Electro-Magnetic Compatibility (EMC)
This product complies with Council Directive 89/336/EEC when installed and used in accordance with the relevant instructions.

Service and Technical Support
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User Guide

“Shaft Speed 6”
6-Channel Shaft Speed Monitor
Calibration and Operation
Software Reference UD701-5
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Overview

The RDS Shaft Speed 6 has an illuminated 4-digit display with 6 display functions, monitoring and displaying the rotational speed (RPM) of up to 6 shafts.

Each shaft speed channel has a programmable low-speed alarm. If any shaft speed drops below the programmed threshold, the display will flash the speed of that shaft, and also sound an audible alarm (an external audible alarm is optional) for 5 seconds.

A second, continuous alarm output (O/P 2) is also triggered, which can be utilised for example, to physically inhibit further operation, or otherwise compensate for the alarm condition. This alarm output remains on until the alarm condition is resolved.

The alarm function on any particular channel can be easily disabled/re-enabled as necessary during normal operation.

The system comprises:

- Head unit
- 12V power supply kit.
- Individual Shaft Speed Sensor kits as required.
- Qikmate to AMP connector cable – Pt. No. S/CB/327-1-064

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 can be fitted, giving up to 360 pulses per rev.
The Control Switches

The front panel has five buttons. Only the middle three are normally used.

- **Channel Indicator**
  - Select the channel then PRESS and HOLD to display the calibration factor. Continue holding the CAL button and programme the cal factor using the button.

- **PROGRAM SWITCH**
  - Select the channel then PRESS and HOLD to display the calibration factor. Continue holding the CAL button and programme the cal factor using the button.

- **SET ALARM**
  - Select the channel then PRESS and HOLD to display the alarm speed. Continue holding the SET button and programme the alarm threshold using the button.
  - Or
    - Hold and then press the CAL button to enable/disable the alarm function.
**RPM Channels**

There are six RPM channels. Press the button to select a channel.

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.

**Programme a Low Speed Alarm Threshold**

*NOTE:* The default alarm speed is zero, i.e. the alarm is disabled.

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

The alarm function on any particular channel can be easily disabled/re-enabled as necessary during normal operation, without you having to re-programme the threshold figure each time.

1. Select the appropriate channel.
2. Press and hold the SET button and press the CAL button to enable/disable the alarm function. The display will alternate between zero and the set threshold.
3. Release the CAL button when the appropriate figure is displayed

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. Select the appropriate channel.

5. Press and hold the CAL button and the display will show the current Cal. factor.

6. Continue holding the CAL button and…

7. PRESS \( \downarrow \) select the digit or decimal point to change.

8. HOLD \( \downarrow \) to change the selected digit (or move the decimal point).

9. RELEASE \( \downarrow \) to select the next digit and repeat as above, otherwise simply release both buttons. The instrument will then return to the normal display mode.
Wiring Connections – Shaft Speed 6

A 12-way Qikmate to 2 x 11-way AMP extension cable Pt No. S/CB/327-1-064 is supplied to connect to the sensors, power supply etc.

Refer to the “Work measurement Installation” manual S/DC/500-10-261 for details on fitting sensors / cutout switches etc.
## Connections for Cable S/CB/327-1-064

<table>
<thead>
<tr>
<th>KEY</th>
<th>COLOUR</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>+V</td>
<td>RED</td>
<td>+V IN</td>
</tr>
<tr>
<td>0V</td>
<td>BLACK</td>
<td>0V IN (+ 3 x COMMON 0V FOR SENSORS)</td>
</tr>
<tr>
<td>Vss</td>
<td>RED</td>
<td>NOT USED</td>
</tr>
<tr>
<td>IP6</td>
<td>WHITE</td>
<td>RPM 6 +V</td>
</tr>
<tr>
<td>OP3</td>
<td>GREY</td>
<td>NOT USED</td>
</tr>
<tr>
<td>OP2</td>
<td>ORANGE</td>
<td>ALARM OUTPUT – CONTINUOUS +V</td>
</tr>
<tr>
<td>OP1</td>
<td>TURQUOISE</td>
<td>AUDIBLE ALARM – PULSED +V</td>
</tr>
</tbody>
</table>

### Connector – Green

<table>
<thead>
<tr>
<th>KEY</th>
<th>COLOUR</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0V</td>
<td>PINK/BLACK</td>
<td>5 x COMMON 0V FOR SENSORS</td>
</tr>
<tr>
<td>IP5</td>
<td>BLUE</td>
<td>RPM 5 +V</td>
</tr>
<tr>
<td>IP4</td>
<td>BROWN</td>
<td>RPM 4 +V</td>
</tr>
<tr>
<td>IP3</td>
<td>PURPLE</td>
<td>RPM 3 +V</td>
</tr>
<tr>
<td>IP2</td>
<td>YELLOW</td>
<td>RPM 2 +V</td>
</tr>
<tr>
<td>IP1</td>
<td>GREEN</td>
<td>RPM 1 +V</td>
</tr>
</tbody>
</table>

**NOTE:** There is no provision for WCI connection on cable S/CB/327-1-064

In some cases for installations on trailed implements, in order to make all the necessary connections between the tractor and implement using the extension cable S/CB/327-1-065, you may need to switch one or more terminal blades between the two connectors.

Carefully insert a suitable thin-bladed screwdriver into the appropriate blade housing and lever the locking tab slightly inwards. The blade can then be withdrawn from the rear of the connector housing. The tabs will probably need to be levered back out so that the blade will lock properly when re-inserted.
SHAFT SPEED 6

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