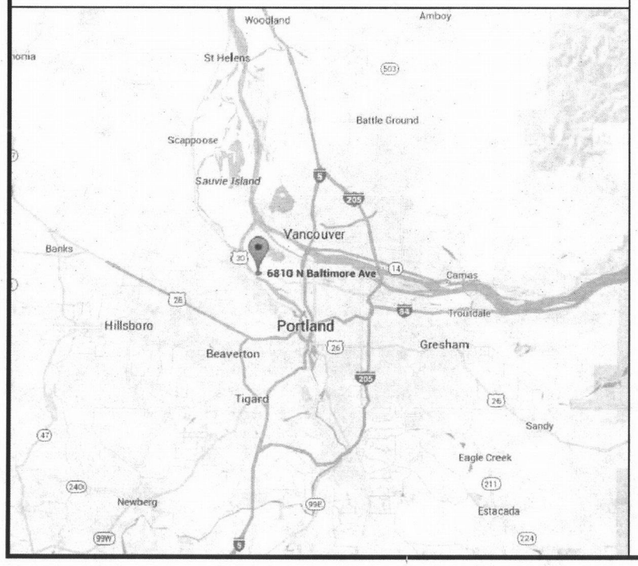
SCOPE OF WORK

- **SYSTEM SIZE:** 5830W DC, 5000W AC
- **MODULES:** (22) CANADIAN SOLAR: CS6P-265P
- **INVERTER(S):**
  (1) SOLAREDGE TECHNOLOGIES: SE5000 (240V) W/ -ER-US OR A-US
- **RACKING:** SNAPNRACK SERIES 100 UL; SEAM CLAMP. SEE PEN D04.

- (22) SOLAREDGE POWER OPTIMIZER P300

VICINITY MAP



GENERAL NOTES

- ALL WORK SHALL COMPLY WITH 2011 NEC, 2009 IBC, MUNICIPAL CODE, AND ALL
  MANUFACTURERS' LISTINGS AND INSTALLATION INSTRUCTIONS.
- PHOTOVOLTAIC SYSTEM WILL COMPLY WITH 2011 NEC.
- ELECTRICAL SYSTEM GROUNDING WILL COMPLY WITH 2011 NEC.
- PHOTOVOLTAIC SYSTEM IS UNGROUNDED. NO CONDUCTORS ARE SOLIDLY GROUNDED IN THE INVERTER. SYSTEM COMPLIES WITH 690.35.
- MODULES CONFORM TO AND ARE LISTED UNDER UL 1703.
- INVERTER CONFORMS TO AND IS LISTED UNDER UL 1741.
- RACKING CONFORMS TO AND IS LISTED UNDER UL 2703.
- CONSTRUCTION FOREMAN TO PLACE CONDUIT RUN PER 690.31(E) AND 2012 IFC 605.11.2.
- ARRAY DC CONDUCTORS ARE SIZED FOR DERATED CURRENT.
- 9.23 AMPS MODULE SHORT CIRCUIT CURRENT.
- 14.42 AMPS DERATED SHORT CIRCUIT CURRENT (690.8 (a) & 690.8 (b)).

- ROOF AREA: 1356 SQ.FT.
- ARRAY AREA: 374 SQ.FT.
- COVERAGE: 28%
- FIREFIGHTER ACCESS: ONE 36" PATHWAY FROM RIDGE TO EAVE AND 12" PATHWAY ALONG EACH SIDE OF ANY HORIZONTAL RIDGE.
- 26 GA STEEL ROOF PANELS, 18" MAX WIDTH ATTACHED WITH #10 SCREWS @ 24" O.C. 1/2" PLYWOOD DECK ATTACHED W/8d NAILS @ 6" O.C.

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LEGEND AND ABBREVIATIONS

- (SE) SERVICE ENTRANCE
- (MP) MAIN PANEL
- (SP) SUB-PANEL
- (LC) PV LOAD CENTER
- (SM) SUNRUN METER
- (PM) DEDICATED PV METER
- (INV) INVERTER(S) WITH INTEGRATED DC DISCONNECT AND AFCI
- (AC) AC DISCONNECT(S)
- (DC) DC DISCONNECT(S)
- (CB) COMBINER BOX
- INTERIOR EQUIPMENT SHOWN AS DASHED

- SOLAR MODULES
- RAIL
- STANDOFFS & FOOTINGS
- CHIMNEY
- ATTIC VENT
- FLUSH ATTIC VENT
- PVC PIPE VENT
- METAL PIPE VENT
- T-VENT
- SATELLITE DISH
- FIRE SETBACKS
- HARDSCAPE
- — PL — PROPERTY LINE

SCALE: NTS

A	AMPERE
AC	ALTERNATING CURRENT
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AZIM	AZIMUTH
COMP	COMPOSITION
DC	DIRECT CURRENT
(E)	EXISTING
EXT	EXTERIOR
FRM	FRAMING
INT	INTERIOR
LBW	LOAD BEARING WALL
MAG	MAGNETIC
MSP	MAIN SERVICE PANEL
(N)	NEW
NTS	NOT TO SCALE
OC	ON CENTER
PRE-FAB	PRE-FABRICATED
PSF	POUNDS PER SQUARE FOOT
PV	PHOTOVOLTAIC
TL	TRANSFORMERLESS
TYP	TYPICAL
V	VOLTS
W	WATTS

