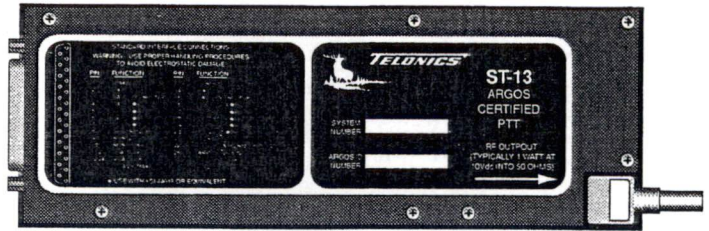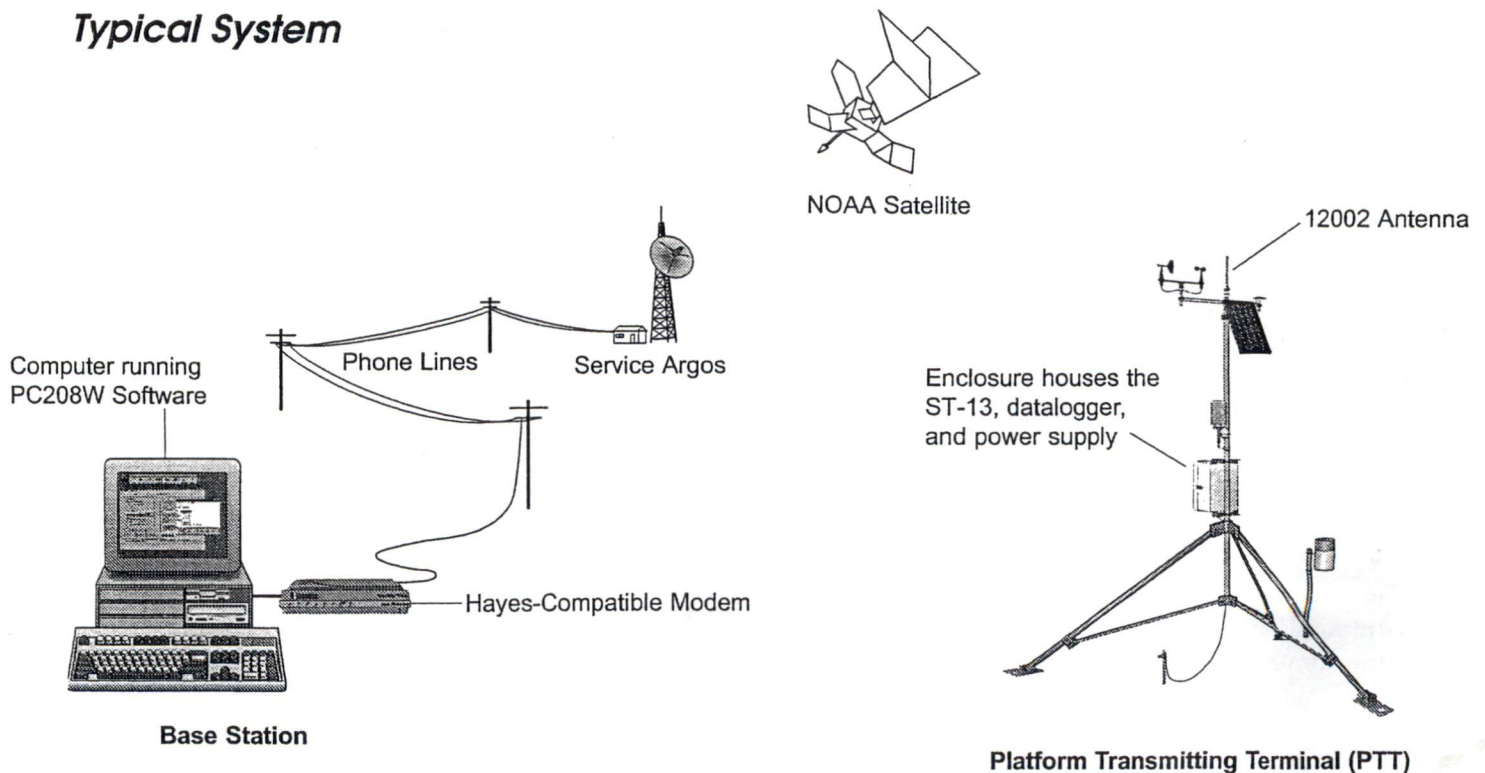# Argos Satellite Transmitter
Model ST-13

The ST-13 transmitter uses the Argos satellite system to provide one-way communication from a Platform Transmitting Terminal (PTT) to a receiving station. The ST-13 is compatible with our CR10(X), CR23X, and CR510 dataloggers and is manufactured by Telonics Incorporated.

