ELECTRONIC WEIGHING SYSTEM

WIN3

WIN3 / Rs485

WIN3 / Ana

WIN3 / Ethernet

WIN3 / Profibus

WIN3 / Profinet

WIN3 / DeviceNet

WIN3 / CANopen

WIN3 / Ethernet IP

INSTALLATION MANUAL

CE

Rev. 1.5

CONTENTS

MAIN FEATURES

WIRINGS

TECHNICAL FEATURES

Power supply	24 Vdc +-10% polarity inversion protection. Protection with replaceable fuse.
Power consumption	2 W
Isolation	Class II
Operating temperature	-10°C ¸ +50°C (max humidity 85% non-condensing)
Storage temperature	-20°C ¸ +60°C
Weight display	5-digit red LED's, 7 segments, 7 mm high
Status LED's	3 red LED's Ø 3 mm
Keyboard	3 keys (behind the red front panel)
Overall dimensions (terminal blocks included)	110 mm x 120 mm x 23 mm (l x h x p) (Win3/Rs485 and Win3/Ana) 110 mm x 120 mm x 35 mm (l x h x p) (Win3/Ethernet, Win3/Profibus, Win3/Profinet, Win3/DeviceNet and Win3/CANopen)
Mounting	DIN rail profile / OMEGA bar
Material	Blend PC/ABS self-extinguishing
Connections	Pull-out terminal blocks, pitch 5.08 mm
Load cells:	Max. 4 350 Ohm-load cells (or 8 700 Ohm-load cells).
Load cells power supply	4Vdc
Linearity	< 0.01% of full scale
Temperature drift	< 0.001% of full scale / C°
A/D converter resolution	24 bit
Input signal range	From -2.6 mV/V to +2.6 mV/V
Digital filter	from 0.1 Hz to 50 Hz, selectable
Weight decimal digits	from 0 to 3 decimal digits
Zero and full scale calibration	Executable via keyboard
Load cells cable fail check	Always working
Logic outputs (alarms) (WIN3 Ana only)	2 relays (one contact N.O.) Contact rate 24 Vcc/Vac 1A
Logic inputs (WIN3 Ana only)	N° 2 optoisolated
Serial port	Rs232 half duplex Rs485 half duplex (WIN3 Rs485 only)
Baud rate	Up to 115 kb/s (default 9600 b/s)
Max. Cable length	15m (Rs232) and 1000m (Rs485)
Field bus	PROFIBUS DP-V1 (Win3/Profibus only) PROFINET (Win3/Profinet only) DEVICENET (Win3/DeviceNet only) CANOPEN (Win3/CANopen only) ETHERNET IP (Win3/Ethernet IP only)
Ethernet Protocols (WIN3/Ethernet only)	TCP, Modbus/TCP, UDP, IP, ICMP, ARP
Communication mode	TCP server
Buffer Size	256 bytes
Connection Timeout	30 seconds (min) - 90 seconds (max)
Link Timeout	30 seconds

TECHNICAL FEATURES

Analogue output (tension) (WIN3 Ana only)	Tension: ± 10 V / ± 5 V
Resolution	16 bits
Calibration	Digital (via keyboard)
Impedance	Min. 10KW
Linearity	0.03% of full full scale
Temperature drift	0.002% of full scale / °C
Analog output (current) (WIN3 Ana only)	Current: 0 ¸ 20 mA / 4 ¸ 20 mA
Resolution	16 bits
Calibration	Digital (via keyboard)
Impedance	Max. 300W
Linearity	0.03% of full scale
Temperature drift	0.002% of full scale / °C
Programme code memory	32 Kbytes
Data memory	2 Kbytes
Conformity to standards	EN61000-6-2, EN61000-6-3 (EMC)
	EN61010-1 (Electric safety)

SYMBOLS

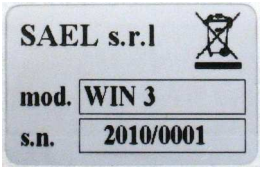
A list of the symbols used in the manual to attract the reader's attention follows below:


Caution! Specialized personnel only must perform this operation.


Red the following instructions carefully.


Further information.

IDENTIFICATION DATA PLATE




It is important to provide these data when requesting information or instructions regarding the instrument, along with the program number and the software version which are shown on the manual cover and are displayed when the instrument is switched on.

WARNINGS

- Specialized personnel only must perform the following operation.
- All wirings must be done with the instrument switched-off.


