

MFX_4 COMPACT PRO

For decades, the powerful MFX_4 data acquisition system has met the highest standards for flexible and reliable custody transfer measurement, mixing and control of processes in the handling of liquids, especially mineral oils. With more than 30 years of operating experience and over 18,000 installations, the fourth generation combines many years of industry experience with the latest technologies and supports the usual market communication standards.

MFX_4 COMPACT PRO

The MFX_4 COMPACT PRO combines the proven functionalities of MFX_4 Controller Ex and MFX_4 Terminal Ex in one housing. By integrating the controller, a **one-box solution** for the Ex area is now available, which can control the complete loading process for two loading arms including additives. Thanks to the "Split Architecture" approach, the system can be flexibly expanded to up to 6 loading arms, including biofuel blending, additive addition and even online density measurement.

In addition, the external RFID card reader enables the user to authorize use even in manual mode. After authentication, the data of the RFID card is saved with the loading data.

All MFX_4 systems can be easily integrated, quickly configured and remotely maintained during operation due to the support of various protocols and communication standards. To significantly expand the range of possible applications, the MFX_4 data acquisition system is characterized by its modular architecture.

Like all MFX_4 systems, the MFX_4 COMPACT PRO can be integrated into an existing field bus (CANopen) to display and control additional external MFX_4 controllers. By using one MFX_4 COMPACT PRO and two further external dual controllers, six charging arms can thus be displayed and controlled simultaneously on the MFX_4 COMPACT PRO display.

For optimal operability, it is equipped with a configurable high-contrast, full-color graphic display and offers multilingual user guidance and the display of all process data of the loading process.

The MFX_4 COMPACT PRO meets the high demands on readability in difficult operating environments with its graphic 10.2" color display and the ability to display process data in various font sizes.

The robust membrane keyboard of the MFX_4 COMPACT PRO is also equipped with freely assignable keys. This means that the display can be individually configured for a variety of applications. Alternatively, a mechanical keyboard in a completely newly developed "heavy duty" version is available. It has successfully passed extensive endurance tests and can be used optionally with any MFX_4 Ex system.



↑ MFX_4 Compact PRO with option KHD and external RFID

MFX_4 COMPACT PRO

Optional online connection to Business Intelligence (BI) tools for smartphones, tablets and PCs

Large graphic 10.2" colour display
Display of up to 6 loading arms
Sign size up to 4 cm



Up to 9 cable glands M20

Mechanical "Heavy Duty"
keyboard with metal lifting keys

Integration of an optional RFID
card reader for access control



MFX_4 COMPACT PRO

CHARACTERISTICS

Approvals	ATEX IECEX PTB type approval [calibration obligation] MID test certificate (Measuring Instruments Directive according to OIML R117)	
Housing	W 350 mm x H 290 mm x D 142 mm, IP65	
Marking of equipment	II 2 G Ex d[ia/ib] IIB T5 (housing) II 2 G Ex ia IIB T4 (keyboard) II (2) G Ex [ia] IIB (separation stage)	
Weight	26 kg	
Ambient temperature	-20 °C ... +40 °C -25 °C ... +60 °C (option extended temperature range)	
Storage temperature	-25 °C ... +75 °C	
Power supply	24 VDC +10 %Ptype = 20 W Pmax = 45 W	110 VAC... 240 VACPtype = 20 W Pmax = 45 W
Display	Main display Large graphic color display, 10.2" XGA LED backlight Automatic contrast tracking	Calibration display Alphanumeric display; 2x16 charactersLED backlightAutomatic contrast adjustment
Keypad	Foil keypad, coloured Mechanical keypad KHD, metal lifting keys (heavy duty)	
Card reader	Integration of the external card reader MFX_4 RFID Transponder [proximity] 13.56 MHz	
Interfaces	1 x CAN bus 1 x RS232 1 x RS485 1 x Ethernet [TCP/IP]	
Protocols	CANopen MODBUS RTU MODBUS TCP OPC [via separately available software license].	
Multilingual capability	German, English (UK), English (USA), French, Spanish, Polish, Russian, Hungarian, Slovak (Other languages on request)	



MFX_4 COMPACT PRO

SINGLE COUNTER VERSION (SINGLE)

DOUBLE COUNTER VERSION (DUAL)

Pulse input

- 1x pulse input (double pulse) (2 KHz)
- 1x pulse input (single pulse) (2 KHz)

Maximum 5 single pulse inputs when using the digital inputs 1-4 (200 Hz)

Temperature measurement

- 1x resistance thermometer PT100 4 wire

Density measurement

- 1x Direct density input [frequency]
- 1x resistance thermometer PT100 4 wire or via 20 mA input (not available in Germany)

Analogue inputs

- 2x analog inputs 0/4 ...20 mA for example...: Pressure, density measurement, etc.

