PHOTOVOLTAIC SYSTEMS

SCOTT COUNTY, IOWA

PV WORKSHEET – MICRO-INVERTER ARRAY

Solar photovoltaic (PV) systems have widely gained acceptance as alternative energy source and installations range from the small array supplying a bus stop luminaire to a large array that covers acres. Since each installation comes with its own characteristics this worksheet has been provided for the installer to complete and submit to his/her electrical inspector for obtaining a permit. The entire PV system installation must comply with Article 690 of the 2014 National Electrical Code (NEC).

To obtain a permit please provide the following documentation to Scott County Planning & Development:

1. Pages 2, 3 and 4 of this document
2. Equipment spec/cut sheets for grounding/bonding fittings, modules, inverters, micro inverters, or optimizers (if these are not available complete page 4 of this document)
3. A one-line diagram of the PV system including service interconnection
4. A site plan showing the relative location of the array and the PV equipment on the property. Also provide location of service and distance from array.

A PV installer is allowed to construct the support system, mount the modules, inverters or optimizers, and connect the factory provided module wiring harness (plug and play). The remainder of the installation such as panelboards, raceways, boxes, fittings, breakers, and building wire shall be installed by a licensed electrical contractor.

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PV SYSTEM INFORMATION

TYPE OF ARRAY						
	Y	N			Y	N
ROOF ARRAY?	☐	☐	RAPID SHUTDOWN REQUIRED (690.12)?		☐	☐
GROUND ARRAY?	☐	☐	GUARDING OF CONDUCTORS REQUIRED (690.31A)?		☐	☐

PV SYSTEM OVERVIEW	
Maximum System Voltage	
# Modules/String	
# Strings in System	
Maximum Circuit Current	
Battery Storage? Y N	

LOAD SIDE CONNECTION[1]	
Service Voltage	
Service Panel Main Breaker	
Service Panel Bus Rating	
Service Conductor Size	
PV System OCPD2 Rating	

CALCULATIONS:

MAXIMUM SYSTEM VOLTAGE - 690.7(A):
(Voc) (module label) X Thermal Coefficient[3] X # of modules/string = VMAX

MAXIMUM CIRCUIT CURRENT – 690.8(A) (1):
(Isc)(module label) X (Sum of the paralleled modules) X 125% = IMAX

OVERCURRENT DEVICE RATING – 690.9(B):
(Imax) X 125% = OCPD[2]

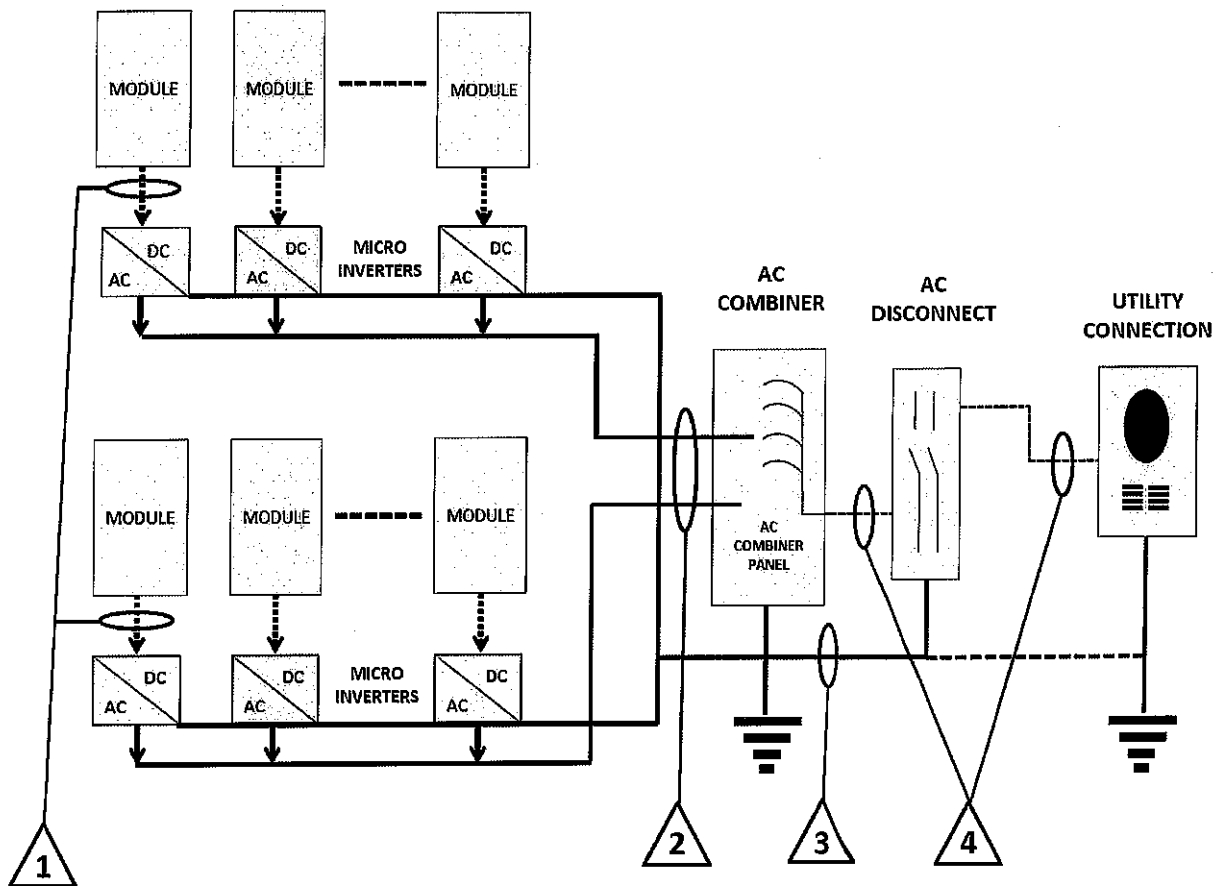[1]Supply side connections may be allowed by your utility and shall comply with 708.12(A)
[2]OCPD – Overcurrent Protective Device

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CONDUCTOR AND RACEWAY SCHEDULE

△	Conductor Type	Conductor AWG	Conduit Type	Conduit Size
1	PV Source Conductors USE – 2 PV wire	MFG Cable	NA	NA
2	Exterior Cable Listed With Inverter	MFG Cable	NA	NA
3	Grounding Electrode Conductor/ Equipment Grounding Conductor		NA	NA
4	THWN-2 XHHW-2 RHW-2			

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COMPONENT RATINGS

PV MODULE RATINGS

Module Name

Module Model

Open Circuit Voltage

Short Circuit Current

Maximum Power

Maximum Voltage

Thermal Coefficient[3]

Inverter Ratings

Inverter Name

Inverter Model

Maximum DC Volt Rating

Maximum Power at 40°

Nominal AC Voltage

Maximum AC Current

Maximum OCPD2

[3]Use thermal coefficient as provided by manufacturer. If not provided, use 1.20. (690.7)