TECHNICAL MANUAL

MC 755 Belt

Software version 400.01

PAVONESISTEMI

INDEX

INSTRUMENT FEATURES

CONNECTIONS

DIALS

MENU

TABLES

PROCEDURES

EU Declaration of conformity (DoC)

We

Pavone Sistemi S.r.l.

Via Tiberio Bianchi, 11/13/15

20863 Concorezzo, MB

declare that the DoC issued under our sole responsibility and belongs to the following product:

Apparatus model/Product: **MC755**

Type: Weighing instrument

The object of the declaration described above used as indicated in the installation manual and use, is in conformity with the relevant Union harmonisation legislation:

Directive **EMC 2014/30/EU** Electromagnetic Compatibility

The following harmonized standards and technical specification have been applied:

EN 61000-6-2:2005

EN 61000-6-3:2007 + A1 2011

Directive **LVD 2014/35/EU** Low Voltage Directive

The following harmonized standards and technical specification have been applied:

EN 61010-1:2011

Signed for end on behalf of:

Concorezzo: 01/12/2024

Di Reda Donato – Manager

TECHNICAL FEATURES

CHARACTERISTICS	DESCRIPTION
Load cell input	– Integrated 24-bit A/D converter up to 1000 conv./sec – Cell power supply: 5 Vdc 240 mA (max 16 cells of 350 ohm), protected from short circuit – Measuring range: –7.8 mV/V ÷ +7.8 mV/V – Input sensitivity: 0.02 uV min – Linearity: < 0.01% FS – Thermal drift: < 0.001 % FS / degC – Internal resolution: > 16,000,000 points – Selectable division values: 0.0001 ÷ 50
Encoder input	– N° 1 incremental encoder input 2 phases (up-down, A-B) – Encoder power supply 24Vdc (100mA max) protected from external short circuits – Frequency 2 KHz max
Logic inputs / outputs	No. 6 opto-isolated digital outputs (clean contact) on board (max 30 Vdc, 0.1 A each) No. 6 opto-isolated digital inputs on board (7.5 ÷ 24 Vdc PNP) Expandable I/O with optional external modules mounted on the back of the panel.
Analog inputs / outputs	N° 2 isolated analog outputs (0–10 V / 4–20mA) (second output optional) N° 1 analog input (0–10V / 4–20mA) optional.
Power supply	10÷30 Vdc 10W max isolated
Display	7" backlit color TFT LCD 800 x 480 pixels. Viewing area size 152 x 92 mm
Keyboard	Resistive touch panel integrated in the LCD, with sound feedback (buzzer)
Container	Made of aluminum with polycarbonate front film and with gasket for recessed installation. External dimensions: 202 x 133 mm Recessed installation: 186 x 117 mm, depth: 36 mm + 10 mm terminal block space.
Connections	Removable screw terminal blocks pitch 5.08 mm for power supply, load cells, serial, encoder, logic I/O and analog I/O. Specific connectors for communication ports (RJ45, USB Type A and USB Type B).
Communication interfaces	Removable screw terminal blocks pitch 5.08 mm for power supply, load cells, serial, encoder, logic I/O and analog I/O. Specific connectors for communication ports (RJ45, USB Type A and USB Type B).

CPU and memories	Removable screw terminal blocks pitch 5.08 mm for power supply, load cells, serial, encoder, logic I/O and analog I/O. Specific connectors for communication ports (RJ45, USB Type A and USB Type B).
Metrological characteristics	CE–M approved (OIML R–76 / EN45501) NAWI Accuracy class: III nmax ≤ 10000 divisions at single weighing range nmax ≤ 3000 divisions at multiple ranges (multirange)
Operating temperature	– 10°C ÷ + 40°C
Storage temperature	– 20°C ÷ + 70°C
Insulation	Class I
Front protection degree	IP65

SYMBOLS

Following are the symbols used throughout the manual to call reader's attention:

Warning! This operation shall be carried out by qualified staff.

Pay special attention to the following points.

Further details.

ATTENZIONE:

To clean the panel, use a smooth cloth possibly neutral soap. While cleaning it instrument must be turned off.

Environmental pollution level: 2

WARNINGS

– This manual provides texts and pictures to inform the operator about all prescriptions and criteria necessary for installing and using this instrument.

– The equipment shall be installed only by qualified personnel that must have read this manual. With the expression "qualified personnel" is meant the personnel that has been trained and thus expressly authorised to carry out the installation by the person in charge for the system safety.

– Power the instrument with a voltage value within the limits specified in the features.

– The user must make sure that the installation is carried out in compliance with the relevant rules in force.

– Please contact the nearest Assistance Centre for every fault you find. Any attempt of disassembly or change that has not been previously authorised will null and void the warranty and will release the Manufacturer from any responsibility.

– The purchased instrument has been designed and produced to be used in the weighing and metering processes thus any improper use will release the Manufacturer from any responsibility.

ASSEMBLING THE INSTRUMENT

⚠️
- The following procedures must be performed by specialized personnel.

- All connections must be carried out with the device powered off.

The device is installed in a panel cutout with a drilling template of 190 x 117 mm and is fixed using the 4 tightening screws provided.

⚠️
- Do not install the device near power equipment (motors, inverters, contactors, etc.) or any devices that do not comply with CE standards for electromagnetic compatibility.
- The connection cable for load cells must have a maximum length of 140m/mm².
- The RS232 serial line must have a maximum length of 15 meters (EIA RS–232–C standards).
- The warnings indicated for connecting the individual peripherals must be observed.

INSTRUMENT IDENTIFICATION PLATE

mod. MC755
s.n. 2024/0001
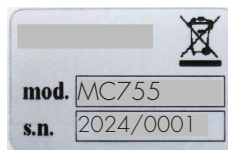
✋ It is important to provide the following data when requesting information or instructions regarding the device, along with the program number and version, which are indicated on the manual cover and displayed when the device is powered on.

BACK PANNEL
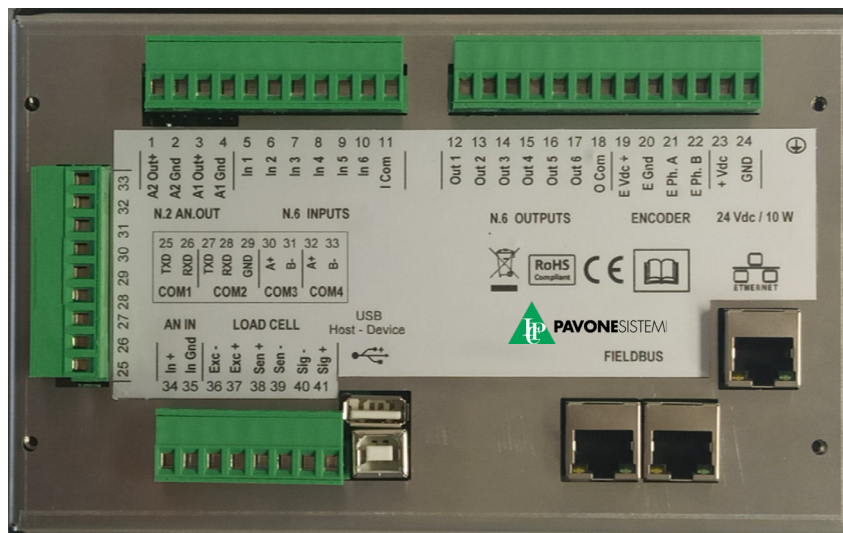
POWER SUPPLY TO THE INSTRUMENT

• The device is powered through terminals 23 and 24.
• The power cable must be routed separately from other cables with different voltages, load cell cables, and logical input/output cables.

NUM.	Terminal block UPPER 13 poles pitch 5.08 mm
23	+10÷30 Vdc 10W
24	0

• The zero wire (terminal 24) is not connected to the metallic enclosure. Connect the metallic enclosure to the ground using a fixing screw.

LOAD CELL CONNECTION

• The load cell cable must not be routed alongside other cables (e.g., relay output cables or power cables) but must follow its own path.
• Any load cell cable extensions must be carefully shielded, respecting the color codes, and using cables provided by the manufacturer. Extension must be soldered or connected using support terminals or the provided junction box.
• The load cell cable must not have more conductors than required (4 or 6). In the case of a 6-conductor cable where only 4 are used (power and signal), connect the reference wires to the respective power wire polarities.

A maximum of 8 load cells of 350 ohms each can be connected in parallel. The load cells are powered with 5 VDC and are protected from temporary short circuits. The device supports load cells with sensitivities from 1 mV/V to 7.8 mV/V. The load cell cable must be connected to terminals 36 through 41 of the lower removable terminal block.

NUM.	Terminal block LOWER 8 poles pitch 5.08 mm
36	Power Cell −
37	Power Cell +
38	Reference Cell +
39	Reference Cell −
40	Signal Cell −
41	Signal Cell +

4-WIRE CELL CONNECTION

SIGNAL−
POWER +
SIGNAL +
POWER −

6-WIRE CELL CONNECTION
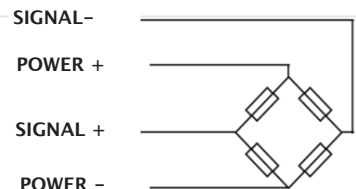
− Signal
+ EXC
+ Sense
+ Signal
− Sense
− EXC
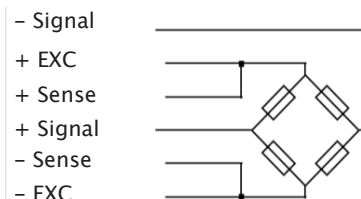
Connect the load cell cable shield to terminal 24 (−Instrument Power).

ANALOG INPUT CONNECTION (OPTIONAL)

When configured, the device accepts an analog signal (not optoisolated) in current or voltage.
NOTE: The standard configuration is made in the laboratory.

Caratteristiche:
• Voltage analog input: Jumpers JP14 and JP15 to the RIGHT – range 0-10V or 0-5V.
• Current analog input: Jumpers JP14 and JP15 to the LEFT – range 0-20mA or 4-20mA.

⚠️ • Use a shielded cable for connection and connect the shield to terminal 24 (–Instrument Power).
• Analog transmission may be sensitive to electromagnetic disturbances, so cables should be as short as possible and follow a separate path.

NUM.	Terminal Block Lower 8 poles pitch 5.08 mm
34	Ana. IN +
35	Ana. GND
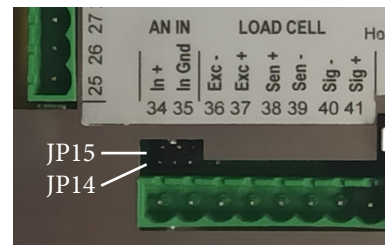
LOGIC INPUT CONNECTION (UPPER TERMINAL BLOCK)

Logical inputs are optoisolated from the device.

⚠️ • Connection cables for logical inputs must not be routed alongside power or supply cables.
• Use the shortest possible connection cable.

To activate a logical input, connect it to the positive terminal of a 24VDC supply and connect the Common Inputs terminal to the negative of the same supply. Refer to the "Connection Summary" page at the end of this manual for details.

LOGIC OUTPUT CONNECTION (UPPER TERMINAL BLOCK)

Logical outputs are photorelays (clean contacts) with a single common terminal. Each contact has a capacity of 100mA / 30VDC. When the output is enabled, the contact closes (NA contact).

⚠️ • The environment where the device is installed may typically be subject to strong magnetic fields and electrical disturbances caused by nearb machinery. Standard precautions should be taken to prevent interference with the signals of the precision electronic equipment (e.g., filters on relays, diodes on 24VDC relays, etc.).

Refer to the "Connection Summary" page at the end of this manual for details.

ANALOG OUTPUT CONNECTION (2ND OPTIONAL OUTPUT)

When configured, the device provides two optoisolated analog outputs in current and voltage.
NOTE: The standard configuration is made in the laboratory.
Characteristics:

⚠️

- Voltage analog output: Jumpers JP2 (Ana1) and JP7 (Ana2) to the RIGHT – range 0–10V or 0–5V, minimum load 10K ohms.
- Current analog output: Jumpers JP2 (Ana1) and JP7 (Ana2) to the LEFT – range 0–20mA or 4–20mA, maximum load 300 ohms.
- Use a shielded cable for connection and connect the shield to ter minal 24 (–Instrument Power).
- Analog transmission may be sensitive to electromagnetic disturbances, so bles should be as short as possible and follow a se parate path.

Connection for 2-phase encoder (push-pull type)

NUM.	Terminal block UPPER pitch 5.08 mm
1	Ana.2 OUT+
2	Ana.2 GND
3	Ana.1 OUT+
4	Ana.1 GND
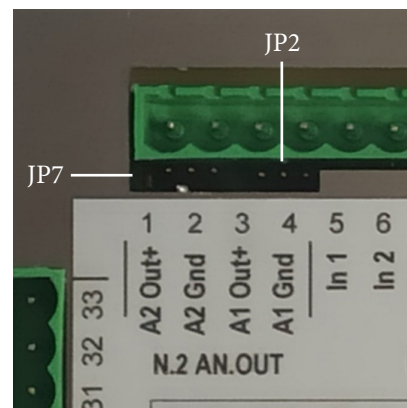
ENCODER INPUT CONNECTION

• The encoder cable must not be routed together with other cables (e.g., outputs connected to contactors or power supply cables) but must follow its own dedicated path.

⚠️ • Any extension connections of the encoder cable must be carefully shielded, respecting the color code and using the cable type provided by the manufacturer. Extension connections must be performed by soldering or using terminal blocks.

The maximum signal acquisition frequency of the encoder is 2 kHz. Install the encoder so as not to exceed this operating frequency. Example: if the resolution of the encoder is 10,000 pulses per revolution, the rotational speed must not exceed 12 rpm. The encoder acquisition is of the up–down type (counting in both rotation directions). For this reason, both phase wires (1 and 2) must be connected. The rotation direction is automatically recognized by the device. The power supplied to the encoder is the one provided by the device and is protected against external short circuits.

NUM.	Terminal block upper 9 poles pitch 5.08 mm
19	Encoder Vdc+
20	Encoder GND
21	Encoder PH. A
22	Encoder PH. B

RS232 SERIAL CONNECTION (SIDE TERMINAL BLOCK)

⚠️ • To establish a serial connection, use a shielded cable, ensuring that the shield is connected to ground at only one of the two ends. If the cable has more conductors than those required, connect the unused conductors to the shield
• The RS232 serial connection cable must have a maximum length of 15 meters (EIA RS–232–C standards), beyond which the RS485 interface included in the device must be used.
• The cable must not be routed with other cables (e.g., outputs connected to contactors or power supply cables) but must preferably follow its own dedicated path.
• The PC used for the connection must comply with the EN 60950 standard.
Below are the connections for the 9–pole lateral terminal block with a 5.08 pitch.

NUM.	Terminal block side 9 poles pitch 5.08 mm
25	COM1 RS232 TX
26	COM1 RS232 RX
27	COM2 RS232 TX
28	COM2 RS232 RX
29	GND

RS485 SERIAL CONNECTION (SIDE TERMINAL BLOCK)

Using the RS485 serial interface, it is possible to establish serial connections over long distances (up to 1000 meters).
This type of connection also allows multiple devices to be connected to a MASTER unit (personal computer, PLC, etc.) using a single serial line and therefore only one serial port on the MASTER.
The maximum number of devices connected is 32. Naturally, the master unit must also be equipped with an RS485 serial interface; if not, one can be provided as an option.

• The serial connection cable must be suitable for RS485 serial communications, consisting of one twisted pair for RS485 and its relative shielding.
• The cable must not be routed with other cables (e.g., outputs connected to contactors or power supply cables) but must preferably follow its own dedicated path. The PC used for the connection must comply with the EN 60950 standard.

Below are the connections for the 9-pole lateral terminal block with a 5.08 pitch.

NUM.	Terminal block side 9 poles pitch 5.08 mm
30	COM3 RS485 +
31	COM3 RS485 –
32	COM4 RS485 +
33	COM4 RS485 –

USB HOST (Specification 2.0 compliant; up to 480 Mbps)

• Support for the USB Mass Storage Device class allows for reading and writing files on USB memory devices, such as pendrives.
• C It is also compatible with USB 3.0 drives that support backward compatibility with the USB 2.0 specification.

USB HOST (Specification 2.0 compliant; full speed 12 Mbps)

• Use this communication port to interface directly with a PC via a USB port.
• Use a standard USB cable for the connection.

To connect the device via the USB device port, the appropriate driver for the operating system used must be installed.
Follow the specific installation instructions.

ATTENTION: only one of the two USB connections should be active at any given time. This is because, at the hardware level, the two interfaces share the same lines, and simultaneous connections would cause usage problems.

ETHERNET CONNECTION

An Ethernet connector is always present.

Characteristics:

- Transmission speed: 100 Mbps
- Network compatibility: Compatible with 10/100/1000 Base-T networks
- Ethernet protocols: TCP, Modbus/TCP, UDP, IP, ICMP, ARP
- Communication mode: TCP server
- Indicator LEDs (2): Ethernet line presence and communication/diagnostics
- Buffer size: 256 bytes
- Connection Timeout: Min 30 seconds – Max 90 seconds
- Link Timeout (disconnected cable): 30 seconds

⚠

• The RJ45 Ethernet connection cable has a maximum length depending on the cable type. A standard shielded Cat5 cable can have a maximum length of approximately 180 m.
• It is possible to connect the Ethernet communication port directly to a PC without using other network devices (router, switch, hub, LAN bridge, etc.), but special RJ45 cables called "crossover" must be used.
• Normally, cables are of the "straight-through" type and allow connection to network devices such as routers or hubs but not direct connections between two PCs (although network cards with auto-sensing technology now exist, which recognize the cable type and connection type, allowing direct PC-to-PC connections even using non-crossover cables).
• Below are diagrams of the two cable types mentioned and their respective connection schemes.
• The cable must not be routed with other cables (e.g., outputs connected to contactors or power supply cables) but must preferably follow its own dedicated path.

RJ45 termination: For straight cable, use 568A or 568B
For Crossover cable, use 568A at one end, 568B at the other end

PROFINET CONNECTION (OPTIONAL)

The Profinet connection is made using two RJ45 connectors.
Refer to the previous page for connection notes and warnings.

Characteristics:

> PROFINET IO Real Time (RT) communications.
> Up to 128 bytes of fieldbus I/O in each direction.

ETHERNET/IP CONNECTION (OPTIONAL)

EtherNet/IP is a real-time industrial protocol based on Ethernet.
Two RJ45 connectors are used, as with Profinet.
Refer to the previous page for connection notes and warnings.

Characteristics::

> 10 and 100 Mbps operation, Full and Half Duplex.
> Up to 128 bytes of fieldbus I/O in each direction.

ETHERCAT CONNECTION (OPTIONAL)

EtherCAT is a real-time industrial protocol based on Ethernet.
Two RJ45 connectors are used, as with Profinet. Refer to the previous page for connection notes and warnings.
The EtherCAT protocol requires that the RJ45 connectors have IN and OUT functions.
By connecting multiple MC755 devices in series, the MASTER must be connected to the IN of the first MC755, whose OUT will connect to the IN of the next device, and so on.

Of the two RJ45 connectors, the one on the left is OUT, and the one on the right is IN.
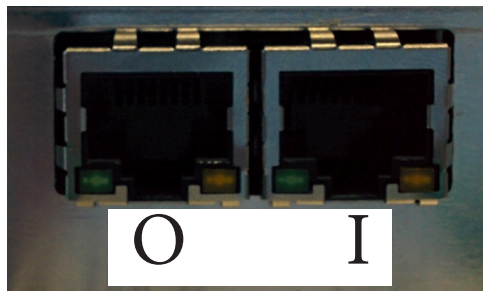
MAC ADDRESS IN INDUSTRIAL ETHERNET FIELDBUS INSTRUMENTS

Devices with Industrial Ethernet protocols (Profinet, Ethernet/IP, EtherCAT) bear a label like the one shown in the figure.
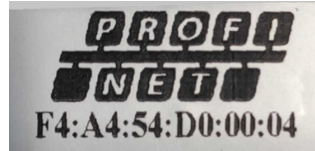
On the same Fieldbus label (in this example, Profinet), the MAC Address of the module is displayed.

CONNECTION SUMMARY

Below is an illustration summarizing the connections to be made in the terminal blocks:

UPPER terminal block.

LATERAL terminal block.