Analogue outputs

- 2x analog outputs 0/4 ...20 mA for example...: flow control, blending

Load outputs

- 7x AC switching outputs (230 V)
- 8x DC switching outputs (24 V)
- If required: relay output, solid state, optocoupler

Digital inputs

- 12x digital inputs

The digital inputs 1 to 4 can also be used as pulse inputs (max. 200 Hz).

Pulse output

- 1x pulse output evaluated (optocoupler)
Configurable: Net volume, gross volume, mass or can be used as digital input
- 1x unweighted pulse output (optocoupler) (A/B pulse)
Copy from pulse input (for Prover)

Pulse input

- 1x pulse input (A/B) double pulse) (2 KHz) (counter 1)
- 1x pulse input (C/D) double pulse) (2 KHz) (counter 2)

Temperature measurement

- 1x resistance thermometer PT100 4 wire (counter 1)
- 1x resistance thermometer PT100 4 wire (counter 2)

Density measurement

- yes, via 20 mA input (not available in Germany)

Analogue inputs

- 2x analog inputs 0/4 ...20 mA for example...: Pressure, density measurement, etc.

Analogue outputs

- 2x analog outputs 0/4 ...20 mA for example...: flow control, blending

Load outputs

- 7x AC switching outputs (230 V)
- 8x DC switching outputs (24 V)
- If required: relay output, solid state, optocoupler

Digital inputs

- 12x digital inputs

The digital inputs 1 to 4 can also be used as pulse inputs (max. 200 Hz).
(The inputs/outputs can be distributed to both counters as required).

Pulse output

- 1x pulse output evaluated (optocoupler)
 - Configurable: Net volume, gross volume, mass or can be used as digital input
- 1x unweighted pulse output (optocoupler) (A/B pulse)
Copy from pulse input (for Prover)



MFX_4 COMPACT PRO

STANDARD FUNCTIONS

- Single or multiple product operation
- Additives incl. flushing function (Flushing)
- Flow rate control for digital and analogue valves
- Double pulse input according to ISO 6551 Level A
- Configurable inputs and outputs
- Automatic temperature and pressure compensation
- Selective chamber preselection
- K-factor setting
- Error curve linearization
- (4 curves with up to 10 support points)
- Up to 10 products configurable
- ASTM Table 54A,B,D,X
- KOE calculation of up to 5 support points
- KOE calculation via polynomial (method 3)
- (biofuel-mineral fuel/fuel oil mixtures)
- Pressure compensation of the volume
- Evaluated pulse output
- Display with multilingual capability
- Automatic error handling and error reporting
- Integrated logbook for selected processes
- Manual or automatic sequence
- Configurable I/O sequence control
- 5 levels of access authorizations
- Document memory for up to 200 transactions per counter
- Interface to density transducer
- Configurable control functions (SPS/PLC)
- Remote maintenance via diagnostic interface

Interfaces

- Fieldbus Communication CANopen
- LAN Communication Ethernet TCP/IP via MFX_4 EDI
- Serial interfaces RS232/RS485
- OPC - Server via MFX_4 EDI, ModBus RTU, ModBus TCP via MFX_4 EDI

OPTIONAL FUNCTIONS

- Density measurement via frequency from the density transmitter
- Density measurement via 0/4 ... 20mA from the density sensor
- Inline Blending -> ratio, side or sequential with flushing function
- Multi-product blending [max. 10 products].
- Additives through integrated controller (analog and digital) for max. 10 additives
- Serial interface to Smart Additive Controller
- Pipeline applications
- Quantity comparison for leak detection
- Master meter function
- Online tools for Business Intelligence (BI) applications on smartphones, tablets, PCs
- PC-based functions:
 - MPC Pipeline Measuring Systems and Prover System
 - Master meter function
 - Multi-product Blending Controller
 - UPC 2000 (verifiable data memory)
- PC-based service functions:
 - MFX_4 Explorer for device configuration
 - Remote maintenance and diagnostic tool



