# Honeywell

# Industrial Interface and UART Board

**For PX940**

## Installation Instructions

# Introduction

This guide describes the Industrial Interface and UART Board Kit for PX940 Series printers.

## Description

The installation instructions describe how to physically install the interface board in a printer and how to configure the serial communication port.

## Printer Firmware

The printer must be fitted with Honeywell Fingerprint v8.60 (or later).

*Note:* *This kit does not work with IPL.*

In Honeywell Fingerprint, the serial ports are addressed as **uart2** (communication channel#2).

## Installation Kit

The Industrial Interface and UART Board Kit includes:

- One Industrial Interface and UART Board
- One USB cable
- One spacer screw
- One 3X8mm Torx screw
- Two 4X8mm Torx screws
- Five straps
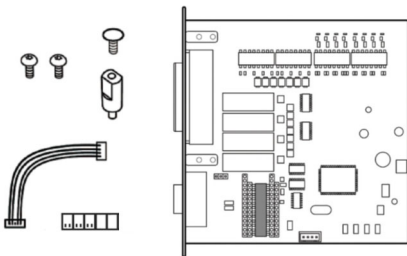


The only tools needed for installation are #T10 and #T20 Torx screwdrivers.

## Installing the UART and Industrial Interface

**Warning: The installation described in this section must only be performed by an authorized service technician. Honeywell assumes no responsibility for personal injury or damage to the equipment if the installation is performed by an unauthorized person.**

**Follow ESD Procedures**

**Caution: Follow standard ESD guidelines to avoid damaging the equipment.**

**Caution: Before you begin, turn off the printer and disconnect the power cord and communication cables.**

Follow the procedure to physically install UART and Industrial Interface in the printer.

1. Turn off the printer and disconnect the power cord.
2. Open the media cover.
3. Use the T20 screwdriver to remove the two screws that secure the electronics cover to the inside of the printer base.
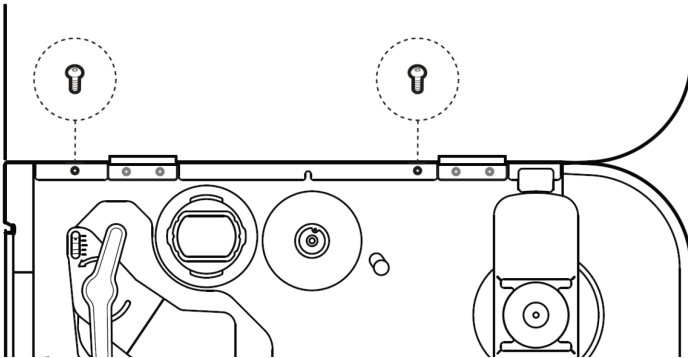
4. Close the media cover.
5. Remove the two screws located on the outside of the electronics cover.

6.  Remove the electronics cover.
7.  On the back of the printer, remove the two screws that secure the cover plate to the printer, and remove the cover plate.
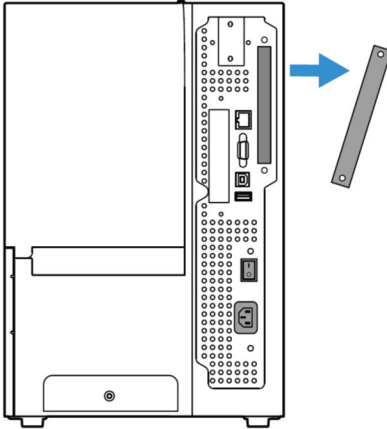


