

**CAUTION:** The DPHY-4300U pyrometers are suitable for use in Class I, Group D, Division 1 and 2 hazardous locations when installed in accordance with these instructions.

The thermocouple leads connected to this device must not contact any external voltage source. Damage to the device will result from connection between the thermocouple leads and the ignition system or any AC or DC power source.

**WARNING: DEVIATION FROM THESE INSTALLATION INSTRUCTIONS MAY LEAD TO IMPROPER OPERATION OF THE MONITORED MACHINE WHICH COULD CAUSE PERSONAL INJURY TO OPERATORS OR OTHER NEARBY PERSONNEL.**

### **1.0 DESCRIPTION**

- 1.1 The Altronic DPHY-4300U digital pyrometers with alarm are electronic instruments designed to monitor temperatures using industry standard thermocouple probes. The DPHY-4320U monitors and displays the temperature of 20 points, with four of the points having alarm outputs. The DPHY-4354U monitors and displays the temperature of four points which are protected against a common high setpoint and have individual alarm outputs.
- 1.2 A front panel pushbutton switch allows the user to select the desired thermocouple channel. The channel selected and the monitored temperature are displayed continuously on the LCD display. In addition, all alarm channels are continuously compared against a high limit setpoint which is set by the operator from the front of the instrument; if the setpoint value is exceeded, one of the output switches is activated to ground.
- 1.3 Operating power is from capacitor-discharge ignition systems or from 12-48 VDC.
- 1.4 For proper operation, these installation instructions must be adhered to strictly.

### **2.0 MOUNTING**

- 2.1 Mount the pyrometer inside a control panel or to a suitable flat surface so that the display is at a convenient viewing height. A drilling template is provided. Be sure the enclosure door does not hit the push buttons on the front of the device.

**NOTE:** Avoid mounting with the LCD display facing direct sunlight. The display temperature range is -40°F. to +175°F. (-40°C. to +80°C.).

### **3.0 WIRING (SEE WIRING DIAGRAMS)**

- 3.1 **POWER WIRING** - Connect the power input wires to the appropriate input terminals; either IGN for C.D. ignition power (100-400V.) or +DC for 12-48 VDC. Be sure to observe the correct polarity in making these connections. The GND terminal is connected to panel ground which should be the same as engine ground. **DO NOT** ground this device directly to the ignition system common coil ground.
- 3.2 **HIGH TEMPERATURE SWITCH WIRING** - An over-temperature condition on any alarm channel actuates a normally open, solid state switch in the device accessible through the four HI TEMP. OUTPUTS terminals and GND on the back of the device. Connect the GND terminal to engine ground as shown in the wiring diagrams. The solid state switches have a breakdown voltage rating of 400 volts DC. An output switch will trip if the monitored temperature on any of the four alarm channels exceeds the setpoint value. The switch will also be activated if any of the alarm channel thermocouple inputs are not connected or become open-circuited. Do not leave any of the thermocouple inputs for alarm channels open; place a jumper across any unused thermocouple inputs. If any of the high temperature switches are unused, leave the corresponding HI TEMP. OUTPUTS terminals disconnected. The alarm channels are designated as follows:

DPYH-4320U: A1, A2, A3, A4

DPYH-4354U: 1, 2, 3, 4

- 3.3 THERMOCOUPLES AND THERMOCOUPLE EXTENSION WIRE** - Type J ungrounded or grounded thermocouples may be used; ungrounded thermocouples are recommended where possible. Type J thermocouple extension wire must be run from the device thermocouple terminals to each thermocouple sensing source. Use stranded thermocouple wire having a good moisture-resistant insulation such as PVC; for higher temperatures, teflon or B-fibre insulated thermocouple wire is recommended. To insure an accurate signal is transmitted to the DPHY device, avoid any added junctions, splices and contact with other metals. Take care not to damage the insulation of the thermocouple extension wire when installing and take precautions against later damage from vibration, abrasion or liquids in conduits. In addition, it is essential that the following practices be adhered to:
- A. Never run thermocouple wires in the same conduit as the ignition wiring or other high energy wiring such as AC line power, etc.
  - B. Keep secondary wires to spark plugs and other high voltage wiring at least eight inches (200 mm) away from thermocouples and extension wiring.
  - C. Jumper across the terminals of unused thermocouple inputs.
- 3.4 HAZARDOUS AREA OPERATION** - The DPHY-4300U devices operate with non-incendive circuits and can be operated with suitable precautions in Class I, Group D areas.
- A. Class I, Group D, Division 2 - The DPHY-4300U devices mounted in a suitable panel meet the requirements for Class I, Group D, Division 2 areas.
  - B. Class I, Group D, Division 1 - The DPHY-4300U devices may be operated as intrinsically safe if the following associated devices are used:
    - 1. Altronic barrier 690 107 or 690 108 when powered from a certified Altronic ignition system, or a CSA certified zener barrier rated 30 volts max., 120 ohms min. when powered from a DC voltage source. A suitable barrier is Stahl part no. 9001/01-280-165-10; follow the installation instructions supplied with the barrier.
    - 2. Altronic DA or DD annunciator system with 690 series power supply; connect the HIGH TEMP. OUTPUTS terminals of the DPHY-4300U device to annunciator sensor inputs. In addition, the following requirements must be met (see NFPA standard no. 493):
      - a. Thermocouple wires within the panel enclosure must be kept at least two (2) inches away from other wiring. Run thermocouple extension wires leaving the panel in a conduit separate from all other wiring and keep separate throughout the installation.
      - b. Wiring to the sensors must have a grade of insulation capable of withstanding an AC voltage of 500 volts RMS.
      - c. Ignition and fuel valve wires must be in separate conduits and junction boxes from thermocouple wires.
- 3.5 TESTING THERMOCOUPLE LEADS** - If it becomes necessary to check thermocouple to terminal strip wiring with an ohmmeter or other checker, first unplug the thermocouple connectors from the DPHY device. This will prevent possible damage to the device's sensitive low voltage detection circuitry.

#### **4.0 OPERATION**

- 4.1 SET DISPLAY READOUT SCALE** - Set the indicated switch on the back of the device for either °C or °F readout. The selected scale is indicated on the right side of the display.
- 4.2 TEMPERATURE READOUT** - The device must be powered from a suitable power source wired in accordance with the attached wiring diagrams. Each time the device is powered-up, the temperature value of Channel 1 will be displayed. Each push of the PUSH TO ADVANCE button will increment the readout to the next channel showing the monitored temperature connected to the point indicated on the display. The channel sequence is as follows:
- DPYH-4320U: 1-16, A1-A4
  - DPYH-4354U: 1-4
- Push and hold the button to rapidly advance to a desired channel on the display.

