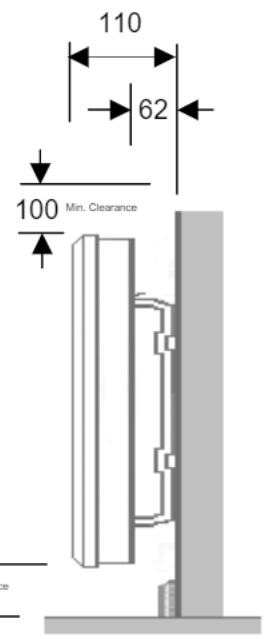
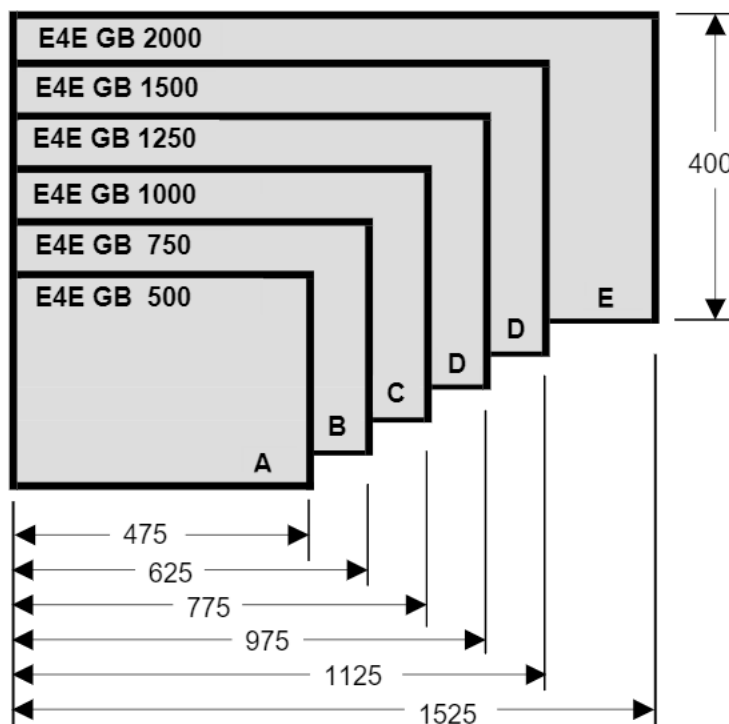
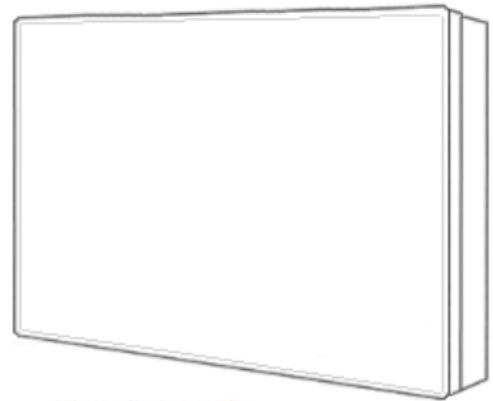


NOBO PANEL RADIATORS

SERIES '14' TYPE 'E4E GB' PANEL RADIATORS

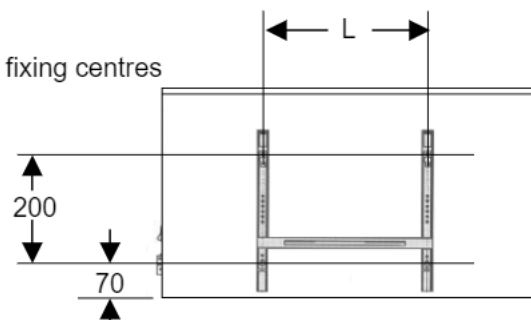
- o Six sizes 500 to 2000 watt
- o Electronic Thermostatic control
- o Adjustable scale 5 - 30°C.
- o On - Off switch
- o Over-heat Cut-Out
- o White paint finish RAL 9010
- o Classified IP 24
- o Flex connection 1.9m (RH side)
- o Electronic proportional temperature regulation
- o Variety of Plug-In Control options:

Series 8 'R80' plug & play technology.



Wall Bracket fixing centres

	L
A	200
B	300
C	400
D	600
E	1000

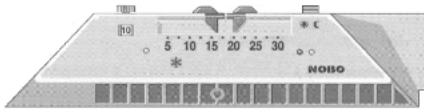


NOBO 'EC.512' CONTROL INFORMATION



The Installation of an EC.512. Mains signalling system for control of 'NOBO' Panel heating should be relatively straight forward provided that a few golden rules are followed.

The principal of the installation centres around the 'EC.512' programmer which transmits radio frequency signals at 120kHz (107-141kHz) through the mains wiring, to be received by receiver units in the panel heaters or by separate plug-in or hard wired receivers. The EC.512 has 12 channels that may be separately programmed and a different programme for each day of the week, (upto 84 different programmes) is possible.



The integral receiver units in the Nobo Panel heaters are used to switch the Panel heater thermostat between its temperature modes, (economy modes (green) and comfort mode (red)) according to the programme instructions.

RS', 'RSX' or 'RCE' receiver units may be used to switch direct in line circuits 'ON or OFF'. Receiver units may be adjusted to respond to any one of the 12 available channels by means of a small rotary switch.



Each system **must** be fitted with a filter, to comply with EMC regulations. The filter should be inserted into the incoming mains electrical tails at the point of entry into that system. The filter is intended to contain the signals within the system, destroy any signal that may escape and eliminate incoming foreign signals, which would otherwise interfere.

Where there are several local systems each fitted with an EC.512 it is essential, if the systems are to operate satisfactorily, for each system to be totally electrically separate **without any cross-over or parallel wiring** of any sort after the filter unit. With a suitably arranged electrical network, equipment that is connected into any power source of that network should receive a signal from the 'EC.512'. The EC.512 may be connected into that network at any appropriate point but it may be prudent, however, to have an entirely separate non-load carrying radial circuit from the fuse board to feed the 'EC.512' direct. Larger installations may benefit from having a dedicated fuseboard for the heating circuits only.

