TEMPERATURE-PROCESS MONITOR

FEATURES

- Accepts RTD-T/C-Current-Voltage and Vibration Inputs
- Digital Readout in Degrees °C or °F or Engineering Units
- High Accuracy and Repeatability
- Readout linearization for three different types of inputs
- Single and Dual Setpoint Alarm and Shutdown

Vibration Input

Pressure/Voltage or Current Input

RTD or Thermocouple Input

AC Current Input

SERIES X80

RONAN

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INSTANT WARNING OF CRITICAL TEMPERATURE AND PROCESS CONTROL INPUT SIGNAL CHANGES

IMMEDIATELY

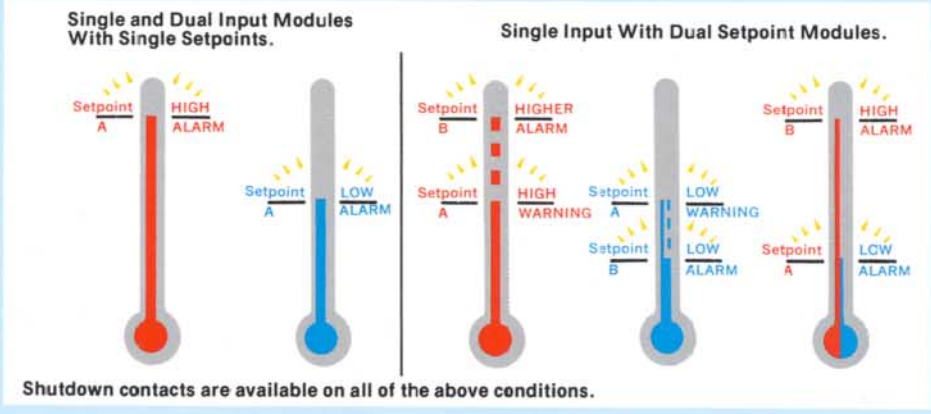
Sounds Audible Alarm
Identifies Alarm Source
Initiates Shutdown
Displays Temperature or
Control Signal Input
Displays Setpoint

MONITOR

Compressors and Pumps
Turbine and Motors
Process Temperatures
Process Control Signals
for Flow and Pressure Level
Strain Gages and Vibration

TYPICAL APPLICATION WITH TEMPERATURE MONITORING

New Dual Setpoint Modules may be mixed with Single Setpoint Modules to provide unequalled versatility for the monitoring and protection of valuable process equipment. The combinations possible are illustrated by the thermometers to the right.



The Ronan Series X80 Temperature and Process Alarm System is designed to monitor temperatues from Thermocouple and Resistance Bulb inputs, as well as engineering units from voltage and current sensors used in Industrial Process Applications.

The Model X80 may be supplied for standard flush mounting in Control Panels or standard EIA Relay Racks. The unit consists of a master module and a number of dual or single setpoint alarm and monitor modules. The sensor inputs are continuously monitored and compared against one or two preset levels. If either of the setpoint levels are exceeded, instant visual and audible warning is provided by variable rate flashing alarm windows and the sound of an external horn or buzzer.

Each input has set or trip points that may be adjusted on the individual front panels using multiturn infinite resolution potentiometers and readout on the digital panelmeter in the master module. The digital meter permits reading temperatures in degrees Celsius or Fahrenheit selectable by a front panel-mounted push-button switch. The engineering unit readout is automatically displayed and identified with a Suffix "E."

Each alarm monitor module is equipped with a shutdown relay contact output per setpoint allowing the control of single or multiple external circuits. The unique shutdown bypass switch in the master module, if depressed, prevents undesired shutdown during system start-up or the execution of the test sequence. The visual alarm of each monitored point follows the standard Ronan Alarm sequence as shown in the charts on page 5. Other alarm sequences are optionally available. Adjustable hysteresis on each setpoint further enhances the flexibility of the system in control applications, providing individual adjustment of the trip point reset.

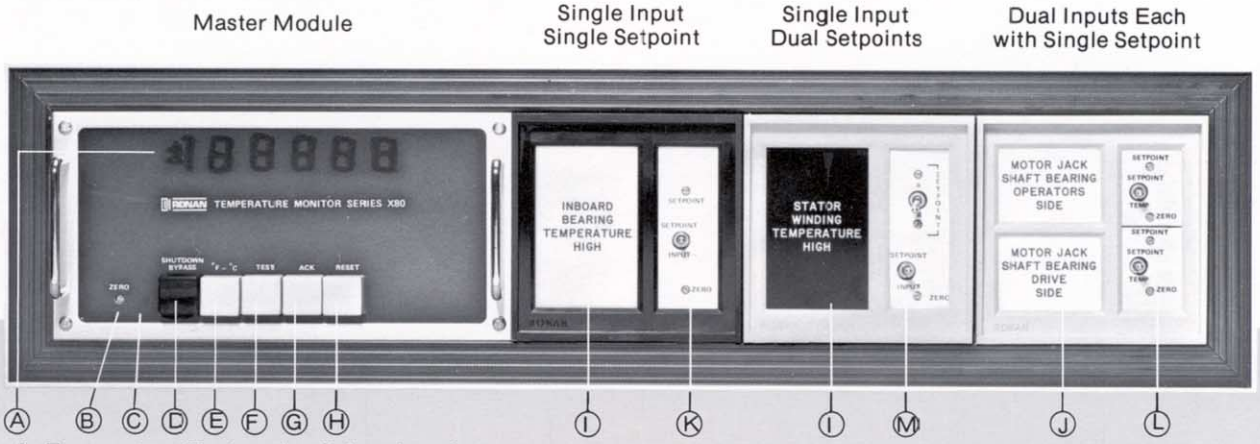
The thermocouple monitor module is designed for complete isolation between input and output and from the system's power supply, therefore normally grounded thermocouple sensors may be connected to the system without impairing the readout accuracy.

The master module contains, in addition to the four-digit panel meter, signal conditioning and linearization circuitry. The linearization amplifier optimizes the readout accuracy of nonlinear sensor inputs inherent in RTD and thermocouples. The master module is capable of accepting up to three different linearization amplifier modules. The system is powered from an unregulated external 24VDC power source or battery. The integral power inverter generates logic and reference voltages providing total systems isolation.

The Master Module's front panel-mounted push-buttons allow selection of °C or °F, Shutdown Bypass, Acknowledge of alarm and execution of Test to functionally simulate alarm conditions.

The modular construction permits complete flexibility in the number of inputs monitored plus the free arrangement of units high by units wide. The mounting may be flush mounted, or 19 inch EIA Relay Rack, as well as wall mounting in NEMA 4 or NEMA 12 type enclosures with safety glass window for front viewing and accessibility.

