A6REL-12 RELAY DRIVER

REVISION: 3/95

WARRANTY AND ASSISTANCE

The **A6REL-12 RELAY DRIVER** is warranted by CAMPBELL SCIENTIFIC, INC. to be free from defects in materials and workmanship under normal use and service for twelve (12) months from date of shipment unless specified otherwise. Batteries have no warranty. CAMPBELL SCIENTIFIC, INC.'s obligation under this warranty is limited to repairing or replacing (at CAMPBELL SCIENTIFIC, INC.'s option) defective products. The customer shall assume all costs of removing, reinstalling, and shipping defective products to CAMPBELL SCIENTIFIC, INC. CAMPBELL SCIENTIFIC, INC. will return such products by surface carrier prepaid. This warranty shall not apply to any CAMPBELL SCIENTIFIC, INC. products which have been subjected to modification, misuse, neglect, accidents of nature, or shipping damage. This warranty is in lieu of all other warranties, expressed or implied, including warranties of merchantability or fitness for a particular purpose. CAMPBELL SCIENTIFIC, INC. is not liable for special, indirect, incidental, or consequential damages.

Products may not be returned without prior authorization. To obtain a Returned Materials Authorization (RMA), contact CAMPBELL SCIENTIFIC, INC., phone (435) 753-2342. After an applications engineer determines the nature of the problem, an RMA number will be issued. Please write this number clearly on the outside of the shipping container. CAMPBELL SCIENTIFIC's shipping address is:

CAMPBELL SCIENTIFIC, INC.
RMA#_____
815 West 1800 North
Logan, Utah 84321-1784

CAMPBELL SCIENTIFIC, INC. does not accept collect calls.

Non-warranty products returned for repair should be accompanied by a purchase order to cover the repair.

CAMPBELL SCIENTIFIC, INC.

815 W. 1800 N.
Logan, UT 84321-1784
USA
Phone (435) 753-2342
FAX (435) 750-9540
www.campbellsci.com

Campbell Scientific Canada Corp.
11564 -149th Street
Edmonton, Alberta T5M 1W7
CANADA
Phone (780) 454-2505
FAX (780) 454-2655

Campbell Scientific Ltd.
Campbell Park
80 Hathern Road
Shepshed, Loughborough
LE12 9GX, U.K.
Phone +44 (0) 1509 601141
FAX +44 (0) 1509 601091

A6REL-12 RELAY DRIVER

1. FUNCTION

Compatible with Campbell Scientific's CR10, 21X, or CR7 dataloggers, the A6REL-12 (Figure 1) drives six dual single pole double throw internal relays for control of up to 12 external AC or DC devices. Each of the six relays has a three position toggle switch; "on" and "off" for manual override, and "auto" for datalogger control. In the on position, the common and normally open contacts are shorted (Figures 2 and 3). In the auto position, the state of a relay is controlled by a datalogger control port.

2. SPECIFICATIONS

Compatible dataloggers: CR10, 21X, CR7

Operating voltage: 12 VDC nominal (84 to 24)

Current drain at 12 VDC: 6 μa quiescent; 30 mA per active LED (switch ON or AUTO active).

Toggle Switch: ON/OFF manual override; AUTO for datalogger control.

Underwriters Laboratories (UL) and Canadian Underwriters Laboratories (CUL) listed product. UL and CUL listing number is 5Z21.

RELAY SPECIFICATIONS

Arrangement:	Dual single pole double throw Break before make	
Contact material:	Gold-clad silver	
Individual contact rating:	2A at 30 VDC 0.6A at 125 VAC	
Coil voltage:	8.4 to 24 VDC	
Coil resistance:	720 Ohms ±10%	
Expected life (contact closures):		
Mechanical	10^8	
Electrical	2A at 30 VDC	$5x10^5$
	1A at 30 VDC	$2x10^6$
Actuation/ release time:	Approx. 3 ms	
Operating temperature:	-40° to 70°C	

NOTE: The A6REL-12 protects each contact against voltage surges of 180 VDC (130 V rms) or greater with a power content of 8 Watts maximum and maximum duration of 0.1 ms.

3. POWERING THE A6REL-12

The A6REL-12 may be powered by the datalogger power supply or a separate 8.4 to 24 VDC battery.

If the 21X power supply is used to power the A6REL-12, all low level analog measurements (thermocouples, pyranometers, thermopiles, etc.) must be made differentially. This is a result of slight ground potentials created along the 21X analog terminal strip when the 12 volt supply is used to power peripherals. This limitation reduces the number of available analog channels and may require the use of a separate battery to power the A6REL-12.

4. INSTALLATION

- The A6REL-12 must be in an enclosure that provides a pollution degree 2 environment (normally, only nonconductive pollution. However, a temporary conductivity caused by condensation may be expected). All Campbell Scientific enclosures meet this requirement.
- Use copper conductors only.
- Wire Range: 26 - 14 AWG
- Tightening Torque: 4.5 in./lb.
- Use minimum 60/75 degree C wire.
- Input power must be connected to a class 2 supply only. All Campbell Scientific power supplies meet the class 2 supply requirements.

5. EXAMPLE

In the following 21X programming example, temperature is being controlled between 96° and 99°F. A copper-constantan thermocouple is measured to determine the temperature. If the temperature drops below 96 degrees, control port 1 is set high to activate the associated relay and turn the heater on. If the temperature equals or exceeds 99 degrees, control port 1 is set low to turn the heater off.

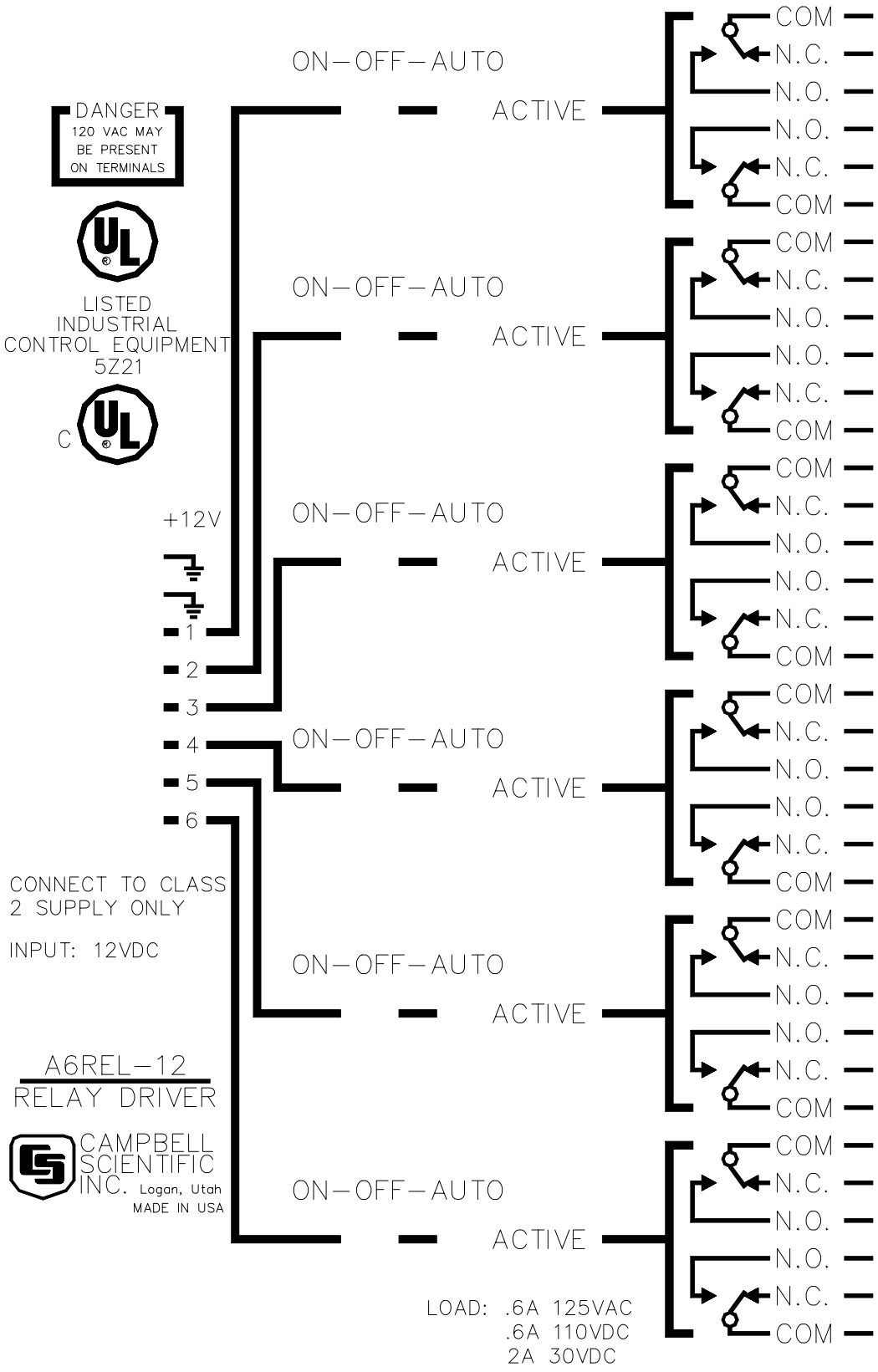

FIGURE 1. A6REL-12 Panel View

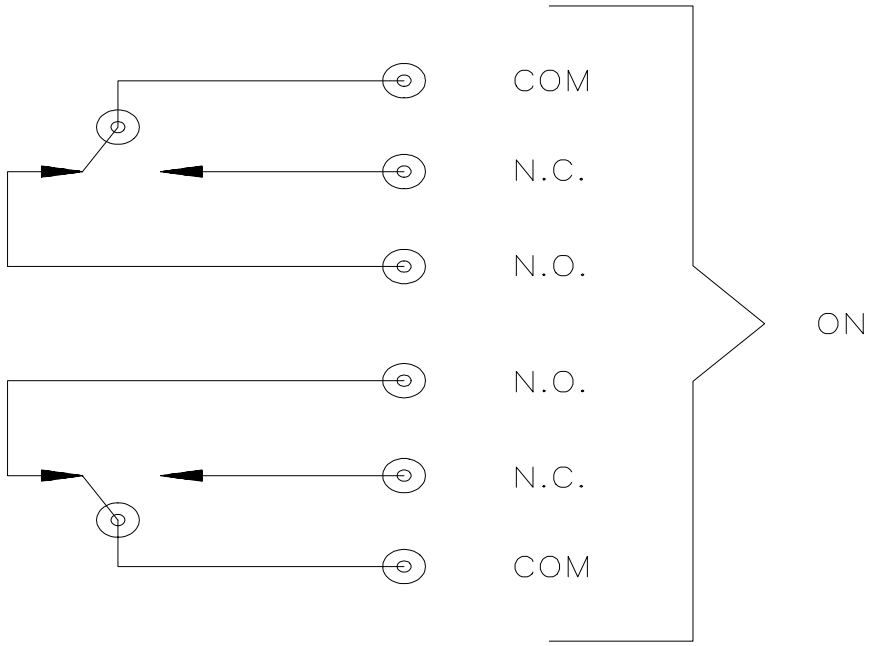

FIGURE 2. Position of Contacts When Coil IS Energized (ON)

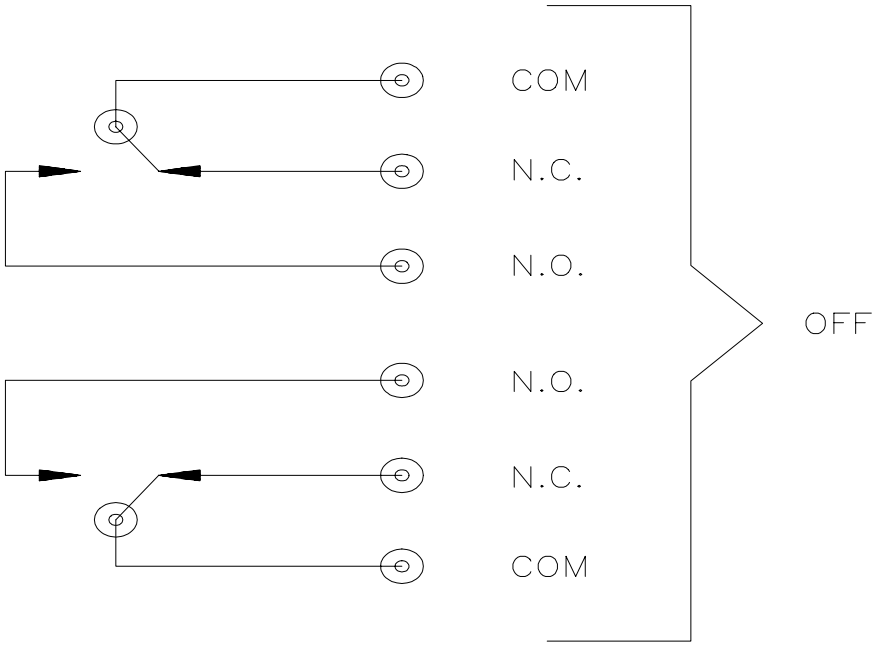

FIGURE 3. Position of Contacts When Coil IS NOT Energized (OFF)

*1		Table 1 Program	
01:	5	Sec. Execution Interval	
01:	P17	Panel Temperature	*Measure the TC*
01:	1	Loc [:REF TEMP]	*reference temperatur*e
02:	P14	Thermocouple Temp (DIFF)	
01:	1	Rep	*Measure*
02:	1	5 mV slow Range	*temperature*
03:	1	IN Chan	
04:	1	Type T (Copper-Constantan)	
05:	1	Ref Temp Loc REF TEMP	
06:	2	Loc [:TEMP]	
07:	1.8	Mult	
08:	32	Offset	
03:	P89	If X<=>F	*If temp is greater*
01:	2	X Loc TEMP	*than or equal to*
02:	3	>=	*99, set Flag 1 low*
03:	99	F	
04:	21	Reset flag 1	
04:	P89	If X<=>F	*If temp is less*
01:	2	X Loc TEMP	*than 96, set*
02:	4	<	*Flag 1 high*
03:	96	F	
04:	11	Set flag 1	
05:	P20	Set Port	*Set Port 1*
01:	11	Set according to flag 1	*according to*
02:	1	Port Number	*Flag 1*

Input Location Labels:

1:REF TEMP 2:TEMP