Function guide to GOLD Version E/F DX Heat Pump Control

1. General

The function is designed to control cooling/heating or reversible DX cooling/heat pumps.

For example, you can use entry with delay and then use linear control.

With a smart heat pump control function, the 0 - 10 V signal can be increased incrementally to achieve optimal comfort and energy consumption according to the desired heating/cooling requirement.

A digital output signal can be set to switch between heating and cooling.

As most cooling units/heat pumps have an entry of 20 - 40%, the entry can be set separately, then linearly.

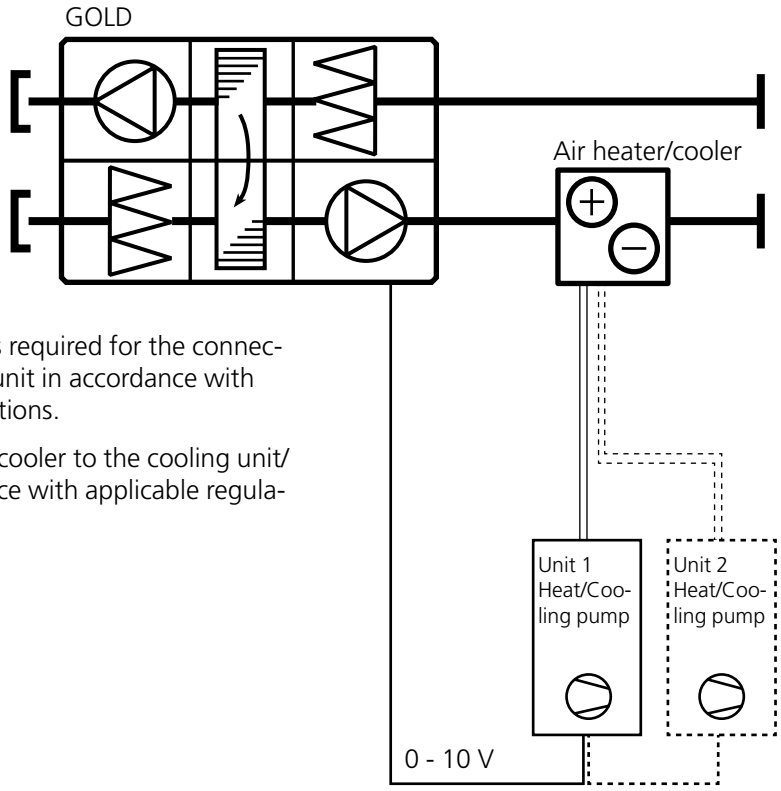
Available functions are Standard, Comfort or Economy, with Comfort only suitable for rotary heat exchangers.

Two reversible cooling/heat pumps can be controlled in sequence.

2. Material Specification

Air Handling Unit	**All types of GOLD RX, with Pv.2.47 or higher GOLD PX CX and SD can be used for economy operation.**
DX coil	**Reversible, heating or cooling only, DX**
IQlogic+ Function Module	**TBIQ-3-2-bb** bb = selected cable length
Set, electrical connections	**TBLZ-1-27-3 or TBLZ-1-90** Used for controlling reversible heat pump

1.1 Basic Circuit Diagram



A coil in a split design is required for the connection of more than one unit in accordance with Swegon's recommendations.

Connect the air heater/cooler to the cooling unit/ heat pump in accordance with applicable regulations and standards.

3. Function

3.1 General

The DX step function is an adapted function for controlling 0 - 10 V reversible heat pumps in steps according to the heating/cooling requirement. 1 - 5 steps can be selected. The function uses Extra Regulation Sequence 1 and/or Extra Regulation Sequence 2.

In order to prevent the heat pump compressor from starting and stopping intermittently, the time between the different steps is adapted to the step switching time. The first step can be adjusted separately. After the last step, the output can be set linearly.

You can choose between Standard, Economy or Comfort for both heating and cooling.

