

NOBØ CONTROLS

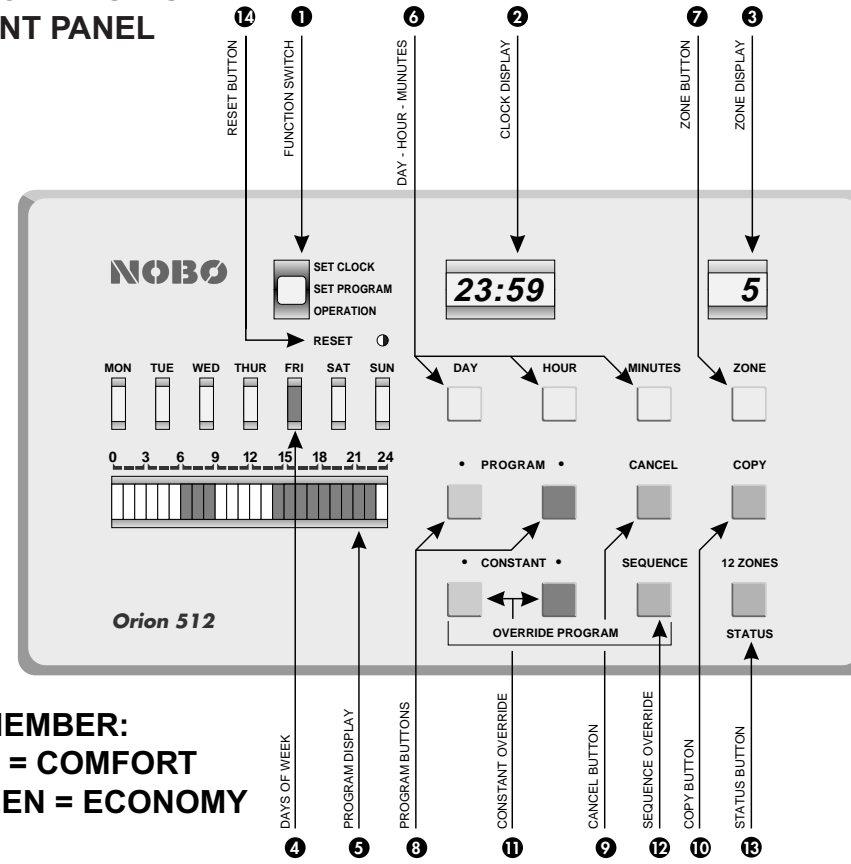
System 500

CONTROL UNIT Orion 512

USER INSTRUCTION

NOBØ ELECTRO AS
P.O. Box 16, N-7501 Stjørdal
Norway

DESCRIPTION OF FRONT PANEL



REMEMBER:
RED = COMFORT
GREEN = ECONOMY

HOW CAN YOU LOWER YOUR ENERGY CONSUMPTION?

Congratulations on purchasing the Nobø Orion 512. In these instructions for use we will tell you how you can use the Orion 512 to control your house's electrical heaters, floor/ceiling heating etc., in such a way that you can considerably reduce your heating costs while retaining the same heating comfort. You can also use the Orion 512 to control other electrical equipment such as engine heaters, TVs, radios, lights etc. Among other things, it enables you to make your house look inhabited when you are not at home.

NETWORK SIGNALLING

The Orion 512 sends its control signals along the house's normal wiring network. Receivers are fitted to the electrical equipment which is to be controlled. The receivers switch the heaters and other electrical equipment ON and OFF at times chosen by you. The time can be set at intervals of one hour 24 hours of the day.

DIVISION INTO ZONES

The Orion 512 can control up to 12 independent zones. A zone is one or more rooms or heaters/appliances, which follow(s) a certain program in the course of 24 hours. Every zone can be programmed individually for every day of the week. There are thus 12 different programs for heating and other functions. The number of heaters/appliances in each zone is not restricted.

CONTROLLING HEATING

If you have installed modern Nobø heaters, you must remember to set the comfort (right slider) and economy (left slider) thermostats to the required temperatures. If you have heaters with a built-in, fixed set-back function, the set-back will be limited to 5-7°C depending on the make. Heaters with a cable and plug have no restriction on the temperature during economy periods. For ceiling/floor heating we recommend that the heating be controlled by Nobø's VENUS TR36 room thermostat for comfort and economy temperatures. It has a built-in receiver for the Orion 512.

DESCRIPTION OF THE ORION 512

FUNCTION SWITCH

The FUNCTION SWITCH "1" in the position "SET CLOCK" is used when first starting up the Orion 512, after the power has been disconnected for more than 14 days or when sending a test signal. The position "SET PROGRAM" is used when first making your control programs or when changing them at a later stage. The position "OPERATION" is the position in which the switch should be during normal use.

DISPLAYS

The CLOCK DISPLAY "2" shows the time in hours and minutes. The ZONE DISPLAY "3" shows the zone for which the program in "5" applies. The ROW OF LIGHTS FOR THE DAYS OF THE WEEK "4" indicates with a yellow light the day of the week for which the program in "5" applies. The PROGRAM DISPLAY "5" consists of a row of lights with 24 light segments. Each segment corresponds to one hour and the display shows a complete program for 24 hours with red lights in the comfort temperature periods and green lights during economy temperature periods.

OPERATING BUTTONS

The DAY - HOUR - MINUTES BUTTONS "6" are used to set the day and time in the Orion's clock. The ZONE BUTTON "7" is used to select the zone (1-12) for which a program is to be made or which is to be overridden. You use the red and green PROGRAM BUTTONS "8" to set the control program you require. The CANCEL BUTTON "9" is used to correct incorrect entries during programming or to cancel overrides. The COPY BUTTON "10" is used to copy a 24-hour program from one day to another day or from one zone to another zone when the programs are the same. The red and green CONSTANT OVERRIDE BUTTONS "11" are used when you want long-term comfort (red) or long-term reduced (green) temperatures in one or more zones. Does not affect the program entered. SEQUENCE OVERRIDE "12" is used for short-term changes to the current program sequence. It automatically switches back to the program at the next change in level. The STATUS BUTTON "13" shows the current situation (comfort/economy) in all 12 zones simultaneously.

RESET BUTTON "14" is used to zeroise the ORION 512 if the processor has frozen and the unit cannot be used.

Freezing may be due to overvoltage in the mains following power failure or lightning strike etc. Use a pen or other sharp object.

OPERATING THE ORION 512

SETTING THE DAY AND TIME

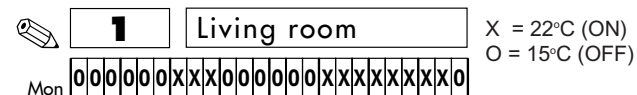
The programming of the Orion 512 applies for a period of one week. Therefore, you must first set the correct current time. All subsequent weeks then follow the same program.

1. Set the FUNCTION SWITCH "1" to the position "SET CLOCK"
 2. Press the DAY BUTTON "6" until the right day of the week lights up in the ROW OF LIGHTS "4".
 3. Set the correct time in the CLOCK DISPLAY "2" by pressing the buttons HOUR and MINUTES "6".
- NB! The time accuracy is ± 10 min. per year and is independent of the frequency (50/60 Hz).

PROGRAMMING

A program means an indication of how many of the 24 hours of the day and night are to be set for comfort temperature (for example 22°C) and how many hours are to be set for economy temperature (for example 15°C). The program chart on the next page can be used to give an overview of ZONES and PROGRAMS. Use your own symbols for comfort and economy temperatures and mark the periods in the diagram. Programming will then be much easier to carry out afterwards.

EXAMPLE:



Remember: All segments must be filled in!

SETTING THE PROGRAM

Move the FUNCTION SWITCH "1" to the position "SET PROGRAM". The unit will now automatically switch to zone 1 in the ZONE DISPLAY "3" and Monday in the ROW OF LIGHTS FOR DAYS OF THE WEEK "4", and where all LEDs in the PROGRAM DISPLAY (5) are red (new units) or show an earlier chosen program.

The programming can now begin. Each time you press the GREEN PROGRAM BUTTON "8" a green bar of light will light in the PROGRAM DISPLAY "5". Pressing the red button produces a red light. Follow the program selection which you have prepared in the program chart and remember to "fill in" all 24 segments. When Monday has been programmed, press the DAY BUTTON "6" so that the lamp for Tuesday lights up. Then fill in the 24-hour program again. Continue like this until all 7 days have been programmed. Then press the ZONE BUTTON "7" until zone 2 is shown in the ZONE DISPLAY "3". Set Monday again with the DAY BUTTON "6" and repeat the procedure for zone 2 and then the other zones which are to be used.

If you wish to DELETE all of the existing programs, this is done in the following manner:

1. Move the FUNCTION SWITCH(1) to the position SET PROGRAM.
2. Press the DAY BUTTON(6), the GREEN PROGRAM BUTTON(8), the ZONE BUTTON (7), the CANCEL BUTTON (9) and the COPY BUTTON (10) simultaneously.

CANCEL

If you make an incorrect entry during programming, an unfinished program can be deleted by using the CANCEL BUTTON "9". The Orion 512 will then display the last selected program in the PROGRAM DISPLAY "5" and the programming can start again. See also the section on OVERRIDE.

COPYING PROGRAMS

If one or more zones are to have the same program for several days in the week, you can save time and effort by using the COPY BUTTON "10" to copy the 24-hour program displayed in the PROGRAM DISPLAY "5".

You can copy from one day to another day in the same zone, or from one day in a zone to a freely selected day in another zone. This is done in the following manner:

1. Press the COPY BUTTON "10" once (2-3 sec.). The ZONE "3" and DAY "4" lamps will now begin to flash.
2. Press the DAY BUTTON "6" to change to the day which is to have the same program.
3. Press the COPY BUTTON "10" once more (2-3 sec.). The flashing will stop and the first copy has now been made. Repeat this procedure for all copies to days/zones which you require. Use your own program chart.

CHECKING PROGRAMS

To check the programs which have been entered, press the DAY BUTTON "6" to "leaf through" the various days. You can select the various zones you want to check by using the ZONE BUTTON "7".

OPERATING THE SYSTEM

NORMAL OPERATION

Set the FUNCTION SWITCH "1" to the position "OPERATION". The Orion 512 will now automatically show the correct day and time. The PROGRAM DISPLAY "5" will display the program for the zone which is displayed in the ZONE DISPLAY "3". The program for the other zones is displayed in the PROGRAM DISPLAY "5" by "leafing through" the zones with the ZONE BUTTON "7".

STATUS

By holding down the STATUS BUTTON "13", the 12 first segments in the PROGRAM DISPLAY "5" will show the current momentary situation for all 12 zones simultaneously. Zones with temperature reduction (OFF) will light up green and the others will light up red.

OVERRIDING THE PROGRAM

(Function switch in position OPERATION)

CONSTANT OVERRIDE

The red and green CONSTANT BUTTONS "11" are used when you want long-term override of one or more programs, for example if you are going to be away for a long time. By pressing in the green button for a few seconds, all lights in the PROGRAM DISPLAY "5" will light up green.

Thus all the appliances which are located in the zone which is displayed in the ZONE DISPLAY "3" are switched to reduction or OFF. If you want to "switch off" several zones, these zones must be selected in turn and in order with the ZONE BUTTON "7" and the green CONSTANT BUTTON "11" must be pressed for each zone. If, on the other hand, you want comfort temperature (ON function) in one or more zones, press the red CONSTANT BUTTON "11". All lights in the PROGRAM DISPLAY "5" will then light up red.

Use the CANCEL (9) button to remove an override. A short press (less than 2 sec) will remove only the override of the program on DISPLAY(3). A long press (more than 3 sec.) will remove all overrides. The ZONE (3) and DAY(4) LEDs will flash while the CANCEL BUTTON (9) is being pressed to confirm removal of all overrides. If the ORION 512 is locked, this must be cancelled before the override can be implemented. (See the section on operating lock).

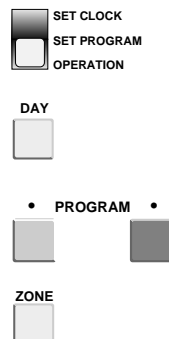
SHORT-TERM OVERRIDE

Any program can be overridden for a shorter period of time by pressing the SEQUENCE BUTTON "12". When you press the button, the rest of the current period will be changed to the opposite in the PROGRAM DISPLAY "5".

Example:

The selected zone has a comfort period (red light) from 4 pm to 11 pm. At 7 pm the SEQUENCE BUTTON "12" is pressed. Thus the period from 7 to 11 pm is changed to an economy period (green light). The reverse occurs if the current period is an economy period when the SEQUENCE BUTTON "12" is pressed.

After 11 pm the heaters are automatically controlled



according to the original program again. If you want to cancel the override during the period, you can

- A. Press the SEQUENCE BUTTON "12" again
- B. Press the CANCEL (9) button briefly (less than 2 sec.). NB ! If you press for more than 2 - 3 sec., both constant and short - term overrides on all zones will be cancelled.

Use of Frost Protection and STOP override functions (R80 RDC - 120E thermostats on zones 1 - 10 only)

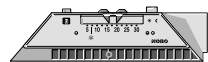
- When an economy signal(green) on Zone 12 is transmitted, the operation of the R80 RDC 120E thermostats is stopped regardless of any of its settings. It will appear not to work at all. - When an economy signal(green) on Zone 11 is transmitted, the operation of the R80 RDC 120E thermostats is switched to Frost protection (7°C approx.) regardless of any of its settings. - Zone 12 in economy mode(green) will override Zones 1 - 10. Zone 11 in economy mode(green) will override Zones 1 - 10 and 12. - When both Zone 11 and Zone 12 are in comfort mode(red), Zones 1 - 10 will operate normally according to their program. - When R80 RDC - 120E thermostats are in Frost Protection mode, a green LED is visible. - When R80 RDC - 120E thermostats are in STOP mode, no LEDs at all are visible.

EXTERNAL OVERRIDE

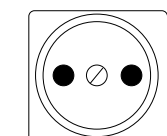
The ORION 512 is equipped with 5 potential free internal connection terminals for remote override switching. Terminals 1 - 4 correspond with zones 1 - 4. Terminal 5 overrides **zone 11!** When the appropriate pair of terminals (1 - 4) are short - circuited (potential free), the corresponding zone is forced into economy mode (green) for as long as the short - circuit exists. When terminal 5 is short - circuited, zone 11 is forced into economy mode, and all R80 RDC - 120E thermostats will automatically provide **frost protection** for as long as the zone 11 override exists.

OPERATING LOCK

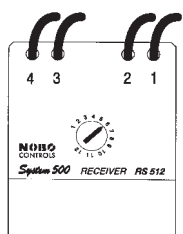
To prevent unauthorised persons changing the selected programs, the operating buttons on the Orion 512 can be locked. This is done as follows:



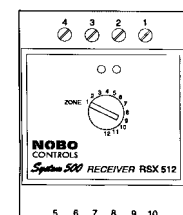
R80 RDC / 120 / 120E



NOBO RC 512
RC512/RCE 512



RS 512/RBS 512/
RDS 512



RSX 512/RBSX
512/RDSX 512

The FUNCTION SWITCH "1" must be in the position "OPERATION". Then press the DAY BUTTON "6", the green PROGRAM BUTTON "8" and the ZONE BUTTON "7" simultaneously for about 3 seconds - the unit is now locked. To cancel the lock, just repeat the same procedure.

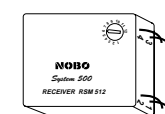
POWER RESERVE IN THE EVENT OF THE POWER BEING DISCONNECTED

On the ORION 512 all lights will be extinguished, when the power is disconnected. However, the new ORION 512 has infinite back - up time (power reserve) for the microprocessor programs. The clock itself has 10 - 14 days of back - up time. If the power is disconnected for longer than 14 days, the CLOCK (2) will have to be set again, when the power is reconnected. Notification is given of this with a flashing light in the CLOCK DISPLAY (2).

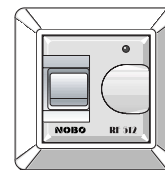
TYPES OF RECEIVER

The Orion 512 transmits OFF and ON signals to various types of receiver, depending on the type of the appliance which is to be controlled. All types of receiver are fitted with a 12-position switch to set the correct zone (1-12).

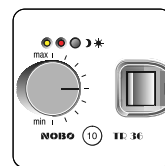
1. **R80 RDC - 120/120E** RDC Pluggable function unit with separate settings for comfort and saver temperatures and integral receiver with channel selector. Yellow operating light and red and green light diodes. Compatible with all NOBØ's heaters of type -N.
2. **RCE 512 GB** Earthed socket outlet receiver for controlling heaters with cables and plugs, household appliances, engine heaters etc.
3. **RS 512** Receiver for controlling fixed heaters and appliances. Mounted in a wall box or connection box. The RS receiver disconnects from the appliance when it receives an "economy signal". (13A).



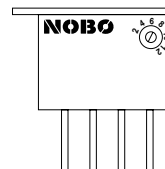
RSM/RBSM 512



RF 512



VENUS TR36



RP 512

4. **RSX 512** As above but the RSX receiver is mounted on a rail in a fuse cabinet. (16 A).
5. **RBS 512** Like the RS 512 but with the difference that the RBS receiver connects the power to the appliance when it receives an economy signal. Used for heaters with built-in night reduction resistor. (13 A).
6. **RBSX 512** As above but the RBSX receiver is mounted on a rail in a fuse cabinet. (16 A).
7. **RDS 512** Like the RS 512 but with the difference that the RDS receiver has a changeover contact for switching between 2 appliances/ functions. (10 A).
8. **RDSX 512** As above but the RDSX receiver is mounted on a rail in a fuse cabinet. (10 A).
9. **RSM 512** For disconnection of f.i. internal and external lights when receiving an «economy signal». Mounting in wall connection boxes (IA).
10. **RBSM 512** For connection of night set - back in heaters and room thermostats when receiving an «economy signal». Mounting in connection boxes (IA).
11. **RF 512** Receiver with switch relay and double pole switch for flush mounting in ELKO, ELJO or Bush Jaeger frames. Can be linked with underfloor heating thermostats or for control of internal/external lighting. Has red/green light diodes. (10A).
12. **VENUS TR 36** Room thermostat (16A) with integral Mains Signalling receiver for use with Orion 512 system. Switches between economy and comfort temperature setting on receipt of Orion signals. Also available with remote sensor or floor sensor. (Replaces GEMINI TRR thermostat).
13. **RP 512** Plug-in receiver for NOBØ heaters of types GER/KER/TER and PER.

CHARTS FOR YOUR OWN USE:

Zone no.	Zone description
1	
Mon	
Tue	
Wed	
Thur	
Fri	
Sat	
Sun	
	0 3 6 9 12 15 18 21 24

Zone no.	Zone description
2	
Mon	
Tue	
Wed	
Thur	
Fri	
Sat	
Sun	
	0 3 6 9 12 15 18 21 24

Zone no.	Zone description
3	
Mon	
Tue	
Wed	
Thur	
Fri	
Sat	
Sun	
	0 3 6 9 12 15 18 21 24

Zone no.	Zone description
7	
Mon	
Tue	
Wed	
Thur	
Fri	
Sat	
Sun	
	0 3 6 9 12 15 18 21 24

Zone no.	Zone description
8	
Mon	
Tue	
Wed	
Thur	
Fri	
Sat	
Sun	
	0 3 6 9 12 15 18 21 24

Zone no.	Zone description
9	
Mon	
Tue	
Wed	
Thur	
Fri	
Sat	
Sun	
	0 3 6 9 12 15 18 21 24

Zone no.	Zone description
4	
Mon	
Tue	
Wed	
Thur	
Fri	
Sat	
Sun	
	0 3 6 9 12 15 18 21 24

Zone no.	Zone description
5	
Mon	
Tue	
Wed	
Thur	
Fri	
Sat	
Sun	
	0 3 6 9 12 15 18 21 24

Zone no.	Zone description
6	
Mon	
Tue	
Wed	
Thur	
Fri	
Sat	
Sun	
	0 3 6 9 12 15 18 21 24

Zone no.	Zone description
10	
Mon	
Tue	
Wed	
Thur	
Fri	
Sat	
Sun	
	0 3 6 9 12 15 18 21 24

Zone no.	Zone description
11	
Mon	
Tue	
Wed	
Thur	
Fri	
Sat	
Sun	
	0 3 6 9 12 15 18 21 24

Zone no.	Zone description
12	
Mon	
Tue	
Wed	
Thur	
Fri	
Sat	
Sun	
	0 3 6 9 12 15 18 21 24