OPERATING CONTROLS AND INDICATORS



A. Temperature/Engineering Units—Setpoint
Digital-Readout with excellent readability.

B. Meter Zero Adjust
Permits precise screwdriver adjustment of the meter's electrical zero.

C. Shutdown Bypass Indicator
Flashing when Shutdown Bypass Pushbutton is depressed.

D. Shutdown Bypass Pushbutton (Maintained Type)
If depressed, prevents undesired shutdown.

E. °C - °F Pushbutton (Maintained Type)
Readout selector for degrees celsius or fahrenheit.

F. Test Pushbutton (Momentary Type)
Causes all alarm lamps to flash and horn to sound. Shutdown Bypass must be used prior to test.

G. Acknowledge Pushbutton (Momentary Type)
Causes flashing alarms to go to their acknowledged state and the horn to silence.

H. Reset Pushbutton
Used on systems supplied with alarm sequences requiring the reset function.

I. & J. Nameplates
Single Inputs — 1.50 inches wide x 2.45 inches high (3.81cm wide x6.22cm high)
Dual Inputs — 1.50 inches wide x 1.15 inches high (3.81cm wide x 2.92cm high)
Standard White (Colored and sandwich lenses available opticnally).

K. & L. Single and Dual Input Modules (with Single Setpoints)
Single and dual input modules may be set to indicate high alarm or low alarm conditions. The shutdown relay energizes when the alarm trips and remains energized during alarm condition (normally energized optional).

Input - Setpoint Switch
Up Position - Read setpoint setting on master module.
Center Position - Normal (spring return).
Down Position - Read input signal on master module.

Setpoint and Zero Adjustment
Jeweler's screwdriver adjustable infinite resolution multiturn potentiometer.

M. Single Input Module (with Dual Setpoints)
Dual setpoints may be set to indicate high/higher, low/lower or high and low alarm conditions. The shutdown relays energize when the associated alarm trips and remains energized during alarm condition. (Normally energized for fail safe operation optional).

Input - Set Point Switch
Up Position - Read setpoint setting on master module.
Center Position - Normal (spring return).
Down Position - Read input signal on master module.

Setpoint Selector Switch
Up Position - A setpoint.
Down Position - B setpoint.

Setpoint and Zero Adjustment
Jeweler's screwdriver adjustable infinite resolution multiturn potentiometer.

SHUTDOWN OR ALARM RELAY OPERATION

GENERAL — To avoid operation of the alarm or shutdown relays during test, the system is designed with a bypass interlock which requires operation of the bypass pushbutton before the test pushbutton will perform the test function.

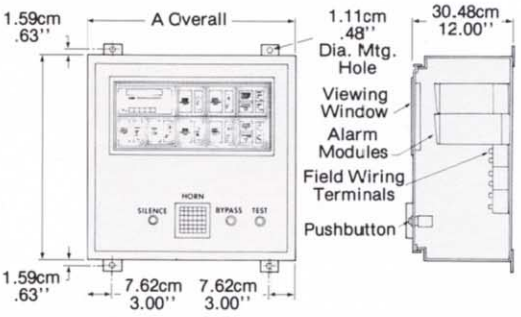
On dual setpoint modules when selecting which setpoint is used for high and low alarms, the "B" setpoint will operate with galloping flashing alarm lights independent of the state of "A" channel which may be normal. The "B" channel can be selected either for high or low setpoint in addition to higher of a high-higher alarm setting or lower of a low-lower alarm setting.

ORDERING INFORMATION — Standard systems are supplied as follows:

All relays deenergized in normal operating state. All relays when operated lock-in with alarm condition until acknowledged with system acknowledge pushbutton.

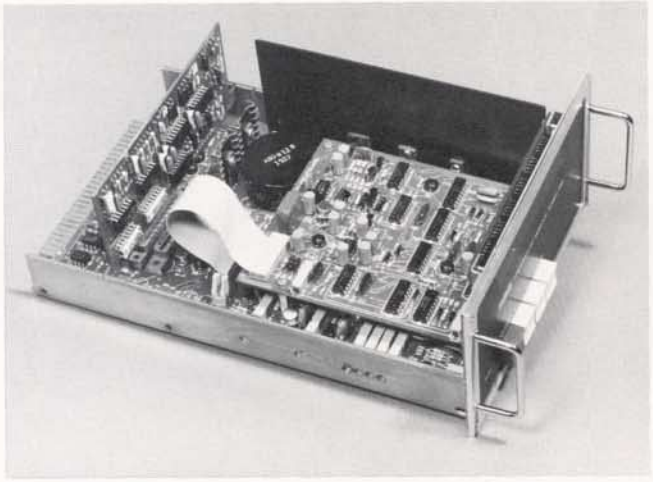
OPTIONAL — All relays energized in normal operating state. All relays when operated are non-lock-in and will remain deenergized only as long as alarm condition on the input exists. General Purpose or Hermetically Sealed relays available to meet electrical area classification required.

SPECIAL ENCLOSURES



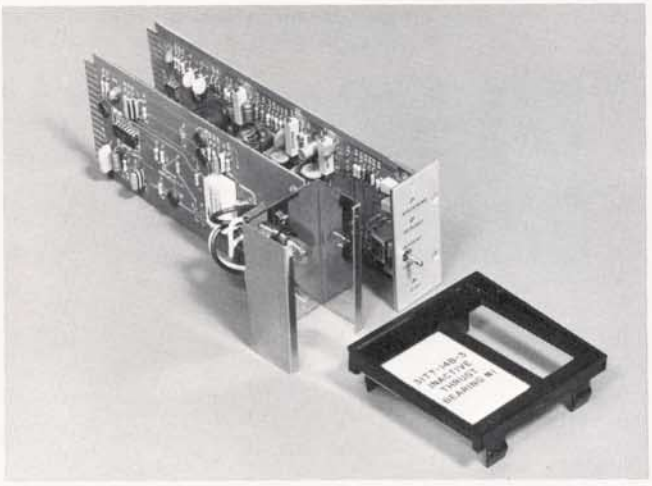
Systems available mounted in NEMA 4 or 12 enclosures suitable for wall mounting, or provided with front flange for flush mounting. Enclosures sized after equipment and accessories are specified. Standard finish - baked enamel grey.

MASTER MODULE



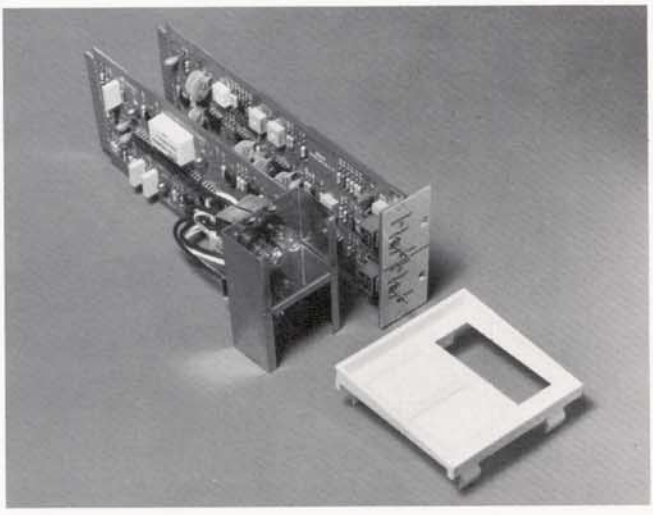
Plug-in design with option of linearizing up to three different types of input signals. Available with or without reset push-button.