Interference from equipment such as Low voltage, Low Energy and fluorescent lighting is possible. Telephone and Television systems can sometimes cause interference, where these are likely to create a signal problem, they should always be connected to separate sub-circuits which can be fitted with an in-line sub-filter.

Three phase installations may require phase coupling to allow the signal to pass from the source phase onto the other phases of the network, larger systems may require a signal boost device.

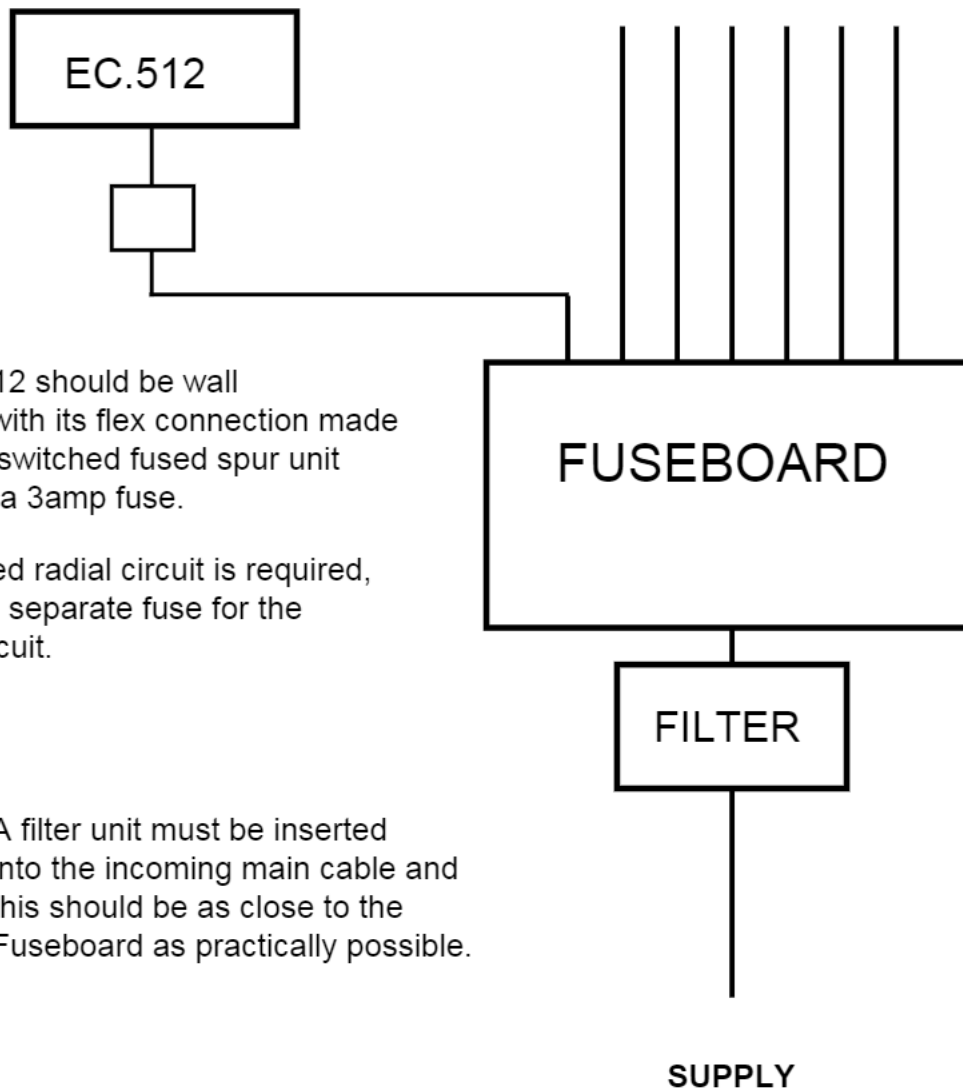
NOBO 'EC.512' CONTROL INFORMATION

The circuit wiring to the heaters should be carried out in the usual manner using ring or radial circuits to spur points beside each heater.

Separate circuits for Heating are required.

Bathroom heaters or towel rails circuits must be separate and not be looped from power circuits.

Installation of an EC.512 Mains Signalling System



The EC.512 should be wall mounted with its flex connection made into an unswitched fused spur unit fitted with a 3amp fuse.

A dedicated radial circuit is required, fed from a separate fuse for the control circuit.

A filter unit must be inserted into the incoming main cable and this should be as close to the Fuseboard as practically possible.

NOBO 'EC.512' CONTROL INFORMATION

INSTALLATION NOTES for use with NOBO ORION System 500 Mains Signalling system.

There are some specific points that should be taken into consideration by the person installing a system 500.

Each system should be separated and protected by an effective filter unit such as the FNX 35 filter.

The separation requires that all cables be kept apart from cables of adjacent systems or cables from unfiltered supplies. They should not be bunched together, share the same duct or cable tray but be a minimum of 150mm apart from each other. The wiring for one apartment, for example, should not be allowed to come into close proximity with wiring from another apartment thus preventing the possibility of a crossover of signals from one system to another.



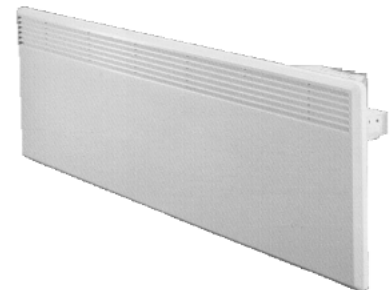
The filter unit, in an apartment for example, should be fitted as near as practically possible to the consumer unit. The filter is directional and it is possible to fit it the wrong way round. The embossed arrows on the casing should always point to the system not the supply.



The EC.512 Programme control unit should be fitted in a convenient location, mounted at eye level in such a manner as will allow easy removal of the cover when necessary.

