
Alarm Summary of External Loop	LPExx.Alarm	01-16	**DWord**, Short, Word, Byte	Read Only
Alarm Level1 Status of External Loop	LPExx.Alarm1	01-16	**Short**, Word, Byte	Read Only
Alarm Level2 Status of External Loop	LPExx.Alarm2	01-16	**Short**, Word, Byte	Read Only
Alarm Level3 Status of External Loop	LPExx.Alarm3	01-16	**Short**, Word, Byte	Read Only
Alarm Level4 Status of External Loop	LPExx.Alarm4	01-16	**Short**, Word, Byte	Read Only
Upper Scale Value of External Loop*	LPExx.scale_Hi	01-16	**Double**, Float	Read Only
Lower Scale Value of External Loop*	LPExx.scale_Lo	01-16	**Double**, Float	Read Only
Unit String of External Loop (PV)*	LPExx.unit or LPExx.PV.unit	01-16	**String**	Read Only
Unit String of External Loop SP*	LPExx.SP.unit	01-16	**String**	Read Only
Unit String of External Loop OUT*	LPExx.OUT.unit	01-16	**String**	Read Only
Tagname of External Loop*	LPExx.tag	01-16	**String**	Read Only
Tagname of External Loop PV*	LPExx.PV.tag	01-16	**String**	Read Only
Tagname of External Loop SP*	LPExx.SP.tag	01-16	**String**	Read Only
Tagname of External Loop OUT*	LPExx.OUT.tag	01-16	**String**	Read Only
Status of External Loop (PV)*	LPExx.status or LPExx.PV.status	01-16	**String**	Read Only
Status of External Loop SP*	LPExx.SP.status	01-16	**String**	Read Only
Status of External Loop OUT*	LPExx.OUT.status	01-16	**String**	Read Only
Precision of External Loop (PV)*	LPExx.Precision or LPExx.PV.P-recision	01-16	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.SP.Precision	01-16	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.OUT.Precision	01-16	**Short**, Word, Byte	Read Only
Set and Read auto/man-ual/cascade (0=Auto, 1=Manual, 2=Cascade)	LPExx.MODE	01-02	**Short**, Word, Byte	Read/Write
Lowest External Loop Number*	LPE.Low		**Short**, Word, Byte	Read Only
Highest External Loop Number*	LPE.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Types	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	**DWord**, 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	31-60	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	31-60	**String**	Read Only
Status of Math Channel*	CHxx.status	31-60	**String**	Read Only
Precision of Math Channel*	CHxx.Precision	31-60	**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

*The data associated with these addresses is 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, write a non zero value to the Reset Tag. Once the Reset Tag has been invoked, the driver will reinitialize all startup data from the device.

**Zero (0) can be written to the tag to disable the ramp parameters. When a 0 is written to the tag, the tag will display +1.inf upon successful disabling.

DI/DO DATA and Internal Switch Status (Style Number S3 or Later)

Address Type	Format	Range	Data Types	Access
Control Digital Inputs	DI	DI001-DI006	**Boolean**	Read Only
Control Digital Outputs	DO	DO001-DO006	**Boolean**	Read/Write
Expansion Digital Inputs	RI	RI001-RI012	**Boolean**	Read/Write
Expansion Digital Outputs	Read Only	RO001-RO012	**Boolean**	Read/Write
Internal Switches	SW	SW001-SW036	**Boolean**	Read/Write

Alarm Setpoints

Data associated with the addresses denoted 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.

Scales

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

Tag Names

For devices 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 Types	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
Host Name of Device	Hostname		**String**	Read Only
Serial Number of Device	SerialNumber		**String**	Read Only
IP Address of Device	IP		**String**	Read Only
Math Communication Data	CDxx	01-30	**Float**	Write Only
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
SetTime*	Tag		**Boolean**	Write Only

*The SetTime tag will cause the the device time to be updated. Writing 0 or 1 to the tag will update the Device Date and Time, which can be verified from the Date tag and the Time tag. The SetTime tag will always display 0 as it is a Write Only tag. After a successful update, the following message will be posted: "Device Clock set to system time [Device <device_name>]."

Administrator Level

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. 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.

Model Name of Device
The Model address type will have a string value of 'CX1000' or 'CX2000,' 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. 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: Use caution when performing write operations using the Command address.

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

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.

CX2220 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 Types	Access
Process Value of Channel	CHxx or CHxx.PV	01-20	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-20	**DWord**, 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
Precision of Channel*	CHxx.Precision	01-20	**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

Internal Loops

Address Type	Format	Range	Data Types	Access
Process Value of Internal Loop	LPxx or LPxx.PV	01-02	**Double**, Float	Read Only
Setpoint Value of Internal Loop for current SP number	LPxx.SP	01-02	**Double**, Float	Read/Write
Setpoint Value of Internal Loop for specified SP number	LPxx.SP.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Current SP number for Internal Loop	LPxx.SP.Num	01-02	**Short**, Word,	Read/Write

Output Value of Internal Loop	LPxx.OUT	01-02	**Double**, Float	Read/Write
Alarm Summary of Internal Loop	LPxx.Alarm	01-02	**DWord**, Short, Word, Byte	Read Only
Alarm Level1 Status of Internal Loop	LPxx.Alarm1	01-02	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Internal Loop	LPxx.Alarm2	01-02	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Internal Loop	LPxx.Alarm3	01-02	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Internal Loop	LPxx.Alarm4	01-02	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	LPxx.ASP1	01-02	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	LPxx.ASP2	01-02	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	LPxx.ASP3	01-02	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	LPxx.ASP4	01-02	**Double**, Float	Read/Write
Set and Read Level1 Alarm Setpoint of specified PID #	LPxx.ASP1.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint of specified PID #	LPxx.ASP2.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint of specified PID #	LPxx.ASP3.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint of specified PID #	LPxx.ASP4.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Upper Scale Value of Internal Loop*	LPxx.scale_Hi	01-02	**Double**, Float	Read Only
Lower Scale Value of Internal Loop*	LPxx.scale_Lo	01-02	**Double**, Float	Read Only
Unit String of Internal Loop (PV)*	LPxx.unit or LPxx.PV.unit	01-02	**String**	Read Only
Unit String of Internal Loop SP*	LPxx.SP.unit	01-02	**String**	Read Only
Unit String of Internal Loop OUT*	LPxx.OUT.unit	01-02	**String**	Read Only
Tagname of Internal Loop*	LPxx.tag	01-02	**String**	Read Only
Tagname of Internal Loop PV*	LPxx.PV.tag	01-02	**String**	Read Only
Tagname of Internal Loop SP*	LPxx.SP.tag	01-02	**String**	Read Only
Tagname of Internal Loop OUT*	LPxx.OUT.tag	01-02	**String**	Read Only
Status of Internal Loop (PV)*	LPxx.status or LPxx.PV.status	01-02	**String**	Read Only
Status of Internal Loop SP*	LPxx.SP.status	01-02	**String**	Read Only
Status of Internal Loop OUT*	LPxx.OUT.status	01-02	**String**	Read Only
Precision of Internal Loop (PV)*	LPxx.Precision or LPxx.PV.P-recision	01-02	**Short**, Word, Byte	Read Only
Precision of Internal Loop SP*	LPxx.SP.Precision	01-02	**Short**, Word, Byte	Read Only
Precision of Internal Loop OUT*	LPxx.OUT.Precision	01-02	**Short**, Word, Byte	Read Only
Proportional band value of Internal Loop for current PID number	LPxx.PID.P	01-02	**Double**, Float	Read/Write
Proportional band value of Internal Loop for specified PID number	LPxx.PID.P.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Integral time value of Internal Loop for current PID number	LPxx.PID.I	01-02	**Double**, Float	Read/Write
Integral time value of Internal Loop for specified PID number	LPxx.PID.I.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Derivative time value of Internal	LPxx.PID.D	01-02	**Double**, Float	Read/Write

