



# **TS-83 Wi-Fi / USB Module**

**Installation/User Manual  
8300-081**

Rev C





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## Document Revision Level & Notes

<b>Revision</b>	<b>Date</b>	<b>Description</b>	<b>Page #</b>
A	11/18/2010	Initial Release/Preliminary Draft	
B	12/7/2010	Added cutout, installation, front view, LED info	4, 5, 7, 9
C	2/15/2012	Reformatted manual, added clarification to data logging, added sample .CSV file	All

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## Instrument Installation

### Mounting Considerations

The TS-83 unit is designed to mount in the aircraft instrument panel. It is recommended that the unit be mounted within view and reach of the pilot. The indicator lights on the front provide status information about the function of the unit. This also allows the pilot to easily plug in or remove a USB memory device. The location should be such that the instrument is not blocked by the glare shield on top, or by the throttles, control yoke, etc. on the bottom. Use aircraft installation standards for mounting and support of the instrument. The Wi-Fi antenna is built into the mounting box of the instrument and in some cases, Wi-Fi signal strength may be degraded due to mounting location. The unit has been tested in various aluminum panel aircraft and found to have sufficient signal strength to operate satisfactorily.

### Wiring Considerations

Use AWG #24 or larger wire for all connections unless otherwise specified. The standard solder pin contacts supplied in the connector kit are compatible with up to AWG #18 wire. In cases where some installations have more than one

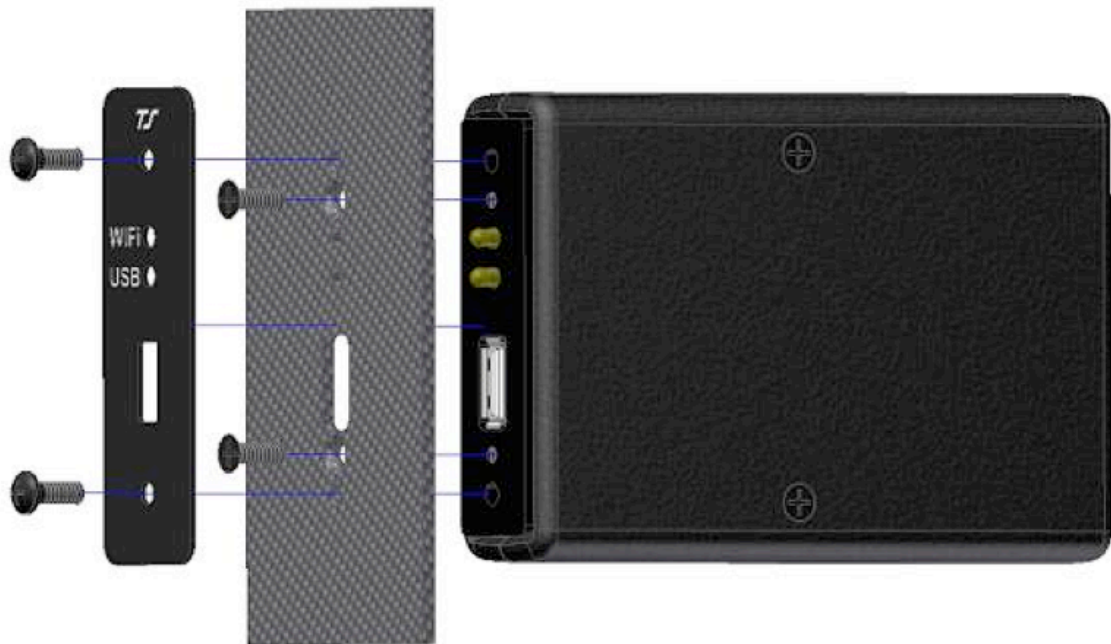
component sharing a common circuit breaker, sizing and wire gauge is based on length of wiring and current draw on units. In these cases, a larger gauge wire such as AWG #20 may be needed for power connections. Do not attach any wires to the outside of the instrument or route high current wires within six (6) inches of the instrument. Ensure that routing of the wiring is not exposed to sources of heat, RF or EM interference. Check that there is ample space for the cabling and mating connectors. Avoid sharp bends in cabling and routing near aircraft control cables. Do not route the COM antenna coax near any instrument components. The TS-83 should be connected to the avionics master bus, not the battery master bus. This way the instrument is in a powered down state during engine starting.

### RFI/EMI Considerations

The instrument has been designed to not generate any appreciable level of electromagnetic interference. It has a low-current draw and cannot contribute to RF interference. Be sure all COM antennas are properly installed, tuned, and grounded as stray RFI can cause unreliable Wi-Fi performance.



## TS-83 Installation View





## FCC Statement

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radiofrequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at self -expense.

## TS-83 Operation

### TS-83 Description

The TS-83 has one nine (9) pin D-subminiature connector on the rear of the unit for power/ground and system connection. It has two LED indicator lights and one standard USB port on the front. The indicator lights provide status information for its functions.



## LED Indicator Lights

Refer to the photo on page seven for light locations.

-Wi-Fi Light Green: Wi-Fi network is powered and initializing.

-Wi-Fi Light Amber: Wi-Fi network is broadcasting data.

-Wi-Fi Light Red: Wi-Fi network failure or hardware failure.

-USB Light Green: USB data recording is ready.

-USB Light Amber: USB data is being written to the connected flash memory device. It should blink every few seconds to indicate a data write.

-USB Light Red: USB failure, incompatible/corrupted USB memory device inserted or file-write failure.

## Wi-Fi Connection / Operation

When the LED indicator light on the top labeled Wi-Fi is orange, the Wi-Fi network is active and broadcasting data. Go to the settings page on the iPod, iPad, or iPhone. Go to the Wi-Fi settings. Choose the network that is labeled TTFS Wi-Fi. If your device has cellular data capability, you may have to turn cell data off before it will join the wireless network. Once the device shows the Wi-Fi bars at the top, then launch iMonitor.

## USB Data Logging

The TS-83 is capable of recording Flight and Engine data to an inserted USB memory device. To begin recording, insert a USB memory device in the port on the front of the module. It will record data every two (2) seconds onto the memory device as long as memory allows. It uses approximately 5 MB for every hour of runtime data. It will record the following list of parameters into a .CSV file on the memory device. An example filename is EM020820.CSV. The format is EMDDMMHH, where DD is day, MM is month, and HH is Zulu hour. A new file will be created each hour.

Note: Flight Data requires TruTrak EFIS, Airframe and Engine data currently requires TruTrak EDM. Flight Data recording coming soon for TruTrak Gemini. Latitude, Longitude, and Ground Track do not record until the aircraft has 10 knots of Ground Speed.

### **Flight Data:**

Latitude \*  
Longitude \*  
Altitude

Pressure Altitude  
Ground Track \*  
Ground Speed \*  
Bank Angle (- indicates left bank)  
Pitch Attitude (- indicates nose down)  
Indicated Airspeed  
True Airspeed \*\*

### **Engine Data:**

Time  
RPM  
Oil Temperature  
Oil Pressure  
Manifold Pressure  
Fuel Flow \*\*\*  
Fuel Pressure  
Volts  
Current  
Carburetor Temperature  
Exhaust Gas Temperature  
Cylinder Head Temperature

\* Requires EFIS be connected to a GPS.

\*\* Requires TruTrak EDM for OAT.

\*\*\* Requires optional Fuel Flow Sensor.