SINGLE INPUT MODULE



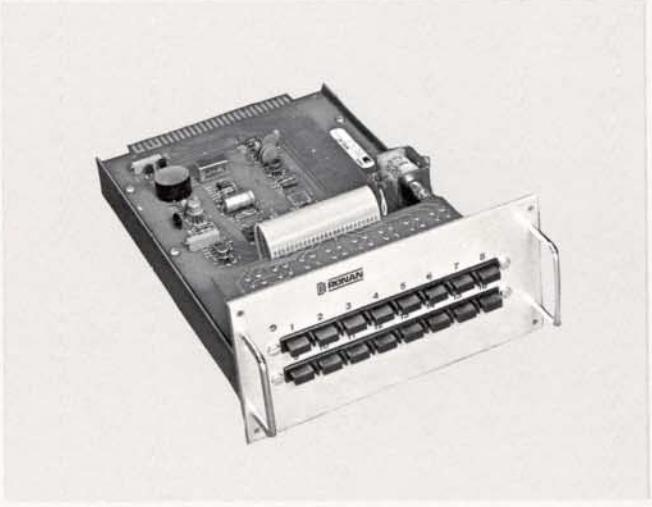
Available with single or dual setpoints for one input signal plus a selection of one of three alarm sequences. (A, AM or FD)

DUAL INPUT MODULE



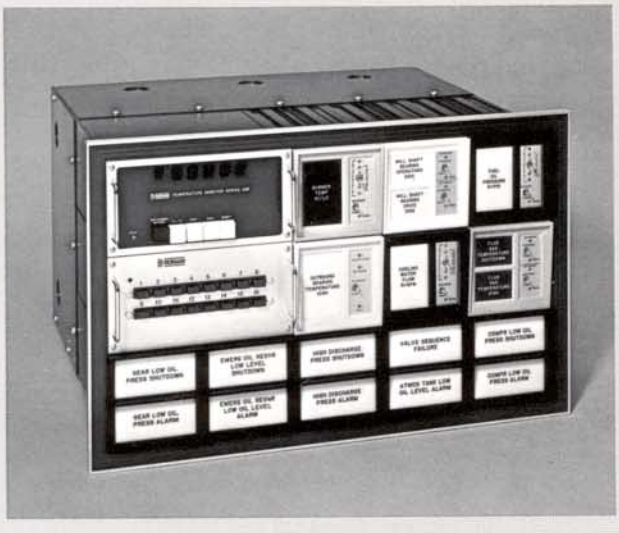
Available with single setpoint on each of the two input signals plus a selection of one of three alarm sequences. (A, AM or FD)

PUSHBUTTON SELECTOR MODULE



Available to handle sixteen inputs for any specified input signal.

HYBRID SYSTEMS



Ronan Series X2 Relay Alarms, Series X12 Solid State Alarms, Series X80-16 Switch Modules or Series LB Lamp Cabinets may be incoroporated into the X80 system.

The system pictured to the left incorporates an optional X80-16 switching module for "read only" indication of 16 channels. The six X80 modules shown provide "continuous " monitoring, alarm and shutdown capabilities in single and dual setpoint configurations. The X12 section in the bottom row will monitor 10 dry field contacts.

When ordering a system, it is important to specify locations of each unit to be housed in the Hybrid System plus the detailed information required for each subsection such as the alarm sequence and voltage inputs.

ALARM SEQUENCES

SINGLE OR DUAL INPUT — SINGLE SETPOINT "A" SEQUENCE

Signal Versus Setpoint	Operator Action	Alarm Lights	Horn	Shutdown Relay
Normal		Off	Off	Deenergized
Alarm		Flash	On	Energized
Alarm	Acknowledge	On	Off	Energized
Normal		Off	Off	Deenergized
Normal	Test	Flash	On	Deenergized
Normal	Acknowledge	Off	Off	Deenergized

TYPE	MODEL
Single Input, Single Setpoint	X80-500-SA-( )
Dual Input, Single Setpoint	X80-502-SA-( )

GP-General Purpose Relays
HS-Hermetically Sealed Relays

SINGLE INPUT — DUAL SETPOINT "DA" DUAL RATE FLASHING SEQUENCE

Signal Versus Setpoint		Operator Action	Alarm Lights	Horn	Shutdown Or Alarm Relays	
A Setpoint	B Setpoint				Setpoint	Setpoint
Normal	Normal		Off	Off	Deenergized	Deenergized
Alarm	Normal		Slow Flashing	On	Energized	Deenergized
Alarm	Normal	Acknowledge	Steady On	Off	Energized	Deenergized
Alarm	Alarm		Galloping Flashing	On	Energized	Energized
Alarm	Alarm	Acknowledge	Fast Flashing	Off	Energized	Energized
Alarm	Normal		Steady On	Off	Energized	Deenergized
Normal	Normal		Off	Off	Deenergized	Deenergized
Normal	Normal	Test	Galloping Flashing	On	Deenergized	Deenergized
Normal	Normal	Acknowledge	Off	Off	Deenergized	Deenergized

TYPE	MODEL
Single Input, Dual Setpoints	X80-500-DA-( )

GP-General Purpose Relays
HS-Hermetically Sealed Relays

SINGLE OR DUAL INPUT — SINGLE SETPOINT "AM" MANUAL RESET SEQUENCE

Signal Versus Setpoint	Operator Action	Alarm Lights	Horn	Shutdown Relay
Normal		Off	Off	Deenergized
Alarm		Flash	On	Energized
Alarm	Acknowledge	On	Off	Energized
Normal	Reset	Off	Off	Deenergized
Normal	Test	Flash	On	Deenergized
Normal	Acknowledge	On	Off	Deenergized
Normal	Reset	Off	Off	Deenergized

TYPE	MODEL
Single Input, Single Setpoint	X80-500-AM-( )
Dual Input, Single Setpoint	X80-502-AM-( )

GP-General Purpose Relays
HS-Hermetically Sealed Relays

SINGLE OR DUAL INPUT — SINGLE SETPOINT "FD" FIRST ALERT SEQUENCE

Signal Versus Setpoint	Operator Action	Alarm Lights	Horn	Shutdown Relay
Normal		Off	Off	Deenergized
Alarm (First)		Fast Flashing	On	Energized
Alarm (First)	Acknowledge	Fast Flashing	Off	Energized
Alarm (First)	Reset	On	Off	Energized
Return to Normal (First)		Off	Off	Deenergized
Alarm (Subsequent Before First Alarm Reset)		Slow Flashing	On	Energized
Alarm (Subsequent)	Acknowledge	On	Off	Energized
Return to Normal (Subsequent)		Off	Off	Deenergized
Normal	Test	Fast Flashing	On	Deenergized

TYPE	MODEL
Single Input, Single Setpoint	X80-500-FD-( )
Dual Input, Single Setpoint	X80-502-FD-( )

