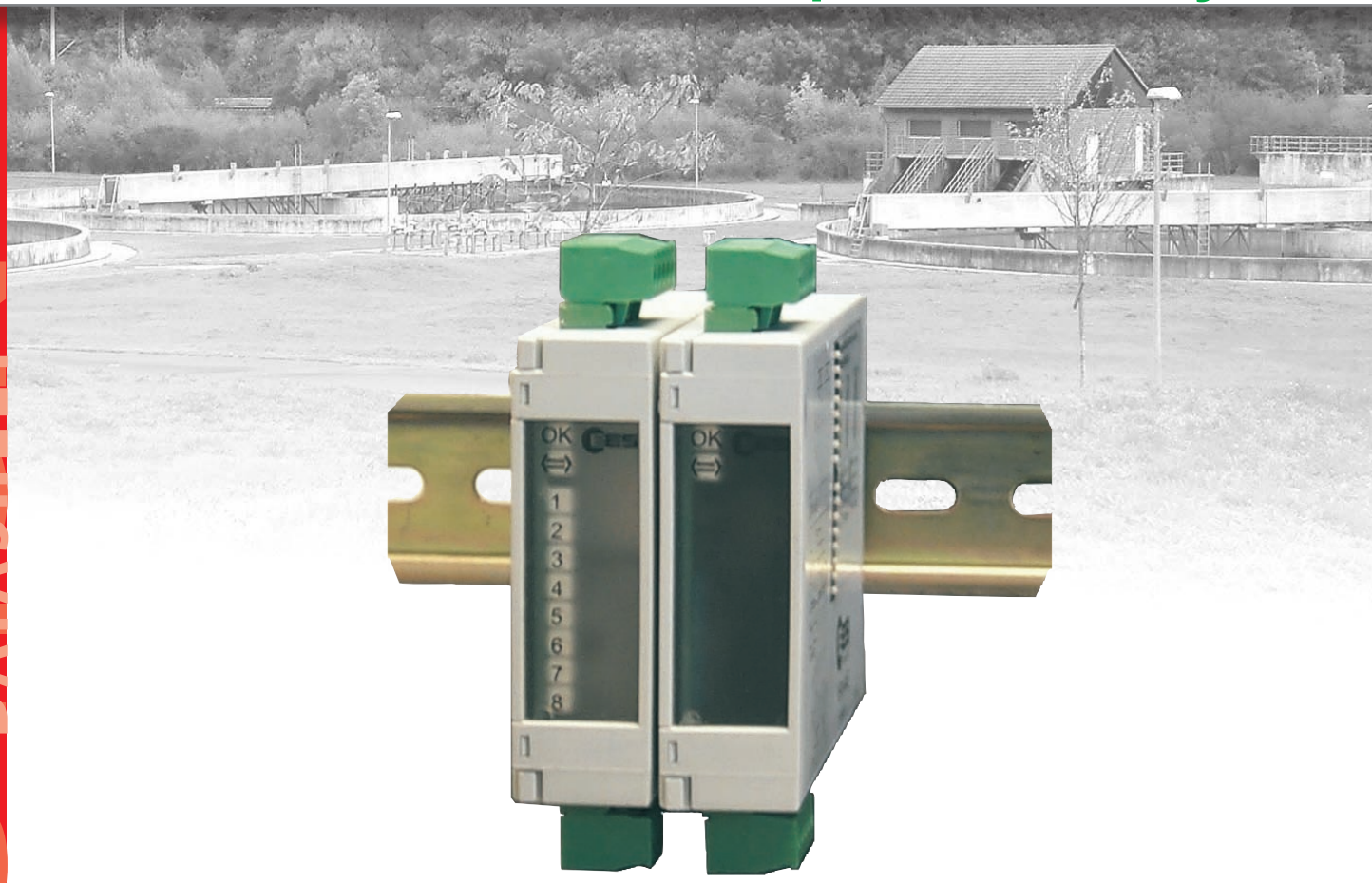
THE SOLUTION

DATASHEET

Modules from the
MFW product family



I/O expansion modules

Increasing the number of inputs and outputs
of the MFW basic modules

- Modular expansion possibilities for any basic module from the MFW product family with digital and analogue I/O
- Simplest addressing and configuration using the DIP switch
- 2 CAN bus interfaces per module
- Power supply using the CAN bus interface
- Connection of I/O using plug-in terminals
- DIN rail mounting