The EC.512 should be fed from a dedicated radial circuit fitted with an unswitched connection unit, fuse protected to 3 amps.

Nobo Panel heaters should be fitted in the appropriate locations fixing to the wall using the mounting bracket provided. The Top Keyhole slots should not be used as a screw location as these are reserved for the restraining strap.



The flex connection to the panel heater is always on the Right Hand side and the electrical connection unit, where possible, should also be on the Right Hand side. Circuit wiring should be either by radial or ring circuit, carried out in the normal manner. Separate circuits for Heating should be provided. **Heaters should not be connected to the power circuits.**

The Panel Heater should not be mounted too high up the wall, the best performance will be achieved where the heater is mounted low down. We suggest 150mm between the floor and the bottom of the heater be considered.



The heater control module plugs into the heater body, care is required to avoid damage to the pins. We suggest that, unless otherwise instructed, all panel heaters be set to zone one.

Where water heating control is part of the system, the use of an RSX receiver wired into the immersion heater circuit is required. The RSX should be mounted adjacent to the consumer unit, housed in a box which allows the front of the RSX to be visible. We suggest that the water heating control be set to zone eight.



Where control of towel rails is part of the system, the use of an RS receiver for each appliance is required, the RS receiver should be fitted into a dual box in partnership with the isolation switch outside the bathroom. Towel rails should be fed from a separate RCD protected circuit, **(not from the power circuits)**. We suggest that the towel rail controls be set to zones nine & ten.



Both RS and RSX are electro-mechanical switch units, used to make and break the live supply to the appliance. Terminals 3 and 4 are the live input and switched live output respectively, terminals 1 and 2 are a live and neutral feed for the electronics. To loop terminals 1 and 3 is acceptable.

Ferrite rings supplied with the filter assembly are not normally used, except that one ring may be applied to the live cable of each of the lighting circuits within the fuseboard to reduce the effects of signal attenuation.

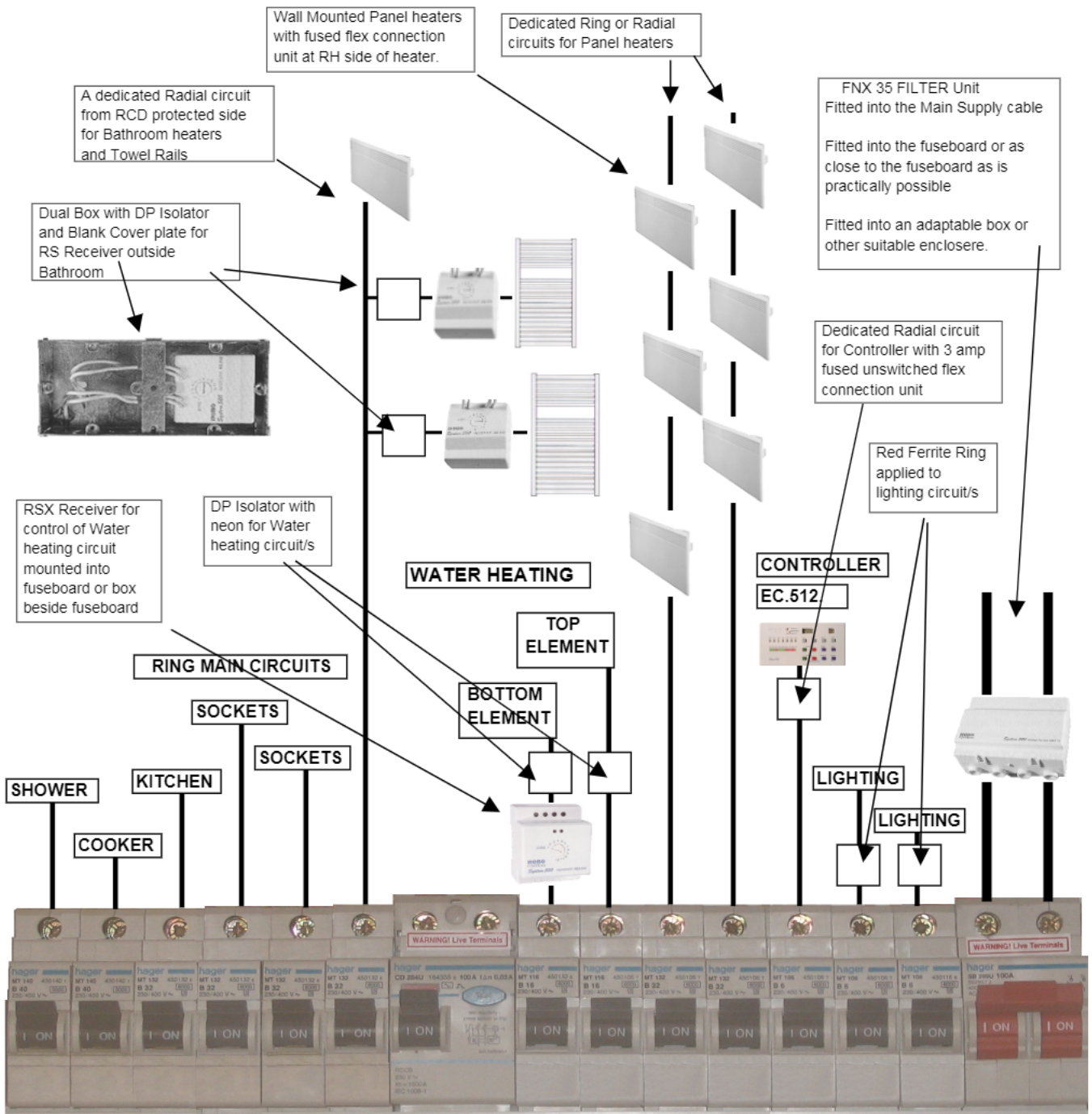
NOBO 'EC.512' CONTROL INFORMATION

CONTROL ARRANGEMENT for use with NOBO ORION System 500 Mains Signalling system.

