PCC420 series installation guide

4-20 mA series transducers

Loop Powered Sensors (LPS®)

Caution: This guide should be read carefully before installation

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Safety section

PCC420-series vibration transducers can be safely installed when the instructions in this manual are carefully followed. This section summarizes the safety considerations. Reminders in the form described below will appear in the detailed instructions to assure operator awareness of these safety considerations. Qualified personnel should install the PCC420-series vibration transducers only after becoming thoroughly familiar with this manual.

WARNING: This symbol is used in the instruction manual where the safety of the operator must be considered. The instruction manual should be consulted and read carefully.

CAUTION: This symbol is used when caution is needed to prevent damage to equipment. It is used where careful attention to certain procedures described in the instruction manual is needed. This symbol is also used to emphasize procedures other than normal operating procedures.

Safety summary

1. The PCC420-series vibration transducers covered by this installation guide do not require any special precautions, protective devices or equipment.
2. Because the PCC420-series vibration transducers are designed to be mounted on rotating industrial equipment, personnel involved with the installation of PCC420-series vibration transducers should be familiar with all plant safety requirements before beginning installation.
3. The PCC420-series vibration transducers are hermetically sealed.
4. There are no user serviceable parts within the PCC420-series vibration transducers.
5. Use common sense and avoid haste during the installation of the PCC420-series vibration transducers!

Contents

1.0 Introduction

This guide is designed to assist the user in the physical installation and wiring of the Wilcoxon Sensing Technologies PCC420 series of vibration transducers. It is presumed that the user has already selected the mounting location and model of PCC420-series transducer to be used. Wilcoxon Sensing Technologies provides assistance for the selection, location, and use of these transducers separately.

2.0 Applicable models

This installation guide is intended for use with the PCC420-series units with either velocity output (PCC420Vx-yy-C) or acceleration output (PCC420Ax-yy-C).

The velocity or acceleration units are two-wire devices. The model number designations have a root, PCC420V or PCC420A, designating the basic 4-20 mA output as proportional to either velocity or acceleration. The PCC420V-series are velocity 4-20 mA output. The PCC420A-series are acceleration 4-20 mA output. The “x-yy-C” portion of the model number designates the type of signal processing, the full-scale range and the connector type. The signal types are VR or AR for “root-mean square (rms)” signal output and VP or AP for “peak” signal output. The tables below summarize the models and full-scale ranges available. The “-C” options are “-R6” for a 2-pin MIL-C-5015 connector style, “-M12” for a 4-pin M12 connector style, and “-F-IM-J9T2A” or “-F-IM-J9T2A” for injection molded integral cable.

Table 1 – PCC420 model numbers for 2 wire output

PCC420VR-yy-C	4-20 mA velocity, rms
PCC420VP-yy-C	4-20 mA velocity, peak
PCC420AR-yy-C	4-20 mA acceleration, rms
PCC420AP-yy-C	4-20 mA acceleration, peak

-yy full scale	Velocity	Acceleration
-05	0.5 ips	5 g
-10	1.0 ips	10 g
-20	2.0 ips	20 g
-30	3.0 ips	N/A
-50	5.0 ips	50 g

3.0 Mounting

When using vibration transducers to measure vibration, the transducer must have direct contact with the machine surface. The transducer should be mounted in a location that minimizes the vibration transmission route through the machine. Avoid mounting the transducer on thin sections or vibration free areas (antinodes).

SF6 stud

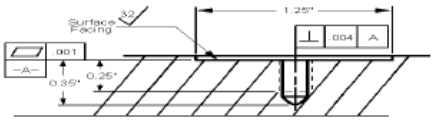
Direct stud mounting, epoxy and cementing pads are used for permanent installations. The transducer can be directly mounted by tapping a hole into the structure and attaching the transducer with a threaded stud. Cementing pads can be epoxied in place of the tapped hole; the transducer is then mounted to the pad. In some cases, the transducer can be mounted directly to the machine using epoxy.

Cementing pads approach the capabilities of stud mounts when used properly. The following are recommended permanent mounting procedures. Alternative procedures should be evaluated with respect to frequency response, grounding, and installation requirements. Adhesive selection is critical for long-term reliability; please consult Wilcoxon Sensing Technologies before other procedures and materials are used.

SF8 cementing pad

3.1 Threaded Stud

Stud mounting requires a tapped hole drilled directly into the structure. A threaded stud provides electrical and mechanical connection between the transducer and machine. The transducer requires a flat spot-faced surface with a perpendicular tapped hole. The spot face must be 1.1 times larger than the diameter of the transducer housing to ensure flush mounting. Burrs between the transducer and the machine must be eliminated. The centerline of the tapped hole should be perpendicular within 1° of the mounting surface to ensure no gaps are present between the base of the transducer and the structure. The pilot hole and spot face can be machined in one step using the Wilcoxon ST101 Spot-Face tool. The ST101 will provide a shallow counterbore and drill the pilot hole perpendicular to the face in one operation. The drill supplied with the ST101 is sized for a 1/4-28 tap. Additional guidance on mounting procedures and techniques can be obtained from Wilcoxon Sensing Technologies Technical note 21, Mounting considerations. It is available for download from the Wilcoxon web site at www.wilcoxon.com.



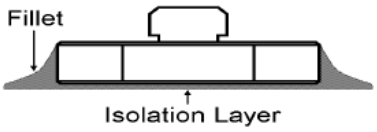
Surface preparation

ST 101

The PCC420-series transducers should be torqued to 24 inch-pounds.

3.2 Cementing pad

Cementing pads eliminate tapping into the structure, but provide high frequency capability approaching stud mounts. The PCC420-series transducers should be mounted using a Wilcoxon SF8 cementing pad. The flat side is bonded to the machine with an appropriate adhesive. The opposite side contains a 1/4-28 stud for mounting the transmitter. Additional guidance on cementing pad mounting procedures can be obtained from Wilcoxon's Technical note 21, Mounting Considerations. It is available for download from the Wilcoxon Sensing Technologies web site at www.wilcoxon.com.



The PCC420-series transducers should be torqued to 24 inch-pounds.

4.0 Cabling

Wilcoxon Sensing Technologies has two-conductor, shielded, twisted pair wire cabling available with connectors already installed for use with the PCC420-series vibration transducers. Isolated connectors are recommended to eliminate the possibility of ground loops when wiring to 4-20 mA loop inputs. The cables listed below all use isolated connections for the shield at the transducer end of the cable so that the shield will not be grounded at the transducer.

J9F cable

J9T2A cable

Stock cable model numbers for use with the PCC420-series transducers are:

Table 3: Standard cable lengths for stock cables

Length	Cable	Use with	Feature
5 m / 16 ft	R6W-0-J9T2A-16	2-wire PCC420	IP67 connector, Teflon, braided shield
	R6W-0-J9F-16	2-wire PCC420	IP67 connector, Teflon, braided shield
	R6QI-0-J9T2A-16	2-wire PCC420	IP68 connector, Teflon, braided shield

Length	Cable	Use with	Feature
10 m / 32 ft	R6W-0-J9T2A-32	2-wire PCC420	IP67 connector, Teflon, braided shield
	R6W-0-J9F-32	2-wire PCC420	IP67 connector, Teflon, foil shield
	R6QI-0-J9T2A-32	2-wire PCC420	IP68 connector, Teflon, braided shield

Cables can be manufactured in other lengths for an additional charge.

Connection

The PCC420 Series Transducers are loop powered devices. There is no additional signal conditioning equipment required for the transducers to function. The tables below show the cable conductor wire colors for the J9T2A and J9F cable assemblies listed in the previous section. The shield of the cable does not make electrical contact with the case of the PCC420 series transducer. For other cable configurations, contact your customer sales representative at 301-330-8811.

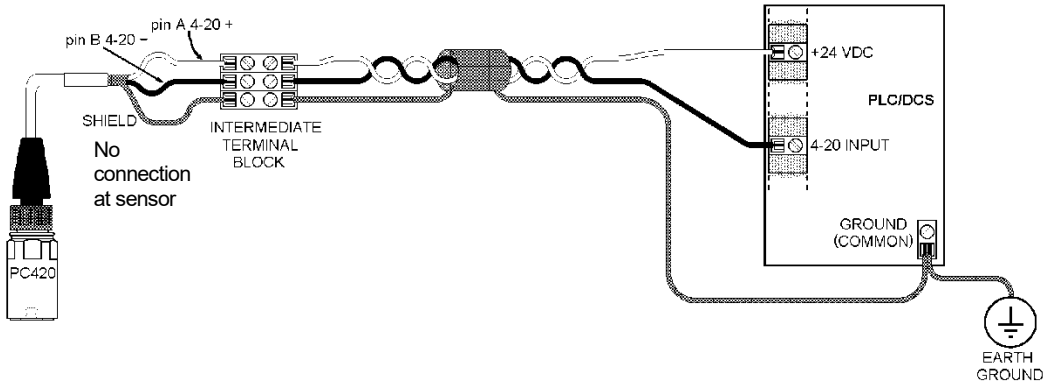
R6Q connector

R6W connector

Table 4: Output pin and cable conductor color designations for two wire PCC420 series transducers

PCC420xx-yy pin	Function	J9T2A	J9F
A	Loop power +	White	Red
B	Loop return -	Black	Black

Figure 1: Typical two wire installation wiring



CAUTION: The common for the dynamic output is also the return signal for the 4-20 mA loop wiring. Connecting this pin to 'ground' will usually short out the 4-20 mA loop return resulting in a loss of the 4-20 mA signal. The dynamic output is designed to be used by portable data collectors where no direct connection to ground exists. It can also be used by on-line systems when their signal input is galvanically isolated from ground.

5.0 Technical assistance

5.1 Technical assistance
For technical assistance, please contact Wilcoxon Sensing Technologies at 301-330-8811 or email info@wilcoxon.com.

5.2 Customer service
For all customer service inquiries, please call 301-330-8811 or email info@wilcoxon.com.