TF-BW500
Electronics for belt weighing systems

Overview

The Milltronics BW500 integrator is a full feature device for to use with both belt scales and weigh feeders.
Milltronics BW500/L is an integrator for simple applications with belt scales and weigh feeders.

Benefits

- Automatic zero and electronic span calibration
- Alarms for rate, load, speed, or diagnostic error
- On-board Modbus and optional: PROFIBUS DP, Modbus TCP/IP, PROFINET, EtherNet/IP and DeviceNet
- Comprehensive weigh feeder control functions
- PID control and on-line calibration with optional analog I/O card
- Differential speed detection with second speed sensor
- Input for moisture meter with optional analogue I/O board for dry weight calculation
- Inclination meter input with optional analogue I/O card to compensate for conveyor belt slope

- Suitable for use with commercially approved belt scales
- Measurement Canada, OIML, MID, EAC, and NTEP certifications

Application

Milltronics BW500 and BW500/L integrators can operate with a belt scale and a speed sensor. They process belt load and belt speed signals and transform them into instantaneous flow rate and total flow rate.
The BW500 provides control functions performed by conventional devices and compatibility with standard communication buses. Its patented balancing function eliminates the need to adapt load cells.
The PID function makes it possible to adjust the instantaneous flow rate on continuous-load dosing scales or to control pre-feeding instruments. The BW500 can also be used with one or two dosing scales to control mixing processes.
It features batch dosing, load out and alarm functions.

Guide to choosing the integrator

	BW500 (with advanced features)	BW500/L (with basic features)
PID control	With optional I/O board	N/A
Differential speed detection	Standard	N/A
Online calibration	Standard	N/A
Approvals for use in legal metrology (OIML, MID, Measurement Canada, GOST, NTEP)	Option	N/A
SmartLinx Communication (DeviceNet, PROFINET, Modbus TCP/IP, EtherNet/IP and PROFIBUS DP)	Option	Option
Modbus	Standard	Standard
Mixing and batch dosing	Standard	N/A
Humidity and slope compensation	• With optional I/O board, or • Parameter set	Parameter set
Multi span	Standard	N/A
RD500 connectivity	Standard	Standard
Relay output	5	2
Print with time/date indication	Standard	N/A
mA output	3[1]	1
mA input	2[1]	0

[1] BW500 mA input/output based on the I/O board·

Technical data

Operating mode	
Measuring principle	Integrator for belt scales
Typical applications	• Compatible with Milltronics belt scales or equivalent models with 1, 2,[4] or[6] load cells • Compatible with scales equipped with LVDT, with optional remote interface board (remotely installed)

Entrances	
Load cell	DC 0 ... 45 mV for load cell
Speed sensor	
• Pulses	• 0 ... 5 V low, 5 ... 15 V high 1 ... 3 000 Hz, or • Open collector or • Dry relay contact
Automatic zero	Dry contact from an external device
mA	See optional I/O mA card[1]
Auxiliary	5 programmable discrete inputs for external functions: display scrolling, totalizer reset 1, zero, working range, multi span, printing, batch dosing reset, PID function or on-line calibration, second speed sensor

Outputs (load and speed)	
mA	0/4 ... 20 mA programmable (flow rate), optically isolated, resolution 0.1 % of 20 mA, max. load 750 Ω (see optional I/O board)
Load cell	DC 10 V compensated, for max. 6 load cells (strain gauge), max. 150 mA
Speed sensor(s)	DC 12 V, 150 mA max. Excitation
Remote totalizer 1	• Contact closing duration 10 ... 300 ms • Solid-state relay contact, DC 30 V, 100 mA max. • Max. contact resistance on = 36 ohms • Max. leak off state = 1 uA
Remote totalizer 2	• Contact closing duration 10 ... 300 ms • Solid-state relay contact, AC/DC 240 V, 100 mA max. • Max. contact resistance on = 36 ohms • Max. leak off state = 1 uA
Relay output	5 control/alarm relays, 1 SPST/relay, 5 A at AC 250 V, non-inductive or DC 30 V

Measuring accuracy	
Resolution	0.02 % of full scale value
Accuracy	0.1 % of full scale value

Nominal operating conditions	
Environmental conditions	
Location	Indoors/outdoors
Room temperature	-20 ... +50 °C (-5...+122 °F)
Relative humidity/protection degree	Outdoors/Type 4X/NEMA 4X/IP65
Installation category	II
Degree of pollution	4

Building structure	
Material (enclosure)	Polycarbonate
Dimensions	209 L x 285 H x 92 D mm (8.2 L x 11.2 H x 3.6 D inch)
Weight of	2.6 kg (5.7 lb)

