CRB-256K & CRB-512K

Call Record Buffers

User's Guide

western™ telematic inc.

Introduction

No one wants to dedicate a PC for collecting call records!
If you have a PC resident Call Accounting system connected directly to your PBX, you can now buffer incoming PBX data thus freeing up the PC. The CRB can record data from any PBX system that sends ASCII data via it's RS-232 interface. Individual baud rates allow recording at one speed while outputting at another.

Non-Volatile Buffer Memory

The CRB provides a substantial improvement over cheap DRAM printer buffers. While DRAM printer buffers will erase stored data with the slightest power glitch, the CRB features non-volatile, battery backed memory, and can reliably store data for up to 60 days, even when powered off. The CRB-256K has 256K of buffer memory, and the CRB-512K has 512K of buffer memory.

High Speed Data Transfer to PC

Buffered data can be transferred from the CRB to your PC at rates up to 11,500 characters per second.

Dual Compression Storage

The Dual Compression storage method can more than double the amount of characters that can be stored. Based on an average call record format, the CRB-512K unit can store approximately 19,600 records.

"Poll-Now" Signal to PC

The CRB's "Poll-Now" signal can trigger your PC based polling software to automatically access the unit and retrieve stored data when memory becomes full.

"Almost-Full" Audible Alarm

The Audible Alarm can emit a beeping tone when CRB memory is over 80% full. The Audible Alarm's beeping tone increases in intensity as more memory is used.

Pass-Through Mode for PBX Programming

The CRB's Pass-Through Mode allows bi-directional communication between your PC and PBX via the CRB unit.

Models CRB-256K and CRB-512K

This User's Guide discusses *both* the CRB-256K and CRB-512K Call Record Buffers. The CRB-256K includes 256K of buffer memory, and the CRB-512K includes 512K of buffer memory. Aside from memory capacity, both models function identically. Throughout this User's Guide, both models are referred to as the "CRB".
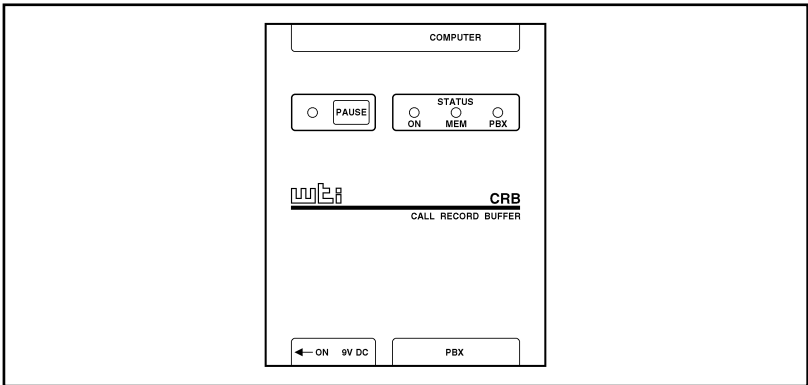
Unit Description

LED Indicators

Figure 1: The CRB Unit

ON: Lights green or red when power is applied:
- **Green:**
  - ○ **CRB-256K:** DTR ready (high) at Computer Port.
  - ○ **CRB-512K:** Indicates Power is On.
- **Red:**
  - ○ **CRB-256K:** DTR *not* present or low at Computer Port.
  - ○ **CRB-512K:** N/A.

MEM: Indicates approximate memory usage:
- **Memory Empty:** LED does not blink.
- **10% Full:** LED will blink once and then pause.
- **20% Full:** LED will blink twice and then pause.
- **30% to 90% Full:** LED will blink once for each 10% of memory used and then pause.
- **100% Full:** The LED will remain on continuously.

PBX: Flashes when data is received from PBX. Indicates the CRB is properly connected to the PBX, and the PBX is transmitting call records via its SMDR Port. If the PBX LED does not flash, this indicates the CRB has been improperly connected, or the PBX is not set to transmit via the SMDR port.