Features

- Provides a reliable and cost effective data transmission method from extremely remote sites, even those located near the poles.
- Supports up to eight ID codes for each ST-13.
- Includes, if you select the -R option, the TSTR-4 Test Receiver that enables on-site verification of proper ST-13 transmissions.
- Supports data delivery from Service Argos to the Base Station via telnet, ISP e-mail, or Internet. For a small fee, data will be available from Service Argos in as little as 20 minutes.
- Operates in harsh environments (0° to +50°C standard temperature range, -40° to +70°C extended range).

Typical System

NOAA Satellite

Computer running PC208W Software

Phone Lines

Service Argos

Hayes-Compatible Modem

Base Station

12002 Antenna

Enclosure houses the ST-13, datalogger, and power supply

Platform Transmitting Terminal (PTT)

Argos System, Pass Frequency, and Pass Duration

The ST-13 Argos satellite transmitter sends data via two NOAA satellites. These satellites have overlapping polar orbits that provide full global coverage (including the poles). Data from several sites can be received and decoded by the satellite simultaneously.

The satellite can receive messages from a Platform Transmitting Terminal (PTT) while the satellite is passing over the PTT. Depending on the latitude, pass frequencies vary from 6 to 24 passes per day and the average pass duration is 10 minutes. Typical transmission intervals are 200 seconds (±6 seconds). The number of data points that can be transmitted are listed below:

Data points transmitted per ST-13 per day

Latitude	Max number of data points
0° (equator)	336
±15°	384
±30°	432
±45°	528
±55°	768
±65°	1056
±75°	1344
±90° (poles)	1344

Platform Transmitting Terminal (PTT) Equipment

- ST-13 satellite transmitter (includes asynchronous interface and SDC99)
- CR10(X), CR23X, or CR510 datalogger (CR10 requires a special PROM)
- 12002 antenna (includes antenna cable and mounting bracket)
- ENC 16/18 or ENCSAT 16" x 18" enclosure; the ENCSAT includes the power supply listed below
- Power supply* consisting of Campbell Scientific's BP12 12 Ahr or BP24 24 Ahr Battery Pack, CH12R Charger/Regulator, and MSX20 20-Watt Solar Panel

Base Station Equipment

- Hayes-compatible modem
- Computer with user-supplied communication software (e.g., Procomm Plus, Crosstalk). Telnet and Tyment sessions are supported.
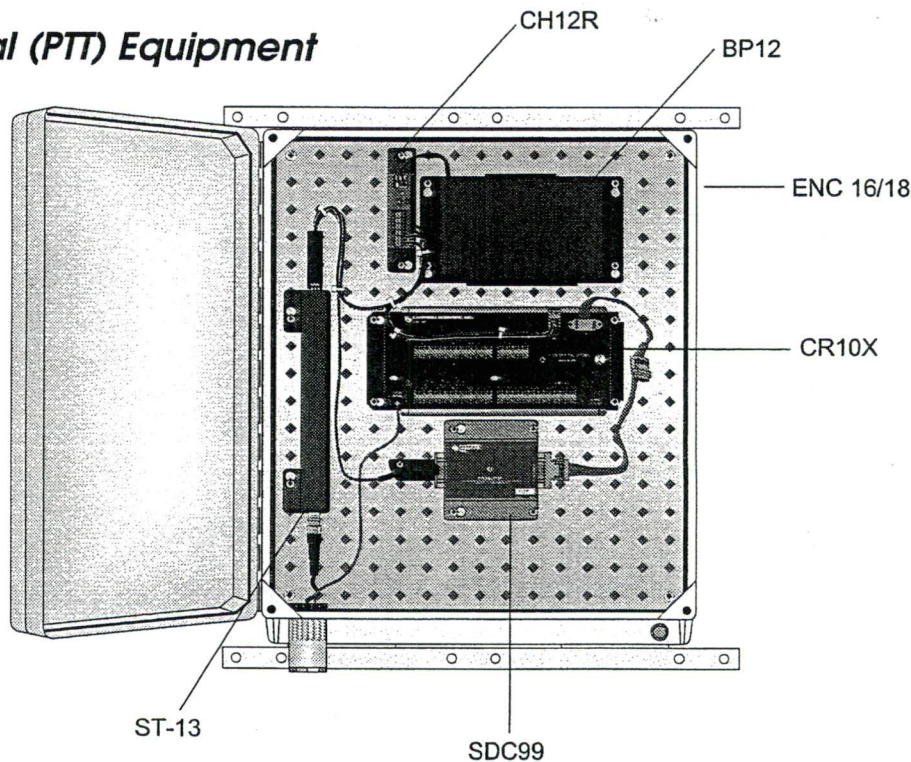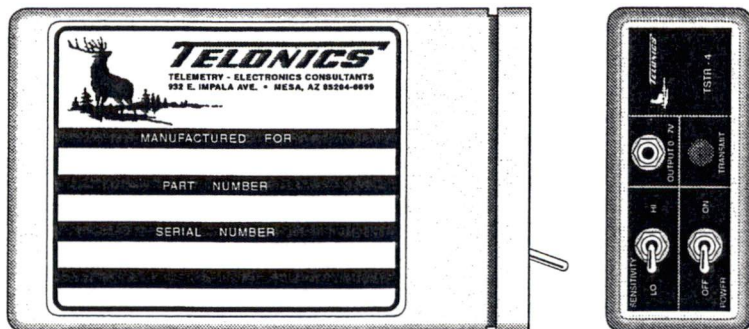

