

# PanelPilot Application Note

## I<sup>2</sup>C / SPI Digital Input



### FEATURES

- Option of I<sup>2</sup>C and SPI communications
- PanelPilot hardware operates as a slave
- Up to 8 'pages' can be displayed
- Touchscreen buttons to change between pages
- Each page features a single line, 4 digit meter (plus decimal point and negative symbol).
- Reduced ASCII character set can be used for short message such as 'Hold'
- Customisable colours and label through PanelPilot software (not updateable through I<sup>2</sup>C / SPI)

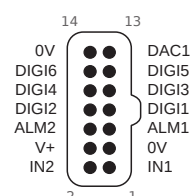
This application configures the PanelPilot hardware to display short character strings using data from a microcontroller. It is primarily intended to show 4 digit numerical readings but has the ability to display short character strings. Data is sent using the using the reduced ASCII character set.

### PIN CONNECTIONS

Pin Number	Pin name	Function	Notes
3	0V	Ground	
7	DIGI1	Clock	SCL/SCLK
8	DIGI2	Data*	SDA/MOSI
10	DIGI4	CE	SPI only

\*Data must be restricted to 3.3V logic levels

Note: Clock and data pins have 4.7k pull-up resistors fitted



### DATA FORMAT

**I<sup>2</sup>C:** Please refer to the NXP I<sup>2</sup>C user manual [http://www.nxp.com/documents/user\\_manual/UM10204.pdf](http://www.nxp.com/documents/user_manual/UM10204.pdf) for more information on the I<sup>2</sup>C serial interface. Clock speed must be 100kHz. Eight bytes are sent; the I<sup>2</sup>C address, the 'page' of the display and six (always six) ASCII characters. So to send "+4.321" to 'page' 3 with the SGD set to address B6, the sequence would be (in hexadecimal): B6 02 2B 34 2E 33 32 31

In I<sup>2</sup>C mode, the display number is equivalent to the internal register number of normal I<sup>2</sup>C peripheral devices.

**SPI:** Clock speed must not exceed 100kHz. Recommended speed 25kHz. The SPI bus operates with the clock active high, idle low. Data is sampled on the rising edge of the clock. Note that CE must be returned high at the end of the sequence, otherwise the SGD will remain in a 'wait' state.

Seven bytes are sent; the number of the display and six (always six) ASCII characters. So to send "+4.321" to 'page' 3 would be (in hexadecimal): 02 2B 34 2E 33 32 31

Note that in both cases the number of the message runs from 00 to 07, so the number for the fourth display would be 03. If there are fewer than 6 characters in the display, the remainder must be made up of spaces (20).

