SPEC

Spec No.	TQ3C-8EAF0-E1DDQ80-00
Date	May 17, 2010

TYPE : TCG085WVLBK-G00

<8.5 inch WVGA transmissive color TFT
with LED backlight with touch panel>

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Issued
Date: May 20, 2010
KYOCERA
Hayato LCD Division

KYOCERA CORPORATION
KAGOSHIMA HAYATO PLANT
LCD DIVISION

This specification is subject to change without notice.
Consult Kyocera before ordering.

Original Issue Date	Designed by: Engineering dept.			Confirmed by: QA dept.	
	Prepared	Checked	Approved	Checked	Approved
May 17, 2010	Y. Ikeda	Y. Yamazaki	M. Fujitani	J. Sakaguchi	

Warning

1. This Kyocera LCD module has been specifically designed for use only in electronic devices and industrial machines in the area of audio control, office automation, industrial control, home appliances, etc. The module should not be used in applications where the highest level of safety and reliability are required and module failure or malfunction of such module results in physical harm or loss of life, as well as enormous damage or loss. Such fields of applications include, without limitation, medical, aerospace, communications infrastructure, atomic energy control. Kyocera expressly disclaims any and all liability resulting in any way to the use of the module in such applications.

2. Customer agrees to indemnify, defend and hold Kyocera harmless from and against any and all actions, claims, damages, liabilities, awards, costs, and expenses, including legal expenses, resulting from or arising out of Customer's use, or sale for use, or Kyocera modules in applications.

Caution

1. Kyocera shall have the right, which Customer hereby acknowledges, to immediately scrap or destroy tooling for Kyocera modules for which no Purchase Orders have been received from the Customer in a two-year period.

Revision record

Date	Designed by : Engineering dept.			Confirmed by : QA dept.	
	Prepared	Checked	Approved	Checked	Approved

Rev.No.	Date	Page	Descriptions

1. Application

This document defines the specification of TCG085WVLBK-G00. (RoHS Compliant)

2. Construction and outline

LCD : Transmissive color dot matrix type TFT
Backlight system : LED
Polarizer : Glare treatment
Additional circuit : Timing controller, Power supply (3.3V input)
(without constant current circuit for LED Backlight)
Touch panel : Analog type, Non-Glare treatment

3. Mechanical specifications

3-1. Mechanical specifications of LCD

Item	Specification	Unit
Outline dimensions 1)	210.7 (W)× (131.3) (H) × 14.0 (D)	mm
Active area	184.8 (W) × 110.88 (H) (21.6cm / 8.5 inch (Diagonal))	mm
Effective viewing area	186.8 (W) × 112.9 (H)	mm
Dot format	800×(B,G,R) (W) × 480 (H)	dot
Dot pitch	0.077 (W) × 0.231 (H)	mm
Base color 2)	Normally White	-
Mass	TBD	g

1) Projection not included. Please refer to outline for details.
2) Due to the characteristics of the LCD material, the color varies with environmental temperature.

3-2. Mechanical specifications of touch panel

Item	Specification	Unit
Input	Radius-0.8 stylus or Finger	-
Actuation Force	(0.5±0.3)	N
Transmittance	Typ. (80)	%
Surface hardness	Pencil hardness 2H or more according	-

4. Absolute maximum ratings

4-1. Electrical absolute maximum ratings

Item	Symbol	Min.	Max.	Unit
Supply voltage	V_{DD}	-0.3	4.5	V
Input signal voltage 1)	V_{IN}	-0.3	4.5	V
LED forward current 2)	IF	-	(100)	mA
Supply voltage for touch panel	V_{TP}	0	6.0	V
Input current of touch panel	I_{TP}	0	0.5	mA

1) Input signal : CK, R0～R5, G0～G5, B0～B5, H_{SYNC}, V_{SYNC}, ENAB
2) For each “AN-CA”

4-2. Environmental absolute maximum ratings

Item	Symbol	Min.	Max.	Unit
Operating temperature 1)	T_{OP}	-20	70	°C
Storage temperature 2)	T_{STO}	-30	80	°C
Operating humidity 3)	H_{OP}	10	4)	%RH
Storage humidity 3)	H_{STO}	10	4)	%RH
Vibration	-	5)	5)	-
Shock	-	6)	6)	-

1) Operating temperature means a temperature which operation shall be guaranteed. Since display performance is evaluated at 25°C, another temperature range should be confirmed.
2) Temp. = -30°C＜48h , Temp. = 80°C＜168h
Store LCD at normal temperature/humidity. Keep them free from vibration and shock.
An LCD that is kept at a low or a high temperature for a long time can be defective due to other conditions, even if the low or high temperature satisfies the standard.
(Please refer to “Precautions for Use” for details.)
3) Non-condensing
4) Temp.≦40°C, 85%RH Max.
Temp.＞40°C, Absolute humidity shall be less than 85%RH at 40°C.
5)

Frequency	10～55 Hz	Acceleration value (0.3～9 m/s^2)
Vibration width	0.15mm	
Interval	10-55-10 Hz	1 minutes

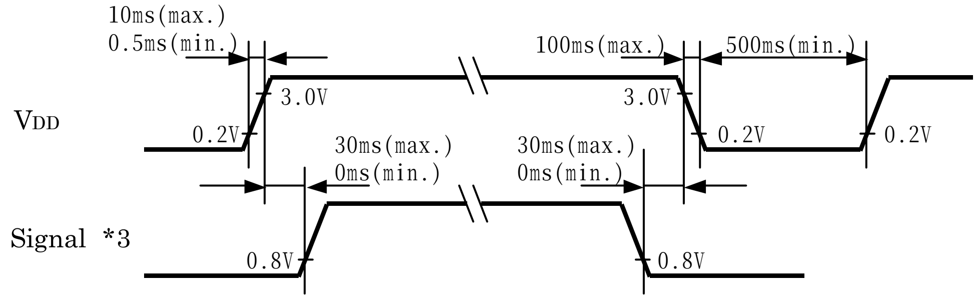
2 hours in each direction X, Y, Z (6 hours total)
EIAJ ED-2531
6) Acceleration: 490 m/s^2, Pulse width: 11 ms
3 times in each direction: ±X, ±Y, ±Z
EIAJ ED-2531

5. Electrical characteristics

Temp. = -20～70°C

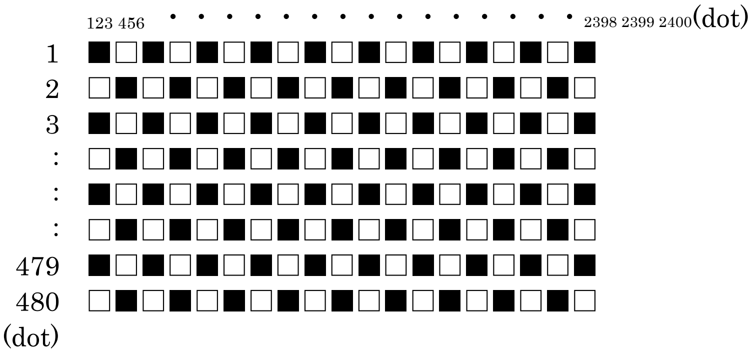
Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage 1)	V_{DD}	-	3.0	3.3	3.6	V
Current consumption	I_{DD}	2)	-	260	340	mA
Permissive input ripple voltage	V_{RP}	V_{DD}=3.3V	-	-	100	mVp-p
Input signal voltage 3)	V_{IL}	"Low" level	0	-	0.8	V
	V_{IH}	"High" level	2.0	-	V_{DD}	V

1) V_{DD}-turn-on conditions


10ms(max.)
0.5ms(min.)
100ms(max.)
500ms(min.)
VDD
3.0V
3.0V
0.2V
0.2V
0.2V
30ms(max.)
0ms(min.)
30ms(max.)
0ms(min.)
Signal *3
0.8V
0.8V

2) Display pattern:

V_{DD} = 3.3V, Temp. = 25°C


123 456
2398 2399 2400(dot)
1
2
3
:
:
:
479
480
(dot)

