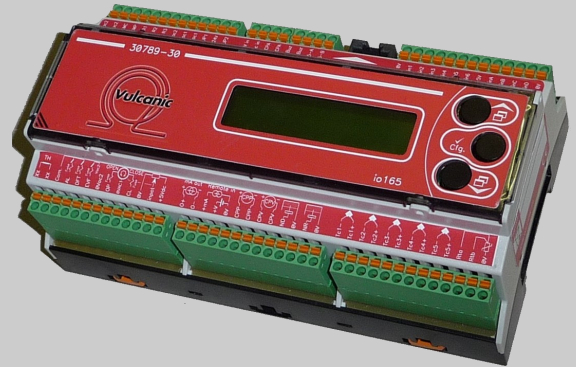


• Remote module for programmable logic controller

- temperature measurement (PT100 and Thermocouples)
- pressure measurement (4..20mA with power sensor)
- level measurement with resistive sensors
- logical inputs and frequency (flow meter)
- input for external setpoint
- relays output + fuse protection embedded
- proportional motorised valve control output
- solid state relay control (PWM and phase angle)
- output for alarm horn



• Modbus RS485 link

- Measure reading, writing command and control (valve position, output power, ...)
- possibility of fallback action on communication loss

• Local display

- Fast diagnosis of sensor and signal
- module configuration (communication ,)

The io165 interface is a smart remote input/output module. It allows the processing of advanced orders for the process driving and the grouping of analogical values (temperature, pressure, flow) and logical inputs via the RS485 Modbus communication link. This customizable device meets the specific needs of manufacturers seeking to integrate the entire command and control periphery of their machine.

Description :

*(given as indication. Customizable according to specific application)
 This describe application is for the control of a [Vulcatherm](#) thermo-regulator from [Vulcanic](#) group*

Input :

- * 1 input for 3 wires Pt100
- * 5 thermocouple inputs (configurable Tc : J,K)
- * 2 inputs for resistive level sensors (0...100kohms)
- * 3 inputs for pressure (4..20mA with power sensor)
- * 1 input for external setpoint (4...20mA / 0...10V isolated)
- * 1 potentiometer input (valve position)
- * 10 Discrete inputs (dry contact, one of them able to measure frequency 0... 300Hz for flow measure)
- * 1 input for security thermostat (emergency stop)

Output :

- * 7 electromechanical relays outputs
(dedicate for solenoid valve, contactor, or signalling : alarm , defect ,....)
- * 3 solid state relays outputs
(dedicate to control frequently used elements: proportional valves, solenoid valves, ...)
- * 2 discrete outputs :24V for power unit control
(choice of command mode: wave train or phase angle variation)
- * 1 klaxon output with signal modulation selectable
(function of type of event to alert)
- * 1 analog output : 0..4...20mA / 0....10V copy of one of the machine measures.

* Some outputs are fuse protected. This limits external wiring to the module (fuse are accessible behind the hinged front face)

* Power supply: 24Vdc +/- 10% . Internal control of presence of power circuit voltage (also visible on communication part)

Front face :

- 2 lines 16 characters alphanumeric LCD display (back lighting)
for viewing all of process parameters :
measure, input status, output status, valve position, output power, ...
- 3 push buttons for display selection and product configuration.

Configuration / Update :

- The module can be configured with the front face buttons (password protected)
- The internal firmware can updated via the serial link (serial connector under the front face)
- USB communication cable provided separately

Feature:

- modular case, 165mm (9 modules) symmetrical DIN rail mounting
- wiring on pluggable terminal blocs
(spring terminal blocs, max 1.5mm²)
- Protection rating : IP20
- Conformal coating.

Communication:

- RS485 Modbus (wiring on spring terminals bloc and RJ45)
- 9600 bauds / 1 or 2 stop bit, configurable address

Version and order code:

IO165 : reference 30789-30

INPUTS		
(temperature: 16 bits resolution ; process: 12bits resolution) (Whole measure cycle: ~ 1 second)		
Type	Range	Accuracy
Pt100 3 wires mounting Measure current	-80.....400 °C 500 uA	+/- 0.3 °C
Thermocouples : (configurable)		
Tc J	-200.....600 °C	+/- 0.5 °C
Tc K	-200.....1350 °C	+/- 0.6 °C
Compensation T°	-10 / 60 °C	+/- 0.7 °C
"Breaking sensor" current detection: 0.5 uA		
Voltage setpoint	0.....11 Vdc	+/- 0.01 V
input impedance	500 kOhms	
Current setpoint	0.....22 mA	+/- 0.01 mA
input impedance	10 ohms	
Current for pressure	0.....22 mA	+/- 0.01 mA
input impedance	500 ohms	
Level resistive sensor input		
Résistance	1.....100Kohms	+/- 3%
Valve position (radiometric)	0.....5 Vdc	+/- 0.01 V
input impedance	50 kOhms	
AUXILIARY		
Sensor power	23 Vdc	(50mA limited)
Potentiometer reference	5 V regulated	+/- 0.2% (50mA)
DISCRETE INPUTS		
Dry contact or voltage	polarisation voltage 5Vdc , current 0.5mA TTL 5V	
frequency (dry contact or 0...5V)	0...300hz	+/-0.2%
LOW LEVEL DISCRETE OUTPUT		
Horn / buzzer output	0 / 24Vdc	(50mA limited)
Output command for power unit	0 / 24Vdc	(50mA limited)
phase angle resolution :	1% (100 µsecond)	
Pulse width modulation :	1.2sec cycle , 120 modulation steps	

ANALOG OUTPUT (10 bits resolution)		
Type	Range	Accuracy
Current	0 ... 4 ... 20 mA	+/- 40 µA
Permissible load :	0.....700 Ohms	
Voltage	0 ... 10 V	+/- 20 mV
output impedance:	500 Ohms (on 0.1% external shunt)	
RELAYS OUTPUT		
Switching power:	electromechanical	250VAC 2A
	synchronous solid state relay	250VAC 1A
protected by internal fuse : 5x20mm 500mA fast		
COMMUNICATION		
RS485 half-duplex 9600 Bps		
POWER SUPPLY		
24Vdc +/-10% (4 VA) protected against reverse polarity		
ENVIRONMENT		
Operating temperature	-20 to 60 °C	
Storage temperature	-20 to 85 °C	
Thermal stability	~ 100 ppm / °C	
Humidity	85 % non condensed	
weight	350 g	
Protection rating	IP 20	
Dielectric strength :	1500 Vrms continuous	
setpoint input / power / relay:	1500 Vrms continuous	
inputs / inputs	(Not isolated, common ground)	
MTBF (MIL HDBK 217F)	> 2 000 000 Hrs @ 25°C	
Life time	> 150 000 Hrs @ 30°C	

Electromagnetic compatibility 2014/30/UE / Low Voltage Directive 2014/35/UE		
Immunity standard for industrial environments EN 61000-6-2		Emission standard for industrial environments EN 61000-6-4
EN 61000-4-2 ESD	EN 61000-4-8 AC MF	EN 55011
EN 61000-4-3 RF	EN 61000-4-9 pulse MF	group 1 class A
EN 61000-4-4 EFT	EN 61000-4-11 AC dips	
EN 61000-4-5 CWG	EN 61000-4-12 ring wave	
EN 61000-4-6 RF	EN 61000-4-29 DC dips	



WIRING AND OUTLINE DIMENSIONS:

