Vibration Monitoring System for Fin Fan

Funan Field

Advance Siam Tech Co., Ltd

ENTEK

Allen-Bradley

AST

Chevron Thailand and Exploration

Funan Platform



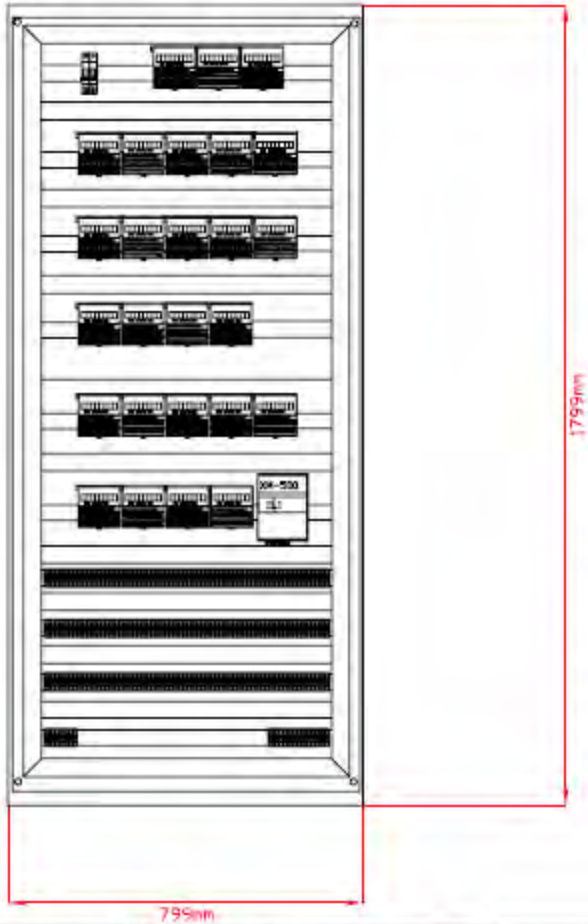





Most Valued Global Provider of Predictive Maintenance Solution

Monitoring Cabinet

Cabinet Layout



Item	Code	Description	Brand	Model	Remark
1	CB01	2 Poles, Circuit Breaker	ABB		
		24 Vdc			
2	HMI01	PanelView 600	AB	PV600	
3	CM01-14	Vibration Monitor	AB	XM-120	
		2 Channels, Output 4-20 mA,			
		2 NO+2NCContact,			
		DEVICENET Communicaton			
4	CM15-17	Ditto Item 3	AB	XM-120	Extension Units
5	RM01-07	Master Relay Module	AB	XM-440	
		4 Relays, 2 Set DPDT,			
		Max Current 3 A,			
		DEVICENET Communicaton			
6	RM08-09	Ditto Item 5	AB	XM-440	Extension Units
7	EM01	Ethernet Gatew ay Module	AB	XM-500	Extension Units
		DEVICENET to Ethernet			
		Bridge			
8	TB1	Vibration Sensor Terminals	Weidmuller	WDU 1.5/ZZ	
9	TB2	Digital Output Terminals	Weidmuller	WDU 1.5/ZZ	
10	TB3	Relay Terminals	Weidmuller	WDU 1.5/ZZ	
11	TB4	Spare Terminals	Weidmuller	WDU 1.5/ZZ	
12		Cable Gland	Crousehind		
13		Wire Duct			
14		Wiring Cable 16 AWG			

ADVANCE SIAMTECH CO.,LTD.
9987/1 Soi Asoke Srinakarin Rd.
Suanluang Bangkok Thailand 10250
Tel.: 66(0)2724-4191 to 2

Chevron Thailand Exploration and Production
Tower III, 5CB Park Plaza, 19 Ratchadapisek Rd.
Chatuchak, Bangkok 10900, Thailand

PRODUCT: ENTEK

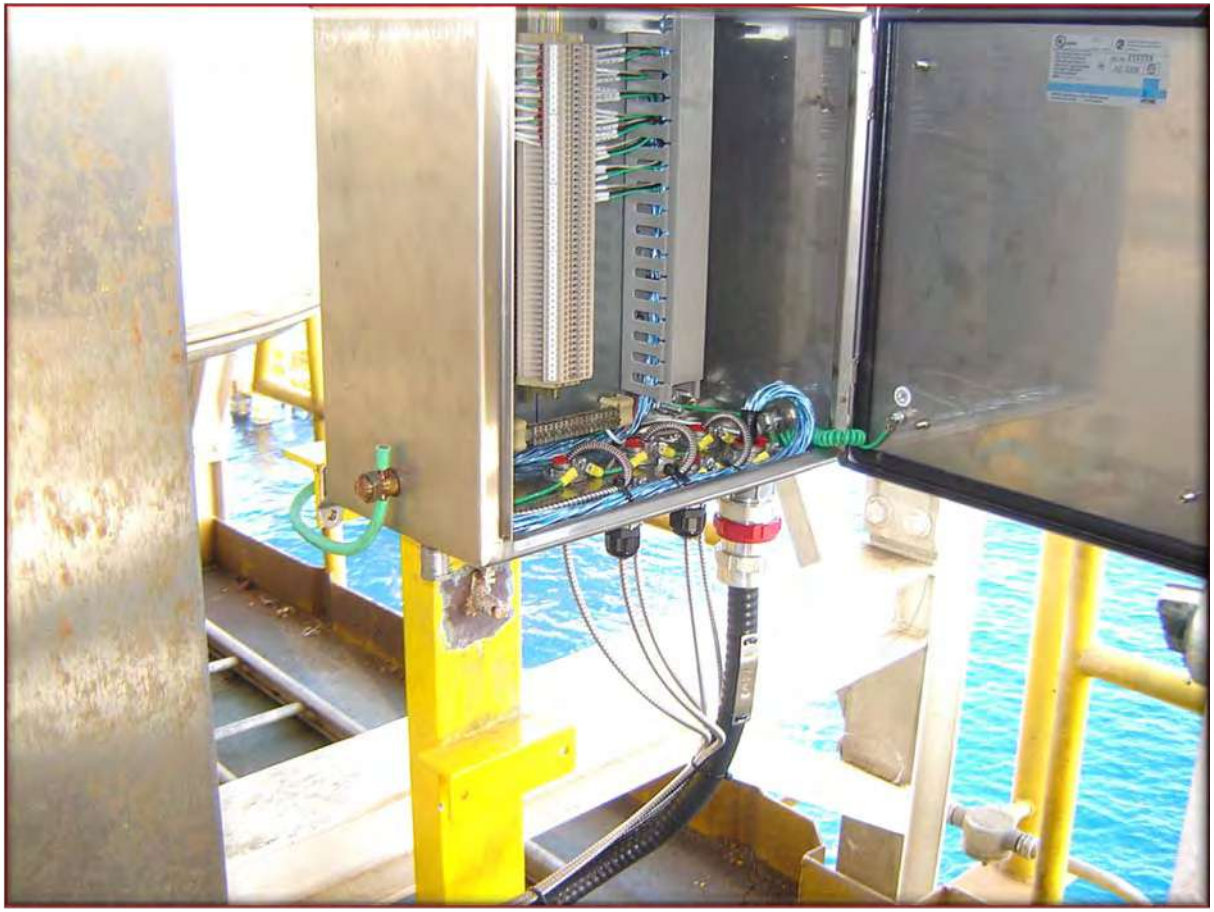
PROJECT: Fin Fan Vibration Monitoring
FCPP, CTEP

DESCRIPTION:

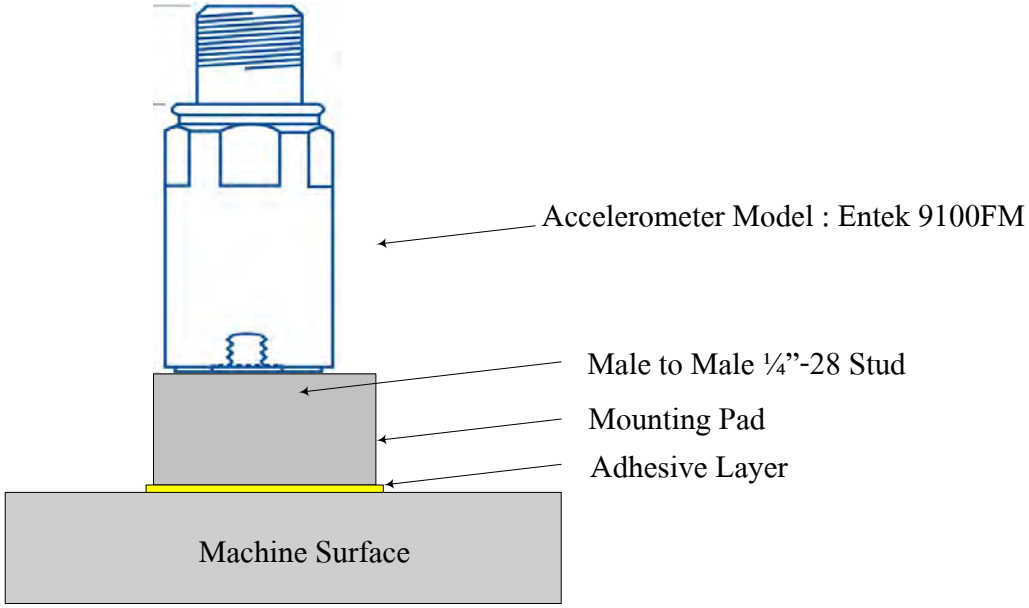
TITLE: Overall View and Bill of Material

DESIGNED BY:	DATE	SHEET NO.
DRAWN BY:	DATE	01
CHECKED BY:	DATE	

Junction Box



Sensor Installation



Surface Preparation Tool

- Scrub off the machine surface desired to install the sensor on with the spot face tool (Shown as the picture below) attached to the gimlet

Mounting Pad Installation

- Dry the scrubbed surface. Heavy grease, oil and dirt should be wiped away.
- Apply adhesive (LOCTITE 330) amount to the spot face and seat the model SF8 pad with a turning motion.

Sensor Installation

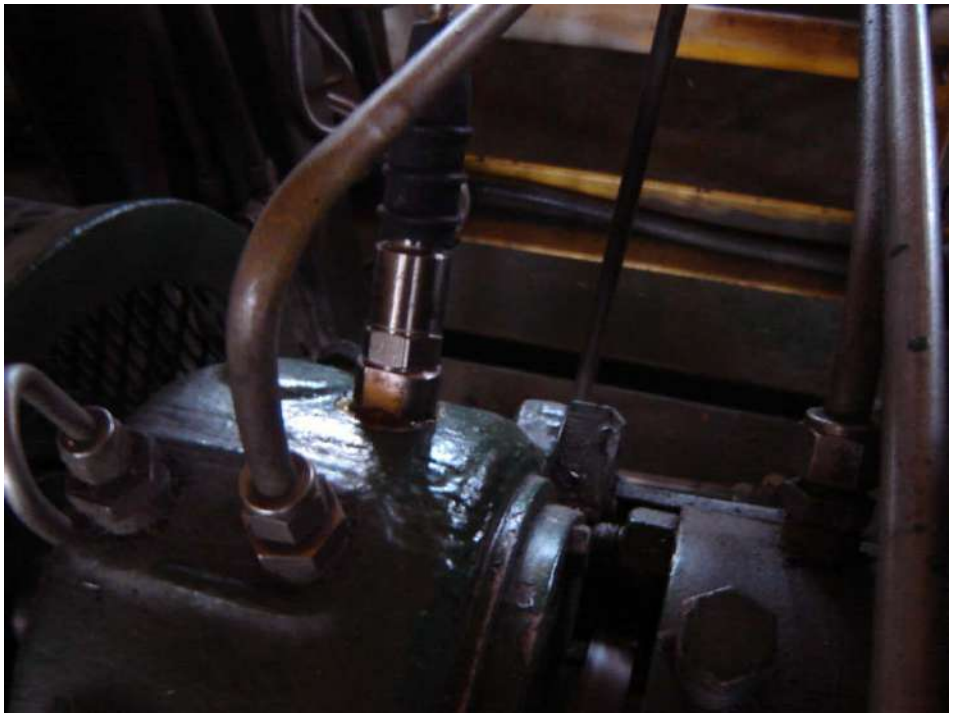
- Fill the adhesive around the sides of the pad to increase shear strength and assist electrical isolation. The working time is 5 minutes but may vary depending on the ambient temperature.
- Do not get epoxy in the sensor mounting surface.

Stud Installation

- Apply the Loctite's thread lock type 242 about 2-3 drops to the tapped hole in the sensor.
- Screw the male to male ¼-28 stud (as shown below) into the sensor and seat with a screwdriver.

Sensor Installation

- Apply the thread lock type 242 to the tapped hole in the mounting pad.
- Torque the sensor with the stud onto the mounting pad to 24 inch-pounds



Vibration Sensor Specification

9100FM
General Purpose

ENTEK

DYNAMIC

Sensitivity, ±5%, 25°C		100 mV/g
Acceleration Range[1]		50 g peak
Amplitude Nonlinearity		1%
Frequency Response		
±5%		0.6 - 4,000 Hz
±10%		0.4 - 5,000 Hz
±3 dB		0.2 - 10,000 Hz
Resonance Frequency		20 kHz
Transverse Sensitivity, max.		5% of axial
Temperature Response		see graph

ELECTRICAL

Power Requirement		
voltage source		18 - 28 VDC
current regulating diode[1,2]		2 - 20 mA
Electrical Noise, equiv. g, nominal		
Broadband	1 Hz to 10 kHz	50 µg
Spectral	10 Hz	4.0 µg/√Hz
	100 Hz	0.8 µg/√Hz
	1,000 Hz	0.4 µg/√Hz
Output Impedance, max.		100 Ohms
Bias Output Voltage, nominal		8 - 12 VDC
Grounding		case isolated, internally shielded

ENVIRONMENTAL

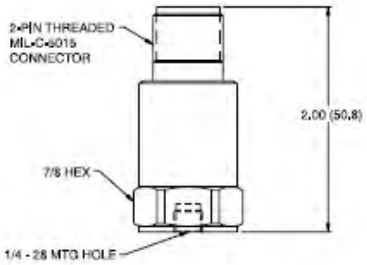
Temperature Range	-54 to 121°C
Shock Limit	5,000 g peak

PHYSICAL

Weight	93 gm
Case Material	stainless steel
Mounting	1/4 - 28 tapped hole
Output Connector	MIL-C-5015, 2 pin
Pin A	signal, power
Pin B	common

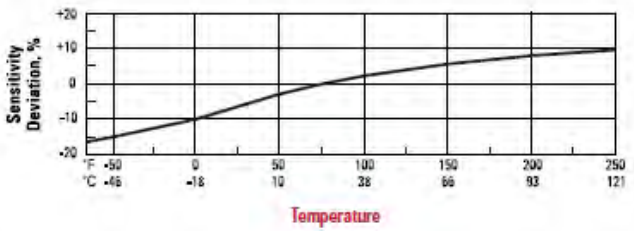
FEATURES:

- Rugged, general purpose
- Corrosion resistant
- Hermetic seal
- Ground isolated
- ESD and miswiring protection



Vibration Sensor Specification (Cont.)

TYPICAL TEMPERATURE RESPONSE



NOTES:

1 To minimize the possibility of signal distortion when driving long cables with high vibration signals, 24 to 30 VDC powering is recommended. The higher level constant current source should be used when driving long cables (Please consult Entek Customer Service).

2 A maximum current of 6 mA is recommended for operating temperatures in excess of 100 °C.

ACCESSORIES SUPPLIED: 1/4-28 Mounting screw, Calibration data

Factory Mutual Approved Standards	
Division 1	Continuous or Intermittent Hazards
Class 1	Gasses and Vapors
Group A	Acetylene
B	Hydrogen
C	Ethylene
D	Methane
Class 2	Dusts
Group E	Metal Dust
F	Coal Dust
G	Grain Dust
Class 3	Fibers – No subgroups
Temperature Code T4	135 °C (maximum surface temperature)

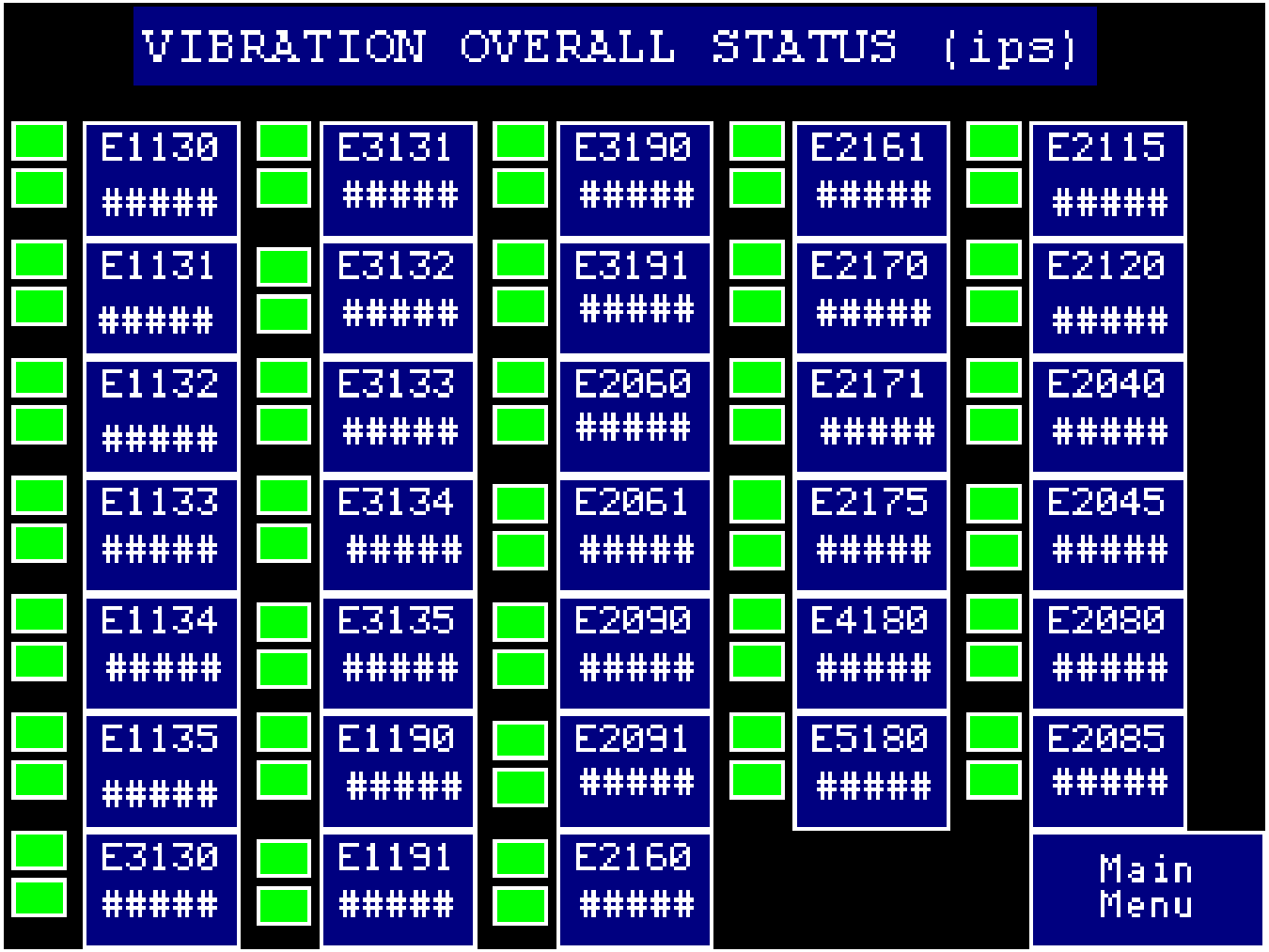
Ordering Information

Model	Description	P/N
9100FM	General purpose accelerometer - 100 mV/g, 0.2-10,000 Hz (3dB), top exit, Mil Spec connector.	43785I

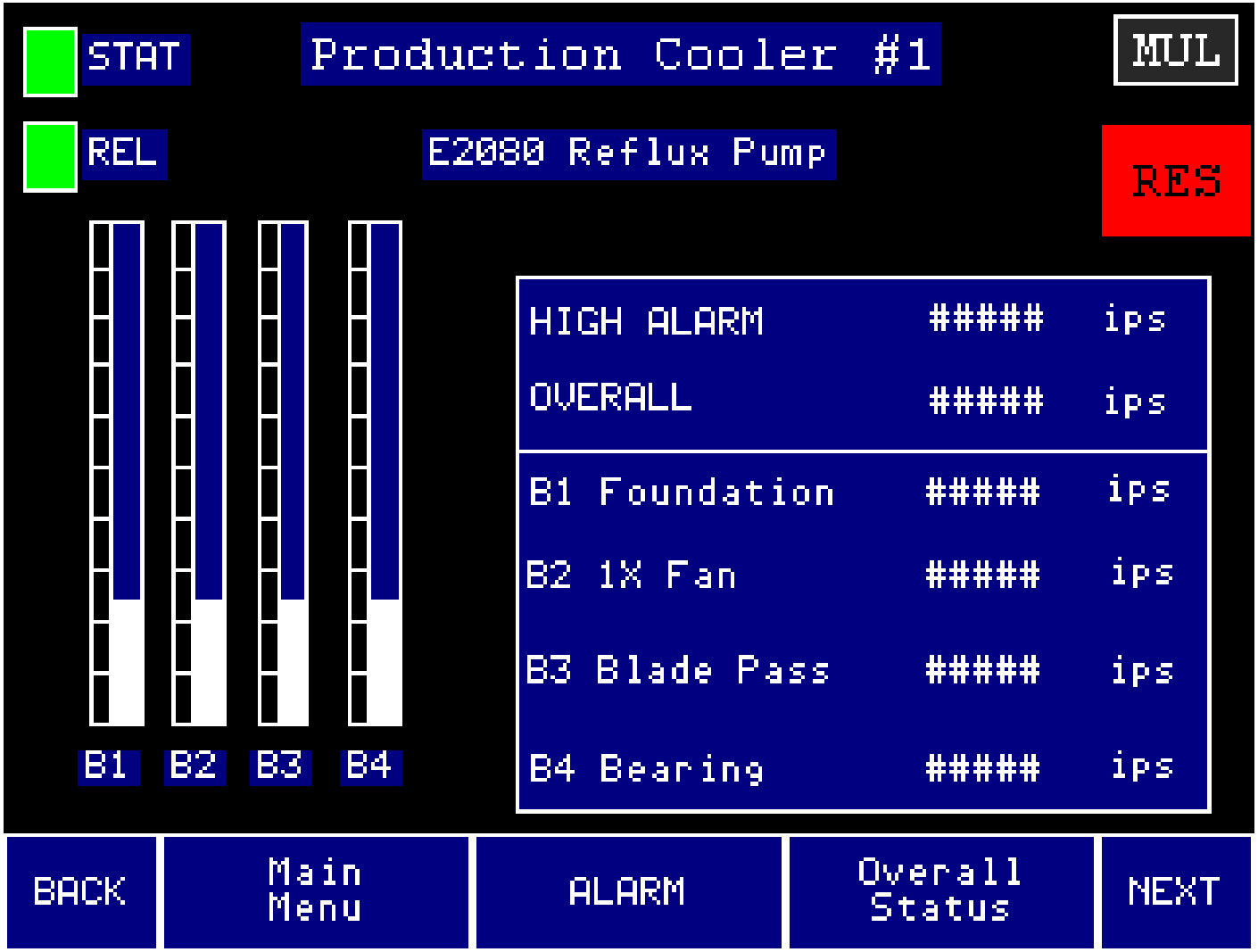
Amour Cable

Two (2) pin socket connector with integral, molded splash proof boot with 7.1 mm (0.28") diameter, SST armored jacket with cable, twisted shielded pair wires. xxx.x = Armor length in meters.
yyy.y = Cable length in meters.

Overall Display



Band Display for Individual Channel



Alarm Settings

- Cooling Fan Layout

Cooling Fan

1. Cooling Fans No. : 1130, 1131, 1132, 1133, 2160, 2161, 3130, 3131, 3132, 3133, 2170, 2171, 2060, 2061, 2090, 2091, 4180 and 5180 refer to ISO 2372 class 3

   Alert : 7.1 mm/s = 0.28 ips Danger : 11.2 mm/s = 0.44 ips

2. Cooling Fans No. : 1134, 1135, 1190, 1191, 3190, 3191 and 2175 refer to ISO 2372 Class 4

   Alert : 11.2 mm/s = 0.44 ips Danger : 18 mm/s = 0.71 ips

3. Cooling Fans No. : 3134 and 3135 was manually alarm set as their structure condition

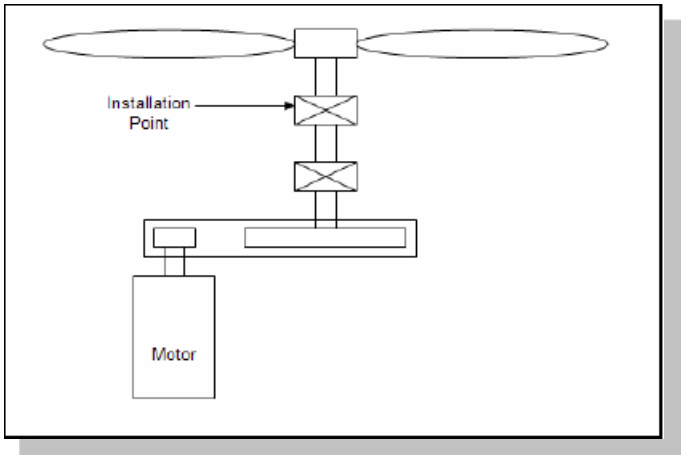
   Alert : 11.2 mm/s = 0.44 ips Danger : 18 mm/s = 0.71 ips

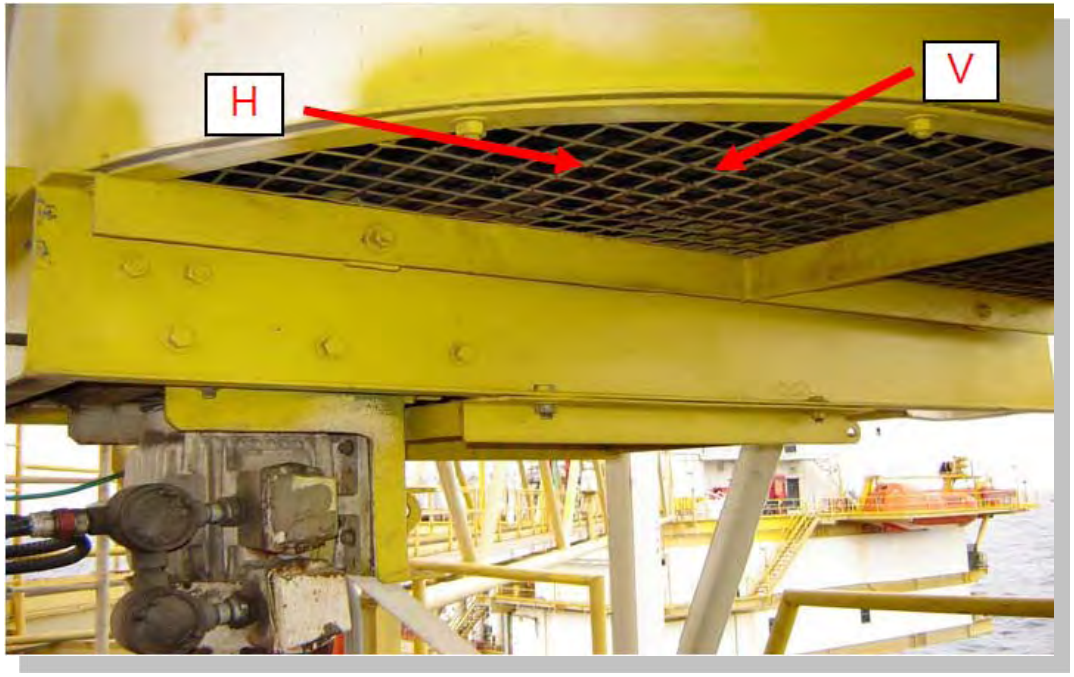
Pump

All 6 Pumps No. : 2115, 2120, 2040, 2045, 2080 and 2085 refer to ISO 10816 Part 3, Group3, External Driven on Relatively Flexible Structure

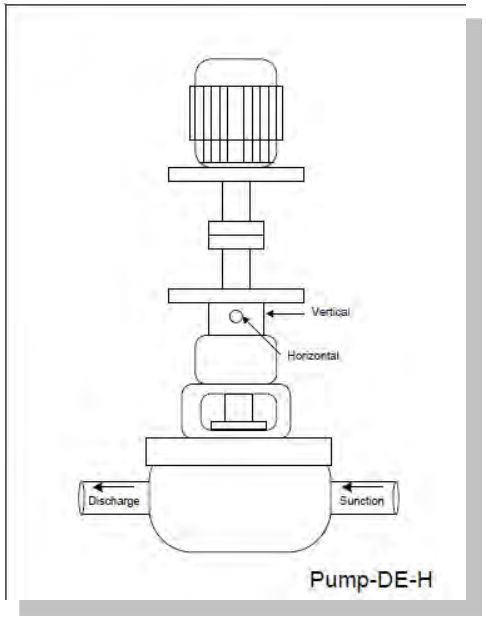
Alert : 7.1 mm/s = 0.28 ips Danger : 11.2 mm/s = 0.44 ips