The enclosure protects the system components from dust, water, sunlight, and pollutants. Desiccant, MSX20 solar panel, and antenna not shown.

*Using a 200 second repetition rate, the satellite power budget is approximately 0.6 Ahr day^{-1} or < 10 hr day^{-1}.

Optional Test Equipment

- TSTR-4 Test Receiver (manufactured by Telonics)

The TSTR-4 is small enough to fit into your pocket while transporting it to the Platform Transmitting Terminal. When the ST-13 is transmitting, the test receiver lights up and beeps. It provides a 0 to 7 V pulsed output to allow it to interface with a datalogger.

Subscribing to Argos

To use the Argos system, you must transmit data that is being used for meteorological purposes. Examples include meteorological/hydrological stations, ship tracking, volcano monitoring, and seismic data. You must also receive formal permission from Service Argos and pay a fee. If your Platform Transmitting Terminal (PTT) is in the U.S., you also need an FCC license. The following steps must be completed:

1. Obtain a Program Application Form from Service Argos' Web site (http://www.argosinc.com) or from one of the following offices:

North America -- East
Service Argos, Inc.
1801 McCormick Drive, Suite 10
Largo, MD 20774
Tel (301) 925-4411
FAX (301) 925-8995
E-mail: useroffice@argosinc.com

North America -- West
Service Argos, Inc.
4210, 198th Street S.W., Suite 202
Lynnwood, WA 98036
Tel (206) 672-4699
FAX (206) 672-8926
E-mail: useroffice@argosinc.com

Europe
CLS/Service Argos
8-10, rue Hermes
Parc Technologique du Canal
31526 Ramonville Cedex, France
Tel (330) 5-61-39-47-00
FAX (330) 5-61-75-10-14
E-mail: useroffice@cls.cnes.fr

Australia
SIT
GPO BOX 1289K
150 Lonsdale Street - 27th Floor
Melbourne, Victoria 3001
Australia
Tel (61) (3) 9669 4650
FAX (61) (3) 9669 4675
E-mail: clsargos@bom.gov.au

Japan
CUBIC-I, Ltd.
Takeuchi Building
6F-8-1-14 Nishi-Gotanda
Shinagawa-Ku, Tokyo 141
Japan
Tel (81) (3) 3779 55 06
FAX (81) (3) 3779 57 83
E-mail: cubici@st.rim.or.jp

2. Fill out and submit the application form to the appropriate Service Argos office. Service Argos will send you a program review stating whether your program has been approved.

3. Following approval, send a Technical File that describes the required data processing and type of results to the appropriate Service Argos office.

4. Complete and return a Service Agreement to the appropriate Service Argos office.

5. If Platform Transmitting Terminal is in the U.S., submit Application Form 442 and 159 to the Federal Communications Commission (FCC) to acquire an FCC license. To order these forms, call (800) 418-3676 or access their Web site (http://www.fcc.gov). International users should contact their local agencies to determine their country's requirements.

ST-13 Specifications

Frequency:	401.650 MHz per Argos specifications
Maximum Bytes Transmitted per Pass:	32 (16 low resolution data points)
Operating Temperature:	0 to +50°C (standard) -40 to +70°C (extended)
Humidity Range:	0 to 90% noncondensing
Terminal Baud Rate:	1200 baud
Transmitter Baud Rate:	400 baud
Supply Voltage Range:	7 to 14 VDC
Power Output:	2.0 W at 14 VDC, 0.7 W at 7 VDC
Typical Current Drain:	65 μA quiescent, 500 mA active
Dimensions:	9.2" x 2.3" x 1.1" (23.4 x 5.8 x 2.8 cm)
Weight:	< 0.4 lb (< 200 g)
Case Polarity:	negative (-) ground
RF Output Impedance:	50 Ohm

TSTR-4 Specifications

Power Supply:	Standard 9 V alkaline battery
Range:	≤ 3 ft (1 m)
Dimensions:	4.5" x 2.7" x 1.3" (11.4 x 6.9 x 3.3 cm)
Weight:	5.64 oz (160 g)