AU-3000

SINGLE PROBE DIGITAL TEMPERATURE ALARM WITH REMOTE ALARM DELAY OPTION

OPERATING INSTRUCTIONS

WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer. For more information, go to www.P65Warnings.Ca.gov

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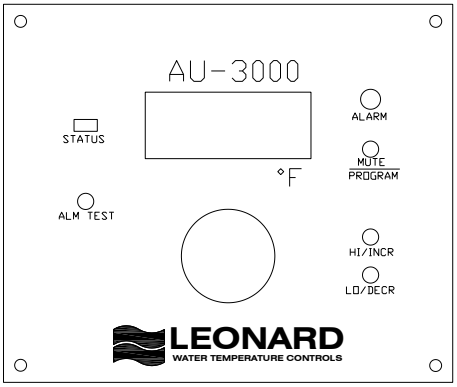
Introduction

The AU-3000 Digital Alarm is a temperature monitoring and alarm device with user-programmable high/low alarm set points and initial alarm delay time. Parameters are stored in non-volatile memory, and are maintained even when power is removed.

The temperature readout for the AU-3000 can be factory-set to ºC or ºF. Its small size makes it easy to install and mount in almost any location.

The AU-3000 is very simple to operate: plug in the unit, place the probe in the location to be monitored, and the display will show the temperature of that location. Probe is a 100 ohm RTD sensor w/4" stainless sheath & 10' lead wire, if longer is needed 40' recommended distance from controller to RTD, 100' is acceptable but there are provisions in the software to make an "OFFSET" adjustment should the distance alter the temperature. If more than 100' is required an optional Remote Alarm Delay Unit, activated by the primary alarm's contacts, allows a user to monitor delayed alarms up to 500' away using standard speaker wire. Pushing three buttons allows the user to program both high and low alarm set points for the temperature range.



Panel

The LCD Display shows the temperature in ºC or ºF, depending on the option.

- If the unit has the battery-backup option, the display shows a BAT message to indicate that there has been a power loss and it is running on the battery.

The STATUS tricolor LED shows the status of the unit.

Green = temperature in range
Red = temperature is out of range
Amber = program mode

The light blinks off briefly each second to show the unit is active.

The ALM TEST push-button interrupts line power, to allow testing of the battery and the alarm relay.

The bright red ALARM LED shows alarm conditions.

- In alarm mode, it flashes every half-second.
- In alarm mute mode, it gives a short blink every second.

The BEEPER shows alarm conditions and user activity.

- In alarm mode, it gives a long beep.
- In alarm mute mode, it gives a short chirp.
- It gives an audible tick to indicate a button has been pressed.

The MUTE/PROGRAM button has three functions.

- In Normal Run mode, if the unit is beeping, pressing the button will mute the beeper for a preset time. Each time the button is pressed the mute time resets.
- Holding the button down for two seconds takes the unit out of Normal Run mode and into Programming mode. At the same time, it mutes the beeper.
- When in Programming mode, pressing the button steps the unit through the various programming parameters.

The HI/INCR button has a different function for each operating mode.

- In Normal Run mode, pressing the button causes the high temperature set point to be displayed.
- In Programming mode, pressing the button increases the displayed parameter value.

The LO/DECR button has a different function for each operating mode.

- In Normal Run mode, pressing the button causes the low temperature set point to be displayed.
- In Programming mode, pressing the button decreases the displayed parameter value.

Unpacking Information

The AU-3000 unit normally ships with the probe connected.

If the unit has the battery back-up option, the battery is disabled before shipping.

NOTE: Remove the tagged screw in the side of the AU-3000 box to enable the battery. Assume the battery is discharged, and allow it to charge for at least 24 hours to ensure full capacity.

Operational Check

1. Plug the AU-3000 into a line power outlet. Most units are equipped with 110-240 volt input power supplies. If the air temperature is within the unit's operating range, the display should show the current probe (air) temperature.

