

Torus Station 1 & 1R

Battery Backup, & Energy Management



Cost Savings

Stores power from the grid when rates are low to use later in the day when prices rise. Replaces the electricity you pull from the grid with renewable energy from solar panels.

CO2 Reduction

Charges your battery when grid power is most likely to be coming from renewable sources. Replaces fossil-fuel-generated electricity from the grid with clean power created by your solar panels.

Outage Protection

Automatically charge your battery to full capacity when your system detects a severe storm ahead. Immediately switch to battery storage when the grid goes down. Replenish your battery storage with solar energy and maintain power for multi-day outages.

Energy Independence

Keeps you off-grid indefinitely by running your home with solar energy during the day and storing excess power to use at night.

Solar EV Charging

Integrates your EV charger and powers your vehicle using only the sun's energy.

Pricing & ROI

Higher upfront cost or monthly payment. High monthly savings and long-term returns. Additional incentives available via VPP programs.

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The Torus Station 1R creates, stores, and manages renewable energy, allowing you to power your home independently from the grid. It provides solar electricity during the day, stores excess clean power to use after the sun has set, and keeps your lights on during multi-day outages.



Inverter

LVI - R

- Certification: UL 9540
- Multi-Inverter Modes (Peak Shaving, Battery Priority, Self Consume)
- 12kW Max DC input, 8kW AC output
- IEEE 1547, IEEE 2030.5, Hawaii Rule 14H, Rule 21 Phase I, II, III
- 33.3A (up to 100A with 3 inverters) load capacity, up to four MPPTs

PV INPUT DATA

Max DC Input Power	12 kW
MPPTs	4
MPPT Range	120 - 500V
Max DC Input Voltage	500V
Max Input Current	12A
Max MPPT Power	3.6 kW

AC OUTPUT DATA (BACK-UP)

Nominal. Apparent Power Output	8KVA
Max. Apparent Power Output	8.8KVA
Nominal Output Voltage L-N/L1-L2	120/240V
Nominal Output Frequency	60Hz
Output THDU	< 2%

AC OUTPUT DATA (ON-GRID)

Nominal output power Output to Grid	8KVA
MAX. Apparent Power Output to Grid	8.8KVA
Output Voltage Range	110-120/220-240V split phase, 1Ø, 230 1 phase
Output Frequency	50/60Hz (45 to 54.9Hz / 55 to 65Hz)
Nominal AC Current Output to Grid	33.3A
Max AC Current Output to Grid	36.7A
Output Power Factor	-0.8 to +0.8
OutPut THDI	< 2%

BATTERY INPUT DATA

Nominal voltage (VDC)	48V
Max Charging/Discharging Current	190A/190A
Battery Voltage Range	40-60V
Battery Type	Flywheel Energy Storage, Lithium
Charging Strategy for Li-Ion Battery	Self-adaption to BMS

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Inverter

LVI - R

GENERAL DATA

Output Conduit	25.4mm
PV Input Conduit	25.4mm
BAT Input Conduit	34.5mm
Operating Temperature Range	-25 ~ +60°C
Relative Humidity	0-95%
Operating Altitude	0~4000m
Ingress Protection	IP65/NEMA 3R
Weight	32kg
Size (W X H X D)	430mm x 710mm x 220mm
Cooling	Natural Convection
Noise emission	38 – 70 dB
Display	LCD
Communication With BMS/ Meter/EMS	RS485, CAN
Supported communication interface	RS485, WLAN, 4G (optional)
Self-consumption at night	< 2.5 W (with battery enabling < 5 W)

EFFICIENCY DATA

Europe Efficiency	>=97.8%
Max. Battery to Load Efficiency	>=97.2%

SAFETY DATA

Certifications	UL1741SA all options, UL1699B, CSA 22.2
EMC	FCC Part 15 Class
Grid connection standards	IEEE 1547, IEEE 2030.5, Hawaii Rule 14H, Rule 21 Phase I,II,III

PROTECTION DATA

Grounding detection	Yes
Arc fault protection	Yes
Island protection	Yes
Battery reverse polarity	Yes
Insulation resistor detection	Yes
Residual current monitoring unit	Yes
Output over current protection	Yes
Back-up output short protection	Yes
Terminal temperature detection	Yes
Output over voltage protection	Yes
Output under voltage protection	Yes

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Torus Smart Battery

LIF-R

- Lithium Iron Phosphate (LFP) chemistry
- Certifications include UL9540, UL9540A, UL1973, UN38.3
- Cycle life of over 7500 cycles@0.5C, 90% DOD, 77°F
- Calendar life of over 10 years with Torus Station
- Communication protocol: RS232, RS485, CAN

TECHNICAL DATA

Chemistry	Lithium Ion Phosphate (LFP)
Nominal Voltage	51.2V
Voltage Range	47.5V - 57.6V
Nominal Capacity	200Ah
Nominal Energy	10.24kWh
Unit Dimensions (L x W x H)	1400 mm x 560mm x 130mm (55.1" x 22" x 5.1")
Unit Weight	102kg (225 lbs)
Charge/Discharge Current	100A
Peak Current	204A for 15s
Round-Trip Efficiency	95%
Communication Protocol	RS232, RS485, CAN

OPERATING DATA

Operating Temperature	<ul style="list-style-type: none"> • Charge: 32°F - 113°F • Discharge: 14°F - 122°F
Cycle Life	≥7,500 cycles@0.5C, 70% DOD, 77°F
Calendar Life	≥10 years
Certifications	UL9540; UL9540A; UL1973; UN38.3

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Torus Control CNS

CNS - R

- Command and control interface between hardware and cloud
- Multiple inverter support, aggregated real-time reporting
- Over-the-air firmware updates
- SSH support for troubleshooting
- Configurability for multiple hardware support – inverters, batteries, home appliances, smart panels

TECHNICAL DATA

CPU	i.MX 8M Mini family ARM Cortex-A53 Core 1.8GHz
CPU Clock Speed	1600MHz
Memory	DDR4, 2048MB
Flash	eMMC 8GB
Networking	<ul style="list-style-type: none"> • 10/100/1000 Mbit/s Ethernet Interface • Certified dual band Wi-Fi 802.11 ac/a/b/g/n • Bluetooth: 4.2/BLE
Operating Temperature Range	-40 to 85°C (-40°F to 185°F)
USB	<ul style="list-style-type: none"> • USB3.0/2.0 OTG Type C • USB2.0 Host Type A
CAN Bus	CAN Transceiver with CAN FD support via RJ45
RS-485	50Mbps Half-Duplex RS-485/RS-422 Transceiver via RJ45

TECHNICAL DATA (CONTINUED)

Power Supply	<ul style="list-style-type: none"> • Input: 100Vac - 240Vac 50Hz / 60Hz • Output Voltage: 12V • Output Current: 0 – 2 A • Maximum Power: 24W • Operation Temperature: -10C to 40C • Model Number: Chanzon 2ABL024F
Dimensions (L x W x H)	286 x 147 x 54 mm
Certifications	<ul style="list-style-type: none"> • Power Supply - FCC (USA), UL E161451 ITE Power Supply, RoHS R43016 • Carrier Board - UL94V-0, Wi-Fi/BT antennas FCC (USA), IC (Canada), ETSI (EU), RoHS I/II/III

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Torus Off-Grid System

TOGS-R

- Seamless disconnection from grid to self-powered
- Improve energy independence and security with Off-Grid
- Automatic transfer switch when the power goes out
- User-controlled off-grid capability

TECHNICAL DATA

CPU	i.MX 8M Mini family ARM Cortex-A53 Core 1.8GHz
CPU Clock Speed	1600MHz
Memory	DDR4, 2048MB
Flash	eMMC 8GB
Networking	<ul style="list-style-type: none"> • 10/100/1000 Mbit/s Ethernet Interface • Certified dual band Wi-Fi 802.11 ac/a/b/g/n • Bluetooth: 4.2/BLE
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Torus EV Charger

AC - I I - R

- Indoor and outdoor installation
- Certifications: NEC 625, SAE J1772, UL 817, UL 991, UL 2231, UL 2251, and UL 2594
- 11.5kW (240V/48A) / 9.6kW (240V/40A) / 10kW (208V/48A) / 8.3kW (208V/40A) (up to 48A hardwired or up to 40A NEMA Type 14-50P with 24" cable compliant with 2017 NEC Section 625.17(A)(3))
- Compatible with any EV with SAE J1772 connector (adapter required for Tesla EVs)

GENERAL DATA

Charger Type	Level 2 / 48A
Input Voltage	208/240VAC @ 50/60Hz
Power Charge	11.5kW (240V/48A) / 9.6kW (240V/40A) / 10kW (208V/48A) / 8.3kW (208V/40A)
Power Wiring	NEMA Type 14-50P (up to 40A) / Hardwired (up to 48A)
Dedicated Breaker / Max Charge	15A (2.9kW / 12A max charge) 20A (3.8kW / 16A max charge) 25A (4.8kW / 20A max charge) 30A (5.8kW / 24A max charge) 35A (6.7kW / 28A max charge) 40A (7.7kW / 32A max charge) 45A (8.6kW / 36A max charge) 50A (9.6kW / 40A max charge) 60A (11.5kW / 48A max charge) Hardwired Only 70A (11.5kW / 48A max charge) Hardwired Only 80A (11.5kW / 48A max charge) Hardwired Only
Connector	7.4m (24 ft) cable SAE J1772 connector - Compatible with any EV (adapter required for Tesla)

GENERAL DATA (CONTINUED)

Dimensions	Charging Station: 12.6" x 9" x 3.4" (320mm x 230mm x 86mm) Charging Gun: 5.3" x 2.2" (135mm x 56mm)
Enclosure	Watertight NEMA Type 4 indoor/outdoor
Temperature Range	-22°F to 122°F (-30°C to 50°C)
Certifications	FCC Parts 15b & c UL Listed E528156 Energy Star Certified 2397026
WiFi	2.4 GHz 802.11b/g/n
FCC ID	2AS6P-EMEVSE1

ELECTRICAL DATA

Maximum Charging Power	11.52 kW (1 Phase)
Rated Current	Configurable from 6 A to 48A (up to 11,520 watts at 240 VAC)
Configurable Current	6 A to 48A (1440 watts up to 11,520 watts at 240 VAC)

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Torus EV Charger

AC-III-R

CONNECTIVITY & INTERACTION DESIGN

Charger Status	Wi-Fi / Ethernet / Bluetooth / RS-485
User Identification	Torus App / RFID Card / Face Recognition
User Interface	Torus App (iOS and Android) / Gesture Control
Reach	Torus Station app status is accessible and controllable from anywhere in the world.
Charger Status Information	Color Screen / RGB LED
Communication Protocol	Torus Electron GraphQL Protocol MQTT

CHARGING THROTTLING MODES

Auto-throttle charging current to match excess solar energy	Yes
Auto-throttle to limit current drawn from the electric grid	Yes
Auto-throttle to limit current provided by the inverter (during off-grid or peak shift modes)	Yes
Auto-throttle charging current based on availability of renewable energy (on the grid or at home)	Yes
Disable auto-throttling (let the EV charge at full power)	Yes

DISPATCH MODES

If multiple charging stations are in use at a residence, auto-throttle is split among the charging stations according to sharing mode selected:

Split available energy evenly across each charging station	Yes
Prioritize one station above another	Yes
Schedule one vehicle to finish (or reach a certain state of charge) and then start the next charging station	Yes

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Solar Panel

AC - II - R

CONNECTIVITY & INTERACTION DESIGN

Charger Status	Wi-Fi / Ethernet / Bluetooth / RS-485
User Identification	Torus App / RFID Card / Face Recognition
User Interface	Torus App (iOS and Android) / Gesture Control
Reach	Torus Station app status is accessible and controllable from anywhere in the world.
Charger Status Information	Color Screen / RGB LED
Communication Protocol	Torus Electron GraphQL Protocol MQTT

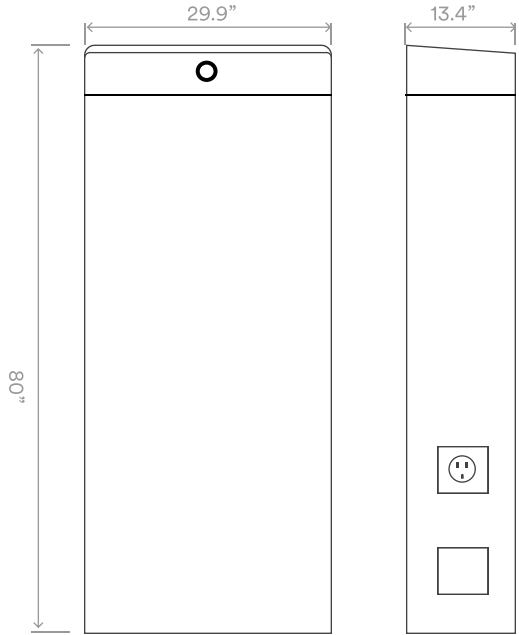
CHARGING THROTTLING MODES

Auto-throttle charging current to match excess solar energy	Yes
Auto-throttle to limit current drawn from the electric grid	Yes
Auto-throttle to limit current provided by the inverter (during off-grid or peak shift modes)	Yes
Auto-throttle charging current based on availability of renewable energy (on the grid or at home)	Yes
Disable auto-throttling (let the EV charge at full power)	Yes

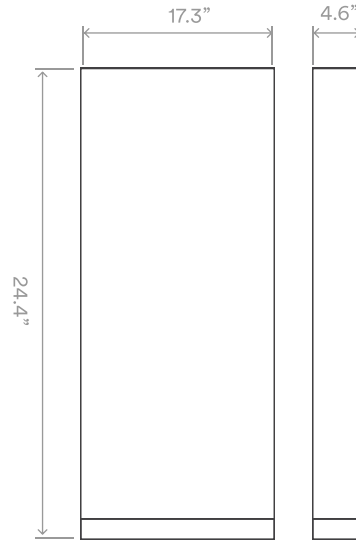
DISPATCH MODES

If multiple charging stations are in use at a residence, auto-throttle is split among the charging stations according to sharing mode selected:

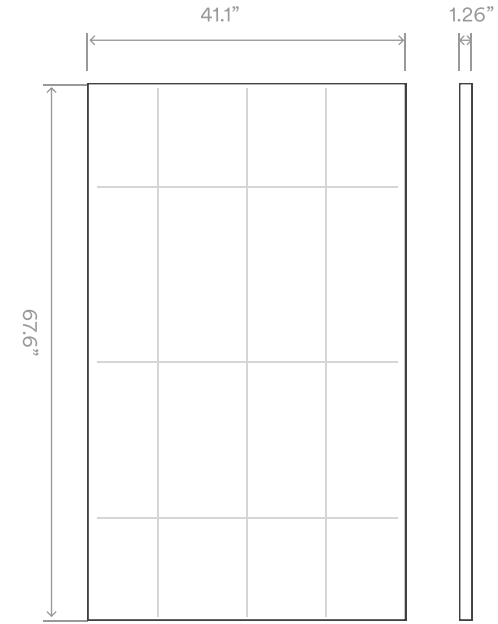
Split available energy evenly across each charging station	Yes
Prioritize one station above another	Yes
Schedule one vehicle to finish (or reach a certain state of charge) and then start the next charging station	Yes



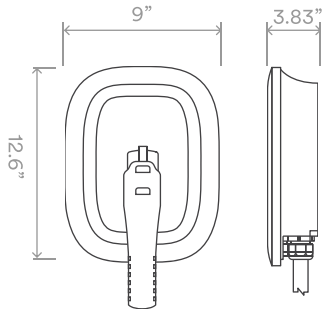
Torus Control™ Cabinet



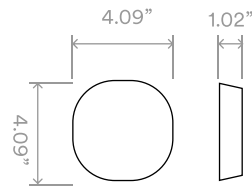
Torus Smart Battery



Solar Panels



Torus EV Charger



Smart Thermostat