

DYNALCO

Instrumentation & Controls

PRODUCT DATA SHEETS

中国授权代理商：信德迈科技（北京）有限公司

Phone:010-8428 395 Email: sales@cnmec.biz

网站: <http://www.cnmec.biz/dynalco.htm>

北京朝阳区望京SOHO-T1-C座2115室



AF900PC

Air/Fuel Ratio Controller



The AF-900PC Air/Fuel Ratio Control System utilizes heated O2 sensors and full-authority fuel valve control to precisely maintain the air/fuel ratio of rich-burn carbureted gaseous fueled engines.

The AF-900PC Air/Fuel Ratio Control System was designed by Dynalco's customer-driven research and development team for rich-burn engines.

Utilizing heated O2 sensor(s) in the exhaust stream (one per bank), the AF-900PC provides PWM outputs to full-authority fuel valves in order to accurately control air/fuel ratio over a wide load range.

The AF-900PC implements this control through an intelligent closed-loop algorithm which provides smooth behavior adaptable to changing engine load, speed, fuel quality and ambient temperature / pressure.

The AF-900PC is also equipped with optional intake manifold pressure sensor(s) capability to maintain emissions over an even wider range of engine loads and operating conditions.

Programming of system parameters is performed using the Dyna-Host software. The use of the front keypad will also allow parameter changes and diagnostics information. These multi-functional keys assist in navigating through the numerous screen levels on the LCD.

The AF-900PC system monitors the proper operation of all sensor inputs and controller outputs, flagging errors and changing its operating mode when a fault is detected. The system also provides Modbus communications to provide real-time controller information for your PLC or SCADA system.

Data logging of critical parameters is stored via onboard flash memory.

FEATURES

- Utilizes heated oxygen sensor(s)
- PWM Output control for Full-Authority Fuel Control Valve(s)
- Large-character, backlit LCD display
- Quick and easy laptop configuration; download and upload capabilities
- Modbus compatible
- Provides On-Board Data Logging of user-selectable parameters (downloads in Excel format)
- Fully programmable from front keypad
- CSA Class I, Division 2, Groups A, B, C, D approved

SPECIFICATIONS

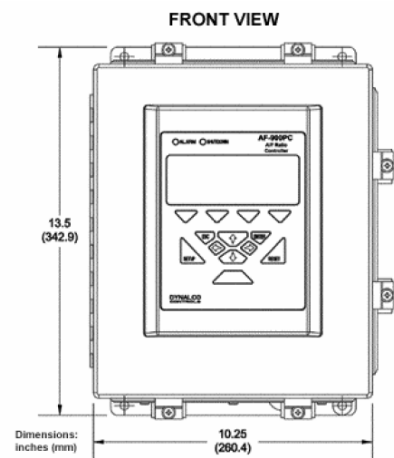
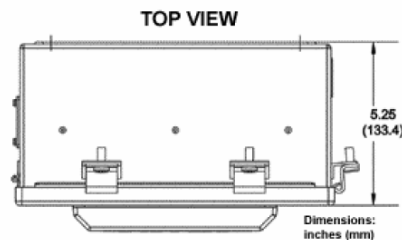
Electrical:

Supply Voltage:	10 – 30 VDC
Input Types:	Pre-Catalyst Heated O2 Sensors (one per bank) Post-Catalyst O2 Sensor Thermocouple Inputs for Air Manifold, Pre & Post Catalyst Temps Optional Air Manifold Pressures (one per bank) Pulsed input for magnetic pickup signal
Output Types:	PWM type for Full Authority Fuel Valve (one per bank) (3) Relays for Alarm / Shutdown / Auxiliary

Mechanical:

Gasketed Painted Metal Enclosure

Removable Wiring Connectors



CRANE

DYNALCO

Authorized Distributor: CNMEC Technology (Beijing) Co., Ltd
Rm2115, C Building T1 Tower, Wangjing SOHO, Chaoyang Dist, Beijing
Phone: 010-8428 395 Email: sales@cnmec.biz Web: <http://www.cnmec.biz/dynalco.htm>

Catalyst Monitor

6 Channel Monitor / Data Logger



Designed for catalyst monitoring and data logging on Spark Ignited and Diesel engines.

- NSCR (3-way) & Oxidation (2-way) type catalysts

The following parameters are monitored:

- Catalyst Inlet / Outlet Temperatures plus Differential
- Catalyst Inlet / Outlet Pressures plus Differential
- Left Bank / Right Bank O2 Sensor Outputs for ensuring proper AFRC operation
- Engine Hours (5-digit non-resettable)
- Engine Speed
- Can be configured to alarm if inlet temperature out of compliance
- On-Board Data Logging of thousands of values with time / date stamp

Monitors catalyst inlet temperature based on 4 hour rolling average per RICE NESHA requirements – data is saved to non-volatile flash memory

- Modbus RS-485 Communications Protocol for communications w/ SCADA or DCS
- CSA Class I, Division 2 Groups A, B, C & D approved

DYNALCO



- Fully programmable from front keypad
- High capacity on board flash memory
- Power loss will not erase memory
- Log Reader software allows data download to PC with USB cable p/n 270A-13020



Date	EventID	Value
1/13/2012 8:25	0	1075
1/13/2012 8:10	0	1072
1/13/2012 7:55	0	1070
1/13/2012 7:40	0	1078
1/13/2012 7:25	0	1078
1/13/2012 7:10	0	1080
1/13/2012 6:55	0	1078
1/13/2012 6:40	0	1085
1/13/2012 6:25	0	1082
1/13/2012 6:10	0	1078
1/13/2012 5:55	0	1079
1/13/2012 5:40	0	1080
1/13/2012 5:25	0	1070
1/13/2012 5:10	0	1076
1/13/2012 4:55	0	1082
1/13/2012 4:40	0	1081
1/13/2012 4:25	0	1079
1/13/2012 4:10	0	1075
1/13/2012 3:55	0	1078
1/13/2012 3:40	0	1080

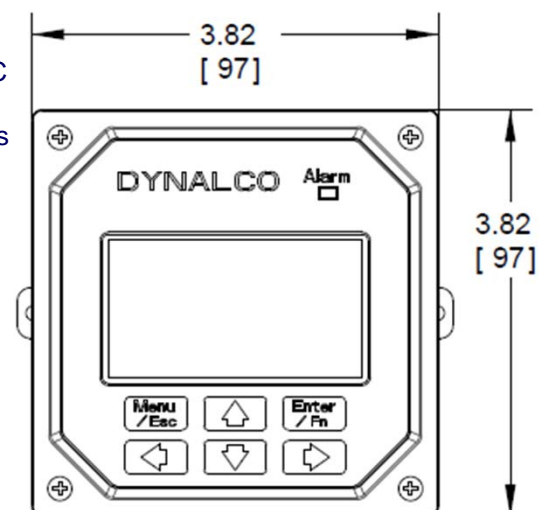
SPECIFICATIONS

Electrical:

Supply Voltage:	10 – 36 VDC
Input Types:	J, K type thermocouple 4 – 20 mA 0 – 1 VDC 0 – 5 VDC 0 – 10 VDC
	Plus (1) pulsed input for RPM display
Output Type:	(2) digital outputs rated 0.15 A @ 48 VDC
Scan Rate:	All channels scanned in 100 milli-seconds
Accuracy:	0.2%

Mechanical:

- ¼ DIN package (3 ½" width X 3 ½" height) for panel mount
- Splash-proof front panel
- Removable connectors on back of enclosure



CRANE

DYNALCO

Authorized Distributor: CNMEC Technology (Beijing) Co., Ltd
Rm2115, C Building T1 Tower, Wangjing SOHO, Chaoyang Dist, Beijing
Phone: 010-8428 395 Email: sales@cnmec.biz Web: <http://www.cnmec.biz/dynalco.htm>

F-16

Signal Generator/ Counter/Calibrator

The F-16™ is used to calibrate tachometers, digital speed indicators, governors, counters, frequency meters. Measures signal frequency from magnetic pickups, pulsers, ac generators, shaft encoders. Eliminates need for a frequency counter or an audio generator.

2-Year Warranty

FEATURES

- Generates a continuously adjustable signal from 10 Hz to 20,000 Hz.
- Displays the generated frequency with 0.1 Hz resolution up to 999.9 Hz; 1 Hz resolution from 1000 Hz to 20,000 Hz. Automatic scale ranging of the readout.
- Measures an external frequency signal with the same accuracy and autoranging.
- Portable, lightweight, battery-operated, low current consumption.
- Fast update rate of one reading per second (one second gate time) in both ranges.
- High level output of 10 volts peak-to-peak. Permits calibration of Dynalco's self-powered tachometers, trips, etc.
- Crystal-controlled accuracy of readout.
- Rugged, extruded aluminum case.



CONTROLS

Frequency Adjustment: Ten-turn coarse and fine potentiometers permit continuous, precise frequency control from 10 Hz to 20,000 Hz.

Generator/Counter Switch: Programs the instrument as a signal generator (transmitter) or as a counter (receiver).

Power Switch: Turns instrument on and off.

SPECIFICATIONS

Display: 5 digits, 0.4" high LCD, high contrast ratio in high ambient light. Frequency is displayed in both the generator and the counter mode of operation. Frequency in 0.1 Hz increments from 10.0 to 999.9 Hz; in 1 Hz increments from 1000 to 20,000 Hz. Automatic scale ranging. Display updating rate of one second in both ranges. Crystal controlled gate time.

Generated Signal: In the generator mode (Generator/Counter switch set to Generator) the output signal frequency can be varied continuously from 10.0 Hz to 20,000 Hz by means of two potentiometers: one for coarse control and one for fine control. Output is a square wave, DC-coupled, nominal amplitude of 10 volts peak-to-peak, short-circuit proof.

Signal Sensitivity: When used as a counter (Generator/Counter switch set to Counter), the instrument operates with any signal amplitude from 50 mVrms to 50 Vrms. It is insensitive to signal amplitude and responds exclusively to frequency. Signal waveform can be sinusoidal, square, triangular, or pulse, and can be unipolar or bipolar since the input amplifier is accoupled.

Power: Single 9-volt radio battery of the following types: Eveready 1222, Mallory M1604HD2, or Ray-O-Vac D1604.

Battery Replacement: A snap-open door in the rear panel gives access for battery replacement.

Low Battery Indication: Appearance of a colon after the first and second digits and a decimal point after the third digit, indicates a discharged battery.

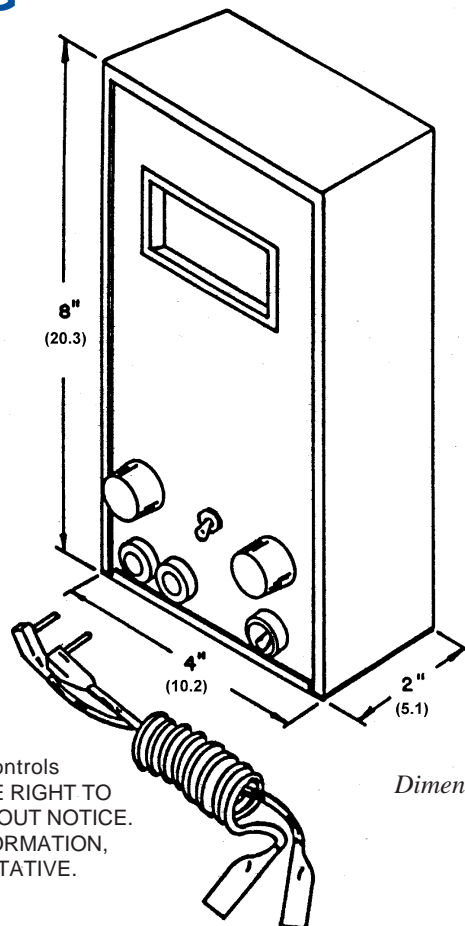
Environment Temperature Range: 0°F to +150°F (−17.7°C to +65.6°C), *operating*; −40°F to +150°F (−40°C to +65.6°C), *storage*.

