

**Measurement of WEIGHT, FORCE, PRESSURE, TORQUE, DISPLACEMENT and TEMPERATURE**

RISOLUZIONE ± 100000 div RESOLUTION	STANDARD STANDARD
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ACCURATEZZA ≤ ±0.01% ACCURACY
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CALIBRAZIONI DIGITALI DIGITAL CALIBRATIONS
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Data Logger
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Stabilità a lungo termine Long term high stability
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CE RoHS
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Smart
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Alta Affidabilità High Reliability
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"THE EVOLUTION OF THE SPECIES" : after more than 20 years of service in the various versions the new **MP4Plus** is born.

**MP4Plus** is a Professional Digital Laboratory Indicator with **4 inputs**, suitable for receiving signals from strain gauge sensors, transmitters with voltage or current output and PT100.

Particularly suitable for both static and dynamic applications, for calibration and verification in metrology laboratories or industrial environments where it is necessary to make measurements of weight, force, pressure, torque, displacement and temperature.

To **FIT EVERY APPLICATION** the instrument can be configured and customized: the function keys F1, F2, F3 and F4 can be programmed for the function of interest such as: PEAK, HOLD, RELEASE, TX DATA DATALOG, DISCHARGE, ZOOM.

**MP4Plus** allows you to enable and disable each channel and using the **ZOOM** function it is possible to display only the channel of interest in full screen.

The instrument works with a resolution of  $\pm 100.000$  divisions and an accuracy better than 0.005% due to an internal 24-bit Sigma-Delta AD converter and a measurement control that is carried out for switching at a frequency equal to that of sampling: this system provides a better suppression of interference due to offset drift and to the connecting cables.

The sampling frequency can be set from 2.5 samples per second up to 4800 samples per second therefore the instrument meets the needs of applications that require a considerable speed of response.

Each input channels can be supplied in 4 different configurations:

- Version with **input for strain gauge transducers** with standard resolution of  $\pm 100.000$  div. suitable for working with load cells or force transducers with output  $\pm 2\text{mV/V}$  or  $\pm 3\text{mV/V}$  and 4 wires or 6 wires connection.
- Version with **voltage input** with standard resolution of  $\pm 100.000$  div. suitable for working with pressure, torque transmitters, etc ... with output  $\pm 10\text{V}$  or  $\pm 5\text{V}$ .
- Version with **current input** with a standard resolution of  $\pm 160.000$  div. suitable for working with pressure, torque transmitters, etc ... with output 4-20mA or 0-20mA and 2- and 3-wires.
- Version with **temperature input** for PT100 eligible to work in the range from  $-50\text{ }^\circ\text{C}$  to  $+250\text{ }^\circ\text{C}$  with  $0.1\text{ }^\circ\text{C}$  resolution and accuracy  $\pm 1\text{ }^\circ\text{C}$ .

**MP4Plus** has as standard configuration:

- **4 DIGITAL INPUT** 24Vdc with function programmable.
- **5 programmable SET POINT.**
- **5 RELAYS** type DPDT. The relays can be programmed, in combination of the setpoint, to create a simple automation or logics of intervention.

- A powerful **DATALOGGER** with non-volatile memory, which allows to store data at the maximum acquisition speed, synchronize recordings with an internal clock-calendar and eventually export data to a file using an USB stick in .csv file format that can be transferred directly to Microsoft Excel.
- A rear **USB** port to connect directly to a PC or Tablet.

