

RS232 SERIAL DATA RECORDER

MODEL **TG**

- DUAL CHANNEL
- TIMESTAMP
- 1 GBYTE CAPACITY
- INSTANT CABLE TAP

Model TG records serial data onto popular and inexpensive memory cards. The unit easily taps into existing serial data connections without interfering with the users system.

It's dual channel ability means that you can also record a second data line to capture TX and RX dialog between equipment. You may record all types of 7-8 Bit data such as text, photos graphics, proprietary protocols, .pdf files, photos, binary and non-ASCII types. Data is stored conveniently as a single RECORD.TXT file on the memory card.

No filtering and no conversion is performed on the data. Insert the memory card in a PC reader for quick transfer of all data to a PC folder. Many kinds of text data are immediately and reasonably viewable in spreadsheets or wordprocessors.

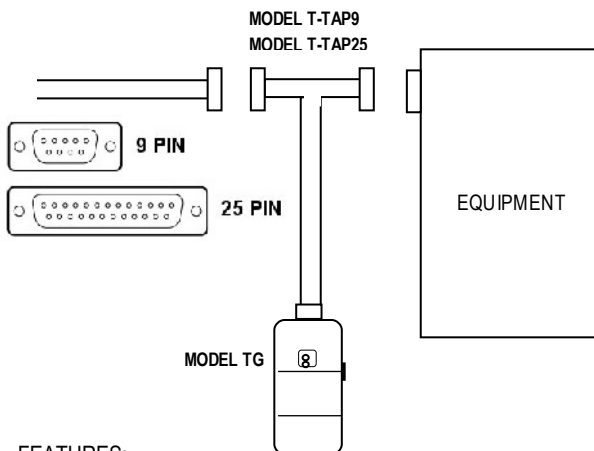
FOR:

- Scientific Instruments
- Computers
- Machinery
- Modems
- Telecommunications
- Point Of Sale Systems
- Security Systems
- GPS Units
- PLC's
- Weigh Scales
- Sensors
- Weather Equipment
- Printers



Model TG

Tap into existing systems without interfering with its operation:



Scope of 1 Gigabyte capacity:

- You can record a constant stream of data at 9600Baud for approximately 12 days.
- You can record 1,000 byte bursts of data every 5 min. for 3,472 days.



Model T-TAP9 Accessory

FEATURES:

- **No front panel settings or internal switches** - makes basic operation a simple procedure: just power up to enter record.Re
- **Timestamp setting** - can mark bursts of data that are received periodically.
- **Dual channel setting** - uses two UARTS to enable recording of serial dialog between equipment.
- **1 GigaByte Capacity** - stores approximately 9.5 million lines of text data @100 characters/line.
- **T-Tap cable option** - allows quick and harmless tap into existing cables to record dialog between equipment.
- **No flow control required** - just RX and TX pins are read, RTS/CTS is not used, so all taps are simple, and non-interfering.
- **Microcontroller & UARTs are "plug-in"** - socketed parts makes the unit user repairable, to help protect the investment.
- **No software is used** - no licensing is involved and no learning or handling of software is required.
- **Data appends after power-up** - data stays in memory card until user erases it. Back to back projects can exist.
- **Recovers after power outage** - begins recording automatically, and appends data to where it left off. No operator required.
- **Audio Sound Transducer** - useful tones help confirm correct operation. Block data-writes to memory card sound similar to a disk drive.
- **Channel Number Stamp** - identifies the recorded data as send or receive when channel changes, ie. RX or TX.
- **"Memory Used" Level Indicator** -programmable threshold signals to the user by LED that memory level is exceeded.
- **Transient Voltage Protectors** -helps suppress damaging RS232 electrical spikes caused by environment, eg. static, lightning effects.

Model TG is recommended if you wish to record data in an established system but are concerned about disrupting it. You may feel that it is complicated and may need wiring changes and studying, however this is usually redundant. Simply install the T-Tap device where a serial cable connections exists, then you will be able to use the recorder without the system being affected by it. You can obtain background recording as a permanent or temporary function without affecting the users equipment. The recorder can be powered on or off, and the memory card can be installed/removed without the users system being affected. This is a valuable feature that makes recording in many types of systems easily accomplished.

