# VAMP 300F and 300M

## Modular IED for feeder and motor protection and control

The VAMP 300 IED is modular and fully supervised unit that can be adapted for a wide range of applications. Free-of-charge VAMPset relay management software ensures easy commissioning, configuration and system maintenance.

The VAMP 300 series IED is based on the proven technology of VAMP protection relays and arc flash protection systems. Optional fibre or point sensor interface enable less than 2 ms operation time for arc protection.

The modularity of the VAMP 300 IED also allows a wide selection of communication protocols, including IEC 61850, Profibus DP, Modbus TCP, Modbus RTU, DNP 3.0, DeviceNet, IEC 60870-5-101, 60870-5-103, DNP TCP, IEC 60870-5-101 TCP and SPA-Bus.

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# VAMP 300F and 300M
We can supply a protection IED tailored to your application

The optional integrated arc protection provides new dimension to protection scheme of VAMP 300 Series.

## VAMP 300 at a glance

- VAMP 300F has all necessary feeder protection for industrial and utility applications for power distribution networks. Synchrochec and auto-reclosing extend automatic network control

- VAMP 300F can be equipped with optical or RS232 communication card to enable line differential and distance protection.

- VAMP 300M is designed for small and medium sized motors up-to 10 MW. External RTD module increases motor status information

- Both models have optional interface for connection of 2, 4 or 6 arc flash point sensors or 1 fibre loop and 4 arc flash point sensors

- Two alternative display options
  128 x 128 LCD matrix
  128 x 128 LCD matrix (detachable)

- Power quality measurements and disturbance recorder enable capture of quick network phenomena

- Wide range of communication protocols i.e. IEC61850, Profibus DP to Modbus TCP to name the most important ones.

## User benefits

- Pre-selectable amount of DI / DO output combinations up to i.e. 40 DI or 22 DO

- Integrated arc flash protection for faster trip in case of cable termination faults

- Bay mimic and control for quick detection of power process status

- Proven Vamp's flexible and simple to use solution

- User friendly multilingual HMI for customised messaging

- Free of cost VAMPSET configuration and setting tool with USB connection

- Text pocket for customised alarm legend indications

# Flexible protection solutions

## Benefits of modular design

- **A modular IED for different applications:**

  VAMP 300 IED features a modular design that allows user-defined conventional protection and arc flash protection solutions both in new and existing power distribution systems.

- **New improved integrated arc protection:**

  New arc option modules with either two, four or six point sensors or one fibre and four point sensors together with high speed outputs provides faster operation time if an arc fault occurs.

- **Local push buttons for object control:**

  New password protected and easy to use control buttons for breaker controlling.

## Build your own protection IED suitable to your application

User may decide the hardware of the unit with the order code. Various I/O modules and communication options bring more flexibility to the protection applications.

EXTENSION SLOTS, see page 16
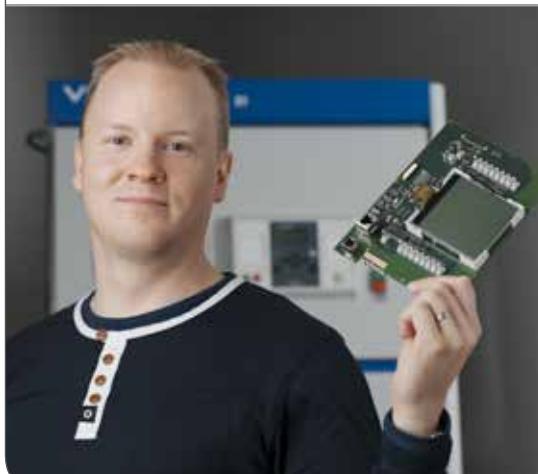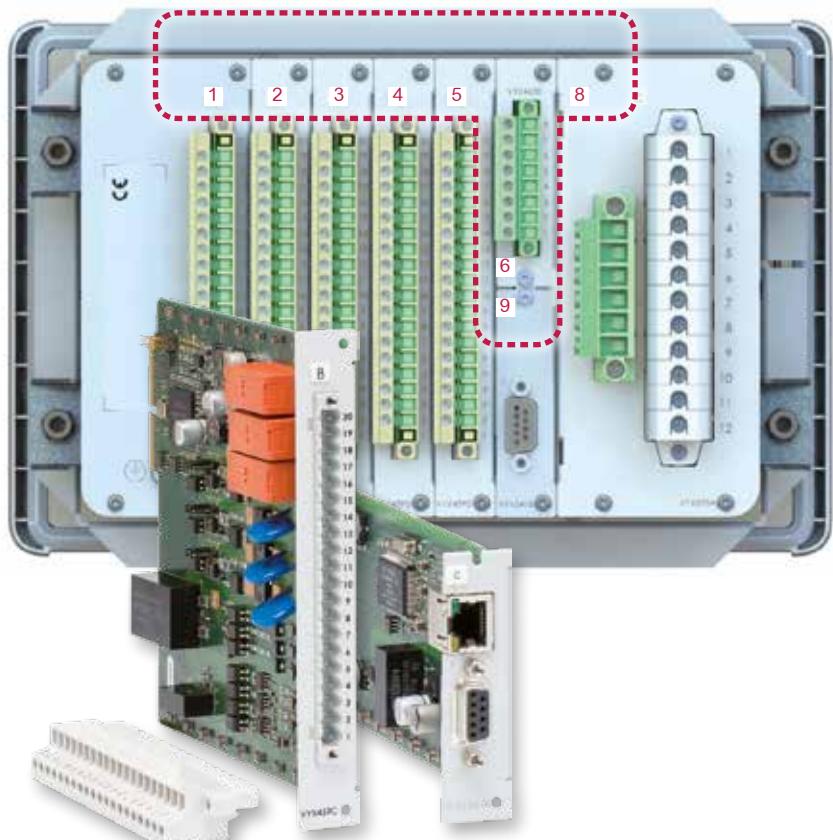
# Quick selection tables