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01.12.2003

MFW-EM-DB-UK-002

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Functional description

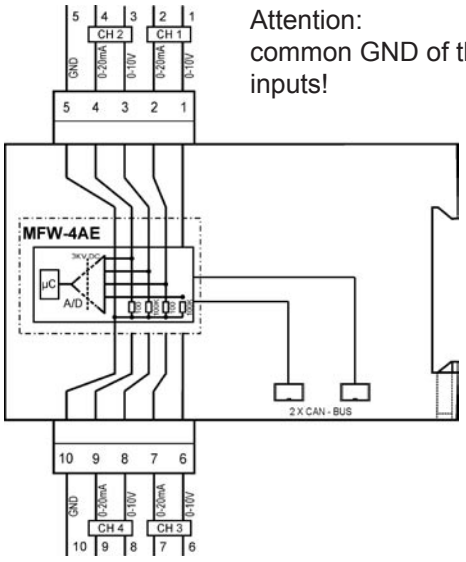
The extension of the amount of analogue and digital I/Os of the MFW basic module is possible with the aid of the expansion module. It is connected by using the bus cable supplied on one of the two CAN-bus sockets. The second socket is usable for the connection of another module or for test purposes.

The module power supply is by the CAN-bus. The configuration of the modules is done simply by the DIP switch.

Analogue modules

The analogue modules are available as input or output components.

The input modules contain 4 analogue inputs, that have a common GND. The inputs are electrically isolated from the power supply. Each input can be switched between current and voltage by DIP switch (0 (4) ... 20 mA or 0...10 V).

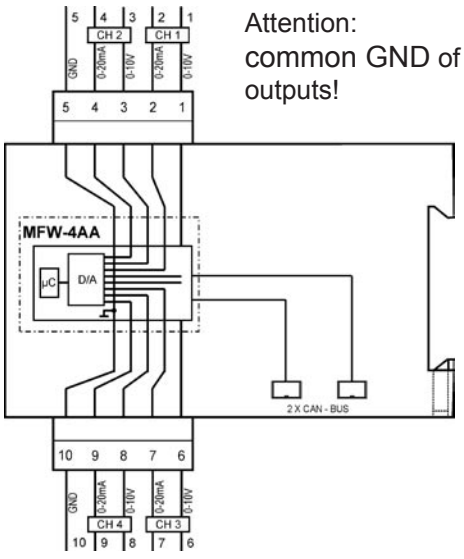


Attention:
common GND of the inputs!

analogue input module

The output modules include 4 short-circuit proof analogue current and voltage outputs (0 (4) ... 20 mA or 0...10 V), for which no auxiliary voltage is required.

The common GND is equipotential with the power supply.



Attention:
common GND of the outputs!

analogue output module

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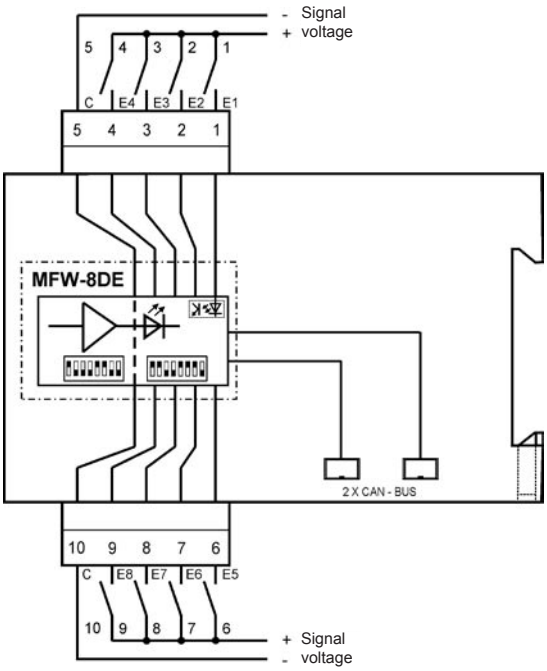
Digital modules

