

# i<sup>3</sup> Modbus Master Tutorial

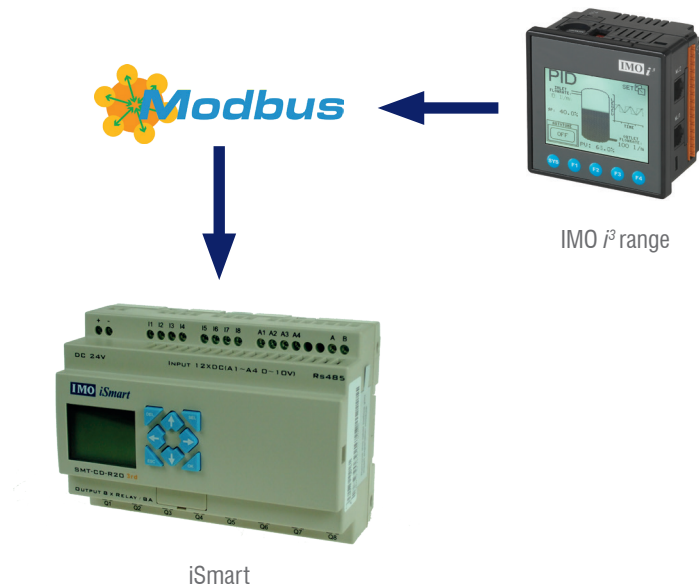
## Introduction

In this tutorial we will see how to configure Modbus master communication of an i<sup>3</sup> with 4 types of devices – an iView, and iSmart, a XBM plc and a VXT inverter.

## Connecting i<sup>3</sup> to iSmart

We will demonstrate the i<sup>3</sup> as a Modbus master, controlling an iSmart output. The i<sup>3</sup> can read and write to and from single and multiple registers and is easily configured.

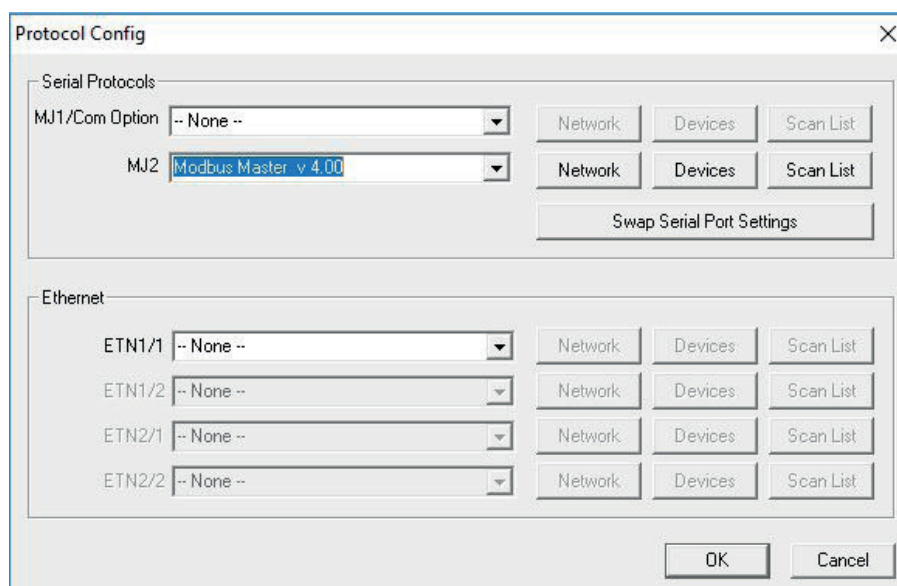
We will write the set point to a timer and a counter.



## i<sup>3</sup> Settings:

### Protocol Configuration:

The Modbus master protocol utilises the Modbus function codes 03 to read single and multiple registers, 10 to write to multiple registers and 06 to write to single registers. Most Modbus slave devices only use the function codes 03 to read and 06 to write. Therefore, the i<sup>3</sup> can communicate with any Modbus enabled device.



# i<sup>3</sup> Modbus Master Tutorial

## Network Configuration

In the network configuration the communication parameters are set. Set the parameters as shown below. We are going to use the protocol Modbus RTU and communicate on RS485, which is a multi-drop half duplex system.

**Network Config (Modbus Master)**

**Port Configuration**

Baud Rate: 9600 Protocol: Modbus RTU

Parity: None Mode: RS-485

Data Bits: 8 Retries: 2 (0-255)

Stop Bits: 1 Timeout: 1000 mSec

Handshake: Multidrop Half Slave Speed: Medium

**Update Scan**

☒ Automatic

Update Interval: 0 mSec ReacquireTime: 1000 mSec

☐ Manual

Trigger: Name: 1-BIT

ID Select: Name: 16-BIT

**Master ID / Address**

Address: 0

**Status**

Register: %R00101 Name: 4 x 32-BIT

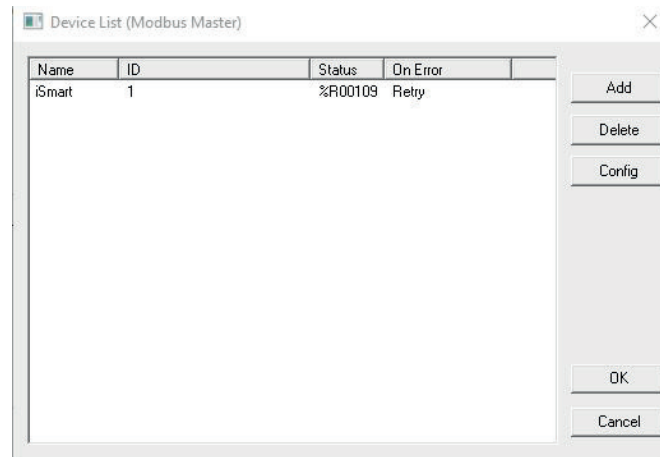
Protocol Help OK Cancel

To see the status of the network assign a % R register here.

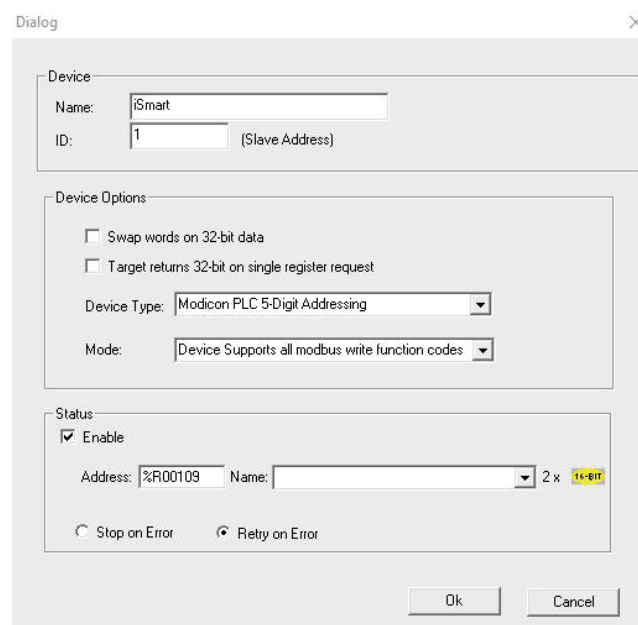
# i<sup>3</sup> Modbus Master Tutorial

## Communication Devices in the Network

Once the Network parameters have been set, the Device need to be added to the network.



Name the device and give the device an ID. This ID should be unique and match the number on the rotary dial on the front on the Smart I/O. Add the three individual devices as shown and click OK. Ensure that the ID has also been set on the front of the Smart I/O before powering up.



# i<sup>3</sup> Modbus Master Tutorial



## Scan List

Finally, we need to add to the scan list the addresses we are going to read from and write to the Modbus slaves.

Note : For the iSmart Modbus addresses please refer to the smt v3 modbus protocol 1013.pdf for more information.

The iSmart addresses used in this example are the following :

I1 : 40006

Q1: 40008

DR1: 44353

DR2: 44354

Dialog

Target

Device Name: iSmart (1)

Device Register: 40006

Length: 1

32 bit access

Local

Register: %R00021

Name: Inputs

UpdateType

☒ Polled Read ☐ Triggered Read

☐ Polled Read/Write ☐ Triggered Write

☐ Polled Read/Write Init

Trigger Register:

Name:

OK Cancel

Select the Modbus device register address and the length of the data.

The data in the device address will be stored in the i3 locally where specified in a particular register.

The type command and update type are defined here. Whether the data is read or write and polled always or triggered on a bit.

