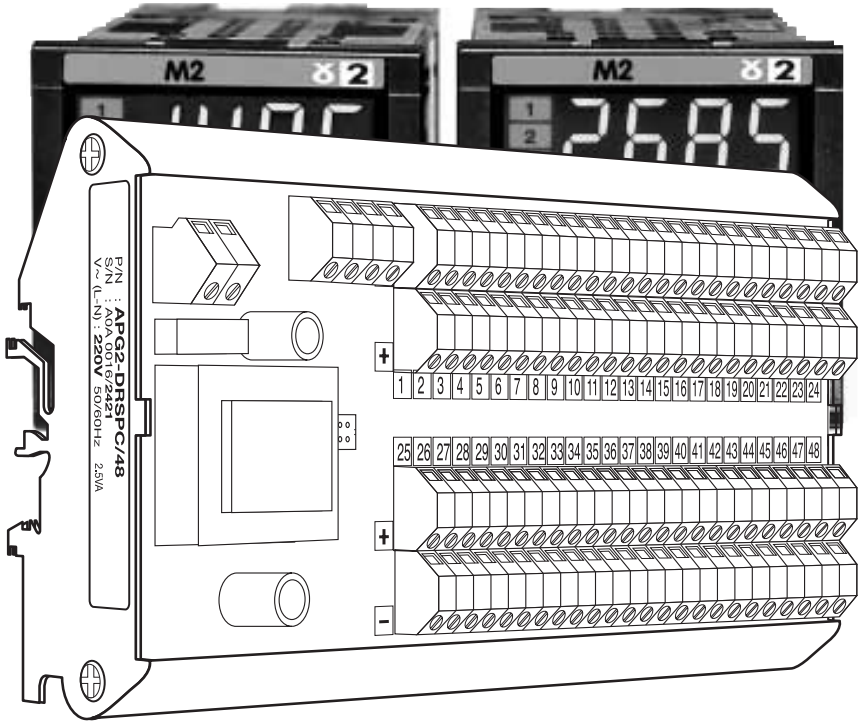




# Digital Remote Setpoint Controller

**APG2-DRSPC**





**NOTES  
ON ELECTRIC  
SAFETY AND  
ELECTROMAGNETIC  
COMPATIBILITY**

**Please, read carefully these instructions before proceeding with the installation of the device.**

**Class II instrument**, only to be mounted inside closed housing. The device can be rear panel mounted if power is switched off at the panel door opening.

This controller has been designed with compliance to:

**Regulations on electrical apparatus** (appliance, systems and installations) according to the European Community directive n93/68/CEE and the Regulations on the essential protection requirements in electrical apparatus EN 61010-1 (IEC 1010 - 1) : 90 +A1:92 + A2:95.

**Regulations on Electromagnetic Compatibility** according to the European Community directive n089/336/CEE, amended by the European Community directive n° 92/31/CEE and the following regulations:

- Regulations on RF emissions
  - EN50081 - 1 residential environments
  - EN50081 - 2 for industrial environments
- Regulation on RF immunity
  - EN50082 - 2 for industrial equipment and system

**It is important to understand that it's responsibility of the installer to ensure the compliance of the regulations on safety requirements and EMC. This device has no user serviceable parts and requires special equipment and specialised engineers.**

Therefore, a repair can be hardly carried on directly by the user. For this purpose, the manufacturer provides technical assistance and the repair service for its Customers. Please, contact your nearest Agent for further information.

**All the information and warnings about safety and electromagnetic compatibility are marked with the CE sign, at the side of the note.**

