



Remote Data Collection Device **CE**
Model DCDSS1
Documentation Number DCDSS11702

*This product designed and manufactured in Ottawa, Illinois USA
of domestic and imported parts by*



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Chapter 1: Introduction

B&B Electronics iCaddy is a serial data collection device that uses the Internet to automatically deliver your data. Data is emailed or sent using FTP based on a user-programmable schedule or when its buffer level is reached or based on a digital alarm input.

It replaces local or long distance phone calls with an automated Internet connection to your Internet Service Provider. Instead of calling out to remote sites, let the DCDSS1 deliver the data to you, virtually anywhere, anytime!

Once installed, there is no need for human presence at the remote site. You can download cash receipts at midnight or track distant conditions at any time. The DCDSS1 works with a modem to call a local ISP near your remote location. User-friendly software with easy-to-read screens allows you to set automatic call-ins from multiple locations. You can change call-in times and data requests at any time from your central PC.



Chapter 2: Operation

Data Storage

Data Buffer and Time Stamping

The DCDSS1 has a 60 Kbyte data buffer for storing data collected through the local serial port and time stamp information. The time stamp can be enabled to record the time that the data came into the local serial port. A new time stamp is created when new data is received after one minute of inactivity.

Polling Strings

Many serial devices require data to be requested before responding. The DCDSS1 can be programmed with up to 10 polling strings, each string up to 35 bytes in length. Each polling string is individually configured and sent out of the local serial port on a time-based trigger. In the PC setup software, fields are chosen to schedule the polling interval of each polling string for minutes, hours and days. Instead of a fixed interval, you can also select which day of the month the polling string should be sent to the local device.

Data Delivery Triggers

The DCDSS1 will automatically connect through your ISP to deliver its data and notifications. Three different types of events can trigger the data delivery.

Time-Based Trigger

The time-based trigger can be user-configured to deliver data based on time and date. For example, data may be delivered once every hour, at 9:00 p.m. each Sunday, or on the first day of each month. In the PC setup software, fields are chosen to schedule the delivery interval for minutes, hours and days. Instead of a fixed interval, you can also select which day of the month that data should be delivered.

Buffer-Based Trigger

The buffer-based trigger automatically dials the modem after the data buffer is a determined percentage full. The range is from 10% to 80% in 5% increments. Keeping the buffer trigger below 100% capacity allows for additional data to be stored while the connection is being made.

Digital Input Trigger

The digital input trigger dials the modem when an input signal is detected on the DCDSS1 digital input. It is a +5 volt signal, which can be set to active high or active low. The signal must stay active for at least 5 milliseconds to be detected.

Data Delivery Methods

Data and error logs can be emailed using a MIME attachment or sent using FTP. Additionally, notifications can be configured to allow email or pager notification that data has been delivered.

Error Conditions

The DCDSS1 has a 2.9 Kbyte error log buffer for storing error conditions. Each error condition is time stamped.

Error Condition Logged	Cause
BYTE(S) LOST	Data received from the local serial port during ISP communications or when in Bypass Mode is not stored
DATA OVERRUN	Onboard UART FIFO overflowed
DATA ERROR	Character received with parity, framing or break error
NOTIFICATION FAILED	An error occurred in the email notification process (mail server connection, command structure, etc.)
DATA ATTACHMENT FAILED	An error occurred in the email data process (mail server connection, command structure, etc.)
ERROR ATTACHMENT FAILED	An error occurred in the email error log process (mail server connection, command structure, etc.)
FTP FAILED	An error occurred in the FTP process (FTP server connection,

	command structure, etc.)
PAGER FAILED	Unable to contact pager or send message
DATA OVERFLOW	Data buffer filled, most recent data stored
ERROR OVERFLOW	Error buffer filled, most recent errors stored
PRIMARY DIALUP FAILED	Unable to connect to ISP1
PRIMARY AUTHENTICATION FAILED	Unable to verify username/password with ISP1
SECONDARY DIALUP FAILED	Unable to connect to ISP2
SECONDARY AUTHENTICATION FAILED	Unable to verify username/password with ISP2

Serial Ports

The DCDSS1 has two serial ports. One connects to the modem; the other is for collecting the serial data.

The modem side serial port is always set up for 8 data bits, one stop bit, and no parity bit. The baud rate for the modem side serial port can be set from 600 to 115.2 kbps. A 60-byte initialization string can be programmed to be sent to the modem before the ISP number is dialed. This port is configured as a DTE device; a standard serial modem cable should be used to connect it to a modem.

