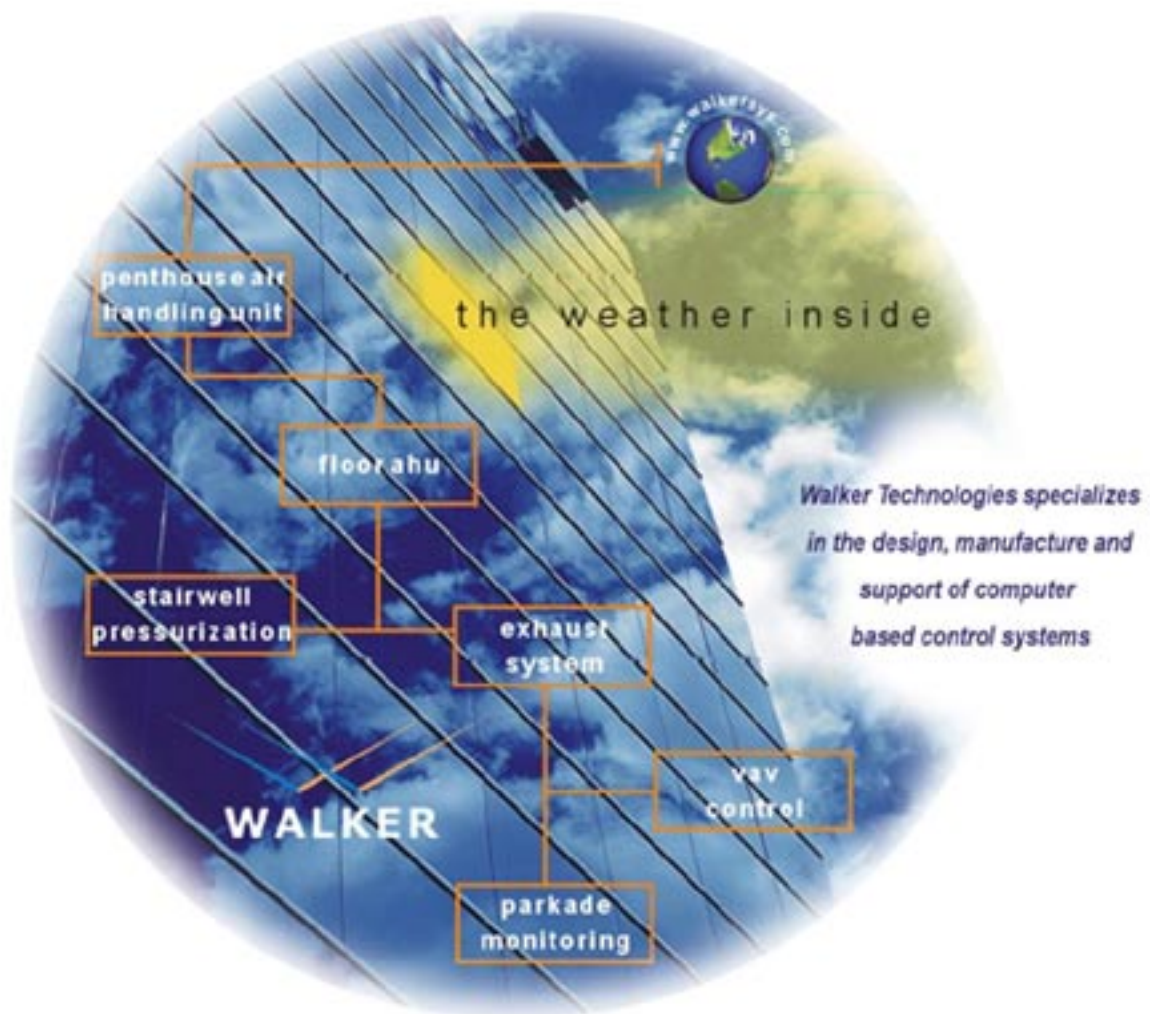




WALKER

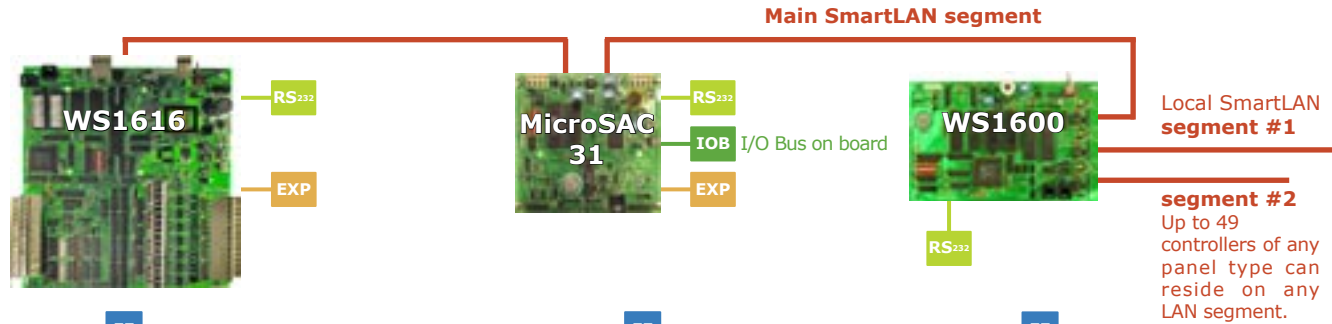
PRODUCT OVERVIEW



SmartLAN

Walker's interrupt driven token passing LAN sets the standard for throughput. Any panel can reside on any LAN segment.

CONTROLLERS



WS1616 FE

- 16 universal inputs
- 16 universal outputs
- Real time clock
- 12 bit A/D
- Expandable to 72 points

MicroSAC 31 FE

- 16K program memory (32K*)
- 3 serial ports
- 16k Dataflash for trend storage*
- Real Time Clock
- I/O BUS Master
- Expandable to 48 points via ribbon cable and more via I/O Bus
- Daughterboard for OEM applications

WS1600 FE

- Network hub
- Real time clock

LEGEND

- RS²³² Communication using RS232
- IOB Communication using I/O Bus
- EXP Expansion hardware available (page 4+)
- FE Full operator interface with front end enabling internet access and connection to Native BACnet

FRONT END



Any Stand Alone Controller on a main or local segment can be connected to a terminal (a PC, laptop or PDA) running **CONNECT2004**, a browser based fully featured graphical Front End.

