



Model 8180-CU00A
single-channel TELEMETRY Control unit
Installation and Operating Manual

**For assistance with the operation of this product,
contact PCB Piezotronics, Inc.**

Toll-free: 800-828-8840
24-hour SensorLine: 716-684-0001
Fax: 716-684-0987
E-mail: info@pcb.com
Web: www.pcb.com



Repair and Maintenance

PCB guarantees Total Customer Satisfaction through its “Lifetime Warranty Plus” on all Platinum Stock Products sold by PCB and through its limited warranties on all other PCB Stock, Standard and Special products. Due to the sophisticated nature of our sensors and associated instrumentation, **field servicing and repair is not recommended and, if attempted, will void the factory warranty.**

Beyond routine calibration and battery replacements where applicable, our products require no user maintenance. Clean electrical connectors, housings, and mounting surfaces with solutions and techniques that will not harm the material of construction. Observe caution when using liquids near devices that are not hermetically sealed. Such devices should only be wiped with a dampened cloth—never saturated or submerged.

In the event that equipment becomes damaged or ceases to operate, our Application Engineers are here to support your troubleshooting efforts 24 hours a day, 7 days a week. Call or email with model and serial number as well as a brief description of the problem.

Calibration

Routine calibration of sensors and associated instrumentation is necessary to maintain measurement accuracy. We recommend calibrating on an annual basis, after exposure to any extreme environmental influence, or prior to any critical test.

PCB Piezotronics is an ISO-9001 certified company whose calibration services are accredited by A2LA to ISO/IEC 17025, with full traceability to SI through N.I.S.T. In addition to our standard calibration services, we also offer specialized tests, including: sensitivity at elevated or cryogenic temperatures, phase response, extended high or low frequency response, extended range, leak testing, hydrostatic pressure testing, and others. For more information, contact your local PCB Piezotronics distributor, sales representative, or factory customer service representative.

Returning Equipment

If factory repair is required, our representatives will provide you with a Return Material Authorization (RMA) number, which we use to reference any information you have already provided and expedite the repair process. This number should be clearly marked on the outside of all returned package(s) and on any packing list(s) accompanying the shipment.

Contact Information

PCB Piezotronics, Inc.
3425 Walden Ave.
Depew, NY14043 USA
Toll-free: (800) 828-8840
24-hour SensorLine: (716) 684-0001
General inquiries: info@pcb.com
Repair inquiries: rma@pcb.com

For a complete list of distributors, global offices and sales representatives, visit our website, www.pcb.com.

Safety Considerations

This product is intended for use by qualified personnel who recognize shock hazards and are familiar with the precautions required to avoid injury. While our equipment is designed with user safety in mind, the protection provided by the equipment may be impaired if equipment is used in a manner not specified by this manual.

Discontinue use and contact our 24-Hour Sensorline if:

- Assistance is needed to safely operate equipment
- Damage is visible or suspected
- Equipment fails or malfunctions

For complete equipment ratings, refer to the enclosed specification sheet for your product.

Definition of Terms and Symbols

The following symbols may be used in this manual:



DANGER

Indicates an immediate hazardous situation, which, if not avoided, may result in death or serious injury.

**CAUTION**

Refers to hazards that could damage the instrument.

**NOTE**

Indicates tips, recommendations and important information. The notes simplify processes and contain additional information on particular operating steps.

The following symbols may be found on the equipment described in this manual:



This symbol on the unit indicates that high voltage may be present. Use standard safety precautions to avoid personal contact with this voltage.



This symbol on the unit indicates that the user should refer to the operating instructions located in the manual.



This symbol indicates safety, earth ground.



PCB工业监视和测量设备 - 中国RoHS2公布表

PCB Industrial Monitoring and Measuring Equipment - China RoHS 2 Disclosure Table

部件名称	有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
住房	0	0	0	0	0	0
PCB板	X	0	0	0	0	0
电气连接器	0	0	0	0	0	0
压电晶体	X	0	0	0	0	0
环氧	0	0	0	0	0	0
铁氟龙	0	0	0	0	0	0
电子	0	0	0	0	0	0
厚膜基板	0	0	X	0	0	0
电线	0	0	0	0	0	0
电缆	X	0	0	0	0	0
塑料	0	0	0	0	0	0
焊接	X	0	0	0	0	0
铜合金/黄铜	X	0	0	0	0	0
本表格依据 SJ/T 11364 的规定编制。						
0：表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。						
X：表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。						
铅是欧洲RoHS指令2011/65/ EU附件三和附件四目前由于允许的豁免。						

CHINA RoHS COMPLIANCE

Component Name	Hazardous Substances					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Chromium VI Compounds (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	O	O	O	O	O	O
PCB Board	X	O	O	O	O	O
Electrical Connectors	O	O	O	O	O	O
Piezoelectric Crystals	X	O	O	O	O	O
Epoxy	O	O	O	O	O	O
Teflon	O	O	O	O	O	O
Electronics	O	O	O	O	O	O
Thick Film Substrate	O	O	X	O	O	O
Wires	O	O	O	O	O	O
Cables	X	O	O	O	O	O
Plastic	O	O	O	O	O	O
Solder	X	O	O	O	O	O
Copper Alloy/Brass	X	O	O	O	O	O

This table is prepared in accordance with the provisions of SJ/T 11364.

O: Indicates that said hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

X: Indicates that said hazardous substance contained in at least one of the homogeneous materials for this part is above the limit requirement of GB/T 26572.

Lead is present due to allowed exemption in Annex III or Annex IV of the European RoHS Directive 2011/65/EU.

Model 8180

Single channel Telemetry



A simple, accurate method of conditioning and transmitting strain, thermocouple, voltage or ICP® signals from moving or rotating components.

Model 8180

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Abbreviations

TC	Thermocouple	STG	Strain Gage	n	RPM
Mt	Torque	AC	Alternating Current	DC	Direct Current

Units of physical dimensions

Voltage	1V = 1,000mV
Current	1A = 1,000mA
Weight	1kg = 1,000g = 35.275 oz.
Temperature	°C = degrees Celsius
	°F = degrees Fahrenheit
	°K = degrees Kelvin
Length	1m = 1,000mm = 3.28ft = 39.37"
Torque	1Nm = 8.851in.lbf

Model 8180



Important Safety Tips!

The 8180 single channel telemetry system utilizes an inductive electricity supply.

Avoid having combustible material in the area of the inductive head.

The power oscillator is regulated according to power usage.

With high power demand the inductive head can become hot to the touch, up to 60°C/140°F.

With high power use the Control Unit can become warm to touch and should be located in a well ventilated area.

Potential health hazard for heart pacemakers.

The inductive supply system generates a magnetic field.

Heart pacemakers and other sensitive medical devices should stay clear of the magnetic field. This area is 50cm/20" around the inductive head.

Potential Burn Hazard.

Avoid metallic objects in and around the active magnetic field. Such as rings, chains and other metallic jewelry. These objects become very hot and burn the skin.

Electrical Shock Hazard.

The Control Unit should not be opened except by authorized service personal. High voltages of up to 400V_{pp} can be found in the Control Unit and stator head cable. Any damaged or frayed stator cables should be discarded and replaced immediately as they may pose a shock hazard.

It is the responsibility of the user to ensure the rotor electronics and antenna are properly installed on the shaft.

Components not correctly mounted may come loose during operation and cause injury to personnel and damages to components and property.

Important Installation Tips!

8180 Installation

All cable connections should be done with the power off.

Only apply power to the Control unit with a stator head connected, otherwise damage to the Control Unit may occur.

If the inductive head is placed on a metallic surface with the power on, the power oscillator will produce maximum power. While there is circuitry to prevent the system from being damaged for a short period of time, this must be avoided.

The inductive head should be fastened to a non-metallic plate or bracket. If a metallic bracket is used the stator should be isolated from the metal by more than 5 mm of a non metallic material such as rubber or plastic.

Mounting the stator near or on metal could produce unnecessary warming of the stator head and cause damage to the system. Every attempt should be made to keep a metal free area around the stator head for best operation.

The installation of the 8180 single channel telemetry system requires the rotor electronics and antenna be mounted in such a way they do not come loose during operation.

It is the responsibility of the user to ensure the components of the 8180 single channel telemetry system are properly installed.

Knowledge of basic soldering techniques is required.

Soldering should be preformed using a regulated soldering iron. The recommended temperature setting is 400 °C / 752 °F.

Model 8180

Technical data

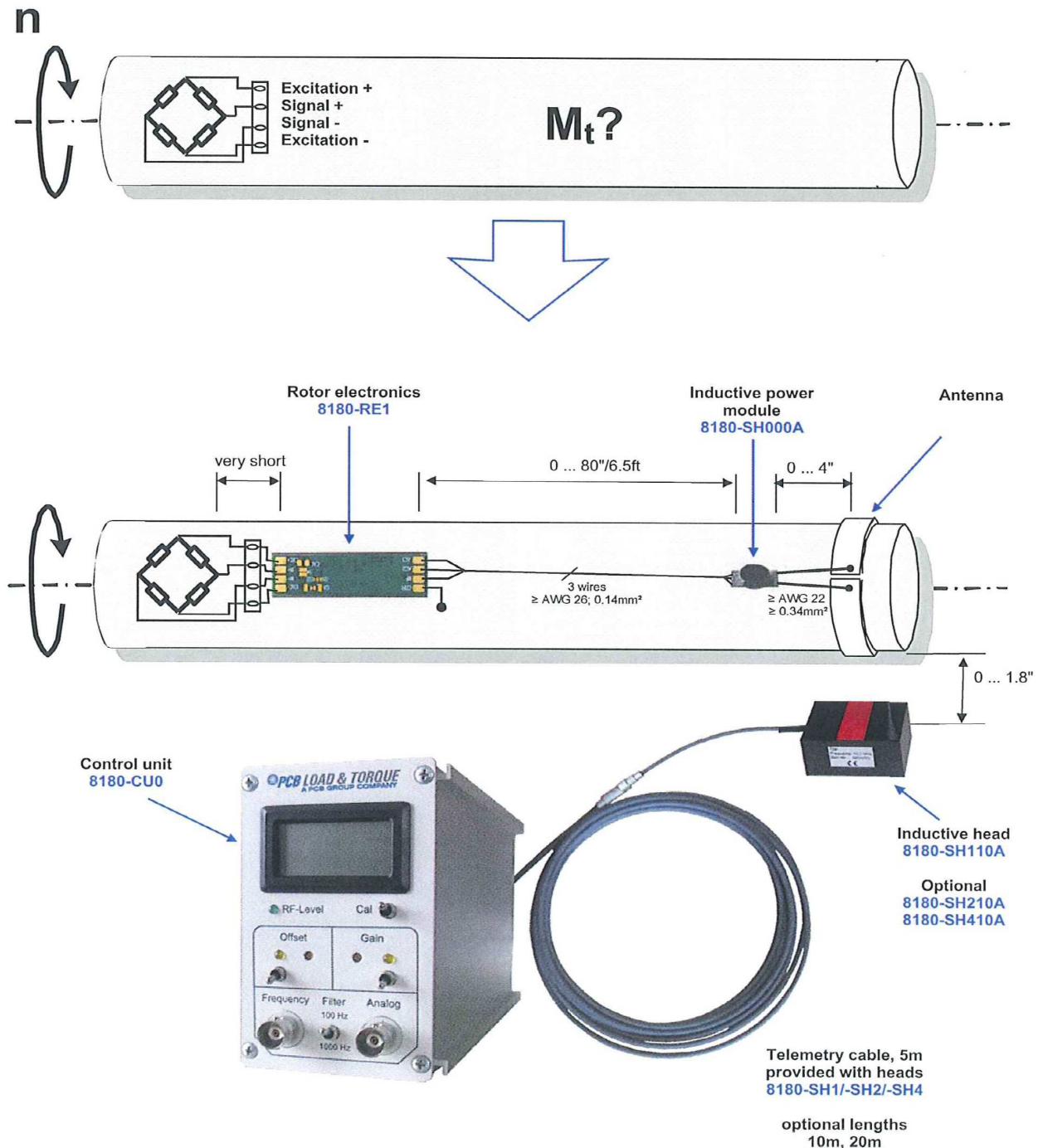
Single-Channel-Telemetry		8180
Rotor electronics 8180-RE		
Mechanical values		
	housing	nickel-plated aluminum housing dust tight and waterproof
	Mechanical adaptation	installation on shafts with tape, glue and/or resins
	weight; dimensions	3g / 0.1oz.; 40mm x 12mm x 3.5mm / 1.57" x 0.47" x 0.14"
	Maximum RPM	dependent on installation, up to 50,000 RPM; higher on request
Operating temperature		-40°C...120°C/ -40°F...248°F, not condensing
Power supply		Battery 6...18V/ 17mA; Inductive supply with module 8180-SH0 8180-SH000A module allows distances of up to 2m/6.6ft to the antenna
Sensor connection		Solder pads
Data transmission		integrated RF-transmitter; 10.7 MHz <1mW
Transmitting antenna		Dependent on application, single band around shaft
Signal input		differential amplifier for direct connection of sensors
	Configuration	by solder jumpers or resistor
	Sensors	different models for specific sensors 8180-RE1- STG full-bridge / half-bridge >=350 Ohm ; 8180-RE2 - TC Type K (non-isolated) ; 8180-RE3 - ICP
	Strain gage bridge excitation	3VDC, integrated, short circuit protected
	Measurement ranges	±0.5mV/V, ±2mV/V, set by jumper or ±0.1mV/V... ±16mV/V, adjustable -100°C .. 1,000°C/-148°F..1,832°F, linearized, cold junction compensated
	Accuracy	Better than ±0.1% FS or ±1°K
	Signal bandwidth	1,000 Hz / channel
	Linearity	< 0.1%
	Zero and Gain drift	-10°C...80°C/14°F...176°F < 0.001%/K; ...100°C/212°F < 0.002%/K -40°... 120°C/-40°F...248°F < 0.003%/K
	Anti-aliasing filter	Butterworth, integrated
	Adjustment function	Offset ±1.8V and gain ±20% by potentiometer at control unit
	Control function	Shunt calibration for STG-application ; power on negative full scale if TC break
Stator 8180-SH		
Wideband Inductive/Receiving head	8180-SH1 8180-SH2 8180-SH4	5m/16ft Telemetry cable; Transmission distance dependent on installation maximum 40mm/1.7"; dimensions 35 x 50 x 70 mm ³ maximum 10mm/0.4"; dimensions 25 x 30 x 45 mm ³ 500mm/19.7" loop length; longer lengths are available
Wideband Receiving head	8180-SH3	0.1m...2m /0.3ft..6.5ft. dependent on installation, dimensions 24 x 12 x 5.5 mm ³ ; 0.95"x 0.47"x 0.22"
Control unit 8180-CU0		
Signal output	-analog voltage -analog frequency	BNC jack on front panel, ±10V BNC jack on front panel, 10kHz ±5kHz
Display		3½ digit LCD-Display
RF-Receiver		integrated,
Power supply		9... 32VDC, with inductive power supply about 12W
dimensions (LxWxH); Weight		robust compact housing 180 x 105 x 64 mm ³ / 7.09"x 4.13"x 2.54"; 1 kg / 35oz. Rack mounting is possible 19"/3HU plug-in
Operating temperature		0°C...60°C/32°F...140°F
Options/special accessories		
	Telemetry cable	5m/16ft - 009M192/M05 ; 10m/32ft - 009M192/M010 ; 20m/64ft - 009M192/M020
	Installation Kit	Installation Kit 8180-IK00A : copper band, mu-metal, Isolation tape
	Special	Carrier frequencies other than 10.7MHz are available Other than type K thermocouples, are available upon request

In the interest of constant product improvement, we reserve the right to change specifications without notice

Model 8180

Basic System Installation

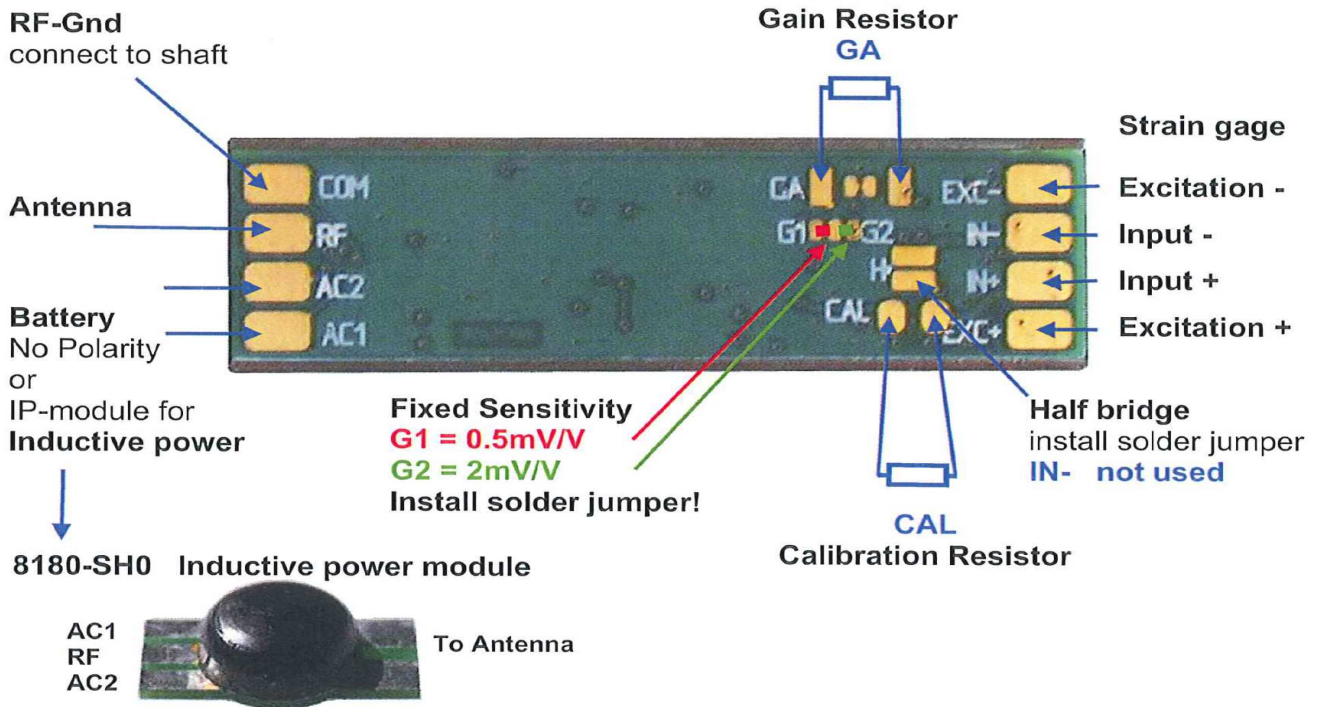
Example: torque measure on a rotating shaft with strain gage, full bridge



Model 8180

Rotor electronics 8180-RE1

Rotor electronics for Strain gage Full or Halfbridge, $\geq 350\Omega$



Calculation

Gain resistor GA (soldered resistor)

$$GA = 100 / (125 / (3 * S) 1) \quad [k\Omega]$$

Calibration resistor CAL (soldered resistor)

$$CAL = Rb (25000 / (D * S) 0.5) \quad [k\Omega]$$

Units S = Sensitivity [mV/V];

Rb = Bridge Resistor [kΩ];

D = Shunt [%]

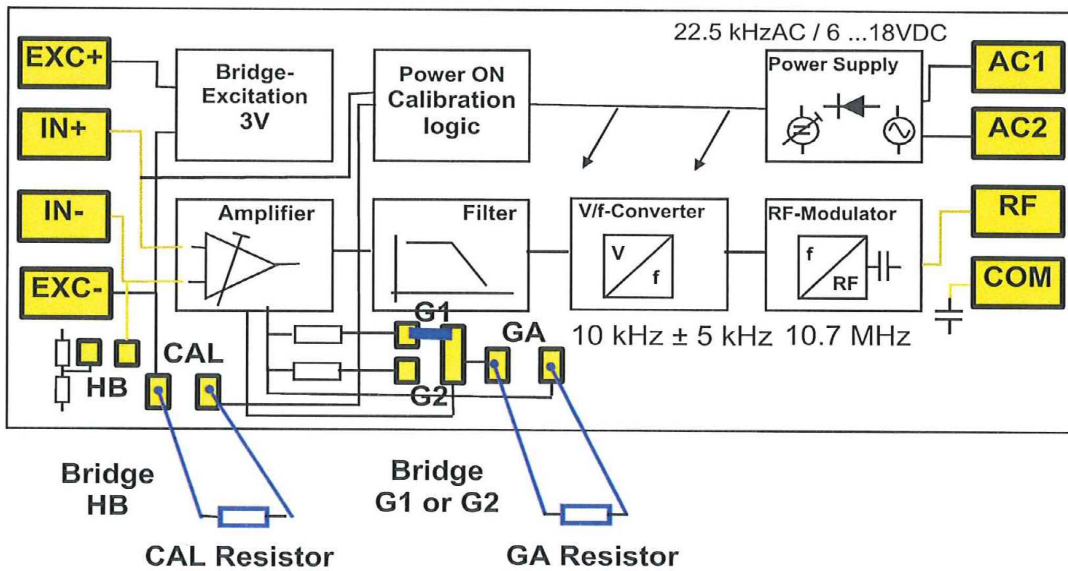
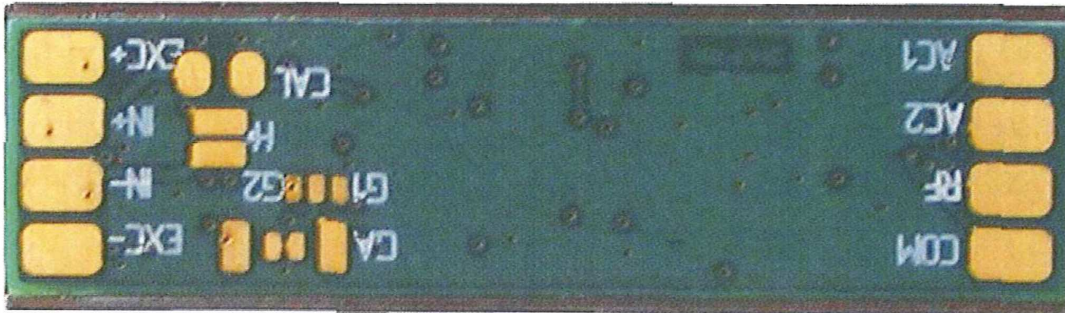
Sensitivity [mV/V]	0.1	0.5	1.0	2.0	4.0	8.0
GA [kΩ]	0.241	1.215	2.459	5.042	10.619	23.762
CAL [kΩ] 80% Shunt 350Ω bridge	1,093.575	218.575	109.200	54.512	27.169	13.497

Useful Link for calculation

<http://www.rt-m.de/dl/singlecal-pcb.jnlp>

Model 8180

Rotor Electronics 8180-RE1 Overview

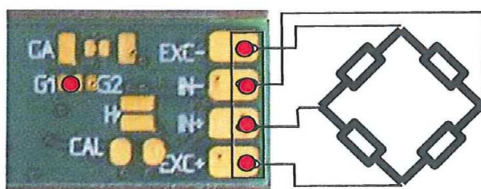


Rotor electronics 8180-RE1

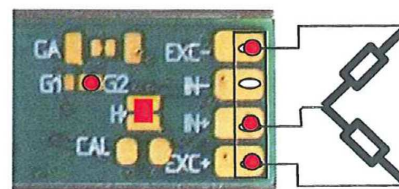
Input connection

Full bridge

Half bridge



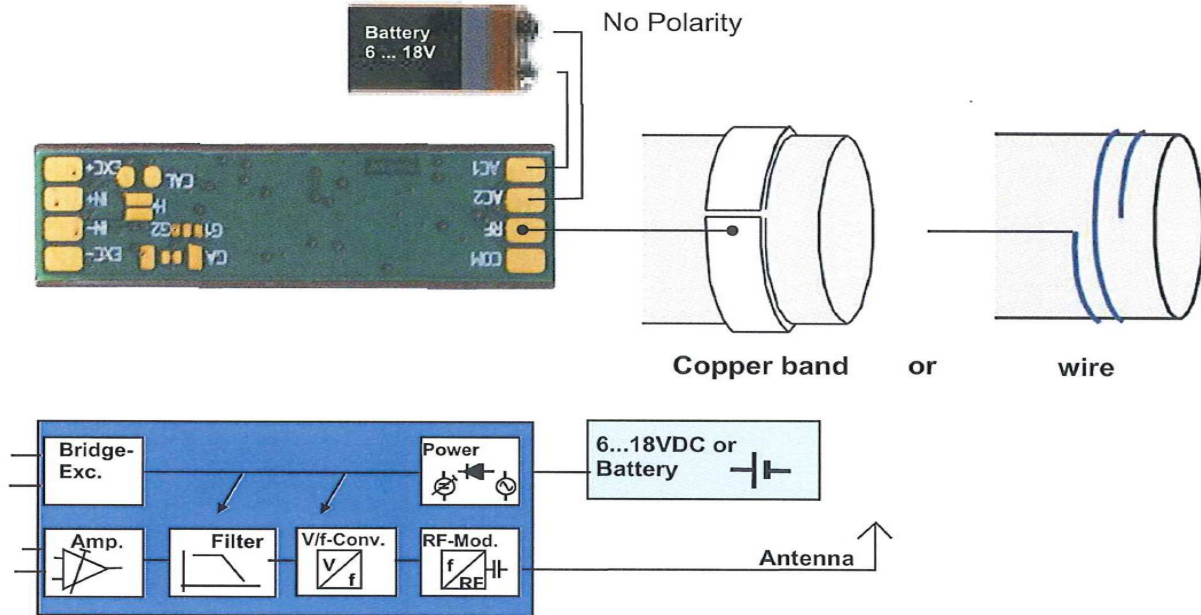
example 0.5mV/V



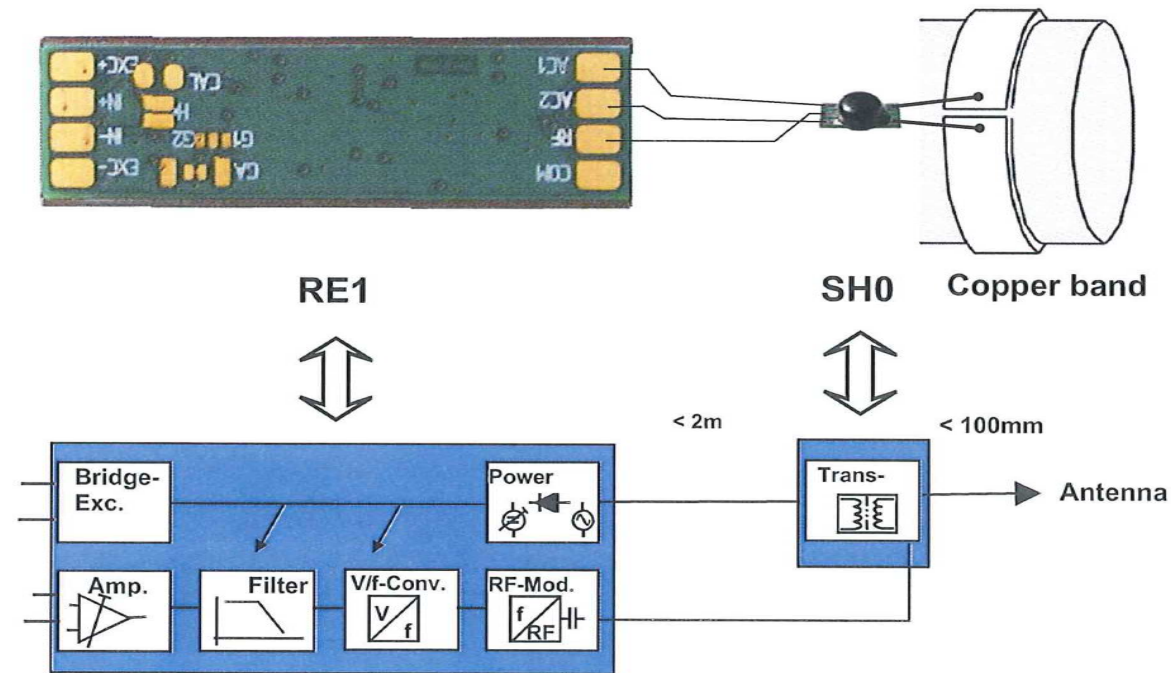
example 1mV/V

Model 8180

Powering the Rotor electronics 8180-RE1 DC Supply



AC Supply



Model 8180

Inductive / Receiving Heads 8180-SH

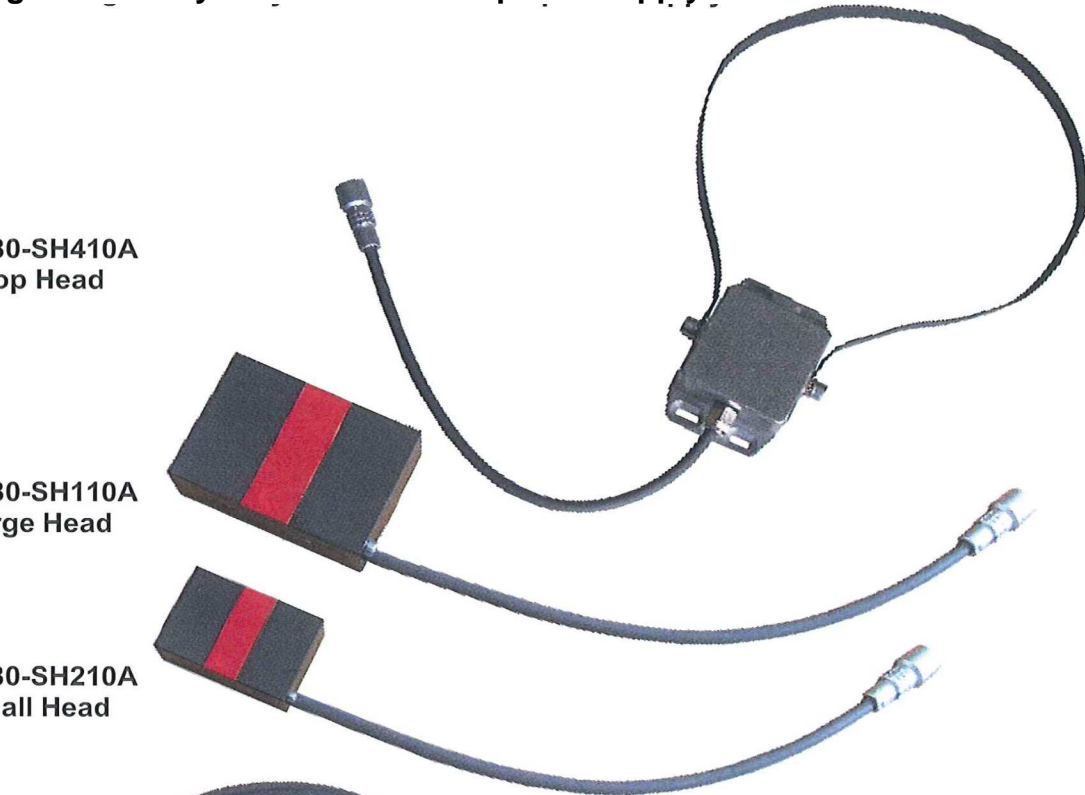
All heads **8180-SH** have an integrated active antenna.
Frequency range: 10 MHz to 40 MHz.

The **8180-SH310A** head is designed for use with battery power and has no integrated coil system for inductive power supply.

8180-SH410A
Loop Head

8180-SH110A
Large Head

8180-SH210A
Small Head



009M192/M05
Telemetry cable 5m / 16ft standard

009M192/M010
Telemetry cable 10m / 32ft

009M192/M020
Telemetry cable 20m / 64ft



8180-SH310A
Receiving Head
(Battery Operation Only)

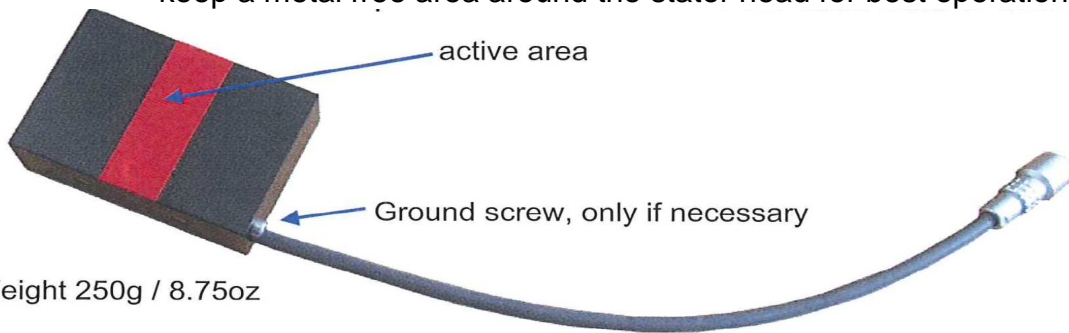


Model 8180

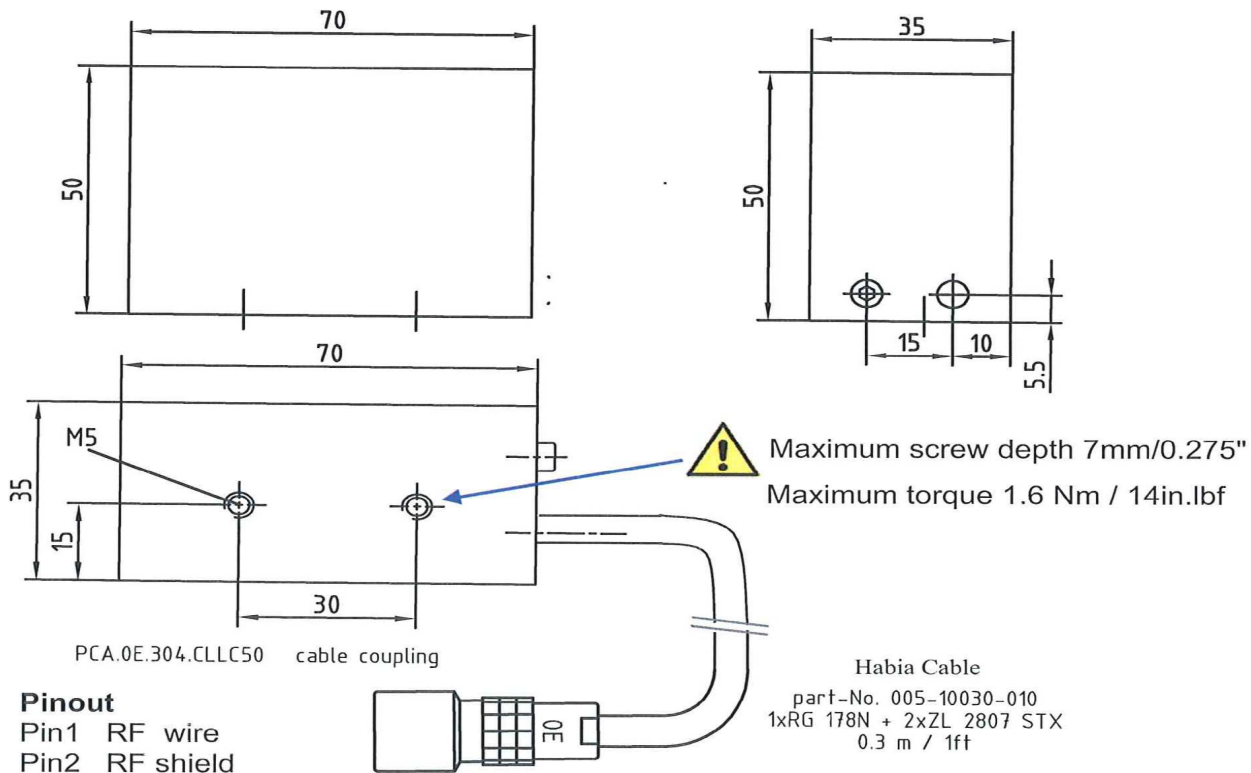
Inductive head 8180-SH110A “Large Head” Typical air gap 40 mm / 1.58”

The inductive head should be fastened to a non-metallic plate or bracket. If a metallic bracket is used the stator should be isolated from the metal by more than 5 mm of a non metallic material such as rubber or plastic.

Mounting the stator near or on metal could produce unnecessary warming of the stator head and cause damage to the system. Every attempt should be made to keep a metal free area around the stator head for best operation.



Weight 250g / 8.75oz



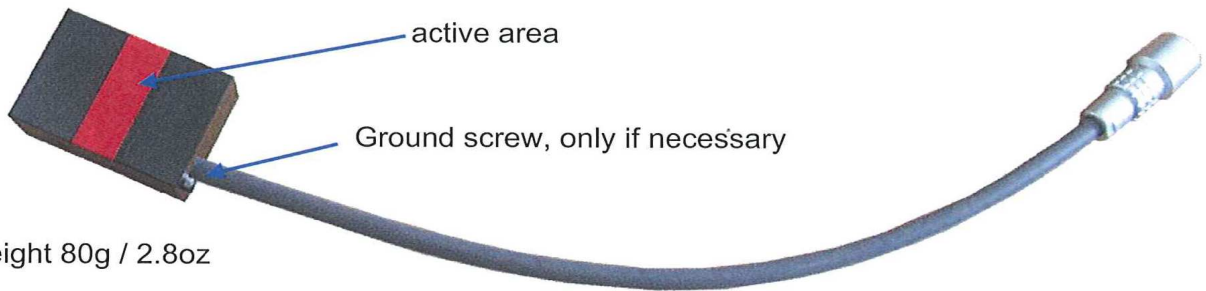
drawing dimensions in mm

Model 8180

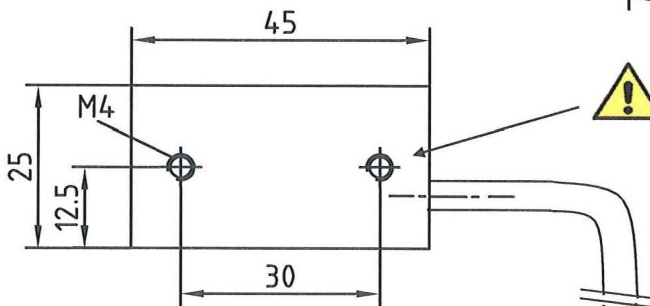
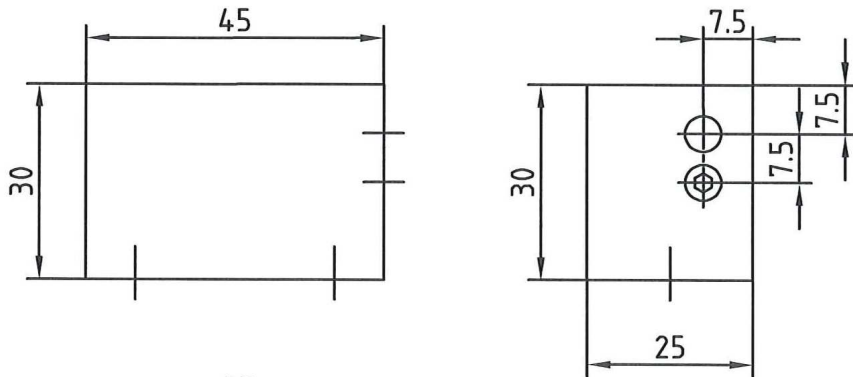
Inductive head 8180-SH210A “Small Head” Typical air gap 10 mm / 0.4”

The inductive head should be fastened to a non-metallic plate or bracket. If a metallic bracket is used the stator should be isolated from the metal by more than 5 mm of a non metallic material such as rubber or plastic.

Mounting the stator near or on metal could produce unnecessary warming of the stator head and cause damage to the system. Every attempt should be made to keep a metal free area around the stator head for best operation.



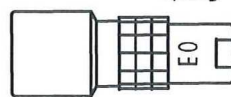
Weight 80g / 2.8oz



Maximum screw depth 6mm/0.236"
Maximum torque 1.3 Nm / 11in.lbf

- Pinout**
Pin1 RF wire
Pin2 RF shield
Pin3 Power1
Pin4 Power2

PCA.0E.304.CLLC50 cable coupling



Habia Cable
part-No. 005-10030-010
1xRG 178N + 2xZL 2807 STX
0.3 m / 1ft

Drawing dimensions in mm

Model 8180

Inductive head 8180-SH410A

“Loop Head”

Typical loop length

350mm...650mm / 13.8”...25.6”

Loop material:

standard and recommended: Copper band 0.3 mm x 10 mm; 0.12" x 0.39"
Included Loop length: 500mm / 19.7"

Screws:

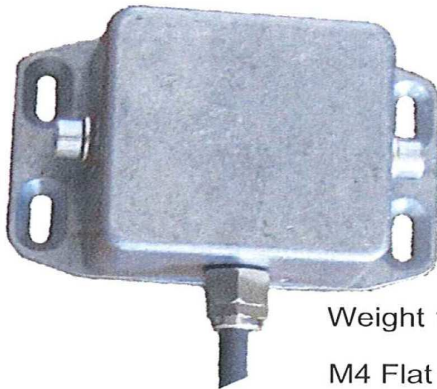


Allen-head screw; M5 x 10mm

The screws should be torqued to 2.5 Nm / 22 in.lbf

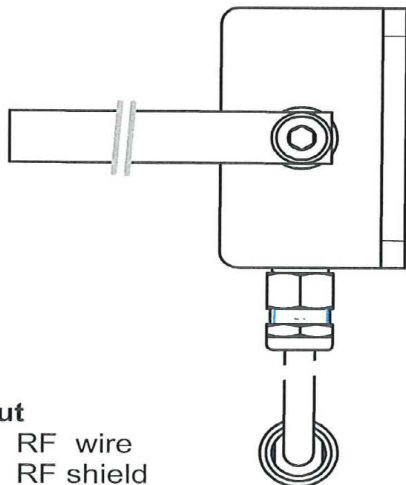
It is very important the contact area of the loop and screws be clean during assembly and should be cleaned with sandpaper.

To improve the connection a lock washer and washer should be used.



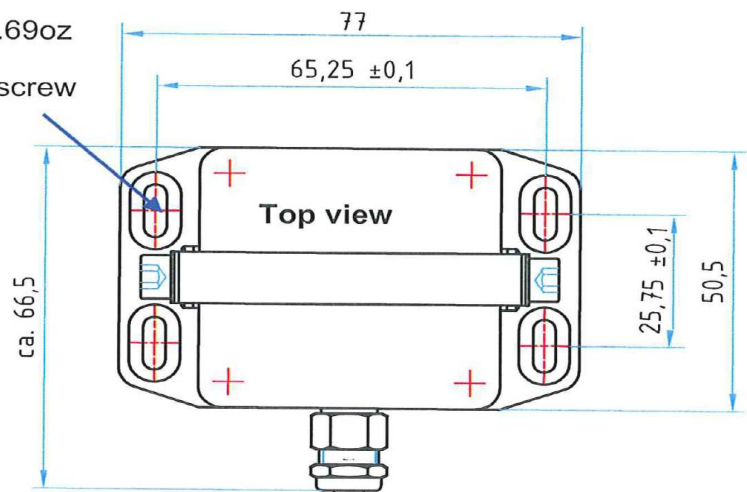
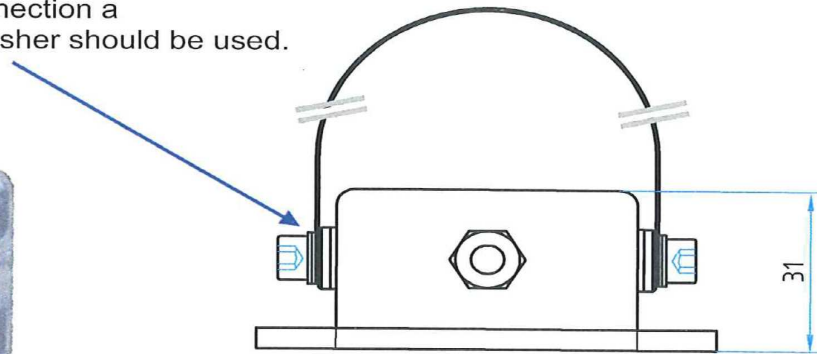
Weight 191g / 6.69oz

M4 Flat headed screw

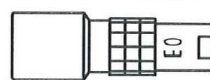


Pinout

- Pin1 RF wire
- Pin2 RF shield
- Pin3 Power1
- Pin4 Power2



PCA.0E.304.CLLC50 cable coupling



Habia Cable
part-No. 005-10030-010
1xRG 178N + 2xZL 2807 STX
0.3 m / 1ft

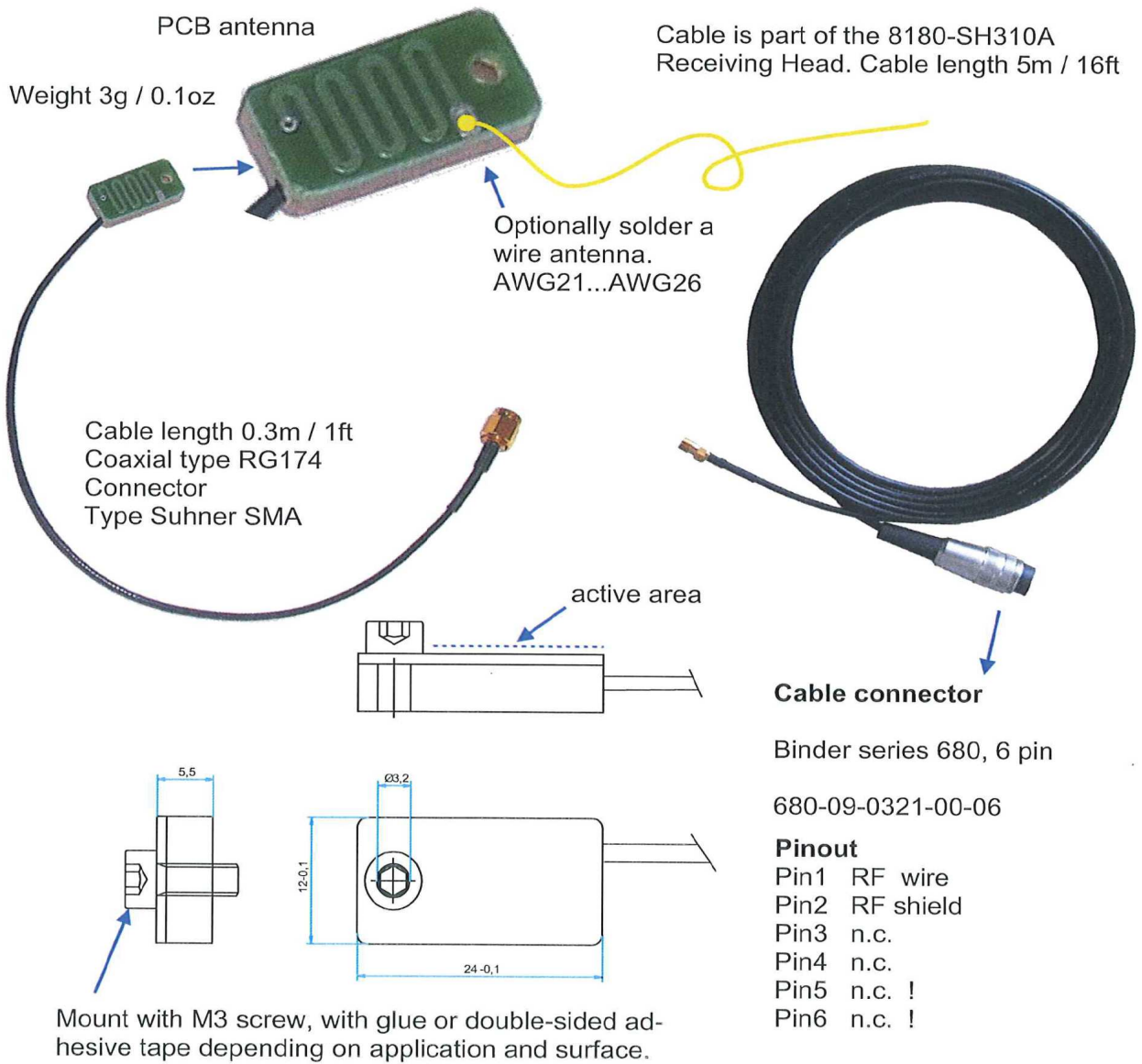
Drawing dimensions in mm

Model 8180

Receiving head 8180-SH310A “Antenna Head” Typical receiving distance 500mm/ 1.6ft

The receiving head is designed for use with battery powered installations. It is not possible to inductively power the rotor electronics with the 8180-SH310A Head.

While plug in the original connecting cable into the Control Unit the power oscillator is not switched on



Model 8180

Telemetry cable

The Telemetry cable is supplied of the heads:

- 8180-SH110A
- 8180-SH210A
- 8180-SH410A

with standard length 5m / 16ft.

As an optional accessory the telemetry cable is available in 3 lengths:

- Length 5m / 16ft part **009M192/M05**
- Length 10m / 32ft part **009M192/M010**
- Length 20m / 64ft part **009M192/M020**

Cable connector

LEMO series 0E, 4pin
FFA.0E.304.CLAC50

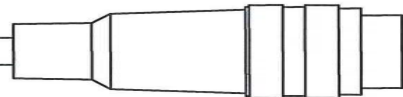


Pinout

- Pin1 RF wire
- Pin2 RF shield
- Pin3 Power1
- Pin4 Power2

Cable connector

Binder series 680, 6 pin
680-09-0321-00-06



Pinout

- Pin1 RF wire
- Pin2 RF shield
- Pin3 Power1
- Pin4 Power2
- Pin5 Jumpered to turn
- Pin6 power oscillator on

Habia Cable
part-No. 005-10030-010
1xRG 178N + 2xZL 2807 STX



The cable is resistant to most oils, lubricants, water and acids.
The bending radius of the cable should not be less than 1".
Operating temperature range: -40°F to 248°F/ -40° C to 120°C



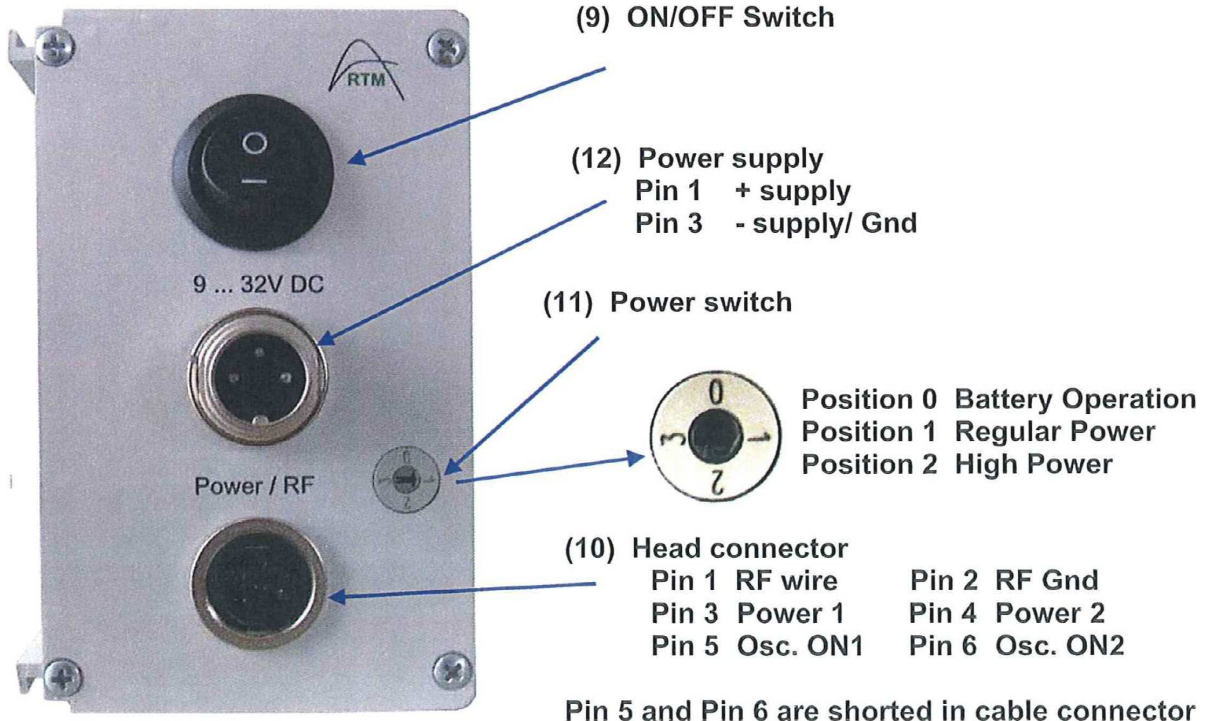
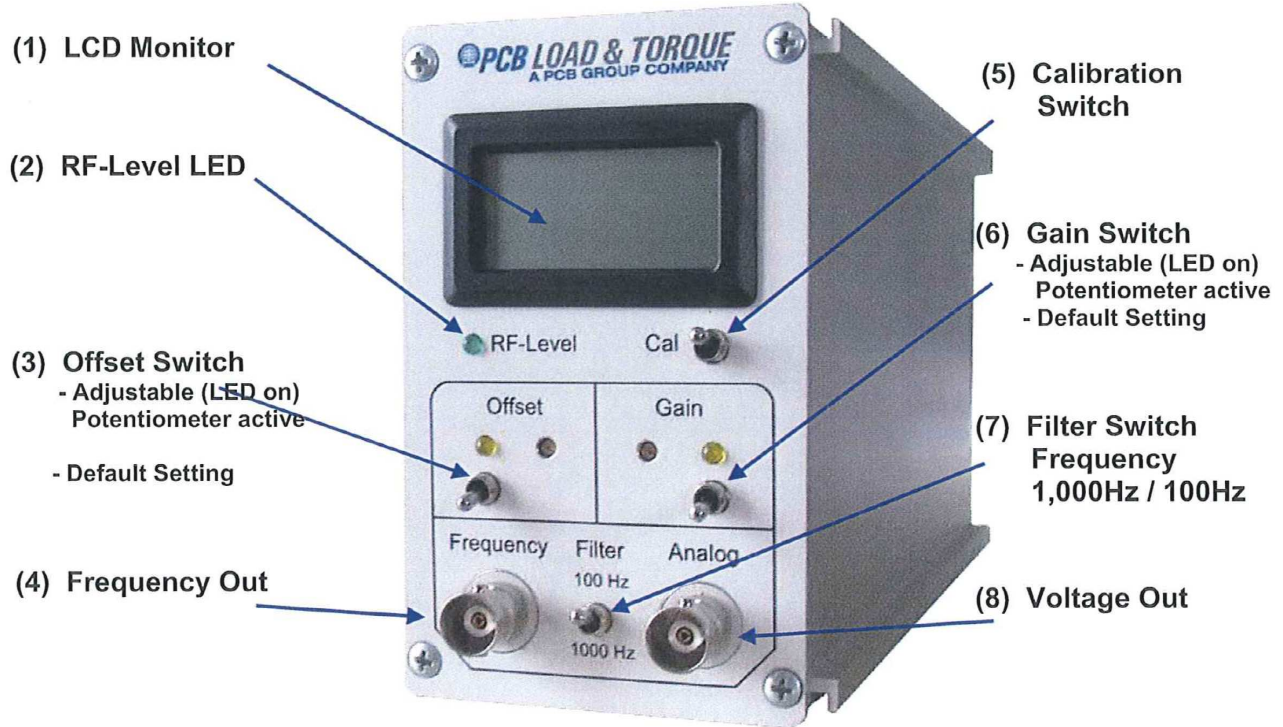
This cable is specially designed and manufactured for this system. It is extremely robust mechanically, and can be used in extreme environments.
This cable should only be substituted with a direct replacement as a non approved cable will affect the data and tuning of the overall system.



Caution!
Voltage up to 400V_{pp}, 22.5 kHz is on the cable.
Only use the approved original cable.
Damaged or frayed cable must be discarded and replaced immediately.

Model 8180

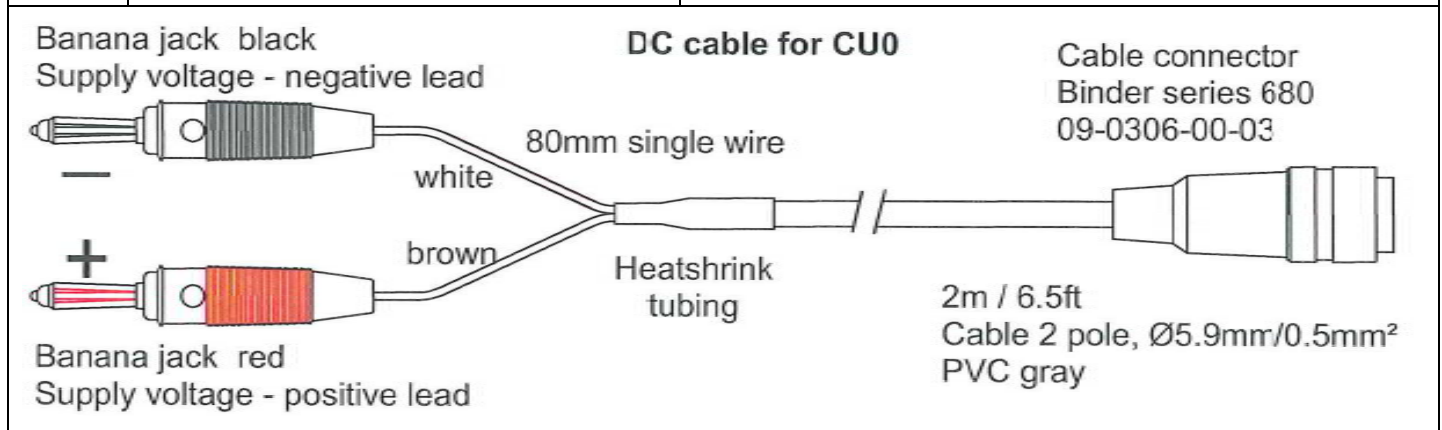
Control Unit 8180-CU0



Model 8180

Control unit 8180-CU0

No.	Name	Short description
1	LCD Monitor	3.5 digit display Shows the analog output voltage, $\pm 10V$ Less resolution than analog output
2	RF-Level LED	Lit green LED indicates a good RF level. Data link is good.
3	Offset Switch	Lower position = factory calibration, LED off Upper position = user adjustable, yellow LED on Range $\pm 1.8V$ by potentiometer
4	Frequency Out	Frequency Range is $10kHz \pm 5kHz$ with TTL-level. $10kHz = 0V$; $5kHz = -10V (-FS)$; $15kHz = 10V (+FS)$ BNC Jack
5	Calibration Switch	Initiates a shunt calibration which unbalances the bridge by x% (determined by the user installed shunt resistor)
6	Gain Switch	Lower position = factory calibration, LED off Upper position = user adjustable, yellow LED on Range $\pm 20\%$ by potentiometer
7	Filter Switch	Switches the output filter (4 pole Butterworth) to a 3dB-frequency of 100 Hz or 1 kHz
8	Voltage Out	$-10V \dots 0V \dots +10V$ single ended BNC Jack
9	ON/OFF switch	Rocker switch turns on and off the DC supply voltage to the system.
10	Head connector	Connection for 8180-SHx stators
11	Power switch	Position 0 for use with 8180-SH310A stator head Position 1 Normal setting for all inductive stator heads Position 2 High power for special conditions
12	Power supply connector	DC power input to power Control Unit



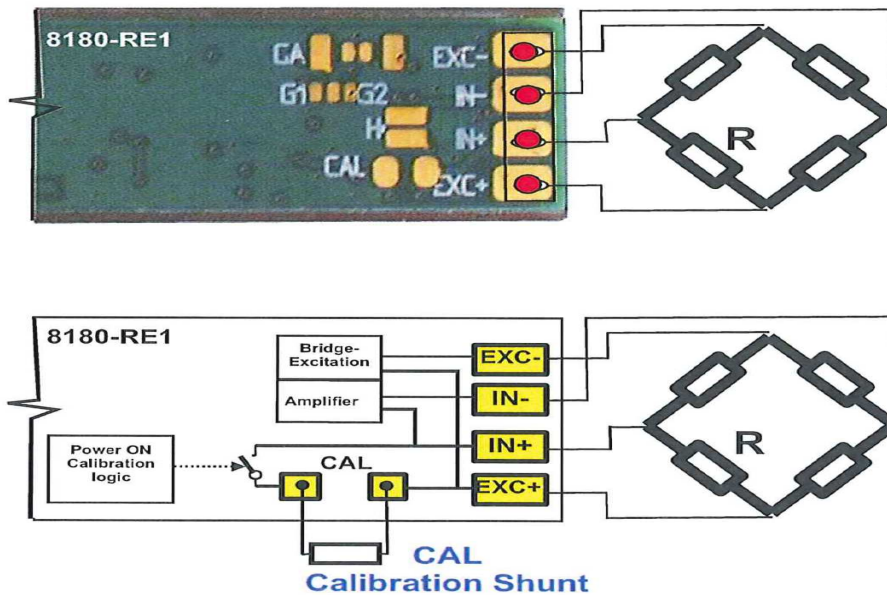
Model 8180

Shunt Calibration

The Shunt-Calibration is an accepted method to system functionality.

A resistor is placed in parallel to leg R in the picture below to unbalance the bridge to predefined value. This predefined value is determined by the value of resistor CAL.

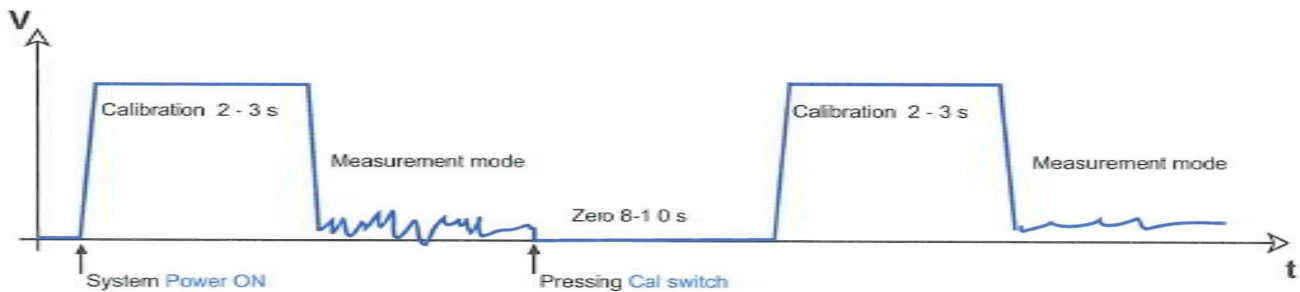
To calculate the resistor CAL value please see chapter "Rotor Electronics 8180-RE1."



A high quality resistor should be used for the **Shunt resistor and can be of form factors and construction: SMD 1206; 0805; 0603 or wired components.**

A shunt calibration is automatically initiated when power is supplied to the system. The shunt is invoked for approximately 2-3 seconds and can be viewed on the Control Unit display and can be measured at the analog and frequency output BNC connectors.

The shunt cal function can be triggered manually by briefly pushing down on the cal switch located on the front panel of the Control Unit. The display and output will show a random value for approximately 8-10 seconds then for another 2-3 seconds the shunt value will be opened and displayed. After which the system returns to normal operation.



Model 8180

Installation of Antenna

Note: All materials are 1m / 3ft in length and are part of [Installation set 8180-IK00A](#)

The prepared area of the shaft should be wider than the width of the stator head being used
e.g.:

8180-SH1 about 75mm / 2.95"

8180-Sh4 about 30mm / 1.18"

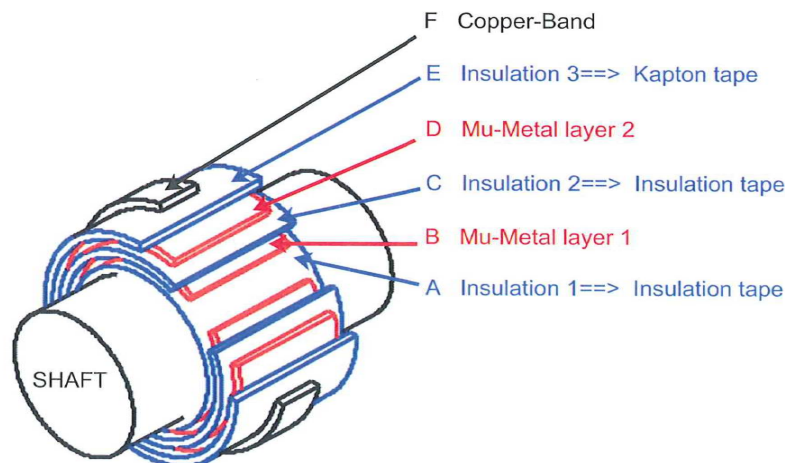
- A** Wrap a layer of insulating tape around the shaft a little wider than the width of the mu metal being used..
- B** Apply a layer of self-adhesive mu-metal. Attention: Gap of 2...6mm!
The ends must not touch.
- C** Completely cover this layer with insulating tape.
- D** Apply another layer of mu-metal. Attention: Gap of 2...6mm!
The gap should be offset by 90 ° ... 180° from the first layer.
- E** Apply over the last layer of mu metal an insulating layer of Kapton tape.
This tape is very temperature-stable and allows soldering of the Copper band antenna.

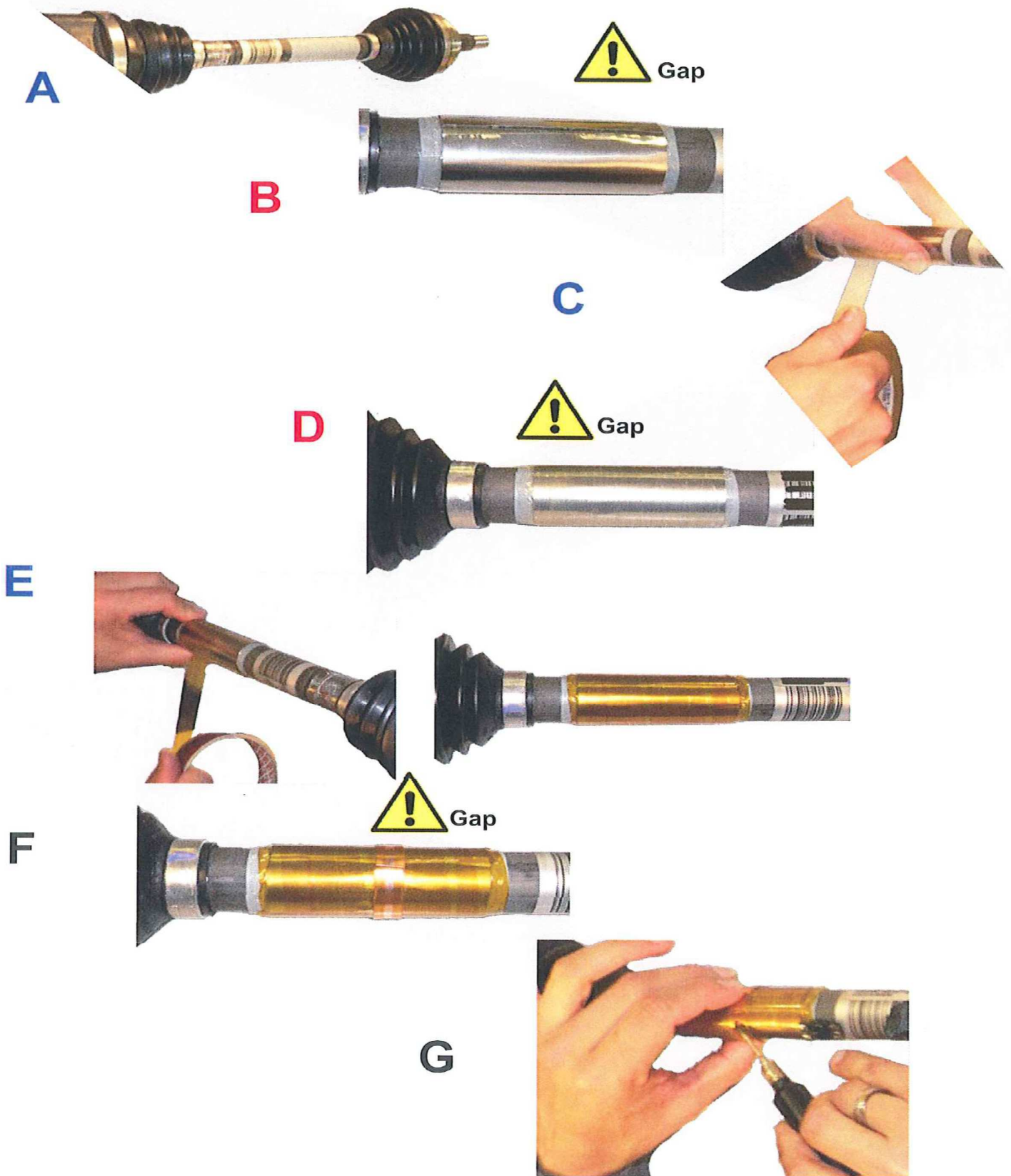
Note: A third layer of mu metal can improve the ratios and is recommended.

- F** Now apply the Copper band around the shaft dividing the mu metal surface in half.
This Copper band has a self adhesive backing.

Attention: Gap of 1... 3 mm!

- G** Now the wires are soldered to both ends of the Copper band.
- H** The last step is to cover the entire installation with a layer of protective tape.





Model 8180

Installation Kit 8180-IK00A

The Installation Kit contains all materials needed for a complete installation on a shaft.

Components

1 m / 3.3ft Copper band, 0.3 mm x 10 xx; self-adhesive backing

2 m / 3.3 ft mu metal, 0.1 mm x 155 mm; self-adhesive

1 roll of insulation tape

1 roll Kapton tape

1 packet 2 components epoxy

0.3 m /1ft wire AWG22 / 0.34 mm²

1 m /3.3ft wire AWG26 / 0.14 mm²



The mu metal can be cut to length using everyday household scissors.

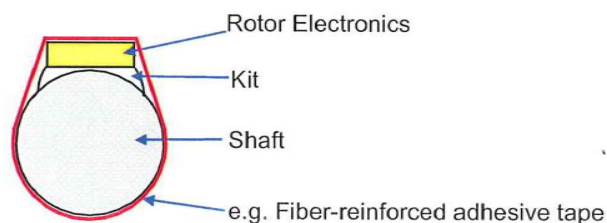
A small amount of 2 part epoxy is typically enough to bond the rotor to the shaft.

Note: It is recommended a layer of nylon reinforced tape be used to strap the rotor electronics in place addition to the 2 part epoxy.



It is the responsibility of the user to ensure the rotor electronics is properly installed on the shaft.

Enough 2 part epoxy should be used to create a saddle to hold the rotor electronics onto the shaft.



In the interest of constant product improvement, we reserve the right to change specifications without notice

Model 8180

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D-83703 Gmund am Tegernsee

Germany

EC – Certificate of Conformity

We hereby certify, that the model of the subsequently designated device corresponds to the essential relevant EC-guidelines mentioned below during compatibility evaluation of the product.

Any changes not agreed with us, will void this declaration.

Description: **1-channel-Telemetry**

Type: **8179; 8180**

Serial numbers: **0290 to 0999**

Relevant EC-guidelines:

Radio and Spectrum engineering parameters: EN 300 220-3


Electromagnetic Compatibility: EN 301 489-01 and 301 489-03

Electric safety: EN 60 950

The device was tested in a typical situation.

Gmund, Oct. 02th 2010

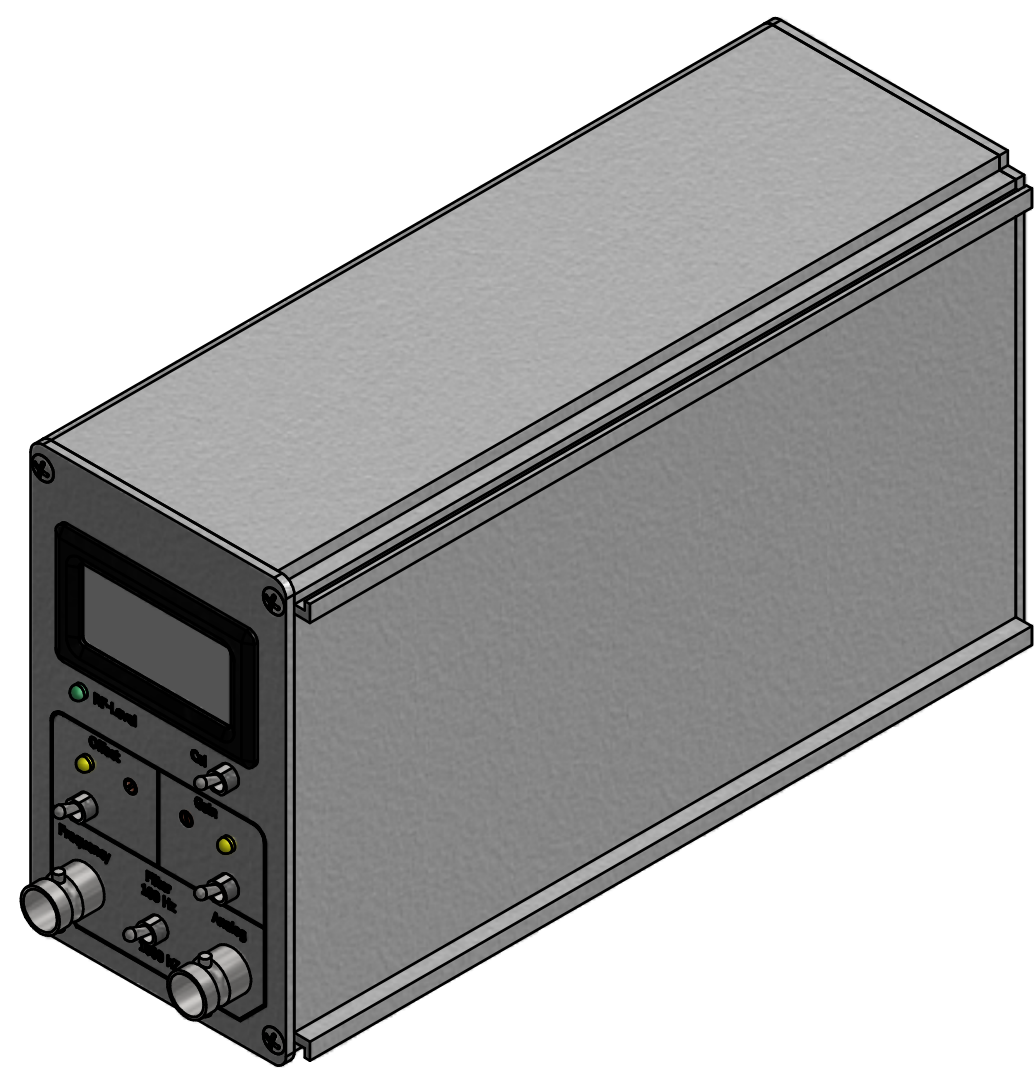
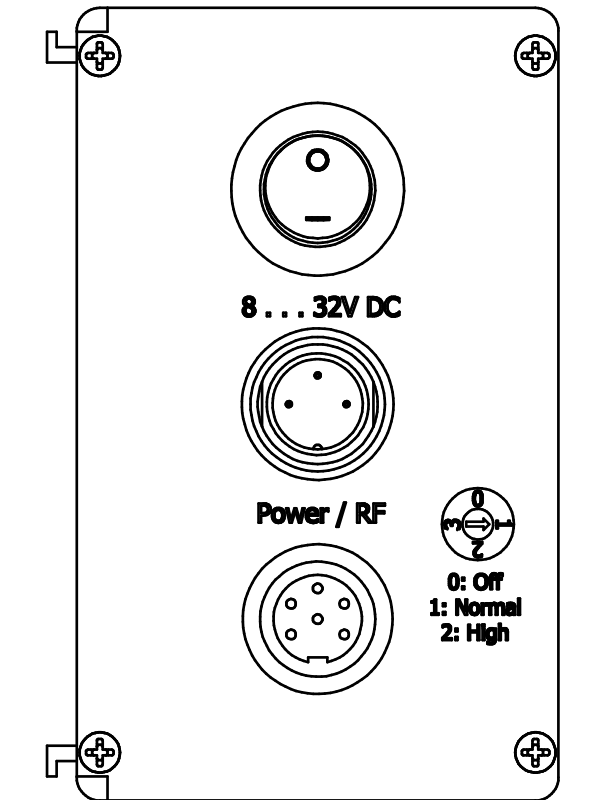
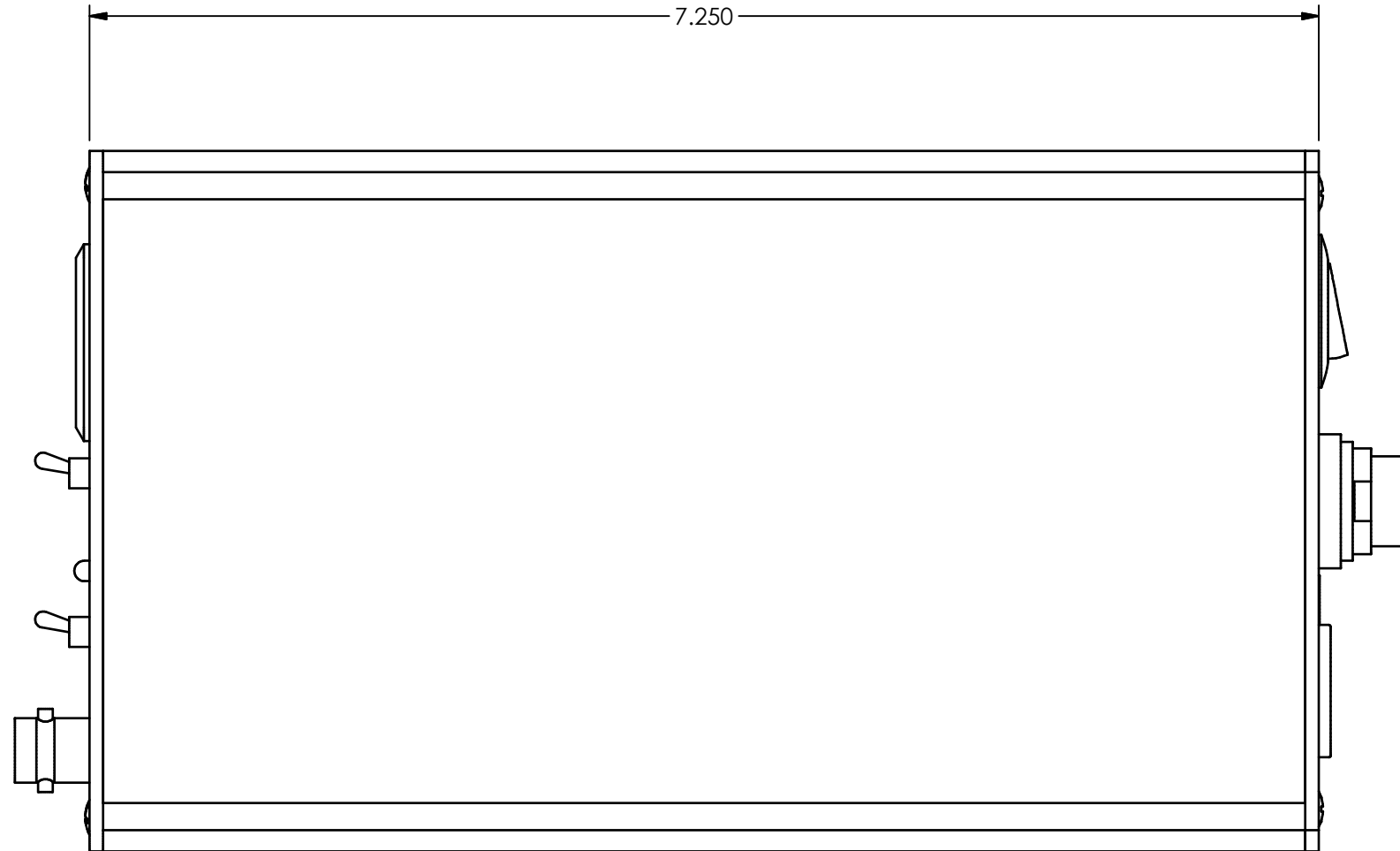
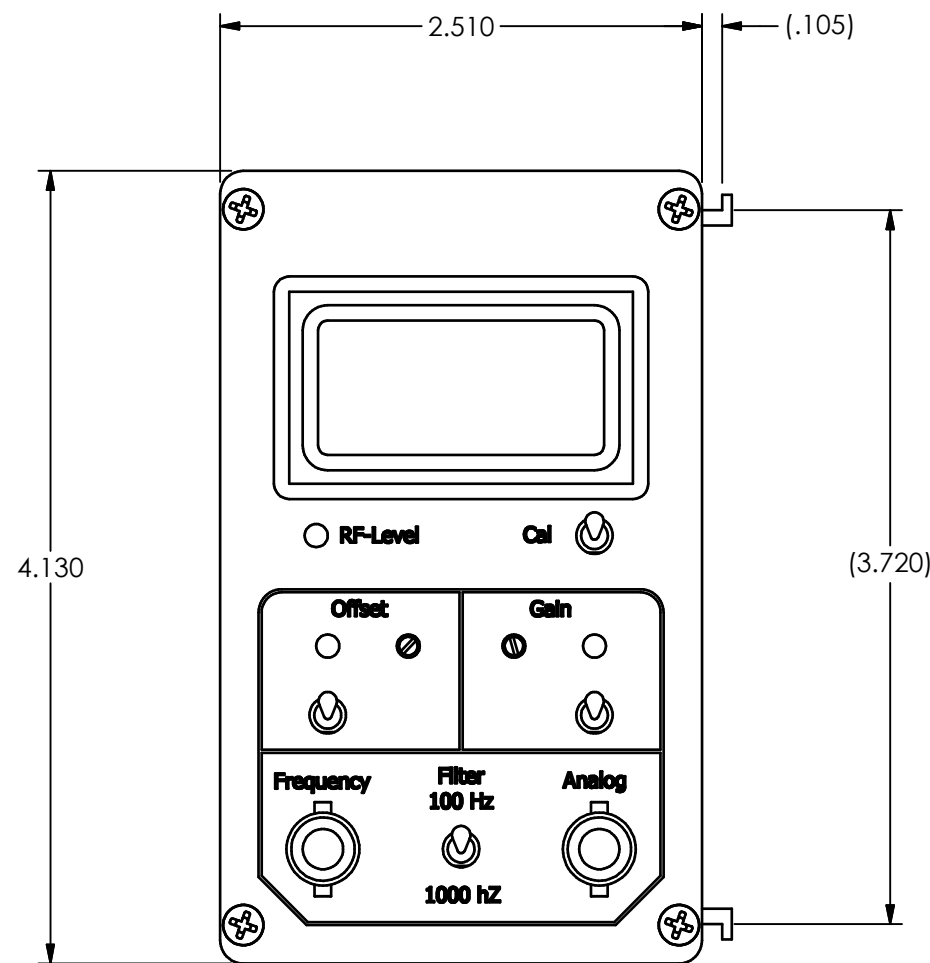

Rainer Thomas

Model Number 8180-CU00A	SINGLE-CHANNEL TELEMETRY CONTROL UNIT			Revision: NR ECN #: 43533		
System Components Model Performance Frequency Output Analog Output Control Interface Display Environmental Temperature Range Electrical Carrier Frequency R-F Receiver Power Supply(Volts) Power Supply(Watts) Analog Output Connector Frequency Output Connector Physical Size (Height x Length x Width) Weight	ENGLISH Control Unit 10 kHz ± 5 kHz +/-10 VDC LCD, 3.5 Digit 32 to 140 °F 10.7 MHz Integrated 9 to 32 VDC 12 W BNC Jack BNC Jack 2.54 in x 7.09 in x 4.13 in 35 oz	SI Control Unit 10 kHz ± 5 kHz +/-10 VDC LCD, 3.5 Digit 0 to 60 °C 10.7 MHz Integrated 9 to 32 VDC 12 W BNC Jack BNC Jack 64 mm x 180 mm x 105 mm 1 kg	OPTIONAL VERSIONS Optional versions have identical specifications and accessories as listed for the standard model except where noted below. More than one option may be used. 8180-CU00D - DIN Rail Telemetry Control Unit 8180-CU01D - DIN Rail Telemetry Control Unit 8180-CU02D - DIN Rail Telemetry Control Unit 8180-CU03D - DIN Rail Telemetry Control Unit			
<i>All specifications are at room temperature unless otherwise specified. In the interest of constant product improvement, we reserve the right to change specifications without notice.</i>				NOTES: [1]This model requires the use of an 8180-SHXXXA stator and an 8180-REXXXA rotor unit.		
				OPTIONAL ACCESSORIES: Model 0009M192/M010 Extension cable - 32ft/10m Model 0009M192/M020 Extension cable - 64ft/20m Model 0009M192/M05 Extension cable - 16ft/5m Model 8180-IK00A Installation kit (copper band, mu-metal, insulation tape) REQUIRED ACCESSORIES: Model 8180-RE101A PCB L&T Single channel telemetry transmitter for strain gage input, 30 MHz Model 8180-RE102A Single channel telemetry transmitter, strain gage input for full and half bridges, 19.5 MHz carrier Model 8180-RE103A PCB L&T Single channel telemetry rotor electronics for strain, 23 MHz Model 8180-RE110A PCB L&T Single channel telemetry transmitter for strain gage input, 10.7 MHz, Extended temperature range of -40 to 248 F (-40 to 120 C) Model 8180-RE111A PCB L&T Single channel telemetry transmitter for strain gage input, 30 MHz, Extended temperature range of -40 to 248 F (-40 to 120C) Model 8180-RE112A Model 8180-RE113A Model 8180-SH110A Large inductive stator head with 5m cable Model 8180-SH210A Inductive/Receiving head-(16 ft/5m telemetry included) Model 8180-SH310A Receiving head (battery operation)-(16 ft/5m telemetry included) Model 8180-SH410A Inductive stator head with hoop antenna and 5m cable		
Entered: AP		Engineer: PE		Sales: RM	Approved: JM	Spec Number:
Date: 12/2/2014		Date: 12/2/2014		Date: 12/2/2014	Date: 12/2/2014	60278
				 <p>PCB Load & Torque, Inc. 24350 Indoplex Circle Farmington Hills, MI 48335 UNITED STATES Phone: 866-684-7107 Fax: 716-684-0987 E-Mail: ltinfo@pcbloadtorque.com Web site: http://www.pcbloadtorque.com</p>		

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60338

REVISIONS		
REV	DESCRIPTION	ECO
NR	RELEASED FOR PRODUCTION - 11.24.14, PTE	43560



UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:		DRAWN			CHECKED			ENGINEER			PCB LOAD & TORQUE A PCB GROUP COMPANY				
DIMENSIONS IN INCHES		PTE		11.24.14		SAC		11.24.14		SAC		11.24.14		24350 Indoplex Circle, Farmington Hills, MI 48335 (248) 888-8260 E-MAIL: llimfo@pcb.com	
DECIMALS XX ±.01 XXX ±.005		TITLE		OUTLINE DRAWING CONTROL UNIT 8180-CU0XXA SERIES										DWG. NO. 60338	
ANGLES ± .5 DEGREES		FILLETS AND RADII .015 MAX		FILLETS AND RADII 0.38 MAX		SCALE: FULL		SHEET		1 OF 1					