



Manitoba Electrical Code Inspection Notice

Issue Date: October 4, 2016. (Updated July, 2017)

64-1 Solar Photovoltaic Systems:

Effective Date:

Immediately

Scope:

To clarify the requirements for:

- Δ • Metering facilities and busbar ratings;
- Δ • AC equipment disconnects with utility interactive inverters;
- Δ • Array installations in accessible locations;
 - Combiners;
 - Disconnects;
 - Utility disconnect;
 - Labelling; and
- Δ • Utility interactive point of connection

Requirements:

Metering facilities and busbar ratings:

Metering facilities permitted for the subdivision of the consumer's service and supplied simultaneously by a primary power source and one or more utility-interactive inverters shall comply with the bus bar requirements of 64-112 and the following:

Customer Service Termination Enclosures (CSTE): For calculating busbar ratings the ampere rating of the CSTE shall be used for the utility source overcurrent device ampere rating. The ampere rating of the CSTE shall be deemed the bus bar rating on an existing CSTE that is not marked with a bus bar ampacity. You may also have the manufacturer re-label the CSTE with a bus bar rating provided the equipment is re-approved in accordance with the Manitoba Electrical Code.

The sum of the connected solar cannot exceed the ampere rating of the CSTE.

Transformer Rated Meter Mounting Devices (TRMMD): The sum of the ampere rating of the overcurrent devices for connected consumer's services shall not exceed the ampere rating of the TRMMD.

Dual Lug Meter Sockets (DLMS): The sum of the ampere rating of the overcurrent devices for



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connected consumer's services shall not exceed the ampere rating of the DLMS.

Examples: 400 amp rated TRMMD — One 400 amp or two 200 amp consumer's services are permitted.
200 amp rated DLMS — Two 100 amp consumer's services are permitted.

AC equipment disconnects with utility interactive inverters:

All AC disconnect switches supplied with two sources of voltage are to be connected utility source to the line side and inverter output to the load side.

Note: For Manitoba Hydro owned farm metering facilities with splitters or pole top subdivisions of the consumer's service, the utility owned breaker will not be permitted for the required customers disconnecting means. Furthermore, no customer equipment can be installed on a utility owned pole to facilitate this disconnect. Changes initiated to accommodate solar will necessitate the customer install their own service equipment.

Array installations in accessible locations:

For the application of rules 64-202(4)(a), 64-210(2)&(3) and 64-220(2) PV installations that are not protected by elevation or fencing require an acceptable barrier for making conductors and connectors inaccessible. An acceptable barrier shall consist of;

- Sheet steel not less than 1.3 mm thick.
- Metal screening not less than 1.3 mm thick and where openings are a maximum size of 6.75 mm.

Installations in excess of 750 Volt will require other effective means such as fenced enclosures in accordance with 26-300 or elevation.

Note: For application Class B modules sheet metal or screening is not considered an acceptable method for making installations inaccessible.

Combiners:

Equipment used to combine source circuits to create an output at a higher current, voltage or both shall be specifically approved for the purpose and marked.

Note: Inverters, rapid shut down boxes and similar equipment is currently not approved for this application and will not be acceptable.



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We will permit the connection of two strings at the inverter provided the maximum rated short circuit current of each photovoltaic source and output circuit does not exceed 10 amperes.

Manitoba Electrical Code Definition:

Photovoltaic combiner — an assembly of buses and connections that may contain overcurrent protective devices, control apparatus, switches, or other equipment and that connects photovoltaic source circuits or the outputs of other combiners together to create an output at higher current or higher voltage, or both.

Disconnects:

Inverter integral DC and AC disconnects will not be considered as meeting the requirements of a disconnecting means as required by the Manitoba Electrical Code. As such the required DC and AC disconnect shall be field installed external to the inverter.

Manitoba Electrical Code 2-024-5

2-024-5 ELECTRICAL EQUIPMENT DISCONNECTING MEANS

A separate disconnecting means shall be installed for all electrical equipment as required by the Manitoba Electrical Code. An integral disconnecting means will only be considered acceptable when specifically permitted by the Manitoba Electrical Code and the associated CSA Part II Standards have provisions for the installation and marking of the required disconnect.

All disconnecting means required by the Manitoba Electrical Code shall be field-installed external to the equipment.

Utility disconnect:

Please be advised that as the supply authority Manitoba Hydro will require a utility disconnect to be installed for all Solar Photovoltaic Systems. The utility disconnect shall be installed adjacent to the Manitoba Hydro electric meter where practicable. When the inspection department has deemed it not practicable to locate the utility disconnect adjacent to the electric meter a label must be installed on the electric meter enclosure that indicates the location of the utility disconnect.

Manitoba Hydro as the supply authority will not mandate the application of 84-024(1)(c) and will not require the utility disconnect to have the contact operation verifiable by direct visible means (viewing window).

Labelling:

All labels for the solar photovoltaic system as required by the Manitoba Electrical Code shall be a permanently attached lamacoid. The lamacoid shall have a red background with white lettering.

Utility interactive point of connection

The only utility interactive point of connection Manitoba Hydro as the supply authority will permit is a



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connection on the load side of the service disconnecting means.

This connection shall be done at a panelboard or switchboard. Each source interconnection at the panelboard or switchboard shall be made at a dedicated circuit breaker or fusible disconnecting means.

For the application of this requirement the definition of a panelboard will include splitters with adjacent overcurrent for each source interconnection.

When electrical equipment is supplied by multiple sources an adjacent disconnecting means shall be installed for all sources as per 14-414.

Note: A separate meter and a connection on the line side of the service disconnecting means will not be permitted by Manitoba Hydro.

Rationale:

To clarify the inspection departments expectations in regards to the electrical installations for solar photovoltaic systems.

Supporting Information:

Manitoba Electrical Code:

- Section 14;
- Section 64;
- Section 84; and
- Technical interpretation 2-024-5

Issued By

Manitoba Hydro
Electrical Codes and Standards