

OPERATION MANUAL

**CMCP570A TEMPERATURE MONITOR
CMCP570 TEMPERATURE TRANSMITTER**

REV. B 12-09-99

Model Description:

The **CMCP570** is a 4-20mA Temperature Transmitter. It can be used with solid state temperature sensor or dual output vibration/temperature sensor that provides a 10mV/deg K output. The input signal is processed to provide temperature in degrees F or C. The output is a standard 4-20mA current proportional to this temperature, within the specified full scale range of 0 -250 degrees F. The 4-20 mA output is suitable for direct connection to a Programmable Logic Controller (PLC) or Distributed Control System (DCS). A BNC connector on the front of the unit provides buffered access to a 0-5Vdc temperature-proportional signal that can be read with a standard volt-meter.

This CMCP570 can be also ordered as a stand alone Monitor by adding suffix "A" to the basic model number: **CMCP570A**. When ordered in this configuration, the unit is supplied with an alarm module that includes independent set point alarms for ALERT and DANGER levels. Each set point has a corresponding adjustment potentiometer and LED indicator on the front panel, and an output relay that can be jumper configured for either latching or non-latching operation. The alarm LED will turn "ON" and the corresponding relay will actuate whenever temperature levels exceed the corresponding set point for more than a jumper selectable delay time. The alarm module provides a front panel accessible BNC connector and associated selector switch for reading the current temperature value (CV) or alarm set points (A or D) with a standard digital volt-meter. The alarm module also provides a transducer "OK" relay. Monitors and Transmitters can mount on standard DIN rail.

Power:

The CMCP570(A) requires externally supplied DC power. The power supply should have a nominal output of +24Vdc and be capable of supplying a minimum of 55mA for each CMCP570 in the system, or 110 mA for each CMCP570A in the system. A linear-regulated power-supply dedicated to the vibration/temperature monitoring system is recommended. It is also recommended that connections between the power-supply and the monitors be made with twisted-shielded instrument cable. The cable shield should float at the monitor/transmitter, and connect to common at the power-supply/system common end only. The CMCP570(A) also internally regulates the applied dc power to prevent a fault on the output of one channel from affecting other channels. When power is first applied to a monitor or transmitter after connecting the transducer, there will be a delay of up to 30 seconds before the "OK" LED turns "ON".

Transducer:

The CMCP570(A) is factory configured for use with transducers that provide a 10mV/degK output, such as: CMSS793T-3 or CMSS797T-1.

Transducer Cable:

The CMCP570(A) provides power for the temperature transducer via a nominal 4.4 mA constant current source. It is recommended that the monitor / transmitter be mounted as close as practical to the associated transducer. This will help to minimize interference from external electromagnetic noise sources (EMI). A well shielded, properly installed transducer cable is absolutely necessary to obtain reliable operation. Twisted-shielded pair cables designed and pre-fitted with the proper transducer connector, and sold for this specific purpose are highly recommended. The cable shield should be open at the transducer end, and connected to common (xdr "-" terminal) at the monitor/transmitter input only. The cable should be routed as far away from high-energy electrical circuits as possible.

Transducer OK Circuit:

The CMCP570(A) incorporates a transducer "OK" circuit. This feature continuously monitors the transducer output voltage. If this voltage exceeds pre-set limits, the 4-20 mA output current is reduced to less than 2 mA (typically 0 mA) to allow detection of the fault condition at the associated PLC or DCS system. A green "OK" LED on the front of the unit (normally "ON" in an "OK" condition) turns "OFF" to provide a local indication of the fault condition. If a fault is detected that subsequently is repaired or goes away, there will be a delay of up to 30 seconds before the unit returns to the "OK" condition and the "OK" LED turns back "ON". A detected fault will also disable alarms/relays until the fault is removed and an "OK" condition exists.

Full Scale Range:

The CMCP570 is factory calibrated for a range of 0 - 250 degrees F.

The factory calibrated range is listed on the side label as a dash number. If a range other than shown above is indicated, the unit has been modified for a special range.

4-20 mA Output:

The primary output of the monitor/transmitter is the 4-20 mA current output which is proportional to the full range of the unit. IE: If the range is 0 - 250 deg. F , then 4 mA indicates a reading of 0 deg. F, and 20 mA indicates a reading of 250 deg. F. This output is intended to drive a maximum resistive load of 600 Ohms with respect to system common at the PLC/DCS input. A precision, low temperature coefficient, 250 Ohm resistor is the recommended load. This will convert the 4-20 mA current reading into a 1-5 Vdc reading at the PLC/DCS. A short to ground (common) on this output *will not* damage it.

