

# MAGNO 22

## Single Phase BS Smart Energy Meter with Keypad

The Magno 22 with Keypad is a cutting-edge single-phase smart electricity meter designed to support both postpaid and prepaid systems. It offers a comprehensive suite of features, including power grid monitoring, load control, tamper detection, and vending functions, making it an ideal solution for residential and commercial applications.

The Magno 22 with Keypad provides real-time insights into energy usage, enabling utilities to manage consumption more effectively and advanced anti-tamper capabilities that help protect against fraud and minimise losses—boosting utility revenues and strengthening overall grid integrity.

Fully compliant with STS/CTS standards for prepaid metering via keypad entry, as well as the DLMS/COSEM and IDIS protocol for seamless integration, the Magno 22 with Keypad ensures reliable performance and compatibility with existing Advanced Metering Infrastructure (AMI) networks.



## ELECTRICITY



# Main Functionalities

<b>Standards &amp; Compliance</b>	<ul style="list-style-type: none"> <li>• IEC 62052-11, 21, 31</li> <li>• IEC 62053-23, 24</li> <li>• IEC 62059-31-1</li> <li>• IEC 62059-32-1</li> <li>• EN62053-23</li> <li>• EN50470-3</li> <li>• DLMS/COSEM</li> <li>• STS/CTS</li> <li>• IDIS Package 2</li> <li>• G3-Alliance</li> </ul>
<b>Measurement</b>	<ul style="list-style-type: none"> <li>• quadrants</li> <li>• Import/Export Absolute/Q1/Q2/Q3/Q4: Wh, varh and VAh</li> <li>• Vrms, Irms</li> <li>• Power factor, frequency</li> <li>• V-I Phase angle</li> <li>• Absolute value <math> Ai = +A + -A </math> <math> Ae = -A </math></li> <li>• Neutral Current Measurement</li> </ul>
<b>Multi TOU Tariff</b>	<ul style="list-style-type: none"> <li>• Up to 8 tariff</li> <li>• Up to 200 programmable special days Daily, Weekly, Monthly, Yearly &amp; Special</li> <li>• Up to 8 separate import and export registers</li> <li>• Up to 12 seasons</li> <li>• Up to 24 periods</li> </ul>
<b>Prepayment</b>	<ul style="list-style-type: none"> <li>• Configurable prepayment and post-payment mode</li> <li>• Three levels for remaining credit alarm</li> <li>• Emergency credit, friendly time and friendly days support</li> <li>• Dual wallet</li> <li>• Meter Keypad (Optional)</li> </ul>
<b>Load control</b>	<ul style="list-style-type: none"> <li>• Remote control command support</li> <li>• Over current control support</li> <li>• Power limit support</li> <li>• 1 poles internal relay (for 100A meter)</li> <li>• 2 poles internal relay (for 80A meter)</li> <li>• Disconnect/Reconnect by locally or remotely</li> </ul>
<b>Load Profile</b>	<ul style="list-style-type: none"> <li>• Up to 60 channels</li> <li>• Support 3 independent surveys</li> <li>• 24hrs daily survey</li> <li>• Intervals programmable from 1 to 60 minutes</li> <li>• Storage 8 channels (15 min) for a year</li> </ul>
<b>Communication Ports</b>	<ul style="list-style-type: none"> <li>• WAN: Plug and play module to support various communication technology</li> <li>• WAN: G3-PLC, WiSUN, Cellular (GPRS, 3G, 4G/LTE, NB-IoT), or Ethernet</li> <li>• RF or PLC module – For communication with CIU (Customer Interface Unit)</li> <li>• Optical: Comply with IEC21-62056standard, DLMS(IEC21-62056 mode E)</li> <li>• Additional: RS485 (2 wire), VTC interface</li> </ul>
<b>Input/Output Ports (Optional)</b>	<ul style="list-style-type: none"> <li>• Pulse Output</li> <li>• Dual Resource Signal (Tariff change)</li> <li>• Meter enclosure opening/tamper detection (Active input)</li> </ul>

