Installation Instructions

EasyCoder XP- & F-Series Industrial Interface Board

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Technologies Corporation

A **UNOVA** Company

Description

Application of Use

The Industrial Interface Board is an optional device for Easy-Coder 501 XP, EasyCoder 601 XP, EasyCoder F2, and Easy-Coder F4, that provides the printer with two extra interfaces. The printer must be fitted with the Intermec Fingerprint v7.xx firmware.

Serial Interface

This interface contains one serial communication channel ("uart2:) adapted for one of the following alternatives:
- RS-232
- RS-422 non isolated
- RS-422 isolated
- RS-485

The type of serial interface is selected by fitting various socket-mounted driver circuits and straps.

Industrial Interface

This interface contains 8 IN and 8 OUT digital ports with opto-couplers, plus 4 OUT ports with relays.

The status of the ports can be read by means of PORTIN functions and the OUT ports can be set be means of PORTOUT ON/OFF statements (see Intermec Fingerprint v7.xx Reference Manual.) Thus, it is possible to design Intermec Fingerprint programs which control not only the printer but also various external devices in for example a production line. The digital IN ports can read the status of various sensors and the program can switch control lamps on or off, open or close gates, and start or stop conveyor belts accordingly using the relays and the digital OUT ports.

Installation Kit

The Industrial Interface Board Kit contains:
- One Industrial Interface Board fitted for either RS-232, RS-422 non isolated, or RS-422 isolated on the serial port.
- One cover plate (for EasyCoder XP-series printers only.)
- One flat cable (for EasyCoder F-series printers only.)
- This Installation Instructions booklet.

Installation

EasyCoder 501 XP and 601 XP

- Switch off the power and disconnect the power cord.

  Warning!
  The electronics compartment contains high voltage components and wires. Do not open the electronics compartment before the printer is safely disconnected from any AC supply.

- Open the right-hand door.

- Remove the four #T10 Torx screws along the lower edge of the cover over the electronics compartment.

- Remove the four #T10 Torx screws that hold the upper edge of the same cover.

#T10 Torx screws (4x)
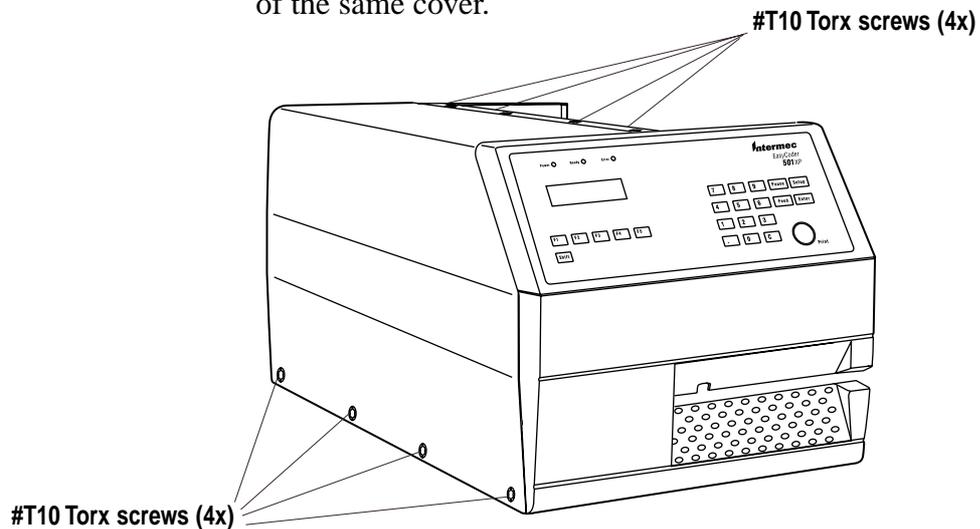
#T10 Torx screws (4x)

- Remove the cover and put it aside on a soft cloth or similar to avoid scratches.

- Remove the four #T10 Torx screws that hold the interface cover plate above the parallel interface connector on the printer's rear plate. Remove the cover plate.

Cover Plate

#T10 Torx screws (4x)
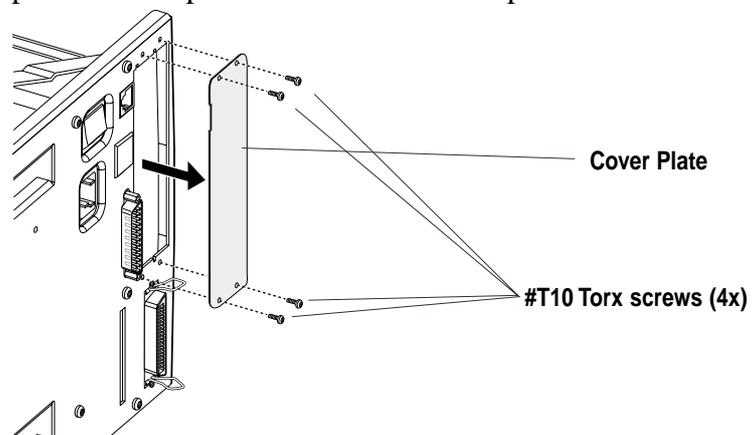
- Save the cover plate for possible later use. Keep the screws.

EasyCoder 501 XP and 601 XP, cont.

- If necessary, fit or remove circuits and straps to adapt the Industrial Interface Board for the desired type of serial interface as described in Chapter 3, *"Serial Port Configuration"* later in this booklet.

- Insert the Industrial Interface Board with the components side facing right, as seen from behind. Check that the board fits into the two square cut-outs on the left side of the slot.

**Industrial Interface Board**
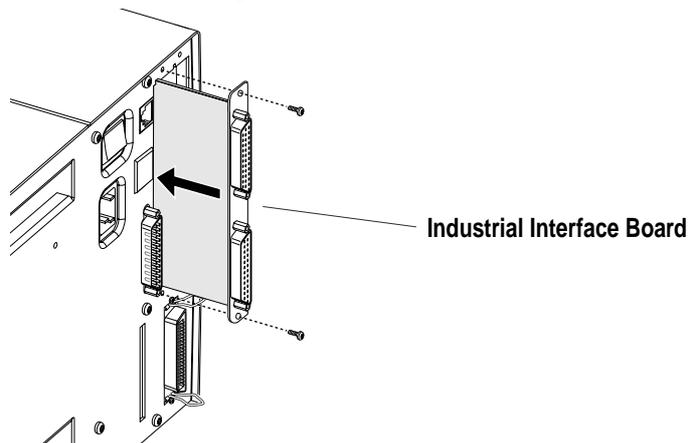
- Attach the Industrial Interface Board to the printer's rear plate by means of two of the screws left over when you removed the original cover plate.

- Using the remaining two screws, attach the narrow cover plate included in the delivery so it covers the right side of the slot.

- Connect the cable running from **P81** on the CPU board to connector **P1** on the Industrial Interface Board.

EasyCoder XP- & F-Series Industrial Interface Board – Installation Instructions Ed. 5
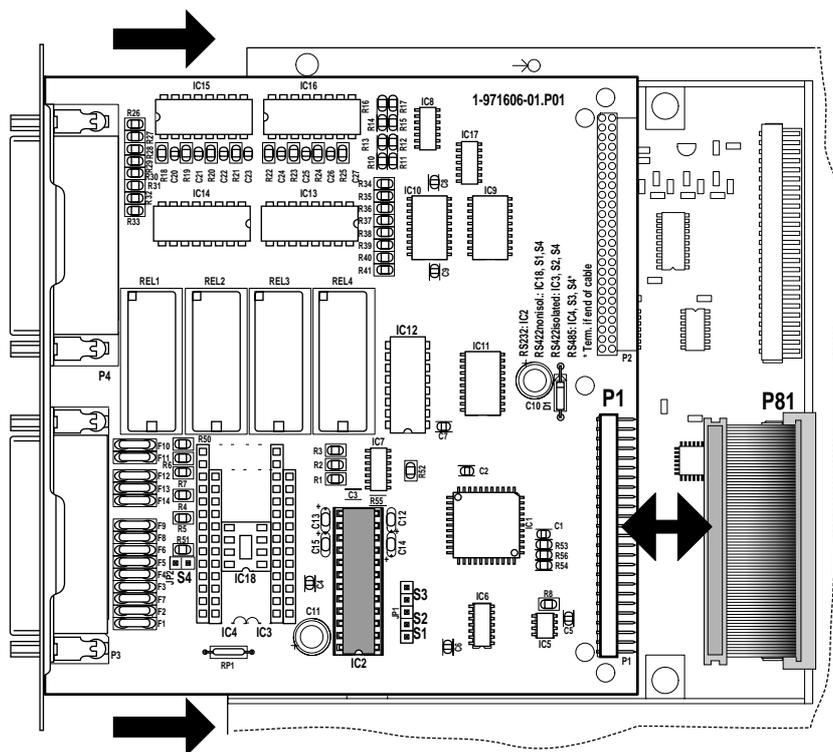
EasyCoder 501 XP and 601 XP, cont.

- Put back the cover over the electronics compartment. Press firmly to compress the leaf springs along the front and rear edges of the electronics compartment.

- Connect the power cord.

- Now you have two new interface connectors on the printer's rear plate in addition to the standard serial interface "uart1:" and the standard partallel interface "centronics:". Connect the interface cables and switch on the power.

- If you intend to use the serial interface ("uart2:"), enter the Setup Mode to set the proper baud rate, character length, parity, number of stop bits, flowcontrol, new line, and buffer size parameters.

Industrial Interface

Serial Interface "uart1:"

Serial Interface "uart2:"

Centronics Interface "centronics:"
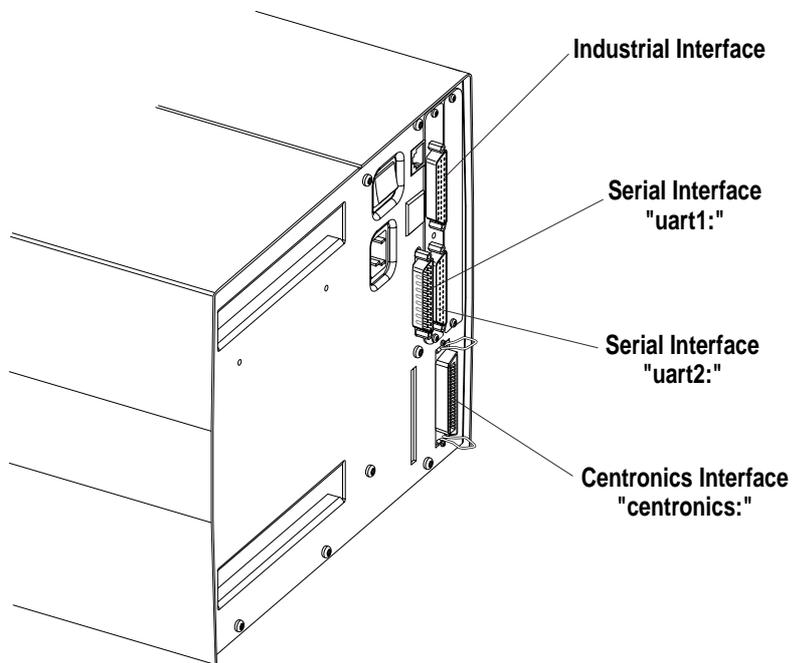
EasyCoder F2 and F4

- Open the electronics compartment by removing the front/ left-hand cover, which is held by three #T20 Torx screws from the media compartment side of the center section.

Warning!
Switch off the power and disconnect the power cord. The electronics compartment contains high voltage components and wires. Do not open the electronics compartment before the printer is safely disconnected from any AC supply.
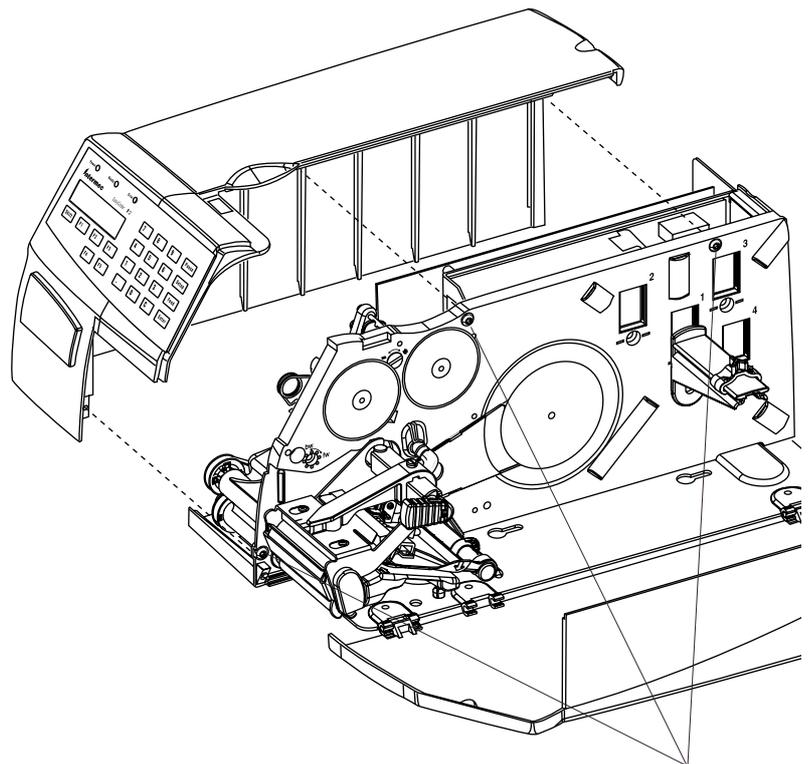
#T20 Torx screws (x3)

- Remove the two #T10 Torx screws that hold the interface cover plate on the printer's rear plate. Remove the cover plate.

**#T10 Torx screw**

Cover Plate

#T10 Torx screw
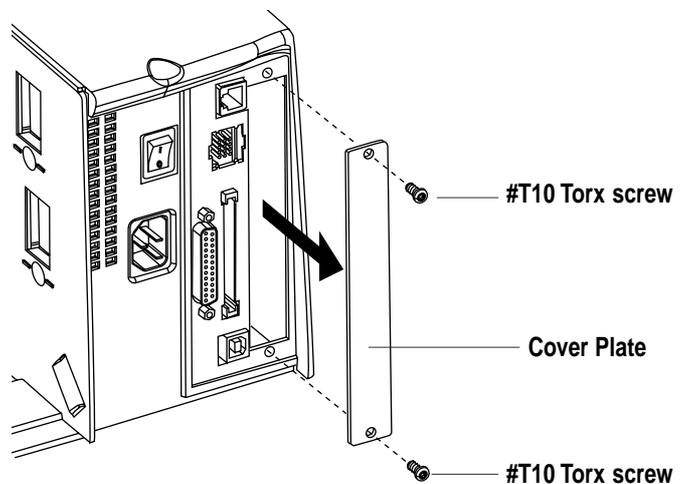
- Save the cover plate for possible later use. Keep the screws.

EasyCoder F2 and F4, cont.

- If necessary, fit or remove circuits and straps to adapt the Industrial Interface Board for the desired type of serial interface as described in Chapter 3, *"Serial Port Configuration"* later in this booklet.

- Insert the interface board with the components side facing right, as seen from behind.

