# MLE Set-Up Guide

## CRE/CME/MTRE
## Constant Pressure Operation
## Dry Run Protection
## Dead Head Protection

MLE motor models H, I and J with function module FM300 and HMI300 graphical control panel

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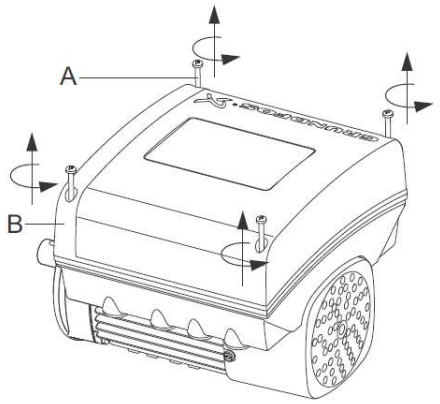
**This guide has been designed for use in North America and is strictly for use by qualified personnel with sufficient trade and/or technical training to setup pump motors.**

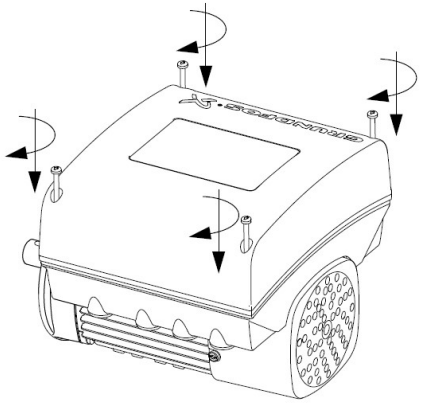
**This guide is not a substitute for the product Installation & Operating Instructions Please ensure you read and understand the Installation & Operating instructions before undertaking the setup of pump motors.**

**CRE - 98566351 & 98419736**
**CME - 98566351 & L-CM-TL-001**
**MTRE - 98566351 & L-MTR-TL-03**

# Remove Jumper Wire and Connect Accessories

- Switch off the power supply to the MLE motor and to the signal relays Wait at least 5 minutes before making any connections in the terminal box
- Loosen the four screws (A) and remove the MLE cover (B)
- Remove the factory installed jumper wire from terminals 2 and 6 (Start-Stop Terminals)
- Connect power supply wires
- Install the wires for the pressure sensor and the inlet pressure switch Wiring details provided on the next two slides
- Fit the MLE cover (B) and tighten the four screws (A)
- Switch on the power supply to the MLE motor



# Pressure Sensor Wiring

## Pressure Sensor – Danfoss MBS3000

| | |
|---|---|
| 0-87 psi | 91136169 |
| 0-145 psi | 91136170 |
| 0-232 psi | 91136171 |
| 0-362 psi | 91136172 |
| 0-580 psi | 91136173 |
| 0-870 psi | 91136174 |

| Sensor Wire Color | MLE Terminal Position | |
|---|---|---|
| Blue | Analog Input 1 | 4 |
| Brown | +24 Volt Supply | 8 |

**Connect the screen of the cable to the frame**

# Inlet Pressure Switch Wiring

## Inlet Pressure Switch - 91136184

## Inlet Pressure Switch wiring

| Wire Colors | Switch Terminal Position | |
|---|---|---|
| Black | (Common) | 1 |
| Green | (Normally closed) | 2 |

## MLE wiring for inlet pressure switch

| Wire Colors | MLE Terminal Position | |
|---|---|---|
| Black | (Digital input 2) | 1 |
| Green | (Ground) | 9 |

# Run start-up guide

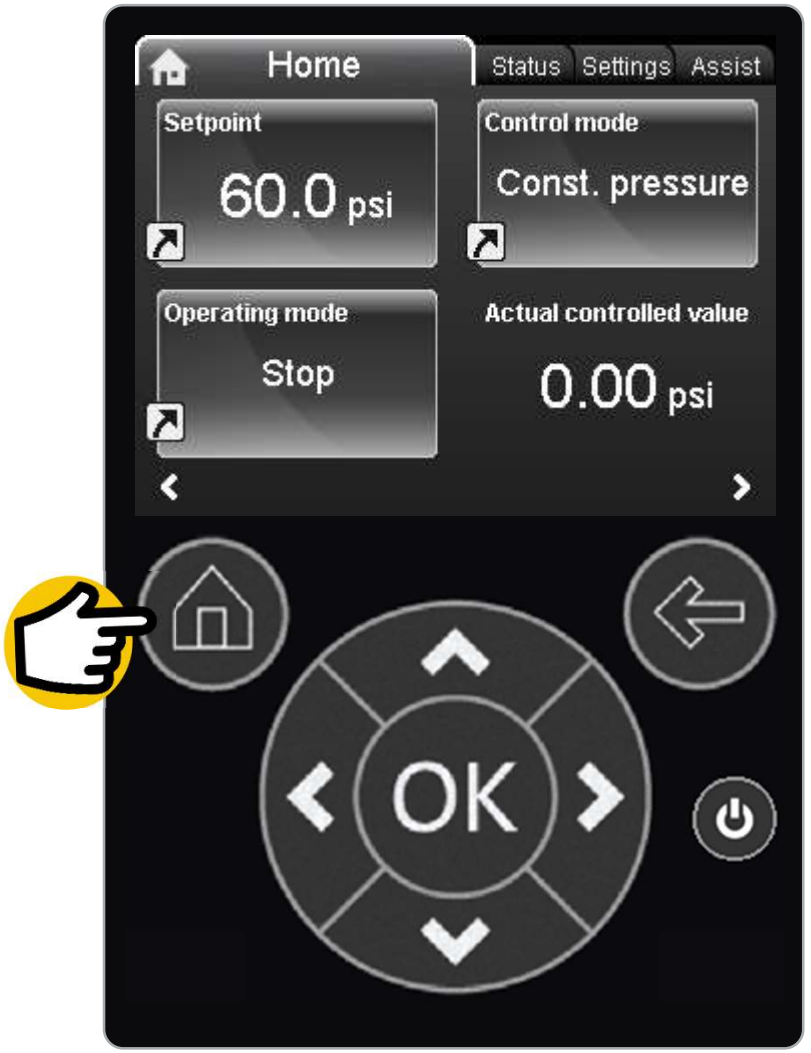
Language
Date
Time
Constant pressure control

Dead head protection
Dry run protection

If this is the first-time electrical power is connected to the MLE motor skip over the next four slides

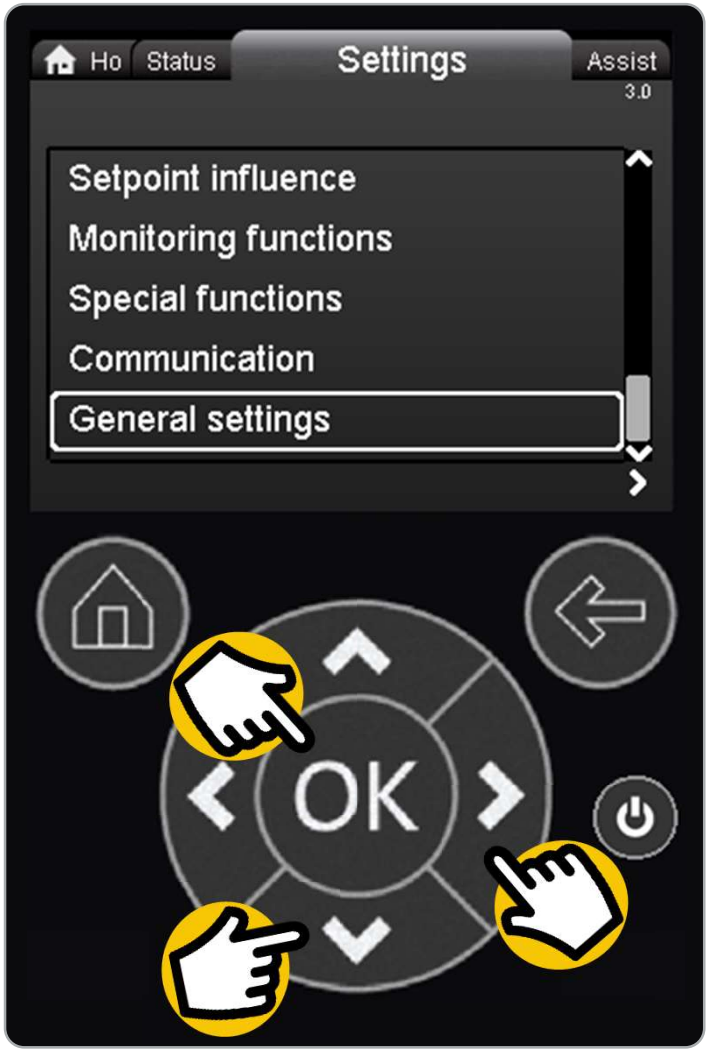
# Navigation to Home menu

- Navigate to the **Home** menu by pressing the button



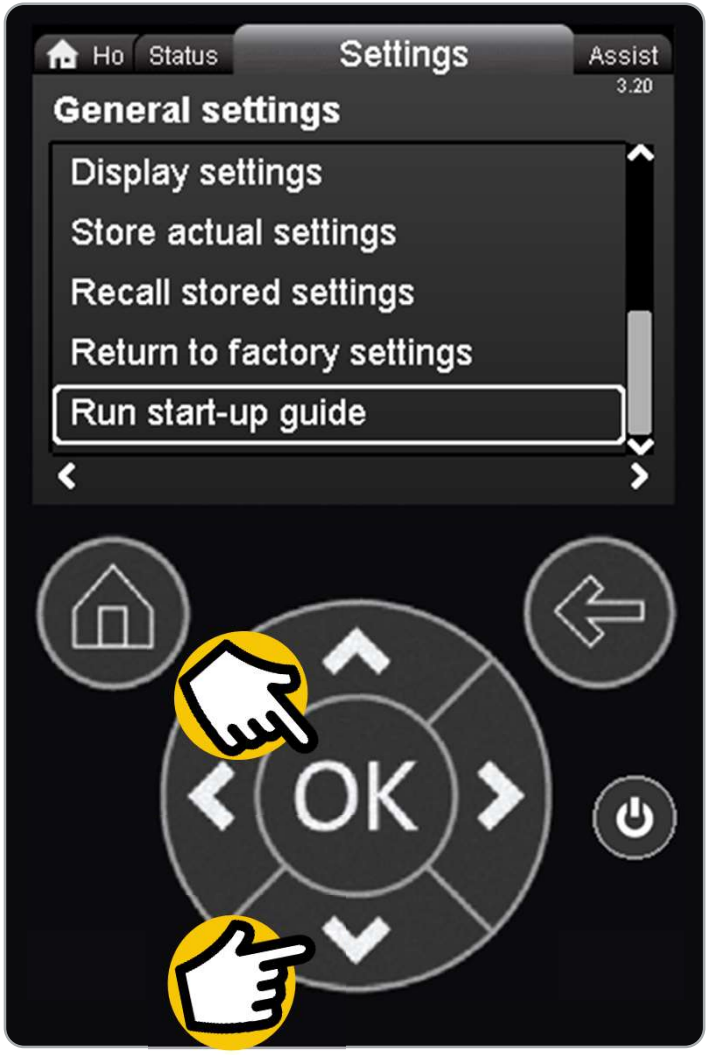
# Navigation to General Settings display

