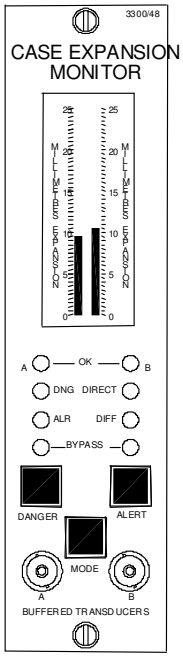
3300/48 Case Expansion Monitor

Bently Nevada™ Asset Condition Monitoring



Description

The 3300/48 Case Expansion Monitor uses two dc Linear Variable Differential Transformers (LVDTs) to measure casing growth relative to the machine foundation. The monitor measures the difference between the transducers and provides two digitally adjustable alarm setpoints for the measurement. Additionally, two display modes are possible: two independent channels of case expansion, or the differential measurement between the two channels. Alarms are available only in the Differential mode.

Specifications

Inputs

Signal:

Accepts two dc LVDT transducer signals.

Input Impedance:

1.0 M Ω.

Signal Scale Factor:

Jumper-selectable for 10 mV/mil, 9 mV/mil, or

3.5 mV/mil.

Power Consumption:

Nominal consumption of 1.5 watts.

Signal Conditioning

Accuracy:

Within ±0.33% of full-scale typical, ±1% maximum.

Specified at ambient temperature of +25°C (+77°F).

Outputs

Recorder:

User-programmable for +4 to +20 mA, 0 to -10 Vdc, or +1 to +5 Vdc. Voltage or current outputs are proportional to programmed monitor full-scale. Recorders can be jumper-programmed for either two channels of direct measurement or one channel of differential measurement. Monitor operation is unaffected by short circuits on the recorder outputs.

Recorder accuracy (in addition to signal conditioning accuracy):

All specified at +25°C (+77°F).

+4 to +20 mA: ±0.7% of signal, ±0.09 mA offset.

+1 to +5 Vdc: ±1.1% of signal, ±10 mV offset.

0 to -10 Vdc: ±1.1% of signal, ±15 mV offset.

Output Impedance (voltage outputs):

100 Ω. Minimum load resistance is 10 k Ω.

Voltage Compliance (current outputs):

0 to +12 Vdc range across load. Load resistance is 0 to 600 Ω when using +4 to +20 mA option.

Buffered Transducer Outputs:

One coaxial connector per transducer on the front panel and one terminal connection per channel on the rear panel. All are short circuit protected.

Output Impedance:

100 Ω.

Transducer Supply Voltage:

-24 Vdc voltages are current limited per channel on individual monitor circuit board.

Alarms

Alarm Setpoints (only in Differential mode):

Both alarms (Alert and Danger) are digitally adjustable from 0 to 100% of full-scale and can be set within LCD resolution (±1.6% of full-scale) to a desired level. Once

set, alarms are repeatable within ±0.4% of full-scale.

Relay Modules

Location:

One relay module can be installed behind each monitor. At least one alarm relay module must be ordered with each 3300 System.

Display

Meter:

Nonmultiplexing vertical bargraph type Liquid Crystal Display (LCD). 63 individual LCD segments per channel. LCD also displays error codes and monitor's ADJUST mode.

Resolution:

Within ±1.6% of monitor full-scale.

Size:

83 mm (3.2 in), vertical dimension.

LED Indicators

OK:

One constant ON green LED per channel to indicate OK condition of monitor, transducers, and field wiring. Constant OFF indicates NOT OK condition or channel Bypassed (red Bypass LED will be ON). OK LED flashing at 1 Hz indicates transducer has been NOT OK but is now OK. OK LED flashing at 5Hz indicates error code(s) stored in memory.

Alarm:

Two red LEDs per channel indicate alarm status (independent Alert and Danger LEDs for each channel). Flashing alarm LED indicates First Out (independent for Alert and Danger alarms).

