

Analog input board PT100 (FCIP)

The analog input board PT100 gives the F4 up to two analog PT100 inputs (-50 to +210°C). This information can be sent over M-Bus. The board is only suited for mains supplied F4. One application could be measuring both indoor temperature and outdoor temperature. Other analog input boards are "FCIU" voltage input 0/2-10V and "FCII" current input board 0/4-20mA.

PT100 Input

The PT100 input is for 2-wire connection and can be ordered with one or two inputs. The inputs are voltage and current transient protected. The measured analog input values are updated with the frequency 10Hz. The standard unit is set to [°C] with the resolution 0.01°C.

Calibration

The board is calibrated from factory till the F4 connection terminal and resistance correction is set to 0 Ohms prior to delivery. The maximum temperature range is -50 to +210°C, when resistance correction is 0 Ohms. The cable losses affect the measurement and resistance corrections must be made. The board offers a resistance correction up to 5 Ohms see also configuring.

Power failure

At power failure the relevant display sequence will show "ULOW" and the output value will be zero (0). The board will output measured values first one minute after power has returned to calculator.

Technical data

Analog input board FCIP - PT100	
Input signal	PT100
Maximum resistance correction	5 Ohms
Output over M-Bus	°C
Output on display	°C
Resolution	0.01°C
Inaccuracy	±0.5°C
Ambient temp.	5-55°C
Slots allowed	B, E or A
Allowed power supply F4	Mains supplied only

Table 1, Technical data

Card slots

Allowed slots for analog input board are primarily **B** or **E**. Slot **A** can be used, when no communication option board is to be used in the integrator.



Fig.1, Analog input board, component side

Configuring

The unit (°C/°F), resolution can be changed and resistance correction can be set by using the Plug&Play configuration utility prior to installation. See below how to calculate resistance correction.

Method 1 using a formula:

$$R = 0.0172 * L/A$$

L = Cable length in [m]; A= cable area in [mm²],
R=resistance correction

Method 2 using board and Plug&Play utility:

The cable resistance can be calculated by installing the board. Then use the Plug & Play configuration utility by setting the temperature sensor to a known temperature. The temperature difference "t" (offset) is the "difference" between the "known" temperature and measured temperature. The resistance then can be calculated by using acquired "t" in the formula below. This method compensates for variations in the PT100 sensor.

$$R = 100 * (1 + A*t + B*t^2)$$

A=0.0039083; B=0.0000005775; t=offset in [°C],
R=Resistance correction.

Connection

The connection of the input signal depends on card slot used for the board. **Note:** The connection differs, depending on slots B/E or A. The PT100 sensors are polarity insensitive.

D/A converter	Channel	+	-
Slot A	1	A1	A2
	2	A3	A4
Slot B	1	B3	B4
	2	B1	B2
Slot E	1	E3	E4
	2	E1	E2

Table 2, Terminal connection depending on slot

Dipswitches

To be sure that the board will install itself and communicate properly, the dipswitches "S1" must be correctly set:

Slot	BY 1	BY 2	BY 3
A	On		
B		On	
E	On		On

Table 3, dipswitch settings on option board

Important! Never change the dipswitch settings when option board is powered.

Installation

It is important that the power from mains or battery are cut when installing. Following procedure is recommended:

1. Short circuit connection "Save data".
2. Disconnect flow sensor (by removing at least one cable connected to the calculator terminal).
3. Set calculator "power off" by removing the 4-wire connectors "K2" and "K3".
4. Check that the dipswitches are correctly set for slot and put option board into the slot. The component side shall be turned to terminals, e.g. align the option board (facade side) to the right side of calculator box. Ensure that all the pins properly connected to the option board.
5. Turn power on by reconnecting the 4-pole connectors "K2" (RawV) and then "K3" (back-up battery). **Note:** The F4 must be connected to mains when the board will be installed.
6. Check the installation, the diode "LD1" blinks and then is turned off. Check the display sequence connected to the slot to ensure proper installation, see also the F4 manual.
7. When additional boards shall be installed, repeat positions 3-6 (above) for each board.
8. Reconnect flow sensor.

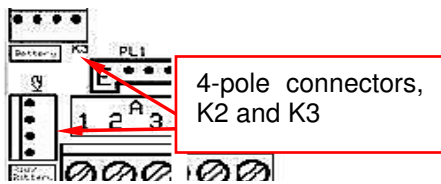


Fig 2, connection terminal F4

Ordering

Product designation: **FCIP**
 Delivery options: **ABCD**

Variable	No	Description
A	1	1 input
A	2	2 inputs
B	1	Board delivered separately
B	4	Board mounted inside F4
C	A	Board for slot A
C	B	Board for slot B
C	E	Board for slot E
D	-C1-100	One (1) PT100 input
D	-C2-100	Two (2) PT100 input

Table 4, Variable number for ordering

Example: Analog input board PT100, 2 inputs, delivered mounted on slot B in F4, standard programming. Article number: FCIP-24B-C2100

Article number key

Table 5, help to acquire correct article number, fill up the blanks.

FCIP-	A	B	C	D

Table 5, article number key