Data Sheet

Electromagnetic Flowmeter Type IZMAG^2 and converters IZM-SE IZM-TE

Indhold

1. Description

By means of the electromagnetic flow meter type IZMAG^2 both the flow and the volume of liquids can be measured with high accuracy.

The measurement is independent of the product's pressure, temperature, viscosity, and density. Due to the smooth measuring tube the measuring method is wear-resistant, extremely rugged and, consequently, nearly unaffected by interferences. The transmitter has nearly no pressure drop. The calibration data of the transmitter are stored in a **MEMbox**. The device is immediately ready for measurement after inserting the **MEMbox** into the converter.

Special mathematical procedures, combined with some newly developed circuit methods, permit a reliable, precise flow measurement, which is nearly resistant against process-dependent or environmental variables. The flow and volume data are available for further processing either digitally or via a serial computer interface (BUS-oriented). Of course, the incorporation of a display including keyboard is possible whenever desired.

For volume measurements which are subject to official trade use, we have available devices suitable for calibration. Provided with appropriate control and monitoring equipment, the devices obtained the qualification approval by the German national legal metrology service PTB. If a display is incorporated it can be used for W&M approved applications.

2. Flowmeter

Combined with the evaluating electronics of the IZM-SE or IZM-TE series, the electromagnetic flow meter type IZMAG² with its special measuring tube design is suitable for custody transfer measurements according to its official approval. The transmitter type IZMAG² is completely made of stainless steel.
Its design and the materials used enable the IZMAG² to meet even the highest hygienic demands. An insulation of PFA introduced into the inner measuring tube by a special moulding process is required for the application of this measuring method. A mechanical anchoring of the synthetic material with a stainless steel lattice allows for the vacuum resistance of the insulation. Using this procedure, the sensitivity to steam can be regarded as absolutely uncritical.

Due to its special measuring tube geometry, the IZMAG² can be used from the metrological point of view without any inlet or outlet pipe sections. For official applications the technical specifications have to be observed.

The IZMAG² is available both in compact and separated design.

2.1. Compact design IZMAG²

Converter IZM-SE / IZM-TE and IZMAG² connected directly via sealed stainless steel housing.

Figure 1

2.2. Separated design

Converter and IZMAG² connected via connector box attached via cable to encoder.

Figure 2

2.3. Flowmeter Features

Figure 3

Special measuring tube of the IZMAG²

- No or only small (for custody transfer applications) inlet and outlet sections required
- Suitable for the use on vehicles according to DIN40839 and OIML Doc. 11/A1.4.X
- Special design, appropriate for custody transfer applications (option) according to OIML (PTB) and Evaluation Certificate (NMI) for the use within MID-approved systems
- Vacuum-tight as well as temperature-stable and resistant to hot steam
- Compact and separated design possible
- Different process connections can be used due to the adapter technology

Smart mathematical calculation methods combined with newly developed electronic circuits ensure a reliable and precise flow measurement which practically cannot be influenced by any process-related or environmental variables.

Flow rate and volume are available for further processing either digitally or via serial computer interface (bus-compatible). A display including keyboard can be installed whenever desired.

2.4. Technical data of the IZMAG² Flowmeter

Connection and nominal sizes	DN 50, 65, 80, 100		
Product-contact materials Housing material	1.4404 / PFA 1.4301		
Process connection	Aseptic flange DIN 11864/2 design A		
Process adapter (option)	Weld-on socket, dairy pipe, clamp, DIN flange, etc.		
Inner diameter of the measuring pipe	Square shape		
Pressure range	0.1…11 bar abs. (PN 10)		
Measuring accuracy	± 0.20% [1)]		
Protection class	IP 65		
Product temperature	120°C max.		
Recommended inlet pipe section Outlet pipe section	2 x DN not applicable		
Electrical connection	Coil supply to transmitter Electrode signal from transmitter Typical standard cable length Coil resistance:	2x0,75mm² 3x1,5mm² CY 5m each 100 Ohms	shielded shielded (separated design)

