MAGNA3

DISPLAY MENU OVERVIEW

Valid from model D

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HOME

The home screen is configured with the most relevant settings (as shortcut) and status parameters. This screen can be customized under general settings.

STATUS

Operating status
- » Operating mode, from
- » Control mode

Pump performance
- » Max. curve and duty point
- » Resulting setpoint
- » Liquid temperature
- » Speed
- » Operating hours

Power and energy consumption
- » Power consumption
- » Energy consumption

Warning and alarm

Heat energy monitor

Operating log
- » Operating hours
- » Trend data

Fitted modules

Date and time

Pump identification

Multi-pump system
- » Operating status
- » System performance
- » Power and energy consumption
- » Other pump 1, multi-pump sys.

SETTINGS

Setpoint

Operating mode 1
- » Normal
- » Stop
- » Min.
- » Max.

Control mode 2
- » AUTO*ADAPT*
- » FLOW*ADAPT*
- » Prop. pressure
- » Const. pressure
- » Const. temp.
- » Diff. temp.
- » Constant curve

Controller settings

FLOW*LIMIT*

Automatic Night Setback

Analog input 3

Relay outputs
- » Relay output 1
- » Relay output 2

Setpoint influence 4
- » External setpoint function
- » Temperature influence

Bus communication
- » Pump number
- » Forced local mode

General settings
- » Enable/disable settings
- » Alarm and warning settings
- » Delete history
- » Define Home display
- » Display brightness
- » Return to factory settings
- » Run start-up guide

ASSIST

Assisted pump setup
- » Setting of pump

Setting of date and time

Multi-pump setup 5

Setup, analog input *

Description of control mode
- » AUTO*ADAPT*
- » FLOW*ADAPT*
- » Prop. press.
- » Const. press.
- » Const. temp.
- » Diff. temp.
- » Constant curve

Assisted fault advice
- » Blocked pump
- » Pump communication fault
- » Internal fault
- » Internal sensor fault
- » Dry running
- » Forced pumping
- » Undervoltage
- » Overvoltage
- » High motor temperature
- » External sensor fault
- » High liquid temperature
- » Comm. fault, twin-head pump

* Wizard

Alarms and warnings 6

- » This overview only includes operation-relevant sub menus.

Status icons in display footer

= Automatic Night Setback

= Change of settings - locked

= Connected to fieldbus

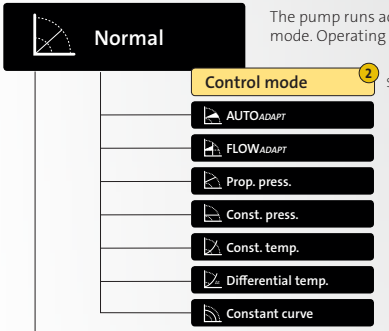
= Multi-pump system

= Master pump (multi-pump system)

= Slave pump (multi-pump system)

= Forced local mode (fieldbus is overridden)

Operating mode 1



Operating mode can be externally controlled by digital input.

Control mode

2

The pump must be in operating mode "Normal" in order for the pump to run according to the selected control mode. The table shows the different control modes along with a recommended application type.

AUTO*ADAPT*		Recommended for most heating systems. During operation, the pump automatically makes the necessary adjustment to the actual system characteristic.
FLOW*ADAPT*		The FLOW*ADAPT* control mode combines a control mode and a function: • The pump is running AUTO*ADAPT* • The delivered flow from the pump will never exceed a selected FLOW*LIMIT*.
Prop. press.		Used in systems with relatively large pressure losses in the distribution pipes. The head of the pump will increase proportionally to the flow in the system to compensate for the large pressure losses in the distribution pipes.
Const. press.		We recommend this control mode in systems with relatively small pressure losses. The pump head is kept constant, independent of the flow in the system.
Const. temp.		In heating systems with a fixed system characteristic, for example domestic hot-water systems, the control of the pump according to a constant return-pipe temperature is relevant.
Differential temp.		Ensures a constant differential temperature drop across heating and cooling systems. The pump will maintain a constant differential temperature between the pump and the external sensor.
Constant curve		The pump can be set to operate according to a constant curve, like an uncontrolled pump. Set the desired speed in % of the maximum speed in the range from minimum to 100 %.

** The FLOW*LIMIT *function can be activated in combination with all of the below control modes.*

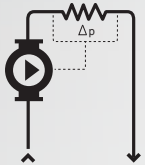
Analog input

3

Function of analog input

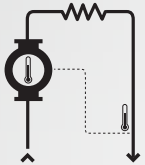
One of the following two options can be used for analog input setup.

External sensor feedback (option 1)



These functions are designed for the connection of an external sensor feedback.

- **Diff. pressure**



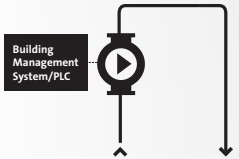
- **Constant temperature** — From factory, the internal temperature sensor is used for feedback.
- **Heat energy monitor** — Is automatically activated if an external temperature sensor is installed
- **Diff. temperature**

Controller settings (Kp and Ti)

From factory, the analog input function is tailored to a generic heating system with a predefined pipe length and sensor position in the system. We recommend to use the wizard under "Assist ▸ Setup, analog input" if these predefined settings are not applicable.

External signal input (option 2)

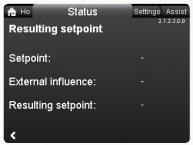
The pump receives a signal (0-10 V or 4-20mA) which influences the setpoint of the pump.



Can be used in the following control modes:

- **Constant curve**
- **Constant pressure**
- **Proportional pressure**

For monotoring the resulting setpoint, view the status menu, under pump performance.



The signal input is an influence on the given setpoint (manually set by the user). The outcome from these two factors is the resulting setpoint.

The locally chosen setpoint is used as the 100 % reference according to the influence which the signal input provides. Example: If the setpoint is set at 13 ft (4 meters) and the signal input gives a maximum value (10V or 20mA), the resulting setpoint will be 13 ft (4 meters). If the signal input is reduced by 50 %, the resulting setpoint will change accordingly, in a linear manner between the minimum and the manually entered setpoint.

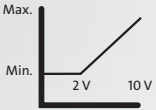
For more information regarding setpoint influence, please see next page.

Setpoint influence

4

The setpoint influence is able to adjust the resulting setpoint in a given control mode based on either a signal feedback (ext. setpoint function) or the internal temperature measurement (temp. influence).

External setpoint function

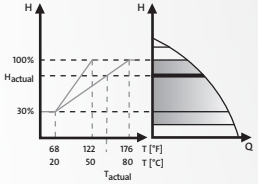


The external setpoint function allows the pump to be controlled by means of an external analog input signal.

External influence changes the resulting setpoint in the given control mode. Please note that AUTO*ADAPT* and FLOW*ADAPT* are not controlled by manual setpoints and therefore cannot be influenced by an external signal.

The commonly used control mode for external setpoint function is constant curve.

Temperature influence



In the above example, Tmax = 176 °F (80 °C) has been selected. The actual liquid temperature, T_{actual} = 140 °F (60 °C), causes the setpoint for head to be reduced from 100 % to H_{actual}.

Temperature influence is chosen for systems where correlation between the media temperature and the pressure setpoint of the pump is desired.

The temperature influence is linear and can be chosen as either T=122 °F (50 °C) or 176 °F (80 °C) at 100 % setpoint.

This function can be enabled in proportional pressure, constant pressure and constant curve. The resulting setpoint will be adjusted according to the liquid temperature.

The pump must be installed in the flow pipe. The temperature influence function cannot be used in air-conditioning and cooling systems.

Multi-pump setup

5

How to identify the master pump

Multi-pump systems

Master =

Check display to identify the master pump in multi-pump systems.

Twin-head pump

Master =

Check name plate to identify the master pump on a twin-head pump.

Where to connect input/output

Relay	Master, Slave	Configure on both master and slave pump.
Analog input Digital input Fieldbus module(CIM)*	Master	Connect and configure on the master pump.

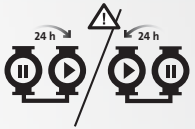
* If monitoring of the slave pump is desired, a CIM must be mounted on the slave too.

Multi-pump modes

Alternating operation =

Only one pump is operating at a time. The change from one pump to the other depends on time or energy. If one of the pumps fails, the other pump takes over automatically.

Back-up operation =



One pump is operating continuously. The backup pump is operated at intervals to prevent seizing up. If the duty pump stops due to a fault, the backup pump will start automatically.

Cascade operation =

All pumps in operation will run at equal speed and will cut in/out depending on system load. Cascade operation can be used in constant curve and constant pressure modes.

No multi-pump function =

Pumps will run as single pumps.

Multi-pump function

Operation

When operating in multi-pump mode, the operating mode, control mode and setpoint is active on a system level, meaning common for both pumps.

When changing settings or reading out multi-pump parameters, it is only necessary to do this on one of the pumps.

Grundfos Eye and the relays are local and show the status of the specific pump (e.g. running, stopped, warning).

Selection of master pump

The pump from which the multi-pump system is formed, will automatically be the master.

On twin-head pumps, where multi-pump is factory enabled, see chapter "how to identify the master pump "under" multi-pump setup".

For changing the master pump, the multi-pump system can be dissolved and reinitialized from the chosen pump.

Heat energy monitor

The heat energy parameters (flow, volume, heat energy) are accumulated on system level. Both pumps will display the same values.

If using the heat energy monitor, the temperature sensor should only be installed on the master pump.

Autonomous twin-head pump control

In applications where the twin-head pump is autonomously controlled by a 3rd party controller, it is recommended to dissolve the factory enabled multi-pump system.

When disabling the internal multi-pump function, it is necessary to connect input/outputs to both pump heads.

Warning 88 – Internal sensor fault

- The pump will continue operation with a yellow light indicating the warning.
- The internal sensor is either blocked due to impurities in the media, or the communication from the sensor is faulty.
- Make sure the sensor and the measuring channels in the pump house are not blocked.
- Replace the sensor if the error persists or disable the alarm under the settings menu if the reading is not needed and the product is running in open loop control (constant curve).

Warning 77 – Multi-pump communication

- Both pumps in the multi-pump system will continue to operate according to their local settings.
- The error is caused by the two pumps losing their radio connection.
- The pumps will search for each other and pair automatically again after reestablishing the connection.
- Make sure both pumps are supplied with power. If the multi-pump system is not desired, dissolve it under the "Assist" menu.

Alarm 72 – Internal fault

- The pump will stop and display a red light, but automatically try to restart.
- There might be turbine flow in the application, forcing a flow through the pump.
- Irregularities in the voltage supply can also cause this alarm.
- Check the application and take necessary measures to avoid turbine flow.
- If the alarm persists, contact Grundfos Service.

Alarm 51 – Blocked pump

- The pump will stop, but automatically try to restart.
- Make sure the rotor is not physically blocked (e.g. after being turned off for extended periods of time).
- If the error persists, contact Grundfos Service.

Alarm 10 – Internal fault

- This error can occur if different print circuit boards in the pump have lost connection to each other.
- Please contact Grundfos Service.

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