- Navigate to the **Settings** menu by pressing the **>** button
- Navigate to the **General Settings** display by pressing the **v** button
- Press **OK** button to access the General settings display



# Navigation to Run start-up guide

- Navigate to the Run start-up guide display by pressing the v button
- Press OK button to access the Run start-up guide display



# Navigation to Run start-up guide

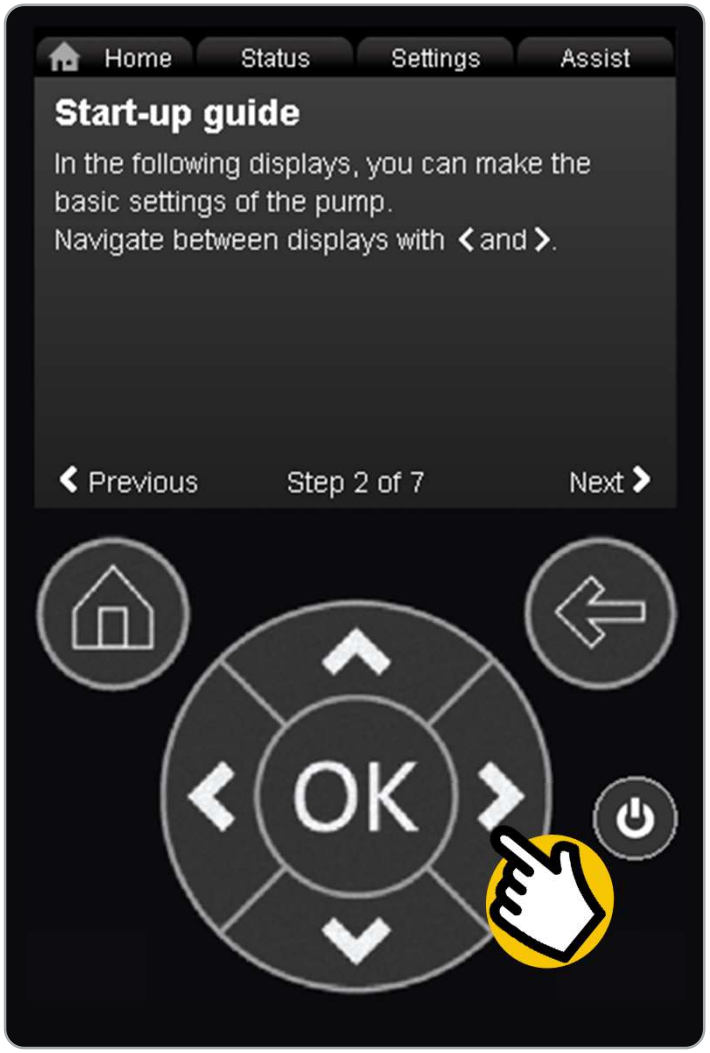
- Navigate to the Yes display by pressing the v button
- Press OK button to confirm the Run start-up guide

# Navigation to English US

- Navigate to the English US display by pressing the ^ button
- Press OK button to confirm the English US
- Press > button to access step 2

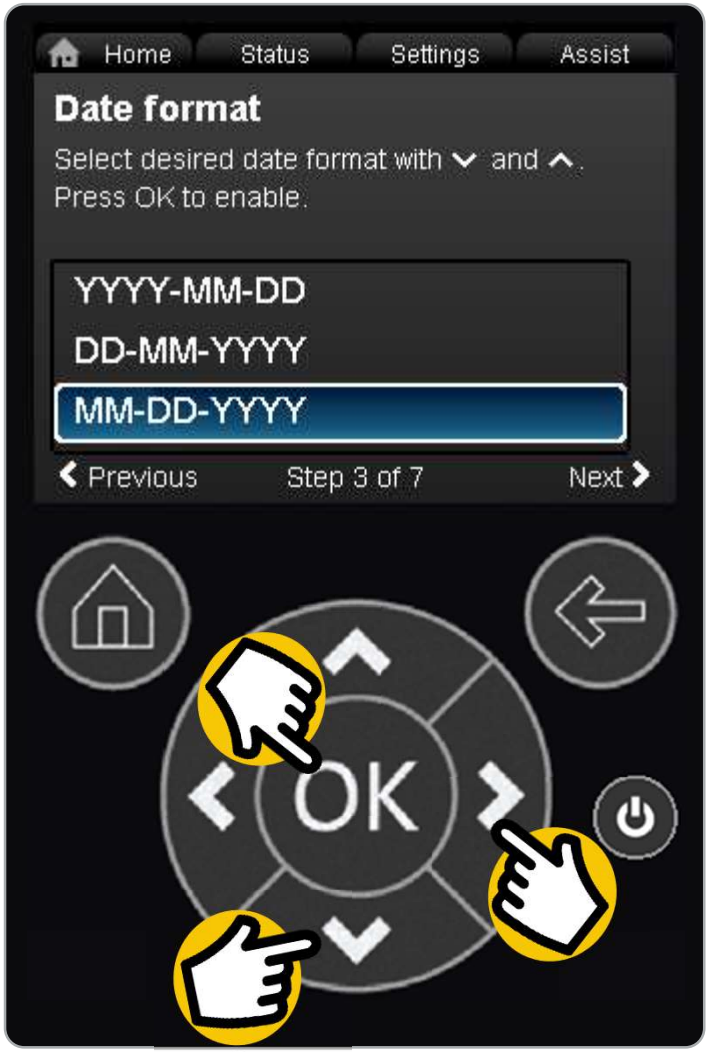
# Start-Up Guide Instructions

- Navigate between displays with the > and < buttons
- Press > button to access step 3



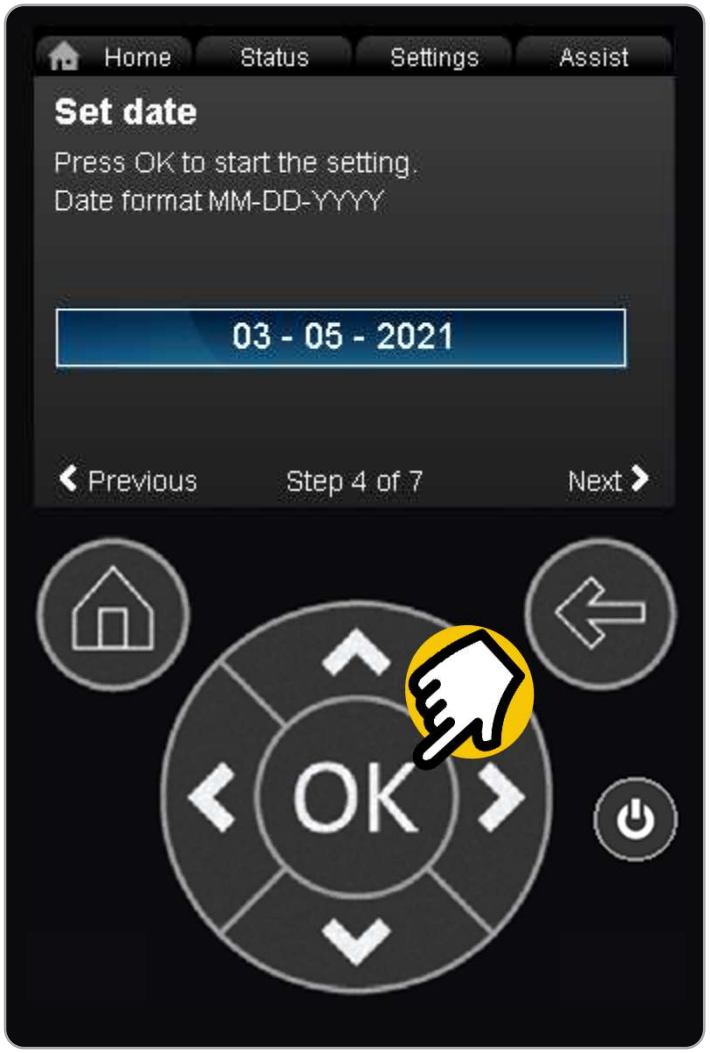
# Navigation to Date Format

- Navigate to the MM-DD-YYYY display by pressing the v button
- Press OK button to confirm the MM-DD-YYYY
- Press > button to access step 4