[1)] ±1 mm/s under reference conditions

2.5. Dimensions

Compact design with converter IZM-SE

Separated design

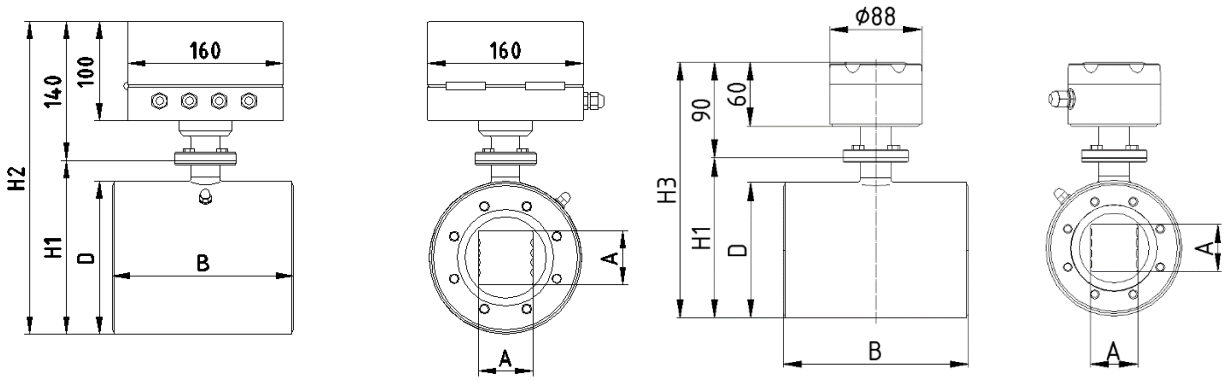


Figure 4

Nominal width	A [mm]	B [1)] [mm]	H1 [mm]	H2 [mm]	H3 [mm]	D [mm]	Measuring range [2)] [L/h]	Weight [kg]
DN 50	36	178	152	292	242	129	1,500… 45,000	8
DN 65	45	178	152	292	242	129	2,400… 80,000	10
DN 80	55	200	177	317	267	154	3,600…100,000	12
DN 100	71	300	191	331	281	168,3	6.000…180.000	15,5

[1)] without process adapter

[2)] for custody transfer applications the minimum flow rate is about 2x higher

2.6. Inlet and outlet lines

An installation into an ascending tube is recommended. In case of horizontal installation, the electrode axis must be in horizontal direction, too.

The length of the inlet lines need to be at least 2 x DN, outlet line has no minimum length.

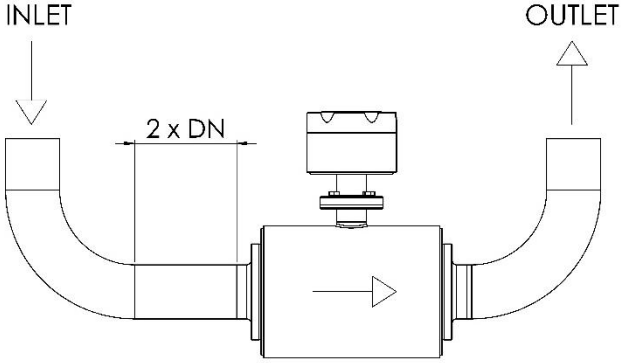


Figure 5

3. Converter

The electromagnetic flow meters of the type **IZM** determine the flow and the volume of liquids at a high precision.
The **IZM-SE** and **IZM-TE** converters are microprocessor-controlled. They supply the transmitter with a switched and regulated coil current. The signal generated at the electrodes is amplified in the converter, conditioned and shown in the internal measuring registers both as flow rate and volume information. Volume pulses (pulses per volume unit) are output for controlling and regulating purposes.
When leaving the factory, each device is adjusted in such a way that only the transmitter, the power supply and any peripherals will have to be connected.

Special instructions for officially approved flow meters:
Calibration marks, security stamps or lead seals of officially approved metering devices and systems must not be damaged or removed. Otherwise, the official calibration by the Weights & Measures Office will become invalid!

Officially Weights&Measures-approved flow meters and quantity preselection devices have to be equipped with a buffer battery (stock no.: E1-282759).