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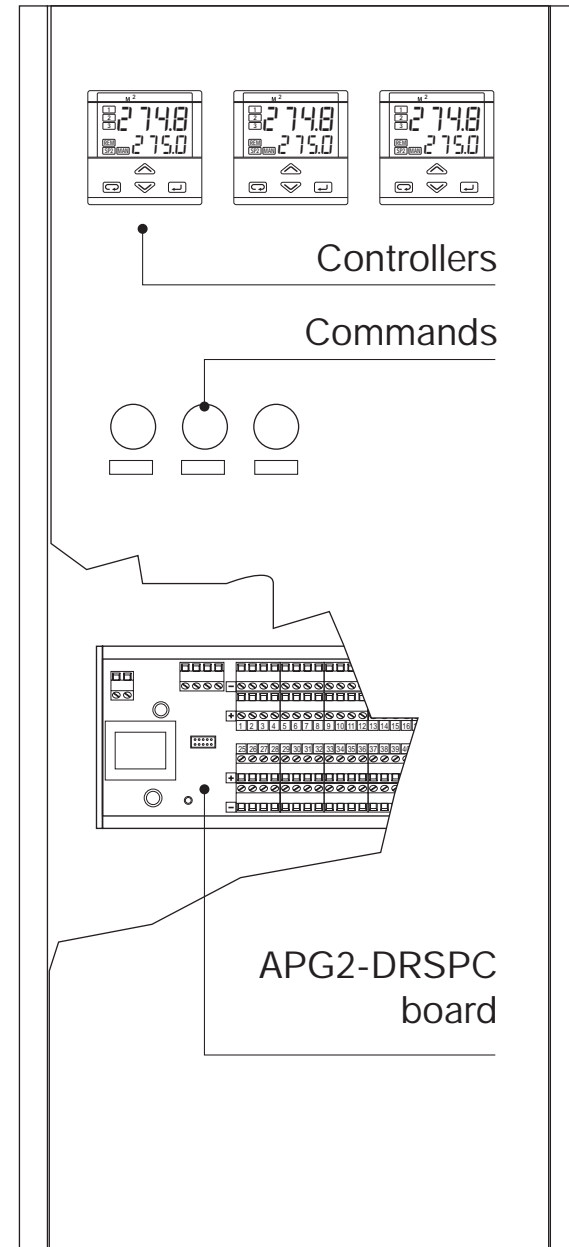
# 1 FUNCTIONAL CHARACTERISTICS

The APG2-DRSPC board can be used exclusively with the *gamma due*<sup>®</sup> series controllers for the followings purposes:

- *gamma due*<sup>®</sup> controllers digital inputs isolation.
- simultaneous Setpoint raise/lower function on a number of controllers (M2)
- stand-by Setpoint selection (M2-M4)
- *gamma due*<sup>®</sup> controllers digital input functions activation.

## 1.1 OPERATION

By an external digital command the APG2-DRSPC board generates an output signal depending on the selected digital input . The output, connected to the digital input of the *gamma due*<sup>®</sup> instruments, performs the following functions:  
Setpoint raise/lower  
stand-by Setpoint selection.  
In this way it is possible to expand the controller digital input functions.  
Up to 48 controllers can be connected to the APG2-DRSPC board.



## 1.2 INPUTS

To perform the APG2-DRSPC board functions, two push buttons and one switch (not supplied) can be connected to the input terminals:

Contact	T1 (M2 only)	T2 (M2 only)	T3
Type	Push button	Push button	Switch
Function	Setpoint step decrease	Setpoint step increase	<ul style="list-style-type: none"> <li>• stand-by Setpoint selection (M2-M4)</li> <li>• digital input functions</li> </ul>
Contact closure	not maintained	not maintained	maintained for
Function description	Decreases the Setpoint of one step. If contact is maintained, decreases the Setpoint of one step each 1.5 seconds.	Increases the Setpoint of one step. If contact is maintained, increases the Setpoint of one step each 1.5 seconds.	If contact is maintained at least 2 seconds, selects the stand-by Setpoint (M2-M4) or the controller digital input function. Returns to local Setpoint (M2-M4) when contact opens.

Inputs are equipped with anti-bounce filter.

**Simultaneous closure of T1 and T2 will not generate any Setpoint change.**

**When the stand-by Setpoint is selected (T3 closed), closure of T1 and/or T2 will have no effect.**


## 1.3 OUTPUT SIGNAL

Outputs are galvanically isolated and suitable to be connected to the digital inputs of the **gamma due**® controllers.

