TR ELECTRONIC

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ETHERNET/IP DEVICE SETUP OVERVIEW

EtherNet/IP Device Setup Overview

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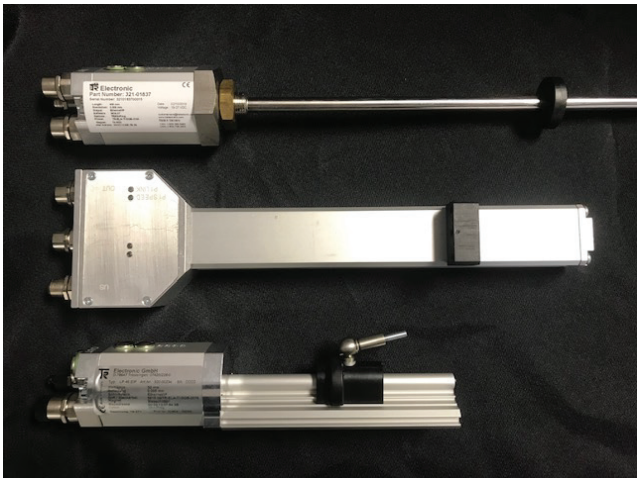
Linear Encoders



Old Applications

- LA 46 Series – 321
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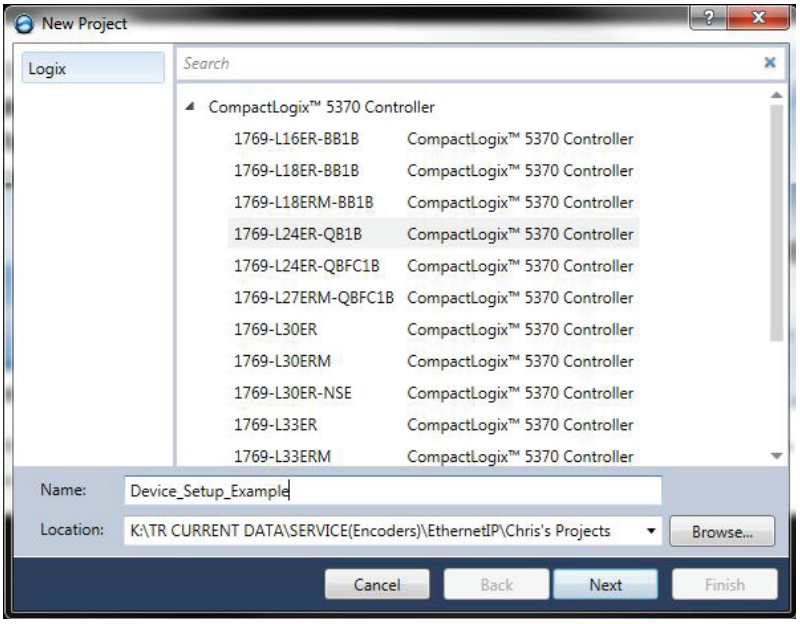
Starting a New Project in Logix Designer

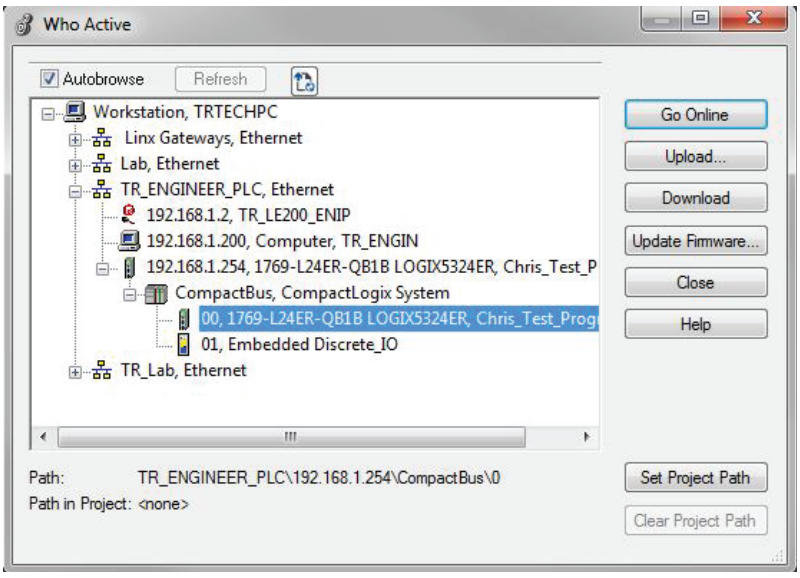
Note to the PLC Programmer

This guide assumes the user has already configured the controller using RSLinx. If you haven't already done so, you may not be able to progress through this guide. To learn how to configure your controllers drivers in RSLinx, please visit:

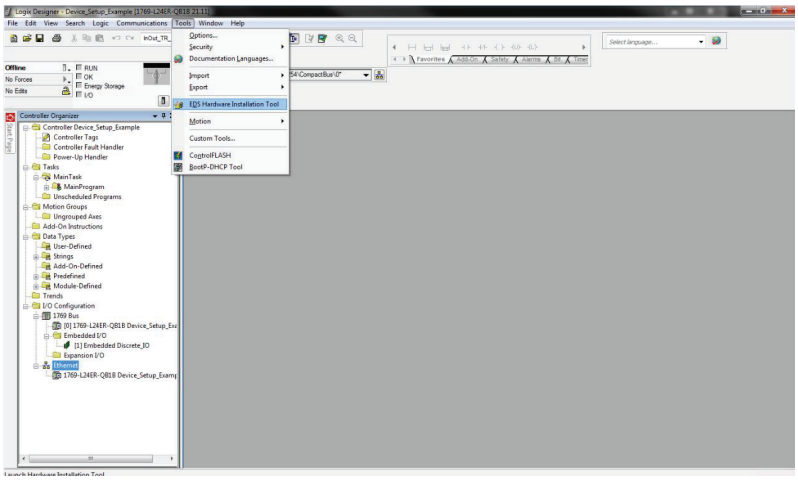
https://literature.rockwellautomation.com/idc/groups/literature/documents/gr/linx-gr001_-en-e.pdf



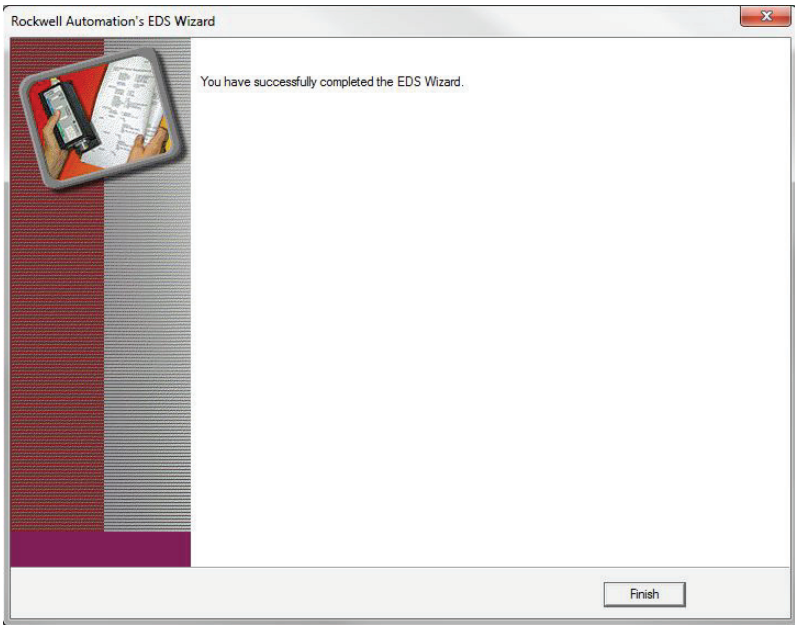
- Open *Studio 5000.*
- Create a *New Project.*
- Select your Controller from the list.
- Name your Project and set the local save location.
- Click *Next* then *Finish.*



- On the tool bar click the *Who Active* symbol to bring up the tool.
- Expand your controller and select your EtherNet card as shown on the right.
- Once selected, you can *Set Project Path* and/or simply click *Go Online.*
- Once the download is complete, you can go *Offl ine* again.



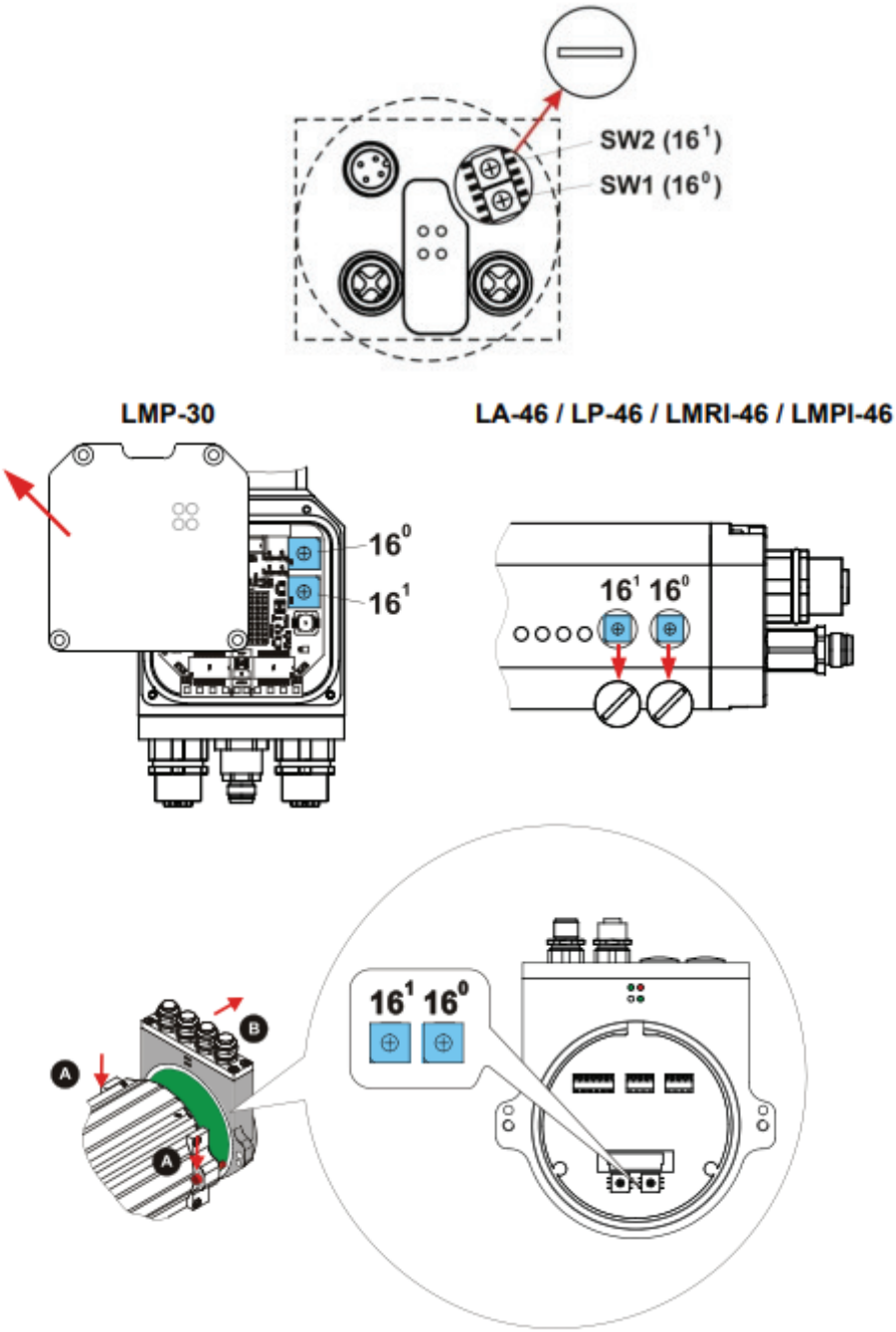
- Download the Electronic DataSheet (EDS) file from the TR Electronic website.
- EDS File Download.
- Once saved locally, return to Logix Designer.
  - Click *Tools*.
  - Click *EDS Hardware Installation Tool*.



- The Rockwell Automation EDS Wizard opens.
- Click *Next*.
- Select *Register an EDS file(s)* and click *Next*.
- You can select *Install 1 file* or a *Directory of EDS Files*.
- Click *Browse* and reference the location you stored the EDS files in the previous slide.
- Follow the wizard until you have successfully installed the EDS file(s), then click *Finish*.

Setting your Device Address

Setting a Device Address Using Rotary Switches



HEX rotary switches inside your TR device allow the last octet in your address to be defined using a value between 0x01 and 0x254.

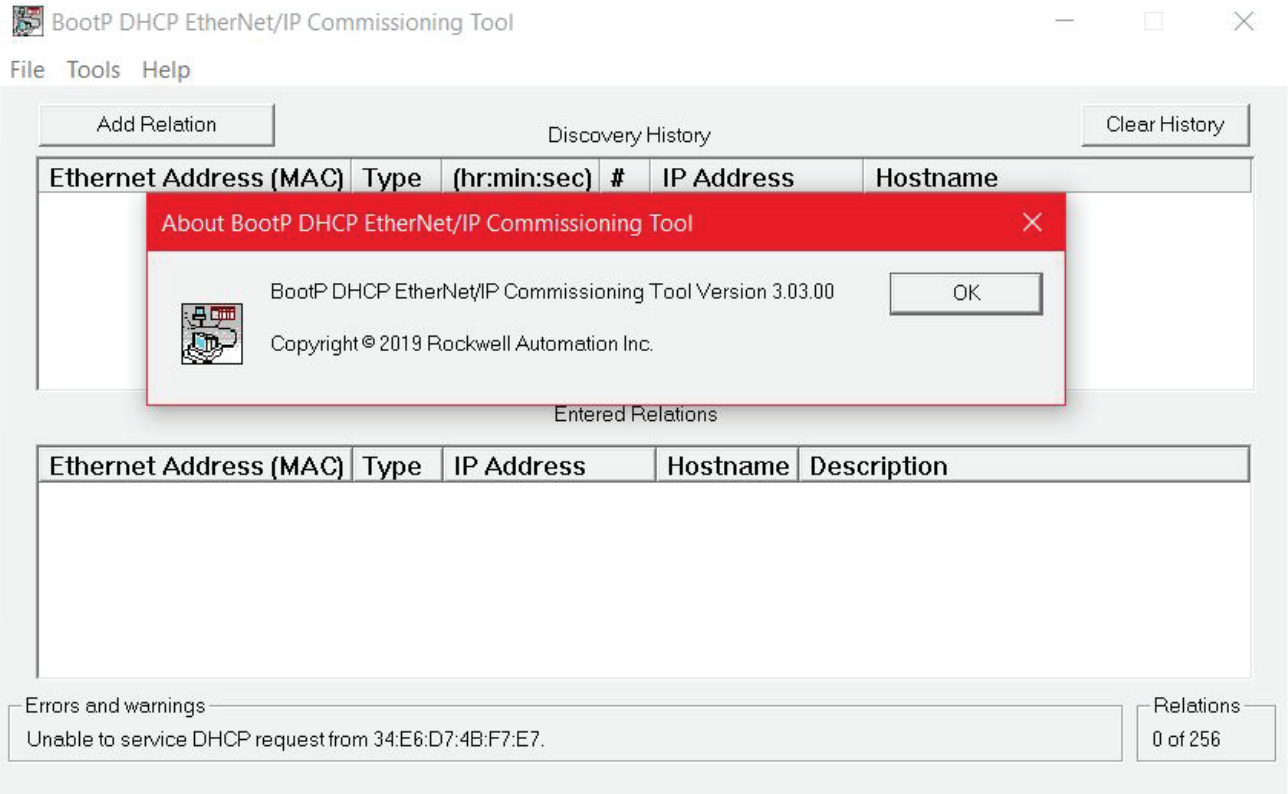
The following is true when the switches are active:

IP Address	192.168.1.<Desired Node Address>
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.254

- Set S1 and S2 rotary switches to your desired HEX value.
- Energize the encoder.
- Upon start-up initialization your encoder will assume this Node ID.
- Ping your Node to verify communication to the device.
- If you have packet loss, try cycling power to the device and retry.

Setting your Device Address

Setting a Device Address Using BootP/DHCP



To download Rockwell's *BootP DHCP EtherNet/IP Tool* Click Here.

- Search *BootP/DHCP EtherNet/IP Tool* in the download catalog.
- Ensure you are using the most current and up-to-date software version before proceeding with this guide.
- Configure your Network Interface settings based on the computer/laptop that you are using (E.g. Subnet Mask, Gateway, Primary/Secondary DNS' and Domain Name if applicable).

Note to the PLC Programmer

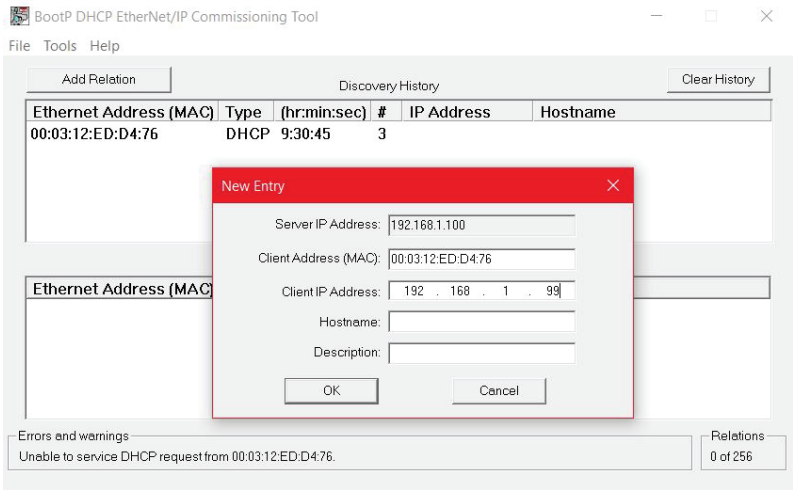
There are many versions of Microsoft Windows, Network configurations and Firewall security settings, it's not possible to support all scenarios. This is a reference GUIDE to assist with IP address configuration. If the steps outlined in this documentation aren't working as indicated, we recommend that you try another computer or laptop. If problems still persist, contact your local IT department or contact Rockwell Automation for further support.

- Method 1 – is used to change the first 3 octets of the device IP address (the Network ID) to match another network. (Eg. 171.125.130.XX instead of the standard 192.168.1.XX).
- Method 2 – is used to change the Host ID of an IP address, when using the default Network ID of 192.168.1.XX. (The first 3 octets are fixed).

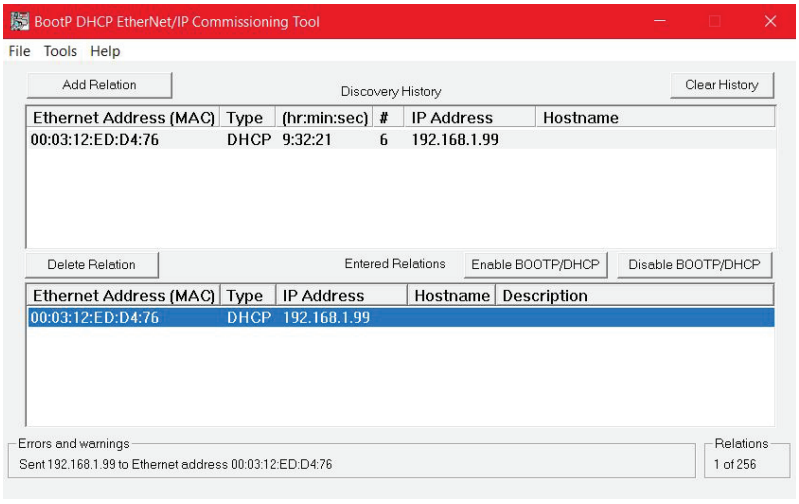
Switch activation		
Switch	**Config. Control**	**Action**
0x00	0x00	Configuration from FLASH
	0x02	Configuration via DHCP
0x01 ... 0xFE	not relevant	**Switch active**
0xFF	not relevant	Configuration via DHCP

Method 1:

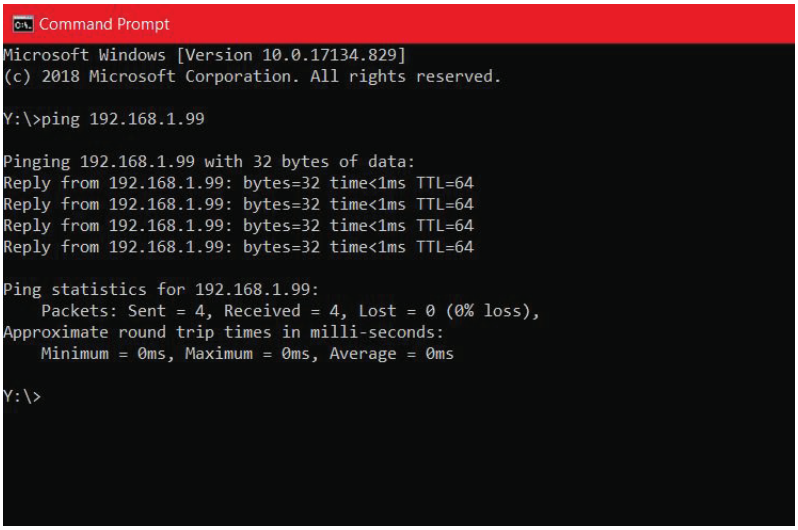
- Connect your device as indicated by the device specific pin-assignment.
- Set SW1 & SW2 to *FF* to indicate the encoder is now set to configure via DHCP.
- Energize the device.



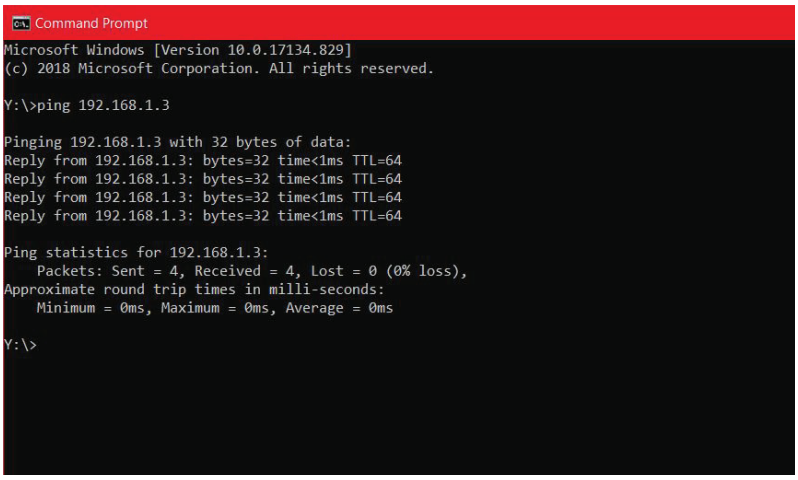
- Using the MAC ID printed on the device label, find your device in the *Discovery History*, cycle power if your device is not listed.
- Enter your desired IP Address, then click *OK*.
- It should now appear under *Entered Relations*.



- Wait until the desired IP Address populates in the *Discovery History* next to your devices MAC ID (max 1 minute).
- If you have changed your IP Address outside of your local network (192.168.1.XXX) you will need to change your network adapter settings for your PC to the same network ID.
- Click *Disable BOOTP/DHCP* then verify in the bottom corner it was successful.
- Power off your device and change SW1 & SW2 to *00*.
- Re-energize your device.