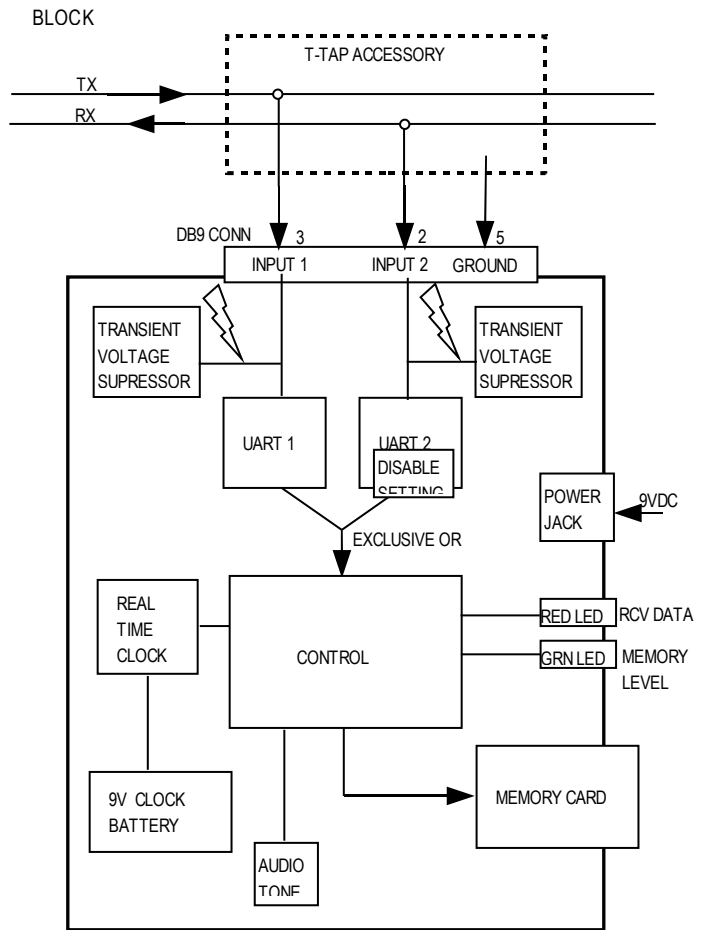
Record for days, weeks or months depending on the application.



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SPECIFICATIONS

Interface	RS-232 DB9F Connector
Data Rates (Baud)	300, 600, 1200, 2400, 4800, 9600, 19.2K, 38.4K, 56.7K, 115.2K
Data Bits / Parity	8 Bits, No Parity, 7 Bits, Even Parity, 7 Bits, Odd Parity,
Time Stamp	Enable or Disable Timestamp after 2 seconds idle time Format: CR LF dd/mm/yyyy hh:mm:ss CR LF
Dual Channel	Enable or Disable setting. Channel1 = DB9 Pin 3 Channel2 = DB9 Pin 2 Half duplex operation records data channels in order received
Dual Channel Stamp	Text stamp "CR LF CHNx: CR LF " is inserted at the start of a channel change.
Memory Fill Level Indicator LED	Settable Bytes: 100KB, 500KB, 1MB, 10MB, 100MB, 200MB, 500MB, 900MB
Handshaking RTS/CTS	None Required Uses Data + Ground only.
Power	DC Jack 5-18Volts 57ma 9 Volt DC Wallmount Adapter supplied
Clock Battery	Internal 9Volt battery. Accessible from battery hatch door. Life: >2 Years
Data Capacity	Approximately 1 Gigabyte
Memory Card	SanDisk Compatible SD
File Type	Windows PC Compatible FAT. 8 Bit Data File Name: RECORD.TXT
Front Panel Indicators	Red LED = Record Green LED = Memory Fill Threshold Status
Audio Sound Transducer	Generates tones to help confirm operation.
Configuration	Performed by editing CONFIG.TXT file on memory card
PHYSICAL	
Weight	125 grams
Dimensions	5.75" L x 2.75" W x 1.1" H (14.5 cm x 7 cm x 2.8 cm)
Enclosure	ABS Plastic



RECORDING PROCEDURE

TO START RECORDING:

1. Power down
2. Install memory card:
 - Either 1. new card with no files on it.
 - 2. used card with only RECORD.TXT on it.
 - 3. card with only CONFIG.TXT on it.
3. Power up.
 - A new card will format and create empty RECORD.TXT (0 bytes).
 - A used card with RECORD.TXT on it will continue recording, appending where it left off.
 - A CONFIG.TXT card will load new settings to the recorder and store them in non-volatile memory.

