



ATTENZIONE: separare quanto più possibile i cavi delle sonde e degli ingressi digitali dai cavi dei carichi induttivi e di potenza per evitare possibili disturbi elettromagnetici.

WARNING: separate as much as possible the probe and digital input signal cables from the cables carrying inductive loads and power cables to avoid possible electromagnetic disturbance.

Dimensioni (mm) / Dimensions (mm)

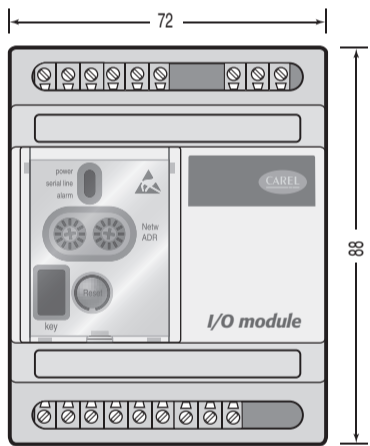
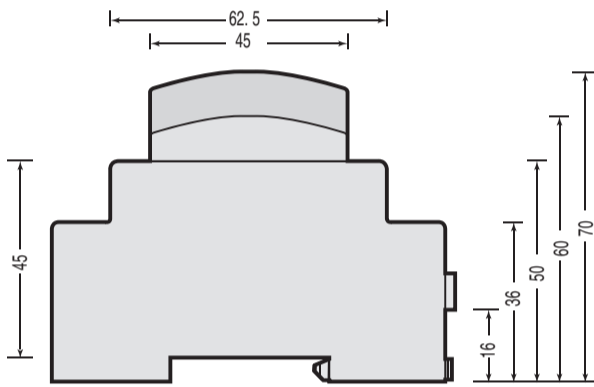


Fig. 1

Caratteristiche tecniche

Table with technical specifications including Alimentazione, Potenza nominale, Ingressi digitali, Ingressi analogici, Risoluzione ingressi analogici, Precisione ingressi analogici, Uscite relè, Alimentazione sonde fornita dallo stesso regolatore, Tasto RESET, Connessioni, Montaggio, Visualizzazione / programmazione, Condizioni di funzionamento, Condizioni di stoccaggio, Grado di protezione, Inquinamento ambientale, PTI dei materiali di isolamento, Periodo delle sollecitazioni elettriche delle parti isolanti, Categoria di resistenza al calore e al fuoco, Immunità contro le sovratensioni, Tipo di azione e disconnessione, N.ro di cicli di manovra delle operazioni automatiche relè, Classe e struttura software, Smaltimento.

Tab. 2

ITA IOM* CAREL è uno strumento compatto da quadro elettrico (4 moduli DIN) versatile e di semplice installazione, destinato alla integrazione delle informazioni acquisibili in impianto da un Sistema di Supervisione/Monitoraggio. Comunica in seriale RS485 con protocollo e velocità standard CAREL. Può gestire ingressi NTC, 4...20 mA, sonde raziometriche, ingressi digitali in tensione opto-isolati e/o da contatti puliti.

Configurazione e modifica parametri

La configurazione degli ingressi e il funzionamento dell'uscita a relè e degli allarmi sono personalizzabili tramite RS485 o con chiave cod. PSOPZKEY00 (è necessario un software specifico fornito da CAREL).

Montaggio

Montaggio su guida DIN all'interno di quadro quadro elettrico (per ulteriori informazioni fare riferimento alle caratteristiche tecniche).

Normative di sicurezza

Conforme alle normative EN 60730-1, EN 60730-2-9, 61010-1.

Precauzioni d'installazione

- I cavi di collegamento devono garantire l'isolamento fino a 90 °C.
I collegamenti degli ingressi digitali e analogici devono essere inferiori a 10 m di distanza: adottare le adeguate misure di separazione dei cavi per il rispetto delle normative di immunità.
Effettuare i collegamenti con la macchina non alimentata.
Le regolazioni sul frontale vanno eseguite con un collegamento a massa dell'operatore per evitare l'insorgere di scariche elettrostatiche.

Avvertenza: Bloccare adeguatamente i cavi di connessione dell'uscita relè per evitare contatti con le parti in bassissima tensione.

Sonde schermate: collegare lo schermo al morsetto GND.

Allarmi e segnalazioni

LED verde acceso= dispositivo alimentato
LED giallo acceso o lampeggiante= comunicazione dati in corso
LED rosso lampeggiante= allarme attivo (sonda guasta, soglie di allarme superate, allarmi, time-out)
LED rosso acceso= allarmi ignorati (inibiti).
Buzzer= attivato secondo le impostazioni dei relativi parametri (soglie di allarmi e ritardi, allarmi gestione unità, comandi da supervisione).
Altri tipi di allarmi sono comunicati tramite LAN al master (dispositivo CAREL o software di supervisione).

Pulsante RESET

Permette di tacitare il buzzer interno in caso di attivazione.

Modalità di funzionamento relè

Le modalità di funzionamento sono 3 e la selezione avviene tramite il parametro OUT.

Table with 2 columns: OUT value and description (0= relè pilotato via 485 dal master, 1= relè legato alle segnalazioni degli allarmi abilitati, 2= non gestito)

Tabella parametri

Main parameter table with columns: Parametro, Valori, Min, Max, Def, U.M. Includes sections for Ingresso Digitale 1, 2, 5, 6, Ingresso Analogico 1, 2, 3, 4, Modalità di Funzionamento Relè, and Utilizzo Ingressi Analogici.

Continuation of the parameter table, including Ingresso Analogico 1, 2, 3, 4, Modalità di Funzionamento Relè, and Stato Uscite Relè al Power-Up.

Tabella caratteristiche (fig.3)

Table with technical specifications for the relay outputs, including Ingressi analogici, Indirizzo seriale, Ingressi digitali, Stato buzzer, Stato relè, and Temperatura.

Il valore da impostare si ottiene sommando le cifre relative ai singoli allarmi.
L'uso di questi parametri è destinato ad applicazioni speciali. Si consiglia di non modificarli.

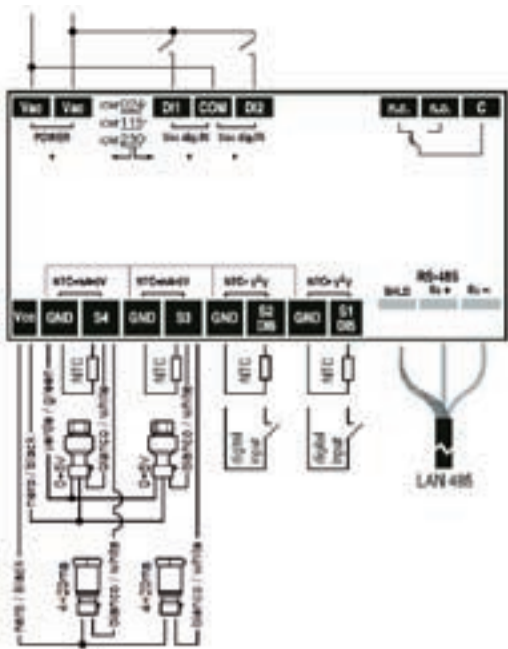


Fig. 2

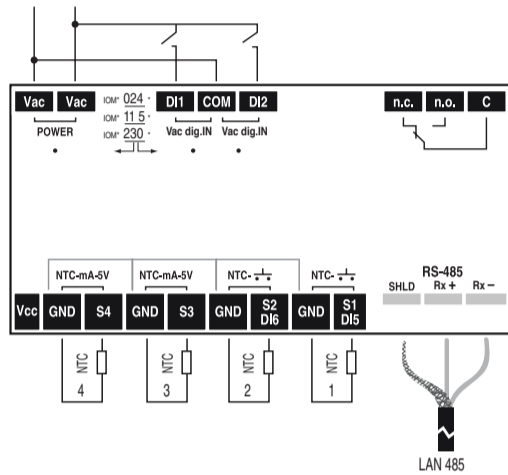


Fig. 3

Technical features

Power supply	mod: IOM**230** 230 Vac (-10% to +10%), 50/60 Hz; mod: IOM**115** 115 Vac (-10% to +10%), 50/60 Hz; mod: IOM**024** 24 Vac (-10% to +10%), 50/60 Hz; 2.7 VA
Power consumption	2.7 VA
Digital inputs	DI1, DI2 voltage contacts (external power supply)
Analog inputs (selectable/programmable)	DI5, DI6 (on S1, S2) free contacts (10 mA)
Analog input resolution	S1, S2, S3, S4: NTC standard CAREL 10 k at 25 °C (interval -50T90 °C) S3, S4: probes 4 to 20 mA or 0 to 5 V ratiometric probe NTC: 0.1 °C probe 4 to 20 mA: 0.1 u.m. probe 0 to 5 V ratiometric: 0.1 u.m.
Analog input accuracy (probe error excluded)	Error NTC: ±0.5 °C interval -30T60 °C; ±1.5 °C intervals -50T-30 °C and 60T90 °C Error 4 to 20 mA: ±1 % of the specified range Error 0 to 5 V ratiometric: ± 0.5% of the specified range
Relay output	2000 VA, 250 Vac UL873, 8 A resistive, 2 A FLA, 12 A LRA EN 60730-1: 2 A inductive, 2(A) A, cosφ= 0.4 S3, S4 like NTC Vcc= 14.64 V S3, S4 like 0 to 5 V ratiometric Vcc= 5.02 V S3, S4 like 4 to 20 mA: Vcc= 14.64 V
Additional probes in same controller	S3, S4 like NTC Vcc= 14.64 V S3, S4 like 0 to 5 V ratiometric Vcc= 5.02 V S3, S4 like 4 to 20 mA: Vcc= 14.64 V
RESET button	Internal buzzer silencing
Connections	Screw terminals for power supply, digital inputs, analog inputs, relay output: section cable max 1.5 mm ² Plug in terminals for LAN 485 communication: cables max cross section 1.5 mm ² , (use shielded cable with shield connected to GND) 4-way vertical connector for programming key
Mounting	electrical panel on DIN rail
Display / programming	Parameter reading and writing via LAN 485 (through CAREL devices or supervision software). The configuration is down loaded using the programming key: code PSOPZKEY00
Operating conditions	operating temperature range: 0T50 °C operating humidity range: 20% to 80% r.H. non-condensing storage temperature range: -20T70 °C storage humidity range: 0% to 80% r.H. non-condensing
Storage conditions	IP20 for device not incorporated in the electrical panel
Index of protection	to be incorporated in devices of class I or class II
Classification according to protection against electrical shock	normal
Environmental pollution	FTI=250V
Period of electrical stress of the insulating parts	long
Category of resistance to heat and fire	category D (UL 94-V0)
Immunity against voltage surges	category II
Action and disconnection type relay	contacts 1C
Relay life cycle	EN60730-1: 2 (2) A, 100,000 operations UL: (250 Vac) 30,000 operations
Software class and structure	Class A
Disposal	refer to the laws for the disposal of electronic material in force in your country

Tab. 2

ENG The CAREL IOM* is a compact instrument for panel mounting (4-DIN module), versatile and easy to install. It has been designed to interface sensor and digital inputs required to monitor and manage a plant with the CAREL Supervision/Monitoring System. It communicates with CAREL protocol at standard speed via serial RS485. It can manage NTC, 4...20mA inputs, ratiometric probes, optoisolated and/or volt free contact digital inputs. IOM is mainly used for RETROFIT applications where it is necessary to supply cost effective and reliable solutions to monitor units fitted with electromechanical or existing non CAREL serial compatible electronic controllers. The instrument can manage 6 inputs, (selected through the software), that allow management of:

- 2 analog inputs (temperature NTC, 4...20mA, V ratiometric);
- 2 analog (temperature NTC) or digital (free contact) inputs;
- 2 digital inputs (voltage reading, optoisolated).

Alarm thresholds, timings, functions and associations between inputs can be programmed. An alarm relay (changeover contacts) and internal buzzer indicate alarm conditions or auxiliary commands.

Parameter configuration and modification

The inputs, status of the relay and alarm output operation modes can be selected through either RS485 serial line (using specific CAREL software) or via the programming key code PSOPZKEY00.

Mounting

DIN rail inside electrical panel (for further information refer to the technical specifications).

Safety standards

It complies with the standards EN 60730-1, EN 60730-2-9,61010-1.

Installation precautions

- The connection cables must provide insulation up to 90 °C.
- The digital and analog input connections must be lower than 10 m: use cable separation in order to comply the immunity standards.
- Ensure the controller is powered OFF when connecting wires.
- To avoid electrostatic discharges, the user is strongly recommended to use a earth connection, when handling the front cover.

Warning: ensure the connection cables for the relay output are securely connected to avoid any contact with the very low voltage parts.

Shielded probes: connect the screen to the GND terminal.

Alarms and signals

Green LED ON= device ON
Yellow LED ON or flashing = data communication in progress
Red LED flashing= active alarm (faulty probe, alarm thresholds exceeded, alarms, time-out)
Red LED ON= ignored alarms (disabled).
Buzzer= Activated based on the settings of the related parameters (alarm and delay thresholds, unit management alarms, supervision commands).
Other types of alarms are sent to the master through LAN (CAREL device or supervision software).

RESET button

Mutes the internal buzzer when activated.

Relay operation mode

There are 3 operation modes, which are selected through the parameter OUT.

OUT 0	relay controlled via RS485 by the master
OUT 1	relay depending on the enabled alarm signals
OUT 2	not managed

List of parameters

Parameter	Values	Min	Max	Def.	U.M.
DIGITAL INPUT 1					
A1	Selection of digital input 1 0= normal input (only reading) 1= open input alarm 2= closed input alarm 3= defrost detection 4= general disable of alarms 5= cleaning cycle detection (associated probe alarm disabled)	0	5	0	---
D1	Alarm delay time (digital input 1): - alarm delay, - time-out defrost, - alarm bypass time - maximum cleaning cycle time	if: A1= 1, 2 A1= 3 A1= 4 A1= 5	0= immediate alarm 0= infinite time-out 0= infinite disable 0= immed. time-out	0	30.000 20 s
DK1	Active alarm time, digital input 1 alarm	if A1= 1, 2		0	30.000 20 s
MTD1	Defrost termination by timeout from input 1	0= only signal to supervisor 1= alarm + signal to supervisor		0	1 0 ---
DIGITAL INPUT 2					
A2	Selection of digital input 2 0= normal input (only reading) 1= open input alarm 2= closed input alarm 3= defrost detection 4= general disable of alarms 5= cleaning cycle detection	0	5	0	---
D2	Alarm delay time (digital input 2): - alarm delay, - time-out defrost, - alarm bypass time - maximum cleaning cycle time	if: A2= 1, 2 A2= 3 A2= 4 A2= 5	0= immediate alarm 0= infinite time-out 0= infinite disable 0= immed. time-out	0	30.000 20 s
DK2	Active alarm time, digital input 2 alarm	if A2= 1, 2		0	30.000 20 s
MTD2	Defrost termination by timeout from input 2	0= only signal to supervisor 1= alarm + signal to supervisor		0	1 0 ---
DIGITAL INPUT 5 (valid for MOD= 1, 3, 5, 7)					
A5	Selection of digital input 5 0= normal input (only reading) 1= open input alarm 2= closed input alarm 3= defrost detection 4= general disable of alarms 5= cleaning cycle detection	0	5	0	---
D5	Alarm delay time (digital input 5): - alarm delay, - time-out defrost, - alarm bypass time - maximum cleaning cycle time	if: A5= 1, 2 A5= 3 A5= 4 A5= 5	0= immediate alarm 0= infinite time-out 0= infinite disable 0= immed. time-out	0	30.000 20 s
DK5	Active alarm time, digital input 5 alarm	if A5= 1, 2		0	30.000 20 s
MTD5	Defrost termination by timeout from input 5	0= only signal to supervisor 1= alarm + signal to supervisor		0	1 0 ---
DIGITAL INPUT 6 (valid for MOD= 1, 3, 5, 7)					
A6	Selection of digital input 6 0= normal input (only reading) 1= open input alarm 2= closed input alarm 3= defrost detection 4= general disable of alarms 5= cleaning cycle detection	0	5	0	---
D6	Alarm delay time (digital input 6): - alarm delay, - time-out defrost, - alarm bypass time - maximum cleaning cycle time	if: A6= 1, 2 A6= 3 A6= 4 A6= 5	0= immediate alarm 0= infinite time-out 0= infinite disable 0= immed. time-out	0	30.000 20 s
DK6	Active alarm time, digital input 6 alarm	if A6= 1, 2		0	30.000 20 s
MTD6	Defrost termination by timeout from input 6	0= only signal to supervisor 1= alarm + signal to supervisor		0	1 0 ---
ANALOG INPUTS					
MOD	* for these two configuration the probe alarms AS3, AS4 won't be activated for the probes 5 V ratiom			0	7 0 ---
#PROBE	Number of probes	0= no probe 1= probe 2= probe 3= probe 4= probe 5= probe 6= probe 7= probe 8= probe 9= probe 10= probe 11= probe 12= probe 13= probe 14= probe 15= probe	1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 3 4		0 15 15 ---
CF	Centigrade or Fahrenheit degrees	0= Centigrade 1= Fahrenheit		0	1 0 ---

Parameter	Values	Min	Max	Def.	U.M.
ANALOG INPUT 1 (valid for MOD= 0, 2, 4, 6)					
N1	Probe 1 associated to the digital input 1, 2, 3, 4 1= digital input. 1 2= digital input. 2 3= not associated 4= not associated	1	4	1	---
H1	High alarm threshold for probe 1 (end scale max. disabled alarm)	L1	1000,0	100,0	°C/°F
L1	Low alarm threshold for probe 1 (end scale max. disabled alarm)	-200,0	H1	-100,0	°C/°F
R1	Alarm activation delay minutes (high and low thresholds) probe	0	255	20	min
F1	Probe 1 filter 0= slow answer 15= quick answer	0	15	8	---
O1	Probe 1 offset	-10,0	10,0	0,0	°C/°F
DS1	Delta probe 1 variation for serial communication	0,1	5,0	0,5	°C/°F
ANALOG INPUT 2 (valid for MOD= 0, 2, 4, 6)					
N2	Probe 2 associated to the digital input 1, 2, 3, 4 1= digital input. 1 2= digital input. 2 3= not associated 4= not associated	1	4	2	---
H2	High alarm threshold for probe 2 (end scale max. disabled alarm)	L2	1000,0	100,0	°C/°F
L2	Low alarm threshold for probe 2 (end scale max. disabled alarm)	-200,0	H2	-100,0	°C/°F
R2	Alarm activation delay minutes (high and low thresholds) probe	0	255	20	min
F2	Probe 2 filter 0= slow answer 15= quick answer	0	15	8	---
O2	Probe 2 offset	-10,0	10,0	0,0	°C/°F
DS2	Delta probe 2 variation for serial communication	0,1	5,0	0,5	°C/°F
ANALOG INPUT 3					
N3	Probe 3 associated to the digital input 1, 2, 3, 4, 5, 6 1= digital input. 1 2= digital input. 2 3= not associated 4= not associated 5= digital input 5 (if MOD 1, 3, 5) 6= digital input 6 (if MOD 1, 3, 5)	1	6	3	---
H3	High alarm threshold for probe 3 (end scale max. disabled alarm)	L3	1000,0	100,0	°C/°F/ bar/...
L3	Low alarm threshold for probe 3 (end scale max. disabled alarm)	-200,0	H3	-100,0	°C/°F/ bar/...
R3	Alarm activation delay minutes (high and low thresholds) probe	0	255	20	min
F3	Probe 3 filter 0= slow answer 15= quick answer	0	15	8	---
O3	Probe 3 offset	-10,0	10,0	0,0	°C/°F/ bar/...
DS3	Delta probe 3 variation for serial communication	0,1	5,0	0,5	°C/°F/ bar/...
V3L (MOD 2, 3, 4, 5, 6, 7)	Minimum value for probe 3 as 4 to 20 mA or 10% in case of use as 5 V ratiometric	-200,0	V3H	0,0	bar/...
V3H (MOD 2, 3, 4, 5, 6, 7)	Maximum value for probe 3 as 4 to 20 mA or 90% in case of use as 5 V ratiometric	V3L	819,0*	30,0	bar/...

(* WARNING: the parameter V3H have to be set with values lower and/or equal to 819.0

Parameter	Values	Min	Max	Def.	U.M.
ANALOG INPUT 4					
N4	Probe 4 associated to the digital input 1, 2, 3, 4, 5, 6 1= digital input. 1 2= digital input. 2 3= not associated 4= not associated 5= digital input 5 (if MOD 1, 3, 5) 6= digital input 6 (if MOD 1, 3, 5)	1	6	4	---
H4	High alarm threshold for probe 4 (end scale max. disabled alarm)	L4	1000,0	100,0	°C/°F/ bar/...
L4	Low alarm threshold for probe 4 (end scale max. disabled alarm)	-200,0	H4	-100,0	°C/°F/ bar/...
R4	Alarm activation delay minutes (high and low thresholds) probe	0	255	20	min
F4	Probe 4 filter 0= slow answer 15= quick answer	0	15	8	---
O4	Probe 4 offset	-10,0	10,0	0,0	°C/°F/ bar/...
DS4	Delta probe 4 variation for serial communication	0,1	5,0	0,5	°C/°F/ bar/...
V4L (MOD 2, 3, 4, 5, 6, 7)	Minimum value for probe 3 as 4 to 20 mA or 10% in case of use as 5 V ratiometric	-200,0	V4H	0,0	bar/...
V4H (MOD 2, 3, 4, 5, 6, 7)	Maximum value for probe 3 as 4 to 20 mA or 90% in case of use as 5 V ratiometric	V4L	819,0*	30,0	bar/...

(* WARNING: the parameter V4H have to be set with values lower and/or equal to 819.0

RELAY OPERATION MODE

OUT	relay operation mode selection	0= relay that can be set via serial 1= relay activates when enabled alarms are present 2= not managed	0	2	1	---
MODE	Idle condition of the relay	0= relay 1 n.a. (OUT0) 1= relay 1 n.c. 2 to 15= not managed	0	15	0	---
LINK1 (OUT=0) (1)	Matrix for the alarm assignment to the outputs (1/2)	relay AF1= 4096; AF2= 256 AF3= 16 (not managed) AF4= 1 (not managed)	0	65536	0	---
LINK2 (OUT=0) (1)(2)	Matrix for the alarm assignment to the output (2/2)	relay AF5/AS1/AT1= 4096 AF6/AS2/AT2= 256 AS3/AT3= 16; AS4/AT4= 1	0	65536	0	---
OUTL1 (OUT=0) (1)(2)	Matrix of the output status in accordance with the alarms (1/2)	relay AF1= 4096; AF2= 256 AF3= 16 (not managed) AF4= 1 (not managed)	0	65536	0	---
OUTL2 (OUT=0) (1)(2)	Matrix of the output status in accordance with the alarms (2/2)	relay AF5/AS1/AT1= 4096 AF6/AS2/AT2= 256 AS3/AT3= 16; AS4/AT4= 1	0	65536	0	---
PRIORITY (OUT=0) (2)	Output status priority when multiple alarms	relay 1= 1 (closed contact) relay 1= 0 (open contact)	0	15	0	---
AL-COMM (OUT=0) (2)	Output status when communication alarm	relay 1= 0...15 (latest status memorization) ENABLE= 16 (open relay) ENABE= 17 (closed relay)	0	31	0	---

BUZZER

BUZ	Buzzer operation mode selection	0= buzzer set from serial 1= buzzer associated with alarms and when communication is down for more than 5 min	0	1	0	---
BUZZ-PWUP	Buzzer output status at power-up	0= silence 1= active	0	1	0	---

RELAY OUTPUT STATUS AT POWER-UP

RELAY 1-PWUP	Relay 1 status at power-up	0= open 1= closed	0	1	0	---
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(1) the value to be set is obtained adding the figures of the single alarms.
(2) these parameters are used for special applications. We suggest you do not modify them.

Characteristic (fig.3)

Analog inputs:	1 NTC; 2 NTC; 3 NTC; 4 NTC
Serial address:	*0; 0 = 200 (under voltage) (* change the serial address using the two rotary switches (BLD 0-9)
Digital inputs:	DI1; DI2 = only reading
Buzzer status:	set by serial line and silent at start-up • normally open at start-up; • depends on the high temperature/low temperature/probe fault/digital inputs alarms; • normally open at rest
Relay status:	
Temperature:	in Centigrade degrees