## 2 ■ INSTALLATION

### PRECAUTIONS

**Installation must only be carried out by qualified personnel.**

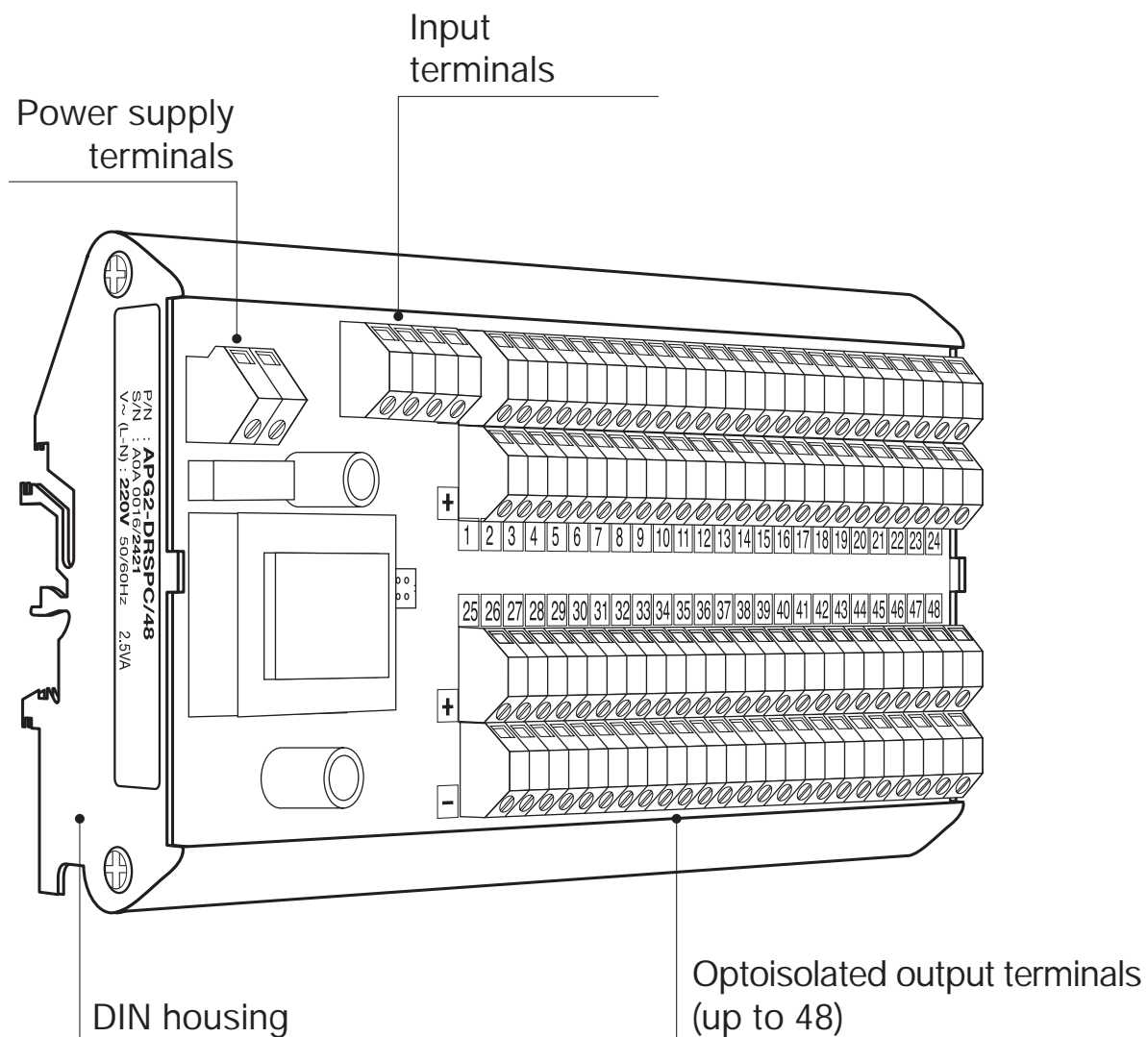
Before proceeding with the installation of this controller, follow the instructions illustrated in this manual and, particularly the installation precautions marked with the  symbol, related to the European Community directive on electrical protection and electromagnetic compatibility.

The front side of the card is the open type construction.

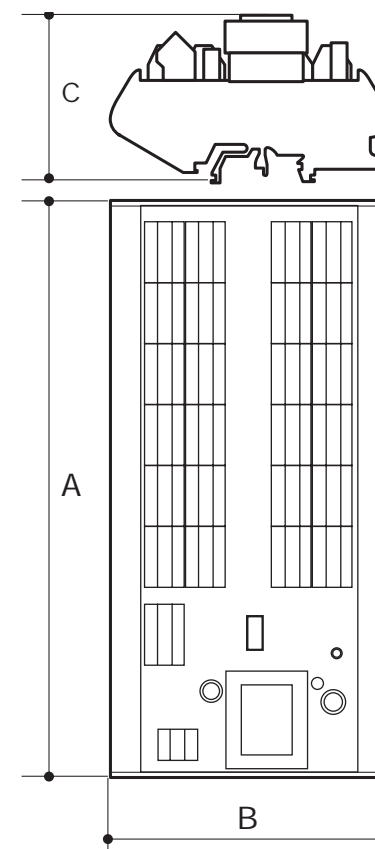


In case of short circuit, the transformer can reach a dangerous temperature of more than 105°C (without fire danger) , electrical protection will not be affected.

