UNIVERSAL RECEIVER COSTERWIRELESS

C ← BUS

URX 918 Eng. (antenna incorporated)
URX 918/S1 Eng. (external antenna)

- **Receives temperature measurements from up to 16 sensors of same type**
- **Calculates minimum, mean and maximum values of the temperatures received**
- **Provided with output compatible with all sensors of COSTER controllers**
- **Stores all measurements in a powerful DATA LOGGER**
- **Telemanagement via incorporated C-Bus**
- **Optoisolated alarm output for reception failure**
- **Power supply 230 V~; wall-mounted**

CE

Since on any COSTERWIRELESS site there is at least one of these receivers, this Data Sheet contains full information on the correct installation and use of the whole system.

1. APPLICATION

URX 918 is the receiver for the sensors in the COSTERWIRELESS system; at present the system comprises SAR 010 room and SER 001 outside temperature sensors.

The analogue output with which URX 918 is equipped can be connected like a normal sensor to any COSTER controller; essentially, it provides a system of sensors without wires (WIRELESS).

URX 918 can be used:

– in spaces where it is impossible or too costly to install normal wired sensors

– heating and/or conditioning of buildings comprising several spaces, where it is necessary to strike a balance between the various zones to ensure uniform heating.

– managed sites where it is necessary to have a record over time of the temperatures of all the spaces in order to settle any complaints which might arise.

2. COSTERWIRELESS FAMILY

URX 918 belongs to the COSTERWIRELESS family which comprises various devices for setting up complete monitoring and communication systems.

In the second part of this Data Sheet the whole family of products is described.

3. SPECIAL MODELS

Model	Description
URX 918/S1	Receiver with external antenna and including extension & base for greater distances

4. OTHER SYSTEM DEVICES

No.	Description	Model	Sensor t°	Code	Data sheet
	Room temperature sensor COSTERWIRELESS	**SAR 010**	NTC 10 kΩ	–	N 310
	Outside temperature sensor COSTERWIRELESS	**SER 001**	NTC 1kΩ	–	N 320
	Universal repeater COSTERWIRELESS	**UTR 908**	–	–	N 350
	Adapter cable for temperature measurement (optional)	**ASA 050**	–	–	–
	4-metre cable for extending antenna (optional)	**APA 812 C1**	–	–	–

5. TECHNICAL DATA (DEFAULT value in bold type)

• Electrical & mechanical

Power supply	230 V~± 10%
Consumption	1 VA
Electromagnetic compatibility	CEE 93/68
Reception frequency	433 MHz
Construction standards	CEI
Protection	IP 40
Dimensions	130 x 80 x 35 mm
Weight	220g

• Outputs

Analogue compatible with COSTER controllers	1
Optoisolated digital alarm signalling	1

• Settings

Address first sensor to receive	**1**...16
Number sensors to receive	**1**...16
Type of sensor to receive	**A (room)**...E (external)
Group sensors to receive	**1**...16
COSTER controllers serviced	see table on page 6
Choice function for analogue output	min/**mean**/max
Recording interval (DATA LOGGER)	5...**15**...60 minutes
C-Bus address	1...255
C-Bus speed	**1200**/2400/4800/9600 baud

