LUBRIQUIP
Centralized Lubrication Systems

Iraborn® and Manzel™
Lube Sentinel Monitor Programming Instructions

Bulletin 44700

INTRODUCTION

Operation of the Lube Sentinel is controlled through the use of three push buttons located on the front display panel. They are labeled: 1- (RST/CLR) reset and/or clear, 2-(SLCT) select, 3-(PRGM) program. The window will display information in either the instantaneous rate of usage per day (readings based on the time interval between the last two closures of the cycle switch), average rate of usage per day (readings based on the last 10 closures of the cycle switch), or totalized usage since last totalizer reset. Additional information displayed are the types of units being measured, the status of the cycle switch (O/C for open/closed), and the channel fault status (blank for normal or F for fault). The mode of display is also shown with INT (instantaneous), AVG (average), or TOT (totalized).

The unit may be configured to be either a single or a dual zone device, but only active zones can be displayed. Either zone 1 or zone 2 or both may be displayed. Modes of display (Int, Avg, Tot) cannot be mixed between zones. Units of measure (cnts, pnts, ml, etc) may be mixed between zones.

A plug in option called a Safety-Set allows the selection of display options and programing from outside of the enclosure, precluding the need to open the enclosure to press the buttons. Three sensors are paralleled with the three buttons and are activated by placing a special magnet over the target area and then removing it. To prevent unauthorized tampering with set points and preset values, a Safety-Set sensor may be disabled, thus allowing only the ability to change the display mode and effect a system reset.

OPERATION

With the Sentinel in the monitor mode, it is able to watch the instantaneous 24 hour rate or the average 24 hour rate of the last 10 cycles. It is also possible to monitor the total amount of lube through the divider valve.

Selection of different display modes is accomplished by pressing the SLCT (select) button. Should the Sentinel enter a fault mode, it may be reset by pressing the RST/CLR (reset) button. Notice that when the RST

button is pressed, the display is reset back to zero. If the display is in the totalized mode, pressing RST will reset the totals back to zero. Care should be exercised when resetting a fault that the display is not in the totalized mode as resetting the fault will also reset the total accumulated usage.

INT - The rate of lube is determined by the interval of time between successive divider valve cycles, and extrapolated by the divider valve size. On power up the display will automatically select the instantaneous (INT) mode.

AVG - The rate of lube is determined by the interval of time it takes to record the last 10 divider valve cycles.

TOT - The totalized usage of lube is determined by the cumulative number of divider valve cycles. The valve displacement is multiplied by the cycle count to determine the total amount of lube used. This number is automatically stored in memory during power down and will be restored on power up.

PROGRAMMING

In the programming mode the three buttons have the following functions:

PRGM (Program) - Enters the programming mode from the monitor mode and advances the next programming option. When activated while the "Save" option is displayed, it will make all changes permanent and return the Sentinel back to the monitor mode.

SLCT (Select) - Toggles the programming mode

between options. Once inside one of the program modes, pressing of the SLCT will rotate through the various responses available for the displayed option. If the displayed option shows "Block Total?" or "Alarm Rate", pressing the "SLCT" will change the value displayed until the button is released.

RST/CLR (Reset/Clear) - Returns the Sentinel to the original monitor mode and is also used to reset the monitor total to zero. Note, while in the programming mode showing either "Block Total?" or "Alarm Rate?", pressing the RST/CLR will reset the number displayed back to its lowest allowed value.

To program the Sentinel, enter the programming mode by pressing the PRGM button. The display will show "Configuration? Zone 1". Pressing the SLCT (select) button will change to zone 2. Pressing it again will allow the serial port to be configured, and pressing once more will allow you to save any changes by pressing the PRGM while save is being displayed. Programming zone 1 and 2 is accomplished in the same manner. Press RST/CLR to return to the monitor mode.

Press PRGM to enter the program mode. The display should read "Configuration? Zone 1". Press the PRGM to configure zone 1.

Enable Zone:

The first option will be to enable the zone. Pressing the SLCT will toggle between "Yes" and "No". If the zone is not to be enabled, no further options will be asked for. A disabled zone will appear as dashes across the screen and will not generate any faults.

