Mounting Sensors to ESA 376 Single-Axis Tracker

INTRODUCTION

These instructions explain how to mount EKO MS80 pyranometers and IMT Solar Reference Cells to an ESA 376 Single-Axis Tracker in the global plane-of-array (GPOA) orientation.

PARTS

The parts table below lists quantities for EACH bracket installation.

NRG Part Number	Part Description	Part Specification	Quantity
14734	PV array mounting bracket	Pre-drilled angled aluminum	1
14738	EKO MS-80 mounting plate	Pre-drilled mounting plate	1
14731	IMT Ref Cell mounting plate	Pre-drilled angled mounting plate	1
	PV array-to-mounting bracket bolts	1/4-20 thread 1 7/8” length Stainless steel button cap bolt	4
	PV array-to-mounting bracket nuts	1/4-20 thread Stainless steel Nyloc nut	4
	Plate-to-mounting bracket bolt	5/16-18 thread 7/8” length Stainless steel button cap bolt	5
	Plate-to-mounting bracket nut	5/16-18 thread Stainless steel Nyloc nut	5
	EKO MS-80 mounting bolts	M5 x 40mm Stainless steel button cap bolt	2
	EKO MS-80 mounting nuts	M5 x 0.8mm Stainless steel nut	4
	IMT Ref Cell mounting bolts	M6 x 14mm Stainless steel button cap bolt	2
	IMT Ref Cell mounting nuts	M6 Stainless steel Nyloc nut	2

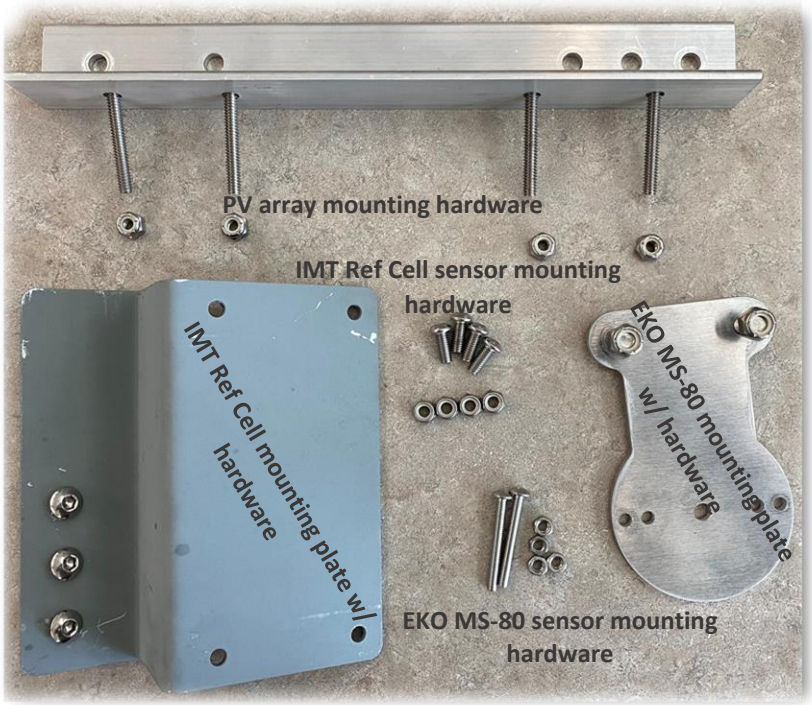
TOOLING

Item	Use
Clamp(s)	Temporarily holding mounting bracket to SF7 PV array structure
Permanent marker	Marking bracket hole locations to drill
Drill with tool-less chuck	Drilling holes for mounting bracket to attach to SF7 PV array structure
Drill bit – 9/32" or 7.2mm or size K	Drilling holes for mounting bracket to attach to SF7 PV array structure
Ratchet & sockets	Bracket & pyranometer plate attachment Specific socket sizes required: • 7/16" • 1/2" • 8mm • 10mm
7/16" Wrench	Bracket attachment
1/2" Wrench	Pyranometer plate attachment
Adjustable Wrench	
8mm Wrench	
10mm Wrench	
3mm Hex key	EKO MS80 pyranometer mounting bolts
4mm Hex key	IMT reference cell mounting bolts
5/32" Hex key	PV array mounting bracket to PV rack frame
3/16" Hex key	Sensor mounting plates to PV array bracket
	

Apply a small amount of anti-seize to the bolt threads.

PROCEDURE

1 Gather the hardware shown below:

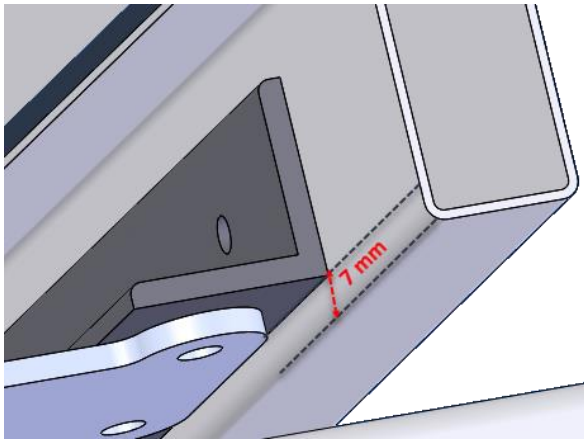


2 Center the mounting bracket on the ESA 375 tracker's metal PV support beam. The bracket should be centered above the torque tube with the protruding angle on the bottom.

The bottom of the bracket must **7mm** from the bottom edge of the support beam →

Clamp in place if desired. Use a **permanent marker** to mark the locations of the holes to be drilled in the structural beam.

Remove the mounting bracket and clamp.



3 Use the **drill** and **drill bit (9/32"|7.2mm|Size K)** to make the required holes in the structural beam.

There will be four holes per bracket.

4 Attach the mounting bracket to the structural beam. Use the **1/4-20 stainless bolts** (#11047) and **nyloc nuts** (#14390).

Check that the bracket is straight with a **level**, then tighten with a **5/32"hex wrench** and **7/16" socket ratchet or wrench.**

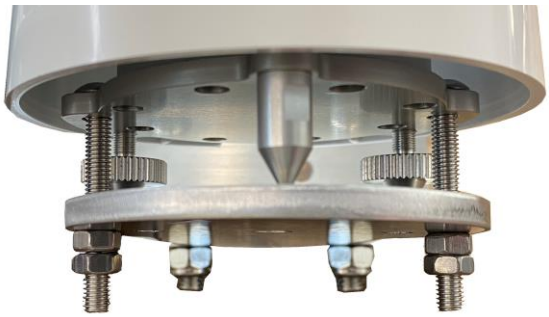
Note: If desired, use flat washers (not supplied) with the mounting hardware.

5 Mount the **IMT Reference Cell mounting plate** (#14731) *under* the protruding PV array mounting bracket using 3 x **5/16" stainless steel button cap bolts** and 2 x **5/16" nyloc nuts**.

6 Mount the **EKO MS-80 mounting plate** (#14738) under the protruding PV array mounting bracket using 2 x **5/16*" stainless steel button cap* bolts** and 2 x **5/16" nyloc nuts**.

7 Mount the **EKO MS-80 pyranometer** to the mounting plate (#14738) using 2 x **M5 bolts** and 4 x **nuts** to lock the sensor onto the mounting plate with the cable connector facing the PV frame.

Level the sensor and tighten the first set of nuts against the mounting plate. Once tight, hold the first set of nuts in place with a wrench and tighten the second set of nuts against the first, locking the nuts in place.



8 Mount the IMT Reference Cell to the mounting plate (#14731) using 4 x **M6 stainless steel button cap bolts** and 4 x **M6 nyloc nuts** with the sensor cable facing the MS-80 pyranometer mounting plate. The cable from the sensor should be facing the MS-80 pyranometer.

9 Attach the MS-80 sensor cable and route the IMT Reference Sensor and MS-80 pyranometer cables to the required connection point.

10 The finished installation should look like this: