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TSX Micro PLCs
TSX 3705/3708/3710/3720
Implementation Manual Volume 1

TSX DM 37 xx eng

General introduction to TSX Micro PLCs

1

TSX Micro PLCs

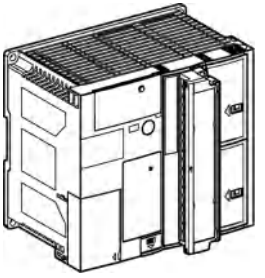
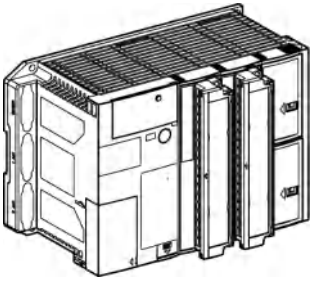
Introduction

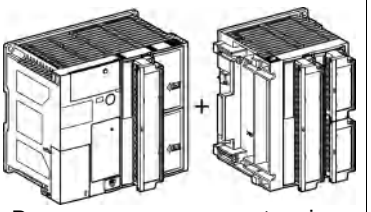
The range of TSX Micro PLCs comprises several PLC types, so as to best meet your needs.

- The TSX 37-05, TSX 37-08 and TSX 37-10 PLCs, at the same time modules that are compact and capable of integrating one or two discrete input/output modules into the database, according to the type,
- the TSX 37-21 and TSX 37-22 modular PLCs.

TSX 37-05
TSX37-08
TSX 37-10

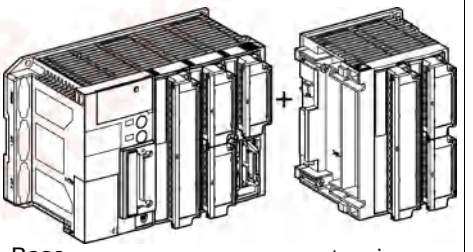
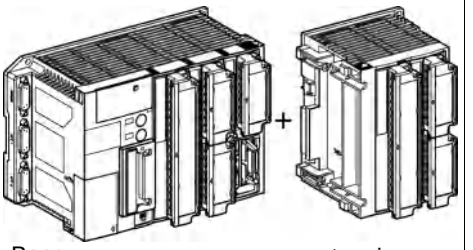
The table below presents the TSX 37-05, TSX 37-08 and TSX 37-10 PLCs.

Type	Illustration
the **TSX 37-05**PLC, incorporates a 28 input/output (16I +12O)module in its database. This is located in the first slot and has two available half slots which enable either a standard format module, or two half-format modules, to be received. Its maximum input/output capacity is 92 discrete I/O, with installation in the available slot of a 64 discrete I/O module connected by an HE10 connector.	
the **TSX 37-08**PLC, incorporates two 28 input/output (16I +12O)modules in its database. These are located in the first two slots and have two available half slots which enable either a standard format module, or two half-format modules, to be received. Its maximum input/output capacity is 120 I/O with installation in the available slot of a discrete 64 I/O module (connected by an HE10 connector).	

Type	Illustration
the **TSX 37-10**PLCs, offer five database configurations. They differ in their supply voltage and the discrete module type installed in the first slot. These PLCs can receive a mini extension rack, which allows the number of local inputs/outputs to be extended to 192 I/O. These PLCs are equipped with a real-time clock.	

TSX 37-21
TSX37-22

The table below presents the TSX 37-21 and TSX 37-22 PLCs.

Type	Illustration
The **TSX 37-21**PLC is available in 2 configurations which differ according to the power supply type. These PLCs do not integrate discrete input/output modules in the database. They possess a maximum capacity of 256 I/O when a mini extension rack is added. They are equipped with a real-time clock, enabling the application memory volume to be extended and can receive a communication module.	
the modular **TSX 37-22** PLCs are identical in every way to TSX 37-21 PLCs, with further rapid counting and analog input/ output functions built in.	

General introduction to the components of a PLC station

2

At a Glance

Aim of this Chapter

This chapter aims to describe the main constituent elements of a TSX 37 PLC.

What's in this Chapter?

This Chapter contains the following Maps:

General information about discrete inputs/outputs

At a Glance

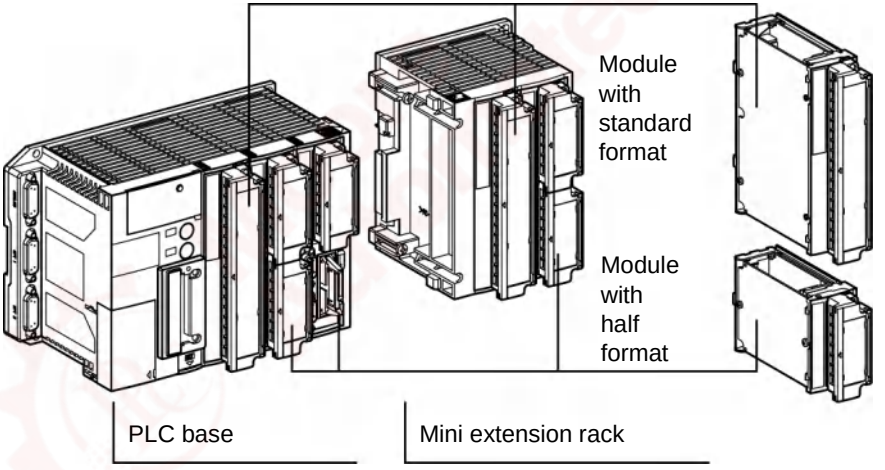
All discrete modules (see TSX Micro Installation Manual, Volume 2) can be installed in all the available positions in TSX 37 PLCs. In order to best meet your requirements, two module sizes are on offer for the discrete inputs/outputs:

- the standard size which takes up a slot (2 position),
- the half-size which takes up a single position.