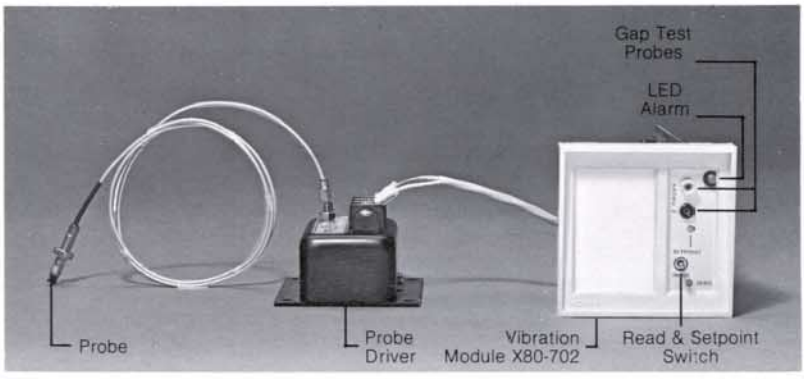
GP-General Purpose Relays
HS-Hermetically Sealed Relays

Note:
After First Alert is reset, the first subsequent alarm will alarm with fast flashing alarm lights.

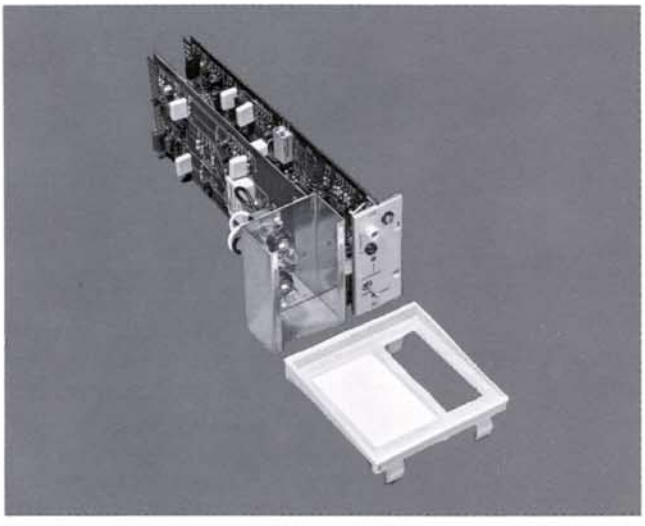
Any number of first-out groups can be used in one system by connecting together the respective "ME" terminals for each group.

VIBRATION MONITOR

Vibration monitored by dependable eddy-circuit principle instrumentation using industrial type probes and probe driver modules. The Eddy Probe Driver provides a DC voltage proportional to the distance of the probe tip from the shaft metal surface. This output is connected to the X80-702 input module and is used to measure the instantaneous or average position of a rotating machine shaft. In addition, the AC component of the input signal is used to measure the peak to peak vibration in mils.

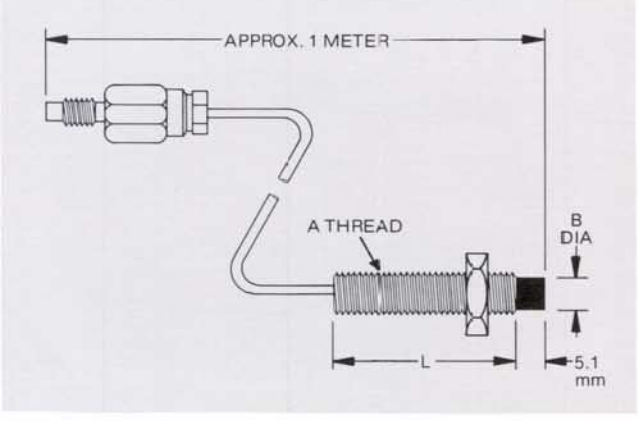


INPUT MODULE X80-702



- Module output voltage - 24VDC (to eddy probe driver).
- Digital meter indicates peak-peak displacement in mils.
- Single setpoint calibrated in peak-peak mils.
- Front panel test points provided for monitoring DC voltage proportional to gap.
- LED indicator provided to monitor probe within standard working range of 10 to 80 mils or 10 to 100 mils gap plus loss of DC signal due to power supply failure, malfunction in probe or probe driver module.
- Input module supplied with an adjustable time delay of 0 to 5 seconds.
- Any of three alarm modules available complete with alarm or shutdown relay.

PROBE DETAILS



MECHANICAL SPECIFICATIONS

Connector	Stainless steel, Weatherproof, sealable, 10-32 threads.
Cable	Co-axial with Teflon® insulation. High tensile and flexural strength.
Mounting	Any position. 0.3-inch clearance around probe tip recommended to maintain factory calibration.

Contact factory for information on armored probe cables.

MODEL M60 PROBES

PROBE CASE	A THD	B DIA	L DIMENSION
M60-1			3cm (1.18")
M60-2			12cm (4.72")
M60-3	3/8-24	8mm	23cm (9.06")
M60-4	UNF 2A		6.35cm (2.50")
M60-5			1.9 cm (.75")
M60-6			15.24cm (6")

MODEL M61 PROBES

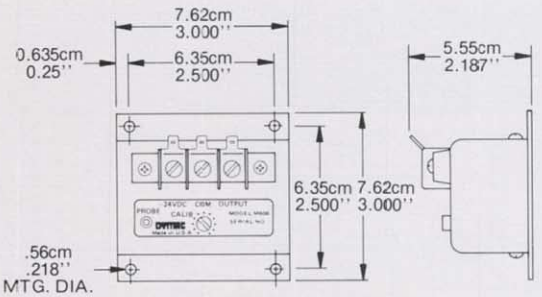
PROBE CASE	A THD	B DIA	L DIMENSION
M61-1			3cm (1.18")
M61-2			12cm (4.72")
M61-3	1/4-28	5mm	23cm (9.06")
M61-4	UNF 2A		6.35cm (2.50")
M61-5			1.9 cm (.75")
M61-6			15.24cm (6")

EXTENSION CABLE

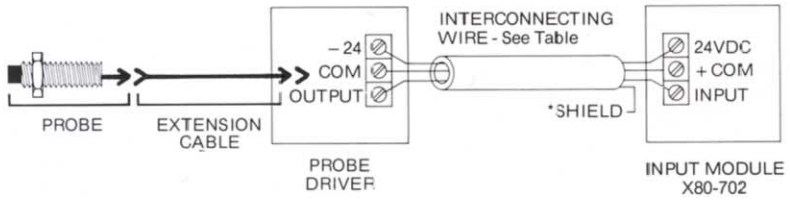
Cable..... Co-axial with Teflon® insulation. High tensile and flexural strength.
Impedance... 75 ohms
Connectors... Sealable. 10-32 thread, 7/32 hex.
Size..... Std. length 4.25 meters ±0.25 meter (14 feet ±1 foot)
O.D. 2.67mm (0.105 in.)
Maximum distance between Probe and Driver is approximately 5.2 meters (17 ft.)

Consult factory for information on armored leads.

