DANAK
PROD Reg. nr 7026

FORCE Certification

EU Type Examination Certificate

No. 0200-MID-08684

BW500

CONTINUOUS TOTALIZING AUTOMATIC WEIGHING INSTRUMENT

Issued by **FORCE Certification**
EU - Notified Body No. 0200

In accordance with the requirements in Directive 2014/32/EU of the European Parliament and Council.

Issued to **Siemens Canada ltd., Siemens Milltronics Process Instruments**
1954 Technology Drive
Peterborough, ON K9J 6X7
Canada

In respect of A continuous totalizing automatic weighing instrument designated BW500 with a weighing platform (type MSI or MMI) and speed sensor.

Accuracy class:	≥ 1
Maximum flow rate, Q_{max}:	Dependent upon application
Minimum flow rate, Q_{min}:	≥ 20% of Q_{max}
Totalization scale interval, d_t:	≥ 1 kg
Belt speed:	0.2 m/s to 5.0 m/s

The conformity with the essential requirements in Annex 1 and the specific requirements in Annex VIII (MI-006), chapter I & VII of the Directive 2014/32/EU is met by the application of OIML R50:1997, OIML D11:2004 section 12 & 13 severity level 3, and WELMEC Guide 7.2.

The principal characteristics and approval conditions are set out in the descriptive annex to this certificate.

The annex comprises 11 pages.

Issued on **2021-08-06**
Valid until **2031-08-06**

Jens Hovgård Jensen
2021-08-06

Digitally signed by Jens Hovgård Jensen
jhje@force.dk
Certification Manager

FORCE Certification references:
Task no.: 120-27804.90.10 and ID no.: 0200-MID-08684

Signatory: Jens Hovgård Jensen

Descriptive annex

Contents

1. Name and type of instrument and modules

The BW500 is a continuous totalizing automatic weighing instrument using Miltronics MSI or MMI load receptors and designed to weigh large quantities of loose material from bulk.

The name of the instrument may be followed by alphanumeric characters for technical, legal or commercial characterization of the instrument.

2. Description of the construction and function

2.1 Mechanical

2.1.1 MSI / MMI weighing platform

The MSI weighing platform is designed to react only to the vertical component of the force being applied to it. It consists of a fixed support frame (static) and a live frame (dynamic). The static frame is the main support between the conveyor stringers which in turn supports the dynamic frame including the pair of load cells. The dynamic frame supports the scale idlers and transfers the weight of the material to the load cells. As the material travels along the conveyor belt, a force is exerted through the suspended idlers to the dynamic frame. The dynamic frame is forced down proportionally. The movement in the load cell is sensed by its strain gauges when excited by voltage from the electronic integrator and produces a signal proportional to weight, which is returned to the integrator. The movement in each load cells is limited by the positive stop incorporated in the design of the load cell.

The MMI weighing platform comprises two or three MSI weighing platforms installed in succession.

2.1.2 Load cells

The load cells are single-ended beam (bending) G4-TBSP models manufactured by Group Four Transducers, as described in OIML Certificate of Conformity R60/2000-GB-01.02.

2.1.3 Speed sensor

The speed sensor is a shaft driven speed sensor and measures the shaft's rotation by sending pulses to the integrator. A number of pulses are generated for each rotation of the shaft.
The speed sensor must be positioned so that slipping does not occur. It shall be placed on the clean side of the belt or directly on the driven axle of the transport belt.

The speed sensor can be type MD-256 or WS300 or any compatible type

2.2 Electrical

2.2.1 BW500 Controller

The BW 500 integrator (Figure 1) is the user interface and data handling terminal. It comprises a keypad with 20 keys, a back-lit LCD display with 2 lines of 40 characters and a CPU board. The load and speed signals from the weighing platform and speed sensor are processed to derive rate of material flow and totalisation. The primary values of speed and load, as well as the derived values or rate and total are available on the display. The display is checked at power-on.

The integrator is mains-operated and supplies the nominal 10 VDC needed to excite the load cells. The speed sensor is powered from the integrator. The integrator console is fitted with a 3V Lithium battery to store parameters in a battery-backed RAM, and maintain the basic functions such as clock, etc. A warning message is displayed when it needs replacing.

2.3 Devices

The instrument is provided with the following devices:

- main totalising device
- semi-automatic zero-setting device
- indication of the flow rate (Q)
- indication of the belt speed
- indication of the totalised weight
- error messages and alarms

2.4 Operation

“Initial zero” and Initial span” need to be performed whenever a parameter is changed on the system and can only be carried out by authorised personnel as it requires access to the calibration/setup switch inside the console. “Routine zero” can be performed by an end user using the keypad and are used to maintain the accuracy of the system over time.

The Program mode is used to define the operation of the system and can only be accessed via the calibration/setup switch by authorised personnel. It allows viewing and editing the parameters to suit the application. The Run mode is the only mode accessible to the end user and can be entered after a successful routine zero and span calibration. It allows running totalisations while displaying rate and total weight. The keypad also allows the end user to view, but not edit, the system’s parameters.

Once a totalisation is complete, the final totalised weight is displayed and printed along with the information needed to identify the measurement (Figure 7). The belt must be empty to allow printing. The system is fitted with alarms (out of range flow-rate or speed, power failure) to ensure accurate totalisation results, and the integrator and printer are disabled should the belt stop. In case of power failure, the totalisation result can be retrieved from a remote battery-operated indicator.

3. Technical data

3.1 Continuous totalizer

The instrument has the following technical characteristics:

Power supply	100 - 240 VAC, 50/60 Hz, or 10 - 30 VDC
Totalization scale interval	≥ 1 kg
Q_{max}	Dependent upon application
Q_{min}	≥ 20% Qmax
Σ_{min}	Dependent upon application
Belt speed	0.2 to 5.0 m/s
Speed sensor output	≤ 2000 Hz
Weigh length	Dependent upon application
Load cells excitation voltage	10 VDC
Minimum load cell impedance	28 Ω
Maximum load cell impedance	1100 Ω
Measuring range minimum voltage (at max capacity)	7.6 mV
Measuring range maximum voltage (at max capacity)	50 mV
Climatic environment	-10 °C to 40 °C Condensing (open)
Electromagnetic environment	E2
Accuracy class	≥ 1
Load cell cable	4 wire and screen

3.2 Software

The software is held in the Flash ROM and its version number is V3.xx, where 3 is fixed for legally relevant part and xx is for minor updates (xx must be greater than 11). The software version number can be accessed by entering P900 via the keypad.

Software download and weighing parameters are protected by a calibration & set-up switch located inside the controller enclosure, which can only be accessed breaking the tamper-evident seal.

3.3 Documents

The documents filed at FORCE (reference No. 120-27804) are valid for the weighing instruments described here.

4. Interfaces and peripheral equipment

4.1 Interfaces

The instrument may have the following interface types:

- Load cell connection (hardwired)
- Speed sensor
- RS232
- RS485
- Modbus connection
- Industrial communication Smartlinx
- Digital I/O
- mA output

4.2 Peripheral equipment

The instrument may be connected to any peripheral device for which there has been issued a Part or Evaluation Certificate by a Notified Body responsible for Module B for automatic weighing instruments under Directive 2014/32/EU and bears the CE marking of conformity to the relevant directives.

or

A peripheral device without a Part or Evaluation Certificate may be connected under the following conditions:

- it bears the CE marking for conformity to all relevant CE marking Directives from EU.
- it is not capable of transmitting any data or instruction into the measuring instrument, other than to release a printout, checking for correct data transmission or validation.
- it prints measurement results and other data as received from the measuring instrument without any modification or further processing.
- it complies with the applicable requirements of Paragraph 8.1 of Annex I.

5. Approval conditions

None

6. Special conditions for verification

None

7. Securing and location of seals and verification marks

7.1 Securing and sealing

Seals shall bear the mark of the manufacturer or alternative verification mark of a notified body according to ANNEX II, module D or F of Directive 2014/32/EU.

The controller enclosure shall be sealed against opening with wire and seal.

Components that may not be dismantled or adjusted by the user (load cell and junction box) must be secured by either a wire and seal or a tamper evident label and securing mark.

8. Location of CE mark of conformity and inscriptions

8.1 Identification plate

All inscriptions for the instrument shall be placed on the identification plate, which is to be located visible on the instrument.
The inscription plate shall be secured, either by sealing or by being of a form such that it is destroyed when removed.

8.1.1 CE mark and metrological M

A CE mark of conformity followed by the metrological M and year of production within a rectangle shall be located on the identification plate.

