Function Guide for the GOLD version E/F/G, Preheating

1. General

When it is cold outside and the humidity is high, preheating the incoming outdoor air will prevent condensation from forming on outdoor air filter surfaces in the air handling unit.

Preheating the air also reduces the risk of frosting in the heat exchanger.

Preheating the outdoor air may also be required during periods of extremely low temperatures outside. If the air is preheated, this prevents the pressure sensor and the frequency inverter from having to operate under excessively low ambient temperature conditions.

Preheat can also be placed in the supply air and is used while defrosting the heat exchanger and/or DX coil at low temperatures.

The air heater is designed for clean air, Swegon therefore recommends that pre-filters are installed before the air heater (seen in the direction of air).

The preheating function can control the air heater as follows:
– Electric air heater, pause/pulse control signal.
– Electric air heater, 0–10 V.
– Air heater for hot water, 0-10 V control signal, with anti-frost monitor/heat retaining function.
– Air heater for hot water, 0-10 V control signal, without anti-frost monitor/heat retaining function.

The TBLF air heater is designed for installation in outdoor air or supply air ducts.

Preheating is interlocked to follow the supply air flow. This means that the function cannot be used in the exhaust air or extract air duct while the supply air fan is switched off and the extract air fan alone is operating.

The preheating function has a relay function for controlling a circulation pump, if required.

2. Material Specification

Air handling unit **All types of GOLD**

For outdoor air temperature-related pre-heat:
Outdoor temperature sensor **TBLZ-1-24-3**

Alt. 1

Air heater for pre-heat, water **TBLF-1-aaa-aaa**
The TBLZ-2-53-0 set of components for controlling the air heater for pre-heat is included.
or
Air heater for pre-heat,
water (not sizes 50-120) **TCLF-1-aa**
The TBLZ-2-53-0 set of components for controlling the air heater for pre-heat is included.

The TBVL-3-aa-b set of valve components can be used. If the valve and valve actuator are not included in Swegon's supply, a TBLZ-1-27-a set of components for electrical connection is required.

Alt. 2

Electric air heater for pre-heat of
standard Swegon type **TBCE/TBRE/TCLE**
Set of components for controlling the air
heater for pre-heat. **TBLZ-2-53-0**
Consists of: IQlogic+,TBIQ-3-2-0
Temperature sensor (set) for duct mounting, TBLZ-1-30.

Alt. 3

Air heater of a type other than TBLF/TCLF or TBCE/TBRE/TCLE.

Set of components for controlling
the air heater for pre-heat. **TBLZ-2-53-a**
Consists of: IQlogic+,TBIQ-3-2-0
Temperature sensor (set) for duct mounting, TBLZ-1-30.

3. Function

The preheating function is a completely independent control with its own duct temperature sensor. The temperature sensor should be installed in a duct, at least 1.5 metres downstream of the air heater TBCE/TBRE/TCLE (Viewed in the direction of airflow, see illustration). The other air heaters, TBLF and TCLF, can be fitted directly to the air handling unit and the temperature sensor can then be mounted inside the air handling unit after the filter.

The duct temperature sensor is required to prevent sensor alarms from tripping.

The control signal regulates the air heater to keep temperature by sensor at the preset value.

The preheating control function begins when the supply air fan is running and an airflow reading appears in the terminal screen.

Scope for setting Outdoor air temperature-related pre-heat is available. The function also requires, in addition to controlling the TBLZ-2-53-0 pre-heat air heater, the TBLZ-1-24-3 outdoor temperature sensor accessory. The function involves presetting a start limit (pre-heat, set-point) and a stop limit (pre-heat, min. limit). Pre-heat is regulated between these temperatures, with preset difference between the outdoor air temperature and the temperature downstream of the coil (difference, outdoor air temperature), according to the diagram.

Air heater for hot water:
During the start-up phase, the preheating and postheating air heaters simultaneously heat each airflow.

Electric air heater:
The air heater for preheating is cooled down according to the same settings as those for the air heater for postheating.

The output is reduced when the airflow rate is low.

An overheating protection with normally-closed contacts monitors the state of the air heater. If the contacts open, an alarm is initiated.

Air heater for hot water with anti-frost monitor:
The heat-retaining function is automatically activated.

Enter separate pre-heat limit settings for heat retention and alarms.