On powering up, the LED indicators blink on, and a beep tones will be heard when recording mode is ready. Erased cards require about 3 seconds to format. If the card is defective, then the LED indicators will blink continuously, or will fail to create the beep tones.
4. When a double beep is heard, the unit is ready to record.
5. The red record LED will blink when a character is received at the interface.
6. After a block of 512 bytes have been received, a beep (tick) will be heard, indicating that the block wrote to the memory card successfully. The beep helps confirm proper operation of the recorder.

TO END RECORDING:

- ▶ Leave memory card installed and power down. The recorder will finish by writing any bytes in its buffer to the memory card.
- ▶ **ALWAYS POWER DOWN BEFORE REMOVING MEMORY CARD.** Otherwise memory card may not be readable.
- ▶ A beep indicates successful power down. If a beep is not heard, then an error condition exists.
- ▶ The memory card may now be read on a Windows PC.

TO RESTART RECORDING:

Go to Step 1 above.

ON POWER OUTAGE:

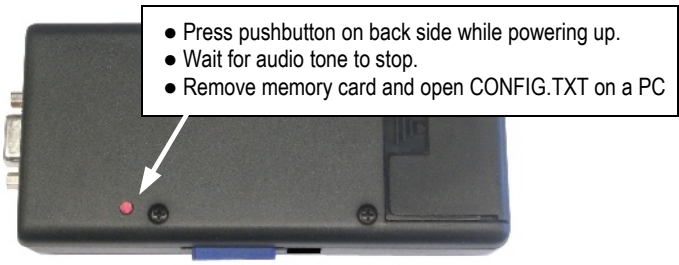
The recorder will save all data to the memory card. The card may be read on a PC if required.

ON POWER RETURN:

The memory card must be installed before power returns. The recorder will beep and then begin recording, appending to RECORD.TXT.

CONFIGURING MODEL TG

Make a CONFIG.TXT file to edit on a PC Note: RECORD.TXT file will be erased.



CONFIG - Notepad

File Edit Format View Help

EDIT CURRENT SETTINGS: CONFIG.TXT

```

-----
BAUD
0 300
0 600
0 1200
0 2400
0 4800
1 9600
0 19.2
0 38.4K
0 57.6K
0 115.2K
1 8 BITS, NO PARITY
0 7 BITS, EVEN PARITY
0 7 BITS, ODD PARITY

-----
1 CHANNEL LABEL
1 TIMESTAMP AFTER 2 SEC RCV IDLE TIME
0 NOT USED
0 NOT USED
0 NOT USED

-----
1 DUAL CHANNEL ENABLE (DB9 PINS 2,3 BOTH RCV)

-----
MEMORY FILL LEVEL INDICATOR
0 100KB
1 500KB
0 1MB
0 10MB
0 100MB
0 200MB
0 500MB
0 900MB

-----
CLOCK/CALENDAR
28 DAY
09 MONTH
09 YEAR
08 HOUR
27 MINUTE
0 SET CLOCK

-----
OPTION
0 #1
0 #2
0 #3
    
```

CAUTION
WHEN EDITING CONFIG.TXT
DO NOT CHANGE ANY SPACING
OR FORMATTING.

Set a baud rate. Edit to: "1"

CR LF **CHx**: CR LF precedes data after the channel has changed:

Example: Timestamp triggers 2 seconds after data AAAAAA data is idle:

- Timestamp only applies to Channel #1
- 2 SEC value is not editable.

Front Panel green LED activates if memory card contains more than 500KBytes

Shows current time. Military format - Edit to adjust

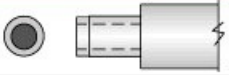
Set to "1" to adjust

Custom design options may be enabled.

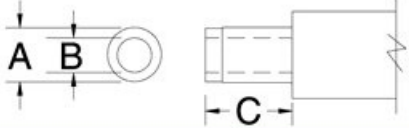
- After editing, perform: **File Save**
- Install memory card in recorder and power up.
- The settings will transfer to non-volatile memory in the recorder.
- When the audio tones stop, the recorder will be ready in record mode.

POWER SUPPLY

- Commonly available style:



Specifications	
diameter :	A = 5.5mm
inner diameter :	B = 2.1mm
shaft length :	C = 8-14mm




OUTPUT: 5V – 18V DC
 Typical Rating:
 9 Volt DC, 200mA

Adapter should be approved: UL, cUL, VDE or approval of your country.