The digital modules can be obtained in three versions:

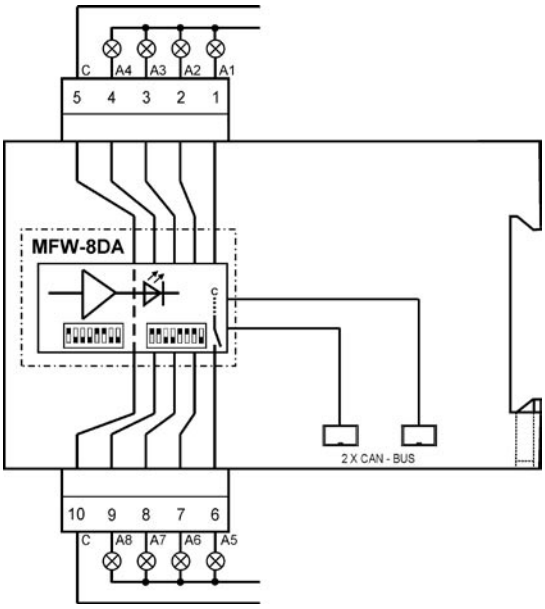
- 8 digital inputs
- 8 relay outputs
- 8 transistor outputs

There are 2 groups each of 4 inputs or outputs with a common root that are electrically isolated from one another. The exceptions are the transistor outputs; all those 8 outputs have the same GND. The first 4 inputs or outputs of each module can be optionally switched as binary or counter value. By DIP switch it is possible to switch between two count rates and the given impulse lengths.

In MFW systems with the IEC 60870-5-101 interface the use of pulse commands is possible. In this case all outputs of the expansion module are configurable for pulse output and additionally one can adjust a pulse width valid for all outputs in the range 40 ms to 120 s.

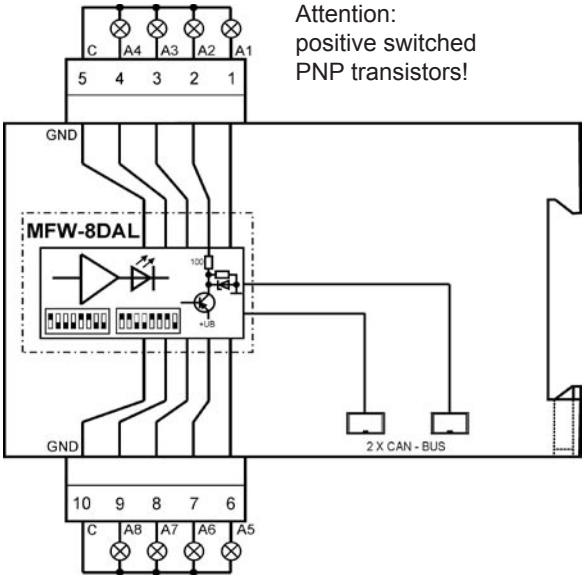


Module with 8 digital inputs



Module with 8 relay outputs

Attention:
positive switched
PNP transistors!



