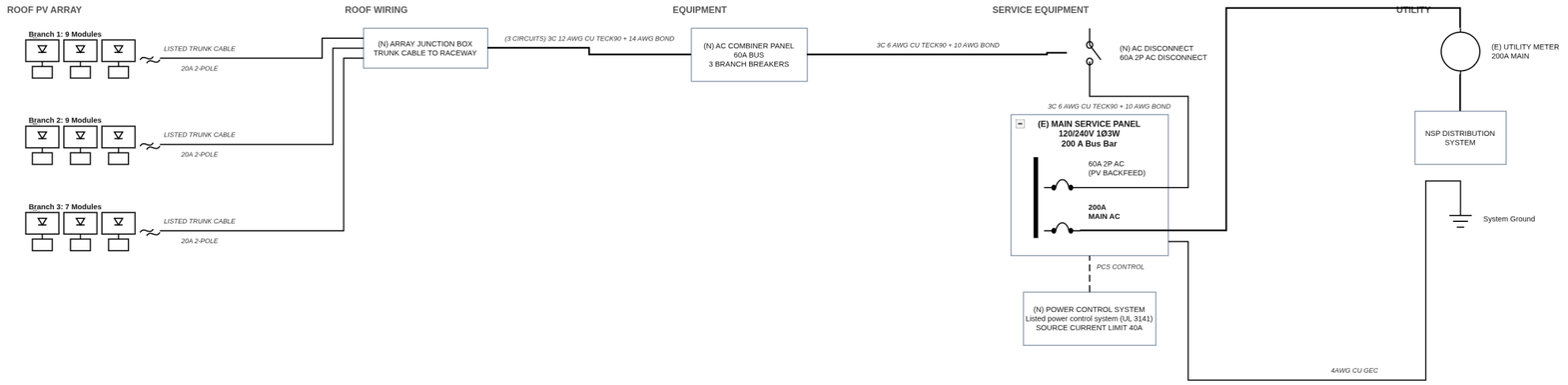
SINGLE LINE DIAGRAM



Notes:

1. All marking of the system shall comply with Rules 64-074, 64-076 and 64-200 of the Canadian Electrical Code. Label all disconnects and the rapid shutdown initiator for quick and safe shutdown operation.

2. All components shall be CSA certified or bear an equivalent recognized certification mark, with nameplate certification visible. Equipment tagged (E) is existing; equipment tagged (N) is new under this permit.

3. Photovoltaic system disconnect: nominal operating voltage 120/240V 1Ø3W, rated AC output current 41.67A.

4. This is a two power source parallel system. Interconnection per Rules 64-112 and 84-030.

5. Design conditions (site weather data, TMY extremes): extreme low ambient -29°C for open-circuit voltage per Rule 64-202; high ambient 34°C with a 30°C cell rise for minimum string voltage; conductor conditions and adjustments are shown by run in the conductor schedule.

6. Maximum PV system voltage 51.90V (cold-corrected string Voc) against a limit of 600V per CEC 64-202 (dwelling).

7. PV source and field homerun conductor sizes, materials, temperature ratings and ampacity calculations follow the conductor schedule and the selected installation conditions.

8. Array wiring runs to the listed roof junction box; the conductor schedule specifies the wiring method for each field homerun and route section.

9. Photovoltaic overcurrent devices per Rules 64-214 and 64-058.

10. DC arc-fault circuit protection per Rule 64-216 and ground-fault protection per Rule 64-066 are provided by the certified inverter(s).

11. PV system dc disconnecting means per Rule 64-060: integral load-break disconnect in the listed inverter(s).

12. Photovoltaic rapid shutdown provided per Rule 64-218—.

13. Inverter(s) certified to CSA C22.2 No. 107.1 and UL 1741-SB.

14. Module frames, racking and all non-current-carrying metal parts bonded per Rules 64-072 and 64-224 with bonding conductors sized per Table 16.

15. System grounding at the service entrance only per Rules 64-066 and 64-070; no separate grounding electrode requirec for the PV array unless noted.

16. Point of interconnection: Backfed breaker in the main panel or switchboard, backfed breaker 60A on a 200A bus with 200A main. PCS-limited source current 40A; allowed 40A. Source connection shall be at the opposite end of the bus from the main.

