



# **Virdis Energy GP3 Series**

## **Hot Water Service GP Series Controller**

### Operating Instructions



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## **General Specification:**

The GP Series Controller is a purpose designed PID regulator which controls temperature via a motorized modulating valve as well as operating a number of primary and secondary pumps, as can be fitted to the various GP Series units.

In addition to the PID regulation, the controller includes:

- Valve opening/closing and P1/P2 primary pump running functional indicator lamps.
- A 500mA control fuse and a 10A output fuse.
- Twin-head pump duty share (if fitted).
- High/low temperature alarm indication.
- Volt free common temperature alarm terminals.
- High temperature lockout.
- A safety extra low voltage (SELV) external interlock circuit for connection of an external safety device or switched circuit.
- A safety extra low voltage (SELV) external time clock circuit for connection of BMS time control.

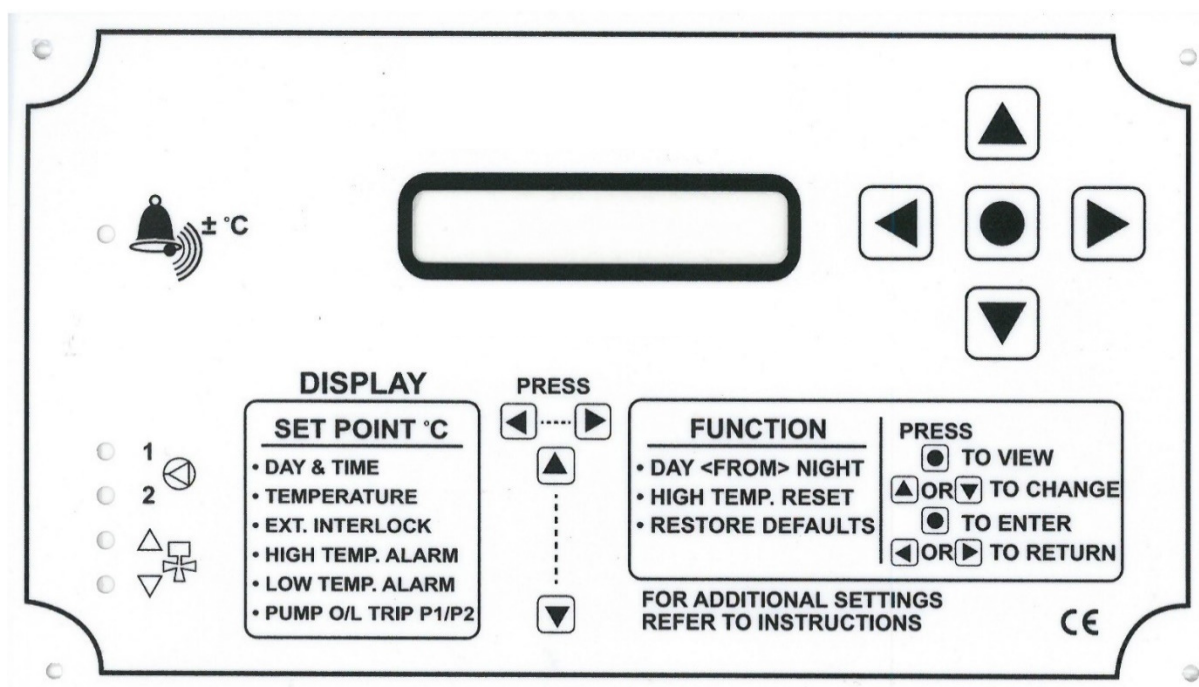
**Time control** can be by: either the internal inbuilt 7 day time clock for either 2 temperatures of operation or a single temperature set point and night "off" per day, or externally using the safety extra low voltage (SELV) external clock circuit for either 2 temperatures of operation or a single temperature set point and "off".

**Primary pump fault indication/overload trip** is displayed on the Controller for units fitted with Magna3 variable speed pump(s)

**Duplex twin-head primary pump duty share facility** is included as standard.

**Duplex twin-head primary pump auto-changeover on pump fault** is included as standard for units fitted with Magna3 D variable speed pumps, and for units fitted with UPSD fixed speed pumps only when fitted with contactor and overload.

## **Fascia Layout:**



## Display Menu:

### Default Display:

The current **SET POINT** (°C) and **DAY & TIME** (24 hour clock, 7 day week) are displayed; to view any one of the other display menu options below press either the ▲ or ▼ key to move from one to the other.

### Display Menu Options:

- **TEMPERATURE** – measured secondary water flow temperature (°C).
- **EXT INTERLOCK** – shown only if the External Interlock circuit is open.
- **HIGH ALARM** – shown only if the high temperature alarm setting has been exceeded (factory set at 10°C above the higher set point).
- **LOW ALARM** – shown only if the low temperature alarm setting has been exceeded (factory set at 20°C below the current set point).
- **P1 O/L or P2 O/L (Pump Fault)** – shown only if a primary pump, P1 or P2, overload has tripped (available on Magna3 variable speed pump(s) and UPS fixed speed pump(s) only when fitted with contactor and overload).

## Function Menu:

### Access:

The FUNCTION options are accessed from the default SET POINT display menu by pressing either ◀ the or ▶ key once.

### Navigation:

- To move from one function option to the next press either the ▲ or ▼ key.
- To view the current status of a function option press the ● key.
- To change the current status press either the ▲ or ▼ key.
- To enter/select this change press the ● key.
- To return to the default SET POINT display menu press the ▲ or ▼ key.

### Function Menu Options:

- **DAY<FROM>NIGHT** – this function is used to change from one mode of operation to the other, e.g. if you were running in night mode and the unit was off, if you wanted hot water as you had during the day, by using this function you can swap over from the night setting to the day setting. When the unit next operates in the day mode the unit will revert back to normal operation.
- **HIGH TEMP RESET** – only operates if a high temperature lockout has occurred; using it restarts the unit and resets the external volt free temperature alarm.
- **RESTORE DEFAULTS** – used to return to the factory values for all settings. A further “Are You Sure?” prompt appears on the display prior to this function being actioned.

## Settings Menu:

### Description:

The SETTINGS are used to set all of the parameters which have an influence on the way in which the controller will work. There are default values for all of these parameters, which are listed below and in the “Summary of Settings Menu” (see later).

### Access:

The SETTINGS options are accessed from the default SET POINT display menu by:

- ✓ First pressing and releasing the ► key to enter the FUNCTION menu,
- ✓ Then pressing **and holding** the ► key for >5 seconds and then releasing.

### Navigation:

- ✓ To move from one setting to the next press either the ▲ or ▼ key.
- ✓ To view the current value of a setting, press the ● key.
- ✓ To change the value of a setting press the ● key again (a cursor will now flash).  
Settings parameters are changed digit by digit:
  - To change the current value of a parameter digit, press the ▲ key.
  - To move to the next parameter digit, press the ► key.
  - To enter this setting value change, press the ● key (the cursor will stop flashing).
- ✓ To move to the next setting, press the ▲ or ▼ key.
- ✓ To return to the default SET POINT display menu, press the ◀ or ► key twice, or leave for 30 seconds.

### Settings Menu Options:

- ✓ **TIME** – this includes the current day of the week, time, in hours, minutes and seconds, based on a 24 hour clock.
- ✓ **CLOCK** – the unit can run on its internal time clock (INT) or it can be controlled from an external source (EXT).  
(Factory Setting = INT).
- ✓ **DAILY DAY, TIME & TEMPERATURE** – this is used, for each day of the week, to set the start time and temperature for the “day” operation when controlled by the internal time clock. The temperature range is from 01 °C to 99 °C; alternatively “OFF” can be selected.  
(Factory Setting = 06:00 : T 60 °C).  
Note: values only adopted when CLOCK = “INT” (internal time clock control).
- ✓ **DAILY NIGHT, TIME & TEMPERATURE** – this is used, for each day of the week, to set the start time and temperature for the “night” operation when controlled by the internal time clock. The temperature range is from 01 °C to 99 °C; alternatively “OFF” can be selected.  
(Factory Setting = 23:30 : T 60 °C).  
Note: values only adopted when CLOCK = “INT” (internal time clock control).
- ✓ **EXT CLOCK DAY, TEMPERATURE** – this is used to set the temperature for the “day” operation when controlled by an external device connected across the external time clock circuit. The temperature range is from 01 °C to 99 °C; alternatively “OFF” can be selected.  
(Factory Setting = T 60 °C).  
Note: values only adopted when CLOCK = “EXT” (external time clock control).
- ✓ **EXT CLOCK NIGHT, TEMPERATURE** – this is used to set the temperature for the “night” operation when controlled by an external device connected across the external time clock circuit. The temperature range is from 01 °C to 99 °C; alternatively “OFF” can be selected.  
(Factory Setting = T OFF).  
Note: values only adopted when CLOCK = “EXT” (external time clock control).

- **HIGH ALARM** – this is used to set the temperature difference above the higher set point at which an alarm mode occurs. The temperature difference is from 01 °C to 99 °C; alternatively “OFF” can be selected.  
(Factory Setting = T +10 °C).
- **LOW ALARM** – this is used to set the temperature difference below the current set point at which an alarm mode occurs. The temperature difference is from 01 °C to 99 °C; alternatively “OFF” can be selected.  
(Factory Setting = T -20 °C).
- **PROP (Proportional Band)** – a high proportional band will produce a slow response but no overshoot; the set point may never be reached. A low proportional band will produce a fast response but a big temperature overshoot and prolonged oscillations in temperature may occur.  
(Factory Setting = 25).
- **DIFF (Differential)** – this term helps the controller approach the set point more rapidly with less overshoot. The higher the value the more the differential term works, and in theory the better the response, however there is a limit above which the system will respond too quickly to small errors and become unstable.  
(Factory Setting = 20).
- **PUMP MODE** – this is used to determine which pump output terminal is used. If a single-head primary pump is connected to the P1 terminals then “P1 ON” should be selected. If a single-head primary pump is connected to the P2 terminals then “P2 ON” should be selected. If a duplex twin-head primary pump is fitted, one will be connected to P1 terminals and the other to P2 terminals, “P1/P2” should be selected which will then perform duty share on the 2 pump heads.  
(Factory Setting = P1 ON).
- **ALARM** – there are 3 automatic and 1 manual reset high temperature alarm modes:  
(Factory Setting = AUT1).
  - **AUT1** – If the secondary temperature measured is greater than the high temperature alarm value, the LCD indicates this. If this persists, the unit is shut down, all pumps are turned off, and the modulating valve is closed. The common temperature alarm lamp is lit and the common temperature alarm volt free terminals are closed. Auto reset occurs once the temperature has fallen below the alarm temperature.
  - **AUT2** – If the secondary temperature measured is greater than the high temperature alarm value, the LCD indicates this. If this persists, the unit is shut down, all pumps are turned off, and the modulating valve is closed. The common temperature alarm lamp is lit and the common temperature alarm volt free terminals are closed. Auto reset occurs once the temperature has fallen below the alarm temperature. Subsequent high temperatures cause an almost immediate shut down.
  - **AUT3** – If the secondary temperature measured is greater than the high temperature alarm value, the LCD indicates this. If this persists, the common temperature alarm lamp is lit and the common temperature alarm volt free terminals are closed, the unit is not shut down. Auto reset occurs once the temperature has fallen below the alarm temperature.
  - **MAN** – If the secondary temperature measured is greater than the high temperature alarm value, the LCD indicates this. If this persists, the unit is shut down, all pumps are turned off, and the modulating valve is closed. The common temperature alarm lamp is lit and the common temperature alarm volt free terminals are closed. To reset the alarm, go into the FUNCTION menu and select HIGH TEMP RESET = “YES”.

## **External Connections:**

### **Electrical Supply:**

The controller operates with a 230V supply. An external electrical supply isolator should always be fitted adjacent to the unit. The supply itself should be provided with suitable protection in accordance with current IEE regulations and codes of practice.

### **Internal Fuse Protection:**

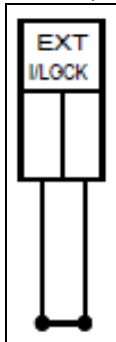
The electronic controller is protected by a 500mA fuse and the main PCB output side is protected by a 10A fuse; both are located on the main PCB.

### **Common Temperature Alarm:**

A rise of 10 °C above the set point or a fall of 20 °C below the set point causes an alarm relay to be energized. A single pair of volt free terminals, which close on a fault (after a given time), are available for external indication.

### **External Interlock:**

An external safety device or switched circuit can be connected to the Econoplate which will shut the unit down in case of a fault. It is a safety extra low voltage (SELV) circuit; an open circuit should be used to shut the unit down.



### **External "Clock":**

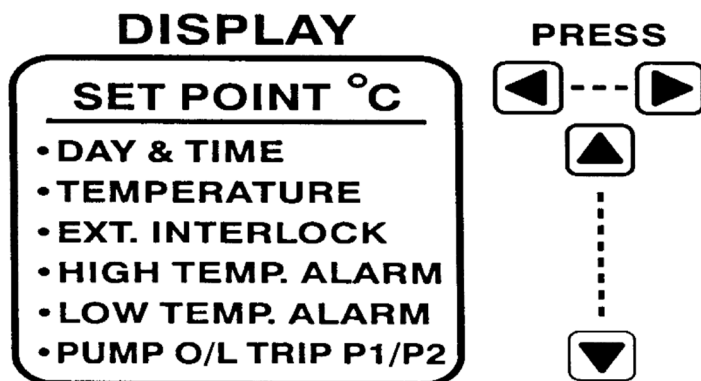
An external device can be connected to switch between 2 temperatures of operation, or to switch between a single set point and "off". A closed contact across this safety extra low voltage (SELV) circuit gives the "day" setting (EXT Clock Day) and an open circuit the "night" setting (EXT Clock Night).



## **WARNING**

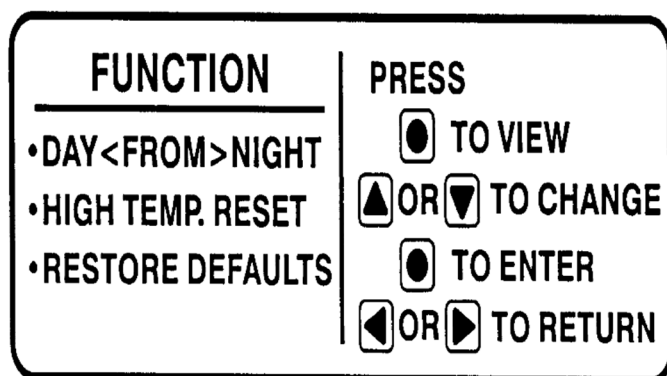
Never run control cables using low voltages with power cables – induced voltages can affect the operation of the controller.

## Summary of Display Menu:



## Summary of Function Menu:














The FUNCTION options are accessed from the default SET POINT display menu by pressing either the ◀ or ▶ key once.



## Summary of Settings Menu:

The SETTINGS options are accessed from the default SET POINT display menu by:

- First pressing and releasing the ▶ key to enter the FUNCTION menu,
- Then pressing **and holding** the ▶ key for >5 seconds and then releasing.

<b>TO ENTER SETTINGS FROM FUNCTION PRESS</b>  OR  <b>HOLD FOR 5 SECONDS THEN RELEASE</b>	<b>PRESS</b>  TO VIEW  TO SELECT (PARAMETER FLASHES)  TO CHANGE  TO MOVE TO NEXT PARAMETER  TO ENTER (FLASHING STOPS)  OR  TO VIEW NEXT SETTING  OR  TO RETURN	<b>SETTINGS</b>  TIME CLOCK   DAILY • DAY, TIME & TEMP   DAILY • NIGHT, TIME & TEMP   EXT. CLOCK, DAY & TEMP   EXT. CLOCK, NIGHT & TEMP   HIGH TEMP. ALARM   LOW TEMP. ALARM   PROPORTIONAL BAND   DIFFERENTIAL   PUMP MODE  ALARM MODE	<b>DEFAULT SETTINGS</b> — INTERNAL CLOCK 06:00 : T 60°C 23:00 : T 60°C T 60°C OFF T + 10°C Differential T - 20°C Differential 25 20 P1 ON AUT 1	<b>SETTINGS RANGE</b> DAY HRS : MIN : SEC INTERNAL OR EXTERNAL HRS : MIN : OFF / 01 — 99°C HRS : MIN : OFF / 01 — 99°C OFF / 01 — 99°C OFF / 01 — 99°C OFF / 01 — 99°C Differential OFF / 01 — 99°C Differential 0 — 99 0 — 99 P1 ON, P2 ON, P1/P2 Duty Share AUT 1, AUT 2, AUT3, MAN
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