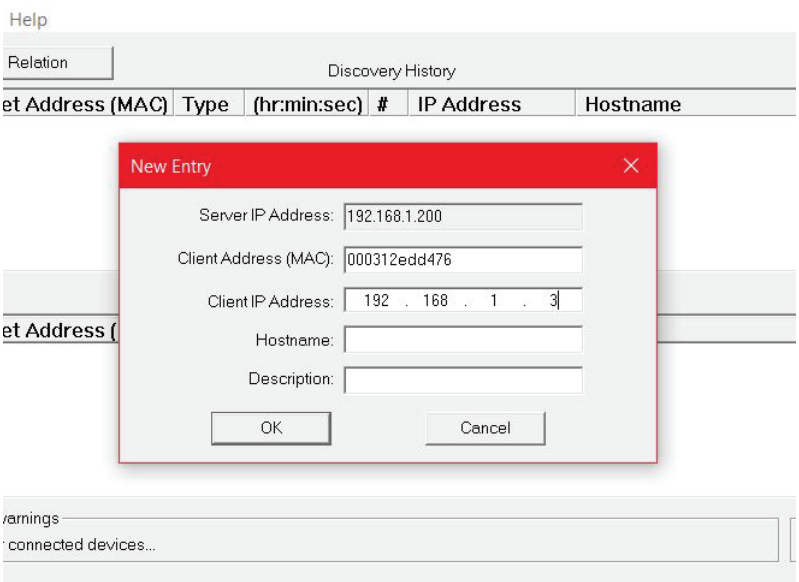


- In your Command Prompt application, PING the device at the desired address.
- Once all packets are received, the device addressing is complete.
- If you receive 100% loss, set SW1 & SW2 back to *FF* and cycle power to the device.
- As long as your relation is still listed in BOOTP, the desired IP Address will be sent again to your device.
- Ensure you click *Disable BOOTP/DHCP* before changing your rotary switches or cycling power as indicated on the previous page.
- If you are still experiencing issues, refer to method 2.



Method 2:

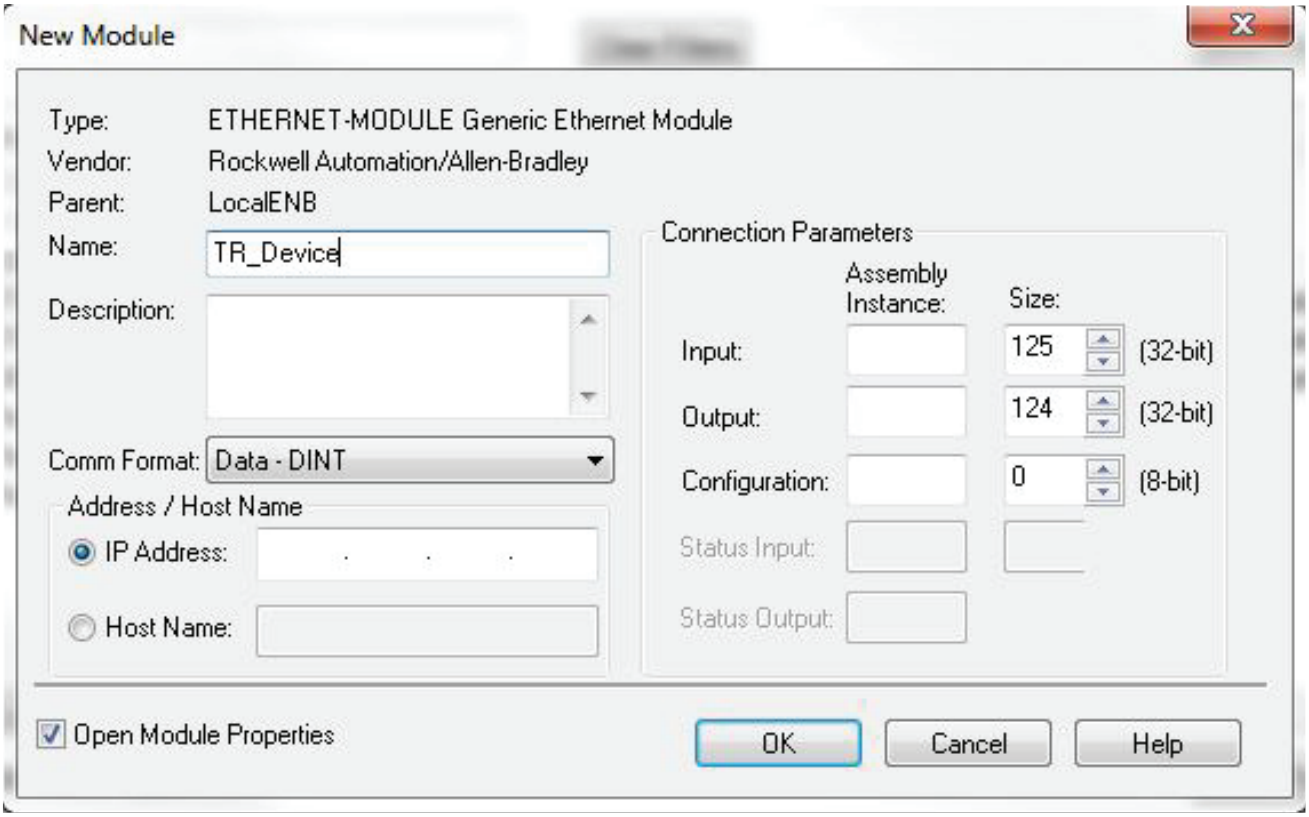
- Connect your device as indicated by the device specific pin-assignment.
- Set SW1 & SW2 to *03*, effectively setting the address of the device to 192.168.1.3.
- Energize the device and Ping the address to confirm the encoder is on the network.



- In *BootP DHCP Utility Tool* click *Add Relation*.
- Using the device label, enter the MAC ID and IP Address.
- Once completed the relation will be reflected in the *Entered Relations* field.
- Now you are able to change the IP address as desired. Reference Method 1 for steps on how to commit this to the device.

Generic Modules vs EDS Files

What are the Differences?



What are the differences?

Generic Module

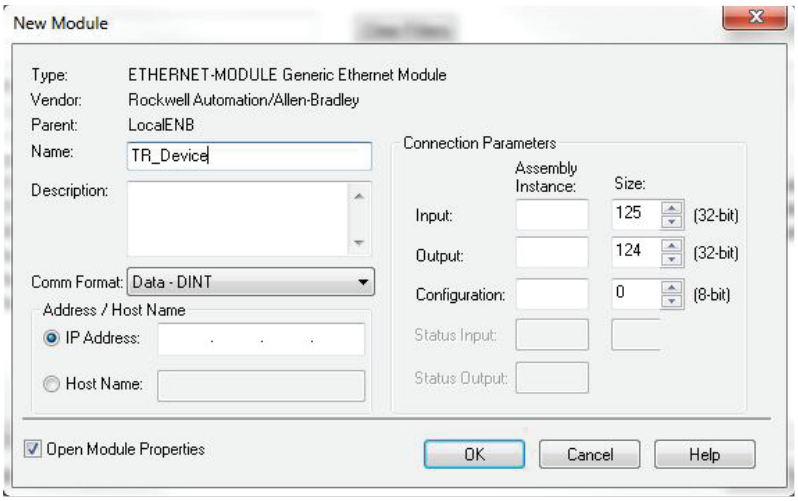
- Allows the user to configure the I/O assembly data of the device manually using explicit messages.
- ***If you are using RS Logix Ver. 19 or below, you must use a Generic Module***

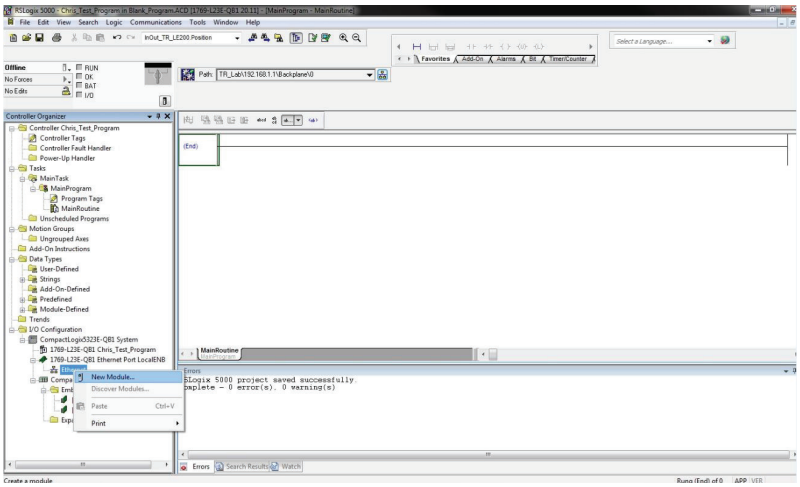
EDS Files

- Pre-configured I/O assembly data specific to the device type, designed for quick setup.
- Configuration Assembly Data designed for quick and easy parameterization of your device (based on device compatibility).

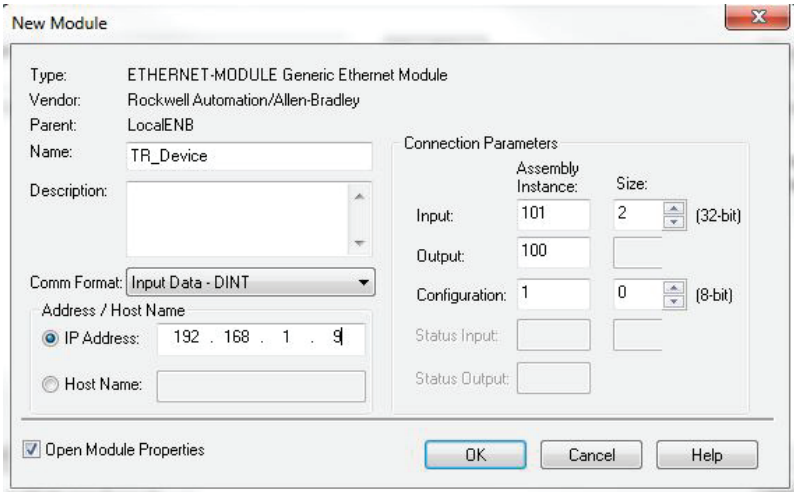
Generic Modules vs EDS Files

Generic Module Configuration





- Right-Click *Ethernet* in the Controller Organizer.
- Select *New Module*.
- Select and Create a Generic Ethernet Module.



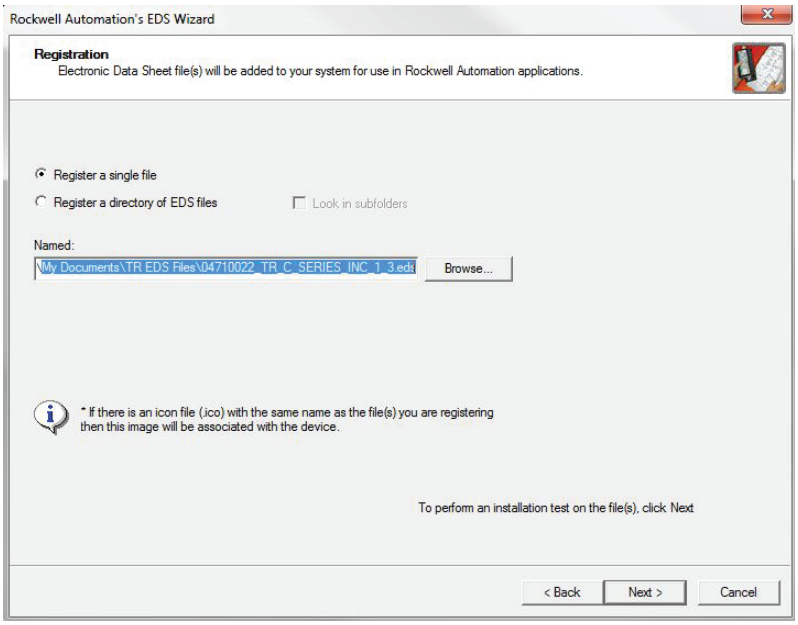
- Enter your desired device name and IP Address.
- Change *Comm Format* to *Input Data - DINT.*
- Set your *Connection Parameters* as shown on the left.
- Click *OK.*
- For more information on I/O assembly data, refer to Chapter 6 – *Object Model* in your device manual.

EDS Compatible Devices

TR EDS Files

You will need your devices corresponding EDS file to progress past this point. To download EDS files for all TR Electronic devices Click Here and use the Readme file to locate the correct sub-folder where your EDS file is stored.