3.1. Special Features

- high precision/reproducibility - typical tolerance of measured values: 0.25 % of measured value in nominal range 1 : 10 or 1 : 20 - nearly no pressure drop - different designs available - large temperature range - measurement independent of density, viscosity, pressure and temperature - wear-resistant measuring principle - transmitter suitable for CIP - easily installed and commissioned - transmitter housing made of stainless steel - self-monitoring with automatic error diagnosis - remote maintenance via CS3-BUS connection (BUS-oriented interface) possible	-electronic system or transmitter can be exchanged without alignment due to **MEMbox** memory - automatic conversion of measuring range in case of exceeding the flow rate - measurement in forward and reverse flow - user-friendly parameterization - output of measured values unaffected by interferences (volt-free outputs) - multi-channel and safe pulse transmission for counting suitable for W&M applications - date and time (type **TE**) - electromagnetically compatible design - suitable for use on vehicles acc. to DIN40839 and OIML Doc. 11/A1.4.X. standards - design suitable for W&M approved applications - temperature measurement with external Pt100 (type **TE**)

3.2. Technical data for converter IZM-SE/TE

Electric power supply: 100 V 115 V 120 V 230 V 240 V 24 V DC 24 V AC	50-60 Hz 50-60 Hz 50-60 Hz 50-60 Hz 50-60 Hz --- 50-60 Hz	(0,17A) (0,15A) (0,15A) (0,07A) (0,07A) (0,8 ... 0,3A) (0,8 ... 0,6A)	85 ... 110 V 98 ... 126 V 102 ... 132 V 195 ... 253 V 204 ... 264 V 10 ... 30 V DC 21 ... 26 V AC
Power consumption:	15 VA / 8 watts max. (10 VA / 6 watts without display)		
Electric fuse protection:	AC supply DC supply 24 V AC		T315 mA M2.5 A M2 A
Digital outputs:	4 x galvanically isolated transistor output Load: 30 V / 250 mA max.		
Analog output:	0/4 ... 20 mA (active), burden 500 Ohm max. adjustable	Q = 0 % → 0 mA oder 4 mA Q = ±100 % → 20 mA	
Digital inputs:	2 x optocoupler; activation: 10 ... 30V DC - Count interruption (standby) and zeroing		
Input for temperature sensor Pt100: * TE only	4-wire input accuracy:	± 0,1 °C in range	-30 ... +100 °C
Serial interface on JB3 (X12): * TE only	Hardware: **RS232**		to control PLC
Serial interface on MB1x (X9):	Hardware: **RS232**		to control various printers
Serial interface on MB1X (X200):	Hardware: **RS485**		TARP Diessel-CS3-BUS protocol
Display (option):	2x20 digits (digit height 5mm)		illuminated LC display with keyboard
Housing:	Cast aluminium (special coating)		
Degree of protection:	IP65		
Ambient temperature:	-25°C ... +55°C		

3.3. Converter overview drawing

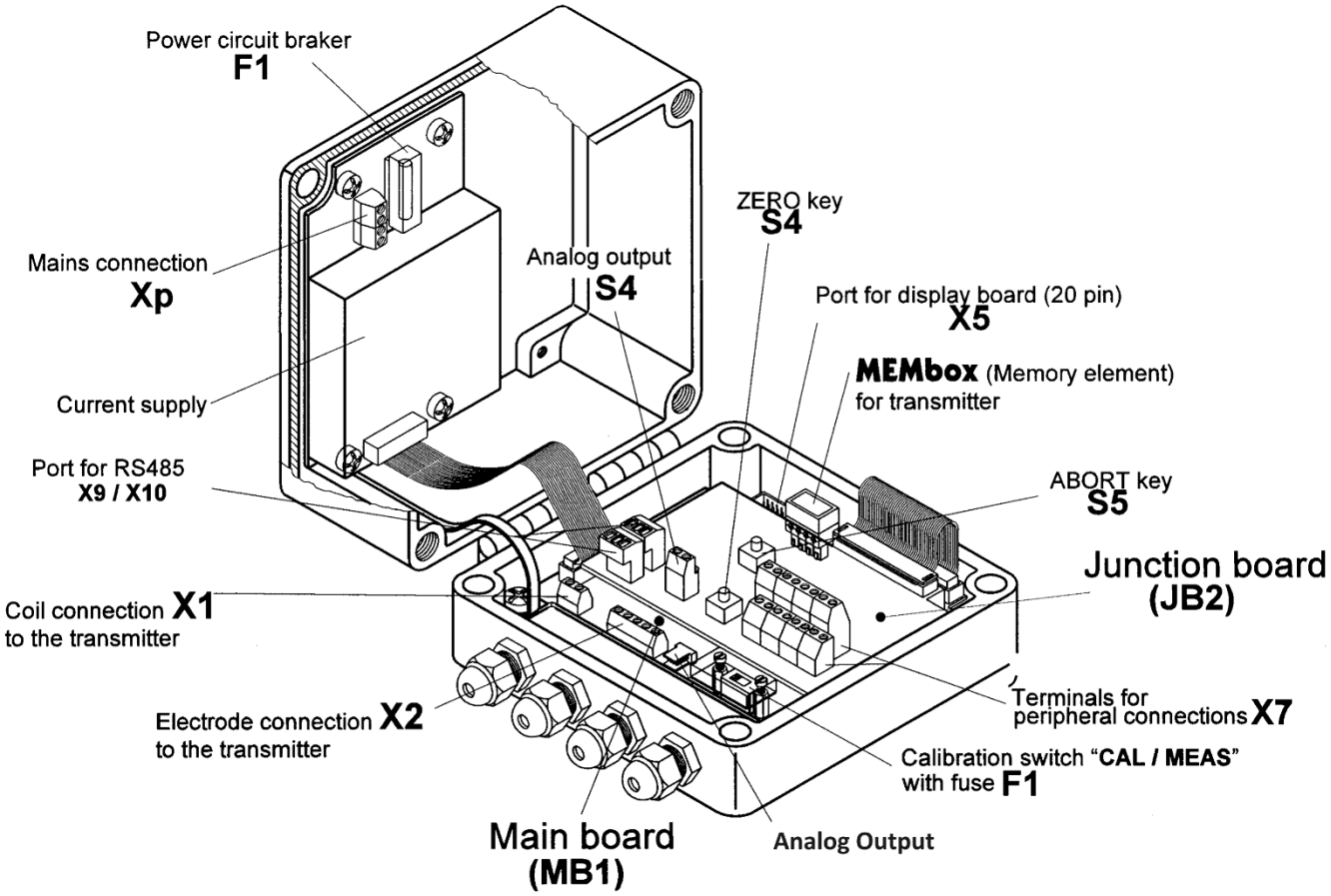


Figure 6

4. Converter Parts

4.1. Mainboard MB1X

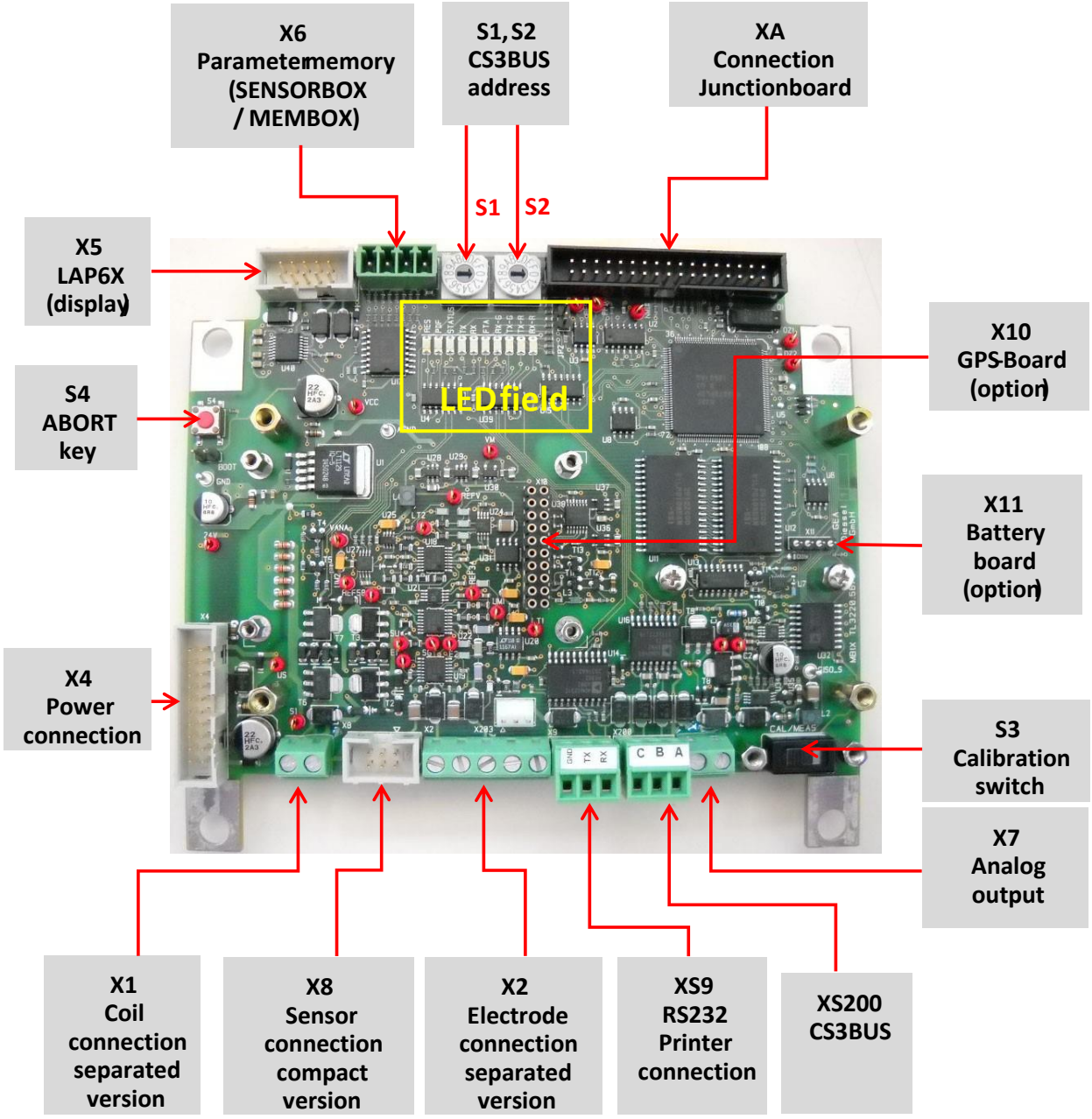


Figure 7

4.2. Junction Board JB2

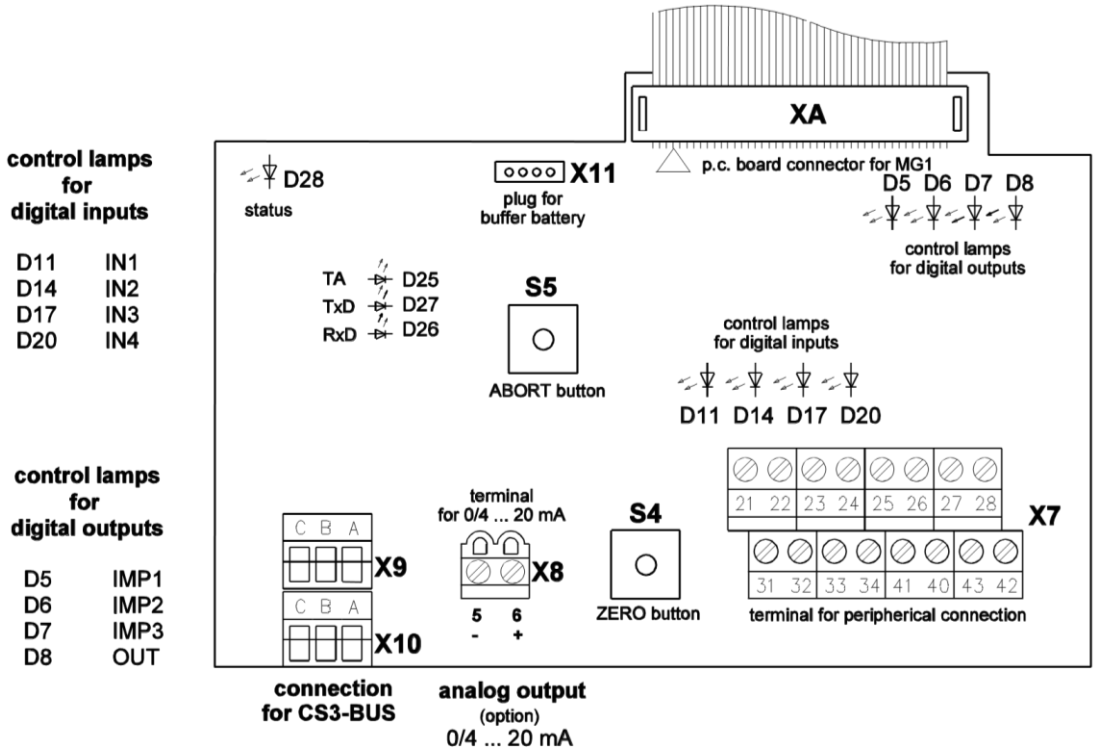


Figure 8

4.3. Junction Board JB3

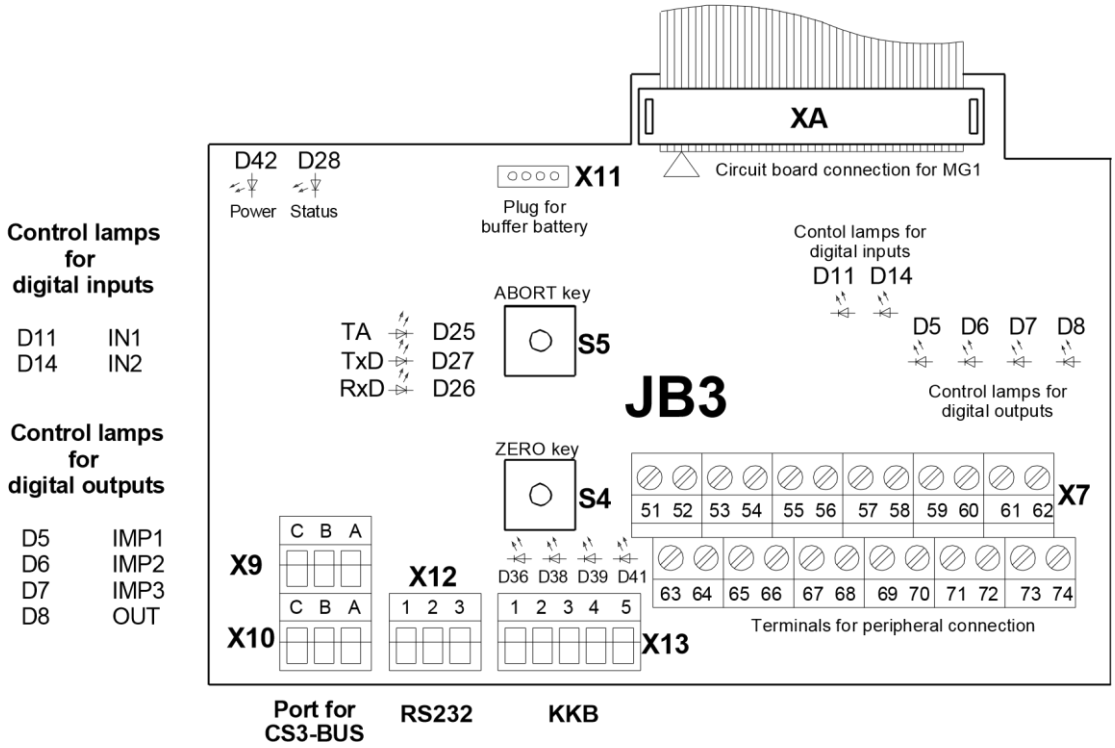


Figure 9

4.4. Electrical connection

Intended use:

The **IZM-SE/IZM-TE**

- Is only suitable for the connection to an earthed/grounded monophase network
- May only be used within industrial areas for reasons of EMC (according to the definition EN 50 081-2)

Qualification of the staff:

All kinds of work that has to be done at the **IZM** may be carried out by accordingly authorized and trained personnel only. At any rate, the directives for industrial safety and protection have to be considered.

The nameplate of the flow meter has to be considered for the electrical connection. According to Fig. 6 (page 9) the supply voltage is connected to terminal **Xp**.

It must correspond to the supply voltage of the power unit!

The shielding braid must be correctly connected to the cable gland in order to guarantee an optimum operation of the device according to the EMC directives.

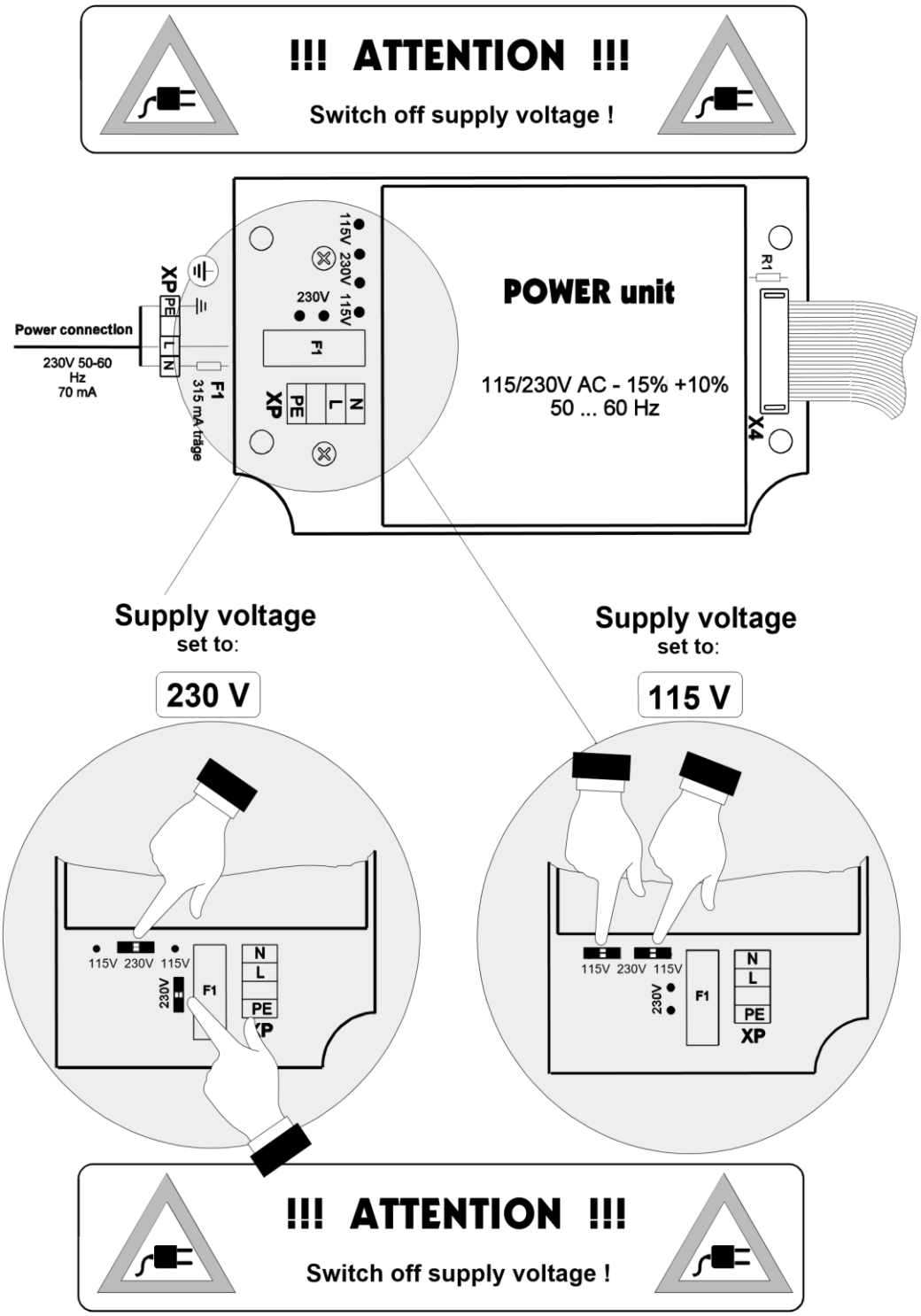
CAUTION

In case of hard-wired devices without any mains switch it is absolutely necessary to install a switch or a power switch in the structure of the building.

That switch has to be fixed in the direct vicinity of the device, easily accessible to the user and clearly marked as a disconnecting or isolating switch for the device.

4.5. Power supply

For the operation of the IZM-SE / IZM-TE at different supply voltages, different POWER units are available. Sometimes the supply voltage has to be changed by using plugin jumpers.



5. Order no. and spare parts

5.1. IZMAG² Encoder

Uncalibrated encoders:

E1-7628-**050**-999	IZMAG² Encoder DN50 Uncalibrated
E1-7628-**065**-999	IZMAG² Encoder DN65 Uncalibrated
E1-7628-**080**-999	IZMAG² Encoder DN80 Uncalibrated
E1-7628-**100**-999	IZMAG² Encoder DN100 Uncalibrated

Calibrated encoders

E1-7628-**050**-000	IZMAG² Encoder DN50 Calibrated
E1-7628-**065**-000	IZMAG² Encoder DN65 Calibrated
E1-7628-**080**-000	IZMAG² Encoder DN80 Calibrated
E1-7628-**100**-000	IZMAG² Encoder DN100 Calibrated

Calibrated encoders with connector housing for separated version

E1-7628-**050**-000_C	IZMAG² Encoder DN50 Calibrated w. Connector housing
E1-7628-**065**-000_C	IZMAG² Encoder DN65 Calibrated w. Connector housing
E1-7628-**080**-000_C	IZMAG² Encoder DN80 Calibrated w. Connector housing
E1-7628-**100**-000_C	IZMAG² Encoder DN100 Calibrated w. Connector housing

5.2. IZMAG² Flowmeter Integrated Versions

Note: A set of adapter sockets is needed for connecting the flowmeter.