LOWER terminal block.
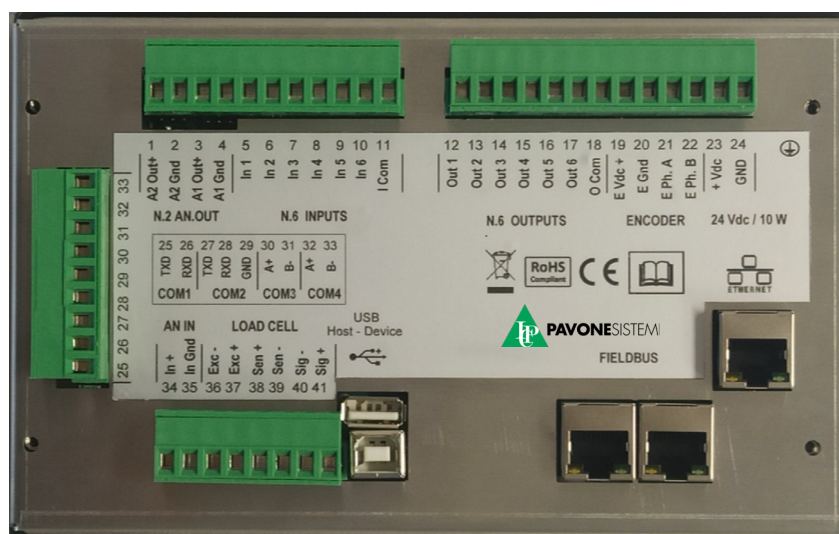
NUM.	Terminal block SIDE pitch 5.08 mm
25	COM1 RS232 TXD
26	COM1 RS232 RXD
27	COM2 RS232 TXD
28	COM2 RS232 RXD
29	GND
30	COM3 RS485+
31	COM3 RS485–
32	COM4 RS485+
33	COM4 RS485–

NUM.	Terminal block UPPER pitch 5.08 mm
1	Analog 2 OUT+
2	Analog 2 GND
3	Analog 1 OUT+
4	Analog 1 GND
5	Input 1
6	Input 2
7	Input 3
8	Input 4
9	Input 5
10	Input 6
11	Common Inputs

NUM.	Terminal block UPPER pitch 5.08 mm
12	Output 1
13	Output 2
14	Output 3
15	Output 4
16	Output 5
17	Output 6
18	Common Outputs
19	Encoder Vdc+
20	Encoder GND
21	Encoder PH.A
22	Encoder PH.B
23	Power supply +10÷30 Vdc

NUM.	Terminal block LOWER pitch 5.08 mm
34	Ana. Input +
35	Ana. Input GND
36	Power Cell –
37	Power Cell +
38	Reference Cell +
39	CCreference Cell –
40	Signal Cell –
41	Signal Cell +

HARDWARE TROUBLESHOOTING GUIDE

PROBLEMS	Possible Cause	Remedy
The instrument remains off	• The supply voltage is not as required.	• Provide the correct supply voltage.
The weight display is stuck	• The load cell is not functioning properly or is not correctly connected.	•Use a tester to ensure: 5V between Supply (+) and (–). 5V between Reference (+) and (–). Millivolt movement between Signal (+) and (–) when loading or unloading the load cell.
Inputs and/or outputs do not work correctly	• Wiring errors or incorrect software settings.	• Use the I/O Test function to verify the correct operation of inputs and outputs and check the settings of the specific program.

MAIN SCREEN

Status bar		Quadrant setpoint
Touch botton		Quadrant hourly flow
Bar graph analog output		Quadrant Logic I/O
Quadrant tape		Quadrant Total

STATUS BAR

– Description of the status or alarm that occurred

– Dosing timer

Background color of the bar and message:

MESSAGE	BACKGROUND COLOR	CONDITION
STOP	GREY	Stop condition
DOSAGE	GREEN	Dosage with automatic regulation
DOSAGE	ORANGE	Dosage with manual adjustment
SIMULATION	PURPLE	Simulation procedure (test)
SYSTEM CALIBRATION	PURPLE	System calibration procedure
RESET TAPE	PURPLE	Procedure for resetting the belt weight
WEIGHT ERROR	RED	Load cell signal acquisition alarm
FIELDBUS ERROR	RED	Failure to communicate with fieldbus module
ERR CRC F–BUS	RED	Fieldbus communication error
NO FIELDBUS COM	RED	Offline fieldbus network
ADJUSTMENT IMPOSSIBLE	RED	Regulation alarm
FIXED WEIGHT	RED	Weight alarm stuck
MINIMUM WEIGHT	RED	Empty belt alarm while driving
OUT OF TOLLER.	RED	Hourly flow rate outside the set tolerance
ENCODER ERROR	RED	Encoder signal acquisition alarm

MC755 PARAMETER STRUCTURE AND NAVIGATION

ELECTRONIC IGNITION

When switched on, the display temporarily shows an introductory screen, which indicates the firmware code and version.

Firmware code

i It is important to communicate the firmware code in case of request for information or indications regarding the instrument.

GENERAL DATA VIEW

The general display on the display is divided into quadrants, each dedicated to a measurement or parameter.

This is the standard display while driving and when stopped. Depending on the case, pressing the dial will access a dedicated screen with more details.
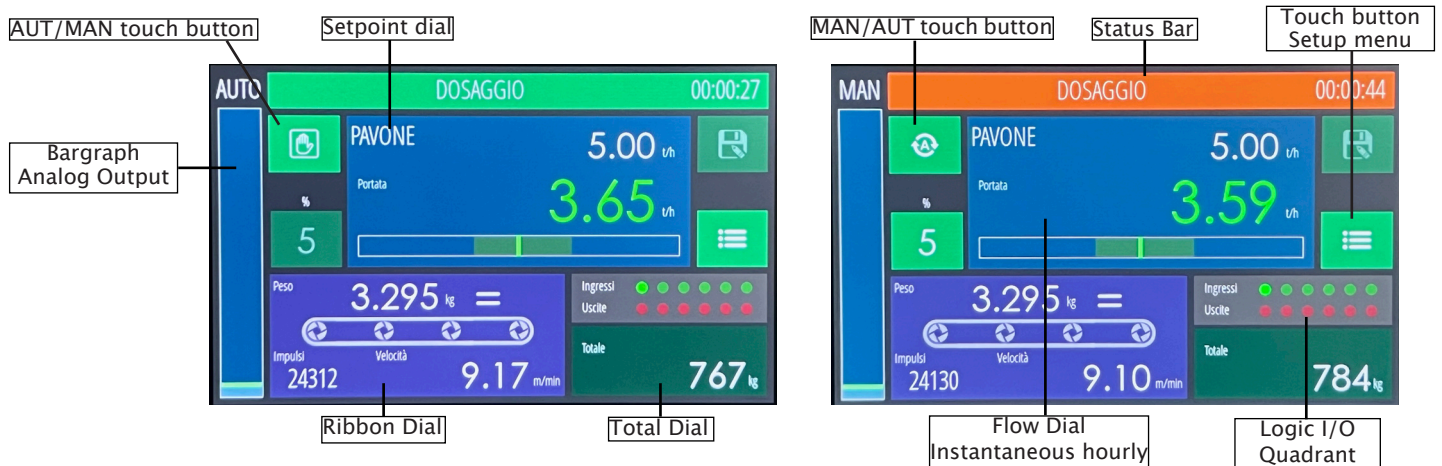
HOW TO ACCESS THE SETUP MENU

By pressing the "Setup Menu Touch Key" you can access theprogramming of the weighing system parameters.
There are 4 selections: Info – Test – User – Technician
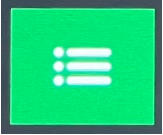
Questo tasto permette l'accesso
al menu di programazione.
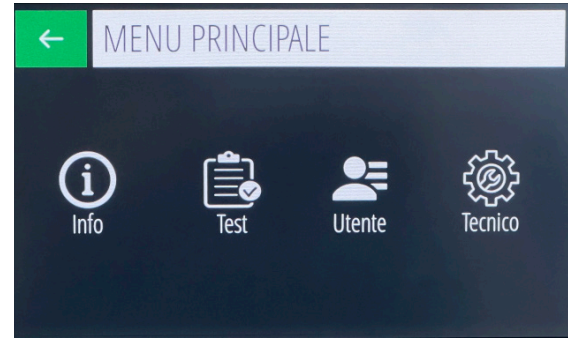
A parameter menu can consist of 1 to 9 items
per screen. If there are more than 9 commands, the
scroll bar located to the right of the parameters can
be used to access the further selections.
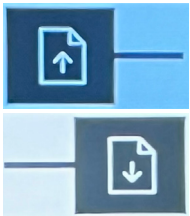
This button allows selection of
the previous menu.

This button allows you to
select the next menu.

Description Parameter

Unit of Measurement

Current Value

Scroll Bar
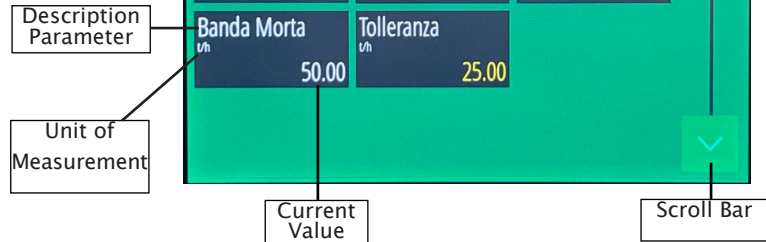
PARAMETER PROGRAMMING MODE

The parameter programming procedures are divided into 2 types: programming of numeric parameters and selection of parameters with a predetermined value.

Parameter Description

Current Value

Dialing Keys numeric

Quit Programming

Default Parameters

Touch keys for confirmation
and change
of default parameter

DIAL: TOTAL

In the general screen, by pressing on the "Total" dial you access the detail screen where additional information is displayed.
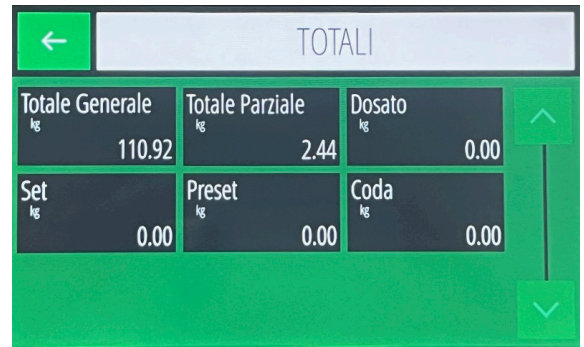
	Setpoint, total weight transported. When the total reaches this value, the relative output is activated
Set	
Preset	When less than this value is missing to reach the set, the relative output is activated.
Coda	Output activation advance compared to the setpoint value

By pressing the General Total or Partial Total dials you can reset the values of the stored totals.

DIAL: SETPOINT

In the general screen, by pressing on the dial you access the flow set point detail screen, where you also access the programming of the setpoint values.
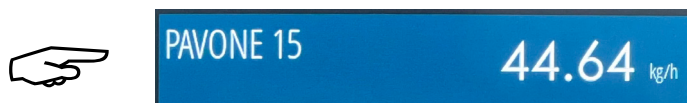
Touch key for setpoint programming

Selected setpoint number

Name of the selected setpoint

The bar graph and percentage value in the center indicate the proportion of the active setpoint value to the full scale.
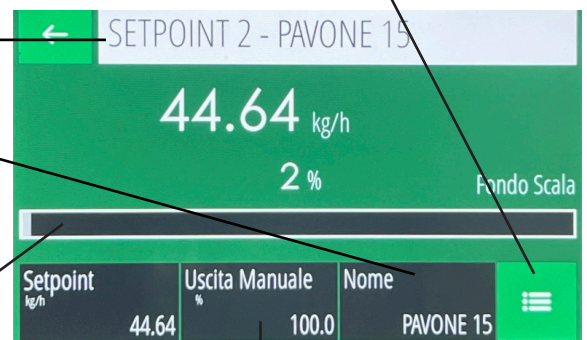
Percentage of maximum capacity

DIAL: HOURLY FLOW

In the general screen, by pressing the FLOW dial you access the instantaneous hourly flow rate detail screen, where additional information is displayed: graphic display of the flow rate over time, statistical data of max., average and min. flow rate.

ⅈ **TECHNICAL NOTE: GRAPHIC REPRESENTATION OF HOURLY FLOW RATE**

The graph represents 300 values, one value per second for 5 minutes, regardless of the sampling time.

When the graph is completed, the last third (50 values) are redrawn at the beginning and the representation continues from there.

The Max, Min and average values refer to the values represented in the graph.

