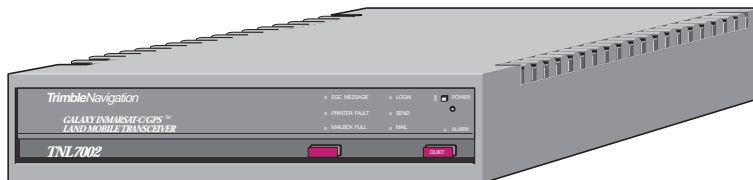


Inmarsat-C Satellite Transceiver

Galaxy Model TNL7002 Inmarsat-C/GPS Land Transceiver

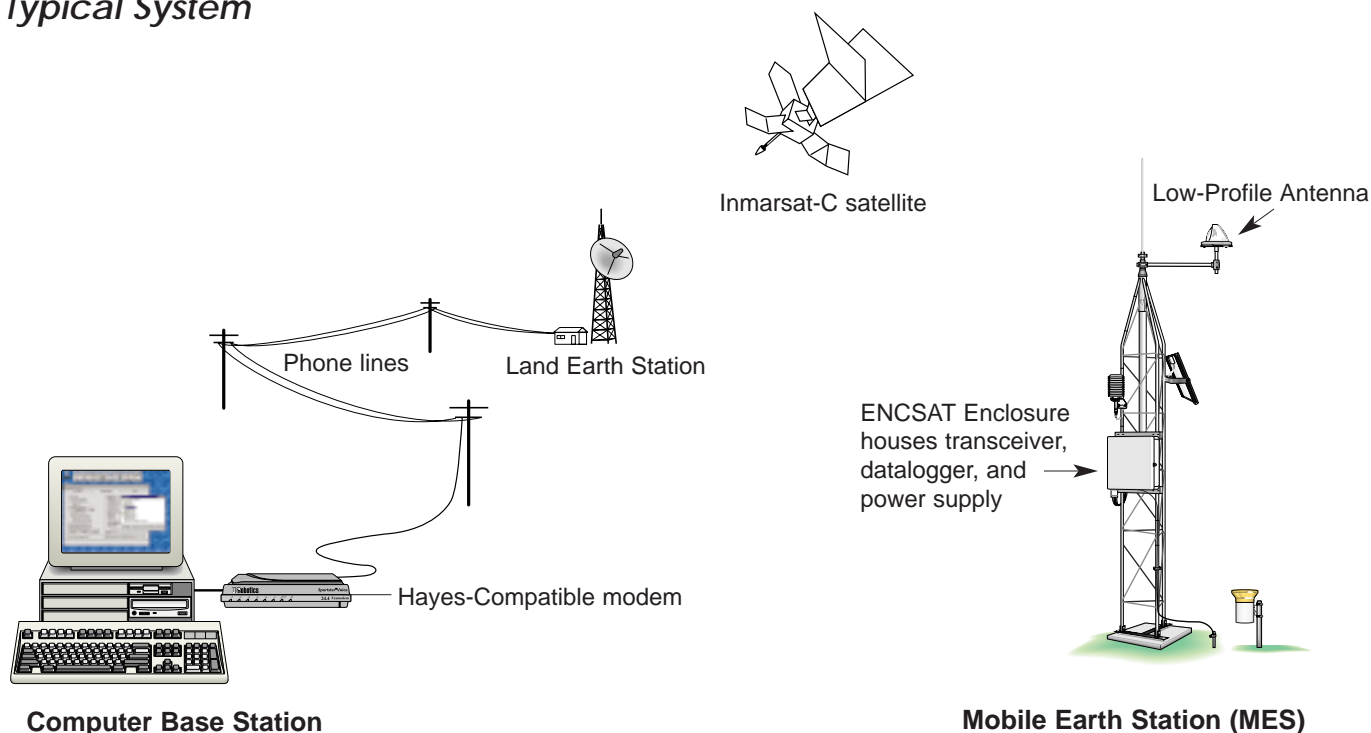
The Galaxy TNL7002 transceiver uses the Inmarsat-C satellite system to provide communications from a Mobile Earth Station (MES) to a receiving station. This transceiver is compatible with our CR10(X) and CR23X dataloggers and is manufactured by Trimble Navigation.