Airflow limits can be set separately for cooling under the Cooling/Airflow Limits icon.

Start-up at low power requirement can be prevented or delayed by using a neutral zone.

3.2 Limitations

The Comfort function is designed to work together with rotary heat exchanger (RX) as the rotor helps to stabilise the temperature.

The supply air temperature may drop during the defrost cycle. An air heater for reheating (TBLA/TCLA/TBLE/TCLE) can be used to ensure the supply air temperature.

3.3 Operating Mode

Available operating modes are Standard, Comfort or Economy for heating and cooling.

1 - 5 steps can be selected.

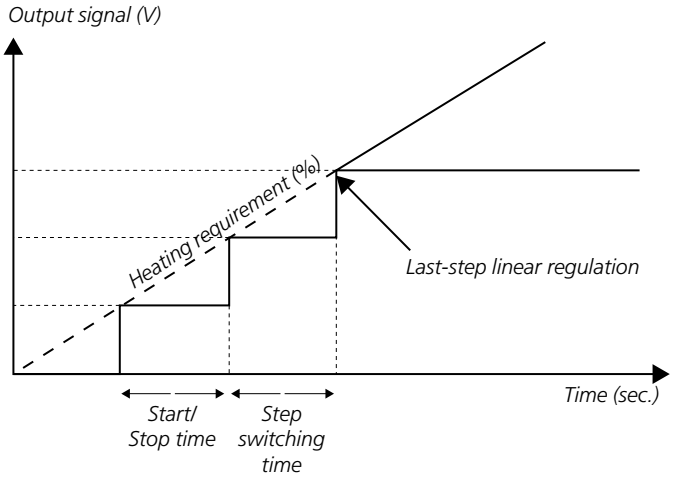
The heating requirement after the steps can be selected to remain on the last step's output signal or to be linear.

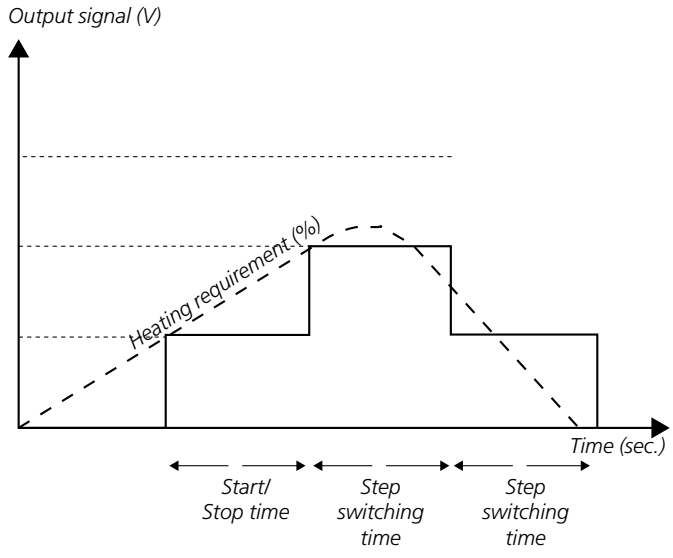
Standard

The heating requirement, 0 - 100%, controls the 0 - 10 V output signal according to defined steps with step switching time between each step and a separate time for the first step.

If the regulation has been in operation, Step 1 starts after the Start/Stop time has expired since Step 1 was last switched off. This time does not apply to first start after the rotor sequence has reached 100%.

When less heat is required, the downshift will delay until the step switching time has passed.

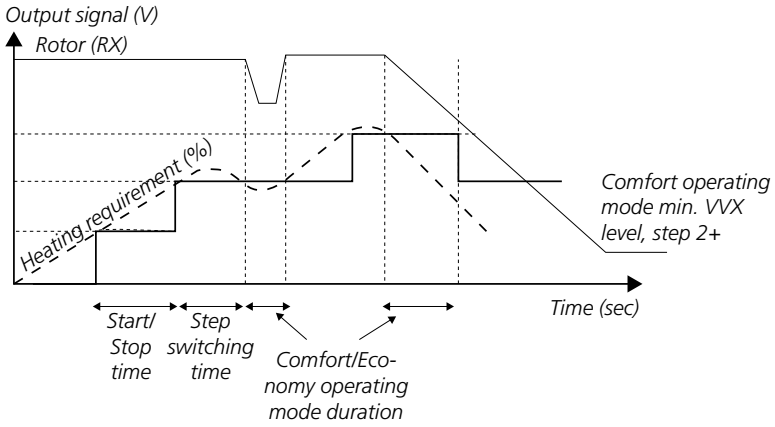




Comfort

Works as standard, except that there is a switching time to go down one step when the heating requirement has decreased. In Comfort mode, the rotary heat exchanger also helps to slow down when the heating requirement decreases. After Step 2, there is a limit on how much the rotary heat exchanger can slow down when the heating requirement is above Step 2.

The Comfort/Economy operating mode duration time is used to test whether the heat pump can operate on a lower step and increase rotor speed to save energy while still maintaining the same temperature.



Economy

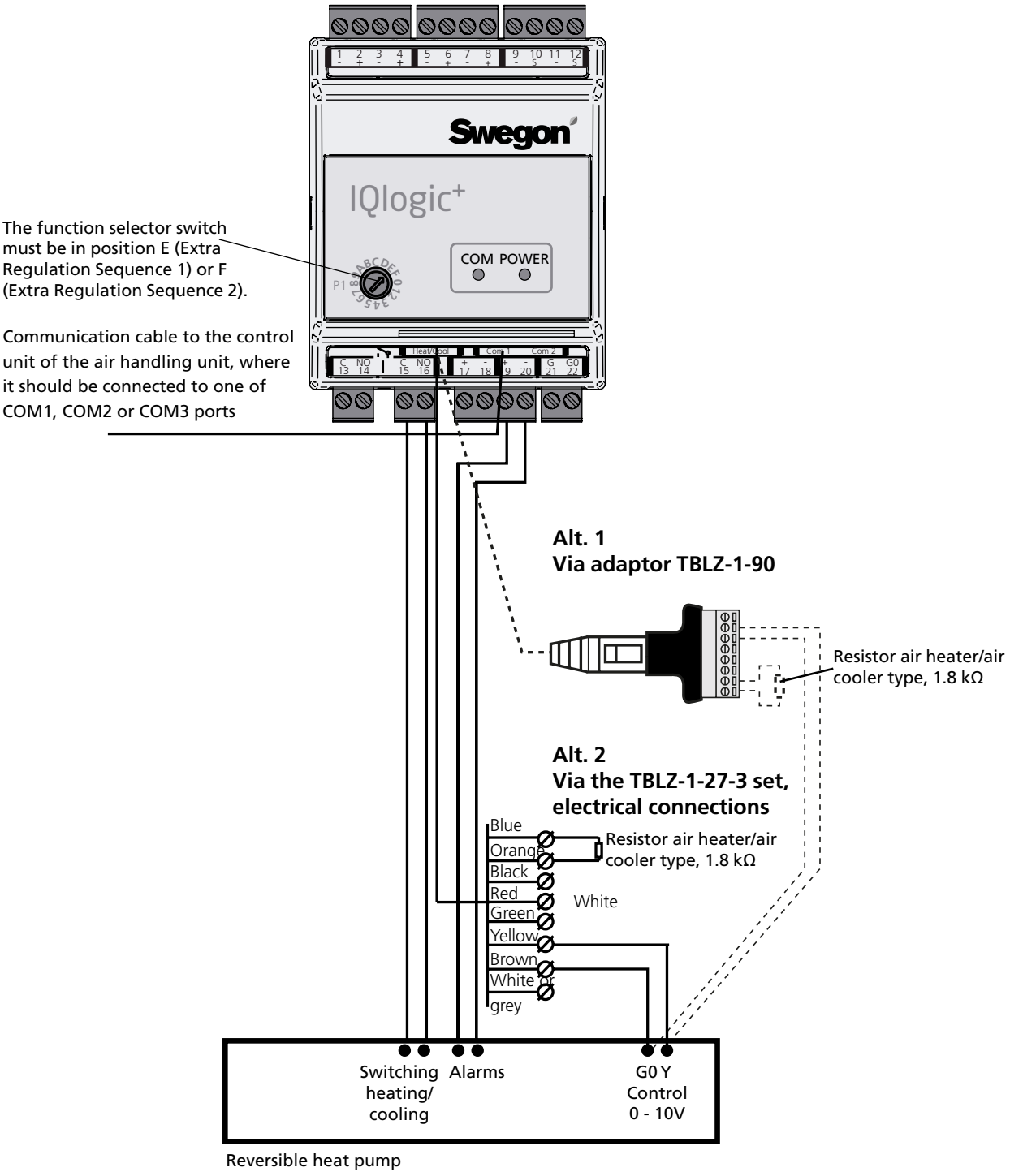
The rotary heat exchanger, which is first in the control sequence, works on maximum recovery and the step function increases depending on the requirement, unlike in Comfort mode where the rotary heat exchanger is allowed to slow down when the heating demand decreases.

