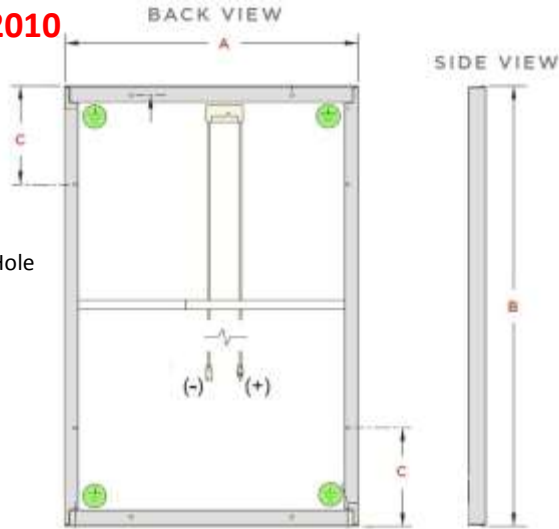


FOR ORDERING CHANNELLOX SYSTEMS
Choose From Standard Rails and Component Packs Below

Typical Panel Measurements Needed
Length, Width and Hole Spacing

V5 Sept-2010



A = Width
B = Length
C = Mounting Hole off-set

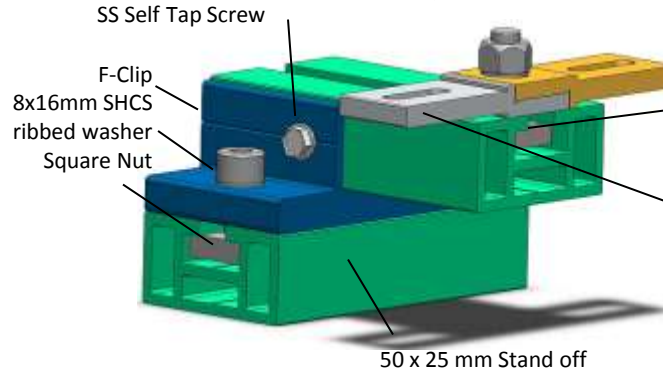


3 Standard Rail Sizes and 3 Standard Lengths

Order custom lengths if required (cut charge)
Check roof load specifications for selecting rail size (Ask an Engineer)

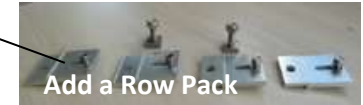


Assembled configuration



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Panel Packs (1/panel)



"First Row" Panel Packs contain 4 of everything above.
"Add a Row" Panel Packs contains 2 T-Bolts instead of 4

F-Clip Packs



Penetrator Pack 1
1 F-Clip 3 SS Screws and bolt only
(Flashing separate)

