GSC3000

TRANSMITTER SITE CONTROL

PRODUCT OVERVIEW

The GSC3000 Site Control System takes the concepts introduced by the VRC2000 Remote Control Unit to the next level. For almost a decade, the VRC product line has provided microprocessor-based "smart" units that established the ability to operate transmitters from many locations (the radio "walk away" mode). Although still very popular, the VRC is somewhat limited in its capabilities. The VRC2000 (along with most other products in the industry modeling the VRC concept) cannot be expanded beyond the system's basic capabilities.

The concept of Gentner Site Control (GSC) is to provide a system that meets the needs of customers who require extensive control abilities, and accommodates the budgets of current VRC users. Operation can cover a single site with minimal requirements, a large number of sites with extensive requirements, and anything in between. This is ideal for duopolies, LMAs and similar configurations. To accomplish this, the GSC3000 uses a modular approach.

The GSC3000 starts with an embedded micro-controlled platform similar to the VRC. The GSC's I/O unit provides eight or 16 analog metering inputs, eight or 16 binary status inputs and 16 or 32 command outputs configured as eight or 16 raise/lower command channels. These inputs and outputs have the same tolerance limits, automatic command capabilities (event driven and time based) and other functions as the VRC. Additional "smarts," such as macro and time-based event capabilities, are added to the GSC3000 I/O unit.

This proven embedded digital platform is now dramatically expanded with networking capability. The GSC3000 uses Gentner's "G-Bus" networking, built on an industry-standard hardware architecture. This networking protocol is extended to a powerful Windows® based application operating at one or more locations. The GSC's networking ability allows users to configure the system for up to 256 channels at one site AND access up to 20 sites per PC running the GSC3000 software.

With networking capability, the GSC3000 goes far beyond the capabilities of typical transmitter remote control systems. It becomes a functioning network that can meet the multiple site control needs of both radio and television station owners at an affordable price. A site with one phone line can serve 16 GSC3000s because GSCs are networked together. It's perfect for multiple stations run from one location, or group-run transmission facilities, while providing new capabilities to single-site, single-transmitter users.

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FEATURES/BENEFITS

- Windows® access of up to 20 sites
- Building-block architecture allows flexible site design to meet each site's needs
- Up to 16 GSC3000 I/O unites can be networked together at any site
- GSC3000 software supports nine simultaneous (concurrent) PC serial COM ports, allowing simultaneous monitoring of nine remote sites
- Automated report and registry of alarms
- From eight to 256 channels of metering, status and command per site
- Complex, automatic time-of-day functions (i.e. macros or command outputs) allowing system-wide self-diagnosis and correction without human intervention
- Automatic functions imbedded in the I/O unit—not in a PC/terminal
- Programmable logging/data-capture function
- Three levels of site and application security
- Ease of setup and use with Windows®-compatible software
- Distributed processing and mission-critical hardware, allowing the GSC3000 to operate in almost any environment and condition
- Remote/local button

COMPONENTS & OPTIONS

I/O-8 and I/O-16 Units:

As the heart of the GSC3000, the I/O unit performs all data collection, time and macro-driven command functions. The I/O unit serves the site as either a Site Server or Site Client. If used as a Site Client, the I/O provides expansion of that site system beyond eight or 16 channels

I/O Unit Description:

The GSC3000 I/O unit is a network device; it is not limited by vocabulary or application to simple transmitter remote control. It may also be used for local or remote site control. The GSC3000 system integrates an RS-485 for network interfacing; up to 16 I/O units may reside on a site LAN. Each I/O unit has access to commands and macros of other units. The GSC3000 Network and Operating System are run out of ROM. Firmware applications may be loaded remotely to change the behavior of a unit. Packet protocol is used for secure transactions, both locally and remotely.

Security/Passwords:

As with the VRC, the GSC3000 has three levels of pass-code access: observer, operator and system.

When a user logs into the GSC3000 network, a password is required. This password is automatically encrypted for network security. Each time the server is accessed, a new key for encryption generates automatically, thereby denying information to pass without the correct password.

Each I/O unit has a unique electronic serial number (the number is not physically recorded anywhere on the unit and differs from Gentner's production serial number). The communications server keeps track of the serial numbers of all units attached to it, and will constantly check the status of those I/O units. If a unit "crashes" or drops out for any reason, the communications server immediately notices and releases an alarm flag.

System Operating Software:

This Windows® based software package provides for the set up of all I/O units and allows basic operation of the complete system. Multiple-site operation is supported through multiple COM port operation. This software is included with each I/O purchase.

I/O units and PC-based control points can be positioned wherever the need exists, allowing control of both studio and transmitter equipment from a variety of locations.

Voice Interface Option (available Fall '97):

This GSC-based server provides a voice output and DTMF command capability to the network (this provides operation similar to the VRC2000's voice mode).

Other Options:

- Wiring Interface
- Command Relay Unit

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I/O 16 UNIT

System Type:
Embedded microprocessor-based design, with battery backed real-time clock.

Memory Type:
CMOS Static RAM / Flash EPROM (battery backed)

Command Outputs:
Thirty-two (32), configured as sixteen (16) channels of two mutually exclusive outputs each. Open collector outputs, each rated at up to 30Vdc, sinking current up to 250mA. Can be programmed as latching or momentary closure configuration. If momentary, the command output can be programmed for durations of 0.1 to 25.5 seconds.

Metering Inputs:
Sixteen (16) channels. Unbalanced inputs with software selectable ranges of -5 to +5 or 0 to 10Vdc. Each input samples four times per second with 12-bit resolution. Input impedance of each channel is 100K Ohms, nominal. Numerical representation is calibrated by inputting a desired value. The I/O unit then computes and stores the appropriate scaling constant. Each channel can also be software configured as linear or linear-to-power scaled. Alternatively, the numeric representation of a channel can be the multiplication of two previous channels for the computation of indirect power readings. Each metering input has four programmable tolerance limits (two above and two below the nominal value). Each tolerance limit can be programmed to activate a selected command output, a time delay to activation of the command output, or a command macro. Delay time supported is 0.1 to 25.5 seconds. Each limit may also be programmed to generate a system alarm.

Binary Status Inputs:
Sixteen (16) channels. Software selectable TTL or CMOS logic compatible inputs: TTL threshold at +1.4Vdc, CMOS threshold at +2.5Vdc. Floating inputs can be programmed to be pulled to Logic Level 1 or Logic Level 0. Each input can operate fully protected to ±30Vdc. Either state occurrence can be programmed to evoke a system alarm. Either state occurrence can be programmed to activate a command output, a time delay to activation of the command output, or a command macro. Delay time supported is 0.1 to 25.5 seconds.

Temperature Range:
0 to +70 C

AC Power:
85 to 264Vac, 47 to 440Hz, at 15W max.

Connectors:
Four (4) DB-37M for metering, status and command channels
Two (2) DB-9M for RS-232 Ports 1 & 2
Two (2) RJ-45 for G-Bus In/Out

Switches:
One, front panel mounted, "Remote/Local," for suspending the generation of command outputs.

Standard firmware normally installed for the I/O unit also includes:

Time Activated Functions:
There are 32 macros. Each can be set to second, minute, day and date specific to activate assigned command output, command macro, logging function, or a "snapshot" of current total log information.

Command Macro Capability:
Thirty-two, each up to 32 steps in length; macro can feed macro. A macro can be selected as a command output elsewhere in the firmware where a command output can be selected.

Mute Capability:
Alarms, command outputs, or command macros generated automatically from metering or status inputs can be suppressed by assertion of the appropriately programmed status input.
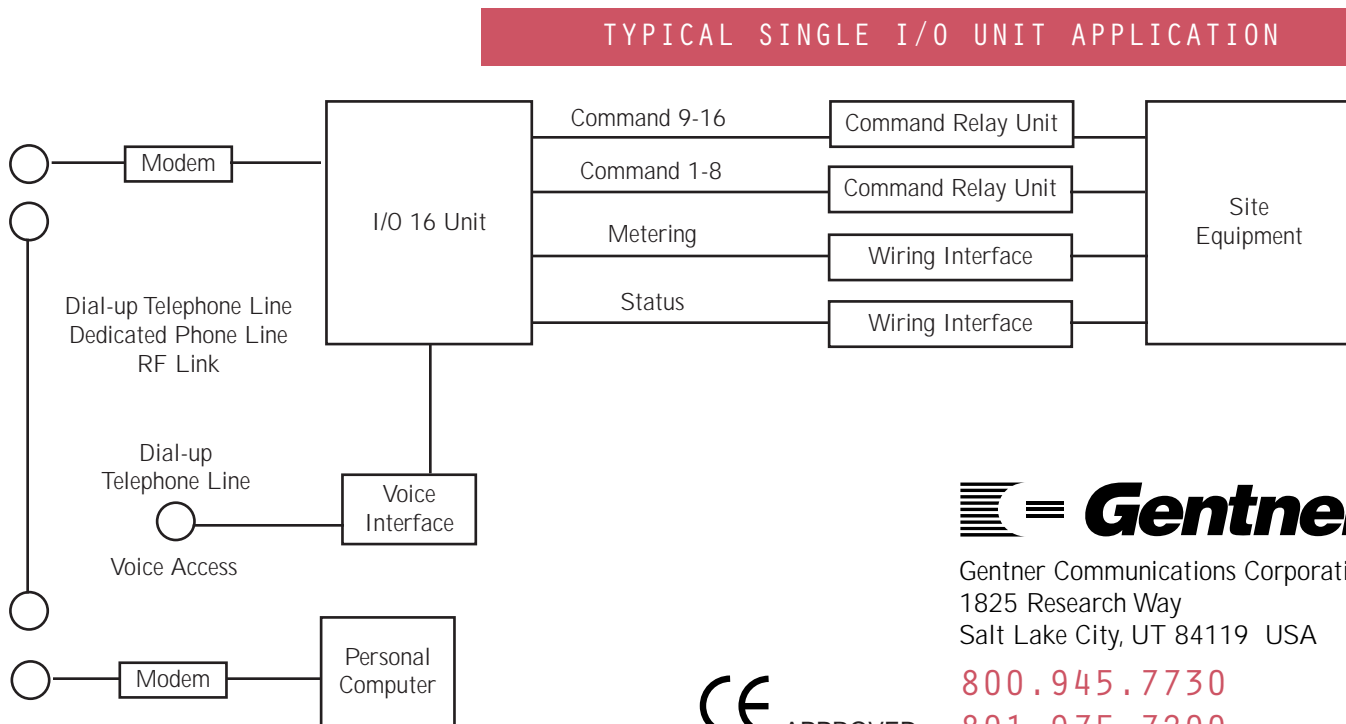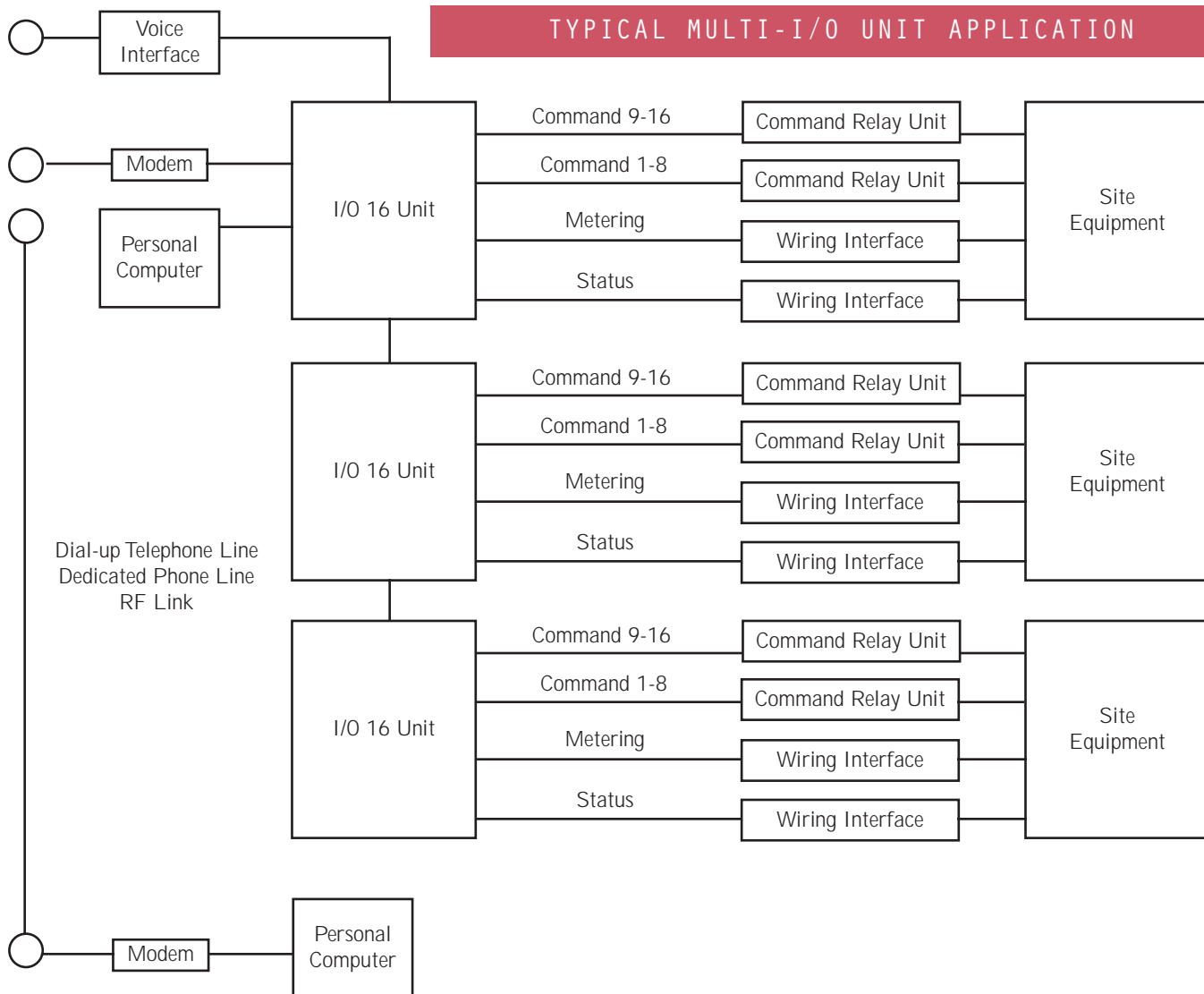
I/O 8 UNIT

The I/O-8 unit contains half the channels of the I/O-16 unit. It contains two (2) DB-37Ms. All other specifications are the same as the I/O-16 unit.

System Requirements:

A basic GSC3000 package includes the I/O unit and system operating software. In order to run this package, the user needs a PC, 486 or higher, with DOS 3.1 and Windows® 3.1 or higher, 8 MB RAM preferred; VGA monitor (SVGA preferred), one to four COM ports, and two modems (one integral to the PC, one external for connection to the I/O unit). The modems should operate at 9,600 baud to 28.8 KB.

One COM port is required for modem operation. Users planning to run multiple sites from one PC may need additional COM ports. COM port expansion boards are available from a variety of manufacturers.

Voice Interface

Modem

Personal Computer

I/O 16 Unit

Command 9-16 — Command Relay Unit
Command 1-8 — Command Relay Unit
Metering — Wiring Interface
Status — Wiring Interface

Site Equipment

I/O 16 Unit

Command 9-16 — Command Relay Unit
Command 1-8 — Command Relay Unit
Metering — Wiring Interface
Status — Wiring Interface

Site Equipment

I/O 16 Unit

Command 9-16 — Command Relay Unit
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Site Equipment

Dial-up Telephone Line
Dedicated Phone Line
RF Link

Modem

Personal Computer

Modem

I/O 16 Unit

Command 9-16 — Command Relay Unit
Command 1-8 — Command Relay Unit
Metering — Wiring Interface
Status — Wiring Interface

Site Equipment

Dial-up Telephone Line
Dedicated Phone Line
RF Link

Dial-up Telephone Line

Voice Interface

Voice Access

Modem

Personal Computer

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