REDZ
SMART COMMUNICATION
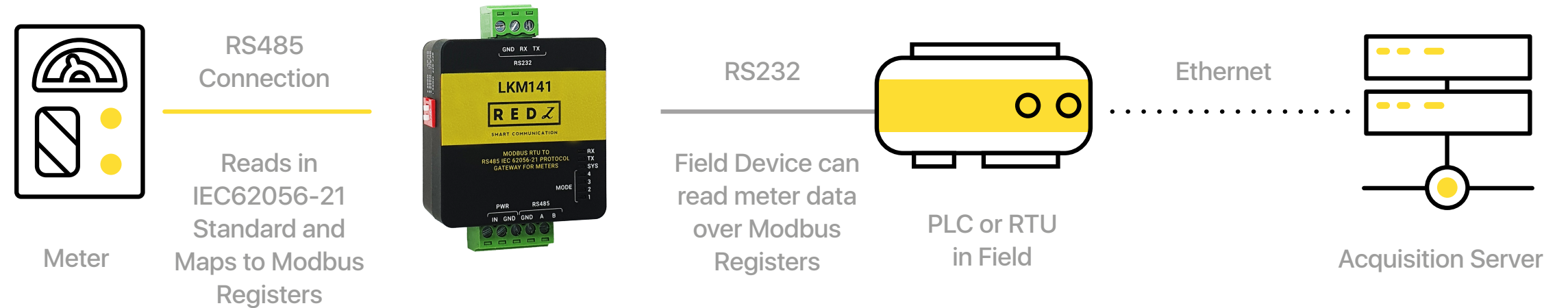
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LKM141
MODBUS RTU to
IEC62056-21 Protocol
Meter Gateway

With RS232 DB9 Male on Modem Side
and RS485 2 Wire Connection on Meter Side

Main Features

- Auto reads Electricity meters that communicates in IEC62056-21 standard and maps in predefined MODBUS register table
- Configurable Modbus address via Modbus Commands
- Configurable Reading Period on IEC6056-21 side via Modbus Commands
- Configurable Reading Table Number on IEC6056-21 side via Modbus Commands
- Wide range power input: 5V – 24V DC
- Wide operating temperature range from -40 to 85 ℃
- Very Small form factor, only 2.1 x 4.2 x 4.4cm
- Customization of reading process and register tables based on client request
- Firmware upgradable over serial line

Meter — RS485 Connection — Reads in IEC62056-21 Standard and Maps to Modbus Registers

LKM141 — REDZ — SMART COMMUNICATION — MODBUS RTU TO RS485 IEC 62056-21 PROTOCOL GATEWAY FOR METERS

RS232 — Field Device can read meter data over Modbus Registers

PLC or RTU in Field — Ethernet — Acquisition Server

LKM Series Modbus RTU to IEC62056-21 Protocol Gateway are designed to be used with electricity meters that communicates in IEC62056-21 standard

The meters that supports IEC62056-21 standard has read out tables that has several data such as import energy, export energy, phase voltages and currents. LKM Series Modbus RTU to IEC62056-21 Protocol Gateway automatically reads that values and maps to Modbus registers. Field devices or software systems can easily read data over Modbus RTU protocol so that energy meter reading can easily be integrated to field automation or monitoring systems without need of IEC6056-21 protocol implementation.

Technical Details

Interface and Indicators

RS232 Connector	DB9 Male RS232 Connector. Only Tx-Rx-GND for data transmission		
	2 – Rx	3 – Tx	5 – GND
RS485 Connector	Terminal Connector for 2 wire RS485 connection and GND		
Operation Mode Selection Switch	Selects the operating mode of the device		

Mode Selection	Modem Side Communication Parameters	Meter Side Communication Parameters
Mode 1 (LED 1 ON)	19200 8N1	Starts with 300 baud rate and changes during transmission to target baud rate based on IEC62056-21 protocol
Mode 2 (LED 2 ON)	9600 8N1	Starts with 300 baud rate and changes during transmission to target baud rate based on IEC62056-21 protocol
Mode 3 (LED 3 ON)	19200 8N1	19200 7E1 Fixed
Mode 4 (LED 4 ON)	9600 8N1	9600 7E1 Fixed

Indicators

LED Indicators	Following LEDs available to show system status. 1 – Mode 1 LED 2 – Mode 2 LED 3 – Mode 3 LED 4 – Mode 4 LED 5 – System LED: Blinks every second 6 – Tx LED: Sending data from Modem Side to Meter Side 7 – Rx LED: Receiving data from Meter Side to Modem Side

