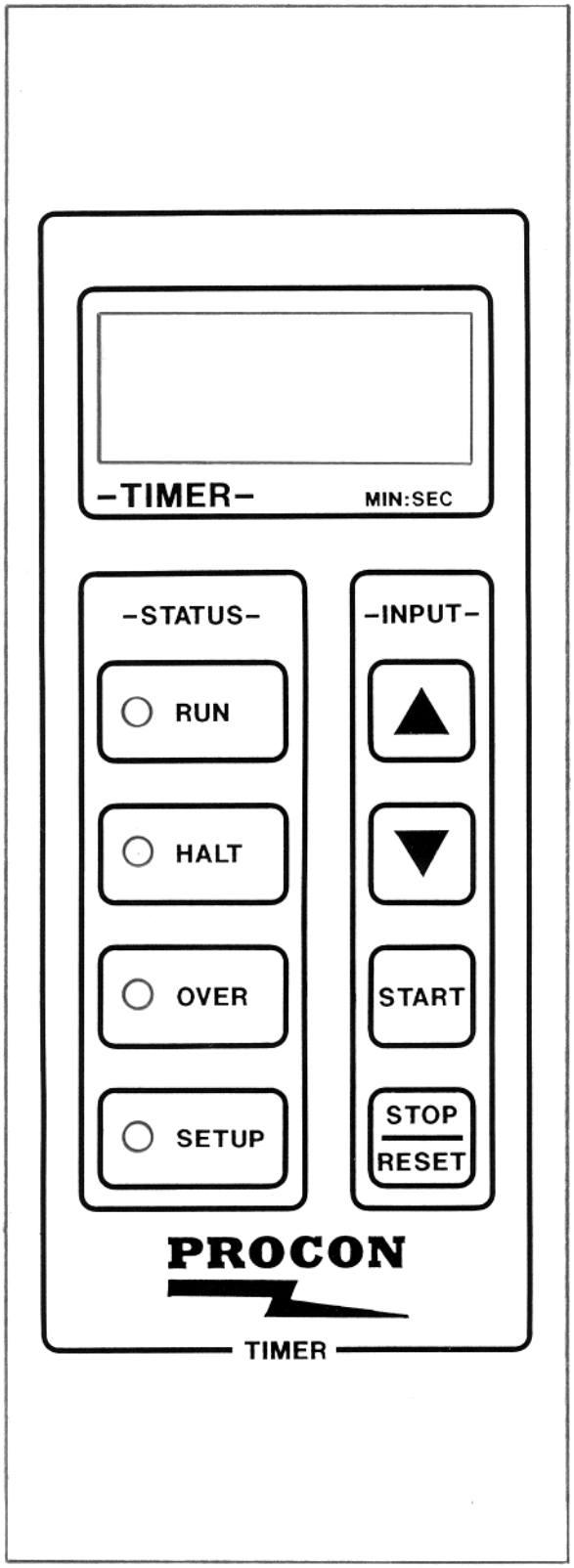
PROCON

MODEL 900T
TIMER

1/13/00
Rev 1


-TIMER-
MIN:SEC
-STATUS-
RUN
HALT
OVER
SETUP
-INPUT-
START
STOP
RESET
PROCON
TIMER

PROCON
MODEL 900T
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i i i **N O T I C E** i i i

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PROCON
MODEL 900T
TIMER

The Model 900T is a Microprocessor based Stand Alone Timer. The following are highlights of some of the main features of the controller:

*PROGRAMMABLE COUNTUP OR COUNTDOWN DIRECTION
*OVERCOUNT CAPABILITY
*PROGRAMMABLE PRE-ALARM
*FORM C (N/O-C-N/C) RELAY OUTPUT
*SCALABLE IN HOURS:MINUTES, MINUTES:SECONDS OR SECONDS
*ACCESS CODE PARAMETER PROTECTION
*EEPROM PARAMETER MEMORY (MINIMUM 10 YEAR LIFE)
*AUDIO ANNUNCIATOR
*ALL PARAMETERS SET IN SOFTWARE -
NO SWITCHES OR POTENTIOMETERS
*WET STATION ENCLOSURE
*BRIGHT FOUR DIGIT LED DISPLAY
*SMOOTH FACE CONSTRUCTION

The following table lists the models that are available:

MODEL	VOLTAGE
900TA	24 VAC
900TB	120 VAC

The controller can be programmed to perform a standard countdown or countup Timer routine with cumulative over Timer and Pre-Alarm. A Form C (N/O-C-N/C) Relay Output is provided that may be programmed to be active either during or after the time period.

