Specifications and Ordering Information

3500/64 Dynamic Pressure Monitor

NRTL/C

Description

The 3500/64 Dynamic Pressure Monitor is a single slot, four-channel monitor that accepts input from various high temperature pressure transducers and uses this input to drive alarms. The monitor will have one proportional value per channel, bandpass dynamic pressure. The bandpass corner frequencies will be configured using 3500 Rack Configuration Software, along with an additional notch filter, if needed. A recorder output will be provided for control system applications.

The primary purpose of the 3500/64M monitor is to provide:

1) Machinery protection by continuously comparing monitored parameters against configured alarm setpoints to drive alarms.
2) Essential machine information for both operations and maintenance personnel.

Each channel typically conditions its input signal into various parameters called “proportional values”. Alert and danger setpoints can be configured for each active proportional value.

Specifications

Inputs

Signal:	Accepts from 1 to 4 pressure transducer signals.
3 Wire Transducer Input Impedance:	10KΩ
2 Wire Transducer Input Impedance:	>1.5MΩ with 3.5MΩ typical
Sensitivity:	
Dynamic Pressure:	100 mV/psi (1.45mV/mBar)

Outputs

Front Panel LED’s:	
OK LED:	Indicates when the 3500/64 is operating properly.
TX/RX LED:	Indicates when the 3500/64 is communication with other modules in the 3500 rack.
Bypass LED:	Indicates when the 3500/64 is in the Bypass Mode.
Buffered Transducer Outputs:	The front of each monitor has one coaxial connector for each channel. Each connector is short circuit protected. 1-> All “Cascade Mode” does not cascade the buffered transducer outputs.
Output Impedance:	550Ω

Transducer Supplies:	
3 wire:	-24Vdc
2 wire:	3.3 mA current source @ -22Vdc (nominal)
Recorder Outputs:	+4 to +20 mA. Values are proportional to monitor full scale. Individual recorder values are provided for each channel. Monitor operation is unaffected by short circuits on recorder outputs.
Voltage Compliance (current output):	0 to +12 Vdc range across load. Load resistance is 0 to 600 Ω
Resolution:	0.366uA per bit ±0.25% error at room temperature, -0.66 to + 0.70% error over temperature range. Updated at 100 mS or less.

Signal Conditioning

Dynamic Pressure	
Frequency Response:	
Direct Filter:	"Low Mode" 5Hz. To 4KHz* "High Mode" 10Hz to 14.75KHz (Fixed Low Pass) *if no LP filter is chosen, this extends to approximately 5.285KHz.

"Low" and "High" filtering modes are options on a channel pair basis. It is possible to select different band pass options on each channel of a channel pair; however, the channels within the pair have to operate in the same filtering mode. Channels 1 and 2 form a pair and channels 3 and 4 form the other pair.

In addition, the signal processing can be set up so that *ONLY* channel 1 input voltage is fed to all four channels. This is "Cascade Mode" (denoted *1->ALL* in the 3500 Configuration Software). In "Cascade Mode" the filter mode options are still selected on a channel pair basis. "Cascade Mode" was designed so that one transducer could be used to provide input to four channels for different filtering requirements. This allows four separate bandpass filter options and four separate full-scale ranges to be configured with just one transducer input.

The two modes of filtering provide different "qualities" of filtering.

LOW MODE:	
Filter Quality:	
High Pass (HP):	10-pole (200dB per decade, 60 dB per octave)
Low Pass (LP):	10-pole (200dB per decade, 60 dB per octave)
Fixed Low Pass: (LP = none)	-78 dB minimum attenuation in the stop band.

HIGH MODE:	
Filter Quality:	
High Pass (HP):	6-pole (120 dB per decade, 36 dB per octave)
Low Pass (LP):	-65 dB minimum attenuation in the stop band.

Line Refection(Notch) Filter:	The line rejection filter has two settings, 50 or 60 Hz. Filter response and Center frequency selections are valid for both settings.

Filter Quality Response:
-0.175 dB (98%) of Full Scale; at Center Frequency of +2 Hz And above
-0.175 dB (98%) of Full Scale; at Center Frequency of –2 Hz and below
-35 dB (1.8%) of Full Scale; from –0.5 Hz of Center Frequency to +0.5 Hz of Center Frequency

Alarms

Alarm Setpoints:	Alert and Danger levels are selectable for the direct values measured by the monitor. All alarm setpoints are set using 3500 Configuration software. Alarms are adjustable and can normally be set from 0 to 100% of Full Scale. The exception is when the full scale exceeds the range of the transducer, in which case the setpoint will be limited to the range of the transducer.

Alarm Time Delays:	Alarm time delays can be programmed using 3500 Configuration software.
Alert:	From 1 to 60 seconds, in 1 second intervals.
Danger:	0.1 Seconds minimum and then from 1 to 60 seconds in 0.1 intervals.

Proportional Values

Dynamic Pressure
Direct*

*This is the primary value for each channel

Environmental Limits

Temperature:	-30º C to 65º C (-22º F to 149ºF) operating.
Humidity:	95% non-condensing

CE MARK DIRECTIVES:

EMC Directives:

EN50081-2:

Radiated Emissions:	EN 55011, Class A
Conducted Emissions:	EN 55011, Class A

EN50082-2:

Electrostatic Discharge:	EN 6100-4-2, Criteria B
Radiated Susceptibility:	ENV 50140, Criteria A
Conducted Susceptibility:	ENV 50141, Criteria A
Electrical Fast Transient:	EN 61000-4-4, Criteria B
Surge Capability:	EN 61000-4-5, Criteria B
Magnetic Field:	EN 61000-4-8, Criteria A
Power Supply Dip:	EN 61000-4-11, Criteria B
Radio Telephone:	ENV 50204, Criteria B

Low Voltage Directives:

Safety Requirements:	EN 61010-01

Hazardous Area Approvals

CSA-NRTL/C	Class1, Division 2, Groups A through D

Physical

Monitor Module (Main Board)

Dimensions (Height x Width x Depth):	241.3 mm x 24.4 mm 241.8 mm (9.50 in x 0.96 in x 9.52 in).
Weight:	0.82 kg (1.8 lbs.).

