CRANE DYNALCO

SPH-100

Peak Speed Tachometer

The SPH-100 is a microprocessor-based 5-digit tachometer, hourmeter, and peak speed indicator with memory recall. The unit is magnetic pickup powered and CSA approved for Class I, Division 1, Groups A, B, C and D hazardous locations.

Features

The SPH-100 peak speed tachometer provides the following features:

- Signal and power are derived from a magnetic pickup.
- High accuracy: 5-digit display; 1 RPM resolution; 100,000 hour range.
- Field configurable: Calibration / setup with single push button.
- Hold last (10) peak speed readings in non-volatile memory.
- Separate "Test" function for overspeed tests.
- Date/Time stamps for RPM peak speed events.
- Tracks run time hours.
- High shock, vibration, and moisture resistant.
- Standard SAE case size fits panels with 3-3/8 inch (86 mm) openings.
- Approved for CSA Class I, Div 1, Groups A, B, C ,D.

Installation

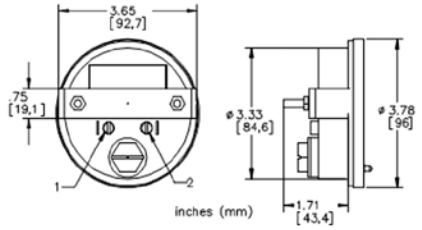
The SPH-100 is designed for panel mounting either on or off the turbine. If mounting on a turbine, shock mounts are recommended. A 3-3/8 inch (86 mm) cut out in the panel is required for installation. A mounting clamp is included with the meter.

Specifications

The SPH-100 peak speed tachometer specifications are as follows:
Mounting: Panel mounted.
Power: Magnetic pickup M204 or M205.
Display: 5 active digits (0 to 99999), non-blinking LCD, 0.4 inch (10.2 mm) character height.
Input Signal Frequency: From 100 to 20,000 Hz.
Tachometer Accuracy: Quartz crystal controlled, 1 RPM resolution, within +/- 1% under all combined environmental conditions.
Environment Temperature: Operating:-5 F to +158 F (-20 C to +70 C).
Storage: -5 F to +158 F (-20 C to +70 C).

Terminal Connections and Dimensions

The magnetic pickup is connected to terminals 1 and 2 on the back of the SPH-100.



Programming Instructions

The SPH-100 programming is done using the single push button on the face of the unit. The push button operates in 4 modes:

1. Click – A momentary press of the button (less than 1 second).
2. Short press – A press and hold of the button for 1 to 2 seconds to select this function..
3. Long press – A press and hold for more than 2 to 5 seconds which always returns to the current RPM display.
4. No button pressing for more than 15 seconds will also return to the RPM display.

These different modes of button pushing need to be used for programming. Note: Programming under battery power is indicated by the LCD display intensity varying. Under battery operation the unit will shut down after a few seconds to conserve the battery.

Initial Programming (must be done for proper RPM reading)

Note that programming can be completed with or without an input signal from the magnetic pickup. There are (2) parameters that need to be programmed for proper operation: the number of teeth on the gear and the current date and time. The procedure is as follows:

1. Click the button 4 times until the display indicates "SEtUP" for meter setup.
2. Now short press the button and the display will read "tEEtH" which means number of teeth of the gear.
3. Short press, and the display will read the current number of teeth.
4. Starting from the left digit, you can either change each digit by a button click to increment the digit or short press the button to go to the next digit. Use this method to enter the number of teeth on your gear. On the last digit, the short press will return you to the "tEEtH" display.
5. After the correct number of teeth is programmed, the next step is to program the date and the time.

Initial Programming (continued)

6. Go to the "SEtUP" display, as in step 1.
7. Short press to get to the "tEEtH" display.
8. Click the button and the display will show " YEAr", for "Year."
9. Short press the button allowing you to set the year. The year can be changed the same as in step 6. Short press on the last digit to go back to the "YEAr" display.
10. From the "YEAr" display click the button once to get to the "dAtE" for the date display.
11. Short press which allows you to set the current date. Change the date as in step 6. Short press on the last digit to go back to the "dAtE" display.
12. Click the button and the display will read "HOUr", for setting the time.
13. Short press which allows you to set the current time. Change the time as in step 6. Short press on the last digit to go back to the "HOUr" display.
14. Click the button and the display will read "F – uEr" which means "Firmware Version." This display is only for support functions.
15. Click the button again and the display will read "UP-1L" which means up-one-level. Short press of the button will return you to the previous menu. If you simply wait a few seconds the display will return to the RPM reading otherwise it will turn off. (These steps complete the programming of the Peak Speed Tachometer.)

