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Medusa Research, Inc.
288 Plymouth Ave.
Fall River, MA 02721
Phone: (508)675-0200
Fax: (508)675-0202
Email: info@medusaproducts.com

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www.MedusaProducts.com

APPROXIMATE RECORDING TIME by SETUP

The table below shows how often samples are written to memory based on the Sample Rate setting and also the approximate recording time based on how many channels are being recorded. The Sample Rate setting may be set to any whole value between 1 and 255. To compute the time between samples written for other values not shown, multiply the Sample Rate setting by 0.229. Note that the recording times are approximate because of the data compression scheme.

Sample Rate Avg. Setting	Sample written every:	Record Time (hh:mm) 1 Channel	Record Time (hh:mm) 2 Channels	Record Time (hh:mm) 3 Channels	Record Time (hh:mm) 4 Channels	Record Time (hh:mm) 5 Channels
1	0.229 seconds	0:17	0:13	0:10	0:08	0:05
2	0.458 seconds	0:35	0:26	0:21	0:17	0:11
3	0.688 seconds	0:53	0:39	0:31	0:26	0:17
4	0.917 seconds	1:11	0:53	0:42	0:35	0:23
5	1.14 seconds	1:28	1:06	0:53	0:44	0:29
10	2.29 seconds	2:57	2:13	1:46	1:28	0:59
20	4.58 seconds	5:55	4:26	3:33	2:57	1:58
30	6.88 seconds	8:52	6:39	5:19	4:26	2:57
40	9.17 seconds	11:50	8:52	7:06	5:55	3:56
50	11.46 seconds	14:47	11:05	8:52	7:23	4:55
100	22.9 seconds	29:35	22:11	17:45	14:47	9:51
150	34.40 seconds	44:22	33:16	26:37	22:11	14:47
200	45.8 seconds	59:10	44:22	35:30	29:35	19:43
255	58.48 seconds	75:26	56:34	45:15	37:43	25:08

Power Analyzer PRO Memory Module



Operation Manual

Model: MR-DM-001

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INTRODUCTION

Congratulations on your purchase of the Power Analyzer PRO Memory Module!

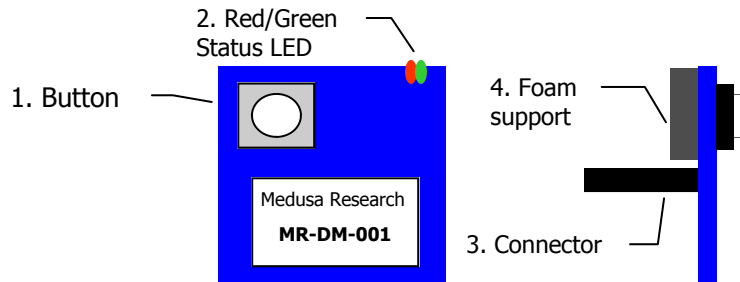
This device adds data logging capability to the **Power Analyzer PRO**, allowing the user to record data while not connected to a computer. This feature allows a whole new set of possibilities for testing with the **Power Analyzer PRO**.

The module is configurable in the field with a simple and intuitive menu system that uses the Power Analyzer PRO display. Available options allow the user to change the sample rate, what channels are recorded, and set recording triggers. Record all data channels at the full sample rate for several minutes, or fewer channels at a lower sample rate for days! Lossless data compression makes maximum use of the data logging memory.

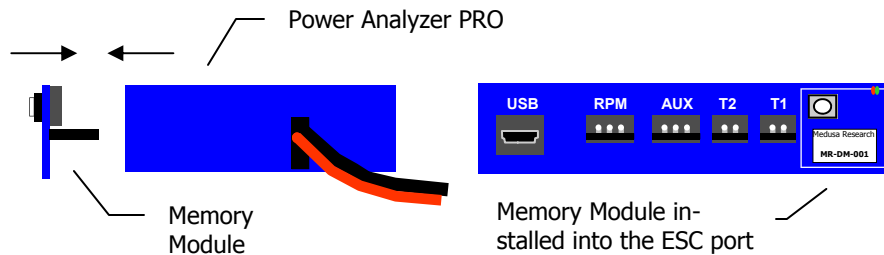
Use the Memory Module with the Power Analyzer PRO for:

- Real-world performance testing of any R/C model.
- Remote logging of RPM, temperature, voltage, current, power and more.
- Any application for the Power Analyzer PRO where data recording is necessary, but it is impractical to hook up to a PC.