PROBE DRIVER DETAILS



INTERCONNECTION DIAGRAM



WIRE SIZE (AWG)	DISTANCE (MAX)
22	1000FT
20	2000FT
16	5000FT

USE 3-CONDUCTOR TWISTED WIRE, SHIELDED.

*SHIELD MAY BE GROUNDED TO ANY OF THE FOLLOWING POINTS BUT USUALLY IS NOT GROUNDED AT BOTH ENDS.
1. MONITOR CHASSIS GROUND SCREW.
2. MONITOR CIRCUIT GROUND COM TERMINAL.
3. DRIVER CHASSIS. (MACHINERY GROUND)
4. FACILITY INSTRUMENTATION "EARTH" GROUND.

SPECIFICATIONS

Usable Range (M60)..... 10 to 100 mil
Usable Range (M61)..... 10 to 85 mil

Frequency Range.... Static to 600,000 cpm (cycles/min) down 3 dB at 600,000 cpm

Sensitivity*..... 200mV/mil

Note: M60 Sensitivity is down 5% at 200°F and 10% at 300°F. M61 sensitivity is down 10% at 200°F and 25% at 300°F.

Linearity*.... ±1 mil of best straight line from 10 to
(M60/M600) 90 mil gap. ± 5% of 200 mV/mil, sensitivity from 10 to 90 mil absolute gap (–24V supply). ±7% of 200 mV/mil sensitivity from 20 to 70 mil absolute gap (–18V supply)

Linearity*.... ±0.5 mil of best straight line from 10 to
(M61/M606) 80 mil gap. ±5% of 200 mV/mil, sensitivity from 10 to 80 mil absolute gap (–24V supply). ±7% of 200 mV/mil sensitivity from 20 to 70 mil absolute gap (–18V supply)

Driver Output

Impedance..... 30 ohms
Current..... 10 mA
Voltage..... Nominal 200mV/mil Maximum output: –21V with –24V supply; –14V with –18V supply.

Interchangeability... Probes of the same model number may be interchanged, and drivers of the same model number may be interchanged, with less than 5% performance change, without recalibration. (Trim calibration adjustment on driver unit allows duplication of exact characteristics after replacement.)

Environmental

Operating Temperature Range

Probe and Cable..... –34°C to +177° C (–30°F to +350°F)

Driver..... –34°C to +93°C (–30°F to +200°F)

Storage Temperature Range

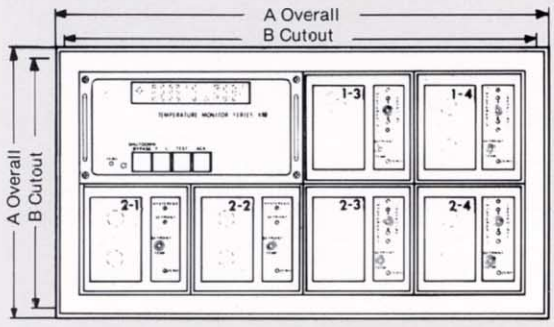
Probe and Cable..... –43°C to +177° C (–45°F to +350°F)

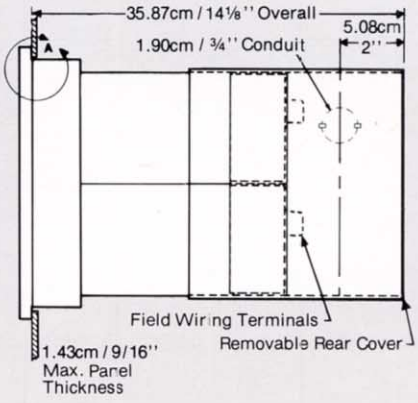
Driver..... –43°C to +93°C (–45°F to +200°F)

*4140 steel target. (Sensitivity is directly proportional to conductivity of target material.)

DIMENSIONAL INFORMATION

FLUSH MOUNTING MODEL X80-1005



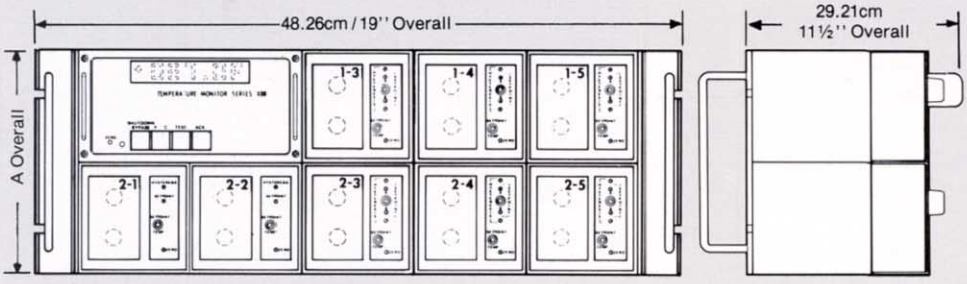


Number of Alarm Cabinets High or Wide	A Overall	B Cutout
1	5.00"/ 12.70cm	4.38"/ 11.11cm
2	8.50"/ 21.95cm	7.88"/ 20.00cm
3	12.00"/ 30.48cm	11.38"/ 28.89cm
4	15.50"/ 39.37cm	14.88"/ 37.78cm
5	19.00"/ 48.26cm	18.38"/ 46.67cm
6	22.50"/ 57.15cm	21.88"/ 55.56cm
7	26.00"/ 66.04cm	25.38"/ 64.46cm
8	29.50"/ 74.93cm	28.88"/ 73.34cm
9	33.00"/ 83.82cm	32.50"/ 82.55cm
10	36.50"/ 92.71cm	36.00"/ 91.44cm
11	40.00"/101.60cm	39.50"/100.33cm
12	43.50"/110.49cm	43.00"/109.22cm

Note: Not limited to 12 Cabinet Modules high or wide.

ORDERING INFORMATION
┌─UNITS HIGH
┌─UNITS WIDE
24 X8-1005

RELAY RACK MOUNTING MODEL X80-1011RR

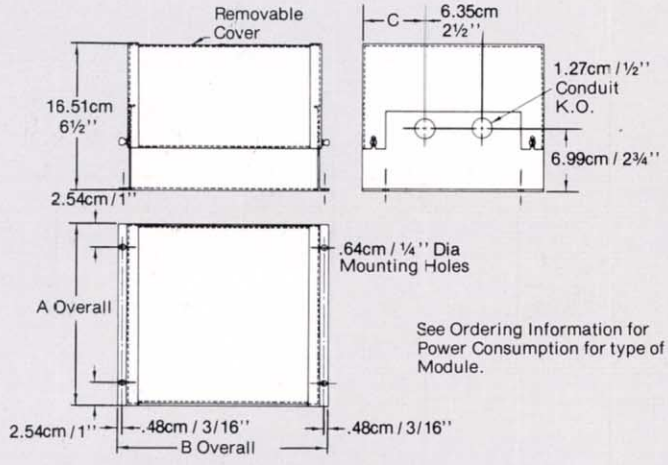


Number of Alarm Cabinet Modules		A Overall
High	Wide	
1	5	3.50"/ 8.89cm
2	5	7.00"/17.78cm
3	5	10.50"/26.67cm
4	5	14.00"/35.56cm
5	5	17.50"/44.46cm
6	5	21.00"/53.34cm
7	5	24.50"/62.23cm
8	5	28.00"/71.12cm
9	5	31.50"/80.01cm
10	5	35.00"/88.90cm

Note: Not limited to 10 Cabinet Modules high. Also available for 24 inch RETMA Cabinets.