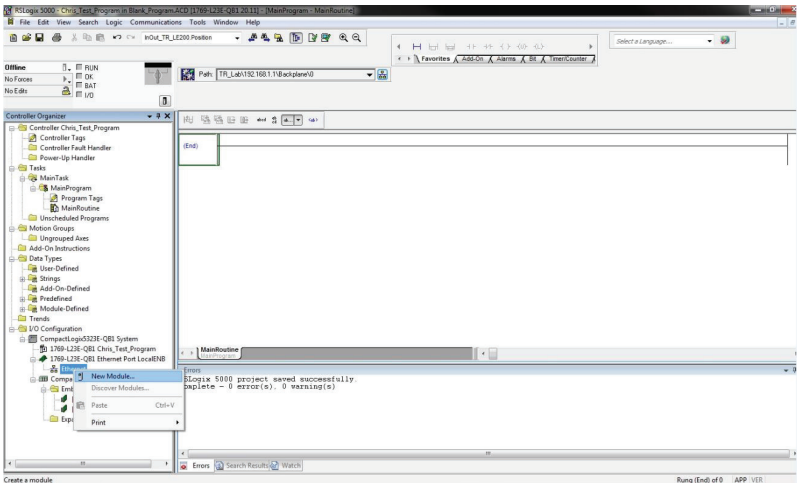
You will need your devices corresponding EDS file to progress past this point.



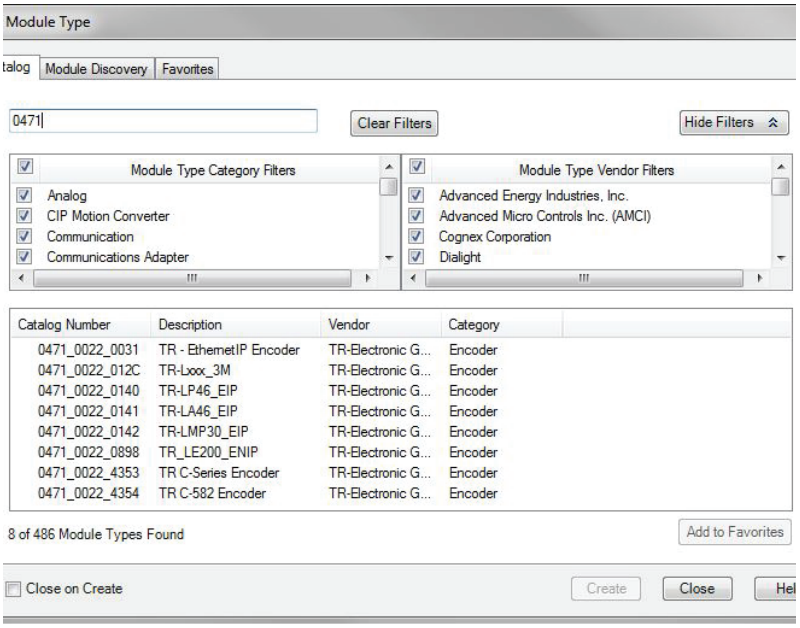
- In RS Logix, Click *Tools* then *EDS Hardware Installation Tool.*
- Follow through and select whether you would like to register a single file or a directory of EDS file(s).
- Click *Browse* and find the EDS file(s).
- Continue through the screens until you've successfully completed the ESD Wizard.

Module Configuration

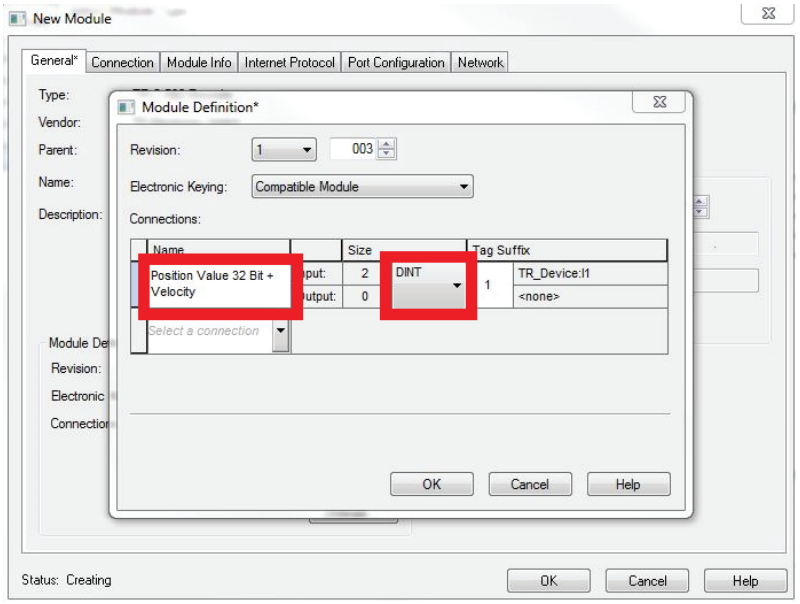
Rotary Device



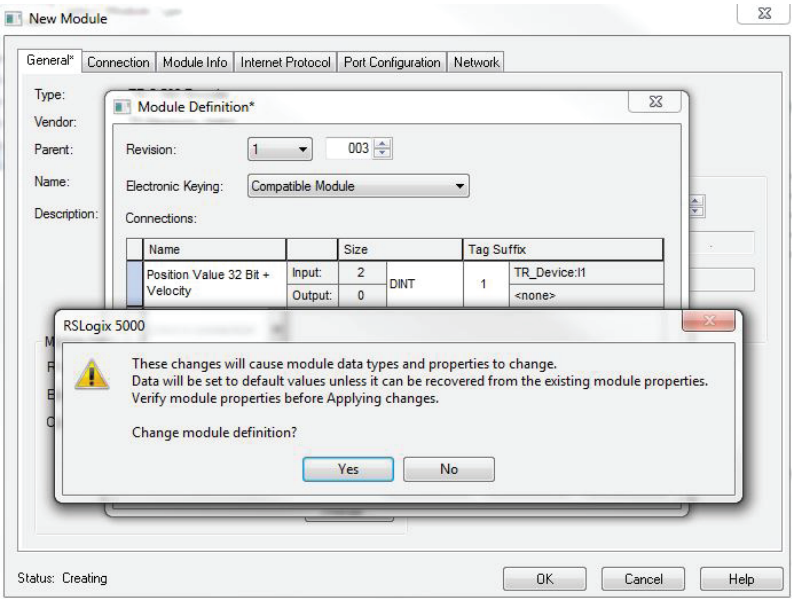
- Right-Click *Ethernet* in the Controller Organizer.
- Select *New Module*.



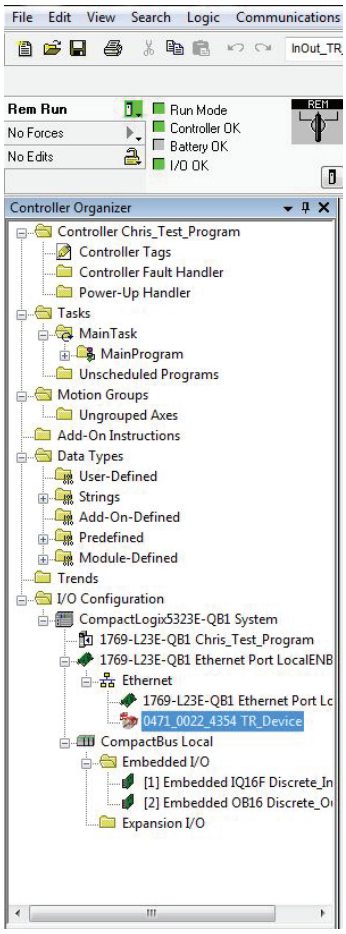
- In the filter field, type *0471* to find the list of TR Electronic Devices.
- 0471_0022_0031 - CEV65M.
- 0471_0022_012C – All Linears w/ built in switch (Dual Communication Ports In/Out).
- 0471_0022_0140 – LP46 w/ no switch.
- 0471_0022_0141 – LA46 w/ no switch.
- 0471_0022_0142 – LMP30 w/ no switch.
- 0471_0022_0898 – LE200.
- 0471_0022_4353 – CXX58 or CXX58:2-1XXXX Rotary Encoder.
- 0471_0022_4354 – CXX582 Rotary Encoder.



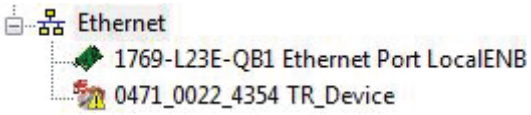
- Select your device EDS file and click *Create*.
- Enter your desired device Name.
- Set your device specific IP Address.
- Click *Change* to select the type of data you desire from the device.
- For more information on I/O assembly data, refer to Chapter 6 – *Object Model* in your device manual.
- ***If you would like to use the AOI to commission your device, refer to the AOI Configuration Guide***

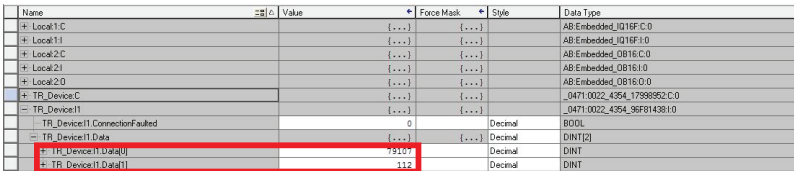


- For this demonstration we will select *Position Value 32 Bit + Velocity.*
- Click *OK.*
- You will receive a message that you have made a change to the module properties. Click *Yes* to proceed.
- Your module is now created and you may *Close* the module window.



- Download your project to the controller and using *Remote Run* go online with the controller.
- If you see a yellow triangle like the example below, there is a communication fault and network troubleshooting will need to be completed.





Name	Value	Force Mask	Style	Data Type
+ Local:1:C	{...}	{...}		AB:Embedded_IQ16F:C:0
+ Local:1:I	{...}	{...}		AB:Embedded_IQ16F:I:0
+ Local:2:C	{...}	{...}		AB:Embedded_OB16:C:0
+ Local:2:I	{...}	{...}		AB:Embedded_OB16:I:0
+ Local:2:O	{...}	{...}		AB:Embedded_OB16:O:0
+ TR_Device:C	{...}	{...}		_0471:0022_4354_17998952:C:0
- TR_Device:I1	{...}	{...}		_0471:0022_4354_96F81438:I:0
TR_Device:I1.ConnectionFaulted	0		Decimal	BOOL
- TR_Device:I1.Data	{...}	{...}	Decimal	DINT[2]
+ TR_Device:I1.Data[0]	79107		Decimal	DINT
+ TR_Device:I1.Data[1]	112		Decimal	DINT

- Go to *Controller Tags* and find your devices Input Data tags.
- In this example it is TR_Device:I1.Data.
- {Device_Name}:I1.Data[0] = Position Data.
- {Device_Name}:I1.Data[1] = Velocity Data.

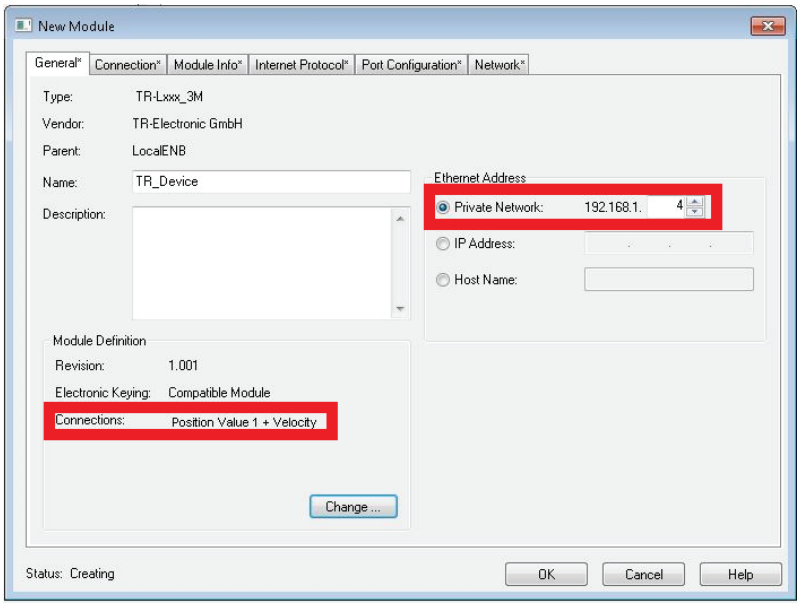
Module Configuration

Linear Device

Most linear devices come scaled by default to output in 1µm or 1000nm increments. In order to calculate the total number of steps across the entire measuring length a simple formula can be used.

$$\text{Measuring length in steps} = \frac{\text{Measuring length [mm]}}{\text{Resolution [mm]}}$$

The measuring system can be scaled to output in other units of measurement using the parameter *Position Format*.



