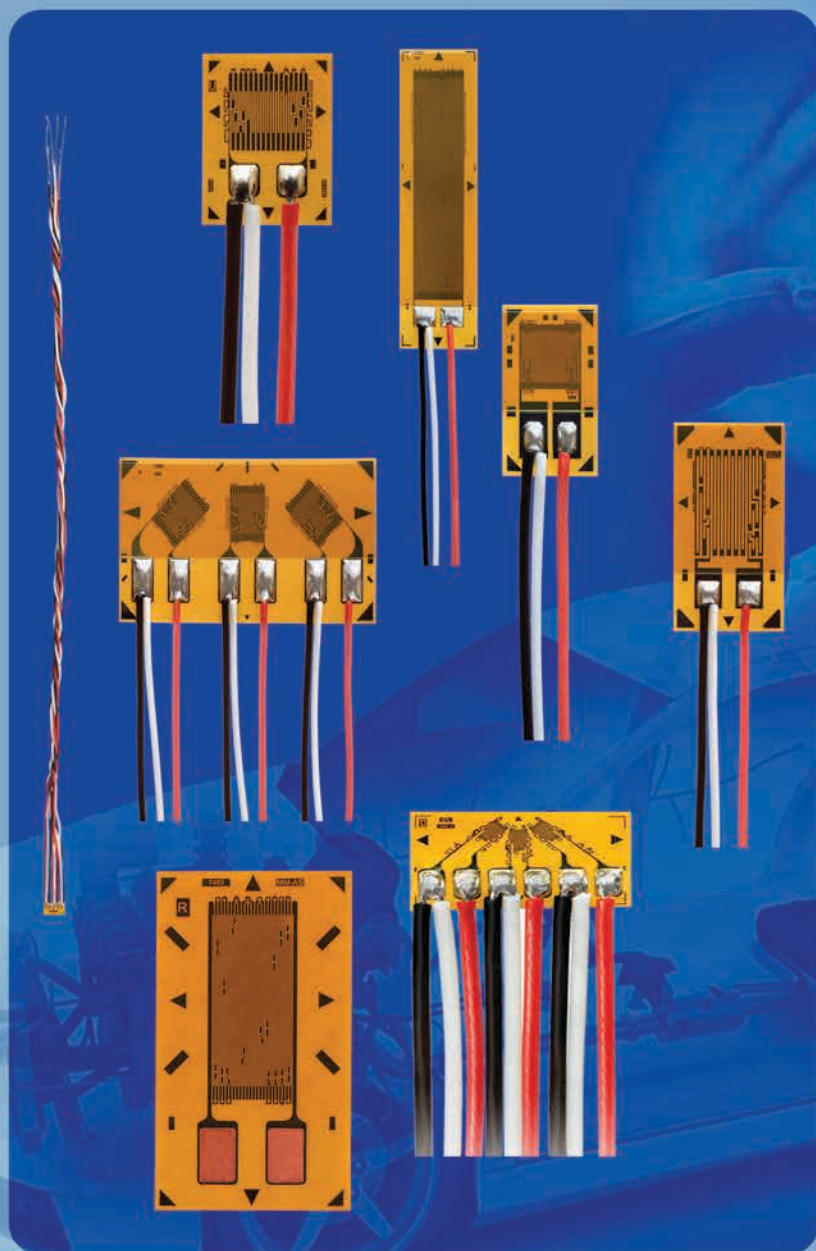


C5K Series

High performance Strain Gages for General-Purpose Applications

Product Overview



micro-measurements.com

MICRO
MEASUREMENTS
A VPG Brand

High performance Strain Gages for General-Purpose Applications

Fully encapsulated General-purpose Karma Alloy strain gages with extended temperature range offered in wide range of resistance values and wiring options, RoHs compliant, Lead-free solder.

