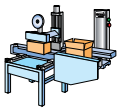
TEXMATE Since 1976 Smart Metering Smart Control

USER MANUAL

SG100

Weighing Controller

Packaging & Check Weighing



Batching & Filling

Vehicle Weighing

Silo & Tank Weighing

c UL us LISTED E469078 CE RoHS COMPLIANT

Introduction

The SG100 weighing controller is a high performance, programmable digital weighing system delivering precise measurement and control from a load cell input. It is pre-configured with the calibration options required for silo and tank weighing applications.

- **1/8 DIN Case**
- **3-button Front Panel Operation**
- **6-digit, 0.56" (14.2 mm) Alphanumeric Display**
- **Intuitive Scrolling Text Menu Configuration**

The 6-digit alphanumeric LED display provides easy to follow setup prompts for all load cell parameters using intuitive scrolling text menus, including:

- Manual Trim for Zero Offset and Span.
- Manual mV/V Setup.
- Zero Span Calibration.
- Decimal Point Position.
- Last Digit rounding.
- Windowed Signal Averaging.
- Selectable Sampling Rate.
- Auto Zero Maintenance.
- Manual Zero.
- Tare and Reset Tare.

The resident Tiger 320 operating system also provides a range of built-in measurement and control functions providing a reliable and precise industrial quality weighing solution. These include:

- **Status Inputs.** Manual zero, tare and reset tare from external status inputs.
- **Relays.** Two 9A Form C standard, Optional Four 4A Form A.
- **Setpoints.** Four programmable setpoints with advanced multiple timer modes, hysteresis, deviation, PID, and setpoint tracking.
- **Analog Output.** Fully scalable from 4 to 20 mA (or reverse) as standard, or optional 0 to 10 V DC and Dual 4-20mA/0-1V DC.
- **Totalizers.** Dual totalizers with independent reset and scaling.
- **Linearization.** Up to four 32-point flexible linearization tables or a single 125-point flexible table.
- **Serial Communications.** RS-485 Standard.
- **Data Logging.** Optional data logging of up to 4000 samples with real-time clock.
- **Excitation.** The controller provides excitation for up to eight 4 or 6-wire 350 Ω load cells.
- **Power Supplies.**

  Standard high voltage
  AC / DC power supply 85-265 V AC / 95-300 V DC.

  Optional low voltage
  AC / DC power supply 15-48 V AC / 15-72 V DC.

Specifications

Digital Display: 14-segment alphanumeric, 0.56" (14.2 mm) LEDs.

Display Color: Red (standard). Call Texmate for other options.

Display Range: -199999 to 999999.

Display Update Rate: 3, 10, or 100 times per second.

Display Dimming: 8 brightness levels. Front panel selectable.

Scrolling Display Text Messaging: Full alphanumeric text characters supported.

Polarity: Assumed positive. Displays – negative.

Annunciators: 6 red LEDs on front panel; one per setpoint.

Overrange Indication: OVER

Underrange Indication: UNDER

Front Panel Controls: PROGRAM, UP and DOWN buttons.

Excitation: 5 V DC, 130 mA maximum, eight x 350 Ω bridges.

Input Range: Software selectable for sensors from 1 mV/V to 20 mV/V.

Zero Drift: ± 40 nV/ °C typical.

Span Drift: ± 5 ppm/ ° C of full scale maximum.

Non-linearity: ± 0.003% of full scale maximum.

Input Noise: 160 nVpp typical at 1 Hz output rate.

Signal processing Rate: 50 Hz maximum, 1 Hz minimum.

Warm Up Time: Up to 10 minutes for load cell to settle.

Conversion Rate: 1, 10, 50 Hz selectable.

Control Output Rate: Can be selected for 100 msec or 10 msec.

Frequency Select: 50 Hz/60 Hz noise rejection, software selectable.

Load Cell Input: 4 or 6-wire Bridge, header selectable.

Output:

Two Form C Relay Specifications: 9 A 240 VAC~1/2 HP, 8 A 24 VDC. Isolation 3000 V. UL listed.

Optional Four Form A Relay Specifications: 4 A 240 VAC, 4 A 24 VDC. Isolation 3000 V. UL listed.

Environmental

Operating Temperature: 0 to 50 ˚C (32 ˚F to 122 ˚F).

Storage Temperature: -20 ˚C to 70 ˚C (-4 ˚F to 158 ˚F).

Relative Humidity: 95% (non-condensing) at 40 ˚C (104 ˚F).

Mechanical

Case Dimensions: 1/8 DIN, 96x48 mm (3.78" x 1.89")

Case Material: 94V-0 UL rated self-extinguishing polycarbonate.

Weight: 11.5 oz (0.79 lbs), 14 oz (0.96 lbs) when packed.

Approvals

CE: As per EN-61000-3/4/6 and EN-61010-1.

UL Listed

Table of Contents

Intuitive Scrolling Text Menus

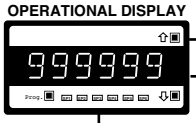
After the controller has been powered up, the display settles and indicates the input signal calibrated value. This is known as the operational mode and is generally referred to as the operational display throughout this document.

Intuitive scrolling text menus provide quick access to a range of configuration modes for easy load cell application setup. The Load Cell Controller – Setup Menu Logic Tree below describes all the modes with intuitive scrolling text menus.

Further Programming

Further programming of controller functions include calibrating the analog output's milliamp/voltage output, serial port settings, and setpoint programming modes.

OPERATIONAL DISPLAY



Scrolling Menus

Press the [P] button for 4 seconds to enter the Configuration Menus.

Other Calibration Settings

Press the [P] and [⇧] buttons at the same time to enter the Brightness Mode and set the brightness setting.

Press the [P] button again to enter the Calibration Mode and configure the following settings:

- Calibrate analog output's milliamp or voltage output.
- Configure serial port settings if serial board installed.

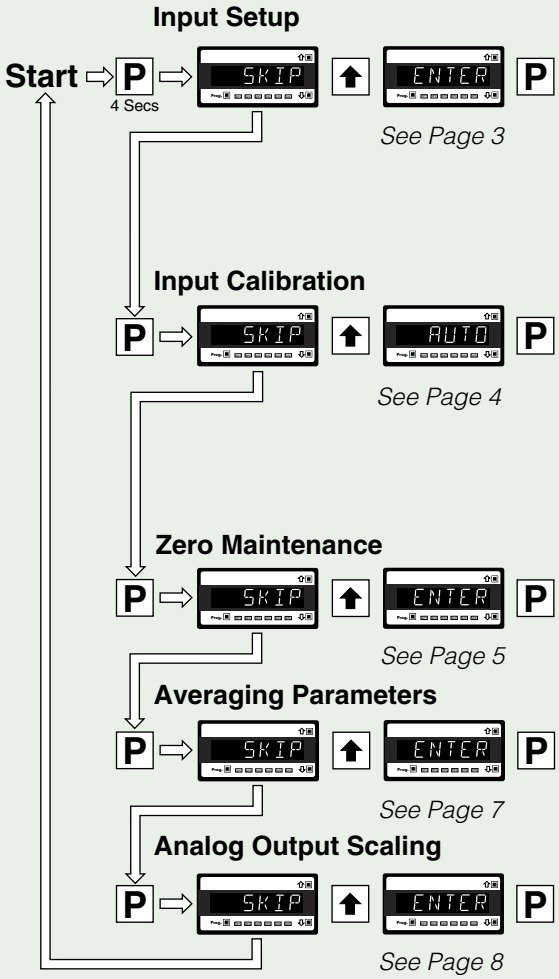
Setpoint Programming Mode

Press the [P] and [⇩] buttons at the same time to enter the Setpoint Programming Mode

Advanced Functions

Additional built-in measurement and control functions are also available with the SG100 controller's resident Tiger 320 operating system. These can be programmed from the front panel buttons or via Texmate's configuration utility program, which is available for free download at: www.texmate.com.

Configuration Menus Logic Tree



Takes you into the Input Setup mode and provides selection for:
- Supply Frequency: 50 or 60 Hz.
- Sampling Rate: 1, 10, or 50 Hz (averaged over 800 samples).
- Select for: 1, 2, 3, or 20 mV/V sensors.
- Decimal Point Position.
- Last Digit Rounding.

Takes you into the Input Calibration mode and provides selection for:
- More than 100,000 counts of resolution.
- 2-point auto calibration for zero and span.
- Manual sensor span calibration.
- Manual sensor mV/V calibration.
- Manual zeroing.
- Manual trim for zero offset.
- Manual trim for span.

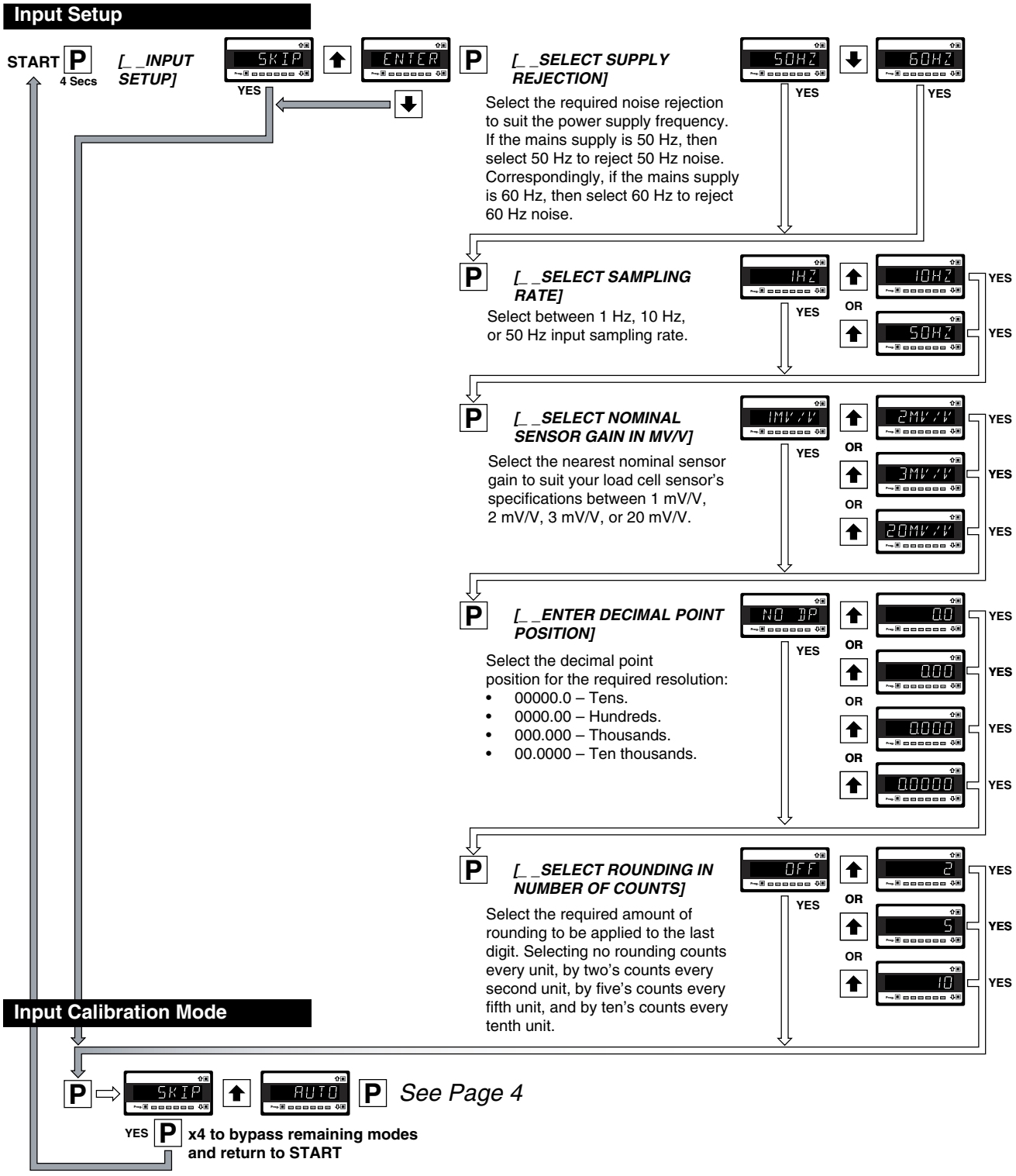
Takes you into the Zero Maintenance mode and provides selection for:
- Auto zero maintenance: capture band, rate of change, and aperture window.
- Manual zero with aperture window limit.