- Refer back to *Module Configuration* and follow the first page, noting the changes below.
- **Set your Connections to Position Value 1 + Velocity as shown on the right.**
- **Set the data type to DINT.**
- **Set your device specific IP Address and click OK to create.**

Name	Value	Force Mask	Style	Data Type
Local:1:C	{...}	{...}		AB:Embedded_IQ16F:C:0
Local:1:I	{...}	{...}		AB:Embedded_IQ16F:I:0
Local:2:C	{...}	{...}		AB:Embedded_OB16:C:0
Local:2:I	{...}	{...}		AB:Embedded_OB16:I:0
Local:2:O	{...}	{...}		AB:Embedded_OB16:O:0
TR_Device:C	{...}	{...}		_0471:0022_012C_17998952:C:0
TR_Device:I1	{...}	{...}		_0471:0022_012C_96F81438:I:0
TR_Device:I1.Connectio...	0		Decimal	BOOL
TR_Device:I1.Data	{...}	{...}	Decimal	DINT[2]
TR_Device:I1.Data[0]	233091		Decimal	DINT
TR_Device:I1.Data[1]	0		Decimal	DINT

- Download and go online with the PLC.
- Go to *Controller Tags* and find your devices Input Data tags.
- In this example it is TR_Device:I1.Data.
- {Device_Name}:I1.Data[0] = Position Data.
- {Device_Name}:I1.Data[1] = Velocity Data.

Configuration Assembly

What is a Configuration Assembly?

TR_Device:C.Data	{...}
TR_Device:C.Data[0]	0
TR_Device:C.Data[1]	0
TR_Device:C.Data[2]	16
TR_Device:C.Data[3]	0
TR_Device:C.Data[4]	0
TR_Device:C.Data[5]	0
TR_Device:C.Data[6]	0
TR_Device:C.Data[7]	0
TR_Device:C.Data[8]	1
TR_Device:C.Data[9]	15
TR_Device:C.Data[10]	31
TR_Device:C.Data[11]	0
TR_Device:C.Data[12]	0
TR_Device:C.Data[13]	0
TR_Device:C.Data[14]	1
TR_Device:C.Data[15]	0
TR_Device:C.Data[16]	0
TR_Device:C.Data[17]	0
TR_Device:C.Data[18]	0
TR_Device:C.Data[19]	0
TR_Device:C.Data[20]	16
TR_Device:C.Data[21]	0
TR_Device:C.Data[22]	0
TR_Device:C.Data[23]	1
TR_Device:C.Data[24]	0
TR_Device:C.Data[25]	0
TR_Device:C.Data[26]	0
TR_Device:C.Data[27]	0
TR_Device:C.Data[28]	0

The Configuration Assembly is a set of data tags that make parameterizing your encoder a one-time process.

Each tag corresponds to a measuring system parameter that is transferred to the device in the start-up phase of communication.

As long as the tag values are saved in your project -if a new device is connected with the same IP address- all the parameter data will be stored to the new device.

This is designed to limit downtime associated with device change out and re-confi guration.

If your existing project utilizes Explicit Message Instructions and this method of parameterization is not desired, the tag values of all parameters should be set to "0"

Configuration Assembly Compatible Devices

- Cxx58 Rotary Encoders (w/ firmware version 1.15).
- Cxx582 Rotary Encoders.
- LA, LP, LMRI-46/LMPI-46, LMP (w/switch) Magnetostriction Linear Devices.

	Default (Hex)	Default (Decimal)	Default (Decimal)	Possibilities	Description	When TR Parameter = 0	When TR Parameter = 1
CEV582:C.Data[0]	00	0	0	0 or 1	Direction Toggle – Attribute: 12		
CEV582:C.Data[1]	00	0	4096	CMX-582 (1-8 192) CEX-582 (1-32 768) COX-582 (1-262 144)	Measuring Units Per Span Attribute: 16	Used For Configuration	Configuration Value Ignored - Leave As Default Attribute Value is Calculated
CEV582:C.Data[2]	10	16					
CEV582:C.Data[3]	00	0					
CEV582:C.Data[4]	00	0					
CEV582:C.Data[5]	00	0	16777216	16 - 4294967295	Total Measuring Range (<32 Bit) Attribute: 17	Used For Configuration	Configuration Value Ignored - Leave As Default Attribute Value is Calculated
CEV582:C.Data[6]	00	0					
CEV582:C.Data[7]	00	0					
CEV582:C.Data[8]	01	1					
CEV582:C.Data[9]	0F	15	7951	7940 (steps/s), 7941 (steps/ms), 7950 (rev/s), 7951 (rev/min)	Velocity Format Attribute: 25		
CEV582:C.Data[10]	1F	31					
CEV582:C.Data[11]	00	0	16777216	CMX-582 (16-33 554 432) CEX-582 (1-8 388 608 000) COX-582 (1-67 108 864 000)	Total Measuring Range (<64 Bit) Attribute: 101	Configuration Value Ignored - Leave As Default Attribute Value is Calculated	Used For Configuration
CEV582:C.Data[12]	00	0					
CEV582:C.Data[13]	00	0					
CEV582:C.Data[14]	01	1					
CEV582:C.Data[15]	00	0					
CEV582:C.Data[16]	00	0					
CEV582:C.Data[17]	00	0					
CEV582:C.Data[18]	00	0					
CEV582:C.Data[19]	00	0	4096	1-256000	Number Of Revolutions – Numerator Attribute: 102	Configuration Value Ignored - Leave As Default Attribute Value is Calculated	Used For Configuration
CEV582:C.Data[20]	10	16					
CEV582:C.Data[21]	00	0					
CEV582:C.Data[22]	00	0					
CEV582:C.Data[23]	01	1	1	1-16384	Number Of Revolutions – Divisor Attribute: 103	Configuration Value Ignored - Leave As Default Attribute Value is Calculated	Used For Configuration - Recommend to leave at 1
CEV582:C.Data[24]	00	0					
CEV582:C.Data[25]	00	0					
CEV582:C.Data[26]	00	0					
CEV582:C.Data[27]	00	0	0	0 or 1 - **Recommended to set to 1**	TR – Parameter - Attribute: 105		
CEV582:C.Data[28]	00	0	0	0	Reserved		
CEV582:C.Data[29]	00	0					
CEV582:C.Data[30]	00	0					
CEV582:C.Data[31]	00	0					

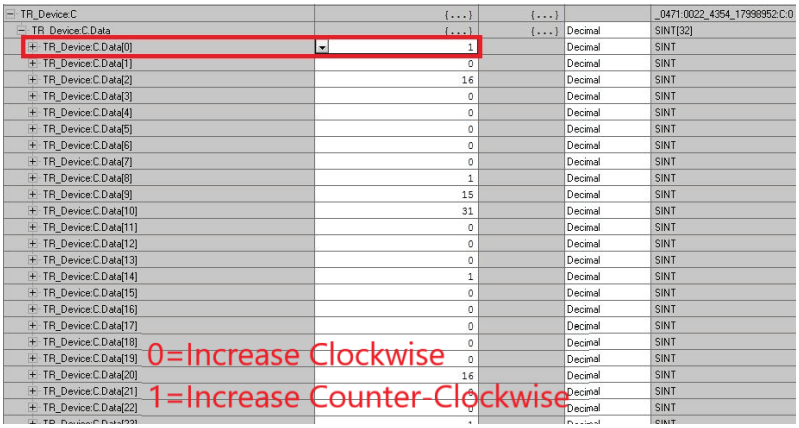
Rotary Encoders Only

	Default (Hex)	Default (Decimal)	Default (Decimal)	Possibilities	Description
Linear:C.Data[0]	00	0	0	0 or 1	Direction Counting Toggle - Attribute: 12
Linear:C.Data[1]	04	4	8708	8706 (cm), 8707 (mm), 8708 (µm), 8709 (nm)	Position Format Attribute: 15
Linear:C.Data[2]	22	34			
Linear:C.Data[3]	01	1	1	1 – 1 000 000	Position Measuring Increment Attribute: 18
Linear:C.Data[4]	00	0			
Linear:C.Data[5]	00	0			
Linear:C.Data[6]	00	0			
Linear:C.Data[7]	01	1	11009	7940 (stp/s) – 11009 (cm/s)	Velocity Format Attribute: 25
Linear:C.Data[8]	2B	43			
Linear:C.Data[9]	01	1	1	1	Velocity Resolution Attribute: 26
Linear:C.Data[10]	00	0			
Linear:C.Data[11]	00	0			
Linear:C.Data[12]	00	0			
Linear:C.Data[13]	00	0	0	N/A	Reserved
Linear:C.Data[14]	00	0			
Linear:C.Data[15]	00	0	0	0, 1, 4, 7	Velocity Observer - Attribute: 108
Linear:C.Data[16]	01	1	1	1-16	Position Filter - Attribute: 109
Linear:C.Data[17]	01	1	1	1, 2, 3	Number of Magnets – Attribute: 110
Linear:C.Data[18]	00	0	0	N/A	Reserved
Linear:C.Data[19]	00	0			
Linear:C.Data[20]	00	0			
Linear:C.Data[21]	00	0			
Linear:C.Data[22]	00	0	0	N/A	Reserved
Linear:C.Data[23]	00	0			
Linear:C.Data[24]	00	0			
Linear:C.Data[25]	00	0			
Linear:C.Data[26]	00	0	0	N/A	Reserved
Linear:C.Data[27]	00	0			
Linear:C.Data[28]	00	0			
Linear:C.Data[29]	00	0			
Linear:C.Data[30]	00	0	0	N/A	Reserved
Linear:C.Data[31]	00	0			

Linear Magnetostriction Devices Only

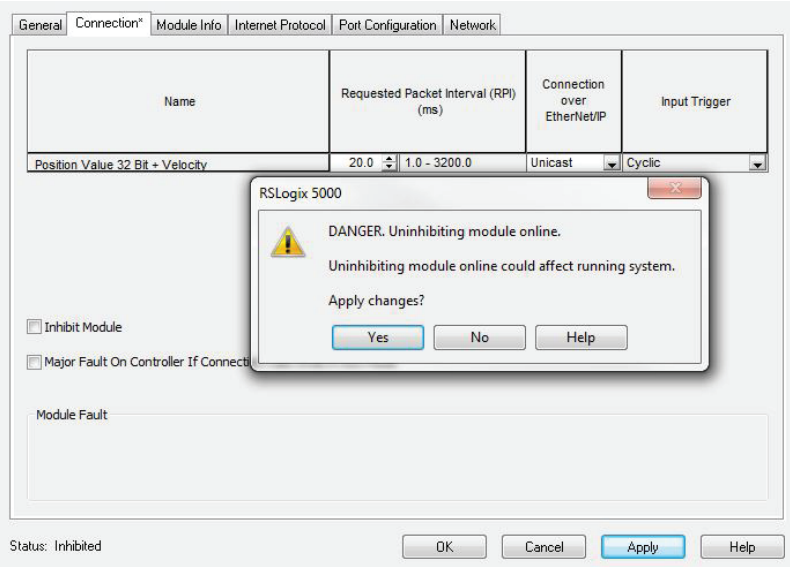
Configuration Assembly

Changing Direction of a Device

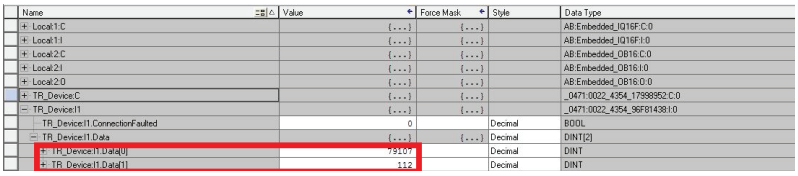


- To change Direction of your device, go to *Controller Tags* and make sure you are viewing *Monitor Tags*.
- Look for the name of your device as it was configured in the Module Configuration section.
- In the tag {Device_Name}:C.Data[0] enter a value of *0* or *1* to change the direction.

  Click Here to view Configuration Assembly table.



- Right-Click your device in the Controller Organizer.
- Select *Properties*.
- Go to the *Connection* Tab.
- Click the *Inhibit Module* box and *Apply* this change.
- Now un-check the *Inhibit Module* box, applying the change once again.