Scan List (Modbus Master)

Edit View Sort

Index	Local Name	Register	Type	Dev Name	ID	Target	Length
0	Inputs	%R00021	<-	iSmart	1	40006	1
1	Outputs	%R00023	<->	iSmart	1	40008	1
2	DR1	%R00030	<->	iSmart	1	44353	1
3	DR2	%R00031	<->	iSmart	1	44354	1

Add

Delete

Config

Edit Names

Cancel

OK

Filter By Device: All

## Screen Editor Programming

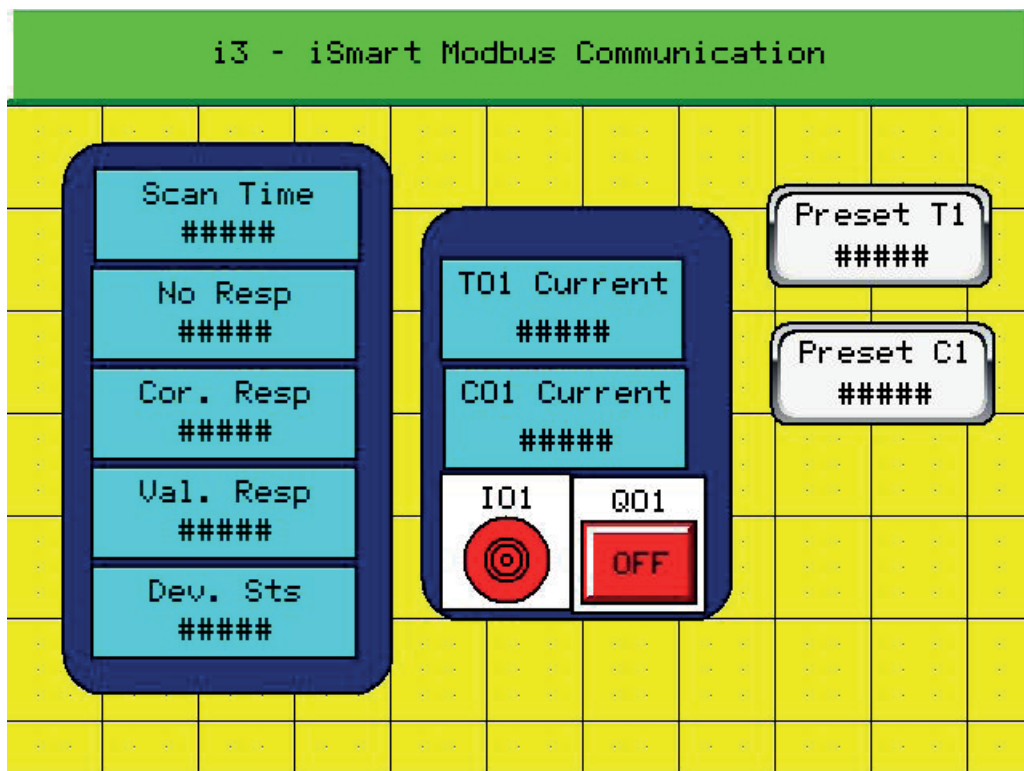
For this program we are going to have 1 screen to :

\*Setting timer/counter setpoint.

\*Monitor the status of the first iSmart 'Input

\*Monitor the communication Status

To enter the screen editor, click on the icon  . Please set up the screens as described below



On the Screen, there will be 7 numeric data fields. 5 to monitor the communication status and two others to monitor the current timer/counter value  
Two numeric data entry for entering the Timer/Counter set point.

One Lamp to represent the Input 1.

One Toggle Button to turn the Output Q1 ON/OFF.

# i<sup>3</sup> Modbus Master Tutorial

## iSmart Comms Settings

The iSmart module system is set as the following :

Module System Set

Set ID  
Current ID: 1  
New ID(00-99): 1

Remote I/O  
☒ NO  
☐ Master  
☐ Slave

Set Expand I/O  
I/O Num: 0  
☐ I/O Alarm

Others  
☒ M Keep  
☐ C Keep  
☐ Back Light  
☐ Z Set

RS485 Set  
Comm. Mode: 8/N/1  
Baud Rate: 9600

DR Format Set  
☒ Unsigned  
☐ Signed

Coil Record  
☒ None ☐ M ☐ N  
Range: 01-10 SUM=0

Cancel Set

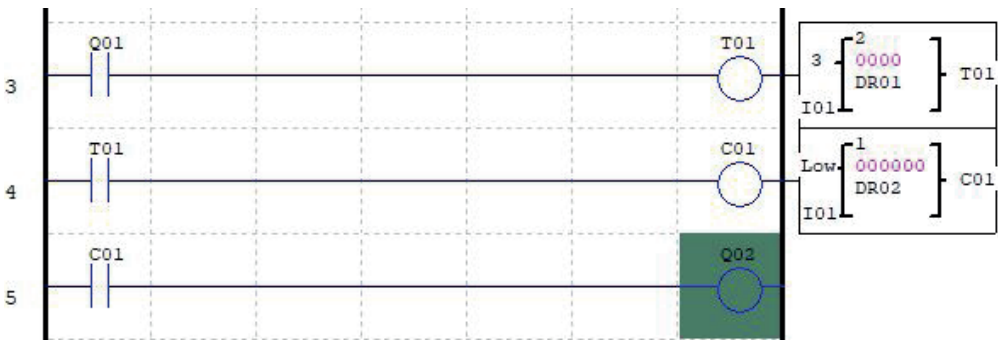
Set ID:

\*Each Device in a network is assigned a unique ID address from 1 to 99.

RS485 Set:

\*The parameter settings should match the master's parameter.(Baud rate/Data bits/Parity/ Stop bits)

## iSmart Ladder Logic Programming

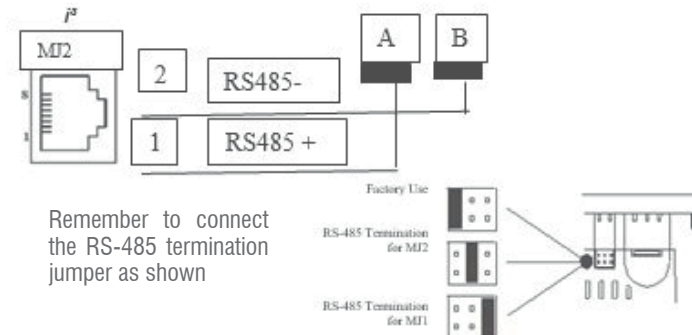


- The output Q1 is controlled from the i3
- The two-pre-set value for the timer/counter are entered from the i3.

# i<sup>3</sup> Modbus Master Tutorial

## Wiring Diagram

We are using MJ 2 on the i3 for the RS485 communication , 2 wire to connect to the devices. The wiring for this is as follows.



## Running the Program

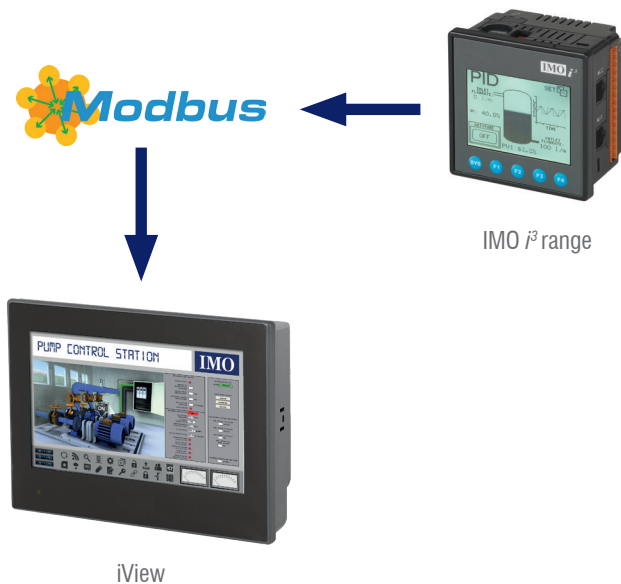
Please refer to the attached program examples:

iSmart : Setpoints\_from\_i3\_master\_modbus485.gen

i3 : i3iSmart Modbus.csp

## Connecting i3 to an iView

The two controllers can be connected together over the Modbus RTU protocol.

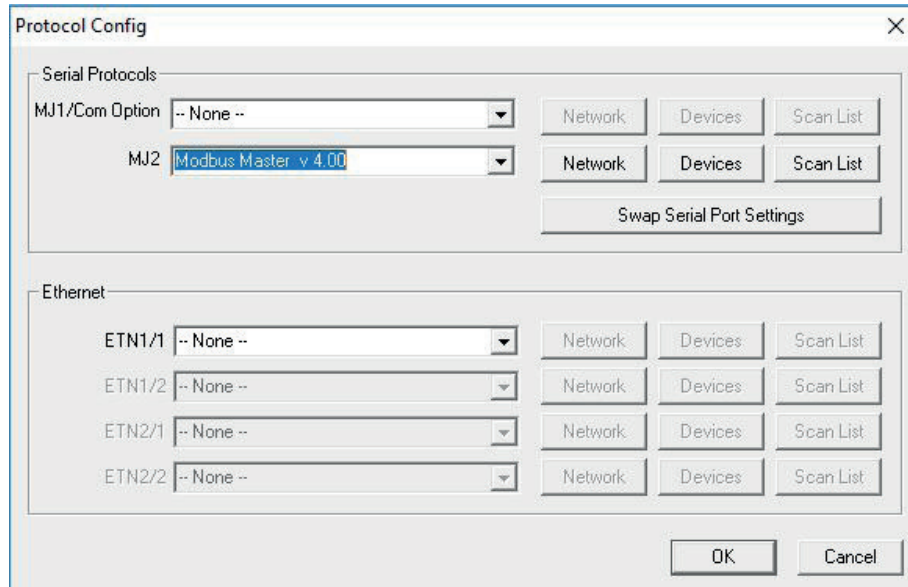


## i3 Configurator Software

### Protocol Configuration

The Modbus master protocol utilises the Modbus function codes 03 to read single and multiple registers, 10 to write to multiple registers and 06 to write to single registers. Most Modbus slave devices only use the function codes 03 to read and 06 to write. Therefore, the i3 can communicate with any Modbus enabled device.

