

VAMP 120

Arc protection unit

User manual

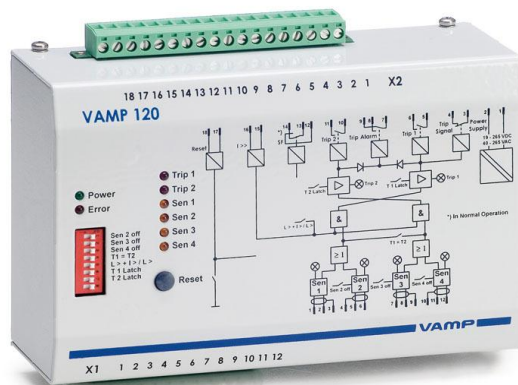


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1. General

This manual describes the general functions of the arc protection unit, it also includes mounting and configuration instructions.

1.1. Arc protection unit VAMP 120

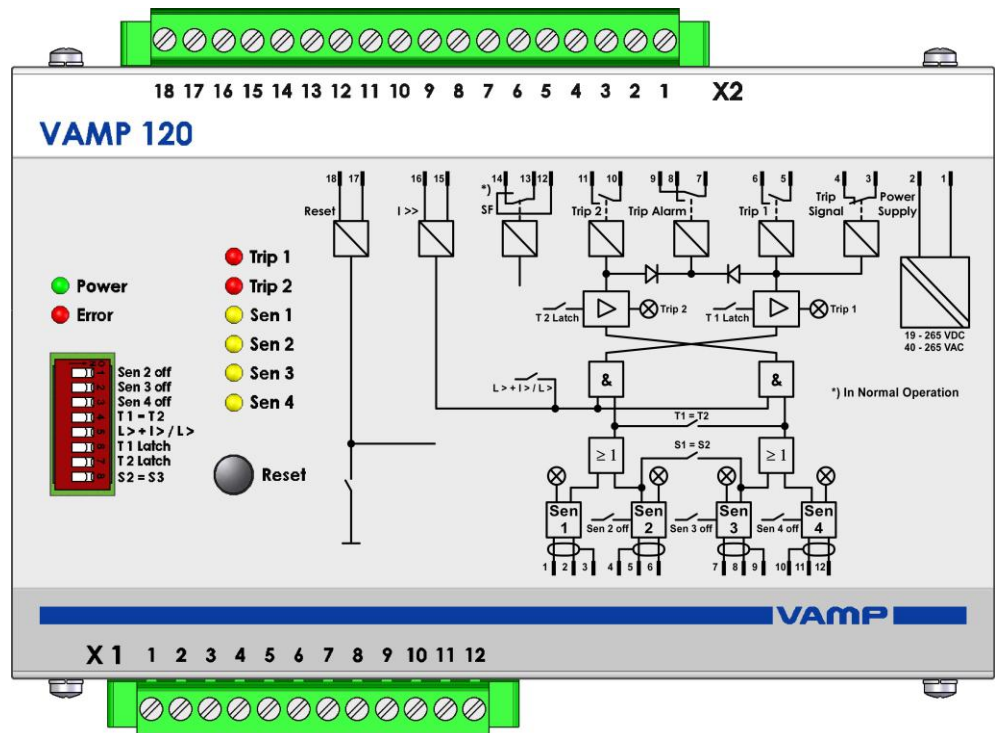


Figure 1.1-1. Arc protection unit VAMP 120

1.2. Unit features

VAMP 120 is a state of the art arc protection unit for electrical power distribution systems.

By using VAMP 120 in switchgears considerable safety improvements are obtained in the form of minimized injury and damage in case of an arc fault.

VAMP 120 is a “stand alone” system, which gives a compact solution when the application doesn’t require overcurrent measurement or when the overcurrent information is available from the incomer protection relay or any other arc protection unit (VAMP 221 / VAM 4C). It is possible to connect 4 arc sensors, of the type VA 1 DA or VA 1 EH, to the VAMP 120 unit.

