CAREL

I/O Module

Introduction

The Carel I-OM is a new instrument from the following features:

- compact (4 DIN modules)
- versatile
- simple to install
- for panel mounting

What is the I/O module?

It's a product of the RETAIL Carel range.

Application: Monitoring-Retrofit

Why RETROFIT?

It can acquire informations in plants fitted with electromechanical control or non Carel electronics.

What can do the I/O module

With Plant Visor it's a real complete Supervisory/Monitoring system.

www.

will be monitored
by a simple PC
through supervisor sistem
(Plant Visor)

The informations
given by the I-OM

Connection

The I/O module can manage probes:

NTC

→ Standard Carel [-50÷+90°C]

4-20 mA

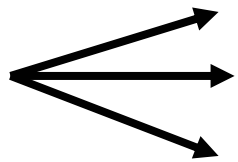
→ Temperature probes and pressure transducers

probes 5Vraz

→ VCC=5.02V

It can manage digital imput:

Voltage opto-insolated
(n° 2 for instrument)



230Vac

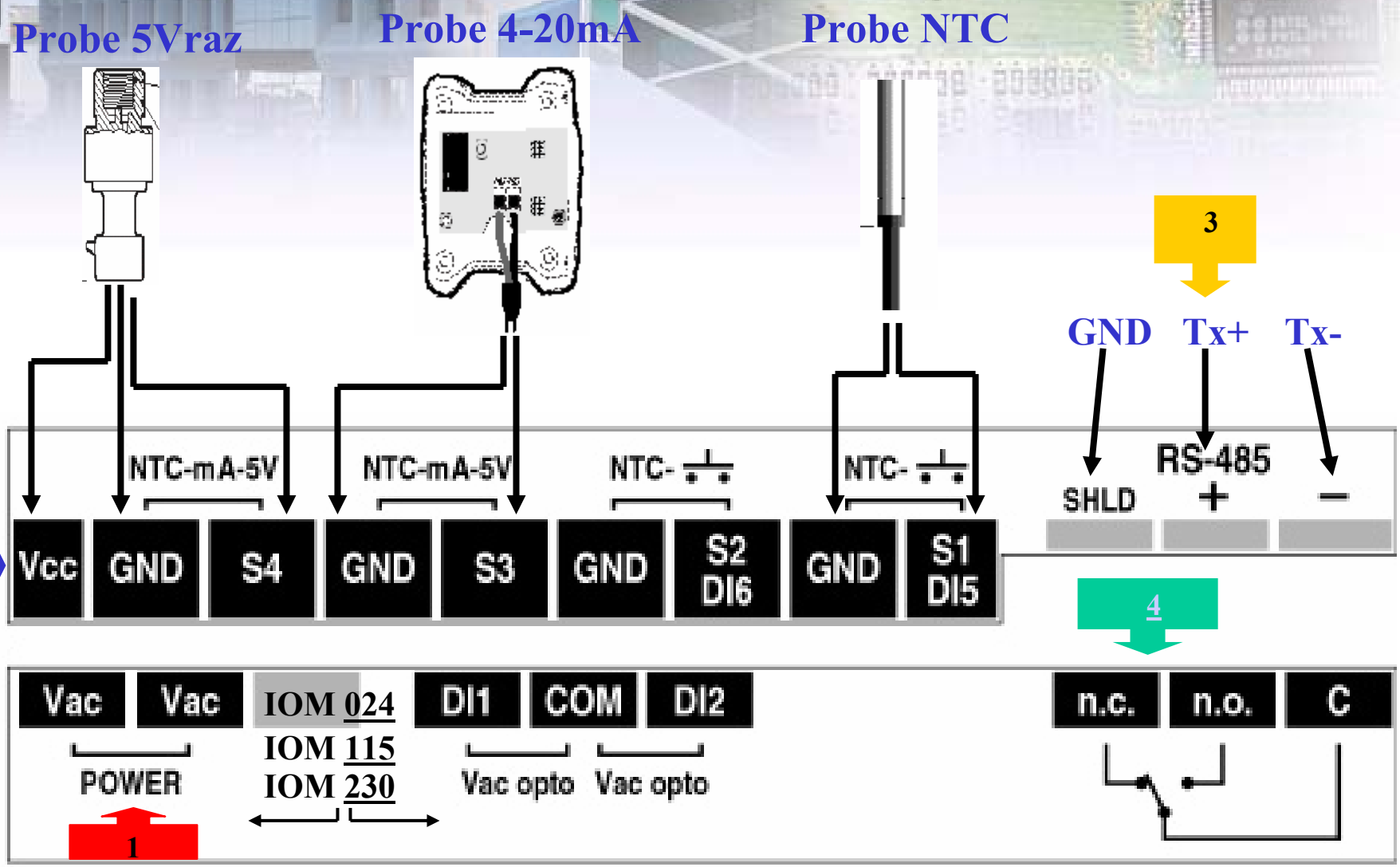
115Vac

24Vac

Free contact
(n° 2 for instrument)

10mA

Electrical connections



Alimentation

The power supply can be:

230 Vac	⟷	**IOM0023000**
115 Vac	⟷	**IOM0011500**
24 Vac	⟷	**IOM0002400**

Input combination

- 4 NTC probes (in the analog inputs 1*,2*,3,4) +2 digit inputs D1,D2

*It is possible to configure them in digital input, respectively D5, D6 rather than in in analog input.

- 2 digital inputs D5*,D6* +2 NTC probes in analog inputs 3,4 +2 digital inputs D1,D2

*If configured like that and not like analog.

- The analog inputs 3,4 besides the NTC probes, can support voltages like 4-20mA or 5Vraz.

All in all

it is possible to configure:

- 4 analog inputs

(of which only 3,4 can support NTC or 4-20mA or 5Vrat)

+

the two standard digital inputs D1,D2

….or

- 4 digital and 2 analog inputs

(that support NTC, 4-20mA.5Vraz)

Serial output

The probe values and the operation parameters are available thanks to the serial output RS485 and to the supervisory system.

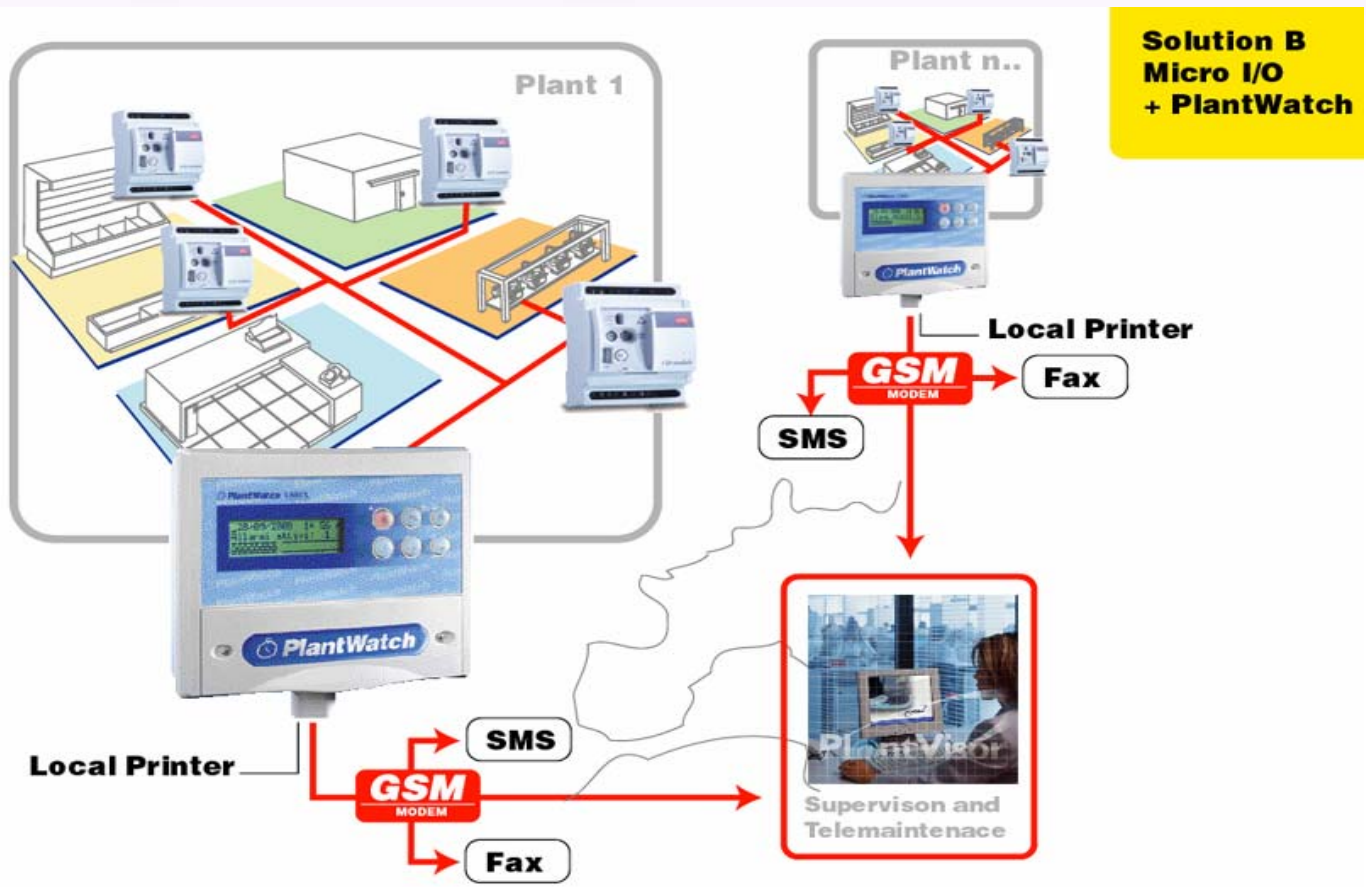
Supervision network

I/O module is scheduled to the RS485 serial communication with standard Carel protocol and speed.

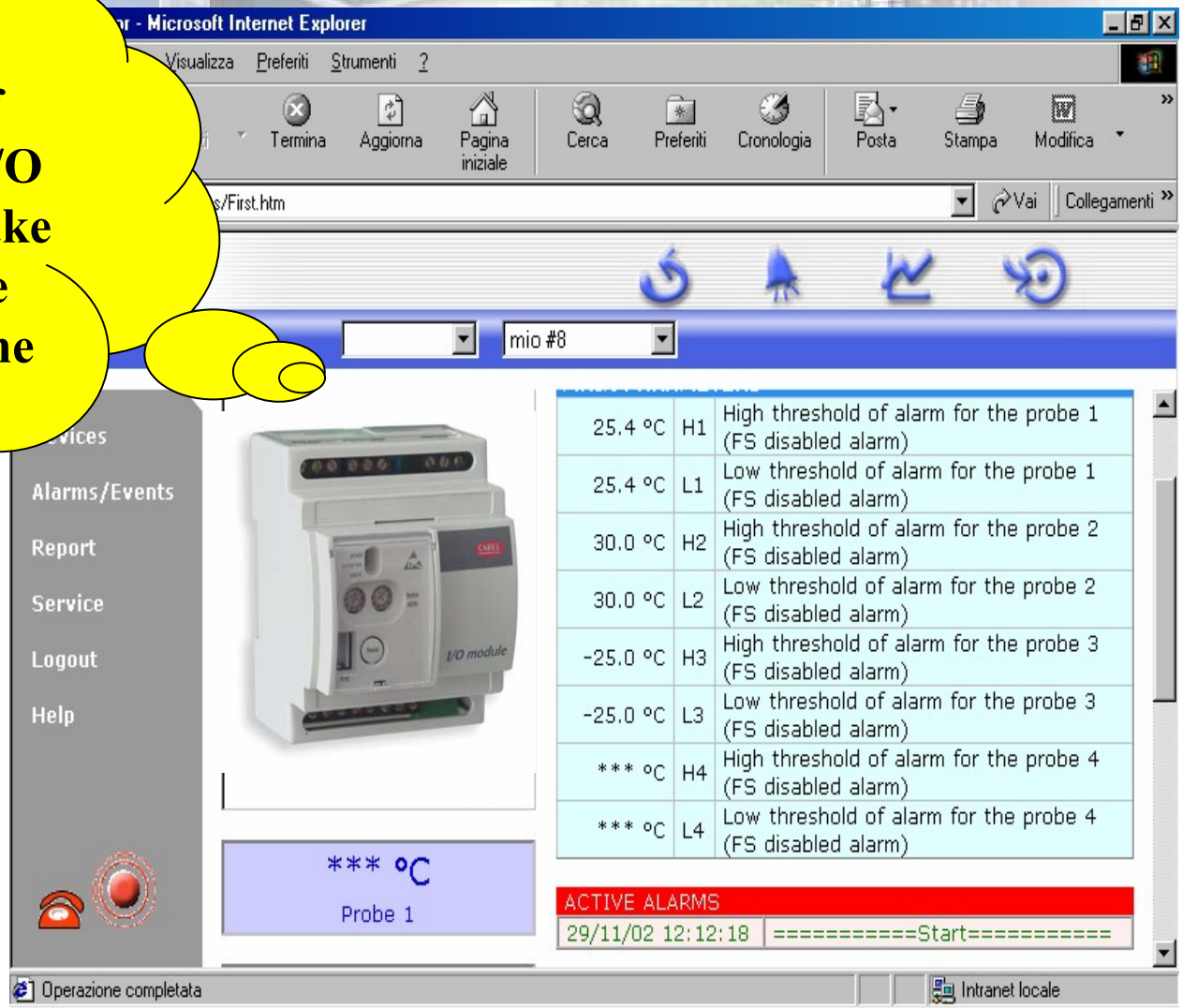
Can be connected to the same 485 network until 100 I/O module.

Compatibility

Optimum application when used together with the PlantWatch and PlantVisor.



The modification of parameters and the I/O module supervision take place directly in the section provided of the Plant Visor.



Relè output

Power: 8 A resistive

- The relay output is managed by the telemaintenance system, as auxiliary if (OUT=0).

- If the suitable parameter is configured (OUT=1), the relay turns on automatically when the analog-digital inputs of the machine enter in alarm conditions (high/low temperature, damaged probes, input anomalies, time out defrost…).

Configuration

The configuration of the inputs, the relè output and alarms operating are customized by the supervision system or by key with cod.PSOPZKEY00

(is necessary a specific Software supplied by Carel)

User interface

Led 1(Green)

The Power Supply LED turns on when the I/O module is properly powered.

Led 2 (Yellow)

- If ON, it signals the correct serial communication between the I/O module and the supervision system.

- The reading of the surveyed data from the instrument is available to be monitored

Led 3(Red)

- If OFF, the operation is normal.
- If ON but not flashing, it signals the allarms inhibition for the time
- If flashing, it signals an alarm.

2 Rotary switch (BCD 0-99)

They can be regulated from 0 to 99, and supply a reading code (serial address) to the remote control system.

When more than one I/O module are connected to the same monitoring system, they determine the reading order.

Key

Programming writing/reading key of the internal parameters can be modified from the serial system.

Tool of programming Key

The Key Kit (PSOPZPRG00) includes:

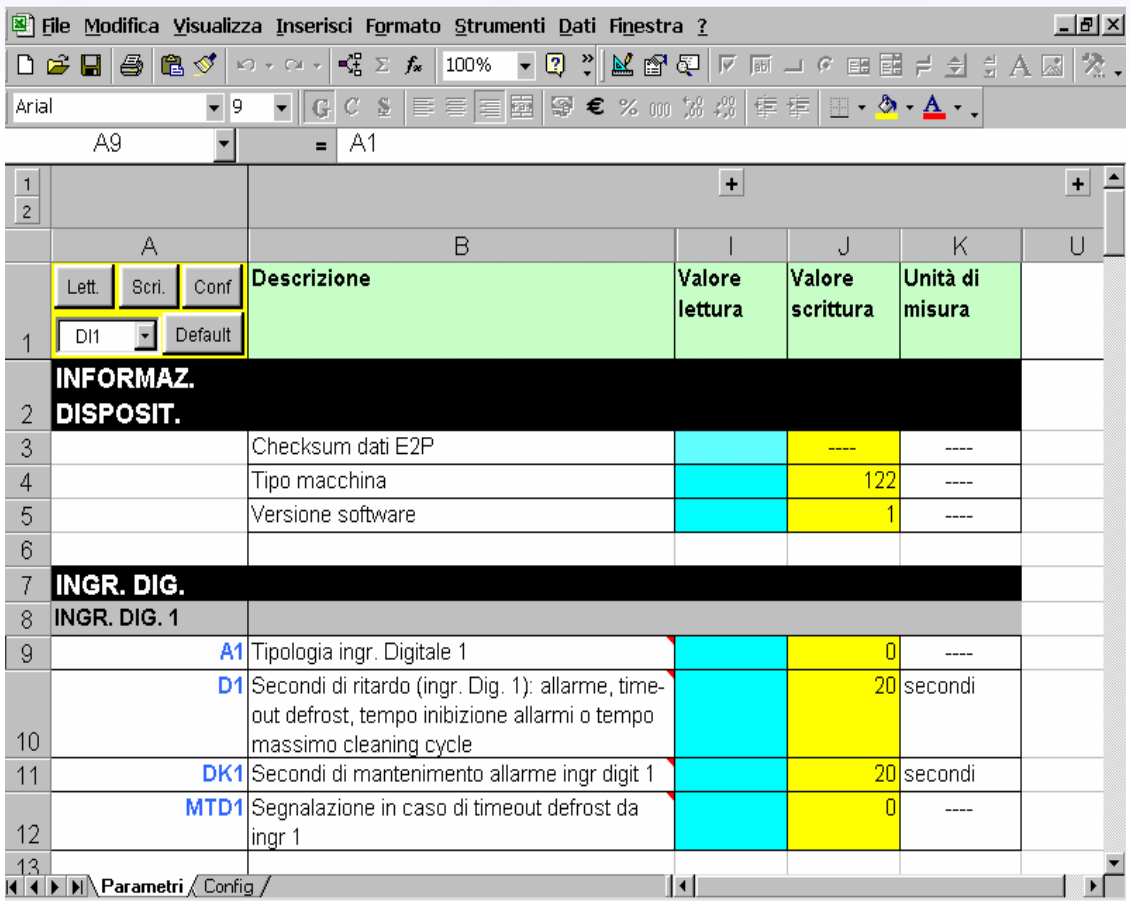
- *1 parallel port connection cable*
- *1 convertor for Key (PSOPZKEY00) connection*
- *1 CD Rom with specific software of programming Key*

Key Software

The Keys present on the sheet "Parameters" (on the higt left) enable to obtain the followings functions:

LETT : It reads the parameters memorized on the Key; they are visualized on the blue column.

SCRI : It writes the parameters on the Key (values previously inserts on the yellow column n).



	A	B	I	J	K	U
1	Lett. Scri. Conf / DI1 Default	Descrizione	Valore lettura	Valore scrittura	Unità di misura	
2	INFORMAZ. DISPOSIT.					
3		Checksum dati E2P		----	----	
4		Tipo macchina		122	----	
5		Versione software		1	----	
6						
7	INGR. DIG.					
8	INGR. DIG. 1					
9	A1	Tipologia ingr. Digitale 1		0	----	
10	D1	Secondi di ritardo (ingr. Dig. 1): allarme, time-out defrost, tempo inibizione allarmi o tempo massimo cleaning cycle		20	secondi	
11	DK1	Secondi di mantenimento allarme ingr digit 1		20	secondi	
12	MTD1	Segnalazione in caso di timeout defrost da ingr 1		0	----	
13						

CONF : It creates file that permit the I/O module configuration throught the Dtest or Plant Visor.

DEFAULT : It upload the default values abaut parameters on the writing column.

Functions:

The functions managed by the device are mainly 7 :

[Probes]

1) Reading of the values and alarms related to the set thresholds

[Digital input]

2) Only reading function
3) Open input alarm
4) Closed input alarm
5) Defrost status
6) General alarm inhibition
7) Cleaning cycle status

Probes monitor

The measuraments read by the probes installed on I/O module are monitored (every 5 min) by the supervision system, to satisfy the HACCP rule.

Reading digital inputs

The open/closed status of the devices connected to the digital inputs (selected like “Only reading”) will be monitored to the supervisor system

Open input alarm switch

At the digital switch opening, after any possible delay time (D1/2/5/6), the I/O module go in alarm status that will be memorized on the historical alarms of the supervisor system.

Closed input alarm switch

In this case the alarm will be active when the switch is closed, respecting the delay time of the parameter D1/2/5/6.

Defrost status

This function permits the inhibition of the high/low alarms on the probes that are associate to the imput in question when the switch closed.

The defrost endurance is setting with the parameter D1/2/5/6.

General alarm inibition

- The digital imput qualified to this function is ables to inhibit all the alarms after the closing of the switch in question.

- The inhibition is mainteined untill all the time D1/2/5/6.

It could corresponds to the OFF status of unit controlled.

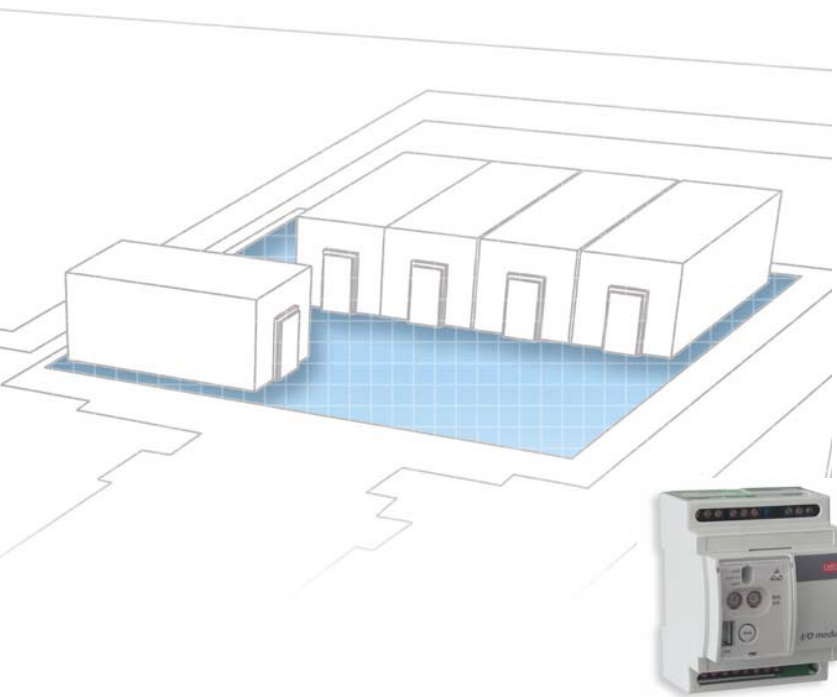
Cleaning cycle

This is a function that permits to inhibit the alarms and to signals the end of the cleaning cycle during all the time D1/2/5/6 spent for the cleaning or the maintenance of the system untill a new rehabilitation of the contact.

COLD ROOM

I O M

Input-Output Modules



- **Regulation (food) Temperature** → **NTC 1**
- **Defrost Temperature** → **NTC 2**

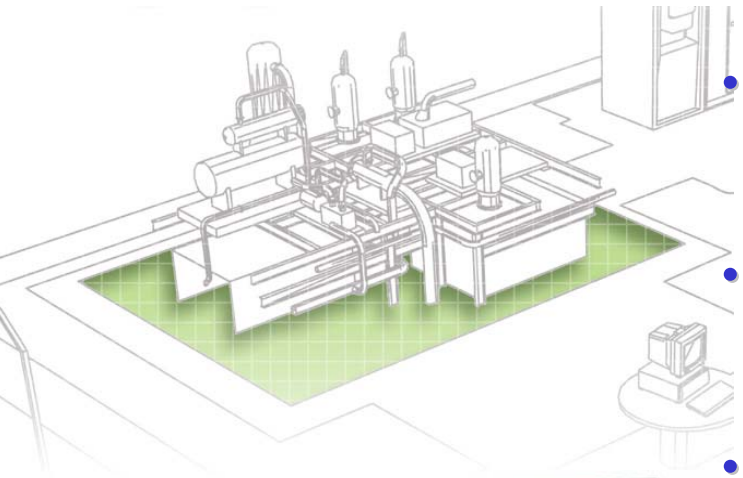
- **Defrosting** → **DI defrost**
- **Refrigerating** → **DI ®**

- **Fans running** → **DI ®**
- **Auxiliary / door switch** → **DI alarm n.o/n.c**
- **remote Alarm / Auxiliary output** → **RELE'**

COMPRESSION UNIT

I O M

Input-Output Modules

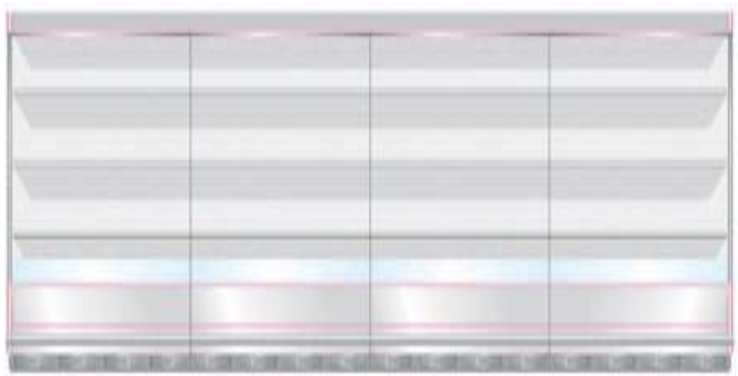


- Suction Pressure → Probe 4-20mA
- Discharge Pressure → Probe 4-20mA
- Compressor status (up to 3) → DI ® / DI ® / DI ®
- General failure → DI alarm n.o/n.c
- remote Alarm / Auxiliary output → RELE'

SINGLE LINE SHOWCASE

I O M

Input-Output Modules



- Regulation (food) Temperature for EACH unit

NTC 1
NTC 2
NTC 3
NTC 4

- Defrosting (group) → DI defrost
- Refrigerating (group) → DI ®
- Light on/off from remote System → RELE'

Prezzi:

Code	Description	Price list
IOM0002400	Modulo 24 Vac	Euro 102.00
IOM0011500	Modulo 115 Vac	Euro 107.00
IOM0023000	Modulo 230 Vac	Euro 105.00
PSOPZKEY00	Programming Key	Euro 56.80
PSOPZPRG00	Tool of programming Key	Euro 80.00

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