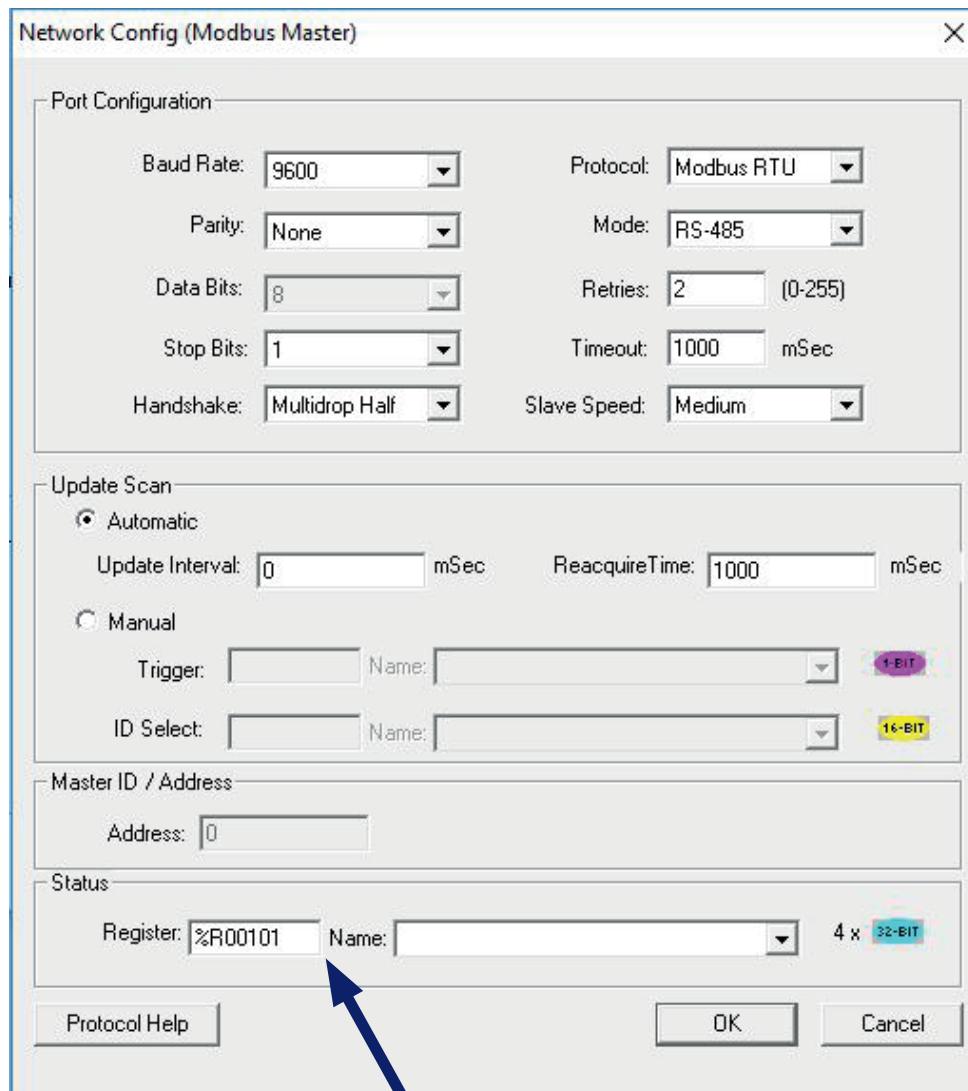
Open the Program > Protocol Configuration. Select the Modbus Master Protocol in the MJ2 and configure the Network, Devices and Scan list as shown below.



The image shows the 'Protocol Config' dialog box in the i3 Configurator software. It is divided into two main sections: 'Serial Protocols' and 'Ethernet'.  
**Serial Protocols:** This section contains two rows of configuration. The first row is for 'MJ1/Com Option' with a dropdown menu set to '-- None --'. The second row is for 'MJ2' with a dropdown menu set to 'Modbus Master v 4.00'. To the right of each dropdown are three buttons: 'Network', 'Devices', and 'Scan List'. Below these rows is a 'Swap Serial Port Settings' button.  
**Ethernet:** This section contains four rows of configuration for ETN1/1, ETN1/2, ETN2/1, and ETN2/2. Each row has a dropdown menu set to '-- None --' and three buttons: 'Network', 'Devices', and 'Scan List'.  
At the bottom right of the dialog are 'OK' and 'Cancel' buttons.

## Network Configuration

In the network configuration the communication parameters are set. Set the parameters as shown below. We are going to use the protocol Modbus RTU and communicate on RS485, which is a multi-drop half duplex system.



The dialog box is titled "Network Config (Modbus Master)". It contains several sections for configuring the Modbus Master:

- Port Configuration:** Includes fields for Baud Rate (9600), Parity (None), Data Bits (8), Stop Bits (1), Handshake (Multidrop Half), Protocol (Modbus RTU), Mode (RS-485), Retries (2), Timeout (1000 mSec), and Slave Speed (Medium).
- Update Scan:** Includes radio buttons for Automatic and Manual. Under Automatic, there are fields for Update Interval (0 mSec) and ReacquireTime (1000 mSec). Under Manual, there are fields for Trigger and ID Select, each with a Name dropdown and a bit indicator (1-BIT and 16-BIT respectively).
- Master ID / Address:** Includes a field for Address (0).
- Status:** Includes a field for Register (%R00101) and a Name dropdown. A blue arrow points to the Register field with a callout box.

Buttons at the bottom include Protocol Help, OK, and Cancel.

To see the status of the network assign a % R register here.

# i<sup>3</sup> Modbus Master Tutorial

## Devices

Name the device and give it an ID.

Dialog

Device

Name:

ID:  (Slave Address)

Device Options

☒ Swap words on 32-bit data

☐ Target returns 32-bit on single register request

Device Type:

Mode:

Status

☒ Enable

Address:  Name:  2 x

☐ Stop on Error ☒ Retry on Error

Ok Cancel

## Scan List

Finally, we need to add to the scan list the addresses we are going to read from and write to the Modbus slaves.

Dialog

Target

Device Name: View (1)

Device Register: 40001

Length: 10

32 bit access

Local

Register: %R00001

Name:

UpdateType

☐ Polled Read
 ☐ Triggered Read

☒ Polled Read/Write
 ☐ Triggered Write

☐ Polled Read/Write Init

Trigger Register: Name:

OK Cancel

Scan List (Modbus Master)

Edit View Sort

Index	Local Name	Register	Type	Dev Name	ID	Target	Length	Trigger
0		%R00001	<->	View	1	40001	10	None

Add

Delete

Config

Edit Names

Cancel

OK

Filter By Device: All

# i<sup>3</sup> Modbus Master Tutorial

Select the Modbus device register address and the length of the data.

The data in the device address will be stored in the i3 locally where specified in a particular register.

The type command and update type are defined here. Whether the data is read or write and polled always or triggered on a bit.

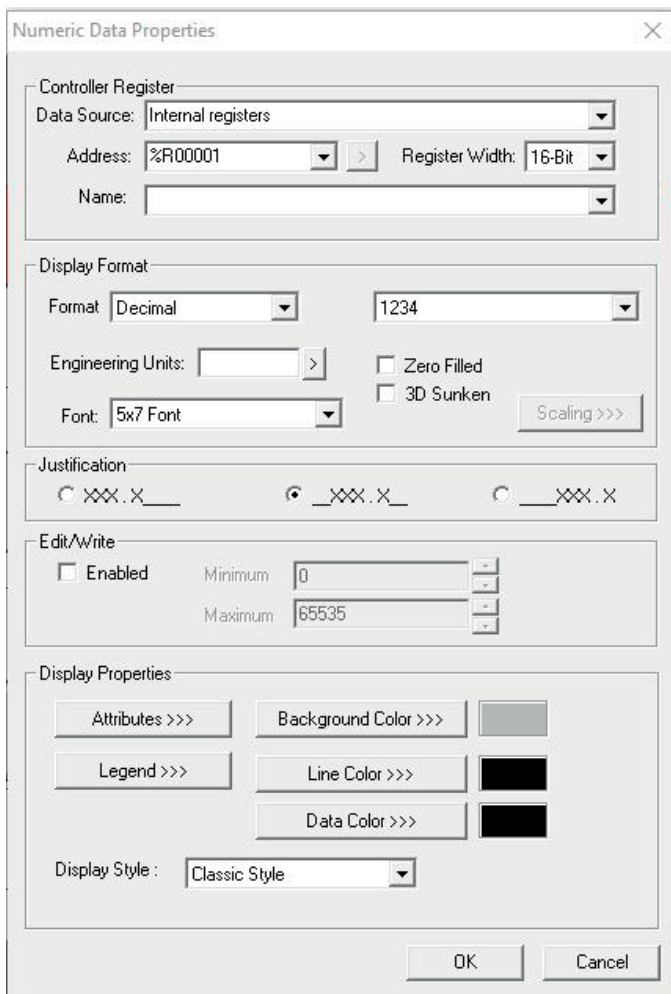
## Screen Editor Programming

For this program we are going to have 1 screen and to enter the screen editor, click on the icon  . Please set up the screen as described below:

There will be 10 numeric data properties.

- 5 numeric data for monitoring Data/value from the iView.

Note: The option Edit/Write should be unticked.



- 5 numeric data to enter data which it will be received by the iView.

Note: The option Edit/Write should be ticked to enable writing value to the iView.

