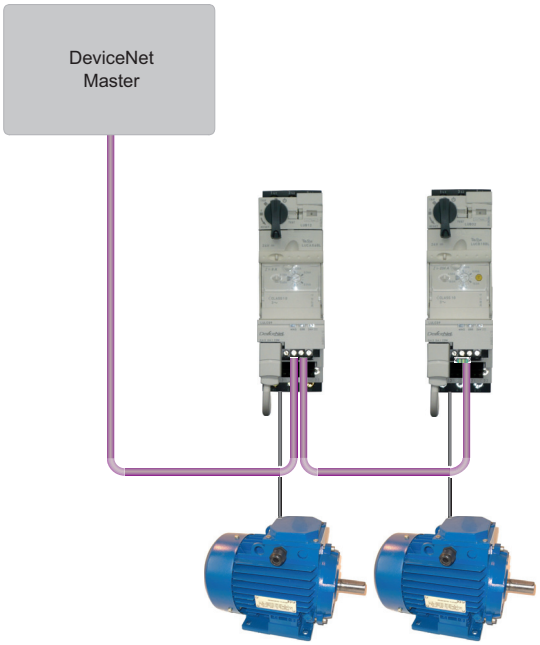
TeSys U DeviceNet with a Third-Party PLC

Quick Start Guide

03/2010



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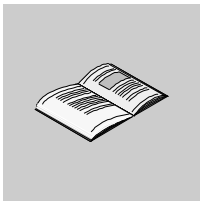
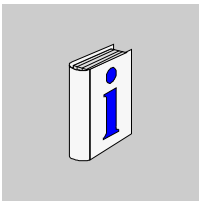




About the Book

At a Glance

Document Scope

The Quick Start Guide uses an application example to describe the different steps to quickly install, configure, and control TeSys U motor starters. With this Quick Start Guide, you can easily set up a DeviceNet communication network, provided that you have a basic knowledge in Allen-Bradley PLCs and Rockwell Automation application software (RSNetWorx for DeviceNet and RSLogix 5000). Allen-Bradley is a trademark of Rockwell Automation. RSLinx, RSNetworx, and RSLogix are trademarks of Rockwell Software.

You do not need any other document to perform this task.

For more details about other capabilities of TeSys U motor starters, consult the related documents listed below.

Validity Note

The information described in this Quick Start Guide is valid for the hardware and software used in the application example provided. The same procedures can be used with different versions of the hardware and software given provided that compatible versions are used.

Related Documents

Title of Documentation	Reference Number
TeSys U LULC09 DeviceNet Communication Module - User's Manual	1744085
TeSys U Communication Variables - User's Manual	1744082
LUB/LUS TeSys U Starters - Instruction Sheet	1629984

You can download these technical publications and other technical information from our website at www.schneider-electric.com.

User Comments

We welcome your comments about this document. You can reach us by e-mail at techcomm@schneider-electric.com.

Introduction

1

What's in this Chapter?

This chapter contains the following topics:

Presentation of the Application

Introduction

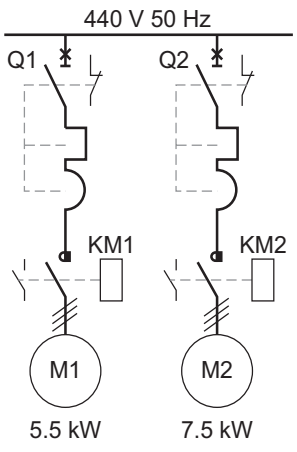
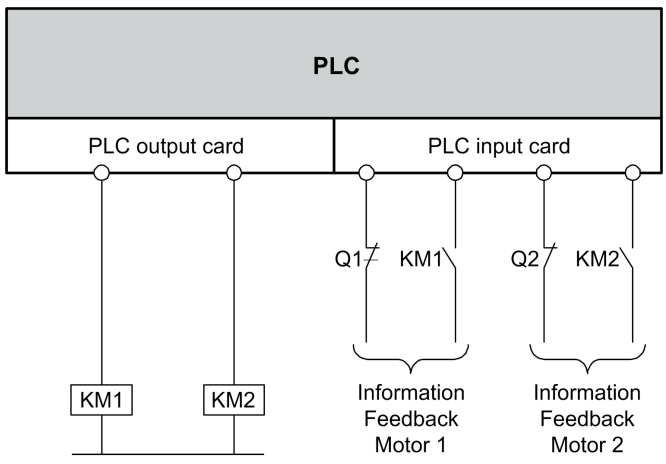
The application example helps you to define Direct On Line (D.O.L.) motor starters step by step, in order to:
- provide thermal magnetic protection,
- control the motor, and
- obtain contactor feedback and circuit breaker trip feedback.

Description of the Application

- Motor 1 (M1):
  3-phase motor, class 10, 5.5 kW (7.5 hp) at 440 V, 50 Hz, rated current In = 10.5 A, D.O.L.
- Motor 2 (M2):
  3-phase motor, class 20, 7.5 kW (10 hp) at 440 V, 50 Hz, rated current In = 14.7 A, D.O.L. with remote monitoring of motor load.

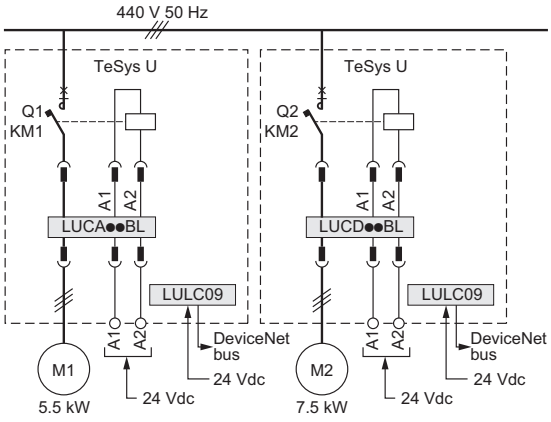
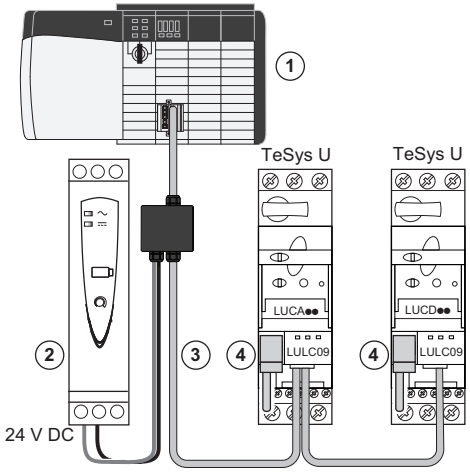
Traditional Solution

The scheme below shows wiring in the traditional solution: all control and feedback information is wired through a PLC.