Here we are suggesting a typical way as to how you should set about wiring your heating system

Do not mix circuits, heaters should not be connected to the socket circuits. (signal interference may occur)

Bathroom heating appliances should be on separate RCD protected circuits.

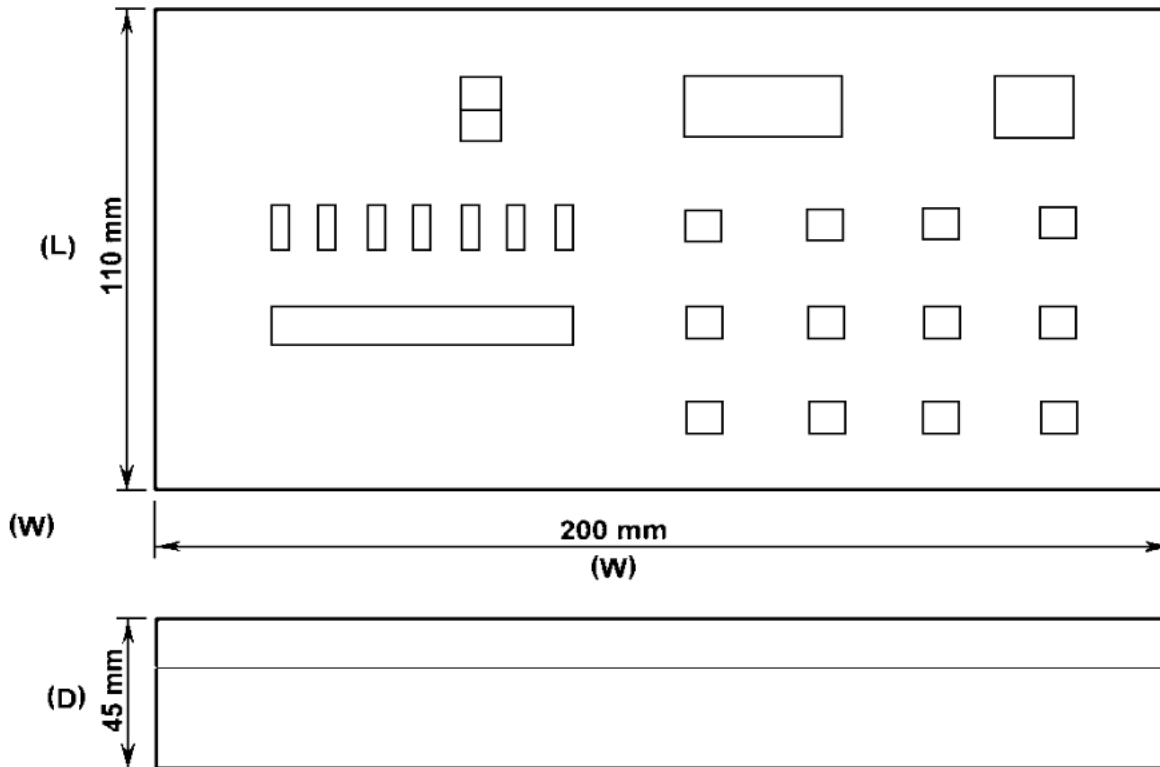


SPLIT-LOAD FUSEBOARD WITH RCD PRTECTION

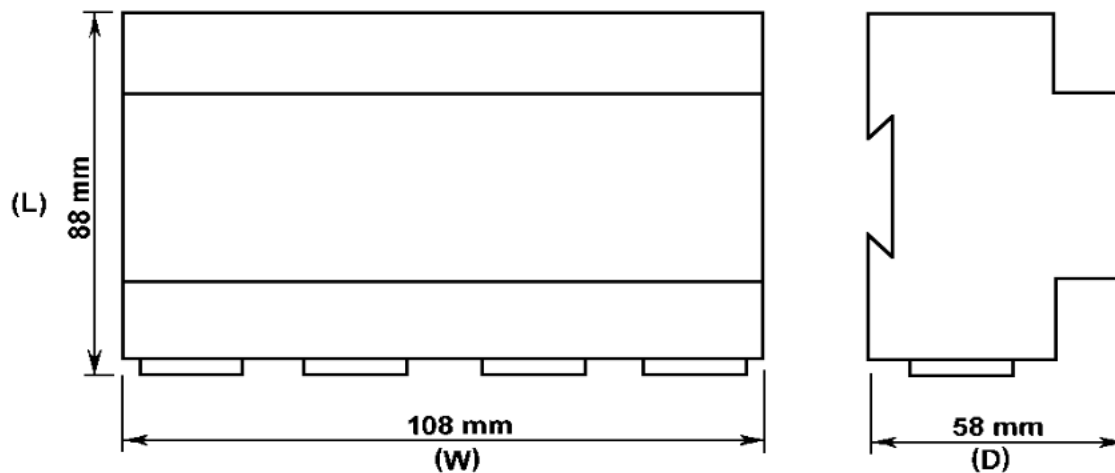
NOBO 'EC.512' CONTROL INFORMATION

NOBO ORION System 500 Mains Signalling control.

EC 512:



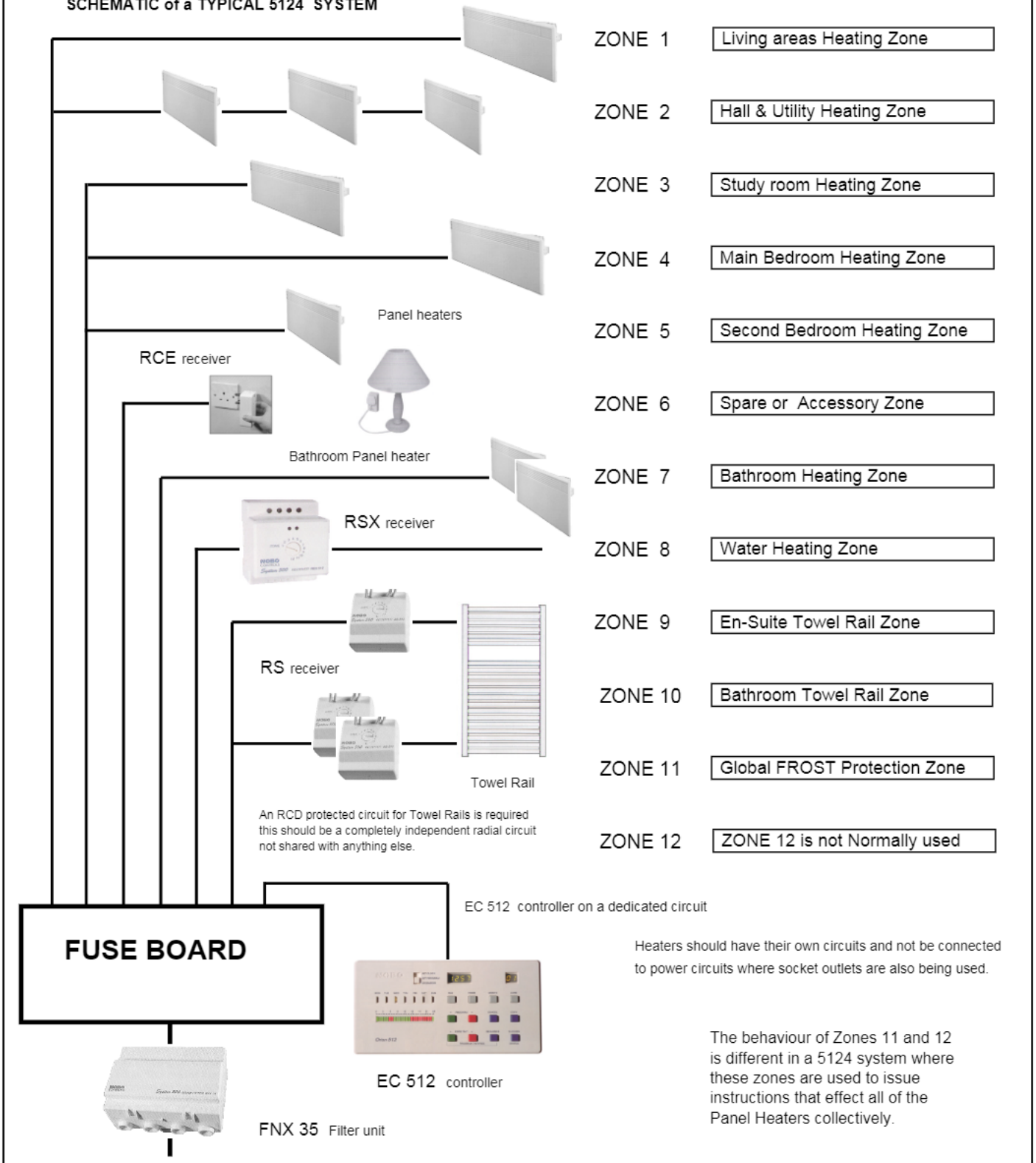
FNX 35:



NOBO 'EC.512' CONTROL INFORMATION

NOBO ORION System 500 Mains Signalling control.

SCHEMATIC of a TYPICAL 5124 SYSTEM



Heaters should have their own circuits and not be connected to power circuits where socket outlets are also being used.

The behaviour of Zones 11 and 12 is different in a 5124 system where these zones are used to issue instructions that effect all of the Panel Heaters collectively.

OPERATING INSTRUCTIONS FOR '5124' SYSTEM

CONTROL MODULE type R80 RDC-E designed for use with NOBO Panel heaters using Series 8 controls.

EC.512 Mains Signalling control

PRINCIPLE OF OPERATION

The Orion unit is a time switch with 12 separate programmable zones.

Each Zone has 7 individual days (Monday to Sunday).

Each Day is divided into 24 hourly periods.

Each hourly period may be set to be either red (on) or green (off).

The Orion unit sends radio signals to the heating appliances, which are switched between their modes of operation according to the status of programme being transmitted. There are 4 modes built into each heater. Comfort mode, economy mode, Frost protection mode and Operation Suspended.

Zones 1–10 Are used to select the times when a heater is in Comfort mode or Economy mode.

Zone 11. Switches Frost Protection mode on and off.

Zone 12. Suspends the heater operation (not when in Frost mode).

For most applications, we do not consider the 'Operation Suspended' mode to be useful and suggest that you programme this zone to be red at all times (24 / 7).

Because of the way the heaters microprocessor operates, the state of zone 11 is looked at first and if it is green the heater (regardless of any other instructions) will operate only in Frost protection mode. The microprocessor then looks at the state of zone 12 and if it is green the heaters operation is suspended but it will not do this if Frost Protection mode has been selected. These two zones should be considered as global overrides, which render ALL heaters in the system to the one state, regardless of any other instructions. Only when zones 11 and 12 are red will control be handed to the remaining zones 1 – 10. They will then operate as individual zones and each heater should respond to the appropriate programme instruction.

There are two ways that the system may be used:

Each heater or group of heaters may be given a different zone number and the Orion unit programmed to provide the times of operation required for each zone.

or

The Orion unit may be programmed to provide a variety of alternative programmes and each heater be set to a zone number appropriate for the programmes you wish to follow.

Each heater has two adjustment levers by which the desired economy and comfort temperatures may be set.

For example:

A heater may be set to zone 1. with Comfort temperature set at 22°C and economy temperature set at 16°C.

The Orion unit programmed for zone 1 - Mon – Fri; to provide comfort between 6am – 9am & 5pm - 11pm.

With zone 11 programmed to provide frost protection between 9am – 5pm. In this example the heater will switch to Comfort temperature at 6am, to Frost Protection at 9am, to Comfort temperature at 5pm to economy temperature at 11pm and then continue with the next days programme.

A second heater may be set the same way but with zone 6 selected. Where the Orion unit has zone 6 programmed to provide comfort between 6 am – 8 am & 10pm - 12pm. In this example the heater will switch to Comfort temperature at 6am, to economy temperature at 8am, to Frost Protection at 9am, to economy temperature at 5pm, to Comfort temperature at 10pm, to economy temperature at midnight and then continue with the next days programme.

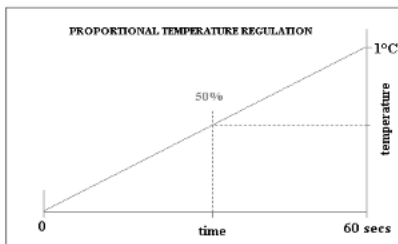
Slave receiver units may be used to control other circuits such as the water heating and towel rails, these may be given a zone number such as 8 or 10. for example, and be programmed to switch the water heating on and off when required. Slave receivers such as the RS and RSX units do not follow the 5124 principal and are unaffected by zone 11 and 12 instructions. It is, therefore advisable, when using slave receivers, to select only zones 1 to 10 and not use zone numbers 11 and 12.

NOBO PANEL RADIATORS

SERIES '8' PLUG-IN 'R80' CONTROL MODULES.

Microprocessor control provides the heart to the Series 8 Panel heater. Offering a wide range of options in control technology. The plug & play approach creates a versatile and flexible choice. All control modules are interchangeable across the whole range.

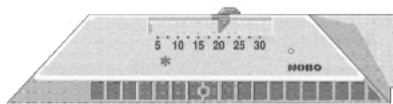
Use of a microprocessor allows precise temperature regulation operating the proportional principal. Control of temperature is divided into two modes of operation. Pre-heat and maintain. In pre-heat mode the processor allows the heater to full-burn but without over-heating. Maintain mode takes over when the room temperature is within one degree of the thermostat set-point. In maintain mode the processor cycles every minute and allows the heater to burn for part of the minute. The closer the temperature gets to the set-point the shorter the burn-time becomes.



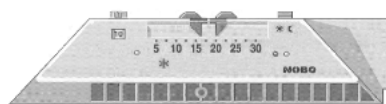
The proportional process of temperature regulation provides a cooler heater giving a gentle heat with better air quality and efficient use of energy. It is far better to over-size the heater and control the output, than to have a heater that has to run flat-out for most of the time.

The flex connection to each heater plugs into the back of the power unit, the flex is supplied, separately with the R80 module, allowing different control configurations to be provided according to the type of system being used. (multicore)

The R80 module is available in many different configurations, offering a wide variety of different control options:



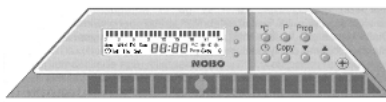
Single mode temperature control.



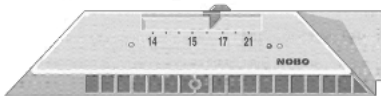
Dual mode with comfort control and set-back or with comfort, set-back and frost protection.



Pre-set programme timer control



Digital programmable timer control



Custom modules for specific applications are available with a choice of restricted temperature scales and selective timing & programme functions.

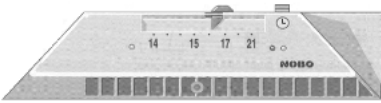


Domestic, Commercial, Hotel or Student applications are a few of the specific applications.

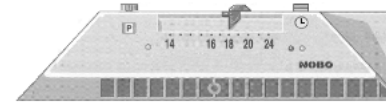
Switching between modes can be achieved either by local or remote means.

Local control options include modules with a choice of integral timers.

Remote control options include modules with mains signalling receiver or with connections for cable control.



Dual temperature control with integral single shot run-back timer,



or with comfort, set-back and frost protection.

There are a wide variety of control options available those shown are just a few examples.

OPERATING INSTRUCTIONS FOR '5124' CONTROL

CONTROL MODULE type R80 RDC-E designed for use with NOBO Panel heaters using Series 8 controls.

5124

Mains Signalling control module. **216 A**

A Control module with a 10 zone programme control capability, switching between adjustable comfort and economy modes of operation and with frost protection override capability.

KEY to Fig. 1.

- 1 – Comfort temperature adjustment control.
- 2 – Economy temperature adjustment control.
- 3 – Control zone selector switch.
- 4 – Red Comfort mode indicator light.
- 5 – Green Economy mode indicator light.
- 6 – Amber operating indicator light.
- 7 – 7°C. Frost Protection setting.
- 8 – On / Off switch. 1 = On, 0 = Off.
- 9 – Control mode override button.

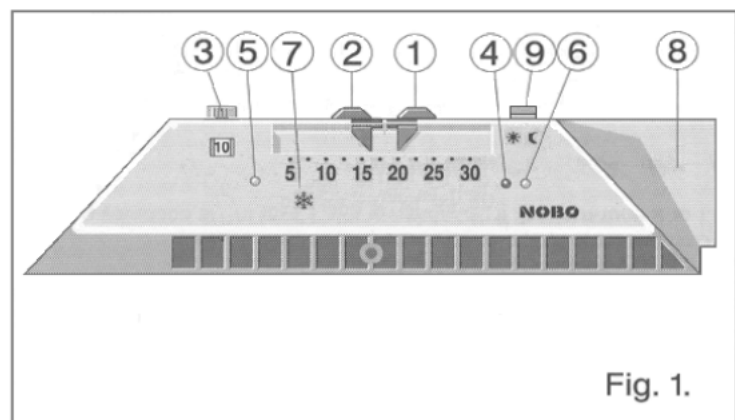


Fig. 1.

OPERATING INSTRUCTIONS

- Switch the heater on with switch (8).
- Set comfort temperature with control (1).
- Set economy temperature with control (2).
- Set control zone with rotary switch (3).

When red indicator (4) is visible the heater will operate in comfort mode to maintain the set temperature (1). When the green indicator (5) is visible the heater will operate in economy mode and maintain the set economy temperature (2) where appropriate instructions from the Orion control dictate. If the heater is switched on but neither the red (4) nor green (5) indicators are visible then the operation of the system may be suspended where appropriate instructions from the Orion control dictate. When the mode of operation is either 'Frost Protection' or 'Suspended' the heater economy and comfort controls have no effect. Override switch (9) when fitted, may be used to toggle between economy and comfort modes.

The action of the heater's electronic thermostat provides proportional regulation of temperature. The Amber operating indicator light (6) will be seen to go on and off at frequent intervals as the thermostat adjusts the amount of heat supplied to maintain room temperature. When room temperature is more than 1°C below the thermostat set point the heater will operate continuously but during the last one degree the operation will be proportionally reduced until the required temperature is achieved.

Switching between the operating modes is achieved by radio signals transmitted by the Orion master control unit. Switching does not always occur immediately and a short response time should be allowed.

See separate instructions for operation of the Orion unit.

NOTE

- The heater should not be covered or things be placed on or over the heater.
- The heater is fitted with an over-temperature cut-out which will switch off the heating element in the event of the heater becoming too hot. The element will not be switched back on again until the heater has cooled.

CLEANING

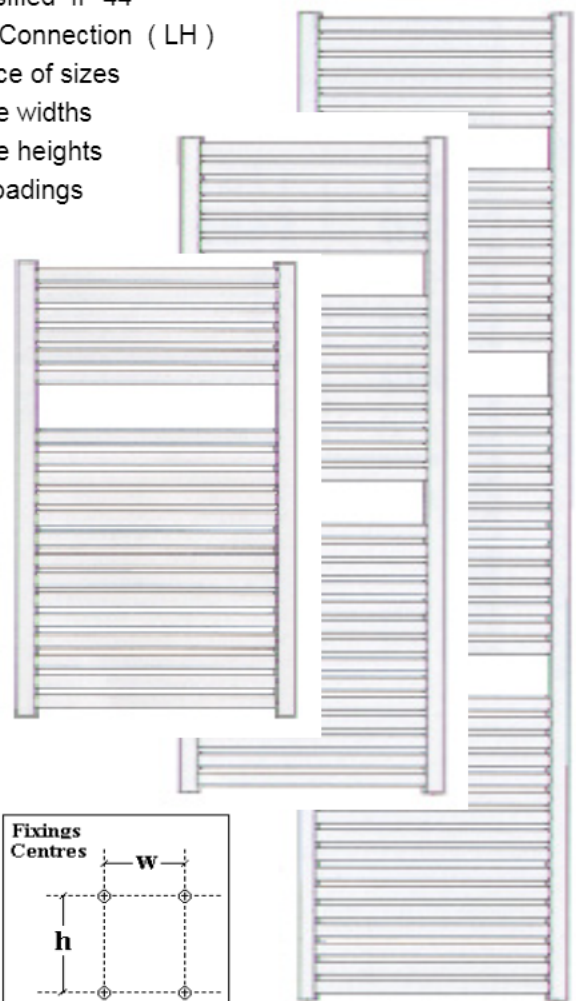
- The heater may be cleaned with a damp cloth and mild detergent.
- The heater may be tilted forwards on its mounting bracket for cleaning and decorating behind the heater.
- Pressing the clips downward at the back of the heater will release the heater from the mounting bracket.

ELECTRIC TOWEL RAILS



KR EXECUTIVE TOWEL RAILS

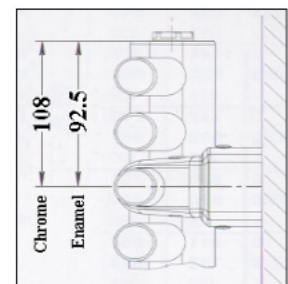
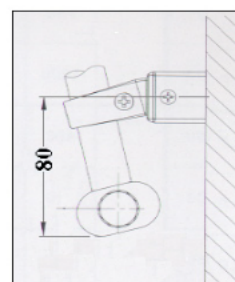
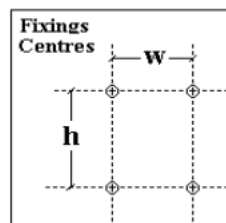
- White Enamel or Chrome finish
- Classified IP 44
- Flex Connection (LH)
- Choice of sizes
- Three widths
- Three heights
- Six loadings



RCD protection is recommended for all Towel rails when used in Bathrooms.

The depth dimension is measured between the wall and the outer face of the curve.

TYPE	LOAD watts	width mm	height mm	depth mm	weight kg	Fix 'w' mm	Fix 'h' mm
Enamel	200	450	780	96	14.8	290	595
Enamel	300	600	780	106	18.5	440	595
Enamel	300	750	780	116	22.3	590	595
Enamel	300	450	1200	96	22.4	290	1015
Enamel	400	600	1200	106	27.8	440	1015
Enamel	500	750	1200	116	33.2	590	1015
Enamel	400	450	1830	96	33.8	290	1645
Enamel	600	600	1830	106	42.1	440	1645
Enamel	800	750	1830	116	50.5	590	1645
Chrome	200	535	900	110	15.6	375	684
Chrome	300	535	1100	110	18.8	375	884
Chrome	400	535	1500	110	25.1	375	1284



NOBO 'RS.512' RECEIVERS

CONTROL ACCESSORY for use with NOBO ORION System 500 Mains Signalling system.

RS 512

Mains Signalling Control

DESCRIPTION

Slave switch for control of fixed appliances.
Switches on receipt of coded signals from an Orion Mains Signalling system. 12 zone capability.