The following information are concerning to all the WIN3's functions, available on the different models.
In the summary of the wirings, the functions are associate to the specific WIN3's model.

POWER SUPPLY

- Power supply must be wired to terminals 23 and 24.
- The power supply cable must be channelled separately from others power supply cables with different voltages, from the load cells cables and from the I/O cables.

The internal circuit is galvanically isolated from power supply.

Power supply : 24 Vdc/ ± 10 % max 2W

TERMINAL BLOCK CONNECTION

23. + Alim.
24. 0

LOAD CELLS WIRING

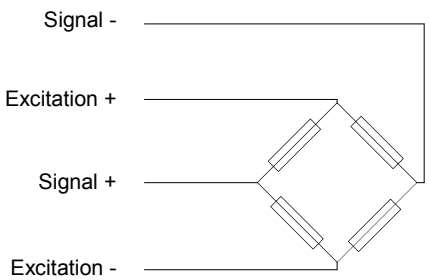
- The load cell cable must not be channelled with other cables (i.e. Outputs connected to remote switches or power supply cables), but must follows its own route.
- Any cable extension must be carefully shielded, the colour code must be respected and must be used a cable of the same type of the one provided from the manufacturer. The extensions on the cables must be soldered, otherwise a supportive terminal block or a junction box must be used.
- The load cell cable shouldn't have more conductors than those effectively used (4 or 6). In case of a cable with more conductors, connect those unused wires to the –power supply (terminal block 2).

A maximum of 4 x 350-ohm load cells can be connected to the instrument in parallel. The load cell excitation voltage is 4 Vdc and is protected against a temporary short circuit.
The instrument's input signal range requires the use of load cells with sensitivity from 1 mV/V to 2.5 mV/V.
The load cell wires must be connected to terminals 2 to 7 of 7 pins pull-out terminal block. In case of a cable with 4 conductors, connect the load cell's power supply terminal blocks to the relative polarity of the reference terminal block (2-5 3-4).

Connect the shield of the load cell cable to the terminal block 1.

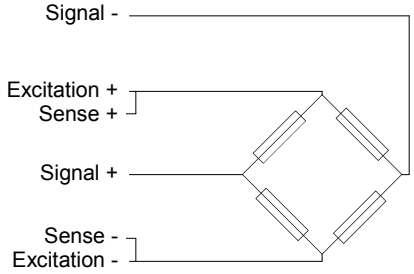
4 WIRES CONNECTION

2. EXCITATION -
3. EXCITATION +
4. Connect to terminal #3
5. Connect to terminal #2
6. SIGNAL -
7. SIGNAL +



6 WIRES CONNECTION

2. EXCITATION -
3. EXCITATION +
4. SENSE +
5. SENSE -
6. SIGNAL -
7. SIGNAL +



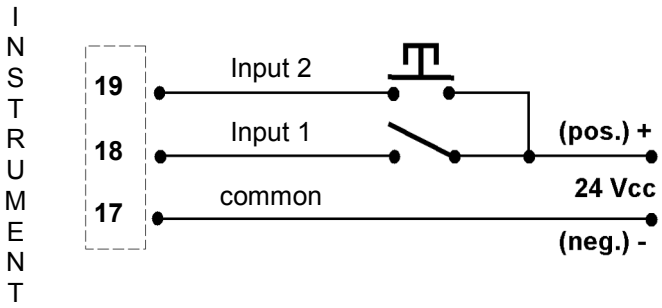
LOGICAL INPUT WIRING (WIN3/ANA ONLY)

The two logical input are electrically isolated from the instrument through an opto-isolator.

- The logical input connection cable must not be channelled with power supply cables.
- Use the shortest possible connection cable.

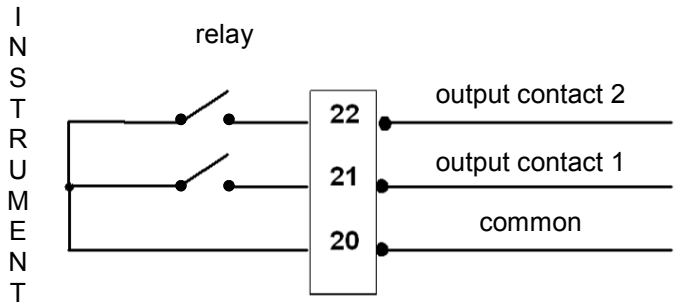
To activate a logical input, it must be connected to a 24Vcc-power supply, whereas the ground must be connected to the negative of the 24Vcc-power supply.