EXTERNAL BATTERY CABLE PART: BATCAB



No internal battery is available for recording operation.

An External Battery Cable accessory is used to power the recorder from a variety of external batteries.

Voltage requirements 5V to 18V DC

Eg. 6 V Lantern batteries: Type 908, Type 918



Approximate Battery Life:
 Battery Rating: 40,000 mah capacity.
 Model TG Usage: 57 ma
 Battery Life: 40,000/57ma = 700 hours
 Degrade by 30% = 700 - 30% = 490 hrs

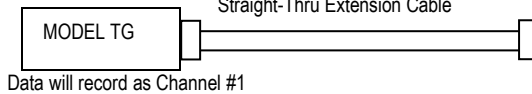
Life: 490 hrs/24 hrs = 20 days

TYPE 918

TESTING MODEL TG

A simple connection to a PC may verify basic operation and familiarize useage.

Set to:
 9600 Baud
 Data Bits: 8
 Parity: None
 Stop Bits: 1



PC

DB9 COM PORT
 Or use USB Serial COM Port Adapter.

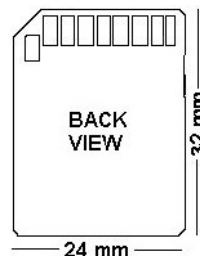
Open Windows Hyperterminal
 Set Properties:
 9600 Baud
 Data Bits: 8
 Parity: None
 Stop Bits: 1
 Flow Contol: None

Memory Card Specifications

Actually maximum capacity of 1 GB rating is approximately 0.955 GBytes
 Popular Standard Original Type: SD

- Not MicroSD
- Not miniSD
- Not SDHC

Use 1GB or 2GB
 Use SanDisk or compatible.



CLOCK CALENDAR

Format : dd/mm/yyyy hh:mm:ss Example for December 25, 2010 1:55PM: **25/12/2010 13:55:00**

Default Time due to unset clock or disabled 9Volt battery displays: **01/01/2001 01:01:00**

Total number of bytes in string: 24 bytes including CR, LF bytes at beginning and end of string.

The timestamp only applies to Channel #1 Reverse DB9 Pins 2 & 3 on input cable to timestamp alternative data line.

If Timestamp is enabled, but the Battery is disabled, then erroneous date values will exist. Solution: Disable Timestamp

NOTES & TIPS

1. "No handshaking required" specification means only the data signal and ground pins need to be used. The recorder simply listens on the users serial cable and does not have to react to any protocols. This makes recording from users systems very easy.
2. Always listen for the power-up Beep . This assures you that the units basic function is working and Record Mode has been entered and is aiting for data to record.
3. Always power down before removing the memory card. This is necessary to close the file on the memory card. Listen for the beep when powering down. The power down beep confirms that the memory card file has been closed properly.
4. A power bar may be used to switch the AC power on and off to start and stop recording, instead of unplugging the recorder's DC power plug.
5. To confirm proper operation while installed, listen for the beep tone when a block of data is being witten to the memory card. Every 512 bytes received will sound a short beep (tick) when it is finished being written to the memory card. The tick sound can be equated to the sound of a PC Hard Disk Drive writing data.
6. You can check the recorder clock/calendar time by making a CONFIG.TXT file on the memory card. (Press pushbutton on backside while powering up.) Read the card on a PC to view the time. When the card is installed back into the recorder, the recorder will format the card to contain an empty RECORD.TXT file.
7. If the recorder fails at making RECORD.TXT or CONFIGURE.TXT files, then it is possible that the card requires a format from the PC. (Go to reader drive letter used, eg. "F", right click and choose Format). The card may be defective.

CAUTION: It is important that the habit of powering down before removing the memory card be made. The process of powering down, closes the file. If the file is not closed, then the user may not be able to retrieve the recorded data on the memory card. After powering down, wait for the audio beep before removing the card. The beep occurs within one second of powering down.

POSSIBLE RECOVERY:

If the memory card is accidentally removed before powering down, then follow instructions below:

1. Do not remove power. Insert card back in Model TG with power remaining on.
2. Press rear panel pushbutton and wait for continuous audio tone. Power down.
3. The card may now be removed and read on a PC

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TG.DOC REV2



NOTES: