



X2  
SYSTEM SOLUTIONS

-19 4 -19 4 | } □ \*  
1: Return Air -19.4 °C  
TUESDAY 29/03/2005 16:26:39  
PRINT ALARM MENU STATUS



## EUROSCAN RX2-6 / TX2-6

Cabin and Trailer recorder

### INSTALLATION MANUAL

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## 1. INTRODUCTION

This manual is a guideline for the installation and use of the EUROSCAN RX2-6/TX2-6 6 sensor temperature recorders. To avoid guarantee exclusion due to incompetent installation it is most essential to follow the instructions and recommendations of this manual.

EUROSCAN RX2-6 and EUROSCAN TX2-6 temperature recorders are developed and produced to conform to the applicable European and National guidelines for the delivery of chilled and frozen transport goods in transport vehicles.

EUROSCAN RX2-6/TX2-6 can provide evidence of correct temperatures for every trip in the form of a delivery ticket, numerical or graphical print-out. All data is stored with a date/time stamp in a large flash memory. Data will not be lost if power supply is disconnected. The real time clock is powered by an internal back-up battery.

The two recorder versions EUROSCAN RX2-6/TX2-6 look different. The R-Version is suitable for in cab installation and the T-Version for outside mounting on a trailer. Both versions are available with or without integrated printer. A printer can be retrofitted at any time, the recorder has been designed already in hardware and software for it. On the back side the connectors are designed for up to 6 temperature sensors, 4 digital inputs, a power supply, CAN bus, digital output and 2x RS232 COM ports. If no free radio slot is available, the use of the optional universal mounting kit is strongly recommended.

### 1.1. RECORDER VERSIONS

#### 1.1.1. EUROSCAN RX2-6

The R-Version has been developed for mounting in a vehicle cabin. The chassis of the recorder meets the dimensions of a DIN car radio and can be easily mounted in a free available radio slot.

#### 1.1.2. EUROSCAN TX2-6

The T-Version has been developed especially for mounting outside on a body or trailer. The unit is fixed into a water proof plastic box (IP65). As on the R-version the connectors are on the back of the unit. Cabling is installed through watertight cable glands.

Both products are produced by Euroscan in the EU. Euroscan has a policy of continuous development and improvements. Therefore, products, manuals and technical information are subject to change without prior notice.

### 1.2. DATA SECURITY

Although the Euroscan X2-6 recorder has been specifically designed and tested for use in the harsh vehicle environment there are certain circumstances beyond our control, i.e. lightning strikes, high voltage peaks, theft, manipulation, etc., where data loss could occur. Because the temperature data might be

crucial to providing evidence in the case of transport damages, we strongly advise to take the following precautions:

- Print or download data to a PC on a **weekly** basis as a back up.
- For a long-term storage of the data we recommend to **download** the data into the Euroscan EuroLOG software via one of the communication options offered by Euroscan. In addition to the infrared connection, Euroscan offers a variety of communication options for automated data transfer from the recorder to the different Euroscan software options. For further information please contact the Euroscan Sales team or visit our website [www.Euroscangroup.com](http://www.Euroscangroup.com).
- Check the correct functioning of the recorder frequently (minimum – together with the fridge service).
- Check the recording system every 12 months to see if the measurement is within the legal error limit. The annual test is obligatory, according to resp. EN 12830 or EN 13486.
- Do not **weld** without disconnecting the power from the Euroscan recorder or the vehicle.
- Do not take the power supply from a generator system without extra **filter** protection against high voltage peaks. Preferably always take power direct from the vehicle or fridge battery.
- Follow the installation and user instructions in this manual.

### 1.3. GENERAL DESCRIPTION

The control panel of the **EUROSCAN RX2-6/TX2-6** consists of three main components:

1. LCD display
2. Keyboard
3. Printer (optional)

#### 1.3.1. LCD DISPLAY

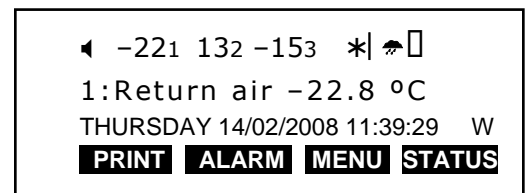
The display has four lines of information, showing the following content in the operating mode.

Line 1: Alarm activated; temperatures; status of digital inputs

Line 2: Rotating display of each temperature to an accuracy of 1 decimal point with sensor name

Line 3: Day, date, and time with indication of summer/wintertime

Line 4: Description of the actual button functions



In every other mode the content of the display is dependent on the actual menu in use.