ORDERING INFORMATION
┌─UNITS HIGH
┌─UNITS WIDE
25 X80-1011R

POWER SUPPLIES



See Ordering Information for Power Consumption for type of Module.

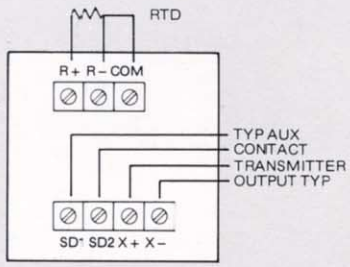
Power Supplies			
Model	A	B	C
115-24-125	6"/15.24cm	9¼"/23.50cm	1¾"/4.45cm
115-24-250	6"/15.24cm	9¼"/23.50cm	1¾"/4.45cm
115-24-375	6"/15.24cm	9¼"/23.50cm	1¾"/4.45cm
115-24-500	8"/20.32cm	10⅛"/25.72cm	2¾"/6.99cm
115-24-750	8"/20.32cm	10⅛"/25.72cm	2¾"/6.99cm

Wattage Rating
Output Voltage DC
Input Voltage AC

Note: For other output voltages please consult factory.

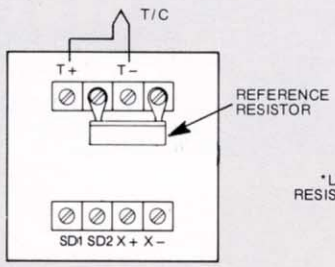
TERMINAL ARRANGEMENTS

SINGLE INPUT — SINGLE SETPOINT MODULES



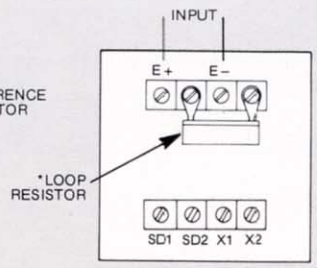
RTD MONTOR

X80-300-9 X80-300-100
X80-300-10 X80-300-120



THERMOCOUPLE MONITOR

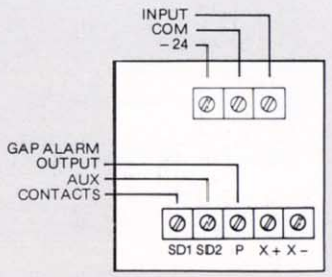
X80-310-E X80-310-T
X80-310-J X80-310-R
X80-310-K X80-310-S



ENGINEERING UNITS

*X80-320-MV *X80-320-05
X80-320-420 *X80-320-15
X80-320-1050 *X80-320-010

*OMIT ON MV AND DC INPUTS

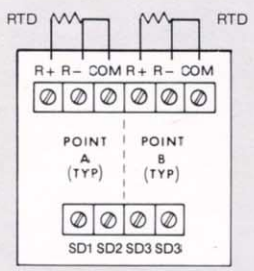


VIBRATION MONTOR

X80-702

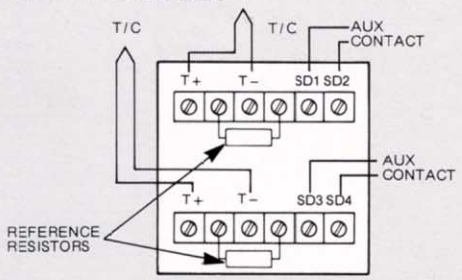
Note: Transmitter X80-600-TM Outputs Use Terminals X+ and X–.

DUAL INPUT — SINGLE SETPOINT MODULES



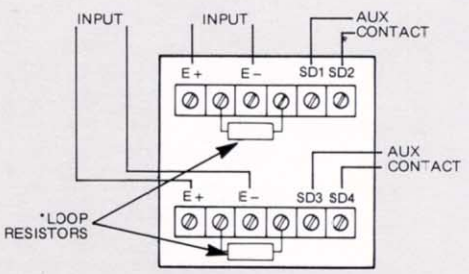
RTD MONTOR

X80-302-9 X80-302-100
X80-302-10 X80-302-120



THERMOCOUPLE MONITOR

X80-312-E X80-312-T
X80-312-J X80-312-R
X80-312-K X80-312-S

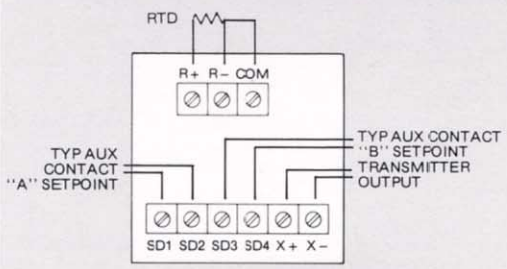


ENGINEERING UNITS

*X80-320-MV *X80-320-05
X80-320-420 *X80-320-15
X80-320-1050 *X80-320-010

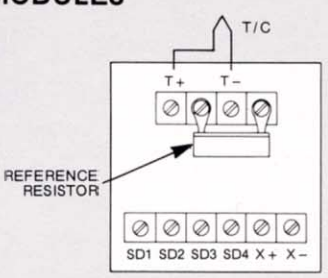
*OMIT ON MV AND DC INPUTS

SINGLE INPUT — DUAL SETPOINT MODULES



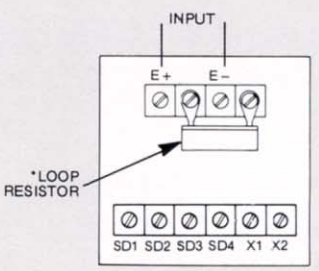
RTD MONTOR

X80-400-9 X80-400-100
X80-400-10 X80-400-120



THERMOCOUPLE MONITOR

X80-410-E X80-410-T
X80-410-J X80-410-R
X80-410-K X80-410-S



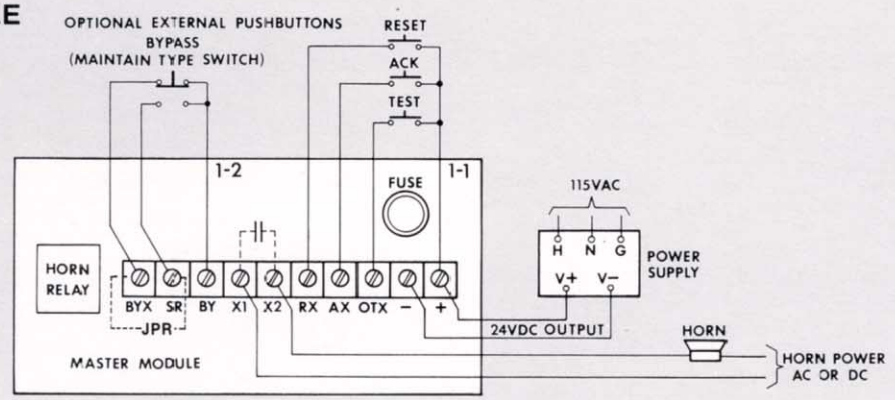
ENGINEERING UNITS

*X80-420-MV *X80-420-05
X80-420-420 *X80-420-15
X80-420-1050 *X80-420-010

*OMIT ON MV AND DC INPUTS

Note: Transmitter X80-600-TM Outputs Use Terminals X+ and X–.