Power Scheme	Control Scheme
	

The Tesys U Motor Starter Solution on DeviceNet with Allen-Bradley PLC

Power and Control Schemes in the Tesys U Motor Starter Solution

Power Scheme	Control Scheme
	 1. Allen-Bradley PLC with DeviceNet master scanner 2. ADBL8REM24030 power supply 3. Allen-Bradley DeviceNet yellow cable 4. LU9BN11L prewired coil connection

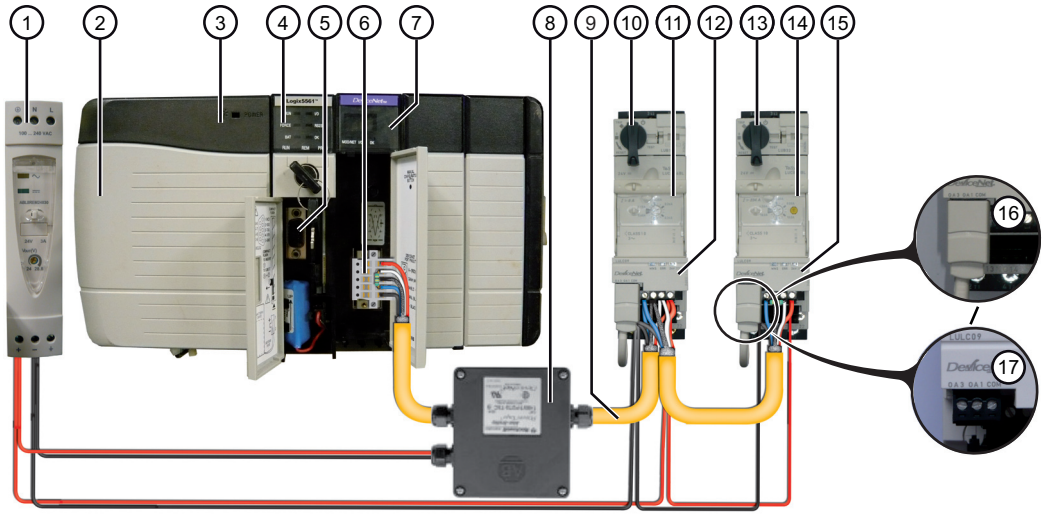
Control Units Used in the TeSys U Motor Starter Solution

The solution presented in this Quick Start Guide uses TeSys U to meet different client needs.

- LUCA12BL is a standard control unit used with motor 1 for basic needs:
  - control a motor remotely (start/stop)
  - provide status information (ready, running, fault condition)
- LUCD18BL is an advanced control unit used with motor 2 for advanced needs, in addition to the standard ones:
  - warning
  - automatic and remote reset via the bus
  - indication of the motor load
  - differentiation of faults

Architecture of the TeSys U System

The following architecture presents the main components of the TeSys U system mounted on a plate:



Legend	Commercial Reference	Description
1	ABL8REM24030	Regulated switch mode power supply 100...240 V AC, 24 V DC/3 A
2 to 9		Allen-Bradley Programmable Logic Controller (PLC) from Rockwell Automation
2	1756-A4	Allen-Bradley ControlLogix chassis with 4 slots
3	1756-PA72	Allen-Bradley ControlLogix power supply 120...240 V AC (5 V/10 A)
4	1756-L61	Allen-Bradley ControlLogix Logix5561 controller, revision 13
5	1756-CP3	Communication port to connect the programmer cable RS232 for processor to the computer
6	1787-PLUG10R	10-pin linear plug used for making a thin cable daisy-chain segment
7	1756-DNB	Allen-Bradley ControlLogix DeviceNet master scanner: network card for the PLC to exchange information between TeSys U and the PLC
8	1485T-P2T5-T5C	Allen-Bradley PowerTap for DeviceNet network, 6 A maximum total current
9	1485C-P1-C••	Allen-Bradley DeviceNet yellow, thin cable to be cut according to network size
10	LUB12	TeSys U power base
11	LUCA12BL	Standard control unit
12, 15	LULC09	DeviceNet communication module with plug-in terminal block, for wire-to-wire control of A1/A2 terminals
13	LUB32	TeSys U power base
14	LUCD18BL	Advanced control unit
16	LU9BN11L	Prewired coil connection (optional), or
17	Standard connection supplied with LULC09	Plug-in terminal block, for wire-to-wire control of A1/A2 terminals

Software Tools

The following software tools must be used to set the applications. Their use requires a basic knowledge.

Commercial Reference	Freeware	Description
9355-WAB	–	RSLinx software for linking the PC and the Allen-Bradley PLC, and for browsing a DeviceNet network.
9357-DNET	–	RSNetWorx for DeviceNet application for configuring and monitoring DeviceNet networks and configuring connected devices.
9324-RLD3FR	–	RSLogix 5000 configuring and programming software for the Allen-Bradley Logix5000 familly of controller.
–	EDS files 1.6 for LULC09 including: ● *DN_TESYSU_Sc_St_1.6E.eds* ● *DN_TESYSU_Sc_Ad_1.6E.eds*	Electronic data sheet (EDS) file used by RSNetWorx for DeviceNet software to handle the devices properly. Download the *.eds* file from the www.schneider-electric.com website.

Fieldbus Network

Protocol: DeviceNet. The DeviceNet network must be terminated at each end with 121 Ωresistors. Each line termination must be connected between pins 2 and 4 on the DeviceNet bus connector, that is to say between the CAN_H and CAN_L signals.

