Electra House, 32 Southtown Road
Great Yarmouth, Norfolk
NR31 0DU, England

Telephone +44 (0)1493 602602
Fax +44 (0)1493 665111
Email:sales@midasdisplays.com
www.midasdisplays.com

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LCD MODULE SPECIFICATION

ITEM CODE
FC0802E00-RNNYBH-16SE

SPECIFICATION ESTABLISHED DATE: 2019.11.22

ISSUED BY: **CHECKED BY:** **APPROVED BY:**

` l mv o fd e q=©==MMÍ=ÚNR=d o a ^ q ^ =bi b ` qo l k f`=` l k=iqa K^=i i =ofd e qp=obpbosba

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AMENDMENT RECORD

MARK	DATE	DESCRIPTION	ITEM	PAGE	APPROVED
1	2019.11	INITIAL ISSUED	ALL	ALL	

1. qÜÉ=Ñçääçï áåÖ=Açåëí~êÉ=Äëçä íÉäó=ÇÉëÇäÉÇ=Äó=cl o a^q^=âåÇÉéÉåÇÉåíäó=âå=OMMTJpbmKqÜÉó=~êÉ=ä åÇ=ì É=âå=íÜÉ=` a=âåÇì ëíêó=~åÇ=~êÉ=ëÉÇ= Ñçêã ~êâåÖ=ì íÉ=cl o a^q^=éêçÇì Åíë=ÄÜ~ê~ÅíÉêâëíÅë=ì åÅâáó=~åÇ=ëâ éáó=íÜçì í=~åó=ëéÉÅâ~ä=Éñ~åâÖK=
cl o a^q^=êÉëÉêî Éë=íÜÉ=Åçã éçëâÖ=êâÖÜíë=~åÇ=Åçéóêâ ÖÜíKkç=ç åÉ=Éäë É=Åâ=~ä ç ï ÉÇ=íç=Çç éó=íÜÉëÉ=Åçåëí=âÜçì í=cl o a^q^’ë=~éé êçî~äK

2. qÜÉ=fpl VMMN=ëç Çç=ï ëÉÇ=âå=íÜë=ÇçÅì ã Éåí=ãë=ï íÜ çêâ ÉÇ=Äó=pd p=Éî ïK ëÖëKÅçã FK=cl o a^q^ =Ü~ë=~êÉ~Çó=ëÅ ÅÉë ëÑì äó=é~ëëÉÇ=íÜÉ= ëíêâÅí=~åÇ=éêçÑÉëëâçå~ä=fpl VMMN:OMMM=n ì ~äâó=j ~å~ÖÉã Éåí=póëíÉã = ÉêíâÑâÅ~íâçå=~åÇ=Öçí=íÜÉ=ÅÉêíâÑâÅ~íÉKEk çK:W=k MTLMMQMQF

3. qÜÉ=íÉÅÜåçäçÖâÉëLíÉÅÜåâèì ÉëLÅê~Ñíë=ï ÜáÅÜ=ÇÉåçíÉÇ=Äó=íÜÉ=Ñçääçï âåÖ=âÅçåë=~êÉ=åçí=ÉñÅäì ëâî Éäó=çï åÉÇ=Äó=cl o a^q^=Äì í=~äëç=ëÜ~êÉÇ= Äó=cl o a^q^’ë=` a=ëíê~íÉÖâÅ=Åççé Éê~íçêëI=Üçï Éî Éê=~ää=íÜÉëÉ=íÉÅÜåçäçÖâÉëLíÉÅÜåâèì ÉëLÅê~Ñíë=Ü~î É=ÄÉÉå=âã~ÖÉ=Äó=Åâ ÑÑ=ÉÇ=Äó=cl o a^q^’ë= éêçÑÉëëâçå~ä=äÉÖ~ä=ÉÉê=~åÇ=n=ÇÉé~êíã ÉåíK

