TL70 Ethernet UDT Guide
October 30th, 2024

This document covers the installation of a Banner TL70 Ethernet or Power over Ethernet device in Rockwell Studio 5000. The setup is done using User Defined Tags.

UDT Components
Banner_TL70E_Advanced_Output
Banner_TL70E_Basic_Output
Banner_TL70E_Inputs

Contents

1.   Configuring the TL70 Studio Connection

Make an EtherNet/IP connection to the TL70 device using the DXM EDS. Install the DXM EDS file if necessary.

Create an Ethernet communications module for the TL70 device. The controller tags generated include Input (I) and Output (O) Assembly Instances. Each Assembly has a corresponding tag array. Creating this Class 1 EtherNet/IP implicit IO connection will provide the PLC access to the TL70PoE data. **Make sure that INTs are selected for the connection**. See the DXM User's Guide for more information.
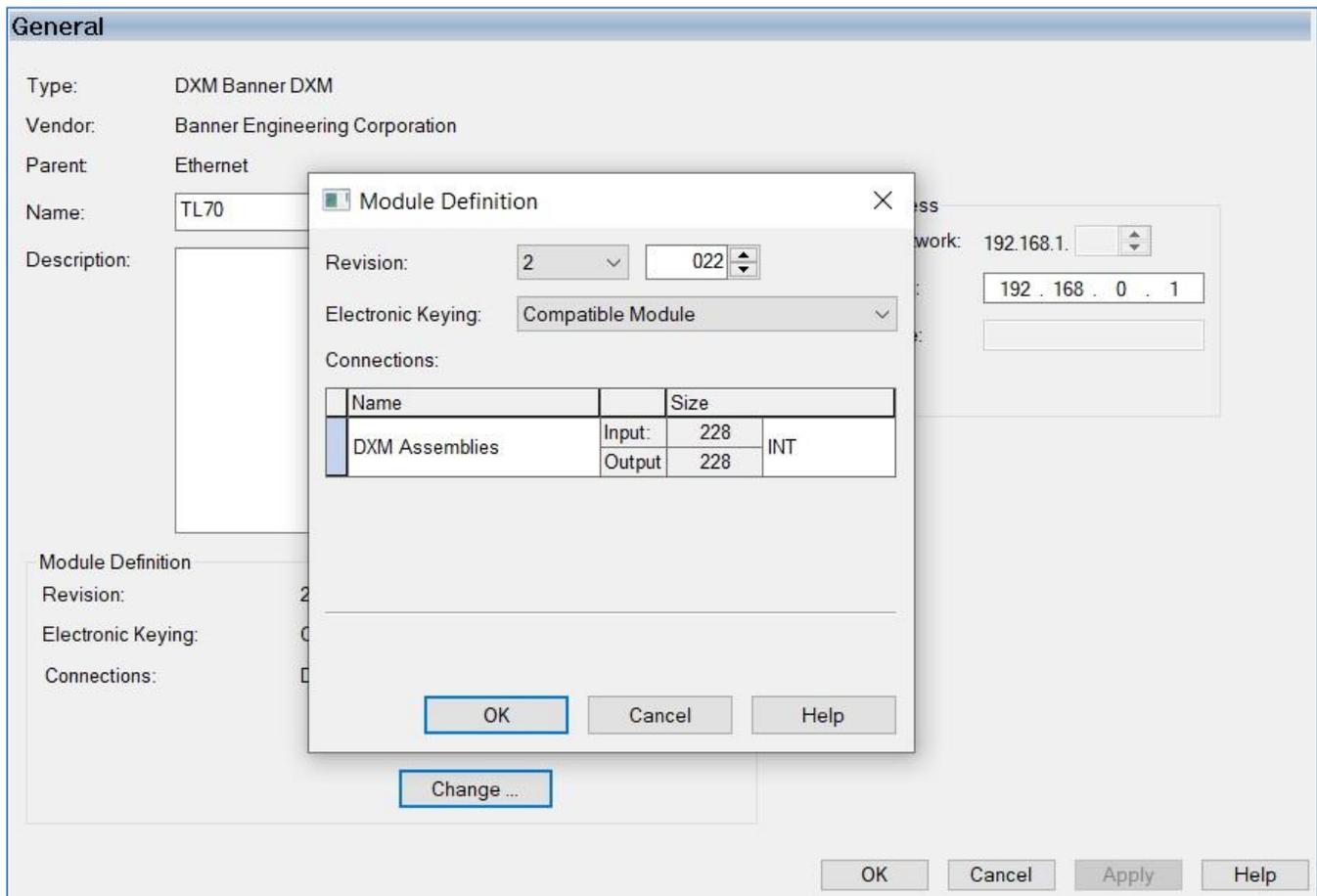
2.   Configuring the TL70 AOI

This section describes how to install the TL70 UDT in Logix Designer software.

