

Instruments and equipment used in the test:

Name of the instrument /equipment	Type	Serial number	Number of the metrological card
Multimeter	M3850-D	HF612094	B07
Multimeter	M3850-D	HF611005	B08
Measuring panel	Almeno 5990-2	A04050063	B25
Digital thermometer / hygrometer	Comet D3120	01910003	B30
Measuring microscope	MM110	-	B38
Multimeter	Fluke 289	96550180	B41
Electrical Safety Compliance Analyzer	ViTREK, typ 955i	011840	B43
Scale loupe Meopta	Scale Loupe 12,5x	- - -	Z1
Climatic chamber Feutron	KPK400P	142	Z10
Test preparation	-	-	-

Test procedure:

Tests were made according to the standard:

ČSN EN 60950-1: 2006, ed 2,+A1.:2010,+A11: 2009,+ A12:2011, +Opr.:2012, clause 1.5;1.6;1.7;2.2;2.3;2.4;2.5;2.6;2.7;2.8;2.9;2.10;3.1;3.2;3.3;3.4;4.1;4.2;4.3;4.4;4.5.1;4.6;4.7;5.1;5.2;5.3;6.1;6.2;6.3.
 The standard is the Czech Version of the European Standard:
 EN 60950-1:2006 ed.2, +A1.:2010, +A11: 2009,+ A12:2011, + Cor.:2011-10
 Safety of information technology equipment.
 Part 1: General requirements (Part 1: General Requirements)

This standard is applicable to mains-powered or battery powered information technology equipment, including electrical business equipment and associated equipment, with a rated voltage not exceeding 600 V.

This standard is also applicable to such information technology equipment:

- Which are designed and intended to be connected directly to a telecommunication network, regardless of the source power.
- Which are designed and intended for direct connection to a cable distribution system, or are used infrastructure facilities such as cable distribution system, regardless of power source.
- Which are designed to use AC power supply network as a communication transmission medium.

This standard specifies requirements intended to reduce the risk of fire, electric shock or injury to the operator or unknowing person who can come into contact with the device, and where it is expressly stated, persons carrying out maintenance.

It is also applicable to such information technology equipment designed to use AC mains supply as a telecommunication medium.

The laboratory environment	
Uncertainty of measurement:	U
temperature	±5°C
relative humidity	±10% RH

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Description of test equipment: Kulon-C module is designed to control distribution of static (street) lighting with remote control via GSM network.

Basic functions:

- Remote control of power networks
- Control cycles 4 magnetic switches
- Involvement meters with a CAN interface RS 485
- Connection of two additional sensors (opening doors and fire alarms)
- Connection of expansion modules (up to 32) inputs and outputs.

Basic technical parameters:

- Number of discrete inputs 6
- Number of relay outputs 4
- Max. voltage and current at the output ... 230VAC, 5A
- Number of inputs for additional probes ... 2
- Radio availability of GSM 900/1800
- Protocol MODBUS interface (RS 485), CAN
- Power (100-250) VAC/50Hz
- Temperature range (-40 to +60) ° C
- Dimensions (105x210x75) mm

Two pieces were delivered as a test sample of this unit (see photo label-).

The unit is supplied from 100 VAC to 250VAC, max supply current 0,5 A. The device is equipped with two 8 - pin connectors for the inputs and outputs regulated network, three 4-pin connectors, two 2-pin connector and one antenna connector.

An operator shall not tamper with the battery in the housing.

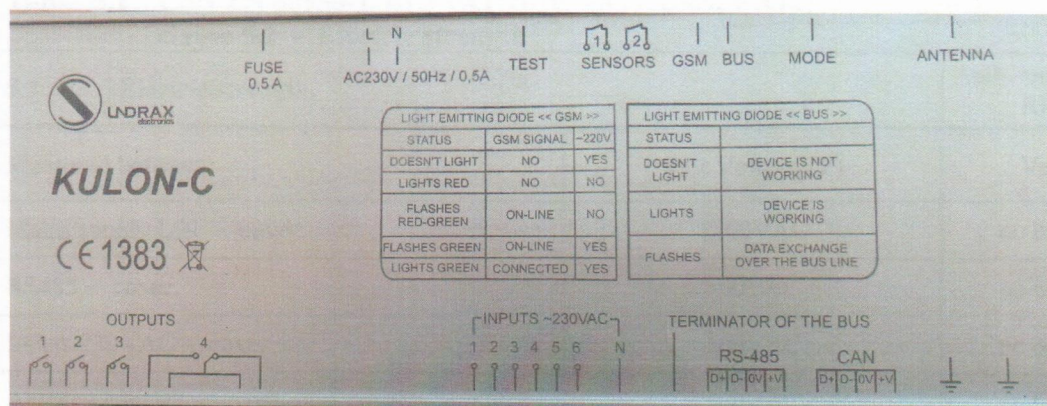
Installation, commissioning and maintenance must be performed by trained personnel.

The documentation was delivered in English language

Unit Dimensions: 105mm x 210mm x 75 mm

Weight: 700 grams

Label on the device:



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The test results:

Note:

Tests or results that are marked "*" have been made beyond the laboratory accreditation according to ISO / IEC 17025:2005

Test case verdicts:

Test case does not apply to the test objects: N/A
 Test item does meet the requirement of standard clause: P(pass)
 Test item does not meet the requirement of standard clause: F(fail)

**Table 1.6.2 ČSN EN 60950-1, ed.2 +A1:2010, +A11:2009, + A12:2011, + Opr.1: 2012
 clause 1.6.2 - Input current.**

Ambient temperature: 25°C, Relative humidity: 29%				
Operating status.: operational mode				
Input Voltage U (VAC)	Input current I ₁ (A)	Power P (VA)	Uncertainty U (%)	Verdict*)
100	0,44	44,0	2,9	P
230	0,21	48,7	2,9	P
240	0,20	48,0	2,9	P

**Table 5.2 ČSN EN 60950-1, ed.2 +A1:2010, +A11:2009, + A12:2011, + Opr.1: 2012
 clause 5.2 - Electric strength**

5.2	Electric strength.	Amb. temperat.: 25°C, RH: 39%
Measured between:	Test Voltage (V)	Verdict *)
Mains supply L,N – cover	1500VAC	no breakdown
RS485 – cover	500VAC	no breakdown
Inputs 230VAC – cover	500VAC	no breakdown
Antenna connector – connector cover	500VAC	no breakdown
Voltage of substantially sine-wave form having a frequency of 50 Hz.		

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**Table 4.5 ČSN EN 60950-1, ed.2 +A1:2010, +A11:2009, + A12:2011, + Opr.1: 2012
clause 4.5.1 – Temperature rise test**

Nominal-load of the equipment		RH = 30%	
	Ambient temperature when the test started:	23,0°C	
	Ambient temperature when the test finished:	23,0°C	
	Measured under Voltage:	230 VAC	
	Current consumption	200 mA	
	Time of the test:	180 min.	
Part measured	The measured temperature (°C)	Standardized temperatures (°C)	U (°C)
Top cover	34,0	70	0,42
Bottom cover	44,2	70	0,42
Switch ON/OFF	39,1	85	0,42
IC SIM900	44,5	70	0,42
AC/DC Power Module ARCH - AOCB-5S	49,6	70	0,42
Battery 3V Lithium – small	38,7	70	0,42
IC C8051F131	35,0	70	0,42
PCB	33,0	95	0,42
The test stopped after stabilization of temperature			

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**Table 5.3 ČSN EN 60950-1, ed.2 +A1:2010, +A11:2009, + A12:2011, + Opr.1: 2012
clause 5.3 – Abnormal operating and fault conditions**

Cause: USB connector short				
Ambient temperature at the start of the test:		24,0°C		
Ambient temperature at the end of the test:		24,8°C		
Measured at the Voltage:		230VAC		
Current consumption		250 mA		
Duration of the test:		120 min.		
Component	Failure	Gas	Flammable	Leaking hot parts
Connector RS -485 and CAN	Short data pins	no	No	no
Measured temperature				
Measured parts	Temperature of the measured (°C)	Standardized temperatures (°C)	U (%)	
Top cover	35,0	70	0,42	
Bottom cover	45,2	70	0,42	
Switch ON/OFF	40,0	85	0,42	
IC SIM900	44,5	70	0,42	
AC/DC Power Module ARCH - APOCH-5S	51,6	70	0,42	
Battery 3V Lithium – small	39,3	70	0,42	
IC C8051F131	38,0	70	0,42	
PCB	34,0	95	0,42	
Note: Measured temperatures to stabilize				

**Table 5.1: ČSN EN 60950-1, ed.2 +A1:2010, +A11:2009, + A12:2011, + Opr.1: 2012
clause 5.1.6 – Touch Current , Testing method**

Touch Current				
Measured at a voltage: 240 VAC /50 Hz				
Measured between	Measured	Standard	Uncertainty U (%)	Verdict *)
Stationary equipment type A Polarity L, N Annex D	1,75 mA	3,5 mA	2,9	P
Stationary equipment type A Reverse polarity N,L Annex D	2,1 mA	3,5 mA	2,9	P

Summary of test results:

ČSN EN 60 950-1:23006, ed. 2, + A1:2010, +A11:2009+ A12:2011, + Opr.1: 2012			
Clause	Requirements – Tests	Test Result	Verdict*)
1.5	Components		
1.5.1	General		P
	With respect to safety components must meet the requirements of the standards or requirements of the relevant IEC standards.	Components tested as part of the equipment PCB material: 94V-0	P
1.5.2	Assessment and testing components		P
	Component consistent with the harmonized standard IEC must be checked, if it is properly used and tested as part of equipment.		P
	Component, for which there is no evidence consensus, must be checked, if properly used, to be tested as part of equipment and tests according to the standards for the appropriate device.		N/A
	If there is no standard IEC or the device is used, contrary to the data - to be tested under the conditions of the device.		N/A
1.5.3	Thermal controls	not used	N/A
	Shall be tested according to Annex K.	not used	N/A
1.5.4	Transformers	not used, used certified AC-DC module type AOCH-5S, manufacturer ARCH Electronics Corp.	N/A
	Must meet the requirements of this standard included in Annex C.		N/A
1.5.5	Interconnecting cables	not used	N/A
1.5.6	Capacitors in primary circuits	not used	N/A
	Between the phase conductors of the primary circuit or phase and neutral conductor / protective earth must conform to IEC 60384-14	not used	N/A

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	Separates the conductive part or circuit from another part of double or reinforced insulation bridged capacitor must be accessible to the circuits with caution.	not used	N/A
1.5.7	Resistors bridging insulation	No such components	N/A
1.5.7.1	Resistors bridging working isolation basic insulation or additional insulation.		N/A
1.5.7.2	Resistors bridging double or reinforced insulation between the AC power networks, and other circuits.		N/A
	One or more resistors must meet the requirements for clearances and creep age		N/A
	If accessible conductive part or circuit separated by double or reinforced insulation, which is jumpered resistor or resistors, the part or circuit must meet the conditions for a circuit with caution.		N/A
1.5.7.3	Resistors bridging double or reinforced insulation between the AC power networks and circuits connected to an antenna or coaxial cable.		N/A
	The requirements and tests of 1.5.7.2.		N/A
1.5.8.	Components in equipment for IT power system.	No components for IT distribution systems	N/A
	Components between phases and bonding must withstand voltage. Capacitors are allowed Y1, Y2 or Y4.	No such components.	N/A
1.5.9.	Surge discharges	No such components.	N/A
1.5.9.1.	General.		N/A
1.5.9.2.	VDR in series with the circuit breaker must be connected to the corresponding interrupt capability.		N/A
1.5.9.3.	Bridging works insulation VDR		N/A
1.5.9.4.	Bridging of basic insulation VDR		N/A

1.5.9.5.	Bridging of additional double and reinforced insulation VDR		N/A
	Does not allow the		N/A
1.6	Power interface		
1.6.1	AC supply	TN-S	P
1.6.2	Input current	Maximal data: See Table. 1.6.2	P
	Steady input current (power) to the device must not exceed the normal load rated current by more than 10%.		P
1.6.3	Voltage limits for handheld devices.	Not hand-held devices	N/A
	The rated voltage of hand-held device shall not exceed 250 V.	Not such equipment.	N/A
1.6.4	Neutral conductor		P
	The neutral conductor shall be insulated from earth and from the body as if it were a line conductor	The neutral conductor is insulated from cover	P
1.7	Marking and instructions		
1.7.1	Power rating and identification marking		
1.7.1.1	Marking the rated data of the power		P
	If the device is not equipped with means for direct connection to a power source, it is not necessary that the marked electrical data.	Marking on the cover of the equipment	P
	A device designed to be installed by the operator - identification visible from areas accessible to the operator.		N/A
	A device designed for installation service technician - easily visible markings on the device or its location in the instructions for installation.	Installation, commissioning, operation and maintenance must be performed only by an authorized person	P
	Rated voltage or voltage range in V.	100 or 240 VAC	P

	The symbol indicating the type of voltage only DC powered equipment		N/A
	Rated frequency or range of frequencies in Hz (if not only for DC)	50 Hz	P
	Rated current in A or mA.	Maximum idle current: 0,5A	P
	Additional labeling		N/A
1.7.1.2	Identification markings		
	Manufacturer's name, trademark or identification mark.	SUNDRAX electronic	P
	The model or type	Kulon-C	P
	Symbol double insulation.		N/A
	Other markings.		P
1.7.2	Safety instructions and marking.		
1.7.2.1.	Generally		
	The user must be given sufficient information concerning any conditions to ensuring that the device will be dangerous.	See section 6.1.2.2 See section 4.3.13.5 The power will not use an extension cord	N/A
	Special instructions to ensure safety during the operation, installation, maintenance, transportation, storage must be provided	No special requirements for the transport, maintenance and storage.	N/A
	The operating instructions, and the installation instructions for pluggable equipment intended for user installation, shall be made available to the user.	See Instalation manual	P
1.7.2.2.	Easily accessible disconnect device Location outlet near the equipment and its easy accessibility.	See Instalation manual	P
1.7.2.3.	Overcurrent protective device	FUSE 0,5A	P
	The instructions shall specify the maximum value of the security element IT mains		N/A
1.7.2.4.	IT power distribution systems		
1.7.2.5.	Operator access with a tool		

	Operator access to the device may not be using the same instrument, or must be placed clear warning label	Designation according to ISO 3864 -5036	N/A
1.7.2.6.	Ozone		N/A
1.7.3	Short operating cycles		N/A
	Marking the rated operating time and recovery.	not intended for such operation	N/A
1.7.4	Setting the supply voltage.	only one supply voltage	N/A
	Setting method described in the instruction manual or installation instructions.	intended only for one voltage	N/A
1.7.5	Power socket on the device.	No	N/A
	If the socket on the device accessible to the operator shall indicate its permitted load.	No outlet	N/A
1.7.6	Identification of fuses.		P
	Marking shall be the rated current fuse or nominal voltage characteristic, if necessary.		P
1.7.7	Wiring terminals		N/A
1.7.7.1	Terminals of the protective earth and terminals of protective bonding.		N/A
	Use the correct symbol.		N/A
	It must not be marked on the screws and removable parts.		N/A
1.7.7.2	Terminals for AC mains supply conductors.		N/A
	Permanently connected equipment and equipment with ordinary non-detachable power supply cords.	It has no effect on security (transmission parameters)	N/A
	Neutral conductor shall be indicated by the capital letter N.		N/A
	Three-phase equipment – phase rotation.	No three phase equipment	N/A
1.7.7.3	Terminals for DC mains supply conductors.		N/A
	For permanently connected equipment and equipment ordinary non-detachable power supply cords – marking to indicate polarity.	No marking to indicate polarity – special connectors	N/A