6. OVERALL DIMENSIONS

1 – Cover
2 – Base
3 – Cover securing element

7. FACIA

1 – Display
2 – Program key
3 – + and – operating keys

8. WIRING DIAGRAM

| L | N | | U0 | U1 | M | B | Oc | C |

230 V ~   Alarm output   Analogue output   0 ▲▼ C-Bus
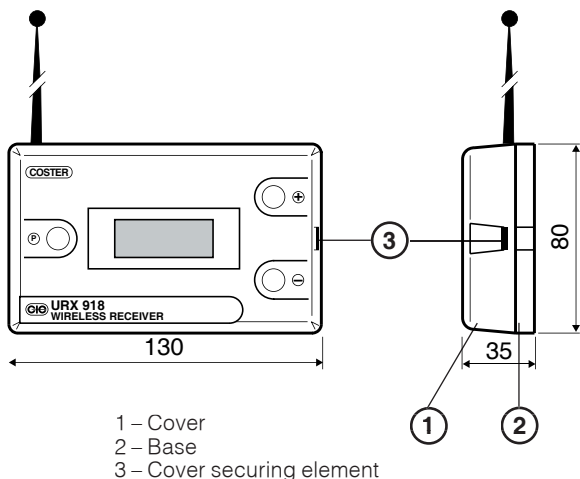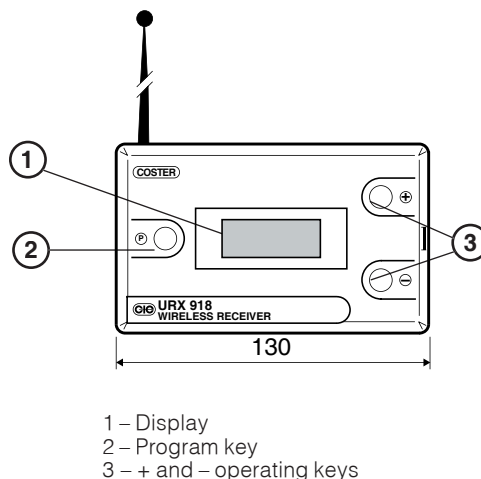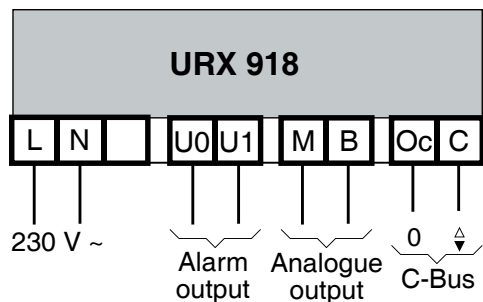
L – 230 Volt ~
N – Neutral
Alarm output – Output which closes when no reception from any sensors. The lack of reception of some of sensors does not trigger alarm: the system adapts itself to a smaller number of sensors. Optoisolated output of open collector type (maximum 5 mA)
U0 = negative of open collector
U1 = positive of open collector
Analogue output – Output compatible with sensors of COSTER controllers
M = Analogue earth
B = Analogue output
C-Bus – Transmission of data via Telemanagement

9. INSTALLATION

URX 918 can be installed by screwing the base to a wall.

To have the best reception it is advisable to install it in a central position in respect of the sensors from which it must receive.

The unit can also be installed inside any type of enclosure, provided it is not made of metal, since this would shield it from the radio waves.

For the distance between transmitters, receivers and repeaters you are referred to section 6 of the general Data Sheet on the COSTERWIRELESS system, attached to this document.

10. WIRING

Proceed as follows :
• Separate cover from base
• Mount base on wall
• Carry out the wiring as in the diagram and in respect of the safety regulations in force, using cables of the following cross sections :
– 1.5 mm^2 for power supply
– 1 mm^2 for all the other connections
• Switch on the power (230 V~) and check its presence at terminals L and N.
• Switch off power and replace cover on base

10.1 C-Bus connection for local or remote Telemanagement

URX 918 is provided with C-Bus like any COSTER controller and so can be treated in exactly the same way as regards local or remote connections.

For local connection use ACB 232 cable.

For remote connection use any modem enabled for C-Bus.

For connection distances refer to Technical Data Sheet T 021.

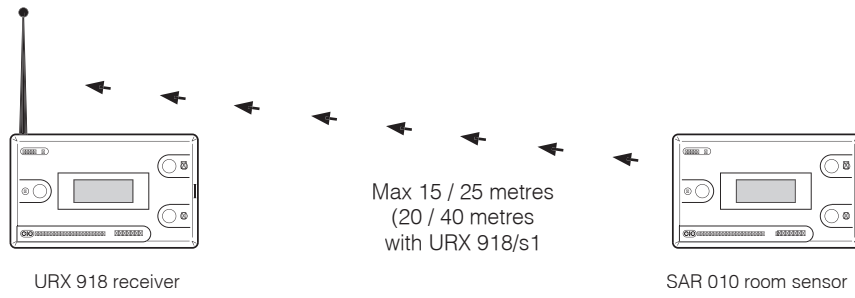### 10.2 Use (if necessary) of "ASA 050 temperature measurement corrector"

Usually the analogue output (M-B) of URX 918 is already calibrated for connection to COSTER controllers of recent manufacture. For earlier COSTER controllers it may happen that the temperature read by the receiver has an error in respect of the temperature read by the controller; usually, this error does not exceed 1 - 2°C. Should this error occur, you can use the ASA 050 corrector, which is essentially a cable with control potentiometer. The ASA 050 cable is plugged in between the URX 918 receiver and the controller: the method of connection is clearly illustrated on the cable itself.