All the other modules (analog, counting, etc.) are half-size modules.
A mini extension rack, which can be directly connected to the PLC database, enables the number of available slots to be extended and therefore the number of modules, which can be used, to be increased.

Illustration

TSX Micro and discrete modules:



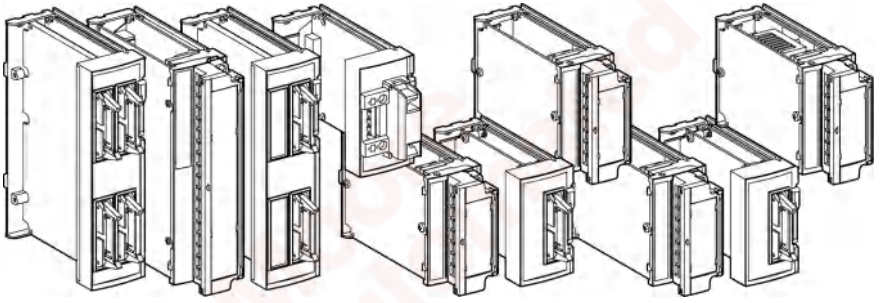
Local discrete inputs/outputs in the rack

General points

The discrete input/output modules differ in:
- their format (standard and half-format),
- their modularity (from 4S to 64I/O),
- their channel types
  - direct current or alternative current inputs,
  - static or relay outputs,
- their connector (HE10 screw terminal connector(s)).

Illustration

The illustration below presents the different types of local discrete input/output modules in the rack.



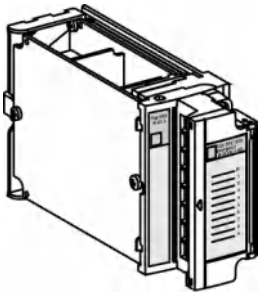
Discrete safety inputs/outputs

General

The TSX DPZ 10D2A safety module carries out a PREVENTA cabled safety function in a half-size module and the complete diagnostics of the safety string.
It offers an emergency stop monitoring or position interrupting function, adapted to the safety demands according to the EN 954-1, EN 418 and EN 60204-1 standards.

Illustration

safety module:



Local analog inputs/outputs

Introduction

The analog inputs/outputs from the TSX 37 range differ in their modularity, their performance and signal ranges offered (high voltage level, thermoelectric couple, heat probe, etc).
(For further details see TSX Micro implementation manual Volume 2).

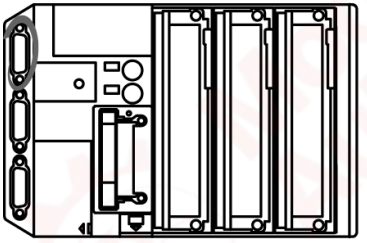
Analog inputs/ outputs built in to TSX 37-22 PLCs

TSX 37-22 PLCs offer 8 inputs and 0-10 V 8 bit-output, and a 10V voltage reference output, which means that a large number of automatic cases can be answered economically.

These inputs may be associated to the TSX ACZ 03 adjustment and adaptation module, which allows:

- manual adjustment of application values across 4 sliders,
- conversion to 4-20 mA current from 0-10V signals,
- adaptation of analog inputs to 24V discrete inputs (IEC type 1).

Illustration:

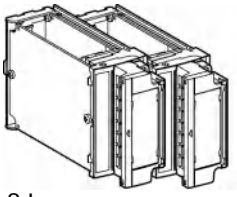


8 I 0-10V and 1 O 0-10V, 8 bits.

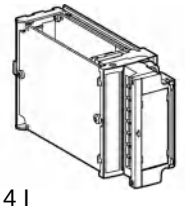
Analog input/ output module

Analog input/output modules, which can be installed in all TSX 37-05/08/10/21/22 PLCs offer a high level of performance. They differ in modularity (from 2 to 8 channels) and the input or output type (high voltage level, high current level, thermoelectric couple-inputs, heat probe-inputs, etc.). The connection is always made by a screw terminal block.

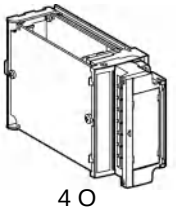
Illustration:



8 I
0-10 v +/- 10V
or
0-20 mA 4-20 mA
12 bits

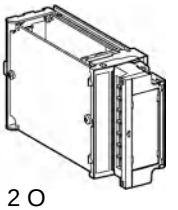


4 I
differentials
multigrams
(+/- 10V, 4-20 mA
Thermocouple, Pt
100,...)
16 bits



4 O
+/- 10V

16 bits+sign



2 O
+/- 10 V
0-20 mA
4-20 mA

11 bits + sign

General introduction to communication

3

At a Glance

Aim of this Chapter

This chapter aims to provide a general description of communication with TSX Micro PLCs.