- If the display is blank, check to make sure that power is going to the unit. If the STATUS LED is lit (any color), the AU-3000 has power. If not, verify that the power supply is plugged into the unit and into line power.

2. Hold the sensing part of the probe tightly in your hand. If your body temperature is within the unit's operating range, the displayed temperature should begin to go up. It will take several seconds to level off.

    - If the AU-3000 does not respond as it should, call Leonard Valve for assistance.

Basic Operation

The AU-3000 has two modes: operating and programming.

In operating mode, the display shows the temperature that the probe is reading. The display does not "round off" the temperature. If it shows a value of 10º, the actual temperature can range from 10.0º to 10.9º. Therefore, a very small system change of 0.1º or less (or a minor electronic disturbance) may cause the displayed temperature to change one digit. It is only when the displayed change holds steady for more than 20 seconds that it can be related to real thermal changes in the probe.

Press the push button labeled "HI/INCR" to cause the display to show the high temperature set point.

Press the push-button labeled "LO/DECR" to cause the display to show the low temperature set point.

Press the MUTE and DECR buttons at the same time to cause the display to show the software version number. It will be different from the temperature display in that it will show two decimal places, such as "1.01".

The AU-3000 compares the probe's temperature reading to the set points for out-of-range states. An out-of-range state is a temperature that is "equal to or beyond the set point". For instance, if the low set point is 0.0, then the temperature reading is out-of-range for 0.0º and below. The STATUS LED glows green when the probe reads an in-range temperature and red when the temperature is out of range.

The AU-3000 will not declare an alarm until the out-of-range state has continued for a specified time (the "alarm delay"). This alarm delay time will prevent transient nuisance alarms.

When an alarm condition occurs, the beeper and LED will both begin. Press the MUTE/PROGRAM button to stop the beeper for a specified time, changing the sound to short 'chirps'. When the temperature goes back within range and there are no out-of-range readings for thirty seconds, the chirping stops and the MUTE/PROGRAM button resets. If another out-of-range condition then occurs, the beeper will again start at full volume.

After the user-programmable "SILENCE" parameter times out, if the AU-3000 is still in a constant alarm condition, the beeper will go back to full volume.

Highest/Lowest Operation

At power up and unit reset, the Highest and Lowest values are set to the current temperature.

To view the **Highest** temperature

- HOLD both the Hi and the Lo buttons together
- (Observe "H L" on display)
- Continue holding Hi and release the Lo button

The Status LED will switch to Amber to indicate that the displayed temperature is not the current temperature, but the saved temperature.

To view the **Lowest** temperature

- HOLD both the Hi and the Lo buttons together
- (Observe "H L" on display)
- Continue holding Lo and release the Hi button

To manually reset the Highest and Lowest to the current temperature

- HOLD both the Hi and the Lo buttons together
- (Observe "H L" on display)
- Press the Mute/Program button
- (Observe all segments on (1888)

Switch Alarm Operation

For units purchased with the SWIN (Switch Input) option, the unit is able to monitor a door or another Open/Closed Switch input. Set the Switch Alarm (SA) parameter in the Setup parameters to activate this alarm.

Switch Alarm:

-1	Alarm on Closed input
0	Do not alarm
1	Alarm on Open input

Set the Switch Alarm Delay(SAD) in the standard parameters to specify the amount of time to delay before alarming.

When the Switch Input is in the alarm condition for longer than the Switch Alarm Delay time, the AU-3000 will alarm and display the door status "OP" or "CL". Once the unit mutes the alarm, the display will return to the current temperature.

To view the status of the switch input

- HOLD both the Hi and the Lo buttons together
- (Observe "H L" on display)
- Press the Mute/Program button
- (Observe all segments on (1888)
- *Continue Holding Hi and Lo* and release Program

Observe "OP" or "CL", the status of the switch input.