By rotating the correction potentiometer with a screwdriver you can make the two temperatures equal.

It should be remembered that often the measurement of the room temperature by COSTER controllers is averaged out from many consecutive measurements so as to obtain greater stability; when turning the potentiometer wait a few seconds so that the room temperature reading becomes stabilised.

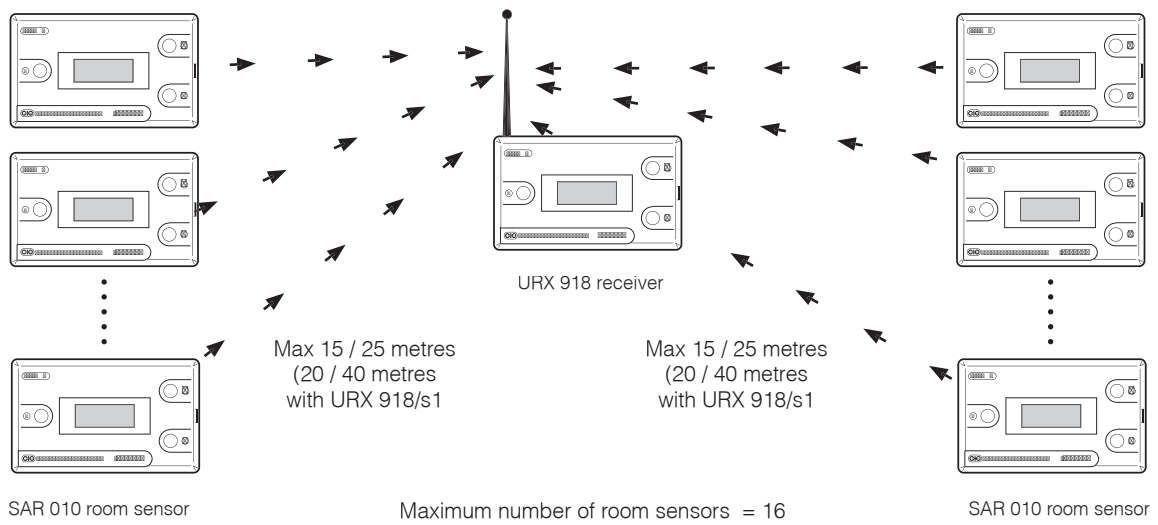### 10.3 Use of external antenna, URX 918/S1 accessory supplied

Usually, URX 918, with its incorporated antenna, covers distances of 15 to 25 metres in normal buildings.

