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TOLERANCES							
DECIMAL .XX = N/A .XXX = N/A	TITLE <div style="text-align: center;"> GUI REFERENCE MODEL 762 INTERFACE GUI </div>						
ANGULAR X = N/A	SCALE N / A	SIZE A	FSCM 61651	SHEET 1 OF 2	DRAWING NUMBER 7703		REV. -

COMMUNICATION OPTIONS

There are two methods of communicating with the 762 SLDD: (1) asynchronous serial, and (2) I²C. For asynchronous serial, the only baud rate option is 9600 with 8 data bits, 1 stop bit, no parity, and no flow control. For I²C, the two available baud rates are 100 kHz and 400 kHz. As a result, I²C is approximately 10 to 40 times faster than asynchronous serial. Only one option can be actively communicating at any given time.

When using asynchronous serial, any +5 V TTL serial port will suffice. For driver and API reasons, when using I²C with the GUI, the only supported I²C device is the Total Phase Aardvark USB-to-I²C converter available from www.totalphase.com. In an embedded environment, there are no restrictions on the make or model of the I²C master.

When either “Open” button is clicked, the GUI attempts to connect. If a connection is successful, full functionality is permitted.

I²C ADDRESS

The I²C address of the device is only applicable if the device is communicating via I²C. The numeric value in the address text box has a base that is consistent with the *Base* group box setting. By default this address is 0x50 (80 decimal), but the user definable address can range from between 0x00 (0 decimal) to 0x7F (127 decimal). Note that when address change is set, the unit will need to reconnect to the GUI.

ADJUSTABLE PARAMETERS

Selected analog parameters are overridden by enabling any of the eight working DACs on the 762. By default, each DAC is disabled and set to a preset value. To change the value, click the “Enable” check box, enter a value in the “Value” that is between the minimum and maximum allowed values, and click the “Set” button. It is possible to enable or disable all 8 DACs at once by selecting or deselecting the “Enable all DACs” check box and clicking the “Set All” button.

While the “Show Raw Values” check box remains unchecked, the data in the “Min”, “Value”, and “Max” text boxes are in the units shown in the DAC description. When the check box is checked, the values shown are the quantization numbers and are in the base selected in the *Base* group box.

Note, DAC 8 is not intended to override any analog set control and is used as a test point for measurement.

STATUS

This group box shows the 762 status as reported by the connected unit. The status displayed is a result of a Status Response Message received by the application. The status of the active low enable is shown in the first check box. The next three check boxes indicate whether the 762, DAC, and EEPROM are ready to receive new information.

An active low Temperature Fault and Current Fault are indicated next, followed by the status of the TEC (shut down when checked).

Any errors that occur are displayed in the error check boxes. An error can be caused by internal memory corruption, as well as an inability to communicate properly with the onboard DACs or EEPROM.

The bank number indicates which of the four 128-byte memory banks is currently in use. Bank 1 will be the default memory bank when the 762 is powered on.

MEMORY CONTROL

The *Memory Control* group box allows the user to load settings from and save settings to the 762 EEPROM. Additionally, it provides a mechanism for updating local controls (text boxes, check boxes, etc.) with the most recent values on the 762.

Since the 762 has four 128-byte memory banks, it is possible to switch banks by selecting the desired bank from the drop down list. Note that while each bank may contain a different configuration, bank 1 will always be the bank the 762 uses after power up.

ENABLE

The active low enable signal can be digitally controlled or can be set by an input. The *Enable* radio box allows the user to disable or enable laser output in software. For safety, if the 762 enable input is driven high the unit will always be disabled regardless of software setting.

SERIAL SELECT

Serial communication using I²C or asynchronous serial can be controlled using external inputs or internally using a memory register. The radio boxes on top dictate control while the bottom two indicate whether I²C or asynchronous serial will be use when under internal memory control.

MONITOR GAIN

The monitor gain can be controlled using external inputs or internally using a memory register. The radio boxes on top dictate control while the bottom four indicate the monitor gain setting.

The monitor gain setting dictates the range of the laser fire threshold. While these radio boxes are adjusted based on the current memory data, they are not updated if being controlled by inputs. As a result, the radio box must be adjusted manually for an accurate range for DAC 1 in the *Adjustable Parameters* group box.

MANUAL COMMAND

Commands may be manually created and sent to the 762. The available command set, entered in text box 1, are as follows:

‘W’ write data in text box 3 to register designated in text box 2
‘R’ read data to text box 3 from register designated in text box 2
‘L’ load registers with EEPROM contents
‘S’ save registers to EEPROM
‘T’ get status
‘B’ switch memory bank to number indicated in text box 2

Note: A change in the *Base* group box affects text boxes 2 and 3.

PULSE ENABLE

The 762 can selectively output any or all of the three pulses. Enable each using the appropriate check box. If the “Trigger / PW” check box is not selected, no pulse is delivered to the diode driver.

TEC SHUTDOWN

The TEC on the 762 can be manually disabled at the request of the user. Unless the appropriate radio boxes are specifically set to “Internal Memory Control” and “Shutdown”, the TEC will remain operational.

AMPLIFIER SYNC. 1/2 OPTIONS

Both amplifier synchronization signals can be controlled with regards to pulse width, polarity, and delay. The pulse width and delay parameters are in the base set in the *Base* group box.

To toggle the polarity of the signal, click the waveform image located to the left of the applicable “Set” button.

Due to the way the 762 handles incoming messages, each parameter must be set separately.

TRIGGER CONFIGURATION AND OPTIONS

The output pulse width, delay, and period parameters may be controlled digitally. If properly configured, the 762 uses these parameters to generate an output pulse based on an input trigger or internally generated pulse.

Choosing one of the five radio buttons selects the operating mode. When “Follow External Trigger” is selected, the unit operates in pass through mode and generates an output pulse identical to the input. If “Use External Trigger” is chosen, the 762 generates a pulse based on the pulse width and delay parameters stored in memory at the time of a valid input trigger.

When “Use Ext. Trigger as Gate” is set, the internal pulse generator operates using all three defined parameters when the input is driven high. Should the input be driven low, the internal pulse generator resets operation and waits for another gate.

When “Use Ext. Trigger as Sync” is selected, the internal pulse generator resets, or synchronizes, the internal clock to the rising edge of the input pulse. The pulse generator will continue to run indefinitely using all three parameters to generate the desired pulse width with the specified period.

The internal pulse generator may free run without the need for any input stimulus. Set the “Int. Pulse Generator” radio box and the 762 will operate autonomously using the user specified settings.

BASE

Clicking the “Decimal” or “Hexadecimal” radio box switches the working base between hexadecimal and decimal for numbers in the *I2C Address*, *Trigger and Configuration Options*, *Amp. Sync 1 Options*, *Amp. Sync 2 Options*, and *Manual Command* group boxes. Alternative to clicking, pressing the F5 or F6 key for hexadecimal and decimal, respectively, can also change the base. The *Adjustable Parameters* group box base does not change unless the “Show Raw Values” check box is checked.

The “x10ns.” labels in the *Trigger and Configuration Options*, *Amp. Sync 1 Options*, *Amp. Sync 2 Options* group boxes do not change base and are always decimal to indicate the value entered in the text box immediately preceding the label should be multiplied by 10 nanoseconds.