Designing the VEML6035 Into an Application

By Reinhard Schaar

HIGH-ACCURACY AMBIENT LIGHT SENSOR: VEML6035

The VEML6035 is a very high-sensitivity, high-accuracy ambient light sensor in a miniature transparent 2.0 mm by 2.0 mm package, with a hight of only 0.4 mm. It includes a highly sensitive photodiode, low-noise amplifier, 16-bit A/D converter, and supports an easy-to-use I^2C bus communication interface and additional interrupt feature.

The ambient light read-out is available as a digital value, and the built-in photodiode response is near that of the human eye. The 16-bit dynamic range for ambient light detection is 0 lx to ~ 6710 lx, with resolution down to 0.0004 lx/counts.

Beside100 Hz and 120 Hz flicker noise rejection and a low temperature coefficient, the device consumes just 0.5 µA in shutdown mode. In addition, another four power-saving modes are available that allow operating current to be reduced down to just 2 µA. The device operates within a temperature range of -25 °C to +85 °C.

The VEML6035's very high sensitivity of just 0.0004 lx allows the sensor to be placed behind very dark cover glasses that will dramatically reduce the total light reaching it. The sensor will also work behind clear cover glass, because even high illumination - such as daylight and all in-door lights - will not saturate the device and read-outs up to 6710 lx are possible.

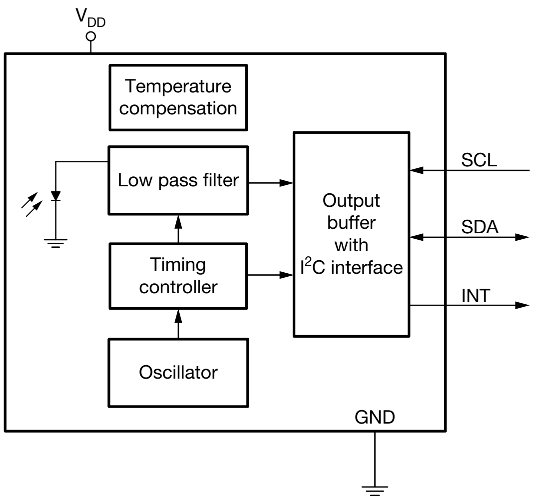


Fig. 1 - VEML6035 Block Diagram

Designing the VEML6035 Into an Application

APPLICATION CIRCUITRY FOR THE VEML6035

The VEML6035 can be connected to a power supply ranging from 1.7 V to 3.6 V. The pull-up resistors at the I^2C bus lines, as well as at the interrupt line, may also be connected to a power supply between 1.7 V to 3.6 V, allowing them to be at the same level needed for the microcontroller.

Proposed values for the pull-up resistors should be > 1 kΩ, e.g.: 2.2 kΩ to 4.7 kΩ for the R1 and R2 resistors (at SDA and SCL) and 10 kΩ to 100 kΩ for the R3 resistor (at interrupt). The interrupt pin is an open drain output for currents up to 12 mA.

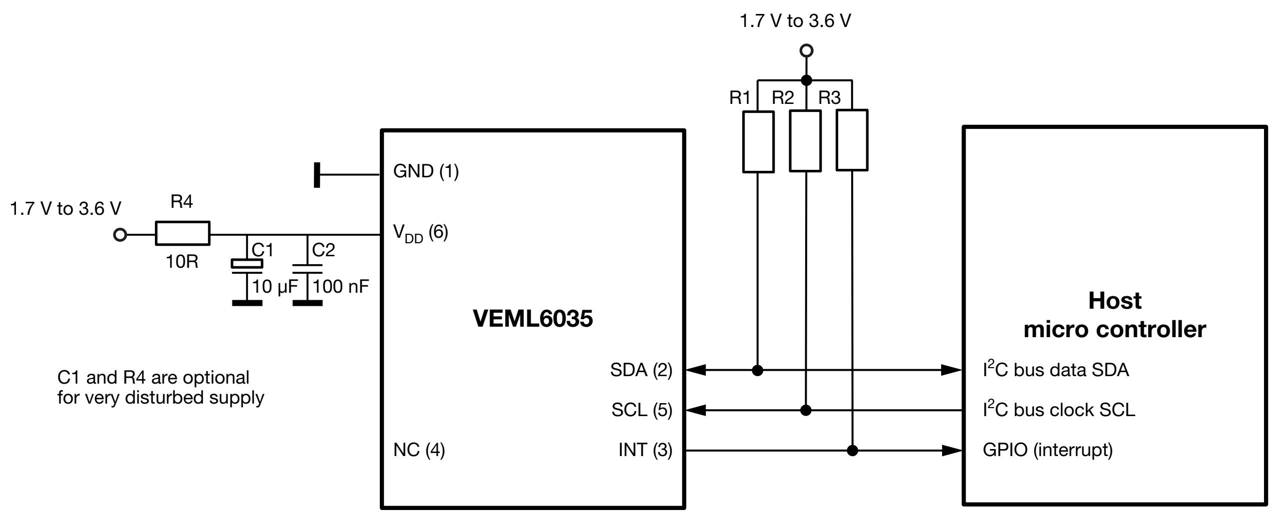


Fig. 2 - VEML6035 Application Circuit
(x) = Pin Number

The VEML6035 is insensitive to any kind of disturbances, so a small ceramic capacitor at its supply pin will be enough. Only if the power supply line could be very noisy and the voltage range close to the lower limit of 1.7 V a R-C decoupler, as shown in the above circuitry, should be used.

Designing the VEML6035 Into an Application

REGISTERS OF THE VEML6035

The VEML6035 has six user-accessible 16-bit command codes. The addresses are 00h to 06h (03h not defined / reserved).

COMMAND REGISTER FORMAT				
COMMAND CODE	**REGISTER NAME**	**BIT**	**FUNCTION / DESCRIPTION**	**R / W**
00	ALS_CONF 0	15 : 0	ALS gain, integration time, interrupt, and shut down	R / W
01	WH	15 : 8	High threshold window setting (MSB)	R / W
	WH	7 : 0	High threshold window setting (LSB)	R / W
02	WL	15 : 8	Low threshold window setting (MSB)	R / W
	WL	7 : 0	Low threshold window setting (LSB)	R / W
03	Reserved	15 : 3	Reserved	R / W
	PSM_WAIT	2 : 1	(0 : 0) = 0.4 s, (0 : 1) = 0.8 s, (1 : 0) = 1.6 s, (1 : 1) = 3.2 s	R / W
	PSM_EN	0	0 = PSM disabled, 1 = PSM enabled	R / W
04	ALS	15 : 8	MSB 8 bits data of whole ALS 16 bits	R
	ALS	7 : 0	LSB 8 bits data of whole ALS 16 bits	R
05	WHITE	15 : 8	MSB 8 bits data of whole WHITE 16 bits	R
	WHITE	7 : 0	LSB 8 bits data of whole WHITE 16 bits	R
06	IF_L	15	Crossing low threshold INT trigger event	R
	IF_H	14	Crossing high threshold INT trigger event	R
	Reserved	13 : 0	Reserved	R

Note

- Command code 0 default value is 01 = devices is shut down

RESOLUTION AND GAIN SETTINGS OF THE VEML6035

The VEML6035 is specified with a resolution of 0.0004 lx/counts. This high resolution is only available for a smaller light range of approximately 0 lx to 26 lx. For this range a high gain factor can be selected. For light levels up to about 6710 lx, both gain steps, GAIN and DG need to be reduced to GAIN = 0 and DG = 0 and sensitivity set down to just 1/8 (SENS = 1). With also short integration time of just 100 ms the resolution will be 0.1024 lx/count and maximum possible illumination will be 6710 lx.