In the following picture are shown two different wiring's types, a button is used on the logical input 2 an a switch is used on logical input 1.



RELAY OUTPUTS WIRING (WIN3/ANA ONLY)

The two output relays have one common. The contacts rate is 24 Vcc/Vac 1 A.



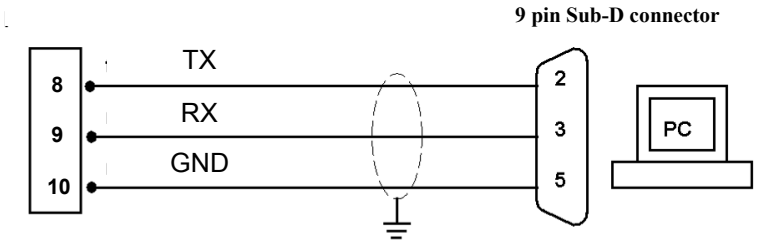
RS485 SERIAL WIRING (WIN3/Rs485 ONLY)

- A shielded cable must be used, the shield must be connected to only one of the ends of the cable. The shield must be connected to the terminal block 13 if it is connected at the instrument-side, otherwise it must be connected to ground.
- In case of cable with more conductors, connect the unused conductors to the shield.
- The cable must not be channelled with other cables (i.e. Outputs connected to remote switches or power supply cables), but must follow its own route.
- A terminal resistor (About 200 ohm) must be added at the end of line.

RS232 SERIAL WIRING

- A shielded cable must be used, the shield must be connected to only one of the ends of the cable. The shield must be connected to the terminal block 13 if it is connected at the instrument-side, otherwise it must be connected to ground. In case of cable with more conductors, connect the unused conductors to the shield.
- The length of the RS232 cable cannot exceed 15 meters (EIA RS-232-C standards), for longer distances the RS422 must be used.
- The cable must not be channelled with other cables (i.e. Outputs connected to remote switches or power supply cables), but must follow its own route.
- The PC must comply with the EN 60950 standards.

The diagram below shows the connection of the instrument to a PC COM port with a 9 pin connector:



ANALOG OUTPUTS WIRING (WIN3/ANA ONLY)

The instrument gives an analog tension / current output.

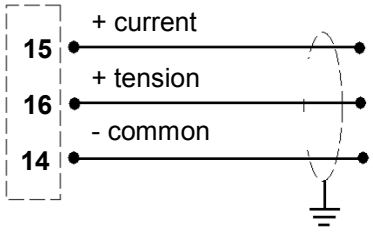
Features:

- Voltage analog output: from -10 to 10 Volt or from -5 a 5 Volt, min. load 10KW
- Current analog output: from 0 to 20 mA or from 4 a 20 mA, max. load 300W.

The analog output is set to work with 0-10V or 0-5V, by factory configuration as requested by the client.

- A shielded cable must be used, the shield must be connected to only one of the ends of the cable. The shield must be connected to the terminal block 13 if it is connected at the instrument-side, otherwise it must be connected to ground.
- The analog transmission is particularly sensitive to electromagnetic disturbances.

We therefore recommend to use the shortest possible cable length and channel the cable separately from power cables.

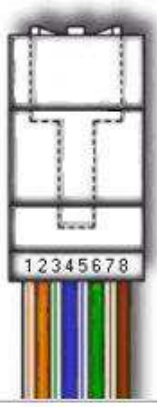
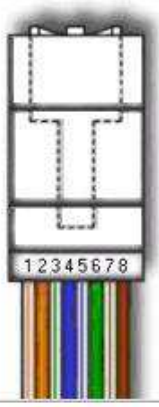


Analog output

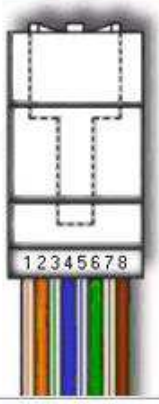
ETHERNET WIRING (WIN3 / Ethernet or WIN 3 Ethernet IP ONLY)

- The ethernet interface can be linked directly to PC, without involving any other network devices (router, switch, hub, lan-bridge o altro); in this case special crossover cable must be used.
- Standard cables are “direct type”, suitable for connections to network devices as routers or hubs. Standard cables are not suitable for direct connection between two PCs. (Currently there are ethernet interfaces equipped with auto-sensing technology, so that they recognize cable type and connection mode, allowing direct PC to PC connection by using non-crossover cable).
- Afterwards color codes of connectors pinouts are showed, both for the direct type cable that the crossover type.
- The cable must not be channelled with other cables (i.e. Outputs connected to remote switches or power supply cables), but must follow its own route.

