3000-SS37
SoftScreen®/Uni-Telway Driver

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Table of Contents

SoftScreen/Uni-Telway Driver

This *SoftScreen* driver allows the Focal Point™ 3000 family of engines to communicate with programmable logic controllers that communicate using version 1.1 of Telemecanique's Uni-Telway bus protocol.

The driver is installed separately from *SoftScreen*. However, once it is installed, it becomes a part of *SoftScreen* and is downloaded, along with an application, to the run-time engine.

Supported Devices

This driver supports the following devices:

- TSX7
- TSX17 (needs TSX-SCG 1161 communication module)
- TSX-Micro (37-10, 37-21, 37-22)
- TSX-Premium (57-10 and 57-20)
- Series 7 (modules ending with -425 have built-in port; others need a TSX SCM-2116 communication module)

Installing the Driver

Technical Note

You *must* install *SoftScreen* before you install the driver.

Because *SoftScreen* is a Microsoft Windows® 95 Operating System program, you *must* install the Uni-Telway driver in Windows 95. If you have already installed this driver on your system, this installation will overwrite the current files.

To install the Uni-Telway driver...

1. Start Windows 95.

> **Technical Note**
>
> *SoftScreen* must be closed when you install this driver. We also recommend you close all other Windows applications before you install this driver.

2. Insert the Uni-Telway Driver Install disk in your local drive (usually drive A).
3. Click the Start button, and then select the Run command.
4. Type A:setup (or B:setup, depending on which local drive you use) in the Open text box, and then click OK or press ENTER to begin the installation.
5. Press the Next button to proceed to the next setup screen.
6. Follow the on-screen prompts to complete the installation.

   As files are being copied to your hard drive, three icons display on the left side of your workstation screen to indicate your progress.

   The far left icon indicates how much of an individual file has been transferred. The middle icon indicates how much of a floppy has been transferred. The far right icon represents the amount of space occupied on the system's hard drive before you install the driver.

> **Technical Note**
>
> To end the installation process at any time, select the Cancel button in any one of the setup dialog boxes. A prompt will inform you that setup is not complete. Select the Exit Setup button if you still want to exit the installation program. If you wish to continue the installation, select the Resume button.

Uninstalling the Driver

To uninstall the Uni-Telway driver...

1. From Windows 95, click the Start button. Select the Settings command, then Control Panel.
2. From the Control Panel, double-click on Add/Remove Programs.
3. Double-click on the UniTelDriver entry in the list of removable programs on the Install/Uninstall page.
4. Select Yes in the Confirm File Deletion dialog box.

You will be notified once the driver has been successfully uninstalled.

Connecting to Supported Devices

This section describes the serial port configuration and the cabling pinout to connect a 3000 engine to a TSX LES 64 Module.

Configuring the Port

A 3000 engine can communicate with a Telemecanique PLC via an RS-485 protocol through a TSX LES 64 Module.

RS-485 Cabling

Electromagnetic Compatibility Warning

The connection of non-shielded equipment interface cables to the Focal Point workstations will invalidate FCC EMI and European Union EMC compliance and may result in interference and/or susceptibility levels which are in violation of relevant regulations. It is the responsibility of the system integrator and/or user to obtain and use shielded interface cables and equipment. If this equipment has more than one connector, do not leave cables connected to unused interfaces. Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

All interface cables must include braid/foil type shields. Communication cable connectors must be metal, ideally zinc die-cast backsheet types, and provide 360° protection about the interface wires. The cable shield braid must be terminated directly to the metal connector shell; ground drain wires alone are not adequate.

Figure 1 depicts the RS-485 pinout to connect a 3000 engine to a TSX LES 64 module on a supported device.

Technical Note

When connecting via the RS-485 standard, use a Belden 8302 or equivalent cable, maximum length 4000 feet. Keep the cable away from high voltage and current-carrying cables. Refer to the EIA RS-485 specification for more details.

