



INDUSTRIAL CONTROL COMMUNICATIONS, INC.

Metasys N2 Master Driver Manual



TABLE OF CONTENTS

| | |
|---|----------|
| 1 Metasys N2 Master | 2 |
| 1.1 Overview | 2 |
| 1.2 Connections | 2 |
| 1.3 Master Settings | 2 |
| 1.4 Service Object Settings | 3 |
| 1.4.1 <i>Analog Input Service Object Settings</i> | 3 |
| 1.4.2 <i>Analog Output Service Object Settings</i> | 4 |
| 1.4.3 <i>Binary Input Service Object Settings</i> | 5 |
| 1.4.4 <i>Binary Output Service Object Settings</i> | 6 |
| 1.4.5 <i>Internal Float Service Object Settings</i> | 7 |
| 1.4.6 <i>Internal Integer Service Object Settings</i> | 8 |
| 1.4.7 <i>Internal Byte Service Object Settings</i> | 9 |
| 1.5 Override Release Trigger (excludes XLTR-1000) | 10 |
| 1.6 Diagnostics Object..... | 10 |

1 Metasys N2 Master

1.1 Overview

This driver supports the Johnson Controls Metasys® N2 protocol as a network master. Some notes of interest are:

- Supports access to N2 analog input, analog output, binary input, binary output, internal float, internal integer, and internal byte object types.
- Supports access to both N2 Open (typically 3rd-party) devices, as well as JCI VMA devices (such as the VMA1420, etc.)

1.2 Connections

This section describes the typical connections used for a Millennium Series gateway.

Connect the N2 bus wiring to the RS-485 port by using twisted-pair cable connected as shown in Figure 1. Connect the N2+ wire to terminal “A”, the N2- wire to terminal “B”, and the network ground wire to terminal “GND”. Also install jumper wires connecting terminal “A” to terminal “Y”, and terminal “B” to terminal “Z”. Continue this connection scheme throughout the remainder of the network. Always connect each unit in a daisy-chain fashion, without drop lines, star configurations, etc. For further N2 network wiring requirements and procedures, please refer to the appropriate JCI network installation documentation.

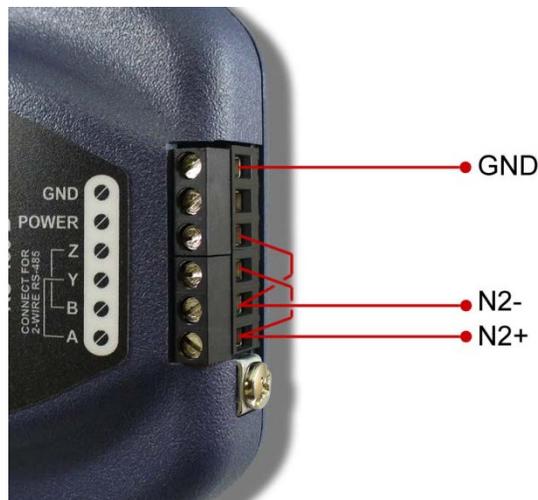


Figure 1: N2 Bus Cable Connection to RS-485 Port

1.3 Master Settings

Baud Rate

Fixed at 9600 baud.



Parity

Fixed at No Parity (1 Stop Bit).

Timeout

Sets the time in milliseconds that the driver will wait for a response from a device after sending a request.

Scan Rate

This is the time in milliseconds the driver will wait between sending requests. This is a useful feature for certain devices or infrastructure components (such as radio modems) that may not be capable of sustaining the maximum packet rates that the driver is capable of producing. The start time for this delay is taken with respect to the moment at which the driver is capable of sending the next packet (due to either reception or timeout of the previous request). If no additional time is required, setting this field to 0 instructs the driver to send its next request packet as soon as possible.

1.4 Service Object Settings

A variety of different service object types are available. Each type targets a different Metasys object type. For each service object, the driver will continually read the values of the defined Metasys objects within the service object from the designated device, storing the values in the database (if the read function is enabled). When data in the database changes where the Metasys objects are mapped, a write request is generated to the designated device notifying it of the changed object values (if the write function is available and enabled).

1.4.1 Analog Input Service Object Settings

Description

This 32-character (max) field is strictly for user reference: it is not used at any time by the driver.

Device Type

Defines whether the targeted device supports the N2 Open or VMA variation of the Metasys protocol.

Destination Address

Indicates the destination address (1...255) of the remote slave device on the network that will be accessed by this service object.

Start Instance

Defines the starting instance number (1...256) for a range of Metasys objects for this service object.

Number of Instances

Defines the number of Metasys objects (1...256) to be targeted by this service object.



Database Address

Defines the database address where the first Metasys object value of this service object will be mapped. The configuration studio will not allow entry of a starting database address that will cause the service object to run past the end of the database. The highest valid database address, therefore, will depend on the targeted data type, as well as the number of items to be accessed.