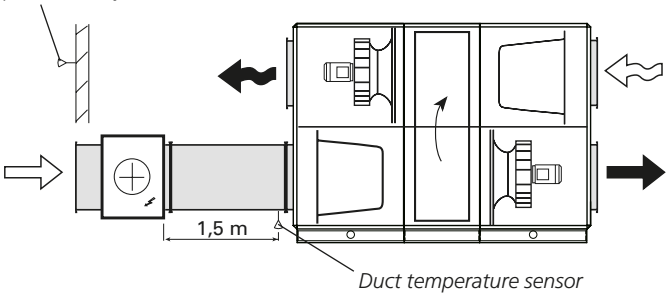
A frost guard sensor is required to prevent sensor alarms from tripping.

Air heater for hot water without anti-frost monitor:
No heat-retaining function and no alarm for a faulty anti-frost sensor.

When heating is required and the outdoor temperature is low, the relay for controlling the circulation pump operates in the same way as the GOLD control system's regular heating relay.

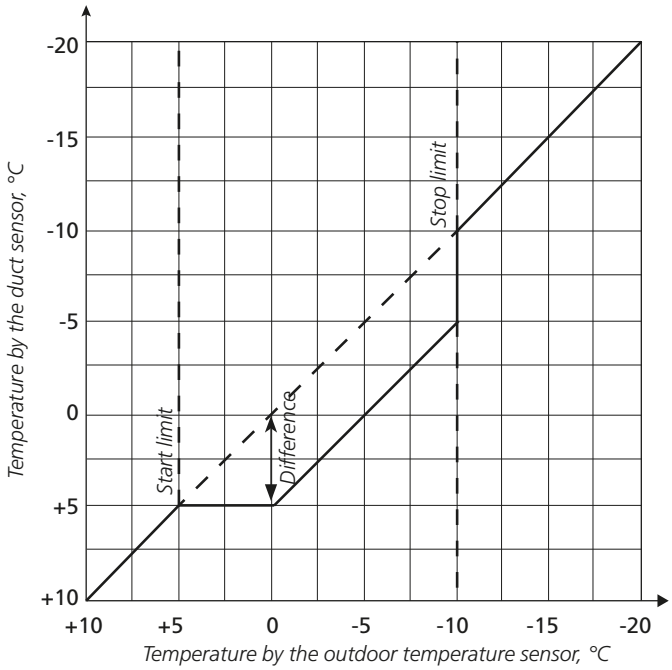
Enter a separate setting for excercising of pre-heat.

Outdoor temperature sensor, TBLZ-1-24-3 (applies to outdoor air temperature-related pre-heat only)



The illustrations show the TBCE/TBRE/TCLE air heater. If TBLF and TCLF air heaters are used, the air heater can be installed directly against the air handling unit and the duct temperature sensor can then be placed inside the air handling unit downstream of the filter.

Diagram, outdoor air temperature-related pre-heat



Necessary conditions:
Start limit (pre-heat setpoint):
+5°C (factory setting)

Stop limit (pre-heat, min. limit):
-10°C (factory setting)

Outdoor temperature difference (outdoor air temperature difference and temperature downstream of the pre-heating coil):
5K (factory setting)

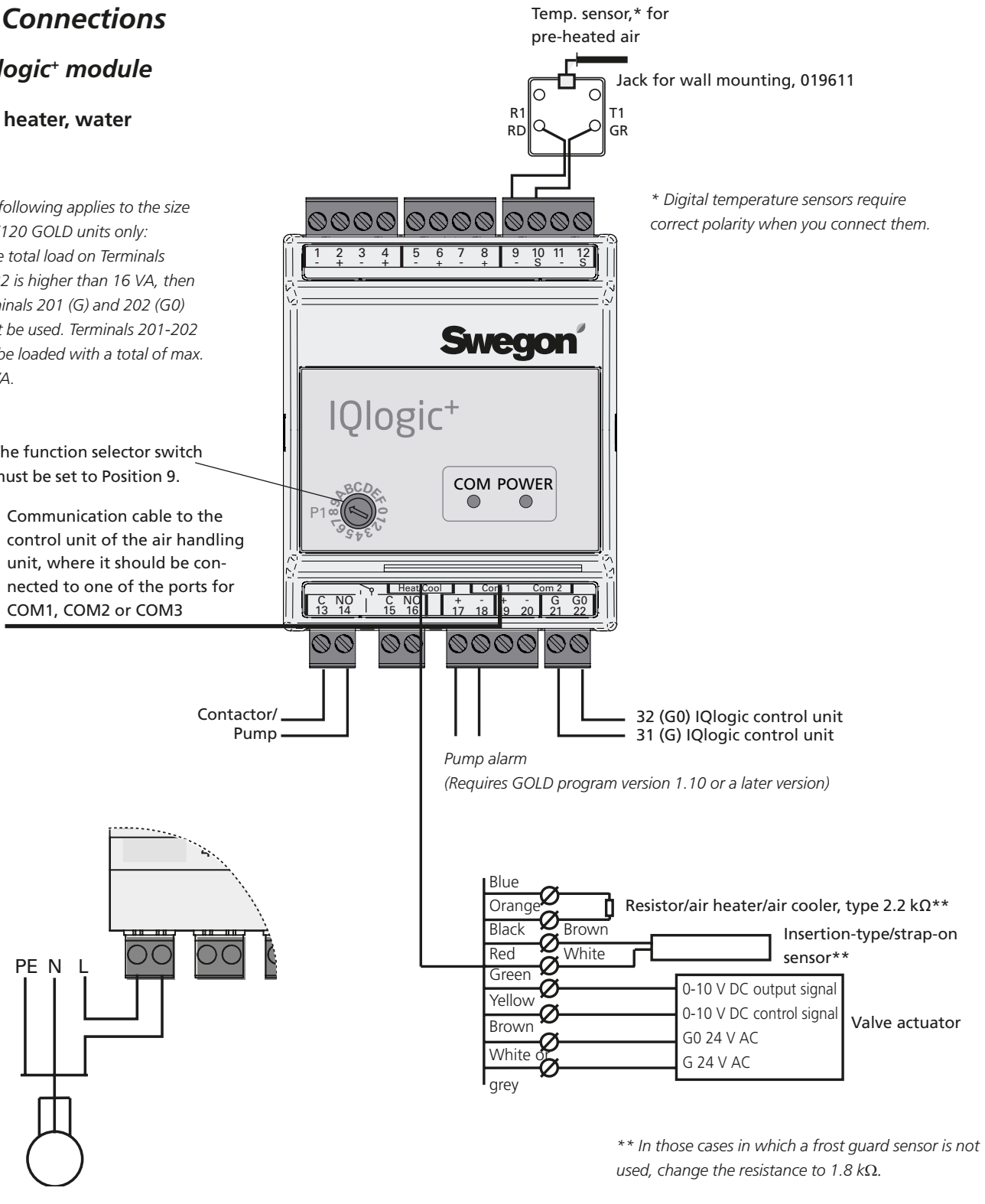
Specifications are subject to change without notice.

4. Connections

IQlogic+ module

Air heater, water

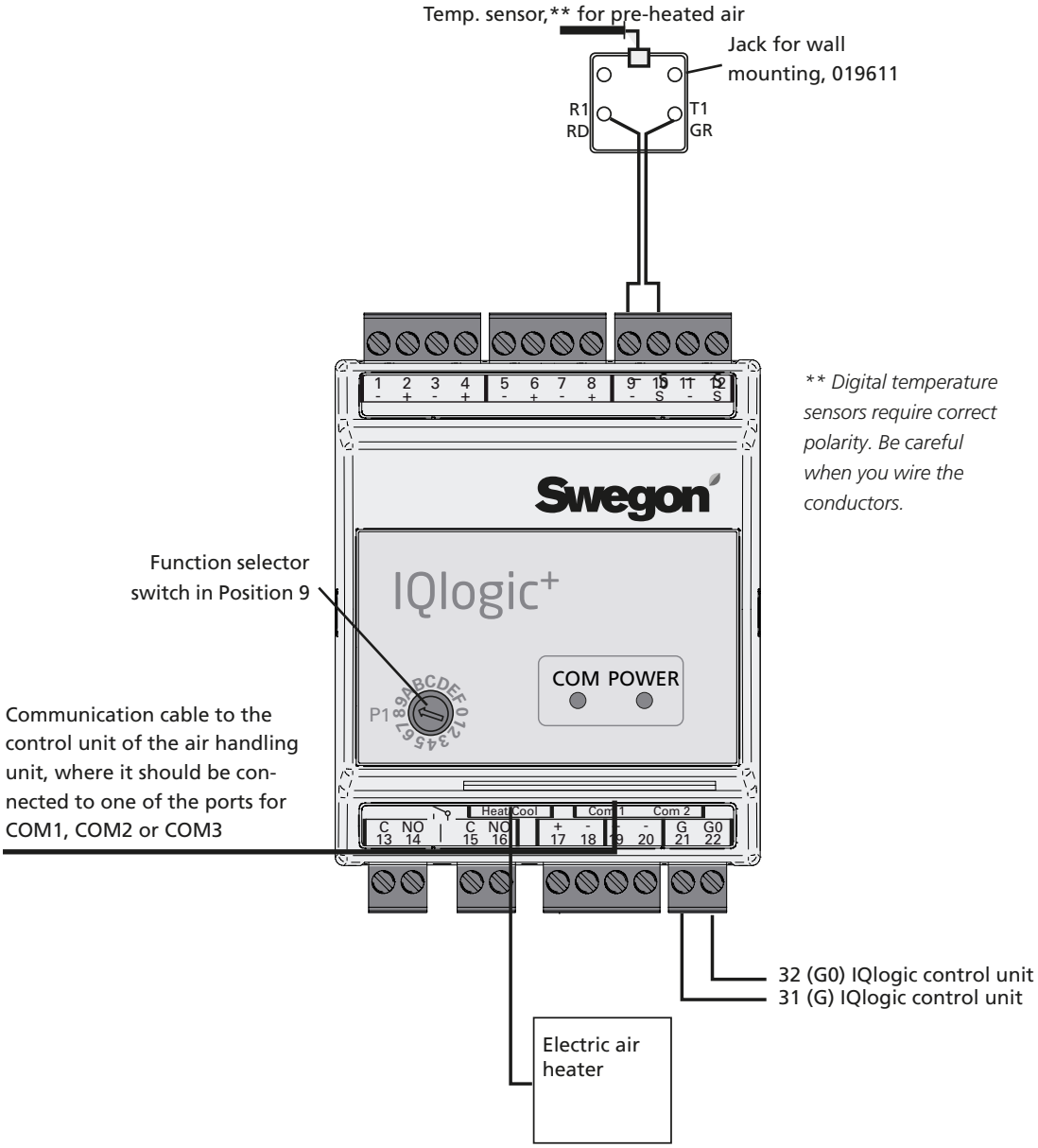
The following applies to the size 100/120 GOLD units only: If the total load on Terminals 31-32 is higher than 16 VA, then Terminals 201 (G) and 202 (G0) must be used. Terminals 201-202 can be loaded with a total of max. 48 VA.



