CRB-2MB & CRB-4MB

Call Record Buffers

User's Guide

western™
telematic inc.

1. Introduction

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, lithium-battery backed memory, and can reliably store data for up to 60 days, even when powered off. The CRB-2MB provides two megabytes of buffer memory, and the CRB-4MB provides four megabytes 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 the Nortel Meridian, single-line format, the CRB-2MB can store approximately 50,000 records and the CRB-4MB can store approximately 100,000 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-2MB and CRB-4MB

This User's Guide discusses *both* the CRB-2MB and CRB-4MB Call Record Buffers. Aside from memory capacity, both models function identically. Throughout this User's Guide, both models are referred to as the "CRB".
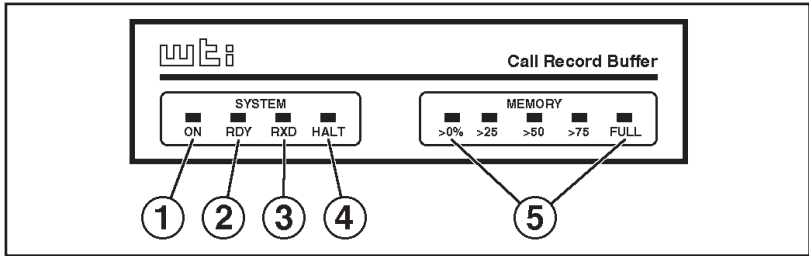
2. Unit Description

Figure 1: LED Indicators

2.1. LED Indicators

As Shown in Figure 1, the front panel of the CRB unit includes the following status indicators:

① **ON:** Lights when power is applied to the CRB unit.

② **RDY:** Lights to indicate the unit is operational and ready to receive commands.

③ **RXD:** Flashes when data is received from the PBX. If the RXD LED does not flash, this may indicate that the CRB has been improperly connected to the PBX, or that the PBX has not been configured to transmit via the SMDR port.

④ **HALT:** Lights when data release has been temporarily paused.

⑤ **MEMORY Indicators:** Light to indicate approximate buffer memory usage.

2.2. Back Panel Components

As shown in Figure 2, the back panel of the CRB unit includes the following components:

① **Computer Port:** An RS232, DB25F socket (DCE pinout) for connection to your PC.

② **PBX Port:** An RS232 DB25M plug (DTE pinout) for connection to your PBX.

③ **Pause/Default Button:** Can be used to either re-read the Setup Switches (see Section 3.1), pause data release (see Section 4.3), clear memory and re-read the Setup Switches (see Section 4.1), or clear and test memory (see Section 4.2.)

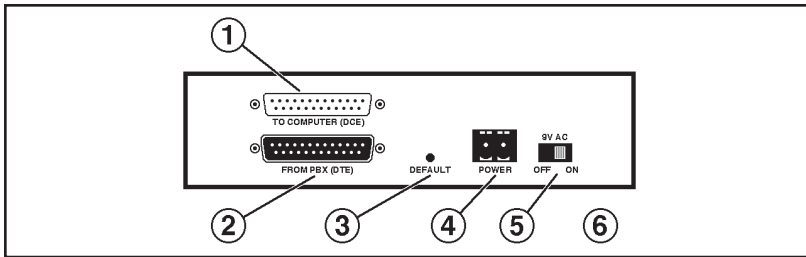④ **Power Connector:** For connection to the 9 VAC @ 1000 ma power adapter, supplied with the unit.

Figure 2: Back Panel Components

⑤ **Power Switch**

⑥ **Setup Switches:** (Not Shown) A bank of eight DIP switches, located on the underside of the unit, which are used to select baud rates for the PBX port and Computer Port, and enable/disable other features as described in Section 3.1. A label adjacent to the Setup Switches summarizes switch functions.

3. Installation

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

3.1. Setup Switches

The Setup Switches can be used to select the data rate for each port and enable various other features as described below.

> **Note:** Newly selected switch settings will not take effect until the unit is powered off and on, or the Pause/Default button is pressed. To read switch settings, briefly press the Pause/Default button.

3.1.1. PBX Port Baud Rate (Sw1 and Sw2)

Selects 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

3.1.2. Computer Port Baud Rate (Sw3 and Sw4)

Selects 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.

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

3.1.3. Enable/Disable Audible Alarm (Sw5)

When enabled, an alarm will sound when memory becomes 80% full as described in Section 4.6.

Audible Alarm	Sw5
Enable Audible Alarm	1
Disable Audible Alarm	0

3.1.4. Enable/Disable Data Compression (Sw6)

When enabled, both the PBX Port and Computer Port will be 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

3.1.5. Enable/Disable XON/XOFF Commands (Sw7)

When Sw7 is set in the ON position, data flowing from the CRB to the polling PC can be regulated by both XON/XOFF commands and the status of the DTR signal. When Sw7 is set in the OFF position, DTR hardware signals will control the data flow as described in Section 4.3, and XON/XOFF commands will be disabled.

