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Short Instructions for RESOL DeltaSol BS3 controller

Overview

- Controller for 1 collector, 1 store systems
- Up to 4 temperature sensor inputs
- 2 standard electromechanical relay outputs
- Optional thermostat function on Relay 2
- Optional heat quantity (kWh) register
- Illuminated graphic display



User display

The display shows a small diagram of the system and the position of the sensors. To the right is a 2 line display that shows one system parameter at a time. You can use the left and right buttons to see the following:

- COL** collector temperature display
TST temperature in the lower part of the store
S3 third temperature sensor – usually shows temp in boiler heated zone of cylinder
S4 fourth temperature sensor used as collector return sensor for heat quantity measurement.
hP hours run counter for pump.
kWh optional display of delivered total heat energy (see option OHQM)

Above this is a toolbar showing any faults and which relays are on e.g. relay 1 is: ①
The toolbar also has a warning triangle symbol and a hand symbol to show manual override. The LED will flash red and green to show there is a fault.

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Adjusting parameters

The controller factory settings suit most installations, but you can adjust them if needed. Most are hidden from the user to help prevent tampering - to access them, hold down the right button for more than 2 sec.

Every parameter has a code and value – e.g. **COL 61.0 °C** means collector temperature is 61 °C. Each code is outlined below and there is a quick reminder under the terminal cover.

The 3 buttons have the following functions: left - down, right - up and centre - enter buttons.

Use the left and right buttons to find the code required then press enter to allow the change; **SET** flashes to show change is possible. Change the value with the up/down buttons then press enter again to store it.

Parameter function codes

- Arr** System arrangement. Earlier versions of the controller had the option of 2 arrangements, The second arrangement being the one that we select when the system is fitted with a heat dump. Later models of solar controllers have the option of 3 Arrangements, if this is the case then (Arr=3) is the option that we need to select in order to utilise the heat dump facility. (See AHO & AHF Below)
- DT O** switch on temperature differential – factory set to 6°C. Some increase this (~8 - 10°C) to overcome pump ‘hunting’ in drainback systems.
- DT F** switch off temperature differential – factory set to 4°C.
- S MX** Maximum store temperature – factory set to 60°C. This is widely regarded to be a safe limit for scald protection and for limiting scale build up in hard water areas. If other anti-scald measures are used (e.g. TMVs) and water hardness is low, this can be increased to ~ 85°C to enable more solar energy capture. **Note this uses sensor 2** – generally at the store base.
- EM** Collector emergency shutdown temperature, factory set to 140°C. If the collector exceeds this, the controller will shut off the system pump to protect the system.
- OCX** System cooling function. Factory setting off. This will restart the solar pump if the maximum collector temperature is exceeded, even if the maximum store temperature has been exceeded.
- CMX** Collector maximum temperature - factory setting 120°C. It may be desirable to increase this on some drainback systems as early afternoon shutdown may trigger it and overheat the store.

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- OCN** Minimum collector function – factory setting off. This prevents the system from operating until the minimum collector temperature (CMN, factory set to 10°C) has been exceeded. Possibly used if the system has no antifreeze – but see below.
- OCF** Antifreeze function – factory set off – not recommended for use in UK
- OREC** Recooling function – factory set off. This will keep the solar pump running even if the store Tmax has been exceeded to prevent system staganation. The solar pump remains on in the evening until T store has fallen to <S MX setting to cool the store down.
- OTC** Tube collector function – factory setting off. Used to move fluid out of collector manifold so temperature sensor can pick up temperature rise. If collector temp rises by 2°C (e.g. first thing in morning) pump is enabled for 30 sec.
- AHO** thermostat switch on temperature. Factory setting 40°C.
AHF thermostat switch off temperature. Factory setting 45°C.
Note:For heat dumping via relay 2, set AHO > AHF (e.g. AHO=75, AHF 72 will dump heat greater than 75°C)..