

UNIVERSAL REPEATER COSTERWIRELESS

UTR 908 Eng.



- **Receives all the signals from any transmitter**
- **Re-transmits the same signals amplified**
- **Doubles the distance between transmitter and receiver**
- **Provided with anti-interference logic for complex systems**
- **Power supply: 230 V~; wall mounting**

1. APPLICATION

UTR 908 is essentially a relay station for doubling the distance between transmitters and receivers In heating zones. It is particularly indicated for very large sites where the distances between transmitter and receiver exceed 15/25 meters.

2. COSTERWIRELESS FAMILY

UTR 908 belongs to the COSTERWIRELESS family which comprises the various devices for setting up complete wireless transmission/reception systems. In the second part of this Data Sheet the whole family is illustrated.

3. OTHER DEVICES OF THE SYSTEM

No.	Description	Model	Sensing element 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 receiver COSTERWIRELESS	URX 918	-	-	N 351

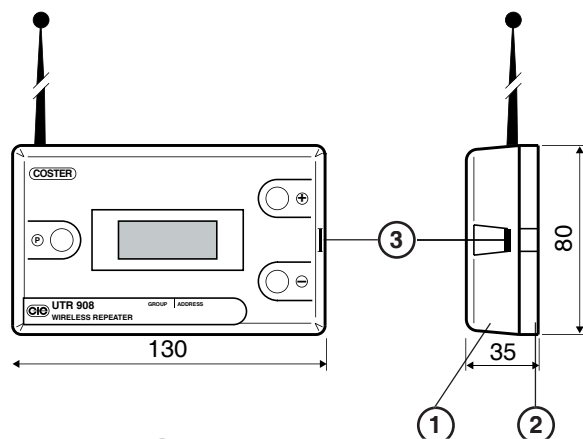
4. TECHNICAL DATA (DEFAULT values in bold type)

• Electrical & mechanical

Power supply 230 V~± 10%
 Consumption 1 VA
 Electromagnetic compatibility CEE 93/68
 Frequency of reception & transmission 433 MHz
 Emission power within the limits
 Construction standards Italian Electrotech. Committee (CEI)

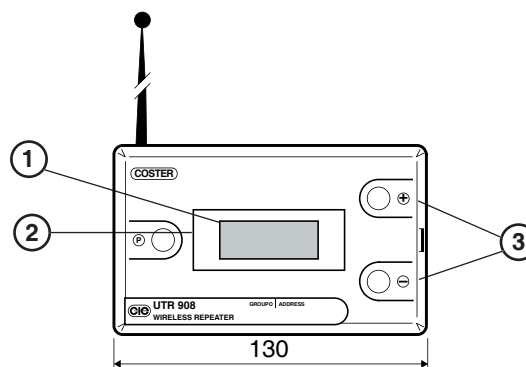
Protection IP 40
 Dimensions 130 x 80 x 35 mm
 Weight 200g
• Setting
 Repeater number 1...16

5. OVERALL DIMENSIONS



- 1 - Cover
- 2 - Base
- 3 - Cover securing element

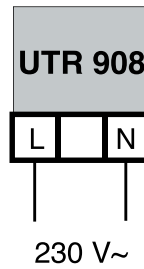
6. FACIA



- 1 - Display
- 2 - Programs key
- 3 - + and - operating keys

7. WIRING DIAGRAM

L – 230 Volt ~
N – Neutral



8. INSTALLATION

UTR 908 can be installed by screwing the base to a wall.

It should be sited in a position intermediate between the sensors to be repeated and the receiver for which it must serve as a bridge.

In place of the receiver there could be another repeater.

UTR 908 can also be installed in a convenient housing provided this is not made of metal (metal acts as a barrier to radio waves).

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

9. WIRING

Procedere as follows :

- Separate cover from base
- Mount the base on the wall
- Make the electrical connections as in the diagram and in respect of the safety regulations in force, using cables of 1.5 mm² cross-section for power supply :
- Switch on power (230 V~) and check its presence at terminals L and N.
- Switch off power and replace cover on base

10. OPERATION

10.1 Reception of radio signals

UTR 908 receives and processes all the signals from all the sensors, irrespective of type, address or group.

It also receives all the signals coming from any other repeaters which might be present.

Essentially, it is a radio bridge which forwards the signals received by increasing their strength.