Sensor Probe

The probes supplied with the AU-3000 are highly accurate temperature sensors. The sensor may be put in water or other mild aqueous solutions from -100°C to 100°C.
NOTE: Avoid submerging the probe in solvents or harsh chemicals. Use protective thermowells when monitoring such materials.
NOTE: The warranty does NOT cover damage to probes or electronics that is caused by exceeding temperature limitations, or damage to probes caused by using them in solvents or other unsuitable environments.
NOTE: If the displayed temperature shows a consistent high (> 100°C) or low (< -100°C) value, most likely, the probe has failed.

Probe Installation

RTD sensors supplied with the AU-3000 should be installed using the supplied fittings, which are 1/2" MNPT x 1/8" compression. After installing the fitting into a tee, insert the RTD into the fitting and adjust the depth of the probe so as the tip of the probe is approximately at the center of the piping. Tighten the nut finger tight, then with a small wrench turn the nut 1/4 to 1/2 turn past finger tight. Warning – do not overtighten.

Probe Extension

If the 10 foot standard probe wiring length is not long enough you may add wiring up to 100 foot maximum. You must use 3 wire 22 gauge stranded RTD wire, up to 100' maximum. If longer than 100 foot is required we recommend using the RDU option. Temperature offset maybe required after adding wiring, see below.

Probe Calibration: Recommendations

Leonard Valve Company recommends that the calibration of the alarms be verified annually.

All of our temperature alarms are factory calibrated to NIST standards and tested by factory trained personnel.

The first two digits of the serial number indicate the year and the second two digits indicate the month that our alarms were built and calibrated.

Probe Calibration: Software Offset

Place the AU-3000 probe and a reference probe together, in a stable well agitated bath. It is imperative that the reference probe and the AU-3000 probe be positioned together and given time to equilibrate. If you find that the AU-3000 temperature differs from your reference temperature, you may adjust a software parameter to offset the AU-3000 temperature.

To access the OFFSET parameter

- Press and Hold LO/DECR, then Press and Hold HI/INCR, then Press and Hold MUTE/PROGRAM
- Release LO/DECR
- Wait for the unit to give a short CHIRP and the display to change to "CHP", after a few seconds a number will appear
- Release the buttons
- Press the MUTE/PROGRAM button once
- Display will read “OFF” for a few seconds, then a number will appear
- Set the offset, if you need the unit to display 2 degrees lower than it does Press LO/DECR twice till display reads “-2”, if you need the unit to display 3 degrees above than it does Press HI/INCR three times till display reads “3”.
- Once complete press MUTE/PROGRAM three times, then the temperature is displayed
- Offset is complete

Probe Calibration: Full Hardware Calibration

The temperature sensor used in the AU-3000 has excellent long-term stability and should not need recalibration in normal usage. However, if the probe is subjected to temperature extremes outside of the normal operating range for the unit, or if the probe is damaged and needs to be replaced, it must be recalibrated.

Equipment Needed:

- Small flat screwdriver or potentiometer adjuster
- Water bath, in an insulated container and at a KNOWN temperature different from 0 ºC. Use a thermometer you can trust.
- Ice water bath, with plenty of clean solid ice in it. The following bath will provide a temperature of 0ºC to within ±.04º:
- Use an insulated Thermos container to contain the bath.
- Get an ordinary aquarium bubbler. It should have a “stone” in it to make little bubbles rather than big ones. Put the end of the bubbler hose in the bottom of the Thermos container.
- Place cold water in the container, with plenty of ice. The water and ice should be distilled water, since water with impurities in it freezes at a temperature below 0ºC.
- Start running the bubbler.
- Use this water bath rather than just putting the sensor on plain ice because the plain ice will probably be colder than 0ºC (freezers generally operate at –20ºC). The air from the bubbler keeps the water moving over the ice. The ice chills the water, but since the water is kept moving by the bubbler it doesn’t freeze. The cold of the ice keeps it right at the freezing point, which for distilled water is 0°C.

- **Set up the unit for calibration:**

- Disconnect the unit from its power source.
- Unscrew the four corner screws on the front panel. Carefully remove front panel from box. Turn it over and lay it down to the right of the case. The circuit board of unit is exposed to view.
- Plug the unit into a 110-120 volt power supply.

- **Adjust the Zero Point:**

- Stir the ice water bath and place the temperature probe in it. Let the probe sit in the bath for about 5 minutes to allow it to stabilize at temperature.
- Locate the adjustment potentiometers (pot) on the left edge of the board. One of the adjustment potentiometers will be marked with a "0". This is the ZERO adjust. Another will be marked with an "S". This is the SPAN adjust.
- Turn the "0" adjustment pot with a small screwdriver until the display reads 0 (or 0.0 for H option models). Try to "center" 0 by turning a little past until a 1 or –1 appears, estimating the distance moved, then returning the pot to a point where 0 just appears on the display.

- **Adjust the Span:**

- Using a rubber band or masking tape, join the sensor probe and the thermometer so that their sensing tips are as close together as possible.
- Stir the probe/thermometer in the water bath. Allow time for the probe and the reference thermometer to stabilize.
- Turn the "S" adjustment pot until the reference thermometer and the display agree. Use the same "centering" technique outlined under the zero adjust instructions. NOTE: If this higher temperature is changing rapidly, it will be difficult to make an accurate adjustment. One technique to slow the rate of change is to use an insulated container (Dewar flask or Thermos bottle), and keep the probe/thermometer near the bottom while stirring gently.

- **Repeat 2 & 3**
  The SPAN and ZERO adjustments are interactive, therefore recheck the ZERO setting. Readjust if needed and then recheck the SPAN adjustment.

NOTE: Factory recalibration of units that have been incorrectly adjusted is not covered by warranty

Optional Features

The AU-3000 displays temperature in degrees Fahrenheit "F".

Relay Option (R)

The relay option consists of a single-pole double-throw (SPDT) relay that changes state (switches) with the loss of line power or with the presence of an alarm condition.

NOTE: The relay is rated for pilot duty operation only. Do NOT use it for control switching. The relay contacts and connections are rated at 30v/1A.

In normal applications, the relay signals remote or central monitoring systems that an alarm condition has occurred at the equipment being monitored.

If the AU-3000 unit has the relay option, the relay will "pull-in" when line power is present. If an alarm condition lasts for a designated time (the "relay delay"), the relay will "drop out", causing the relay contacts to switch. If the alarm condition does not last long enough for the relay delay to time out, the relay will not go into its alarm position. The relay will also "drop out" if power to the alarm is lost, acting as a power loss detector. When the main power to the alarm is lost, the bicolor LED on the upper left of the panel will go dark.

NOTE: Mute button, beeper or LED activities do not affect relay status.

Battery Back-Up (B)

AU-3000 units that have the battery back-up option ship with the battery in place and connected, but disabled. Remove the screw located on the outside of the left side of the module to activate the battery option.

When line power is present, all of the normal features of the Model 140 are operating. When line power is lost, the battery provides power to continue to display the temperature of the area being monitored.

Testing the battery:

The battery recharges when the unit is plugged into line power. To test the battery, push the ALM TEST button on the front panel. The following should happen:

- The display will show a small BAT designation.
- The Alarm LED will light red.
- The beeper alarm will sound full on.
- On units with the relay option, the relay will switch.

If the button is held longer than 6 seconds, the unit will reset, the activity LED will stop blinking, and the unit will not restart until 5 seconds after the button is released.

Current Output Option (I) if equipped

The I option sends out a milliamp signal that is proportional to the temperature being monitored. The I option is calibrated so that the units sends out 4 ma at a user defined low temperature, and 20 ma at a user defined upper temperature.

Voltage Output Option (V) if equipped

The V option sends out a millivolt signal that is proportional to the temperature being monitored. The standard output is 10 mv per degree C, with 0 mv at 0 ºC. For example, if the monitored temperature is +37 ºC, the voltage output is +370 mv (0.370 v). If the monitored temperature is -20 ºC, the voltage present at the V option connector is -200 mv (-0.200v).

NOTE: This voltage output signal is intended for recorders and data loggers only. Do not try to use this voltage to operate other devices directly.

The input impedance of the apparatus using the voltage signal should not be less than 100K ohms.

Programming

To program the AU-3000

1. Hold the Program button for two seconds to bring the unit into Programming mode.
2. The display will show the first parameter that can be programmed (high temperature limit). The name of the parameter will flash, then the current value of that parameter.
3. To change the value of a parameter, press the INCR or DECR buttons. Pressing either button will change the parameter value by one count.
4. Holding either button for half a second will change the parameter value by 10 counts. It will continue to step by ten on further button pushes, as long as the pushes occur within a short period.
5. Releasing the INCR or DECR buttons for a half second will cause the step to revert back to one.
6. Once the unit is in Programming mode, each time the Mute button is pressed, the unit steps to the next parameter. As the unit steps to the next parameter, the value of the previous parameter is saved. Once the final parameter is reached, pressing the Mute button returns the unit to Normal Run mode, saving the final parameter.

Parameter List

Standard Parameters:

Hi, Lo, Ad, rd, SAD, SIL

Setup* Parameters:

CHP, OFF, dEF, SA

Hi (High Limit)

This is the high temperature limit. The current temperature is considered out-of-range if the probe reads a temperature equal to or above the high temperature limit.

Lo (Low Limit)

This is the low temperature limit. The current temperature is considered out-of-range if the probe reads a temperature equal to or below the low temperature limit.

Ad (Alarm Delay)

The AU-3000 will not declare an alarm until the out-of-range state has continued for a specified time (the “alarm delay”). This alarm delay time will prevent transient nuisance alarms. The alarm delay time can be set for 0 to 30 minutes.

SAd (Switch Alarm Delay)

The AU-3000 will not declare an alarm until the switch has been in its alarm position for a specified time (the "switch alarm delay"). The switch alarm delay time can be set for 0 to 30 minutes.

rd (Relay Delay)

This parameter is used in conjunction with the relay option. If there is an alarm condition, the relay contacts will switch. The relay delay parameter allows the user to set the amount of time delay from when the alarm condition begins to when the relay contact actually switches. This keeps the relay from switching during short “nuisance alarms”. The operator may set the relay delay time for 0 to 30 minutes.

SIL (Alarm Silence (Mute))

This parameter sets the number of minutes the beeper will “chirp” when the mute button is pressed during an alarm condition. After the Silence Time elapses, if the alarm condition still exists, the beeper will begin to sound at full volume again. This parameter can be set from 5 to 120 minutes.

* To access the Setup parameters

- Press and hold LO/DECR, then add HI/INCR, then add MUTE/PROGRAM,
- release LO/DECR
- Wait for the unit to give a short BLIP and the display to change to "OFF"

Release the buttons.

CHP (Chirp Interval)

This is the frequency of the chirp while the audible alarm is Silenced. This parameter can be set from 0 to 120 seconds. Zero disables the chirp entirely.

OFF (Offset)

This is a software Offset that allows the user to correct the temperature display. See the "Probe Calibration: Software Offset" section.

dEF (Definition)

Defines ºC/ºF and whole/tenth display.

Def Value	AU-3000 Setting
0	tenth ºC
1	whole ºC
2	tenth ºF
3	whole ºF

Not all settings are applicable to all options. (I-out units cannot change between C and F, thermocouples are whole degree only)

SA (Switch Alarm)

The unit is able to monitor a door or another Open/Closed Switch input. Set this parameter to activate this alarm.

Switch Alarm:

-1	Alarm on Closed input
0	Do not alarm
1	Alarm on Open input

See the "Switch Alarm Operation" section

Quick List of Button Functions

While in Run mode:

Press:	To:
HI	Display high temperature alarm point
LO	Display low temperature alarm point
MUTE + LO	Display software version number
HOLD **HI** & *TAP* LO	Display the **Highest** Temperature reached since power up or manual Highest/Lowest Reset
HOLD **LO** & *TAP* HI	Display the **Lowest** Temperature reached since power up or manual Highest/Lowest Reset
HOLD HI + LO & *TAP* MUTE	Display if switch input is open (“OP ”) or closed (“CL”).
MUTE	Mute alarm beeper for programmed "Silence" time.
(MUTE/)PROGRAM for 2 seconds	Bring unit into Programming mode for standard parameters

**TAP* -- Press and Release

While in Programming mode

Press:	To:
HI/INCR	Increase parameter value
LO/DECR	Decrease parameter value
MUTE/PROGRAM	Advance to next parameter

ALARM DELAY MODULE (RDU Option)
INSTALLATION INSTRUCTIONS

I Description:

The Alarm Delay Module is designed to accept dry contact inputs, either Normally Open (N.O.) or Normally Closed (N.C.), and to delay the transmission of the contact change information to another device.

II Application:

The primary application is in alarm systems where it is desirable to insert a fixed time interval between the detection of an alarm condition and the transmission of the alarm information to monitoring systems, telephone dialers, external services, etc.
Such delay is particularly important in areas where short power interruptions are frequent, or where transitory alarm conditions are likely to occur. The user can select a time period of delay that results in the minimum number of "false" (self-correcting) alarm transmissions while still providing the degree of safety required.

III Installation:

1. Remove the plastic case cover by removing the 2 Phillips screws from the back. Apply light pressure on the face plate, the cover and face plate will come off together.
2. Locate the **ALARM INPUT** switch on the circuit board. Move the switch to the condition of the contacts in the alarm sending device **when in the NON-ALARM condition**. The unit is shipped with the switch in the N.O. (Normally Open) position, this will be correct for the majority of installations, however, if your alarm device opens its contacts when it alarms, simply slide the switch to the N.C. position.
3. Locate the row of pins on the short edge of the board labeled "minutes". A shorting clip will be at the 8 minute position. In this position the alarm delay module will require 8 minutes of CONTINUOUS incoming alarm indication before sending the alarm status on to the next system. Move the jumper to the set of pins marked either 0.5, 1, 2, 4, 8, 16, or 32 minutes, as your needs require. The pair of pins marked "T" are for test purposes and should not be used.
4. Install the signal wires from your alarm. Route the wires through the drilled hole at the bottom of the case and to the terminals marked 1 & 2.
5. Install the output wires to your output device, route the wires through the drilled hole at the bottom of the case and to the terminals marked 4 & 5 if it requires contact closure for operation or to terminals 3 & 4 if it requires contact opening for operation.
6. Install a 9 volt **rechargeable battery** in the holder provided if you desire the battery back up function AND you have the 120 Volt adapter. If you do not have the 120 Volt adapter you may use any 9Volt battery, we recommend Alkaline.
7. Check the system for proper operation and reassemble.
8. Using the peel-and-stick Velcro provided, mount the RDU where the LED indicators can be easily seen.

IV Operation

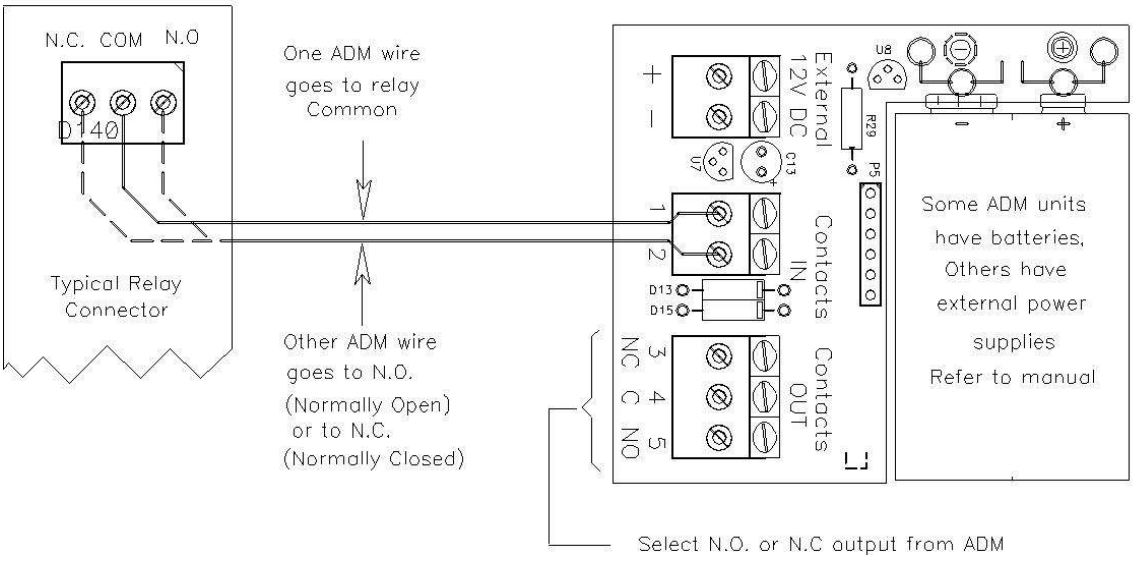
When the unit is monitoring there are no LEDs lit, pressing RESET will light the green LED to indicate OK.

• A flashing yellow light indicates that an alarm condition is being timed.

• A flashing red light means that an alarm condition has persisted for the set time and has been transmitted to the monitoring device, this LED will continue to flash even if the alarm condition has corrected itself.

• Pressing **RESET** will cause the red LED to stop flashing and reset the output contacts to their normal non-alarm state, if the alarm condition persists the yellow LED will again flash to indicate timing and, after timing out, will light the red LED and change the output contacts.

NOTE It is important that the battery condition be checked regularly by pressing **RESET**. A dead battery may prevent proper operation of the Alarm Delay Module.



This is the hookup from a relay (contact) output of an AU-3000, or other device, to the RDU.

RDU wiring can be up to 500 feet maximum, speaker wire or similar can be used

Use the slide switch on the main board to choose N.O. or N.C. input.

On the output side, the RDU offers Normally Open (4, 5) or Normally Closed (3, 4) contacts, and may be connected to a dialer, beeper, strobe light, etc.

SOLENOID CONTROL OPTION
PROVIDED BY LEONARD VALVE

Description:

The Solenoid Control Option (SCO) is designed to accept dry contact inputs, either Normally Open (N.O.) or Normally Closed (N.C.), in order to switch an AC powered solenoid opened or closed. **Solenoid valve and associated power supply are to be provided by others.**

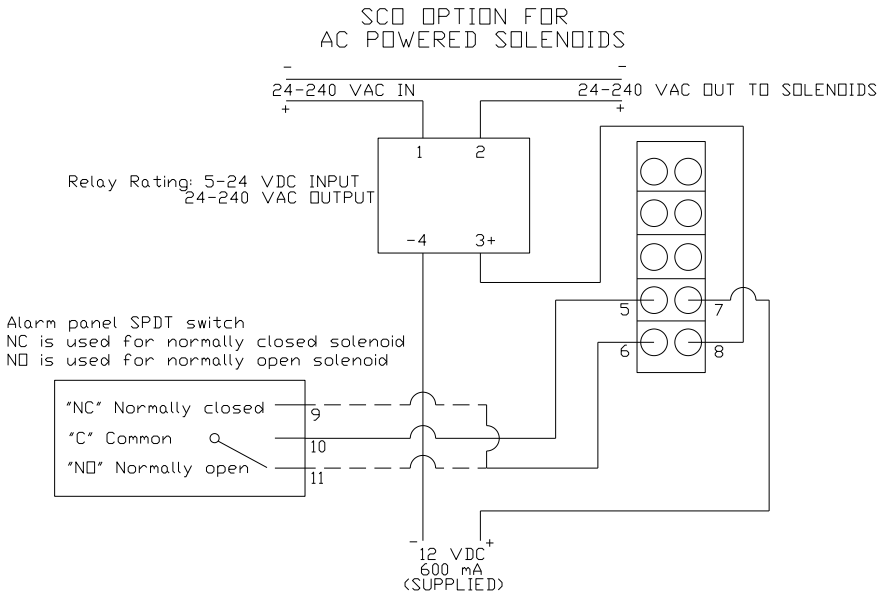
Application:

The primary application is in systems where it is desirable to control an AC powered solenoid in the event that the alarm on the AU-3000 is active. When in non-alarm condition the relay is in a N.O. state and the solenoid will allow water to flow through it freely. Once the alarm is active, the relay on the AU-3000 will switch to N.C. and the solenoid will shut down. **Solenoid valve and associated power supply are to be provided by others.**

Installation:

Included with every SCO is a 12 VDC/600 mA power source with a 10' lead that requires a dedicated 110 VAC outlet to plug into. See wiring diagram below for reference. Do Not Energize SCO, AU-3000, or solenoid valve until wiring is complete. **Solenoid valve and associated power supply are to be provided by others.**

1. Connections from the power source to the SCO (+ side to terminal **7**), terminal to solid state relay (terminals **3+ to 8**), and power source to solid state relay (- side to terminal **4-**) have been made at the factory.
2. Properly ground the SCO by using the screw provided inside of the enclosure and connect to suitable earth ground
3. Connect terminal **5** (12VDC) to the **COMMON 'C'** terminal (**9**) of the AU-3000 relay switch.
4. Connect either terminal **9 or 11** from the AU-3000 relay switch to terminal **6** on the terminal strip. Use terminal **9** with N.C. solenoids; use terminal **11** with N.O. solenoids.
5. Connect the positive side of the solenoid power supply to terminal **1** on the solid state relay.
6. Connect terminal **2** on the sold state relay to the positive side of the solenoid valve. Complete the circuit by connecting the neutral side of solenoid to the neutral side of power supply.



DC POWERED SOLENOID CONTROL HARDWARE SUPPLIED BY OTHERS

Description:

This solution is for systems that utilize a DC powered solenoid valve and want to make use of the SPDT relay switch included with AU-3000. **Solenoid valve and associated power supply are to be provided by others.**

Application:

The primary application is in systems where it is desirable to control a DC powered solenoid in the event that the alarm on the AU-3000 is active. When in non-alarm condition the relay is in a N.O. state and the solenoid will allow water to flow through it freely. Once the alarm is active, the relay on the AU-3000 will switch to N.C. and the solenoid will shut down. **Solenoid valve and associated power supply are to be provided by others.**

Installation:

Solenoid power supply is to be supplied by others and is not available from Leonard Valve. The relay contacts are rated up to 30V/1A. See wiring diagram below for reference. Do not energize AU-3000 or solenoid valve until wiring is complete. **Solenoid valve and associated power supply are to be provided by others**.

1. Connect neutral side of power supply to the **COMMON** terminal (2)
2. Connect either terminal 1 or 3 from AU-3000 relay switch to neutral side of DC solenoid. Use terminal 1 with N.C. solenoids; use terminal 3 with N.O. solenoids.
3. Connect positive side of power supply directly to positive side of DC solenoid.

DC POWERED SOLENOIDS
SUPPLIED BY OTHERS

Alarm panel SPDT switch
NC is used for normally closed solenoid
NO is used for normally open solenoid