## 2.1 GENERAL DESCRIPTION



## 2.2 DIMENSIONS



	APG2-DRSPC/12 APG2-DRSPC/24	APG2-DRSPC/48
<b>A</b>	135mm - 5.31in	200mm - 7.88in
<b>B</b>	92mm - 3.63in	
<b>C</b>	56mm - 2.21in	



## 2.3 DIN RAIL MOUNTING



35mm DIN rail ( EN 50022)

## 2.4 ENVIRONMENTAL RATINGS





### Operating Conditions

	Altitude up to 2000 m
	Temperature 0...50°C
%Rh	Relative Humidity 5...95 %Rh non-condensing

Special conditions	Suggestions
 Temperature >50°C	Use forced air ventilation
%Rh Humidity > 95 %Rh	Warm-up
 Conducting atmosphere	Use filters

### Forbidden conditions

	Corrosive atmosphere
	Explosive atmosphere

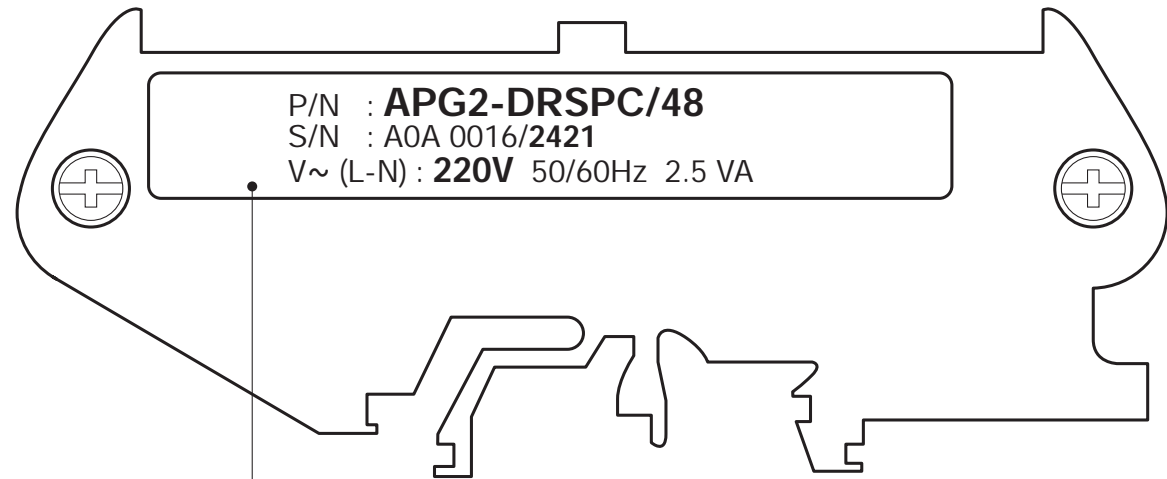
## 3

## PRODUCT CODING

The complete code is displayed on the instrument label.

Three models are available, identical for functionality, able to drive 12, 24 and 48 output channels.

Each output channel is suitable to drive a digital input of the *gamma<sup>adue</sup>* controllers.

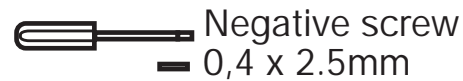
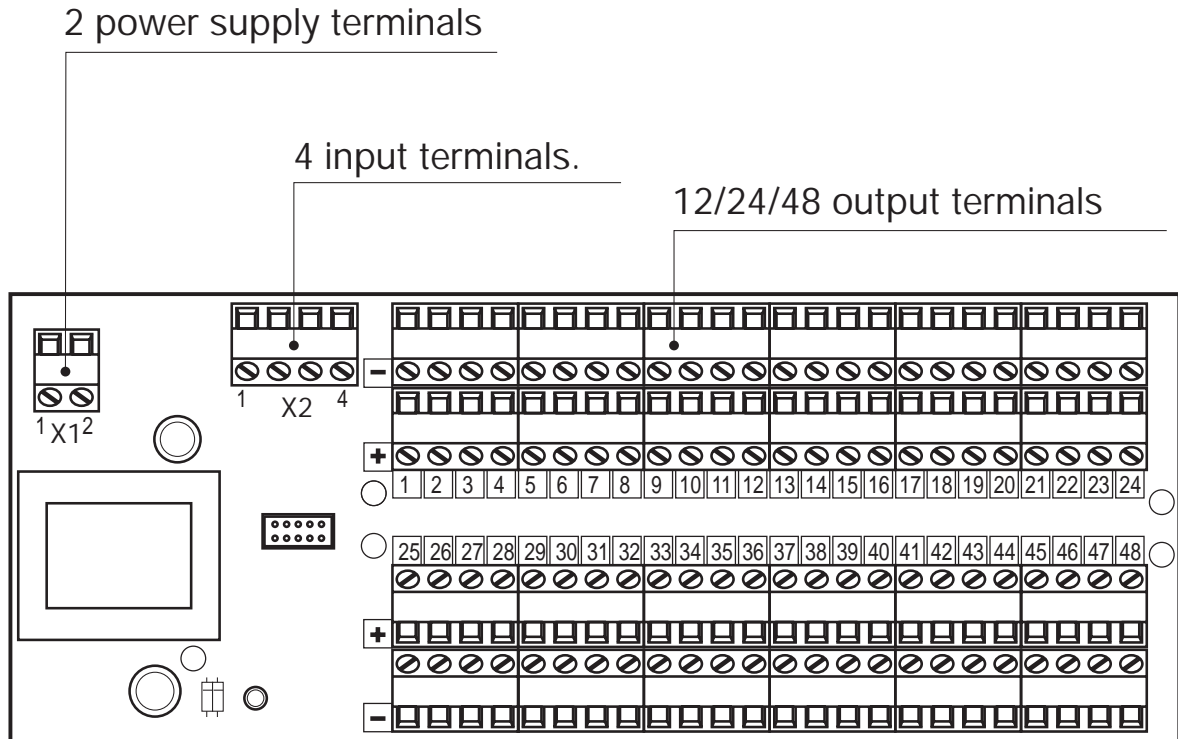


Instrument Label

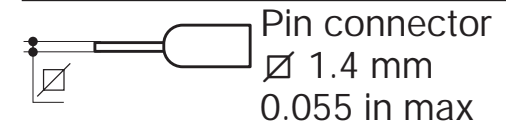
Model n°	Outputs	power supply voltage
APG2-DRSPC/12	12 outputs	220 Vac
APG2-DRSPC/24	24 outputs	
APG2-DRSPC/48	48 outputs	

# 4 ELECTRICAL CONNECTIONS

## 4.1 TERMINATION UNIT



### Terminals



**PRECAUTIONS**



Despite the fact that the instrument has been designed to work in an harsh and noisy environmental (level IV of the industrial standard IEC 801-4), it is recommended to follow the following suggestions.



All the wiring must comply with the local regulations.

The supply wiring should be routed away from the power cables.

Avoid to use electromagnetic contactors, power Relays and high power motors nearby.

Avoid power units nearby, especially if controlled in phase angle

Keep the low level sensor input wires away from the power lines and the output cables.

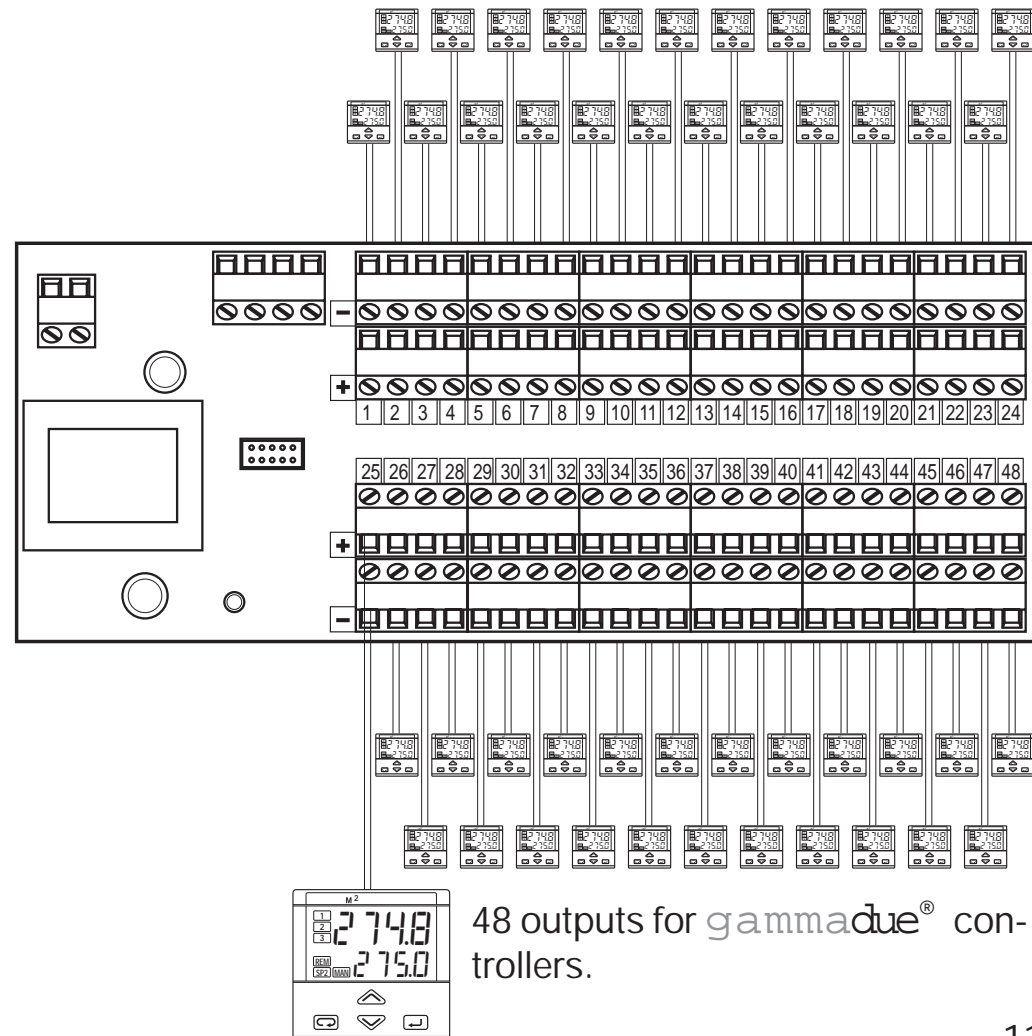
If this is not achievable, use shielded cables on the sensor input, with the shield connected to earth.

**4.1.1 OPTOISOLATED OUTPUTS**



The 12/ 24/ 48 outputs are galvanically isolated between them and from the circuit. All the outputs repeat simultaneously the same command. The outputs are driven in groups of 12. Each group has an output status LED.

The outputs are suitable to drive the digital inputs of the *gamma due*<sup>®</sup> controllers.

