Overview

Milltronics BW500 is a full feature integrator for use with both belt scales and weighfeeders.
Milltronics BW500/L is an integrator for use in basic belt scale or weighbelt applications.

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 weighfeeder control functions
- PID control and on-line calibration with optional analog I/O card
- Differential speed detection with second speed sensor
- Moisture meter input with optional analog I/O card for calculation of dry weight
- Inclinometer input with optional analog I/O card to compensate for conveyor slope
- Suitable for belt scale custody approval
- Measurement Canada, OIML, MID, EAC, and NTEP approved

Application

Milltronics BW500 and BW500/L operate with a belt scale and a speed sensor. Belt load and speed signals are processed for accurate flow rate and totalized weight of bulk solids.

BW500 can take on lower level control functions traditionally handled by other devices, and it supports popular industrial communication buses. Its proven load cell balance function eliminates matching of load cells.

The PID function may be used for rate control on shearing weighfeeders - where belt loading is constant - but can also control pre-feeding devices. Operating in tandem with two or more weighfeeders, the BW500 may be used for ratio blending and controlling additives. Batching, load out, and alarm functions are also provided by the BW500.

Dolphin Plus software may be used for programming the unit on a PC.

Integrator selection guide

	BW500 (advanced feature set)	**BW500/L (basic feature set)**
PID control	With optional I/O card	N/A
Differential speed detection	Standard	N/A
Online calibration	Standard	N/A
Trade approval (OIML, MID, Measurement Canada, GOST, NTEP)	Optional	N/A
SmartLinx communications (DeviceNET, PROFINET, Modbus, TCP/IP, EtherNet/IP, and PROFIBUS DP)	Optional	Optional
Modbus	Standard	Standard
Ratio blending and batching	Standard	N/A
Moisture and incline compensation	• With optional I/O card, or • Parameter set	Parameter set
Multi Span	Standard	N/A
RD500 connectivity	Standard	Standard
Relay output	5	2
Time/date stamped printing	Standard	N/A
mA output	3[1)]	1
mA input	2[1)]	0

[1)] mA input/output for BW500 is based on I/O card

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Technical specifications

Milltronics BW500, BW500/L	
Mode of operation	
Measuring principle	Belt scale integrator
Typical application	• Compatible with Milltronics belt scales or equivalent 1, 2, 4[1], or 6[1] load cell scales • Compatible with LVDT equipped scales, with use of optional interface board (remotely mounted)
Inputs	
Load cell	0 ... 45 mV DC per load cell
Speed sensor • Pulse train	• 0 ... 5 V low, 5 ... 15 V high 1 ... 3 000 Hz, or • Open collector switch, or • Relay dry contact
Auto zero	Dry contact from external device
mA	See optional mA I/O board[1]
Auxiliary	5 discrete inputs for external contacts, each programmable for either: display scrolling, totalizer 1 reset, zero, span, multi-span, print, batch reset, PID function or online calibration, 2nd speed sensor
Outputs (load and speed)	
mA	Programmable 0/4 ... 20 mA, for rate, optically isolated, 0.1 % of 20 mA resolution, 750 Ω load max. (see optional mA I/O board)
Load cell	10 V DC compensated excitation for strain gauge type, 6 cells max, 150 mA max.
Speed sensor(s)	12 V DC, 150 mA max. excitation
Remote totalizer 1	• Contact closure 10 ... 300 ms duration • Solid state relay contact 30 V DC, 100 mA max. • Max. contact on-resistance = 36 ohms • Max. off-state leakage = 1 uA
Remote totalizer 2	• Contact closure 10 ... 300 ms duration • Solid state relay contact rated 240 V AC/DC, 100 mA max. • Max. contact on-resistance = 36 ohms • Max. off-state leakage = 1 uA
Relay output	5 alarm/control relays, 1 SPST Form A relay contact per relay, rated 5 A at 250 V AC, non-inductive or 30 V DC
Measuring accuracy	
Resolution	0.02 % of full scale
Accuracy	0.1 % of full scale

Milltronics BW500, BW500/L	
Rated operating conditions	
Ambient conditions	
Location	Indoor/outdoor
Ambient temperature	-20 ... +50 °C (-5 … +122 °F)
Relative humidity/ingress protection	Suitable for outdoor/Type 4X/ NEMA 4X/IP65
Installation category	II
Pollution degree	4
Design	
Material (enclosure)	Polycarbonate
Dimensions	209 W x 285 H x 92 D mm (8.2 W x 11.2 H x 3.6 D inch)
Weight	2.6 kg (5.7 lb)
Power supply	
Standard	AC version • 100 ... 240 V AC, ±10 %, 50/60 Hz, 55 VA max. • Fuse FU3 = 2AG, 2 AMP, 250 V Slo Blo DC version • 10 ... 30 V DC, 26 W max. • Fuse FU2 = 3.75 A resettable (not user replaceable)
Controls and displays	
Displays	Illuminated 5 x 7 dot matrix liquid crystal display with 2 lines of 40 characters each
Programming	Via local keypad and/or Dolphin Plus interface
Memory	Program and parameters stored in non-volatile Flash memory, upgradeable via Dolphin Plus interface
Communications	• Two RS 232 ports • One RS 485 port • SmartLinx compatible
mA I/O board	
Inputs	2 programmable 0/4 … 20 mA for PID control and on-line calibration, optically isolated, 0.1 % of 20 mA resolution, 200 Ω input impedance
Outputs	2 programmable 0/4 … 20 mA for PID control, rate, load, and speed output, optically isolated, 0.1 % of 20 mA resolution, 750 Ω load max
Output supply	Isolated 24 V DC at 50 mA, short circuit protected
Approvals	
BW500	CE, $CSA_{US/C}$, FM, Measurement Canada, NTEP, MID, OIML, GOST, RCM, EAC, SABS, STAMEQ, KCC
BW500/L	CE, $CSA_{US/C}$, FM, RCM, EAC, KCC
Options	• Speed sensor: MD-36/36A, MD-256, SITRANS WS300, TASS, or RBSS, or compatible • Dolphin Plus: Windows based software interface. Refer to associated product documentation. • SmartLinx Modules: protocol specific modules for interface with popular industrial communications systems. Refer to product documentation. • LVDT interface card: for interface with LVDT based scales

[1] BW500 only.

Selection and ordering data

	Article No.
Milltronics BW500 and BW500/L ↗ A full-feature, powerful integrator designed for use with both belt scales and weighfeeders ↗Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	**7MH7152-** ■■■■■ - ■■■
Input voltage	
AC voltage	2
DC voltage	3
Auxiliary input/output board	
None	A
Board with 2 analog inputs and 2 analog outputs[1]	B
Feature software	
BW500, 1 ... 6 load cell input (advanced feature set)	A
BW500/L, 1... 2 load cell input[2] (basic feature set)	B
Auxiliary memory	
None	0
Data communications[3]	
SmartLinx ready	0
SmartLinx PROFIBUS DP module	2
SmartLinx DeviceNet module	3
SmartLinx PROFINET module	4
SmartLinx EtherNet/IP module	5
SmartLinx Modbus TCP/IP module	6
Enclosures	
Standard enclosure, no entry holes	1
Standard enclosure, 4 entries, for M20 glands	2
Trade approval stickers	
No trade approval sticker	A
Not legal for Canadian and EU trade sticker	B
Legal for Canadian trade[4)5)6)]	C
Legal for U.S. trade (NTEP)[4)5)6)]	D
Legal for World trade (OIML), European trade (MID)[4)5)6)]	E
Approvals	
CE, $CSA_{US/C}$, FM, RCM, EAC, KCC	A

Further designs Please add "**-Z**" to article no. and specify order code(s).	Order Code
Stainless steel tag (69 x 50 mm), Measuring-point number/identification (max 27 characters), specify in plain text.	**Y15**
Manufacturer's test certificate: According to EN 10204-2.2	**C11**
OIML/MID approval additional nameplate (submit application data with order)	**Y77**
NTEP approval additional nameplate (submit application data with order)	**Y78**
LVDT conditioner card mounted and connected for use with LVDT belt scales	**G21**
Stainless steel, sun/weather shield 357 x 305 x 203 mm (14 x 12 x 8 inch) (finished unit is field mounted with enclosure)	**S50**
Stainless steel enclosure, 304 (1.4301), [406 x 305 x 152 mm (16 x 12 x 6 inch), Nema/Type 4X, IP66; (finished unit is mounted inside enclosure)]	
• With window	**A11**
• Without window	**A12**
Painted mild steel, [406 x 305 x 152 mm (16 x 12 x 6 inch), Nema/Type 4, IP65; (finished unit is mounted inside enclosure)]	
• With window	**A13**
• Without window	**A14**
Painted mild steel, anti-vibration enclosure with viewing window [406 x 305 x 203 mm (16 x 12 x 8 inch), Nema/Type 4, IP66; (finished unit is mounted inside enclosure)]	**A15**
Painted mild steel, heated enclosure with viewing window for use down to -50 °C (-58 °F); finished unit is mounted inside enclosure 483 x 584 x 203 mm (19 x 23 x 8 inch)	**A35**

1) Required for PID control and online calibration, available with feature software option A only.
2) Available with auxiliary I/O option A, and trade approval stickers A, B only.
3) Required for industrial communications. SmartLinx PROFINET module is certified per standard V2.2.4.
4) Requires use with applicable certified MSI or MMI.
5) Complete specification data sheet on page 4/27 and submit with order.
6) Available with feature software option A only.