10.2 Re-transmission of signals received

UTR 908 re-transmits the signals received after having examined and processed them to ensure that it re-transmits only useful signals and, above all, to avoid bouncing the signals frequently between the various repeaters: it is a technical standard of radio bridges to avoid bouncing the digital signals between the various bridges.

10.3 Processing the signals transmitted

Each repeater has its own number; the first repeater is allotted number 1, the second number 2, and so on up to 16. Importantly, each repeater has its own number which is different from that of the others.

Zones which might require more than 16 repeaters would certainly be very complex: in such a situation it would be advisable to contact COSTER Technical Service because, in some circumstances, some repeaters can also have the same number.

This number has these functions:

- Any sensor transmits all its data in an original manner: it is the first to transmit a certain datum because it has created it. Each original transmission has a particular code (repetition code) to which is assigned the value "0" (being the original signal, it has had "zero" repetitions)
- When a repeater receives an original signal, it adds 1 to the repetition code to indicate that there has been a repetition.
- When a repeater receives a signal from any other repeater or chain of repeaters, it adds 1 to the repetition code: the value of the repetition code present in each signal is, in practice, the number of repetitions undergone by the signal. Each repeater has a certain number: all the signals which have had a number of repetitions equal to or greater than this number are discarded and not repeated.

When the final receiver detects the same signal coming from more than one source, it selects the one with the least number of repetitions. In this way, even in complex networks, bouncing and interference is avoided.

12. SETTING

UTR 908 normally displays the last signal received **XX: XX** where :

- the first XX = Group of the sensor received directly or via other repeaters
 - : = this 3-point symbol goes out each time a new signal is received
 - the seconds XX = address of the sensor received directly or via other repeaters
- With each reception the Group and Address are also updated.

Press P key for at least 9 seconds: nr : XX appears : with + and – keys the number is given to repeater :

- the number always starts from 1 & increases (2, 3, 4 etc) for the various repeaters
- all the repeaters must have different numbers
- the lowest numbers must be given to the repeaters near the sensors
- the highest numbers must be given to the repeaters near the receivers
- the intermediate numbers must be given to the repeaters in intermediate positions

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

If you want to exit before the time has elapsed :

Press P to return to first page

NOTE : When you enter "Programming" (nr), you remain in this menu for 15 minutes after pressing any key. After this time you return automatically to the first page.

You can always return to the first page by means of the P button.

SYSTEM OF RADIO-TRANSMITTING SENSORS (WIRELESS) COMPATIBLE WITH CONTROLLERS

C ←BUS

COSTERWIRELESS

COSTERWIRELESS is a system which includes (at the date of this document) four devices for providing HVAC zones with sensors or other devices without hard wiring (WIRELESS).

A typical application would comprise a room sensor and/or outside sensor without wires. This is very convenient because it is often very difficult to lay cables in existing buildings.

WIRELESS SENSORS AVAILABLE AT PRESENT : OUTSIDE sensor and ROOM sensor.

1. SYSTEM COMPONENTS

1.1 SAR 010 room sensor

- Sensor for measurement of room temperature.
- Sensor can be wall-mounted or simply laid in a convenient position
- Provided with a lithium battery (life at least 7 years)
- System provides for use of up to 16 room sensors with a single receiver

1.2 SER 001 outside sensor

- Sensor for measurement of outside temperature.
- Sensor is waterproof (IP55) and can be wall-mounted
- Provided with a lithium battery (life at least 7 years)
- System provides for use of up to 16 outside sensors with a single receiver

1.3 URX 918 universal receiver

- Receiver can be configured for any type of sensor..
- Can service up to 16 sensors of the same type.
- Processes measurements received from sensors to provide:
 - mean value
 - minimum value
 - maximum value
- Provided with a data logger for recording all data from receiving sensors.
- An output compatible with all COSTER controllers
- Provided with C-Bus for Telemangement..

1.4 UTR 908 Universal repeater

- Repeater serves to amplify the radio signals.
- One or more repeaters permit greater distances between transmitters and receivers

2. APPLICATION

- **The system for room temperature** is useful when it is necessary to measure room temperature in different spaces of the building to be heated (e.g. classrooms in a school) in order to ensure that all the zones have the correct contractual temperature.
This measurement is useful both for checking the temperature curve, obtained by means of the receiver data logger, and for having available the necessary data for a balanced operation of the HVAC site.
It avoids overheating a particular zone just because it is more favoured than another from the thermal point of view. Greater comfort is obtained with the maximum energy saving.
- **The system for outside temperature** is useful when you want to measure the temperature at one or two points, without laying cables; in particular when the north / north-west side of the building is a long way from the boiler room.

3. SYSTEM HARDWARE

No.	Description	Model	Sensing element 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 receiver COSTERWIRELESS	URX 918	–	–	N 351
	Universal repeater COSTERWIRELESS	UTR 908	–	–	N 350

NOTE : At present the COSTERWIRELESS family comprises these four basic devices: it is planned to enlarge this family with new sensors and/or controls in order to provide a much more comprehensive WIRELESS system.

4. GLOBAL INFORMATION ON THE SYSTEM

The system comprises four components, each having special functions; for each device there is a Technical Data Sheet which describes the device itself and its method of use.

This type of installation comprises a minimum of two elements (transmitter and receiver) and a maximum practically without limits.

However, any system will require at least a receiver (e.g. URX 918); the Data Sheet for this device will provide information on the device itself plus detailed information on the entire system.

For example, all the operations necessary for testing the various devices which have to communicate with each other.

5. OPERATION OF SYSTEM

The system can carry out numerous functions, for example :

5.1 Measurement and recording of room temperature of a space

Components : 1 **SAR 010** WIRELESS SENSOR
1 **URX 918** WIRELESS RECEIVER

With this combination the room sensor measures the temperature and sends it via radio to the receiver.

The receiver records the temperature at preset intervals, and converts it to a signal compatible with all the COSTER controllers. If the distance exceeds a certain value, it is necessary to insert between the sensor and the receiver one or more **UTR 908** repeaters.

The repeater is of the universal type and so can handle any type and number of sensors and any type and number of receivers. Essentially, it is a transmitter which repeats faithfully everything it receives, after having amplified it.

5.2 Measurement and recording of room temperature of several spaces (max.16 for each system)

Components: up to 16 **SAR 010** WIRELESS SENSORS
1 **URX 918** WIRELESS RECEIVER

The room sensors measure the temperature and send it to the receiver.

The receiver records all the temperatures at adjustable intervals, calculates their mean value, minimum and maximum, and converts one of these values into a signal compatible with all the COSTER controllers.

With this function the COSTER controller can ensure that the temperature in the various heated zones does not exceed, or fall below, a set value.

By using a mean value the heated zones are kept at the mean value of all the temperatures measured.

The receiver can handle up to 16 sensors of the same type.

If the distance is too great it is necessary to insert, between sensor and receiver, one or more UTR 908 repeaters.

Essentially, this is a transmitter which faithfully repeats all the signals it receives after having amplified them.

5.3 Measurement & recording of outside temperature with one or more sensors

Components: 1 or more **SER 001** WIRELESS SENSORS
1 **URX 918** WIRELESS RECEIVER

For outside temperature the information given above for room temperature applies.

When you require an outside temperature measurement representative of the whole building, you can use more outside sensors, on the lines described for room temperature.

6. DISTANCE BETWEEN TRANSMITTERS, RECEIVERS & REPEATERS.

Both the receiver and transmitter are greatly miniaturised, operate at a frequency of 433 MHz and at an output rating permitted by the regulations.

The maximum distances between any one transmitter and its receiver can be established as follows :

- **transmitter & receiver in sight:** this means that the transmitter "sees" the receiver since there is no obstacle between them. Max. distance: 35 metres
- **transmitter & receiver not in sight:** this means that between transmitter & receiver there are obstacles e.g. walls, doors, ceilings. This is the most common situation because the devices are installed in the buildings. In this situation, establishing the maximum distance is very difficult since the type of obstacle can influence the radio waves differently. Max. distance: 15/25 metres
In practice, the maximum distance indicated must always be checked

Should the actual site require longer distances, or if the obstacles have a great deal of influence on the radio transmission, it is necessary to interpose a repeater or repeaters .

Each repeater doubles the maximum distance between sender and receiver

For more detailed technical information kindly refer to the Technical Data Sheets for the individual components.

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Head Office & Sales
Via San G.B. De La Salle, 4/a
20132 - Milano
Orders
Reg. Off. Central & Southern
Via S. Longanesi, 14
00146 - Roma
Shipping
Via Gen. Treboldi, 190/192
25048 - Edolo (BS)
E-mail: info@coster.eu Web: www.coster.eu

Tel. +39 022722121
Fax +39 022593645
Fax +39 0227221239

Tel. +39 065573330
Fax +39 065566517

Tel. +39 0364773200
Tel. +39 0364773202



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