If these distances should not be sufficient, or if the condition of the walls should be unfavourable, model URX 918/S1 could be used: this model has antenna, extension and base plate (reflector), and is attached to the wall and (if necessary) in a different location from the receiver. The distances can be up to 20/40 metres.
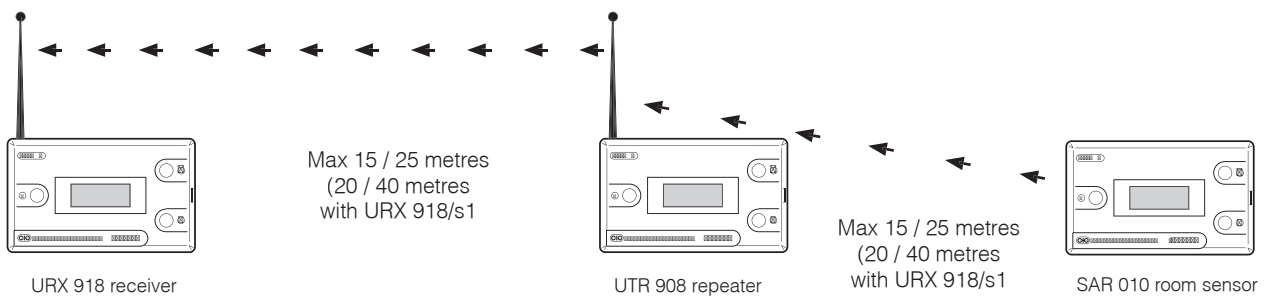
11. EXAMPLES OF INSTALLATIONS
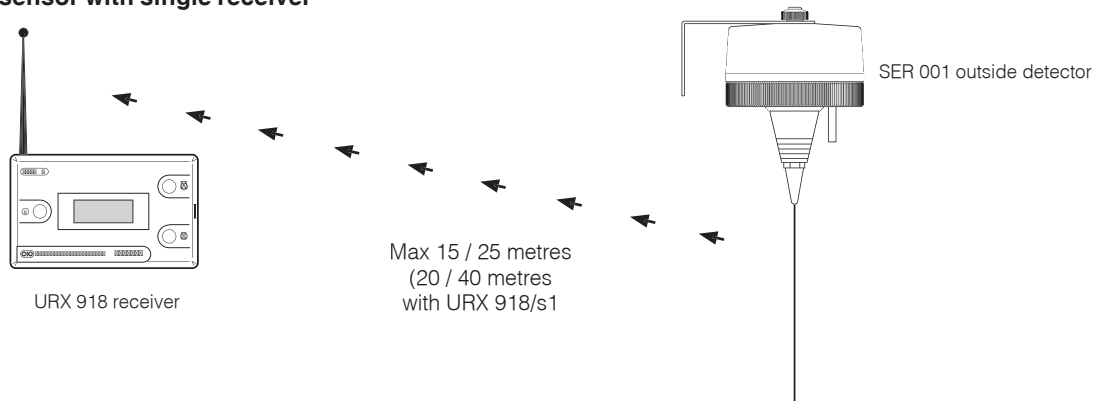
11.1 Single room sensor with a single receiver

Max 15 / 25 metres
(20 / 40 metres
with URX 918/s1)

URX 918 receiver

SAR 010 room sensor

11.2 Several room sensors with a single receiver

URX 918 receiver

SAR 010 room sensor

Max 15 / 25 metres
(20 / 40 metres
with URX 918/s1)

Max 15 / 25 metres
(20 / 40 metres
with URX 918/s1)

Maximum number of room sensors = 16

SAR 010 room sensor

11.3 Single room sensor a long distance from receiver

Max 15 / 25 metres
(20 / 40 metres
with URX 918/s1)

Max 15 / 25 metres
(20 / 40 metres
with URX 918/s1)

URX 918 receiver

UTR 908 repeater

SAR 010 room sensor

11.4 Single outside sensor with single receiver

SER 001 outside detector

Max 15 / 25 metres
(20 / 40 metres
with URX 918/s1)

URX 918 receiver

11.5 Complex system with several elements

This example describes a site which has several room sensors belonging to different groups, several outside sensors, several receivers (one for each group) and a repeater for reaching greater distances..

Outside sensor 1
GROUP C

Room senmsor 1
GROUP B

Room sensor 1
GROUP A

Room sensor 2
GROUP B

Room sensor 2
GROUP A

REPEATER

Room sensor 3
GROUP B

Room sensor 3
GROUP A

Outside sensor 2
GROUP C

Receiver
GROUP A

Receiver
GROUP B
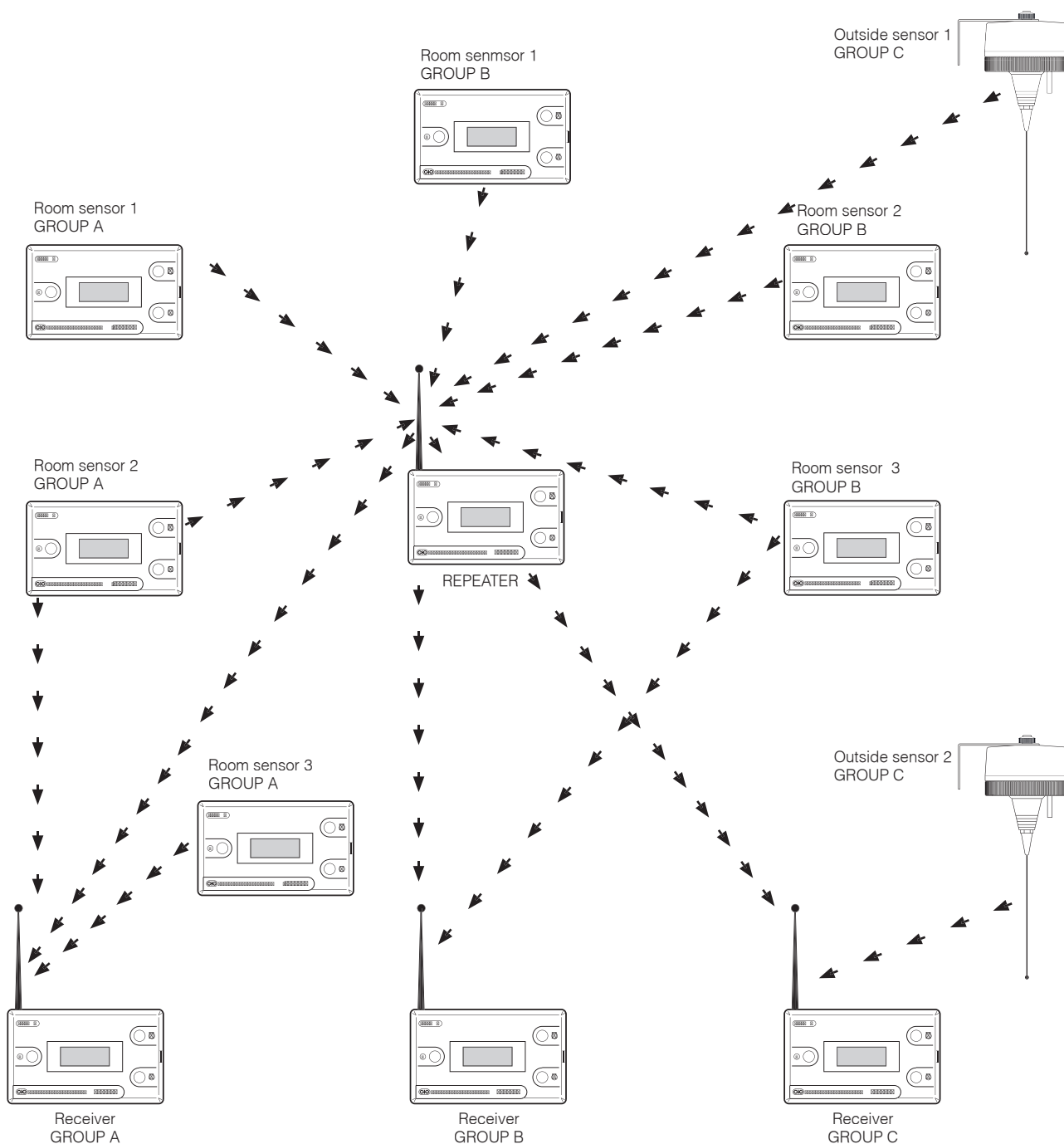
Receiver
GROUP C

- The GROUP A receiver processes the three sensors of its group in order to send to a controller the room temperature data from zone A.
- The GROUP B receiver processes the three sensors of its group in order to send to a controller the room temperature data from zone B.
- The GROUP C receiver processes the two outside sensors of its group in order to send to a controller the outside temperature data.
- Room sensor 1 of GROUP A does not transmit directly to its receiver but sends via a repeater
- Room sensor 2 of GROUP A transmits both directly to its receiver and via a repeater: the receiver can process, without problems, several signals from the same sensor which arrive via different channels.
- Room sensor 3 of GROUP A transmits directly to its receiver.
- Room sensors 1 and 2 of GROUP B reach their receiver via the repeater.
- Room sensor 3 of GROUP B reaches its receiver directly and via the repeater.
- Outside sensor 1 of GROUP C reaches its receaver via the repeater.
- Outside sensor 2 of GROUP C reaches its receiver directly.