MASTER MODULE



ORDERING INFORMATION

CHASSIS

Units High—Flush Mounting Cabinet
—1 or More Units High

Units High—Relay Rack Mounting Cabinet
—1 or More Units High

Units Wide—Flush Mounting Cabinet
—2 or More Units Wide

Units Wide—Relay Rack Mounting Cabinet
—5 Only

Note: Master Module occupies a 1H x 2W position within the cabinet.

( )( ) **X80-1005**
Flush Mounting Cabinet

( )( ) **X80-1011RR**
Relay Rack Mounting Cabinet

MASTER MODULE

MODEL X80-100A (Less Reset Pushbutton)

Temperature Range: – 460° to 3000°F
Engineering Units: 0 to ± 4000 or 0.00 to ± 40.00

MODEL X80-100B (with Reset Pushbutton)

Temperature Range: – 460° to 3000°F
Engineering Units: 0 to ± 4000 or 0.00 to ± 40.00

LINEARIZING BOARDS

One to Three Maximum per Master Module.

Model	Description	Range
X80-200-100	100 Ohm Platinum RTD	– 300°F to 1000°F
X80-200-120	120 Ohm Nickel RTD	– 50°F to 550°F
X80-200-E	T/C Type-E Chromel Constantan	– 50°C to 1000°C
X80-200-J	T/C Type-J Iron Constantan	– 50°C to 760°C
X80-200-K	T/C Type-K Chromel-Alumel	– 50°C to 1100°C
X80-200-R	T/C Type-R Platinum-13% Rhodium/Platinum	+ 250°C to 1750°C
X80-200-S	T/C Type-S Platinum-10T Rhodium/Platinum	+ 150°C to 1750°C
X80-200-T	T/C Type-T Copper-Constantan	– 170°C to 370°C
X80-200-EU	Engineering Units - All Standard Inputs 4-20 Ma, 10-50 Ma, 1-5VDC, 0-5VDC, 0-10VDC	0 to ± 4000 or 0.00 to ± 40.00

Note: Copper RTD's do not need a linearizing amplifier module.

INPUT MODULE

(Single Setpoint — One Input Channel per Chassis Position.)

Model No.	Input	Range
X80-300-9	9 Ohm Copper RTD	0°F to 300°F
X80-300-10	10 Ohm Copper RTD	
X80-300-100	100 Ohm Platinum RTD	See Linearizing Boards for Maximum Range
X80-300-120	120 Ohm Nickel RTD	
X80-310-E	T/C Type-E Chromel-Constantan	
X80-310-J	T/C Type-J Iron-Constantan	
X80-310-K	T/C Type-K Chromel-Alumel	
X80-310-R	T/C Type-R Platinum-13% Rhodium/Platinum	
X80-310-S	T/C Type-S Platinum-10% Rhodium/Platinum	
X80-310-T	T/C Type-T Copper Constantan	
X80-320-MV	MV (Specify Range)	Specify Readout Range e.g. 4 Ma input = 0 20 Ma input = 3,000
X80-320-420	4-20 Ma	
X80-320-1050	10-50 Ma	
X80-320-05	0-5VDC	
X80-320-15	1-5VDC	
X80-320-010	0-10VDC	

INPUT MODULE

(Single Setpoint — Two Input Channels per Chassis Position.)

Model No.	Input	Range
X80-302-9	9 Ohm Copper RTD	0°F to 300°F
X80-302-10	10 Ohm Copper RTD	
X80-302-100	100 Ohm Platinum RTD	See Linearizing Boards for Maximum Range
X80-302-120	120 Ohm Nickel RTD	
X80-302-E	T/C Type-E Chromel-Constantan	
X80-312-J	T/C Type-J Iron-Constantan	
X80-312-K	T/C Type-K Chromel-Alumel	
X80-312-R	T/C Type-R Platinum-13% Rhodium/Platinum	
X80-312-S	T/C Type-S Platinum-1% Rhodium/Platinum	
X80-312-T	T/C Type-T Copper Constantan	
X80-322-MV	MV (Specify Range)	Specify Readout Range e.g. 4 Ma input = 0 20 Ma input = 3,000
X80-322-420	4-20 Ma	
X80-322-1050	10-50 Ma	
X80-322-05	0-5VDC	
X80-322-15	1-5VDC	
X80-322-010	0-10VDC	

INPUT MODULES

(Dual Setpoint — One Channel per Chassis Position.)

Model No.	Input	Range
X80-400-9	9 Ohm Copper RTD	0°F to 300°F
X80-400-10	10 Ohm Copper RTD	
X80-400-100	100 Ohm Platinum RTD	See Linearizing Boards for Maximum Range
X80-400-120	120 Ohm Nickel RTD	
X80-410-E	T/C Type-E Chromel-Constantan	
X80-410-J	T/C Type-J Iron-Constantan	
X80-410-K	T/C Type-K Chromel-Alumel	
X80-410-R	T/C Type-R Platinum-13% Rhodium/Platinum	
X80-410-S	T/C Type-S Platinum-10% Rhodium/Platinum	
X80-410-T	T/C Type-T Copper-Constantan	
X80-420-MV	MV (Specify Range)	Specify Readout Range e.g. 4 Ma input = 0 20 Ma input = 3,000
X80-420-420	4-20 Ma	
X80-420-05	0-5VDC	
X80-420-15	1-5VDC	
X80-420-010	0-10VDC	

Notes: (Apply for both Single and Dual Setpoint Input Modules.) T/C Module with Upscale Burn-Out Standard. Optional Downscale Burn-Out must be specified. RTD Module Upscale Burn-Out standard. Use Dual Module with Low Setpoint for Short Detection on RTD Modules. Hysterisis Adjustment 18°F Maximum. (Other values optional.) All Inputs isolated from 24VDC power except RTD Modules.

VIBRATION MODULE:

Model X80-702

Specify sensitivity of probe and driver Mv/mil.
- Peak to peak setpoint range.
- Gap if other than 10 to 80 mils.

Verify standard power supply voltage of −22 to −24VDC is acceptable. If not, specify voltage required.

ALARM MODULES

Model	Description
X80-500-SA-(*)	One Single Setpoint with N.O. or N.C. Contact Output (Field Selectable) "A" Sequence
X80-502-SA-(*)	Two Single Setpoint with N.O. or N.C. Contact Output on each point (Field Selectable) "A" Sequence
X80-500-AM-(*)	One Single Setpoint with N.O. or N.C. Contact Output (Field Selectable) "AM" Manual Reset Sequence
X80-502-AM-(*)	Two Single Setpoint with N.O. or N.C. Contact Output on each point (Field Selectable) "AM" Manual Reset Sequence
X80-500-FD-(*)	One Single Setpoint with N.O. or N.C. Contact Output (Field Selectable) "FD" First Alert Sequence
X80-502-FD-(*)	Two Single Setpoint with N.O. or N.C. Contact Output on each point (Field Selectable) "FD" First Alert Sequence
X80-500-DA-(*)	One Dual Setpoint with N.O. or N.C. Contact Outputs at each setting "DA" Dual Rate Flashing Sequence

* GP-General Purpose Relays
* HS-Hermetically Sealed Relays

Notes: See Page 3 for relay functions options.
See Specifications for relay contact rating.

TRANSMITTER

(Use with Single or Dual Setpoint Units. One Per Chassis Position Only.)

Model	Description
X80-600-TM	All Standard listed Inputs. 4 to 20 Ma Output Input to Output Isolation Standard

16-POINT SELECTOR SWITCH MODULE:

Model No.	Input	Range
X80-16-9	9 Ohm Copper RTD	0°F to 300°F
X80-16-10	10 Ohm Copper RTD	
X80-16-100	100 Ohm Platinum RTD	See Linearizing Boards for Maximum Range
X80-16-120	120 Ohm Nickel RTD	
X80-16-E	T/C Type-E Chromel-Constantan	
X80-16-J	T/C Type-J Iron-Constantan	
X80-16-K	T/C Type-K Chromel-Alumel	
X80-16-R	T/C Type-R Platinum-13% Rhodium/Platinum	
X80-16-S	T/C Type-S Platinum-10% Rhodium/Platinum	
X80-16-T	T/C Type-T Copper Constantan	
X80-16-MV	MV (Specify Range)	Specify Readout Range e.g. 4 Ma input = 0 20 Ma input = 3,000
X80-16-420	4-20 Ma	
X80-16-1050	10-50 Ma	
X80-16-05	0-5VDC	
X80-16-15	1-5VDC	
X80-16-010	0-10VDC	

Note: Each System requires one Interface Module X80-16-IF to disengage the input to the Master Module when reading temperatures and setpoints of X80 Input Modules.

POWER SUPPLIES

Model No.	Rating
115-24-125	115VAC Input 24VDC Power Output-125 Watts
115-24-250	115VAC Input 24VDC Power Output-250 Watts
115-24-375	115VAC Input 24VDC Power Output-375 Watts
115-24-500	115VAC Input 24VDC Power Output-500 Watts
115-24-750	115VAC Input 24VDC Power Output-750 Watts

220VAC 600W 50Hz Input Power Supplies Available

POWER CONSUMPTION

Master Module	10 Watts
Single Input Single Setpoint Modules (except 9 or 10 Ohm RTD)	5 Watts Per Point
Single Input Single Setpoint Modules (9 or 10 Ohm RTD)	6 Watts Per Point
Dual Input Single Setpoint Module (except 9 or 10 Ohm RTD)	9 Watts Per 2 Points
Dual Input Single Setpoint Module (9 or 10 Ohm RTD)	10 Watts Per 2 Points
Single Input Dual Setpoint Modules (except 9 or 10 Ohm RTD)	5.6 Watts Per Point
Single Input Dual Setpoint Modules (9 or 10 Ohm RTD)	6.6 Watts Per Point
Horn Relay	1 Watt
Tranmitter	1.2 Watt
16 Point Selector Switch Modules	6 Watts

HORN RELAY

X23DC-24GP General Purpose
X23DC-24HS Hermetically Sealed

HYBRID SYSTEMS

The X80 can be custom assembled with either Solid State or Relay Annunciators.

SPARE CHASSIS WIRING

Specify Single Input Modules, Dual Single Input Modules and Transmitter Operation plus type of input associated with each position.

TYPICAL EXAMPLE

16—Thermocouple Type J with Dual Setpoints
4—RTD 3-Wire Platinum Probe Single Setpoints
Flush Panel Mounting Cabinet
Electrical Classification—General Purpose

QTY—1 46X80-1005 Monitor complete with:
1—X80-100A Master Module
1—X80-200-J Linearizing Board
1—X80-200-100 Linearizing Board
16—X80-410-J Input Modules
4—X80-300-100 Input Modules
16—X80-500-DA Dual Setpoint Alarm Module
4—X80-500-SA Single Setpoint Alarm Module
2—Spare Chassis Positions (wired for Dual or Single Modules)
1—X23DC-24GP Horn Relay
1—115-24-125 Power Supply
Optional: 1—350N-115VAC Horn

SPECIFICATIONS

POWER:	24VDC ± 10%
POWER CONSUMPTION:	See Page 11
ACCURACY:	Total systems error includes curve fitting and meter to 1000 degree: ±2°F or °C Over 1000 degrees: ± 0.2% of range + 1 Digit
AMBIENT TEMPERATURE EFFECT: Gain: Offset:	75° ± 40°F ±.01% of reading/°F ±.05 degree/°F
HORN RELAY CONTACT RATING:	5 Amp @ 115VAC
ALARM & SHUTDOWN RELAY CONTACT RATING:	1 Amp 28VDC 0.5 Amp 115VAC
RESOLUTION:	1° Standard
COMMON MODE VOLTAGE:	300VDC, 100V P-P, 60Hz
COMMON MODE REJECTION:	100db, DC to 120Hz
SETPOINT RANGE:	Same as standard input range (Range may be reduced optionally)
SETPOINT RESOLUTION:	Better than .1% of Setpoint Range
HYSTERESIS:	Front panel controlled 1 to 18 Degrees Fahrenheit. (Other Values Optional.)
INPUT IMPEDANCE:	RTD-Greater than 20K Ohm T/C-Greater than 10M Ohm Current 4-20 Ma-3.12 Ohms 10-50Ma-3.12 Ohms
BURNOUT RESPONSE:	Volts-Greater than 100K Ohms RTD—Positive Overscale T/C—Positive Overscale Underscale, Optional

RTD PROBES AND ACCESSORIES

For full details of RTD Probes and Accessories, see Catalog RTP-100.

OTHER RONAN PRODUCTS

- RELAY ALARM SYSTEMS
- MOTION DETECTORS
- FAULT FINDER
- MOTOR STOP-START STATIONS
- TWO-WIRE MOTOR CONTROL SYSTEMS
- EXPLOSION PROOF ALARMS
- SOLID STATE ALARM SYSTEMS
- ELECTRONIC TRANSMITTERS AND TRIP MODULES
- TRI-COLOR & ENGRAVABLE PANEL LIGHTS
- SEQUENTIAL EVENTS RECORDER
- GRAPHIC DISPLAYS

RONAN WARRANTY

Ronan warrants equipment of its own manufacture to be free from defects in material and workmanship, under normal conditions of use and service, and will replace any component found to be defective, on its return, transportation charges prepaid, within one year of its original purchase. This warranty carries no liability, either expressed or implied, beyond our obligations to replace the unit which carries the warranty.

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