#### 1.3.2. KEYBOARD

EUROSCAN RX2-6/TX2-6 is completely menu controlled. All functions can be carried out via the four coloured buttons (like printing, activate alarms or change parameters). The actual function of the buttons

is always displayed on the bottom line (chapter 2). To navigate through the menus and change settings, two different kinds of button functions are applicable.

To navigate through the menus and to select in the edit mode a parameter from a table, use the buttons as described below:

<b>Blue</b>	↑	Previous item of the menu
	<	In edit mode: Next item from the list
<b>Yellow</b>	↓	Next item of the menu
	>	In edit mode: Previous item from the list
<b>Green</b>	<b>edit</b>	Menu select, change to edit mode or one menu level down
	<b>accept</b>	In edit mode: accept input and go to next menu point
<b>Red</b>	<b>&lt;-Menu</b>	One menu level up
	<b>&lt;-Cncl</b>	In edit mode: cancel input and display the non changed value. Press 2 seconds for rejecting input and go back to previous menu.

When entering free programmable text like names the button functions are as follows:

<b>Blue</b>	↑	Next character from the list
<b>Yellow</b>	↓	Previous character from the list
<b>Green</b>	<	One character to the left
<b>Red</b>	>	One character to the right
<b>Blue + Yellow</b>	<b>&lt;-cncl</b>	Cancel input and display the non-changed value. Press for 2 seconds to reject the input and go back to the previous menu.
<b>Green + Red</b>	<b>accept</b>	Accept input and go to next menu point.

### 1.3.3. PRINTER (OPTIONAL)

The optional thermal printer is installed in the right side of the recorder. Due to the so called "Plug and Play concept" the printer can be retrofitted at any time without disconnecting the recorder from power. For retrofit, the existing mechanism will be exchanged for a mechanism with printer. To remove the printer or the housing, pull down clear plastic flap (with Euroscan logo). Printer slides forward and can be pulled out. After changing the paper please install the printer with the flap open and close the flap only after the printer is fully inserted.

Note: a printout must be torn downwards over the edge of the bottom plastic part. A coloured line on the last meter of a roll indicates that the paper roll needs to be replaced (Attachment B).

## 2. INSTALLATION

In general **EUROSCAN** temperature recorders are supplied with all required components for a standard installation. A standard installation includes the mounting of the unit itself, mounting and connecting of two temperature sensors. Optionally 4 extra sensors and up to 4 digital (status) inputs can be connected. The main steps of the installation are described in the following chronological order.

### 2.1. POSITIONING CONNECTIONS

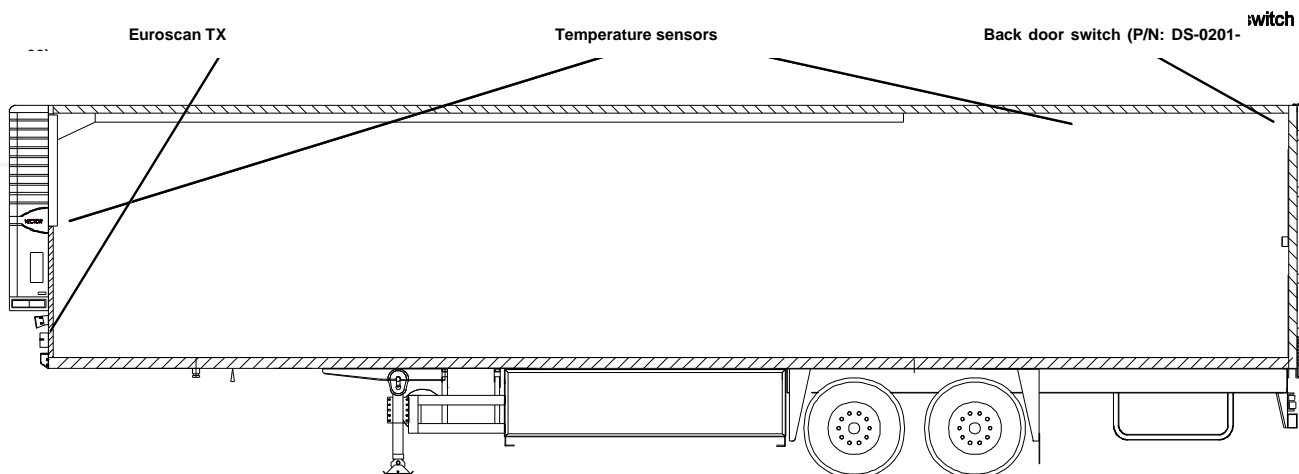
#### 2.1.1. TEMPERATURE SENSORS

**EUROSCAN** Temperature recorders can only be used with **EUROSCAN** temperature sensors as supplied with the **EUROSCAN** package.

