

The Intermec logo is displayed in a bold, italicized, sans-serif font. It is positioned on the left side of the page, partially overlapping a large, light gray circular graphic that features several overlapping orbits and a central dot, resembling a stylized atom or a network diagram.

Intermec



Installation Instructions

**RFID 13.56 MHz
Interface Board for
EasyCoder F2 and
F4 Printers**

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Description

Introduction

The term RFID (radio frequency identification) describes the use of radio frequency signals to provide automatic identification of items.

RFID is a flexible technology that combines advantages not available with other identification technologies. It is convenient, easy to use, and well suited for automatic operation. RFID does not require contact or line-of-sight to operate, can function under a variety of environmental conditions, and provides a high level of data integrity. In addition, because the technology is difficult to counterfeit, RFID provides a high level of security.

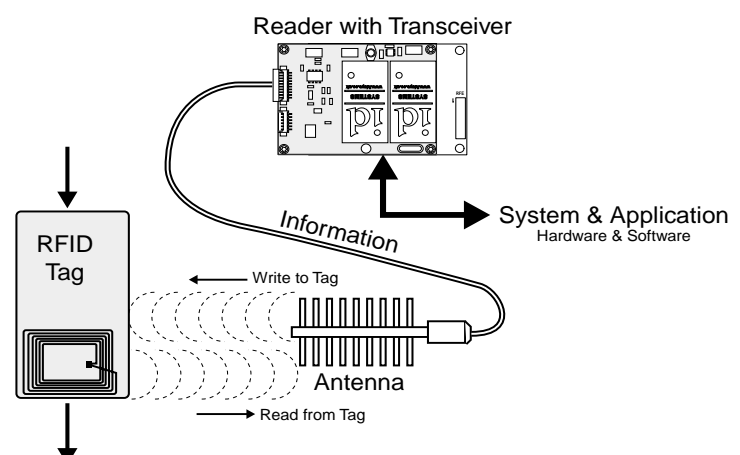
Radio waves transfer data between an RFID reader and an item to which an RFID tag is attached. The tag can contain data about the item, such as what the item is, what time the device traveled through a certain zone, etc. RFID tags can be attached to virtually anything—from a vehicle to a pallet of merchandise.

RFID is similar in concept to bar coding. Bar code systems use a reader and coded labels that are attached to an item, whereas RFID uses a reader and special RFID tags that are attached to an item. Bar code uses optical signals to transfer information from the label to the reader; RFID uses radio frequency signals to transfer information from the RFID tag to the reader.

RFID technology uses frequencies within the range of 50 kHz to 2.5 GHz. As shown below, an RFID system typically includes the following components:

- RFID tag or transponder that contains data about an item
- Antenna used to transmit the RF signals between the reader and the RFID tag
- RF transceiver that generates the radio frequency signals
- Reader that receives RF transmissions from an RFID tag

In addition to this basic RFID equipment, an RFID system includes application-specific software.



Application of Use

The RFID 13.56 MHz Interface Board is an optional device for EasyCoder F2 or EasyCoder F4, that provides these printers with two extra interfaces, "uart2:" and "uart3:". The printer must be fitted with the Intermec Fingerprint v7.xx firmware.

The RFID 13.56 MHz Interface Board is either factory-installed in the printer, or delivered as field-installable kits, one for EasyCoder F2 and another for EasyCoder F4 (see Chapter 2).

Approvals

Please refer to Internet (<http://printer-rfid.intermec.com>) for a complete and updated list of the countries, in which the RFID 13.56 MHz Interface Board is approved for use. There you can also find Declarations of Conformity (CE) in all the official languages of the European Union.

Interfaces

The "uart2:" interface can be fitted with straps and circuits for one of the following alternatives:

- RS-232
- RS-422 non isolated
- RS-422 isolated
- RS-485

Refer to Chapter 3 for instructions how to configure the interface board.

The "uart3:" interface connects to a piggyback-fitted RFID encoder that provides the printer with the capability to write information to an RFID 13.56 MHz tag in special media during printing. This requires special application software, that can be found on Internet (<http://printer-rfid.intermec.com>).

Printing Recommendations

The RFID chip and antenna are usually glued to the back of the media between the label and the liner. Even if the chip and antenna are very thin, there will be a small bump at the surface of the media, which may affect the printout quality, especially in connection with thermal transfer printing. To get the best printout quality, consider the following recommendations:

- Increase the printhead pressure by turning the adjustment screw 2–4 turns clockwise (see the printer's User's Guide).
- Avoid placing important information, like bar codes, on top or in the immediate vicinity of the chip and antenna edges.
- In case of thermal transfer printing, use soft wax-based ribbons (GP, Standard, or Basewax).