17. Warning: inverter output connection — do not relocate this overcurrent device.

18. Proposed PCS (Listed power control system (UL 3141)) limits aggregate PV/storage source current to 40A per phase; the bus check counts that limit, capped at the backfed breakers' continuous rating. Confirm the listed configuration, CT locations and commissioning settings per 64-112.

19. Field wiring methods, materials, sizes, conditions and bonding conductors are specified by run in the conductor schedule. Cable assembly selections specify the required construction; confirm the supplied cable's marking, conductor/bond sizes, fittings and equipment termination suitability. Factory wiring remains subject to the equipment instructions.

System Specifications

Modules

25 x Powerlily PL-400M 400Watts 10kWDC

Inverter

25 x Powerlily PL-400M @0.4kWAC x 1Ø x 240V

Design Conditions

Temperatures: -29°C extreme low, 34°C high ambient + 30°C cell rise (site weather data, TMY extremes). Max PV system voltage 51.9V of 600V allowed (CEC 64-202 (dwelling)). Raceways: EMT: array-side raceway runs at 34°C, interior runs at 34°C. DC disconnect: integral load-break disconnect in the listed inverter(s).

Rapid Shutdown

Module-level — integrated in Powerlily PL-400M microinverters

Equipment Legend

(E) EXISTING (N) NEW

PV Module + Microinverter · AC Disconnect · Utility Meter · Grounding Electrode · Wire Crossing (No Connection)

Conductor Schedule

QTY	TAG	FROM / TO	CONDUCTORS	EGC	OCPD	RACEWAY	AMPACITY & INSTALLATION CONDITIONS	LENGTH
(3)	PV-AC	(N) MICROINVERTERS – (N) ARRAY JUNCTION BOX	MICROINVERTER TRUNK CABLE (LISTED)	IN TRUNK CABLE		FREE AIR UNDER MODULES		
(3)	PV-AC	(N) ARRAY JUNCTION BOX · Whole run – (N) AC COMBINER PANEL	3C 12 AWG CU TECK90 + 14 AWG BOND	14 AWG CU BOND	20A 2-POLE	CABLE ASSEMBLY	30A @90°C × 0.97 (34°C) × 0.8 (6 CCC) = 23.3A; rooftop, dry	NOT MEASURED
(1)	PV-AC	(N) AC COMBINER PANEL · Whole run – (N) AC DISCONNECT	3C 6 AWG CU TECK90 + 10 AWG BOND	10 AWG CU BOND		CABLE ASSEMBLY	75A @90°C × 0.97 (34°C) × 1 (2 CCC) = 72.8A; 75°C termination 65A; indoor, dry	NOT MEASURED
(1)	PV-AC	(N) AC DISCONNECT · Whole run – (E) MAIN SERVICE PANEL	3C 6 AWG CU TECK90 + 10 AWG BOND	10 AWG CU BOND	60A 2-POLE	CABLE ASSEMBLY	75A @90°C × 0.97 (34°C) × 1 (2 CCC) = 72.8A; 75°C termination 65A; indoor, dry	NOT MEASURED
(1)	GND	(E) MAIN SERVICE PANEL – GND ELECTRODE	4AWG CU GEC					

Project Details

CLIENT: Michael Scott
Address: 85 Westridge Rd NW, Edmonton, AB T5T 1B3, Canada
SYSTEM SIZE: 10 kWDC
Annual output: 7,890 kWh
AC OUTPUT: 10 kWAC
DC/AC Ratio: 1
Installer: The Sun Box

Designed By: The Sun Box
Date: 11/6/2026
Code: Canadian Electrical Code 2024
Scale: NOT TO SCALE

STAMP

The Sun Box

Photovoltaic System Design
11/6/2026

PROJECT SITE
85 Westridge Rd NW, Edmonton, AB T5T 1B3, Canada

CUSTOMER: Michael Scott
PROJECT #: —
SITE ID: —
PARCEL ID: —
AHJ: NSP · Alberta
PERMIT: Residential PV — streamlined
CODES: Canadian Electrical Code
DATE: 11/6/2026
DRAWN BY: The Sun Box
CHECKED BY: —
ISSUE: A · Initial Issue
SCALE: AS NOTED; DIMENSIONS GOVERN

REVISIONS

REV	DATE	DESCRIPTION
A	2026-04-24	Initial Issue

SHEET TITLE
SINGLE LINE DIAGRAM

PV-3