Before installation, it is necessary to determine how many measurement points are required to retrieve the desired information. Only with an optimal choice of the number and the position of the sensors can a sensible conclusion be drawn of the air temperature in an entire compartment.

The following items must be observed at planning:

- The temperature sensor must **not** be mounted in a location without air circulation.
- The sensor position should be protected against bumping of load, doors, etc.
- The channel of the interior light must have a minimum distance of 0.5 m to the sensors.
- At least one sensor per compartment and also one sensor in the return air are recommended.  
The best position of a compartment sensor is in the middle under the ceiling at about 1/3 of the compartment length counted from the back.
- The compartment sensor should be mounted with the **EUROSCAN** protection guard.  
Which will allow sufficient air circulation around the sensor.



#### 2.1.2. DIGITAL INPUTS

The digital inputs allow monitoring and registration of doors (open/close) or defrost and refrigeration (on/off). By configuring the parameters the interpretation of the corresponding status can be distinguished.

### 2.1.3. POWER SUPPLY

The power supply must be connected directly to the vehicle or fridge battery. The included 10A (T) floating fuse must be fitted in the +power line as close as possible to the power connection. The **EUROSCAN** recorders are suitable for a voltage between 10 - 36 Volt DC.

## 2.2. MOUNTING

The installation set of the **EUROSCAN** recorder contains almost all components required for a standard installation with two temperature sensors. In addition to that some small materials like a silicon kit, PVC trunking, and fixing materials for cable mounting are required.

- Preferably, use for both outside and inside walls the existing cable trunking. Alternatively, use self adhesive cable trunking. All drilled holes need to be sealed with a suitable sealant.
- For future calibration requirements, it is advisable to allow enough spare cable to enable the sensor to be lowered to the floor.

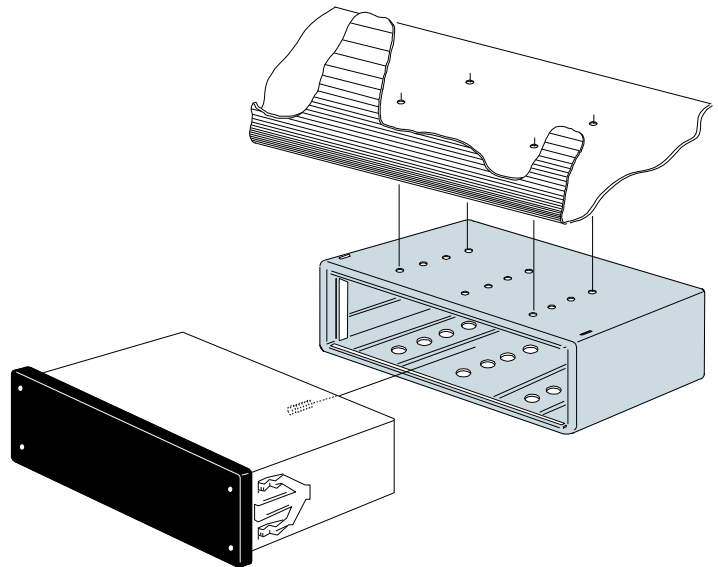
### 2.2.1. EUROSCAN R-VERSION

The R-version is designed to be mounted within the cab of a vehicle in a DIN radio slot.

The R-version is retained in the mounting cage by a spring locking plates fitted to each side.

Fix the mounting cage by inserting it into the slot and by bending the fixing blades to secure it in the fascia.

Slide the recorder into the cage until it locks into position. Once fitted into the cage, the removal procedure is to insert the keys provided into the keyways at each side of the front face of the recorder to release the locks.



#### 2.2.1.1 Optional mounting kit

If no radio slot is available the recorder should be mounted with the optional mounting kit (P/N ET-1100-31). This will replace a radio slot and can be fixed on or under the dashboard as well as on the back wall. Ensure that the position chosen allows the driver to see the display and use the operator keyboard. Please keep in mind that access to the printer is required to replace the paper roll. This requires clearance above the recorder.