Data Type

Specifies how the value will be stored in the database for each Metasys object in this service object. This defines how many bytes will be allocated, whether the value should be treated as signed or unsigned, and whether the value should be interpreted as an integer or a floating point number. Select the desired data type from this dropdown menu.

Multiplier

The amount that associated network values are scaled by prior to being stored into the database or after being retrieved from the database. Upon retrieval from the database, raw data is multiplied by the multiplier to produce a network value (to be sent to the device). Similarly, network values (read from the device) are divided by the multiplier before being stored into the database.

Read Value

This checkbox is always checked, which indicates that reading is always enabled for this type of service object.

1.4.2 Analog Output Service Object Settings

Description

This 32-character (max) field is strictly for user reference: it is not used at any time by the driver.

Device Type

Defines whether the targeted device supports the N2 Open or VMA variation of the Metasys protocol.

Destination Address

Indicates the destination address (1...255) of the remote slave device on the network that will be accessed by this service object.

Start Instance

Defines the starting instance number (1...256) for a range of Metasys objects for this service object.

Number of Instances

Defines the number of Metasys objects (1...256) to be targeted by this service object.

Database Address

Defines the database address where the first Metasys object value of this service object will be mapped. The configuration studio will not allow entry of a starting database address that will cause the service object to run past the end of the database. The highest valid database



address, therefore, will depend on the targeted data type, as well as the number of items to be accessed.

Data Type

Specifies how the value will be stored in the database for each Metasys object in this service object. This defines how many bytes will be allocated, whether the value should be treated as signed or unsigned, and whether the value should be interpreted as an integer or a floating point number. Select the desired data type from this dropdown menu.

Multiplier

The amount that associated network values are scaled by prior to being stored into the database or after being retrieved from the database. Upon retrieval from the database, raw data is multiplied by the multiplier to produce a network value (to be sent to the device). Similarly, network values (read from the device) are divided by the multiplier before being stored into the database.

Read Value

Check this checkbox to enable reading (the service object will continuously read from the remote device unless a pending write exists).

Write Value

Check this checkbox to enable writing (when values encompassed by this service object change in the internal database, these changes will be written down to the targeted remote device).

1.4.3 Binary Input Service Object Settings

Description

This 32-character (max) field is strictly for user reference: it is not used at any time by the driver.

Device Type

Defines whether the targeted device supports the N2 Open or VMA variation of the Metasys protocol.

Destination Address

Indicates the destination address (1...255) of the remote slave device on the network that will be accessed by this service object.

Start Instance

Defines the starting instance number (1...256) for a range of Metasys objects for this service object.

Number of Instances

Defines the number of Metasys objects (1...256) to be targeted by this service object.

Database Address

Defines the database address where the first Metasys object value of this service object will be mapped. The configuration studio will not allow entry of a starting database address that will



cause the service object to run past the end of the database. The highest valid database address, therefore, will depend on the number of items to be accessed.

Data Type

Fixed at “1 Bit”.

Read Value

This checkbox is always checked, which indicates that reading is always enabled for this type of service object.

1.4.4 Binary Output Service Object Settings

Description

This 32-character (max) field is strictly for user reference: it is not used at any time by the driver.

Device Type

Defines whether the targeted device supports the N2 Open or VMA variation of the Metasys protocol.

Destination Address

Indicates the destination address (1...255) of the remote slave device on the network that will be accessed by this service object.

Start Instance

Defines the starting instance number (1...256) for a range of Metasys objects for this service object.

Number of Instances

Defines the number of Metasys objects (1...256) to be targeted by this service object.

Database Address

Defines the database address where the first Metasys object value of this service object will be mapped. The configuration studio will not allow entry of a starting database address that will cause the service object to run past the end of the database. The highest valid database address, therefore, will depend on the number of items to be accessed.

Data Type

Fixed at “1 Bit”.

Read Value

Check this checkbox to enable reading (the service object will continuously read from the remote device unless a pending write exists).

Write Value

Check this checkbox to enable writing (when values encompassed by this service object change in the internal database, these changes will be written down to the targeted remote device).



1.4.5 Internal Float Service Object Settings

Description

This 32-character (max) field is strictly for user reference: it is not used at any time by the driver.

Device Type

Defines whether the targeted device supports the N2 Open or VMA variation of the Metasys protocol.

Destination Address

Indicates the destination address (1...255) of the remote slave device on the network that will be accessed by this service object.

Start Instance

Defines the starting instance number (1...256) for a range of Metasys objects for this service object.

Number of Instances

Defines the number of Metasys objects (1...256) to be targeted by this service object.

Database Address

Defines the database address where the first Metasys object value of this service object will be mapped. The configuration studio will not allow entry of a starting database address that will cause the service object to run past the end of the database. The highest valid database address, therefore, will depend on the targeted data type, as well as the number of items to be accessed.

Data Type

Specifies how the value will be stored in the database for each Metasys object in this service object. This defines how many bytes will be allocated, whether the value should be treated as signed or unsigned, and whether the value should be interpreted as an integer or a floating point number. Select the desired data type from this dropdown menu.

Multiplier

The amount that associated network values are scaled by prior to being stored into the database or after being retrieved from the database. Upon retrieval from the database, raw data is multiplied by the multiplier to produce a network value (to be sent to the device). Similarly, network values (read from the device) are divided by the multiplier before being stored into the database.

Read Value

Check this checkbox to enable reading (the service object will continuously read from the remote device unless a pending write exists).

Write Value

Check this checkbox to enable writing (when values encompassed by this service object change in the internal database, these changes will be written down to the targeted remote device).



1.4.6 Internal Integer Service Object Settings

Description

This 32-character (max) field is strictly for user reference: it is not used at any time by the driver.

Device Type

Defines whether the targeted device supports the N2 Open or VMA variation of the Metasys protocol.

Destination Address

Indicates the destination address (1...255) of the remote slave device on the network that will be accessed by this service object.

Start Instance

Defines the starting instance number (1...256) for a range of Metasys objects for this service object.

Number of Instances

Defines the number of Metasys objects (1...256) to be targeted by this service object.

Database Address

Defines the database address where the first Metasys object value of this service object will be mapped. The configuration studio will not allow entry of a starting database address that will cause the service object to run past the end of the database. The highest valid database address, therefore, will depend on the targeted data type, as well as the number of items to be accessed.

Data Type

Specifies how the value will be stored in the database for each Metasys object in this service object. This defines how many bytes will be allocated, whether the value should be treated as signed or unsigned, and whether the value should be interpreted as an integer or a floating point number. Select the desired data type from this dropdown menu.

Multiplier

The amount that associated network values are scaled by prior to being stored into the database or after being retrieved from the database. Upon retrieval from the database, raw data is multiplied by the multiplier to produce a network value (to be sent to the device). Similarly, network values (read from the device) are divided by the multiplier before being stored into the database.

Read Value

Check this checkbox to enable reading (the service object will continuously read from the remote device unless a pending write exists).

Write Value

Check this checkbox to enable writing (when values encompassed by this service object change in the internal database, these changes will be written down to the targeted remote device).



1.4.7 Internal Byte Service Object Settings

Description

This 32-character (max) field is strictly for user reference: it is not used at any time by the driver.

Device Type

Defines whether the targeted device supports the N2 Open or VMA variation of the Metasys protocol.

Destination Address

Indicates the destination address (1...255) of the remote slave device on the network that will be accessed by this service object.

Start Instance

Defines the starting instance number (1...256) for a range of Metasys objects for this service object.

Number of Instances

Defines the number of Metasys objects (1...256) to be targeted by this service object.

Database Address

Defines the database address where the first Metasys object value of this service object will be mapped. The configuration studio will not allow entry of a starting database address that will cause the service object to run past the end of the database. The highest valid database address, therefore, will depend on the targeted data type, as well as the number of items to be accessed.

Data Type

Specifies how the value will be stored in the database for each Metasys object in this service object. This defines how many bytes will be allocated, whether the value should be treated as signed or unsigned, and whether the value should be interpreted as an integer or a floating point number. Select the desired data type from this dropdown menu.

Multiplier

The amount that associated network values are scaled by prior to being stored into the database or after being retrieved from the database. Upon retrieval from the database, raw data is multiplied by the multiplier to produce a network value (to be sent to the device). Similarly, network values (read from the device) are divided by the multiplier before being stored into the database.

Read Value

Check this checkbox to enable reading (the service object will continuously read from the remote device unless a pending write exists).

Write Value

Check this checkbox to enable writing (when values encompassed by this service object change in the internal database, these changes will be written down to the targeted remote device).

1.5 Override Release Trigger (excludes XLTR-1000)

Each commandable service object, i.e. Output and Internal service objects, can optionally include an override release trigger to release a previously written override value. The trigger is assigned to a byte in the database. When a write is detected at this database address, the trigger value is reset to 0, and a release request is sent to all objects defined in the service object.

Release Trigger Database Address

Specifies the database address to use to trigger the release request.

1.6 Diagnostics Object

Each service object can optionally include a diagnostics object for debugging and diagnostics.

Diagnostics Database Address

Enter the database address at which to store the diagnostics information.



INDUSTRIAL CONTROL COMMUNICATIONS, INC.

1600 Aspen Commons, Suite 210
Middleton, WI USA 53562-4720
Tel: [608] 831-1255 Fax: [608] 831-2045

<http://www.iccdesigns.com>

Printed in U.S.A