FIBARO
Home intelligence

Fibar Group referring to alleged research described in
"CE & Safety Validity Analysis / SHT201311-TYC"
by unknown company.

The publication in question does not constitute any elements of document that can be taken into consideration in evaluating the quality of the product by customers or the competent bodies for market of electronic devices surveillance. Nevertheless for those not having the technical and legal knowledge it may provide a basis for evaluating of Wall Plug as a defective or dangerous device for the user.

Fibar Group guided by its own good will refer to the contents of this report confronted its results with the results obtained from an accredited certification bodies and, in some cases, repeated the tests conducted on its own in accordance with the standards and measurement methods set out in them.

The first thing to pay attention to is the lack of consistency in the results in the entire document and referring to sub standards, which do not apply to the product Fibaro Wall Plug. These show that the authors of the report did not have the proper knowledge of how the device works, how to use the standards and how to find the relevant standards that are applicable for this product. In addition, can be found online a large number of illegally placed fragments of standards which may provide the basis for a similar report to anyone. However, there is no guarantee of update of these standards and the correct interpretation of very difficult technical language.

Fibar Group's Research and Development Department cooperates on the selection of appropriate standards and research of the product with a world-class accredited laboratories such as DEKRA. The selection of standards and testing are very costly and time consuming processes and the results are confidential and can not be disclosed to any third party. During the product design Engineering Department of Fibar Group uses standards obtained from institutions designated for that purpose to guarantee their timeliness and completeness.
Considering all the faults in the report and the results of research conducted by accredited company, Fibar Group questions its authenticity and confirms that Fibro Wall Plug complies with the obligatory standards on the relevant markets where it is sold.

Below is a list of items that raised concerns or were classified as a "fail."
They have been subjected to re-test procedure to make sure that the device meets the requirements of the standard.

Clause		Verdict from document	Comment from Fibar Group
8	Test of markings	Fail	Minor errors were found in the labeling of the device. They do not affect the functionality of the device.
9	Checking of dimensions	Fail	In previous batch of product there were minor issues caused by a mistake of our supplier. The problem was solved and no longer exist in the product.
10	Protection against electrical shock	Passed	10.5 – after testing there was no problem found
11	Provision for earthing	Passed	Test passed
12	Tests on screw terminals	Not applicable	Test passed
13	Construction of fixed socket-outlets	Not applicable	Test passed
14	Construction of plugs and portable socket-outlets	Fail	Inconsistency: test shows that the requirements were met, but the verdict is "Fail"
16	Resistance to aging, protection provided by enclosures, and resistance to humidity	Passed	Test passed
17	Insulation resistance and electric strength	Fail	Lack of knowledge of the product caused wrong interpretation of standard in regard to the product. This may cause that the measurement was performed incorrectly.

19	Temperature rise	Fail	19, 19.1 - after repeated tests there was no problem found 19.3 – requirements do not apply to the device
20	Breaking capacity	Fail	Inconsistency: test showed that the requirements were met, but the verdict is "Fail"
21	Normal operation	Fail	Inconsistency: test showed that the requirements were met, but the verdict is "Fail"
22	Force necessary to withdraw the plug	Fail	Inconsistency: test showed that the requirements were met, but the verdict is "Fail"
23	Flexible cables and their connection	Not applicable	Not applicable
24	Mechanical strength	Fail	24.2, 24.8 - after repeated tests there was no problem found
25	Resistance to heat	Fail	25.2 - after repeated tests there was no problem found
26	Screws, current-carrying parts and connections	Passed	Design in accordance to IEC 60730 and meets the requirements of this document
27	Creepage distances, clearances and distances though sealing compound	Fail	Test passed

28	Resistance of insulating material to abnormal heat, to fire and to tracking	Passed	Test passed
29	Resistance to rusting	Passed	Test passed
30	Additional tests on pins provided with insulating sleeves	Not applicable	Not applicable

8. Marking

The correct marking of the product is the subject of this chapter. Although it does not affect the safety of use, the standard instructs to mark the device according to prouided pattern.

The first batch of the product lacked markings of nature of supply voltage and a precise determination of protection class.

Although this does not affect the safety, this problem has been solved.

9. Verification of dimensions.

Constructor's note:
IEC60884-1 standard itself does not specify the construction of plugs and sockets. Instead it refers to standardization cards appropriate for each country.