### 2.2.2. EUROSCAN T-VERSION

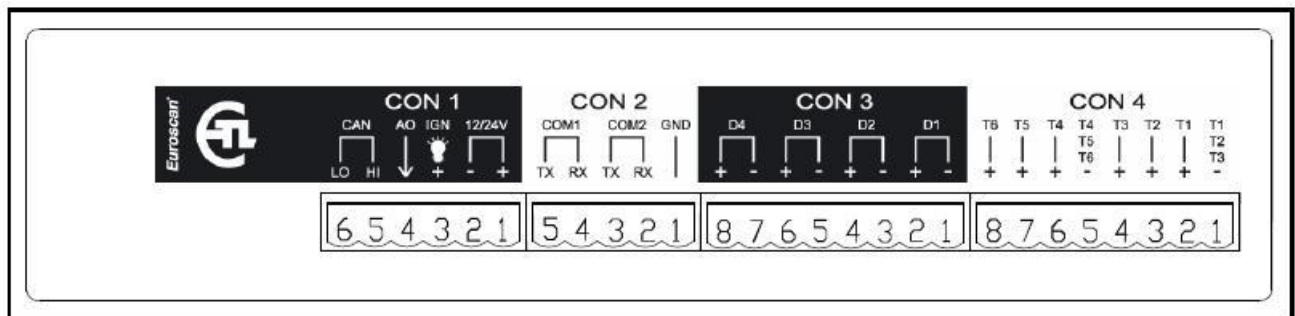
The T-version has been designed for outside mounting directly on the body. Usually it is fixed under the refrigeration unit on the front side of the body where it is easily accessible. For fixing proceed as follows: first hold the box in the desired position and mark the mounting holes. Next step is to drill the holes so

that the rubber sleeves fit in exactly and the box can be screwed on. Please make sure that the cable glands of the box show downwards.

Cables should be installed via watertight cable glands. This avoids humidity penetration into the box. For each cable a separate gland should be used unless you use a gland especially designed for more cables.

## 2.3 CONNECTORS

As both versions are provided with identical PCBs the connections for temperature sensors, digital inputs and power supply are the same for both versions. On the back of the recorder you will find four connector blocks (see picture) each of them being described in detail in the next paragraphs.



### 2.3.1 CONNECTOR BLOCK 1 (POWER SUPPLY AND OUTPUTS)

Power supply

Connect power supply on pin 1 (+) and pin 2 (-). The recorder is suitable for a voltage between 10 - 36 Volt DC. Power consumption when printing is 25W.

Display background light (preferable for the R-version)

Usually the display background light switches on after pressing any key and switches off automatically after some seconds if no further key is pressed. If a permanent background light is required while driving, connect pin 3 to a vehicle ignition +signal.

**(Warning:** never connect directly to vehicle battery).

Alarm output

Pin 4 is an alarm output, for temperature and status alarm. The output is switched to ground in case of an alarm situation and is limited to 1A output current.

CAN bus

Pin 5 and 6 is reserved for CAN bus functionality for future use. The CAN bus chip is not incorporated and no software functions are implemented yet.

### 2.3.2 CONNECTOR BLOCK 2 (SERIAL PORTS)

The temperature recorder has two serial communication ports. These are used for a permanent connection with external devices. To be connected with a suitable connector (connector block 5-way, P/N ET-0300-15).

### 2.3.3 CONNECTOR BLOCK 3 (DIGITAL INPUTS)

EUROSCAN-recorders offer the possibility to connect up to 4 digital inputs. Pins 1-8 are accordingly marked with D1-D4 (D1 = Pins 1+2, ...). At every opening or closing of the input circuit a status change will be recorded into memory, but only if the input has been activated and configured correctly in the parameter settings. All four inputs as standard

are de-activated, the next functions are pre-programmed: D1 = refrigeration, D2 = back door, D3 = defrost, D4 = side door.

There are 3 ways to connect a digital input:

- A normal open/close switch.
- An external signal that has a pulse signal through the positive polarity signal (example: defrost signal of fridge unit, On/off switch fridge unit).
- An external signal that has a pulse signal through the ground signal (example: fridgealarm output signal).