## Inputs and outputs

Modularity ensures a wide range of DI / DO combination as per customer demand. The table shows number of DI / DO for few optional module combinations. Maximum amount of DI can be 40 pcs and DO 22 pcs but not at a same time.

| Inputs and outputs combination examples | | | | | | | |
|---|---|---|---|---|---|---|---|
| DI (pcs) | 31 | 30 | 26 | 22 | 18 | 16 | 12 |
| DO (pcs) | 14 | 10 | 10 | 14 | 18 | 10 | 14 |

## Protection functions

Coming now, feeder and motor protection include necessary protection functions and modern control features for basic and demanding applications.

| Protection | C = 3L+4U+2Io (5+1A)  D = 3L+4U+2Io (1+0.2A) | |
|---|---|---|
| | Feeder | Motor |
| Arc protection (option) | ● | ● |
| Phase overcurrent (50/51) | ● | ● |
| Directional phase overcurrent (67) | ● | ● |
| SOTF Switch on to fault (50 HS) | ● | |
| Line differential (87L) | ● | |
| Distance (21) | ● | |
| Cold load pick-up | ● | ● |
| Thermal overload (49) | ● | ● |
| Earth fault (50N/51N) | ● | ● |
| Directional earth fault (67N) | ● | ● |
| Intermittent earth fault (67N-IEF) | ● | ● |
| Undervoltage (27) | ● | ● |
| Overvoltage (59) | ● | ● |
| Neutral voltage (59N) | ● | ● |
| Phase undercurrent (37) | | ● |
| Unbalance (46) | ● | |
| Phase sequence (47) | ● | ● |
| Directional power (32) | ● | ● |
| Excessive starts (48) | | ● |
| Successive starts (66) | | ● |
| Locked rotor (51LR) , by application | | ● |
| Stall protection 48 | | ● |
| Magnetising inrush (68F2) | ● | ● |
| Over excitation 68F5 | ● | |
| Frequency (81H/81L) | ● | ● |
| Synchrocheck (25) | ● | |
| Rate of change of frequency (81R) | ● | ● |
| Capacitor bank unbalance 46C | ● | |
| Capacitor overvoltage | ● | |
| Recloser (79) | ● | |
| Breaker failure (50BF) | ● | ● |
| Programmable stage 1-8 (99) | ● | ● |

The optional integrated arc protection provides new dimension to protection scheme.

# Circuit breaker control

## ON / OFF buttons

The most advanced circuit breaker controlling is to use dedicated ON / OFF control buttons for the object. Two different operational modes may be chosen:

- **Selective:** Once a control button is pressed a dedicated Control view with pre-determined timeout asks confirmation for the control.

- **Direct:** Using this mode the control of the circuit breaker is immediate. This mode is practical for instance during the commissioning stage.

Customized interlocking is checked before output of the controlling will become active.

## Control through HMI

A third possibility to control circuit breakers and isolators is to use the Mimic view of the IED. User selects wanted object in the single line diagram and executes the control with dedicated Info view instructions.
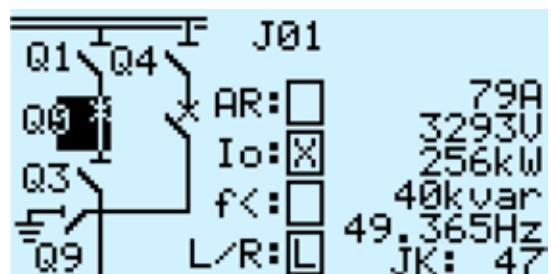
## F1 / F2 buttons

Another way to control circuit breaker or isolators is to program Function button F1 and F2 to execute the control command. Once programmed F1 could be the close and F2 open operand. A dedicated info view appears on the HMI requesting confirmation or de-selection of the action.
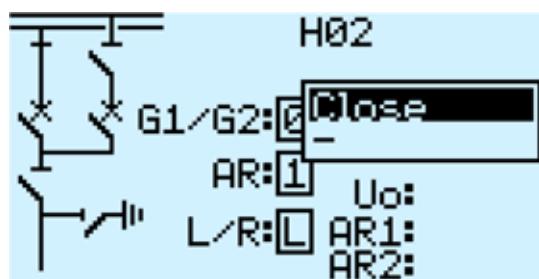
# VAMPSET
## Setting and Configuration Tool

