

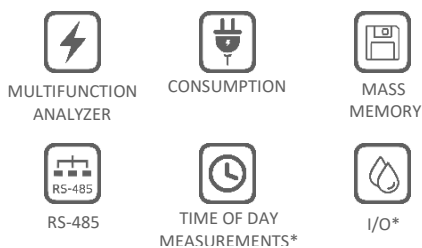


### FEATURES

- The **Mult-K Plus** is an instrument conceived to measure electrical parameters in AC systems, such as energy consumption, current, voltage and others.
- Applicable either on low, mid or high voltage, mono-phase, two-phase or three-phase systems, since it is possible to program the potential and/or current transformer ratios and the connection diagrams.
- Measurement readings can be obtained locally (through a LED display, with 7 segments and 4 digits) or remotely, using a RS-485 output for communication.
- Equipped with mass memory, which allows the recording of a historical database comprising up to 10 electrical parameters, using a minimum registering interval of 1 minute.
- Can be provided in special versions such as E-10 and E-13, which have a time of day energy measurement mode (Peak and Off-peak time divisions).

### APPLICATIONS

- Submetering
- Energy Efficiency
- Energy Cogeneration systems (4-quadrant metering, delivered and received power)
- Time of day energy measurement (Peak and Off-Peak times)\*
- Automation systems
- Analysis of electrical circuits and equipment
- Analog Instrument Substitution
- Any application related to energy and electrical parameters measurements



\*Special Versions

### PRODUCT INFO

#### ELECTRICAL PARAMETERS - 63

- Includes current, voltage, frequency, energy consumption, energy demand, active, reactive and apparent powers, power factor and other parameters

#### CONNECTION DIAGRAMS

- Mono-Phase, Two-Phase or Three-Phase systems (configurable)

#### INSTALLATION

- Panel's Door
- Technical support via e-mail, telephone, WhatsApp and YouTube videos

#### MASS MEMORY

- Mass memory used to create an internal historical database of the measurements, comprising up to 10 electrical parameters, using a minimum registering interval of 1 minute

#### PEAK AND OFF-PEAK ENERGY MEASUREMENTS

- Special E-10 and E-13 versions feature peak and off-peak energy measurements, using a specific configuration mode (time of day)

#### INTERFACES, READINGS & CONFIGURATIONS

- Man Machine Interface (MMI) composed of displays (LED) and three navigation keys, allowing local reading and configuration
- RS-485 communication
- Software for reading and parameterization: RedeMB (RS-485)
- Modbus-RTU protocol, allowing integration to PLCs, master MMIs, supervisory systems and data concentrators
- It may include pulse output as an option, for remote reading of active or reactive inductive energy, using wired connection to external device inputs (CLPs, mechanical counters, etc.)

#### WATER, GAS, OIL, REMOTE COMMANDS...

- E-13 version is equipped with three digital inputs for concentration of external pulses, generated by other resources meters – like water, gas - and one digital output for remote commands (On/Off)

# MULT-K PLUS

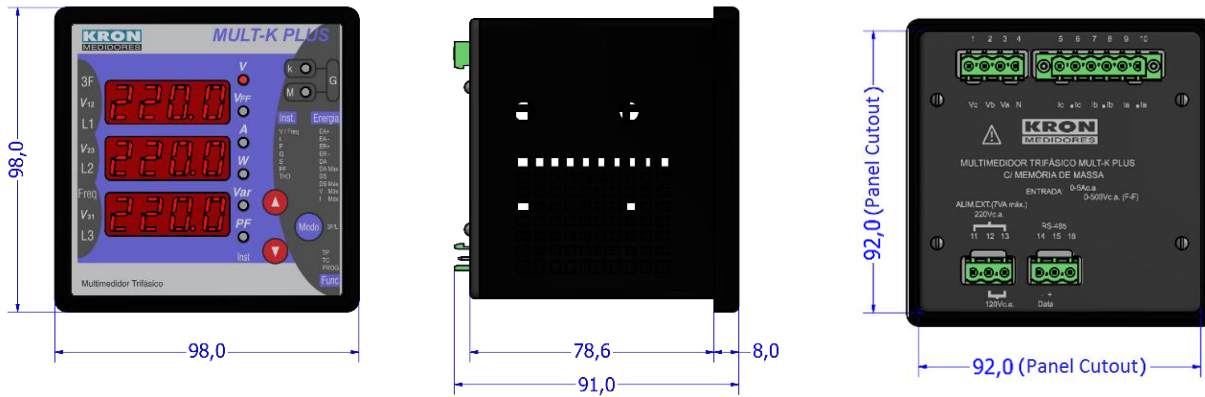
## Energy Meter and Multifunction Analyzer

