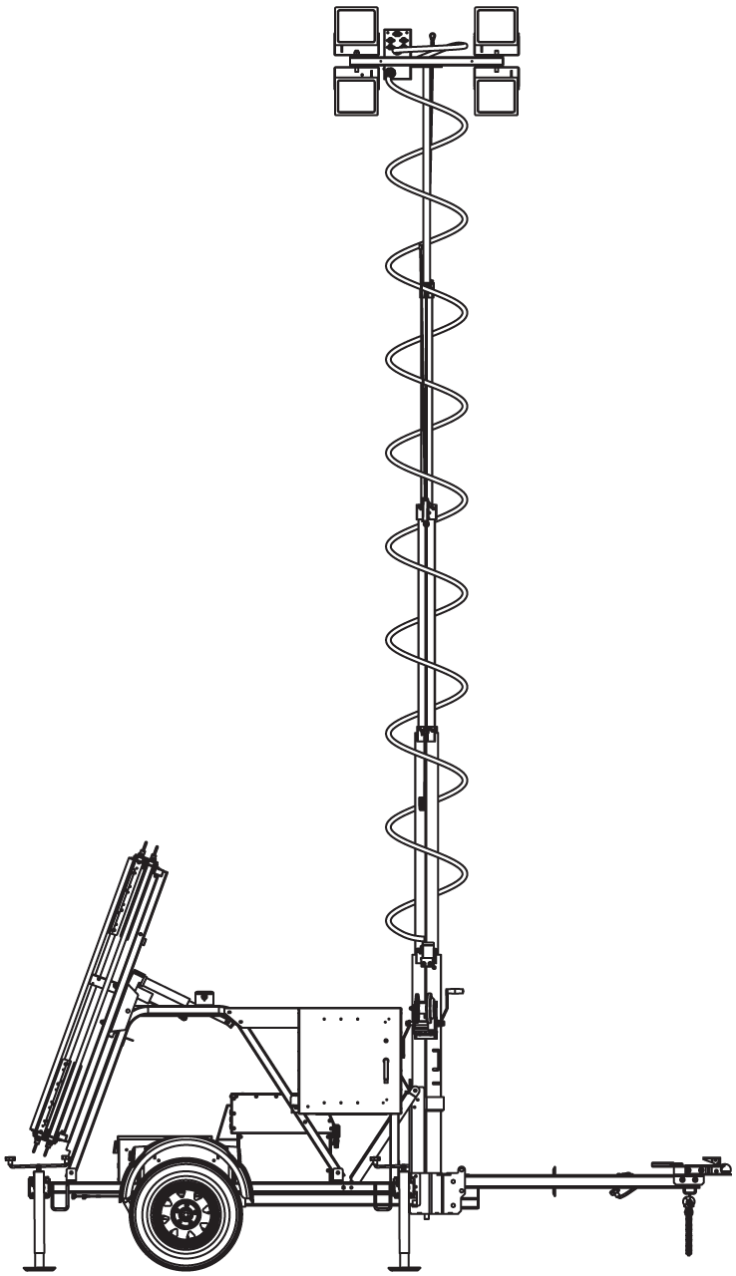
PROGRAMMABLE HYBRID SOLAR LIGHT TOWER

MODEL WLTS-MM-1600H
PRODUCT SPECIFICATIONS | FEBRUARY 2024



1. SYSTEM

1.1. Description

Wanco® Programmable Solar Light Towers provide LED lighting on a versatile platform. Unique features include ultra-bright LED lighting, a highly efficient power system, and variable programmability for autonomous operation.

Four high-efficiency, high-output, dimmable light fixtures top a telescoping tower. Lights can be aimed individually without tools, and operate at any height. The vertical tower rotates nearly 360 degrees without lowering the lights. A winch and cables raise and lower the tower smoothly and easily.

The hybrid solar power system charges a bank of batteries, which in turn power the lights and control system. The charging system is solar first, with diesel backup. State-of-the-art solar uses the latest technology to provide the greatest possible charging capacity. The array of solar panels tilts from horizontal to nearly vertical to optimize charging year-round. The diesel genset runs automatically when solar alone cannot keep up with demand, ensuring long run times. The advanced power management system provides real-time data for monitoring, managing and optimizing the power system. Power management is possible both locally and remotely.