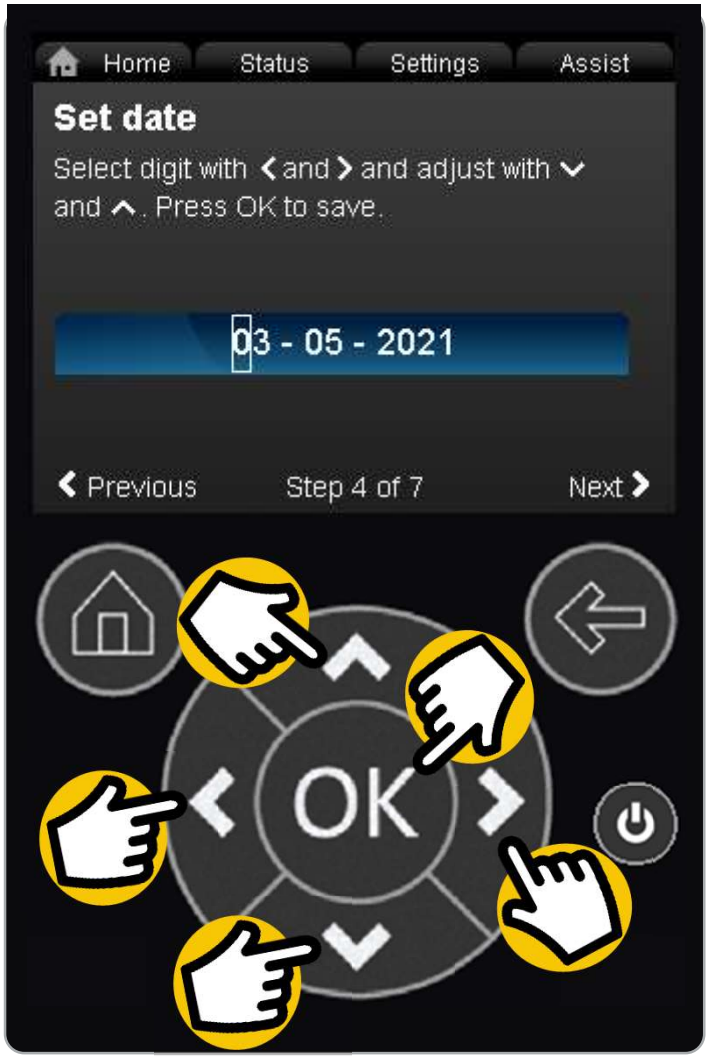
# Programming the Date

- Press **OK** button to activate the date parameter



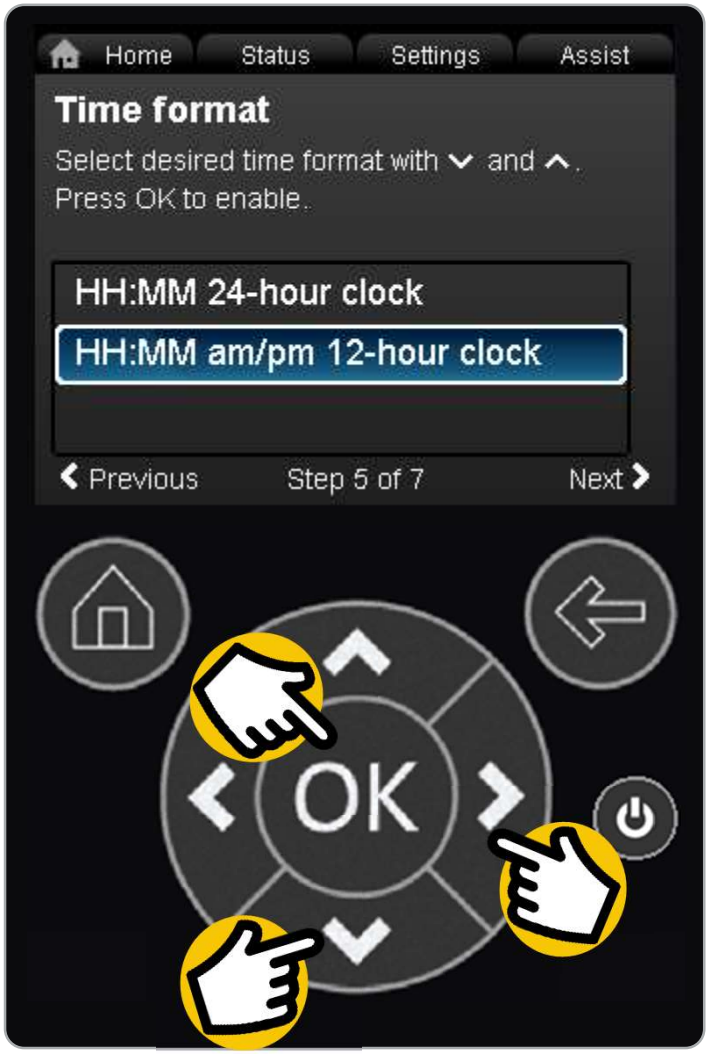
# Programming the Date

- Select the digit by using the > or < buttons
- Press ^ or v buttons to select the desired digit
- Press OK button to save date change
- Press > button to access step 5



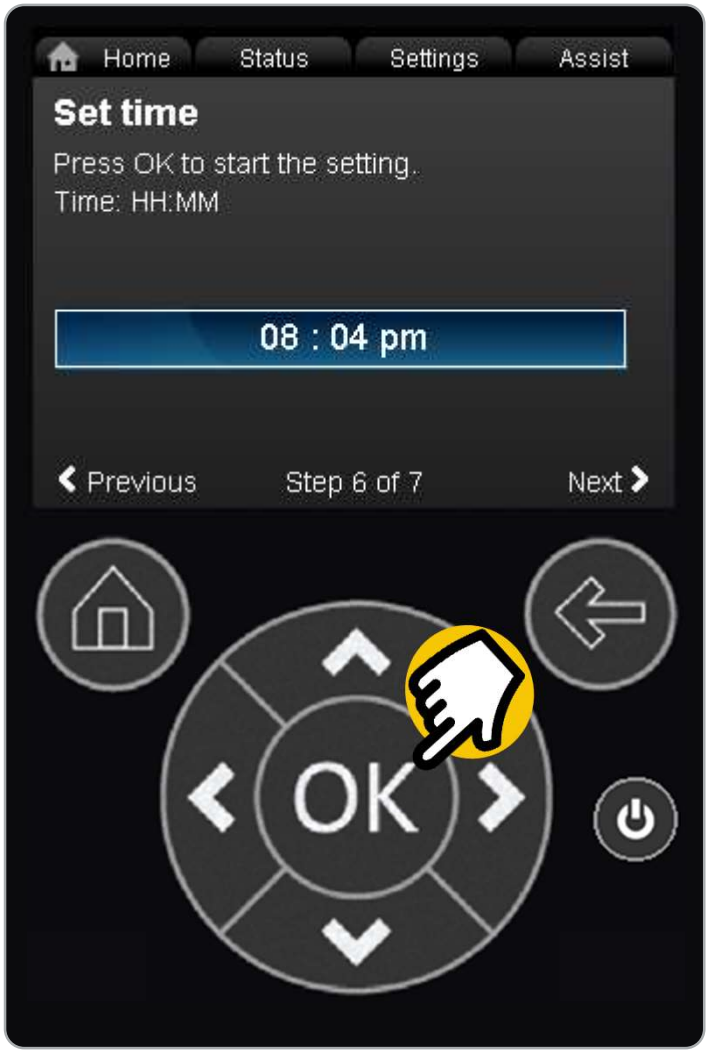
# Navigation to 12-Hour Clock

- Navigate to the 12-hour clock display by pressing the v button
- Press OK button to confirm the 12-hour clock
- Press > button to access step 6



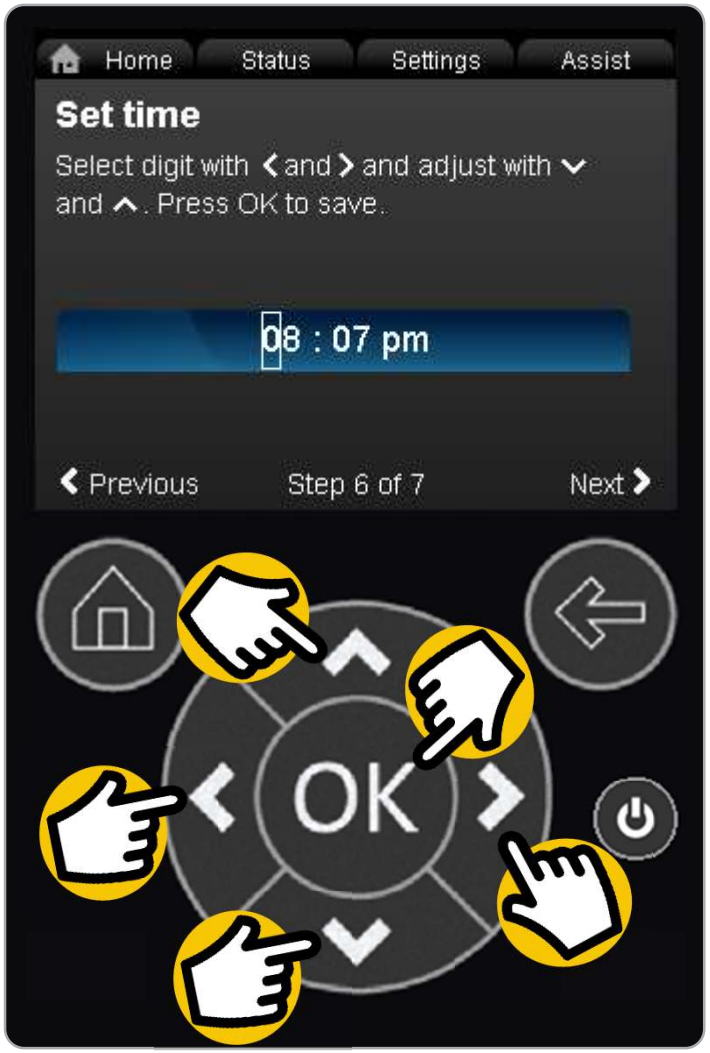
# Programming the Time

- Press **OK** button to activate the time parameter



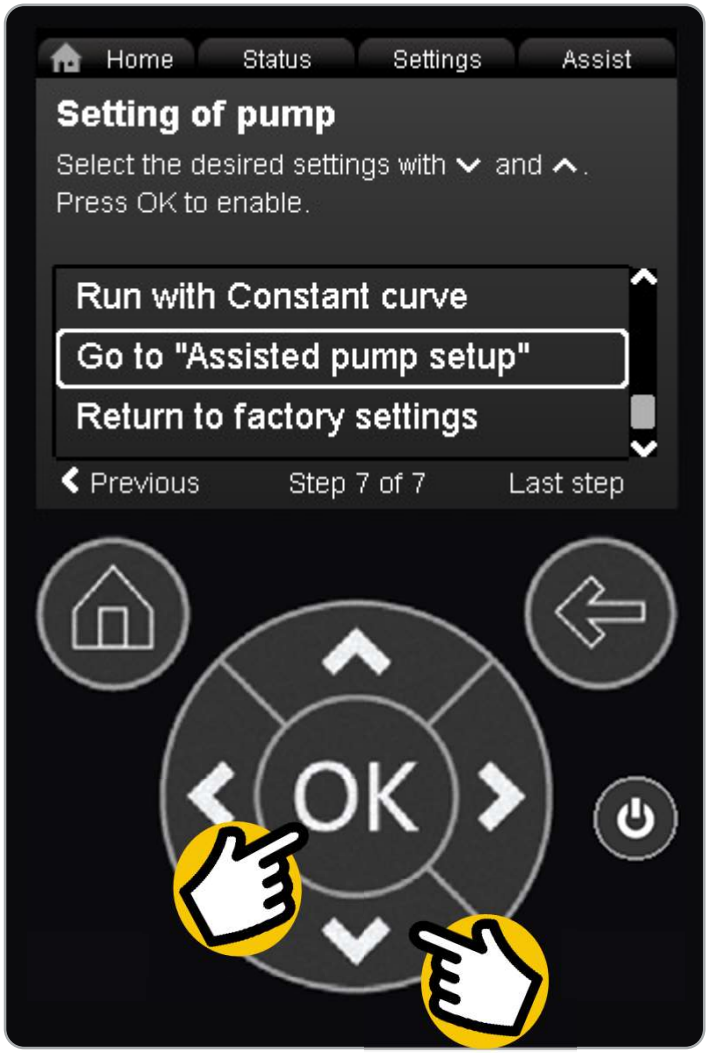
# Programming the Time

- Select the digit by using the > or < buttons
- Press ^ or v buttons to select the desired digit
- Press OK button to save time change
- Press > button to access step 7



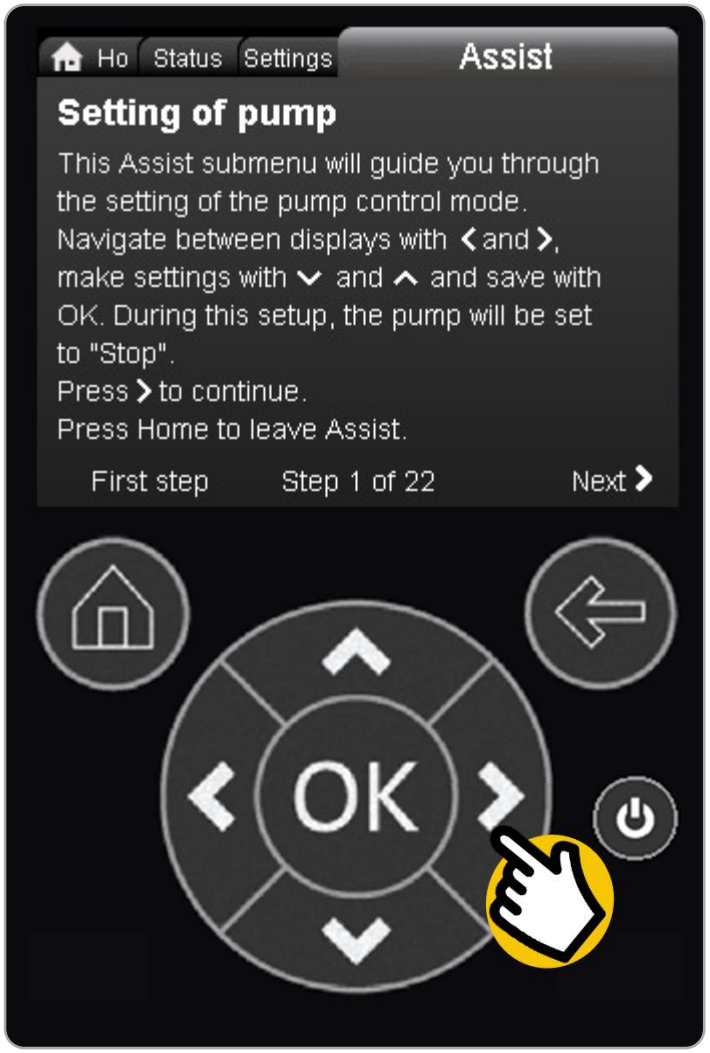
# Navigation to Assisted Pump Setup

- Navigate to the Go to "Assisted pump setup" display by pressing the v button
- Press OK button to confirm



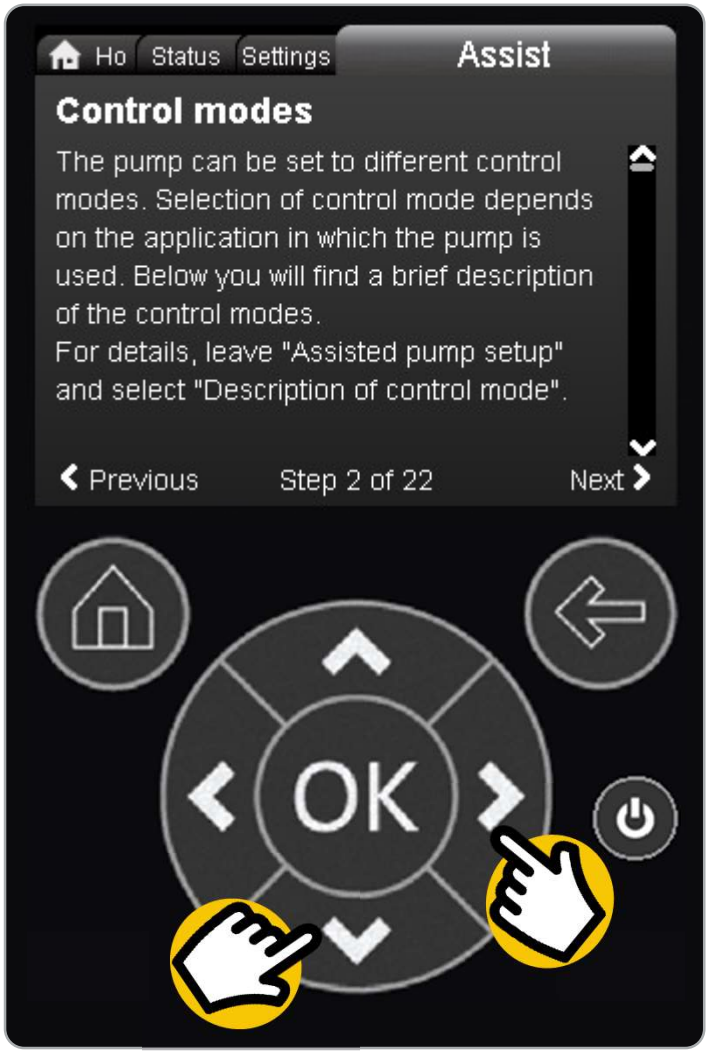
# Setting of Pump Control

- Assist menu
- Press > button to access step 2



# Control Mode Instructions

- Control mode – Constant Pressure
- Navigate to the Constant pressure display by pressing the v button
- Press > button to access step 3



# Navigation to Constant Pressure

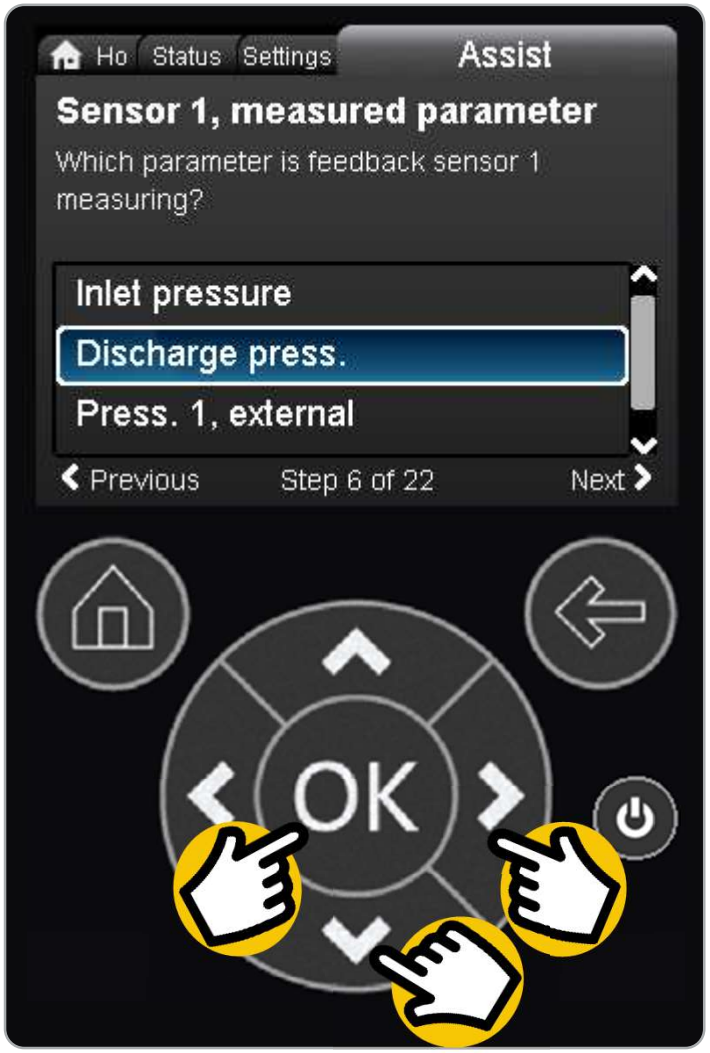
- Navigate to the Const. pressure display by pressing the v button
- Press OK button to confirm the constant pressure
- Press > button to access step 4

# Navigation to Analog Input 1

- Press **OK** button to confirm the Analog input 1 (Pressure sensor 4-20mA)
- Press **>** button to access step 6 (Analog input 1)

# Navigation to Discharge Pressure

- Navigate to the Discharge pressure display by pressing the v button
- Press OK button to confirm the discharge pressure
- Press > button to access step 7



# Navigation to PSI

- Navigate to the psi display by pressing the v button
- Press OK button to confirm the psi
- Press > button to access step 8

# Navigation to Minimum Value of Sensor Range

- The minimum value of the sensor range is 0 psi for the Pressure Sensors
- Press > button to confirm 0 psi and access step 9

# Program Maximum Value of Sensor Range

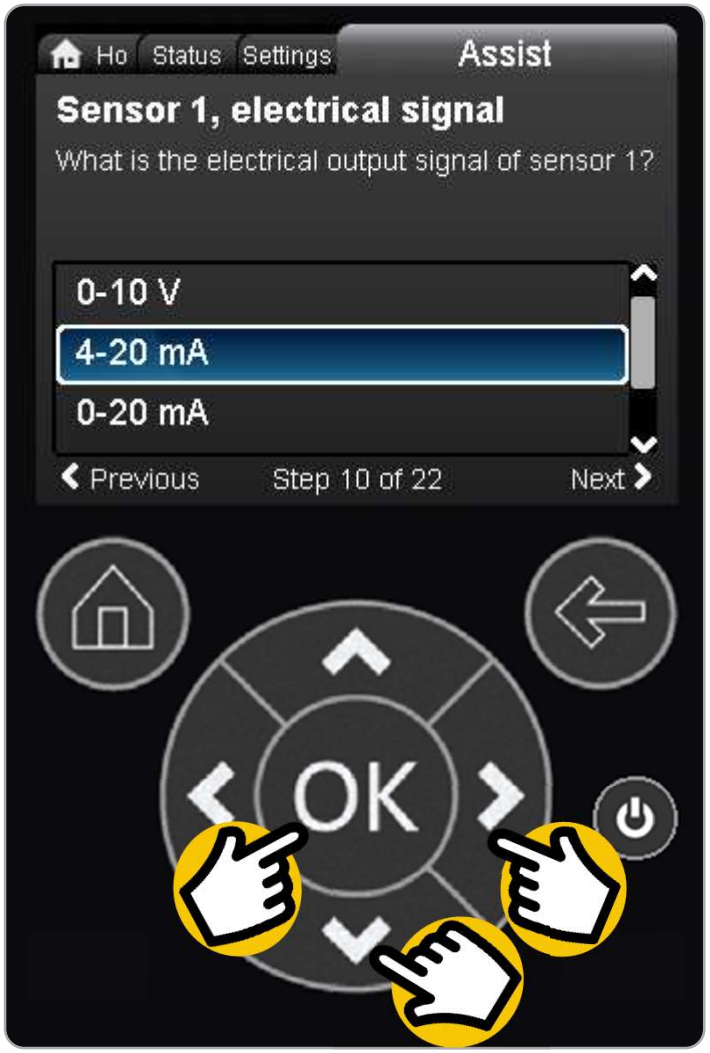
- Press OK button to activate the parameter

# Program Maximum Value of Sensor Range

- Select the digit by using the > or < buttons
- Press ^ or v buttons to select the desired digit
- Press OK button to save pressure change
- Press > button to access step 10

# Navigation to 4-20mA Signal

- Navigate to the 4-20mA display by pressing the v button
- Press OK button to confirm the 4-20 mA
- Press > button to access step 17

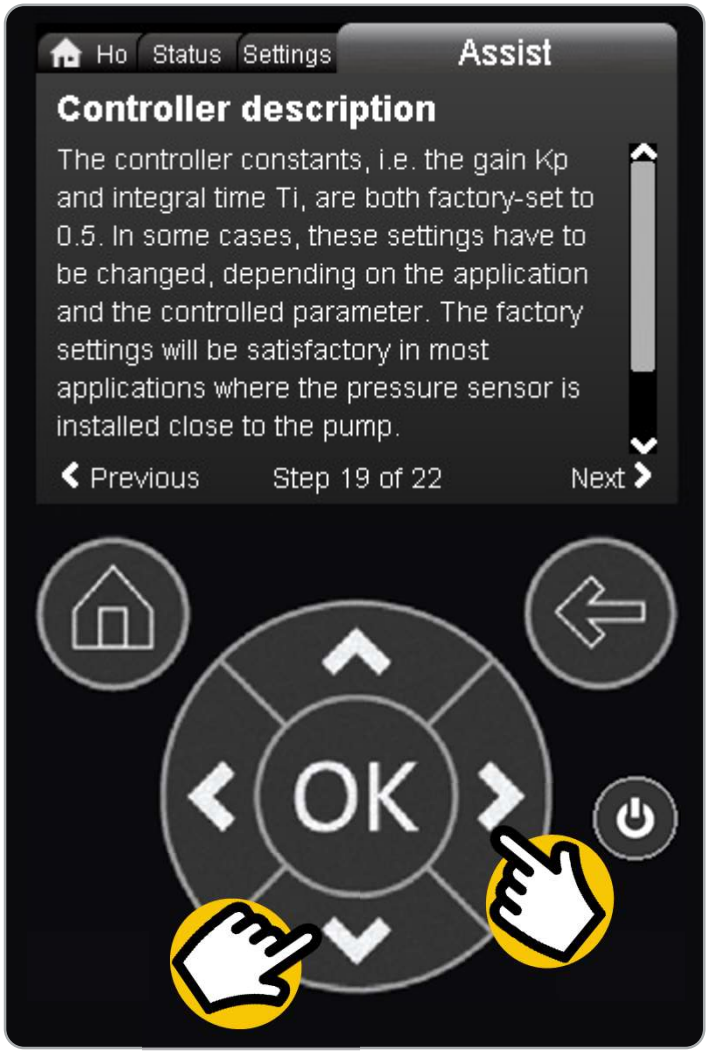


# Program Setpoint

- Press OK button to activate the parameter
- Select the digit by using the > or < buttons
- Press ^ or v buttons to select the desired digit
- Press OK button to save setpoint
- Press > button to access step 18

