

Global Control Module Version 5

The TAC NETWORK 8000® Global Control Module (GCM™) is a modular, multi-tasking, multi-user, and direct digital area controller. The GCM block programming software provides flexible, pre-tested, and debugged control elements to ensure reliability, compatibility with future system enhancements, and reduced system maintenance costs. Two built-in RS-485 communication trunks support the full complement of TAC NETWORK 8000 controllers. Dual RS-232 ports can be used to connect personal computer-based graphical operator interfaces, VT-100 class terminals, and/or auto-dial/auto-answer modems for remote telecommunications.

Designed to accomplish the sophisticated control strategies of today's Building Automation Systems (BAS), the GCM in conjunction with a wide variety of stand-alone controllers can be applied to all types of mechanical, electrical, and environmental systems. In addition to direct digital control applications, the GCM has a complete set of energy and facility management capabilities including maintenance time reminders, energy reports, and trend reports.

The GCM interconnects with TAC NETWORK 8000 stand-alone controllers, utilizing two industry standard RS-485 communications trunks, thereby providing a single interface point to the BAS. GCMs may be connected together in a peer-to-peer network by using optional Ethernet or Echelon® TAC Network Interface Modules (TAC NIM) to provide system point expansion capacity, for any size facility, in a fully modular manner.

- Complete direct digital control, energy management, and facility management software libraries control most building mechanical, electrical, and lighting systems.
- Programming based on the NETWORK 8000 object oriented technique known as block programming provides reliable control operations.
- Battery backed real-time clock allows the GCM to be used in stand-alone and dial-up applications.
- Built-in daily EMS profile reports and monthly summary reports provide facilities data useful for tenant billing and cost savings.
- Built-in maintenance time reminder functions ensure that system maintenance requirements are scheduled and annunciated when needed, reducing overall maintenance costs.
- Auto-dial applications can select up to three subsets of ten phone numbers for the remote reporting of alarms, trend reports, and maintenance reports.
- Optional operator interfaces such as the low-cost ProView™ provide the flexibility of meeting daily monitoring needs, plus complete database programming and access.

Table-1 Software Functional Libraries.

Direct Digital Control Functions	Energy Management System (EMS) Functions	Math and Logic Functions	Facilities Management System (FMS) Functions
<ul style="list-style-type: none"> • Setpoint Reset • Ramp • Floating ON/OFF • 2-Position ON/OFF • PID Loop • Linear Sequencer • Rotating Sequencer • Binary Sequencer • High/Low Select • Energy Dead Band • Thermostat • Self-Tune PID 	<ul style="list-style-type: none"> • Duty Cycle • Temperature Compensated Duty Cycling • Optimum Start/Stop • Electric Demand Limiting • Weekly Scheduling • Calendar Scheduling • Enthalpy Changeover • Global Control/Monitoring • TAC MICROFLO • TAC MICROFLO II™ • TAC MICROZONE • TAC MICROZONE II® • TAC MICROZONE II Scheduling • TAC MICROZONE II Holiday Scheduling • TAC MicroNet • TAC MicroNet VAV 	<ul style="list-style-type: none"> • Add • Subtract • Multiply • Divide • Square Root • AND, OR, XOR, NAND, NOR • Invert • Averaging • Summation • Totalize • Pulse Count Conversion • Time Delay • Sensor Curve Fit • CFM Calculation • BTUH Calculation 	<ul style="list-style-type: none"> • Analog High/Low Alarm • Digital Alarm • Trend Log Reporting • Weekly EMS Report • Monthly EMS Report • Maintenance Time Reminders • BTUH Trend • View/Edit/Override • Current Status Group • LAN Configuration

Communications

Ports

RS-232C

Dual asynchronous ports for connection to TAC NETWORK 8000 operator interface computers, auto-answer/auto-dial modems, video display terminals, printers, or portable service computers, using definable ASCII word size, start bits and stop bits.

Data Rates - 300, 1200, 2400, 4800, 9600 baud asynchronous.

Characters - Non Return to Zero (NRZ) binary encoded. Word size, parity, and stop bit definition are user-selectable.

RS-485 LCM Interface Bus

19,200 baud asynchronous. Protocol: packeted data with error checking.

RS-485 Application Specific Device (ASD) Controller Bus

1,200 to 19,200 baud asynchronous (selectable). Protocol: packeted data with error checking, supports up to 128 ASD controllers (with repeaters).

Accessories

ENCL-201-TUB	Control cabinet tub
ENCL-201-TUB-P	Cabinet tub (plain)
ENCL-DOOR-PLA	Control cabinet door (plain)
ENCL-DOOR-PRO	Control cabinet door with ProView
GCM-ECH-001	Echelon network interface module
GCM-ETH-001	Ethernet network interface module
RPTR-WIRE/FIBER	ASD Bus repeaters
PROV-GCM	TAC ProView operator interface (included in the ENCL-DOOR-PRO-1 control cabinet door)

SPECIFICATIONS

HARDWARE SPECIFICATIONS

Dimensions

11-1/4 H x 11-1/4 W x 2-3/4 D in.
(286 x 286 x 70 mm).

Power Supply Input

20.4 Vac to 30.0 Vac, 50/60 Hz.

Maximum Power Consumption

30 VA.

Transient Compliance

Meets requirements of ANSI/IEEE
C62.41.

AGENCY LISTINGS

FCC

Part 15, Subpart J, Class A.

UL Listed

UL-864 (Category UUKL, File # S5381).

UL-916 (Category PAZX, File # E71385).

UL Listed to Canadian Safety Standards
(CAN/CSA C22.2, File # E71385).

European Community — EMC Directive

Emissions

EN55022 Class A.

Immunity

EN50082-1.

AMBIENT LIMITS

Operating Temperature

32 to 122°F (0 to 50°C).

Shipping and Storage Temperature

-40 to 140°F (-40 to 60°C).

Humidity

Up to 85% RH, non-condensing.

Microprocessor

80186, 12 MHz clock frequency, 16 bit
word size.

Memory

EPROM, EEPROM and RAM memory
for operating system, user control
program, and data storage sufficient for
all functions specified.

Hardware Clock

Power fail backup, crystal-driven,
automatic engage, accuracy ±60 sec./
mo. @ 77°F (25°C).

Battery Backup

Maximum 30 day RAM and clock
backup via replaceable battery.

Optional User Interface

Full alphanumeric and function select
keys or menu keys for parameter
entry, system configuration, and edit
functions.

Diagnostic Displays

Light Emitting Diode and alphanumeric
displays (with optional user interface)
annunciate hardware failures and
control program errors or problems.

SOFTWARE SPECIFICATIONS

Operating System

Multi-user, multi-tasking.

Message Routing

Messages may be routed throughout
the network to one of five print groups,
to provide segregation of alarms,
database changes, etc. to operating
personnel.

Local Trend Reports

4 points per trend with user definable
sample intervals, titles, quantity of
samples, and number of trends.

Maintenance Time Reminders (MTR)

User definable MTR messages with
event, calendar, elapsed time or number
of cycles initiation.

View/Edit/Override Groups

Attribute values that are frequently
viewed and/or modified can be added
to any one of ten View/Edit/Override
groups. Each View/Edit/Override group
is password protected and can contain
up to 20 attribute values with a 20-
character description for each value.

Override Reports

Listing of all attribute values that are
currently in an overridden state. This
report can be viewed and/or printed.

ALARM PROCESSING FEATURES

Alarm Response Time

3 seconds typical.

Alarm Priority Levels

15.

ARITHMETIC CAPACITIES

Calculation Range

3.4×10^{-38} to 3.4×10^{38} floating point
arithmetic.

Functions

Add, subtract, multiply, divide, square
root.