The control system uses a touchscreen interface for manual and automatic on/off control of the lights. Advanced programming options include individual light control, and flexible scheduling by time, day, and calendar date. Manual control is achieved with a single button on the main screen. Multilevel password protection can be enabled or disabled.

1.2. Model — WLTS-MM-1600H programmable hybrid solar light tower

1.3. Temperature limits

Operating	–20 to 122°F (–29 to 50°C)
Storage	–40 to 158°F (–40 to 70°C)

2. FEATURES

2.1. Setup

- Portable trailer is easy to tow and deploy
- Four leveling jacks provide stability
- Tilting drawbar folds up for smaller footprint for storage and when deployed
- Light fixtures tilt and rotate independently and hold their position without tools
- Single winch raises and lowers the tower smoothly and easily
- Dual electric actuators tilt solar array to any angle for optimal solar charging, from horizontal to nearly vertical
- Telescoping tower rotates nearly 360 degrees, reducing the need to move the trailer
- Lights operate at any height

2.2. Operation

- Full-color touchscreen controller with high-resolution display
- Control four LED light fixtures individually or all together
- Turn lights on or off with a single button
- Programmable automatic on/off with brightness control and time-day-date schedule
- Weather-resistant control box cover has lockable three-point latch

- Self-governing power control system ensures reliable, continuous operation
- Deluxe power management package provides real-time data locally and remotely
- Web-based power management portal provides remote on/off control of lights
- Bluetooth® power management app for mobile devices

2.3. Power system

- Battery powered with hybrid solar and diesel charging
- Energy-efficient operation with ultra-fast MPPT solar charging
- Solar panels charge batteries automatically without intervention
- Auxiliary power unit (APU) engages automatically when solar charging alone cannot meet demand
- Fully integrated APU components include diesel engine, fuel tank, start battery, and charging generator
- Sound-attenuated APU enclosure and exhaust substantially reduces engine noise
- Built-in fluid containment prevents ground contamination from leaks, spills, and drips
- Charging system varies power input as needed to keep batteries fully charged, preventing damage and prolonging battery life
- Power system allows battery charging with solar, genset, or commercial power
- Low-voltage-disconnect circuit shuts down power if battery voltage drops below setpoint, preventing damage to batteries and electronics
- Maintenance-free AGM batteries require no access
- Battery box cover is bolted closed to deter tampering
- Control panel includes master power switch for power shutoff during servicing

2.4. Maintenance

- All-welded structural steel frame ensures durability and long life
- Durable powder-coat finish resists the elements
- Standard trailer tires
- Bolt-on fenders can be replaced if damaged
- LED taillights

2.5. Application

Common applications include:

- Parking lots
- Special events
- Construction sites
- Material staging areas
- Freight yards
- Security operations/checkpoints

3. LIGHTS

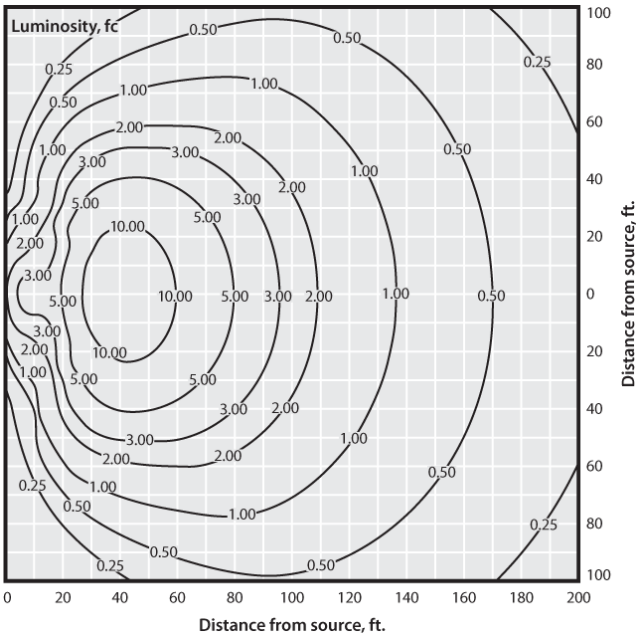
3.1. Description — Four high-efficiency dimmable LED light fixtures