Loop for current PID number				
Derivative time value of Internal Loop for specified PID number	LPxx.PID.D.n	xx=01-02 n=1-8	**Double**, Float	Read/Write
Current PID number for Internal Loop	LPxx.PID.Num	01-02	**Short**, Word, Byte	Read Only
Set and Read Run/Stop (0=Stop, 1=Run)	LPxx.RUN	01-02	**Short**, Word, Byte	Read/Write
Set and Read Remote/Local (0=Local, 1=Remote)	LPxx.Remote	01-02	**Short**, Word, Byte	Read/Write
Set and Read auto/manual/cascade (0=Auto, 1=Manual, 2=Cascade)	LPxx.Mode	01-02	**Short**, Word, Byte	Read/Write
Lowest Internal Loop Number*	LP.Low		**Short**, Word, Byte	Read Only
Highest Internal Loop Number*	LP.High		**Short**, Word, Byte	Read Only
Ramp Up Rate**	LPxx.RUR xx=loop number	01-02	**Double**, Float	Read/Write
Ramp Down Rate**	LPxx.RDR xx=loop number	01-02	**Double**, Float	Read/Write

External Loops

Address Type	Format	Range	Data Types	Access
Process Value of External Loop	LPExx or LPExx.PV	01-16	**Double**, Float	Read Only
Setpoint Value of External Loop	LPExx.SP	01-16	**Double**, Float	Read/Write
Output Value of External Loop	LPExx.OUT	01-16	**Double**, Float	Read/Write
Alarm Summary of External Loop	LPExx.Alarm	01-16	**DWord**, Short, Word, Byte	Read Only
Alarm Level1 Status of External Loop	LPExx.Alarm1	01-16	**Short**, Word, Byte	Read Only
Alarm Level2 Status of External Loop	LPExx.Alarm2	01-16	**Short**, Word, Byte	Read Only
Alarm Level3 Status of External Loop	LPExx.Alarm3	01-16	**Short**, Word, Byte	Read Only
Alarm Level4 Status of External Loop	LPExx.Alarm4	01-16	**Short**, Word, Byte	Read Only
Upper Scale Value of External Loop*	LPExx.scale_Hi	01-16	**Double**, Float	Read Only
Lower Scale Value of External Loop*	LPExx.scale_Lo	01-16	**Double**, Float	Read Only
Unit String of External Loop (PV)*	LPExx.unit or LPExx.PV.unit	01-16	**String**	Read Only
Unit String of External Loop SP*	LPExx.SP.unit	01-16	**String**	Read Only
Unit String of External Loop OUT*	LPExx.OUT.unit	01-16	**String**	Read Only
Tagname of External Loop*	LPExx.tag	01-16	**String**	Read Only
Tagname of External Loop PV*	LPExx.PV.tag	01-16	**String**	Read Only
Tagname of External Loop SP*	LPExx.SP.tag	01-16	**String**	Read Only
Tagname of External Loop OUT*	LPExx.OUT.tag	01-16	**String**	Read Only
Status of External Loop (PV)*	LPExx.status or LPExx.PV.status	01-16	**String**	Read Only
Status of External Loop SP*	LPExx.SP.status	01-16	**String**	Read Only
Status of External Loop OUT*	LPExx.OUT.status	01-16	**String**	Read Only
Precision of External Loop (PV)*	LPExx.Precision or LPExx.PV.P-recision	01-16	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.SP.Precision	01-16	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.OUT.Precision	01-16	**Short**, Word, Byte	Read Only
Set and Read auto/man-ual/cascade	LPExx.MODE	01-02	**Short**, Word, Byte	Read/Write

(0=Auto, 1=Manual, 2=Cascade)				
Lowest External Loop Number*	LPE.Low		**Short**, Word, Byte	Read Only
Highest External Loop Number*	LPE.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Types	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	**DWord**, 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	31-60	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	31-60	**String**	Read Only
Status of Math Channel*	CHxx.status	31-60	**String**	Read Only
Precision of Math Channel*	CHxx.Precision	31-60	**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

*The data associated with these addresses is 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, write a non zero value to the Reset Tag. Once the Reset Tag has been invoked, the driver will reinitialize all startup data from the device.

**Zero (0) can be written to the tag to disable the ramp parameters. When a 0 is written to the tag, the tag will display +1.inf upon successful disabling.

DI/DO DATA and Internal Switch Status (Style Number S3 or Later)

Address Type	Format	Range	Data Types	Access
Control Digital Inputs	DI	DI001-DI006	**Boolean**	Read Only
Control Digital Outputs	DO	DO001-DO006	**Boolean**	Read/Write
Expansion Digital Inputs	RI	RI001-RI012	**Boolean**	Read/Write
Expansion Digital Outputs	Read Only	RO001-RO012	**Boolean**	Read/Write
Internal Switches	SW	SW001-SW036	**Boolean**	Read/Write

Alarm Setpoints

Data associated with the addresses denoted 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.

Scales

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

Tag Names

For devices 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 Types	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
Host Name of Device	Hostname		**String**	Read Only
Serial Number of Device	SerialNumber		**String**	Read Only
IP Address of Device	IP		**String**	Read Only
Math Communication Data	CDxx	01-30	**Float**	Write Only
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
SetTime*	Tag		**Boolean**	Write Only

*The SetTime tag will cause the the device time to be updated. Writing 0 or 1 to the tag will update the Device Date and Time, which can be verified from the Date tag and the Time tag. The SetTime tag will always display 0 as it is a Write Only tag. After a successful update, the following message will be posted: "Device Clock set to system time [Device <device_name>]."

Administrator Level
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. 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.

Model Name of Device
The Model address type will have a string value of 'CX1000' or 'CX2000,' 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. 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: Use caution when performing write operations using the Command address.

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

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.