The four digit display can be scaled in ›Minutes and Seconds‹,‹Hours and Minutes‹, or ›Seconds Only‹. The maximum setting for ›Minutes and Seconds‹ and ›Hours and Minutes‹ is 99:59, while the ›Seconds only‹ allows a maximum 9999 preset. The Pre-alarm is scaled in ›Seconds or Minutes‹ and is setable to a maximum of 59 seconds/minutes.

LED INDICATORS

Four discrete LEDs are provided to indicate the current system status. They are labeled RUN, HALT, OVER and SETUP:

RUN - Indicates that the Timer is running.

HALT - Indicates that the system is in the HALT mode.

OVER - Indicates that the Timer has counted the preset time and is now accumulating the amount of time that has passed, since the completion of the preset count.

SETUP - Indicates that the system is in the SETUP mode. In this mode, the system parameters are selected. (see SETUP)

KEYS

The four keys marked: START, STOP/RESET, UP and DOWN are used to operate and program the unit. The following is a listing of each of the keys and their functions:

START - This is a multifunction key that is used in both Operation and Setup. Its primary function is to start the Timer. It may start the Timer either from a Reset or Halted condition.

The second function for this key is in the SETUP mode. (See SETUP)

STOP/RESET - This is also a multifunction key. Its primary functions are to stop the Timer and then reset it for another run. If the Timer is in the RUN mode, depressing the STOP/RESET key once will place it in the HALT mode. If the Timer is in the HALT mode, depressing the key once will place it in the RESET mode.

The key is also used in entering the SETUP mode. (See SETUP)

(Note: by depressing the STOP/RESET key at power up, the EEPROM will default to zeroes in the parameter stack.)

UP - In the SETUP mode, depressing the UP key will cause the display to advance. Depressing the key once and releasing will allow the accurate setting of the least significant digit. Holding the key down will activate the automatic, rapid incrementing of the display.

DOWN - In the SETUP mode, depressing the DOWN key will cause the display to decrease. Depressing the key once and releasing will allow the accurate setting of the least significant digit. Holding the key down will activate the automatic, rapid decrementing of the display.

SETUP

The SETUP mode is entered by depressing and holding the STOP/RESET key and then depressing the START key. While in this mode, the START key is used to step through the parameters. The following is a listing of the Code prompts that will appear in the display, when in the SETUP mode. The code will alternately flash with the selected value to indicate to the user the parameter that is currently viewed or set.

CODE	DESCRIPTION
CS	Clock Setpoint
PA	Pre-Alarm
CD	Clock Count Direction
RL	Relay Logic
PC	Period Count
AC	Access Code

CODE	SETTING RANGE
CS	0:00 to 99:59 Min:Sec
	0:00 to 99:59 Hrs:Min
	0:00 to 9999 Seconds
PA	00 to 59 Seconds
	00 to 59 Minutes
CD	UP/DN (Up or Down)
RL	0 or 1 (0=After, 1=During)
PC	00 to 02
	(00=Min:Sec,01=Hr:Min, 02=Seconds)
AC	0 to 9999

CS - The ›Clock Setpoint‹ determines the duration of the Timer period. Depending on the ›CD‹ parameter, the Timer will either count up to the desired setting or countdown from the desired setting.

PA - The ›Pre-Alarm‹ is the time at which an audio warning will begin prior to the Timer period being completed. Its purpose is to alert the operator to the fact that the Timer period has almost elapsed. The audio tone will cycle ON and OFF from the beginning of this period until the end of the Timer period.

CD - The ›Clock Count Direction‹ allows the user to program the direction in which the Timer will count.

RL - The ›Relay Logic‹ will determine whether the relay will be on during the Timer period or after the Timer period.

PC - The ›Period Count‹ allows the user to program the units in which the Timer will count.

AC - The Access Code is the number that must be matched to allow entry into the Programming mode. This number may be changed at any time, but a note should be kept of its value. If set to ›0‹, this function is eliminated.

To exit the SETUP mode, the RESET key is depressed. When exiting, the unit automatically enters a SAVE mode. This causes the parameters to be written into the EEPROM memory. This is a permanent (10-year minimum life) memory that does not require battery backup.

OPERATION

After the Timer has been programmed in the SETUP mode, a Timer period can be run by depressing the START key. The following is a description of Timer operation with various system settings.