3.2. Standards — IP67

IEC protection: Safety Class I

CE certified

EU RoHS compliant

3.3.	Luminous flux	100% brightness	32,045 lumens per fixture 128,180 total lumens
		50% brightness	16,022 lumens per fixture 64,088 total lumens
3.4.	Light color	5000K	
3.5.	Field angle	60 degrees	
3.6.	Photometrics		
3.6.1.	Coverage area	Total coverage at 0.5 foot-candles or greater with lights at 100% brightness and fixtures tilted 15° down from vertical: 26,510 sq ft (2460m^2) 0.6086 acres	
3.6.2.	Isolines		
3.7.	LED lifetime	50,000 hours	
3.8.	Power draw	200W @100% brightness	
3.9.	Input voltage	24Vdc	
3.10.	Input current	8.3A max.	
3.11.	Polarity protection	Reverse voltage up to 45 Vdc	
3.12.	Temperature limits	Operating	–40 to 122°F (–40 to 50°C)
		Storage	–40 to 158°F (–40 to 70°C)

3.13.	Fixture material	Black aluminum housing Clear polycarbonate lens
3.14.	Fixture size	9.5 x 10.4 x 3.9 in (240 x 265 x 98 mm), W x H x D
3.15.	Mounting brackets	Each light fixture installed on a swivel bracket Bracket allows light to rotated and tilted without tools; friction and tensioning hold lights in place
3.16.	Weight	11.0 lb (5.0kg)

4. CONTROL SYSTEM

4.1.	Control box		
4.1.1.	Function	Weatherproof control box contains system electronics	
4.1.2.	Location	Securely fastened to uprights behind tower on right side of trailer	
4.1.3.	Size	24 x 25 x 10 in (610 x 635 x 254 mm), W x H x D	
4.1.4.	Material	12 ga 5052-H32 aluminum sheet	
4.1.5.	Door	Hinged door panel with rotating handle and three-point latch Door is hinged on the right and opens fully; a telescoping prop-slide holds door open Handle can be locked with user-supplied padlock for added security	
4.1.6.	Finish	Control box and door are coated with oven-baked, equipment-white powder-coat finish to ensure durability and corrosion protection. Assemblies are run through a five-stage, high-pressure phosphate-wash prior to application of the finish coat.	
4.2.	Control panel		
4.2.1.	Touchscreens	Function	Two controllers: 7-inch screen: control and monitor lights and system settings 5-inch screen: monitor and manage power system
		Display	Full color, backlit displays Capacitive touch panels 800 x 480 pixels, W x H Displays automatically power off after a period of inactivity
		Interface	Graphical interfaces, operated with virtual touchscreen buttons
4.2.2.	Power disconnect	Master power switch disconnects battery and solar charging, for use during servicing	

4.2.3.	Serviceability	Hinged control panel folds down for access to connections and electronics	
		Two plunger panel latches easily fasten or release panel; a rubber bumper supports panel when down	
4.3.	Compass	Removable compass stored on interior of door for use when positioning trailer to optimize solar charging	
		Compass attached to door with lanyard	
4.4.	PC boards		
4.4.1.	Coating	100% coated with military-spec, low-VOC, silicone conformal coating to provide long-term protection against moisture and other atmospheric contaminants. Resists corrosion and shorts due to high humidity.	
4.4.2.	Temperature limits	Operating	–40 to 176°F (–40 to 80°C)
		Storage	–40 to 185°F (–40°C to 85°C)
4.4.3.	Humidity limits	Conformal coating rated to 95% relative humidity	
4.5.	Solar charge system		
4.5.1.	Description	Smart maximum power point tracking (MPPT) solar controller regulates solar charging	
4.5.2.	Features	Ultra-fast MPPT	
		Optimizes solar energy harvest and battery charging even with partial solar shading	
		Exceptional conversion efficiency exceeds 98%	
		Improves energy harvest up to 30% over PWM charge controllers	
		Automatic battery voltage recognition	
		Built-in Bluetooth for enhanced local monitoring	
		External battery voltage, temperature and current sensing via Bluetooth	
4.5.3.	Current	70A rated charge current	
4.5.4.	Voltage	150Vdc max. PV open circuit voltage	
4.5.5.	Protection	Over-temperature protection and power derating when temperature is high	
		PV short circuit and PV reverse polarity protection	
		PV reverse current protection	
		Three high-current circuit breakers protect solar and charging system in lieu of fuses, installed on DIN rail behind control panel	