**Numeric Data Properties** [X]

**Controller Register**

Data Source: Internal registers [v]  
Address: %R00006 [v] [>] Register Width: 16-Bit [v]  
Name: [v]

**Display Format**

Format: Decimal [v] 1234 [v]  
Engineering Units: [v] [>] ☐ Zero Filled  
☐ 3D-Sunken  
Font: 5x7 Font [v] [Scaling >>>]

**Justification**

☐ XXX.X\_\_ ☒ \_XXX.X\_ ☐ \_\_XXX.X

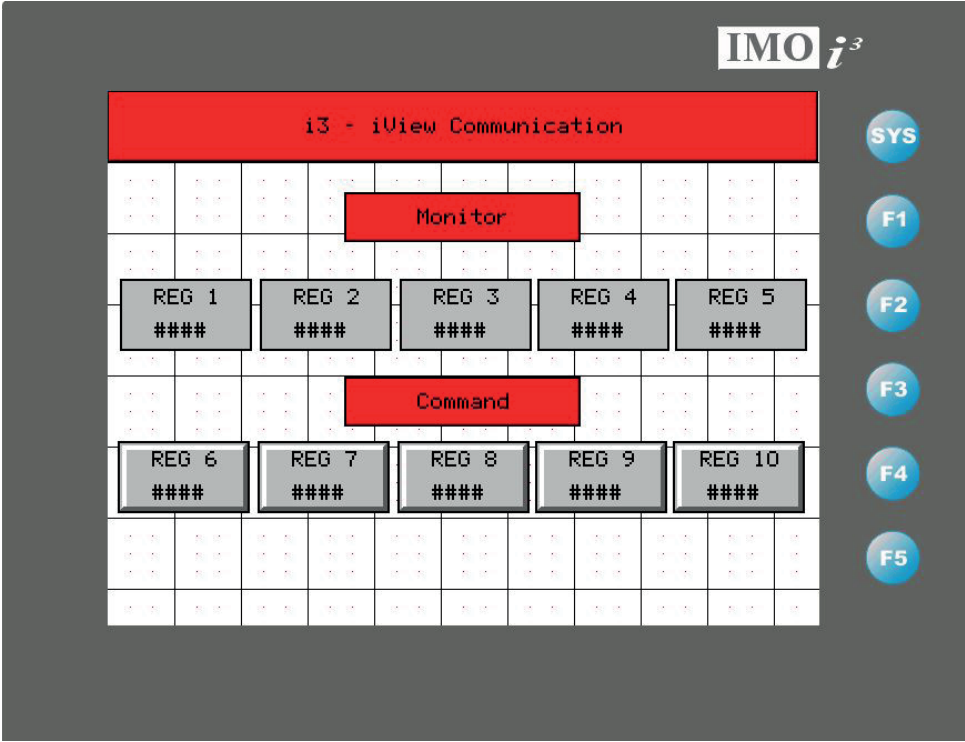
**Edit/Write**

☒ Enabled Minimum 0 [v]  
Maximum 65535 [v]

**Display Properties**

Attributes >>> Background Color >>> [v]  
Legend >>> Line Color >>> [v]  
Data Color >>> [v]  
Display Style: Classic Style [v]

OK Cancel



## iView Developer Software:

Open the Project Manager under View > Project Manager

In the Project Manager > Open the Application Program Section (AP\_1) > Links. Right Click Links > Add Link.

Configure the link table as below.

## General:

Link Properties

General Parameter

Link Number: 1

Link Name: Link 1

Link Type: Direct Link (COM)

Device/Server: Modicon Corp. Modicon 984 Master (RTU)

Link Port: COM2 (Link 1) ☐ Sub-links

☐ Record communication status in operation log

The duration of showing a communication error message: 5 second(s)

OK Cancel Help

## Parameter:

Link Properties

General Parameter

Transmission

Baud Rate: 9600

Data Bits: 8

Parity: None

Stop Bits: 1

Others

Panel Address: 1

Retry Count: 3

PLC Address: 1

Timeout Time: 10 (x 0.1 Sec.)

Command Delay: 0 (x 1 ms)

Fetching Data In Blocks To Optimize The Screen Data Reading

☐ Merge Adjacent Bits To Form Bit Blocks

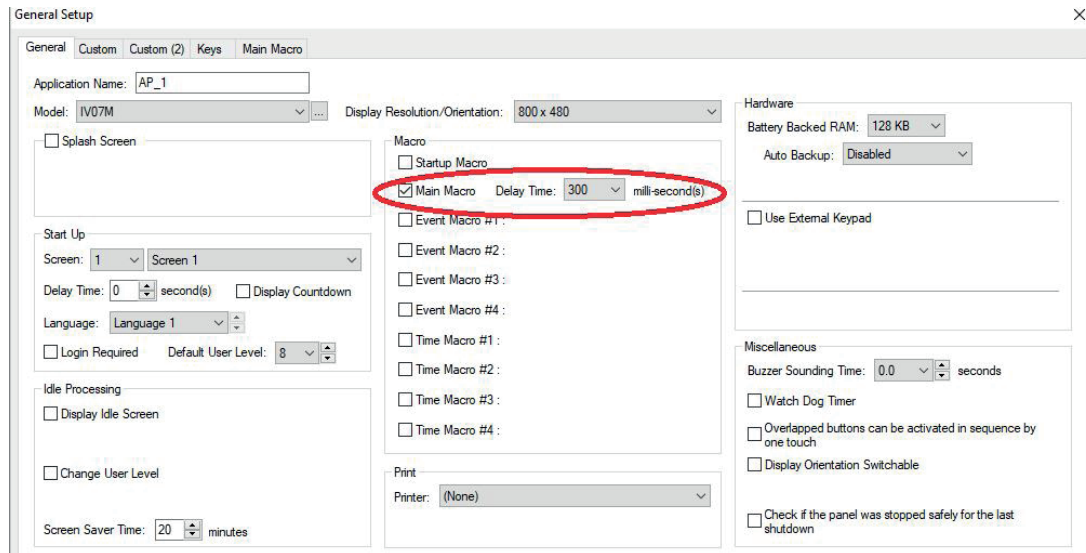
☐ Merge Adjacent Words To Form Word Blocks

OK Cancel Help

The parameter settings should match the master's parameter.(Baud rate/Data bits/Parity/Stop bits).

## Macro:

Now Expand the following, Setup > General Setup



Open the Main Macro to run a simple script to read and write registers between the i3 and iView.

\*1\40001=mov(\$u0,5) ( copy the 5 words starting from \$u0 to 40001 of link 1 (i3)).

\$u0 to R1 1\40001  
 \$u1 to R2 1\40002  
 \$u2 to R3 1\40003  
 \$u3 to R4 1\40004  
 \$u4 to R5 1\40005

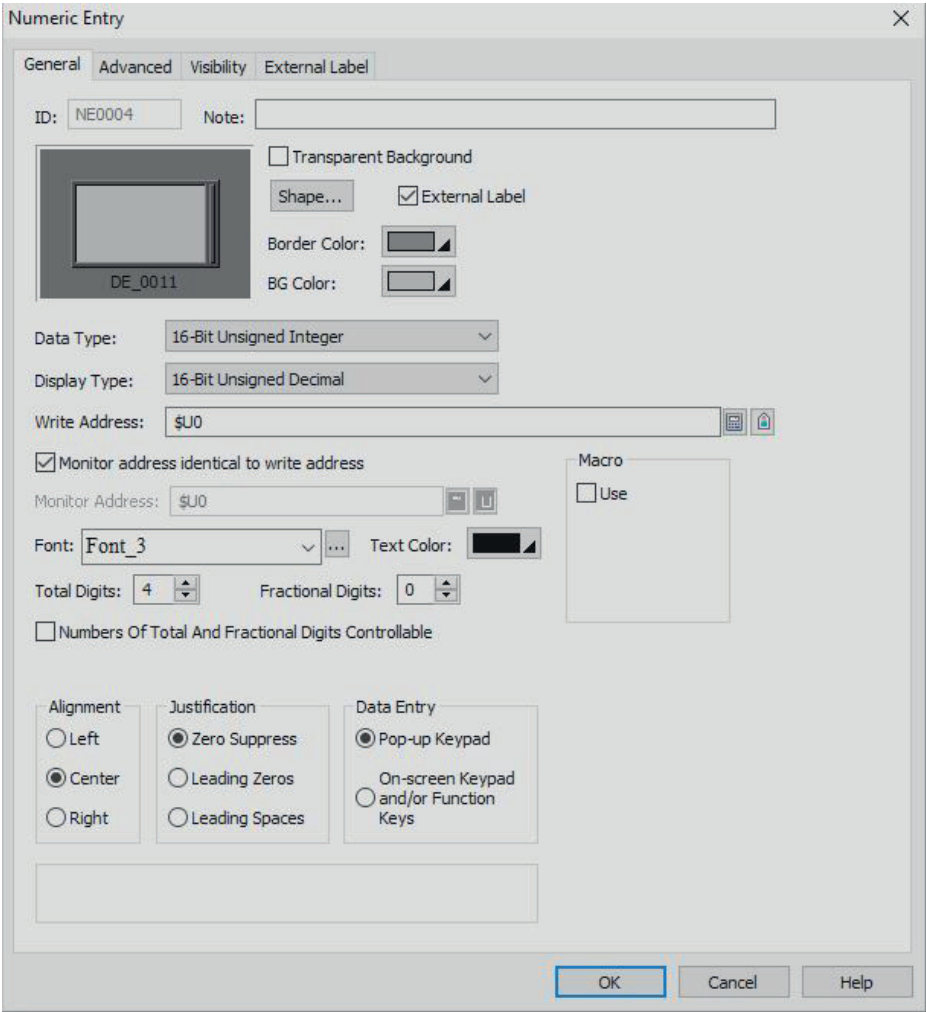
\*\$u5=mov(1\40006,5) ( copy 5 words starting from 40006 of link 1 (i3) from \$u5 to \$u9).

1\40006 to \$u5  
 1\40007 to \$u6  
 1\40008 to \$u7  
 1\40009 to \$u8  
 1\40010 to \$u9

AP_1	
Script - move a	
0	1\40001=mov(\$u0,5)
1	\$u5=mov(1\40006,5)

## Screen:

To send command to the i3, 5 numeric entry will be added to the Screen as per picture below.




