Connecting UniOP to the Taian TP02 PLC

This Technical Note contains the information needed to connect UniOP to the Taian TP02 PLC. The Taian TP02 protocol is associated to the Designer file UPLC149.DLL.

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1. Introduction

The UniOP operator panels can be connected to the Taian TP02 PLC directly to the PLC programming port. In alternative UniOP can also be connected to the auxiliary RS-422 port available in all PLC models.

2. Setting up the PLC for Communication

2.1 Connecting to the MMI (Programming) Port

The MMI (Programming Port of the TP02 PLC has two different modes of operation:
- PG (programming) mode
- Computer link mode

UniOP can communicate only in the Computer link mode. Selection of the operating mode of the port must be done using two signals of the communication port: connectig pin 4 and pin 5 of the connector will select the Computer link mode for the port.

The communication parameters of the port in Computer link mode must be configured with System Registers in the PLC (see chapter 14 of the TP02 Series User's Manual).

The default communication parameters of UniOP are the following:

Baud rate: 19200
Parity: none
Data bits: 8
Stop bits: 1

PLC slave id: 1

Note: *UniOP does NOT support communication with 7 data bits and no parity.*

To configure the same communication parameters in the PLC, the following set-up of the system registers is required:

Register	**Content (Decimal)**	**Description**
WS041	01000	Programming Port Setup (valid only when the port is in Computer Link Mode)
WS042	00001	Slave-station number. The value 0 means Broadcast. Do not use with UniOP.

Note: *All System Registers are reset to zero when the PLC is turned on for the first time. The values shown in the table MUST be written to the PLC using the Taian TP12 programming software.*

Use the menu option 'Edit/System Memory' of the Taian TP12 programming software to set the content of the System Registers (see figure below).
Content of the System Memory must be transferred to the PLC to be effective.

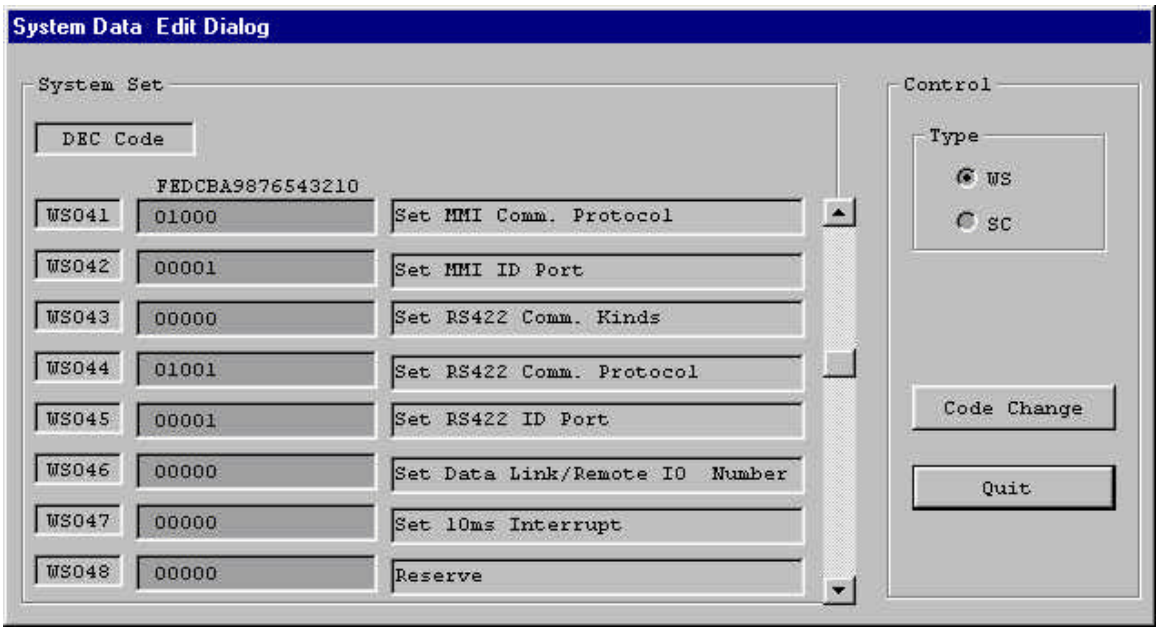


Figure 1 – System Register dialog box

Use cable CA186 for a point-to-point connection of UniOP to a Taian TP02 PLC.