As **OPTIONS** the instrument can be equipped with:

- One, two, three or four **Analog Outputs** programmable as voltage ( $\pm 10V$ , 0/5V, 0/10V,  $\pm 5V$ ) or current (4-20mA, 0-20mA, 0-24mA) that can be associated to different channels or to the TOTAL (sum of two or more channels). The refresh rate of the analog signals is equal to the frequency of acquisition of the respective channels in input.
- A serial **RS232** line to directly connect the device to a PC, PLC or a serial **PRINTER**. Moreover **MP4Plus** can be programmed to work as **REPEATER**.
- A serial **RS485** line with protocol MODBUS RTU normally used to connect multiple instruments in a same network to a PLC.
- A front panel **USB port type A**, to export directly on a USB stick a datalogger in csv file format for a complete compatibility with Microsoft Excel

Other features and functions of importance are:

- Graphical, large and high resolution LCD display with backlit.
- Automatic **UNIT CONVERSIONS** in many specific units for each type of transducers.
- Function **MULTIMETER** which displays the signal of the sensor directly in mV/V, V or mA.
- User selectable language : **ITALIAN or ENGLISH**.
- Function **ZERO** and **AUTOZERO** to reset automatically the measure if the measurement is below a set threshold.
- Function of **HOLD**, **PEAK**, programmable **FILTER**.
- Function of **DISCHARGE** in order to measure the amount of product discharged for example from a tank.
- Function **TOTAL** to perform the sum of two or more channels.
- Function **KEY LOCK** to protect the instrument settings by unauthorized persons.
- 24 columns **PRINTER** (option) connected to the serial port through which it is possible to print the measuring points with the date and time and the data of the company that carried out the survey.
- **REPEATER** Function: The instrument can be configured to display (in the form passive as Slave) measures from the RS232 serial port (for example from another **MP4Plus** - Master) to a remote view of the measures. In this case all the features enabled on the **MP4Plus** Slave will be active (Setpoint, USB, printer, logger etc). The **REPEATER** function is active for one channel.

For each input channel, you can calibrate the signal coming from the sensor both in the **POSITIVE RANGE** and in the **NEGATIVE RANGE** (Example in tension and compression) through 3 different modes:

- Calibration with **Full Scale**: characterization through the programming of the transducer full scale and sensitivity in both the positive and negative range.
- Calibration for **POINTS**: linearity correction by programming 5 known points in both the positive and negative range.
- **Known Weight**: practice characterization (in the field) by imposing a known weight, pressure, torque to the sensor and calibrating the transducer output to this reference value.

To increase security the instrument has the ability to perform a **BACKUP** of all calibrations data so that you can recall them in case of accidental tampering.

**MP4Plus** can be accompanied by the PC program **MP Supervisor** (Option) which allows immediate interface via the USB port with the instrument and allows you to display graphs, export to Microsoft Excel.

The program also allows you to download the data logger performed using the internal memory and those on performed on USB stick and view their acquisition curves.

#### **Typical applications:**

Automatic weighing systems and small dosages.

Systems for monitoring levels of tanks, silos and hoppers.

Integrated measuring systems on test benches and testing.

Measurement systems integrated into automated processes.

Control systems of industrial processes.



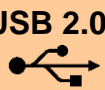



Automatic systems Testing and Quality Control in production lines.

Control measures on board for materials testing machines.





Control measures on springs, friction detection, breakout forces, leakage tests.

Tests on protective and safety devices.

**STANDARD CONFIGURATION**

<b>INPUT</b>	<p><b>CH1 - CH4 - CH2 - CH3</b>  <math>\pm 2mV/V, \pm 3mV/V</math>  <math>\pm 5V, \pm 10V</math>                  0-20mA, 4-20mA                  PT100 (temperature) only for channels CH2 e CH4</p>			
<b>FUNCTION</b>	<p><b>Power Supply 220 Vac</b></p>  <p><b>NO External Power Supply</b></p>	 <p><b>USB 2.0</b></p> 	<p><b>5 Set Point</b>  <b>5 RELAYS</b>                  programmable</p>  <p>Ca be used for :</p> <ul style="list-style-type: none"> <li>motors ON / OFF</li> <li>solenoid ON / OFF</li> </ul>	<p><b>4 Programmable Digital Inputs</b></p>  <p><b>Used for:</b></p> <ul style="list-style-type: none"> <li>Remote Function key</li> <li>PLC Commands</li> </ul>
<b>FUNCTION</b>	 <p><b>Data Logger</b></p> <p>+</p> <p><b>Internal CLOCK CALENDAR</b></p>		<p>PEAK - TOTAL - DISCHARGE</p> <p>DIGITAL FILTER - ZERO and AUTOZERO</p> <p>DIGITAL CALIBRATIONS</p> <p>UNIT CONVERSION</p>	

