

## Vaisala QST102-3 GOES DCP Transmitter



### Features / Benefits

- Provides access to the NOAA/ NESDIS GOES Data Collection System (DCS) for Data Collection Platforms (DCPs)
- Supports NESDIS HDR V2.0 standards
- Certified by NESDIS in the entire GOES frequency band (any of the 532 channels for 300 bps and 177 channels for 1200 bps)
- Timed and Random Reporting for adaptive transmission control
- Easy and flexible connection to data loggers and computers with RS-232 and RS-485 interface PCs
- State of the art design for high reliability and long service life
- Low power consumption
- Advanced algorithms for maintaining time and frequency maximize operational availability

Vaisala QST102-3 is an advanced GOES Data Collection Platform Transmitter compliant with the latest NESDIS implemented higher data rate V2.0 standards for 300 and 1200 BPS operation. It is certified by NESDIS for operation anywhere in the entire GOES frequency band covering Domestic and International Channels.

The Transmitter supports Timed and Random Reporting protocols. Timed transmissions are sent at preset user-configurable interval. Random Reporting makes a check of the data after each measurement to control random transmissions. Random Reporting can be configured to make frequent transmissions when data changes rapidly or alarm conditions are met, and to make infrequent transmissions when the data is not changing or no alarms are active.

### RS-232 and RS-485 Interface

RS-332 (with or without handshaking) and RS-485 (half-duplex) interface allows an easy and flexible connection with data loggers.

A simple, packetized command protocol allows the user to:

- Control the transmitter's center frequency for each message transmission.
- Specify the transmission time for individual messages.
- Query the embedded GPS receiver for position information and precise UTC time.
- Queue up multiple messages for future transmissions (total memory capability is 19.2 Kbytes).
- Query the transmitter for configuration parameters, time of day and a listing of all messages remaining in the transmission queue.

The transmitter can also be commanded to perform and report the results of a complete diagnostic and functionality check of its internal circuitry for on-site troubleshooting (forward/reflected power, temperature and voltage readings, GPS status and many more).

The command protocol is integrated to the Vaisala QML201 data logger software, so the QST102-3 transmitter is easily and seamlessly integrated to the Data Collection Platform.

## Modern State of the Art Design

The QST102-3 is a modern digital waveform synthesizer using the latest digital and analog ASIC and MMIC circuitry. This gives the QST102-3 transmitter high reliability and assures the user of a long service life and supportability.

The transmitter's very low current consumption while in the idle mode between transmissions places less demands to battery operation at remote sites in case of low power or interrupted solar panel charging.

The QST102-3 applies advanced algorithms for maintaining time and frequency using the embedded GPS receiver to maximize operational availability.

## Technical Data

Output Frequency	GOES: 401.701000 to 402.099250 MHz (x532 300-bps channels and x177 1200-bps channels)	DC Power	10.5 to 16 volts <5 mA standby (typical 2.8 mA at 12V) <50 mA during GPS acquisition (typical 25 mA at 12V) < 2.5 Amps when transmitting (typical 1.8 A at 12V)
Frequency Stability	QST102-3 corrects to typically less than +/- 20Hz using GPS based algorithm Long Term TCXO: Maintained to less < ± 125 Hz. Short term stability < ±1Hz/second	Size	5.56" x 4.06" x .96" (141.2mm x 103.1mm x 24.4mm)
Output Impedance	50 Ohms, short and open circuit protected	Weight	1.1 lb (0.5 Kg)
RF Power Output		Environmental Operating:	-40 °C to +55 °C
Output power of the transmitter	27 dBm to 37 dBm in 0.5 dB steps nominal	Storage:	-55 °C to +75 °C
Effective Isotropic Radiated Power (EIRP) with approved 11 dB gain antenna assuming 1 dB cable loss	37dBm to 47 dBm in 0.5 dB steps nominal	Diagnostics available to the DCP, storage and transmission	Forward Power Reflected Power Internal Temperature Before & during transmission Voltage reading Before & during transmission Latitude & Longitude Altitude Time of last GPS acquisition Time of last GPS acquisition missed GPS status Failsafe status VSWR
Harmonics	Suppressed > 60 dBc	Certification	NESDIS Certification Number 12142012; December 20, 2012
Spurious	Meets NESDIS spurious signal spectral mask for all data rates		
Phase Noise	Meets NESDIS Carrier Phase Noise, Phase Modulation Bias and RMS Phase Error requirements specified in 300 and 1200 GOES DCPRS Certification Standard V2.0		
Modulation Message Format	8-ary PSK with Square Root Raised Cosine Filtering Rate 2/3 Trellis Coding and Data Scrambling		
Data Rate / Symbol Rate	300 BPS (150 SPS +/- 0.025%) and 1200 BPS (600 SPS +/- 0.025%)		
Control Interface	RS-232 and RS-485		
Time of Day Clock	Accurate to 20 mill-seconds		

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