

ACL

ACL TC 200 Pilotless Burner Control System

Manufacturing Inc.

INSTALLATION MANUAL

FOR

ACL TC 200 Pilotless Burner Control System

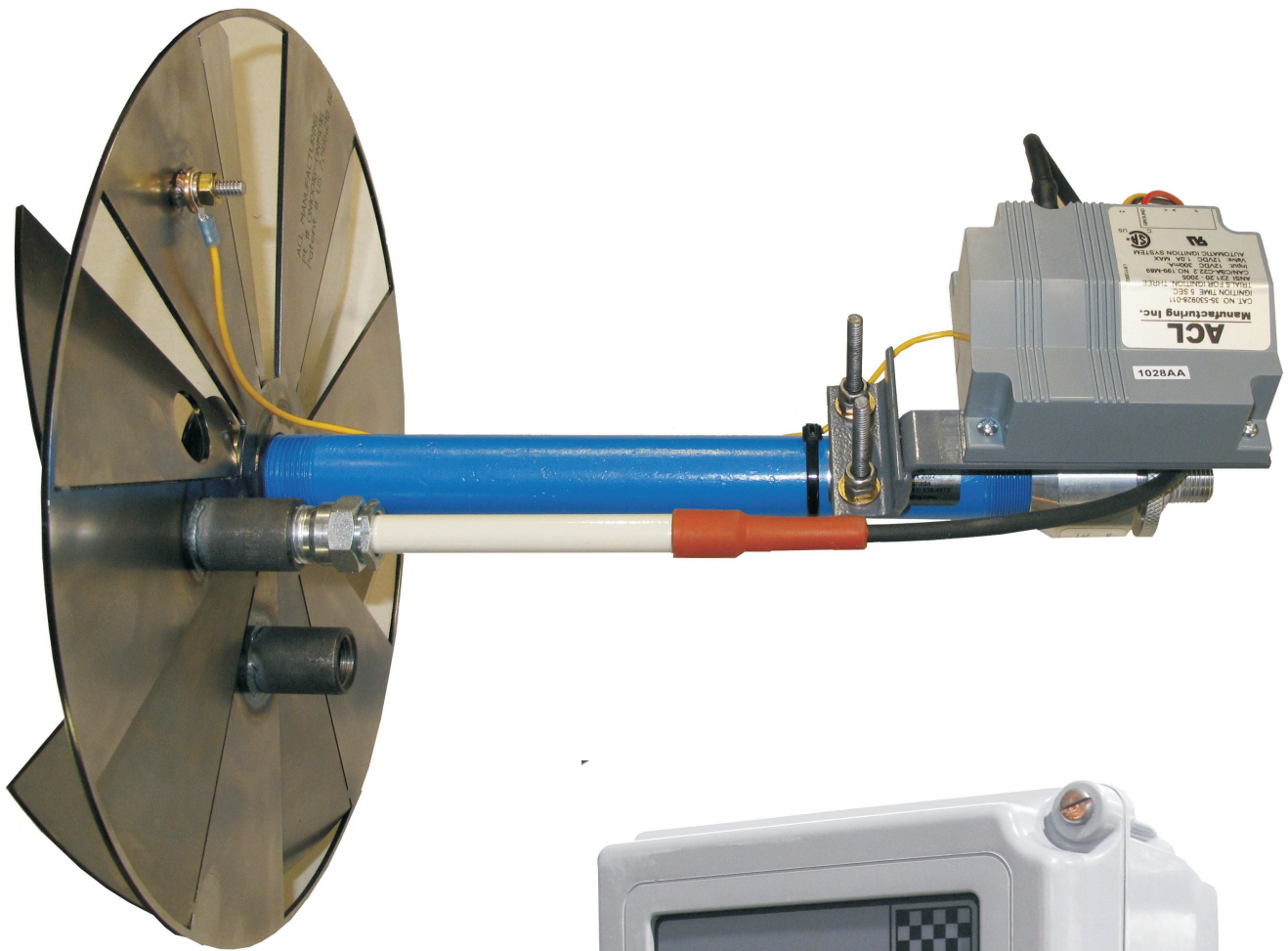


WARNING

This manual must be read in its entirety before installation of this system. Installation must be performed by a qualified technician and must adhere to the standards set by the local regulatory authorities.

ACL is not responsible for the misuse or incorrect application of this product.

ACL TC 200 Pilotless Burner Control System



ACL TC 200 Pilotless Burner Control System

FEATURES

- No Programming
- 12VDC or Solar
- Low power consumption
- On/Off burner control
- Two adjustable type K thermocouple inputs for monitoring two separate temperature points (bath temp. & high temp.)
- Shutdown input (ie. Low level shutdown)
- TYPE 4X enclosure and 3 membrane push buttons for trouble free operation
- Dip switch selectable thermocouple ranges of -60°C to 1100°C or 0°C to 500°C (-75°F to 2012° F or 32° F to 932° F)
- Easy to read four digit seven segment LED display
- LED indication of thermocouple 1 or 2 values displayed
- Dip switch selectable read out in Celsius or Fahrenheit
- Dip switch adjustable dead band from 2, 3, 5 and 10 degrees C (4, 6, 10 and 20 degrees F)
- Relay outputs rated at 5 amps and 250 VAC or 30 VDC
- Two 4-20 mA loop powered isolated transmitter outputs
- CSA certified for Class I Div 2 hazardous locations
- Operational ambient temperature of -40° to +60° Celsius

ACL TC 200 Pilotless Burner Control System

DESCRIPTION The ACL TC 200 PBCS provides burner ignition and flame fail as well as monitoring of two separate thermocouple locations which can be utilized for temperature control and high temp shutdowns in process applications such as tanks, line heaters, re-boilers or any other application where accurate temperature monitoring or control is required without using a continuous pilot.

The independent two temperature set points can be adjusted with the three membrane push buttons with LED indication, on the face of the controller. Initial set up can be obtained through dip switch selections for various user preferences.

OPERATION Supply 12VDC to Controller as per drawing on pages 6 & 8. Display will turn on and indicate either Temp1 or Temp 2 which ever was selected by ½ push button. The arrows up and down select the temperature set point. Once selected, the ignition controller can be turned to the On position. This will initiate ignition if controller is calling for heat. If process is above temperature it will not initiate lighting of the burner but will turn on once process drops below set point.

POWER CONNECTION The ACL TC 200 Pilotless Burner Control System is available in 12VDC only and can be used with solar packages as well. **Incorrect polarity may result in damage to circuit board components.** The terminal marked ground is for power supply or system ground.

THERMO-COUPLE CONNECTION The Type K thermocouple(s) are connected to their respective terminals inside the control box labeled T/C1 (+ & -) and T/C2 (+ & -). The customer may supply their own type K thermocouple (ungrounded) or use the manufacturers recommended assembly.

4-20 mA CONNECTION The 4-20 mA output connections are connected to their respective terminals inside the control box labeled 4-20mA 1 (+ & -) and 4-20mA 2 (+ & -). Each output supplies a separate 4-20mA isolated signal transmitted output (Loop Powered).

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ADJUSTING SET POINTS



Selects temperature input 1 or 2 on display



Displays and increases temperature set point



Displays and decreases temperature set point



If left with no buttons pushed the display will revert back to show the actual thermocouple temperature reading according to the LED indication.

Display will show (----) when T/C is not enabled through the designated dip switch setting or (OPEN) if T/C is not connected or if its damaged.

SPECIFICATIONS CHART

Voltage	Current	Power	Frequency	Relay Contact	Operating Temp.	Accuracy
12 VDC	0.125A	1.5 W	XXXXXX	5 amp Per Output	-40 C to 60 C	+/- 1 C (+/- 2 F)

ACL TC 200 Pilotless Burner Control System

Dip Switch Option Chart			
Board LEDs	On	SW8	Off
T/C #2 Range	High	SW7	Low
T/C #2 Enable	On	SW6	Off
T/C #1 Range	High	SW5	Low
T/C #1 Enable	On	SW4	Off
Deadband (see chart)	On	SW3	Off
Deadband (see chart)	On	SW2	Off
Display Units	Deg C	SW1	Deg F

High	Minus 60 to 1100 degrees C
	Minus 76 to 2012 degrees F
Low	0 to 500 degrees C
	Minus 32 to 932 degrees F

Deadband Adjustment

SW3	off	off	on	on
SW2	off	on	off	on
Deg C	2	3	5	10
Deg F	4	6	10	20

Switch #8

Selects board LEDs on or off
Display will not show anything for this switch setting change

Switch #7

Selects range for thermocouple #2
Display will show - R2 H or R2 L

Switch #6

Selects thermocouple #2 enable
Display will show - 2 ON or 2 OFF

Switch #5

Selects range for thermocouple #1

Switch #4

Selects thermocouple #1 enable
Display will show - 1 ON or 1 OFF

Switch #3 and #2

Selects deadband
Display will show 2 C, 3 C, 5 C, 10 C
or 4 F, 5 F, 10 F, 20 F

Switch #1

Selects Celsius or Fahrenheit
Display will show - U C or U F

ACL TC 200 Pilotless Burner Control System

4-20 MA OUTPUT SPECIFICATIONS

High Range (-60 to 1100 degrees Celsius) or (-76 to 2012 degrees Fahrenheit)

Thermocouple disabled	Output = 3.5 mA
Thermocouple fault (i.e. Open)	Output = 22 mA
Temperature equal to -60 C	Output = 4.0 mA
Temperature equal to 1100 C	Output = 20 mA

Temperature between the limits is directly proportional to the output signal

Low Range (0 to 500 degrees Celsius) or (0 to 932 degrees Fahrenheit)

Thermocouple disabled	Output = 3.5 mA
Thermocouple fault (i.e. Open)	Output = 22 mA
Temperature equal to 0 C	Output = 4.0 mA
Temperature equal to 500 C	Output = 20 mA

Temperature between the limits is directly proportional to the output signal

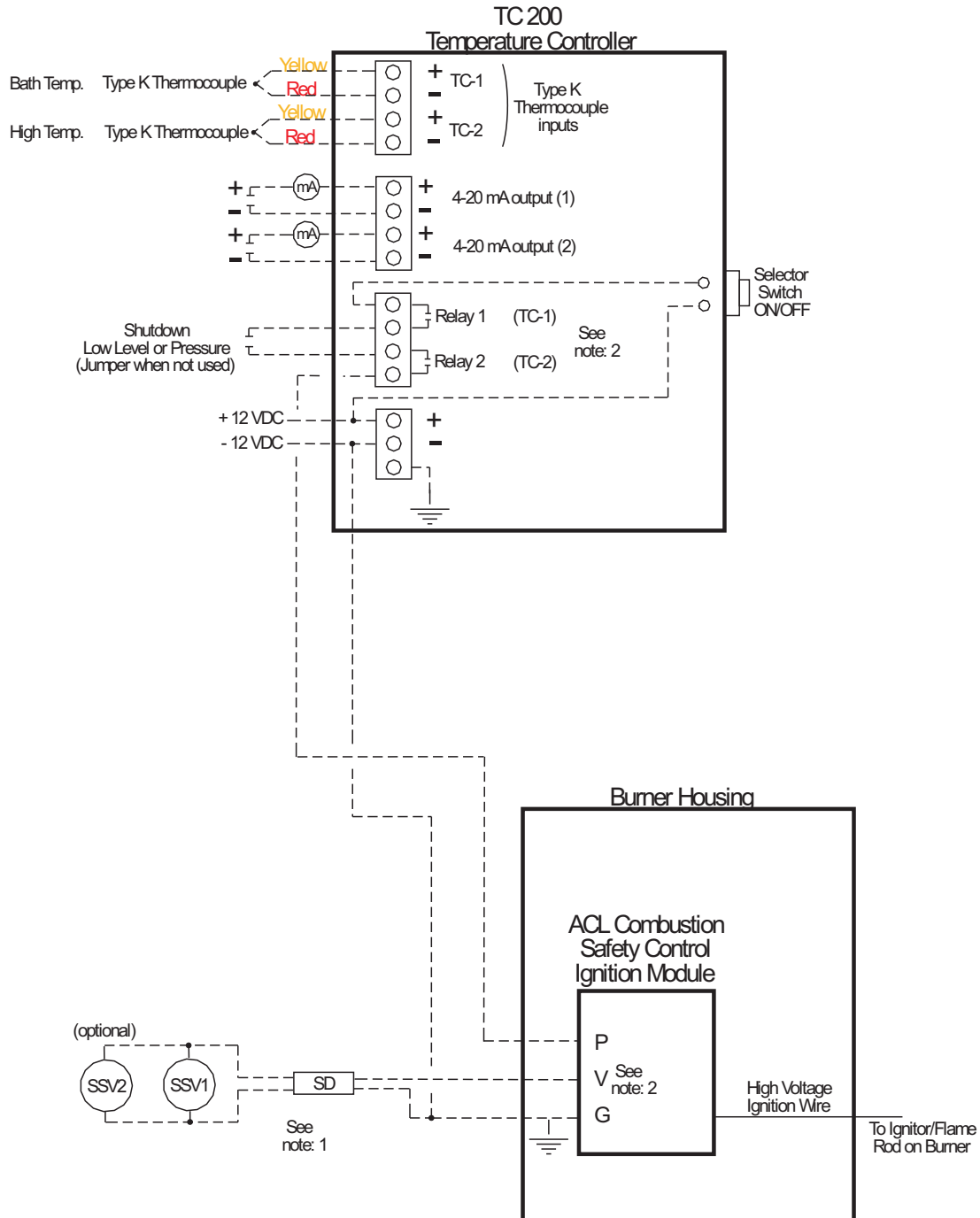
(Optional) Output for 4-20mA (1) Deadband set at 10 Celsius

Thermocouple disabled	Output = 3.5 mA
Thermocouple opened	Output = 22 mA
Below setpoint 95 C	Output = 20 mA
Set point 100 C	Output = 12 mA
Above setpoint 105 C	Output = 4 mA

Temperature between the limits is directly proportional to the output signal

ACL TC 200 Pilotless Burner Control System

SINGLE STAGE BURNER



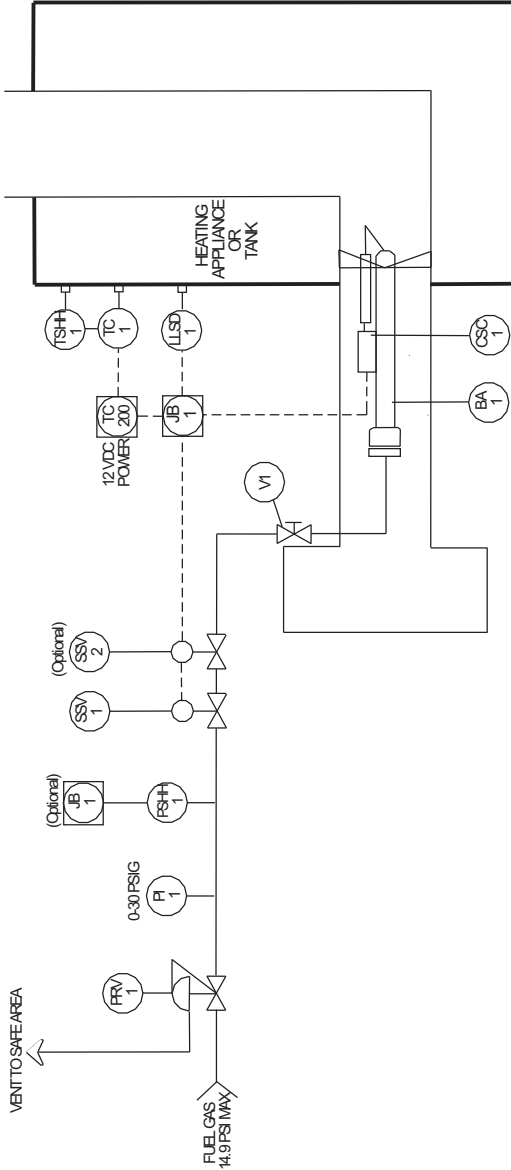
Notes:

- Note 1: SD - Solenoid Driver - reduces wattage on all solenoid valves (ideal for solar applications)
- Note 2: Valve output rated at 1 Amp max 12VDC

ACL TC 200 Pilotless Burner Control System

DESIGN BASIS		BILL OF MATERIALS			DESIGN COMPLIANCE
DESIGN TEMP WITH EXCEPTION FOR REGULATOR	-40°C TO 65°C -29°C TO 65°C	ITEM	QTY.	DESCRIPTION	<p>1.0 ALL APPLICABLE STATE AND PROVINCIAL CODES, STANDARDS, AND REGULATIONS MUST BE COMPLIED WITH. VARIANCES AND SPECIAL INSPECTIONS MAY BE ACCEPTABLE.</p> <p>2.0 THE FUEL GAS TRAIN MUST BE FABRICATED AS DETAILED ON THE DRAWINGS. FIELD SELECTION OF SUITABLE LEVEL SWITCHES AND PRESSURE SWITCH IS ACCEPTABLE. FUEL GAS CONTROLS AND INSTRUMENTS MUST BE INSTALLED IN LOCATIONS INDICATED BY THE SCHEMATICS BELOW. NO ALTERNATE CONTROL SCHEMES OR LAYOUTS ARE ALLOWED.</p> <p>3.0 THE APPLIANCE MUST BE EQUIPPED WITH A PROPER FLAME ARRESTOR.</p> <p>4.0 PIPING DESIGN MUST CONFORM TO CURRENT ASME/ANSI SPECIFICATIONS.</p>
POWER	12 VDC (OPTIONAL SOLAR)	TC-200	1	TEMPERATURE CONTROLLER CSA CLASS I DIV 2	
FUEL GAS PRESSURE	14.9 PSIG	TSHH-1	1	CSA APPROVED CLASS I DIV 1 TYPE K THERMOCOUPLE ELEMENTS FOR HIGH TEMPERATURE SHUTDOWN & TEMPERATURE CONTROL NOTE: CAN BE SINGLE TYPE K OR A DUAL TYPE K UNGROUNDED	
MAX NET BTU/HR RATING	400,000BTU/HR NET	TC-1	1		
ELECTRICAL AREA CLASSIFICATION	CLASS I DIV 2	CSC-1	1	ACL 35 SERIES - COMBUSTION SAFETY CONTROLLER CSA APPROVED	
NOTES:		SSV-1/SSV-2	2	SAFETY SHUTDOWN VALVE - CSA CLASS I DIV 1	
		BA-1	1	ACL-HE-ON BURNER ASSEMBLY - COMPLETE WITH IGNITOR/FLAME ROD	
		PRV-1	1	FISHER 64-35 REGULATOR OR EQUIVALENT - 0-30 PSIG	
		LLSD-1	1	LEVEL SHUTDOWN - FIELD SELECTABLE MUST BE RATED FOR AREA CLASSIFICATION	
		V1	1	CERTIFIED BALL VALVE - CSA 3.16 OR EQUIVALENT	
		JB-1	1	CSA APPROVED JUNCTION BOX	
		PSSH	1	PRESSURE SWITCH - FIELD SELECTABLE MUST BE FOR AREA CLASSIFICATION	

SINGLE STAGE BURNER



ENGINEERING STAMP

ACL
MANUFACTURING INC.

805 Main Ave West
Box 2002
Sundre, AB CANADA
Ph (877) 638-5234
Fax (403) 638-5234

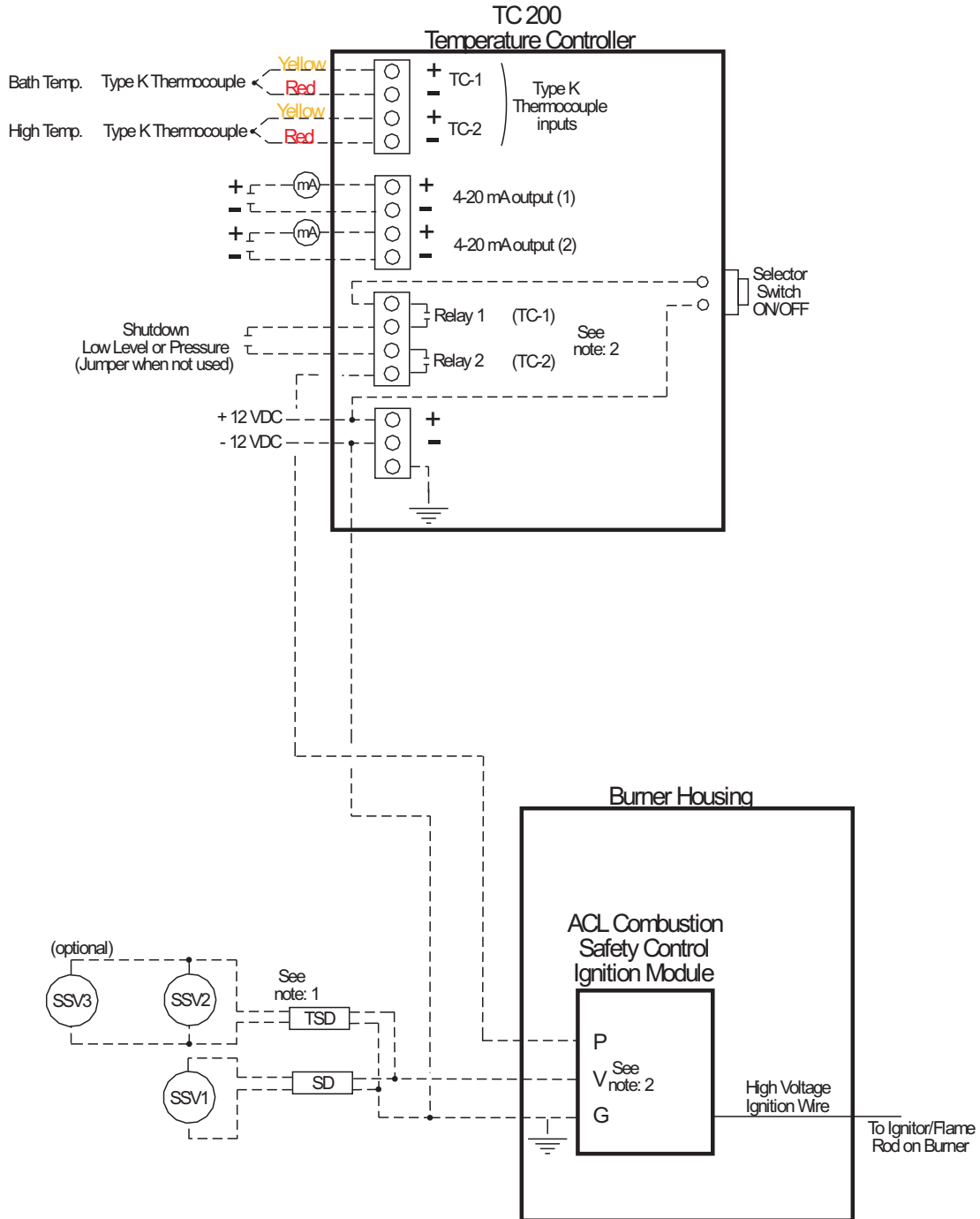
PILOTLESS BURNER CONTROL SINGLE STAGE BURNER

COMPANY:

LOCATION/JOB #:

ACL TC 200 Pilotless Burner Control System

2 STAGE BURNER (LOW FIRE HIGH FIRE)



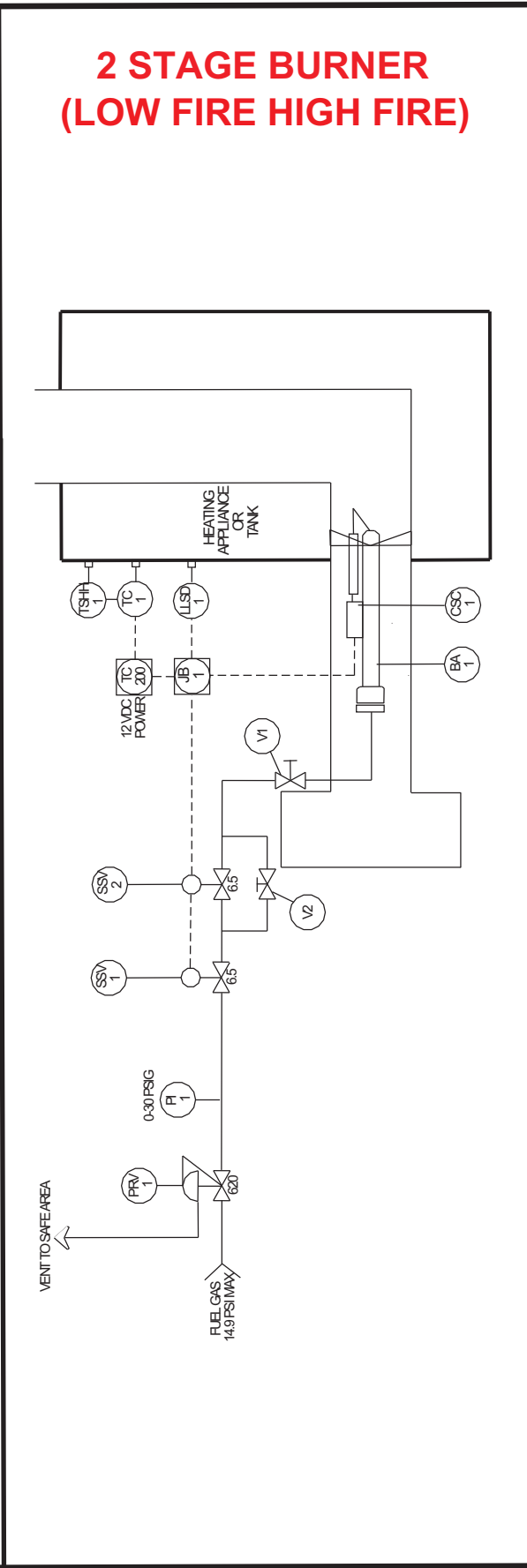
Notes:

Note 1: SD - Solenoid Driver reduces wattage on all solenoid valves (ideal for solar applications)
 TSD - Solenoid Driver with 10 sec time delay on

Note 2: Valve output rated at 1 Amp max 12VDC

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DESIGN BASIS		BILL OF MATERIALS		DESIGN COMPLIANCE
DESIGN TEMP WITH EXCEPTION FOR REGULATOR	POWER	ITEM	QTY.	DESCRIPTION
-40°C TO 65°C -29°C TO 65°C	12 VDC (OPTIONAL SOLAR)	TC-200	1	ACL TC 200 - TEMPERATURE CONTROLLER CSA CLASS I DIV 2
FUEL GAS PRESSURE	14.9 PSIG	TSHH-1 TC-1	1	CSA APPROVED CLASS I DIV 1 TYPE K THERMOCOUPLE ELEMENTS FOR HIGH TEMPERATURE SHUTDOWN & TEMPERATURE CONTROL NOTE: CAN BE SINGLE TYPE K OR A DUAL TYPE K UNGROUNDED
MAX NET BTU/HR RATING	1,000,000BTU/HR NET	CSC-1	1	ACL 35 SERIES - COMBUSTION SAFETY CONTROLLER CSA APPROVED
ELECTRICAL AREA CLASSIFICATION	CLASS I DIV 2	SSV-1/SSV-2	2	SAFETY SHUTDOWN VALVE. CSA CLASS I DIV 1
NOTES:				
1.0 ALL APPLICABLE STATE AND PROVINCIAL CODES, STANDARDS, AND REGULATIONS MUST BE COMPLIED WITH. VARIANCES AND SPECIAL INSPECTIONS MAY BE ACCEPTABLE.				
2.0 THE FUEL GAS TRAIN MUST BE FABRICATED AS DETAILED ON THE DRAWINGS. FIELD SELECTION OF SUITABLE LEVEL SWITCHES AND PRESSURE SWITCH IS ACCEPTABLE. FUEL GAS CONTROLS AND INSTRUMENTS MUST BE INSTALLED IN LOCATIONS INDICATED BY THE SCHEMATICS BELOW. NO ALTERNATE CONTROL SCHEMES OR LAYOUTS ARE ALLOWED.				
3.0 THE APPLIANCE MUST BE EQUIPPED WITH A PROPER FLAME ARRESTOR.				
4.0 PIPING DESIGN MUST CONFORM TO CURRENT ASME/ANSI SPECIFICATIONS.				



ENGINEERING STAMP
 MANUFACTURING INC.
805 Main Ave West Box 2002 Sundre, AB CANADA Ph (877) 638-5234 Fax (403) 638-5234
PILOTLESS BURNER CONTROL TWO STAGE BURNER (LOW FIRE, HIGH FIRE)
COMPANY:
LOCATION/JOB #:



Website: www.aclmfg.com

Limited Warranty

Seller warrants that the product hereby purchased is, upon delivery, free from defects in material and workmanship and that any product which is found to be defective in such workmanship or material will be repaired or replaced by Seller for a period of one year from purchase date. Warranty of such items do not include shipping, installation or set-up.

Liability Statement

ACL Manufacturing Inc. Shall not be liable for any special, indirect, consequential or other damages of a like general nature, including, without limitation, loss of profits or production, or loss of expenses of any nature incurred by the buyer or any third party.

805 Main Ave West - Box 2002 Sundre, Alberta T0M 1X0
Phone: (877) 638-5234 - Fax: (403) 638-4973
E-mail: aclmfg@telus.net