

Visi-Genie Magic: Analog Input

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Description

This application note demonstrates how to use Analog input of the 4D Display.

Before getting started, the following are required:

Hardware

- Two of Any <u>4D Systems display module</u> powered by any of the following processors:
 - o DIABLO16
 - o PICASO
 - o PIXXI-28/44
- One Programming Adaptor for target display module
- 50k ohm Potentiometer
- 22k ohm, 1/4w resistor

Software

- Workshop4
- This requires the **PRO** version of Workshop4

This application note comes with one (1) Visi Genie projects:

• Visi-Genie-Analog-Input.4DGenie

Note: Using a non-4D programming interface could damage the processor and void the warranty.

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Application Overview

Reads the Output Voltage from the Potentiometer and display it using Angular Meter gauge and LED digits, measures up to 5V only.



Setup Procedure

For instructions on how to launch Workshop4, how to open a ViSi-Genie project, and how to change the target display, kindly refer to the section "**Setup Procedure**" of the application note:

- <u>ViSi Genie Getting Started First Project for Picaso Displays</u>
- <u>ViSi Genie Getting Started First Project for Diablo16 Displays</u>
- <u>ViSi-Genie Getting Started First Project for Pixxi</u>

Create a New Project

For instructions on how to create a new **Visi Genie** project, please refer to:

- ViSi Genie Getting Started First Project for Picaso Displays
- <u>ViSi Genie Getting Started First Project for Diablo16 Displays</u>
- <u>ViSi-Genie Getting Started First Project for Pixxi</u>

Design the Project

Add Angular Meter

Go to Gauges tab and add one Angular Meter gauge.



Go to angularmeter0 Properties.

Object Angularmeter0				
Properties Events				
Property		Value		
Name		Angularmeter0		
Alias		Angularmeter0		
Angle		40		
AngleOffse	et	280		
Caption		Voltage		

Set Max value to 5 and Min value to 0.



Set ColorZone Colours.

ColorZone1	dGreen
ColorZone2	ORANGE
ColorZone3	clRed

Set Percent1 to 66 and Percent2 to 20.

Percent1	66
Percent2	20

Angular Meter Gauge Image.



Set Ticks to 100 and Ticks enlarge to 10.

	Ticks	100	
	TicksColor	dWh	nite
	TicksEnlarge	10	
- 16			

Add Led Digits

Go to Digits tab and Add one LED digits.



Go to the Leddigits0 properties then set Decimals to 2 and Digits to 3.

Object	Lec	ldigits0)	
Properti	ies	Event	s	
Propert	y		Valu	ie
Name		Ledo	digits0	
Alias			Ledo	digits0
Color			E	LACK
Decima	s		2	
Digits			3	

Open the Palette then Set Low Colour to BLACK.

Palette

High	dLime	
Low	BLACK	

APPLICATION NOTES

LED digits image.



Add Label

Go to Labels Tab and add one label.

Backgrounds	Buttons	Digits	Gauges	I/O	Inputs	Labels
next 🔨	 New deal is 8 deal 12 lines, of alart of 1 case to 1 case address, entings (

Go to LabelO Properties and set Caption Value to Voltage.

Form Form0	Form0		
Object Label0			
Properties Event	ts		
Property	Value		
Name	Label0		
Alias	Label0		
1 4DGLFont			
BGcolor	BLACK		
Caption	Voltage		

Position the label above the LED digits.



Add Magic Code

Go to Magic tab, click Magic Code two times to create two Magic Codes.

Backgrounds	Buttons	Digits	Gauges	I/O	Inputs	Labels	Magic	F
Event Touch	⊷ Move	Release	KbClr Co	/> xde	BJ			

Go to Object Inspector to check the added Magic Codes which are MagicCode0 and MagicCode1.



Go to MagicCode0 properties and Set InsertPoint to PreGenieInit.

Form	Form0				
Object	t MagicCode0				
Proper	ties	Event	ts		
Proper	rty		Value		
Name			MagicCode0		
Alias			MagicCode0		
Code		MagicCode0.i	nc		
Insert	Point		PreGenieInit		

To open the code for the MagicCode0 click the MagicCode0.inc.

Form Form0					
Object MagicCode0					
Properties Events					
Property	Value				
Name	MagicCode0				
Alias	MagicCode0				
Code	MagicCode0.inc				
InsertPoint	PreGenieInit				

The variable pot_val is use to store the analog input value, set PA3 as the analog Input then start the count down timer from 50 ms using TIMER5. MagicCode0.inc

1	<pre>var pot_val;//variable for</pre>
2	<pre>pin_Set(PIN_ANAVG,PA3);//</pre>
∳3	<pre>sys_SetTimer(TIMER5, 50);/</pre>

Form Form0 ~					
Object MagicCode1 ~					
Properties Events					
Property	Value				
Name	MagicCode 1				
Alias	MagicCode 1				
Code	MagicCode 1.inc				
InsertPoint	MainLoop				

To open the code for the MagicCode1 click the MagicCode1.inc.

Form	For	Form0 ~				
Object	Ma	MagicCode 1				
Properties Events			ts			
Property			Value			
Name			MagicCode 1			
Alias			MagicCode 1			
Code			MagicCode 1.inc			
InsertPoint			MainLoop			

Go to MagicCode1 properties and Set InsertPoint to MainLoop

APPLICATION NOTES

Inside the MainLoop Function. If TIMER5 reaches 0 then start reading analog input PA3, the analog reading is divided by 8 because $4095/(5*100 \text{ ticks/V}) = 8.19 \approx 8.19 \approx 8.19 \approx 11$ is the remainder of 4905/8 - 4905/8.19 = 11. Then input the readings to the angular meter and LED digits using the function WriteObject(object name, index, value). Then start the countdown timer again from 50 ms.

MagicCode 1.inc

1	<pre>if(! sys_GetTimer(TIMER5))//reads alaog in</pre>
2	<pre>pot_val:=pin_Read(PA3);//read analog i</pre>
3	<pre>pot_val:=(pot_val/8);// 4095/5=819, 81</pre>
4	<pre>if(pot_val>=11)</pre>
5	<pre>pot_val:=pot_val - 11;//subtract t</pre>
6	endif
7	<pre>WriteObject(tAngularmeter,0,pot_val);/</pre>
8	<pre>WriteObject(tLeddigits,0,pot_val); //i</pre>
9	<pre>sys_SetTimer(TIMER5, 50);//start count</pre>
4 0	endif

R1 derivation.



Hardware Connection



Run the Program

For instructions on how to save a **Visi-Genie** project, how to connect the target display to the PC, how to select the program destination, and how to compile and download a program, please refer to the section "**Run the Program**" of any of the following application notes:

- <u>ViSi Genie Getting Started First Project for Picaso Displays</u>
- <u>ViSi Genie Getting Started First Project for Diablo16 Displays</u>
- <u>ViSi-Genie Getting Started First Project for Pixxi</u>

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