

# Schneider Electric

## Schneider Electric TSX07/37/57 Series Unitelway Driver

- 1 [System Structure](#)
- 2 [Cable Diagrams](#)
- 3 [Supported Device Addresses](#)
- 4 [Consecutive Device Addresses](#)
- 5 [Environment Setup](#)
- 6 [I/O Manager Configuration](#)
- 7 [Driver Configuration](#)
- 8 [Protocol Configuration](#)
- 9 [Device Address Configuration](#)

- This manual explains how to connect the target machine with other manufacturer's devices. For information about how to use the Pro-Designer software, please refer to the Pro-Designer Online Help.
- The types of target machines that are compatible with Pro-Designer depends on the version of Pro-Designer. For information about target machine compatibility, please refer to the Pro-Designer Online Help.

# 1 System Structure

The following table describes the basic system setup for connecting the target machine to Schneider PLCs.

To view a cable connection diagram for a particular communication format, see Section 2 – [Cable Diagrams](#).

| Series              | CPU            | Link I/F                         | Comm. Format   | Diagram         |
|---------------------|----------------|----------------------------------|----------------|-----------------|
| TSX 07/37/57 Series | TSX 07 Nano    | Programmer Port                  | RS-232C        | Cable Diagram 1 |
|                     |                |                                  | RS-422(2-wire) | Cable Diagram 2 |
|                     | TSX 37 Micro   | TER & AUX Port                   | RS-232C        | Cable Diagram 1 |
|                     |                |                                  | RS-422(2-wire) | Cable Diagram 2 |
|                     | TSX 57 Premium | TER & AUX Port                   | RS-232C        | Cable Diagram 1 |
|                     |                |                                  | RS-422(2-wire) | Cable Diagram 2 |
|                     |                | TSX SCP 111 (PCMCIA Link Module) | RS-232C        | Cable Diagram 3 |
|                     |                | TSX SCP 114 (PCMCIA Link Module) | RS-422(2-wire) | Cable Diagram 4 |

## 2 Cable Diagrams

The illustrated cable diagrams and those recommended by Schneider may differ. However, Pro-face recommends using the following diagrammed connections.

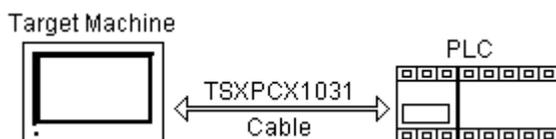
- Ground the PLC's FG terminal according to your country's applicable standard. For details, refer to the PLC manual.
- When making your own communication cable, be sure to connect the SG signal.

### Diagram 1 RS-232C

To connect the target machine and the PLC, use one of the recommended cables.

| Target Machine               | Cable / Adapter                             | Comments               |
|------------------------------|---|------------------------|
| GP, PS-P,<br>PC/AT(PL), PS-G | a   TSXPCX1031 Cable                        | Cable length: 15m max. |
|                              | b   User-created Cable and TSXPCU1030 Cable |                        |

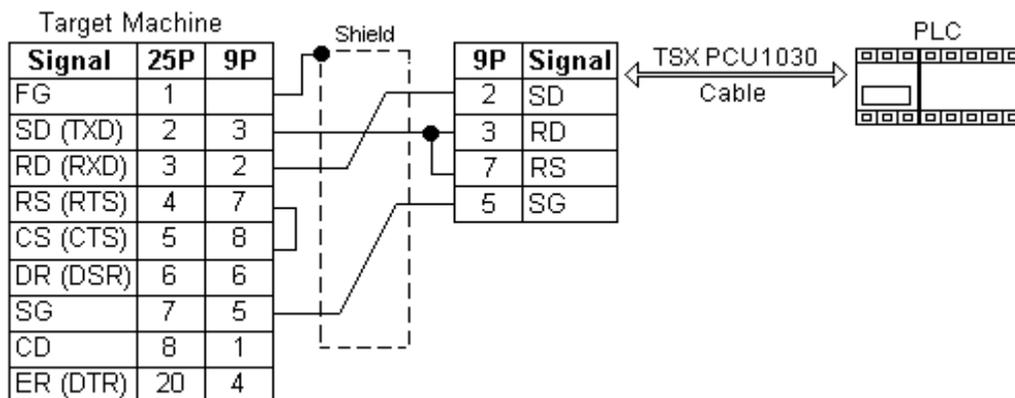
#### a. TSXPCX1031 Cable



#### MEMO

Set the TSXPCX1031 multifunction cable to TER Direct Mode.

#### b. User-created Cable and TSXPCU1030 Cable



- \*1 When creating your own cable, prepare a male connector on the side that connects to the TSXPCU1030 cable.

## Diagram 2 RS-422 (2-wire)

To connect the target machines and the PLC, use the connection terminal adapter, signal converter, or create your own cable using the following specifications.

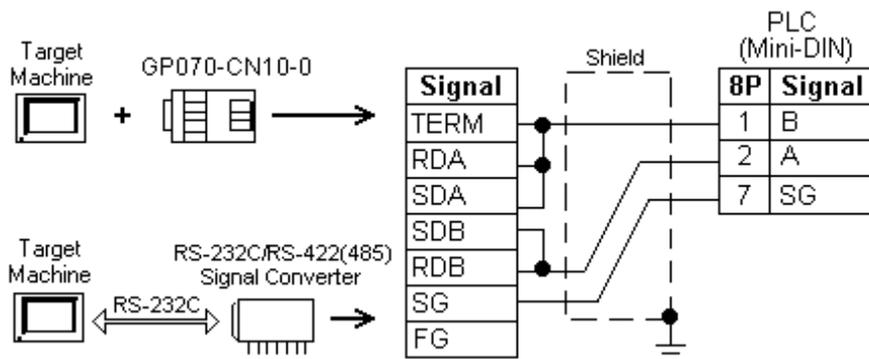
| Target Machine  | Cable / Adapter  | Comments                   |
|-----------------|--|----------------------------|
| GP, PS-P        | a   RS-422 Connection Terminal Adapter<br>(Pro-face: GP070-CN10-0) | Cable length: 500m<br>max. |
|                 | b   User-created Cable   |                            |
| PC/AT(PL), PS-G | a   RS-232C / RS-422(485) Signal Converter                         |                            |

\*1 Connect to COM1.

**MEMO**

Use shielded twisted-pair cables for noise immunity. Connect the cable shields, then connect the cable to a single-point ground.

- a. RS-422 Connection Terminal Adapter (Pro-face: GP070-CN10-0)  
OR: RS-232C/RS-422(485) Signal Converter

**MEMO**

- As the RS-422(485) side of the RS-232C/RS-422(485) signal converter is a terminal, use any external line other than the communication line for the power cable.
- Follow the specifications for your RS-232C/RS-422(485) signal converter when connecting termination resistance on the RS-422(485) terminal.
- The RS-232C connection between the RS-232C/RS-422(485) signal converter and target machine depends on the signal converter. Refer to its specifications when connecting the signal converter and target machine.

## b. User-created Cable

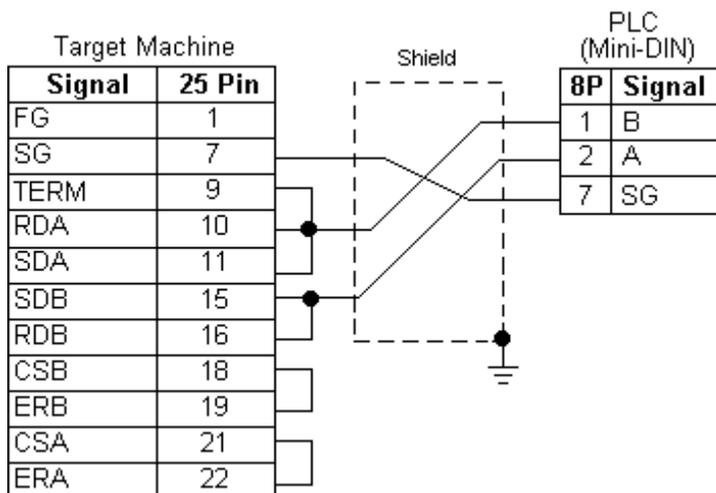
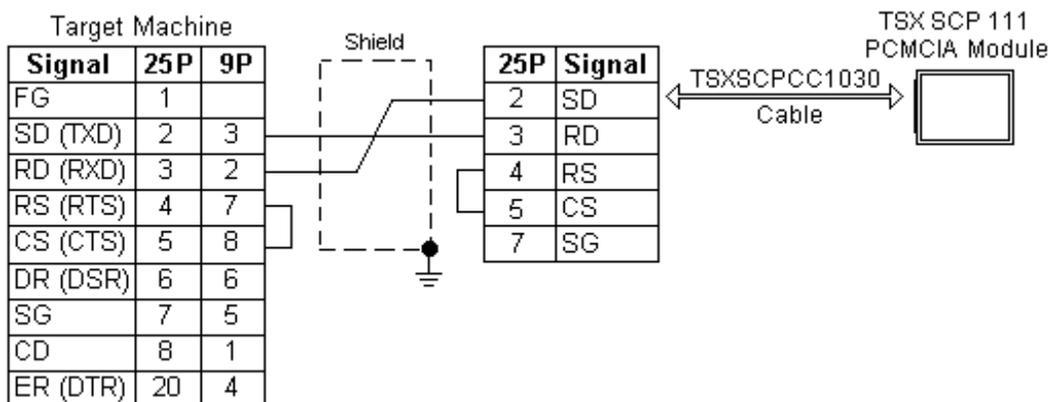


