

Bently Nevada 3500 Series Service Manual

3500/77-03-00

1. Description

3500/77-03-00 Bently Nevada Recip Cylinder Pressure Monitor

3. Product Information

3500/77-03-00 Bently Nevada Recip Cylinder Pressure Monitor

Description

The Bently Nevada™ 3500/77M Recip Cylinder Pressure Monitor is a 4-channel monitor that accepts input from Bently Nevada approved pressure transducers, conditions the signal to make various pressure measurements for reciprocating compressors, and compares the conditioned signals with user-programmable alarms.

The primary purpose of the 3500/77M monitor is to provide:

- I Machinery protection by continuously comparing monitored parameters against configured alarm setpoints to drive alarms.

- I Essential machine information for operations and maintenance personnel.

Depending on configuration, each channel typically conditions its input signal to provide various parameters called measured variables. Users can configure Alert setpoints for each active measured variable and Danger setpoints for any two of the active measured variables. Each channel of the 3500/77M will provide eight measured variable values that relate to cylinder pressure operation. The five values that relate to a single chamber are as follows:

- I Discharge Pressure

- I Suction Pressure

- I Maximum Pressure

- I Minimum Pressure

- I Compression Ratio

Specifications

Inputs

Signal

Accepts 1 to 4 channels of Bently

Nevada approved positive voltage 3rd-party pressure transducers (psia)

Scale Factor

range† 95,000 mV/psi for 100 psia

range† 38,000 mV/psi for 250 psia

range† 19,000 mV/psi for 500 psia

range† 9,500 mV/psi for 1000 psia

range† 3,800 mV/psi for 2500 psia

range† 1,900 mV/psi for 5000 psia

range† 950 mV/psi for 10,000 psia

Signal Conditioning

Frequency

Response

0 to 5.5 kHz on all configured pressure channels

Pressure

Accuracy

Within $\pm 0.5\%$ of pressure

transducer full-range (9.5 Volts:

From +0.5 to +10.0 Volts) @

+25°C (77°F)

Within $\pm 1.0\%$ of pressure

transducer full-range (9.5 Volts:

From +0.5 to +10.0 Volts) over

-30°C to +65°C (-22°F to 150°F)

Measured Variables

Cylinder

Pressure

Discharge Pressure, Suction

Pressure, Maximum Pressure, Minimum Pressure,

Compression Ratio, Peak Rod

Compression, Peak Rod

Tension, Degree of Rod

Reversal

Input Impedance

Internal/

External

Termination

Cylinder

Pressure I/O

50 k Ω

Power

Consumption

7.8 Watts with transducer supplies at full load.

Outputs

Front Panel LEDs

OK LED

Indicates when the 3500/77M is operating properly.

TX/RX LED

Indicates when the 3500/77M is communicating with other modules in the 3500 rack.

Bypass LED

Indicates when the 3500/77M is in Bypass Mode.

Buffered

Transducer

Outputs

The front of each monitor has one coaxial connector for each channel. Each connector is short-circuit protected.

The Buffered Transducer Outputs on monitors using the Cylinder Pressure I/O module will be inverted and offset by -2.265 Vdc.

Output

Impedance 550 Ω

Transducer

Power Supply

+23.0 $\pm$ 0.8 Vdc with 24.5 ma current limiting on each channel.

Environmental Limits

Operating Temperature

When used with

Internal/External

Termination

Cylinder Pressure

I/O Module:
-30°C to +65°C
(-22°F to +150°F)
Storage
Temperature
-40°C to +85°C
(-40°F to +185°F)
Humidity 95%, non-condensing
Physical
Monitor Module
Dimensions (Height
x Width x Depth)
241.3 mm x 24.4 mm x
241.8 mm
(9.50 in x 0.96 in x 9.52
in)
Weight 0.91 kg (2.0 lb.)
I/O Modules
Dimensions (Height
x Width x Depth)
241.3 mm x 24.4 mm x
99.1 mm
(9.50 in x 0.96 in x 3.90
in)
Weight 0.20 kg (0.44 lb.)
Rack Space Requirements
Monitor Module 1 full-height front slot
I/O Modules 1 full-height rear slot
Cylinder Pressure Monitor
3500/77-03-00
A: I/O Module Type
0 3= Cylinder Pressure I/O with Internal Terminations.
B: Agency Approval Option
0 0 =None

