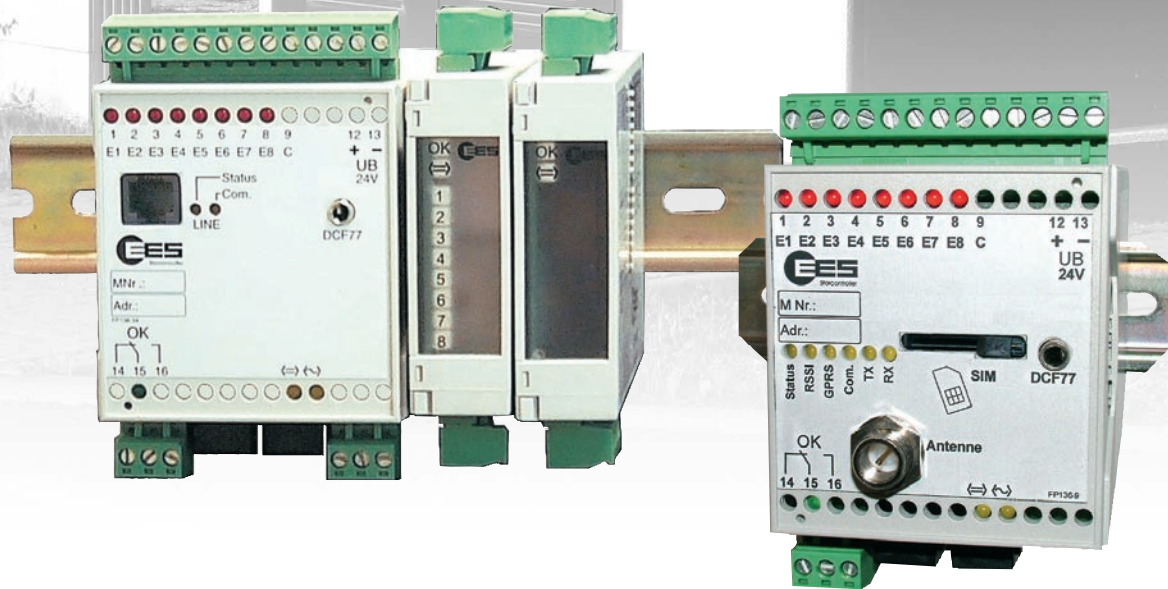


A system from the
MFW product family



MFW-Modular dial-up line telecontrol system

Telecontrolling over any landline or GSM telephone network

- Modular construction up to 32 stations and a maximum 512 I/O modules
- Transmission over telephone lines (analog and ISDN) and also GSM networks (900 or 1800 MHz)
- Easy connection to other transmission medias, such as radio or two-wire within the MFW product family and also to third party systems via various interfaces and protocols
- Data transmission event- and time-controlled
- Remote parameterisation and remote diagnosis possible

Functional description

The MFW modular telecontrol network has been specially conceived for the interconnection of widely scattered outdoor installations, such as for example pump, transformer and gas regulating stations, storm-overflow reservoirs, inspection chambers and elevated reservoirs. The MFW can be operated as a fully independent, cost-effective telecontrol system or as an extension to existing telecontrol interface modules. Almost all types of cable (telephone line, three-phase current cable, cable screen, electrically isolated cable, optical fibres etc.) and various radio ranges are suitable as transmission media. This documentation only deals with one particular aspect: transmission on telephone dial-up lines.

In its minimum configuration, the telecontrol system consists of a central station and an outstation. In each station at least one basic module is needed. This includes the following function groups, display and setting elements:

- internal modem (analog, ISDN or GSM)
- RS 232 parameterising and diagnostics interface or combined RS 232 parameterising, diagnostics and protocol interface
- I/O module with optionally 8 binary inputs or outputs with status LED or an additional interface for protocol couplings
- two CAN bus interfaces for connecting the expansion modules
- watchdog LED and fault signalling contact
- DIP switches for setting the station address, module number, etc.