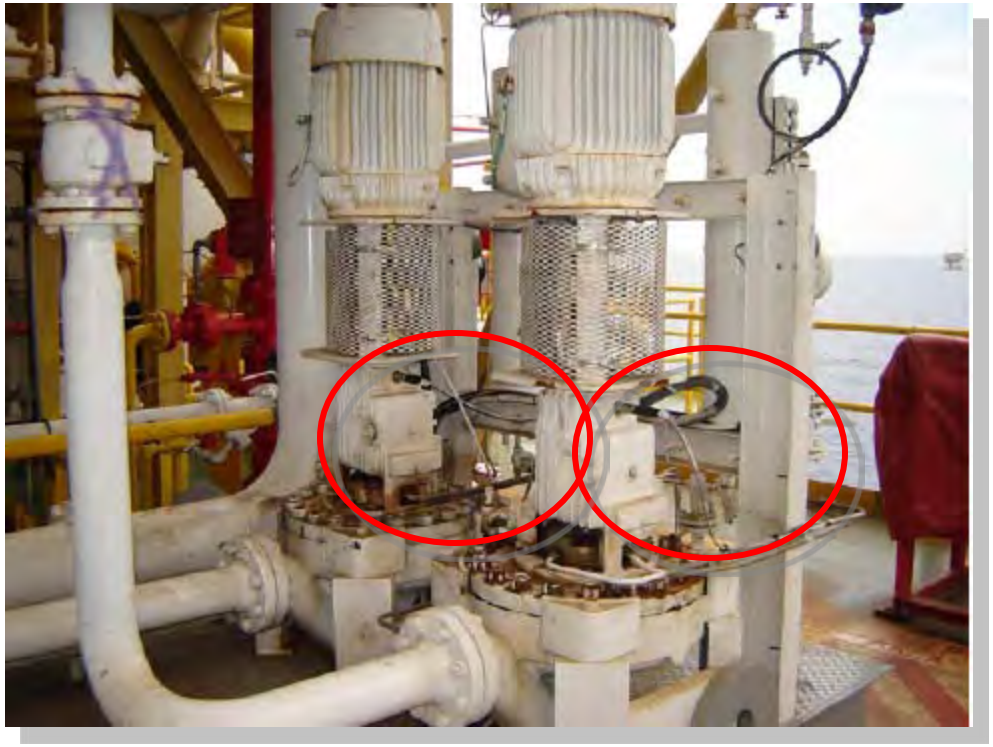
Location





Example





Calibration


XM®

XM Module

XM-120's Inputs

Shaft Displacement

Includes onboard power supply for non-contact eddy current displacement probes.

Casing Vibration

Includes onboard 4mA excitation for piezoelectric transducers with integrated circuits.

Voltage Input

Supports almost any externally powered or self powering voltage output sensor that produces a calibrated linear signal.

Just *ONE* module for any *DYNAMIC* measurement….

Inputs – 1 Tachometer…

- ±25V (50V max. peak to peak)
- 1 to 50,000 events per revolution
- 120kΩ minimum input impedance
- 1 to 1,200,000 RPM (0.0167 to 20,000Hz) speed range
- 500 Hz/sec maximum rate of change

XM-120's Output

Analog

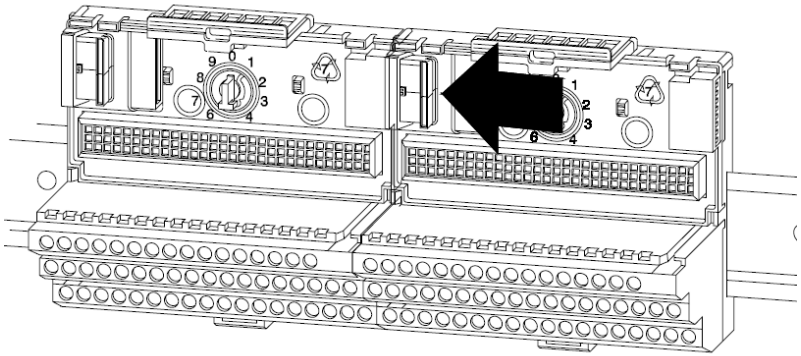
- Two 4-20mA outputs
- Configurable as any of the calculated parameters

Relays

- Single onboard relay
- Expandable to five (supports one XM-441 Expansion Relay Module)

XM Features

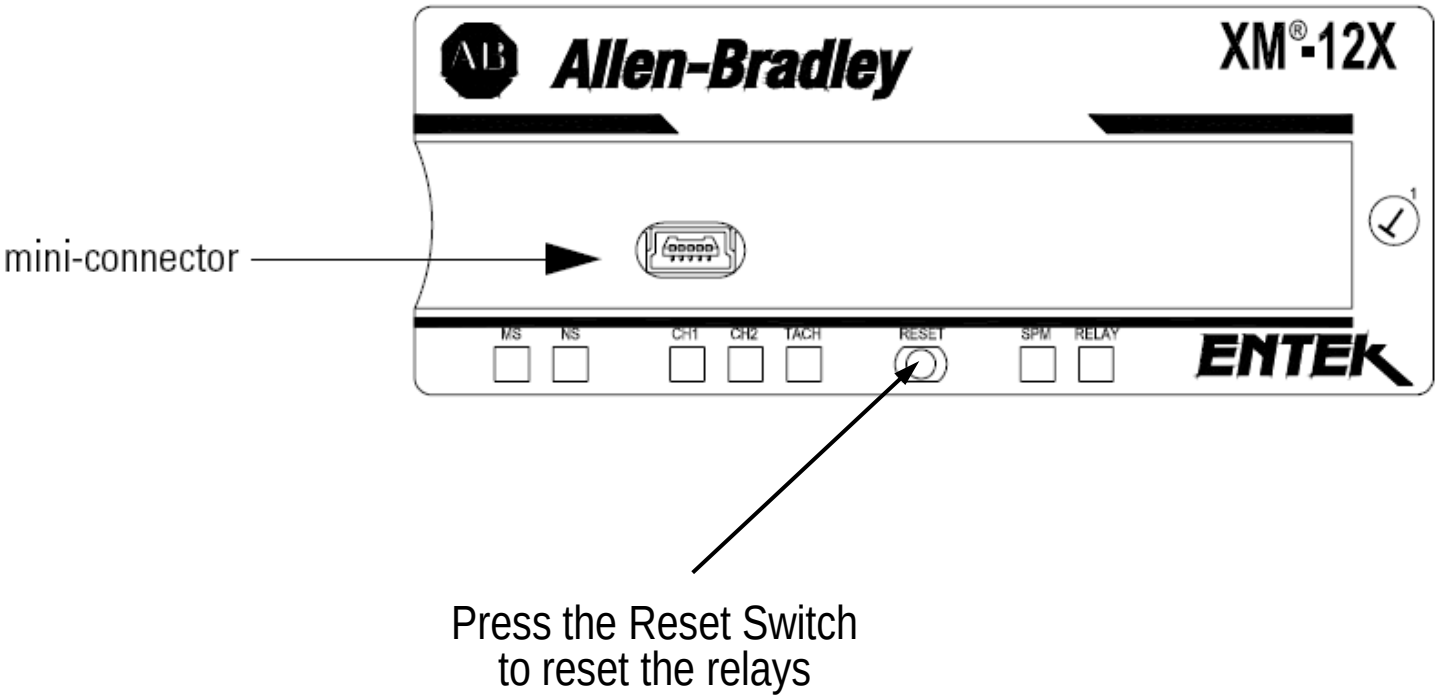
- Communicates between the Module via the DEVICENET



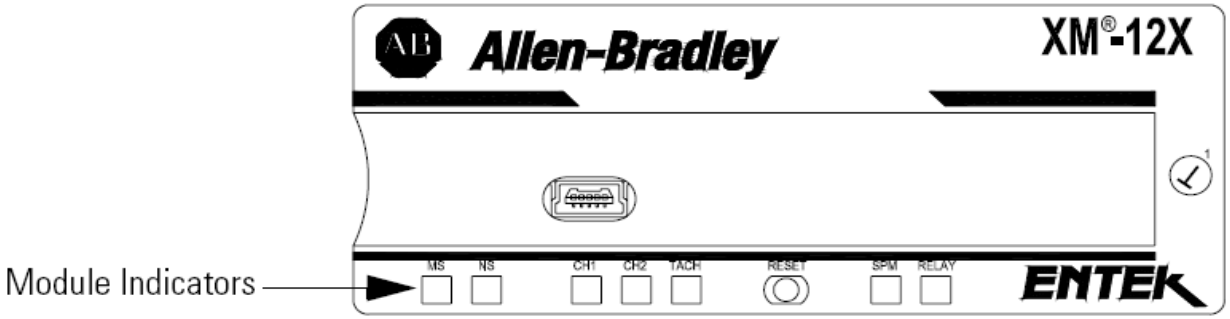
XM Features


Allen-Bradley
XM-440
Configure and review current data such as overall value, spectrum and feedback voltage via the serial port and the XM serial Configuration Software

XM Features

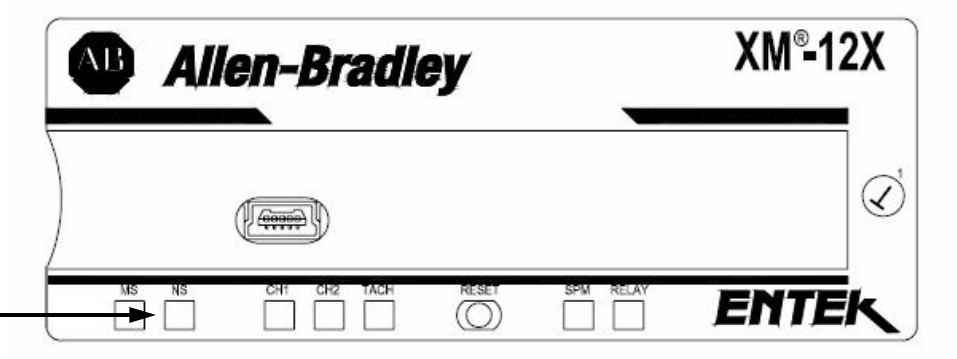

mini-connector
Allen-Bradley
XM®-12X
M/S
NS
CH1
CH2
TACH
RESET
SPM
RELAY
ENTEK
Press the Reset Switch
to reset the relays

XM Features



Color	State	Description
No color	Off	No power applied to the module.
Green	Flashing Red	Module performing power-up self test.
	Flashing	Module operating in Program Mode.
	Solid	Module operating in Run Mode.
Red	Flashing	Application firmware is invalid or not loaded. Download firmware to the module.
		Firmware download is currently in progress.
	Solid	An unrecoverable fault has occurred. The module may need to be repaired or replaced.

XM Features

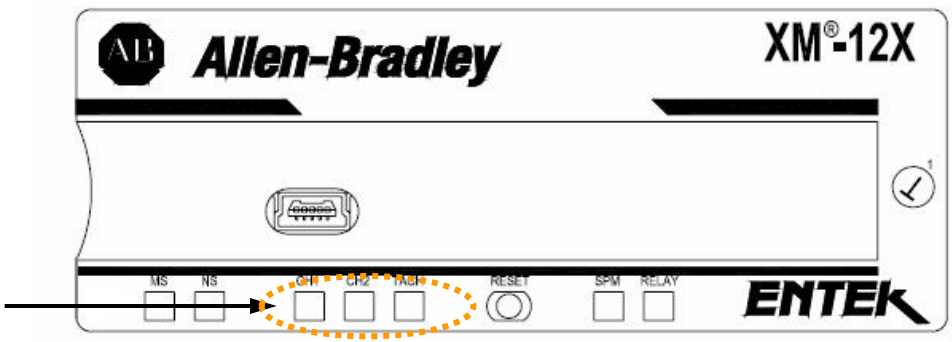


Network Status Indicator

Color	State	Description
No color	Off	Module is not online.
		• Module is autobauding.
		• No power applied to the module, look at Module Status LED.
Green	Flashing	Module is online (DeviceNet) but no connections are currently established.
	Solid	Module is online with connections currently established.
Red	Flashing	One or more I/O connections are in the timed-out state.
	Solid	Failed communications (duplicate MAC ID or Bus-off).

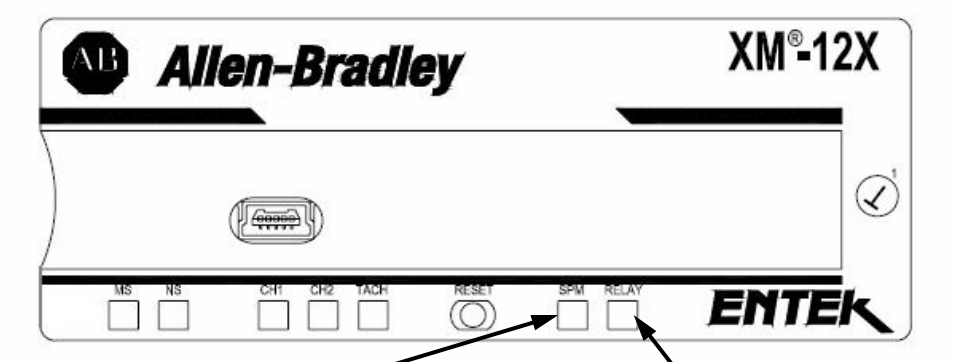
XM Features

Channel 1,Channel 2 and Tachometer Status Indicator



Color	State	Description
No color	Off	• Normal operation within alarm limits on the channel. • No power applied to the module, look at Module Status LED.
Yellow	Solid	An alert level alarm condition exists on the channel (and no transducer fault, tachometer fault, or danger level alarm condition exists).
	Flashing	(Tach LED only) Tachometer fault (no transducer fault) condition exists on the channel.
Red	Solid	A danger level alarm condition exists on the channel (and no transducer fault or tachometer fault condition exists).
	Flashing	A transducer fault condition exists on the channel.

