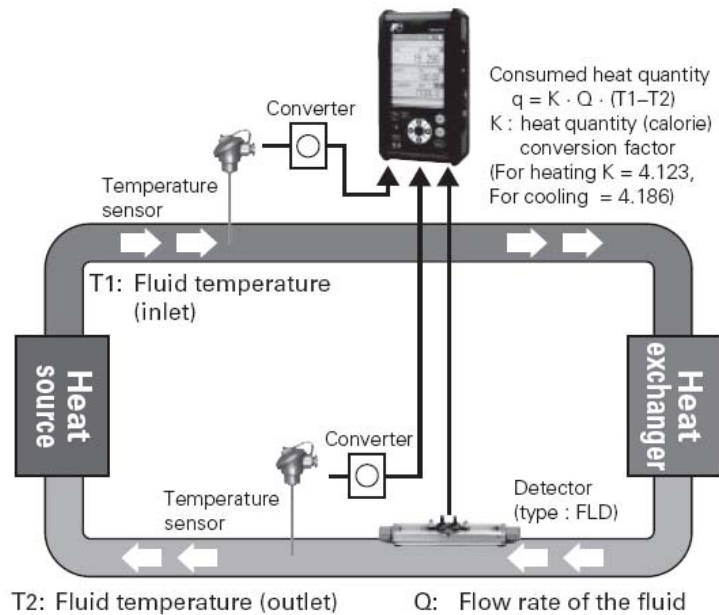


External temperature sensors for FSC Ultrasonic Flow Meter (thermal flow measurement function)

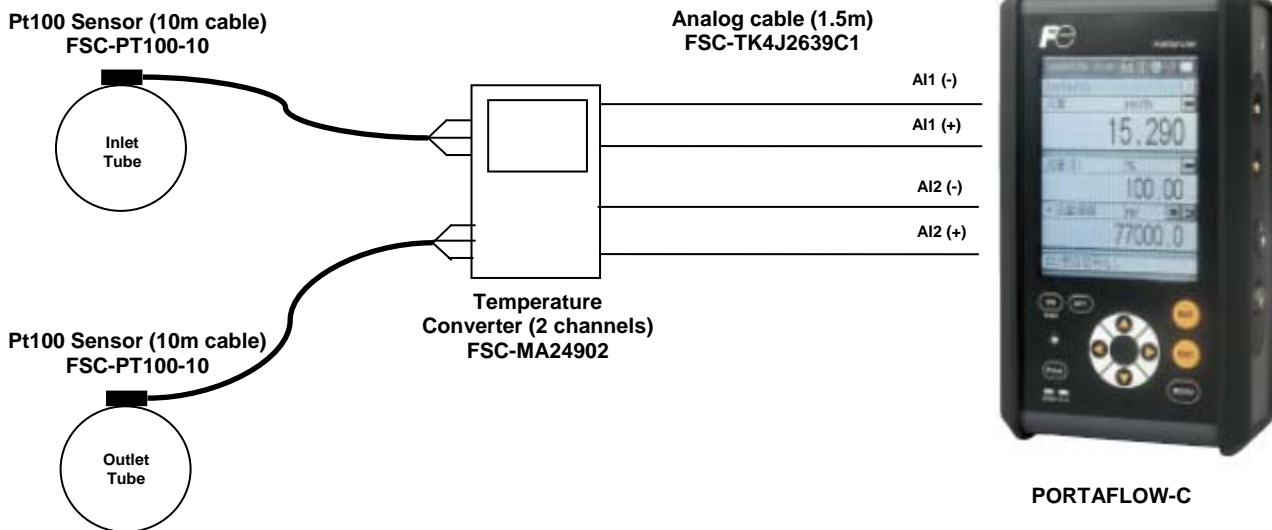
Application:

Heat quantity measurement –

This function calculates the heat quantity received and sent with liquid (water) in cooling and heating. Two 4-20mA inputs are available for temperature measurements.



Connection diagram:



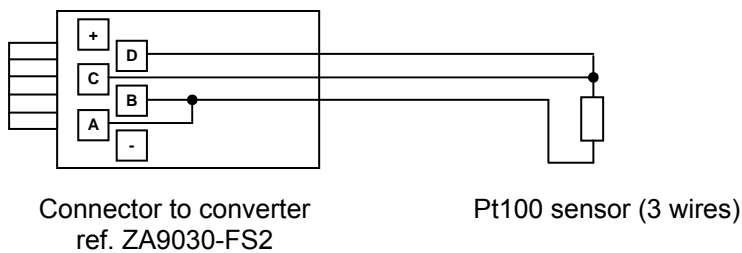
Optional items to order:

- 2x Pt100 Sensor (10m cable) ref. FSC-PT100-10
- 1x Analog cable (1.5m) ref. FSC-TK4J2639C1
- 1x Temperature Converter (2 channels) ref. FSC-MA24902

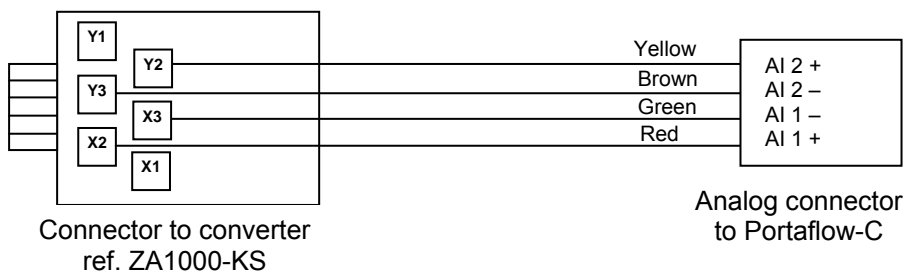


Cables specifications:

1- Sensor cable (Pt100 sensor to converter):



2- Analogue cable (Converter to Portaflow-C):



Configuration of Temperature Converter (2 channels) ref. FSC-MA24902:

1- Description of temperature converter



(1) **Measuring inputs M0 and M1**
 M0 ... M1 for all ALMEMO® sensors
 M2 Function channel, differential
 M10...M32 9 additional channels

(2) **Analog output P0 (option)**
 P0 Clamp connector (ZA 1000-KS)

(3) **Outputs A1, A2**
 A1 Interface USB (ZA 19019-DKU)
 RS 232 (ZA 1909-DK5)
 Optic fiber (ZA 1909-DKL)
 Ethernet (ZA 1945-DK)
 RS 422 (ZA 5099-NVL/NVB)
 2nd analog output (ZA 1601-RK)
 A2 Network cable (ZA1999-NK5/NKL)
 Trigger input (ZA 1000-ET/EK)
 Relay outputs (ZA 1006-EAK)
 1st analog output (ZA 1601-RK)

(4) **Connection DC 12V (not type L)**
 Mains adapter (ZA1312-NA1, 12V, 0.2A)
 Cable, electr. isol. (ZA2690-UK, 10-30V)
 RS485 (option I) (ZA1000-FSV)

(5) **LCD**
 (a) Function
 (b) Measuring point, 2nd meas. value
 (c) Units for 2nd measured value
 (d) Units for 1st measured value
 (e) 1st measured value
 (f) Operational states
 LOBAT Battery voltage <3.3 V
 FREE Unlocked for adjust. purposes
 CORR Measured value corrected
 REL Relative measuring

(6) **Operating keys**
ON OFF Switch the device on
 To switch device OFF, press and hold down
M▲ **M▼** Meas. point selection
MAX **MIN** Max. / min. value
 clear; press and hold down
MEM Measured value memory
 press and hold down: value displaying
CLR Relative measuring
 Sensor adjustment
 cancel: press and hold down

Rear of device

(7) Battery compartment
 3 AA alkaline-manganese batteries

The used inputs are M0 for the first Pt100 sensor and M1 for the second Pt100 (gray connector ref. ZA9030-FS2). The used output is P0 for the two analogue signals to Portaflow-C (orange connector ref. ZA1000-KS).

2- Initial commissioning

- Connect the first Pt100 sensor to M0 connector and the second sensor to M1 connector,
- Ensure that the power supply is provided via 3 AA batteries or mains adapter,
- Switch ON by pressing key **ON**,
- Select measuring channels by pressing key **M▲**, read out measured values,

3- Analogue outputs

The ZA1000-KS module is available with one or two integrated electrically isolated analog outputs (10 V or 20 mA). These appear in the device configuration as 'ACH6' and 'ACH7' because they occupy ports 6 and 7 of socket P0 (2) (port addresses 06 and 07). **To obtain the retransmission of two Pt100 inputs to the two analogue outputs, the configuration of 'ACH6' and 'ACH7' is necessary (see the next paragraph nb.4).**

4- Converter configuration

DEVICE CONFIGURATION

On the ALMEMO® 2490 measuring instrument a number of parameters can be configured. To do so when switching ON press and hold down key **MEM**. The function field should then show an abbreviation for the parameter and the main field should show the value currently set.



To select from all possible parameters, if any are available, press keys :

Device address

Locking the CLR key:

Reference channel and scaling for 1st analog output (at socket A2)

Reference channel and scaling for 2nd analog output (at socket A1):

Reference channel and scaling for Analog output P0-6 (option)

Reference channel and scaling for Analog output P0-7 (option)

Automatic switch OFF time in minutes

Air pressure for measuring value compensation

To enter a value first press : starts flashing.