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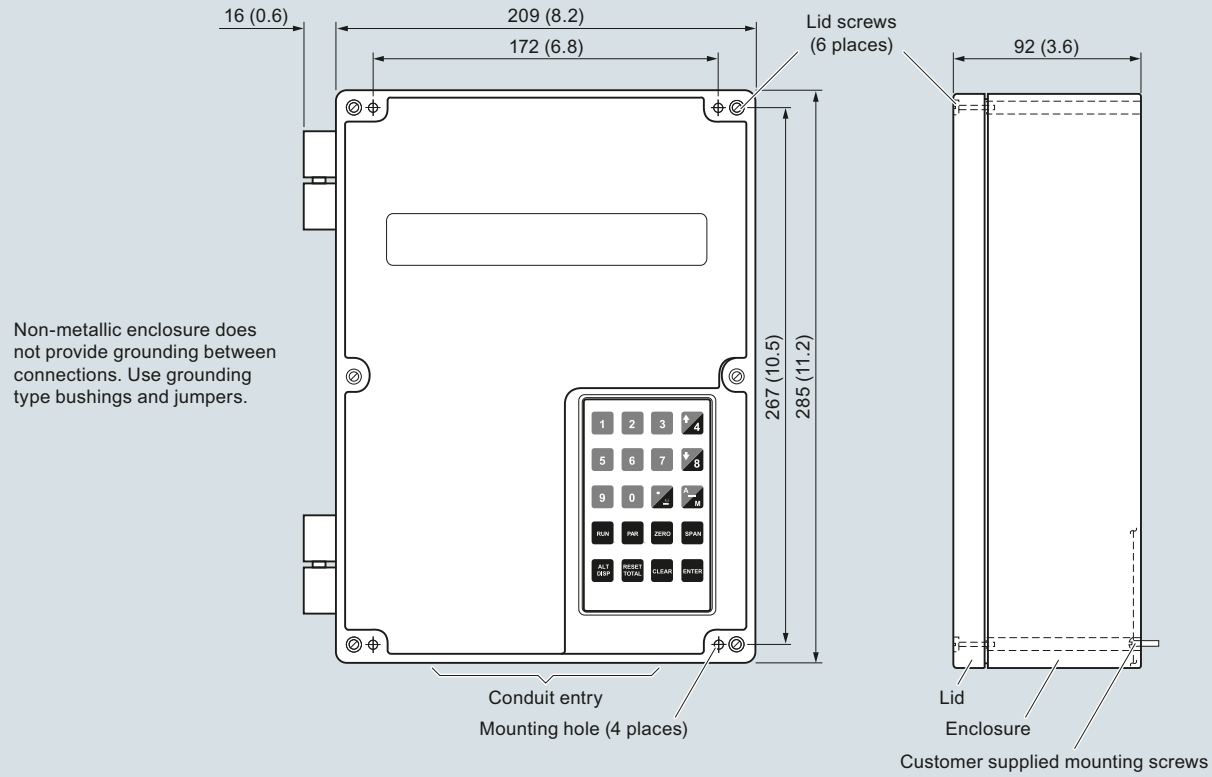
Selection and ordering data

	Article No.
Instruction manuals	
BW500 and BW500/L, English	**A5E33482052**
Note: the instruction manual should be ordered as a separate item on the order.	
All literature is available to download for free, in a range of languages, at	
http://www.siemens.com/weighing/documentation	
Optional equipment	
Auxiliary I/O card spare	**7MH7723-1BJ**
LVDT Conditioners in Nema 4 enclosure (to interface LVDT Flowmeter/Belt scale without internal pre-amplifier)	**7MH7723-1AJ**
Supply voltage regulators, 120 V AC, 60 Hz	**7MH7726-1AN**
Cables to connect BW500, BW500/L, and SF500 keypad to motherboard	**7MH7723-1CB**
SIMATIC Touch panel 277, 6 inch	**6AV6643-0AA01-1AX0**
SIMATIC Touch panel TP277B, 6 inch	**6AV6642-0BA01-1AX1**
SIMATIC Multi-panel MP277, 8 inch	**6AV6643-0CB01-1AX1**
Programmed MMC for SIMATIC panel TP277	**7MH7726-1AW**
Programmed MMC for SIMATIC panel TP177B	**7MH7726-1AX**
Programmed MMC for SIMATIC panel MP277	**7MH7726-1AY**
SITRANS RD100 Remote displays, see RD100 on page 2/100	
SITRANS RD200 Remote displays, see RD200 on page 2/102	
SITRANS RD300 Remote displays, see RD300 on page 2/106	
SITRANS RD500 web, datalogging, alarming, Ethernet, and modem support for instrumentation, see page 2/110	**7ML5750-1AA00-0**
Large LED display, 150 mm (6 inch) high characters	**A5E31871009**

