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# BOTTARO SISTEMI DI PESATURA

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**Weighing instrument**

***MB06***




**Instructions**

This publication may contain information with typographical errors. The changes will be incorporated in the new editions

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# Terminology

|   |   |   |
|---|---|---|
| e   | = | Minimum division testing  |
| Max   | = | Instrument maximum range  |
| Min   | = | Instrument minimum range  |
| n   | = | Number of division  |
| Load receiver device  | = | Scale or structure  |
| Instrument  | = | Computerized apparatus  |
| Sample mass   | = | Mass to be used as a reference for the calibration  |
| G   | = | Gross weight display  |
| N   | = | Net weight display  |
| T   | = | Tare indication   |
| PT  | = | Preset tare indication  |
| MD  | = | Acronym for "multiple divisions"  |
| MC  | = | Acronym for "multiple weighing ranges"  |
| Baud rate   | = | Serial channel transmission rate  |
| Frame   | = | Word size transmission  |
| Lights  | = | Warning indications ( Eg.LED )  |
| g   | = | Grams   |
| kg  | = | Kilograms   |
| g1  | = | Value of gravity acceleration referred to the installation site   |
| g2  | = | Value of gravity acceleration referred to the calibration place   |
| ms  | = | Millisecond   |
|  | = | Note, information or important procedure  |
|  | = | Attention, information or procedure which, if not carefully performed, could cause serious damage to the instrument |
|  | = | Terminal power supply 12/24 Vdc   |

# 1. INTRODUCTION

The purpose of this handbook is to inform the operator, with illustrations and driven examples, the fundamental requirements and criteria for the installation and proper use of the instrument. The device must be installed only by specialized personnel who must have seen and learned this manual.



**"Specialized personnel" means personnel who, due to the formation and personal experience, has been expressly authorized by the " Plant Safety Responsible " to do installation, use and maintenance work on the terminal.**

The installer must parameterize and calibrate, in according to specific requirements, by following strictly to what is indicated.



**Is forbidden the instruments manipulation and the use of the instruments by untrained personnel; for this purpose must consult and meet this manual, whenever is necessary to intervene on the installation parameters.**

For each anomaly, please contact the authorized service center.

The information and illustrations below are upgraded to the date stated in the second edition cover, also the technical information contained in this manual are exclusive property of the manufacturer and therefore photostatic reproduction and dissemination without written permission is prohibits.

The date of issue and the document number, identifying the correspondence between manual and installed firmware.

Under the policy of corporate quality, the manufacturer is committed to continuous products improvement. This could result in changes to components of the system without compromising its metrological characteristics.

If there are any differences between what is described in this manual and the equipment in your possession, please contact the authorized service center.

## 1.1 PROHIBITED USES

Anything not expressly described in this manual will be considered as improper use of the instrument.



**Any attempt to tamper the legal points constraint, modification of the programming parameters related to data weighting and the primary indications, by you or by unauthorized personnel, will automatically void the warranty contract and relieve the manufacturer from responding for any damage to persons or property.**

## 1.2 PROHIBITED USES



**THE WEIGHING TERMINAL MB06, IS NOT APPROVED TO RELATIONSHIP WITH THIRD PARTS.**

**TO BE USED ONLY FOR INTERNAL USE.**

## 1.3 SAFETY



*The electric power used is high enough to be life threatening. Maintenance and repair of electrical and electronic equipment must be performed only by qualified personnel , after taking appropriate safety measures.*

Follow the instructions given on the nameplate of the electrical data applied on the instrument. When it is missing or unreadable request it at authorized service center.

Is forbidden the instruments manipulation and the use of the instruments by untrained personnel ; for this purpose must consult and meet this manual, whenever is necessary to intervene for use and maintenance of the instrument.

The power supply of the instrument could be 12 or 24 Vdc.

The absence of the ground connection determine a malfunction and dangerous working of the instrument.

The power supply line must be privileged. If any, use the power supply line of computers.

Where there is not a stable line, insert a sine wave UPS or stabilizing network.

If the terminal must be connected to other devices such as computers or other, before making the connections, disconnect from the mains power.

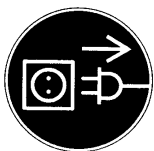


*The safety instructions included in this manual are not intended to exclude other conditions or situations that could be dangerous. Common sense, care and caution are factors which an electrical device can not be fitted, therefore must be made by the person who use and maintain it.*



*If the system must be installed in potentially explosive environments, this must be expressly indicated as a specific order. The standard equipment is not designed to operate in environments with potentially explosive atmospheres.*

## 1.4 CARE AND MAINTENANCE



*Before any cleaning, is required disconnect the instrument from the power outlet.*

Do not use aggressive cleaning agents (solvents or similar), but a damp cloth with a mild detergent.

Prevent infiltration of liquid into the instrument, wipe with a soft cloth. If safe operation of the device is no longer guaranteed , switch off the instrument immediately , disconnect the plug from the mains, keep it in a safe place and contact your authorized service center. This can happen when:

- The device has visible signs of damage or tampering .
- Visual feedback shows a clear failure.
- The device has been stored for a long time in unsuitable conditions.

## 2. TESTING AND INSTALLATION

### 2.1 Testing and storage

Each instrument is controlled and subjected to testing so as to ensure a product functioning and long operational.

- Upon receipt of the instrument, check for damage incurred during transport.
- Unpack the instrument carefully. Keep the original packaging for any future or subsequent movements.
- Store the instrument on a flat , solid and serviceable surfaces, with no sudden temperature and humidity changes, and safe from tampering by unauthorized personnel.
- Do not overlap materials.
- Caution is recommended in the handling of the instrument.



*Store instruments as received. Do not overlap pallets or any other type of material*

### 2.2 Led indicators

#### 1: Stable



On when there are the stable conditions as internal programming.

#### 2: Central ZERO



On when the zero range is between -1/4 and +1/4 e.

#### 3: Min

**min**

On when the gross weight indicator in negative or between 0 and 20 e .

#### 4: Net weight

**net**

On indicates that the weight value shown is net weight, then you have press the acquisition tare button **G/N**

## 2.3 List of selectable functions

### Key **Zero** - Zeroising

The pressure of the key **Zero** for more than 2 seconds, determines the zeroing of the weight with a precision of 0,25 e. By pressing the button, the value of the gross weight displayed is used as the new value of zero, provided the following conditions are met for a time equal to 1 second:

- a) steady reading.
- b) gross weight **minor**  $\pm 2\%$  (subsequent zeroing) of the **MAX**, around the calibration zero. With a higher value, the display will flash for 3 seconds.
- c) is not operating any tare device

**NB: in case the requirements above are not met, the display will shows the message **E n E**.**  
**The zero value acquired is not retained in memory in case of power failure.**

### Key **G/N** - Tare acquisition

The **G/N** key, used for the management of the tare, has 2 main functions :

- 1) pressed for more of 3 sec. captures the tare and the display shows the value of the net weight, highlighted also by the indicator light **net**
- 2) pressed for a time less than 2 sec. redispays the gross weight ; repressing again for a time less than two seconds, shows again the value of net weight , taking into consideration the value of tara, has previously acquired.

**ES.:** Place the tare on the balance which must be acquired and wait until the value is stable.

By pressing the **G/N** key for a long period (more than 3 sec.) , the gross weight is taken as tare value if the following conditions are met:

- a) the indication must be **stable**
- b) the weight must be **major or uqual of 1 e**.
- c) the weight must be **positive**
- d) the weight must be **lower than MAX**.

In case these conditions are not met, the tare function will not be performed.

Downloading the weight, you will get an indication with a negative sign , equal to the amount of downloaded weight, if the tare weight has been fixed ; in the case where the tare weight has not been fixed, once the weights will return to zero the tare weight will be automatically canceled.

To fix the tare, once the value is acquired and only after the **net** light is on, by pressing the **Zero** key the display will shows for a short time **tara b** ; at this stage , the tare will remain stored until will be acquired a new value , or by pressing **Zero** key again to unlock the tare ; in this case, the display will show **tara S** .

**NB: tare value acquired is not retained in memory in case of power failure.**

### Key **Prog** allows the acces to the set-point programming menu.

By pressing the key **Prog** , is possible to acces to the set-point value menu setting for remote control of 2 digital outputs. See paragraph 3.1.3


# 3. Use of terminal

## 3.1.1 SET-POINT setting

The system provides the possibility to set two values of set-points alarm independent of each , two values correspond to each output (Val.1 Val.2 ) through which you can change the working logic : **normally open** (scheme 1) or **normally close** (scheme 2) , or **weight control** ( scheme 3) .