Buffered Output:

The CMCP570(A) provides buffered access to a 0-5Vdc, temperature-proportional signal via a BNC connector on the front of the unit. The buffered output signal is also available on a screw terminal at the top of the unit.

ALARM MODULE:

Alert and Danger Alarm Set-Point Adjustment:

The Alert and Danger alarm set-points can be independently set in the field by turning the front panel selector switch to the associated position (A or D) and adjusting the associated front-panel potentiometer until the correct DC voltage is measured at the BNC connector located directly above the selector switch. Adjusting the set-point requires the use of a digital volt-meter, knowledge of the full scale range of the monitor, and the desired set-point as a percentage of the full scale range. The voltage measured at the BNC will vary between 0 Vdc and 5 Vdc, corresponding to 0 to Full-scale. IE: 2.5 Vdc represents 50% of full scale, 3.75 Vdc represents 75% of full scale. To calculate the required set point voltage, use the equation, $5(.xx)$ where $.xx$ is the desired percentage expressed as a decimal fraction of the full scale range. IE. $5(.60) = 3.00$ Vdc for a set-point of 60% of the full scale range. Turning the potentiometer clockwise increases the set point voltage.

Alert and Danger Alarm Delay Adjustment:

The Alert and Danger alarm delays can be independently set by internal jumper selection to .1, 1, 3, 6, or 10 seconds. The purpose of the delay is to reduce nuisance alarms caused by external electrical noise and/or transient vibration events. Both the Alert and Danger delay are factory set to the 3 second position.. To change the delay, open the unit and move the delay jumpers to the proper position (See: CMCP500 SERIES ALARM MODULE JUMPER LOCATIONS, at the back of this manual).

Latching/Non-Latching Alarms:

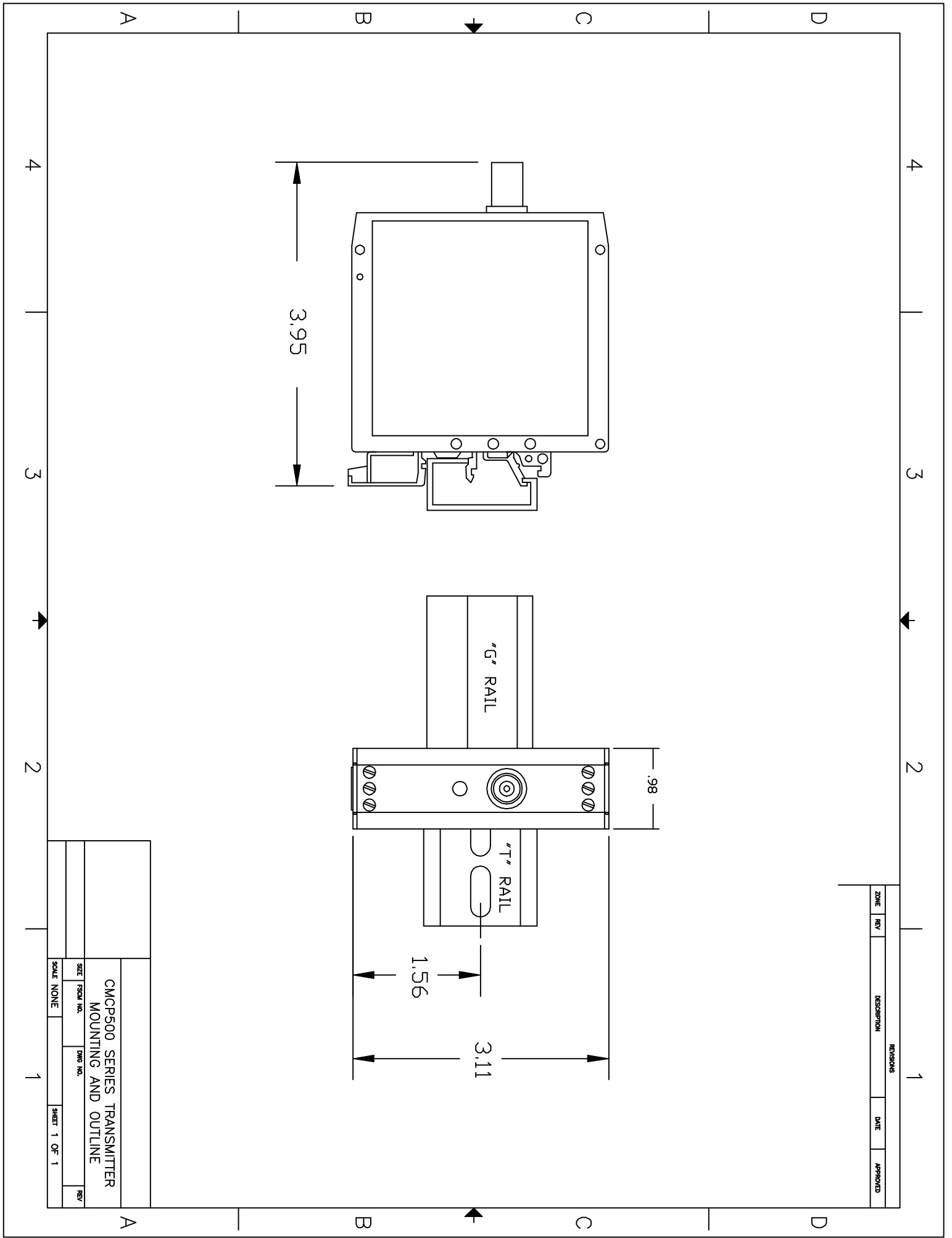
The Alert and Danger alarms are factory set for NON-LATCHING operation. This means that whenever the vibration level drops below the associated set-point for more than about 1 second, the associated relay will de-energize and the alarm LED will turn off. The alarms can also be set for LATCHING operation by installing shunts on jumpers E1 and E2 respectively on the Alarm module circuit board (See: CMCP500 SERIES ALARM MODULE JUMPER LOCATIONS, at the back of this manual). Latched alarms may be reset by closing the RESET (RST) and COMMON (COM) contacts at the top of the unit. This may be done with an external switch, dry contact relay, or by shorting the terminals together by hand. **DO NOT APPLY VOLTAGE TO EITHER THE "RST" or "COM" TERMINALS.** If several monitors are mounted together, the "RST" terminals may be daisy-chained together and switched to "COM" (system common) as a group.

