Bill of Materials

TI DESIGNS

TIDM-3LC-METER-CONV Main Board

Designator	Value	Qty	Description	Package	Manufacturer PN	Digikey PN	Remark	Manufacturer
C100, C101, C200, C201, C405, C406, C410, C412	10pF(NP0/C0G)	8	Chip Capacitor, C0G, 50V, -+5%	C0402	GRM1555C1H100JA01D	490-5921-1-ND	Alternatives: NP0/C0G, 10V, -+5% or better	Murata
C10, C11, C403, C404	22pF(NP0/C0G)	4	Chip Capacitor, C0G, 50V, -+5%	C0402	GRM1555C1H220JA01D	490-5868-1-ND	Alternatives: NP0/C0G, 10V, -+5% or better	Murata
C109, C110	33pF(NP0/C0G)	2	Chip Capacitor, C0G, 50V, -+5%	C0402	GRM1555C1H330JA01D	490-5936-1-ND	Alternatives: NP0/C0G, 10V, -+5% or better	Murata
C111, C210	1000pF	2	Chip Capacitor, X7R, 50V, -+10%	C0402	GRM155R71H102KA01D	490-1303-1-ND	Alternatives: X5R, 10V, -+10% or better	Murata
C1	2200pF	1	Chip Capacitor, X7R, 100V, -+10%	C0402	GRM155R72A222KA01D	490-6367-1-ND	Alternatives: X5R, 10V, -+10% or better	Murata
C3, C5, C7, C9, C32, C36, C102, C104, C108, C202, C204, C205, C400, C402, C407, C408	100nF	16	Chip Capacitor, X7R, 16V, -+10%	C0402	GRM155R71C104KA88D	490-3261-1-ND	Alternatives: X5R, 10V, -+10% or better	Murata
C105, C106, C206, C207	220nF	4	Chip Capacitor, X7R, 16V, -+10%	C0402	GRM155R71C224KA12D	490-5418-1-ND	Alternatives: X5R, 10V, -+10% or better	Murata
C107, C208	470nF	2	Chip Capacitor, X5R, 10V, -+10%	C0402	GRM155R61A474KE15D	490-3264-1-ND	Alternatives: X5R, 10V, -+10% or better	Murata
C411, C415, C417	1uF	2	Chip Capacitor, X7R, 25V, -+10%	C0603	GRM188R71E105KA12D	490-5307-1-ND	Alternatives: X5R, 10V, -+10% or better	Murata
C33, C401	4.7uF	1	Chip Capacitor, X7R, 16V, -+10%	C0805	GRM21BR71C475KA73L	490-4522-1-ND	Alternatives: X5R, 10V, -+10% or better	Murata
C103, C203, C209, C409	10uF	4	Chip Capacitor, X7R, 25V, -+10%	C1206	GRM31CR71E106KA12L	490-6518-1-ND	Alternatives: X5R, 10V, -+10% or better	Murata

R44, R45, R46, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56, R57, R420	0Ω	15	Chip Resistor	R0402	RC0402JR-070RL	311-0.0JRCT-ND	Alternatives: -+5% or better	Yageo
R65	10Ω	1	Chip Resistor	R0402	RC0402JR-0710RL	311-10JRCT-ND	Alternatives: -+5% or better	Yageo
R407, R409, R412, R413, R416, R417	22Ω	6	Chip Resistor	R0402	RC0402JR-0722RL	311-22JRCT-ND	Alternatives: -+5% or better	Yageo
R100, R101, R201, R203, R406	27Ω	5	Chip Resistor	R0402	RC0402JR-0727RL	311-27JRCT-ND	Alternatives: -+5% or better	Yageo
R405	33Ω	1	Chip Resistor	R0402	RC0402JR-0733RL	311-33JRCT-ND	Alternatives: -+5% or better	Yageo
R211	100Ω	1	Chip Resistor	R0402	RC0402JR-07100RL	311-100JRCT-ND	Alternatives: -+5% or better	Yageo
R105, R202, R204, R205	390Ω	4	Chip Resistor	R0402	RC0402JR-07390RL	311-390JRCT-ND	Alternatives: -+5% or better	Yageo
R9, R10, R104, R200	470Ω	2	Chip Resistor	R0402	RC0402JR-07470RL	311-470JRCT-ND	Alternatives: -+5% or better	Yageo
R103, R206, R408	1.5kΩ	3	Chip Resistor	R0402	RC0402JR-071K5L	311-1.5KJRCT-ND	Alternatives: -+5% or better	Yageo
R600, R601	2.2kΩ	2	Chip Resistor	R0402	RC0402JR-072K2L	311-2.2KJRCT-ND	Alternatives: -+5% or better	Yageo
R40, R41	10kΩ	2	Chip Resistor	R0402	RC0402JR-0710KL	311-10KJRCT-ND	Alternatives: -+5% or better	Yageo
R400, R401, R402, R403, R410, R411, R414, R415	15.0kΩ	8	Chip Resistor	R0402	RC0402JR-0715KL	311-15KJRCT-ND	Alternatives: -+5% or better	Yageo
R1, R106, R209, R404	47kΩ	4	Chip Resistor	R0402	RC0402JR-0747KL	311-47KJRCT-ND	Alternatives: -+5% or better	Yageo
R102, R210	1MΩ	2	Chip Resistor	R0402	RC0402JR-071ML	311-1.0MJRCT-ND	Alternatives: -+5% or better	Yageo
R5, R6, R7, R8	5.6kΩ	4	Chip Resistor 1%	R0402	RC0402FR-075K6L	311-5.6KLRCT-ND	Alternatives: -+1% or better	Yageo
R3	100kΩ	1	Chip Resistor 1%	R0402	RC0402FR-07100KL	311-100KLRCT-ND	Alternatives: -+1% or better	Yageo
R109	150kΩ	1	Chip Resistor 1%	R0402	RC0402FR-07150KL	311-150KLRCT-ND	Alternatives: -+1% or better	Yageo
R107, R108	220kΩ	2	Chip Resistor 1%	R0402	RC0402FR-07220KL	311-220KLRCT-ND	Alternatives: -+1% or better	Yageo
R110	240kΩ	1	Chip Resistor 1%	R0402	RC0402FR-07240KL	311-240KLRCT-ND	Alternatives: -+1% or better	Yageo
L400	2.2uH	1	SMD Inductor	3mm x 3mm	NR3010T2R2M	587-1638-1-ND		Taiyo Yuden

D100, D200	Red	2	LED, Red, SMD	0603	LTST-C190CKT	160-1181-1-ND		Lite-On Inc
D101, D201, D202, D203	Green	4	LED, Green, SMD	0603	LTST-C190GKT	160-1183-1-ND		Lite-On Inc
LED1, LED2	Amber	2	LED, Amber, SMD	0603	LTST-C190AKT	160-1180-1-ND		Lite-On Inc
Q100, Q200	4Mhz	2	Ceramic Resonator	CSTCR	CSTCR4M00G15L99-R0	490-7861-1-ND		Murata
Q400	6Mhz	1	Ceramic Resonator	CSTCR	CSTCR6M00G55-R0	490-5997-1-ND		Murata
X1	32.768kHz	1	Crystal Oscillator	Cylindrical Can, Radial	CMR200T-32.768KDZF-UT	300-8340-1-ND		Citizen
U1	MSP430FR6989PZ	1	Mixed Signal Microcontroller	MSP430FR6989	MSP430FR6989	N/A	Provided by TI	Texas Instruments
U100, U200	MSP430F5528IRGC	2	Mixed Signal Microcontroller	TI_RGC0064B_N	MSP430F5528IRGCR	296-27930-1-ND		Texas Instruments
U400	TPD2E001DRL	1	15kV ESD-Protection Array	DRL0005A	TPD2E001DRLR	296-21883-1-ND		Texas Instruments
U401	TUSB2046BIRHB	1	4-Port Full-Speed USB Hub	RHB0032E	TUSB2046BIRHBR	296-21926-1-ND		Texas Instruments
U403	TPS62237DRY	1	3.3V Buck Step Down Regulator	DRY0006A	TPS62237DRYT	296-25630-1-ND		Texas Instruments
J400	micro B	1	micro USB Type B, Reverse, Receptacle, SMD, RA	CONN_USB_micro_ZX62R-B-5PA	ZX62R-B-5P	H11574CT-ND		Hirose
RF1, RF2	2x10 SMD	2	Header, SMD, 1.27mm, 2x10	HDR2X10	TFM-110-02-SM-D-A-K	N/A	Contact Samtec directly	Samtec
(JP13+JP14), J401	2x2	2	Header, TH, 2.54mm, 2x2	HDR2X2	67997-104HLF	609-3225-ND	Alternative: Any similar JP13 and JP14 share same component	FCI
J402, J601 PORT_1_4, PORT_2_3, PORT_6_8, PORT_J	2x4	6	Header, TH, 2.54mm, 2x4	HDR2X4	67997-108HLF	609-3226-ND	Alternative: Any similar	FCI
ESI	2x8 RA	1	Shrouded Header, TH, 2.54mm, 2x8, Right Angled	HDR2X8	SBH11-PBPC-D08-RA-BK	S9179-ND		Sullins Connector Solutions
(Jumpers)	1x2	12	2 pin Jumper, 2.54mm	N/A	QPC02SXGN-RC	S9337-ND	Alternative: Any similar	Sullins Connector Solutions
BUT	TPA511GLFS	1	4 Way Navigation Switch w/select	TPA511GLFS	TPA511GLFS	401-1130-1-ND		C&K

BUT (Accessory)	Y43109100OP	1	Cap for TPA511GLFS	N/A	Y43109100OP	401-1997-ND		C&K
MCU_RESET, S201, S202	B3U-1000P	3	Push Button	B3U-1000P	B3U-1000P	SW1020CT-ND		Omron
LCD	FH-1152P	1	Custom 160 segment LCD	FH-1152P	FH-1152P	N/A	Provided by TI	ADKOM Elektronik GmbH
M3 Hex Standoff	M3/13mm	4	M3 13mm Female, female	N/A	Harwin Inc	952-1488-ND	Alternative: Any similar	R30-1011302
M3 Screw	M3/6mm	4	M3 Screw Philips Pan Head Head Diameter 5-6mm Thread Length 6mm		RM3X8MM 2701	335-1149-ND	Alternative: Any similar M3 Screws	APM Hexseal

Bill of Materials

TI DESIGNS

TIDM-3LC-METER-CONV Motor Board

Designator	Value	QTY	Description	Package	P/N	DigiKey PN	Remark	Manufacturer
R4, R8, R9	100Ω	3	Chip Resistor	R0402	RC0402JR-07100RL	311-100JRCT-ND	Alternatives: -+5% or better	Yageo
R2, R6	470Ω	2	Chip Resistor	R0402	RC0402JR-07470RL	311-470JRCT-ND	Alternatives: -+5% or better	Yageo
R3	1KΩ	1	Chip Resistor	R0402	RC0402JR-071KL	311-1.0KJRCT-ND	Alternatives: -+5% or better	Yageo
R5	2KΩ	1	Chip Resistor	R0402	RC0402JR-072KL	311-2.0KJRCT-ND	Alternatives: -+5% or better	Yageo
R1	10KΩ	1	Chip Resistor	R0402	RC0402JR-0710KL	311-10KJRCT-ND	Alternatives: -+5% or better	Yageo
R7	47KΩ	1	Chip Resistor	R0402	RC0402JR-0747KL	311-47KJRCT-ND	Alternatives: -+5% or better	Yageo
VR1	10KΩ	1	10K POT		3352P-1-103LF	3352P-103LF-ND	Alternatives: Same type, value between 10K to 100K	Bourns Inc.
C4	2200pF	1	Chip Capacitor, X7R, 100V, -+10%	C0402	GRM155R72A222KA01D	490-6367-1-ND	Alternatives: X5R, 10V, -+10% or better	Murata
C3, C5, C7, C8, C10	100nF	5	Chip Capacitor, X7R, 16V, -+10%	C0402	GRM155R71C104KA88D	490-3261-1-ND	Alternatives: X5R, 10V, -+10% or better	Murata
C6	470nF	1	Chip Capacitor, X5R, 10V, -+10%	C0402	GRM155R61A474KE15D	490-3264-1-ND	Alternatives: X5R, 10V, -+10% or better	Murata
C1, C9	22uF	2	Chip Capicitor, X5R, 16V, +20%	C1206	GRM31CR61C226ME15L	490-4739-1-ND	Alternatives: X5R, 10V, -+20% or better	Murata
LED1	Red	1	LED, Red, SMD	0603	LTST-C190CKT	160-1181-1-ND		Lite-On Inc
LED_PWR	Green	1	LED, Green, SMD	0603	LTST-C190GKT	160-1183-1-ND		Lite-On Inc
D1	MBR0520L	1	0.5A Schottky Diode, SMD	SOD123	MBR0520L	MBR0520LCT-ND		Fairchild
U1	MSP430G2553	1	MCU: MSP430G2553	20 TSSOP PW(R-PDSO-G20)	MSP430G2553IPW20	296-28430-1-ND		Texas Instruments
U3	DRV8837DSG	1	Low Voltage H-Bridge Driver	DSG(S-PWSON-N8)	DRV8837DSGR	296-34786-1-ND		Texas Instruments
U4	QRD1113	1	Reflective Optical Sensor	Custom 4L	QRD1113	QRD1113-ND		Fairchild
T1	BC817-40L	1	NPN Transistor	SOT23	BC817-40L	BC817-40LT3GOSCT-ND		On Semi
BUT1, BUT2		2	SMD push button	6mm x 6mm	B3SL-1002P	SW1064CT-ND		Omron
POWER	2P2T	1	SMD 2P2T Switch		JS202011SCQN	401-2002-1-ND		C&K Components
PWR_SEL, I2C, UART	3x1	3	3x1 2.54mm Pin header		68001-103HLF	609-3468-ND	Alternative: Any similar	FCI
EXT_PWR, SBW	2x1	2	2x1 2.54mm Pin header		68001-102HLF	609-3506-ND	Alternative: Any similar	FCI
(Jumpers)	1x2	1	2 pin Jumper, 2.54mm	N/A	QPC02SXGN-RC	S9337-ND	Alternative: Any similar	Sullins Connector Solutions
Motor		1	Motor		PPN7PA12C1	P14355-ND		NMB Technologies Corporation

BAT	2xAAA	1	2xAAA Battery holder		2468	2468K-ND		Keystone Electronics
Motor Mount		1	Custom made motor mount		NA	NA	Custom made by outsourcing	NA
M2 Screws	M2/3mm	2	M2 Screw Philips Pan Head Head Diameter 3mm; Head Height 1mm Thread Length 3mm Total length 4mm			NA	Alternative: M2 Screws with same dimension	
M2 Spring	M2/4mm dia	2	M2 Spring Diameter around 4mm Thickness < 1mm		MLWZ 002	H771-ND	Alternative: Similar M2 Springs	B&F Fastener Supply
M3 Screw	M3/6mm	5	M3 Screw Philips Pan Head Head Diameter 5-6mm Thread Length 6mm		RM3X8MM 2701	335-1149-ND	Alternative: Similar M3 Screws	APM Hexseal
M3 Hex Standoff	M3/2.54cm	4	M3 1 inch Standoff Female, female		R6397-02	952-2177-ND	Alternative: Similar M3 Standoff	Harwin Inc
M3 Nuts	M3	1	M3 Nut Width around 5mm Thickness around 2mm (For Mounting Battery Holder)			NA	Farnell Alternative: 53M8681 (Duratool M3- HFST-Z100-) Or Similar M3 Nuts	

Bill of Materials

TI DESIGNS

TIDM-3LC-METER-CONV 3LC Sensor board

Designator	Value	QTY	Description	Package	P/N	DigiKey PN	Remark	Manufacturer
C1 C2 C3	220pF (NP0/C0G)	3	Chip Capacitor, C0G, 50V, -+5%	C0402	GRM1555C1H221JA01D	490-1293-1-ND	Alternatives: NP0/C0G, 10V, -+5% or better	Murata
C5	470nF	1	Chip Capacitor, X5R, 10V, -+10%	C0402	GRM155R61A474KE15D	490-3264-1-ND	Alternatives: X5R, 10V, -+10% or better	Murata
L2 L6 L7	470uH	3		Radial	11R474C	811-2034-ND		Murata
ESI	8x2	1	8x2 2.54mm Female Socket		SFH11-PBPC-D08-ST-BK	S9196-ND		Sullins Connector Solution

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