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Milltronics BW500 and BW500/L

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, optional PROFIBUS DP, Allen-Bradley RIO 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, GOST, 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 patented 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 (AB RIO, DeviceNET, 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
mA output	3[1)]	1
mA input	2[1)]	0

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

Art No.	7MH7152-2BA02-2AA
Item No.	01SM-D-WI002

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Milltronics BW500 and BW500/L

Technical specifications

Milltronics BW500 and BW500L	
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 ... 3000 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, multispan, 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, 4 cells max, 150 mA max.
Speed sensor(s)	12 V DC, 150 mA max. excitation
Remote totalizer 1	Contact closure 10 ... 300 ms duration, open collector switch rated 30 V DC, 100 mA max.
Remote totalizer 2	Contact closure 10 ... 300 ms duration, open collector switch rated 240 V AC/DC, 100 mA max.
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
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 (W x H x D)	209 x 285 x 92 mm (8.2 x 11.2 x 3.6 inch)
Weight	2.6 kg (5.7 lb)

Power supply	
Standard	100/115/200/230 V AC ± 15 %, 50/60 Hz, 31 VA fuse, FU1: 2AG, Slo Blo, 2 A, 250 V or equivalent
Controls and displays	
Displays	Illuminated 5x7 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, C-TICK, , GOST, SABS
BW500/L	CE, $CSA_{US/C}$, FM, C-TICK, GOST
Options	• Speed sensor: MD-36/36A, MD-256, SITRANS WS100, 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

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Selection and Ordering data

		Order No.
Milltronics BW500 and BW500/L	C)	**7MH7152-**
A full-feature, powerful integrator designed for use with both belt scales and weighfeeders		■■■■■ - ■■■
Input voltage		
AC voltage		**1**
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 Allen-Bradley RIO module		**1**
Smartlinx PROFIBUS DP module		**2**
Smartlinx DeviceNet module		**3**
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, C-TICK		**A**
Further designs		Order Code
Please add "**-Z**" to Order No. and specify Order code(s).		
Stainless Steel tag (69 x 50 mm), Measuring-point number/identification (max 16 characters), specify in plain text.		**Y15**
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000		**C11**
Stainless Steel, sun/weather shield 357 x 305 x 203 mm (14 x12 x 8 inch) (finished unit is field mounted with enclosure)		**S50**
Stainless steel enclosure, 304 (1.4301), [406 x 305 x 152 mm (16 x12 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
4) Requires use with applicable certified MSI or MMI
5) Complete specification data sheet on page 4/3 and submit with order
6) Available with Feature Software option A only

		Order No.
Milltronics BW500 and BW500/L	C)	**7MH7152-**
A full-feature, powerful integrator designed for use with both belt scales and weighfeeders		■■■■■ - ■■■
BW500 and BW500/L, German	C)	**7ML1998-5DK35**
BW500, French	C)	**7ML1998-5DK12**
BW500, Spanish Note: The instruction manual should be ordered as a separate item on the order.	C)	**7ML1998-5DK23**
Additional instruction manuals		
LVDT Conditioner Card Instruction Manuals, English	C)	**7ML1998-5EF01**
LVDT Conditioner Card Instruction Manuals, German	C)	**7ML1998-5EF31**
Smartlinx Allen-Bradley Remote I/O, English	C)	**7ML1998-1AP03**
Smartlinx PROFIBUS DP, English	C)	**7ML1998-1AQ03**
Smartlinx PROFIBUS DP, German	C)	**7ML1998-1AQ33**
Smartlinx PROFIBUS DP, French	C)	**7ML1998-1AQ12**
Smartlinx DeviceNet, English Note: The appropriate Smartlinx instruction manual should be ordered as a separate line on the order.	C)	**7ML1998-1BH02**
This device is shipped with the Siemens Milltronics manual CD containing the complete instruction manual library.		
Optional equipment		
Auxilliary I/O cards spare	C)	**7MH7723-1BJ**
LVDT Conditioners in Nema 4 enclosure (to interface LVDT belt scale without internal pre-amplifier)	C)	**7MH7723-1AJ**
Supply voltage regulators, 120 V AC, 60 Hz	C)	**7MH7726-1AN**
SITRANS RD100 Remote displays - see RD100 on page 2/16		
SITRANS RD200 Remote displays - see RD200 on page 2/18		
SITRANS RD500 web, datalogging, alarming, ethernet, and modem support for instrumentation - see page 2/22	K)	**7ML5750-1AA00-0**
Spare parts		
Display cards		**7MH7723-1AF**
Motherboards	C)	**7MH7723-1AH**
Batteries, 3V, lithium	C)	**7MH7723-1ES**
Fuses, 2 A, 250 V, BW500, BW500/L, and SF500, spare	C)	**7MH7723-1DG**
Lid with overlay and keypad for BW500 and BW500/L	C)	**7MH7723-1AK**
Lid with overlay and keypad for trade approved BW500		**7MH7723-1HN**
Cables to connect BW500, BW500/L, and SF500 keypad to motherboard		**7MH7723-1CB**
Keypads spare for BW500, BW500/L, and SF500		**7MH7723-1CD**

C) Subject to export regulations AL: N, ECCN: EAR99.

K) Subject to export regulations AL: N, ECCN: 5A991X.