8.  Use the T10 screwdriver to remove the screw located on the top of the printer main board and attach the space saver screw.
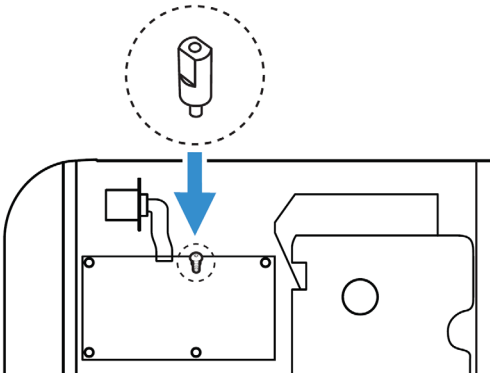
9. Insert the Industrial Interface and UART Board into the printer and secure the board assembly to the printer with two screws.
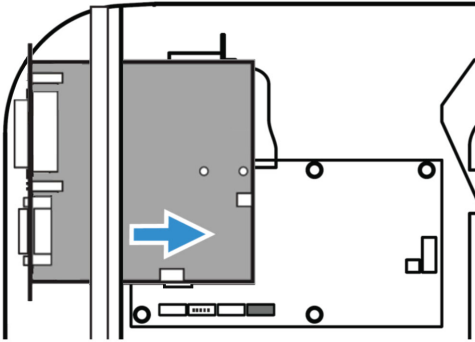


10. Secure the optional board assembly to the spacer with a Torx screw.
11. Insert the USB cable into the J37 connector on the printer main board. Then insert the other end into the J13 connector on the Industrial Interface and UART Board.
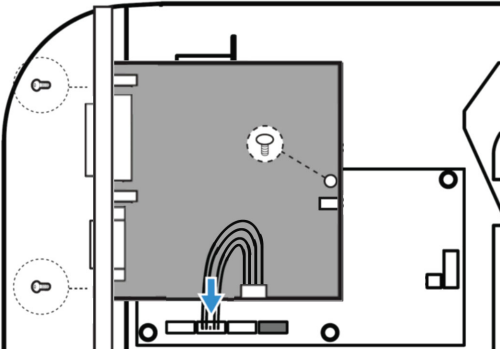


12. Fit straps and circuits on the board to configure the type of serial communication you want to use. For more details, see Serial Interface.
13. Put the cover back on and secure it with the 4 screws.
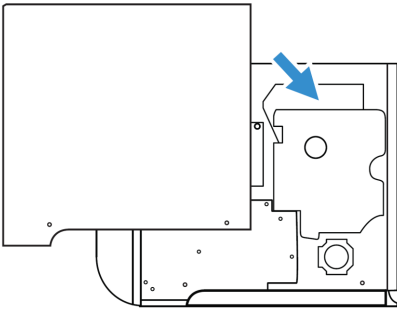
## Serial Interface

This section describes how to modify the interface board for RS-232 (standard), RS-422 isolated/full duplex, or RS-485 isolated/half duplex on the "uart2:" port and explains the configuration of the interface connector.

One of the circuits shown below will be needed for the serial communication you want to use.

| Serial Communication | Honeywell Part Number | Integrated Circuit | Remark |
|---|---|---|---|
| RS-232 Non-isolated | 360-018-001 | Maxim 238 | Already mounted on the board |
| RS-422 isolated full duplex | 360-027-001 | Maxim 1490 full duplex RS485/422 Intfc, 250Kbps RoHS | Not included in the kit, needs to be purchased |
| RS-485 isolated half duplex | 360-026-001 | Maxim 1480 half duplex RS485/422 Intfc, 250KBPS RoHS | Not included in the kit, needs to be purchased |

⚠ **Caution:** **When fitting driver circuit and straps before installing the interface board, make sure the circuit is not fitted upside down. Protect the board and circuits from electrostatic charges.**

## RS232 Non-isolated (standard)
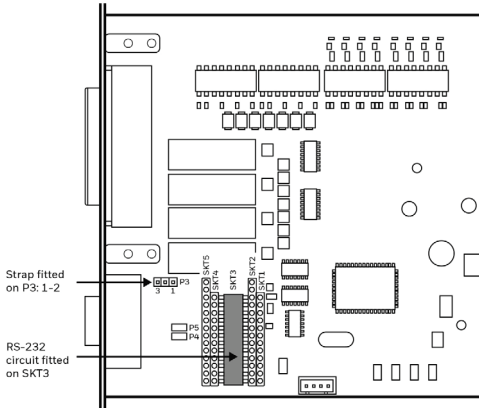


**Connector Configuration (RS-232 on "uart2")**

| Pin of DB9 | Signal Name | Description |
|---|---|---|
| 1 | +5VDC | External +5VDC max 600 mA (automatic switch off at overload, short-circuit protected) |
| 2 | TXD | Transmit data |
| 3 | RXD | Receive data |
| 4 | DSR | Data set ready |
| 5 | GND | Ground |
| 6 | DTR | Data terminal ready |
| 7 | CTS | Clear to send |
| 8 | RTS | Request to send |
| 9 | – | |

