CircuitWerkes

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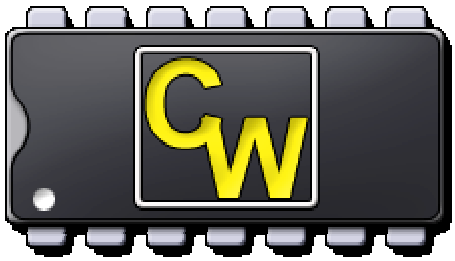


System Overview

Sicon-8

Transmitter Site Controller

For a complete product listing, pricing, and support,
visit our website at www.circuitwerkes.com

Introduction

The CircuitWerkes Sicon-8 is a value-priced, full-featured dial-up transmitter site controller with recordable voice response, integrated Internet Web server and free setup/control software included.[1] The Sicon-8 was designed with the user in mind, so all of the basic functionality you need to control your site is included. No extra purchases are necessary to get your site up and running, although several options are available to expand the capabilities of the Sicon-8.[2] See the options list below for details or ask your favorite CircuitWerkes dealer for more info.

With eight independent channels of telemetry, status, and control, the Sicon-8 can handle any facility with basic to moderate control requirements. If you need more channels, the Sicon-8 Expansion Module can be added to the system, giving a total of 16 channels each of status, metering, and control. Each telemetry channel provides a self-calibrating, auto-ranging analog input capable of handling anywhere from 0 to +12Vdc or 0 to -12 Vdc. The eight control channels feature independent relays for the raise and lower functions. The first six control channels consist of two heavy-duty SPDT relays (one for raise/on, one for lower/off) that can handle up to 2.5 amps at 30 VDC or 125 VAC. These relays operate in momentary mode, making them ideal for controlling your equipment. The last two control channels make use of two latching or momentary DPDT relays each. These relays let you use the Sicon-8 as an audio switcher and they can also be used for standard equipment control as well.

Key Features

- *Voice recordable technology*
- *Internet capable*
- *8 channels metering, status, and control*
- *Expandable up to 16 channels*
- *2 heavy-duty SPDT relays per channel*
- *Self-calibrating, auto-ranging meter inputs*
- *Up to 5 alarms per channel*
- *Cell-phone interface*
- *Audio pass-through*
- *Free GUI software to monitor your site*
- *X-10 capability for additional control*

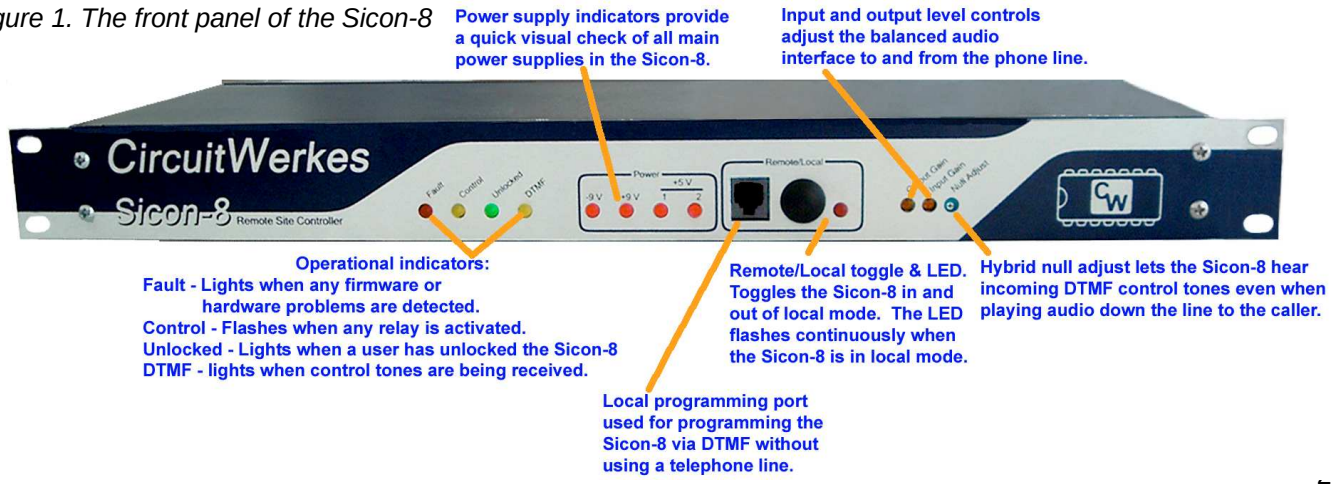
The Sicon-8 has many features not found in similar remote controls. For instance, the Sicon-8 makes use of voice-recordable technology, so you can record your own words and phrases in any language, although it comes with the most commonly-used English phrases pre-configured. In addition, a cell-phone audio interface is provided, so any auto-answer cell-phone can be used to provide control to out-of-the-way transmitter sites. The Sicon-8 can also communicate with X-10 transmitter modules. X-10 modules communicate over a building's existing electrical wiring. They can be plugged in around your site and equipment plugged into them can then be turned on or off by the Sicon-8 with no external wiring to the remote locations.

With the Sicon-8, you're not limited to the dial-up telephone or cell phone interface. The Sicon-8 includes an integrated Internet Web server that lets you use any browser to do basic operations. Using the included Windows® interface software, “Sicontroller”, a local or remote computer can be used to program or operate your Sicon-8. Programming the Sicon-8 using the software is as simple as following the menu prompts. Sicon-8 configurations can be saved, recalled and loaded onto a single Sicon-8 or multiple machines with ease, making setup painless for multiple sites. The Sicontroller software allows your Windows based PC to control your facility. The computer can connect to the Sicon-8 in a number of different ways. With no extra hardware, a local computer can communicate with the Sicon-8 over a standard RS-232 connection. A remote connection can also be made by adding either a dial-up modem (to connect directly to the Sicon-8), or an Ethernet-to-serial adapter to access the device over a LAN or the Internet using the free Sicontroller software.

Inputs and Outputs

As seen in Figure 2 below, the Sicon-8 has a number of connectors on the back panel to interface the controller to your equipment. The following table is a list giving the name of each connector, followed by a brief description of its function.

Figure 1. The front panel of the Sicon-8



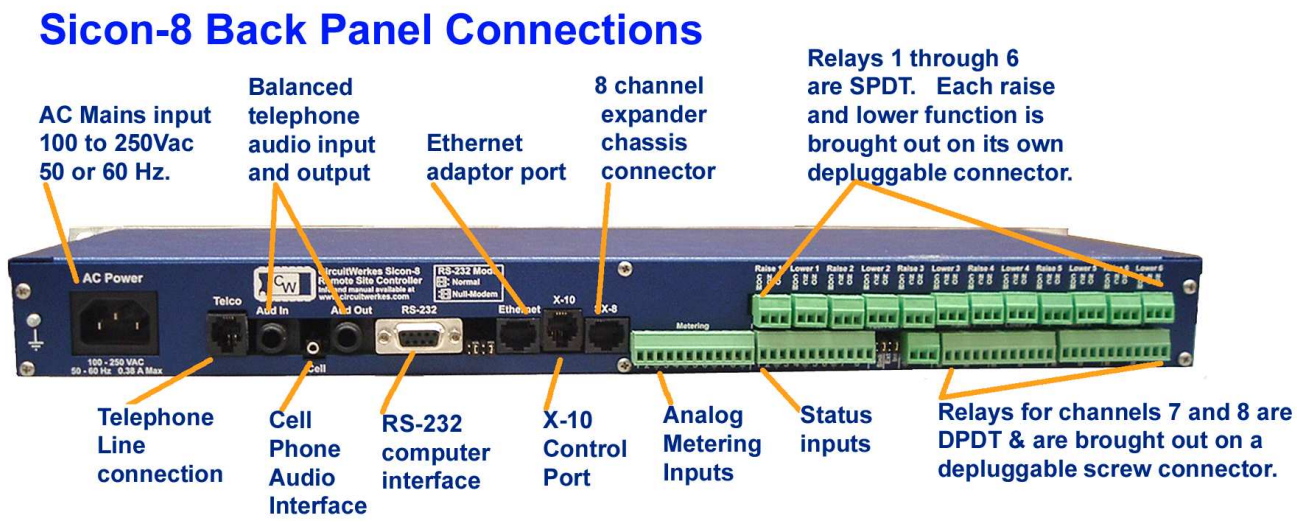


Figure 2. The back panel of the Sicon-8

Name	*Type*	*Description*
AC Power In	IEC Cup	Accepts 100-250 VAC @ 50-60 Hz.
Telco	RJ-11	Connects to the phone line.
Audio In	¼" TRS	Audio input used to feed program audio into the device for remote audio monitoring via phone.
Cell-Phone I/O	2.5mm TRS	Connects to a standard cell phone headphone jack.
Audio Out	¼" TRS	Audio output used for local monitoring of the device or phone line audio.
Host/Modem	Female DB-9	RS-232 connection to communicate with a host PC or modem or LAN/Internet.
Expansion	RJ-45	Connects to expansion module for extra channels.
X-10	Female DB-9	Connects to X-10 transmitter for more control.
Metering/Status	Depluggable terminals	Metering and Status inputs connect to the equipment to be monitored.
Control Output	Depluggable Terminals	Control relay outputs – 12 momentary SPDT relays and 4 latching or momentary DPDT relays.

Table 1. Description of Sicon-8 main connectors

Telemetry

Eight telemetry channels are brought into the Sicon-8 on depluggable screw terminals located at the center of the back panel (see Figure 2 above). These analog inputs can handle either positive or negative voltages of up to 12 Volts. To make setup and operation simpler, each input is auto-ranging. You do not have to adjust any potentiometers to set the proper input range. Inputs are self-calibrating and are based on an internal, precision, low-drift, voltage reference, so the meters will not drift over time or with temperature. Telemetry setup is as simple as connecting the sample voltage and then telling the Sicon-8 what the input voltage represents.

Status

The Sicon-8's optoisolated status inputs can be used to determine the status (on/off) of your equipment. All status inputs are on depluggable screw terminals. The first seven status channels accept only contact closures as inputs. If the voltage at the input is at or very near ground, then the status channel is considered active, and if it is not grounded, the channel is considered inactive. Each status channel may be independently configured so that ground is considered inactive, and not ground (or open circuit) is considered active. The eighth status channel provides some additional flexibility. Based on a jumper setting, you may configure channel 8 so that your equipment sources current to or sinks current from the Sicon-8. In either case, if current is flowing, then the input is considered active, but again, this may be inverted according to user preferences. To use these inputs, your equipment's ground must be tied to the Sicon-8's ground. This is to allow your equipment to sink current from the Sicon (the only option for status channels 1 through 7). If you wish to source current to status channel 8, one line is provided with +5 V. This line is diode-protected and current-limited to minimize the risk of damaging the Sicon-8's power supply. It is not required that this +5-V line be used to source current to channel 8, however. The channel will tolerate up to 24 VDC as input, but at least 3 VDC is needed to turn the optoisolator on.

Control

The Sicon-8 is equipped with 16 relays organized in 8 channels to provide you with control over your transmitter site equipment. Each channel consists of a raise/on relay and a lower/off relay. These raise relays are used to turn equipment on or to raise a given parameter, like plate voltage for instance. Similarly, the lower relays are used to turn equipment off or to reduce the specified parameter. These relays can be used to control any equipment in any way, but it is recommended, for the sake of simplicity, that equipment is turned on or parameters increased using the raise relays and equipment turned off or parameters lowered with the lower relays.

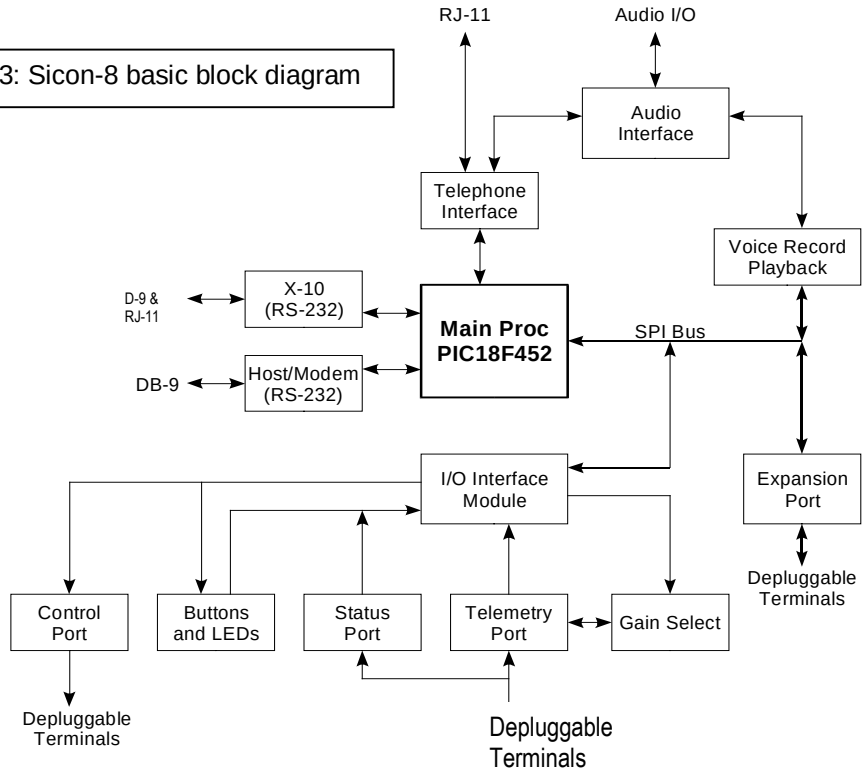
The first six channels consist of heavy-duty SPDT relays, rated at 10 A @ 30 VDC or 10 A @ 250 VAC (however, the board is desgined to handle only 2.5 A), which operate in momentary mode. **Although these relays are rated to handle up to 250 VAC, it is strongly discouraged due to the dangers associated with exposing someone to accidentally making contact with the high voltage.** All three contacts from each relay are made available on the back panel screw terminals.

Channels 7 and 8 each consist of two DPDT relays (one for raise/on and one for lower/off) which can operate in momentary or latching mode. These relays can tolerate up to 1 A @ 30 VDC or 0.3 A @ 125 VAC (again, connecting high voltages to the Sicon-8 is not recommended). Since these relays may operate in the latching mode, they are ideal for use as an emergency audio switcher. These relays can also be operated in momentary mode, so they can be used as standard control outputs, as well. All six contacts of each relay are brought out on the back panel, depluggable barrier strip, so any and all of their contacts may be utilized.

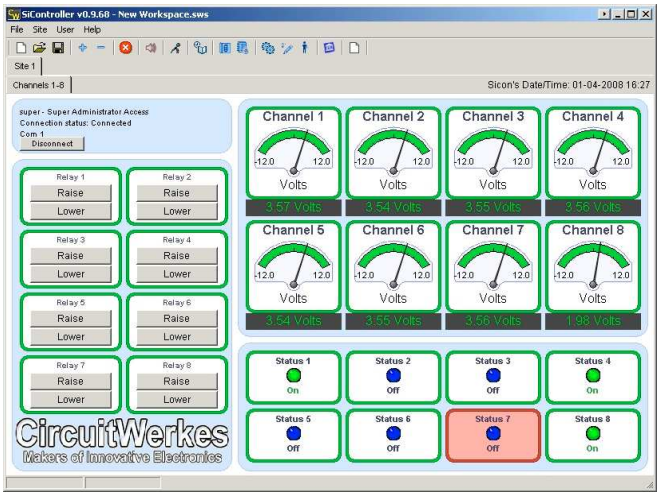
Automation/Timed Events

Sicon-8 has an on-board real-time clock. Basic time-of-day/month/year functions are handled by the Sicon-8. Time-of-day functions include anything that must be done at a specific time, such as AM station pattern/power adjustments that typically happen at local sunset and sunrise. A full year's events can be pre-programmed into the Sicon-8. The Sicon-8 can do simple sequences of closing relays and pauses, but cannot currently do multi-step functions (such as: where it does a function, takes a particular reading, performs another step, etc), however, this is planned as a future firmware update. Complex tasks involving intelligent, multiple, steps can be performed using the scripting function of the Sicontroller software.

Figure 3: Sicon-8 basic block diagram



Software



The Sicon-8 includes a Windows-based setup and control software client, the Sicontroller. Sicontroller is divided into two main function groups, control and setup.

The setup mode lets you program your Sicon-8 via a PC. Setup is menu-driven and is designed to make programming as easy as possible. All Sicon-8 parameters are available via the menus and, once set-up, the programming parameters can be saved to a local file. The local file can then be used to program other Sicon-8s or as a backup in case it ever becomes necessary to reset your Sicon-8 to factory defaults. You may save as many Sicon-8 configurations as you want. By modifying one configuration file and then saving it as another name, you can create an infinite number of files for setting up different Sicon-8s. Sicontroller has tabs for controlling multiple sites from one client.

The control mode lets you operate the Sicon-8 from either a local PC or one that is located off-site. Sicontroller supports modem communications and Ethernet-to-serial converters for use over the Internet or a LAN. Ethernet-to-serial converters must have software support for virtual serial ports for them to be used with the Sicon-8.

The Sicontroller interface lets you hide any, or all, of the meter and control panels, letting you display only the ones that you want to see.

Alarms automatically pop up a large dialog box on the screen and, optionally, play an audio alert. E-mail can be automatically generated notifying you of the condition.

Specifications

Dimensions	1 ¾" H x 19" W x 6 ¼" D 1RU rack-mountable
Weight	approx. 6 lbs.
Power	100-250 VAC @ 50-60 Hz
Relays	12 SPDT relays rated at 2.5 A @ 30 VDC or 2.5 A @ 250 VAC for 3 x 10^5 cycles. 4 DPDT relays rated at 1 A @ 30 VDC, 0.3 A @ 125 VAC for 5 x 10^5 cycles.

CAUTION: While the Sicon-8's relays can handle 250 VAC, this practice is very dangerous and is strongly discouraged by CircuitWerkes. Switching of high voltages should only be done in a manner which isolates the voltages from accidental contact with people.

Metering Inputs	8 analog inputs capable of accepting +12 or -12 Vdc with reference to ground.
Status Inputs	8 contact-closure inputs. Pull to ground to activate.
Audio I/O	Balanced, line-level audio pass-through on separate (in and out) ¼" TRS jacks.
Cell Phone I/O	Unbalanced, mic-level output (to cell phone) and line-level input (from cell phone) on 2.5mm jack.
Telephone Interface	Unpowered RJ-11 jack. Connects to standard phone line.
Programminge Interface	Powered RJ-11 jack. Connects to standard DTMF telephone.
PC Communication	9600 bps RS-232 (8 bits, 1 stop bit, no parity bit, no flow control) on female DB-9.
Ethernet	Etherstuf ET-1, Ethernet-to-serial adapter - Communicates with Sicon-8 through the RS-232 port. Allows connection of the Sicon-8 to a LAN or to the Internet. Onboard ethernet option with Webserver coming soon
X-10	Supports CM-17 and PL513 X-10 controllers or equiv.

Optional Accessories

SX-8, Eight Channel Expander Chassis - This unit increases the total number of channels by eights to a maximum of 32. The additional channels include full metering, status and control. Each SX-8 fits in a single rack space and connects to the Sicon-8 via an RJ-45 jack.

Ethernet daughter board –This board allows the Sicon-8 to connect directly to a LAN or Internet and features a built-in Web server that can accommodate both PC and PDA based readings and control. This board is now included on all Sicon-8s sold after May '06.

Note: The Sicon-8 can be remotely controlled via the Internet using the Sicontroller software and an inexpensive serial-to-Telnet converter or by using local PC running the Sicontroller program & VNC or LogMeIn free software. The Serial-to-Ethernet method described here is in addition tot he internal Web Server which does not require special client software, other than a standard Web browser.

While we always try to present the most current information about our products to you, specifications are subject to change without notice. Please call us with any specific questions that you may have.