- To verify your change, go to *Controller Tags* and fi nd your devices Input Data tags.
- In this example it is TR_Device:I1.Data.
- {Device_Name}:I1.Data[0] = Position Data.
- {Device_Name}:I1.Data[1] = Velocity Data.

Configuration Assembly

TR Parameter

Attribute 105, TR-Parameter in use (scaling)

`TR-Parameter in use` sets which scaling attributes are in use.

BOOL

Access	Value	Description	Default
Set / Get	= 0	Standard EthernNet/IP scaling attributes in use	X
	= 1	Manufacturer specific TR scaling attributes in use	

Standard EthernNet/IP scaling parameters:

- Attribute 16, Measuring Units per Span
- Attribute 17, Total Measuring Range in Measuring Units

Manufacturer specific TR scaling parameters:

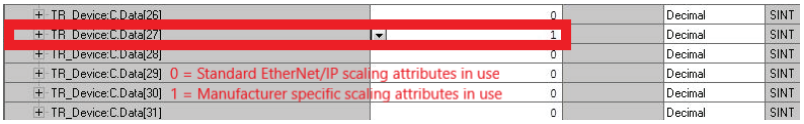
- Attribute 101, Total Measuring Range
- Attribute 102/103, Revolution Numerator/Denominator

Connection path, `Packed EPATH` with 8 bit class

0x20	0x23	0x24	0x01	0x30	0x69
Logical Type = Class	Class #23	Logical Type = Instance	Instance #1	Logical Type =Attr.-ID	Attr.-ID #105

This attribute only takes effect after executing service code 0x16 `save` or attribute 112 `Accept Parameter`.

- TR Parameter allows the measuring system to be configured outside of the factory default settings.
- It can be turned ON/OFF using the configuration assembly.
- Tag{Device_Name}:C.Data[27]= TR-Parameter.



- To turn TR-Parameter ON, place a value of *1* in the corresponding tag.
- Cycle communication via the module properties window like in the Direction setting example.
- **It is recommended that this parameter be set to *1* if customer specific scaling is desired.**

Configuration Assembly

Scaling the Measuring System Rotary Device

In order to scale the measuring system to a customer specific resolution, a combination of 3 parameters are used:

- Total Measuring Range – the total number of steps the encoder will output before restarting to zero.
- Revolution Numerator/Denominator – defines the number of revolutions before the measuring system restarts at zero.

$$\text{Total measuring range} = \text{Steps per revolution} * \frac{\text{Number of Revolutions Numerator}}{\text{Number of Revolutions Denominator}}$$

Let's set the device so that it outputs 360 steps over 10 full rotations, before starting over at zero. This will also effectively output in degrees of rotation.

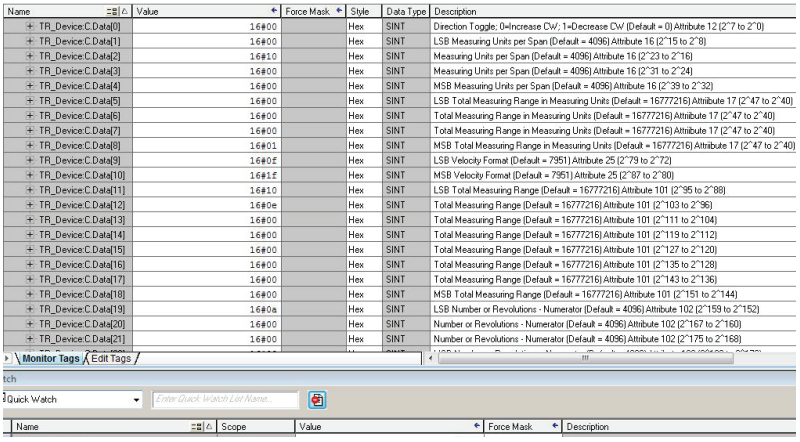
Name	Force Mask	Style	Data Type	Description
TR_Device:C.Data	{...}	Decimal	SINT[32]	Configuration Assembly - SEE MANUAL FOR MORE INFORMATION
TR_Device:C.Data[0]		Decimal	SINT	Direction Toggle; 0=Increase CW; 1=Decrease CW (Default = 0) Attribute 12 (2^7 to 2^0)
TR_Device:C.Data[1]		Decimal	SINT	LSB Measuring Units per Span (Default = 4096) Attribute 16 (2^15 to 2^8)
TR_Device:C.Data[2]		Decimal	SINT	Measuring Units per Span (Default = 4096) Attribute 16 (2^23 to 2^16)
TR_Device:C.Data[3]		Decimal	SINT	Measuring Units per Span (Default = 4096) Attribute 16 (2^31 to 2^24)
TR_Device:C.Data[4]		Decimal	SINT	MSB Measuring Units per Span (Default = 4096) Attribute 16 (2^39 to 2^32)
TR_Device:C.Data[5]		Decimal	SINT	LSB Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[6]		Decimal	SINT	Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[7]		Decimal	SINT	Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[8]		Decimal	SINT	MSB Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[9]		Decimal	SINT	LSB Velocity Format (Default = 7951) Attribute 25 (2^79 to 2^72)
TR_Device:C.Data[10]		Decimal	SINT	MSB Velocity Format (Default = 7951) Attribute 25 (2^87 to 2^80)
TR_Device:C.Data[11]		Decimal	SINT	LSB Total Measuring Range (Default = 16777216) Attribute 101 (2^95 to 2^88)
TR_Device:C.Data[12]		Decimal	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^103 to 2^96)
TR_Device:C.Data[13]		Decimal	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^111 to 2^104)
TR_Device:C.Data[14]		Decimal	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^119 to 2^112)
TR_Device:C.Data[15]		Decimal	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^127 to 2^120)
TR_Device:C.Data[16]		Decimal	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^135 to 2^128)
TR_Device:C.Data[17]		Decimal	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^143 to 2^136)
TR_Device:C.Data[18]		Decimal	SINT	MSB Total Measuring Range (Default = 16777216) Attribute 101 (2^151 to 2^144)
TR_Device:C.Data[19]		Decimal	SINT	LSB Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^159 to 2^152)
TR_Device:C.Data[20]		Decimal	SINT	Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^167 to 2^160)
TR_Device:C.Data[21]		Decimal	SINT	Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^175 to 2^168)
TR_Device:C.Data[22]		Decimal	SINT	MSB Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^183 to 2^176)
TR_Device:C.Data[23]		Decimal	SINT	LSB Number or Revolutions - Denominator (Default = 1) Attribute 103 (2^191 to 2^184)
TR_Device:C.Data[24]		Decimal	SINT	Number or Revolutions - Denominator (Default = 1) Attribute 103 (2^199 to 2^192)
TR_Device:C.Data[25]		Decimal	SINT	Number or Revolutions - Denominator (Default = 1) Attribute 103 (2^207 to 2^200)
TR_Device:C.Data[26]		Decimal	SINT	MSB Number or Revolutions - Denominator (Default = 1) Attribute 103 (2^191 to 2^184)
TR_Device:C.Data[27]		Decimal	SINT	TR-Parameter in Use 0=Not in Use; 1=In Use (Default = 0) Attribute 105 (2^223 to 2^216)
TR_Device:C.Data[28]		Decimal	SINT	Reserved

- In this example we will set the measuring system to the following values:
  - Steps per Revolution: 360
  - Revolution Numerator: 10
  - Revolution Denominator: 1
  - Total Measuring Range: 3600
- **For more information on these calculations and further examples, see your Device Manual.**

Name	Value	Force Mask	Style	Data Type	Description
TR_Device:C	{...}	{...}		_0471:00...	
TR_Device:C.Data	{...}	{...}	Hex	SINT[32]	Configuration Assembly - SEE MANUAL FOR MORE INFORMATION
TR_Device:C.Data[0]	16#00		Hex	SINT	Direction Toggle; 0=Increase CW; 1=Decrease CW (Default = 0) Attribute 12 (2^7 to 2^0)
TR_Device:C.Data[1]	16#00		Hex	SINT	LSB Measuring Units per Span (Default = 4096) Attribute 16 (2^15 to 2^8)
TR_Device:C.Data[2]	16#10		Hex	SINT	Measuring Units per Span (Default = 4096) Attribute 16 (2^23 to 2^16)
TR_Device:C.Data[3]	16#00		Hex	SINT	Measuring Units per Span (Default = 4096) Attribute 16 (2^31 to 2^24)
TR_Device:C.Data[4]	16#00		Hex	SINT	MSB Measuring Units per Span (Default = 4096) Attribute 16 (2^39 to 2^32)
TR_Device:C.Data[5]	16#00		Hex	SINT	LSB Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[6]	16#00		Hex	SINT	Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[7]	16#00		Hex	SINT	Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[8]	16#01		Hex	SINT	MSB Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[9]	16#0f		Hex	SINT	LSB Velocity Format (Default = 7951) Attribute 25 (2^79 to 2^72)
TR_Device:C.Data[10]	16#1f		Hex	SINT	MSB Velocity Format (Default = 7951) Attribute 25 (2^87 to 2^80)
TR_Device:C.Data[11]	16#10		Hex	SINT	LSB Total Measuring Range (Default = 16777216) Attribute 101 (2^95 to 2^88)
TR_Device:C.Data[12]	16#0e		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^103 to 2^96)
TR_Device:C.Data[13]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^111 to 2^104)
TR_Device:C.Data[14]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^119 to 2^112)
TR_Device:C.Data[15]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^127 to 2^120)
TR_Device:C.Data[16]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^135 to 2^128)
TR_Device:C.Data[17]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^143 to 2^136)
TR_Device:C.Data[18]	16#00		Hex	SINT	MSB Total Measuring Range (Default = 16777216) Attribute 101 (2^151 to 2^144)
TR_Device:C.Data[19]	16#0a		Hex	SINT	LSB Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^159 to 2^152)
TR_Device:C.Data[20]	16#00		Hex	SINT	Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^167 to 2^160)
TR_Device:C.Data[21]	16#00		Hex	SINT	Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^175 to 2^168)
TR_Device:C.Data[22]	16#00		Hex	SINT	MSB Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^183 to 2^176)
TR_Device:C.Data[23]	16#01		Hex	SINT	LSB Number or Revolutions - Denominator (Default = 1) Attribute 103 (2^191 to 2^184)
TR_Device:C.Data[24]	16#00		Hex	SINT	Number or Revolutions - Denominator (Default = 1) Attribute 103 (2^199 to 2^192)
TR_Device:C.Data[25]	16#00		Hex	SINT	Number or Revolutions - Denominator (Default = 1) Attribute 103 (2^207 to 2^200)
TR_Device:C.Data[26]	16#00		Hex	SINT	MSB Number or Revolutions - Denominator (Default = 1) Attribute 103 (2^191 to 2^184)
TR_Device:C.Data[27]	16#01		Hex	SINT	TR-Parameter in Use 0=Not in Use; 1=In Use (Default = 0) Attribute 105 (2^223 to 2^216)

A
B
C

- Find your device in the *Controller Tags* window.
- Change the data *Style* to *Hex*.
- Convert your desired values to Hexadecimal values.
  - Total Measuring Range = 3600Dec = 0xE10Hex.
  - Revolutions/Numerator = 10Dec = 0x0AHex.
  - TR-Parameter = In-Use = 0x01Hex.
- Enter the values as depicted on the left.