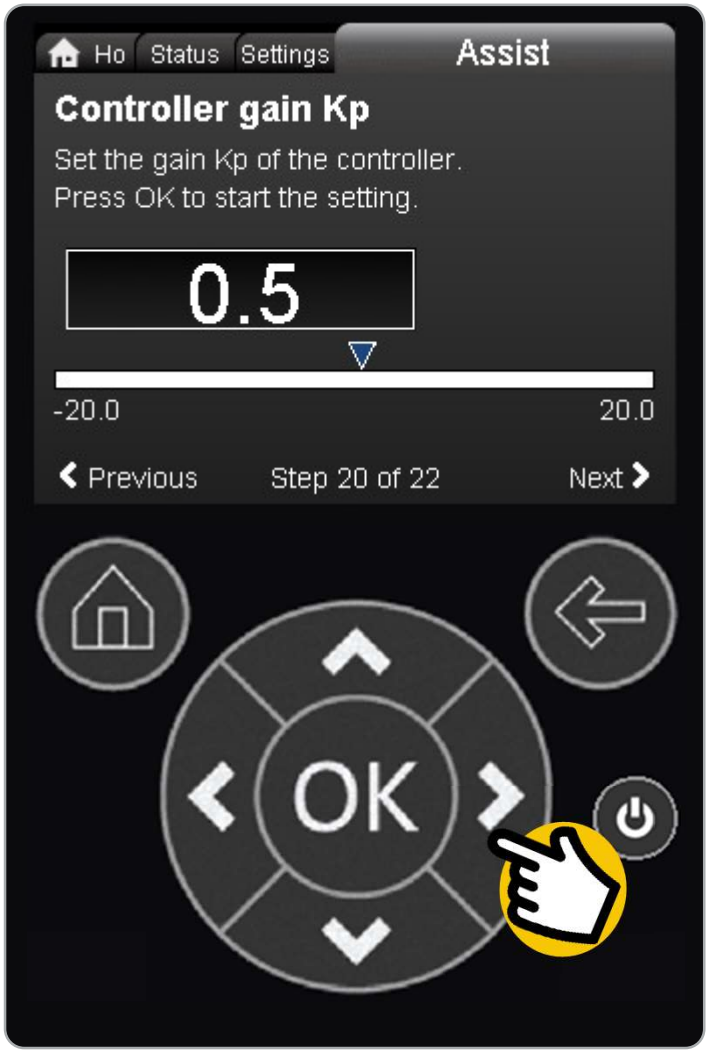
# Controller Instructions

- Kp and Ti
- Press > button to access step 20



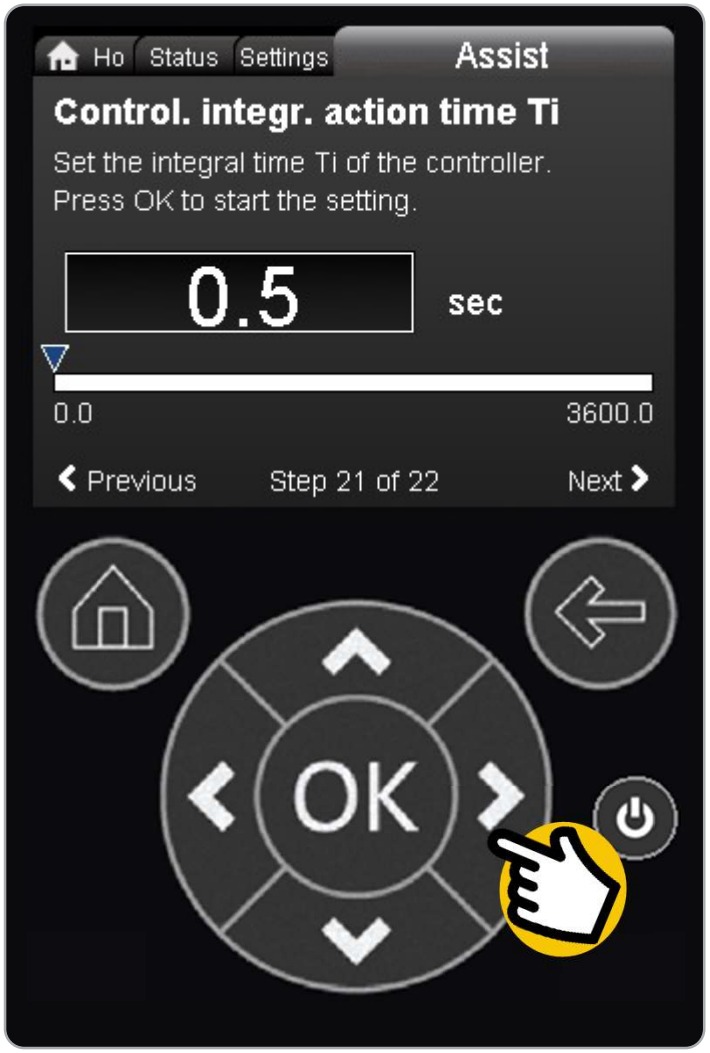
# Navigation to Controller Gain Kp

- For constant pressure applications the Kp is to be 0.5
- Press > button to access step 21



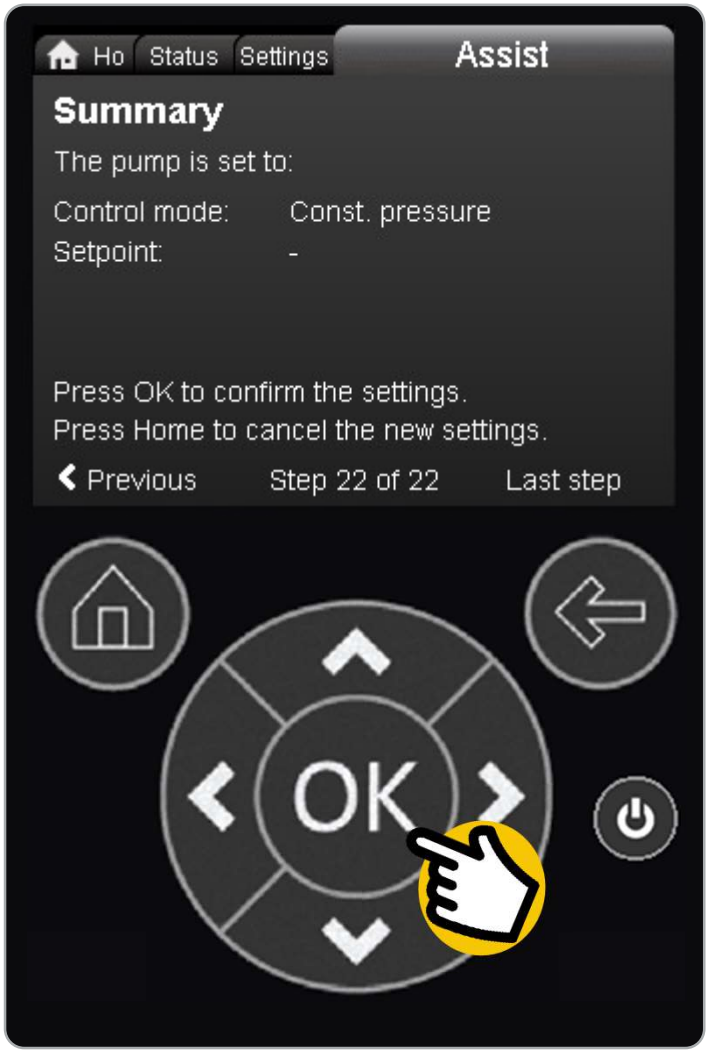
# Navigation to Integral Time Ti

- For constant pressure applications the Ti is to be 0.5
- Press > button to access step 22



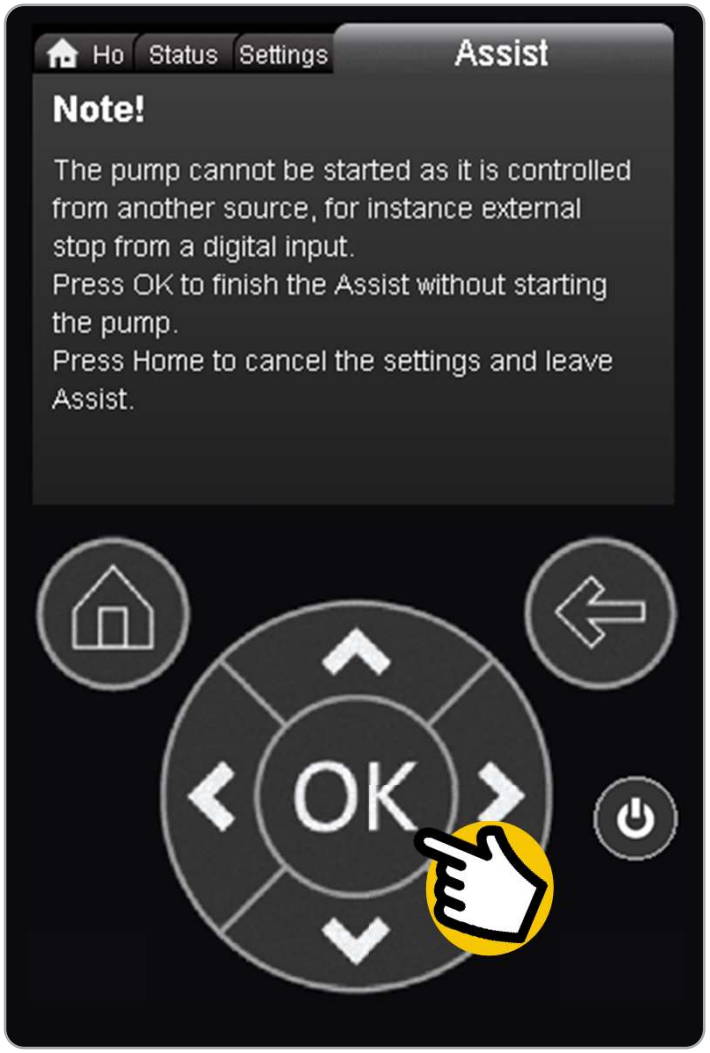
# Confirm Settings

- **Press OK button to confirm settings**

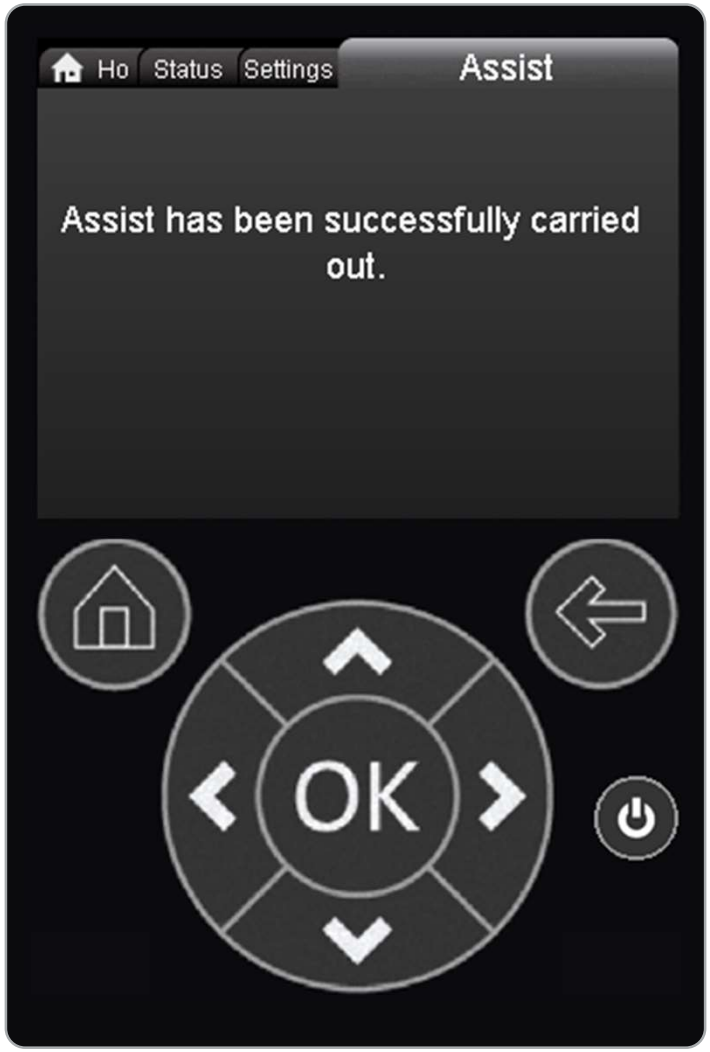


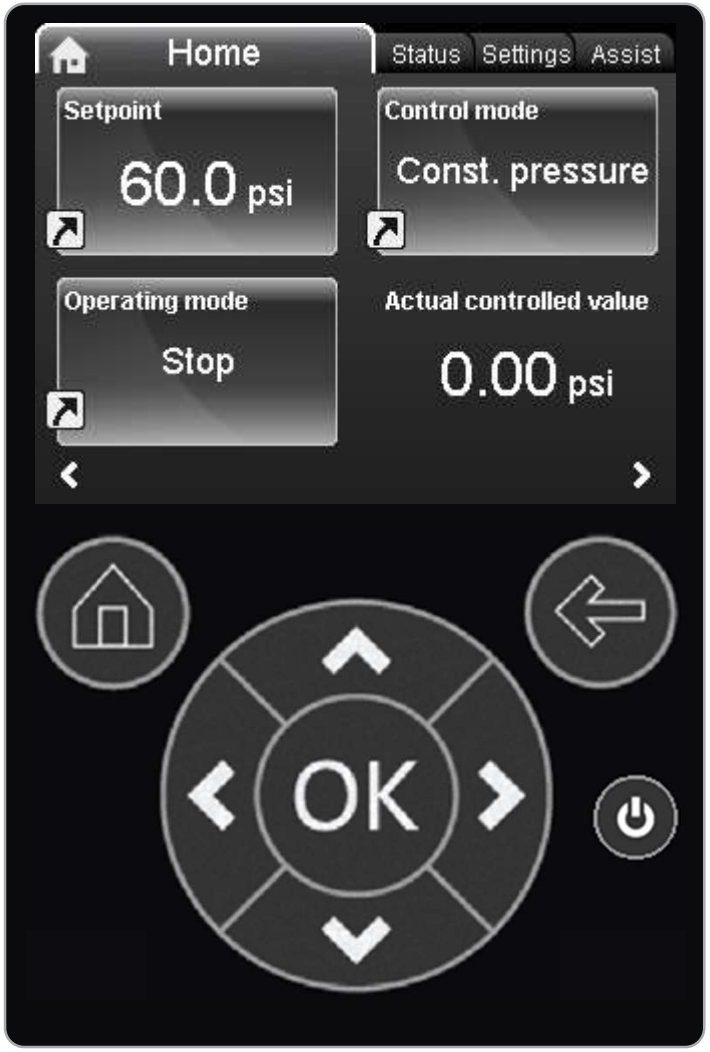
# Navigation to Finish Assisted Pump Setup

- The pump will not start due to the jumper wire being removed
- Press OK button to finish assisted pump setup



# Navigation to Finish Assisted Pump Setup



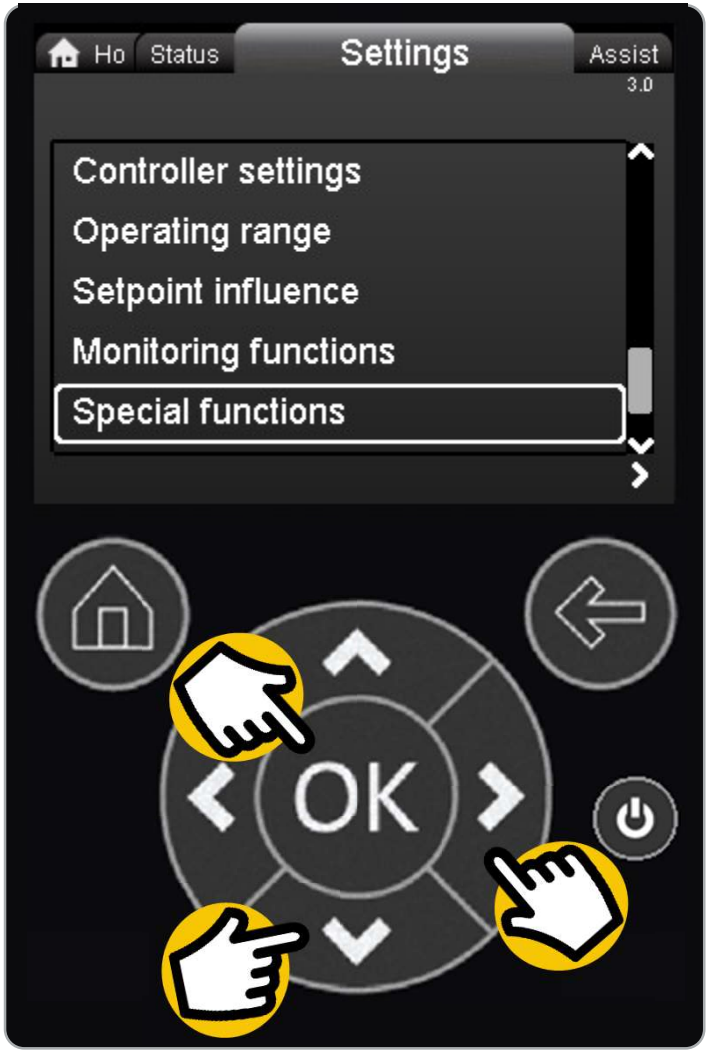



# Activation of Dead Head Protection

- **Stop Function**
  - **Diaphragm tank**
  - **Check valve**
  - **Pressure sensor**

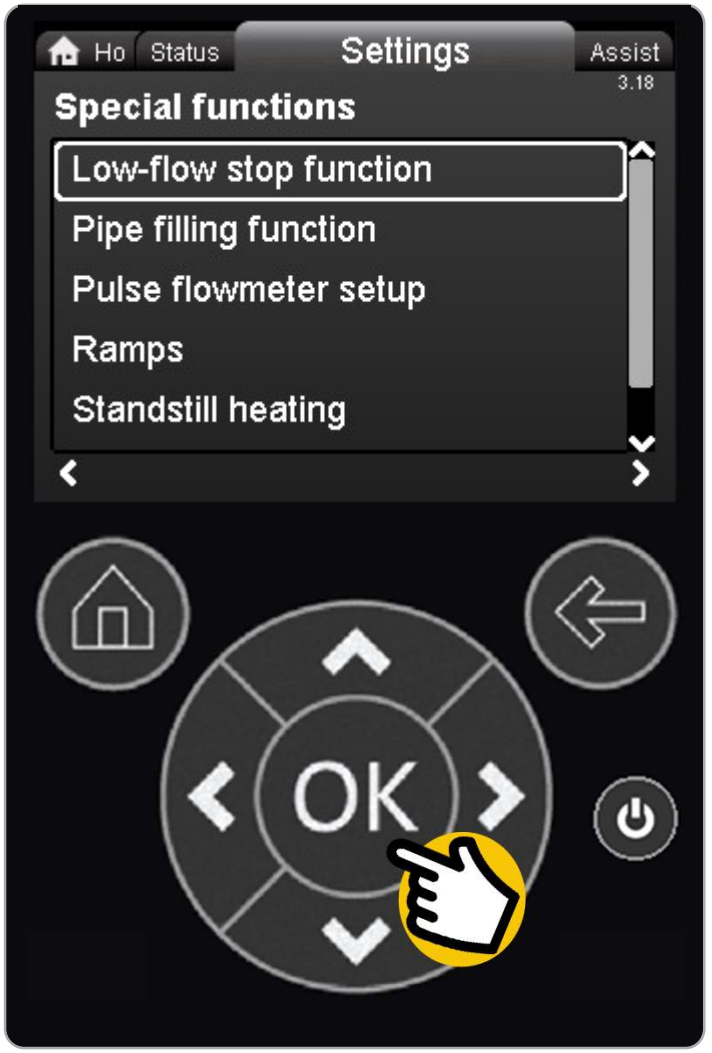
# Navigation to Special Functions display

- Navigate to the **Settings** menu by pressing the **>** button
- Navigate to the **Special functions** display by pressing the **v** button
- Press **OK** button to access the Special functions display



# Navigation to Low-Flow Stop Function

- Press **OK** button to access the **Low-flow stop function**



# Navigation to Desired Stop Function

- Press **OK** button to access the **desired stop function**

# Navigation to Energy-Optimal Mode

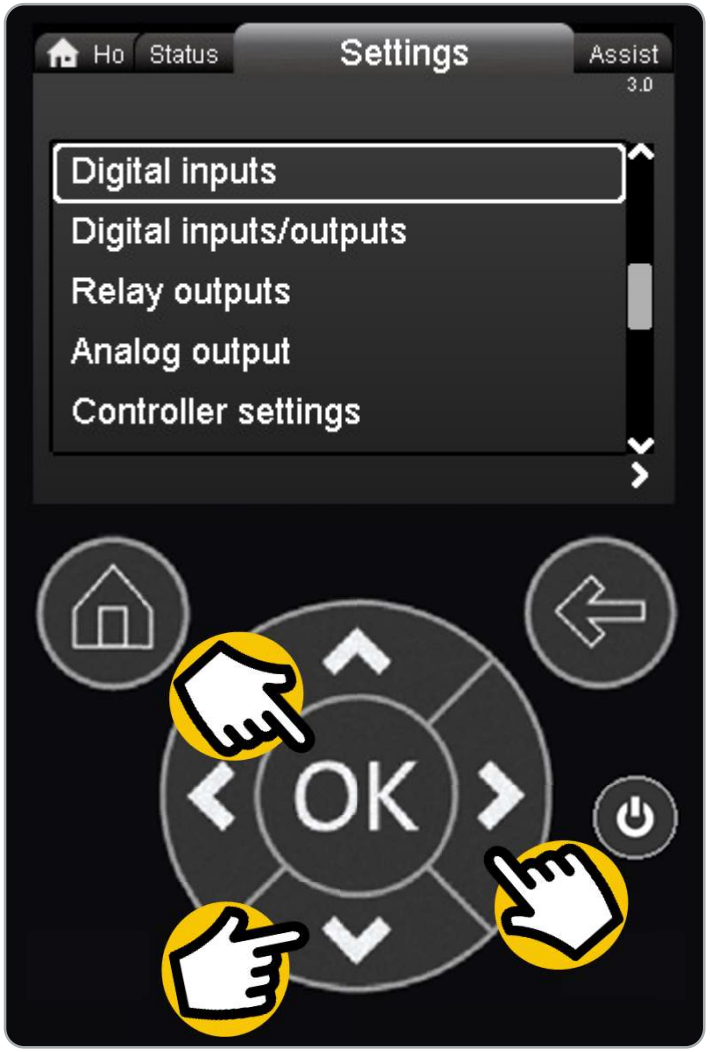
- Navigate to the **Energy-optimal mode** display by pressing the **v** button
- Press **OK** button to confirm the Energy-optimal mode
- Navigate to the **Home** menu by pressing the  button