## Example .CSV File

Time (Zulu)	RPM	Oil Temp (F)	Oil Pres. (PSI)	Manifold Pres. (inHg*10)	Fuel Flow (10*GAL/hr)	Fuel Pres. (PSI)	Volts (10*V)	Current (10*A)	Carb Temp (F)	EGT-1 (F)	EGT-2 (F)	EGT-3 (F)	EGT-4 (F)
20:03:16	2750	130	79	255	166	94	475	271	86	1236	1236	1262	1229
20:03:18	2739	131	78	256	166	94	289	198	87	1223	1246	1264	1193
20:03:20	2722	133	79	257	165	94	287	129	87	1232	1238	1259	1228
20:03:22	2729	135	78	256	165	94	287	121	88	1230	1238	1257	1231
20:03:24	2687	136	78	258	164	94	288	99	88	1234	1239	1263	1234
20:03:26	2693	138	78	258	163	94	287	95	88	1235	1240	1261	1236
20:03:28	2694	139	78	258	163	94	287	92	89	1240	1241	1265	1234
20:03:30	2683	140	78	258	163	94	287	94	89	1238	1241	1265	1226
20:03:32	2686	142	78	258	162	94	287	92	89	1240	1241	1268	1234
20:03:34	2683	143	78	258	162	94	287	92	89	1240	1238	1264	1235
20:03:36	2690	144	78	257	162	94	287	94	90	1239	1238	1265	1223
20:03:38	2696	145	78	258	162	94	287	92	91	1244	1234	1267	1238
20:03:40	2683	146	78	258	162	94	288	95	91	1243	1240	1268	1236
20:03:42	2688	147	77	257	162	94	287	95	91	1241	1234	1267	1231
20:03:44	2676	148	78	257	161	93	288	95	91	1245	1234	1265	1231
20:03:46	2681	149	77	257	161	93	287	93	91	1248	1232	1266	1235
20:03:48	2674	150	77	257	162	92	287	93	91	1245	1235	1265	1230
20:03:50	2685	151	77	256	162	92	287	93	92	1245	1231	1267	1232
20:03:52	2673	152	77	256	162	92	287	93	92	1245	1235	1266	1234
20:03:54	2683	153	77	256	162	92	287	93	92	1244	1230	1259	1228
20:03:56	2670	154	77	256	162	92	287	93	92	1235	1232	1259	1225
20:03:58	2680	155	77	256	161	92	287	93	93	1242	1230	1266	1229
20:04:00	2678	156	76	256	160	93	287	93	93	1239	1230	1262	1230

CHT-1 (F)	CHT-2 (F)	CHT-3 (F)	CHT-4 (F)	Lat (Deg)	Long (Deg)	Alt (FT)	Pres. Alt (FT)	Track (Deg)	GndSpeed (Kts)	Bank Angle (Deg)	Pitch Att. (Deg)	IAS (Kts)	TAS (Kts)
311	287	303	300	34.996.408	-118.095.654	2764	2457	76	109	-3	1	104	107
313	290	305	302	34.996.409	-118.095.677	2773	2466	76	111	-2	-2	105	108
313	291	305	303	34.996.413	-118.095.684	2787	2480	76	113	0	-2	108	111
314	293	307	305	34.996.415	-118.095.674	2799	2493	76	115	-2	-2	111	114
316	294	308	307	34.996.419	-118.095.652	2823	2516	76	117	-2	-3	114	117
317	296	311	308	34.996.427	-118.095.617	2848	2541	75	119	-24	-5	115	119
318	298	312	309	34.996.447	-118.095.830	2874	2567	73	120	-36	-3	116	119
319	299	313	311	34.996.287	-118.095.792	2906	2599	64	120	-32	-4	114	118
320	300	314	313	34.996.244	-118.095.782	2933	2626	53	121	-30	-4	114	118
321	301	316	314	34.996.325	-118.095.830	2955	2648	42	123	-26	-4	114	118
322	303	318	314	34.996.261	-118.095.700	2983	2676	31	125	-34	-5	118	122
323	304	319	317	34.996.294	-118.095.667	2998	2692	21	127	-23	-4	121	127
324	305	321	317	34.996.413	-118.095.763	3022	2716	10	130	-36	-5	121	126
325	307	322	319	34.996.339	-118.095.749	3057	2752	359	131	-29	-4	122	128
326	308	323	320	34.996.301	-118.095.635	3088	2782	349	132	-26	-5	121	127
327	309	325	322	34.996.274	-118.095.677	3114	2808	340	134	-23	-6	122	127
327	311	326	322	34.996.236	-118.095.864	3135	2829	330	134	-31	-6	120	125
328	312	327	323	34.996.418	-118.095.677	3175	2869	321	133	-34	-6	120	126
329	313	329	325	34.996.283	-118.095.634	3201	2895	310	133	-31	-5	118	123
330	315	330	326	34.996.324	-118.095.719	3231	2925	300	133	-27	-6	120	126
330	316	331	327	34.996.269	-118.095.660	3266	2960	290	133	-24	-6	118	124
331	317	332	328	34.996.363	-118.095.684	3285	2979	281	133	-29	-5	120	126
331	318	334	329	34.996.354	-118.095.764	3307	3000	272	132	-26	-3	121	127

