PROFILE

The PU 104 is part of the P-open series and provides compact PLC functions for automation applications requiring distributed intelligence. It also combines CAN with Ethernet, enabling Ethernet PCs to access CAN field busses directly, without an additional CAN interface. Apart from real-time processing, the unit features 16 on-board digital inputs, and 16 digital I/O which can be configured individually as inputs or outputs.

For communication and programming purposes, the PU 104 is fitted with a complete CAN/CAN master/slave implementation, plus a CANopen master implementation as a library for IEC 1131 and ‘C’.

With its compact dimensions of 124 x 170 mm, and a depth of 85,5 mm, the PU 104 is ideally suited for mounting close to the process in de-centralized systems.

The housing is designed for clip-on mounting to standard DIN rails. System extensions are easily implemented by connecting additional I/O modules to the PU 104. The connections are made with cables which plug into the module’s extension bus (E-bus). The resulting complete PLC system is linked via the CANbus.

Selective I/O energization

Supply of the inputs/outputs is provided via two terminals at the signal level. The supply voltage is 24 VDC.

The I/O’s can be divided into 6 groups, each with its own supply. This enables the I/O of a specific group to be disabled by means of an external switching device.

Convenient field connections

Electrical wiring from the machine or process is taken directly to the terminal strips at top and bottom of the modules. The terminal strips are of the plug-in type, allowing system pre-wiring as well as fast module exchange. Furthermore, the following alternatives are available for the terminal strips:

- Screw terminals
- Screwless spring-clamp terminals
- Crimp terminals.

Inputs/outputs are connected using the 3-wire principle. Front panel LEDs indicate the signal status of every I/O, and the module’s operational status. The LED positions are directly associated with the corresponding I/O’s. Inscription labels on the terminal strips allow clear identification of each I/O.

CAN/Ethernet bridge

Together with its PLC functions, the PU 104 provides a „bridge“ between CAN-CAL and Ethernet TCP/IP networks. For linking into the Ethernet, the PU 104 is fitted with a 10BaseT and a 10Base2 interface. In this way, PCs with 32-bit Windows-based applications and Ethernet network modules, have direct access to CAN fieldbus networks. The bridge function is supported by an ANSI-C library in the form of a 32-bit Windows DLL.

Programming with standard tools

Programming of the PU 104 is done with a PC and a Windows-based (95 or NT) software tool. The universal programming tool is used for all of PMA’s P-open modules. Depending on your application, the programming software lets you choose the most convenient method:

- Instruction List (IL),
- Ladder Diagram (LD),
- Function Block Diagram (FBD),
- or the high-level language ‘C’. The first three options are according to the international standard IEC 1131-3.

If necessary, we provide full support during development of your own application-specific programs.
**TECHNICAL DATA**

**CPU**
Type: MC 68EN360FE33, 33 MHz

**Configuration**
Pre-configured

**Memory**
2 Mbyte Flash EPROM
2 Mbyte SRAM

**Programming**
By means of a PC-based software tool under Windows.
Available languages: IL, LD, and FBD to IEC 1131-3, and ‘C’.
Downloading: from PC (RS 232), via CANbus or via Ethernet

**Digital I/O**
16 digital inputs for 24 VDC.
16 digital I/O, individually configurable as 24 VDC inputs/outputs (max. 0.5 A for outputs).
Connection: 3-wire technique
All digital outputs are short-circuit proof and have reverse-polarity protection.

**Status LEDs / diagnostics**
32 red LEDs show the switching status of the digital I/O.
5 LEDs show the module’s operational status. A push-button is provided for diagnostic functions.
In addition, the module has a watchdog.

**Interfaces**
2 x CANbus interface
To ISO/DIN 11 898, 9-pin D-type connector with locking screws.
Protocol: CAN CAL/CANopen
1 x RS 232 interface
24 VDC, max. 0.15 A (to EN 61 131-2)
9-pin D-type connector with locking screws.
1 x 10Base port
Screened RJ45 socket to IEE 802.3
or Coax socket
E-bus
For local I/O extensions with P-open modules

**POWER SUPPLY**
Module supply
24 VDC, max. 0.4 A (to EN 61 131-2)

**I/O energization**
24 VDC (to EN 61 131-2), divided into 6 groups

**Galvanic isolation**
Between CANbus and digital I/O

**ENVIROMENTAL CONDITIONS**

**Permissible temperature**
For operation: 5...50°C

**Climatic category**
KUF to DIN 40 040
Relative humidity: \( \leq 85\% \) yearly average, no condensation

**Shock and vibration**

**Vibration test Fc**
to DIN 60068-2-6 (5...50 Hz)
Unit in operation: 1g or 0.075 mm
Unit not in operation: 1.5g or 0.15 mm

**Shock test Ea**
to DIN IEC 60068-2-27 (15g, 11 ms)

**ELECTROMAGNETIC COMPATIBILITY**

**Electromagnetic immunity**
Complies with EN 50 082-2

**Electromagnetic radiation**
Complies with EN 50 081-2

**GENERAL**

**Housing**
Front dimensions: 124 x 170 mm
Depth: 85.5 mm
Module spacing: B = 113/118.5 mm
Protection mode: IP 20

**CE-marking**
Fulfils the European Directives for electromagnetic compatibility and low voltage.

**Electrical connections**
Choice of screw terminals (Phoenix type FRONT-MSTB 2.5/18-ST-5.08), screwless spring-clamp connection, or crimp terminals.
All terminal types simply plug onto the connector strips of the PU 104.

**Electrical safety**
Tested to IEC 348 (VDE 0411)
Protection class III (protective low voltage)

**Mounting method**
Clip-on rail mounting (NS 35/75 „top-hat“ rails to DIN EN 50 022)

**Weight**
approx. 0.71 kg

**Accessories**
Operating instructions

**ORDERING DATA**

**Description**
Intelligent PLC module PU 104-R (RJ45 socket)
Intelligent PLC module PU 104-C (COAX socket)

**Order no.**
9407 700 40011
9407 700 41011

**ACCESSORIES**

**Description**
18-pole screw terminal strip
CANbus cable for connecting CANbus modules, standard length 5 m
CANbus termination resistor with plug

**Order no.**
9407 799 00001
9407 800 90041
9407 800 90021

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