RFID Media Recommendations

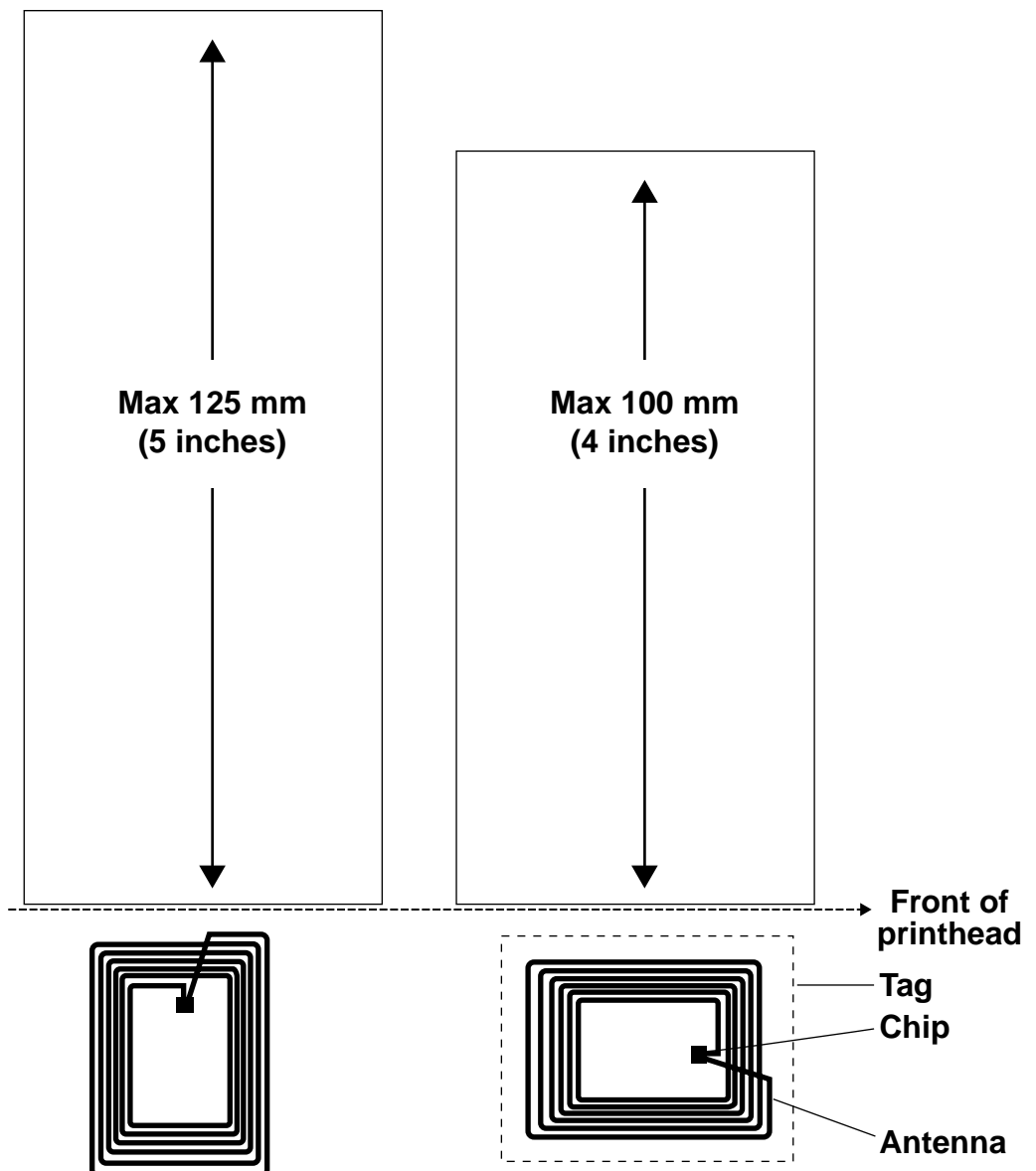
Because the RFID tag is a part of a system consisting of the printer, the tag, the media in which the tag is fitted, and the reader, all applications should be tested before installation.

As regards the printing characteristics of the media, the same recommendations as for “ordinary” printing apply.

The chip and antenna of the tag should face the platen roller, not the printhead.

The location of the RFID tag depends on if the tag goes along or across the media feed direction. When writing to the RFID tag, the media must be in a position where the tag antenna is inside the areas illustrated below,

The size of the “writeable area” could vary between different manufacturers of tags. It is advisable always to test out optimal positions for the tag type used. The area shown below corresponds to a 2 in. × 3 in. Tag-It™ tag.



DECLARATION OF CONFORMITY

We,

Intermec Printer AB
Idrottsvägen 10
Box 123
S-431 22 Mölndal
Sweden

declare under our sole responsibility¹, that the product

EasyCoder F2/F4 RFID 13.56 MHz

to which this declaration relates
is in conformity with the following standards

RTTE/EMC:

ETSI EN 300 330-1 (2000-07 Draft)

ETSI EN 300 330-2 (2000-07 Draft)

SP Swedish National Testing and Research Institute
Box 857, S-501 15 BORÅS
Id mark 0402

Emission:

ETSI EN 310 489-3:

EN 55 022:1994, class B conducted

EN 61 000-3-2:1995

EN 61 000-3-3:1995

Immunity:

ETSI EN 310 489-3:

EN 61 000-4-2:1995

EN 61 000-4-3:1995

EN 61 000-4-4:1995

EN 61 000-4-5:1995

EN 61 000-4-6:1995

EN 61 000-4-11:1995

Electrical Safety:

EN 60 950

following the provisions of Directives

95/5/EEC, 89/336/EEC, and 73/23/EEC

Mölndal 2001-04-01



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Mats Cremon
President

¹/. Intermec assumes no responsibility as regards fulfilling the CE Directive if the printer is handled, modified or installed in other manners than those described in Intermec's manuals.

Field Installation

Installation Kits

The RFID 13.56 MHz Interface Kit comes in two versions, one for EasyCoder F2 and another for EasyCoder F4. Each kits contains:

- One interface board fitted for RS-232 on "uart2:".
- One flat cable.
- One antenna (different sizes for EasyCoder F2 and F4.)
- One cable strap
- Two self-adhesive cable straps
- This Installation Instruction booklet.

Circuits for RS-422 non-isolated, RS-422 isolated, and RS-485 can be bought separately from Intermec.

The only tools required are a #T10 Torx screwdriver and a long #T20 Torx screwdriver. Field installation should only be performed by a skilled service technician.

