Milltronics SF500

Overview

Milltronics SF500 is a full feature integrator for use with solids flowmeters.

Benefits

- Automatic zero and electronic span calibration
- Alarms for rate or diagnostic error
- On-board Modbus and optional: PROFIBUS DP, PROFINET, Modbus TCP/IP, EtherNet/IP, and DeviceNet
- On-line calibration and dual PID control with optional analog I/O card
- Multi-point linearizer for high turn down accuracy
- Up to 8 multi-spans for application of more than one flow condition and/or material
- Moisture meter input with optional analog I/O card for calculation of dry weight

Application

Milltronics SF500 operates with any solids flowmeter with up to two strain gauge load cells or LVDT sensor. The SF500 processes sensor signals for accurate flow rate and totalized weight of bulk solids. It 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 of pre-feeding devices and/or control of additives with two internal PID controllers. Operating in tandem with two or more solids flowmeters or weighfeeders, the SF500 may be used for ratio blending and controlling additives. Batching, load out, and alarm functions are also provided by the SF500.

Technical specifications

Milltronics SF500	
Mode of operation	
Measuring principle	Flowmeter integrator
Typical application	• Compatible with SITRANS solids flowmeters or equivalent 1 or 2 load cell models • Compatible with LVDT equipped solids flowmeters, with use of optional interface board (remotely mounted)
Input	
Load cell/LVDT	0 … 45 mV DC per load cell or LVDT interface card
Auto zero	Dry contact from external device
mA	See optional mA I/O board
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 on-line calibration
Output	
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/LVDT conditioner card	10 V DC compensated excitation for strain gauge type, 2 cells max., 150 mA max.
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 SF500	
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	
Display	Illuminated 5 x 7 dot matrix liquid crystal display with 2 lines of 40 characters each
Programming	Via local keypad
Memory	Program and parameters stored in non-volatile Flash memory
Communications	Two RS 232 ports One RS 485 port SmartLinx compatible
Approvals	CE, UKCA, $_{C}$CSA$_{US}$, FM, RCM, EAC, KC
Options	• SmartLinx modules: protocol specific modules for interface with popular industrial communications systems. Refer to associated product documentation. • LVDT interface card: for interface with LVDT based solids flowmeters • mA I/O board - Inputs: 2 programmable 0/ 4 … 20 mA for PID control or on-line calibration, optically isolated, 0.1 % … 20 mA resolution, 200 Ω input impedance - Outputs: 2 programmable 0/ 4 … 20 mA for PID control or rate 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

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Selection and ordering data

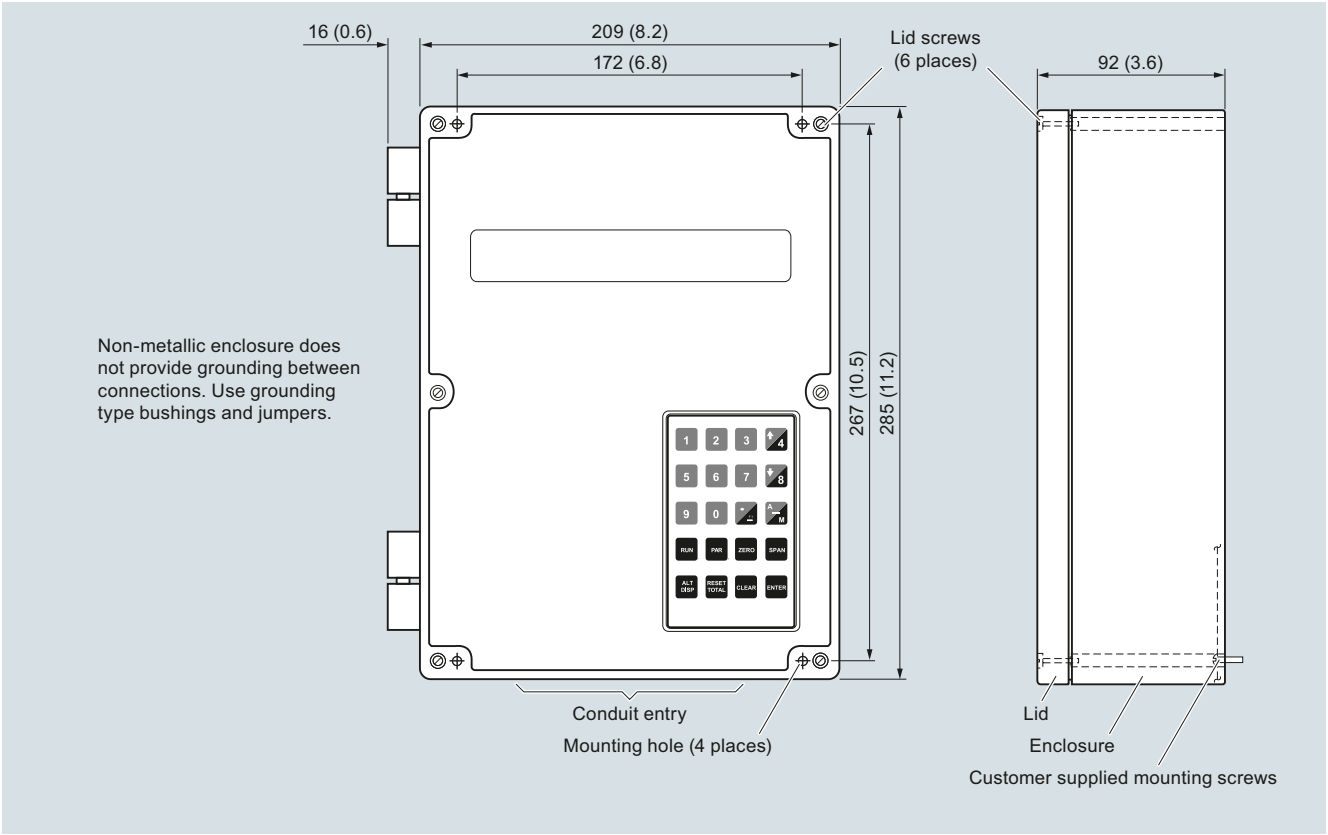
	Article No.	Order code
Milltronics SF500 Integrator ↗ Full feature, powerful integrator designed for use with solids flowmeters. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	**7MH7156-** ■■■■■■-■■■	
Input voltage		
AC voltage	**2**	
DC voltage	**3**	
Auxiliary input/output boards[1]		
None	**A**	
Board with 2 analog inputs and 2 analog outputs	**B**	
Feature software		
Standard	**A**	
Auxiliary memory		
None	**0**	
Data communications[2]		
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**	
Approvals		
Ordinary Locations/General Purpose (Non-Ex), CE, UKCA, $_{C}$CSA$_{US}$, FM, RCM, EAC, KC	**A**	
Further designs		
Please add "**-Z**" to article no. and specify order code(s).		
Stainless steel tag (69 x 50 mm), Measuring-point number/identification (max 27 characters), specify in plain text.		**Y15**
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**
Manufacturer's test certificate: According to EN 10204-2.2		**C11**
LVDT conditioner card mounted and connected for use with LVDT flowmeters		**G21**
Stainless steel enclosure, 304 (1.4301), [406 x 305 x 152 mm (16 x 12 x 6 inch), 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), 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**
Instruction manuals		
All literature is available to download for free, in a range of languages, at http://www.siemens.com/weighing/documentation		