3) Input signal : CK, R0～R5, G0～G5, B0～B5, H_{SYNC}, V_{SYNC}, ENAB

6. Optical characteristics

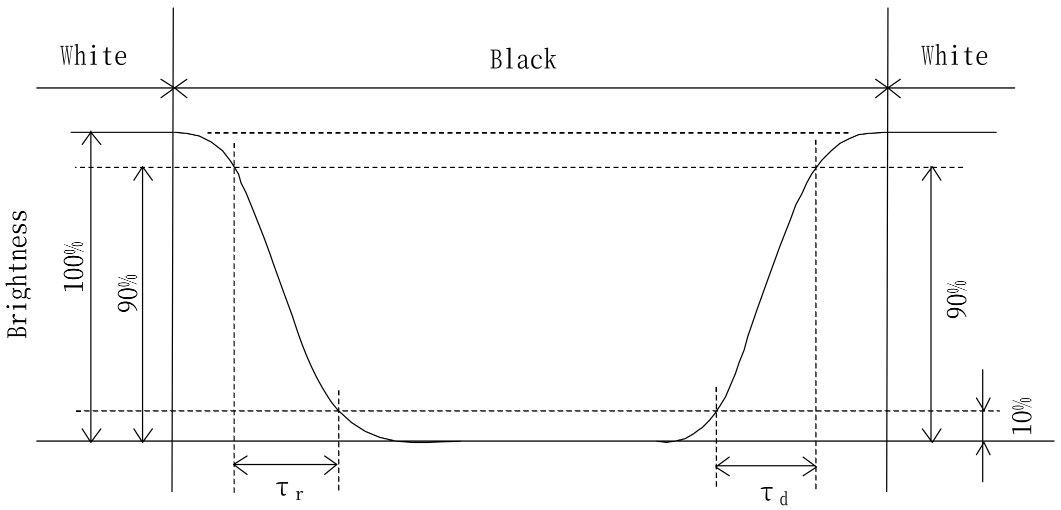
Measuring spot = φ6.0mm, Temp. = 25°C

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Response time	Rise	τ_r	$\theta=\phi=0°$	-	15	-	ms
	Down	τ_d	$\theta=\phi=0°$	-	35	-	ms
Viewing angle range View direction : 12 o'clock (Gray inversion)		θ_{UPPER}	CR≧10	-	60	-	deg.
		θ_{LOWER}		-	45	-	
		ϕ_{LEFT}		-	60	-	deg.
		ϕ_{RIGHT}		-	60	-	
Contrast ratio		CR	$\theta=\phi=0°$	300	500	-	-
Brightness		L	IF=60mA/Line	280	400	-	cd/m^2
Luminance(Brightness)		LU	-	70	-	-	%
Chromaticity coordinates	Red	x	$\theta=\phi=0°$	0.54	0.59	0.64	-
		y		0.30	0.35	0.40	
	Green	x	$\theta=\phi=0°$	0.29	0.34	0.39	
		y		0.53	0.58	0.63	
	Blue	x	$\theta=\phi=0°$	0.10	0.15	0.20	
		y		0.07	0.12	0.17	
	White	x	$\theta=\phi=0°$	0.26	0.31	0.36	
		y		0.28	0.33	0.38	

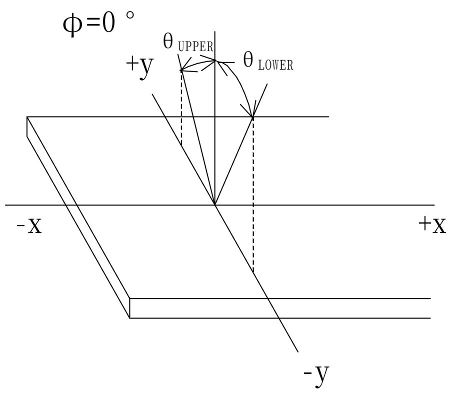
6-1. Definition of contrast ratio

$$\text{CR(Contrast ratio)} = \frac{\text{Brightness with all pixels "White"}}{\text{Brightness with all pixels "Black"}}$$

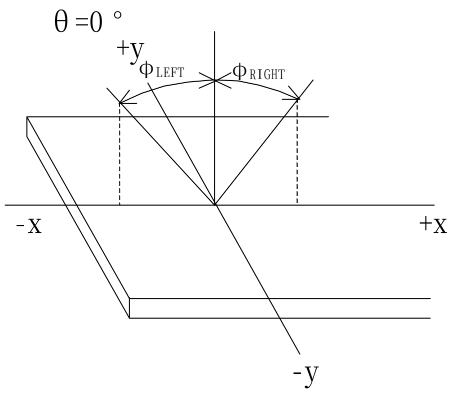
6-2. Definition of response time



6-3. Definition of viewing angle

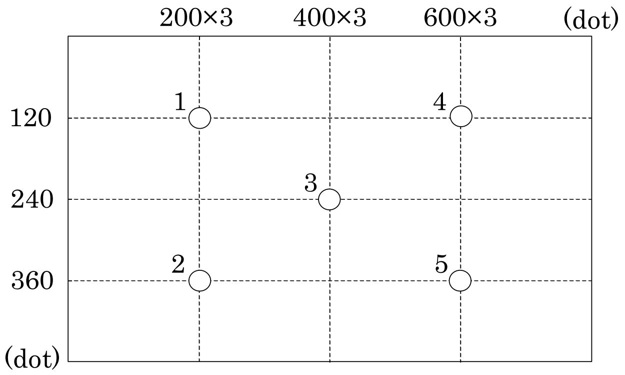

φ=0 °
θ UPPER
θ LOWER
+y
-x
+x
-y

θ direction


θ =0 °
+y
φLEFT
φRIGHT
-x
+x
-y

φ direction

6-4. Brightness measuring points


200×3
400×3
600×3
(dot)
120
240
360
(dot)
1
2
3
4
5

1) Rating is defined as the white brightness at center of display screen(3).
2) The brightness uniformity is calculated by using following formula.

$$\text{Brightness uniformity} = \frac{\text{Minimum brightness from 1 to 5}}{\text{Maximum brightness from 1 to 5}} \times 100\ [\%]$$

3) 30 minutes after LED is turned on. (Ambient Temp.=25℃)

7. Interface signals

7-1. LCD

No.	Symbol	Description	Level
1	V_{DD}	3.3V power supply	
2	V_{DD}	3.3V power supply	
3	V_{DD}	3.3V power supply	
4	V_{DD}	3.3V power supply	
5	NC	No connect	
6	ENAB	Data Enable (positive)	
7	GND	GND	
8	V_{SYNC}	Vertical synchronous signal (negative)	
9	GND	GND	
10	H_{SYNC}	Horizontal synchronous signal (negative)	
11	GND	GND	
12	B5	BLUE data signal (MSB)	
13	B4	BLUE data signal	
14	B3	BLUE data signal	
15	GND	GND	
16	B2	BLUE data signal	
17	B1	BLUE data signal	
18	B0	BLUE data signal (LSB)	
19	GND	GND	
20	G5	GREEN data signal (MSB)	
21	G4	GREEN data signal	
22	G3	GREEN data signal	
23	GND	GND	
24	G2	GREEN data signal	
25	G1	GREEN data signal	
26	G0	GREEN data signal (LSB)	
27	GND	GND	
28	R5	RED data signal (MSB)	
29	R4	RED data signal	
30	R3	RED data signal	
31	GND	GND	
32	R2	RED data signal	
33	R1	RED data signal	
34	R0	RED data signal (LSB)	
35	NC	No connect	
36	GND	GND	
37	GND	GND	
38	CK	Sampling clock	
39	GND	GND	
40	GND	GND	

LCD connector : IMSA-9637S-40C-TB (IRISO)
Recommended matching FFC or FPC : 0.5mm pitch

7-2. LED

No.	Symbol	Description
1	AN1	Anode 1
2	AN2	Anode 2
3	CA1	Cathode 1
4	CA2	Cathode 2