Features and Benefits

Operating temperature: +260°C without leadwires (+205°C with leadwires)

Extended grid resistance range from 350Ω to 5000Ω

High Resistance gages allow for:

Improved heat dissipation




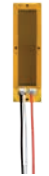

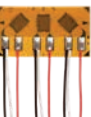
Use of high excitation voltage

Reduction of drifts on thermoplastic materials

Reduction of STC mismatch

High resistance strain gages can be coupled with the new MRF-50C-130 Bridge Completion Module allowing to turn any standard strain measurement device compatible with 5000Ω strain gage measurement

C5K series gages are offered as stand alone gage, with flat lead ribbons or with pre-attached Teflon leadwires

| Gage Pattern | Gage Length | Grid Width | Matrix Length | Matrix Width | Gage Designation (XX = STC Number) | Resistance in Ohms | Options Available |
|---|-----------------------|-----------------------|----------------|----------------|--------------------------------------|---------------------------|-------------------|
| S5145  | 0.030 (0.76) | 0.063 (1.60) | 0.12 (3.1) | 0.10 (2.6) | C5K-XX-S5145-350 | 350 ± 0.2% | XXF, 2R |
| 050LK | 0.050 {1.27} | 0.073 {1.85} | 0.17 (4.4) | 0.14 (3.6) | C5K-XX-050LK-50C | 5000 ± 0.2% | |
| 125LK  | 0.125 (3.18) | 0.065 (1.65) | 0.25 (6.3) | 0.14 (3.6) | C5K-XX-125LK-350 C5K-XX-125LK-50C | 350 ± 0.2% 5000 ± 0.2% | |
| 250LK  | 0.250 (6.35) | 0.125 (3.18) | 0.44 (11.1) | 0.19 (4.7) | C5K-XX-250LK-350 | 350 ± 0.2% | |
| 400LK  | 0.400 (10.0) | 0.102 (2.59) | 0.55 (14.0) | 0.16 (4.0) | C5K-XX-400LK-50C | 5000 ± 0.2% | |
| S5198  | 0.014 ES (0.36) ES | 0.012 ES (0.30) ES | 0.08 (2.2) | 0.15 (3.9) | C5K-XX-S5198-350 | 350 ± 0.5% | |
| 062PR  | 0.062 ES (1.57) ES | 0.062 ES (1.57) ES | 0.25 (6.4) | 0.46 (11.7) | C5K-XX-062PR-350 | 350 ± 0.2% | |

C5K Series Specifications

Carrier Matrix: Thin, laminated, polyimide-film backing featuring encapsulated grids

Leadwires (optional): Thin, flexible, color coded high performance etched Teflon® leadwires allowing simplified gage installation and ensure dependable installations, particularly in difficult locations on components or in the field

Lead Ribbons (optional): 1.25" (31.75mm) long Ni-Clad Copper flat ribbons

Temperature Range: -100° to +400°F (-75° to +205°C) with leadwires

-100° to +500°F (-75° to +260°C) without leadwires

Grid Encapsulation: Entire grid is encapsulated (solder tabs are not encapsulated)

Strain Range: ±1.5%

Fatigue Life: 10⁷ cycles at ±1800 microstrain

Option XXF

General Description: C5K gage series can be supplied with preattached cables for direct connection to instrumentation.

Wiring Selection:

| C5K | Length | | Options Available | |
|-----|--------|-------|-------------------|---------|
| | | | 2 wires | 3 wires |
| | 0.1" | 25 mm | 2R | - |
| | 1" | 0.3M | 21F | - |
| | 3" | 1M | 23F | 33F |
| | 9" | 3M | - | 39F |

Cable: Color-coded, thin, two or three-conductor 36-gauge (0.127 mm), flexible, etched Teflon insulated flexible wires.

Solder: +361°F (+180°C) tin-lead alloy solder joints. Exposed leadwires on unattached end of cable are pretinned for ease of hookup.

Wires Resistance Considerations: Each conductor of the cable has a nominal resistance of 0.1 ohm/ft (0.35 ohm/m). Gage resistance is measured at gage tabs.

Gage Factor: Gage factor is determined for gages without preattached cable.