Alarm Relays:

The Alert Danger and OK relays are independent, single-pole-double throw relays. NO, ARM, and NC contacts are available via plugable screw-connector at the bottom of the monitor. Ok relay contacts are available on fixed screw terminals at the bottom front of the alarm module (See drawing: CMCP500 Series Relays And External Connections). Relay contacts are rated 5 Amps, 30 Vdc or 125 Vac, resistive load. This rating includes any inrush current that the load draws. For loads that are not purely resistive the contact switching capability will need to be considered carefully in terms of this inrush current. The entire subject of relay application is too large to address here, so the user is cautioned to use care in the application of the relays. The factory intended purpose of providing relay contacts is to operate relatively low power alarm annunciators, act as a dry or low dc voltage contact closure input to other systems, or act to actuate an appropriately sized slave relay for larger loads such as shutting down a motor. Relays are socketed and can be replaced.

Opening The Case:

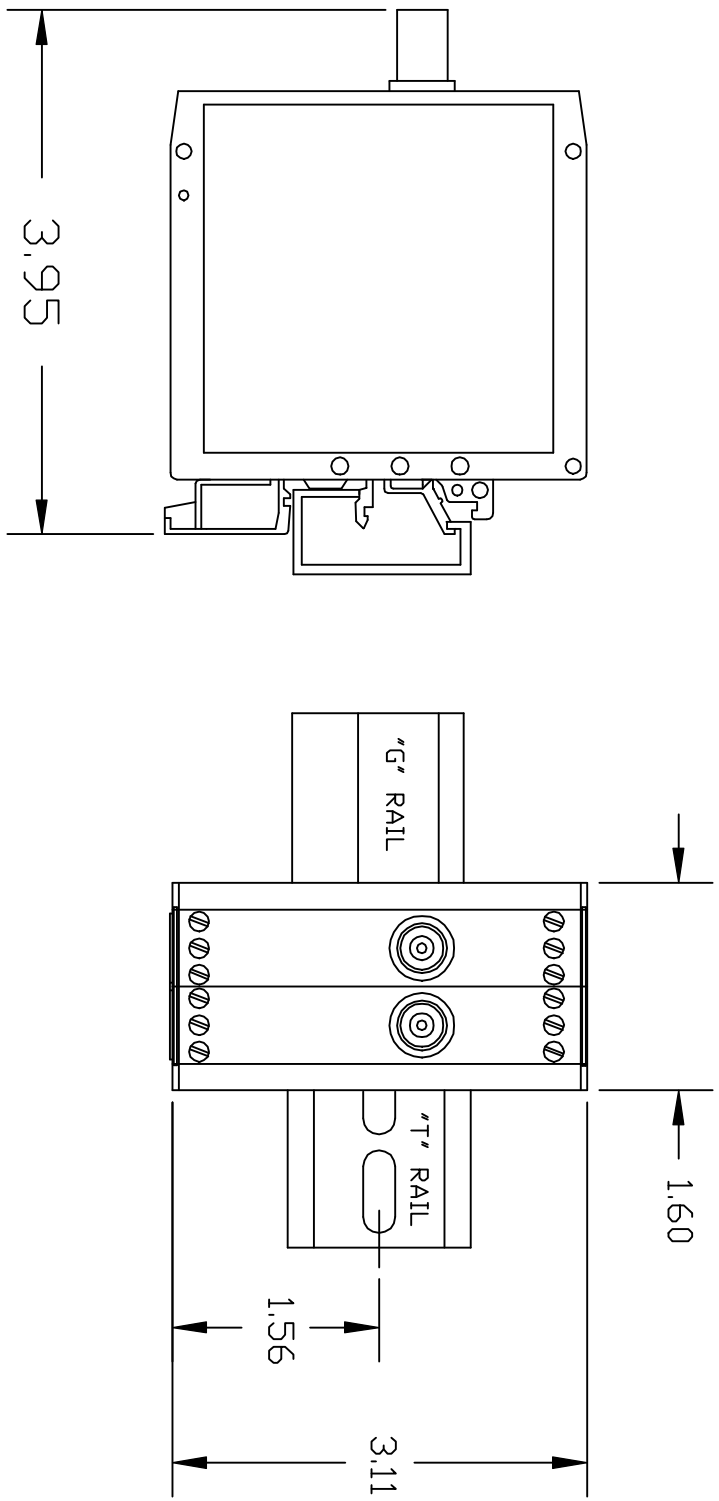
Opening the case is best done with a small flat-blade screwdriver. On transmitters (1" wide units) insert the tip of the screwdriver between the right-side cover (as viewed from the front of the unit) and the DIN rail mounting foot at the back of the unit and gently leverage the blade to begin separating the cover from the rest of the unit. Carefully work your way around to the front of the unit to complete removal of the cover, exposing the circuit board components. On Monitors (1.6" wide units), you must first CAREFULLY separate the two halves of the unit at the center. The sides do not need to be removed. This is done by working the screwdriver around the middle of the unit in the same general manner described above. As the two halves start to become separated, you will see that they are still attached by a short ribbon cable inside. This cable can be carefully removed by pulling it away from the left hand side of the unit. The cable stays with the right hand side permanently. **CAUTION:** When re-installing this cable, make sure it is properly connected to the mating connector, and that the bend in the cable goes towards the front panel side of the unit. **IF THE UNIT IS CLOSED WITH THE BEND TOWARDS THE BACK, THE RIBBON CABLE CAN BE DAMAGED.** Also, make sure the ribbon cables' connector does not catch on the relays when pressing the unit back together.