4. ^ ë=íÜÉ=ÇâÑÑÉêÉåÅÉ=â=Éëí=ë~åÇ~êÇ=~åÇ=Éëí=ÅçåÇâíâçåëI=~ëç=d o a^q^’ë=âåÑç êã ~íáçå=Ñã âå=~Åí=âå=ÜÉ=Åâ~î ~ä=ì a=ìëÉâÖ=Éâî âçåã Éåíí= ~ä=íÜÉ=ÉÑÑÉÅí=Çå=Ñçêã ~íäçå=â=Ü~ë=^q^ pebbq=ãÅ~ä ÇâÖ=íÜÉ=ÅçåÇâíâçåF=çÑ=íÜÉ=î ç=ÑâÅâíçåëW
QKNW=éêçî âÇÉ=ì íâå~ä=ëíÉÑÑÉÅí=íÜÉ=éçì í=~êÉ=ã ÇÖâ Öí ÜÉí íÜÉ=íÜÉ=éêçÇì Åí=ã ÉÉíë=çì êêÉì âêÉã ÉåíK
QKOW=ëÉííâÖ=ì í=íÜÉ=íçäÉê~åÅÉK

FORDATA declares seriouslyW=çì=ëÜçì äÇ=ÑâÉëí=íÉëí=íÜÉ=ÅçêêÉëéçåÇâåÖ=ë~ã éäÉë=F=ÄÉÑçêÉ=ëâÖåâåÖ=íÜÉ=Ñçêã ~ä=cl o a^q^=p^j mi b= ^mmol s^i=ÇçÅì ã Éåí=êçí íÜÉ=Ü~å=Åçåëì äíâÖ=ÜÉ=a^q^ pebbq=~ë=íÜÉ=ê~åÇ~êÇ=ÑÉ=íâÅÖÉâåÖ=íÜÉ=ïÜÉíÜÉê=íÜÉ=ï ` a=ëÉíë=çì êêÉì âêÉã Éåíë Éçåíê~ÅíK=~åÇ=Éçì=~êÉ=ã ~ÇÉ=~ÅÅçêÇâåÖ=íç=cl o a^q^=í ã ì ëí=ÄÉ=íÉëíÉÇ=~åÇ=ÅçåÑâêã ÉÇ=Äó=Éçì ê=ÅçåíÉÅí=ÉÉKcl o a^q^ =ã ~â Éë=åç=ï ~êê~åíó=íÜ~í=íÜÉ=éêçÇì Åí=ï âää=ÑìäÑâää=Éçì ê=ÉåÇJéêçÇì Åí=ê Éèì âêÉã ÉåíëK===

5. qÜÉ=êÉèì ÉëÅÉ=çÑ=íÜÉ=Åçåëí~åí=~åÇ=çì êÉ=~åÇ=ÇÉëÅêâé íâçå=çÑ=íÜÉ=ã çÇÉä=ã ~ÅÉ=ÅÜ~åÖÉK

6. Åçåëí=Éñé~å~íâçå

OMMM=sÉêëâçå OMMS=sÉêëâçå OMNO=sÉêëâçå

classic mono LCDs Classic LCDs & LEDs

cloa^ q^=âë=åâåÇÉê=íÜÉ=âåÑ~ÅíêÉ=çÑÑä~=ë=åÉåÇ~éëÉéÉçEcmaFK=ä=ÄçíÉ=âäâÉÇ=âåÅçåë=åÇ=çêÇÉê=Åçãé ë Éê=cloa^ q^’ë=äçÖçK=
cêçã=OMMM=d o a^q^ Ü~ë=êÉ éé äâÉÇ i ` a=ä çÇì äÉ
cêçã=OMMSI=d o a^q^ Ü~ë=êÉ éé äâÉÇ qk I=eqk I=pqk I=cpqk=ã çåçÅÜêçã É=ï ` a=é~åÉä
cêçã=OMNOI=d o a^q^==Ü~ë=êÉ éé äâÉÇ ~ää=âåÇë=çÑ=ba=Ä~Åâäâ ÖÜíK

FAST RESPONSE TIME
qÜáë=Åçåë=ã Ç=íÜÉ=ÅçîÉêâåÖ=éêçÇì Åí=Ü~ë=ÄÉíÉê=êÉëéçåëÉ=íâã ÉK

PROTECTION CIRCUIT
qÜâë=Åçåë=ã Ç=íÜÉ=ÅçîÉêâåÖ=éêçÇì Åí=Ü~ë=éêçíÉÅíâçå=ÅâêÅì âíK

HIGH CONTRAST
qÜáë=Åçåë=ã Ç=íÜÉ=ÅçîÉêâåÖ=éêçÇì Åí=Ü~ë=ÜâÖÜ=ÅçåíÉêí=ëíK

LONG LIFE VERSION
qÜâë=Åçåë=ã Ç=íÜÉ=ÅçîÉêâåÖ=éêçÇì Åí=Ü~ë=äçåÖ=äâÑÉ=çÑ=ìëÉ=ÇÉ=ë=ÅÉêí~âå=ÅçåÇâíâçåëK
I íÜÉê=î ÉêëâçåK

WIDE VIEWING SCOPE
qÜáë=Åçåë=ã Ç=íÜÉ=ÅçîÉêâåÖ=éêçÇì Åí=Ü~ë=ï âÇÉ=î âÉï âåÖ=ëÅçéÉK

Anti UV VERSION
qÜâë=Åçåë=ã Ç=íÜÉ=ÅçîÉêâåÖ=éêçÇì Åí=Ü~ë=~åíâ=rs=ÑìåÅíâçåK= I íÜÉê=î ÉêëâçåK

RoHS COMPLIANCE
qÜáë=Åçåë=ã Ç=íÜÉ=ÅçîÉêâåÖ=éêçÇì Åí=ã ÉÉíë=olep= êÉèì âêÉã ÉåíK

EASY OPERATION TEMPERATURE
qÜâë=Åçåë=ã Ç=íÜÉ=ÅçîÉêâåÖ=éêçÇì Åí=Å~å=Ü~î É=ÉñÅÉéíâçå~ä=ê~åÖÉ=çÑ=çéÉê~íâåÖ=íÉã éÉê~íì êÉK

3TIMEs 100% QC EXAMINATION
qÜâë=Åçåë=ã Ç=íÜÉ=ÅçîÉêâåÖ=éêçÇì Åí=Ü~ë=Ä ÉÉå=cloa ^q^’s=íÜêÉÉ=ÅÜÉÅâëK
líÜ Éê=î ÉêëâçåK

TWICE SELECTION OF LED MATERIALS
qÜâë=Åçåë=ã Ç=íÜÉ=ÅçîÉêâåÖ=éêçÇì Åí=ba=Ü~ë=ÄÉÉå=ëÉäÉÅíÉÇ=Äó=cl o a^q^’ë=íï âÅÉ=ëÉäÉÅíâçå=çÑ=ïÜ~ÑÉêë=~åÇ=éêçÇì Åí=ëÉÉ=íÜÉ=êÉèì âêÉã ÉåíK

Vlcm = 3.0V
qÜâë=Åçåë=ã Ç=íÜÉ=ÅçîÉêâåÖ=éêçÇì Åí=Å~å=ï çêâ=ì åÇÉê=PKMs=Éñ~ÅíäóK=íÜÉê=î ÉêëâçåK

N SERIES TECHNOLOGY (2008 developed)
cl o a^q^=~ÇçéíÉÇ=âí=ëíê~íÉÖâÅ=ÅâÉí=ÑÉÅÜåçäçÖó=~åÇ=ãâí=ã ~íÉêâ~äë=ÑÉê=ï ` a=ã çÇì äÉ=~åÇ=ì ` a=é~åÉä=ÑêçÇì Åí=íÜÉ=?o~å_ç ?=

1	2	3	4	5	6	—	7	8	9	10	11	12	—	13	14	15	16
F	C	08	01	A	23	—	F	H	Y	Y	B	W	—	5	2	L	E

No.	REMARKS	DESCRIPTION
1	COMPANY ABBRAVIATION	F = FORDATA
2	STANDARD MODULE TYPE	C = Character type standard LCD module (COB version) G = Graphic type standard LCD module (COB version)
3	Character (FC series)	08, 10, 12, 16, 20, 24, 40, = Character number Per line
	Graphic (FG series)	80, 100, 120, 122, 128, 160 ... ... = Row Dots Quantity
4	Character (FC series)	01, 02, 04, = Character Lines
	Graphic (FG series)	32, 64, 80, 128, 160 ... ... =Column Dots Quantity
5	Serial Number	A~Z which is decided by the sizes of viewing area
6	Identifying Code	00~99 which is decided by all the other aspects for the same viewing area
7	Polarizer type	R = Positive Reflective F = Positive Transflective M = Positive Transmissive N = Negative Transmissive B = Super Black technology New!
8	Backlight type	N = No Backlight L = Array Type LED Backlight S = Edge Type LED Backlight (Standard version) H = Edge Type LED Backlight (Long life span version) New! E = EL backlight without Invertor F = EL backlight with Invertor C = CCFL backlight without Invertor T = CCFL backlight with Invertor
9	Backlight color	N = No Backlight Y = Yellow-Green W = White R = Red A = Amber C = Blue-Green B = Blue G = Green Q = RedGreenBlue three color New!
10	LCD panel type	T = TN H = HTN Y = Yellow-Green STN G = Gray STN B = Blue STN F = FSTN
11	Viewing angle	B = Bottom 6:00 T = Top 12:00 R = Right 3:00 L = Left 9:00
12	Operation temperature range	S = 0°C ~ 50°C (Single Supply Voltage) D = 0°C ~ 50°C (Dual Supply Voltage) W = -20°C ~ 70°C (Single Supply Voltage) H = -20°C ~ 70°C (Dual Supply Voltage) T = -30°C ~ 80°C (Single Supply Voltage) E = -30°C ~ 80°C (Dual Supply Voltage)
13	Driving Voltage Code (This code was updated from 2015-JAN-1ST)	

	Vlcm = 3.0V	Vlcm = 3.3V	Vlcm = 3.6V	Vlcm = 5.0V
Vled = Indicated Voltage*	P	R	X	Q
Vled = 4.2V	M	G	D	K
Vled = 3.0V	9	A	3	4
Vled = 3.3V	T	B	K	F
Vled = 5.0V	8	C	2	5
NO/EL/CCFL	1	H	7	6

14	Backlight Connect Method	0 = PIN1 LED-, PIN2 LED+ 1 = PIN15(17/19) LED+, PIN16(18/20) LED- 2 = PIN15(17/19) LED-, PIN16(18/20) LED+ 3 = PIN15(17/19) LED+, PIN16(18/20) NC 4 = PIN15(17/19) NC, PIN16(18/20) LED+ 5 = PINA LED+, PINK LED- 6 = No / EL / CCFL Backlight
15	IC Manufacturer Code	A~Z or 01~99 which is decided by different IC manufacturers
16	Font Set	A~Z or 01~99 which is decided by different font maps

FEATURES

AVAILABLE OPTIONS	CHARACTERISTICS	CODE	No.
afpmi^v=doj^q	8 Characters by 2 Lines	FC0802E00	NúS
ml i^ofwbo==lmqfl kp	Positive Reflective	R	T
_^` hi fd e q=qv mb=l mqfl kp	No Backlight	N	U
_^` hi fd e q=`l i l o=l mqfl kp	No Backlight	N	V
i` a=m^kbi=l mqfl kp	Yellow-Green STN	Y	NM
sfbt fk d=^kdi b=l mqfl kp	6:00 (Bottom)	B	NN
qbj mbo^qr ob=o^kd b=l mqfl kp	-20°C ~ 70°C, Dual Supply Voltage	H	NO
pr d d b pqba=ao fs fk d=sl i q^d b	Vlcm = 3.0V	1	NP
pr d d b pqba=i ba=ao fs fk d=j l ab	No Backlight	6	NQ
`l kqol i i bo ▲1	ST7066U	S	NR
cl k q=j^m=`l ab	E Version	E	NS
aofsfkd=ar qv	1/16	—	—
aofsfkd=_f^p	1/5	—	—

▲1 mäÉ~ëÉ=ëâ=Ñê=Çí~ëÜÉÉí=çÑ=ÜÉ=äÉåíåÉÇ=Åàíêçää Éê=ñã=cl o a^q^=çê=c o a^q^ B=í ÜçêÉÇ=Ç ÉíêÅ íçêK ...

▲1 vçì=Å~å=ëâ=Ñê=ÜÉ=Ê~ã éäÉ=çÑ=çÑï ~êÉ=ëçÖê~ã=ä~åÖì~ÖÉF=ñã=cl o a^q^=çê=c o a^q^ B=í ÜçêÉÇ=ÇÉíêÅ íçêK

MECHANICAL SPECIFICATIONS

OVERALL SIZE	40.0W x 35.4H	mm	THICKNESS	max 8.5	mm
VIEWING AREA	30.4W x 13.9H	mm	HOLE-HOLE	36.0W x 30.0H	mm
CHARACTER SIZE	2.95W x 4.75H	mm	CHARACTER PITCH	0.40W x 0.40H	mm
DOT SIZE	0.55W x 0.55H	mm	DOT PITCH	0.05W x 0.05H	mm

ABSOLUTE MAXIMUM RATINGS

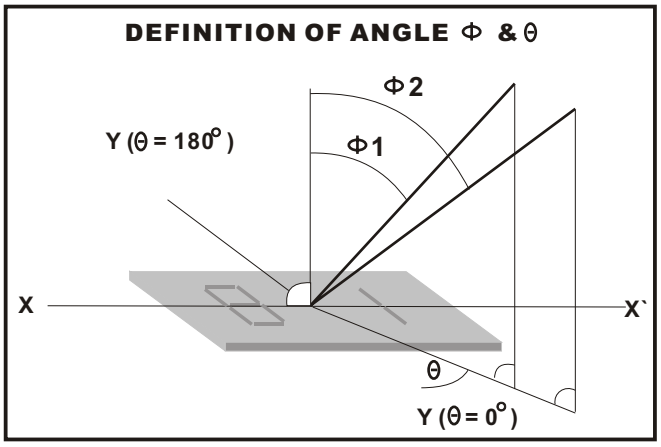
ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
ml t bo=pr mmi v=E+id f` F	sÇÇ	OR°=`	-0.3	—	7.0	V
ml t bo=pr mmi v=E` aF	sM	OR°=`	Vdd -13.5	—	Vdd +0.3	V
fkmr q=sl i q^d b	sáå	OR°=`	-0.3	—	Vdd +0.3	V
lm bo^qfkd=qbjmbo^qr ob	sçêê	—	-20	—	70	°C
pql o^d b=qbj mbo^qr ob	sëíÖ	—	-30	—	80	°C

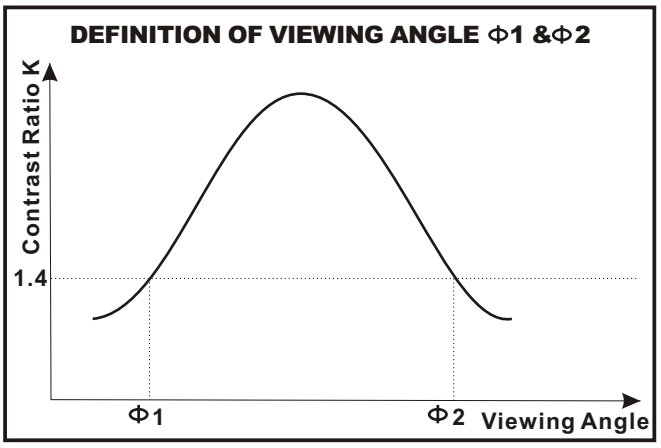
ELECTRONIC CHARACTERISTICS*

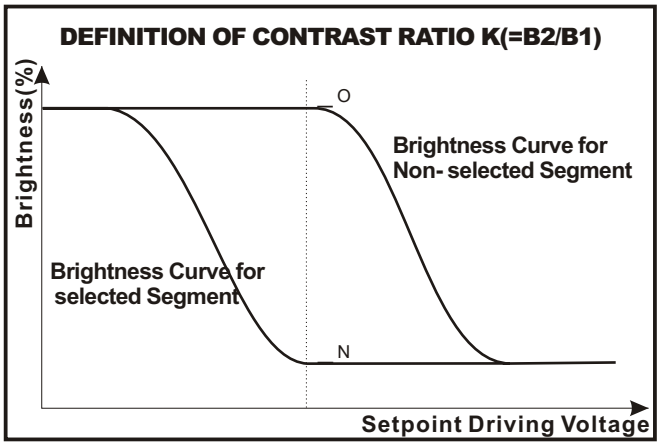
ICONS	ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
	fkmr q=sl i q^d b	sÅÅ=Z=sÇÇ	—	—	3.0	—	V
	pr mmi v=`r oobkq	fÇÇ	Vdd=3.0V	—	1.5	—	mA
	aofsfkd=sl i q^d b cl o=i ` a=m^kbi	säÅÇ=EsÇÇ-sMF	-20°C	4.40	—	4.90	V
			0°C	4.35	—	4.85	
			25°C	4.30	4.50	4.80	
			50°C	4.20	—	4.75	
			70°C	4.10	—	4.70	

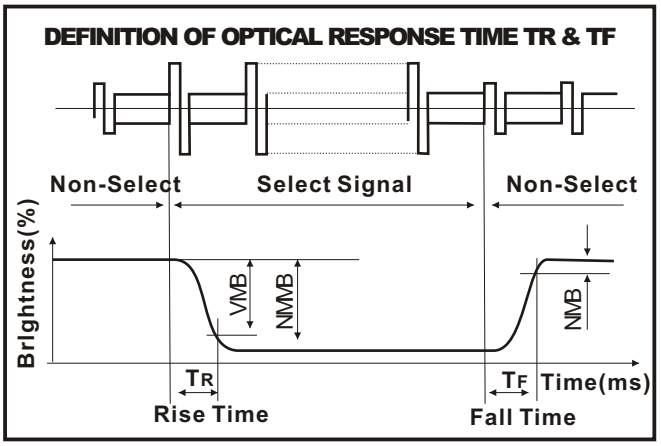
* ^ää=Çí~=~êÉ=ÉÅçêÇÉÇ=ñã=qbpq=ob ml o q=@pvmMMMTMMNU

FOR STN/FSTN TYPE LCD Panel (TA=25°C, Vlcd=5.0V ± 0.5V)							
ICONS	ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
	sfbt fkd=^kdib	Φ2 |=Φ1	K=4	40	—	—	deg
		θ		60			
HC	`lkqo^pq=o^qfl	K	—	6	—	—	—
	obpml kpb=qfj bEofpbF	To	—	—	150	250	ms
F	obpml kpb=qfj bEc^iiF	Tc	—	—	150	250	ms





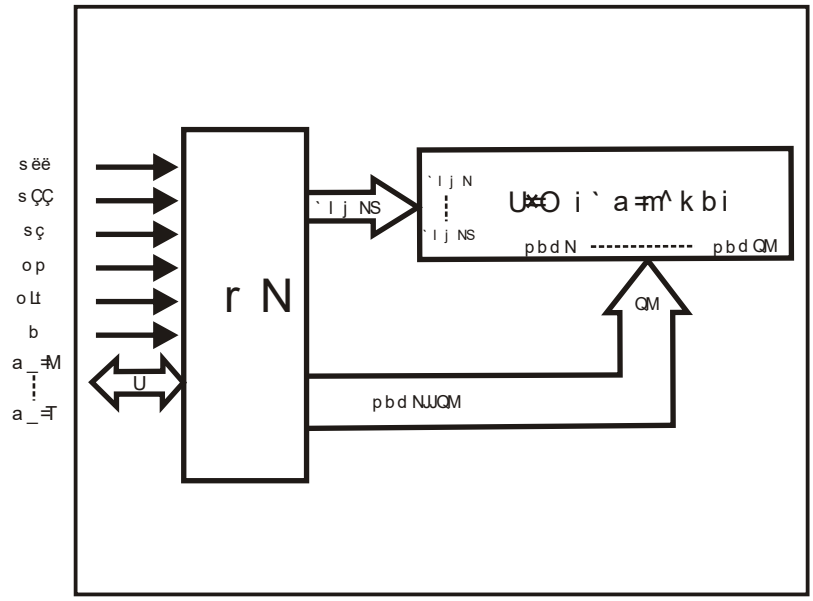




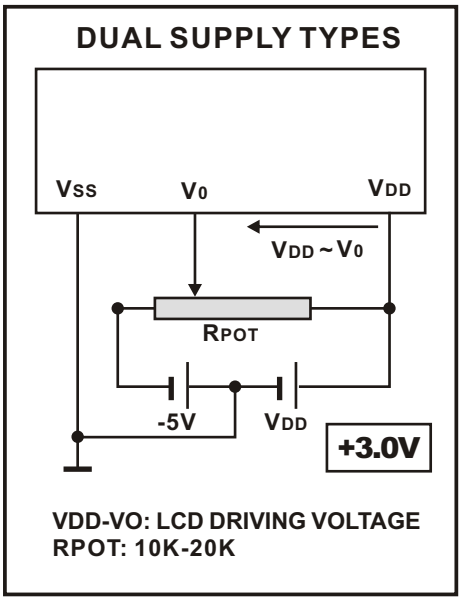
PIN ASSIGNMENT

PIN	SYMBOL	DESCRIPTION	REMARKS
1	Vss	GND	
2	Vdd	Power supply for LCM	3.0V
3	V0	Contrast Adjust	
4	RS	Register Select Signal	
5	R/W	Data Read / Write	
6	E	Enable Signal	
7	DB0	Data bus line	
8	DB1	Data bus line	
9	DB2	Data bus line	
10	DB3	Data bus line	
11	DB4	Data bus line	
12	DB5	Data bus line	
13	DB6	Data bus line	
14	DB7	Data bus line	
15	NC	No connection	
16	NC	No connection	