Direct type cable pinout

Connector 1 (RJ45)		Connector 2 (RJ45)	
White / Orange		White / Orange	
Orange		Orange	
White / Green		White / Green	
Blue		Blue	
White / Blue		White / Blue	
Green		Green	
White / Brown		White / Brown	
Brown		Brown	

Crossover type cable pinout

Connector 1 (RJ45)		Connector 2 (RJ45)	
White / Orange		White / Green	
Orange		Green	
White / Green		White / Orange	
Blue		Blue	
White / Blue		White / Blue	
Green		Orange	
White / Brown		White / Brown	
Brown		Brown	

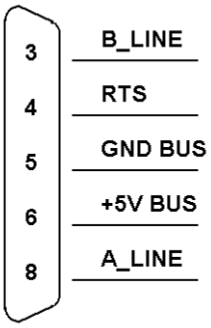
PROFIBUS WIRING (WIN3/Profibus ONLY)

In this hardware version, the instrument has a connector for the PROFIBUS DP's field bus in the lower side of the instrument.

Features:

- PROFIBUS baud-rate from 9.6 kbps to 12 Mbps.

Connection with Profibus line (9 pin Sub-D connector)



PROFIBUS CABLE

- A PROFIBUS cable must be used for the connection.
- On the PLC/LC used with instrument must be present the file HMS_1810.GSD (provided with the instrument).

PROFINET WIRING (WIN3/Profinet ONLY)

In the WIN3 / Profinet hardware version, the connection with the Profibus line is performed through the appropriate RJ45 connector.

Connection with Profinet line (RJ45 connector)

1 2 3 4 5 6 7 8

1	**TX +**
2	**TX -**
3	**RX +**
6	**RX -**

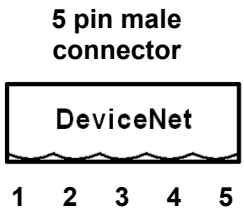
DEVICENET WIRING (WIN3/DeviceNet ONLY)

In the WIN3 / DeviceNet hardware version, the connection with the DeviceNet line is performed through the appropriate 5 pin pull-out terminal block.

Features:

- DEVICENET baudrate 125, 250, 500 kbps.

Connection with DeviceNet line (5 pin pull-out terminal block)



1	V -
2	CAN_L
3	SHIELD
4	CAN_H
5	V +

CANOPEN WIRING (WIN3/CANopen ONLY)

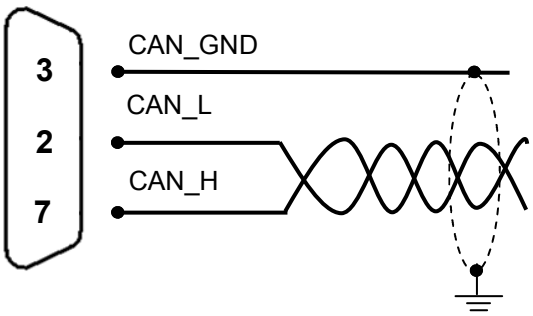
CANopen is an higher-layer communication protocol, based on the CAN serial bus system.

- For the CANopen connection must be used a cable appropriate for the CANbus line, with differential pair with common return in accordance to ISO 11898.
- The length of the bus is restricted by the communication speed (baud rate), as shown in the following table:

Bit rate	max bus length
1 Mbit / sec	25 m
500 kbit / sec	100 m
250 kbit / sec	250 m
125 kbit / sec	500 m
<= 50 kbit / sec	1000 m

- Although the maximum theoretical number of CANbus nodes is 127, the maximum number of supported nodes is 64.
- The CANbus line must have the termination resistor of 120 Ω.
- CAN_GND must be connected to the line cable, which must be connected to ground in a single point of the line.
- The cable must not be channelled with other cables (for example outputs connected to con-tactors or power cables), but must follow his own path.

Connection with CANopen line (9 pin Sub-D connector)



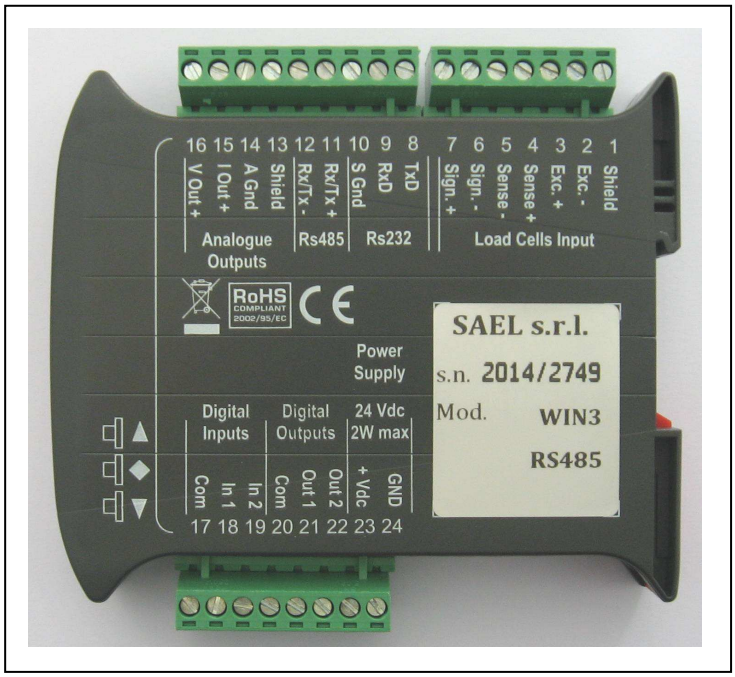
SUMMARY OF WIRINGS WIN3 / RS485

NUM.	9P pull-out terminal block pitch 5.08 mm
8	RS232 TX
9	RS232 RX
10	RS232 GND
11	RS485 +
12	RS485 -
13	Shield
14	NC
15	NC
16	NC

NUM.	8P pull-out terminal block pitch 5.08 mm
17	NC
18	NC
19	NC
20	NC
21	NC
22	NC
23	Power supply 24 Vdc
24	Power supply 0 Vdc

NUM.	7P pull-out terminal block pitch 5.08 mm 6-conductors cable version
1	Shield
2	- Load cell Excitation
3	+ Load cell Excitation
4	+ Load cell Sense
5	- Load cell Sense
6	- Load cell Signal
7	+ Load cell Signal

NUM.	7P pull-out terminal block pitch 5.08 mm 4-conductors cable version
1	Shield
2	- Load cell Excitation Connect to terminal 5
3	+ Load cell Excitation Connect to terminal 4
6	- Load cell Signal
7	+ Load cell Signal



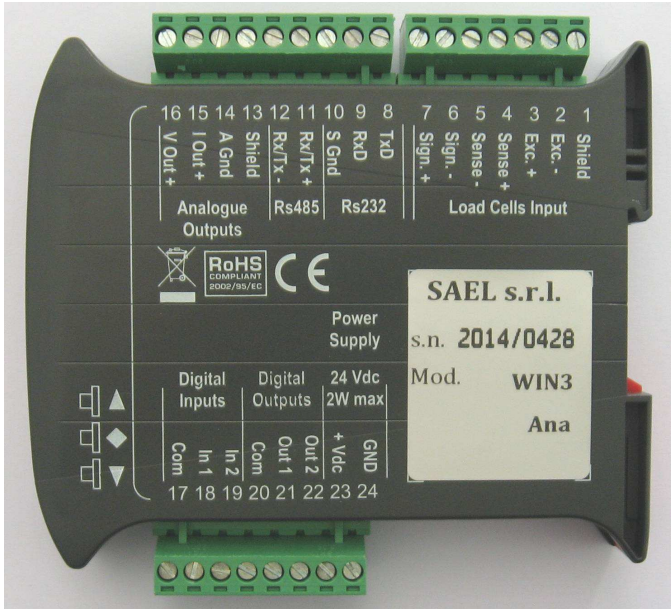
SUMMARY OF WIRINGS WIN3 / ANA

NUM.	9P pull-out terminal block pitch 5.08 mm
8	RS232 TX
9	RS232 RX
10	RS232 GND
11	NC
12	NC
13	Shield
14	Analog outputs GND
15	Analog output 4-20 / 0-20 mA
16	Analog output ± 10V / ± 5V

NUM.	8P pull-out terminal block pitch 5.08 mm
17	Inputs common
18	Logical input 1 (optoisolated)
19	Logical input 2 (optoisolated)
20	Outputs
21	Logical output 1 (relay 24 Vdc 1A NA)
22	Logical output 2 (relay 24 Vdc 1A NA)
23	Power supply 24 Vdc
24	Power supply0 Vdc

