

Weighing Electronics

Stand-alone electronics
Solids flowmeters

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 | Flowmeter integrator |
| Measuring principle | |
| Typical application | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • 100 ... 240 V AC ± 10 %, 50/60 Hz, 55 VA max. • Fuse FU3 = 2AG, 2 AMP, 250 V Slo Blo DC version <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • Program stored in non-volatile FLASH ROM • Parameters stored in battery backed RAM, 3 V NEDA 5003LC or equivalent, 10 year life |
| Communications | Two RS 232 ports One RS 485 port SmartLinx compatible |
| Approvals | CE, CSA _{US/C} , FM, RCM, EAC, KCC |
| Options | <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> - 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 DC voltage | 2 3 | <i>Further designs</i> 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. Stainless steel, sun/weather shield 357 x 305 x 203 mm (14 x 12 x 8 inch) (finished unit is field mounted with enclosure) Manufacturer's test certificate: According to EN 10204-2.2 LVDT conditioner card mounted and connected for use with LVDT flowmeters | Y15 S50 C11 G21 |
| Auxiliary input/output boards¹⁾ None Board with 2 analog inputs and 2 analog outputs | A B | | |
| Feature software Standard | A | | |
| Auxiliary memory None | 0 | | |
| Data communications²⁾ SmartLinx Ready SmartLinx PROFIBUS DP module SmartLinx DeviceNet module SmartLinx PROFINET module SmartLinx EtherNet/IP module SmartLinx Modbus TCP/IP module | 0 2 3 4 5 6 | 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 • Without window 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 • Without window 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)] 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) | A11 A12 A13 A14 A15 A35 |
| Enclosures Standard enclosure, no entry holes Standard enclosure, 4 entries, for M20 glands | 1 2 | | |
| Trade approval stickers No trade approval sticker Not legal for Canadian and EU trade sticker | A B | <i>Instruction manuals</i> All literature is available to download for free, in a range of languages, at http://www.siemens.com/weighing/documentation | |
| Approvals CE, CSAUS/C, FM, RCM, EAC, KCC | A | | |

¹⁾ Required for PID control and online calibration.

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

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| <i>Optional equipment</i> | |
| 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 |
| <i>Spare parts</i> | |
| 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 spare, 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 |

