



**SPEKTRUM®**

**TM1000 User Guide**

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**TM1000 Bedienungsanleitung**

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**TM1000 Guide de l'utilisateur**

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**TM1000 Guida per l'utente**

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## NOTICE

All instructions, warranties and other collateral documents are subject to change at the sole discretion of Horizon Hobby, Inc. For up to date product literature, visit <http://www.horizonhobby.com/ProdInfo/Files/SPM9548-manual.pdf>.

### Meaning of Special Language:

The following terms are used throughout the product literature to indicate various levels of potential harm when operating this product:

**NOTICE: Procedures, which if not properly followed, create a possibility of physical property damage AND a little or no possibility of injury**

**CAUTION: Procedures, which if not properly followed, create the probability of physical property damage AND a possibility of serious injury.**

**WARNING: Procedures, which if not properly followed, create the probability of property damage, collateral damage, and serious injury OR create a high probability of superficial injury.**

 **WARNING: Read the ENTIRE instruction manual to become familiar with the features of the product before operating. Failure to operate the product correctly can result in damage to the product, personal property and cause serious injury.**

This is a sophisticated hobby product and NOT a toy. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the product or other property. This product is not intended for use by children without direct adult supervision. Do not attempt disassembly, use with incompatible components or augment product in any way without the approval of Horizon Hobby, Inc. This manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or serious injury.

# TM1000 Telemetry Module User Guide

Spektrum's TM1000 telemetry module is compatible with all Spektrum™ and JR® receivers that have a Data (Flight Log) port including:

## Spektrum

- AR6255
- AR7100R
- AR9000
- AR9300
- AR7000
- AR7600
- AR9100
- AR12000
- AR7100
- AR8000
- AR9200
- AR12100

## JR

- R921
- R922
- R1221
- R1222

## Specifications:

**Type:** TM1000 Telemetry module

**Operational Voltage:** 3.5 to 9.6 volts

**Dimensions:** 43 x 25 x 12mm

**Weight:** 15.8 g

**RPM Range:** 0 to 65,500

**Flight Pack Voltage Range:** 0–60V

**Temperature Range:** -40°F to 1000°F/ -40°C to 538°C

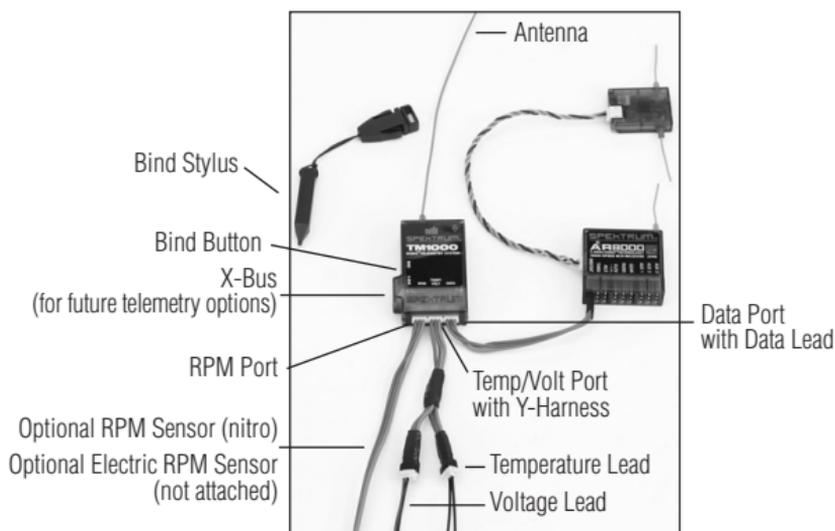
**Receiver Volts:** 0–8.0V

## Items Included

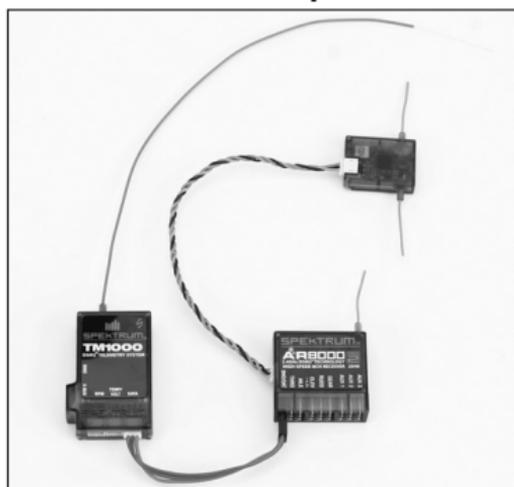


- TM1000 telemetry module
- 2.5" Data lead
- 20" External voltage sensor
- 20" Temperature sensor
- 2.5" Aircraft telemetry Y-h arness (used when Temp and volts are used simultaneously)
- TM1000 Manual

## Hook up



## Installation and Hook Up Information



### Installing the TM1000 Module

Mount the TM1000 module near the receiver in a position that allows the 2.5-inch data lead to extend from the receiver's Data port to the Data port on the telemetry module. You can use servo tape to secure the TM1000 module or wrap it in foam with the receiver. Plug the Data lead into the TM1000 port marked DATA and plug the other end of the lead into the receiver's DATA port.

**NOTICE:** Route and secure the antenna away from any metallic or conductive materials to give the best range.

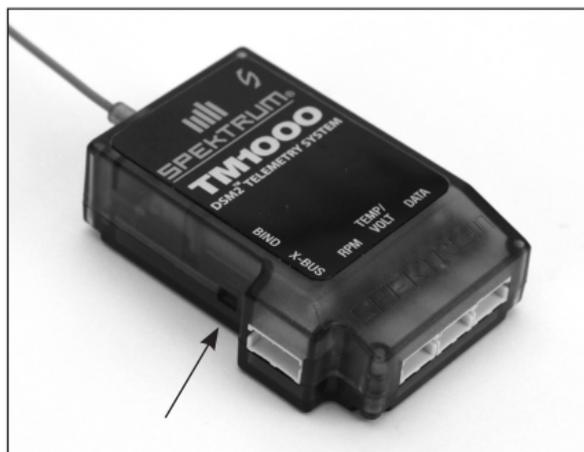
At this point the internal telemetry DATA is now fully functional. This includes:

- Flight log data (fades, frame losses and holds)
- Receiver pack voltage

Before continuing, bind the system to the transmitter and confirm the telemetry system is functioning.

## Binding the Telemetry Module and Receiver

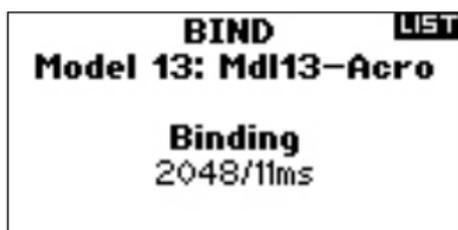
1. Using the Bind Stylus press and hold the bind button on the side of the TM1000 telemetry module.



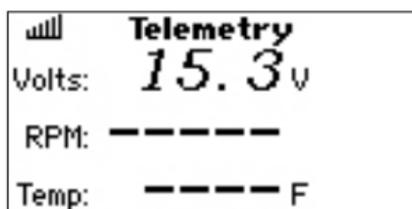
2. While depressing the bind button, power the receiver. The main receiver, all attached remote receivers and the TM1000 telemetry module should blink indicating the system is in bind mode.
3. With the stick and switches in the desired failsafe positions (normally low throttle and neutral sticks), put the transmitter into bind mode.



4. The main screen displays the receiver type. After several seconds, the system connects and reverts to the main screen.



5. From the main screen rotate the roller to access the telemetry screens and verify the flight log data and receiver voltage displays.



## Temperature, Voltage and Optional RPM Sensors

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The TM1000 includes a temperature and external voltage sensors. Optional RPM sensors are available for Gas/Glow and electric brushless models to monitor RPM.

### Temperature Sensor

To monitor the temperature of most any component, secure the sensor on the object. It must come into contact with the surface to get an accurate temperature reading. You can loop the temperature sensor around the engine's cylinder head to assist in tuning an engine. To monitor battery temperature, you can wrap the sensor around the battery.

