SkyWave DMR-200D Installation Guide

The DMR-200D is an Inmarsat D+ mobile satellite communications terminal manufactured by SkyWave Mobile Communications Inc. SkyWave distributes the DMR-200D through Solution Providers who activate the terminal on the SkyWave D+ Network and provide application programs that communicate with the terminal.

This manual provides the necessary information to ensure a successful installation of the DMR-200D on a vehicle, boat or other platform. This manual does not address the DMR-200D's commissioning procedures as these procedures vary depending upon the Solution Provider and their specific application.

Configuration Options

The DMR-200D is available in a number of configurations with two standard mounting options.

Part Number	Configuration
SM200216-BHX-XXX	Bottom Mount Connector
SM200216-SHX-XXX	Side Mount Connector

Shipping Box Contents

SkyWave ships the DMR-200D in an individual packaging box with the following parts.

1) DMR-200D - qty 1
2) Installation Instructions - qty 1 (This document)
3) Mating connector * - qty 1
4) Chemplex825® Silicon Grease - qty 1 (1 gram package)

* Solution Provider may provide a cable instead of the mating connector.

Tools Required

The following tools are required to install the DMR-200D

1) Drill
2) 5.5 mm drill bit
3) 25 mm hole punch or drill bit (For Bottom Mount Connector version only)
4) Screw driver
5) Socket wrench set

Materials Required

The following materials are required to install a DMR-200D. These materials are not included with the DMR-200D, as they need to be selected for each installation type.

1) Qty 4 - M5 screws (length depends on mounting surface thickness)
2) Qty 4 nuts with locking hardware
3) Water-proof sealing tape
4) Water-proof sealing compound such as silicone RTV (bottom connector version only)
5) Qty 1 DMR-200D Cable

DMR-200D Cable

Although SkyWave ships the DMR-200D with a mating connector, the SkyWave Solution Provider may provide a DMR-200D cable instead. If a DMR-200D cable is not provided with the DMR-200D, consult your Solution Provider as the instructions for properly building this cable are beyond the scope of this manual.

The DMR-200D is designed to accept input ranges of 9VDC to 30VDC. All cables should be less than 30m and they should be built with the following guidelines for minimum wire size based on voltage supplied to terminal.

Input Voltage	Minimum Wire Gauge	Recommended Fuse
9 to 18 VDC	18 AWG	2 Amp
18 to 30 VDC	22 AWG	1 Amp

Cable used for power and data connections to the terminal must be shielded for reliable operation.

Safety Warning !!

The DMR-200D is typically installed on a mobile platform. It is therefore imperative that the installation is performed in a safe and secure manner in order to avoid hazards to person and property. It is the responsibility of the installer to ensure that the installation is safe and secure.

Installation Steps

Recording Serial Number

The DMR-200D's serial number is located in three places: a label on the bottom of the terminal, a label on the original SkyWave packaging box and electronically inside the terminal. The serial number is the DCC004 number followed by six hexadecimal digits.

This number is a unique identifier for the terminal. This number should be recorded before the terminal is mounted. You will need it later for commissioning the terminal on the satellite network.

Selection of Mounting Location

The most important part of any installation is making sure the DMR-200D is securely fastened in a location where it will have a clear and unobstructed view of the satellite. For a mobile installation, this generally means an installation location at the highest point on the vehicle where there is no obstruction in any direction. Mount the terminal so that it has an unobstructed view to within 20 degrees of the mounting surface. This means that the terminal should be located at least two (2) meters from all objects taller than 0.5 meters.

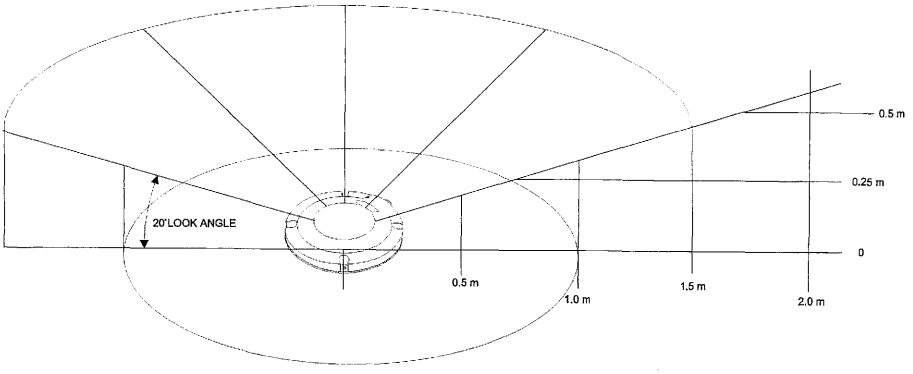


Figure 1 Elevation View to Satellite

Selection of Mounting Surface

The installation must be on a flat horizontal surface. The DMR-200D should not be mounted in an area where standing water may occur. The drain holes in the slots on the bottom of the terminal should not be blocked.

The DMR-200D's mounting surface must be capable of mechanically supporting the terminal. If not, a backing plate (not supplied) or other suitable reinforcement should be employed.

In some cases, the surface temperature of the mounting platform may exceed the DMR-200D's maximum operating temperature (70C). If this is the case, the DMR-200D needs to be mounted with a thermal barrier between it and the mounting surface.

Before drilling any holes, verify that there is enough space to accommodate the bend radius of the DMR-200D Cable. The bend radius needs to be measured on the cable supplied with the DMR-200D.

Installation

Once the mounting location has been selected, the DMR-200D needs to be mounted. Select either Bottom Connector Mounting (Figure 2) or the Side Connector Mounting (Figure 3) depending on the installation type.

In some cases, the Solution Provider may provide the DMR-200D with a mounting bracket. In this case, the following instructions are not required. Refer to the instructions with the mounting bracket.

1) Use the Drill Template (see figure 4) to mark the location of the four mounting holes and the connector hole. The orientation of the terminal with a bottom connector is not important.
2) Drill the four mounting holes using the drill with the 5.5 mm bit.
3) Punch or drill the 25 mm hole for the connector. [Bottom Connector Mount Only]
4) Fill the ribbed channel around the connector and the space between the base plate and the terminal with waterproof sealing compound. Be careful not to block the drain holes in the slots on the bottom of the terminal. [Bottom Connector Mount Only]
5) Secure the terminal in place with the mounting hardware using the screw driver and socket set,
6) Install the mating connector and cable using the silicon grease to protect the connector pins.
7) Wrap the mating connector with waterproof sealing tape [If connector is exposed to elements].

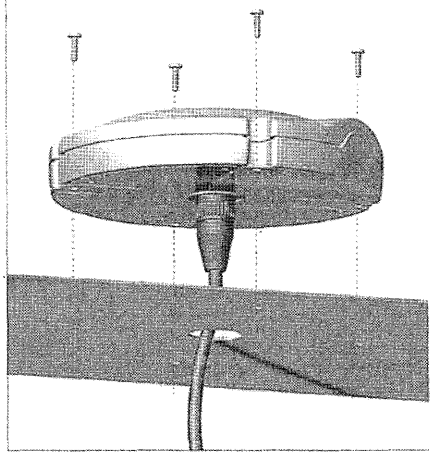


Figure 2
Bottom Connector DMR-200D
(SM200216-BXX-XXX)

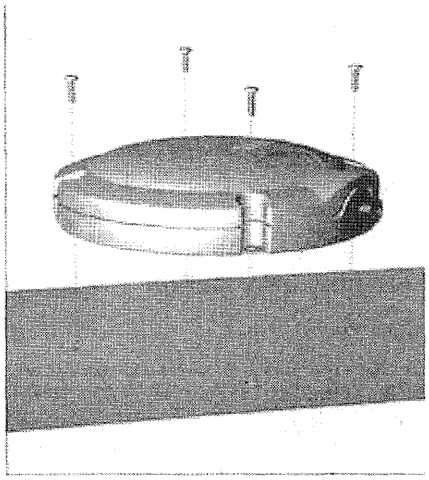


Figure 3
Side Connector DMR-200D
(SM200216-SXX-XXX)

Applying Power

Before connecting the DMR-200D to an external voltage source ensure that the polarity is correct and the voltage source is between 9 and 30 VDC. Refer to the Appendix for the connector pin out descriptions.

Always ensure that the ground connection is connected at the same time or before power is applied. This is especially applicable to cases when the RS232 lines are used along with power and ground.

Verification

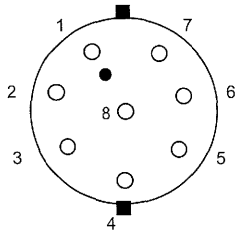
When the terminal is powered on the ERR LED comes on for 5 seconds and the STAT LED flashes. This indicates that the DMR-200D is correctly executing its startup self-test sequence. After about 5 seconds, the ERR LED will turn off and the STAT LED continues flashing at different rates. If the ERR LED remains on the DMR-200D is not functioning correctly.

Any additional verification procedures need to be done in cooperation with the SkyWave Solution Provider as these vary depending the installation and the Solution Provider's application.

Appendix Data

Connector Pin-out

Pin 1	I/O_1 selectable as Digital In or Out, Analog In
Pin 2	RS-232 Tx Data (Output)
Pin 3	RS-232 Rx Data (Input)
Pin 4	Ground and Shield
Pin 5	Input Power +9 to +30 VDC
Pin 6	I/O_2 selectable as Digital In or Out, Analog In
Pin 7	I/O_3 selectable as Digital In or Out, Analog In
Pin 8	I/O_4 selectable as Digital In or Out, Analog In or Current Loop Input 0-20mA



Rear view of mating connector (solder cups)

Mating Connector

Conxall #MINI-CON-X® 6282-8SG-3DC

LED Indicators

The Solution Provider can configure the DMR-200D to disable all LEDs (except the startup sequence). The following table outlines the LEDs state in the DMR-200D's default operational mode.

STAT This LED flashes to indicate the DMR-200D's current operational state.

Tx Indicates when the DMR-200D is transmitting.

ERR When on continuously indicates that the terminal has detected an internal problem. In this case, contact your Solution Provider for instructions.

Warranty Information

Warranty

SkyWave warrants its products and services will perform in accordance with SkyWave's specifications and will be free from defects in material and workmanship for a period of twelve (12) months from date of shipment. This warranty is limited to the repair and/or replacement of any defective components experienced under normal specified operating use and storage conditions, at SkyWave's discretion. It does not cover any damages caused or associated with the product's misuse. Experience with defective products should be communicated to your Solution Provider. Shipping of defective product, back to the Solution Provider will be in accordance with the Solution Provider's instructions and should be accompanied with a fault report. SkyWave is not responsible for corrosion damage caused by improperly assembled or installed cables. Warranty is void if unit is opened.

Limited Liability

SkyWave's liability is limited to the cost of repair or replacement of any of SkyWave's products during the warranty period. Consequential, indirect or similar damages associated with product application and usages are disavowed. SkyWave's products are not suitable for life critical applications. SkyWave's aggregate liability shall in no circumstances exceed the product's price as paid to SkyWave and this limitation of liability is reasonable given the price of SkyWave's products, which reflect reasonable allocation.

SkyWave Mobile Communications Inc.
1145 Innovation Drive, Suite 288
Ottawa, Ontario, Canada K2K 3G8
Phone: +1 613 836-4844 Fax: +1 613 836-1088
www.skywave.com

Form: DC500245 Rev 2.0
Date: 02/09/06

Cut off on line to fit in box