

396-UK

Shaft Speed 2



2-channel Shaft Speed Monitor Operation and Calibration Manual



OVERVIEW	2
Calibration	2
THE CONTROL SWITCHES	3
NORMAL OPERATION	4
Programme a Low-speed Alarm Threshold	4
Programme an Overspeed Alarm Threshold	5
Set Shaft Speed Sensor Cal Factor	6
Error message: "Prog"	7
WIRING CONNECTIONS	8
Connections for Cable S/CB/327-1-066	8

Overview

The 2-channel Shaft Speed Monitor is supplied either in a generic version as the “RDS Shaft Speed 2”, or customised with a different front panel overlay, e.g as the “Lodgeway Shaft Monitor”. The instruments function and operate identically.

The instrument has an illuminated 4-digit LCD display and monitors the rpm of either of 2 rotating shafts. These channels are specifically for Seed Shaft RPM () and Fan Speed () on the Lodgeway instrument, whereas they can be for any designated shaft on the generic instrument.

Each shaft speed channel has a programmable low-speed alarm and an Overspeed alarm. If either shaft speed drops below or goes above the programmed threshold, the display will flash the speed of that shaft, and also sound an audible alarm (an external audible alarm is optional) continuously.

The system comprises :

- Head unit
- 12V power supply kit.
- Shaft Speed Sensor kits as required.
- Qikmate to 11-way AMP connector cable – Pt. No. S/CB/327-1-066

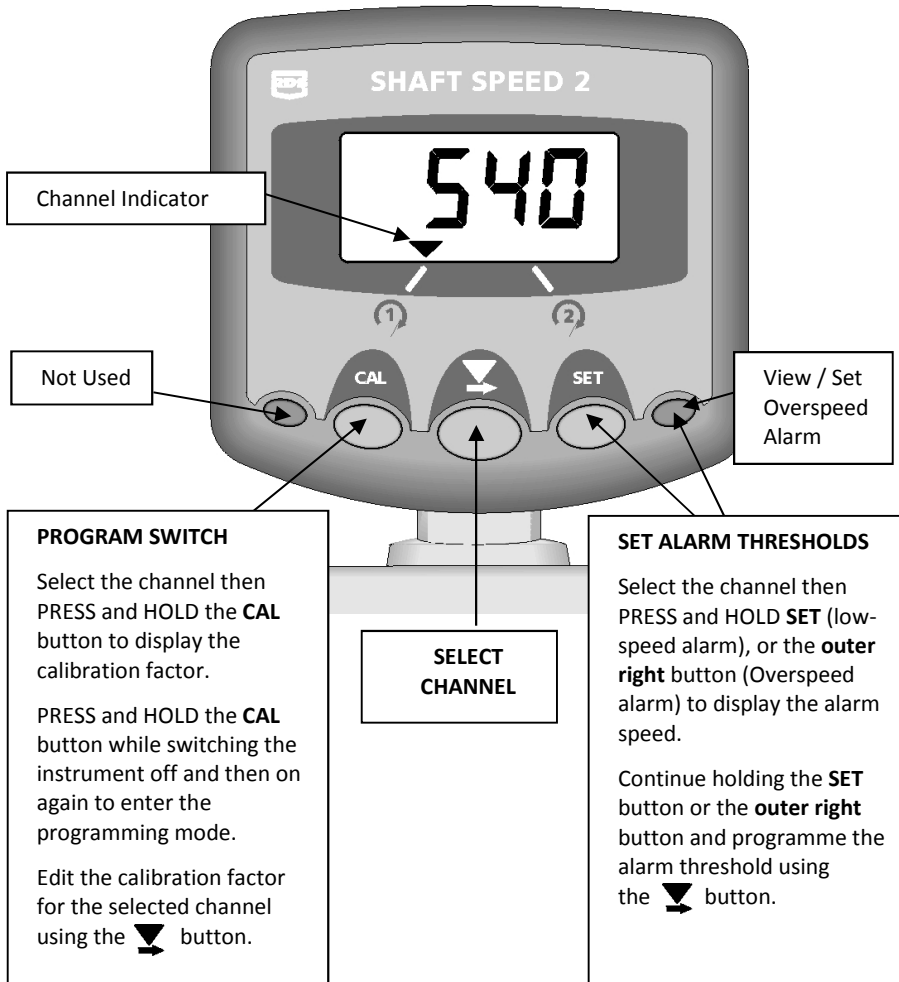
Calibration

Each shaft speed channel in operation must be programmed with a calibration factor to enable the correct RPM display. This factor is the number of pulses received from the sensor per revolution of the shaft. This varies according to the type of sensor / number of sensor magnets installed.




NOTE: *The sensor must provide a pulse rate of more than 1 pulse per second for the instrument to work properly. For slow turning shafts, a range of magnet carriers are available with up to 8 magnets fitted. For very slow turning shafts, a shaft encoder may be used.*

The Control Switches

The front panel has five buttons. The leftmost one is not used.



Normal Operation

Press the  button to switch the display between channel 1 and channel 2 (Seed Shaft RPM () and Fan Speed () on the Lodgeway instrument).

For a shaft speed up to 100rpm, the speed is displayed to the nearest 1 rpm.

For a shaft speed above 100 rpm the speed is displayed to the nearest 10 rpm.

If either shaft speed drops below the programmed threshold, the display will flash the speed of that shaft, and also sound a pulsed audible alarm continuously.

If either shaft speed exceeds the programmed threshold, the display will flash the speed of that shaft, and also sound a pulsed audible alarm continuously.

Programme a Low-speed Alarm Threshold

NOTE: *Default alarm speed :*

Channel 1 = 400 rpm

Channel 2 = 100 rpm




1. Select the appropriate channel.
2. Press and hold the **SET** button and the display will show the current alarm threshold setting.
3. Continue holding the **SET** button and...
4. PRESS  to select the digit or decimal point to change.
5. HOLD  to change the selected digit (or move the decimal point).
6. RELEASE  to select the next digit and repeat as above, otherwise simply release both buttons. The instrument will then return to the normal display mode.



Figure 2: Display Low Speed Alarm

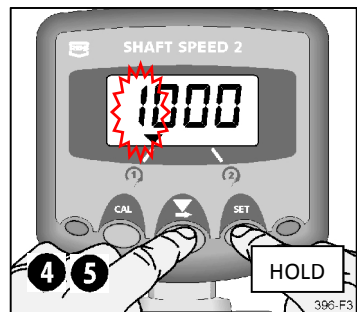


Figure 3: Set Low Speed Alarm

Programme an Overspeed Alarm Threshold

NOTE: Default alarm speed :




Channel 1 = 0 rpm (Alarm Off)

Channel 2 = 0 rpm (Alarm Off)

1. Select the appropriate channel.
2. Press and hold the **right outer** button and the display will show the current alarm threshold setting.
3. Continue holding the **right outer** button and...



Figure 4a: Display Overspeed Alarm

4. PRESS  to select the digit or decimal point to change.
5. HOLD  to change the selected digit (or move the decimal point).
6. RELEASE  to select the next digit and repeat as above, otherwise simply release both buttons. The instrument will then return to the normal display mode.

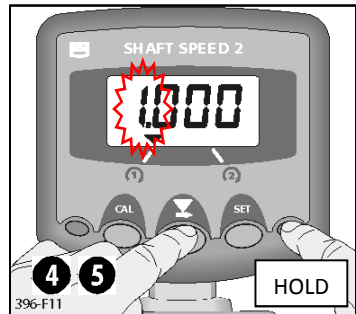


Figure 4b: Set Overspeed Alarm

Set Shaft Speed Sensor Cal Factor

In order for RPM to be displayed correctly, The RPM Sensor Factor must be programmed correctly.

The factor is the number of pulses received by the instrument per revolution of the sensed shaft, e.g. for measuring Engine RPM, PTO Speed, Shaft Speed, Fan Speed etc, depending on the particular installation.


The default setting is 1 pulse per rev (p.p.r), which is OK in the case of a magnetic sensor with a single magnet on the sensed shaft.

For an 8-magnet carrier, the cal. Factor is 8.000.

In other cases, perform the following calibration procedure.

1. Run the sensed component at a known speed. If necessary measure this speed using a hand-held tachometer.
2. At the same time have someone note the RPM displayed on the instrument.
3. Calculate the new calibration factor

$$\text{New Factor} = \text{Initial Factor} \times \frac{\text{Displayed Speed}}{\text{Actual Speed}}$$

4. To display the existing cal. factor, press  to select the channel, and then press the **CAL** button (fig. 5).

To edit the cal factor, you need to enter the Cal mode as follows:-

5. Switch the instrument off then press and hold the **CAL** button while switching the instrument on again. Release the **CAL** button and the calibration factor for the currently selected channel is displayed.