Easy-STAT TERMINAL*



- ASCII display
- Full access to all mapped points and Easy-STAT sub system
- Full I/O Bus master for other Easy-STATs

EASY-STAT ON I/O BUS

All Easy-STAT Controllers

- Standalone or Walker I/O BUS
- Temperature Sensor
- GRUNER motor interface
- Multiple controller points
- Fully configurable
- Several control strategies:
 - Rooftop
 - Lighting
 - Chiller
 - DHW
 - Exhaust systems



Easy-STAT1X

- 1 button & setpoint knob
- 3 additional inputs
- 3 universal outputs

Easy-STAT2X

- ASCII display
- 3 buttons & thumbwheel
- 4 additional inputs
- 6 digital outputs
- 2 universal outputs
- Scheduling with 48 hour backup

Easy-VAV

- Easy-Stat with full setup and control for Gruner Motor/ Flow Controller

NETWORKING

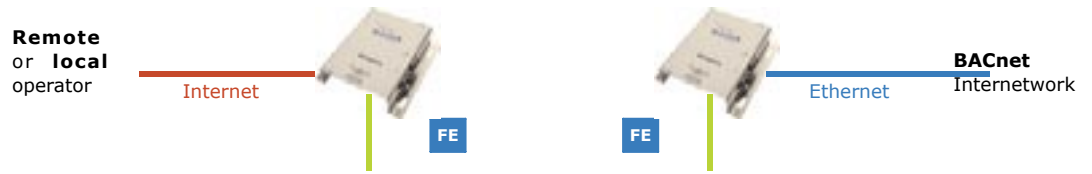
Any Stand Alone Controller on a main or local segment can be accessed over the internet or become Native BACnet.