Support for External Auto-Dial Modem Command Set

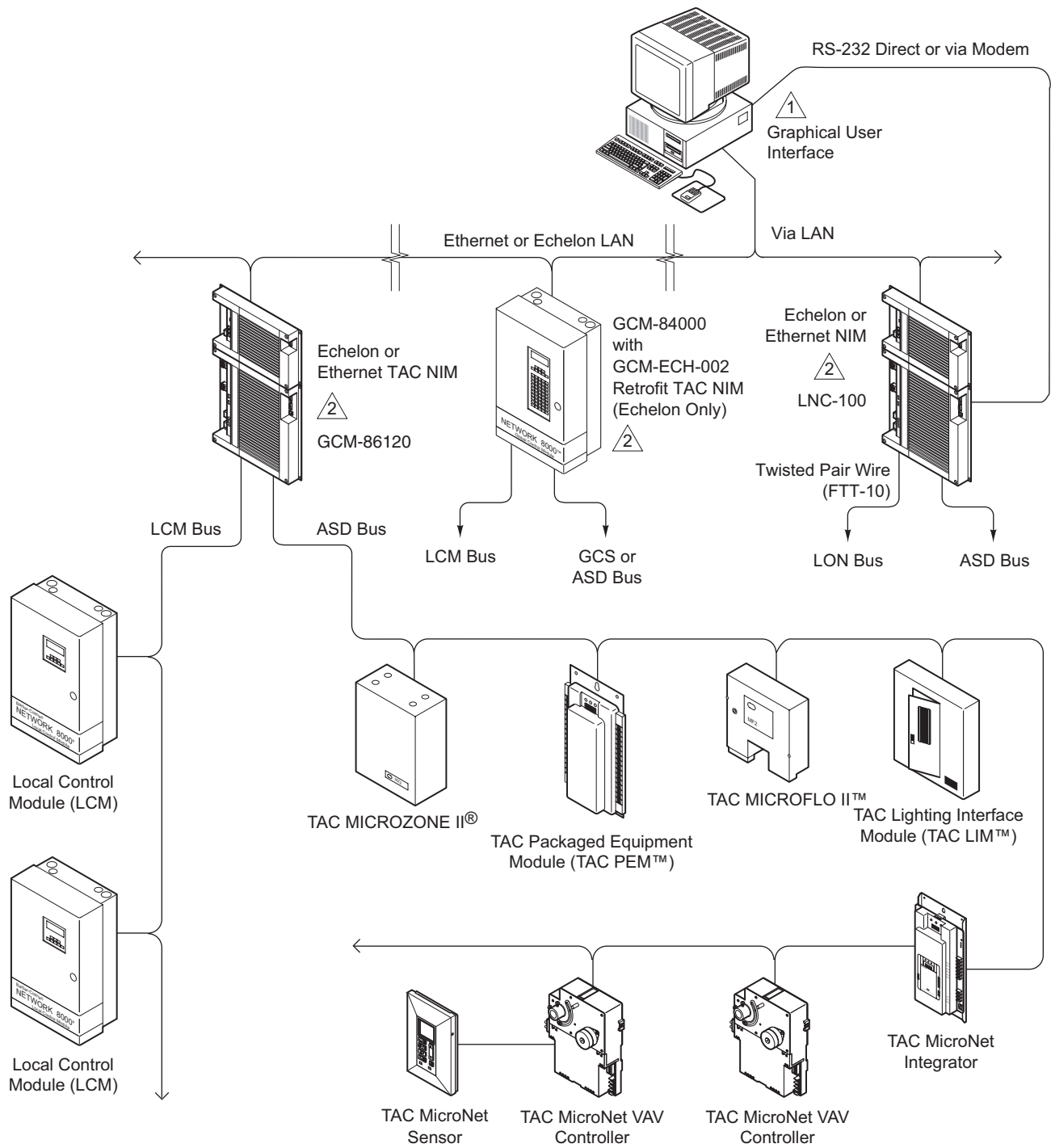
DC Hayes-compatible.

Baud Rate

300, 1200, 2400, 9600.

Auto-Dial Modem Support

Ten phone numbers, three subsets
activated by event, calendar or time of
day, calling one or multiple users (until
answered).



1 TAC graphical user interfaces use various methods to communicate with the GCM series and LNC controllers. Refer to information in this diagram that is applicable to the chosen user interface.

2 Echelon and Ethernet TAC NIMs must be installed on separate network trunks.

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