The communication channels between the various elements can change from one moment to another according to the transmission characteristics of the area where the various components are installed.

The receivers continuously carry out "clean-up" operations so as to take into account only their own sensors, from whatever part the information originates. In even more complex networks it is possible for several sensors to be processed simultaneously by several receivers when, for example, a single sensor has to serve several different controllers.

We reserve the right to make changes without notice

12. OPERATION

12.1 Reception of signals from the sensors

URX 918 receives all the signals from all the sensor installed within its sensing zone, but processes only those regarding the sensors of its GROUP. The maximum number of sensors for each group is 16.

URX 918 recognises (by means of the setting) which and how many sensors it is expected to receive directly or through one or more repeaters.

If any sensor is not received for a certain length of time an alarm is triggered.

12.2 Type of sensors to be received

URX 918 processes only the type of sensor for which it has been programmed: at present only room and outside sensors. By means of the setting it will recognise the sensors of interest.

12.3 Processing of the temperature measurements

For each new reception, URX 918 calculates the minimum, mean and maximum values received from all the sensors for which it is responsible. If connected to one sensor only, obviously these three values are the same.

One of these three values can be chosen to convert it into an analogue size (value in volts between 0 and 5) which represents exactly the figure which a traditional sensor would send to the controller to which it is connected.

In practice, the whole system is equivalent to a normal sensor connected with wires.

The choice of one of the minimum, mean or maximum values has the following significance:

– MINIMUM VALUE: it is desired that none of the heated spaces has a temperature below a contractual value; the controller receives this minimum value continuously.

– MEAN VALUE: it is desired to heat a group of spaces so that a mean temperature acceptable to all the building is maintained.

– MAXIMUM VALUE: it is desired that no space is heated above a certain temperature value.

12.4 Recorder

All the measurements of each single sensor are recorded at regular (adjustable) intervals.

Using the SWC program all these values can be read and graphed.

The capacity of the recorder depends on the number of sensors in the GROUP and the time interval between one recording and another. With16 sensors connected it is possible to have 100 complete recordings: the time period covered by the recorder is, therefore, equal to 100 multiplied by the interval set.

Example: with 16 sensors and a recording interval of 30 minutes the recording covers two days (50 hours).

If there are less than 16 sensors the autonomy of the recorder can be three times as much.

In practice, the recorder shows the trend of the temperature for the past 4 - 5 days.

12.5 Telemanagement

URX 918 receiver is provided with C-Bus for Telemanagement (local or remote).

For the WIRELESS system, Telemanagment differs from the standard system since only the receiver is provided with C-Bus; all the sensors have radio connection and are not provided with C-Bus.

All the system settings must therefore be made locally at the time of installation: it must be remembered that the WIRELESS connection is essentially the equivalent of a wired connection, but via Telemanagement.

Only the recorder can be configured and read via Telemanagement, using a keynumber if required.

13. READINGS & CONTROLS FOR NORMAL USE (AFTER HAVING CONCLUDED PROGRAMMING)

URX 918 normally displays the minimum, mean or maximum temperature of all the temperatures received from the sensors for which it is responsible, on the basis of the programming:

Press + key: readout of maximum temperature from all the sensors received

Press – key: readout of minimum temperature from all the sensors received

Press + and – keys together: readout of mean temperature value of all sensors received.

The following may also appear :

− ... ... = running dashes: Search for first signal after first switching on

− − : − − = fixed dashes: Stop receiving all the sensors which are radio-connected to receiver

Press P key to check values and operation of individual sensors. There may appear:

In : 01 alternating with **XX.Xc :** indicates receiving sensor with address 1 and that temperature received is **XX.Xc**

In : 01 alternating with **Er : rc :** indicates that sensor with address 1 not being received

In : 01 alternating with **Er : So :** indicates that sensor with address 1 received with errors (e.g. sensor fault).

With + and – keys scroll all the addresses of the sensors which must be received to check the temperature or any malfunctioning.

