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:

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

l 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:

l Discharge Pressure

l Suction Pressure

l Maximum Pressure

l Minimum Pressure

l 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 ± 0.5% of pressure transducer full-range (9.5 Volts: From +0.5 to +10.0 Volts) @ +25°C (77º F)

Within ± 1.0% of pressure transducer full-range (9.5 Volts: From +0.5 to +10.0 Volts) over –30°C to +65°C (-22ºF to 150ºF)

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 kΩ
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 ± 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