PAUSE: Lights when the data release has been temporarily paused or buffer is empty. Data release will be paused when an XOFF is sent from the polling device, when the DTR signal to the CRB is low, or when XON/XOFF handshaking is disabled, and the PAUSE Button is pressed.

Controls

PAUSE Button: Can be used to start or stop data transfer to the PC when XON/XOFF handshaking is disabled. When XON/XOFF handshaking is enabled, the PAUSE Button will not function. Can also be used to clear and test CRB memory.

Setup Switches: The DIP switches located on the underside of the CRB are used to select baud rates for the PBX Port and Computer Port. Also used to enable or disable other CRB functions such as the Audible Alarm, XON/XOFF mode, and Data Compression.

Installation

This section describes the procedures for configuring the Setup Switches, and connecting the CRB unit to your PBX and PC.

Setup Switches

The Setup Switches select the data rate for each port and enable various other options. Note that switch settings are read when the CRB is powered up.

When the CRB is placed bottom-side up, with Setup Switches positioned on the Left hand side, switches function as follows:

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Switch Left = 0 (OFF)
Switch Right = 1 (ON)

</div>

PBX Port Baud Rate (Sw1 and Sw2)

Switches One and Two select the baud rate for the CRB's PBX Port. The baud rate for the CRB's PBX port must match the baud rate for your PBX's SMDR Port.

PBX Port Baud Rate	Sw1	Sw2
9600	1	1
2400	0	1
1200	1	0
300	0	0

Computer Port Baud Rate (Sw3 and Sw4)

Switches Three and Four select the baud rate for the CRB's Computer Port. The baud rate for the Computer port must be compatible with the baud rate used by your PC or polling device.

Computer Port Baud Rate	Sw3	Sw4
9600	1	1
19.2K	0	1
38.4K	1	0
115.2K	0	0

Enable/Disable Audible Alarm (Sw5)

Switch Five enables or disables the Audible Alarm feature. When enabled, the alarm will sound when memory is almost full.

Audible Alarm	Sw5
Enable Audible Alarm	1
Disable Audible Alarm	0

Enable/Disable Data Compression (Sw6)

Switch Six enables or disables the Data Compression feature. When enabled, both the PBX Port and Computer Port are set for 7 Bits, Even Parity. When disabled, both ports will be set for 8 Bits, No Parity.

Note:
- Most PBX SMDR ports are set at 7 bits, even parity. Therefore, it is recommended to always enable the Data Compression feature when connecting to a PBX.
- The CRB will record data sent at any parity.

Data Compression	Sw6
Enable Data Compression (7 Bits, Even)	1
Disable Data Compression (8 Bits, None)	0

Enable/Disable XON/XOFF Mode (Sw7)

Switch Seven enables/disables the XON/XOFF data release mode. When enabled, XON/XOFF signals will regulate the data flow between the CRB and polling PC. When disabled, CTS/DTR hardware signals will regulate the data flow.

XON/XOFF Mode	Sw7
Enable (XON/XOFF Handshake)	1
Disable (CTS/DTR Handshake)	0

Enable/Disable XON Single Call Record Mode (Sw8)

Switch Eight enables/disables the XON Single Call Record Mode. When enabled, the CRB releases one call record or data item terminated by a Line Feed character, then waits for an XON before sending the next item. When disabled, the CRB will continue to release data until the buffer is empty, or an XOFF is received. When XON/XOFF data release is disabled (Sw7 = DOWN), the Single Call Record Mode will not function.

Single Record XON	Sw8
Enable	1
Disable	0

Computer Port Connection

Use straight wired, pin to pin cable for 25 pin PCs. The CRB's RS-232 interface uses a DCE configuration. Therefore a standard PC to modem cable can be used to connect the CRB to a 25 pin PC COM port. For 9 pin PC COM ports, use a 9 pin to 25 pin adapter, or a 9 pin to 25 pin modem cable.

PBX Port Connection

Before connecting to the PBX Port, check the pin configuration of your PBX's SMDR interface. Most PBX SMDR ports are configured to attach directly to a printer (DTE). If this is the case, a straight wired, pin to pin cable may be used to connect to the CRB's PBX Port.

Only pins 2, 3, 4, and the Ground line are required. The DTR signal (pin 20) is provided as a positive voltage source to the PBX in the event that your PBX requires a READY input in order to release data.

Operation

This section describes the procedures for retrieving data from the CRB, and explains various features and capabilities.

Clear/Test Memory

If the CRB beeps and simultaneously flashes the Pause and Mem LEDs upon power up, this may indicate a memory error or low battery condition. A memory error can be corrected by performing the Clear/Test Memory procedure, which will clear all stored data from memory, test memory continuity, and re-initialize the CRB.

To clear and test memory, proceed as follows:

1. Power off the CRB.
2. Press and hold PAUSE, then power on the CRB.
3. Release the PAUSE Button. The Clear/Test Memory operation will take approximately 10 seconds. Note that during the memory test, the Mem and Pause LEDs will also blink. When the operation is complete, the CRB will beep twice.

Data Release Control

XON/XOFF Data Release (Switch 7 = ON)

Each time the CRB is powered up, the unit will be set in the XOFF (halt) condition. Data will not be released until the DTR signal (pin 20) goes high, and an XON is received from the polling device.

If the DTR signal drops for any reason during data transfer, data output will be terminated, and the Pause LED will light. Data output will not resume until the DTR line goes high, and an XON is received from the polling device. This prevents records from being lost in the event of power failure, cable disconnection, or problems with the polling program.

When the XON/XOFF Mode is enabled, the PAUSE Button will not function, but the Pause LED will light when data output has halted.

Single Call Record Release: When XON Single Call Record Release is enabled (Sw8 = ON), the CRB will release a single call record or data item, then wait for an XON before releasing additional data. When the Single Call Record mode is disabled (Sw8 = OFF), the CRB will release data continuously until an XOFF is received or the buffer is empty. Single Call Record Release is not available in the CTS/DTR Mode.

CTS/DTR Flow Control (Switch 7 = OFF)

When Switch Seven has been set in the OFF position to disable the XON/XOFF mode, the CRB will use CTS/DTR flow control, and will release data when Computer Port pin 20 is high. Upon power up, or after the buffer has been emptied, the CRB will wait 60 seconds before releasing data. This delay allows time for the PC to "boot-up" to the PC polling program.

When the CTS/DTR flow control method is selected, the CRB's PAUSE Button can be used to halt or resume data release, and the Pause LED will light when data output has been halted.

"Poll-Now" Signal

The "Poll-Now" signal can be used to trigger the PC to "Poll" the CRB and transfer buffered data to disk. When the CRB's memory becomes 80% full, Computer Port pin 8 will go high until CRB memory is almost empty (1%).

Data Pass-Through to PBX

The Pass-Through feature allows bi-directional communication between the PC and polling device via the CRB unit. During Pass-Through, data received from the PC is buffered to allow for baud rate differences, and then transmitted out the PBX Port. During Pass-Through, XON/XOFF codes are not passed to the PBX Port.

The buffer should be empty when bi-directional communication is attempted. This will prevent incoming data from the PBX from being written at the end of any previously stored call data.

When the XON Single Call Record Mode has been enabled, an XON must be sent to release each line of text from the buffer.

Audible Alarm

When enabled, the Audible Alarm indicates that CRB memory is almost full. When memory is 80% full, the CRB will emit a slow beeping tone. When memory becomes 90% full, the CRB will emit a medium beeping tone. When memory becomes 100% full, the CRB will emit a fast beeping tone.