GAIN Settings

Configuration register: 00, bits 12, 11, and 10

CONFIGURATION REGISTER 00 (HEX)		
REGISTER NAME	**BIT**	**FUNCTION / DESCRIPTION**
SENS	12	0 = high sensitivity (1 x), 1 = low sensitivity (1/8 x)
DG	11	0 = normal, 1 = double
GAIN	10	0 = normal sensitivity, 1 = double sensitivity

Remark: to avoid possible saturation / overflow effects, application software should always start with low gain: GAIN = 0, DG = 0, and low sensitivity (SENS = 1). GAIN = 1, DG = 1, and SENS = 0 shows the highest resolution and should only be used with very low illumination values, e.g. if sensor is placed below a very dark cover allowing only low light levels to reach the photodiode.

Designing the VEML6035 Into an Application

IT Settings

Configuration register: 00, bits 9 to 6

CONFIGURATION REGISTER 00 (HEX)		
REGISTER NAME	BIT	FUNCTION / DESCRIPTION
IT	9 : 6	Integration time setting which represents how long ALS / WHITE can update the readout value. 1100 = 25 ms 1000 = 50 ms 0000 = 100 ms 0001 = 200 ms 0010 = 400 ms 0011 = 800 ms

Remark: the standard integration time is 100 ms. If a very high resolution is needed, one may increase this integration time up to 800 ms. If faster measurement results are needed, it can be decreased down to 25 ms.

READ-OUT OF ALS MEASUREMENT RESULTS

The VEML6035 stores the measurement results within the command code 04. The most significant bits are stored to bits 15 : 8 and the least significant bits to bits 7 : 0.

The VEML6035 can memorize the last ambient data before shutdown and keep this data before waking up. When the device is in shutdown mode, the host can freely read this data directly via a read command. When the VEML6035 wakes up, the data will be refreshed by new detection.

Command Code ALS

Command code: 04, bits 15 : 8 (MSB), bits 7 : 0 (LSB)

COMMAND REGISTER FORMAT			
REGISTER NAME	BIT	FUNCTION / DESCRIPTION	R / W
ALS	15 : 8	MSB 8 bits data of whole ALS 16 bits	R
	7 : 0	LSB 8 bits data of whole ALS 16 bits	R

TRANSFERRING ALS MEASUREMENT RESULTS INTO A DECIMAL VALUE

Command code 04 contains the results of the ALS measurement. This 16-bit code needs to be converted to a decimal value to determine the corresponding lux value. The calculation of the corresponding lux level is dependent on the programmed gain setting and the chosen integration time.

Designing the VEML6035 Into an Application

POWER SAFE MODE		
REGISTER NAME	BIT	FUNCTION / DESCRIPTION
03	15 : 3	Reserved
	2 : 1	PSM_WAIT (0 : 0) = 0.4 s, (0 : 1) = 0.8 s, (1 : 0) = 1.6 s, (1 : 1) = 3.2 s
	0	PSM_EN 0 = PSM disabled, 1 = PSM enabled

Besides selftimed measurements, which are executed direct after setting SD to 0, there is also a power save mode available, which is activated when PSM_EN = 1.

When this mode is enabled, PSM_WAIT defines the wait time between the measurements and it can be set between 0.4 s and 3.2 s as shown in table above.

Current consumption will be lowest with short integration time (IT) and longest WAIT time between the measurements of 3.2 s.

Example:

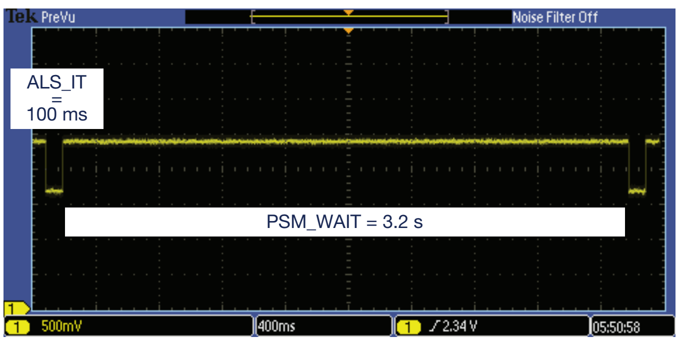


Fig. 3

Exact current consumption is here for ALS_IT = 100 ms and PSM_WAIT = 3.2 s

I_{avg} = t_p/T x 160 μA + 3.2/3.3 x 90 μA
= 100 ms/3300 ms x 160 μA + 3.2/3.3 x 90 μA
= 0.03 x 160 μA + 0.97 x 90 μA
= 4.85 μA + 87.3 μA
= 92.15 μA

Designing the VEML6035 Into an Application

CALCULATING THE LUX LEVEL

With the standard integration time of 100 ms, one has to just calculate the corresponding light level according to the programmed gain and corresponding resolution. This resolution is most sensitive with GAIN = 1, DG = 1, SENS = 0 and an integration time of 800 ms, specified to 0.0004 lx/step. For each shorter integration time by half, the resolution value is doubled.

The same principle is valid for the GAIN and DG. With SENS = 1 the sensitivity is reduced to 1/8 what then leads also to higher detection range.

The tables below show this factor of “2” for the GAIN and DG values and the factor of 8 for the sensitivity (SENS):

RESOLUTION AND MAXIMUM DETECTION RANGE AT DG = 1									
	GAIN = 1, SENS = 0	GAIN = 0, SENS = 0	GAIN = 1, SENS = 1	GAIN = 0, SENS = 1		GAIN = 1, SENS = 0	GAIN = 0, SENS = 0	GAIN = 1, SENS = 1	GAIN = 0, SENS = 1
IT (ms)	TYPICAL RESOLUTION (lx/cnt)					MAXIMUM POSSIBLE ILLUMINATION (lx)			
800	0.0004	0.0008	0.0032	0.0064		26	52	210	419
400	0.0008	0.0016	0.0064	0.0128		52	105	419	839
200	0.0016	0.0032	0.0128	0.0256		105	210	839	1678
100	0.0032	0.0064	0.0256	0.0512		210	419	1678	3355
50	0.0064	0.0128	0.0512	0.1024		(-) (1)	(-) (1)	(-) (1)	(-) (1)
25	0.0128	0.0256	0.1024	0.2048		(-) (1)	(-) (1)	(-) (1)	(-) (1)

RESOLUTION AND MAXIMUM DETECTION RANGE AT DG = 0									
	GAIN = 1, SENS = 0	GAIN = 0, SENS = 0	GAIN = 1, SENS = 1	GAIN = 0, SENS = 1		GAIN = 1, SENS = 0	GAIN = 0, SENS = 0	GAIN = 1, SENS = 1	GAIN = 0, SENS = 1
IT (ms)	TYPICAL RESOLUTION (lx/cnt)					MAXIMUM POSSIBLE ILLUMINATION (lx)			
800	0.0008	0.0016	0.0064	0.0128		52	105	419	839
400	0.0016	0.0032	0.0128	0.0256		105	210	839	1678
200	0.0032	0.0064	0.0256	0.0512		210	419	1678	3355
100	0.0064	0.0128	0.0512	0.1024		419	839	3355	6711
50	0.0128	0.0256	0.1024	0.2048		(-) (1)	(-) (1)	(-) (1)	(-) (1)
25	0.0256	0.0512	0.2048	0.4096		(-) (1)	(-) (1)	(-) (1)	(-) (1)

Note

(1) For integration times lower than 100 ms, the maximum count level is no longer 16 bit so half the integration time no longer leads to double the max. lux level

Example:

If the 16-bit word of the ALS data shows: 0000 0101 1100 1000 = 1480 (dec.), the programmed GAIN = 1, DG = 0, SENS = 1, and the integration time is 100 ms, the corresponding lux level is 1480 cnt x 0.0512 lx/cts = 75.8 lx.

Either one selects the resolution from the tables above, or puts the two gain factors together with integration time into one formula as shown below.

This results in the following formula: lux = max. resolution x (800/IT) x 2/DG x 2/GAIN x SENS/8 x counts result.

APPLICATION NOTE

Designing the VEML6035 Into an Application

Whereby the following should be inserted into the formula:

SETTING	FORMULA
DG = 0/1	1 x / 2 x
GAIN = 0/1	1 x / 2 x
SENSE = 0/1	1 x / 1/8 x

For this example it results in the following: 0.0004 lx/cnt x 800/100 x 2/1 x 2/2 x 8/1 x 1480 cts = 0.0512 lx/cnt x 1480 cts = 75.8 lx

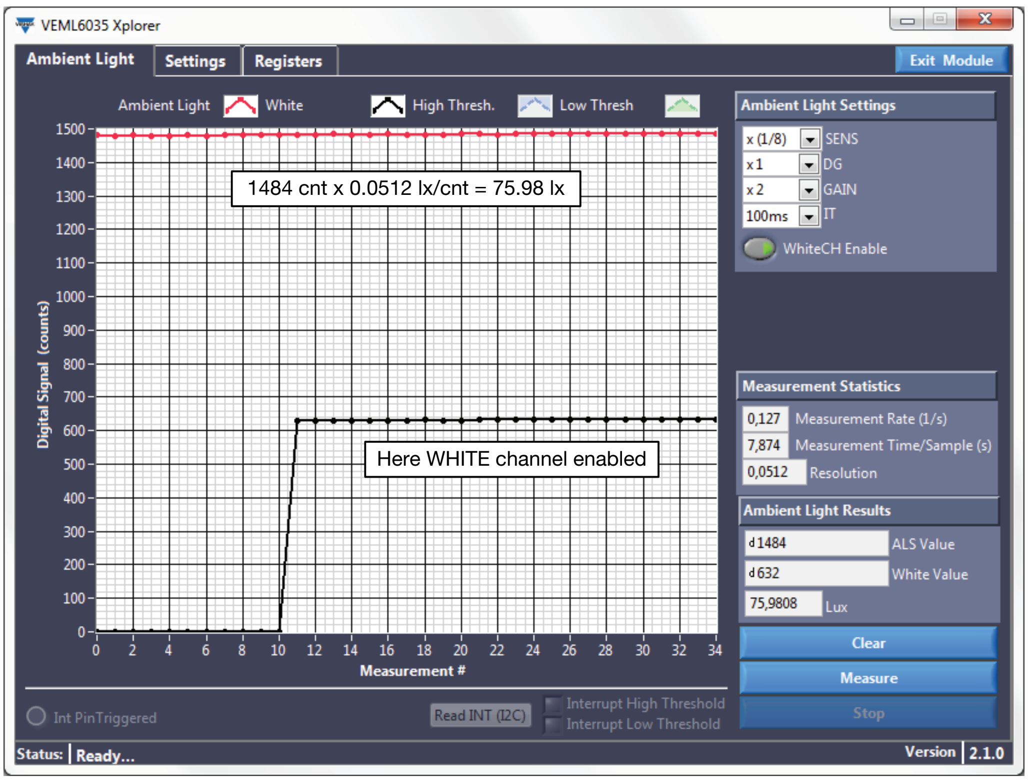


Fig. 4

Designing the VEML6035 Into an Application

The screen shot below shows the linearity for the four gain factors.

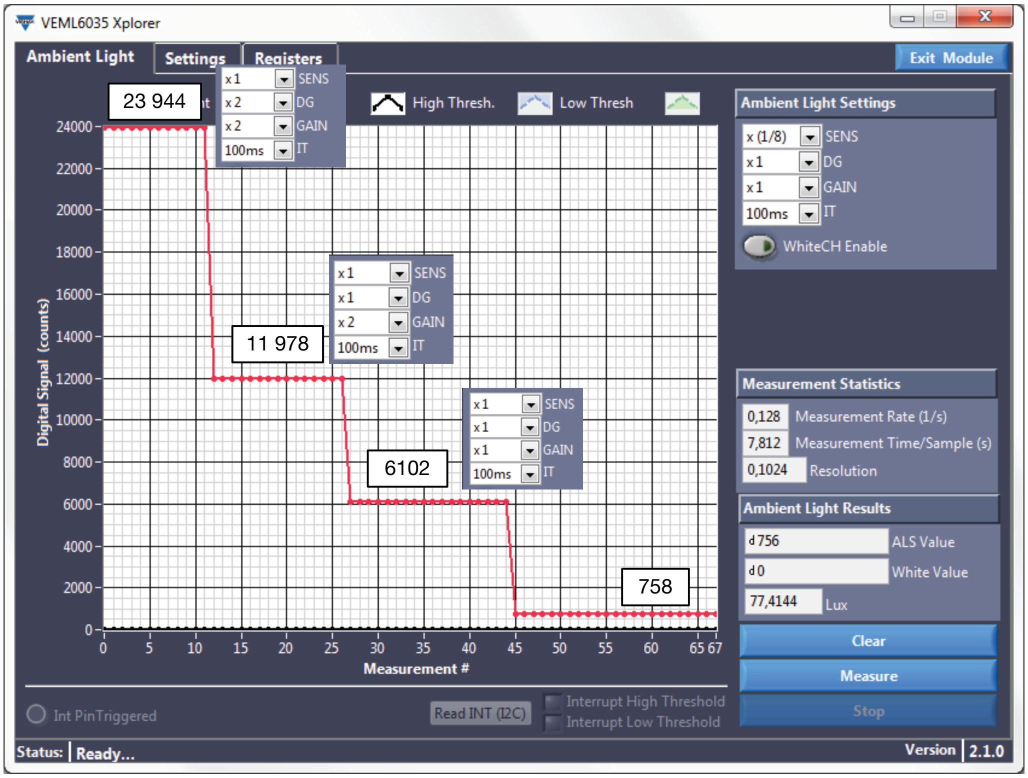


Fig. 5 - Linearity of Gain Steps

Designing the VEML6035 Into an Application

This screen shot shows the linearity for the integration times.

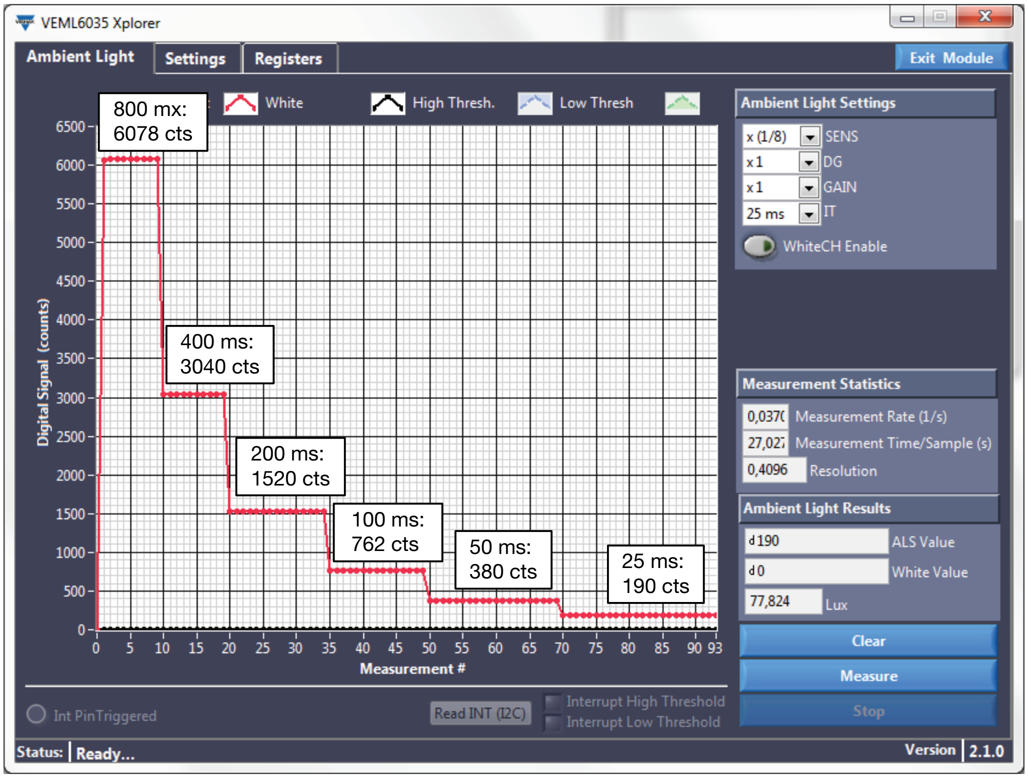


Fig. 6 - Linearity of Integration Times

Designing the VEML6035 Into an Application

If the light level is very low, or if just a small percentage of outside light reaches the sensor, a higher integration time will need to be chosen.

For just 0.1 lx, 32 counts are enough with both GAIN and DG set to “1” and SENS to “high sensitivity”, but for 0.01 lx just 3.5 counts will remain. With an integration time of 200 ms, this will be doubled to 7 counts, and with 800 ms 28 counts are shown.

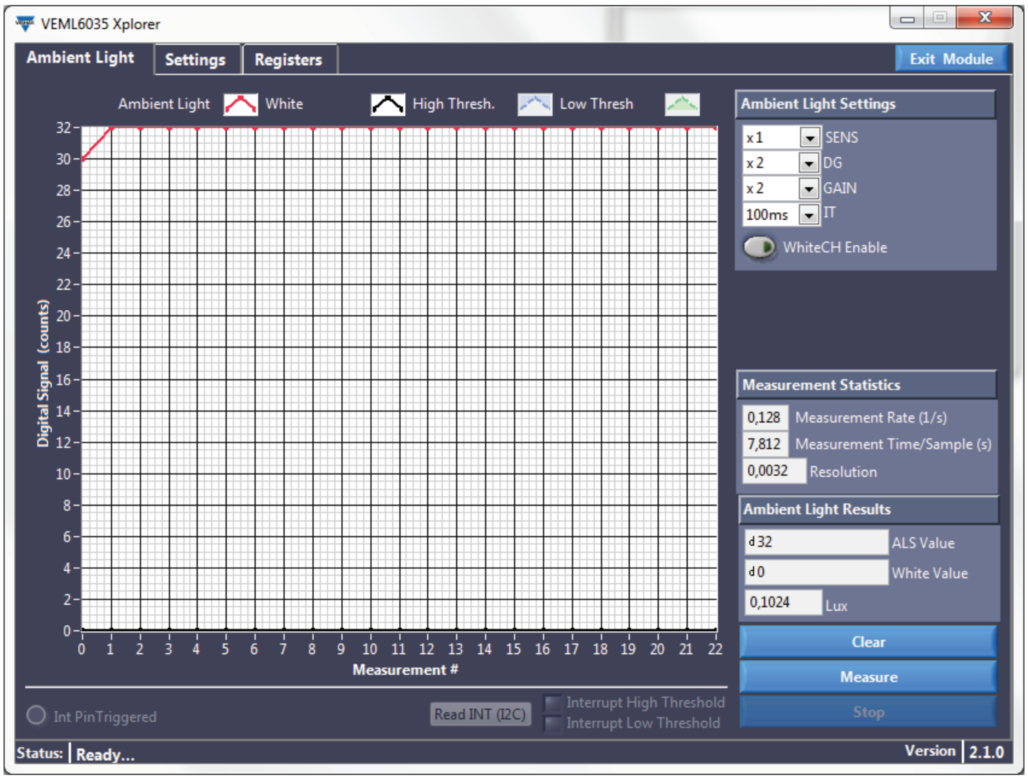


Fig. 7 - 32 Counts Seen for 0.1 lx (with both gains set to 2 and an integration time of 100 ms)

Designing the VEML6035 Into an Application

The lowest possible detectable illuminance is 0.004 lx, with GAIN = 1 and DG = 1, SENS = 0 and longest integration time of 800 ms, but 10 counts are noted here.

Any other increase of illuminance is seen with a resolution of 0.0004 lx/cnt

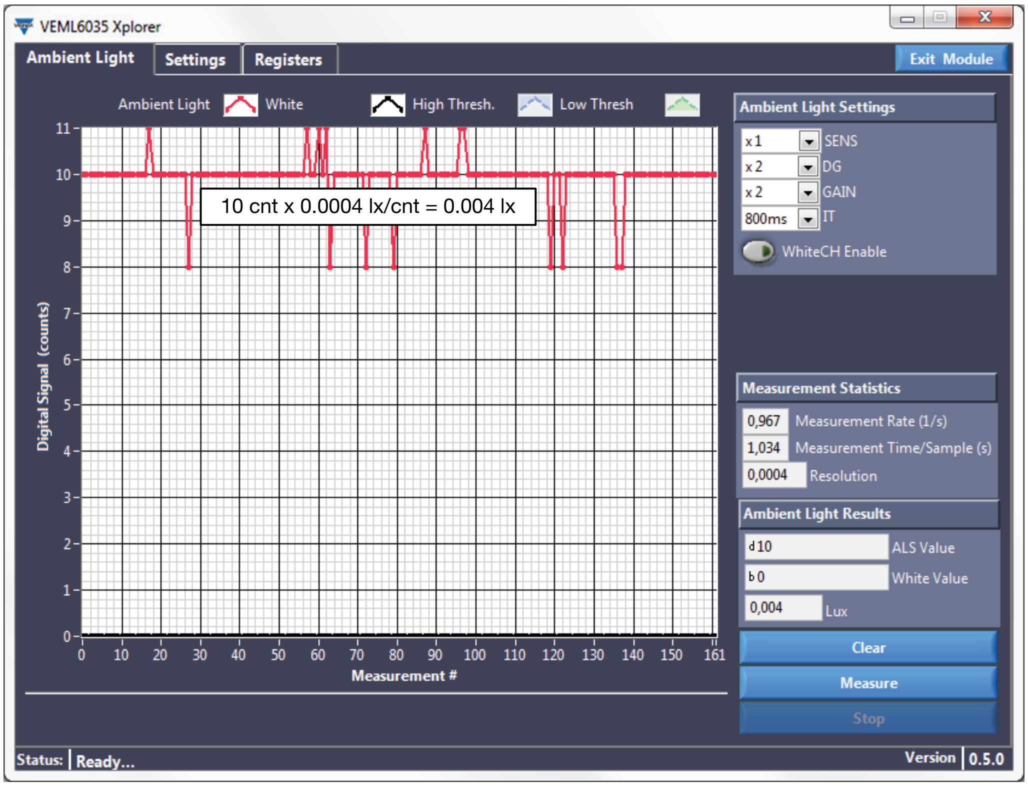


Fig. 8 - Min. Possible Illuminance is 0.004 lx

Designing the VEML6035 Into an Application

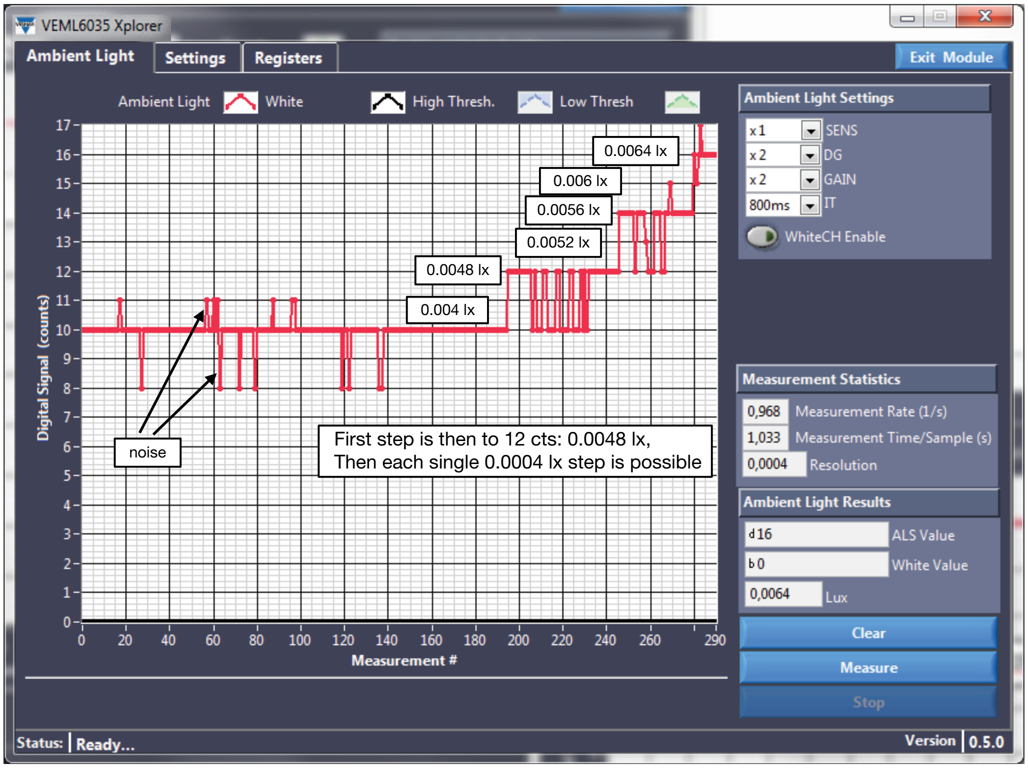


Fig. 9 - Resolution of 0.0004 lx/cnt

Designing the VEML6035 Into an Application

LUX LEVEL MATCHING FOR DIFFERENT LIGHT SOURCES

The VEML6035 shows very good matching for all kinds of light sources. LED light, fluorescent light, and normal daylight show about the same results in a close tolerance range of just ± 10 %. Only a halogen lamp with strong infrared content may show higher values.

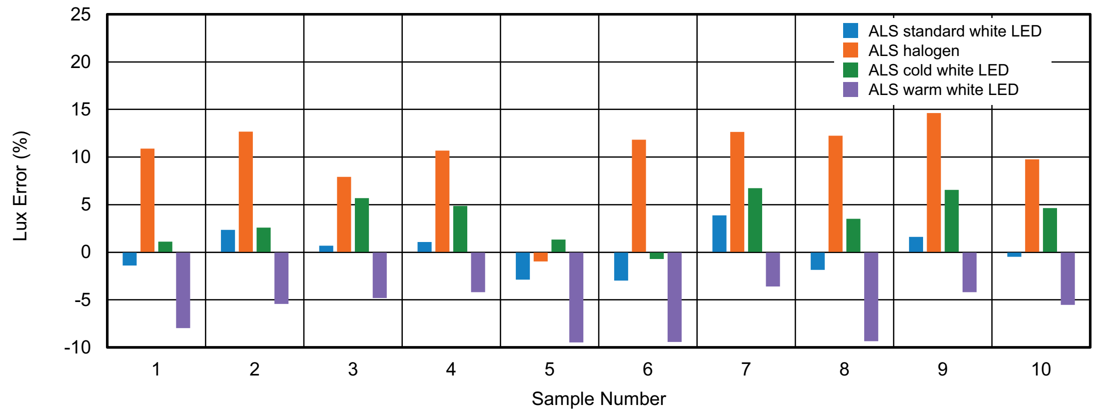


Fig. 10 - Tolerances for Different Light Sources

APPLICATION-DEPENDENT LUX CALCULATION

If the application uses a darkened / tinted cover glass, just 10 % - or even just 1 % - of the ambient light will reach the sensor. For a tinted cover glass where there is 1 lx up to 100 klx of light outside, just 0.01 lx to 1 klx is reaching the sensor, and the application software may always stay with both gain amplification factor of 2.

If the application uses a clear cover glass, nearly all ambient light will reach the sensor. This means up to about 6.7 klx may be possible. For this clear cover where << 1 lx to ≥ 6 klx is possible, the application software will not need to have both gain steps up to maximum of “2”, but GAIN = 0, DG = 1 and SENS = 0 would be good and one will get sufficient enough digital counts for a wide range from very low light up to 6.7 klx.

For unknown brightness conditions, the application should always start with the lowest gain: GAIN = 0, DG = 0 and SENS = 1. This avoids possible overload / saturation if, for example, direct sunlight suddenly reaches the sensor.

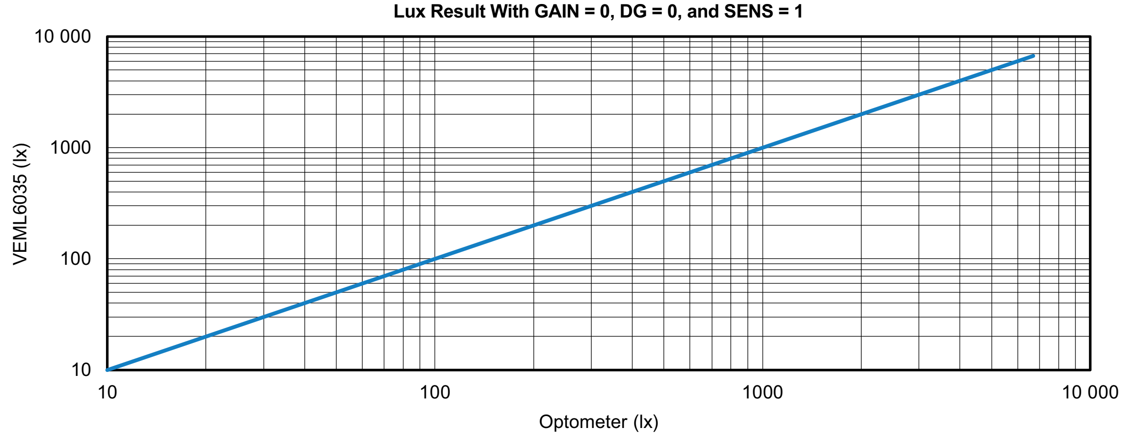


Fig. 11 - Linearity for GAIN = 0, DG = 0, and SENS = 1: VEML6035 Lux Value vs. Optometer Lux Value

Designing the VEML6035 Into an Application

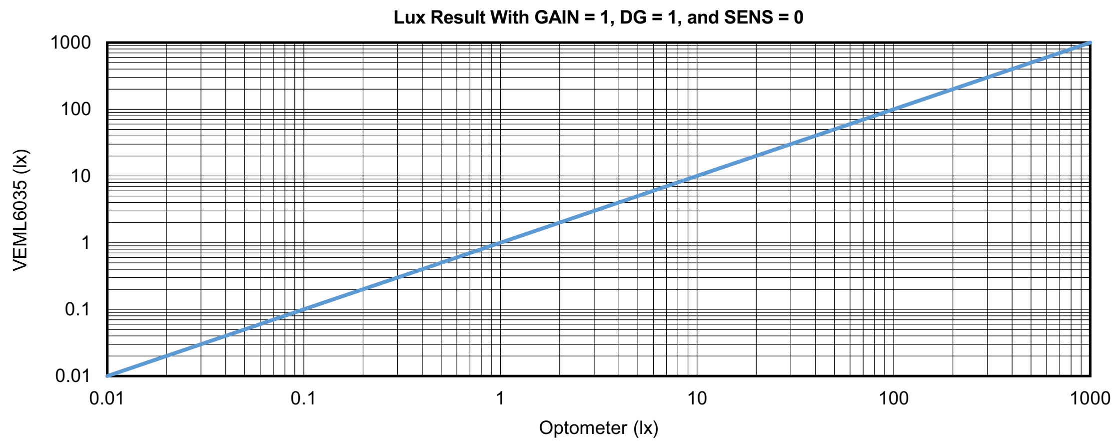


Fig. 12 - Linearity for GAIN = 1, DG = 1, and SENS = 0: VEML6035 Lux Value vs. Optometer Lux Value

The VEML6035 shows very good linear behavior for all levels from 0.0004 lx to about 6700 lx.

A software flow may look like the flow chart diagram at the end of this note:

- Starting with the lowest gain (GAIN = 0, DG = 0, and SENS = 1), check the ALS counts. If ≤ 100 counts, increase sensitivity with SENS = 0
- Check the ALS counts again. If they are still ≤ 100 counts, increase GAIN to 1
- Check the ALS counts again. If they are still ≤ 100 counts, increase DG to 1
- Check the ALS counts again. If they are still ≤ 100 counts, increase the integration time from 100 ms to 200 ms, and continue the procedure up to the longest integration time of 800 ms. If a very dark cover glass is used and one knows that just few percent of outside light is reaching the sensor one may directly start with higher gain

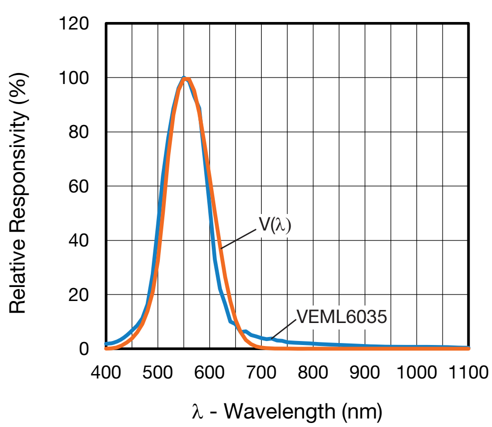


Fig. 13 - Normalized ALS Channel Spectral Response

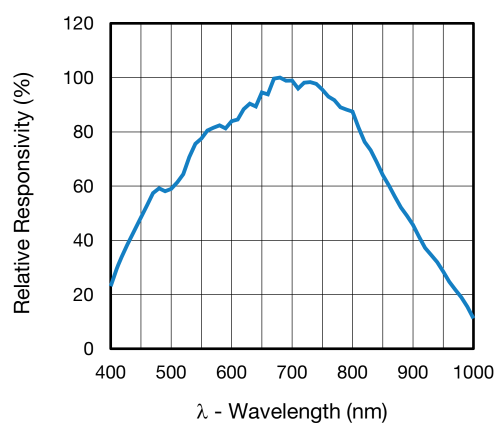


Fig. 14 - Normalized WHITE Channel Spectral Response

Designing the VEML6035 Into an Application

WHITE CHANNEL

In addition to the ALS channel that follows the so-called human eye curve very well, there is also a second channel available called the white channel, which offers a much higher responsivity for a much wider wavelength spectrum.

This white channel could be used to eliminate the last few tolerance percentages that light sources with strong infrared content are showing.

The data for this channel is available within the command code 05. Several measurements with many different light sources show that the output data of this channel will lead to higher data, up to 2 times that read from the ALS channel for incandescent or halogen lamps as it ranges from 400 nm to 1000 nm, please see Fig.14.

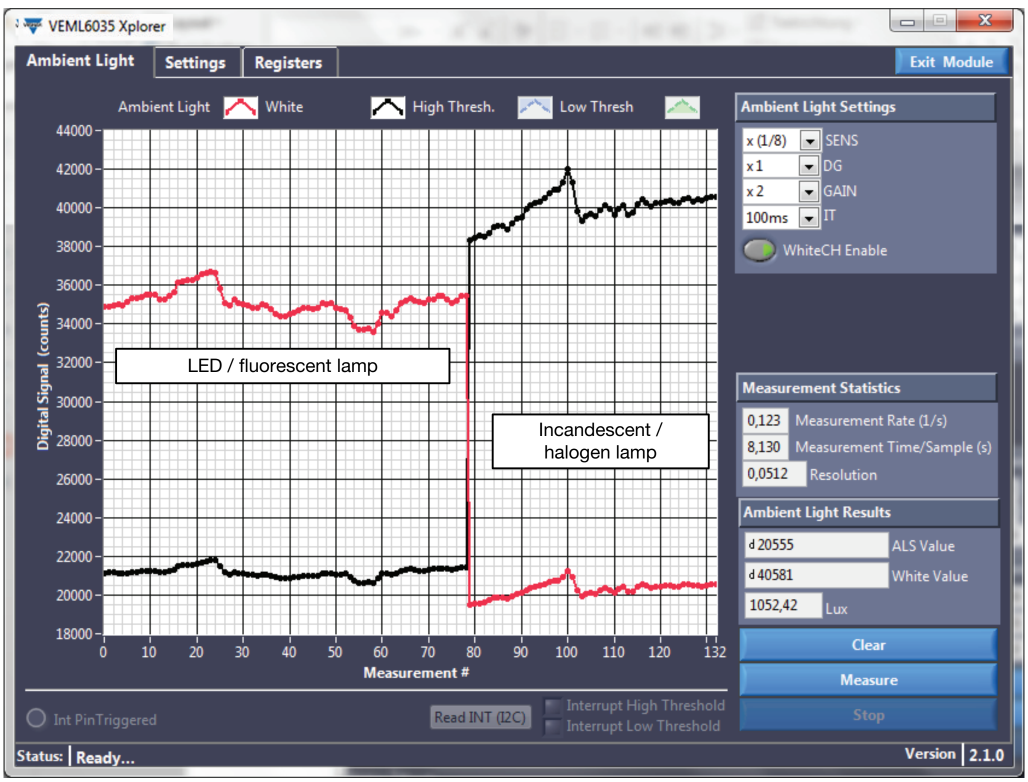


Fig. 15 - White Channel and ALS Channel for Different Lamp Spectra

Knowing that light sources with strong infrared content deliver about > 2 times higher output data at the white channel than all other light sources, which show a maximum factor of about 2, one may use it to optimize the lux conversion now.

Designing the VEML6035 Into an Application

INTERRUPT HANDLING

To avoid too many interactions with the microcontroller, the interrupt feature may be used. This is activated with ALS_INT_EN = 1.

Only when the programmed threshold is crossed (above / below) consecutively by the programmed number of measurements (ALS_PERS) will the corresponding interrupt bit (ALS_IF_L or ALS_IF_H) be set and the interrupt pin pulled down.

Configuration register: 00, bits 5 to 1 and command codes 01, 02, and 06

COMMAND REGISTER FORMAT

COMMAND CODE	REGISTER NAME	BIT	FUNCTION / DESCRIPTION	R / W
00	ALS_PERS	5 : 4	Interrupt persistence setting. The interrupt pin is triggered while sensor reading is out of threshold windows after consecutive number of measurement cycle 00 = 1 01 = 2 10 = 4 11 = 8	W
	INT_CHANNEL	3	Selection for which channel the interrupt should trigger 0 = ALS CH interrupt 1 = WHITE CH interrupt	W
	CHANNEL_EN	2	Channel enable function 0 = ALS CH enable only 1 = ALS and WHITE CH enable	W
	INT_EN	1	Interrupt enable setting 0 = INT disable 1 = INT enable	W
01	ALS_WH	15 : 8	ALS high threshold window setting (MSB)	W
		7 : 0	ALS high threshold window setting (LSB)	W
02	ALS_WL	15 : 8	ALS low threshold window setting (MSB)	W
		7 : 0	ALS low threshold window setting (LSB)	W
06	ALS_IF_L	15	ALS crossing low threshold INT trigger event	R
	ALS_IF_H	14	ALS crossing high threshold INT trigger event	R
	reserved	13 : 0		

Designing the VEML6035 Into an Application

MECHANICAL CONSIDERATIONS AND WINDOW CALCULATION FOR THE VEML6035

The ambient light sensor will be placed behind a window or cover. The window material should be completely transmissive to visible light (400 nm to 700 nm). For optimal performance the window size should be large enough to maximize the light irradiating the sensor. In calculating the window size, the only dimensions that the design engineer needs to consider are the distance from the top surface of the sensor to the outside surface of the window and the size of the window. These dimensions will determine the size of the detection zone.

First, the center of the sensor and center of the window should be aligned. The VEML6035 has an angle of half sensitivity of about ± 55°, as shown in the figure below.

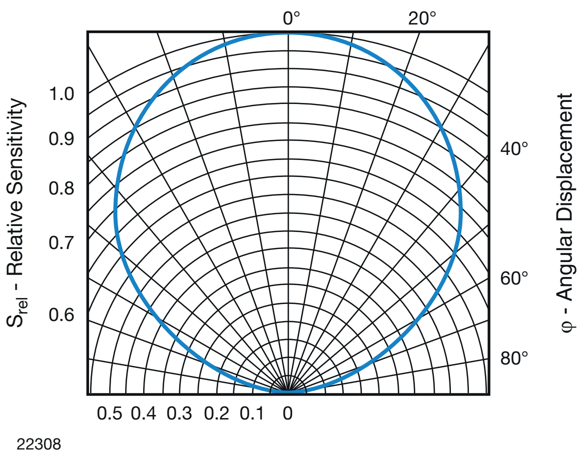


Fig. 16 - Relative Radiant Sensitivity vs. Angular Displacement

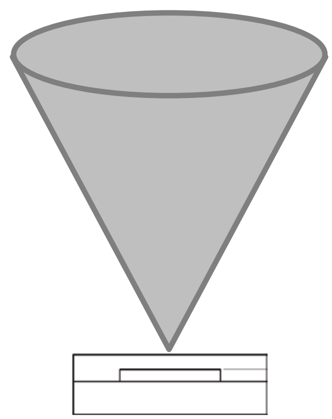


Fig. 17 - Angle of Half Sensitivity: Cone

Remark:

This wide angle and the placement of the sensor as close as possible to the cover is needed if it should show comparable results to an optometer, which also detects light reflections from the complete surroundings.

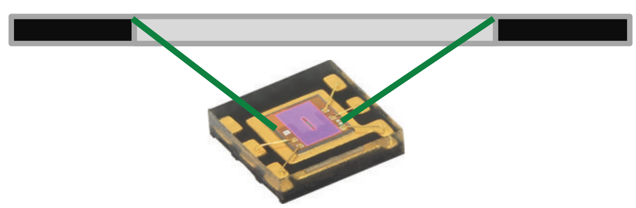


Fig. 18 - Windows Above Sensitive Area

The size of the window is simply calculated according to triangular rules. The dimensions of the device are shown within the datasheet, and with the known distance below the window's upper surface and the specified angle below the given window diameter (w), the best results are achieved.

Designing the VEML6035 Into an Application

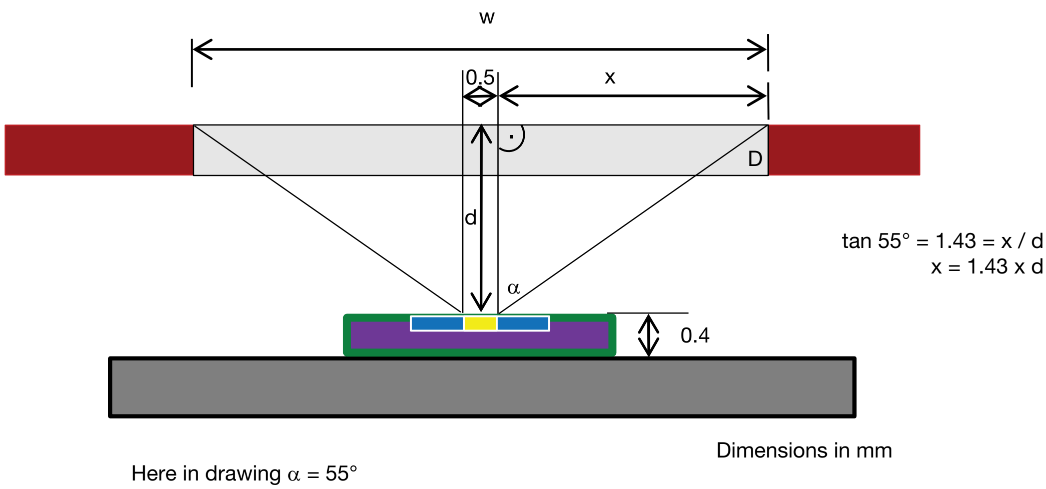


Fig. 19 - Window Area for an Opening Angle of ± 55°

The calculation is then: tan α = x / d → with α = 55° and tan 55° 1.43 = x / d → x = 1.43 x d

Then the total width is w = 0.5 mm + 2 x x.

d = 0.5 mm	→	x = 0.72 mm	→	w = 0.5 mm + 1.44 mm	=	1.94 mm
d = 1.0 mm	→	x = 1.43 mm	→	w = 0.5 mm + 2.86 mm	=	3.36 mm
d = 1.5 mm	→	x = 2.15 mm	→	w = 0.5 mm + 4.30 mm	=	4.80 mm
d = 2.0 mm	→	x = 2.86 mm	→	w = 0.5 mm + 5.72 mm	=	6.22 mm
d = 2.5 mm	→	x = 3.58 mm	→	w = 0.5 mm + 7.16 mm	=	7.66 mm
d = 3.0 mm	→	x = 4.29 mm	→	w = 0.5 mm + 8.58 mm	=	9.08 mm

A smaller window is also sufficient if reference measurements can be done and / or if the output result does not need to be as exact as an optometer.

Designing the VEML6035 Into an Application

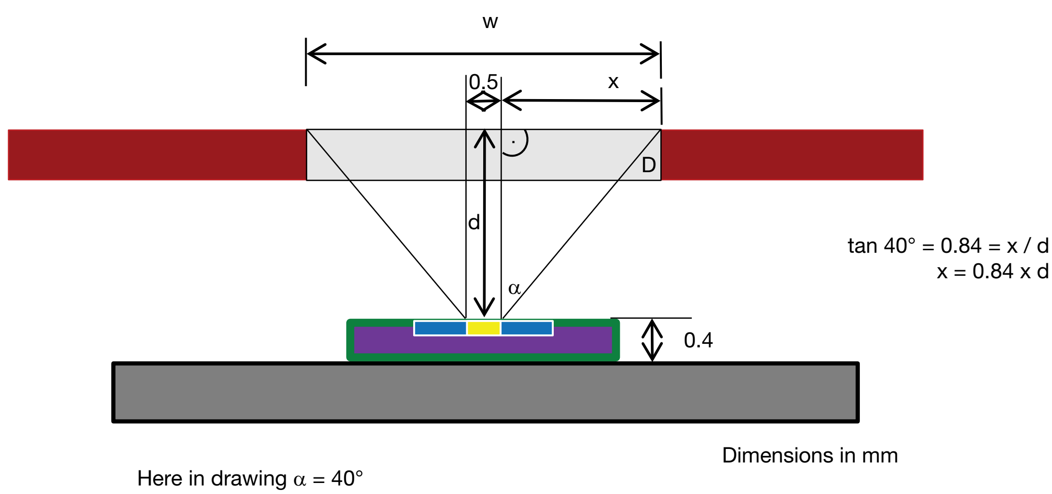


Fig. 20 - Window Area for an Opening Angle of ± 40°

The calculation is then: tan α = x / d $\rightarrow$ with α = 40° and tan 40° 0.84 = x / d $\rightarrow$ x = 0.84 x d
Then the total width is w = 0.5 mm + 2 x x.

d = 0.5 mm	→	x = 0.42 mm	→	w = 0.5 mm + 0.84 mm	=	1.34 mm
d = 1.0 mm	→	x = 0.84 mm	→	w = 0.5 mm + 1.68 mm	=	2.18 mm
d = 1.5 mm	→	x = 1.28 mm	→	w = 0.5 mm + 2.56 mm	=	3.06 mm
d = 2.0 mm	→	x = 1.68 mm	→	w = 0.5 mm + 3.36 mm	=	3.86 mm
d = 2.5 mm	→	x = 2.10 mm	→	w = 0.5 mm + 4.20 mm	=	4.70 mm
d = 3.0 mm	→	x = 2.52 mm	→	w = 0.5 mm + 5.04 mm	=	5.54 mm

Designing the VEML6035 Into an Application

TYPICAL SOFTWARE FLOW CHART

For a wide light detection range of more than seven decades (from 0.004 lx to 6710 lx), it is necessary to adjust the sensor. This is done with the help of the two gain steps, the sensitivity, and the steps for the integration time.

Whereas the programmed gain begins with the lowest possible value (GAIN = 0, DG = 0), in order to avoid any saturation effect, the integration time starts with 100 ms: IT = 0.

With this about 6710 lx is possible. To determine the optimal gain and sensitivity settings for an application it is advisable to first increase the sensitivity via the SENS bit (SENS = 0), followed by the GAIN bit (GAIN = 1) and then finally the DG bit (DG = 1).

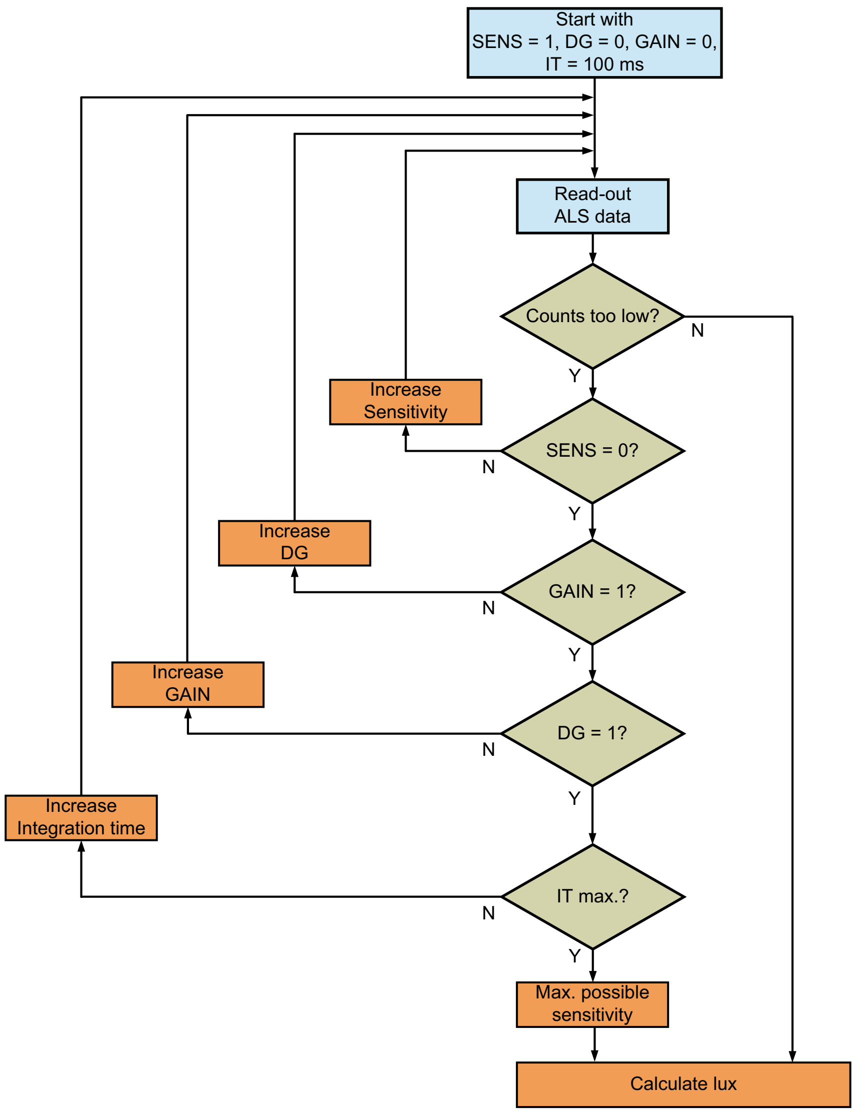


Fig. 21 - Simple Flow Chart View

Designing the VEML6035 Into an Application

TYPICAL LUMINANCE VALUES

Luminance	Example
10^{-5} lx	Light from Sirius, the brightest star in the night sky
10^{-4} lx	Total starlight, overcast sky
0.002 lx	Moonless clear night sky with airglow
0.01 lx	Quarter moon, 0.27 lx; full moon on a clear night
1 lx	Full moon overhead at tropical latitudes
3.4 lx	Dark limit of civil twilight under a clear sky
50 lx	Family living room
80 lx	Hallway / bathroom
100 lx	Very dark overcast day
320 lx to 500 lx	Office lighting
400 lx	Sunrise or sunset on a clear day
1000 lx	Overcast day; typical TV studio lighting
10 000 lx to 25 000 lx	Full daylight (not direct sun)
32 000 lx to 130 000 lx	Direct sunlight

VEML6035 SENSOR BOARD AND DEMO SOFTWARE

The small blue VEML6035 sensor board is compatible with the SensorStarterKit.
Please also see www.vishay.com/optoelectronics/SensorXplorer

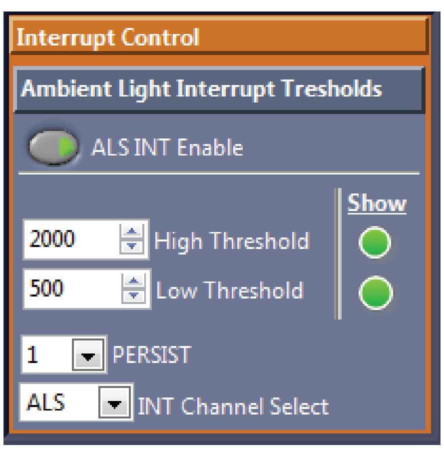
After plugging in the VEML6035 sensor board to the USB dongle and activating with the "VEML6035.exe" file, the "Ambient Light" menu appears, please see Fig. 3.

The ALS sensitivity mode is preprogrammed to "GAIN = 0, DG = 0, SENS = 1" and integration time to "100 ms." Self-timed measurements are started by clicking the measure button.

Both, the ALS and the white channel are shown. A channel can be deactivated by clicking within the small white box on top of the graph and clicked again to make visible. In addition, decimal, binary, or hex formats can be selected in the small white boxes on the right side, where the small letters "d" and "b" are shown.

The lux level is calculated according to the rules mentioned above, and the chosen gain and integration time are displayed in the lowest white box "Lux".

The screen shots below appear when programming the upper and lower thresholds within the "Settings" menu.



Selecting "ALS INT Enable" and "Show" within the measurement menu will then show the high and low thresholds as blue and green lines, respectively. If the light source changes to that higher or lower value, the below appears. Within "PERSIST" one may select for numbers of measurements above / below defined threshold before the INT is set.

The interrupt can be assigned for the ALS or for the WHITE channel with "INT Channel Select".

Designing the VEML6035 Into an Application