The central reference line refers to the current flow setpoint, the lines above and below the central one represent the set tolerance, programmed, otherwise 25%del set.
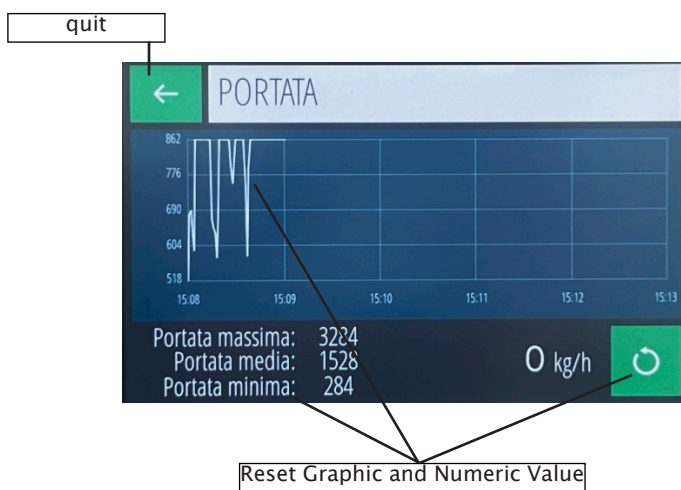
The display shows the current hourly flow values, the minimum, maximum values and the arithmetic mean of the previous instantaneous hourly flow values represented in the graph.

During operation in RUNNING the hourly flow rate value takes on different colors based on the following conditions.

The bar below the value during dosing indicates the deviation from the active setpoint, with a GREEN index. The GREY index indicates the previous value and therefore the variation, and is updated every 3 seconds.

COLOR VALUE RANGE	CONDITION
WHITE	In arrest condition
GREEN	In dosing mode (automatic or manual)
RED	In a condition of out of tolerance

Offset bar
GREEN index

Offset bar
GRAY index

CURRENT WEIGHT DIAL
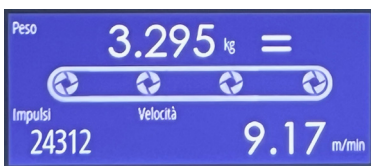
This dial displays the current detected weight.

In case of load cells not connected or faulty connection cable, instead of the measurement the writing is indicated

NO CONN.

If the weight is not calibrated, the flashing message NO CAL is displayed instead of the weight; the various serial protocols and the drive are also inhibited.

DIAL WEIGHT DOSED IN THE LAST SAMPLING PERIOD
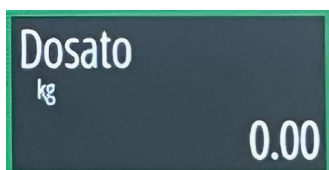
This dial, located within the total menu, displays the net weight dosed in the last sampling period, programmable in seconds from 3 to 120, expressed in the same unit as the current net weight.

MC755 MENU PROGRAMMING LEVELS

The programmable parameters are organized in 3 different levels: User, Technician and Setup.

A programmable password can be enabled for each level to access the menu.

Modifying the parameters could compromise the operation of the machine, therefore it is recommended to do so only if you are an expert and in any case after having read the manual.
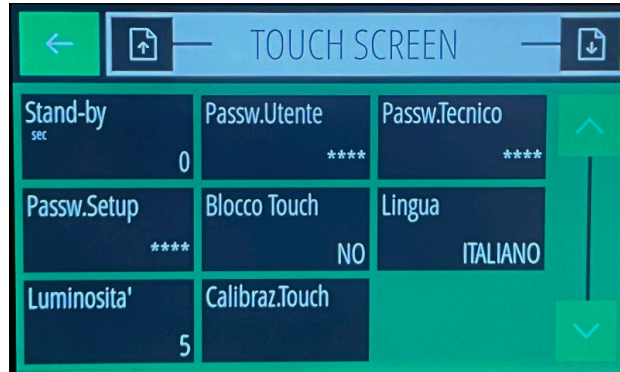
ACCESS TO THE MENU

This button allows access to the User, Technician, Test and Info menus.

Pressing for 3 seconds determines access to the System Setup menu.

USER MENU

Contains the functions and parameters that can normally be changed by the operator based on work needs

- Regulation parameters
- I/O selections
- Operating times
- Variable filters

TECHNICAL MENU

Contains settings related to the type of machine and the operating mode, normally to be used during the start–up phase (recommended for expert personnel):

- Belt specifications
- System calibration
- Communication ports
- Touch screen
- Archives
- Date hours

TEST MENU - (ACCESS ONLY IF EXPERT)

Contains the functions for checking the hardware parts of the MC755 and their operation.

It also allows the simulation of the operation of the conveyor belt by entering the speed and weight values.

N.B.: The simulation is activated with input 1 (Gear) active.

MAIN MENU	SIMULATION MENU
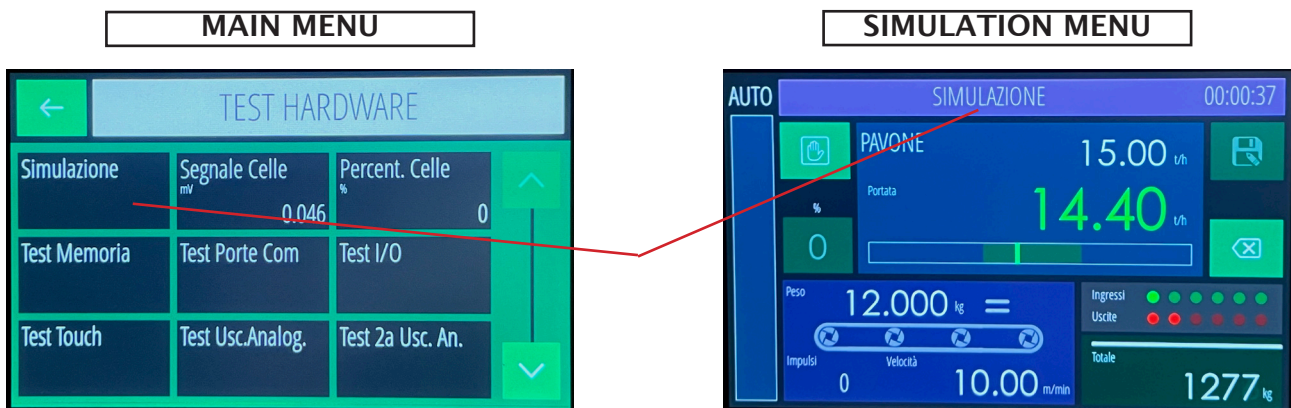
SYSTEM MENU - (ACCESS ONLY IF EXPERT)

Contains the instrument configuration functions/parameters, the modification of these parameters is normally carried out during the indicator production phase
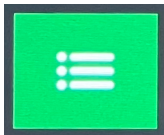
This button allows access to the System Setup menu.

A long press of at least 3 seconds is required.
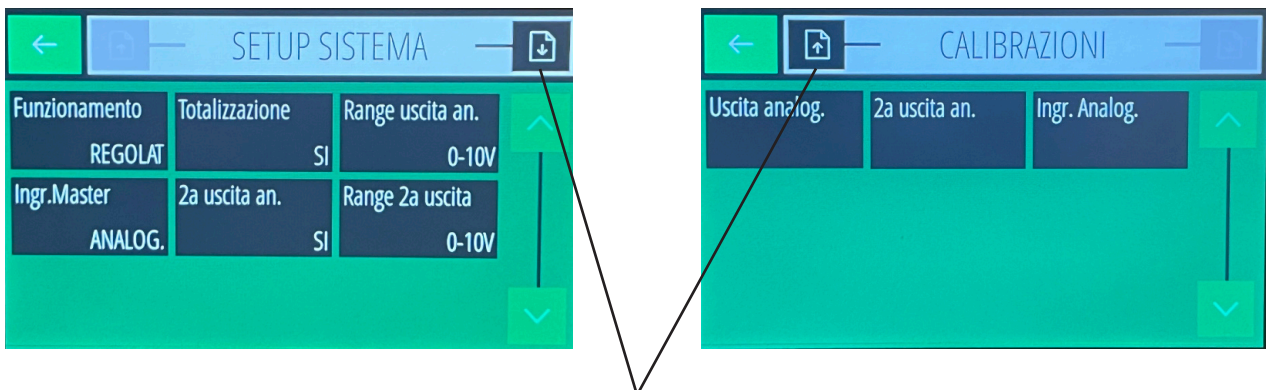
This button allows you to choose the menu with the modifiable parameters

SYSTEM SETUP NAVIGATION TABLE

Access from the main screen by holding down the MENU button for 3 seconds.

Programmable password (default = 2286)

Submenu	Parameter / Function	Descrizione
System Setup	How it works	TOTALIZER / REGULATOR selection
	Encoder	NO/YES selection
	Totalization	NO/YES selection
	Master Entrance	Selection (NONE / SERIAL / ANALOG)
	Analog output range	Selection 0–10V, 0–5V, 0–20mA, 4–20mA
	2nd analog output	NO/YES selection: Only if regulator, the second output transmits the instantaneous hourly flow rate
	Range 2nd exit	Selection 0–10V, 0–5V, 0–20mA, 4–20mA
	Imp. KK Factor	NO/YES selection
	Displayed Weight	Selection (WEIGHT – WEIGHT / METER)
Calibrations	Analog output	Calibration procedure
	2nd analog output	Calibration procedure
	Analog input	Calibration procedure

MAIN MENU NAVIGATION TABLE

Access from the main screen by pressing the MENU button.

The main menu is divided into 4 sections:

– INFO MENU (Display of the main parameters)

– TEST MENU (HW resource test functions)

– USER MENU (User operating parameters)

– TECHNICAL MENU (Technical operating parameters)

NOTE:

The programmable passwords for the USER and TECHNICAL menus are required when modifying a parameter and only once until a new access to the menu.
The display of the programmed data is also available without typing the relative password.

INFO MENU NAVIGATION TABLE

Submenu	Parameter / Function	Notes
Firmware	Software Code (SW)	
	Version	
Parameters	Weight Full Scale	
	Capacity Full Scale	Read Only
Connections	Fieldbus	
	Address	
Analog	Output 2 (activation)	
	Input (activation)	

TEST MENU NAVIGATION TABLE

Submenu	Parameter / Function	Description
HW Test	Simulation	Procedure to simulate operation.
	Cell Signal	Displays signal (mV).
	Cell Percentage	Displays percentage relative to full scale.
	Memory Test	Reads and writes internal memory for testing.
	I/O Test	Procedure to test logical inputs and outputs.
	Test Ports Com	Displays received strings and tests transmission for COM1, COM2, COM3, and COM4.
	Test Touch	Tests the touch screen functionality.
	Analog Output 1	Tests analog output.
	Analog Output 2	Tests analog output.
	Analog Input	Displays signal (V or mA).

