WHS HE

Electronic control unit
WHSE

Room temp.
sensor TFR

Hydraulic unit WHSH HE 24 V

Rect. duct temp. sensor TFK
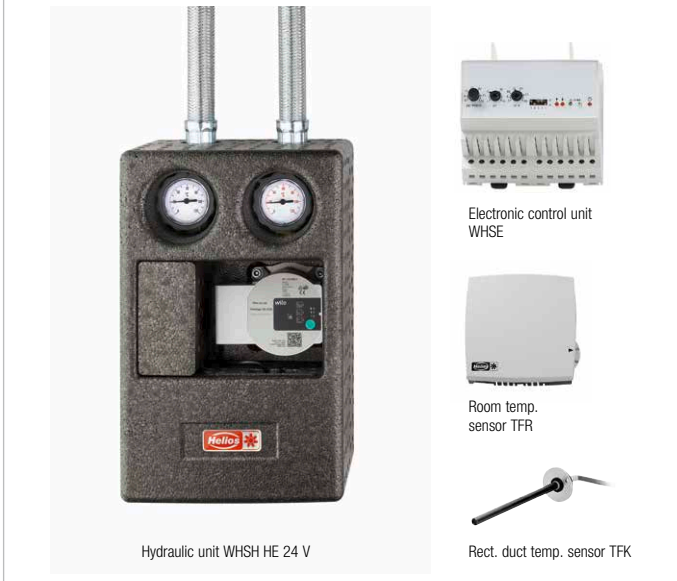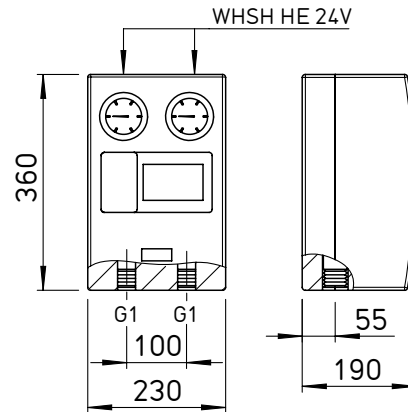
Dimensions WHS HE

WHSH HE 24V

360

G1   G1

100

230

55

190

Other dim. in mm see table

Air temperature control WHS HE for warm water heating elements

■ For the air heating control of warm water heating elements with a maximum output of approx. 70 kW and a flow rate between 200 and 2200 l/h.
■ Compatible with the Helios heating elements WHR-R 250 – 400 and WHR-K up to 2200 l/h.
■ Complete system with multiple control options and matched components.

■ Application
❑ Connection to existing heating circuits to supply e.g. a separate section. For creating a separate heating circuit using the integrated pump.
❑ The hydraulic assembly WHSH HE 24 V is used to operate a heating circuit in combination

with Helios warm water heating elements. The flow temperature to the heating element is controlled using a 3-way valve, which is operated by a 24 V electric servomotor.
❑ Delivered as a ready-to-connect, easy-to-install set. With premounted, thermally insulated hydraulic unit.

■ Control options
❑ Constant supply air temperature control using duct sensor TFK.
❑ Constant room temperature control using external room sensor TFR.
❑ Constant room temperature control with minimum limit for supply air temperature through the room and duct sensors.
❑ Frost protection for all three variants by using a second duct sensor TFK.
❑ WHS HE also offers the option

