

Instruction

This instruction applies to installation and use of piezo-resistive pressure transmitters for immersion. Expert pressure transmitters is available in the following standard types:

Relative (gauge) pressure transmitters (7060, 7070):

Measuring range	Ø 60 mm	Ø 23 mm
0 - 3 m	7060-1413	7070-1413
0 - 5 m	7060-1443	7070-1443
0 - 10 m	7060-1423	7070-1423
0 - 30 m	7060-1433	7070-1433

Absolute pressure transmitter (7050):

0 - 10 m (calibrated: 0-20 m)	7050-1413	-
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Function

Level measurement with pressure transmitters are based on the following principle: A pressure transmitter is immersed into liquid and measures the hydrostatic pressure. The pressure transmitter produces a current signal that is proportional to the level. The pressure transmitters is designed for the 2-wire principle where the two wires are supplied with a voltage between 15 and 35 V DC. The pressure transmitter produces a level-proportional 4-20 mA output signal and has a built-in signal amplifier.

Pressure transmitters 7060 and 7070

These transmitters have a pressure equalizing tube in the cable for air pressure compensation so the 4-20mA signal is directly level proportional. When mounting the pressure transmitter with an equalizing tube, assure that no moisture or condensation water gets in the tube (see section: Connection box).

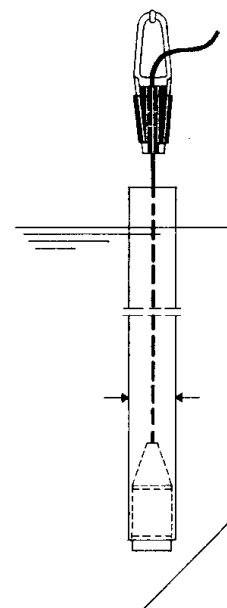
Pressure transmitter 7050

measures absolute pressure. There is no equalization tube in the cable, but it requires an electronic air-pressure compensation. MJK delivers pump controllers and level transmitters with built-in electronic compensation. The type number of these units all end with 3, i.e. Level Converter type 704-1113.

Mounting

Immerse the pressure transmitter into the liquid. In case of turbulence, it can be immersed in a pipe. The pressure transmitter is fastened either with the enclosed cable bracket or fitted on a tube with 1" RG female thread (if the pressure transmitter is delivered with threaded connection). Removal, cleaning and immersion will be easier if the pressure transmitter is fitted in a pipe.

Example of tube mounting
(inside diameter min. 65 mm)



Electric connection

The pressure transmitters are delivered standard with 12 m cable. (7060/70-1433: 35 m). If the cable needs to be lengthened, normal installation cable can be used. At the connection, ensure that the joint is absolutely waterproof (by potting). When assembling cables to relative pressure transmitters, ensure that no moisture or water get into the equalizing tube. We recommend the use of connection box type 202922 or 202923.

The cable can be lengthened to: $R_L = [U_F - (U_B + 15)]/20$

where: R_L is the resistance in $K\Omega$ of the wires in the cable which is lengthened (do not forget the resistance in both wires!)
 U_F is the supply voltage which is approx. 24 V DC in most PLCs.
 U_B is the voltage drop at the input of a PLC.

Example: A MJK Pump Controller has a voltage supply to the pressure transmitter U_F of approx. 24 VDC. If a loop supplied indicator like MJK type 531 with a voltage drop of approx. 3,5V is connected to the circuit, 5,5V will still be available in order to compensate for voltage drop in the cable. After calculation this gives a approx. 275 ohm. In a cable with a wire gauge of 1,5 mm² the resistance is approx. 12 ohm/1000m.

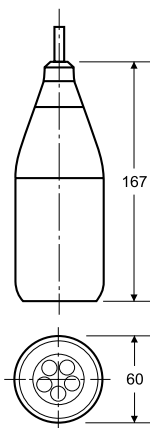
The signal is not noise sensitive but we recommend carefulness close to cables with high current or recommend the use of shielded cable when there is a risk of electrical disturbance.

The wires are connected as follows:

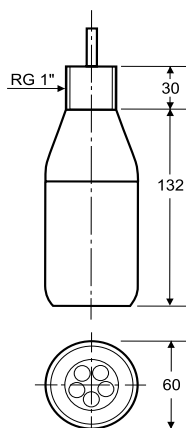
Red wire (no. 1): + 10 ... 30 V DC
 Brown wire (no. 2): -
 Black wire (no. 3): Screen

Do not extend the programming conductors. It may cause changes in the programming of the pressure transmitter.

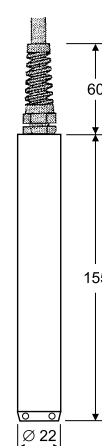
Pressure transmitters
types 7050-60



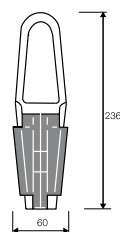
Pressure transmitters
types 7050-60, 1" ISO



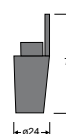
Pressure transmitter
type 7070



Cable fitting
for types 7050-60



Cable fitting
for type 7070



Maintenance

When the pressure transmitter is constantly immersed, no further maintenance is required. In installations with very dirty water with a tendency to sedimentation or drying out, cleaning may be necessary. Be careful with the fragile diaphragms - they cannot stand cleaning with sharp or pointed objects, only use a soft brush. A 10% hydrochloric acid solution might be used as degreasing agent.

Part numbers:

P/n:	Type no.:	Measuring range:
202912	7050-1413	0 - 10 m (absolute pressure)
202930	7060-1413	0 - 3 m
202930	7060-1443	0 - 5 m
202935	7060-1423	0 - 10 m
202940	7060-1433	0 - 30 m
202950	7070-1413	0 - 3 m
202955	7070-1423	0 - 10 m
202960	7070-1433	0 - 30 m

Pressure transmitters can on request be delivered with special measuring range from 100 cm to 200 m.

Options:

202915	Spec. material 7050/60
202916	Spec. material 7070
202917	Platinum diaphragm 7050/60
202918	Copper ring 7050/60
202920	Non-standard cable lengths
202921	Threaded connection 7050/60
202925	Non-standard measuring range 7050/60/70

Accessories and spare parts:

202922	Connection box for cable with pressure equalisation hose
200126	Display 531 insert for 202922, 4-20 mA loop, IP 65
560915	Cable fitting for 7050/60
560916	Cable fitting for 7070
691010	Cable for 7050
691014	Cable for 7060
691018	Cable for 7070