REV	NAME	DATE	COMMENTS
A			

TABLE OF CONTENTS

sunrun

OR CL #180464

3380 S E 20TH, PORTLAND, OR 97202
PHONE 888.657.6527
FAX 503.205.0748

CUSTOMER RESIDENCE:
JAMES BARNAS
6810 N BALTIMORE AVE
PORTLAND OR USA 97203

TEL. (503) 286-2776 APN #: R191870

PROJECT NUMBER:
601R-810BARN

DESIGNER:
MICHAEL LANDA 805.540.6310

DRAFTER:
DIMENSION I

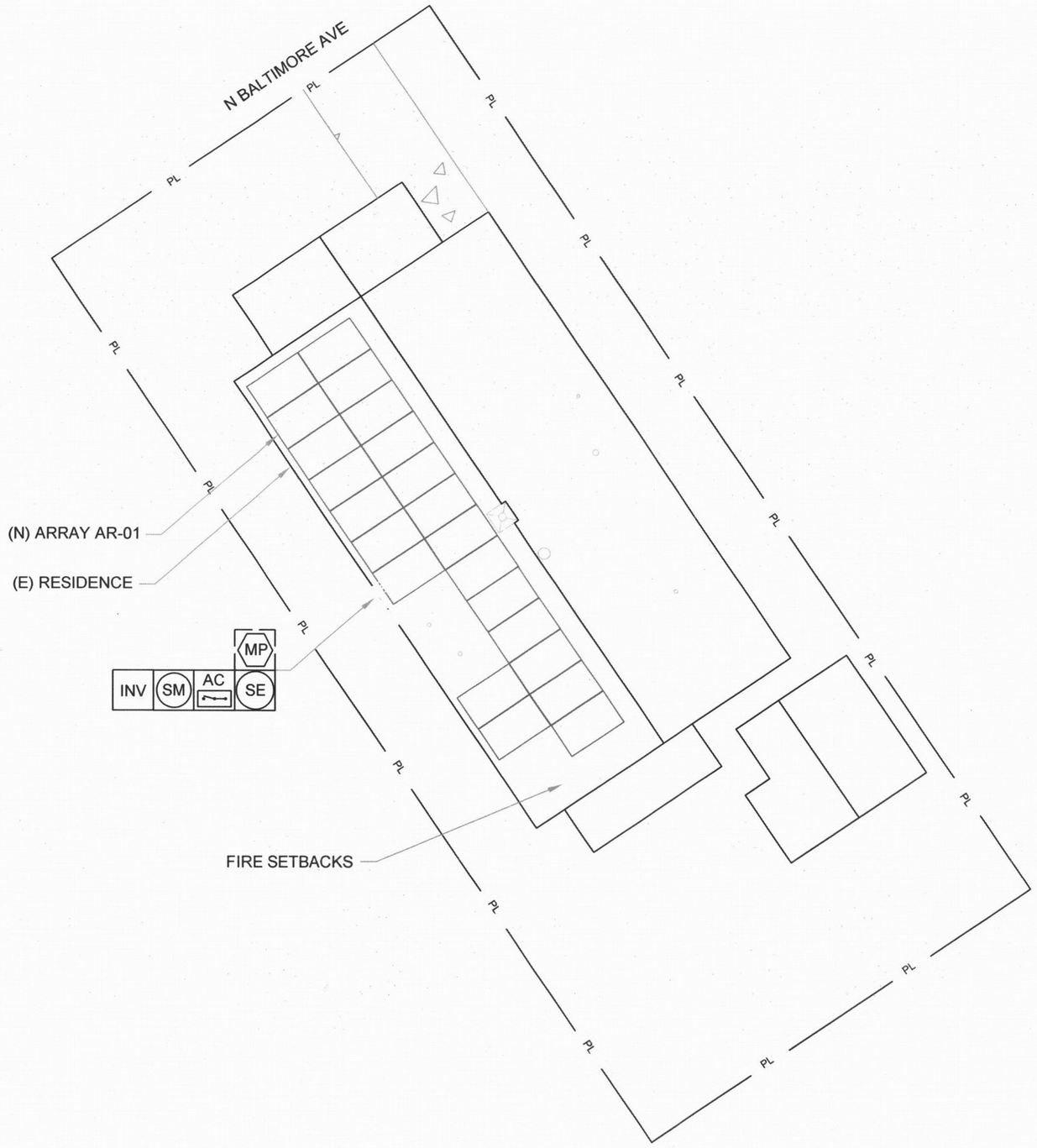
SHEET
COVER SHEET

REV: A 5/3/2016

PAGE PV-1.0

SITE PLAN - SCALE = 3/32" = 1'-0"

	PITCH	TRUE AZIM	MAG AZIM	PV AREA (SQFT)
AR-01	32°	236°	220°	381.4



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City of Portland
Bureau of Development Services
By C. Curtis Date 6/14/16
Approved by Planning and Zoning Review

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MICHAEL LANDA
805.540.6310

DRAFTER:
DIMENSION I

SHEET
SITE PLAN

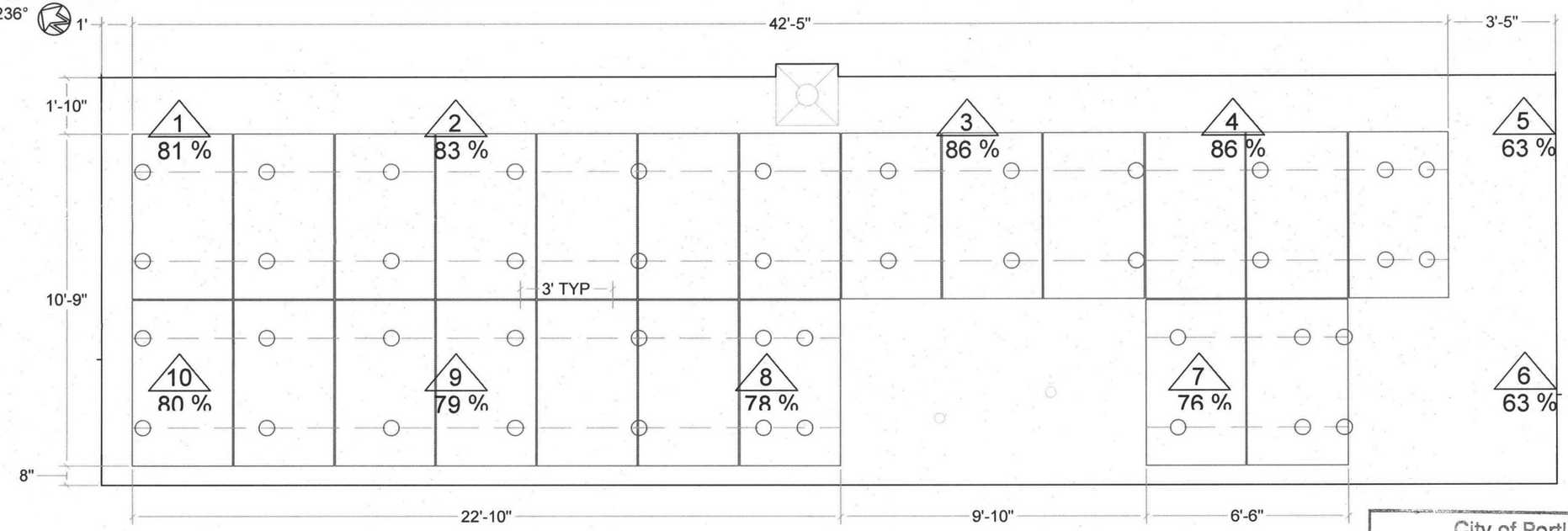
REV: A 5/3/2016

PAGE
PV-2.0

	ROOF TYPE	ATTACHMENT	ROOF HEIGHT	ROOF EXPOSURE	FRAME MATERIAL	FRAME TYPE	FRAME SIZE	MAX FRAME SPAN	OC SPACING	ROOF EDGE ZONE	MAX RAIL SPAN	MAX RAIL OVERHANG
AR-01	STANDING SEAM	SEAM CLAMP. SEE PEN D04.	SINGLE STORY	ATTIC	WOOD	RAFTER	2 X 4	4' - 9"	36"	N/A	3' - 0"	2' - 1"

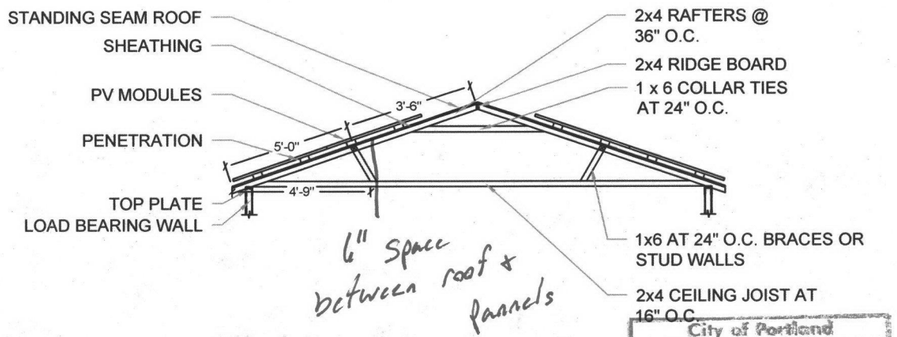
D1 - AR-01 - SCALE: 1/4" = 1'-0"
PITCH: 32°
AZIM: 236°

D1: ▲ INDICATES TSRF VALUE AT MARKED LOCATION.



ELEVATION DETAIL -SCALE:NTS

ROOF FRAMING DETAIL - SCALE: NTS



City of Portland
Bureau of
Development Services
By C. Cortes Date 6/14/16
Approved by
Planning and Zoning Review

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DESIGN CRITERIA

MODULES:
CANADIAN SOLAR: CS6P-265P
MODULE DIMS:
64.5" x 38.7" x 1.57"
MODULE CLAMPS:
Portrait: 13.39" - 16.14"
Landscape: 7.87" - 9.84"
MAX DISTRIBUTED LOAD: 2.87 PSF
MAX POINT LOAD :40.7 LBS
SNOW LOAD: 25 PSF
WIND SPEED:
95 MPH 3-SEC GUST.
LAG SCREWS:
5/16"x4.0": 2.5" MIN EMBEDMENT
NOTE:
INSTALLERS TO VERIFY RAFTER SIZE, SPACING AND SLOPED SPANS, AND NOTIFY E.O.R. OF ANY DISCREPANCIES BEFORE PROCEEDING.

PENETRATION SPACING:
STAGGERED

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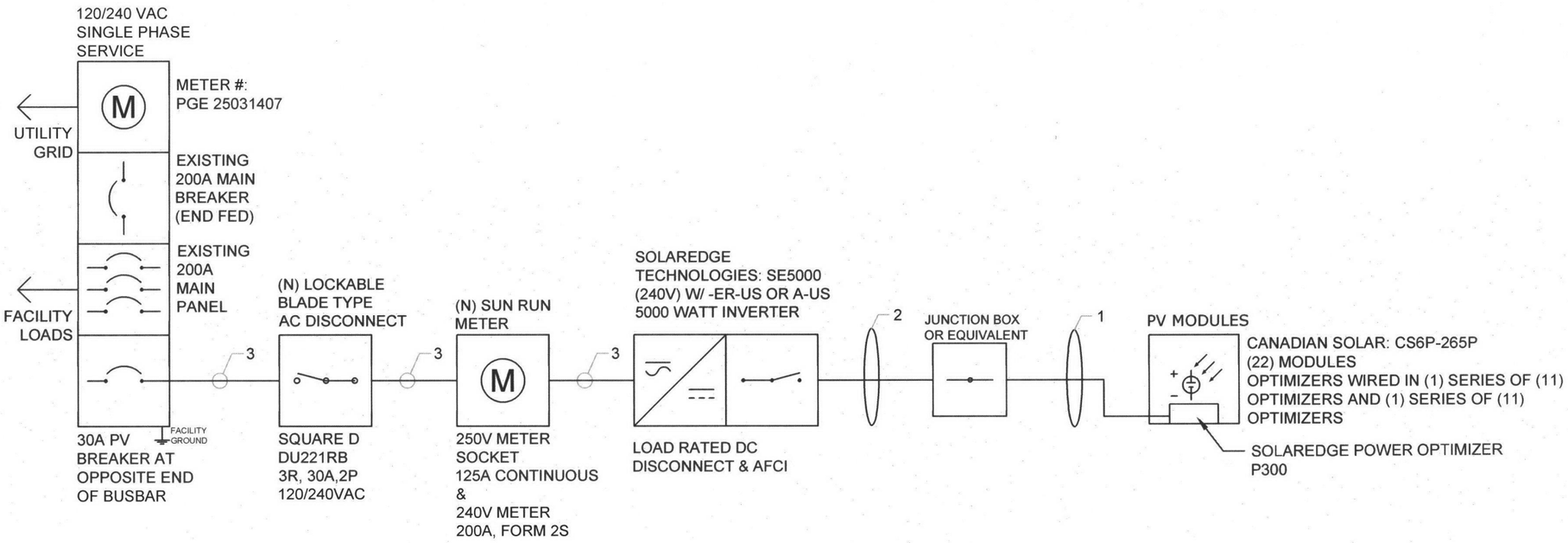
DESIGNER:
MICHAEL LANDA 805.540.6310