BRIDGE 2000

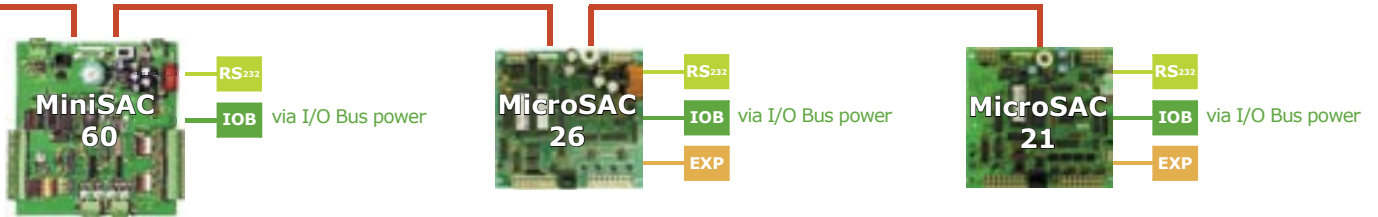
- Internet Bridge
- Email support
- Remote Access

WS-NBC

- Expands any controller to a Native BACnet controller



CONTROLLERS



MiniSAC-60 FE

- 8 universal inputs
- 4 universal outputs
- 8 digital outputs
- Real time clock
- Expandable I/O BUS Master

MicroSAC 26 FE

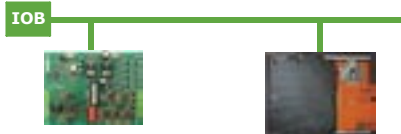
- 4 universal inputs
- 4 universal outputs
- Expandable with add. 8 outputs
- Expandable I/O BUS Master

MicroSAC 21 FE

- 4 universal inputs
- 1 universal output
- 4 digital outputs
- Expandable with add. 8 outputs
- Expandable I/O BUS Master

I/O BUS DEVICES

Devices that can be connected to MiniSAC and MicroSACs using Walker I/O Bus.



IOB-I/O boards

- Full range of point counts: from 4 to 16 I/O points

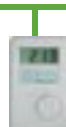
IOB-VAV

- Stand-alone or slaved VAV Controller



ROOMSTAT 30/31/32 IOB

- Temperature Sensor
- Set point
- Override (+LED)



ROOMSTAT35 IOB

- Temperature Sensor
- ASCII display
- Set point
- Override (+LED)
- Time/ Temperature
- Clock

RS232 DEVICES

Devices that can be connected to MiniSAC and MicroSACs using RS232.



ROOMSTAT 30/31/32

- Temperature Sensor
- Set point
- Override (+LED)



ROOMSTAT35

- Temperature Sensor
- ASCII display
- Set point
- Override (+LED)
- Time/ Temperature
- Clock



MicroSTAT 20

- Temperature Sensor
- ASCII display
- Programmable

PLUG & PLAY EXPANSION TECHNOLOGY

Walker products use one of the following three plug and play expansion technologies to connect additional inputs and outputs to the controller. Once the expansion boards are connected, their points map automatically in the SAC database.

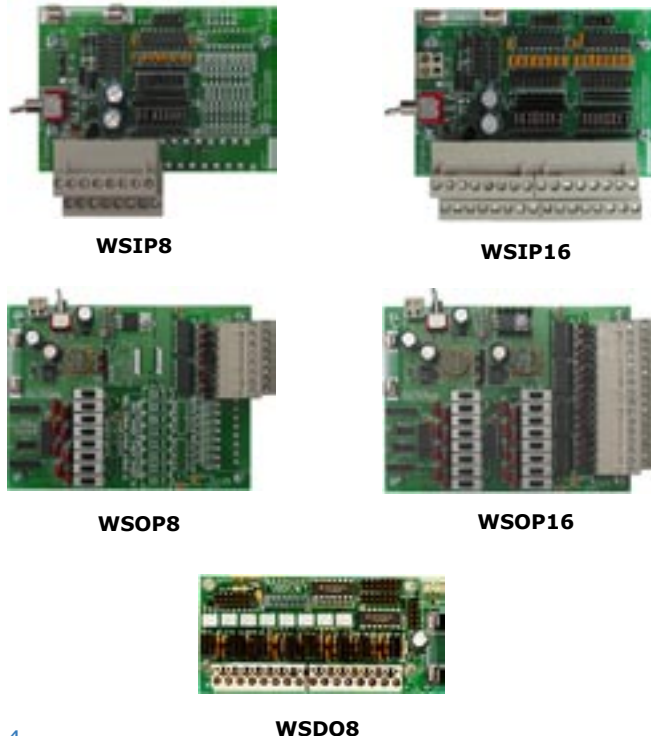
1. DIGITAL EXPANSION (PARALLEL)

Digital expander boards are attached to the controller via flat cables. They then reside on the physical input/output address space of the controller. The boards decode the input/output commands and map them back to the controller on the expansion bus. The advantage of these types of expansion boards are that the points are available at the same high speed as input/output points that are physically on the board.

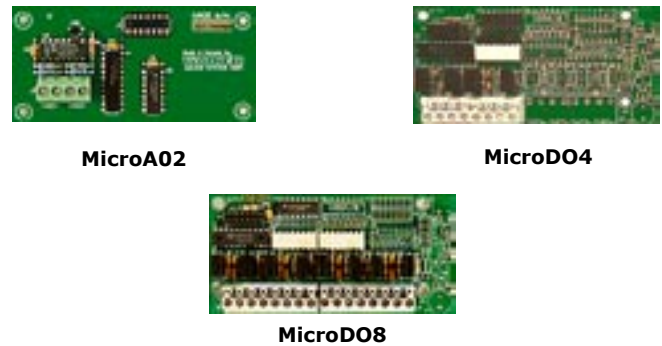
2. ANALOG EXPANSION (PARALLEL)

Analog expander boards are attached via flat cables, but are selected by decode logic on the main panel. These input/output points have the advantage that the I/O boards are less noise sensitive, less expensive and they allow cable lengths of up to 12 inches within the control cabinet.

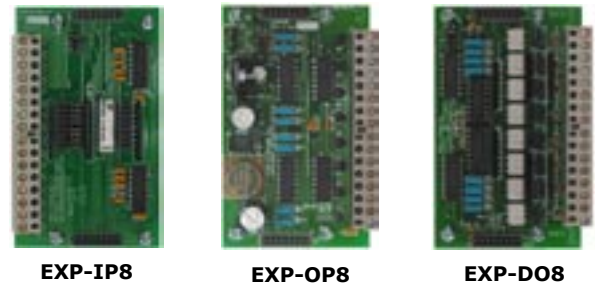
WS1616 - Expansion boards



MicroSAC 2X - Expansion boards



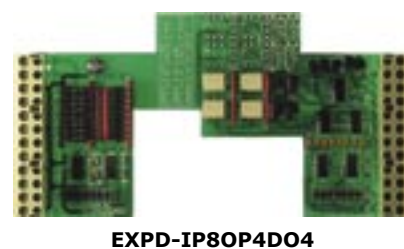
MicroSAC 31 - Expansion boards



Microsac 31 - Daughter boards

These three EXPD boards plug in on top of the MicroSAC 31:

- EXPD-IP8DO8: 8 universal inputs, 8 Triac outputs
- EXPD-IP8OP4: 8 universal inputs, 4 universal outputs
- EXPD-IP8OP4DO4: 8 universal inputs, 4 Triac outputs, 4 universal outputs



3. I/O BUS EXPANSION (SERIAL)

I/O Bus modules are intelligent expander modules that communicate via serial communications. The signal technology is a two wire "short to talk" mechanism that is very robust. The "Master" controller (usually a SAC) supplies a current transmitter source that attempts to drive 200ma through the signal loop. Because of the power available on I/O Bus, expander boards can also draw their power from the Bus. The low impedance of this communication technology makes it very noise immune.

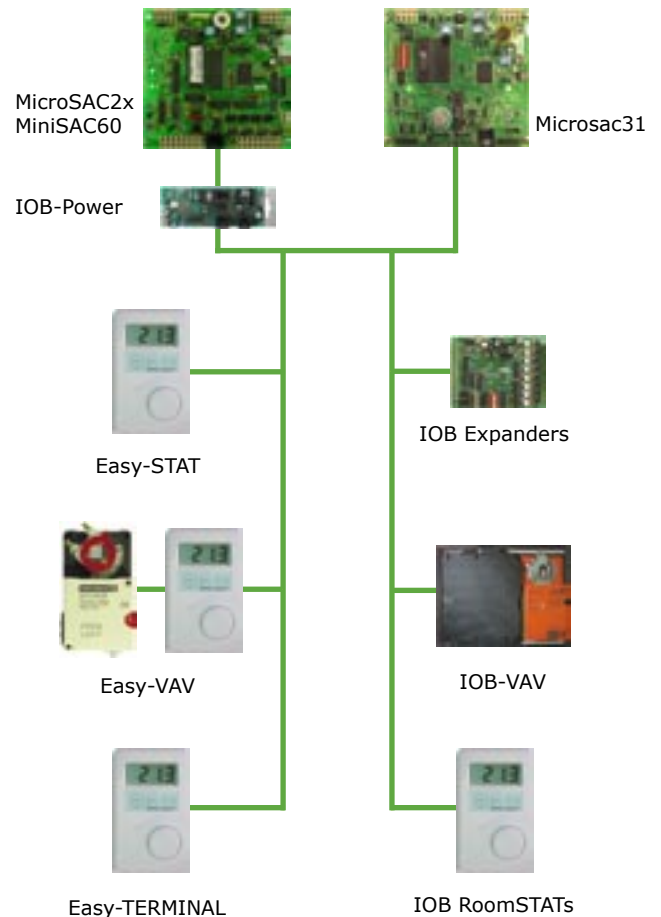
Powerful features of I/O Bus expansion:

- Increases the power and point capacity of all SACs
- Seamless information transfer between I/O Bus expansion modules and all network SACs
- Both power and communications for RoomSTAT modules supplied over single shielded twisted pair cable
- Devices can be daisy-chained or T-tapped from the I/O Bus line
- Physical location up to 1000 ft from the controlling SAC
- Unitary control applications possible because of onboard signal processing
- Modules are addressable and configure automatically (Plug and Play)
- I/O Bus lends itself to rapid development of custom application modules

I/O Bus modules come in various configurations designed to fulfill every requirement. The I/O design permits up to a maximum of 23 modules connected to a single SAC panel. The modules do not load down the host SAC panel. Powered by a dedicated PIC microcontroller, I/O Bus expansion modules perform all I/O and communications processing locally, offloading processor requirements of the host SAC panel. Expansion module point data is mapped to SAC memory and is accessible via the familiar GCL (General Control Language).

IOB-OPx and IOB-DOx series modules provide either variable 0-12 VDC or triac switched output. The IOB-IPx series of devices provides 'Plug and play' design allowing additional I/O Bus expansion modules to be placed anywhere along an existing Bus without the need for additional hardware.

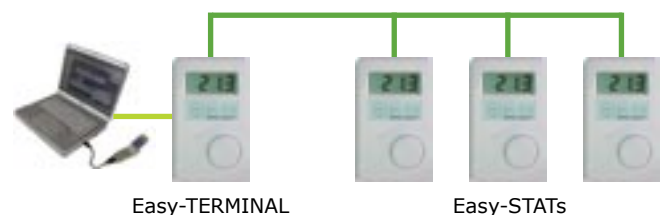
PRODUCT	INPUTS	OUTPUTS
IOB-OP4	NO	4 UNIVERSAL
IOB-IP4	4 UNIVERSAL	NO
IOB-IP8	8 UNIVERSAL	NO
IOB-D04	NO	4 TRIAC
IOB-D08	NO	8 TRIAC
IOB-IP4OP4	4 UNIVERSAL	4 UNIVERSAL
IOB-IP8DO8	8 UNIVERSAL	8 TRIAC
EASY-VAV	NEW VERSION VAV CONTROLLER	
IOB-VAV	CURRENT VERSION	



EASY-STAT TERMINAL under development

The Easy-STAT terminal is a full I/O Bus master. Connected to the Connect-2004 graphical front-end the Easy-STAT Terminal can display and revise real-time data from other Easy-STAT units on the I/O Bus network. It also can download configuration files and algorithms to other units on the network.

Key and key combinations are used to gain global access and the system uses security codes for operator access. The alpha numeric display can be programmed to display a variety of numbers and words. Keypad labels can be customized to indicate specific button functionality.





Product Overview

STAND ALONE CONTROLLERS (SACS)

Fully programmable controllers make customizing simple

- Range of sizes and point configurations
- Powerful operating system
- True peer network
- Share information
- Expansion options available
- Executable database defines the connected points
- GCL programs reside in database & define the required control procedures

INDUSTRIAL HARDWARE

Panels rated as equivalent to industrial controllers

- Switching power supplies enhance noise immunity and voltage range
- 12 bit A/D converters on WS1616 & MiniSAC60
- Output short circuit protection on analog outputs
- 1 amp total output drive on WS1616 (Kurtis???)
- Supercaps and flash memory eliminates batteries and battery maintenance

SMARTLAN

Prioritized communications guarantees 100% throughput

- Up to 2500+ panels on a single peer-to-peer network
- Segmented LAN architecture keeps local traffic local while giving full global access to all panels
- Synchronized token network guarantees 100% data throughput even under extreme loading
- Prioritized token interrupts ensures critical information gets through first
- Communication scheduled to eliminate redundant traffic
- Predictable performance for any size system under extreme loading conditions:

Operator access: 2 sec
Alarm reporting: 6 sec
Trend capability: 200 samples/sec/segment
Panel to Panel: 2-3 sec

FLEXIBLE ARCHITECTURE

Simple, powerful, flexible, expandable

- Single level LAN: Any panel on any LAN segment. All panels are equal peers. No LAN hierarchy.
- Easy to layout, easy to bid. Any panel, anywhere!
- Layout panels in terms of point density, then group them logically into local SmartLAN segments that make sense for the building
- Upsize any panel at any time with no change to programming
- Any two panels automatically form a SmartLAN and share data
- LAN automatically reconfigures into two segments if cut or disconnected at any panel
- All controllers use the same database format
- Backward and forward compatibility with no changes to programming

EASY MIGRATION

Hassle free upgrade

- Originally installed systems can be upgraded by just adding panels. No reprogramming is necessary
- SmartLAN automatically reconfigures itself when panels are added to or removed from a system
- Any smaller SAC panel can be replaced with a larger panel without reprogramming
- SAC panels can be expanded by adding I/O BUS modules
- Connect 2004 priced aggressively for small systems
- Any size system will get fully featured front-end package



Product Overview

WALKER ASCII COMMUNICATIONS

Interfacing to other systems

- Fully programmable interfacing language
- Ports up to 4000 points from external systems
- Display, command and trending can be applied to incoming data
- Solution for protocol incompatibility with minimal programming
- I/O bus architecture is a medium speed, high security simple technology for mapping points back into the SAC

BACNET

BACnet compatibility with product line and installed base

- Full conformance class 4 support
- Native BACnet controller using Ethernet, BAC/IP or BACnet MS/TP
- BACnet support available for any existing Walker WS1500/1600/1616, MiniSAC, or MicroSAC.
- Fully backwards compatible to all Walker Technologies or Honeywell Custodian installations.
- Single low cost BACnet connection available to systems where a minimal BACnet connection is possible
- BACnet throughput can be increased by use of Walker's high speed SmartLAN network.
- WS-NBC panels can provide concurrent support of Bridge 2000E functionality to allow communication with Connect 2004.

MODBUS SYSTEM MANAGER (MSM)

Adding Modbus networking features to Walker systems

- Allows any Walker SAC or NI panel to communicate via Modbus using Modbus RTU on a RS485 network
- MSM can be attached to any panel over SmartLAN, which becomes a Modbus master device
- Use combination of Modbus and Walker GCL to control and monitor devices

CONNECT 2004 (FRONT END)

Maximize access and efficiency, minimize cost

- Maximize access with internet connectivity
- Maximize operator efficiency by reducing system setup and modification and so minimize operational cost
- See status of one or more buildings at a glance
- Display real time data by showing dynamic values superimposed over graphic images
- Access to documentation and tech support on-line
- Extremely low bandwidth facilitates easy communication over low speed or cellular connections
- Client server version for high speed connections
- Group processing of alarms and status makes programming animation more efficient

WALKER TECHNOLOGIES EASY GRAPHICS

Save time creating HVAC graphics

- Create HVAC displays by placing standard HVAC components on a selected duct shell using the Paint Shop Pro 9 package.
- The Easy Graphics package includes numerous HVAC graphic components and duct shells including animated dampers and fans.
- Using this package will greatly decrease the required time in creating graphic displays for use in Connect-2004.





Product Overview

UNIVERSAL DATABASE

The heart of Walker SAC's

- Created by system installer or operator
- Controls the SAC's functionality
- All Walker panels use the same database format
- Database is backwards compatible to installations
- Created via WS1500, WS1600, WS1616 or use Connect 2004 and a SAC

DATABASE POINTS

- Variables:** Four types of variables are provided
- Alarm:** Monitors any point for high and low limit conditions
- Controller:** PID controllers feature true elapsed time calculations
- Totalizer:** Totals the time and number of starts for any point
- Input/Output:** Defines the external connection to the system and sensors
- Display:** Can contain up to eighty system points
- ASCII:** Defines external database mapping
- Schedule:** Weekly and annual schedules
- Command:** Used to trigger alarm and activity reports or remote dial out

GENERAL CONTROL LANGUAGE

Intelligent panels make customization simple

- Available in all SAC panels
- All database points accessed via GCL
- Closely resembles conversational English
- Created via WS1500, WS1600, WS1616 or use our Front-end Connect 2004 and a MiniSAC or MicroSAC

GCL LANGUAGE CONSTRUCTS

- +, -, *, /:** Add, Subtract, Multiply, Divide
- SQRT(), ABS():** Square Root, Absolute Value
- IF, THEN, ELSE:** Conditional decision branches
- <, >, =, ><:** Less, Greater, Equal, Not Equal
- BETWEEN:** Between
- AND, OR, XOR:** Boolean operators
- ON-FOR, OFF-FOR,:** Start/Stop time delays,
- ON-FOR<, OFF-FOR<:** Minimum and maximum delays
- DO-EVERY:** Periodic control action
- GOTO, CALL:** Program redirection
- START, STOP:** Start and stop control
- DATA:** Data extraction from any point
- C-ON, C-OFF:** Supervisory program control
- HOUR, DAY, MONTH:** Time scheduling functions
- TIME, DATE, WEEKDAY,**
- HOLIDAY MESSAGE:** Message output to terminal modem port or external system

GENERAL CONTROL LANGUAGE EXAMPLE

Natural language readable code

```
[ADMINISTRATION FAN CONTROL]
IF DAY SCHEDULE ON THEN DAY_OPERATION
ELSE NIGHT_OPERATION

:DAY_OPERATION
START SUPPLY_FAN, RETURN_FAN
HEATING_COIL_VALVE = (AIR_SETPOINT - AIR_TEMP)
* HEATING_COIL_GAIN
HEATING_COIL_VALVE = MIN (HEATING_COIL_VALVE,
100)
RET

:NIGHT_OPERATION
[ALSO MUST CHECK NIGHT SETPOINT]
IF AVERAGE_TEMPERATURE < NIGHT_SETPOINT THEN
DAY_OPERATION ELSE STOP SUPPLY_FAN, RETURN_
FAN
HEATING_COIL_VALVE = 0
RET
```