Diagram 3 RS-232C

To connect the target machine and the PLC, create your own cable and attach it to the recommended cable.

| Target Machine            | Cable / Adapter                           | Comments               |
|---------------------------|---|------------------------|
| GP, PS-P, PC/AT(PL), PS-G | User-created Cable and TSXSCPCC1030 Cable | Cable length: 15m max. |



- \*1 When creating your own cable, prepare a male connector on the side that connects to the TSXSCPCC1030 cable.

### 3 Supported Device Addresses

The following table lists the device address range of the Schneider TSX 07/37/57 Series PLCs that Pro-Designer users can specify in the driver user interface.

For actual device address ranges supported by the PLC, refer to the corresponding PLC manual. Supported device addresses differ from protocol to protocol and between PLC models.

| Device                      | Bit Address              | Word Address                  | 16-Bit            | 32-Bit            |
|-----------------------------|--------------------------|-------------------------------|-------------------|-------------------|
| Internal Word               | MW00000:X0 - MW65535:X15 | MW00000-MW65535 <sup>*1</sup> | L/H <sup>*3</sup> | L/H <sup>*3</sup> |
| Constant Word <sup>*2</sup> | KW00000:X0 - KW65535:X15 | KW00000-KW65535 <sup>*1</sup> |                   |                   |
| System Word                 | SW000:X0 - SW999:X15     | SW000-SW999 <sup>*1</sup>     |                   |                   |
| Analog Inputs <sup>*2</sup> | IW00:X0 - IW99:X15       | IW00-IW99 <sup>*1</sup>       |                   |                   |
| Analog Outputs              | QW00:X0 - QW99:X15       | QW00-QW99 <sup>*1</sup>       |                   |                   |
| Internal Bit                | M0000-M9999              | --                            |                   |                   |
| System Bit                  | S000-S999                | --                            |                   |                   |
| Output Bits                 | QX00:0-QX99:15           | --                            |                   |                   |
| Input Bits <sup>*2</sup>    | IX00:0-IX99:15           | --                            |                   |                   |

- \*1 Read-modify-write. When you write to one of these bit addresses, the target machine reads the entire word address, sets the defined bit, then returns the new word address to the PLC. If the ladder program writes data to this word address during the bit read/write process, the resulting data may be incorrect.
- \*2 You can define a bit address by adding a colon and the bit indicator (X00~X15) at the end of the word. (e.g. MW00100:X08)
- \*3 Read-only.
- \*4 16-bit and 32-bit data, High and Low, refer to data as defined in the following examples.

| Byte | 16 bit         | Word | 32 bit          |
|------|----------------|------|-----------------|
| 0    | 7    ...    0  | 0    | 15    ...    0  |
| 1    | 15    ...    8 | 1    | 31    ...    16 |
|      | L (Low)        |      | L (Low)         |
|      | H (High)       |      | H (High)        |

## 4 Consecutive Device Addresses

The following table lists the maximum number of consecutive addresses that can be read by each PLC. Refer to this table when using block transfers.

### MEMO

- To speed up data communication, use consecutive device addresses on the same panel screen.
- The following situations increase the number of times that the device is read, and reduces the data communication speed between the target machine and the PLC:
  - when the number of consecutive addresses exceeds the maximum
  - when an address is designated for division
  - when different device types are used

| Device              | Max. Consecutive Addresses | Gap Span |
|---------------------|----------------------------|----------|
| Internal Bit (M)    | 8 bits                     | 8 bits   |
| System Bit (S)      |                            |          |
| Output Bit (QX)     | 1 bit                      | 1 bit    |
| Input Bit (IX)      |                            |          |
| Internal Word (MW)  | 32 words                   | 7 words  |
| Constant Word (KW)  |                            |          |
| System Word (SW)    |                            |          |
| Analog Inputs (IW)  | 1 word                     | 1 word   |
| Analog Outputs (QW) |                            |          |

## 5 Environment Setup

The following table lists the communication settings, recommended by Pro-face, for the target machine and Schneider TSX 07/37/57 Series PLCs.

For details, see Section 7 – *Driver Configuration*, and Section 8 – *Protocol Configuration*.

### RS-232C

PRG, TER, or AUX Port

| Target Machine |                    | PLC Settings        |                              |
|----------------|--------------------|---------------------|------------------------------|
| Driver         | Serial Interface   | RS-232C             | Conn. Format   RS-232C Cable |
|                | Flow Control       | DTR(ER)/CTS         | --                           |
|                | Transmission Speed | 19200 <sup>*1</sup> | Baud Rate   19200            |
|                | Retry Count        | 2                   | --                           |
|                | Parity Bit         | Odd                 | Parity Bit   Odd             |
|                | Stop Bit           | 1 bit               | Stop Bit   1 bit             |
|                | Data Length        | 8 bits              | Data Length   8 bits         |
|                | Rcv. Timeout       | 10 sec              | --                           |
|                | TX Wait Time       | 0 msec              | --                           |
| Protocol       | Address (SLAVE ID) | 4                   | --                           |

\*1 Set 9600bps for the TSX 07 Nano PLC.

PCMCIA Module

| Target Machine |                    | PLC Settings |                        |
|----------------|--------------------|--------------|------------------------|
| Driver         | Serial Interface   | RS-232C      | Conn. Format   RS-232C |
|                | Flow Control       | None         | --                     |
|                | Transmission Speed | 19200        | Baud Rate   19200      |
|                | Retry Count        | 2            | --                     |
|                | Parity Bit         | Odd          | Parity Bit   Odd       |
|                | Stop Bit           | 1 bit        | Stop Bit   1 bit       |
|                | Data Length        | 8 bits       | Data Length   8 bits   |
|                | Rcv. Timeout       | 10 sec       | --                     |
|                | TX Wait Time       | 0 msec       | --                     |
| Protocol       | Address (SLAVE ID) | 4            | --                     |

## RS-422 (2-wire)

PRG, TER, or AUX Port

| Target Machine |                    | PLC Settings        |              |                 |
|----------------|--------------------|---------------------|--------------|-----------------|
| Driver         | Serial Interface   | RS-422(2-wire)      | Conn. Format | RS-422 (2-wire) |
|                | Flow Control       | None                | --           |                 |
|                | Transmission Speed | 19200* <sup>1</sup> | Baud Rate    | 19200           |
|                | Retry Count        | 2                   | --           |                 |
|                | Parity Bit         | Odd                 | Parity Bit   | Odd             |
|                | Stop Bit           | 1 bit               | Stop Bit     | 1 bit           |
|                | Data Length        | 8 bits              | Data Length  | 8 bits          |
|                | Rcv. Timeout       | 10 sec              | --           |                 |
|                | TX Wait Time       | 0 msec              | --           |                 |
| Protocol       | Address (SLAVE ID) | 4                   | --           |                 |

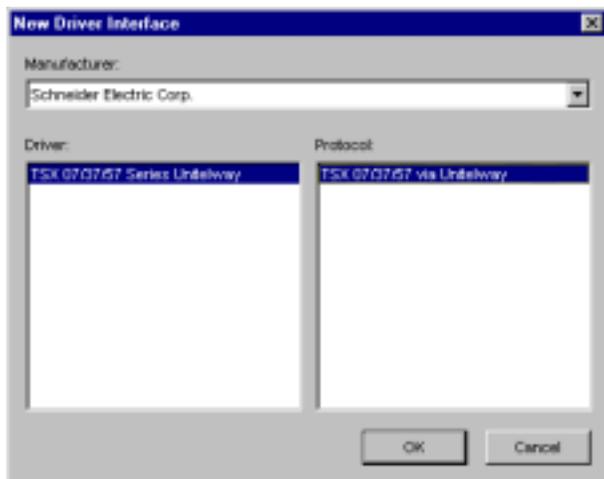
\*1 Set 9600bps for the TSX 07 Nano PLC.

## 6 I/O Manager Configuration

The driver and protocol, which enable communication between the target machine and the PLC, depends on the PLC type.

**MEMO**

For information on how to display the [New Driver Interface] dialog box, or for details about the I/O Manager, see the online help.



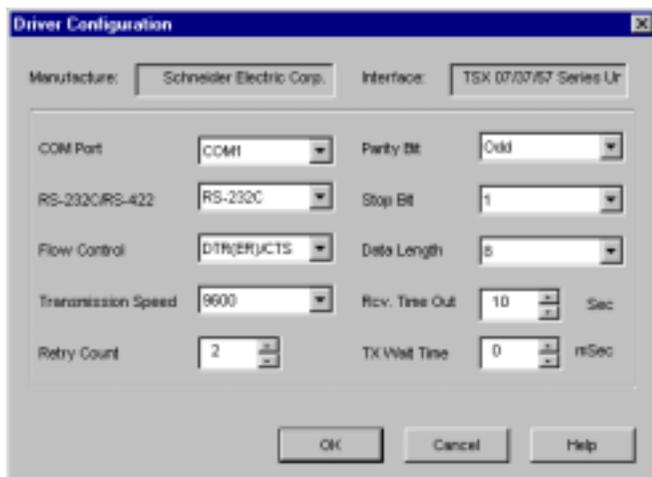
## 7 Driver Configuration

To configure the communication settings of the serial driver in the target machine, use the [Driver Configuration] dialog box. Make sure the settings match those of the PLC.

For an overview of the driver and protocol settings, see Section 5 – *Environment Setup*.

### MEMO

For information on how to display the [Driver Configuration] dialog box, see the online help.



### Manufacturer

Displays the name of the PLC manufacturer.

### Interface

Displays the type of serial connection used to connect the target machine to the PLC.

### COM Port

Defines which COM port to use on the target machine, for connecting to the PLC.

### MEMO

Select COM1 for PS Series Type G target machines. Connection is not possible using COM2.

### Serial Interface

Defines the serial connection: RS-232C or RS-422 (2-wire).

For details about the supported connections, see Section 2 – *Cable Diagrams*.

### Flow Control

Defines the signals that control the data flow.

### Transmission Speed

Sets the communication speed in bits per second. This setting must match the PLC baud rate.

### Retry Count

Defines the number of times the driver tries to send or receive data when there is an error.

### Parity Bit

Sets either a parity bit [Even or Odd] for use in detecting communication errors, or [None] at all.

### Stop Bit

Defines the stop bit: 1, 1.5, or 2 bits.

**Data Length**

Defines the length of each unit of data: 7 bit or 8 bit.

**Rcv. Timeout**

Defines the length of time the target machine waits for a response before it outputs a timeout error or sends another communication.

**TX Wait Time**

Defines the number of milliseconds that the target machine waits, after receiving a communication packet, before sending a response.

## 8 Protocol Configuration

To set up details about the communication process between the target machine and the PLC, use the [Protocol Configuration] dialog box.

For an overview of the driver and protocol settings, see Section 5 – *Environment Setup*.

**MEMO**

For information on how to display the [Protocol Configuration] dialog box, see the online help.



### Address (SLAVE ID)

Enter a value to identify the target machine. (1-253)

**MEMO**

- Up to 28 slaves can be connected to the PLC at the same time.
- Slave ID numbers 1 to 3 are reserved for the Programming unit to program the PLC.

## 9 Device Address Configuration

To set up a PLC variable in the Variable List, use the Device Address Keypad from the variable properties.

See Section 3 – [Supported Device Addresses](#).

**MEMO**

For information on how to display the Device Address Keypad, see the online help.



### Memory Area

Lists the PLC's discrete and word memory areas.

### Address

Enter the memory area address for the PLC variable.

Click the ellipsis to display the [Address Selector] keypad, which ensures you type the correct value.



### Bit

When defining a bit address in a word memory area, select the bit position (0-15).