Weight: 1.0 lb maximum (0.45 kg).

Intrinsic Safety: All circuits and electrical components operate at low energy levels incapable of releasing sufficient electrical or thermal energy, under normal or abnormal conditions, to cause ignition of hazardous atmospheric mixtures of pentane, ethylene, or methane in their most volatile state.

The F-16 is intrinsically safe when used with battery types Eveready 1222, Mallory M1604HD2, or Ray-O-Vac D1604.

OUTLINE DRAWING



F-16 is a trademark of Dynalco Controls
DYNALCO CONTROLS RESERVES THE RIGHT TO
CHANGE THESE SPECIFICATIONS WITHOUT NOTICE.
FOR COMPLETE SPECIFICATION INFORMATION,
CONTACT A DYNALCO REPRESENTATIVE.

Dimensions in inches (cm)

CRANE

A division of Crane Co.

DYNALCO

Authorized Distributor: CNMEC Technology (Beijing) Co., Ltd
Rm2115, C Building T1 Tower, Wangjing SOHO, Chaoyang Dist, Beijing
Phone: 010-8428 395 Email: sales@cnmec.biz Web: <http://www.cnmec.biz/dynalco.htm>

MTH-103E

Tachometer / Hourmeter / Trip

The MTH-103E™ is a microprocessor-based 5-digit tachometer, hourmeter with output trip. The trip can be programmed to activate on overspeed, underspeed (Class C) or hours. Unit may be pickup-powered or DC-powered.



FEATURES

Selectable overspeed, underspeed (Class-C) and hours trip

Both signal and power may be derived from magnetic pickup.

High accuracy: 5-digit display, 1 rpm resolution, 100,000 hour range.

Field configurable with front keypad for any number of pulses per revolution, trip point value, and for preset / reset hours.

Displays speed, hours, and setpoints on separate screen

Displays Alarm Log history

Fast overspeed reaction time of 100 msec

Backlit display when DC powered

Standard SAE case size fits engine panels with 3-3/8" openings.

High shock and vibration resistance. Gasketed and spray proof.

Highly resistant to electrical noise

SPECIFICATIONS

Power: Magnetic pickup or 9 - 30 VDC

Display: Alphanumeric LCD

Input Signal Frequency: From 10 to 13,000 Hz

Minimum required input signal voltage is 4.0 VAC when pickup powered and 1.5 VAC when DC powered

Maximum permissible input signal is 15 VAC

Tachometer Accuracy: 1 RPM resolution, within 0.2% under all combined environmental conditions

Hourmeter: 100,000-hour range (99,999), 1-hour increments. Display is visible and time accumulates only when the signal is applied to terminals A and B

Trip: Setpoint value is field-settable directly in RPM or hours (counts up or down). Normally open solid-state contacts at terminals 5(+) and 6(-) close on trip.

Reaction time of 0.1 seconds. Maximum continuous contact rating of 0.15 amps, 400 VDC

Trip Accuracy: ± 1 unit, maximum

Hourmeter Accuracy: 0.2% of reading. Retains count in memory when signal or power is removed.

SPECIFICATIONS

Environment Temperature:

Operating: -5 to +175 DegF (-20 to +79 DegC)

Storage: -40 to +195 DegF (-40 to +90 DegC)

Vibration: Modified MIL-810E (N3)

CSA CERTIFICATION



Class I, Division 1, Groups A, B, C, and D

When Pickup Powered:

Dynalco magnetic pickup M203, M204 or M205 must be used.

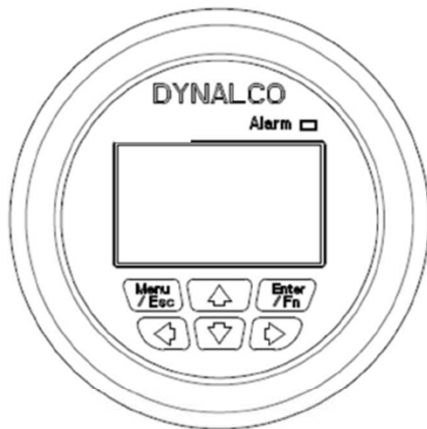
Class I, Division 2, Groups A, B, C, and D

When 9 - 30 VDC Powered:

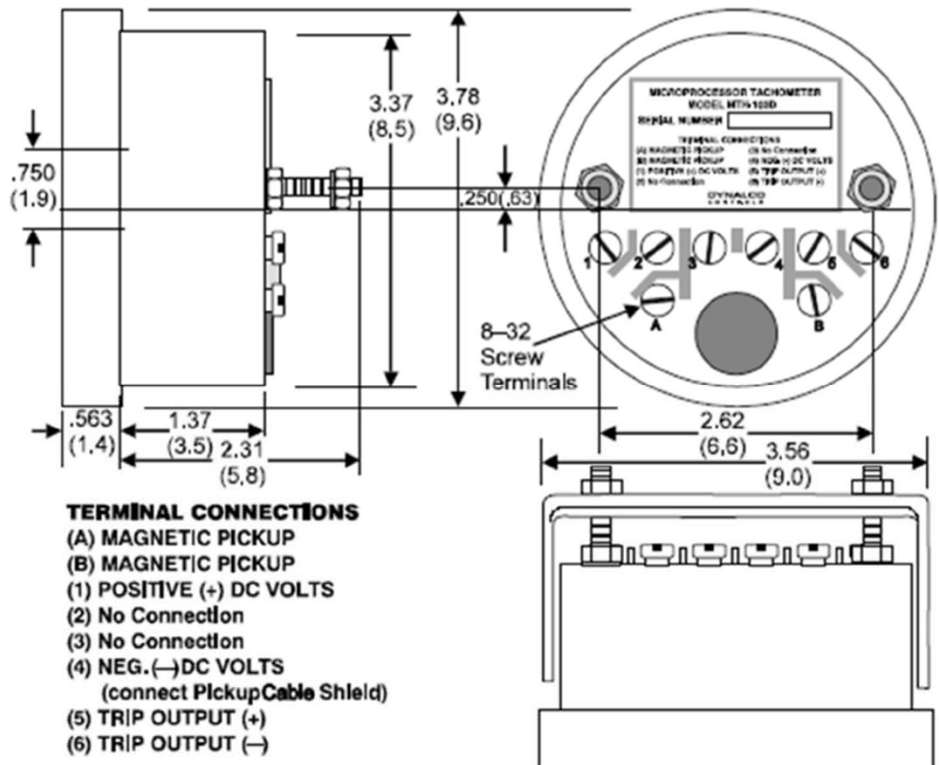
Dynalco magnetic pickup M201, M202, M203, M204, M205, M207, M208, M231, M233 or M281 must be used to provide the speed signal.



OUTLINE DRAWING AND CONNECTIONS



Dimensions in inches (cm)



DYNALCO

CRANE

Authorized Distributor: CNMEC Technology (Beijing) Co., Ltd
Rm2115, C Building T1 Tower, Wangjing SOHO, Chaoyang Dist, Beijing
Phone: 010-8428 395 Email: sales@cnmec.biz Web: <http://www.cnmec.biz/dynalco.htm>

SC-2124

24-Channel Universal Scanner

The SC-2124™ Series are universal scanners for continuous monitoring of 24 channels of temperature, pressure, or any other analog signal. Modbus communications is an option.

**2-Year
Warranty**



*Class I, Division 2,
Group A, B, C, D*

The SC-2124 microprocessor-based Universal Scanner continually checks temperature, pressure, or other analog signals and shows them on a large alphanumeric display.

This multi-informational display indicates both the value of each channel and any alarm conditions.

Custom-configurable screens allow specific channels to be displayed and parameters to be entered and updated.

Four relay outputs are used for alarm, shutdown, and user-defined functions. Class A, B, or C alarms and shutdowns are provided.

Modbus communication option allows for remote monitoring of all channels.



Universal Inputs

- J, K thermocouple; or 2- or 3-wire RTD inputs (with SC-RTD option).
- 0–5 V inputs that represent temperature, pressure, or other physical parameters.
- 4–20 mA inputs.

Field-Configuration

Using the front panel keypad the user can field-configure:

- Input types and units.
- Channel thresholds and trip classes.
- Relay operation modes.
- Remote displays.

A laptop computer can be used for faster field-configuration.

Remote Displays

Up to eight Dynalco IDM-200™ universal indicator displays can be connected for constant display of specific scanner channels.

FEATURES

- Microprocessor-based with communications for remote monitoring or laptop configuration.
- 24 universal analog input channels configurable for monitoring thermocouples, voltages, and 4–20 mA inputs.
- Class A, B, or C alarms and shutdowns.
- Open thermocouple and RTD detection.
- Wide DC power range (9–38 Vdc).
- Large 4-row by 20-character alphanumeric display shows status of all channels along with channel names.
- Meter Bus (remote display bus): up to eight IDM-200 displays for dedicated display of any channel.
- Ergonomic, sealed-membrane keypad with tactile feedback.
- Rugged, front-sealed enclosure.
- DB-style connectors for clean, reliable wiring.

- Password-protected setup mode.
- CSA Class I, Division 2, Groups A, B, C, & D. (Standard and Modbus® versions).

SC-2124M

- SC-2124 with Modbus communications.

ACCESSORIES

- **SC-CBLE25MM:** 6 ft cable & terminal block for 12 inputs (2 required for 24 input system).
- **SC-CBLE25MF:** 6 ft cable & terminal block for relays.
- **SC-CBLE15MF:** 6 ft cable & terminal block for power, etc.

ALL MODELS: Options

- **SC-RTD:** Filtering and conditioning module to read up to 12 channels of 100 ohm Pt or 120 ohm Ni RTDs.
- **ETS-202:** Cold-junction compensation for thermocouples.
- **IDM-200:** 3³/₈ in. (~85.7 mm) diameter digital remote display.

SPECIFICATIONS

Scan Rate	New channel every 50 milliseconds during operation
Input Channels	<ul style="list-style-type: none">• 24 analog input channels fully configurable for:<ul style="list-style-type: none">• J & K thermocouples• 0–5 V• 4–20 mA (8 on-board input resistors)• 100Ω Pt or 120Ω Ni RTDs using SC-RTD optional module• Accuracy: ±0.2%FS
Relay Outputs	• 4 relays; SPDT; rated 2.5amps @ 28 Vdc / 125 Vac
Input Power	• 9–38 Vdc, 0.45 amps maximum
Sensor Power	• +5 Vdc power for cold-junction temperature sensor, ETS-202
Display/Indicators	<ul style="list-style-type: none">• Large 4X20 alphanumeric display• Dedicated alarm and shutdown LEDs• Backlit display
Communications	<ul style="list-style-type: none">• RS-232C standard for laptop configuration using Dynalco WinHost software• Optional SC-2124M has Modbus RTU communications.
Rear Connections	<ul style="list-style-type: none">• All DB-style connectors on rear of unit• All field wiring is connected to DIN-RAIL mounted terminal blocks (optional)
Environmental	<ul style="list-style-type: none">• Operating: –4 °F to +176 °F (–20° to +80°C)• NEMA 4 sealed enclosure

DYNALCO

CRANE

A division of Crane Co.

Authorized Distributor: CNMEC Technology (Beijing) Co., Ltd
Rm2115, C Building T1 Tower, Wangjing SOHO, Chaoyang Dist, Beijing
Phone: 010-8428 395 Email: sales@cnmec.biz Web: <http://www.cnmec.biz/dynalco.htm>

SPD-100

Signal-Powered Digital Tachometer

FEATURES

- Signal and power derived totally from magnetic pickup or pulser.
- Intrinsically safe. Can be used in hazardous environments with approved Dynalco pickups. (See THIRD PARTY APPROVALS, next page.)
- No power supply connections. High immunity to electrical noise.
- Can be field-calibrated.
- High accuracy: 1 rpm resolution.
- High shock and vibration resistance.
- Standard SAE case size fits panels with 3-3/8 inch (86 mm) openings.
- Gasketed and spray-proof.
- Ideal for OEM use.
- Can be paralleled with governors and/or speed switches.
- Can share existing pickups or pulsers; draws only microamperes.
- Ground-free terminals have no polarity; easy installation.