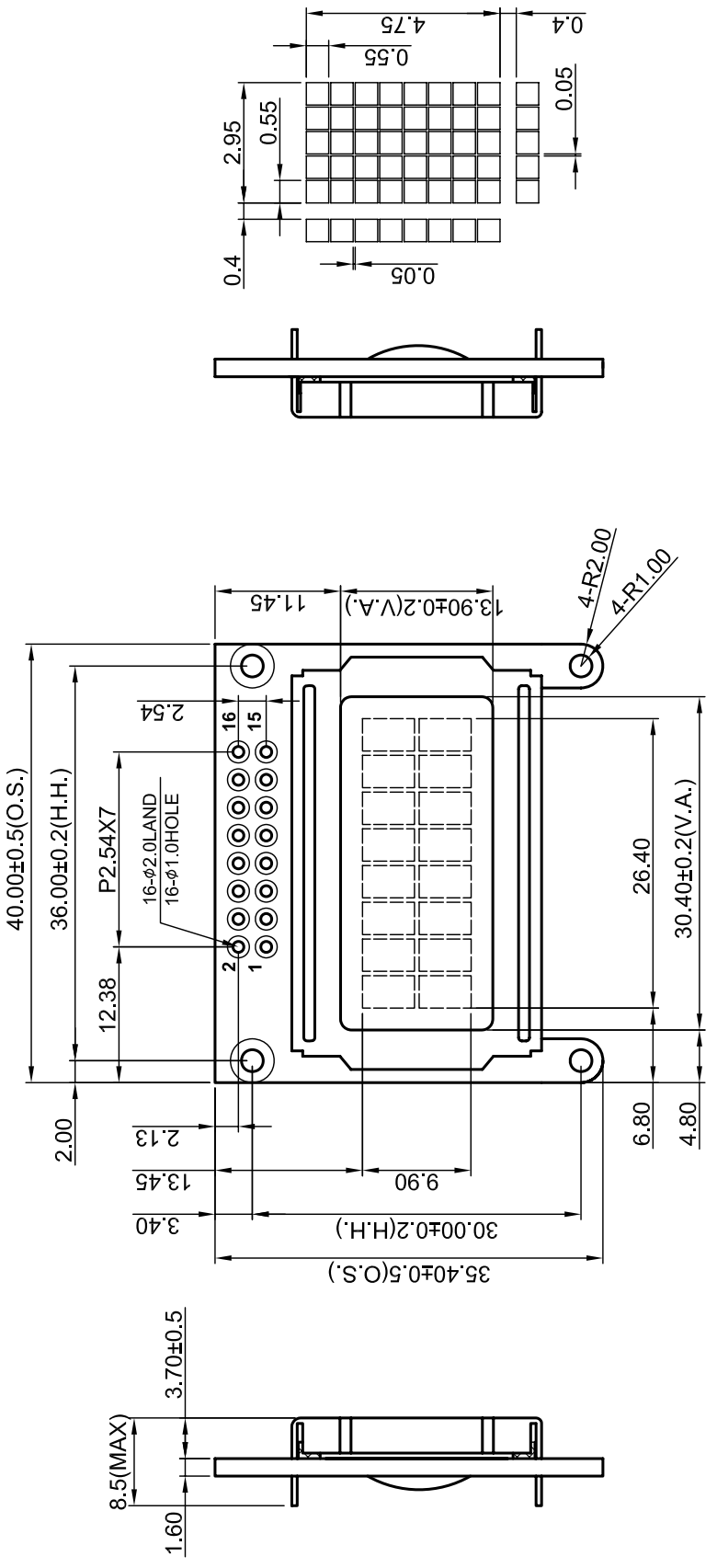
BLOCK DIAGRAM



POWER SUPPLY DIAGRAM



r ééÉê QÄáí / i çï Éê QÄáí	i i i i	i i i e	i i e i	i i e e	i e i i	i e i e	i e e i	i e e e	e i i i	e i i e	e i e i	e i e e	e e i i	e e i e	e e e i	e e e e
i i i i	` d o ^ j ENF															
i i i e	EOF															
i i e i	EPF															
i i e e	EQF															
i e i i	ERF															
i e i e	ESF															
i e e i	ETF															
i e e e	EUF															
e i i i	ENF															
e i i e	EOF															
e i e i	EPF															
e i e e	EQF															
e e i i	ERF															
e e i e	ESF															
e e e i	ETF															
e e e e	EUF															


4.75
0.4
0.55
0.05
2.95
0.55
0.4
0.05
4-R2.00
4-R1.00
11.45
13.90±0.2(V.A.)
2.54
16
15
40.00±0.5(O.S.)
36.00±0.2(H.H.)
P2.54X7
16-Ø2.0LAND
16-Ø1.0HOLE
2
1
12.38
26.40
30.40±0.2(V.A.)
2.00
2.13
13.45
9.90
6.80
4.80
3.40
30.00±0.2(H.H.)
35.40±0.5(O.S.)
3.70±0.5
8.5(MAX)
1.60

FULL-SIZED PACKAGE
45 PCS/BOX
10 BOXES/CARTON
450 PCS/CARTON
13.00 KGS/CTN(G.W.)
0.054 M^3/CARTON

HALF-SIZED PACKAGE
45 PCS/BOX
5 BOXES/CARTON
225 PCS/CARTON
6.00 KGS/CTN(G.W.)
0.027 M^3/CARTON

PACKING DECLARATION

NKqÜáë=é~Åâ~ÖáåÖ=áåÑçêã~íáçå=áë=Ñçê=êÉÑÉêÉåÅÉ=çåäóK=qÜÉ=Åîì~ä= áåÑçêã~íáçå=áë=ëì ÄàÉÅí=íç=íÜÉ=Åîì~äé~Åâ~ÖáåÖKb=ëéÉÅá~äó=Ñçê= é~Åâ~ÖáåÖ=çÑ=ï i I=çäÉê~åÅÉë=ã~ó=ÉñáëíK

OKcl oa ^q^=ïá ääåçí=ÄÉ=êÉëéçåëáÄäÉ=Ñçê=èì ~äáó=éêçÄäÉãë=Å~ìëÉÇ= Äó=ïå åçêã~äêÉ~åëéçêí~íáçå=ÅçåÇáíáçåë=ÉãÅäìÇáåÖ=Äì í=åçí=äãáíÉÇ= íç=Åäãã~íÉ=Ñ~Åíçêë=çêÜì ã~ å=Ñ~ÅíçêëI=ëì ÅÜ=ë=áãéêçéÉêÜ~åÇäáåÖFK