Name	Value	Force Mask	Style	Data Type	Description
TR_Device:C.Data[0]	16#00		Hex	SINT	Direction Toggle; 0=Increase CW; 1=Decrease CW (Default = 0) Attribute 12 (2^7 to 2^0)
TR_Device:C.Data[1]	16#00		Hex	SINT	LSB Measuring Units per Span (Default = 4096) Attribute 16 (2^15 to 2^8)
TR_Device:C.Data[2]	16#10		Hex	SINT	Measuring Units per Span (Default = 4096) Attribute 16 (2^23 to 2^16)
TR_Device:C.Data[3]	16#00		Hex	SINT	Measuring Units per Span (Default = 4096) Attribute 16 (2^31 to 2^24)
TR_Device:C.Data[4]	16#00		Hex	SINT	MSB Measuring Units per Span (Default = 4096) Attribute 16 (2^39 to 2^32)
TR_Device:C.Data[5]	16#00		Hex	SINT	LSB Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[6]	16#00		Hex	SINT	Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[7]	16#00		Hex	SINT	Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[8]	16#01		Hex	SINT	MSB Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[9]	16#0f		Hex	SINT	LSB Velocity Format (Default = 7951) Attribute 25 (2^79 to 2^72)
TR_Device:C.Data[10]	16#1f		Hex	SINT	MSB Velocity Format (Default = 7951) Attribute 25 (2^87 to 2^80)
TR_Device:C.Data[11]	16#10		Hex	SINT	LSB Total Measuring Range (Default = 16777216) Attribute 101 (2^95 to 2^88)
TR_Device:C.Data[12]	16#0e		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^103 to 2^96)
TR_Device:C.Data[13]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^111 to 2^104)
TR_Device:C.Data[14]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^119 to 2^112)
TR_Device:C.Data[15]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^127 to 2^120)
TR_Device:C.Data[16]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^135 to 2^128)
TR_Device:C.Data[17]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^143 to 2^136)
TR_Device:C.Data[18]	16#00		Hex	SINT	MSB Total Measuring Range (Default = 16777216) Attribute 101 (2^151 to 2^144)
TR_Device:C.Data[19]	16#0a		Hex	SINT	LSB Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^159 to 2^152)
TR_Device:C.Data[20]	16#00		Hex	SINT	Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^167 to 2^160)
TR_Device:C.Data[21]	16#00		Hex	SINT	Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^175 to 2^168)

Monitor Tags / Edit Tags

Quick Watch — Enter Quick Watch List Name...

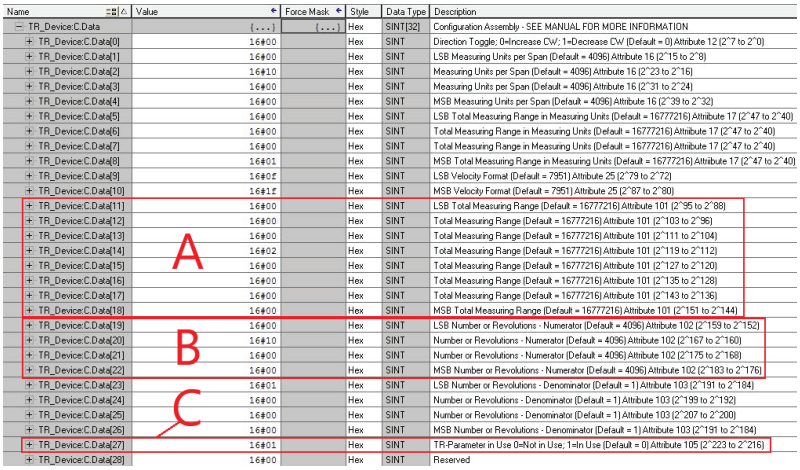
Name	Scope	Value	Force Mask	Description

- Press *ALT+3* to call up the *Watch* table.
- Click the drop down menu and select *Quick Watch.*
- Add your input data tag for position value (E.g. {Device_Name}:I.Data[0]).
- This will allow you to view the position value and validate the changes to the measuring system.
- Cycle power to the device or inhibit/ re-inhibit communication as shown in the direction example.

Let's set the device so that it outputs 8192 steps over 4096 full rotations, before starting over at zero. This will also effectively output the maximum resolution of this device. See device label for max. resolution for your device.

Name	Force Mask	Style	Data Type	Description
TR_Device:C.Data	{...}	Decimal	SINT[32]	Configuration Assembly - SEE MANUAL FOR MORE INFORMATION
TR_Device:C.Data[0]		Decimal	SINT	Direction Toggle; 0=Increase CW; 1=Decrease CW (Default = 0) Attribute 12 (2^7 to 2^0)
TR_Device:C.Data[1]		Decimal	SINT	LSB Measuring Units per Span (Default = 4096) Attribute 16 (2^15 to 2^8)
TR_Device:C.Data[2]		Decimal	SINT	Measuring Units per Span (Default = 4096) Attribute 16 (2^23 to 2^16)
TR_Device:C.Data[3]		Decimal	SINT	Measuring Units per Span (Default = 4096) Attribute 16 (2^31 to 2^24)
TR_Device:C.Data[4]		Decimal	SINT	MSB Measuring Units per Span (Default = 4096) Attribute 16 (2^39 to 2^32)
TR_Device:C.Data[5]		Decimal	SINT	LSB Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[6]		Decimal	SINT	Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[7]		Decimal	SINT	Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[8]		Decimal	SINT	MSB Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[9]		Decimal	SINT	LSB Velocity Format (Default = 7951) Attribute 25 (2^79 to 2^72)
TR_Device:C.Data[10]		Decimal	SINT	MSB Velocity Format (Default = 7951) Attribute 25 (2^87 to 2^80)
TR_Device:C.Data[11]		Decimal	SINT	LSB Total Measuring Range (Default = 16777216) Attribute 101 (2^95 to 2^88)
TR_Device:C.Data[12]		Decimal	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^103 to 2^96)
TR_Device:C.Data[13]		Decimal	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^111 to 2^104)
TR_Device:C.Data[14]		Decimal	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^119 to 2^112)
TR_Device:C.Data[15]		Decimal	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^127 to 2^120)
TR_Device:C.Data[16]		Decimal	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^135 to 2^128)
TR_Device:C.Data[17]		Decimal	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^143 to 2^136)
TR_Device:C.Data[18]		Decimal	SINT	MSB Total Measuring Range (Default = 16777216) Attribute 101 (2^151 to 2^144)
TR_Device:C.Data[19]		Decimal	SINT	LSB Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^159 to 2^152)
TR_Device:C.Data[20]		Decimal	SINT	Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^167 to 2^160)
TR_Device:C.Data[21]		Decimal	SINT	Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^175 to 2^168)
TR_Device:C.Data[22]		Decimal	SINT	MSB Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^183 to 2^176)
TR_Device:C.Data[23]		Decimal	SINT	LSB Number or Revolutions - Denominator (Default = 1) Attribute 103 (2^191 to 2^184)
TR_Device:C.Data[24]		Decimal	SINT	Number or Revolutions - Denominator (Default = 1) Attribute 103 (2^199 to 2^192)
TR_Device:C.Data[25]		Decimal	SINT	Number or Revolutions - Denominator (Default = 1) Attribute 103 (2^207 to 2^200)
TR_Device:C.Data[26]		Decimal	SINT	MSB Number or Revolutions - Denominator (Default = 1) Attribute 103 (2^191 to 2^184)
TR_Device:C.Data[27]		Decimal	SINT	TR-Parameter in Use 0=Not in Use; 1=In Use (Default = 0) Attribute 105 (2^223 to 2^216)
TR_Device:C.Data[28]		Decimal	SINT	Reserved

- In this example we will set the measuring system to the following values:
  - Steps per Revolution: 8192
  - Revolution Numerator: 4096
  - Revolution Denominator: 1
  - Total Measuring Range: 33,554,432
- **For more information on these calculations and further examples, see your Device Manual.**



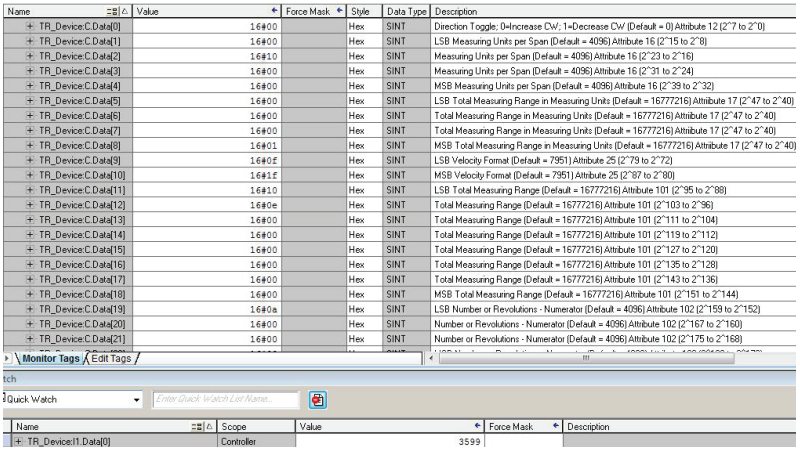
Name	Value	Force Mask	Style	Data Type	Description
TR_Device:C.Data	{...}	{...}	Hex	SINT[32]	Configuration Assembly - SEE MANUAL FOR MORE INFORMATION
TR_Device:C.Data[0]	16#00		Hex	SINT	Direction Toggle; 0=Increase CW; 1=Decrease CW (Default = 0) Attribute 12 (2^7 to 2^0)
TR_Device:C.Data[1]	16#00		Hex	SINT	LSB Measuring Units per Span (Default = 4096) Attribute 16 (2^15 to 2^8)
TR_Device:C.Data[2]	16#10		Hex	SINT	Measuring Units per Span (Default = 4096) Attribute 16 (2^23 to 2^16)
TR_Device:C.Data[3]	16#00		Hex	SINT	Measuring Units per Span (Default = 4096) Attribute 16 (2^31 to 2^24)
TR_Device:C.Data[4]	16#00		Hex	SINT	MSB Measuring Units per Span (Default = 4096) Attribute 16 (2^39 to 2^32)
TR_Device:C.Data[5]	16#00		Hex	SINT	LSB Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[6]	16#00		Hex	SINT	Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[7]	16#00		Hex	SINT	Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[8]	16#01		Hex	SINT	MSB Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[9]	16#0f		Hex	SINT	LSB Velocity Format (Default = 7951) Attribute 25 (2^79 to 2^72)
TR_Device:C.Data[10]	16#1f		Hex	SINT	MSB Velocity Format (Default = 7951) Attribute 25 (2^87 to 2^80)
TR_Device:C.Data[11]	16#00		Hex	SINT	LSB Total Measuring Range (Default = 16777216) Attribute 101 (2^95 to 2^88)
TR_Device:C.Data[12]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^103 to 2^96)
TR_Device:C.Data[13]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^111 to 2^104)
TR_Device:C.Data[14]	16#02		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^119 to 2^112)
TR_Device:C.Data[15]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^127 to 2^120)
TR_Device:C.Data[16]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^135 to 2^128)
TR_Device:C.Data[17]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^143 to 2^136)
TR_Device:C.Data[18]	16#00		Hex	SINT	MSB Total Measuring Range (Default = 16777216) Attribute 101 (2^151 to 2^144)
TR_Device:C.Data[19]	16#00		Hex	SINT	LSB Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^159 to 2^152)
TR_Device:C.Data[20]	16#10		Hex	SINT	Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^167 to 2^160)
TR_Device:C.Data[21]	16#00		Hex	SINT	Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^175 to 2^168)
TR_Device:C.Data[22]	16#00		Hex	SINT	MSB Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^183 to 2^176)
TR_Device:C.Data[23]	16#01		Hex	SINT	LSB Number or Revolutions - Denominator (Default = 1) Attribute 103 (2^191 to 2^184)
TR_Device:C.Data[24]	16#00		Hex	SINT	Number or Revolutions - Denominator (Default = 1) Attribute 103 (2^199 to 2^192)
TR_Device:C.Data[25]	16#00		Hex	SINT	Number or Revolutions - Denominator (Default = 1) Attribute 103 (2^207 to 2^200)
TR_Device:C.Data[26]	16#00		Hex	SINT	MSB Number or Revolutions - Denominator (Default = 1) Attribute 103 (2^191 to 2^184)
TR_Device:C.Data[27]	16#01		Hex	SINT	TR-Parameter in Use 0=Not in Use; 1=In Use (Default = 0) Attribute 105 (2^223 to 2^216)
TR_Device:C.Data[28]	16#00		Hex	SINT	Reserved

A

B

C

- Convert your desired values to Hexadecimal values.
- Total Measuring Range = 33554432Dec = 0x2000000Hex.
- Revolutions/Numerator = 4096Dec = 0x1000Hex.
- TR-Parameter = In-Use = 0x01Hex.
- Enter the values as depicted on the left.



Name	Value	Force Mask	Style	Data Type	Description
TR_Device:C.Data[0]	16#00		Hex	SINT	Direction Toggle; 0=Increase CW; 1=Decrease CW (Default = 0) Attribute 12 (2^7 to 2^0)
TR_Device:C.Data[1]	16#00		Hex	SINT	LSB Measuring Units per Span (Default = 4096) Attribute 16 (2^15 to 2^8)
TR_Device:C.Data[2]	16#10		Hex	SINT	Measuring Units per Span (Default = 4096) Attribute 16 (2^23 to 2^16)
TR_Device:C.Data[3]	16#00		Hex	SINT	Measuring Units per Span (Default = 4096) Attribute 16 (2^31 to 2^24)
TR_Device:C.Data[4]	16#00		Hex	SINT	MSB Measuring Units per Span (Default = 4096) Attribute 16 (2^39 to 2^32)
TR_Device:C.Data[5]	16#00		Hex	SINT	LSB Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[6]	16#00		Hex	SINT	Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[7]	16#00		Hex	SINT	Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[8]	16#01		Hex	SINT	MSB Total Measuring Range in Measuring Units (Default = 16777216) Attribute 17 (2^47 to 2^40)
TR_Device:C.Data[9]	16#0f		Hex	SINT	LSB Velocity Format (Default = 7951) Attribute 25 (2^79 to 2^72)
TR_Device:C.Data[10]	16#1f		Hex	SINT	MSB Velocity Format (Default = 7951) Attribute 25 (2^87 to 2^80)
TR_Device:C.Data[11]	16#10		Hex	SINT	LSB Total Measuring Range (Default = 16777216) Attribute 101 (2^95 to 2^88)
TR_Device:C.Data[12]	16#0e		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^103 to 2^96)
TR_Device:C.Data[13]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^111 to 2^104)
TR_Device:C.Data[14]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^119 to 2^112)
TR_Device:C.Data[15]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^127 to 2^120)
TR_Device:C.Data[16]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^135 to 2^128)
TR_Device:C.Data[17]	16#00		Hex	SINT	Total Measuring Range (Default = 16777216) Attribute 101 (2^143 to 2^136)
TR_Device:C.Data[18]	16#00		Hex	SINT	MSB Total Measuring Range (Default = 16777216) Attribute 101 (2^151 to 2^144)
TR_Device:C.Data[19]	16#0a		Hex	SINT	LSB Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^159 to 2^152)
TR_Device:C.Data[20]	16#00		Hex	SINT	Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^167 to 2^160)
TR_Device:C.Data[21]	16#00		Hex	SINT	Number or Revolutions - Numerator (Default = 4096) Attribute 102 (2^175 to 2^168)

Monitor Tags / Edit Tags

Quick Watch — Enter Quick Watch List Name...

Name	Scope	Value	Force Mask	Description
TR_Device:I1.Data[0]	Controller	3599		

- Press *ALT+3* to call up the *Watch* table.
- Click the drop down menu and select *Quick Watch.*
- Add your input data tag for position value (Eg. {Device_Name}:I.Data[0]).
- This will allow you to view the position value and validate the changes to the measuring system.
- Cycle power to the device or inhibit/ re-inhibit communication as shown in the Direction example.

Presetting your Rotary Position Value

Rotary Device

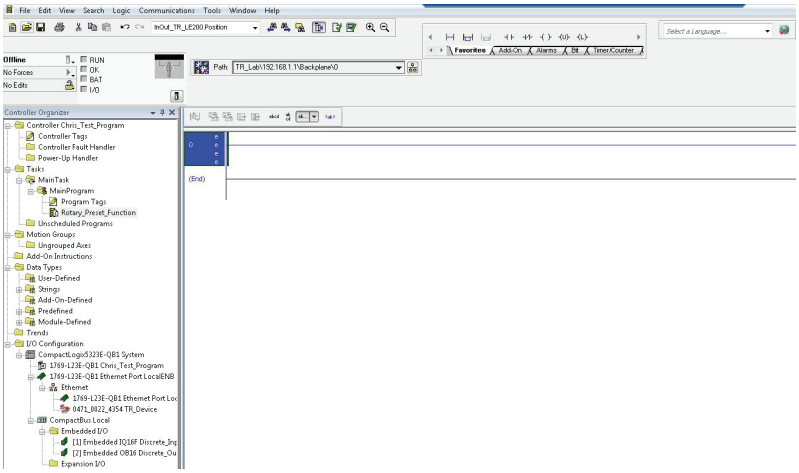
⚠ WARNING

NOTICE

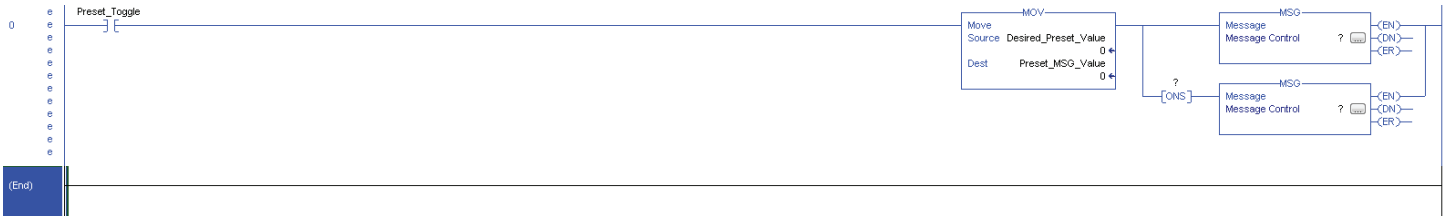
Danger of physical injury and damage to property due to an actual value jump during execution of the preset adjustment function!

- The preset adjustment function should only be executed when the measuring system is stationary, or the resulting actual value jump must be permitted by both the program and the application!

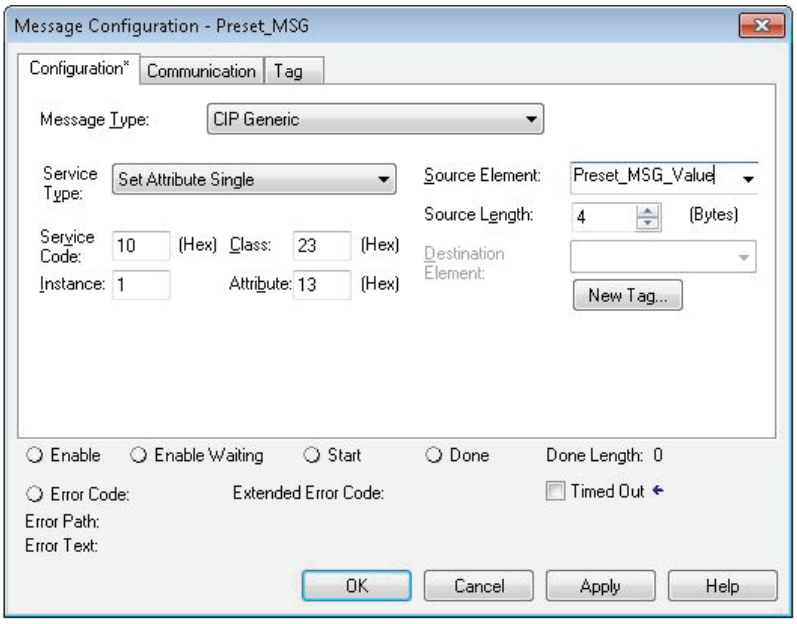
Preset or Homing functions are often carried out after mounting and coupling has been completed. The machinery may need to be "jogged" to a known position of its stroke and then "zeroed". This is done using a Preset function. The following example is for a CXX582 rotary encoder. Attribute numbers vary by device so it is important to reference the device specific manual.



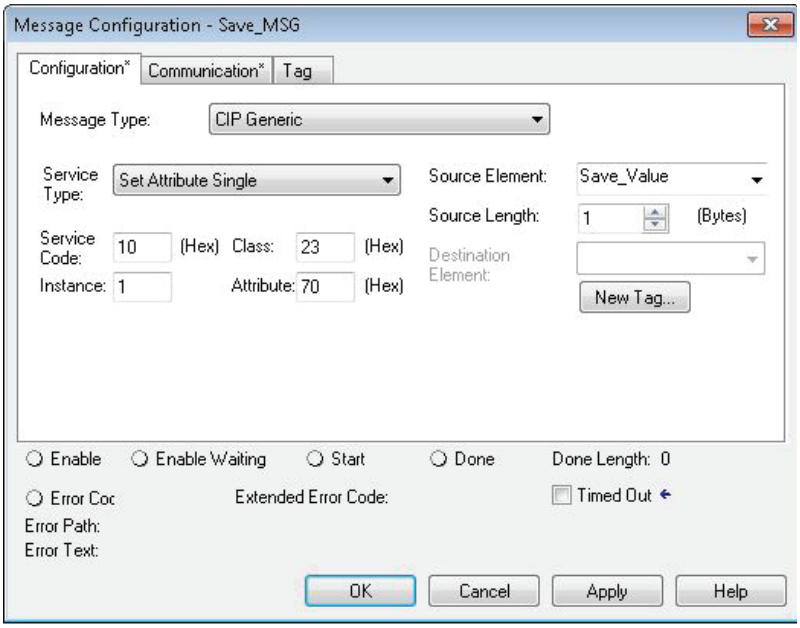
- In the Controller Organizer, right-click *Main Program.*
- Select *New Routine* and set a Name of your choosing.
- You should now see it in your Controller Organizer.
- Right-click *Main Routine* and delete it.
- Right-click *Main Program* and select Properties.
- Under the *Configuration tab*, assign the newly created routine as your *Main*, then click *Ok*.
- Double-click your routine, to display an empty Ladder Logic window.
- Make sure you are in an *Offline* state with the PLC.



- Add the logic that you see in the example above.
- Right-click the N/O contact and create a tag (Ex. Preset_Toggle).
- In the MOV function we will send our desired value to the Message instruction.
- Create 2 tags of a DINT data type.
  - Desired_Preset_Value.
  - Preset_MSG_Value.



- In the message Instruction, right-click the ? and create a new tag (Ex. Preset_MSG) with the data type MESSAGE.
- Click the box on the Message instruction and enter the attribute information for Attribute 19, Preset Value (≤ 32 bit).
- The *Source Element* tag should match the Destination tag of the MOV function shown above and can be selected from the drop-down menu.
- Click the *Communication* tab, then *Browse*.
- Locate the specific device you are commissioning.



- Assign the Done bit of the Preset message instruction to the One-Shot function.
- This can be done by typing Preset_MSG.DN as the tag.
- In the message instruction, right-click the ? and create a new tag (Ex. Save_MSG) with the data type MESSAGE.
- Click the box on the message instruction and enter the attribute information for Attribute 112, Accept Parameter on the left.
- You will need to create a *New Tag* for the Source Element (Eg. Save_Value).

Local:1:C	{...}	{...}		AB:Embedded_IQ16F:C:0
Local:1:I	{...}	{...}		AB:Embedded_IQ16F:I:0
Local:2:C	{...}	{...}		AB:Embedded_OB16:C:0
Local:2:I	{...}	{...}		AB:Embedded_OB16:I:0
Local:2:O	{...}	{...}		AB:Embedded_OB16:O:0
TR_Device:C	{...}	{...}		_0471:0022_4354_17998952:C:0
TR_Device:I1	{...}	{...}		_0471:0022_4354_96F81438:I:0
TR_Device:I1.Connectio...	0		Decimal	BOOL
TR_Device:I1.Data	{...}	{...}	Decimal	DINT[2]
TR_Device:I1.Data[0]	0		Decimal	DINT
TR_Device:I1.Data[1]	0		Decimal	DINT
Preset_Toggle	0		Decimal	BOOL
Desired_Preset_Value	12345678		Decimal	DINT
Preset_MSG_Value	0		Decimal	DINT
Preset_MSG	{...}	{...}		MESSAGE
Save_MSG	{...}	{...}		MESSAGE
Save_Value	1		Decimal	DINT

- Click the *Communication* tab, then *Browse*.
- Locate the specific device you are commissioning, select it and click *OK*.
- Go to *Controller Tags*.
- Set tag values as indicated:
- Save_Value = 1.
- Desired_Preset_Value = Any value within the encoders total measuring range.
- Download the project to the PLC and Go Online.

- Once online the position value will show in your controller tags (TR_Device:I1.Data[0]).
- To write the Preset Value to the encoders EEPROM, simply place a value of 1 in the *Preset_Toggle* tag or CTRL+T to *Toggle Bit*.
- This carries out the logic functions and saves the Desired_Preset_Value to the encoders memory.

TR Electronic Center of Technical Excellence will work with you to develop custom ***TR***aining to meet your needs.

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