USER MENU NAVIGATION TABLE

Programmable password (default = 166)

Submenu	Parameter / Function	Unit	Notes
Adjustment Params	Sampling Time	sec	From 1 to 20 sec for flow rate calculation.
	Proportional Coeff.	%	Magnitude of proportional adjustment based on flow rate deviation from the setpoint (0.01 to 2.50).
	Integral Coeff.		Integration constant for the adjustment algorithm (from 1 to 10).
	Deadband	kg/h	Minimum difference between instantaneous flow rate and setpoint, within which no adjustment occurs. Also used to define regulation stability.
	Tolerance	kg/h	Flow rate tolerance (positive or negative).
I/O Selections	Total Impulse Value	kg	Totalized weight corresponding to output impulse.
	Min. Weight Alarm		Minimum weight alarm selection (DISABLED / FLOW 0 / MIN. WEIGHT).
	Alarm Output Logic		Logic selection for alarm output 4 activation (N.O. / N.C.).
	Tolerance Output Logic		Logic selection for out–of–tolerance output 5 activation (N.O. / N.C.).
	Input 5 Function		Selection for input 5 function (Setpoint Selection / Belt Zeroing).
	Input 6 Function		Selection for input 6 function (Setpoint Selection / Total Reset).
Operational Times	Stop Delay	sec	Flow rate measurement and totalization delay at the end of operation (from 0 to 200).
	Weight Timeout	sec	Maximum time for constant weight during operation (from 0 to 200).
	Adjustment Delay	sec	Adjustment delay at the start of operation (from 0 to 200).
	Tolerance Delay	sec	Delay for tolerance alarm activation (from 0 to 200).
	Startup Tolerance Delay	sec	Delay for tolerance alarm activation after startup or refill completion (from 0 to 200).
Variable Filters	Flow Rate Filter		Flow rate filtering factor (0–9).
	Weight Filter		Weight filtering factor (0–9).
	Minimum Weight	kg	Below this threshold, the flow rate is considered zero.
	Min. Analog Output	%	Minimum percentage of analog output for belt drive control.

NAVIGATION TABLE TECHNICAL MENU

Programmable password (default = 1599)

Parameter / Function	Unit		Descrizione
Weight Unit	Unit of weight		Selezione kg, g, t.
	Cell Capacity	<weight unit>	Range: 1 to 100,000.
	Weight Division Value	<weight unit>	Selection range: 0.001 to 50.
	Cell Sensitivity	mV/V	Used for automatic theoretical calibration.
	Preload	<weight unit>	Used for automatic theoretical calibration, set automatically after zero calibration (Test Weights Calibration).
	Flow Rate Unit		Selection of flow rate units: kg/h, t/h.
	Maximum Flow Rate	<flow unit>	Maximum system flow rate corresponding to the highest value of analog output regulation.
	Flow Division Value	<flow unit>	Selection range: 0.001 to 50.
	Total Division Value	<weight unit>	Selection range: 0.001 to 50.
	Roller Diameter	cm	Diameter of the roller connected to the encoder.
	Pulses / Rotation		Resolution of the encoder (if enabled).
	Belt Speed	m/min	Theoretical belt speed (if the encoder is not present).
	Roller Distance	cm	Distance between the weighing bridge rollers.
	Belt Inclination	°	Belt inclination in degrees.
	Deadband Unit		Selection: <flow unit> or %.
	Tolerance Unit		Selection: <flow unit> or %.
Test Weights Calibration		Calibration procedure using test weights.	Procedura di taratura a pesi campione.
	Automatic Calibration		Theoretical automatic calibration procedure based on the weigher data.
	Belt Zeroing		Procedure to zero the weight using one full rotation of the belt.
	Belt Calibration		System calibration procedure using total transported weight, determines the correction factor.
	Correction Factor (K)		Correction factor for hourly flow rate and total transported weight. Weight calibration remains unaffected.

	Com1 – RS232		Access the submenu for parameter setup.
Comm. Doors	Com2 – RS232		Access the submenu for parameter setup.
	Com3 – RS485		Access the submenu for parameter setup.
	Com4 – RS485		Access the submenu for parameter setup.
	Ethernet		Access the submenu for parameter setup.
	Fieldbus		Access the submenu for parameter setup (not yet implemented
Touch Screen	Stand–by		Set the standby time in seconds (max 999). Set to 0 to disable the function.
	User Password		Password required for modifying parameters or executing user menu functions.
	Technical Password		Password required for modifying parameters or executing technical menu functions.
	Setup Password		Password required to access the setup menu.
	Touch Lock		Enable/Disable (YES/NO) the requirement for a technical password for quadrant and key functions.
	Language		Select language: ITA (Italian), ENG (English).
	Brightness		Set the brightness level numerically (0 = minimum, 9 = maximum).
	Touch Calibration		Run the touch screen calibration procedure.
Archivi	Datalogger		Select mode: OFF, Single, Continuous.
	Log Frequency		For continuous logging: select from 10Min, 5Min, 1Min, 10Sec, 5Sec, 2Sec, 1Hz.
	File Management		File exchange procedure with USB pen drive and internal memory.
	USB Memory		Share memory via USB Device.
	Save Setup File		Save the device configuration file to a USB drive.
Time and Date	Current Date		
	Current Time		

WEIGHT CALIBRATION PROCEDURE

After programming the following parameters, in the belt specifications menu:

– Weight unit

– Cell capacity

– Weight division value

– Cell sensitivity

– Pre-load

You can proceed to perform an automatic calibration of the weighing system.

Select the "TECHNICAL" setup menu, then the "SYSTEM CALIBRATION" menu and then press the automatic calibration dial.
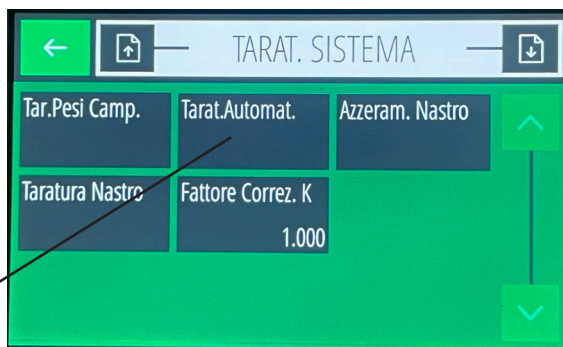
Dial for performing
automatic calibration
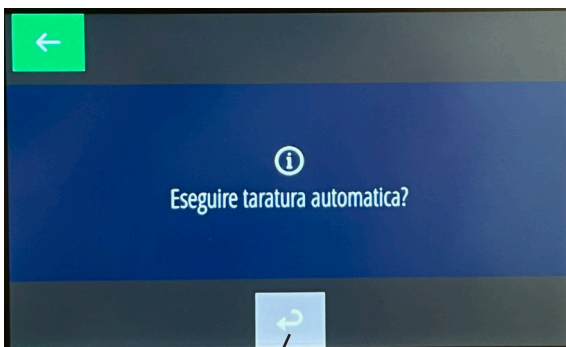
Confirm execution
calibration
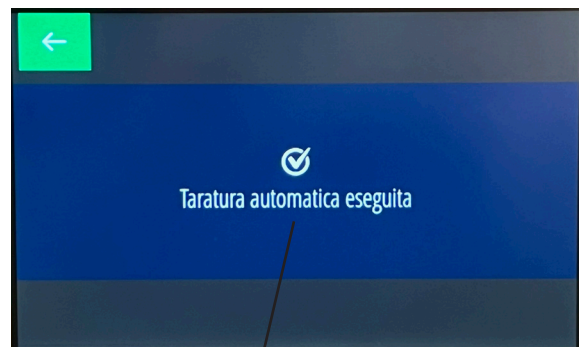
Confirm calibration
performed

CALIBRATION PROCEDURE WITH KNOWN WEIGHTS

This procedure corrects the automatic calibration performed previously. Select the Tar.Pesi Camp. dial.
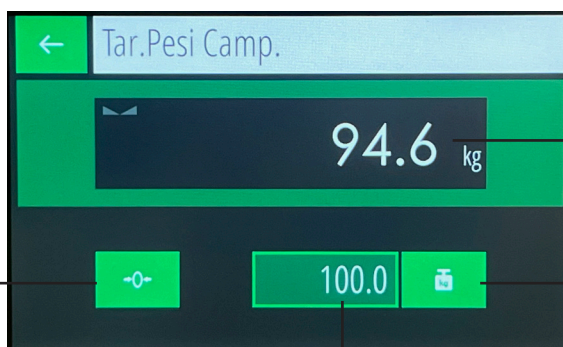
Weight displayed
to be corrected

Reset button
of the vacuum system

Confirmation button for
applied sample weight

Sample weight value

Page 33

BELT RESET PROCEDURE

Start/Stop Reset

Speed tape

Menu of reset parameters

Before proceeding with the conveyor belt reset, select the reset parameters programming menu, and choose the reset operating mode (Time, Length).

This procedure allows you to reset the weight of the belt, by continuous sampling, for the length or the set time.

Before starting the procedure, it is necessary to program the belt speed value.

Press the START/STOP Reset button to start the procedure, and close IN 1 (MARCIA).

Once the lap time or lap length has elapsed, the conveyor belt weight value will be reset to zero and the calculated tare value will be stored in the tare dial present in the reset parameters menu.

Tare value calculated

The reset procedure can also be controlled remotely, using the parameters already programmed in memory, only in stop conditions. The command can be sent by serial line or by logic input. The execution methods are the same as the manual procedure, but with a maximum programmable resettable value (MAX REMOTE TARE).

BELT CALIBRATION PROCEDURE

By selecting the BELT CALIBRATION dial, you can access the correction of the weight passed on the conveyor belt.

At the end of the correction procedure, a correction factor K is calculated, which will update the previous K value in the K Correction Factor dial.

The K factor is calculated as a ratio between the total weight transported and the actual weight found at the end of the procedure.
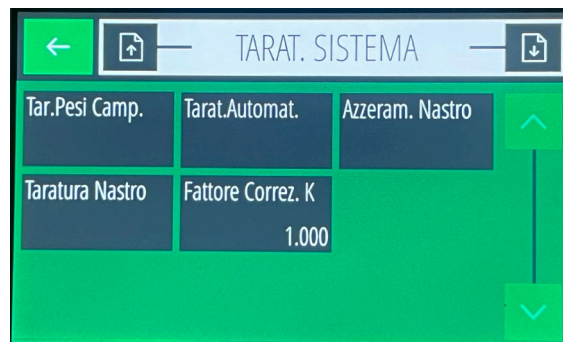
To modify the value of the weight passed and

update the K Correction Factor, press on the dial

The following mask will appear, in which

you can modify the value of the weight

passed and update the value of the K factor.
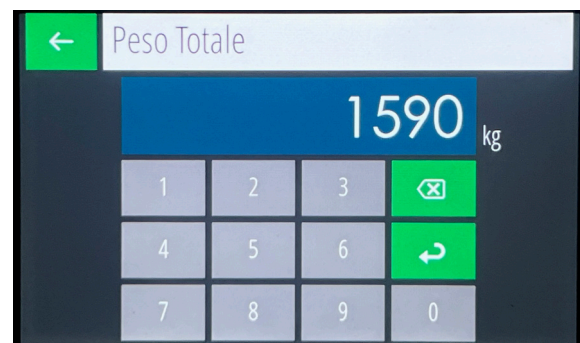
N.B.: The value of the K factor can be modified manually, restoring the previous value in the event of an incorrect correction, or it can be entered manually if the system error is already known.

SETPOINT DIAL

The screen shows:

The value of the active setpoint.

The percentage compared to the max. flow rate, also represented graphically.

TOUCH

The parameters of the active setpoint are directly accessible:

Setpoint value

Associated manual output

Associated alphanumeric name (if not programmed identified as Setpoint <n>)

With the MENU key you can access the programming of the parameters of all 15 setpoints.

HOURLY FLOW DIAL

The screen shows:

The instantaneous flow rate value.

The statistical data of maximum flow rate, average flow rate, and minimum flow rate.

Graphic representation of the instantaneous flow rate over time. (last 5 minutes of operation with update every second).

TOUCH

The reset button deletes the previous data.

TOTAL DIAL

A menu with the following parameters appears:

– General total: with the possibility of resetting to zero.

– Partial total: with the possibility of resetting to zero.

– Net weight transported in the last sampling period: display only.

– Set total: Programming the total setpoint.

– Preset total: Programming the preset value.

– Coda total: Programming the tail value.

TEST PROCEDURE (SIMULATION)

The main mask is displayed in the SIMULATION state.

It differs from the operational mode for the following TOUCH commands:

- The MENU key is replaced by the exit button.
- In the tape dial, touching the weight value accesses the current weight setting.
- In the belt dial, tapping on the speed value accesses the current speed setting.

DATALOGGER

The datalogger function allows you to record the records with the main system data on the USB stick connected to the USB Host port, in a ..\Log\logxxxx.csv file

The function can be selected:

"SINGLE" with manual storage of a record with the appropriate button on the main screen.

"CONTINUOUS" with continuous automatic storage of records at the selected frequency.

The log record is composed as follows:

<date>; <time>; <state>; <instantaneous flow rate>; <speed>; <pulses>; <weight>; <Man/Auto>; <output value>; <setpoint>; <alarm>

Where:

<status>	description
0	STOP
1	GEAR

<alarm>	description
0	None
1	NO ADJUSTMENT POSSIBLE
2	ENCODER ERROR
3	MINIMUM WEIGHT
4	WEIGHT ERROR
5	FIXED WEIGHT
6	FIELDBUS ERROR
7	NO FIELDBUS COM
8	F–BUS CRC ERR
9	OUT OF TOLERANCE

FILE MANAGEMENT

This function allows you to explore the files on the inserted USB stick and the files in the internal memory, navigating through the folders.

TOUCH

Once you have selected a file you can:

- – Copy a file from one memory to another

- – Delete the selected file.

USB MEMORY

Connect the PC with a standard cable to the USB device port of the instrument.

Warning: the first time you connect, the instrument memory must be formatted, using the default parameters proposed.

The internal memory of the instrument is seen as remote memory in Windows Explorer on the PC, allowing file import and export operations.

CONFIGURATION FILES

The "Save Setup File" function, in the ARCHIVES menu, allows you to make a copy of the instrument configuration parameters to a file.

The configuration file is stored on a USB pendrive in the "Setup" folder, which is automatically created when the function is started.

The configuration file is stored with the ".mem" extension, in the format

"**P400200.mem**" (**02** = program number, **00** = version number).

The configuration parameters, stored in a file, can be transferred to other instruments. To perform this operation, you must start the "File Management" function in the ARCHIVES menu on the instrument into which you wish to import the configuration, press on the file with the ".mem" extension and then press the function key at the top right.

FIRMWARE UPDATE

To perform firmware programming, a USB pendrive is required.

The firmware file to be programmed must be renamed to "P400.hex" and copied into the "Update" directory, specifically created in the USB pendrive.

Insert the pendrive into the USB port of the instrument and turn on the device by pressing the touch in the top left corner.

During the update, the programming progress bar is displayed.

At the end of programming, the instrument restarts automatically.

COMMUNICATION PORTS

The MC755 weight indicator has
– N° 2 Rs232 serial ports
– N° 2 Rs485 serial ports
– N° 1 Ethernet (LAN)
– N° 1 USB Host for pen drive N° 1 USB Device
– N° 1 optional Fieldbus interface:
Profinet, Ethernet-IP.
–––––––––––

– The serial ports Com. 1 – Rs232 and Com. 2
– Rs232 have the ability to manage
the following protocols: Repeater, AscII, Modbus,
Monitor, Master, Slave, I/O EXT, Print.
– The serial ports Com. 3 – Rs485 and Com. 4
– Rs485 have the ability to manage
the following protocols: Repeater, AscII, Modbus,
Monitor, Master, Slave, I/O EXT.
–––––––––––

The Ethernet port has the ability to manage
the following protocols:
Repeater, AscII, Modbus, Monitor, Master,
Slave, I/O EXT.
–––––––––––

The optional Fieldbus port has the ability to
manage the following protocols:
Profinet, Ethernet/IP.
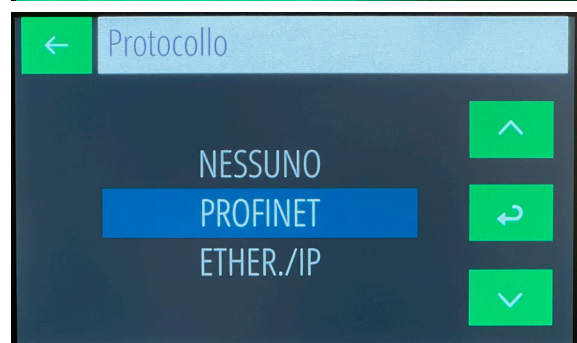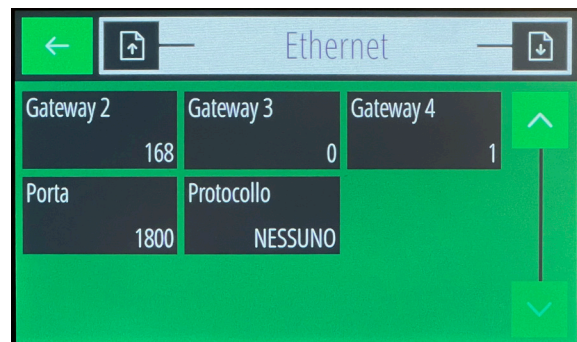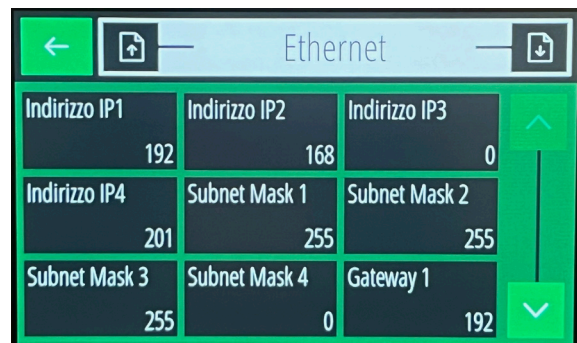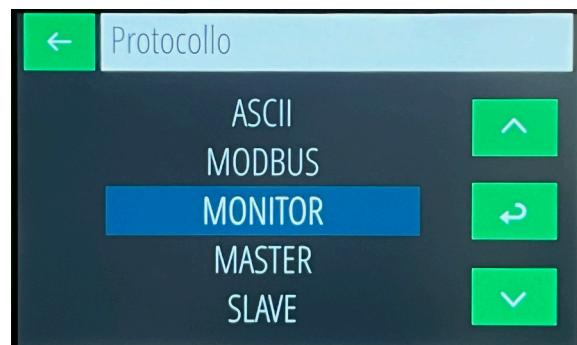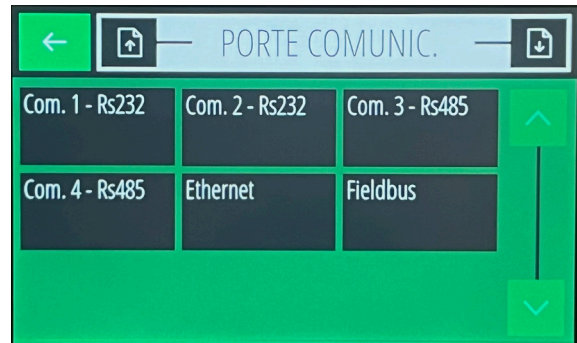
SERIAL PROTOCOL FOR REPEATER

The communication string is sent at a frequency of 5 Hz.

STX	M	F	PPPPPPPP	TTTTTTTT	ETX	CC	EOT

– M (1 char.): Dosing status ('1' in dosing; '0' in stop)

– F (1 char.): Operation ('M' manual; 'A' automatic)

– PPPPPPPP (8 char.): Hourly flow rate

– TTTTTTTT (8 char.): Total

– CC (2 char.): Checksum

ASCII SERIAL PROTOCOL

The communication protocol always requires the PC to send a string containing the address of the instrument receiving the command, followed by the response string of the instrument concerned.

Maximum response delay 25 mS.

The following parameters are common in the following description of the strings:

ADDR	Recipient address (80h + address number; e.g. address 1: a = 81h)
ETX	End of text (03h)
EOT	End of transmission (04h)
ACK	Acknoledgy (06h)
NAK	NO acknoledgy (15h)
<CC>	Check sum calculated from ADDR to ETX excluded; they are 2 ASCII characters of hexadecimal notation result of the XOR operation of the characters
<CMD>	Command identifier consists of an ASCII character (an uppercase letter)

LIST OF COMMANDS

A. PROGRAMMING THE FLOW RATE SET POINT
B. READING THE FLOW RATE SET POINT
C. SELECTING THE SET POINT
D. PROGRAMMING THE SET TOLERANCE
E. READING THE SET TOLERANCE
F. PROGRAMMING THE TOTAL TRANSPORTED SET
G. READING THE TOTAL TRANSPORTED SET
H. RESETTING THE TOTAL TRANSPORTED SET
I. MANUAL / AUTOMATIC SELECTION
J. PROGRAMMING THE REGULATION PARAMETERS
K. READING THE REGULATION PARAMETERS
L. READING THE INSTRUMENT STATUS
M. READING THE MAX. SYSTEM FLOW RATE
M0. CHANGE PERCENTAGE OF THE FLOW SET
N. PROGRAMMING OF THE PRODUCT CORRECTION COEFFICIENT
O. RESET FUNCTION OF THE BELT IN MOTION
P. READING PERCENTAGE OF THE INSTANTANEOUS ANALOG OUTPUT

The commands are available in any condition of the instrument except for the A,D,F,J,O commands during keyboard programming of the related parameters.

All strings passed to the instrument have the following format; the instrument response strings also have the same format except the error string, command unavailable string and acknoledgy string.

| –String type | | ADDR | <CMD> | <dati> | ETX | <CC> | EOT |

– Acknoledgy string   ADDR   <CMD>   ACK   EOT

– Communication error or unacceptable data string   ADDR   NAK   EOT

– Command string not available   ADDR   "#"   EOT

All values in the fields are formatted without decimal points and with leading zeros equal to '0' (30h).

