

Arc guard system

TVOC-2



When an arc flash occurs, TVOC-2 with the system breakers cuts the power before the energy can increase. The arc flash is detected by the fiber optic sensor and a signal is sent to the TVOC-2 arc monitor. Finally, the TVOC-2 arc monitor sends a trip signal to trip the circuit breaker. All of this occurs in under 1 ms.

Arc flash is a “dangerous condition associated with the release of energy caused by an electrical arc.” Time is the most critical factor that determines the increase of energy released during an arc flash and how much damage an arc flash will cause. The TVOC-2 detects the light from an occurring arc flash and sends the signal to the breaker within 1 ms. TVOC-2 increases the safety of personnel and equipment as well as minimizes downtime after an arc accident. Furthermore, no calibration is needed which ensures a reliable function and quick installation. The TVOC-2 can easily be expanded with up to 30 sensors to increase cabinet coverage from a single TVOC-2. The product is integrated in ABB ability™ Energy and Asset Manager with a modbus RTU communication protocol. It is also available in the EkipConnect 3 configuration tool. Together with CSU-2, both light and current are used for tripping in a total tripping time of less than 2 ms.

Product conformity & compliance

REACH (Regulation EC 1907/2006)

TVOC-2 and related accessories were classified as articles and, during normal and reasonably foreseeable conditions of use, do not intentionally release any substance or preparation. ABB continuously undertakes communications

throughout its supply chain in order to collect information about suppliers’ compliance with REACH regulation.

SVHC (Regulation EC 1907/2006 REACH)

ABB continuously assesses its products for content of Substances of Very High Concern (SVHC), as included in the “Candidate List” by the European Chemicals Agency (ECHA). According to our best knowledge, TVOC-2 and related accessories do not contain SVHC substances exceeding 0.1 % w/w.

RoHS II

TVOC-2 and related accessories are within the scope of directive 2011/65/EU (RoHS II) and amendment 2015/863, starting from July 22 2019.

WEEE

The Waste Electrical and Electronic Equipment directive (WEEE directive) is the European community directive 2012/19/EU on waste electrical and electronic equipment (WEEE) which, together with the RoHS directive, became European law in February 2003.

Product safety

Compliance with essential health and safety requirements has been assured by compliance with the applicable product and safety standards. The validation according to the product and safety standards is carried out by third party tests laboratory (STIEE / TL030) in respect of the EN ISO/IEC 17025 European standard, according to IECCE CB scheme. CB certificate has been issued.

The TVOC-2 is certified with Safety Integrity Level SIL-2 as per IEC-61508 and IEC-62061.

SIL is a measure of safety system performance in terms of Probability of Failure on Demand (PFD), established to define a metric for evaluating a systems (or functions) level of operational reliability with regards to maintaining safety. TVOC-2 is certified with a PFD of 3.49×10^{-3} (0.00349) per year for a period of 10 years after it is first connected (as long as suggested maintenance is performed according to recommended intervals) TVOC-2 itself increases the safety for both personnel and equipment.

Standard:

- UL508
- CSA C22.2 No.14
- IEC 61508
- IEC/EN 60947-1
- IEC/EN 60947-5-1
- EN 50581

Directives:

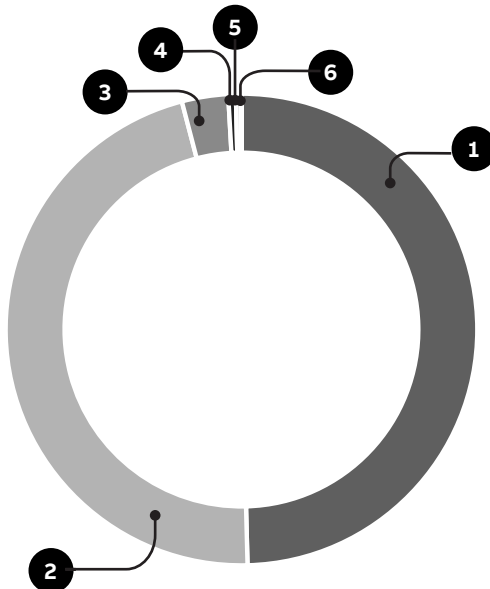
- Low Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU

Material declaration

The charts below show the constituents of TVOC-2-240-C which represents the range of TVOC-2. The constituent materials are distributed as follows.

TVOC-2-240

The total weight of the product is 1019.87 gr.

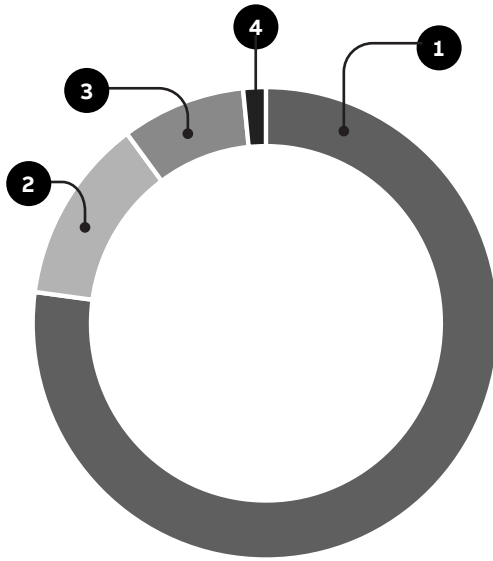


Material	% wt
1 Electronics	49.59 %
2 PA	46.34 %
3 Steel	3.17 %
4 PC	0.52 %
5 PE	0.37 %
6 Cellular rubber	0.01 %
TOTAL	100 %

Packaging

The charts below provide information for each packaging material used. The cardboard and the paper used for the product material are made of recycled fibers and are 100 % recyclables. The polymer films used are marked with the proper identification code and are recyclable.

TVOC-2 Packaging material composition:
total weight = 269.58 gr.



Material	%
1 Cardboard	77.12 %
2 PE	12.72 %
3 Paper	8.59 %
4 Plastic	1.57 %
TOTAL	100 %

Product use



Energy

Energy consumption for TVOC-2 is indicated in the following table.

Type	Trip unit	Energy consumption (KWh)
TVOC-2		0.12 kWh

End-of-life

At the end of operating life, constituent components of TVOC-2 have been optimized in order to reduce waste amount and increase recovery of the material. Metals and polymers contained into TVOC-2 are characterized by high recycling rates. Most plastic parts are marked for easy sorting.

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