NUM.	7P pull-out terminal block pitch 5.08 mm 6-conductors cable version
1	Shield
2	- Load cell Excitation
3	+ Load cell Excitation
4	+ Load cell Sense
5	- Load cell Sense
6	- Load cell Signal
7	+ Load cell Signal

NUM.	7P pull-out terminal block pitch 5.08 mm 4-conductors cable version
1	Shield
2	- Load cell Excitation Connect to terminal 5
3	+ Load cell Excitation Connect to terminal 4
6	- Load cell Signal
7	+ Load cell Signal



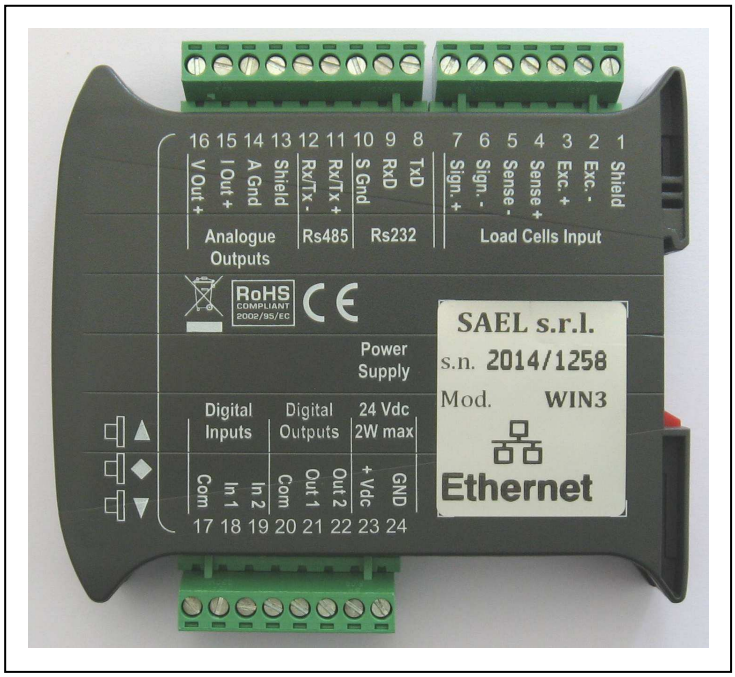
SUMMARY OF WIRINGS WIN3 / ETHERNET

NUM.	9P pull-out terminal block pitch 5.08 mm
8	RS232 TX
9	RS232 RX
10	RS232 GND
11	NC
12	NC
13	NC
14	NC
15	NC
16	NC

NUM.	8P pull-out terminal block pitch 5.08 mm
17	NC
18	NC
19	NC
20	NC
21	NC
22	NC
23	Power supply 24 Vdc
24	Power supply 0 Vdc

NUM.	7P pull-out terminal block pitch 5.08 mm 6-conductors cable version
1	Shield
2	- Load cell Excitation
3	+ Load cell Excitation
4	+ Load cell Sense
5	- Load cell Sense
6	- Load cell Signal
7	+ Load cell Signal

NUM.	7P pull-out terminal block pitch 5.08 mm 4-conductors cable version
1	Shield
2	- Load cell Excitation Connect to terminal 5
3	+ Load cell Excitation Connect to terminal 4
6	- Load cell Signal
7	+ Load cell Signal



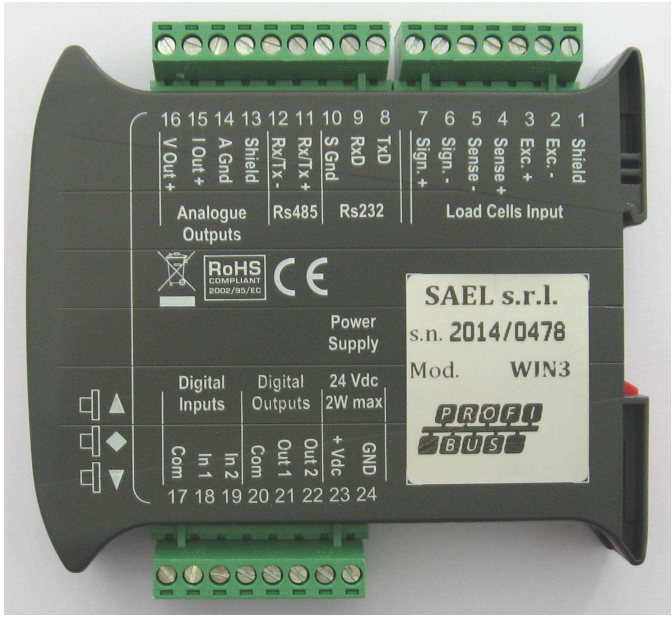
SUMMARY OF WIRINGS WIN3 / PROFIBUS

NUM.	9P pull-out terminal block pitch 5.08 mm
8	RS232 TX
9	RS232 RX
10	RS232 GND
11	NC
12	NC
13	NC
14	NC
15	NC
16	NC

NUM.	8P pull-out terminal block pitch 5.08 mm
17	NC
18	NC
19	NC
20	NC
21	NC
22	NC
23	Power supply 24 Vdc
24	Power supply 0 Vdc

NUM.	7P pull-out terminal block pitch 5.08 mm 6-conductors cable version
1	Shield
2	- Load cell Excitation
3	+ Load cell Excitation
4	+ Load cell Sense
5	- Load cell Sense
6	- Load cell Signal
7	+ Load cell Signal

NUM.	7P pull-out terminal block pitch 5.08 mm 4-conductors cable version
1	Shield
2	- Load cell Excitation Connect to terminal 5
3	+ Load cell Excitation Connect to terminal 4
6	- Load cell Signal
7	+ Load cell Signal



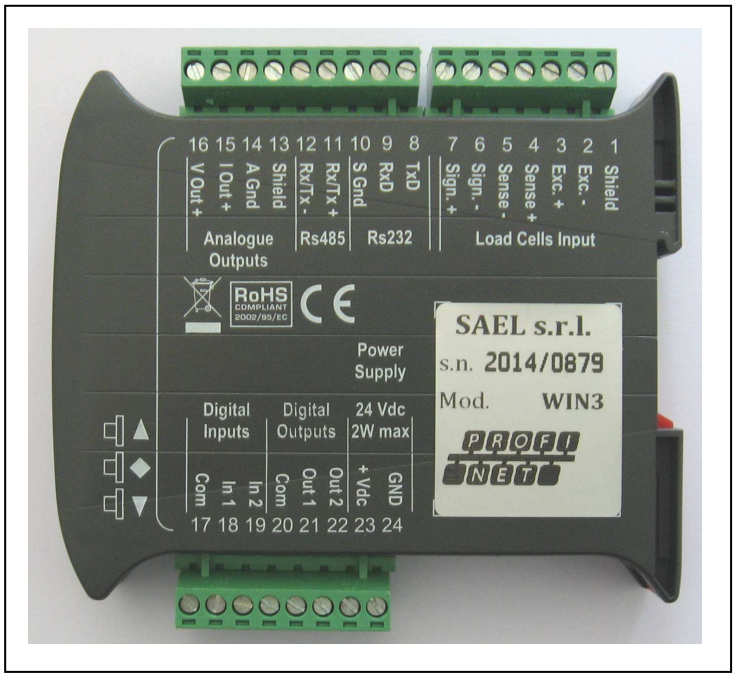
SUMMARY OF WIRINGS WIN3 / PROFINET

NUM.	9P pull-out terminal block pitch 5.08 mm
8	RS232 TX
9	RS232 RX
10	RS232 GND
11	NC
12	NC
13	NC
14	NC
15	NC
16	NC

NUM.	8P pull-out terminal block pitch 5.08 mm
17	NC
18	NC
19	NC
20	NC
21	NC
22	NC
23	Power supply 24 Vdc
24	Power supply 0 Vdc

NUM.	7P pull-out terminal block pitch 5.08 mm 6-conductors cable version
1	Shield
2	- Load cell Excitation
3	+ Load cell Excitation
4	+ Load cell Sense
5	- Load cell Sense
6	- Load cell Signal
7	+ Load cell Signal

NUM.	7P pull-out terminal block pitch 5.08 mm 4-conductors cable version
1	Shield
2	- Load cell Excitation Connect to terminal 5
3	+ Load cell Excitation Connect to terminal 4
6	- Load cell Signal
7	+ Load cell Signal



SUMMARY OF WIRINGS WIN3 / DEVICENET

NUM.	9P pull-out terminal block pitch 5.08 mm
8	RS232 TX
9	RS232 RX
10	RS232 GND
11	NC
12	NC
13	NC
14	NC
15	NC
16	NC

NUM.	8P pull-out terminal block pitch 5.08 mm
17	NC
18	NC
19	NC
20	NC
21	NC
22	NC
23	Power supply 24 Vdc
24	Power supply 0 Vdc