The local serial port can be configured for 5 – 8 data bits, 1 or 2 stop bits, and even, odd or no parity. The baud rates for the local serial port can be set from 300 baud to 115.2k baud. This port is set up as DTE and supports TD and RD data lines.

ISP Account

The DCDSS1 allows for a primary and secondary (backup) ISP account. If the DCDSS1 is unable to connect to the primary ISP, three attempts will be made before switching to the secondary ISP for that delivery. Subsequent deliveries will revert back to the primary ISP.

Note: The DCDSS1 supports *Password Authentication Protocol (PAP)* for logging into the ISP. *Challenge Handshake Authentication Protocol (CHAP)* is **not** supported by the DCDSS1. The user must supply a user name and password for each ISP account. The user name and password are limited to 30 bytes each. Note that AOL, Netzero, Juno, MSN, Earthlink, and others use non-standard protocols and cannot be used with the DCDSS1.

Email Setup

The DCDSS1 allows for a primary and secondary mail server. The primary mail server is used when the primary ISP is dialed. The secondary mail server is used when the secondary ISP is dialed. For the primary and secondary mail servers, the IP address, port number and MIME filename need to be supplied by the user.

The DCDSS1 stores up to ten email addresses for notification and delivering the collected data. The email addresses can be up to 50 bytes each. A user email address for the reply field is also limited to 50 bytes. The subject for the DCDSS1's email will be <the event> <the trigger> <user defined ID>. The user defined ID can be up to 32 characters long. Some sample subject lines are listed below.

```
<data><buffer> SWfieldPump#1  
<error><time>StorageTank4  
<notification><digital>WestEntrance
```

FTP Setup

The DCDSS1 allows for a primary and secondary FTP server. The primary FTP server is always tried first. If the primary FTP server fails, the secondary FTP server is used. Both the primary and secondary FTP servers require the FTP server's IP address, port number, FTP username, FTP password, file name, and pathname for the data file. The username and password can be up to 30 bytes each; the pathname can be up to 50 bytes. The filename can be up to 10 bytes long, and can be set to increment each time a file is downloaded by adding a two-digit number to the beginning of the filename.

Pager Setup

The DCDSS1 allows for one numeric pager to be dialed. The numbers dialed and message sent, including pauses and spaces, can be up to 50 characters long. The pager can be dialed any time one of the modem triggers has been tripped to notify that an event has occurred.

Time Setup

The DCDSS1 setup software uses the local clock from the computer to set the time during configuration. You can adjust the time and date using the supplied configuration software. The DCDSS1 keeps track of the hour, minute, day, month, year, and day of the week. It can also be set up to automatically adjust for daylight savings time.

Bypass Mode

The DCDSS1 features a Bypass Mode that allows you to make direct modem connections to the remote device. When the DCDSS1 detects an incoming call from the modem from your software, it automatically switches to bypass mode, allowing you to communicate directly to the remote serial device.

Remote Buffer Retrieval (New! May 2002)

The DCDSS1 now features a remote buffer retrieval mode. This feature allows the user to manually the gather data or error stored in the buffer at any time *remotely*. This mode uses modem-to-modem communication, so a modem and a simple emulation program (like SimpTerm, downloadable from www.bb-elec.com) are necessary.

Instructions:

- 1) Connect the local modem to an available COM port.
- 2) Open the emulation program of choice.
- 3) Raise/set DTR and RTS.
- 4) Dial the number that iCaddy's modem is on (like "**ATDT 18454335100<carriage return>**") and wait for confirmation of connection. If successful, go on to 5. If not, lower DTR and go back to 3.
- 5) **You must know the password in order to go any further. The password must be received within the first 100 bytes to get into this mode. Otherwise, this is a standard bypass mode.** Next, type "**!RT**" (read time command). You should have received 3 bytes if successful. If not, re-enter password.
- 6) Type "**!DA**" for the data buffer.
- 7) Type "**!EL**" for the error buffer.
- 8) Type "**!##**" to exit. Please be sure you receive the initialization string before exiting to confirm the unit has rebooted. If not, try "**!##**" again.
- 9) Lower DTR and RTS to disconnect.

Local Buffer Retrieval (New! May 2002)

The DCDSS1 also features local buffer retrieval mode. This feature allows the user to manually gather the data or error stored in the buffer at any time *locally*. This mode is very similar to the remote buffer retrieval method. However, it does not require a modem. It still requires a simple emulation program (like SimpTerm, downloadable from www.bb-elec.com).

