

# MODEL 460D

## Switch-to-Loop Converter

- 6 Inputs
- 4 to 20mA Output
- LED Loop Output Indicator

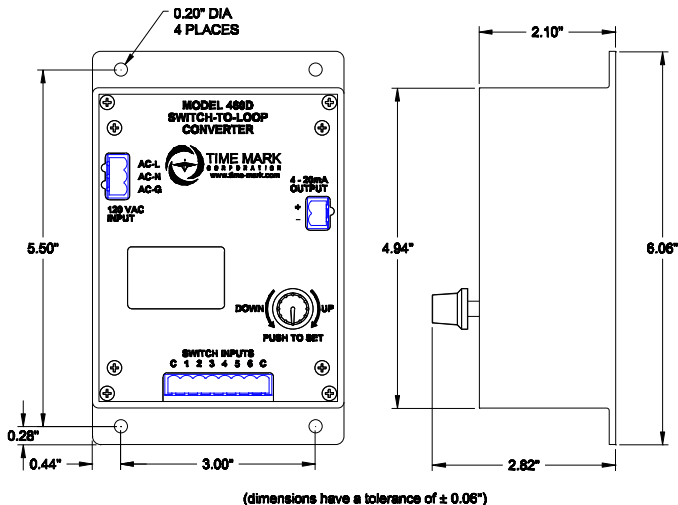


### DESCRIPTION

Liquid level controllers generally require a 4-20mA loop current. The loop current indicates the level of liquid in a tank or reservoir, and is usually generated by an expensive pressure transducer or ultrasonic sensor. If you already have a tank with float switches installed, the **Model 460D Switch-to-Loop Converter** allows you to take advantage of the latest liquid level control, without the added cost of a transducer.

The Model 460D Converter outputs a specific current value as each of the six inputs are closed. Current values are individually adjustable between 4 and 20mA for each switch input. Up to six switches can be used as inputs to all liquid level devices accepting a 4-20mA input, such as Time Mark's Model 4052.

### DIMENSIONS



\*add max. of 1.0" to depth for terminal strips & connectors

### SPECIFICATIONS

Model	460D
Nominal Voltage	120VAC ±10%
Frequency	50/60 Hz
Power Consumption	9W
Transient Protection	2500 VRMS for 10ms
Switch Current	5mA Max
Switch Voltage	5VDC
Loop Output	adjustable 4 to 20mA no switches closed = 4mA output
Operating Environment	-4° to +122° F
Humidity Tolerance	97% w/o condensation
Enclosure Material	ABS plastic
Weight	15 oz.

### INSTALLATION INSTRUCTIONS

Mount the Model 460D Converter in a panel or suitable enclosure. Referring to the markings on the unit and the provided drawings, make the following connections:

#### OPERATING POWER

Connect the 120VAC to the terminal marked **L** (line), **N** (neutral), **G** (ground).

#### SIGNAL INPUT

Make the appropriate connections from the external float switch inputs (starting at 1 and progressing up to 6 as needed) and either **C** (common) terminal. Two common terminals are provided for convenience.

**IMPORTANT: Connect float switches in the correct order (lowest float switch to lowest numbered input).**



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# MODEL 460D Switch-to-Loop Converter

READ ALL INSTRUCTIONS BEFORE INSTALLING, OPERATING OR SERVICING THIS DEVICE.  
KEEP THIS DATA SHEET FOR FUTURE REFERENCE.

## GENERAL SAFETY

POTENTIALLY HAZARDOUS VOLTAGES ARE PRESENT AT THE TERMINALS OF THE MODEL 460D.  
ALL ELECTRICAL POWER SHOULD BE REMOVED WHEN CONNECTING OR DISCONNECTING WIRING.  
THIS DEVICE SHOULD BE INSTALLED AND SERVICED BY QUALIFIED PERSONNEL.

## Installation Instructions (cont'd)

### SIGNAL OUTPUT

Connect the 4-20mA OUTPUT from the 460D to the 4-20mA INPUT on the device that the 460D will be controlling. OBSERVE POLARITY (See + and - on output connection).

### OPERATING INSTRUCTIONS

When an input switch is closed, the output changes to the corresponding current level. The highest of the 6 input switches (that is closed) determines the level of current at the output. If none of the switches are closed, the output is 4mA. The LCD display indicates when input switches are closed.

During normal operation, the display will show the current level that is active (Level 1-6). If no level is active, the display will show Level 0. The second line of the display will show what the output current level should be (based on the active level). If no level is active, this will show 4.0mA.

The inputs start with Level 1 and each input will override the previous input. That is, if Input 6 is active, the output will be at the value for Level 6 – ignoring all lower numbered inputs. If Level 2 is active, only level 1 will be ignored, etc.

### To adjust the output levels:

1. Press and hold the switch for about 4 seconds; The display will show "Setup Mode"
2. Press and hold the switch for about 2 seconds; The display will show "Set Lvl 1:  
Out: x.xmA"
3. Rotate the knob to adjust what the output should be when level 1 activates
4. Repeat steps 2 & 3 for the remaining switch inputs.  
**NOTE:** All switch inputs do not have to be used. The highest switch closed (#1 through #6) will determine the output value.
5. The final screen will show "Repeat Setup" - Pressing the knob again will repeat the setup menu, starting with Level 1

### To adjust the output levels: (cont'd)

6. Rotate the knob to change the display options: "Exit No Save" will exit the menu and restore the previous settings – ignoring the current changes. "Exit and Save" will exit the menu and save the current changes as the new settings.

### CALIBRATION

#### Should calibration be required:

1. Remove power from the controller
2. Press and hold the knob
3. Apply power and wait until the controller says "Cal Output"
4. Release the knob; the display will show 4mA and the output will/should be 4mA
5. Rotate the knob to adjust the output to be 4mA based on the meter you are calibrating to.
6. Press and release the knob; the display will change to 20mA and the output will change to 20mA;
7. Rotate the knob to adjust the output to be 20mA based on the meter you are calibrating to.

### WARRANTY

The **Model 460D Switch-to-Loop Converter** is warranted to be free from defects in materials and workmanship for one year. Should this device fail to operate, we will repair it for one year from the date of purchase. For complete warranty details, see the *Terms and Conditions of Sales* page in the front section of the Time Mark catalog.



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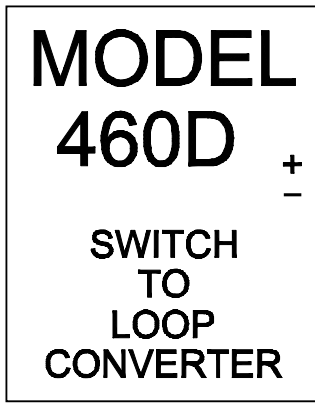
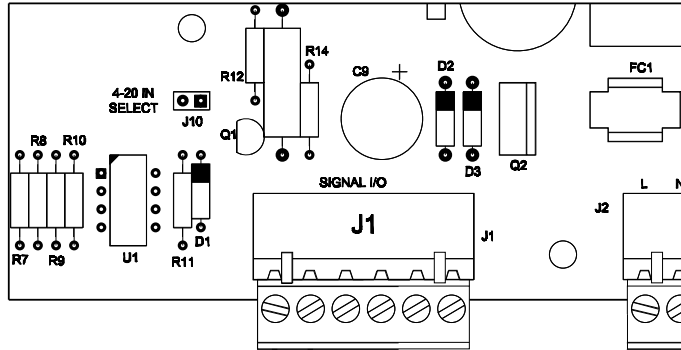
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# MODEL 460D Switch-to-Loop Converter