**RS-232 socket**
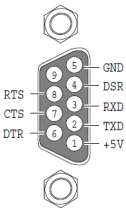
## RS-422 Isolated, Full Duplex (reconfiguration required)

**Note:** *The RS-422 circuit is available as a spare part*

Strap fitted
on P3: 1-2,
if external
+5VDC is
required

Straps fitted
on P4 & P5

RS-422
circuit fitted
on
SKT1&SKT4
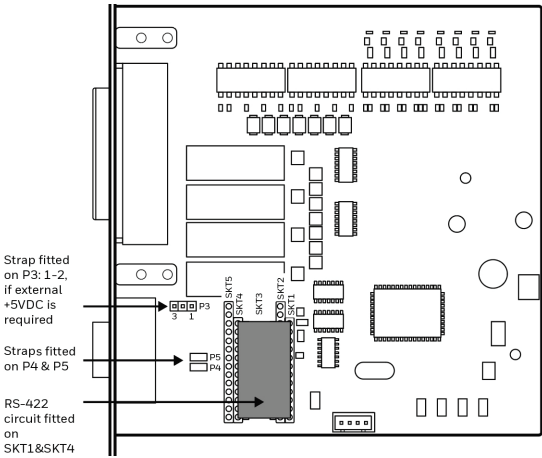
## Connector Configuration (RS-422 on "uart2")

| Pin of DB9 | Signal Name | Description |
|---|---|---|
| 1 | +5VDC | External +5VDC max 600 mA (automatic switch off at overload, short–circuit protected) provided strap is fitted on P3: 2-3 which spoils the galvanic isolation |
| 2 | +TXD | +Transmit data |
| 3 | +RXD | +Receive data |
| 4 | – | |
| 5 | GNDE | Ground |
| 6 | – | |
| 7 | –RXD | –Receive data |
| 8 | –TXD | –Transmit data |
| 9 | – | |

## RS-422 socket

-TXD
-RXD

GNDE
+RXD
+TXD
+5V
if GND strap
fitted
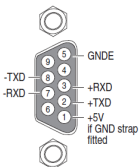
## RS-485 Isolated, Half Duplex (reconfiguration required)

*Note:* *The RS-485 circuit is available as a spare part.*



Strap fitted on P3: 1–2, if external +5VDC is required

Straps fitted on P2 & P5

RS-485 circuit fitted on SKT2&SKT5

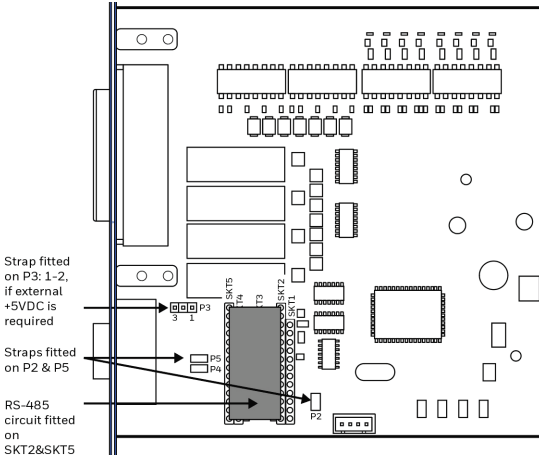### Connector Configuration (RS-485 on "uart2")

| Pin of DB9 | Signal Name | Description |
|---|---|---|
| 1 | +5VDC | External +5VDC max 600 mA (automatic switch off at overload, short–circuit protected) provided strap is fitted on P3: 2-3 which spoils the galvanic isolation |
| 2 | +DATA | |
| 3 | – | |
| 4 | – | |
| 5 | GNDE | Ground |
| 6 | – | |
| 7 | – | |
| 8 | –DATA | |
| 9 | – | |

