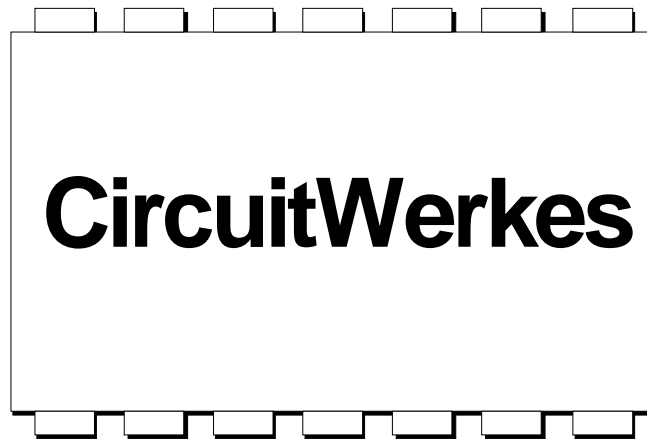


# EAS-4 Controller



## Technical Manual

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# CircuitWerkes EAS-4 Technical Manual

## Description

The EAS-4 is designed to interface \*Sage\* ENDECs to your automation system or any contact closure. The EAS-4 takes contact closures and converts them to serial data that is used to trigger the required weekly or monthly tests. Up to four different, co-located, stations can be controlled using one ENDEC with the RP-2 relay panel (a.k.a. MSRP) and the EAS-4. In addition to RWT and RMT test generation, the EAS-4 can operate four macro functions on the ENDEC. Note that you usually will need the Sage RP-2 relay panel to control more than one station's EAS events.

You should not use the EAS-4 for unattended ALERTS, though the macros to do so can be defined in the ENDEC (then fired from the EAS-4) to accomplish this.

Because of the important and serious nature of the EAS system, we strongly suggest that you read and thoroughly understand everything in this manual before attempting to hook the EAS-4 to your ENDEC. In addition, you should test each and every function that you are planning to control with the EAS-4 to insure that the ENDEC responds as you think it should. Do not assume that you have hooked up everything correctly and that it's all programmed correctly and working.

## Connections

Power is applied to either the coaxial power connector or to the screw terminals marked power. Depending upon what type of power adaptor was supplied with your EAS-4 either connector may be used, but both inputs may **not** be used simultaneously.

Serial connection to your ENDEC is made via the D-9 connector on the EAS-4. Both standard serial cables and null modem cables are supported by the EAS-4. If you are using a null cable, J1 and J2 must be moved to the null position as seen on the diagram on the last page. Any of the ENDEC's serial inputs that are set up for a handheld remote control may be used. The serial port must be set for the default setting of N-8-1 data at 9600 baud and must be selected for handheld remote control.

All command functions to the EAS-4 are made by grounding the appropriate inputs. Actual connections to your ENDEC depend upon which functions you wish to use. At the least, you will probably want to connect RWT inputs to corresponding switches or automation system contact closures for all stations that you are planning to control. Note that the EAS-4 depends upon relay outputs from the ENDEC to know when an event has been properly run and to know when the ENDEC is busy. **If you do not connect the EAS-4 to the ENDEC relays, the EAS-4 will always show an error LED and will not illuminate the "Event OK" LED**, however, the EAS-4 will continue to pass commands to the ENDEC even if the error LED is lit.

## Operation

The EAS-4 mimics sequences of key presses from the hand held remote control. Instead of pressing a bunch of buttons by hand, the EAS4 takes a closure from you and then sends out the serial command string (waiting for and replying to "prompts" coming back from the ENDEC) to perform a function. Before the EAS-4 can control an ENDEC, the ENDEC's user password must be set for zero length, effectively eliminating it. The ENDEC does not allow simultaneous tripping of RWTs or RMTs on multiple stations, except by using a macro (see next page).

There is an RWT trigger for each station. Immediately (actually a few milliseconds later because of handshaking) after the the EAS-4 gets triggered, the ENDEC sends the RWT for the station selected.

To initiate a RWT, close the contact that corresponds to the station on which you wish to send the test. The ENDEC should commence the RWT within a second, provided that the ENDEC is not already busy.

RMT's are handled much like RWT's. Give the unit a closure and it causes the ENDEC to generate a RMT. You could conceivably also relay RMTs using macros, however the ENDEC would have to be preset for duration of event, etc. A firmware modification allowing the RMT button to relay the tests is currently being written and will be available by special request. Please call us to check availability.