In the application example, the line terminators are located on the following devices:
- The DeviceNet master scanner of the Allen-Bradley PLC.
- The LULC09 Devicenet communication module of the advanced TeSys U for motor 2.

Baud Rate: 125 kbps

Address Settings:
- 0 for PLC DeviceNet master
- 1 for TeSys U DeviceNet motor 1
- 2 for TeSys U DeviceNet motor 2

Fallback Strategy Configuration for the TeSys U on the DeviceNet Network

In case of a communication loss with the PLC, the fallback strategy offers the possibility to operate a motor in different ways. Set parameter 682 to one of the following values:

Value	Fallback Mode	Description
0	Ignore	No strategy is applied. This is not recommended.
1	Freeze outputs	On detection of a communication loss, the motor will keep its status: ● If running, the motor will keep running. ● If stopped, the motor will remain stopped. No change in control status is authorized. A new control will be considered only after a communication loss reset (703.3).
2	Force stop (default value)	The motor is forced to stop. Output OA1 = 0 Output OA3 = 0
3	Continue	Changes in control status are authorized. A new control will be considered even before a communication loss reset (703.3).
4	Force forward	Output OA1 = 1 (direct) Output OA3 = 0
5	Force reverse	Output OA1 = 0 Output OA3 = 1 (reversing)

The fallback strategy adapted to the application is:
- Value 1 = Freeze outputs for motor 1
- Value 2 = Force stop for motor 2

Setting Up TeSys U

2

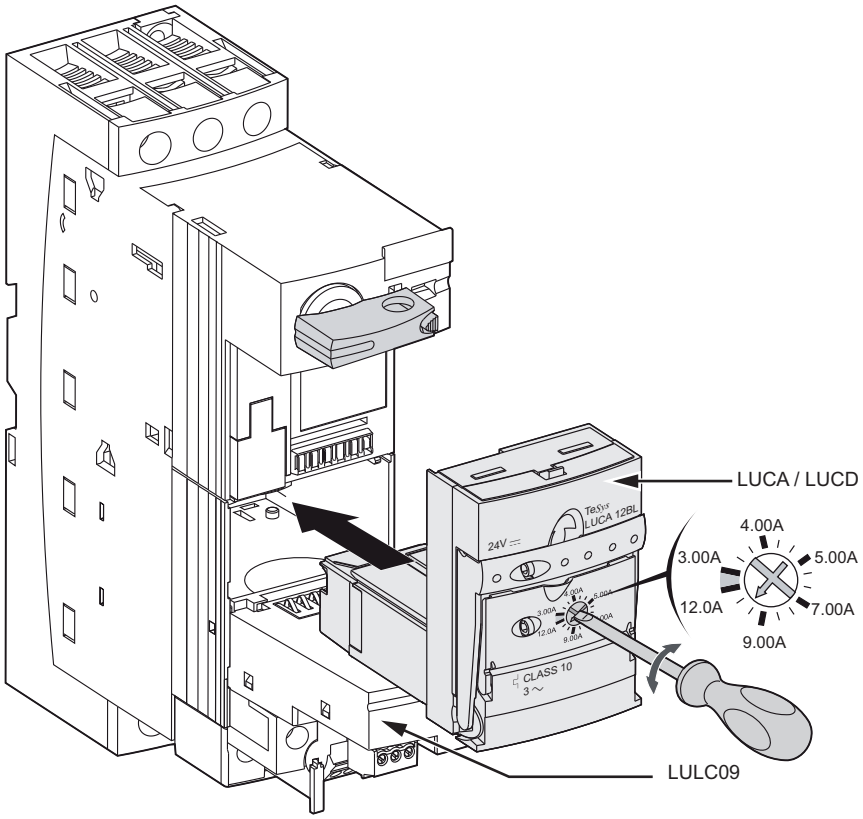
What's in this Chapter?

This chapter contains the following topics:

LUCA12BL and LUCD18BL Settings

Setting Current on the Control Units

The figure below shows how to set current on the control unit using a screwdriver (LUCA12BL here):



Current Setting Values

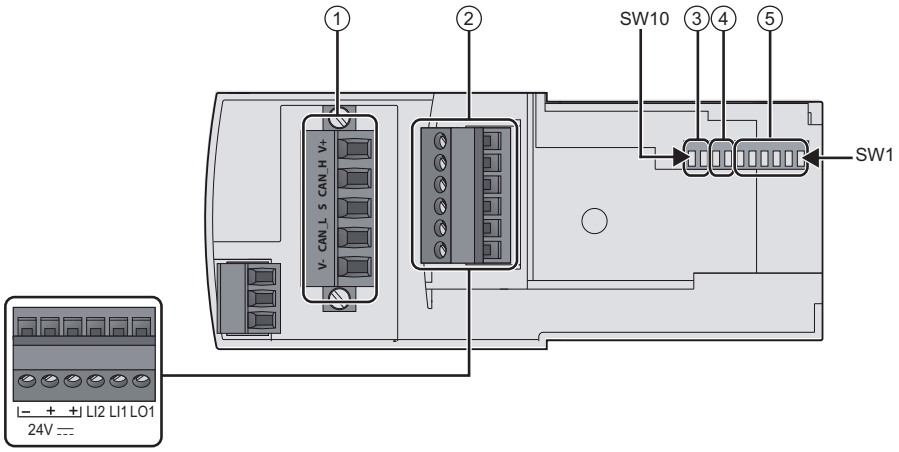
The table below shows the settings for LUCA12BL (Standard Control Unit) and LUCD18BL (Advanced Control Unit):

Control Unit	Motor	Current Setting Range	Motor Nominal Power	Current Setting Value = Motor Rated Current
LUCA12BL	M1	3...12 A	5.5 kW (7.5 hp)	10.5 A
LUCD18BL	M2	4.4...18 A	7.5 kW (10 hp)	14.7 A

LULC09 Connectors, Baud Rate, Address Settings

Presentation

Use the DIP switches located on the under side of the LULC09 communication module, to set the DeviceNet baud rate and address.