DRAFTER:
DIMENSION I

SHEET
LAYOUT

REV: A 5/3/2016

PAGE
PV-3.0



CONDUIT SCHEDULE

#	CONDUIT	CONDUCTOR	NEUTRAL	GROUND
1	NONE	(4) 10 AWG PV WIRE	NONE	(1) 6 AWG BARE COPPER
2	3/4" EMT OR EQUIV.	(4) 10 AWG THHN/THWN-2	NONE	(1) 6 AWG THHN/THWN-2
3	3/4" EMT OR EQUIV.	(2) 10 AWG THHN/THWN-2	(1) 10 AWG THHN/THWN-2	(1) 8 AWG THHN/THWN-2

NOTES TO INSTALLER:

1. 11 VDC EXPECTED OPEN CIRCUIT STRING VOLTAGE.
2. ADD 30 AMP PV BREAKER TO MAIN PANEL.

MODULE CHARACTERISTICS	
CANADIAN SOLAR: CS6P-265P	265 W
OPEN CIRCUIT VOLTAGE	37.7 V
MAX POWER VOLTAGE	30.6 V
SHORT CIRCUIT CURRENT	9.23 A

OPTIMIZER CHARACTERISTICS		
MIN INPUT VOLTAGE	8	VDC
MAX INPUT VOLTAGE	48	VDC
MAX INPUT ISC	10	ADC
MAX OUTPUT CURRENT	15	ADC

SYSTEM CHARACTERISTICS - INVERTER 1	
SYSTEM SIZE	5830 W
SYSTEM OPEN CIRCUIT VOLTAGE	11 V
SYSTEM OPERATING VOLTAGE	350 V
MAX ALLOWABLE DC VOLTAGE	500 V
SYSTEM OPERATING CURRENT	16.7 A
SYSTEM SHORT CIRCUIT CURRENT	30 A

PER CODE: 690.52

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DRAFTER:
DIMENSION I

SHEET
ELECTRICAL

REV: A 5/3/2016

PAGE
PV-4.0

⚠ WARNING

ELECTRIC SHOCK HAZARD

THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED

LABEL LOCATION:
DC DISCONNECT, INVERTER
(PER CODE: NEC 690.35(F))
[To be used when inverter is ungrounded]

⚠ WARNING

ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERMINALS TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT

LABEL LOCATION:
AC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: NEC 690.17(E))

⚠ WARNING

ELECTRIC SHOCK HAZARD

DO NOT TOUCH TERMINALS TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION:
AC DISCONNECT, POINT OF INTERCONNECTION
PER CODE: NEC 690.17(E), CB

WARNING - Electric Shock Hazard
No user serviceable parts inside
Contact authorized service provider for assistance

LABEL LOCATION:
INVERTER, JUNCTION BOXES (ROOF), AC DISCONNECT
(PER CODE: NEC690.13.G.3 & NEC 690.13.G.4)

WARNING: PHOTOVOLTAIC POWER SOURCE

LABEL LOCATION:
CONDUIT, COMBINER BOX
(PER CODE: CEC690.31(G)(3)(4) & CEC 690.13(G)(4)

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION:
POINT OF INTERCONNECTION
(PER CODE: NEC 705.12(D)(4))

CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED

LABEL LOCATION:
POINT OF INTERCONNECTION
(PER CODE: NEC690.15, 690.13(B))

ADHESIVE FASTENED SIGNS:
- THE LABEL SHALL BE SUITABLE FOR THE ENVIRONMENT WHERE IT IS INSTALLED.
- WHERE REQUIRED ELSEWHERE IN THIS CODE, ALL FIELD APPLIED LABELS, WARNINGS, AND MARKINGS SHOULD COMPLY WITH ANSI Z535.4 [NEC 110.21(B) FIELD MARKING].
- ADHESIVE FASTENED SIGNS MAY BE ACCEPTABLE IF PROPERLY ADHERED. VINYL SIGNS SHALL BE WEATHER RESISTANT [IFC 605.11.1.3]

PHOTOVOLTAIC SYSTEM AC DISCONNECT
RATED AC OPERATING CURRENT 21 AMPS
AC NOMINAL OPERATING VOLTAGE 240 VOLTS

LABEL LOCATION:
AC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: NEC690.54)

WARNING
INVERTER OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:
POINT OF INTERCONNECTION
(PER CODE: NEC 705.12(D)(7))
[Not required if panelboard is rated not less than sum of ampere ratings of all overcurrent devices supplying it]

CAUTION: SOLAR CIRCUIT

LABEL LOCATION:
MARKINGS PLACED ON ALL INTERIOR AND EXTERIOR DC CONDUIT, RACEWAYS, ENCLOSURES, AND CABLE ASSEMBLIES AT LEAST EVERY 10 FT, AT TURNS AND ABOVE/BELOW PENETRATIONS AND ALL COMBINER/JUCTION BOXES. (PER CODE: IFC605.11.1.4)

SOLAR DISCONNECT

LABEL LOCATION:
DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: NEC690.13(B))

INVERTER 1

RATED MAXIMUM POWER-POINT CURRENT (Imp)	16.7	A
RATED MAXIMUM POWER-POINT VOLTAGE (Vmp)	350	V
MAXIMUM SYSTEM VOLTAGE (VOC)	11	V
MAXIMUM CIRCUIT CURRENT (Isc)	30	A

LABEL LOCATION:
DC DISCONNECT, INVERTER
(PER CODE: NEC690.53)

PHOTOVOLTAIC POWER SOURCE BREAKERS ARE BACKFEEDING
240 VOLTS
21 AMPS

LABEL LOCATION:
AC BREAKER AND AC DISCONNECT
[Inside or front of panel]

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DRAFTER:
DIMENSION I

SHEET
SIGNAGE

REV: A 5/3/2016

PAGE
PV-5.0

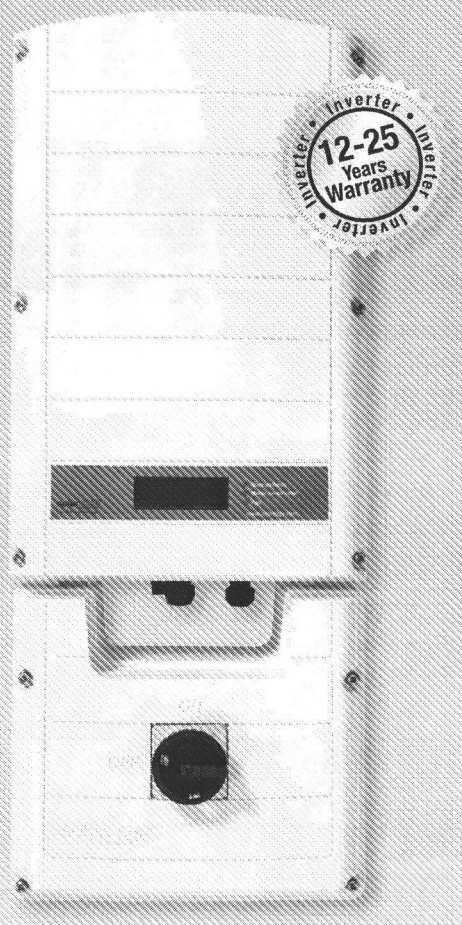
solaredge

SolarEdge Single Phase Inverters

For North America

SE3000A-US / SE3800A-US / SE5000A-US / SE6000A-US /
SE7600A-US / SE10000A-US / SE11400A-US

INVERTERS



The best choice for SolarEdge enabled systems

- Integrated arc fault protection for NEC 2011 690.11 compliance
- Rapid shutdown for NEC 2014 690.12
- Superior efficiency (98%)
- Small, lightweight and easy to install on provided bracket
- Built-in module-level monitoring
- Internet connection through Ethernet or Wireless
- Outdoor and indoor installation
- Fixed voltage inverter, DC/AC conversion only
- Pre-assembled Safety Switch for faster installation
- Optional – revenue grade data, ANSI C12.1

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Permit Number

Single Phase Inverters for North America

SE3000A-US / SE3800A-US / SE5000A-US / SE6000A-US / SE7600A-US / SE10000A-US / SE11400A-US

	SE3000A-US	SE3800A-US	SE5000A-US	SE6000A-US	SE7600A-US	SE10000A- US	SE11400A-US	
OUTPUT								
Nominal AC Power Output	3000	3800	5000	6000	7600	9980 @ 208V 10000 @240V	11400	VA
Max. AC Power Output	3300	4150	5400 @ 208V 5450 @240V	6000	8350	10800 @ 208V 10950 @240V	12000	VA
AC Output Voltage Min.-Nom.-Max.[1] 183 - 208 - 229 Vac	-	-	✓	-	-	✓	-	
AC Output Voltage Min.-Nom.-Max.[1] 211 - 240 - 264 Vac	✓	✓	✓	✓	✓	✓	✓	
AC Frequency Min.-Nom.-Max.[1]	59.3 - 60 - 60.5							Hz
Max. Continuous Output Current	12.5	16	24 @ 208V 21 @ 240V	25	32	48 @ 208V 42 @ 240V	47.5	A
GFDI Threshold	1							A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes							Yes
INPUT								
Maximum DC Power (STC)	4050	5100	6750	8100	10250	13500	15350	W
Transformer-less, Ungrounded	Yes							
Max. Input Voltage	500							Vdc
Nom. DC Input Voltage	325 @ 208V / 350 @ 240V							Vdc
Max. Input Current[2]	9.5	13	16.5 @ 208V 15.5 @ 240V	18	23	33 @ 208V 30.5 @ 240V	34.5	Adc
Max. Input Short Circuit Current	45							Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600kΩ Sensitivity							
Maximum Inverter Efficiency	97.7	98.2	98.3	98.3	98	98	98	%
CEC Weighted Efficiency	97.5	98	97 @ 208V 98 @ 240V	97.5	97.5	97 @ 208V 97.5 @ 240V	97.5	%
Nighttime Power Consumption	< 2.5					< 4		W
ADDITIONAL FEATURES								
Supported Communication Interfaces	RS485, RS232, Ethernet, ZigBee (optional)							
Revenue Grade Data, ANSI C12.1	Optional[3]							
Rapid Shutdown – NEC 2014 690.12	Yes							
STANDARD COMPLIANCE								
Safety	UL1741, UL1699B, UL1998 , CSA 22.2							
Grid Connection Standards	IEEE1547							
Emissions	FCC part15 class B							
INSTALLATION SPECIFICATIONS								
AC output conduit size / AWG range	3/4" minimum / 16-6 AWG					3/4" minimum / 8-3 AWG		
DC input conduit size / # of strings / AWG range	3/4" minimum / 1-2 strings / 16-6 AWG					3/4" minimum / 1-3 strings / 14-6 AWG		
Dimensions with Safety Switch (HxWxD)	30.5 x 12.5 x 7.2 / 775 x 315 x 184					30.5 x 12.5 x 10.5 / 775 x 315 x 260		in / mm
Weight with Safety Switch	51.2 / 23.2		54.7 / 24.7			88.4 / 40.1		lb / kg
Cooling	Natural Convection				Natural convection and internal fan (user replaceable)	Fans (user replaceable)		
Noise	< 25					< 50		dBA
Min.-Max. Operating Temperature Range	-13 to +140 / -25 to +60 (-40 to +60 version available[4])							°F / °C
Protection Rating	NEMA 3R							