## Avoiding problems by using the ENDEC's Active relays

The EAS-4 has two status inputs that must be hooked up to your ENDEC to avoid trying to send an EAS test if the ENDEC is busy. Grounding either of the two status inputs will cause an EAS-4 event to be stored in the EAS-4 until the both inputs are open. Once the status inputs are cleared, the EAS-4 will send the stored command to the ENDEC. The ENDEC has three programmable relays. Normally, the EAS-4 status inputs will be tied to the ENDEC's "Attn Active" and "Encoder Active" terminals. Depending on how you have your ENDEC's relays programmed, you may also jumper the third relay in either series or parallel with one of the other ENDEC relays. If you don't use the EAS-4 status inputs, the unit will error out if it tries to control the ENDEC when the ENDEC is already busy. On the other hand, if you do use the status inputs, the EAS-4 will run the event as soon as the status inputs are clear. The busy relays (described in more detail below) may be used on some automation systems to delay the triggering of tests while the ENDEC or EAS-4 is busy, which can prevent your automation from trying to trigger a test when one can't be sent.

## Using the macro functions

The EAS-4 can be used to automate various tasks on the ENDEC, including providing an alternate means to generate RWTs and RMTs. ***The EAS-4 cannot program macros***, only run them. You must program the macros using the Sage hand held remote before the EAS-4 can run one. Macros can be used to generate various outgoing messages, including actual alerts, however, you should not use the EAS-4 to generate actual alerts, except when an operator is on duty that can manually send the alert if the EAS-4 should fail to do so. The EAS-4 has four macro inputs (1 through 4) and supports ENDEC macros E, F, G & H only.

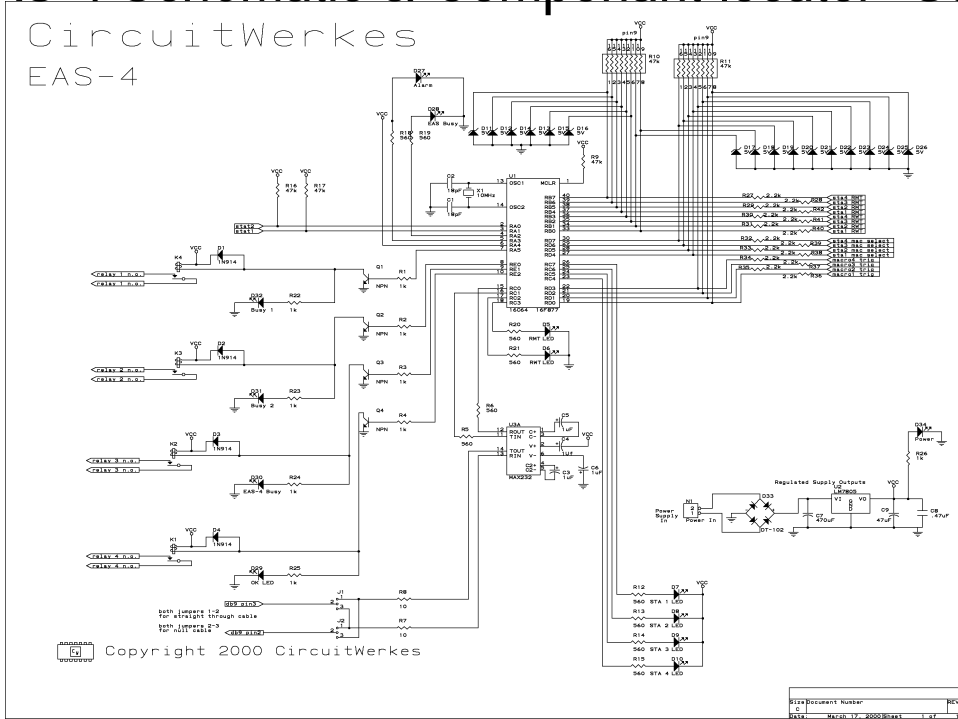
To run a macro, you must provide at least two contact closures. One tells the unit which macro to call (Macro 1-4) and the other tells it which station to select for that macro (Sta 1-4). You **MUST** close the station input before or simultaneously with the macro input. You can run a macro on multiple stations by closing the "sta #" input for each station on which you want to run the macro. When the actual macro is called, the EAS-4 will scan all of its station inputs and instruct the ENDEC to run the macro on all selected stations. You can also run macro #1 on each station in sequence, if you so desire. To do that you would ground the input for macro 1 and also station 1. To run the same macro for station 2 you would again ground macro 1, but this time you would ground station 2. See your ENDEC manual for specific instructions on programming templates and macros. Remember that actual alerts should only be done directly through the ENDEC and should not be done by the EAS-4, most especially when unattended.

## Indicators and Outputs

The EAS-4 has numerous LEDs that can help you see what's happening. These LEDs can be useful when troubleshooting your EAS system. There are four LEDs that correspond to each station. There is an LED for RWT and an LED for RMT. Whenever a test is run, the corresponding LED (RWT or RMT) will light along with the LED for the associated station. Whenever there is a station LED lit but no RWT or RMT LED, then a macro has been triggered for that station. If there is a problem communicating with the ENDEC, Error Alarm LED, D27 will light and stay lit until the next event is triggered.

There are four relays and associated status LEDs on the EAS-4. K1 and K2 Busy relays close when the EAS-4 detects that the corresponding relays on the ENDEC are closed. The EAS-4 busy relay closes any time that the EAS-4 is communicating with the ENDEC. These relays can be used together or separately as either remote indicators for operators in other rooms or to allow your automation to know when the EAS system is busy. The "Event Okay" relay closes momentarily when the EAS-4 has successfully completed all communications with the ENDEC. This can be used to show on your automation logs that the test or macro commands were successfully delivered to the ENDEC. The ENDEC does not communicate back to the EAS-4 that a test or macro has actually run, only that the ENDEC took the sequence of commands without error, so the "Event Okay" relay does not replace your EAS log from the ENDEC showing the actual status of the EAS message.

# EAS-4 Schematic & Component locator Guide



Front Panel Power LED

Front Panel Busy LED - Lights any time the EAS-4 is in use.

Station LEDs - Indicate on which station an event is running.

RWT & RMT LEDs

ERROR ALARM LED - Turns on if communication to ENDEC is incomplete.

Power Input - Power can be applied through either the coaxial connector or the screw terminals, but not both simultaneously.

Macro and Station selector Inputs. Both must be used for running macros.

RWT Inputs

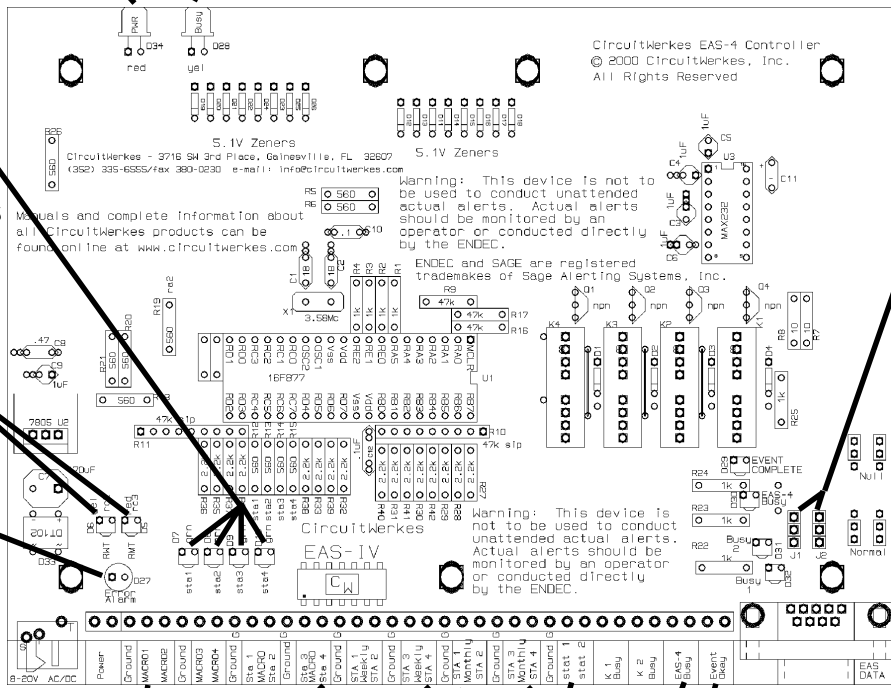
RMT Inputs

ENDEC Busy Inputs.

Busy Relays

Event Okay Relay, closes when EAS-4 has communicated with ENDEC.

Serial cable to ENDEC. You may use either a null modem cable or standard serial cable depending on J1 & J2.



J1 & J2 - Serial Cable type jumpers.