VAMPSET is a user-friendly, free-of-charge relay management software for setting parameters and configuring VAMP relays. Via the VAMPSET software, relay parameters, configurations and recorded data can be exchanged between PC and VAMP relays. Supporting the COMTRADE format, VAMPSET also intcorporates tools for analysing relay events, waveforms and trends from data recorded by the relays, e.g. during a network fault situation.
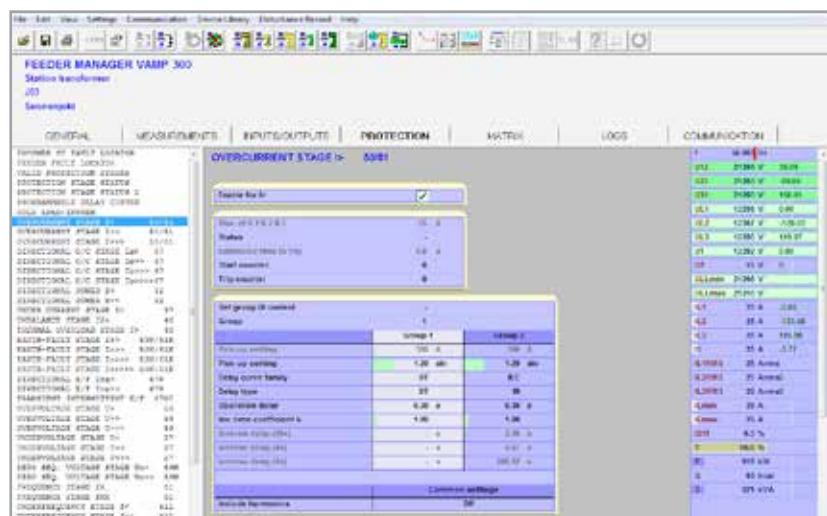


Relay's setting views are organised to several folders in the VAMPSET setting tool views in order to conveniently find right data for parameterisation of the IED. The setting tool displays on-line measurements in each folder view.

**+**

The VAMPSET software is future-proof, supporting future updates and new VAMP protducts.





The phase sequences for currents and voltages can be read on-line from the clear and explicit phasor diagram screen for easy commissioning of the relay .

# Arc flash protection

VAMP relays measure fault current and with optional arc protection, also measure light via arc sensor channels, which provide monitoring for the whole switchgear. Should an arc fault occur in the switch-gear the arc protection system provides extremely fast tripping of the circuit breaker. The fault will be prevented from spreading and quickly isolated, which may save valuable assets.



## VAMP - pioneer in arc flash protection
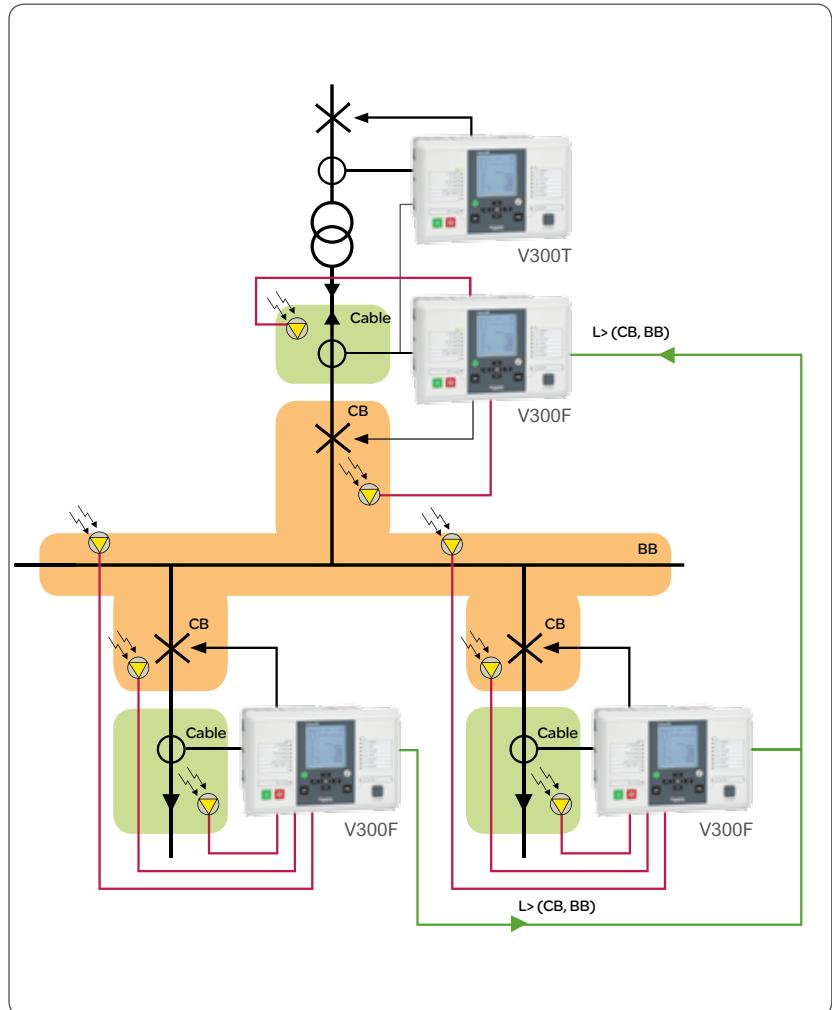


Arc sensors for V300F and V300M models used for feeder and protection

• Easy installation and replacement

• Enables fault location indication

• Surface mounting

• Tube mounting

• Continuous self-supervision

int sensor
1EH-x (pipe)