1. Open a project.
2. Select the Import Data Type option from the User-Defined under Data Types.
3. Navigate to the correct file location and select the Output UDT to be installed. There are two possible options.
   a. Advanced: The standard mode that the TL70E is configured in. This setup allows for complete control of each segment of the Tower Light. See TL70E manual for more information.
   b. Basic: The optional configuration. Allows for a simpler control setup. See TL70E manual for more information.
4. The Import Configuration window will pop up. The default selection will create all the necessary items for the UDT. Click the OK button to complete the import process.
5. Now import the Banner_TL70E_Inputs UDT. This is an optional step.
6. Items will now be populated in the User-Defined area. Example images show the Advanced UDT having been imported.
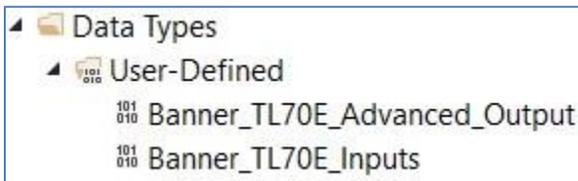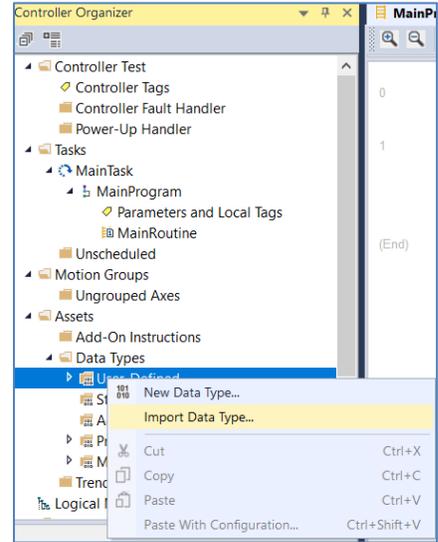
7. Create two new tags. One is called TL70_In (UDT: Banner_TL70E_Inputs) and the other called TL70_Out (Banner_TL70E_Advanced_Output).

8. Add two CPS or COP blocks to a rung.
9. The first CPS instruction should have the Source set to the tag created previously. In this example that tag is TL70_Out. The Dest Is linked to the Output Assembly Instance for the TL70 connection. Link to index 0 of the array. Finally set the length to 97.
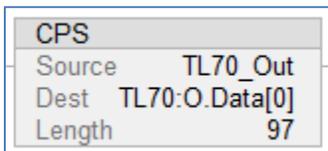
10. The second CPS instruction should have the Source set to the Input Assembly Instance for the TL70 connection. Link to index 0 of the array. Set the Dest to the input tag created previously. In this example that tag is TL70_In. Finally set the length to 1.

```
CPS
Source   TL70:I.Data[0]
Dest              TL70_In
Length                  1
```
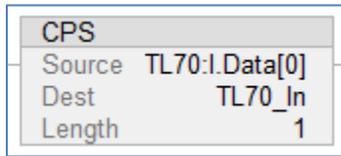
11. The setup rung looks like the following.

```
CPS                             CPS
Source       TL70_Out          Source   TL70:I.Data[0]
Dest   TL70:O.Data[0]          Dest             TL70_In
Length            97           Length                 1
```
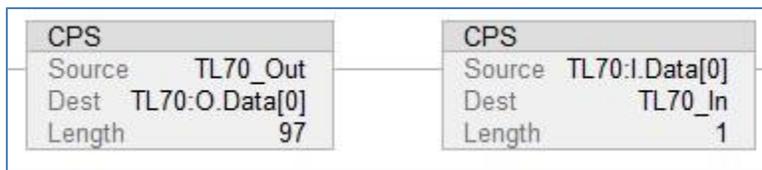
12. Configuration of UDT's is complete.