Modbus RTU and IEC62056-21 Characteristics

Modbus RTU Address	Default value is 0x01 Changeable via Modbus Command
Reading Period on IEC62056-21 Protocol Meter Side	Default value is 10 (in seconds) Changeable via Modbus Command
IEC62056-21 Protocol Meter Read Out Table	Default value is 0x30 = '0'in ASCII Changeable via Modbus Command
IEC62056-21 Protocol Meter Reading Method	Reads each line of table and registers data during reading
IEC62056-21 Protocol Meter Read Out Data	Date, Time Import and Export Active Energy Import and Export Reactive Energy Reactive Energy in 4 Quadrants Import and Export Maximum Demands Active Power Phase Currents for each phase Phase Voltages for each phase Frequency Error Code Extendable/Changeable via firmware change
Monitoring Parameters	IEC Read counter Time counter (in seconds) FW version Query able via Modbus Commands

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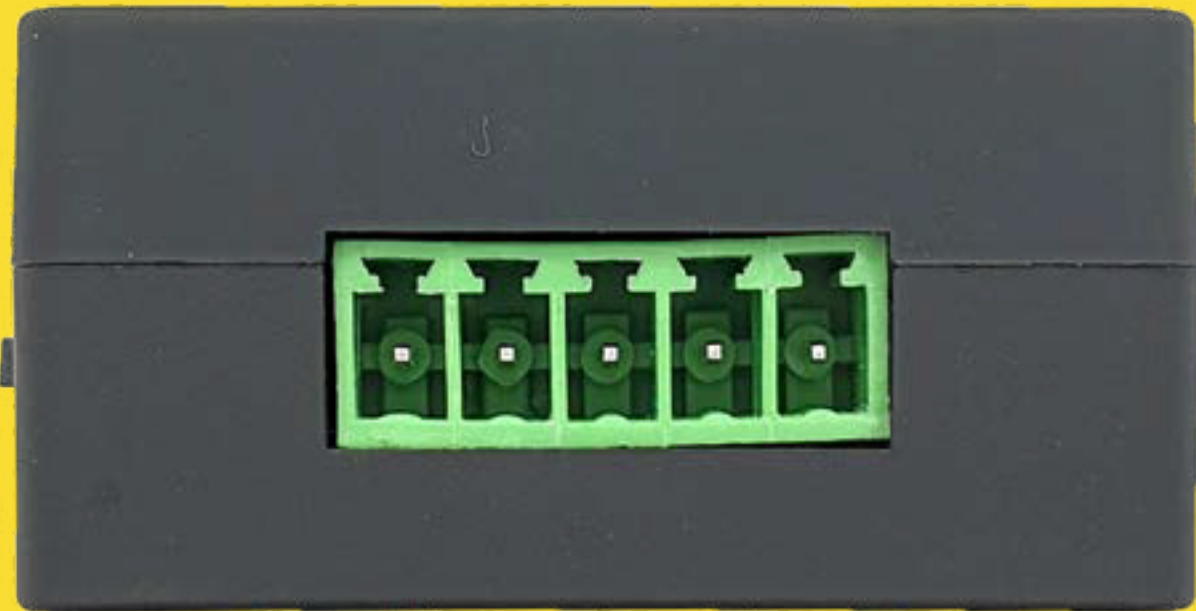
Firmware Upgrade

Upgrade over Serial Line	**Available from Modem side Serial Line** RS232 on LKM141 Device must be on operating mode 19200 8N1 for firmware upgrade process.

Power

Power Switch	Turns External Power On and OFF
Power Input	5V – 24V DC
Reverse Polarity Protection	Available
Thermal Shutdown Protection	Available

Physical & Environmental Characteristics

Enclosure	ABS, IP40
Dimensions	21 × 42 × 44 (h × w × d) mm
Weight	~ 60 g
Storage Temperature	– 55 to 125 °C
Operating Temperature	– 40 to 85 °C
Operating Humidity	5% to 95% Non-condensing

Ordering Information

LKM141
Modem side RS232, Meter side RS485,
Modbus RTU to IEC 62056-21 Protocol Meter gateway

Product Selection

Model	5-24V DC Power Input	Plug into Meter and Play, No external Power Needed	Operating Mode Selections	Modem Side RS232 Connection	Modem Side RS485 Connection	Meter Side RS232 Connection	Meter Side RS485 Connection	Meter Side P1 Companion Standard	Firmware Upgrade Over Serial Line
LKM111	●		●	●		●			●
LKM114	●		●		●	●			●
LKM124	●		●		●			●	●
LKM141	●		●	●			●		●
LKM144	●		●		●		●		●
LKM614		●	●						●