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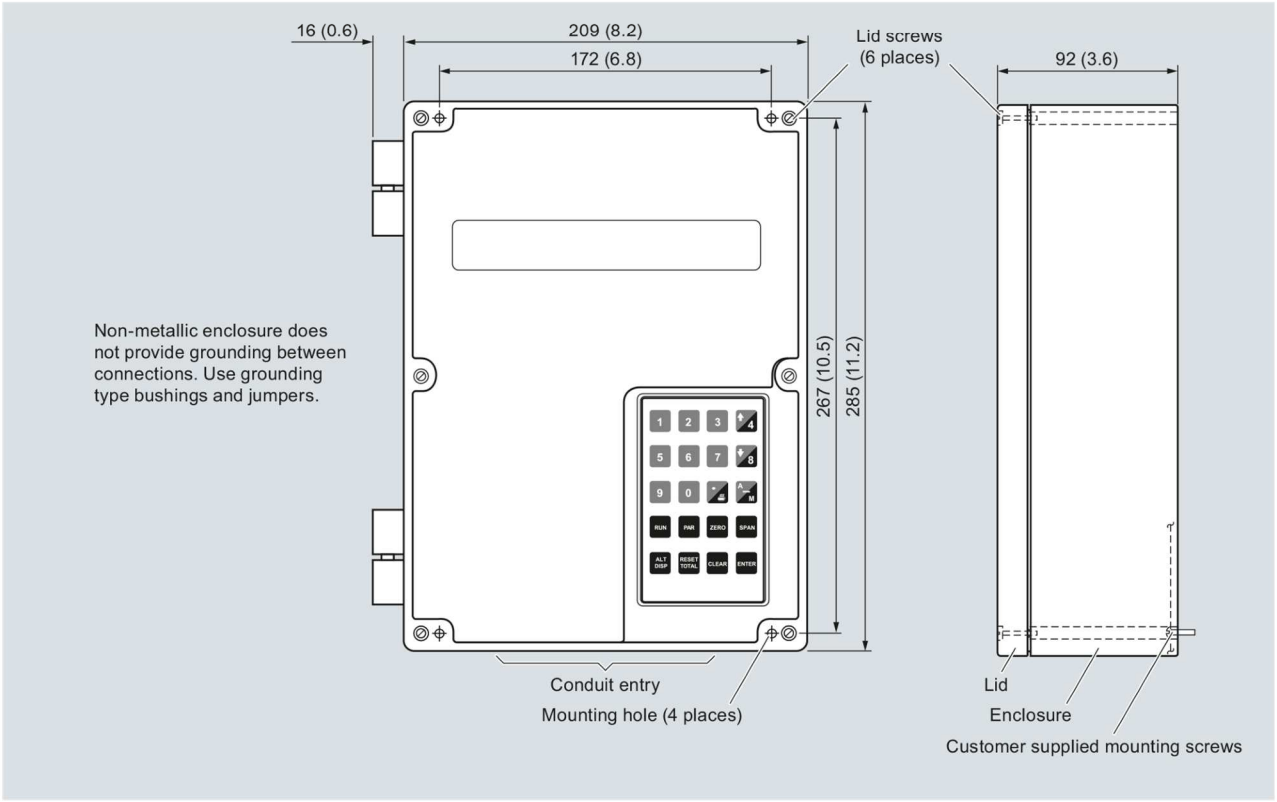
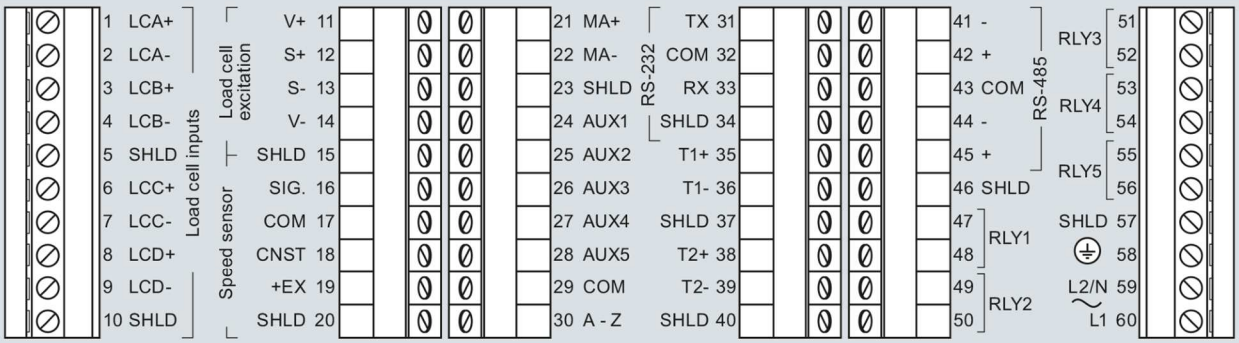
Dimensional drawings



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

Schematics



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 (1000 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 (1000 ft) max.
- Speed sensor: Belden 8770, 3 wire shielded, 18 AWG (0.75 mm²) or equivalent, 300 m (1000 ft)
- Auto zero: Belden 8760, 1 pair, twisted/shielded, 18 AWG (0.75 mm²) or equivalent, 300 m (1000 ft) max.
- Remote total: Belden 8760, 1 pair, twisted/shielded, 18 AWG (0.75 mm²) or equivalent, 300 m (1000 ft) max.

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

Milltronics BW500 and BW500/L connections