Features

- Assures accurate timekeeping with built-in GPS receiver
- Supports data delivery from the Land Earth Station to the base station via phone lines, computer bulletin board, or e-mail
- Allows you to send a number from 0 through 9 to the Mobile Earth Station, enabling the datalogger's program to make logical decisions such as automatically changing output and transmission intervals or turning sensors on or off
- Operates in harsh environments (-25° to +55°C temperature range, 0 to 95% RH non-condensing)

Typical System



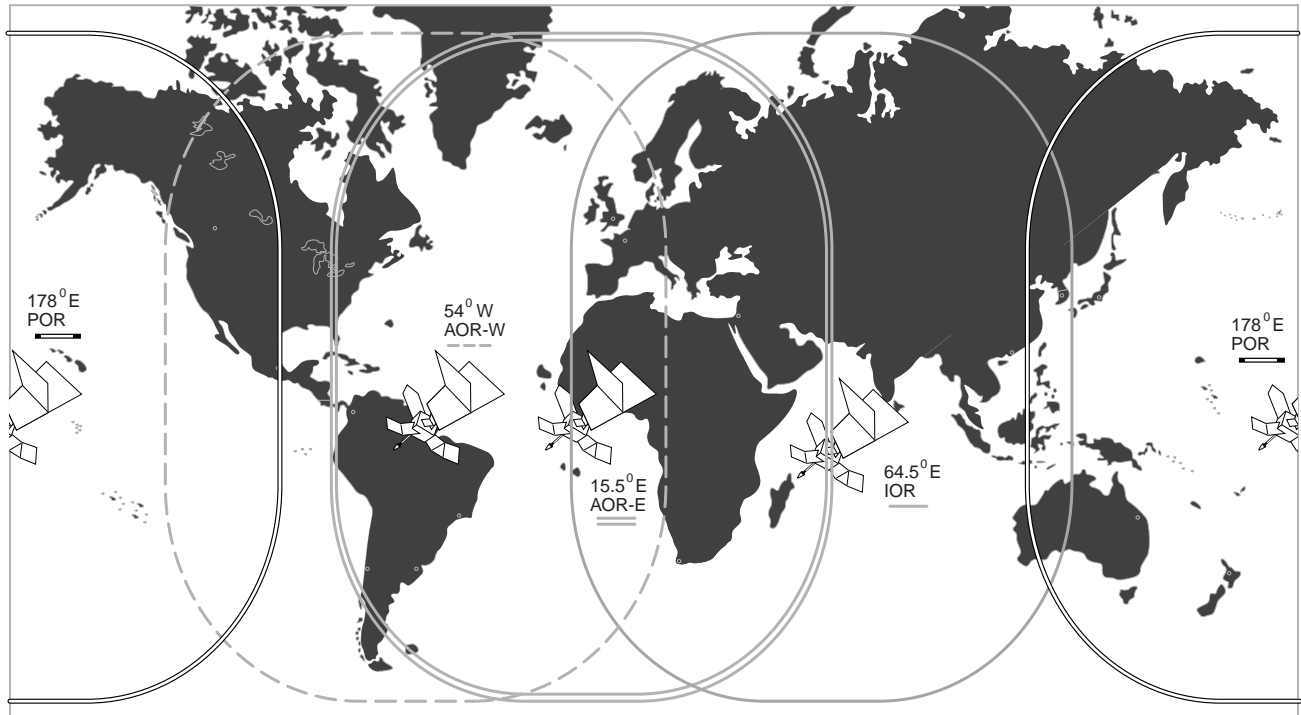
CAMPBELL SCIENTIFIC, INC.

815 W. 1800 N. • Logan, Utah 84321-1784 • (435) 753-2342 • FAX (435) 750-9540 • www.campbellsci.com

Inmarsat-C System, Land Earth Stations, and Network Coordination Stations

Inmarsat-C is a commercial geostationary system. Satellites in geostationary systems maintain orbits that coincide with the Earth's rotation allowing them to remain essentially fixed above a geographic location. The Inmarsat system maintains a satellite in each of four ocean regions: Atlantic Ocean East, Atlantic Ocean West, Pacific Ocean, and Indian Ocean (see map). These satellites provide coverage throughout most of the world (coverage ends at approximately $\pm 70^\circ$ latitude).

The Land Earth Stations (LES) and the Network Coordination Stations (NCS) manage and coordinate Inmarsat-C telecommunications. The Land Earth Stations are land-based receiving and transmitting stations that coordinate national and international fixed communication networks. One Network Coordination Station resides in each of the four ocean regions to monitor and control communication traffic within each region.

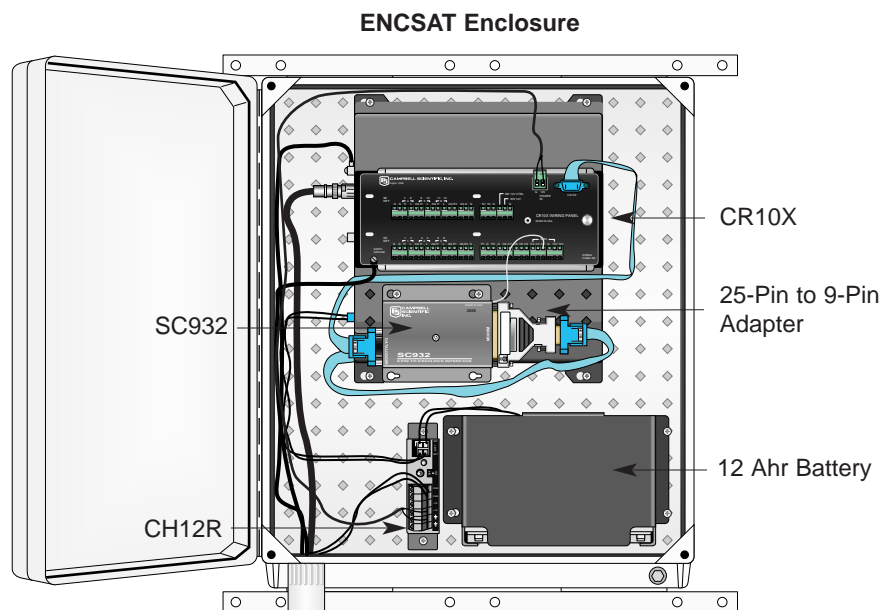


Computer Base Station Equipment

- Hayes-compatible modem
 - Computer with user-supplied communication software (e.g., Procomm Plus, Crosstalk, Windows Terminal, or Hyperterminal)
-

Mobile Earth Station Equipment

- Galaxy Model TNL7002
Inmarsat-C/GPS Land Transceiver
- CR10(X) or CR23X datalogger
(the CR10 requires a special PROM;
the CR23X requires an additional
enclosure)
- SC932 9-pin to RS-232 DCE Interface
and mounting bracket
- 25-pin to 9-pin adapter (RS26-287)
DB25 Female/DB9 Male
- Low Profile Antenna and stand.
Requires a 5 m RG58 low-loss
antenna cable
- Campbell's ENC SAT enclosure
(includes water-tight compression
fittings, 12 or 24 Ahr sealed recharge-
able battery, CH12R battery charger,
and an MSX10 solar panel)
- Mounting bracket that allows a
CR10(X) datalogger and SC932 to be mounted
on the transceiver saving enclosure space



The transceiver is located under the bracket that supports the CR10X and SC932.

Getting onto the Inmarsat-C System

Mobile Earth Stations located within the United States

1. Contact COMSAT Mobile Communications which is the U.S. Routing Organization and acquire the latest Routing Organization Application Forms, Credit Application, and FCC Forms* 442 and 159.

COMSAT Mobile Communications
22300 Comsat Drive
Clarksburg, MD 20871

Tel: (800) 685-7898
Fax: (301) 601-5953
Web: <http://www.comsat.com>

2. After your applications have been approved, and an Inmarsat Mobile Number (IMN) has been assigned, enter this IMN into the Galaxy Unit using the supplied PC software.
3. After receiving your FCC License, perform a Platform Verification Test (PVT) using the supplied PC software to assure the transceiver is operating within the guidelines of the Inmarsat System.
4. Deploy your Inmarsat Mobile Earth Station (MES).

Mobile Earth Stations located outside the United States

Contact the following office for details:

Inmarsat
99 City Road
London ED1Y 1AX
United Kingdom

Tel: +44 171 728 1777
Fax: +44 171 728 1746
E-mail: customer_care@inmarsat.org
<http://www.inmarsat.org/inmarsat>

*The FCC forms are for acquiring an FCC License to Transmit on Uplink Frequencies assigned to the Inmarsat-C system. The latest forms also can be acquired directly from the Federal Communications Commissions by accessing their web site (<http://www.fcc.gov>) or by calling (800) 418-3676.

TNL7002 Transceiver Specifications

Operating Range:	-25° to +55°C, 0 to 95% RH non-condensing
Frequencies:	Transmit 1626.5 to 1646.5 MHz Receive 1530.0 to 1545.0 MHz
Terminal Rate:	4800 bps
Data Rate:	600 bps; 8, 20, and 32 byte packets
Power:	12 to 24 Vdc (+30%, -20%), 11 W receive, 120 W transmit
Vibration:	5 to 20 Hz, .05 g ² Hz ⁻¹ , -3 dB oct ⁻¹ (survival and operational)
Dimensions (excluding connectors):	215 mm x 245 mm x 60 mm (8.5" x 9.6" x 2.4")
Weight:	2.9 kg (6.4 lbs)



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