[1] Required for PID control and online calibration.

[2] Required for industrial communications. SmartLinx PROFINET module is certified per standard V2.2.4.

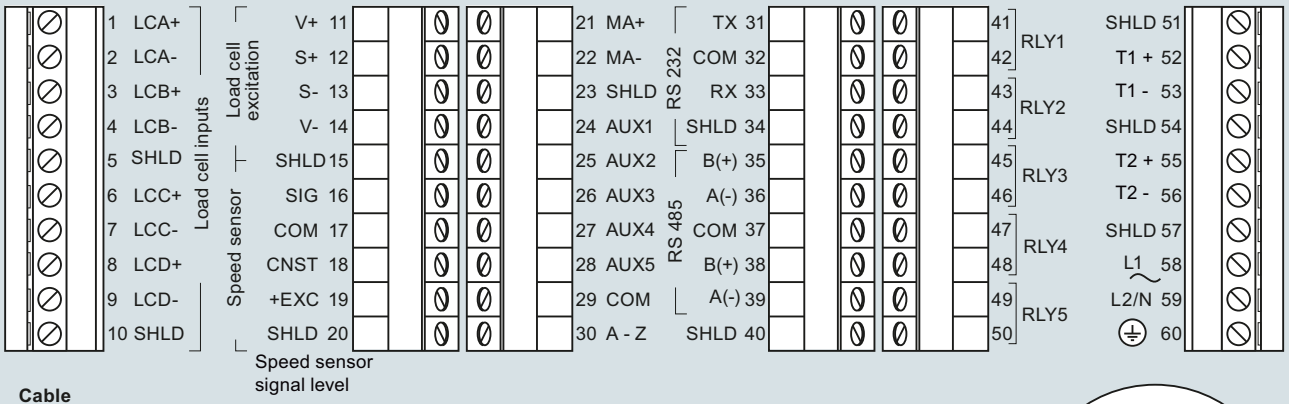
Selection and ordering data	Article No.
Optional equipment	
Auxiliary I/O card spare	**7MH7723-1BJ**
LVDT Conditioners in NEMA 4 enclosure (to interface LVDT Flowmeter/Belt scale without internal pre-amplifier)	**7MH7723-1AJ**
Cables to connect BW500/SF500 keypad to motherboard	**7MH7723-1CB**
SITRANS RD100 Remote displays, see RD100 on page 2/106	**7ML5741-.....-.**
SITRANS RD150 Remote displays, see RD150 on page 2/109	**7ML5742-.....-....**
SITRANS RD200 Remote displays, see RD200 on page 2/113	**7ML5740-.....-..**
SITRANS RD300 Remote displays, see RD300 on page 2/117	**7ML5744-.....-..**
SITRANS RD500 web, datalogging, alarming, Ethernet, and modem support for instrumentation, see on page 2/121	**7ML5750-1AA00-0**
Spare parts	
Display card	**7MH7723-1AF**
Lid with overlay and keypad	**7MH7723-1AG**
SF500 motherboard, AC	**A5E34320776**
SF500 motherboard, DC	**A5E34320778**
Fuse, 2 A, 250 V, BW500, BW500/L, and SF500, spare	**7MH7723-1DG**
Keypad spare for BW500, BW500/L, and SF500	**7MH7723-1CD**
LVDT card kit, internal to SF500	**A5E34699664**
PROFINET IO module	**7ML1830-1PM**
Modbus TCP/IP, EtherNet/IP module	**7ML1830-1PN**
PROFIBUS DP module	**7ML1830-1HR**
DeviceNet module	**7ML1830-1HT**

Dimensional drawings



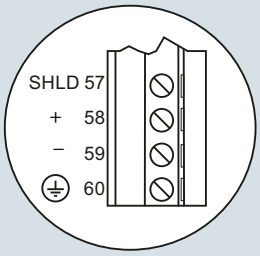
Milltronics SF500, dimensions in mm (inch)

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 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.
- 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.



DC version

Milltronics SF500 connections