**Numeric Entry**


General | Advanced | Visibility | External Label

ID: NE0004 Note:

☐ Transparent Background



Shape... ☒ External Label

Border Color: 



BG Color: 



Data Type: 16-Bit Unsigned Integer

Display Type: 16-Bit Unsigned Decimal

Write Address: \$U0  

☒ Monitor address identical to write address

Monitor Address: \$U0  

Font: Font\_3  Text Color: 

Total Digits: 4 Fractional Digits: 0

☐ Numbers Of Total And Fractional Digits Controllable

Macro ☐ Use

Alignment: ☐ Left ☒ Center ☐ Right

Justification: ☒ Zero Suppress ☐ Leading Zeros ☐ Leading Spaces

Data Entry: ☒ Pop-up Keypad ☐ On-screen Keypad and/or Function Keys

OK Cancel Help


# i<sup>3</sup> Modbus Master Tutorial

To read data from the i3, 5 numeric display will be added to the screen to display the data received.

**Numeric Display** [X]

General | Advanced | Visibility | External Label

ID: ND0000 Note: [ ]

 ☐ Transparent Background  
Shape... ☒ External Label  
Border Color: [ ]  
BG Color: [ ]

Data Type: 16-Bit Unsigned Integer  
Display Type: 16-Bit Unsigned Decimal

Monitor Address: \$U5 [ ] [ ]

Font: Font\_3 [ ] [ ]

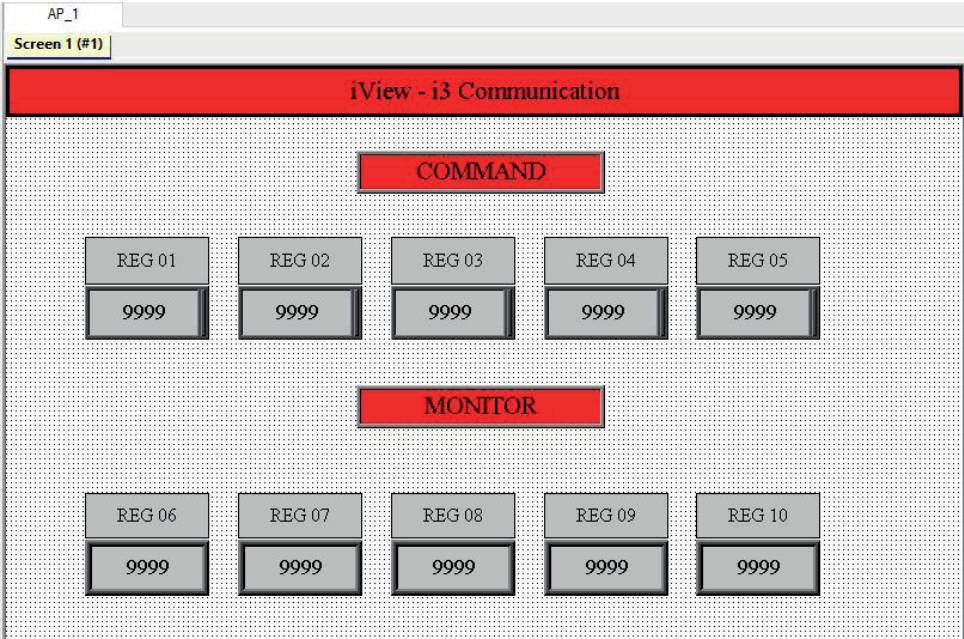
Text Color: [ ]  
Total Digits: 4 [ ]  
Fractional Digits: 0 [ ]

Alignment  
☐ Left  
☒ Center  
☐ Right

Justification  
☒ Zero Suppress  
☐ Leading Zeros  
☐ Leading Spaces

☐ Numbers Of Total And Fractional Digits Controllable

OK Cancel Help



### Wiring:



i3 - iView RS 485 Communication

Note : please refer to the iView technical datasheet for more information about the connection.

### Attached Program

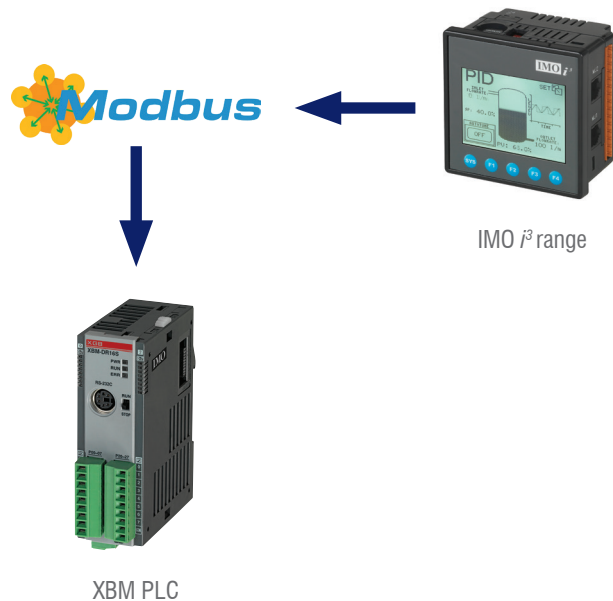
Please refer to the attached program examples:

iView program: iView\_i3\_ModbusMaSTER.pm3

i3 Program : iView i3 Comms.csp

# i<sup>3</sup> Modbus Master Tutorial

## Connecting i<sup>3</sup> to XBM PLC



### i<sup>3</sup> Configurator Software:

#### Protocol Configuration:

The Modbus master protocol utilises the Modbus function codes 03 to read single and multiple registers, 10 to write to multiple registers and 06 to write to single registers. Most Modbus slave devices only use the function codes 03 to read and 06 to write. Therefore, the i<sup>3</sup> can communicate with any Modbus enabled device.

Open the Program > Protocol Configuration. Select the Modbus Master Protocol in the MJ2 and configure the Network, Devices and Scan list as shown below.

Protocol Config

Serial Protocols

MJ1/Com Option -- None --

MJ2 Modbus Master v 4.00

Network Devices Scan List

Network Devices Scan List

Swap Serial Port Settings

Ethernet

ETN1/1 -- None --

ETN1/2 -- None --

ETN2/1 -- None --

ETN2/2 -- None --

Network Devices Scan List

Network Devices Scan List

Network Devices Scan List

Network Devices Scan List

OK Cancel

# i<sup>3</sup> Modbus Master Tutorial

## Network Configuration:

In the network configuration the communication parameters are set. Set the parameters as shown below. We are going to use the protocol Modbus RTU and communicate on RS485, which is a multi-drop half duplex system.

**Network Config (Modbus Master)**

**Port Configuration**

Baud Rate: 9600 Protocol: Modbus RTU

Parity: None Mode: RS-485

Data Bits: 8 Retries: 2 (0-255)

Stop Bits: 1 Timeout: 1000 mSec

Handshake: Multidrop Half Slave Speed: Medium

**Update Scan**

☒ Automatic  
Update Interval: 0 mSec ReacquireTime: 1000 mSec

☐ Manual  
Trigger: Name: 1-BIT

ID Select: Name: 16-BIT

**Master ID / Address**

Address: 0

**Status**

Register: %R00101 Name: 4 x 32-BIT

Protocol Help OK Cancel

To see the status of the network assign a % R register here.

# i<sup>3</sup> Modbus Master Tutorial

## Devices:

Name the device and give it an ID.

Dialog

Device

Name: XGB\_XBM

ID: 1 (Slave Address)

Device Options

☐ Swap words on 32-bit data

☒ Target returns 32-bit on single register request

Device Type: Modicon PLC 5-Digit Addressing

Mode: Device Supports all modbus write function codes

Status

☒ Enable

Address: %R00109 Name: 2 x 16-BIT

☐ Stop on Error ☒ Retry on Error

Ok Cancel

# i<sup>3</sup> Modbus Master Tutorial

## Scan List:

Finally, we need to add to the scan list the addresses we are going to read from and write to the Modbus slaves.

Dialog

Target

Device Name: XGB\_XBM (1)

Device Register: 40001 > ☐ 32 bit access

Length: 10

Local

Register: %R00001 Name:

UpdateType

☐ Polled Read ☐ Triggered Read

☒ Polled Read/Write ☐ Triggered Write

☐ Polled Read/Write Init

Trigger Register: Name:

OK Cancel

Scan List (Modbus Master)

Edit View Sort

Index	Local Name	Register	Type	Dev Name	ID	Target	Length	Trigger
0		%R00001	<->	XGB_XBM	1	40001	10	None

Add  
Delete  
Config  
Edit Names  
Cancel  
OK

Filter By Device: --- All ---

# i<sup>3</sup> Modbus Master Tutorial

Select the Modbus device register address and the length of the data.

The data in the device address will be stored in the i3 locally where specified in a particular register.

The type command and update type are defined here. Whether the data is read or write and polled always or triggered on a bit.