## Black Box Data Logging

The TS-83 also serves as a “Black Box”. It will automatically store the following parameters, once per second, for the most recent 15 hours of use.

Note: Flight Data requires TruTrak EFIS, Airframe and Engine and Airframe data currently requires TruTrak EDM. Flight Data recording coming soon for TruTrak Gemini.

### Flight Data:

Latitude \*  
Longitude \*  
Altitude  
Pressure Altitude  
Ground Track \*  
Ground Speed \*  
Bank Angle  
Pitch Attitude  
Indicate Airspeed  
True Airspeed \*\*

### Airframe Data:

Pitch Trim Position  
Lateral Trim Position  
Flap Position

### Switch Positions

### Engine Data:

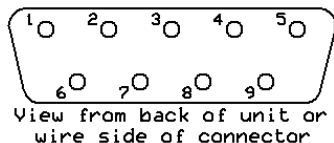
Time  
Time Zone Offset  
RPM  
Oil Temperature  
Oil Pressure  
Manifold Pressure  
Fuel Flow \*\*\*  
Fuel Remaining \*\*\*  
Fuel Pressure  
Fuel Tank Levels  
Volts  
Current  
Outside Air Temperature  
Carburetor Temperature  
Exhaust Gas Temperature  
Cylinder Head Temperature

\* Requires EFIS be connected to a GPS.

\*\* Requires TruTrak EDM for OAT.

\*\*\* Requires optional Fuel Flow Sensor.