Takes you into the Averaging Parameters mode and provides:
A menu that allows you to select the number of input samples to be averaged within an adjustable window for smooth and fast response.

Takes you into the Analog Output Scaling mode and provides:
A menu that allows you to set zero and full scale analog output calibration settings.

Input Setup

The input setup mode allows you to configure five input setup settings in linked menus.



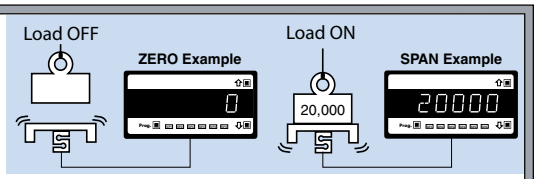
Input Calibration

The **input calibration mode** provides four individual calibration techniques.

Input Setup

START → P (4 Secs) → SKIP → ENTER → P *See Page 3*

YES



Input Calibration

P *[_ _SELECT CALIBRATION TECHNIQUE]* → SKIP → AUTO → P *[_ _REMOVE WEIGHT---- PRESS PROGRAM BUTTON TO ACCEPT]* → 0

Max counts 999999
Min counts –199999

YES

OR

Remove the calibration weight and set the zero calibration offset value.

This is a two-step setting. Both settings must be carried out correctly, zero then span, for the controller to accept the calibration.

P *[_ _ADD WEIGHT----ENTER DESIRED SPAN---- PRESS PROGRAM BUTTON TO ACCEPT]* → 0 → P

Max counts 999999
Min counts –199999

Add the calibration weight to the weighing platform and set the calibration value. If calibration fails, you will see a “calibration failed” message displayed twice. Meter goes back to normal operation.

OR → MV/V → P *[_ _ENTER TOTAL FULL SCALE WEIGHT OF LOAD CELLS IN COUNTS]* → 5000

Max counts 999999
Min counts 0

Add together the capacities quoted on the test certificate of all connected load cells and enter this figure in counts into the controller.

Note: This must include all counts before and after the decimal point to suit the resolution required.

P *[_ _ENTER MV/V FROM LOAD CELL TEST CERTIFICATE] (NOTE 2MV/V NOMINAL SENSOR ONLY)* → 1500

Max counts 2.500
Min counts 1.500

Note: This is for use with sensors between 1.5 to 2.5 mV/V only.
Enter the average of the mV/V readings quoted on the test certificate of all connected load cells.

Note: The mV/V menu enters a calculated span only.

P *[SET ZERO NOW ?]* → NO → YES → P

Select *[YES]* to enter the zero offset calibration value (with load cells connected) or [NO] to return to the operational display.

P

OR → T_OFST → P *[ENTER KNOWN WEIGHT---- PRESS PROG TO ACCEPT OFFSET]* → P → 0

Max counts 999999
Min counts –199999

P

This calibration technique allows you to independently trim the displayed zero, or enter a zero offset value to compensate for residual load.

OR → T_SPAN → P *[ADD CAL WEIGHT---- ENTER DESIRED SPAN---- PRESS PROGRAM BUTTON TO ACCEPT]* → P → 5000

Max counts 999999
Min counts –199999

P

This calibration technique allows you to independently trim the loaded displayed weight to the required value. Note, when trimming the span value, the zero/offset value is automatically re-calculated and entered for the new scale factor (trimmed span value).

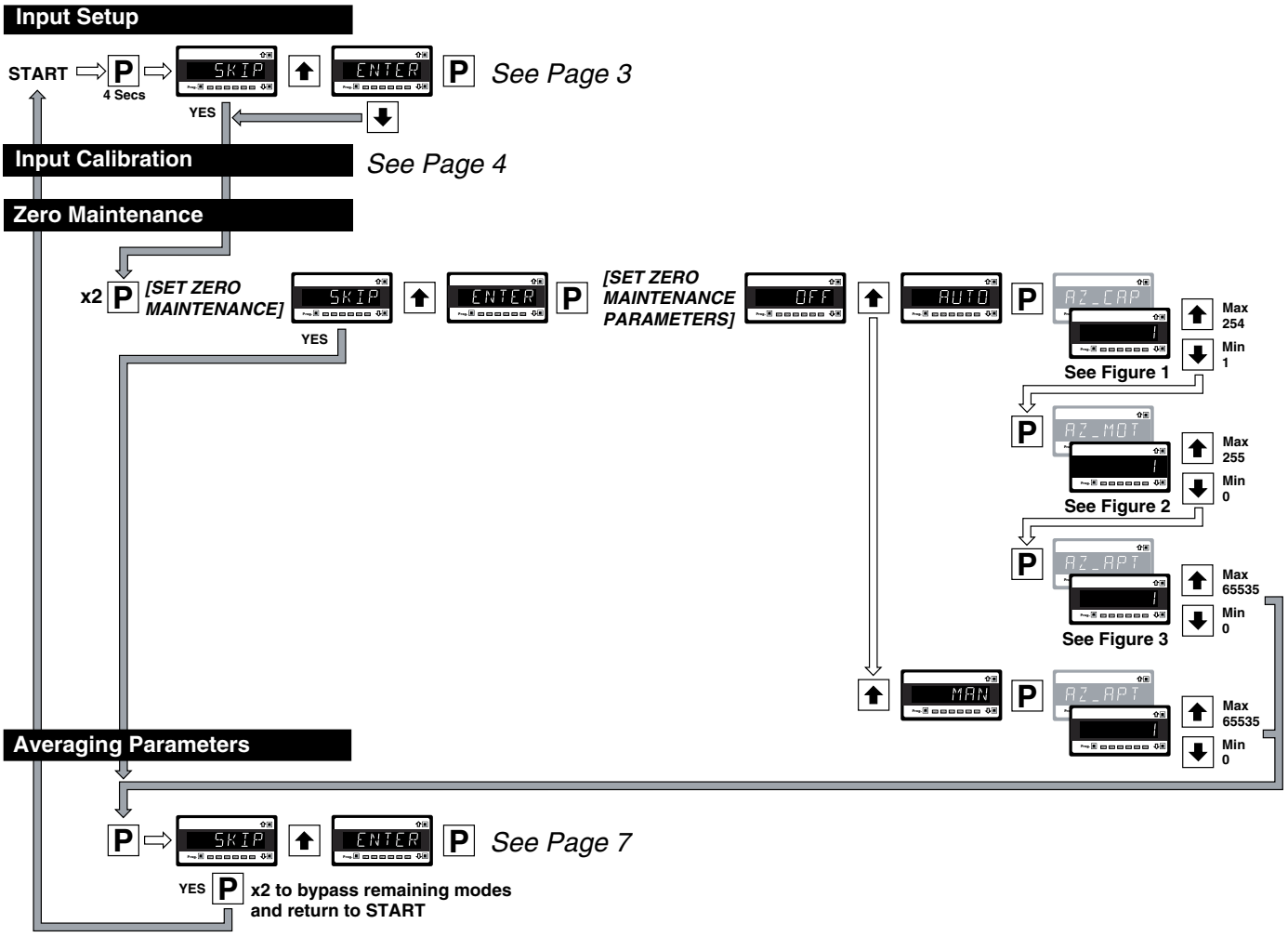
Zero Maintenance

P → SKIP → ENTER → P *See Pages 5-6*

YES → P **x3 to bypass remaining modes and return to START**

Zero Maintenance

Zero maintenance provides an automatic and manual mode for zeroing the calibrated zero setting.



Auto Zero Maintenance

Auto zero maintenance is used to automatically compensate for slow drift in load cell output due to factors such as temperature change, dust accumulation over time, and small mechanical changes. The controller display maintains zero provided all of the following three conditions remain within their programmed parameters:

- Auto zero capture band. Displayed as [AZ_CAP].
- Auto zero motion. Displayed as [AZ_MOT].
- Auto zero aperture window. Displayed as [AZ_APT].

Provided the changes to the load cell remain within the capture band, motion band, and aperture window parameters, the controller automatically zeroes.

Auto Zero Capture Band [AZ_CAP]

See Figure 1. The auto zero capture band is the maximum number of display counts that the controller will automatically zero within. The capture band reference point is the accumulated zero counts. If the drift/load on the load cell exceeds the capture band setting, then the controller stops zeroing and displays the change.

The capture band setting can be set from 1 to 254 counts, but should always be set to less than the smallest weight to be measured.

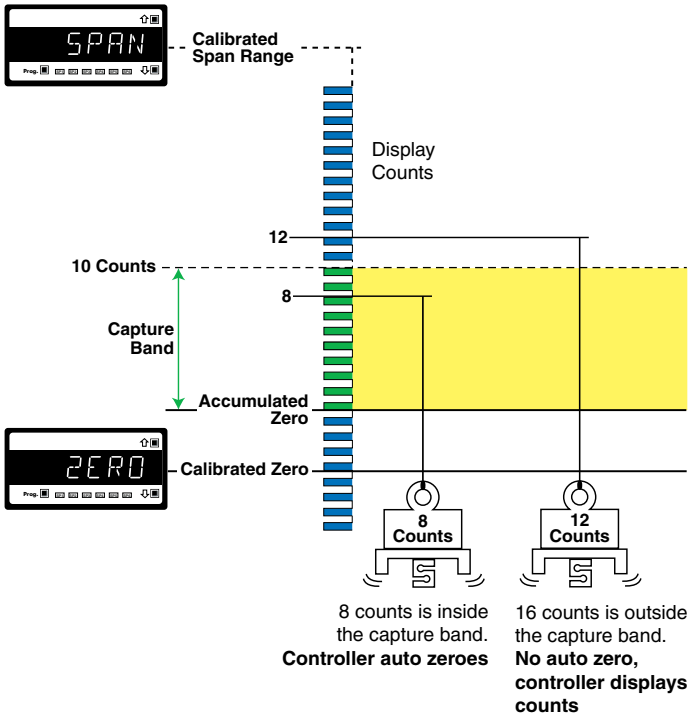


Figure 1 – Auto Zero Capture Band

Auto Zero Motion [AZ_MOT]

See Figure 2. Auto zero motion control operates within the capture band and provides a rate of change limit setting. The rate of change setting determines the number of counts per second allowed within the capture band. This means that even if the count change is within the capture band, but the speed of the count change is more than the selected counts per second, then the controller stops zeroing and displays the change.