The basic modules can be obtained in the following variants:

- Only one master module, whose type name contains “MF-...”, needs to be present in the system, and is usually used in the central station. It co-ordinates the flow of data. In the MFW-system there can be used currently two master modules with the following item numbers:
MF-... - Standard telecontrol master
MD-... - Telecontrol master with data logging function
- The outstation module, whose type name contains “UF-...”, is used in the outstations. Currently the following outstation modules with these item numbers can be used:
UF-... - Standard telecontrol outstation
UD-... - Telecontrol outstation with data logging function in standard variant
UL-... - Telecontrol outstation with data logging function in low power variant

Each basic module can be fitted with up to a maximum of 15 expansion modules in order to increase the I/O scope. These are connected via the CAN bus interface. Please find more detailed information in the separate datasheet “Expansion modules”.

Each **I/O module** is given a module number. The data is exchanged between modules with the same module number. The physical arrangement of the modules within the system (the station address) is of no significance at all here. The input module with number 5, for instance, transmits its data to all the output modules whose number is 5.

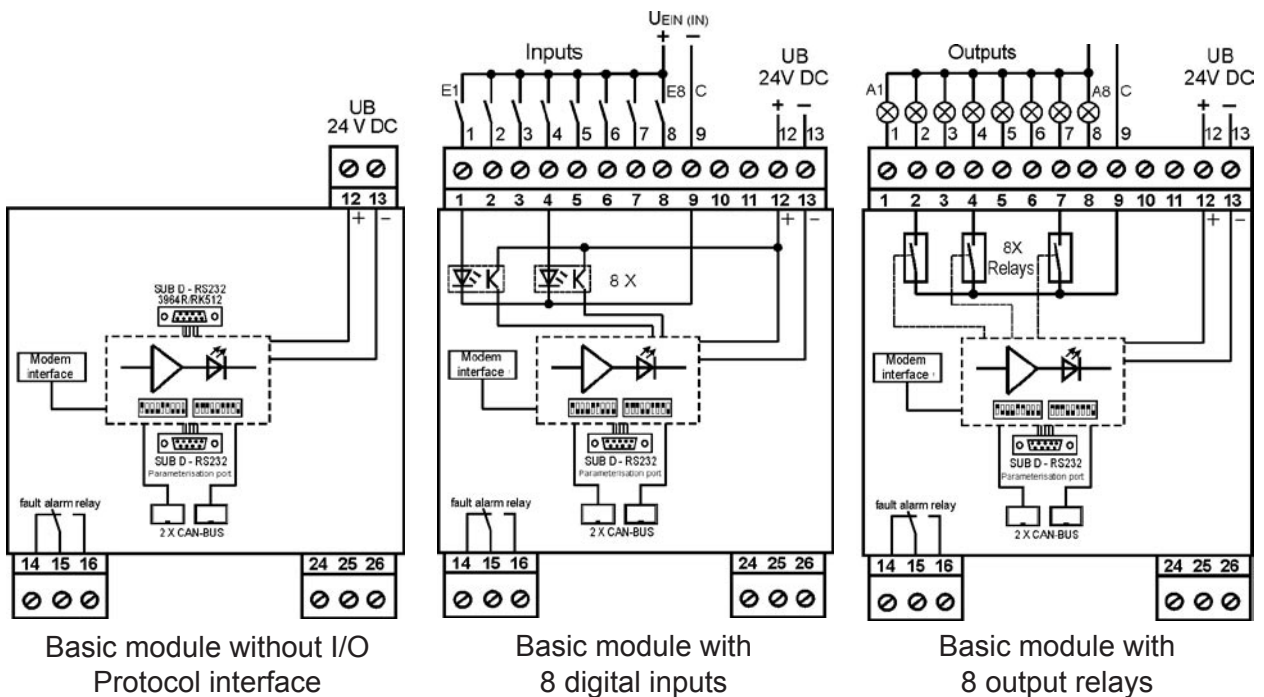
The data exchange is triggered by the master event-controlled or time-controlled and by the outstations event-controlled. After the setting up of the call-up connection between the central station and the outstation measuring values and nominal values, signals, commands, momentary pulses and count pulses and also fault notifications are exchanged. In addition the central station synchronises the internal real time clock of the outstations. In the case of digital I/O modules the inputs/outputs 1-4 can be switched over between the two types of function - static or counting/momentary pulses. Analogue signals can be transmitted both as voltage values 0-10 V or as current values 0-20 mA.