## Technical Datasheet

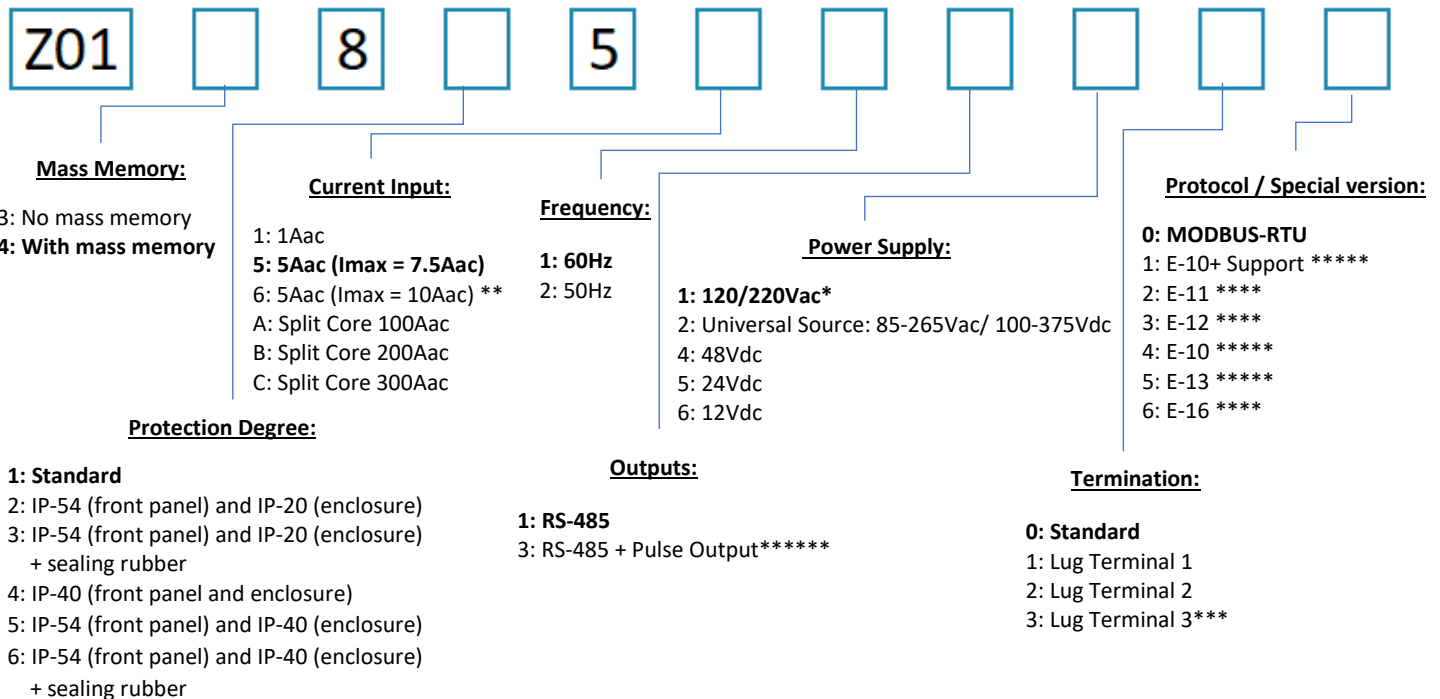
<b>ELECTRICAL GREATNESSES</b>	<i>Instantaneous</i>	Voltage (Ph-Ph, Ph-N and 3Ph), Current (Ph, N and 3Ph), Frequency, Active, Reactive and Apparent Power (Ph and 3Ph), Power Factor (Ph and 3Ph), THD-Voltage and Current (Ph until 31 <sup>st</sup> order)
	<i>Energy</i>	±Active Energy kWh (Consumption and Supply) ±Reactive Energy VARh [Inductive (+) and Capacitive Loads (-)] Active and Apparent Demand (Last and Maximum)
	<i>Maximum and Minimum</i>	Voltage and Current (3Ph)
	<i>Connections Diagrams</i>	Three-Phase (Star or Delta), Two-phase and Single-Phase
<b>MEASUREMENTS AND INPUT INFO</b>	<i>Voltage – Working Range</i>	20 to 500Vac (Ph-Ph) [1.5 Vmax overload (1s)]
	<i>Current – Working Range</i>	20mA to 7.5Aac 50mA to 10Aac Split-Core 100A   200A   300Aac (minimum: 2% of nominal value)
	<i>Frequency – Working Range</i>	44 to 72 Hz
	<i>Connection</i>	Quick coupling terminal or Lug Terminal (IP-00)
<b>POWER SUPPLY</b>	<i>Maximum Cable to be Used</i>	2.5mm <sup>2</sup> for power supply and measurement inputs 1.5mm <sup>2</sup> for pulses output
	<i>Internal Consumption</i>	<0.5VA
	<i>Voltage</i>	85-265Vac/100-375Vdc 110/220Vac (80 to 120% of nominal value) 12Vdc (90 to 120% of nominal value) 24Vdc (80 to 120% of nominal value) 48Vdc (80 to 120% of nominal value)
	<i>Internal Consumption</i>	< 10VA
<b>MASS MEMORY</b>	<i>Storage Capacity</i>	512kB (58.236 registers for 1 electrical parameter configured), non –volatile memory
	<i>Number of recordable parameters / Interval</i>	Up to 10   From 1 to 540 minutes
<b>ACCURACY at 25°C (77 °F), referred to the full scale</b>	<i>Voltage, Current and Powers</i>	0.2%
	<i>Frequency</i>	0.1Hz
	<i>Power Factor and Energies</i>	0.5%
	<i>THD</i>	< 3%
<b>COMMUNICATION</b>	<i>Connection/Protocol</i>	RS-485 - Modbus RTU
	<i>RS-485 Cabling</i>	Shielded cables, with at least two twisted pairs (2x24 AWG), minimum section of 0.25mm <sup>2</sup> and characteristic impedance of 120ohms
	<i>Transmission Speed</i>	9600, 19200, 38400 or 57600bps (configurable)
	<i>Data Format</i>	8N1, 8N2, 8E1 or 8O1 (configurable)
<b>DISPLAY</b>	<i>Addressing</i>	1 to 247 (configurable)
	<i>LED (red)</i>	High-bright LED Display, 4 digits and 7 segments.
<b>I/O (E-13)</b>	<i>3 Digital Inputs</i>	Type: Open Collector   Voltage required: 12~24Vdc Maximum Frequency: 2Hz   Admittable pulse width: 200ms
	<i>Digital Output</i>	Relay Output, 250V – 2A (Ac or Dc)
<b>PULSE OUTPUT</b>	<i>Parameters</i>	Positive Active Energy (consumption) and Positive Reactive Energy (inductive load)
	<i>Type</i>	Open Collector   Voltage required (external source): 12 to 24 Vdc Pulse width: 200ms   Maximum Current: 1mA   Maximum Frequency: 1Hz
<b>CASE</b>	<i>Material</i>	Thermoplastic
	<i>Mass</i>	0.5kg
	<i>Protection Degree</i>	IP-40 for front panel and IP-20 for enclosure
<b>ENVIRONMENTAL CONDITIONS</b>	<i>Operation Temperature</i>	0 to 60°C (32 to 140°F)
	<i>Storage Temperature</i>	-25 to 60°C (-13 to 140°F)
	<i>Relative Air Humidity</i>	Maximum of 90% (without-condensation)
	<i>Temperature Coefficient</i>	50ppm/°C
<b>STANDARDS</b>	<i>Electrical Parameters</i>	IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-11 CISPR 11

