io.module Product code: P+E1M00000000

ENG

User manual









READ CAREFULLY IN THE TEXT!







CAREL bases the development of its products on decades of experience in HVAC/R, on the continuous investments in technological innovations to products, procedures and strict quality processes with in-circuit and functional testing on 100% of its products, and on the most innovative production technology available on the market. CAREL and its subsidiaries nonetheless cannot guarantee that all the aspects of the product and the software included with the product respond to the requirements of the final application, despite the product being developed according to start-of-the-art techniques. The customer (manufacturer, developer or installer of the final equipment) accepts all liability and risk relating to the configuration of the product in order to reach the expected results in relation to the specific final installation and/or equipment.

CAREL may, based on specific agreements, acts as a consultant for the positive commissioning of the final unit/application, however in no case does it accept liability for the correct operation of the final equipment/system.

The CAREL product is a state-of-the-art product, whose operation is specified in the technical documentation supplied with the product or can be downloaded, even prior to purchase, from the website www.CAREL.com.

Each CAREL product, in relation to its advanced level of technology, requires

setup/configuration/programming/commissioning to be able to operate in the best possible way for the specific application. The failure to complete such operations, which are required/indicated in the user manual, may cause the final product to malfunction; CAREL accepts no liability in such cases.

Only qualified personnel may install or carry out technical service on the product.

The customer must only use the product in the manner described in the documentation relating to the product.

In addition to observing any further warnings described in this manual, the following warnings must be heeded for all CAREL products:

- Prevent the electronic circuits from getting wet. Rain, humidity and all types of liquids or condensate contain corrosive minerals that may damage the electronic circuits. In any case, the product should be used or stored in environments that comply with the temperature and humidity limits specified in the manual.
- Do not install the device in particularly hot environments. Too high temperatures may reduce the life of electronic devices, damage them and deform or melt the plastic parts. In any case, the product should be used or stored in environments that comply with the temperature and humidity limits specified in the manual.
- Do not attempt to open the device in any way other than described in the manual.
- Do not drop, hit or shake the device, as the internal circuits and mechanisms may be irreparably damaged.
- Do not use corrosive chemicals, solvents or aggressive detergents to clean the device.
- Do not use the product for applications other than those specified in the technical manual.

All of the above suggestions likewise apply to the controllers, serial boards, programming keys or any other accessory in the CAREL product portfolio.

CAREL adopts a policy of continual development. Consequently, CAREL reserves the right to make changes and improvements to any product described in this document without prior warning.

The technical specifications shown in the manual may be changed without prior warning.

The liability of CAREL in relation to its products is specified in the CAREL general contract conditions, available on the website <u>www.CAREL.com</u> and/or by specific agreements with customers; specifically, to the extent where allowed by applicable legislation,

in no case will CAREL, its employees or subsidiaries be liable for any lost earnings or sales, losses of data and information, costs of replacement goods or services, damage to things or people, downtime or any direct, indirect, incidental, actual, punitive, exemplary, special or consequential damage of any kind whatsoever, whether contractual, extra-contractual or due to negligence, or any other liabilities deriving from the installation, use or impossibility to use the product, even if CAREL or its subsidiaries are warned of the possibility of such damage.



INFORMATION FOR USERS ON THE CORRECT HANDLING OF WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE)

In reference to European Union directive 2002/96/EC issued on 27 January 2003 and the related national legislation, please note that:

- WEEE cannot be disposed of as municipal waste and such waste must be collected and disposed of separately;
- the public or private waste collection systems defined by local legislation must be used. In addition, the equipment can be returned to the distributor at the end of its working life when buying new equipment;
- the equipment may contain hazardous substances: the improper use or incorrect disposal of such may have negative effects on human health and on the environment;
- the symbol (crossed-out wheeled bin) shown on the product or on the packaging and on the instruction sheet indicates that the equipment has been introduced onto the market after 13 August 2005 and that it must be disposed of separately;
- in the event of illegal disposal of electrical and electronic waste, the penalties are specified by local waste disposal legislation.

Warranty of the materials: 2 years (from the date of production, excluding consumables).

Approval: the quality and safety of CAREL INDUSTRIES Hqs products are guaranteed by the ISO 9001 certified design and production system.



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. Never run power cables (including the electrical panel wiring) and signal cables in the same conduits.



The product must be installed with the earthconnected, using the special yellow-green terminal on the terminal block. Do not use the neutral for the earth connection.

KEY TO THE ICONS



CONTENTS

1.	INTRODUCTION	
1.1	1 Main features	
2.	INSTALLATION	
2.′	I/O P+EM10000000	5
2.2	2 Connections RS485 communication	
2.3	3 Connection active probes 0-5V	
2.4	4 Connection active probes 4-20 mA	
2.5	5 Connection digital inputs / digital outputs	
3.	START UP	
3.′	1 Setting the dipswitches for network configuration	
3.2	2 BOSS line configuration	
3.3	3 Configuration: 2 Temperature sensors with high temp alarm and alarm output	
3.4	Configuration: Gas detector and trapped personal alarm	
3.5	5 Configuration: analog signal 0-10V	
3.6	6 Alarm management	Error! Bookmark not defined.
3.7	7 Zone management	Error! Bookmark not defined.
4.	ALARMS	Error! Bookmark not defined.
4.′	1 Table of alarms	
5.	NOTE	
5.1	1 Software release notes	

1. INTRODUCTION

1.1 Main features

Part number	Description
P+E1M00000000	IO.MODULE 24V 4TI 4DI 20 6DO 1BMS
P+E0C1M0B0	CONNECTOR KIT

.

List of functions:

Main features	Up to 10 different inputs depending on configuration.
Hardware	c.pCOe
User interface	Boss
Languages	EN
Unit of measure	Temperature: °C , Inputs: On/Off , Pressure: bar , Other: %
Alarms	Low and high alarms, digital input alarms
	Automatic reset
	Log from Boss
Supervisor protocol	Modbus and CAREL







Old io.module IOM0023000; IOM0011500; IOM0002400

NEW io.module P+E1M00000000

	I/O Module (Old)	io.module (New)
HW	24 Vac / 115 Vac / 230 Vac power supply	24 Vac / 24-36 Vdc power supply
HW	Complete address setting by rotary	Partial address setting by dipswitch.
	dipswitches	Complete address setting by dipswitches and parameters
HW	Reset button available	-
HW	Buzzer available	-
HW	1 electromechanical relay	6 electromechanical relays
1/0	2 temperature inputs (4)	4 temperature inputs
1/0	2 digital inputs (4)	4 digital inputs
1/0	2 active probes (4-20 mA)	2 active probes (4-20 mA / 0-5 V / 0-10 V)
Protocols	Carel	Carel and Modbus
Settings	Predefined operating modes for standard applications that can be selected by setting "macro-parameters"	Greater versatility given by the possibility of detailed parameter settings
Features	Correct management of high and low temperature alarms, with the possibility to delay notification	Correct management of high and low temperature alarms, with the possibility to delay notification
Features	Management of absent probes. In this case, the device communicates a default value	Management of absent probes. In this case, the device communicates a default value
Features	Association between probe and digital input to optimise management by supervisory systems	Association between probe and digital input to optimise management by supervisory systems
Features	Possibility to create a global alarm that summarises the unit status by connecting it, where necessary, to a	Possibility to create a global alarm that summarises the unit status by connecting it, where necessary, to a
Features	Possibility to add a manual calibration to the probe readings to accuracy in the specific use	Possibility to add a manual calibration to the probe readings to accuracy in the specific use

2. INSTALLATION

2.1 I/O P+EM10000000



Note: it is necessary to restart the device to improve the changes to the dip-switches.

	Temperature T1-T4	Digital input DI1-DI4	Analogue active Y1-Y2							
J2	1, 2, 3, 4	5, 6, 7, 8	9, 10							
1	Power supply co	nnectors [G(+), G0(-), Vbat]							
2	Inputs									
3	+VDC: power sup +5V power supp	oply for active prob ly for raziometric p	es robes							
4	Relay digital outp	outs								
5	BMS connector									
8	Configuration Di	p-switch								

Technical leaflet P+E1M0000000



2.2 Connections RS485 communication

Modbus or CAREL RS485. Up to 15 io.modules can be connected in the serial network. Adress ranging from 1-15.





2.3 Connection temperature probes

It's possible to connect up to 4 temperature probes, NTC, NTC-HT, NTC-LT and PT1000 (T1-T4).





2.4 Connection active probes 0-5V

It's possible to connect up to 2 active 0-5V probes (Y1,Y2).

• 2 active probes powered by **internal supply voltage** (Max current available is 50mA, if the sensor requires more it has to be power supplied externally)



2.5 Connection active probes 4-20 mA

It's possible to connect up to 2 active 4-20 mA probes (Y1,Y2).

• 2 active probes powered by **internal supply voltage** (Max current available is 50mA, if the probe requires more it has to be power supplied externally)



ENG

2.6 Connection analog signals

It's possible to connect up to 2 active 0-10V, 0-5V, 4-20mA analog signals (Y1,Y2).



2.7 Connection digital inputs / digital outputs

It's possible to connect up to 4 digital inputs for alarm or status (DI1-DI4). 6 digital outputs (230VAC, see technical leaflet for max load)



Digital input (Voltage free)



ENG

3. START UP

3.1 Setting the dipswitches for network configuration

In order to connect the io.module to a supervisory system the dip switches needs to be set up accordingly to the network configuration that will be used. It's necessary to restart the io.module to acknowledge the dip switch changes.

- Network address: 1-15 (Default: address 1)
- With or without offset (Default: without offset)
- Protocol: Modbus or CAREL (Default: Modbus)
- Baudrate, 9.6K, 19,2K, 38,4K, 57,6K (Default: 19.2K)



3.2 BOSS line configuration

When the network configuration and wiring to the io.module is completed the device can be read by the Boss.

1. Select Configuration

2. Enter "Site configuration"

3. If a serial line hasn't been created press "Add". If a line you want to use is already present, press "Modify".

≡ ← •b oss	Site configuratio	n		📥 Add 🔪 Modify 🗕 Delete 🚽	🖬 Import 📑 Export 🚯 🧒 👤
2021/10/22/4:27	• Site	S Alarms safety S Copy config.	Dependencies	Priorities	
Plant	List of lines				
	Line	COM port / IP address	Transmission speed	Protocol	Number of devices
	9	RS485 - 1	19200	Modbus - RS485	1
Report					
📀 Configuration					
System pages					
Setup Wizard / Tutorials					
Site configuration					
User config.					
I/O configuration					
Logic group creation					

4. In "Site configuration – Edit" select the protocol in use, CAREL or Modbus, Baudrate and COM port (serial port) the communication line that the io.module is connected to. These settings needs to be exactly the same as the network settings configured with the dip switches.

≡	 ••••••••••••••••••••••••••••••••••••		Site configuration -	Edit							\$	Cancel 🗸	Save
	2023/08/16 13:00	 Connection 											
9	Plant	Protocol Mod	dbus - RS485	~	COM port	RS485 - 1		~	Baud rate	19200*	~		
€	Alarm/Event	Poll Delay (ms)	0										
	Report	 Devices 											
	Configuration	Device name	IOM_P+E_modbus v0.4							~			Auto de
	System pages	From address	1 *	To address 1	~	+ -							
	Setup Wizard / Tutorials	Serial address		Device mod	lel			Device descrip	tion		Disable	Config.	Settings Im
	Site configuration	1	IOM_P+E_modbus v0.4	1			IOM_P+E_modbus v0.4 - 1				Off	•	0
	User config.												
	l ogic group creation												
1	Activity												
C	Tools												

5. In "Device name" Find the XML IOM_P+E_modbus v0.4



10. If the installation has been successfull the io.module will have a red circle around the device indicating alarm status (device not configured).

	Devices						6
2023/08/16 13:05	- Devices 🔧 Parameters 🛕 Alar	ns 🚽 Trend 📲 Notes					
D Plant			Q	All Online A	larm Offline Offline	led 🖣 Address	42 A-Z
Devices	Internal IO Digital output 1 Digital output 2	• (IOM_P+E_modbus v0.4 - 1 Temperature T1 Temperature T2	9.001 -999.9 °C/°F -999.9 °C/°F			
Secondary map	Digital output 3	• (Temperature T3 Temperature T4	-999.9 °C/°F -999.9 °C/°F			
Alarm/Event							
Report							
📀 Configuration							
Activity							
Cools							
System pages							

Configuration example: 2 temp sensors with high temp alarm and alarm output 3.3

Configuration of two temperature sensors connected to T1 and T2 with high temperature alarm. Alarm output NO1.

1. Click on the io module to enter the device page.

2. Enter "Parameter" and select "All parameters" in categories, search for "Enable" in the search bar.

🕑 Set 3. Disable the analog inputs T3, T4, Y1 and Y2. Confirm by pressing

← •**b**055 mir 🗘 Refresh 🧭 Set 📔 Copy 🏷 Save 🖘 Load 🖧 Broadca 2023/08/16 13:13 📲 Main 😽 Parameters $I \equiv Variables$ 🜲 Alarms <u>↓</u> ∠ Trend -@- Notes D Plant Devices IOM_P+E_modbus v0.4 - 1 ~ **<** > Q enable Category All parameters Value New U.M. Short desc Description DI Status ~ DI1 alarm enable DI1 alarm enable 0 Secondary map ~ 0 DI Status DI2 alarm enable DI2 alarm enable Alarm/Event ~ DI Status DI3 alarm enable DI3 alarm enable 8 Report ~ DI Status DI4 alarm enable DI4 alarm enable 8 Configuration 0 enabled ~ Y1_enable Y1_enable 뉦 Activity enabled Y2_enable Y2_enable 0 🧷 Tools ~ enabled T1_enable 0 T1_enable Device configuration enabled ~ T2_enable T2_enable 0 ~ enabled T3_enable T3_enable 0 0 enabled T4_enable T4_enable ~ Enable safe mode Safe mode enabling digital output 0 NO (keep status) 0 NO (keep status) ~ Enable safe mode Safe mode enabling digital output 2 NO (keep status) ~ Enable safe mode Safe mode enabling digital output 3 0 ~ Enable safe mode Safe mode enabling digital output 4 8 -NO (keep status)

In this example analog input T1 and T2 is used.

5. Select "Configuration entreé T1" in the category menu.

6. Configure the parameters below and and confirm by pressing



ENC

- Type of T1 NTC, NTC-HT, NTC-LT or PT1000.
- T1_HI threshold set E.g.10C (High emperature alarm set point)
- T1_HI linkALM trigger to alarm 1(Assigned to alarm group 1)
- T1_alm_delay E.g. 30 min (Alarm delay time for both high- and low temperature alarm)

7. Select "Configuration entreé T2" in the category menu.

8. Configure the parameters below and confirm by pressing



- Type of T2 NTC, NTC-HT, NTC-LT or PT1000.
- T2_HI threshold set E.g.10C (High emperature alarm set point)
- T2_HI linkALM trigger to alarm 1(Assigned to alarm group 1)
- T2_alm_delay E.g. 30 min (Alarm delay time for both high- and low temperature alarm)

Ξ ← •ט ס55mini	ſ	Devices / device detail			¢	Refresh 🧭 Set 📄 Copy 🍕) Save ❤D Load D Broadcast	0
2023/08/16 13:24	🚽 Main 🔧 Para	ameters 🛓 🗄 Variables 🌲 Alarms	rrend®_ Notes					
Plant	Devices IOM_P+E_	modbus v0.4 - 1	~ < >			Q Category	Configuration entrée T1	~
Devices	Value	New	U.M.	Short desc		Description		
Мар	enabled	•		T1_enable	T1_enable			0
Secondary map	NTC	NTC ~		Type (T probe)	Type of T1			0
Alarm/Event	0.0		°C/°F	T1-adj	T1 probe calibration			6
Configuration	5			Samples for filtering	N° of samples for filtering T	Γ1		0
	0.1			Update Threshold	Minimum variation of T1 to	update its value to master		0
	999.9	10	°C/°F	T1_HI_set	T1_HI threshold set	1		6
Device configuration	NO link Alarm	trigger to ALARM 1		T1_HI_linkALM	T1_HI_linkALM			0
berree comparation	-999.9		°C/°F	T1_LO_set	T1_LO_set			0
	NO link Alarm	~		T1_LO_linkALM	T1_LO_linkALM			6
	0	30	min	T1_alm_delay	T1_alm_delay			0
	NOT disabled by DI	· · · · ·		T1_alm_disable	T1 alarm disabled/delayed	by DI input		6

7. Select "Configuration relais 1".

8. Configured the parameter below and confirm by pressing



• OUT1_alm_gr – from ALARM-1 (Assigning relay 1 (NO1) to be used as an alarm relay for group 1).

ב ← •b055mini	C	Devices / device detail			🗘 Refresh 🧭 Set 📔 Copy 🍾 Save 👈 Loa	ad 🔊 Broadcast 🦁 👤
2023/08/16 13:30	⊣¦ Main 🔧 Para	ameters	<u>⊬</u> Trend –®- Notes			
Plant	Devices IOM_P+E_	modbus v0.4 - 1	~ < >		Q Configuration	relais 1 👻
Devices	Value	New	U.M.	Short desc	Description	
Map	0=standard	~		Type (Dout)	Channel type digital output 1: 0=standard; 1=cyclic;	0
Alarma Trunct	2		sec	Delay (TON)	Digital output 1 ON delay	θ
Report	2		sec	Delay (TOFF)	Digital output 1 OFF delay	0
Configuration	NO (keep status)	~		Enable safe mode	Safe mode enabling digital output 1	0
Activity	forced OFF	~		OfflinePattern (Dout)	Offline pattern digital output 1	0
Tools	from ALARM-1	from ALARM-1		OUT1_alm_gr	Alarm Group (n) -> Relay 1	0
 Device configuration						

9. Description of all the I/O and alarm texts can be changed in device > device configuration > description list.

≡ ← •ט ס55mini			Devices / devi	ce detail / Device configura	ation				١	/ Save	6	<u> </u>
2023/08/	16 13:40	🕒 Main	Alarm variables	Log configuration	Description	ns list	$f\!x$ Computed variables	-@- Notes				
Plant		IOM_P+E_mod	dbus v0.4 - 1									
Devices		Descrip	ations list									
Мар			Var code	Short de	sc		V	ariable descriptions			UM	
Secondary map		Type_of_Clie	nt	Type_of_Client	0	0: 16 bit / 1: 32 bit						
A		ALLg1_reset		ALLg1_reset	A	ALARM GROUP 1 reset comma	ind					
Alarm/Event		ALLg2_reset		ALLg2_reset ALARM GROUP 2 reset command								
Report		ALLg3_reset		ALLg3_reset	A	ALARM GROUP 3 reset comma	ind					
📀 Configuration		ALLg4_reset		ALLg4_reset	A	ALARM GROUP 4 reset comma	ind					
Activity		ALLg5_reset		ALLg5_reset	A	ALARM GROUP 5 reset comma	ind					
		ALLg6_reset		ALLg6_reset	A	ALARM GROUP 6 reset comma	ind					
Tools		Probe-Y1		Sensor Y1	A	Active probe Y1						
Device detail		Probe-Y2		Sensor Y2	A	Active probe Y2						
Configuration conv		Y1_ActPrbMa	эх	Scale - max range valu	e A	Active probe maximum Y1						
connguration copy		Y2_ActPrbMa	ах	Scale - max range valu	e A	Active probe maximum Y2						
		Y1_ActPrbMi	n	Scale - min range value	e A	Active probe minimun Y1						
		Y2_ActPrbMi	n	Scale - min range value	e A	Active probe minimun Y2						
		AddrExts		Address extension	A	Address extension offset						

3.4 Configuration example: Gas detector and trapped personal alarm

Configuration of two digital inputs with gas detection and trapped personal. Digital input DI1 is used for gas detector and DI2 for trapped personal.

- 1. Click on the io module to enter the device page.
- 2. Enter "Parameter" and select "All parameters" in categories, search for "Enable" in the search bar.

3. Disable the analog inputs T1-T4, Y1 and Y2. Enable DI1 and DI2 with "DI alarm ENABLED". Confirm by pressing digital input 1 and 2 will be used.



In this example

■ + •b055 mini	I	Devices / device detail			(🗘 Re	fresh 🥳 Set	📄 Copy 🔹 🏷	Save 🍤 Load	D Broadcast	1
2023/08/16 14:05	🚽 Main 🛛 🔧 Para	ameters 👔 Variables 🌲 Alarms	<u>↓</u> Trend [–] ® [–] Notes								
Plant	Devices IOM_P+E_	modbus v0.4 - 1	~			٩	enable	Category	All parameters		~
Devices	Value	New	U.M.	Short desc		_		Description			
Мар	DI Status	DI Alarm ENABLED		DI1 alarm enable	DI1 alarm enable						0
Secondary map	DI Status	DI Alarm ENABLED		DI2 alarm enable	DI2 alarm enable						0
Alarm/Event	DI Status	~		DI3 alarm enable	DI3 alarm enable						0
	DI Status	~		DI4 alarm enable	DI4 alarm enable						0
Activity	DISABLED	~		Y1_enable	Y1_enable						0
Cools	DISABLED	~		Y2_enable	Y2_enable						0
Device configuration	DISABLED	~		T1_enable	T1_enable						0
a and composition	DISABLED	~		T2_enable	T2_enable						0
	DISABLED	~		T3_enable	T3_enable						0
	DISABLED	~		T4_enable	T4_enable						0
	NO (keep status)	· ·		Enable safe mode	Safe mode enabling digital	l outpu	it 1				0
	NO (keep status)	~		Enable safe mode	Safe mode enabling digital	l outpu	ıt 2				0
	NO (keep status)	`		Enable safe mode	Safe mode enabling digital	l outpu	it 3				0
	NO (keep status)	~		Enable safe mode	Safe mode enabling digital	l outpu	ıt 4				0 -

4. Select "Alarm and digital inputs configuration" in the category menu.

5. Configured the parameters below and confirm by pressing

• Din1-Din4 logic – Alarm at open or closed digital input contact (Closed as default).

- D1_alarm_delay X minutes (Alarm delay digital input 1)
- D2_alarm_delay X minutes (Alarm delay digital input 2)
- DI1_alarm_group Alarm group 1 (Assign DI1 to alarm group 1)
- DI2_alarm_group Alarm group 1 (Assign DI2 to alarm group 1)

Ξ ← •b 055 mini	C	Devices / device detail			🗘 Refresh 🥳 Set	📄 Copy \land S	ave 🕩 Load 🔊 Broadcast 🤯	
2023/08/16 14:50	୍କ୍ର Main 🛛 🔸 Para	ameters 👔 Variables 🛕 Alarms	<u>↓ -</u> Trend ⁻ ® ⁻ Notes					
Plant	Devices IOM_P+E_	modbus v0.4 - 1	~ * *		Q	Category	Alarm and digital inputs configuration	~
Devices	Value	New	U.M.	Short desc		Description		
Мар	Din(x) TRUE=DI closed	~		Din1-Din4 logic	logic status for Digital Inputs Din1-Din4			0
Secondary map	DI Alarm ENABLED	DI Alarm ENABLED		DI1 alarm enable	DI1 alarm enable			0
Alarm/Event	DI Alarm ENABLED	DI Alarm ENABLED		DI2 alarm enable	DI2 alarm enable			0
Configuration	DI Status	· ·		DI3 alarm enable	DI3 alarm enable			0
Activity	DI Status	· · · · · · · · · · · · · · · · · · ·		DI4 alarm enable	DI4 alarm enable			0
Tools	0		min	D1_alarm_delay	D1_alarm_delay			0
Device configuration	0		min	D2_alarm_delay	D2_alarm_delay			0
ŭ	0		min	D3_alarm_delay	D3_alarm_delay			0
	0		min	D4_alarm_delay	D4_alarm_delay			0
	Alarm Group NOT assigned	Alarm Group 1		DI1_alarm_group	DI1_alarm_group			6
	Alarm Group NOT assigned	Alarm Group 1		DI2_alm_group	DI2_alm_group			0
	Alarm Group NOT assigned	~		DI3_alm_group	DI3_alm_group			0
	Alarm Group NOT assigned			DI4_alm_group	DI4_alm_group			0

6. Select "Configuration relais 1".

7. Configured the parameter below and confirm by pressing



OUT1_alm_gr - from ALARM-1 (Assigning relay 1 (NO1) to be used as an alarm relay for group 1). ٠

≡ ← • b 055mini	ſ	Devices / device detail			🗘 Refresh 🧭 Set	📄 Copy 🏷 Save 🍤 Load 🔊 Broadcast	: 🧑 👤
2023/08/16 13:30	🕂 Main 🔧 Para	ameters	<u>≁</u> Trend –® [−] Notes				
Plant	Devices IOM_P+E_	modbus v0.4 - 1	~ < >		Q	Configuration relais 1	~
Devices	Value	New	U.M.	Short desc		Description	
Map	0=standard	· · · · ·		Type (Dout)	Channel type digital output 1: 0=standard; 1=cycli	ic:	0
	2		sec	Delay (TON)	Digital output 1 ON delay		6
Report	2		sec	Delay (TOFF)	Digital output 1 OFF delay		0
	NO (keep status)	~		Enable safe mode	Safe mode enabling digital output 1		0
Activity	forced OFF	· · · ·		OfflinePattern (Dout)	Offline pattern digital output 1		6
Tools	from ALARM-1	from ALARM-1		OUT1_alm_gr	Alarm Group (n) -> Relay 1		0
Device configuration			1	1			

6. To change the alarm text of the digital inputs, enter device > device configuration > description list. Press description.

Variable code:

- DI1_alarm Gas detector alarm ٠
- DI2_alarm Trapped personal alarm DI1_status Gas detector status ٠
- ٠
- DI2_ status Trapped personal alarm ٠

≡ ← •b 055mini	Devices / devic	e detail / Device configuration	✓ Sav	
2023/08/16 14:15	● Main 4 ₀ Alarm variables	Log configuration	triptions list If Main variables fx Computed variables "%" Notes	
Plant	Var code	Short desc	Variable descriptions	им ^
Devices	ALLg3_reset	ALLg3_reset	ALARM GROUP 3 reset command	
	ALLg4_reset	ALLg4_reset	ALARM GROUP 4 reset command	
Map	ALLg5_reset	ALLg5_reset	ALARM GROUP 5 reset command	
Secondary map	ALLg6_reset	ALLg6_reset	ALARM GROUP 6 reset command	
Alarm/Event	Probe-Y1	Sensor Y1	Active probe Y1	
Report	Probe-Y2	Sensor Y2	Active probe Y2	
	Y1_ActPrbMax	Scale - max range value	Active probe maximum Y1	
Configuration	Y2_ActPrbMax	Scale - max range value	Active probe maximum Y2	
Activity	Y1_ActPrbMin	Scale - min range value	Active probe minimun Y1	
Tools	Y2_ActPrbMin	Scale - min range value	Active probe minimun Y2	
-	AddrExts	Address extension	Address extension offset	
Device detail	DI1_alarm	Alarm DI1	Alarm DI1	v
Configuration copy	OUT1_alm_gr	OUT1_alm_gr	Alarm Group (n) -> Relay 1	
	OUT2_alm_gr	OUT2_alm_gr	Alarm Group (n) -> Relay 2	
	OUT3_alm_gr	OUT3_alm_gr	Alarm Group (n) -> Relay 3	
	OUT4_alm_gr	OUT4_alm_gr	Alarm Group (n) -> Relay 4	
	OUT5_alm_gr	OUT5_alm_gr	Alarm Group (n) -> Relay 5	
	OUT6_alm_gr	OUT6_alm_gr	Alarm Group (n) -> Relay 6	
	ALL_Gr1	ALL_Gr1	Alarm group 1	
	ALL_Gr2	ALL_Gr2	Alarm group 2	
	ALL_Gr3	ALL_Gr3	Alarm group 3	
	ALL_Gr4	ALL_Gr4	Alarm group 4	

7. To see the DI1-2 status in the device overview instead of temperature sensors enter device > device configuration > main variables.



to save the new alarm





8. Change the following variables and confirm by pressing

- Gas detector status Probes
- Trapped personal status Probes
- Temperature T1-T4 None

בסט• ← •ו סס	5 mini	Devices / device detail / Device configuration		×	Save	3			
	2023/08/16 14:28	🗣 Main 🔥 Alarm variables 🖺 Log configuration 🕞 Descriptions list 👫 Main variables fx Computed variables 😗 No	tes						
Plant		IOM_P+E_modbus v0.4 - 1			on page	t Go to s	sort page		
Devices		Description	Short desc	Status	Probes	General	None		
Мар		Triniware date, year	rear (rw)		0				
Secondary map		Firmware version (high part)	Firmware H		0	0			
		Firmware version (low part)	Firmware L	\bigcirc	\bigcirc	\bigcirc			
		Gas detector status	DI1_status	0		0	0		
Report		OUT: safe status activated	safe mode warning	0	\bigcirc	0	0		
📀 Configuration		Reserved_1	Reserved_1		\bigcirc	0			
Activity		Reserved_2	Reserved_2		\bigcirc	\bigcirc			
C Tools		Reserved_3	Reserved_3		\bigcirc	0			
		Reserved_4	Reserved_4		\bigcirc	\bigcirc			
Device detail		Reserved_5	Reserved_5		0	0			
Configuration copy		Temperature T1	Probe T1		\bigcirc	\bigcirc			
		Temperature T2	Probe T2		\bigcirc	0			
		Temperature T3	Probe T3		\bigcirc	\bigcirc			
		Temperature T4	Probe T4	\bigcirc	\bigcirc	0	\bigcirc		
		Trapped personal status	DI2_status	0	\bigcirc	\bigcirc	\bigcirc		
		Wrong configuration: 0= no error; 1000+= common parameters; 2000+= CHs; 3000+= DOuts	Configuration error		\bigcirc	0			
		pCO_type	pCO_type		\bigcirc	\bigcirc			
Temperature T1		Pro	be T1	0 (\bigcirc	\bigcirc	\bigcirc		
Temperature T2		Prol	be T2	(О	\bigcirc	\bigcirc		
Temperature T3		Prol	be T3	0 (0	\bigcirc	\bigcirc		
Temperature T4		Probe T4							

3.5 Configuration example: analog signal 0-10V

Configuration of one analog input Y1 used for 0-10V.

1. Click on the io module to enter the device page.

2. Enter "Parameter" and select "All parameters" in categories, search for "Enable" in the search bar.

3. Disable the analog inputs T1-T4. Enable Y1. Confirm by pressing

🧭 Set

In this example analog input Y1 will be used.

E ← •b055 mini		Devices	/ device detail					🗘 Refi	resh 🧭 Set 📄	Copy 🎝 S	ave ≫D Load றீற் B	roadcast
2023/08/16 13:13	- Main	🔸 Parameter	rs ∐ ⊇ Variables	🜲 Alarms	- Trend	🕼 Notes						
Plant	Devices IC)M_P+E_modbu	s v0.4 - 1		~ <	>		c	enable	Category	All parameters	~
Devices	Value		New		U.M.		Short desc			escription		A
Мар	DI Status			~			DI1 alarm enable	DI1 alarm enable				0
Secondary map	DI Status			~			DI2 alarm enable	DI2 alarm enable				0
Alarm/Event	DI Status			~			DI3 alarm enable	DI3 alarm enable				0
	DI Status			~			DI4 alarm enable	DI4 alarm enable				0
Activity	enabled			~			Y1_enable	Y1_enable				0
Tools	enabled			~			Y2_enable	Y2_enable				0
Device configuration	enabled			~			T1_enable	T1_enable				0
	enabled			~			T2_enable	T2_enable				0
	enabled			~			T3_enable	T3_enable				0
	enabled			~			T4_enable	T4_enable				0
	NO (keep sta	itus)		~			Enable safe mode	Safe mode enabling digital out	put 1			0
	NO (keep sta	itus)		~			Enable safe mode	Safe mode enabling digital out	out 2			0
	NO (keep sta	itus)		~			Enable safe mode	Safe mode enabling digital outp	out 3			0
	NO (keep sta	itus)		~			Enable safe mode	Safe mode enabling digital out	out 4			0 -

4. Select "Configuration entreé Y1" in the category menu.

5. Configured the parameters below and confirm by pressing



- Type (A probe) Type of analog input (0.5-4.5V, 4-20mA, 0-10V)
- Scale min range value Minimum value for the analog input
- Scale max range value Maximum value for the analog input

- 00000		Devices / device detail					v keiresi v set i copy vij:	lave .
202	23/08/21 09:21	+¦ Main 🔧 Paramete	ers 📃 Variables 🌲 Alarms 🔐 Trend	T Notes				
Plant		Devices IOM_P+E_modb	us v0.4 - 1	~ < >			Q Category Configuration entrée Y1	~
Devices		Value	New	U.M.	Short desc		Description	
Map		DISABLED	v		Y1_enable	Y1_enable		0
Secondary map		8	v		Type (A probe)	Type of Y1		0
Alarm/Event		39.1			Scale - min range value	Active probe minimun Y1		0
Report		30.0			Scale - max range value	Active probe maximum Y1		0
Configuration		34.8			Y1-adj	Y1 probe calibration	• • • • • • • • • • • • • • • • • • •	0
Activity		7			Samples for filtering	N* of samples for filtering Y1		0
Addianz		11.0			Update Threshold	Minimum variation of Y1 to update i	its value to master	0
Add-ons								



7. The value of analog input can be found in the main page of the io.module. Compare it to the actual value of the external signal.

≡ ← •boss	Devices / device detail							Ø Refresh	🕑 Set 🔒 Alarms 🎯 🕺 💄
2023/08/21 09:25	- Main A Parameters] 🗏 Variables 🔺 Alarms	אַ Trend דון Notes						
Plant Plant	Devices IOM_P+E_modbus	/0.4 - 1	~	< >				A DECISION OF THE OWNER OWNER OF THE OWNER	
Devices		Temperature T1	39.0°C/*F		anna i Jar			The	and the second second
Мар	-	Temperature T2 Temperature T3	28.0°C/°F 30.0°C/°F					1	Start L
Secondary map	A Reaction	Temperature T4	30.0°C/*F					-	1 1
Alarm/Event							· /	1/2	Aller Ist
Report				1					
📀 Configuration	Active alarms								
activity	Priority	Date Time			Description			Ack	Cancel actions
Tools		2023/08/21 09:23:02	Y1_probe_alarm				<u>ا</u> بر		
G Add-ons	DI1_status		DI2_status			DI3_status		DI4_status	
	ON Relay 1		ON Relay 2			Offer Relay 3		OFF Relay 4	
	ON Relay 5		ON Relay 6						
Device configuration	▼ Read-only variables								
Report configuration	Value	s	Short desc			De	scription		
Commiss. report	15.0		Sensor Y1	Active probe Y1					
Device Events	20.0	3	Sensor Y2	Active probe Y2					
	•	safe	mode warning	OUT: safe status act	vated				

Complete alarm table in Boss supervisory system.

Alarm Code	Description	Solution /	Reset type
config_alarm	Configuration parameters error	See technical leaflet code, 100v 2xxv and 3xxv	AUTO
ALL_Gr1	Alarm group 1	Temperature sensor, analog signal, digital input connected with alarm group	AUTO
ALL_Gr2	Alarm group 2	Temperature sensor, analog signal, digital input connected with alarm group 2	AUTO
ALL_Gr3	Alarm group 3	Temperature sensor, analog signal, digital input connected with alarm group 3	AUTO
ALL_Gr4	Alarm group 4	Temperature sensor, analog signal, digital input connected with alarm group 4	AUTO
ALL_Gr5	Alarm group 5	Temperature sensor, analog signal, digital input connected with alarm group 5	AUTO
ALL_Gr6	Alarm group 6	Temperature sensor, analog signal, digital input connected with alarm group 6	AUTO
T1_HI_alm	Temperature sensor 1 high temperature alarm	Parameter T1_HI_set	AUTO
T2_HI_alm	Temperature sensor 2 high temperature alarm	Parameter T2_HI_set	AUTO
T3_HI_alm	Temperature sensor 3 high temperature alarm	Parameter T3_HI_set	AUTO
T4_HI_alm	Temperature sensor 4 high temperature alarm	Parameter T4_HI_set	AUTO
T1_LO_alm	Temperature sensor 1 low temperature alarm	Parameter T1_LO_set	AUTO
T2_LO_alm	Temperature sensor 2 low temperature alarm	Parameter T2_LO_set	AUTO
T3_LO_alm	Temperature sensor 3 low temperature alarm	Parameter T3_LO_set	AUTO
T4_LO_alm	Temperature sensor 4 low temperature alarm	Parameter T4_LO_set	AUTO
Y1_HI_alm	Analog signal Y1 high alarm	Parameter Y1_HI_set	AUTO
Y2_HI_alm	Analog signal Y2 high alarm	Parameter Y2_HI_set	AUTO
Y1_LO_alm	Analog signal Y1 low alarm	Parameter Y1_LO_set	AUTO
Y2_LO_alm	Analog signal Y2 low alarm	Parameter Y1_LO_set	AUTO
T1_probe_alarm	Temperature sensor 1 probe error	Temperature sensor 1 out of range, wrong wiring, broken.	AUTO
T2_probe_alarm	Temperature sensor 2 probe error	Temperature sensor 2 out of range, wrong wiring, broken.	AUTO
T3_probe_alarm	Temperature sensor 3 probe error	Temperature sensor 3 out of range, wrong wiring, broken.	AUTO
T4_probe_alarm	Temperature sensor 4 probe error	Temperature sensor 4 out of range, wrong wiring, broken.	AUTO
Y1_probe_alarm	Analog signal Y1 probe error	Y1 signal out of range, wrong wiring, broken. Parameter Scale, min/max range value,	AUTO
Y2_probe_alarm	Analog signal Y2 probe error	Y2 signal 1 out of range, wrong wiring, broken. Parameter Scale, min/max range value	AUTO
DI1_alarm	Digital input 1 alarm	Digital input 1 alarm	AUTO
DI2_alarm	Digital input 2 alarm	Digital input 2 alarm	AUTO
DI3_alarm	Digital input 3 alarm	Digital input 3 alarm	AUTO
DI4_alarm	Digital input 4 alarm	10s	AUTO
OFFLINE	io.module OFFLINE	10s	AUTO



4. NOTE

4.1 Software release notes

SW release	Manual release	Modification description



ENG

CAREL reserves the right to modify or change its products without prior warning.

All trademarks hereby referenced are the property of their respective owners. CAREL is a registered trademark of CAREL INDUSTRIES Hqs in Italy and/or other countries.

© CAREL INDUSTRIES Hqs 2021 all rights reserved



CAREL Nordic AB Florettgatan 12A, 254 67 Helsingborg (Sweden) Phone (+46) 42 450 66 90 <u>http://www.carel.com</u> - e-mail: <u>cst.nordic@carel.com</u>



NOSTDmDLSN - rel 1.0 - 22/10/2021