Point sensor
VA1DA-x (surface)

# Communication

VAMP is a communication expert with a wide experience in interfacing with different system integrators' and SCADA suppliers' RTUs, PLCs, gateways etc. using many different protocols. Flexible adaptation of the communication protocols together with powerful and easy to use software tools are the key of successful integration.

VAMP 300 IED and the VAMPSET tool provide access to practically any power system information you may need.

## IEC 61850

The IEC 61850 protocol can be used to read or write static data or to receive events sent spontaneously from the relay. In addition, the interface allows peer-to-peer communication between the relays, called GOOSE communication. The IEC 61850 interface is configured with familiar, user-friendly VAMPSET software.

The IEC 61850 datamodel, data-sets, report control blocks and the GOOSE communication are configured according to the requirements of the system configuration. VAMPSET is also used to produce ICD files, which may be needed for the substation RTU configuration
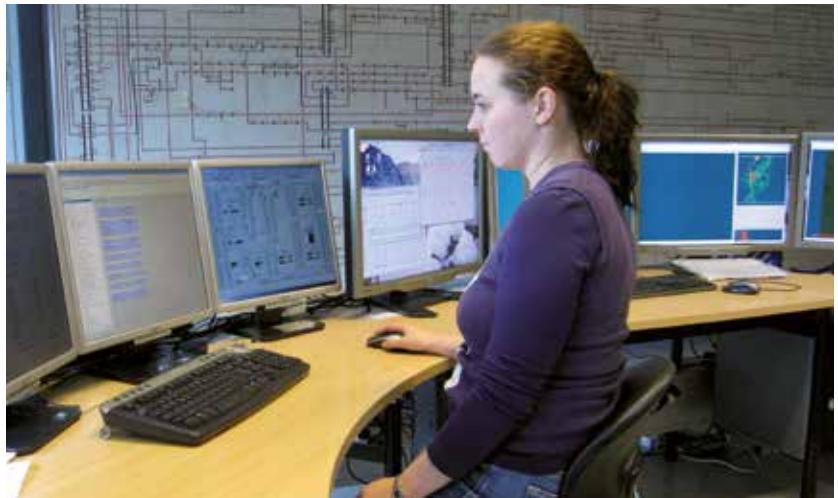
## Communication matrix

Communication matrix shows which physical interface matches with supported protocols.

| | None | DeviceNet | External I/O: Modbus | IEC-101 | IEC-103 | Modbus RTU | Profibus DP | SpaBus | EthernetIP | IEC-61850 | ModBus TCP | DNP 3.0 | GetSet |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RS-232 | • | | • | • | • | • | | • | | | | | • |
| RS-485 | • | | • | • | | • | | • | | | | • | |
| Ethernet | • | | | | | | | • | • | • | • | • | • |
| Profibus | • | | | | | | | | | | | | |
| Serial fiber | • | | | • | • | • | | • | | | | | |
| Devive Net | | • | | | | | | | | | | | |
| Profibus (External modules) | • | | | | | | • | | | | | | |
| RS-485 (External modules) | • | | • | | • | • | | | | | | • | |

# Connections

## Voltage connection mode

The slot 8 can accommodate two different analogue measurement cards. Models C and D have two residual current inputs and four voltage channels.

$$C = 3L\,(5\ A) + 4U + 2Io\ (5+1\ A)$$
$$D = 3L\,(5\ A) + 4U + 2Io\ (1+0.2\ A)$$

The C and D analogue interface modules
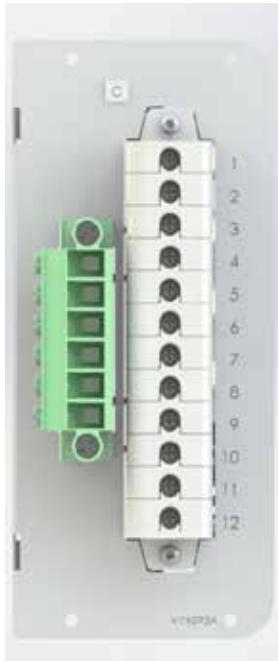
| Terminal | 8/C/2 and 8/D/2 | | | | | | 8/C/1 and 8/D/1 | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 11 | 12 |
| Voltage channel | U1 | | U2 | | U3 | | U4 | |
| Mode / Used voltage | | | | | | | | |
| 3LN | UL1 | | UL2 | | UL3 | | Not in use | |
| 3LN+$U_0$ | UL1 | | UL2 | | UL3 | | Uo | |
| 3LN+LLy | UL1 | | UL2 | | UL3 | | LLy | |
| 3LN+LNy | UL1 | | UL2 | | UL3 | | LNy | |
| 2LL+$U_0$ | U12 | | U23 | | Uo | | Not in use | |
| 2LL+$U_0$+LLy | U12 | | U23 | | Uo | | LLy | |
| 2LL+$U_0$+LNy | U12 | | U23 | | Uo | | LNy | |
| LL+$U_0$+LLy+LLz | U12 | | U12y | | Uo | | L12z | |
| LN+$U_0$+LNy+LNz | UL12 | | U11y | | Uo | | UL1z | |