of setpoint control e.g. for night and weekend deactivation as well as the connection of additional sensors or setpoint adjusters.
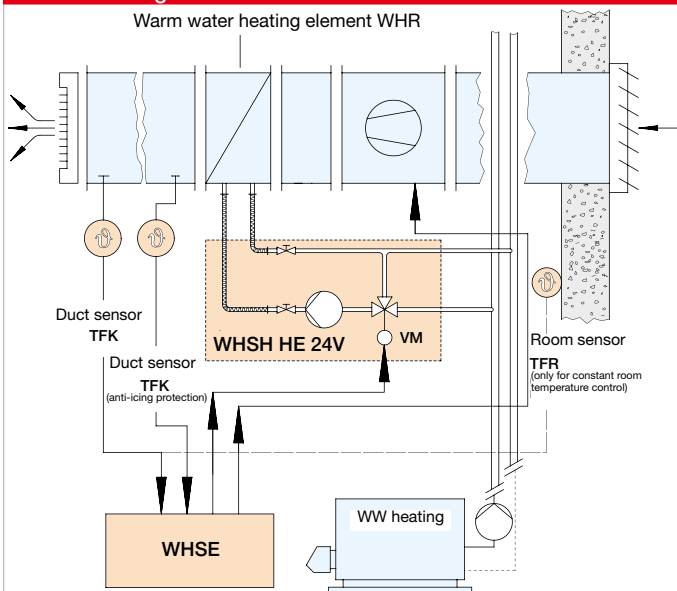
■ Scope of delivery/Description
❑ Hydraulic unit WHSH HE 24 V with:
  – Electronic circulating pump with automatic ventilation function, 2 m connection cable.
  – Flow/return shut-off valves with integrated temperature display.
  – 24 Volt servomotor with end switch, manual operation possible. Connection cable (2.2 m).
  – Three-way valve.
  – Thermal cladding made of EPP foam.
  – Sealing kit and two flexible reinforced hoses DN 25

(stainl. steel, 50 cm long) for element-side connection.
  – Reduction nipple, 3/4" – 1".

❑ Electronic control unit WHSE, for switch cabinet installation. Functions:
  – Setpoint temp. specification for operation with constant supply air temperature.
  – Cascade factor setting.
  – Minimum limit.
  – Setting/selection of control modes.
  – Operating display.
  – Frost protection: Alarm and reset.
  – Servomotor operating display.
  – Potential-free output for alarm 24 V and 230 V circuit.
❑ Two temperature sensors TFK for rectangular duct installation.
❑ One room temperature sensor TFR.
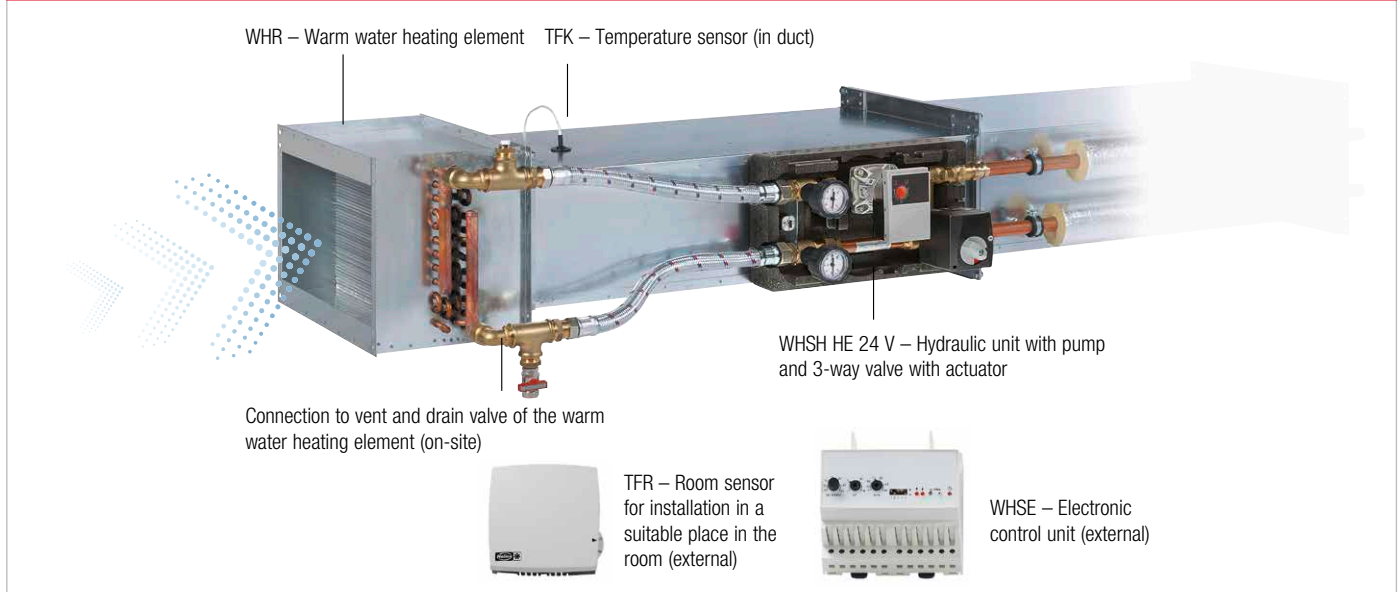
Installation diagram WHS HE

Warm water heating element WHR

Duct sensor
TFK

Duct sensor
TFK
(anti-icing protection)

WHSH HE 24V

VM

Room sensor
TFR
(only for constant room temperature control)

WW heating

WHSE

Type	WHS HE
Ref. no	08319
Max. operating pressure	6 bar
Max. operating temperature	120 °C
KVS value	5.1
Min. / Max. flow rate	200 [1] – 2200 l/h
Differential pressure influence	0.1 – 0.7 K / 0.5 bar
Setpoint range (thermostat)	7 – 28 °C
Ambient temperature (control electronics)	0 – 50 °C
Protection category (control electronics)	IP20
Power consumption – Pump	3 ... 45 W
– Servomotor	2.5 W
– Control electronics	5 W
Voltage – Pump / control electronics	230~ V / 50 Hz
– Servomotor	24~ V / 50/60 Hz
Wiring diagram no.	953
Dimensions in mm – Hydraulic unit [3]	See dimensional drawing
– Control electronics WHSE [3]	H 80 x W 100 x D 85
– Room sensor TFR	H 80 x W 85 x D 30
– Duct sensor TFK	130/50 [2], Ø 10
Weight approx. kg	9.0

[1] Low water flow rates can cause control problems. [2] Length internal/external.
[3] One-off orders of WHS HE system components upon request.

Application example

WHR – Warm water heating element   TFK – Temperature sensor (in duct)

WHSH HE 24 V – Hydraulic unit with pump and 3-way valve with actuator

Connection to vent and drain valve of the warm water heating element (on-site)

TFR – Room sensor for installation in a suitable place in the room (external)

WHSE – Electronic control unit (external)

■ Installation instructions

The heating element WHR and duct sensor TFK must be attached on the air-side in the duct system downstream of the fan. The hydraulic unit WHSH HE 24 V must be fixed independently and securely. Expansion forces or the dead weight of the duct system must not burden the connections.
The vent valve must be attached at the highest point and the drain valve must be attached at the lowest point of the circuit. The electronic control unit WHSE (IP 20) can be installed in the switch cabinet on DIN profile rails.

■ Design

① Selection of the desired PWW heating element using the air volume flow, the design (duct dimensions) and the required heat output
– WHR-R, round ducts   p. 490
– WHR-K, rect. ducts   p. 489

② Determination of the pressure loss of the on-site duct system.

③ Addition of losses from all components:
Δp Total =
Δp heating element
+ Δp duct system
+ Δp WHSH HE

④ Setting the required differential pressure Δp Total at the rotary knob on the circulating pump.

Diagram

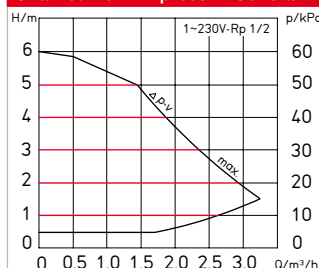**Pressure loss Hydraulic unit incl. flexible pipe**
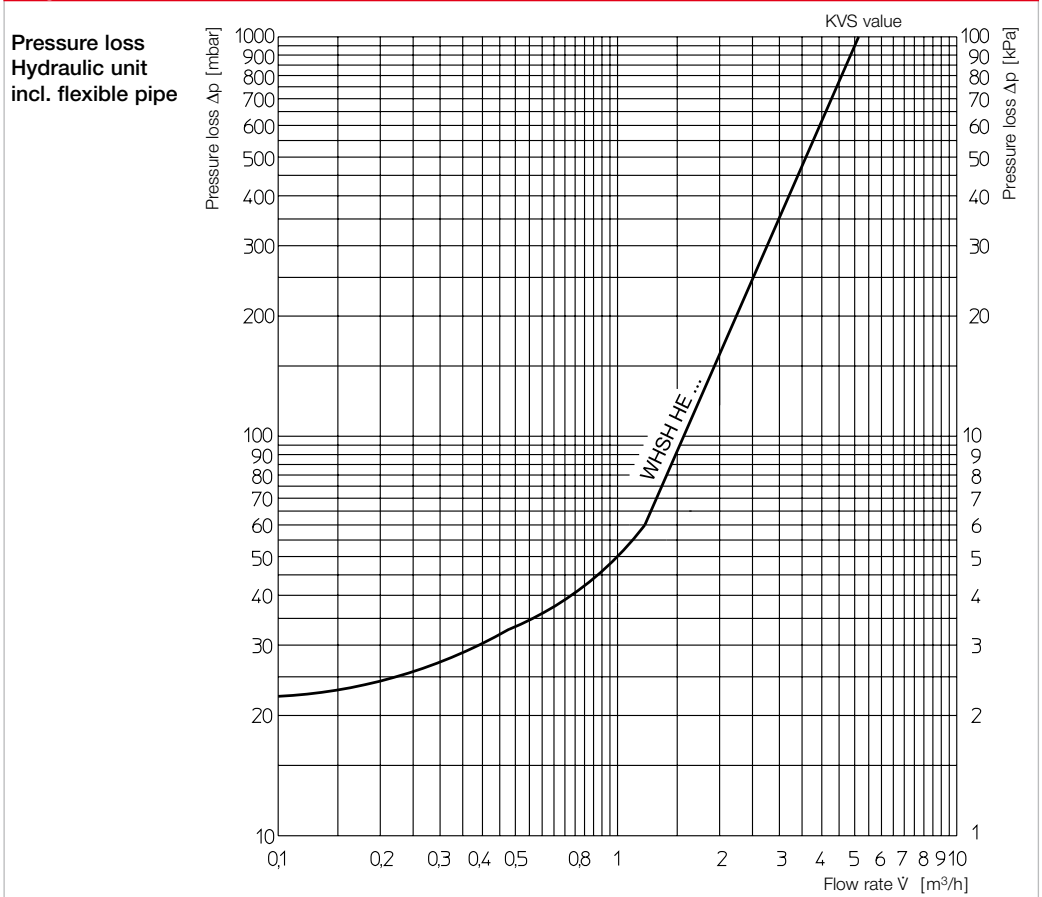
Char. curve Diff. press. – Variable
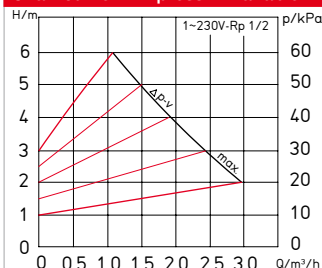
Char. curve Diff. press. – Constant

■ Reference

Other hydraulic units

– for KWL units   **171**
with PWW post-heater
WHSH HE 24 V (0-10 V)
Ref. no.08318

– for ALB EC WW   **351 ff.**
WHSH HE 24 V (0-10 V)
Ref. no.08318

Air treatment