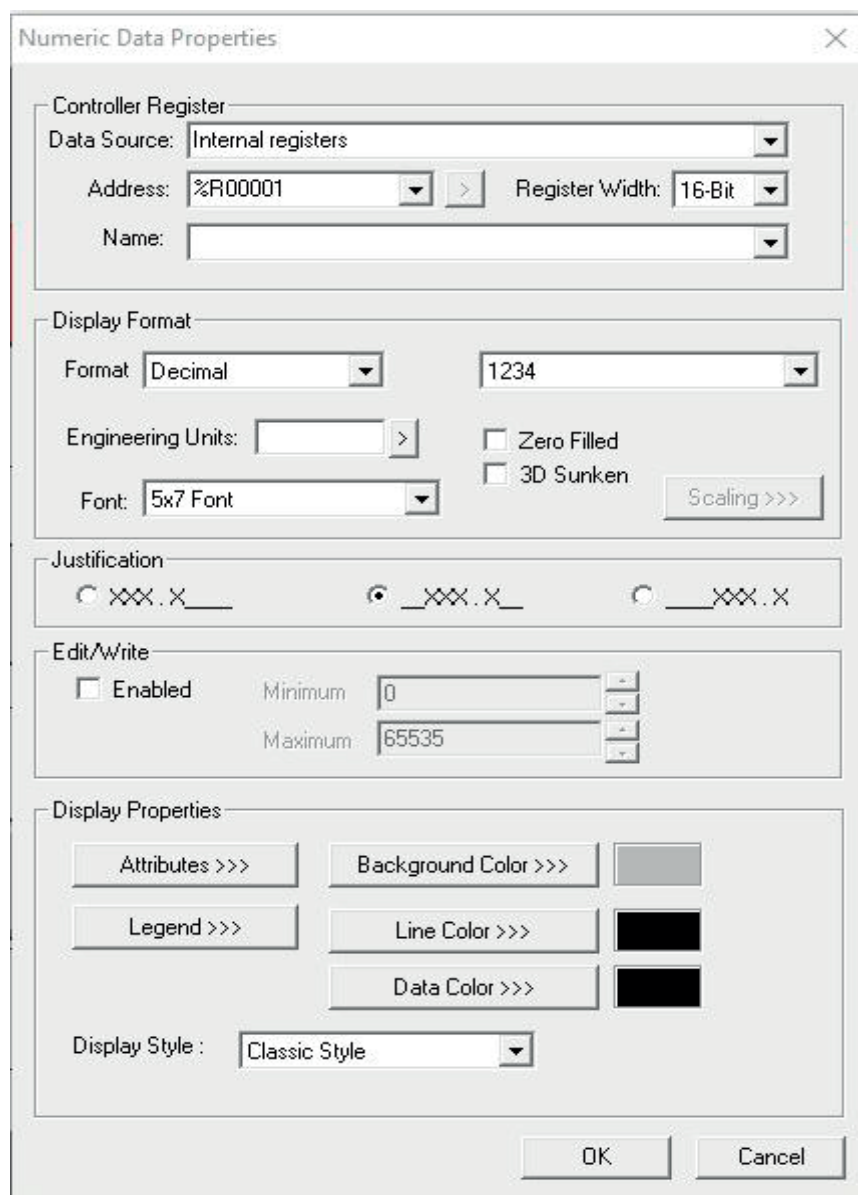
## Screen Editor Programming

For this program we are going to have 1 screen and to enter the screen editor, click on the icon  . Please set up the screen as described below:

There will be 10 numeric data properties.

- 5 numeric data for monitoring Data/value from the PLC.

Note: The option Edit/Write should be unticked.



The screenshot shows the 'Numeric Data Properties' dialog box with the following settings:

- Controller Register:**
  - Data Source: Internal registers
  - Address: %R00001
  - Register Width: 16-Bit
  - Name: (empty)
- Display Format:**
  - Format: Decimal
  - 1234
  - Engineering Units: (empty)
  - Font: 5x7 Font
  - ☐ Zero Filled
  - ☐ 3D Sunken
  - Scaling >>>
- Justification:**
  - ☐ XXX.X
  - ☒ \_XXX.X\_
  - ☐ \_\_XXX.X
- Edit/Write:**
  - ☐ Enabled
  - Minimum: 0
  - Maximum: 65535
- Display Properties:**
  - Attributes >>>
  - Background Color >>> (light gray)
  - Legend >>>
  - Line Color >>> (black)
  - Data Color >>> (black)
  - Display Style: Classic Style

Buttons: OK, Cancel

# i<sup>3</sup> Modbus Master Tutorial

- 5 numeric data to enter data which it will be received by the iView.

Note: The option Edit/Write should be ticked to enable writing value to the PLC.

**Numeric Data Properties** [X]

**Controller Register**

Data Source: Internal registers [v]  
Address: %R00006 [v] [>] Register Width: 16-Bit [v]  
Name: [v]

**Display Format**

Format: Decimal [v] 1234 [v]  
Engineering Units: [v] [>] ☐ Zero Filled  
Font: 5x7 Font [v] ☐ 3D Sunken [Scaling >>>]

**Justification**

☐ XXX.X\_\_ ☒ \_XXX.X\_ ☐ \_\_XXX.X

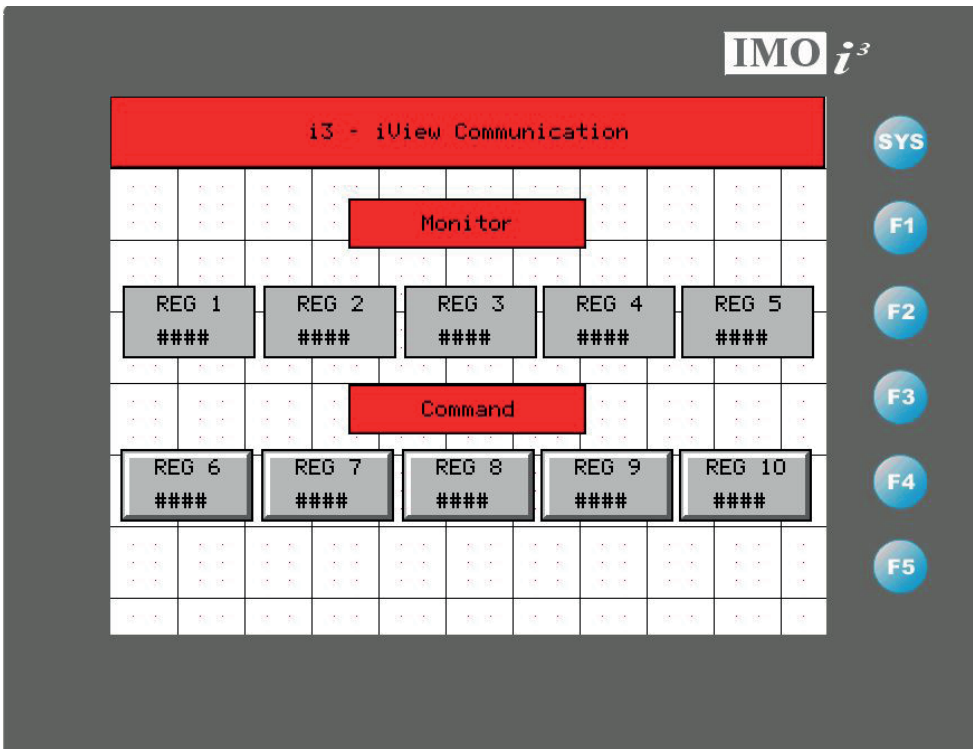
**Edit/Write**

☒ Enabled Minimum: 0 [v] [v]  
Maximum: 65535 [v] [v]

**Display Properties**

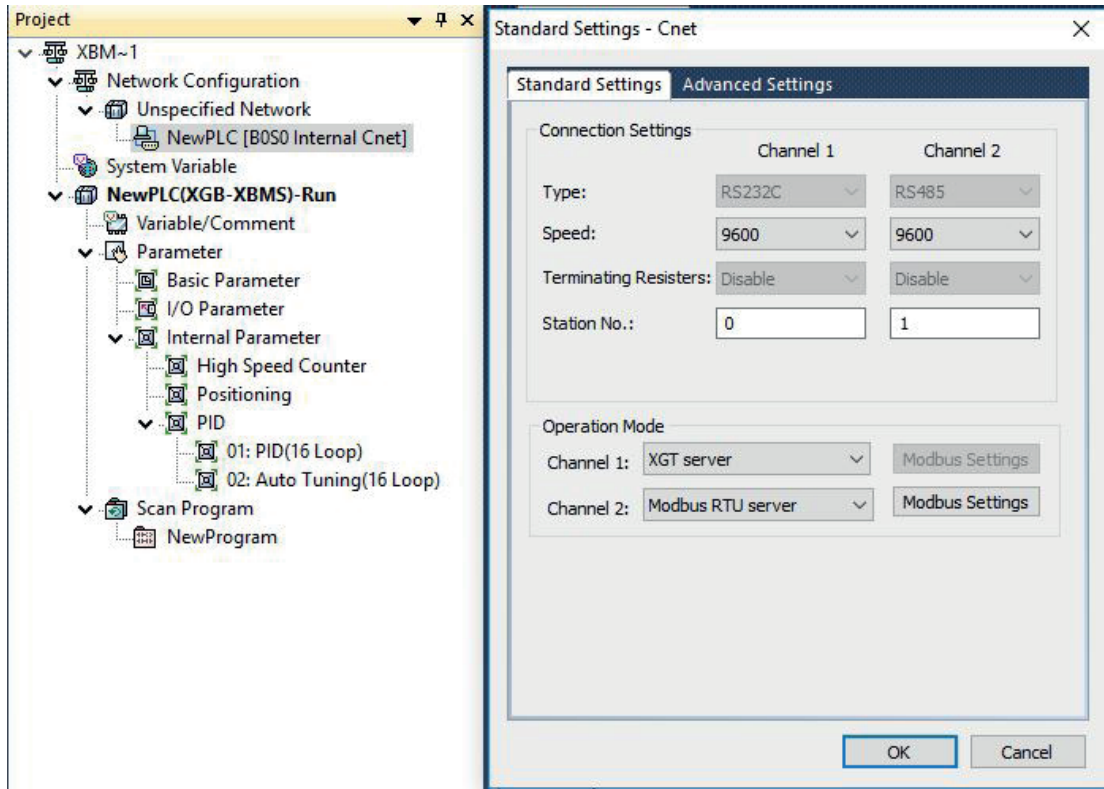
Attributes >>> Background Color >>> [v]  
Legend >>> Line Color >>> [v]  
Data Color >>> [v]  
Display Style: Classic Style [v]