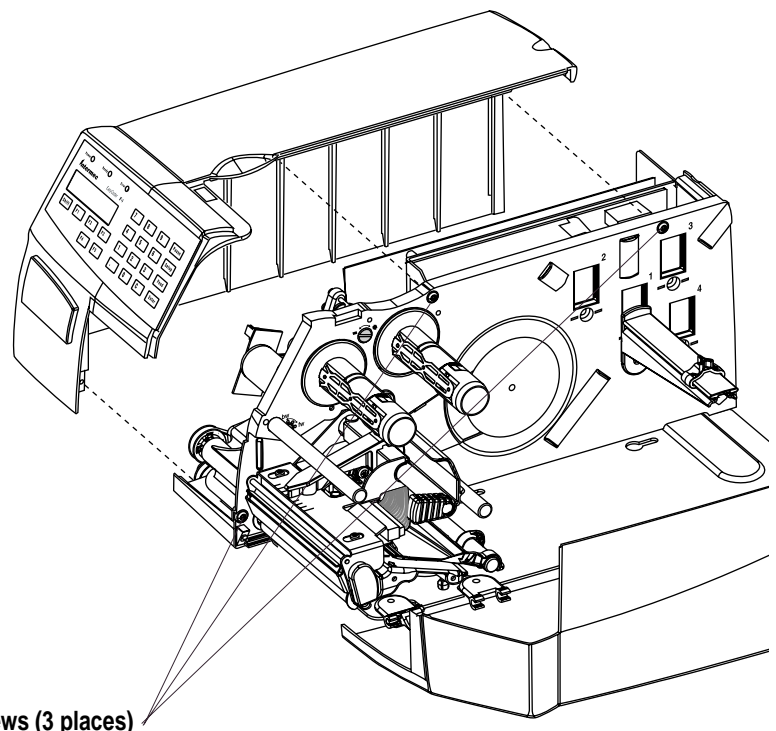
Fitting the Interface Board

- 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.

Generally, the illustrations show an EasyCoder F4 printer. However, the same principles applies to EasyCoder F2 printers.

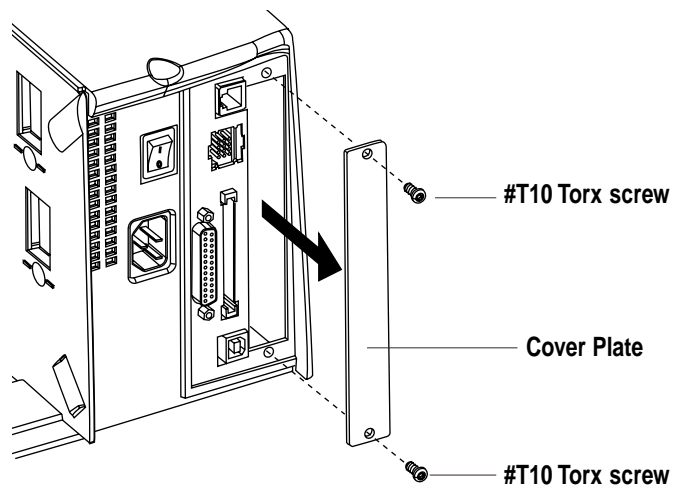
Warning!

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.

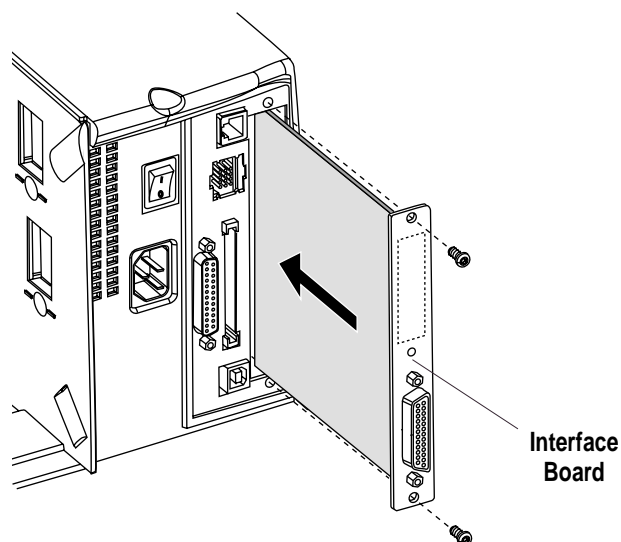


#T20 Torx screws (3 places)

Fitting the Interface Board, cont.

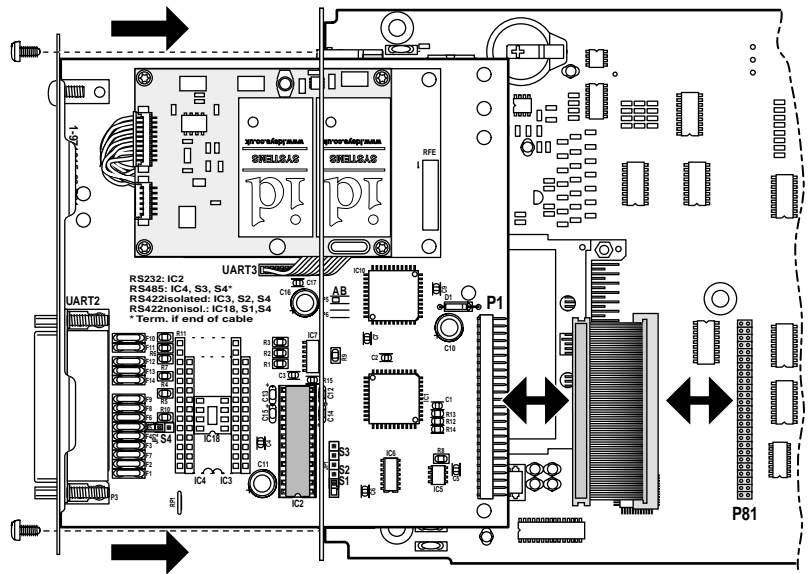


- Remove the two #T10 Torx screws that hold the interface cover plate on the printer's rear plate. Remove the cover plate.
- Save the cover plate for possible later use. Keep the screws.
- If necessary, fit or remove circuits and straps to adapt the RFID 13.56 MHz Interface Board for the desired type of serial interface on "uart2:" as described in Chapter 3.
- 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.

