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DL Quick Start

Overview

You might typically use the DL at the office to program a schedule or group, or to transfer collected data to a PC. In this situation, the PC is connected to the COM1 port, and power is supplied by means of an AC/DC converter that is connected to the Power port.

You might typically use the DL in the field to collect data while receiving differential information over a radio modem from a base station. In this situation, the GPS antenna is connected to the RF port, the radio modem is connected to the COM2 port, and power is supplied by means of one or two batteries connected to the Power port.

The examples in this Quick Start use DL-MiLLen-Std model for the base and a MiLLen-RT2 for the remote receiver. The FIX POSITION command is set for our offices in Calgary but you will enter the coordinates (latitude, longitude and height) for your base station (see point #7 in the next section).

In the Office

Load schedule and logging parameters to the base or rover DL.

1. Place the DL on a desk or other suitable work surface.

2. Connect a null modem RS232 communication cable between a terminal (e.g. PC, data logger) and one of the serial ports of the DL. The supplied null-modem cables are intended for RS232 communications only.

3. Hold down the black power switch for 15 seconds to erase any previous group and schedule settings. Note that during initial power up of the DL or upon wake up from sleep mode, the lights on the DL indicate self-test conditions and therefore *Table 2, Page 5* does not apply. Typically the red LEDs flash, then the yellow LEDs and then you release.

4. Make a connection to the DL receiver through COM1 using, for example, HyperTerminal at 9600 baud.

5. Power up the DL by applying AC power or connecting it to a battery. Once power is supplied, the DL performs a self-test sequence.

6. When all the LED's have gone dark (this happens once the DL has finished its PDC self-test sequence), briefly press and release the black power switch or, if you are connected to the DL via a terminal, hit the <Enter> key and wait for a MSGA log with a BOOTOK message to appear. If you are you are using SoftSurv to communicate with the DL, this initial communication is handled by the Utilities Module software.

7. When the BOOTOK message appears enter the following sequence of commands:

Table 1 Command Sequence

BASE	ROVER
SLEEP OFF FIX POSITION 51.11635,–114.03883,1048.189 LOG COM2 RTCAREF ONTIME 10 LOG COM2 RTCAOBS ONTIME 2 SAVECONFIG GROUP ADD POWERUP RGED,ONTIME,1.00 GROUP ADD POWERUP PRTKB,ONTIME,60.0 GROUP ADD POWERUP REPB,ONCHANGED,0 GROUP ADD POWERUP ALMB *(This will make it possible to convert from binary to Rinex)* *This POWERUP group will execute every time the DL is powered on and the DL will never go to sleep.* *The DL will, when power is applied, perform a self-test sequence. When the LEDs go dark, you must briefly press the black power switch to start the DL. The DL will then begin logging data to the PCMCIA card and transmitting RTCA differential corrections.*	SLEEP OFF *(to keep the DL awake while you enter commands)* ACCEPT COM2 RTCA SAVECONFIG GROUP ADD POWERUP RGED ONTIME 1.00 GROUP ADD POWERUP PRTKB ONTIME 1.0 GROUP ADD POWERUP REPB ONCHANGED 0 *This POWERUP group will execute every time the DL is powered on and the DL will never go to sleep.* *The DL will, when power is applied, perform a self-test sequence. When the LEDs go dark, you must briefly press the black power switch to start the DL. The DL will then begin logging data to the PCMCIA card.*

> ***Warning!***   Never use the SAVECONFIG command with GPSolution.

In the Field

All commands and power up groups have been entered and saved in both the rover and base receivers. To set up then only implies the physical connection of cables and equipment.

Set up the base station to broadcast RTCA differential corrections using a radio transmitter.

Set up the rover station to collect kinematic/rover data and receive RTCA broadcast information via a radio receiver.

This assumes that a portable terminal is not being used. If a portable terminal were being used, then at Step #7, when power was supplied, the DL would accept configuration commands from the terminal, if desired (not necessary at this point because of the commands and power up groups already saved).

1. Mount or place the DL on a secure, stable structure that will not sway or topple. For example, attach the DL to a tripod leg using a mounting bracket. Although the unit has a moisture and dust-resistant enclosure, shelter it from adverse environmental conditions when possible.

2. Position the antenna at the desired location – e.g. on a tripod over a survey marker. The recommended antenna depends on which model of the DL you purchased (L1 - 501, 521, 531; L2 - 600, 502, 503, 512; GLONASS - 504, 514). For maximum positioning precision and accuracy, as well as to minimize the risk of damage, ensure that the antenna is securely mounted on a stable structure that will not sway or topple. Where possible, select a location with a clear view of the sky to the horizon so that each satellite above the horizon can be tracked without obstruction. The location should also be one that minimizes the effect of multipath interference (i.e. removed from water bodies, glass steel or steel objects, hills, etc.).

3. Connect the RF coaxial cable between the antenna and DL.

4. Connect an RS232 communication device to COM2 of the DL using a null modem cable. For example, this might be a radio modem:

   - At the rover for receiving differential GPS messages from a base station.
   - At the base station for broadcasting differential GPS messages

   The supplied null-modem cables are intended for RS232 communications only.

5. Insert a PCMCIA Card into the DL.

> Important! : Use only these PCMCIA cards for reliable operation:
>
> SANDISK 4 MB, 10 MB, 20 MB, 40 MB or 85 MB
>
> All other PCMCIA cards have not been formally tested. You will often experience unreliable DL performance with an unsupported PCMCIA card.

6. Connect the output of a power source (e.g. battery) to the input power port of the DL. Once power is supplied, the DL turns on automatically, performs a self-test sequence. When all the LEDs go dark, briefly press the black power button to start the DL.

7. The DL will, after power up, begin logging data to the PCMCIA card. The DL receiver will not go into sleep mode unless:

   - battery power runs low
   - the PCMCIA card runs out of space
   - the black power switch is pressed down for 5 seconds until all the LED's turn red
   - the SLEEP command is issued

> Note: To safely remove the PCMCIA card in this mode, or to safely conclude a data logging session, you must press down the black power switch for 5 seconds until all the LED's turn red in order to shut it down. It is then safe to remove the PCMCIA card.

8. Monitor the status indicators:

Table 2 Status Indicators

Indicator	Color	Status Description
Power	Green	Input voltage is good. The light blinks in a single-blink pattern (e.g. ✧ ✧ ✧) if Battery A is good, and in a double-blink pattern (e.g. ✧✧ ✧✧ ✧✧) if Battery B is good.
	Amber blink	The light blinks in a single-blink pattern (e.g. ✧ ✧ ✧) if Battery A is low – battery voltage is less than 10.7 Volts.
	Amber double blink	The light blinks in a double-blink pattern (e.g. ✧✧ ✧✧ ✧✧) if Battery B is low – battery voltage is less than 10.7 Volts.
	Amber	Switching batteries.
	Red	There are no good batteries available. Operation is disabled.
	Amber fast blink	High temperature warning.
	Red fast blink	High temperature shutdown.
	Amber slow blink	High temperature shutdown. Temperature returning to normal (blinks once every five seconds).
	Red slow blink	High temperature shutdown. Waiting for temperature to return to normal (blinks once every five seconds).
	Dark	No power, or DL in sleep mode.
Position	Green	Valid position solution; fine time reference set.
	Green blink	Valid position solution; fine time reference not set.
	Amber	Position fixed; fine time reference set.
	Amber blink	Position fixed; fine time reference not set.
	Red	Insufficient satellites for position.
	Dark	No power, or DL in sleep mode.
Logging	Green	PC Card in, memory capacity OK.
	Green blink	PC Card in, logging to PC Card in progress and memory capacity OK.
	Amber	PC Card in; memory capacity below 10%.
	Amber blink	Logging to PC Card in progress, less than 10% capacity remaining at current logging rate.
	Amber slow blink	Sleeping: waiting for scheduled event (blink once every 5 seconds).
	Red	PC Card in; memory capacity full.
	Red Blink	PC Card in; error encountered while trying to access the PC Card.
	Dark	Power off or PC Card not detected, or initialized.