# Activation of Dry Run Protection

- **Inlet pressure switch**
  **3 psi**

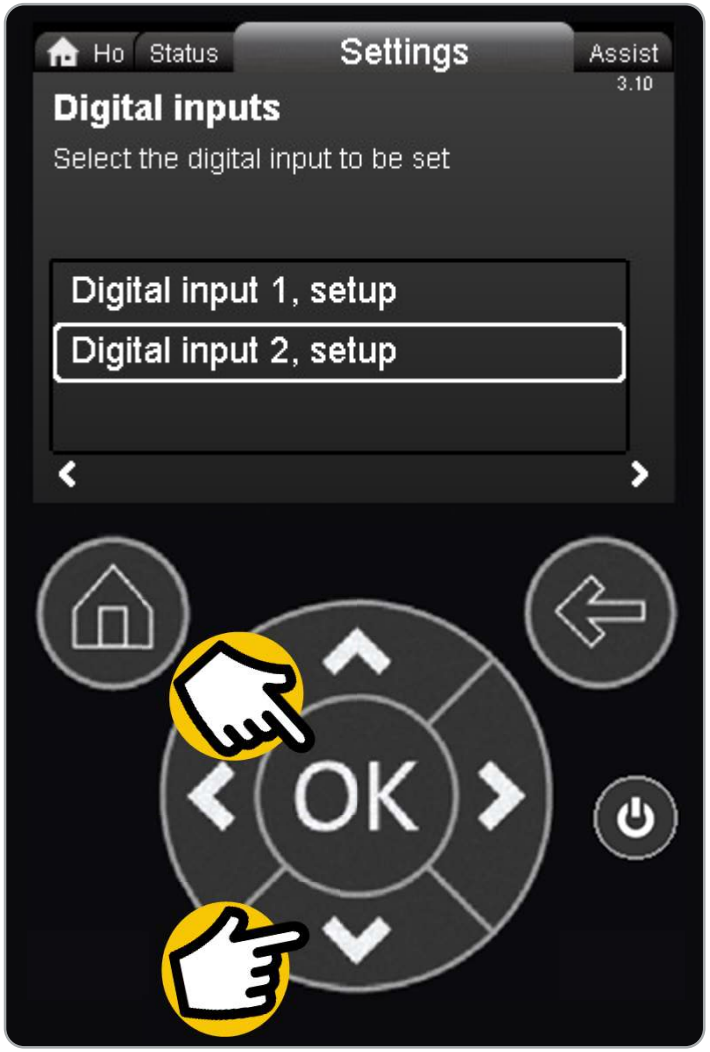
# Navigation to Digital Inputs

- Navigate to the **Settings** menu by pressing the **>** button
- Navigate to the **Digital inputs** display by pressing the **v** button
- Press **OK** button to access the Digital inputs



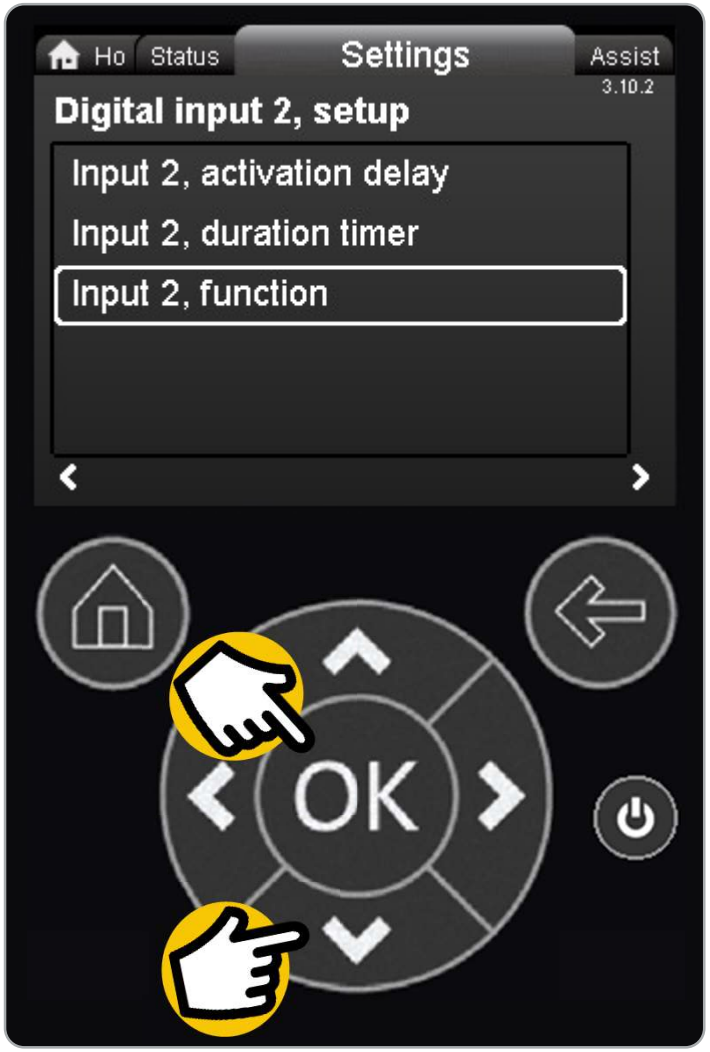
# Navigation to Digital Input 2

- Navigate to the Digital input 2, setup display by pressing the v button
- Press OK button to access the Digital input 2, setup



# Navigation to Input 2, Function

- Navigate to the Input 2, function display by pressing the v button
- Press OK button to access the Input 2, function

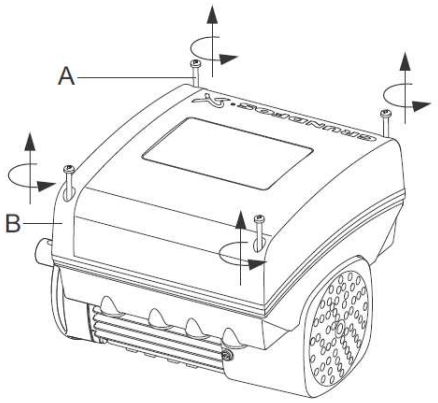


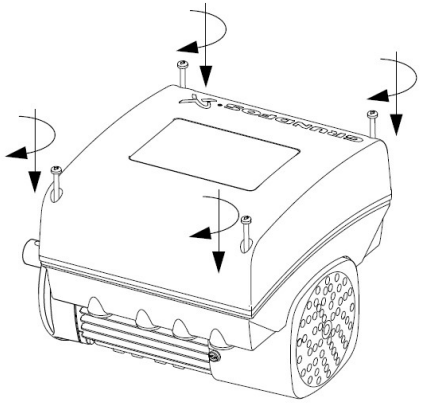
# Navigation to Dry Running

- Navigate to the Dry running display by pressing the v button
- Press OK button to confirm the dry running
- Navigate to the Home menu by pressing the button

# Prime the pump and Replace Jumper Wire

- Switch off the power supply to the MLE motor and to the signal relays Wait at least 5 minutes before you make any connections in the terminal box
- Prime the pump per the Installation and Operating Instructions
- Loosen the four screws (A) and remove the MLE cover (B)
- Replace the factory installed jumper wire to terminals 2 and 6 (Start-Stop Terminals)
- Fit the MLE cover (B) and tighten the four screws (A)
- Switch on the power supply to the MLE motor and to the signal relays Note: The pump shaft will typically rotate
- Complete the pump priming process by venting the pump



# MLE Wiring Diagram

| Terminal | Type | Function |
|---|---|---|
| 10 | DI3/OC1 | Digital input/output, configurable.<br>Open collector: Max. 24 V resistive or inductive. |
| 4 | AI1 | Analog input:<br>0-20 mA / 4-20 mA<br>0.5 - 3.5 V / 0-5 V / 0-10 V |
| 2 | DI1 | Digital input, configurable |
| 5 | +5 V | Supply to potentiometer and sensor |
| 6 | GND | Ground |
| A | GENIbus, A | GENIbus, A (+) |
| Y | GENIbus, Y | GENIbus, GND |
| B | GENIbus, B | GENIbus, B (-) |
| 3 | GND | Ground |
| 15 | +24 V | Supply |
| 8 | +24 V | Supply |
| 26 | +5 V | Supply to potentiometer and sensor |
| 23 | GND | Ground |
| 25 | GDS TX | Grundfos Digital Sensor output |
| 24 | GDS RX | Grundfos Digital Sensor input |
| 7 | AI2 | Analog input:<br>0-20 mA / 4-20 mA<br>0.5 - 3.5 V / 0-5 V / 0-10 V |

| Terminal | Type | Function |
|---|---|---|
| NC | Normally closed contact | Signal relay 1 (LIVE or PELV) |
| C1 | Common | |
| NO | Normally open contact | |
| NC | Normally closed contact | Signal relay 2 (PELV only) |
| C2 | Common | |
| NO | Normally open contact | |
| 18 | GND | Ground |
| 11 | DI4/OC2 | Digital input/output, configurable.<br>Open collector: Max. 24 V resistive or inductive. |
| 19 | Pt100/1000 input 2 | Pt100/1000 sensor input |
| 17 | Pt100/1000 input 1 | Pt100/1000 sensor input |
| 12 | AO | Analog output:<br>0-20 mA / 4-20 mA<br>0-10 V |
| 9 | GND | Ground |
| 14 | AI3 | Analog input:<br>0-20 mA / 4-20 mA<br>0-10 V |
| 1 | DI2 | Digital input, configurable |
| 21 | LiqTec sensor input 1 | LiqTec sensor input (white conductor) |
| 20 | GND | Ground (brown and black conductors) |
| 22 | LiqTec sensor input 2 | LiqTec sensor input (blue conductor) |

# MLE Set-up Guide

# CRE/CME/MTRE
# Constant Pressure Operation

MLE motors model H, I, J, with function module FM300 and HMI300 operator interface

# Questions

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