8.1.2 Inscriptions

The identification plate shall bear the following inscriptions:

- Manufacturer's name and postal address
- Type designation
- Serial number
- Accuracy class
- Maximum flow rate Q_{max}
- Minimum flow rate Q_{min}
- Minimum totalized load Σ_{min}
- Scale interval for totalization d
- Belt speed v (fixed speed)
- Temperature range: -10°C to +40 °C
- Electromagnetic class: E2
- Type examination certificate number

9. Pictures

Figure 1 BW500 controller

Figure 2 BW500 controller, modified design

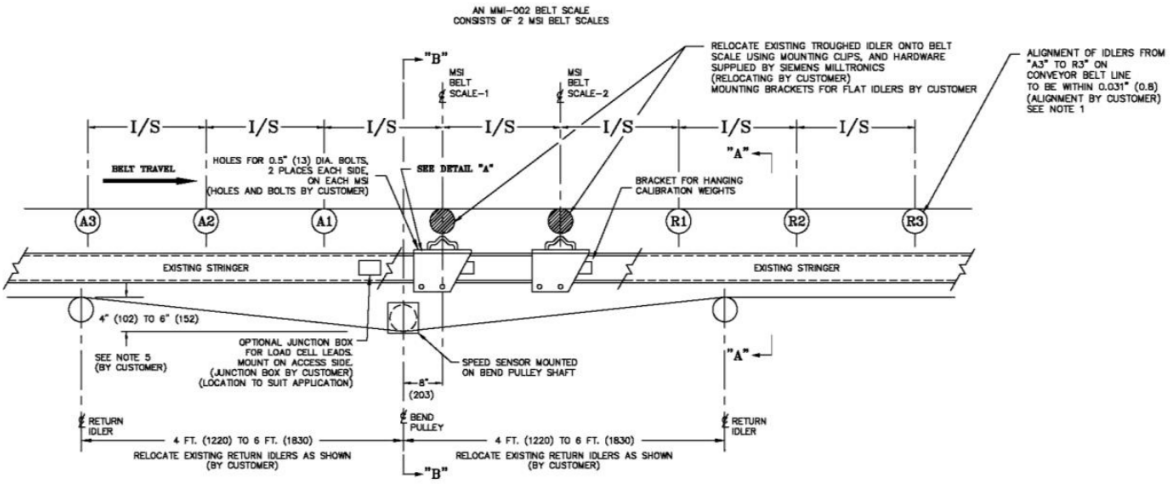

Figure 3 Typical MMI installation.

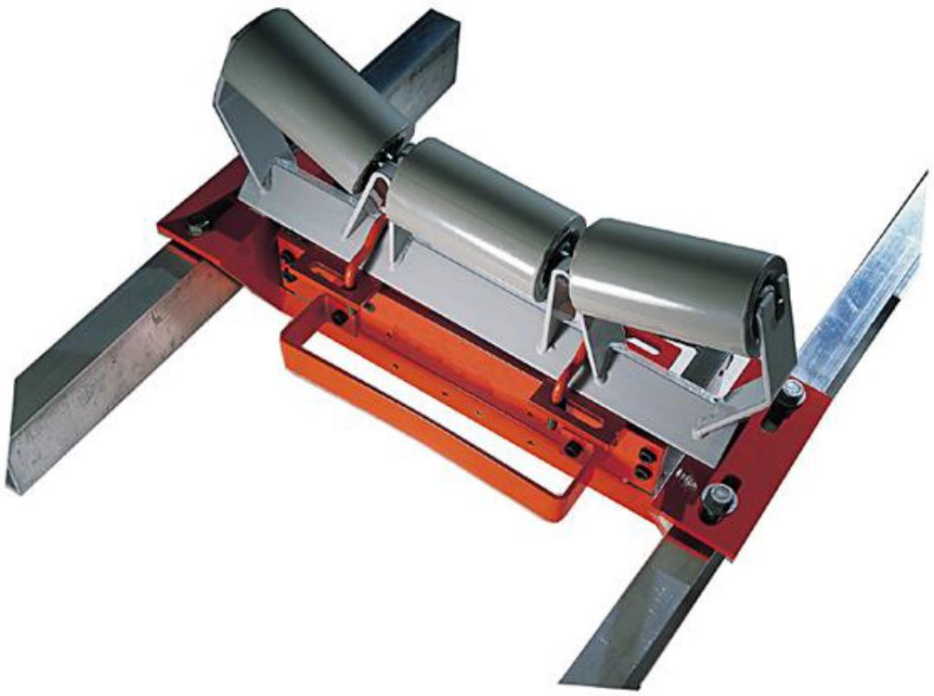

Figure 4 MSI load receptor.

Figure 5 Typical speed sensor (MD-256 type)

Figure 6 WS300 speed sensor

Figure 7 Typical print-out

Figure 8 Sealing of BW500