The auto zero motion setting can be set from 0 to 255 counts, but is normally set below the capture band.

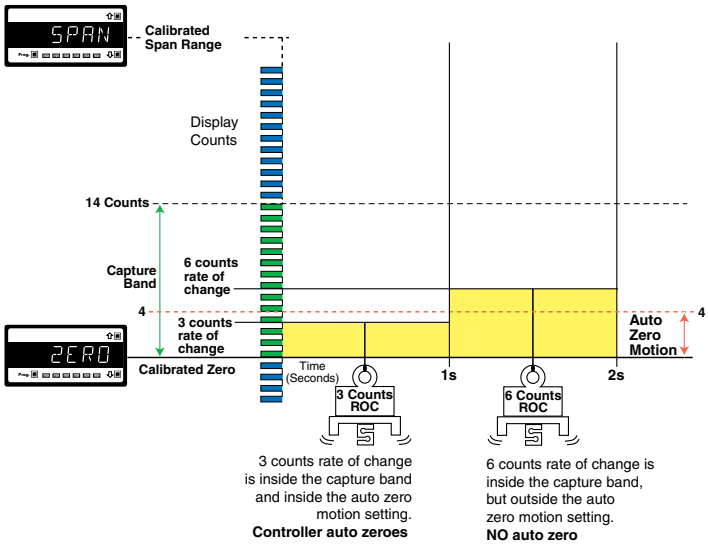


Figure 2 – Auto Zero Motion

Auto Zero Aperture Window [AZ_APT]

The auto zero aperture window provides a limit for the number of counts of zero offset allowed to accumulate relative to the calibrated zero setting. If the accumulated zero offset becomes greater than the aperture window, the auto zero function stops operating and the controller displays the reading.

The suggested limit for the aperture window is 2% of the calibrated span. If the controller fails to zero, check for mechanical or electrical faults.

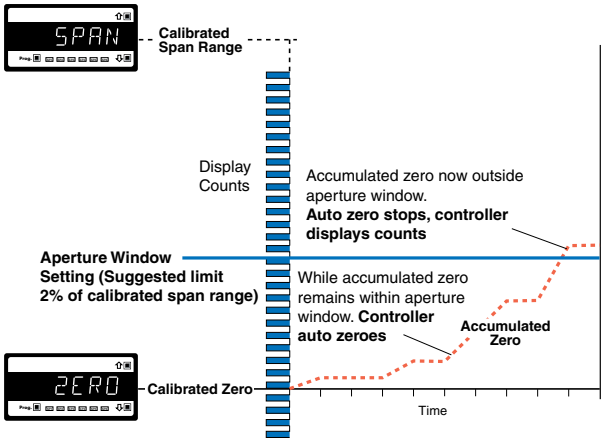


Figure 3 – Auto Zero Aperture Window

Manual Zero

Manually resetting the calibrated zero is initiated from a remote switch (not supplied) connected through the Pin 4 and 5 at the rear of the controller (Terminal 2: Pin 4 Common, Pin 5 Manual Zero).

Manual Zero Aperture Window [AZ_APT]

The manual zero aperture window provides a limit for the number of counts of zero offset allowed to accumulate relative to the calibrated zero setting. If the accumulated zero offset becomes greater than the aperture window, the manual zero function stops operating and the controller displays the actual reading. Manual zero shifts the zero position on channel 1 (CH1), but does not alter the calibrated span range.

The manual zero window limit should be set to no more than 2% of the load cell span. This reduces the danger of overloading the load cell and causing possible mechanical damage. If the controller fails to zero, check for mechanical or electrical faults.

The manual zero offset is held in non-volatile memory and is retained during a power outage.

Set Display Tare & Reset Display Tare Function

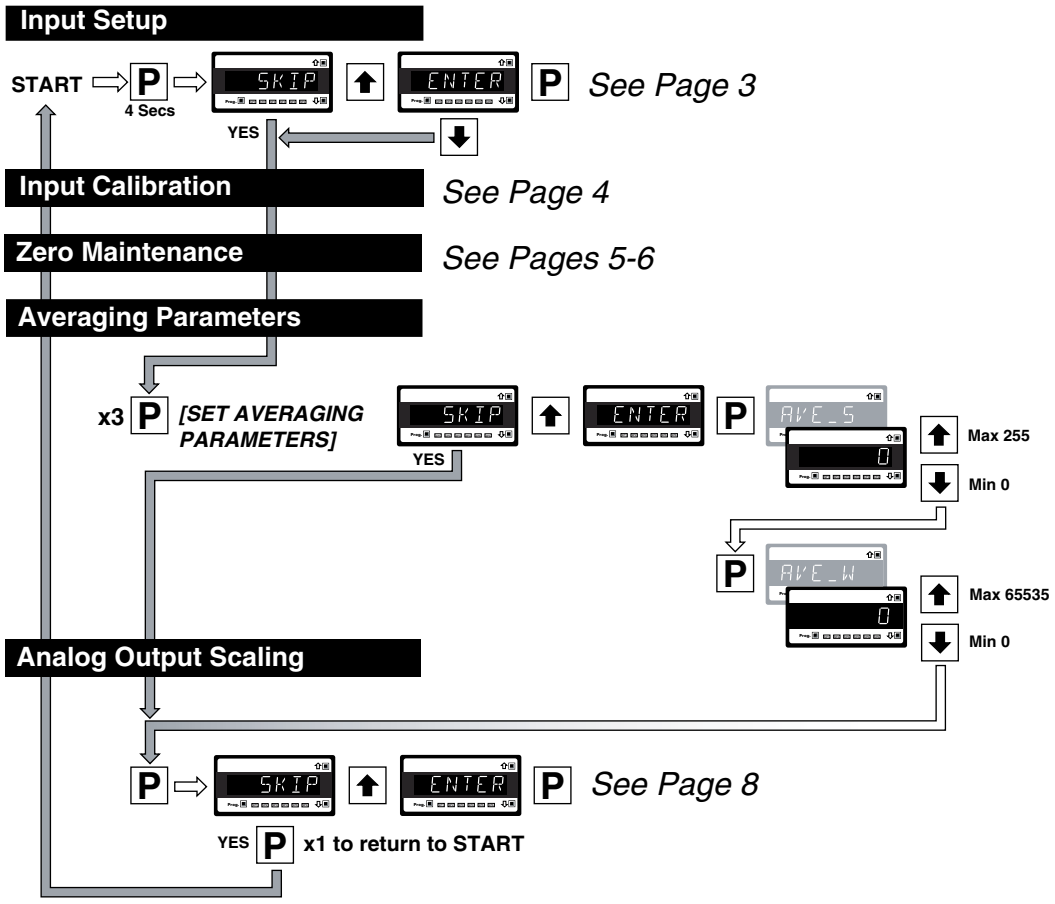
The controller has been programmed with a set **display tare** and **reset display tare** function that operate on the display reading only.

The **set display tare** function is used to zero the display. Set display tare is initiated from a remote switch (not supplied) connected through Pins 4 and 2 at the rear of the controller (Terminal 2: Pin 4 Common, Pin 2 Set Display Tare).

The **reset display tare** function is used to restore the true calibrated weight on the display. Reset display tare is initiated from a remote switch connected through Pins 4 and 1 at the rear of the controller (Terminal 2: Pin 4 Common, Pin 1 Reset Display Tare).

The set display tare and reset display tare values are not retained during a power outage.

The set display tare and reset display tare functions are often used for batching applications.



Windowed averaging allows you to average a selected number of input signal samples within a selectable averaging window. This allows you the benefit of a stable signal, with fast response to change when required.

The number of input signal samples to average over is selected in the [AVE_S] menu. The size of the averaging window in input signal displayed counts is selected in the [AVE_W] menu.

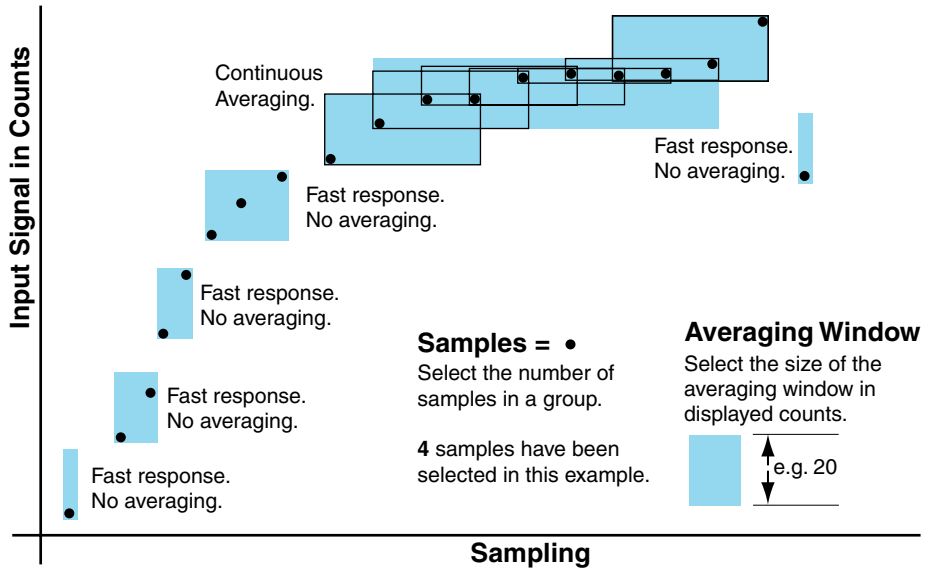


Figure 4 – Averaging Parameters

See Figure 4. While the signal is being monitored by the controller, the averaging window tracks the input signal, looks at the samples, and when it locates a group of samples within the size of the window, averaging takes place.