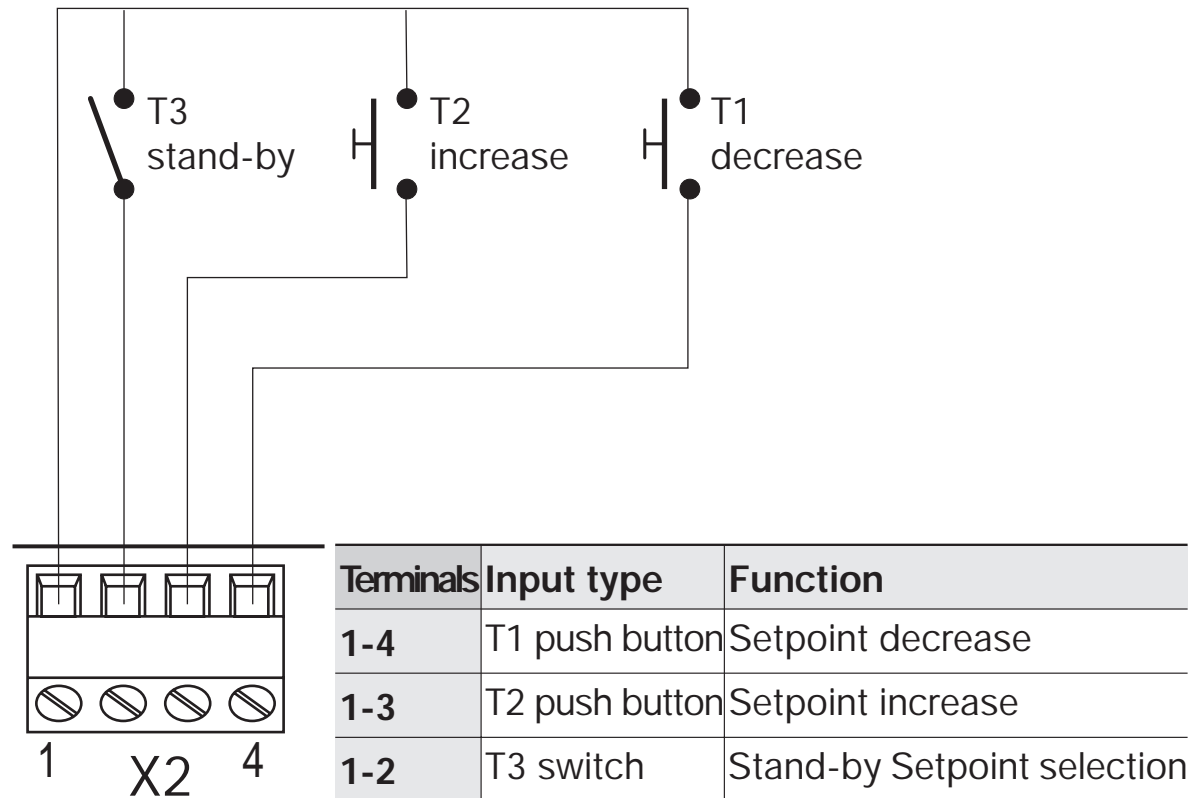


### 4.1.2 INPUTS



The inputs can typically be one switch and two push buttons (not supplied with the board) with voltage free contacts and mounted on the control panel front.

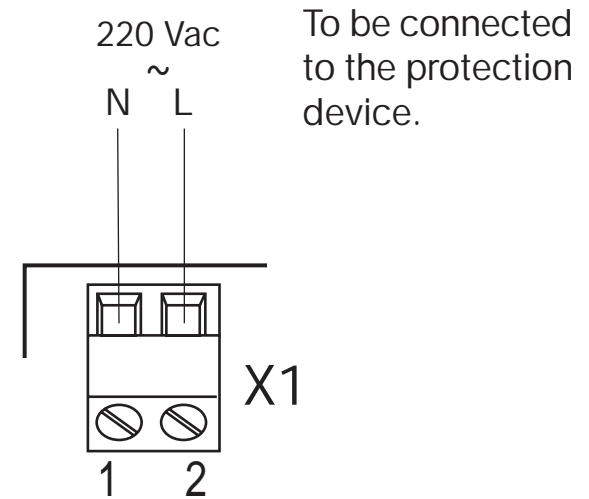
Use AWG26 -14 single pole isolated wire.



### 4.1.3 POWER SUPPLY VOLTAGE



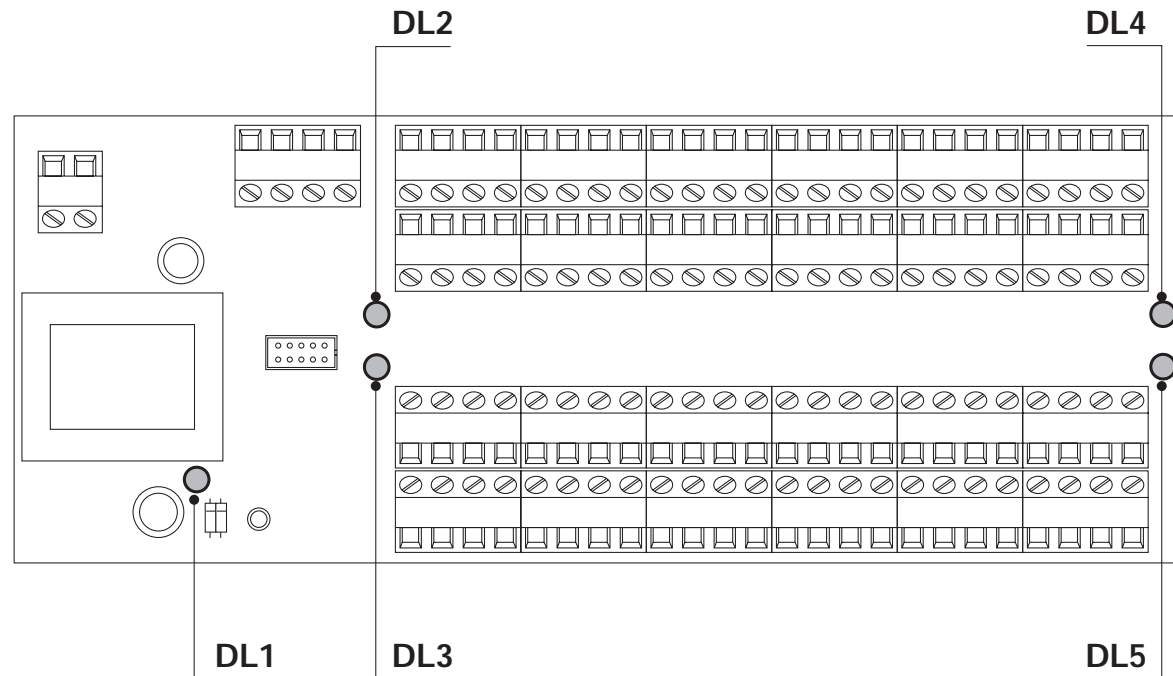
220V (15% +10%)ac.  
Consumption 2.5VA.  
Double isolation transformer.



## 5 DIAGNOSTICS

Failures can be detected by means of 5 LEDs.

The table shows the type of signalization given by the LEDs on the board.



Led	Signalization	Colour	Function
DL 1	Power supply on	red	Lit when the card is powered.
DL 2	status of output group from 1 to 12	green	Lit when any output signal is present.
DL 4	status of output group from 13 to 24		
DL 3	status of output group from 25 to 36		
DL 5	status of output group from 37 to 48		

## 6 TECHNICAL SPECIFICATIONS

Features (at 25°C. env. temp)	Description	
<b>Compatibility</b>		
<b>Functionality</b>	<ul style="list-style-type: none"> <li>• <b>gammaDue</b><sup>®</sup> controllers digital inputs isolation.</li> <li>• simultaneous Setpoint raise/lower function on more controllers (M2)</li> <li>• stand-by Setpoint selection (M2-M4)</li> <li>• <b>gammaDue</b><sup>®</sup> controllers digital input functions activation.</li> </ul>	
<b>Inputs</b>	Type	3 inputs - switch or button
	Max current of closing for each input	0,5mA
	Max voltage to each input (open)	5Vdc (as regards the common ground terminal)
	Protections	limitation of the current of input against wrong connections of positive and negative voltage (max. 30V)
	Filters of input for the contacts	- hardware filter (4 ms) - software filter debounce
<b>Outputs</b>	Type	up to 48 outputs (optoisolated)
	Type of command of output	transistor - open collector
	Voltage of output to open contact	open collector @ I= 0mA
	Voltage of output to closed contact	0,8V @ I <sub>max</sub> . 0,9mA
	Applicable voltage to the terminals	5Vdc nominal 30Vdc max.
	Protections	- inversion of polarity - Resistance of limitation from 470Ω in series to the output
	Isolation between the outputs	galvanic of functional type
	Output filter	HF of RC type (4,7 us.)

Features (at 25°C. env. temp)	Description	
<b>General characteristics</b>	Power supply	220V (-15% +10%) power consumption 2.5VA max transformed to voltage of 18Vac and isolated by means of safety transformer, double room of wrapping and short circuit proof.
	Electric Safety	Compliance to EN61010, installation class 2 (2500V), pollution class 2. Only to be mounted inside closed housing. the device can be rear panel mounted if power is switched off at the panel door opening
	Electromagnetic compatibility	Compliance to the CE standard for industrial system and equipment (see pag. 2)
	Protections EN650529	IP20 termination unit
	Dimensions	135/ 200 x 92 x 56 (L x H x P), depth 150 mm, weight 340 gr. apx

## WARRANTY

We warrant that the products will be free from defects in material for 3 years from the date of delivery.

The warranty above shall not apply for any failure caused by the use of the product not in line with the instructions reported on this manual.