Correlation between voltage measuring mode, physical voltage input and available voltages in terminal 8/C/1 (8/D/1) and 8/C/2 (8/D/2).

# Connection examples
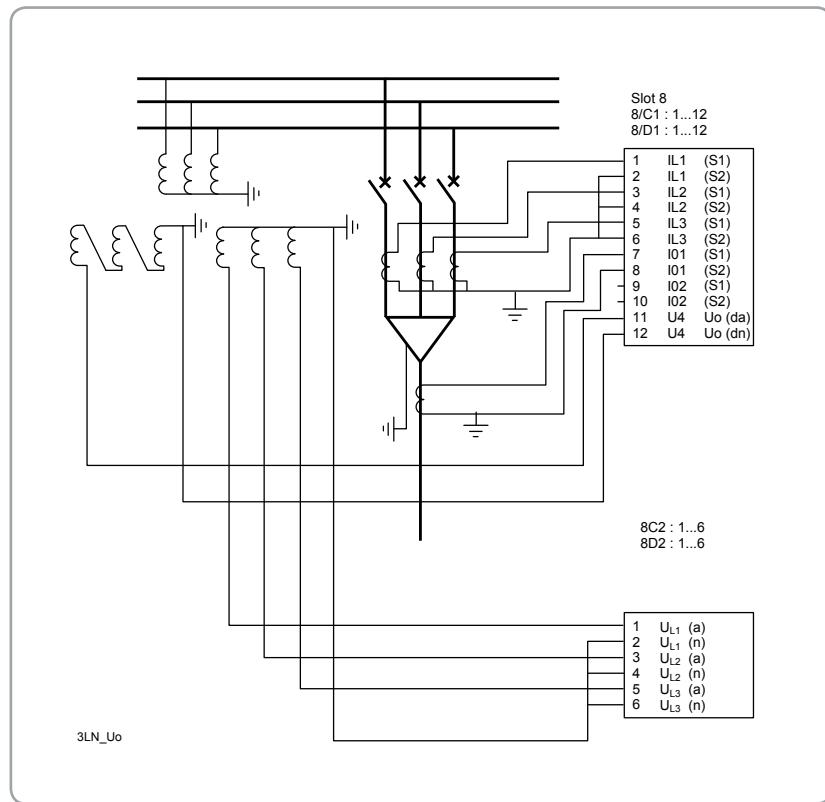


3LN_Uo

| Voltage measuring mode: 3LN + Uo | |
| --- | --- |
| Voltages measured by VTs | UL1, UL2, UL3, Uo |
| Values calculated | UL12, UL23, UL31, U1, U2, U2/U1, f |
| Measurements available | All |
| Protection functions available | All except synchrocheck |

| Voltage measuring mode: 3LN | |
| --- | --- |
| Voltages measured by VTs | UL1, UL2, UL3 |
| Values calculated | UL12, UL23, UL31, U1, U2, U2/U1, f, Uo |
| Measurements available | All |
| Protection functions available | All except intermittent e/f and synchrocheck |

Above measuring modes are typically used for feeder and motor protection schemes.
3LN connection is similar to 3LN+Uo. Open delta connection is missing in this mode but Uo is calculated.
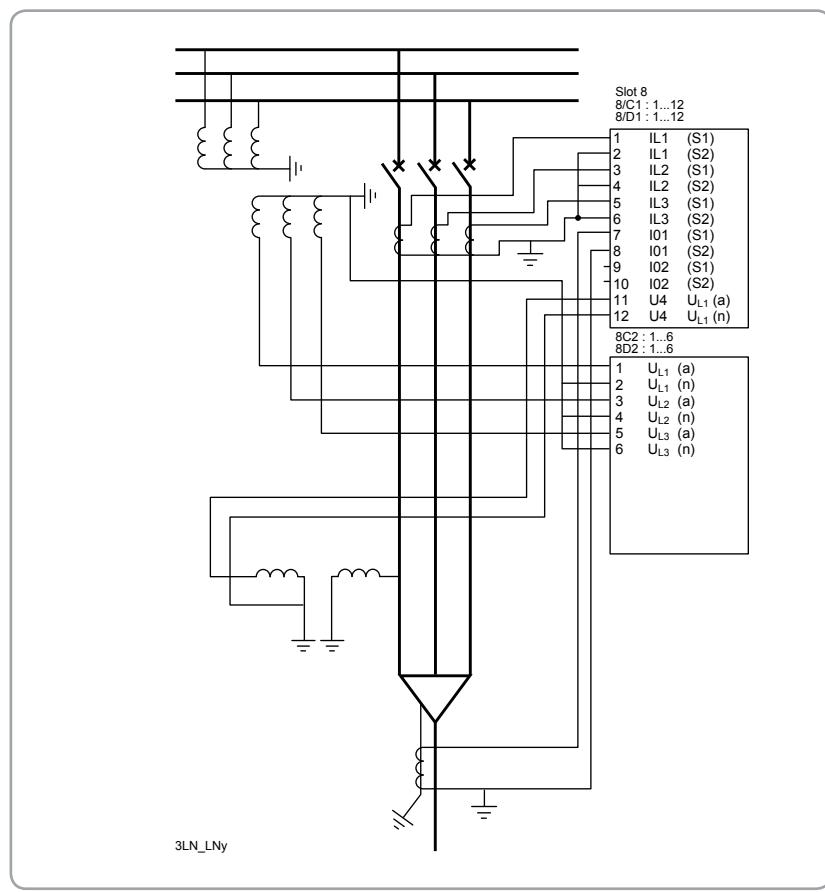