A) FLOW RATE SET POINT PROGRAMMING

    The PC transmits: ADDR "A" <N> <XXXX> ETX <CC> EOT
    <N> = set point number. (from "1" to "9" and from "A" to "F" for set points from 10 to 15)
    <XXXX> = flow rate set point without decimal point

    The instrument responds: ADDR "A" ACK EOT

B) FLOW RATE SET POINT READING

    The PC transmits: ADDR "B" <N> ETX <CC> EOT
    <N> = set point number. (from "1" to "9" and from "A" to "F" for set points from 10 to 15)

    The instrument responds: ADDR "B" <N> <XXXX> ETX <CC> EOT
    <XXXX> = flow rate set point

C) SET POINT SELECTION

    The PC transmits: ADDR "C" <N> ETX <CC> EOT
    <N> = set point number. (from "1" to "9" and from "A" to "F" for set points from 10 to 15)

    The instrument responds: ADDR "C" ACK EOT

D) SET TOLERANCE PROGRAMMING

    The PC transmits: ADDR "D" <XXXX> ETX <CC> EOT
    <XXXX> = set tolerance without decimal point

    The instrument responds: ADDR "D" ACK EOT

E) SET TOLERANCE READING

The PC transmits: ADDR "E" ETX <CC> EOT

The instrument responds: ADDR "E" <XXXX> ETX <CC> EOT
<XXXX> = set tolerance without decimal point

F) PROGRAMMING SET OF TOTAL CARRIED, PRESET AND FLIGHT

The PC transmits: ADDR "F" <XXXXXXX> <PPPPPPP> <VVVVVVV> ETX <CC> EOT
<XXXXXXX> = total set point without decimal point
<PPPPPPP> = total preset without decimal point
<VVVVVVV> = total flight without decimal point

The instrument responds: ADDR "F" ACK EOT

G) READING OF TOTAL CARRIED SET, PRESET AND FLIGHT

The PC transmits: ADDR "G" ETX <CC> EOT

The instrument responds: ADDR "G" <XXXXXXX> <PPPPPPP> <VVVVVVV> ETX <CC> EOT
<XXXXXXX> = total set point without decimal point
<PPPPPPP> = total preset without decimal point
<VVVVVVV> = total flight without decimal point

H) TOTAL RESET OF TRANSPORTED

PC transmits: ADDR "H" ETX <CC> EOT

Instrument responds: ADDR "H" ACK EOT

I) MANUAL / AUTOMATIC SELECTION

The PC transmits: ADDR "I" <N> <XXX> ETX <CC> EOT
<N> = ("A" = automatic, "M" = manual)
<XXX> = manual output value (from 0% to 100%)
– with <N> = "A" : <XXX> = "000"
– with <N> = "M" : <XXX> from 0 to 100 selects the instrument in manual mode
with the manual analog output equal to <XXX>.
– with <N> = "M" : <XXX> greater than 100 selects in manual mode maintaining
the analog output already present.

The instrument responds: ADDR "I" ACK EOT
If it is impossible to select in manual mode (in case of external regulator) it
responds with NAK.

J) PROGRAMMING REGULATION PARAMETERS

The PC transmits: ADDR "J" <PPP> <XX> <BBBB> ETX <CC> EOT
<PPP> = proportional constant from 0 to 250.
<XX> = integration constant from 1 to 10.
<BBBB> = absolute value of dead band.

The instrument responds: ADDR "J" ACK EOT

K) READING REGULATION PARAMETERS

The PC transmits: ADDR "K" ETX <CC> EOT

The instrument responds: ADDR "K" <PPP> <XX> <BBBB> ETX <CC> EOT
<PPP> = proportional constant from 0 to 250.
<XX> = integration constant from 1 to 10
<BBBB> = absolute value of dead band

L) READING INSTRUMENT STATUS

The PC transmits: ADDR "L" ETX <CC> EOT

The instrument responds: ADDR "L" <M> <F> <FFFF><XXXXXXX> ETX <CC> EOT
<M> = (stop='0', start='1')
<F> = operating mode (A = automatic, M = manual)
<FFFF> = instantaneous flow rate
<XXXXXXX> = partial total

M) MAX SYSTEM FLOW READING

The PC transmits: ADDR "M" ETX <CC> EOT

The instrument responds: ADDR "M" <XXXXXXx> ETX <CC> EOT
<XXXXXXX> = 7 chars of max. flow rate in kg/h

M0) CHANGE PERCENTAGE OF FLOW SET

The PC transmits: ADDR_0 "M" <XXXX> ETX <CC> EOT
This string must contain the address "0" to be recognized. The instrument does not respond with any string either in the case of a command executed or in the case of an error. The percentage value received is relative to the maximum flow rate value.
<XXXX> = percentage in thousandths of the maximum flow rate.

N) PROGRAMMING PRODUCT CORRECTION COEFFICIENT

The PC transmits: ADDR "N" <XXXX> ETX <CC> EOT
<XXXX> = correction coefficient without decimal point

The instrument responds: ADDR "N" ACK EOT

O) TAPE-IN-MOTION RESET FUNCTION

The PC transmits: ADDR "O" <XXX> <Y> <ZZZZZ> ETX <CC> EOT
<XXX> = manual output value (from 0% to 100%)
<Y> = selection of tape rotation with time "T" or length "L".
<ZZZZZ> = tape rotation time in seconds or tape length in cm

The instrument responds: ADDR "O" ACK EOT

P) INSTANT ANALOG OUTPUT PERCENTAGE READING

The PC transmits: ADDR "P" ETX <CC> EOT

The instrument responds:
ADDR "P" <XXX> ETX <CC> EOT
<XXX> = 3 characters of instantaneous analog output percentage.

MODBUS RTU / MODBUS TCP

The following table lists the instrument registers that can be read or programmed via Modbus RTU or Modbus/TCP protocol. The supported functions are:

– READ HOLDING REG

– PRESET SINGLE REG

– PRESET MULTIPLE REG

Registers are 16 bits in size.

– Type R – Read registers.

– Type W – Write registers.

WARNING: Once the parameters have been programmed, it is necessary to send the command '5'=save data in the command register in order to save the changes made in permanent memory, before turning off the instrument.

Address	Register	Type	Notes
40011	Setup – Operation	R/W	Transmitter / Controller
40012	Setup – Encoder Presence	R/W	NO / YES
40013	Setup – Totalization	R/W	NO / YES
40014	Setup – Master Input	R/W	NO / SERIAL / ANALOG
40015	Setup – 2nd Analog Output	R/W	NO / YES
40017	Analog Input	R	YES
40018	USB Host	R	YES
40019	Technical – Language	R/W	ITA / ENG
40020	Setup – Analog Output Range 1	R/W	(0–10 / 0–5 / 0–20 / 4–20)
40021	Setup – Analog Output Range 2	R/W	(0–10 / 0–5 / 0–20 / 4–20)
40022	KK Factor Selection	R/W	NO / YES
40024	Weight Display Selection	R/W	Weight / weight per meter
40101	COM1 Protocol	R/W	
40102	COM1 Baud Rate	R/W	1200/2400/4800/9600/19200/38400/57600/115200
40103	COM1 Data Frame	R/W	
40104	COM2 Protocol	R/W	1200/2400/4800/9600/
40105	COM2 Baud Rate	R/W	
40106	COM2 Data Frame	R/W	MSW
40107	COM2 Protocol	R/W	LSW
40108	COM1 Address	R/W	
40109	FIELDBUS Address	R/W	0
40110	Fieldbus IP Address	R/W	(32/64/96/128)
40111	Fieldbus IP Address	R/W	(32/64/96/128)
40112	Fieldbus Subnet	R/W	0
40113	Fieldbus Subnet	R/W	(NO/YES)
40114	Not Used	R	0
40115	Fieldbus Input Area Size	R/W	(32/64/96/128)
40116	Fieldbus Output Area Size	R/W	(32/64/96/128)
40117	Not Used	R	0
40121	Touch Lock	R/W	(NO/SI)
40122	User Password	R/W	

40123	Setup Password	R/W	Time / Length
40124	Technician Password	R/W	0 – 600 sec
40131	Belt zeroing mode selection	R/W	0 – 10000 cm
40132	Belt rotation time	R/W	
40133	Belt length for zeroing	R/W	MSW
40134	Belt tare	R/W	LSW
40135	Maximum resettable value (belt tare)	R/W	MSW
40141	K correction factor	R/W	LSW
40142	KK correction factor	R/W	0.0 – 100.0 cm
40151	Technician – Max. capacity	R/W	
40152	Technician – Max. capacity	R/W	Fixed 2 (4x)
40153	Technician – Load cell capacity	R/W	0 – 5000 cm
40154	Technician – Load cell capacity	R/W	0 – 30 °
40155	Roller diameter	R/W	
40156	Encoder resolution (pulses/	R/W	0–250.00 m/min
40157	Encoder phase acquisition system	R	
40158	Roller distance	R/W	(kg(t)–h / %)
40159	Belt inclination	R/W	(kg(t)–h / %)
40160	Technician – Load cell sensitivity	R/W	MSW
40161	Belt constant speed (no encoder	R/W	LSW (data related to
40162	Total unit decimals	R/W	(1=reset total, 2=auto/
40163	Dead band units	R/W	
40164	Tolerance units	R/W	(NO / Zero capacity /
40501	Data Register	R/W	(N.O. / N.C.)
40502	Data Register	R/W	(N.O. / N.C.)
40503	Command Register	R/W	(NO/YES)
41001	Sampling time	R/W	(NO/YES)
41002	Proportional constant	R/W	(Sel.Set / Tape reset)
41003	Integral constant	R/W	(Sel.Set / Total reset)
41004	Dead band in kg(t)/h	R/W	0
41005	Tolerance in kg(t)/h	R/W	0
41006	Dead band in %	R/W	
41007	Tolerance in %	R/W	
41021	Pulse value total	R/W	
41022	Minimum weight alarm selection	R/W	(NO / Portata nulla / Peso minimo)
41023	Alarm output logic	R/W	(N.A. / N.C.)
41024	Tolerance output logic	R/W	(N.A. / N.C.)
41025	Regulation alarm selection	R/W	(NO/SI)
41026	Encoder alarm selection	R/W	(NO/SI)
41027	In.5 function	R/W	(Sel.Set / Azz. nastro)
41028	In.6 function	R/W	(Sel.Set / Azz.Tot.)
41029	Disable Tolerance Alarm Display	R	0
41030	Permanent alarm activation	R	0
41041	Stop delay	R/W	
41042	Constant weight timeout	R/W	
41043	Start regulation intervention delay	R/W	
41044	Tolerance delay	R/W	
41045	Start tolerance delay	R/W	
41061	Capacity filter	R/W	
41062	Weight filter	R/W	

41063	Minimum weight for flow calculation	R/W	
41064	Minimum control output	R/W	
42001	Set Total	R/W	MSW
42002	Set Total	R/W	LSW
42003	Preset Total	R/W	MSW
42004	Preset Total	R/W	LSW
42005	Code Total	R/W	MSW
42006	Code Total	R/W	LSW
42041	Setpoint 1	R/W	
42042	Manual output setpoint 1	R/W	
42043	Setpoint 2	R/W	
42044	Manual output setpoint 2	R/W	
42045	Setpoint 3	R/W	
42046	Manual output setpoint 3	R/W	
42047	Setpoint 4	R/W	
42048	Manual output setpoint 4	R/W	
42049	Setpoint 5	R/W	
42050	Manual output setpoint 5	R/W	
42051	Setpoint 6	R/W	
42052	Manual output setpoint 6	R/W	
42053	Setpoint 7	R/W	
42054	Manual output setpoint 7	R/W	
42055	Setpoint 8	R/W	
42056	Manual output setpoint 8	R/W	
42057	Setpoint 9	R/W	
42058	Manual output setpoint 9	R/W	
42059	Setpoint 10	R/W	
42060	Manual output setpoint 10	R/W	
42061	Setpoint 11	R/W	
42062	Manual output setpoint 11	R/W	
42063	Setpoint 12	R/W	
42064	Manual output setpoint 12	R/W	
42065	Setpoint 13	R/W	
42066	Manual output setpoint 13	R/W	
42067	Setpoint 14	R/W	
42068	Manual output setpoint 14	R/W	
42069	Setpoint 15	R/W	
42070	Manual output setpoint 15	R/W	
43011	Hourly flow rate	R	
43012	Total	R	MSW
43013	Total	R	LSW
43014	Grand Total	R	MSW
43015	Grand Total	R	LSW
43016	Active setpoint value	R	
43017	Alarm code	R	
43018	Logic inputs	R	
43019	Logic outputs	R	
43020	Belt speed	R	MSW
43021	Belt speed	R	LSW
43022	Weight	R	MSW
43023	Weight	R	LSW
43024	Analog output 1 (%)	R	

43025	Analog output 2 (%)	R	
43026	Analog input value	R	
43027	Doser status	R	
43028	Dosing status	R	
43029	Hourly flow rate values decimals	R	
43030	Total values decimals	R	
43031	Weight value decimals	R	
43032	Current weight/meter value	R	MSW
43033	Current weight/meter value	R	LSW
44011	Selected set number	R/W	
44012	Manual / automatic selection	R/W	
44013	Manual percentage output	R/W	
44014	Slave operating setpoint percentage	R/W	
44016	Ext module input status 2		
44017	Ext module output status 1	R/W	
44018	Ext module input status 2	R/W	
44019	Ext module output status 2	R/W	
45001	Command register	R/W	(1=total reset, 2=auto/man, 3=manual output set, 4=set set, 5=save data, 6=tape reset)
45002	Start input command and priority	R/W	(bit 15 priority, bit 0 input status)
47001	Test register	R/W	

MASTER/SLAVE PROTOCOL

The instrument can be configured to work as a master of other instruments or as a slave of it. In the first case the percentage of hourly flow detected with respect to the full scale is continuously transmitted to the slaves, which adjust the flow setpoint to the percentage received.

This function can be achieved with a serial connection Rs485. The communication string is sent at a frequency of 10 Hz, using the parameters programmed for the port used.

STX	"M"	XXXXXX.X	ETX	CC	EOT

– XXXXXX.X (8 chars): Flow rate percentage with 1 decimal place.
– CC (2 chars): Control checksum.

A repeater (RIPH20, RIPH60, RIPH100, RIPH160) can be connected in parallel to the slaves to display the transmitted value.

PROFINET - ETHERNET/IP

The management of fieldbus protocols takes place via dedicated interfaces (hardware modules mounted internally).

FIELDBUS INTERFACE MANAGEMENT

– Communication between the instrument and the fieldbus interface occurs via Modbus RTU serial protocol.

– The communication baud rate is fixed (115200 bits/sec).

– The timeout on the module response is controlled (300 ms).

ERROR HANDLING

– [FIELDBUS ERROR] Modbus communication failure with the fieldbus interface: following consecutive communication timeouts (20 seconds). An attempt to restore communication is automatically performed; if this also fails, the error is displayed and it is possible to manually attempt to restore by pressing the message.

– [NO COM FIELDBUS] Fieldbus network error off-line: for example, if the interface fails to connect to the network. This error is automatically silenced when normal connection is restored.

– [ERR CRC F-BUS] CRC error in Modbus communication.

PROFINET HILSCHER X90

XML config file: GSDML-V2.35-HILSCHER-NETX 90-RE-PNS-32byte-M-20200507.xml.
Input area size: selectable (32, 64, 96 or 128 bytes).
Output area size: selectable (32, 64, 96 or 128 bytes).
Communication address: not programmable from the instrument.
The instruments are supplied with the "Profinet Name" parameter not configured and with an IP address equal to 0.0.0.0.

ETHERNET/IP HILSCHER X90

EDS config file:
- **HILSCHER NETX90 EIS V5-32.EDS** (input area 32 byte, output area 32 byte).
- **HILSCHER NETX90 EIS V5-64.EDS** (input area 64 byte, output area 64 byte).
- **HILSCHER NETX90 EIS V5-96.EDS** (input area 96 byte, output area 96 byte).
- **HILSCHER NETX90 EIS V5-128.EDS** (input area 128 byte, output area 128 byte).

Input area size: selectable (32, 64, 96 or 128 bytes).

Output area size: selectable (32, 64, 96 or 128 bytes).

Communication address: IP address and subnet mask programmable from the instrument.

The instruments are supplied with an IP address of 10.0.0.201. The size of the input and output areas set in the PLC must match the size of the input and output areas in the instrument

INPUT DATA AREA – Data produced by the instrument and read master

Input area size: selectable (32, 64, 96 or 128 bytes).
Single register size: 16 bits.
Register update rate: 100 Hz.

OUTPUT DATA AREA – Data written by the master and acquired by the instrument

Output area size: selectable (32, 64, 96 or 128 bytes).
Single register size: 16 bits.
Register acquisition rate: 100 Hz.

INPUT DATA AREA

Address ref.	Variables	Byte Mapping
3011	Instantaneous hourly flow rate	0–1
3022	Current weight (MSW)	2–3
3023	Current weight (LSW)	4–5
3012	Total dosed (MSW)	6–7
3013	Total dosed (LSW)	8–9
3027	Instrument status	10–11
3028	Dosing status	12–13
4012	AUTO / MAN operation	14–15
4013	Manual output value	16–17
3017	Alarm code	18–19
4011	Active setpoint number	20–21
3016	Active setpoint value	22–23
3018	Logic input status	24–25
3019	Logic output status	26–27
3024	Analog output value	28–29
7001	Monitor register	30–31
3014	Grand total (MSW)	32–33
3015	Grand total (LSW)	34–35
3020	Belt speed (MSW)	36–37
3021	Belt speed (LSW)	38–39
2001	Set total (MSW)	40–41
2002	Set total (LSW)	42–43
2003	Preset total (MSW)	44–45
2004	Preset total (LSW)	46–47
2005	Queue total (MSW)	48–49
2006	Queue total (LSW)	50–51

1021	Total Pulse Value	52–53
1005	Setpoint Tolerance	54–55
1044	Tolerance Alarm Delay	56–57
3029	Hourly Flow Decimals	58–59
3031	Weight Decimals	60–61
3030	Total Decimals	62–63
2041	Setpoint 1	64–65
2042	Output Relative to Setpoint 1	66–67
2043	Setpoint 2	68–69
2044	Output Relative to Setpoint 2	70–71
2045	Setpoint 3	72–73
2046	Output Relative to Setpoint 3	74–75
2047	Setpoint 4	76–77
2048	Output Relative to Setpoint 4	78–79
2049	Setpoint 5	80–81
2050	Output Relative to Setpoint 5	82–83
2051	Setpoint 6	84–85
2052	Output Relative to Setpoint 6	86–87
2053	Setpoint 7	88–89
2054	Output Relative to Setpoint 7	90–91
2055	Setpoint 8	92–93
2056	Output Relative to Setpoint 8	94–95
0151	Maximum System Flow Rate (MSW)	96–97
0152	Maximum System Flow Rate (LSW)	98–99
0153	Load Cell Flow Rate (MSW)	100–101
0154	Load Cell Flow Rate (LSW)	102–103
0155	Roller Diameter	104–105
0156	Encoder Resolution	106–107
0158	Roller Distance	108–109
0159	Belt Inclination	110–111
0161	Belt Constant Speed	112–113
1001	Sampling Time	114–115
1002	Proportional Constant	116–117

1003	Integral constant	118–119
1004	Dead band	120–121
1061	Hourly flow filter	122–123
1062	Weight filter	124–125
1063	Minimum weight	126–127

OUTPUT DATA AREA

Address ref.	**Variables**	**Byte Mapping**
503	Command Register	0–1
501	Data Register (MSW)	2–3
502	Data Register (LSW)	4–5
7001	Monitor Register	6–7
4012	AUTO / MAN Operation	8–9
4013	Manual Output Value	10–11
4011	Active Setpoint Number	12–13
2001	Total Set (MSW)	14–15
2002	Total Set (LSW)	16–17
2003	Total Preset (MSW)	18–19
2004	Total Preset (LSW)	20–21
2005	Total Queue (MSW)	22–23
2006	Total Queue (LSW)	24–25
1021	Total Pulse Value	26–27
1005	Setpoint Tolerance	28–29
1044	Tolerance Alarm Delay	30–31
2041	Setpoint 1	32–33
2042	Output Relative to Setpoint 1	34–35
2043	Setpoint 2	36–37
2044	Output Relative to Setpoint 2	38–39
2045	Setpoint 3	40–41
2046	Output Relative to Setpoint 3	42–43
2047	Setpoint 4	44–45
2048	Output Relative to Setpoint 4	46–47
2049	Setpoint 5	48–49
2050	Output Relative to Setpoint 5	50–51

2051	Setpoint 6	52–53
2052	Output Relative to Setpoint 6	54–55
2053	Setpoint 7	56–57
2054	Output Relative to Setpoint 7	58–59
2055	Setpoint 8	60–61
2056	Output Relative to Setpoint 8	62–63
0151	Maximum System Flow (MSW)	64–65
0152	Maximum System Flow (LSW)	66–67
0153	Load cell capacity (MSW)	68–69
0154	Load cell capacity (LSW)	70–71
0155	Roller diameter	72–73
0156	Encoder resolution	74–75
0158	Roller distance	76–77
0159	Belt inclination	78–79
0161	Belt speed constant	80–81
1001	Sampling time	82–83
1002	Proportional constant	84–85
1003	Integral constant	86–87
1004	Dead band	88–89
1061	Hourly flow filter	90–91
1062	Weight filter	92–93
1063	Minimum weight	94–95

COMMAND REGISTER / DATA REGISTER

Command register value	Data register value	Description
1	–	Clear Total
2	0–1	Switch AUTO / MAN operation
3	0–1000	Set manual output value (0.0 % to 100.0 %)
4	1–15	Select setpoint
5	–	Store data
6	–	Start tape zeroing procedure
0x3FFF	–	Read output data area

PAVONE SISTEMI S.R.L.
Via Tiberio Bianchi, 20863 Concorezzo (MB)
T 039 9162656 **F** 039 9162675 **W** pavonesistemi.com
Industrial Electronic Weighing Systems since 1963