The Audible Alarm will shut off when data is released to the PC. If incoming data exceeds outgoing data, the Audible Alarm will be re-triggered. The Audible Alarm can be disabled using Switch 5.
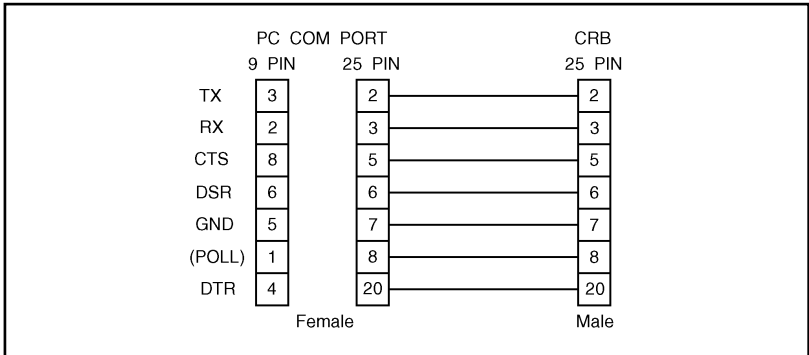
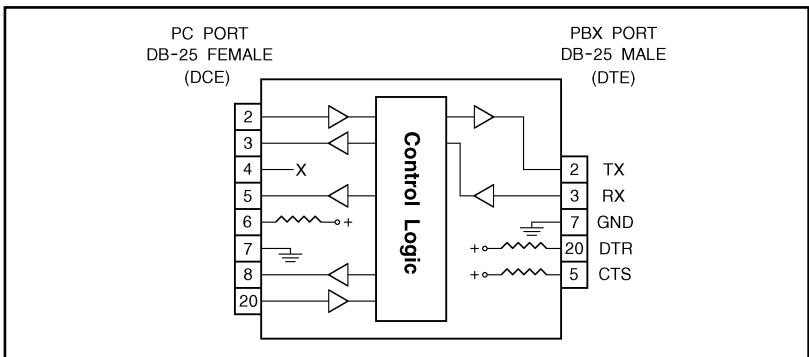# RS-232 Interface

Figure 2: PC to CRB Wiring

Figure 3: RS-232 Interface

PC Port; RS-232, DB-25 Female (DCE)

Pin	Signal	I/O
2	RXD	Input
3	TXD	Out
5	CTS	Out
6	DSR	Out
7	GND	—
8	"Poll-Now"	Out
20	DTR	Input

(All other pins are open)

PBX Port; RS-232, DB-25 Male (DTE)

Pin	Signal	I/O
2	TXD	Out
3	RXD	Input
5	CTS	Input
7	GND	—
20	DTR	Out

(All other pins are open)

Specifications

Interface: RS-232 Asynchronous
   PBX Port: DB-25 Male, DTE Pinouts
   PC Port: DB-25 Female, DCE Pinouts

Data Rate: (Dip Switch Selectable)
   PBX Port: 300, 1200, 2400, 9600
   PC Port: 9600, 19.2K, 38.4K, 115.2K

Parity: (Dip Switch Selectable)
   7 bit, Even Parity (Compression Mode)
   8 bit, No Parity (No Compression)

Flow Control: DTR/CTS, XON/XOFF (Switch Selectable)

Memory:
   CRB-256K: 256K CMOS Static RAM, Battery Backed (2 yr. life)
   CRB-512K: 512K CMOS Static RAM, Battery Backed (2 yr. life)

Size: 1.20" x 4.50" x 6.00" (H x W x D)

Weight: 1 lb.

Power: AC Adapter, 9 VDC @ 500 ma

Temperature: 50°F to 104°F (10°C to 40°C) Operating

Humidity: 20% to 80% Relative Humidity

Customer Service

Customer Service hours are from 8:00 AM to 5:00 PM, PST, Monday through Friday. When calling, please be prepared to give the name and make of the unit, its serial number and a description of its symptoms. If the unit should need to be returned for factory repair it must be accompanied by a Return Authorization number from Customer Service.

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Irvine, California   92618

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Toll Free: 1-800-854-7226
Fax: 949-583-9514
Email: service@wti.com

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FCC Notice

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 radio frequency 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 his own expense.

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