E1-7628-**050**-000_I	IZMAG² Flowmeter DN50 Integrated Converter IZM-SE 24V without Display
E1-7628-**065**-000_I	IZMAG² Flowmeter DN65 Integrated Converter IZM-SE 24V without Display
E1-7628-**080**-000_I	IZMAG² Flowmeter DN80 Integrated Converter IZM-SE 24V without Display
E1-7628-**100**-000_I	IZMAG² Flowmeter DN100 Integrated Converter IZM-SE 24V without Display
E1-7628-**050**-000_I-01	IZMAG² Flowmeter DN50 Integrated Converter IZM-SE 24V with Display
E1-7628-**065**-000_I-01	IZMAG² Flowmeter DN65 Integrated Converter IZM-SE 24V with Display
E1-7628-**080**-000_I-01	IZMAG² Flowmeter DN80 Integrated Converter IZM-SE 24V with Display
E1-7628-**100**-000_I-01	IZMAG² Flowmeter DN100 Integrated Converter IZM-SE 24V with Display

5.3. IZMAG² Flowmeter Separated Version

For correct size change XXX with 050,065,080,100 when ordering
Note: A set of adapter sockets is needed for connecting the flowmeter.
Standard cable length of 5m between converter and flowmeter

E1-7628-**XXX**-000_S	IZMAG² Flowmeter Separated Converter IZM-SE 24V without Display
E1-7628-**XXX**-000_S-01	IZMAG² Flowmeter Separated Converter IZM-SE 24V with Display
E1-7628-**XXX**-000_S-02	IZMAG² Flowmeter Separated Converter IZM-SE 230V with Display
E1-7628-**XXX**-000_S-03	IZMAG² Flowmeter Separated Converter IZM-TE (Temp) 24V with Display
E1-7628-**XXX**-000_S-04	IZMAG² Flowmeter Separated Converter IZM-TE (Temp) 24V without Display
E1-7628-**XXX**-000_S-05	IZMAG² Flowmeter Separated Converter IZM-ZDC1 7,5V-35V DC with Display
E1-7628-**XXX**-000_S-06	IZMAG² Flowmeter Separated Converter IZM-TE 230V with Display

5.4. IZM Converter

E1-7623-003-000	Converter IZM-SE w/o display 24V DC separate design
E1-7623-003-000-01	Converter IZM-SE w. display 24V DC separate design
E1-7623-003-000-02	Converter IZM-SE w/o display 24V DC integrated design
E1-7623-003-000-03	Converter IZM-SE w. display 24V DC integrated design
E1-7623-003-000-04	Converter C1 w. display 7,5V-35V DC/DC separate design
E1-7623-003-000-05	Converter IZM-G1 w. display 24V DC int. (Obsolete- Sparepart G1 Flowmeters)
E1-7623-003-000-06	Converter IZM-TE (Temp) w. Display separate design
E1-7623-003-000-07	Converter IZM-TE (Temp) w/o. Display separate design
E1-7623-003-000-08	Converter IZM-SE w. display 230V separate design
E1-7623-003-000-09	Converter IZM Empty w/o display integrated design
E1-7623-003-000-10	Converter IZM-TE (Temp) w. Display 230V separate design
E1-7623-003-000-11	Converter IZM-TE (Temp) w. Display 100/200V separate design

5.5. Converter parts

018012261001	Membrane Keyboard Tarp Diessel IZM
E1-280546	Display LAP6X
E1-280507	Mainboard MB1X
E1-280524	Junction Board JB2A
E1-280523	Junction Board JB3
E1-282759	Battery board IZME
E1-280550	DC Power Supply 12 / 24VDC / 10,5W

5.6. Adapter sockets for Transmitter

All socket kits include fasteners and seals.

E1-7626-050-001	- Welding sockets DN50 (Standard)
E1-7626-050-009	- Threaded socket as per DIN11851 DN50
E1-7626-065-001	- Welding sockets DN65 (Standard)
E1-7626-080-001	- Welding sockets DN80 (Standard)
E1-7626-100-001	- Welding sockets DN100 (Standard)