NUM.	7P pull-out terminal block pitch 5.08 mm 6-conductors cable version
1	Shield
2	- Load cell Excitation
3	+ Load cell Excitation
4	+ Load cell Sense
5	- Load cell Sense
6	- Load cell Signal
7	+ Load cell Signal

NUM.	7P pull-out terminal block pitch 5.08 mm 4-conductors cable version
1	Shield
2	- Load cell Excitation Connect to terminal 5
3	+ Load cell Excitation Connect to terminal 4
6	- Load cell Signal
7	+ Load cell Signal

NUM.	5P pull-out terminal block pitch 5.08 mm
1	V -
2	CAN_L
3	SHIELD
4	CAN_H
5	V +

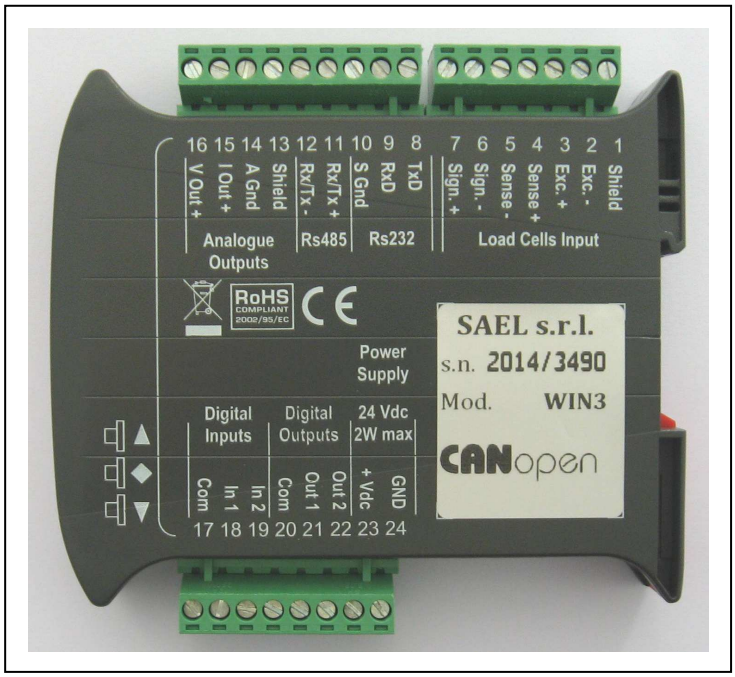
SUMMARY OF WIRINGS WIN3 / CANOPEN

NUM.	9P pull-out terminal block pitch 5.08 mm
8	RS232 TX
9	RS232 RX
10	RS232 GND
11	NC
12	NC
13	NC
14	NC
15	NC
16	NC

NUM.	8P pull-out terminal block pitch 5.08 mm
17	NC
18	NC
19	NC
20	NC
21	NC
22	NC
23	Power supply 24 Vdc
24	Power supply 0 Vdc

NUM.	7P pull-out terminal block pitch 5.08 mm 6-conductors cable version
1	Shield
2	- Load cell Excitation
3	+ Load cell Excitation
4	+ Load cell Sense
5	- Load cell Sense
6	- Load cell Signal
7	+ Load cell Signal

NUM.	7P pull-out terminal block pitch 5.08 mm 4-conductors cable version
1	Shield
2	- Load cell Excitation Connect to terminal 5
3	+ Load cell Excitation Connect to terminal 4
6	- Load cell Signal
7	+ Load cell Signal



SUMMARY OF WIRINGS WIN3 / ETHERNET IP

NUM.	9P pull-out terminal block pitch 5.08 mm
8	RS232 TX
9	RS232 RX
10	RS232 GND
11	NC
12	NC
13	NC
14	NC
15	NC
16	NC

NUM.	8P pull-out terminal block pitch 5.08 mm
17	NC
18	NC
19	NC
20	NC
21	NC
22	NC
23	Power supply 24 Vdc
24	Power supply 0 Vdc

NUM.	7P pull-out terminal block pitch 5.08 mm 6-conductors cable version
1	Shield
2	- Load cell Excitation
3	+ Load cell Excitation
4	+ Load cell Sense
5	- Load cell Sense
6	- Load cell Signal
7	+ Load cell Signal

NUM.	7P pull-out terminal block pitch 5.08 mm 4-conductors cable version
1	Shield
2	- Load cell Excitation Connect to terminal 5
3	+ Load cell Excitation Connect to terminal 4
6	- Load cell Signal
7	+ Load cell Signal