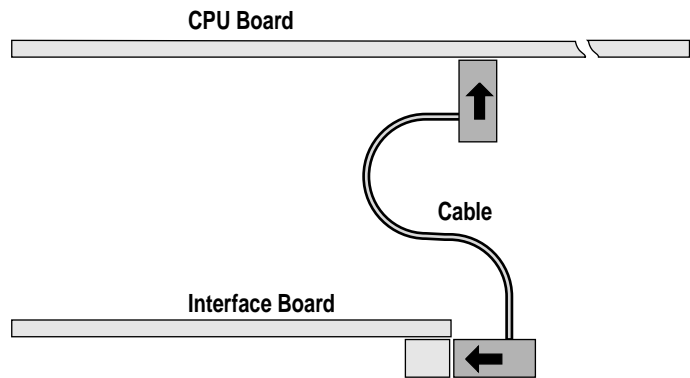


- Connect the flat cable included in the kit between connector **P81** on the CPU board and connector **P1** on the interface board (see the next page).

Fitting the Interface Board, cont.



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

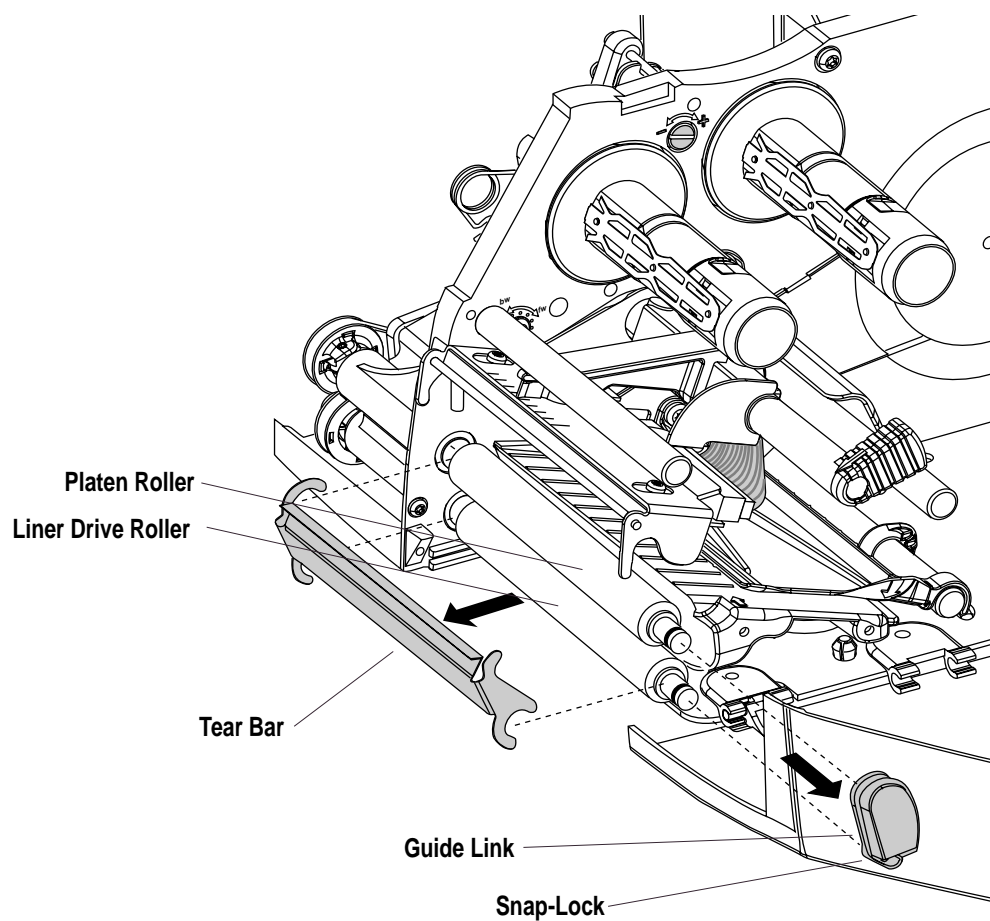


- Fit the antenna as described on the next page.

