# EtherNet/IP Device Setup Overview

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Introduction

TR EIP Compatible Devices
Rotary Encoders

- CEV58 – Optical, Solid Shaft
- CEV582 – Optical, Solid Shaft
- CMV582 – Magnetic, Solid Shaft
- CEH582 – Optical, Hollow Shaft
- CES582 – Optical, Blind Shaft
- CEV65 – Optical, Solid Shaft

Linear Encoders

Old Applications

- LA 46 Series – 321
- LP 46 Series – 320
- LMP30 Series – 322
- LMRI 46 Series – 339
- LMPI 46 Series – 340

LE-200 Laser Device

- LE-200 Laser Measurement Device - 2200
Starting a New Project in Logix Designer
6 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 Offline again.
Starting a New Project in Logix Designer

- 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:

<table>
<thead>
<tr>
<th>IP Address</th>
<th>192.168.1.&lt;Desired Node Address&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subnet Mask</td>
<td>255.255.255.0</td>
</tr>
<tr>
<td>Default Gateway</td>
<td>192.168.1.254</td>
</tr>
</tbody>
</table>
10 Setting a Device Address Using Rotary Switches

- 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
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).
Setting a Device Address Using BootP/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.

<table>
<thead>
<tr>
<th>Switch</th>
<th>Config. Control</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00</td>
<td>0x00</td>
<td>Configuration from FLASH</td>
</tr>
<tr>
<td>0x01 ... 0xFE</td>
<td>not relevant</td>
<td>Switch active</td>
</tr>
<tr>
<td>0xFF</td>
<td>not relevant</td>
<td>Configuration via DHCP</td>
</tr>
</tbody>
</table>

- 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 CXX58:2-1XXX 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.
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.

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.
- 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.
Configuration Assembly

What is a Configuration Assembly?
### What is a Configuration Assembly?

<table>
<thead>
<tr>
<th>TR_Device.C.Data[0]</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR_Device.C.Data[1]</td>
<td>0</td>
</tr>
<tr>
<td>TR_Device.C.Data[2]</td>
<td>16</td>
</tr>
<tr>
<td>TR_Device.C.Data[3]</td>
<td>0</td>
</tr>
<tr>
<td>TR_Device.C.Data[4]</td>
<td>0</td>
</tr>
<tr>
<td>TR_Device.C.Data[5]</td>
<td>0</td>
</tr>
<tr>
<td>TR_Device.C.Data[6]</td>
<td>0</td>
</tr>
<tr>
<td>TR_Device.C.Data[7]</td>
<td>0</td>
</tr>
<tr>
<td>TR_Device.C.Data[8]</td>
<td>1</td>
</tr>
<tr>
<td>TR_Device.C.Data[9]</td>
<td>15</td>
</tr>
<tr>
<td>TR_Device.C.Data[10]</td>
<td>31</td>
</tr>
<tr>
<td>TR_Device.C.Data[12]</td>
<td>0</td>
</tr>
<tr>
<td>TR_Device.C.Data[13]</td>
<td>0</td>
</tr>
<tr>
<td>TR_Device.C.Data[14]</td>
<td>1</td>
</tr>
<tr>
<td>TR_Device.C.Data[15]</td>
<td>0</td>
</tr>
<tr>
<td>TR_Device.C.Data[16]</td>
<td>0</td>
</tr>
<tr>
<td>TR_Device.C.Data[17]</td>
<td>0</td>
</tr>
<tr>
<td>TR_Device.C.Data[18]</td>
<td>0</td>
</tr>
<tr>
<td>TR_Device.C.Data[19]</td>
<td>0</td>
</tr>
<tr>
<td>TR_Device.C.Data[20]</td>
<td>16</td>
</tr>
<tr>
<td>TR_Device.C.Data[21]</td>
<td>0</td>
</tr>
<tr>
<td>TR_Device.C.Data[22]</td>
<td>0</td>
</tr>
<tr>
<td>TR_Device.C.Data[23]</td>
<td>1</td>
</tr>
<tr>
<td>TR_Device.C.Data[24]</td>
<td>0</td>
</tr>
<tr>
<td>TR_Device.C.Data[25]</td>
<td>0</td>
</tr>
<tr>
<td>TR_Device.C.Data[26]</td>
<td>0</td>
</tr>
<tr>
<td>TR_Device.C.Data[27]</td>
<td>0</td>
</tr>
<tr>
<td>TR_Device.C.Data[28]</td>
<td>0</td>
</tr>
</tbody>
</table>
What is a Configuration Assembly?

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-configuration.

