Microcom Design, Inc.

GTX-2.0

Data Logger Satellite Transmitter for GOES, INSAT, MTSAT, METEOSAT

The Microcom GTX-2.0 Satellite Transmitter and Data Collector is certified for 100, 300, and 1200 BPS operation on GOES DCS for Self Timed and Random operating modes. (Certificate # xxxxx). Operation on GMS is Self Timed. On METEOSAT it is Self Timed on the International channels. User selectable GOES, SCD, or ARGOS operation.

GPS time correction is optional for the 100 and 300 BPS operation and required for 1200 BPS operation. Without GPS, time keeping is ±0.25 PPM (±0.65 seconds per month or ±0.02 seconds per day maximum), ± 0.1 PPM typical. With GPS time keeping is improved to ±0.1 milliseconds at the GPS update time and drifts at the maximum rate of ±0.15 PPM until the next GPS update when it is resynchronized. An important aspect of the precision control of timing and frequency in the GTX is that GPS updates are needed very infrequently. GPS updates should be done at least every 10 days. GPS updates are scheduled AFTER transmissions, NOT before. Optionally, time and date may be entered manually.

Frequency error is less than ±125 Hz, in the worst case. GPS fixes every 30 days are required for frequency control due to TXCO aging. Short-term frequency and phase stability are better than ±1 Hz per second. These two features ensure very reliable communications all the time every time in all conditions. The Microcom UB8 GOES Antenna is recommended for use with the GTX-2.0. Other approved antennas in the range of 3 to 11 dB gain may be used. A 3-dB antenna will have a reduced EIRP. For ARGOS & SCD applications the Synergetics 14A is recommended.

Transmit power is able to be set using software commands. The output required is determined by the satellite system used, data rate, and antenna.

A number of options are available with the GTX 2.0. These include the display and keypad.

The data acquisition function in the GTX-2.0 has two modes. The first using the serial RS-232 input unit. This option can be used with third party data acquisition systems. The second functions as a full SDI-12 data recorder and counter input. Analog and digital adpaters to SDI-12 are available.

Up to 64 total SDI-12 sensor parameters can be sampled and recorded. A further 64 user-selected “internal sensors” are available for equation processing, counter capturing, and other internal parameters. The equation processing in the GTX includes standard numeric operations as well as a full compliment of basic and transcendental functions. Also, a built-in Min, Max, and Average processor greatly simplifies the task of capturing summary information from sensors.

Up to 100 parameters with as many as 25 individual readings per parameter may be included in a Self Timed Transmission. Random transmissions can have as many as 40 different parameters. Absolute values and rate of change over time may be used to trigger Random transmissions from one or more parameters.

Sensor data and system events may be logged in a non-volatile circular buffer for retrieval via the RS-232 port. Each parameter has its own discrete sampling and logging schedule. In the standard memory configuration, as many as 30,000 data points can be stored. Expanded memory options are available that increase the logging capacity to close to 250,000 entries.

Each log entry is individually time and date stamped. Flexible filtering options allow only the desired information to be quickly retrieved.

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GTX-2.0 Features and Specifications

Key Features:

Additional internal information that may be added to the data acquisition parameters some of these are:

- Station or message format identifier
- Transmit sequence number
- Battery volts under transmission load
- Forward RF Power
- Reflected RF Power
- Transmitter Temperature
- GPS position information

Setup may be accomplished from an intuitive Command Line terminal mode or from the Microcom GTX Utility. A Palmtop or PDA may also be used for setup. Setups are easily replicable and downloadable from a PC or Palmtop.

Test messages with identification and GPS location can be easily field initiated.

Diagnostic commands can be sent to SDI-12 sensors while the GTX is in operation mode.

Various package, cable, and connector options and accessories are available.

General Specifications:

Vdc Power:	12.5 volts nominal 10.5 to 18.0 volts (Transmitter) 9.0 to 18.0 volts (Logger Operation)
Vdc Protection:	Reverse and OVP >18.0 volts
Battery Current:	1.3 mA quiescent 30 mA during GPS use 3 Amps at 10 watts RF output power
Temperature:	-50° to +70° C (Logger Operation) -40° to +60° C (ARGOS/SCD) -40° to +50° C (GOES/METEOSAT)
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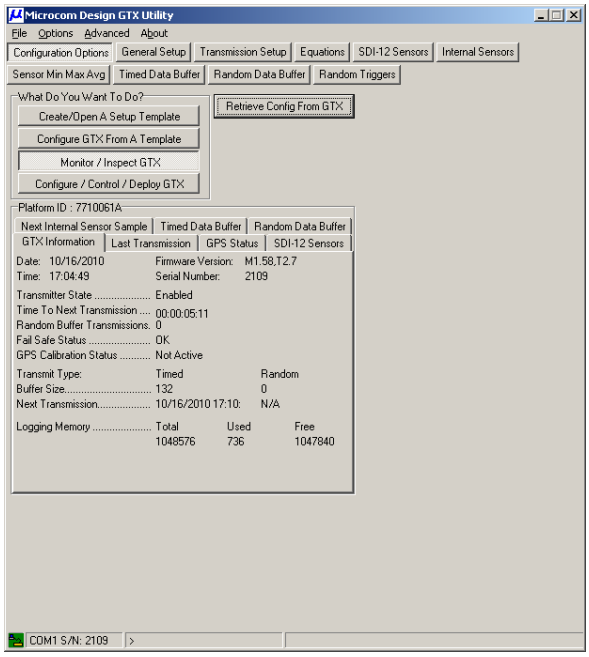
Time Stability:	±0.1 PPM typical ±0.25 PPM maximum
Humidity:	0 to 99% RH noncondensing
Size:	6.6" W X 9" L X 1.5" H
Weight:	2 Lbs

Transmitter Specifications:

RF Power:	1 - 10 watts (international) 1 - 5 watts (GOES CS2) Adjustable in 0.1 dB steps
Modulation:	100 BPS BPSK, 300 & 1200 BPS (GOES CS2) ARGOS/SCD 400bps, INSAT 4800 BPS
Freq Stability:	<0.25 PPM
Freq Resolution:	<10 Hz
Frequency Range:	401 to 405 MHz
Phase Stability:	<2 degrees



GTX PC Utility - In Monitor/Inspect Mode

GTX-2.0 Notes:

Meets NOAA NESDIS specifications (Version 2.0B) for 300, and 1200 BPS operation in Self-Timed and Random operating modes. 100 BPS applies to International channels

A full range of Operational and Test Diagnostics are available including:

- VSWR measurement to 0.05
- Independent field/bench test transmissions
- Battery voltage measurement during transmission
- Internal temperature measurement
- Include TX measurements as message header
- GPS satellite signal strength reporting
- System event/fault logging
- Configuration and status reports