

Instruction Manual • May 2008



million
in one

milltronics
WD600

SIEMENS

Safety Guidelines: Warning notices must be observed to ensure personal safety as well as that of others, and to protect the product and the connected equipment. These warning notices are accompanied by a clarification of the level of caution to be observed.

Qualified Personnel: This device/system may only be set up and operated in conjunction with this manual. Qualified personnel are only authorized to install and operate this equipment in accordance with established safety practices and standards.

Unit Repair and Excluded Liability:

- The user is responsible for all changes and repairs made to the device by the user or the user's agent.
- All new components are to be provided by Siemens Milltronics Process Instruments Inc.
- Restrict repair to faulty components only.
- Do not reuse faulty components.

Warning: This product can only function properly and safely if it is correctly transported, stored, installed, set up, operated, and maintained.

This product is intended for use in industrial areas. Operation of this equipment in a residential area may cause interference to several frequency based communications.

Note: Always use product in accordance with specifications.

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- For a selection of Siemens Milltronics level measurement manuals, go to: **www.siemens.com/processautomation**. Under Process Instrumentation, select *Level Measurement* and then go to the manual archive listed under the product family.
- For a selection of Siemens Milltronics weighing manuals, go to: **www.siemens.com/processautomation**. Under Weighing Technology, select *Continuous Weighing Systems* and then go to the manual archive listed under the product family.

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Safety Notes

Special attention must be paid to warnings and notes highlighted from the rest of the text by grey boxes.

! **WARNING** means that failure to observe the necessary precautions can result in death, serious injury, and/or considerable material damage.

Note: means important information about the product or that part of the operating manual.

The Manual

Note:

- Please follow the installation and operating procedures for a quick, trouble-free installation, and to ensure the maximum accuracy and reliability of your Siemens Milltronics weighing system.
- WD600 is to be used only in the manner outlined in this manual or protection provided to the equipment may be impaired.
- This product is intended for use in industrial areas. Operation of this equipment in a residential area may cause interference to several frequency based communications.

Milltronics WD600 weighdeck is used in conjunction with the selected integrator and speed sensor. This manual covers only WD600 installation and operating procedures. For the complete library of Siemens manuals, go to:

www.siemens.com/processautomation.

This manual will help you set up your WD600 for optimum performance. We always welcome suggestions and comments about manual content, design, and accessibility.

Please direct your comments to techpubs.smpi@siemens.com.

WD600

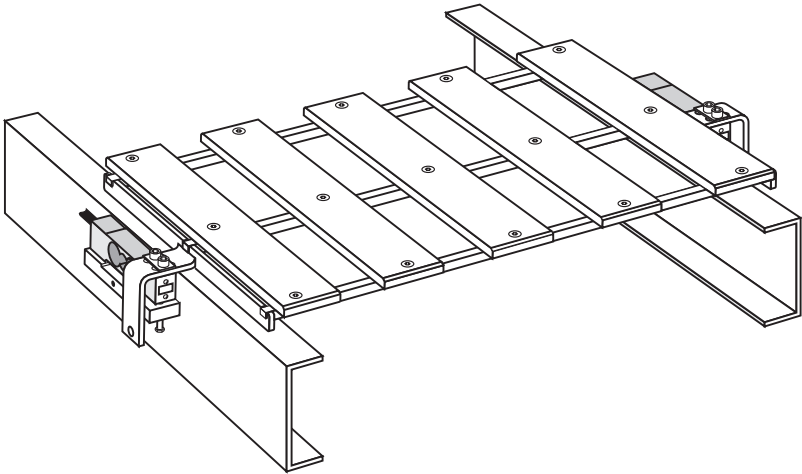
WD600 belt scale is a low-to-medium capacity scale for light-to-medium belt loading. It is designed to be inserted into either a flat roll idler (non-troughing) belt conveyor or a flat pan slider belt conveyor for continuous weighing of dry bulk solids. WD600 is suitable for monitoring such products as fertilizer, tobacco, animal feed pellets, and sugar.

WD600 belt scale consists of the following:

- weighbridge (UHMW slider)
- two precision load cells on mounting pads with weighbridge mounts

WD600 load cells output an electrical signal proportional to load, which is applied to the selected Siemens belt scale integrator. Thus, weighing is accomplished without interrupting the process and without affecting the process material.

Important: WD600 is an accurate and repeatable force sensor. Its performance is ultimately dependent upon the conveyor system and the quality of the installation and accuracy of the alignment.