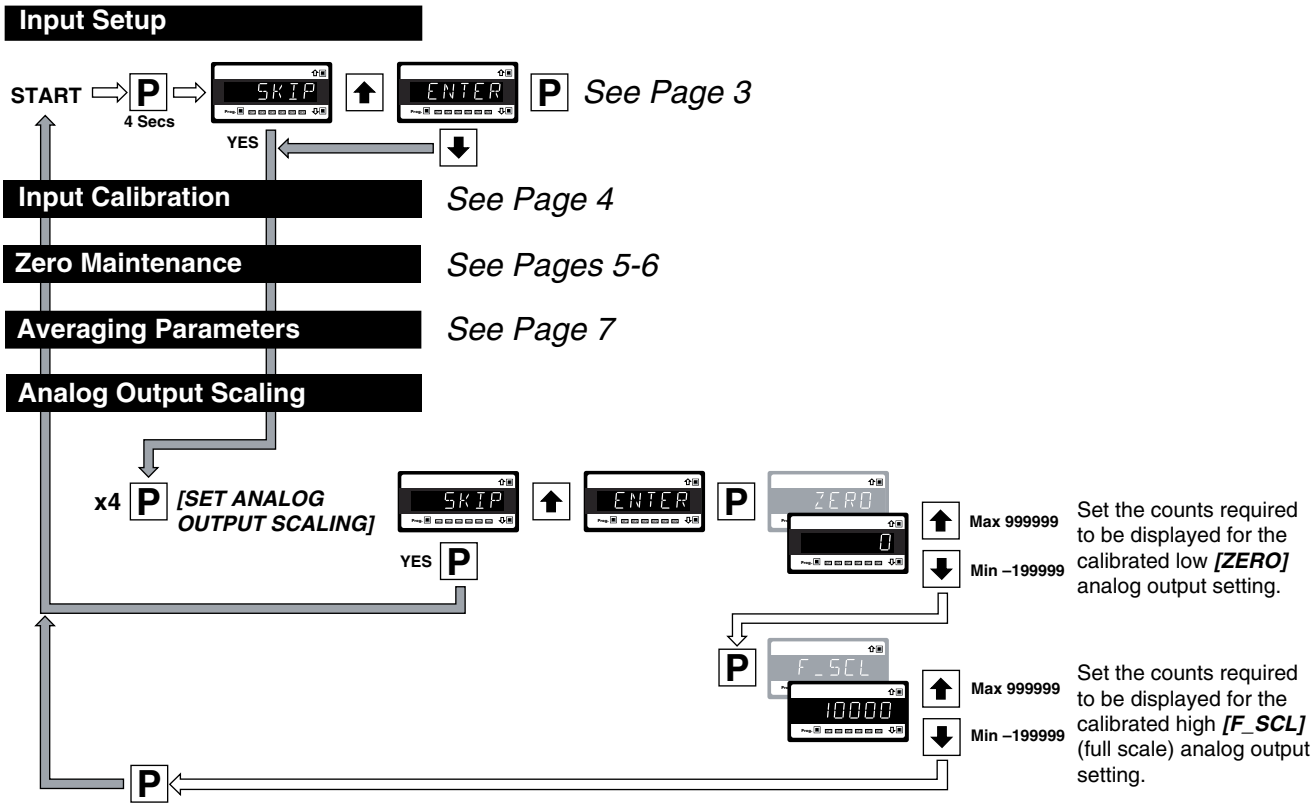
As each new sample comes into the controller, the last sample in the group is dropped off. Provided the sample group remains within the averaging window, the controller constantly averages the sample group.

If a sample moves out of the averaging window, the controller responds quickly to the change by displaying the non-averaged signal value. When the signal stabilises, a new averaging window is established around a sample group and averaging resumes.

Analog Output Scaling

The analog output module is a single channel, programmable, isolated, 16-bit analog output that can be scaled to any desired span between –199999 to 999999 display counts using the **analog output scaling mode**.

See Analog Output Procedures for an analog output scaling procedure.



Note: There are no limits to the difference between the zero and full scale settings. The difference can be anywhere between 1 count and the entire display range of the meter.

Analog Output Module

The analog output module is mounted on the controller's output carrier board and leaves the factory configured for 4-20 mA output. It can also be user configured for either 0/4-20 mA or 0-10 V DC, or reverse of either, using a **current / voltage selection header.**

See Analog Output Procedures for a current / voltage selection header positioning procedure.

Analog Output Calibration

The analog output's milliamp or voltage output requires to be calibrated to suit your application. To carry out this procedure, enter the calibration mode by pressing the P and ⬆ buttons at the same time. You have entered the brightness mode. You can remain in this mode and reset the display brightness, or press the P button again to enter the calibration mode.

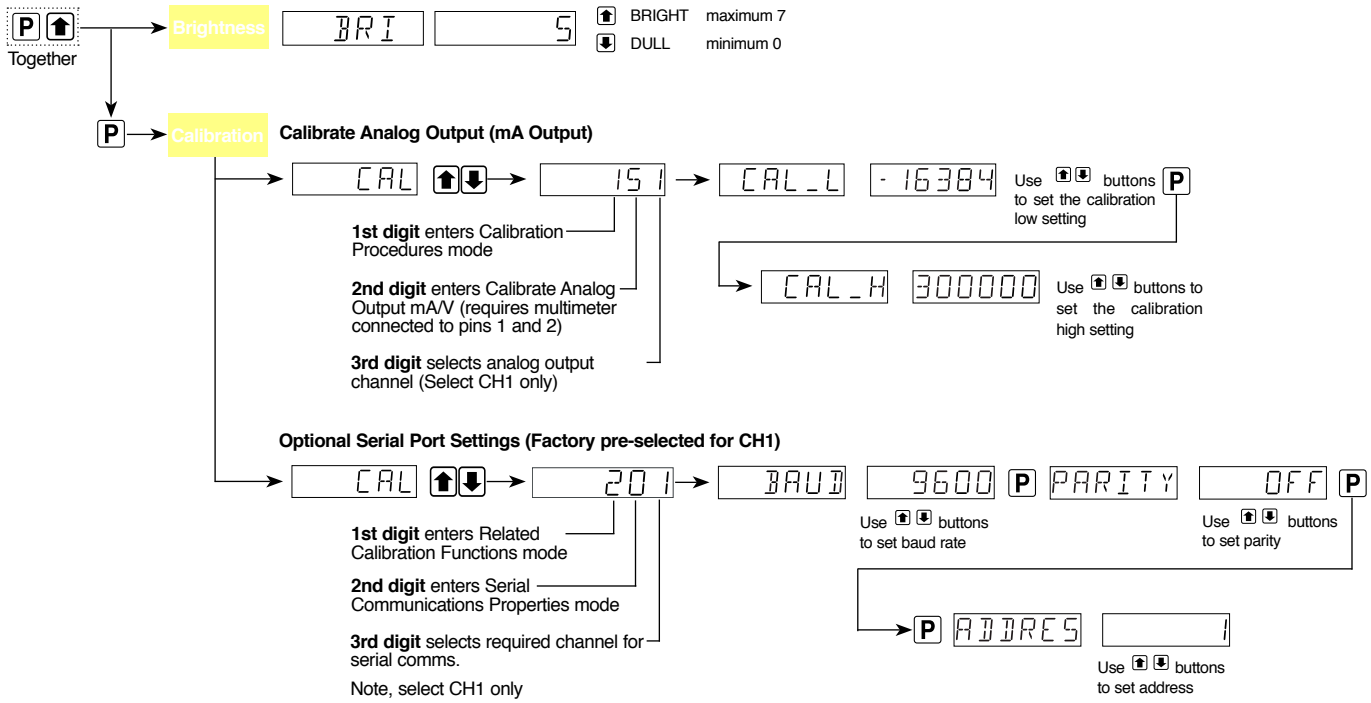
Calibrating the analog output requires setting the milliamp or voltage output low [CAL_L] and high [CAL_H] parameters. The calibrated low and high outputs can be set anywhere between –0.3 to +21 mA for current or –0.3 V to +10.5 V for voltage.

Once the milliamp or voltage output is calibrated, the analog output can be easily rescaled (setting zero and full scale) using the analog output scaling mode without having to recalibrate the milliamp or voltage output. The low and high milliamp output signal values follow the new span range.

See Analog Output Procedures for an analog milliamp or voltage output calibration procedure.

Load Cell Controller – Programming Logic Tree

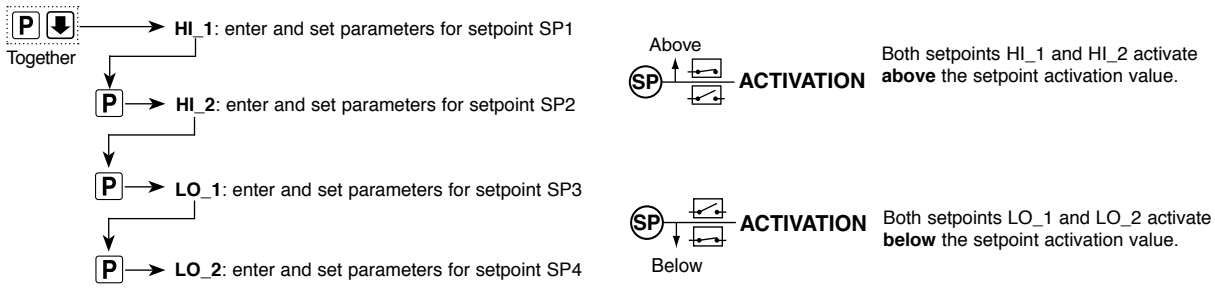
Other Calibration Settings



Full serial port configuration details are available in the document:
Serial Communications Module Supplement (NZ202).

Visit **www.texmate.com** and browse the literature page for the documentation you require.

Setpoint Programming Mode



Advanced Function Programming

The SG100 belongs to the Tiger 320 Series range of controllers and uses the Tiger 320 Operating System. All functions available in the Tiger 320 Operating System are available to the SG100, but the codes are hidden from the operator. If any of these advanced functions are required for the SG100, the codes can be restored by removing code blanking. To remove code blanking, carry out the procedures on Page 10, Code Blanking & Macro Checking Procedure.

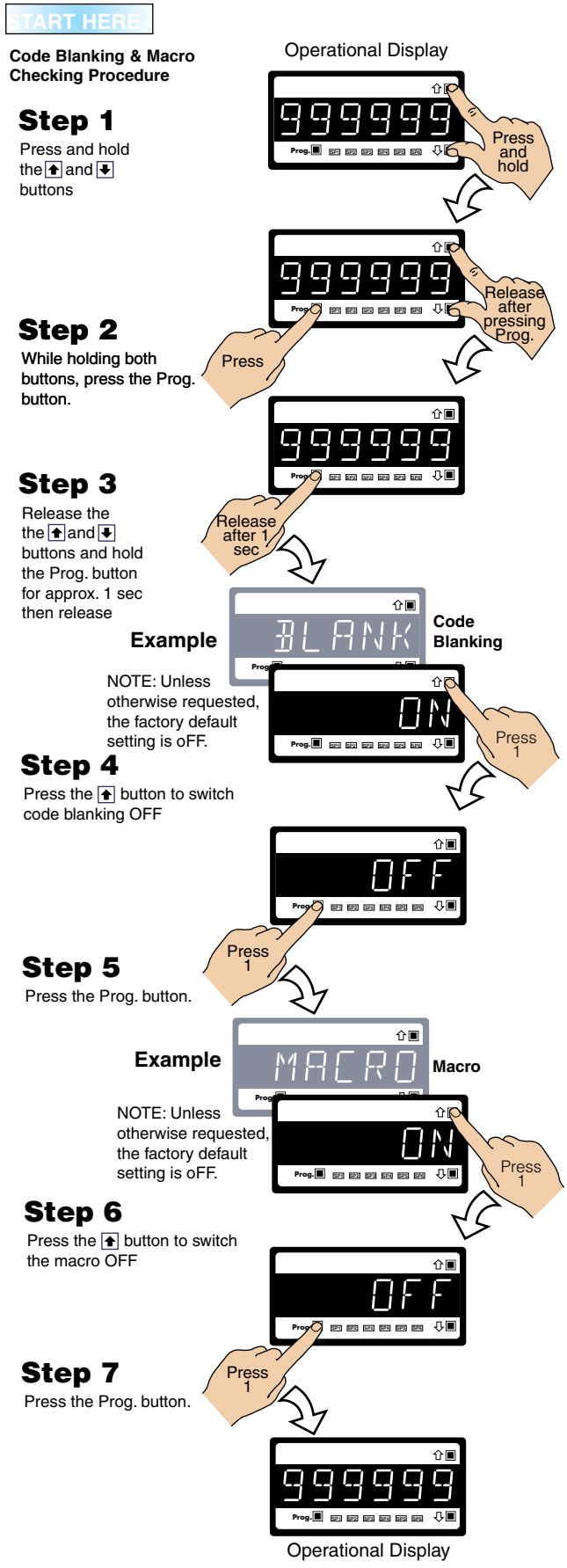
Contact Texmate for further information on advanced functions available with the SG100.

Code Blanking & Macro Checking Procedure

The SG100's Tiger 320 Series operating system is blanked out to the operator to prevent accidental configuration changes. To configure the SG100 for any advanced functions, the operating system's programming codes can be accessed by removing code blanking.

To remove code blanking, carry out the procedures in the Code Blanking & Macro Checking Procedure opposite.

Contact Texmate for further information on advanced functions available with the SG100.



4 or 6-wire Bridge Header Positioning

Note:
The load cell input can be either a 4-wire or 6-wire bridge configuration. The selection header has been preset for 4-wire before leaving the factory.

The following procedure describes how to change the header position if necessary.

To reposition the 4-wire/6-wire bridge selection header, proceed as follows:

STEP A Disconnect the Power Supply and Input/Output Connectors

WARNING

AC and DC power supply voltages are hazardous. Make sure the power supply is isolated before disconnecting from the controller.

1) Pull the AC power supply connector block from the AC power input pins.

2) Pull all other input and output connectors from their sockets.

STEP B Remove the Rear Cover from the SG100

1) Using a small flat-blade screwdriver, press down lightly to release the catch on the top of the case and gently lever outwards.

2) Repeat for the other top catch.

3) With both top catches free, pull the rear cover away from the SG100.

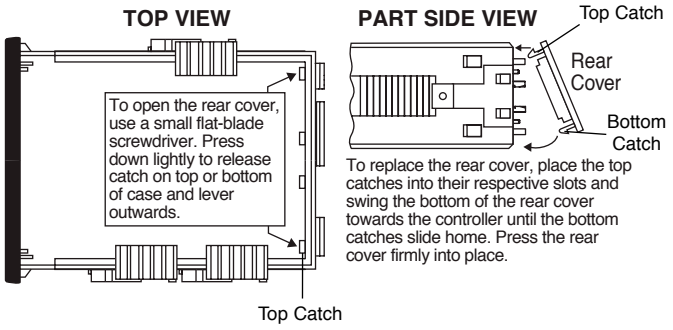


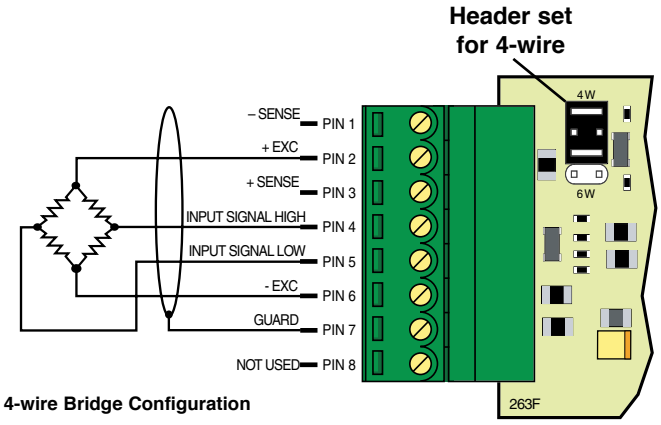
Figure 5 – Rear Cover Removal

STEP C Remove the Input Module

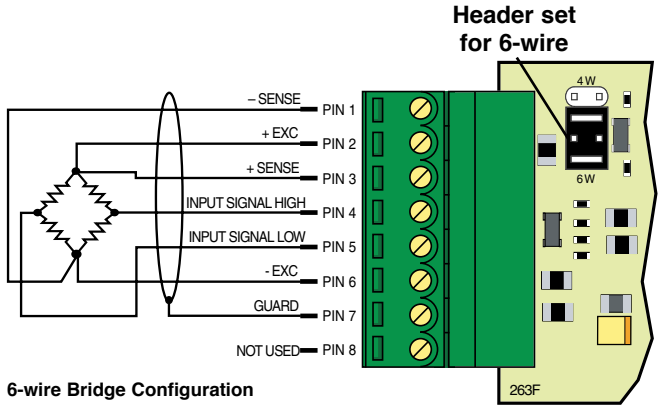
1) Pull the input module (bottom left board when viewed from rear) until it is free from the SG100 case.

STEP D Select the Correct Header Setting

1) If not in the correct position, pull the header from its pins and reposition it to suit the load cell input signal type: 4-WIRE



4-wire Bridge Configuration



6-wire Bridge Configuration

Figure 6 – Load Cell Configuration

STEP E Replace the Input Module Board

1) Gently push the input module board back into the SG100 case, taking care to correctly align the board with the slots on the case.

STEP F Replace the Rear Cover

1) Place the top catches into their respective slots and swing the bottom of the rear cover towards the SG100 until the bottom catches slide home.

2) Press the rear cover firmly into place.

STEP G Reconnect the Power Supply and Input/Output Connectors

1) Ensure the power supply is still isolated.

2) Reconnect the AC power supply connector block to the AC power input pins.

3) Reconnect the input and output connectors.

4) Remove the isolation from the power supply.

The power and input signal should be restored and the SG100 should be in the operational display.

Selection Header Positioning

Note:
The analog output current / voltage selection header has been preset for CURRENT before leaving the factory.

The following procedure describes how to change the header position if necessary.

The analog output selection header can be positioned for current (0/4 to 20 mA) or voltage (0 to 10 V DC) output. To change the header selection, the output carrier board must be removed from the SG100.

To reposition the analog output selection header, proceed as follows:

STEP A Disconnect the Power Supply and Input/Output Connectors

WARNING

AC and DC power supply voltages are hazardous. Make sure the power supply is isolated before disconnecting from the SG100.

1) Pull the AC power supply connector block from the AC power input pins.

2) Pull all other input and output connectors from their sockets.

STEP B Remove the Rear Cover from the SG100

1) Using a small flat-blade screwdriver, press down lightly to release the catch on the top of the case and gently lever outwards.

2) Repeat for the other top catch.

3) With both top catches free, pull the rear cover away from the SG100.

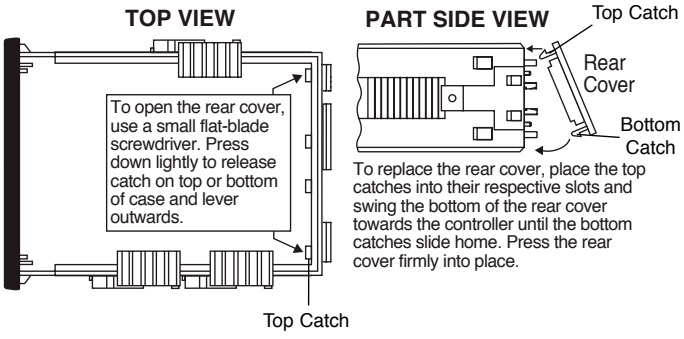


Figure 7 – Rear Cover Removal

STEP C Remove the Carrier Board

1) Pull the carrier board (top board) until it is free from the SG100 case.

STEP D Select the Correct Analog Output Selection Header Setting

1) If not in the correct position, pull the header from its pins and reposition it to suit the analog output signal: VOLTAGE or

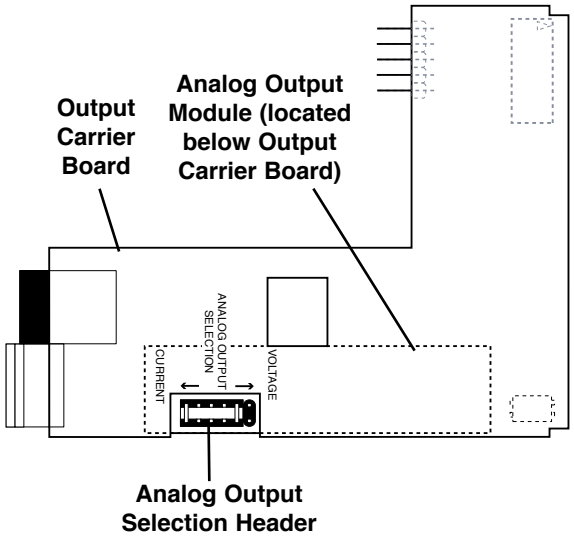


Figure 8 – Analog Output Selection Header Placement

STEP E Replace the Carrier Board

1) Gently push the carrier board back into the controller case, taking care to correctly align the board with the slots on the SG100 case.

STEP F Replace the Rear Cover

1) Place the top catches into their respective slots and swing the bottom of the rear cover towards the controller until the bottom catches slide home.

2) Press the rear cover firmly into place.

STEP G Reconnect the Power Supply and Input/Output Connectors

1) Ensure the power supply is still isolated.

2) Reconnect the AC power supply connector block to the AC power input pins.

3) Reconnect the input and output connectors.

4) Remove the isolation from the power supply.

The power and input signal should be restored and the SG100 should be in the operational display.

Analog Output Calibration Procedures

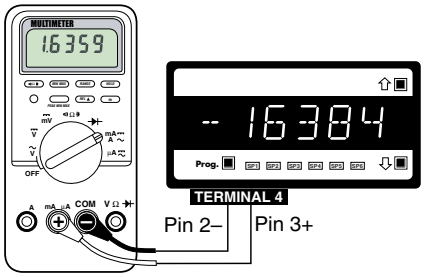


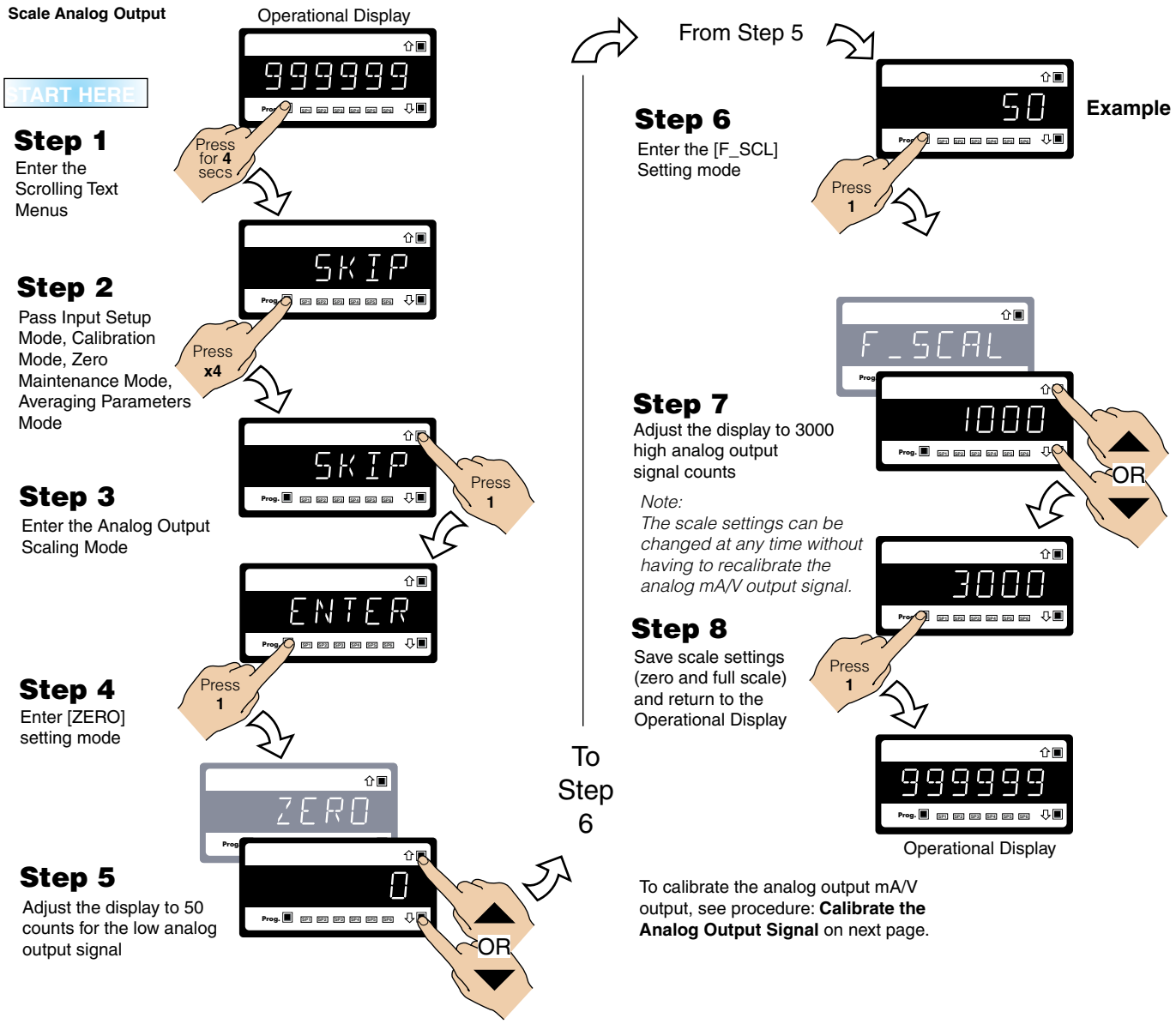
Figure 9 – Multimeter to SG100 Connections

1) See Figure 8. Make sure the analog output selection header on the analog output module is set in the appropriate position: VOLTAGE or CURRENT (Factory preset to CURRENT).
2) See Figure 9. Connect a multimeter to the analog output connector at the rear of the meter (Terminal 4: Pin 1 positive, Pin 2 negative).
3) Make sure the multimeter is set to read the appropriate signal type: volts or milliamps.
4) Carry out the analog output scaling procedure to set zero and full scale settings.
5) If required, carry out the analog output calibration procedure to calibrate the millamp output low and high settings.

Analog Output Scaling Mode

Example

In the following example analog output scaling procedure, we decribe how to scale the analog output signal for 4 to 20 mA over a range of 50 to 3000 counts. With a display of 50 counts, the analog output must be 4.000 mA. With a display of 3000 counts, the analog output must be 20 mA.



To calibrate the analog output mA/V output, see procedure: **Calibrate the Analog Output Signal** on next page.

Analog Output Calibration Mode Procedure

Example

In the following example analog output calibration procedure, with the analog output already scaled over a range of 50 to 3000 counts for 4 to 20 mA, calibrate the low mA output to 4.000 mA and the high mA output to 20 mA.

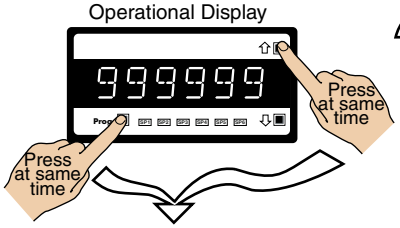
Note:
The analog output has been pre-configured as a milliamp output before leaving the factory.

The following procedure describes how to recalibrate the milliamp output (or voltage if reset) over 4 to 20 mA if required.

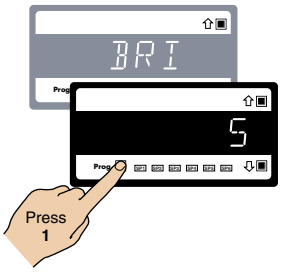
Calibrate Analog Milliamp / Voltage Output Signal

START HERE

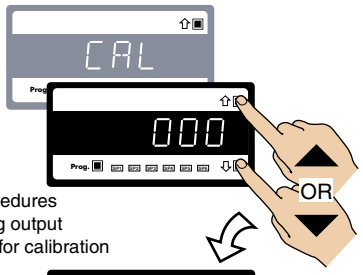
Operational Display



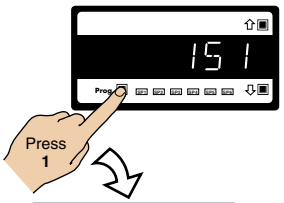
Step 1
Enter the Brightness Mode



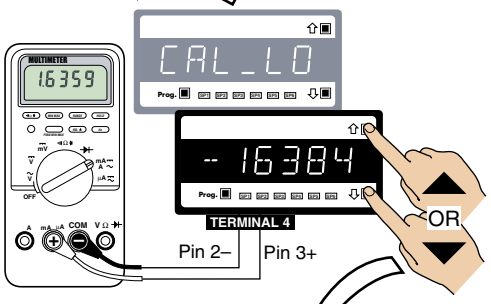
Step 2
Enter the Calibration Mode



Step 3
Set CAL to [151]:
1st Digit = 1 Selects calibration procedures
2nd Digit = 5 Selects calibrate analog output
3rd Digit = 1 Select analog output 1 for calibration

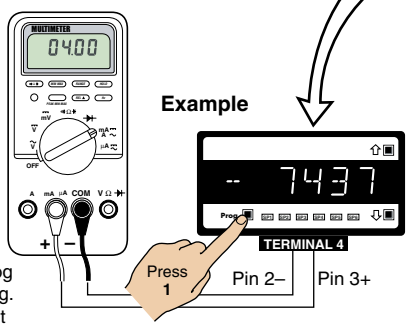


Step 4
Enter analog output **low** signal calibration mode



Step 5
Ensure the **low** analog output signal reading [CAL_LO] on the multimeter display is 4.00 mA.

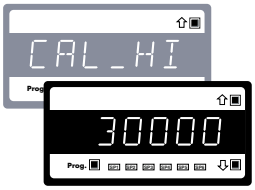
If not correct, press the ⬆ OR ⬇ button on the SG100 controller until the reading on the multimeter display is correct.



Step 6
Save the **low** analog output signal setting. Enter analog output **high** signal calibration mode

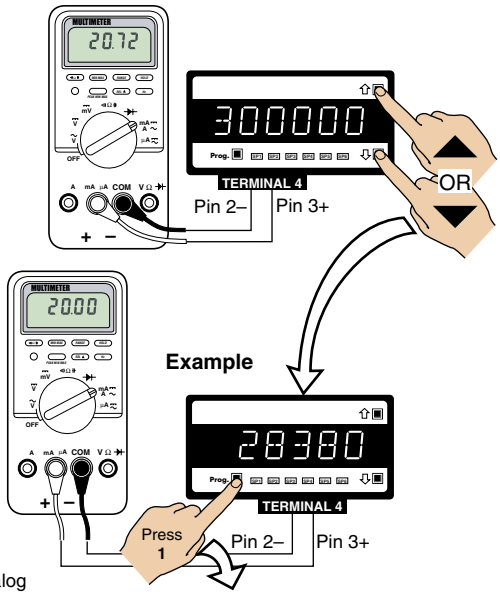
To Step 7

From Step 6

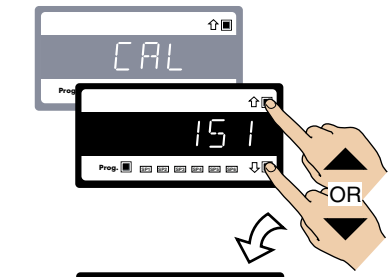


Step 7
Ensure the **high** analog output signal reading [CAL_HI] on the multimeter display is 20 mA.

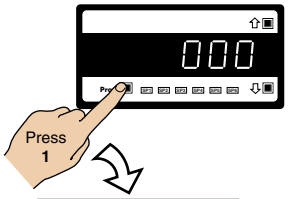
If not 20 mA, press the ⬆ OR ⬇ button on the SG100 controller until the reading on the multimeter display is correct.



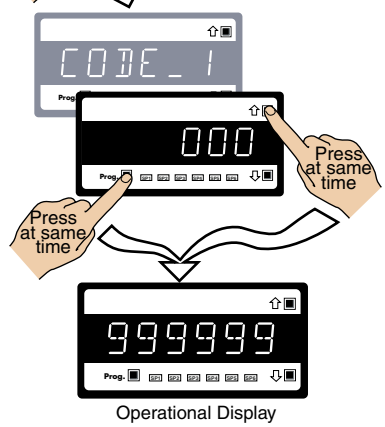
Step 8
Save the **high** analog output signal setting. Return to the calibration mode [CAL] menu



Step 9
Reset calibration mode setting to [000]



Step 10
Save calibration mode [000] setting and enter Code 1



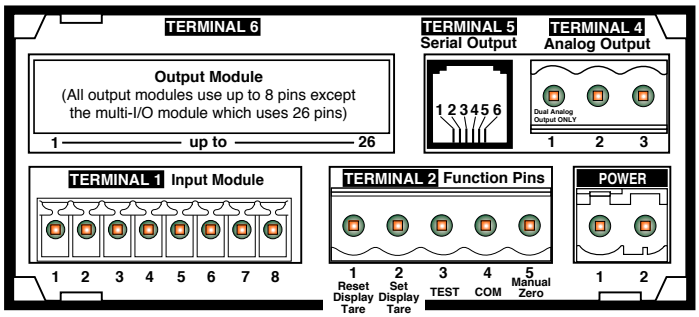
Step 11
Exit Code 1 and return to the operational display

Operational Display

Connector Pinouts

All external connections to the SG100 is via the following six connector terminal blocks located at the rear of the SG100:

- Terminal 1: Input Signals.
- Terminal 2: Function Pins.
- Power: AC / DC Power Supply.
- Terminal 4: Analog Output.
- Terminal 5: Serial Output.
- Terminal 6: Relay Output or Multi-I/O Module.