LCD side connector : PHR-4 (JST)
Recommended matching connector
: B4B-PH-SM4-TB (JST)
: B4B-PH-SM4-TB(LF)(SN) (JST)･･･(RoHS Compliant)
: S4B-PH-SM4-TB (JST)
: S4B-PH-SM4-TB (LF)(SN) (JST)･･･(RoHS Compliant)

7-3. Touch panel

No.	Symbol	Description
1	xL	x-Left terminal
2	yU	y-Upper terminal
3	xR	x-Right terminal
4	yL	y-Lower terminal

Touch panel side connector : 1.25mm pitch
Recommended matching connector
: Series FE,FFS (JST)
: KCA-K4R (DMC)

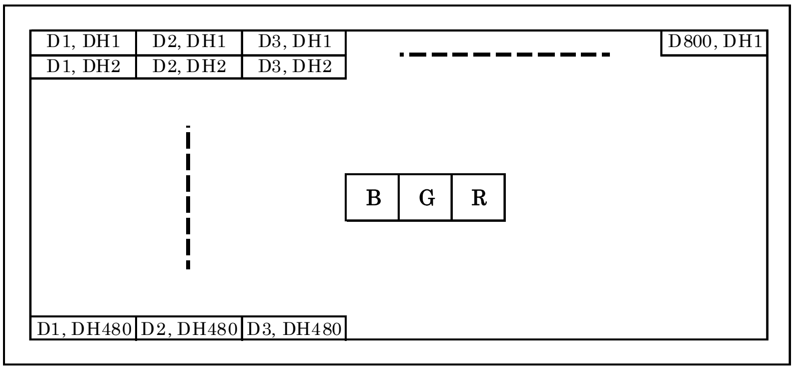
8. Input timing characteristics

8-1. Timing characteristics

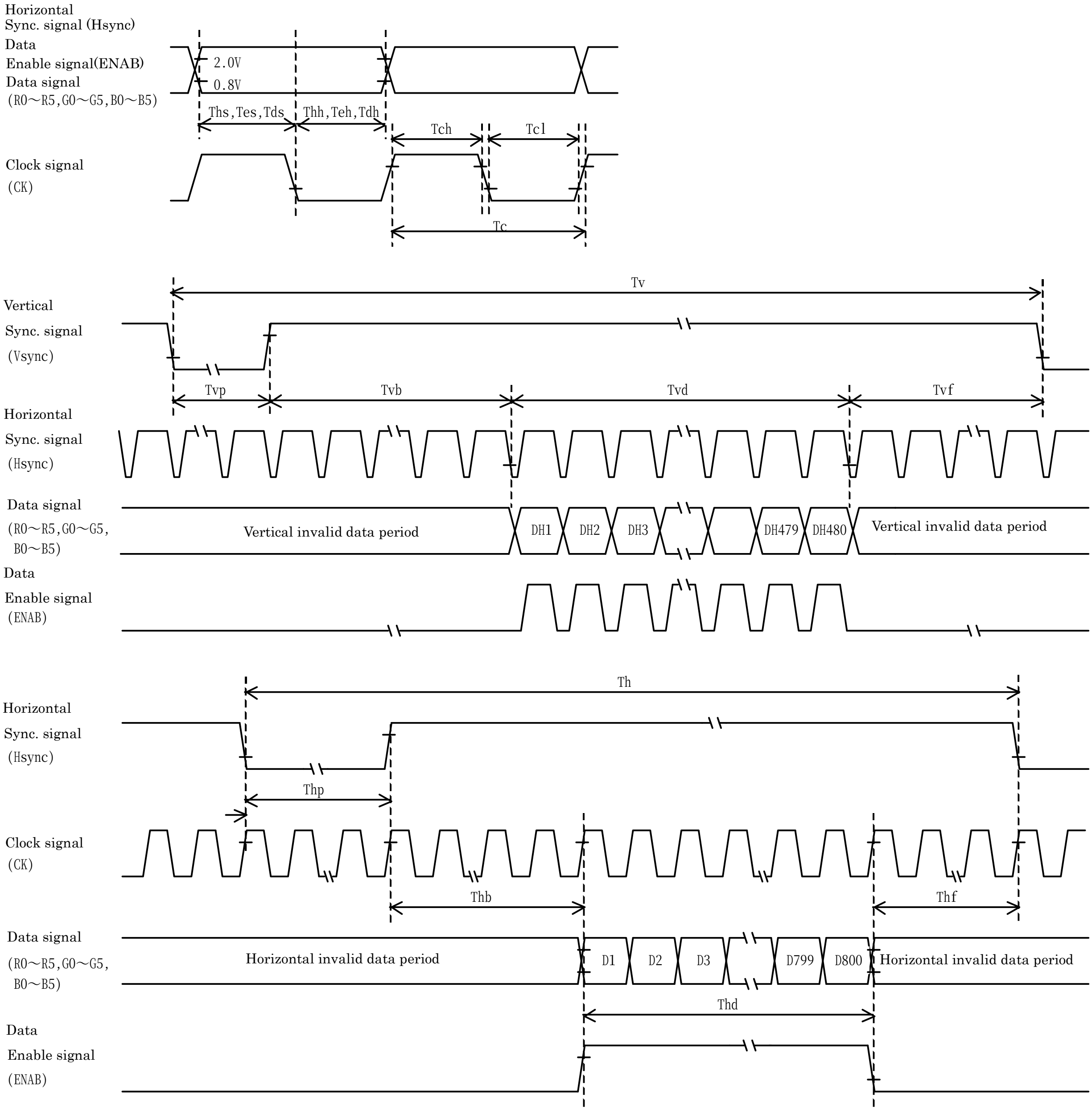
Item		Symbol	Min.	Typ.	Max.	Unit	Note
Clock	Frequency	Fck	29.88	33.2	36.52	MHz	
	Period	Tc	27.4	30.1	33.5	ns	
	High time	Tch	12	-	-	ns	
	Low time	Tcl	12	-	-	ns	
Data	Set up time	Tds	5	-	-	ns	
	Hold time	Tdh	10	-	-	ns	
Data Enable	Set up time	Tes	5	-	-	ns	
	Hold time	Teh	10	-	-	ns	
Horizontal sync. signal	Set up time	Ths	5	-	-	ns	
	Hold time	Thh	10	-	-	ns	
	Period	Th	944	1,056	1,088	Tc	
			-	31.8	-	μs	
	Pulse width	Thp	4	128	-	Tc	
	Front porch	Thf	-	40	-	Tc	
	Back porch	Thb	7	88	-	Tc	
Horizontal display period		Thd	800			Tc	
Vertical sync. signal	Period	Tv	516	525	534	Th	
			14.7	16.6	17.4	ms	
	Pulse width	Tvp	1	2	-	Th	
	Front porch	Tvf	-	11	-	Th	
	Back porch	Tvb	4	32	-	Th	
Vertical display period		Tvd	480			Th	

1) In case of lower frequency, the deterioration of the display quality, flicker etc., may occur.
2) If CK is fixed to "H" or "L" level for certain period while ENAB is supplied, the panel may be damaged.
3) Please adjust LCD operating signal timing and CFL driving frequency, to optimize the display quality. There is a possibility that flicker is observed by the interference of LCD operating signal timing and CFL driving condition (especially driving frequency), even if the condition satisfies above timing specification.
4) Do not make Tv, Th, and Thp fluctuate.
5) CK count of each Horizontal Scanning Time should be always the same. Vertical invalid data period should be "n" X "Horizontal Scanning Time" . (n: integer)　Frame period should be always the same.

