Control options of E-pumps

Communication with CRE, CRIE, CRNE pumps is possible by means of

- a central management system,
- remote control (Grundfos R100) or
- a control panel.

The purpose of controlling an E-pump is to monitor and control the pressure, temperature, flow and liquid level of the system.

Central management system

Communication with the E-pump is possible even though the operator is not present near the E-pump. Communication is enabled by having connected the E-pump to a central management system allowing the operator to monitor and change control modes and setpoint settings of the E-pump.

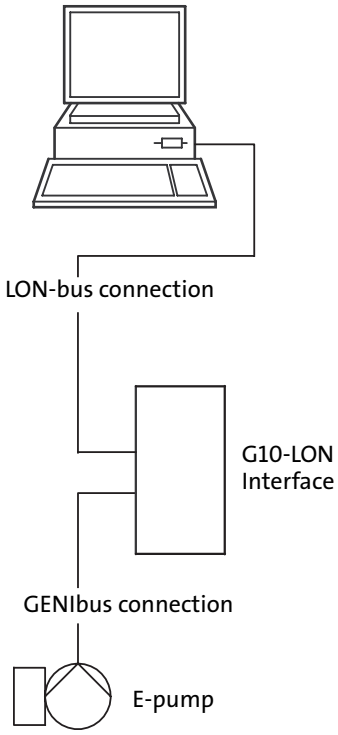

Fig. 6 Structure of a central management system

Remote control

The R100 remote control produced by Grundfos is available as an accessory.

The operator communicates with the E-pump by pointing the IR-signal transmitter at the control panel of the E-pump terminal box.

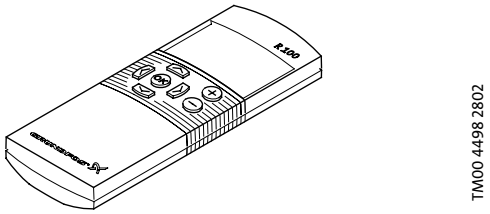

Fig. 7 R100 remote control

On the R100 display it is possible to monitor and change control modes and settings of the E-pump.

Control panel

The control panel of the E-pump terminal box makes it possible to change the setpoint settings manually.

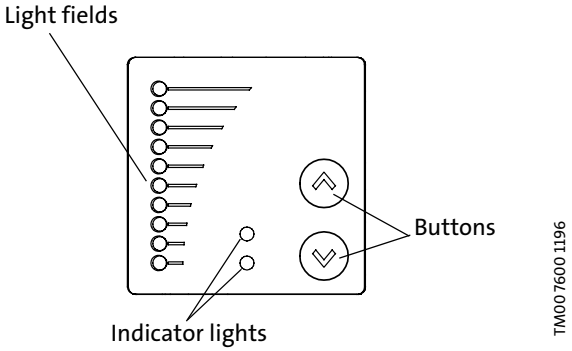

Fig. 8 Control panel on CRE pump

Control modes for E-pumps

Grundfos offers CRE, CRIE and CRNE pumps in two different variants:

- CRE, CRIE and CRNE with integrated pressure sensor
- CRE, CRIE and CRNE without sensor.

CRE, CRIE, CRNE with integrated pressure sensor

CRE, CRIE and CRNE pumps with integrated pressure sensor are suitable for applications where you want to control the pressure after the pump, irrespective of the flow. For further information, see the section "Examples of E-pump applications" on page 10. Signals of pressure changes in the piping system are transmitted continuously from the sensor to the pump.

The pump responds to the signals by adjusting its performance up or down to compensate for the pressure difference between the actual and the desired pressure. As this adjustment is a continuous process, a constant pressure is maintained in the piping system.

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Fig. 9 CRE, CRIE and CRNE pumps

A CRE, CRIE or CRNE pump with integrated pressure sensor facilitates installation and commissioning. CRE, CRIE and CRNE pumps with integrated pressure sensor can be set to:

- constant-pressure mode (factory setting) or
- constant-curve mode.

In **constant-pressure** mode, the pump maintains a preset pressure after the pump, irrespective of the flow, see figure below.

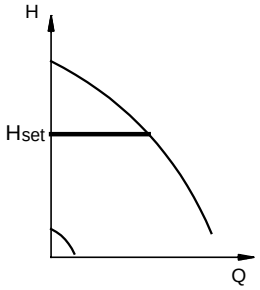

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Fig. 10 Constant pressure mode

In **constant-curve** mode, the pump is not controlled. It can be set to pump according to a preset pump characteristic within the range from min. curve to max. curve, see figure below.

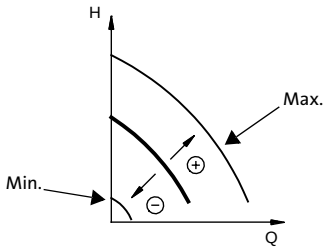

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Fig. 11 Constant curve mode

CRE, CRIE and CRNE without sensor

CRE, CRIE and CRNE pumps without sensor are suitable for applications where

- uncontrolled operation is required
- you want to fit another sensor later in order to control the flow, temperature, differential temperature, liquid level, pH value, etc at some arbitrary point in the system.

CRE, CRIE and CRNE pumps without sensor can be set to:

- controlled-operation mode or
- uncontrolled-operation mode (factory-setting).

In **controlled**-operation mode, the pump adjusts its performance to the desired setpoint, see figure below.

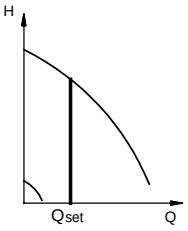

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Fig. 12 Constant flow mode

In **uncontrolled**-operation mode, the pump operates according to the constant curve set, see figure below.

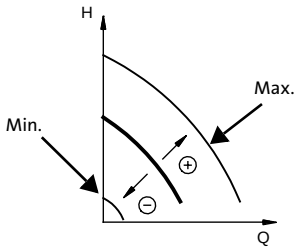

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Fig. 13 Constant curve mode

CRE, CRIE and CRNE pumps can be fitted with sensor types listed on page 75.