MODEL 9300A
HIGH SPEED STRAIN GAGE READOUT

DESIGN CONCEPTS INC

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SPECIFICATIONS:

Power Requirements:

- AC: 105VAC to 132VAC @ 50mA (47Hz to 63Hz)
- AC: 198VAC to 264VAC @ 25mA (47Hz to 63Hz) optional.

Display:

- Type: Five digit, seven segment LED 0.56" (14.3mm) high.
- Polarity Indication: "-" Displayed.
- Overrange Indication: "Or" Displayed.
- All setup parameters stored in nonvolatile memory during power outage.

Limit Outputs:

- Two form "A" relay closures rated .5A at 28VDC (Resistive).

Environmental:

- Operating Temperature Range: -20°C to +60°C
- Storage Temperature Range: -25°C to +85°C
- Relative Humidity: 0% to 90%, Non-condensing

Dimensions:

- Case size "D" Refer to page 20.
- Weight: 1 pound
- I/O Terminations: Fifteen quick disconnect terminals.

Analog to Digital Conversions:

- Technique: 16 Bit Sigma Delta
- Rate: 10 Conversions/Second

Analog Output (optional):

- Voltage: 0-10V, 2.5mV resolution. 0V and 10V points are programmable via front panel switches.
  Maximum drive capability ±2mA.
- CMV: 1400V Peak (AC or DC) between analog output, digital ground and AC power line to earth ground.
- 4-20mA output, maximum load 600Ω. The 4mA and the 20mA points are programmable via front panel switches.

Serial Interface (optional):

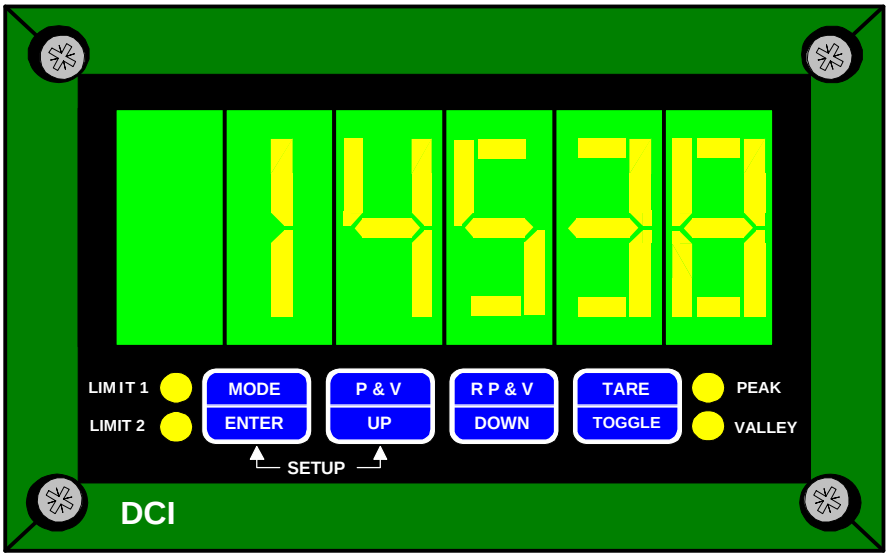
- ASCII RS-232 or RS485 compatible (optional); format: 1 start bit, 8 data bits, 1 stop bit, and no parity bits. Baud Rates: 9600, 4800, 2400, 1200, 600, 300, 150, & 75 programmable from the front panel. Output compatible with DCI Model 9100 Remote Readout.

Input Span Voltage: ± 10mV to ± 35mV

- Span programmable from ± 1,000 to ± 30,000 counts using front panel switches.
- Span and Limits store in nonvolatile memory during power loss. Limit Outputs:

OPTIONS

- 01 RS232 Compatible Interface
- 02 RS485 Compatible Interface
- 05 +4.7VDC to 7VDC input power 500mA max
- 08 4-20mA output max load 600Ω
- 09 Analog output, (0-10VDC) tracks input
- 12 9-18VDC power 400mA max.
- 22 230VAC; 47Hz – 63Hz input power
- 24 18VDC – 36VDC power 300mA max.
- 50 Sunlight Readable Red LED

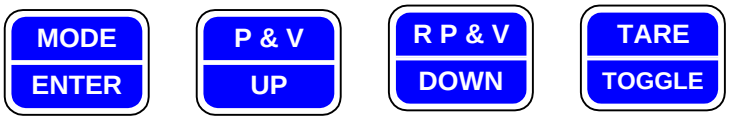


DESCRIPTION:

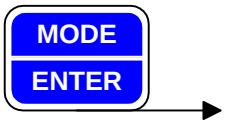
The Model 9300A Strain Gage Readout is a microprocessor based high-resolution instrument. The 9300A utilizes a 16-bit sigma-delta analog to digital converter. It performs a display update at 10 times per second. All calibration takes place through the front panel where no pots are used. Calibration is performed by entering the calibration mode and pressing a switch to calibrate zero and full scale. This calibration is taken care of at the factory, and is only required on an annual basis. When it does become necessary it can be easily performed in the field or job site. The unit can be made to produce any display reading for the given zero and full scale inputs. When the optional analog output is installed it can be made to output it's zero and full scale at any display reading.

SWITCH FUNCTIONS:

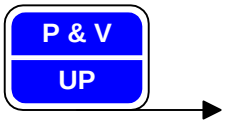
On the front of the 9300A will be four switches that are located behind the front lens. Each switch is labeled from left to right as Mode[Enter], P&V[Up], RP&V[Down], and Tare[Toggle]. A description of each switch function is as follows.



SWITCH FUNCTIONS:

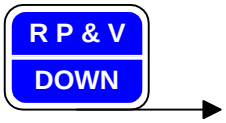


S***etup & Calibration Modes***
Press to store a completed setting and advance to the next setup.



Data Acquisition & Display
Press to select desired display mode: peak, valley, normal operation mode.

Setup & Calibration Modes
Press to increment the digit/parameter being set.



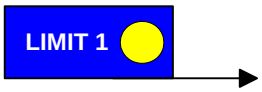
Data Acquisition & Display
Press to reset the peak and valley.

Setup & Calibration Modes
Press to decrement the digit/parameter being set.

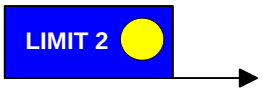
Data Acquisition & Display
Press to display the tare value. Hold for a approximately two seconds, to store display as the new tare value.

Setup & Calibration Modes
Press to advance to the next digit to be set.

LED INDICATORS:



Programmable to illuminate or extinguish when the display meets or exceeds the set limit.



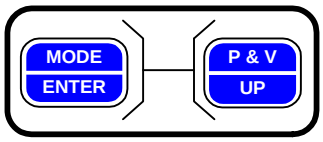
Programmable to illuminate or extinguish when the display meets or exceeds the set limit.

Illuminates when the display is set to peak mode.

Illuminates when the display is set to valley mode.

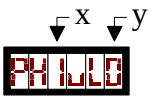
SETUP:

The meter setup is accomplished by using the four front panel switches. The setup mode is entered by pressing the Mode[Enter] and P&V[Up] switches simultaneously. The setup procedures are as follows.



NOTE: If not pressed simultaneously the unit may be in peak or valley mode after exiting setup. The peak or valley LED will be illuminated and the peak or valley reading will be displayed.

Peak & Valley:

Upon entering the setup mode the display will show 

where "x" sets the peak on or off and "y" sets the valley on or off. Where "1" is on and "0" is off. Press P&V[UP] will toggle "x" and RP&V[Down] will toggle "y". Press the Mode[Enter] switch to proceed to the next setup function.

Note: Only one mode may be turned on at any time.

Decimal Point Position:

Display will flash 

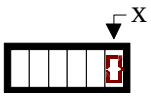
then the display will show 

to program the desired decimal point position use the Tare[Toggle] switch to move the decimal point. Press the Mode[Enter] switch to proceed to the next setup function.

Note: Placement of decimal point has no effect on the display reading.

Tare Setting:

Display will flash 

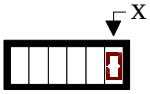
then the display will show 

where "x" is the current tare value. To set the tare value to zero press Tare[Toggle]. Press the Mode[Enter] switch to proceed to the next setup function.

Note: In normal operating mode the tare switch will only tare the unit, to zero the tare value enter setup mode and set tare to zero.

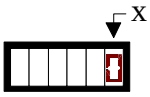
Set Display Zero:

Display will flash 

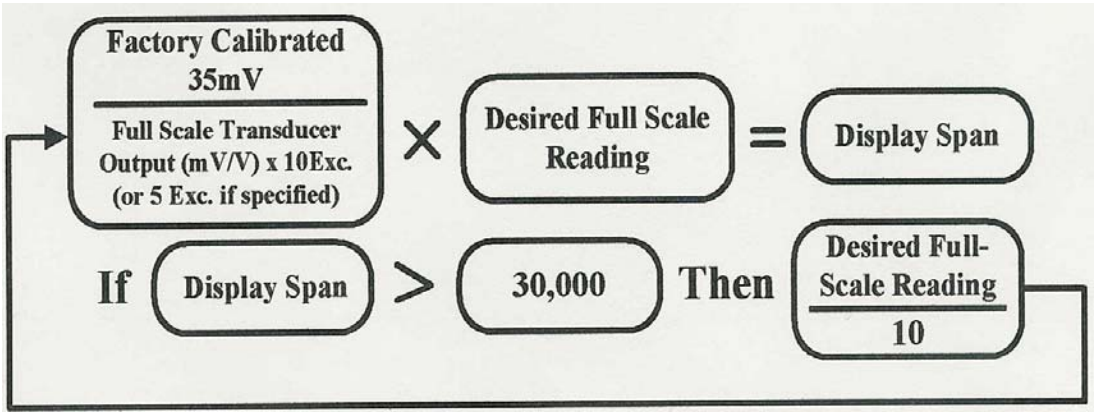
then the display will show 

where "x" is the zero calibration point value. This value is what the display will read when the voltage at the input is at the calibration zero point, calibration is on page 11. This value can be any number ± 30,000 counts not to exceed set span value. To change this value, follow this procedure, P&V[Up] increments the selected digit and RP&V[Down] decrements the selected digit. The Tare[Toggle] switch selects the desired digit to be incremented or decremented. Upon entering any setup function the LSD (far right displayed digit) is selected. At each press of the Tare[Toggle] switch moves the selected digit to the left and back to LSD. Press the Mode[Enter] switch to proceed to the next setup function.

Set Display Span:

Display will flash  then the display will show  where "x" is the span calibration point value or the calculated span number. This value is what the display will read when the voltage at the input is at the calibration span point or calculated span number, calibration is on page 11. This number can be any number from ± 1,000 to ± 30,000 counts not to fall below set zero value.

Note: Unit is shipped from factory calibrated at 35mV equals 30,000 counts.



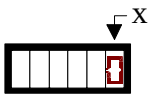
To change this value, follow this procedure, P&V[Up] increments the selected digit and RP&V[Down] decrements the selected digit. The Tare[Toggle] switch selects the desired digit to be incremented or decremented. Upon entering any setup function the LSD (far right displayed digit) is selected. At each press of the Tare[Toggle] switch moves the selected digit to the left and back to LSD. Press the Mode[Enter] switch to proceed to the next setup function.

Note: If desired to have unit read higher then 30,000 counts the following formula must be used and unit recalibrated. y - 30,000 = x. y = Desired full scale, x = new zero display value, Put x in the "set display zero" and when in normal operating mode tare the display at zero. For example: Need to display 40,000 counts with 30mV input. Calibrate unit for 30mV full scale input. Program display zero in setup for minus 10,000 counts. Program span for 30,000 counts. Exit the setup mode and input 0mV and tare the display.

The accuracy of the unit is based on a span number 30,000 counts with an input voltage of 35mV. If the span number is increased above 30,000 counts the least significant digit will increment by greater then one but the accuracy would still be .01% of reading ± one count of the A/D converter. If the unit is calibrated at anything less than 35mV for the purpose of increasing the display counts beyond 60,000 the accuracy will degraded.

Set Analog Output Zero:

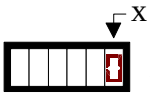
If the analog output option has been installed the display will flash 

then the display will show 

where "x" is the analog output zero value. If not go to limit setup. This value is what the display reads when the analog output is a 0 volts or 4mA. This value can be any number up to ± 30,000 counts not to exceed set analog output span value. To change this value, follow this procedure, P&V[Up] increments the selected digit and RP&V[Down] decrements the selected digit. The Tare[Toggle] switch selects the desired digit to be incremented or decremented. Upon entering any setup function the LSD (far right displayed digit) is selected. At each press of the Tare[Toggle] switch moves the selected digit to the left and back to LSD. Press the Mode[Enter] switch to proceed to the next setup function.

Set Analog Output Span:

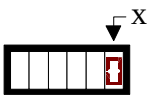
Display will flash 

then the display will show 

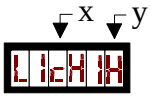
where "x" is analog output span value. This value is what the display reads when the analog output is at 10 volts or 20mA. This value can be any number from ± 1,000 to ± 30,000 not to fall below set analog output zero value. To change this value, follow this procedure, P&V[Up] increments the selected digit and RP&V[Down] decrements the selected digit. The Tare[Toggle] switch selects the desired digit to be incremented or decremented. Upon entering any setup function the LSD (far right displayed digit) is selected. At each press of the Tare[Toggle] switch moves the selected digit to the left and back to LSD. Press the Mode[Enter] switch to proceed to the next setup function.

Limit 1 Setup:

Display will flash 

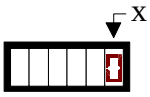
then the display will show 

where "x" is limit 1 value. This value can be any number up to ± 30,000 counts. To change this value, follow this procedure, P&V[Up] increments the selected digit and RP&V[Down] decrements the selected digit. The Tare[Toggle] switch selects the desired digit to be incremented or decremented. Upon entering any setup function the LSD (far right displayed digit) is selected. At each press of the Tare[Toggle] switch moves the selected digit to the left and back to LSD. Press the Mode[Enter] switch to proceed to the next setup function.

Display will show 

where "x" is the function that limit 1 will monitor. The 9300A will only monitor CH1. When "y" is "H" the limit activates above the display reading or "L" activates the limit below the display reading. To change "y" press the RP&V[Down] switch . Press the Mode[Enter] switch to proceed to the next setup function.

Limit 2 Setup:

Display will flash  then the display will show  where "x" is limit 2 value. This value can be any number up to ± 30,000 counts. To change this value, follow this procedure, P&V[Up] increments the selected digit and RP&V[Down] decrements the selected digit. The Tare[Toggle] switch selects the desired digit to be incremented or decremented. Upon entering any setup function the LSD (far right displayed digit is selected. At each press of the Tare[Toggle] switch moves the selected digit to the left and back to LSD. Press the Mode[Enter] switch to proceed to the next setup function.

Display will show  where "x" is the function that limit 2 will monitor. The 9300A will only monitor CH1. When "y" is "H" the limit activates above the display reading or "L" activates the limit below the display reading. To change "y" press the RP&V[Down] switch . Press the Mode[Enter] switch to proceed to the next setup function.

Guardband Setup:

 The next setup function will allow control over the limit settings for control applications. The three digit number is the guardband hysteresis setting. The guardband setting will allow the reading to fall within a window before limit activation occurs. For Example: If the limit were set at 500, the guardband set at 5, and the limit activates as a high limit. If the reading were 490 the limit would be off, if the reading were 501 the limit would be on, if the limit were on and the readings starts to fall the limit would not turn off until the reading falls below 495. This feature is useful when using a heater to control the temperature of a liquid. To change the guardband setting, pressing P&V[Up] will increment the number by one, and pressing RP&V[Down] will decrement the number by one. Press the Mode[Enter] to complete set up, unit will flash " done " then exit to normal operation. If option 01 or 02 is installed pressing Mode[Enter] will continue to serial communications set up.

NOTE: See the serial communications section on page 12 for more information on the following setups. Note that the baud rate setup, unit address setup, echo line feed, continuous update, and the serial command setups apply only if you have options 01 or 02 installed on the instrument.

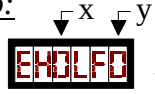
Baud Rate Selection:

Display will show  where "x" is desired baud rate, use the P&V[Up] or RP&V[Down] to toggle through the available settings (9600, 4800, 2400, 1200, 600, 300, 150, and 75). Press the Mode[Enter] switch to proceed to the next setup function.

Unit Address Setup:

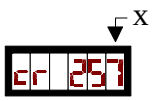
Display will show  where "x" is desired address, use the P&V[Up] or RP&V[Down] to program the unit's address. The address used must be in the range of 0 to 255. Press the Mode[Enter] switch to proceed to the next setup function.

Echo and Line Feed Setup:



Display will show where "x" is the desired echo command, the echo command is used to turn the auto echo function on or off. When on, the unit automatically re-transmits all received serial data. When the selected value "x" is a 1 the echo function is turned on, conversely when "x" is 0 the echo function is turned off. Where "y" is the desired line feed command, the line feed command is used to turn the line feed function on or off. When the line feed is on the unit will add a line feed character (1) to every message. When the selected value "y" is a 1 the line feed character is transmitted, conversely when "y" is 0 the line feed character is not transmitted. To turn the line feed option on/off use the RP&V[Down] switch. Press the Mode[Enter] switch to proceed to the next setup function.

Continuous Update Setup:



Display will show where "x" is continuous reading, the continuous reading command allows an auto serial update mode to be selected. A value of –1 will output data once for every conversion (10 times per second). A value of one or greater will indicate the number of seconds between updates, up to the maximum of 3600 seconds between updates. The value of zero will disable the auto update function. To program the continuous update setting (-1 to 3600) using the P&V[Up], RP&V[Down] switches to move in either direction. The Tare[Toggle] switch selects the digit you wish to change. Press the Mode[Enter] switch to proceed to the next setup function.

Legend Setup:

Display will show where "x" is the legend number, the legend setup command allows the selection of a unit to define the transmitted reading. Use the P&V[Up], RP&V[Down] switches to select a legend number from the legend table below. Press the Mode[Enter] switch to proceed to the next setup function.

Legend Table

1. – LBS	6. – F.	11. – KOhms	16. – RPM	21. – Hz
2. – TEMP	7. – Mv	12. – Mohms	17. – FPM	22. – VAC
3. – C	8. – V	13. – PSI	18. – GPM	23. – mRADS
4. – C.	9. – A	14. – PSIA	19. – MPH	
5. – F	10. – Ohms	15. – PSIG	20. - IPM	

Serial Command Setup:

Display will show 

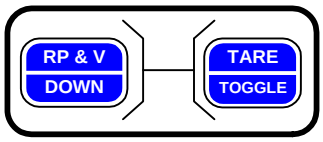
where "x" = device code, a 1 will enable and 0 will disable. Where "y" is the command to send to the next unit in the string. Remote serial command is most widely used if several units are connected together in series to the same printer. A device code allows the units to “take turns” on a serial bus. When two or more units are connected serially and set for the same bus, the first unit in the string can have its device code enabled. All units should have the echo function enabled in order to pass messages along in the string. When the serial command is sent a value (XYY) the first attached number (YY) is the corresponding number for the remote serial command. A table of these numbers can be found in the serial communication section on Page 12. Use the P&V[Up] switch to select the device code, RP&V[Down] will change "r". Press the Mode[Enter] switch to proceed to the next setup function.

Display will flash 

then exit to normal operation.

CALIBRATION:

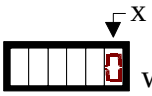
The calibration mode is entered by pressing RP&V[Down] and Tare[Toggle] switches simultaneously. Note: This is the only method to check or change the calibration of this unit externally.



Note: Do not enter the calibration mode unless you have appropriate signal source for zero and span calibration.

Protection Code:

Display will flash 

then display will show 

where "x" is the code number. Before any calibration can be performed on the unit a unique security code must be entered. If the code is not entered correctly the unit will automatically revert to display and acquisition mode; otherwise, the user is allowed to proceed with the calibration sequence. To enter the code use the P&V[Up] or the RP&V[Down] switches to set the code any were from (0-99).

When the unit is shipped from the factory the code setting is set at 0.

Display's the introduction to the calibration of the A/D Converter.

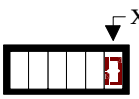
Zero Point Calibration Programming:

Display will show 

this is to show that a new zero point and span point is ready to be set. Set the transducer or calibrator for zero point, allow sufficient time, 5 to 10 seconds, for the unit to stabilize. Press the P&V[Up] switch, this will display "cH 1 0" and store your zero point. Next set the transducer or calibrator for a span point, allow sufficient time, 5 to 10 seconds, for the unit to stabilize. Then press the RP&V[Down] switch to store new span calibration, this will display "cH1 FS" and store your span point. Press the Mode[Enter] switch to move to the next step.

New Protection Code Programming:

Display will flash 

then the display will show 

where "x" is current protection code value. A different protection code can be programmed at this time. The code can be anywhere in the range 0-99. If a new code is not required simply press Mode[Enter]. The calibration sequence is now ended.

Display will flash 

then exit to normal operation.

SERIAL COMMUNICATIONS:

If the serial communications option is installed it allows the 9300A series to communicate with a remote computer, terminal or printer. Two standard serial options are available RS-232 or RS-485. Almost all functions available from the front panel switches can be duplicated by the host computer. Listed below are all commands with their associated remote serial command number. Later in this section a full description is given for each command.

1	EH	Set Echo Mode
2	LF	Set Line Feed Mode
3	AE	Address Enable
4	AD	Address Disable
5	RD	Read Display
6	NOT USED	
7	NOT USED	
8	S1	Set Limit One (high limit)
9	S2	Set Limit Two (low limit)
10	NOT USED	
11	NOT USED	
12	SP	Peak Reset
13	SV	Valley Reset
14	SZ	Remote Tare
15	NOT USED	
16	NOT USED	
17	NOT USED	
18	NOT USED	
19	TM	Test Message
20	NOT USED	
21	NOT USED	
22	CR	Set Continuous Reading Mode
23	NOT USED	
24	NOT USED	
25	NOT USED	
26	LR	Set Legend
27	SC	Remote Serial Command
28	DP	Set Decimal Point Position
29	NOT USED	
34	NOT USED	
35	PV	Set Display, Serial Reading Modes

Serial data is transmitted/received as ASCII characters, using the selected baud rate, each word or character is made up of eight data bits, one stop bit and no parity bit. The format of data transmitted depends on the command. The left most character is transmitted or received first and terminated with a carriage return (c.r.). When additional digits are required, the leading zeros or place holders may be omitted. A plus sign is optional but if used, it must proceed the numbers. Any received numbers will have the decimal point ignored. Transmitted numbers will have a decimal point (when needed) to conform with the display format. In the command descriptions below the command string will be shown within brackets ([ ]), the sign

if required will be shown as a lower case (s), and the number as upper case (X). Commands that are used to set a parameter can be sent to the unit without that parameter attached. The unit will respond with the current setting for that parameter. This allows the verification of parameter settings. Once a valid command is received and executed, the unit responds by transmitting [Okc.r.] on the serial bus. The following is a list of all serial commands with a description of their meaning, along with programming instructions.

ECHO: [EHXc.r.]

The echo command is used to turn the auto echo function on or off. When the echo is on, the unit automatically re-transmits all received serial data. When the applied value X is a one the echo function is turned on, conversely when X is zero, the echo function is turned off.

LINE FEED: [LFXc.r.]

The line feed command is used to turn the line feed on or off. When the line feed is on the unit will follow every message with a line feed character. When the applied value X is a one the line feed character is transmitted, conversely when X is zero the line feed character is not transmitted.

ADDRESS ENABLE: [AEXXXc.r.]

The address enable and disable commands can be used when a series of 9300s are connected together on the same serial bus, (i.e. a RS-485 serial interface where several units are in parallel on a serial bus or an RS-232 serial interface where several units are connected in series). The address enable command allows the unit specified by the address number XXX to be enabled. The address used must be in the range of 1 to 255. When the unit address is set to 0, the unit will respond to commands without first receiving the address enable command. When enabled with the address enable command the unit will respond with [HELLOc.r.]

Note: If addressing more than one unit, zero address can not be used.

ADDRESS DISABLE: [ADXXXc.r.],[Adc.r.]

This command allows the unit specified by the address number XXX to be turned off or disabled. The address must be in the range of 1 to 255. If an address is not supplied with the command all units on the serial bus will be turned off or disabled. If the unit is disabled by the unit address number the unit will respond with [BYEc.r.].

READ DISPLAY: [Rdc.r]

When the read display command is received the unit will return either the current reading, the current peak reading or the current valley reading, depending on the serial reading mode selected by the reading mode command (see below). *The return data format will be [sXXXX.Xc.r.] where (s) is the minus sign (if needed), (XXXXX) is the reading, and (.) is the decimal point (if needed).*

SET LIMIT: [S#XXXXXc.r.]

The set limit command is used to program a limit number for the high or low limit. The first number following the command (#) specifies whether the high limit or low limit is being programmed. A one in this field specifies the high limit, while a two specifies the low limit. The number following this (XXXXX) is the actual limit number to be entered.

VERIFY LIMIT: [VXc.r.]

The verify limit command is used to read the current high and low limit settings for the unit. The applied number (X) specifies whether the high or low limit value is to be returned. A one specifies the high limit, while a two specifies the low limit.

RESET PEAK: [Spc.r.]

The reset peak command performs a remote reset to the peak reading.

RESET VALLEY: [Svc.r.]

The reset valley command performs a remote reset to the valley reading.

REMOTE TARE: [SZXc.r.]

The remote tare command is used to perform a tare function comparable to the panel tare switch. When the command is received with a number (X) attached, the tare value is set or cleared depending on whether the unit was already tared or not. When the command is received without a number attached the current tare value is returned.

TEST MESSAGE: [TMc.r.]

The test message command is a diagnostic aid. When the test message command is received the unit will output all current settings, readings and the model number with software revision.

CONTINUOUS READING: [CFXXXXc.r.]

The continuous reading command allows the auto serial update mode to be selected. It updates all the units with corresponding display data at the selected time interval. The attached number (XXXX) is the numeric value from –1 to 3600. A value of 0 will disable the auto update function. A value of –1 will output data once for every conversion (2.5 times per second). A value of one or greater indicates the number of seconds between updates up to maximum of 3600 seconds between updates.

SET LEGEND: [LRX c.r.]

The set legend command allows the selection of a unit indicator, which will be added onto the reading update from the serial output. The number (X) applied to the command indicated which unit from the legend table (on page 9) will be appended to the serial reading.

REMOTE SERIAL COMMAND: [SCXYyc.r.]

For data logging purposes, certain concessions must be made if several units are connected together to the same printer. If the units are connected serially and set for the same auto update time, there is a possibility resulting in jumbled data. A device code allows the units to “take turns” on the serial bus. When two or more units are connected to the same bus, the first unit in the string can have it's device code enabled. The unit will then send a printable character at the end of it's message string. The next unit will suppress this character and perform a serial command specified in the remote serial command setup (for example a RD command). The second unit may also have the device code enabled and so on. All units should have the echo function enabled in order to pass messages along in the string.

When the SC command is sent a value of zero for the first attached number (X) disables the device code, conversely a one enables the device code. The second attached number (YY) is the corresponding number for the remote serial command. These numbers can be found in the serial communications section in the table on page 12.

DECIMAL POSITION: [DPXc.r.]

The decimal position command allows programming a decimal point position for the display and serial communication readings. The attached number (X) can have a range of 0 to 5 the table below shows the each value and its corresponding effect on the decimal point position.

X=0: No decimal point
X=1: YYYY.Y
X=2: YYY.YY
X=3: YY.YYY
X=4: Y.YYYY
X=5: .YYYYY

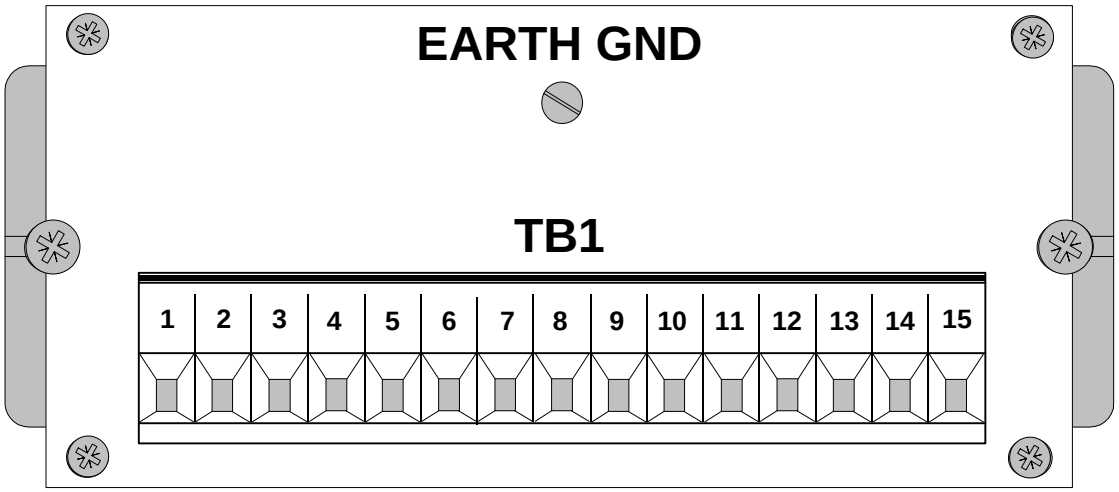
READING MODE: [PVXc.r.]

The reading mode command is used to set the display and serial interface reading modes (i.e., reading, peak, or valley). The attached number (X) has a range from 0 to 6 with each value representing a particular combination of displays and serial reading modes. The list of combinations follows:

X = 0: Display = reading, Serial = reading
X = 1: Display = peak, Serial = reading
X = 2: Display = reading, Serial = peak
X = 3: Display = Peak, Serial = Peak
X = 4: Display = valley, Serial = reading
X = 5: Display = reading, Serial = valley
X = 6: Display = valley, Serial =valley

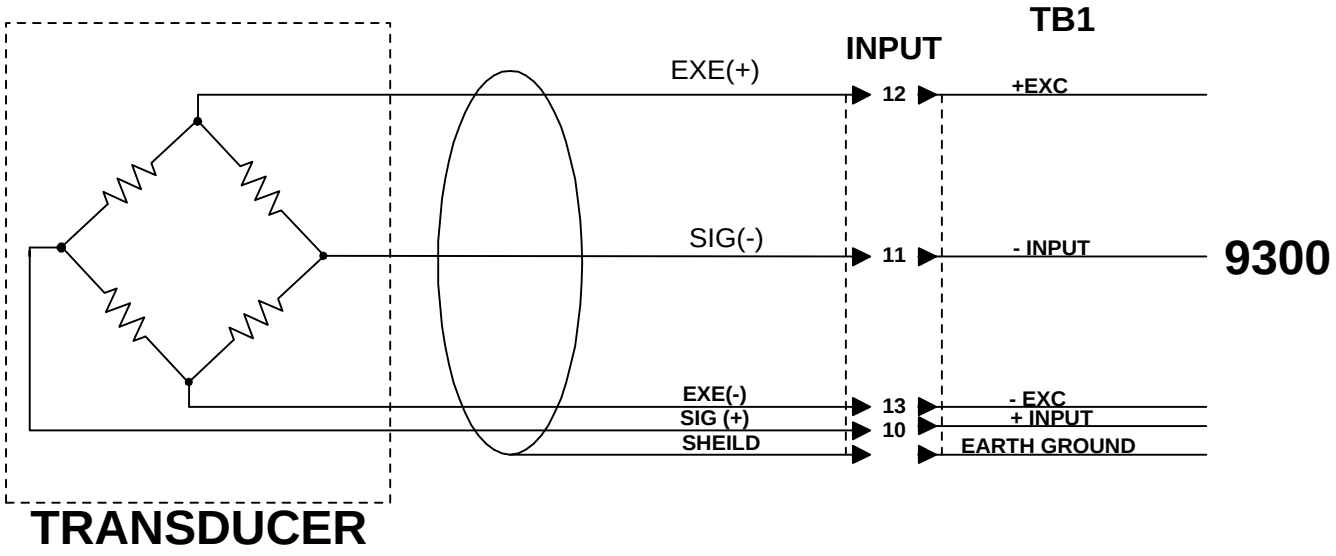
9300A BACK VIEW

FIGURE 1.0



INPUT CONNECTIONS – TRANSDUCER TO TB1

FIGURE 2.0



9300A CONNECTIONS

TB1

1. 115VAC Line/-DC Power
2. 115VAC Neutral/+DC Power
3. RS-232 Transmit/RS-485
4. RS-232 Receiver/RS-485
5. Digital Ground
6. Limit 1 Normally-Open
7. Limit 1 Common
8. Limit 2 Normally-Open
9. Limit 2 Common
10. Channel 1 Input +
11. Channel 1 Input -
12. Excitation + (10Volts)
13. Excitation -
14. Analog Output
15. Analog Ground

NOTE: For proper AC line filtering and safety precautions Pin 1 must be connected to Line, Pin 2 connected to neutral and unit must be tied to earth ground.

NOTE: Standard Input Power is 115VAC (Optional power is listed below).

Option 05, Input Power is +5VDC, Pin 1 (-) and Pin 2 (+)
Option 12, Input Power is +9VDC-18VDC, Pin 1 (-) and Pin 2 (+)
Option 22, Input Power is 230VAC
Option 24, Input Power is + 18VDC to +36VDC, Pin 1 (-) Pin 2 (+)

SHUNT-CAL RESISTOR:

Shunt-Cal Resistor for Calibration:

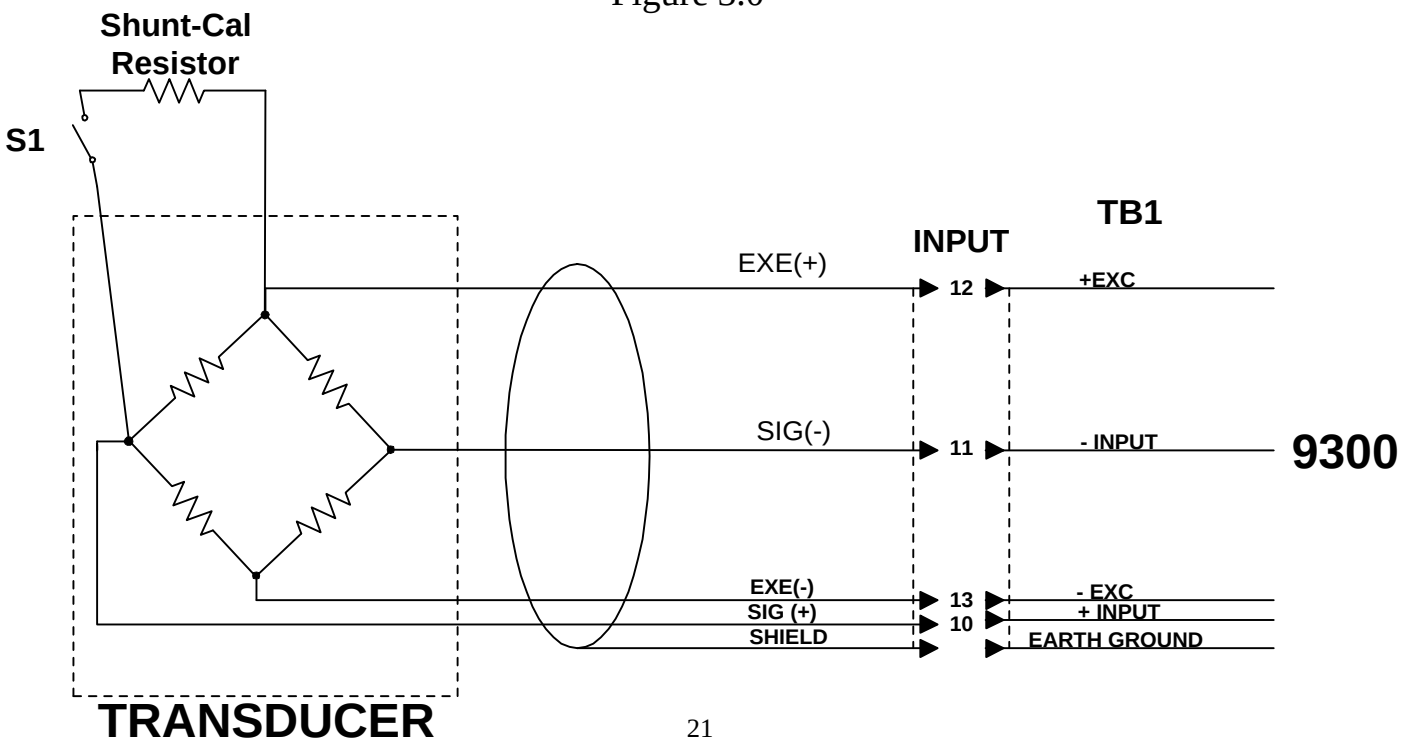
If a shunt-cal resistor is required for calibration, use this process to properly calibrate the instrument. To start this process, a specification for the shunt-cal resistor is required from the load cell manufacturer, for example: 60KΩ = 80lbs if shunt-cal resistor is not available from manufacturer you may contact DCI sales and order part number 01-0346-00. Enter the calibration mode by following the procedure found in the calibration section on page 10, and stop at *Zero Point Calibration*. With no load on the transducer or the transducer loaded for desired zero point press P&V[Up]. Then install the shunt-cal resistor to TB1 at pins 10 and 12 and allow at least 5 to 6 seconds for the change to take place before pressing RP&V[Down], and press Mode[Enter] twice to complete the calibration procedure. Next proceed to the setup procedure on page 5. Go to *Set Display Spa*n, enter the specified scale reading (example: 80 = 80lbs). To exit setup at that point press Mode[Enter] and then Mode[Enter] plus P&V[Up] simultaneously before the next display reading. **There is one very important note to beware of, once the calibration has been changed with the shunt-cal resistor, the factory calibration is lost. To restore the factory calibration the instrument must be returned for calibration.**

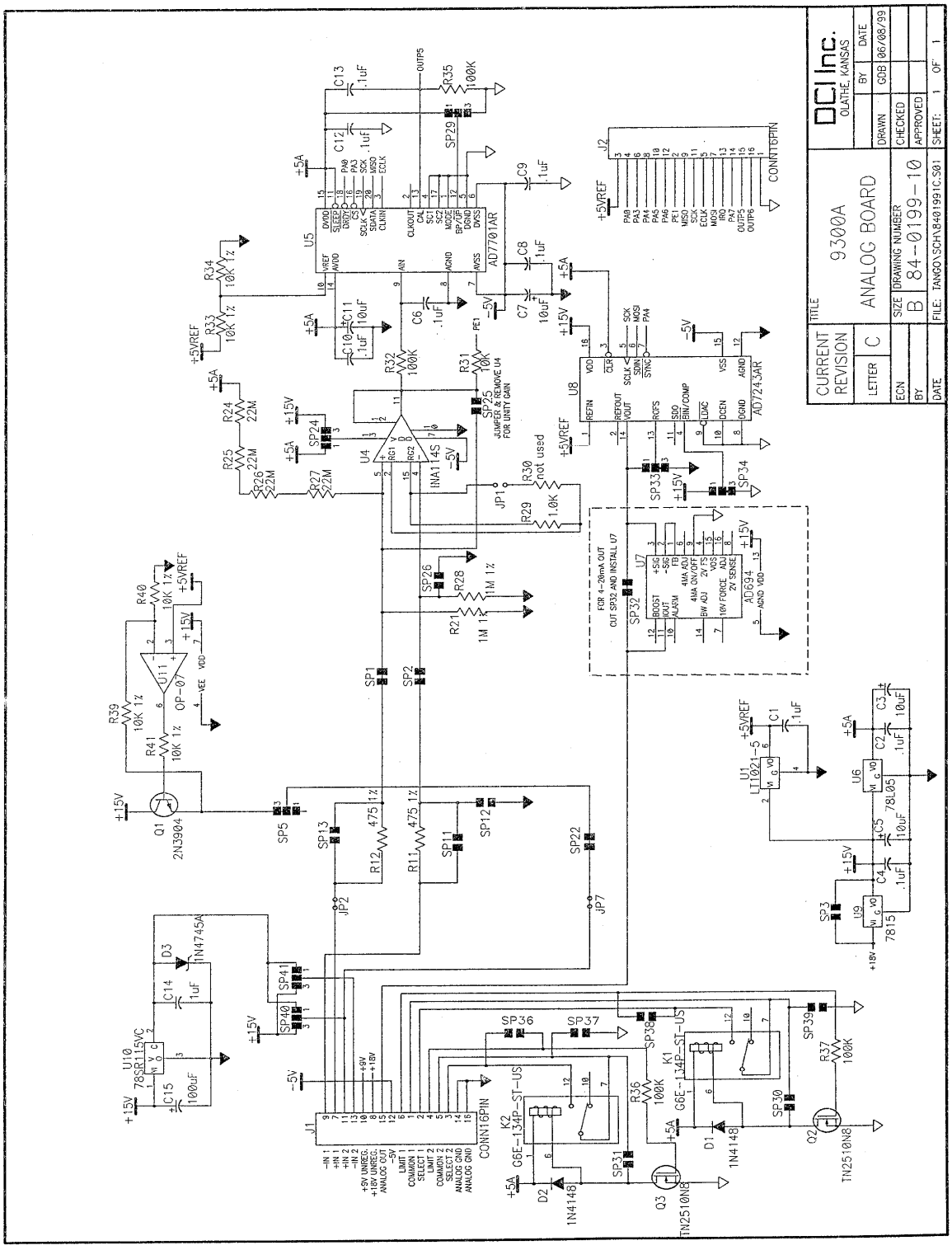
Shunt-Cal Resistor for Calibration verification:

To allow for periodic calibration verification install the shunt-cal resistor provided by the load cell manufacturer or DCI part number 01-0346-00 as in figure 3.0.

Press S1 to verify that the shunt-cal resistor equals the manufacturer set value for that cal resistor or the DCI calculated value when using DCI part number 01-0346-00 for that load cell.

Figure 3.0




DCI Inc.
OLATHE, KANSAS
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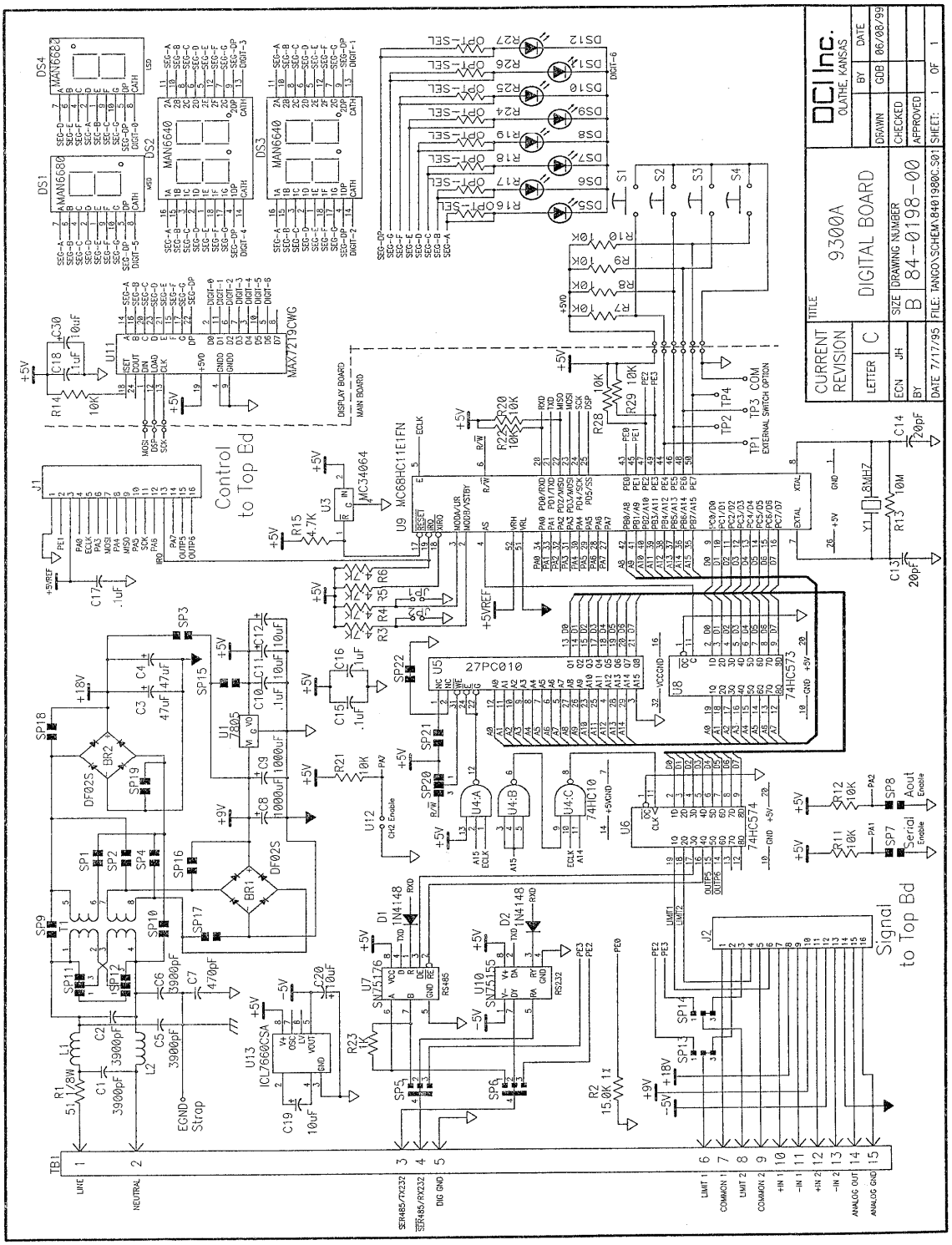
9300A
ANALOG BOARD
CURRENT REVISION
LETTER C
SIZE B
DRAWING NUMBER 84-0199-10
DRAWN GDB 06/08/99
CHECKED
APPROVED
SHEET: 1 OF 1
FILE: TANGO\SCH\840199C.S01
CONN16PIN
CONN10PIN
AD7701AR
AD7243AR
INA114S
OP-07
AD694
LT1021-5
78L05
7815
78SR115VC
2N3904
1N4745A
1N4148
TN2510N8
C6E-134P-ST-US
G6F-134P-ST-US
not used
JUMPER & REMOVE U4 FOR UNITY GAIN
FOR 4-20mA OUT CUT SP32 AND INSTALL U7


DCI Inc.
OLATHE, KANSAS
TITLE
9300A
DIGITAL BOARD
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LETTER C
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BY
DATE 7/17/95
SIZE B
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DRAWN BY
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APPROVED
DATE 06/08/99
SHEET: 1 OF 1
Control to Top Ed
Signal to Top Bd
DISPLAY BOARD
MAIN BOARD
EXTERNAL SWITCH OPTION
EGND Strap
LINE
NEUTRAL
SER485/TX232
SER485/RX232
DIG GND
ANALOG OUT
ANALOG GND
LIMIT 1
COMMON 1
LIMIT 2
COMMON 2
+IN 1
-IN 1
+IN 2
-IN 2
MC68HC11E1FN
27PC010
74HC573
74HC10
74HC574
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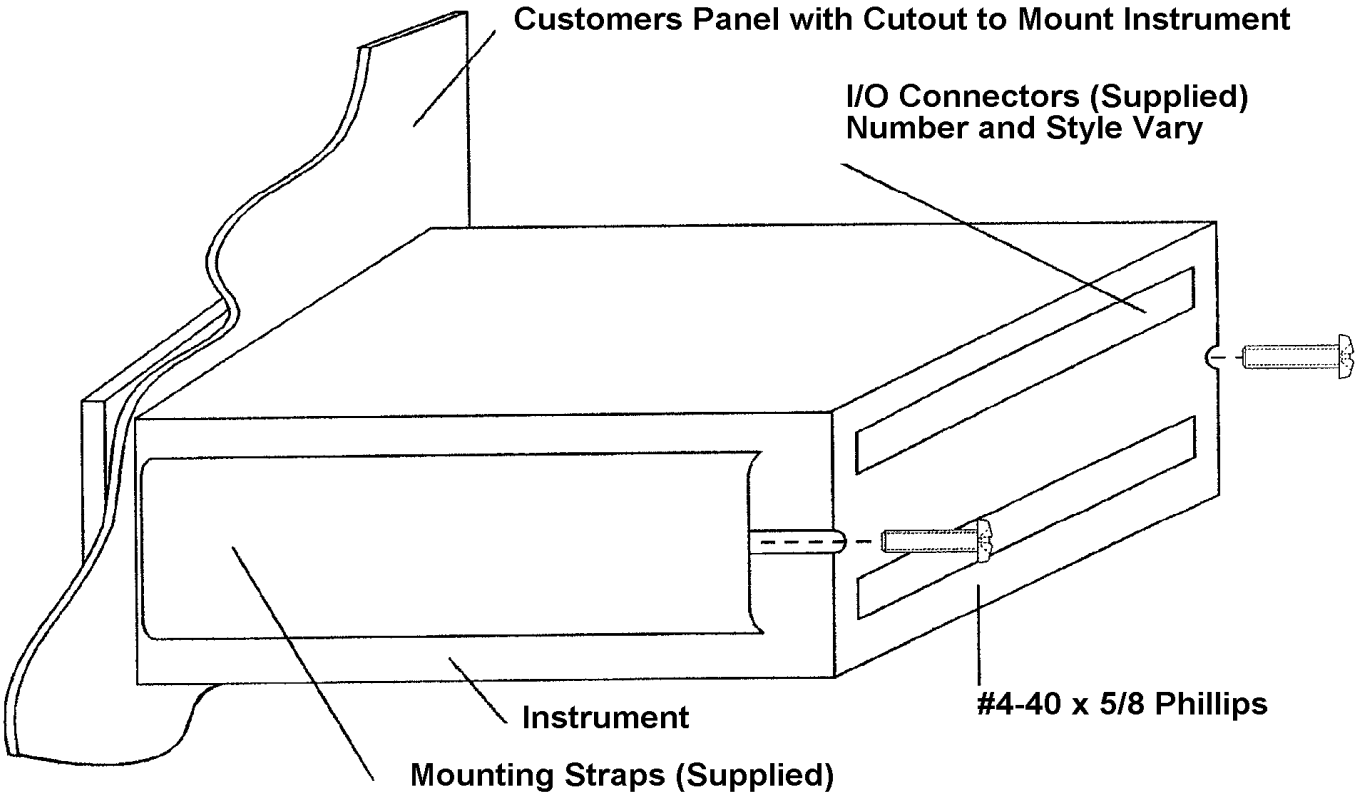
1N4148
DF02S
MAN6680
MAN6640

MOUNTING



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