A system from the MFW product family

If the outstation cannot be reached or if the data transmission is faulty, the system recognises the faulty communication and signals this by LED and relay contact both to the central station as well as to the outstation. In addition, a binary contact can be used to signal availability of all connected stations at any point of the telecontrol system, if appropriate I/O modules are used. If a serial interface is used, this information can also be evaluated via this interface. After the cause of the fault has been rectified, normal operation is resumed automatically.

Configuration of the system is simple and easy. On the modules themselves there is only the setting of station address (1 – 31) , module number (0 ... 254), static/counter value with digital I/O and current/voltage with analog signals etc. All other parameters (telephone numbers, dial-up conditions, dial-up intervals etc) are configured only on the master module. This ensures a simple and secure operation of the system. Modifications are carried out directly from the central station (e.g. continuously from the management system). Remote parameterisation and diagnosis via the telephone network are possible using a PC with modem. To detect, store and evaluate measuring values, counter readings and facility conditions special basic modules with data logging functions have been developed, which can be operated either stand-alone or in a master-slave structure. Detailed information of the basic modules with data logging functions can be found in the separate datasheet „MFW-Data logger“.

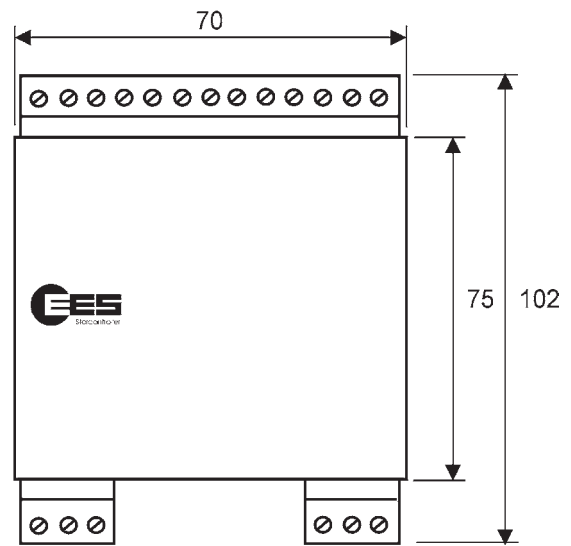
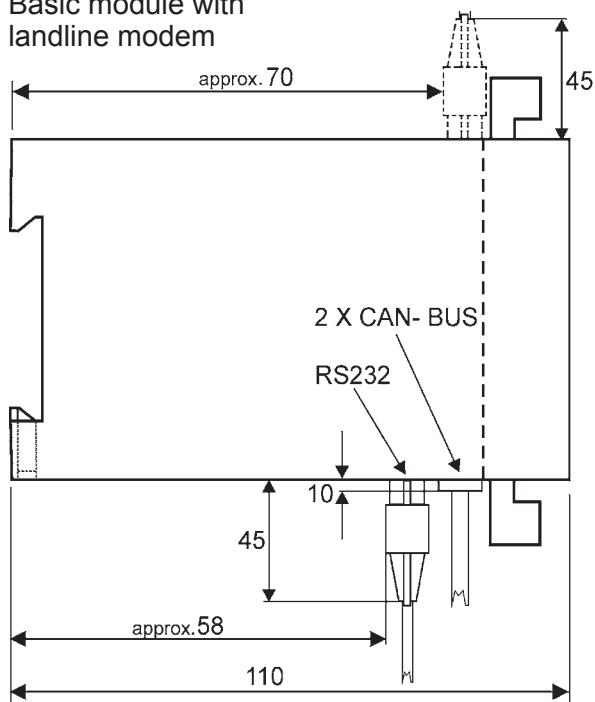
Terminal assignments