Instructions:

- 1) **Do not remove power from iCaddy at any time during these steps. Doing so will erase the data and error buffers.**
- 2) Connect an available COM port to the modem side of iCaddy using a null modem cable.
- 3) Open the emulation program of choice and set the speed the same as iCaddy's modem port baud rate.
- 4) Raise/set DTR to set DCD (pin 1) of iCaddy's modem port. **You must know the password in order to go any further. The password must be received within the first 100 bytes to get into this mode. Otherwise, this is a standard bypass mode.** If successful, you should see the modem LED come on solid. Note that the power LED should have been solidly lit already.
- 5) Type **“!DA”** for the data buffer.
- 6) Type **“!EL”** for the error buffer.
- 7) Type **“!##”** to exit. Please be sure you receive the initialization string before exiting to confirm that the unit has rebooted. If not, try **“!##”** again.
- 8) Lower DTR to disconnect.

Chapter 3: Setup

The DCDSS1 comes with setup software to run on your PC. The latest version of the setup software can be downloaded from B&B Electronics web site at www.bb-elec.com. This setup software will allow Windows users (Win 95, 98, ME, 2000, XP, or NT 4.0) to quickly set up the DCDSS1 operational variables, or copy existing variables over to a new device. These variables can be set up through the local serial port, or from a dial-in modem so you can configure and modify the DCDSS1 whether it's on your desk or at a remote site. The initial DCDSS1 setup must be done through the local serial port.

To program the variables through the local serial port, the **SETUP** jumper found inside the enclosure must be set to **CONFIG** before the power is plugged in. This will set the DCDSS1 to configure mode. Use the provided null modem setup cable to connect the local serial port of the DCDSS1 to any available serial port of your computer and then run the iCaddy setup software. Follow the setup instructions in the software. When configuration is complete, unplug the power and move the **SETUP** jumper to the **RUN** position. Remove the configuration cable. Note that this cable is a Null Modem connection and can only be used during configuration. If a replacement setup cable is needed, it can be purchased from B&B Electronics as part number 232NM9.

To program the DCDSS1 remotely through a dialup modem, a password has to be set. This is done for security and to prevent raw binary data from editing the variables inadvertently. The password is up to 10 bytes long. The iCaddy setup software allows you to select a modem from the computer, put the DCDSS1 into setup mode, send the variables, and restart the DCDSS1 in run mode.

Firmware Updates

The DCDSS1 is flash programmable, allowing its internal software to be updated. The firmware updates can be programmed only through the local serial port. Any update will be available on B&B Electronics web site, www.bb-elec.com.

Chapter 4: Specifications

Serial Ports

Modem Port:	RS-232, DTE, DB9 male connector
Data Rates:	600 – 115,200 baud, N-8-1 only
ISP:	User configurable for primary and secondary (fallback) ISP accounts Supports standard (AT command set) modems
Local Port:	RS-232, DTE, DB9 male connector
Data Rates:	300 – 115.2 kbps
Data Bits:	5, 6, 7, or 8
Stop Bit:	1, 1.5, or 2
Parity:	None, even, or odd
Serial Data Buffer Size:	60 Kbytes

Triggers for Data Delivery

Time Based Trigger:	Configurable from once per minute to once per month
Buffer Trigger:	Configurable 10 – 80% of buffer capacity
Digital Input:	Active high or low, 0 – 5V input, 5 ms min. pulse width Removable terminal block connection
Data/Fault Notification:	E-mail or pager
Data Delivery:	FTP or e-mail attachment (MIME)
Timestamp:	User enabled, new data time-stamped after 1 minute of idle
Number of Polling Strings:	10 user definable, each with independent transmit schedule
Max. Polling Strings Length:	35 bytes per string
Email Addresses Supported:	10
Pager Supported:	1
FTP Addresses Supported:	2
Mounting:	Desktop or panel mounting using provided holes in case flange
Power Requirements:	10–30 VDC, 650 mW maximum Removable terminal block connection
Indicators:	3 LED's for power/status, modem, and local serial port activity
Size:	6.5 x 4.9 x 1.5 in (16.5 x 11.2 x 3.5 cm)
Shipping Weight:	0.9 lb (0.4 kg)
Software (included):	CD for Windows 95/98/ME/2000/XP/NT 4.0

Appendix A: Declaration of Conformity

DECLARATION OF CONFORMITY	
Manufacturer's Name:	B&B Electronics Manufacturing Company
Manufacturer's Address:	P.O. Box 1040 707 Dayton Road Ottawa, IL 61350 USA
Model Numbers:	DCDSS1
Description:	Remote Data Collection Device
Type:	Light industrial ITE equipment
Application of Council Directive:	89/336/EEC
Standards:	EN 50082-1:1998 EN 61000 (-4-2, -4-3, -4-4, -4-6)
	
William H. Franklin III, Director of Engineering	