2. Unit configuration

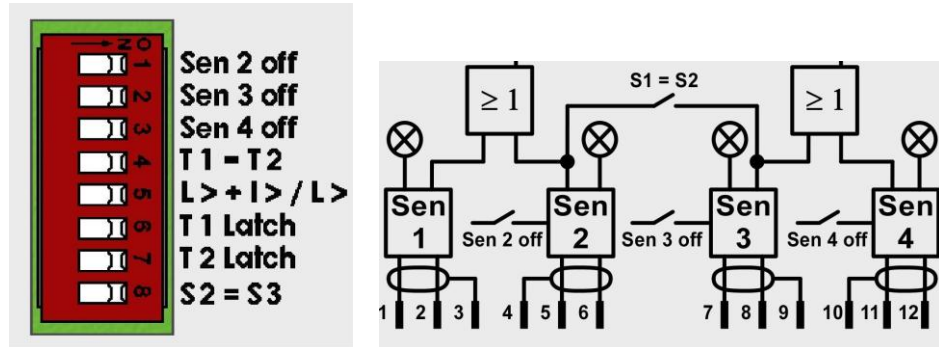


Figure 2-1. VAMP 120 dipswitch operations and sensor connection

The unit is configured using the dipswitches:

Dipswitches 1-5 (see Figure 2-1):

If only one arc sensor in use, SENSOR 1 input should be used.

- SW nr. 1 : if sensor input 2 is also required, SEN 1 should be set to the left position.
- SW nr. 2 and 3 : if sensor input 3 and 4 are used, SW nr. 2 and 3 should respectively be set to left position.
- SW nr. 4 : is setting the system selectivity. If set to the left position, sensor nr. 1 and 2 will trip relay T1. Accordingly sensor nr. 3 and 4 will trip relay T2. The NC trip signal output will always work in parallel with T1. If SW nr. 4 is to the right, all four sensor channels will activate both trip groups.
- SW nr. 5 : is the selection of tripping criteria. If set to the right, the unit will trip for light only. If set to the left, the unit needs both light and current information for tripping.
- SW nr. 6 and 7 : the Latch switches enables latching of the trip relays. When it is in ON position the latching function is activated.
- SW nr. 8 : is the configuration switch for sensor inputs 2 and 3. If it is in "ON" position, sensor 2 or 3 activation will make a common trip of both T1 and T2. If it is in "OFF" position, sensor 2 is linked to T1 and sensor 3 to T2.

3. Sensors

3.1. Arc sensor VA 1 DA

The arc sensor is a light sensitive element, which is activated by strong light. Arc sensors should be mounted in the switch-gear cubicles, in such a way that the light sensitive part (see Figure 3.1-2) covers the protected area as completely as possible.

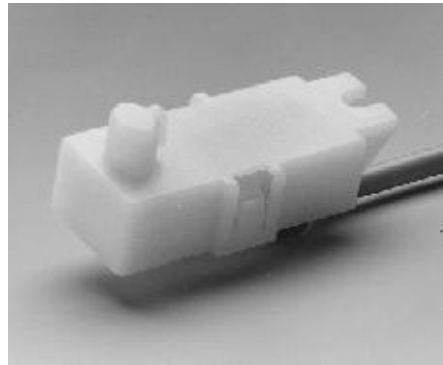


Figure 3.1-1. Arc sensor VA 1 DA

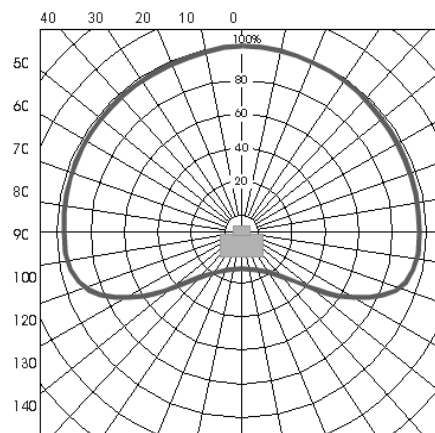


Figure 3.1-2. The sensitivity of the VA1DA arc sensor to light from different directions.

In open spaces, such as the bus bar section, arc sensors should be mounted max. four meters apart.

The light sensitivity of the arc sensor is 8000 LUX

The arc sensor can be mounted from the outside on partition wall of the switchgear. The active part of the sensor is mounted in a 10 mm hole, to the area in the switchgear that should be protected, and fastened with a 4 mm self-tapping screw (see Figure 3.1-3).

The arc sensor can alternatively be mounted completely in the protected area with the help of a mounting plate VYX 01 (Z-shaped) or VYX 02 (L-shaped). (See Figure 8.3-1)

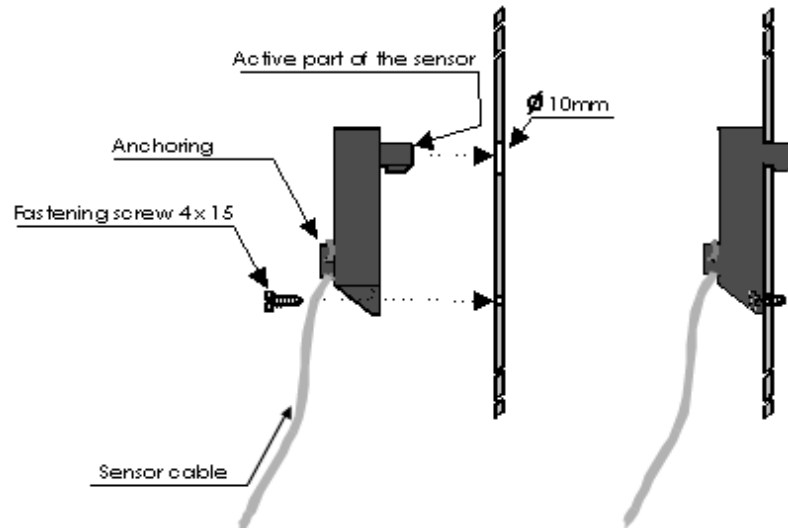


Figure 3.1-3. Arc sensor mounting picture.

4. Functions

VAMP 120 includes an extensive self-supervision. The self-supervision includes internal functions as well as all arc sensors.

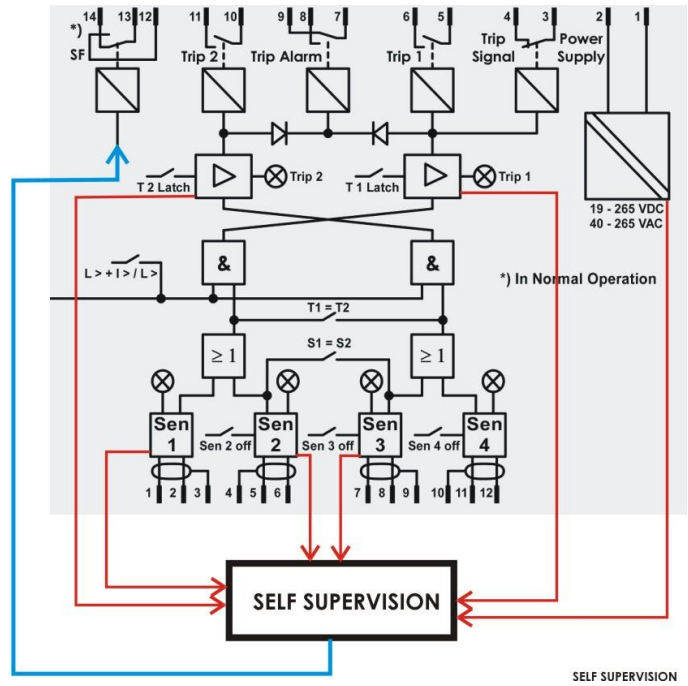


Figure 4-1 Self-supervision block diagram

If an internal fault occurs the self-supervision relay is activated and the ERROR-led is lit.

5. Applications

Every compartment is equipped with an arc sensor. Up to four sensors can be connected to the VAMP 120 unit. The trip relays are electromechanical and can be connected directly to control the circuit-breakers (see chapter Technical data).

The VAMP 120 is suitable for small power generation plants where light is the only criteria for tripping and full selectivity is required.

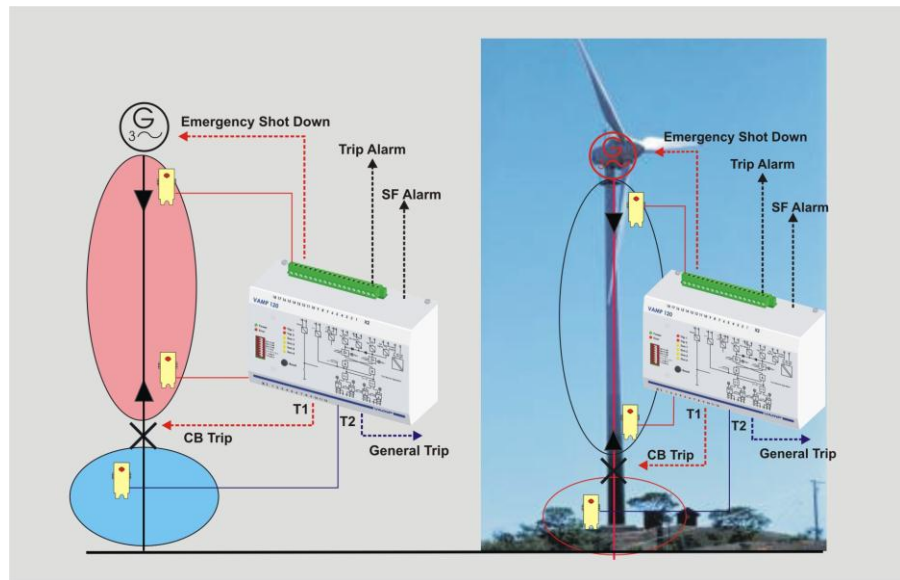


Figure 5-1 Wind power application

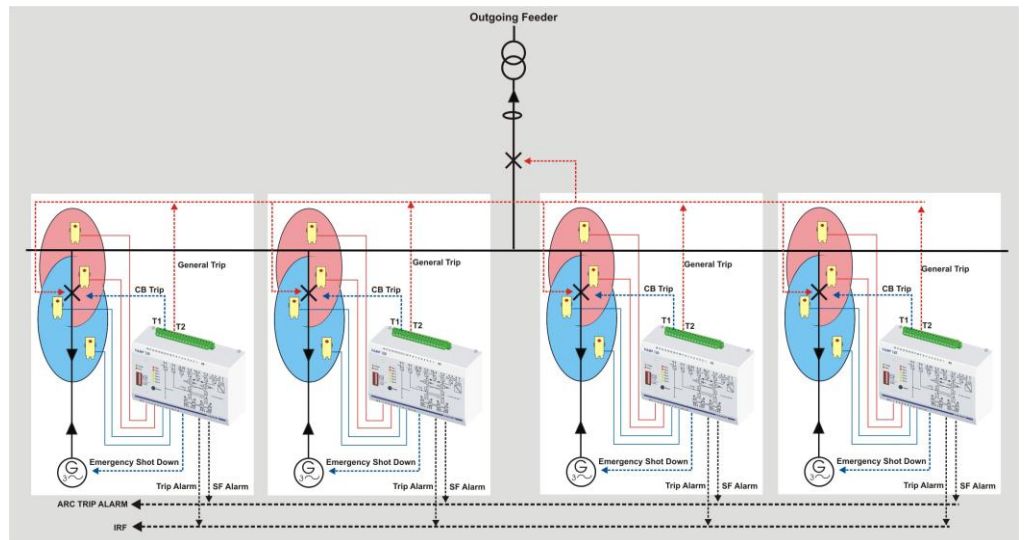
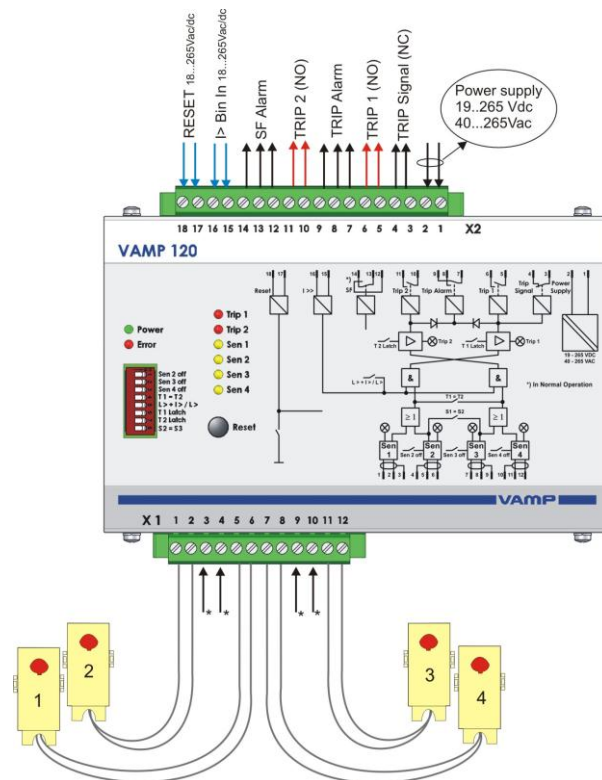


Figure 5-2 Diesel power plant application

6. Connections



*Connection for shield if shield sensor cable used (VA1DA-20s)

Figure 6-1. VAMP 120 connection

The VAMP 120 unit comprises two independent arc protection zones. Both zones have their own trip relay, trip 1 and trip 2. Trip 1 is controlled by sensor inputs 1 and 2. Trip is controlled by sensors 3 and 4.

Trip alarm is activated if either or both are tripping. If “T1=T2” dip switch is at “on” position, both trip outputs will work in parallel for any sensor activation.

If “S1=S2” dip switch is at “on” position, sensors 2 and 3 activation will cause both T1 and T2 to trip. This is e.g. used for CB compartment supervision where two zones are overlapping each other.

If overcurrent criteria is required simultaneously with light activation, a binary current signal has to be connected to X2-15/16. This I> signal can e.g. be taken from a VAM 4C or VAMP 221 unit. The external reset is possible by correcting an auxiliary voltage to X2-17/18.

The auxiliary voltage is connected to X2-1 and X2-2. VAMP has a wide range power supply from 19 to 265 Vdc or 40 to 265 Vac in the same hardware.

7. Technical data

Auxiliary voltage

Us	19 ... 265 V dc / 40 ... 265 V ac
In (stby)	30mA
IsensAct	20mA
Iarc	120mA + (IsensAct x n); n = number of active sensors

Tripping contacts

Number	1
Rated voltage	≤250V ac/dc
Continuous carry	5A
Make and carry for 0.5s	30A
Make and carry for 3s	15A
Breaking capacity DC, when time constant L/R=40ms	50W
Contact material	AgCdO2
Operating time	7ms

BIO Input

Rated voltage	18 · 265 Vac/dc
Rated current / input	5 mA
Number of inputs	2

Disturbance tests

EMC test	CE approved and designed according to EN 50081-2, EN 50082-2
Emission - Conducted (EN 55011 class A) - Emitted (EN 55011 class A)	0.15 - 30 MHz 30 - 1 000 MHz
Immunity - Static discharge (ESD) (According to IEC244-22-2 and EN61000-4-2, class III) - Fast transients (EFT) (According to EN61000-4-4, class III and IEC801-4, level 4) - Surge (According to EN61000-4-5 [09/96], level 4) - RF electromagnetic field test (According to EN 61000-4-3, class III) - Conducted RF field (According to EN 61000-4-6, class III)	Air discharge 8 kV Contact discharge 6 kV Power supply input 2kV, 5/50ns other inputs 2 kV, 5/50ns Between wires 2 kV / 1.2/50µs Between wire and earth 4 kV / 1.2/50µs f = 80...1000 MHz 10V /m f = 150 kHz...80 MHz 10V

Voltage tests

Insulation test voltage acc. to IEC 60255-5	2 kV, 50Hz, 1min
Impulse test voltage acc. to IEC 60255-5	5 kV, 1.2/50us, 0.5J

Mechanical tests

Vibration test	2 ... 13.2 Hz \pm 3.5mm 13.2 ... 100Hz, \pm 1.0g
Shock/Bump test acc. to IEC 60255-21-2	20g, 1000 bumps/dir.

Environmental conditions

Specified ambient service temp. range	-35...+70°C
Transport and storage temp. range	-40...+70°C