Fitting the Antenna

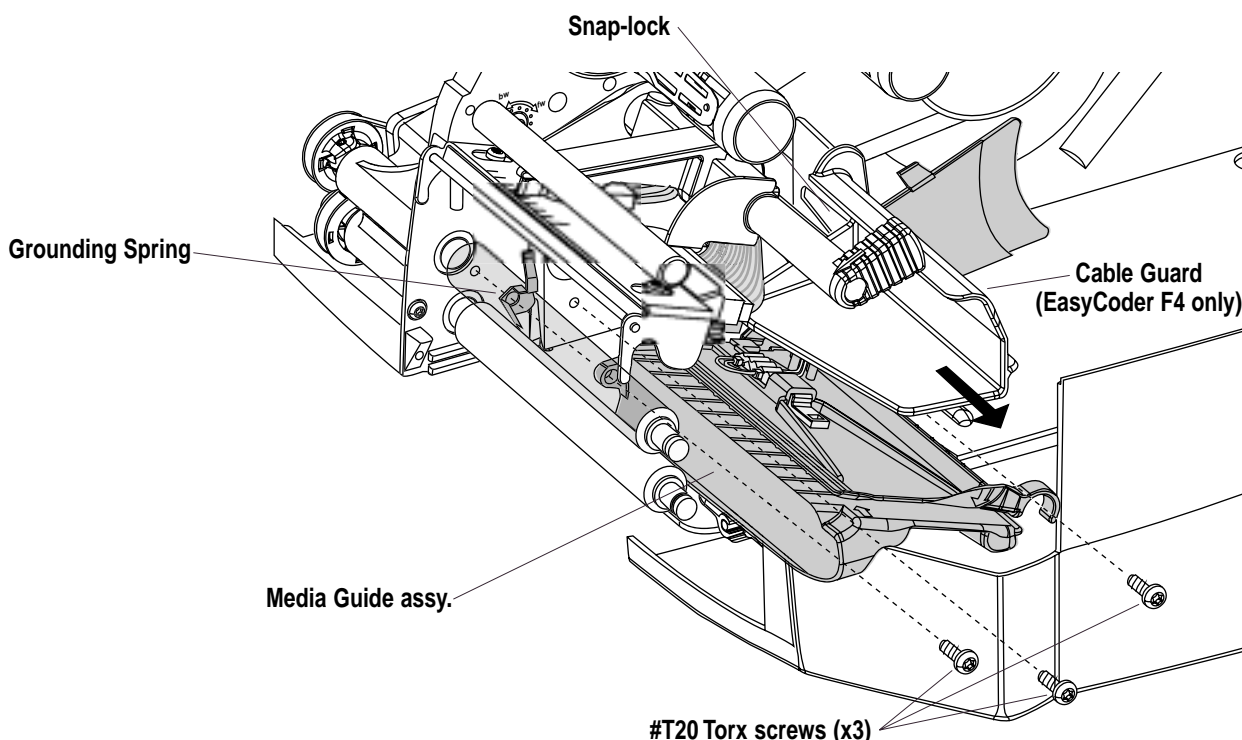
The shape of the antenna differs between EasyCoder F2 and EasyCoder F4. The antenna is fitted inside the lower media guide. To be able to fit it, you must remove the tear bar, the guide link, and media guide assy.

- Raise the printhead to open position.
- Remove the tear bar by pulling it **upwards**. Avoid bending the hooks, which will make it loose-fitting.
- Press down the snap-lock at the bottom of the guide link and pry the guide link away from the shafts of the platen roller and the liner drive roller.

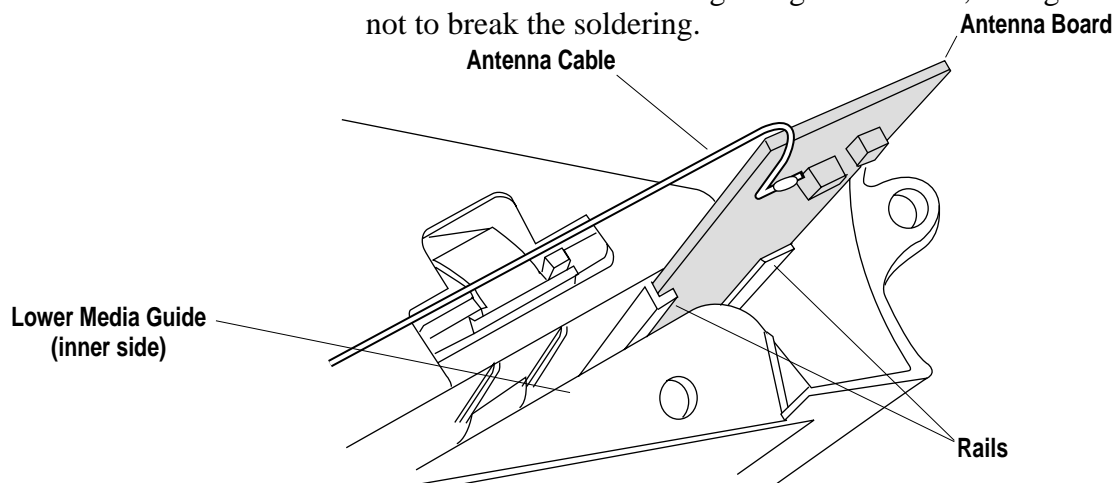


Fitting the Antenna, cont.

- *EasyCoder F4 only:* From the electronics compartment, disengage the snap-lock that holds the cable guard and pull it out along the shaft.
- Pull out the standard edge guide or the two quick-load guides.
- Disconnect the LSS cable from connector P53 on the front edge of the CPU board (marked “LSS.”)
- Remove the three #T20 Torx screws that hold the media guide assembly and pull it out until the connector of the LSS cable reaches the center section. Be careful not to lose the grounding spring at the front tip of the assembly.

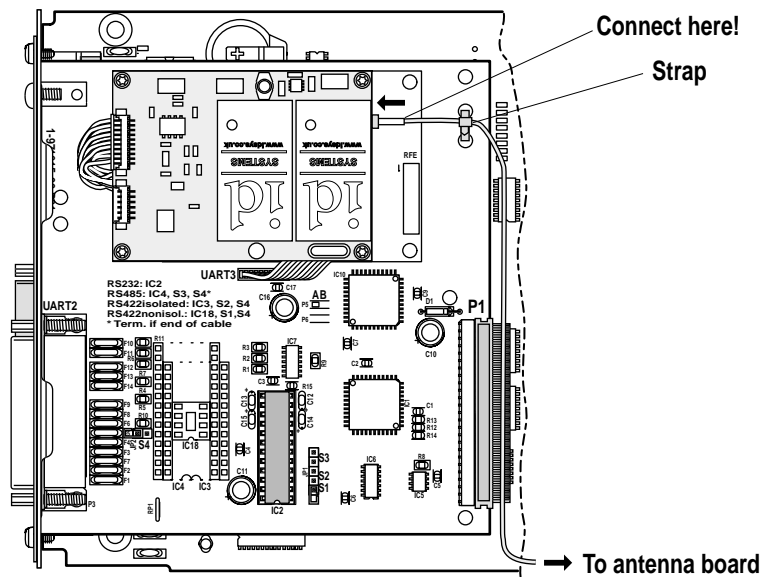


- At the inside of the front of the lower media guide, there are two rails for holding the antenna board. Insert the antenna board with the component side facing down. Gently bend the antenna cable in a straight angle rearwards, taking care not to break the soldering.



Fitting the Antenna, cont.

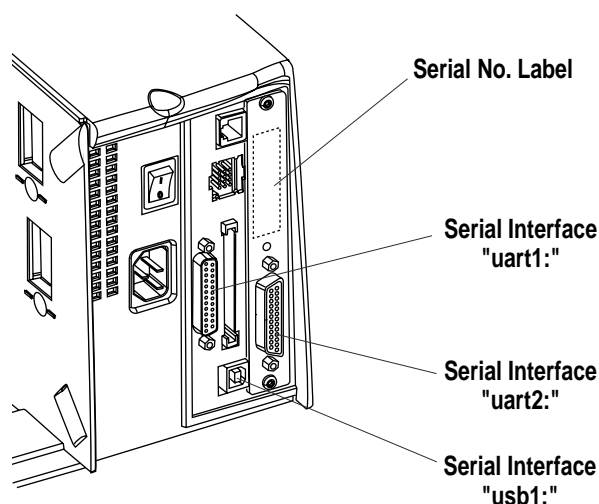
- Route the cable through the same slot in the center section as the LSS cable.
- Fit back the media guide assy and grounding spring using the three #T20 Torx screws while pulling at the antenna and LSS cables. Make sure the grounding spring is fitted straight up.
- Put back the edge guide or the quick-load guides. In case of EasyCoder F4, also put back the cable guard.
- Put back the guide link and the tear bar, making sure that the tear bar snaps at the inner end of the liner drive roller.
- Connect the LSS cable to P53 at the front edge of the CPU board (marked “LSS”).
- Route the antenna cable along the edge of the bottom plate and connect it to the RFID interface board as illustrated below.
- Secure the antenna cable to the RFID interface board using the cable strap included in the kit.



- Fit the two self-adhesive cable straps on the antenna cable and attach them to the upper side of the bottom plate where they will not interfere with the stiffeners on the inside of the front/left-hand cover.

Completing the Installation

- Put back the cover over the electronics compartment.
- Connect the power cord.
- Now you have one new interface connector 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 want to use the serial communication port "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. See Chapter 3 for specifications.
- Using RFID 13.56 requires special application software, that can be found on Internet (<http://printer-rfid.intermec.com>).



Serial Port Configuration "uart2:"

Introduction

The serial communication port "uart2:" can be configured for **one** of four different types of serial communication:

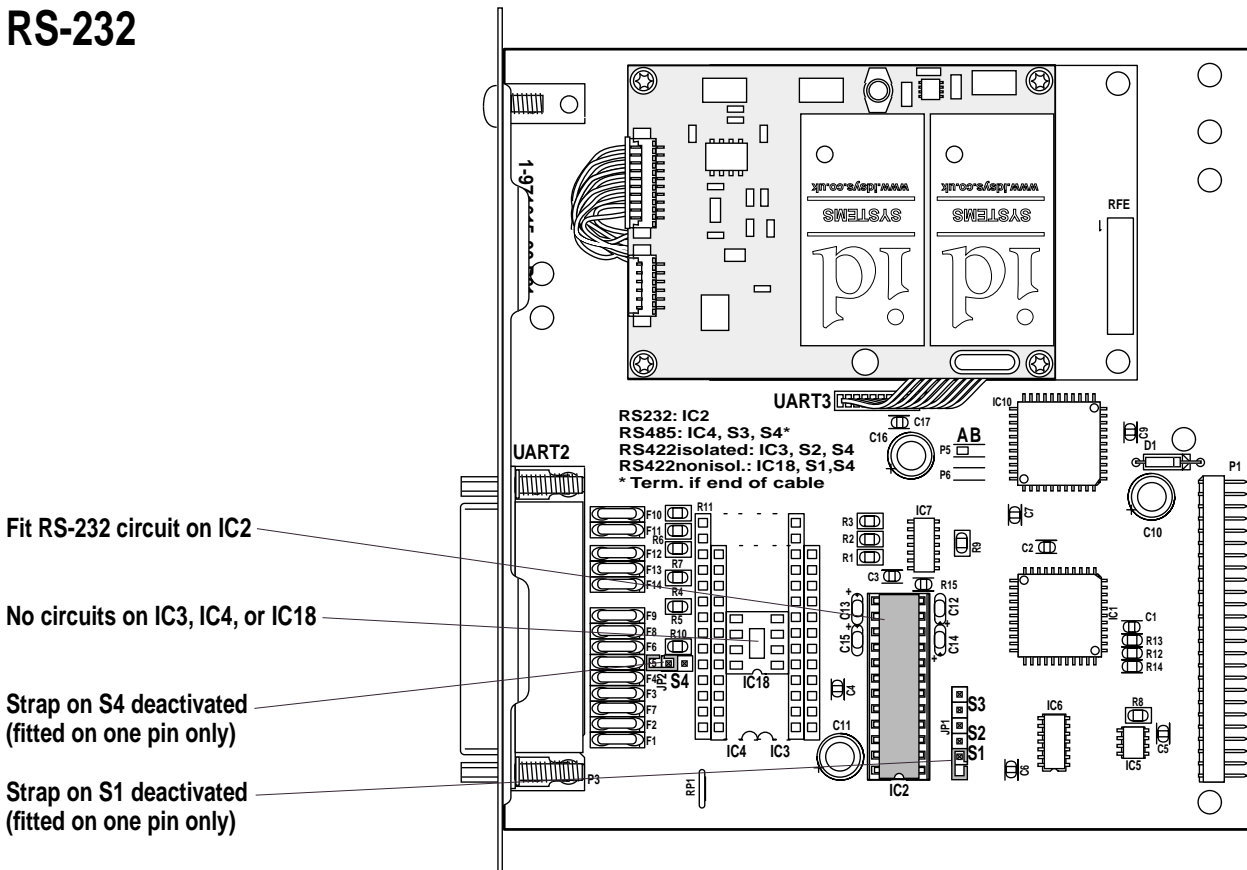
- RS-232
- RS-422 non isolated
- RS-422 isolated
- RS-485

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.