To modify the value press keys :

To delete parameters press :

select the next digit or entry is completed :

To terminate or cancel configuration :

M▲ or **M▼**

Adr

Loc

ACh1

ACh2

ACh6

ACh7

AOFF

mb

1013

ON and the value

M▲ or **M▼**

CLR

ON

MEM

ANALOG OUTPUT

By default the 1st analog output (cable at A2) is used to output the measured value for the selected measuring point and the 2nd analog output (cable at A1) is used to output the measured value for the 1st channel of the selected sensor; (see Manual 6.10.7). The internal analog outputs P0-6, P0-7 initially behave adäquat (see 11.2).

Selecting the reference channel

Which channel is in fact to be output via which analog output can also be stipulated by the user. To do this the parameters 'ACh1', 'ACh2', 'ACh6', or 'ACh7' must be configured as previously described.

Scaling the analog output

The output signal from the possible analog outputs (0 to 2 V, 0 to 10 V, 0 to 20A, 4 to 20 mA) can be stipulated for each sensor to any partial range (e.g. 4 to 20 mA for -30.0 to 120.0 °C). For this purpose, for the previously specified channel, the values for **analog output start** and **analog output end** plus the **analog output type** (0 to 20 mA or 4 to 20 mA) can all be programmed.

To perform this programming select the analog output with the already configured reference channel (e.g. M2) :

ACh1	
	01

To select from the possible parameters :

Analog output start by pressing : **MIN**

M 1	AS
-----	----

Analog output end by pressing : **MAX**

M 1	AE
-----	----

Analog output type by pressing key : **CLR**

M 1	mA
-----	----

To return to the reference channel press key :

ACh1	
------	--

To enter a value first press : starts flashing.

ON and the 1st digit

Each digit can be changed by pressing keys :

M▲ or **M▼** .

To delete parameters press :

CLR

To select the next digit, and terminate entry :

ON

To cancel or terminate configuration press:

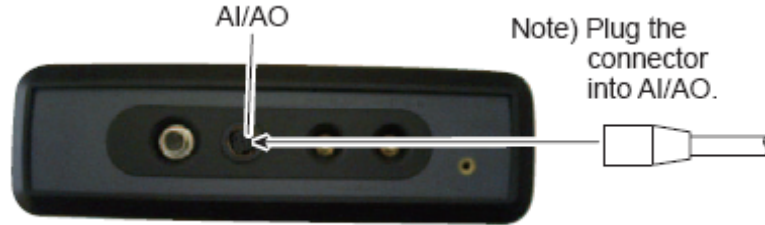
MEM

For all other information, please read the enclosed instruction manual of temperature converter model ALMENO 2490-1, 2490-2 of AHLBORN.

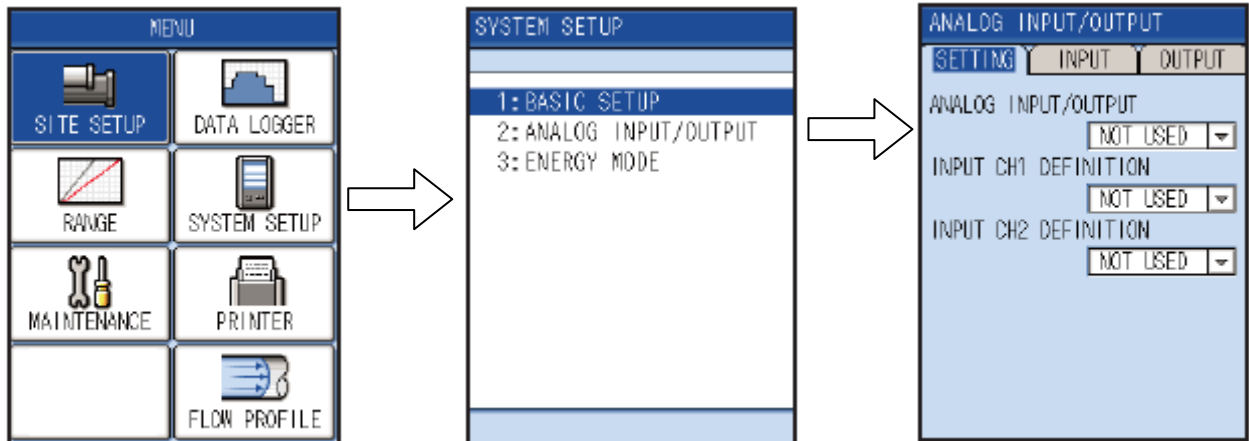
Configuration of Portaflow-C:

1- Configuration of analogue inputs,

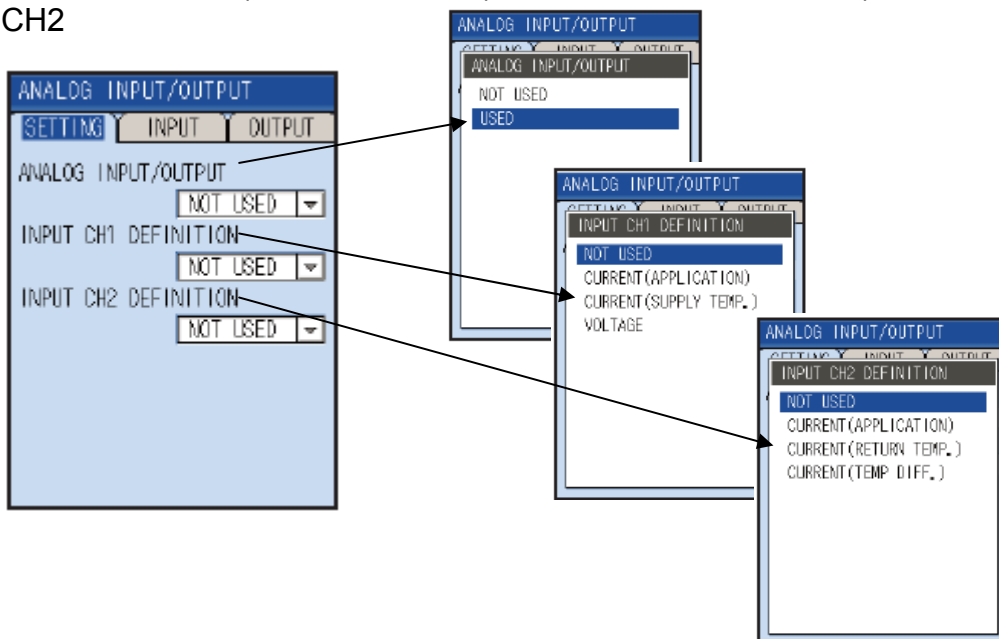
- Plugs the analogue cable on the AI/AO connector of Portaflow-C,



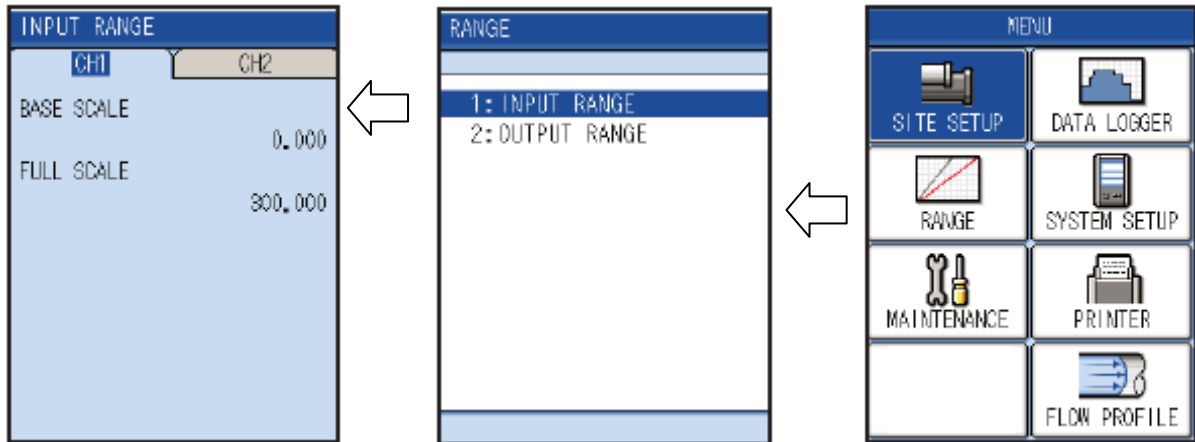
- Select "SYSTEM SETUP" menu and then "ANALOG INPUT/OUTPUT" menu



- Configure 'ANALOG INPUT/OUTPUT' with 'USED' option and 'INPUT CH_ DEFINITION' with 'CURRENT (SUPPLY TEMP.)' for CH1 and 'CURRENT (RETURN SUPPLY)' for CH2



- Select "RANGE" menu and then "1: INPUT RANGE" menu,



Configure the same data's for base and full scale of CH1 and CH2 in the Portaflow-C and in the external temperature converter (ACH6 and ACH7).

For all other information concerning the configuration of Portaflow-C, please read the instruction manual supplied with the flowmeter.

Fuji Electric France S.A.S.

46, Rue Georges Besse – ZI du Brézet

63039 Clermont-Ferrand cedex 2 – France

France : Tél. 04 73 98 26 98 – Fax : 04 73 98 26 99

International : Tél. (33) 4 73 98 26 98 – Fax : (33) 4 73 98 26 99

Email : sales.dpt@fujielectric.fr – Web : www.fujielectric.fr

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