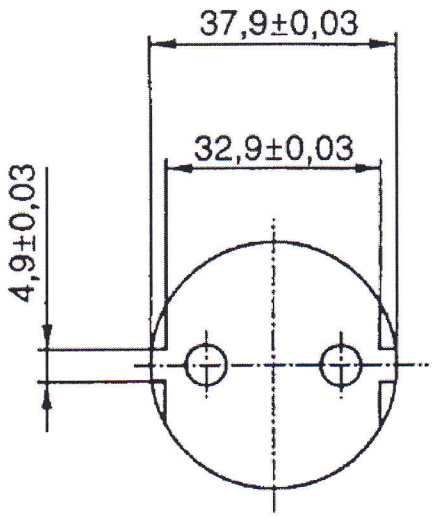
To meet all the requirements imposed by the standardization cards two versions of the devices were developed characterized, by a common connector and various sockets.

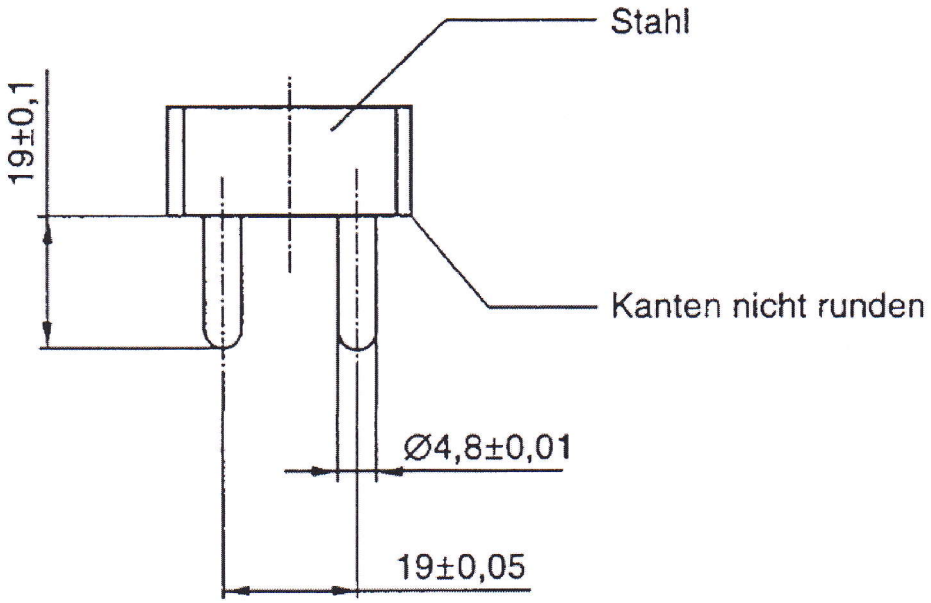
Compliance is checked through tests performed within suitable tolerances set by the standard or by measurement with use of a measuring instrument with adequate accuracy. Tolerances may exist indicated in point 9.3, provided that they are justified from technical point of view and do not threaten safety.

Over the last two years several deviations from the norm were identified resulting from the error of supplier. The problem was immediately eliminated by the additional quality control performed by the supplier although the deviations were in the range of acceptable limits as defined in paragraph 9.3, without compromising security.

Measured dimensions			
	acceptable	measured	deviation
The diameter of the plug	36-37mm	37.05mm	0.05mm
The diameter of the socket DIN 49440 and N FC 61-314	38-40mm	37.5mm	0.5mm
The distance between the flat surfaces of the plug	31.5-32.5mm	32.8mm	0.3mm
Diameter of a contact sleeve of a DIN49440 and N FC61-314b socket	5.5-5.8mm	5.45mm	0.05mm

Fibaro Wall Plug is designed to meet the requirements specified in the following standardization cards:
PN-E-93921-1997, N FC 61-314, DIN VDE 0620-1
Gauges included in the figure are derived from the standard VDE0620.

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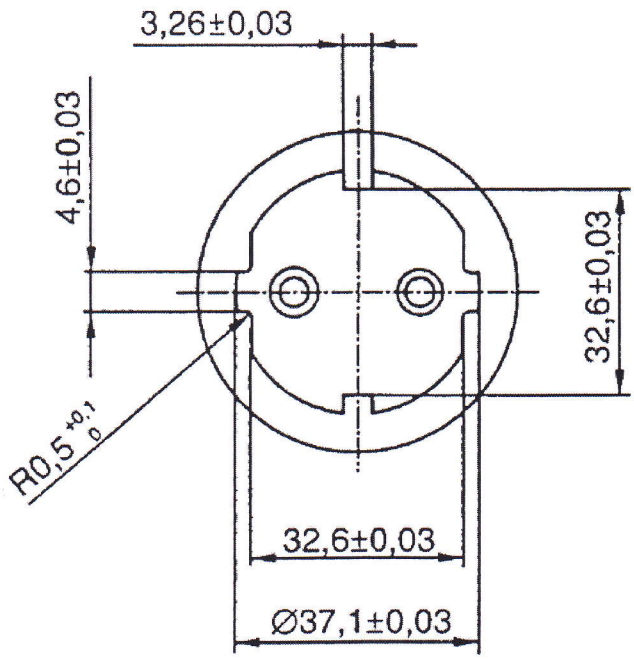
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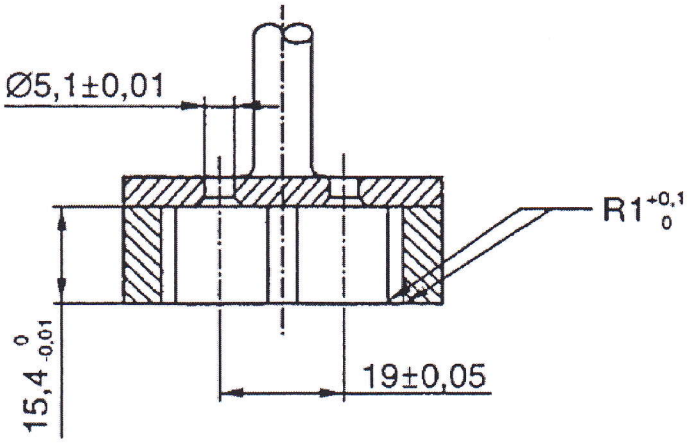


Test method: socket and plug tested with gauges or by taking measurements by the measuring device with adequate accuracy. The gauge should suit without applying too much force.

Test results:
Universal Plug - positive. The plug can be inserted into an appropriate gauge without much resistance.
Socket DIN VDE 0620-1 (DIN 49440-1:2006) - positive. Socket can be attached to a suitable gauge without much resistance.
Socket N FC 61-314 (PN-E-93921-1997) - positive. Method of measurement - measuring with caliper and Mitutoyo micrometer. All dimensions are within the tolerances specified by the standard.

9.2 Systems.

Test method: visual inspection. If plug can not be inserted into the socket of a different voltage or a lower current rating or a different protection class.
Research result: positive. Unable to secure the plug in systems intended for supply of lower current and voltage parameters, with values different than nominal.

9.3 Deviations from dimensions.

This paragraph refers to the allowed deviations from the dimensions given in the standardization cards. Deviations are allowed only when they do not compromise the safety of operation (e.g. when possible to touch live parts due to prolonged contact pins).

Quality control at the Fibar Group factory did not show any deviations that may endanger the safety of use.

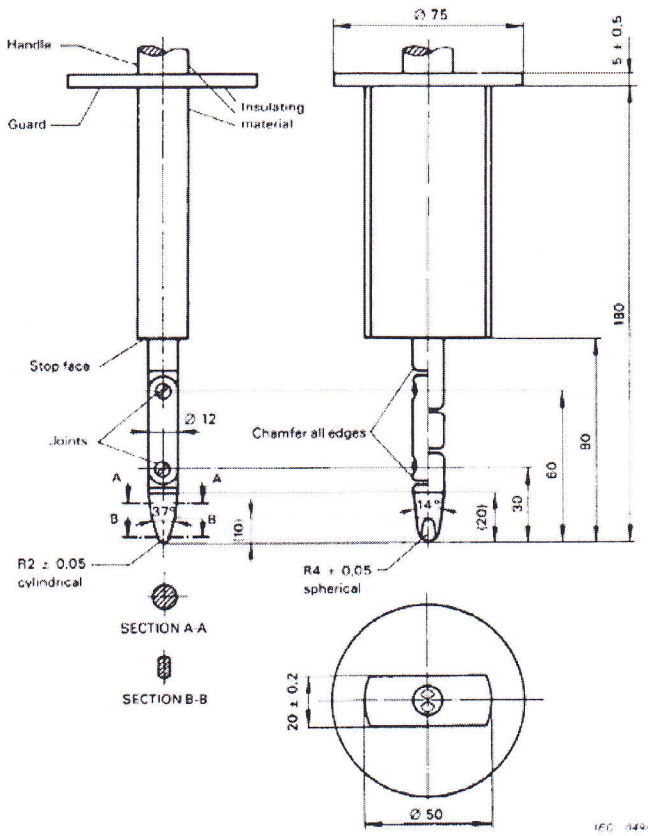
10. Protection against electric shock.

According to 60884-1, 60884-2-5:2002 standards the following tests should be conducted:

10.1 Test for the opportunity to touch live parts when the plug is partially inserted into the slot.

Method of testing - testing finger.

Test results - live parts cannot be touched.



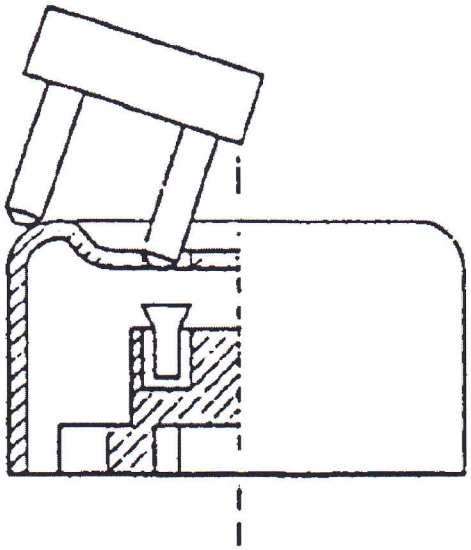
10.101 Attempt to open the fuse when the plug is in the socket-not applicable. No fuse.

10.2 Restrictions for the material of slot cover - not applicable. No masking socket.

10.3 Testing the possibility of making contact between a pin of a plug and a live socket - contact of a socked - outlet while any other pin is accessible.

Method: visual and manual inspection using a socket and plug testing. The test is performed separately for the socket and the splitter plug.

Test results- no possibility of contact between pin and sleeve splitter plug, or sleeve and pin splitter plug.



10.4 External parts of splitters should be made of an insulating material.

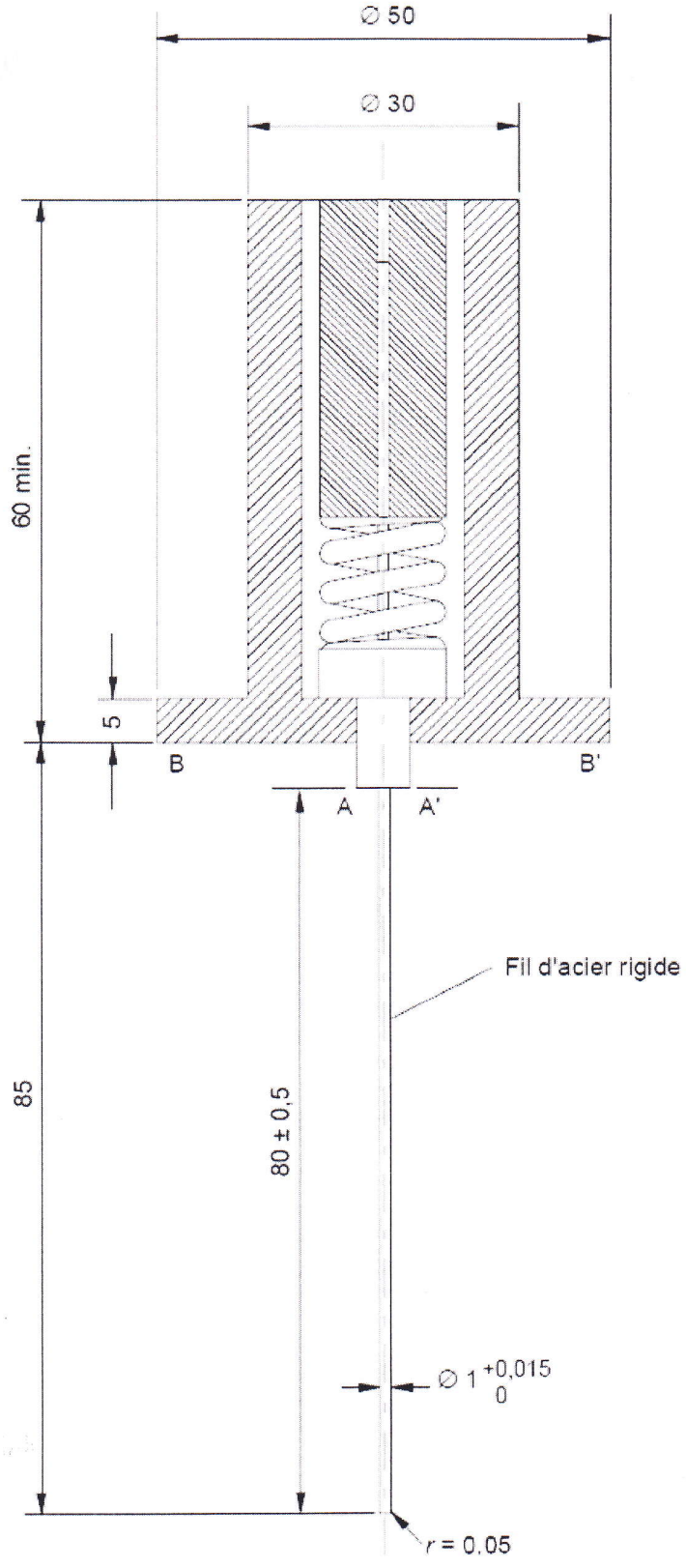
Test method: visual inspection.

Test result: no part not being the active part is made of a material other than the insulation.

10.5 Shuttered sockets should be made so that after removing the plug it is not possible to touch active parts.

Test method: applying the gauges.

Test result: inability to touch active parts.



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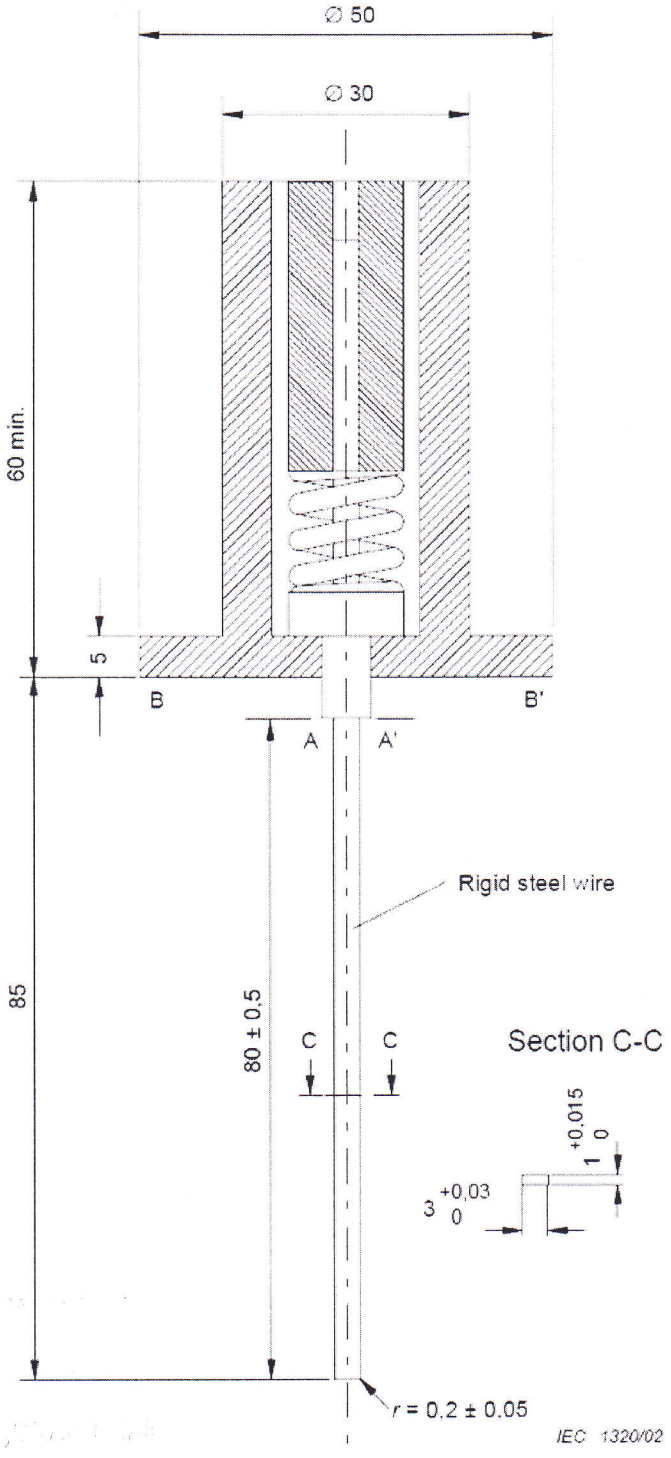


Dimensions in millimetres

10.6 Earthing contacts susceptibility to damages.

Test method: an attempt to deform earthing contacts by a testing plug with pressure of 150N.

Tests results: earthing contacts, after test, meet the objectives of Chapter 9, which means their dimensions are within the tolerances.

10.7 Testing socket with increased protection - not applicable.

14. Testing plugs and portable socket-outlets.

14.1 Testing non-rewirable portable accessories.

Test method: visual inspection.

Tests results: device cannot be put together with original parts and materials.

14.2 Testing pins of portable accessories.

Test method: tests described in chapter 24 (applied 24.2, 24.4, 24.5, 24.10, 24.8).

Test results: device passed tests from chapter 24.

14.3 Properties of pins of plugs.

Test method: visual inspection and tests described in chapter 24.

Test results: positive. Pins do not rotate, they cannot be separated from the socket without damaging the device.

14.4 Properties of earthing contacts.

Test method: visual inspection and tests described in chapter 24.

Test results: positive. - Earthing contacts do not rotate, they can not be separated

from the socket without damaging the device.

14.5 Resilience of contact sleeves.

Test method: visual inspection and gauge described in chapter 9, 21, 22.

Test results: Device passed tests from chapter 9, 21, 22.

14.6 Testing if pins and socket-contacts are resistant to corrosion.

Test method: all steel components tested for corrosion resistance in accordance with Chapter 29.

Test result: none of the conductive parts is made of steel. This standard does not provide a method for testing corrosion resistance off brass parts.

All the brass parts are protected against oxidation by applying a nickel coating.

14.7 -14.11 – Subsections do not apply to the non-portable product.

14.12 Testing the possibility of subtracting covers and masking plates without the use of tools.

Test method: visual inspection.

Test result: positive. The device is equipped with a cover mounted by a screw - a dedicated tool is needed to dismantle it.

14.13 Testing the possibility of subtracting culverts pins from the cover.

Test method: visual inspection.

Test result: positive. The device does not have a culvert through the slot cover.

14.14 Securing screws provide access to the interior of the product - not applicable due to the inability to open the device.

14.15 Testing if the engagement face of plugs has projections other than the pins.
Test method: visual inspection.
Test result: positive. Engagement face of plugs have no projections other than the pins.

14.16 Testing if socket-outlets are designed in such a way that full engagement of associated plugs is not prevented by any projection from their engagement face.

Test method: visual inspection.

Test result: positive.

14.17 Testing enclosure according to IPxx classification after fitted with cables - not applicable. Device does not have possibility of connecting cables.

14.18 Possibility to access live parts through the suspension means.

Test method: visual inspection.

Test result: positive, device does not have any holes to mount on the wall.

14.19 Tests of portable accessories and switches, circuit-breakers or other devices supplied with the product against the compliance with the relevant individual IEC standards - not applicable. Device is supplied as a single component.

14.20 Portable accessories shall not be an integral part of lampholders.

Test method: visual inspection.

Test result: positive. Device is not an integral part of lampholders.

14.21 Testing of plugs classified exclusively as plugs for equipment of class II - not applicable. Device is classified with class I.

14.22 Testing components integrated in the device against the relevant IEC standard
Test method: visual inspection.

Test result: The device does not have a separate component which is subject to testing according to IEC. Electronic switch system according to 60884-1 is a separate system that is fully tested according to the IEC60730 standard.

14.23 Examining the effect of heating up a device on the temperature of contact pins.

Test method: according to 14.23.1 and 14.23.2.

Test result: positive.

14.23.1 Temperature rise after connected to a supply voltage equal to 1.1 times the highest rated voltage of the equipment.

Test method: temperature measurement after placing pins in the fixed socket-outlet complying with this standard. The temperature rise should not exceed 45K.

Test result: positive. Observed temperature rise of 10K.

14.23.2 Testing impact of the device's weight on tension in the fixed socket outlet.

Test method: measuring of force needed to keep a rotating outlet in a vertical position while trying to rotate under the weight of the device equipped with a normative plug with a cable length of 1 meter.

Test result: positive. The additional torque which has to be applied to the socket-outlet in order to maintain the engagement face in the vertical position was equal to 0,05Nm. Acceptable value is 0,25Nm.

IEC60884-2-5 Standard also introduces following point:

14.23.101 Splitters shall withstand a lateral stresses caused by installed equipment.

Test method: the device is placed on the bracket in such a way that the surface of the socket is perpendicular to the substrate surface. Test plug is put into the socket and loaded the 5N force in the direction of the substrate, then the sample is rotated

by 90. The test is repeated 4 times. The plug should not fall out of the socket.

Test result: positive. Plug did not fall out of the socket during the test, socket wasn't damaged within the meaning of section 22 of this standard.

14.24. Testing whether the device is shaped in such a way that it can be easily removed from the relevant socket -outlet.

Test method: visual inspection. Lack of guidelines specified by the standard.

Test result: positive. Examined device has a 2mm deep recess so to facilitate pulling it out from a socket.

14.25 - not applicable according to IEC60884-2-5 standard.

IEC60884-2-5 Standard also introduces the following point:

14.101 If any of the socket adaptor's socket is equipped with protective contact, the adaptor's plug should also be equipped with protective contact.

Test method: visual inspection and test of resistance between the grounding and accessible metal parts.

Test result: Plug and socket have protective contacts. Resistance measurement is not applicable due to the lack of available metal parts.

17. Insulation resistance and electric strength

Constructor's note:
According to this standard insulation measurement is done separately for the adapter and separately for the electronic system embedded in it, which is subject to a different standard IEC60730. Misunderstanding of this point will cause incorrect preparation of device for the measurement which will result in an underestimation of the measured values.

17.1 Resistances are measured with DC 500V for 1 minute. The insulation resistance shall be not lower than 5MOhm.

17.1.1
a) between all poles connected together and metal foil in contact with the outer surface, R >20MOhm
b) between each pole in turn and all others connected together; R>20mOhm
c) between any metal enclosure and earthing terminal – no metal parts
d) between any metal part of the cord anchorage - does not apply in the absence of wires

17.1.2 Not applicable according to IEC60884-2-5 standard.

17.2 Testing with 50Hz AC voltage 2kV for one minute according to routine 17.1.1. No flashover or breakdown shall occur during the test.

a. between all poles connected together and metal foil in contact with the outer surface -flashover occurred only at 3.8 kV.

b. between each pole in turn and all others connected together- flashover occurred only at 4 kV.

Test result: positive. All measured values are above the limits set by the standard.

19. Temperature rise.

This study aims to determine the rise of the temperature of the device under the influence of current flow greater than the nominal during 1 hour.

Designer's note:
For Fibaro Wall Plug test current is 17A.
The device prepared for testing has shorted electrical circuits embedded inside it. Misunderstanding of this recommendation causes erroneous determination of the test conditions and erroneous results.

Method: a device is inserted into a wall socket mounted in a pattress box installed in plaster wall, as desribed by the norm. To stimulate the worst case scenario, a plug of lowest allowed dimensions is inserted into the socket. According to the norm, during the 1-hour test the temperature may rise by 45K compared to the ambient temperature. The temperature is measured at the contact sleeves and insulating parts which can be accessed by the user.

Test result: positive. The recorded temperature rise was 25K.

20. Breaking capacity.

Constructor's note:

Testing performed according to this section is to check the contact pins and pin bushings for the ability to disconnect the operating currents during normal operation of removing or inserting the plug to the socket. Test should be conducted on the socket and pins incomplete, so in the case of Fibaro Wall Plug, this study applies only to the socket. The test voltage is 110% of rated voltage and test current is 125% of rated current. Product tested is deprived of the electronics and failure to do so may cause distortion in the results of the tests.

Test method: tested plug is inserted and removed from the socket-outlet 50 times at a load current of 125% of the rated current and voltage 110% of rated voltage. The frequency of position changes is 30 changes per minute.

Test result: positive. After finishing the test socket shows no change in the meaning of the description provided the norm.

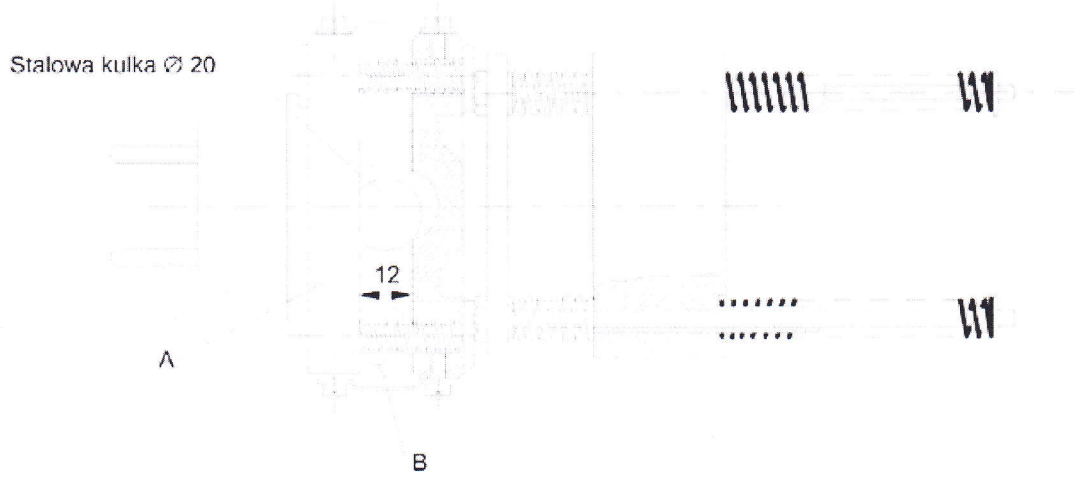
21. Normal operation

Constructor's note:

Testing performed according to this section is similar to the previous one, except that the test voltage and current are equal to the current value and the nominal voltage of 130V and 13A. The plug is inserted and removed from the socket outlet 5000 times, 30 changes per minute. After this testing the compatibility with several chapters is examined, and visual inspection in search of a possible premature wear is performed.

Test method: test plug is inserted and removed 5,000 from the wall outlet device with rated current and rated voltage.

Test result: positive. No wear resulting from the continued use, no deterioration of the housing, no damage to openings leading pegs, no backlash in the mechanical and electrical connections. Re-examination according to section 10.5 confirmed the same positive results.



22. Force necessary to withdraw the plug.

The test is to determine whether the force needed to pull the plug out of the testing socket remains within the range defined as the maximum and minimum.

22.1 Maximum withdrawal force
Test method: Socket tested is mounted so that the contact sleeve openings face down. Plug with the maximum size pins is inserted and withdraw 10 times and then placed in the slot. Then the acting force 50N facing down pulls out a testing plug from the socket.

Test results: positive. Plug does not remain in the socket.

22.2 Minimum withdraw force
Test method: as in the previous section socket is fixed downward. Then test pin of minimum acceptable size is inserted consequently into each of the contact sleeve, and then trying to pull the pin from the sleeve acting with the force in a downward 2N for 30s.
Test results: positive. Pin remained in the sleeve contact for each repetition of the test.

24. Mechanical strength

Constructor's note:

This section is followed by a series of tests to determine the adequacy of mechanical strength under normal use. Test ends with a visual inspection or a simple checking aimed at detecting potential damage endangering the safety of use. To intermediate splitter, which is Fibaro Wall Plug, these subsections:

24. 2 Free fall attempt.

Test method: the sample is tested according to IEC 60068-2 standard with 25 barrel turns, then it is assessed for damage.

Test results: positive. Sample shows no damage, the pins are in their original state and do not rotate upon application of 0.4 Nm torque.

24.4 Impact test.

Test method: sample is hit by the pendulum of 1 kg weight from a height of 1 meter, after subjecting it to a cycle of freezing to -15°C.

Test results: positive. Sample shows no damage.

24.5 Compressing attempt.

Test method: The sample is subjected to compression with a force of 300N at temperature 23°C.

Test results: positive. Sample shows no damage.

24.8 Contact sleeve shutters examination.

Test method: test pin attached to a curtained opening sleeve contact with the force of 40N.

Test results: positive pin did not touch the sleeve of contact

24.10 Attempt to break the contact pins

Test method: the sample is placed in the plate with the holes so that the pins protrude to the other side. Then force of 50 N is applied and then heated to 70°C

Test results: positive. Sample shows no changes

27. Clearances

Constructor's note:

The device is certified according to two standards, one of which relates to the socket and plug the other to the electronic parts of the device.

of acceptable creepage and clearance distances:
- Creepage distance according to IEC60884-1 and EN60730-1 standards is at least 3mm.
- Clearance distance according to EN60730-1 standard is at least 5mm.
Distance through insulating sealing of metal parts of plug and socket is 3mm according to IEC 60884-1 standard.
Distance through insulating sealing of PCB traces is 1mm according to EN60730-1 standard.
Additional Information:
Nominal voltage - 250V AC RMS
Rated impulse voltage - 2,5kV
Pollution degree: 2
Material group: IIIa
Appliance classes: I

Only after determining the above values, we are able to correctly classify individual distances used in the device.
The following are applicable:

Type of distance		Required	Measured
Creepage distance:			
2	Between live parts and:		
	Accessible surface of parts of insulating material	3mm	11mm
	Earthed metal parts including parts of earthing circuit	3mm	3.67mm
Clearance:			
6	Between live parts of different polarity	3mm	14mm
7	Between live parts and		
	Accessible surface of parts of insulating material	3mm	11mm
	Earthed parts	3mm	3.67mm

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