4.6.	APU charge system	
4.6.1.	Function	Automatically starts engine to charge batteries when their set state of charge decreases below a low setpoint Automatically stops engine when batteries set state of charge increases to a high setpoint Optimizes engine run time to ensure maximum number of run cycles before refueling is necessary
4.6.2.	Deluxe power management	Provides real-time power performance information for monitoring, managing, and optimizing the power system Cloud-based service provides remote power management online via internet browser, 5-year cellular service plan included Web-based portal provides remote on/off control of lights with real-time feedback, and remote power management via internet and cellular connection Mobile app provides enhanced local power management via Bluetooth when within range of light tower Provides both live and historical data Displays actual GPS location of light tower and real-time weather conditions Allows user to set alerts and alarms to portal and user email accounts
4.6.3.	Dashboard	Displays most useful real-time information on one screen, including: Time and date of last system update, indicates accuracy of data (typically “Minutes ago”) Power flowing from the batteries to system electronics Power flowing into the batteries; indicates bulk, absorb, float, off solar charging DC power consumption by lights Provides link to switch power to lights on or off
4.6.4.	System overview screen	Displays an interactive chart that shows performance over time: battery state of charge (SoC), solar power into batteries, and power drawn from batteries Moving cursor over chart reveals individual data point values Allows analysis of engine run cycles Time interval is user-selectable
4.6.5.	Advanced screens	Displays interactive charts and graphs Moving cursor over chart reveals individual data point values Time interval is user-selectable Battery voltage — Displays recorded battery voltage and current over time State of charge — Displays battery state of charge (SoC) over time

	Lights	Displays light states over time, on and off
	Fuel level	Displays fuel level over time; includes summary of fuel tank capacity, remaining fuel in units and as percentage of capacity
	PV yield	Displays power output from solar array over time; includes indication of bulk, absorb, float, and off charge states
	Battery power	Displays power output from batteries over time
	Generator	Displays genset on and off states over time, running and stopped; includes indication of manual start/stop commands
	Start battery	Displays voltage of engine start battery over time
	E-stop	Displays state of emergency stop system over time, OK and alarm
	Engine lid	Displays state of engine cabinet lid over time, open and closed
4.6.6. Local control		Interactive touchscreen allows local monitoring and engine start/stop control
4.7. Programmability		
4.7.1. Function		Use the touchscreen controller for controlling the lights with virtual buttons and keyboards that provide: Individual and linked light control Manual on/off control Automatic on/off by ambient light, time of day, motion detection Manual and automatic dimming from 10% to 100% of full brightness Advanced day and date scheduling Control system configuration
4.7.2. Main screen		Shows current date, time, and controller software version Clearly displays current and next (future) status of each light including on/off state, brightness, and on/off control mode: timer, sensor, or manual Displays quick-select button for switching all lights off if any are on, or all lights on from dusk to dawn at 50% brightness; quick-select button can be enabled or disabled (hidden) in settings Displays active alarms and warnings if any; alert symbol is green with no alerts and orange with active alerts; pressing the symbol accesses the Alarms and Warnings screen Displays buttons for accessing system information and settings Displays button for system login (password entry); password protection can be enabled or disabled in settings

4.7.3.	Light settings	Light settings screen clearly displays current light settings alongside buttons for changing and programming on/off functions
		Link or unlink lights for setting operation conditions for all lights at once, one at a time, or in any combination
		Manually switch lights on and off
		Manually control light brightness
		Create, view, enable, and disable programs for automatic on/off operation
		Save or cancel all changes to light settings
		Reset light settings to factory default
4.7.4.	Programs and scheduling	Three separate programs can be independently configured, activated, deactivated, and cleared
		Programs use internal real-time calendar and clock with DST control
		Independent on and off settings for each light or any combination of lights
		Set each program to run on specific calendar dates, or from a selected start date until a selected end date, or with no specified dates
		Set programs to run one or more days of the week in any combination; each day can be selected independently
		Set multiple programs to run simultaneously; failsafe protection keeps lights on when active programs conflict
4.7.5.	Lights on options	Programs include user-selected triggers to switch lights on automatically, including:

Dusk	Lights on at dusk based on ambient light detected by system photocell sensor
Time of day	Lights on at user-specified time of day based on control system internal clock
Sunset	Lights on at sunset or user-selected number of minutes before sunset; variable sunset time of day is calculated using control system location
Delay after dusk	Lights on at user-selected number of minutes after dusk based on ambient light detected by system photocell sensor
Motion	Lights on when motion detected by user-installed motion sensor device

4.7.6.	Lights off options	Programs include user-selected triggers to switch lights off automatically, including:	
		Dawn	Lights off at dawn based on ambient light detected by system photocell sensor
		Time of day	Lights off at user-specified time of day based on control system internal clock
		Delay after dusk	Lights off at user-selected number of hours after dusk based on ambient light detected by system photocell sensor
4.7.7.	Information screen	Includes buttons for viewing:	
		Alarms and warnings	
		System time and date	
		System location	
		System IDs and versions	
		System photocell and temperature values	
4.7.8.	System settings	Devices	Provides access to user-configurable settings for auxiliary devices and touchscreen controller
			Provides access for user to allow/disallow remote control of lights (remote on/off control only)
		Time and date	Provides access to set and change system time and date
			Includes automatic or manual Daylight Saving Time switching with built-in time zone selection
		Location	Provides access to set or override system location by entering GPS coordinates or by choosing a city (North American cities only)
			When the control system is equipped with a compatible GPS modem, system location is automatically set but can be overridden by user settings
		Communications	Provides access modem settings
		Passwords	Provides access to enable/disable password protection
			When enabled, two levels of system control: basic controls including light settings, and full access to all system functions
		Low-voltage disconnect	Provides service access for managing low-voltage-disconnect threshold values

5. TRAILER

5.1.	Frame	
5.1.1.	Construction	All welded structural steel
5.1.2.	Tie-downs	One on each corner of frame
5.1.3.	Forklift pockets	Heavy duty all-welded forklift guides located at front of trailer Forking requires drawbar to be folded up
5.1.4.	Hoist rings	Three lifting rings allow for three-point crane hoisting
5.1.5.	Finish	Oven-baked, black powder-coat finish, applied prior to assembly to ensure durability and corrosion protection. Assemblies are bead-blasted and then run through a five-stage, high-pressure phosphate wash prior to finish coat.
5.2.	Fenders	Round, full wheel coverage, bolted to trailer frame, removable and replaceable
5.3.	Axle assembly	3500 lb (1588kg) capacity, 5 on 4.5" B.C. idler hub
5.4.	Springs	Double-eye leaf springs
5.5.	Tires	ST205/75D15 steel-belted trailer tires
5.6.	Drawbar	
5.6.1.	Construction	Hinged on bracket welded under trailer frame. Folds up for shipping and storage when needed. Secures up or down with a single locking pin.
5.6.2.	Material	3" (7.62cm) square steel tubing, 3/16" (0.476cm) wall
5.6.3.	Jack	Swivel jack with heavy-duty caster wheel, 2000 lb (907kg) capacity, welded-tube mount with retention pin
5.6.4.	Tow hitch	Standard 2-inch ball coupler tow-hitch, SAE Class 2, 3500 lb (1588kg) capacity. Bolts to drawbar, removable and replaceable. See “Options and Optional Equipment” for tow-hitch options.
5.6.5.	Tow chains	Two high-test proof coil chain assemblies with “latching” clevis slip hooks for towing. Chains attached to tongue with quick-link connectors. Material diameter 0.406" (10.3mm) Working load limit 5400 lb (2450kg) Breaking force 16,200 lb (72kN)
5.7.	Stabilizer jacks	Four swivel jacks, each with spring-loaded lock pin and 2000 lb (907kg) capacity, mounted with snap-rings at corners of trailer frame

5.8.	Wiring	
5.8.1.	Description	Wiring to connect tow vehicle and trailer for trailer taillights is installed inside drawbar with pigtails and connectors at both ends; no crimping required
5.8.2.	Trailer plug	A sealed, molded, 4-square connector plugs into harness under trailer
5.8.3.	Tow-vehicle plug	Two-piece assembly with 4-flat molded connector on harness plugs into tow vehicle Meets SAE J1239 See “Options and Optional Equipment” for tow-vehicle plug options
5.8.4.	Protection	All trailer wiring encased in UV protective sleeve, and attached with P-clamps riveted to trailer frame; no exposed wires
5.9.	Taillights	Two oval-shaped, sealed, LED, combination stop, turn and taillights integrated with fenders
5.10.	License plate	Lighted license plate holder is mounted to rear of trailer frame
5.11.	Reflectors	Red and white conspicuity tape in critical areas
5.12.	Tower assembly	
5.12.1.	Function	Lights are raised and lowered on a telescoping vertical tower
5.12.2.	Tower construction	Five sections, four square steel tubing and one round section, each with a successively smaller circumference, telescope inside the adjacent section below it. Each section is supported by a single cable that loops under it inside the next larger tower section. Nylon guide blocks keep the sections tight, eliminating the need for greasing the tower and preventing dirt from building up on the inner tower section. Dirt would cause performance problems and maintenance issues.
5.12.3.	Swivel base	A steel tubular weldment is bolted to the trailer frame. The bottom tower section rotates on a thrust bearing and washers inside the swivel base, reducing rotating friction.
5.12.4.	Lights crossbar	Crossbar supports four light fixtures during operation and transport
5.12.5.	Finish	All tower sections are treated for corrosion resistance
5.12.6.	Height	At fully deployed height, 24.5 ft (7.97m) from ground to top of tower See “Options and Optional Equipment” for taller tower option
5.12.7.	Wiring	Electrical cable for lights enclosed in durable, coiled Nycoil® cable conduit attached to tower; extends with raised tower and returns fully to coil when tower is telescoped down

5.12.8.	Winch assembly	Function	Hand-operated winch raises and lowers tower
		Capacity	1500 lb (680kg)
		Brake	Safety friction-brake prevents tower from falling should operator lose grip on winch handle
		Cable	1/4" (6.35mm) diameter galvanized aircraft cable
5.12.9.	Rotation	Tower assembly rotates by hand, pivoting nearly 360 degrees; tower includes handle for gripping while rotating	
5.12.10.	Tower lock	Single tension-lock secures tower rotation	

6. POWER SYSTEM

6.1.	Description	Lights powered by batteries, which are charged automatically by integrated solar charging system and backup auxiliary power unit (APU)
		See “Options and Optional Equipment” for power system options
6.2.	Battery box	
6.2.1.	Function	Holds batteries, power shunts, and battery charger
6.2.2.	Construction	Riveted all-steel construction, cover is bolted in place
		Four vents with filters provide ventilation
		Covered inlet receptacle on back of battery box for AC charger
6.2.3.	Finish	Cabinet panels are coated with oven-baked, white powder-coat finish, applied prior to assembly to ensure durability and corrosion protection. Parts are run through a five-stage, high-pressure phosphate wash prior to application of the finish coat.
6.2.4.	Location	Centered between fenders, bolted to trailer frame
6.3.	Batteries	
6.3.1.	Description	Four batteries in one battery box
		4D AGM batteries, wired in parallel and series for a 24-volt system
6.3.2.	Features	100% maintenance-free
		Sealed and spill-proof
		Faster recharge and greater freeze resistance than conventional batteries
6.3.3.	Voltage	12Vdc each
6.3.4.	Weight	120 lb (54.4kg) each

6.3.5.	Capacity	400 Ah total Approximate run time, batteries only (no solar charge): Lights at 50% brightness, 25 hours Lights at 100% brightness, 10 hours
6.3.6.	Voltage monitoring	Power shunt calculates remaining power capacity to provide accurate battery-bank state of charge (SoC) Monitors power going into the battery bank from solar and AC charging, power drawn from the battery bank by the lights, and battery temperature using a temperature sensor inside the battery box See “Options and Optional Equipment” for remote power monitoring options
6.3.7.	Low-voltage disconnect (LVD)	To protect batteries from full discharge, the LVD system automatically shuts down power when battery voltage drops to preset level, and re-engages power when battery charge returns to optimum Lights pulse on and off as a visible notification of LVD shutdown; duration of pulsing is configurable
6.4.	Solar	
6.4.1.	Panels	High-efficiency monocrystalline photovoltaic modules with half-cut heterojunction bifacial cell technology Two fixed-position panels mounted to tilt-frame Two sliding panels mounted to tilt-frame below fixed-position panels
6.4.2.	Panel slides	Panels slide in and out manually in rigid, low-friction channels Channel assemblies have no moving parts to wear or fail Mechanical stops ensure panels cannot extend out of channels Each panel is secured with dual locking pins when fully extended or contracted
6.4.3.	Tilt-frame	Solar array installed on tilt-frame above battery box/boxes. Entire solar array can be tilted using dual electric actuators, controlled with momentary switch on control panel. The angle range is 0 to 70 degrees up from horizontal. Optimal charging results from tilting solar array depending on the season; 0 degrees or horizontal with sun overhead during summer months, then angled up (latitude plus 15 degrees) with sun lower in the sky during winter months.
6.4.4.	Power output	1600W
6.4.5.	Current	19A max. system current 20.6@24V open short-circuit current

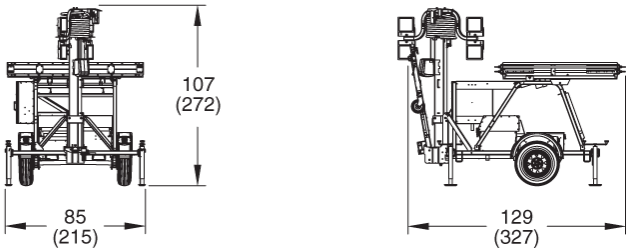
6.4.6.	Voltage	84.0Vdc max. system voltage 97.6Vdc open short-circuit voltage	
6.4.7.	Efficiency	21.6%	
6.4.8.	Regulation	Solar power input regulated by control system	
6.4.9.	Security	Solar panels attached to frame with security screws	
6.5.	Auxiliary power unit		
6.5.1.	Function	Diesel genset engages to charge batteries when battery charge drops below a low preset, and disengages when battery charge increases to a high preset Factory-configured to run only at night when solar charging is not available, with failsafe that ensures daytime operation to prevent full discharge of batteries Maximum battery charge limit optimizes engine run time for maximum number of charging cycles on a single tank of fuel, extending autonomous light tower operation before the need for refueling	
6.5.2.	Housing	Riveted sheet steel construction Hinged lid opens fully; switch prevents engine from running while lid is open Access to engine air filter and oil dipstick through removable side panel	
6.5.3.	Finish	Cabinet panels are coated with oven-baked, black powder-coat finish, applied prior to assembly to ensure durability and corrosion protection. Parts are run through a five-stage, high-pressure phosphate wash prior to application of the finish coat.	
6.5.4.	Location	Centered behind tower, bolted to trailer frame	
6.5.5.	Engine	Type	Tier 4 final diesel, single-cylinder, 4-stroke, air cooled
		Model	Hatz 1B30E
		Speed	1500 to 3200 rpm, variable based on load from lights
		Displacement	21.18 in^3 (347 cm^3)
6.5.6.	Generator	Model	Hatz PDMC-28-100
		Type	Flywheel-integrated permanent magnet generator (fiPMG) uses no belts or pulleys
		Max. power output	3.75 hp (2.8 kW) 100 A @28V
6.5.7.	Oil sump	3.0 quarts	