CX2410 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 Types	Access
Process Value of Channel	CHxx or CHxx.PV	01-10	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-10	**DWord**, 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
Precision of Channel*	CHxx.Precision	01-10	**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

Internal Loops

Address Type	Format	Range	Data Types	Access
Process Value of Internal Loop	LPxx or LPxx.PV	01-04	**Double**, Float	Read Only
Setpoint Value of Internal Loop for current SP number	LPxx.SP	01-04	**Double**, Float	Read/Write
Setpoint Value of Internal Loop for specified SP number	LPxx.SP.n	xx=01-04 n=1-8	**Double**, Float	Read/Write
Current SP number for Internal Loop	LPxx.SP.Num	01-04	**Short**, Word,	Read/Write
Output Value of Internal Loop	LPxx.OUT	01-04	**Double**, Float	Read/Write
Alarm Summary of Internal Loop	LPxx.Alarm	01-04	**DWord**, Short, Word, Byte	Read Only
Alarm Level1 Status of Internal Loop	LPxx.Alarm1	01-04	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Internal Loop	LPxx.Alarm2	01-04	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Internal Loop	LPxx.Alarm3	01-04	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Internal Loop	LPxx.Alarm4	01-04	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	LPxx.ASP1	01-04	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	LPxx.ASP2	01-04	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	LPxx.ASP3	01-04	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	LPxx.ASP4	01-04	**Double**, Float	Read/Write
Set and Read Level1 Alarm Setpoint of specified PID #	LPxx.ASP1.n	xx=01-04 n=1-8	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint of specified PID #	LPxx.ASP2.n	xx=01-04 n=1-8	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint of specified PID #	LPxx.ASP3.n	xx=01-04 n=1-8	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint of specified PID #	LPxx.ASP4.n	xx=01-04 n=1-8	**Double**, Float	Read/Write
Upper Scale Value of Internal Loop*	LPxx.scale_Hi	01-04	**Double**, Float	Read Only
Lower Scale Value of Internal Loop*	LPxx.scale_Lo	01-04	**Double**, Float	Read Only
Unit String of Internal Loop (PV)*	LPxx.unit or LPxx.PV.unit	01-04	**String**	Read Only
Unit String of Internal Loop SP*	LPxx.SP.unit	01-04	**String**	Read Only
Unit String of Internal Loop OUT*	LPxx.OUT.unit	01-04	**String**	Read Only
Tagname of Internal Loop*	LPxx.tag	01-04	**String**	Read Only
Tagname of Internal Loop PV*	LPxx.PV.tag	01-04	**String**	Read Only
Tagname of Internal Loop SP*	LPxx.SP.tag	01-04	**String**	Read Only

Tagname of Internal Loop OUT*	LPxx.OUT.tag	01-04	**String**	Read Only
Status of Internal Loop (PV)*	LPxx.status or LPxx.PV.status	01-04	**String**	Read Only
Status of Internal Loop SP*	LPxx.SP.status	01-04	**String**	Read Only
Status of Internal Loop OUT*	LPxx.OUT.status	01-04	**String**	Read Only
Precision of Internal Loop (PV)*	LPxx.Precision or LPxx.PV.Precision	01-04	**Short**, Word, Byte	Read Only
Precision of Internal Loop SP*	LPxx.SP.Precision	01-04	**Short**, Word, Byte	Read Only
Precision of Internal Loop OUT*	LPxx.OUT.Precision	01-04	**Short**, Word, Byte	Read Only
Proportional band value of Internal Loop for current PID number	LPxx.PID.P	01-04	**Double**, Float	Read/Write
Proportional band value of Internal Loop for specified PID number	LPxx.PID.P.n	xx=01-04 n=1-8	**Double**, Float	Read/Write
Integral time value of Internal Loop for current PID number	LPxx.PID.I	01-04	**Double**, Float	Read/Write
Integral time value of Internal Loop for specified PID number	LPxx.PID.I.n	xx=01-04 n=1-8	**Double**, Float	Read/Write
Derivative time value of Internal Loop for current PID number	LPxx.PID.D	01-04	**Double**, Float	Read/Write
Derivative time value of Internal Loop for specified PID number	LPxx.PID.D.n	xx=01-04 n=1-8	**Double**, Float	Read/Write
Current PID number for Internal Loop	LPxx.PID.Num	01-04	**Short**, Word, Byte	Read Only
Set and Read Run/Stop (0=Stop, 1=Run)	LPxx.RUN	01-04	**Short**, Word, Byte	Read/Write
Set and Read Remote/Local (0=Local, 1=Remote)	LPxx.Remote	01-04	**Short**, Word, Byte	Read/Write
Set and Read auto/manual/cascade (0=Auto, 1=Manual, 2=Cascade)	LPxx.Mode	01-04	**Short**, Word, Byte	Read/Write
Lowest Internal Loop Number*	LP.Low		**Short**, Word, Byte	Read Only
Highest Internal Loop Number*	LP.High		**Short**, Word, Byte	Read Only
Ramp Up Rate**	LPxx.RUR xx=loop number	01-04	**Double**, Float	Read/Write
Ramp Down Rate**	LPxx.RDR xx=loop number	01-04	**Double**, Float	Read/Write

External Loops

Address Type	Format	Range	Data Types	Access
Process Value of External Loop	LPExx or LPExx.PV	01-16	**Double**, Float	Read Only
Setpoint Value of External Loop	LPExx.SP	01-16	**Double**, Float	Read/Write
Output Value of External Loop	LPExx.OUT	01-16	**Double**, Float	Read/Write
Alarm Summary of External Loop	LPExx.Alarm	01-16	**DWord**, Short, Word, Byte	Read Only
Alarm Level1 Status of External Loop	LPExx.Alarm1	01-16	**Short**, Word, Byte	Read Only
Alarm Level2 Status of External Loop	LPExx.Alarm2	01-16	**Short**, Word, Byte	Read Only
Alarm Level3 Status of External Loop	LPExx.Alarm3	01-16	**Short**, Word, Byte	Read Only
Alarm Level4 Status of External Loop	LPExx.Alarm4	01-16	**Short**, Word, Byte	Read Only
Upper Scale Value of External Loop*	LPExx.scale_Hi	01-16	**Double**, Float	Read Only
Lower Scale Value of External Loop*	LPExx.scale_Lo	01-16	**Double**, Float	Read Only
Unit String of External Loop (PV)*	LPExx.unit or LPExx.PV.unit	01-16	**String**	Read Only

Unit String of External Loop SP*	LPExx.SP.unit	01-16	**String**	Read Only
Unit String of External Loop OUT*	LPExx.OUT.unit	01-16	**String**	Read Only
Tagname of External Loop*	LPExx.tag	01-16	**String**	Read Only
Tagname of External Loop PV*	LPExx.PV.tag	01-16	**String**	Read Only
Tagname of External Loop SP*	LPExx.SP.tag	01-16	**String**	Read Only
Tagname of External Loop OUT*	LPExx.OUT.tag	01-16	**String**	Read Only
Status of External Loop (PV)*	LPExx.status or LPExx.PV.status	01-16	**String**	Read Only
Status of External Loop SP*	LPExx.SP.status	01-16	**String**	Read Only
Status of External Loop OUT*	LPExx.OUT.status	01-16	**String**	Read Only
Precision of External Loop (PV)*	LPExx.Precision or LPExx.PV.Precision	01-16	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.SP.Precision	01-16	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.OUT.Precision	01-16	**Short**, Word, Byte	Read Only
Set and Read auto/manual/cascade (0=Auto, 1=Manual, 2=Cascade)	LPExx.MODE	01-02	**Short**, Word, Byte	Read/Write
Lowest External Loop Number*	LPE.Low		**Short**, Word, Byte	Read Only
Highest External Loop Number*	LPE.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Types	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	**DWord**, 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	31-60	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	31-60	**String**	Read Only
Status of Math Channel*	CHxx.status	31-60	**String**	Read Only
Precision of Math Channel*	CHxx.Precision	31-60	**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

*The data associated with these addresses is 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, write a non zero value to the Reset Tag. Once the Reset Tag has been invoked, the driver will reinitialize all startup data from the device.