2.2 Connecting to the RS-422 Communication Port

UniOP can also be connected to the RS-422 Communication Port of the PLC. The Communication Port has several modes of operation. To communicate with UniOP the port must be configured in Computer Link mode.

You will have to set-up the operation mode of the Communication Port writing the appropriate values in the system registers.

Register	Content (Decimal)	Description
WS043	00000	Port Function Selection; Computer Link Mode
WS044	01000	Programming Port Setup
WS045	00001	Slave-station number. The value 0 means Broadcast. Do not use with UniOP.

Use cable CA187 for a point-to-point connection of UniOP to a Taian TP02 PLC. Follow strictly the indications on wiring of the earth signals present in the Taian User's Manual.

3. Designer Configuration

The figure below shows the Designer Controller Setup dialog box for the Taian PLC.
Slave ID contains the node number of the PLC connected to the operator panel.

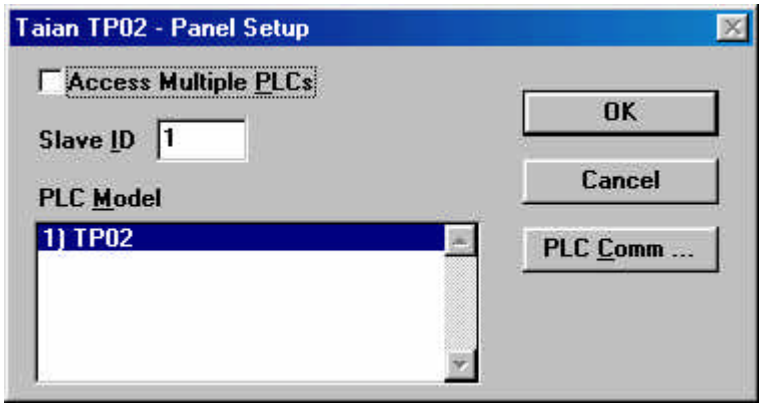
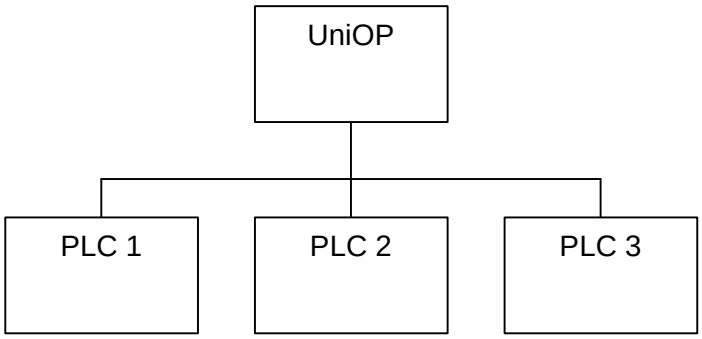


Figure 2 – Controller Setup dialog box

The protocol allows for multiple PLC's connected to one operator panel. See figure below.



4. RDA information

- The Real Time Clock information in the Reserved Data Area (RDA) is binary coded. It is adjusted to the PLC internal date and time formats to enable straightforward usage of the corresponding PLC instructions.

- The page number displayed and the page number requested in the RDA are binary coded.

- The RDA can be freely positioned within the PLC memory.

Appendix A. Communication Error Codes

Current communication status is displayed in the System Menu of the UniOP.
A message and a numeric error code describe the error status.
The message reports the current communication status. The number shows the code of the current communication error or, if the communication is correct, the code of the last error encountered. When the error code 0 is shown, it means there have been no communication errors since this system start-up.

Code	Description	Notes
0	No error	There are no communication errors and there have been no errors since start-up.
4	Not accepted	Request NAKed - The PLC rejected the request.
5	Time out	No response received from the PLC within the timeout period.
6	Response error	Unexpected characters received from the PLC.
7	General communication error	
10	Checksum error	Checksum received from the PLC did not match the calculated value.
11	Line error	Parity, Baud Rate, etc.
12	Response integrity	The expected number of response bytes were not received

Appendix B. Limitations

UniOP does not support communication with 7 data bits and no parity.

The UniOP Passthrough function cannot be used with this PLC.

The File Register data type is not available.

Writing bits to the V, D, WS and WC data areas is performed using a read-modify-write technique. To avoid data consistency problems avoid concurrent access in writing to the same register by both the PLC and the operator panel. For instance: if UniOP is writing a bit in the register V1, the register V1 should be considered **read-only** for the PLC program.