XON/XOFF Mode	Sw7
Enable XON/XOFF Handshake	1
Disable XON/XOFF Handshake	0

3.1.6. Enable/Disable XON Single Call Record Mode (Sw8)

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 as described in Section 4.3.2. Note that Sw8 overrides Sw7; when Sw8 is ON, the CRB will still recognize XON/XOFF commands, regardless of the setting of Sw7.

Single Record XON Mode	Sw8
Enable	1
Disable	0

3.2. Computer Port Connection

The RS-232 interface uses a DCE configuration, and 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.

3.3. 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, and the Ground line are required. The DTR signal (pin 20) is provided in the event that your PBX requires a READY input in order to release data.

4. Operation

4.1. Clear Memory / Read Switches

To clear the CRB's buffer memory and re-read the Setup Switches, first set the CRB's Power switch in the OFF position. Next, press and hold the Pause/Default button while placing the Power Switch in the ON Position.

> **Note:** This procedure will clear all buffer memory. Before performing this procedure, make certain that all important data has been retrieved from the unit.

4.2.   Clear/Test Memory

To clear and test buffer memory, press and hold the Pause/Default button until the front panel LEDs begin to flash, and then release the button. Note that the Memory Test will require several minutes to complete. If the test determines that there are no problems with the CRB's memory, the unit will emit a beep at the end of the test; if a memory error is detected, all LEDs will flash simultaneously at the end of the test.

> **Note:** When this memory test is performed, all data will be cleared from buffer memory. Make certain to retrieve important data before performing this test.

4.3.   Data Release Control

When data is released from the CRB, the unit will always regulate data flow based on the status of the DTR signal (Pin 20.) When DTR goes low, the CRB will pause data release, and when DTR goes high, the CRB will wait for five seconds, and then resume data release. In addition, providing that the DTR signal is high, the Pause/Default button can also be used to pause or resume data release. In the default state (Sw7 = OFF), the CRB will not respond to XON/XOFF commands.

4.3.1.   XON/XOFF Data Release

When Setup Switch Seven is placed in the ON position, then XON/XOFF commands can also be used to regulate data flow (in addition to the DTR signal and Pause/Default button discussed above.) Note that when an XON is sent, data will not be released until the DTR signal (pin 20) goes high.

4.3.2.   XON 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, DTR drops, or the buffer is empty. Note that Switch 8 overrides Switch 7; When Switch 8 is set in the ON position, XON/XOFF commands will still be recognized, regardless of the setting of Switch Seven.

4.4.   "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%).

4.5.   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 and commands received from the PC are 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.

4.6.   Audible Alarm

When enabled, the Audible Alarm will sound to indicate 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 enabled or disabled using Switch 5.
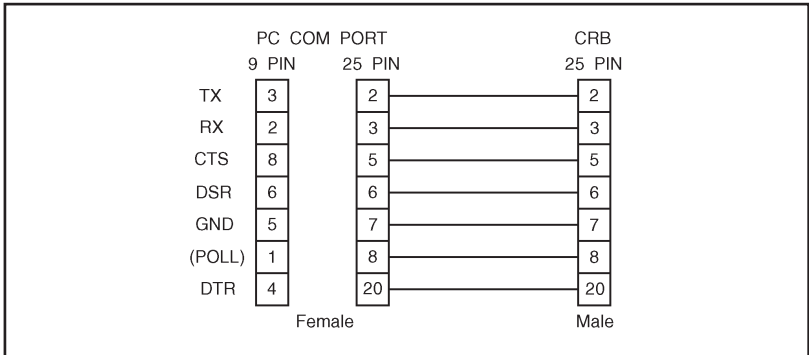
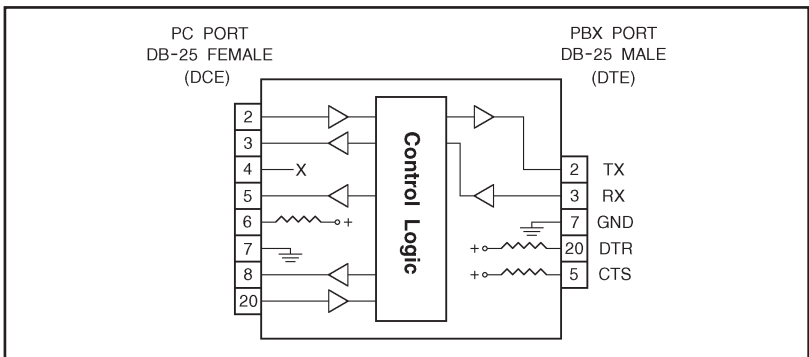# 5. RS-232 Interface

Figure 3: PC to CRB Wiring

Figure 4: RS-232 Interface

Computer 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)

6. 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-4MB: 4 Megs, CMOS Static RAM, Battery Backed (2 yr. life)
   CRB-2MB: 2 Megs, CMOS Static RAM, Battery Backed (2 yr. life)

Size: 1.75" x 5.75" x 7.00" (H x W x D)

Weight: 2 lb.

Power: AC Adapter, 9 VDC @ 1000 ma

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

Humidity: 20% to 80% Relative Humidity

7. 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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8. 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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