DESCRIPTION & INSTALLATION



1. **Button**—The button is used in conjunction with the LCD display on the Power Analyzer PRO to control the Memory Module. Press the button briefly to scroll through the menus that are displayed on the Power Analyzer PRO. Hold the button in for more than 1 second to select the current menu item.
2. **Red/Green Status LED**—This dual-color LED indicates the Memory Module activity. Green flashes indicate transmit/receive data with the Power Analyzer PRO or POWERLink. Red flashes indicate data is being recorded to memory.
3. **Connector**—This connector is inserted in the **ESC** port of the Power Analyzer PRO. This is how the Memory Module communicates with the Power Analyzer PRO.
4. **Foam Support**—This foam pad is added behind the button to help support the Memory Module. The blue plastic backing on the foam *should not be removed*.



The Memory Module plugs into the ESC port, with the status LED facing up. Make sure the connector engages the pins inside the ESC port, and push the Memory Module in until the foam pad seats against the Power Analyzer PRO case.

If power is applied to the Power Analyzer PRO already, the status LED should begin to blink green to indicate that it is communicating with the Power Analyzer PRO and the PRO display will the message "PA Memory Module / Press button...".

OPERATION

The Memory Module menu system allows you to change the setup in the field without a computer. The top line of the LCD shows the title of the current menu, while the second line shows the options in the menu. The current option is pointed to with the → ← arrows. To select the current option, hold the button in for more than 1 second. To move to the next option, tap the button briefly. The menu options are as follows:

- **Main Menu**—This is the top level menu.
- **Record Menu**—Select this option to enter the Record Menu.
 - **Start**—The start option starts recording data. If the memory is not blank, you will be prompted to erase before starting the recording. If the trigger threshold is greater than zero, recording will start once the current exceeds the threshold value.
 - **Erase**—This option erases the memory. The erase option will ask the user to confirm the erase. Select Yes in the erase option to erase the memory.
 - **Back**—This option returns to the Main Menu

- **Setup Menu**—Select this option to enter the Setup Menu.
 - **Rate**—This option enters a menu that adjusts the number of samples averaged to create one sample. Use this option to slow down the sample rate and allow for longer recording time. The number of samples averaged may be adjusted from 1 to 255 by selecting the Up or Down options to increase and decrease the value.
 - **Chan**—This Channel menu selects what channels will be recorded. Turn off channels that need not be recorded to increase the recording time. Select the channel to change it from On to Off or Off to On. Channel abbreviations used in the menu are as follows: V = Voltage, A = Current, AUX = Auxiliary analog, T1 = Temperature 1, T2 = Temperature 2, TC = Thrust Cell, RPM = RPM.
 - **Trigger**—This option allows the user to set a current threshold in amps, at which to start recording. When enabled, the Start option of the Record menu will only start recording once the current channel has exceeded this threshold value. This value may be set from 0 to 10 amps by selecting the Up or Down options to increase and decrease this value.
 - **Back**—This option returns to the Main Menu
 - **Info Menu**—This option displays the software version, and software and hardware identification codes. Tap the button briefly to exit back to the Main Menu

Amp-hours are calculated from current; power and watt-hours are calculated from current and voltage. Whenever current or voltage is recorded, the values computed from them will be available when the data is downloaded to the PC.

The Trigger function allows the user to start recording when the value of the current channel exceeds the threshold set in the trigger setting. To use the function, set the Trigger setting to a non-zero value. Select Start from the Record menu. The recorder will wait until the amps measured exceeds the threshold before it starts writing to memory. Once triggered, the Memory Module will continue recording until it is stopped by the user. After the unit is triggered, the LED will blink red every time data is written to memory. Set the Trigger to 0 to disable the trigger function.

Sample Rate averaging will take the average of the set number of samples, then write that value to memory. By decreasing the number of samples written to memory, this function is useful for monitoring data that does not change rapidly and it can extend the recording time dramatically. See the table on the inside page for sample rates and recording times.

WARRANTY

LIMITED WARRANTY

Medusa Research Incorporated warrants the Memory Module to be free of manufacturing defects in material and workmanship for a period of 1 year from the original date of purchase. Should any defects covered by this warranty be found, the Memory Module shall be repaired or replaced with a unit of equal performance by Medusa Research Incorporated. In the event of a product defect during the warranty period, see the directions in the "Returns and Return Authorization" section.

LIMITS AND EXCLUSIONS:

This warranty may be enforced only by the original purchaser, who uses the Memory Module in strict accordance with the information provided in this operation guide. This warranty does not apply to damage resulting from failure to follow instructions provided in this operations guideline, misuse, abuse, neglect, connector incompatibility, mechanical failure of user installed parts, or repair/alteration performed by someone other than Medusa Research Inc.

LIMITATION OF LIABILITY

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For warranty and repair returns, please download a *returns form* from our website.

Instructions for packaging and shipping returns are also on our website.

SUPPORT

email: support@medusaproducts.com

website: <http://www.medusaproducts.com>

telephone: phone number: 508.675.0200 (in Fall River, Massachusetts)

hours: Monday-Friday 10am to 5pm eastern time, excluding business holidays