**2-Year
Warranty**

*THIRD PARTY APPROVALS

SPD-100 and SPD-108



LR45322

Canadian Standards Association (CSA): Class I, Division 1, Groups A, B, C, & D with M134, M135, M139, M203, M204, M205. Class I, Division 1, Groups C & D with M160, M201, M202, M231, and M233.

•
•
•

DYNALCO

SPECIFICATIONS

External Power Requirements:

All models are signal-powered. Lighted versions: 12 or 24 Vdc, depending on model.

Display:

Four active digits (0 to 9999), non-blinking LCD display; character height of 0.5 inches (14 mm). Display contrast increases with increasing ambient light.

Input Valve Voltage:

From pickups, pulsers, shaft encoders, etc.

◆ Minimum signal amplitude: 2.5 Vrms.

◆ Maximum permissible signal: 15 Vrms.

The SPD-100 automatically limits pickup signals at approximately 10 volts peak-to-peak. Input impedance is 100 Ω in series with a 6 volt Zener diode.

Input Signal Frequency:

Maximum input signal frequency of 20,000 Hz. Lowest frequency range limited by gate time and corresponding numerical display.

Isolated Circuit:

All circuitry is totally floating, i.e. totally isolated and insulated from the case and from ground.

Operating Temperature Range:

–5°F to +175°F (–20°C to +80°C).

Storage:

–40°F to +195°F (–40°C to +90°C).

Vibration: MIL STD 810C; Method 514.2; Curve Q; Procedure V; Modified to 500 Hz upper limit. 5 Hz to 10 Hz @ 0.2 inches D.A.; 10 Hz to 18 Hz @ 1.0 g (peak); 18 Hz

to 57 Hz @ 0.06 inches D.A.; 57 Hz to 500 Hz @ 10 g (peak).

Accuracy:

One rpm resolution; within 0.5% (0.1% typical at room ambient) under all combined environmental conditions.

Gate Time Ranges:

SPD-100 Series : field-selectable from 0.26 to 5.7 seconds.

SPD-108 Series: field-selectable from 0.13 to 2.85 seconds.

This accommodates calibrations for an extremely broad range of corresponding pulses per second.

Magnetic Pickups:

Dynalco Magnetic Pickups M102 and M107 are used with the SPD-100 Series in most applications. *Refer to Dynalco Magnetic Pickup brochure for various types and characteristics.*

For low-speed applications, or to permit operation with larger gaps, the ultrahigh sensitivity M142 can be used.

For intrinsically safe applications Dynalco Controls offers various models, with the M202 and M134 the most frequently used.

Weight: 1 lb (0.45 kg)

CRANE

A division of Crane Co.

DYNALCO

Authorized Distributor: CNMEC Technology (Beijing) Co., Ltd
Rm2115, C Building T1 Tower, Wangjing SOHO, Chaoyang Dist, Beijing
Phone: 010-8428 395 Email: sales@cnmec.biz Web: <http://www.cnmec.biz/dynalco.htm>

Signal-Powered SPH-100 Digital Peak Speed with Memory Tachometer



FEATURES

- Designed for steam turbines, turbochargers, and other high speed applications.
- Holds last ten (10) peak speed readings.
- Time/date stamps speed in real time.
- Provides total run time (hourmeter function).
- Signal and power derived from magnetic pickup.
- CSA approval for Class I, Division 1, Groups A, B, C, D.
- Field-configurable.
- 1 RPM resolution
- High shock, vibration, and moisture resistant.
- Standard SAE case size fits panels with 3-3/8 inch (86mm) openings.
- Gasketed and spray-proof.

**2-Year
Warranty**

*THIRD PARTY APPROVALS

SPH-100



*Canadian Standards Association
(CSA): Class I, Division 1, Groups
A, B, C, & D with M204 and M205.*

SPECIFICATIONS

EXTERNAL POWER REQUIREMENTS:

No external power required. Power is generated by magnetic pickup.

DISPLAY:

Five active digits (0 to 99999), LCD display; character height of 0.5 inches (13mm).

INPUT SIGNAL VOLTAGE:

Minimum signal amplitude is 4.0 VRMS.

TEMPERATURE RANGE:

Operating: -5°F to +158°F (-20°C to +70°C).

Storage: -40°F to +195°F (-40°C to +90°C).

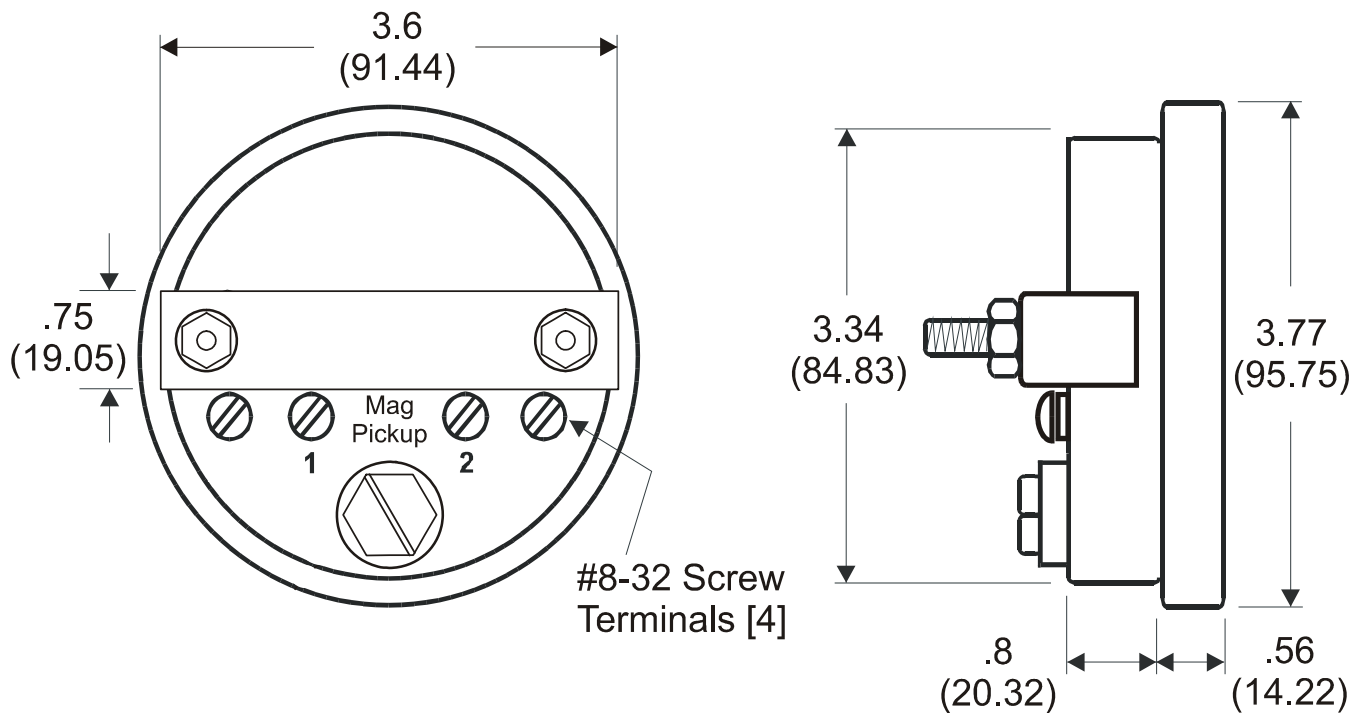
ACCURACY:

One RPM resolution; within 0.5% (0.1% typical at room ambient) under all combined environmental conditions.

MAGNETIC PICKUPS:

Dynalco magnetic pickup model M204 and M205 are recommended.

OUTLINE AND CONNECTION DRAWING



*Dimensions in inches
(millimeters)*

CRANE

A division of Crane Co.

DYNALCO

Authorized Distributor: CNMEC Technology (Beijing) Co., Ltd
Rm2115, C Building T1 Tower, Wangjing SOHO, Chaoyang Dist, Beijing
Phone: 010-8428 395 Email: sales@cnmec.biz Web: <http://www.cnmec.biz/dynalco.htm>

SST-2000

Speed Switches/ Transmitters

SST-2000A™ and SST-2000H™ Series Speed Switches/Transmitters receive signal input from a passive or active magnetic pickup, shaft encoder, contact closure, flowmeter, etc., to provide proportional analog outputs and either 0, 2, or 4 relay trip setpoints.

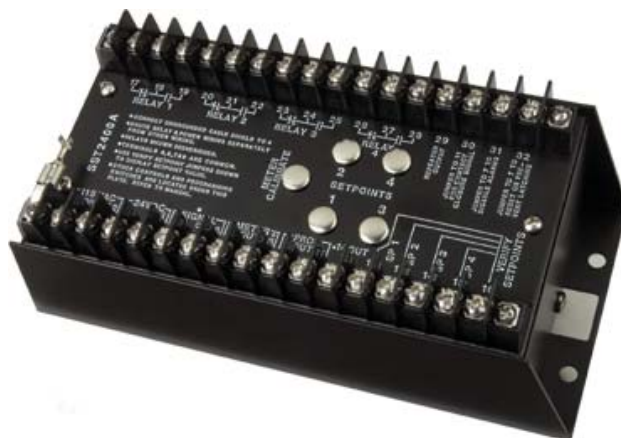
**2-Year
Warranty**



See: *THIRD PARTY
APPROVALS**

FEATURES

- Proportional outputs of either 4–20 mA (standard), 0–5 Vdc, or 0–10 Vdc are field-selectable. Standard 0–1 mAdc meter output included.
- Models available with up to four alarm setpoints.
- Field-selectable frequency range.
- Field-adjustable sensitivity control.
- Field-programmable for many types of sensors, including contact closure input.
- Repeater output drives counters and self-powered digital tachometers such as Dynalco's SPD-100 and SPD-700.
- Regulated 14 Vdc output powers active pickups (e.g. M910), accessories, and digital meters such as DPM-105 or MTH-103D, and the 12 Vdc versions of the internally lighted SPD-100L and LST-100L.
- Alarms are field-configurable for DPDT (SST-2400 A or -H only), overspeed, underspeed, energize, de-energize, latch, auto-reset.
- Integral VERIFY, requires external meter. Permits viewing and setting of setpoint value without actuating the relays.



*THIRD PARTY APPROVALS

CSA (Canadian Standards Association)

SST-2000A Series: General certification:
LR 92270

SST-2000H Series: Cl. I, Div. 2, Group
C & D approval: LR45322

*Approval contingent upon housing
an SST-2000H Series device in a
CSA-certified enclosure.*

CE (Conformité Européen)

SST-2000A & SST-2000H

89/336/EEC, Light Industrial;
72/23/EEC, Low Voltage Directive

- **Input Frequency:** Full-scale values from 0–0.1Hz (6 pulses per minute) to 0–50,000 Hz.
- **Function:** Converts frequency input (speed, rate) into linear proportional dc output. Provides alarm setpoints for over- and underspeed control and for sequential, startup, and shutdown switching.
- **Applications:** Includes engines, machines, I/P drivers, instrumentation, process control, recording, measurement.
- **Signal Sources:** Includes magnetic pickups, ac generators, contact closures, photocells.
- **Output Range Capability:** Current source up to 50 mAdc output always included.
- **Alarm Setpoints:** Available with two or four relays. Also available with no relays if only proportional outputs are required.