At increased heating demand, and when the next step needs to shift up, the step switching time is 300 sec. There is also a hysteresis that blocks the next step if the supply air temperature is within 0.5 Kelvin from the setpoint.

If the function has shifted down one step, you can prevent ramp-up with the Comfort/Economy delay time operating mode duration.

4. Connections

The function selector switch on the IQlogic+ module must be in position E (Extra Regulation Sequence 1) or F (Extra Regulation Sequence 2).



5 Settings

The DX step function can be selected under Heating or Cooling.

1. Select cooling or heating or cooling/heating under Extra Regulation Sequence 1 or 2.

2. Activate the DX step function.

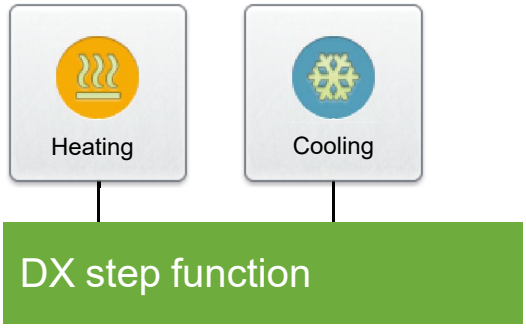
3. Select Standard/Economy/Comfort for cooling and heating.

4. Set the required number of steps and select levels for the different steps.

5 Set the required values for initial step and the switching time between steps.

6. Set the desired digital output signal to switch between heating/cooling

7 Set required limits (if applicable) for the minimum Cooling airflow under "Air Flow, Limits".

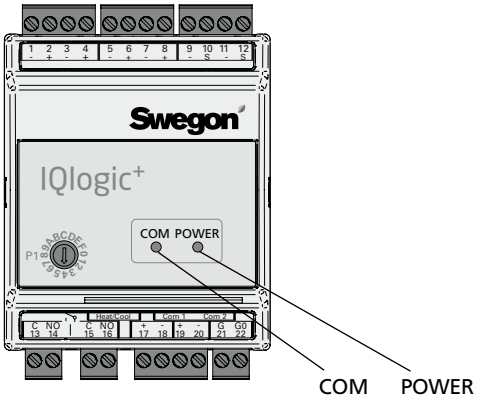


6. Function control

IQlogic+ Module:

POWER LED indicates with steady light that power is correctly being supplied from the GOLD air handling unit's control unit.

LED COM indicates with a flashing light correct communication with the GOLD air handling unit's control unit.



Temperature sensor:

Current temperatures can be read under Temperature – Status. If the temperature readings are reasonable, the wiring is correct.