I/O Modules (non-barrier)

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 lbs.).

I/O Modules (barrier)

Dimensions (Height x Width x Depth):	241.3 mm x 24.4 mm x 163.1 mm (9.50 in x 0.96 in x 6.42 in).
Weight:	0.46 kg (1.01 lbs.).

Ordering Information

Dynamic Pressure Module
3500/64-AXX-BXX
Option Descriptions

A: I/O Module Type	01 I/O Module with Internal Termination 02 I/O Module with External Termination's 03 Internal Barrier for 3 wire Transducer 04 Internal Barrier for 2 wire Transducer
B: Agency Approval Option	00 None 01 CSA/NRTL/C

External Termination (ET) Blocks

128015-09	Dynamic Pressure ET Block, (Terminal Strip connectors)
125808-09	Dynamic Pressure ET Block, (Euro Style connectors)
129649-10	Recorder Out ET Block, (Terminal Strip connectors)
129649-09	Recorder Out ET Block, (Euro Style connectors)

Cables

3500 Dynamic Pressure
Signal to ET Block Cable
129525-AXXXX-BXX
Option Descriptions

A: Cable Length	0005 5 feet (1.5 metres) 0007 7 feet (2.1 metres) 0010 10 feet (3 metres) 0025 25 feet (7.5 metres) 0050 50 feet (15 metres) 0100 100 feet (30.5 metres)
B: Assembly Instructions	01 Not Assembled 02 Assembled

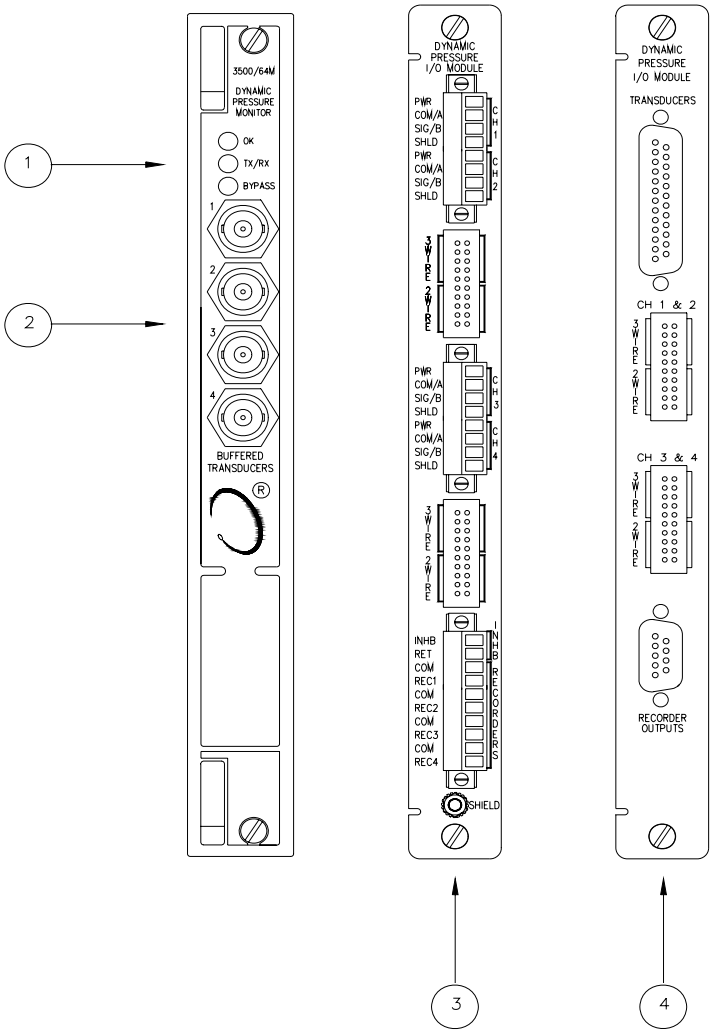
3500 Recorder Output to
ET Block Cable
129529-AXXXX-BXX
Option Descriptions

A: Cable Length	0005 5 feet (1.5 metres) 0007 7 feet (2.1 metres) 0010 10 feet (3 metres) 0025 25 feet (7.5 metres) 0050 50 feet (15 metres) 0100 100 feet (30.5 metres)
B: Assembly Instructions	01 Not Assembled 02 Assembled

Spares

140734-05	3500/64 Dynamic Pressure Module
140471-02	I/O Module, Internal Termination
140482-02	I/O Module, External Termination
132836-01	3500 Dynamic Pressure Manual
04425545	Grounding Wrist Strap
04400037	IC Removal Tool
00580434	Connector Header, Int. Termination, 8 position, Green
00580436	Connector Header, Int. Termination, 6 position, Green
00502133	Connector Header, Int. Termination, 12 position, Blue

Figures and Tables



Front and rear views of the Dynamic Pressure Module

1. Status LED's
2. Buffered Transducer Outputs
3. I/O Module, Internal Terminations
4. I/O Module, External Terminations