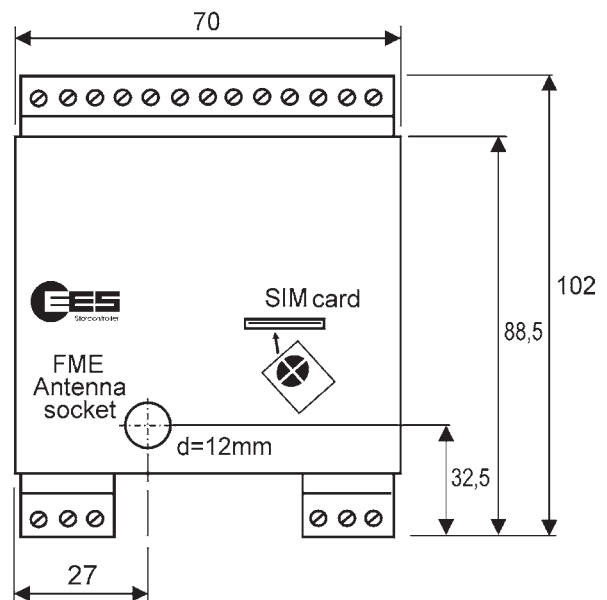
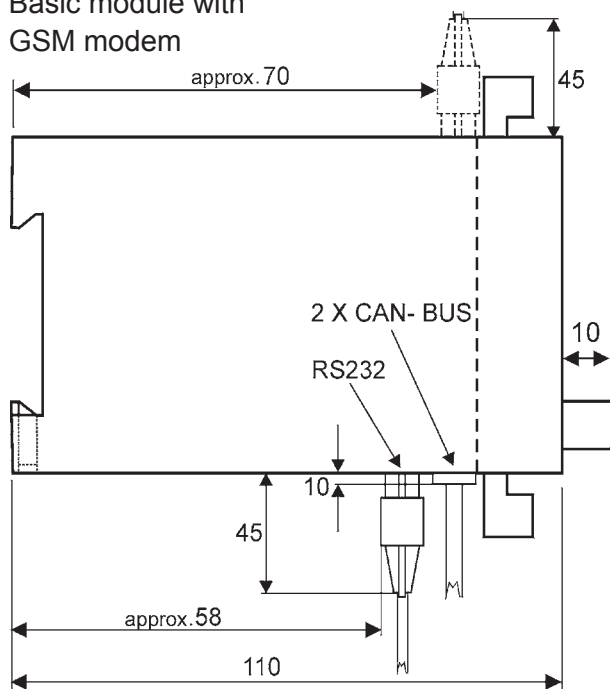
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Dimensional drawing

Basic module with landline modem



Basic module with GSM modem



Dimensions in mm

Note: In the case of modules with internal GSM modem please take in mind to provide space for connection of the antenna.

Antenna set A Overall depth 165 mm

Antenna set B Overall depth 180 mm

* Certain basic modules have a separate protocol-interface (e.g. Profibus-DP or IEC 60870-5-101).

