1. DESCRIPTION

The MOD64 is an input/output expanding module developed for working together with the SITRAD® installation management software. By using the MOD64, it is possible to expand the automation capacity of a given installation since it enables monitoring several events, such as:

- Opening ports;
- Engaging switches;
- Activating compressors and fans.

Besides monitoring events, the MOD64 also allows controlling up to 4 different loads. With the SITRAD® software it is possible to bind the conditions of different controllers and only actuate when a specific rule is valid, for example:

-"Actuate output 2 when the temperature of controller 1 is higher than 50.0 oC, and compressors 1 and 2 linked to controller 5 are activated";

-"Actuate outputs 1 and 4 when the MOD64 input 1 is activated, or when the instrument 2 pressure is lower than 150 psi".

In the event the serial communication is interrupted, the MOD64 will enter the standard operating mode, when the user can previously set up the state of each controller output.

Besides the integrated control with the SITRAD® software, the MOD64 can also autonomously control 2 processes whose sensors are connected to analog inputs 1 and 2. For doing this, the user must set up the MOD64 indicating the voltage levels, end of scale and decimal resolution the connected sensors are capable of providing. The user can also set up the type of control (setpoint / hysteresis or intra/extra range alarm), the type of action (direct or inverse action), and the outputs associated with each internal control.

The MOD64 also features two internal cyclic timers, which are capable of autonomously actuating any of the outputs. By using the SITRAD® the user can set up each output associated with a cyclic timer, as well as its on and off time.

Full Gauge uses a RS-485 network for providing higher robustness and reliability to the communication among its controllers and the SITRAD® software. Communication is established using two wires (A and B), thus performing a Half-Duplex communication where the computer is the master and the controllers, the slaves.

2. APPLICATIONS

Monitoring ports, flow switches, windows; checking compressor activation; activating alarms, lamps, and other similar equipment. Controlling humidity, temperature, pressure, cooling gas humidity, and other physical characteristics depending on the sensor employed.

3. TECHNICAL SPECIFICATION

- **Power supply:** 115/230Vac ±10% (50/60Hz)
- **Dimensions:** 115 x 90 x 40mm
- **Operation temperature:** 0 to 50°C
- **Operation humidity:** 10 to 90% RH (w/o condensation).
- **Indication:** 4 digital input indication LEDs
  4 output indication LEDs
  1 POWER indication LED

-Inputs:
IN 1 - Insulated voltage input 115/230 Vac ±10%
IN 2 - Insulated voltage input 115/230 Vac ±10%
DIG1 - Non-insulated digital input (dry contact)
DIG2 - Non-insulated digital input (dry contact)
AN1 - Non-insulated analog input (0 to 5 Vdc)
AN2 - Non-insulated analog input (0 to 5 Vdc)

-Outputs:
OUT1 - 5(3)A/250Vac 1/8HP
OUT2 - 5(3)A/250Vac 1/8HP
OUT3 - 5(3)A/250Vac 1/8HP
OUT4 - 5(3)A/250Vac 1/8HP
5V - Adjusted 5Vdc output (max. 50mA)
12V - Non-adjusted 12 Vdc output (max. 20mA)

4. CONFIGURATIONS

The MOD64 is entirely configured by the SITRAD® software. Therefore, just connect it to the RS-485 network. The configuration options available in the software are:

A) Output standard status when there is no communication with the SITRAD® software.

In this function, the user sets up the status of each MOD64 output when the serial communication loss is detected. Options available for this function are:

"On" – The output is on;

"Off" – The output is off;

"Last status" – When the output is not associated with an autonomous control or with a internal cyclic timer, it keeps its last status. If it is associated with the autonomous control or with the internal cyclic timer, the output will continue being controlled even without the SITRAD®.

B) Digital voltage input operation logic:

In this function, it is possible to set up the digital inputs interpreting ON and OFF signals.

When the "Normal" option is chosen, the MOD64 will consider an ON signal when there is voltage on the input port or when the digital input contact is closed.

When the "Inverted" option is selected, the MOD64 will consider an ON signal when there is no voltage on the input port or when the digital input contact is open.

C) Autonomous control operation logic for analog inputs 1 and 2

In this function, it is possible to set up the type of autonomous control that is associated with inputs 1 and 2. Possible options are:

- Direct action Setpoint and Hysteresis
- Inverse action Setpoint and Hysteresis
- Intra Range Alarm
- Extra Range Alarm

Besides this type of control, the user can also set up which outputs will be triggered by each of the autonomous controls (AN1 or AN2), and their resetting time (in seconds).

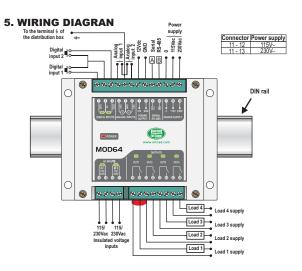D) Time for validating the serial communication loss:

Time that the MOD64 waits upon identifying a serial communication loss until activating the output standard operation mode (item A).
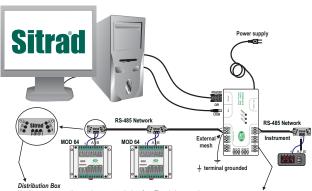
E) RS-485 interface address

Network instrument address for communicating with the SITRAD® software. Note: on the same network there cannot be more than one instrument with the same address.

The MOD64 is set up at the plant with the standard address "201".

ATTENTION: If you want to connect more than one MOD64 to the same installation, it shall be connected and then its address should be changed; only after doing this the next instrument can be connected.

5. WIRING DIAGRAN

Connector	Power supply
11 - 12	115V~
11 - 13	230V~

Integrating Controllers, RS-485 Serial Interface and Computer

Distribution Box
Used to connect more than one instrument to the Interface. The wire's connections must be made in agreement the following rules: terminal **A** of the instrument connects to the terminal **A** of the distribution box, that must be connected with the terminal **A** of the Interface. Repeat the action for terminals **B** and ⏚ , being ⏚ the cable shield.
The terminal ⏚ of distribution box must be connected to the respective terminals ⏚ of each instrument.
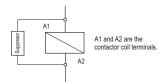
RS-485 Serial Interface
Device used to establish the connection Full Gauge Controls' instruments with the Sitrad®.

IMPORTANT

According to the chapters of norm IEC 60364:

1: Install underline protector against overvoltage on the power supply.

2: Sensor cables and signal cables of the computer may be joined, but not in the same electric conduit through which the electric input and the activation of the loads run.

3: Install transient suppresors (RC filters) parallel to the loads as to increase the product life of the relays.

Schematic for the connection of supresors to contactors

A1

Suppresor

A2

A1 and A2 are the contactor coil terminals.

Schematic for the connection of supresors to direct activation loads

Suppresor

Load

For direct activation the maximum specified current should be taken into consideration.

ENVIRONMENTAL INFORMATION

Package:
The packages material are 100% recyclable. Just dispose it through specialized recyclers.

Products:
The electro components of Full Gauge controllers can be recycled or reused if it is disassembled for specialized companies.

Disposal:
Do not burn or throw in domestic garbage the controllers which have reached the end-of-life. Observe the respectively law in your region concerning the environmental responsible manner of dispose its devices. In case of any doubts, contact Full Gauge controls for assistance.