

Residential Sample Solar PV Submittals
Sample Fastener Information for Residential PV Installations
Sample only.

Fasteners & Quik Drive® Systems

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SDS & SD Wood Screws

The Simpson Strong-Tie® Strong-Drive® screw (SDS) is a 1/4" diameter structural wood screw ideal for various connector installations as well as wood-to-wood applications. It installs with no predrilling and has been extensively tested in various applications. The new SDS is improved with a patented easy driving 4CUT™ tip and a corrosion resistant double-barrier coating.

The SD8 #8x1 1/4" washer head screw is ideal for miscellaneous fastening applications. The needle point ensures fast starts and deep #2 Phillips drive reduces cam-out and stripping.

SDS FEATURES:

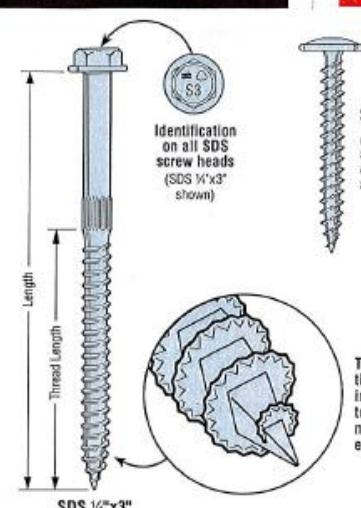
- The patented 4CUT tip has a square core and serrated threads to reduce installation torque and make driving easier with no predrilling and minimal wood splitting.
- A double-barrier coating finish provides corrosion resistance equivalent to hot-dip galvanization. Now one screw can handle interior, exterior and certain pressure-treated wood applications (see Corrosion information on page 14-15 for more information).
- 3/8" hex washer head is stamped with the No-Equal sign and fastener length for easy identification after installation.

MATERIAL: Heat-treated carbon steel, Type-316 stainless steel
FINISH: SDS—Double-barrier coating. SDS screws may also be available yellow zinc dichromate or HDG (Not all sizes are available in all coatings - Contact Simpson Strong-Tie for product availability and ordering information); SD8x1.25—Electro Galvanized.

CODES: See page 13 for Code Reference Key Chart.

WARNING: Industry studies show that hardened fasteners can experience performance problems in wet or corrosive environments. Accordingly, the SD8x1.25 should be used in dry, interior, and noncorrosive environments only.

SIMPSON Strong-Tie



SDS 1/4"x3"
U.S. Patent 6,109,850; 5,897,280; 7,101,133

Identification on all SDS screw heads (SDS 1/4"x3" shown)

SD8x1.25
(Not for structural applications - see note 8)

The 4CUT tip reduces installation torque and makes driving easier.

These products feature additional corrosion protection. Additional products on this page may also be available with this option, check with Simpson Strong-Tie for details.

SDS and SD Wood Screws

Size (in.)	Model No.	Thread Length (in.)	Fasteners per Carton ¹	DF/SP Allowable Loads ⁴				SPF/HF Allowable Loads ⁴				Code Ref.				
				Shear (100) ¹			Withdrawal ⁵ (100)	Shear (100)			Withdrawal ⁵ (100)					
				Wood Side Plate ² 1 1/2"	1 1/2" SCL	16 ga 14 ga & 12 ga		10 ga or Greater	Wood or Steel Side Plate	Wood Side Plate ² 1 1/2"			1 1/2" SPF LVL	16 ga 14 ga & 12 ga	10 ga or Greater	Wood or Steel Side Plate
3/8 x 1 1/4	SD8x1.25 ³	—	—	—	—	50	50	50	—	—	—	45	45	45	—	170
1/4 x 1 1/2	SDS25112	1	1500	—	—	250	250	250	170	—	—	180	180	180	120	I5, L1, F20
1/4 x 2	SDS25200	1 1/4	1300	—	—	250	290	290	215	—	—	180	210	210	150	
1/4 x 2 1/2	SDS25212	1 1/2	1100	190	—	250	390	420	255	135	—	180	280	300	180	
1/4 x 3	SDS25300	2	950	280	—	250	420	420	345	200	—	180	300	300	240	
1/4 x 3 1/2	SDS25312	2 1/4	900	340	340	250	420	420	385	245	245	180	300	300	270	
1/4 x 4 1/2	SDS25412	2 3/4	800	350	340	250	420	420	475	250	245	180	300	300	330	
1/4 x 5	SDS25500	2 3/4	500	350	340	250	420	420	475	250	245	180	300	300	330	
1/4 x 6	SDS25600	3 1/4	600	350	340	250	420	420	560	250	245	180	300	300	395	
1/4 x 8	SDS25800	3 1/4	400	350	340	250	420	420	560	250	245	180	300	300	395	

Stainless-Steel SDS Wood Screws

Size (in.)	Model No.	Thread Length (in.)	Fasteners per Carton ¹	DF/SP Allowable Loads ⁴				SPF/HF Allowable Loads ⁴				Code Ref.				
				Shear (100)			Withdrawal ⁵ (100)	Shear (100)			Withdrawal ⁵ (100)					
				Wood Side Plate ² 1 1/2"	1 1/2" SCL	16 ga 14 ga & 12 ga		10 ga or Greater	Wood or Steel Side Plates	Wood Side Plate ² 1 1/2"			1 1/2" SCL	16 ga 14 ga & 12 ga	10 ga or Greater	Wood or Steel Side Plates
1/4 x 1 1/2	SDS25112SS	1	1500	—	—	250	250	250	170	—	—	180	180	180	120	I5, L1, F20
1/4 x 2	SDS25200SS	1 1/4	1300	—	—	250	290	290	215	—	—	180	210	210	150	
1/4 x 2 1/2	SDS25212SS	1 1/2	1100	190	—	250	390	420	255	135	—	180	280	300	180	
1/4 x 3	SDS25300SS	2	950	280	—	250	420	420	345	200	—	180	300	300	240	
1/4 x 3 1/2	SDS25312SS	2 1/4	900	340	340	250	420	420	385	245	245	180	300	300	270	

1. Screws may be provided with the 4CUT or Type 17 tip.
2. SDS screws install best with a low speed 1/8" drill with a 3/8" hex head driver.
3. All applications are based on full thread penetration into the main member.
4. Allowable loads are shown at the wood load duration factor of C_D = 1.00. Loads may be increased for load duration per the building code up to a C_D = 1.60.
5. Withdrawal loads shown are in pounds (lbs.) and are based on the entire threaded section installed into the main member. If thread penetration into the main member is less than the Thread Length as shown in the table, reduce allowable load by 172 lbs. x inches of thread not in main member. Use 121 lbs./inch for SPF.
6. Fasteners per Carton represent the quantity of screws which are available in bulk packaging. Screws are also available in mini bulk and retail packs. Refer to Simpson Strong-Tie® List Price book. Contact Simpson Strong-Tie for more information.
7. LSL wood-to-wood applications that require 4 1/2", 5", 6" or 8" SDS screws are limited to interior-dry use only.
8. SD8x1.25 requires 3/4" minimum penetration. DO NOT USE SD8x1.25 wood screws with structural connectors unless specified and stated in this catalog.
9. Where predrilling is required for SDS, predrill diameter is 3/8".
10. Minimum spacing edge and end distance requirements are listed in ICC-ES ESR-2236.

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Sample Manufacturer's Installation/Data Sheet for Residential PV Installations

Sample only.

APS YC500A-K Microinverter Datasheet

INPUT DATA (DC)

Maximum Input Voltage	55V
Maximum Input Current	24A

OUTPUT DATA (AC)

Rated Output Power	500W
Maximum Output Current - 240V	2.08A
Maximum Output Current - 208V	2.4A
Nominal Output Voltage/Range - 240V	211-264V*
Nominal Output Voltage/Range - 208V	183-233V*
Nominal Output Frequency/Range	60Hz / 59.3-60.5Hz*
Power Factor	>0.99
Total Harmonic Distortion	<3%
Maximum Units Per Branch	7 per 20A / 9 per 25A breaker

EFFICIENCY

Peak Efficiency	95.5%
CEC Weighted Efficiency	94.5%
Nominal MPP Tracking Efficiency	99.0%

MECHANICAL DATA

Storage Temperature Range	-40°F to +185°F (-40°C to +85°C)
Operating Temperature Range (Ambient)	-40°F to +149°F (-40°C to +65°C)
Operating Temperature Range (Internal)	-40°F to +185°F (-40°C to +85°C)
Dimensions (WxHxD) inches	7.9" x 6.3" x 1.1"
Dimensions (WxHxD) mm	200mm x 160mm x 29mm
Weight	5.5 lbs (2.5kg)
Enclosure Rating	NEMA 3R
Cooling	Natural Convection

FEATURES & COMPLIANCE

Communication	Power line
Design Lifetime	25 years
Emissions & Immunity (EMC) Compliance	FCC PART 15, ANSI C63.4 2003, ICES-003
Safety Class Compliance	UL 1741, CSA C22.2, No. 1071-01
Grid Connection Compliance	IEEE 1547

* Programmable per customer and utility requirements
All settings UL approved

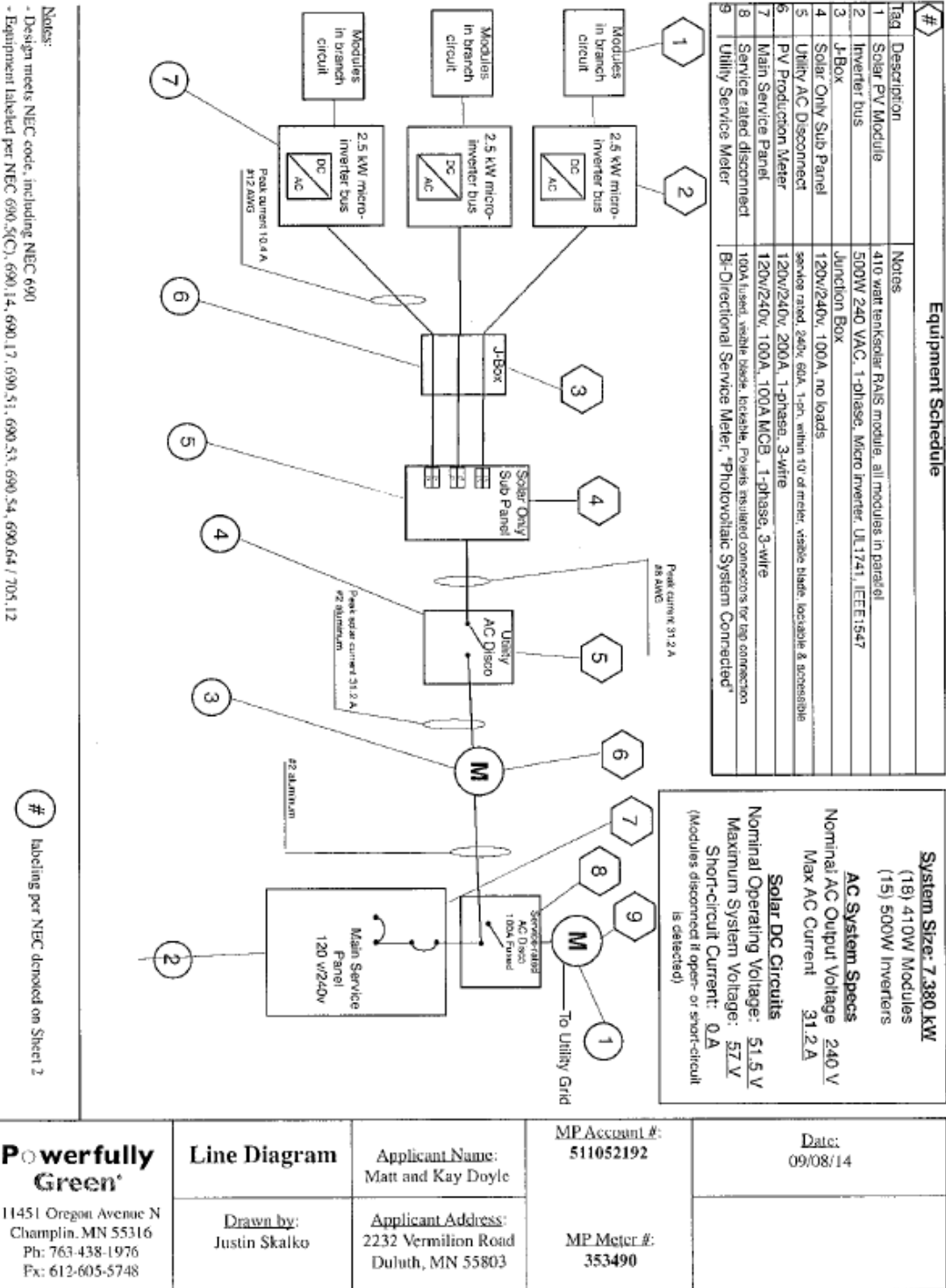
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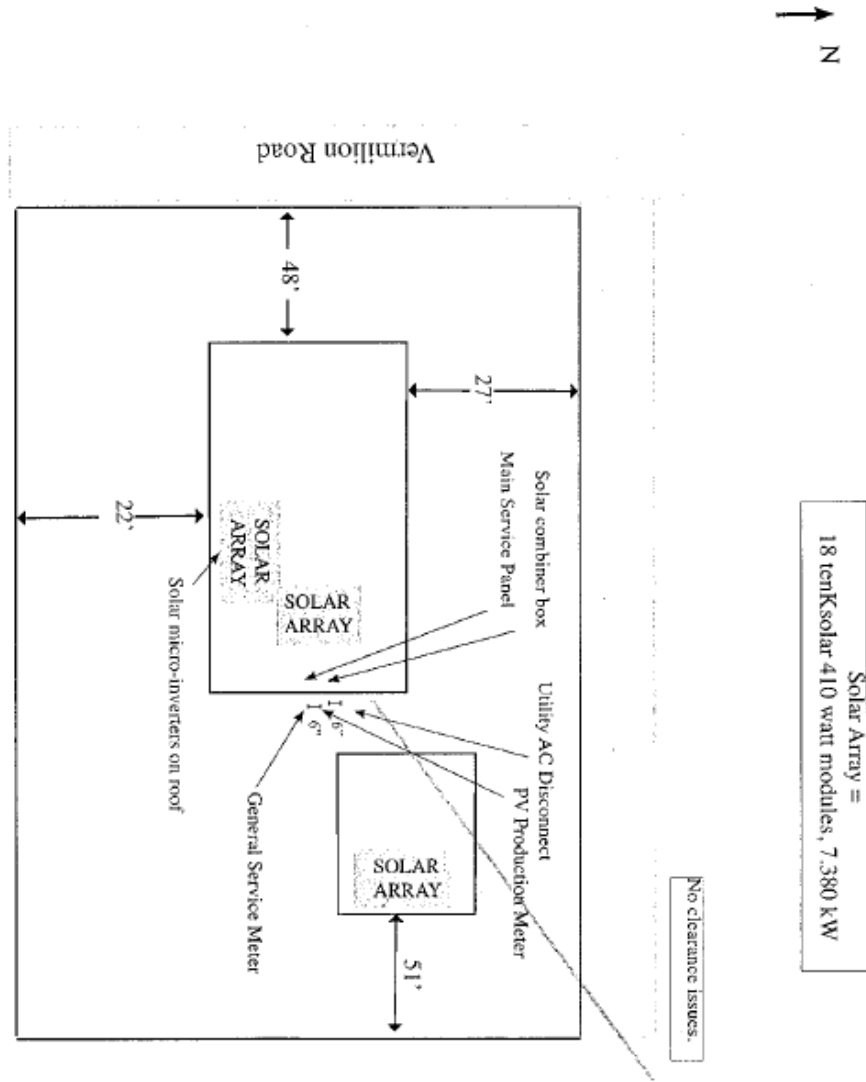
Sample Line Diagram for Residential PV Installations

Sample only.



Powerfully Green* 11451 Oregon Avenue N Champlin, MN 55316 Ph: 763-438-1976 Fx: 612-605-5748	Line Diagram Drawn by: Justin Skalko	Applicant Name: Matt and Kay Doyle Applicant Address: 2232 Vermilion Road Duluth, MN 55803	MP Account #: 511052192 MP Meter #: 353490	Date: 09/08/14
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Sample Site Diagram Residential PV Installations
 Sample only.



Powerfully Green 11451 Oregon Avenue N Champlin, MN 55316 Ph: 763-438-1976 Fx: 612-605-5748	Site Diagram	Applicant Name: Matt and Kay Doyle	Account #: 511052192	Date: 9/8/2014
	Drawn by: Justin Skalko	Applicant Address: 2232 Vermillion Road Duluth, MN 55803	Meter #: 353490	

Sample Labeling Sheet for Residential PV Installations

Sample only.

Photovoltaic System Labeling (Installer: Powerfully Green)

* This Photovoltaic Installation will meet or exceed the requirements of the National Electric Code (NEC) and will pass electrical inspection prior to utility commissioning. The state-licensed electrical inspector will already have verified all NEC requirements, including labeling.
 * All Outdoor Labels are UV Stable Reflective Vinyl w/Acrylic Laminate, permanently attached.
 Operating Temperature: -40°F to 175°F, Certified: UL969

Physical Labels in this installation: (For label placement see attached line diagram)

- 1 **General Service Meter**
per Xcel Energy requirements



- 2 **Main Service Panel** (and sub-panel if applicable)
is labeled as required by the NEC.



- 5 **Inverter(s)** is labeled as required by the NEC.



- 6 **DC Disconnect** is labeled as required by the NEC.



- 3 **PV Production Meter**
per Xcel Energy requirements



- 4 **AC Disconnect** has reflective label that says "Service Disconnect" and additional labeling per NEC requirements



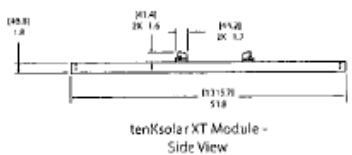
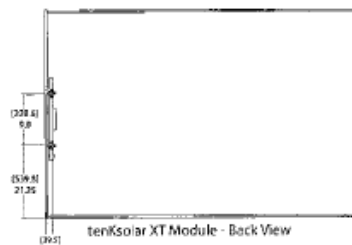
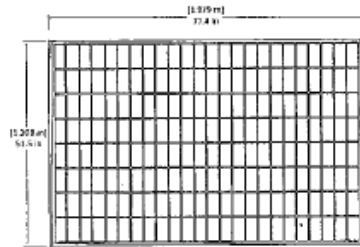
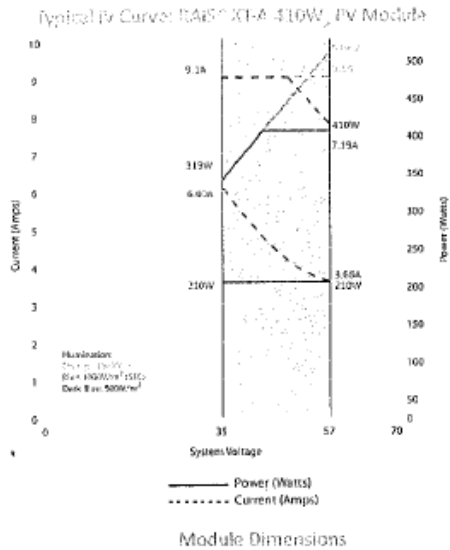
- 7 **Conduit, J-boxes, and Combiner boxes** are labeled as required by the NEC.



Sample Specifications Sheet for Residential PV Installations

Sample only.

RAIS® XT-A PV Module 410W_p



Patents Pending
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 XTAR00161300

Application Options	
Direct Grid Connect Inverters	
Battery Only Systems	
Hybrid Inverters	
Specifications	
Power Output at STC (P _{max})	410W _p
Power Tolerance	+/- 3%
Cell Type	Polycrystalline Silicon
Number of Cells	192 Half Cells
Glass	3.2mm Tempered Glass
Maximum Current Output	9.1A
Maximum Series Fuse Rating	80A
DC Voltage Output	35V Minimum / 57V Maximum
Ground Fault Detect	Integrated (Compatible w/ Inverter GFDI)
Internal Ground Fault Limit	500 mA
Frame Size (not including optional extensions)	77.4" x 51" (1979mm x 1295mm)
Frame / Background	Silver / White
Backsheet Material	PET Covered Aluminum
Bypass Diodes	None
Ambient Operating Temperature Range	-40°F to 185°F (-40°C to 85°C)
Module NOCT (Nominal Operating Cell Temperature)	109°F (43°C)
Temperature Coefficient	-0.46% / °C
Static Load Capacity	50 psf / 2400 Pa
Hail Resistance	Direct 1" impact at 52mph (84kph)
Weight	71 lbs (32.2 kgs)
Certifications	UL 1703/UL 1741 IEC 61215 EN 61730
Warranty	12 Year Limited Product Warranty, 25 Year Linear Power Warranty: 3% Power Degradation First Year, 0.2% Linear Degradation per year after First Year

Shipping Information	
Max Quantity per Pallet	23
Pallet Dimensions	82 W x 55" D (1.4m x 2.1m)
Fully Loaded Pallet Weight	1735 lbs (787 kg)

Specifications and design are subject to change without notice. Read operating instructions carefully before using this product.

