Wireless Strain Gauge System
AC Coupled
Product Summary
The AC coupled wireless strain gauge system uses a low-power radio link up to two transfer digitised strain measurements to a stationary antenna mounted nearby. Signals from the antenna are passed to a receiver where they are decoded and output as CAN bus messages.

The strain measurements are also available in analogue output form.

The system consists of a strain gauge transmitter and external battery unit, a receive antenna and a tyre strain receiver. The strain gauge elements are provided by the customer and are not deliverables.

Application

- Measurement of strain gauge on the car, e.g. tyre strain gauge.

Electrical

SGT Transmitter

- 10-bit resolution
- Accuracy ±1% RO
- Non-linearity ±1% RO
- Hysteresis ±1% RO
- Repeatability ±1% RO
- Nominal resistance 120ohm ±2%
- Temperature effect on zero balance ±0.3% RO/°C
- Temperature effect on zero output ±0.2% RO/°C
- Sample rate 5000 samples/s on each channel
- Bandwidth 0.1Hz – 2.5kHz
- RF characteristics:
  - Nominal centre frequency 433.92MHz
  - Transmission bandwidth 2MHz

The transmitter has three operating modes: sleep, standby and full rate

Each transmitter will be factory configured with a ‘corner ID’ corresponding to the location where it will be fitted.

SGR Receiver

- Supply voltage 8 to 16Vdc (unit is protected against reverse polarity and transients)
- Supply current 105mA typical @ 12V
- RF input 50ohm
- CAN bus 2.0B active, 1Mbps
- RS232 57.6kbps for configuration
- Three diagnostic LEDs on case: processor status, CAN Busy and RF channel
- Configurable parameters: corner ID, receiver attenuation setting and CAN base ID

SGT-B External Battery Unit

- CR2 battery
- 3.0V nominal voltage

Connection

SGT Transmitter

- Strain gauge connector ECN FF 304 XLM
- Antenna connector via case-mounted bulkhead SMC socket
- Battery connector FGN FF 304 YLC

SGT-B Battery Unit

- FGN FF 304 XLM

SGR Receiver

- Main unit connector AS2-10-35PN
• Antenna connector 25SMA-50-2-6/111 NE
For pin-out details, please contact MESL.

Mechanical
SGT Transmitter
• Black anodised aluminium case
• Weight 33g including flying lead
• Resistant to standard Motorsport fluids
SGT-B Battery Unit
• Black anodised aluminium case
• Weight 35g including battery
• Resistant to standard Motorsport fluids
SGR Receiver
• Black anodised aluminium case
• Weight 115g
• Resistant to standard Motorsport fluids
• 434 MHz helical antenna, approx 79mm long x 15mm diameter, with SMA female connector

Environmental
SGT Transmitter
• Resistant to standard Motorsport fluids
• Operating temperature 0 to + 85°C
• Storage temperature 0 to + 85°C
• Vibration 40 to 2500Hz @ 40g 8hrs per axis
• Shock 50g(max), 1/2sine for 11ms, five times per axis
SGT-B Battery Unit
• Operating temperature 0 to + 85°C (battery life may be reduced by up to 20% at low temperatures)
• Storage temperature 0 to + 85°C
• Vibration 40 to 2500Hz @ 40g 8hrs per axis
• Shock 50g(max), 1/2sine for 11ms, five times per axis
SGR Receiver
• Operating temperature 0 to + 85°C
• Storage temperature -20 to + 85°C
• Vibration random spectrum for two hours in one axis
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<tr>
<th>Description</th>
<th>Ordercode</th>
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<tr>
<td>SGR strain gauge receiver</td>
<td>O 030 205 007 000</td>
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<tr>
<td>Receiver ANA/CAN/PWR connection cable</td>
<td>O 030 205 990 000</td>
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<tr>
<td>1.5m antenna extension cable</td>
<td>O 030 205 990 004</td>
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<th>Description</th>
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<tr>
<td>SGT strain gauge transmitter</td>
<td>O 030 205 008 000</td>
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<tr>
<td>Transmit antenna</td>
<td>O 030 205 990 003</td>
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**Description** | **Ordercode**
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SGT-B external battery pack | O 030 205 008 001
Spare battery | O 030 205 990 005