SVM Relay option board (FCRC)

DATA SHEET

- **Galvanic isolation of the pulse inputs**
- **Galvanic isolation of the pulse outputs**
- **Galvanic isolation of the alarm output**
- **Easy to install**
- **Fits both F4 and F22 calculators**

Relay option board (FCRC)

Calculator F22 and F4 can be equipped with option boards for extended functionality. The relay option board FCRC protects the pulse inputs, pulse outputs and alarm output and makes them isolated from the calculator. The option board FCRC can be installed in mains supplied calculators and comes in two versions. The simpler version protects only the pulse outputs of the meter, and the fully equipped version also protects the pulse inputs and the alarm output.

The installation is very simple since the option board does not need to be installed in the meter memory. Also when the board is removed, no uninstallation from the meter is required.

When the calculator F22 or F4 is equipped with an FCRC option board, the regular terminals for inputs and outputs are used. The alarm output in the F4 calculator is connected to the terminals marked with the letter “D”.

The F4 calculator may also be equipped with other option boards offering galvanic isolation. The FCR2 option board offers galvanic isolation of the built-in M-Bus. The option board FCMB offers an additional M-Bus output with galvanic isolation.

The M-Bus output from F22 is always isolated from the calculator.

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Application

The relay option board FCRC is of the type solid state with an optical signal trigger, and with a transient protection. It offers good protection of the inputs and outputs of the meter. The relay option board can be installed in calculator F22 or F4 and is delivered in two versions, with galvanic isolation for:

- Pulse inputs, pulse outputs and alarm output (F22 and F4)
- Pulse outputs only (F4)

With the option board FCRC installed the same terminals are used in the meter for pule inputs and outputs. However, the inputs, outputs and alarm output all need an external power supply when the FCRC option board is used. Also cf. Technical data.

Pulse inputs/pulse outputs

Pulse inputs: The pulses are accumulated in pulse register 1 and 2 in the meter. The inputs are isolated from the meter, but not from each other due to the common "-" signal.

Pulse output 1: The calculator generates a pulse for every increment of the last digit in the energy register. The pulse value thus depends on the decimal setting. If the energy unit is MWh and the the number of decimals is set to 3, the pulse value is 0.001 MWh, or 1 kWh.

Pulse output 2: The calculator generates a pulse for every increment of the last digit in the volume register. The pulse value thus depends on the decimal setting. The default volume unit is cubic meters, and if the number of decimals is set to 2, the pulse value is 0.01m³, or 10 litres.

Note! The pulse outputs in F22 are isolated from the calculator and from each other. In F4 however, they are only isolated from the calculator and not from each other due to a common "-" signal.

Alarm output: An alarm is generated when an error code exists. The meter may however be configured to send an alarm only for low flow.

Technical data

Table 1, below shows the pulse duration for inputs and outputs, and the criteria for the power supply of the FCRC option board.

Pulse duration for outputs	Approx. 125 ms
Pulse duration for inputs	Min. 40 ms
Max voltage	48 V
Max current	0.1 A
Max power	10 W
Max contact resistance	35 Ω

Table 1, Power supply for inputs and outputs

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Card slot

The relay option board FCRC-4 shall be installed in card slot **D** in the F4 calculator.

The relay option board FCRC-2 shall be installed in card slot **PL2+PL3** in the F22 calculator.

Installation

The installation is very simple since the FCRC option board does not need to be installed in the meter memory. Also when the board is removed, no uninstallation from the meter memory is required.

NOTE: Cut the power from mains and battery before installation to avoid damaging the meter or the option board.

NOTE: Disconnect any flow sensor connected to the meter, see below for more information.

NOTE: Install only one card at a time.

Recommended installation procedure in calculator F4:

1. Save data by short circuiting the “Save data” circuit.
2. Disconnect the flow sensor by removing at least one of the flow sensor cables.
3. Cut the power by disconnecting the four-pole connectors “K2” and “K3”, cf. Fig.1.
4. Remove the jumpers from card slot “D” and install the option board. The component side shall be turned towards the terminals. Align the chambered end of the board with the right side of the calculator box. Ensure that all pins on the option board are properly connected.
5. Turn power on, reconnect the four-pole connectors.”K3” (battery) first and then “K2” (RawV).
6. If another board is being installed, cf. the installation procedure for that specific board.
7. Reconnect the flow sensor.

