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DNP3 Master Communications Drivers

Information Sheet for Crimson v3.0+

Compatible Devices

DNP3 Serial or Ethernet slave device.

Verified Device

Invensys/Foxboro SCD5200

General Information

A Red Lion Graphite HMI or Graphite Controller device is mandatory when using a DNP3 communications driver.

Data Access

Data access to the following items and their events are provided:

Binary Inputs
Double-bit Inputs
Binary Outputs
Counters
Frozen Counters
Analog Inputs
Analog Outputs

The following commands are also available:

Cold Restart
Warm Restart
Unsolicited Message Enable Mask
Unsolicited Message Disable Mask

Data Access Notes

The following attributes and action items are available as indicated:

Current Value or **Control** - The latest value received from the target device. Access is read only with the exception of non-event Binary and Analog Output items.

Flags – Read only bit mask indicating status. Bit mask definition is as follows:

Binary items:
Bit 0 – Online
Bit 1 – Restart
Bit 2 – Communications Lost
Bit 3 – Remote Forced
Bit 4 – Local Forced
Bit 5 – Chatter

Counters:
Bit 0 – Online
Bit 1 – Restart
Bit 2 – Communications Lost
Bit 3 – Remote Forced
Bit 4 – Local Forced
Bit 5 – Rollover

Analogs:
Bit 0 – Online
Bit 1 – Restart
Bit 2 – Communications Lost
Bit 3 – Remote Forced
Bit 4 – Local Forced
Bit 5 – Check Reference

Timestamp – The date and time associated with the last value received from the target device. Please use Crimson 3.0+ Time and Date format option using a Data Type of addrLongAsLong. Timestamps are read only and are dependent upon target device variation support.

Class – Data item used to assign the desired DNP3 class 0, 1, 2 or 3. Success of the assignment command may be determined by mapping to a read/write tag item. Upon success the entered value will remain, otherwise the previous value will be returned.

On Time – Write only attribute item used when setting the Binary Output control item.

Off Time – Write only attribute item used when setting the Binary Output control item.

Freeze – Write only bit mask item used to perform a Counter Freeze. Bit mask definition is as follows:

Bit 0 – freeze counter
Bit 1 – reset counter
Bit 2 – no ACK required

Note: No action will occur if bit 0 is not set or a value change is not detected.

Accessing 64-bit Values:

Access to 64-bit double values is possible by using data arrays in conjunction with user functions provided in Crimson 3.0+. Simply map all parameters of type double to a numeric tag array. The array selection is available in each tag. Then use the following user functions to get and set double values, respectively.

```
cstring  AsTextR64(Data)
```

Where Data is the first element in the array of the double value that will be passed as a string.

```
void     TextToR64(Input, Output)
```

Where Input is a string representing a double value and Output is the first element in the array of the double value to be set.

Note: Other 64-bit math functions are also available. Please review the Crimson 3.0 Reference Manual.

Using Commands:

All commands require a non-zero value change.

Unsolicited Message Enable/Disable Mask – Bit mask definition is as follows:

Bit 0 – Class 1
Bit 1 – Class 2
Bit 2 – Class 3

Enabling Events - To enable events for a data item, assign a non-zero class to the data item. If unsolicited messages are enabled for the assigned class events will be sent as they happen. Otherwise, events will be polled on demand.

Error Feedback – Failed Cmd/Write Feedback data items are provided so that details can be viewed when an error occurs. The system will not automatically retry errors which provide feedback details. Ten sets are available – each set containing the following details:

Object – The data item associated with the error. Please see object table below for numerical translation.

Point – The index or element associated with the error.

Flags – Bit mask representing error or condition. Please refer to flag table below for bit definitions.

Timestamp – Time that error feedback was reported. Please use Crimson 3.0+ Time and Date format option.

Object Table

Binary Inputs	1
Double-bit Inputs	2
Binary Outputs	10
Counters	20
Frozen Counters	23
Analog Inputs	30
Analog Outputs	40
Cold Restart	240 Point 1
Warm Restart	240 Point 2
Unsolicited Msg Enable	240 Point 3
Unsolicited Msg Disable	240 Point 4

Flag Table

0	Unsupported Function
1	Object Unknown
2	Parameter Error
3	Buffer Overflow
4	Already Executing
5	Bad Configuration
7	n/a
8	All Stations
9	Class 1
10	Class 2
11	Class 3
12	Need Time
13	Local
14	Trouble
15	Restart

Revision History

07/26/16 – Created
12/02/16 – Updated Data Access notes.
12/22/16 – Updated General Information.