Electric power supply	
Standard	**Model AC** • AC 100 ... 240 V ± 10 %, 50/60 Hz, 55 VA max. • Fuse FU3 = 2AG, 2 AMP, 250 V **Model CC** • DC 10 ... 30 V, 26 W max. • Fuse FU2 = 3.75 A resettable (not user-replaceable)

Control and display elements	
Display	5 x 7 backlit dot matrix liquid crystal display (LCD) with 2 lines of 40 characters each
Programming	Via local keyboard
Memory	Programmes and parameters saved in non-volatile flash memory
Communication	• 2 RS 232 ports • 1 RS 485 port - Compatibility with SmartLinx

I/O mA card	
Inputs	2 programmable 0/4 ... 20 mA for PID control and on-line calibration, optically isolated, resolution 0.1 % of 20 mA, input impedance 200 Ω
Releases	2 programmable 0/4 ... 20 mA for PID control, instantaneous flow, load and speed, optically isolated, resolution 0.1 % of 20 mA, max. load 750 Ω
Power supply outputs	DC 24 V at 50 mA, isolated, short-circuit protection

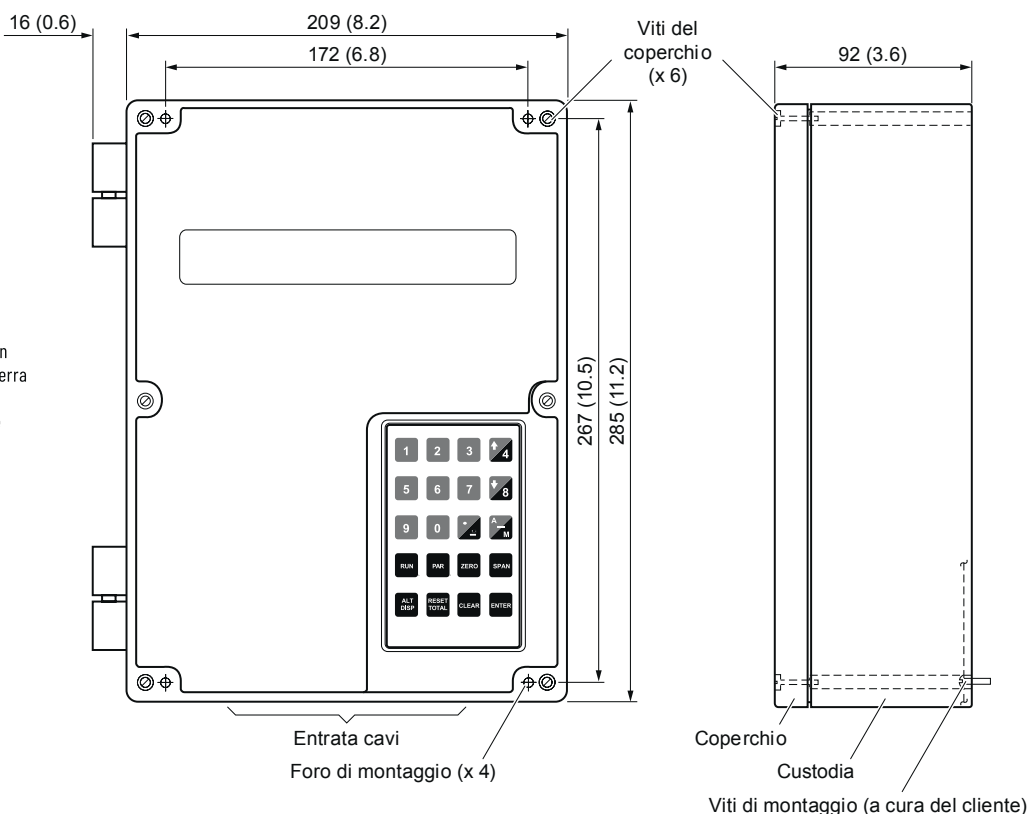| Type-approval	
BW500	CE, CSAUS/C, FM, Measurement Canada, NTEP, MID, OIML, GOST, RCM, EAC, SABS, STAMEQ, KCC
BW500/L	CE, CSAUS/C, FM, RCM, EAC, KCC