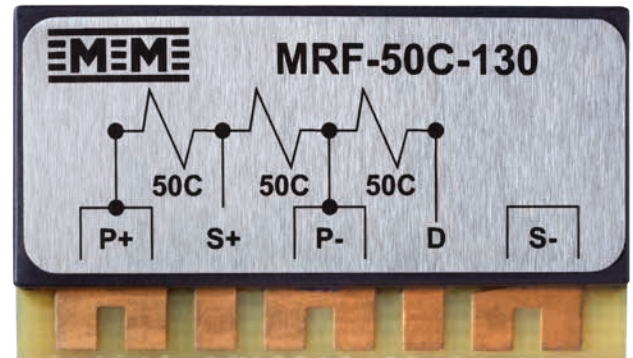
5000Ω Bridge Completion Module

Strain gage instrumentation is readily available with built-in bridge completion resistors and "dummy" gages to accept quarter- and half-bridge strain gage input circuits. However, if the instrumentation at hand is not provided with these components, or if the measurement application does not permit their use, external bridge completion must be provided, and MR-Series Bridge Completion Modules can be an excellent choice in these applications.

MRF-Series Bridge Completion Modules employ Bulk Metal Foil Resistors. The resistors are specially processed to "match" the thermal expansion coefficient of the ceramic, resulting in a very low resistance temperature coefficient equivalent to $\pm 0.15 \mu\epsilon/^\circ\text{F}$ ($\pm 0.27 \mu\epsilon/^\circ\text{C}$) for the half-bridge circuits, and $\pm 0.35 \mu\epsilon/^\circ\text{F}$ ($\pm 0.63 \mu\epsilon/^\circ\text{C}$) for the dummy gages, over a temperature range from 0° to $+200^\circ\text{F}$ (-18° to $+95^\circ\text{C}$). Maximum operating temperature range is -50° to $+250^\circ\text{F}$ (-45° to $+120^\circ\text{C}$).

Each module is covered with a special environmental protection system to ensure long-term stability. Each module is provided with foam tape for easy attachment to the test-part surface or at the instrumentation site, and gold plated copper terminals facilitate attachment of up to 22-gauge (0.64 mm dia.) leadwires.

Completing the bridge circuit at the strain gage site provides for a symmetrical, balanced leadwire system between the strain gage circuit and the instrumentation. This can reduce effects of noise pickup in the leadwire system in some environments. Where switch contacts, slip rings, or other mechanical connections are employed between the strain gages and measuring instrumentation, or when leadwires will be periodically disconnected from the measuring instrument, accuracy can be improved by completing the bridge at the measurement site. Bridge completion modules can be designed to meet special circuit requirements. Contact our Applications Engineering Department for a detailed discussion of your special needs.



| CHARACTERISTICS | | |
|--|---------------------------|---------|
| MODULE TYPE AND FEATURES | BRIDGE EXCITATION (VOLTS) | |
| | RECOMMENDED | MAXIMUM |
| MRF 50C-130: Provides a precision 5000 Ω dummy gage. Recommended for use with half-bridge strain gage circuits of any resistance value, or with 5000 Ω quarter-bridge circuits. High resistance extends battery life in battery-powered instrumentation, reduces strain gage self-heating, and permits higher bridge excitation voltage to improve signal-to-noise ratio. Size (including foam tape): 1.3 x 0.7 x 0.2 in (32 x 18.2 x 5.7 mm). Weight: 6g. | 0.5–30 V | 40 V |



Sales Contact

mm@vpgsensors.com

micro-measurements.com

DISCLAIMER: ALL PRODUCTS, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE. Vishay Precision Group, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "VPG"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product. The product specifications do not expand or otherwise modify VPG's terms and conditions of purchase, including but not limited to, the warranty expressed therein. VPG makes no warranty, representation or guarantee other than as set forth in the terms and conditions of purchase. **To the maximum extent permitted by applicable law, VPG disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.** Information provided in datasheets and/or specifications may vary from actual results in different applications and performance may vary over time. Statements regarding the suitability of products for certain types of applications are based on VPG's knowledge of typical requirements that are often placed on VPG products. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. You should ensure you have the current version of the relevant information by contacting VPG prior to performing installation or use of the product, such as on our website at vpgsensors.com. No license, express, implied, or otherwise, to any intellectual property rights is granted by this document, or by any conduct of VPG. The products shown herein are not designed for use in life-saving or life-sustaining applications unless otherwise expressly indicated. Customers using or selling VPG products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify VPG for any damages arising or resulting from such use or sale. Please contact authorized VPG personnel to obtain written terms and conditions regarding products designed for such applications. Product names and markings noted herein may be trademarks of their respective owners.