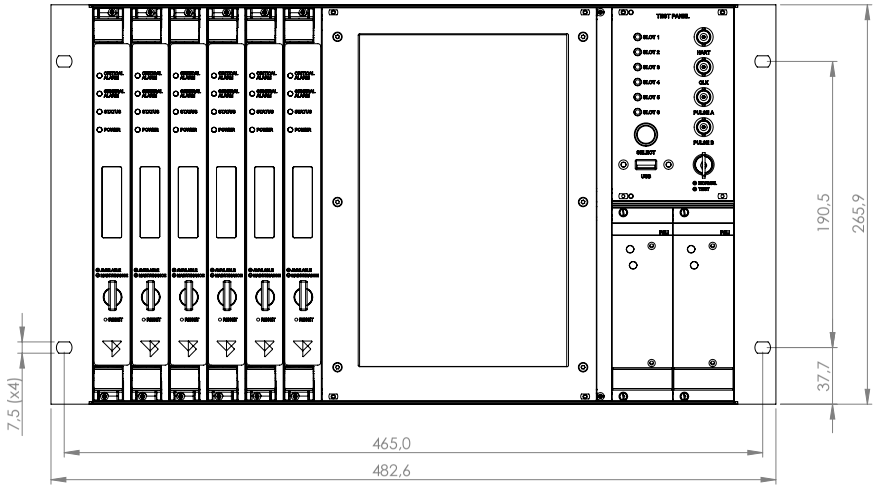
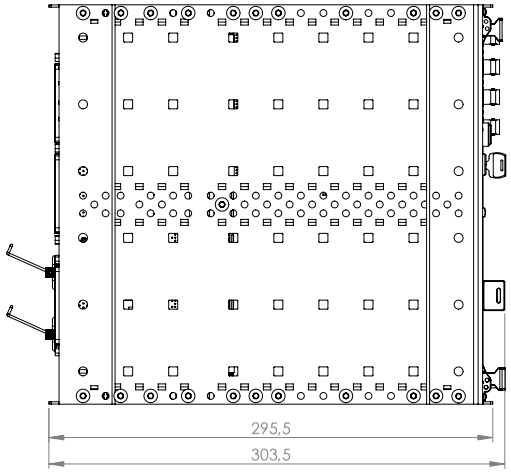
Documentation folder

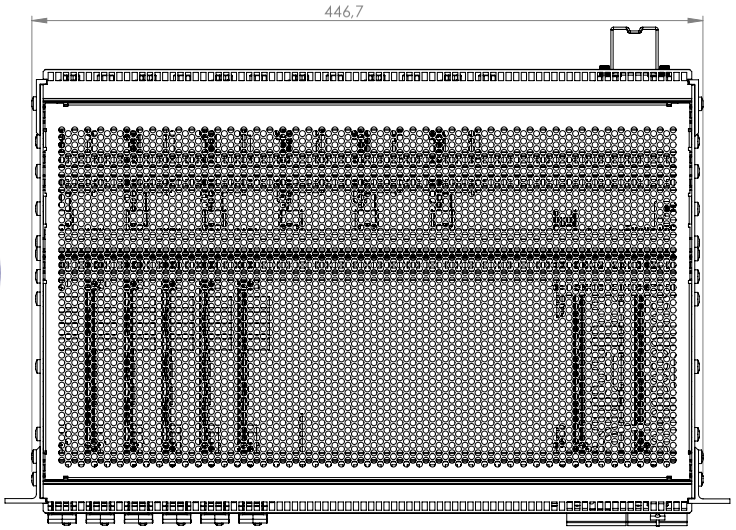
Number **T12660-1**
Project number 2546746

Number	Pages	Description	Remark
12660/0-01	2	Sigma3 Outline drawing	-
12660/0-02	2	SOC PCA assembly drawing	-
12660/0-03	6	SOC PCA Parts List	-
12660/0-04	2	BackPlane assembly drawing	-
12660/0-05	2	BackPlane Parts List	-
12660/0-06	2	Front Board assembly drawing	-
12660/0-07	1	Front Board Parts List	-
12660/0-08	2	IO PCA assembly drawing	-
12660/0-09	2	IO PCA Parts List	-
12660/0-10	38	Drawing and specifiation sheet of LCD display	-
12660/0-11	4	Specification sheet of Power supply	-
12660/0-12	3	Parameter settings	-

REVISIONS						
ZONE	STATE	REV.	DESCRIPTION	DATE	APPROVED	QA REF.
	Released	A	First release	2021-03-22	MLOK	5000114-600







	NAME	DATE
DRAWN	ES	2021-03-22
CHECKED	-	-
APPROVED	MLOK	2021-03-22
UPDATED	-	-
CUSTOMER REF.	-	

NOTE: -

FIRST ANGLE PROJECTION

UNLESS OTHERWISE SPECIFIED:
- DIMENSIONS ARE IN MILLIMETERS
- TOLERANCES: ISO 2768-m
- ISO 16792:2015 CLASSIFICATION CODE 3
- DEBUR AND BREAK SHARP EDGES

STATE: Released

REVISION: A

DO NOT SCALE DRAWING

FINISH: -

MATERIAL: -

WEIGHT: -

TITLE: Outline drawing FPM 207 v10

DWG NO. 780483-430

SIZE: A3

SCALE:1:3

SHEET 1 OF 2

NMi

Doc no 12660/0-01

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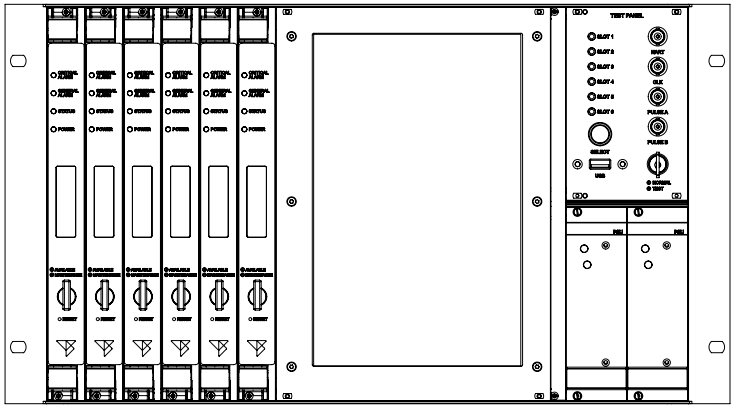

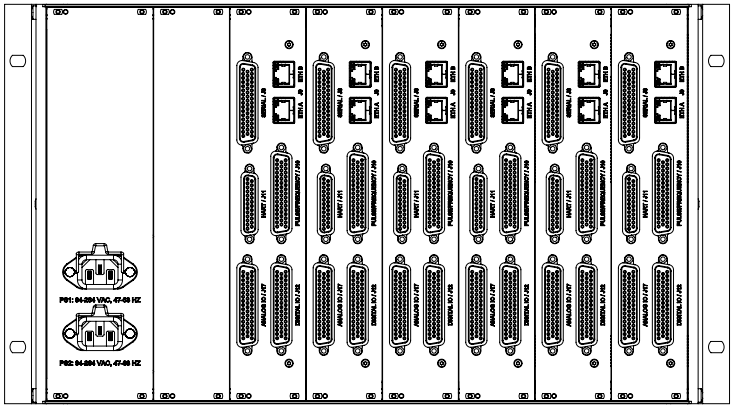

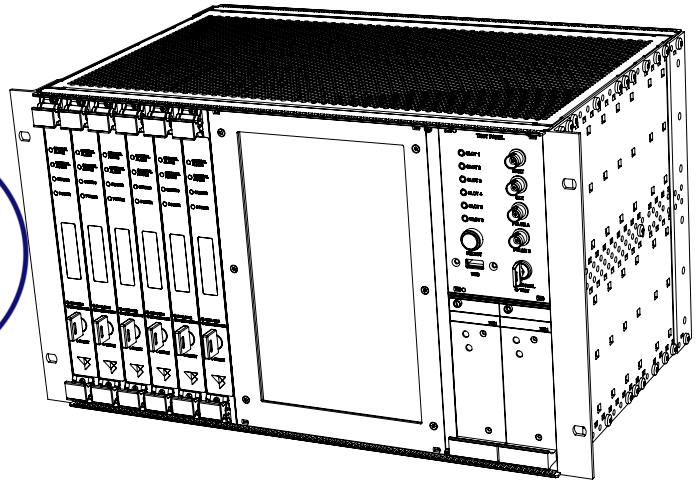

data respons SOLUTIONS	NOTE: -	FIRST ANGLE PROJECTION
UNLESS OTHERWISE SPECIFIED: • DIMENSIONS ARE IN MILLIMETERS • TOLERANCES: ISO2768-m • ISO 16792:2015 CLASSIFICATION CODE 3 • DEBUR AND BREAK SHARP EDGES	STATE: Released	REVISION: A
	DO NOT SCALE DRAWING	

	NAME	DATE
DRAWN	ES	2021-03-22
CHECKED	-	-
APPROVED	MLOK	2021-03-22
UPDATED	-	-

FINISH: -

MATERIAL: -

WEIGHT: -

CUSTOMER REF. -

TITLE:

Outline drawing
FPM 207 v10

DWG NO. 780483-430

SIZE: A3

SCALE:1:3

SHEET 2 OF 2

NMi

Doc no 12660/0-01

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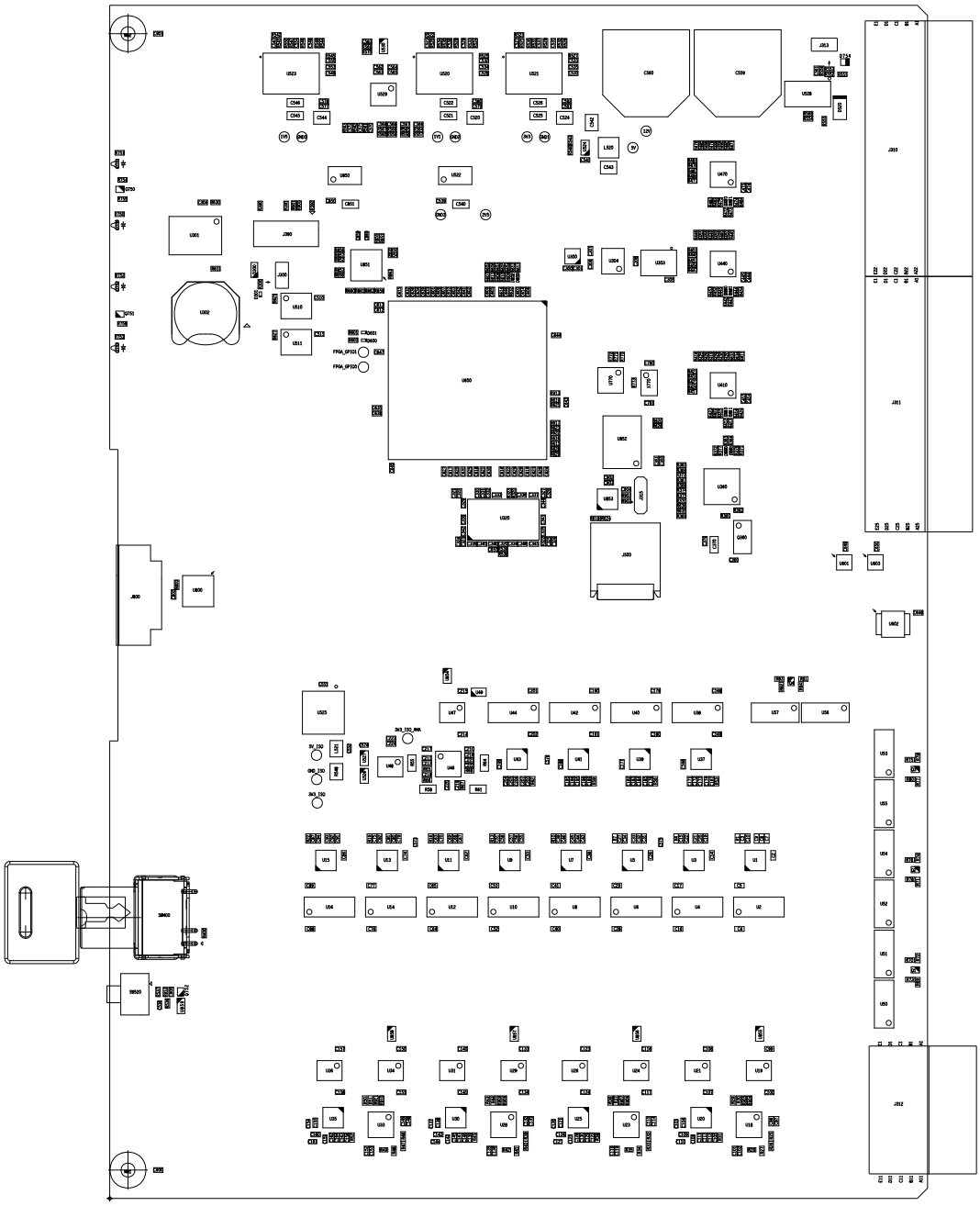
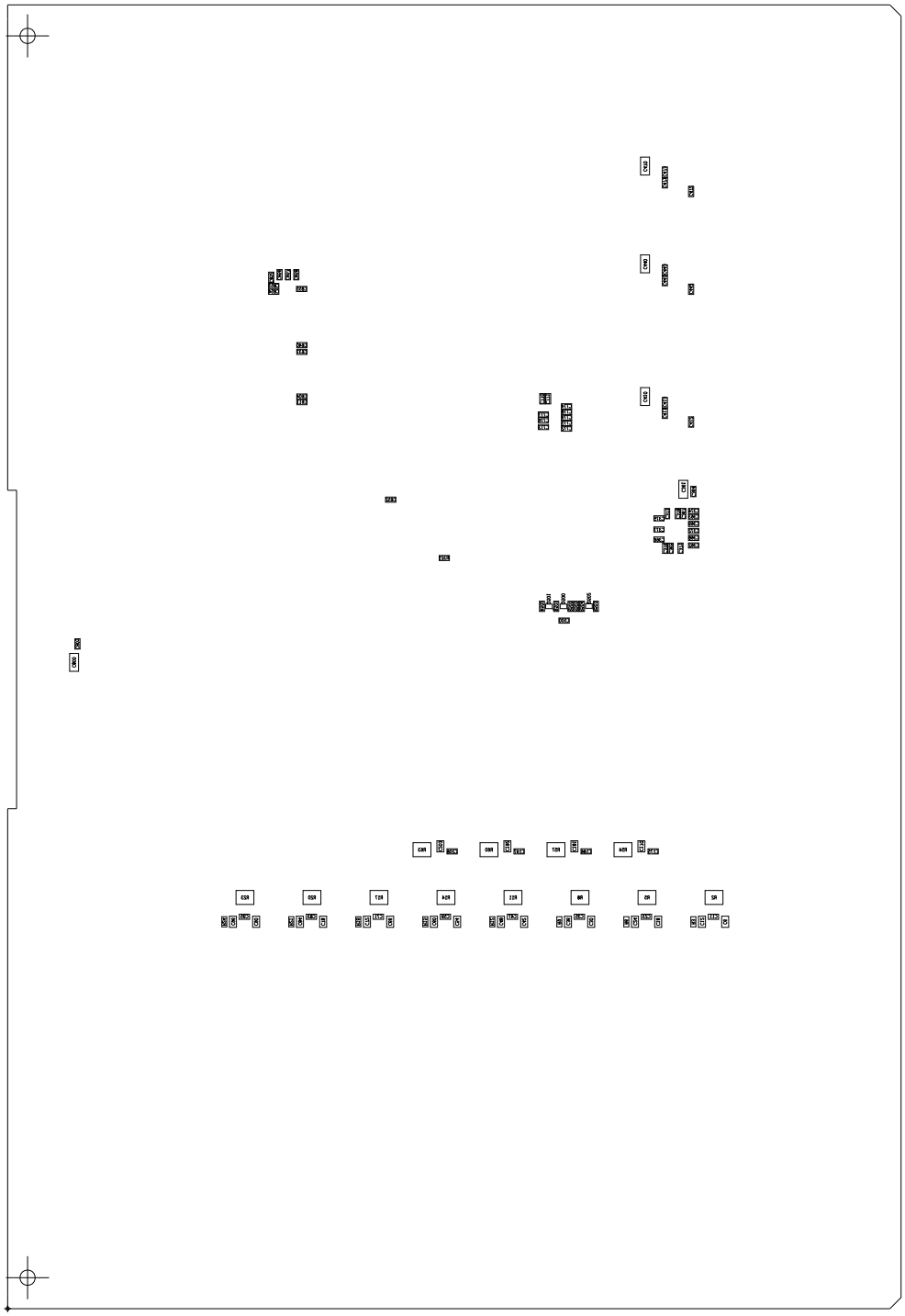


	10003611-00 FPM207_10_SOC_PCA NAME: 10003611-00 FPM207_10_SOC_PCA REV: C
	PCB: DATA RESPONS ENG: RAMESH TOP ASSEMBLY SHEET 1 OF 2

Doc no	**12660/0-02**
Page	1 of 2



	10003611-00 FPM207_10_SOC_PCA NAME: 10003611-00 FPM207_10_SOC_PCA REV: C PCB: DATA RESPONS ENG: RAMESH BOTTOM ASSEMBLY SHEET 2 OF 2

ART FILM - ASSY_BOTTOM

Qty	Part Reference	Part Number	Description	Pkg type	Value	Voltage	Tolerance	RoHS	Temperature Range	Manufacturer	DRP/N
4	C108 C125 C142 C159	Cap_std_0603_68n	Capacitor, Ceramic, Standard, 0603	0603 (1608 Metric)	68nF	50 V / X7R	10%	Yes	-55°C to +125°C		7000115
2	C859 C860	Cap_std_0603_100n	Capacitor, Ceramic, Standard, 0603	0603	100nF	50 V / X7R	10%	Yes	-55°C to +125°C		7000117
4	C523 C780 C781 C802	Cap_std_0402_22p	Capacitor, Ceramic, Standard, 0402	0402 (1005 Metric)	22pF	50 V / NP0	5%	Yes	-55°C to +125°C		7000135
1	C547	Cap_std_0402_27p	Capacitor, Ceramic, Standard, 0402	0402 (1005 Metric)	27pF	50 V / NP0	5%	Yes	-55°C to +125°C		7000136
1	C527	Cap_std_0402_56p	Capacitor, Ceramic, Standard, 0402	0402 (1005 Metric)	56pF	50 V / NP0	5%	Yes	-55°C to +125°C		7000140
53	C11 C23 C35 C47 C59 C71 C83 C95 C113 C130 C147 C164 C175 C186 C197 C208 C363 C364 C365 C366 C367 C368 C369 C371 C372 C413 C443 C473 C578 C580 C582 C608 C609 C610 C611 C612 C613 C614 C615 C628 C629 C630 C631 C635 C636 C637 C638 C639 C640 C641 C642 C646 C647 C905	Cap_std_0402_2n2	Capacitor, Ceramic, Standard, 0402	0402 (1005 Metric)	2.2nF	50 V / X7R	10%	Yes	-55°C to +125°C		7000159
55	C8 C20 C32 C44 C56 C68 C80 C92 C172 C183 C194 C205 C329 C330 C331 C332 C333 C334 C335 C336 C337 C338 C339 C340 C341 C342 C343 C344 C345 C346 C362 C373 C374 C375 C376 C411 C412 C441 C442 C471 C472 C534 C535 C553 C577 C579 C581 C624 C625 C626 C627 C633 C634 C644 C645	Cap_std_0402_22n	Capacitor, Ceramic, Standard, 0402	0402 (1005 Metric)	22nF	16 V / X7R	10%	Yes	-55°C to +125°C		7000171
3	R411 R441 R471	Res_std_0402_E96_6k49	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	6.49k	50 V	1%	Yes	-55°C to +155°C		7000570
1	R362	Res_std_0402_E96_12k1	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	12.1k	50 V	1%	Yes	-55°C to +155°C		7000596
1	R529	Res_std_0402_E96_29k4	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	29.4k	50 V	1%	Yes	-55°C to +155°C		7000633
1	R547	Res_std_0402_E96_53k6	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	53.6k	50 V	1%	Yes	-55°C to +155°C		7000658
1	R520	Res_std_0402_E96_169k	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	169k	50 V	1%	Yes	-55°C to +155°C		7000706
1	R505	Res_std_0402_E96_316k	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	316k	50 V	1%	Yes	-55°C to +155°C		7000732
1	U770	USB3300-EZK	USB 2.0 High Speed PHY, Host, Device, OTG, ULPI Low Pin Interface, QFN	32 Lead QFN w/pad	480 Mbps	3.0 to 3.6 V		Yes	-40°C to +85°C	Microchip Technology	7001249
2	J300 J313	TSM-102-01-T-SV-P	Header, Male, 2.54 mm Pitch, 5.8 mm Pin Height, Tin Finish	SMT 1x02	1x2 WAY	475 V AC/DC	3 A	Yes	-55°C to +105°C	Samtec	7001448
3	C536 C537 C554	Cap_std_0402_47n	Capacitor, Ceramic, Standard, 0402	0402 (1005 Metric)	47nF	16 V / X7R	10%	Yes	-55°C to +125°C		7001557
111	C2 C4 C5 C14 C16 C17 C26 C28 C29 C38 C40 C41 C50 C52 C53 C62 C64 C65 C74 C76 C77 C86 C88 C89 C98 C99 C100 C101 C102 C104 C106 C107 C115 C116 C117 C118 C119 C121 C123 C124 C132 C133 C134 C135 C136 C138 C140 C141 C149 C150 C151 C152 C153 C155 C157 C158 C166 C168 C169 C177 C179 C180 C188 C190 C191 C199 C201 C202 C210 C211 C214 C215 C216 C217 C221 C301 C304 C305 C351 C415 C445 C475 C500 C510 C511 C536 C541 C563 C565 C572 C583 C648 C649 C650 C771 C772 C773 C774 C775 C776 C778 C801 C850 C853 C854 C855 C856 C857 C858 C903 C904	Cap_std_0402_100n	Capacitor, Ceramic, Standard, 0402	0402 (1005 Metric)	100nF	16 V / X7R	10%	Yes	-55°C to +125°C		7001960
1	J390	M20-8760542	Header, 2.54 mm pitch, 5.8 mm pin height, Gold finish	SMT 2x5	2x5 WAY	750 V AC/DC	3 A	Yes	-40°C to +105°C	Harwin	7002173

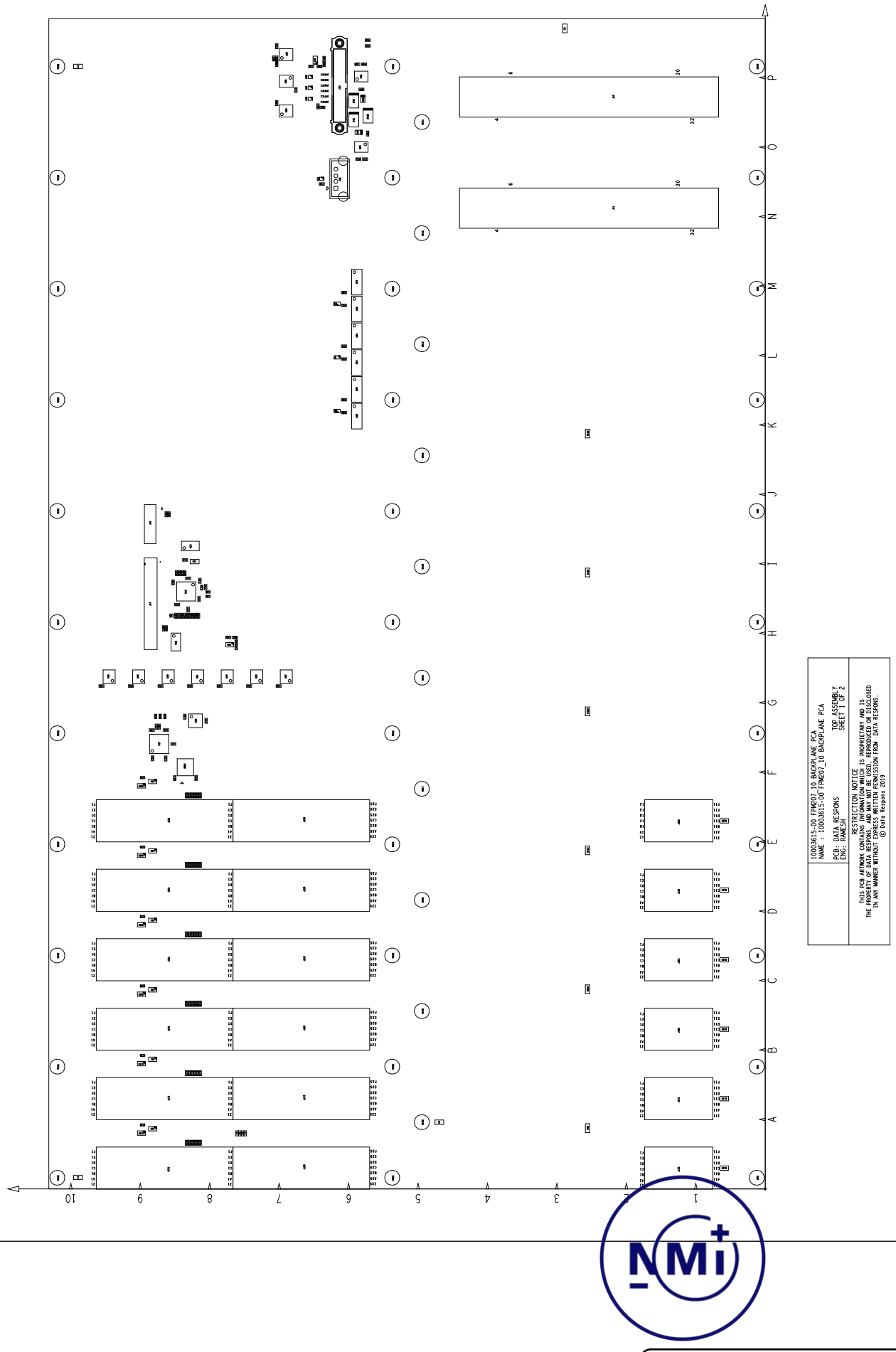
Qty	Part Reference	Part Number	Description	Pkg type	Value	Voltage	Tolerance	RoHS	Temperature Range	Manufacturer	DRP/N
19	R29 R36 R43 R50 R604 R607 R608 R610 R611 R616 R853 R854 R855 R857 R901 R905 R907 R909 R911	Res_std_0402_E24_0	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	0	50 V	1%	Yes	-55°C to +155°C		7003127
9	R321 R615 R859 R860 R861 R862 R863 R902 R903	Res_std_0402_E24_100	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	100	50 V	1%	Yes	-55°C to +155°C		7003349
3	R320 R538 R539	Res_std_0402_E24_240	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	240	50 V	1%	Yes	-55°C to +155°C		7003358
16	R1 R4 R7 R10 R13 R16 R19 R22 R31 R38 R45 R52 R53 R56 R59 R62	Res_std_0402_E24_470	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	470	50 V	1%	Yes	-55°C to +155°C		7003365
9	R69 R70 R71 R75 R76 R77 R81 R82 R772	Res_std_0402_E24_820	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	820	50 V	1%	Yes	-55°C to +155°C		7003371
30	R375 R376 R377 R392 R421 R422 R423 R425 R426 R427 R428 R429 R451 R452 R453 R455 R456 R457 R458 R460 R481 R482 R483 R485 R486 R487 R488 R623 R624 R627	Res_std_0402_E24_1k	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	1k	50 V	1%	Yes	-55°C to +155°C		7003373
1	R537	Res_std_0402_E24_1k	Resistor, 50 V, 63 mW, 0402	0402	1k	50 V	1%	Yes	-55°C to +155°C		7003373
7	R300 R363 R412 R442 R472 R600 R612	Res_std_0402_E24_1k3	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	1.3k	50 V	1%	Yes	-55°C to +155°C		7003376
3	R322 R632 R750	Res_std_0402_E24_2k0	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	2k	50 V	1%	Yes	-55°C to +155°C		7003380
2	R630 R631	Res_std_0402_E24_2k2	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	2k2	50 V	1%	Yes	-55°C to +155°C		
10	R364 R413 R443 R473 R534 R550 R560 R601 R613 R751	Res_std_0402_E24_3k	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	3k	50 V	1%	Yes	-55°C to +155°C		7003384
29	R323 R365 R366 R367 R368 R369 R370 R414 R415 R417 R420 R444 R445 R447 R449 R474 R475 R477 R479 R480 R525 R527 R545 R633 R634 R635 R636 R752 R753	Res_std_0402_E24_4k7	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	4.7k	50 V	1%	Yes	-55°C to +155°C		7003389
39	R72 R73 R74 R78 R79 R80 R83 R84 R390 R391 R400 R500 R501 R502 R503 R524 R526 R543 R544 R552 R553 R559 R561 R562 R564 R566 R567 R568 R569 R614 R619 R620 R621 R628 R629 R754 R755 R756 R913	Res_std_0402_E24_10k	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	10k	50 V	1%	Yes	-55°C to +155°C		7003397
5	R532 R533 R536 R549 R912	Res_std_0402_E24_10k	Resistor, 50 V, 63 mW, 0402	0402	10k	50 V	1%	Yes	-55°C to +155°C		7003397
1	R770	Res_std_0402_E24_12k	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	12k	50 V	1%	Yes	-55°C to +155°C		7003399
1	R523	Res_std_0402_E24_15k	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	15k	50 V	1%	Yes	-55°C to +155°C		7003401
4	R542 R555 R556 R570	Res_std_0402_E24_20k	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	20k	50 V	1%	Yes	-55°C to +155°C		7003404
2	R522 R535	Res_std_0402_E24_22k	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	22k	50 V	1%	Yes	-55°C to +155°C		7003405
4	R65 R66 R67 R68	Res_std_0402_E24_39k	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	39k	50 V	1%	Yes	-55°C to +155°C		7003411
2	R530	Res_std_0402_E24_43k	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	43k	50 V	1%	Yes	-55°C to +155°C		7003412
3	R540 R557 R800	Res_std_0402_E24_56k	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	56k	50 V	1%	Yes	-55°C to +155°C		7003415
1	R531	Res_std_0402_E24_62k	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	62k	50 V	1%	Yes	-55°C to +155°C		7003416
4	R360 R521 R551 R563	Res_std_0402_E24_100k	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	100k	50 V	1%	Yes	-55°C to +155°C		7003421
4	R541 R546 R554	Res_std_0402_E24_150k	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	150k	50 V	1%	Yes	-55°C to +155°C		7003425
1	R548	Res_std_0402_E24_360k	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	360k	50 V	1%	Yes	-55°C to +155°C		7003434
5	R26 R33 R40 R47 R773	Res_std_0402_E24_1M	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	1M	50 V	1%	Yes	-55°C to +155°C		7003445
10	R3 R6 R9 R12 R15 R18 R21 R24 R558 R565	Res_std_0402_E24_10M	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	10M	50 V	1%	Yes	-55°C to +155°C		7003469
4	R25 R32 R39 R46	Res_std_0402_E24_10M	Resistor, 50 V, 63 mW, 0402	0402	10M	50 V	1%	Yes	-55°C to +155°C		7003469
1	D520	SMAJ17A	Transient Voltage Suppressor, Unidirectional, SMAJ Series, 400 W, DO-214AC	DO-214AC (SMA)	400 W	17 V Stand Off	18.9 Vbr	Yes	-65°C to +150°C	Littelfuse	7006742
1	U602	SN74HC08PWR	Logic Gate, Quad 2 Input AND, TSSOP	14 Lead TSSOP	4 Gate 2 Input AND	2.0 V to 6.0 V		Yes	-40°C to +85°C	Texas Instruments	7011016

Qty	Part Reference	Part Number	Description	Pkg type	Value	Voltage	Tolerance	RoHS	Temperature Range	Manufacturer	DRP/N
3	U410 U440 U470	KSZ8081MNXIA	Ethernet Transceiver, 10/100 BASE-TX, PHY, MII, RMII, 3.3 V, LQFP	32 Lead QFN w/pad	10/100 Mbit	3.135 V to 3.465 V / 1.8 V, 2.5 V or 3.3 V IO		Yes	-40°C to +85°C	Microchip Technology	7011721
5	U19 U24 U29 U34 U47	ADuM1446ARQZ	Digital Isolator, 4 Channels, 3/1 Channel Directionality, Ultralow power, QSOP	16 Lead QSOP	2 Mbps	2.25 V to 3.6 V	2.5 kV rms Isolation	Yes	-40°C to +125°C	Analog Devices	7011793
1	U49	NC7SZ14M5X	Logic Gate, Single Inverter, TinyLogic UHS, Schmitt Trigger, SOT-23	5 Lead SOT-23	1 Gate Inverter	1.65 V to 5.5 V		Yes	-40°C to +85°C	Fairchild Semiconductor	7012188
1	U320	MT41K256M16TW-107IT:P	Memory, DDR3 SDRAM, 32 Meg x 16 x 8 banks, 933 MHz, FBGA	96 Ball FBGA	4 Gbit	1.283 V to 1.45 V	1.071 ns	Yes	-40°C to +95°C	Micron Technology	7012355
4	U21 U26 U31 U36	ADuM1447ARQZ	Digital Isolator, 4 Channels, 2/2 Channel Directionality, Ultralow power, QSOP	16 Lead QSOP	2 Mbps	2.25 V to 3.6 V	2.5 kV rms Isolation	Yes	-40°C to +125°C	Analog Devices	7012388
5	U854 U855 U856 U857 U858	SN74AHCT1G125DBVR	Logic Gate, Single Buffer, 3-State Output, SOT-23	5 Lead SOT-23	1 Gate Buffer	4.5 to 5.5 V		Yes	-40°C to +125°C	Texas Instruments	7012418
69	C3 C7 C9 C15 C19 C21 C27 C31 C33 C39 C43 C45 C51 C55 C57 C63 C67 C69 C75 C79 C81 C87 C91 C93 C105 C109 C111 C122 C126 C128 C139 C143 C145 C156 C160 C162 C167 C171 C173 C178 C182 C184 C189 C193 C195 C200 C204 C206 C213 C218 C219 C222 C306 C307 C308 C528 C529 C530 C531 C548 C549 C561 C562 C564 C566 C568 C569 C570 C571	Cap_std_0402_1u	Capacitor, Ceramic, Standard, 0402	0402 (1005 Metric)	1uF	6.3 V / X5R	10%	Yes	-55°C to +85°C		7012625
1	C567	Cap_std_0402_1u	Capacitor, Ceramic, Standard, 0402	0402	1uF	6.3 V / X5R	10%	Yes	-55°C to +85°C		7012625
20	C6 C12 C18 C24 C30 C36 C42 C48 C54 C60 C66 C72 C78 C84 C90 C96 C170 C181 C192 C203	Cap_std_0805_2.2u_50V	Capacitor, Ceramic, Standard, 0805	0805 (2012 Metric)	2.2uF	50 V / X7R	10%	Yes	-55°C to +125°C		7012626
4	U18 U23 U28 U33	AD5421BCPZ	4-20 mA DAC, Single-Channel, 16-Bit, Serial Input, HART Connectivity, LFCSP	32 Lead LFCSP_WQ w/pad	16 Bit	5.5 V to 52 V		Yes	-40°C to +105°C	Analog Devices	7012640
21	C97 C114 C131 C148 C300 C350 C600 C601 C602 C603 C616 C617 C618 C619 C632 C643 C770 C777 C779 C852 C902	Cap_std_0402_4u7	Capacitor, Ceramic, Standard, 0402	0402 (1005 Metric)	4.7uF	6.3 V / X5R	10%	Yes	-55°C to +85°C		7012645
1	L520	LQH44PN4R7MP0	Inductor, LQH44P Series, Shielded, SMD	SMD (4.0 mm x 4.0 mm x 1.65 mm)	4.7uH	±20%	1.7 A	Yes	-40°C to +85°C	Murata Manufacturing	7012671
1	C361 C370 C410 C440 C470 C540 C851	Cap_std_1206_22u	Capacitor, Ceramic, Standard, 1206	1206 (3216 Metric)	22uF	10 V / X7R	10%	Yes	-55°C to +125°C		7012678
5	C110 C127 C144 C161 C551	Cap_std_0603_220n	Capacitor, Ceramic, Standard, 0603	0603 (1608 Metric)	220nF	50 V / X7R	10%	Yes	-55°C to +125°C		7012832
1	SW520	1571300-2	Switch, Tactile, Off-Mom, Right Angle, IP67, SMD /w Guide Pin	SMD	SPST-NO	24 V	0.05 A @ 24 VDC	Yes	-35°C to +85°C	TE Connectivity	7012836
2	MH1 MH2	MTGP680H270V6P	Mounting Hole, M2.5, Tight Fit, Flat Washer, Support VIA, Plated, 2.70 mm Hole, 6.80 mm Pad	Mounting Hole	M2.5	6.80 mm	2.70 mm	Yes			7012998
11	C103 C120 C137 C154 C360 C538 C556 C573 C574 C575 C576	Cap_std_0603_10u	Capacitor, Ceramic, Standard, 0603	0603 (1608 Metric)	10uF	10 V / X5R	10%	Yes	-55°C to +125°C		7013147
25	C320 C321 C322 C323 C324 C325 C326 C327 C328 C377 C378 C379 C532 C533 C550 C604 C605 C606 C607 C620 C621 C622 C623 C651 C652	Cap_std_0402_220n	Capacitor, Ceramic, Standard, 0402	0402 (1005 Metric)	220nF	16 V / X7R	10%	Yes	-55°C to +125°C		7013212
3	C414 C444 C474	Cap_std_0402_2u2	Capacitor, Ceramic, Standard, 0402	0402 (1005 Metric)	2.2uF	6.3 V / X5R	10%	Yes	-55°C to +85°C		7013213

Qty	Part Reference	Part Number	Description	Pkg type	Value	Voltage	Tolerance	RoHS	Temperature Range	Manufacturer	DRP/N
7	Q1 Q2 Q3 Q4 Q750 Q751 Q752	EM6K34	MOSFET Dual N-Channel, Rds 3 Ohm, 50 V, 200 mA, 0.9V drive, SOT-563	6 Lead SOT-563	0.2 A	50 V	150 mW	Yes	-55°C to +150°C	ROHM	7013254
1	U852	MT25QL128ABA8ESF-0SIT	Memory, Flash, QSPI, 128 Mbit, 133 MHz, SO16W	16 Lead SO W	128 Mbit	2.7 V to 3.6 V	133 MHz	Yes	-40°C to +85°C	Micron Technology	7013288
2	U526 U527	ADP150AUJZ-3.3-R7	Power Regulator, LDO, 150 mA, Fixed output, TSOT-23	5 Lead TSOT-23	2.3 V to 5.5 Vin	3.3 Vout, 150 mA	±1%	Yes	-40°C to +125°C	Analog Devices	7013322
1	U524	TPS561208DDC	Power Regulator, Switch, Synchronous Step Down, Continuous, 1 A, SOT-23	6 Lead SOT-23	4.5 V to 17 Vin	0.76 V to 7 V	1 A	Yes	-40°C to +85°C	Texas Instruments	7013360
1	U530	LM3880MF-1AE/NOPB	Power Supply Sequencer, 3 Channel, 2 ms Timer, SOT-23	6 Lead SOT-23	2.7 V to 5.5 Vin			Yes	-40°C to +125°C	Texas Instruments	7016211
1	D300	BAT54CLT1G	Diode, Schottky, Dual, common cathode, 30 V, 200 mA, SOT-23	3 Lead SOT-23	200 mA	30 V	600 mA	Yes	-55°C to +125°C	ON Semiconductor	7013725
16	U1 U3 U5 U7 U9 U11 U13 U15 U20 U25 U30 U35 U37 U39 U41 U43	AD5700-1ACPZ	HART modem, Single channel, Serial input, LFCSP, Int osc	24 Lead LFCSP_WQ w/pad	-	1.71 V to 5.5 V	-	Yes	-40°C to +125°C	Analog Devices	7013871
16	C10 C22 C34 C46 C58 C70 C82 C94 C112 C129 C146 C163 C174 C185 C196 C207	Cap_std_0402_680p_NP0	Capacitor, Ceramic, Standard, 0402	0402 (1005 Metric)	680pF	50 V / NP0	5%	Yes	-55°C to +125°C		7013872
8	R2 R5 R8 R11 R14 R17 R20 R23	Res_std_1210_E24_390	Resistor, 200 V, 500 mW, 1210	1210 (3225 Metric)	390	200 V	1%	Yes	-55°C to +155°C		7013873
1	U46	AD7124-4BCPZ	AD Converter, 4 Channel, 19.2 ksps, 24-bit, SPI	32 Lead LFCSP	19.2 kSPS	2.7 V to 3.6 V and ±1.8 V	24.bit	Yes	-40°C to +125°C	Analog Devices	7013878
12	U2 U4 U6 U8 U10 U12 U14 U16 U38 U40 U42 U44	SI8642AB-B-IS1	Digital Isolator, 2/2 Channels, 2.5 kVrms, 1 Mbps, SOIC	16 Lead SOIC_N	1 Mbps	2.5 V to 5.5 V	2.5 kV rms isolation	Yes	-40°C to +125°C	Silicon Labs	7013879
4	R55 R58 R61 R64	RNCF1206T_Y100R	Resistor, Thin Film, Precision, 250 mW, 1206	1206 (3216 Metric)	100	150 V / 125 mW	0.01% / 5 ppm/°C	Yes	-55°C to +155°C	Stackpole Electronics	7013880
5	R54 R57 R60 R63 R548	Res_std_1210_E24_270	Resistor, 200 V, 500 mW, 1210	1210 (3225 Metric)	270	200 V	1%	Yes	-55°C to +155°C		7013899
2	U510 U511	MR20H40CDF	Memory, MRAM, 4 Mbit, 512 k x 8, 50 MHz, SPI, 8-DFN	8-DFN Small Flag	4 MBit	3.0 V to 3.6 V	50 MHz	Yes	-40°C to +85°C	Everspin Technologies	7013902
1	U301	DS1339C-33#	RTC Module with I2C Interface, SMD, Integrated Crystal	16-SOIC	32.768kHz	2.97 V to 5.5 V	180 ppm	Yes	-40°C to +85°C	Maxim Integrated	7013904
1	U302	3000	Battery Holder, CR1216, CR1220, CR1225, Nickel Plated Phosphor Bronze, SMD	SMD	1216/1220/1225 coin cell	h=3.18 mm		Yes	NA	Keystone Electronics	7013905
1	X770	ECS-240-20-30B-AEN	Crystal, 24.000 MHz, 20.0 pF, ESR 30 ohm, SMD	SMD (5.0 mm x 3.2 mm x 0.9 mm)	24.000 MHz	20 pF	±25 ppm	Yes	-40°C to +85°C	ECS	7013906
1	U360	KSZ9031RNXIC	Ethernet Transceiver, 10 BASE-T/100BASE-TX/1000BASE-T, PHY, RGMII, 3.3 V, QFN	48 Lead QFN	10/100/1000 Mbit	3.135 V to 3.465 V		Yes	-40°C to +85°C	Microchip Technology	7013908
1	Q360	NTF6P02T3G	MOSFET P-Channel, Rds 0.050 Ohm, -20 V, -10 A, Enhancement Mode, SOT223	4 Lead SOT-223	-10 A	-20 V	8.3 W	Yes	-55°C to +150°C	ON Semiconductor	7013909
1	SW400	SK12AG30	Keylock Switch 2 Position SPDT 0.4VA (AC/DC) 28VAC 28VDC Through Hole, Right Angle	Through hole	SPDT	28 V	100 mA	Yes	-25°C ~ 70°C	NKK Switches	TBD
1	J312	5352115-1	Connector, Compact PCI, Female, Right Angle, 2.0 mm Pitch, Type C, Pressfit, Through hole	55 Lead Pressfit, Through hole	5x11 Way	500 VAC	1.5 A	Yes	-55°C to +125°C	TE Connectivity	7013911
1	J311	5352069-9	Connector, Compact PCI, Female, Right Angle, 2.0 mm Pitch, Type B, Pressfit, Through hole	125 Lead Pressfit, Through hole	5x25 Way	500 VAC	1.5 A	Yes	-55°C to +125°C	TE Connectivity	7013912
1	J310	5352068-1	Connector, Compact PCI, Female, Right Angle, 2.0 mm Pitch, Type A, Pressfit, Through hole	110 Lead Pressfit, Through hole	5x22 Way	500 VAC	1.5 A	Yes	-55°C to +125°C	TE Connectivity	7013913

Qty	Part Reference	Part Number	Description	Pkg type	Value	Voltage	Tolerance	RoHS	Temperature Range	Manufacturer	DRP/N
7	D301 D360 D410 D440 D470 D600 D602	APHHS1005LZGCK-V	LED, Green, 40 mcd, 2 mA, 2.65 V, 140° Angle, 0402	0402 (1005 Metric)	Green 40 mcd	2.65 V	2 mA	Yes	-40°C to +85°C	Kingbright	7013914
2	D601 D603	APHHS1005LSECK/J3-PF	LED, Red, 80 mcd, 2 mA, 1.8 V, 120° Angle, 0402	0402 (1005 Metric)	Red 80 mcd	1.8 V	2 mA	Yes	-40°C to +85°C	Kingbright	7013915
1	U300	SI52112-A1-GM2R	PCIe Clock Generator, Crystal, 2 Clock Output, Low-Jitter, HCSL, TFDN	10 Lead TDFN w/pad	100 MHz	3.13 V to 3.46 V		Yes	-40°C to +85°C	Silicon Labs	7013917
1	U303	AST3TQ-T-25.000MHZ-28	Oscillator, LVCMOS Output, 25 MHz, 15 pF, SMD	SMD (7.0 mm x 5.0 mm x 2.0 mm)	25 MHz	3.14 V to 3.46 V	±0.28 ppm	Yes	-40°C to +85°C	ABRACON	7013918
1	J500	5009010801	MicroSD Socket, Hinge, Top, SMD	SMD	5009010801	10V VAC (RMS) / VDC	0.5 A	Yes	-25°C to +85°C	Molex	7013919
3	D500 D501 D502	ESD5V3U2U03FH6327XTSA1	Transient Voltage Suppressor, ESD Protection Diodes, Unidirectional, High-speed, SMD	PG-TSFP-3-1	45 W	5.3 V Stand-off	6.0 Vbr	Yes	-40°C to +125°C	Infineon Technologies	7013920
1	D750	APDA1806SYCK/J3-PRV	LED, Yellow, Right Angle, 1800 mcd	SMD	Yellow, 1800	2 V	20 mA	Yes	-40°C to +85°C	Kingbright	7013921
2	D752 D753	APDA1806ZGCK	LED, Green, Right Angle, 3200 mcd	SMD	Green, 3200	3.3 V	20 mA	Yes	-40°C to +85°C	Kingbright	7013922
1	D751	APDA1806SECK/J3-PRV	LED, Red, Right Angle, 2600 mcd	SMD	Red, 2600	2.2 V	20 mA	Yes	-40°C to +85°C	Kingbright	7013923
1	U600	5CSXFC6D6F31I7N	FPGA, Cyclon V SX Series, 110 k Logic Elements, 9 x 3.125 Gbps Tranceivers, Speed Grade 7, FBGA, ARM A9	896 Ball FBGA	5CSXFC6D6F31I7N	1.1 V, 2.5 V		Yes	-40°C to +100°C	Intel	7013926
4	D361 D411 D441 D471	APHHS1005LSYCK/J3-PF	LED, Yellow, 20 mcd, 2 mA, 1.85 V, 120° Angle, 0402	0402 (1005 Metric)	Yellow 20 mcd	1.85 V	2 mA	Yes	-40°C to +85°C	Kingbright	7013927
3	U520 U521 U523	EN2342QI	Power Regulator, Switch, Synchronous Step Down, 4 A, Integrated inductor	68 Lead QFN w/pad	4.5 V to 14 Vin	0.75 V to 5 V	4 A	Yes	-40°C to +85°C	Intel	7013929
7	C521 C522 C525 C526 C545 C546 C800	Cap_std_1206_47u_10V	Capacitor, Ceramic, Standard, 1206	1206 (3216 Metric)	47uF	10 V / X5R	20%	Yes	-55°C to +85°C		7013931
1	U529	ADC128D818CIMTX/NOPB	AD Converter, 8 Channel, 82 sps, 12-bit, I2C, TSSOP, Temp sensor	16 Lead TSSOP	82 SPS	3 V to 5.5 V	12-bit	Yes	-40°C to +125°C	Texas Instruments	7013932
1	U528	LTC4233IWHH#PBF	Hot Swap Controller, Programmable Current Limit, Automatic Retry, Internal NFET,IMON, QFN	38 Lead QFN w/pad	1 Channel	2.9 V to 15 V	10 A	Yes	-40°C to +85°C	Linear Technology	7013933
2	C559 C560	EMVH350GDA471MLH0S EMVH350GRA471MLH0S	Capacitor, Aluminium Electrolytic, MVH Series, SMD	Radial SMD	470uF	35 V	20%	Yes	-40°C to +125°C	United Chemi-Con	7013934
1	U522	TLV117125DCY	Power Regulator, LDO, 1 A, Fixed 2.5 V, SOT-223-4	4 Lead SOT-223	2.0 V to 5.5 V	2.5 V, 1 A	±1.5%	Yes	-40°C to +125°C	Texas Instruments	7013936
1	U525	MTU1S1205MC	Power Module, DC/DC Converter, 1 kV Isolation, 1 W Single Output, SMD	5 Lead SMD	10.8 V to 13.2 Vin	+5.0 Vout, 200 mA	1 kVDC Isolation	Yes	-40°C to +85°C	Murata Power Solutions	7013937
1	L521	82103C	Inductor, 8200 Series, SMD	1210	10 uH	±10%	500 mA	Yes	-40°C to +85°C	Murata Power Solutions	7013938
5	C510 C524 C542 C543 C544	Cap_std_1210_22u_25V	Capacitor, Ceramic, Multilayer, X7R, 1210	1210 (3225 Metric)	22uF	25 V / X5R	10%	Yes	-55°C to +125°C		7013940
1	U851	DS90UR907QSQ/NOPB	FPD-Link to FPD-Link II Converter	36 Lead WQFN w/pad	DS90UR907Q-Q1	1.71 V to 1.89 V, 3.0 V to 3.6 V	1.82 Gbps	Yes	-40°C to +105°C	Texas Instruments	7013941
1	U850	TLV117118DCY	Power Regulator, LDO, 1 A, Fixed 1.8 V, SOT-223-4	4 Lead SOT-223	2.0 V to 5.5 V	1.8 V, 1 A	±1.5%	Yes	-40°C to +125°C	Texas Instruments	7013942
1	U800	MAX6955ATL+	LED Driver, I2C, QFN	40 Lead TQFN w/pad	7, 14, 16 Segment	2.7 V to 5.5 V		Yes	-40°C to +125°C	Maxim Integrated	7013947
1	J800	TFM-110-02-L-DH	Header, DIL, Right Angle, 1.27 mm pitch, Keying shroud, SMT	SMT 2x10	2x10 WAY	275 VAC	1 A	Yes	-55°C to +125°C	Samtec	7013948
2	U601 U603	TS3A44159RGTR	Analog Switch, Quad, SPDT, 0.45 Ohm, QFN	16 Lead QFN w/pad	2 x DPDT	1.65 V to 4.3 V		Yes	-40°C to +85°C	Texas Instruments	7013949

Qty	Part Reference	Part Number	Description	Pkg type	Value	Voltage	Tolerance	RoHS	Temperature Range	Manufacturer	DRP/N
8	U50 U51 U52 U53 U54 U55 U56 U57	CPC2017N	PhotoMOS Solid State Relay, Normally Open, 16 ohm, SOIC	8 Lead SOP	120 mA	60 V	1.5 kV	Yes	-40°C to +85°C	IXYS	7013961
1	U304	SI53365-B-GT	Clock Buffer, 8-Output, LVCMOS I/O, TSSOP	16 Lead TSSOP	200 MHz	1.71 V to 3.63 V		Yes	-40°C to +85°C	Silicon Labs	7013966
1	J315	614105150721	Connector, USB, Single, Type Micro-B, Vertical, Through Hole	USB Type Micro-B	USB Micro-B	30 VAC	1.8 A	Yes	-40°C to +85°C	Würth Elektronik	7014146
1	U853	FT231XQ	USB Interface IC USB to Full Serial UART IC	20 Lead QFN w/pad	480 Mbps	3.0 to 5.5V		Unknown	-40°C to +85°C	Future Technology	7015912
1	U859	74HC2G14GV	Logic Gate, Hex Inverter, Schmitt Trigger, Clamping Diodes, CMOS Level, TSOP	6 Lead TSOP	2 Gate Inverter	2.0 V to 6.0 V		Yes	-40°C to +85°C	NXP Semiconductors	7011701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TOP ASSEMBLY
PCB: DATA RESPONS
ENG: RAMESH
SHEET 1 OF 2
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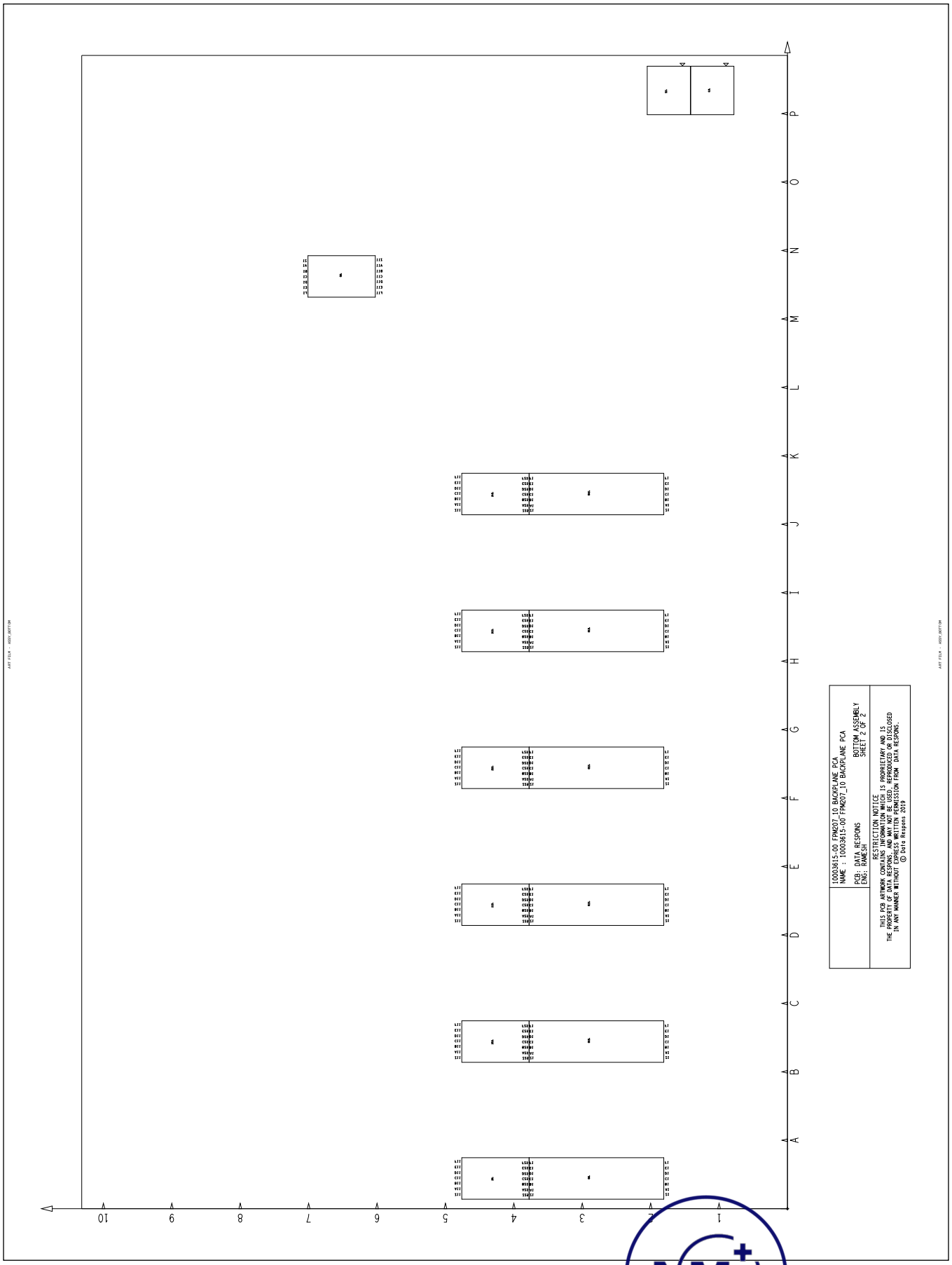
10003615-00 FPM207_10 BACKPLANE PCA
NAME : 10003615-00 FPM207_10 BACKPLANE PCA
BOTTOM ASSEMBLY
SHEET 2 OF 2
PCB: DATA RESPONS
ENG: RAMESH
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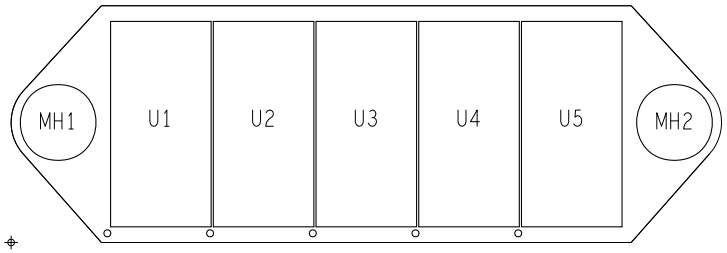
Qty	Part Reference	Part Number	Description	Pkg type	Value	Voltage	Tolerance	RoHS	Temperature Rang	Manufacturer	DR P/N
2	C28 C29	Cap_std_0603_100n	Capacitor, Ceramic, Standard, 0603	0603 (1608 Metric)	100nF	50 V / X7R	10%	Yes	-55°C to +125°C		7000117
3	C31 C32 C33	Cap_std_0402_10n	Capacitor, Ceramic, Standard, 0402	0402 (1005 Metric)	10nF	16 V / X7R	10%	Yes	-55°C to +125°C		7000167
1	SW10	A6S-2104-H	DIP Switch, A6S-H Series, SPST, SMD	4 lead SMD	2 pole, Raised	24 VDC	25 mA	Yes	-20°C to +70°C	Omron	7001301
3	D41 D43 D183	SM6T36CA	Transient Voltage Suppressor, Bidirectional, SM6T Series, 600 W, DO-214AA	DO-214AA (SMB J Bend)	600 W	30.8 V Stand Off	34.2 Vbr	Yes	-55°C to +150°C	ST Microelectronics	7001360
32	C5 C6 C7 C8 C15 C17 C18 C19 C20 C21 C22 C24 C25 C26 C27 C34 C35 C36 C42 C43 C45 C46 C47 C48 C49 C50 C51 C52 C53 C54 C56 C57	Cap_std_0402_100n	Capacitor, Ceramic, Standard, 0402	0402 (1005 Metric)	100nF	16 V / X7R	10%	Yes	-55°C to +125°C		7001960
3	R29 R30 R31	Res_std_0603_E24_51	Resistor, 50 V, 100 mW, 0603	0603 (1608 Metric)	51	50 V	1%	Yes	-55°C to +155°C		7002974
24	R19 R21 R22 R23 R25 R27 R154 R155 R156 R171 R175 R176 R192 R194 R196 R211 R212 R216 R233 R234 R235 R251 R253 R255	Res_std_0402_E24_0	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	0	50 V	1%	Yes	-55°C to +155°C		7003127
1	R46	Res_std_0402_E24_100	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	100	50 V	1%	Yes	-55°C to +155°C		7003349
6	R50 R51 R52 R53 R54 R55	Res_std_0402_E24_820	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	820	50 V	1%	Yes	-55°C to +155°C		7003371
6	R32 R40 R41 R47 R48 R49	Res_std_0402_E24_1k3	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	1.3k	50 V	1%	Yes	-55°C to +155°C		7003376
11	R10 R11 R12 R13 R42 R43 R44 R45 R56 R57 R58	Res_std_0402_E24_3k6	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	3.6k	50 V	1%	Yes	-55°C to +155°C		7003386
1	U54	TPD3E001DRL	ESD Protection, Array, 3 Channels, 15 kV ESD, High Speed Data, SOT-663	5 Lead SOT-663	3 Channels	0.9 V to 5.5 V	±8 KV Contact	Yes	-40°C to +85°C	Texas Instruments	7010931
6	C23 C30 C44 C55 C58 C580	Cap_std_0402_4u7	Capacitor, Ceramic, Standard, 0402	0402 (1005 Metric)	4.7uF	6.3 V / X5R	10%	Yes	-55°C to +85°C		7012645
1	C16	Cap_std_1206_22u	Capacitor, Ceramic, Standard, 1206	1206 (3216 Metric)	22uF	10 V / X7R	10%	Yes	-55°C to +125°C		7012678
1	U18	BSP452	High-Side Power Switch, Industrial Applications, 700mA, Single Channel	4 Lead PG-SOT223	Single	5 V to 34 V	2 A	Yes	-40°C to +150°C	Infineon Technologies	7013001
6	R90 R100 R110 R120 R130 R140	Res_std_1206_E24_0	Resistor, Thick Film, 200 V, 250 mW, 1206	1206 (3216 Metric)	0	200 V / 250 mW	1%	Unknown	-55°C to +155°C		7013121
6	C150 C170 C190 C210 C230 C250	Cap_std_0603_10u	Capacitor, Ceramic, Standard, 0603	0603 (1608 Metric)	10uF	10 V / X5R	10%	Yes	-55°C to +125°C		7013147
6	Q40 Q41 Q42 Q43 Q44 Q45	EM6K34	MOSFET Dual N-Channel, Rds 3 Ohm, 50 V, 200 mA, 0.9V drive, SOT-563	6 Lead SOT-563	0.2 A	50 V	150 mW	Yes	-55°C to +150°C	ROHM	7013254
2	D40 D42	MBR0580S1	Diode, Schottky, 80 V, 500 mA, SOD-123	SOD-123	500 mA	80 V	14 A	Yes	-55°C to +175°C	Diodes	7013746
7	D15 D44 D45 D46 D47 D48 D49	APHHS1005LZGCK-V	LED, Green, 40 mcd, 2 mA, 2.65 V, 140° Angle, 0402	0402 (1005 Metric)	Green 40 mcd	2.65 V	2 mA	Yes	-40°C to +85°C	Kingbright	7013914
1	U15	TLV117118DCY	Power Regulator, LDO, 1 A, Fixed 1.8 V, SOT-223-4	4 Lead SOT-223	2.0 V to 5.5 V	1.8 V, 1 A	±1.5%	Yes	-40°C to +125°C	Texas Instruments	7013942
6	U61 U62 U63 U64 U65 U66	CPC2017N	PhotoMOS Solid State Relay, Normally Open, 16 ohm, SOIC	8 Lead SOP	120 mA	60 V	1.5 kV	Yes	-40°C to +85°C	IXYS	7013961
1	U16	DS90UR908QSQE/NOPB	FPD-Link II to FPD-Link I Converter	48 Lead WQFN w/pad	DS90UR908Q	1.71 V to 1.89 V, 3.(	1.82 Gbps	Yes	-40°C to +105°C	Texas Instruments	7014003
1	U1	SY58038U	Multiplexer, 8:2, LVPECL, QFN	44 Lead QFN w/pad	8:2	2.375 V to 2.625 V c	3.5 GHz	Yes	-40°C to +85°C	Microchip Technology	7014005
1	U49	MAX4999ETJ+	Multiplexer, Differential 8:1, Analog, USB 2.0, TQFN	32 Lead TQFN w/pad	Differential 8:1	3.0 V to 3.6 V	480 Mbps	Yes	-40°C to +85°C	Maxim Integrated	7014006
1	U58	SN74HC32PW	Logic Gate, Quad 2 Input OR, TSSOP	14 Lead TSSOP	4 Gate 2 Input OR	2.0 V to 6.0 V		Yes	-40°C to +85°C	Texas Instruments	7014008
1	U57	SN74HC175PW	Flip flop, Quad, Positive edge trigger, TSSOP	16 Lead TSSOP	D-Type Flip-Flop	2.0 V to 6.0 V		Yes	-40°C to +85°C	Texas Instruments	7014009
2	U60 U44	SN74LVC1G14DBV	Logic Gate, Single Inverter, Schmitt Trigger, SOT23	5 Lead SOT-23	1 Gate Inverter	1.65 V to 5.5 V		Yes	-40°C to +125°C	Texas Instruments	7014022
1	U59	CD74HC238PW	Decoder, 3-8 line, Active high, TSSOP	16 Lead TSSOP	3-to-8 line Decoder	2 V to 6 V		Yes	-55°C to +125°C	Texas Instruments	7014027
2	U46 U48	SI8711CC-B-IS	Digital Isolator, 1/0 Channels, 3.75 kVrms, 1 Mbps, LED emulator, SOIC	8 Lead SOIC_N	1 Mbps	3 V to 30 V	3.75 kV rms isc	Yes	-40°C to +125°C	Silicon Labs	7014035

Qty	Part Reference	Part Number	Description	Pkg type	Value	Voltage	Tolerance	RoHS	Temperature Range	Manufacturer	DR P/N
7	U19 U20 U21 U42 U43 U45 U47	NX3L4051PW	Multiplexer, 8 Channel, Analog, Single Supply, 0.75 ohm, TSSOP	16 Lead TSSOP	8 Channel MUX	1.4 V to 4.3 V		Yes	-40°C to +125°C	Nexperia	7014037
13	J80 J91 J101 J111 J121 J131 J141 J152 J172 J192 J212 J232 J252	5106081-1	Connector, Compact PCI, Male, 2.0 mm Pitch, Type C, Pressfit, Through hole	77 Lead Pressfit, Through hole	5+2x11 Way	500 VAC	1.5 A	Yes	-55°C to +125°C	TE Connectivity	7014038
12	J90 J100 J110 J120 J130 J140 J150 J170 J190 J210 J230 J250	5100669-1	Connector, Compact PCI, Male, 2.0 mm Pitch, Type B, Pressfit, Through hole	175 Lead Pressfit, Through hole	5+2x25 Way	500 VAC	1.5 A	Yes	-55°C to +125°C	TE Connectivity	7014039
6	J151 J171 J191 J211 J231 J251	5352332-1	Connector, Compact PCI, Male, 2.0 mm Pitch, Type A, Pressfit, Through hole	154 Lead Pressfit, Through hole	5+2x22 Way	500 VAC	1.5 A	Yes	-55°C to +125°C	TE Connectivity	7014040
12	U50 U51 U52 U53 U55 U56 U150 U170 U190 U210 U230 U250	STMPS2171STR	High-Side Power Switch,1 A, Single Channel, SOT-23	5 Lead SOT-23	90 mOhm Ron	2.7 V to 5.5 V	1 A	Yes	-40°C to +85°C	ST Microelectronics	7014041
1	J15	DF19G-30P-1H	Connector, FPC, DF19 Series, Horizontal, 30 Pins,1 mm pitch, SMD	SMD	30 Way	100 V	500 mA	Yes	-35°C to +85°C	Hirose Electric	7014042
2	J10 J11	09 06 215 2821	Connector, Female, DIN 41612, H15, 15 Way, Through Hole	15 Lead Through hole	15 Way	3100 VAC	15 A	Yes	-55°C to +125°C	Harting	7014043
2	J12 J13	1017504	Terminal Block, TDPT Series, 5,08 mm Pitch, Push-in spring connection, Through Hole	Through Hole 1x3	3 Way	400 V Nominal	32 A Nominal	Yes	-40°C to +85°C	Phoenix Contact	7014044
1	J40	UE27AE54100	Connector, USB, Single, Type A, Vertical, Through hole	USB TYPE A	USB A	250 VAC	1.5 A	Yes	-40°C to +85°C	Amphenol	7014045
1	J41	M80-5112642	Datamate, Male Vertical Through Hole Connector with jackscreew and board mount	Through Hole 2x12	26 Contacts	120 VAC/DC	2.2 A	Unknown	-55°C to +125°C	Harwin	7015917
1	J16	53261-1071	1.25mm Pitch PicoBlade Header, Surface Mount, Right Angle, SMD	Surface Mount, Right Angle	1x10 Way	125 V	1 A	Unknown	-40°C to +85°C	Molex	7015918



10003647-00 FPM207_10 Front Board PCA			REVIEW REFERENCE: 10003647-00
PART NO.: 10003647-00	REV: A1	DATE: 2020-16-01	APPROVED: OLL 2020-16-01
ASSEMBLY (PRIMARY)		GERBER: 10003647-00_AT.art	

data respons

ART FILM - 10003647-00_AT

ART FILM - 100036647-00_AB

100036647-00 FPM207_IO Front Board PCA			
ASSEMBLY (SECONDARY)	GERBER: 100036647-00_AB.art	DATE: 2020-10-01	REV: A1
REVIEW REFERENCE: 100036647-00	APPROVED: OLL 2020-10-01		PART NO.: 100036647-00