Press PRGM again to advance to the next option.

Units:

Pressing SLCT will toggle between the displayable units: Ounces, Pints, Gallons, Liters, Milliliters, or counts. Choosing one of these units will be reflected on the display. It is possible to have each zone read out in different units.

Press PRGM to advance to the next programming option.

Block Total:

If the units are displayed in anything but counts, the total valve size value will be asked for. Add up all the numbers on the divider valve sections and enter this value.

Pressing and holding in the SLCT button will advance the count to a maximum of 9999.

Note: That the value entered is the sum of all the valve numbers on the feeder assembly with the proximity switch only. The Sentinel will automatically take this number and convert it to the total volume of lube displaced: i.e. valve total of 68 would be 2 x (valve total/1000) or .136 cubic inches).

Note that changing the valve total will also change the displayed alarm rate. Always reset the alarm rate after altering the valve total.

Note that the valve total is automatically changed to 1000 when the "count" display is used. Valve total should be reset to proper value when displaying other units.

Press PRGM to advance to the next programming option.

Fault Setup:

Pressing SLCT will toggle selections between Interlocked, Independent, and Disabled. Choosing interlocked will tie the two zones into a first alarm indication only. If the alarm is independent, then each zone is allowed to register a fault when its rate limit has been exceeded. This allows the Sentinel to be used to monitor two separate systems. If the alarm is disabled, no fault will be generated from that zone. Note: changing the status of one alarm zone may automatically change the status of the other zone.

Press PRGM to advance to the next programming option.

Alarm Rate:

The alarm rate is programed similar to the valve total. The alarm is based on a minimum usage rate per 24 hours. Should the usage drop below that value, the zone will go into alarm.

Press PRGM to advance to the next programming option.

This should return back to zone configuration mode. To configure zone 2 press SLCT and repeat the above steps to configure the options for zone 2. Pressing RST/CLR (clear) at this time will abort the programming mode and dispense with any changes made to the system, and return back to the monitor mode.

Pressing SLCT again will allow the serial port to be configured. If a serial port connection is not being used simply press SLCT until you advance to Save.

Save:

Pressing the SLCT button will move to the SAVE unction. If all the modifications to the unit are satisfactory and ready to become permanent, press the PRGM button. All changes will be made and the Sentinel will be returned to the monitor mode. If there is any problem with a value entered, press the RST/CLR button and the changes will be ignored, and the Sentinel will again be returned to the monitor mode. Note that once the data has been saved (by pressing the PRGM button) pressing the RST/CLR will not undo the new values.

CIRCUIT BOARD CONNECTIONS

Terminals 1 & 2: Factory connections associated with Zone 1 input.

Terminals 3 & 4: Factory connections associated with Zone 2 input.

Terminal 5: Factory connection which jumpers erminal 3 to 5.

Terminal 6: Not used

Terminals 7 & 10: Used when monitor is to be powered by 24 VDC. Customer must move black wire rom terminal 8 to 7, and move white wire from 9 to 10. If using 24 VDC input power there will now be 2 wires on terminal 7)

Terminals 8 & 9: Factory connections associated with 10 VAC input.

Note: Be sure the enclosure is properly grounded and that the ground wire from the monitor is firmly attached to the enclosure.

Term 11 thru 16, Zone 1 Fault Relay: The zone fault elay is a double pole double throw (DPDT) form-C elay. Relay contacts are wired directly to the terminal strip. Pole "A" uses terminals 11, 12 and 13. Pole "B" uses 14, 15 and 16. There is no power supplied to hese contacts. Contacts are rated at 5 AMPS resistive, 1/8 HP at 120/240 VAC, 24 VDC. Relay energizes during fault.

Term 17 thru 22, Zone 2 Fault Relay: (Same as above) Pole "A" uses terminal 17, 18 and 22. Pole "B" uses terminals 19, 20 and 21.

Term 23 thru 25, Power Failure Relay: The power ail relay is a single pole single throw (SPST) relay ated at 5 AMPS resistive. This relay will be energized as long as power supply voltage is active to the monitor.