8. Dimensions

8.1. VAMP 120

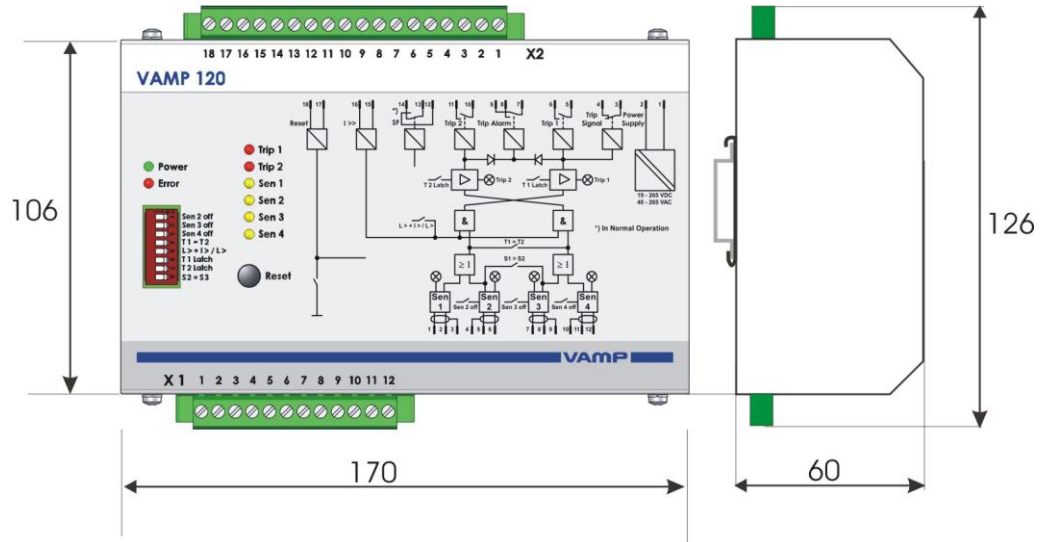


Figure 8.1-1. Arc protection unit VAMP 120 dimensions

8.2. VA 1 DA arc sensor

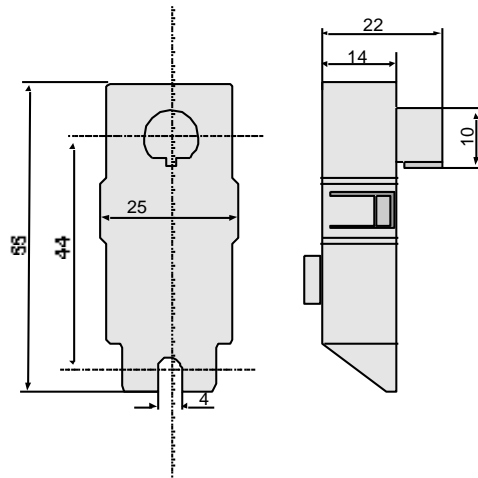


Figure 8.2-1. VA 1 DA arc sensor dimensions

8.3. Mounting plates for VA 1 DA

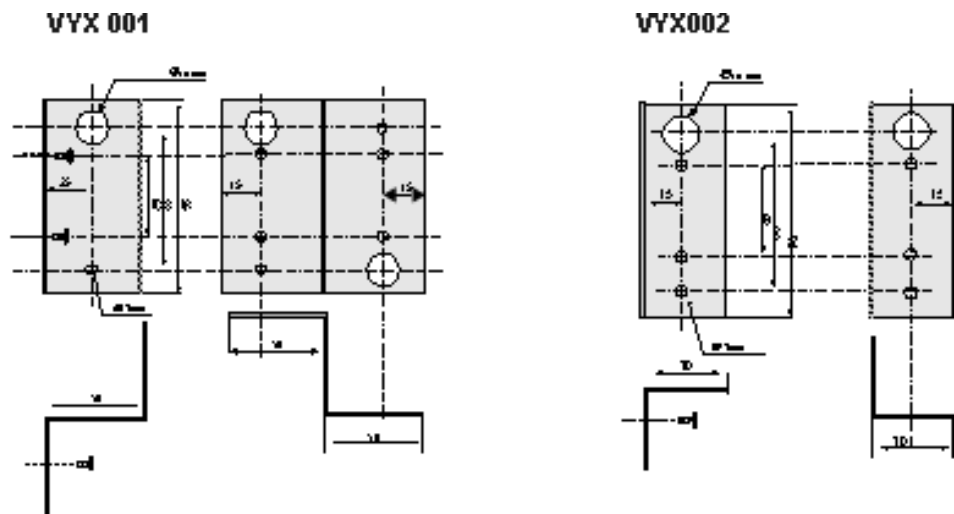


Figure 8.3-1. Mounting plate dimensions.

9. Order information

Unit	Ordering code
VAMP 120 unit	VAMP 120
Installation kit for flush mounting	VYX 293A
Arc sensor, 6 m cable	VA 1 DA-6
Arc sensor, 6 m cable	VA 1 EH-6 (IP65)
Arc sensor, 20 m cable	VA 1 DA-20

10. Reference information

Manufacturer data:

VAMP Ltd
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FIN-65101 Vaasa, Finland
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