WARNING: AC and DC input signals and power supply voltages can be hazardous. Do not connect live wires to screw terminal plugs, and do not insert, remove, or handle screw terminal plugs with live wires connected.

Figure 10 – Rear Panel Pinout Diagram

The SG100 uses plug-in type screw terminal connectors for most input and output connections, an RJ-11 phone connector for the optional RS-232 or RS-485 serial outputs, and an RJ-45 phone connector for the optional Ethernet output.

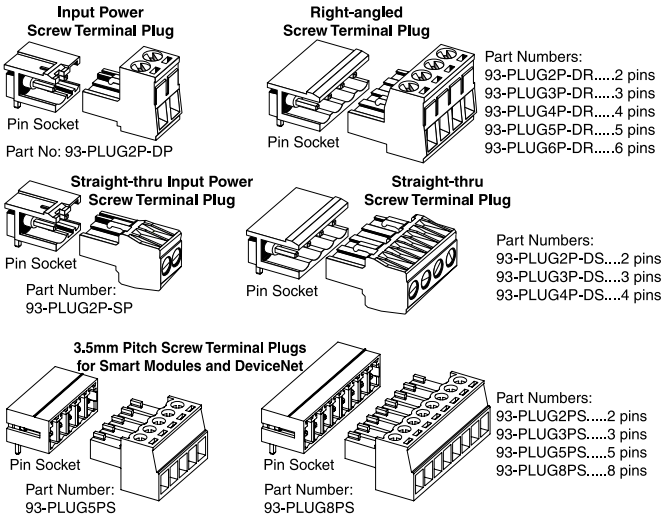
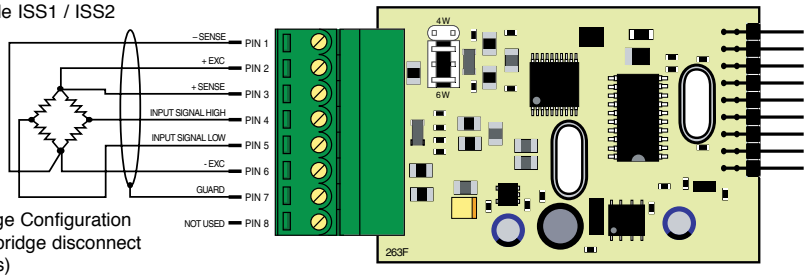
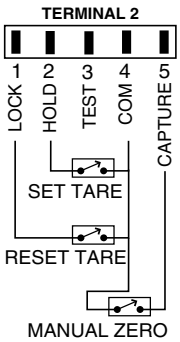
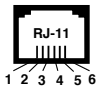


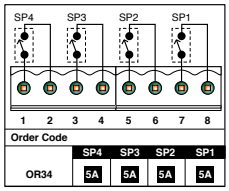
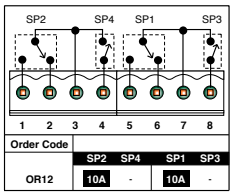
Figure 11 – Terminal Connectors

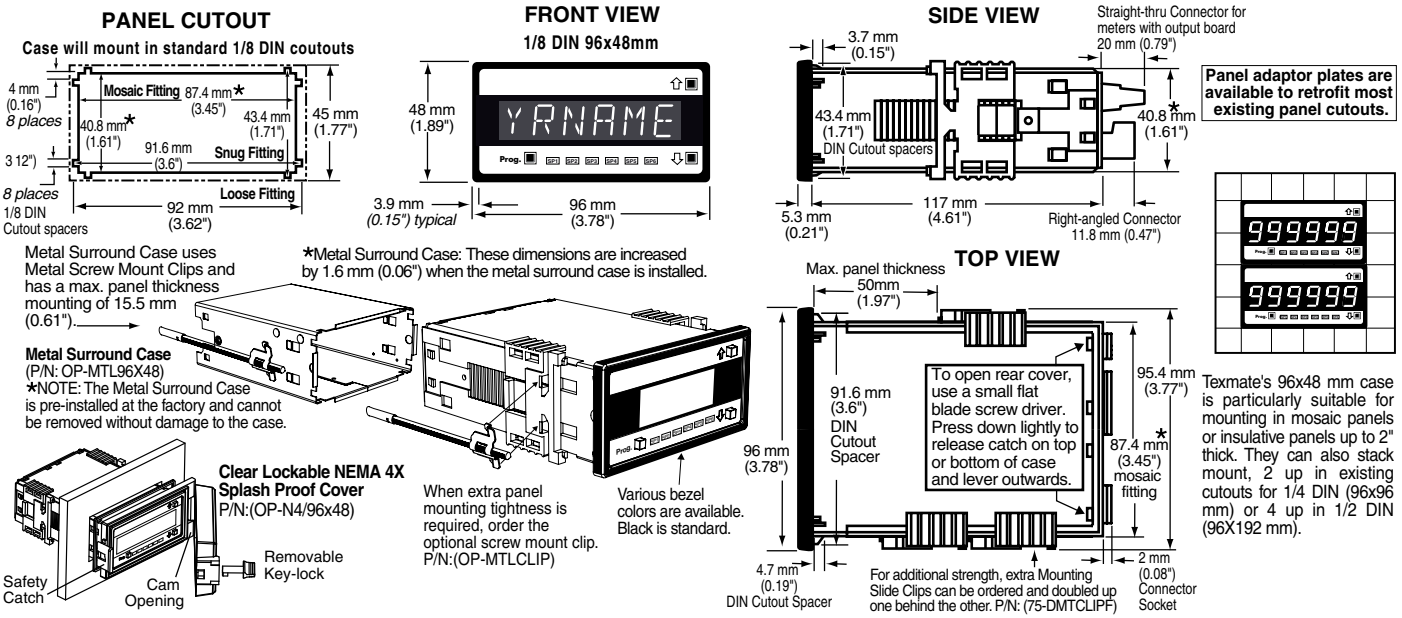
Connector	Pin	Name	Description
TERMINAL 1 **Input Signals** Pins 1 up to 8	1 2 3 4 5 6 7 8	– Sense +Excitation + Sense Input Signal High Input Signal Low –Excitation Guard Not Used	Input Module ISS1 / ISS2  6-wire Bridge Configuration (for 4-wire bridge disconnect sense leads)
TERMINAL 2 **Function Pins** Pins 1 to 5	1 2 3 4 5	Reset Display Tare Set Display Tare Display Test and Reset Common Manual Zero	Connecting Pin 1 (reset display tare) to Pin 4 (common) with a remote switch (not supplied), the load cell reading on the display is returned to the true calibrated weight on the display. Connecting Pin 2 (set display tare) to Pin 4 (common) with a remote switch (not supplied) the load cell reading on the display can be zeroed (tare). Pin 3 (display test and reset pin) provides a test of the controller's display and resets the microprocessor when Pin 3 is connected to Pin 4. To activate the hold, test and reset, or lock pins from the rear of the controller, the respective pins have to be connected to the common pin. Connecting Pin 5 (manual zero pin) to Pin 4 (common) with a remote switch (not supplied), manually resets the calibrated zero. For further details on the function pins, contact Texmate. 
POWER **Auto Sensing AC / DC Power Supply** Pins 1 and 2	1 2	AC Neutral / DC – AC Line / DC +	The power connector supplies AC / DC power to the controller via a standard high voltage or optional low voltage auto-sensing power supply mounted on the main board. PS1: Standard High Voltage option. 85-265 V AC / 95-300 V DC. PS2: Optional Low Voltage option. 15-48 V AC / 10-72 V DC.

Connector	Pin	Name	Description
TERMINAL 4 **Analog Outputs** Pins 1 ,2 and 3	TERMINAL 4 connects the analog output module to external devices. A single 0/4 to 20 mA (standard) or 0 to 10 V DC (optional) is supported on the standard or Ethernet carrier board.		
	1	Positive (+)	Positive for optional Dual Analog Output.
	2	Negative (–)	Negative for Analog Output.
	3	Positive (+)	Positive for Analog Output
TERMINAL 5 **Serial Outputs** Pins 1 up to 8	TERMINAL 5 connects the serial output module to external devices. The standard carrier board supports an RS-485 ASCII or Modbus serial card connected thru an RJ-11 socket.		



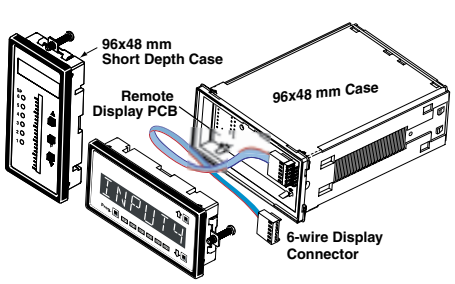
STANDARD CARRIER BOARD		
Pin No.	**RS-485 (ASCII or Modbus) RJ-11 Socket**	
	Single Output	**Dual Output**
1	Reserved for future use	B1
2	Isolated Ground	0 V
3	+5 VDC to power external converters	0 V1
4	A (High)	A
5	B (Low)	B
6	Reserved for future use	A1
7	Not applicable	Not applicable
8	Not applicable	Not applicable

TERMINAL 6 **Relay Outputs** Pins 1 up to 8	TERMINAL 6 connects electromechanical and solid state relays (SSRs) to external applications.		Depending on the number of relays, standard plug-in relay boards use up to 8 pins.	
Relay Module **OR34**	**1** **2** **3** **4** **5** **6** **7** **8**	Normally Open SP4 Common SP4 Normally Open SP3 Common SP3 Normally Open SP2 Common SP2 Normally Open SP1 Common SP1	Relay Module with Four 4 A Form A Relays	
Relay Modules **OR12**	**1** **2** **3** **4** **5** **6** **7** **8**	Normally Open SP2 Normally Closed SP2 Common SP2 N/C Normally Open SP1 Normally Closed SP1 Common SP1 N/C	Relay Module with Two 9 A Form C Relays	

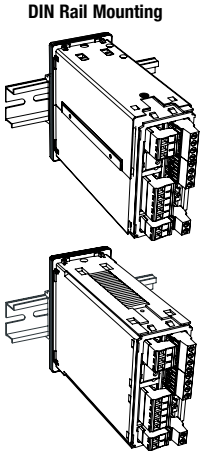


Optional Remote Shallow-depth Display and DIN-rail Mounting

An optional remote shallow-depth display is available for applications with minimal panel depth. The controller case can then be mounted in a convenient position inside the panel, or externally DIN-rail mounted.



Remote Displays



DIN Rail Mounting

Short Depth 96X48 Separated Display

OP-DI/RDISP . . . Remote Display Connection for DI - w/Cable & Standard Display. . . . .
OP-DI/RDND . . . Remote Display Connection for DI - w/Cable & No Display (order code ND must be added to the order, see Display Options) . . . . . .