**ADDITIONAL OPTIONS**

<b>OPTION</b>	<p><b>RS232C and RS485 Modbus</b></p>  <p><b>PLC</b>      <b>PC</b>      <b>PRINTER</b>      <b>REPEATER</b></p>	<p><b>From 1 to 4 analog output</b>                  Associated to channels CH1, CH2, CH3, CH4 or TOTAL                  The refresh rate of the analog signals is equal to the frequency of acquisition of the respective channels in input.</p>  <p><b>INVERTER</b>      <b>PLC</b>      <b>RECORDER</b></p>	
<b>OPTION</b>	 <p>Front panel USB port to download data logger using a USB sticks and to bring data directly to a PC. File type : csv or txt</p>	<p><b>POWER SUPPLY</b></p> <p>115 Vac</p> <p>24Vdc</p>	<p><b>SOFTWARE APPLICATION</b>  <b>MP Supervisor</b></p>  <p>Instrument Configuration Data Analysis                  DataLogger Management                  Graphics.</p>

## TECHNICAL DATA

<b>STANDARD NUMBER OF CHANNELS</b>	<b>4 (CH1 - CH2 - CH3 - CH4)</b>
ACCURACY	≤± 0,010%
LINEARITY ERROR	≤± 0,010%
INTERNAL DIVISIONS	24bit
<b>INPUT :STRAIN GAUGE TRANSDUCERS</b>	<b>± 2mV/V, ± 3mV/V (max ±3.5mV/V)</b>
RESOLUTION	± 100.000div
TRANSDUCERS POWER SUPPLY	5Vdc switching (±3%)
TYPE OF CONNECTION	4 or 6 wires
TRANSDUCER RESISTANCE	from 100Ω to 2000Ω
TRANSDUCERS CONNECTED IN PARALLEL	4 @350Ω or 8 @700Ω
<b>INPUT: VOLTAGE AMPLIFIED TRANSDUCERS</b>	<b>± 10V e ± 5V</b>
RESOLUTION	± 100.000div
TRANSDUCERS POWER SUPPLY	20Vdc (±1Vdc)
<b>INPUT: CURRENT AMPLIFIED TRANSDUCERS</b>	<b>0-20mA   4-20mA</b>
RESOLUTION	+200.000div   +160.000div
TRANSDUCERS POWER SUPPLY	20Vdc (±1Vdc)
<b>INPUT: Temperature (only CH2 and CH4)</b>	<b>PT100 2 wires (range -50 +250°C)</b>
ACCURACY	±1°C
RESOLUTION	±0.1°C°
Unit Conversions for <b>TEMPERATURE</b>	C°, °F
Unit Conversions for <b>WEIGHT and FORCE</b>	kg, t, N, daN, kN, MN, lb, klb
Unit Conversions for <b>PRESSURE</b>	bar, mbar, psi, MPa, kPa, Pa, mH <sub>2</sub> O inH <sub>2</sub> O kg/cm <sup>2</sup> , mmHg, cmHg, inHg, atm
Unit Conversions for <b>TORQUE</b>	N·m, N·mm, kN·m, kg·m, g·cm, kg·mm, ft·lbf, in·lbf
Unit Conversions for <b>DISPLACEMENT</b>	mm, m, foot, inch, cm, dm, μm
<b>MULTIMETER FUNCTION</b>	Direct Display in mV/V, Volt o mA
BACKLIT GRAPHIC DISPLAY	128 x 64 dots
CHARACTER SIZE	~ 4 mm (~13 mm when ZOOM is activated)
TRANSDUCER CALIBRATION	Both in the POSITIVE and NEGATIVE range
TYPE OF DIGITAL CALIBRATION	Full Scale, Point Interpolation, Known Weight
FIELD LINEARITATION	On 1 ... 5 measurement point
BACKUP AND RESTORE FUNCTION	Save and restore all configuration data
FUNCTION OF ZERO	100% (on all the measurement range)
FUNCTION OF AUTOZERO	With TIME and THRESHOLD programming
FUNCTION OF PEAK	POSITIVE and NEGATIVE
FUNCTION OF DISCHARGE	YES
FUNCTION OF KEY BLOCK	Enabled through a Password
FUNCTION OF TOTAL (on all enabled channels)	YES
PROGRAMMABLE RESOLUTION	1 ... 100
PROGRAMMABLE POINT POSITION	0 ... 5
DIGITAL FILTER	0 ... 5
PROGRAMMABLE CONVERSION RATE	from 2.5 to 4800 samples for second
INSTRUMENT LANGUAGE	ITALIAN and ENGLISH
Function Keys programmable in configuration	F1 – F2 – F3 – F4
<b>INTERNAL DATA LOGGER (non volatile memory)</b>	
Max storing points	1 channel enabled : max. 130.000 2 channels enabled: max. 65.000 3 channels enabled: max. 32.000 4 channels enabled: max. 43.000 4 channels enabled +TOTAL: max. 26.000
MAX TIME	100 days
CLOCK CALENDAR	Year, Month, Day, Hour, Minute,Seconds
PROGRAMMABLE SET POINT	5
DIGITAL INPUT with programmable function	4
RELAYS OUTPUT – contact DPDT form	5
• MAX VOLTAGE	220Vdc – 250Vac
• MAX CURRENT	2A
• MAX POWER	60W – 62,5VA
<b>Rear Panel USB output, Connector type B</b>	<b>Max Cable Length 3.5m</b>

NOMINAL WORKING TEMPERATURE	0... +50°C
MAX WORKING TEMPERATURE	0... +50°C
STORAGE TEMPERATURE	-20... +70°C
TEMPERATURE EFFECTS on the measurements	
a) on zero (10°C variation)	≤±0,005%
b) on full scale (10°C variation)	≤±0,005%
POWER SUPPLY	230 Vac +/-10%
FREQUENCY	50/60 Hz
EXTERNAL PROTECTION FUSE	250mA / 250 V
MAX. POWER REQUIRED	10VA
PANEL MOUNTING CASE	DIN 43700
CASE MATERIAL	NORYL UL94 V-0
FRONT AND REAR PANEL MATERIAL	UL94 V-2
PROTECTION CLASS (EN 60529)	IP40 (solo pannello frontale)
DEGREE OF ENVIRONMENTAL CONT.	1
DIMENSIONS ( HxLxD ) mm	72 x 144 x 150 mm
DRILLING TEMPLATE (A x L) mm	68 x 138 mm
WEIGHT	~ 0,8 kg

## OPTIONS

<b>RS232 SERIAL LINE</b>	MAX cable Lenght 13m
<b>RS485 MODBUS RTU</b> (max 32 in multipoint)	MAX cable Lenght 1000m
<b>PRINTER</b>	24 columns (RS232)
<b>Analog Outputs</b>	1 or 2 outputs independent
Current Output	0-20mA, 4-20mA, 0-24mA
Voltage Output (max 20mA – RL min: 1kΩ)	0-5V, 0-10V, ±10V, ±5V
<b>FRONT PANEL USB</b>	File types csv or txt
to download data logger USB Flash Drive (Flash Memory) and take them directly to a PC.	
<b>POWER SUPPLY</b>	115 Vac o 24Vdc

## COMPONENTS SUPPLIED



Mounting Brackets

DB9 Male Connector  
for transducerCD with  
Manual and USB Driver

### COMPONENTS IN OPTION (purchased separately)



USB Cable



RS232 Serial Cable

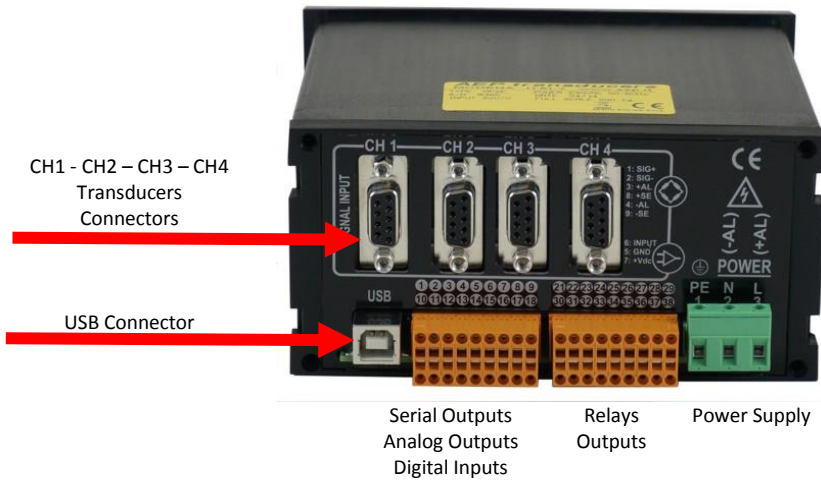


DB9 Male Connector for transducers



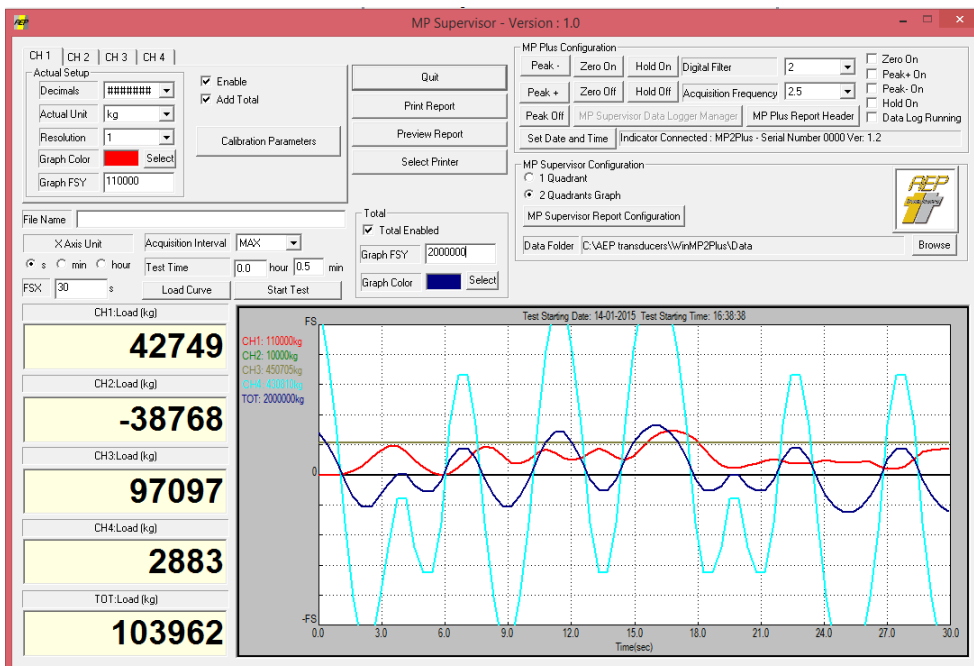
Desktop 24 columns printer

### ELECTRICAL CONNECTION

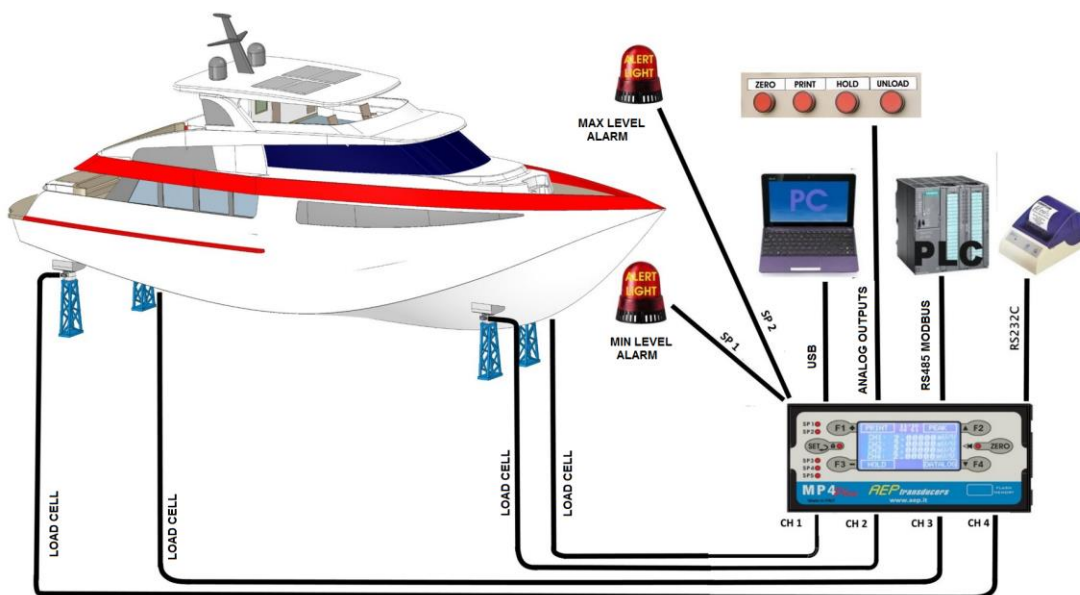
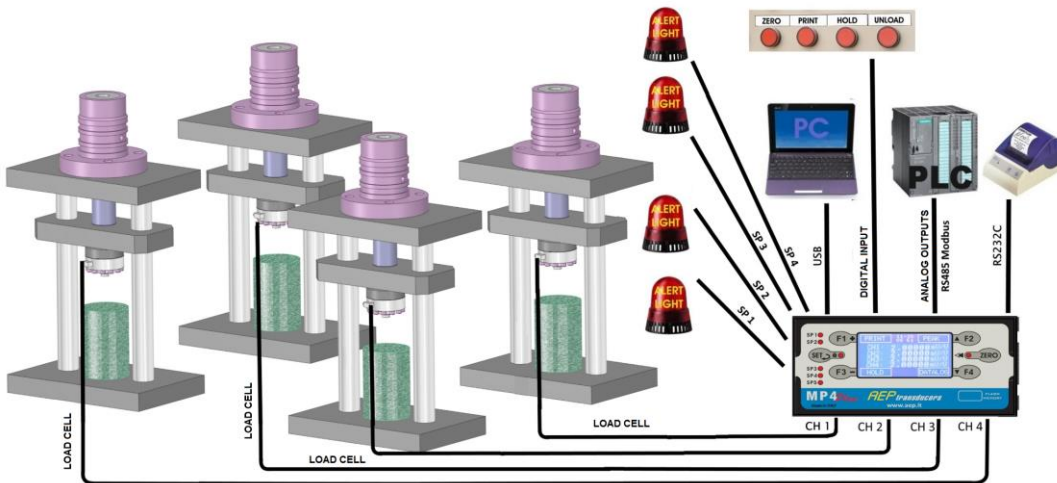
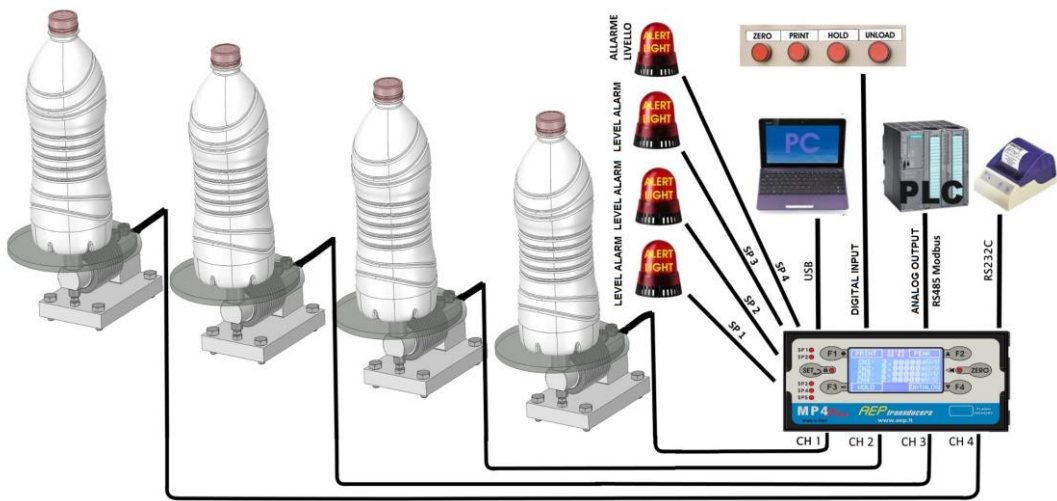


### MP Supervisor (Option)

A dedicated program that allows an immediate interfacing through the USB port with the MP4Plus and allows you to view graphs, export data to Microsoft Excel directly from the PC and set all configuration parameters. The program also allows you to download a Data Logger carried out using the internal memory or the USB Flash Memory and display the respective curves of acquisition.



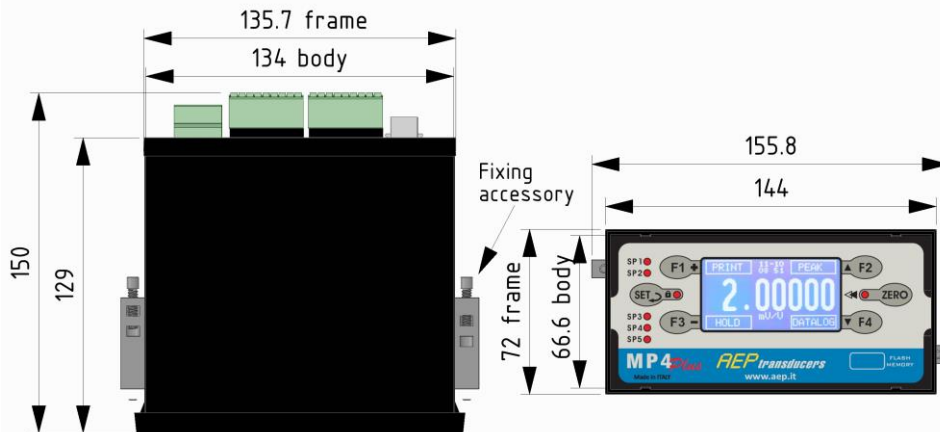
### TYPICAL APPLICATION



### BALANCING

Ability to view both the weights of 4 distinct cells that weight TOTAL..

### Dimensions (mm)



### MOUNTING PANEL APPLICATION



### PURCHASE CODE

	Power	Analog Output	Serial Output	Function
<b>MP4P</b>	<b>XXX</b>	<b>XX</b>	<b>X</b>	<b>X</b>
	<b>230</b> 230 Vac	<b>A1</b> 1 Output	<b>S</b> RS232, RS458 Modbus, Printer	<b>F</b> USB Frontale for Flash Memory
	<b>115</b> 115Vac	<b>A2</b> 2 Output		
	<b>24</b> 24Vdc	<b>A3</b> 2 Output	<b>A3</b> 4 Output	

**Example: MP4P230** (MP4Plus power supply 230Vac base version)

**Example: MP4P24A2S** (MP4Plus power supply 24Vdc + 2 analog output + Serial Output)

**Example: MP4P115SF** (MP4Plus powersupply 115Vac + Serial Output + USB Flash Memory)

**ALWAYS SPECIFY** in the purchase order how to configure the input channels:

**Example: CH1 = 4-20mA CH2 = 2mV/V CH3 = 10V CH4 = PT100**



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In order to improve the technical performance of the product, the company reserves the right to make changes without notice.