ART FILM - 100036647-00_AB

data respons
EMBEDDED SOLUTIONS

TechnipFMC
FPM207_10 FRONT BOARD PCA
Bill of Materials

Date of Issue	20.02.2020
Doc. No	10003647-00
Revision	A0 Released

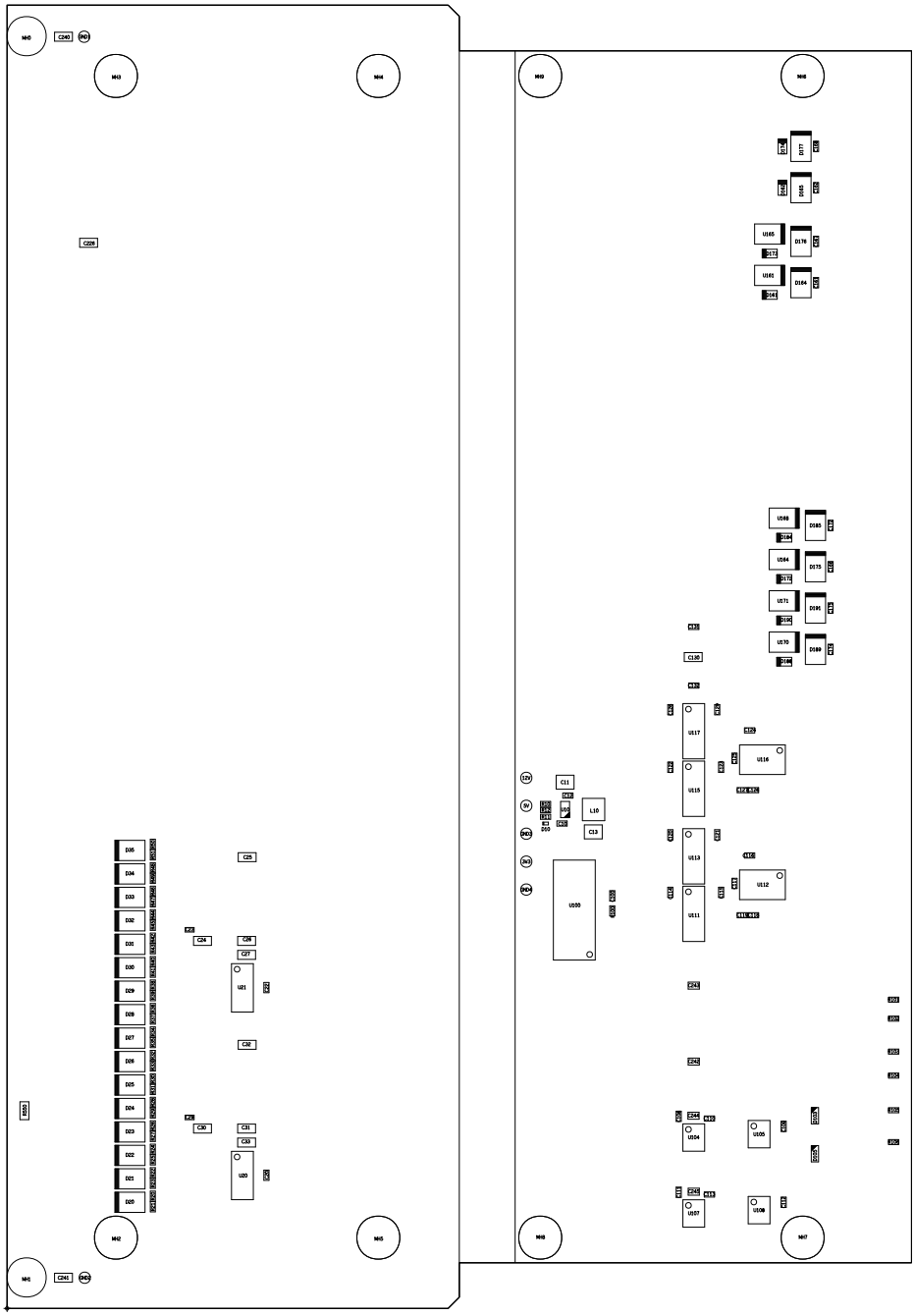
Item	Qty.	Ref. Designator	Complete Part No. or Doc. No	Description	Pakage type or Doc Type	Value or Rev.
1	1	J1	SFM-110-02-L-D	Header, DIL, 1.27 mm pitch, Keying shroud, SMT	SMT 2x10	2x10 WAY
2	5	U1 U2 U3 U4 U5	ACPSC04-41CGKWA	14-Segment Display, Common Cathode, SMD	16 Lead SMD	Green

Item	Voltage	Tolerances	Special Comments	RoHS	Temperature Range	Manufacturer
1	250 VAC	3.2 A		Yes	-55°C to +125°C	Samtec
2	2.0 V	10 mA		Yes	-40°C to +85°C	Kingbright

Item	Supplier	Supplier Part No.	Second source Manufacturer	Second source Part no.	DR Part Number
1	www.digikey.com	SAM9881-ND			7 014 099
2	www.digikey.com	754-2192-1-ND			7 014 100

NMi

Doc no	**12660/0-07**
Page	1 of 1



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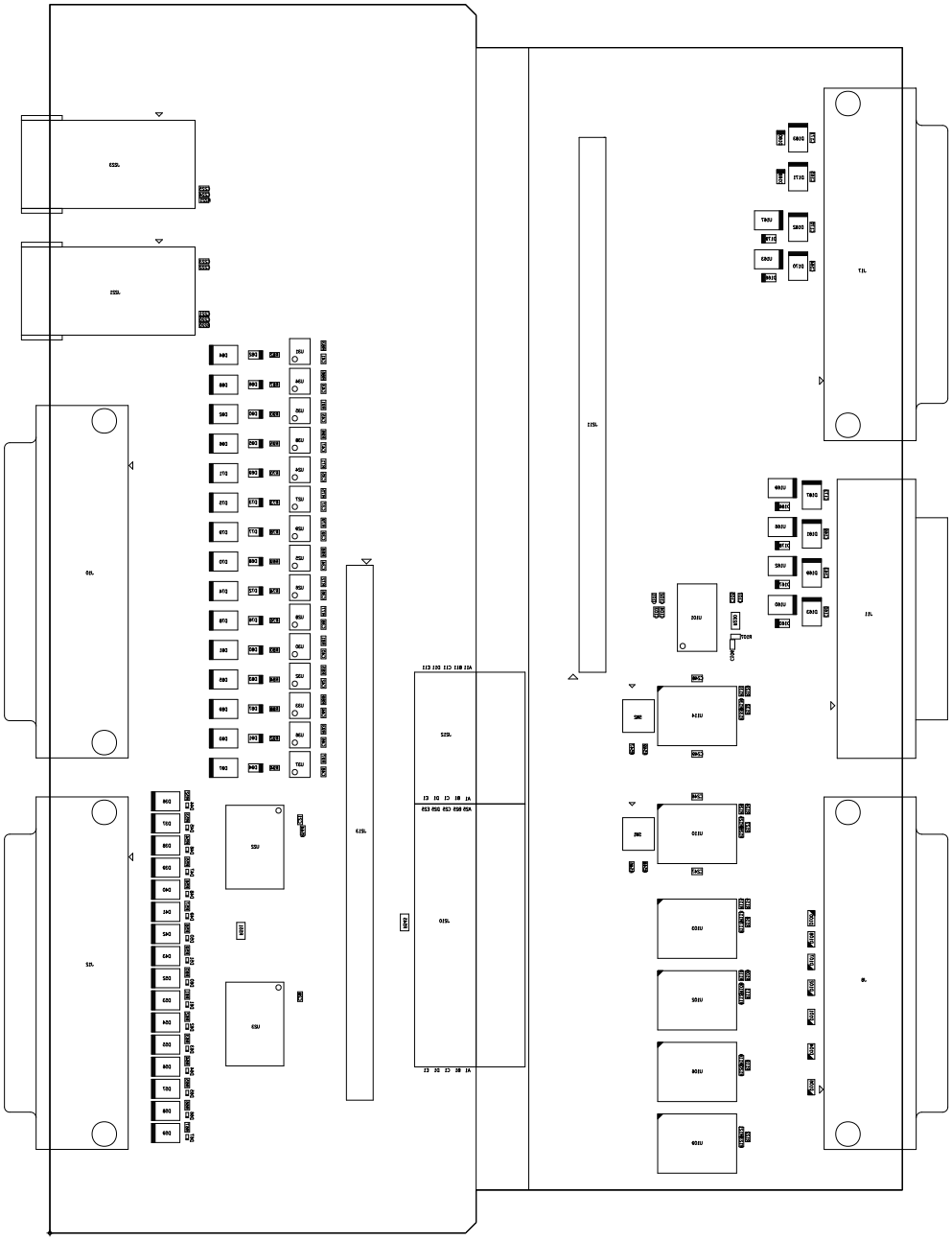
PART NO.: 10003613-00	REV: A	DATE: 2021-03-15	APPROVED: OLL 2021-03-10
ASSEMBLY (PRIMARY)		GERBER: 10003613-00_AT.art	

Doc no	**12660/0-08**
Page	1 of 2



datasheets			REVIEW REFERENCE: 10003613-00
PART NO.: 10003613-00	REV: A	DATE: 2021-03-10	APPROVED: OLL 2021-03-10
ASSEMBLY (SECONDARY)		ORDER: 10003613-00_AB.ort	

Doc no	12660/0-08
Page	2 of 2

Qty	Part Reference	Part Number	Description	Pkg type	Value	Voltage	Tolerance	RoHS	Temperature Range	Manufacturer	DRP/N
	C10 C12 C20 C21 C22 C28 C34 C35 C36 C37 C38 C39 C40 C41 C42 C43 C44 C45 C46 C47 C48 C100 C102 C103 C106 C108 C109 C110 C111 C112 C113 C114 C115 C116 C117 C118 C119 C120 C121 C122 C123 C124 C125 C126 C127 C128 C129 C220										
53	C221 C222 C223 C224 C225	Cap_std_0402_100n	Capacitor, Ceramic, Standard, 0402	0402 (1005 Metric)	100nF	16 V / X7R	10%	Yes	-55°C to +125°C		7 001 960
2	C11 C13	Cap_std_1210_22u_25V	Capacitor, Ceramic, Multilayer, X7R, 1210	1210 (3225 Metric)	22uF	25 V / X5R	10%	Yes	-55°C to +125°C		7 013 940
2	C23 C29	Cap_std_0603_100n	Capacitor, Ceramic, Standard, 0603	0603 (1608 Metric)	100nF	50 V / X7R	10%	Yes	-55°C to +125°C		7 000 117
2	C24 C30	Cap_std_1206_10u_50V	Capacitor, Ceramic, Standard, 1206	1206 (3216 Metric)	10uF	50 V / X5R	20%	Yes	-55°C to +125°C		7 013 998
7	C25 C26 C27 C31 C32 C33 C130	Cap_std_1206_4n7_500V	Capacitor, Ceramic, Standard, 1206	1206 (3216 Metric)	4.7nF	500 V / X7R	10%	Yes	-55°C to +125°C		7 013 999
2	C101 C107	Cap_std_0603_10u	Capacitor, Ceramic, Standard, 0603	0603 (1608 Metric)	10uF	10 V / X5R	10%	Yes	-55°C to +125°C		7 013 147
2	C104 C105	Cap_std_0402_22n	Capacitor, Ceramic, Standard, 0402	0402 (1005 Metric)	22nF	16 V / X7R	10%	Yes	-55°C to +125°C		7 000 171
2	C131 C132	C0402C331J1GAC	Capacitor, Ceramic, Multilayer, C0G, 0402	0402 (1005 Metric)	330pF	100 V / C0G	5%	Yes	-55°C to +125°C	KEMET	7 014 053
16	C160 C161 C162 C163 C164 C165 C166 C167 C168 C169 C170 C171 C172 C173 C174 C175	Cap_std_0402_4n7	Capacitor, Ceramic, Standard, 0402	0402 (1005 Metric)	4.7nF	50 V / X7R	10%	Yes	-55°C to +125°C		7 000 163
8	C242 C243 C244 C245 C246 C247 C248 C249	C0805H271JDGAC	Capacitor, Ceramic, Multilayer, High Temperature, C0G, 0805	0805	270pF	1000 V / C0G	5%	Yes	-55°C to +200°C	KEMET	7 011 610
17	D10 D44 D45 D46 D47 D48 D49 D50 D51 D60 D61 D62 D63 D64 D65 D66 D67	APHHS1005LZGCK-V	LED, Green, 40 mcd, 2 mA, 2.65 V, 140° Angle, 0402	0402 (1005 Metric)	Green 40 mcd	2.65 V	2 mA	Yes	-40°C to +85°C	Kingbright	7 013 914
63	D20 D21 D22 D23 D24 D25 D26 D27 D28 D29 D30 D31 D32 D33 D34 D35 D36 D37 D38 D39 D40 D41 D42 D43 D52 D53 D54 D55 D56 D57 D58 D59 D70 D71 D74 D75 D78 D79 D81 D84 D85 D88 D89 D92 D93 D96 D97 D163 D164 D165 D169 D170 D171 D175 D176 D177 D181 D182 D183 D185 D187 D189 D191	SM6T36CA	Transient Voltage Suppressor, Bidirectional, SM6T Series, 600 W, DO-214AA	DO-214AA (SMB J Bend)	600 W	30.8 V Stand Off	34.2 Vbr	Yes	-55°C to +150°C	ST Microelectronics	7 001 360
31	D68 D69 D72 D73 D76 D77 D80 D82 D83 D86 D87 D90 D91 D94 D95 D160 D161 D162 D166 D167 D168 D172 D173 D174 D178 D179 D180 D184 D186 D188 D190	MBR0580S1	Diode, Schottky, 80 V, 500 mA, SOD-123	SOD-123	500 mA	80 V	14 A	Yes	-55°C to +175°C	Diodes	7 013 746
1	D100	NUP2105L	Transient Voltage Suppressor, CAN, Bidirectional, 350 W, SOT-23	3 Lead SOT-23	350 W	24 V Stand Off	26.2 V Vbr	Yes	-55°C to +150°C	ON Semiconductor	7 010 946
8	D101 D102 D103 D104 D105 D106 D107 D108	SM712.TCT	Transient Voltage Suppressor, RS-485, Asymmetrical, Extended Common-Mode, SOT-23	3 Lead SOT-23	400 W	12 V and 7 V Stand	13.3 Vbr and 7	Yes	-55°C to +125°C	Semtech	7 002 720
12	FID0 FID1 FID2 FID3 FID4 FID5 FID6 FID7 FID8 FID9 FID10 FID11	Fiducial_10x20	Fiducial Mark, 1.0 mm Pad, 2.0 mm Solder Mask	Fiducial Mark	1.0 mm	2.0 mm		Yes			7 001 276
4	J8 J10 J12 J17	09665526612	Connector, D-SUB, Female, DD50, 50 Pin, Right Angle, Through Hole	50 Lead D-SUB	50 Way	300 V	6.5 A	Yes	-55°C to +125°C	HARTING	7 016 020
1	J[illegible]	09663526612	Connector, D-SUB, Female, DB25, 25 Pin, Right Angle, Through Hole	25 Lead D-SUB	25 Way	300 V	5 A	Yes	-55°C to +125°C	HARTING	7 016 021
1	J210	5352069-9	Connector, Compact PCI, Female, Right Angle, 2.0 mm Pitch, Type B, Pressfit, Through hole	125 Lead Pressfit, Throug	5x25 Way	500 VAC	1.5 A	Yes	-55°C to +125°C	TE Connectivity	7 013 912
1	J211	BCS-140-L-D-PE-BE	Connector, Header, Female, 2.54 mm pitch, Through Hole, Pass Through, Bottom entry	Through Hole 2x40	2x40 WAY, Bottom e	475 VAC	3 A	Yes	-55°C to +125°C	Samtec	7 013 997
1	J[illegible]2	5352115-1	Connector, Compact PCI, Female, Right Angle, 2.0 mm Pitch, Type C, Pressfit, Through hole	55 Lead Pressfit, Through	5x11 Way	500 VAC	1.5 A	Yes	-55°C to +125°C	TE Connectivity	7 013 911
1	J213	DW-40-14-F-D-820	Header, 2.54 mm Pitch, 36.32 mm pin height, 20.8 mm stacker height, Gold Finish, TH	Through Hole 2x40	2x40 WAY	550 VAC	3 A	Yes	-55°C to +125°C	Samtec	7 014 000
1	J[illegible]1 J223	0826-1G1T-23-F	Connector, RJ-45, Single, Right Angle, Integrated Magnetics, 12 Cores per jack, 10/100/1000 Base	Through Hole (RJ-45)	RJ-45	1.5 kVrms		Yes	0°C to +70°C	Bel Magnetics	7 013 996
1	L10	LQH44PN4R7MP0	Inductor, LQH44P Series, Shielded, SMD	SMD (4.0 mm x 4.0 mm)	4.7uH	±20%	1.7 A	Yes	-40°C to +85°C	Murata Manufacturing	7 012 671
17	R10 R52 R53 R54 R55 R56 R57 R58 R59 R60 R61 R62 R63 R64 R65 R66 R67	Res_std_0402_E24_56k	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	56k	50 V	1%	Yes	-55°C to +155°C		7 003 415
17	R11 R20 R22 R24 R26 R28 R30 R32 R34 R36 R38 R40 R42 R44 R46 R48 R50	Res_std_0402_E24_6k2	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	6.2k	50 V	1%	Yes	-55°C to +155°C		7 003 392
2	R12 R100	Res_std_0402_E24_10k	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	10k	50 V	1%	Yes	-55°C to +155°C		7 003 397
16	R21 R23 R25 R27 R29 R31 R33 R35 R37 R39 R41 R43 R45 R47 R49 R51	Res_std_0402_E24_2k4	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	2.4k	50 V	1%	Yes	-55°C to +155°C		7 003 382

Qty	Part Reference	Part Number	Description	Pkg type	Value	Voltage	Tolerance	RoHS	Temperature Range	Manufacturer	DRP/N
	R68 R69 R70 R71 R72 R73 R74 R75 R76 R77 R78 R79 R80 R81 R82 R83 R84 R85 R86 R87 R88 R89 R90 R91										
30	R92 R93 R94 R95 R96 R97	Res_std_0402_E24_3k6	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	3.6k	50 V	1%	Yes	-55°C to +155°C		7 003 386
1	R107	Res_std_0402_E24_43k	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	43k	50 V	1%	Yes	-55°C to +155°C		7 003 412
3	R110 R115 R126	Res_std_0402_E24_0	Resistor, 50 V, 63 mW, 0402	0402 (1005 Metric)	0	50 V	1%	Yes	-55°C to +155°C		7 003 127
1	R131	Res_std_0402_E24_0	Resistor, 50 V, 63 mW, 0402	0402	0	50 V	1%	Yes	-55°C to +155°C		7 003 127
2	R220 R221	Res_std_0402_E24_120	Resistor, 50 V, 63 mW, 0402	0402	120	50 V	1%	Yes	-55°C to +155°C		7 003 351
5	R544 R546 R547 R548 R549	Res_std_0402_E24_10k	Resistor, 50 V, 63 mW, 0402	0402	10k	50 V	1%	Yes	-55°C to +155°C		7 003 397
3	R545 R550 R551	Res_std_1206_E24_0	Resistor, Thick Film, 200 V, 250 mW, 1206	1206	0	200 V / 250 mW	1%	Yes	-55°C to +155°C		7 013 121
2	SW1 SW2	A6S-2104-H	DIP Switch, A6S-H Series, SPST, SMD	4 lead SMD	2 pole, Raised	24 VDC	25 mA	Yes	-20°C to +70°C	Omron	7 001 301
1	U10	TPS561208DDC	Power Regulator, Switch, Synchronous Step Down, Continuous, 1 A, SOT-23	6 Lead SOT-23	4.5 V to 17 Vin	0.76 V to 7 V	1 A	Yes	-40°C to +85°C	Texas Instruments	7 013 360
2	U20 U21	SI8380S-IU	Digital Isolator, 8/0 Channels, 2.5 kVrms, 250 kbps, LED emulator, SPI	20 Lead QSOP	250 kbps	2.25 V to 5.5 V	2.5 kV rms iso	Yes	-40°C to +125°C	Silicon Labs	7 013 897
2	U22 U23	ISO1H816G	High-Side Power Switch, Industrial Applications, 1.2 A, 8 Channels, Galvanic Isolation, SPI	36 Lead SOP w/pad	200 mOhm Ron	3 V to 5.5 V	1.2 A	Yes	-40°C to +125°C	Infineon Technologies	7 013 898
15	U24 U25 U26 U27 U28 U29 U30 U31 U32 U33 U34 U35 U36 U37 U38	SI8711CC-B-IS	Digital Isolator, 1/0 Channels, 3.75 kVrms, 1 Mbps, LED emulator, SOIC	8 Lead SOIC_N	1 Mbps	3 V to 30 V	3.75 kV rms is	Yes	-40°C to +125°C	Silicon Labs	7 014 035
1	U100	MCP23S17-E/SO	IO Expander, 16 bit, 10 MHz SPI, Interupt, SOIC	28 Lead SOIC	16 bit	1.8 V to 5.5 V		Yes	-40°C to +125°C	Microchip Technology	7 007 987
1	U101	ADM3053BRWZ	CAN Transceiver, Signal and Power Isolated, w/ Integrated Isolated DC-to-DC Converter, SOIC	20 Lead SOIC_W	1 Mbps	VIO=3.0V to 5.5V a	2.5 kV rms Iso	Yes	-40°C to +85°C	Analog Devices	7 007 260
6	U102 U103 U106 U109 U110 U114	LTM2881CY-5#PBF	RS485/RS422 Tranceiver, Isolated, Half/Full Duplex, ±15 kV ESD-protected, Integrated terminatio	32 Lead BGA	1 Rx / 1 Tx	4.5 V to 5.5 V	20 Mbps	Yes	0°C to +70°C	Analog Devices	7 014 032
2	U104 U107	SI8620AB-B-IS	Digital Isolator, 2/0 Channels, 2.5 kVrms, 1 Mbps, SOIC	8 Lead SOIC_N	1 Mbps	2.5 V to 5.5 V	2.5 kV rms iso	Yes	-40°C to +125°C	Silicon Labs	7 014 034
2	U105 U108	ISL8483EIBZ	RS485/RS422 Transceiver, Single Channel, SOIC	8 Lead SOIC_N	1 Rx / 1 Tx	4.5 V to 5.5 V	250 kbps	Yes	-40°C to +85°C	Renesas Electronics / In	7 014 033
4	U111 U113 U115 U117	SI8642AB-B-IS1	Digital Isolator, 2/2 Channels, 2.5 kVrms, 1 Mbps, SOIC	16 Lead SOIC_N	1 Mbps	2.5 V to 5.5 V	2.5 kV rms iso	Yes	-40°C to +125°C	Silicon Labs	7 013 879
2	U112 U116	ADM208EARSZ	RS232 Tranceiver, 15 kV ESD-Protected, 230 Kbps, 24-SSOP	24 Lead SSOP	4 Tx / 4 Rx	4.5 V to 5.5 V	230 kbps	Yes	-40°C to +85°C	Analog Devices	7 013 988
12	U160 U161 U162 U163 U164 U165 U166 U167 U168 U169 U170 U171	NSIC2030JBT3G	Current regulator, 30 mA	DO-214AA (SMB)	30 mA	120 V	15 %	Yes	-40°C to +175°C	ON Semiconductor	7 013 982

億力光電股份有限公司

EVERVISION ELECTRONICS CO., LTD.

Product Specification For LCD Module

(KVPF-7B-002-16)

Model NO. : VGG128004-5TSLWH(RoHS)

REVISION : 3

☐APPROVAL FOR SPECIFICATIONS ONLY

■APPROVAL FOR SPECIFICATIONS AND SAMPLE

CUSTOMER :	APPROVED BY :
STD.	

EVERVISION LCM R&D CENTER			
APPROVED BY	CHECKED BY	PREPARED BY	
張乃元 4/6/17	張乃元 4/6/17	余宗穎 4/6/17	詹俊訓 4/6/17
DIRECTOR	MANAGER	Mechanism Engineer	Electronic Engineer

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http://www.evervisionlcd.com

1. Table of Contents

2. Record of Revisions

Rev.	Comments	Page	Date
1	Preliminary Specification was first issued.	All	12/1515
2	Modify 6 General Specifications	5	3/1'16
2	Modify 8 Electrical Characteristics	7	3/1'16
3	Modify 6 General Specifications	5	4/6'17
3	Modify 7.1 Absolute Ratings of Environment	6	4/6'17
3	Modify 13 Reliability Test	27	4/6'17
3	Modify 14 Packaging	28	4/6’17
3	Modify 16 Outline Drawing	31	4/6’17

3. Module Numbering System

V G G 1280 04 – 5 T S L W H

Serial No:A~Z

Backlight Color:
N:Without Backlight;
A:Amber; **B:**Blue; **G:**Green;
L:Yellow; **O:**Orange; **R:**Red;
W:White; **Y:**YellowGreen;
X:Others

Backlight Type:
N:Without Backlight; **E:**EL; **F:**CCFL;
L:General LED; **H:**High NTSC LED ;
R:RGB LED; **X:**Others

LCD Model:
A:ASTN**; B:**STN Blue**; C:**CSTN**; D:**DSTN**;**
F:TFT; **G:**STN Gray; **H:**HTN; **I:**IBN;
K:Black Mask TN **L:**LTPS; **M:**MVA;
N:others; **O:**OLED; **P:**PLED; **S:**IPS;
T:TN; **U:**FSC TN; **W:**FSTN Black/white;
X:FFSTN; **Y:**STN Yellow;

LCD Type:
R: Reflective/Positive;
S : Reflective/Negative ;
F : Transflective/Positive ;
G: Transflective/Negative ;
U: Transmissive/Positive ;
T: Transmissive/Negative ; **N:**Others

Temperature Range & View Direction:
General Purpose : **1:**6H **2:**12H **3:**3H **4:**9H **5:**Others
High Performance: **6:**6H **7:**12H **8:**3H **9:**9H **0:**Others

STD Product Serial No.**:** 01~99
Customer Made Serial No.**:** A1,A2…A9,B1,B2…B9,C1..

Display Function:
Segment Number / Characters Lines / Column and Row Dots
/ Length * Width of Other

Display Type:
C:Character Type; **G:**Graphic Type; **S:**Segment Type; **O:**Other

Package Type:
B:COB; **F:**COF; **G:**COG; **H:**Heat Seal; **S:**SMT; **T:**TAB; **O:**Others

4. Application

This specification is applied to the 10.1 inch WXGA supported TFT-LCD module, and can display true 16.7M colors (8 bit/ color).The module is designed for OA, Car TV application and other electronic products which require flat panel display of digital signal interface. This module is composed of a 10.1" TFT-LCD panel, a driver circuit, and backlight unit and used as the input devices for general electric appliances via both finger and Capacitive stylus pen.

5. Features

- WXGA (1280×800 pixels) resolution.
- LVDS Receiver 24 bit Interface
- Dot inversion mode with stripe type.
- LED driver circuit is built in this module to provide PWM Dimmer function.
- Projected Capacitive Touch
  - I^2C Interface
  - Multi Touch (Ten points)

6. General Specifications

Item	Specifications	Unit
Screen Size	10.1 (Diagonal)	inch
Display Format	1280RGB(H)×800(V)	dot
Active Area	216.96(H)×135.6(V)	mm
PIXEL Pitch	0.0565(H)×0.1695(V)	mm
Pixel Configuration	RGB Vertical Stripe	-
Display Mode	AAS Type Transmissive Mode Normally Black	-
Surface Treatment	Clear(7H)	-
Viewing Direction	Full view angle	-
Outline Dimension	229.46(W)×149.1(H)×7.66(D)	mm
Weight	325	g
RoHS Compliance	Eversion certifies this product to be in compliance with European Union Directive 2011/65/EU on the restriction of certain hazardous substances in electrical and electronic equipment.	-

7. Absolute Maximum Ratings

7.1 Absolute Ratings of Environment

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	T_{ST}	-20	+60	°C	(1)(2)
Operating Ambient Temperature	T_{OP}	-10	+60	°C	(1)(2)

Note1: Background color changes slightly depending on ambient temperature.
This phenomenon is reversible.

Note2: Please refer to item of RELIABILITY.

7.2 Electrical Absolute Ratings

7.2.1 TFT-LCD Module

(Ta=25±2°C, GND=V_{SS}=0V)

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Digital Power Supply Voltage	V_{CC}	-0.3	4.0	V	-
LVDS Driver Output Voltage	-	-0.3	V_{CC} + 0.3	V	-

7.2.2 LED Driver Absolute Maximum Ratings

(Ta=25±2°C)

Item	Symbol	Value		Unit	Note
		Min.	Max.		
LED Driver Supply Voltage	VLED	-0.3	17	V	(1)
LED Driver PWM	PWM	-0.3	6	V	(1)

Note (1) Permanent damage to the device may occur if maximum values are exceeded or reverse voltage is loaded.

8. Electrical Characteristics

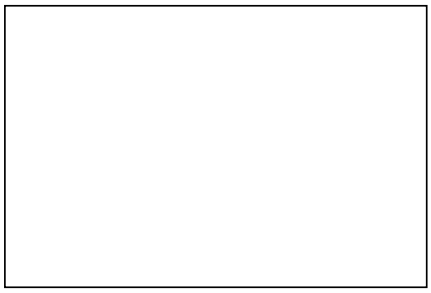
8.1 TFT-LCD Module

(Ta=25±2°C)

Item	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Power Supply Voltage	V_{CC}	3.0	3.3	3.6	V	-
Power Supply Current	I_{CC}	-	270	378	mA	(1)
Differential Input High Threshold Voltage	V_{TH}	-	-	100	mV	-
Differential Input Low Threshold Voltage	V_{TL}	-100	-	-	mV	-
Power Consumption	P_L	-	891	1247	mW	(1)
VSYNC Frequency	F_V	-	60	-	Hz	-
DCLK Frequency	DCLK	-	71.1	-	MHz	-

Note (1) The specified power consumption is under the conditions at V_{CC}=3.3V, F_V=60Hz, whereas a power dissipation check pattern below is displayed.

White Pattern / 255 Gray



Active Area

8.2 LED Driver Unit

(Ta=25±2°C)

Item	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Voltage of LED Driver Unit	V_{LED}	11.5	12.0	12.5	V	-
Current of LED Driver Unit	I_{LED}	-	260	364	mA	V_{LED}=12V、B/L=260mA
Voltage of LED Driver Unit	V_{LED}	4.5	5.0	5.5	V	-
Current of LED Driver Unit	I_{LED}	-	630	882	mA	V_{LED}=5V、B/L=260mA
PWM signal Low voltage	V_{PWML}	0	-	0.2	V	-
PWM signal High voltage	V_{PWMH}	4	5.0	5.5	V	-
PWM frequency	f_{PWM}	100	-	1000	Hz	-
PWM Pulse width	t_{PWMH}	10	-	-	us	-
LED Life Time(25℃)	-	50000	60000	-	hr	(1)

Note (1)：LED life time is defined as under 25±2°C , when the average brightness decrease to 50% of original brightness

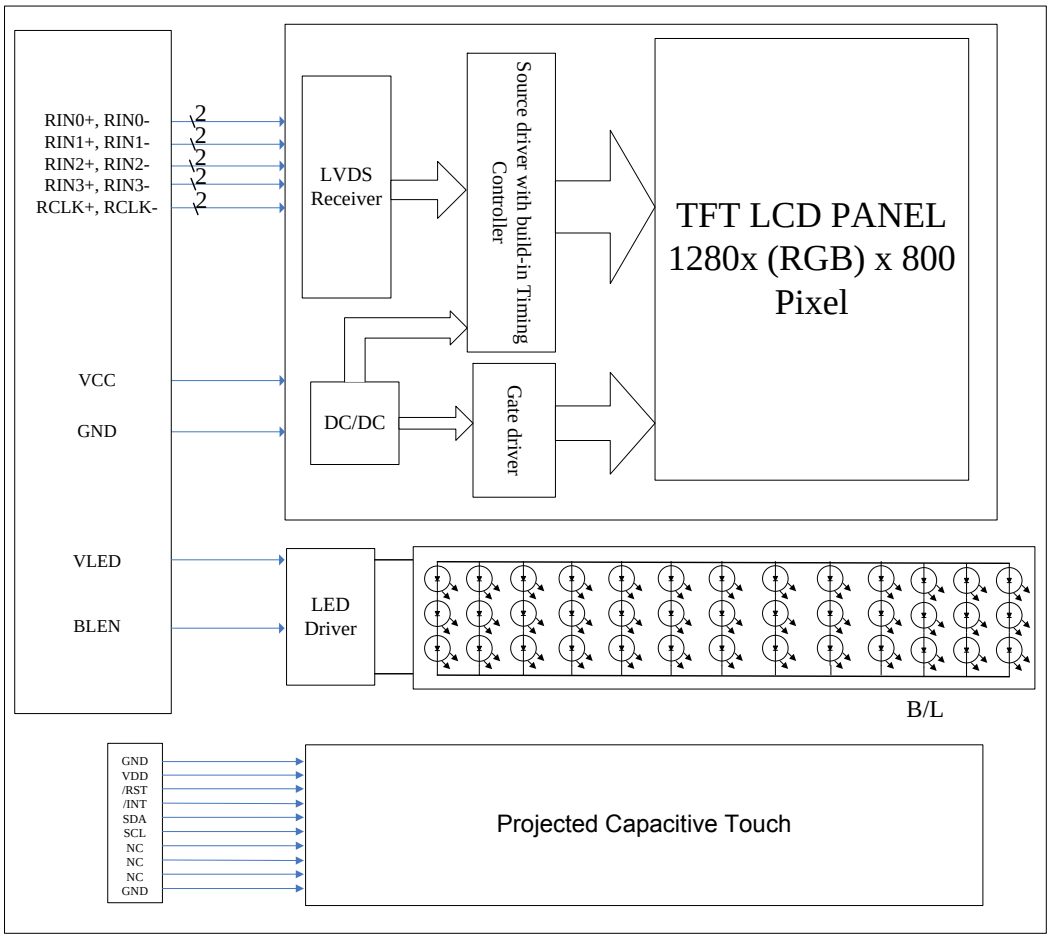
8.3 Projected Capacitive Touch

Item	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Operating Voltage	VDD	3.0	3.3	3.6	V	-
Power Supply Current	IDD	-	23.6	33.1	mA	(1)
Input High Threshold Voltage	V_{IH}	0.7VDD	-	VDD	V	-
Input Low Threshold Voltage	V_{IL}	-0.3	-	0.3VDD	V	-
Output High Threshold Voltage	V_{OH}	0.7VDD	-	-	V	-
Output Low Threshold Voltage	V_{OL}	-	-	0.3VDD	V	-
Power Consumption	P_L	-	77.88	109.23	mW	@3.3V
Interface		I^2C				-
Function		Multi Touch				-

Note (1) This test condition is touched with 10 points.

9. Block Diagram

9.1 TFT-LCD Module with Backlight Unit



10. Input / Output Terminals Pin Assignment

10.1 TFT-LCD Module

Connector: HIROSE DF19G-30P-1H

Pin No.	Symbol	I/O	Description
1	V_{CC}	I	+3.3V power supply
2	V_{CC}	I	+3.3V power supply
3	GND	I	Ground
4	GND	I	Ground
5	RIN3+	I	LVDS Signal (+) Channel 3
6	RIN3-	I	LVDS Signal (-) Channel 3
7	GND	I	Ground
8	RCLK+	I	LVDS Clock Signal (+)
9	RCLK-	I	LVDS Clock Signal (-)
10	GND	I	Ground
11	RIN2+	I	LVDS Signal (+) Channel 2
12	RIN2-	I	LVDS Signal (-) Channel 2
13	GND	I	Ground
14	RIN1+	I	LVDS Signal (+) Channel 1
15	RIN1-	I	LVDS Signal (-) Channel 1
16	GND	I	Ground
17	RIN0+	I	LVDS Signal (+) Channel 0
18	RIN0-	I	LVDS Signal (-) Channel 0
19	GND	I	Ground
20	GND	I	Ground
21	NC	I	Not Connection
22	NC	I	Not Connection
23	NC	I	Not Connection

24	NC	I	Not Connection
25	BLEN	I	Note 1
26	NC	I	Not Connection
27	VLED	I	LED driver power supply
28	VLED	I	LED driver power supply
29	GND	I	Ground
30	GND	I	Ground

Note 1: On/Off Control Input and Dimming Command Input.
A voltage greater than 0.7V will turn on the chip.
When the BLEN pin voltage rises from 0.7V to 1.4V,The LED current will change from 0% to 100% of the maximum LED current.

To use PWM dimming, apply a 100Hz to 1kHz square wave signal with amplitude greater than 1.4V to this pin.

10.2 Improved Projected Capacitive Touch

Connector: CVILUX CF25101D0R0-05

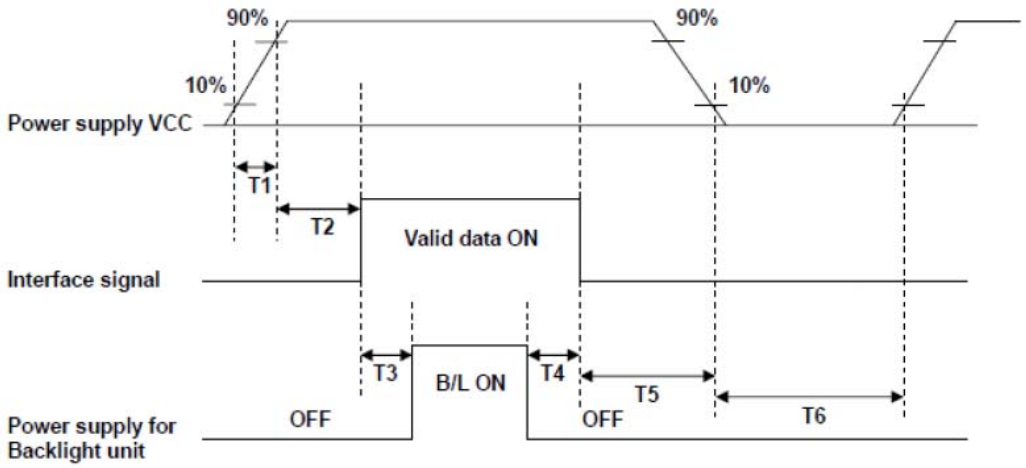
Pin No.	Symbol	I/O	Description
1	GND	I	System ground.
2	VDD	I	+3.3V power supply.
3	/RST	I	External reset signal, active low.
4	/INT	O	Interrupt signal, active low, asserted to request Host start a new transcation.
5	SDA	I/O	I2C data signal.
6	SCL	I	I2C clock signal.
7	NC	-	Not Connection
8	NC	-	Not Connection
9	NC	-	Not Connection
10	GND	I	System ground.

10.3 Color Data Input Assignment

The brightness of each primary color(red, green and blue) is based on the 8 bit gray scale data input for the color. The higher the binary input, the brighter the color. The table provides the assignment of color versus data input.

Color		Data Signal																							
		Red								Green								Blue							
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
Basic Colors	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gray Scale Of RED	Red(0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(1)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(2)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Red(253)	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(254)	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Scale Of Green	Green(0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	Green(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Green(253)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0
	Green(254)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	Green(255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Gray Scale Of Blue	Blue(0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Blue(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Blue(253)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1
	Blue(254)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0
	Blue(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

10.4 Power ON/OFF Sequence



POWER SEQUENCE TABLE

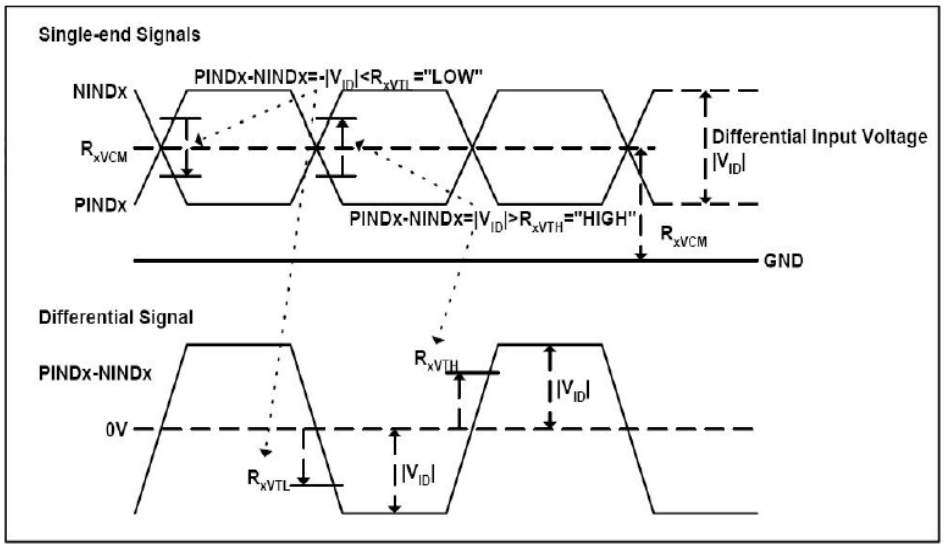
Parameter	Value			Units
	Min.	Typ	Max.	
T1	0.5	-	10	ms
T2	20	-	70	ms
T3	200	-	-	ms
T4	200	-	-	ms
T5	20	-	70	ms
T6	1000	-	-	ms

11. Interface Timing

11.1 Input Signal Characteristics

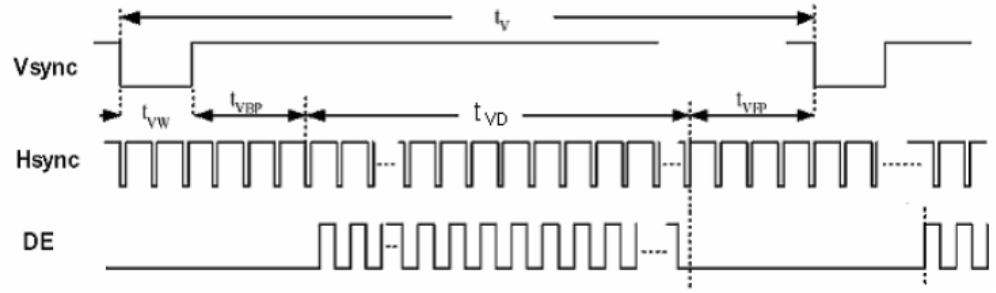
11.1.1.AC Electrical Characteristics

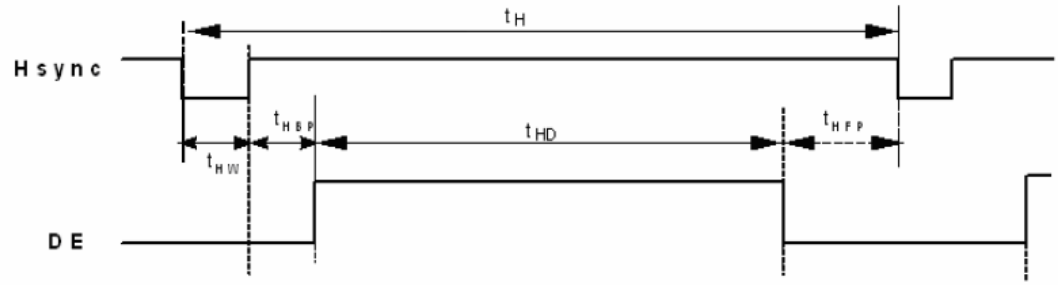
Parameter	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
LVDS Differential input high Threshold voltage	R_{xVTH}	-	-	+100	mV	R_{XVCM}=1.2V
LVDS Differential input low Threshold voltage	R_{xVTL}	-100	-	-	mV	
LVDS Differential input common mode voltage	R_{xVCM}	0.7	-	1.6	V	
LVDS Differential voltage	$\|V_{ID}\|$	200	-	600	mV	



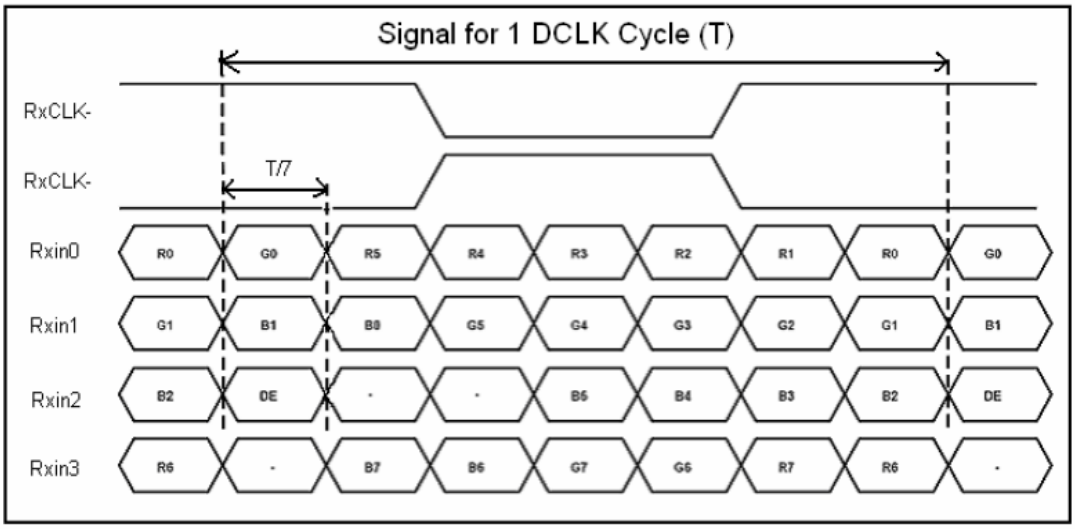
11.1.2.Timing

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Clock Frequency	1/Tc	(68.9)	71.1	(73.4)	MHz	Frame rate =60Hz
Horizontal display area	tHD		1280		Tc	
HS period time	tH	(1410)	1440	(1470)	Tc	
HS Width +Back Porch +Front Porch	tHW+ tHBP +tHFP	(60)	160	(190)	Tc	
Vertical display area	tVD		800		tH	
VS period time	tv	(815)	823	(833)	tH	
VS Width +Back Porch +Front Porch	tvW+ tvBP +tvFP	(15)	23	(33)	tH	



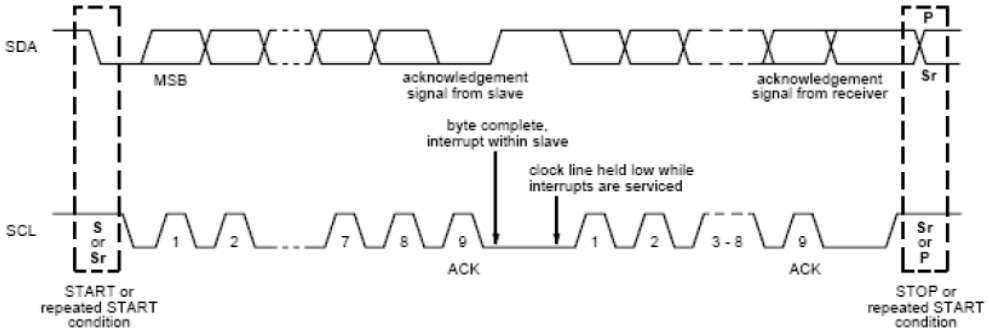


11.1.3. LVDS Data Input Format



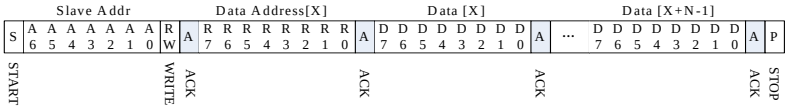
11.2 Timing Requirement of Projected Capacitive Touch

11.2.1 I2C Data Transfer Format

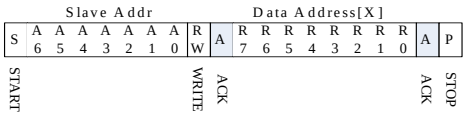


Mnemonics	Description
S	I^2C Start or I^2C Restart
A[6:0]	Slave Address = 7'b0111000
W	1'b0: Write
R	1'b1: Read
C	ACK
P	STOP: the indicate the end of a packet (if this bit is missing, S will indicate the end of the current packet and the beginning of the next packet)

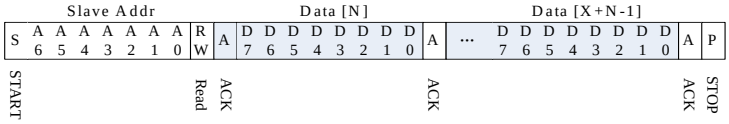
Write N bytes to I2C slave



Set Data Address



Read X bytes from I^2C Slave

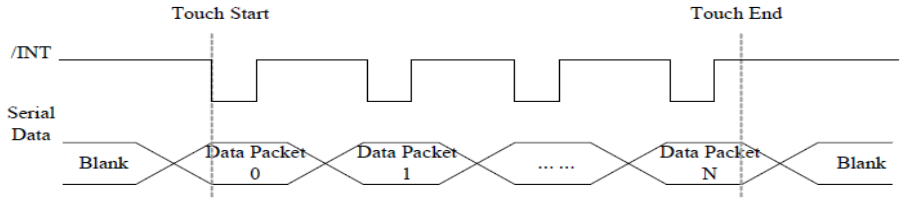


11.2.2 I2C Timing Characteristics

(Ta=25±2°C)

Parameter	Min	Max	Unit
SCL frequency	-	400	kHz
Bus free time between a STOP and START condition	4.7	-	μs
Hold time (repeated) START condition	4.0	-	μs
Data setup time	250	-	ns
Setup time for a repeated START condition	4.7	-	μs
Setup time for STOP condition	4.0	-	μs

11.2.3 Interrupt Trigger Mode



11.2.4 I2C Operating Mode Register Map

Address	Name	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Host Access
Op,00h	DEVICE_MODE		Device Mode[2:0]							RW
Op,01h	Reserved									R
Op,02h	TD_STATUS					Number of touch points[3:0]				R
Op,03h	TOUCH1_YH	1st Event Flag				1st Touch Y Position[11:8]				R
Op,04h	TOUCH1_YL	1st Touch Y Position[7:0]								R
Op,05h	TOUCH1_XH	1st Touch ID[3:0]				1st Touch X Position[11:8]				R
Op,06h	TOUCH1_XL	1st Touch X Position[7:0]								R
Op,07h	Reserved									R
Op,08h	Reserved									R
Op,09h	TOUCH2_YH	2nd Event Flag				2nd Touch Y Position[11:8]				R
Op,0Ah	TOUCH2_YL	2nd touch Y Position[7:0]								R

Op,0Bh	TOUCH2_XH	2nd Touch ID[3:0]	2nd Touch X Position[11:8]	R
Op,0Ch	TOUCH2_XL	2nd Touch X Position[7:0]		R
Op,0Dh	Reserved			R
Op,0Eh	Reserved			R
Op,0Fh	TOUCH3_YH	3rdEvent Flag	3rd Touch Y Position[11:8]	R
Op,10h	TOUCH3_YL	3rd Touch Y Position[7:0]		R
Op,11h	TOUCH3_XH	3rd Touch ID[3:0]	3rd Touch X Position[11:8]	R
Op,12h	TOUCH3_XL	3rd Touch X Position[7:0]		R
Op,13h	Reserved			R
Op,14h	Reserved			R
Op,15h	TOUCH4_YH	4thEvent Flag	4th Touch Y Position[11:8]	R
Op,16h	TOUCH4_YL	4th Touch Y Position[7:0]		R
Op,17h	TOUCH4_XH	4th Touch ID[3:0]	4th Touch X Position[11:8]	R
Op,18h	TOUCH4_XL	4th Touch X Position[7:0]		R
Op,19h	Reserved			R
Op,1Ah	Reserved			R
Op,1Bh	TOUCH5_YH	5thEvent Flag	5th Touch Y Position[11:8]	R
Op,1Ch	TOUCH5_YL	5thTouch Y Position[7:0]		R
Op,1Dh	TOUCH5_XH	5th Touch ID[3:0]	5th Touch X Position[11:8]	R
Op,1Eh	TOUCH5_XL	5th Touch X Position[7:0]		R
Op,1Fh	Reserved			R
Op,20h	Reserved			R
Op,21h	TOUCH6_YH	6thEvent Flag	6th Touch Y Position[11:8]	R
Op,22h	TOUCH6_YL	6thTouch Y Position[7:0]		R
Op,23h	TOUCH6_XH	6th Touch ID[3:0]	6th Touch X Position[11:8]	R
Op,24h	TOUCH6_XL	6th Touch X Position[7:0]		R

Op,25h	Reserved				R
Op,26h	Reserved				R
Op,27h	TOUCH7_YH	7th Event Flag		7th Touch Y Position[11:8]	R
Op,28h	TOUCH7_YL	7th Touch Y Position[7:0]			R
Op,29h	TOUCH7_XH	7th Touch ID[3:0]		7th Touch X Position[11:8]	R
Op,2Ah	TOUCH7_XL	7th Touch X Position[7:0]			R
Op,2Bh	Reserved				R
Op,2Ch	Reserved				R
Op,2Dh	TOUCH8_YH	8th Event Flag		8th Touch Y Position[11:8]	R
Op,2Eh	TOUCH8_YL	8th Touch Y Position[7:0]			R
Op,2Fh	TOUCH8_XH	8th Touch ID[3:0]		8th Touch X Position[11:8]	R
Op,30h	TOUCH8_XL	8th Touch X Position[7:0]			R
Op,31h	Reserved				R
Op,32h	Reserved				R
Op,33h	TOUCH9_YH	9th Event Flag		9th Touch Y Position[11:8]	R
Op,34h	TOUCH9_YL	9th Touch Y Position[7:0]			R
Op,35h	TOUCH9_XH	9th Touch ID[3:0]		9th Touch X Position[11:8]	R
Op,36h	TOUCH9_XL	9th Touch X Position[7:0]			R
Op,37h	Reserved				R
Op,38h	Reserved				R
Op,39h	TOUCH10_YH	10th Event Flag		10th Touch Y Position[11:8]	R
Op,3Ah	TOUCH10_YL	10th Touch Y Position[7:0]			R
Op,3Bh	TOUCH10_XH	10th Touch ID[3:0]		10th Touch X Position[11:8]	R
Op,3Ch	TOUCH10_XL	10th Touch X Position[7：0]			R
Op,3Dh	Reserved				R
Op,3Eh	Reserved				R

11.2.5 DEVICE_MODE

This register is the device mode register, configure it to determine the current mode of the chip.

Address	Bit Address	Register Name	Description
Op,00h	6:4	Device Mode [2:0]	000b Normal operating Mode 001b System Information Mode (Reserved) 100b Test Mode – read raw data (Reserved)

11.2.6 TD_STATUS

This register is the Touch Data status register.

Address	Bit Address	Register Name	Description
Op,02h	3:0	Number of touch points[3:0]	How many points detected. 1-10 is valid.

11.2.7 TOUCHn_YH (n:1-10)

This register describes MSB of the Y coordinate of the nth touch point and the corresponding event flag.

Address	Bit Address	Register Name	Description
Op,03h ~ Op,39h	7:6	Event Flag	00b: Put Down 01b: Put Up 10b: Contact 11b: No event
	5:4		Reserved
	3:0	Touch Y Position [11:8]	MSB of Touch Y Position in pixels

11.2.8 TOUCHn_YL (n:1-10)

This register describes LSB of the Y coordinate of the nth touch point.

Address	Bit Address	Register Name	Description
Op,04h ~ Op,3Ah	7:0	Touch Y Position [7:0]	LSB of the Touch Y Position in pixels

11.2.9 TOUCHn_XH (n:1-10)

This register describes MSB of the X coordinate of the nth touch point and corresponding touch ID.

Address	Bit Address	Register Name	Description
Op,05h ~ Op,3Bh	7:4	Touch ID[3:0]	Touch ID of Touch Point
	3:0	Touch X Position [11:8]	MSB of Touch X Position in pixels

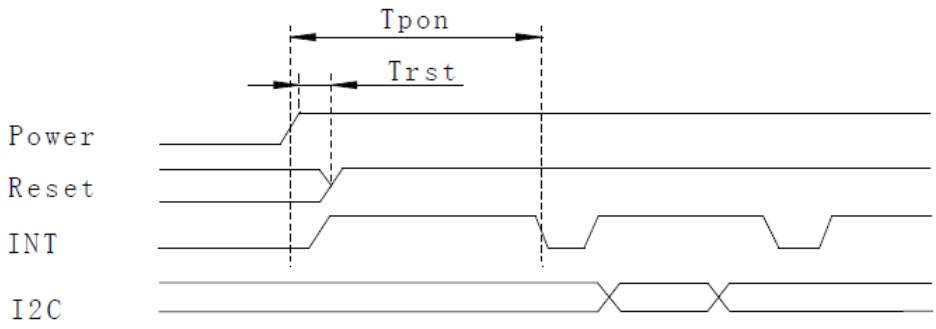
11.2.10 TOUCHn_XL (n:1-10)

This register describes LSB of the X coordinate of the nth touch point.

Address	Bit Address	Register Name	Description
Op,06h ~ Op,3Ch	7:0	Touch X Position [7:0]	LSB of The Touch X Position in pixels

11.3 POWER ON/Reset Sequence

Reset and GPIO such as /INT and I2C are advised to be low before powering on. The signal of waking up should be set to be high after powering on. /INT signal will be sent to the host after initializing all parameters and then start to report points to the host.



Power on Sequence

Reset time must be enough to guarantee reliable reset, the time of starting to report point after resetting approach to the time of starting to report point after powering on.

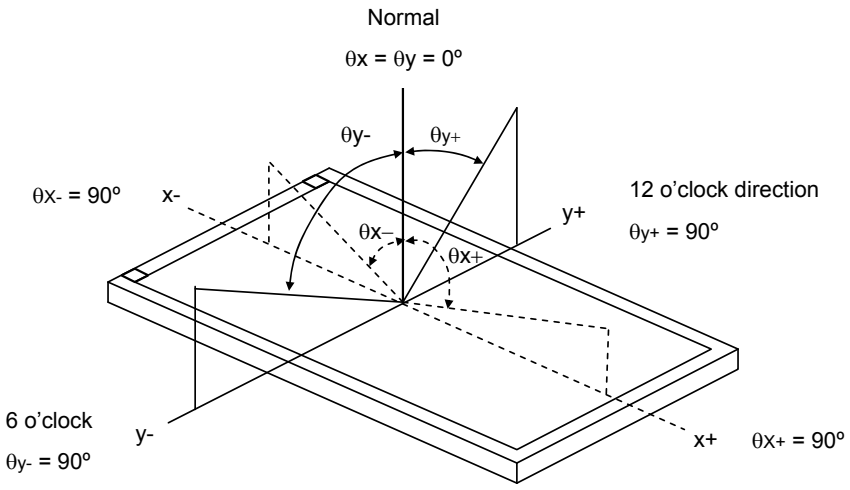
Parameter	Description	Min	Max	Units
Tris	Rise time from 0.1VDD to 0.9VDD	--	10	ms
Tpon	Time of starting to report point after powering on	300	--	ms
Trsi	Time of starting to report point after resetting	300	--	ms
Trst	Reset time	5	--	ms
Twai	Time of starting to report point after waking	300	--	ms

12. Optical Characteristics

The optical characteristics should be measured in a dark environment (≦ 1 lux) or equivalent state with the methods shown in Note (4).

Item		Symbol	Conditions	Min.	Typ.	Max.	Unit	Note
Contrast Ratio		CR	θ_x=0°, θ_Y =0° Viewing Normal Angle	600	（800）	-	-	(2)
Response Time		T_R		-	10	20	ms	(3)
		T_F		-	15	30	ms	
Luminance(Center)		Y		440	（490）	-	cd/m^2	(4)
Brightness uniformity		BUNI		75	（80）	-	%	(5)
Color Chromaticity	White	Wx		0.260	0.310	0.360	-	(1),(4)
		Wy		0.280	0.330	0.380	-	
	Red	Rx		0.550	0.600	0.650	-	
		Ry		0.290	0.340	0.390	-	
	Green	Gx		0.290	0.340	0.390	-	
		Gy		0.540	0.590	0.640	-	
	Blue	Bx		0.105	0.155	0.205	-	
		By		0.090	0.140	0.190	-	
Viewing Angle	Horizontal	θ_x+	CR≥10	75	（85）	-	deg.	
		θ_x-		75	（85）	-		
	Vertical	θ_Y+		75	（85）	-		
		θ_Y-		75	（85）	-		

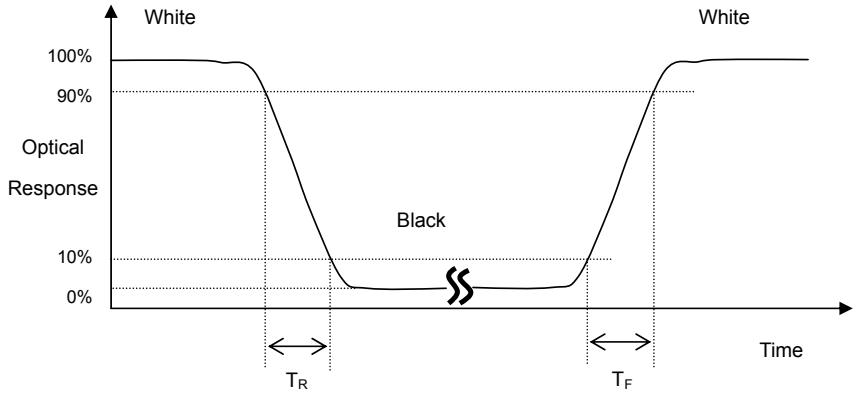
Note (1) Definition of Viewing Angle (θx, θy):



Note (2) Definition of Contrast Ratio (CR):

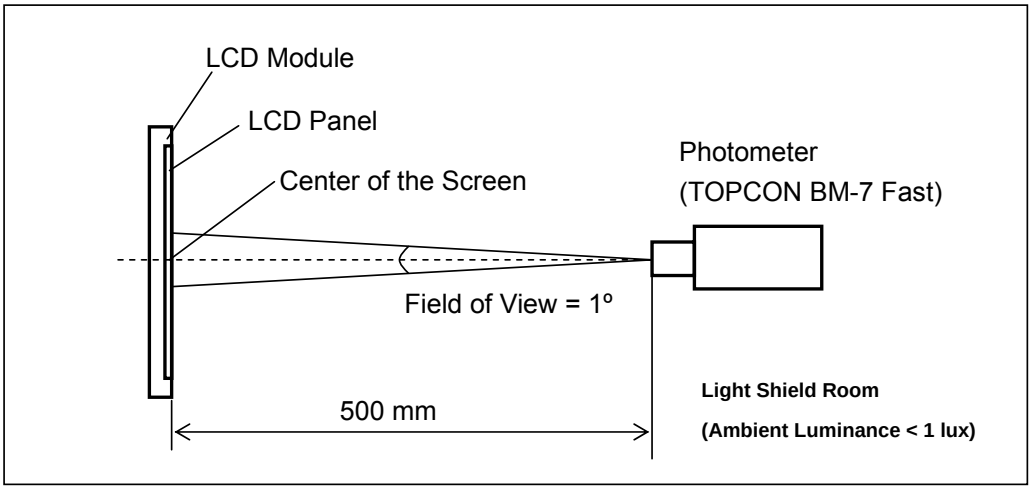
$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD on the "White" state}}{\text{Luminance measured when LCD on the "Black" state}}$$

Note (3) Definition of Response Time (T_R, T_F):



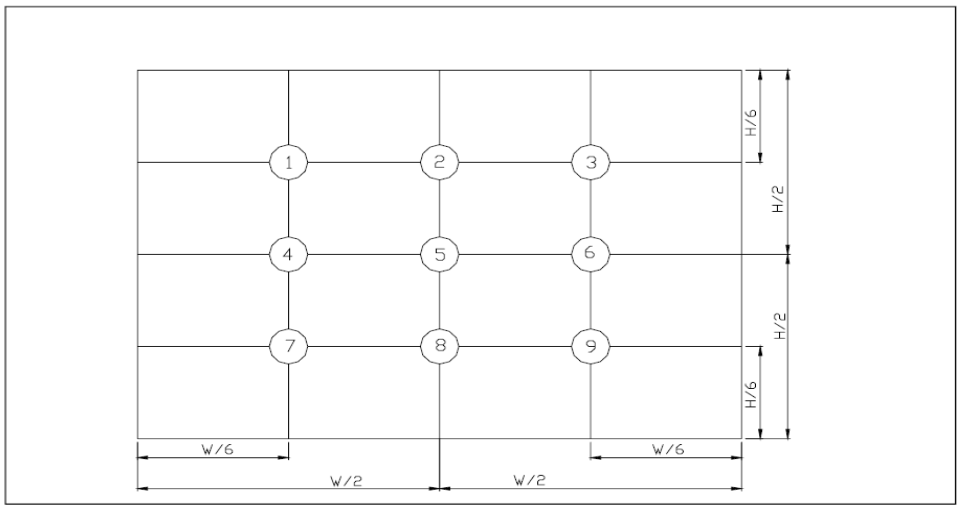
Note (4) Measurement Set-Up:

The LCD module should be stabilized at a given temperature for 30 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 30 minutes in a dark room or equivalent condition.



Note (5) Definition of brightness uniformity

Brightness uniformity=(Min Luminance of 9 points)/(Max Luminance of 9 points)×100%



(單位 ：mm)

13. Reliability Test

No.	Test Items	Test Condition	Remark
1	High Temperature Storage Test	T_a= 60℃ 120 hours	(1),(3),(4)
2	Low Temperature Storage Test	T_a= -20℃ 120 hours	(1),(3),(4)
3	High Temperature Operation Test	T_S= 60℃ 120 hours	(2),(3),(4)
4	Low Temperature Operation Test	T_a=-10℃ 120 hours	(1),(3),(4)
5	High Temperature and High Humidity Operation Test	T_a=40℃ 90%RH 120 hours	(3),(4)
6	Electro Static Discharge Test (non-operating)	-Panel Surface/Top Case : 150pF, 330Ω Air: ±15kV, Contact: ±8kV	(3)
7	Mechanical Shock Test (non-operating)	Half sine wave, 100G, 6ms 3 times shock of each six surfaces	(3)
8	Vibration Test (non-operating)	Sine wave：10 ~ 55 ~ 10Hz amplitude：1.5mm 3 axis，2 hours/axis	(3)
9	Thermal Shock Test (non-operating)	0℃(30min) ~ 50℃(30min),10 cycles	(3),(4)
10	Drop Test(with Carton)	Height: 80cm 1 corner, 3 edges, 6 surfaces	(3)

Note 1：Ta is the ambient temperature of samples.

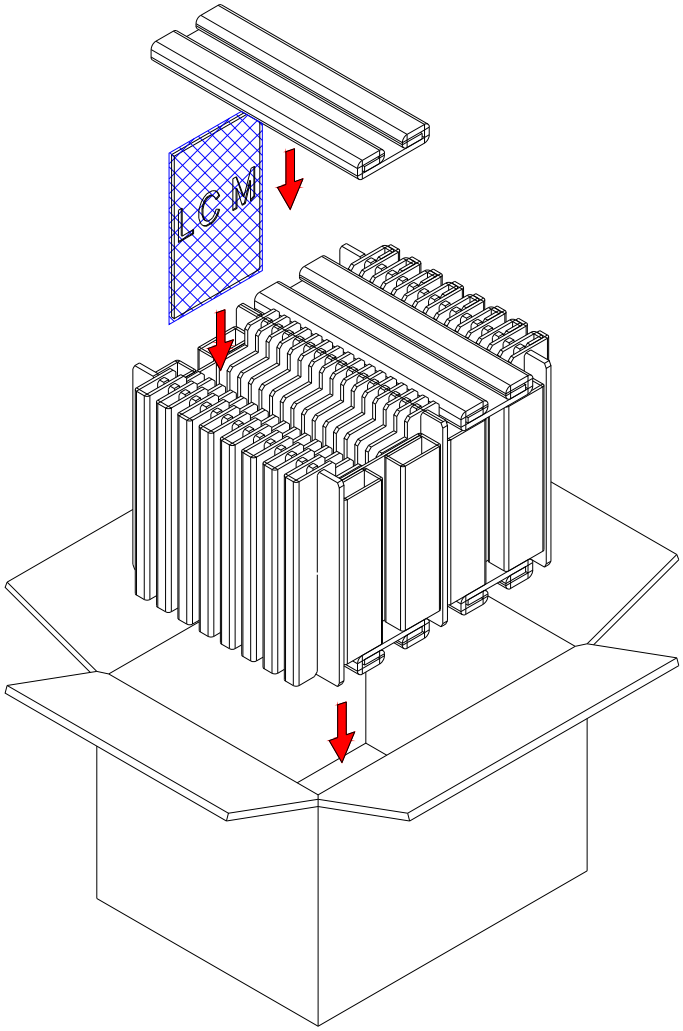
Note 2：Ts is the temperature of panel's surface.

Note 3：In the standard condition, there shall be no practical problem that may affect the display function. After the reliability test, the product only guarantees operation, but don't guarantee all of the cosmetic specification.

Note 4：Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.

Note 5：When OP reaches -10 degree, the reaction of the display will be slower. However, this phenomenon is reversible after the ambient temperature returns to higher values.

14. Packaging



	PARTS LIST				
	ITEM	SIZE(L×W×H) unit : mm	MATERIAL	Q.T.Y	NOTE
1	STATIC SHIELDING BAGS	245.0×300.0		30	
2	PARTITION	425.0×345.0×295.0	CARTON	1	
3	EXTERNAL BOX	450.0×335.0×355.0	CARTON	1	
4	PRODUCT	229.46×149.1×7.66		30	

15. Precautions

15.1 Assembly and Handling Precautions

(1) Do not apply rough force such as bending or twisting to the module during assembly.

(2) It's recommended to assemble or to install a module into the user's system in clean working areas. The dust and oil may cause electrical short or worsen the polarizer.

(3) Don't apply pressure or impulse to the module to prevent the damage of LCD panel and Backlight.

(4) Always follow the correct power-on sequence when the LCD module is turned on. This can prevent the damage and latch-up of the CMOS LSI chips.

(5) Do not plug in or pull out the I/F connector while the module is in operation.

(6) Do not disassemble the module.

(7) Use a soft dry cloth without chemicals for cleaning, because the surface of polarizer is very soft and easily scratched.

(8) Moisture can easily penetrate into LCD module and may cause the damage during operation.

(9) High temperature or humidity may deteriorate the performance of LCD module. Please store LCD module in the specified storage conditions.

(10) When ambient temperature is lower than 10ºC, the display quality might be reduced. For example, the response time will become slow.

15.2 Safety Precautions

(1) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, skin or clothes, it has to be washed away thoroughly with soap.

(2) After the module's end of life, it is not harmful in case of normal operation and storage.

15.3 Terms of Warrant

(1) Acceptance inspection period

The period is within one month after the arrival of contracted commodity at the buyer's factory site.

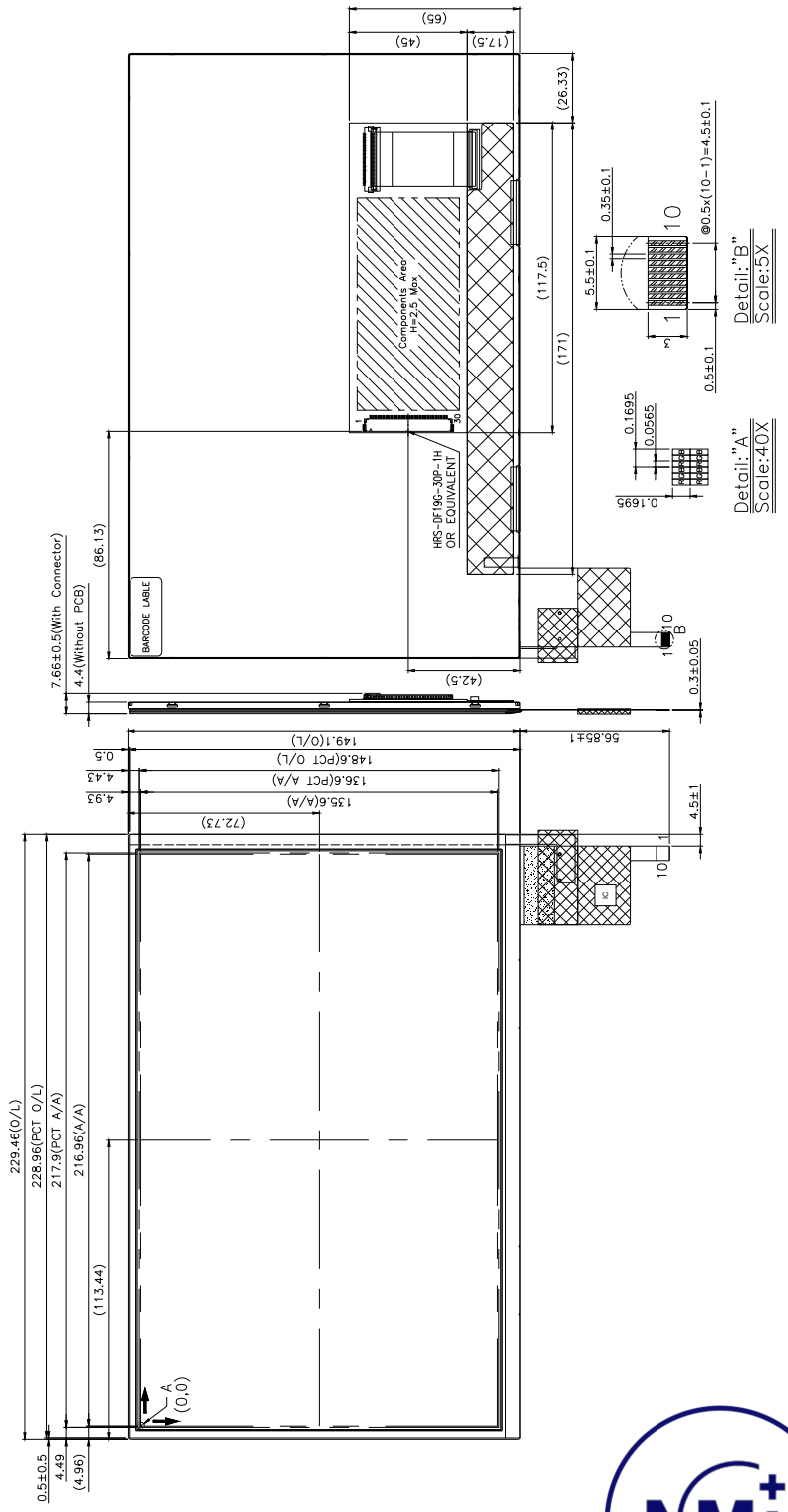
(2) Applicable warrant period

The period is within twelve months since the date of shipping out under normal using and storage conditions.

15.4 Caution

This Eversion LCD module has been specifically designed for use only in electronic devices in the areas of audio control, office automation,industrial control, home appliances, etc. The modules should not be used in applications where module failure could result in physical harm or loss of life, and Eversion expressly disclaims any and all liability relating in any way to the use of the module in such applications.

16.Outline Drawing



17.Definition of Labels

The bar code nameplate is pasted on each module as illustration, and its definitions are as following explanation.

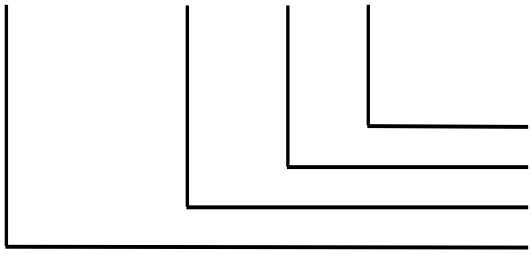
VGG128004-5TSLWH

ABCDEFGHIJKL

（a） Module Name：VGG128004-5TSLWH

（b） Serial ID：

A B C D E F G H IJ K L



Serial No.
Factory Code
Manufactured Date
Screen Size

Serial ID includes the information as below：

（a） Screen size （Diagonal）： Inch Code （ABCD）

3.5” → 0350

10.4” → 1040

（b） Manufactured Date： Year, Month, Day （EFG）

Year （E）

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Mark	0	1	2	3	4	5	6	7	8	9
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Mark	A	B	C	D	E	F	G	H	I	J

Month （F）

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Mark	1	2	3	4	5	6	7	8	9	A	B	C

Day （G）

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Mark	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G
Day	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Mark	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	

（c） Factory Code （H）:

For EVERVISION internal use.

（d） Serial No. （IJKL）:

Manufacturing sequence of product, for example： 0001~9999.

18. Incoming Inspection Standards

18.1 The environmental condition of inspection

The environmental condition and visual inspection shall be conducted as below.

(1) Ambient temperature 25 ± 5℃

(2) Humidity: 45 ~ 65 % RH

(3) Viewing distance is approximately 30~40 cm

(4) Viewing angle is normal to the LCD panel as Fig _1 (± 45°)

(5) Ambient Illumination: 300 ~ 500 Lux for external appearance inspection

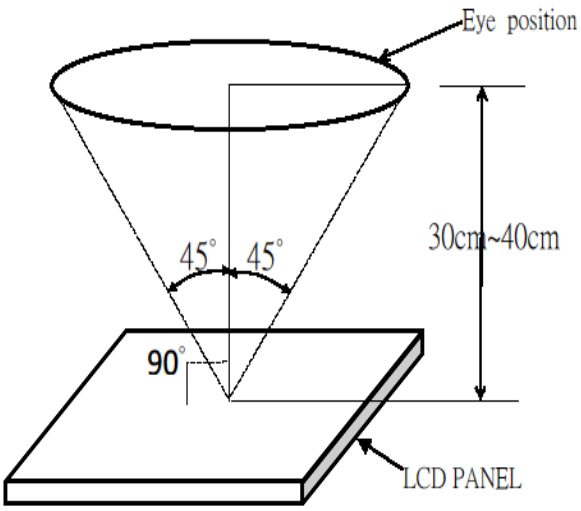


Fig_1

18.2 The defects classify of AQL as following:

(1) Test method: According to ANSI/ASQC Z 1.4 .General Inspection Level Ⅱ take a single time

(2) The defects classify of AQL as following:

Class of defects	AQL	Definition
Major	0.65%	It is defect that is likely to result in failure or to reduce materially the usability of the intended function.
Minor	1.5%	It is a defect that will not result in functioning problem with deviation classified.

18.3 Inspection Parameters

Item		Specification/Description			Note
Display	Function	No Display			-
		Malfunction			-
Operating	Contrast ratio	Out of Spec			-
	Line defect	No obvious Vertical and Horizontal line defect in bright , dark and colored.			-
	Point Defect (red ,green , blue, dark , white)	Item		Acceptable number	Note: 1、4、5
		BRIGHT DOT	Random	N≦3	
			2 dots adjacent	N≦0	
			3 dots adjacent	N≦0	
		Distance	Minimum Distance Between Bright Dots	5mm	
		DARK DOT	Random	N≦4	
			2 dots adjacent	N≦0	
			3 dots adjacent	N≦0	
		TOTAL DOT		N≦6	
		Distance	Minimum Distance Between Dark AND Bright Dots Minimum Distance Between Dark Dots	5mm	
External Inspection (non-operating or operating)	Scratch (in display area)	L(mm)	W(mm)	Acceptable number	Note:2
		-	W≦0.07	Disregard	
		L≦5.0	0.07＜W≦0.1	4	
	Polarizer dent or bubble (in display area)	Dimension(mm)		Acceptable number	Note:3
		D≦0.3		Disregard	
		0.3＜D≦0.5		4	
	Line Shape (Particles and Lint in display area)	L(mm)	W(mm)	Acceptable number	Note:2
		-	W≦0.07	Disregard	
		L≦5	0.07＜W≦0.1	4	
	Dot Shape (Particle in Display area)	Dimension(mm)		Acceptable number	Note:3
		D≦0.3		Disregard	
		0.3＜D≦0.5		4	

Incoming Inspection Touch Panel

Circular Defects
Linear Defects
Scratch
Air Bubble
Crack

Y:
Long breakage

Z:
Wide breakage

D:
thickness
breakage

T:
single piece of
glass thickness
(Touch senor
single thickness)

VA:
Touch control
panel viewing
area.

Sensor wide:
the size of the
long side of the
touch panel.

(1) Circular Defects $\phi=(L+W)/2$

Diameter(mm)	Spec
$\phi \leqq 0.25$	No quantity limit
$0.25 < \phi \leqq 0.5$	Max 5 defect
$0.5 < \phi$	Reject

(2) Linear Defects

Length	Width	Acceptable
12.0≧L	0.06≧W	Accept
12.0≧L	0.08≧W	Max 5 defect
L>12.0	W>0.08	Reject
The Min distance of defects must be above 15.0mm.		

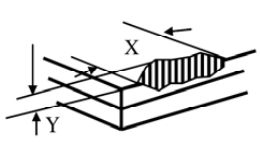
(3)Scratch

Length	Width	Acceptable
12.0≧L	0.06≧W	Accept
12.0≧L	0.08≧W	Max 5 defect
L>12.0	W>0.08	Reject
The Min distance of defects must be above 15.0mm.		

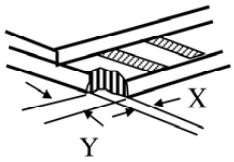
(4) Air Bubble

Diameter(mm)	Spec
$\phi \leqq 0.2$	No quantity limit
$0.2 < \phi \leqq 0.6$	Max 5 defect
The Min distance of defects must be above 10.0mm.	

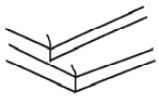
(5)Crack



Z≦T,X≦1/8 Sensor wide
Y:Did not enter the VA
(Accept)



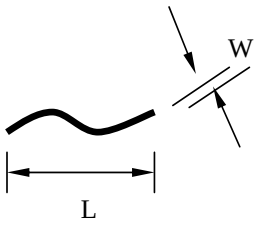
X≦3mm and Y≦1/3D
(Accept)



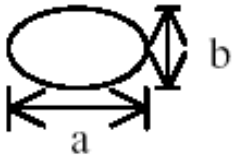
(Reject)

Note1. The definition of dot defect : The dot defect was judged after repair and the size of a defective dot over 1/2 of whole dot is regarded as one defective dot.

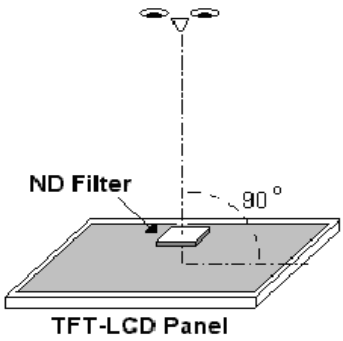
Note2.

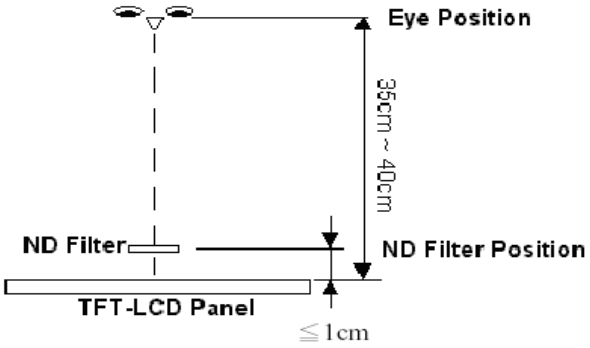


Note3. D：Diameter D=(a+b)/2



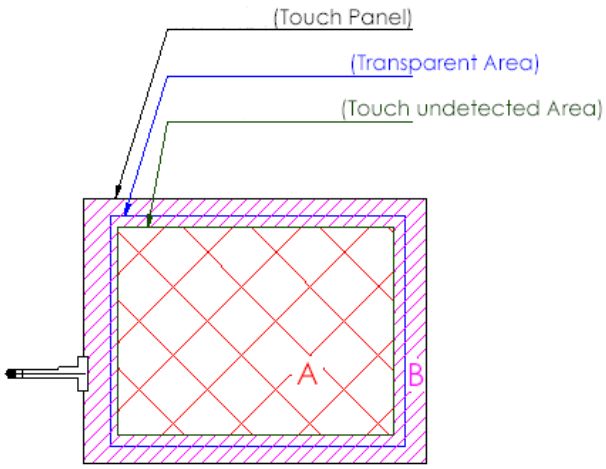
Note4. Bright dot is defined through 2% transmission ND Filter as following.





Note5. ADJACENT DOT

Note6.



A area : Without any defect point effect on normal operation.

B area : None-specify

18.4 Handling of LCM

(1)Don't give external shock.

(2)Don't apply excessive force on the surface.

(3)Liquid in LCD is hazardous substance. Must not lick and swallow. when the liquid is attach to your hand, skin, cloth etc. Wash it out thoroughly and immediately.

(4)Don't operate it above the absolute maximum rating.

(5)Don't disassemble the LCM.

VERO/power

EPLAX

VP80-Serie: 1-4 Ausgänge AC/DC-Netzteile mit PFC

80 Watt primärgetaktete AC/DC-Einschubnetzteile in 3HE/8TE-Eurokassetten für den Einsatz in 19"-Baugruppenträgern nach DIN 41494

- Aktive Powerfaktor Korrektur PFC
- Weiter Eingangsbereich 94-253VAC
- Hoher Wirkungsgrad bis 83%
- Power Share zwischen d. Ausgängen
- N+1 redundante Typen
- CE-Zeichen gem. EMV u. NV-Richtlinie
- EN60950, ULund cUL abgenommen
- Optional: EMV-Frontplatte, ohne Frontpl.
- Vero-Standardpinning, paßt zu PK60
- 24 Monate Garantie

Durch moderne Schaltungstechnik werden Wirkungsgradwerte bis 83% erreicht. Zusammen mit optimalem thermischen Design konnte die Leistungsdichte dieser Serie gegenüber der PK-Serie um mehr als 30% erhöht werden. Somit können 80 Watt in einer 3HE/8TE-Kassette bereitgestellt werden. Die Einzelwandler-Technik erlaubt bei Mehrfachausgängen eine Lastverschiebung zwischen den Ausgängen. Mit dem VP80-1R können N+1redundante Systeme und Battery Back-up Systeme aufgebaut werden.

80 Watt switched mode AC/DC plug-in power supplies in 3U/8HP-Eurocassettes for use in 19" subracks to DIN 41494

- Active Powerfactor Correction PFC
- Wide input range 94-253VAC
- High efficiency up to 83%
- Power share between outputs
- N+1 redundant types
- CE marking acc EMI and LV directive
- Safety certified to EN60950, UI, cUL
- Optional: EMI frontpanel, no frontpanel
- VERO standard pinning, suits to PK60
- 24 months warranty

With the new VP80 series an efficiency of up to 83% is achieved whilst power density is increased over its predecessors by more than 30%. Without the need for external heatsinking, the 80W output power can be achieved with natural convection cooling. A wide range of multi O/P units is further extended through power share technology, allowing maximum flexibility in the way power is delivered across the voltage rails, for smaller and more economical solutions. The range is enhanced with „Type R“ versions, designed for N+1 redundant applications or battery back-up systems.

Technische Daten	Technical Data	VP80 Serie
Eingangsdaten	**Input Data**	
Eingangsspannung	Input voltage	94 – 253VAC
Eingangsfrequenz	Input frequency	47-63Hz
Einschalt-Stoßstrombegrenzung	Inrush surge current limit	<27A (NTC)
Begrenzung Eingangsspannungsspitzen	Input voltage spike limit	durch VDR; by VDR
Netzausfallüberbrückung	Hold-up time	>20 msec (bei Nenndaten; at nominal values)
Powerfaktor Korrektur PFC	Powerfactor correction PFC	>0,95
Wirkungsgrad	Efficiency	bis / up to 83%
Sicherheit: CE-Zeichen gemäß Niederspannungsrichtlinie 73/23/EWG	**Safety: CE marking according to low voltage directive 73/23/EEG**	
Sicherheit gemäß	Safety according to	EN60950, IEC 950, UL1950, cUL
EMV: CE-Zeichen gemäß EMV-Richtlinie 89/336/EWG	**EMC: CE marking according EMC directive 89/336/EEG**	
EMV-Störaussendung	EMI conducted & radiated emission	EN 55022/B (0,15-30MHz; 30-1000MHz)
EMV-Störfestigkeit	EMI immunity	EN 50082-2
Betriebstemperatur / Lagertemperatur	Operating temperature / Storage temperature	0°C...+70°C / -40°C...+85°C
Relative Luftfeuchtigkeit	Relative humidity	max. 90% ohne Betauung /without condensation
Abmaße (L x B x H) mm	Dimensions (L x W x H) mm	162 x 32,9 x 100mmm (3U/8HP) with Frontpanel
Gewicht:	Weight:	650 g

Typ	Ausgänge	Bestell-Code mit Frontplatte
Type	**Outputs**	**Ordercode with frontpanel**
VP80-1 5V	5V/16A	116-020015L
VP80-1 12V	12V/6,7A	116-020016H
VP80-1 15V	15V/5,3A	116-020017E
VP80-1 24V	24V/3,3A	116-020018B
VP80-1-R 5V	5V/16A	116-020047D
VP80-1-R 12V	12V/6,7A	116-020048A
VP80-1-R 15V	15V/5,3A	116-020049J
VP80-1-R 24V	24V/3,3A	116-020050K
VP80-2A	+12V/5A; -12V/2A	116-020019K
VP80-2B	+15V/4A; -15V/2A	116-020020L
VP80-2C	+5V/12A; +12V/2,5A	116-020021H
VP80-2D	+5V/5A; +24V/2,5A	116-020022E
VP80-2E	+12V/2A; +24V/2,5A	116-020023B
VP80-3A	5V/12A; ±12V/1A	116-020024K
VP80-3B	5V/12A; ±15V/1A	116-020025G
VP80-3C	5V/12A; +12V/4A; -12V/1A	116-020026D
VP80-3D	5V/12A; +15V/3A; -15V/1A	116-020027A
VP80-4	+3,3V/3A; +5V/12A; +12V/4A; -12V/1A	116-020028J
Federleiste mit Kodierung H15 nach DIN 41612 mit Faston-Pins	Mating connector coded H15 to DIN 41612 with faston pins	117-010015K
Kodierungsteil (10er Paket) für Federleiste mit Kodierung	Coding keys (pack per 10)	117-010064F

VP80-Serie mit 1 und 2 Ausgängen
AC/DC-Netzteile mit PFC

Technische Daten	Technical Data	VP80 Serie			
VP80-1 80W Einzel-Ausgang	**VP80-1 80W Single output**	**V1**	**V1**	**V1**	**V1**
Ausgangsspannung	Output voltage	**5V**	**12V**	**15V**	**24V**
Einstellbereich	Adjustment range	4,8–5,5V	11–13V	14–16V	22–28V
Ausgangs-Nennstrom 1)	Output nominal current 1)	**16A**	**6,7A**	**5,3A**	**3,3A**
Ripple bei Vollast	Ripple at full load	<40mV$_{PP}$	<40mV$_{PP}$	<40mV$_{PP}$	<40mV$_{PP}$
Begrenzung Ausgangsstrom	Output current limit	>16,1A	>6,75A	>5,35A	>3,35A
Kurzschlußschutz	Short circuit protection	ja, elektronisch, automatischer Neustart - yes, electronic, automatic restart			
Überspannungsschutz (OVP)	Overvoltage protection (OVP)	6,0–6,7V	15,5–18V	17–21V	27–32V
Powerfail-Signal (bei Vollast >6ms)	Powerfail signal (at full load >6ms)	V1<4,8V	V1<11,5V	V1<14,4V	V1<23V
Netzregelung (100% I_{OUT})	Line regulation (100% I_{OUT})	<0,1%	<0,1%	<0,1%	<0,1%
Lastregelung statisch (10...90%I_{OUT})	Load regulation static (10...90%I_{OUT})	<0,1%	<0,1%	<0,1%	<0,1%
Regelzeit (10...90%I_{OUT})	Response time (10...90%I_{OUT})	<0,5ms	<0,2ms	<0,2ms	<0,1ms
Spannungsausregelung mit Sense max.	Output regulation with sense max.	0,5V max.	0,5V max.	0,5V max.	0,5V max.
Derating	Derating	2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s			

