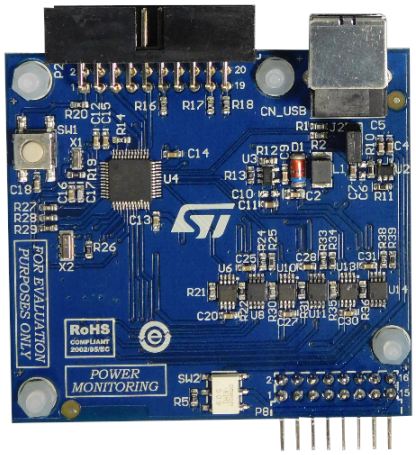
STDES-ERH001D

Data brief

Power monitoring board of the kits STDES-IDS003V1 and STDES-IDS002V1



Product summary
STDES-ERH001D: Power monitoring board of the kits STDES-IDS003V1 and STDES-IDS002V1
STDES-IDS002V1: SPIDEr™ Autonomous wireless multi-sensor node powered by PV cells and based on SPV1050
STDES-IDS003V1: SPIDEr™ Autonomous wireless multi-sensor node powered by TEG and based on SPV1050
SPV1050: Ultra low power energy harvester and battery charger with embedded MPPT and LDOs
STSW-IDS002V1: GUI for STEVAL-ISV021V1, STDES-IDS002V1 and STDES-IDS003V1

Features

- Allows full monitoring of power efficiency and MPPT accuracy of the SPV1050 ULP energy harvester and battery charger, when used in conjunction with the STDES-ERH001V1 or STDES-ERH003V1 companion board
- Compatible with STSW-IDS002V1 user-friendly GUI software for displaying input and output electrical parameters
- CE Certified
- RoHS and China RoHS compliant
- WEEE compliant
- Compliant with Directive 2006/66/EC

Description

The STDES-ERH001D is included in the STDES-IDS002V1 and STDES-IDS003V1 kits.

When used together with the STDES-ERH001V1 companion board in the STDES-IDS003V1 kit, or the STDES-ERH003V1 companion board in the STDES-IDS002V1 kit, you can use the STSW-IDS002V1 software GUI to monitor the power efficiency and MPPT accuracy of the SPV1050.

While the STDES-ERH001D samples the voltage and current at input and output stages of the SPV1050, the STSW-IDS002V1 can display the data both as raw data and in user-friendly plots.

1 Bill of material

Table 1. STDES-ERH001D bill of material

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
1	1	C1	4.7 µF	Capacitor	MURATA	GCM21BR71C475KA73L
2	1	C2	100 nF	Capacitor	AVX	08053C104KAT2A
3	5	C3, C4, C7, C11, C24	10 µF	Capacitor	MURATA	GRM188R61E106MA73D
4	2	C5, C9	220 pF	Capacitor	MURATA	GRM155R71H221KA01D
5	0	C6, C10 (DNM)	-	Capacitor	-	-
6	17	C12 to C15 C18 to C23 C25 to C31	100 nF	Capacitor	KEMET	C0603C104K4RAC
7	1	C16	10 nF	Capacitor	MURATA	GRM188R71C103KA01D
8	1	C17	1 nF	Capacitor	KEMET	C0603C102J5GACTU
9	1	CN1	USB TYPE B	USB-B socket	MOLEX	67068-8010
10	1	P8	2 rows, 16 ways	Connector	FCI	68021-116HLF
11	1	D1	0.1 A, 100 V	Diode	ST	TMMBAT41
12	1	J2	1 row, 2 ways	Jumper	MOLEX	22-28-4023
13	1	L1	10 µH	Inductor	MURATA	LQH43CN100K03L
14	1	P2	2 rows, 20 ways	JTAG connector	ASSMANN	AWHW 20A-0202-T
15	2	R1, R2	10 Ω	Resistor	BOURNS	CR0603-JW-100GLF
16	1	R3	1.5 kΩ	Resistor	YAGEO	232270265152
17	1	R4	0.1 Ω	Resistor	BOURNS	CRL0603-FW-R100ELF
18	1	R5	390 Ω	Resistor	YAGEO	232270265311
19	1	R7	909 kΩ	Resistor	VISHAY	CRCW0603909KFKEA
20	5	R8, R12, R27, R28, R29	100 kΩ	Resistor	BOURNS	CR0603-FX-1003ELF
21	3	R9, R23, R32	2 kΩ	Resistor	PANASONIC	ERJ3RBD2001V
22	1	R10	57.6 kΩ	Resistor	PANASONIC	ERA3AEB5762V
23	1	R11	33 kΩ	Resistor	PANASONIC	ERJ3RBD3302V
24	1	R13	31.6 kΩ	Resistor	VISHAY	CRCW060331K6FKEA
25	6	R14, R15, R16, R17, R18, R20	10 kΩ	Resistor	YAGEO	232270265103
26	2	R19, R26	560 Ω	Resistor	TE CONN	CRG0603F560R
27	3	R21, R30, R35	2.49 Ω	Resistor	TE CONN	CPF0603F2R49C1
28	3	R22, R31, R36	37.4 Ω	Resistor	VISHAY	CRCW060337R4FKEA
29	1	R24, R33, R38	12 kΩ	Resistor	TE CONN	CRG0603F12K
30	3	R25, R34, R39	510 Ω	Resistor	PANASONIC	ERJ3RBD5100V

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
31	1	R37	20 kΩ	Resistor	VISHAY	CRCW060320K0FKEA
32	1	SW1	SPST push button	PUSH BUTTON	TE CONN	4-1437565-1
33	1	SW2	0.4 A, 60 V	Opto-coupler	OMRON	G3VM-61H1
34	1	U1	1.4MHz DC/DC	Step-up Converter	LT	LT1618EDD
35	2	U2, U3	85 mA LDO	Voltage Regulator	ST	ST715
36	1	U4	72 MHz MCU	Micro Controller	ST	STM32F103CB
37	1	U5	6 channels 24 bits	ADC converter	Microchip	MCP3903-I/SS
38	3	U6, U10, U13	-0.1 V to 28 V	Current Sense Amplifier	Maxim Integrated	MAX9928FAUA+
39	3	U7, U9, U12	2 Channels Analog Switch	Analog Switch	ANALOG DEVICES	ADG1636BRUZ
40	1	X1	8 MHz	Crystal Oscillator	MURATA	CSTCE8M00G52-R0
41	1	X2	4 MHz	Crystal Oscillator	MURATA	CSTCR4M00G53-R0
42	1	-	TYPE B TYPE A	USB Cable	RS	815-8466
43	3	U8, U11, U14	126 dB	Operational amplifier	TI	OPA140AIDGKT

2 Schematic diagrams

Figure 1. **STDES-ERH001D board schematic (1 of 3)**

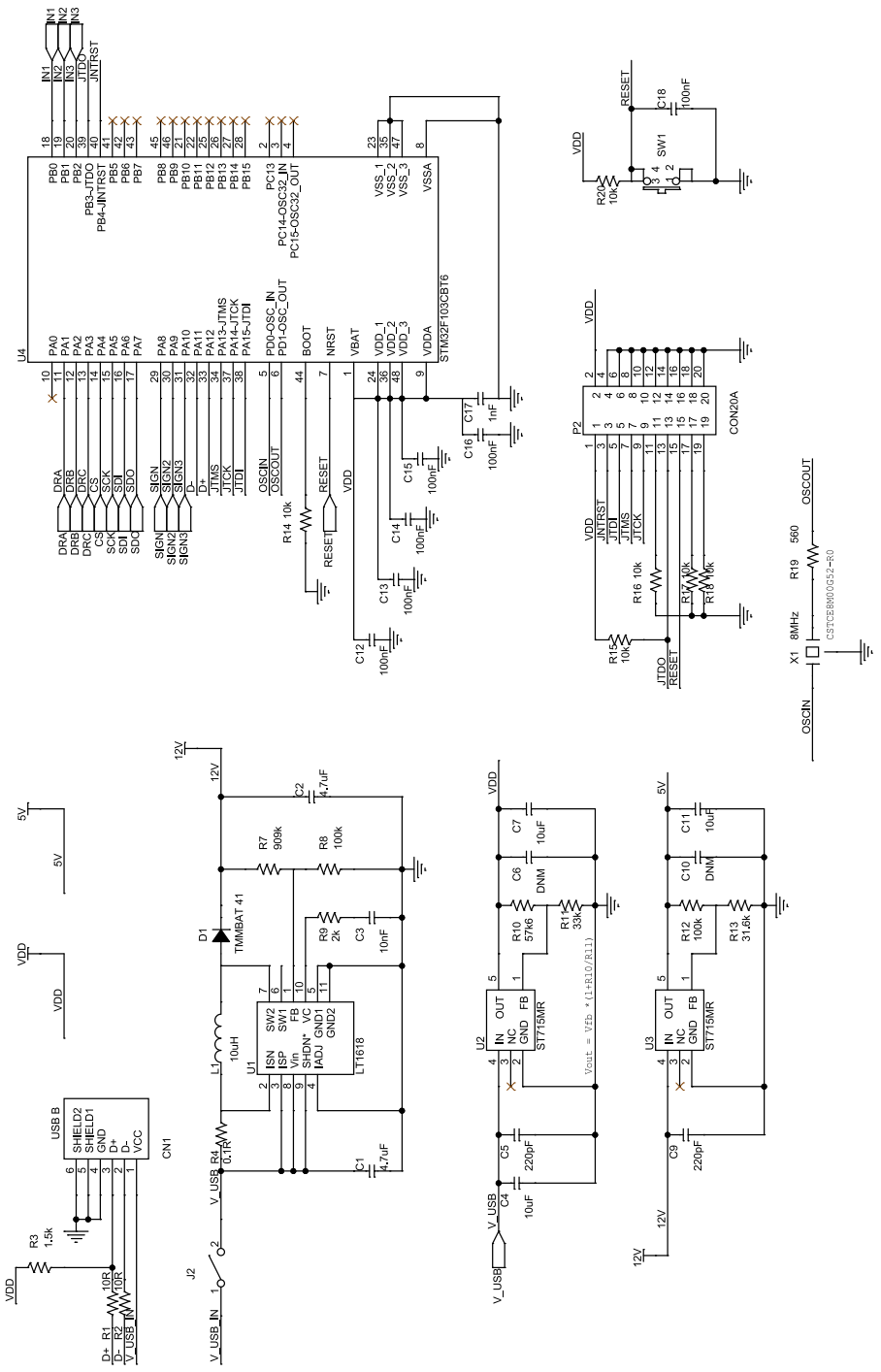


Figure 2. **STDES-ERH001D board schematic (2 of 3)**

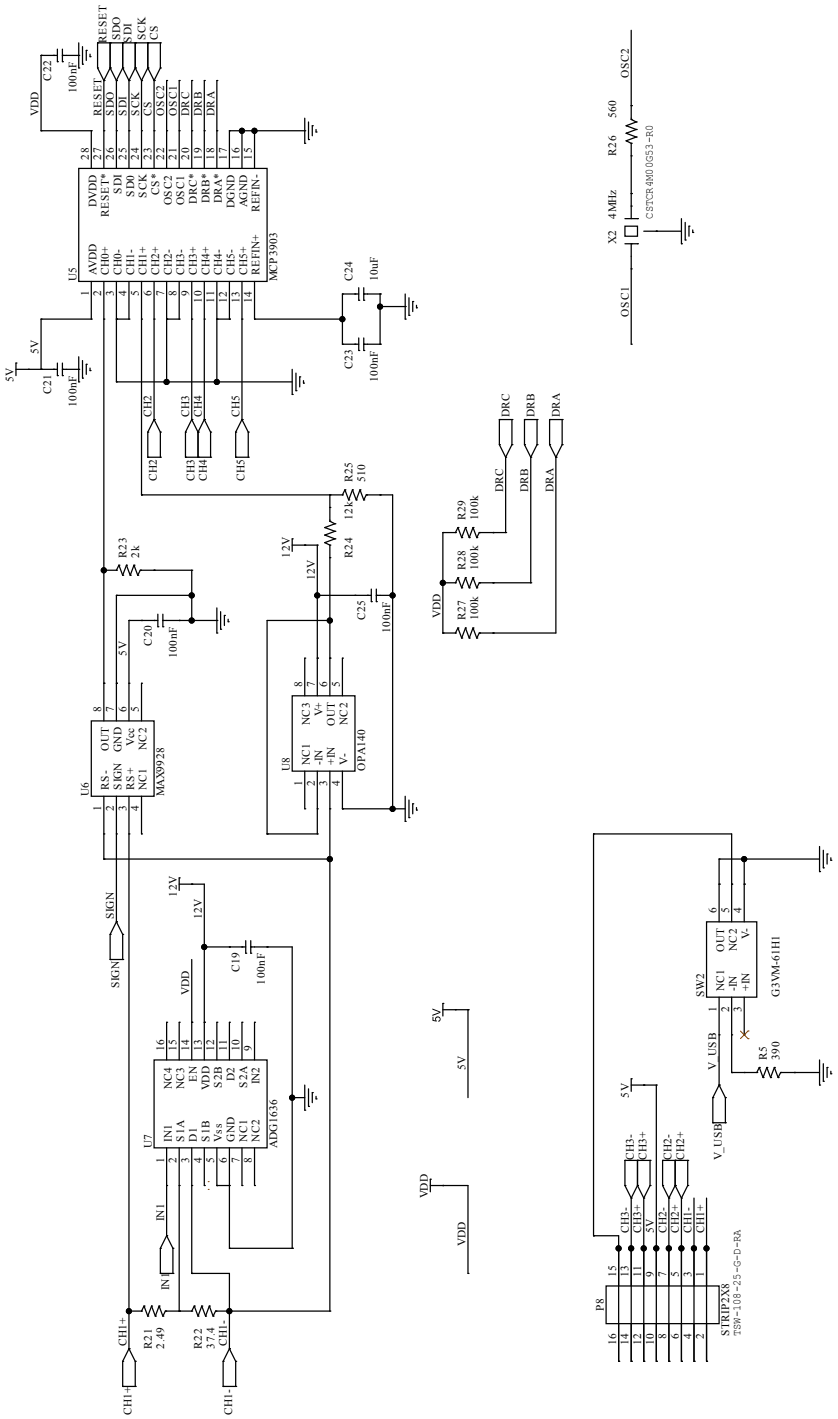
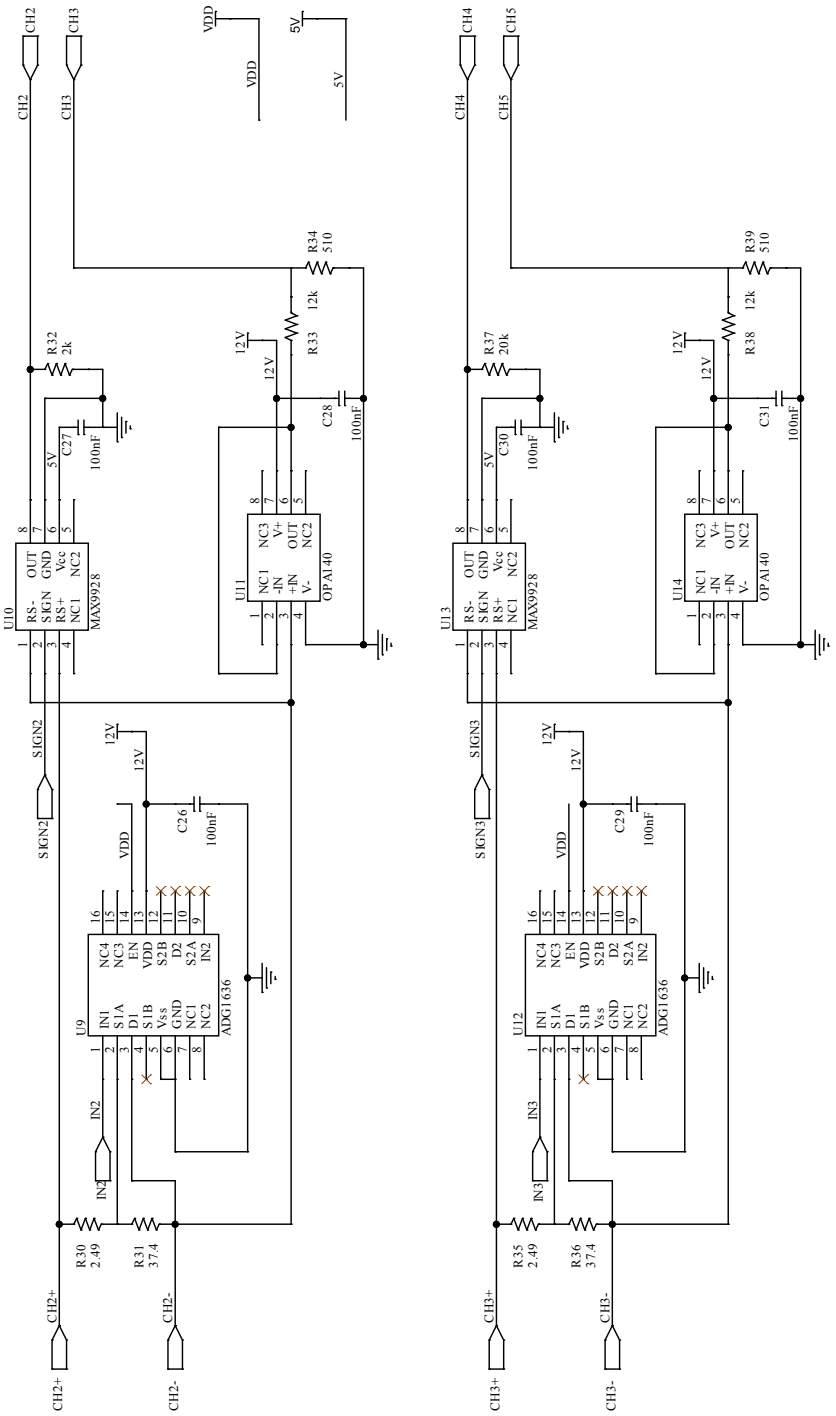


Figure 3. **STDES-ERH001D board schematic (3 of 3)**



Revision history

Table 2. **Document revision history**

Date	Version	Changes
03-Oct-2018	1	Initial release.
25-Feb-2019	2	Fix link in Section 1 BIII of material

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