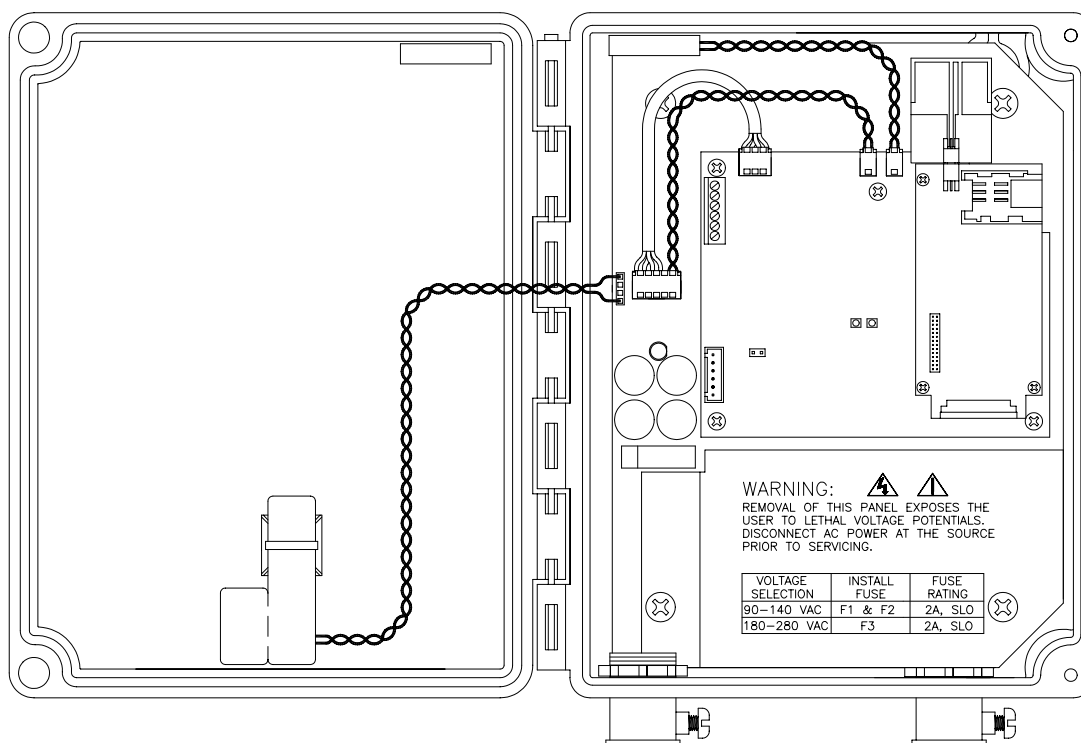


Digital Cellular Modem-200 (DCM-200)

Description of Error and Status Codes



Document: 900337
Date: July, 2003
Revision: -

COPYRIGHT ©2003 by Metretek, Incorporated

All rights to this document, domestic and international, are reserved by Metretek, Incorporated. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise) without the prior written permission of Metretek, Incorporated. Requests for permission to reproduce or distribute this manual should be addressed to:

METRETEK, INCORPORATED
300 NORTH DRIVE
MELBOURNE, FLORIDA, USA 32934

TABLE OF CONTENTS

CHAPTER ONE: ERROR AND STATUS REPORTING

- 1.1 Product Overview
- 1.2 Normal Power-Up / Reset Behavior
- 1.3 How System Status is Displayed
- 1.4 How Error Codes are Displayed
- 1.5 Error / Status Codes Descriptions

LIST OF FIGURES

- Figure 1-1 Location of Unit Reset Pins
- Figure 1-2 LED Indicators

LIST OF TABLES

- Table 1-1 Green LED Status Indicator
- Table 1-2 Red LED Status Indicator in CSD Mode
- Table 1-3 Red LED Status Indicator in GPRS Mode
- Table 1-4 Error & Status Code Descriptions

CHAPTER ONE

ERROR AND STATUS REPORTING

- 1.1 Product Overview
- 1.2 Normal Power-Up / Reset Behavior
- 1.3 How System Status is Displayed
- 1.4 How Error Codes are Displayed
- 1.5 Error / Status Codes Descriptions

Section 1.1 Product Overview

Metrotek's DCM-200 is a wireless system designed to connect to an ANSI C12-compliant electric meter and transfer its information over common digital cellular phone networks. The unit supports 900 / 1800 / 1900 MHz GSM, the primary cellular system used throughout most of the world.

This document is intended to elaborate on the DCM-200's error and status codes. See the DCM-200 Installation and Operation Manual, Document #900333, for full details about the operation of the DCM-200.

Section 1.2 Normal Power-Up / Reset Behavior

The primary controller board is referred to as the "GUTC", or General Utility for Telemetry and Control. Mounted to the GUTC is a Motorola g18 GSM cellular radio module.

Upon power up or a manual reset, the DCM-200 will conduct diagnostic tests of its on-board components. During this time both the green and red LED indicators will light solidly for several seconds. After completion of these tests, the red LED will turn off and the green LED should blink at a rate of about once per second.

If the unit needs to be reset manually, two pins on the "J5" programming port connector can be momentarily shorted together, as shown in Figure 7-1.

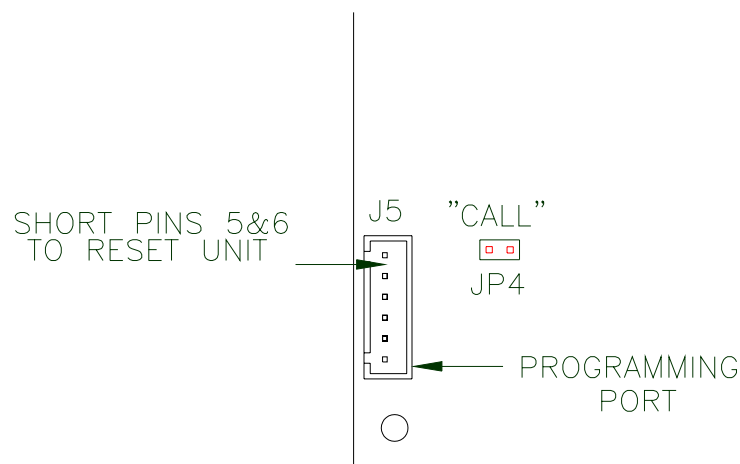


Figure 7-1
Location of Unit Reset Pins

Section 1.3 How System Status is Displayed

The two LED indicators on the GUTC board are used to display error conditions and status.

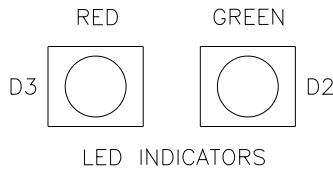


Figure 1-1
LED Indicators

During normal operation the green LED is used to indicate the status of the radio:

GREEN FLASH RATE	RADIO STATUS
SLOW	Radio is being initialized or unit is idle
MODERATE	Radio is initialized, looking for cellular service
FAST	Service found, weak signal strength (1 or 2 bars)
VERY FAST	Service found, strong signal strength (3 or more bars)

Table 1-1
Green LED Status Indicator

The red LED is used to indicate the progress of a cellular call, depending upon the mode of communications:

RED FLASH RATE	CSD MODE
SLOW	Dialing phone number
MODERATE	
FAST	Receiving incoming phone call
VERY FAST	
SOLID	Online with data collection modem

Table 1-2
Red LED Status Indicator in CSD Mode

RED FLASH RATE	GPRS MODE
SLOW	Looking for GPRS service
MODERATE	GPRS service found, requesting attachment
FAST	Attached to GPRS service, requesting PPP connection
VERY FAST	PPP connection established, requesting TCP connection
SOLID	TCP connection established, online with server

Table 1-3
Red LED Status Indicator in GPRS Mode

Section 1.4 How Error Codes are Displayed

In the event of an error, the LEDs will be flashed in a pattern that represents a 2-digit number. The red LED represents the first digit while the green LED represents the second digit. For instance, for an error code of “43”, the red LED will flash 4 times, then the green LED will flash three times. Normally an error code is displayed twice to allow the user to observe the pattern.

Certain error codes may be displayed indefinitely because the particular failure will not allow the DCM-200 to operate correctly.

Other error codes are informative, such as reporting problems with the cellular network. Eventually those problems will be resolved and the unit will be able to perform its functions.

Section 1.5 Error / Status Codes Descriptions

A list of common error codes is attached to the inside door of the enclosure. Here we provide more details about each code.

CODE	DESCRIPTION
11	The serial EEPROM memory device failed to acknowledge that it received data from the processor.
12	The serial EEPROM memory device did not retain a binary data pattern of 01010101.
13	The serial EEPROM memory device did not retain a binary data pattern of 10101010.
14	The serial EEPROM memory device did not contain a correct data pattern at a particular memory location.
16	A firmware download operation was aborted due to a communications problem with the host computer or with the serial EEPROM memory device. The cellular connection may have been disrupted, the host computer may have experienced problems, or the data that was received was corrupt. The serial EEPROM memory device may be defective.
18	A segment of FLASH memory could not be fully erased.
19	A segment of FLASH memory could not be programmed correctly.
21	The DCM-200 has been configured to place a CSD call, but there is no phone number programmed into the unit.
22	The cellular radio will not accept the PIN number. Either the wrong number was programmed into the DCM-200, or into the SIM card.

Table 1-4
Error & Status Code Descriptions

CODE	DESCRIPTION
31	Problem initializing for a PPP (point-to-point) connection. This error may indicate a problem with the DCM-200's operating program. It does <u>not</u> indicate a problem with the cellular service.
32	Could not negotiate a PPP (point-to-point) connection with the cellular service. The system may be down or congested. There may have been data errors that caused the process to abort, possibly due to marginal signal strength or interference.
33	Could not negotiate a TCP connection to the destination server. This error is often caused if the destination server is not running (listening) or the number of server channels has reached a maximum and there are no channels available. Otherwise the cellular system may be down or congested. There may have been data errors that caused the process to abort, possibly due to marginal signal strength or interference.
34	A TCP packet was sent to the server but was not acknowledged as being received.
35	A TCP packet was received from the server that contained errors or that was not intended for the DCM-200.
41	The cellular radio could not register itself with the cellular service, either home or roaming. Signal strength may be too low to establish a connection. The SIM card may be defective or contain incorrect information.
42	The cellular radio could not detect a cellular service signal. The DCM-200's frequency setting may be incorrect for this location or for this service provider. The distance from the tower may be too great or there is interference from a nearby building or electrical equipment.
43	In CSD mode a connection could not be established with the destination modem.
45	In CSD mode after dialing a phone number, the destination modem did not answer the call.
46	In CSD mode after dialing a phone number, the line was busy.

Table 1-4
Error & Status Code Descriptions (continued)

CODE	DESCRIPTION
51	A command was issued to the cellular radio, but the radio did not return a response within a certain amount of time.
52	The cellular radio returned a response that was corrupt.
53	In CSD mode the cellular radio hung up a connection on its own. This typically occurs after a loss of carrier from the destination modem.
54	The cellular radio was reset by the processor, but failed to indicate that it was ready for operation within a certain amount of time.
55	The cellular radio returned a response that was incomplete.
56	When commands are issued to the radio, the radio should always return a response indicating that the command was accepted and executed. This error indicates that an unexpected response was received.
57	The cellular radio indicated that it was unable to accept commands or operate on the cellular network.
58	The response received from the cellular radio could not be recognized.
59	The cellular radio returned a response indicating that it could not accept or process a command, or could not get a proper response from the cellular network.

Table 1-4
Error & Status Code Descriptions (continued)

CODE	DESCRIPTION
61	In CSD mode the DCM-200 and the central computer exchange specific information in order to establish a valid connection. During this time the DCM-200 received a response that was not expected.
62	In CSD mode the central computer did not respond to a request for communications.
63	In CSD mode after establishing a valid connection with the central computer, a response was received that was not expected.
64	A stream of data was received that was much larger than anything expected from the central computer.
65	A command was received from the central computer to change the configuration memory, but the command contained an error.
66	A command was received from the central computer that was not recognized.
67	There is an illegal setting in the configuration memory. For instance, the cellular radio does not support the 850 MHz range, but the DCM-200 has been configured for 850 MHz operation.
68	A command or data received from the central computer contained an error.

Table 1-4
Error & Status Code Descriptions (continued)