Channellox Stand-off

25, 50, 75 x 100mm + 4 or 6" lag-bolt



F-Clip Pack for Standoff



1 F-Clip
1 8x16mm SHCS
1 Ribbed washer
1 Square Nut
3 SS Self-Tap screws
1 spare screw for ground wire

Tilt Rail Pack

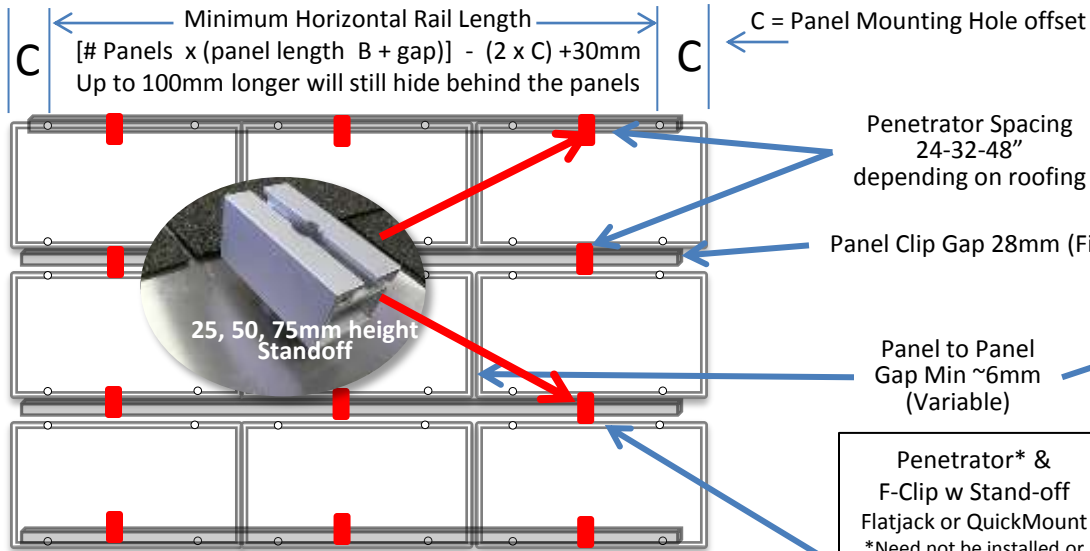


3 Stainless Pivot-Clips with 2 bolts ribbed washers & nuts
1 50x50mm Tilt Rail
1 50x50mm Support Rail
(lengths cut to order)

Choosing Rail Size, Lengths and Quantities

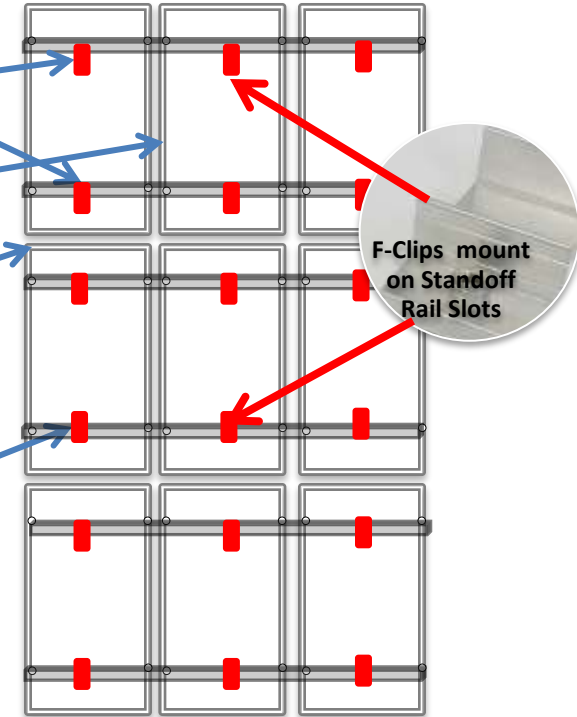
NOTE: Check your panel specification sheet for exact measurements – Choose a rail length longer than the minimum calculations shown

Landscape ← (Landscape can use fewer components – Costs Less)



Portrait

Minimum Horizontal Rail Length
 $[\# \text{ Panels } \times (\text{panel width } A + 28\text{mm gap})] + 30\text{mm}$



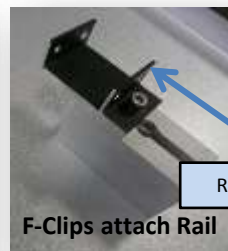
Penetrator* & F-Clip w Stand-off Flatjack or QuickMount
 *Need not be installed or aligned precisely
 *Can be purchased with or without penetrator bolt and flashing

NOTE: Mounts can be done with more or fewer rails and penetrators, for strength. Consult a qualified structural engineer

PORTRAIT layouts require 2 horiz rails per row + more attachments
 Install penetrators on trusses with flashing and/or Standoffs
 Use F-Clips to attach and adjust horizontal rails

SEE CHANNELLOX ROOF SYSTEM DESIGN GUIDE FOR HOW TO DETERMINE PIECE COUNTS

Landscape uses less rail and penetrators per kW installed
 Use 2800mm rails for 2 panels and 4600mm rails for 3 panels as above
 3 rail sizes 50x25mm, 50x50mm and 50x75mm 50x50mm can be "Light "or "Heavy"
 Use 50x50 Light for up to 36" truss spacing
 Use 50x50 Heavy for 48" truss spacing which is common
 Use 50x75 for >48" truss spacing
 All extrusions are 6063-T6 aluminum except 50x75mm which is stronger 6061-T6



Rail attaches with 2 Self-tap set screws



Enphase mounting kit also available. Specify Enphase kits when ordering.
 1 per panel/Enphase Unit

Channellox – Options and Details



Enphase Mounting Kits

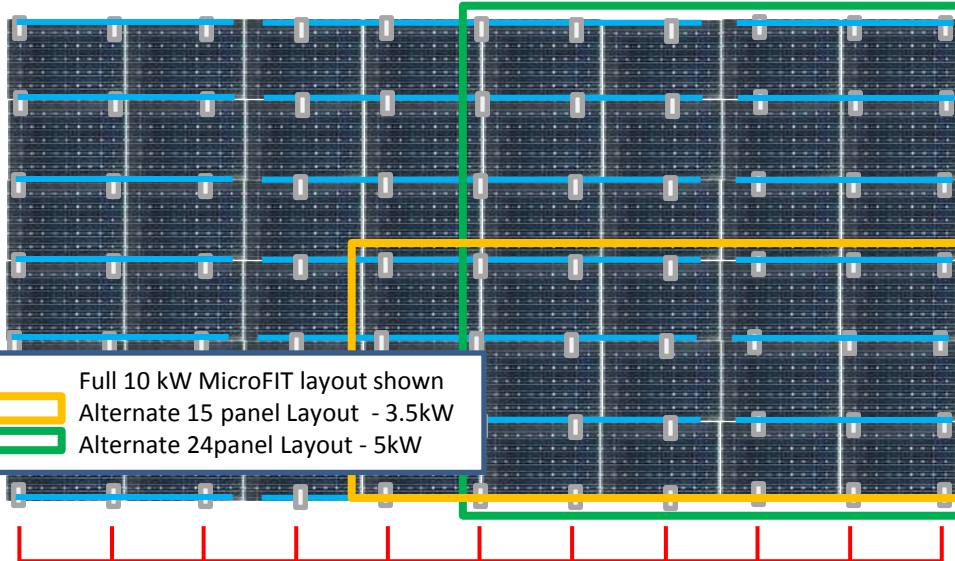
52 panels mount to curved surface with variable standoffs



Photos Courtesy of www.naturespower.ca



Sample 10 kW Roof Configuration - 48 x 200-235w Panels



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48inCenters

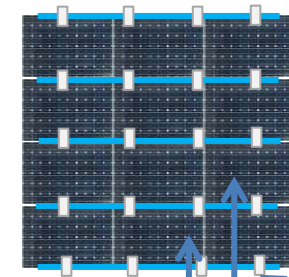
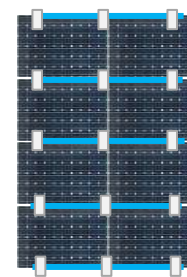
Two Standard Rail Lengths Build ANYTHING in LANDSCAPE

2800mm for 2 vertical rows

4600mm for 3 vertical rows

Select combinations for even or odd length horizontal Strings

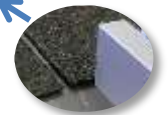
Use Standoffs and lagbolts at each truss



Count 2 rails, bolts and standoffs for 1st row and one for each additional row



Each panel pack has 4 CLIPS
 First row panel packs have 4 bolts
 Add a Row pack need only 2 bolts



25, 50 or 75mm height

Channellox - Example Tilt Layout



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GENERAL CONFIGURATION ONLY

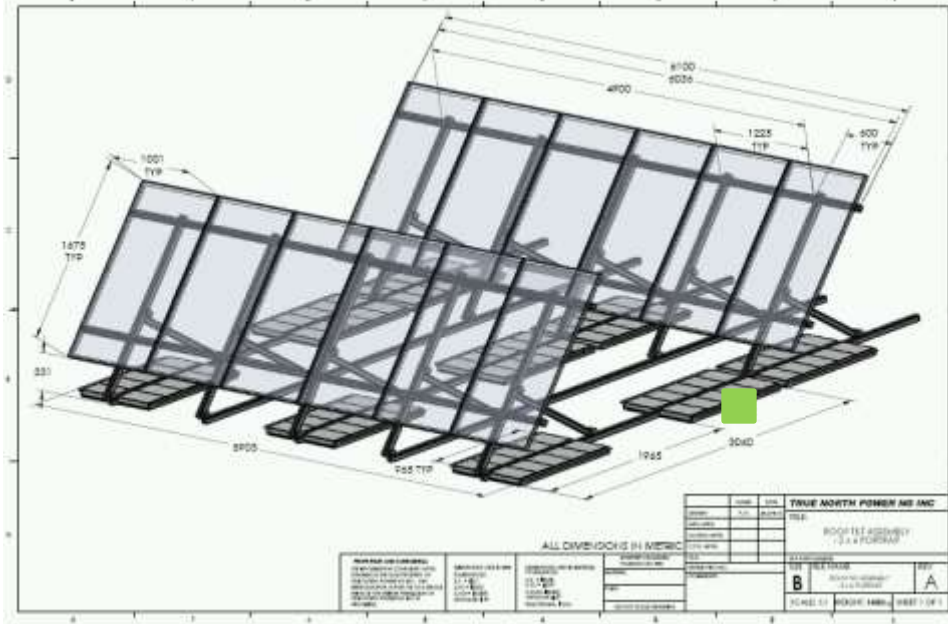
Basic building set at left
 (2x6s wide makes 2 rows of 24 = 10kW)

4sets of 2 rows of 6 panels PORTRAIT
 LANDSCAPE orientation for low profile
 Sections seasonally adjustable

Total 48 panels - 24 panels per row
 2 horizontal rails per section
 With 200-235w panels ~5k watts per single row

 Ballast tray or F-Clip/Standoff penetrator

Can be mounted on any flat or sloped roof



Angle 0-45deg
 Seasonally adjustable
 Or Fixed



10kW Micro-FIT made for 2x5kW inverters.
 Tamper Proof BOLT kits also available.
 ENPHASE mounting kit option available

~24-25m Total array width
 for each 10kW grouping



GENERAL LAYOUT ONLY

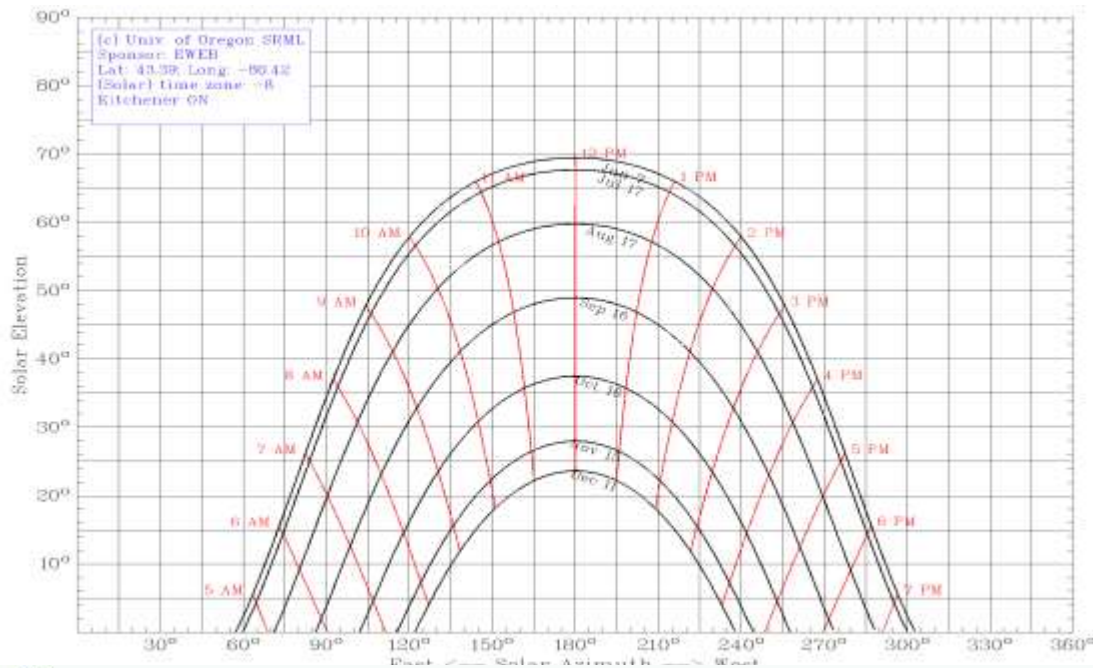
All panels and sections would be evenly and closely spaced for seasonal adjustment up to 30-50deg winter angle



F-Clip with FlatJack

Pivot-Clip with Array base rail and Seasonal setting bolt

Channellox – Siting Angles

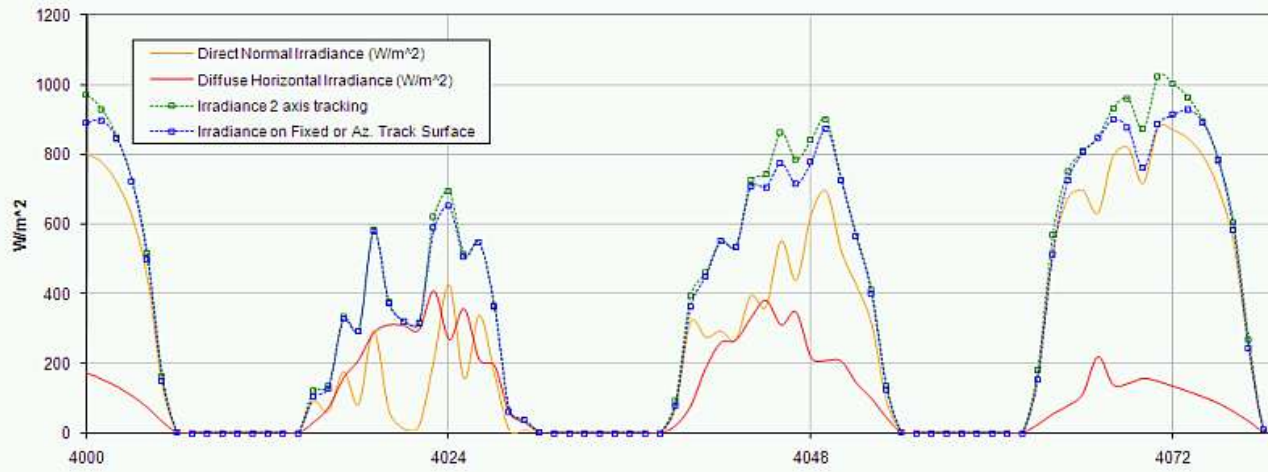


Summer and Winter Array Tilt Angles

Adjusting the tilt of the array only twice a year, to optimize production for summer and winter, will gain between 8-11% more energy than leaving a fixed array all year. Adjusting the tilt angle every month adds only a small amount of extra production, possibly less than 2-3%.

Adjusting winter setting for Dec 21st (winter solstice) is largely a waste of time since, in Canada at least, it is likely to be cloudy or even snowing that week and even if it is full sun all day the atmospheric attenuation at such a low angle and the few hours of sun there is does not collect any significant energy over a what would be collected with a tilt angle optimized or the 1st of Dec.

Also atmospheric attenuation is very high when the sun is less than 15 degrees above the horizon so pointing directly at early morning and late evening light is not nearly as valuable as the sunlight energy between roughly 8 am to 5:30pm in the summer and 9 till 4pm in the winter.



At left is an example of diffuse vs specular (direct sun) light and the value of tracking the sun precisely. Note that precise tracking is only valuable in specular light such as in desert and high sun areas. In most of Canada at least passive pointing systems gather nearly the same energy annually as so called "dual axis" trackers and use a lot less energy in the process by not "chasing" the diffuse energy around clouds and snow a lot of the time. If you adjust the array tilt angle only twice annually you'll capture >90-95% of the energy a dual axis tracker can with a less drive train energy as well as wear and tear with lower maintenance costs.