**RS-485 socket**



**Note:** *The increased use of LAN networks has made the RS-485 interface somewhat obsolete, because RS-485 requires a special communication protocol and a dedicated wiring system limited to 1,200 m (4,000 ft). We only recommend RS-485 for existing applications and advice the customer to consider a LAN network solution for new applications.*

## Industrial Interface

The Industrial Interface, provides 8 digital IN ports with optocouplers, 8 digital OUT ports with optocouplers, and 4 OUT ports with relays.

The industrial interface has no straps or circuits to be fitted or removed. All signals are available on a DB-44pin socket and the various ports are controlled by the Honeywell Fingerprint instructions PORTIN and PORTOUT ON/OFF.

For more information, see the Honeywell Fingerprint Command Reference Manual at www.honeywellaidc.com.

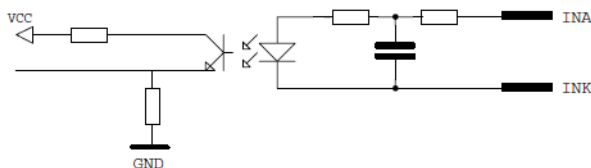### Digital Opto In

The status of the digital IN ports can be read using the PORTIN functions. If a current is led through the optocoupler of the port, PORTIN returns the value -1 (true) or value 0 (false).

| Signal | Description | Min | Typical | Max |
|--------|-------------|-----|---------|-----|
| Vin (High) | Input voltage high | 10V | 24V | 40V |
| Vin (Low) | Input voltage low | -1V | 0V | 1V |

**Connector Configuration**

| Pin of DSUB 44 | Signal Name | Description | Fingerprint Ref. No. |
|---|---|---|---|
| 10 | IN1A | Anode Opto In Channel 1+ | 101 |
| 40 | IN1K | Cathode Opto In Channel 1– | |
| 26 | IN2A | Anode Opto In Channel 2+ | 102 |
| 11 | IN2K | Cathode Opto In Channel 2– | |
| 41 | IN3A | Anode Opto In Channel 3+ | 103 |
| 27 | IN3K | Cathode Opto In Channel 3– | |
| 12 | IN4A | Anode Opto In Channel 4+ | 104 |
| 42 | IN4K | Cathode Opto In Channel 4– | |
| 28 | IN5A | Anode Opto In Channel 5+ | 105 |
| 13 | IN5K | Cathode Opto In Channel 5– | |
| 43 | IN6A | Anode Opto In Channel 6+ | 106 |
| 29 | IN6K | Cathode Opto In Channel 6– | |
| 14 | IN7A | Anode Opto In Channel 7+ | 107 |
| 44 | IN7K | Cathode Opto In Channel 7– | |
| 30 | IN8A | Anode Opto In Channel 8+ | 108 |
| 15 | IN8K | Cathode Opto In Channel 8– | |

**Simplified schematics of a digital IN port:**



## Digital Opto Out

The current to each optocoupler of the digital OUT ports can be turned on and off using PORTOUT ON/OFF statements. The status of the ports can be read using PORTIN functions. If a current is led through the optocoupler of the port, PORTIN returns the value –1 (true), else it returns the value 0 (false).

| Signal | Description | Max |
|--------|-------------|-----|
| Vceo | Collector - emitter Breakdown Voltage | 35V |
| Veco | Emitter - collector breakdown voltage | 6V |
| Ic | Collector current (non-saturation) | 30mA |

**Connector Configuration:**

| Pin of DSUB 44 | Signal Name | Description | Fingerprint Ref. No. |
|----------------|-------------|-------------|----------------------|
| 20 | OUT_1C | Collector Opto Out Channel 1 | 221 |
| 5 | OUT_1E | Emitter Opto Out Channel 1 | |
| 35 | OUT_2C | Collector Opto Out Channel 2 | 222 |
| 21 | OUT_2E | Emitter Opto Out Channel 2 | |
| 6 | OUT_3C | Collector Opto Out Channel 3 | 223 |
| 36 | OUT_3E | Emitter Opto Out Channel 3 | |
| 22 | OUT_4C | Collector Opto Out Channel 4 | 224 |
| 7 | OUT_4E | Emitter Opto Out Channel 4 | |
| 37 | OUT_5C | Collector Opto Out Channel 5 | 225 |
| 23 | OUT_5E | Emitter Opto Out Channel 5 | |
| 8 | OUT_6C | Collector Opto Out Channel 6 | 226 |
| 38 | OUT_6E | Emitter Opto Out Channel 6 | |
| 24 | OUT_7C | Collector Opto Out Channel 7 | 227 |
| 9 | OUT_7E | Emitter Opto Out Channel 7 | |
| 39 | OUT_8C | Collector Opto Out Channel 8 | 228 |
| 25 | OUT_8E | Emitter Opto Out Channel 8 | |

Simplified schematics of a digital OUT port:
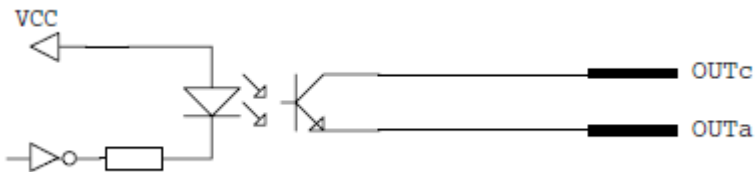
## Relays

The relays of the OUT ports can be individually activated using PORTOUT ON/OFF statements. The status of the ports can be read by means of PORTIN functions. If a relay is activated, PORTIN returns the value –1 (true), else it returns the value 0 (false).

| Signal | Description | Max |
|--------|-------------|-----|
| I | Current | 1A |
| Psw AC | Switching power | 100VA AC |
| Usw AC | Switching voltage | 100V AC |

**Connector Configuration:**

| Pin of DSUB 44 | Signal Name | Description | Fingerprint Ref. No. |
|----------------|-------------|-------------|----------------------|
| 16 | REL1NC | Relay 1 Normally Closed | 201 |
| 1 | REL1NO | Relay 1 Normally Open | |
| 31 | REL1COM | Relay 1 Common | |
| 17 | REL2NC | Relay 2 Normally Closed | 202 |
| 2 | REL2NO | Relay 2 Normally Open | |
| 32 | REL2COM | Relay 2 Common | |
| 18 | REL3NC | Relay 3 Normally Closed | 203 |
| 3 | REL13NO | Relay 3 Normally Open | |
| 33 | REL3COM | Relay 3 Common | |
| 19 | REL4NC | Relay 4 Normally Closed | 204 |
| 4 | REL4NO | Relay 4 Normally Open | |
| 34 | REL4COM | Relay 4 Common | |

Simplified schematics of a relay OUT port:
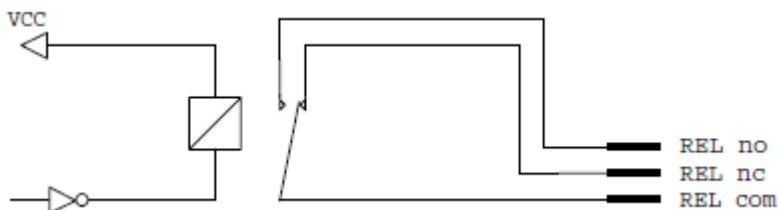


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## Support

To search our knowledge base for a solution or to log into the Technical Support portal and report a problem, go to www.hsmcontactsupport.com.

## User Documentation

For the user guide and other documentation, go to www.honeywellaidc.com.

## Limited Warranty

For warranty information, go to www.honeywellaidc.com and click **Get Resources > Product Warranty**.

## Patents

For patent information, see www.hsmpats.com.

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