



*Consult TNx prior to design-in*

SHORTFORM *Part of the* DATASHEET



*family of touchscreens*

Rev	Date	Author	Notes
A1	24/11/2015	PG	First Issue
A1a	11/03/2106	PS	Split table and formatting

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## 1 Highlights

The Luminance family of multi-touch capacitive touch sensors and assemblies includes numerous models that have the following features:

- + *12-bit XY full-multi-touch reporting.*
- + *Supports self and mutual capacitance measurements for best performance with glove, stylus and moisture*
- + *Reporting rate typically 80 to 100Hz depending on configuration.*
- + *Suitable for lens thicknesses up to 4mm glass.*
- + *Robust sensor design allows operation with a wide range of displays.*
- + *Industry leading conducted and radiated immunity performance.*
- + *Narrow edge margins, near invisible ITO pattern.*
- + *Range of Control PCBs to cover all screen sizes and interface requirements.*
- + *Host connection via low cost 10 way 1mm pitch ZIF FFC or USB mini-B connector.*
- + *I2C and USB communication interfaces with auto switch-over (link free)<sup>1</sup>.*
- + *Supported by TouchNetix' proprietary TNxTouchHub tuning software for Windows™*
- + *Optional adapter to allow "mouse mode" support in legacy OS and embedded versions of Windows™*
- + *3D CAD STEP file available on request.*
- + *Bare sensor supplied as 0.7mm thick glass substrate with bonded FPC.*
- + *Optional bonding to "standard" glass cover lens<sup>2</sup>.*

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<sup>1</sup> 2952 controller PCB only.

<sup>2</sup> Options for customisable cover lens subject to MOQ.

## 2 Ordering Part Numbers

### 2.1 Touchscreen Assemblies<sup>3</sup>

Consult TNx for non-listed sizes or for custom lens requirements.

TNx CodeName (Black)	Diagonal	Comms	Display Aspect Ratio	Orientation	LCD display AA size		Sensor Size		Part Number	
					LONG AXIS	SHORT AXIS	LONG AXIS	SHORT AXIS	Sensor only (No Lens)	Sensor with Lens
Elli	3.5 inch	I2C	4:3	Landscape	71.120	53.340	78.75	64.00	TNxLMB-035A-A8-AC-001rr	TNxLMB-035A-A8-AC-002rr
Esus	4.3 inch	I2C	15:9	Portrait	93.600	56.200	104.10	67.00	TNxLMB-043E-A8-AC-001rr	TNxLMB-043E-A8-AC-002rr
Orim	7.0 inch	I2C	15:9 & 16:9	Portrait	154.96 (max)	91.44 (max)	170.00	104.00	TNxLMB-070E-A8-AC-001rr	TNxLMB-070E-A8-AC-002rr
Miro	7.0 inch	I2C	15:9 & 16:9	Landscape	154.96 (max)	91.44 (max)	167.00	106.50	TNxLMB-070E(B)-A7-AC-001rr	TNxLMB-070E(B)-A7-AC-002rr
Ares	8.0 inch	I2C	15:9	Portrait	174.000	104.400	188.00	117.00	TNxLMB-080E-A11-AC-001rr	TNxLMB-080E-A11-AC-002rr
Siwa	10.1 inch	I2C	16:10	Landscape	216.960	135.600	228.50	150.00	TNxLMB-101C-A11-AC-001rr	TNxLMB-101C-A11-AC-002rr
Diva	9.0 inch	I2C & USB	15:9	Landscape	195.840	117.504	214.00	141.00	TNxLMB-090E-A7-AB-001rr	TNxLMB-090E-A7-AB-002rr
Milu	10.4 inch	I2C & USB	4:3	Landscape	211.200	158.400	228.50	182.50	TNxLMB-104A-A7-AB-001rr	TNxLMB-104A-A7-AB-002rr
Apis	12.1 inch	I2C & USB	16:10	Landscape	261.12	163.2	279.50	188.50	TNxLMB-121C-A7-AB-001rr	TNxLMB-121C-A7-AB-002rr
Lado	12.1 inch	I2C & USB	4:3	Landscape	245.760	184.320	210.00	265.00	TNxLMB-121A-A7-AB-001rr	TNxLMB-121A-A7-AB-002rr
Fudo	15.0 inch	I2C & USB	4:3	Landscape	304.128	228.096	327.00	256.50	TNxLMB-150A-A7-AB-001rr	TNxLMB-150A-A7-AB-002rr
Ran	14.0 inch	I2C & USB	16:9	Landscape	309.310	173.990	331.50	202.00	TNxLMB-140B-A7-AB-001rr	TNxLMB-140B-A7-AB-002rr
Enyo	15.6 inch	I2C & USB	16:9	Landscape	344.232	193.536	365.50	221.50	TNxLMB-156B-A7-AB-001rr	TNxLMB-156B-A7-AB-002rr
Hari	17.0 inch	I2C & USB	16:10	Landscape	365.760	228.600	390.00	259.00	TNxLMB-170C-A7-AB-001rr	TNxLMB-170C-A7-AB-002rr
Aray	19.0 inch	I2C & USB	5:4	Landscape	376.320	301.056	400.00	333.00	TNxLMB-190D-A7-AB-001rr	TNxLMB-190D-A7-AB-002rr
Mars	21.5 inch	I2C & USB	16:9	Landscape	475.200	267.300	500.00	299.00	TNxLMB-215B-A7-AB-001rr	TNxLMB-215B-A7-AB-002rr
Baku	24 inch	I2C & USB	16:9	Landscape	531.360	298.890	557.00	332.00	TNxLMB-240A-A7-AB-001rr	TNxLMB-240A-A7-AB-002rr

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<sup>3</sup> Approximate dimensions and ratios

## 2.2 Optional Accessories

### 2.2.1 TNxAC-003 I2C to USB Mouse Mode Adapter

Connects to the 10-way FFC connector on the sensor control PCB and outputs to a USB Mini-B receptacle. This allows the host to treat the touch panel as a Mouse HID device in either relative (touchpad) mode or absolute (digitizer style) mode. The board measures 32x30mm<sup>4</sup>.



### 2.2.2 EVK

An evaluation kit is available. See 2.1 for details of part numbers.

Each kit contains the following items:

- 1x Sensor with lens as listed above
- 1x TNxAC-003
- 1x USB cable assembly
- 1x USB stick containing TNxTouchHub evaluation and tuning software for XP/Win7/8

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<sup>4</sup> Note that J1 (rectangular 5-way B2W connector) in the picture is an optional fit and is \*not\* populated by default.

### **3 Mechanical Specifications**

#### **3.1 Sensor / FPC Assembly**

Base material:	Glass ITO. Interconnects in metal
Thickness:	0.7mm typ.
Dimensions:	See Section 7 – [Mechanical Drawings]
Transmissivity:	88% typ. non bonded sensor only
Orientation:	Suitable for portrait or landscape use
Outline drawings:	See Section 7 – [Mechanical Drawings]
LCD attachment:	Refer to [3.4]
Attachment to housing:	See “TNxAN00010 Recommended Attachment Methods for Touchscreen Assemblies”
Max lens thickness:	4mm glass, 2.5mm polycarbonate, 2mm acrylic
Mass:	Consult TNx
Handling:	Refer to “TNxAN00019 Glass Sensors”

#### **3.2 Optional Standard Lens for 002 Variants**

Dimensions:	See [6 Mechanical Drawings]
Base material:	Soda-lime glass
Thickness:	3.0mm +/-0.2mm.
Treatment:	Chemically strengthened
Decoration:	Black <sup>5</sup> border rear printed

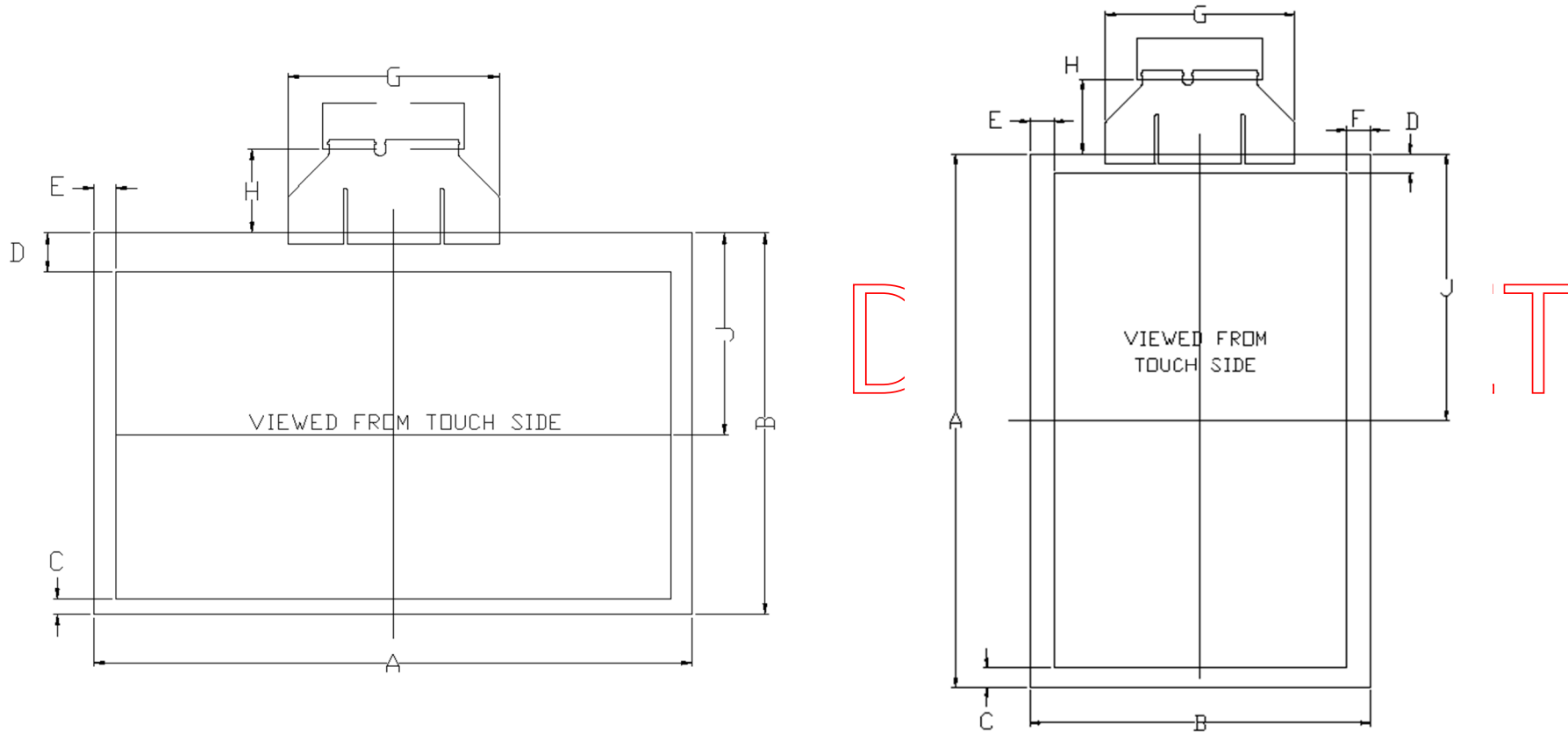
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<sup>5</sup> “Process black”

## 6 Mechanical Drawings

### 6.1 Without Lens



# Luminance "Black" Datasheet



Specific dimensions in mm (all +/-0.5mm unless noted):

TNx CodeName (Black)	Diagonal	Comms	Display Aspect Ratio	Orientation	Sensor Size		Edges to LCD AA				Bond width	Sensor edge to control PCB	LCD AA to sensor edge
					A	B	C	D	E	F			
Elli	3.5 inch	I2C	4:3	Landscape	78.75	64.00	2.28	8.38	3.815	3.815	39.8	20	35.05
Esus	4.3 inch	I2C	15:9	Portrait	104.10	67.00	2.55	7.95	5.42	5.42	39.8	20	54.8
Orim	7.0 inch	I2C	15:9 & 16:9	Portrait	170.00	104.00	4.47	10.57	6.28	6.28	39.8	20	88.05
Miro	7.0 inch	I2C	15:9 & 16:9	Landscape	167.00	106.50	4.23	10.83	6.02	6.02	39.8	20	56.6
Ares	8.0 inch	I2C	15:9	Portrait	188.00	117.00	3.70	10.30	6.30	6.30	56.6	35	97.3
Siwa	10.1 inch	I2C	16:10	Landscape	228.50	150.00	3.30	11.10	5.77	5.77	56.6	35	78.9
Diva	9.0 inch	I2C & USB	15:9	Landscape	214.00	141.00	6.55	16.95	9.08	9.08	118	51.45	75.7
Milu	10.4 inch	I2C & USB	4:3	Landscape	228.50	182.50	6.55	17.55	8.65	8.65	118	51.45	96.75
Apis	12.1 inch	I2C & USB	16:10	Landscape	279.50	188.50	6.85	18.43	9.19	9.19	118	51.45	100.05
Lado	12.1 inch	I2C & USB	4:3	Landscape	210.00	265.00	6.75	18.75	9.50	9.50	118	51.45	111
Fudo	15.0 inch	I2C & USB	4:3	Landscape	327.00	256.50	7.65	20.30	11.44	11.44	118	51.45	134.8
Ran	14.0 inch	I2C & USB	16:9	Landscape	331.50	202.00	7.70	20.30	11.09	11.09	118	51.45	107.3
Enyo	15.6 inch	I2C & USB	16:9	Landscape	365.50	221.50	7.43	20.53	10.63	10.63	118	51.45	117.3
Hari	17.0 inch	I2C & USB	16:10	Landscape	390.00	259.00	8.35	22.05	12.12	12.12	118	51.45	136.4
Aray	19.0 inch	I2C & USB	5:4	Landscape	400.00	333.00	9.12	22.82	11.84	11.84	118	51.45	173.4
Mars	21.5 inch	I2C & USB	16:9	Landscape	500.00	299.00	8.85	22.85	12.40	12.40	118	51.45	156.5
Baku	24 inch	I2C & USB	16:9	Landscape	557.00	332.00	9.55	23.55	12.82	12.82	118	51.45	173