6.5.8.	Start battery	Maintenance-free AGM battery, Group U1 12 Vdc 300 CCA @ 0°F 375 CA @ 32°F
6.5.9.	Sound level	68.5 dBA avg. @ 23 ft (7m) at max. load
6.5.10.	Fuel tank	22 gal (83 L) capacity 20 gal (76 L) usable volume
6.5.11.	Fuel consumption	0.25 to 0.50 gal/hr (0.95 to 1.89 L/h) , varies with load from lights
6.5.12.	Run cycles	Approx. 40 to 80 cycles, varies with load from lights Average run time before refueling is 40 hrs
6.5.13.	Control system	Integrated power control system monitors battery bank state of charge (SoC) and automatically starts and shuts down engine when needed, without operator intervention Engine control — Victron Energy™ Cerbo GX® module Battery monitors — Dual Victron Energy SmartShunt® battery monitors
6.5.14.	Emergency shutdown	Large emergency-stop button on side of control box for quick, manual engine shutdown
6.6.	Remote charger	
6.6.1.	Function	Plugs into a standard AC power source to manually recharge batteries A single charger is configured to charge all batteries
6.6.2.	Type	24-volt 3-stage smart battery charger
6.6.3.	Location	Inside battery box, mounted to side panel on opposite side of divider from batteries Covered inlet receptacle on back of battery box for connecting to power without accessing battery box interior
6.6.4.	Output capacity	50A
6.6.5.	Output voltage	26 to 33 Vdc
6.6.6.	Input voltage	108 to 132Vac, standard NEMA 5-15P three-prong plug
6.6.7.	Input current	14A max.
6.6.8.	Input receptacle	Standard NEMA 5-15R 15A receptacle with ground
6.6.9.	Cooling	Automatic fan cooling
6.6.10.	Protection	Reverse polarity protection, automotive style replaceable fuses

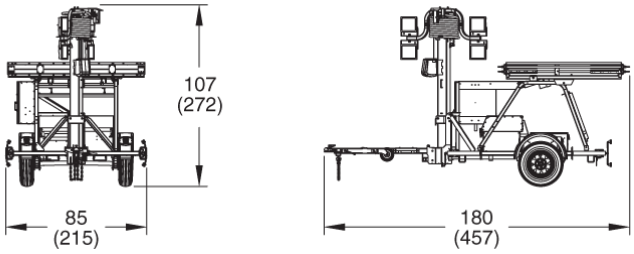
7. DIMENSIONS & WEIGHT

7.1. Dimensions *inches (cm)*

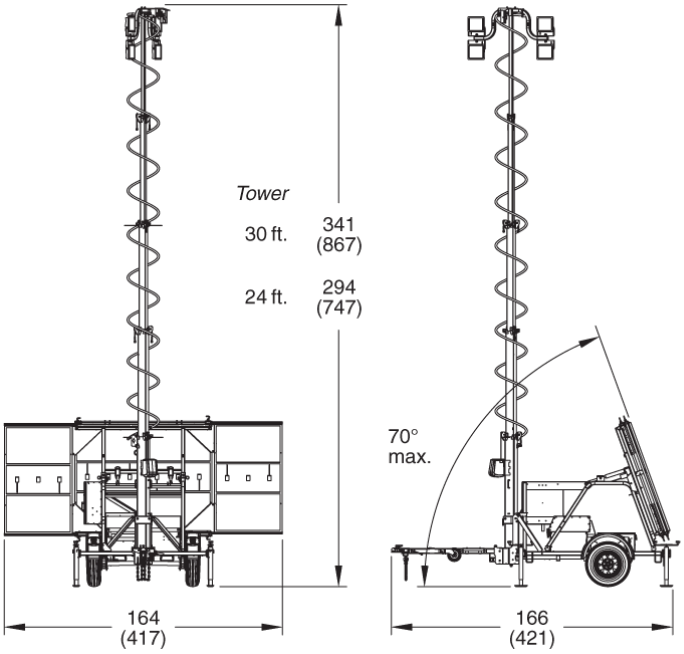
Storage position



Travel position



Deployed



7.2. Weight Approx. 2700 lbs. (1225 kg)

8. OPTIONS AND OPTIONAL EQUIPMENT

8.1. Transport options

8.1.1.	Tow hitch	Lunette ring for pintle hook, 3" ID x 1 5/8" cross-section replaces standard ball hitch
8.1.2.	Tow-vehicle plug	Many types of plugs available, prewired at the factory; contact factory for details
8.1.3.	Spare tire	Spare tire/wheel and carrier installed on solar support frame
8.1.4.	Wheel chocks	Two rubber chocks with carry basket installed on solar support frame

8.2. Functional options

8.2.1.	Tower	30 ft (9.1m) tower replaces standard tower
		At fully deployed height, 28 ft 5 in (8.67m) from ground to top of tower
		Power-operated winch replaces manual winch for raising and lowering tower
		Adds momentary switch to control panel for up/down operation; includes manual winch handle for use in the event of system power failure
8.2.2.	Flashing beacon	Flashing blue presence light at top of tower increases awareness of light tower
		Can be powered on or off with light tower controller