ir33 platform

conexiones / *connections*

ir33
ir33 power
ir33 DIN
powercompact
powercompact small
mastercella

ES Manual del usuario

GB User manual

LEGGI E CONSERVA QUESTE ISTRUZIONI
READ AND SAVE THESE INSTRUCTIONS

Technology & Evolution

User manual

ENGLISH

We wish to save you time and money!
We can assure you that the thorough reading of this manual will guarantee correct installation and safe use of the product described.

IMPORTANT WARNINGS

CAREL bases the development of its products on decades of experience in HVAC, 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:

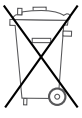
- Prevent the electronic circuits from getting wet. Rain, humidity and all types of liquids or condensate contain corrosive minerals that may damage the electronic circuits. In any case, the product should be used or stored in environments that comply with the temperature and humidity limits specified 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 www.carel.com 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.



Disposing of the parts of the controller:
The controller is made up of metal and plastic parts and a lithium battery. All these parts must be disposed of separately in compliance with the local standards in force on waste disposal.

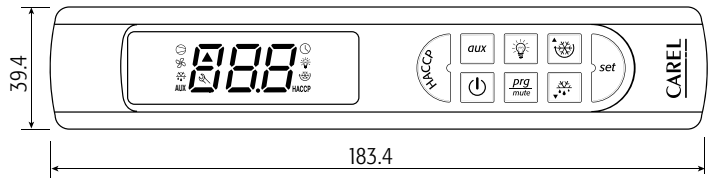
Contents

1. POWERCOMPACT

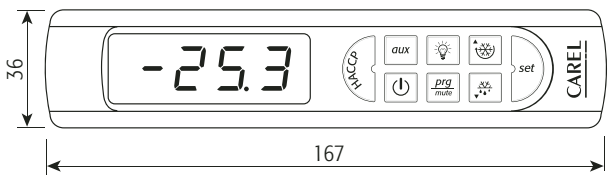
1.1 Dimensions

Appearance and ergonomics:
The appearance has been designed to fit in harmoniously with the new lines of the refrigeration units.
The main characteristic is its compactness: the dimensions are in fact 167x 36 x75 mm in the standard version.

POWER COMPACT WIDE



POWER COMPACT STANDARD



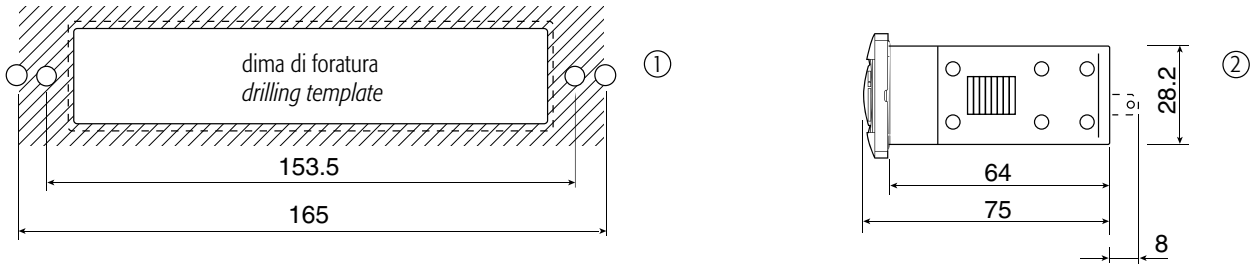


Fig. 1.a

Key:
1. drilling template 138.5 x 29 mm;
2. faston (spade) version + 8 mm

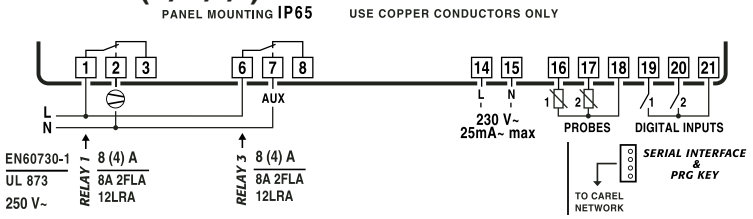
1.2 Electrical specifications

Power supply		**voltage**	**power**
	model E:	230 V~ 50/60 Hz; 230 V~ 50/60 Hz, 16 A, 8 A, 8 A version;	3 VA, 25 mA~ max 3 VA, 25 mA~ max
	model A:	115 V~ 50/60 Hz; 115 V~ 50/60 Hz, 16 A, 8 A, 8 A version;	3 VA, 50 mA~ max 3 VA, 50 mA~ max
	model H:	115-230 Vac 50/60Hz	6 VA, 50mA~ max
	model 0:	12 V~ , 50/60Hz 12 Vdc, 12-18Vdc	4 VA, 300 mA~ max TRADR4W012 transformer, 315 mA slow-blow fuse in secondary, only use SELV power supply
Insulation guaranteed by the power supply		**voltage**	**power**
	model E, A, H:	insulation from very low voltage parts insulation from relay outputs	reinforced.; 6 mm air, 8 mm surface; 3750 V insulation basic; 3 mm air, 4 mm surface; 1250 V insulation
	model 0:	insulation from very low voltage parts insulation from relay outputs	to be guaranteed externally by safety transformer basic; 3 mm air, 4 mm surface; 1250 V insulation
Inputs	S1	NTC or PTC, depending on the model	
	S2	NTC or PTC, depending on the model	
	DI1 S3	voltage-free contact, contact resistance < 10 ohm, closing current 6 mA NTC or PTC, depending on the model	
	DI2 S4	voltage-free contact, contact resistance < 10 ohm, closing current 6 mA NTC or PTC, depending on the model	
	Maximum distance between probes and digital inputs less than 10 m **Note:** in the installation, keep the power supply and load connections separate from the probe, digital inputs, repeater display and supervisor cables.		
Type of probe	Std. Carel NTC	10 kΩ at 25 °C, range –50T90 °C measurement error: 1 °C in the range –50T50 °C 3 °C in the range +50T90 °C	
	High temperature NTC	50 kΩ at 25 °C, range –40T150 °C measurement error: 1.5 °C in the range –20T115 °C 4 °C in the range outside of -20T115 °C	
	Std. Carel PTC (specific model)	985 Ω at 25°C, range -50T150 °C measurement error: 2 °C in the range –50T50 °C 4 °C in the range +50T150 °C	

Relay outputs	depending on the model			
	5 A (*)	EN60730-1:	250 V~ 5 (1) A;	100,000 operating cycles
		UL 873:	250 V~ 5A res 1FLA 6LRA C300;	30,000 operating cycles
	8 A (*)	EN60730-1:	250 V~ 8 (4) on N.O., 6 (4) on N.C., 2 (2) on N.O. and N.C.;	100,000 operating cycles
		UL 873:	250 V~ 8A res 2FLA 12LRA C300;	30,000 operating cycles
	16 A (*)	EN60730-1:	250 V~ 10 (4) A up to 60°C on N.O., 12 (2) A on N.O. and N.C.;	100,000 operating cycles
		UL 873:	250 V~ 12A res 5FLA 30LRA C300;	30,000 operating cycles
	2HP	EN60730-1:	250 V~ 10 (10) A;	100,000 operating cycles
		UL 873:	250 V~ 12A res 12FLA 72LRA;	30,000 operating cycles
	(*): Relay not suitable for fluorescent loads (neon lights, ...) that use starters (ballasts) with phase-shift capacitors. Fluorescent lamps with electronic control devices or without phase-shift capacitors can be used, within the operating limits specified for each type of relay.			
	insulation from very low voltage parts		reinforced; 6 mm air, 8 mm surface; 3750 V insulation	
	insulation between the relay outputs		basic; 3 mm air, 4 mm surface; 1250 V insulation	
Connections	**Type of connection**		**Cross-sections**	**Maximum current**
	fixed screw plug-in for screw blocks spade with crimped contact		for cables from 0.5 to 2.5 mm²	12A
	The correct sizing of the power and connection cables between the instrument and the loads is the responsibility of the installer. In the max load and max operating temp. conditions, the cables used must be suitable for operation up to 105°C.			
Case	plastic: dimensions 36x167x75 mm; mounting depth 64 mm			
Assembly	smooth, hard and indeformable panel: using screws from the front			
	drilling template: dimensions 29x138.5 mm; distance between fastening screws 153.5mm			
	fastening screws: countersunk head with maximum thread diameter 3.9mm			
Wide vers. case (power supply E, A, H, O)	plastic		dimensions: 39.4x183x75 mounting depth 63 mm	
Assembly	smooth, hard and indeformable panel		using screws from the front or brackets	
(power supply E, A, H, O) Wide versions	drilling template		dimensions: from 138.5x29 to 150x31 distance between fastening screws: 165 mm or 153.5	
Display	digits: 3 digit LED			
	display: from -99 to 999			
	operating status: indicated with graphic icons on the display			
Keypad	8 silicone rubber buttons			
Infrared receiver	available depending on the model			
Clock with backup battery	available depending on the model			
Buzzer	available in all models			
Fastening screws	countersunk with maximum thread diameter 3.9 mm for 165 mm spacing; for 153 spacing, flat head with maximum thread diameter 3 mm			
Clock	Error at 25 °C:		± 10 ppm (±5.3 min/year)	
	Error in the temperature range -10T60 °C:		- 50ppm (-27min/year)	
	Ageing:		< ±5p pm (±2.7 min/year)	
	Discharge time:		typically 6 months (8 months maximum)	
	Recharge time:		typically 5 hours (< 8 hours maximum)	
Operating conditions	-10T65 °C; <90% relative humidity non-condensing			
Storage conditions	-20T70 °C; <90% relative humidity non-condensing			
Front panel index of protection	assembly on smooth and indeformable panel with IP65 gasket			
Environmental pollution	2, normal situation			
PTI of insulating materials	printed circuits 250, plastic and insulating materials 175			
Period of stress across the insulating parts	long			
Category of resistance to fire	category D and category B (UL 94-V0)			
Class of protection against voltage surges	category II			
Type of action and disconnection	1B relay contacts (micro-disconnection)			
Construction of the control device	electronic control device incorporated			
Classification according to protection against electric shock	class II when appropriately integrated			
Device designed to he hand-held or integrated into equipment designed to be hand-held	no			
Software class and structure	class A			
Cleaning the front panel of the instrument	only use neutral detergents and water			
Serial interface for CAREL network	External, available in all models			
Interface for repeater display	External, available in models with H and 0 power supplies			
Maximum distance between interface and display	10 m			
Programming key	Available in all models			
	fastening screws		countersunk head with maximum thread diameter 3.9 mm for 165 mm spacing flat head for 153 mm spacing, maximum thread diameter 3 mm	

1.3 Electrical connections

PB00S*E(N,R,C,B)*0
PB00S*E(A,M,L,T)*0



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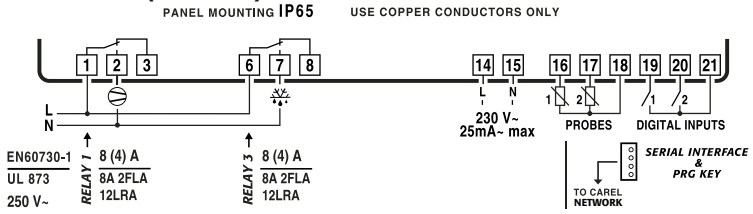

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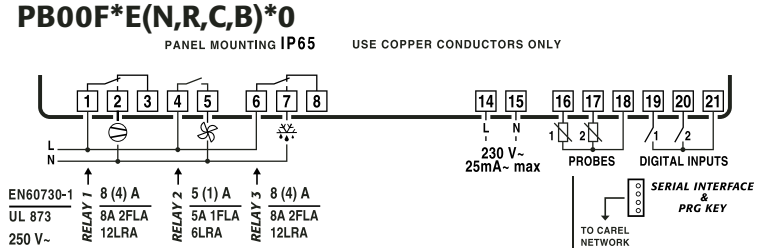

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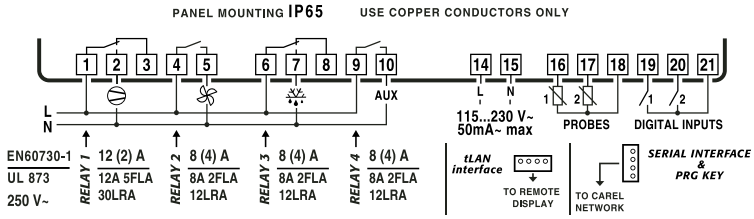

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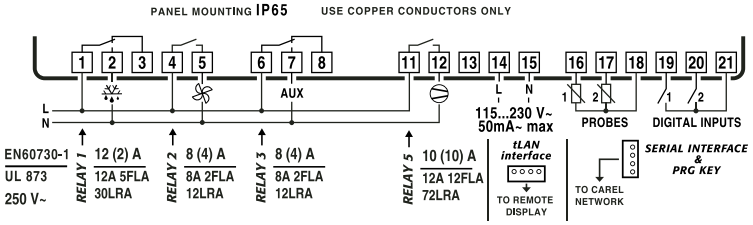

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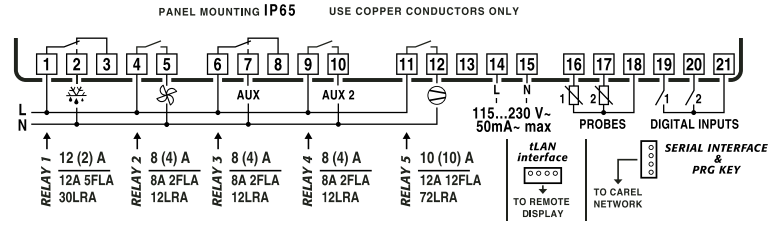
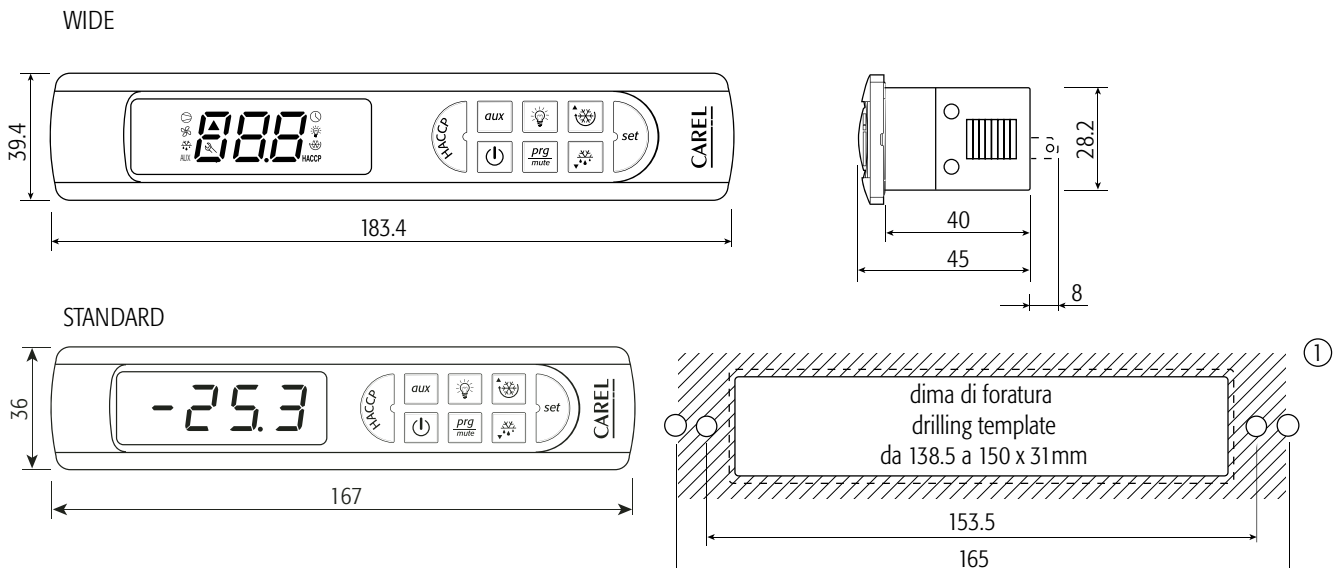


Fig. 1.b

2. POWERCOMPACT SMALL

2.1 Dimensions

Appearance and ergonomics:



Key:

1. drilling template	standard models 138.5 x 29 mm.
	wide models from 138,5 x 29 mm to 150x31 mm

Fig. 2.a

2.2 Electrical specifications

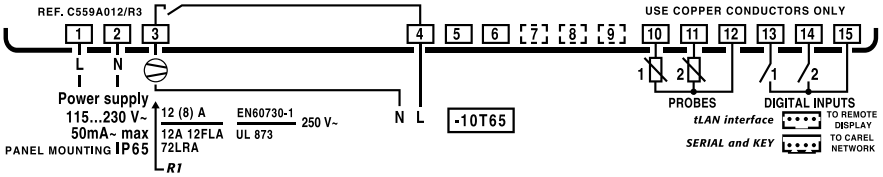
		voltage		**power**
Power supply	**model S:**	115 - 230 V~ 50/60 Hz;		6 VA, 50 mA~ max
Insulation guaranteed by the power supply	insulation from very low voltage parts			reinforced; 6 mm air, 8 mm surface; 3750 V insulation
	insulation from relay outputs			basic; 3 mm air, 4 mm surface; 1250 V insulation
Inputs	S1	NTC or PTC, depending on the model		
	S2	NTC or PTC, depending on the model		
	DI1 S3	voltage-free contact, contact resistance < 10 ohm, closing current 6 mA NTC or PTC, depending on the model		
	DI2 S4	voltage-free contact, contact resistance < 10 ohm, closing current 6 mA NTC or PTC, depending on the model		
	Maximum distance between probes and digital inputs less than 10 m. Note: in the installation, keep the power supply and load connections separate from the probe, digital inputs, repeater display and supervisor cables.			
Type of probe	Std. Carel NTC	10 kΩ at 25 °C, range –50 to 90 °C measurement error: 1 °C in the range –50 to 50 °C 3 °C in the range +50 to 90 °C		
	High temperature NTC	50 kΩ at 25 °C, range –40 to 150 °C measurement error: 1.5 °C in the range –20 to 115 °C 4 °C in the range outside of -20 to 115 °C		
	Std. Carel PTC (specific model)	985 Ω at 25°C, range -50 to 150 °C measurement error: 2 °C in the range –50 to 50 °C 4 °C in the range +50 to 150 °C		
Relay outputs	depending on the model			
	5 A	EN60730-1: UL 873:	250 V~ 5 (1) A; 250 V~ 5A res 1FLA 6LRA C300;	100,000 operating cycles 30,000 operating cycles
	8 A	EN60730-1: UL 873:	250 V~ 8 (4) on N.O., 6 (4) on N.C., 2 (2) on N.O. and N.C.; 250 V~ 8A res 2FLA 12LRA C300;	100,000 operating cycles 30,000 operating cycles
	30 A	EN60730-1: UL 873:	250 V~ 12 (10) A; 250 V~ 12A res 2HP 72LRA;	100,000 operating cycles 30,000 operating cycles
	Relay not suitable for fluorescent loads (neon lights, ...) that use starters (ballasts) with phase-shift capacitors. Fluorescent lamps with electronic control devices or without phase-shift capacitors can be used, within the operating limits specified for each type of relay.			
	insulation from very low voltage parts		reinforced; 6 mm air, 8 mm surface; 3750 V insulation	
	insulation between the relay outputs		basic; 3 mm air, 4 mm surface; 1250 V insulation	
Connections	**Type of connection** fixed screw plug-in for screw blocks fixed screw vertical spade with crimped contact		**Cross-sections** for cables from 0.5 to 2.5 mm^2	**Maximum current** 12A
	The correct sizing of the power and connection cables between the instrument and the loads is the responsibility of the installer. Maximum current at terminals 4 and 7 is 12A. In the max load and max operating temp. conditions, the cables used must be suitable for operation up to 105°C.			

Case	plastic: dimensions 36x167x51 mm; mounting depth 40 mm	
Assembly	smooth, hard and indeformable panel: using screws from the front	
	drilling template: dimensions 29x138.5 mm; distance between fastening screws 153.5 mm	
	fastening screws: countersunk head with maximum thread diameter 3.9 mm	
Wide vers. case (power supply S)	plastic	dimensions: 39.4x183x45 mounting depth 40 mm
Assembly	smooth, hard and indeformable panel	using screws from the front or brackets
(power supply S) Wide versions	drilling template	dimensions: from 138.5x29 to150x31 distance between fastening screws: 165 mm or 153.5
	fastening screws	countersunk head with maximum thread diameter 3.9 mm for 165 mm spacing flat head for 153 mm spacing, maximum thread diameter 3 mm
Display	digits: 3 digit LED	
	display: from -99 to 999	
	operating status: indicated with graphic icons on the display	
Keypad	8 silicone rubber buttons	
Infrared receiver	available depending on the model	
Clock with backup battery	available depending on the model	
Buzzer	available in all models	
Clock	Error at 25 °C:	± 10 ppm (±5.3 min/year)
	Error in the temperature range –10T60 °C:	- 50ppm (-27min/year)
	Ageing:	< ±5p pm (±2.7 min/year)
	Discharge time:	typically 6 months (8 months maximum)
	Recharge time:	typically 5 hours (< 8 hours maximum)
Operating conditions	-10T65 °C; <90% relative umidity non-condensing	
Storage conditions	-20T70 °C; <90% relative umidity non-condensing	
Front panel index of protection	assembly on smooth and indeformable panel with IP65 gasket	
Environmental pollution	2, normal situation	
PTI of insulating materials	printed circuits 250, plastic and insulating materials 175	
Period of stress across the insulating parts	long	
Category of resistance to fire	category D and category B (UL 94-V0)	
Class of protection against voltage surges	category II	
Type of action and disconnection	1B relay contacts (micro-disconnection)	
Construction of the control device	electronic control device incorporated	
Classification according to protection against electric shock	to be integrated into class I appliances	
Device designed to he hand-held or integrated into equipment designed to be hand-held	no	
Software class and structure	class A	
Cleaning the front panel of the instrument	only use neutral detergents and water	
Serial interface for CAREL network	External, available in all models	
Interface for repeater display	External, available in all models	
Maximum distance between interface and display	10 m	
Programming key	Available in all models	

Table 2.a

2.3 Electrical connections

PB00S*S(N,R,C,B)*0



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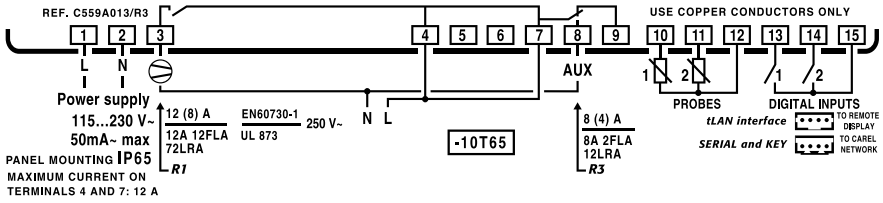

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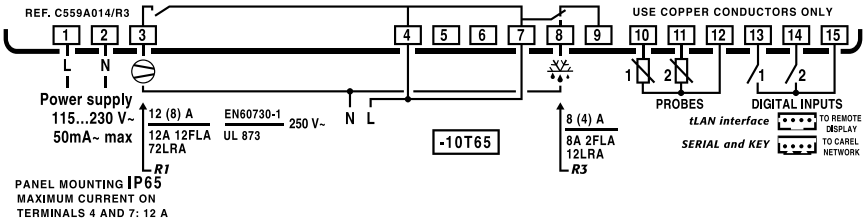

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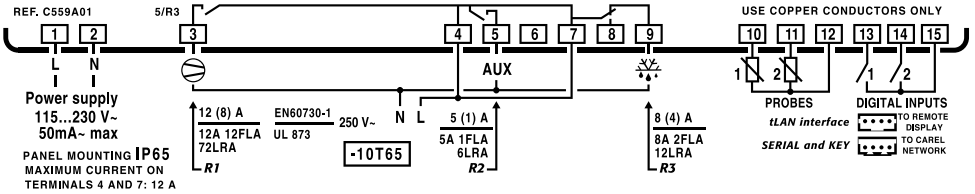

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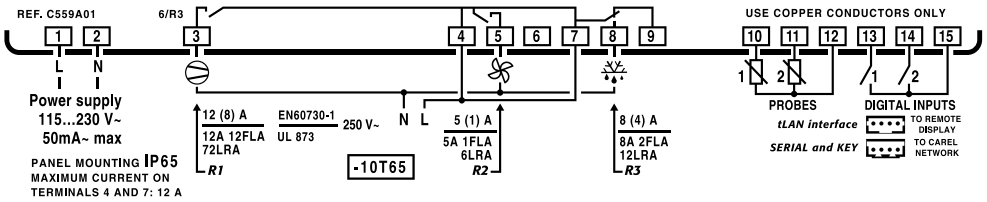

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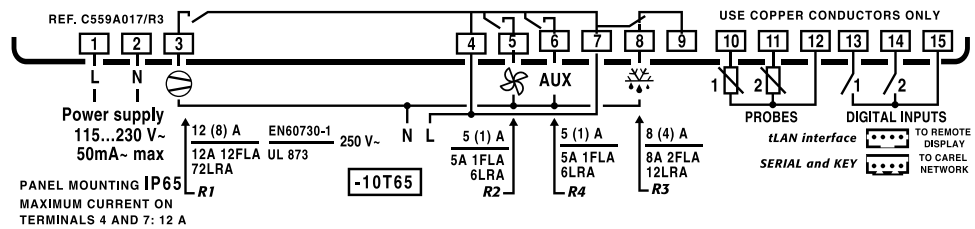


Fig. 2.b

3. MASTERCELLA 2

3.1 Dimensions

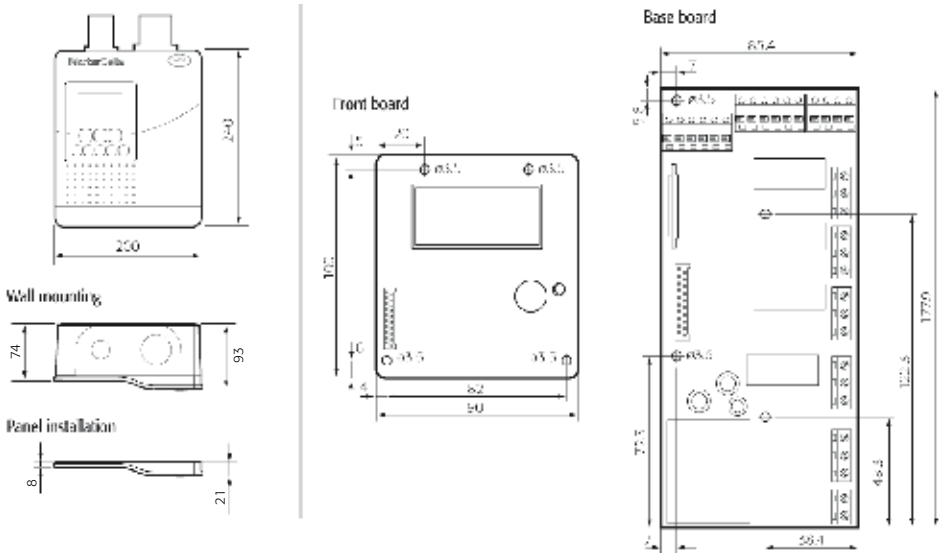


Fig. 3.a

3.2 Technical specifications

Power supply		**voltage**	**power**
	model E:	230 V~ 50/60 Hz;	11,3 VA, 50 mA~ max
	model A:	115 V~ 50/60 Hz;	11,3 VA, 100 mA~ max
Insulation guaranteed by the power supply		**voltage**	**power**
	model E, A:	insulation from very low voltage parts insulation from relay outputs	reinforced; 6 mm air, 8 mm surface; 3750 V insulation basic; 3 mm air, 4 mm surface; 1250 V insulation
Inputs	S1	NTC or PTC, depending on the model	
	S2	NTC or PTC, depending on the model	
	DI1 S3	voltage-free contact, contact resistance < 10 ohm, closing current 6 mA NTC or PTC, depending on the model	
	DI2 S4	voltage-free contact, contact resistance < 10 ohm, closing current 6 mA NTC or PTC, depending on the model	
	DI3 S5	voltage-free contact, contact resistance < 10 ohm, closing current 6 mA NTC or PTC, depending on the model	
	Maximum distance between probes and digital inputs less than 10 m. Note: in the installation, keep the power supply and load connections separate from the probe, digital inputs, repeater display and supervisor cables.		
Type of probe	Std. Carel NTC	10 kΩ at 25 °C, range -50 to 90 °C measurement error: 1 °C in the range -50 to 50 °C 3 °C in the range +50 to 90 °C	
	High temperature NTC	50 kΩ at 25 °C, range -40 to 150 °C measurement error: 1.5 °C in the range -20 to 115 °C 4 °C in the range outside of -20 to 115 °C	
	Std. Carel PTC (specific model)	985 Ω at 25°C, range -50 to 150 °C measurement error: 2 °C in the range -50 to 50 °C 4 °C in the range +50 to 150 °C	
Relay outputs	depending on the model		
	8 A (*)	EN60730-1: UL 873:	250 V~ 8 (4) on N.O., 6 (4) on N.C., 2 (2) on N.O. and N.C.; 100,000 operating cycles 250 V~ 8A res 2FLA 12LRA C300; 30,000 operating cycles
	16 A (*)	EN60730-1: UL 873:	250 V~ 10 (4) A up to 60°C on N.O., 12 (2) A on N.O. and N.C.;100,000 operating cycles 250 V~ 12A res 5FLA 30LRA C300; 30,000 operating cycles
	2HP	EN60730-1: UL 873:	250 V~ 10 (10) A; 100,000 operating cycles 250 V~ 12A res 12FLA 72LRA; 30,000 operating cycles
	30 A (*)	EN60730-1: UL 873:	250 V~ 12 (10) A; 100,000 operating cycles 250 V~ 12A res 2HP 72LRA; 30,000 operating cycles
	(*): relay not suitable for fluorescent loads (neon lights, ...) that use starters (ballasts) with phase-shift capacitors. Fluorescent lamps with electronic control devices or without phase-shift capacitors can be used, within the operating limits specified for each type of relay.		
	insulation from very low voltage parts	reinforced; 6 mm air, 8 mm surface; 3750 V insulation	
	insulation between the relay outputs	basic; 3 mm air, 4 mm surface; 1250 V insulation	
Connections	**Type of connection**	**Cross-sections**	**Maximum current**
	fixed screw plug-in for screw blocks spade with crimped contact	for cables from 0.5 to 2.5 mm²	12A
	wire cross-section for probes and digital inputs:		0.25 to 2.5 mm2 (from 20 to 13 AWG)
	wire cross-section per power supply and loads:		1.5 to 2.5 mm2 (from 15 to 13 AWG)
	The correct sizing of the power and connection cables between the instrument and the loads is the responsibility of the installer. In the max load and max operating temp. conditions, the cables used must be suitable for operation up to 105°C.		

Case	plastic: dimensions 200x240x93 mm; mounting depth 64 mm	
	open main board and front panel: base dimensions 178x86x40 mm; front panel dimensions 100x90x12 mm	
Assembly	wall mounting (with plastic case):	using fastening screws; spacing 162.5x218.5 mm
	panel installation (with plastic front panel):	using fastening screws; spacing 159.5x197.5 mm
	open board:	using fastening screws for main board and front panel
Display	digits: 3 digit LED	
	display: from -99 to 999	
	operating status: indicated with LEDs and graphic icons made in the polycarbonate label applied to the plastic case	
Keypad	8 mechanical buttons, keypad made in the polycarbonate label applied to the plastic case	
Infrared receiver	available depending on the model	
Clock with backup battery	available depending on the model	
Buzzer	available in all models	
Clock	Error at 25 °C:	± 10 ppm (±5.3 min/year)
	Error in the temperature range -10T60 °C:	- 50 ppm (-27min/year)
	Ageing:	< ± 5 ppm (±2.7 min/year)
	Discharge time:	typically 6 months (8 months maximum)
	Recharge time:	typically 5 hours (< 8 hours maximum)
Operating conditions	open board:	-10T65 °C; <90% RH non-condensing
	with plastic case: With the following current configurations: The currents indicated above will be reduced according to the relays used.	-10T50 °C; <90% RH non-condensing Relay 1 12 A, Relay 2 0 A, Relay 3 4 A, Relay 4 4 A, Relay 5 4 A Relay 1 0 A, Relay 2 12 A, Relay 3 4 A, Relay 4 4 A, Relay 5 4 A
Storage conditions	-20T70 °C; <90% RH non-condensing	
Front panel index of protection	with plastic case	IP65 without disconnecting switch
	panel installation with plastic front panel	IP54 with disconnecting switch
Environmental pollution	2, normal situation	
PTI of insulating materials	printed circuits 250, plastic and insulating materials 175	
Period of stress across the insulating parts	long	
Category of resistance to fire	category D and category B (UL 94-V0)	
Class of protection against voltage surges	category II	
Type of action and disconnection	1B relay contacts (micro-disconnection)	
Construction of the control device	electronic control device incorporated	
Classification according to protection against electric shock	class II when appropriately integrated	
Device designed to he hand-held or integrated into equipment designed to be hand-held	no	
Software class and structure	class A	
Cleaning the front panel of the instrument	only use neutral detergents and water	
Serial interface for CAREL network	Built-in, available in all models, upon request	
Interface for repeater display	Built-in, available in all models, upon request	
Maximum distance between interface and display	10 m	
Programming key	Available in all models	

Tab. 3.a

3.3 Electrical connections

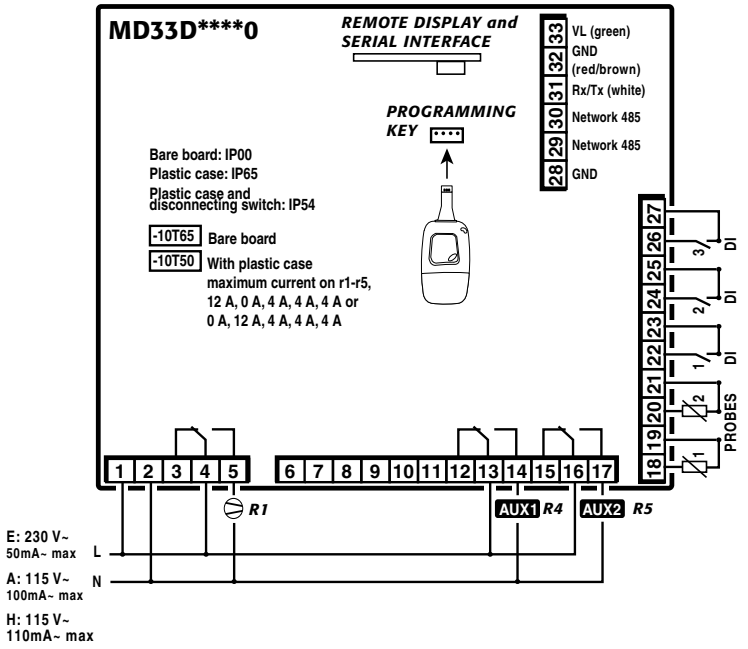


Fig. 3.b

			Relè 1	Relè 2	Relè 5
MD33A0***0	EN60730-1 UL 873	250 V	12(2) A 12A 5FLA 30LRA	8(2) A 8A 2FLA 30LRA	12(2) A 12A 5FLA 30LRA
MD33A1***0	EN60730-1 UL 873	250V	10(10) A 12A 12FLA 72LRA	8(4) A 8A 2FLA 12LRA	10(10) A 12A 12FLA 72LRA
MD33A2***0	EN60730-1 UL 873	250V	12(10) A 12A 12FLA 72LRA 2hp	8(4) A 8A 2FLA 12LRA	12(2) A 12A 5FLA 30LRA
MD33A3***0	EN60730-1 UL 873	250V	12(2) A 12A 5FLA 30LRA	8(4) A 8A 2FLA 12LRA	10(10) A 12A 12FLA 72LRA
MD33A4***0	EN60730-1 UL 873	250V	10(10) A 12A 12FLA 72LRA	8(4) A 8A 2FLA 12LRA	12(2) A 12A 5FLA 30LRA
MD33A5***0	EN60730-1 UL 873	250V	12(10) A 12A 12FLA 72LRA 2hp	8(4) A 8A 2FLA 12LRA	10(10) A 12A 12FLA 72LRA

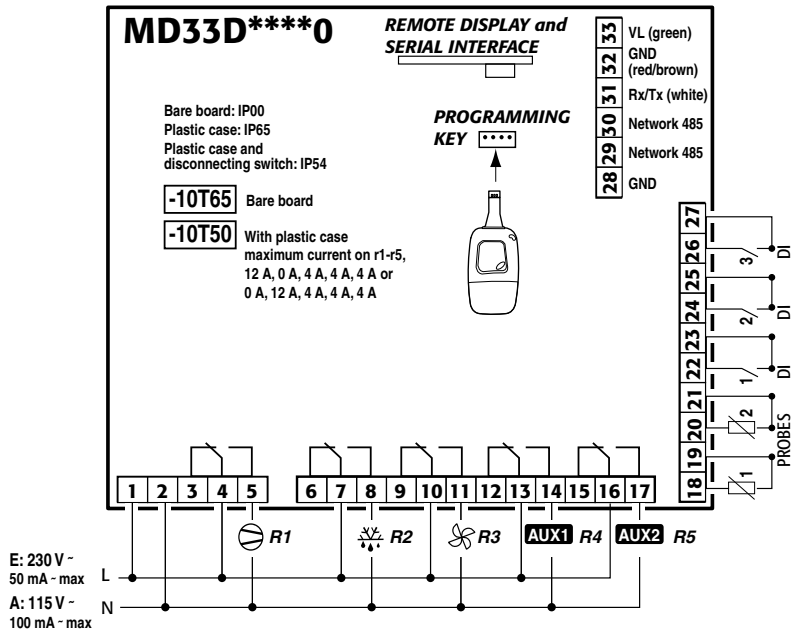


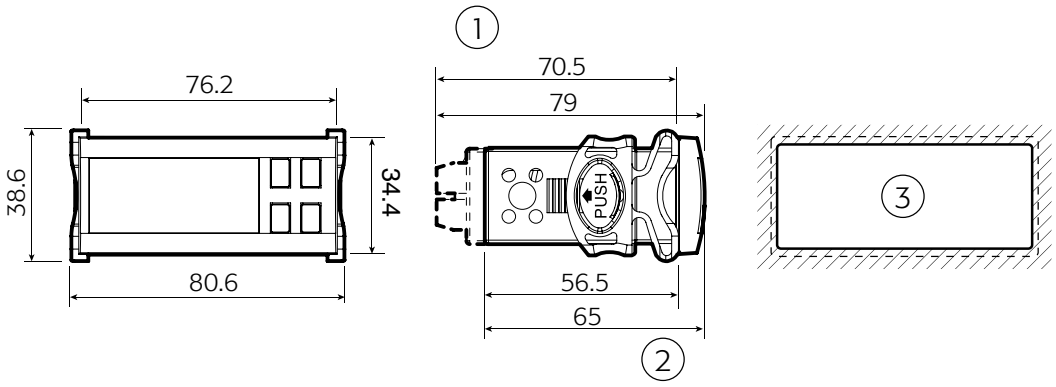
Fig. 3.c

			Relè 1	Relè 2	Relè 3	Relè 4	Relè 5
MD33D0***0	EN60730-1 UL 873	250 V	12(2) A 12A 5FLA 30LRA	12(2) A 12A 5FLA 30LRA	8(4)A 8A 2FLA 12LRA	8(4)A 8A 2FLA 12LRA	12(2) A 12A 5FLA 30LRA
MD33D1***0	EN60730-1 UL 873	250V	10(10) A 12A 12FLA 72LRA	8(4) A 8A 2FLA 12LRA	8(4)A 8A 2FLA 12LRA	8(4)A 8A 2FLA 12LRA	10(10) A 12A 12FLA 72LRA
MD33D2***0	EN60730-1 UL 873	250V	12(10) A 12A 12FLA 72LRA 2hp	8(4) A 8A 2FLA 12LRA	8(4)A 8A 2FLA 12LRA	8(4)A 8A 2FLA 12LRA	12(2) A 12A 5FLA 30LRA
MD33D3***0	EN60730-1 UL 873	250V	12(2) A 12A 5FLA 30LRA	8(4) A 8A 2FLA 12LRA	8(4)A 8A 2FLA 12LRA	8(4)A 8A 2FLA 12LRA	10(10) A 12A 12FLA 72LRA
MD33D4***0	EN60730-1 UL 873	250V	10(10) A 12A 12FLA 72LRA	8(4) A 8A 2FLA 12LRA	8(4)A 8A 2FLA 12LRA	8(4)A 8A 2FLA 12LRA	12(2) A 12A 5FLA 30LRA
MD33D5***0	EN60730-1 UL 873	250V	12(10) A 12A 12FLA 72LRA 2hp	8(4) A 8A 2FLA 12LRA	8(4)A 8A 2FLA 12LRA	8(4)A 8A 2FLA 12LRA	10(10) A 12A 12FLA 72LRA

4. IR33

4.1 Dimensions

Appearance and ergonomics:
The appearance has been designed to fit in harmoniously with the new lines of the refrigeration units.
The main characteristic is its compactness: the dimensions are in fact 34.4 x 76.2 x 65 mm, and 34.4 x 76.2 x 79 mm for the version with traditional transformer.
The drilling templates for both versions are 29 x 71 mm.



Key:
1. version O, L, H;
2. version E, A;
3. drilling template 71x29 mm

Fig. 4.a

4.2 Electrical specifications

		voltage	**power**
Power supply	**E:**	230 V~ 50/60 Hz;	3 VA, 25 mA~ max
	A:	115 V~ 50/60 Hz;	3 VA, 50 mA~ max
Insulation guaranteed by the power supply		**voltage**	**power**
	E, A:	insulation from very low voltage parts	reinforced; 6 mm air, 8 mm surface; 3750 V insulation
		insulation from relay outputs for model E, A, for I, L, M, N connections only	basic; 3 mm air, 4 mm surface; 1250 V insulation
		insulation from relay outputs for model E, A, for A, B, C, D, E, F, G, H connections only	basic; 3 mm air, 4 mm surface; 1250 V insulation
Inputs	S1	NTC or PTC, depending on the model	
	S2	NTC or PTC, depending on the model	
	DI1 S3	voltage-free contact, contact resistance < 10Ω, closing current 6 mA NTC or PTC depending on the model	
	DI2 S4	voltage-free contact, contact resistance < 10Ω, closing current 6 mA NTC or PTC depending on the model	
	Maximum distance between probes and digital inputs less than 10 m **Note:** in the installation, keep the power supply and load connections separate from the probe, digital inputs, repeater display and supervisor cables.		
Type of probe	Standard Carel NTC	10 kΩ at 25 °C, range -50T90 °C measurement error: 1 °C in the range -50T50 °C 3 °C in the range +50T90 °C	
	High temperature NTC	50 kΩ at 25 °C, range -40T150 °C measurement error: 1.5 °C in the range -20T115 °C 4 °C in the range outside of -20T115 °C	
	Standard Carel PTC (specific model)	985 Ω at 25°C, range -50T150 °C measurement error: 2 °C in the range -50T50 °C 4 °C in the range +50T150 °C	
Relay outputs	depending on the model		

		EN60730-1		UL 873	
modello	**relè**	**250V~**	**cicli di manovra**	**250V~**	**cicli di manovra**
IRxxxx(E,A)(P,Q,S,U,V,X,Y,Z)xxx	R2 (*)	5 (1) A	100000	5A res 1FLA 6LRA C300	30000
IRxxxx(E,A)(N,R,C,B,A,M,L,T)xxx	R3(*)	5 (1) A	100000	5A res 1FLA 6LRA C300	30000
IRxxxx(E,A)(N,R,C,B,A,M,L,T)xxx	R1,R2	8 (4) A su N.O.	100000	8A res 2FLA 12LRA C300	30000
IRxxxx(0,L,H)(N,R,C,B,A,M,L,T)xxx	R2,R3,R4	6 (4) A su N.C.			
IRxxxx(0,L,H)(H,I,E,F,G,K,O,W))xxx	R2,R3,R4(*)	2 (2) A su N.O. e N.C.			
IRxxxx(E,A)(P,Q,S,U,V,X,Y,Z)xxx	R1	12 (2) A su N.O. e N.C.	100000	12A res 5FLA 30LRA C300	30000
IRxxxx(0,L,H)(N,R,C,B,A,M,L,T)xxx0	R1(*)				
IRxxxx(0,L,H)(H,I,E,F,G,K,O,W))xxx	R1	10 (10) A	100000	12A res 12FLA 72LRA Toff minimum 60 seconds	30000

(*): relay not suitable for fluorescent loads (neon lights, ...) that use starters (ballasts) with phase-shift capacitors. Fluorescent lamps with electronic control devices or without phase-shift capacitors can be used, within the operating limits specified for each type of relay.

insulation from very low voltage parts reinforced; 6 mm air, 8 mm surface; 3750 V insulation
insulation between the relay outputs indipendent basic; 3 mm clearance, 4 mm creepage; 1250 V insulation

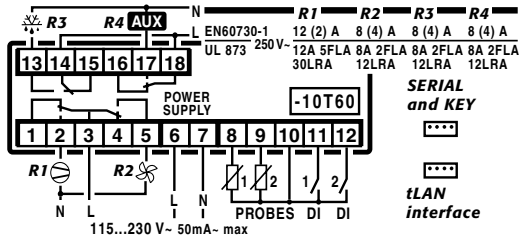
Connections	**Type of connection** fixed screw 16A fixed screw estraibili per blocchetti a vite	**Cross-sections** for cables from 0.5 to 4.2 mm^2 for cables from 0.5 to 2.5 mm^2	**Max current.** 16A 12A
	The correct sizing of the power and connection cables between the instrument and the loads is the responsibility of the installer. Depending on the model, the maximum current at the common terminals is 12A or 16A. In the max load and max operating temp. conditions, the cables used must be suitable for operation up to 105°C.		
Case	plastic: E, A dimensions 34.4x76.2x65 mm - mounting depth 56.5 mm O, L, H dimensions 34,4x76,2x79 mm - mounting depth 70,5 mm		
Assembly	smooth, hard and indeformable panel: side fastening brackets, to be pressed in fully		
	drilling template: dimensions 28.8 ± 0.2 x 70.8 ± 0.2 mm		
Display	digits: 3 digit LED		
	display: from -99 to 999		
	operating status: indicated with graphic icons on the display		
Keypad	4 silicone rubber buttons		
Infrared receiver	available depending on the model		
Clock with backup battery	available depending on the model		
Buzzer	available in all models		
Clock	error at 25 °C:	± 10 ppm (±5.3 min/year)	
	error in the temperature range -10T60 °C:	- 50 ppm (-27min/year)	
	ageing:	< ± 5 ppm (±2.7 min/year)	
	discharge time:	typically 6 months (8 months maximum)	
	recharge time:	typically 5 hours (< 8 hours maximum)	
Operating temperature	IRxxxx(E,A)(P,Q,S,U,V,X,Y,Z)xxx IRxxxx(E,A,0,L,H)(N,R,C,B,A,M,L,T)xxx IRxxxx(0,L)(H,I,E,F,G,K,O,W))xxx	-10T60 °C	
Operating humidity	<90% RH non-condensing		
Storage temperature	-20T70 °C		
Front panel index of protection	assembly on smooth and indeformable panel with IP65 gasket		
Environmental pollution	2, normal situation		
PTI of insulating materials	printed circuits 250, plastic and insulating materials 175		
Period of stress across the insulating parts	long		
Category of resistance to fire	category D and category B (UL 94-V0)		
Class of protection against voltage surges	category II		
Type of action and disconnection	1B relay contacts (micro-disconnection)		
Construction of the control device	electronic control device incorporated		
Classification according to protection against electric shock	class II when appropriately integrated		
Device designed to he hand-held or integrated into equipment designed to be hand-held	no		
Software class and structure	class A		
Cleaning the front panel of the instrument	only use neutral detergents and water		
Serial interface for CAREL network	External, available in all models		
Programming key	Available in all models		

Tab. 4.a

4.3 Electrical connections

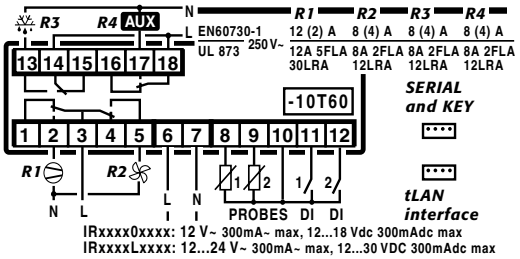
IRxxC(0,7) H (N,R,C,B) (0,2)xx

Maximum total current on terminal 3: 12 A



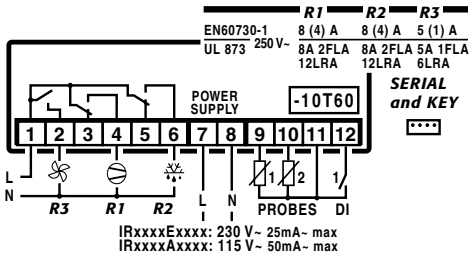
IRxxC(0,7) (0,L) (N,R,C,B) (0,2)xx

Maximum total current on terminal 3: 12 A



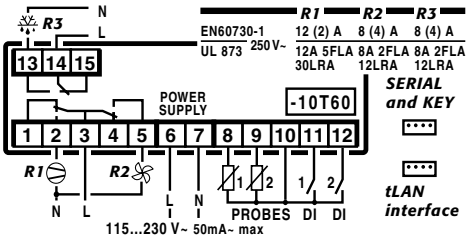
IRxxF(0,7) (E,A) (N,R,C,B) (0,1,2,3,5)xx

Maximum total current on terminal 1: 12 A



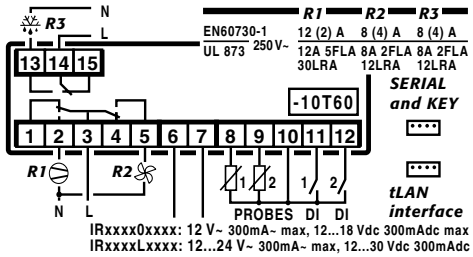
IRxxF(0,7) H (N,R,C,B) (0,2)xx

Maximum total current on terminal 3: 12 A

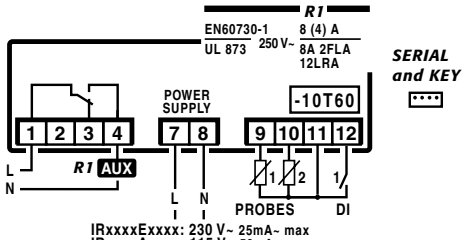


IRxxF(0,7) (0,L) (N,R,C,B) (0,2)xx

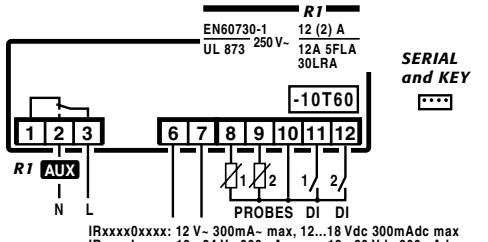
Maximum total current on terminal 3: 12 A



IRxxM(0,7) (E,A,0) (N,R,C,B) (0,1,2,3,5)xx (NO R1)
IRxxM(0,7) (E,A) (A,M,L,T) (0,1,2,3,5)xx

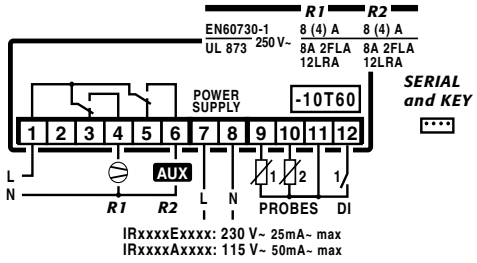


IRxxM(0,7) (L) (N,R,C,B) (0,2)xx (NO R1)
IRxxM(0,7) (0,L) (A,M,L,T) (0,2)xx



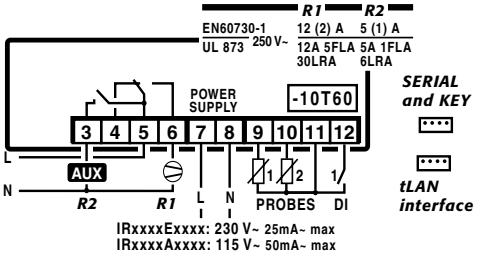
IRxxS(0,7) (E,A) (N,R,C,B) (0,1,2,3,5)xx (NO R2)
IRxxS(0,7) (E,A) (A,M,L,T) (0,1,2,3,5)xx

Maximum total current on terminal 1: 12 A



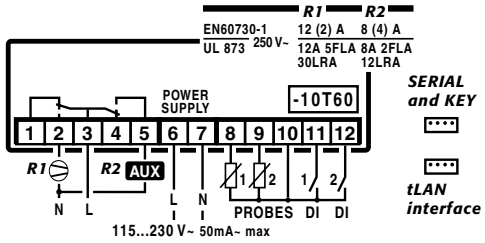
IRxxS(0,7) (E,A) (P,Q,S,U) (0,1,2,3,5)xx (NO R2)
IRxxS(0,7) (E,A) (V,X,Y,Z) (0,1,2,3,5)xx

Maximum total current on terminal 5: 12 A



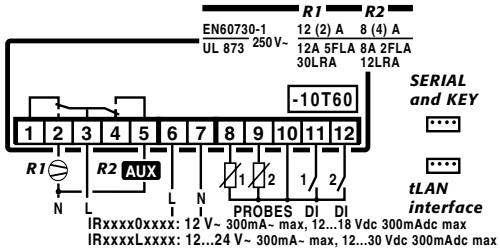
IRxxS(0,7) H (A,M,L,T) (0,2) xx

Maximum total current on terminal 3: 12 A



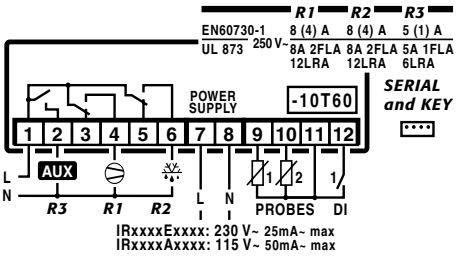
IRxxS(0,7) (0,L) (N,R,C,B) (0,2)xx (NO R3)
IRxxS(0,7) (0,L) (A,M,L,T) (0,2)xx

Maximum total current on terminal 3: 12 A



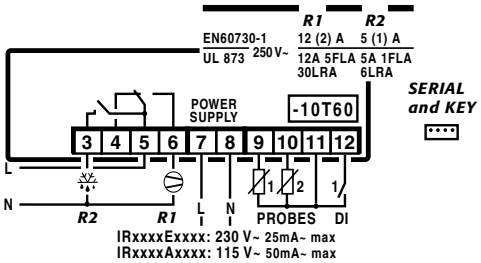
IRxxY(0,7) (E,A) (N,R,C,B) (0,1,2,3,5)xx (NO R3)
IRxxY(0,7) (E,A) (A,M,L,T) (0,1,2,3,5)xx

Maximum total current on terminal 1: 12 A



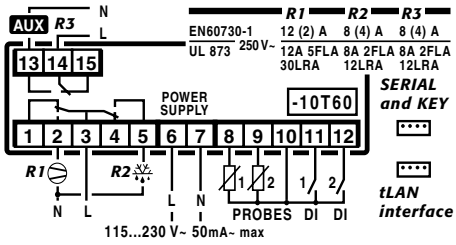
IRxxY(0,7) (E,A) (P,Q,S,U) (0,1,2,3,5)xx

Maximum total current on terminal 5: 12 A



IRxxY(0,7) H (N,R,C,B) (0,2)xx (NO R3)
IRxxY(0,7) H (A,M,L,T) (0,2)xx

Maximum total current on terminal 3: 12 A



IRxxY(0,7) (0,L) (N,R,C,B) (0,2)xx (NO R3)
IRxxY(0,7) (0,L) (A,M,L,T) (0,2)xx

Maximum total current on terminal 3: 12 A

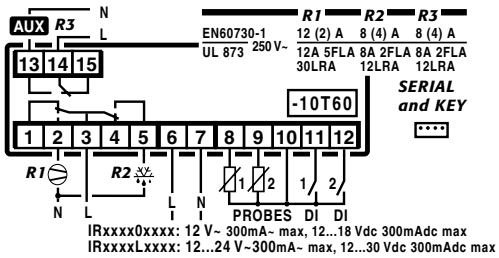


Fig. 4.b

5. IR33POWER

5.1 Dimensions

See "Dimensions" for the chapter on the ir33.

5.2 Electrical specifications

		voltage	**power**
Power supply	**model E:**	230 V~ 50/60 Hz;	3 VA, 25 mA~ max
	model A:	115 V~ 50/60 Hz;	3 VA, 50 mA~ max
Insulation guaranteed by the power supply		**voltage**	**power**
	model E, A, H:	insulation from very low voltage parts: insulation from relay outputs for model E, A for I, L, M, N connections only: insulation from relay outputs with model E, A for A, B, C, D connections only:	reinforced; 6 mm air, 8 mm surface; 3750 V insulation basic; 3 mm air, 4 mm surface; 1250 V insulation Do not insulate from the power supply as one phase is taken from the relay common
Inputs	S1	NTC or PTC, depending on the model	
	S2	NTC or PTC, depending on the model	
	DI1 S3	voltage-free contact, contact resistance < 10 ohm, closing current 6 mA NTC or PTC, depending on the model	
	DI2 S4	voltage-free contact, contact resistance < 10 ohm, closing current 6 mA NTC or PTC, depending on the model	
	Maximum distance between probes and digital inputs less than 10 m. Note: in the installation, keep the power supply and load connections separate from the probe, digital inputs, repeater display and supervisor cables.		
Type of probe	NTC std. Carel	10 kΩ at 25 °C, range –50 to 90 °C measurement error: 1 °C in the range –50 to 50 °C 3 °C in the range +50 to 90 °C	
	High temperature NTC	50 kΩ at 25 °C, range –40 to 150 °C measurement error: 1.5 °C in the range –20 to 115 °C	4 °C C in the range outside of -20 to 115 °C
	Std. Carel PTC (specific model)	985 Ω at 25°C, range -50 to 150 °C measurement error: 2 °C in the range –50 to 50 °C	4 °C in the range +50 to 150 °C
Relay outputs	depending on the model		
	R3	EN60730-1: 250 V~ 5(1) A; UL 873: 250 V~ 1A res 1FLA 6LRA C300;	100,000 operating cycles 30,000 operating cycles
	R2	EN60730-1: 250 V~ 8(4) A on N.O., 6(4) A on N.C., 2(2) A on N.O. and N.C.; UL 873: 250 V~ 12A res 5FLA 30LRA C300;	100,000 operating cycles 30000 operating cycles
	R1	EN60730-1: 250 V~ 10 (10) A; UL 873: 250 V~ 12A res 12HP 72LRA;	100,000 operating cycles 30,000 operating cycles
	(*): relay not suitable for fluorescent loads (neon lights, ...) that use starters (ballasts) with phase-shift capacitors. Fluorescent lamps with electronic control devices or without phase-shift capacitors can be used, within the operating limits specified for each type of relay.		
	insulation from very low voltage parts	reinforced; 6 mm air, 8 mm surface; 3750 V insulation	
	insulation between the relay outputs independent	basic; 3 mm air, 4 mm surface; 1250 V insulation	
Connections	**Type of connection**	**Cross-sections**	**Maximum current**
	fixed screw 16A	for cables from 0.5 to 4.5 mm²	16 A
	fixed screw	for cables from 0.5 to 2.5 mm²	12 A
	plug-in for screw blocks	for cables from 0.5 to 2.5 mm²	12 A
	The correct sizing of the power and connection cables between the instrument and the loads is the responsibility of the installer. Depending on the model the maximum current at the common terminals is 12A or 16A. In the max load and max operating temp. conditions, the cables used must be suitable for operation up to 105°C.		
Case	plastic = O, L, H dimensions: 34.4x76.2x79 mm,	mounting depth: 70.5 mm	
Assembly	smooth, hard and indeformable panel: side fastening brackets, to be pressed in fully		
	drilling template: dimensions 28.8±0.2 x 70.8±0.2 mm		
Display	digits: 3 digit LED		
	display: from -99 to 999		
	operating status: indicated with graphic icons on the display		
Keypad	4 silicone rubber buttons		
Infrared receiver	available depending on the model		
Clock with backup battery	available depending on the model		
Buzzer	available in all models		

Clock	Error at 25 °C:	± 10 ppm (±5.3 min/year)
	Error in the temperature range -10T60 °C:	- 50 ppm (-27min/year)
	Ageing:	< ± 5 ppm (±2.7 min/year)
	Discharge time:	typically 6 months (8 months maximum)
	Recharge time:	typically 5 hours (< 8 hours maximum)
Operating conditions	-10T60 °C; <90% RH non-condensing	
Storage conditions	-20T70 °C; <90% RH non-condensing	
Front panel index of protection	assembly on smooth and indeformable panel with IP65 gasket	
Environmental pollution	2, normal situation	
PTI of insulating materials	printed circuits 250, plastic and insulating materials 175	
Period of stress across the insulating parts	long	
Category of resistance to fire	category D and category B (UL 94-V0)	
Class of protection against voltage surges	category II	
Type of action and disconnection	1B relay contacts (micro-disconnection)	
Construction of the control device	electronic control device incorporated	
Classification according to protection against electric shock	class II when appropriately integrated	
Device designed to he hand-held or integrated into equipment designed to be hand-held	no	
Software class and structure	class A	
Cleaning the front panel of the instrument	only use neutral detergents and water	
Serial interface for CAREL network	External, available in all models	
Interface for repeater display	External, available in models with power supplies H, L and 0	
Maximum distance between interface and display	10 m	
Programming key	Available in all models	

Tab. 5.a

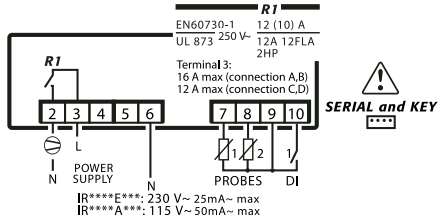
The IR33 Power range fitted with the standard Carel NTC probe is compliant with standard EN 13485 on thermometers for measuring the air temperature in applications on units for the conservation and sale of refrigerated, frozen and deep-frozen food and ice cream. Designation of the instrument: EN13485, air, S, A, 1, -50T90°C.
The standard Carel NTC probe is identifiable by the printed laser code on "WP" models, or the code "103AT-11" on "HP" models, both visible on the sensor part.

5.3 Electrical connections

"RELE 2" MODELS WITH "DEPENDENT" COMMON

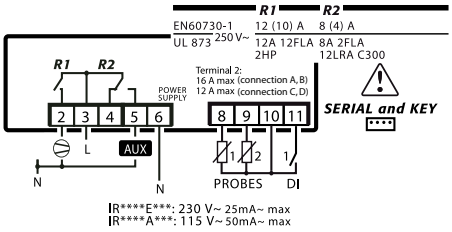
Modello S senza ausiliario

IR33S*(A,E) (H,I,E,F) (A,B,C,D)*



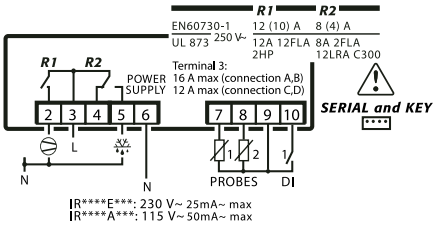
Modello S con ausiliario

IR33S*(A,E) (G,O,K,W) (A,B,C,D)*



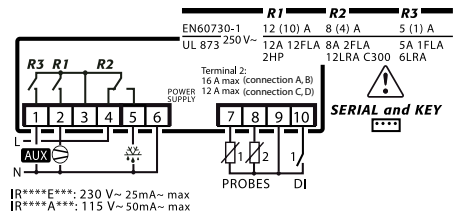
Modello Y senza ausiliario

IR33Y*(A,E) (H,I,E,F) (A,B,C,D)*



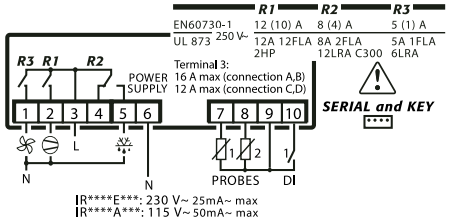
Modello Y con ausiliario

IR33Y*(A,E) (G,O,K,W)(A,B,C,D)*



Modello F senza ausiliario

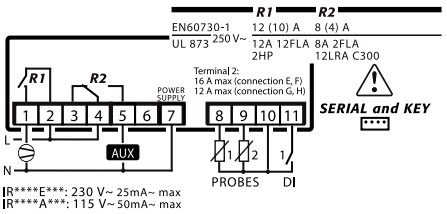
IR33F*(A,E) (H,I,E,F) (A,B,C,D)*



"RELE 2" MODELS WITH "INDEPENDENT" COMMON

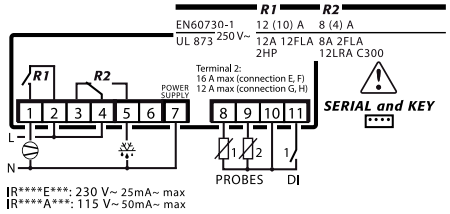
Modello S con ausiliario

IR33S*(A,E) (G,O,K,W) (E,F,G,H)*



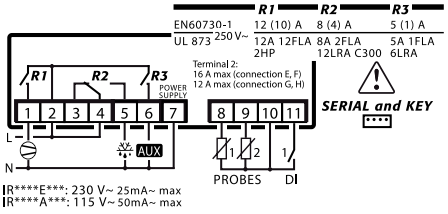
Modello Y senza ausiliario

IR33Y*(A,E) (H,I,E,F) (E,F,G,H)*



Modello Y con ausiliario

IR33Y*(A,E) (G,O,K,W) (E,F,G,H)*



Modello F senza ausiliario

IR33F*(A,E) (H,I,E,F) (E,F,G,H)*

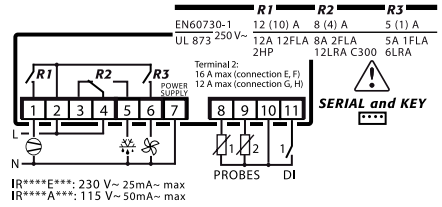


Fig. 5.a

6. IR33 2HP

6.1 Dimensions

See "Dimensions" for the chapter on the ir33.

6.2 Technical specifications

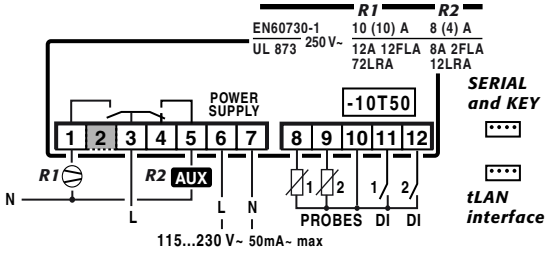
	Model	Voltage		Power	
Power supply	mod H: mod L: mod O:	115...230 V~, 50/60 Hz 12...24 V~, 50/60 Hz, 12...30 Vdc 12 V~, 50/60 Hz, 12...18 Vdc		6 VA, 50 mA~ max 3 VA, 300 mA~ /mAdc max Use only SELV power supply	
Insulation guaranteed by the power supply	mod H:	insulation in reference to very low voltage parts		reinforced 6 mm clearance, 8 creepage 3750 V insulation	
		insulation from relay outputs		basic 3 mm clearance, 4 creepage 1250 V insulation	
	mod O, L:	insulation in reference to very low voltage parts		da garantire esternamente con trasformatore di sicurezza (SELV)	
		insulation from relay outputs		reinforced 6 mm clearance, 8 creepage 3750 V insulation	
Input	S1 (probe 1)	NTC (IRxxx0xxxxx) o NTC e PTC (IRxxx7xxxxx)			
	S2 (probe 2)	NTC (IRxxx0xxxxx) o NTC e PTC (IRxxx7xxxxx)			
	DI1 S3 (probe 3)	free contact, contact resistance < 10 Ω, closing current 6 mA NTC (IRxxx0xxxxx) o NTC e PTC (IRxxx7xxxxx)			
	DI2 S4 (probe 4)	free contact, contact resistance < 10 Ω, closing current 6 mA NTC (IRxxx0xxxxx) o NTC e PTC (IRxxx7xxxxx)			
	Maximum ditance of probes and digital inputs less than 10 m. Nota:during installation keep the power and loads connection separate from probe cables, digital inputs, repeater display and supervisory system.				
Probe type	NTC std. CAREL	10 kΩ a 25 °C, range da –50T90 °C			
		measurement error:		1 °C in the –50T50 °C range	
				3 °C in the –50T90 °C range	
	NTC high temperature	50 kΩ a 25 °C, range da –40T150 °C			
		measurement error		1,5 °C in the –20T115 °C range	
				4 °C nel range esterno a -20T115 °C	
	PTC std. CAREL (specific model)	985 Ω a 25 °C, range da -50T150 °C			
		measurement error		2 °C in the –50T50 °C range	
				4 °C in the –50T150 °C range	
Relay outputs	Rating xdon the model IRxx(S,Y,F,C)x(0,L,H)(H,I,E,G,K,O,W)xxx				
	EN 60730-1			UL 873	
	relè	250 Vac	operating cycles	250 Vac	operating cycles
	R1	10 (10)A	100000	12A resistive 12 FLA 72 LR, Toff minimum 60 seconds(*), pilot duty C 300	30000
	R2(**)	8 (4)A	100000	8A resistive 2 FLA 12 LRA, pilot duty C300	30000
	R3(**)	8 (4)A	100000	8A resistive 2 FLA 12 LRA, pilot duty C300	30000
	R4(**)	8 (4)A	100000	8A resistive 2 FLA 12 LRA, pilot duty C300	30000
	insulation from very low voltage parts reinforced			rinforzato: 6 mm in aria, 8 superficiali	
				3750 V isolamento	
	insulation between the relay outputs indipendent			principale: 3 mm in aria, 4 superficiali	
				1250 V isolamento	
	(*): between the OFF status and the following ON status of the relay at least 1 minute have to elapse. (**): Relay not suitable for fluorescent loads (neon lights, ...) that use starters (ballasts) with phase-shift capacitors. Fluorescent lamps with electronic control devices or without phase-shift capacitors can be used, within the operating limits specified for each type of relay.				
Connections	Type of connection			Cross-section	Max. current
	Model	Relay	P. Supply	Probes	for wires from 0,5 to 2,5 mm²	12 A
	0 2	screw/faston removablei	screw removable	screw removable		
	the installer has to provide the correct dimensioning of the power supply and cable connection between the instruments and the loads. Depending on the model, the maximum current in the common terminals 1, 3 or 5 is 12 A. When using the controller at maximum operating temperature and full load, use cables featuring a maximum operating temperature of 105 °C at least.				
Case	plastic	Models: O, L, H		dimensions	34,4 x 76,2 x 79 mm

		mount-in depth	70,5 mm
Mounting	smooth and stiff panel using side fastening brackets, pressed until stop		
	drilling template	dimensions 28.8 ± 0.2 x 70.8 ± 0.2 mm	
Display	digits	3 digit LED	
	display range	from –99 to 999	
	operating status	indicated by graphic icons on the display	
Keypad	4 rubber silicon buttons		
No options	mod H		
Infrared receiver	mod I,F,K,W		
Clock with backup battery	mod E,F,O,W		
Alarm or auxiliary relay	G,K,O,W		
Custom param. or firmware	IRccxxxxxnx; cc customer; n custom made parameters list		
Package	IRxxxxxxxxi: blank singol; 1 or 5 multiple; K kit with probes		
Buzzer	available on all the models		
Clock	error at 25 °C	±10 ppm (±5.3 min/year)	
	error in the temperature range -10T60 °C	-50 ppm (-27 min/year)	
	ageing	< ±5 ppm (±2.7 min/year)	
	discharge time	typical 6 months (max. 8 months)	
	recharge time	typical 5 hours (< max. 8 hours)	
Operating temperature	-10T60 °C for the versions IRxxxx(0,L)(H,I,E,F,G,K,O,W)xx -10T50 °C for the versions IRxxxx(H)(H,I,E,F,G,K,O,W)xx		
Operating humidity	<90% r.H. non-condensing		
Storage temperature	-20T70 °C		
Storage humidity	<90% relative humidity. non-condensing		
Front panel degree of protection	montaggio a pann. liscio e indeform. con guarniz. IP65		
Control pollution status	2 (normal situation)		
PTI of the insulating material	printed circuit board 250, insulation 175		
Period of electric stress across insulating parts	long		
Heat and fire resistance category	category D and category B (UL 94-V0)		
Class of protection against voltage surges	category II		
Type of disconnection or interruption	1.B relay contacts (micro-disconnection)		
Construction of control	incorporated control, electronically		
Classification according to protection against electric shock	Class II, by appropriate incorporation		
The control is either to be hand-held or is intented for a hand-held equipment	no		
Software class and structure	Class A		
Front panel cleaning	use only neutral detergents and water		
Serial interface for CAREL network	external, available on all models		
Interface for repeater display	external, available on IRxxxx(0,L,H)xxxx		
Maximum distance between interface and display	10 m		
Programming key	available on all models		

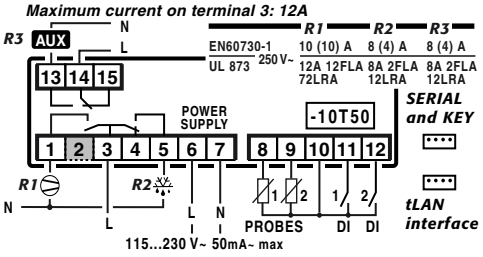
Tab. 6.a

6.3 Electrical connections

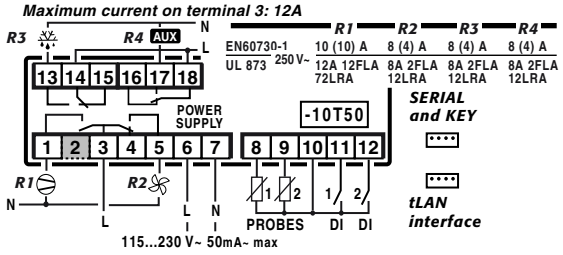
IRxxS*H (G,K,O,W)*0
Corrente massima totale su terminale 3: 12A
Maximum current on terminal 3: 12A



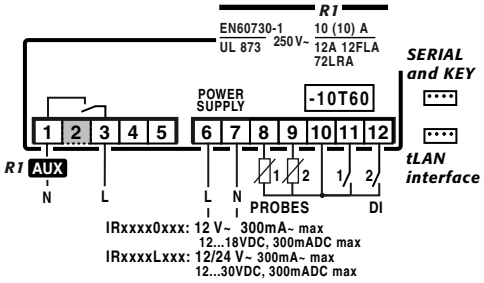
IRxxY*H (G,K,O,W)*0
IRxxY*H (H,I,E,F)*0 senza/*without R3*
Corrente massima totale su terminale 3: 12A
Maximum current on terminal 3: 12A



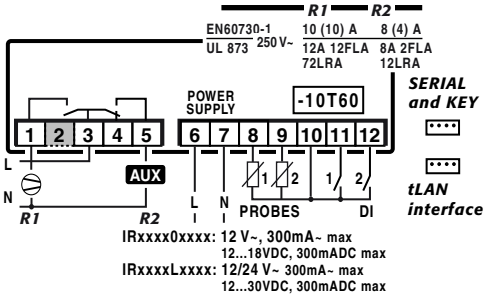
IRxxC* H (H,I,E,F)*0
IRxxF* H (H,I,E,F)*0 senza/*without R4*
Corrente massima totale su terminale 3: 12A
Maximum current on terminal 3: 12A



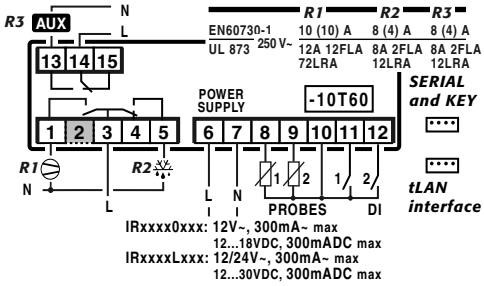
IRxxM*(L,0) (G,K,O,W)*0



IRxxS* (L,0) (G,K,O,W) *0
IRxxS* (L,0) (H,I,E,F)*0 senza/*without R2*
Corrente massima totale su terminale 3: 12A
Maximum current on terminal 3: 12A



IRxxY* (L,0) (G,K,O,W) *0
IRxxY* (L,0) (H,I,E,F) *0 senza/*without R3*
Corrente massima totale su terminale 3: 12A
Maximum current on terminal 3: 12A



IRxxC* (L,0) (H,I,E,F)*0
IRxxF* (L,0) (H,I,E,F)*0 senza/*without R4*
Corrente massima totale su terminale 3: 12A
Maximum current on terminal 3: 12A

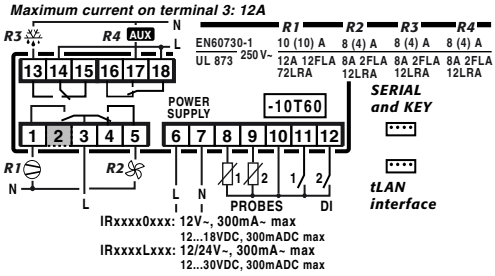


Fig. 6.a

7. IR33DIN

7.1 Dimensions

The dimensions of the ir33DIN are 60x111x70.4 mm for all versions, with the drilling template measuring 40x70 mm.

DIN rail assembly

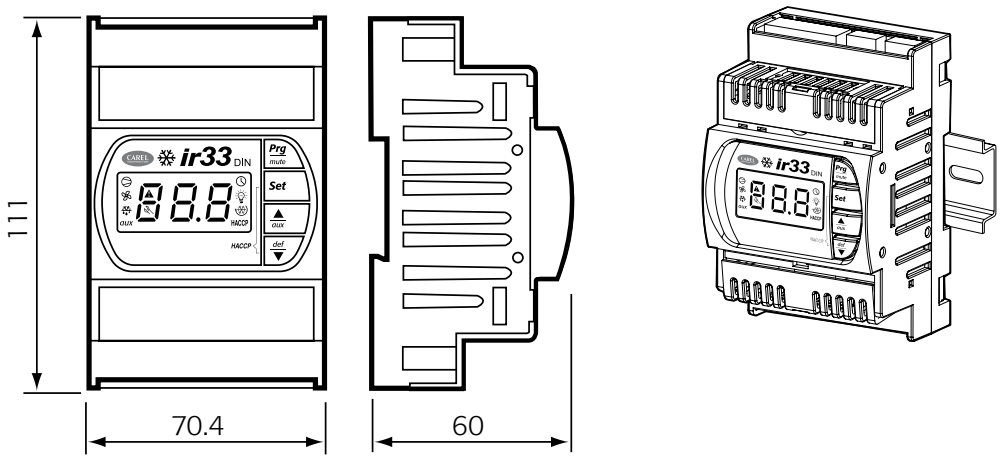


Fig. 7.a

7.2 Electrical specifications

Power supply		**voltage**	**power**
	model E:	230 V~ 50/60 Hz;	3 VA, 25 mA~ max
	model A:	115 V~ 50/60 Hz;	3 VA, 50 mA~ max
	model H:	115-230 V~ 50/60 Hz;	6 VA, 50 mA~ max
	model L:	12...24 V~ 50/60 Hz; 12 Vdc, 12 - 30 Vdc	4 VA, 300 mA~ max TRADR4W012 transformer, 315 mA slow-blow fuse in secondary, only use SELV power supply
	model O:	12 V~ 50/60 Hz; 12 Vdc, 12 - 18 Vdc	4 VA, 300 mA~ max TRADR4W012 transformer, 315 mA slow-blow fuse in secondary, only use SELV power supply
Insulation guaranteed by the power supply		**voltage**	**power**
	model E, A, H:	insulation from very low voltage parts: insulation from relay outputs:	reinforced; 6 mm air, 8 mm surface; 3750 V insulation basic; 3 mm air, 4 mm surface; 1250 V insulation
	model O, L:	insulation from very low voltage parts: insulation from relay outputs:	to be guaranteed externally by safety transformer basic; 6 mm air, 8 mm surface; 3750 V insulation
Inputs	S1	NTC or PTC, depending on the model	
	S2	NTC or PTC, depending on the model	
	DI1 S3	voltage-free contact, contact resistance < 10 ohm, closing current 6 mA NTC or PTC, depending on the model	
	DI2 S4	voltage-free contact, contact resistance < 10 ohm, closing current 6 mA NTC or PTC, depending on the model	
	DI3 S5	voltage-free contact, contact resistance < 10 ohm, closing current 6 mA NTC or PTC, depending on the model	
	Maximum distance between probes and digital inputs less than 10 m **Note:** in the installation, keep the power supply and load connections separate from the probe, digital inputs, repeater display and supervisor cables.		
Type of probe	Std. Carel NTC	10 kΩ at 25 °C, range -50 to 90 °C measurement error: 1 °C in the range -50 to 50 °C 3 °C in the range +50 to 90 °C	
	High temperature NTC	50 kΩ a 25 °C, range -40 to 150 °C measurement error: 1.5 °C in the range -20 to 115 °C 4 °C in the range outside of -20 to 115 °C	
	Std. Carel PTC (specific model)	985 Ω at 25°C, range -50 to 150 °C measurement error: 2 °C in the range -50 to 50 °C 4 °C in the range +50 to 150 °C	
Relay outputs	depending on the model		
	8 A (*)	EN60730-1: UL 873:	250 V~ 8(4) A on N.O., 6(4) A on N.C., 2(2) A on N.O. and N.C.; 250 V~ 8A res 2FLA 12LRA C300;	100,000 operating cycles 30,000 operating cycles
	16 A (*)	EN60730-1: UL 873:	250 V~ 10(4) on up to 60 °C on N.O., 12(2) A on N.O. and N.C.; 250 V~ 12A res 5FLA 30LRA C300;	100,000 operating cycles 30,000 operating cycles
	2HP	EN60730-1: UL 873:	250 V~ 10 (10) A; 250 V~ 12A res 12FLA 72LRA;	100,000 operating cycles 30,000 operating cycles
	(*): Relay not suitable for fluorescent loads (neon lights, ...) that use starters (ballasts) with phase-shift capacitors. Fluorescent lamps with electronic control devices or without phase-shift capacitors can be used, within the operating limits specified for each type of relay.		
	insulation from very low voltage parts	reinforced; 6 mm air, 8 mm surface; 3750 V insulation	
	insulation between the separate relay outputs	basic; 3 mm air, 4 mm surface; 1250 V insulation	

Connections	**Type of connection**	**Cross-sections**	**Maximum current**
	fixed screw 16A	for cables from 0.5 to 2.5 mm2	12 A
	plug-in for screw blocks	for cables from 0.5 to 2.5 mm2	12 A
	spade with crimped contact	for cables from 0.5 to 2.5 mm2	12 A
	Wire cross-section for probes and digital inputs	0.5 to 2.5 mm2 (from 20 to 13 AWG)	
	Wire cross-section for power supply and loads	1.5 to 2.5 mm2 (from 15 to 13 AWG)	
	The correct sizing of the power and connection cables between the instrument and the loads is the responsibility of the installer. In the max load and max operating temp. conditions, the cables used must be suitable for operation up to 105°C.		
Case	plastic	dimensions: 111x70.4x60 mm	
Assembly	DIN rail:	using built-in fastening system	
	drilling template for front panel:	dimensions 45x70mm	
Display	digits: 3 digit LED		
	display: from -99 to 999		
	operating status: indicated with graphic icons on the display		
Keypad	4 silicone rubber buttons		
Infrared receiver	available depending on the model		
Clock with backup battery	available depending on the model		
Buzzer	available in all models		
Clock	Error at 25 °C:	± 10 ppm (±5.3 min/year)	
	Error in the temperature range -10T60 °C:	- 50 ppm (-27min/year)	
	Ageing:	< ± 5 ppm (±2.7 min/year)	
	Discharge time:	typically 6 months (8 months maximum)	
	Recharge time:	typically 5 hours (< 8 hours maximum)	
Operating conditions	**power supply O, L, H:** -10T55 °C; <90% RH non-condensing **power supply E, A:** -10T50 °C; <90% RH non-condensing		
Storage conditions	-20T70 °C; <90% RH non-condensing		
Front panel index of protection	front panel IP40, complete controller IP20		
Environmental pollution	2, normal situation		
PTI of insulating materials	printed circuits 250, plastic and insulating materials 175		
Period of stress across the insulating parts	long		
Category of resistance to fire	category D and category B (UL 94-V0)		
Class of protection against voltage surges	category II		
Type of action and disconnection	1B relay contacts (micro-disconnection)		
Construction of the control device	electronic control device incorporated		
Classification according to protection against electric shock	class II when appropriately integrated		
Device designed to he hand-held or integrated into equipment designed to be hand-held	no		
Software class and structure	class A		
Cleaning the front panel of the instrument	only use neutral detergents and water		
Serial interface for CAREL network	Built-in, available in all models, upon request		
Interface for repeater display	Built-in, available in all models, upon request		
Maximum distance between interface and display	10 m		
Programming key	Available in all models		

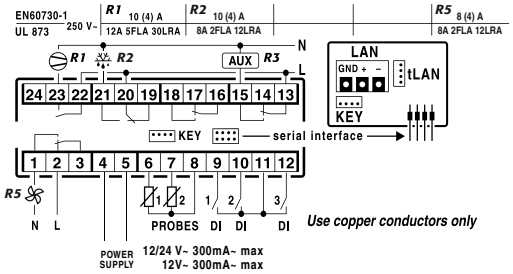
Tab. 7.a

EN13485 certification

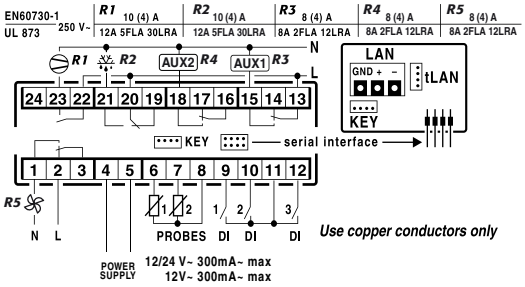
The ir33 platform range fitted with the standard Carel NTC probe is compliant with standard EN 13485 on thermometers for measuring the air temperature in applications on units for the conservation and sale of refrigerated, frozen and deep-frozen food and ice cream.
Designation of the instrument: EN13485, air, S, A, 1, -50 +90°C. The standard Carel NTC probe is identifiable by the printed laser code on "WP" models, or the code "103AT-11" on "HP" models, both visible on the sensor part.

7.3 Electrical connections

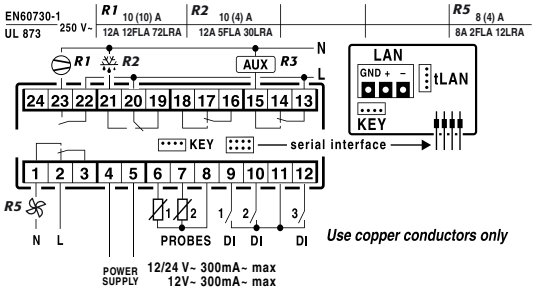
DN33 (S,Y,F)*0,L (N-R-C-B)*0 senza/ *without R3*
DN33 (S,T)*0,L (A-M-L-T)*0



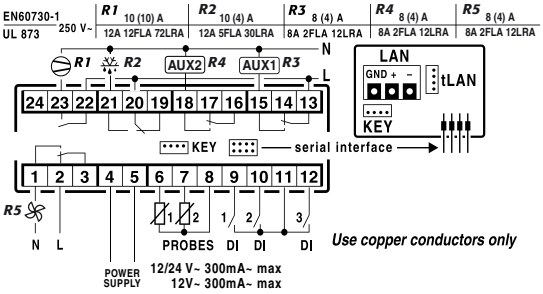
DN33(C)*(0,L) (N-R-C-B)*0 senza/*without R4*
DN33(H)*(0,L) (N-R-C-B)*0



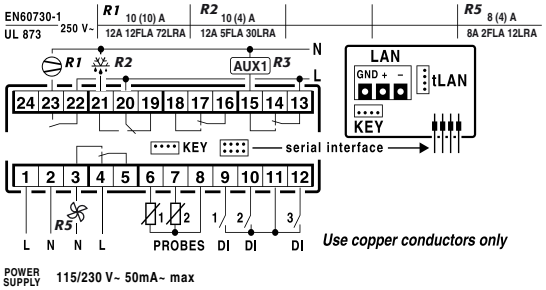
DN33 (S,Y,F)*0,L (H-I-E-F)*0 senza/ *without R3*
DN33 (S,T)*0,L (G-K-O-W)*0



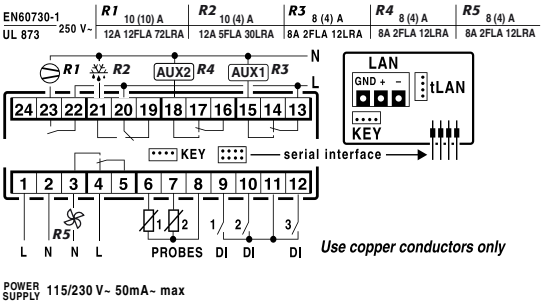
DN33(C,M)*(0,L) (H-I-E-F)*0 senza/ *without R3*



DN33(S,Y,F)*H (N-R-C-B)*0 senza/ *without R3*
DN33(S,Y)*H (A-M-L-T)*0



DN33(C)*H (N-R-C-B)*0 senza/*without R4*
DN33(H)*H (N-R-C-B)*0



DN33(S,Y,F)* (E-A) (N-R-C-B)*0 senza/*without R3*
DN33(S,Y,F)* (E-A) (A-M-L-T)*0

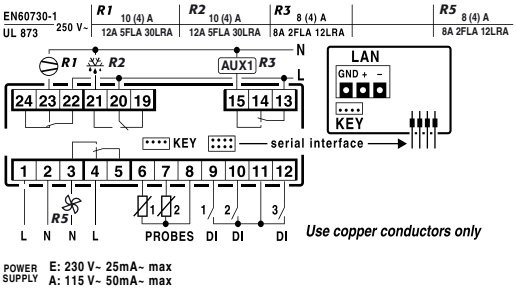


Fig. 7.b

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