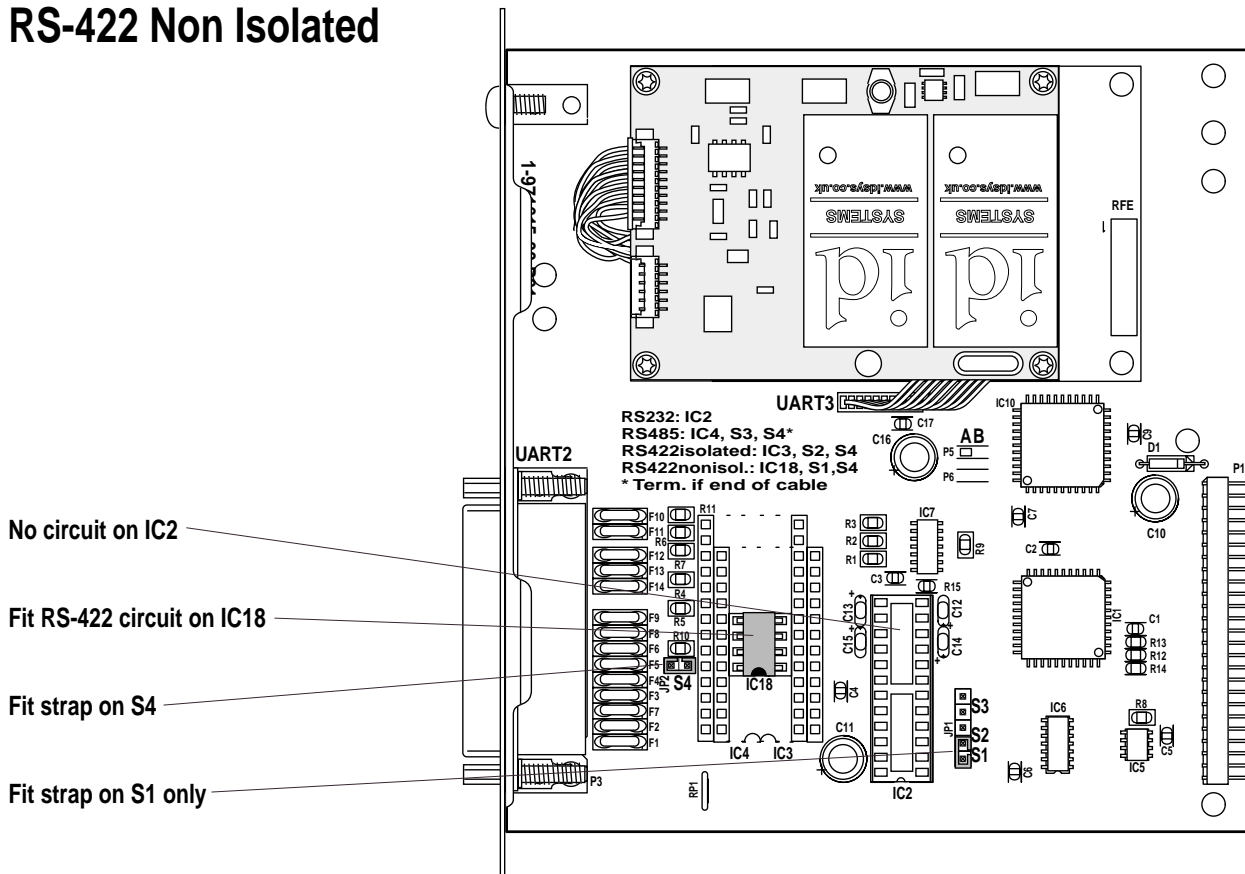
Caution!

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.

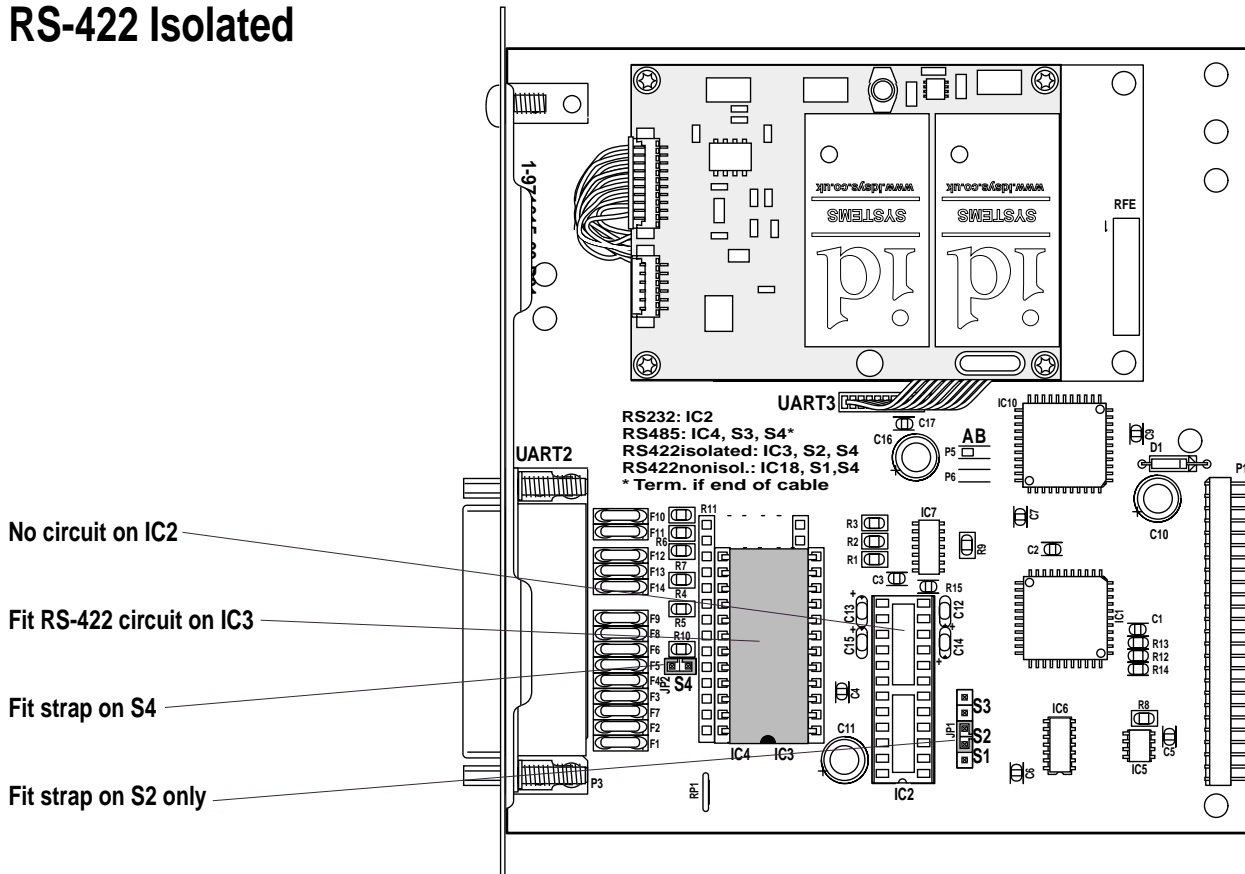
RS-232



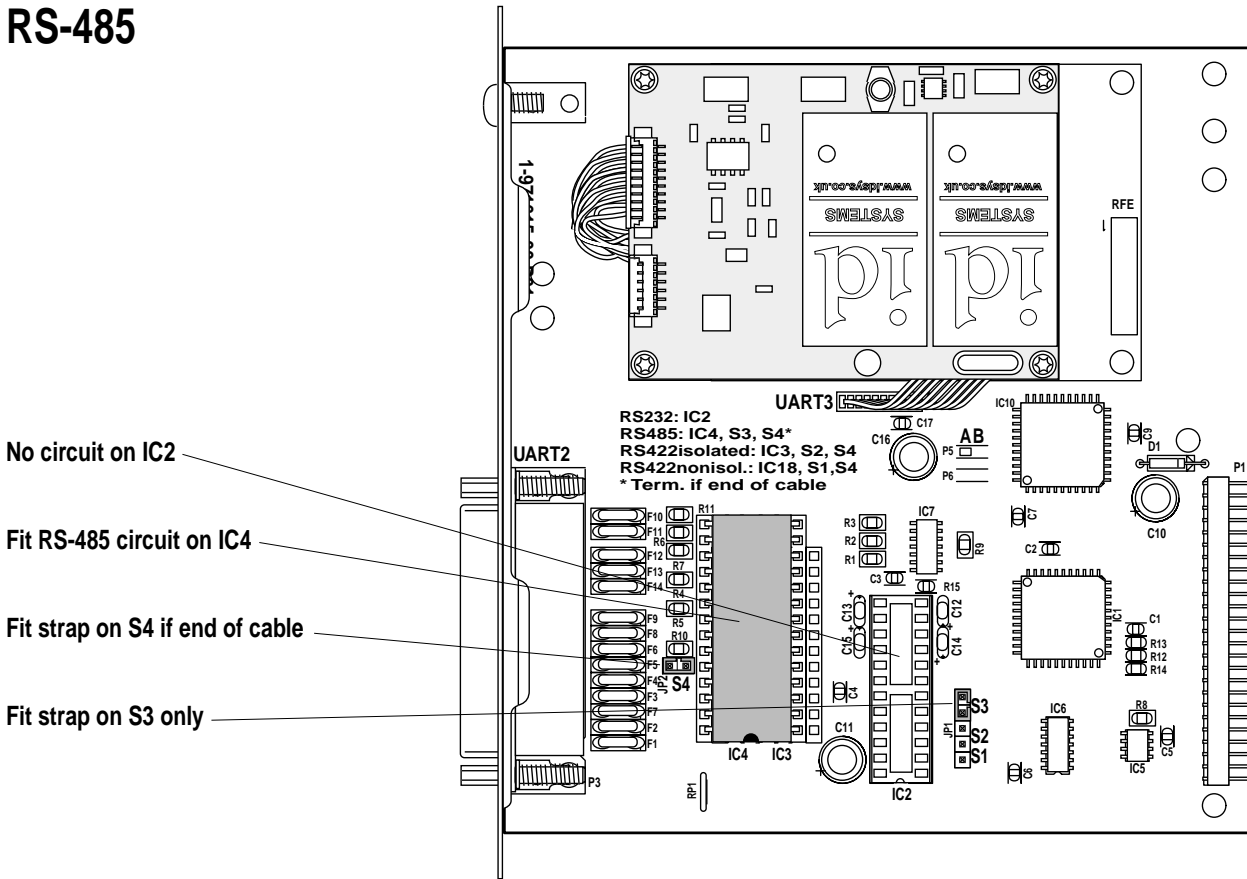
RS-422 Non Isolated



RS-422 Isolated



RS-485



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.



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