

GOLD CONTROL SEQUENCE OPTIONS

Project Name
Unit Tag

Swegon GOLD units include factory installed and tested IQLogic controls. There are over 60 algorithms that can be configured during commissioning to achieve the desired operation for your project. The configuration can be changed throughout the life of the equipment as all the configurations are shipped with each unit. The following is a quick list of popular control sequences that are available for this unit. Once the application is defined, Swegon can provide a complete points list and controls diagram as well as a complete sequence of operation. Swegon controls can do more than what is listed here. If you require something that is not shown, please contact your Swegon Representative.



IQNavigator

IQNavigator ships with each unit and serves as an interface to the controller.

AIRFLOW CONTROL

The following control sequences are available for the supply fan (SF) and return fan (RF). The sequence is specific to each fan. Please select one option for each fan.

SF RF

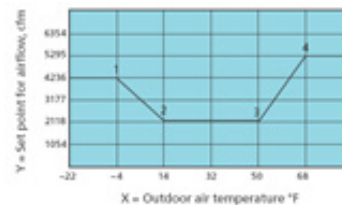
Constant Airflow Control The fan will deliver a constant airflow. The airflow amount (in cfm or l/s) is entered via the IQNavigator. The controller measures airflow to deliver the correct amount regardless of filter loading, external static pressure or changes in outdoor air density due to seasonal temperatures.

Variable Airflow Duct Pressure Control The fan will maintain the duct pressure based on a field mounted duct pressure sensor installed in the duct or other location. The pressure level is entered via the IQNavigator and can be positive or negative (exhaust fan control)

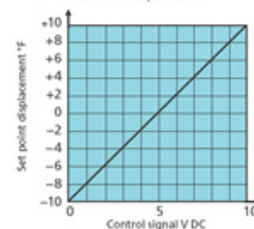
Variable Airflow Demand Control Ventilation The airflow modulates between minimum and maximum based on air quality sensor such as CO₂ or VOC via a 0-10Vdc signal. The minimum and maximum setpoints can be adjusted through the IQNavigator.

Slave Control The airflow is constantly regulated to the same value as the other fan. If supply or return fan is pressure-controlled or demand-controlled, the other one can be controlled as a slave to generate the same airflow. An offset can be entered (e.g. 90%) through the IQNavigator for the slave fan.

Outdoor Air Compensation Control The supply airflow setpoint can be adjusted based on outdoor air temperature. The airflow levels and the outdoor air temperatures can be adjusted through the IQNavigator.



Setpoint Displacement Control The airflow modulates between minimum and maximum based on a 0-10Vdc signal typically from a Building Automation System. The minimum and maximum setpoints can be adjusted through the IQNavigator.



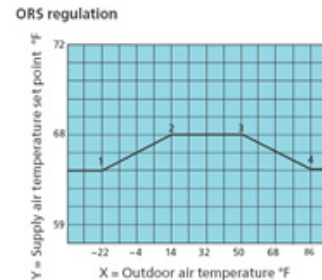
TEMPERATURE CONTROL

Please select one option from below:

Supply Air Regulation The supply air temperature is maintained based on field installed sensor in the supply air duct. The setpoint can be adjusted via the IQNavigator.

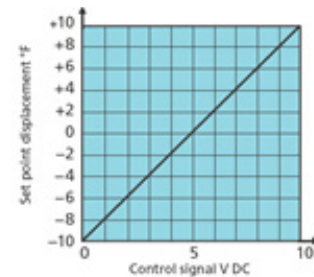
Zone Temperature Regulation The zone air temperature is maintained based on field installed sensor in control zone. Up to four sensors can be installed. Either the highest temperature difference of any sensor or the average temperature difference can be selected to control the unit. The setpoints can be adjusted via the IQNavigator.

ORS Regulation Outdoor air temperature Related Supply air temperature (ORS) adjusts the supply air temperature setpoint based on outdoor air temperature. The setpoints can be adjusted via the IQNavigator.



ERS Regulation Extract (return) air temperature-Related Supply (ERS) air temperature regulation adjusts the supply air temperature setpoint based on the return air temperature. Use this sequence if the GOLD unit is providing zone temperature control for a single zone. The setpoints can be adjusted via the IQNavigator.

Setpoint Displacement The supply air temperature modulates between minimum and maximum based on a 0-10Vdc signal typically from a Building Automation System. The minimum and maximum setpoints can be adjusted via the IQNavigator.



ENERGY RECOVERY ROTOR CONTROL

Energy Recovery Control When the conditions between outdoor air temperature, return air temperature and temperature setpoint indicate energy recovery is required, the rotor speed is modulated between 0.5 and 20 rpm to achieve temperature setpoint either for cooling or heating. When the conditions do not promote energy recovery, the rotor is stopped. Energy recovery is always the first stage of heating or cooling.

Carry Over Control Where supply and exhaust airflows are modulated (i.e. VAV), the rotor speed is reduced to the appropriate speed to ensure the correct purging airflow through the rotor.

Purging During periods of operation where the rotor is not required (economizer mode) the rotor rotates for 10 seconds every 10 minutes to purge its surfaces clean of impurities.

Please select one option from below:

Rotor Pressure Defrost Control Rotor air pressure drop is used to recognize a frosting condition. When there is no defrost, energy recovery is maximized. When frosting occurs, rotor wheel speed is reduced to defrost the rotor.

Exhaust Air Defrost Control Rotor speed is controlled by the exhaust air temperature setpoint. The exhaust air temperature setpoint can be selected via the IQNavigator to avoid any frosting condition (e.g 32°F (0 °C)).

PLATE HEAT EXCHANGER CONTROL

Energy Recovery Control When the conditions between outdoor air temperature, return air temperature and temperature setpoint indicate energy recovery is required, the heat exchanger face and bypass dampers are modulated to achieve temperature setpoint either for cooling or heating. When the conditions do not promote energy recovery, the face and bypass dampers all open to minimize air pressure drop. Energy recovery is always the first stage of heating or cooling.

Recofrost Control Return air dewpoint is calculated to identify potential frosting condition. Heat exchanger exhaust air pressure drop is monitored for frosting condition. When frosting occurs, the bypass damper is modulated to defrost the heat exchanger.

HEATING CONTROL

Heating control signals can be On-Off, staged with up to four steps, or 0-10 Vdc modulating signals. These signals can be used with electric heaters, valve control for steam or hot water or a remote, third party gas heat exchanger.

Select all options that apply.

Preheat Control Modulating signal is used to preheat outdoor air to preheat temperature setpoint. Heat source can be electric or valve (glycol hot water, steam etc.). Preheat temperature setpoint can be adjusted via the IQNavigator. Control valve and actuator are supplied with wiring harness by Swegon loose for field installation.

Reheat Control Modulating signal is used to add supplemental heat after energy recovery device to achieve temperature setpoint. Heat source can be electric or valve (glycol hot water, steam etc.) Control valve and actuator are supplied with wiring harness by Swegon loose for field installation

Frostguard Temperature sensor strapped to heating coil monitors coil temperature. Coil temperature is maintained at minimum 55°F (12.8 °C) while unit is operating and 77°F (25 °C) while unit is not operating to protect coil from freezing. An alarm is initiated and the unit is stopped if the coil temperature drops below 55°F (12.8 °C).

Extra Regulation Extra regulation can operate a second heat source. If the first heat source cannot maintain temperature setpoint, the second heat source will be used.

DAMPER CONTROL

Factory Mounted Dampers Outdoor air and/or exhaust air dampers and actuators are factory mounted and tested. Dampers are two position with spring return. Dampers are open when unit is operating and closed when unit is shut down.

Field Supplied Dampers Field supplied outdoor air and/or exhaust air dampers and actuators can be controlled by IQLogic controller. Damper actuators should be two position with spring return. Dampers are open when unit is operating and closed when unit is shut down.

COOLING AND DEHUMIDIFICATION CONTROL

Cooling control signals can be On-Off, staged with up to four steps, or 0-10 Vdc modulating signals. These signals can be used with valve control for chilled water or DX control. Swegon works closely with all major VRF manufacturers and can integrated VRF into the GOLD unit controls for heating, cooling and dehumidification (Heat Recovery Reheat) for most VRF manufacturers.

Please select one option from below:

Chilled Water Control Modulating signal is used to provide supplemental cooling after energy recovery device to achieve temperature setpoint. Control valve and actuator are supplied with wiring harness by Swegon loose for field installation

DX Control Up to 4 stages of control is used to stage condensing unit for supplemental cooling after energy recovery device to achieve temperature setpoint. Field wiring between GOLD unit and DX condensing unit by installing contractor

Dehumidification Control Where the heat source is downstream of the cooling coil it can be used to provide reheat. Humidity sensor is field installed in the supply duct or a dew point sensor is field installed in the return air duct for dehumidification control.

When supply air humidity or return air dewpoint is above setpoint, the cooling capacity is increased to dehumidify the supply air and the reheat is used to return the supply air back to temperature setpoint. The setpoints can be adjusted via the IQNavigator.

VRF Control Modulating signal is used to provide supplemental heating and/or cooling after energy recovery device to achieve temperature setpoint. The details are specific based on the VRF manufacturer.

Heat Recovery Reheat Control A second refrigerant coil is located downstream of main VRF refrigerant coil and is used for reheat. Humidity sensor is field installed in the supply duct or a dew point sensor is field installed in the return air duct for dehumidification control.

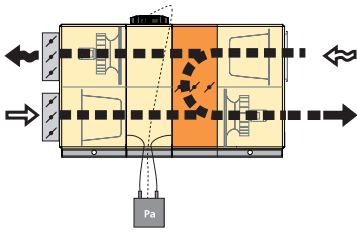
When supply air humidity or return air dewpoint is above setpoint, the cooling capacity is increased to dehumidify the supply air and the reheat is used to return the supply air back to temperature setpoint. The setpoints can be adjusted via the IQNavigator.

FILTER MONITORING

Supply Air Filter Supply pre and main filter each have pressure transducers to monitor filter loading. Filter clean and final filter loading can be adjusted via IQNavigator. Clean filter delta P is established at startup with “filter calibration” algorithm.

Return Air Filter Return pre and main filter each have pressure transducer to monitor filter loading. Filter clean and final filter loading can be adjusted via IQNavigator. Clean filter delta P is established at startup with “filter calibration” algorithm.

RECO (RECIRCULATION) CONTROL



The following control sequences are available for units that include the optional recirculating section. This section includes a bypass damper with modulating actuator, pressure transducer and outdoor and exhaust air dampers with modulating actuators.

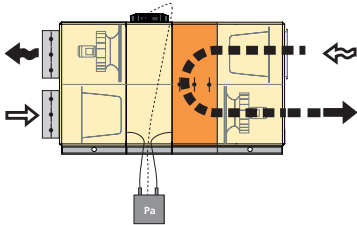
Please select one option from below:

CO₂ The supply and return airflows are constant. The outdoor air volume is adjusted to maintain CO₂ setpoint by modulating the recirculation damper. As the recirculation damper opens, more recirculated air and less outdoor air is sent to the space. As the recirculation damper closes, less recirculated air and more outdoor air is sent to the space. Minimum outdoor air and exhaust airflow levels are adjustable. CO₂ sensor signal is 0-10Vdc either from Swegon supplied and field installed sensor or the BAS system. The setpoints can be adjusted via the IQNavigator.

CO₂ + Flow The supply and return airflows are constant at reduced levels for fan energy savings. The outdoor air volume is adjusted to maintain CO₂ setpoint through modulation of the recirculation damper. Minimum outdoor air and exhaust airflow levels are adjustable. If bypass damper is fully closed and CO₂ is not met, the supply airflow is increased until CO₂ setpoint level is met. CO₂ sensor signal is 0-10Vdc either from Swegon supplied and field installed sensor or the BAS system. The setpoints can be adjusted via the IQNavigator.

Temperature Return and outdoor are mixed to maintain supply air temperature setpoint. Minimum outdoor air and exhaust airflow levels are adjustable. Return air temperature control (economizer) can be selected to happen before supplemental reheat is used or after. The setpoints can be adjusted via the IQNavigator.

NIGHT SETBACK CONTROL



The following control sequences are available for units that include the optional recirculating section. The section includes a bypass damper with modulating actuator and outdoor and exhaust air dampers with modulating actuators.

Select all options that apply.

Intermittent Night Heat During unoccupied hours, the unit will operate in recirculating mode (100% return air only) and use the reheat source to warm the building. Requires zone sensor to indicated when night setback temperature is reached at which point the unit will shut down again. The setpoints can be adjusted via the IQNavigator.

Morning Boost (Morning Warm-Up) Prior to normal building occupied hours, the unit starts in recirculating mode (100% return air only) and uses the reheat source to warm the building. The setpoints can be adjusted via the IQNavigator.

HUMIDIFIER CONTROL

GOLD IQLogic is capable of operating third party humidifiers. The Steam grid can be factory mounted in the GOLD unit (can also be field supplied and installed in the supply duct).

Please select one option from below:

Constant Volume (Airflow) Humidification Humidity sensors are supplied loose for field installation in the supply and return ducts. A 0-10Vdc signal is sent to the humidifier (Swegon or by others) to maintain relative humidity in the supply air duct. The humidifier can only operate when the GOLD unit is operating. The setpoints can be adjusted via the IQNavigator.

Variable Volume (VAV) Humidification Humidity sensors are supplied loose for field installation in the supply and return ducts. A 0-10Vdc signal is sent to the humidifier (Swegon or by others) to maintain relative humidity in the return air duct. The supply air humidity sensor is used to prevent saturation in the supply air duct. The humidifier can only operate when the GOLD unit is operating. The setpoints can be adjusted via the IQNavigator.

Humidifier Alarm An alarm from the humidifier can be connected to the IQLogic and displayed via the IQNavigator and BACnet.

XZONE

IQLogic controller is designed to operate two independent temperature control zones. For example, an interior and perimeter temperature control zone. Requires two coil accessory sections (one for each zone). Options below refer to second control zone.

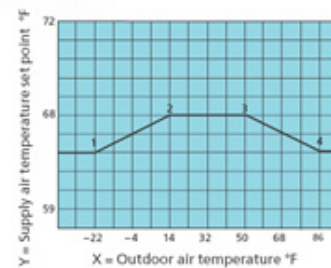
Please select one option from below:

Supply Air Regulation The supply air temperature is maintained based on field installed sensor in the supply air duct. The setpoint can be adjusted via the IQNavigator.

Zone Temperature Regulation The zone air temperature is maintained based on field installed sensor in control zone. Up to four sensors can be installed. Either the highest temperature difference of any sensor or the average temperature difference can be selected to control the unit. The setpoints can be adjusted via the IQNavigator.

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ORS regulation



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INPUT/OUTPUT

Up to 4 additional input and 4 output signals can be added to IQLogic to allow for hardwired monitoring and control of GOLD unit (Requires additional IQLogic modules). The following are common applications. Contact Swegon for the complete list.

Please select one option from below:

Supply Air Temperature Reset 0-10Vdc signal to reset supply air temperature. The setpoints can be adjusted via the IQNavigator.

Supply Airflow Boost 0-10Vdc signal to reset supply airflow. The setpoints can be adjusted via the IQNavigator.

Return Airflow Boost 0-10Vdc signal to reset return airflow. The setpoints can be adjusted via the IQNavigator.

TIME SCHEDULE

Please select one option from below:

Remote Control Unit is enabled to operate when contacts on IQLogic are closed by building automation system or other timer.

Internal Time Clock Built in seven day plus holidays timer is programmed with operating schedule. The setpoints can be adjusted via the IQNavigator.

ALARMS

IQLogic controller has extensive alarms for internal operation. Alarm history (past 50 alarms) are time and date stamped and displayed via IQNavigator. There is also a Trend log tool for diagnostics.

Please select one option from below:

Internal Fire Alarm GOLD unit's internal temperature sensors serve as fire protection thermostats. Alarm is initiated if supply air sensor registers more than 160°F (70 °C) or if supply return sensor registers more than 120°F (50 °C). Fire alarm function can be adjusted via the IQNavigator.

External Fire Alarm Two external fire alarm inputs can be configured to operate unit such as control the supply and exhaust fan operation and speed. Fire alarm function can be adjusted via the IQNavigator.

External Alarm Two external general alarm inputs are available to monitor external components such as humidifiers, condensing unit alarms, circulating pumps etc. Alarms can manual or auto reset and activate on an open or closed circuit. Alarm function can be adjusted via the IQNavigator.

ENERGY MONITORING

IQLogic controller monitors internal energy consumption and energy recovery for building management and energy auditing.

Fan Energy Usage Supply and return fan energy usage is calculated and displayed in kWh. Specific Fan Power (SPF).

Please select one option from below:

Rotor Efficiency Measurement Rotor energy recovery efficiency is calculated and displayed as a percent.

Plate Heat Exchanger Efficiency Measurement Plate energy recovery efficiency is calculated and displayed as a percent.

COMMUNICATION

IQLogic controller is designed to integrate into a variety of common building automation protocols.

Please select one option from below:

BACnet IP IQLogic is BTL certified. Setup is completed via IQNavigator.

Modbus TCP and RTU Setup is completed via IQNavigator.

Metasys N2 Setup is completed via IQNavigator.

Exoline Setup is completed via IQNavigator.

Lonworks Requires optional Lonworks module.

Wi-Fi IQLogic as standard has WiFi feature that allows unit to be connected to building WiFi system for remote monitoring on any WiFi enabled device. No additional software is required. Setup is completed via IQNavigator.

Wireless IQNavigator Optional Wireless IQNavigator is available for remote monitoring up to 50 ft (15m).