Specifications

Accuracy

- $\pm 0.5\%$ to 1% totalization over 4 to 1 operating range, application dependent

Belt width

- 12, 18, 24, 30, 36, 42, 48" (300, 450, 600, 750, 900, 1000, 1200 mm)

Belt speed

- 2.0 m/s (400 fpm) maximum

Capacity

- up to 50 t/h

Conveyor incline

- $\pm 20^\circ$ from horizontal, fixed incline
- up to $\pm 30^\circ$ with reduced accuracy

Conveyor idler/slider profile

- horizontal

Loading

- Minimum 1.0 kg/m (0.6 lbs/ft)
- Maximum 60 kg/m (40 lbs/ft)

Load cell

- excitation: 10 V DC nominal, 15 V DC maximum
- output: 2 mV/V (nickel-plated alloy steel version)
3 mV/V (stainless steel version)
- non-linearity: 0.02% of rated output
- non-repeatability: 0.01% of rated output
- capacity: nickel-plated range: 10, 15, 20, 30 kg
stainless steel ranges: 6 kg (25, 50 lbs)
- overload: 150% of rated capacity
- temperature: -40 to $+65$ °C (-40 to $+150$ °F) operating range
 -10 to $+40$ °C (15 to $+105$ °F) compensated
- construction: stainless steel construction
UMHW - PE sliders

Hazardous locations

- with the use of approved Intrinsically Safe barrier strips

Approvals

- CE

Operation

WD600 works with an existing flat belt conveyor and the selected Siemens integrator. As material is moving along the conveyor belt and travels over the belt scale, it exerts a force proportional to the material load through the suspended weighbridge to the load cells.

WD600 reacts only to the vertical component of the applied force. The resulting movement in each load cell is sensed by its strain gauges. When the strain gauges are excited by voltage from the electronic integrator, they produce an electrical signal proportional to weight, which is then applied to the integrator. The vertical movement of the load cells is limited by the positive overload stop incorporated into the design of the load cell mount.

Installation

WD600 is shipped from the factory as three units in a heavy-duty shipping container. The container is packed to separate each item and to provide protection during shipment. Each item should be inspected as it is removed from the container.

Notes:

- Be sure the conveyor design meets the installation requirements for the WD600.
- Adjust conveyor stringers to be rigid, straight, parallel to, and square, with the belt line in the area of the scale installation.
- Adjust pulleys to ensure that the conveyor belt tracks straight and centrally from the head to the tail pulley.

To limit the weight and dimensions of the weighbridge on the scale, Siemens builds the weighbridge to definite specifications as part of the scale. If a substitute or a replacement is required, please contact Siemens. Substituting or replacing this weighbridge with a non-specific weighbridge could result in damage to the scale due to overloading or improper fit.

To avoid potential scale installation problems, please compare the site conditions with WD600 installation drawings available at www.siemens.com/processautomation.

If you have any questions, please contact your Siemens representative.

Welding



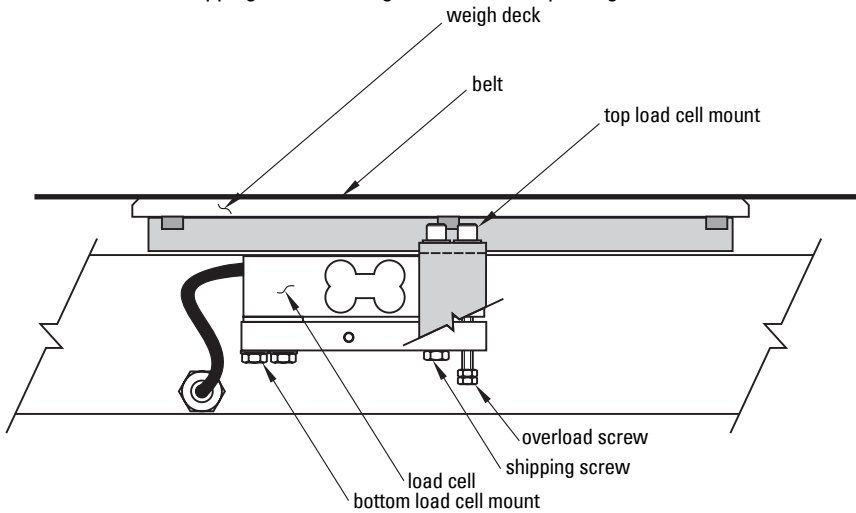
WARNING: Use extreme care when arc welding in the area of the belt scale. Ensure that no welding current can flow through the belt scale. Welding currents passing through the scale can functionally damage the load cells.

