

INSTALLATION MANUAL

vibro-meter®

Pressure measurement chains using  
CPxxx piezoelectric pressure sensors



**This document contains important information about products that are intended for use in potentially explosive atmospheres.**

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Table 4-2 lists the permitted value for the diagnostic component (DC) of the output signal from an IPC707 without diagnostics.

**Table 4-2:** Permitted values for the diagnostic component (DC) of the output signal from an IPC707 without diagnostics

Diagnostic component (DC) value	Measurement chain OK?	Description
12 mA <sub>DC</sub> ±0.5 mA <sub>DC</sub> or 7 V <sub>DC</sub> ±0.5 V <sub>DC</sub>	Yes	Normal operation
Other current or voltage value	No	Problem with the measurement chain (sensor, cabling and/or signal conditioner)
<p>Notes</p> <p>The output signal from an IPC707 can be either a current (mA) or a voltage (V) signal, depending on the configured transfer function and output signal.</p> <p>Although the output signal from an IPC707 has a maximum tolerance of ±0.5 mA<sub>DC</sub> or ±0.5 V<sub>DC</sub> to allow for operation in all circumstances (including strong electromagnetic interference), a typical tolerance of ±0.2 mA<sub>DC</sub> or ±0.2 V<sub>DC</sub> is seen during normal operating conditions.</p>		

#### 4.4.1.4 Sensor compatibility

In order to support the correct operation of an IPC707 signal conditioner with diagnostics, the CPxxx piezoelectric pressure sensor, the cabling and the complete measurement chain must meet specific electrical requirements (see 4.4.1.5 Valid IPC707 measurement chains).

Table 4-3 lists the CPxxx piezoelectric pressure sensors that are compatible with an IPC707 signal conditioner with diagnostics.

**Table 4-3:** CPxxx piezoelectric pressure sensors compatible with an IPC707 signal conditioner with diagnostics

CPxxx piezoelectric pressure sensor	Part number (PNR)	Comments / Notes
CP104	143-104-000-101	
CP211	143-211-000-x2x	CP211 sensors with an integral MI cable >0.5 m (19.7") are not compatible
CP216	143-216-000-x2x	CP216 sensors with an integral MI cable >0.5 m (19.7") are not compatible
CP232	143-232-000-11x 143-232-000-22x	CP232 sensors with an integral MI cable >0.3 m (11.8") are not compatible
CP238	143-238-000-02x	
Other		Contact Meggitt for further information
<p>Notes</p> <p>In general, CPxxx piezoelectric pressure sensors with integral mineral-insulated (MI) cables longer than 0.5 m (19.7") are not compatible with an IPC707 signal conditioner with diagnostics. This is because the conductors of mineral-insulated (MI) cables are usually not individually shielded, resulting in a relatively high capacitance between the conductors of the cabling that prevents the detection of problems with the sensor (as the capacitance of the cabling becomes larger than and "swamps" the capacitance of the sensor).</p>		

#### 4.4.1.5 Valid IPC707 measurement chains

In order to support the correct operation of an IPC707 signal conditioner with diagnostics, the IPC707 measurement chain must be “valid”, that is, the sensor (CPxxx piezoelectric pressure sensor), the cabling and the complete measurement chain must meet specific electrical requirements.

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**NOTE:** Refer to the *IPC707 signal conditioner safety manual* for further information on the specific electrical requirements for “valid” IPC707 measurement chains.

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#### 4.4.1.6 IPC707 measurement chains in safety-related applications

When an IPC707 measurement chain is used in a safety-related application, certain conditions/restrictions apply.



**AS AN INPUT (SENSOR) TO AN EXTERNAL SAFETY INSTRUMENTED SYSTEM (SIS) PERFORMING A SAFETY INSTRUMENTED FUNCTION (SIF), AN IPC707 MEASUREMENT CHAIN MUST CONSIST OF AN IPC707-COMPATIBLE SENSOR, IPC707-COMPATIBLE CABLING AND AN IPC707 SIGNAL CONDITIONER WITH DIAGNOSTICS.**

It is the end-user’s responsibility to ensure that the recommendations in the *IPC707 signal conditioner safety manual* are implemented as appropriate.

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**NOTE:** Refer to the *IPC707 signal conditioner safety manual* for further information on using the IPC707 in safety-related systems (functional-safety contexts).

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#### 4.4.2 Mounting procedure



**SEE 4.1 GENERAL PRECAUTIONS BEFORE INSTALLING AN IPC707 SIGNAL CONDITIONER.**

An IPC707 signal conditioner can be installed in different ways, depending on its configured installation option:

- IPC707 with DIN-rail mounting adaptor  
An IPC707 with a DIN-rail mounting adaptor (ordering option **G2**) should be installed on a 35 mm wide symmetrical DIN rail such as a TH 35-7.5.
- IPC707 without DIN-rail mounting adaptor  
An IPC707 without a DIN-rail mounting adaptor (ordering option **G1**) should be installed on a base plate or other mounting surface.

An IPC707 is generally mounted in an industrial housing, rack or cabinet/cubicle installed in a vibration-free location, although it can also be mounted directly on a machine (without DIN-rail option).

The IPC707’s housing features removable screw-terminal connectors that can be unplugged from the main body of the housing to simplify installation of the signal conditioner (see Figure 4-7).

#### 4.4.2.1 Grounding

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**NOTE:** The metal housing (electrically conductive) of an IPC707 is connected to its “COM” and “SHD” terminals. Accordingly, an IPC707 can be installed and operated either with or without a direct electrical connection between the IPC707 and ground (GND).

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Installation and operation of an IPC707 with *or* without a direct electrical connection between the IPC707 and ground (GND) both result in measurement chains that comply with required CE and SIL electromagnetic compatibility (EMC) standards.

See 7.2 General wiring diagrams.

#### 4.4.2.2 Installing on a DIN rail

An IPC707 signal conditioner with a DIN-rail mounting adaptor is easily installed on or removed from a DIN rail (see Figure 4-5). No screwdrivers or special tools are required.

To install an IPC707 signal conditioner with a DIN-rail mounting adaptor on a DIN rail:

- 1- Hook the spring-loaded end of the DIN-rail mounting adaptor onto one edge of the DIN rail.
- 2- Push against the spring-loaded end of the DIN-rail mounting adaptor (thereby compressing the springs), while pivoting the IPC707 signal conditioner in order to hook the opposite end of the mounting adaptor over the other edge of the DIN rail.
- 3- Connect the cables to the signal conditioner (see 4.4.4 Connecting cables and 7.2 General wiring diagrams).

Similarly, to remove an IPC707 signal conditioner from a DIN rail:

- 1- Disconnect the cables to the signal conditioner (see 4.4.4 Connecting cables).
- 2- Push against the spring-loaded end of the DIN-rail mounting adaptor (thereby compressing the springs), while pivoting the IPC707 signal conditioner in order to unhook the opposite end of the mounting adaptor from one edge of the DIN rail.
- 3- Unhook the spring-loaded end of the DIN-rail mounting adaptor from the other edge of the DIN rail.