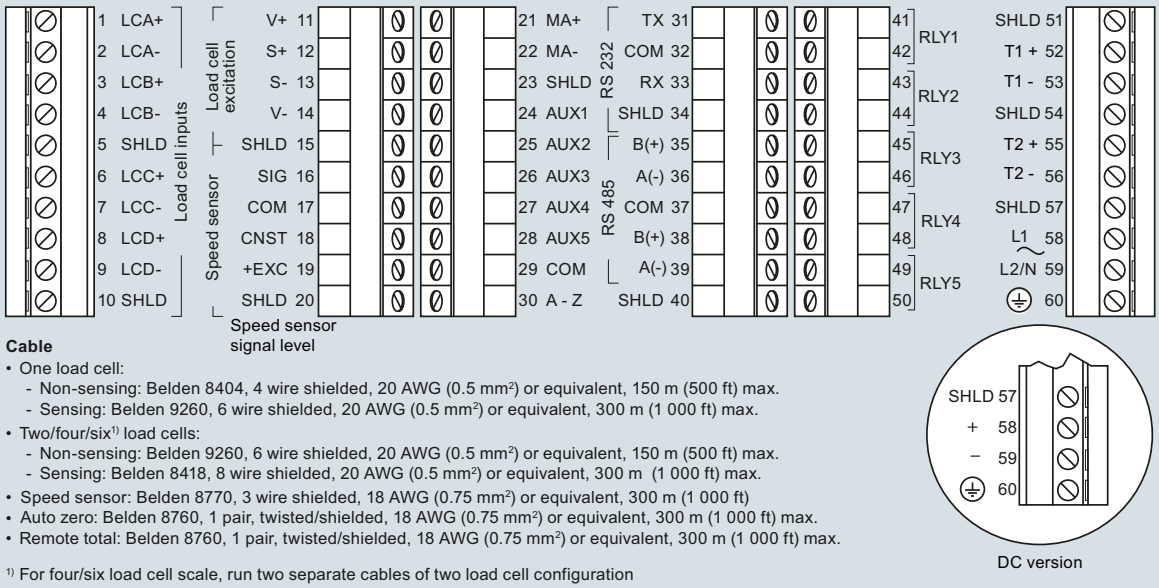
	Article No.
Spare parts	
Display card	**7MH7723-1AF**
BW500 motherboard, AC	**A5E34320772**
BW500/L motherboard, AC	**A5E34320773**
BW500 motherboard, DC	**A5E34320774**
BW500/L motherboard, DC	**A5E34320775**
Fuse, 2 A, 250 V, BW500, BW500/L, and SF500, spare	**7MH7723-1DG**
Lid with overlay and keypad for BW500	**7MH7723-1AK**
Lid with overlay and keypad for trade approved BW500	**7MH7723-1HN**
Lid with overlay and keypad for BW500/L	**A5E34699647**
Keypads spare for BW500, BW500/L, and SF500	**7MH7723-1CD**
LVDT card spare, internal to BW500	**A5E34699664**
Modbus TCP/IP, EtherNet/IP module	**7ML1830-1PN**
PROFINET IO module	**7ML1830-1PM**
PROFIBUS DP module	**7ML1830-1HR**
DeviceNet module	**7ML1830-1HT**

Dimensional drawings



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

Circuit diagrams



Cable

- One load cell:
  - Non-sensing: Belden 8404, 4 wire shielded, 20 AWG (0.5 mm²) or equivalent, 150 m (500 ft) max.
  - Sensing: Belden 9260, 6 wire shielded, 20 AWG (0.5 mm²) or equivalent, 300 m (1 000 ft) max.
- Two/four/six[1] load cells:
  - Non-sensing: Belden 9260, 6 wire shielded, 20 AWG (0.5 mm²) or equivalent, 150 m (500 ft) max.
  - Sensing: Belden 8418, 8 wire shielded, 20 AWG (0.5 mm²) or equivalent, 300 m (1 000 ft) max.
- Speed sensor: Belden 8770, 3 wire shielded, 18 AWG (0.75 mm²) or equivalent, 300 m (1 000 ft)
- Auto zero: Belden 8760, 1 pair, twisted/shielded, 18 AWG (0.75 mm²) or equivalent, 300 m (1 000 ft) max.
- Remote total: Belden 8760, 1 pair, twisted/shielded, 18 AWG (0.75 mm²) or equivalent, 300 m (1 000 ft) max.

[1] For four/six load cell scale, run two separate cables of two load cell configuration

Milltronics BW500 and BW500/L connections