Load Cell Handling

WD600 is designed for low-to-medium capacity operation and is constructed using two load cells. Although the load cells are protected by shipping screws that keep the cells from moving, care should be taken when handling the scale to avoid damaging the cells. The screws are bolts about 38 mm (1.5") long located beneath the load cell mount pads and threading into the load cell.

When handling the WD600 during installation and setup, make sure the shipping screws remain in place.

Reinstall both shipping screws during maintenance or prolonged shutdown.



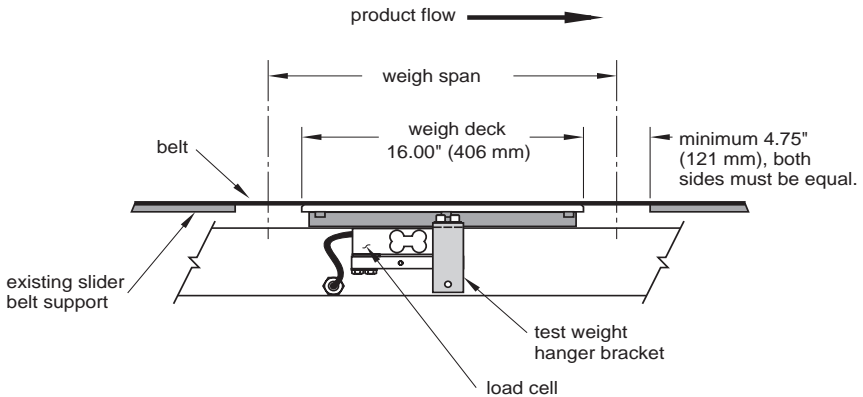
Installation Precautions

The following precautions should be observed when handling the scale.



- Do not pry on the weighbridge, its mountings, or the cells directly.
- Do not stand or lean on the scale.
- Avoid shock from blows of a hammer when trying to position the scale during installation.
- Do not lift the WD600 by its load cells.

Installation Procedure



1. Make sure the shipping stops are in place and secure.
2. Remove the existing flat roll idler (or flat slider pan) from the area selected to locate the belt scale assembly.
3. Drill four 8 mm (5/16") diameter mounting holes. This will allow clearance for 6 mm bolts.

Note: Slotting the holes vertically will permit greater adjustment capability.

4. Position the scale with the weighbridge towards the head end of the conveyor and the load cells toward the tail end.
 - Raise the conveyor belting to provide room for the installation of the scale.
5. Insert the scale (modules) onto the conveyor.
 - Insert four M6x1 bolts through the conveyor frame and through the holes in the sides of the load cell mount pads.
 - Secure. Finger tight only.
6. Make sure there is at least 13 mm (½") of clearance between the return belt and the WD600.
 - In some conveyors, it may be necessary to install a return idler roller adjacent to the scale to deflect the return belt past the scale.
7. Position the scale so that it is parallel to the conveyor and square to the stringer.
 - Place the weighbridge on the top load cell mount.
 - Level the weighbridge and tighten the bolts sufficiently to keep the load cell mount pads in place until final adjustment.

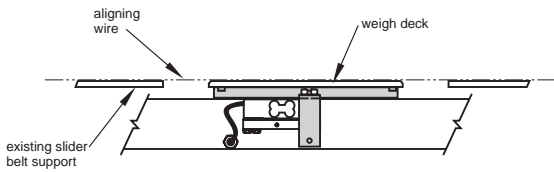
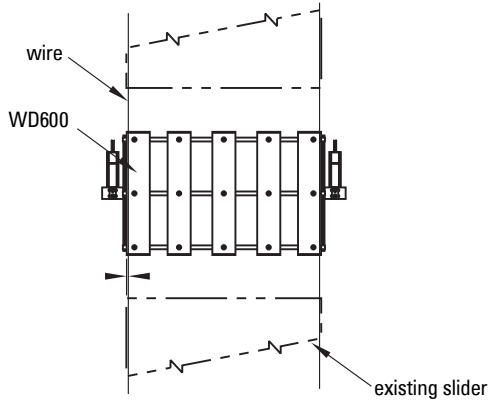
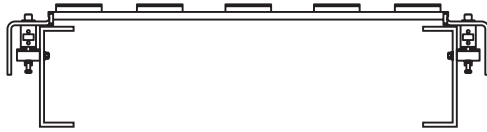
CAUTION: Off-center or off-square installation can result in poor belt tracking and scale inaccuracy.

Idler Alignment

Precise alignment is very important to achieve maximum accuracy of the weighing system. Improperly aligned idlers could cause unwanted forces to be applied to the weighbridge, resulting in measurement errors.

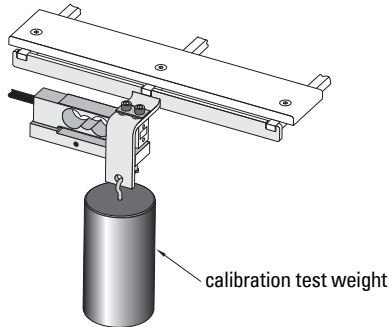
Alignment Procedure

1. Remove the shipping stops to free the weighing mechanism.
 - Keep the screws stored in a convenient place for use during maintenance or at other times when protection of the cells is necessary.
2. Align and level the weighbridge in the weighing area by raising or lowering the load cell mount pads in their slots.
 - The weighing area includes the scale and the approach and retreat idler/sliders. For conventional flat idler roll conveyors, two additional idler rolls should be included in the alignment procedure.
3. Adjust idlers (pans on a slider pan conveyor) vertically until they are all within ± 0.8 mm (1/32") of each other.
 - Stretch a line across the top surface of each idler roll (pan) in the scale area at approximately 25 mm (1") from each end of each idler roll (pan).
 - Use good quality wire [0.5 mm (1/64") diameter] or equivalent nylon line to check for alignment. The wire or string aligning lines must be able to withstand sufficient tension to eliminate sag in the line.
4. Check that the idlers are centered and squared to the conveyor as in step 7 of the installation procedure.
5. Tighten the load cell mount pad bolts (34 to 40.8 Nm or 20 to 25 ft lbs).
6. Carefully lower the conveyor belt onto the scale and fixed idlers (pans).
Run the conveyor for at least fifteen minutes to limber the belt prior to calibration.



General

After the WD600 has been installed in accordance with the installation procedure, calibration of the weighing system must be done in conjunction with the selected integrator. Refer to the integrator instruction manual for programming and calibration. The calibration is initially done using a calibration test weight. Where possible, material tests are recommended to achieve maximum accuracy. (For more information about material tests refer to the integrator manual.)



Test Load

The test load (stated in kilograms per meter or pounds per foot) for the WD600 is stamped on top of the calibration test weight. Enter this value into the integrator as the test load programming parameter.

If the actual weigh span (see diagram on page 8) differs from the design data provided at time of purchase, recalculate and re-enter a new test load value as follows:

$$\text{test load (kg/m or lbs/ft)} = \frac{\text{weight of calibration weight (kg or lbs)}}{\text{actual weigh span (m or ft)}}$$

Zero

Perform the zero calibration as described in the calibration section of the selected integrator manual.

Span

1. Hang the calibration test weight from the hole in the top load cell mount.
2. Perform the span calibration as described in the calibration section of the selected integrator instruction manual.
3. After the span calibration has been completed, remove the calibration test weight and store it in a convenient location.

Maintenance

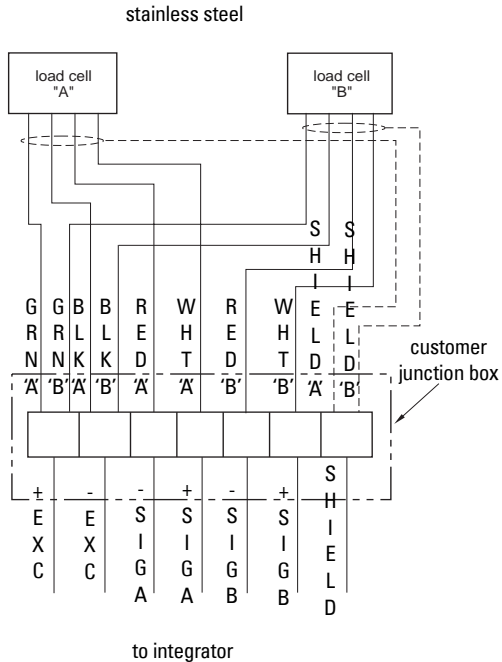
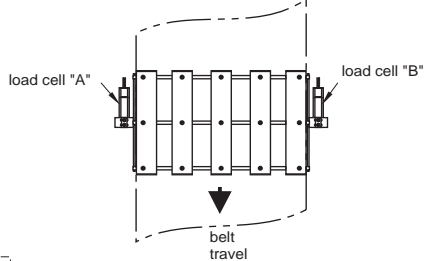
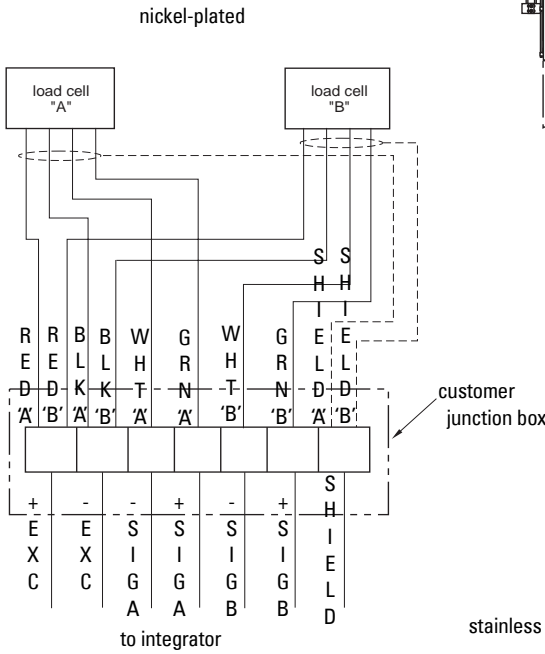
Because the WD600 has no moving parts, the scale requires no active maintenance. Once the scale is installed into the conveyor, the conveyor becomes part of the total weighing system. If a problem develops with the conveyor, that problem may also affect the scale. For this reason, we recommend that a periodic conveyor maintenance program be established for any conveyor that incorporates a scale.

Note: Re-install the shipping stops during maintenance or any other time when protection of the cells is necessary.

Spare Parts

The only spare part recommended for the WD600 is the load cell. Refer to the load cell nameplate for the proper size and then specify as follows when ordering.

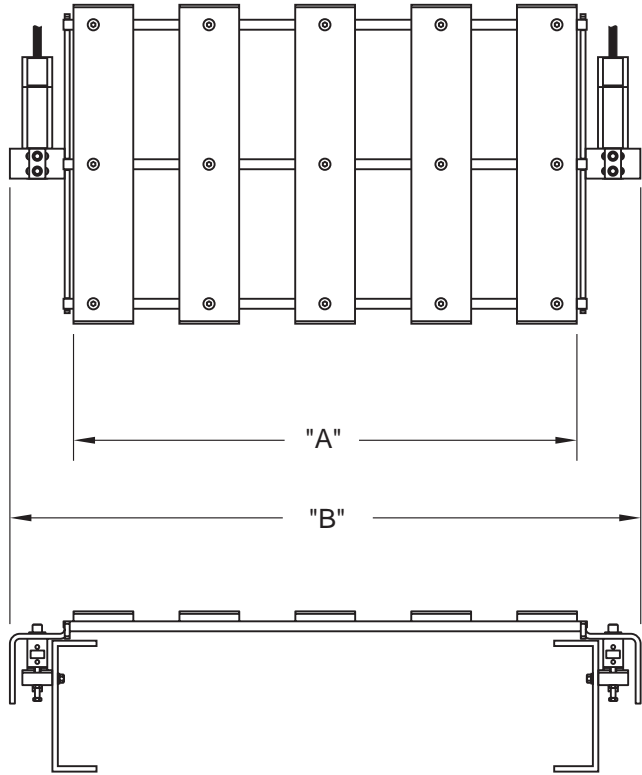
Wiring



Wiring

Outline Dimensions

plan view



front view

| Belt Width | A | B |
|---------------|------------------|------------------|
| 12" (300 mm) | 13.25" (330 mm) | 20.25" (510 mm) |
| 18" (450 mm) | 19.25" (485 mm) | 26.25" (665 mm) |
| 24" (600 mm) | 25.25" (640 mm) | 32.25" (815 mm) |
| 30" (750 mm) | 31.25" (790 mm) | 38.25" (970 mm) |
| 36" (900 mm) | 37.25" (945 mm) | 44.25" (1120 mm) |
| 42" (1000 mm) | 43.25" (1095 mm) | 50.25" (1275 mm) |
| 48" (1200 mm) | 49.25" (1250 mm) | 56.25" (1425 mm) |



www.siemens.com/processautomation

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