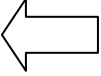
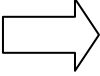
1) After pressing the key **Prog** will appear the message :

oUt 1H

2) Confirm by key  will show the last value set by the leftmost digit flashing :



000500

3) through the use of the arrow  and  increase or decrease the blinking value ,

by the arrows  and  move the flashing digit ;

4) after setting the weight value which above the contact switches to , confirm with 

oUt 1H

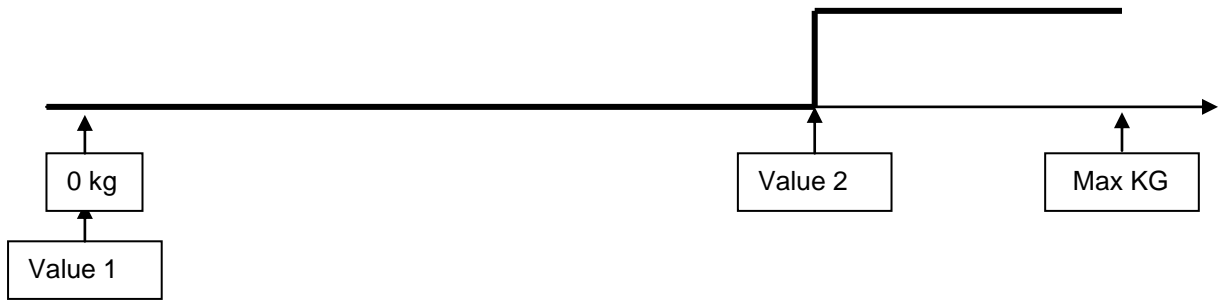
5) if you want to exit, press **Prog** key ; if you want to proceed to change the other value , select the digital output by key  and  and repeat from step 2 .



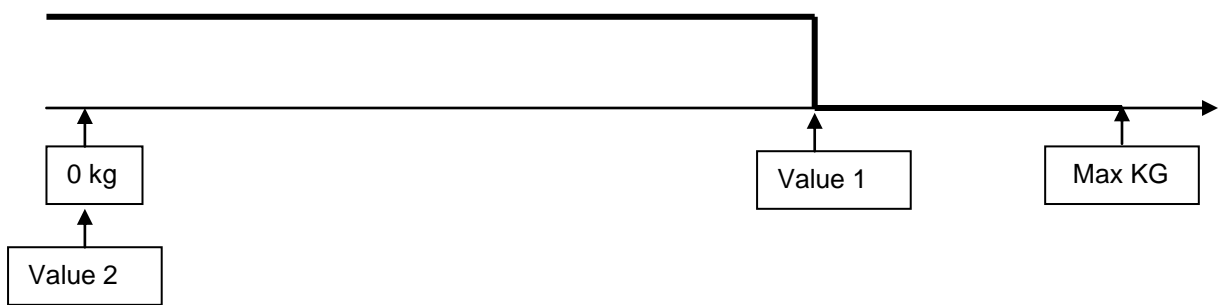
**MAXIMUM VOLTAGE ALLOWED 24 V DC/AC**

### 3.1.2 SET-POINT Working logic

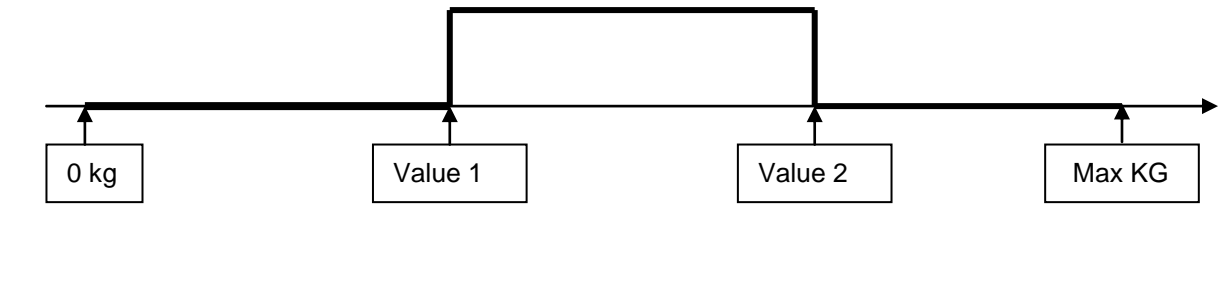
Scheme 1



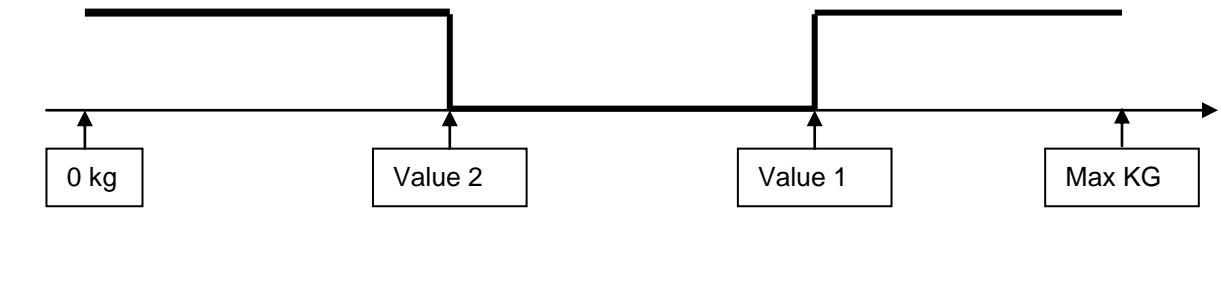
Scheme 2



Scheme 3



Scheme 3.1



# 4. Interfaces

## 4.1 Maxidisplay remote device

The weighing terminal can be programmed to continuously transmits, through a serial RS 485 or RS232, a 11 characters string as below . The output is activated by the displacement of the dip switch **num. 1** in position **ON** for mode RS 485 , while if it is placed in position **ON** the dip switch **num. 2** , will be activated the mode RS232 . In both cases, the transmitted string will be the same.

**The weighing terminal MB 06, is set from the factory the following parameters not editable:**

| APPLICATION PARAMETERS   | DESCRIPTION    |
|--------------------------|----------------|
| Serial channel baud rate | 9600 baud rate |
| Word size                | 8/none/1       |

### 4.1.1 Connection cable with Maxidisplay RS 485

| side MAXIDISPLAY |             |   | side MB06 |             |
|------------------|-------------|---|-----------|-------------|
| DB9 male         |             |   |           |             |
| Pin n°           | Description |   | Pin n°    | Description |
| 8                | RXD -       | ← | 23        | TXD -       |
| 6                | RXD +       | ← | 24        | TXD +       |

N.B.:on the maxidisplay tab, jumper J3 must be between 1 and 2.

### 4.1.2 Connection cable with Maxidisplay RS 232

| side MAXIDISPLAY |             |   | side MB06 |             |
|------------------|-------------|---|-----------|-------------|
| DB9 male         |             |   |           |             |
| Pin n°           | Description |   | Pin n°    | Description |
| 3                | RX          | ← | 20        | TX          |
| 5                | GND         | ← | 22        | GND         |

N.B.: on the maxidisplay tab, jumper J3 must be between 2 and 3.

### 4.1.3 String format transmission

The string can be transmitted only in **continuous mode**. Here is the string format :

| N° of the character | Description    | Meaning                  |
|---------------------|----------------|--------------------------|
| 1                   | \$             | Start car                |
| 2                   | 1 or 3         | 1 positive<br>3 negative |
| 3                   | space          |                          |
| 4                   | 1 weight digit |                          |
| 5                   | 2 weight digit |                          |
| 6                   | 3 weight digit |                          |
| 7                   | 4 weight digit |                          |
| 8                   | 5 weight digit |                          |
| 9                   | 6 weight digit |                          |
| 10                  | 7 weight digit |                          |
| 11                  | CR             | End car                  |

## 4.2 CAN BUS connection

The weighing terminal is equipped with a CAN BUS data output, by which you can connect up to 30 scales in line; through the **optional card**, it is possible to switch the CAN BUS signal to a serial RS232, easily managed from a PC. Below are the commands to enable and disable the transmission, and the description of the data string transmitted in CONTINUOUS mode, ie after the start command transmission.

Will be transmitted, in continuous mode, the string containing the data weight detected at that time, until the terminal receives the stop command; then, the transmission will be interrupted until a new command.

The CAN BUS net, allows to receive the weight value of each individual instrument connected, and this is done without sending the address of the scale, so, once launched the start transmission command, all connected terminals will begin to transmit. The assignment of each instrument address must be programmed inside the MB06 ADDRESS SECTION. ( default address is 1 ).

| Comand                    |   | Code     |           | ASCII Code |           |           |
|---------------------------|---|----------|-----------|------------|-----------|-----------|
| <b>Start transmission</b> | : | <b>1</b> | <b>CR</b> | <b>3A</b>  | <b>31</b> | <b>OD</b> |
| <b>Stop transmission</b>  | : | <b>0</b> | <b>CR</b> | <b>3A</b>  | <b>30</b> | <b>OD</b> |

The string sent by the terminal will be of 19 characters as described :

| N° of the character | Value        | Meaning                                 |
|---------------------|--------------|---|
| 1                   | \$           | Start string character                  |
| 2                   |              | Space                                   |
| 3                   |              | Space                                   |
| 4                   |              | Space                                   |
| 5                   |              | Space                                   |
| 6                   |              | Space                                   |
| 7                   |              | Space                                   |
| 8                   |              | Space                                   |
| 9                   |              | Space                                   |
| 10                  | from 1 to 30 | Address of the scale                    |
| 11                  | ;            | ;                                       |
| 12                  | Weight digit | First digit ( most significant value )  |
| 13                  | Weight digit | Second digit                            |
| 14                  | Weight digit | Third digit                             |
| 15                  | Weight digit | fourth digit                            |
| 16                  | Weight digit | fifth digit                             |
| 17                  | Weight digit | sixth digit                             |
| 18                  | Weight digit | seventh digit                           |
| 19                  | Weight digit | eighth digit ( less significant value ) |
| 20                  | CR           | End string character                    |

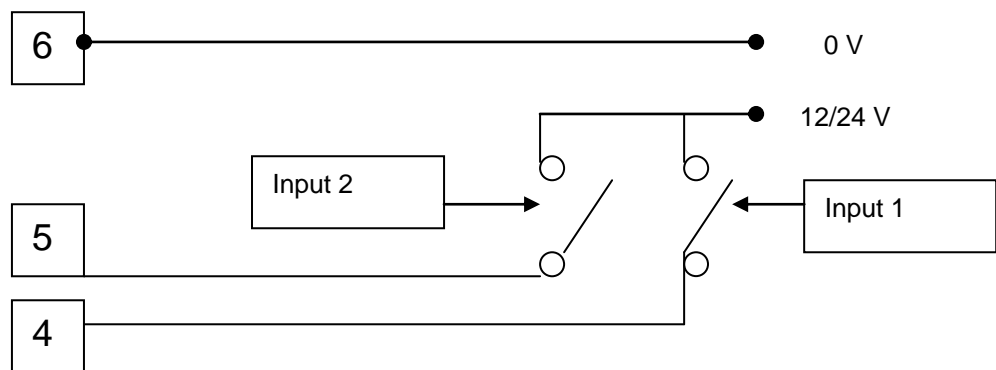
### 4.3 Input wiring diagram

The instrument is provided by two optoisolated input, used to remoting the first 2 keys , associated to the zeroing and tare function ; these two inputs can not be associated any other function.

For a correct operation, you must use a power of 12 or 24 Vdc arising from an external power supply not affected by noise. Any external contacts should be **normally open** .

| Num. of the pin | Input num.   |
|-----------------|--------------|
| 4               | input 1      |
| zeroing         |              |
| 5               | input 2      |
| tare            |              |
| 6               | Input common |

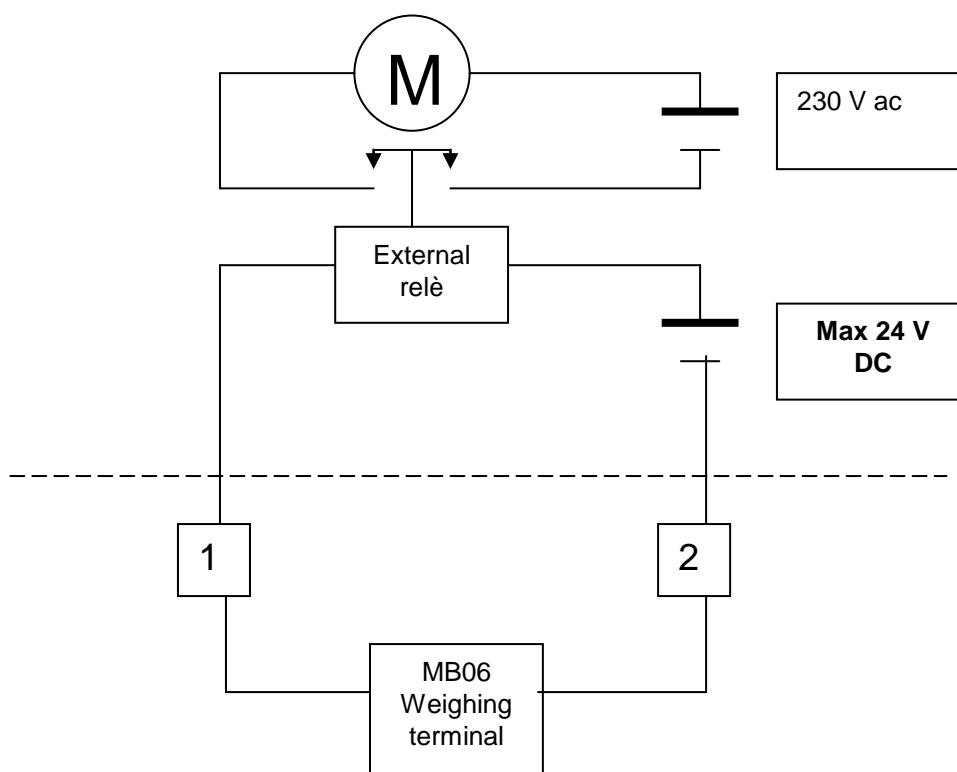
Example of connection between MB06 weighing terminal and external systems:



## 4.4 SET-POINT wiring diagram

| Num. of the pin | Output num.   |
|-----------------|---------------|
| 3               | output 1      |
| 2               | output 2      |
| 1               | output common |

Example of connection between MB06 weighing terminal and external systems:



## 4.5 Parameters table

|   |                     | PAR                                |    |   |   |   |   |   |   |
|---|---------------------|------------------------------------|----|---|---|---|---|---|---|
|   | Parameter           | 1                                  | 2  | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | CONVERSIONS AVERAGE | Set value from 1 to 15             |    |   |   |   |   |   |   |
| 2 | MOVEMENT POINTS     | Set value from 1 to 1000           |    |   |   |   |   |   |   |
| 3 | STABILITY TIME (s)  | Set value from 0 to 4 (STEP : 0,5) |    |   |   |   |   |   |   |
| 3 | STABILITY RANGE (e) | Set value from 1 to 9              |    |   |   |   |   |   |   |
| 4 | SHOW NEGATIVE       | YES                                | NO |   |   |   |   |   |   |
| 7 | CONVERSION TIME     | Set value from 0 to 15             |    |   |   |   |   |   |   |
| 8 | ZERO TRACKER        | Set value from 0,0 to 6,0          |    |   |   |   |   |   |   |

|   |           | CAL-PAR   |                    |              |
|---|-----------|---|--------------------|--------------|
|   | Parameter | Description   |                    |              |
| 1 | dPOINT    | Decimal point position  |                    |              |
| 2 | Prange    | Maximum range value   |                    |              |
| 3 | M-C1-2    | MC multirange   | MD multi divisions | Single scale |
| 3 | ST C1     | Minimum division value C1   |                    |              |
| 4 | ST C2     | Minimum division value C2 (only if MC or MD are enabled)              |                    |              |
| 7 | P_ST_1    | Maximum range value <b>first range</b> (only if MC or MD are enabled) |                    |              |

**CAL\_0**

**CAL**

|                     | G_C |   |   |   |
|---------------------|-----|---|---|---|
| Zone of use         | A   | B | C | D |
| Zone of calibration | A   | B | C | D |

|               | ADDRES                 |
|---------------|------------------------|
| CAN-BUS adres | Set value from 1 to 31 |

|                | MODE          |              |
|----------------|---------------|--------------|
| OPERATING MODE | 0 = loadcells | 1 = impulses |

**4 ma**

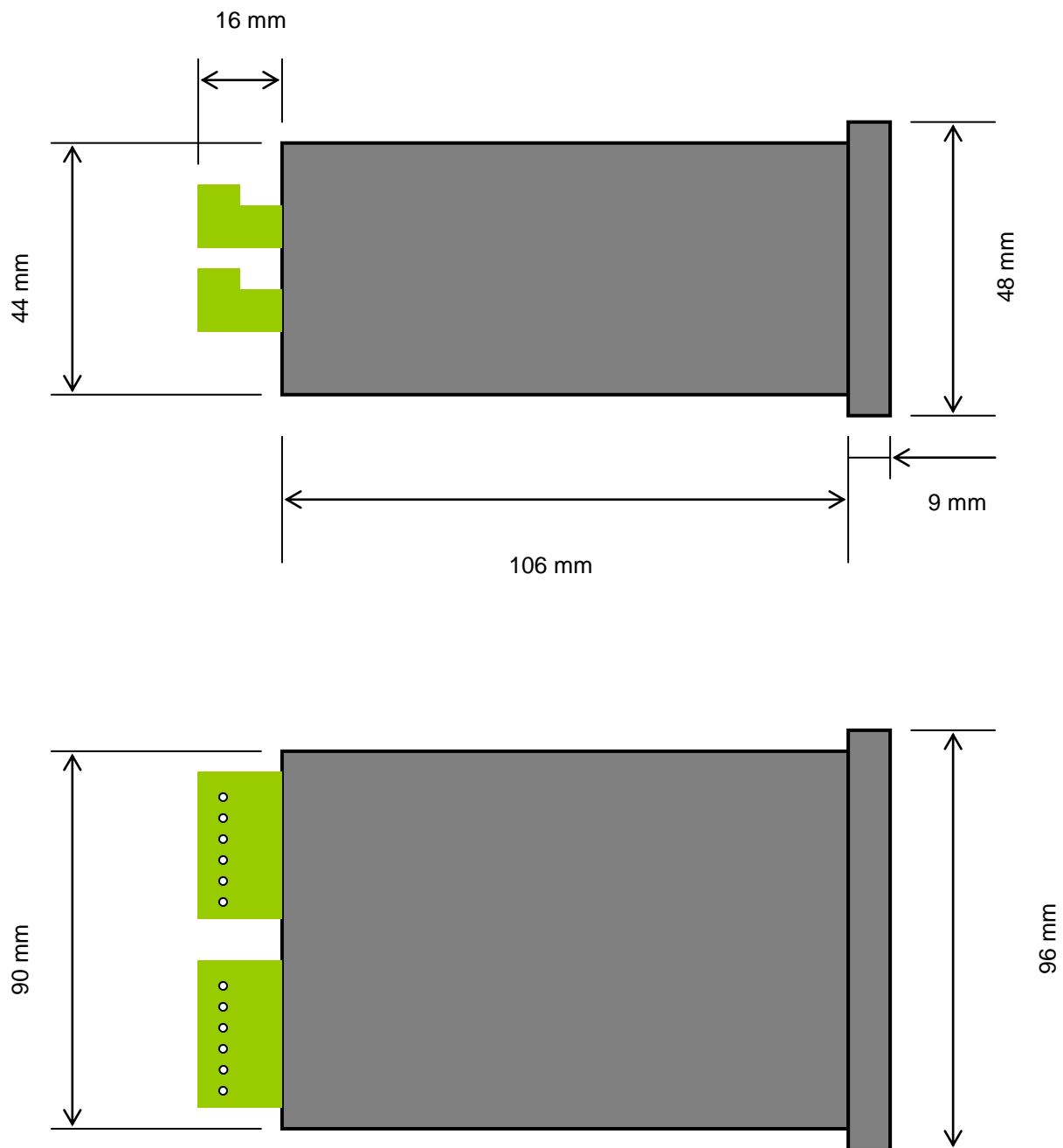
**20 ma**

**0 v**

**10 v**

## 4.6 Case dimensions

In case of front panel mounting, hole size should be of 45x91 mm.



## 4.7 Connectors pinout