96X48 DIN Rail Mounting with and without Separated Display

OP-DI/RD-DR. . . . Remote Display Conn. for DI - w/Cable, Din Rail Mount & Standard Disp . . .
OP-DI/RDND-D . . Remote Display Connection for DI - w/Cable, Din Rail Mount & No Display (order code ND must be added to the order, see Display Options) . . . . . .

Installation Procedure

WARNING

AC and DC power supply voltages are hazardous. Make sure the power supply is isolated before connecting to the meter.

STEP A Prepare the Panel

1) Cut a hole in the panel to suit the panel cut-out. See panel cutout sizes above.

STEP B Install the Meter

1) Remove both mounting clips from the meter. ①
2) Push the meter into the panel cutout from the front of the panel. ②
3) Attach both mounting clips to the meter from the rear of the panel and push them towards the front of the panel until the meter is firmly held. ③

STEP C Connect the Cables

1) Connect all input and output signal cables to the connector pins (See Connector Pinouts for details).
2) Connect the power cables to the connector pins (See Connector Pinouts for details).

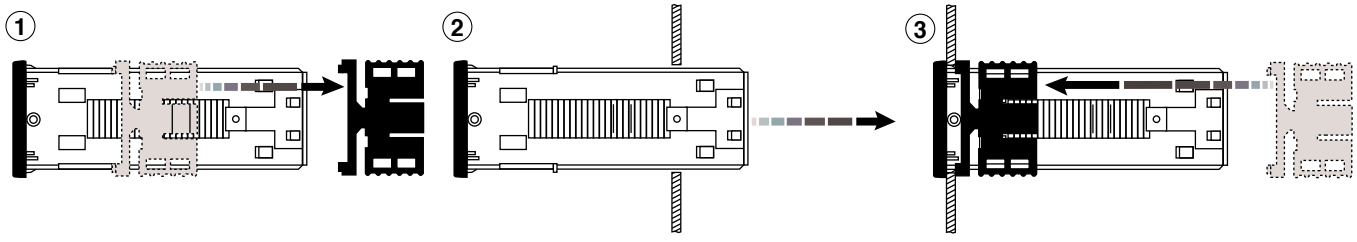


Figure 12 – SG100 Installation Sequence

Installation

1. Install and wire meter per local applicable codes/ regulations, the particular application, and good installation practices.

2. Install meter in a location that does not exceed the maximum operating temperature and that provides good air circulation.

3. Separate input/output leads from power lines to protect the meter from external noise. Input/output leads should be routed as far away as possible from contactors, control relays, transformers and other noisy components. Shielding cables for input/output leads is recommended with shield connection to earth ground near the meter preferred.

4. A circuit breaker or disconnect switch is required to disconnect power to the meter. The breaker/switch should be in close proximity to the meter and marked as the disconnecting device for the meter or meter circuit. The circuit breaker or wall switch must be rated for the applied voltage (e.g., 120VAC or 240VAC) and current appropriate for the electrical application (e.g., 15A or 20A).

5. See *Case Dimensions section* for panel cutout information.

6. See *Connector Pinouts section* for wiring.

7. Use 28-12 AWG wiring, minimum 90˚C (HH) temperature rating. Strip wire approximately 0.3 in. (7-8 mm).

8. Recommended torque on all terminal plug screws is 4.5 lb-in (0.51 N-m).

Advanced Functions and Options

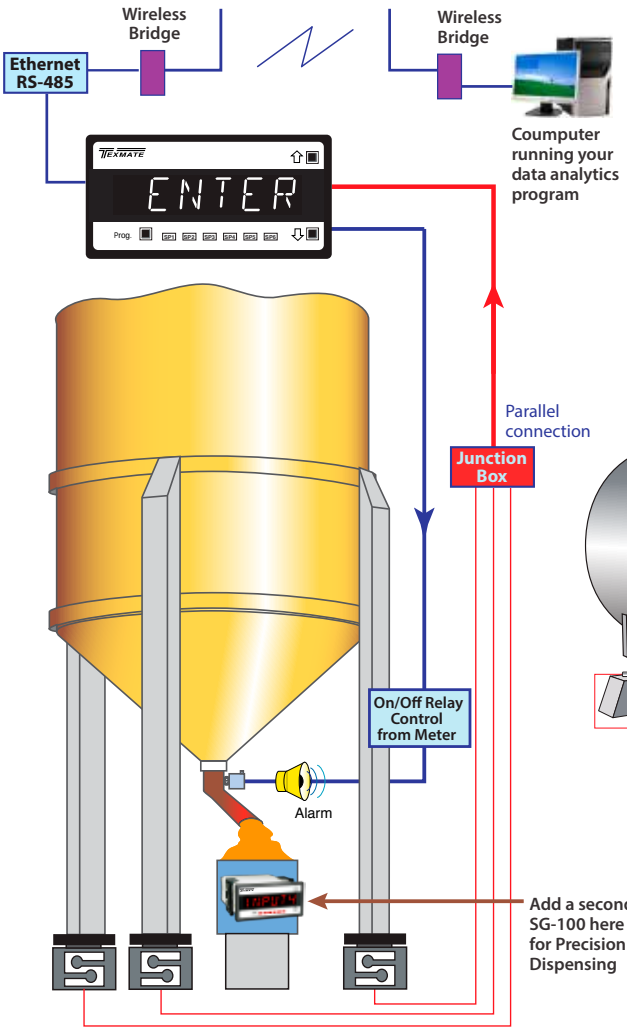
This user's manual is designed to provide you with the information required to connect an SG100 controller to a load cell input and configure it to operate in a silo or tank weighing application.

The SG100 has a range of built-in functions available to perform advanced functions that include totalizing, linearization, data logging, and many more. The four setpoints also have built-in advanced functions that include setpoint latching, reset, tracking, hysteresis and deviation, PID, and seven timer modes.

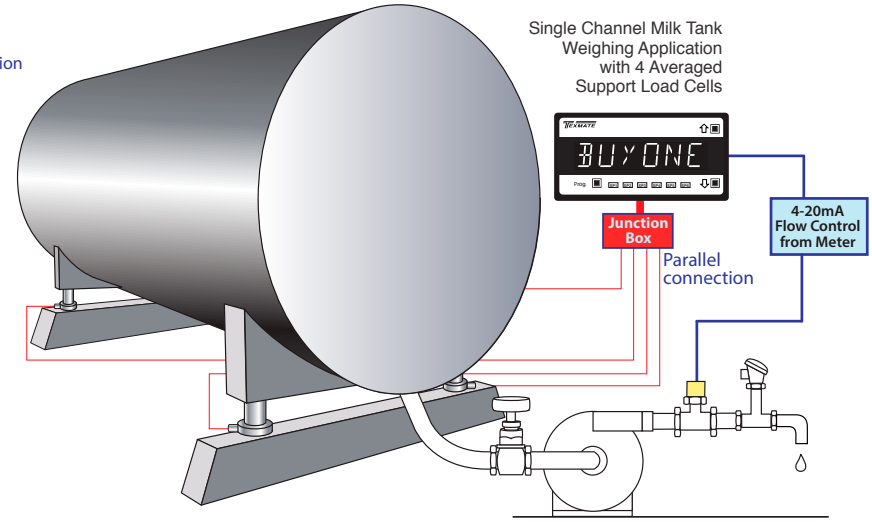
As well as the RS-485 serial output, there are a number of advanced isolated communications options available such as Modbus protocol RS-232 and Ethernet.

Should you wish to use any of the remaining built-in functions available with all SG range controllers, contact Texmate for further information.

Application Examples



Silo Weighing Application with 3 averaged support load cells, On/Off relay control dispensing, communicate data via 3rd party wireless bridges for data analytics applications.



Ordering Information

When you order SG100, your get the following configuration with a pre-loaded Weighing Controller application. Pease call Texmate for procing and availability of the listed options. Additional accessories may be needed depending on your communication options, please caontct Texmate to determin which accessories you may need for your application.

Pre-loaded Configuration (ordering code with this configuration : SG100-DR-PS1-ISS4-AIC-S4-OR12)

BASIC MODEL #	DISPLAY	POWER SUPPLY	INPUT	ANALOG OUTPUT	COMMUNICATION	RELAY	DATA LOGGING
SG100	DR(red)	PS1(90-265VAC/VDC)	ISS4 (60Hz 24bit)	AIC(4-20mA)	S4 (RS-485 ASCII)	OR12 (two 9A FormC)	32Kbit (88 samples)

Custom Options: call Texmate for availability

DISPLAY	POWER SUPPLY	INPUT	ANALOG OUTPUT	COMMUNICATION	RELAY	DATA LOGGING
DG(green)	PS2(15-48VAC/VDC)	ISS3 (50Hz 24bit)	AIV(0-10VDC)	S6 (RS-485 Modbus)	OR34 (four 4A FormA)	OP-P1MB/R-T (1024Kbit (3984 Samples) with Real Time Clock)
				S2 (RS-232 ASCII)		
				S5 (RS-232 Modbus)		
				S8 (Ethernet ASCII)		
				S9 (Ethernet Modbus)		

WARRANTY

Texmate warrants that its proDXcts are free from defects in material and workmanship under normal use and service for a period of one year from date of shipment. Texmate's obligations under this warranty are limited to replacement or repair, at its option, at its factory, of any of the proDXcts which shall, within the applicable period after shipment, be returned to Texmate's facility, transportation charges pre-paid, and which are, after examination, disclosed to the satisfaction of Texmate to be thus defective. The warranty shall not apply to any equipment which shall have been repaired or altered, except by Texmate, or which shall have been subjected to misuse, negligence, or accident. In no case shall Texmate's liability exceed the original purchase price. The aforementioned provisions do not extend the original warranty period of any proDXct which has been either repaired or replaced by Texmate.

USER'S RESPONSIBILITY

We are pleased to offer suggestions on the use of our various proDXcts either by way of printed matter or through direct contact with our sales/application engineering staff. However, since we have no control over the use of our proDXcts once they are shipped, NO WARRANTY WHETHER OF MERCHANTABILITY, FITNESS FOR PURPOSE, OR OTHERWISE is made beyond the repair, replacement, or refund of purchase price at the sole discretion of Texmate. Users shall determine the suitability of the proDXct for the intended application before using, and the users assume all risk and liability whatsoever in connection therewith, regardless of any of our suggestions or statements as to application or construction. In no event shall Texmate's liability, in law or otherwise, be in excess of the purchase price of the proDXct.

Texmate cannot assume responsibility for any circuitry described. No circuit patent or software licenses are implied. Texmate reserves the right to change circuitry, operating software, specifications, and prices without notice at any time.

TEXMATE INC
450 State Place • Escondido, CA 92029
Tel: 1-760-598-9899 • USA 1-800-839-6283 • That's 1-800-TEXMATE
Fax: 1-760-598-9828 • Email: orders@texmate.com • Web: www.texmate.com

For product details visit www.texmate.com

Local Distributor Address