Table 6.1-1

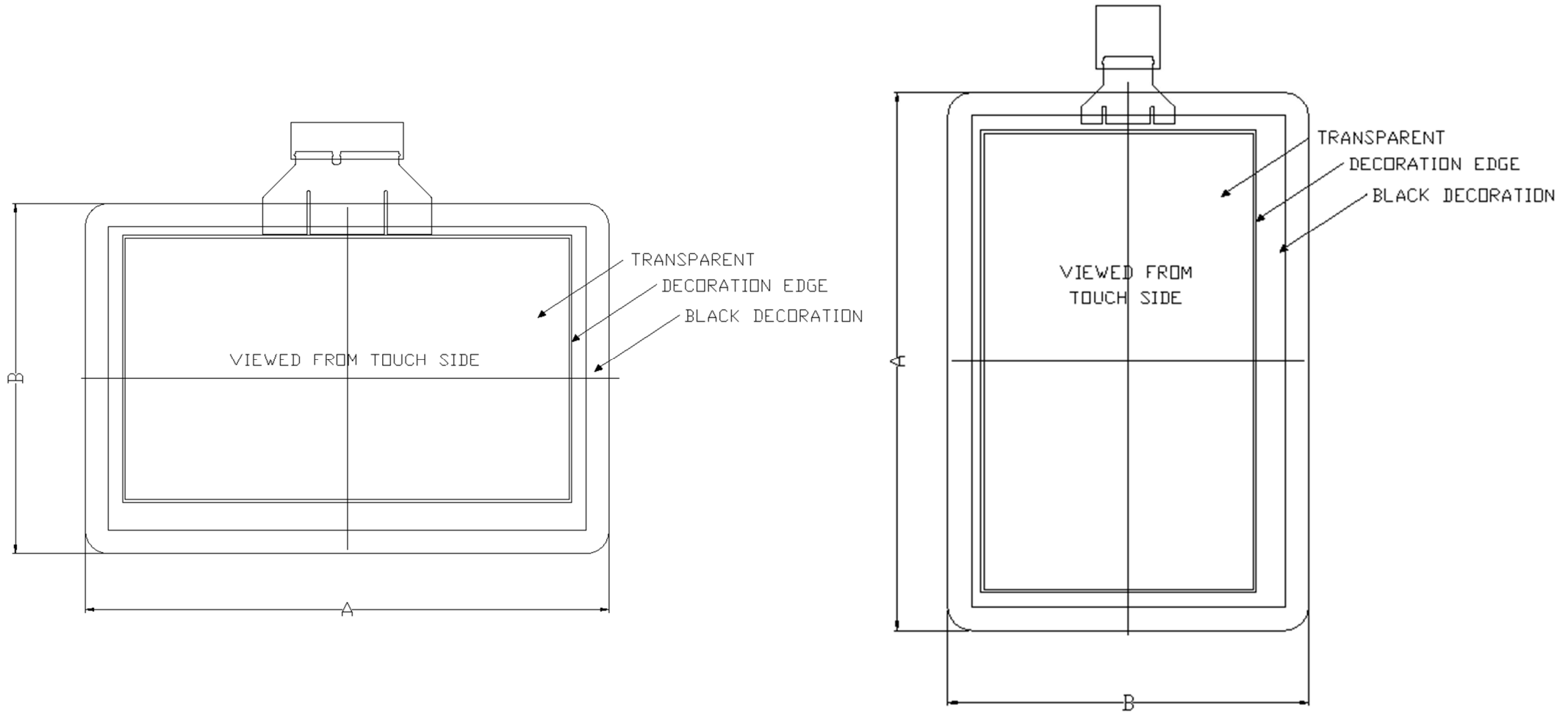


## Notes

1. The "Sensor size" defines the overall outside dimensions of the sensor glass.
2. Note that the FPC and Control Board lie centrally to the mid-line of the sensor
3. The rectangle shown on the drawing above representing the LCD\_AA is a construction line for reference only. The transparent area of the sensor is large enough to operate with a range of vendors' LCDs for a given size (noting that there are sometimes subtle variations in the active and bezel region sizes between manufacturers for the "same" sized LCD modules).  
Please consult TNx for compatibility checks.
4. 3D Step data is available on request.

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6.2 With Lens



Specific model dimensions in mm (all +/-0.2mm unless noted):

TNx CodeName (Black)	Diagonal	Display Aspect Ratio	Orientation	Standard Lens Size	
				A	B
Elli	3.5 inch	4:3	Landscape	Contact TNx	
Esus	4.3 inch	15:9	Portrait	Contact TNx	
Orim	7.0 inch	15:9 & 16:9	Portrait	Contact TNx	
Miro	7.0 inch	15:9 & 16:9	Landscape	Contact TNx	
Ares	8.0 inch	15:9	Portrait	Contact TNx	
Siwa	10.1 inch	16:10	Landscape	Contact TNx	
Diva	9.0 inch	15:9	Landscape	Contact TNx	
Milu	10.4 inch	4:3	Landscape	257.00	212.70
Apis	12.1 inch	16:10	Landscape	308.00	220.00
Lado	12.1 inch	4:3	Landscape	292.00	240.80
Fudo	15.0 inch	4:3	Landscape	356.00	289.00
Ran	14.0 inch	16:9	Landscape	351.95	234.91
Enyo	15.6 inch	16:9	Landscape	398.10	256.50
Hari	17.0 inch	16:10	Landscape	414.00	283.00
Aray	19.0 inch	5:4	Landscape	430.60	367.00
Mars	21.5 inch	16:9	Landscape	524.00	330.00
Baku	24 inch	16:9	Landscape	582.00	363.00

Table 6.2-1

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Notes

1. All models: The lens decoration opening is 1mm larger all round than the LCD-AA
2. All models: The lens is 3mm nominal thickness with square ground edge and with nominal 0.5mm edge chamfers all round top and bottom.
3. The Lens is bonded to the sensor with 0.5mm (+0.3/-0.2) optical adhesive. The adhesive may exceed the sensor glass profile by up to 1.0mm around its periphery. Take this into account when planning edge-bonded gaskets etc
4. Overall assembly thickness is 4.2mm (+0.55/-0.35)
5. See also 6.1 for sensor glass sizes for each model.
6. Note that the FPC and Control Board lie centrally to the mid-line of the sensor in the horizontal axis.
7. The rectangle shown on the drawing above representing the LCD-AA is a construction line for reference only. The transparent area of the sensor is large enough to operate with a range of vendors' LCDs for a given size (noting that there are sometimes subtle variations in the active and bezel region sizes between manufacturers for the "same" sized LCD modules). Please consult TNx for compatibility checks.
8. The black region of the lens (decoration region) is shown above "non-filled" for clarity, only the decoration inner edge is shown for reference. Note that due to the above noted manufacturer-to-manufacturer variations in size, the standard lenses offered may not be perfect for some LCD modules. Consult TNx for customized options.
9. 3D Step data is available on request.