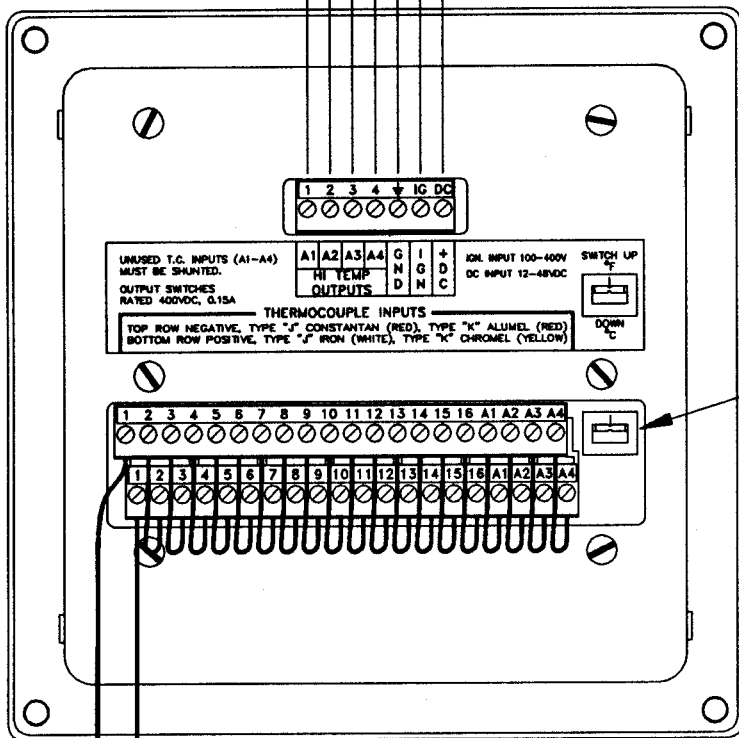
- 4.3 SETPOINT ADJUSTMENT** - The high temperature limit setpoint for the alarm channels is read by depressing the PUSH TO READ SETPOINT TEMP. button; the display will read [A :XXXX]. To adjust the setpoint, use a small screwdriver to turn the adjustment until the display readout matches the desired setpoint temperature. Rotating the adjustment clockwise (CW) increases the setpoint. An output switch will be activated when the display readout for one of the alarm points exceeds the preset number. The setpoint value is retained indefinitely until altered. The standard adjustment range is 0°C. to 815°C., 32°F. to 1500°F.
- 4.4 OPEN THERMOCOUPLE INDICATION** - An unused or an open thermocouple connection will cause a high reading above the setpoint on any of the alarm channels, and will read an "ice point" indication of 0°C. or 32°F. on the channels 1-16 of model DPHY-4320U. A jumpered input will read the ambient temperature of the device on both models.

# GENERAL WIRING DIAGRAM

## DPYH-4320U PYROMETER

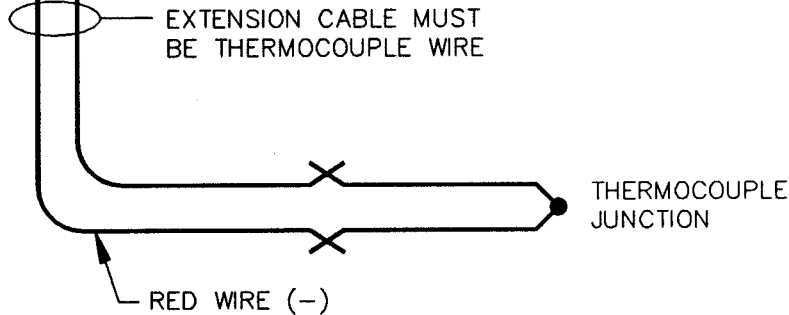
**OUTPUT SWITCHES**  
 - SOLID STATE, NORM. OPEN  
 - RATING: 400VDC, 0.15A  
 - SWITCH ON TO GROUND WHEN SETPOINT TEMP. EXCEEDED

GND -- PANEL GROUND  
 IGN -- C.D. IGNITION SHUTDOWN LEAD  
 ±100-400V  
 +DC -- 12-48VDC



SWITCH UP FOR °F READOUT  
 SWITCH DOWN FOR °C READOUT

NOTE: UNUSED THERMOCOUPLE INPUTS MUST BE SHUNTED WITH JUMPER WIRES.



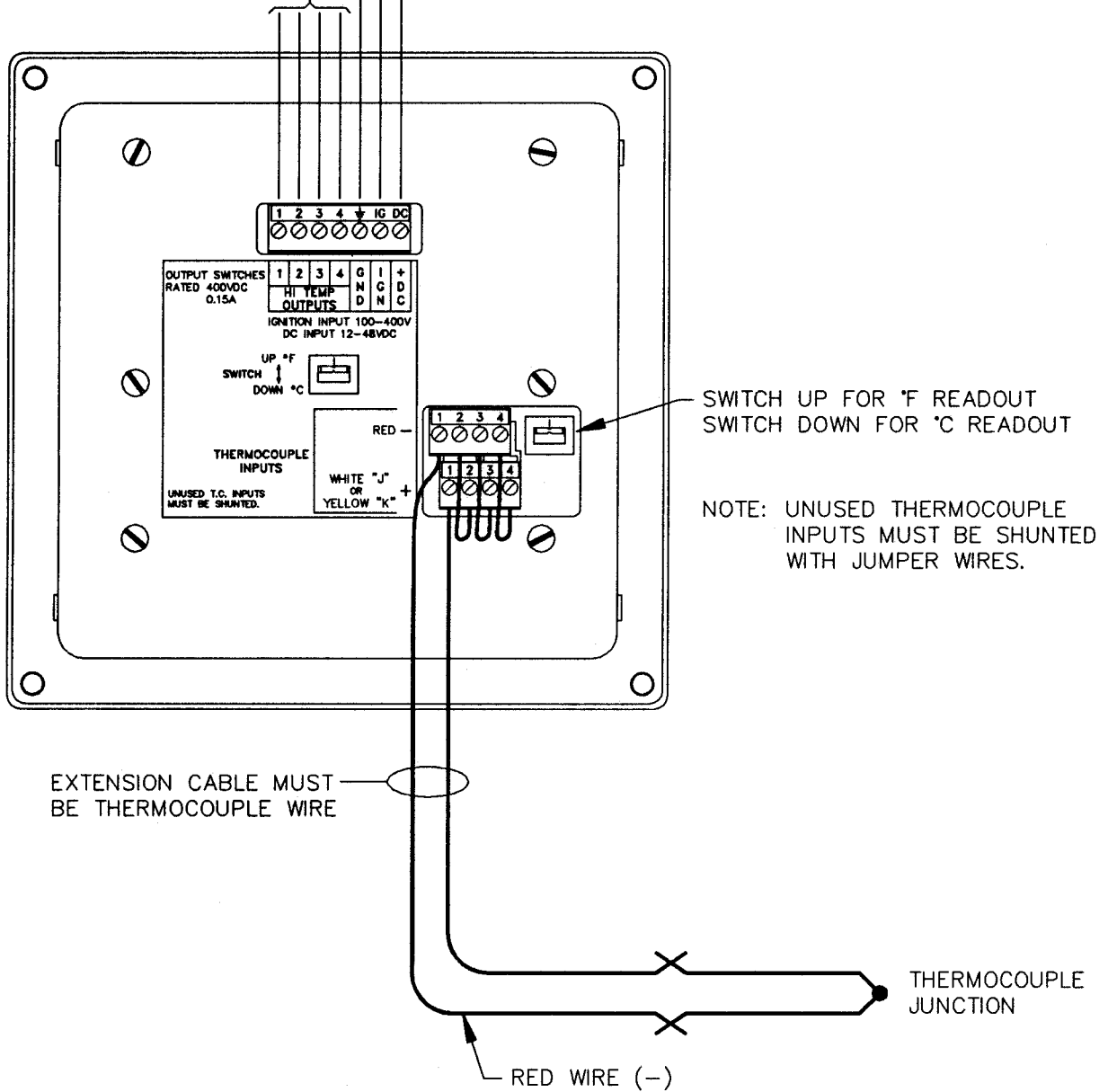
NOTE: ALL EXTENSION WIRE CONNECTIONS MUST BE OF THE SAME METAL. ALL CONNECTIONS TO BE CLEANED, TIGHTLY TWISTED AND INSULATED WITH CERAMIC WIRE NUT.

# GENERAL WIRING DIAGRAM

## DPYH-4354U PYROMETER

- OUTPUT SWITCHES**
- SOLID STATE, NORM. OPEN
  - RATING: 400VDC, 0.15A
  - SWITCH ON TO GROUND WHEN SETPOINT TEMP. EXCEEDED

- GND - PANEL GROUND
- IGN - C.D. IGNITION SHUTDOWN LEAD  
±100-400V
- +DC - 12-48VDC

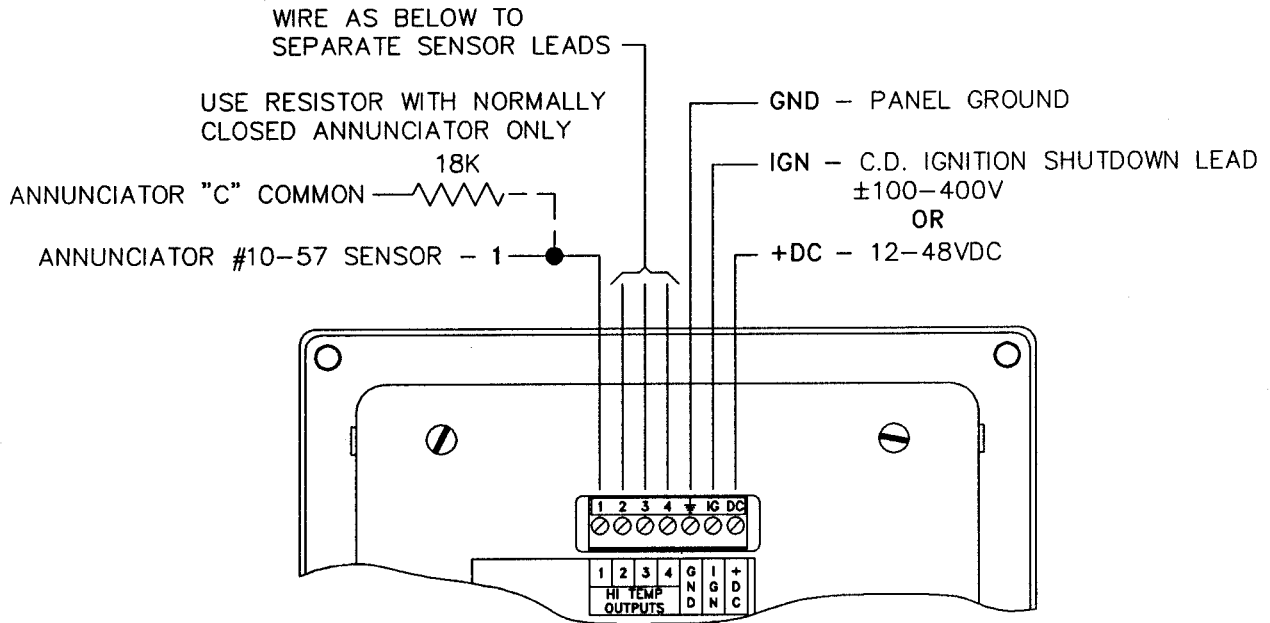


NOTE: ALL EXTENSION WIRE CONNECTIONS MUST BE OF THE SAME METAL. ALL CONNECTIONS TO BE CLEANED, TIGHTLY TWISTED AND INSULATED WITH CERAMIC WIRE NUT.

