KM41 or KM45 PRESSURE TRANSMITTER INSTALLATION INSTRUCTIONS

ASHCROFT®

⚠ WARNING! READ ⚠ BEFORE INSTALLATION

1. GENERAL:
A failure resulting in **injury** or **damage** may be caused by excessive overpressure, excessive vibration or pressure pulsation, excessive instrument temperature, corrosion of the pressure containing parts, or other misuse. Consult Ashcroft Inc., Stratford, Connecticut, USA before installing if there are any questions or concerns.

2. OVERPRESSURE:
Pressure spikes in excess of the rated overpressure capability of the transducer may cause **irreversible electrical and/or mechanical damage** to the pressure measuring and containing elements.
Fluid hammer and surges can destroy any pressure transducer and must always be avoided. A pressure snubber should be installed to eliminate the damaging hammer effects. Fluid hammer occurs when a liquid flow is suddenly stopped, as with quick closing solenoid valves. Surges occur when flow is suddenly begun, as when a pump is turned on at full power or a valve is quickly opened.
Liquid surges are particularly damaging to pressure transducers if the pipe is originally empty. To avoid damaging surges, fluid lines should remain full (if possible), pumps should be brought up to power slowly, and valves opened slowly. To avoid damage from both fluid hammer and surges, a surge chamber should be installed.

Symptoms of fluid hammer and surge's damaging effects:

- Pressure transducer exhibits an output at zero pressure (large zero offset).
- Pressure transducer output remains constant regardless of pressure
- In severe cases, there will be no output.

FREEZING:
Prohibit freezing of media in pressure port. Unit should be drained (mount in vertical position with electrical termination upward) to prevent possible overpressure damage from frozen media.

3. STATIC ELECTRICAL CHARGES:
Any electrical device may be susceptible to damage when exposed to static electrical charges. To avoid damage to the transducer observe the following:

- Ground the body of the transducer BEFORE making any electrical connections.
- When disconnecting, remove the ground LAST!

Note: The shield and drain wire in the cable (if supplied) is not connected to the transducer body, and is not a suitable ground.

DESCRIPTION
The Ashcroft Model KM41 or KM45 pressure transmitter is a high performance instrument intended for use in applications where the process media is compatible with the 17-4PH (KM41) or 316L (KM45) stainless steel sensor material and process connection.

MECHANICAL INSTALLATION
Environmental
The KM41 or KM45 transmitter can be stored and used within the temperature limits of -40°C to 125°C (-40°F to 257°F). IP67 (ingress protection) rating applies for most configurations, install accordingly.

Mounting
The KM41 or KM45 transmitter requires no special mounting hardware and can be mounted in any orientation with negligible position error. Although the units can withstand considerable vibration without damage or significant output effects, it is always good practice to mount the transducer where there is minimum vibration. For units with NPT type pressure fittings apply sealing tape or an equivalent sealant to the threads before installing. When installing or removing the unit apply a wrench to the hex wrench flats, located above the pressure fitting. **DO NOT** tighten by using a pipe wrench on the housing. A 22mm (7/8") wrench can be used on the wrench flats of the hex (as per DIN 894 or similar) with a tightening torque of ~25Nm (20 ft lbs). For KM41 or KM45 models with detachable electrical connectors a 6 point deep socket can also be used to install the unit.

Electro-Magnetic Interference
The circuitry of the KM41 or KM45 transmiter is designed to minimize the effect of electromagnetic and radio frequency interference. To minimize susceptibility to noise, avoid running the termination wiring in a conduit which contains high current AC power cables. Where possible avoid running the termination wiring near inductive equipment.

Field Adjustments
The KM41 or KM45 transmiter is precisely calibrated and temperature compensated at the factory to ensure long and stable performance. There are no field accessible adjustments on the KM41 or KM45 transmiter.

ELECTRICAL INSTALLATION
Please refer to the reverse of this page for power supply requirements and for appropriate wiring protocol based on the particular output signal and electrical termination features of the unit being installed.

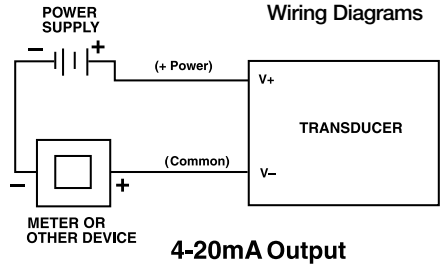
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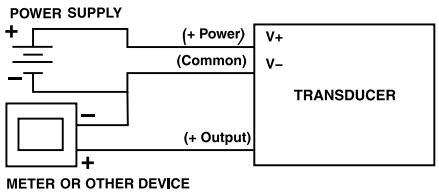
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KM41 OR KM45 ELECTRICAL INSTALLATION

Wiring Diagrams



4-20mA Output



3-Wire Voltage Output

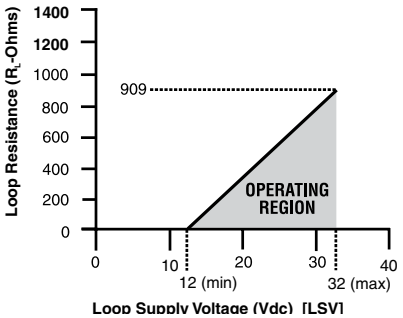
Power Supply Requirements:

Output Signal	Min Supply	Max Supply
Ratiometric* (0.5V to 4.5V)	4.5Vdc	5.5Vdc
0-10V	12Vdc	32Vdc
0-5V, 1-5V, 1-6V	8Vdc	32Vdc
4-20mA**	12Vdc	32Vdc

*0.5Vdc-4.5Vdc output is ratiometric to the nominal 5Vdc supply

**For transmitters with 4-20mA output signal, the minimum voltage at the terminals is 12Vdc. However, the minimum supply voltage should be calculated using the adjacent graph and formula.

Power Supply Voltage vs Loop Resistance
(4-20mA ONLY)



To determine minimum loop supply voltage:

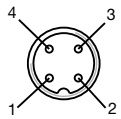
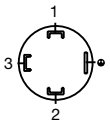
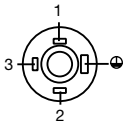
$LSV(min)=9(V)+[.022(A)*R_L]$

Where:

LSV= Loop Supply Voltage (Vdc)
$R_L = R_S + R_W$ (ohms)
R_L = Loop Resistance (ohms)
R_S = Sense Resistance (ohms) [Measuring Instrument]
R_W = Wiring Resistance (ohms)

KM41 OR KM45 ELECTRICAL TERMINATIONS AND WIRING

Connections *

Plug M12x1	Cable port	DIN EN 175301-803-A	DIN EN 175301-803-C
			
Power 1: UB+ 2: nc 3: out 4: nc	Power red : UB+ black: out white: nc	Power 1: UB+ 2: out 3: nc	Power 1: UB+ 2: out 3: nc
Voltage 1: UB+ 2: nc 3: UB- 4: out	Voltage red: UB+ black: UB- white: out	Voltage 1: UB+ 2: UB- 3: out	Voltage 1: UB+ 2: UB- 3: out

nc = not connected

The electrical connection must be made in accordance with the respective connectiondiagram unless otherwise agreed upon.

* Custom-made adjustments are possible.

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