WIRING PRACTICES

Wiring for electronic devices should be done with care, and with full awareness of the environment in which the device is installed. Electrical interference from improperly installed equipment may cause erratic behavior of the device.

Be sure that the device is connected to an "EARTH GROUND". This allows the filter circuit to function properly. Ground connections should NOT be connected to conduits or other electrical boxes. The ground wire should be connected to a grounding rod, or a grounded bus bar which is tied to a grounding rod in the earth.

When installing the Sentinel Monitor, #18 gauge machine tool wire may be used. All wiring should be kept as short as possible. There should be no loops to use up extra wire. Wiring should be bundled away from circuits of dissimilar function (i.e. external alarm circuitry should be bundled away from sensor lines). Wires should be tucked away from the module, toward the sides of the enclosure, with sensor, power and alarm wiring being segregated.

It is recommended that the wiring be run in its own conduit to minimize electrical interference. If the installation is in an area of high electrical noise/ interference, or in trays with other control wiring, a shielded cable pair is recommended. Shielded cable should be used on applications where engines or heavy duty motors are in close proximity to the monitor, wiring or sensors.

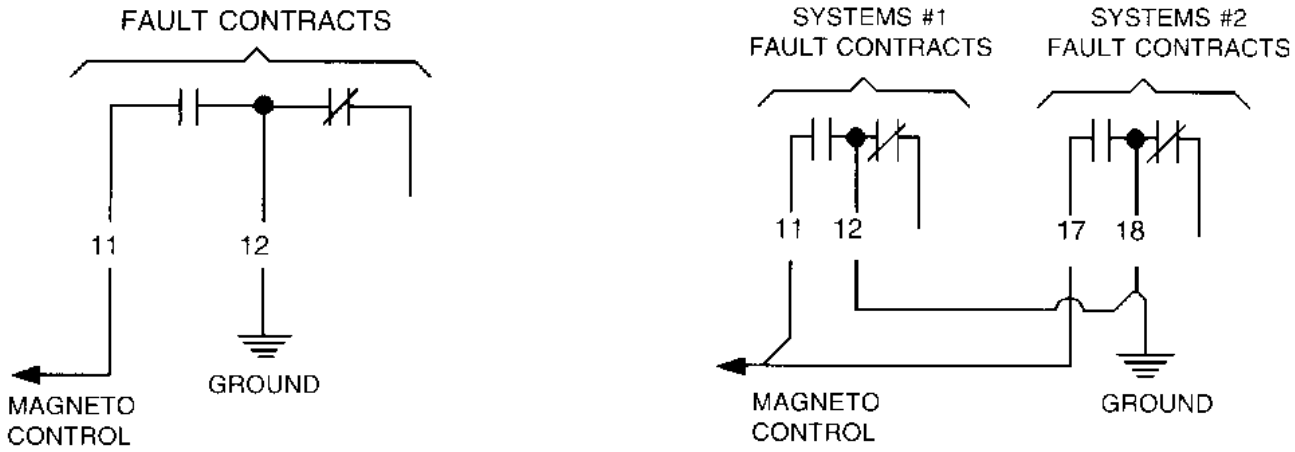
If shielded cable is used, the shield should stay intact as close to the termination screws as possible. (Do not remove shielding from the cable if it is in a shared tray.) The shield should be clipped at the sensor and connected to the designated ground on the monitor. DO NOT connect the shield wire at BOTH ENDS. Grounding the shield wire at both the monitor and the sensor may create a ground loop and become the source of an electrical anomaly.

TYPICAL WIRING DIAGRAMS

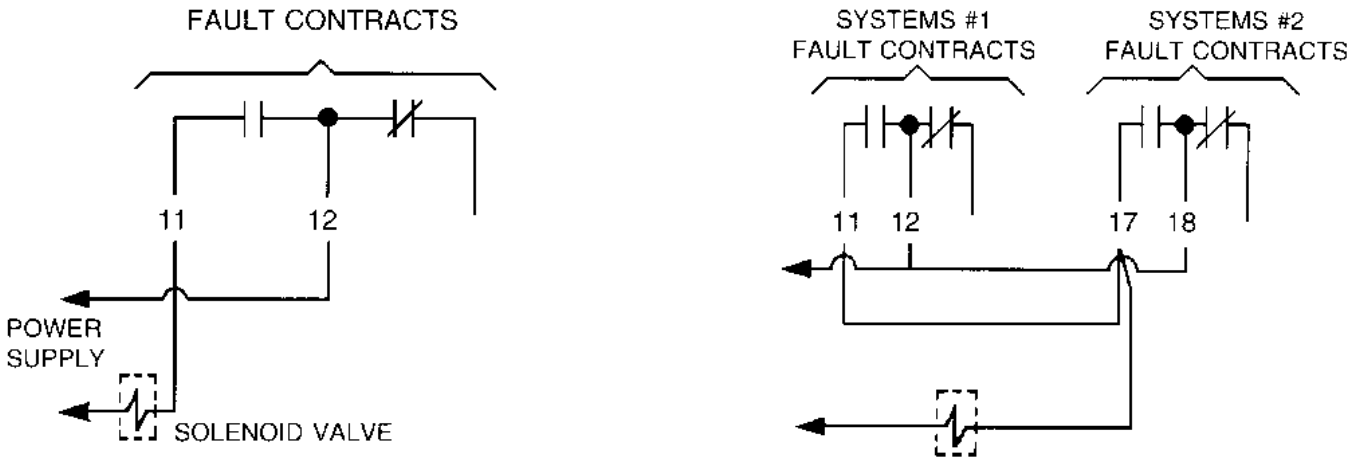
SINGLE MONITOR

DUAL MONITOR

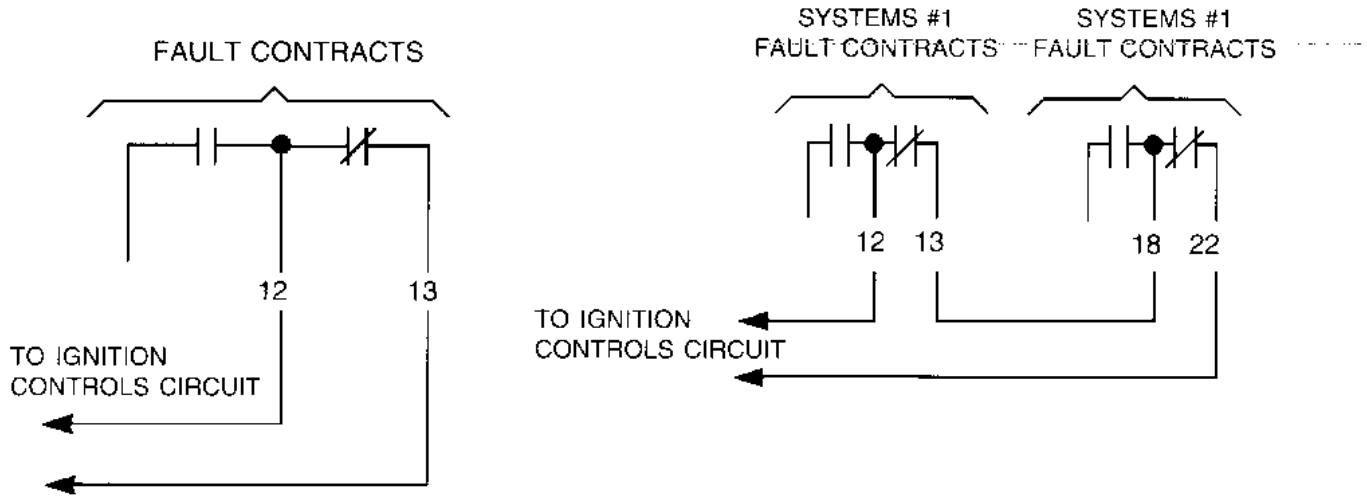
Magneto Grounding



Fuel Gas or Pneumatic Annuciator



Ignition Shutdown



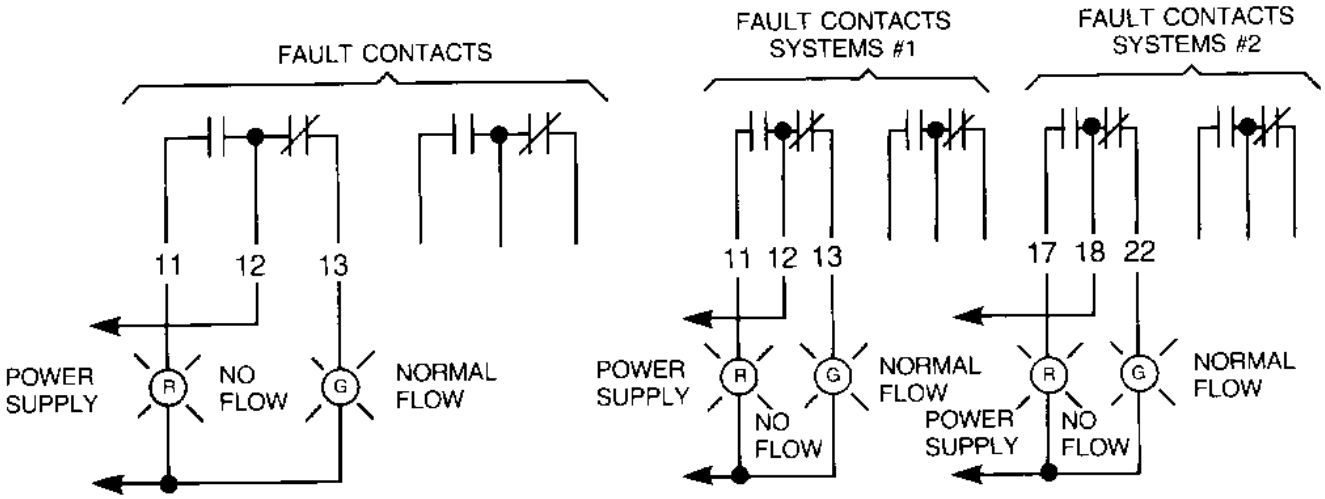
NOTE: Do not connect to high voltage. Connect to controls only.

TYPICAL WIRING DIAGRAMS

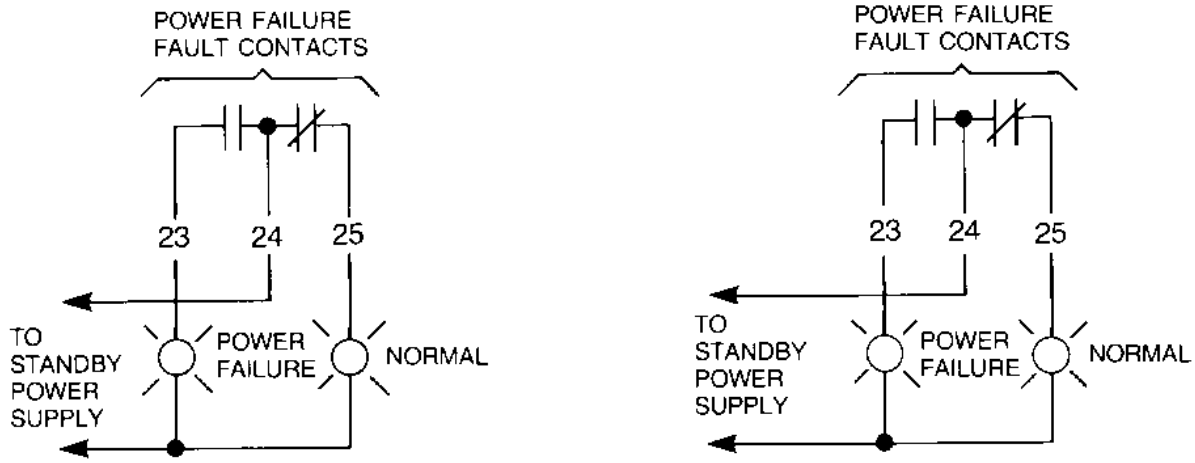
SINGLE MONITOR

DUAL MONITOR

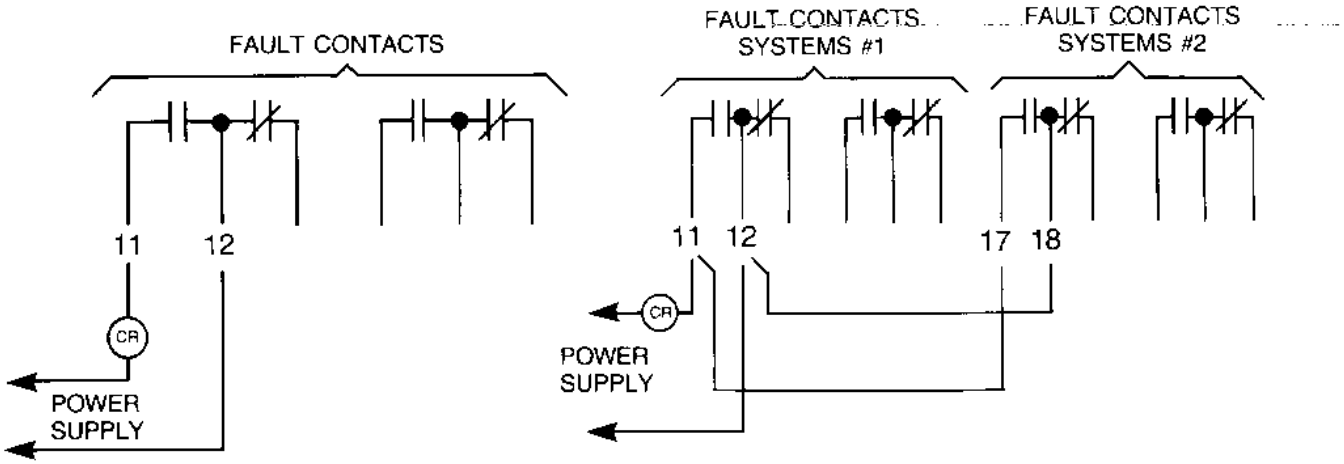
External Flow-No Flow Lights



Power Failure Indication

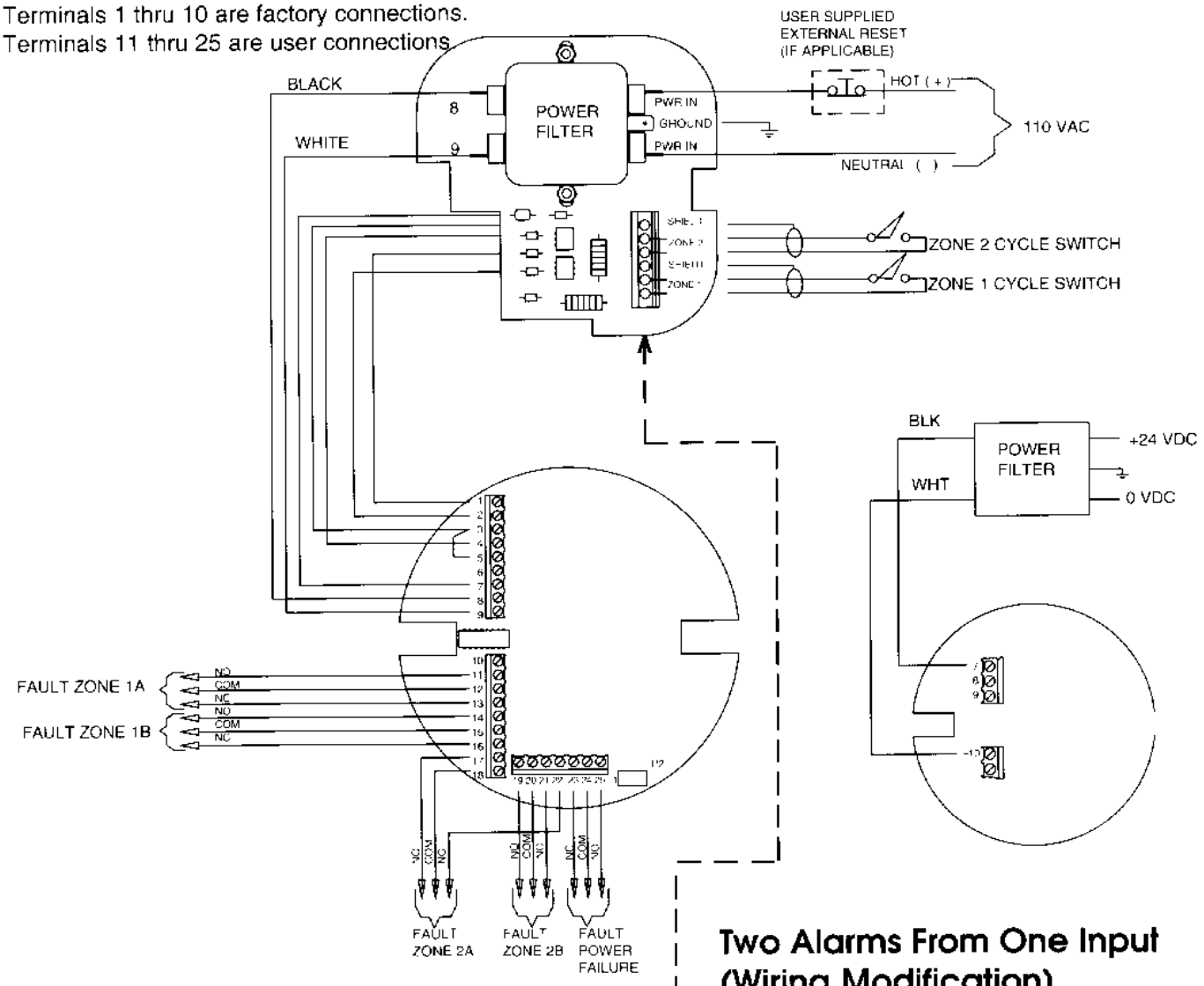


To Energize External Load (Such as a Relay Coil)



CIRCUIT BOARD CONNECTIONS

Terminals 1 thru 10 are factory connections.
Terminals 11 thru 25 are user connections.



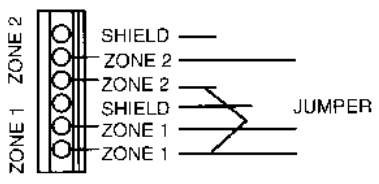
NOTE: Unit is shipped wired for use with 110 VAC power source. For use with 24 VOLT DC source, modify wiring as follows:

Remove the black and white wires from terminals 8 and 9 on the center board. Put the black wire from the power filter to terminal 7 and the white wire from the filter to terminal 10. (Two wires will now be attached to terminal 7.) Connect the +24 volts to the power filter opposite the hot (black) wire and 0 volts opposite the neutral (white) of the wire.

Only 1 voltage source may be connected at a time. The sentinel may not be powered by both 110 VAC and 24 VDC simultaneously.

Two Alarms From One Input (Wiring Modification)

The inputs may be doubled up to give two separate alarm set points using only one sensor input. Wire up one zone as normal. Insert a jumper between the bottom terminals of each zone triplet.



Note that when either zone goes into alarm, its fault relay will change states. It must then be manually reset to clear the fault.

PROGRAMMING DATA SHEET FOR LUBE SENTINEL MONITOR

NOTE: Use "PRGM" button to shift to next option and "SLCT" button to switch to next selection. When you have completed entering program do not forget to save or changes will be deleted. (Use RST/CLR to reset or clear changes)

CONFIGURATION: ZONE 1 _____ ZONE 2 _____

ENABLE ZONE: YES _____ NO _____ YES _____ NO _____

UNITS: (CHECK ONLY ONE FROM EACH ZONE)

COUNTS	_____	_____
OUNCES	_____	_____
PINTS	_____	_____
GALLONS	_____	_____
LITERS	_____	_____
MILLILITERS	_____	_____

BLOCK TOTAL: _____ _____

(TOTAL FACE VALUE ON DIVIDER VALVE)

_____ _____

FAULT SETUP: (CHECK ONLY ONE FROM EACH ZONE)

INDEPENDENT	_____	_____
DISABLE	_____	_____
INTERLOCK	_____	_____

(THIS OPTION WILL TIE THE TWO ZONES INTO A FIRST ALARM ONLY))

ALARM RATE: _____ _____

(EACH ZONE INDICATES UNIT AMOUNTS)

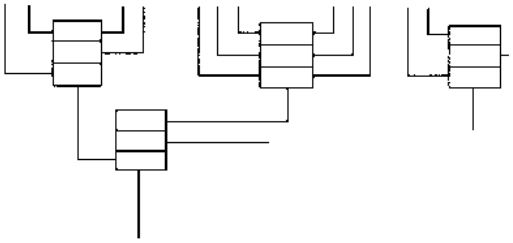
CONFIGURATION: SAVE

TO EXIT PROGRAMMING MODE AND TO SAVE YOUR CHANGES PUSH "PRGM" BUTTON. THE NEXT SCREEN WILL BE SYSTEM OUTPUT. "INSTANTANEOUS", "AVERAGE" OR "TOTAL" FLOW (VIA "SLOT" BUTTON).

ANZEL & SENTINEL LUBRICATION SYSTEMS

.ubemation System

he Lubemation System represents the state-of-the art in precision oil-
etering systems on the market today. Designed especially with reciprocat-
g piston compressors in mind, it provides unsurpassed oil-metering
ccuracy and lubrication system monitoring capability for your industrial
rocess application. Regardless of whether the application is in general
ndustry, petro-chemical processing, or oil & gas pipeline transmission, the
ubriquip/Manzel Lubemation concept (a registered Lubriquip trademark)
epresents the finest in lubrication technology.



ubriquip has over 90 domestic stocking distributor locations and over 125
tocking distributor sites worldwide. This extensive network provides our
ustomers with the finest parts and service support of any lubrication
quipment manufacturer in the entire world. Please fee free to call us at
-800-USA-LUBE for the name of the distributor nearest you.

MH Feeder

he Lubriquip MH Feeder assembly is the heart of the Lubemation System.
ensures uniformity of lubricant delivery and eliminates the need for
onstant monitoring and adjustment of individual lubrication points, with
onsequent manpower savings and greater operating convenience, safety
nd efficiency. It eliminates the human factor...so frequently the cause of
ostly failures and excessive downtime. It reduces piping and simplifies
ump requirements, substantially cuts lubricant costs, and engenders
ncreased production rates.

orce Feed Lubricators

he Manzel Force Feed Lubricator includes precision metering pumps
ssociated with gear-box / reservoirs which contain lubricant (either mineral
il base or synthetic) to be dispensed. Each pumping unit supplies a single
oint of lubrication. Lubricators can be furnished in single or multi-feed
onfigurations for any number of points of lubrication, with a wide choice of
djustable feeds, with single or multi-compartment reservoirs, with various
rive arrangements, for a broad range of lubricants, viscosities and desired
ne pressures. Each Manzel Lubricator Pumping Unit is fitted with an
ntegral sight feed showing the flow of lubricant into each line.

.ube Sentinel Monitor

he "Lube Sentinel" is a field configurable micro-processor based monitor
apable of detecting flow slow-down or stoppage in any Series Progressive
ype system. This lubrication system-dedicated device displays precise
ubrication rates within 1/100 of a milliliter, and detects a flow slowdown of as
ttle as 5% of a total lubricant passing through the system.

esigned for versatility, the "Lube Sentinel" provides both single and dual
onitoring capabilities in one unit. The "Lube Sentinel" is capable of
onitoring two dependent or independent lubrication systems, or can be
asily configured to monitor one lubrication system.

onfiguration is made simple with the easy-to-use, 3-button design. No
omputer knowledge or special training is necessary. Programming is
imply a matter of inputting parameters and selecting options as prompted
y the LCD (Liquid Crystal Display).

perator safety and convenience can be enhanced by choosing the exclu-
ive "Safety Set" option, which allows the operator to access all functions of
he unit without opening an environmental enclosure.