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## Energy Management & IoT Gateway



### Intelligent energy system

Welcome to the world of smart energy, where you can monitor, control and optimize how you use, store and share energy – all via the naak app or online dashboard.

### Monitor & control your energy

Know how much energy you use and produce in real-time. To avoid bill-shock, use naak's bill prediction in the app, set bill goals and alerts to implement changes. Schedule and control appliances from anywhere or let naak orchestrate it all for you and save big.

### Unlock the power of solar & storage

Solar and battery storage systems are a big investment. naak shows your solar production, use, and export, and can notify you if a fault occurs. The flexibility of our "Digital Essential Loads" feature, integrated battery management and load control capabilities, increase battery longevity, maximize solar value and improve ROI.

### Be future-ready

With the ability to control your energy resources and manage your energy loads accordingly, no matter what changes, be it your energy needs or utility tariffs, you have the ability to adapt, optimize and respond.

### Control your energy future® with naak!

### BENEFITS

- Control electrical circuits and individual appliances through scheduling or by switching them on/off via the app or online dashboard
- Monitor solar power generation, usage and export
- Monitor energy consumption
- Always know your system status with real-time alerts

### FEATURES

- App & online dashboard
- Big Picture & granular data
- Switch & smart load control
- Reliable, real-time data
- Cellular & Wi-Fi communications
- Solar & Battery maximisation
- Energy Autopilot
- Digital Essential Loads
- Control multiple SunSpec compatible & IoT devices
- ZigBee HA 1.2 compliant
- Google Home connectivity
- Safety & system alerts
- MDT data security

## SPECIFICATIONS

Model	CT200-CAT-M1	CT200-3G
Performance	LTE CAT-M1 / NB-IoT Power Class 3 +23dBm	HSDPA, UMTS, EDGE, GPRS (Class 12), GSM
Frequency Bands	Full Spectrum Radio	GPRS/EDGE: 1900/1800/900/850MHz WCDMA: 2100/850MHz
Processor & Memory	<ul style="list-style-type: none"> <li>• 8-bit AVR Micro-controller with 131 instructions</li> <li>• 12 MHz (External Crystal)</li> <li>• 128KB Flash Memory</li> <li>• 16KB Data Memory</li> <li>• 4KB EEPROM</li> </ul>	
Radio Frequency ZigBee Power and Standard	2.4GHz Channels 11-26, +10dBm, ZigBee HA 1.2	
Radio Frequency Wi-Fi and Power	802.11 b/g/n with WPA/WPA2, 2.4-2.4835 GHz Channels 1-14, +20 dBm	
Monitoring Accuracy	+/- 2% @ PF 1.0 to 0.6	
Input Voltage and Current	100 – 240 V; 200 mA Maximum (Optional; 5 to 24 V DC)	
Battery Type, Capacity & Run Time	Lithium ion, 3.7 V/ 1500 mAh, 5.55 Wh, 24 hours	
Firmware Upgrade Method	Remote Over the air (OTA) Firmware Upgradable	
<b>Connectors</b>		
Monitoring Current Clamps	x4 (30A to 3000A each)	
Circuit Relay Controls	x3 (30A each)	
Cellular Antenna	Internal Antennal Cell 2dBi, Optional external antenna via Female SMA	
Wi-Fi Antenna	Internal Antenna, Optional external antenna via Female SMA	
SIM Socket	SIM / USIM (2FF)	
Ethernet Port	10/100 MB Ethernet	
RS-485 Port	Supports Half-duplex and Full-duplex	
<b>Physical Description</b>		
Dimensions (W x L x H)	7.98" x 10.53" x 2.36" (202.73 mm x 267.45 mm x 60.00 mm)	
Weight & Chassis Type	1.54 lbs (0.70 kg), Plastic	
<b>Environmental</b>		
Operating Temperature	-20° to +55° C*	
Storage Temperature	-40° to +85° C	
Relative Humidity	20% to 90%, non-condensing	
<b>Warranty</b>		
Warranty Term	36 months	
<b>Certifications</b>		
EMC Compliance	SANS 222 / CISPR 22, SANS / IEC 61000-3-3, SANS / IEC 61000-4-2, SANS / IEC 61000-4-3, SANS / IEC 61000-4-4, SANS / IEC 61000-4-5, SANS / IEC 61000-4-6, SANS / IEC 61000-4-8, SANS / IEC 61000-4-11	
Radio Compliance	ACMA Section 376 of the Telecommunications Act 1997, AS/CA S042.1: 2011, AS/ACIF S042.3: 2005, AS/NZS 60950.1: 2011, ESTI EN 301 908-2 V5.4.1 (2012-12), ESTI EN 301 908-2 V6.2.1 (2013-04)	
Safety Compliance	ANSI/UL 60950-1-2014, CSA/CAN C22.2 No. 60950-1-07, IEC60950-1 / SANS 60950-1, IEC61010-1	
Environmental Compliance	SANS 60529: 2013 Ed 1.2/IEC 60529: 2013 Ed2.2	

\* Installation in outdoor locations or ambient temperature above 40° C or 70° C has not been evaluated by UL. UL Certification does not apply or extend to use in outdoor applications. Certification does not apply or extend to voltages outside certified range and has not been evaluated by UL for operating voltages beyond tested range.