3LN_LNy

| Voltage measuring mode: 3LN+LNy | |
| --- | --- |
| Voltages measured by VTs | UL1, UL2, UL3, UL1y |
| Values calculated | UL12, UL23, UL31, Uo, U1, U2, U2/U1, f |
| Measurements available | All |
| Protection functions available | All except intermittent e/f and synchrocheck |

This connection is typically used for feeder protection scheme where line-to-neutral voltage is required for synchrocheck application.

# Programmable stages

There are eight programmable stages available to use with various applications. Each stage can monitor any analogue (measured or calculated) signal and issue start and trip signals. Programmable stages extend the protection functionality of the manager series to a new

level. For example, if four stages of frequency are not enough, with programmable stages, the maximum of 12 can be reached. Other examples are using the stages to issue an alarm when there are a lot of harmonics (THD) or indicating reverse power condition
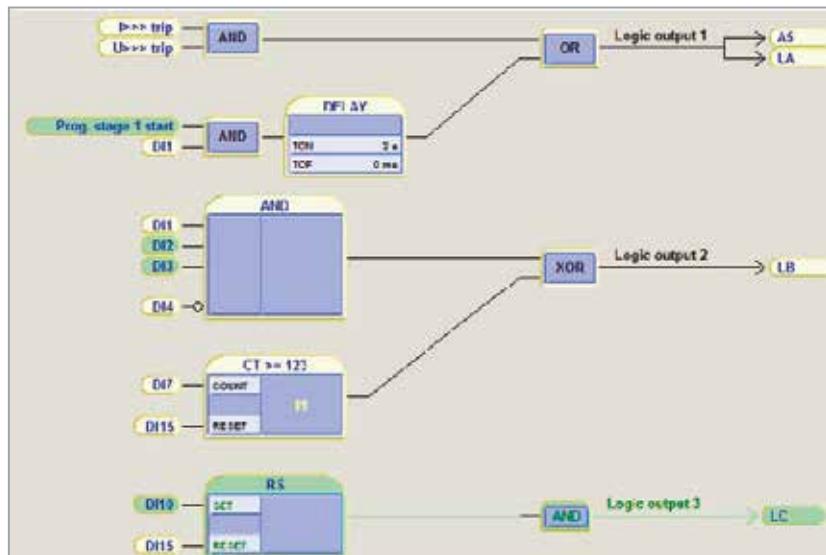


Programmable logic:  The logic editor has colours to enable viewing of active statuses. Furthermore, each input status can be also seen on-line in VAMPSET view .





Programmable stage has a possibility to compare two freely selectable signals between each other. Using this feature the user can create compare function using relay's own measured or calculated signals. One or both of the signals can be connected to comparison function over GOOSE.

# Mounting options

Order options provide two alternative mounting principles to VAMP 321 IED. Both options have its own advantages.

## Panel mounting

The conventional mounting technique has always been installing the IED on the secondary compartment's door. Limitation in this approach could be that the door construction is not strong enough for the IED's weight and suitability to wire large amount of secondary and communication cabling could be challenging.

### Projection mounting

In case the depth dimension behind the compartment door is limited, the IED can be equipped with frame around the collar. This arrangement reduces depth inside compartment by 45 mm.

## Wall mounting with detachable HMI brings more flexibility

This mounting technique allows door being lighter as the relays frame is installed in the back of the secondary compartment. Communication, DI and DO cabling cabling is easier, too, as the door movement does not need to be considered. In this case, only the communication between IED base and display has to be wired.
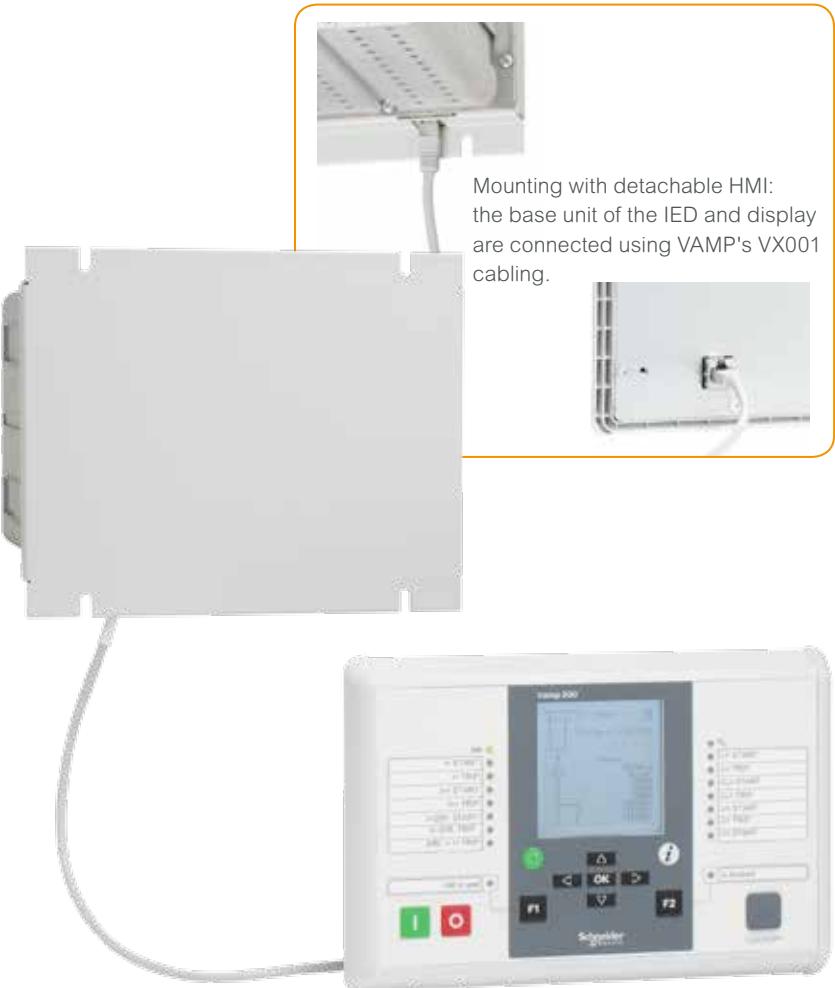
Mounting with detachable HMI: the base unit of the IED and display are connected using VAMP's VX001 cabling.