# WIRING DIAGRAM

## ALTRONIC ANNUNCIATOR SYSTEMS

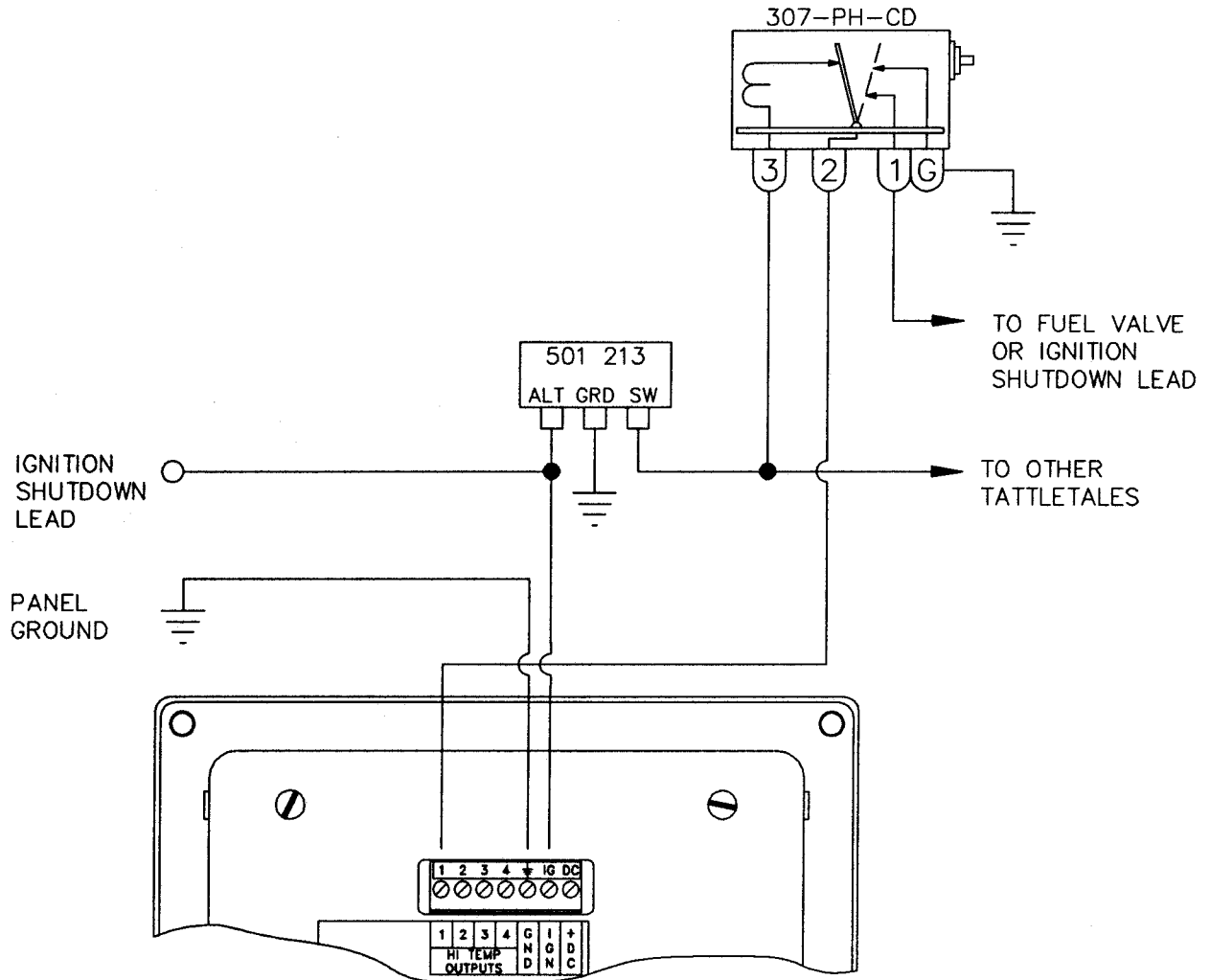
### DPYH-4320U/DPYH-4354U PYROMETER



NOTE: FOR INTRINSICALLY SAFE OPERATION, POWER FROM ALTRONIC 690 107/108 BARRIER FOR IGNITION POWER OR FROM A CSA CERTIFIED ZENER BARRIER RATED 30V MAX., 120 $\Omega$  MIN. FOR DC POWER.

FOR FURTHER INFORMATION REGARDING ANNUNCIATOR HOOK-UP PLEASE SEE "THE ALTRONIC ANNUNCIATOR DIGITAL ANNUNCIATOR SYSTEM APPLICATIONS AND SPECIFICATIONS" MANUAL.

WIRING DIAGRAM  
MURPHY TATTLETALE or PNEUMATIC VALVE  
DPYH-4320U/DPYH-4354U PYROMETER



**WIRING DIAGRAM**  
**MURPHY TATTLETALE or DC RELAY**  
 12-48VDC POWERED  
 DPYH-4320U/DPYH-4354U PYROMETER

