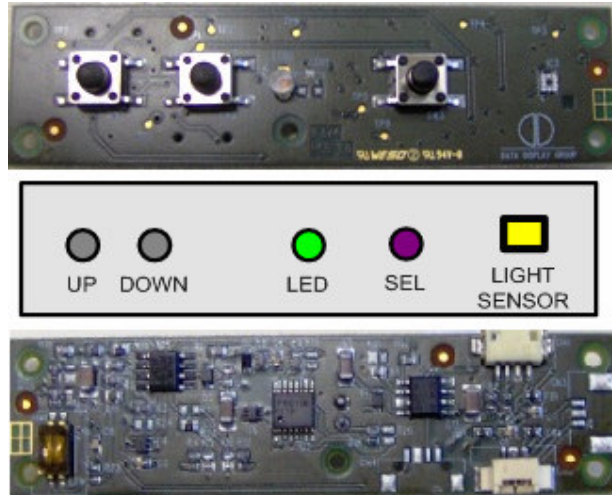


Data Display

IF374 - Keypad with Light Sensor for G070x



Version 1.03

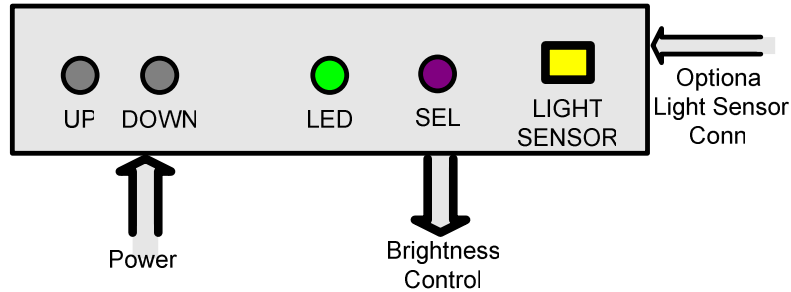
03.02.2009

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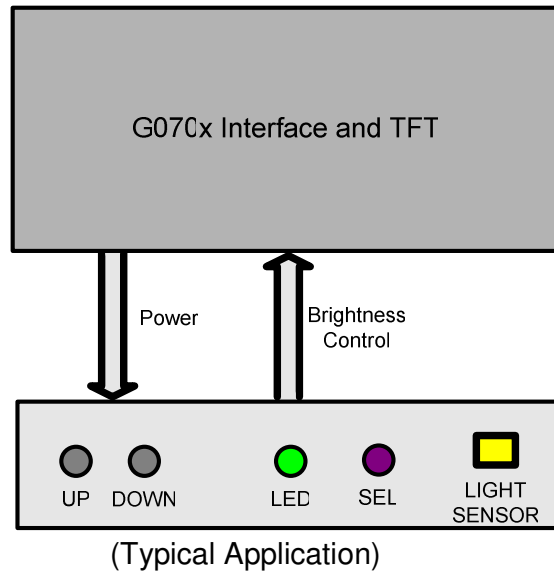
1 GENERAL DESCRIPTION

Aim of this board is to adjust backlight intensity of G070x TFT panel. Board has two control mechanism “manual control” and “automatic control”.



When system is powered up “automatic control” is default selection by hardware. Board consist of:

- “**UP**” button: Increase brightness control voltage output
- “**DOWN**” button: Decrease brightness control voltage output
- “**SEL**” button: Select control method. Light Sensor (Automatic control) or Manual.
- “**LED**”: Green → Manual control enabled , OFF → Light sensor control enabled
- “**LIGHT SENSOR**”: Analog sensor to detect ambient light intensity.



2 FEATURES

2.1 Manual Control of Backlight

To enable manual control “SEL” button should be pressed to make “LED” emit light. Then control is taken by user and display brightness level can be adjusted with “UP” and “DOWN” buttons.

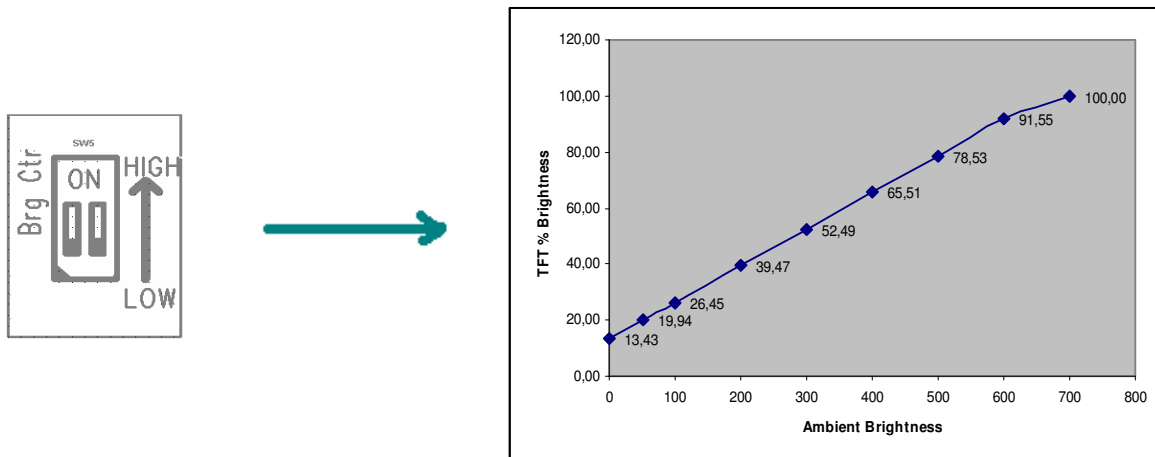
All buttons on the board have debounced inputs to filter unwanted key activities. The number of increments/decrements of the brightness level depend on how long the button is being pushed. When making a continuous push, after the first second, the increment/decrement speed increases. For the first second the device will be in the slow scan mode. Then if the button is held for longer than 1 second the device will go into the fast scan mode. In fast scan mode, increments/decrements operations doing faster.

2.2 Automatic Control of Backlight

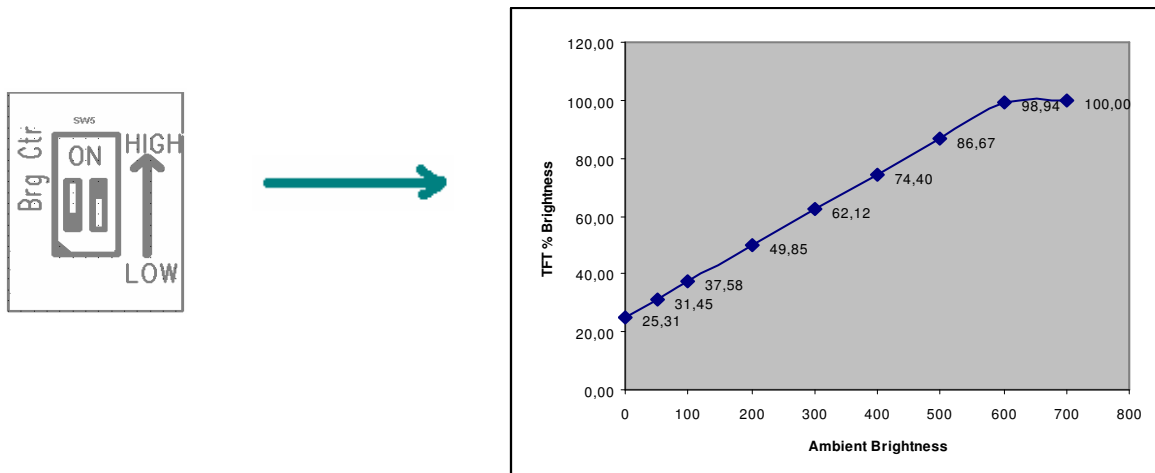
To enable automatic control “SEL” button should be pressed to make “LED” off. When LED is OFF, brightness control is performed by ambient light sensor automatically. Different graph for ambient light brightness and display brightness adjustments are selectable by the switch (**SW5**) on the keypad.

Four different user selectable brightness control graphics are available with SW5 positions.

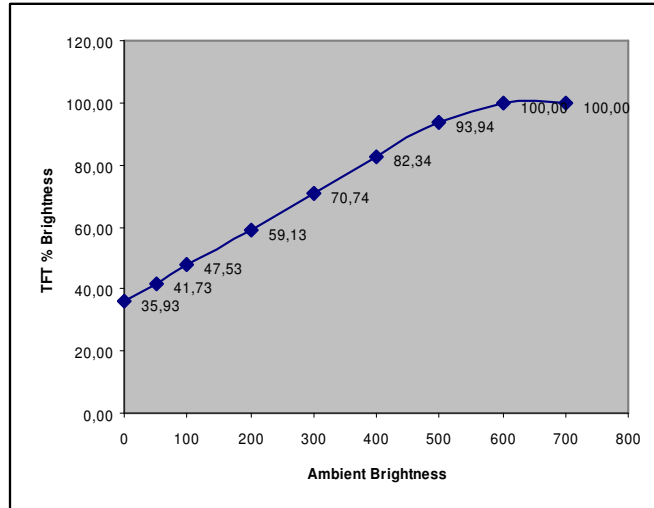
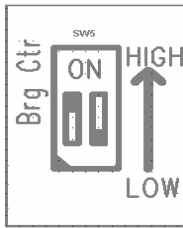
When both mini switches on **SW5** are “LOW” position:



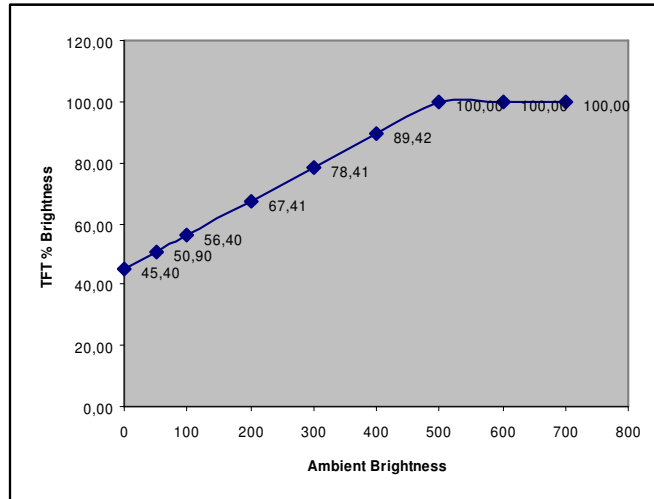
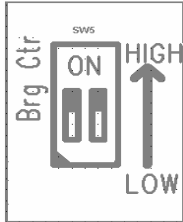
When right mini switch on **SW5** is “HIGH” position:



When left mini switch on **SW5** is “**HIGH**” position:



When both mini switches on **SW5** are “**HIGH**” position:



(All graphics are calculated for LED backlight type panel)

3 ELECTRICAL SPECIFICATIONS

3.1 Absolute Maximum Specifications

Operating temperature-20C to +70°C
 Storage temperature -40°C to +85°C
 Vdd (supply voltage)..... -0.3 to +5.5V

3.2 Recommended Operating Conditions

Operating temperature -20° to +70°C
 VDD (supply voltage) +5.0V and +3.3V

3.3 DC Specifications

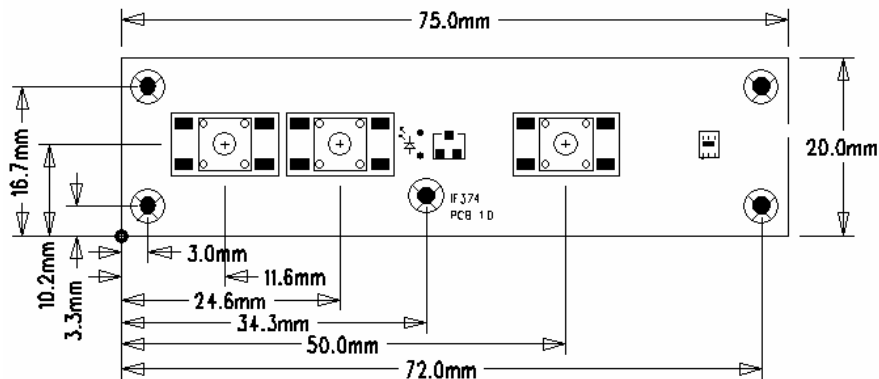
(Supply Voltage : 5V)

Parameter	Min	Typ	Max	Units	Notes
Average Supply Current	-	5	-	mA	From 5V
Average Supply Current	-	2	-	mA	From 3.3V
Input leakage current	-	2	-	mA	-

Parameter	Min	Max	Units	Notes
Brightness Control Voltage Output (for LED version)	155	1600	mV	UP Button: Increase Brightness DOWN Btn: Decrease Brightness
Brightness Control Voltage Output (for CCFL version)	18	3500	mV	UP Button: Decrease Brightness DOWN Btn: Increase Brightness

- To modify the board for CCFL backlight panels refer "section-6".
- Function of UP and DOWN button depends on backlight control circuit or inverter.

4 MECHANICAL SPECIFICATIONS:



Maximum pcb height (including pcb): 12.2mm ± 0.2

5 CONNECTORS:

Conn. No	Manufac.	Ordering Number	Purpose	Assemble
CN1	Hirose	DF13-4P-1.25H	Brightness Control	OK
CN2	Molex	53261-0371	Ext. Light Sensor	OK
CN3	Molex	53261-0371	Ext. Light Sensor	NA
CN4	Hirose	DF13-4P-1.25H	Brightness Control	NA

CN1 Pin out:	
Pin No	Function
1	+5V
2	+3V
3	GND
4	Brightness Ctrl Output

CN3 Pin out:	
Pin No	Function
1	+3V
2	GND
3	Ext. Light Sensor Input

CN2 Pin out:	
Pin No	Function
1	+3V
2	GND
3	Ext. Light Sensor Input

CN4 Pin out:	
Pin No	Function
1	+5V
2	+3V
3	GND
4	Brightness Ctrl Output

6 Hardware Modifications for LED and CCFL Panels:

IF374 is produced for LED backlight panels as a default. To modify the boards for CCFL backlight type panels these steps should be applied:

- 1- Remove: R25 and R28
- 2- Place: R21, R24, R27

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