Unique Broadband Systems Ltd.

Site Controller
Model: STC 1000

Product Features

- • *Remote RF site monitoring and control*

- • *Transport Stream Analyzer*

- • *RF Signal Analyzer supporting CMMB, DTMB, DVB-T/H, DVB-T2 and ISDB-T/T$_B$ waveforms*

- • *Analog inputs and relay contacts*

- • *Web and SNMP interfaces provide remote control as well as remote software upgrades*

Optional Features

- • *GPS/GLONASS Receiver*

- • *Optical Media Converter*

- • *Modbus to SNMP Gateway*

- • *Remote SNMP Polling Agent - opens communications link to network SNMP server when an event occurs*

- • *Command interface to control an external Dial-up/GSM Modem*

- • *Communication with third party web camera allows operator to view live images and save images on alarm*

- • *Battery back-up*

- • *Hot/Standby redundancy configuration using two units*

Product Description

Overview

The STC 1000 Site Controller is a feature-rich remote monitoring and control platform optimized for TV and radio broadcast sites.

The unit supports multiple interfaces including Ethernet, USB, RS-232, RS-485, Optical and DVB-ASI. Using expansion modules, additional interfaces including analog inputs and Form C relay contacts are available.

Armed with multiple interfaces and numerous control features, the STC 1000 is a complete solution for remote management of broadcast sites.

Transport Stream Analyzer

The STC 1000 is equipped with two serial DVB-ASI inputs that can be used for the analysis of an ASI stream to discover its program table structure. The user has the ability to filter the TS PIDs as well as record (and temporarily save) TS clips to DDR memory. This will be useful for remote verification of the signal input into a TV transmitter.

Optionally, one of the Site Controller's Ethernet ports can be dedicated as a GbE transport stream input (according to Pro-MEPG Forum CoP #3 / SMPTE 2022 standards) and the transport stream recovered from the IP input can be directed to the analysis engine.

RF Signal Analyzer

The RF Signal Analyzer is a highly informative tool that can be used to evaluate the output performance of a UHF Transmitter or Repeater.

The RF Signal Analyzer consists of two boards: a downconverter and a capture card. High power amplifier and band pass filter feedback signals (between 470 MHz and 862 MHz) are downconverted to 25 MHz IF for processing in the capture card. The capture card processes the downconverted feedback signals and communicates directly with the main system controller to display MER, PAPR and Group Delay measurements in real time.

The Site Controller can be configured to send alarm based SNMP traps in the event that a measurement reaches its minimum threshold value.

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Product Description

GPS/GLONASS Receiver (Optional)

The internal GPS/GLONASS receiver provides accurate, high quality 10 MHz and 1PPS reference signals required to synchronize multiple   devices. The GPS/GLONASS distribution system allows the Site Controller to provide 10 MHz and 1PPS reference signals for internal components as well as four 10 MHz and two 1 PPS reference signal outputs.

Optical Media Converter (Optional)

The internal Optical Media Converter supports conversion between 1000Base-LX10 and 10/100/1000Base-T networks.

The STC 1000 is equipped with ST type connectors that allow for a typical link distance of 10 km over a pair of single-mode fibre. The media converter 10/100/1000Base-T Ethernet port is connected to an internal switch for communication with the Site Controller's internal components as well as a LAN/WAN.

Analog Inputs and Relay Contacts

The STC 1000 features eight analog inputs which are monitored by the main system controller permitting the user to set the polarity and voltage threshold that trigger an alarm. Additionally, four (normally closed) alarm relay contacts can be set to trigger on a specific alarm.

Web Interface

This feature allows remote control of the STC 1000 via the Ethernet interface and is based on an internal Web server. The Web pages stored on the Web server are designed as a complete graphical user interface (GUI) for status monitoring and parameter configuration.   The Web Interface concept is popular because remote control with this system only requires a standard computer with a network interface card (NIC) and a Web browser (Microsoft Internet Explorer, Firefox, etc.).

SNMP Client

This feature allows remote control of the STC 1000 in accordance with SNMP v3 protocol (Get, Set and SNMP traps). This remote control feature is intended for systems solutions where it is desired to integrate the control of a range of SNMP compliant equipment in a common management system.

Modbus SNMP Agent (Optional)

Among its control features is a SNMP agent engine to support equipment with a Modbus TCP or Modbus RTU interface. The unit is fully programmable and can map Modbus registers to SNMP MIB objects (get/set registers & I/O). As part of its monitoring capability the SNMP agent can set threshold rules to   generate SNMP traps.

External Dial-up/GSM Modem Control Interface (Optional)

The STC 1000 web interface includes a control interface to manage an external dial-up or GSM modem using industry standard AT commands. Supported modem interfaces are Ethernet, RS-232 and RS-485. With this feature the external modem can be controlled as either a backup link or as a primary connection that is only engaged for certain user-defined events.

Remote SNMP Polling Agent (Optional)

For many sites the communications link may be a dial-up or GSM modem connection that is only intended to be activated when an event is in progress. When the communications link is inactive the STC 1000 can fill in for the network SNMP server by continuing to poll the site equipment and to monitor all equipment for SNMP messages being sent to the server. Based on a set of user-defined rules, the STC 1000 can be programmed to reopen communications to the central SNMP server and forward trap messages for specific events. The remote polling agent feature is very useful as it only upload status changes or alerts when required. This is a very efficient way of polling a site and helps reduce communication link fees for the site.

Machine to Machine Interface

Upon request, one of the RS-232 or RS-485 ports can be used for a proprietary machine to machine interface. For legacy equipment that may employ a proprietary control interface (usually via a serial connector) the STC 1000 can be programmed with a custom control interface for remote management of the device. This is a valuable feature for control of a UPS, legacy transmitter, etc.

Battery Back-up

The STC 1000 is equipped with back-up battery system that provides the main system controller, Ethernet Switch and Optical Media Converter with approximately 1 minute of back-up power. This will be enough time to store parameters in volatile memory, send SNMP traps to the network management center and safely shut down the Site Controller.

Hot/Standby Redundancy Configuration

To ensure a reliable 24/7 network monitoring solution, the STC 1000 supports a live/standby redundancy configuration. The backup unit continually monitors the primary unit and in the event of a failure, automatically takes over all monitoring functions. Through the standby controller feature, operators can continue to monitor their network if the primary system is disabled through system failure, human error or other unforeseen circumstances.

UBS

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Rear Panel

Product Specifications

Transport Stream Analyzer

DVB-ASI Input
(IN A, IN B)
2x connectors: BNC (F), 75 Ω

DVB-ASI Output
(OUT A, OUT B)
2x connectors: BNC (F), 75 Ω
(Input MPEG-2 TS loop-through; no TS modification performed)

Gb Ethernet Input
Connector: 2x RJ45
Speed: 10/100/1000 Base-T

RF Signal Analyzer

RF 1
(HPA feedback input)
Connector: SMA (F), 50 Ω
Frequency: 470 MHz to 862 MHz
Level: -12 dBm ±3 dB

RF 2
(BPF feedback input
Connector: SMA (F), 50 Ω
Frequency: 470 MHz to 862 MHz
Level: -12 dBm ±3 dB

Optical Media Converter

Fibre Rx
(Input)
Connector: ST / Single Mode
Interface: 1000Base-LX
Wavelength: 1310 nm

Fibre Tx
(Output)
Connector: ST / Single Mode
Interface: 1000Base-LX
Wavelength: 1310 nm

Other Inputs/Outputs

Analog In
Connector: 9-pin SUB-D (M)
Pin 1 to Pin 4 Voltage: 0 to 10 VDC
(analog input – pull down)
Pin 5 to Pin 8 Voltage: 5 VDC
(analog input – pull up)

Relay
Connector: 9-pin SUB-D Male
Four alarm relays, triggered by any alarm

GPS/GLONASS Receiver

Input Connector
F-type (F), 75 Ω
5 Vdc biased

Recommended Antenna
Bullet III GPS antenna - Trimble model no. 57860-10 or equivalent

Receiver Architecture
L1 - 1575.42 MHz / GLONASS - L1 frequency range

32 Parallel Channels
GPS C/A code (1.023 MHz chip rate) / GLONASS PT code - WASS / EGNOS

Tracking Capability
24 simultaneous satellite vehicles

Acquisition Time
(Time To First Fix, TTFF)
(Tested at –40ºC to +85ºC)
< 15 s typical TTFF-hot (with current almanac, position, time and ephemeris)
< 40 s typical TTFF-warm (with current almanac, position, time)
< 150 s typical TTFF-cold (No stored information)

Positioning Accuracy
GPS: < 10m / 20m
GLONASS: < 10 m / 20m

Timing Accuracy
1 PPS + 10 MHz
< 100 ns

Holdover Time
≤ 2.5 μsec during 2 hours

10 MHz Output
4x connectors: SMA (F), 50 Ω
Level: 10 dBm ±2.5 dBm, sine wave
Harmonic Level: -30 dBc max.

Phase Noise:		
1 Hz:	< -75 dBc/Hz
10 Hz:	< -110 dBc/Hz
100 Hz:	< -125 dBc/Hz
1 kHz:	< -135 dBc/Hz
10 kHz:	< -155 dBc/Hz
100 kHz:	< -155 dBc/Hz

1PPS Output
2x connectors: SMA (F), 50 Ω
Level: TTL

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Description and Application

Control Interfaces

Front Panel	LCD display and cursor/ execute keys
Ethernet WAN	2x connectors: RJ45 Speed: 10/100/1000 Base-T (Connected to Gb Ethernet Switch)
Ethernet LAN	2x connectors: RJ45 Speed: 10/100/1000 Base-T (Connected to Main System Controller)
USB	Connector: 9-pin SUB-D Male
RS-232	Connector: 9-pin SUB-D Male
RS-485 (A)	Connector: 9-pin SUB-D Female
RS-485 (B)	Connector: 9-pin SUB-D Female
Web GUI	Internet Explorer, Firefox, etc. Connector: Ethernet Primary interface for configuration and control of all functions including TS Analyzer, RF Signal Analyzer, Modbus interface, etc.
CLI **(Command Line Interface)**	Connector: USB (HyperTerminal) or Ethernet (HyperTerminal and Telnet)
SNMP Control Interface	Connector: Ethernet Note: MIBs are provided
Machine-Machine	Connector: Ethernet, RS-232, RS-485

Power Supply

Voltage	90 – 132 / 180 – 264 VAC
Frequency	47 - 63 Hz
Power Consumption	max. 130 VA
Harmonic Correction	EN61000-3-2

Environmental

Operating Temperature	0°C to +50°C (+32°F to +122°F)
Storage Temperature	-10°C to +70°C (14°F to +158°F)
Relative Humidity (operating/storage)	10% to 90%, non-condensing
Cooling	Internal fans to assist natural convection

Mechanical

Size	1 U of 19" wide cabinet
Dimension (W x H x D)	482.6 mm x 43.9 mm x 520.7 mm (19" x 1.73" x 20.5")
Weight	7.75 kg (17 lbs)
Transport and Storage	Vibration acc. to IEC Publ.68