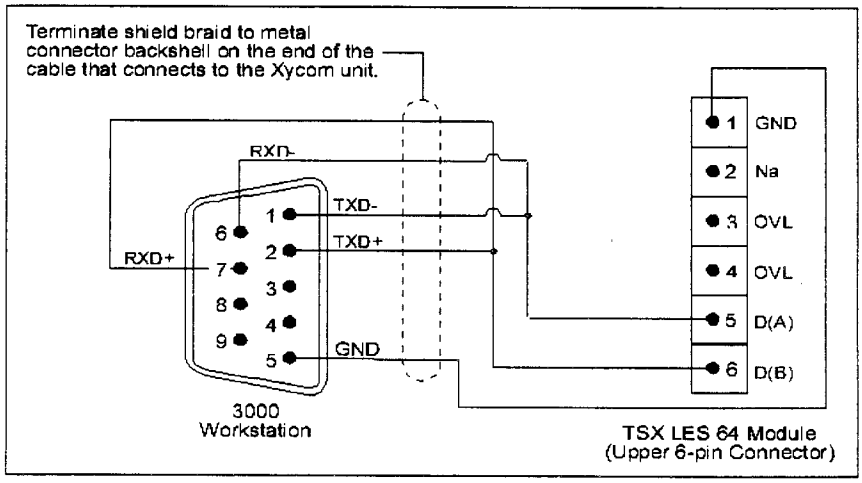

Figure 1. RS-485 Pinout

Development System Configuration

Once you have installed the driver (refer to the *Installing the Driver* section at the beginning of this manual), you must configure it in the *SoftScreen* Development System.

To configure the driver...

1. Open an application in *SoftScreen*. See the *SoftScreen Development System for Windows User's Guide* for information on creating an application.
2. Select the Drivers command on the Configure menu in the Application Navigator. The Configure Physical Drivers dialog box opens, as shown in Figure 2.

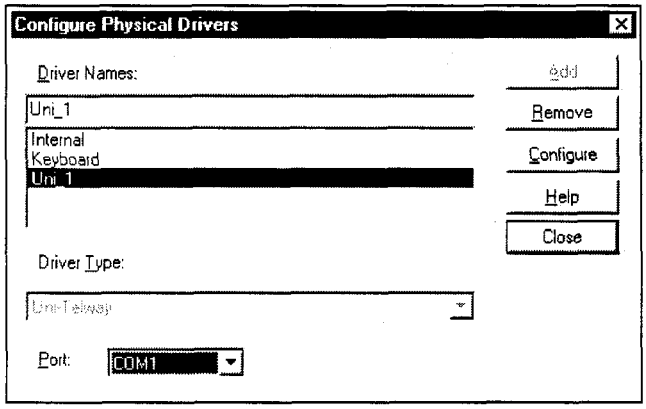

Figure 2. Configure Physical Drivers Dialog Box

3. Select Uni-Telway from the Driver Type drop-down list box.
4. Type a unique name in the Driver Names text box, using up to 32 characters. Tag names can begin with a character or a colon, and can contain alphanumeric characters, underscores, and colons. Tag names cannot begin with, or contain, a space.
5. Choose COM1 or COM2 as the port to which you want to connect the PLC.
6. Click the Add button. The driver name is added to the Driver Names list box.

7. Highlight the name in the Driver Names list box, and then click on the Configure button.

   The Uni-Telway Configuration dialog box opens, as shown in Figure 3.

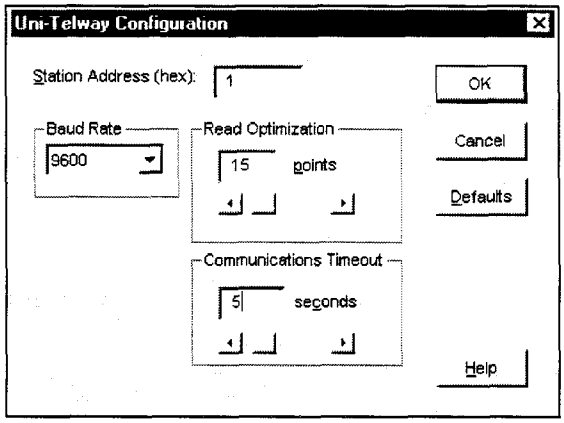

Figure 3. Uni-Telway Configuration dialog box

This dialog box reflects the default settings. Table 1 defines the fields in this dialog box.

Table 1. Fields in the Uni-Telway Driver Configuration Dialog Box

Field	Definition
Station Address (hex)	Sets the station address to a hexadecimal number, from 1 to FE. The default is 1.
Baud Rate	Sets the baud rate at which you will transfer data, from 4800 to 19200. The default is 9600.
Read Optimization	Optimizes the number of data points read in a single command, from 1 to 30. The default is 15. This number can be changed to affect driver performance.
Communications Time-out	Sets the time period the engine will wait for a response from the PLC before timing out, from 1 to 30 seconds. The default is 5.

8. Click OK to accept the changes you have made to these settings. If you want to revert to the default settings, click Defaults. Click Cancel to cancel any changes you have made during the current use of the dialog box.

To change settings once you have configured the driver, double-click on the driver name in the Drivers configured list box on the Application Navigator form.

Technical Note

You cannot change the port setting from the Application Navigator form. You must use the Drivers command on the Configure menu to change this setting.

Once the driver is configured, you can create tag names that address data points on supported devices.

Addressing Supported Devices

SoftScreen uses tag names to address data points on supported devices. Tag names can be up to 32 alphanumeric characters. Do not start tag names with a number or a space.

This section describes how to assign these tag names to data points on supported devices, and defines expressions supported by the Uni-Telway protocol.

Assigning Tag Names

To assign a tag name to a data point on a supported device...

1. Select Drivers from the Data drop-down list box on the Application Navigator form.
2. Double-click on the driver name for which you want to configure tag names. The Uni-Telway data point configuration form opens, as shown in Figure 4.

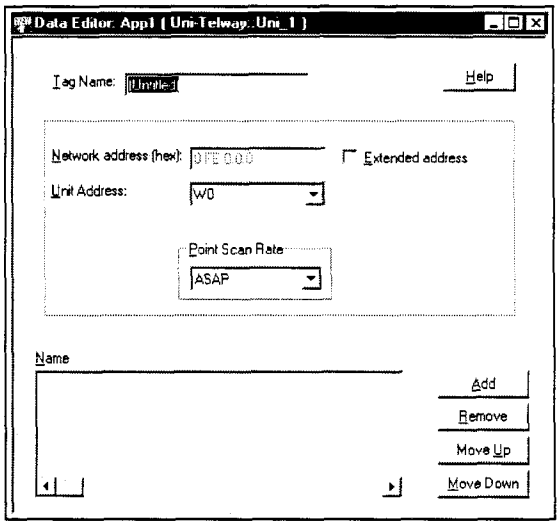

Figure 4. Uni-Telway Data Point Configuration Form

Table 2 defines the fields in this form.

Table 2. Fields in the Uni-Telway Data Point Configuration Form

Field	Definition
Tag Name	Defines a unique tag name.
Network address (hex)	Sets the address of the network to which the driver will communicate. When communicating point to point, use the default setting. If communicating with an extended PLC network, enable the Extended address field and specify a standard Uni-Telway address that includes the network (0-FE), station (0-FE), gate (0-FE), rack/module (0-FE), and channel (0-FE). Refer to your Uni-Telway documentation for more information on network addressing.
Extended address	If this checkbox is disabled, the Network address is set to 0.FE.0.0.0 and the Network address field is grayed out. If this option is not checked, you can specify an address in the Network address text box.
Unit Address	Links the tag to a valid data point. The default is W0. Refer to the *Creating Valid Addresses* section for more information.

Field	Definition
Point Scan Rate	Sets how often the run-time engine will read from the data point, from ASAP (as soon as possible) to once every eight hours. The default is ASAP.

3. Click Add to add the tag. Click Remove to delete the tag. Click Move Up or Move Down to change the order in which the tags are arranged in the list box.

Creating Valid Addresses

Table 3 defines the valid data types and addressing ranges for supported PLCs.

Legend	
i	Address (decimal)
x	Rack number (hexadecimal), 0-F
y	Slot number (hexadecimal), 0-7

Note

This driver uses Telemecanique's unique system for addressing 32-channel I/O modules. It takes two racks to address a 32-channel I/O module (0 and 1, 2 and 3, or 4 and 5); bits 0-15 are addressed as 0-F on racks 0, 2, or 4, and bits 16-31 are addressed as 0-F on racks 1, 3, or 5. Based on this addressing scheme, if you address a 32-channel I/O module in racks 0, 2, or 4, the corresponding slot in racks 1, 3, or 5 must be left blank.

For example, address I01, 1A (bit 26) would be addressed as I11, A.

Please refer to Telemecanique manual for a complete description of this addressing.

Warning

Do not attempt to read/write 32-bit integer values less than -16,777,216 or greater than +16,777,216. Doing so will cause unpredictable results.

Table 3. Valid Data Types and Addressing Ranges

Data Type	Address Range	Size	Bit Addressing	Word Access	Bit Access
Bits (B*i*)	N/A	Bit	0-4095	N/A	R/W
Constant (CW*i*)	0-32767	Word	N/A	R	N/A
Counter Preset (C*i*,P)	0-255	Word	N/A	R/W	N/A
Counter Current (C*i*,V)	0-255	Word	N/A	R	N/A
Double Constant (CDW*i*)	0-16382	Double word	N/A	R	N/A
Double Data Word (DW*i*)	0-16382	Double word	N/A	R/W	N/A
Input Bit (I*xy,i*)	N/A	Bit	0-F	N/A	R/W
Output Bit (O*xy,i*)	N/A	Bit	0-F	N/A	R/W
Timer Preset (T*i*,P)	0-127	Word	N/A	R/W	N/A
Timer Current (T*i*,V)	0-127	Word	N/A	R	N/A
Data Word (W*i*)	0-32767	Word	N/A	R/W	N/A
Grafcet Step (X*i*)	N/A	Bit	0-511	N/A	R

Following are examples of tags that address data points on a Telemecanique TSX7 PLC.

Example_1 addresses data word 70 at network address 0.FE.0.0.0 ASAP.

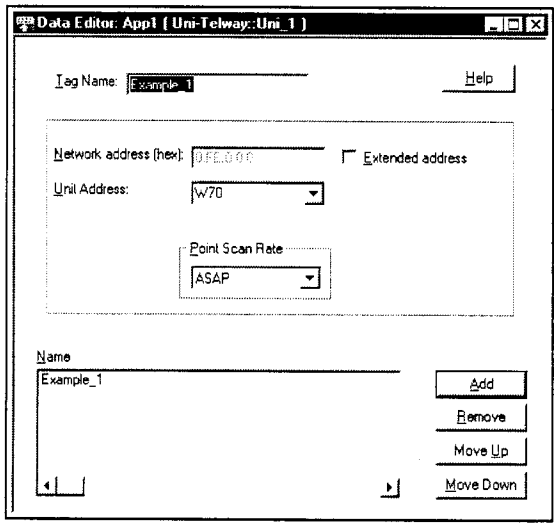

Figure 5. Uni-Telway Addressing, Example 1

Example_2 addresses timer preset 32 at network address 0.FE.5.FE.66 every five seconds.

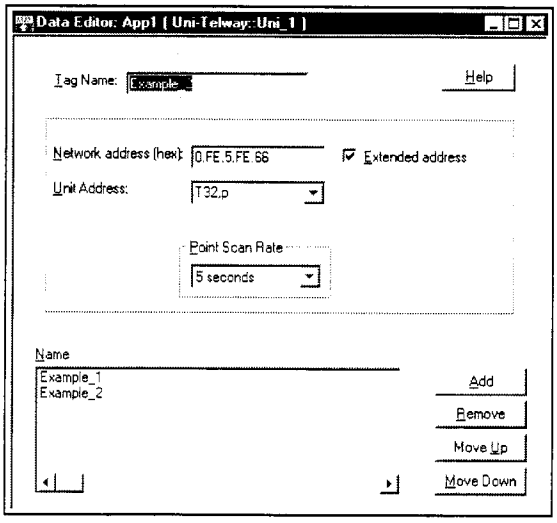

Figure 6. Uni-Telway Addressing, Example 2

Example_3 addresses input bit 6 in rack number 2 and slot number 3 at network address 2.1.5.FE.0 every 30 minutes.

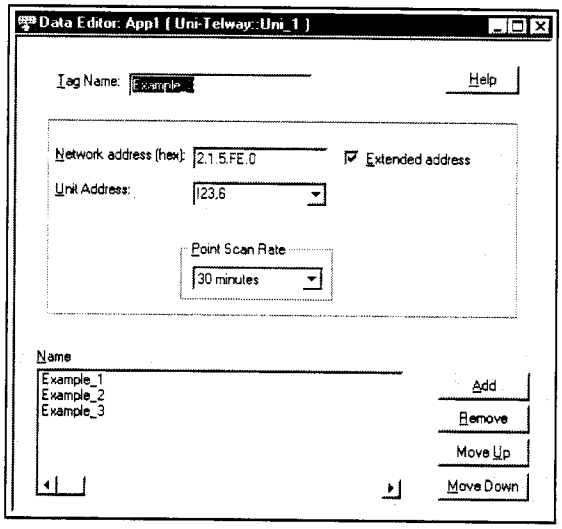

Figure 7. Uni-Telway Addressing, Example 3

Retrieving Status Information

Use the strings described in this section to retrieve driver status information.

> **Technical Note**
>
> These strings are not case sensitive.

Driver ID

UTDriverID returns the following null-terminated string identifying the driver running on the 3000 engine:

```
"Uni-Telway Driver"
```

Driver Revision

UTDriverRev returns a string identifying the driver revision level, such as "1.3."

Error Handling

UTCommStatus returns a number describing the current communication status of the driver. Table 4 defines these status values.

Technical Note

There are no communication errors if the number is 0.

Table 4. Uni-Telway Communication Status Errors

Bit	Type	Description
0	Timeout	The unit did not respond in the configured amount of time.
1	Transmit error	The initial part of the message (before the response data) had an error.
2	Receive error	The part of the message after the first DLE from the master had an error.
3	Checksum error	The message received had an invalid checksum.
4-7	N/A	Reserved
8	Master poll timeout	Master poll timeout
9	Reply timeout	Reply timeout
10	N/A	Message NAKed. The PLC's input buffers are full.
11	Silent NAK error	The message did not ACK or NAK.
12	N/A	Network packet refused
13	Parse error	Parse error
14	N/A	Invalid response code
15	N/A	Application request refused
16	Internal error	Internal error. Please contact Xycom.
17-31	N/A	Unused.

Each of the data points assigned to the driver can have a different update rate, so on any given scan, some points will be scanned and some will not. When the driver detects an error (either read or write), it will post an alarm if it has not previously posted an alarm. The alarm will be posted at the bottom of the screen for three seconds. During any given scan, only the first error condition in the scan will be posted.

The alarm message that is posted will indicate the data point that caused the error. The number that indicates the type of error that occurred does not appear on screen. However, the number will be logged in the alarm summary along with the date and time of the alarm (refer to the *SoftScreen Development System for Windows User's Guide* for information on the alarm summary).

If the driver is optimizing points, it will read data points in optimized blocks, instead of one at a time. If an error occurs while the driver is reading the block, the alarm message will describe the data point that was at the beginning of the block.

For example, if the driver reads an optimized block of data points (a, b, and c), and an error occurs because data point "c" does not exist in the target device, an alarm message is posted. This message will indicate that there was an error reading data point "a," not data point "c."

Once the driver completes a scan without any errors (after an error has occurred in a previous scan), then the driver will post the following message:

```
"Uni-Telway: Communication Restored"
```

Communication Status

UTCommString returns a null-terminated string describing the current communication status of the driver. For example:

```
"UniTel P1: Net:0.FE.5.FE.64 Unit:T4,p (R)"
```

This example shows an error reading (R) address T4,p on COM port 1 at network address 0.FE.5.FE.64.

If no errors are found, the following string displays:

```
"No Errors"
```

Scan Time

UTScanTime returns a number (in msecs) describing the amount of time it takes the driver to read the current data points. For example, if all data points are set to ASAP, the system would track the time between the starting point of the scan and the ending point, and then would display the scan time based on these two numbers. However, if one data point is set to an ASAP scan rate, and another is set to an eight-hour scan rate, the system would continue to read the ASAP point until eight hours had passed, then it would read the ASAP point and the eight-hour point, and then provide you with the time period it took for this scan to read both the points.