VP80-1-R for N+1 redundant systems

80W Einzel-Ausgang redundant	80W Single output redundant	V1	V1	V1	V1
Ausgangsspannung	Output voltage	**5V**	**12V**	**15V**	**24V**
Einstellbereich	Adjustment range	4,8–5,5V	11–13V	14–16V	22–26V
Ausgangs-Nennstrom 1)	Output nominal current 1)	**16A**	**6,7A**	**5,3A**	**3,3A**
Ripple bei Vollast	Ripple at full load	<40mV$_{PP}$	<40mV$_{PP}$	<40mV$_{PP}$	<40mV$_{PP}$
Begrenzung Ausgangsstrom	Output current limit	>16,1A	>6,75A	>5,35A	>3,35A
Kurzschlußschutz	Short circuit protection	ja, elektronisch, automatischer Neustart - yes, electronic, automatic restart			
Überspannungsschutz (OVP)	Overvoltage protection (OVP)	6,0–6,7V	15,5–18V	17–21V	27–32V
DC-FAIL-Signal	DC-FAIL signal	active low bei Geräteausfall / at unit failure (open collector, 20mA, <0,4V)			
Netzregelung (100% I_{OUT})	Line regulation (100% I_{OUT})	<0,1%	<0,1%	<0,1%	<0,1%
Lastregelung statisch (10...90%I_{OUT})	Load regulation static (10...90%I_{OUT})	<0,2%	<0,2%	<0,2%	<0,2%
Regelzeit (10...90%I_{OUT})	Response time (10...90%I_{OUT})	<1ms	<0,5ms	<0,4ms	<0,1ms
Stromaufteilung mit ASF-Signal: ±5%bei I_{OUT}	Current share with ASF signal: ±5% @ I_{OUT}	>3,2A	>1,3A	>1,0A	>0,6A
Spannungsausregelung mit Sense max.	Output regulation with sense max.	0,5V max.	0,5V max.	0,5V max.	0,5V max.
Derating	Derating	2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s			

VP80-2

		Version A		Version B		Version C	
80W Doppel-Ausgang	**80W Dual output**	**V1**	**V2**	**V1**	**V2**	**V1**	**V2**
Ausgangsspannung	Output voltage	**+12V**	**-12V**	**+15V**	**-15V**	**+5V**	**+12V**
Einstellbereich	Adjustment range	11,8–13V	fix	14,8–16V	fix	4,8–5,5V	fest
Ausgangs-Nennstrom 1)	Output nominal current 1)	**5A**	**2A**	**4A**	**2A**	**12A**	**2A**
Ripple bei Vollast	Ripple at full load	<40mV$_{PP}$	<40mV$_{PP}$	<40mV$_{PP}$	<40mV$_{PP}$	<40mV$_{PP}$	<40mV$_{PP}$
Begrenzung Ausgangsstrom	Output current limit	>5,01A	>2,01A	>4,01A	>2,01A	>12,1A	>2,01A
Kurzschlußschutz	Short circuit protection	ja, elektronisch, automatischer Neustart - yes, electronic, automatic restart					
Überspannungsschutz (OVP)	Overvoltage protection (OVP)	15,5–18V	–	17–21V	–	6,0–6,7V	–
Powerfail-Signal (bei Vollast >6ms)	Powerfail signal (at full load >6ms)	–	–	–	–	V1<4,8V	–
Netzregelung (100% I_{OUT})	Line regulation (100% I_{OUT})	<0,1%	<0,1%	<0,1%	<0,1%	<0,1%	<0,1%
Lastregelung statisch (10...90%I_{OUT})	Load regulation static (10...90%I_{OUT})	<0,5%	<1,5% 2)	<0,5%	<1,5% 2)	<0,2%	<1,5% 2)
Regelzeit (10...90%I_{OUT})	Response time (10...90%I_{OUT})	<1ms	<1ms	<1ms	<1ms	<1ms	<1ms
Spannungsausregelung mit Sense max.	Output regulation with sense max.	–	–	–	–	–	–
Derating	Derating	2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s					

VP80-2

		Version D		Version E	
80W Doppel-Ausgang	**80W Dual output**	**V1**	**V2**	**V1**	**V2**
Ausgangsspannung	Output voltage	**+5V**	**+24V**	**+12V**	**+24V**
Einstellbereich	Adjustment range	fest	22-26V	fest	22-26V
Ausgangs-Nennstrom 1)	Output nominal current 1)	**5A**	**2,7A**	**2A**	**2,5A**
Ripple bei Vollast	Ripple at full load	<40mV$_{PP}$	<40mV$_{PP}$	<40mV$_{PP}$	<40mV$_{PP}$
Begrenzung Ausgangsstrom	Output current limit	>5,01A	>2,71A	>2,01A	>2,51A
Kurzschlußschutz	Short circuit protection	ja, elektronisch, automatischer Neustart - yes, electronic, automatic restart			
Überspannungsschutz (OVP)	Overvoltage protection (OVP)	6,0–6,7V	–	–	–
Powerfail-Signal (bei Vollast >6ms)	Powerfail signal (at full load >6ms)	V1<4,8V	–	–	–
Netzregelung (100% I_{OUT})	Line regulation (100% I_{OUT})	<0,1%	<0,1%	<0,1%	<0,1%
Lastregelung statisch (10...90%I_{OUT})	Load regulation static (10...90%I_{OUT})	<1,5%	<0,5% 2)	<1,5%	<0,5% 2)
Regelzeit (10...90%I_{OUT})	Response time (10...90%I_{OUT})	<1ms	<1ms	<1ms	<1ms
Spannungsausregelung mit Sense max.	Output regulation with sense max.	0,5V max.	--	0,5V max.	–
Derating	Derating	2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s			

1) maximale Gesamt-Ausgangsleistung: 80 Watt, siehe Derating
2) P_{OUT} V1 min. 5Watt

1) maximum total output power: 80 Watt, see derating
2) P_{OUT} V1 min. 5Watt

VP80-Serie mit 3 und 4 Ausgängen
AC/DC-Netzteile mit PFC

VP80 Serie

VP80-3

Technische Daten	Technical Data	Version A	with sym. ±12V		Version B	with sym. ±15V	
80W Dreifach-Ausgang	80W Triple output	V1	V2	V3	V1	V2	V3
Ausgangsspannung	Output voltage	5V	+12V	-12V	5V	+15V	-15V
Einstellbereich	Adjustment range	4,8–5,5V	fix	fix	4,8–5,5V	fix	fix
Ausgangs-Nennstrom [1]	Output nominal current [1]	12A	1A	1A	12A	1A	1A
Ripple bei Vollast	Ripple at full load	<40mV$_{PP}$	<10mV$_{PP}$	<10mV$_{PP}$	<40mV$_{PP}$	<10mV$_{PP}$	<10mV$_{PP}$
Begrenzung Ausgangsstrom	Output current limit	>12,1A	>1,01A	>1,01A	>12,1A	>1,01A	>1,01A
Kurzschlußschutz	Short circuit protection	ja, elektronisch, automatischer Neustart - yes, electronic, automatic restart					
Überspannungsschutz (OVP)	Overvoltage protection (OVP)	6,0–6,7V	–	–	6,0–6,7V	–	–
Powerfail-Signal (bei Vollast >6ms)	Powerfail signal (at full load >6ms)	V1<4,8V	–	–	V1<4,8V	–	–
Netzregelung (100% I_{OUT})	Line regulation (100% I_{OUT})	<0,2%	<0,2%	<0,2%	<0,2%	<0,2%	<0,2%
Lastregelung statisch (10...90%I_{OUT})	Load regulation static (10...90%I_{OUT})	<0,5%	<1,5% [2]	<1,5% [2]	<0,5%	<1,5% [2]	<1,5% [2]
Regelzeit (10...90%I_{OUT})	Response time (10...90%I_{OUT})	<1ms	<1ms	<1ms	<1ms	<1ms	<1ms
Spannungsausregelung mit Sense max.	Output regulation with sense max.	0,5V	–	–	0,5V	–	–
Derating	Derating	2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s					

VP80-3

		Version C	with strong +12V/4A		Version D	with strong +15V/3A	
80W Dreifach-Ausgang	80W Triple output	V1	V2	V3	V1	V2	V3
Ausgangsspannung	Output voltage	+5V	+12V	-12V	+5V	+15V	-15V
Einstellbereich	Adjustment range	4,8–5,5V	fix	fix	4,8–5,5V	fix	fix
Ausgangs-Nennstrom [1]	Output nominal current [1]	12A	4A	1A	12A	3A	1A
Ripple bei Vollast	Ripple at full load	<40mV$_{PP}$	<40mV$_{PP}$	<10mV$_{PP}$	<40mV$_{PP}$	<40mV$_{PP}$	<10mV$_{PP}$
Begrenzung Ausgangsstrom	Output current limit	>12,1A	>4,1A	>1,01A	>12,1A	>3,1A	>1,01A
Kurzschlußschutz	Short circuit protection	ja, elektronisch, automatischer Neustart - yes, electronic, automatic restart					
Überspannungsschutz (OVP)	Overvoltage protection (OVP)	6,0–6,7V	–	–	6,0–6,7V	–	–
Powerfail-Signal (bei Vollast >6ms)	Powerfail signal (at full load >6ms)	V1<4,8V	–	–	V1<4,8V	–	–
Netzregelung (100% I_{OUT})	Line regulation (100% I_{OUT})	<0,2%	<0,2%	<0,2%	<0,2%	<0,2%	<0,2%
Lastregelung statisch (10...90%I_{OUT})	Load regulation static (10...90%I_{OUT})	<0,5%	<±4 [2]	<1,5% [2]	<0,5%	<±4% [2]	<1,5% [2]
Regelzeit (10...90%I_{OUT})	Response time (10...90%I_{OUT})	<1ms	<1ms	<1ms	<1ms	<1ms	<1ms
Spannungsausregelung mit Sense max.	Output regulation with sense max.	0,5V	–	–	0,5V	–	–
Derating	Derating	2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s					

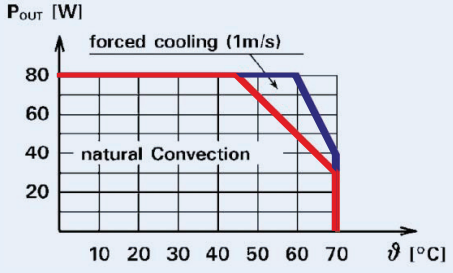
VP80-4

		mit 3,3V und 5V für cPCI-Anwendungen / for cPCI applications			
80W Vierfach-Ausgang	80W quadruple output	V1	V2	V3	V4
Ausgangsspannung	Output voltage	+3,3V	+5V	+12V	12V
Einstellbereich	Adjustment range	fix	4,8–5,5V	fix	fix
Ausgangs-Nennstrom [1]	Output nominal current [1]	3,0A	12A	4A	1A
Ripple bei Vollast	Ripple at full load	<20mV$_{PP}$	<40mV$_{PP}$	<40mV$_{PP}$	<10mV$_{PP}$
Begrenzung Ausgangsstrom	Output current limit	>3,01A	>12,1A	>4,1A	>1,01A
Kurzschlußschutz	Short circuit protection	ja, elektronisch, automatischer Neustart - yes, electronic, automatic restart			
Überspannungsschutz (OVP)	Overvoltage protection (OVP)	–	6,0–6,7V	–	–
Powerfail-Signal (bei Vollast >6ms)	Powerfail signal (at full load >6ms)	–	V2<4,8V	–	–
Netzregelung (100% I_{OUT})	Line regulation (100% I_{OUT})	<0,2%	<0,2%	<0,2%	<0,2%
Lastregelung statisch (10...90%I_{OUT})	Load regulation static (10...90%I_{OUT})	<±4%	<1%	<1,5% [3]	<1,5% [3]
Regelzeit (10...90%I_{OUT})	Response time (10...90%I_{OUT})	<1ms	<1ms	<1ms	<1ms
Spannungsausregelung mit Sense max.	Output regulation with sense max.	–	–	–	–
Derating	Derating	2W/°C over 45°C at natural convection; 4W/°C over 60°C at enhanced cooling 1 m/s			

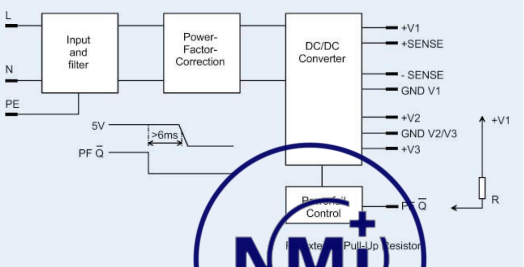
[1] maximale Gesamt-Ausgangsleistung: 80 Watt, siehe Derating
[2] I_{OUT} V1 min. 1A
[3] I_{OUT} V2 min. 1A

[1] maximum total output power: 80 Watt, see derating
[2] I_{OUT} V1 min. 1A
[3] I_{OUT} V2 min. 1A

Deratingkurve **Derating curve**

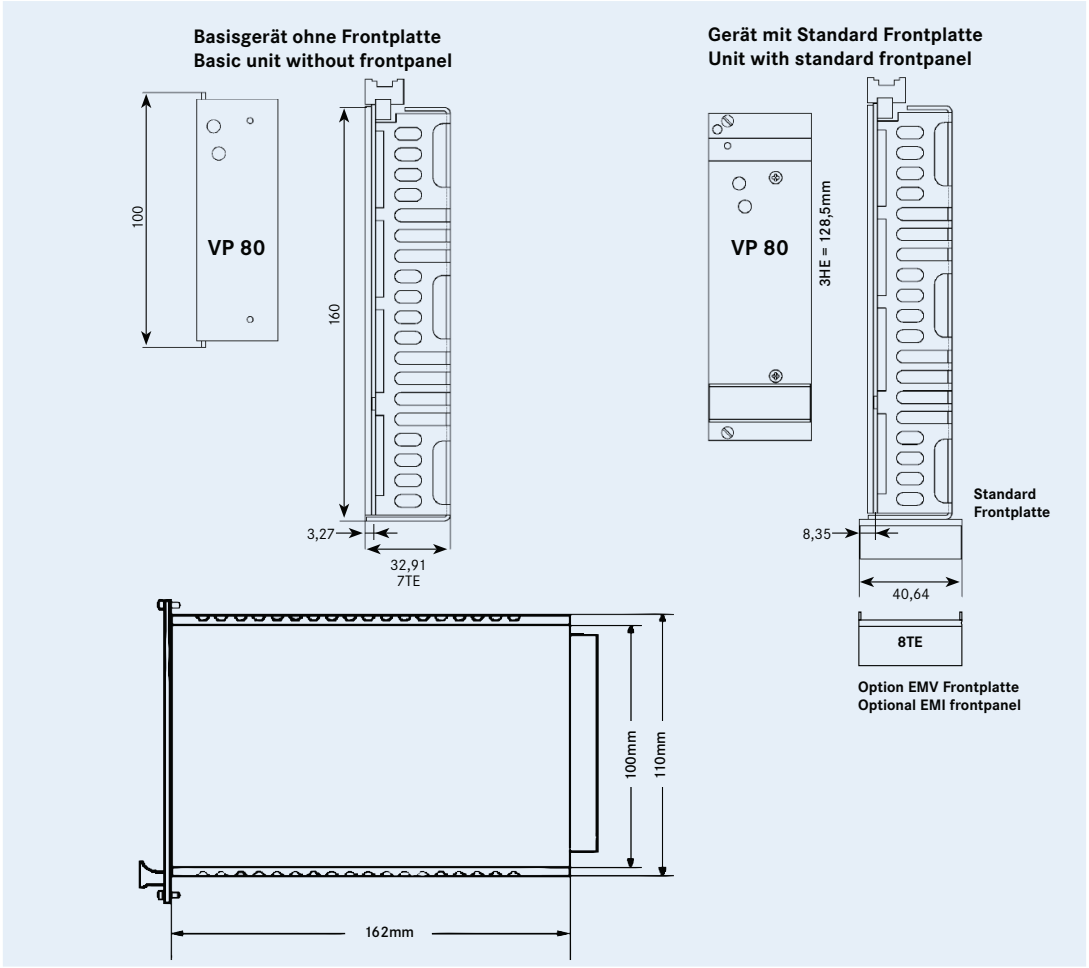


Blockschaltbild **Schematic Diagram**

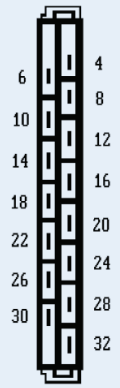


VP80 Serie — Mechanische Details, Steckerbelegung

VP80 Series — Mechanical Details, Connector Pinning



H15-Stecker
Connector



Anschlussbelegung — **Connector pinning**

PIN	Funktion							
	VP80-1	VP80-1R	VP80-2			VP80-3		VP80-4
			A+B	C+E	D	A+B	C+D	
4	+V1	+V1	–	+V1	+V1	+V1	+V1	+V2
6	+V1	+V1	–	+V1	+V1	+V1	+V1	+V2
8	Gnd V1	Gnd V1	–	Gnd V1	Gnd V1	Gnd V1	Gnd	Gnd
10	Gnd V1	Gnd V1	–	Gnd V1	Gnd V1	Gnd V1	Gnd	Gnd
12	+Sense	+Sense	–	+Sense	–	+Sense	+Sense	+V1
14	-SENSE	-Sense	–	-Sense	–	-Sense	-Sense	–
16	PF/	DC-Fail/	–	PF/	–	PF/	PF/	PF/
18	–	–	+V1	–	–	+V2	+V2	+V3
20	–	ASF	Gnd V1/V2	+V2	+V2	Gnd V2/V3	Gnd	Gnd
22	–	–	-V2	Gnd V2	Gnd V2	-V3	-V3	-V4
24	–	–	–	–	–	–	–	–
26	–	–	–	–	–	–	–	–
28	N	N	N	N	N	N	N	N
30	L	L	L	L	L	L	L	L
32	PE	PE	PE	PE	PE	PE	PE	PE

Anmerkung: Die Sense-Leitungen müssen angeschlossen werden. Wegen der maximalen Kompensation des Spannungsabfalls im Zuleitungskabel sollten sie so nahe wie möglich an der Last angeschlossen sein.

Attention: The sense lines must be connected. For maximum compensation of the voltage drops on the power cables they should be connected as close as possible to the load.

Parameter setting
The below mentioned parameters shall be set to the belonging values and in the secure mode “read only”.

Object number	Description	Unit	Value
462	Atmospheric Pressure	bara	0,9 - 1,1
464	Line reference temperature	degC	0 / 15
465	Line reference pressure	bara	1,01325
468	Combustion temperature	degC	0 / 15 / 20 / 25
473	Gamma0 temperature	degC	0 / 15 / 20 / 25
487	Spec. heat cap. at line cond. par.	J/(mol K)	0-100
512	Measured clock frequency IPIMC	Hz	Measured on front panel (typical 312500Hz)
570	Distribution Hexane (C6)	%	0 - 100
571	Distribution Heptane C7	%	0 - 100
572	Distribution Octane (C8)	%	0 - 100
582	Isentr.exp. at line cond. parameter	-	1,1 - 1,3
583	Gamma0 (Cp/Cv) parameter	-	1,1 - 1,3
584	Dyn. visc. at line cond. parameter	Pas	0,000008 - 0,000010
592	C1 Methane	% mol	60 - 100
593	N2 Nitrogen	% mol	0 - 50
594	CO2 Carbondioxide	% mol	0 - 30
595	C2 Ethane	% mol	0 - 10
596	C3 Propane	% mol	0 - 4
597	H2O Water	% mol	0 - 0,05
598	H2S Hydrogensulphide	% mol	0 - 0,1
599	H2 Hydrogen	% mol	0 - 10
600	CO Carbonmonoxide	% mol	0 - 3
601	O2 Oxygen	% mol	0 - 0,2
602	iC4 Iso-Butane	% mol	0 - 1,5
603	nC4 Normal-Butane	% mol	0 - 1,5
604	iC5 Iso-Pentane	% mol	0 - 0,5
605	nC5 Normal-Pentane	% mol	0 - 0,5
606	nC6 Normal-Hexane	% mol	0 - 0,12
607	nC7 Normal-Heptane	% mol	0 - 0,05
608	nC8 Normal-Octane	% mol	0 - 0,05
609	nC9 Normal-Nonane	% mol	0 - 0,05
610	nC10 Normal-Decane	% mol	0 - 0,05

Object number	Description	Unit	Value
611	He Helium	% mol	0 - 0,5
612	Ar Argon	% mol	0 - 0,2
615	C6+ Hexane+	% mol	0 - 0,15
619	NeoC5 Neo-Pentane	% mol	0 - 1,5
1400	K0 - Densitometer A	-	From certificate
1401	K1 - Densitometer A	-	From certificate
1402	K2 - Densitometer A	-	From certificate
1403	K3 - Densitometer A	-	From certificate
1404	K4 - Densitometer A	-	From certificate
1405	K18 - Densitometer A	-	From certificate
1406	K19 - Densitometer A	-	From certificate
1407	A - Densitometer A	-	From certificate
1408	Cal. temp. - Densitometer A	degC	From certificate
1409	Gamma for cal. Gas - Densitometer A	-	From certificate
1410	K5 - Densitometer A	-	From certificate
1411	K6 - Densitometer A	-	From certificate
1412	K - Densitometer A	-	From certificate
1413	K0 - Densitometer B	-	From certificate
1414	K1 - Densitometer B	-	From certificate
1415	K2 - Densitometer B	-	From certificate
1416	K3 - Densitometer B	-	From certificate
1417	K4 - Densitometer B	-	From certificate
1418	K18 - Densitometer B	-	From certificate
1419	K19 - Densitometer B	-	From certificate
1420	A - Densitometer B	-	From certificate
1421	Cal. temp. - Densitometer B	degC	From certificate
1422	Gamma for cal. Gas - Densitometer B	-	From certificate
1423	K5 - Densitometer B	-	From certificate
1424	K6 - Densitometer B	-	From certificate
1425	K - Densitometer B	-	From certificate
1426	Orifice diameter	mm	From certificate
1427	Orifice cal. temperature	degC	From certificate
1428	Orifice exp. coeff.	/degC	From certificate
1429	Line diameter	mm	From certificate
1430	Line cal. temperature	degC	From certificate

Object number	Description	Unit	Value
1431	Line exp. coeff.	/degC	From certificate
1441	Wall thickness	mm	From certificate
1472	Meter Factor	-	From certificate
1473	Nominal K-Factor from certificate	P/m3	From certificate
1474	V-Cone flow coefficient	-	From certificate
1475	Venturi discharge coefficient	-	From certificate