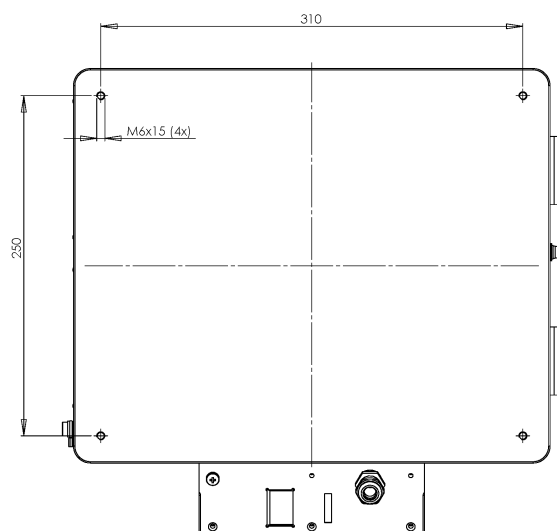
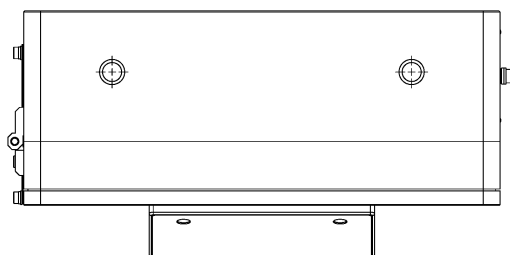
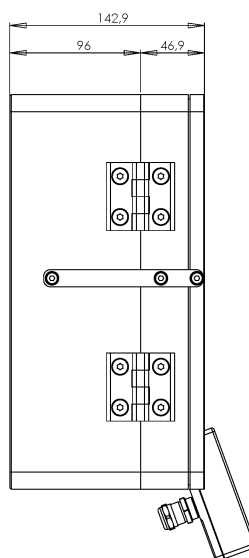
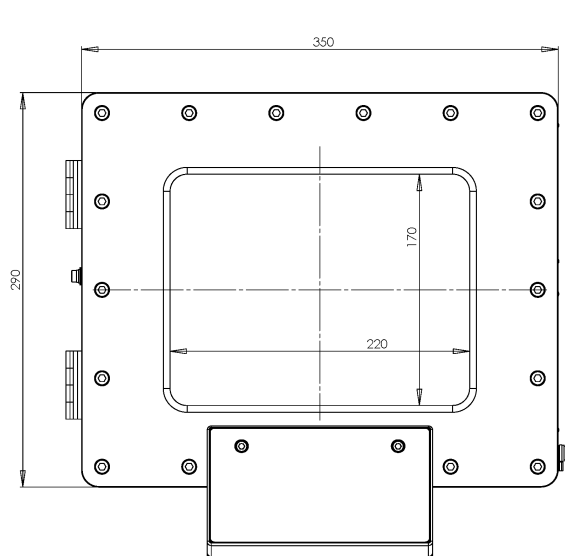
MFX_4 COMPACT PRO

PRODUCT KEY / OPTIONS

Basic device (without keyboard)	P230 P024	= Supply voltage 230 VAC = Supply voltage 24 VDC	
Temperature range	TR1 TR2	= -20 °C ... +40 °C (standard) = -25 °C ... +60 °C (extended)	
Counter Option	CH1 CH2	= Single (single counter) = Dual (double counter)	
Keypad	K0 KF KHD	= without keypad = Foil keypad = Keypad Heavy Duty	
Card reader	CR0 CR2	= without RFID card reader = external RFID card reader	
Software Option	SW00 SW01 SW02 SW03 SW04 SW05 SW06	= Meter controller + additive = Blending controller = Density = Pipeline = Pipeline leakage monitoring = Master meter = Master meter (duty meter)	
I/O option	ADR R13	= 7 AC relay + 8 DC relay = 13 relay	4A9 = 4 Solid state (AC) + 9 relays 4D9 = 4 Solid state (DC) + 9 relays
Interface Option	RS232 RS485	= RS232 = RS485	
Cable	IK0 IK01 IK02 IK03	= no cable = 5m (Power + CANopen) = 10m (Power + CANopen) = 15m (Power + CANopen)	
Languages	East West D	= Polish, Russian, Hungarian, Slovak, German, English (UK) = German, English (UK), English (USA), French, Spanish = German, English (UK), English (USA)	
Type of housing	Sw	= Housing black anodized	

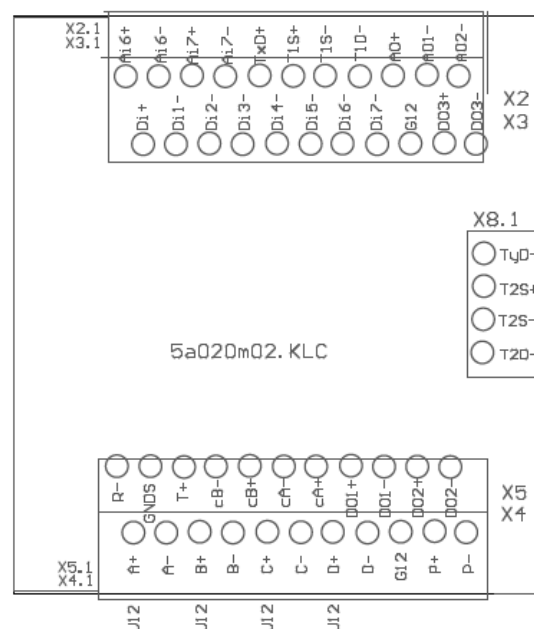
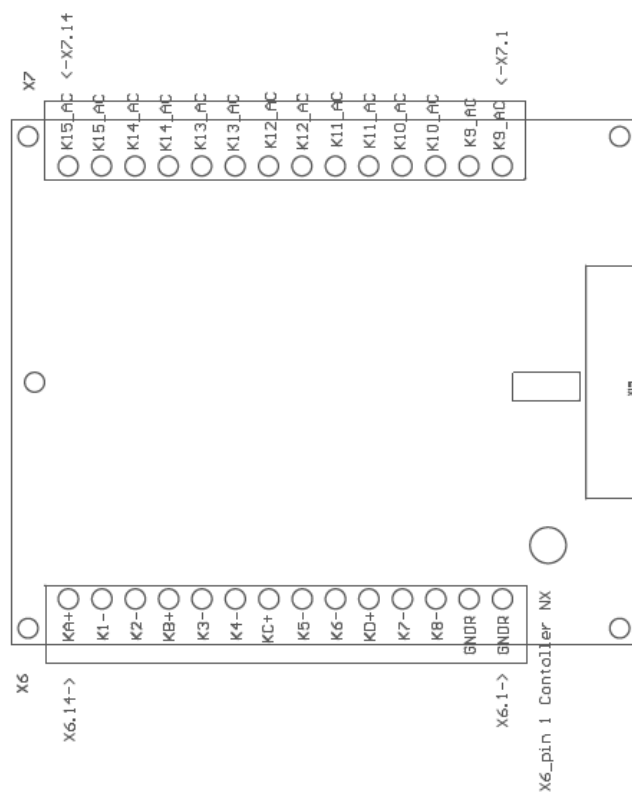
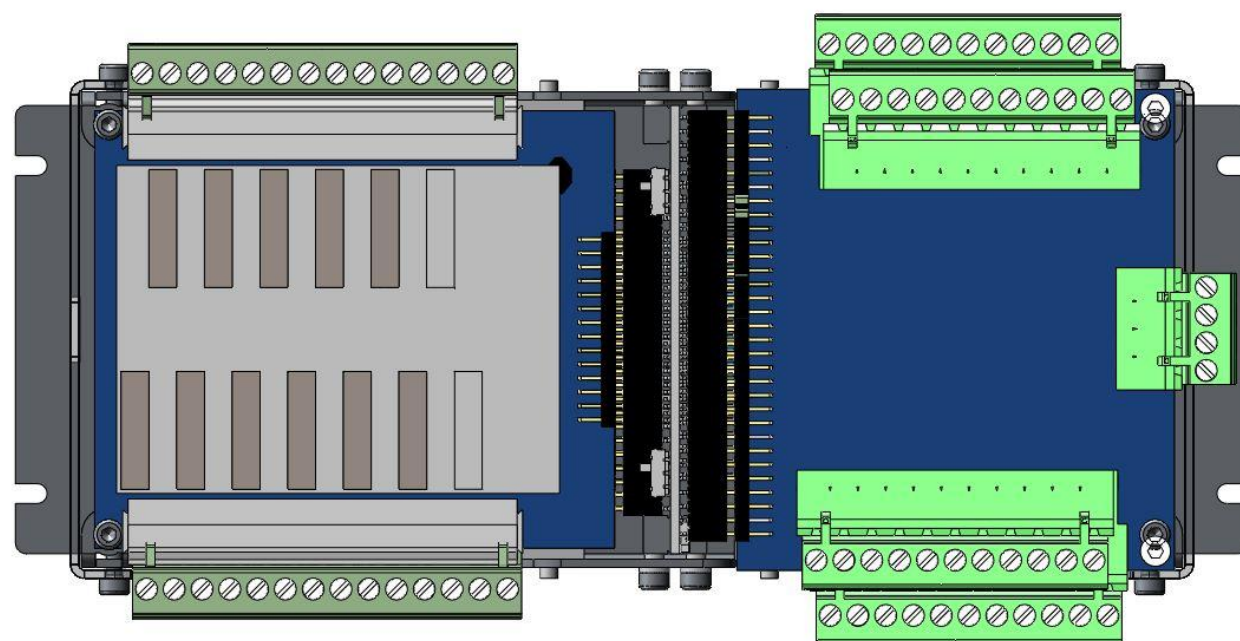
MFX_4 COMPACT PRO

DIMENSIONS



Dimensioning
nnn : Dimensions in millimetres

PIN ASSIGNMENT*



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