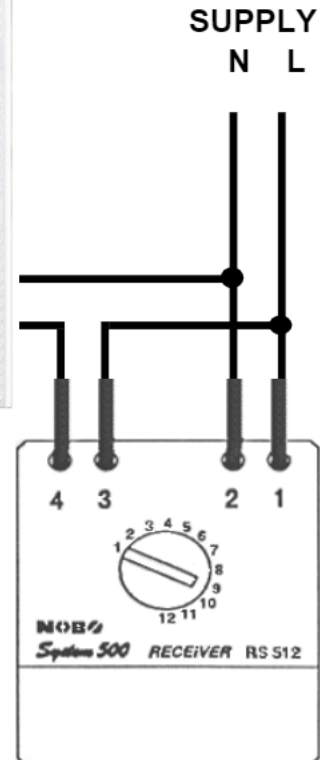
SPECIFICATION

Enclosure	IPX0
Voltage	230 V @ 50 Hz
Capacity	10 amps
Capacity	13 amps (when mounted in metal Box)
Consumption	20 ma
Contacts	Break with economy signal
Standards	EC EMC directive 89/336 EEC
Signal	120 kHz frequency (standard) 141 kHz frequency (special) 107 kHz frequency (special)
Dimensions	28 x 57 x 53 mm (D x L x W)

Frequently used for control of electric towel rails in Bathroom (should be mounted outside the Bathroom)
In systems where the '5124' principle is practiced only zones 1 - 10 should be selected. The receiver does not acknowledge the 'frost' or 'suspend' instruction and will continue to work normally on zones 11 and 12.

The switch mechanism across terminals 3 and 4 provide potential free switching for independent circuits that require this.

The receiver defaults to 'ON' and only switches 'OFF' on receipt of an economy signal (green) from the Orion system.



Mounted in a Dual Box with fused Spur and blank cover plate



In Bathroom applications a separate circuit to feed the towel rail/s should be taken from the RCD protected side of the fuseboard. (must not be looped from the power ring main.)

CAUTION: Must not be used to control equipment which could be dangerous if switched on unintentionally.

NOBO 'RSX.512' RECEIVERS

CONTROL ACCESSORY for use with NOBO ORION System 500 Mains Signalling system.

RSX 512

Mains Signalling Control

DESCRIPTION

Slave switch for control of fixed appliances.
Switches on receipt of coded signals from an Orion Mains Signalling system. 12 channel capability.

SPECIFICATION

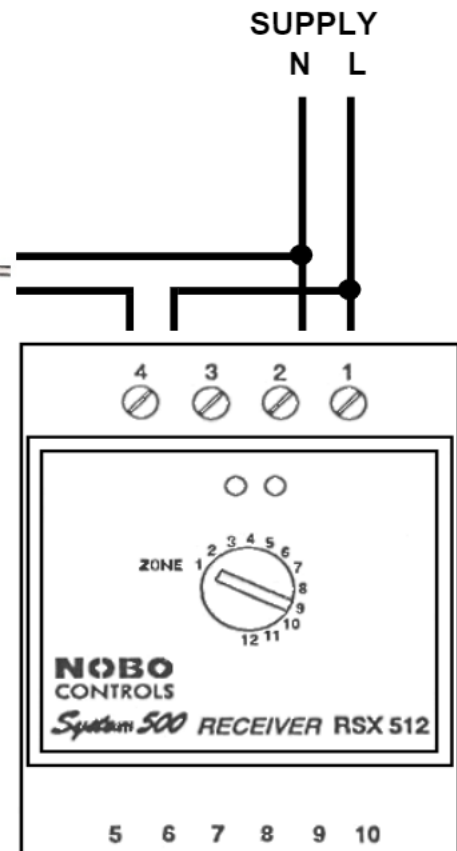
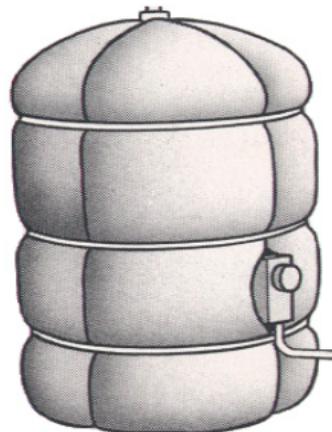
Enclosure	IPX0
Voltage	230 V @ 50 Hz
Capacity	16 amps
Consumption	20 ma
Contacts	Break with economy signal
Standards	EC EMC directive 89/336 EEC
Signal	120 kHz frequency (standard) 141 kHz frequency (special) 107 kHz frequency (special)
Dimensions	57 x 70 x 54 mm (D x L x W)
Mounting	DIN rails

Frequently used for electric Water Heating control.
DIN rail mounted in the fuseboard or boxed in the airing cupboard.

The switch mechanism across terminals 3 and 4 provide potential free switching for independent circuits that require this.

In systems where the '5124' principle is practiced only channels 1 - 10 should be selected. The receiver does not acknowledge the 'frost' or 'suspend' instruction and will continue to work normally on channels 11 and 12.

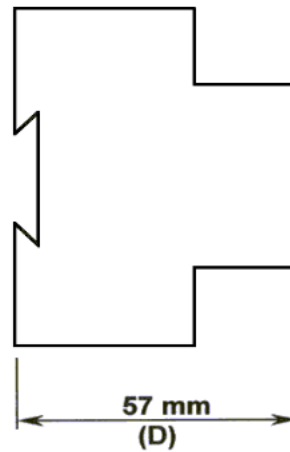
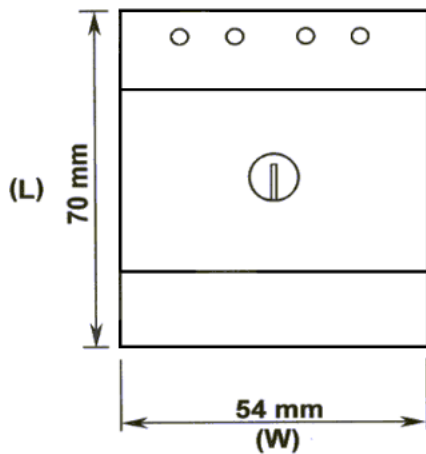
The receiver defaults to 'ON' and only switches 'OFF' on receipt of an economy signal (green) from the Orion system.



CAUTION: Must not be used to control equipment which could be dangerous if switched on unintentionally.

NOBO 'RECEIVERS' DIMENSIONS

RSX 512:



RS 512:

