

### Description

The Simplex Polaris 2.0 is a highly standardized, advanced design, Load Bank Series, covering the small KW ranges, 5-150kw, at common 60 and 50 hertz low voltages. The Polaris is intended for permanent installation outdoors or indoors. The Polaris carries the UL and UL-C Listing. The product is designed for local or remote control, with standard digital HMI which accepts a sophisticated optional automation package.

The Polaris 2.0 is highly standardized into five frame sizes. Within a frame size, the unit can be easily programmed to a discrete KW rating based upon the standard load step resolution of the frame. Programming is easily accomplished via the standard touchpanel HMI.

The Polaris 2.0 is digitally controlled via an on-board PLC. Control is via a 4-inch TFT color touchpanel HMI. Remote control is via RS-485, shielded/twisted-pair network cable (1000m). Local and remote HMI is housed in a weather/tamper-resistant, lockable enclosure.

Basic unit is setup for manual control. Digital control is via direct numeric entry.

A comprehensive automation option is available which allows automatic load regulation via KW sensing such that the load bank automatically maintains a constant load on the generator. This function can be used for minimum loading to prevent wet-stacking and other low load issues, engine optimum loading for emissions control, and for regenerative power protection. Load levels, high/low set-point bandwidth, and time delays are easily user programmed on the touchpanel. With the automation option, full display of load bank electrical values (V-A-Hz-KW) is also provided.

Options are available for load bank integration with Building Automation Systems via MODBUS RTU RS-485 or MODBUS TCP.



Model	Version	Frame	KW Range	Step Resolution
Polaris	2.0	50	5-50	5
Polaris	2.0	75	55-75	5
Polaris	2.0	100	80-100	10
Polaris	2.0	150	125-150	25

**Voltage:** 208v, 240v, 480v, 600v; 3-phase. 240v, single-phase. 50/60 hertz

### Features

**Construction:** NEMA3R, outdoor weatherproof, pad-mountable, steel enclosure with removable access panels. Powder coated dark gray cabinet with high temperature black air hoods.

**Load Elements:** Simplex Powr-Web, UL recognized, chromium alloy, open wire, ceramic supported.

**Load Control:** Electromagnetic contactors.

**Element Short Circuit Protection:** Branch circuit fuses.

**Cooling:** Forced-air, shrouded aluminum fan blade direct driven by TEFC motor. Fan motor starter with external disconnect.

**Power Wiring:** 150°C XLP.

**Power Connection:** Power distribution block.

**Control Power:** Internal, from load bus, with isolation transformer (120v control). PLC powered via 24vDC conditioned power supply.

**System Protection:** Fan failure, high exhaust temperature, high intake temperature, lockout and alarm. Alarm message display on touchpanel.

**Interior Heaters:** Anti-condensation heaters with thermostatic control.

## Controller

PLC based control with local or remote 4-inch TFT color HMI.

1. 4" Color Touch HMI – Provides all functionality previously accomplished by physical lights/ switches
  - a. Control Power On/Off Switch
  - b. Numeric Load Application Mode: direct entry to keypad, apply and remove function. Allows successive block loading
  - c. Master Load Switch function
  - d. Load Step Switches function
  - e. Fan Failure Indication
  - f. High Exhaust Temperature Indication
  - g. Load Dump Active Indication
  - h. Load Dump Bypassed Indication
  - i. Setup Functions
  - j. Various other functions depending on chosen options
2. Cooling Failure Load Lockout – Disables all load in the event of an exhaust over-temperature or fan failure
3. Remote Load Dump input – Allows user to connect normally closed contacts to permit remote load dump (close to run, open to dump)
4. Load Dump Bypass– Provides means to defeat load dump function above



## Remote Controller

5. Discrete Power Available Lamp – Indicates control power available to load bank. LED indicator on load bank.
6. Summary Alarm Lamp – Indicates that there has been a cooling failure, load dump activation or other failure. LED indicator on load bank.
7. BMS Monitoring (Dry Contacts) – Relay dry contacts for BMS monitoring of “normal operation”, “summary alarm”.
8. BMS Monitoring (Modbus RTU RS-485) – Allows all load bank conditions to be monitored via Modbus RTU RS-485
9. Cooling (to 25KW)
  - a. 1/3HP TEFC Cooling Fan Motor, 4000 cfm
10. Cooling (50+KW)
  - a. 3/4HP TEFC Cooling Fan Motor, 6000 cfm

## Options

Option No.	Description
A	Automation option. Allows AUTOMATIC LOAD REGULATION, REGENERATIVE POWER PROTECTION, via KW sensing. Requires installation of remote current transformer (supplied). User programmable: set point, step up/step down bandwidth, initiate delay, step-up delay, step-down delay, shutdown delay. Includes voltage and frequency sensing with adjustable set point and delay. Includes display of volts-amps-hertz-kw and MODBUS registers for same.
020	BMS control. Allows load bank to be controlled/monitored by BMS
030	MODBUS TCP. Replaces MODBUS RTU-485 with TCP capability

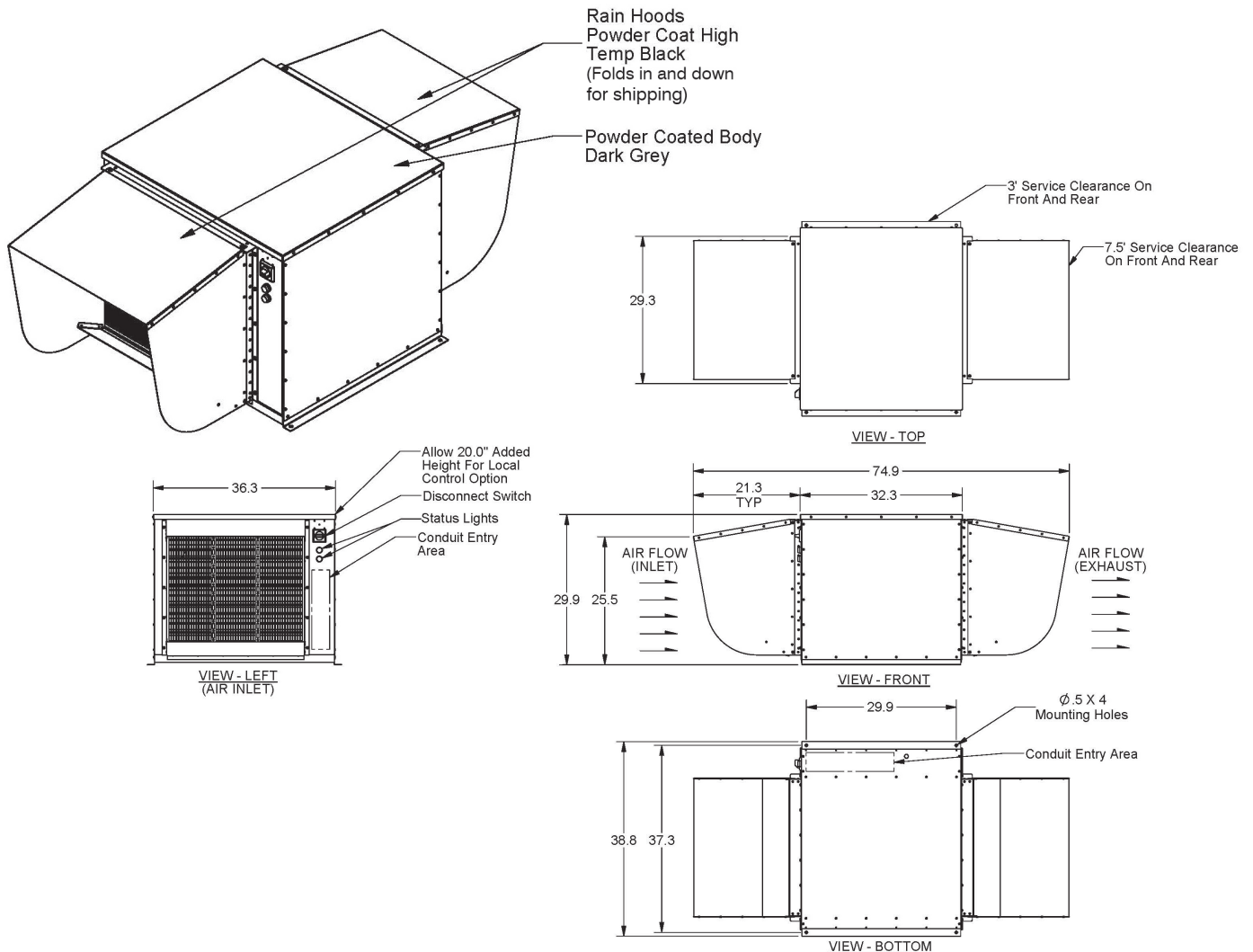
### Model Number Generation

**Example:** PS-2.0-50-2083-60-R-M-010  
20KW, 208V, 3-phase, 60Hz, Remote Manual Control with Interior Heaters

PS	2.0	50	2083	60	R	M	010
Polaris	Version	Frame	Voltage	Frequency	Control	Function	Options
Polaris	1.0 Legacy	50kw	2083	60Hz	L – Local	M – Manual	010: Interior heaters
	2.0 2013	75kw	2403	50Hz	R – Remote	A – Automation	020: BMS Control
		100kw	4803				030: MODBUS TCP
		150kw	6003				
			2401				
			(Volts x Hz)				

### Polaris 50-75-100 Frame

Depending on voltage and options, the frame size utilized may not match the frame size on this illustration.



## Polaris 100-150 Frame

Depending on voltage and options, the frame size utilized may not match the frame size on this illustration.

