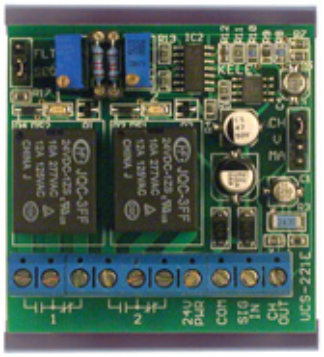
SEQUENCER CONTROL MODULE - TWO STAGE

UCS-221E

DESCRIPTION

The **UCS-221E** is a solid-state device used for multistage control in HVAC systems, sequencing boilers or chillers, or floating/tri-state control of VAV boxes from a single analog signal. The **UCS-221E** can be used to obtain a digital output from a voltage or current producing sensor. Units may be daisy chained to provide additional stages of control, and a mounting track is supplied for easy installation.



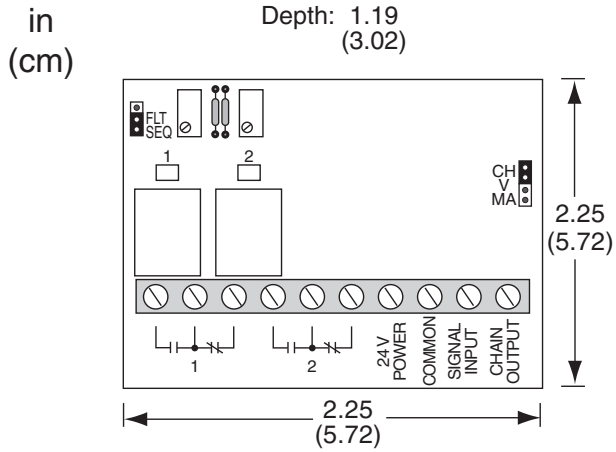
FEATURES

- ***Two stages of relay control***
- ***Voltage or current input***
- ***LED indication of relay status***
- ***Adjustable relay setpoints***
- ***Adjustable relay differentials***
- ***Snap-track mounted***

OPERATION

The **UCS-221E** accepts a 0-20 mA or 0-15V input signal to produce a two-stage relay output. Each relay has a multi-turn potentiometer adjustment to set the pull-in point. Relay 1 can be jumper-selected to pull in on either a rise or fall in signal. Relay 2 always pulls in on a signal rise. Individual relay differential is easily adjusted by using different value plug-in differential resistors. Multiple UCS models can be daisy chained to operate additional stages from one input signal. A maximum of eight slave units can be daisy chained.

DIMENSIONS



SPECIFICATIONS

Supply Voltage	24 VAC ±10%, half-wave; or 24 VDC ±10%
Supply Current	100 mA @ 24 VAC; 50 mA @ 24 VDC maximum
Input	0-20 mA or 0-15 VDC, jumper selectable
Input Impedance	250Ω (mA input); 49.7 kΩ (VDC input)
Wiring Terminations	Screw terminals
Accuracy	±1%
Output	Two SPDT relays, adjustable via setpoint potentiometers
Relay Differential	Factory set at 0.5 mA or 0.375V, adjustable using plug-in resistors
Relay Output Rating	10A @ 120 VAC
Operating Temperature	32° to 158°F (0° to 70°C)
Operating Humidity	5% to 95% RH (non-condensing)
Weight	0.4 lb (.18 kg)
RoHS Statement	Yes
Warranty	1 year

SEQUENCER CONTROL MODULE - TWO STAGE

UCS-221E

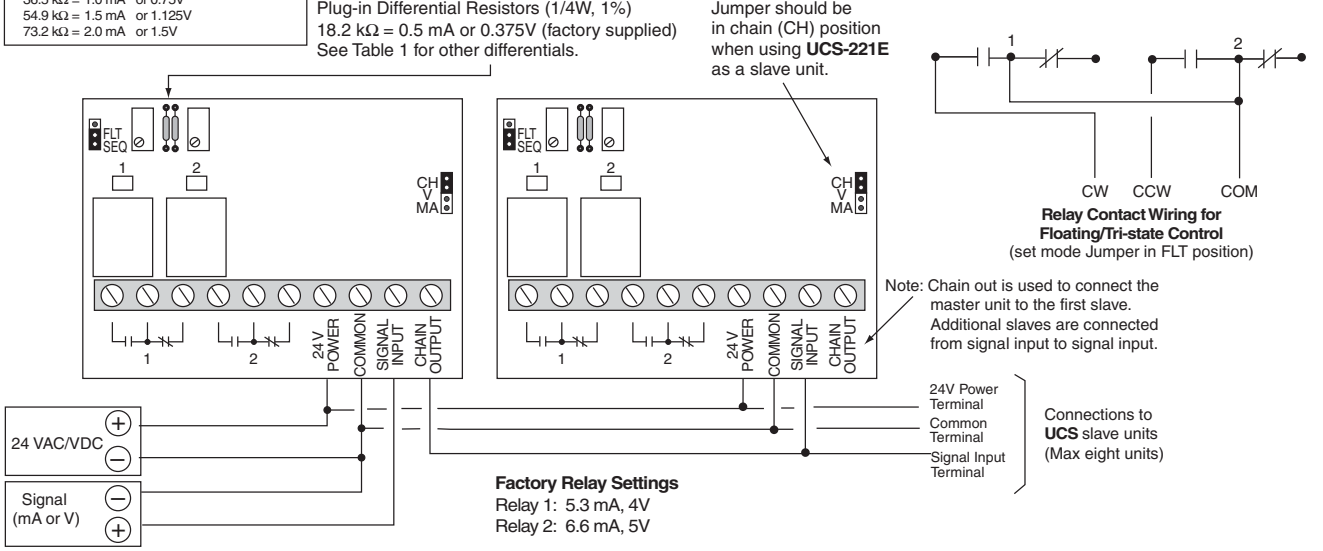
WIRING

Make all connections according to the diagram below or as shown on the job diagrams and in compliance with national and local codes. Make all connections with power removed. Failure to do so could result in circuit board damage. Use shielded #18-gauge cable for connections from the **UCS-221E** to the controller, shield grounded at the controller.

TABLE 1. OTHER DIFFERENTIALS

Other Differential Resistors can be used (customer supplied)

9.1 kΩ =	0.25 mA or 0.1875V
36.5 kΩ =	1.0 mA or 0.75V
54.9 kΩ =	1.5 mA or 1.125V
73.2 kΩ =	2.0 mA or 1.5V



SETUP / CALIBRATION

1. Set jumpers to desired position as follows:
   Mode jumper - In FLT position, Relay 1 energizes on a decrease in signal. In the SEQ position, Relay 1 energizes on an increase in signal. Relay 2 always energizes on an increase in signal.
   Input jumpers - Select mA position for a 0-20 mA input, or V position for a 0-15 VDC input. If the **UCS-221E** is used as a slave control, place the bottle-plug jumper in the chain position.
2. Connect a meter in series with the SIGNAL INPUT terminal and the 0-20 mA (+) signal to read a current signal. To read a voltage input, connect across the COMMON (-) and SIGNAL INPUT (+) terminals.
3. Adjust the input signal to the desired pull-in current or voltage for Relay 1.
4. If Relay 1 LED is on, turn setpoint adjustment potentiometer clockwise (counterclockwise if Relay 1 has mode jumper in FLT position) until it de-energizes; otherwise, proceed to step 5.
5. Adjust Relay 1 pull-in point by turning the setpoint adjustment potentiometer counterclockwise (clockwise if Relay 1 has mode jumper in FLT position) until the relay energizes. (The potentiometers are 25-turn potentiometers.)
6. Repeat steps 3, 4, and 5 for Relay 2 using setpoint adjustment potentiometer.
7. When using a 0-20 mA input, the CHAIN OUTPUT produces a 0 to 12 VDC signal, which is proportional to the input signal. Connections should be made between CHAIN OUTPUT and COMMON. If a voltage input is used, the CHAIN OUTPUT is directly proportional to the input.

ORDERING INFORMATION

MODEL	DESCRIPTION
UCS-221E	Sequencer control module, two relay outputs, field calibrated
UCS-221E-C	Sequencer control module, two relay outputs, pre-calibrated (specify settings when ordering)

	RELATED PRODUCTS	PAGE
B-5	5"x4"x3" two-piece aluminum box with two 1/2" conduit knockouts	**217**