Pump control

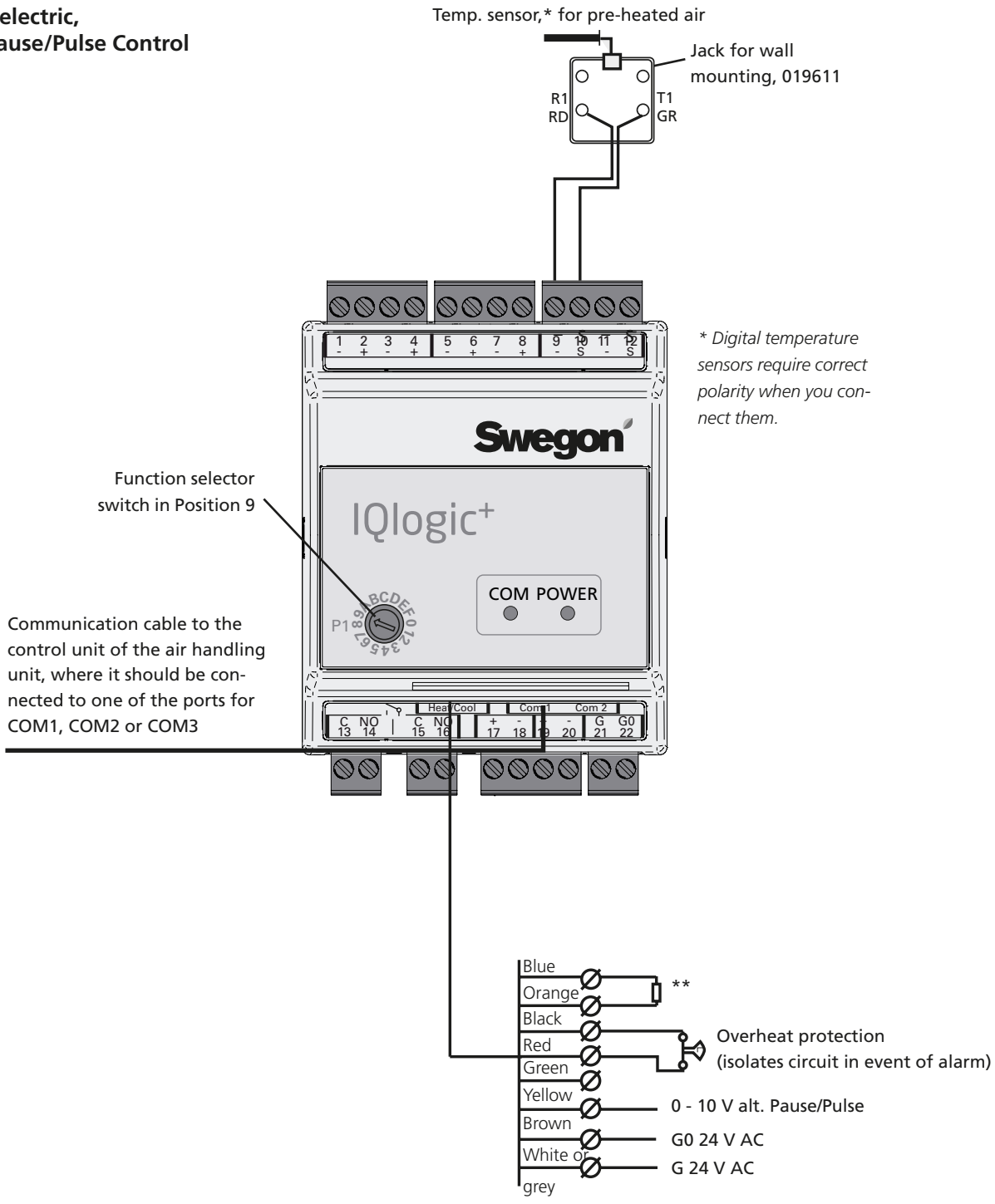
Feed voltage for the 1-phase pump, max. 1.5 A, can be supplied from terminals inside the air handling unit.
***GOLD**: Terminal 101 (L), Terminal102 (N).*

Electric air heater, standard Swegon model with control cable



Specifications are subject to change without notice.

Air heater, electric,
0-10 V or Pause/Pulse Control



** Digital temperature sensors require correct polarity when you connect them.*

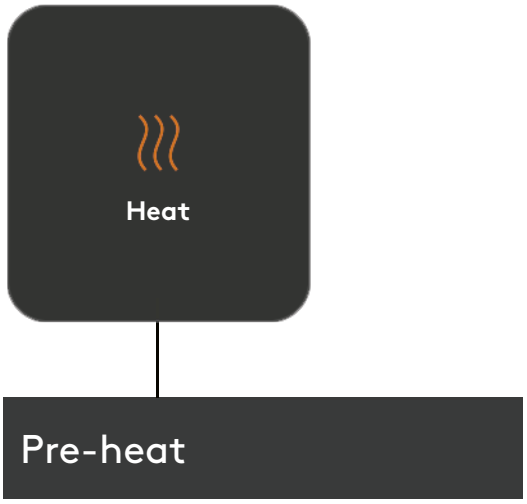
*** Different resistance is required depending on the type of electric air heater and its step-switching configuration. For correct selection of resistance, contact Swegon.*

5. Settings

For basic facts on how to use the hand-held terminal, see the Operation and Maintenance Instructions for the GOLD air handling unit.

The Preheat function must be activated manually under Functions/Core/Heat.

1. Select Pre-heat.
2. Activate the function.
3. Select the location, outdoor air or supply air.
4. Set the set point required.
5. Set the required values for exercising the pump and valve.
6. If outdoor air temperature-related pre-heat is required, carry out the settings described above, activate the outdoor air temperature-related pre-heat function, set the required value for outdoor air temperature difference and for min. pre-heat limit.

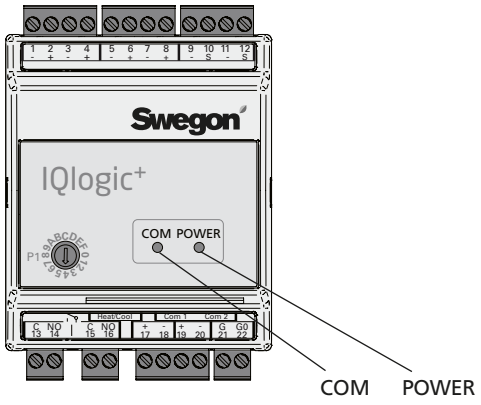


6. Performance checks

IQlogic⁺ module:

Light-emitting diode POWER lit with a steady glow indicates that power is being supplied from the GOLD unit's control unit.

A flashing light-emitting diode COM indicates correct communication with the GOLD unit's control unit.



Temperature sensor:

Current temperatures can be read under Temperature – Status. If the temperature readings are reasonable, wiring has been carried out correctly.

Specifications are subject to change without notice.