In this case it is necessary to re-test the sensor or sensors not received: if the test shows the sensor or sensors are working this means that there is no radio link, probably because they are too far away. If the test shows the sensor or sensors are not functioning this means they are damaged.

In complex systems (at least 20 sensors, 2 receivers and a few repeaters) it may happen that occasionally some sensor is not received because it has temporarily collided with another sensor or repeater (radio interference).

If these interferences are relatively few they do not influence the good functioning of the system.

If they should be frequent and they persist (e.g.1 hour) it would be worthwhile looking again at the addressing of the various components of the system.

In situations of this kind it is advisable to contact COSTER technical staff in order to find the best solution possible.

Whilst at the previous page, by pressing + and – keys at the same time for a few seconds there will appear the writing rES: the memory of the temperatures read up to that moment is cancelled.

In practice, you start completely from the beginning with all the new values which will be updated.

Press P key to return to the first page.

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14. SETTING

Press P for at least 9 seconds: ProG appears: indicates start of programming.
As soon as P key released you go to:
First page of programming appears: ti : 01 = with + and – keys enter address of first transmitter of series of group of this receiver. The factory (default) value is 1.
Usually the value set is 1, irrespective of whether one sensor or several sensors belong to the group.
It is necessary to enter values different from 1 in very complex situations where it is possible for the same sensor or sensors to be connected to several receivers; or when occur instances of interference illustrated in section 12.
In such situations it is necessary to consult COSTER technical staff.

Press P: tr: 01 appears = with + and – keys enter total number of sensors which belong to the group of this receiver.
Remember that the sensors of a certain group must have addresses with all the numbers in sequence.
Example with 5 sensors: if the first sensor has address 1, the others must be 2, 3, 4, 5; If the first sensor has address 3, the others must be 4, 5, 6, 7.
The receiver, knowing the first address and the first sensor of its group, and the total number of sensors, automatically knows which are the addresses of all the sensors it has to receive.
In complex systems these last two pages of programming can be used in order to utilise connections which are absolutely free.
In practice, one or more sensors can be used by one or more receivers when monitoring of room or outside temperatures has to serve for different controllers.
When systems are really complex it is advisable to consult COSTER technical staff.

Press P : So : A appears = with + and – keys choose from the values:
A = connected with room sensors model SAR 010
E = connected with outside sensors model SER 001
L = connected with sensors for transfering the value in volts without changes (e.g. fluid level sensors)

Press P : Gr : 01 appears = with + and – keys enter the number of group of sensors to which connected.
Values go from 1 to 16, with 1 factory setting (default)

Press P : AP : A1 appears = with + and – keys choose the number corresponding to the code of the COSTER device to be serviced (i.e. the input of the normal sensor converted to WIRELESS)..
The following table shows the code to be entered on the basis of the type of controller to be serviced.

TYPE OF SENSOR	CODE	TYPE OF COSTER DEVICE
Outside SER 001	E1	DTU/RTU/XTU 614 - DTU/RTU/XTU 644 - DTU/RTU/XTU 618 - DTA/RTA/XTA 624 DTT/XTT 608 - DTT/XTT 618 - DRU 614 - RTP 318 - CAP 328 - CSC 328
	E2	DTE/RTE/XTE 611 - DTE/DSE/RTE/XTE/XSE 602 - DTE/DSE/XTE/XSE 600 - RTE 643 RTC 604 - DCC/XCC 602 - DTC 648 - DTC 628 - DCS/RCS/XCS 633 UPT 678 - DAM 675 - XTP 600
	E3	CSV 328 - UMM 348 - UMF 348
	E4	ULT 328
	07	FTC 738 - XTC 638 - XCC 638 - XCC 618
	08	SPECIAL CONVERSION FOR FUTURE USES
Room SAR 010	A1	DTU/RTU/XTU 614 - DTU/RTU/XTU 644 - DTU/RTU/XTU 618 - DTT/XTT 608 - DTT/XTT 618 DTA/RTA/XTA 624 -RTP 318 - UPT 678 - CAP 328 - RTB 645 - CSC 328 - DTR 628
	A2	DTE/RTE/XTE 611 - DTE/DSE/RTE/XTE/XSE 602 - DTE/DSE/XTE/XSE 600 - DTR/RTR 684 RTE 643 - DCS/RCS/XCS 633 - UPT 678 - DAM 675 - FTC 738 - XTC 638 - XCC 638 XCC 618 - XTP 600
	A3	DTF/RTF 314 - DTF/RTF 318
	A4	ULT 328
	A5	RTB .40 - RTB .41 - RTB .42 - RTB .45 - RTB .44 - RTB .44S1 - RTB 540
	L	OUTPUT B IS EQUAL TO THE INPUT VOLTAGE OF THE TRANSMITTER

This analogue output can also be connected to several COSTER controllers provided the outside sensor or the room sensor have the same code shown in the table.

Press P : FU ☰ ⁻ appears = with + and – keys establish the type of processing to carry out on all the temperature values received, to be converted to output for the controllers:

FU :☰ ⁻ = choose maximum value to send to output for controllers

FU :☰ – = choose mean value to send to output for controllers

FU :☰ _ = choose minimum value to send to output for controllers

Press P : rE : 15 appears = with + and – keys choose the time interval between one recording and another of the temperatures received (between 5 and 60 minute).
The factory setting is 15 minutes: with this value the recorder capacity is a little over a day with 16 sensors connected and more than 3 days with few sensors serviced.
A value of 30 minutes is suggested; this is more than sufficient to know the trend of the temperatures, in view of the relatively high time constant, both of outside temperature and of room temperature; with this time value the recording can last from 2 days to one week.

Press P: A 1 appears = with + and – keys choose the C-Bus address of the receiver, for local or remote Telemanagement
The C-Bus address has the same significance as for all other COSTER devices.

Press P : br : 01 appears = with + and – keys choose the communication speed for C-Bus :
01 = 1200 baud
02 = 2400 baud
03 = 4800 baud
04 = 9600 baud
The C-Bus speed must be chosen on the basis of the other devices present on the site and of the speed of the modem.
– if other devices all run at 1200 baud (standard speed) the receiver must also run at 1200.
– if there is only one receiver or it is with devices having adjustable speeds, it is necessary to choose the same speed for all devices and to check that the modem can support this speed.

Press P : CL : – – appears = this is the page of testing.
During testing, a voltage value equal to figure indicated is sent to the analogue output.
With + and – keys this value can be adjusted.
You can test the connection between the receiver and the controller to which it is connected; furthermore, by adjusting the value, you can check the exact conversion between the temperature shown by the controller and the output value in volts.
In general, it is sufficient to adjust the value and to see that the relative temperature indicated by the controller concerned, varies within a realistic range.

Press P appears : XX P is the software version of the unit.

If you want to exit testing before the time has expired :
Press P to return to first page

NOTE : When you enter "**ProG**" programming and in all the successive pages, you remain in this menu for 15 minutes after pressing any key. After this period of time you return automatically to the first page. There remains the option of going to the first page via the P button.

15. TESTING RADIO CONNECTION BETWEEN TRANSMITTERS & RECEIVER

As stated in section 12 of the relative Data Sheet, the transmitting sensors can be put under test in order to check the quality of the radio connection.

It is necessary to test one sensor at a time for each group so as not to confuse one sensor with another.

Before testing, all the group settings and address must have been completed.

The receiver must have the display in the initial position (indicating the mean temperature received).

When a sensor is put under test the receiver must alternate the temperature read (sent by the sensor) and the address of the sensor itself: **21.5c** and **co:1**; this means that the sensor with address 1, and group the same as that of the receiver is under test and is sending a temperature of 21.5c.
If these indications cannot be seen, this means that the sensor is not being received either directly or via any repeaters; it is necessary to position differently the various elements until the sensor is received.
Once a positive result has been obtained you can exit the sensor from the testing and pass to any others to be tested.

Amendment to data sheet

Date	Revision No.	Page	Section	Details of amendments
29.02.08 AM	**01**	6	14. SETTING	Up-to-date table "TYPE TO COSTER DEVICE"

We reserve the right to make changes without notice