V★S DRIVES

INSTRUCTION SHEET D2-3248
Pressure-to-Electrical Transducer Kit
Model 1PE4100
For Use With GP2000 50–100 HP and VTAC V 60–100 HP A-C V★S® Drives

DANGER

ONLY QUALIFIED ELECTRICAL PERSONNEL FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF THIS EQUIPMENT AND THE HAZARDS INVOLVED SHOULD INSTALL, ADJUST, OPERATE, AND/OR SERVICE THIS EQUIPMENT. READ AND UNDERSTAND THIS MANUAL IN ITS ENTIRETY BEFORE PROCEEDING. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN SEVERE BODILY INJURY OR LOSS OF LIFE.

DESCRIPTION

The products described in this instruction sheet are manufactured and/or distributed by Reliance® Electric Industrial Company.

The Pressure-to-Electrical Transducer Kit provides control of the speed reference of the A-C V★S Drive Controller by using a pressure signal from the Kit of 3 to 15 PSIG.

The basic component is a pressure transducer assembly. The transducer assembly is used as a voltage source for the controller automatic mode speed reference. Between 0 and 3 PSIG, it has a 0 volt D-C output. The output increases to the voltage setting of the controller Max Hz (Function 4) setting as the pressure is increased to 15 PSIG.

The Current/Voltage Reference Isolator PC Board (provided with the kit) mounts in a specific mounting area on the carrier assembly below the Control Signal Buffer PC Board. The Pressure-to-Electrical Transducer receives 120 volts from the Control Signal Buffer PC Board, and the output of the transducer goes back into the Control Signal Buffer PC Board. The actual pressure sensor unit mounts on the left panel of the cabinet and is connected to the Current/Voltage Reference Isolator PC Board by harnessing. See Figure 1 for mounting location.

RECEIVE AND ACCEPT THE SHIPMENT

Reliance Electric's terms of sale in all instances are F.O.B. point of origin. The user is responsible for thoroughly inspecting the equipment before accepting shipment from the transportation company.

If all the items called for on the bill of lading or on the express receipt are not included or if any items are obviously damaged, do not accept the shipment until the freight or express agent makes an appropriate notation on your freight bill or express receipt. If any concealed loss or damage is discovered later, notify your freight or express agent within 15 days of receipt and request that he make an inspection of the shipment. Keep the entire shipment intact in its original shipping container.

The user is responsible for making claim against the carrier for any shortage or damage occurring in transit. Claims for loss or damage in shipment must not be deducted from the Reliance Electric invoice, nor should payment of the invoice be withheld while awaiting adjustment of such claims since the carrier guarantees safe delivery.

Upon receiving, check the contents of the kit with the contents as listed in Table 1. Store this equipment in a clean and dry area until ready to use. The ambient temperature of the storage area must not exceed 65°C (149°F) or go below −40°C (−40°F) within a relative humidity range of 5 to 95% without condensation.

FILE A RETURN REQUEST

1. To return equipment, send a written request to Reliance Electric within ten days of receipt.
2. Do not return equipment without a numbered Equipment Return Authorization (ERA) from Reliance Electric.
3. Reliance Electric reserves the right to inspect the equipment on site.

Table 1. Complete Parts List

Description	Quantity	Part Number
Transducer Assembly	1	608813-112Y
Guard Bracket	1	612182-30A
M5 X 40 HHCS	2	419062-4HHQ
M5 Flat Washer	2	419064-1SH
M5 Nyloc Nut	2	419063-100SH
Cur/Voltage Ref. Insulator	1	608887-15A
Cur/Voltage Ref. Isolator PC Board	1	0-55325-28
M4 x 13 CCWS	4	419062-1PGJ
Wire Harness (RED/WHT)	1	608813-112Z
Wire Harness (YEL/WHT)	1	608813-112RR
Ty-Rap	2	69306-3D

RELIANCE ELECTRIC

INSTALLATION

Note: All components of the Pressure-to-Electrical Transducer Kit must be mounted in a clean and dry environment. Maximum ambient temperature must not exceed 40°C outside the cabinet (55°C inside the cabinet), and the relative humidity must fall within a range of 5 to 95% without condensation.

DANGER

DO NOT INSTALL MODIFICATION KITS WITH POWER APPLIED TO THE UNIT. DISCONNECT AND LOCK OUT INCOMING POWER BEFORE ATTEMPTING SUCH INSTALLATION. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN SEVERE BODILY INJURY OR LOSS OF LIFE.

1. Disconnect all power to the controller before installing this kit.
2. Loosen the two (2) captive screws and open the hinged cabinet door.

DANGER

THE USER IS RESPONSIBLE FOR CONFORMING TO THE NATIONAL ELECTRICAL CODE AND ALL OTHER APPLICABLE LOCAL CODES. WIRING PRACTICES, ENCLOSURES, GROUNDING, DISCONNECTS, AND OVERCURRENT PROTECTION ARE OF PARTICULAR IMPORTANCE. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN SEVERE BODILY INJURY OR LOSS OF LIFE.

2. Locate the three holes on the left side panel of the enclosure where the transducer assembly unit and guard bracket will be mounted.
3. Mount transducer assembly 608813-112Y and guard bracket 612182-30A using the M5 x 40 HHCS screws, M5 flat washers, and M5 Nyloc nuts provided. The transducer plug-in wire harness is already assembled to the unit. Refer to Figure 1 for mounting details.
4. Loosen four (4) captive screws on the hinged regulator carrier, which is mounted to the cabinet door. Open the carrier.
5. Locate the four (4) pin nut holes on the regulator tray below Control Signal Buffer PC Board 0-55325-81. This is where the Current/Voltage Reference Insulator and Current Reference Isolator PC Board will be mounted. Refer to Figure 2 for mounting location.
6. Place Current/Voltage Reference Insulator (part number 606887-15A) beneath the Current/Voltage Reference Isolator PC Board 0-55325-28. Align the holes. Mount both boards to the regulator carrier tray using the four (4) M4 x 13 CCWS screws provided.
7. Follow the wiring diagrams and instructions in the Controller Instruction Manual and/or any other appropriate kit instruction manuals (if other kits are installed) for all wires except those wires detailed in this instruction sheet.
8. Using wire harness 606813-112Z (RED/WHT), connect terminals 3(+) and 4(−) on the Current/Voltage Reference Isolator PC Board to TB11 terminals 2(−) and 3(−) on the Control Signal Buffer PC Board. **Note the polarity of these terminals and verify that it is correct.** Refer to Figure 2 for wiring detail.
9. Using wire harness 606813-112RR (YEL/WHT), connect terminals 5 and 6 on the Current/Voltage Reference Isolator PC Board to TB14 terminals 3 and 4 on the Control Signal Buffer PC Board. **Note that this connection is 115 VAC power wiring.** Refer to Figure 2 for wiring detail.
10. Connect the pressure sensor unit (transducer assembly) to the Current/Voltage Reference Isolator PC Board. The plug-in wire harness is already connected to the transducer. Refer to Figure 2 for wiring detail.
11. Secure the harness from the transducer assembly unit to the Current/Voltage Isolator PC Board using the two (2) Ty-Rap fasteners provided. Refer to Figure 2 for location.
12. Proceed to the section "Complete the Pneumatic Installation."

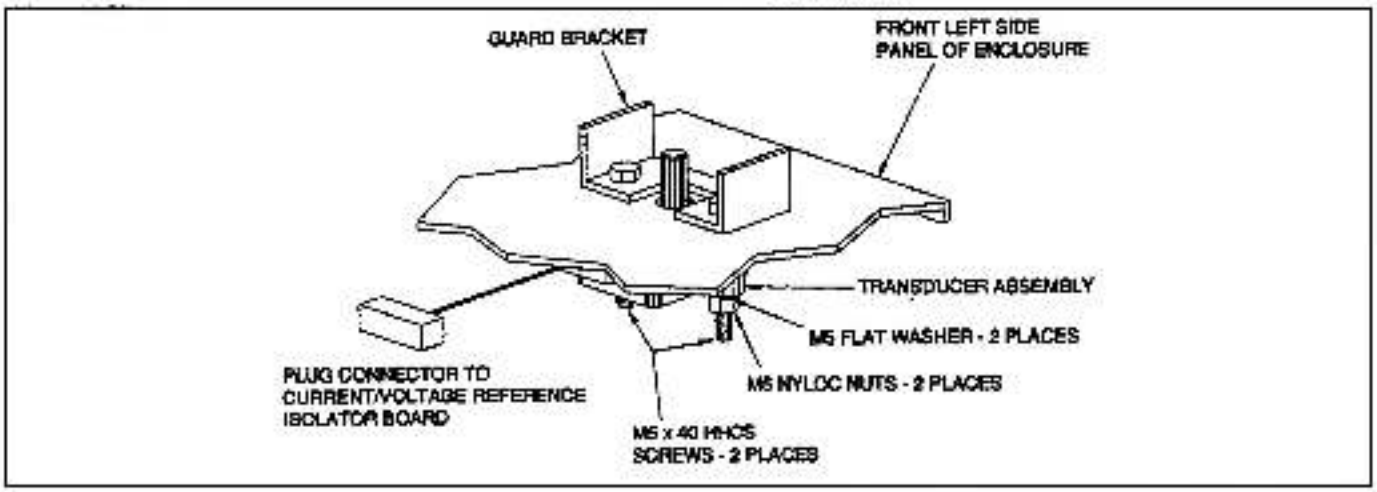

Figure 1. Pressure-to-Electrical Transducer Assembly Component Mounting.

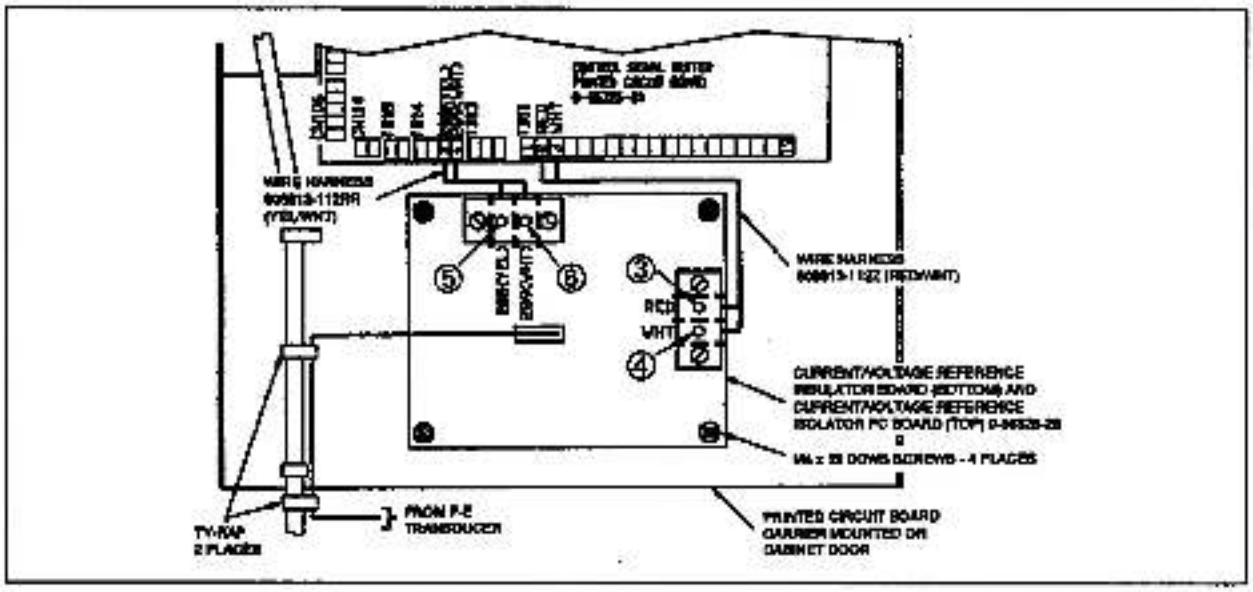

Figure 2. Current/Voltage Reference Isolator PC Board Mounting Location and Connection Diagram.

COMPLETE THE PNEUMATIC INSTALLATION

1. Make sure the transmitting instrument provides clean, dry, oil-free instrument air. Refer to Instrument Society of America's "Quality Standard for Instrument Air" (ISA- S7-3).
2. Install 1/4" OD tubing (not supplied) from the transmitting instrument to the pressure transducer.
3. Fit the tube over the fitting.
4. Leak test all fittings and tube connections in the input line to the pressure transducer. Repair any leaks.

CAUTION: The maximum pressure applied to this transducer must not exceed 30 PSIG. Failure to observe this precaution could result in damage to, or destruction of, this equipment.

ADJUST THE PRESSURE-TO-ELECTRICAL TRANSDUCER

DANGER

ADJUSTMENTS ARE MADE WITH THE POWER ON. EXERCISE EXTREME CARE AS HAZARDOUS VOLTAGE EXISTS. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN SEVERE BODILY INJURY OR LOSS OF LIFE.

Note: To properly adjust the controller performance for automatic operation from 3 to 15 PSIG, a pressure regulator with good resolution from 0 to 15 PSIG is required.

CAUTION: Do not use an ohmmeter to check the transducer. Failure to observe this precaution could result in damage to, or destruction of, the transducer.

Note: For automatic only operation, proceed to Step 7.

DANGER

THIS EQUIPMENT IS AT LINE VOLTAGE WHEN A-C POWER IS CONNECTED TO THE CONTROLLER. DISCONNECT ALL UNGROUNDED CONDUCTORS OF THE A-C POWER LINE FROM THE CONTROLLER. AFTER POWER IS REMOVED, VERIFY WITH A VOLTMETER AT TERMINALS 147(+) AND 45(−) THAT THE D-C BUS CAPACITOR(S) IS DISCHARGED BEFORE TOUCHING ANY INTERNAL PARTS OF THE CONTROLLER. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN SEVERE BODILY INJURY OR LOSS OF LIFE.

1. With power OFF, connect a voltmeter on a 12 VDC or greater scale to terminals 3 (+) and 4 (COM) on the Current/Voltage Reference Isolator PC Board. Refer to Figure 2 for wiring detail.
2. The controller does not need to be running. If an automatic start/stop contact is being used, make sure that it remains open.
3. Turn main power to the controller ON.
4. In the automatic mode, establish 15 PSIG on the transducer input. Measure and record the voltage. Adjust the voltage to equal 10.0 volts with the gain pot on the Current/Voltage Reference Isolator PC Board.
5. Reduce pressure to 3 PSIG. Voltage should equal 0.0 volts. If it does not, adjust to 0.0 volts with the bias pot on the Current/Voltage Reference Isolator PC Board.
6. Re-establish 15 PSIG on the transducer input. Accurately adjust the voltage to equal 10.0 volts with the gain pot on the Current/Voltage Reference Isolator PC Board.
7. Turn main power to the controller OFF, then disconnect the voltmeter.
8. Proceed to "Adjust the Controller Functions" in the main controller manual supplied with the controller.

Make all of the adjustments in the automatic mode. Disregard all jumpers on the controller when using this kit. Establish 3 PSIG (or system minimum) on the transducer. Measure the output of the Current/Voltage Reference Isolator PC Board between terminals 3 and 4. The output voltage should be 0 volts. If it is not, adjust the bias pot to obtain 0 volts.

9. Establish 15 PSIG (or system maximum).

   Note: System maximum cannot exceed 20 PSIG.

   Measure the output of the Current/Voltage Reference Isolator PC Board between terminals 3 and 4. Output voltage should be 10 volts. If it is not, adjust the gain pot to obtain 10 volts.

10. Repeat Step 8 to obtain 0 volts between terminals 3 and 4 on the Current/Voltage Reference Isolator PC Board at minimum pressure reference.

11. If bias adjustments are made, repeat Step 9 to obtain 10 volts between terminals 3 and 4 on the Current/Voltage Reference Isolator PC Board at maximum pressure reference.

12. Close the cabinet door and tighten the captive screws that secure it.

13. Turn power ON. In the automatic mode, verify that 3 PSIG (or system minimum) causes the controller to run at minimum speed and 15 PSIG (or system maximum) causes the controller to run at maximum speed.