- Attach the interface board to the printer's rear plate by means of the two screws left over when you removed the original cover plate.
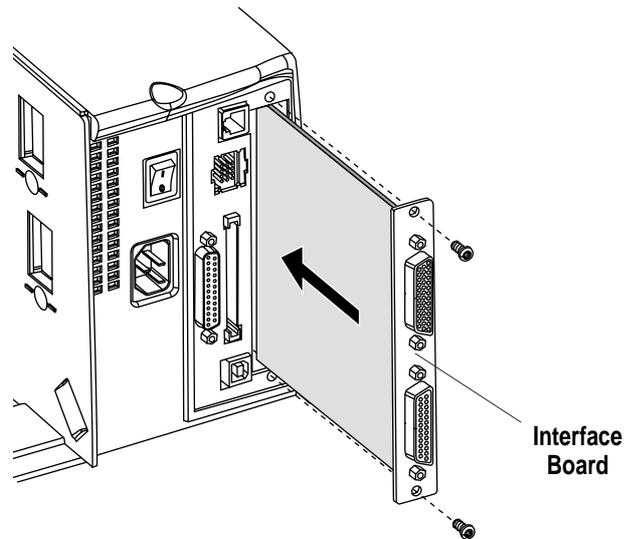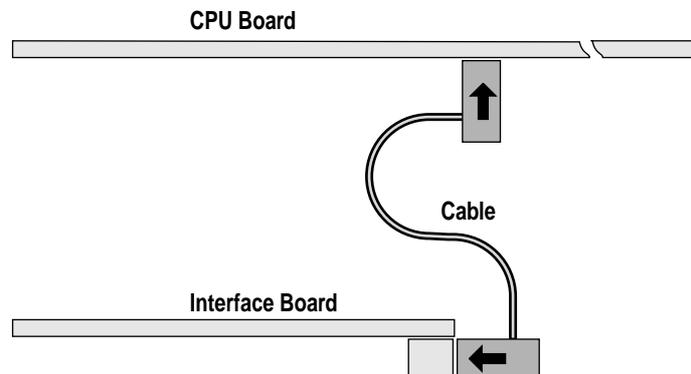

Interface Board

- Connect the flat cable included in the kit between connector **P81** on the CPU board and connector **P1** on the interface board (also see the next page.)
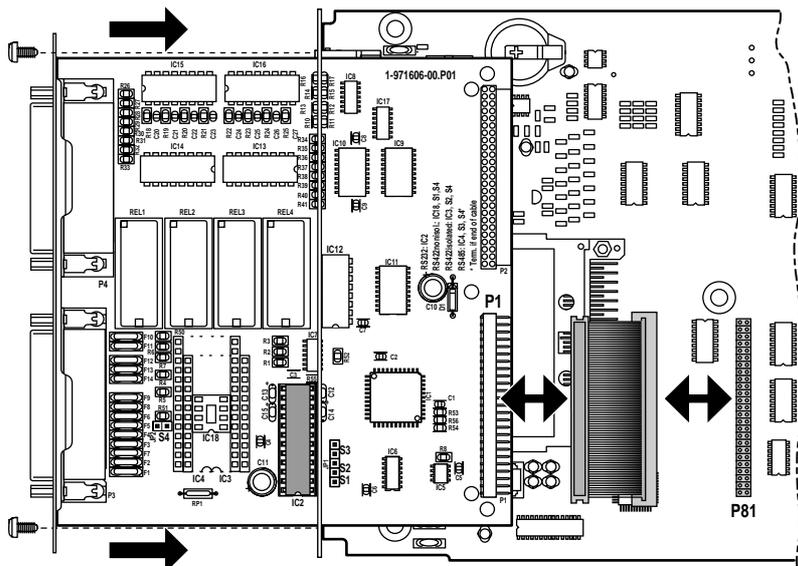
EasyCoder F2 and F4, cont.

- Make sure that the cable between CPU board and interface board runs as illustrated below.

CPU Board

Cable

Interface Board

- Put back the front/left-hand cover.
- Connect the power cord.
- Now you have two new interface connectors on the printer's rear plate in addition to the standard interfaces "uart1:" and "usb1:". Connect the interface cables and switch on the power.
- If you intend to use the serial interface ("uart2:"), enter the Setup Mode to set the proper baud rate, character length, parity, number of stop bits, flowcontrol, new line, and buffer size parameters.

Industrial Interface

Serial Interface "uart1:"

Serial Interface "uart2:"

Serial Interface "usb1:"
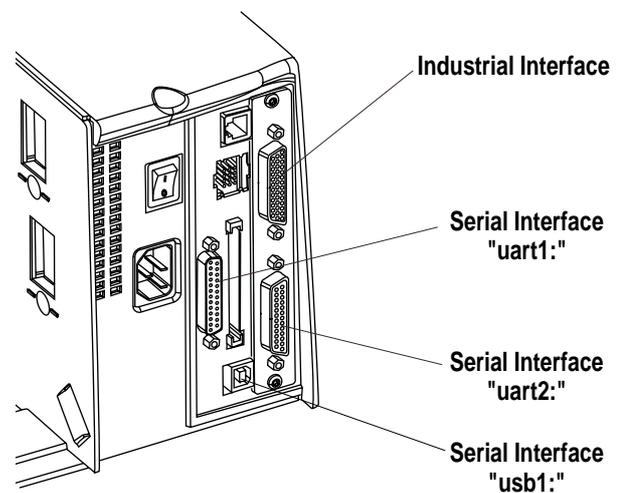
Serial Port Configuration

Introduction

The serial communication port "uart2:" can be configured for **one** of four different types of serial communication:
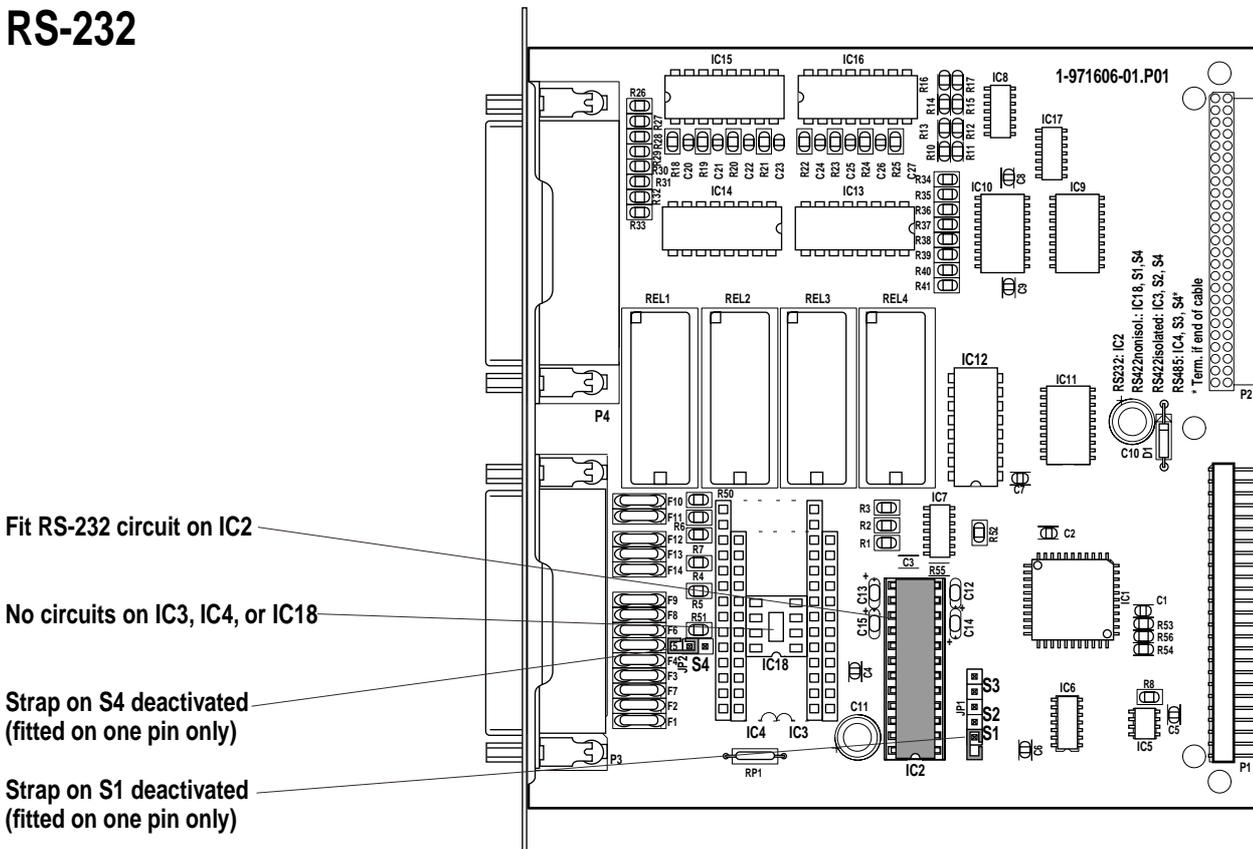• RS-232
• RS-422 non isolated
• RS-422 isolated
• RS-485

By fitting or removing certain circuits and straps, the desired type of interface can be selected. This is either done at factory or by the customer. There can only be one driver circuit and its corresponding straps fitted at a time.
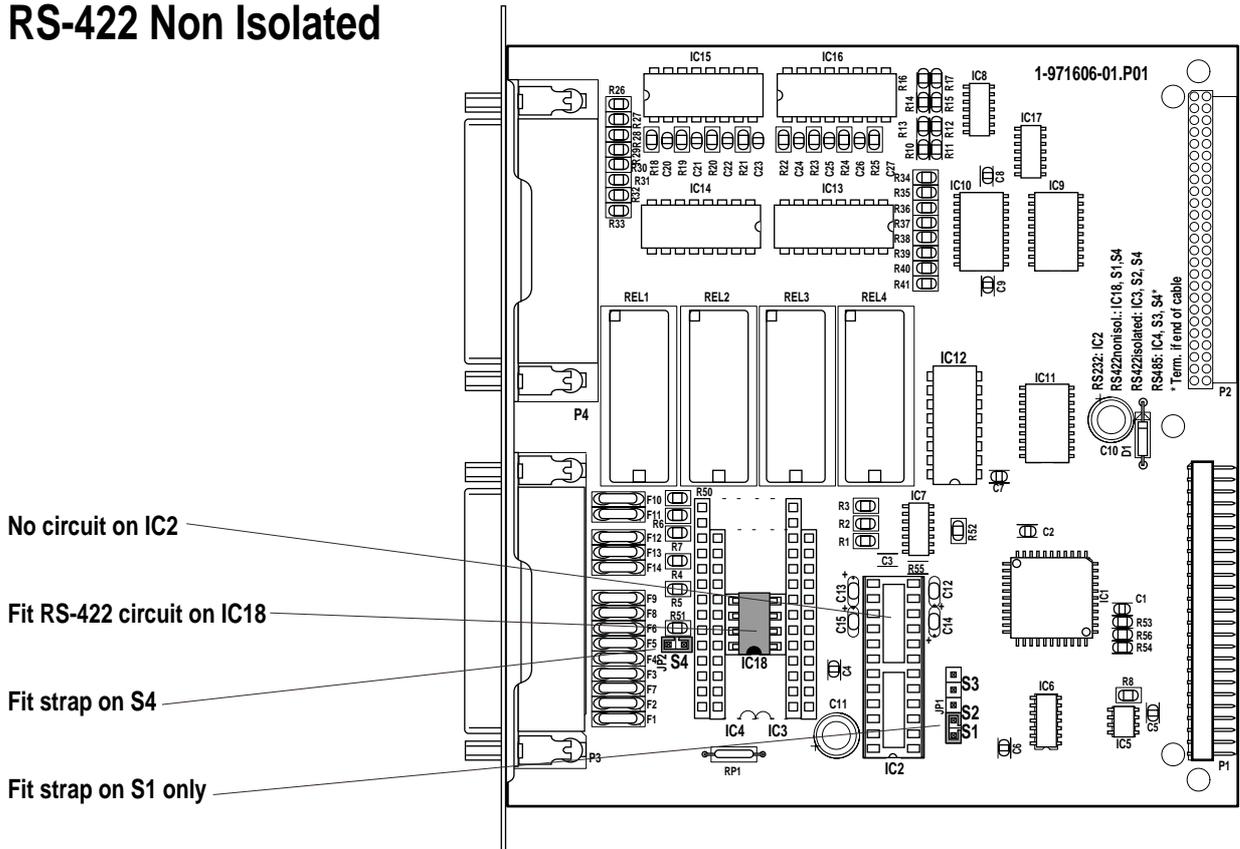
Caution!
When fitting circuits yourself, do it before connecting the interface board and make sure that the circuits are not fitted upside down (see front end markings in the illustrations in this chapter.) Also take care so all "legs" of the circuits fit into their respective slots in the socket and are not bent. Also, take proper precautions so as to protect the board and circuits from electrostatic discharges.
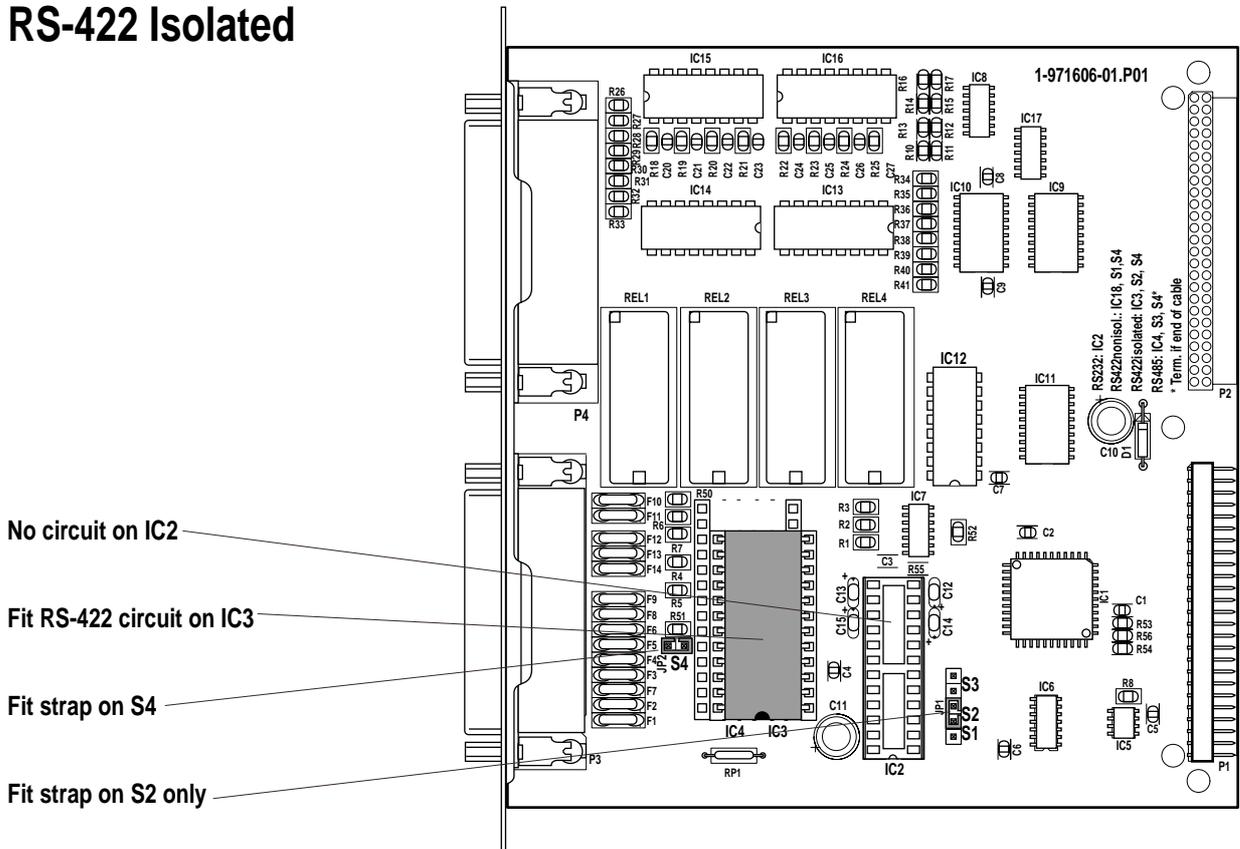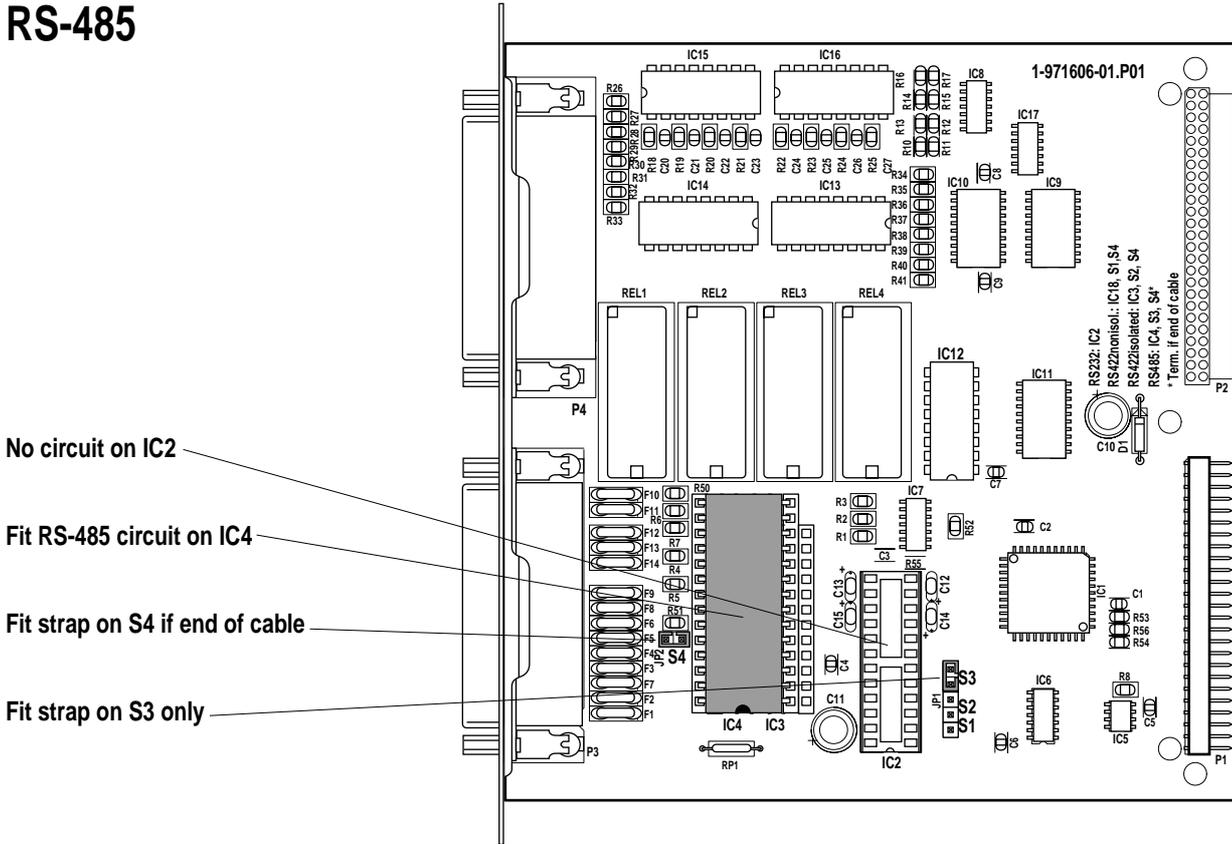
RS-232

Fit RS-232 circuit on IC2

No circuits on IC3, IC4, or IC18

Strap on S4 deactivated (fitted on one pin only)

Strap on S1 deactivated (fitted on one pin only)

RS-422 Non Isolated

No circuit on IC2

Fit RS-422 circuit on IC18

Fit strap on S4

Fit strap on S1 only

RS-422 Isolated

No circuit on IC2

Fit RS-422 circuit on IC3

Fit strap on S4

Fit strap on S2 only

RS-485

No circuit on IC2

Fit RS-485 circuit on IC4

Fit strap on S4 if end of cable

Fit strap on S3 only

Connector Configuration

The serial interface for "uart2:" uses a female DB-25pin connector.

Pin	Signal Name	Description
1		Not connected
2	TxD	RS-232 Transmitter
3	RxD	RS-232 Receiver
4	RTS	RS-232 Request To Send
5	CTS	RS-232 Clear To Send
6	DSR	RS-232 Data Set Ready
7	GND	Ground
8–14		Not connected
15	+RS422RI	+RS-422 Receive
16	+5V	5 Volt for external use (max. 200 mA)[1]
17	-RS422RI	- RS-422 Receive
18		Not connected
19	+RS422DO	+ RS-422 Transmit/+ RS-485
20	DTR	RS-232 Data Terminal Ready
21	-RS422DO	- RS-422 Transmit/- RS-485
22	RI	RS-232 Ring Indicator
23	Shield	Optional shield for RS-422 and RS-485
24–25		Not connected

[1]. *The external 5V is automatically switched off at overload.*

Industrial Interface Configuration

Introduction

The Industrial Interface provides:
- 8 digital IN ports with opto-couplers (Opto In)
- 8 digital OUT ports with opto-couplers (Opto Out)
- 4 OUT ports with relays (Relay Out)

The Industrial Interface has no straps or circuits to be fitted or removed. All signals are available on a female DB-44pin connector and the various ports are controlled by the Intermec Fingerprint instructions PORTIN and PORTOUT ON/OFF (see Intermec Fingerprint, v7.xx, Reference Manual.)
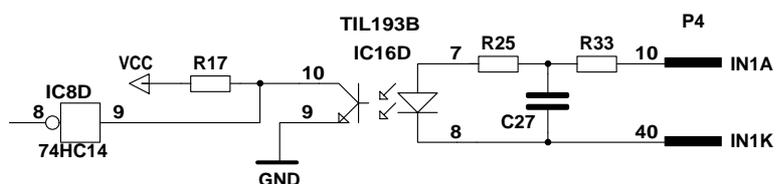
Digital Opto In

The status of the digital IN ports 101-108 can be read by means of PORTIN functions. If a current is led through the opto-coupler of the port, PORTIN returns the value -1(true), else the 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	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 221-228 can be turned on and off by means of PORTOUT ON/OFF statements.

The status of the ports can be read by means of PORTIN functions. If a current is led through the opto-coupler of the port, PORTIN returns the value -1(true), else the value 0 (false.)

Signal	Description	Max.
Vceo	Collector-Emitter breakdown voltage	35V
Veco	Emitter-Collector breakdown voltage	7V
	Collector Current	15 mA
Vog	Output to ground (optocoupler)	100V

Connector Configuration

Pin	Signal Name	Description	Fingerprint Ref. No.
20	Out1c	Collector Opto Out Channel 1	221
5	Out1e	Emitter Opto Out Channel 1	
35	Out2c	Collector Opto Out Channel 2	222
21	Out2e	Emitter Opto Out Channel 2	
6	Out3c	Collector Opto Out Channel 3	223
36	Out3e	Emitter Opto Out Channel 3	
22	Out4c	Collector Opto Out Channel 4	224
7	Out4e	Emitter Opto Out Channel 4	
37	Out5c	Collector Opto Out Channel 5	225
23	Out5e	Emitter Opto Out Channel 5	
8	Out6c	Collector Opto Out Channel 6	226
38	Out6e	Emitter Opto Out Channel 6	
24	Out7c	Collector Opto Out Channel 7	227
9	Out7e	Emitter Opto Out Channel 7	
39	Out8c	Collector Opto Out Channel 8	228
25	Out8e	Emitter Opto Out Channel 8	
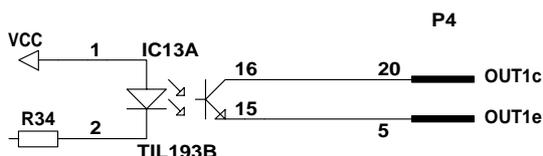
*Simplified schematics of a digital OUT port.*

Relay Out

The relays of the OUT ports 201-204 can be individually activated by means of 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 the value 0 (false.)

Max AC Load Breaking Capacity

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

Max DC Load Breaking Capacity

a: resistive load

b: inductive load L/R=20 ms
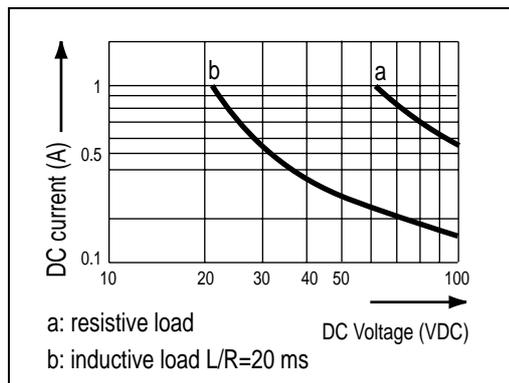
Connector Configuration

Pin	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	REL3no	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	
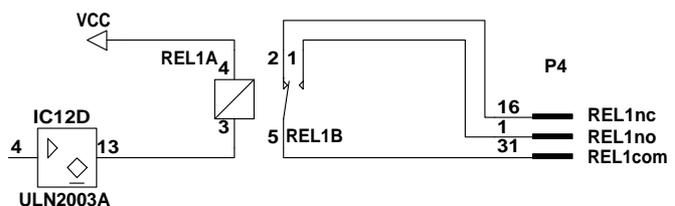
Simplified schematics of a relay OUT port.

Notes