- For further information, see User Manual

### DIMENSIONS



### How to Specify:



\* Not applicable for models with lug terminals

\*\* Only for Lug terminal types 1 and 2.

\*\*\* Only for current inputs of In= 5Aac and Split Cores, RS-485 and pulse output. Not applicable for special versions.

\*\*\*\* Special versions intended for applications in power companies. E-11 uses a specific register map, features Imax = 10Aac, lug terminal 1 and is not equipped with mass memory. E-12 has a specific color pattern in the front panel, different colors to indicate each phase and is provided with lug terminals 1 or 2. E-16 includes CD-05, is provided with lug terminal 2 and is not equipped with mass memory.

\*\*\*\*\* Versions with "Time of Day" algorithm implemented, allowing Peak and Off-Peak energy counting. These versions must be equipped with mass memory. E-13 includes 3 digital inputs and 1 digital output and cannot be output with pulse output.

\*\*\*\*\* Only for Lug terminal types 3..

The bold signaled items indicate the standard options, which have higher stock availability. Check User Manual for further information about Special Versions.

**Standard Model:** (Example)

**Z01 4 8 1 5 5 2 1 1 0 0**

Mult-K Plus {Mass Memory} {Protection Degree - Standard} {Current Input 5Aac} {Frequency 50Hz} {RS-485 output} {Power Supply 110/220Vac} {Termination - Standard} {Modbus-RTU Protocol}

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For correct utilization of the product, the User Manual must be consulted before its installation or operation.

Some items presented here may be optional, being necessary the correct product specification by their code.

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