

Bill of materials

Table 1. STEVAL-STWINBX1 bill of materials

Item	Q.ty	Ref.	Part/value	Description	Manufacturer	Order code
1	1	Table 2. STEVAL-STWBXCS1	-	Core system board	ST	Not available for separate sale
2	1	Table 3. STEVAL-C34DIL24	-	Adapter board	ST	Not available for separate sale
3	1	-	-	Plastic case	-	-
4	4	-	-	Screws	-	-
5	1	-	-	Programming cable	-	-

Table 2. Core system board bill of materials

Item	Q.ty	Ref.	Part/value	Description	Manufacturer	Order code
1	1	A1	U.FL connector	Coaxial U.FL (not mounted)	-	-
2	1	BATT1	Battery connector	Battery connector	Molex	78171-0003
3	1	CN1	CON34 SMD gold	Connector socket	Panasonic Electric Works	AXF5G3412A
4	1	CN3	CON4, 0.50 mm pitch	4-pin FFC/FPC connector	Hirose	FH33J-4S-0.5SH(10)
5	1	CN4	STDC14	STDC14-ARM MIPI10 compatible	Samtec	FTSH-107-01-L-DV-K-P
6	1	CN5	NU	STDC14- RM MIPI10 compatible (not mounted)	Samtec	FTSH-107-01-L-DV-K-P
7	1	CS1	CS V3 4L 35um	C.S. (not mounted)	-	-
8	42	C1, C2, C3, C7, C9, C12, C13, C14, C15, C22, C25, C26, C27, C28, C29, C31, C32, C33, C35, C37, C38, C39, C42, C43, C45, C48, C49, C51, C52, C56, C57, C58, C59, C61, C62, C64, C65, C66, C70, C72, C74, C80	100 nF, 0402 (1005 metric), 0.1 µF, ±10%, X7R	Ceramic capacitors	Murata Electronics North America	GRM155R71C104KA88J
9	11	C4, C10, C18, C20, C50, C53, C54, C60, C63, C78, C79	10µF, 10 V, 0402 (1005 metric), ±20%, X5R	Ceramic capacitors	Samsung Electro-Mechanics America, Inc.	CL05A106MP8NUB8
11	6	C8, C23, C46, C76, C77, C83	10 nF, 25 V, 0402 (1005 metric), ±10%,X7R	Ceramic capacitors	AVX Corporation	04023C103KAT2A

Item	Q.ty	Ref.	Part/value	Description	Manufacturer	Order code
12	8	C11, C17, C24, C40, C44, C47, C67, C75	1 μ F, 10 V, 0402 (1005 metric), \pm 10%, X5R	Ceramic capacitors	Taiyo Yuden	JMK105BJ105KV-F
13	1	C16	0.22 μ F, 16 V, 0402 (1005 metric), \pm 10%, X7R	Ceramic capacitor	Murata Electronics North America	GRM155R71C224KA12D
14	4	C19, C55, C86, C87	47 μ F, 10 V, 0603 (1608 metric), \pm 20%, X5R	Ceramic capacitors	Murata Electronics North America	ZRB18AR60J476ME01L
15	3	C21, C30, C34	4.7 μ F, 10 V, 0402 (1005 metric), \pm 20%, X5R	Ceramic capacitors	Murata Electronics North America	GRM155R61A475MEAAD
16	2	C36, C41	6.8 pF, 10 V, 0402 (1005 metric), \pm 5%, C0G/NP0	Ceramic capacitors	Murata Electronics North America	GRM0225C1E6R8CA03L
17	4	C68, C69, C71, C73	2.2 μ F, 10 V, 1210 (3225 metric), \pm 20%, X5R	Ceramic capacitors	Würth Electronics Inc.	Würth-885012105013
18	1	C81	100 pF, 10 V, 0402 (1005 metric), \pm 5%, C0G/NP0	Ceramic capacitor	Würth Electronics Inc.	'885012005013
19	1	C82	10 n/1 kV, 1206, \pm 10%, X7R	Ceramic capacitor	AVX	1206AC103KAT1A
20	1	C84	10000 PF, NU, 0402 (1005 metric), \pm 10%, X7R	Ceramic capacitor (not mounted)	-	-
21	1	C85	330 pF, NU, 0402 (1005 metric), \pm 10%,	Ceramic capacitor (not mounted)	-	-
22	1	DS1	BAT30KFILM, SOD-523	30 V, 300 mA SMD general-purpose signal Schottky diode	ST	BAT30KFILM
23	2	D4, D7	DIODE SCHOTTKY, STmite	20 V, 1 A STmite power Schottky rectifier	ST	STPS120M
24	1	D6	ESDA7P60-1U1M, QFN-2L	High-power transient voltage suppressor	ST	ESDA7P60-1U1M
25	2	D8, D9	NU, VFQFPN 2 0.6x1	Single-line low capacitance and low leakage current ESD protection (not mounted)	ST	ESDALCL5-1BM2
26	4	FID1, FID2, FID3, FID4	TPS	Fiducial (not mounted)	-	-
27	1	J1	NU	Stripline for RS485 (not mounted)	-	-
28	3	J4, J8, J11	NU	Jumpers (not mounted)	-	-

Item	Q.ty	Ref.	Part/value	Description	Manufacturer	Order code
29	1	J5	CON2, 2.54 mm pitch	PCB terminal block	Phoenix Contact	1725656
30	1	J12	MicroSD - 502774-0891, 8p, SMT	MicroSD	Molex	502774-0891
31	1	J13	12401598E4#2A	USB 3.0	Amphenol ICC	12401598E4#2A
32	1	LED_C1	Red, 0402 (1005 metric)	Red LED	Vishay Semiconductor Opto Division	VLMS1500-GS08
33	1	LED1	KPHHS-1005MGCK, 0402 (1005 metric)	Green LED	Kingbright	KPHHS-1005MGCK
34	1	LED2	SML-P12DTT86R, 0402 (1005 metric)	Orange LED	Rohm Semiconductor	SML-P12DTT86R
35	2	L1, L2	2.2 μ H, 2520, 20%,	2.2 μ H, 20%, 1.3A	Würth	Würth-74438323022
36	1	L3	2.2 μ H, 2520, \pm 20%, 2.1 A	Inductor	Murata	DFE201210S-2R2M=P2
37	1	L4	470 μ H, 7.8x7.8x5.3 mm, 3.7 A, \pm 20%	Inductor	Bourns	SDR0805-4R7ML
38	2	L5, L6	10 μ H, 2520, 850 mA, \pm 20%	Inductors	Würth	74438323022
39	1	M1	IMP23ABSUTR, RHLGA 2.65X3.5X1.08(M AX)MM 4L	Analog bottom port microphone with frequency response up to 80 kHz for ultrasound analysis and predictive maintenance applications	ST	IMP23ABSUTR
40	1	M2	IMP34DT05TR, HCLGA 4MM X 3 MM X 1.00 MM MICRO	MEMS audio sensor omnidirectional digital microphone for industrial applications	ST	IMP34DT05TR
41	3	USR1, RESET1, PWR1	SW PUSHBUTTON-SPST-2, 4.2x3.2x2.5 mm	Push button	ALPS	SKRPADE010
42	1	Q1	STL6N3LLH6, PowerFLAT 2x2	N-channel 30 V, 0.021 ohm typ., 6 A STripFET H6 power MOSFET	ST	STL6N3LLH6
43	1	Q2	DMN32D2LFB4, 1.05x0.65 mm	Transistor MOSFET	Diodes Incorporated	DMN32D2LFB4
44	1	Q3	DMP210D μ FB4, 1.05x0.65 mm	TRANSISTOR MOSFET P DMP210D μ FB4 μ DFN3 DIODES INC SMT	Diodes Incorporated	DMP210D μ FB4
45	3	R1, R24, R30	10 kohm, 0402 (1005 metric), \pm 1%, SMD	Resistors	Yageo	RC0402FR-0710KL

Item	Q.ty	Ref.	Part/value	Description	Manufacturer	Order code
46	9	R2, R3, R6, R22, R26, R27, R32, R38, R39	4.7 kohm, 0402 (1005 metric), 1/16 W±1%, SMD	Resistors	TE Connectivity Passive Product	CRG0402F4K7
47	1	R4	7.5 kohm, 0402 (1005 metric), 1/16 W±5%, SMD	Resistor	Yageo	RC0402JR-077K5L
48	9	R5, R9, R11, R16, R19, R34, R36, R40, R50	100 kohm, 0402 (1005 metric), 1/16 W±1%, SMD	Resistors	TE Connectivity Passive Product	CRG0402F100K
49	2	R7, R8	1 M, 0402 (1005 metric), ±1%, SMD	Resistors	TE Connectivity	CRG0402F1M0
50	1	R10	10 kohm, NU, 0402 (1005 metric), ±1%, SMD	Resistor (not mounted)	TE Connectivity	CRG0402F10K
51	1	R12	20 K, 0402 (1005 metric), 1/16 W±1%, SMD	Resistor	Yageo	RC0402FR-0720KL
52	2	R13, R18	2 k, 0402 (1005 metric), ±1%, SMD	Resistors	Yageo	RT0402FRE072KL
53	1	R14	56 K, 0402 (1005 metric), ±1%, SMD	Resistor	Yageo	RC0402FR-0756KL
54	27	SB4, SB5, SB6, SB8, SB11, SB12, SB15, R15, SB17, R17, SB18, SB19, SB20, SB21, SB23, SB24, SB31, SB32, SB33, SB34, SB35, SB38, SB40, SB41, SB42, SB46, SB47	0 R, 0402 (1005 metric), SMD	Resistors	Vishay Dale	CRCW04020000Z0ED
55	2	R20, R21	62, 0402 (1005 metric), 1/16 W±1%, SMD	Resistors	Yageo	RC0402FR-0762RL
56	1	R23	47k, 0402 (1005 metric), 1/16 W±1%, SMD	Resistor	Samsung Electro-Mechanics America, Inc.	RC1005F473CS
57	1	R25	160, 0402 (1005 metric), 1/16 W±1%, SMD	Resistor	TE Connectivity Passive Product	CRG0402F160R
58	1	R28	1k, 0402 (1005 metric), 1%, SMD	Resistor	Yageo	RC0402FR-071KL
59	1	R29	560R, 0402 (1005 metric), 1/16 W±1%, SMD	Resistor	Yageo	RC0402FR-07560RL
60	1	R31	2.7k, 0402 (1005 metric), 1/16 W±1%, SMD	Resistor		

Item	Q.ty	Ref.	Part/value	Description	Manufacturer	Order code
61	1	R35	100, 0402 (1005 metric), 1/16 W±1%, SMD	Resistor	TE Connectivity Passive Product	CRG0402F100R
62	1	R37	120R, 0402 (1005 metric), 1/16 W±1%	Resistor	TE Connectivity Passive Product	CRGCQ0603F120R
63	1	R45	1M, 0603 (1608 metric), 1/16 W±1%	Resistor	TE Connectivity Passive Product	CRGCQ0603J1M0
64	4	R46, R47, R48, R49	0R, 1206, 1/4W ±5%	Resistors	Yageo	AF1206JR-070RL
65	20	SB1, SB2, SB3, SB7, SB9, SB10, SB13, SB14, SB16, SB22, SB25, SB26, SB27, SB28, SB29, SB30, SB39, SB43, SB44, SB45	0 ohm, NU, 0402 (1005 metric), SMD	Resistors (not mounted)	Vishay Dale	CRCW04020000Z0ED
66	2	SB36, SB37	0 ohm, NU, 0402 (1005 metric), SMD	Resistors	Vishay Dale	CRCW04020000Z0ED
67	10	TAMPER1, TP4, TP5, TP6, TP7, TP8, TP9, TP10, TP11, TP12	TPS	Test points (not mounted)	-	-
68	3	TP1, TP2, TP3	NU	Test points (not mounted)	Keystone Electronics	5001
69	3	TVS1, TVS2, TVS3	ESDALC6V1-1M2, VFQFPN 2 0.6x1	Single-line low capacitance Transil, transient surge voltage suppressor (TVS) for ESD protection	ST	ESDALC6V1-1M2
70	1	TVS4	USBULC6-2M6, QFN-6L	Ultra large bandwidth ESD protection	ST	USBULC6-2M6
71	1	U1	EMIF06-MSD02N16	6-line EMI filter and ESD protection for T-Flash and micro-SD card interfaces	ST	EMIF06-MSD02N16
72	1	U3	ILPS22QSTR, HLGA 2X2X.8 10L EXP. SILIC .91SQ	Dual full-scale, 1.26 bar and 4 bar, absolute digital output barometer in full-mold package	ST	ILPS22QSTR
73	1	U5	BLUENRG-M2SA, BLUENRG-2 MODULE QFN, CHIP ANT	Very low power application processor module for Bluetooth® low energy v5.2	ST	BLUENRG-M2SA
74	1	U6	STTS22HTR, UDFN 2X2X.55 6L PITCH0.65	Low-voltage, ultra-low-power, 0.5°C accuracy I2C/SMBus 3.0	ST	STTS22HTR

Item	Q.ty	Ref.	Part/value	Description	Manufacturer	Order code
				temperature sensor		
75	1	U7	STSAFA110S8SP L02, SO-8	Secure element	ST	STSAFA110S8SPL02
76	1	U8	TSV912IQ2T, QFN-8L P 0.5 mm	Wide-bandwidth (8 MHz) rail-to-rail input/output 5V CMOS op-amps, dual	ST	TSV912IQ2T
77	1	U9	ISM330DHCXTR, VFLGA2.5X3X.86 14L P.5 L.475X.25	iNEMO inertial module with Machine Learning Core, Finite State Machine with digital output for industrial applications	ST	ISM330DHCXTR
78	1	U10	LDLN025PU275R, DFN4 1x1	250 mA ultra-low noise LDO	ST	LDLN025PU275R
79	1	U11	IIS3DWBTR, VFLGA2.5X3X.86 14L P.5 L.475X.25	Ultra-wide bandwidth, low-noise, 3-axis digital vibration sensor	ST	IIS3DWBTR
80	1	U12	IIS2DLPCTR, LGA2X2X0.7 12 leads	MEMS digital output motion sensor: high-performance ultra-low-power 3-axis accelerometer for industrial applications	ST	IIS2DLPCTR
81	1	U13	IIS2MDCTR, LGA2X2X0.7 12 leads	High accuracy, ultra-low-power, 3-axis digital output magnetometer	ST	IIS2MDCTR
82	1	U15	STBC02AJR, chip scale package 0.4 mm pitch	Li-ion linear battery charger with LDO, load switches, and reset generator	ST	STBC02AJR
83	2	U16, U19	ST1PS02CQTR, MLPQ/QFN 1.7x2.0x0.55 12L P0.4	400 mA nano-quiescent synchronous step-down converter with digital voltage selection, Power Good, and AUX switch	ST	ST1PS02CQTR
84	1	U17	USBLC6-2P6, SOT666	ESD protection for USB 2.0	ST	USBLC6-2P6
85	1	U18	STR485LVQT, VDFPN 10 3x3x1.0	3.3 V RS485 compatible with 1.8 V I/Os and selectable speed 20 Mbps or 250 kbps	ST	STR485LVQT
86	1	U20	STM32U585AI16Q	Ultra-low-power with FPU ARM™	ST	STM32U585AI16Q

Item	Q.ty	Ref.	Part/value	Description	Manufacturer	Order code
				Cortex-M33 with TrustZone, MCU 160 MHz with 2 mbytes of Flash memory		
87	1	U21	IIS2ICLXTR, LGA 5X5X1.7 16LD ceramic cavity	High-accuracy, high-resolution, low-power, 2-axis digital inclinometer with embedded Machine Learning Core	ST	IIS2ICLXTR
88	1	U22	TCPPO1-M12,QFN-12L	Overvoltage protection for USB Type-C™ or Power Delivery	ST	TCPPO1-M12
89	1	U23	EMW3080(BP), SoM,	EMW3080 Wi-Fi Module 802.11 bgn	Mxchip	EMW3080(BP)
90	1	U24	ST25DV64K-JFR6D3, UDFPN 12L 3X3X0.55 pitch 0.50	Dynamic NFC/RFID tag IC	ST	ST25DV64K-JFR6D3
91	1	U25	STEF05SGR, TSOT 8L	Electronic fuse for 5 V line	ST	STEF05SGR
92	1	X1	16 MHz	Crystal	NDK	NX2016SA 16 MHz EXS00A-CS07826
93	1	X2	32.7680 KHz,	Crystal	NDK	NX2012SA 32.768KHz EXS00A-MU00527

Table 3. Adapter board bill of materials

Item	Q.ty	Ref.	Part/value	Description	Manufacturer	Order code
1	1	CN1	CON34-Plug, SMD, gold	Connector socket	Panasonic Electric Works	AXF6G3412A
2	1	CN2	SPC15503	DIL24 socket	E-TEC	BL1-036-G-700-01
3	2	C1, C2	330 pF, 0402 (1005 Metric), ±10 %,	Ceramic capacitors	Murata Electronics North America	GRM1555C1H331GA01D
4	2	R1, R2	2.2 K (NC), 0402 (1005 Metric), 100ppm/C V, 1/16 W ±1%,SMD	Resistors (not mounted)	Vishay Dale	CRCW04022K20FKEDC
5	8	SB1,SB3,SB7,SB8,SB10,SB12,SB15,SB16	0 R, 0402 (1005 Metric), SMD	Resistors	Vishay Dale	CRCW04020000Z0ED
6	9	SB2,SB4,SB5,SB6,SB9,SB11,SB13,SB14,SB17	NC, 0402 (1005 Metric), SMD	Resistors (not mounted)	Vishay Dale	CRCW04020000Z0ED

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Notice applicable to Evaluation Boards according to European Regulation

For the European Regulation of the Evaluation Board, the applicable EU directives are considered, with a particular attention to the Low Voltage Directive (LVD) 2014/35/EU, the Electromagnetic Compatibility (EMC) Directive 2014/30/EU, and the Radio Equipment Directive (RED) 2014/53/EU. If the Evaluation Board is outside the scope of the foregoing Directives, then the General Product Safety Directive (GPSD) 2001/95/EC and Council Directive 93/68/EEC, amending Directive 73/23/EEC on electrical equipment designed for use within certain voltage limits, are applicable.

The Evaluation Board meets the requirements of the Restriction of Hazardous Substances (RoHS 2 or RoHS recast) Directive 2011/65/EU, Annex II, as amended by Directive 2015/863/EU.

Notice applicable to Evaluation Boards not FCC-Approved

This kit is designed to allow:

1. Product developers to evaluate electronic components, circuitry, or software associated with the kit to determine whether to incorporate such items in a finished product and
2. Software developers to write software applications for use with the end product.

This kit is not a finished product and when assembled may not be resold or otherwise marketed unless all required FCC equipment authorizations are first obtained. Operation is subject to the condition that this product not cause harmful interference to licensed radio stations and that this product accept harmful interference. Unless the assembled kit is designed to operate under part 15, part 18 or part 95 of 47 CFR, Chapter I ("FCC Rules"), the operator of the kit must operate under the authority of an FCC license holder or must secure an experimental authorization under part 5 of this chapter.

For Evaluation Boards annotated as FEDERAL COMMUNICATIONS COMMISSION (FCC) Part 15 Compliant

- **FCC Interference Statement for Class A Evaluation Boards:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
- **FCC Interference Statement for Class B Evaluation Boards:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
 - Reorient or relocate the receiving antenna.
 - Increase the separation between the equipment and receiver.
 - Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
 - Consult the dealer or an experienced radio/TV technician for help.
- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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You shall indemnify ST and its Affiliates against and pay any resulting costs and damages finally awarded against ST or its Affiliates or agreed to in any settlement, provided that You have sole control of the defense and settlement of the claim or action, and ST cooperates in the defense and furnishes all related evidence under its control at Your expense. ST will be entitled to participate in the defense of such claim or action and to employ counsel at its own expense.

"Affiliates" means any corporation or other entity directly or indirectly controlled by, controlling or under common control with the entity in question, for so long as such ownership exists. "Control" means the direct or indirect beneficial ownership of more than fifty (50%) percent of the stock or other equity interests entitled to vote for the election of directors or an equivalent governing body. Any such corporation or other legal entity shall be deemed to be an Affiliate of such Party only as long as such Control exists.

TERMINATION

ST may terminate this Agreement without notice if You breach this Agreement. Upon termination, You shall immediately destroy or return all copies of the software, firmware, and documentation of the Evaluation Board to ST and certify in writing to ST that You have done so.

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This Agreement shall be governed, construed and enforced in accordance with the laws of Switzerland, without regard to its conflict of laws rules. The UN Convention on Contracts for the International Sale of Goods shall not apply to this Agreement. In case of dispute and in the absence of an amicable settlement, the only competent jurisdiction shall be the Courts of Geneva, Switzerland. Any breach of this Agreement by You may result in irreparable damage to ST for which ST will not have an adequate remedy at law. Accordingly, in addition to any other remedies and damages available, You acknowledge and agree that ST may immediately seek enforcement of this Agreement in any jurisdiction by means of specific performance or injunction, without any requirement to post a bond or other security.

SEVERABILITY

If any provision of this agreement is or becomes, at any time or for any reason, unenforceable or invalid, no other provision of this agreement shall be affected thereby, and the remaining provisions of this agreement shall continue with the same force and effect as if such unenforceable or invalid provisions had not been inserted in this Agreement. In addition, any unenforceable or invalid provision shall be deemed replaced by a provision that is valid and enforceable and that comes closest to expressing the intention of the unenforceable or invalid provision.

WAIVER

The waiver by either party of any breach of any provision of this Agreement shall not operate or be construed as a waiver of any other or a subsequent breach of the same or a different provision.

RELATIONSHIP OF THE PARTIES

Nothing in this Agreement shall create, or be deemed to create, any joint venture, partnership, principal-agent, employer-employee or other relationship between the Parties, except that of independent contractors. Neither Party has the authority or power to bind, to contract in the name of, or to create a liability for the other in any way or for any purpose.

SURVIVAL

Any provision of this Agreement which imposes an obligation after termination of this Agreement shall survive the termination of this Agreement.

SECTION HEADINGS

Section headings are inserted for convenience only and shall not be used to interpret this Agreement.

WASTE AND RECYCLING

The Evaluation Board is not to be disposed of as urban waste. At the end of its life cycle, differentiated waste collection must be followed. Consult the local authorities for more information on the proper disposal channels. It is mandatory to separately collect the Evaluation Board and make sure it is delivered it to the appropriate waste management and recycling centers.

As of 15 August 2018, in all the countries belonging to the European Union, the Evaluation Board is subject to the WEEE Directive 2012/19/EU requirement; therefore, it is forbidden to dispose of the Evaluation Board as undifferentiated waste or with other domestic wastes. Consult the local authorities for more information on the proper recycling centers.

Disposing of the Evaluation Board incorrectly may cause damage to the environment and may be subject to fines based on specific countries' rules.



IMPORTANT NOTICE – READ CAREFULLY

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