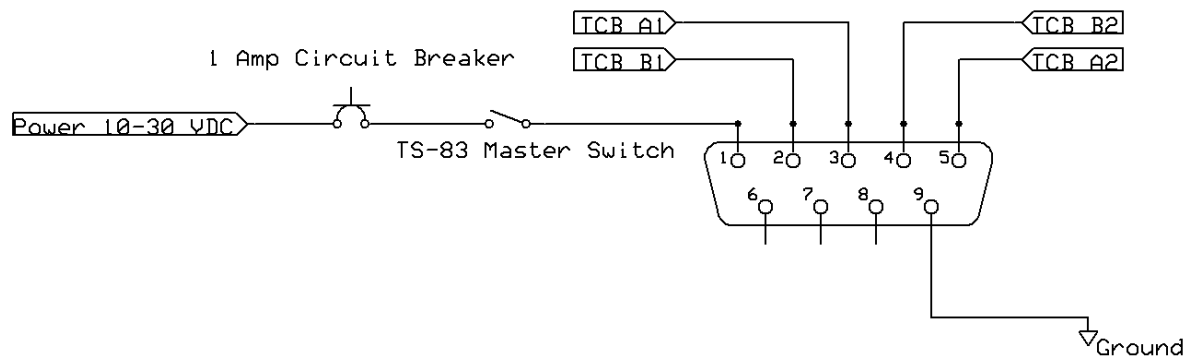
## Electrical Pin-out



Rear 9-Pin Connector P101  
viewed from rear of unit

P101 Pin	Function	Notes
1	<b>Aircraft Power (10-30 VDC)</b>	0.2 mA @ 12 V, 0.11 mA @ 24 V
2	<b>TCB-B<sub>1</sub></b>	Must be an unshielded, twisted pair. Connects to TruTrak EFIS or EDM.
3	<b>TCB-A<sub>1</sub></b>	
4	<b>TCB-B<sub>2</sub></b>	Must be an unshielded, twisted pair. Connects to TruTrak EFIS or EDM.
5	<b>TCB-A<sub>2</sub></b>	
6	<b>No Connection</b>	
7	<b>No Connection</b>	
8	<b>No Connection</b>	
9	<b>Ground Connection</b>	

## TS-83 Wiring Diagram





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## **Warranty On TruTrak Flight Systems Products**

We at TruTrak Flight Systems know how important it is to feel as though the customer is purchasing a product that the manufacturer is going to stand behind. For this reason we want offer more than the basic one-year warranty that is standard to this industry. The warranty on all TruTrak products will be three years from the date of purchase. Abuse and misuse of a product are not covered under this warranty. Modification to a product may void the warranty, as well as carry a penalty when upgrading to another product. This three-year warranty will be for all products except the Pictorial Turn & Bank, which will continue to have a warranty of one year from the date of purchase.

## **Return Merchandise Policy And Procedure**

Under no circumstances should products be returned to TruTrak without first obtaining a Return of Merchandise Authorization number (RMA #) from TruTrak. An RMA# may be obtained by contacting us at 866-878-8725.

Products that do not have an RMA # will not be processed.

Please include documentation stating the reason for the return and describing any symptoms, failure modes, suspected causes of damage, diagnostics performed, data collected, etc.

Product(s) should be packaged in their original shipping containers. In lieu of this, they should be very carefully packaged in containers suitable to protect them during transit. For your protection, items should be insured for the full value. Note that damage caused during shipping will not be repaired under warranty.

The outside of the box must be clearly marked with the RMA # issued by TruTrak and the RMA # must also be noted on the return documents.

Products will be returned to the customer at no charge via FedEx Ground or UPS Ground. If customer requests expedited shipping (2<sup>nd</sup> Day or Overnight) they will be charged the shipping cost and must supply a credit card number.

## **INTERNATIONAL SHIPMENTS:**

TruTrak sends all International shipments with an insurance value on all products. The customer is responsible for any and all fees, including the cost of shipment, duties, and taxes associated with the shipment.

When sending products to TruTrak for repair or otherwise please be advised that the customer is responsible for all charges and fees associated with shipment. For your protection, items should be insured for the full value.

TruTrak states on all product returns “WARRANTY REPAIR AT NO CHARGE TO CUSTOMER. A COMMERCIAL INVOICE VALUE OF \$\_\_ GIVEN FOR INSURANCE PURPOSES ONLY”

Please keep in mind that your government or another entity in your country may impose a charge for custom and/or brokerage fees, duties and taxes on items received from the US. These charges do not originate from our company nor do we benefit from them in any way. You are responsible for payment of all custom and brokerage fees, duties and taxes that may be imposed when these goods are imported into your country.

Send UPS/FedEx/DHL return shipments to:

TruTrak Flight Systems, Inc., 1500 South Old Missouri Road, Springdale, AR 72764 USA  
Attention: Returns Dept. RMA# \_\_\_\_\_

TRUTRAK FLIGHT SYSTEMS

**1500 S. Old Missouri Road  
Springdale, AR 72764**

POSTAL SERVICE ADDRESS

P.O. Box 189  
Springdale, AR 72765-0189

**Ph: 479-751-0250 Fax: 479-751-3397**

**Toll free: 866-TRUTRAK**

**866-(878-8725)**

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