

MILLTRONICS

INCLINE COMPENSATOR

Instruction Manual PL-294

September 2001

INCLINE COMPENSATOR

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.

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

Note: Always use product in accordance with specifications.

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SPECIFICATIONS

Power		<ul style="list-style-type: none">» 115 V \pm 15%,» 230 V \pm 15%,» 50/60 Hz, 12 VA» voltage selection hardwired
Fuse	<ul style="list-style-type: none">- 115 V- 230 V	<ul style="list-style-type: none">» 1/8 amp MDL SLO-BLO» 1/16 amp MDL SLO-BLO
Input		» 10.0 \pm 0.1 V DC (static load cell excitation from electronic integrator)
Output		<ul style="list-style-type: none">» 10.0 \pm 0.1 V DC at 0° incline» 11.5 \pm 0.1 V DC at \pm 30° incline
Range		» 0 to \pm 30° off horizontal
Accuracy		» will maintain integrator specification
Resolution		» will maintain integrator specification
Temperature	<ul style="list-style-type: none">- operating- exposure	<ul style="list-style-type: none">» -40 to 60°C (-40 to 140°F)» -55 to 65°C (-67 to 149°F)
Enclosure		<ul style="list-style-type: none">» NEMA 4 style» 292 mm H x 203 mm W x 102 mm D (11.5" H x 8" W x 4" H)
Weight	<ul style="list-style-type: none">- open style- NEMA 4	<ul style="list-style-type: none">» 735 g (1.6 lb)» 4.5 Kg (10 lb)

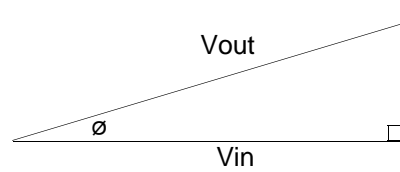
GENERAL

The Milltronics Incline Compensator provides dynamic load cell excitation to compensate for the varying vertical force component applied to the belt scale, due to varying inclination of a belt conveyor.

The Incline Compensator receives the static load cell excitation voltage from the electronic integrator and transmits a dynamic load cell excitation voltage, proportional to the secant of the angle of incline.

$$V_{out} = V_{in} \times \sec \theta$$

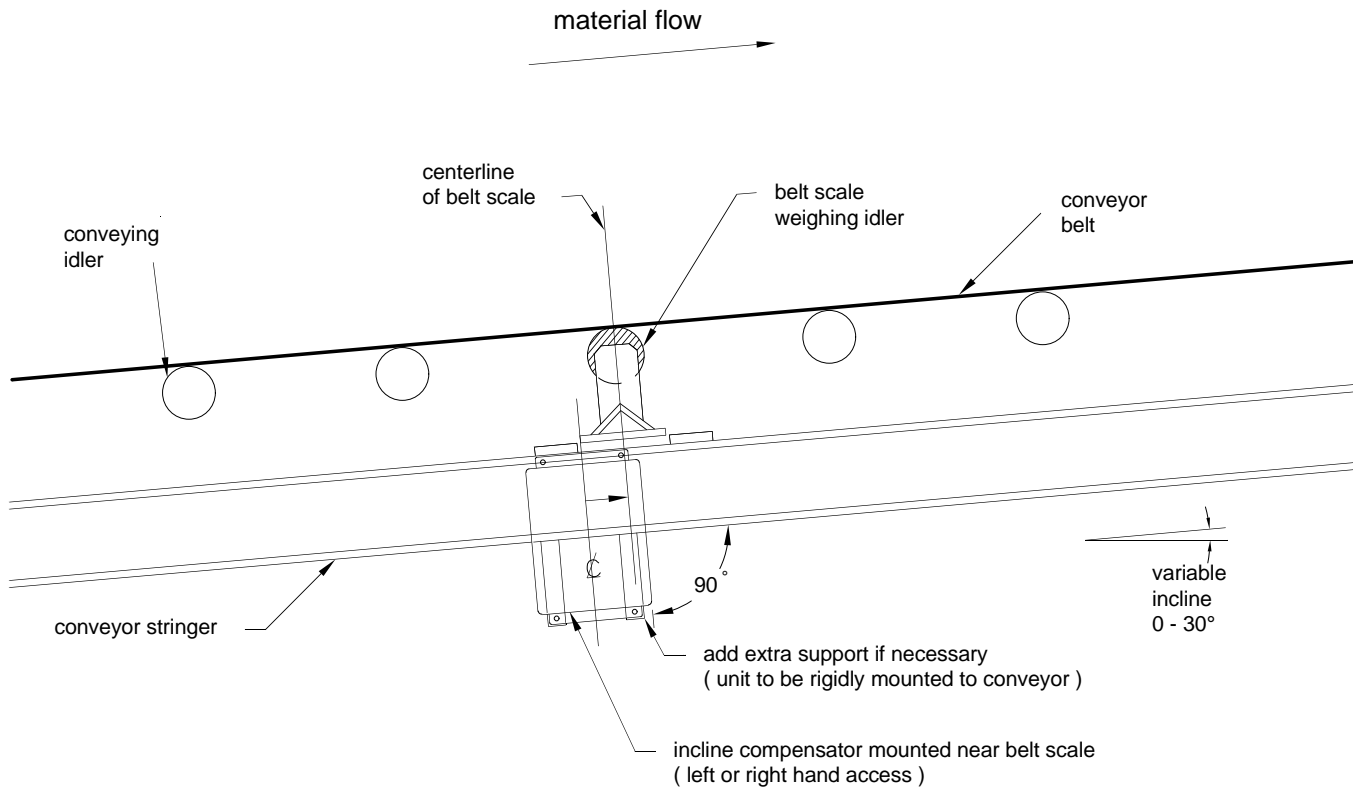
where: V_{in} = static load cell excitation voltage
 V_{out} = dynamic load cell excitation voltage
 θ = angle of incline from horizontal



Although the Incline Compensator was designed to work in conjunction with Milltronics integrators and scales, it can be used with equipment not of our manufacture, providing that the required excitation voltage meets our specification. For excitation voltages other than that specified, please consult Milltronics.

INSTALLATION

The Incline Compensator is mounted in a painted steel NEMA 4 enclosure, suitable for the rugged outdoor environment in which variable incline conveyors are found. The unit must be mounted to the conveyor such that the card will be standing vertically and right side up when the conveyor is level. It should be rigidly mounted on the conveyor stringer and in line with the center of the belt scale. Furthermore the unit should be mounted such that it is not subjected to excessive vibration or shock from falling material.



WIRING

All wiring must be done in conjunction with approved conduit, boxes and fittings and to procedures in accordance with all governing regulations.

The power supply cable to the Incline Compensator must be run in a conduit separate from the load cell excitation and signal cable. Refer to figure 3 for interconnection wiring of compensator between integrator and belt scale.

CALIBRATION

The Incline Compensator is factory calibrated to yield the specified dynamic load cell excitation through the range of 0 to $\pm 30^\circ$.

The dynamic load cell excitation ensures that the load cell signal output will remain constant for given load on the belt scale through the specified range of inclination. As such, Zero and Span calibrations of the integrator are not affected by the presence of an Incline Compensator in the load cell circuit. Refer to the associated integrator instruction manual and follow the calibration procedures as outlined.

MAINTENANCE

The Incline Compensator requires no maintenance, however the associated integrator and belt scale should be well maintained in accordance with their respective manuals.

A periodic inspection of the Incline Compensator should be initiated. The enclosure and circuit board should be cleaned only when the power is disconnected at the main breaker and by using a vacuum cleaner and a clean, dry paint brush. Check all electrical contacts for corrosion and arcing.

Check enclosure for evidence of shock from falling material. Provide sufficient protection if unit is being subjected to direct shock.

SPARE PARTS

ITEM

circuit board - 115 V supply
 - 230 V supply

fuse - 115 V supply
 - 230 V supply

INCLINE COMPENSATOR OUTLINE AND MOUNTING

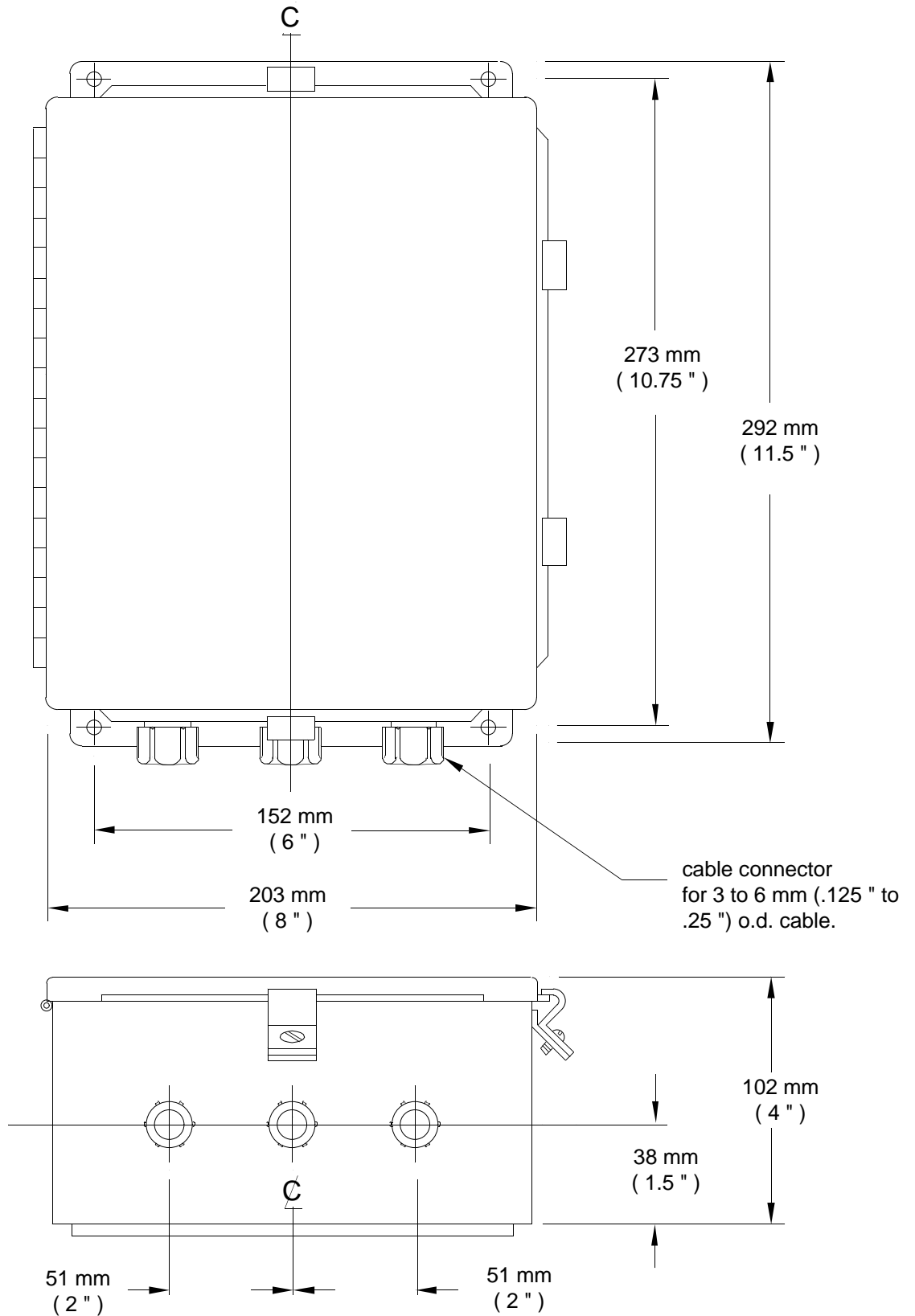


FIG. 1

CIRCUIT BOARD LAYOUT

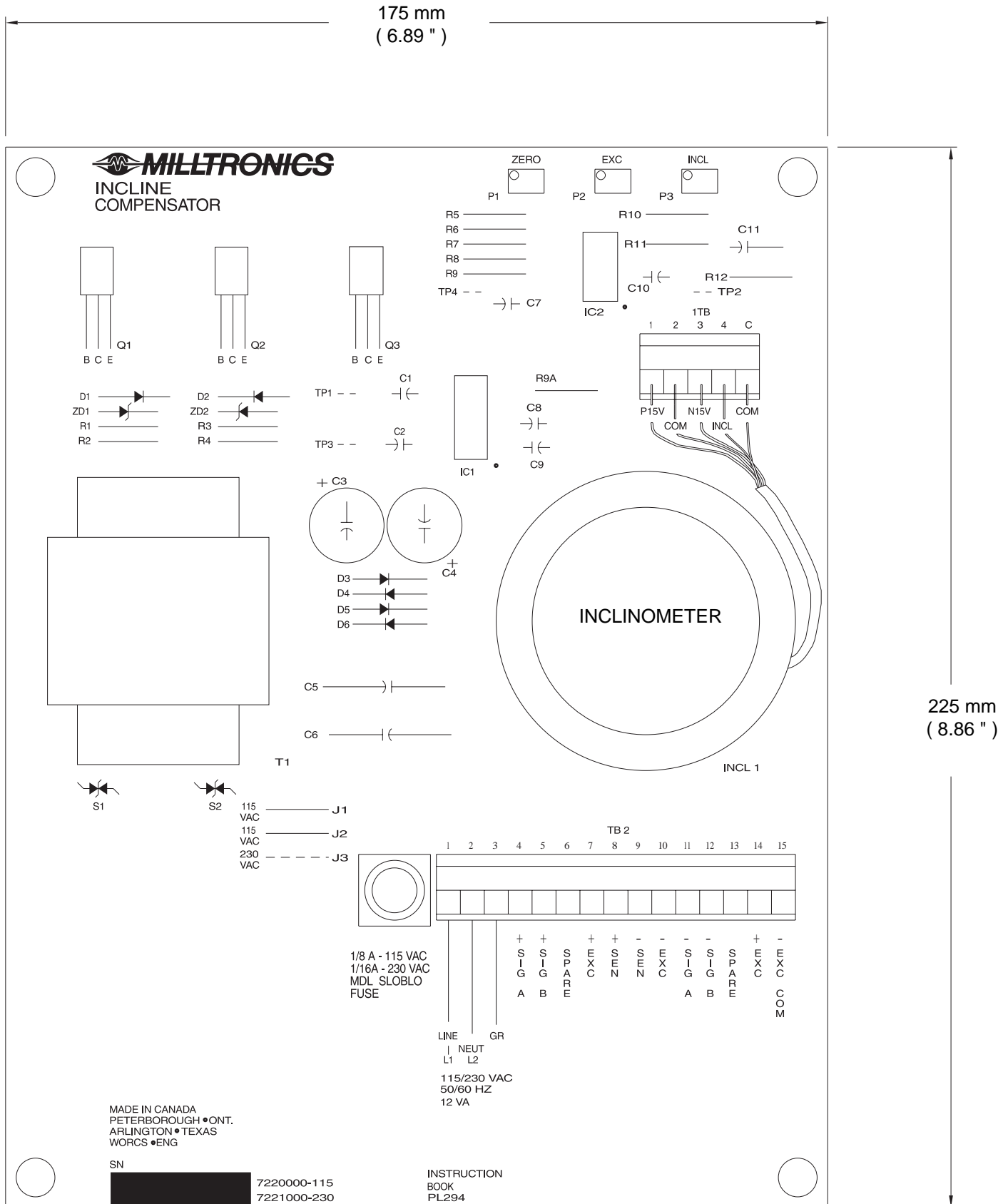


FIG. 2

INCLINE COMPENSATOR CONNECTION DIAGRAM

Single load cell

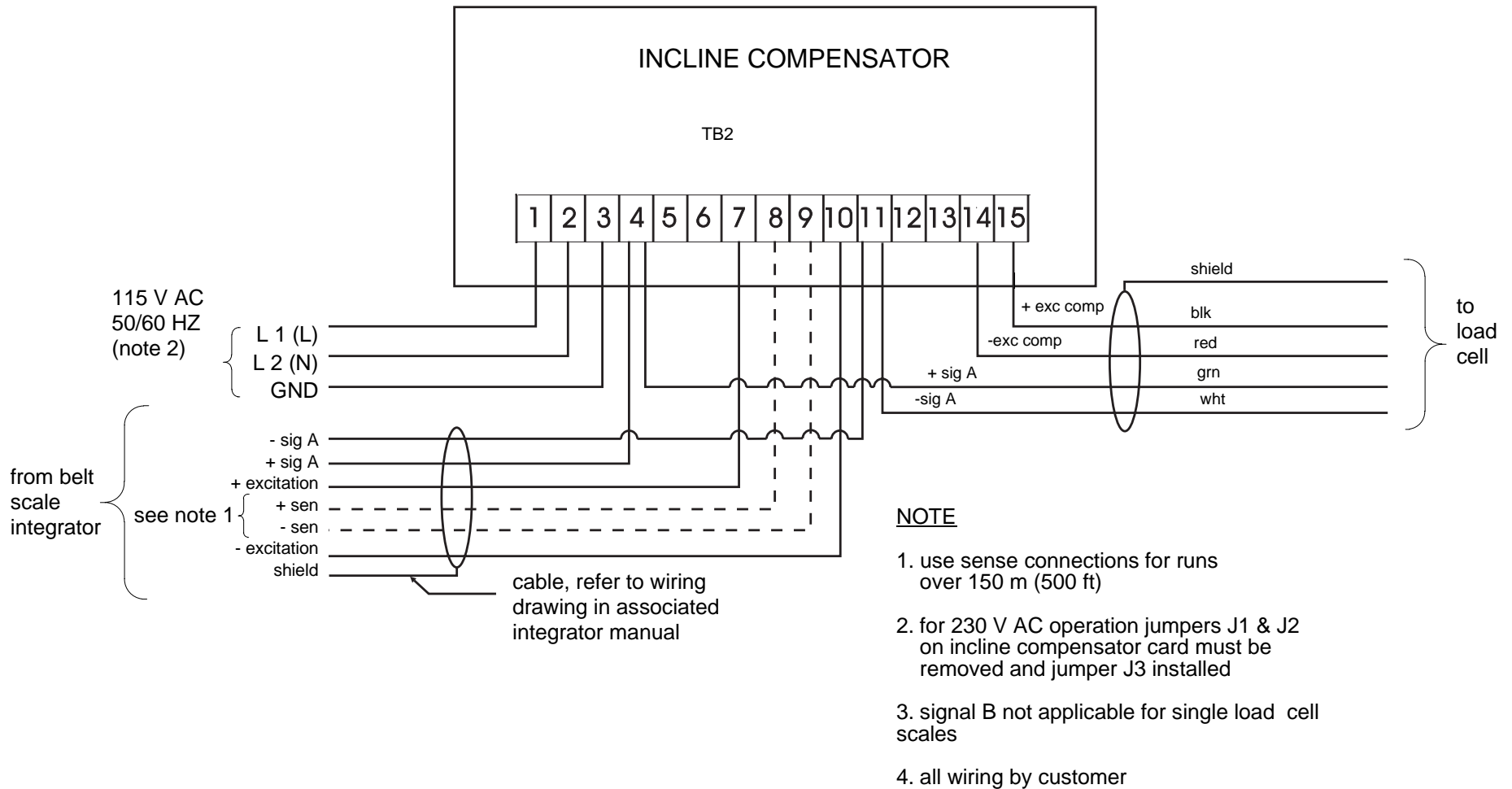
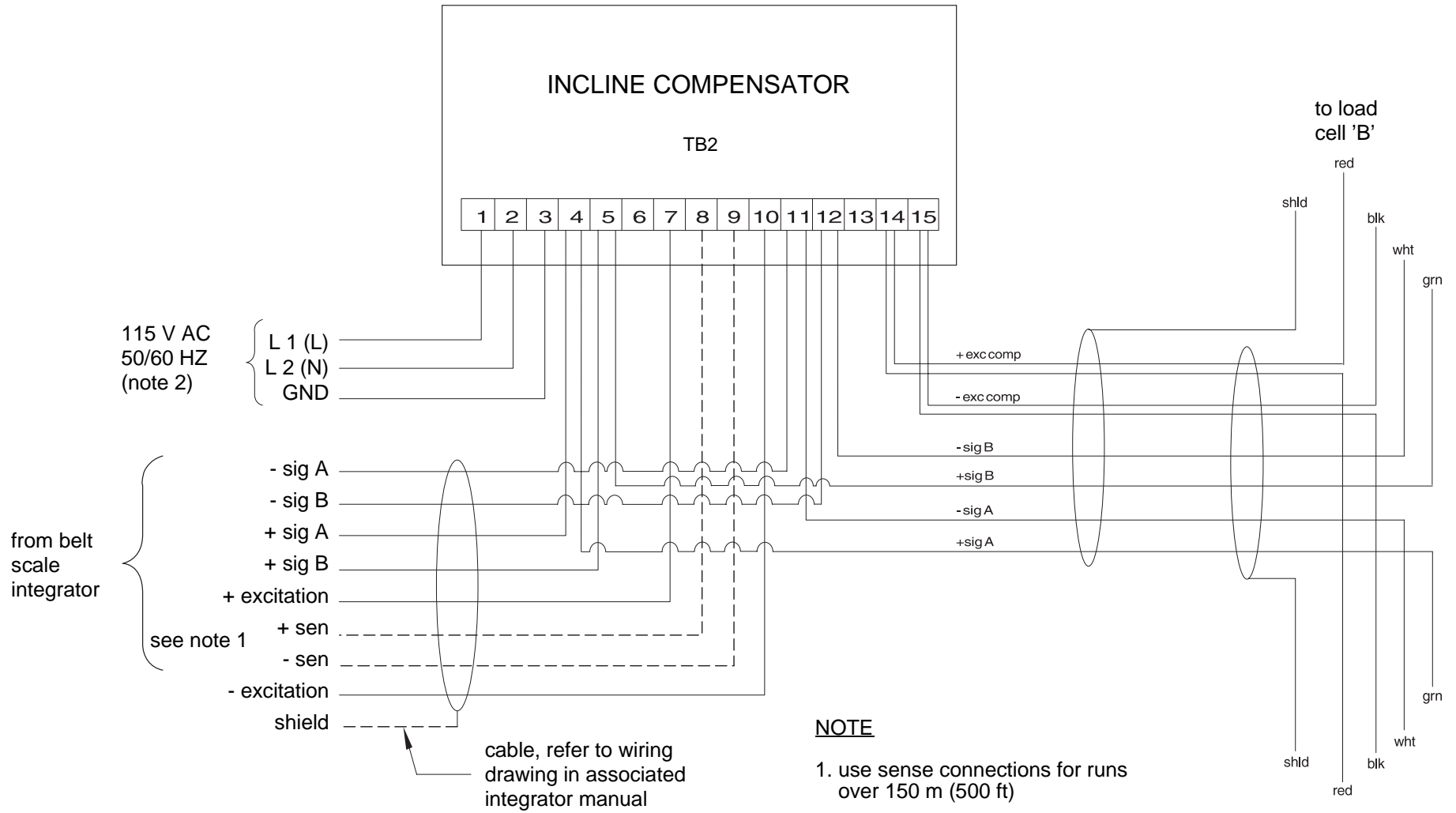


FIG. 3A

INCLINE COMPENSATOR CONNECTION DIAGRAM

Dual load cell



NOTE

1. use sense connections for runs over 150 m (500 ft)
2. for 230 V AC operation jumpers J1 & J2 on incline compensator card must be removed and jumper J3 installed
3. all wiring by customer

to load cell 'B'

to load cell 'A'

FIG. 3B

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Notes

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Siemens Milltronics Process Instruments Inc.
1954 Technology Drive, P.O. Box 4225
Peterborough, ON, Canada K9J 7B1
Tel: (705) 745-2431 Fax: (705) 741-0466
www.milltronics.com

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