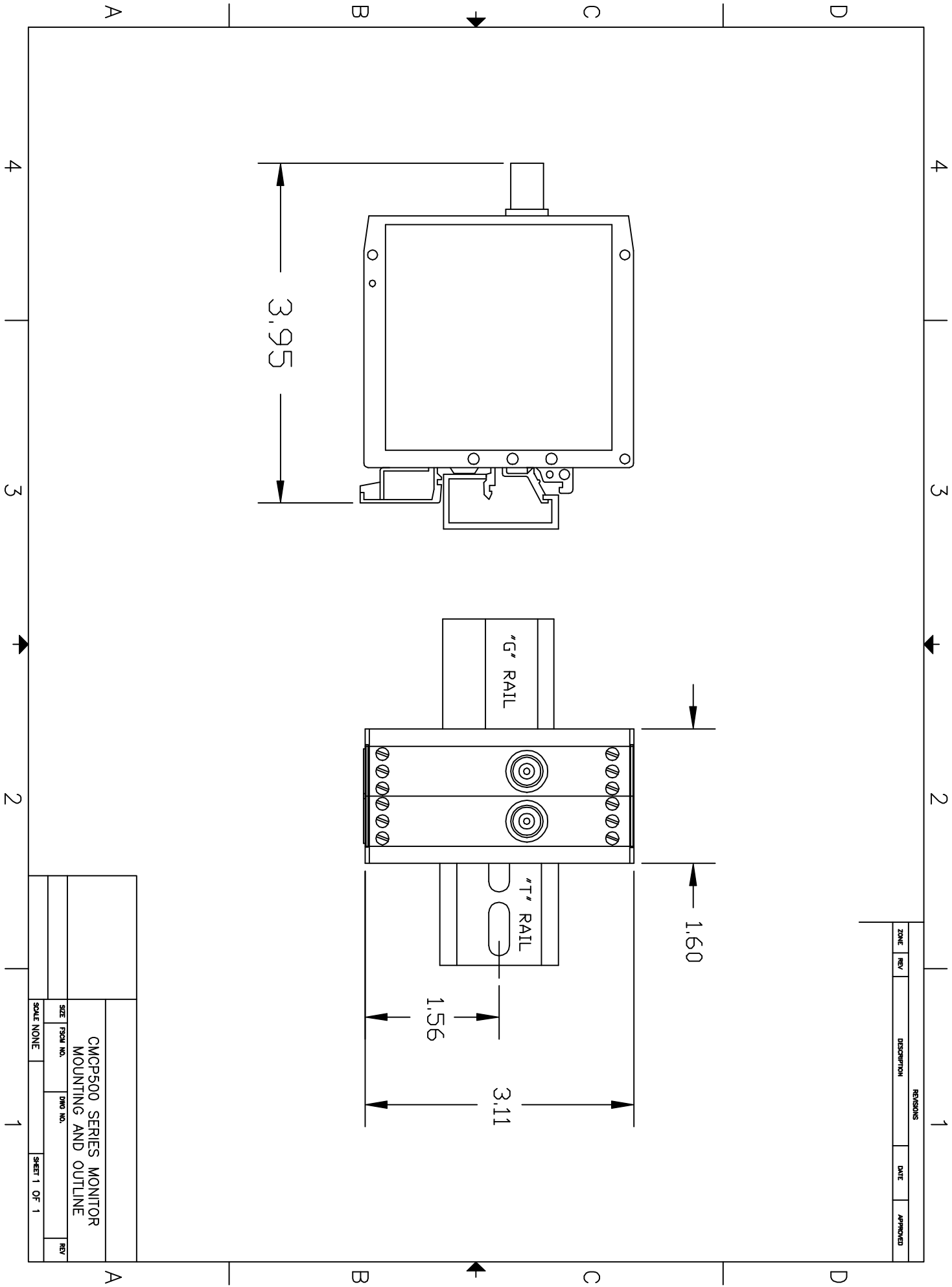
REVISIONS			
ZONE	REV	DESCRIPTION	DATE

CMCP500 SERIES TRANSMITTER		DATE	
MOUNTING AND OUTLINE		APPROVED	
SIZE	FORM NO.	DWG. NO.	REV.
SCALE	NONE	SHEET	1 OF 1

REVISIONS			
ZONE	REV	DESCRIPTION	DATE

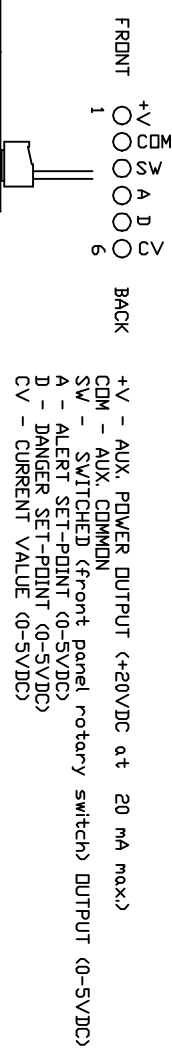


CMCP500 SERIES MONITOR MOUNTING AND OUTLINE			
SIZE	FORM NO.	DWG NO.	REV
SCALE NONE			



REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

TOP PLUGGABLE TERMINAL (for external meter connections)



Alarm reset ('RST'), and trip multiply ('Tx') terminals. External contact closure to the adjacent 'CDM' terminal, or to instrument common activates

'DANGER' LED - Turns on when Danger setpoint is exceeded

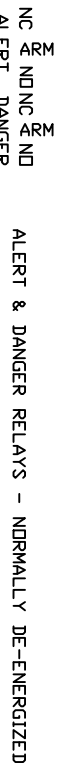
BNC connector - Read switch selected values, using digital volt meter

Rotary switch - selects output to BNC connector above

Potentiometers for adjusting 'ALERT' and 'DANGER' setpoints. (Based on 0 to 5Vdc proportional to zero to full scale range of unit)

'ALERT' LED - Turns on when Danger setpoint is exceeded

'DK RELAY' - Normally energized. Contacts shown in 'DK' condition.

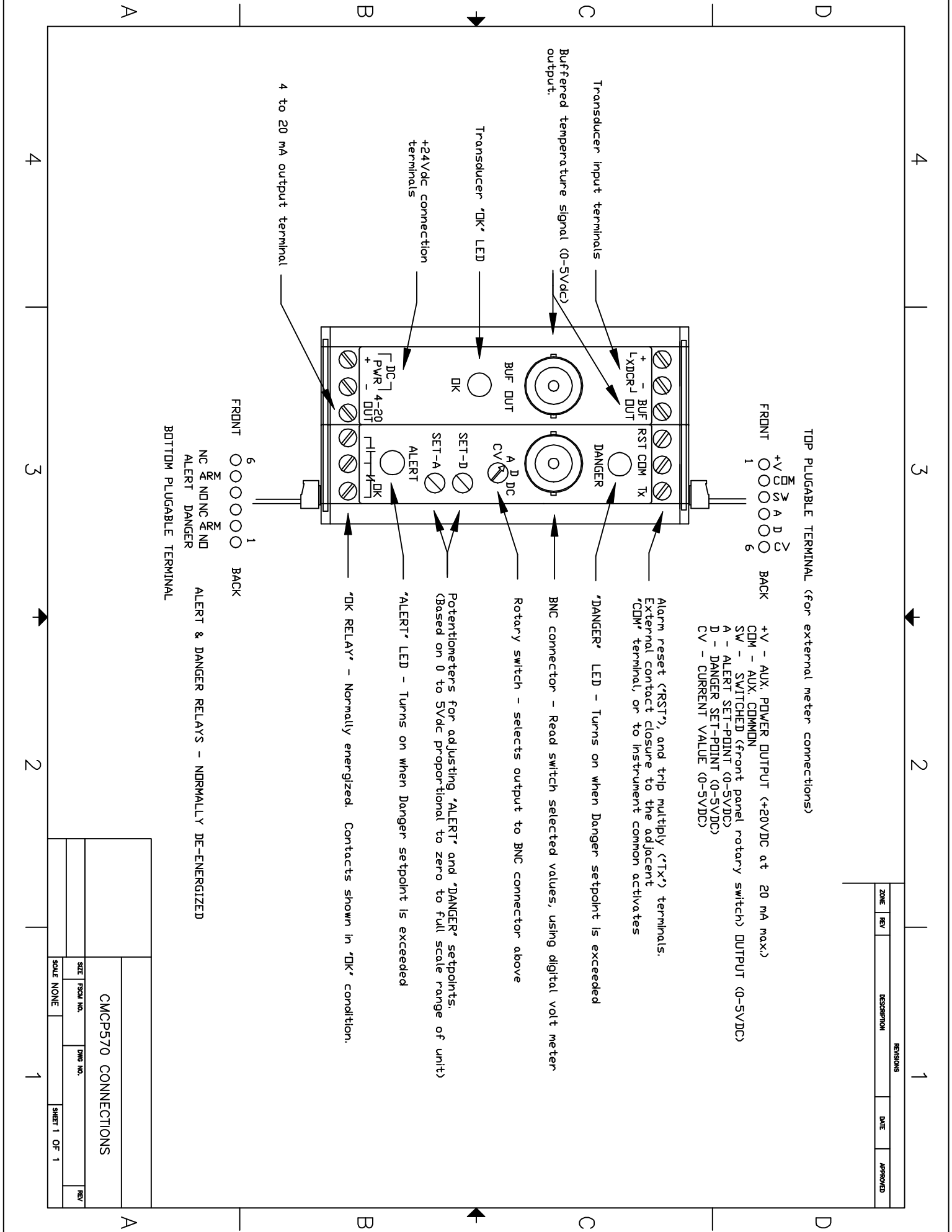


FRONT 6 BACK 1

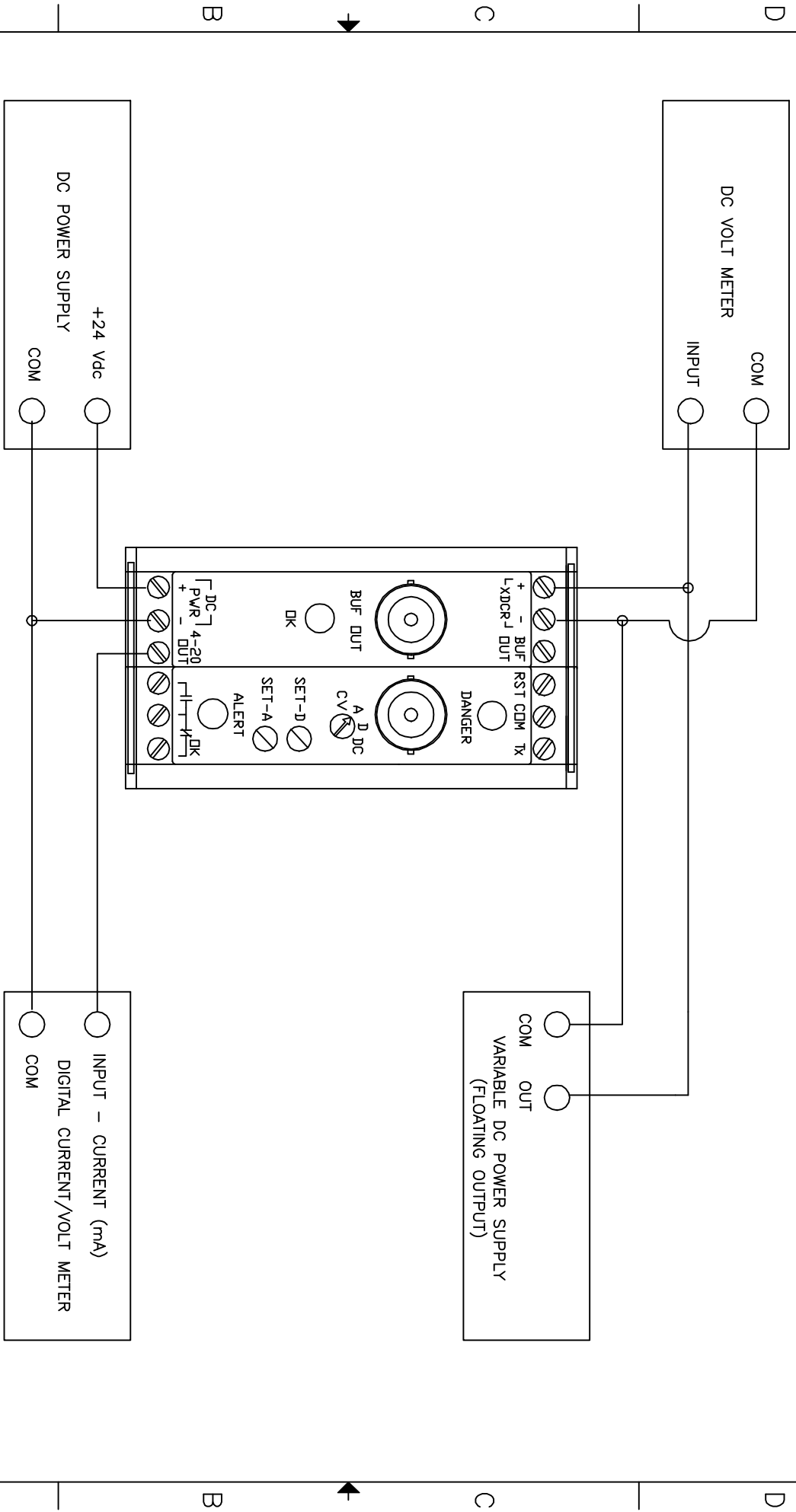
ALERT & DANGER RELAYS - NORMALLY DE-ENERGIZED

CMCP570 CONNECTIONS

SIZE	FORM NO.	DWG. NO.	REV.
SCALE	NONE	SHEET 1 OF 1	



REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



CMCP570 TEST/CALIBRATION			
SIZE	PSHA NO.	DWG NO.	REV
SCALE	NONE		
			SHEET 1 OF 1