What's in this Chapter?

This Chapter contains the following Maps:

Communication

General

TSX 37 PLCs offer a series of economic multidrop links via the terminal port of all the PLCs and an additional permanent connection for the operator dialog on TSX 37-21/22 PLCs.
These connections enable the connection of (one single protocol at a time):

- a programming terminal and/or an operator dialog device (UNITELWAY master mode),
- the PLC to an UNI-TELWAY multidrop link (UNI-TELWAY master or slave mode),
- the PLC to the Modbus bus,
- a printer or a terminal in character mode,
- a modem.

A TSX P ACC 01 enables the PLC to be connected to a UNI-TELWAY link, when the distance between the devices is greater than 10 meters. If desired, it makes it possible to duplicate the terminal port in order to simultaneously connect a console and an operator dialog device on a TSX 37 05/08/10 PLC.

TSX 37-21 and TSX 37-22 PLCs are also fitted with a slot which makes it possible to receive a communication module in PCMCIA format (full-duplex or half-duplex, UNI-TELWAY, JBUS/MODBUS, FIPWAY, FIPIO Agent, Modbus+, modem asynchronous series of links).

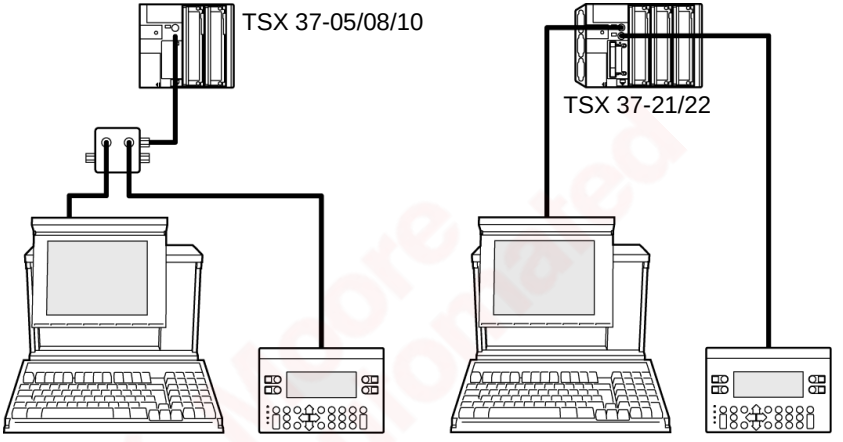
UNI-TELWAY link

General

Communicating via UNI-TELWAY allows the exchange of data between all the devices which are connected on the bus. The UNI-TELWAY standard is a UNI-TE protocol which creates a hierarchical structure (one master and several slaves). The master device is the bus manager.

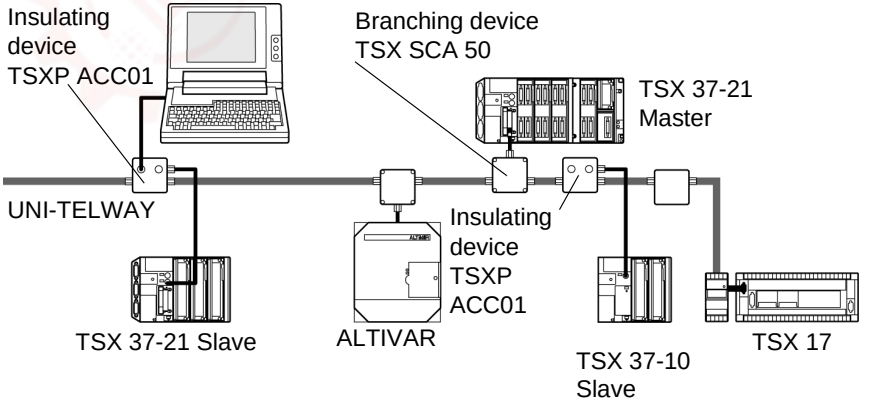
UNI-TELWAY master link by terminal port

Illustration:



UNI-TELWAY slave link by terminal port and master by PCMCIA module

Illustration:



Character mode link by terminal port

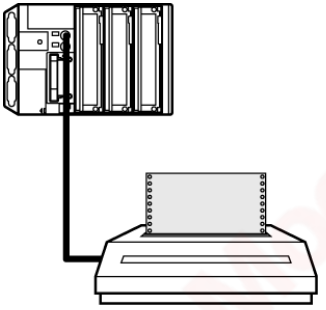
General

Communication via character mode enables dialog and communication functions to be carried out between the PLCs and their environment.

- common peripherals: printers, keyboard-screen, workshop terminal,
- specialized peripherals: bar code readers,
- link to a checking or production management calculator,
- data transmission between heterogeneous devices (numerical commands, variable speed controllers, etc),
- link to an external modem.

Illustration

character mode link to a printer:



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