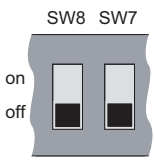


1 DeviceNet bus connector
2 Input/Output terminal block and 24 V DC
3 Unused switches (SW9 and SW10)
4 Baud rate switches (SW7 and SW8)
5 Address switches (SW1 to SW6)

Baud Rate

Assign a baud rate (125, 250, or 500 kbps) using the switches SW7 and SW8.

In the application, baud rate is 125 kbps:

SW8	SW7	Baud Rate
0	0	125 kbps (default value) 

Address

Assign an address from 0 to 63 (default address), using the 6 right-most switches (SW1 to SW6).

In the application, addresses are 1 and 2:

SW6	SW5	SW4	SW3	SW2	SW1	Address
0	0	0	0	0	1	1
0	0	0	0	1	0	2

Address 1 for TeSys U Motor 1	Address 2 for TeSys U Motor 2
	

Setting Up Communication Network to a PLC

3

Configuring TeSys U on the DeviceNet Network with RSNetWorx for DeviceNet and RSLogix 5000

Introduction

This chapter describes step by step how to set the DeviceNet communication including the TeSys U motors starters and an Allen-Bradley PLC using:

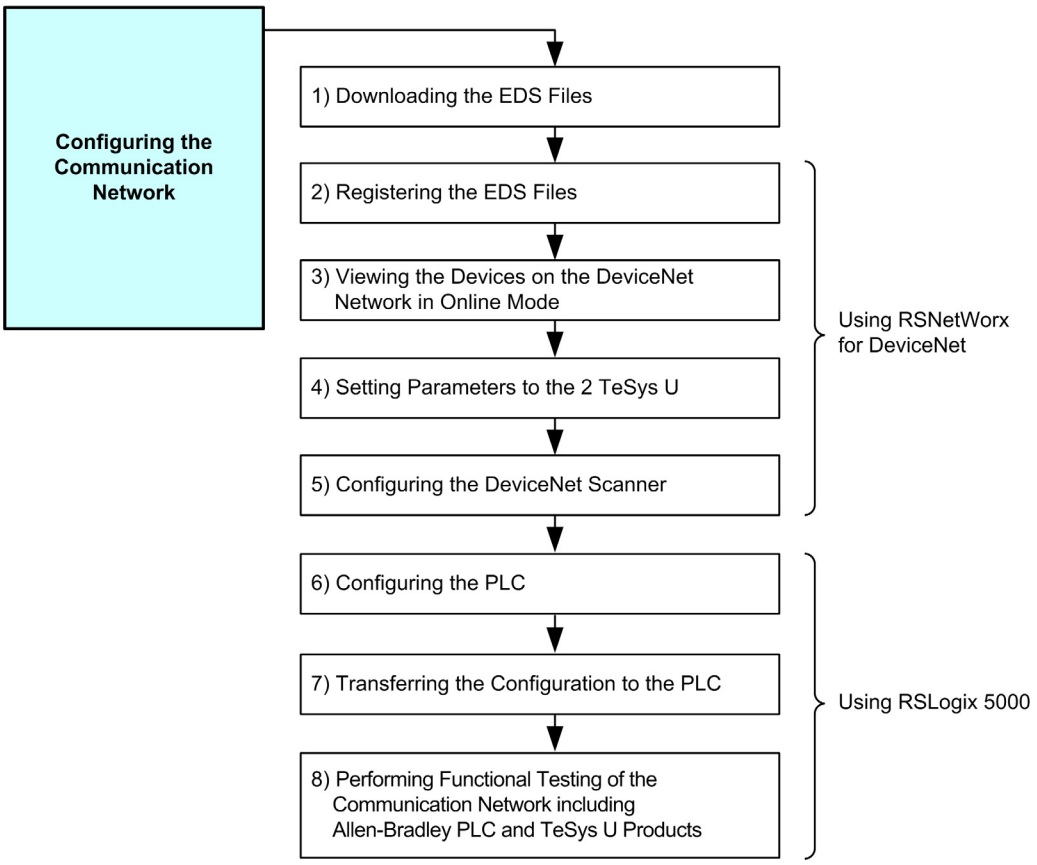
- RSNetWorx for DeviceNet configuration software for network configuration, and
- RSLogix 5000 for PLC configuration.

Prerequisite

Before you start configuring the application, RSLinx, RSNetWorx for DeviceNet, and RSLogix 5000 software from Rockwell Automation must be

- correctly installed on your computer,
- activated, and
- correctly configured to communicate with the PLC.

Configuration Process



1) Downloading the EDS Files

The following table describes the steps to follow to download the EDS files associated with Tesys U from the www.schneider-electric.com website:

Step	Action
1	Open the Schneider Electric website: www.schneider-electric.com.
2	Type *TeSys U* in the Search field.
3	In the **Product Ranges** section, click **TeSys U**.
4	Click the **Downloads** tab, and then **Software**/**Firmware**.
5	Select **EDS Files 1.6 for LULC09** and download the *eds_1_6.7z* file on your hard disk.
6	Extract the *eds_1_6.7z* file into a single directory to your hard disk. It contains the 2 EDS files corresponding to the 2 TeSys U used in the application example: ● *DN_TESYSU_Sc_St_1.6E.eds* file ● *DN_TESYSU_Sc_Ad_1.6E.eds* file

The table below gives the associations between the 2 TeSys U variants and the associated EDS file names.

Variants Names	EDS File Names	Motors (for the Application)
TeSysU Sc St R	*DN_TESYSU_Sc_St_1.6E.eds*	Motor 1
TeSysU Sc Ad R	*DN_TESYSU_Sc_Ad_1.6E.eds*	Motor 2

- The letters **Sc** stand for **S**tarter-**C**ontroller.
- The letters **St** and **Ad** stand for **St**andard and **Ad**vanced control unit, respectively.
- The letter **R** stands for **R**emote configuration.

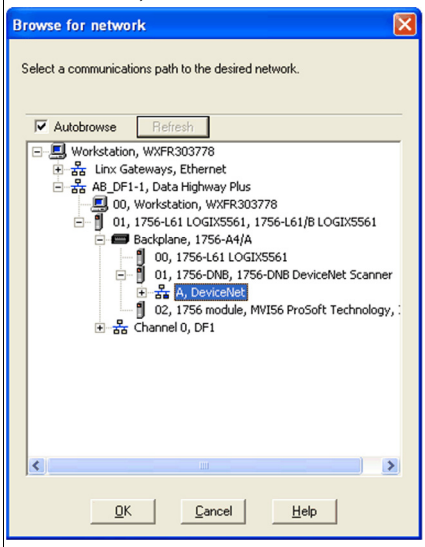
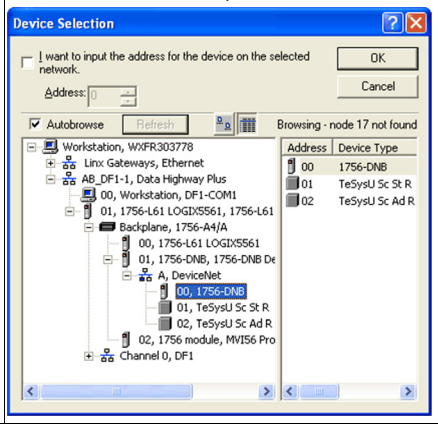
2) Registering the EDS Files using RSNetWorx for DeviceNet

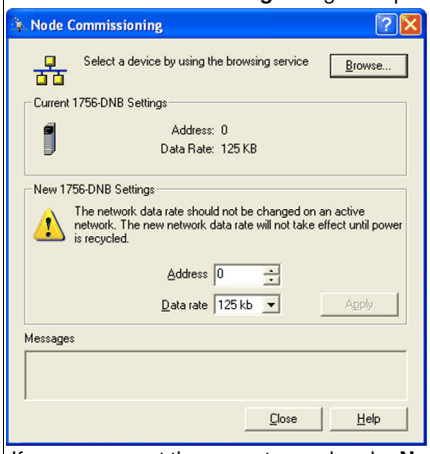
To register the starter-controllers' EDS in the EDS library of RSNetWorx for DeviceNet software, follow the procedure below:

Step	Action	Result
1	Start **RSNetWorx for DeviceNet**.	
2	Select the menu command **Tools** →**EDS Wizard...**	The **Wizard** welcome screen opens.
3	Click **Next**.	The **Options** screen opens.
4	Select **Register an EDS file(s)** and click **Next**.	The **Registration** screen opens.
5	Select **Register a directory of EDS files** and browse to the directory in which you unzipped the EDS files.	
6	Click **Next**.	The **EDS File Installation Test Results** screen opens.
7	Click **Next**.	The **Change Graphic Image** screen opens. The 2 **TeSys U** are listed in the **Product Types** field as motor starters.
8	Click **Next**.	The **Final Task Summary** screen opens.
9	Verify that the devices have been registered and click **Next**.	The completion screen opens.
10	Click **Finish**.	The **EDS Wizard** closes. You can find the EDS recorded into the hardware library under **DeviceNet** →**Vendor** → **Schneider Automation, Inc.** →**Motor Starter**

3) Viewing the Devices on the DeviceNet Network in Online Mode using RSNetWorx for DeviceNet

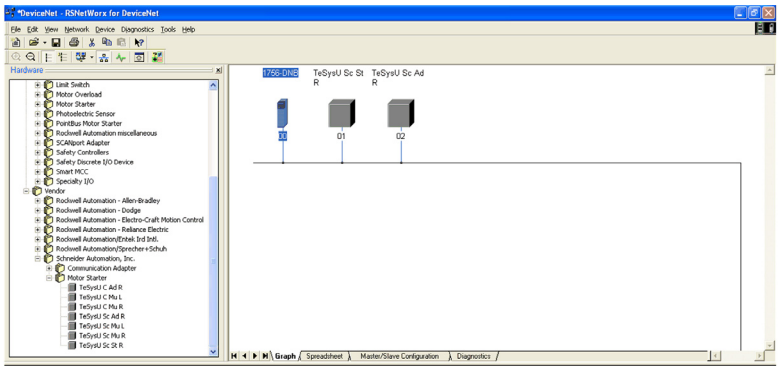
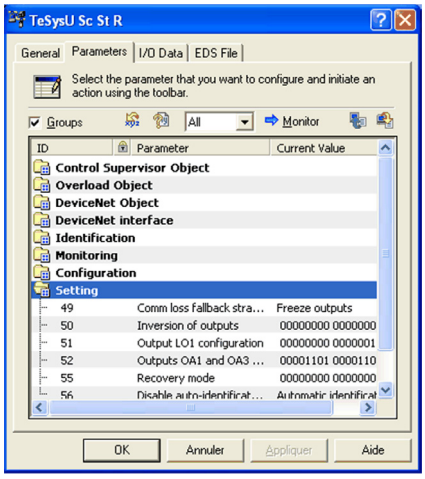
The process for viewing the devices on the DeviceNet network in online mode using RSNetWorx for DeviceNet software is described below:

Step	Action
1	Connect the appropriate programming cable from your PC to the Allen-Bradley PLC.
2	Connect each device to the network.
3	From **RSNetWorx for DeviceNet** software, select the menu command **Network →Online**. **Result:** The **Browse for network** dialog box opens.
4	Set the communication path based on the system and application requirements by browsing the network to **DeviceNet**, and then click **OK**. 
5	Click **OK** in the dialog box which displays the parameters of the devices that are not going to be read or changed. **Result:** When the **Browsing network** screen finishes, the physically connected devices appear in the configuration view including the standard TeSys U TeSysU Sc St R and the advanced TeSys U TeSysU Sc Ad R. The node addresses appear below each icon.
6	Check the node address and baud rate of the TeSYs U starter-controllers by selecting the menu command **Tools →Node Commissioning**. **Result:** The **Node Commissioning** dialog box opens.
7	Click on the **Browse** button. **Result:** The **Device Selection** dialog box opens.
8	Browse to the scanner, and then click on **OK**. 

Step	Action
9	The **Node Commissioning** dialog box opens with the current settings for the device.  If necessary, set the correct speed under **New Device Settings**, then click on **Apply**, and then click on **Exit** to close the dialog box.

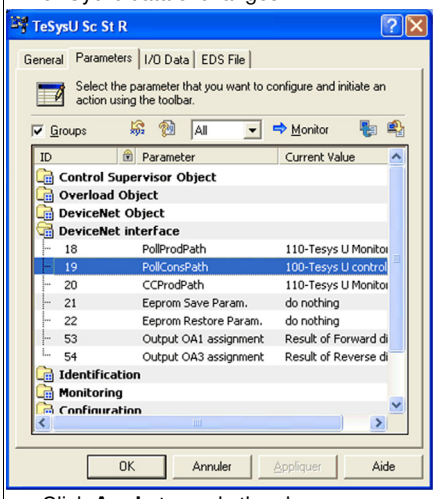
4) Setting Parameters to the 2 TeSys U using RSNetWorx for DeviceNet

The process for setting parameters to each TeSys U using RSNetWorx for DeviceNet software is described below:

Step	Action
1	From the configuration view, double-click a TeSys U starter-controller icon. 
2	In the starter-controller configuration dialog box, click the **Parameters** tab.
3	Agree to upload the configuration from the device before going online by clicking **Upload** in the dialog box.
4	Select the **Groups** check box.
5	Select the **Setting** group to access starter-controller setting parameters. 

Step	Action

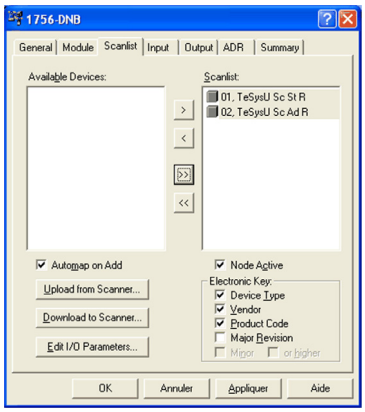
6	Configure the communication loss fallback strategy:
	● For **TeSysU Sc St R**:
	  ● Set the communication loss fallback strategy to **Freeze outputs**.
	  ● Click **Apply**.
	● For **TeSysU Sc Ad R**, keep the default communication loss fallback strategy: **Force stop**.
	● Agree to download the configuration to the device when prompted in the dialog box.

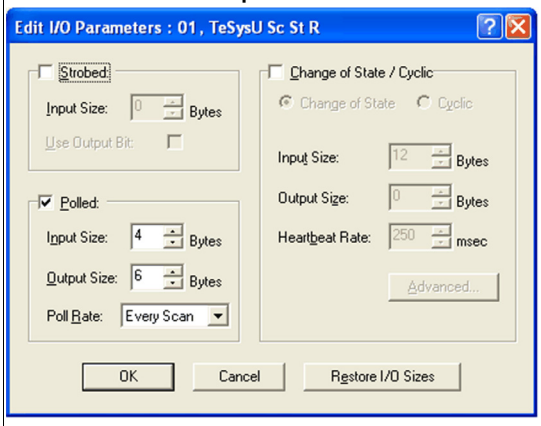
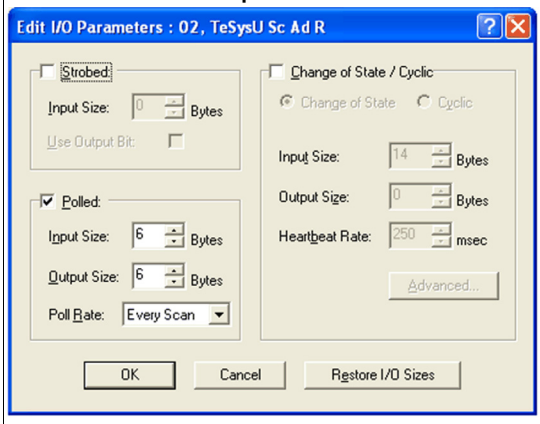
7	Select the **DeviceNet interface** group.
8	Select the data you want to exchange (Instance): ● Set **PollProdPath** parameter to instance **110-Tesys U Monitoring registers** (with dynamic configuration) PollProdPath consists of input assembly object produced by the TeSys U starter-controller on polling sent by the scanner. ● Set **PollConsPath** parameter to instance **100-Tesys U control registers** PollConsPath consists of output assembly data sent by polling by the scanner and consumed by the TeSys U starter-controller. ● Set **CCProdPath** parameter to instance **110-Tesys U Monitoring registers** CCProdPath consists of data produced by the TeSys U starter-controller on Change-of-state (COS) or Cyclic data exchanges.  ● Click **Apply** to apply the changes. ● Agree to download the configuration to the device when prompted in the dialog box.
9	Click **OK** to close the dialog box corresponding to the TeSys U starter-controller for which you have changed the parameters.
10	Go back to step 1 and repeat the procedure for the second TeSys U.

5) Configuring the DeviceNet Scanner using RSNetWorx for DeviceNet

The process for configuring the scanner to communicate with the TeSys U starter-controllers is described below. The procedure involves adding the TeSys U to the scanlist of the master scanner using RSNetWorx for DeviceNet software:

Step	Action
1	Go offline by selecting the menu command **Network →Offline**.
2	From the configuration view, double-click the icon of 1756-DNB scanner. **Result:** The scanner configuration dialog box opens.
3	Click the **Scanlist** tab.
4	Check **Automap on Add** to enable the software to automatically assign the memory locations for each device.

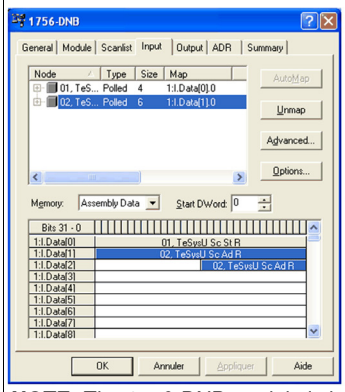
Step	Action
5	In the **Scanlist** tab, highlight the 2 starter-controllers in the **Available Devices** list, and click the right-pointing double chevron >> to add all the devices at once to the scanlist. **Result:** The 2 starter-controllers now appear in the Scanlist. 
6	Edit the input/output parameters of each TeSys U by selecting the corresponding label under **Scanlist**, and then by clicking the **Edit I/O Parameters** button. **Result:** The **Edit I/O Parameters** dialog box opens.
7	Select the type of data exchange by checking **Polled**.

8	Under **Polled**, enter the input and output sizes in bytes which depend on the selected instances for the DeviceNet Interface object and the TeSys U variant:
	• For **TeSysU Sc St R**:
	  • Enter **4** in the **Input Size** text field.
	  • Enter **6** in the **Output Size** text field.
	 
	• For **TeSysU Sc Ad R**:
	  • Enter **6** in the **Input Size** text field.
	  • Enter **6** in the **Output Size** text field.
	 

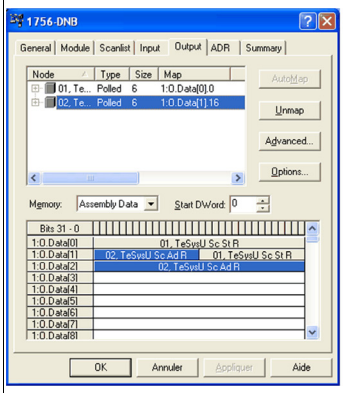
9	Click **OK**. **Result:** The **Edit I/O Parameters** dialog box related to the TeSys U for which you have changed the parameters closes.
10	In the scanner configuration dialog box, click the **Download to scanner** button. The **Downloading Scanlist to Scanner** dialog box opens.
11	Click **Download**.

<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>12</td><td>In the scanner properties dialog box, click the Input tab: the device mapping appears in the lower panel which enables to determine the tag name (address) for DeviceNet data.
Select Node 01, TeSysU Sc St R or node 02, TeSysU Sc Ad R to see the corresponding data highlighted in blue in the input array.
NOTE: Refer to the user's manuals TeSys U LULC09 DeviceNet Communication Module and TeSys U Communication Variables for details of which registers are used with the TeSys U depending on the instance.

For example: In the application, the instance 110 has 6 bytes (3 words) for reading the following registers depending on the TeSys U system:
● For the standard and advanced TeSys U:
  ● Register 455 (TeSys U Status)
  ● Register 458 (I/O Module status)
● For the advanced TeSys U:
  ● Register 461 (Warning register)

The table below shows the byte arrangement of I/O messages for the 2 TeSys U, when input assembly is Instance 110:
 

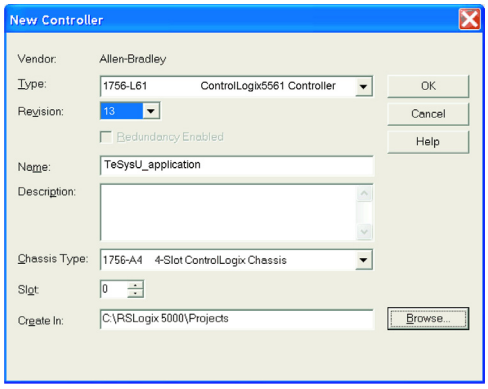
<table>
<tr><th>PLC Input</th><th>Byte 3</th><th>Byte 2</th><th>Byte 1</th><th>Byte 0</th></tr>
<tr><td>Local:1:I.Data[0]</td><td colspan="2">TeSys U Sc St R_Reg.458</td><td colspan="2">TeSys U Sc St R_Reg.455</td></tr>
<tr><td>Local:1:I.Data[1]</td><td colspan="2">TeSys U Sc Ad R_Reg.458</td><td colspan="2">TeSys U Sc Ad R_Reg.455</td></tr>
<tr><td>Local:1:I.Data[2]</td><td></td><td></td><td colspan="2">TeSys U Sc Ad R_Reg.461</td></tr>
</table>
NOTE: The 1756-DNB module is installed in slot 1 in the ControlLogix chassis. Therefore, the addresses for the inputs and outputs of the TeSys U starter-controllers begin with Local:1.</td></tr>
<tr><td>13</td><td>Click the Output tab: an entry for the device appears in the output array.
Select Node 01, TeSysU Sc St R or node 02, TeSysU Sc Ad R to see the corresponding data highlighted in blue in the output array.
For example: In the application, the instance 100 has 6 bytes (3 words) for writing the following registers in the standard and advanced TeSys U systems:
● 704 (TeSys U command)
● 703 (reset communication loss)
● 700 (other control command)

The table below shows the byte arrangement of I/O messages for the 2 TeSys U, when output assembly is Instance 100:
 

<table>
<tr><th>PLC Output</th><th>Byte 3</th><th>Byte 2</th><th>Byte 1</th><th>Byte 0</th></tr>
<tr><td>Local:1:O.Data[0]</td><td colspan="2">TeSys U Sc St R_Reg.703</td><td colspan="2">TeSys U Sc St R_Reg.704</td></tr>
<tr><td>Local:1:O.Data[1]</td><td colspan="2">TeSys U Sc Ad R_Reg.704</td><td colspan="2">TeSys U Sc St R_Reg.700</td></tr>
<tr><td>Local:1:O.Data[2]</td><td colspan="2">TeSys U Sc Ad R_Reg.700</td><td colspan="2">TeSys U Sc Ad R_Reg.703</td></tr>
</table></td></tr>
<tr><td>14</td><td>Select the menu command Files →Save as to save the global configuration to the PC as a .dnt file (DeviceNet file): DNnetwork.dnt in our application example.</td></tr>
<tr><td>15</td><td>Select the menu command Network →Download To Network.</td></tr>
<tr><td>16</td><td>Agree to download the device configuration to the network.</td></tr>
</table>

6) Configuring the PLC using RSLogix 5000

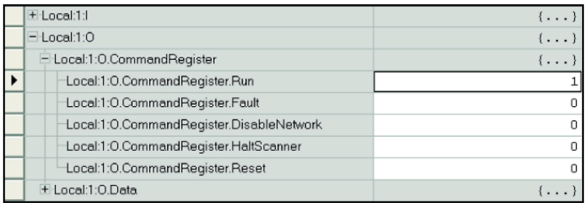
The process for configuring the PLC using RSLogix 5000 software is described below:

Step	Action
1	Start **RSLogix 5000** software.
2	Create a project by selecting the command **File** →**New**. **Result:** The **New Controller** dialog box opens.
3	Set the characteristics of the controller used in the application example: ● **Type**: 1756-L61 Controller ControlLogix5561 ● **Revision**: 13 ● **Name**: Enter a controller name, for example TeSysU_application. The name will be used to create the project file; the *.acd* extension is automatically appended to this name. ● **Chassis Type**: 1756-A4 4-Slot ControlLogix Chassis ● **Slot**: 0, which is the slot number for this controller. **NOTE:** In ControlLogix, controllers occupy a numbered slot in the chassis and can be placed in any slot. It is also possible to place multiple controllers in the same chassis. ● **Create in**: Enter the directory in which you want to store the project file. 
4	Confirm the selected settings and create the project by clicking **OK**.
5	In the standard toolbar, click the **Path** button. **Result:** The **Select Recent Communications Path** dialog box opens, from which you can choose a communications path from among the most recent paths stored on the PC.
6	Select the controller, and then click the **Go online** button.
7	Configure the 1756-DNB scanner module as an I/O device for the application example: In the **Controller Organizer**, expand the tree structure to **I/O Configuration** →**[1] 1756-DNB ScanDevicenet**, and then double-click the scanner's label. **Result:** The **Module Properties** dialog box opens.
8	Select the **RSNetWorx** tab, and then browse to the configuration file for the network that you saved before: *DNnetwork.dnt*.
9	Click **OK** to close the module properties dialog box.

7) Transferring the Configuration to the PLC using RSLogix 5000

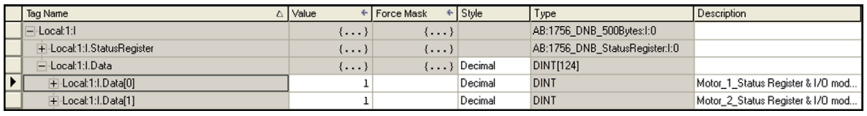
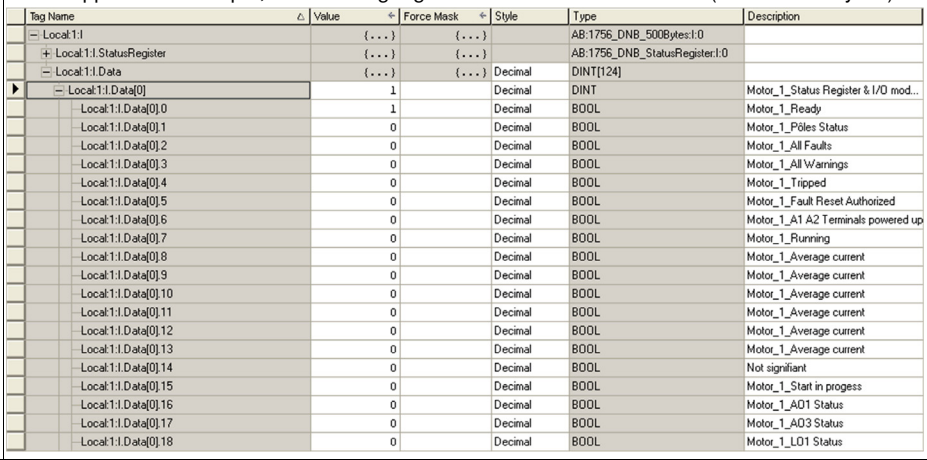
The process for monitoring the controller's tags and values assigned to them using RSLogix 5000 software is described below:

Step	Action
1	Turn the key located on the front of the PLC processor to the **PROG** position. 
2	In RSLogix 5000 software, set the operational mode to **Offline**. 
3	Select the menu command **Communications →Download**. **Result:** The **Download** dialog box opens.
4	Confirm the download by clicking button **Download** when prompted in the dialog box. **Result:** A message indicates that the download is complete, in the results window at bottom of the screen.
5	Switch the controller to Run mode: turn the key to the **RUN** position on the front of the PLC processor. The **RUN** LED of the PLC processor turns green on and the program is launched. 
6	In the RSLogix 5000 Controller Organizer, select **Controller Controller_1756 →Controller Tags**, and then right-click **Monitor Tags**. **Result:** The **Controller Tags** window appears.
7	Select the **Monitor Tags** tab at the bottom of the Controller Tags window.

8	Activate the internal bit of the DeviceNet card to put the DeviceNet network in Run mode:
	Expand the tag name **Local:1:O →Local:1:O.CommandRegister →** **Local:1:O.CommandRegister.Run**, and then replace the value 0 (scanner in idle mode) by 1 (scanner in Run mode).
	 
	Communication is established correctly when the LEDs on the modules display the following behavior:
	• LULC09 communication modules:
	  • **MNS** (module/network status) is steady green.
	  • **24V** ⎓ lights up green.
	• DeviceNet scanner module:
	  • **MOD**/**NET** (module/network) lights up green.
	  • **I/O** lights up green.

8) Performing Functional Testing of the Communication Network Including Allen-Bradley PLC and TeSys U Products

Test the communication network from the Controller Tag window using RSLogix 5000 software as described below:

Step	Action
1	Expand the tag name **Local:1:I.Data** to view the values assigned to the tags. 
2	Name the topological addresses in such a way to avoid programming with names which do not provide any information of the contents of the memory location. Refer to the user's manuals *TeSys U LULC09 DeviceNet Communication Module* and *TeSys U Communication Variables* for details. In the application example, the following tags names are used for Motor 1 (standard TeSys U): 
3	Monitor the tags for Motor 1 and Motor 2 corresponding to the standard and advanced TeSys U, respectively. For example: Test the control of the standard TeSys U with the Input command Local:1:I.Data[0] (Register 455): ● Bit 0 corresponds to the Ready status: the TeSys U product is ready to operate on command request. ● In our application, the rotary handle is turned to 'On' position and there is no fault (register 451 = 0). The bit value is set to 1. ● Turn the rotary handle to 'Off' position (0 on the TeSys U front). ● The value 1 change to 0.