### 2.3.4 CONNECTOR BLOCK 4 (TEMPERATURE INPUTS)

Euroscan recorders offer the possibility to connect up to 6 temperature sensors. Pins 1-8 are accordingly marked with T1-T6. Pins 2, 3, 4, and 6, 7, 8 are signal inputs and pins 1 and 5 are internally connected to ground. The polarity of the sensor cable is not relevant. In the factory settings inputs 1 and 2 are activated and pre-programmed as follows: T1 = return air, T2 = rear. Please note that a used input always has to be activated and configured in the parameter menu.

## 2.4 CONFIGURATION

After finishing the physical installation of the temperature recorder it should now be configured. All parameters are stored in a parameter file. After every standard installation a number of parameters need to be either checked or changed. Time and date are directly accessible in the user menu, all other settings are accessible via the pin code protected parameter menu (view Attachment D):

- Time (menu 3.1), Date (menu 3.3)
- Temperature inputs (menu 5)
- Sample rate (menu 10.3)
- Vehicle ID (menu 10.4)
- Header text (menu 10.5)

## 2.5 FINAL TESTING STANDARD INSTALLATION

The following features must be checked after installation:

### POWER SUPPLY

The supplied power voltage is between 10V and 36V DC and protected with a 10A floating fuse. The power supply must be sufficient to offer 25W (if applicable check by printing any ticket).

### 2.5.1. DISPLAY

The background light of the display must switch on after pressing any key (except if using the permanent background light function) and an acoustic signal can be heard. The display shows the actual temperatures of the activated temperature inputs.

### 2.5.2. TEMPERATURE SENSORS

After approximately 5 minutes the temperature must be correctly displayed. A value of -40°C indicates the possibility of a non-connected sensor or a cable failure (open circuit). A value of +50°C indicates a possible short circuit between the connector pins.

## 2.6 ADDITIONAL INSTALLATION

The following items are to be checked if applicable:

**2.6.1 PRINTER**

Test the printer by printing any ticket.

**2.6.2 STATUS INPUTS**

For each activated status input, a small box appears in the top right edge of the display (pre-defined symbol, indicating that the corresponding input has been activated). If the status of the input changes, a symbol appears instead of the box, according to the change of the status.

**2.6.3 ALARM SIGNAL**

The internal alarm signal (persistent buzzer) can be heard as soon as a defined temperature limit has been exceeded. In the case of an alarm an external signal is also activated if this is installed. Furthermore the corresponding temperature input will flash on the display. The internal signal buzzer and the external signal can be switched off by pressing the yellow (alarm) key. The flashing display will only stop after the temperature is back within the defined limits.

**ATTACHMENT A TECHNICAL DATA**

For technical support please contact your supplier or visit [www.Euroscangroup.com](http://www.Euroscangroup.com)

Technical specification:

- Operating voltage: 10-36 V, protected against alternator load shedding
  - Power consumption: nominal value 0.6W, max. 25W (while printing)
  - Temperature: -30°C / +70°C (in operation), -40°C / +85°C (maximum)
  - Humidity: 97% relative humidity at 25°C
  - Memory size: 512kB, minimum 1 year with 2 sensors and logging interval 15 min.
  - Inputs:
    - 6 x temperatures for Euroscan sensors: measuring range -40°C to +50°C
    - 1 x digital for display background light, active >5V
    - 4 x digital, closed circuit
  - Outputs:
    - 1 x open input, switched to ground and current limited to 1A
  - Data ports:
    - Infra red for data transmission and service/parameter programming
    - 2 RS-232 connectors for external devices
    - 2 RS232 for internal devices on one connector
    - 1 CAN bus connector
- a) Ventilation:  
No special requirements. Euroscan recorders are designed for use in an automotive environment.
- b) IP rating:  
Euroscan TX2-6, trailer version for outside mounting, IP65  
Euroscan RX2-6, cabin version for cabin mounting, IP22

- c) Dimensions (W x H x D):  
Euroscan TX2-6, 245 x 202 x 110mm  
Euroscan RX2-6, 188 x 58 x 145mm
- d) Maintenance:  
Clean with a moistened duster, without alcohol or other volatile cleaning products.
- e) Circuit protection:  
For protection a 10A floating fuse must be fitted in the positive (+VE) power line as close as possible to the power connection (contained in installation kit).
- f) Battery:  
Unit contains a lithium battery, please remove before discarding and dispose of separately.

## **ATTACHMENT D      ERROR CODES**

If the display shows one of the following values:

- OC    (I)    the input is activated but no sensor is connected
- (ii)    the sensor has an open circuit (sensor or wire failure)
  
- SC    (I)    the sensor has a short circuit (sensor or cable failure)