## GENERAL INFORMATION

Functional Capabilities	
Digital Essential Loads	<ul style="list-style-type: none"> <li>Create and manage digital essential loads panel</li> </ul>
Green Circuit	<ul style="list-style-type: none"> <li>Supports green circuit feature to maximize solar use</li> </ul>
Peak Load Management	<ul style="list-style-type: none"> <li>Manage peak loads for an entire home</li> </ul>
Device Control	<ul style="list-style-type: none"> <li>Remote control and monitoring of all appliances in the home</li> </ul>
User Configurable Schedules	<ul style="list-style-type: none"> <li>User configurable schedule-based control</li> </ul>
Data Transmission Protocol	<ul style="list-style-type: none"> <li>Secure MDT protocol</li> </ul>
Electrical Parameters	
Electrical Phase Monitoring	<ul style="list-style-type: none"> <li>Single and three phases (3 phase 4 wire)</li> </ul>
Power Direction	<ul style="list-style-type: none"> <li>Measures both import and export</li> </ul>
Solar Support	<ul style="list-style-type: none"> <li>Yes (shareable among total of 3 current clamps)</li> </ul>
Monitoring	
Active Power	<ul style="list-style-type: none"> <li>Both Watt and Watt-hour in all phases</li> </ul>
Apparent Power	<ul style="list-style-type: none"> <li>Both VA and VAh in all phases</li> </ul>
Power Factor	<ul style="list-style-type: none"> <li>Yes (0 to 1 PF) in all phases</li> </ul>
Power Direction	<ul style="list-style-type: none"> <li>Measures import, export and net powers (kWh)</li> </ul>
Product Compatibility	
Electric Hot Water Unit	<ul style="list-style-type: none"> <li>Support up to 2 electrical hot water/geysers</li> <li>Manual control / configurable switch on timers</li> <li>Peak load timer for efficient heating</li> </ul>
Solar Thermal Controller	<ul style="list-style-type: none"> <li>Temperature differential based control</li> <li>Circulation Pump switching based on user configurable upper and lower limits</li> </ul>
HVAC (Heating, Venting, and Air-Conditioning)	<ul style="list-style-type: none"> <li>Support up to 3 HVAC systems, Temperature based control</li> </ul>
Solenoid Valve	<ul style="list-style-type: none"> <li>Shut-off valve control for hot water units</li> </ul>
ZigBee capability	<ul style="list-style-type: none"> <li>On-board ZigBee support</li> </ul>
Future Expansion (wired)	<ul style="list-style-type: none"> <li>Any device supporting I2C or RS232 communication</li> </ul>
Future Expansion (wireless)	<ul style="list-style-type: none"> <li>ZigBee router implementation</li> </ul>
Relay Control	<ul style="list-style-type: none"> <li>Enabled through three (3) onboard relays</li> </ul>
Relay Port Voltage and Rated Current	<ul style="list-style-type: none"> <li>12 V DC, 1 A</li> </ul>
Relay Output Voltage and Rated Current	<ul style="list-style-type: none"> <li>240 VAC, 30 A</li> </ul>
Wireless Device Control	<ul style="list-style-type: none"> <li>Enabled through ZigBee</li> </ul>
External Sensors	
Voltage Sensor and Type	<ul style="list-style-type: none"> <li>100 V to 240 V line-to-neutral, on-board</li> </ul>
Current Sensor and Type	<ul style="list-style-type: none"> <li>60 A standard sensor (60 A to 2000 A options), off-board</li> </ul>
Temperature Sensor	<ul style="list-style-type: none"> <li>2 Analog and up to 8 digital, -55 °C to 125 °C</li> </ul>
Water Flow Sensor	<ul style="list-style-type: none"> <li>1 Litre/min to 60 Litre/min</li> </ul>
Leakage Sensor	<ul style="list-style-type: none"> <li>Water leak detector, alert triggered</li> </ul>
Earth Fault Alarm	<ul style="list-style-type: none"> <li>Supports electrical earth fault leakage</li> </ul>

