VERTICROSS

Automatic Meter Reader - 2G/4G (AMR - 2G/4G)

About Verticross

Verticross is an automation company focused on transforming customers' businesses through state-of-the-art technology. Specialising in power, water, gas, oil, transportation and security, our mission is to become a global leader in communication systems, data acquisition and analytics by the year 2024.

Verticross is led by a dynamic team of professionals who possess a wealth of experience in applied research and development in the areas of communication and data transfer protocols for embedded systems in the automation of energy, water and gas utilities.
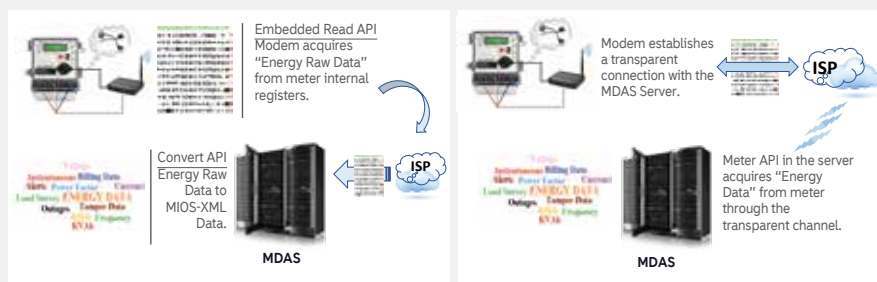
The communication systems form an integral part of data acquisition for billing, audit, decision support and analytics. Our products include automatic meter readers, energy management solutions and pump monitoring systems, while our services encompass consultancy, installation, commissioning, facilities management and IT support.

Our products and solutions conform to international standards and can be seamlessly integrated with legacy system. In addition, they can be customised in order to address and exceed customer expectation.

Automatic Meter Reader - 2G/4G (AMR - 2G/4G)

The AMR streamlines and automates the meter reading process from demanding and complex systems. It can operate on both intelligent and transparent modes and has the capability to automatically read parameters from all meters, irrespective of the protocol and meter make.

The AMR reads various energy parameters such as IP data, load survey, billing, events and tampers. Using 2G/4G, this information is transmitted to data centres for billing, decision making and energy audit.

AMR Architecture – Intelligent Mode

AMR Architecture – Transparent Mode

AMR

Features

- Supports all DLMS, legacy and Modbus protocols
- 32 bit high speed M0+ ARM cortex core with dual UART for communications
- CMOS circuitry for low power consumption and high noise immunity
- Operating capability:
  - o   Three phase supply 70V AC to 480V AC at 50Hz ± 5Hz
  - o   Single phase 230V, 50Hz ± 5Hz supply
- Operating range: 70 V AC P-P to 480 V AC P-P, for both HT and LT tri-vector meters
- Quad band GSM/ GPRS/ 4G/ LTE communication module
- In-built AC/DC power supply
- Built-in overload, short-circuit and surge protection
- EMI and RFI protection
- Polarised connectors for reverse polarity protection
- Leakage current protection through use of high-quality glass epoxy PCB
- Power-on LED indicator
- Supports SIM cards of 1.8V and 3V
- Battery backup for transmitting alerts and alarms during power outages
- Remote configuration, on-demand data acqusition, programming and diagnostic testing of AMR using POTA (Programming Over The Air)
- RS-232/RS-485 communication port
- On-board flash for data storage
- Rugged design to withstand high/ low temperature and extreme variations in operating voltages and surge
- LAN port (optional)

Alerts & Alarms

- Power failure
- Meter communication cable failure
- Voltage imbalance, over voltage and under voltage
- Current imbalance
- Signal strength

Specifications:

Control Card

Description	AMR-2G	AMR-4G
Module	GSM/GPRS	LTE CAT1
RAM	32Mbit	32Mbit
Flash	24Mbit	24Mbit
Micro controller	M0+ ARM Cortex	M0+ ARM Cortex

Environmental Conditions

Nominal operating temperature range	-25 °C to +60 °C
Max. operating temperature	-40 °C to +65 °C
Relative humidity	5% to 95 % (non-condensing)

Communication Interface

Description	Serial Port		Optical Port	
Connector	DB-9 Female		DB-9 Female	
Type	Serial Port		Serial Port	
Bit rate	100 bit/s – 115200 bits/s		100 bit/s – 9600 bits/s	
Signal lines	TxD	PIN 2	TxD	PIN 2
	RxD	PIN 3	RxD	PIN 3
	GND	PIN 5	GND	PIN 5
			Power	PIN 8&9
Voltage Level	typical: ± 10V		typical: ± 10V	

Antenna

Type	1.5-meter Whip Antenna
Gain	3dbi/ 6dbi/ 10dbi/ 12dbi
Impedance	50 Ohms

Operating Voltage

70 V to 480 V AC	max. 30 mA
18 V to 36 V DC (Optional)	--
110 V / 220 V DC (Optional)	--

Physical Attributes

Dimensions	190 mm x 110 mm x 45 mm
Housing type	Polycarbonate
Protection	IP55
Weight	Less than 500 gms

Indicators

Red LED	Power
Blue LED	Network status
Yellow LED	TX
Green LED	RX

Immunity Test

Surge IEC 61000-4-5, 2005	6 KV Performance criteria A	
Conducted Emission CISPR 22	150 KHz to 30 MHz Performance criteria A	
Radiated Emission CISPER 22	30 MHz to 1000 MHz Performance criteria A	
Electrostatic Discharge IEC 61000-4-2, 2008	6 KV in Contact Discharge 8 KV in Air Discharge	
Radiated Susceptibility IEC 61000-4-3, 2010	80 MHz to 1000 MHz (3 V/m) Performance criteria A	
Electrical Fast Transient IEC 61000-4-4, 2011	4 KV Performance criteria A	

Power Supply

Input Voltage	70V AC to 480V AC
Output Voltage	5.0V DC
Output Current	2.0 Amps max
Protections	Short circuit and Overload
Surge handling capacity	6KV as per IEC 61000-4-5
Connection type	Single phase 2 wire Three Phase three wire Three phase four wire
Cable	Input - 4 core 0.5 sq. mm cable, 1-meter length Output - 2 core twisted pair cable 1 sq. mm
Battery	3.7 V Li-Ion rechargeable

Communication Module

Description	AMR-2G	AMR-4G
Bands	850MHz, 900MHz, 1800MHz, 1900MHz	900MHz, 1800MHz, B1, B3, B5, B7, B8, B20, B38, B40, B41
Data throughput	Multi-slot class12	Multi-slot class12 LTE CAT-1
Data Speed	85.6 kbps U/L and D/L	10Mbps D/L, 5Mbbs U/L
SMS	MT, MO, CB, Text and PDU mode	MT, MO, CB, Text and PDU mode
Programming port	USB	USB

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