## Additional Functionalities

<b>Event</b>	<ul style="list-style-type: none"> <li>• Fraud detection log (Meter cover &amp; terminal cover open detect with and without power, module cover open detect, current reverse, magnetic detect, neutral current mismatch etc.)</li> <li>• Failure detection log (Memory error, relay error, battery low voltage, clock invalid etc.)</li> <li>• Power quality event log (Under voltage / Over voltage(Sag/Swell) ,Over current/current imbalance, Power up/down, etc.)</li> <li>• Security event log (Parameters change, clock adjust, etc.)</li> <li>• Standard event log (Power up/on, time synchronization, etc.)</li> </ul>
<b>Anti Tamper</b>	<ul style="list-style-type: none"> <li>• More than 4 sealing positions</li> <li>• Terminal cover, meter cover and module cover sealing</li> <li>• Self-protection under Overload control, Abnormal voltage control, Arrearage control, Tamper control,</li> <li>• Malfunction control, Fire disaster control etc.</li> </ul>
<b>Alarm</b>	<ul style="list-style-type: none"> <li>• Alarms with LED/Buzzer and LCD on CIU</li> <li>• Alarm can be configurable</li> </ul>
<b>Tariff Expense (Optional)</b>	<ul style="list-style-type: none"> <li>• Up to 10 steps tariff</li> <li>• Up to 5 steps Monthly service charge</li> <li>• Up to 5 kinds subsidy</li> <li>• Up to 3 kinds fixed charge</li> <li>• Up to 5 kinds levies charge</li> <li>• Up to 3 kinds VAT charge</li> </ul>
<b>Communication Protocol</b>	<ul style="list-style-type: none"> <li>• International open protocol</li> <li>• IEC21-62056 E mode DLMS</li> <li>• HDLC DLMS and TCP/IP DLMS, Support suite 0 and suite 1</li> <li>• STS/CTS Token and SMS</li> <li>• LLS support 3 level passwords for local and remote communication</li> <li>• HLS support auth and encryption for local and remote communication</li> <li>• IDIS Compliant</li> </ul>
<b>Billing Record</b>	<ul style="list-style-type: none"> <li>• Up to 13-month billing data</li> <li>• Calculate monthly net consumption of energy</li> <li>• Up to 31 days daily data</li> <li>• Calculate daily net consumption of energy</li> </ul>
<b>Firmware Upgrade</b>	<ul style="list-style-type: none"> <li>• The firmware can be upgraded via local interface and WAN interface.</li> <li>• Schedule activity image support</li> </ul>
<b>CIU unit</b>	<ul style="list-style-type: none"> <li>• The meter can communicate with the CIU via RF or PLC</li> <li>• Parameters transfer</li> <li>• Credit token, Key change token, clear balance token, clear tamper token, set power limit token, test token etc.</li> <li>• Fully complies with STS standard</li> </ul>
<b>Keypad</b>	<ul style="list-style-type: none"> <li>• High-durability silicone rubber keypad</li> <li>• 12-key numeric keypad (0-9, Enter, Clear)</li> <li>• Soft-touch keys with enhanced tactile response</li> </ul>

# Technical Specification

<b>Rated Nominal Voltage</b>	220V~240V, 110V~120V
<b>Operating Voltage Range</b>	50 %Un~120 % Un (When Un = 220V-240V) 80 %Un~120 % Un (When Un = 110V-120V)
<b>Rated Current &amp; Starting Current</b>	5(100)A, 5(80)A and 0.4% Ib
<b>Rated Current &amp; Starting Current</b>	50Hz or 60Hz $\pm 5$ %
<b>Pulse Constant (Configurable)</b>	1000imp/kWh 1000imp/kvarh (Default)
<b>Accuracy Class</b>	Cl.1 for Active Cl.2 for Reactive
<b>Power Consumption</b>	Voltage circuit $\leq 2$ W or 5VA, Current circuit $\leq 0.5$ VA
<b>Battery and Life</b>	Replaceable Lithium battery, life more than 15 years Supercap (Optional) – 5 yr lifetime with power off
<b>Normal Operation Range</b>	-25°C to + 60°C, Humidity is up to 95 %
<b>Limit Operation Range</b>	-40°C to + 70°C, Humidity is up to 95 %
<b>EMC Performance</b>	Impulse voltage > 10kV, AC voltage > 4kV, Short circuit current > 3kA, Electrostatic Discharge contact: 8kV & air: 15kV
<b>Protection Class</b>	IP54 compliant with IEC60529 Insulation grade II
<b>Housing Material</b>	Polycarbonate with non-conductive, high impact, smooth finish, durable, non-flammable, UV stabilized,

## Diagram