XM Features



Setpoint Multiplier Indicator

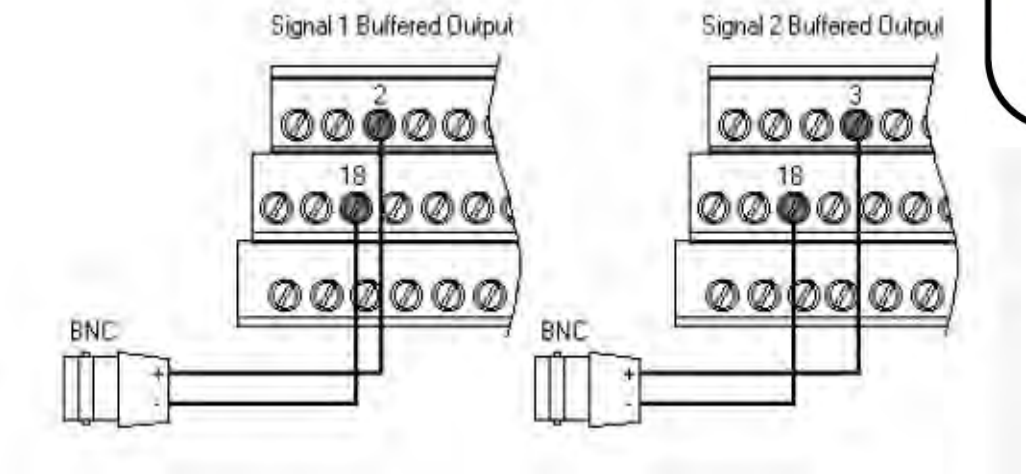
Color	State	Description
Yellow	Off	Setpoint multiplier is not in effect.
	Solid	Setpoint multiplier is in effect.

Relay Indicator

Color	State	Description
Red	Off	On-board relay is not activated.
	Solid	On-board relay is activated.

XM-120 Features

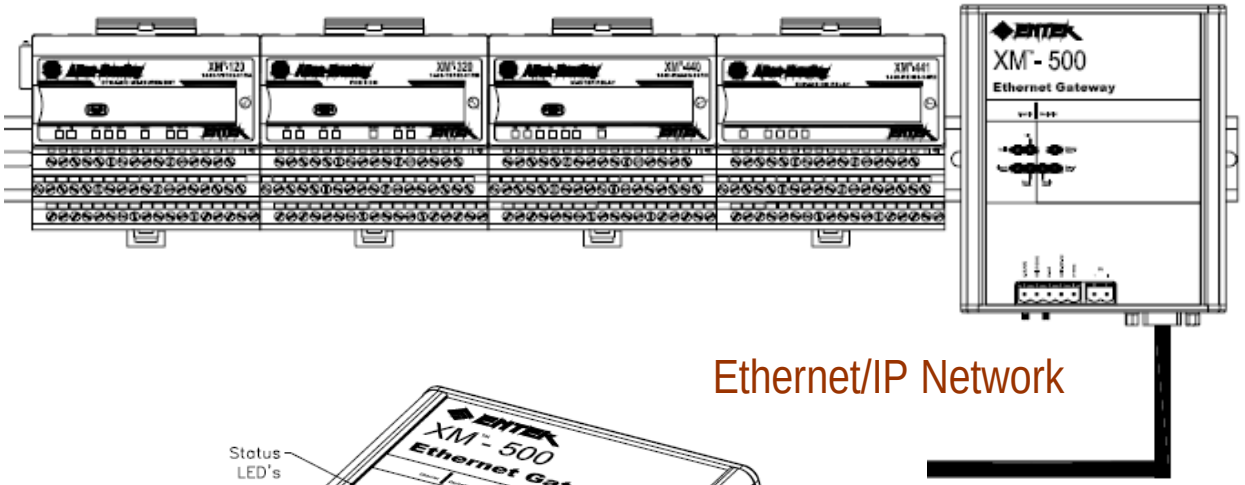
- Data Collection Tapped by Portable with the Additional Wiring

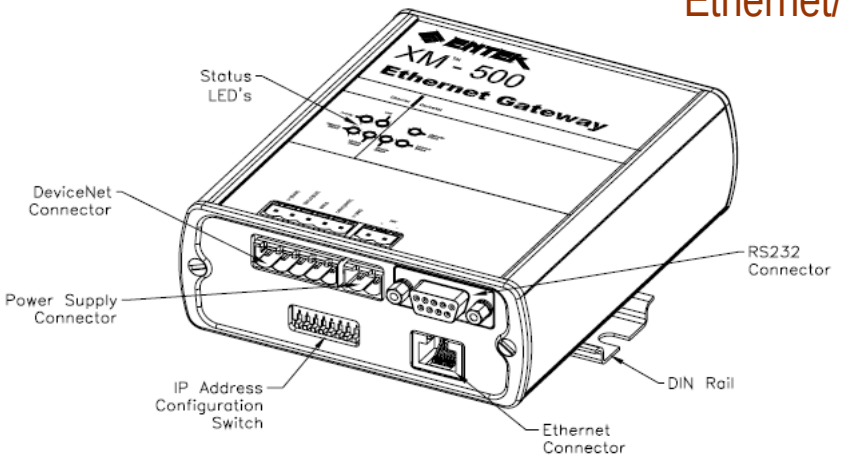


XM-440 Features

- 4 Integrated Relay (12 Relays Available with XM-441 Expansion Modules)
- All Alarms are able to be configured individual

XM-500 Gateway





XM-500 Gateway

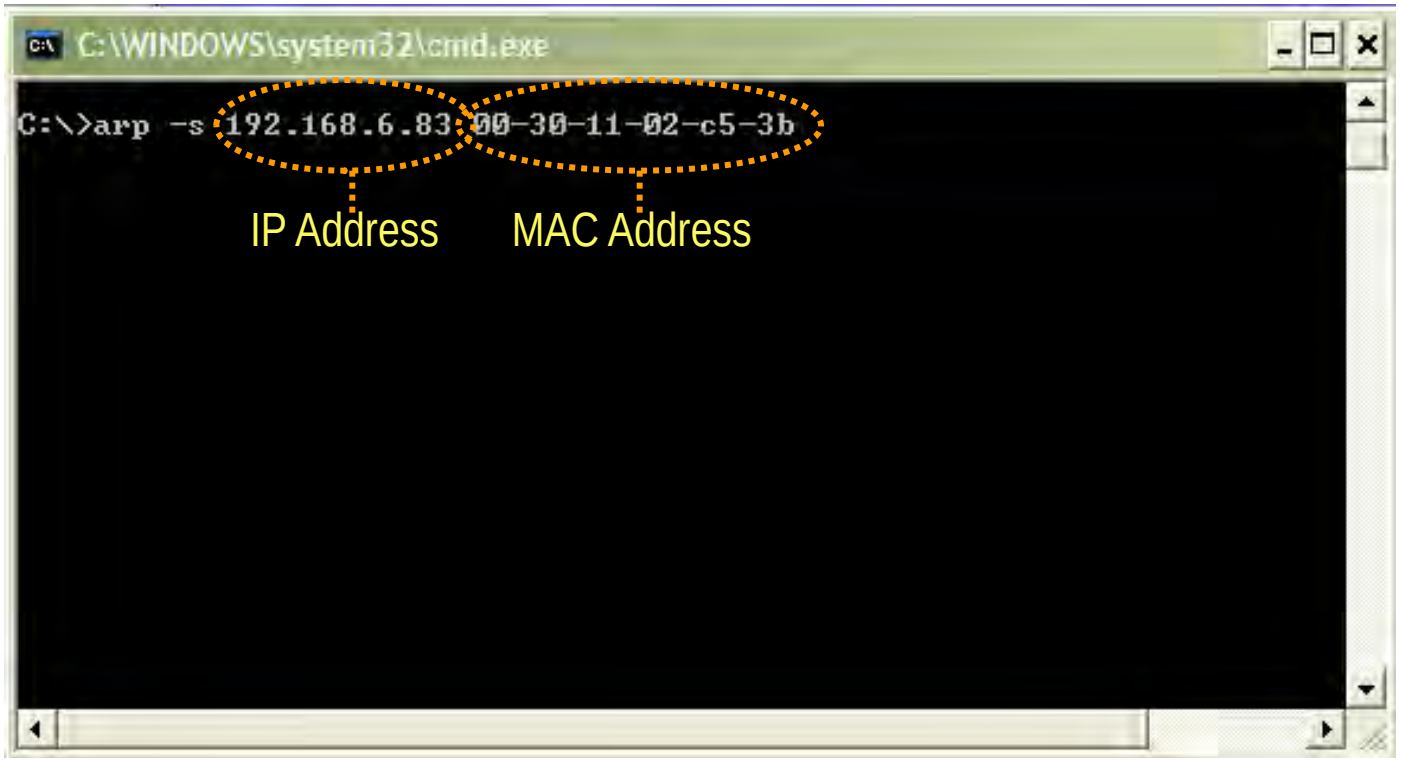
XM-500 Address Reference

MAC Address : 00-30-11-02-C5-3B

IP Address : 192.168.6.83

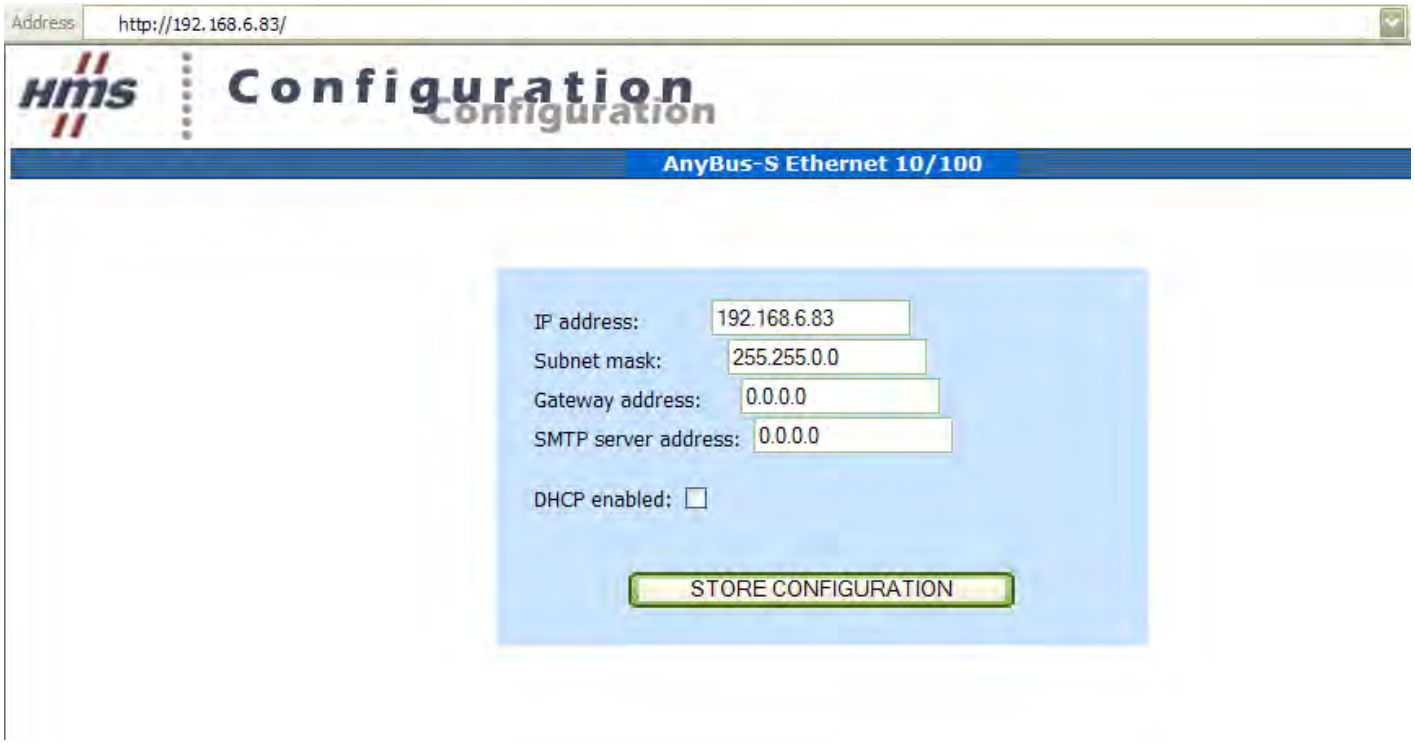
XM-500 Gateway

XM-500 IP Configure



XM-500 Gateway

XM-500 IP Configure



XM Software

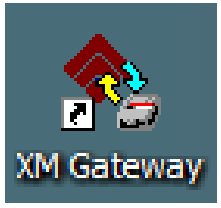
The Interface between all AB Hardware Instruments and all Rockwell's Software

The software to local configure and review all data from only one node of stand alone XM Module via the RS232 Serial Cable

The software to configure and review all data from XM Module(s) via the XM-500 and Online Network

XM Software

Real-time interactive display, analysis and management of data from XM systems

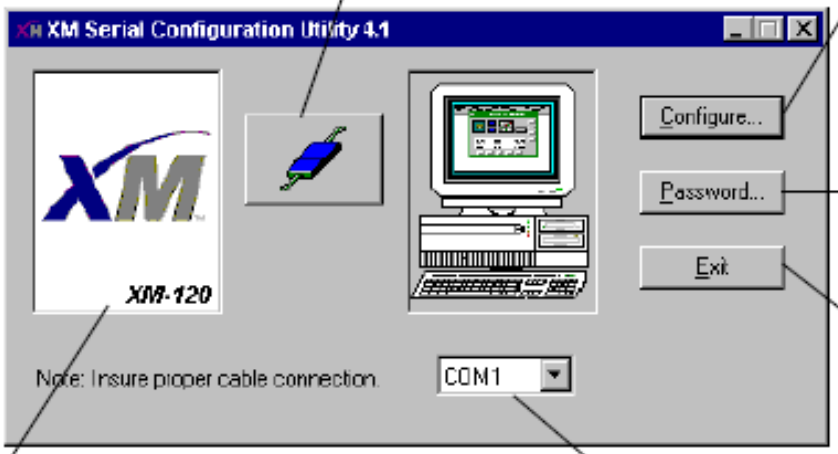


The feature utility in both the EOL Monitor and the Emonitor to harvest and map the data from all XM to the Emonitor's Database

Predictive Maintenance historian, data analysis and reporting system.

Supports multiple data types and sources.

XM Serial Configuration



Connection Icon
This icon changes when the Serial Configuration Utility is not connected to an XM module.

Click **Configure** to configure the connected XM module (online) or create a configuration (offline).

Click **Password** to change the password.

Click **Exit** to exit the Serial Configuration Utility.

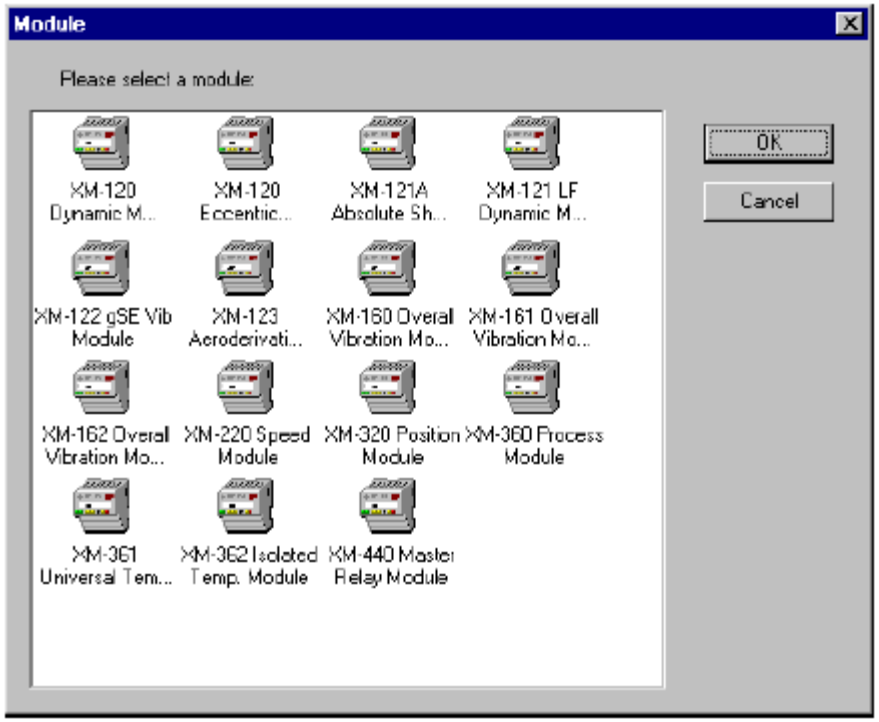
XM Module Icon
This icon displays the type of XM module when connected to an XM module.

Computer's serial (COM) port selected to connect to XM modules.

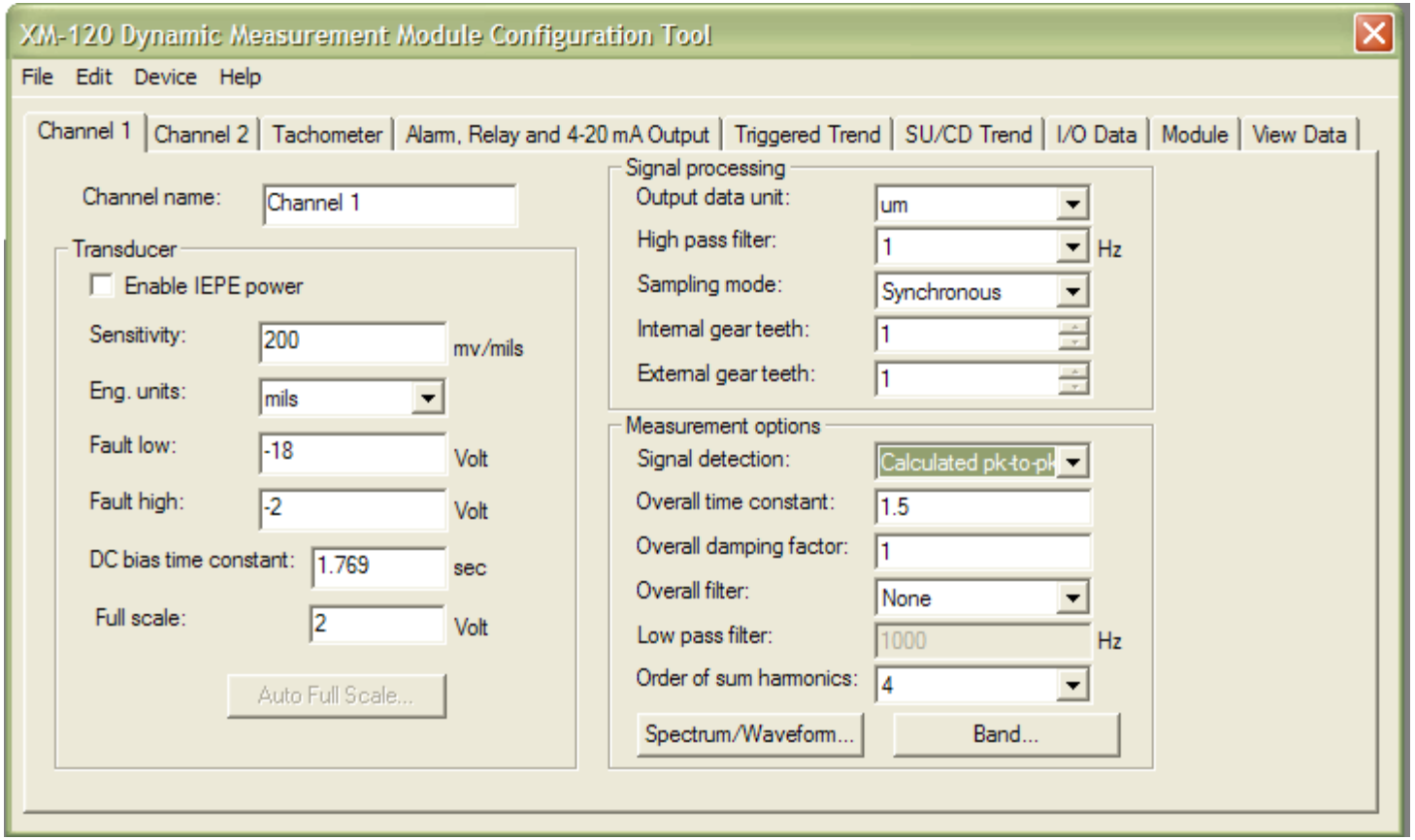
XM Serial Configuration

Not connected to an XM module (offline)

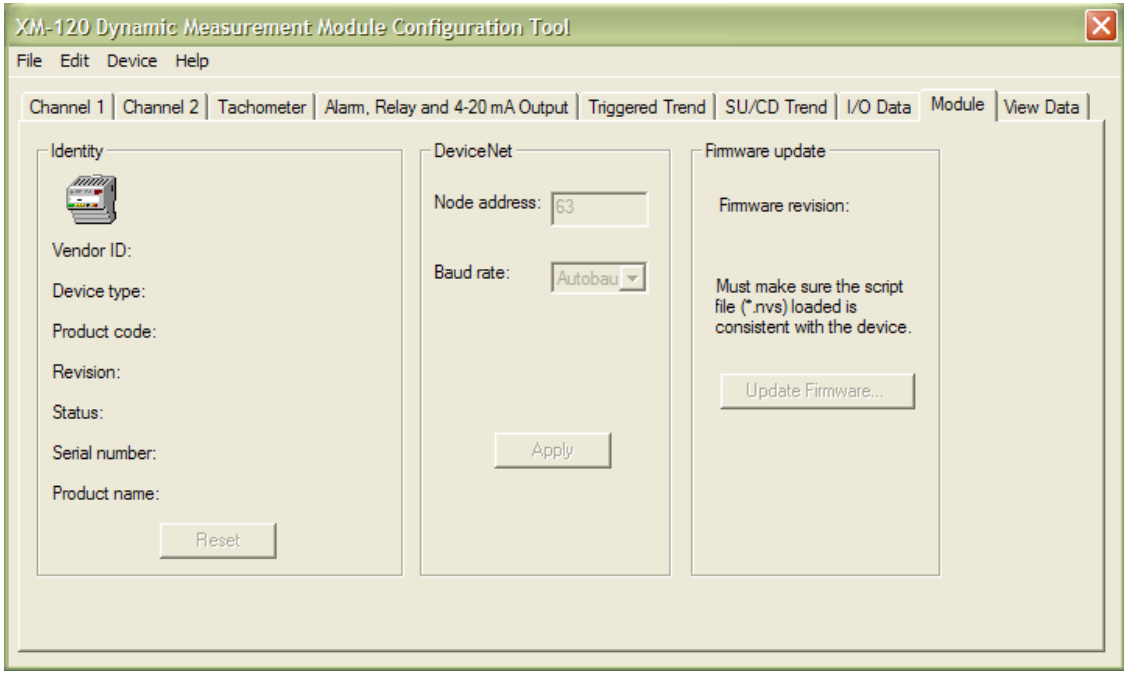
Clicking Configure when not connected to an XM module displays the Module dialog so you can select an XM module.



XM Serial Configuration



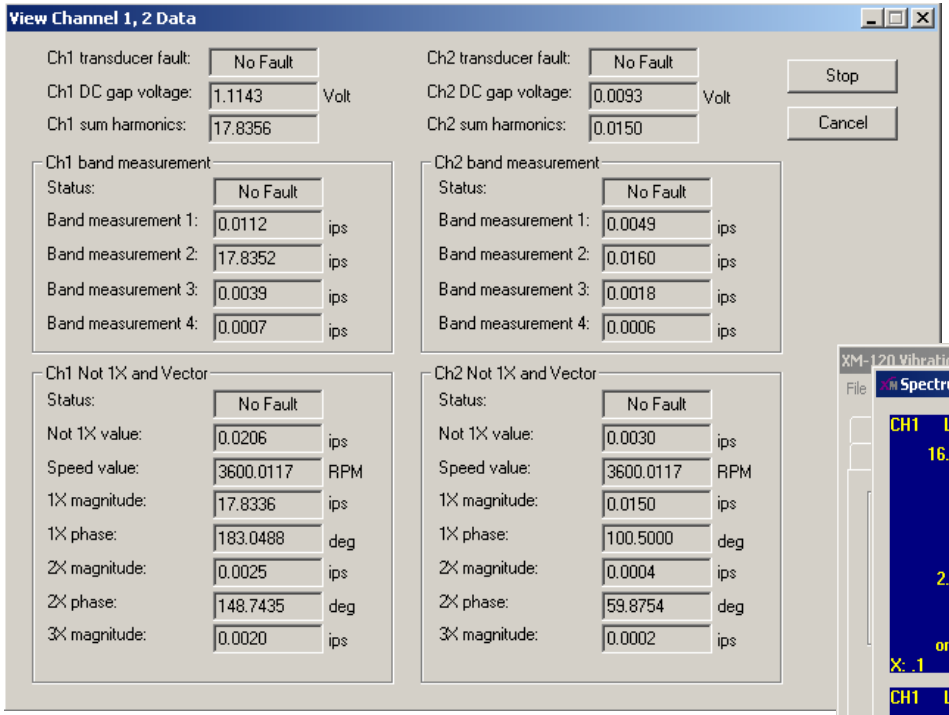
XM Serial Configuration



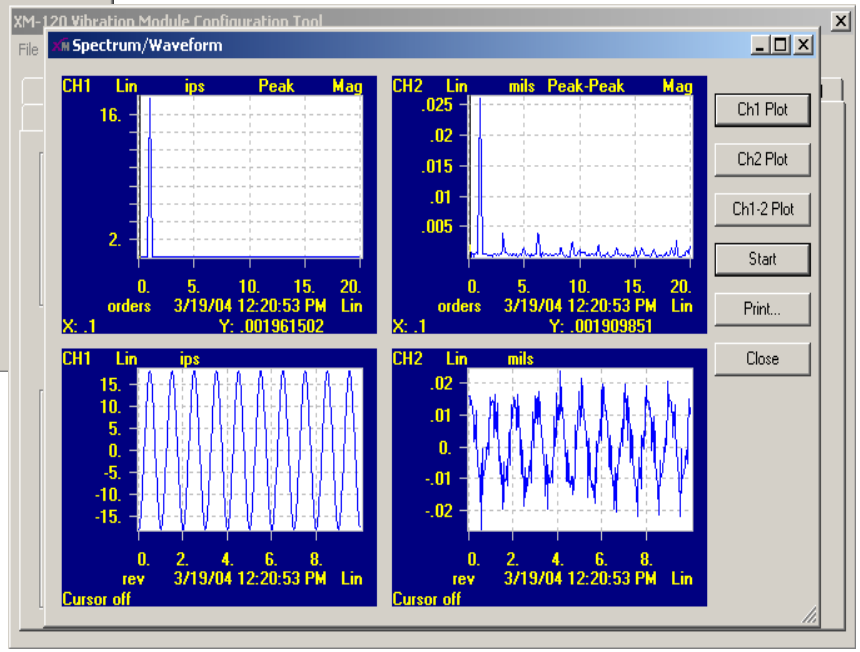
Apply the Node Address to the configured module first (Be aware the assigned number was not used by another)

Then download all configuration to the module and turn it to RUN Mode

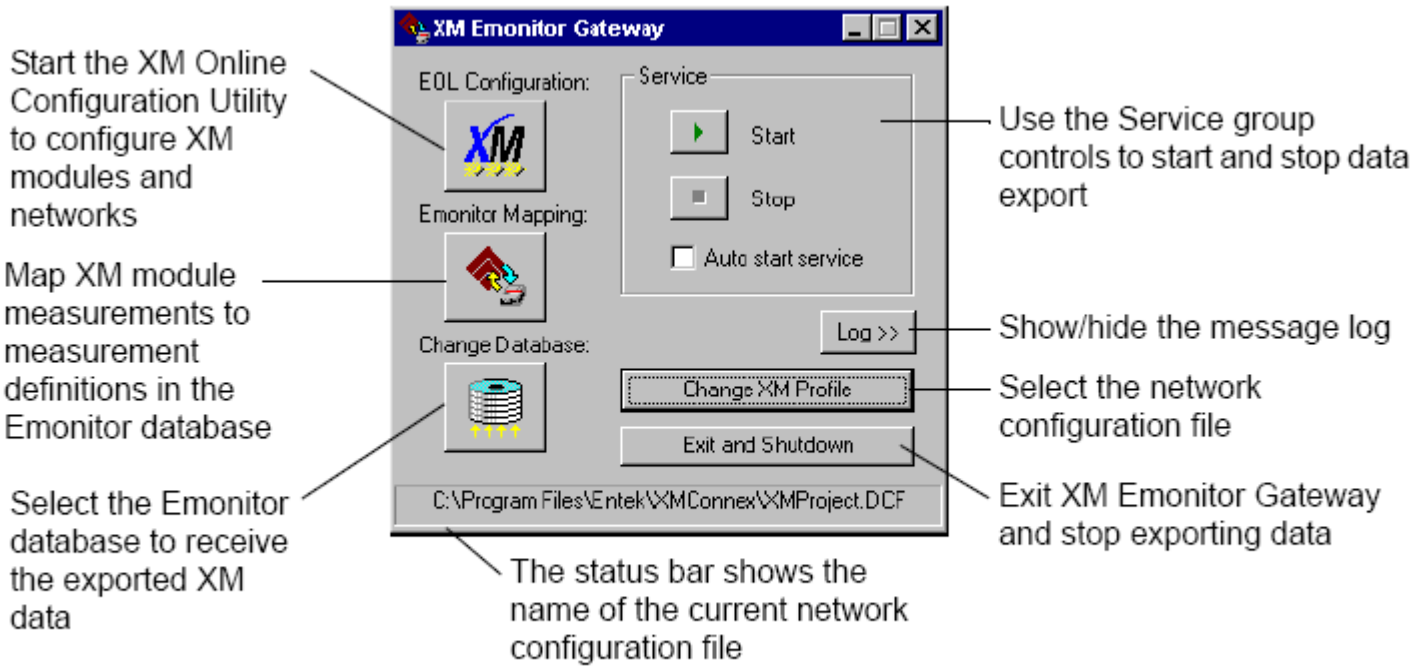
XM Serial Configuration Tool



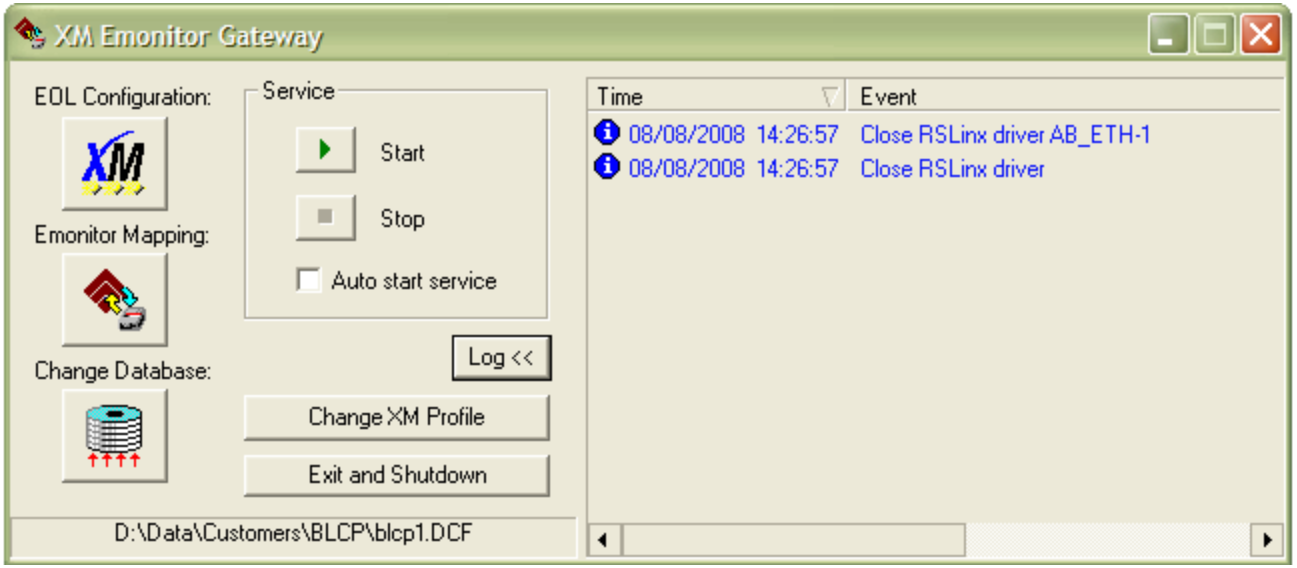
Everything you need to install and configure your XM system – over a serial link



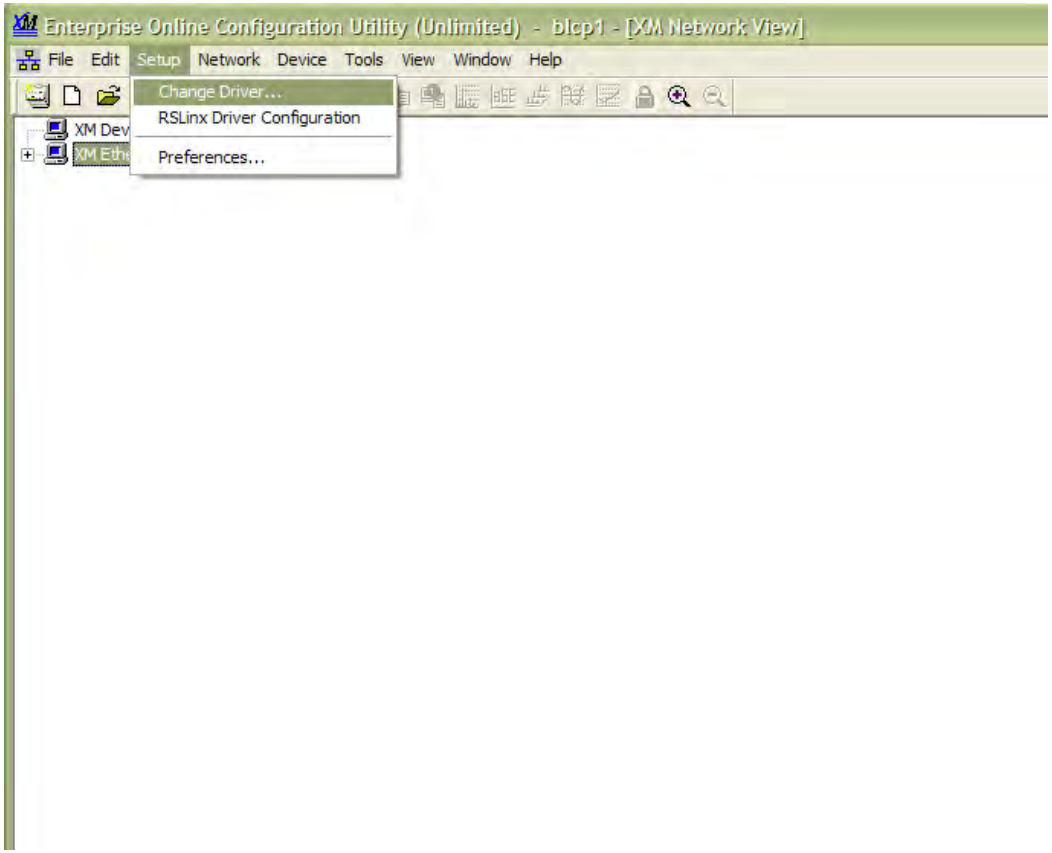
XM Configuration by XM Gateway



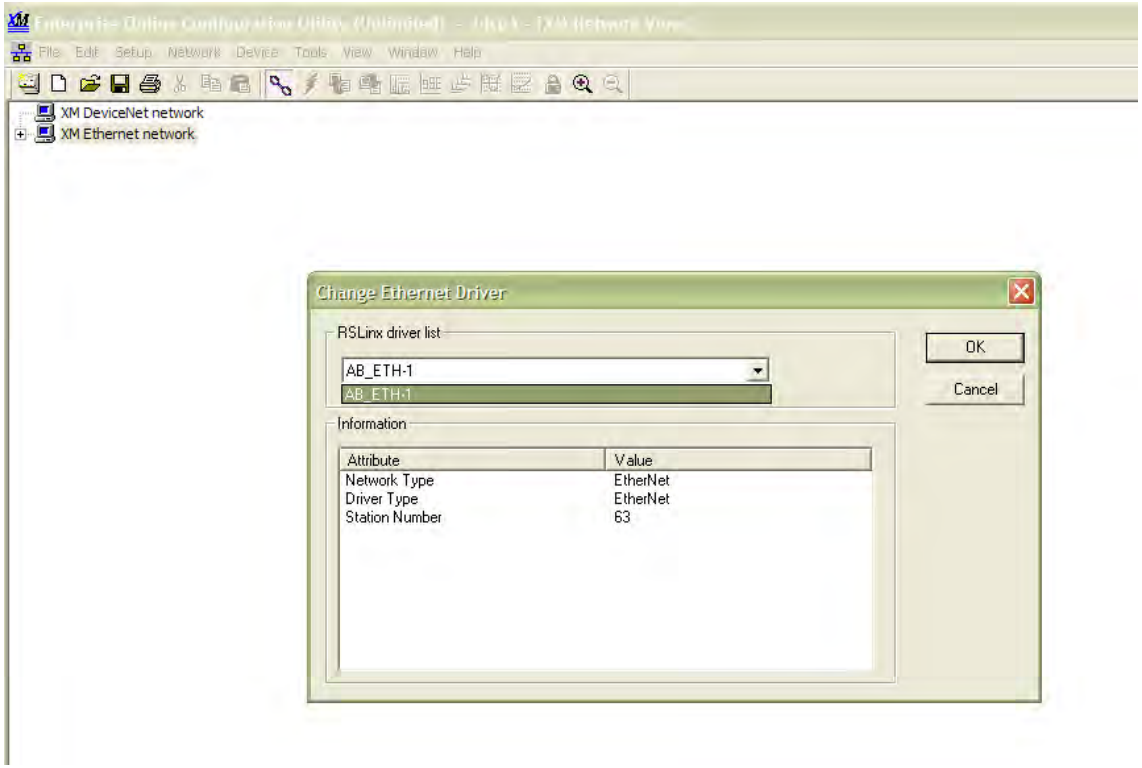
XM Configuration by XM Gateway



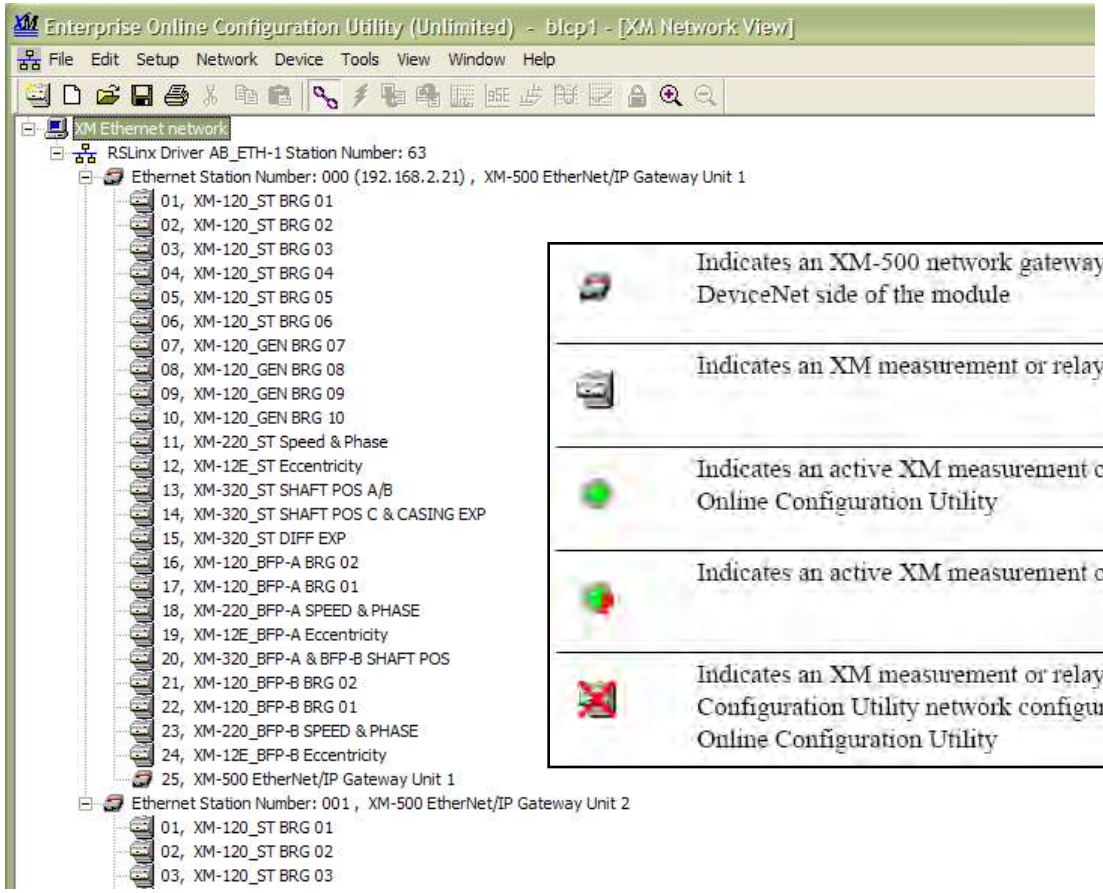
XM Configuration by XM Gateway



XM Configuration by XM Gateway

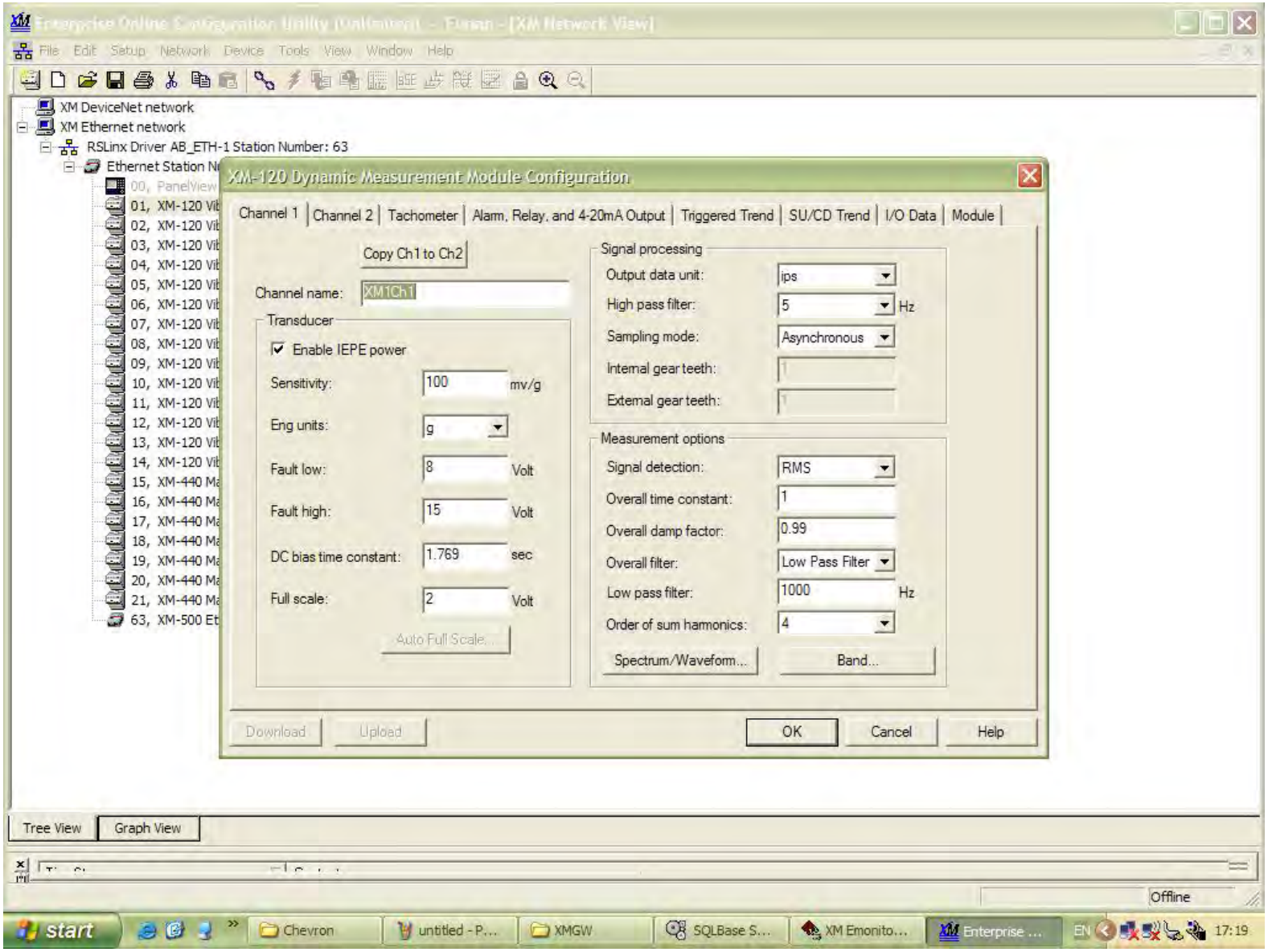


XM Configuration by XM Gateway

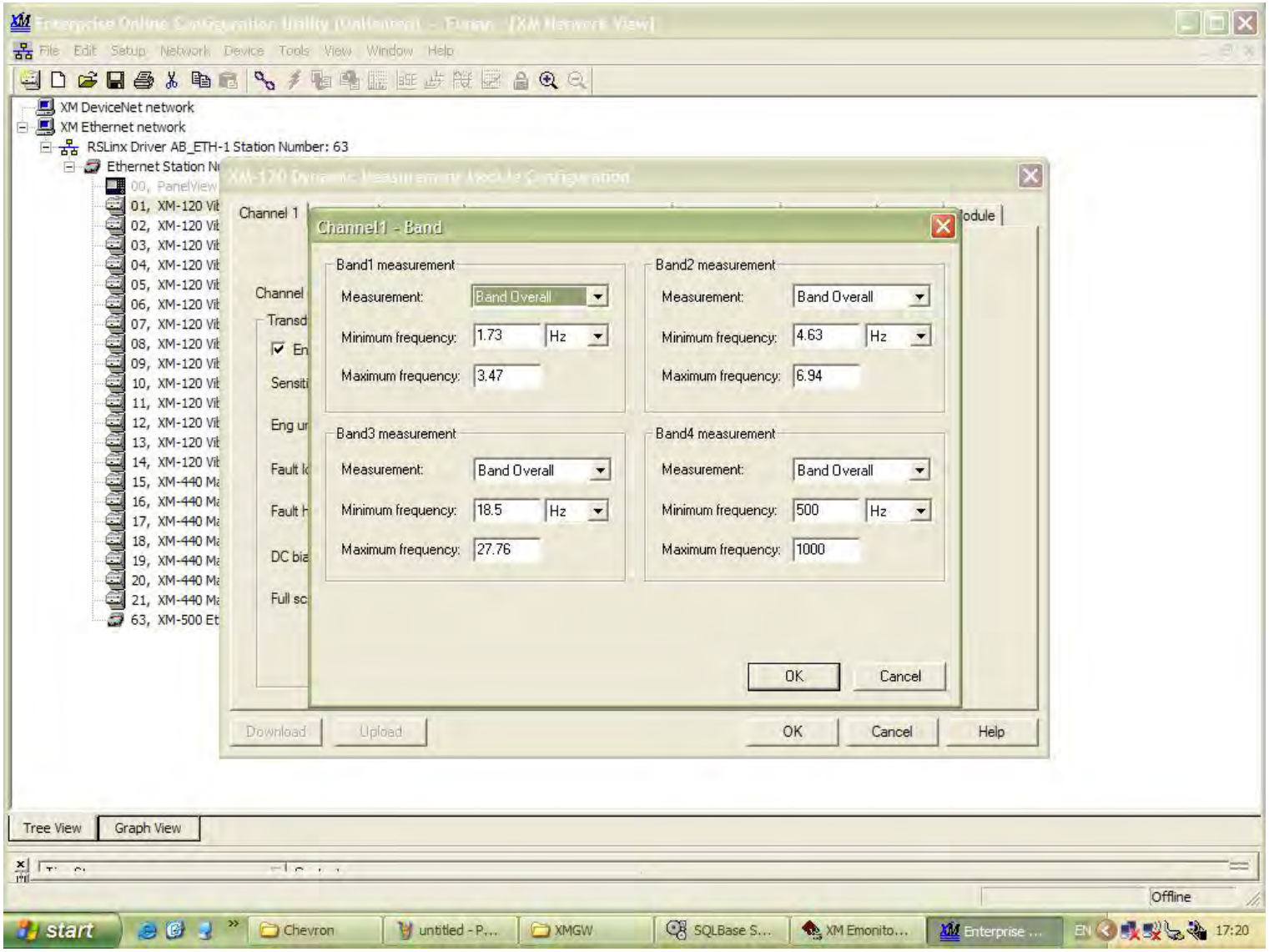


	Indicates an XM-500 network gateway module, either the Ethernet side or the DeviceNet side of the module
	Indicates an XM measurement or relay module
	Indicates an active XM measurement or relay module in communication with the Online Configuration Utility
	Indicates an active XM measurement or relay module that is in Program mode
	Indicates an XM measurement or relay module that appears in the Online Configuration Utility network configuration, but is not in communication with the Online Configuration Utility

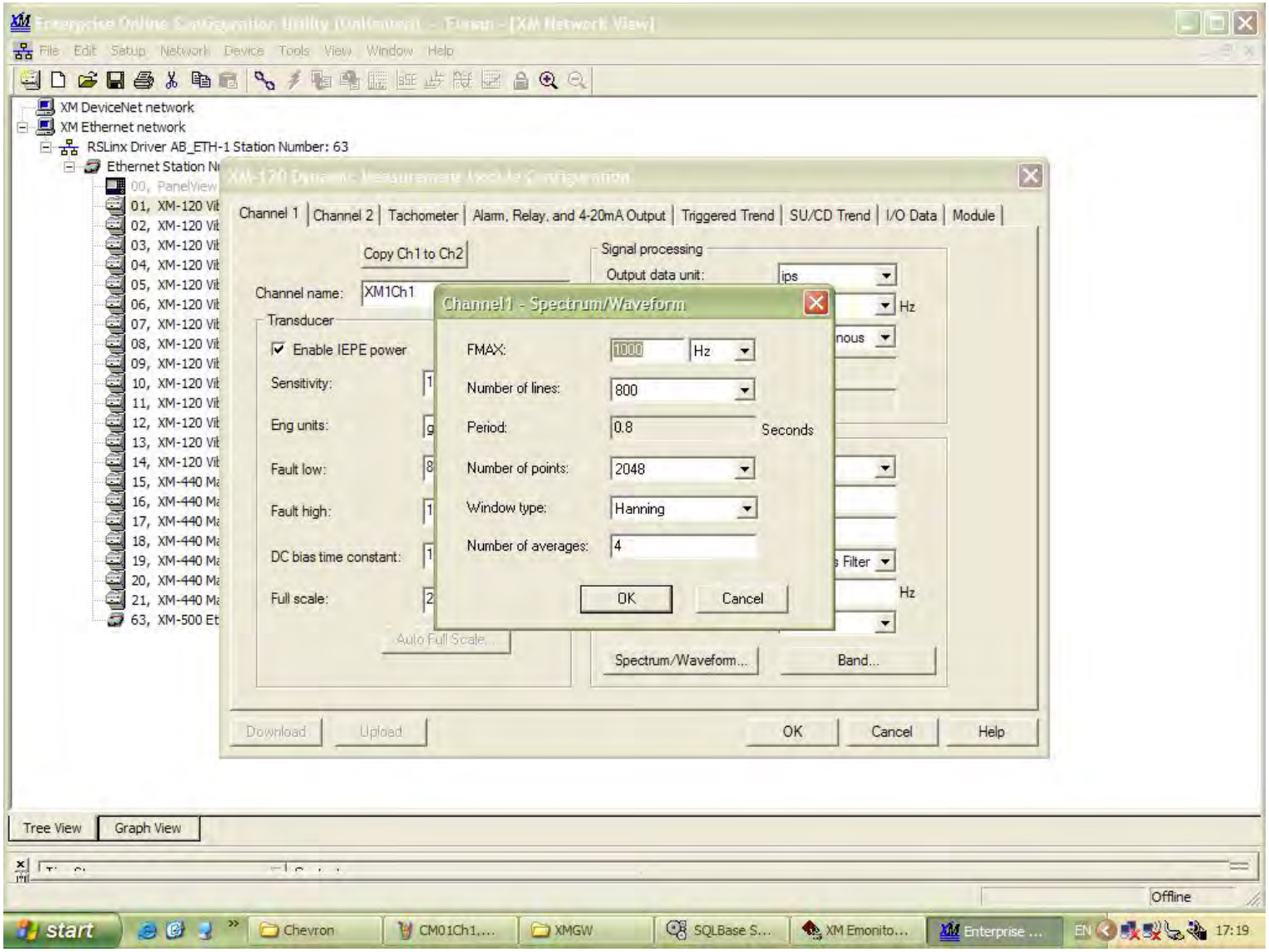
XM Configuration by XM Gateway



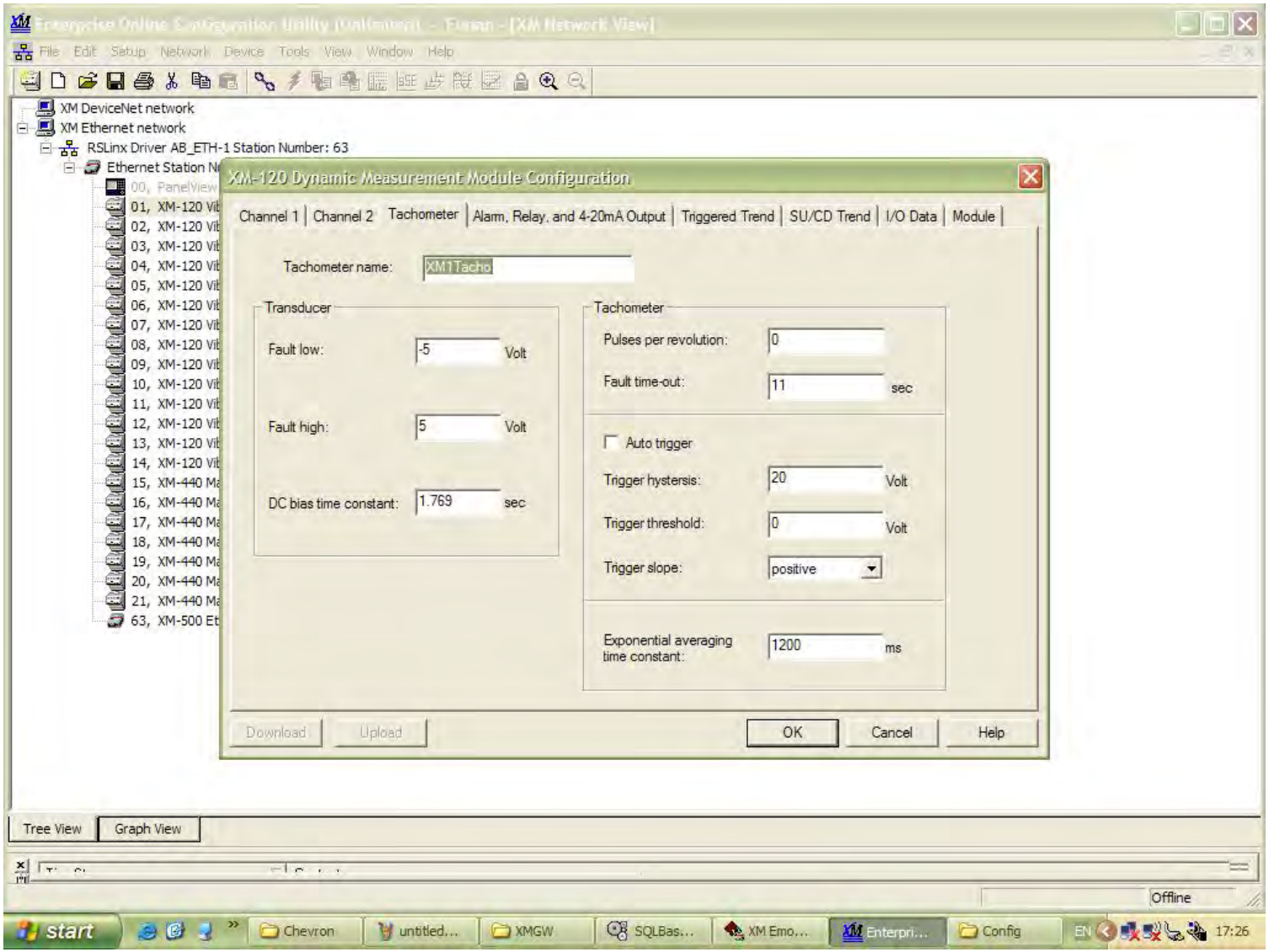
XM Configuration by XM Gateway



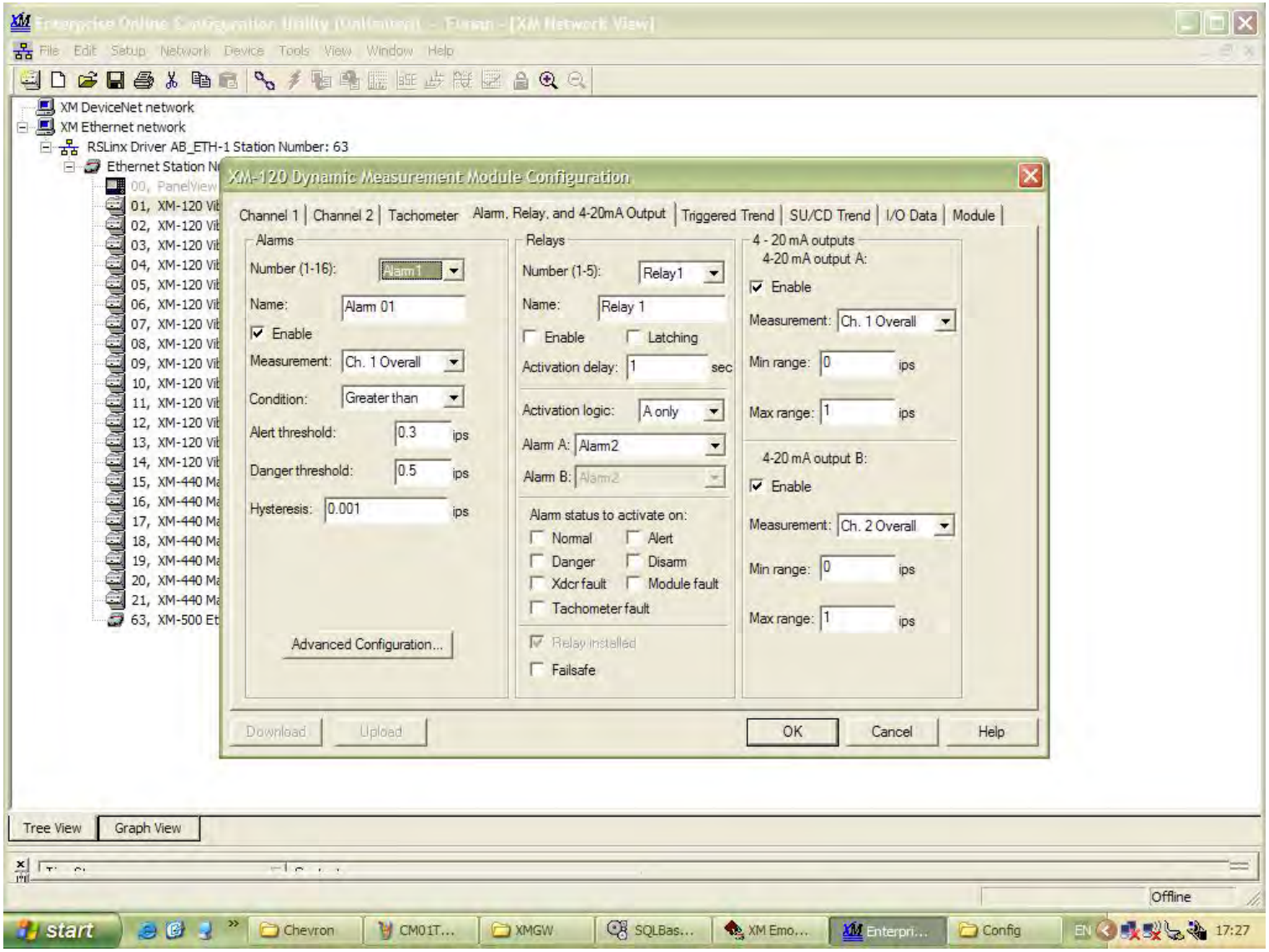
XM Configuration by XM Gateway



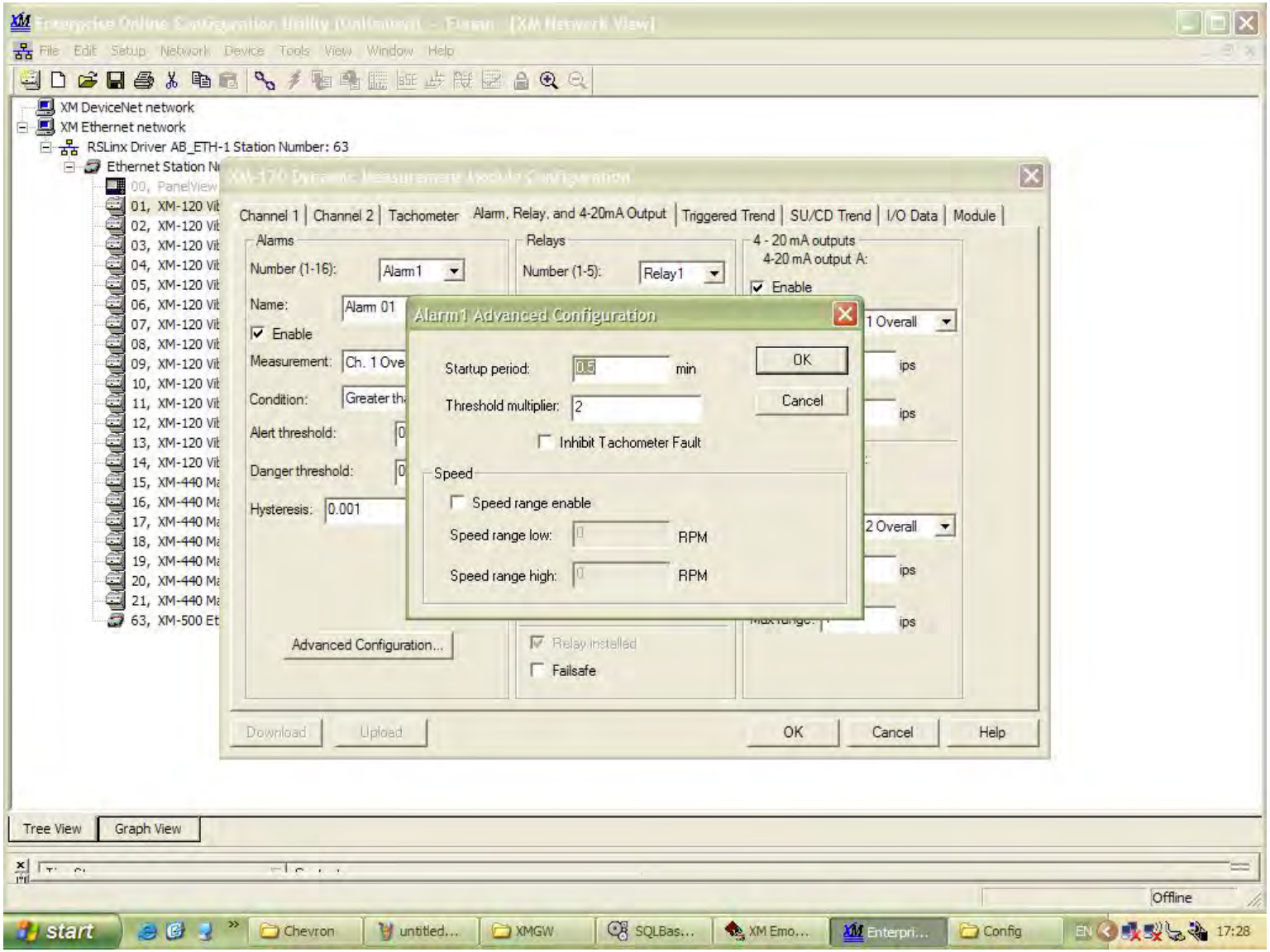
XM Configuration by XM Gateway



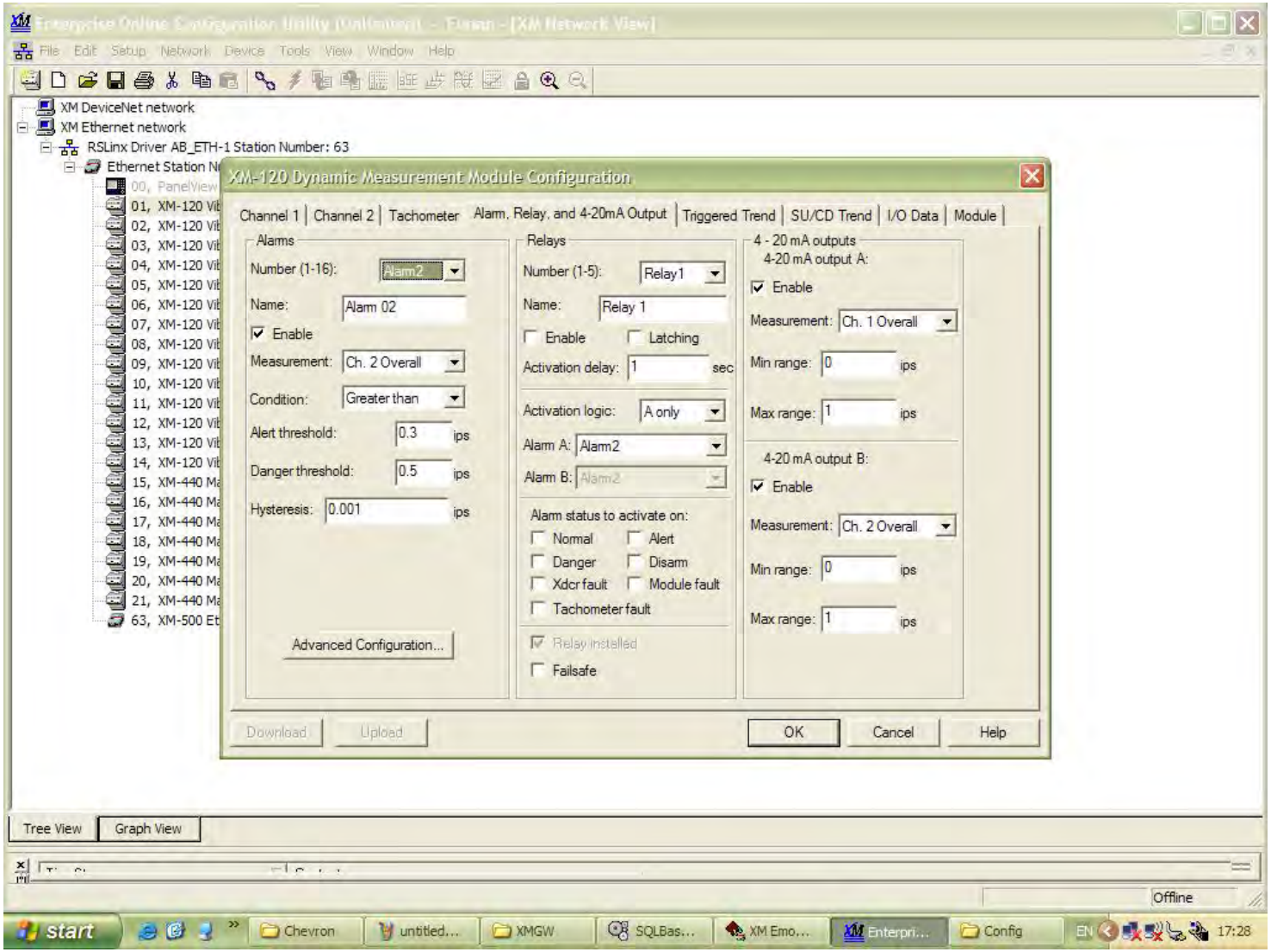
XM Configuration by XM Gateway



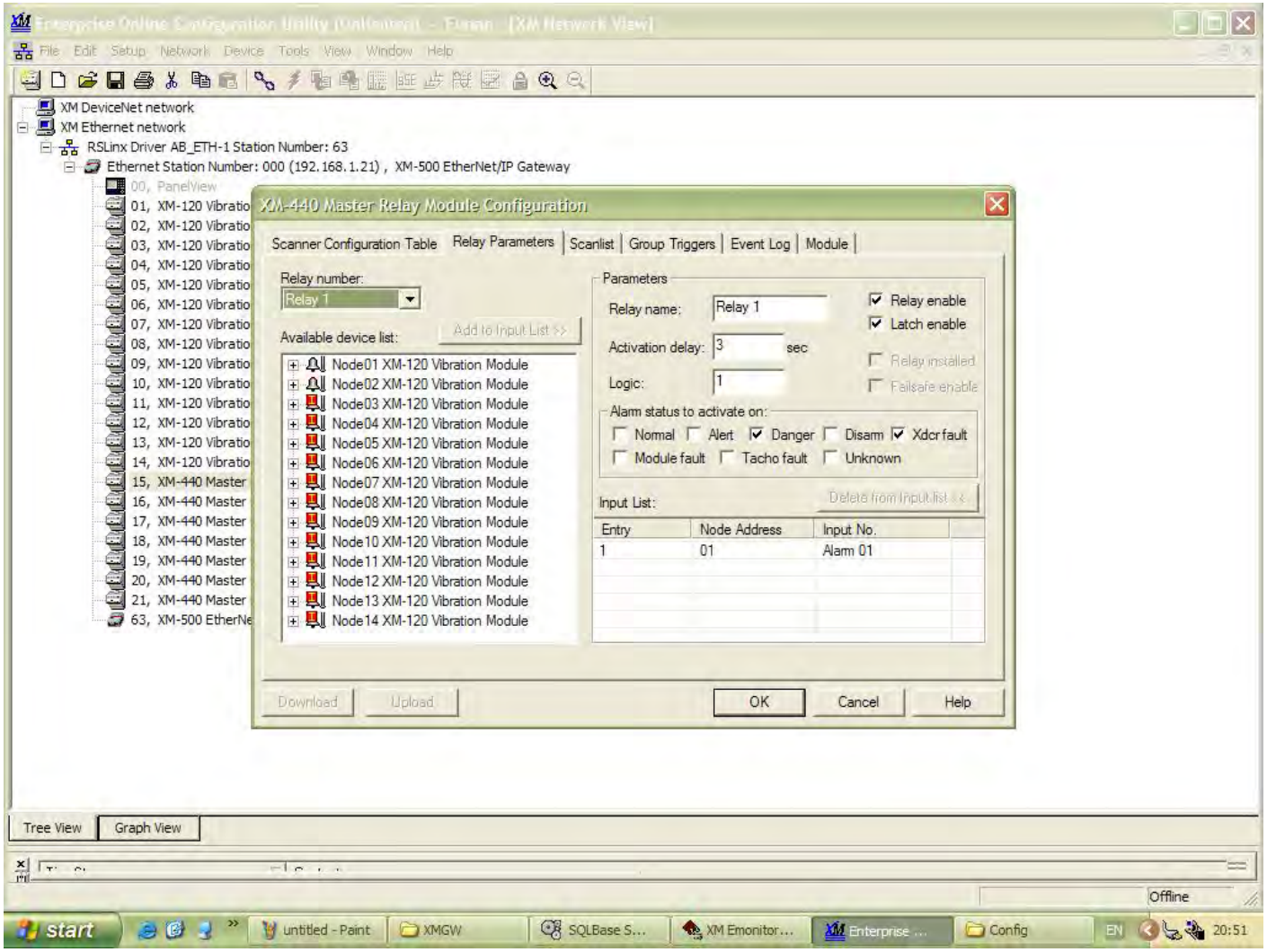
XM Configuration by XM Gateway



XM Configuration by XM Gateway



XM Configuration by XM Gateway



XM Configuration by XM Gateway