INSTALLATION MANUAL

DAT 700 Serial and analog weighing Indicator/Trasnmitter

Installation rev. 0.0

PAVONESYSTEMS

INDEX

INSTRUMENT CHARACTERISTICS

CONNECTIONS

Power supply	10-30VDC protected against reverse polarity. Protection with resettable fuse.
Max absorption	2.5 W
Insulation	Class II
Operating temperature	-10°C ÷ +40°C (max. non-condensing humidity 85%)
Storage temperature	-20°C ÷ +60°C
Weight display	Numerical 6-digit red 7-segment led (h 14 mm)
Led	4 led 3mm
Keyboard	4 mechanical buttons
Overall dimensions (including terminal blocks)	96 mm x 48 mm x 100 mm (w x h x d) (terminal blocks included)
Mounting	Flush-mounted on panel (drilling template 91 mm x 44 mm)
Support material	Self-extinguishing PPO (UL 94 V0)
Connections	Removable screw 5.08 mm pitch terminal blocks
Cell input with the following characteristics:	max 8 of 350 ohms in parallel.
Cell supply voltage	5Vdc
Linearity	< 0.01% of full scale
Temperature drift	< 0.001% of full scale / C°
Internal resolution	24 bits
Measuring range	From -7.6 mV/V to +7.6 mV/V
Digital filter	Selectable 0.1 Hz - 1000 Hz
Decimal number weight	0 to 4 decimal digits
Zero and full-scale calibration	Executable by push buttons, to sample weights or datasheet
Cellular cable interruption control	Always present
Alarm logic outputs	2 photo relay outputs (24 VDC/Vac one NO contact) Relay contact rating 100 mA
Logic inputs	No. 2 opto-isolated
Serial ports	Rs232 half duplex Rs485 half-duplex USB Device for instrument programming and setting
Baud rate	Up to 115 kb/s (default 9600 b/s)
Maximum cable length	15m (Rs232) and 1000m (Rs485)
Fieldbus (with external module)	PROFIBUS DP-V1 PROFINET CANOPEN ETHERNET IP ETHERCAT ETHERNET

Read more ...

TECHNICAL FEATURES

Analog Voltage Output	Voltage: ± 10 V / ± 5 V
Resolution	16 bits
Calibration	Digital from buttons
Impedances	minimum $10K\Omega$
Linearity	0.03% of full scale
Temperature drift	0.002% of full scale / °C
Current Analog Output	Current: 0 ÷ 20 mA / 4 ÷ 20 mA
Resolution	16 bits
Calibration	Digital from buttons
Impedances	maximum 300Ω
Linearity	0.03% of full scale
Temperature drift	0.002% of full scale / °C
Microcontroller	32-bit ARM Cortex M0+, 256KB Flash reprogrammable on-board by USB.
Data memory	32 Kbytes + optional Aliby memory (1MByte)
Compliance with Regulations	EN61000-6-2, EN61000-6-3 for EMC
	EN61010-1 for Electrical Safety

SYMBOLOGY

The following are the symbols used in the manual to call the reader's attention:

⚠ Warning! This operation must be performed by trained personnel.

✋ Pay special attention to the following directions.

ⓘ Further information.

INSTRUMENT NAMEPLATE

✋ It is important to communicate this data in case of inquiries or indications regarding the instrument combined with the program number and version that are on the cover of the manual and are displayed when the instrument is turned on.

WARNINGS

⚠
- The procedures below, must be carried out by trained personnel.
- All connections should be made with the instrument turned off.

ⓘ The following information covers all the functions included in the OPTIMATION tools, present on the various models.

INSTRUMENT POWER SUPPLY

⚠️ • The instrument is powered through terminals 1 and 2.
• The power cable should be channeled separately from other power cables with different voltages, load cell cables, and logic input/output cables.

The internal circuit is galvanically isolated from the supply voltage.

Supply voltage: 10-30 VDC max 2.5W TERMINAL

CONNECTION.

1. + Alim.
2. 0

LOAD CELLS CONNECTION

• The cell(s) cable should not be channeled with other cables (e.g., outputs connected to contactors or power cables), but should follow its own path.
• Any cable extension connections must be carefully shielded, respecting the color code and using the type cable supplied by the manufacturer. Extension connections must be made by soldering, either through support terminal blocks or by means of the separately supplied junction box.
• The cell cable should have no more conductors than those used (4 or 6). In the case of multi-core cable, tie the remaining wires to the cell power supply (terminal 19).

A maximum of 8 350-ohm cells can be connected to the instrument in parallel. The voltage cell power supply is 5 VDC and is protected against temporary short circuit.
The measuring range of the instrument involves the use of load cells with sensitivities from 1 mV/V to 7.8 mV/V. The load cell cable should be connected to terminals 19 … 24 of the bottom pull-out terminal blocks.
In the case of 4-conductor cell cable, connect the cell power terminals to the respective polarities of the reference terminals (19-22 20-21).

✋ Connect the cell cable shield to terminal 19.

CONNESSIONE A 4 FILI

19	ALIMENTAZIONE -
20	ALIMENTAZIONE +
21	Cortocircuitare con morsetto 20
22	Cortocircuitare con morsetto 19
23	SEGNALE -
24	SEGNALE +

SEGNALE -
ALIMENTAZIONE +
SEGNALE +
ALIMENTAZIONE -

CONNESSIONE A 6 FILI

19	ALIMENTAZIONE -
20	ALIMENTAZIONE +
21	RIFERIMENTO +
22	RIFERIMENTO -
23	SEGNALE -
24	SEGNALE +

SEGNALE -
ALIMENTAZIONE +
RIFERIMENTO +
SEGNALE +
RIFERIMENTO -
ALIMENTAZIONE -

LOGIC INPUTS CONNECTION

The two logic inputs are isolated from the internal circuits of the instrument by opto-isolator.

⚠
- The logic input connection cable should not be channeled with power or power cables.
- Use as short a connecting cable as possible.

To activate a logic input, it must be taken to the positive side of a 24Vdc supply, while the common must be connected to its negative side.

The diagram below shows two types of connections using, for example, a button on input 2 and a switch on input 1.
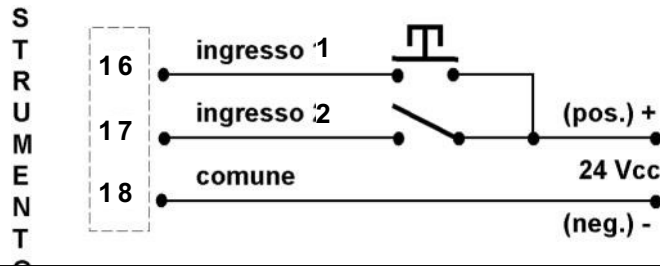
RELAY OUTPUTS CONNECTION

The two outputs are photo relay with a common. The capacity of each contact is 24 VDC/Vac 100 mA.
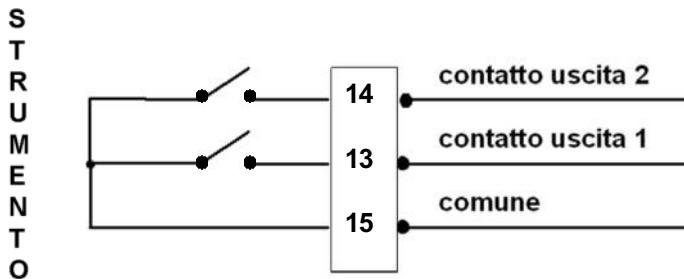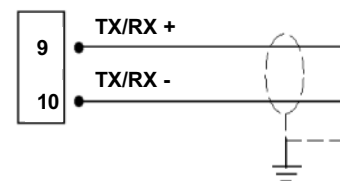

RS485 SERIAL CONNECTION

⚠
- Use a shielded cable to make the serial connection, taking care to connect the shield to only one of the two ends: to terminal 1 if connected on the instrument side, to ground if connected on the opposite side.
- In case the cable has more conductors than used, connect the free conductors to the shield.
- The cable should not be channeled with other cables (e.g., outlets connected to contactors or power cables), but should ideally follow its own path.

✋ Connect the cable shield to terminal 1 if connected on the side of the instrument, to ground if connected on the opposite side.


RS232 SERIAL CONNECTION

⚠ · To make the serial connection, use a shielded cable, taking care to ground the shield at only one of the two ends. In case the cable has more conductors than used, connect the free conductors to the shield.
· The serial connection cable must have a maximum length of 15 meters (EIA RS-232-C standards), beyond which the Rs485 interface with which the instrument is equipped must be adopted.

· The cable should not be channeled with other cables (e.g., outlets connected to contactors or power cables), but should ideally follow its own path.
· The PC used for connection must comply with EN 60950.

Shown below is the connection diagram with 9-pin PC connector:
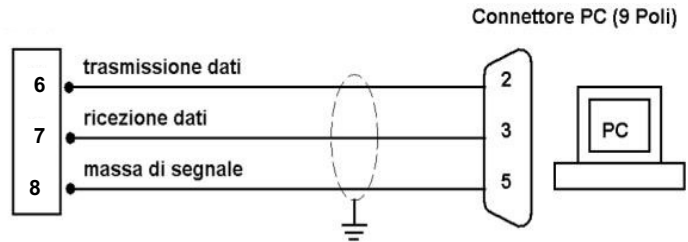
Connettore PC (9 Poli)

6	trasmissione dati	2
7	ricezione dati	3
8	massa di segnale	5

PC

✋ Connect the cable shield to terminal 1 if connected on the side of the instrument, to ground if connected on the opposite side.

ANALOG OUTPUTS CONNECTION

The instrument provides an analog current output and a voltage output.

Features:

· Analog voltage output: range 0 to 10 volts or 0 to 5 volts, minimum load $10K\Omega$
· Analog current output: range 0 to 20 mA or 4 to 20 mA. The maximum load is 300 .

A -10V / +10V or -5V / +5V output is possible after factory configuration.

⚠ · Use a shielded cable to make the connection, taking care to connect the shield to only one of the two ends: to pin 1 if connected on the instrument side, to ground if connected on the opposite side.
· Analog transmission is particularly sensitive to electromagnetic noise it is therefore recommended that cables be as short as possible and follow their own path.

✋ Connect the cable shield to terminal 1 if connected on the side of the instrument, to ground if connected on the opposite side.

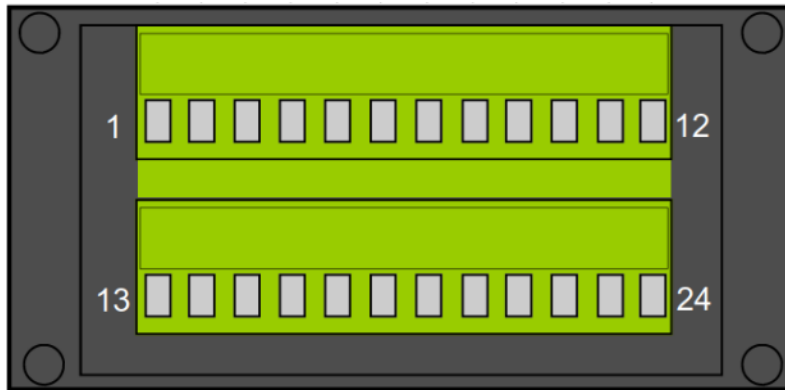| 3 | + CORRENTE | |
| 4 | + TENSIONE | Uscita analogica |
| 5 | - COMUNE | |
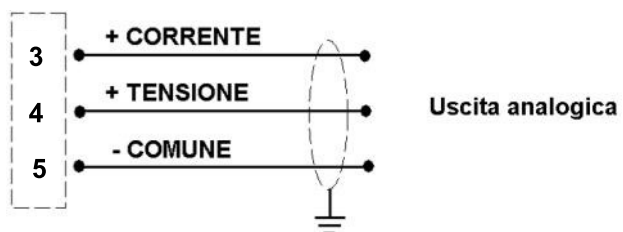
mA or V input CONNECTION (Optional)

For the 4-20mA or 0/10V input option (Special Hardware Version) it is necessary to connect:

· Analog signal (0/10V or 4/20mV) to terminal 24 (+CELLS SIGNAL)
· GND to terminal 23 (-CELLS SIGNAL).

CONNECTION SUMMARY

N°	12P terminal block pitch 5.08 *Terminal block 12P (pitch 5.08)*	N°	12P terminal block pitch 5.08 *Terminal block 12P (pitch 5.08)*
1	+ 10/30 VDC power supply *+ 10/30 VDC power supply*	13	Output 1 *Output 1*
2	GND *GND*	14	Output 2 *Output 2*
3	Current Analog Output 0-20mA / 4-20mA Max 300 W *Current analog output 0-20mA / 4-20mA Max 300 W*	15	Common Outputs *Common (outputs)*
4	Voltage analog output 0-5V / 0-10V min 10KW *Voltage analog output 0-5V / 0-10V min 10KW*	16	+ Input 1 *+ Input 1*
5	Negative Analog Output Voltage/Current *Negative analog output Voltage/Current*	17	+ Input 2 *+ Input 2*
6	(TX) RS232 *(TX) RS232*	18	Common Inputs *Common (inputs)*
7	(RX) RS232 *(RX) RS232*	19	Cell Power Supply - *Load cell exc. -*
8	SGND *SGND*	20	Cell Power Supply+ *Load cell exc. +*
9	+ RS485 *+ RS485*	21	Cell Reference + *Load cell sense +*
10	- RS485 *- RS485*	22	Reference Cell - *Load cell sense -*
11	N.C. *N.C.*	23	Signal Cell - *Load cell signal -*
12	N.C. *N.C.*	24	Signal Cell + *Load cell signal +*

HARDWARE TROUBLESHOOTING GUIDE

ISSUE	POSSIBLE CAUSE	REMEDY
The Instrument remains off	• The voltage supply is not as required	• Provide the correct voltage supply
The weight display remains stuck.	• The load cell is not working properly or has not been connected properly	• make sure with a tester that you have 5V between Cell Power + and -, and between reference + and -, and check the movement in millivolts between signal + and - when charging or discharging the cell.
Inputs and/or outputs are not working properly	• Wiring or software setting errors	• Use the I/O Test function to check the proper operation of inputs and outputs and verify the settings of the specific program.

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: **DAT 700**

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

EN 61000-6-3 + A1

EN 61326-1

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

The following harmonized standards and technical specification have been applied:

EN 61010-1

Signed for end on behalf of:

Concorezzo: 08/01/2024

Di Reda Donato - Manager

PAVONESYSTEMS

RINA