A system from the MFW product family

Technical data

General data

Rated operating voltage	24 V DC
Operating voltage range	
Basic module	10 ... 32 V DC
with expansions	20 ... 32 V DC
Operating and ambient temperature	0 °C ... +55 °C
Air humidity	maximum 95 %, non-condensing
Connection terminals	
Wire cross section rigid or flexible	
without wire sleeve	0.22.5 mm ²
with wire sleeve	0.25....2.5 mm ²
Housing / protection class	plastic / IP 40

Digital input modules

Power consumption	approx. 2.5 W
Signal voltage	see table
Threshold for 24 V nominal voltage *	
Maximum voltage	48 V
Voltage for high-state (DC)	> 10 V respectively < -10 V
Voltage for high-state (AC)	> 15 V _{eff}
Voltage for low-state (DC)	< 9 V respectively > -9 V
Voltage for low-state (AC)	< 9 V _p
Input resistance	see table
Maximum count rate	10 Hz
Minimum pulse width	50 ms
Electrical isolation between signal and supply voltage	4 kV _{eff}

Digital output modules

Power consumption	approx. 3.5 W
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 (pure ohmic load) 30 V DC / 2 A 110 V DC / 0.2 A 220 V DC / 0.1 A
total current 230V AC	maximum 8 A (pure ohmic load)
Count rate	12 Hz*
Pulse width / pause	40 ms*
Electrical isolation between output and supply voltage	4 kV _{eff}
electrical isolation between dial-up line and supply voltage	0.5 kV _{eff}

* Other figures on request

** We would be happy to supply you with more precise specifications on request.

Digital input modules can be supplied with varying signalling voltages. The voltage is specified via the 23th character/digit of the type identifier.

Modular dial-up line remote operation system

Order identification	Rated voltage	Voltage range limit value	Input resistance
...-.....-G8DEX-DIA-0-BB-0	24 V AC/DC	16 V – 48 V AC/DC	10 k Ω
...-.....-G8DEX-DIA-0-BE-0	60 V AC/DC	35 V – 75 V AC/DC	22 k Ω
...-.....-G8DEX-DIA-0-BF-0	110 V AC/DC	75 V – 130 V AC/DC	68 k Ω
...-.....-G8DEX-DIA-0-BJ-0	220 V AC/DC	180 V – 255 V AC/DC	180 k Ω

The right to make technical changes is reserved.

Order identification

Master modules with analog modem

MF-AWMOD-G8DEX-DIA-0-BB-0	8 digital inputs
MF-AWMOD-G8DAR-DIA-0-BX-0	8 relay outputs
MF-AWMOD-XXXXX-101-0-BX-0	without I/O / IEC 60870-5-101
MF-AWMOD-XXXXX-512-0-BX-0	without I/O / 3964R / RK 512
MF-AWMOD-3PPDP-DIA-0-BX-0	without I/O / Profibus-DP-interface
MF-AWMOD-XXXXX-RTU-0-BX-0	without I/O / Modbus-RTU interface

with GSM modem

MF-GWMOD-G8DEX-DIA-0-BB-0	8 digital inputs
MF-GWMOD-G8DAR-DIA-0-BX-0	8 relay outputs
MF-GWMOD-XXXXX-101-0-BX-0	without I/O / IEC 60870-5-101
MF-GWMOD-XXXXX-512-0-BX-0	without I/O / 3964R / RK 512
MF-GWMOD-3PPDP-DIA-0-BX-0	without I/O / Profibus-DP-interface
MF-AWMOD-XXXXX-RTU-0-BX-0	without I/O / Modbus-RTU interface

Outstation modules with analog modem

UF-AWMOD-G8DEX-DIA-0-BB-0	8 digital inputs
UF-AWMOD-G8DAR-DIA-0-BX-0	8 relay outputs
UF-AWMOD-XXXXX-512-0-BX-0	without I/O / 3964R / RK 512

with GSM modem

UF-GWMOD-G8DEX-DIA-0-BB-0	8 digital inputs
UF-GWMOD-G8DAR-DIA-0-BX-0	8 relay outputs
UF-GWMOD-XXXXX-512-0-BX-0	without I/O / 3964R / RK 512

Expansion modules

Please find more information in our special datasheet.

Accessories

Connecting cable to PC or laptop, power supply, DC/DC converter, battery booster and accumulator packs.



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