***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) Magnetostriiction Linear Devices.

### Table: Configuration Assembly

<table>
<thead>
<tr>
<th>Tag Name</th>
<th>Default (Hex)</th>
<th>Default (Decial)</th>
<th>Possible Values</th>
<th>Description</th>
<th>When TR Parameter = 0</th>
<th>When TR Parameter = 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cxx58.Z.Data[0]</td>
<td>00 0</td>
<td>0</td>
<td>0 or 1</td>
<td>Direction Toggle – Attribute: 12</td>
<td>Used for Configuration</td>
<td>Configuration Value Ignored - Leave As Default Attribute Value is Calculated</td>
</tr>
<tr>
<td>Cxx58.Z.Data[1]</td>
<td>00 0</td>
<td>0</td>
<td>4096</td>
<td>Measuring rati o span – Attribute: 16</td>
<td>Used for Configuration</td>
<td>Configuration Value Ignored - Leave As Default Attribute Value is Calculated</td>
</tr>
<tr>
<td>Cxx58.Z.Data[2]</td>
<td>10 16</td>
<td>0</td>
<td>16 – 4094</td>
<td>Total Measuring range – Attribute: 17</td>
<td>Used for Configuration</td>
<td>Configuration Value Ignored - Leave As Default Attribute Value is Calculated</td>
</tr>
<tr>
<td>Cxx58.Z.Data[3]</td>
<td>00 0</td>
<td>0</td>
<td>7951</td>
<td>Velocity Format – Attribute: 25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cxx58.Z.Data[4]</td>
<td>00 0</td>
<td>0</td>
<td>1</td>
<td>Configuration Value Ignored - Leave As Default Attribute Value is Calculated</td>
<td>Used for Configuration</td>
<td>Used for Configuration</td>
</tr>
<tr>
<td>Cxx58.Z.Data[5]</td>
<td>00 0</td>
<td>0</td>
<td>10 16</td>
<td>Total Measuring range – Attribute: 102</td>
<td>Configuration Value Ignored - Leave As Default Attribute Value is Calculated</td>
<td>Used for Configuration</td>
</tr>
<tr>
<td>Cxx58.Z.Data[6]</td>
<td>00 0</td>
<td>0</td>
<td>1</td>
<td>Number Of Revolutions – Numerator Attribute: 102</td>
<td>Configuration Value Ignored - Leave As Default Attribute Value is Calculated</td>
<td>Used for Configuration</td>
</tr>
<tr>
<td>Cxx58.Z.Data[7]</td>
<td>00 0</td>
<td>0</td>
<td>0</td>
<td>Number Of Revolutions – Denominator Attribute: 103</td>
<td>Configuration Value Ignored - Leave As Default Attribute Value is Calculated</td>
<td>Used for Configuration</td>
</tr>
</tbody>
</table>

***Rotary Encoders Only***
What is a Configuration Assembly?

<table>
<thead>
<tr>
<th>Linear.C.Data[0]</th>
<th>00</th>
<th>0</th>
<th>0</th>
<th>0 or 1</th>
<th>Direction Counting Toggle - Attribute: 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear.C.Data[1]</td>
<td>04</td>
<td>4</td>
<td>8708</td>
<td>8706 (cm), 8707 (mm), 8708 (µm), 8709 (nm)</td>
<td>Position Format Attribute: 15</td>
</tr>
<tr>
<td>Linear.C.Data[2]</td>
<td>22</td>
<td>34</td>
<td>1</td>
<td>1 – 1 000 000</td>
<td>Position Measuring Increment Attribute: 18</td>
</tr>
<tr>
<td>Linear.C.Data[3]</td>
<td>01</td>
<td>1</td>
<td>11009</td>
<td>7940 (stp/s) – 11009 (cm/s)</td>
<td>Velocity Format Attribute: 25</td>
</tr>
<tr>
<td>Linear.C.Data[7]</td>
<td>01</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Velocity Resolution Attribute: 26</td>
</tr>
<tr>
<td>Linear.C.Data[8]</td>
<td>28</td>
<td>43</td>
<td>0</td>
<td>N/A</td>
<td>Reserved</td>
</tr>
<tr>
<td>Linear.C.Data[13]</td>
<td>00</td>
<td>0</td>
<td>0</td>
<td>0, 1, 4, 7</td>
<td>Velocity Observer – Attribute: 108</td>
</tr>
<tr>
<td>Linear.C.Data[16]</td>
<td>01</td>
<td>1</td>
<td>1</td>
<td>1-16</td>
<td>Position Filter – Attribute: 109</td>
</tr>
<tr>
<td>Linear.C.Data[17]</td>
<td>01</td>
<td>1</td>
<td>1</td>
<td>1, 2, 3</td>
<td>Number of Magnets – Attribute: 110</td>
</tr>
<tr>
<td>Linear.C.Data[18]</td>
<td>00</td>
<td>0</td>
<td>0</td>
<td>N/A</td>
<td>Reserved</td>
</tr>
<tr>
<td>Linear.C.Data[19]</td>
<td>00</td>
<td>0</td>
<td>0</td>
<td>N/A</td>
<td>Reserved</td>
</tr>
<tr>
<td>Linear.C.Data[20]</td>
<td>00</td>
<td>0</td>
<td>0</td>
<td>N/A</td>
<td>Reserved</td>
</tr>
<tr>
<td>Linear.C.Data[21]</td>
<td>00</td>
<td>0</td>
<td>0</td>
<td>N/A</td>
<td>Reserved</td>
</tr>
</tbody>
</table>

***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 find your devices Input Data tags.

In this example it is TR_Device:I1.Data.

(Device_Name):I1.Data[0] = Position Data.

Configuration Assembly

TR 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.

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.

### Calculations

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Decimal Value</th>
<th>Hexadecimal Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>360</td>
<td>Total Measuring Range</td>
<td>3600</td>
<td>0xE10</td>
</tr>
<tr>
<td>10</td>
<td>Revolution Numerator</td>
<td>10</td>
<td>0x0A</td>
</tr>
<tr>
<td>1</td>
<td>Revolution Denominator</td>
<td>1</td>
<td>0x01</td>
</tr>
</tbody>
</table>

For more information on these calculations and further examples, see your Device Manual.

- **Change the data Style to Hex.**
- **Convert your desired values to Hexadecimal values.**
- **Enter the values as depicted on the left.**
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.

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.

---

Convert your desired values to Hexadecimal values.

**Total Measuring Range = 33554432Dec = 0x20000000Hex.**

**Revolutions/Numerator = 4096Dec = 0x1000Hex.**

**TR-Parameter = In-Use = 0x01Hex.**

Enter the values as depicted on the left.
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
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).
42 Presetting Your Rotary Position Value - Rotary Device

- 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.

For Further Information Contact:

training@trelectronic.com

[www.trelectronic.com](http://www.trelectronic.com)

1-800-265-9483