The mounting position of the sensor, especially on gas or glow engines, will result in different temperature readings. So it's important to experiment with different positions.

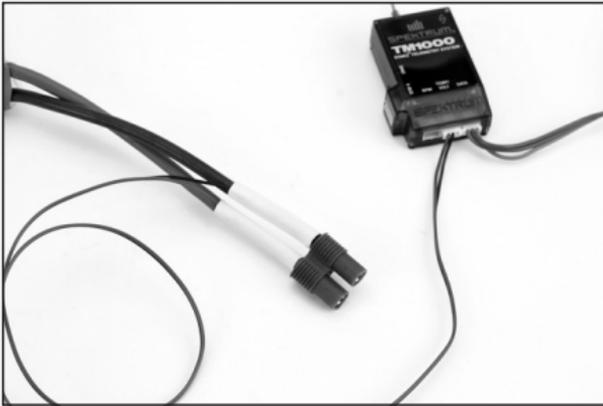


### Installation

Insert the temperature sensor connector into the port labeled TEMP/VOLT. The temperature sensor is now active and the actual temperature displays on screen.

## External Voltage

External voltage telemetry is commonly used to monitor flight pack voltage or you can monitor ignition batteries on gas engine equipped aircraft. You can set alarms in the DX8 to prevent over-discharging batteries.

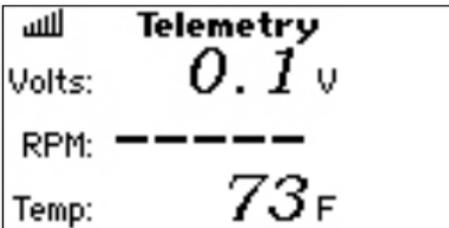


### Installation

Plug the connector of the voltage sensor into the TEMP/VOLT port in the Telemetry module.

Attach the opposite ends of the voltage sensor (stripped wires) to the voltage source you wish to monitor. Note the polarity (Red = + positive /Black = - Negative).

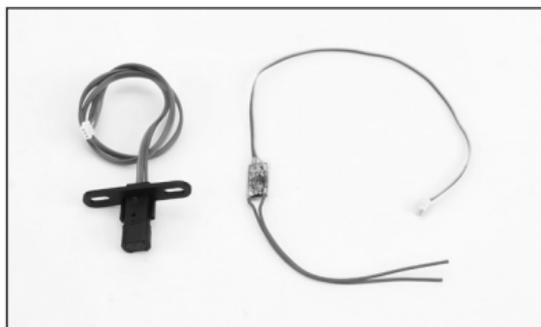
Typically, you can solder the wires to the battery connector. At this point the external voltage displays on the telemetry screen.



**Note:** A Y-harness is provided if you want to use temperature and voltage sensors simultaneously.

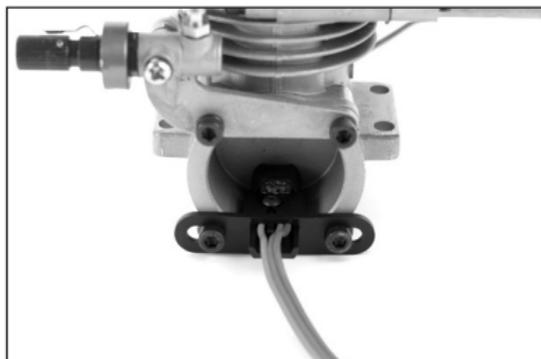
## RPM (optional sensors, sold separately)

Two RPM sensors are available: SPMA9569 for nitro and gas engines, SPMA9558 for brushless electric motors.



## Engine RPM Sensor

The optional engine RPM sensor mounts inside the backplate of aircraft engines. The sensor picks up the crankpin as the engine rotates giving accurate RPM. Additionally, you can use this sensor as an RPM pickup on any rotating gear/collar or shaft that has a steel setscrew or other magnetic metal by locating the sensor within 5mm of the rotating steel object.



**Note:** On some engines you may need to space the sensor further away from the backplate. The sensor picks up the crankpin only; on some engines if the sensor is too close, it will not distinguish the crankpin from the crank weight.

## Installation

Install the backplate sensor in the backplate referring to the photo above.

Install the connector into the RPM port in the TM1000.

## Testing

Turn the transmitter and receiver on and scroll to the RPM telemetry screen.

Rotate the engine rapidly and the RPM should register on the screen.

The RED LED on the TM1000 indicates the sensor is picking up properly.

You may need to adjust the sensor's position to optimize the pickup. Move the sensor closer or farther away until you have a reliable RPM pickup.

## Electric RPM Sensor

The optional electric RPM sensor is designed to be used with any brushless motor. The sensor has two leads to attach to any two of the three motor wires. This is typically done by soldering.



### Installation

To install the electric RPM sensor using servo tape, attach the sensor in a convenient place that allows the leads to reach the motor wires and the TM1000 telemetry unit.

Solder the two sensor wires to any two motor leads.

Plug the sensor lead into the RPM port on the TM1000 telemetry module.

### Testing

Turn the transmitter and receiver on and scroll to the RPM telemetry screen.

Run the motor and the RPM should register on the screen.

The RED LED on the TM1000 indicates the sensor is picking up properly.

**NOTICE:** It is necessary to program a matching pole count in the telemetry RPM screen to have accurate reading on screen. The motor's pole count is normally in the motor manufacturer's instructions or on the manufacturer's website.

# WARRANTY AND REPAIR POLICY

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## Warranty Period

Exclusive Warranty- Horizon Hobby, Inc., (Horizon) warranties that the Products purchased (the "Product") will be free from defects in materials and workmanship for a period of 1 year from the date of purchase by the Purchaser.

## 1-Year Limited Warranty

**Horizon reserves the right to change or modify this warranty without notice and disclaims all other warranties, express or implied.**

(a) This warranty is limited to the original Purchaser ("Purchaser") and is not transferable. REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. This warranty covers only those Products purchased from an authorized Horizon dealer. Third party transactions are not covered by this warranty. Proof of purchase is required for all warranty claims.

(b) Limitations- HORIZON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCT. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

(c) Purchaser Remedy- Horizon's sole obligation hereunder shall be that Horizon will, at its option, (i) repair or (ii) replace, any Product determined by Horizon to be defective. In the event of a defect, these are the Purchaser's exclusive remedies. Horizon reserves the right to inspect any and all equipment involved in a warranty claim. Repair or replacement decisions are at the sole discretion of Horizon. This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or modification of or to any part of the Product. This warranty does not cover damage due to improper installation, operation, maintenance, or attempted repair by anyone other than Horizon. Return of any Product by Purchaser must be approved in writing by Horizon before shipment.

## Damage Limits

HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCT, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY. Further, in no event shall the liability of Horizon exceed the individual price of the Product on which liability is asserted. As Horizon has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability.

If you as the Purchaser or user are not prepared to accept the liability associated with the use of this Product, you are advised to return this Product immediately in new and unused condition to the place of purchase.

Law: These Terms are governed by Illinois law (without regard to conflict of law principals).

## WARRANTY SERVICES

### Questions, Assistance, and Repairs

Your local hobby store and/or place of purchase cannot provide warranty support or repair. Once assembly, setup or use of the Product has been started, you must contact Horizon directly. This will enable Horizon to better answer your questions and service you in the event that you may need any assistance. For questions or assistance, please direct your email to [productsupport@horizonhobby.com](mailto:productsupport@horizonhobby.com), or call 877.504.0233 toll free to speak to a Product Support representative. You may also find information on our website at [www.horizonhobby.com](http://www.horizonhobby.com).

### Inspection or Repairs

If this Product needs to be inspected or repaired, please use the Horizon Online Repair Request submission process found on our website or call Horizon to obtain a Return Merchandise Authorization (RMA) number. Pack the Product securely using a shipping carton. Please note that original boxes may be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as Horizon is not responsible for

merchandise until it arrives and is accepted at our facility. An Online Repair Request is available at [www.horizonhobby.com](http://www.horizonhobby.com) <http://www.horizonhobby.com> under the Repairs tab. If you do not have internet access, please contact Horizon Product Support to obtain a RMA number along with instructions for submitting your product for repair. When calling Horizon, you will be asked to provide your complete name, street address, email address and phone number where you can be reached during business hours. When sending product into Horizon, please include your RMA number, a list of the included items, and a brief summary of the problem. A copy of your original sales receipt must be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

**Notice: Do not ship batteries to Horizon. If you have any issue with a battery, please contact the appropriate Horizon Product Support office.**

## Warranty Inspection and Repairs

**To receive warranty service, you must include your original sales receipt** verifying the proof-of-purchase date. Provided warranty conditions have been met, your Product will be repaired or replaced free of charge. Repair or replacement decisions are at the sole discretion of Horizon Hobby.

## Non-Warranty Repairs

**Should your repair not be covered by warranty the repair will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost.** By submitting the item for repair you are agreeing to payment of the repair without notification. Repair estimates are available upon request. You must include this request with your repair. Non-warranty repair estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Horizon accepts money orders and cashiers checks, as well as Visa, MasterCard, American Express, and Discover cards. By submitting any item to Horizon for inspection or repair, you are agreeing to Horizon's Terms and Conditions found on our website under the Repairs tab.

Country of Purchase	Horizon Hobby	Address	Phone Number/ Email
United States	Horizon Service Center (Electronics and engines)	4105 Fieldstone Rd Champaign, Illinois 61822 USA	877-504-0233  Online Repair Request visit: <a href="http://www.horizonhobby.com/repairs">www.horizonhobby.com/repairs</a>
	Horizon Product Support (All other products)	4105 Fieldstone Rd Champaign, Illinois 61822 USA	877-504-0233  <a href="mailto:productsupport@horizonhobby.com">productsupport@horizonhobby.com</a>
United Kingdom	Horizon Hobby Limited	Units 1-4 Ployters Rd Staple Tye Harlow, Essex CM18 7NS United Kingdom	+44 (0) 1279 641 097  <a href="mailto:sales@horizonhobby.co.uk">sales@horizonhobby.co.uk</a>
Germany	Horizon Technischer Service	Hamburger Str. 10 25335 Elmshorn Germany	+49 4121 46199 66  <a href="mailto:service@horizonhobby.de">service@horizonhobby.de</a>
France	Horizon Hobby SAS	14 Rue Gustave Eiffel Zone d'Activité du Réveil Matin 91230 Montgeron	+33 (0) 1 60 47 44 70  <a href="mailto:infofrance@horizonhobby.com">infofrance@horizonhobby.com</a>

## FCC Information

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**Caution:** Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This product contains a radio transmitter with wireless technology which has been tested and found to be compliant with the applicable regulations governing a radio transmitter in the 2.400GHz to 2.4835GHz frequency range.

# Compliance Information for the European Union

The following information is for item numbers: SPM9548



AT	BG	CZ	CY	DE
DK	ES	FI	GR	HU
IE	IT	LT	LU	LV
MT	NL	PL	PT	RO
SE	SI	SK	UK	

## CE Declaration of Conformity

(in accordance with ISO/IEC 17050-1)

No. HH2010082102

Product(s): Spektrum TM1000 Telemetry Module

Item Number(s): SPM9548

Equipment class: 2

The objects of declaration described above are in conformity with the requirements of the specifications listed below, following the provisions of the European R&TTE directive 1999/5/EC:

**EN 301 489 General EMC requirements**

**EN 300-328 Technical requirements for Radio equipment.**

Signed for and on behalf of:  
Horizon Hobby, Inc.  
Champaign, IL USA  
Aug 21, 2010

Steven A. Hall  
Vice President  
International Operations and Risk Management  
Horizon Hobby, Inc.



## Instructions for Disposal of WEEE by Users in the European Union

This product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.



**SPEKTRUM**<sup>®</sup>

Leaders in Spread Spectrum Technology

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