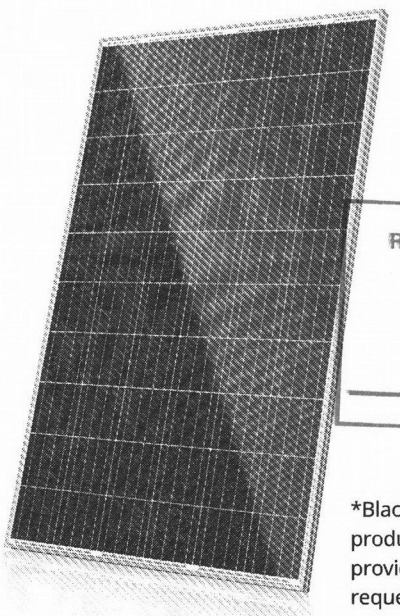
[1] For other regional settings please contact SolarEdge support.
[2] A higher current source may be used; the inverter will limit its input current to the values stated.
[3] Revenue grade inverter P/N: SExxxxA-US000NNR2 (for 7600W inverter:SE7600A-US002NNR2).
[4] -40 version P/N: SExxxA-US000NNU4 (for 7600W inverter:SE7600A-US002NNU4).

ETL SUNSPEC RoHS

CanadianSolar

QUARTECH
CS6P-260 | 265P

Canadian Solar's new Quartech modules have significantly raised the standard of module efficiency in the solar industry. They introduced innovative four busbar cell technology, which demonstrates higher power output and higher system reliability. Worldwide, our customers have embraced this next generation of modules for their excellent performance, superior reliability and enhanced value.



*Black frame product can be provided upon request.

NEW TECHNOLOGY

- Reduces cell series resistance
- Reduces stress between cell interconnectors
- Improves module conversion efficiency
- Improves product reliability

25 years — insurance-backed warranty
non-cancelable, immediate warranty insurance
linear power output warranty

10 years — product warranty on materials and workmanship

KEY FEATURES

Higher energy yield

- Outstanding performance at low irradiance
- Maximum energy yield at low NOCT
- Improved energy production through reduced cell series resistance

Increased system reliability

- Long-term system reliability with IP67 junction box
- Enhanced system reliability in extreme temperature environment with special cell level stress release technology

Extra value to customers

- Positive power tolerance up to 5 W
- Stronger 40 mm robust frame to hold snow load up to 5400 Pa and wind load up to 2400 Pa
- Anti-glare project evaluation
- Salt mist, ammonia and blowing sand resistance apply to seaside, farm and desert environments

MANAGEMENT SYSTEM CERTIFICATES

ISO 9001:2008 / Quality management system
ISO/TS 16949:2009 / The automotive industry quality management system
ISO 14001:2004 / Standards for environmental management system
OHSAS 18001:2007 / International standards for occupational health & safety

PRODUCT CERTIFICATES

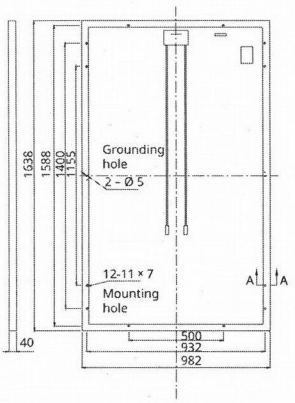
IEC 61215/IEC 61730: VDE/MCS/CE / JET/SII/CEC AU/INMETRO/CQC
UL 1703 / IEC 61215 performance: CEC listed (US) / FSEC (US Florida)
UL 1703: CSA / IEC 61701 ED2: VDE / IEC 62716: VDE / IEC 60068-2-68: SGS
PV CYCLE (EU) / UNI 9177 Reaction to Fire: Class 1

CANADIAN SOLAR INC. is committed to providing high quality solar products, solar system solutions and services to customers around the world. As a leading manufacturer of solar modules and PV project developer with about 10 GW of premium quality modules deployed around the world since 2001, Canadian Solar Inc. (NASDAQ: CSIQ) is one of the most bankable solar companies worldwide.

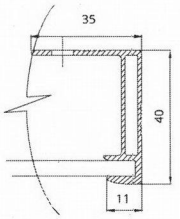
CANADIAN SOLAR INC.
545 Speedvale Avenue West, Guelph, Ontario N1K 1E6, Canada, www.canadiansolar.com, support@canadiansolar.com

MODULE / ENGINEERING DRAWING (mm)

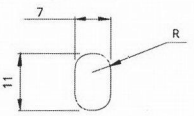
Rear View



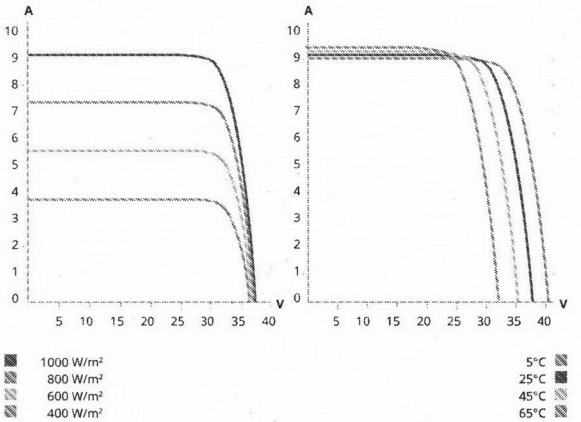
Frame Cross Section A-A



Mounting Hole



CS6P-260P / I-V CURVES



ELECTRICAL DATA / STC*

Electrical Data CS6P	260P	265P
Nominal Max. Power (Pmax)	260 W	265 W
Opt. Operating Voltage (Vmp)	30.4 V	30.6 V
Opt. Operating Current (Imp)	8.56 A	8.66 A
Open Circuit Voltage (Voc)	37.5 V	37.7 V
Short Circuit Current (Isc)	9.12 A	9.23 A
Module Efficiency	16.16%	16.47%
Operating Temperature	-40°C ~ +85°C	
Max. System Voltage	1000 V (IEC) or 1000 V (UL)	
Module Fire Performance	TYPE 1 (UL 1703) or CLASS C (IEC61730)	
Max. Series Fuse Rating	15 A	
Application Classification	Class A	
Power Tolerance	0 ~ + 5 W	

* Under Standard Test Conditions (STC) of irradiance of 1000 W/m², spectrum AM 1.5 and cell temperature of 25°C.

ELECTRICAL DATA / NOCT*

Electrical Data CS6P	260P	265P
Nominal Max. Power (Pmax)	189 W	192 W
Opt. Operating Voltage (Vmp)	27.7 V	27.9 V
Opt. Operating Current (Imp)	6.80 V	6.88 A
Open Circuit Voltage (Voc)	34.5 V	34.7 V
Short Circuit Current (Isc)	7.39 A	7.48 A

* Under Nominal Operating Cell Temperature (NOCT), irradiance of 800 W/m², spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

PERFORMANCE AT LOW IRRADIANCE

Industry leading performance at low irradiation, average +96.5% relative efficiency from an irradiance of 1000 W/m² to 200 W/m² (AM 1.5, 25°C).

The specification and key features described in this datasheet may deviate slightly and are not guaranteed. Due to on-going innovation, research and product enhancement, Canadian Solar Inc. reserves the right to make any adjustment to the information described herein at any time without notice. Please always obtain the most recent version of the datasheet which shall be duly incorporated into the binding contract made by the parties governing all transactions related to the purchase and sale of the products described herein.

Caution: For professional use only. The installation and handling of PV modules requires professional skills and should only be performed by qualified professionals. Please read the safety and installation instructions before using the modules.

MODULE / MECHANICAL DATA

Specification	Data
Cell Type	Poly-crystalline, 6 inch
Cell Arrangement	60 (6×10)
Dimensions	1638×982×40 mm (64.5×38.7×1.57 in)
Weight	18 kg (39.7 lbs)
Front Cover	3.2 mm tempered glass
Frame Material	Anodized aluminium alloy
J-Box	IP67, 3 diodes
Cable	4 mm² (IEC) or 4 mm² & 12AWG 1000 V (UL), 1000 mm (39.4 in) (650 mm (25.6 in) is optional)
Connectors	Friends PV2a (IEC), Friends PV2b (IEC / UL)
Standard Packaging (quantity & weight per pallet)	26 pieces, 515 kg (1135.4 lbs)
Module Pieces per Container	728 pieces (40' HQ)

TEMPERATURE CHARACTERISTICS

Specification	Data
Temperature Coefficient (Pmax)	-0.41% / °C
Temperature Coefficient (Voc)	-0.31% / °C
Temperature Coefficient (Isc)	0.053% / °C
Nominal Operating Cell Temperature	45±2°

PARTNER SECTION

Scan this QR-code to discover solar projects built with this module

S-5!®

The Right Way!

The right way to attach almost anything to metal roofs!

Installation Instructions

S-5!® Warning! Please use these products responsibly! Visit our website or contact your S-5! distributor for available load test results. The user and/or installer of these parts is responsible for all necessary engineering and design to ensure the S-5! clamps have been properly spaced and configured. **Notice to S-5! users:** Due to the many variables involved with specific panel products, climates, snow melt phenomena, and job particulars, the manufacturer cannot and does not express any opinions as to the suitability of any S-5! assembly for any specific application and assumes no liability with respect thereto. S-5! products are tested for ultimate holding strength on various profile types and materials. Visit **www.S-5.com** for more details. This document is an installation guide only and the photographs and drawings herein are for the purpose of illustrating installation, tools and techniques, not system designs. Information contained within is intended to apply to the document as a whole.

The S-5-U, S-5-S, S-5-E, S-5-B, and S-5-V clamps are made for standing seam profiles. For horizontal seam applications, the setscrew(s) must be accessible from the top for tightening. S-5-U clamps have two bolt holes to accommodate either vertical or horizontal seam applications; visit www.S-5.com for more details.

Tools Needed

- Screw Gun*
- 3/16" Allen Bit Tip (provided)
- Dial-Calibrated Torque Wrench
  (For accurate tension values, do NOT use a clicking torque wrench; inquire with S-5! for proper tool sourcing)

To Install the S-5-U, S-5-S, S-5-E, S-5-B, and S-5-V

1. Partially thread the setscrews into the clamp by hand. (The S-5-U has four setscrew locations to make the clamp more versatile; however, only two setscrews are used per clamp. Both setscrews should always be loaded into the same side of the clamp.)

2. Determine how to position the clamp. When attaching to machine-folded seams (regardless of panel profile and geometry), S-5! clamps are designed to engage the seam as shown in Illustration A; with setscrew opposite seam fold. On many snap-together type seams, the setscrews are on the open (or overlap) side of the seam. On some seams, this aspect of clamp orientation is not critical.

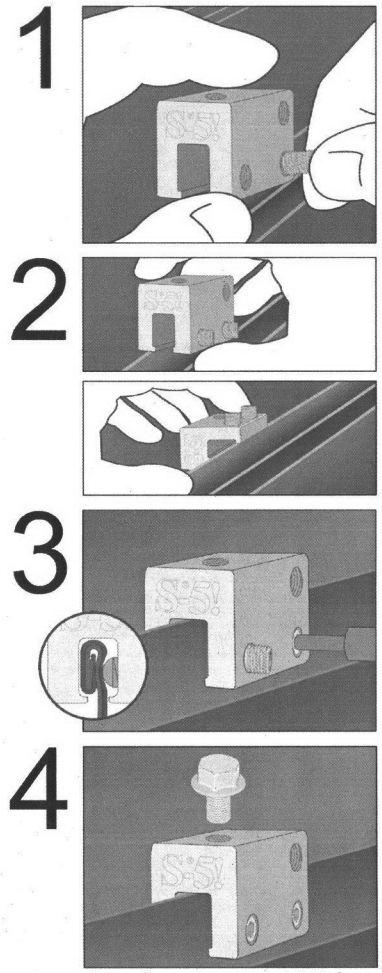
3. Tighten the setscrews using a screw gun* and the included screw gun bit tip. Setscrews should be tensioned and re-tensioned as the seam material compresses, i.e. tighten the first setscrew, then the second; then repeat until each setscrew achieves the recommended torque. The setscrews will dimple the seam material but will not penetrate it. When relying on published load values, setscrew tension should be verified periodically using a calibrated torque wrench as indicated below to ensure the tool is consistently achieving the proper torque range.

   *** For time-saving tool recommendations, call S-5!**

Specified Torque	Inch Pounds	Foot Pounds	Nm
22ga steel	160–180	13–15	18–20
All other metals and thinner gauges of steel	130–150	11–12.5	15–17

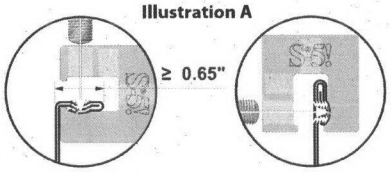
   Once installed correctly, these clamps require no maintenance or re-inspection for the life of the roof.

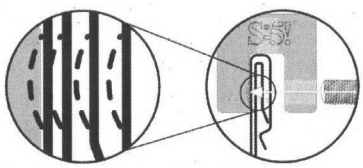
4. For critical attachment applications utilizing an M8-1.25 X 16 mm Hex Flange Bolt, tighten the included M8 bolt to 160 inch pounds (13 foot pounds).



Above illustrations show S-5-U clamp on a vertical seam. Step 2 shows both vertical and horizontal applications.

Illustration A





(Top) S-5-U clamp on both vertical and horizontal seams. (Bottom) S-5-S on a snap together seam with blow up illustrating deformation of seam as setscrew is tightened

For horizontal seams equal to or greater than .65" use the S-5-U in its horizontal orientation.

For horizontal seams equal to or less than .50" use the S-5-S mounted vertically.

These instructions are for use by those experienced in the trade. Always follow appropriate safety precautions and use appropriate tools.

To Install the S-5-U Mini, S-5-S Mini, S-5-E Mini, S-5-B Mini, and S-5-V Mini

1. Partially thread the setscrew into the clamp by hand.

2. Determine how to position the clamp. When attaching to machine-folded seams (regardless of panel profile and geometry), S-5!® clamps are designed to engage the seam as shown in Illustration A on the front page; with setscrew opposite seam fold. On many snap-together type seams, the setscrew is on the open (or overlap) side of the seam. On some seams, this aspect of clamp orientation is not critical.

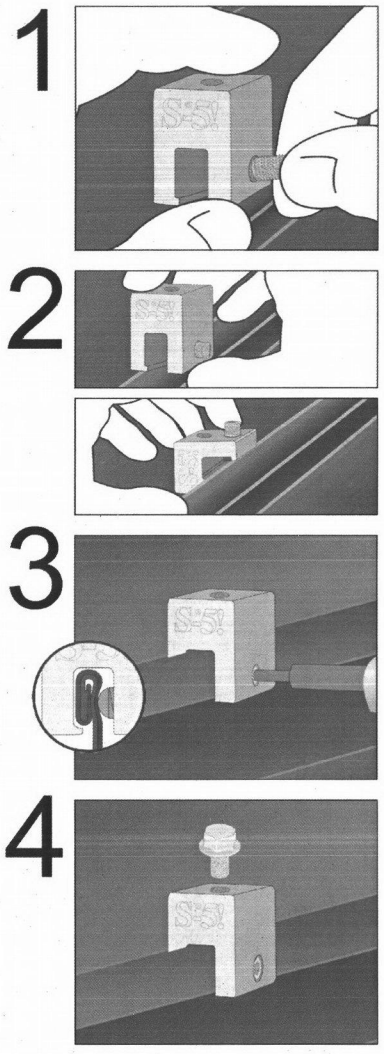
3. Tighten the setscrew using a screw gun* and the included screw gun bit tip. The setscrew will dimple the seam material but will not penetrate it. When relying on published load values, setscrew tension should be verified periodically using a calibrated torque wrench as indicated below to ensure the tool is consistently achieving the proper torque range.

   ***For time-saving tool recommendations, call S-5!**

Specified Torque	Inch Pounds	Foot Pounds	Nm
22ga steel	160–180	13–15	18–20
All other metals and thinner gauges of steel	130–150	11–12.5	15–17

   Once installed correctly, these clamps require no maintenance or re-inspection for the life of the roof.

4. For critical attachment applications utilizing an M8-1.25 X 16 mm Hex Flange Bolt, tighten the included M8 bolt to 160 inch pounds (13 foot pounds).



Above illustrations show S-5-E Mini clamp on a vertical seam. Step 2 shows S-5-E Mini on vertical applications and S-5-U Mini on horizontal applications.

S-5!® Warning! Please use this product responsibly!

Products are protected by multiple U.S. and foreign patents. Visit the website at www.S-5.com for complete information on patents and trademarks. For maximum holding strength, setscrews should be tensioned and re-tensioned as the seam material compresses, i.e. tighten the first setscrew, then the second; then repeat until each setscrew achieves the recommended torque. Clamp setscrew tension should be verified using a calibrated torque wrench between 160 and 180 inch pounds when used on 22ga steel, and between 130 and 150 inch pounds for all other metals and thinner gauges of steel. Consult the S-5! website at www.S-5.com for published data regarding holding strength.

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