Bypass:

Two red LEDs indicate status of Danger Bypass and Rack / Channel Bypass functions.

Environmental Limits

Operating Temperature:

0°C to +65°C (+32°F to +150°F).

Storage Temperature:

-40°C to +85°C (-40°F to +185°F).

Relative Humidity:

To 95%, noncondensing.

CE Mark Directives

EMC Directive

Certificate of Conformity: 158710

Low Voltage Directive

Certificate of Conformity: 135300

Hazardous Area Approvals

CSA/NRTL/C

Class I, Div 2

Groups A, B, C, D

T4 @ Ta = +65 °C

Certification Number

150368 – 1002151 (LR 26744)

ATEX

 II 3 G

EEx nC[L] IIC

T4 @ Ta = -20°C to +60°C

When installed per document number 132577-01.

Certification Number

BN26744C-55A

Physical

Space Requirements:

One rack position (any position except 1 and 2 which are reserved for the Power Supply and System Monitor, respectively).

Weight:

1 kg (2.2 lbs.).

Ordering Information

For spares, order the complete catalog number as described below. This includes a front panel assembly, monitor PWAs with sheet metal, and appropriate relay module. This unit is optioned, tested and ready to install in your system. Spare relay modules can be ordered separately.

Case Expansion Monitor

3300/48-AXX-BXX-CXX-DXX

A: Full-scale Range Option

- **0 1** 0 - 1 in. (Requires 1 in. LVDT)
- **0 2** 0 - 25 mm (Requires 1 in. LVDT)
- **0 3** 0 - 2 in. (Requires 2 in. LVDT)
- **0 4** 0 - 50 mm (Requires 2 in. LVDT)
- **0 5** 0 - 4 in. (Requires 4 in. LVDT)
- **0 6** 0 - 100 mm (Requires 4 in. LVDT)

B: Transducer Input Option

- **0 1** 1 in. LVDT (9 mV/mil)
- **0 2** 2 in. LVDT (10 mV/mil)
- **0 3** 4 in. LVDT (3.5 mV/mil)

Note: Refer to our Case Expansion Transducer System for dc LVDTs.

C: Alarm Relay Option

- **0 0** No Relays
- **0 1** Epoxy-sealed
- **0 2** Hermetically-sealed
- **0 4** Spare Monitor-No SIM/SIRM

Note: At least one relay module must be ordered with each 3300 System. If one common relay module per system has been ordered, all other monitors of this type will be jumper-programmed at the factory to activate relay bus one.

D: Agency Approval Option

- **0 0** Not required
- **0 1** CSA/NRTL/C

Note: CSA/NRTL/C option is only available with relays when the monitor is ordered in a system.

Spare Relay Module Assemblies

81544-01

No Relays

81545-01

Dual Epoxy Relays

81546-01

Dual Hermetic Relays

Field-programmable Options

These options are field-programmable via plug-in jumpers. **Bold text** indicates options as shipped from the factory.

First Out Option

Enabled

Disabled

Alarm Time Delay Option

0.1 second

1 second

3 seconds

6 seconds

OK Mode Option

Nonlatching

Latching

NOT OK Channel Defeat

Disabled

Enabled

Alert Reset Option

Latching

Nonlatching

Danger Reset Option

Latching

Nonlatching

Recorder Outputs Option

+4 to +20 mA

+1 to +5 Vdc

0 to -10 Vdc

Recorder Mode

Differential

Direct

Alert Relay Mode Option

Normally de-energized

Normally energized

Danger Relay Mode Option

Normally de-energized

Normally energized

Danger Bypass Switch Option

Disabled

Enabled

Meter Response Time

Fast

Slow

Channel B

On

Off

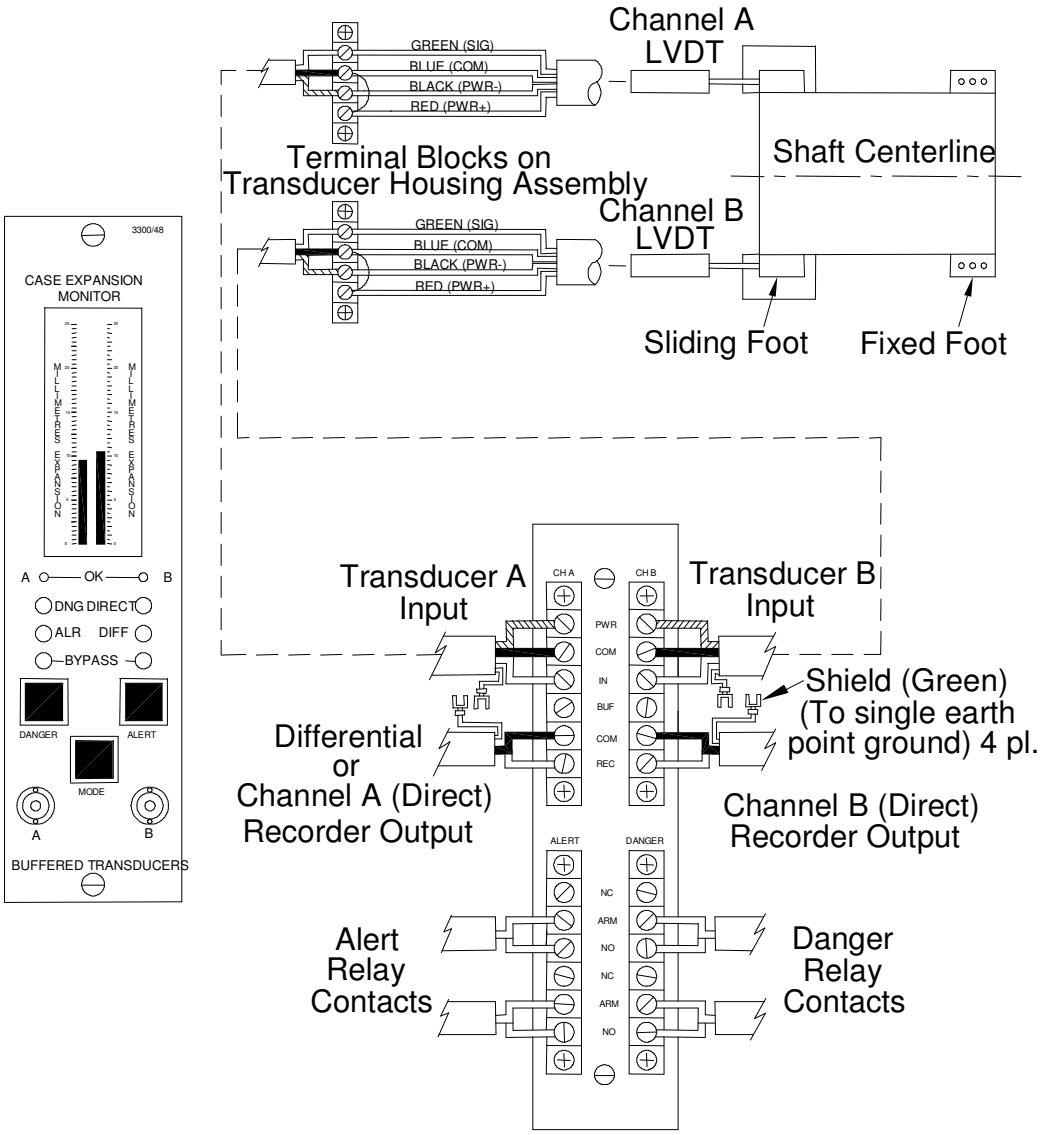
Upscale Direction

Toward Transducer

Away from Transducer

Field wiring diagram

3300/48 Case Expansion Monitor



Field wiring diagram for 3300/48 Case Expansion Monitor