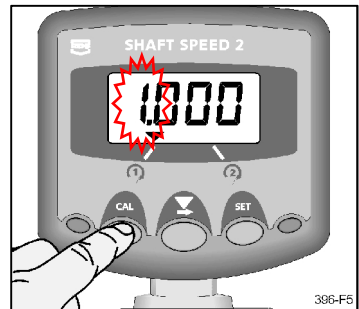





Figure 5: Display Cal. Factor

6. PRESS  to select the digit or decimal point to change.
7. HOLD  to change the selected digit (or move the decimal point).
8. RELEASE  to select the next digit and repeat as above, otherwise simply release both buttons. The instrument will then return to the normal display mode.

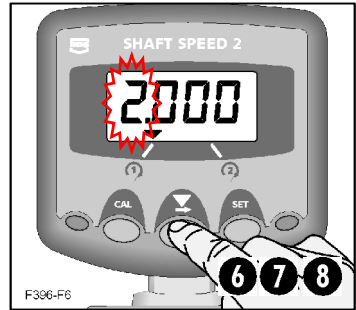


Figure 6: Set Cal. Factor

Error message: "Prog"

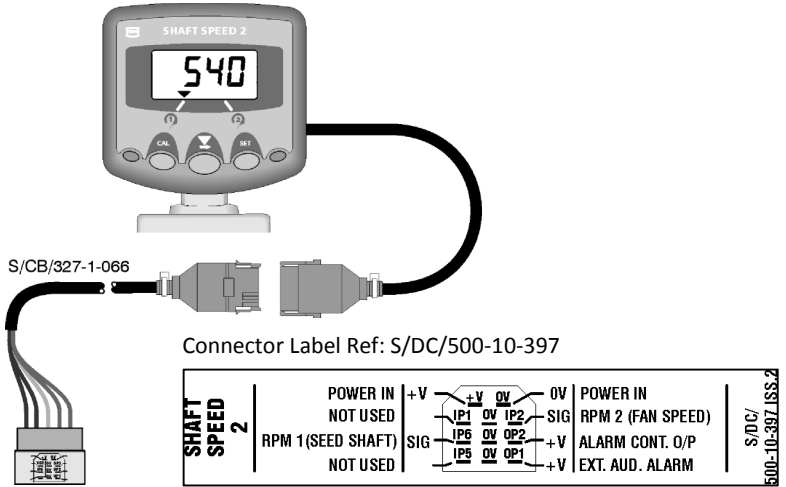
The instrument memory has been corrupted. You can attempt a "Power-On Reset".

1. Switch the power supply off.
2. Press and hold all three buttons and switch the power on. If the instrument can recover itself, it will perform a short self-test routine and return to the normal display.

NOTE: *All calibration and alarm settings will be reset to the factory default values. Otherwise, please visit the RDS website for technical support.*

Wiring Connections

A 12-way Qikmate to 11-way AMP Extension cable Pt No. S/CB/327-1-066 is supplied to connect to the sensors, power supply etc.



Connections for Cable S/CB/327-1-066

TERMINAL	KEY	COLOUR	FUNCTION
11	+V	RED	+V IN
10 2,5,8	0V	BLACK	0V IN (+ 3 x COMMON 0V FOR SENSORS)
9	IP1	GREEN	NOT USED
6	IP6	WHITE	RPM 1 SIGNAL (SEED SHAFT)
7	IP2	YELLOW	RPM 2 SIGNAL (FAN SPEED)
4	OP2	VIOLET	ALARM - CONTINUOUS OUTPUT +V
3	IP5	BLUE	NOT USED
1	OP1	BROWN	AUDIBLE ALARM +V

Refer to the “Work measurement Installation” manual S/DC/500-10-261 for details on fitting sensors / cutout switches etc.

Issue Ref.	Date	Description
Issue 1:	14.4.03	Original Issue
Issue 2	29.5.03	p.3 - deleted para. 4. p.7 - revised procedure for setting cal factor.
Issue 3	5.10.12	Ref. CRQ 3839
Issue 4	6.2.18	Ref. CRQ 8191



Electro-Magnetic Compatibility (EMC)

This product complies with Council Directive 2014/30/EU when installed and used in accordance with the relevant instructions



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Please visit our website for technical support or other product information. Replacement user manuals are available on request

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