DOWN COUNT TIMER - The Timer will begin to countdown in either minutes or seconds. If the ›PC‹ parameter is set to 0 or 2, it will count in seconds. If ›PC‹ is set to 1, it will count in minutes. The Timer will continue this process until it reaches the pre-alarm time setting. At this point, an audio tone that has a 50/50 duty cycle and a 1 second period will sound. Once the unit has counted down to 0:00, the audio will change to a continuous tone and the display will begin to flash. If the timer is not stopped, it will begin to count back up, accumulating the time that has elapsed.

UP COUNT TIMER - The Timer will begin to count up in either minutes or seconds. If the ›PC‹ parameter is set to 0 or 2, it will count in seconds. If ›PC‹ is set to 1, it will count in minutes. It will continue this process until it reaches the set time minus the pre-alarm setting. At this point, an audio tone that has a 50/50 duty cycle and a 1 second period will sound. Once the unit has counted up to the preset time, the audio will change to a continuous tone and the display will begin to flash. If the timer is not stopped, it will reset to zero and count back up, accumulating the time that has elapsed.

The START key may be used as an audio silence without stopping the Timer. Depressing the START key once will silence the audio and the Timer will continue to count.

Depressing the STOP/RESET key will stop the Timer and freeze the display. Depressing the STOP/RESET key for a second time will reset the Timer for another cycle. If in the DOWN COUNT mode, the pre-programmed setpoint will be inserted in the display. If in the UP COUNT mode, the display will be set to 0:00. In both cases, the Timer is then ready for another cycle.

A relay output is provided for simple interfacing. The relay has a standard Form C (N/O-C-N/C) set of contacts brought out to the rear panel. The 'RL' parameter allows the Output Relay to be setup, such that it is active either during the Timing cycle or at the completion of the Timing cycle. In both conditions, the Relay is OFF when the Timer is Reset. If zero (0) is set, the relay will be active after the timing period has elapsed and prior to the RESET key being depressed. If one (1) is selected, the relay will be active from the time the START key is depressed, until the period has timed out.

If the continuous tone, signaling the end of the timer cycle is not silenced or the Timer is not stopped within 30 seconds, the buzzer will go into an unattended alarm mode. In this mode, the buzzer will shift from a continuous tone to a 50/50 duty cycle with a 1 second period.

ACCESS CODE - In some cases, it may be desirable to restrict access to the SETUP mode. An Access Code system is incorporated. If the Access Code is set to ›0000=, the function is eliminated and the system operates as previously described. The code is any number from 1 to 9999, as programmed into the system by the customer's authorized personnel. Once this code is entered, any attempt to enter the SETUP mode will cause 'CODE' to appear in the Timer display. The UP and DOWN keys are then used to enter the Access Code. Once the proper code has been selected, the user simply depresses the START key to gain entry into the SETUP parameters.

BACKDOOR CODE

A special code has been incorporated into the software to insure factory access to all functions no matter what the customer has done with the Access Codes. This code is **920**.

MANUAL REVISIONS

Revision #	Program #	Engineering #	Revisions Made
Rev 0	DT920TA	DT900TA DT900TB	Origination

LIMITED WARRANTY

WARRANTY: JPC CONTROLS WARRANTS ITS NEW PRODUCTS TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP UNDER THE SERVICE FOR WHICH THEY ARE INTENDED. THIS WARRANTY IS EFFECTIVE FOR TWELVE MONTHS FROM THE DATE OF SHIPMENT.

EXCLUSIONS: THIS WARRANTY IS **IN LIEU OF** ANY OTHER WARRANTY EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF **MERCHANTABILITY** OR FITNESS FOR A PARTICULAR PURPOSE.

