

## XDCR I/O and Record Terminals / Dual Epoxy Relays Module

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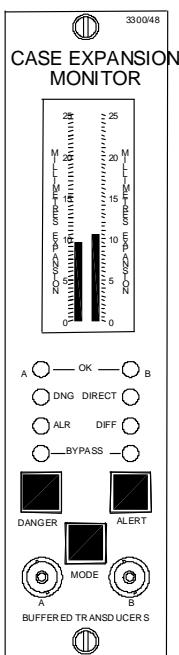
**Artisan Technology Group**

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# 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 and Ordering Information

Part Number 141510-01

Rev. F (06/07)

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imagination at work

## Specifications

### Inputs

#### Signal:

Accepts two dc LVDT transducer signals.

#### Input Impedance:

1.0 M  $\Omega$ .

#### 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  $\pm 0.33\%$  of full-scale typical,  $\pm 1\%$  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:**  $\pm 0.7\%$  of signal,  $\pm 0.09$  mA offset.

**+1 to +5 Vdc:**  $\pm 1.1\%$  of signal,  $\pm 10$  mV offset.

**0 to -10 Vdc:**  $\pm 1.1\%$  of signal,  $\pm 15$  mV offset.

#### Output Impedance (voltage outputs):

100  $\Omega$ . Minimum load resistance is 10 k  $\Omega$ .

#### Voltage Compliance (current outputs):

0 to +12 Vdc range across load. Load resistance is 0 to 600  $\Omega$  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  $\Omega$ .

#### 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 ( $\pm 1.6\%$  of full-scale) to a desired level. Once

set, alarms are repeatable within  $\pm 0.4\%$  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  $\pm 1.6\%$  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

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**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.).

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## 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.

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### 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.

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### Spare Relay Module Assemblies

**81544-01**

No Relays

**81545-01**

Dual Epoxy Relays

**81546-01**

Dual Hermetic Relays

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## 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**

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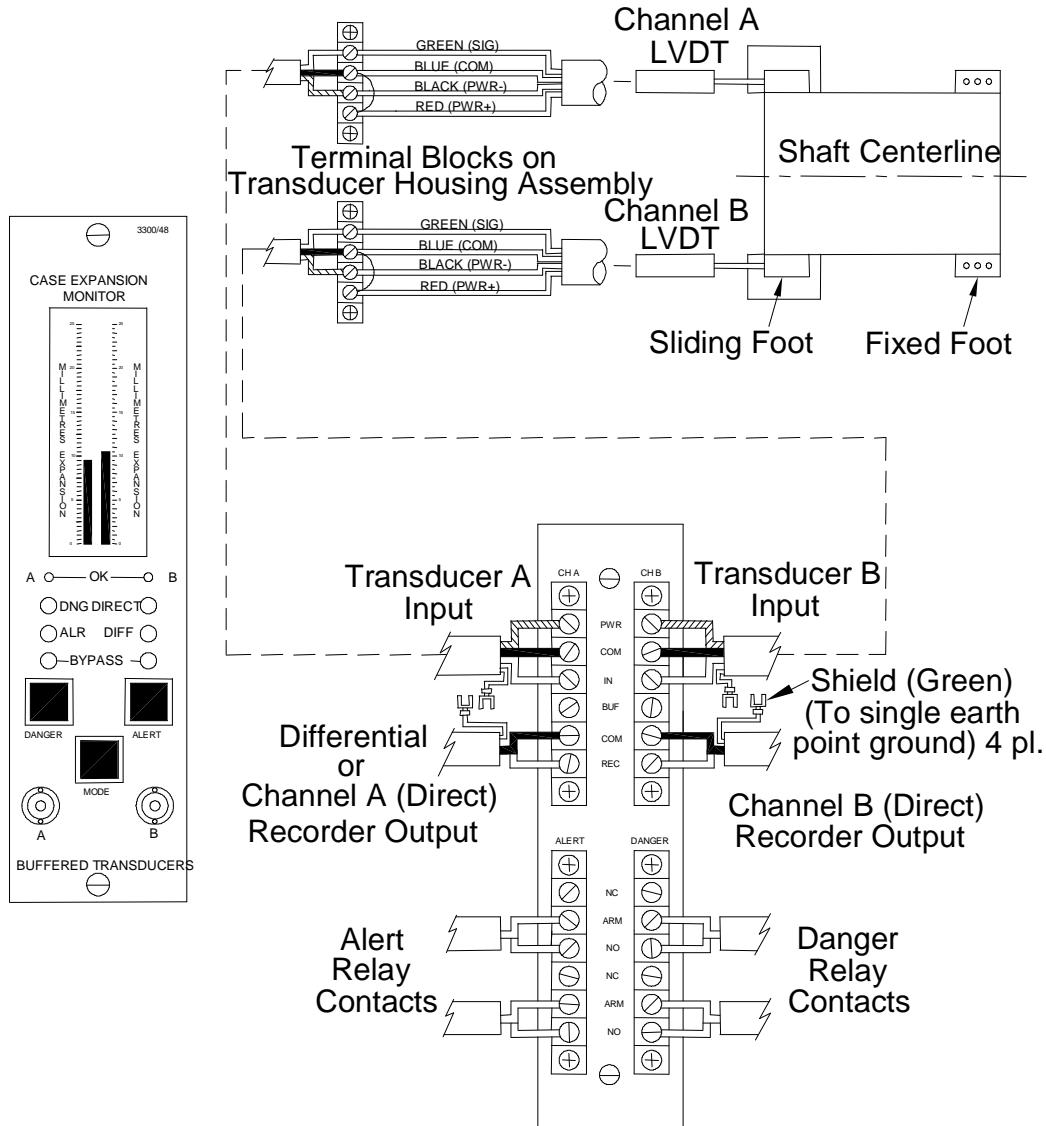
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	+1 to +5 Vdc	<b>Danger Bypass Switch Option</b>	
	0 to -10 Vdc		
<b>Recorder Mode</b>			<b>Disabled</b>
	<b>Differential</b>		Enabled
	Direct	<b>Meter Response Time</b>	
<b>Alert Relay Mode Option</b>			<b>Fast</b>
	<b>Normally de-energized</b>		Slow
	Normally energized	<b>Channel B</b>	
<b>Danger Relay Mode Option</b>			<b>On</b>
	<b>Normally de-energized</b>	<b>Upscale Direction</b>	Off
	Normally energized		<b>Toward Transducer</b>
			Away from Transducer

## Field wiring diagram

3300/48 Case Expansion Monitor



Field wiring diagram for 3300/48 Case Expansion Monitor

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