OK Cancel



## XGB5000 Software:

Under the project name select Network configuration > Unspecified Network>

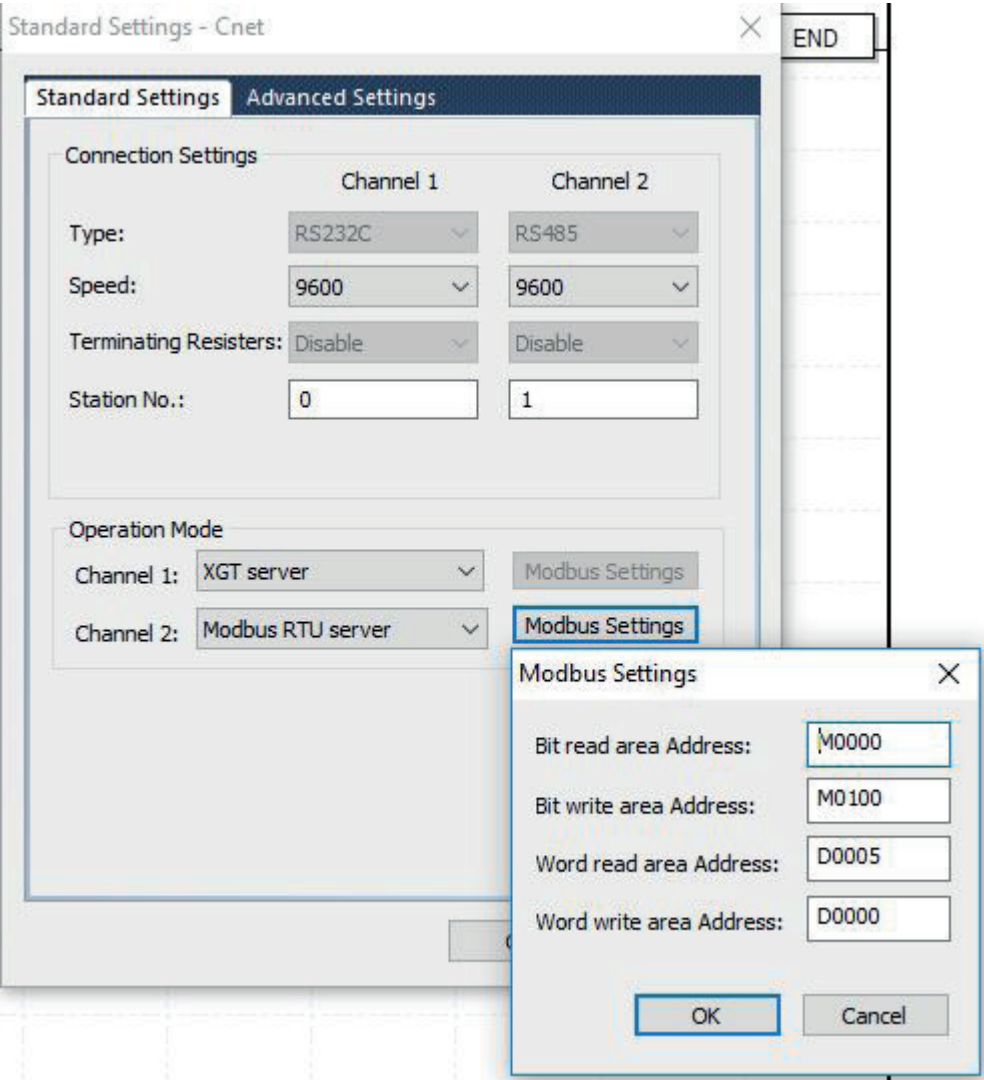


# i3 Modbus Master Tutorial

In this example the PLC is the Slave device , so channel 2 will be set to Modbus RTU server.

The Writing address will be starting from D0000.

The Reading address will be starting from D0005.



Wiring

Table Picture

Attached program :

XGB: XBM\_I3.xgwx

I3: i3\_xbm\_PLC.csp



**i3 - XBM RS 485 Communication**

# i<sup>3</sup> Modbus Master Tutorial



## Connecting i<sup>3</sup> to VXT

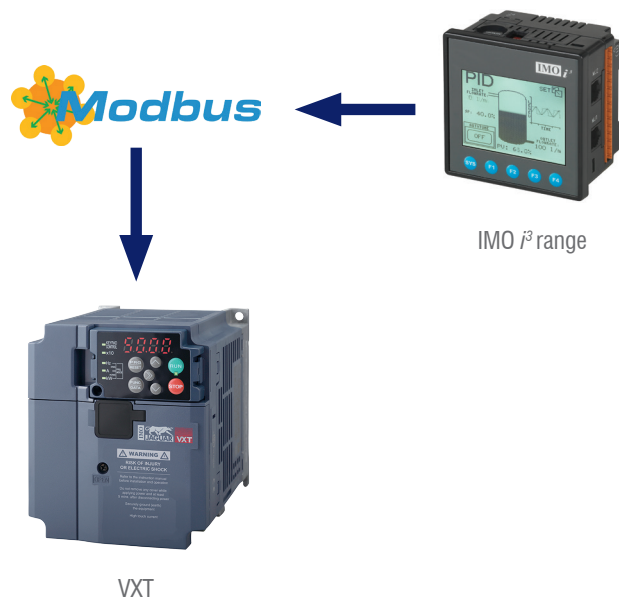
In this tutorial we will demonstrate the i<sup>3</sup> as a Modbus master, controlling a network of Modbus devices. The i<sup>3</sup> can read and write to and from single and multiple registers and is easily configured.

We will demonstrate the i<sup>3</sup> as a Modbus master controlling 1 Modbus slaves an IMO VXT Inverter Drive.

We will read and write the Frequency and start and stop the inverter.

**\*\* Be aware that the i<sup>3</sup> Modbus addressing all starts at offset xxxx1 not xxxx0 (Holding Registers - 40001, not 40000, see Figure 1). So, when translating the address from the relevant product manual, you may be required to add 1 to the address to correct this offset.**

**For example: The VXT manual will point to register 41797 (plus 1) = 41798. (Please refer to Inverter user manual for more information about the commands.**

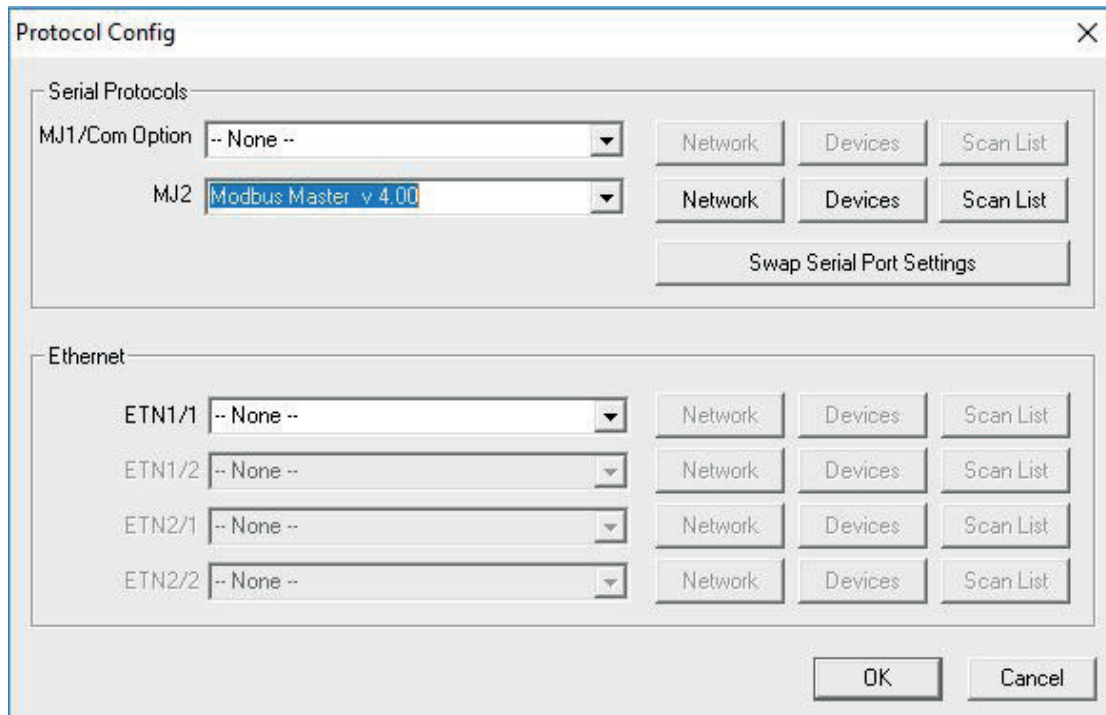


## i3 Configurator Software:

### Protocol Configuration:

The Modbus master protocol utilises the Modbus function codes 03 to read single and multiple registers, 10 to write to multiple registers and 06 to write to single registers. Most Modbus slave devices only use the function codes 03 to read and 06 to write. Therefore, the i3 can communicate with any Modbus enabled device.

Open the Program > Protocol Configuration. Select the Modbus Master Protocol in the MJ2 and configure the Network, Devices and Scan list as shown below.



The image shows the 'Protocol Config' dialog box in the i3 Configurator software. It is divided into two main sections: 'Serial Protocols' and 'Ethernet'.

**Serial Protocols:**

- MJ1/Com Option:** A dropdown menu currently set to '-- None --'. To its right are three buttons: 'Network', 'Devices', and 'Scan List'.
- MJ2:** A dropdown menu currently set to 'Modbus Master v 4.00'. To its right are three buttons: 'Network', 'Devices', and 'Scan List'.
- Below these two rows is a button labeled 'Swap Serial Port Settings'.

**Ethernet:**

- ETN1/1:** A dropdown menu currently set to '-- None --'. To its right are three buttons: 'Network', 'Devices', and 'Scan List'.
- ETN1/2:** A dropdown menu currently set to '-- None --'. To its right are three buttons: 'Network', 'Devices', and 'Scan List'.
- ETN2/1:** A dropdown menu currently set to '-- None --'. To its right are three buttons: 'Network', 'Devices', and 'Scan List'.
- ETN2/2:** A dropdown menu currently set to '-- None --'. To its right are three buttons: 'Network', 'Devices', and 'Scan List'.

At the bottom right of the dialog box are two buttons: 'OK' and 'Cancel'.

# i<sup>3</sup> Modbus Master Tutorial

## Network Configuration

In the network configuration the communication parameters are set. Set the parameters as shown below. We are going to use the protocol Modbus RTU and communicate on RS485, which is a multi-drop half duplex system.

**Network Config (Modbus Master)**

**Port Configuration**

Baud Rate: 9600 Protocol: Modbus RTU

Parity: None Mode: RS-485

Data Bits: 8 Retries: 2 (0-255)

Stop Bits: 1 Timeout: 1000 mSec

Handshake: Multidrop Half Slave Speed: Medium

**Update Scan**

☒ Automatic  
Update Interval: 0 mSec ReacquireTime: 1000 mSec

☐ Manual  
Trigger: Name: 1-BIT  
ID Select: Name: 16-BIT

**Master ID / Address**

Address: 0

**Status**

Register: %R00101 Name: 4 x 32-BIT

Protocol Help OK Cancel

To see the status of the network assign a % R register here.

# i<sup>3</sup> Modbus Master Tutorial

## Devices:

Name the device and give it an ID.

Dialog

Device

Name: VXT

ID: 1 (Slave Address)

Device Options

☐ Swap words on 32-bit data

☐ Target returns 32-bit on single register request

Device Type: Modicon PLC 5-Digit Addressing

Mode: Device Supports all modbus write function codes

Status

☒ Enable

Address: %R00118 Name: 2 x 16-BIT

☐ Stop on Error ☒ Retry on Error

Ok Cancel

# i<sup>3</sup> Modbus Master Tutorial

## Scan List:

In this example we are going to control direction of the inverter.

Dialog

Target

Device Name: VXT (1)

Device Register: 41798 > ☐ 32 bit access

Length: 2

Local

Register: %R00121 Name: F\_Cmd

UpdateType

☐ Polled Read ☐ Triggered Read

☒ Polled Read/Write ☐ Triggered Write

☐ Polled Read/Write Init

Trigger Register:  Name:

OK Cancel

Scan List (Modbus Master)

Edit View Sort

Index	Local Name	Register	Type	Dev Name	ID	Target	Length
0	F_Cmd	%R00121	<->	VXT	1	41798	2

Add  
Delete  
Config  
Edit Names  
Cancel  
OK

Filter By Device: ... All ...

## Screen Editor Programming:

In this example we going to configure the following:

- 1 numeric entry for entering the frequency
- 1 Text table data to control the motor direction ( Forward/Reverse /Stop).

Setting Frequency :

**Numeric Data Properties** [X]

**Controller Register**

Data Source: Internal registers [v]  
Address: %R00121 [v] [>] Register Width: 16-Bit [v]  
Name: F\_Cmd [v]

**Display Format**

Format: Decimal [v] 12 . 12 [v]  
Engineering Units: Hz [v] [>] ☐ Zero Filled  
Font: 5x7 Font [v] ☐ 3D Sunken [v] [Scaling >>>]

**Justification**

☐ XXX.X\_\_ ☒ \_XXX.X\_ ☐ \_\_XXX.X

**Edit/Write**

☒ Enabled Minimum 0 [v] [v]  
Maximum 65535 [v] [v]

**Display Properties**

Attributes >>> Background Color >>> [Green]  
Legend >>> Line Color >>> [Black]  
Access>>> Data Color >>> [Red]  
Display Style : Classic Style [v]

OK Cancel

## Direction Command:

Text Table Data Properties

Controller Register  
Data Source: Internal registers  
Address: %R00122 Register Width: 16-Bit  
Name: R\_Cmd

Data Format  
Justification: ☐ Left ☒ Center ☐ Right  
Digits: 16 Text Table >>>  
☒ Editable ☐ 3D Sunken

Display Properties  
Attributes >>> Background >>>  
Legend >>> Line >>>  
Access >>> Data >>>  
Display Style: Classic Style

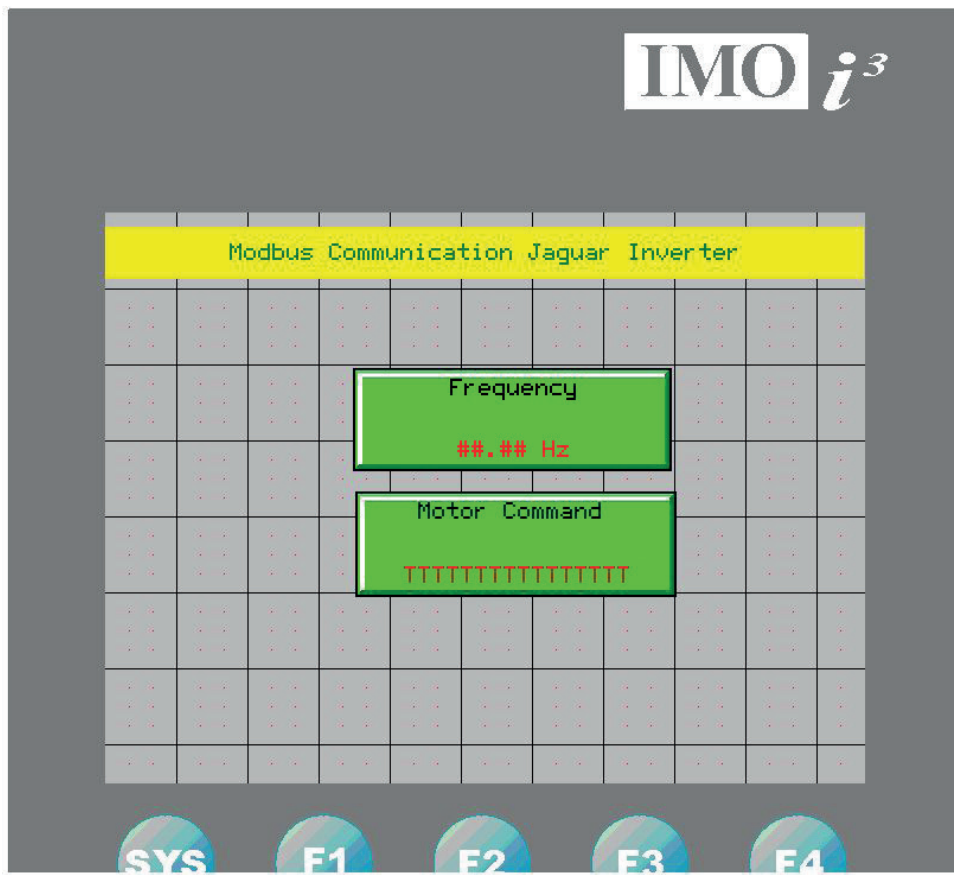
Edit/View Text Tables

Value	Text
0	Stop
1	Forward
2	Reverse

Table Number: 1

Add Edit Remove Import Export

OK

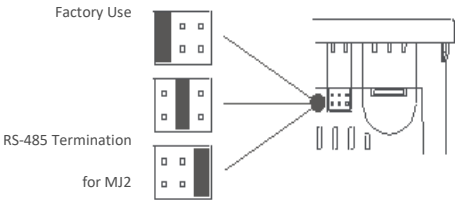


## Wiring Diagram

We are using Port 2 on the i3 as a RS485, 2 wire to connect to the device. The wiring for this is as follows.

Pin	MJ2 Pins	
8	TXD	OUT
7	RXD	IN
6	0 V	Gnd
5	+5V (60mA)	+ve
4		
3		
2	TX-/RX-	IN/OUT
1	TX+/RX+	IN/OUT

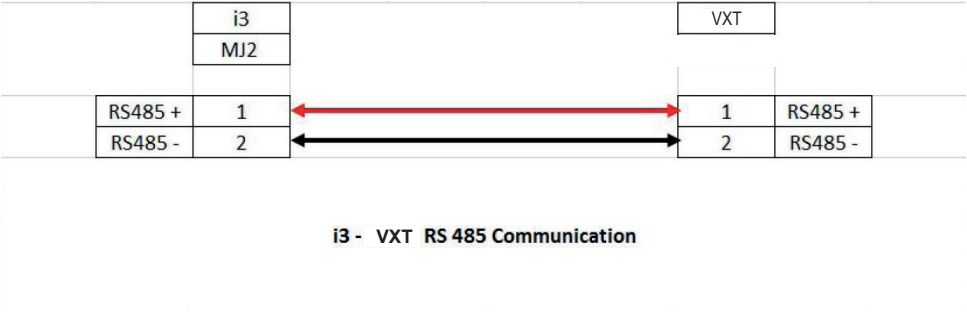
Remember to connect the RS-485 termination jumper as shown.



# i<sup>3</sup> Modbus Master Tutorial



## i3 to VXT Inverter



### Running the Program

Please connect the network as shown. Also, note that drive needs to have the communication parameters set appropriately.

Please use the program: i3\_VXT\_Inverter.csp by clicking on the paperclip below.

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