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**09/28/17 TSGW\_ModifyingSetptWithExternalAnalogSignal**

This document provides step-by-step instructions, using the Touchscreen Gateway (TSGW) to modify the set point using an external analog signal. Either PID1 or PID2 setpoint may be adjusted proportionally between the analog signal range using this method.

Set Point Modifier 1 (SPM1) is used to modify PID1, and Set Point Modifier 2 (SPM2) is used to modify PID2. In a similar fashion as Outdoor Air Reset modifies the setpoint based on the outdoor air temperature, an analog signal may be used to proportionally modify the associated unmodified setpoint.

PID1 is used for temperature-based control, whereas PID2 is used for generic analog control. Both PIDs use the General Purpose Analog 2 (GPA2) input to modify the setpoint. This input may be configured and wired for the various types of compatible signals per the following table:

Command Signal Type	Connect (+)	Connect (-)	SW1-1 61.9 Resistor	SW1-2 Volt Network	SW1-3 61.9 Resistor	SW1-4 Volt Network	SW1-5 GPA1 Offset	SW1-6 GPA2 Offset
GPA2 0-10 V dc	TB7	TB8			OFF	ON		OFF
GPA2 2-10V dc	TB7	TB8			OFF	ON		ON
GPA2 0-20 ma	TB7	TB8			ON	OFF		OFF
<b>GPA2 4-20 ma</b>	TB7	TB8			<b>ON</b>	<b>OFF</b>		<b>ON</b>

## PID1 - Temperature-based Control

- 1) Set Point Modifier 1 (SPM1) is used to modify the Unm (Unmodified) Set point.
  - a. Determine the quantity of (+/-) degrees to modify at both the low (0%) and high (100%) extent of the analog signal range.
  - b. For instance, if the unmodified set point is 140 degrees F and the customer wants to vary between 140 F and 180 F:
    - i. In the Touchscreen (TSGW ) page 4,
      1. Set the SPM Src select to 3 to select GPA2 % span
      2. Leave Lo Mod Deg at default 0
      3. Change the Hi Mod Deg to 40
      4. Leave Set X axis Lo at default 0 (This is 0V for 0-10V range, or 4ma with 4-20ma configuration)
    - ii. On the SLC4060, PGW:
      1. Connect the signal to GPA2(+) at TB7 and GPA2(-) at TB8
      2. Set SW1 for the desired signal. 4-20 ma is the default

## PID2 – Generic Analog-based Control (Typically Pressure)

- 1) Set Point Modifier 2 (SPM2) is used to modify the Unm (Unmodified) Set point.
  - a. PID2 Engineering Units is specified on TSGW Page 5, where ‘3’ is for Percent Span and ‘4’ is for PSI.
  - b. Determine the quantity of (+/-) Span% or PSI to modify at both the low (0%) and high (100%) extent of the analog signal range.
  - c. For instance, if PID2 is using PSI as the Engr Unit with the unmodified set point at 100 PSI and the customer wants to vary between 80 and 140 PSI:
    - i. In the Touchscreen (TSGW ) page 6,
      1. Set the SPM Src select to 4 to select GPA2 PSI
      2. Set the Lo Mod in EU to -20, which is 100 unmodified – 20 = desired 80 PSI
      3. Change the Hi Mod Deg to 40, which is 100 unmodified +40 = desired 140 PSI
      4. Leave Set X axis Lo at default 0 (This is 0V for 0-10V range, or 4ma with 4-20ma configuration)
    - ii. On the SLC4060, PGW:
      1. Connect the signal to GPA2(+) at TB7 and GPA2(-) at TB8
      2. Set SW1 for the desired signal. 4-20 ma is the default
    - iii. If PID2 is using the generic Percent Span, then the Lo Mod and Hi Mod are specified in Percent Span.

### Modified Setpoint

- Both the unmodified and modified setpoint are displayed on TSGW Page 1, as well as on the applicable PID and SPM pages.

### Saving Configuration

- 1) The changes to the TSGW configuration are saved in non-volatile memory after a few minutes. Do not power off the TSGW during this period.
- 2) Cycle power to the unit, and verify that the desired changes have been saved. Repeat the process, if not successful
- 3) The settings may optionally be saved in the OnStartup Configuration file. Refer to document “TSGW\_ Startup Configuration Modification Guide.pdf”, available at [www.selectronix.us](http://www.selectronix.us) in the Support section for SLC4075.

Configuration Complete