SIGNAL OUTPUT to MODEL 4042

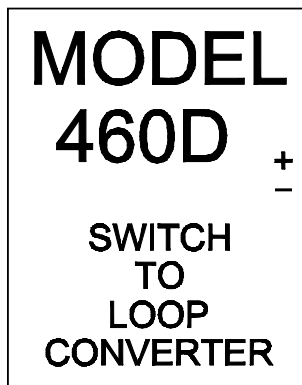
## MODEL 4042



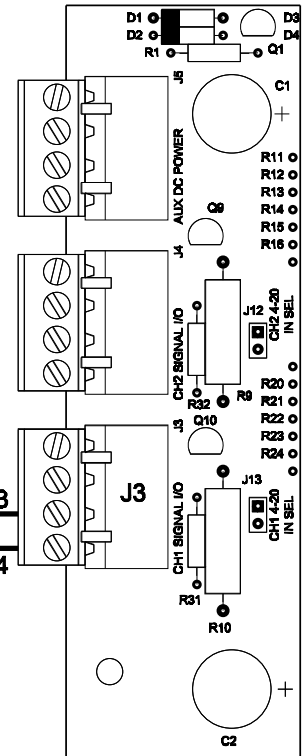
to Terminal J1, Pins 1 & 2

SIGNAL OUTPUT to MODEL 4082

## MODEL 4082



to Terminal J3 Pins 3 & 4



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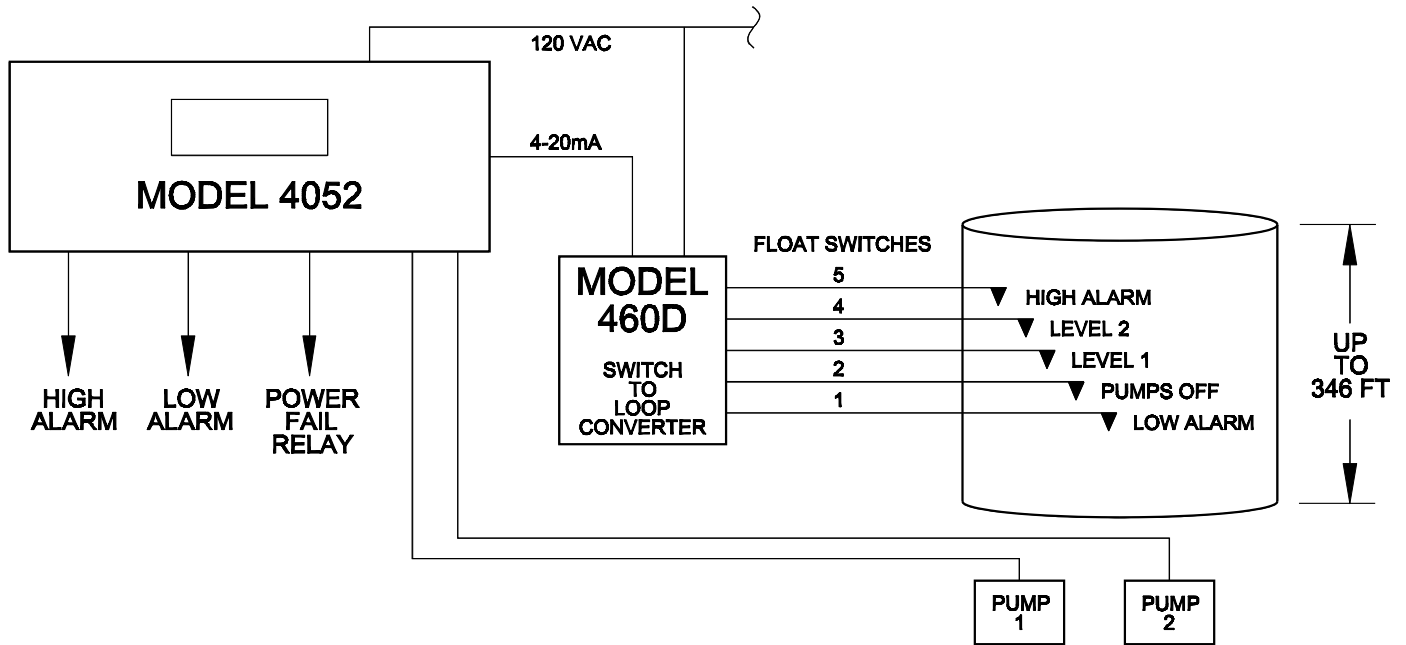
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# MODEL 460D Switch-to-Loop Converter

TYPICAL APPLICATION - Model 4052



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