Module with 8 transistor outputs

Technical data

General Data	
Operating and ambient temperature	-20°C ... +60°C
Air humidity	maximum 95%, non-condensing
Connection terminals	nominal cross section 2.5 mm^2
Housing / protection class	Plastic / IP 40
Digital input modules	
Power consumption	max. 1 W
Signal voltage	approx. 16 ... 48 V AC/DC**
Input resistance	approx. 10 kΩ
Electrical isolation between signal and supply voltage	4 kV_{eff}
Digital output modules	
Power consumption	
With relay outputs	max. 3 W
With transistor outputs	max. 2 W logic + load current
Contact loading of the relay outputs***	
minimum	1.2 V / 1 mA (suitable for control of LED)
maximum	250 V AC / 400 mA 250 V AC / 2 A (purely ohmic load) 30 V DC / 2 A 110 V DC / 0.2 A 220 V DC / 0.1 A
Total 230 V AC current (purely ohmic load)	8 A
Load capacity at transistor outputs	max. 50 mA per output
maximum count rate	switchable between 1 Hz or 12 Hz **
min. pulse width / pause	500 ms or 40 ms **
electrical isolation between relay contacts and power supply	4 kV_{eff} (not for transistor outputs!)
Analogue input modules	
Power consumption	max. 2 W
resolution	12 bit
Accuracy	absolute error < 0.25% of final value / 1 year *
Input current load	100 Ω
Input resistance at voltage input	100 kΩ
Analogue output modules	
Power consumption	max. 3.5 W
resolution	12 bit
Accuracy	absolute error < 0.5% of final value / 1 year *
Max. output current load	500 Ω
Min. load resistance voltage output	1 kΩ to infinite

* For greatest accuracy an annual calibration service is available.
** Other figures on request
*** We would be happy to supply you with more precise specifications on request.

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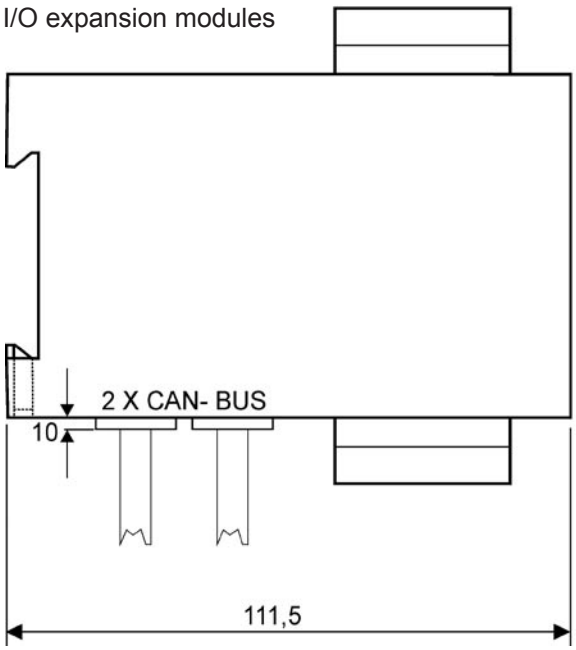
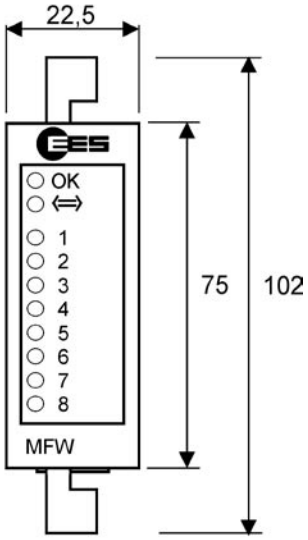
... Solutions for complex tasks

from project planning through to commissioning

Dimensional Drawing:

I/O expansion modules





Dimensions in mm

The right to make technical changes is reserved

Order identification

EM-G8DEX-0-BB-0	expansion module 8 digital inputs
EM-G8DAR-0-BX-0	expansion module 8 relay outputs
EM-G8DAL-0-BB-0	expansion module 8 transistor outputs
EM-G4AE0-0-BX-0	expansion module 4 analogue inputs 0 (4) ... 20 mA or 0...10 V
EM-G4AA0-0-BX-0	expansion module 4 analogue outputs 0 (4) ... 20 mA or 0...10 V

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