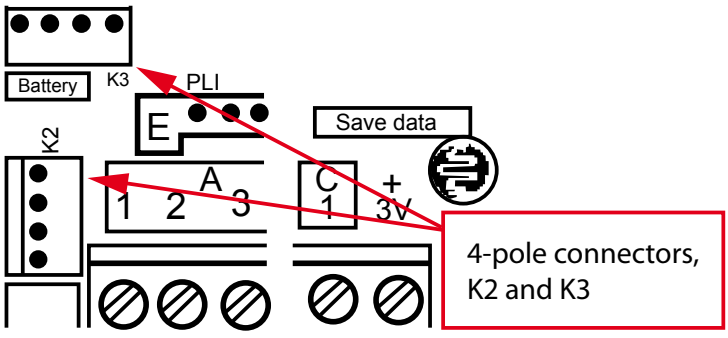

Fig. 1, F4 connection terminal

Installation

Recommended installation procedure in calculator F22:

1. Disconnect the flow sensor by removing at least one of the flow sensor cables.
2. Cut the power by disconnecting the large black connector “K1” and the four-pole connector “K3”, cf. Fig.2.
3. Remove the jumpers from card slot “PL2” and “PL3” and install the option board. The component side shall be turned towards the terminals. Align the chambered end of the board with the right side of the calculator box. Ensure that all pins on the option board are properly connected.
4. Turn power on, reconnect the four-pole connector ”K3” first and then the large connector “K1”.
5. If another board is being installed, cf. the installation procedure for that specific board.
6. Reconnect the flow sensor.

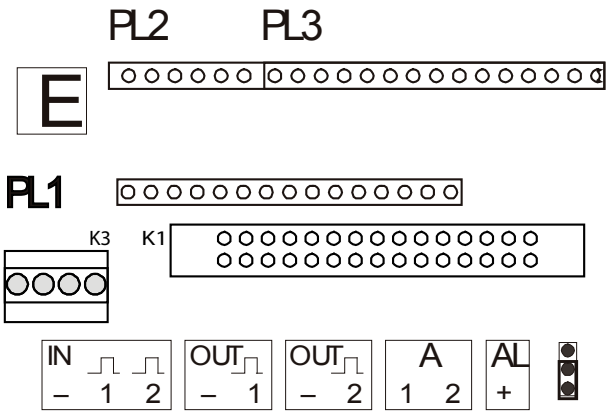

Fig. 2, F22 connection terminal

Connection

The pulse input signal (+) shall be connected to the terminals marked “IN 1” and “IN 2”. The signal zero (-) is connected to a common terminal marked “IN –“.

The pulse outputs are connected in the same way. The energy pulse signal (+) is connected to the terminal marked “OUT 1” and the signal zero (-) is connected to the terminal marked “OUT –“. The volume pulse signal (+) is connected to the terminal marked “OUT 2” and the signal zero (-) to the terminal marked “OUT –“. The pulse outputs “OUT 1” and “OUT 2” are separated in calculator F22 with separate “OUT –“-terminals, and common in calculator F4 with only one “OUT –“-terminal. Also cf. Fig. 3 and Fig. 4.

The alarm output is connected to the terminals marked “D1” and “D2” in the F4 calculator, and to the terminals marked “AL+” and “AL-“ in the F22 calculator. Also cf. Fig. 5 and Fig. 6.

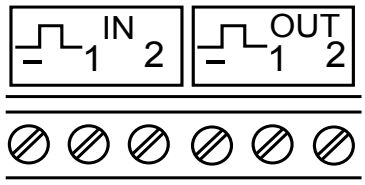

Fig. 3, Pulse in/outputs in F4

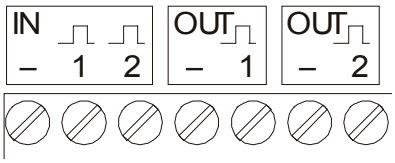

Fig. 4, Pulse in/outputs in F22

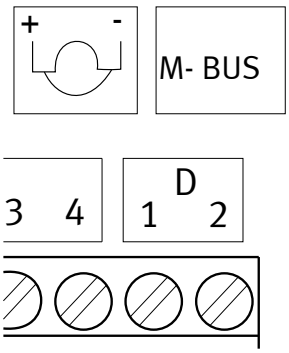

Fig. 5, Alarm output in F4

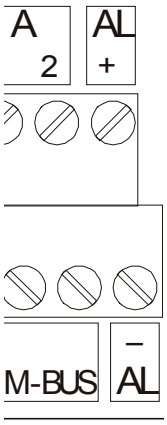

Fig. 6, Alarm output in F22

Ordering

The article number consists of the Product designation and Delivery options.

Product designation: **FCRC**

Delivery options: **ABCD**

FCRC	A	B	C	D
For calculator F4	4			
For calculator F22	2			
Board delivered separately		1		
Board installed in calculator		4		
For card slot D / PL2/3			D	
Fully equipped for pulse in/outputs and alarm				1
Equipped for pulse outputs only (F4 only)				2

Table 2, Delivery options for FCRC

Relay option board for F4, installed in calculator, for card slot D, equipped for pulse outputs only.

Article nember: FCRC-44D2.

Relay option board for F22, delivered separately, for card slot PL2/3, fully equipped.

Article number: FCRC-21D1.

Article number key

To acquire the correct article number, just fill out the blanks.

FCRC-	A	B	C	D
			D	

Table 3, Article number key