Note: The complete SETUP Menu Flow Diagram is attached.

Power Up – Magnetic Pickup Powered

Apply power from either Dynalco model M204 or M205 intrinsically safe magnetic pickups.

- Connect to terminals (1) and (2) (no polarity)
- Pickup gap should be set to 0.010 – 0.020 inch.
- Minimum 4.0 VRMS required for operation.

Operation

The SPH-100 peak speed tach is designed to record the highest turbine speed either prior to a shutdown or during routine overspeed tests.

Following a turbine shutdown:
The display will go blank. To read the peak speed recorded, click the push button until "HiSt" or RPM history is displayed. A short press while displaying "HiST" will allow a choice of (3) history functions; tStCy (Test Cycle), CyC (Current Cycle) or ALL (all history).

1. First select the desired history. For a turbine shutdown, you will select the "CyC" display (current cycle)
2. Short press the button and the display will read the highest speed (RPM) recorded.
3. Click the button and the display will read the date of shutdown.
4. Click the button again and the display will read the time of shutdown.
5. Click the button again to display "C0nt" for continue, short press the button to show the next highest peak speed recorded, as well as the corresponding date and time.

To escape to the RPM display from this option or any other option press and hold the button for 2 to 5 seconds (Long press).

Overspeed Tests are performed as follows:

1. First, put the SPH-100 in the test mode by pressing and holding the push button for more than 5 seconds while in the RPM display. This is described as an Extra Long press. (see SPH-100 Main Menu Operations Method diagram).
2. Once in the test mode, the display will blink.
3. At this time, you can perform your overspeed tests, with the highest readings being recorded in the "Test Cycle."
4. It is recommended to manually record the peak readings following each overspeed test as these values will be cleared if the test mode is exited and then re-entered.
5. The peak speed values will be recorded in the same way as in the "Following a turbine shutdown" section above, except that you will select the "tStCy" display (Test Cycle) in order to see the values recorded.

Please see the attached complete SETUP Menu Flow Diagram for an illustration of all functions.

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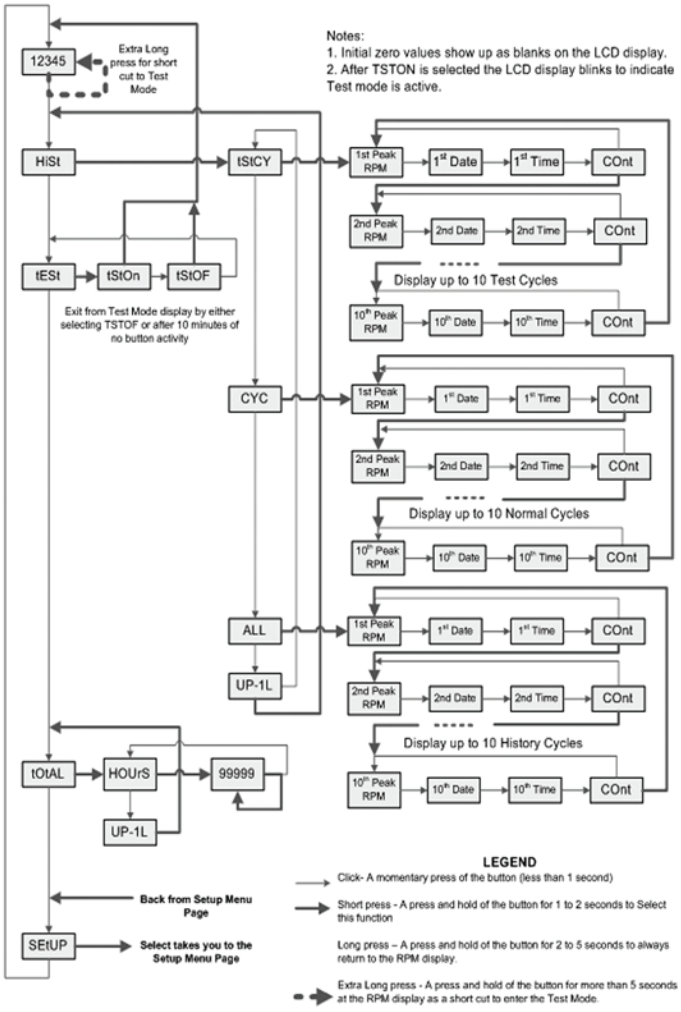
SPH-100 Main Menu Operations Method



SETUP Menu Flow Diagram