DYNALCO

SPECIFICATIONS

ELECTRICAL

Input Signal Frequency Range: Standard input range is field-selectable from 0–80 Hz to 0–20 kHz. Ranges as low as 0–0.1 Hz and up to 0–50,000 Hz are available options.

Input Signal Sensitivity: Field-adjustable from approximately 5 mVrms to 100 mVrms by internal sensitivity potentiometer. Normal factory setting is 25 mVrms. Maximum permissible signal is 50 Vrms for the standard unit.

Input Impedance: Nearly infinite at low signal levels; a minimum of 10 k Ω at signal levels exceeding +15.0 V peak or –1.0 V peak.

Power: 115 Vac \pm 10%, 47–420 Hz/22–30 Vdc, maximum 5 W or 150 mAdc. Optional: 220 Vac, \pm 10%, 50/60 Hz/22–30 Vdc.

Proportional Output: 4–20 mAdc. The maximum load is 1 k Ω with the unit powered by 115/220 Vac or 30 Vdc; and 750 ohms with the unit powered by 22 Vdc. The maximum load is approximately linear between 22 Vdc and 30 Vdc. Other custom ranges are available.

Auxiliary Meter Output: Proportional 0–1 mAdc, filtered, for meter or recorder loads up to 750 Ω .

Supply Output: Regulated +14 Vdc (\pm 5%), at terminals 11(+) and 4(–); maximum load 40 mAdc.

Repeater Output: Square wave 14 V peak-to-peak, positive going, at terminals 29 and 4 to operate signal-powered digital tachometers SPD-100 and SPD-700.

Output Ripple and Noise: 0.1% of full-scale maximum over 10% to 100% of full-scale.

Verifying Setpoints: *No input signal required.* Jumpering specific terminals overrides the 0–1 mA auxiliary meter output at terminals 7 and 8; instead, the actual setpoint value is output and viewed using an external meter at terminal 7 and 8.

Response Time: 150 milliseconds, 10% to 90% rise, is standard. Full-scale frequency ranges below 80 Hz are proportionally slower.

Linearity: 0.1% of full-scale (0.05%, typical), all outputs.

Output and Setpoint Stability: Less than 0.05% of full-scale change with a 10% change in supply voltage.

RELAYS

Logic: Field-programmable by switches for overspeed, underspeed, energize, de-energize, latch, auto-reset, and DPDT.*

Ratings: “A” series: Contact rating: 6.0 A @ 28 Vdc or 115 Vac (resistive); 2.0 A @ 220 Vac. Maximum inductive load 75 Vdc, 1.0 A, into 500 mH, for up to 100,000 cycles; SPDT.*

“H” series: Contact rating: 5 A (resistive) @ 24 Vdc; 1.0 A @ 120 Vac; 0.5 A @ 220 Vac; SPDT.*

**For DPDT, relays 1 & 3 and 2 & 4 work together as separate DPDT trips.*

Alarm Setpoints: Relay setpoints are easily adjustable using 25–turn cermet potentiometers. Potentiometer adjustments are accessible through holes in the cover plate.

ALARM DISABLE: Jumpering terminal 31 to terminal 7 disables all alarms, allowing for startup conditions and special functions.

ALARM RESET: Momentary jumpering of terminal 32 to terminal 7 resets all latched alarms. Permanent jumpering converts all latching alarms to auto-reset.

OPTIONS

ENCLOSURES: XP and NEMA rated enclosures are available.

OPEN PICKUP: Relay 1 switches in the event of an open or disconnected magnetic pickup. Relay 1 will still react when its setpoint is traversed. **NOTE:** *Not available with signal isolation transformer option.*

PNEUMATIC TRIP: Pulses relay 1 for 100 milliseconds; trips optional Dynalco SPV-200 Solenoid Pneumatic Valve on overspeed.

UNDERSPEED CLASS “C” LOGIC: Arms relay 2 as setpoint 2 is traversed on increasing speed. Pulses relay 2 as setpoint 2 is traversed on decreasing speed. Use for tripping the pneumatic SPV-200 on underspeed or for general underspeed electrical shutdown.

EXPANDED SCALE INPUT: Provides full meter output, full proportional output, and full setpoint range over a limited input range e.g. 0–1 mA and 4–20 mA over 800–1000 Hz input frequency.

ENVIRONMENTAL

TEMPERATURE RANGE: –40°F to +160°F (–40°C to +71°C) operating. –40°F to +180°F (–40°C to +82°C) storage.

Weight: 2.6 lbs (1.17 kg)

CRANE

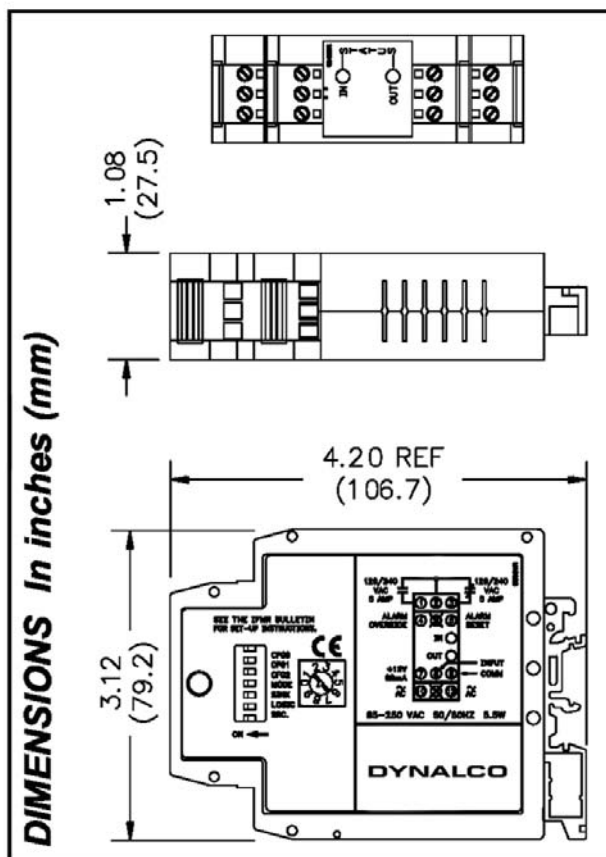
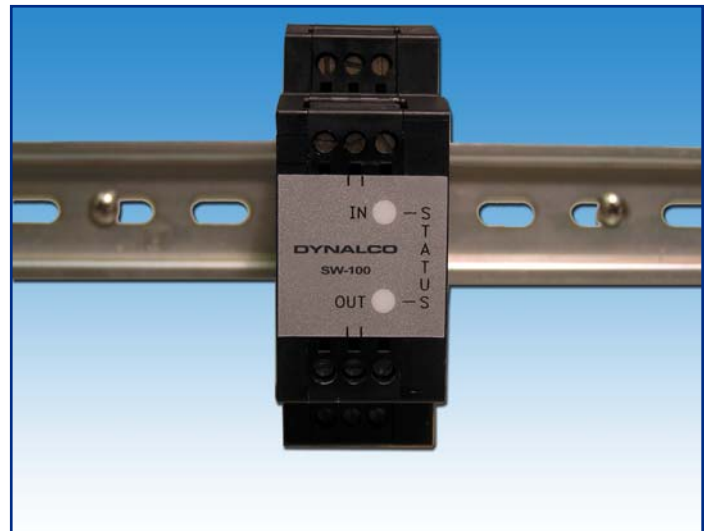
A division of Crane Co.

Authorized Distributor: CNMEC Technology (Beijing) Co., Ltd
Rm2115, C Building T1 Tower, Wangjing SOHO, Chaoyang Dist, Beijing
Phone: 010-8428 395 Email: sales@cnmec.biz Web: <http://www.cnmec.biz/dynalco.htm>

DYNALCO

SW-100 Speed Switch

- Single setpoint for over/underspeed protection
- DIN rail mounting
- Simple configuration - no test equipment or computer needed



Features

- Accepts frequency input, and controls a single relay (SPDT) for over/under speed trip
- Relay configurable for non-latching or latching with external alarm override and reset
- Relay contacts rated 5A @ 120/240VAC or 28VDC (resistive)
- LED indicators for input signal and relay status
- Calibrate with or without input signal
- Signal input DIP switch selectable to accept switch contacts, mag pickups, CMOS or TTL circuits
- 9-32VDC power supply
- 0.1Hz - 25KHz operating frequency range
- Accuracy 0.1% for setpoints

CRANE

A division of Crane Co.

Authorized Distributor: CNMEC Technology (Beijing) Co., Ltd
Rm2115, C Building T1 Tower, Wangjing SOHO, Chaoyang Dist, Beijing
Phone: 010-8428 395 Email: sales@cnmec.biz Web: <http://www.cnmec.biz/dynalco.htm>

DYNALCO

SW-200B

Speed Switch

The SW-200B™ Speed Switch provides three adjustable relay set points for engine overspeed protection, crank disconnect, generator field flashing, and speed monitoring with full field-programming capability.

2-Year Warranty

FEATURES

- **Inputs:** Senses signal frequency from magnetic pickup or AC signal generator.
- **Outputs:** Three relays (speed setpoints) and one 0-1 mA proportional DC output.
- **Field-programmable:** Four DIP switches provide a variety of frequency input and overspeed relay logic configurations. Also three trim potentiometers to adjust setpoint range, and one potentiometer to adjust the proportional output.
- **Circuit:** High-reliability. Virtually immune to electrical and RFI noise.
- **Test/Verify:** Permits testing without over-speeding.
- **Case:** Sealed and gasketed.

SPECIFICATIONS

Environment

- **Temperature:** (storage & operation) -40°F to +185°F (-40°C to +85°C).
- **Vibration:**
 - ◆ MIL STD 810C, Method 514.2, Curve P, Procedure V.
 - ◆ MIL STD 202F, Method 201A (10-55 Hz, continues displacement of 0.06 in. P-P).
 - ◆ Screws on all access holes are predrilled for safety wire.



- **Humidity:** SAE J1211, paragraph 4.2.3., figure 3A; 95% relative humidity at +150°F (+66°C).
- **Dust:** MIL STD 810C, Method 510.1, Procedure 1, Steps 1,4,5,6. (175 ft/min velocity; 0.3 g/ft³ density; <176 M average particle size).
- **Sealing:** Can open and reseal case without damaging watertight integrity. O-ring sealed access holes for setpoint and proportional output adjustments. Case complies with NEMA Standard 250, Types 3, 4, 12, and 13.
- **Moisture protection:** Component board entirely dip-coated with moisture repellent sealant.

Functional

Power: 9–40 Vdc, 300 mA maximum.

Withstands:

- ◆ 800 volts peak reverse voltage.
- ◆ 80 volts peak forward voltage, 0.1 second maximum duration.
- ◆ 350 volts peak forward voltage, 1 milli-second maximum duration.

Standard signal frequency ranges: 0–11,200, 0–5,000, 0–1,000Hz. Field-selectable using built-in DIP switches.

Input Signal:

- ◆ **Minimum signal requirement:** 50 mVrms at frequencies below 1 kHz; 0.4 Vrms at 11 kHz.
- ◆ **Maximum signal:** 70 Vrms.
- ◆ **Minimum input resistance:** 10 kW.

SPECIFICATIONS

NOTE

RPM/Frequency Conversion:

Frequency may be calculated by multiplying the engine speed in RPM by the number of holes or teeth on the gear/flywheel being sensed, and then dividing by 60.

Grounding, phasing, referencing:

All circuits are isolated from earth ground. The input circuit is referenced to the negative side of the battery so that the magnetic pickup can be paralleled with electric governors and other devices similarly constructed.

Signal cable shield can be grounded to the negative side of the battery.

DC Power application: At standstill or speeds below setpoints, applying dc power causes no flicker or change in the normally deenergized relays 1 and 2.

Tach Output: 0–1 mAdc proportional output for speed drives, speed indicators, recorders, programmers, etc.

Field-adjustable to 1 mA full-scale for any frequency between 25% and 100% of the selected full-scale frequency range.

- ◆ **Linearity:** 1.5% of selected frequency range.
- ◆ **Temperature Effect:** 1.5% of selected frequency range over the operating range.
- ◆ **Signal Amplitude:** 0.25% of selected frequency range.

RELAYS

Comments are for the SW-200B at standstill (powered-up, zero speed, no alarms).

TYPICAL USAGE

- ◆ **Standard:** One SPDT: Overspeed
Two SPST: Relays 1 & 2
- ◆ **Option:** Relays 1 & 2 can be replaced by a single SPDT relay.

Typical Usage

- ◆ **Overspeed Relay:** Energized. De-energizes and latches on overspeed or power loss.
- ◆ **Relay 1:** Deenergized. Energizes non-latched on alarm. *Typically used for crank disconnect.*
- ◆ **Relay 2:** Deenergized. Energizes non-latched on alarm. *Typically used for generator field flashing.*

NOTE

- Relays 1 & 2 can be configured as: both Normally Open (NO); both Normally Closed (NC); or one NC, one NO.
- Overspeed relay can be configured as normally deenergized (energizes on overspeed).

CONTACT RATINGS

- ◆ **12 Vdc:** 10.0 A, resistive load;
8.0 A, inductive load.
- ◆ **24 Vdc:** 5.0 A, resistive load;
4.0 A, inductive load.
- ◆ **120 Vac:** 0.8 A, resistive or inductive load.

SETPOINTS

Resetting: Integral reset push-button switch or by momentary removal and reapplication of power.

Hysteresis (Nominal): 3% for all relays.

Setpoint adjustment range: 3–100% of full-scale frequency range with integral 25-turn trim potentiometer for each relay.

Stability of Setpoints

- ◆ **Signal amplitude effect:** 0.1% maximum from 0.4–100 Vrms.
- ◆ **Power Source Effect:** 0.1% of setpoint maximum with 25% fluctuation of power source.
- ◆ **Temperature Effect:** 2.5% of selected frequency range maximum over operating range.

Response Time: 50 milliseconds, maximum, any setpoint.

TEST/VERIFY

Pressing the integral Overspeed Test push button lowers the overspeed setpoint to 60% \pm 3% of its original value to permit verifying the integrity of the alarm circuitry without overspeeding the engine.

WEIGHT

2 lbs (0.9 kg)

CRANE

A division of Crane Co.

Authorized Distributor: CNMEC Technology (Beijing) Co., Ltd
Rm2115, C Building T1 Tower, Wangjing SOHO, Chaoyang Dist, Beijing
Phone: 010-8428 395 Email: sales@cnmec.biz Web: <http://www.cnmec.biz/dynalco.htm>

DYNALCO

SW-50

Two-Setpoint Speed Switch

Reliable engine overspeed protection. Overspeed relay plus a second setpoint for crank disconnect, generator field- flashing, or other alarm. Full field-programming capability.

2-Year Warranty



FEATURES

- **Various signal sources:** Senses signal frequency from magnetic pickup or AC signal generator.
- **Field-programmable:** Two 25-turn trim potentiometers provide adjustment for setpoints over 3–100% of full-scale frequency range.
- **Test circuit:** Permits on-line testing without overspeeding the protected device.
- **Rugged:** Sealed, gasketed, reinforced case.

ENVIRONMENTAL

Temperature (storage & operation): -40°C to +85°C (-40°F to +185°F).

Vibration:

- MIL STD 810C, Method 514.2, Curve P, Procedure V.
- MIL STD 202F, Method 201A (10–55Hz, continuous displacement of 0.06 inches P-P). Screws on all access holes are predrilled for safety wire.

Humidity: SAE J1211, paragraph 4.2.3., fig. 3A (95% relative humidity at +66°C (+150°F)).

Dust: MIL STD 810C, Method 510.1, Procedure 1, Steps 1, 4, 5, and 6. (1750 ft/min velocity; 0.3g/ft³ density; <176 microM average particle size).

Sealing: Case can easily be opened and resealed without damaging watertight integrity. O-ring sealed access holes for setpoint adjustments. Complies with NEMA Standard 250, types 4, 12, and 13.

Moisture protection: Component board entirely dip-coated with moisture-repellent sealant.

SPECIFICATIONS

Input signal: Two input frequency ranges: 0–5,000 Hz, standard; or 0–10,000 Hz. *Minimum signal requirement:* 0.15 Vrms (150 mVrms) for all frequencies. *Maximum signal:* 70 Vrms. *Minimum input resistance:* 10 KΩ.

Input power: 8–32 Vdc. (Operates with 12 or 24 Vdc systems.) *Maximum current consumption:* 95 mA. Can withstand 800 volts peak reverse; 80 volts peak forward for 0.1 second maximum duration; and 350 volts peak forward for 1 millisecond duration.

Relays: SPDT for Overspeed; SPST N.O. contacts for Auxiliary relay. Contact rating of 5 amperes at 30 Vdc/300 Vac, resistive. Setpoint adjustment range for both relays: 3–100% of full-scale frequency range. Integral 25-turn trim potentiometer for each relay setpoint. Response time for both relay setpoints is 50 milliseconds, maximum.

SPECIFICATIONS (cont'd)

At stand-still (zero speed), power on, the standard relay configuration is:

1. Overspeed relay: SPDT, normally energized. Relay de-energizes and latches on overspeed.

Latching may be inhibited by jumpering Terminal 4 to Terminal 2; resetting is then automatic.

2. Auxiliary relay: Normally de-energized. Relay energizes above the setpoint, non-latching (automatic reset).

Resetting relays:

- The latched Overspeed relay is reset (after speed is reduced by at least 2% below setpoint value) by momentarily jumpering Terminal 4 to Terminal 2 or by momentarily removing power.
- The Auxiliary relay will automatically reset when speed is reduced by at least 2% below setpoint value.

Power up considerations: No relay flicker on power up. At stand-still or speeds below setpoints, applying dc power causes no flicker or change in the normally de-energized Auxiliary relay. Power application resets the Overspeed relay to the normally energized (no alarm) condition.

Grounding, phase referencing: All circuits are isolated from earth ground. The input circuit is referenced to the negative side of the power supply so that the magnetic pickup can be paralleled with electrical governors and other similarly constructed devices.

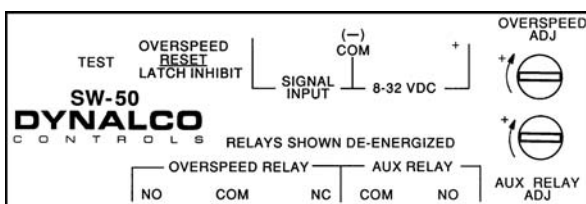
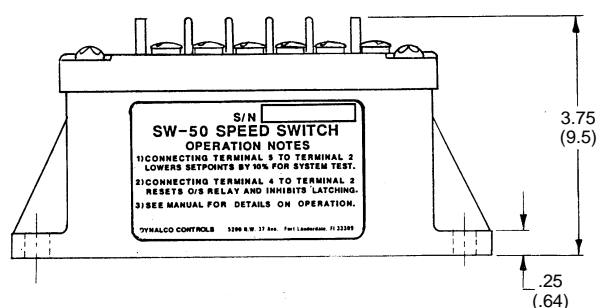
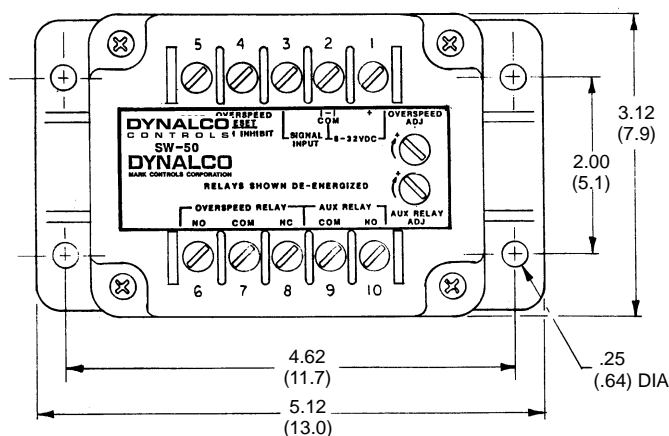
Signal cable shield: can be grounded directly or taken to any designated electrical terminal on the governor. (No shield terminal is provided in the speed switch.)

Test: Jumpering Terminal 5 to Terminal 2 lowers the setpoints to 90% \pm 2% of the actual value to permit verifying the alarm setpoints without overspeeding the engine.

Stability of setpoints:

- Signal amplitude effect: \pm 0.5% full-scale from 150 mVrms to 100 Vrms.
- Power supply voltage effect: \pm 0.1% of full-scale with 25% supply fluctuation.
- Temperature effect: \pm 2.5% of full-scale maximum with change in environmental temperature from -40°C to $+85^{\circ}\text{C}$ (-40°F to $+185^{\circ}\text{F}$).

Hysteresis: 2% of full-scale frequency, nominal.



CRANE

A division of Crane Co.

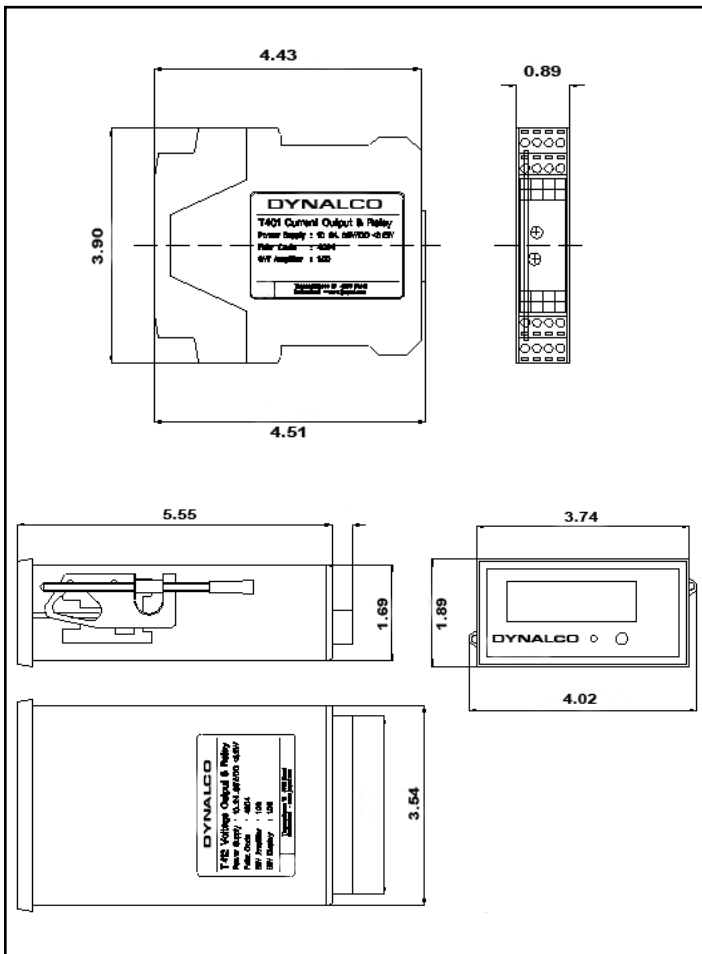
DYNALCO

Authorized Distributor: CNMEC Technology (Beijing) Co., Ltd
Rm2115, C Building T1 Tower, Wangjing SOHO, Chaoyang Dist, Beijing
Phone: 010-8428 395 Email: sales@cnmec.biz Web: <http://www.cnmec.biz/dynalco.htm>

SWT-1000 / SWTD-1000

Speed Switch/Transmitter with Optional Display

- 4-20mA isolated output - loop isolator not required
- Single relay setpoint for over speed protection
- Configurable via Windows® software



Features

- Converts frequency to an analog signal
- Output configurable for 4-20 mA or 0-10 VDC
- 0Hz - 50kHz operating frequency range
- Integrated backlit display (SWTD-1000)
- 2 possible relay set-point configuration sets (A & B) for start up / run, controlled via binary inputs
- Open pickup sensor warns against failed pickup
- Plug in terminals for easy installation
- Isolated signal input with automatic trigger level adjustment ensures accurate speed measurement
- Open collector repeater output provides signal to external devices
- Accuracy 0.05% for setpoints, 0.5% for analog signals
- Fast response to over-speed conditions, 10.5ms typical
- Adaptive input signal sensitivity provides high noise immunity
- Integrated 2 or 3 wire sensor monitoring and system watchdog

DYNALCO

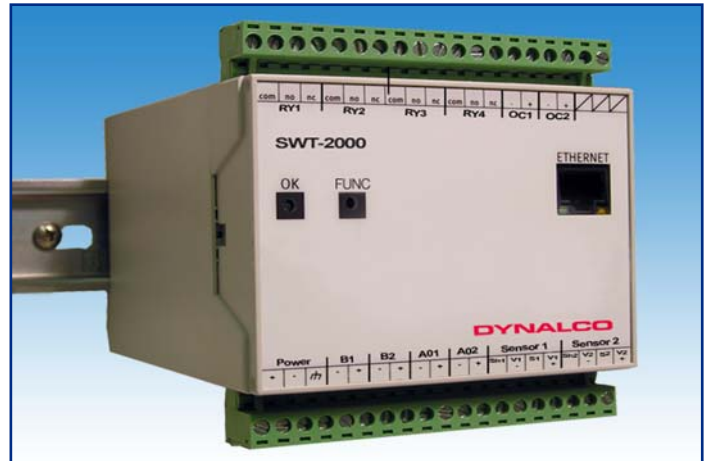
CRANE

A division of Crane Co.

SWT-2000

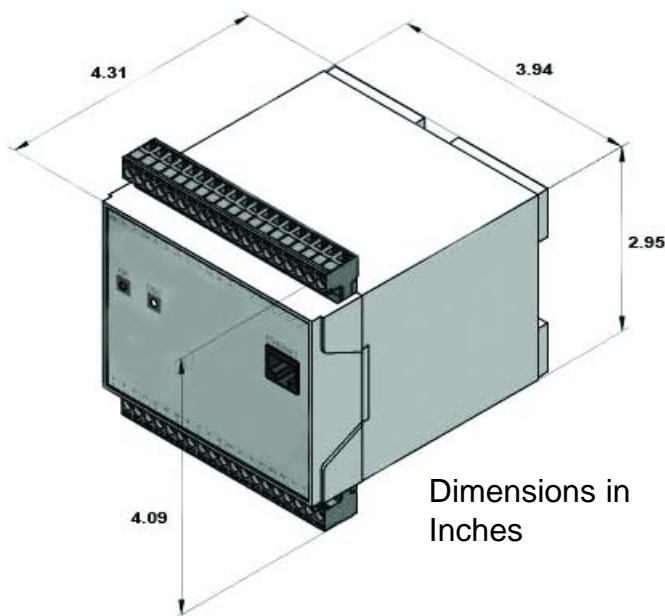
2 Channel Speed Switch/Transmitter

- 2 Speed switches in one..
 - Monitor and protect two separate machines
 - Provide redundant speed protection on one machine
- Flexible - Allows multiple setup configurations
- Dual speed measurement/protection
- DIN rail mounting



Features

- 2 frequency + 2 binary inputs
- 2 current (4-20 mA) outputs
- 4 relay and 2 open collector outputs
- Open pickup sensor
- 4 parameter sets each with 6 set-points for almost limitless applications
- x1, x2 or x4 repeater outputs
- Fully isolated I/O
- High accuracy speed measurement: 0.002% for set-points and 0.1% for analog signals
- Programmable logical, diagnostic and measurement functions
- Fast 8 ms reaction time on overspeed
- Compatible with passive and active mag pickups
- Plug in terminals
- 18-36 VDC or 90-264 VAC power supply
- Ethernet interface - configuration via Windows® software
- 0Hz - 50kHz operating frequency range



TID-110

DC or Pickup-Powered Digital Temperature Gauge

Standard RTD or thermocouple input indicates temperature of power cylinders, coolant, turbochargers, compressor discharge, lubricant, valves. Excellent for process control, instrumentation, textile, machine tool, and food processing.

2-Year Warranty

Features

- Grounded or ungrounded thermocouples; 2-wire RTDs.
- Thermocouples: standard J, K, T, and E; RTDs: platinum, nickel, and copper.
- Rugged: all solid-state. No meter movement.
- Sealed: Resistant to sour gas that attacks internal workings in analog meter movements.
- Lighted version: solid-state illumination.
- Standard SAE case size fits engine panels with 3-3/8 inches (~85.7 mm) openings.
- Large 0.5 in. high LCD digits. Display contrast increases with increasing ambient light: ideal for outdoor installations.
- Power from 8–40 Vdc or magnetic pickup.
- Highly resistive to electrical noise and supply spikes.



Specifications

Environment Temperature:

Operating: -5°F to $+175^{\circ}\text{F}$ (-20°C to $+70^{\circ}\text{C}$).
Storage: -40°F to $+195^{\circ}\text{F}$ (-40°C to $+91^{\circ}\text{C}$). 0.25% maximum effect on readout with 50°F (28°C) change in ambient temperature.

Sensors: *Thermocouples:* integral cold junction compensation; thermocouple extension wire resistance of up to 100 ohms introduces less than 1° error.

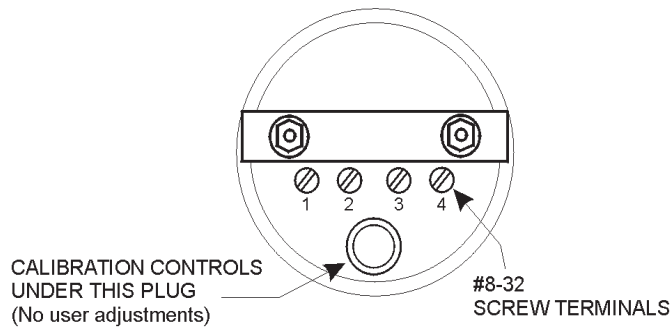
- *RTDs:* two-wire only, with heavy copper extension leads to minimize error, i.e., #16 AWG for up to 50 feet; #14 to 100 feet, for platinum or nickel; #8 AWG for up to 25 feet for 10 ohm copper.
- Burned out thermocouple or open RTD indicated by a "1" in the thousands column with all other digits blanked.

Power: *DC-powered units:* 8 to 40 Vdc. *Typical current consumption:* 1 mA at 12 Vdc; 4 mA at 24 Vdc; 6 mA at 32 Vdc. *Lighted units:* 20 to 30 Vdc; 25 mA at 28 Vdc, nominal. ♦ *Magnetic pickup-power units:* require a minimum of 2.5 Vrms pickup signal, and cannot be lighted.

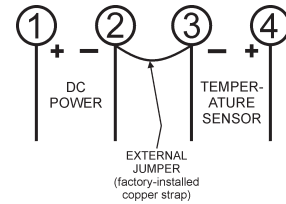
Weight: <1 lb (<0.45 kg).

A TID-110 Series Digital Temperature Gauge can be ordered for either DC power (8–40 Vdc) or magnetic pickup power (minimum of 3.0 Vrms pickup signal), unlighted.

OUTLINE DRAWING



DC

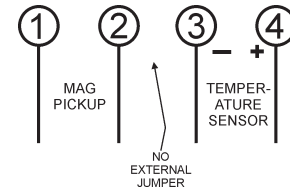


CAUTION: Only connect a temperature sensor to Terminals 4(+) and 3(-).

- Connect 8–40 Vdc power to 1(+) and 2(-).
- For lighted display units [TID-110L units] power with 20–30 Vdc *only*.

Warning: Remove the external jumper across Terminals 2 and 3 **ONLY** if there is some

PICKUP



CAUTION: Do not connect DC or AC power to this instrument this unit is magnetic pickup powered.

- Connect temperature sensor to Terminals 4(+) & 3(-).
- Connect magnetic pickup to Terminals 1 & 2

SENSOR TYPE AND RANGE

TYPE	SENSOR	TEMP RANGE	TYPE	SENSOR	TEMP RANGE	TYPE	SENSOR	TEMP RANGE
-11	J T/C	–50° to +1400°F	-16	T T/C	–45° to +400°C	-21	Ni RTD	–100° to +500°F
-12	J T/C	–45° to +760°C	-17	E T/C	–50° to +1800°F	-22	Ni RTD	–75° to +260°C
-13	K T/C	–50° to +1800°F	-18	E T/C	–45° to +980°C	-23	Cu RTD	–50° to +500°F
-14	K T/C	–45° to +980°C	-19	Pt RTD	–200° to +1200°F	-24	Cu RTD	–45° to +260°C
-15	T T/C	–50° to +750°F	-20	Pt RTD	–100° to +750°C			

NOTES: Pt RTD is 100 ohms at 0°C, 0.00392 ohms per ohm per 0°C, characteristic winding no. 11

Ni RTD is 120 ohms at 0°C, characteristic winding no. 7

Cu RTD is 10 ohms at 25°C, characteristic winding no. 15

Observe recommendations under “Specifications/Sensors”

CRANE

A division of Crane Co.

DYNALCO

Authorized Distributor: CNMEC Technology (Beijing) Co., Ltd
Rm2115, C Building T1 Tower, Wangjing SOHO, Chaoyang Dist, Beijing

Phone: 010-8428 395 Email: sales@cnmec.biz Web: <http://www.cnmec.biz/dynalco.htm>

TMP-100

Multi-Point Digital Pyrometer

Protect your engine from costly failure. The TMP-100™ Multi-Point Digital Pyrometer measures the temperature of power cylinders, turbocharger, compressor discharge, coolant, lubricant, valves, etc... Monitors the temperature of 19 points in any process.

2-Year Warranty

FEATURES

- Digital readout with 1° resolution.
- Intrinsically safe. Third-party approved. No expensive hazardous enclosure required.
- Heavily gold-plated selector switch for long life, trouble-free operation.
- Integral 2-pole selector switch permits using grounded or ungrounded thermocouples.
- Requires no external dc or ac power.
- Fits existing cutouts and mounting holes of other popular pyrometers.
- Compensation for lead lengths or lead resistances not required; use inexpensive small gauge thermocouple extension wire and save cost and space.
- Fully gasketed; rugged construction.
- Readout unaffected by power line noise and spikes (no line connections).



SPECIFICATIONS

Display: 3-1/2 digit (–999 to +1999), 0.5" high, liquid crystal display, 1° increment. Brightness increases with ambient light (no outdoors fadeout).

- Open thermocouple or RTD indicated by a number 1 in the thousands column; all other digits blanked.
- Momentarily pressing the front display push button activates the display for 50 seconds.

Environment Temperature: 0°F to +165°F (–18°C to +74°C); 0.25% maximum effect on readout.

Selector Switch: Two-pole, 19-position, double gold plating of contacts.

Sensor:

- **Thermocouples:** Grounded or ungrounded; integral cold junction compensation. Thermocouple extension wire resistance of up to 100Ω introduces less than 1° error.
- **RTDs:** Accepts 2-wire RTDs only. Use with heavy copper extension leads to minimize error, i.e., 16 AWG for up to 50 feet, 14 AWG to 100 feet.

Power: Two common 9-volt batteries such as Mallory M1604HD2, Eveready 1222, Ray-O-Vac D1604. Battery life is approximately 4000 viewings, or a couple of years, under typical operation. Appearance of decimal points after every digit indicates discharged batteries.

INTRINSIC SAFETY

*THIRD PARTY APPROVALS

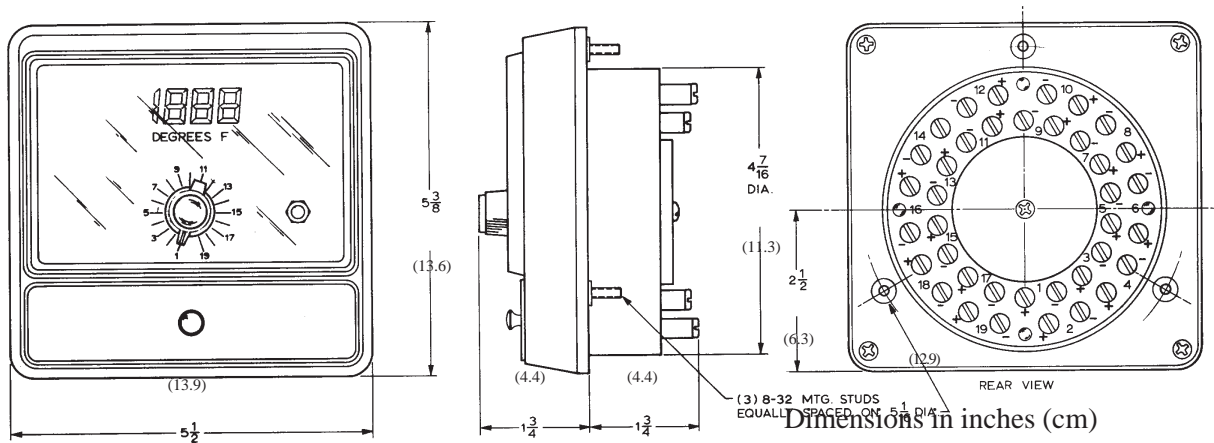


Canadian Standards Assoc:

Intrinsically safe for Class I, Division 1, Groups C and D hazardous locations, when used only with previously mentioned 9-volt batteries.

Per ISA-RP-12.2 criteria. All circuits and electrical components operate at low energy levels, incapable of releasing sufficient electrical or thermal energy under normal or abnormal conditions to cause ignition of hazardous atmospheric mixtures of pentane, ethylene, or methane in their most easily ignited concentrations.

OUTLINE DRAWING



DYNALCO

CRANE

A division of Crane Co.

Authorized Distributor: CNMEC Technology (Beijing) Co., Ltd
Rm2115, C Building T1 Tower, Wangjing SOHO, Chaoyang Dist, Beijing
Phone: 010-8428 395 Email: sales@cnmec.biz Web: <http://www.cnmec.biz/dynalco.htm>

TMP-100DC

DC Powered Digital Pyrometer

The TMP-100DC™ monitors the temperature of any 18 points in any process or system such as engines, factories, and mills.

2-Year Warranty

FEATURES

- Digital readout with 1° resolution.
- Heavily gold plated selector switch for long life, trouble-free operation.
- Fits existing cutouts and mounting holes of other popular pyrometers.
- No compensation for lead lengths or lead resistances required. Use inexpensive small gauge thermocouple extension wire to save cost and space.
- Fully gasketed; rugged construction.
- Readout unaffected by power line noise and spikes.
- Continuous readout.



SPECIFICATIONS

Display: 3-1/2 digit (-1999 to +1999), 0.5" high digits, liquid crystal display, 1° increments. Brightness increases with ambient light (no outdoors fadeout).

Environment: 0°F to +165°F (-18°C to +74°C); 0.25% maximum effect on readout.

Selector Switch: Two-pole, 18-position, double gold plating of contacts.

Sensor: Must be grounded if dc supply is grounded.

- **Thermocouples:** Integral cold junction compensation. Thermocouple extension wire resistance of up to 100Ω introduces less than 1° error. Open sensor indicated by a number 1 in the thousands column, all other digits blanked.
- **RTDs:** Accepts 2-wire RTDs only. Use with heavy copper extension leads to minimize error, i.e., 16 AWG for up to 50 feet, 14 AWG to 100 feet.

Power: 24 Volt dc systems; 6 mA dc typical, 10 mA maximum.

Weight: 1.75 lbs.

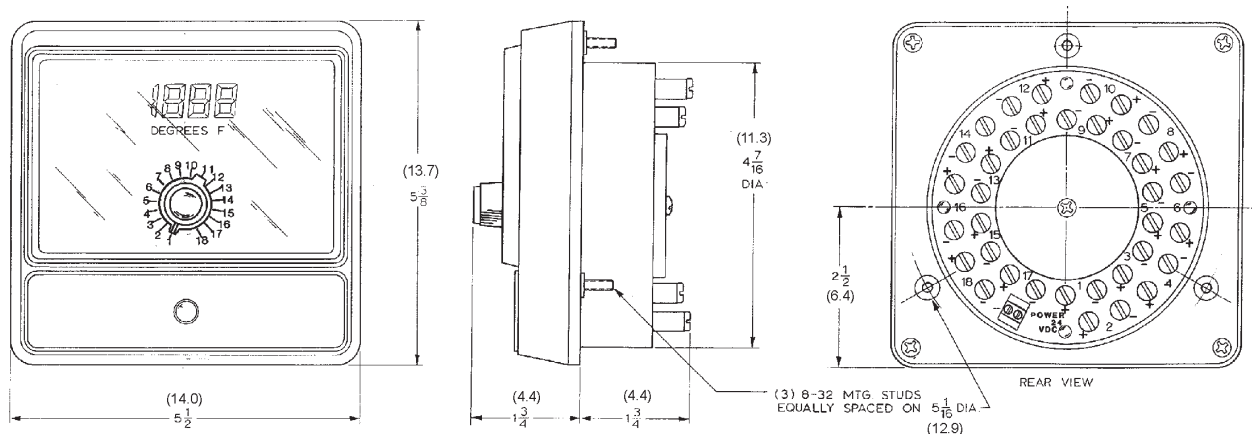
NOTE

For the TMP-100DC, thermocouples used must be ungrounded if the dc supply is grounded.

PART NUMBERS AND RANGES

P/N	RANGE	SENSOR TYPE
TMP-100DC-11	-50° to +1500°F	J (Iron-Constantan)
TMP-100DC-12	-45° to +815°C	J (Iron-Constantan)
TMP-100DC-13	-50° to +1800°F	K (Iron-Alumel)
TMP-100DC-14	-45° to +980°C	K (Iron-Alumel)
TMP-100DC-15	0° to +500°F	T (Copper-Constantan)
TMP-100DC-16	-20° to +260°C	T (Copper-Constantan)
TMP-100DC-17	0° to +500°F	E (Chromel-Constantan)
TMP-100DC-18	-20° to +260°C	E (Chromel-Constantan)
TMP-100DC-19	-300° to +800°F	100 Ohm Pt RTD
TMP-100DC-20	-185° to +425°C	100 Ohm Pt RTD

OUTLINE AND CONNECTION DRAWING



Dimensions in inches (cm)

DYNALCO

CRANE

A division of Crane Co.

Authorized Distributor: CNMEC Technology (Beijing) Co., Ltd
Rm2115, C Building T1 Tower, Wangjing SOHO, Chaoyang Dist, Beijing
Phone: 010-8428 395 Email: sales@cnmec.biz Web: <http://www.cnmec.biz/dynalco.htm>

UM-200

Two Channel Monitor w/ Differential

- Monitors 2 channels
- Displays Differential reading
- Accepts Universal Input Types
- 5 - Digit non-resettable hourmeter
- Engine RPM
- Rugged splash-proof design
- Output trip programmable for over & under values
- CSA Class I, Division 2 Groups A, B, C & D approved



The UM-200 is ideal for any application requiring accurate measurement of absolute and differential parameters in remote locations and hazardous areas.

DYNALCO



FEATURES

- Accepts thermocouple, 4-20 mA & DCV inputs
- Reads Absolute & Differential values
- Digital Output for alarm / shutdown
- Displays Engine RPM / Engine Hours
- Backlit LCD Display
- Programmable channel names
- Fully programmable from front keypad

SPECIFICATIONS

Electrical:

Supply Voltage: 10 – 36 VDC

Input Types: J, K type thermocouple (ungrounded)
4 – 20 mA
0 – 1 VDC
0 – 5 VDC
0 – 10 VDC

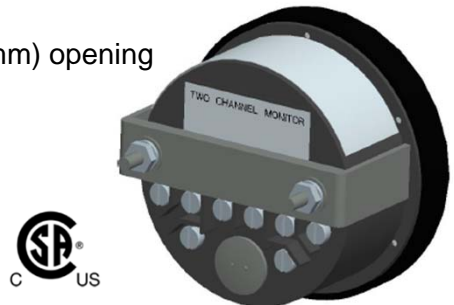
Plus pulsed input (magnetic pickup) for RPM display

Output Type: Digital output configurable as latching / non-latching rated 0.15 Amp

Accuracy: 0.2%

Mechanical:

Standard SAE case size fits panels with 3-3/8 inch (86 mm) opening



CRANE

DYNALCO

Authorized Distributor: CNMEC Technology (Beijing) Co., Ltd
Rm2115, C Building T1 Tower, Wangjing SOHO, Chaoyang Dist, Beijing
Phone: 010-8428 395 Email: sales@cnmec.biz Web: <http://www.cnmec.biz/dynalco.htm>

Universal Monitor

Model UM600

Six Channel Monitor w/ Differential

- Monitors 6 channels
- Displays Absolute & Differential readings
- Universal Input Types
- Rugged design for remote locations
- On-Board Data Logging of Alarm History with Date / Time Stamp
- Modbus Communications Protocol
- CSA Class I, Div 2 Groups A, B, C & D approved

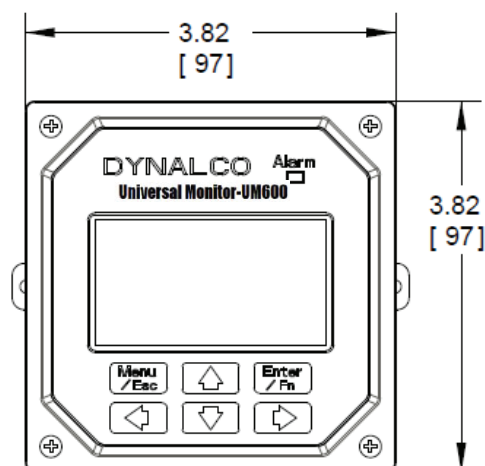


The UM600 is ideal for any application requiring accurate measurement of absolute and differential parameters in remote locations and hazardous areas.

The UM600 is a 6-channel universal monitor capable of reading both absolute and differential values of thermocouple, pressure (4-20 mA) and voltage inputs.

FEATURES

- Accepts thermocouple, 4-20 mA & DCV inputs
- Reads Differentials between channels 1 & 2, 3 & 4, 5 & 6
- 5 - Digit Hourmeter Function
- Displays Engine RPM
- (2) Outputs for alarm / shutdown
- Backlit LCD Display
- Fully programmable from front keypad



SPECIFICATIONS

Electrical:

Supply Voltage: 10 – 36 VDC

Input Types: J, K type thermocouple
4 – 20 mA
0 – 1 VDC
0 – 5 VDC
0 – 10 VDC

Plus (1) pulsed input (magnetic pickup) for RPM display

Output Type: (2) digital outputs configurable as N.O. or N.C. rated 0.15 A @ 48 VDC

Mechanical:

1/4 DIN package (3 1/2" width X 3 1/2" height) for panel mount

Removable connectors on back of enclosure



CRANE

DYNALCO

Authorized Distributor: CNMEC Technology (Beijing) Co., Ltd
Rm2115, C Building T1 Tower, Wangjing SOHO, Chaoyang Dist, Beijing
Phone: 010-8428 395 Email: sales@cnmec.biz Web: <http://www.cnmec.biz/dynalco.htm>

Standard Magnetic Pickups

Standard magnetic pickups are used for most applications. These pickups have 2 pins that will accept a standard MS style connector. They are available in short, medium, long and extra-long thread lengths. The sensitivity is available as either standard, high or ultra-high. A pickup with higher sensitivity is sometimes required to produce higher output at low speed.



Model	Thread Size	Sensitivity
M101	5/8-18 X 1.125"	Standard
M102	5/8-18 X 1.125"	High
M142	5/8-18 X 1.125"	Ultra-High
M151	5/8-18 X 2.500"	Standard
M183	5/8-18 X 2.500"	High
M184	5/8-18 X 2.500"	Ultra-High
M131	5/8-18 X 4.000"	Standard
M133	5/8-18 X 4.000"	High
M185	5/8-18 X 4.000"	Ultra-High
M101-6	5/8-18 X 6.000"	Standard
M183-6	5/8-18 X 6.000"	High

Intrinsically-Safe Magnetic Pickups

Intrinsically-safe magnetic pickups have a limited output current for use in hazardous locations where explosive gases may be present. These pickups will be approved by either CSA, UL or ATEX and it is important to read the applicable certificate that will have a description on where they are approved, which products they are approved with, as well as installation instructions. Similar to the standard pickups, these pickups have 2 pins that will accept a standard MS style connector and are available in short and long thread lengths. The sensitivity is available as either standard or high. A pickup with higher sensitivity is sometimes required to produce higher output at low speed.

Model	Thread Size	Sensitivity
M201	5/8-18 X 1.125"	Standard
M202	5/8-18 X 1.125"	High
M231	5/8-18 X 4.000"	Standard
M233	5/8-18 X 4.000"	High



Explosion-Proof Magnetic Pickups

Explosion-proof magnetic pickups are constructed using a blind-end housing with a 1/2" NPT female thread for connection to either rigid or flexible conduit. By containing all wires and connections within the cable conduit, this construction allows for use in hazardous locations where explosive gases may be present. These pickups will be approved by either CSA, UL or ATEX and it is important to read the applicable certificate that will have a description on where they are approved, which products they are approved with, as well as installation instructions. These pickups have 2 - AWG 18 leads that can be ordered in custom lengths. The bodies are available in short and long thread lengths.

Model	Thread Size	Approval
M104	3/4-20 x 1.875"	CSA / UL
M140	3/4-20 x 1.875"	UL
M180	5/8-18 x 1.500"	CSA / UL / ATEX
M219	5/8-18 x 3.500"	CSA
M318	3/4-20 x 3.500"	CSA
M319	5/8-18 x 3.500"	CSA / ATEX



Hall-Effect Sensors

Hall-effect sensors require DC power and operate at speeds down to 0 RPM. These sensors have 3 pins that will accept a standard 3-socket MS style connector. There are two models available. The model M806 is designed to sense either the north or south pole of a target magnet. This sensor is ideal for ignition systems that require a pulse from the camshaft for proper ignition timing. The model M951 is designed to sense ferrous metal; either gear teeth, a single iron pin or hole / keyway. The output of either sensor is a digital square wave making them ideal for input to a PLC pulse card.

Model	Thread Size	Supply Input
M806	5/8-18 x 4.500"	8 – 32 VDC
M951	5/8-18 X 4.500"	8 – 32 VDC

REV

ECN

REVISION RECORD

DATE

DR

CK

A

89XX

INITIAL RELEASE

04/25/14

PF

BR

5/8-18 UNF-2A

LOCKNUT

5.60L.093

4.500+.016
-.031

Ø .890
±.007

DYNALCO M806

Ø .31

A

B

C

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS
FINISH: AS FURNISHED
MATERIAL: 303 STAINLESS STEEL

DATE: 03/03/14
MODEL: M806
PART: NYP0001PICKUPMS806
DRAWN: PF
APPROVED: HM

REVISIONS TO DIMENSIONS, DIMENSIONS AND ALL INFORMATION RELATED TO A PROPERTY OF DYNALCO SHALL BE IN WRITING. NO PARTS OR SUBASSEMBLIES SHALL BE USED IN ANY MANNER UNLESS THEY ARE SPECIFICALLY APPROVED BY DYNALCO AND TO BE RETURNED TO DYNALCO FOR REUSE.

DO NOT SCALE DRAWING

SCALE: 1:1

WEIGHT

SHEET 1 OF 1

ELECTRICAL CONNECTIONS

PIN A

PIN B

PIN C

COMMON

POWER SUPPLY: 8 TO 32 VDC.
SUPPLY CURRENT: 30 mA MAXIMUM
OPERATING TEMPERATURE: -30 F TO +250 F (-35 C TO 125 C)
SENSING FREQUENCY: 0 TO 20 KHZ
OUTPUT VOLTAGE: SQUARE WAVE
LOGIC 0: WHEN NO MAGNET PRESENT
LOGIC 1: WHEN MAGNET ACTIVATES SENSOR
4.7 KΩ PULL UP TO VIN
VOUT= VIN x Rload/(Rload+4.7KΩ)
INSULATION RESISTANCE: 100 MEGA ohm MIN. AT 50 VDC
HOUSING: 303 STAINLESS STEEL, BLIND END
OPERATING AIR GAP: 0.120 TYPICAL WITH NORTH POLE FACING TARGET MAGNET.

POWER SUPPLY: 8 TO 32 VDC.
SUPPLY CURRENT: 30 mA MAXIMUM
OPERATING TEMPERATURE: -30 F TO +250 F (-35 C TO 125 C)
SENSING FREQUENCY: 0 TO 20 KHZ
OUTPUT VOLTAGE: SQUARE WAVE
LOGIC 0: WHEN NO MAGNET PRESENT
LOGIC 1: WHEN MAGNET ACTIVATES SENSOR
4.7 KΩ PULL UP TO VIN
VOUT= VIN x Rload/(Rload+4.7KΩ)
INSULATION RESISTANCE: 100 MEGA ohm MIN. AT 50 VDC
HOUSING: 303 STAINLESS STEEL, BLIND END
OPERATING AIR GAP: 0.120 TYPICAL WITH NORTH POLE FACING TARGET MAGNET.

REV

ECN

REVISION RECORD

DATE

DR

CK

A

9269

INITIAL RELEASE

04/25/14

PF

BR

5/8-18 UNF-2A

LOCKNUT

5.60L.093

4.500+.016
-.031

Ø .890
±.007

DYNALCO M951

Ø .31

A

B

C

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS
FINISH: AS FURNISHED
MATERIAL: 303 STAINLESS STEEL

DATE: 09/27/14
MODEL: M951
PART: NYP0001PICKUPMS951
DRAWN: PF
APPROVED: HM

REVISIONS TO DIMENSIONS, DIMENSIONS AND ALL INFORMATION RELATED TO A PROPERTY OF DYNALCO SHALL BE IN WRITING. NO PARTS OR SUBASSEMBLIES SHALL BE USED IN ANY MANNER UNLESS THEY ARE SPECIFICALLY APPROVED BY DYNALCO AND TO BE RETURNED TO DYNALCO FOR REUSE.

DO NOT SCALE DRAWING

SCALE: 1:1

WEIGHT

SHEET 1 OF 1

ELECTRICAL CONNECTIONS

PIN A

PIN B

PIN C

COMMON

POWER SUPPLY: 8 TO 32 VDC.
SUPPLY CURRENT: 30 mA MAXIMUM
OPERATING TEMPERATURE: -30 F TO +250 F (-35 C TO 125 C)
SENSING FREQUENCY: 0 TO 20 KHZ
OUTPUT VOLTAGE: SQUARE WAVE
LOGIC 0: WHEN NO MAGNET PRESENT
LOGIC 1: WHEN MAGNET ACTIVATES SENSOR
4.7 KΩ PULL UP TO VIN
VOUT= VIN x Rload/(Rload+4.7KΩ)
INSULATION RESISTANCE: 100 MEGA ohm MIN. AT 50 VDC
HOUSING: 303 STAINLESS STEEL, BLIND END
OPERATING AIR GAP: 0.120 TYPICAL WITH NORTH POLE FACING TARGET MAGNET.

POWER SUPPLY: 8 TO 32 VDC.
SUPPLY CURRENT: 30 mA MAXIMUM
OPERATING TEMPERATURE: -30 F TO +250 F (-35 C TO 125 C)
SENSING FREQUENCY: 0 TO 20 KHZ
OUTPUT VOLTAGE: SQUARE WAVE
LOGIC 0: WHEN NO MAGNET PRESENT
LOGIC 1: WHEN MAGNET ACTIVATES SENSOR
4.7 KΩ PULL UP TO VIN
VOUT= VIN x Rload/(Rload+4.7KΩ)
INSULATION RESISTANCE: 100 MEGA ohm MIN. AT 50 VDC
HOUSING: 303 STAINLESS STEEL, BLIND END
OPERATING AIR GAP: 0.120 TYPICAL WITH NORTH POLE FACING TARGET MAGNET.

REV

ECN

REVISION RECORD

DATE

DR

CK

A

9269

INITIAL RELEASE

04/25/14

PF

BR

5/8-18 UNF-2A

LOCKNUT

5.60L.093

4.500+.016
-.031

Ø .890
±.007

DYNALCO M951

Ø .31

A

B

C

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS
FINISH: AS FURNISHED
MATERIAL: 303 STAINLESS STEEL

DATE: 09/27/14
MODEL: M951
PART: NYP0001PICKUPMS951
DRAWN: PF
APPROVED: HM

REVISIONS TO DIMENSIONS, DIMENSIONS AND ALL INFORMATION RELATED TO A PROPERTY OF DYNALCO SHALL BE IN WRITING. NO PARTS OR SUBASSEMBLIES SHALL BE USED IN ANY MANNER UNLESS THEY ARE SPECIFICALLY APPROVED BY DYNALCO AND TO BE RETURNED TO DYNALCO FOR REUSE.

DO NOT SCALE DRAWING

SCALE: 1:1

WEIGHT

SHEET 1 OF 1

ELECTRICAL CONNECTIONS

PIN A

PIN B

PIN C

COMMON

POWER SUPPLY: 8 TO 32 VDC.
SUPPLY CURRENT: 30 mA MAXIMUM
OPERATING TEMPERATURE: -30 F TO +250 F (-35 C TO 125 C)
SENSING FREQUENCY: 0 TO 20 KHZ
OUTPUT VOLTAGE: SQUARE WAVE
LOGIC 0: WHEN NO MAGNET PRESENT
LOGIC 1: WHEN MAGNET ACTIVATES SENSOR
4.7 KΩ PULL UP TO VIN
VOUT= VIN x Rload/(Rload+4.7KΩ)
INSULATION RESISTANCE: 100 MEGA ohm MIN. AT 50 VDC
HOUSING: 303 STAINLESS STEEL, BLIND END
OPERATING AIR GAP: 0.120 TYPICAL WITH NORTH POLE FACING TARGET MAGNET.

POWER SUPPLY: 8 TO 32 VDC.
SUPPLY CURRENT: 30 mA MAXIMUM
OPERATING TEMPERATURE: -30 F TO +250 F (-35 C TO 125 C)
SENSING FREQUENCY: 0 TO 20 KHZ
OUTPUT VOLTAGE: SQUARE WAVE
LOGIC 0: WHEN NO MAGNET PRESENT
LOGIC 1: WHEN MAGNET ACTIVATES SENSOR
4.7 KΩ PULL UP TO VIN
VOUT= VIN x Rload/(Rload+4.7KΩ)
INSULATION RESISTANCE: 100 MEGA ohm MIN. AT 50 VDC
HOUSING: 303 STAINLESS STEEL, BLIND END
OPERATING AIR GAP: 0.120 TYPICAL WITH NORTH POLE FACING TARGET MAGNET.