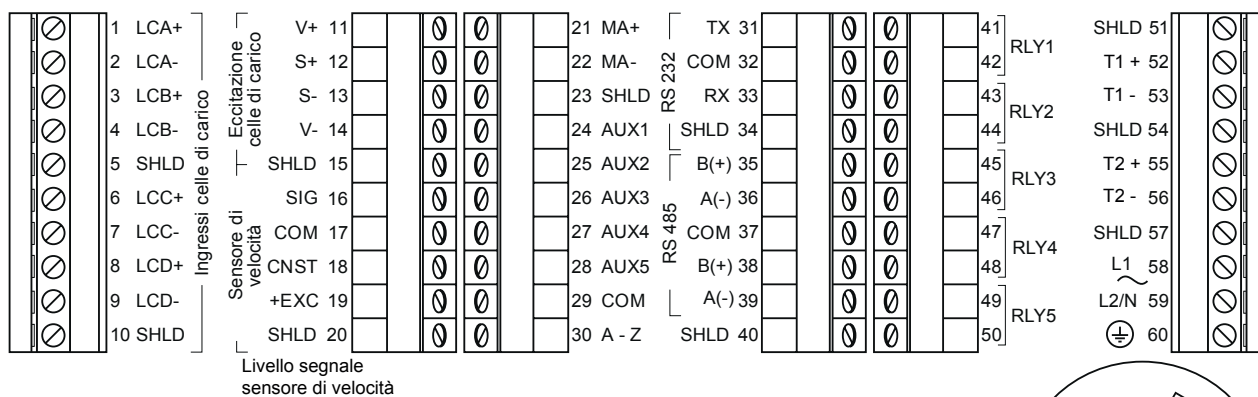| Options	
	• Speed sensor: MD-36/36A, MD- 256, SITRANS WS300, TASS, or RBSS, or equivalent models • SmartLinx modules: interface modules compatible with the most common communication standards. See product documentation. • LVDT interface card: for belt scales equipped with LVDTs

[1] BW500 only

Dimensional drawings

16 (0.6) 209 (8.2) 172 (6.8) 92 (3.6)

Viti del coperchio (x 6)

267 (10.5) 285 (11.2)

La custodia non metallica non fornisce un collegamento a terra continuo tra i conduttori. Utilizzare pertanto boccole e ponticelli di messa a terra.

Entrata cavi
Foro di montaggio (x 4)

Coperchio
Custodia
Viti di montaggio (a cura del cliente)

Milltronics BW500 and BW500/L, dimensions in mm (inch)

Wiring diagrams

1 LCA+	V+ 11	21 MA+
2 LCA-	S+ 12	22 MA-
3 LCB+	S- 13	23 SHLD
4 LCB-	V- 14	24 AUX1
5 SHLD	SHLD 15	25 AUX2
6 LCC+	SIG 16	26 AUX3
7 LCC-	COM 17	27 AUX4
8 LCD+	CNST 18	28 AUX5
9 LCD-	+EXC 19	29 COM
10 SHLD	SHLD 20	30 A - Z

Eccitazione celle di carico

Ingressi celle di carico

Sensore di velocità

Livello segnale sensore di velocità

RS 232 / RS 485:
TX 31 / COM 32 / RX 33 / SHLD 34 / B(+) 35 / A(-) 36 / COM 37 / B(+) 38 / A(-) 39 / SHLD 40

41 RLY1 42 / 43 RLY2 44 / 45 RLY3 46 / 47 RLY4 48 / 49 RLY5 50

SHLD 51 / T1 + 52 / T1 - 53 / SHLD 54 / T2 + 55 / T2 - 56 / SHLD 57 / L1 58 / L2/N 59 / ⏚ 60

SHLD 57 / + 58 / − 59 / ⏚ 60

Alimentazione CC

- One load cell:
- Without detection: Belden cable 8404, 4-core shielded, 20 AWG (0.5 mm2) or equivalent, max. length 150 m (500 ft).
- With detection: Belden cable 9260, 6-core shielded, 20 AWG (0.5 mm2) or equivalent, max. length 300 m (1 000 ft).
- Two/four/six[1] load cells:
- Without detection: Belden cable 9260, 6-core shielded, 20 AWG (0.5 mm2) or equivalent, max. length 150 m (500 ft).
- With detection: Belden cable 8418, 8-core shielded, 20 AWG (0.5 mm2) or equivalent, max. length 300 m (1 000 ft).
- Speed sensor: Belden 8770, 3 wires shielded, 0.75 mm2 (18 AWG) or equivalent, 300 m (1 000 ft)
- Automatic zero: Belden 8760, two-wire shielded/braided, gauge 18 AWG (0.75 mm2) or equivalent, max. 300 m (1000 ft)
- Remote totalizer: Belden 8760, two-wire shielded/braided, gauge 18 AWG (0.75 mm2) or equivalent, max. 300 m (1 000 ft)

[1]For scales with four/six load cells, install two cables separately (configuration with two load cells)