

# PLC Tecomat SmartFox – basic module with 8 I/O

Type	DI	DO	AI	AO	Comm
<b>CP-5002</b>	1x 120V/230V	3x RO	4x AI/DI		Ethernet, 2x RS-485, RFox II

## Basic features

- Programmable controller (PLC)
- Outstanding integration of controller together with the IT and telecommunications technologies in one device.
- Built in RFox II Master – wireless I/O system in the 868.1 MHz band.
- Powerful CPU with unique combination of on board I/Os suitable for HVAC applications.
- Each of 4 universal inputs can be configured as binary input for 24V, as potential free contact or as analog input.
- Inputs ADI3 ÷ ADI4 can be configured by the jumpers as current inputs 4(0) ÷ 20 mA.
- Other inputs can be configured for one of RTD range or voltage range.
- Graphical display 128x32 pixels.

## CPU features

- Easy and intuitive graphical programming.
- Multi-platform IDE runs on Windows, MAC and Linux.
- Programming and data communication is available over USB or Ethernet connection.
- 2 serial ports with RS-485 interface.
- Optional RFox II interface for wireless remote I/O modules.
- Built-in JSON driver for scada.
- Built-in web server.
- Internal Real Time Clock circuit.
- Internal remanent memory.

## Connecting

- Removable screw terminals.
- Compact form-factor for DIN rail mounting (3 modules width) for standard circuit breaker cabinets.
- More PLCs can be networked by Ethernet or by RS-485 bus.

## Use

- Can be used as a powerful control system in process and building control, mainly in HVAC applications.
- Can be used as independent programmable data logger of any measured or internal data point with time stamping.

## Features of CPU

CPU	32-bit RISC processor
Real Time Clock (RTC)	Yes
Backup period of remanent memory	Infinite
Backup period of RTC	typ. 6 days
User program memory	64 kB Flash 32 kB RAM 4 kB remanent

## Universal inputs (ADI1 – ADI4)

No. of inputs	4
Configurable inputs	Voltage/resistance/RTD measurement, current (ADI3, ADI4 only),

	binary 24V input, binary contact
Common wire	minus (GND)
Galvanic isolation	No

## Function: binary inputs 24V (ADI1-ADI4)

Type of input	Digital 24V
Input voltage for log. 0 (U <sub>L</sub> )	0 V DC; (-5 ÷ +3 V DC)
Input voltage for log. 1 (U <sub>H</sub> )	+24 V DC; (+7 ÷ +30 V DC)
Input current for log. 1 (I <sub>H</sub> )	1.2 mA @ 24 V

## Function: binary inputs contact (ADI1-ADI4)

Type of input	Potential free contact
Min. impedance of input circuit for log. 0 (U <sub>L</sub> )	50 kΩ
Max. impedance of input circuit for log. 1 (U <sub>H</sub> )	100 Ω
Input current for log. 1 (I <sub>H</sub> )	1.8 mA
Delay 0 → 1 / 1 → 0 DI1 ÷ DI2 DI3 ÷ DI10	10 μs 1 ms

## Analog inputs (ADI1-ADI4)

Resolution	12 bit
Conversion time	32 μs per input
Protection type	Overvoltage, integrated

## Measurement ranges

Current (ADI3, ADI4 only)
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Input impedance	100 Ω
Input range	0 ÷ 20 mA, 4 ÷ 20 mA
Max. error at 25 °C	±0.4 % of full range
Overvoltage allowed	+50 mA (between AI and AGND)

### Voltage

Input range	0 ÷ 2 V, 0 ÷ 10 V
Input impedance 0 ÷ 2 V 0 ÷ 10 V	50 kΩ 24 kΩ
Max. error at 25 °C	±1.5 % of full range

### Resistance Temperature Detectors (RTD)

Input impedance	Typ. 5 kΩ
Input range Pt1000 1.385 Pt1000 1.391 Ni1000 1.500 Ni1000 1.618 KTY81-121 NTC10k 3435 NTC10k 3977 NTC12k 3740	-90 ÷ + 320 °C -90 ÷ + 320 °C -60 ÷ + 200 °C -60 ÷ + 200 °C -55 ÷ + 125 °C -40 ÷ + 130 °C -40 ÷ + 130 °C -30 ÷ + 130 °C

### Resistance

Input range	0 ÷ 2.5 kΩ, 0 ÷ 100 kΩ
Max. error at 25 °C 0 ÷ 2.5 kΩ 0 ÷ 100 kΩ	±0.4 % of full range ±2 % of full range

## Relay outputs (DO1-DO3)

No. of outputs	3
Galvanic isolation	Yes (also among each others)
Type of output	Electromechanical relay, NO, non-protected output
Switched voltage	min. 5V, max. 250V
Switched current	min. 100mA, max. 3A DC,

	max. 5A AC
Turn-on/turn-off time	typ. 10ms / 10ms
Threshold limits of switched loads: for resistive load for inductive load DC13 for inductive load AC15	max. 3 A at 30 V DC or 5 A at 230 V AC max. 3 A at 30 V DC max. 5 A at 230 V AC
Switching frequency without load	max. 300 switches/ minute
Switching frequency with rated load	max. 20 switches/ minute
Mechanical/ electrical lifetime at max. load	min. 5 mil./ 100 thous. cycles
Short-circuit protection	None
Spike suppressor of inductive load	External RC, varistor or diode snubber
Insulation voltage	3750 V AC

Max. input power	3 W
Galvanic isolation	Yes

## Operational conditions

Operating temperature	-20 ÷ +55 °C
Storage temperature	-25 ÷ + 70 °C
IP Degree of protection (IEC EN 60 529)	IP 10B
Overvoltage Category	II
Degree of pollution (IEC EN 61131-2)	2
Working position	Vertical
Installation	On DIN rail
Connections	Screw terminals
Conductors cross-section	max. 2.5 mm <sup>2</sup>

## Communication

Serial ports	2x RS-485
Network	Ethernet
Wireless network	RFox II (868.1 MHz)

## Power supply

Power supply voltage	230 V AC / 120V AC
Allowed range	85 ÷ 264 V AC