3.   Using the TL70 Tags

Look in the Controller Tags to find the name you used above. This example used the name "TL70_Out" and "TL70_In).

▷ TL70_In	{...} Banner_TL70E_Inputs
▷ TL70_Out	{...} Banner_TL70E_Advanced_Output

TL70 Input Data

Name	Value
⊿ TL70_In	{...}
▷ TL70_In.Num_of_Segments	2
▷ TL70_In.Operation_Mode	2
▷ TL70_In.Banner_Name	{...}
▷ TL70_In.Product_Name	{...}
▷ TL70_In.Item_H	0
▷ TL70_In.Item_L	3
▷ TL70_In.Serial_Number	{...}
▷ TL70_In.Firmware_Version_H	1
▷ TL70_In.Firmware_Version_L	3
▷ TL70_In.Firmware_Build_H	-28910
▷ TL70_In.Firmware_Build_L	4
▷ TL70_In.User_Defined	{...}

The TL70 input data gives information on the status of the tower light. The number of segments and current operation mode are useful diagnostics tools.

TL70 Output Data (Partial Data shown)

Name		Value
▲ TL70_Out		{...}
▷ TL70_Out.Restore_Factory_Config		0
▷ TL70_Out.Seg1_Animation		1
▷ TL70_Out.Seg1_Color1		10
▷ TL70_Out.Seg1_Color2		0
▷ TL70_Out.Seg1_C1_Intensity		0
▷ TL70_Out.Seg1_C2_Intensity		0
▷ TL70_Out.Seg1_Speed		0
▷ TL70_Out.Seg1_Pattern		0
▷ TL70_Out.Seg2_Animation		0
▷ TL70_Out.Seg2_Color1		0
▷ TL70_Out.Seg2_Color2		0
▷ TL70_Out.Seg2_C1_Intensity		0
▷ TL70_Out.Seg2_C2_Intensity		0
▷ TL70_Out.Seg2_Speed		0
▷ TL70_Out.Seg2_Pattern		0

Segments 1 and 2 are shown in the example, while segments 3 through 5 are not shown. The Advanced Mode UDT is used here as the Tower Light is in Advanced Mode. To control a light segment the Animation must be set. Here a value of 1 is used to set the segment to a Solid On state. Since the animation only requires one color, Color 1 is set to a value of 10 or violet.

The Description column gives all the possible options for each of the segment settings.

Name		Value		Style	Data Type	Description
▲ TL70_Out			{...}		Banner_TL70E_Advanced_...	
▷ TL70_Out.Restore_Factory_Config		0		Decimal	INT	1 = Soft Reset, 2 = Hard Reset.
▷ TL70_Out.Seg1_Animation		1		Decimal	INT	0 = Off, 1 = Steady, 2 = Flash, 3 = 2 Color Flash, 4 = 50/50, 5 = 50/50 Rotate, 6 = Chase
▷ TL70_Out.Seg1_Color1		10		Decimal	INT	0 = Green, 1 = Red, 2 = Orange, 3 = Amber, 4 = Yellow, 5 = Lime Green, 6 = Spring Gre
▷ TL70_Out.Seg1_Color2		0		Decimal	INT	0 = Green, 1 = Red, 2 = Orange, 3 = Amber, 4 = Yellow, 5 = Lime Green, 6 = Spring Gre
▷ TL70_Out.Seg1_C1_Intensity		0		Decimal	INT	0 = High, 1 = Medium, 2 = Low, 3 = Off, 4 = Custom
▷ TL70_Out.Seg1_C2_Intensity		0		Decimal	INT	0 = High, 1 = Medium, 2 = Low, 3 = Off, 4 = Custom
▷ TL70_Out.Seg1_Speed		0		Decimal	INT	0 = Slow, 1 = Medium, 2 = Fast, 3 = Custom
▷ TL70_Out.Seg1_Pattern		0		Decimal	INT	0 = Normal, 1 = Strobe, 2 = 3 Pulse, 3 = SOS, 4 = Random

Set each segments parameters for how the Tower Light should be configured as for a specific condition of the system.