JPC CONTROLS IS NOT LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

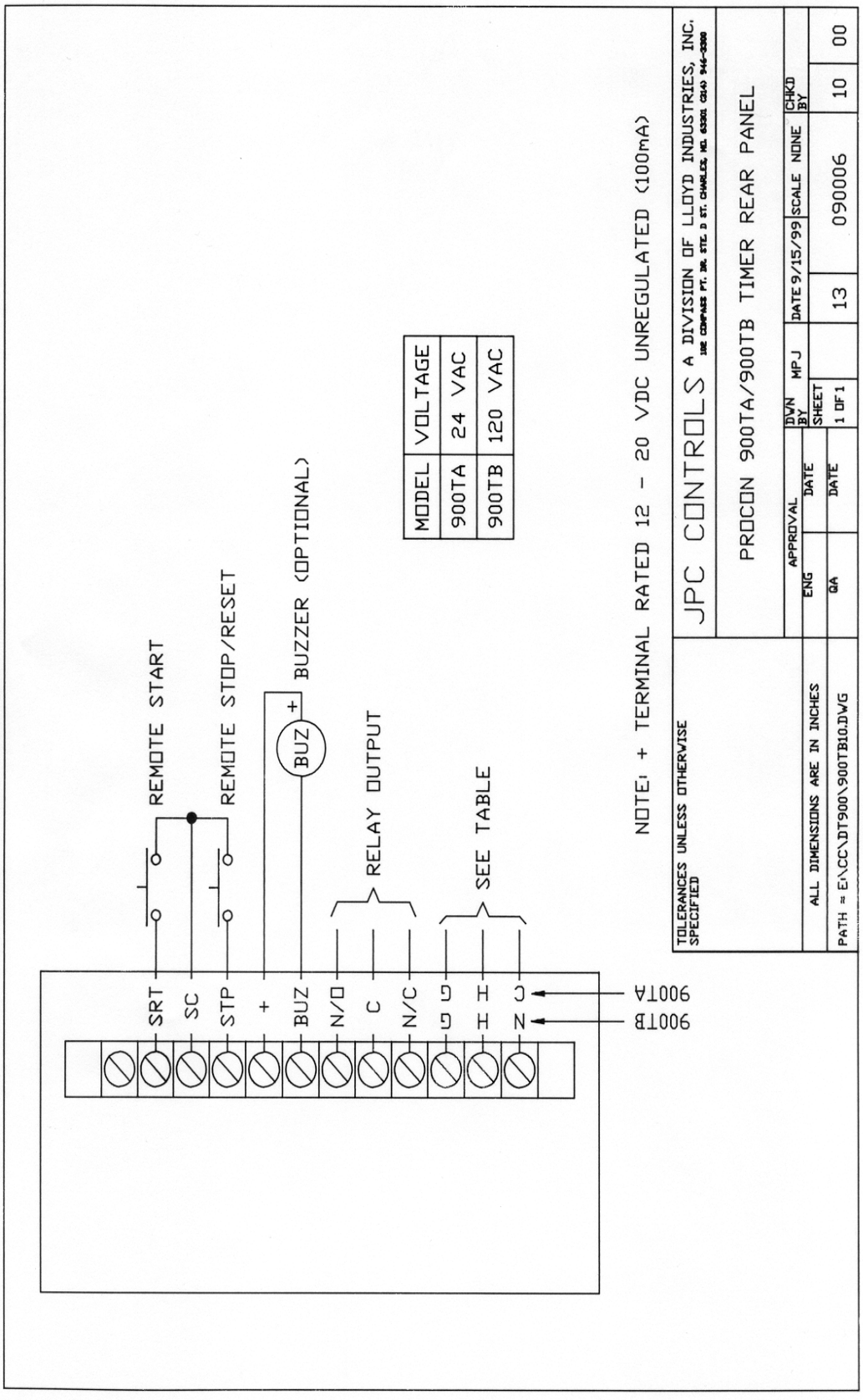
NO PERSON OTHER THAN AN OFFICER IS AUTHORIZED TO GIVE ANY OTHER WARRANTY OR ASSUME ANY LIABILITY.

REMEDIES: THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY SHALL BE: (1) THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS OR PRODUCTS, WITHOUT CHARGE. (2) AT THE OPTION OF **JPC CONTROLS**, THE REFUND OF THE PURCHASE PRICE.

SPECIFICATIONS

MODEL 900T
TIMER

RANGE	0:00 - 99:59 Min:Sec 0:00 - 99:59 Hrs:Min 0000 - 9999 Seconds
RESOLUTION	1 Sec.
DISPLAY	Four, 0.56 Inch High, Seven Segment, LED Uniplanar numerals. Four Discrete LEDs (Red, Green, Amber).
ANNUNCIATOR	Audio Tone, ~ 3200 HZ
SETUP MEMORY	EEPROM, All Parameters
MEMORY RETENTION	10 Years w/o Power
OPERATING RANGE	0 to 50 Degrees C
STORAGE RANGE	-40 to 60 Degrees C
CONSTRUCTION	Enclosure - Kydex, Black Face - Lexan, Back Printed
SIZE	8.25 x 3 x 5.25 inches (HxWxD) 210 x 76 x 133mm
WEIGHT	$\leq$ 3 Lbs. (1.4 kg)
CONNECTION	Rear, Screw-Type, 3/8 Inch Centers
OUTPUT	Relay, Form C Contacts (N/O-C-N/C), 5 Amps, 24 VAC
POWER	900TA - 7 VA, 24 VAC $\pm$10%, 50/60 HZ 900TB - 7 VA, 120 VAC $\pm$10%, 50/60 HZ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+
BUZ
N/O
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N/C
G
H
Z
900TA
900TB
BUZ +
MODEL | VOLTAGE
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900TB | 120 VAC
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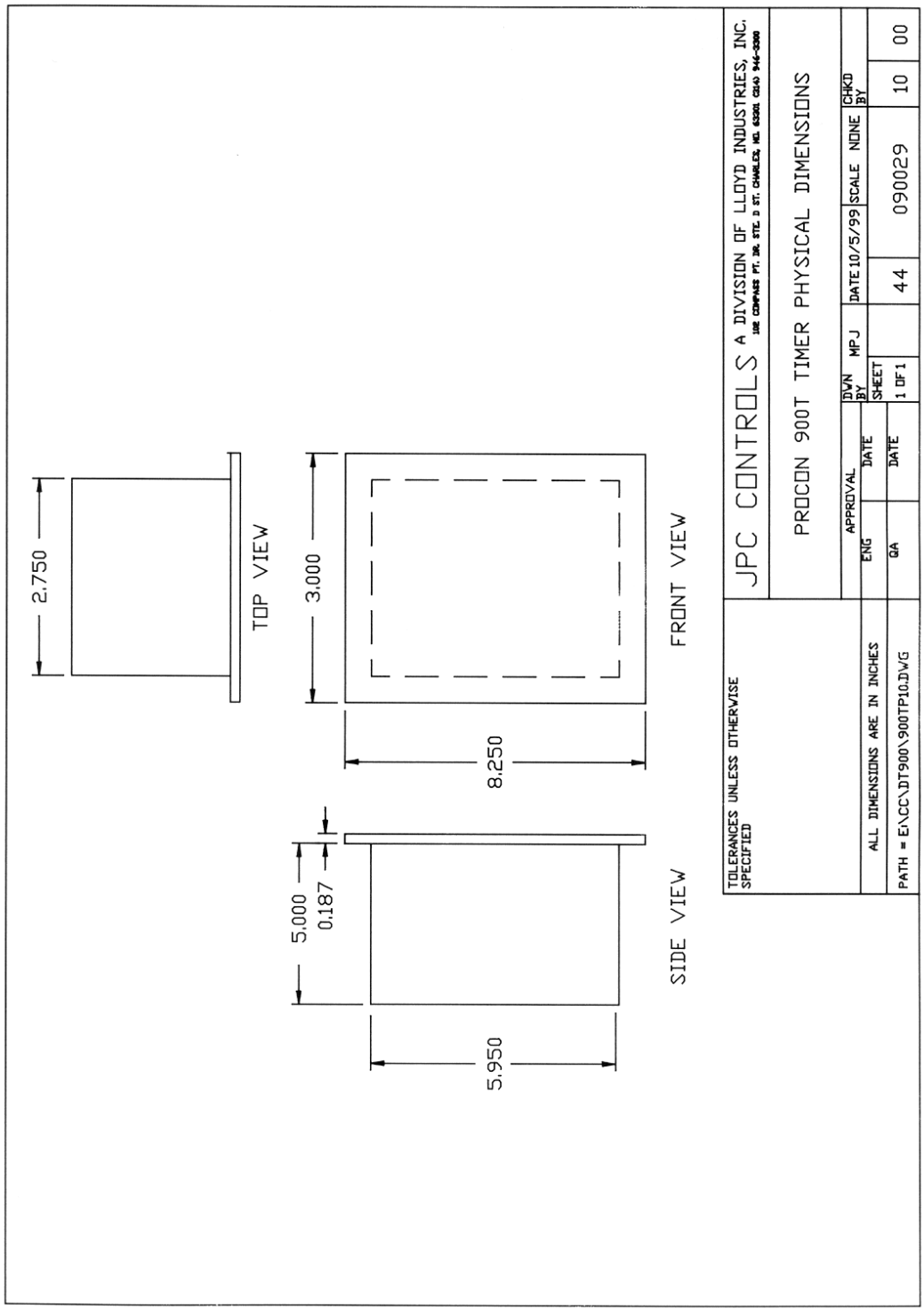
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SIDE VIEW
TOLERANCES UNLESS OTHERVISE SPECIFIED
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JPC CONTROLS
A DIVISION OF LLOYD INDUSTRIES, INC.
PROCON 900T TIMER PHYSICAL DIMENSIONS
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