8-2. Input Data Signals and Display position on the screen


D1, DH1
D2, DH1
D3, DH1
D800, DH1
D1, DH2
D2, DH2
D3, DH2
B
G
R
D1, DH480
D2, DH480
D3, DH480

8-3. Input timing characteristics


Horizontal Sync. signal (Hsync)
Data Enable signal(ENAB)
Data signal (R0～R5,G0～G5,B0～B5)
2.0V
0.8V
Ths,Tes,Tds
Thh,Teh,Tdh
Tch
Tcl
Clock signal (CK)
Tc
Tv
Vertical Sync. signal (Vsync)
Tvp
Tvb
Tvd
Tvf
Horizontal Sync. signal (Hsync)
Data signal (R0～R5,G0～G5, B0～B5)
Vertical invalid data period
DH1
DH2
DH3
DH479
DH480
Vertical invalid data period
Data Enable signal (ENAB)
Th
Horizontal Sync. signal (Hsync)
Thp
Clock signal (CK)
Thb
Thf
Data signal (R0～R5,G0～G5, B0～B5)
Horizontal invalid data period
D1
D2
D3
D799
D800
Horizontal invalid data period
Thd
Data Enable signal (ENAB)

9. Backlight characteristics

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Forward current 1)	IF	-	60	-	mA	Ta=-20～70°C
Forward voltage 1)	VF	-	18.9	22.1	V	IF=60mA, Ta=-20℃
		-	18.0	21.2	V	IF=60mA, Ta=25℃
		-	17.5	20.6	V	IF=60mA, Ta=70℃
Operating life time 2), 3)	T	-	50,000	-	h	IF=60mA, Ta=25℃

1) For each “AN-CA”
2) When brightness decrease 50% of minimum brightness.
   The average life of a LED will decrease when the LCD is operating at higher temperatures.
3) Life time is estimated data(Condition : IF=(60)mA, Ta=25℃ in chamber).
4) An input current below (TBD)mA may reduce the brightness uniformity of the LED backlight.
   This is because the amount of light from each LED chip is different. Therefore, please evaluate carefully before finalizing the input current.

10. Design guidance for analog touch panel

10-1. Electrical (In customer's design, please remember the following considerations.)

1) Do not use the current regulated circuit.
2) Keep the current limit with top and bottom layer.
   (Please refer to “Electrical absolute maximum ratings” for details.)
3) Analog touch panel can not sense two points touching separately.
4) A contact resistance is appeared at the touch point between top and bottom layer.
   After this resistance has stable read of the touch panel position data.
5) Because noise of inverter or peripheral circuits may interfere signal of touch panel itself
   it is necessary to design carefully in advance to avoid these noise problem.

10-2. Software

1) Do the "User Calibration".
2) "User Calibration" may be needed with long term using.
   Include "User Calibration" menu in your software.
3) When drawing a line with a stylus, there may be a slight discontinuity when the stylus passes over a spacer-dot. If necessary, please provide a compensation feature within your software.

10-3. Mounting on display and housing bezel

1) Do not use an adhesive tape to bond it on the front of touch panel and hang it to the housing bezel.
2) Never expand the touch panel top layer (PET-film) like a balloon by internal air pressure.
   The life of the touch panel will be extremely short.
3) If a dew will be on the heat-sealed area or exposed traces at the end of a flexible tail,
   the migration of silver can occur. This will cause sometimes a short circuit.
4) Must maintain a gap between inside of bezel and touch panel to avoid malfunction or electrode damage of touch panel.

11. Lot number identification

The lot number shall be indicated on the back of the backlight case of each LCD.

TCG085WVLBK-G00 - □□ - □□ - □ MADE IN □□□□□
↓↓ ↓ ↓ ↓
1 2 3 4 5

No1. - No5. above indicate
1. Year code
2. Month code
3. Date
4. Version Number
5. Country of origin (Japan or China)

Year	2010	2011	2012	2013	2014	2015
Code	0	1	2	3	4	5

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.
Code	1	2	3	4	5	6

Month	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Code	7	8	9	X	Y	Z

12. Warranty

12-1. Incoming inspection

Please inspect the LCD within one month after your receipt.

12-2. Production warranty

Kyocera warrants its LCD's for a period of 12 months from the ship date. Kyocera shall, by mutual agreement, replace or re-work defective LCD's that are shown to be Kyocera's responsibility.

13. Precautions for use

13-1. Installation of the LCD

1) The LCD shall be installed so that there is no pressure on the LSI chips.
2) The LCD shall be installed flat, without twisting or bending.
3) Please design the housing window so that its edges are between the active area and the effective area of the LCD screen.
   Must maintain a gap between inside of bezel and touch panel to avoid malfunction or electrode damage of touch panel.

13-2. Static electricity

1) Since CMOS ICs are mounted directly onto the LCD glass, protection from static electricity is required.
2) Workers should use body grounding. Operator should wear ground straps.

13-3. LCD operation

1) The LCD shall be operated within the limits specified. Operation at values outside of these limits may shorten life, and/or harm display images.

13-4. Storage

1) The LCD shall be stored within the temperature and humidity limits specified.
   Store in a dark area, and protect the LCD from direct sunlight or fluorescent light.
2) Always store the LCD so that it is free from external pressure onto it.

13-5. Usage

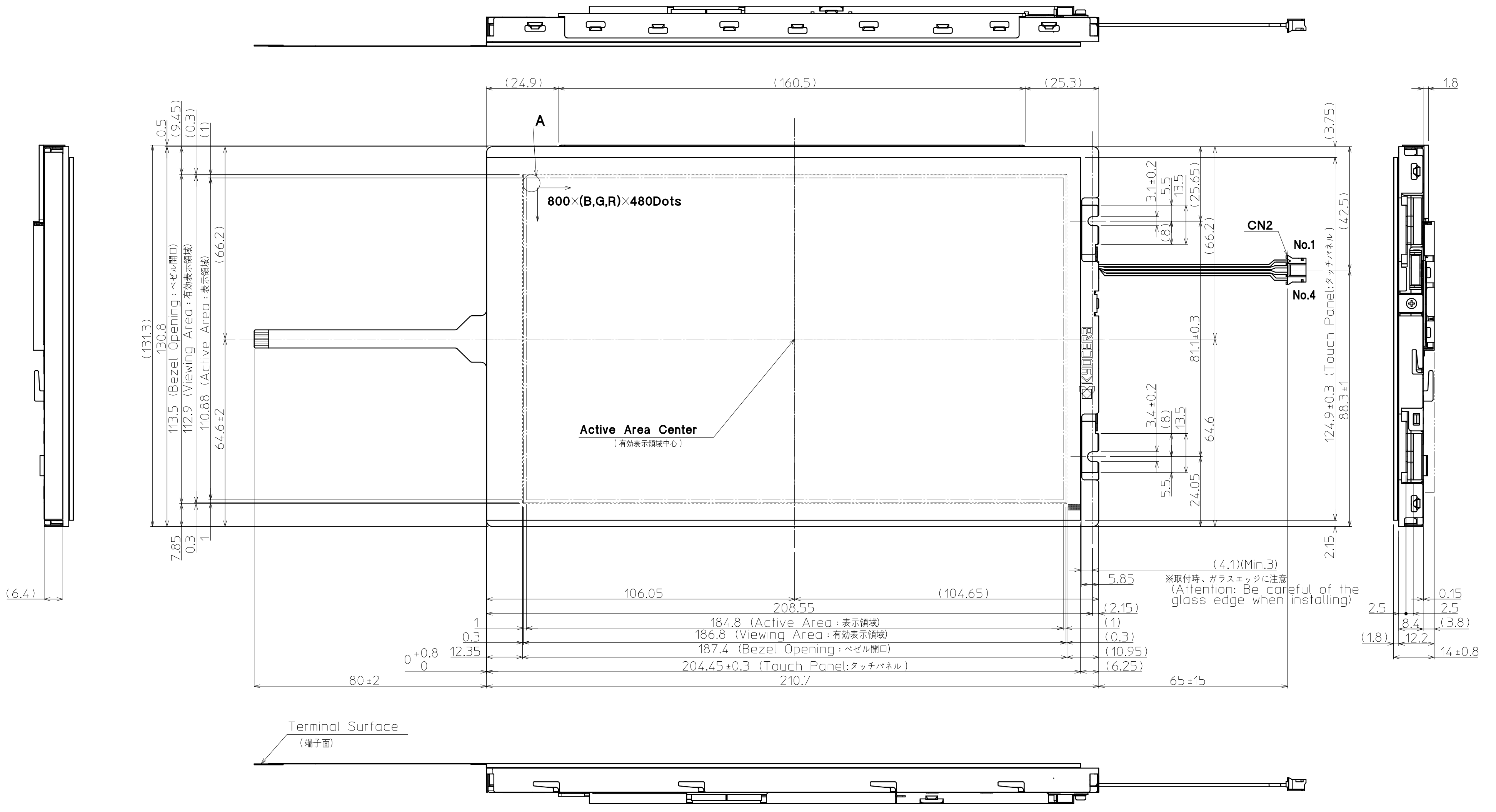
1) DO NOT store in a high humidity environment for extended periods. Polarizer degradation bubbles, and/or peeling off of the polarizer may result.
2) Do not push or rub the touch panel's surface with hard to sharp objects such as knives, orthe touch panel may be scratched.
3) When the touch panel is dirty, gently wipe the surface with a soft cloth, sometimes moistened by mild detergent or alcohol. If a hazardous chemical is dropped on the touch panel by mistake, wipe it off right away to prevent human contact.
4) Touch panel edges are sharp. Handle the touch panel with enough care to prevent cuts.
5) Always keep the LCD free from condensation during testing. Condensation may permanently spot or stain the polarizer.
6) Do not pull the LED lead wires and do not bend the root of the wires. Housing should be designed to protect LED lead wires from external stress.
7) Do not disassemble LCD because it will result in damage.
8) This Kyocera LCD has been specifically designed for use in general electronic devices, but not for use in a special environment such as usage in an active gas. Hence, when the LCD is supposed to be used in a special environment, evaluate the LCD thoroughly beforehand and do not expose the LCD to chemicals such as an active gas.
9) Please do not use solid-base image pattern for long hours because a temporary afterimage may appear. We recommend using screen saver etc. in cases where a solid-base image pattern must be used.
10) Liquid crystal may leak when the LCD is broken. Be careful not to let the fluid go into your eyes and mouth. In the case the fluid touches your body; rinse it off right away with water and soap.

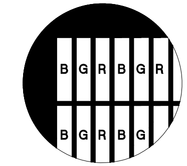
14. Reliability test data

Test item	Test condition	Test time	Judgement
High temp. atmosphere	80°C	240h	Display function : No defect Display quality : No defect Current consumption : No defect
Low temp. atmosphere	-30°C	240h	Display function : No defect Display quality : No defect Current consumption : No defect
High temp. humidity atmosphere	40°C 90% RH	240h	Display function : No defect Display quality : No defect Current consumption : No defect
Temp. cycle	-30°C 0.5h R.T. 0.5h 80°C 0.5h	10cycles	Display function : No defect Display quality : No defect Current consumption : No defect
High temp. operation	70°C	500h	Display function : No defect Display quality : No defect Current consumption : No defect
Point Activation life	Silicon rubber, Tip : R = 4.0 Hitting force 3N Hitting speed 2 time/s	one million times	Terminal resistance : No defect Insulation resistance : No defect Linearity : No defect Actuation Force : No defect

1) Each test item uses a test LCD only once. The tested LCD is not used in any other tests.
2) The LCD is tested in circumstances in which there is no condensation.
3) The reliability test is not an out-going inspection.
4) The result of the reliability test is for your reference purpose only.
The reliability test is conducted only to examine the LCD's capability.

No	Description	Drawn	Checked	Checked	Approved


(24.9)
(160.5)
(25.3)
A
800×(B,G,R)×480Dots
Active Area Center
（有効表示領域中心）
CN2
No.1
No.4
(131.3)
130.8
113.5 (Bezel Opening：ベゼル開口)
112.9 (Viewing Area：有効表示領域)
110.88 (Active Area：表示領域)
64.6±2
(66.2)
0.5
(9.45)
(0.3)
(1)
7.85
0.3
1
3.1±0.2
5.5
13.5
(8)
(25.65)
(66.2)
81.1±0.3
3.4±0.2
(8)
13.5
5.5
64.6
24.05
(3.75)
(42.5)
124.9±0.3 (Touch Panel:タッチパネル)
88.3±1
2.15
1.8
(6.4)
(4.1)(Min.3)
5.85
※取付時、ガラスエッジに注意
(Attention: Be careful of the glass edge when installing)
106.05
(104.65)
208.55
(2.15)
1
184.8 (Active Area：表示領域)
(1)
0.3
186.8 (Viewing Area：有効表示領域)
(0.3)
12.35
187.4 (Bezel Opening：ベゼル開口)
(10.95)
0 +0.8 0
204.45±0.3 (Touch Panel:タッチパネル)
(6.25)
80±2
210.7
65±15
2.5
0.15
2.5
8.4
(3.8)
(1.8)
12.2
14±0.8
Terminal Surface
（端子面）


B G R B G R
B G R B G

DETAIL A (Dot Size)
(NTS)

CN2 Pin Assign

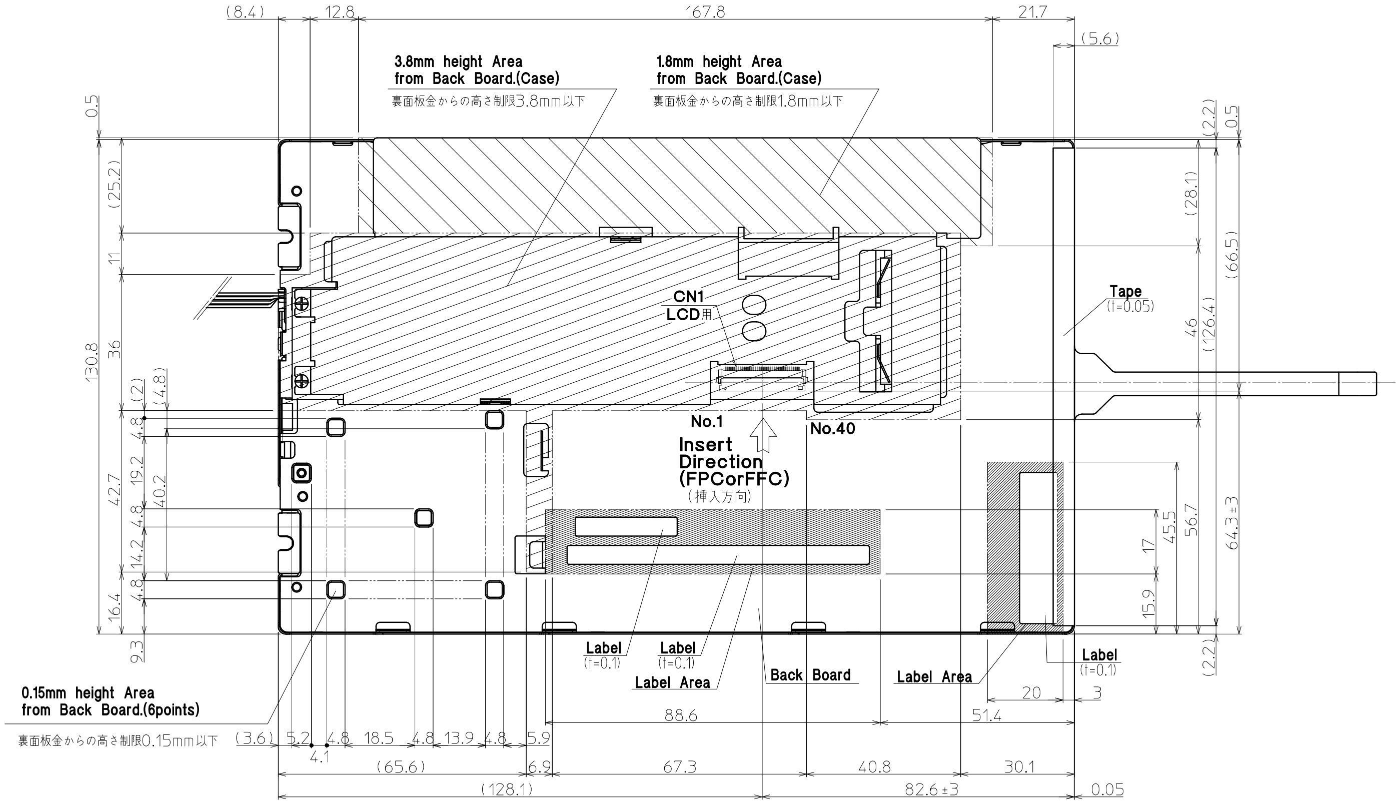
	Cable Color
No.1	Black(黒)
No.2	Red(赤)
No.3	White(白)
No.4	Blue(青)

Note.(注記)

1. Connector CN1: IMSA-9637S-40C-TB (IRISO)
   (コネクター)　CN2: PHR-4 (JST)
2. Matching Connector : B4B-PH-SM4-TB (JST)
   (適合コネクター)　B4B-PH-SM4-TB(LF)(SN) (JST)
   S4B-PH-SM4-TB (JST)
   S4B-PH-SM4-TB(LF)(SN) (JST)　etc.
3. The Information of LCD is displayed starting at the upper left hand corner, moving right then down to the lower right hand corner.
   (LCDにおいて、画像データの表示は左上コーナーから始まり、右へ進み下へ送られ右下コーナーへ向かう。)
4. Tolerance without indication：±0.5
   (指示無き公差)

Material 材　質	Treatment 処　理	Approved '10.05.12	Checked	Checked '10.05.12	Drawn	Scale 1:1(NTS)	Title TCG085WVLBK	KYOCERA	Year-Month-Day 10.05.11	Size 2
Quantity 製作数	Description; 備　考　RoHS	朝倉		今村	圓福		Outline Dimensions	Drawing No. 121A8026600		1/3

No	Description	Drawn	Checked	Checked	Approved


(8.4)
12.8
167.8
21.7
(5.6)
3.8mm height Area
from Back Board.(Case)
裏面板金からの高さ制限3.8mm以下
1.8mm height Area
from Back Board.(Case)
裏面板金からの高さ制限1.8mm以下
0.5
(2.2)
0.5
(25.2)
11
36
130.8
(2)
(4.8)
4.8
19.2
40.2
42.7
4.8
14.2
4.8
16.4
9.3
(28.1)
(66.5)
46
(126.4)
45.5
56.7
64.3±3
17
15.9
(2.2)
CN1
LCD用
Tape
(t=0.05)
No.1
No.40
Insert
Direction
(FPCorFFC)
(挿入方向)
Label
(t=0.1)
Label
(t=0.1)
Label Area
Back Board
Label Area
Label
(t=0.1)
20
3
0.15mm height Area
from Back Board.(6points)
裏面板金からの高さ制限0.15mm以下
88.6
51.4
(3.6)
5.2
4.8
18.5
4.8
13.9
4.8
5.9
4.1
(65.6)
6.9
67.3
40.8
30.1
(128.1)
82.6±3
0.05

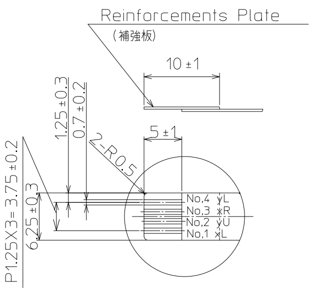
Note.(注記)
1. Tolerance without indication : ±0.5
(指示無き公差)

Material 材　質	Treatment 処　理	Approved	Checked	Checked	Drawn	Scale	Title			Year-Month-Day	Size
		'10.05.12		'10.05.12		1:1	TCG085WVLBK		KYOCERA	10.05.11	2
Quantity 製作数	Description; 備　考　RoHS	朝倉		今村	圓福		Outline Dimensions		Drawing No. 121A8026600		2/3

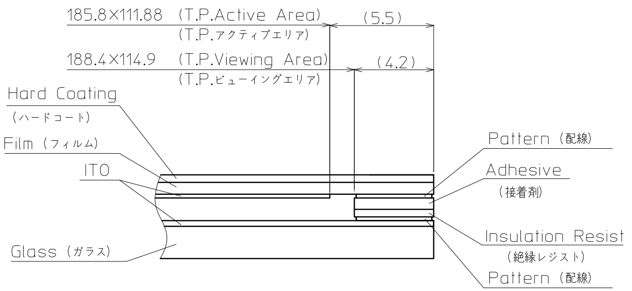
No	Description	Drawn	Checked	Checked	Approved

Note（注記）

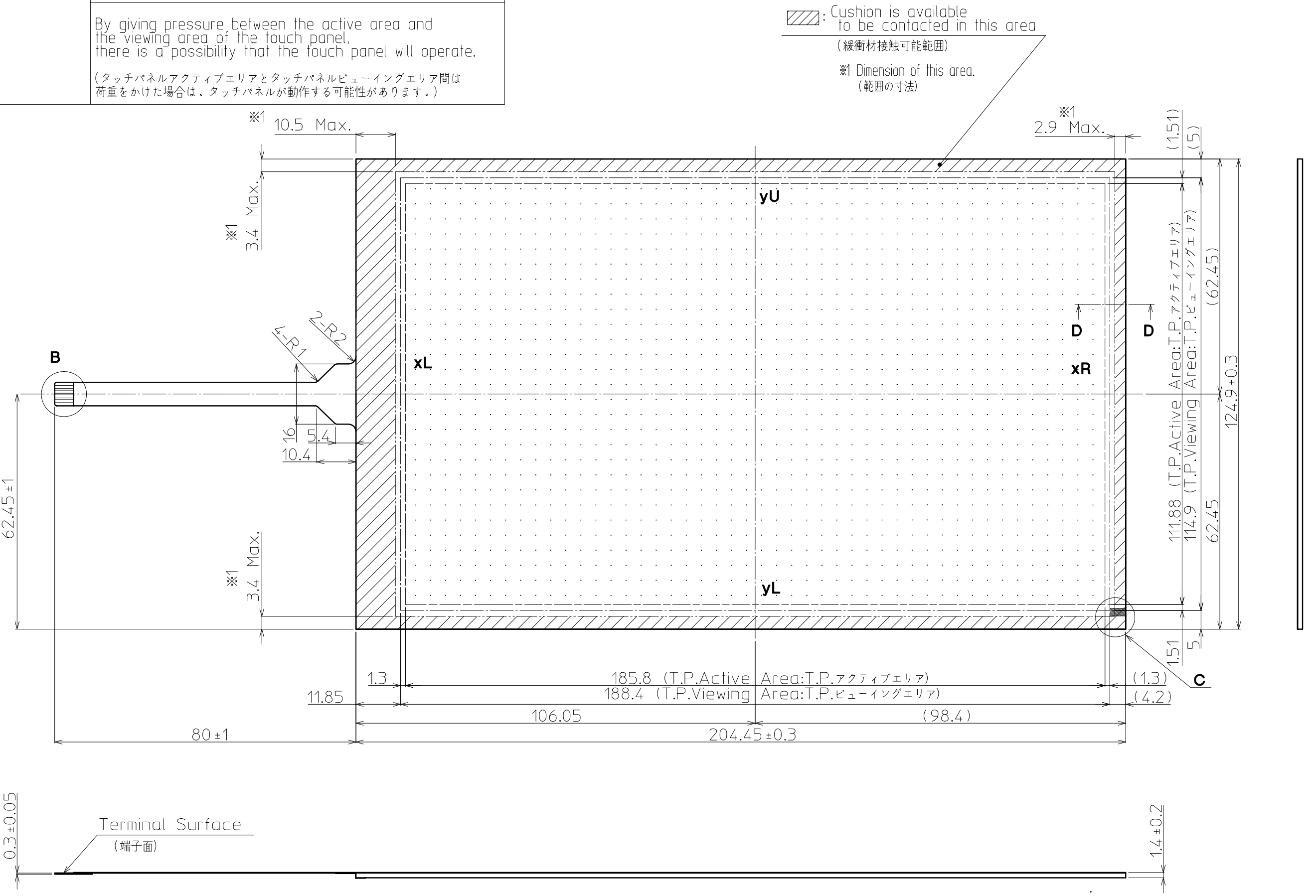
	Name(名称)	Explanation(説明)
1	T.P.	Touch panel (タッチパネル)
2	T.P. Active Area (T.P.アクティブエリア)	Operating area of touch panel (タッチパネルの動作範囲)
3	T.P. Viewing Area (T.P.ビューイングエリア)	Warranty area of touch panel's appearance (タッチパネルの外観(傷・異物等)保証範囲) By giving pressure between the active area and the viewing area of the touch panel, there is a possibility that the touch panel will operate. (タッチパネルアクティブエリアとタッチパネルビューイングエリア間は荷重をかけた場合は、タッチパネルが動作する可能性があります。)

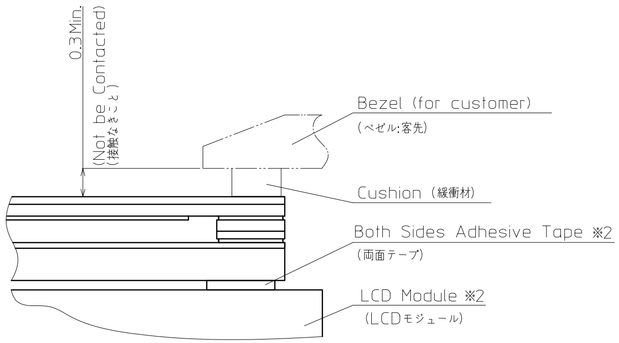

Reinforcements Plate
(補強板)
10±1
1.25±0.3
0.7±0.2
2-R0.5
5±1
P1.25X3=3.75±0.2
6.25±0.3
No.4 yL
No.3 xR
No.2 yU
No.1 xL

DETAIL B(2:1)


185.8×111.88 (T.P.Active Area)
(T.P.アクティブエリア)
(5.5)
188.4×114.9 (T.P.Viewing Area)
(T.P.ビューイングエリア)
(4.2)
Hard Coating
(ハードコート)
Film (フィルム)
ITO
Glass (ガラス)
Pattern (配線)
Adhesive
(接着剤)
Insulation Resist
(絶縁レジスト)
Pattern (配線)

SECTION D-D(NTS)


▨: Cushion is available to be contacted in this area
(緩衝材接触可能範囲)
※1 Dimension of this area.
(範囲の寸法)
※1
10.5 Max.
※1
2.9 Max.
(1.51)
(5)
※1
3.4 Max.
yU
xL
xR
yL
D
D
B
C
4-R1
2-R2
16
5.4
10.4
62.45±1
※1
3.4 Max.
(T.P.Active Area:T.P.アクティブエリア)
(T.P.Viewing Area:T.P.ビューイングエリア)
(62.45)
124.9±0.3
111.88
114.9
62.45
1.51
5
1.3
185.8 (T.P.Active Area:T.P.アクティブエリア)
(1.3)
11.85
188.4 (T.P.Viewing Area:T.P.ビューイングエリア)
(4.2)
106.05
(98.4)
80±1
204.45±0.3
0.3±0.05
Terminal Surface
(端子面)
1.4±0.2


0.3Min.
(Not be Contacted)
(接触なきこと)
Bezel (for customer)
(ベゼル:客先)
Cushion (緩衝材)
Both Sides Adhesive Tape ※2
(両面テープ)
LCD Module ※2
(LCDモジュール)

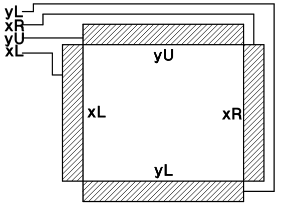
(NTS)

Precaution in use of touch panel.
(タッチパネル使用上の注意事項)

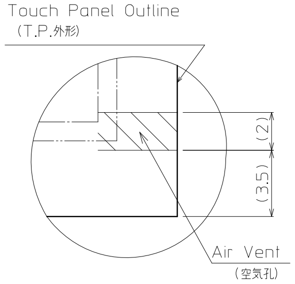
※2 In case of assemble to the LCD.
(LCDに取りつける場合)

1.Fix touch panel at LCD module and the rear side of touch panel.
(タッチパネルの固定はLCDモジュール側とタッチパネル裏面とで行なうこと。)

2.Must maintain a gap between inside of bezel and touch panel to avoid malfunction or electrode damage of touch panel.
(ベゼル内側とタッチパネルの接触厳禁．誤動作や電極破損の原因となります。)


yL
xR
yU
xL
yU
xL
xR
yL

Touch Panel Pin-assign
(Pin-assign from Touch Panel side)
(タッチパネル ピンアサイン
(タッチ面側からのピンアサイン))


Touch Panel Outline
(T.P.外形)
(2)
(3.5)
Air Vent
(空気孔)

DETAIL C(5:1)

Precaution in use of touch panel.
(タッチパネル使用上の注意事項)

There is vent channel to equalize air pressure between the inner space of the touch panel and the atmosphere.

Please make sure it is not blocked by your housing and mounting method.

(タッチパネルの中には内圧と外圧を均一にするため通気孔を設けています。
取り付け時にこの通気孔を塞がないようにしてください。)

Material 材 質	Treatment 処 理	Approved '10.05.12	Checked	Checked '10.05.12	Drawn	Scale 1:1(5:1,2:1,NTS)	Title	TCG085WVLBK	KYOCERA	Year-Month-Day 10.05.11	Size 2
Quantity 製作数	Description; 備 考 RoHS	朝倉		今村	圓福			Outline Dimensions	Drawing No.	121A8026600	3/3

Spec No.	TQ3C-8EAF0-E2DDQ80-00
Date	May 17, 2010

KYOCERA INSPECTION STANDARD

TYPE : TCG085WVLBK-G00

KYOCERA CORPORATION
KAGOSHIMA HAYATO PLANT
LCD DIVISION

Original Issue Date	Designed by : Engineering dept.			Confirmed by : QA dept.	
	Prepared	Checked	Approved	Checked	Approved
May 17, 2010	Y. Ikeda	Y. Yamazaki	M. FujiTani	J. Sakaguchi	

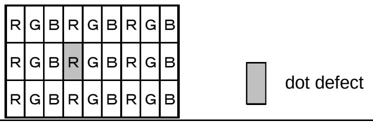
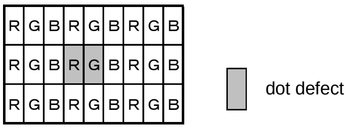
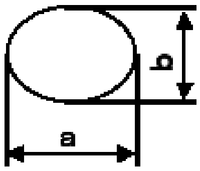
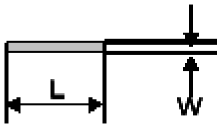
Revision record

Date	Designed by：Engineering dept.			Confirmed by：QA dept.	
	Prepared	Checked	Approved	Checked	Approved

Rev.No.	Date	Page	Descriptions

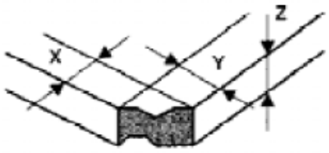
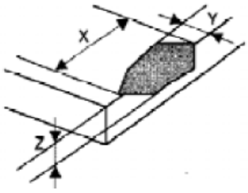
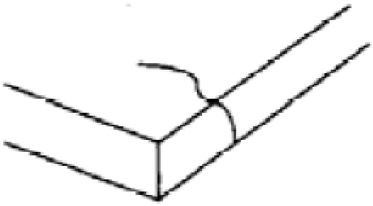
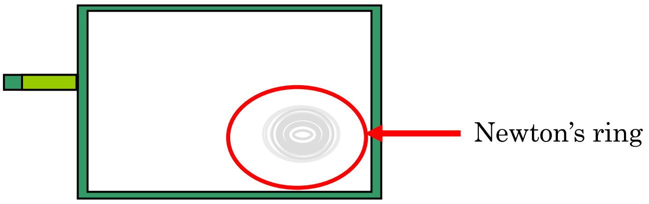
Visuals specification

1) Note

	Note		
General	1. Customer identified anomalies not defined within this inspection standard shall be reviewed by Kyocera, and an additional standard shall be determined by mutual consent. 2. This inspection standard about the image quality shall be applied to any defect within the active area and shall not be applicable to outside of the area. 3. Inspection conditions Luminance : 500 Lux min. Inspection distance : 300 mm. Temperature : 25 ± 5°C Direction : Directly above		
Definition of inspection item	Dot defect	Bright dot defect	The dot is constantly “on” when power applied to the LCD, even when all “Black” data sent to the screen. Inspection tool: 5% Transparency neutral density filter. Count dot: If the dot is visible through the filter. Don’t count dot: If the dot is not visible through the filter.  R G B R G B R G B R G B R G B R G B R G B R G B R G B dot defect
		Black dot defect	The dot is constantly “off” when power applied to the LCD, even when all “White” data sent to the screen.
		Adjacent dot	Adjacent dot defect is defined as two or more bright dot defects or black dot defects.  R G B R G B R G B R G B R G B R G B R G B R G B R G B dot defect
	External inspection	Bubble, Scratch, Foreign particle (Polarizer, Cell, Backlight)	Visible operating (all pixels “Black” or “White”) and non operating.
		Appearance inspection	Does not satisfy the value at the spec.
	Others	CFL wire	Damaged to the CFL wire, connector, pin, functional failure or appearance failure.
	Definition of size	Definition of circle size  d＝(a＋b)/2	Definition of linear size 

2) Standard

<table>
<tr><th colspan="2">Classification</th><th colspan="2">Inspection item</th><th>Judgement standard</th></tr>
<tr><td rowspan="7">Defect
(in LCD glass)</td><td rowspan="6">Dot defect</td><td colspan="2">Bright dot defect</td><td>Acceptable number : 4
Bright dot spacing : 5 mm or more</td></tr>
<tr><td colspan="2">Black dot defect</td><td>Acceptable number : 5
Bright dot spacing : 5 mm or more</td></tr>
<tr><td rowspan="2">2 dot join</td><td>Bright dot defect</td><td>Acceptable number : 2</td></tr>
<tr><td>Black dot defect</td><td>Acceptable number : 3</td></tr>
<tr><td colspan="2">3 or more dots join</td><td>Acceptable number : 0</td></tr>
<tr><td colspan="2">Total dot defects</td><td>Acceptable number : 5 Max</td></tr>
<tr><td>Others</td><td colspan="2">White dot, Dark dot
(Circle)</td><td>
<table>
<tr><th>Size (mm)</th><th>Acceptable number</th></tr>
<tr><td>d ≦ 0.2</td><td>(Neglected)</td></tr>
<tr><td>0.2 < d ≦ 0.4</td><td>5</td></tr>
<tr><td>0.4 < d ≦ 0.5</td><td>3</td></tr>
<tr><td>0.5 < d</td><td>0</td></tr>
</table>
</td></tr>
<tr><td colspan="2" rowspan="4">External inspection
(Defect on Polarizer or between Polarizer and LCD glass)</td><td colspan="2">Polarizer (Scratch)</td><td>
<table>
<tr><th>Width (mm)</th><th>Length (mm)</th><th>Acceptable number</th></tr>
<tr><td>W ≦ 0.1</td><td>—</td><td>(Neglected)</td></tr>
<tr><td rowspan="2">0.1 < W ≦ 0.3</td><td>L ≦ 5.0</td><td>(Neglected)</td></tr>
<tr><td>5.0 < L</td><td>0</td></tr>
<tr><td>0.3 < W</td><td>—</td><td>0</td></tr>
</table>
</td></tr>
<tr><td colspan="2">Polarizer (Bubble)</td><td>
<table>
<tr><th>Size (mm)</th><th>Acceptable number</th></tr>
<tr><td>d ≦ 0.2</td><td>(Neglected)</td></tr>
<tr><td>0.2 < d ≦ 0.3</td><td>5</td></tr>
<tr><td>0.3 < d ≦ 0.5</td><td>3</td></tr>
<tr><td>0.5 < d</td><td>0</td></tr>
</table>
</td></tr>
<tr><td colspan="2">Foreign particle
(Circular shape)</td><td>
<table>
<tr><th>Size (mm)</th><th>Acceptable number</th></tr>
<tr><td>d ≦ 0.2</td><td>(Neglected)</td></tr>
<tr><td>0.2 < d ≦ 0.4</td><td>5</td></tr>
<tr><td>0.4 < d ≦ 0.5</td><td>3</td></tr>
<tr><td>0.5 < d</td><td>0</td></tr>
</table>
</td></tr>
<tr><td colspan="2">Foreign particle
(Linear shape)
Scratch</td><td>
<table>
<tr><th>Width (mm)</th><th>Length (mm)</th><th>Acceptable number</th></tr>
<tr><td>W ≦ 0.03</td><td>—</td><td>(Neglected)</td></tr>
<tr><td rowspan="3">0.03 < W ≦ 0.1</td><td>L ≦ 2.0</td><td>(Neglected)</td></tr>
<tr><td>2.0 < L ≦ 4.0</td><td>3</td></tr>
<tr><td>4.0 < L</td><td>0</td></tr>
<tr><td>0.1 < W</td><td>—</td><td>(According to circular shape)</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Inspection item</th><th>Judgement standard</th></tr>
<tr><td>Scratch,
Foreign particle
(Touch screen portion)</td><td>
(W = Width, L = Length, D = Diameter = (major axis＋minor axis)/ 2)
<table>
<tr><th>Item</th><th>Width(mm)</th><th>Length(mm)</th><th>Acceptable number</th></tr>
<tr><td rowspan="4">Scratch</td><td>W ≦ 0.03</td><td>L ≦ 20</td><td>Neglected</td></tr>
<tr><td>0.03 ＜ W ≦ 0.05</td><td>L ≦ 10</td><td>2pces within φ20mm</td></tr>
<tr><td>0.05 ＜ W ≦ 0.08</td><td>L ≦ 6</td><td>2pces within φ20mm</td></tr>
<tr><td>0.08 ＜ W ≦ 0.1</td><td>L ≦ 4</td><td>1pces within φ30mm</td></tr>
<tr><td rowspan="2">Foreign
(line like)</td><td>W ≦ 0.05</td><td>Neglected</td><td>Neglected</td></tr>
<tr><td>0.05 ＜ W ≦ 0.1</td><td>L ≦ 5</td><td>2pces within φ30mm</td></tr>
<tr><td rowspan="2">Foreign
(circle like)</td><td colspan="2">D ≦ 0.2</td><td>Neglected</td></tr>
<tr><td colspan="2">0.2 ＜ D ≦ 0.3</td><td>2pces within φ30mm</td></tr>
</table>
Above are applied to the visible area.
Unless there are foreign particle and damage affected seriously to the electrical performance out of the active area, we approve of this product.
</td></tr>
<tr><td>Glass crack
(Touch screen portion)</td><td>
<table>
<tr><th>Item</th><th colspan="3">Size (mm)</th><th>Acceptable number</th></tr>
<tr><td rowspan="3">Conner crack</td><td rowspan="3">
</td><td>X</td><td>≦3</td><td rowspan="3">2 pcs
/panel</td></tr>
<tr><td>Y</td><td>≦3</td></tr>
<tr><td>Z</td><td>＜t</td></tr>
<tr><td rowspan="3">Crack in other area than in corner</td><td rowspan="3">
</td><td>X</td><td>≦5</td><td rowspan="3">2 pcs
/side</td></tr>
<tr><td>Y</td><td>≦1.5</td></tr>
<tr><td>Z</td><td>＜t</td></tr>
<tr><td>Progressive crack</td><td colspan="3"></td><td>0 pcs
(NG even 1pcs)</td></tr>
</table>
Above are applied to the visible area.
Unless there are foreign particle and damage affected seriously to the electrical performance out of the active area, we approve of this product.
</td></tr>
<tr><td>Newton’s ring</td><td>Neglected.

</td></tr>
</table>

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