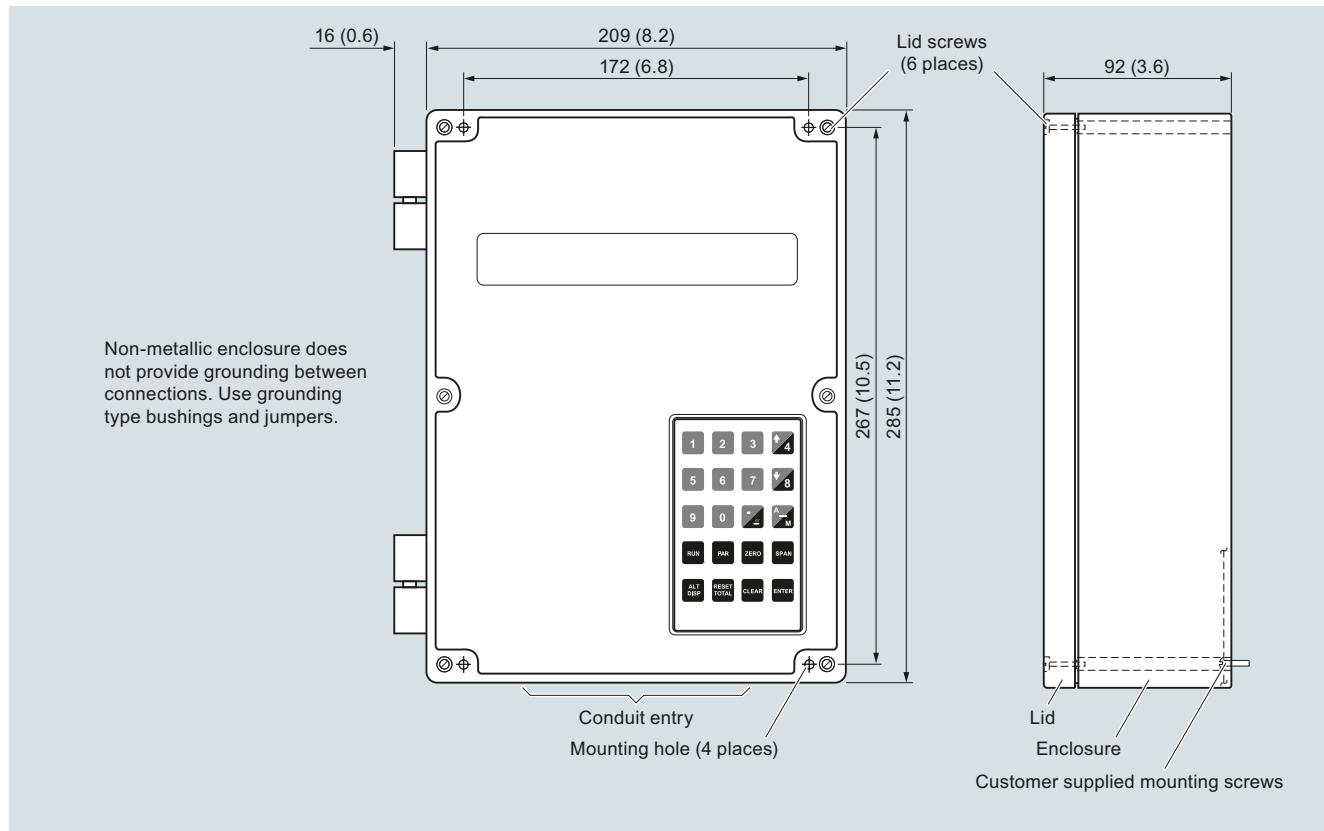
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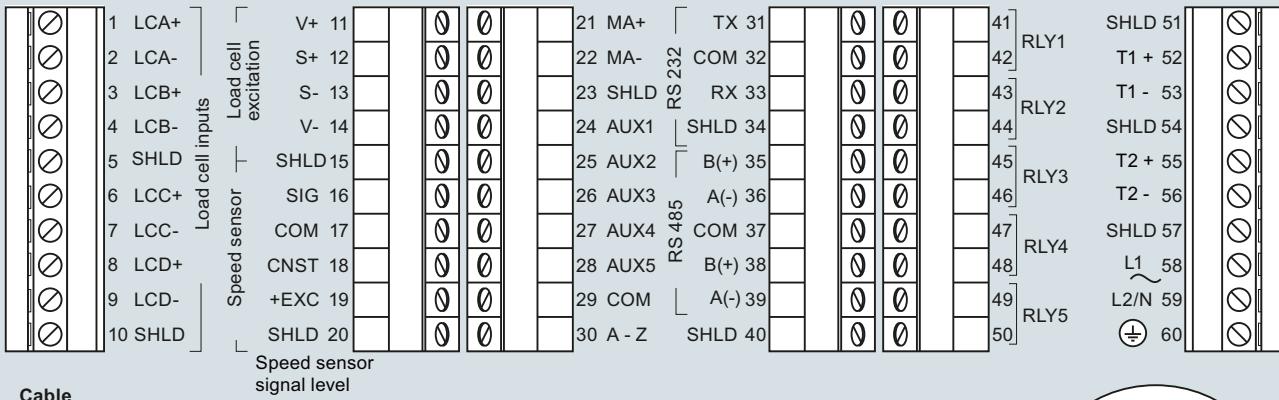
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Dimensional drawings

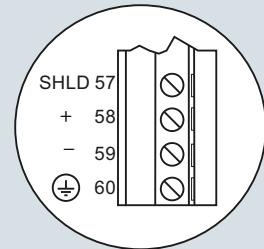


Milltronics SF500, dimensions in mm (inch)

Circuit diagrams



- 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