**Zero (0) can be written to the tag to disable the ramp parameters. When a 0 is written to the tag, the tag will display +1.inf upon successful disabling.

DI/DO DATA and Internal Switch Status (Style Number S3 or Later)

Address Type	Format	Range	Data Types	Access
Control Digital Inputs	DI	DI001-DI006	**Boolean**	Read Only
Control Digital Outputs	DO	DO001-DO006	**Boolean**	Read/Write
Expansion Digital Inputs	RI	RI001-RI012	**Boolean**	Read/Write
Expansion Digital Outputs	Read Only	RO001-RO012	**Boolean**	Read/Write
Internal Switches	SW	SW001-SW036	**Boolean**	Read/Write

Alarm Setpoints
Data associated with the addresses denoted 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.

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

Tag Names
For devices 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 Types	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
Host Name of Device	Hostname		**String**	Read Only
Serial Number of Device	SerialNumber		**String**	Read Only
IP Address of Device	IP		**String**	Read Only
Math Communication Data	CDxx	01-30	**Float**	Write Only
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
SetTime*	Tag		**Boolean**	Write Only

*The SetTime tag will cause the the device time to be updated. Writing 0 or 1 to the tag will update the Device Date and Time, which can be verified from the Date tag and the Time tag. The SetTime tag will always display 0 as it is a Write Only tag. After a successful update, the following message will be posted: "Device Clock set to system time [Device <device_name>]."

Administrator Level
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. 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.

Model Name of Device
The Model address type will have a string value of 'CX1000' or 'CX2000,' 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. 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: Use caution when performing write operations using the Command address.

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

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.

CX2420 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 Types	Access
Process Value of Channel	CHxx or CHxx.PV	01-20	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-20	**DWord**, 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
Precision of Channel*	CHxx.Precision	01-20	**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

Internal Loops

Address Type	Format	Range	Data Types	Access
Process Value of Internal Loop	LPxx or LPxx.PV	01-04	**Double**, Float	Read Only
Setpoint Value of Internal Loop for current SP number	LPxx.SP	01-04	**Double**, Float	Read/Write
Setpoint Value of Internal Loop for specified SP number	LPxx.SP.n	xx=01-04 n=1-8	**Double**, Float	Read/Write
Current SP number for Internal Loop	LPxx.SP.Num	01-04	**Short**, Word,	Read/Write
Output Value of Internal Loop	LPxx.OUT	01-04	**Double**, Float	Read/Write
Alarm Summary of Internal Loop	LPxx.Alarm	01-04	**DWord**, Short, Word, Byte	Read Only
Alarm Level1 Status of Internal Loop	LPxx.Alarm1	01-04	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Internal Loop	LPxx.Alarm2	01-04	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Internal Loop	LPxx.Alarm3	01-04	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Internal Loop	LPxx.Alarm4	01-04	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	LPxx.ASP1	01-04	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	LPxx.ASP2	01-04	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	LPxx.ASP3	01-04	**Double**, Float	Read/Write

Set and Read Level4 Alarm Setpoint	LPxx.ASP4	01-04	**Double**, Float	Read/Write
Set and Read Level1 Alarm Setpoint of specified PID#	LPxx.ASP1.n	xx=01-04 n=1-8	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint of specified PID#	LPxx.ASP2.n	xx=01-04 n=1-8	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint of specified PID#	LPxx.ASP3.n	xx=01-04 n=1-8	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint of specified PID#	LPxx.ASP4.n	xx=01-04 n=1-8	**Double**, Float	Read/Write
Upper Scale Value of Internal Loop*	LPxx.scale_Hi	01-04	**Double**, Float	Read Only
Lower Scale Value of Internal Loop*	LPxx.scale_Lo	01-04	**Double**, Float	Read Only
Unit String of Internal Loop (PV)*	LPxx.unit or LPxx.PV.unit	01-04	**String**	Read Only
Unit String of Internal Loop SP*	LPxx.SP.unit	01-04	**String**	Read Only
Unit String of Internal Loop OUT*	LPxx.OUT.unit	01-04	**String**	Read Only
Tagname of Internal Loop*	LPxx.tag	01-04	**String**	Read Only
Tagname of Internal Loop PV*	LPxx.PV.tag	01-04	**String**	Read Only
Tagname of Internal Loop SP*	LPxx.SP.tag	01-04	**String**	Read Only
Tagname of Internal Loop OUT*	LPxx.OUT.tag	01-04	**String**	Read Only
Status of Internal Loop (PV)*	LPxx.status or LPxx.PV.status	01-04	**String**	Read Only
Status of Internal Loop SP*	LPxx.SP.status	01-04	**String**	Read Only
Status of Internal Loop OUT*	LPxx.OUT.status	01-04	**String**	Read Only
Precision of Internal Loop (PV)*	LPxx.Precision or LPxx.PV.Precision	01-04	**Short**, Word, Byte	Read Only
Precision of Internal Loop SP*	LPxx.SP.Precision	01-04	**Short**, Word, Byte	Read Only
Precision of Internal Loop OUT*	LPxx.OUT.Precision	01-04	**Short**, Word, Byte	Read Only
Proportional band value of Internal Loop for current PID number	LPxx.PID.P	01-04	**Double**, Float	Read/Write
Proportional band value of Internal Loop for specified PID number	LPxx.PID.P.n	xx=01-04 n=1-8	**Double**, Float	Read/Write
Integral time value of Internal Loop for current PID number	LPxx.PID.I	01-04	**Double**, Float	Read/Write
Integral time value of Internal Loop for specified PID number	LPxx.PID.I.n	xx=01-04 n=1-8	**Double**, Float	Read/Write
Derivative time value of Internal Loop for current PID number	LPxx.PID.D	01-04	**Double**, Float	Read/Write
Derivative time value of Internal Loop for specified PID number	LPxx.PID.D.n	xx=01-04 n=1-8	**Double**, Float	Read/Write
Current PID number for Internal Loop	LPxx.PID.Num	01-04	**Short**, Word, Byte	Read Only
Set and Read Run/Stop (0=Stop, 1=Run)	LPxx.RUN	01-04	**Short**, Word, Byte	Read/Write
Set and Read Remote/Local (0=Local, 1=Remote)	LPxx.Remote	01-04	**Short**, Word, Byte	Read/Write
Set and Read auto/manual/cascade	LPxx.Mode	01-04	**Short**, Word, Byte	Read/Write

(0=Auto, 1=Manual, 2=Cascade)				
Lowest Internal Loop Number*	LP.Low		**Short**, Word, Byte	Read Only
Highest Internal Loop Number*	LP.High		**Short**, Word, Byte	Read Only
Ramp Up Rate**	LPxx.RUR xx=loop number	01-04	**Double**, Float	Read/Write
Ramp Down Rate**	LPxx.RDR xx=loop number	01-04	**Double**, Float	Read/Write

External Loops

Address Type	Format	Range	Data Types	Access
Process Value of External Loop	LPExx or LPExx.PV	01-16	**Double**, Float	Read Only
Setpoint Value of External Loop	LPExx.SP	01-16	**Double**, Float	Read/Write
Output Value of External Loop	LPExx.OUT	01-16	**Double**, Float	Read/Write
Alarm Summary of External Loop	LPExx.Alarm	01-16	**DWord**, Short, Word, Byte	Read Only
Alarm Level1 Status of External Loop	LPExx.Alarm1	01-16	**Short**, Word, Byte	Read Only
Alarm Level2 Status of External Loop	LPExx.Alarm2	01-16	**Short**, Word, Byte	Read Only
Alarm Level3 Status of External Loop	LPExx.Alarm3	01-16	**Short**, Word, Byte	Read Only
Alarm Level4 Status of External Loop	LPExx.Alarm4	01-16	**Short**, Word, Byte	Read Only
Upper Scale Value of External Loop*	LPExx.scale_Hi	01-16	**Double**, Float	Read Only
Lower Scale Value of External Loop*	LPExx.scale_Lo	01-16	**Double**, Float	Read Only
Unit String of External Loop (PV)*	LPExx.unit or LPExx.PV.unit	01-16	**String**	Read Only
Unit String of External Loop SP*	LPExx.SP.unit	01-16	**String**	Read Only
Unit String of External Loop OUT*	LPExx.OUT.unit	01-16	**String**	Read Only
Tagname of External Loop*	LPExx.tag	01-16	**String**	Read Only
Tagname of External Loop PV*	LPExx.PV.tag	01-16	**String**	Read Only
Tagname of External Loop SP*	LPExx.SP.tag	01-16	**String**	Read Only
Tagname of External Loop OUT*	LPExx.OUT.tag	01-16	**String**	Read Only
Status of External Loop (PV)*	LPExx.status or LPExx.PV.status	01-16	**String**	Read Only
Status of External Loop SP*	LPExx.SP.status	01-16	**String**	Read Only
Status of External Loop OUT*	LPExx.OUT.status	01-16	**String**	Read Only
Precision of External Loop (PV)*	LPExx.Precision or LPExx.PV.P-recision	01-16	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.SP.Precision	01-16	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.OUT.Precision	01-16	**Short**, Word, Byte	Read Only
Set and Read auto/man-ual/cascade (0=Auto, 1=Manual, 2=Cascade)	LPExx.MODE	01-02	**Short**, Word, Byte	Read/Write
Lowest External Loop Number*	LPE.Low		**Short**, Word, Byte	Read Only
Highest External Loop Number*	LPE.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Types	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	**DWord**, 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	31-60	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	31-60	**String**	Read Only
Status of Math Channel*	CHxx.status	31-60	**String**	Read Only
Precision of Math Channel*	CHxx.Precision	31-60	**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

*The data associated with these addresses is 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, write a non zero value to the Reset Tag. Once the Reset Tag has been invoked, the driver will reinitialize all startup data from the device.

**Zero (0) can be written to the tag to disable the ramp parameters. When a 0 is written to the tag, the tag will display +1.inf upon successful disabling.

DI/DO DATA and Internal Switch Status (Style Number S3 or Later)

Address Type	Format	Range	Data Types	Access
Control Digital Inputs	DI	DI001-DI006	**Boolean**	Read Only
Control Digital Outputs	DO	DO001-DO006	**Boolean**	Read/Write
Expansion Digital Inputs	RI	RI001-RI012	**Boolean**	Read/Write
Expansion Digital Outputs	Read Only	RO001-RO012	**Boolean**	Read/Write
Internal Switches	SW	SW001-SW036	**Boolean**	Read/Write

Alarm Setpoints

Data associated with the addresses denoted 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.

Scales

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

Tag Names

For devices 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 Types	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
Host Name of Device	Hostname		**String**	Read Only
Serial Number of Device	SerialNumber		**String**	Read Only
IP Address of Device	IP		**String**	Read Only
Math Communication Data	CDxx	01-30	**Float**	Write Only
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
SetTime*	Tag		**Boolean**	Write Only

*The SetTime tag will cause the the device time to be updated. Writing 0 or 1 to the tag will update the Device Date and Time, which can be verified from the Date tag and the Time tag. The SetTime tag will always display 0 as it is a Write Only tag. After a successful update, the following message will be posted: "Device Clock set to system time [Device <device_name>]."

Administrator Level

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. 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.

Model Name of Device

The Model address type will have a string value of 'CX1000' or 'CX2000,' 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. 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: Use caution when performing write operations using the Command address.

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

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.

CX2610 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 Types	Access
Process Value of Channel	CHxx or CHxx.PV	01-10	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-10	**DWord**, 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
Precision of Channel*	CHxx.Precision	01-10	**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

Internal Loops

Address Type	Format	Range	Data Types	Access
Process Value of Internal Loop	LPxx or LPxx.PV	01-06	**Double**, Float	Read Only
Setpoint Value of Internal Loop for current SP number	LPxx.SP	01-06	**Double**, Float	Read/Write
Setpoint Value of Internal Loop for specified SP number	LPxx.SP.n	xx=01-06 n=1-8	**Double**, Float	Read/Write
Current SP number for Internal Loop	LPxx.SP.Num	01-06	**Short**, Word,	Read/Write
Output Value of Internal Loop	LPxx.OUT	01-06	**Double**, Float	Read/Write
Alarm Summary of Internal Loop	LPxx.Alarm	01-06	**DWord**, Short, Word, Byte	Read Only
Alarm Level1 Status of Internal Loop	LPxx.Alarm1	01-06	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Internal Loop	LPxx.Alarm2	01-06	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Internal Loop	LPxx.Alarm3	01-06	**Short**, Word, Byte	Read Only
Alarm Level4 Status of Internal Loop	LPxx.Alarm4	01-06	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	LPxx.ASP1	01-06	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	LPxx.ASP2	01-06	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	LPxx.ASP3	01-06	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	LPxx.ASP4	01-06	**Double**, Float	Read/Write
Set and Read Level1 Alarm Setpoint of specified PID#	LPxx.ASP1.n	xx=01-06 n=1-8	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint of specified PID#	LPxx.ASP2.n	xx=01-06 n=1-8	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint of specified PID#	LPxx.ASP3.n	xx=01-06 n=1-8	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint of specified PID#	LPxx.ASP4.n	xx=01-06 n=1-8	**Double**, Float	Read/Write
Upper Scale Value of Internal Loop*	LPxx.scale_Hi	01-06	**Double**, Float	Read Only
Lower Scale Value of Internal Loop*	LPxx.scale_Lo	01-06	**Double**, Float	Read Only
Unit String of Internal Loop (PV)*	LPxx.unit or LPxx.PV.unit	01-06	**String**	Read Only
Unit String of Internal Loop SP*	LPxx.SP.unit	01-06	**String**	Read Only
Unit String of Internal Loop OUT*	LPxx.OUT.unit	01-06	**String**	Read Only
Tagname of Internal Loop*	LPxx.tag	01-06	**String**	Read Only
Tagname of Internal Loop PV*	LPxx.PV.tag	01-06	**String**	Read Only
Tagname of Internal Loop SP*	LPxx.SP.tag	01-06	**String**	Read Only
Tagname of Internal Loop OUT*	LPxx.OUT.tag	01-06	**String**	Read Only
Status of Internal Loop (PV)*	LPxx.status or LPxx.PV.status	01-06	**String**	Read Only
Status of Internal Loop SP*	LPxx.SP.status	01-06	**String**	Read Only

Status of Internal Loop OUT*	LPxx.OUT.status	01-06	**String**	Read Only
Precision of Internal Loop (PV)*	LPxx.Precision or LPxx.PV.Precision	01-06	**Short**, Word, Byte	Read Only
Precision of Internal Loop SP*	LPxx.SP.Precision	01-06	**Short**, Word, Byte	Read Only
Precision of Internal Loop OUT*	LPxx.OUT.Precision	01-06	**Short**, Word, Byte	Read Only
Proportional band value of Internal Loop for current PID number	LPxx.PID.P	01-06	**Double**, Float	Read/Write
Proportional band value of Internal Loop for specified PID number	LPxx.PID.P.n	xx=01-06 n=1-8	**Double**, Float	Read/Write
Integral time value of Internal Loop for current PID number	LPxx.PID.I	01-06	**Double**, Float	Read/Write
Integral time value of Internal Loop for specified PID number	LPxx.PID.I.n	xx=01-06 n=1-8	**Double**, Float	Read/Write
Derivative time value of Internal Loop for current PID number	LPxx.PID.D	01-06	**Double**, Float	Read/Write
Derivative time value of Internal Loop for specified PID number	LPxx.PID.D.n	xx=01-06 n=1-8	**Double**, Float	Read/Write
Current PID number for Internal Loop	LPxx.PID.Num	01-06	**Short**, Word, Byte	Read Only
Set and Read Run/Stop (0=Stop, 1=Run)	LPxx.RUN	01-06	**Short**, Word, Byte	Read/Write
Set and Read Remote/Local (0=Local, 1=Remote)	LPxx.Remote	01-06	**Short**, Word, Byte	Read/Write
Set and Read auto/manual/cascade (0=Auto, 1=Manual, 2=Cascade)	LPxx.Mode	01-06	**Short**, Word, Byte	Read/Write
Lowest Internal Loop Number*	LP.Low		**Short**, Word, Byte	Read Only
Highest Internal Loop Number*	LP.High		**Short**, Word, Byte	Read Only
Ramp Up Rate**	LPxx.RUR xx=loop number	01-06	**Double**, Float	Read/Write
Ramp Down Rate**	LPxx.RDR xx=loop number	01-06	**Double**, Float	Read/Write

External Loops

Address Type	Format	Range	Data Types	Access
Process Value of External Loop	LPExx or LPExx.PV	01-16	**Double**, Float	Read Only
Setpoint Value of External Loop	LPExx.SP	01-16	**Double**, Float	Read/Write
Output Value of External Loop	LPExx.OUT	01-16	**Double**, Float	Read/Write
Alarm Summary of External Loop	LPExx.Alarm	01-16	**DWord**, Short, Word, Byte	Read Only
Alarm Level1 Status of External Loop	LPExx.Alarm1	01-16	**Short**, Word, Byte	Read Only
Alarm Level2 Status of External Loop	LPExx.Alarm2	01-16	**Short**, Word, Byte	Read Only
Alarm Level3 Status of External Loop	LPExx.Alarm3	01-16	**Short**, Word, Byte	Read Only
Alarm Level4 Status of External Loop	LPExx.Alarm4	01-16	**Short**, Word, Byte	Read Only

Upper Scale Value of External Loop*	LPExx.scale_Hi	01-16	**Double**, Float	Read Only
Lower Scale Value of External Loop*	LPExx.scale_Lo	01-16	**Double**, Float	Read Only
Unit String of External Loop (PV)*	LPExx.unit or LPExx.PV.unit	01-16	**String**	Read Only
Unit String of External Loop SP*	LPExx.SP.unit	01-16	**String**	Read Only
Unit String of External Loop OUT*	LPExx.OUT.unit	01-16	**String**	Read Only
Tagname of External Loop*	LPExx.tag	01-16	**String**	Read Only
Tagname of External Loop PV*	LPExx.PV.tag	01-16	**String**	Read Only
Tagname of External Loop SP*	LPExx.SP.tag	01-16	**String**	Read Only
Tagname of External Loop OUT*	LPExx.OUT.tag	01-16	**String**	Read Only
Status of External Loop (PV)*	LPExx.status or LPExx.PV.status	01-16	**String**	Read Only
Status of External Loop SP*	LPExx.SP.status	01-16	**String**	Read Only
Status of External Loop OUT*	LPExx.OUT.status	01-16	**String**	Read Only
Precision of External Loop (PV)*	LPExx.Precision or LPExx.PV.P-recision	01-16	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.SP.Precision	01-16	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.OUT.Precision	01-16	**Short**, Word, Byte	Read Only
Set and Read auto/man-ual/cascade (0=Auto, 1=Manual, 2=Cascade)	LPExx.MODE	01-02	**Short**, Word, Byte	Read/Write
Lowest External Loop Number*	LPE.Low		**Short**, Word, Byte	Read Only
Highest External Loop Number*	LPE.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Types	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	**DWord**, 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	31-60	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	31-60	**String**	Read Only
Status of Math Channel*	CHxx.status	31-60	**String**	Read Only
Precision of Math Channel*	CHxx.Precision	31-60	**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

*The data associated with these addresses is 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, write a non zero value to the Reset Tag. Once the Reset Tag has been invoked, the driver will reinitialize all startup data from the device.

**Zero (0) can be written to the tag to disable the ramp parameters. When a 0 is written to the tag, the tag will display +1.inf upon successful disabling.

DI/DO DATA and Internal Switch Status (Style Number S3 or Later)

Address Type	Format	Range	Data Types	Access
Control Digital Inputs	DI	DI001-DI006	**Boolean**	Read Only

Control Digital Outputs	DO	DO001-DO006	**Boolean**	Read/Write
Expansion Digital Inputs	RI	RI001-RI012	**Boolean**	Read/Write
Expansion Digital Outputs	Read Only	RO001-RO012	**Boolean**	Read/Write
Internal Switches	SW	SW001-SW036	**Boolean**	Read/Write

Alarm Setpoints
Data associated with the addresses denoted 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.

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

Tag Names
For devices 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 Types	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
Host Name of Device	Hostname		**String**	Read Only
Serial Number of Device	SerialNumber		**String**	Read Only
IP Address of Device	IP		**String**	Read Only
Math Communication Data	CDxx	01-30	**Float**	Write Only
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
SetTime*	Tag		**Boolean**	Write Only

*The SetTime tag will cause the the device time to be updated. Writing 0 or 1 to the tag will update the Device Date and Time, which can be verified from the Date tag and the Time tag. The SetTime tag will always display 0 as it is a Write Only tag. After a successful update, the following message will be posted: "Device Clock set to system time [Device <device_name>]."

Administrator Level
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. 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.

Model Name of Device
The Model address type will have a string value of 'CX1000' or 'CX2000,' 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. 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: Use caution when performing write operations using the Command address.

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

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.

CX2620 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 Types	Access
Process Value of Channel	CHxx or CHxx.PV	01-20	**Double**, Float	Read Only
Alarm Summary of Channel	CHxx.Alarm	01-20	**DWord**, 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
Precision of Channel*	CHxx.Precision	01-20	**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

Internal Loops

Address Type	Format	Range	Data Types	Access
Process Value of Internal Loop	LPxx or LPxx.PV	01-06	**Double**, Float	Read Only
Setpoint Value of Internal Loop forcurrent SP number	LPxx.SP	01-06	**Double**, Float	Read/Write
Setpoint Value of Internal Loop for specified SP number	LPxx.SP.n	xx=01-06 n=1-8	**Double**, Float	Read/Write
Current SP number for Internal Loop	LPxx.SP.Num	01-06	**Short**, Word,	Read/Write
Output Value of Internal Loop	LPxx.OUT	01-06	**Double**, Float	Read/Write
Alarm Summary of Internal Loop	LPxx.Alarm	01-06	**DWord**, Short, Word, Byte	Read Only
Alarm Level1 Status of Internal Loop	LPxx.Alarm1	01-06	**Short**, Word, Byte	Read Only
Alarm Level2 Status of Internal Loop	LPxx.Alarm2	01-06	**Short**, Word, Byte	Read Only
Alarm Level3 Status of Internal Loop	LPxx.Alarm3	01-06	**Short**, Word, Byte	Read Only

Alarm Level4 Status of Internal Loop	LPxx.Alarm4	01-06	**Short**, Word, Byte	Read Only
Set and Read Level1 Alarm Setpoint	LPxx.ASP1	01-06	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint	LPxx.ASP2	01-06	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint	LPxx.ASP3	01-06	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint	LPxx.ASP4	01-06	**Double**, Float	Read/Write
Set and Read Level1 Alarm Setpoint of specified PID#	LPxx.ASP1.n	xx=01-06 n=1-8	**Double**, Float	Read/Write
Set and Read Level2 Alarm Setpoint of specified PID#	LPxx.ASP2.n	xx=01-06 n=1-8	**Double**, Float	Read/Write
Set and Read Level3 Alarm Setpoint of specified PID#	LPxx.ASP3.n	xx=01-06 n=1-8	**Double**, Float	Read/Write
Set and Read Level4 Alarm Setpoint of specified PID#	LPxx.ASP4.n	xx=01-06 n=1-8	**Double**, Float	Read/Write
Upper Scale Value of Internal Loop*	LPxx.scale_Hi	01-06	**Double**, Float	Read Only
Lower Scale Value of Internal Loop*	LPxx.scale_Lo	01-06	**Double**, Float	Read Only
Unit String of Internal Loop (PV)*	LPxx.unit or LPxx.PV.unit	01-06	**String**	Read Only
Unit String of Internal Loop SP*	LPxx.SP.unit	01-06	**String**	Read Only
Unit String of Internal Loop OUT*	LPxx.OUT.unit	01-06	**String**	Read Only
Tagname of Internal Loop*	LPxx.tag	01-06	**String**	Read Only
Tagname of Internal Loop PV*	LPxx.PV.tag	01-06	**String**	Read Only
Tagname of Internal Loop SP*	LPxx.SP.tag	01-06	**String**	Read Only
Tagname of Internal Loop OUT*	LPxx.OUT.tag	01-06	**String**	Read Only
Status of Internal Loop (PV)*	LPxx.status or LPxx.PV.status	01-06	**String**	Read Only
Status of Internal Loop SP*	LPxx.SP.status	01-06	**String**	Read Only
Status of Internal Loop OUT*	LPxx.OUT.status	01-06	**String**	Read Only
Precision of Internal Loop (PV)*	LPxx.Precision or LPxx.PV.Precision	01-06	**Short**, Word, Byte	Read Only
Precision of Internal Loop SP*	LPxx.SP.Precision	01-06	**Short**, Word, Byte	Read Only
Precision of Internal Loop OUT*	LPxx.OUT.Precision	01-06	**Short**, Word, Byte	Read Only
Proportional band value of Internal Loop for current PID number	LPxx.PID.P	01-06	**Double**, Float	Read/Write
Proportional band value of Internal Loop for specified PID number	LPxx.PID.P.n	xx=01-06 n=1-8	**Double**, Float	Read/Write
Integral time value of Internal Loop for current PID number	LPxx.PID.I	01-06	**Double**, Float	Read/Write
Integral time value of Internal Loop for specified PID number	LPxx.PID.I.n	xx=01-06 n=1-8	**Double**, Float	Read/Write
Derivative time value of Internal Loop for current PID number	LPxx.PID.D	01-06	**Double**, Float	Read/Write
Derivative time value of Internal Loop for specified PID number	LPxx.PID.D.n	xx=01-06 n=1-8	**Double**, Float	Read/Write
Current PID number for Internal Loop	LPxx.PID.Num	01-06	**Short**, Word, Byte	Read Only

Set and Read Run/Stop (0=Stop, 1=Run)	LPxx.RUN	01-06	**Short**, Word, Byte	Read/Write
Set and Read Remote/Local (0=Local, 1=Remote)	LPxx.Remote	01-06	**Short**, Word, Byte	Read/Write
Set and Read auto/manual/cascade (0=Auto, 1=Manual, 2=Cascade)	LPxx.Mode	01-06	**Short**, Word, Byte	Read/Write
Lowest Internal Loop Number*	LP.Low		**Short**, Word, Byte	Read Only
Highest Internal Loop Number*	LP.High		**Short**, Word, Byte	Read Only
Ramp Up Rate**	LPxx.RUR xx=loop number	01-06	**Double**, Float	Read/Write
Ramp Down Rate**	LPxx.RDR xx=loop number	01-06	**Double**, Float	Read/Write

External Loops

Address Type	Format	Range	Data Types	Access
Process Value of External Loop	LPExx or LPExx.PV	01-16	**Double**, Float	Read Only
Setpoint Value of External Loop	LPExx.SP	01-16	**Double**, Float	Read/Write
Output Value of External Loop	LPExx.OUT	01-16	**Double**, Float	Read/Write
Alarm Summary of External Loop	LPExx.Alarm	01-16	**DWord**, Short, Word, Byte	Read Only
Alarm Level1 Status of External Loop	LPExx.Alarm1	01-16	**Short**, Word, Byte	Read Only
Alarm Level2 Status of External Loop	LPExx.Alarm2	01-16	**Short**, Word, Byte	Read Only
Alarm Level3 Status of External Loop	LPExx.Alarm3	01-16	**Short**, Word, Byte	Read Only
Alarm Level4 Status of External Loop	LPExx.Alarm4	01-16	**Short**, Word, Byte	Read Only
Upper Scale Value of External Loop*	LPExx.scale_Hi	01-16	**Double**, Float	Read Only
Lower Scale Value of External Loop*	LPExx.scale_Lo	01-16	**Double**, Float	Read Only
Unit String of External Loop (PV)*	LPExx.unit or LPExx.PV.unit	01-16	**String**	Read Only
Unit String of External Loop SP*	LPExx.SP.unit	01-16	**String**	Read Only
Unit String of External Loop OUT*	LPExx.OUT.unit	01-16	**String**	Read Only
Tagname of External Loop*	LPExx.tag	01-16	**String**	Read Only
Tagname of External Loop PV*	LPExx.PV.tag	01-16	**String**	Read Only
Tagname of External Loop SP*	LPExx.SP.tag	01-16	**String**	Read Only
Tagname of External Loop OUT*	LPExx.OUT.tag	01-16	**String**	Read Only
Status of External Loop (PV)*	LPExx.status or LPExx.PV.status	01-16	**String**	Read Only
Status of External Loop SP*	LPExx.SP.status	01-16	**String**	Read Only
Status of External Loop OUT*	LPExx.OUT.status	01-16	**String**	Read Only
Precision of External Loop (PV)*	LPExx.Precision or LPExx.PV.P-recision	01-16	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.SP.Precision	01-16	**Short**, Word, Byte	Read Only
Precision of External Loop*	LPExx.OUT.Precision	01-16	**Short**, Word, Byte	Read Only
Set and Read auto/man-ual/cascade (0=Auto, 1=Manual, 2=Cascade)	LPExx.MODE	01-02	**Short**, Word, Byte	Read/Write
Lowest External Loop Number*	LPE.Low		**Short**, Word, Byte	Read Only
Highest External Loop Number*	LPE.High		**Short**, Word, Byte	Read Only

Math Channels

Address Type	Format	Range	Data Types	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	**DWord**, 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	31-60	**String**	Read Only
Tagname of Math Channel*	CHxx.tag	31-60	**String**	Read Only
Status of Math Channel*	CHxx.status	31-60	**String**	Read Only
Precision of Math Channel*	CHxx.Precision	31-60	**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

*The data associated with these addresses is 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, write a non zero value to the Reset Tag. Once the Reset Tag has been invoked, the driver will reinitialize all startup data from the device.

**Zero (0) can be written to the tag to disable the ramp parameters. When a 0 is written to the tag, the tag will display +1.inf upon successful disabling.

DI/DO DATA and Internal Switch Status (Style Number S3 or Later)

Address Type	Format	Range	Data Types	Access
Control Digital Inputs	DI	DI001-DI006	**Boolean**	Read Only
Control Digital Outputs	DO	DO001-DO006	**Boolean**	Read/Write
Expansion Digital Inputs	RI	RI001-RI012	**Boolean**	Read/Write
Expansion Digital Outputs	Read Only	RO001-RO012	**Boolean**	Read/Write
Internal Switches	SW	SW001-SW036	**Boolean**	Read/Write

Alarm Setpoints

Data associated with the addresses denoted 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.

Scales

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

Tag Names

For devices 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 Types	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
Host Name of Device	Hostname		**String**	Read Only
Serial Number of Device	SerialNumber		**String**	Read Only
IP Address of Device	IP		**String**	Read Only

Math Communication Data	CDxx	01-30	**Float**	Write Only
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
SetTime*	Tag		**Boolean**	Write Only

*The SetTime tag will cause the the device time to be updated. Writing 0 or 1 to the tag will update the Device Date and Time, which can be verified from the Date tag and the Time tag. The SetTime tag will always display 0 as it is a Write Only tag. After a successful update, the following message will be posted: "Device Clock set to system time [Device <device_name>]."

Administrator Level
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. 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.

Model Name of Device
The Model address type will have a string value of 'CX1000' or 'CX2000,' 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. 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: Use caution when performing write operations using the Command address.

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

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.

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

Device Status Messages

Device '<device name>' is not responding
Device '<device name>' login failed. Check username and password
Device '<device name>' login not accepted. Choose username of 'admin' or 'user'
No more logins at this level on device '<device name>'
Unable to write to '<address>' on device '<device name>'
Write allowed for admin level only (Device '<device name>', Tag '<address>')
Write allowed for devices with math option only (Device '<device name>', Tag '<address>')

Driver Error Messages

Winsock initialization failed (OS Error=n)
Winsock V1.1 or higher must be installed to use the Yokogawa CX Ethernet device driver

Address Validation

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

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

Error Type:
Warning

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

Solution:
Verify that 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 statically 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 statically 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 statically 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 statically has no length.

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

Device Status Messages

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

Device Status Messages

Device '<device name>' is not responding
Device '<device name>' login failed. Check username and password
Device '<device name>' login not accepted. Choose username of 'admin' or 'user'
No more logins at this level on device '<device name>'
Unable to write to '<address>' on device '<device name>'
Write allowed for admin level only (Device '<device name>', Tag '<address>')
Write allowed for devices with math option only (Device '<device name>', Tag '<address>')

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.

Device '<device name>' login failed. Check username and password

Error Type:
Serious

Possible Cause:
1. The username and password required for login to the device have not been specified in Device Configuration.

2. The username and password were entered incorrectly or entered in non-matching case.
3. The username and/or password specified in Device Configuration is not registered in the device.

Solution:
Re-enter the correct username and password in Device Configuration.

Device '<device name>' login not accepted. Choose username of 'admin' or 'user'

Error Type:
Serious

Possible Cause:
1. The password protected login feature of the device is disabled and the username specified in Device Configuration does not contain the expected user level required for login to the device.
2. The user level was entered incorrectly or entered in non-matching case.

Solution:
Re-enter the correct user level (either 'admin' or 'user') in the username field in Device Configuration.

No more logins at this level on device '<device name>'

Error Type:
Serious

Possible Cause:
There are no more users permitted to login at this user level. Other users may be connected to the device, or a connection may have been made and broken without logging off or disconnecting.

Solution:
1. Check for other user connections that are blocking connection.
2. Make sure that the Keep Alive feature for Ethernet communications is enabled in the device. This will cause the device to disconnect if there is a break in communications.

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.

Write allowed for admin level only (Device '<device name>', Tag '<address>')

Error Type:
Warning

Possible Cause:
The user is logged on to the named device at the user level and is attempting to write to a tag that is writeable at the administrator level only.

Solution:
Verify the user/admin level used for login.

Write allowed for devices with math option only (Device '<device name>', Tag '<address>')

Error Type:

Warning

Possible Cause:
The named device is not equipped with the math option and a write was attempted to a tag that is available for math operations only.

Solution:
Verify that the tag address exists for the device.

Driver Error Messages

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

Driver Error Messages
Winsock initialization failed (OS Error=n)
Winsock V1.1 or higher must be installed to use the Yokogawa CX Ethernet device driver

Winsock initialization failed (OS Error=n)

Error Type:
Fatal

OS Error	Indication	Possible Solution
10091	Indicates that the underlying network subsystem is not ready for network communication.	Wait a few seconds and restart the driver.
10067	Limit on the number of tasks supported by the Windows Sockets implementation has been reached.	Close one or more applications that may be using Winsock and restart the driver.

Winsock V1.1 or higher must be installed to use the Yokogawa CX Ethernet device driver

Error Type:
Fatal

Possible Cause:
The version number of the Winsock DLL found on the system is less than 1.1.

Solution:
Upgrade Winsock to version 1.1 or higher.

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