# Dimensional drawings

**mm**
**in**

270
10.63

176
6.93

Vamp 300

230
9.05

183
7.20

150
5.91

## Panel mounting

① 225
8.86      in

152
5.98

1.0-60
0.04-2.36

②

③

3a

3a

CLICK

3b   2.5N•m
22 lb-in

3c   3N•m
27 lb-in

④ | T max. 1.2N•m 10.6 lb-in | T max. 0.5-0.6N•m 4.4-5.3 lb-in |

## Projection mounting

① **mm**
**in**

269
10.59

224
8.82

172
6.77

152
5.98

45
1.77

② 225
8.86

152
5.98

1.0-60
0.04-2.36

③

3a

3a

CLICK

3b   2.5N•m
22 lb-in

3c   3N•m
27 lb-in

④ | T max. 1.2N•m 10.6 lb-in | T max. 0.5-0.6N•m 4.4-5.3 lb-in |
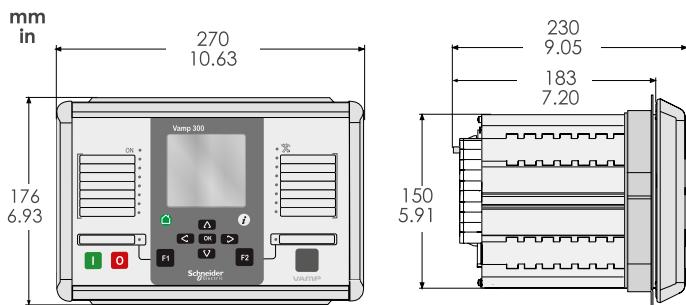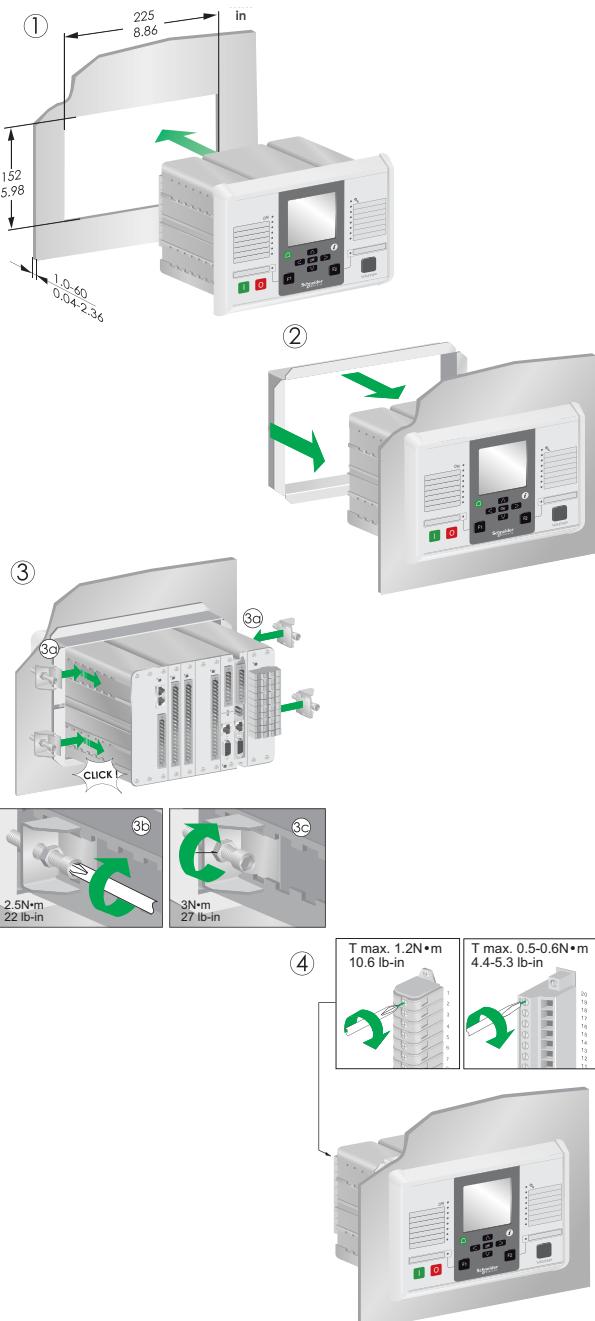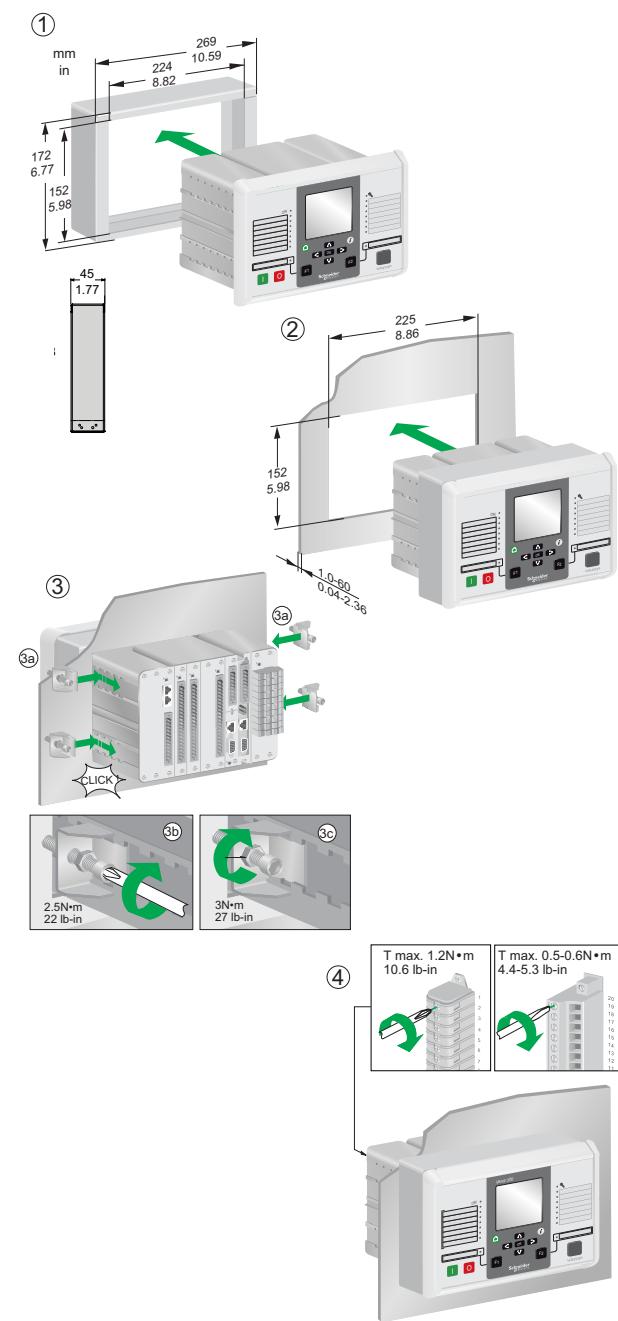
## Wall mounting with detachable HMI
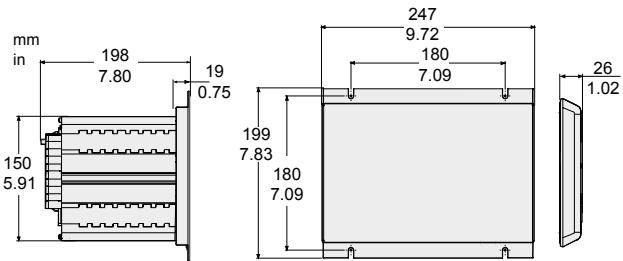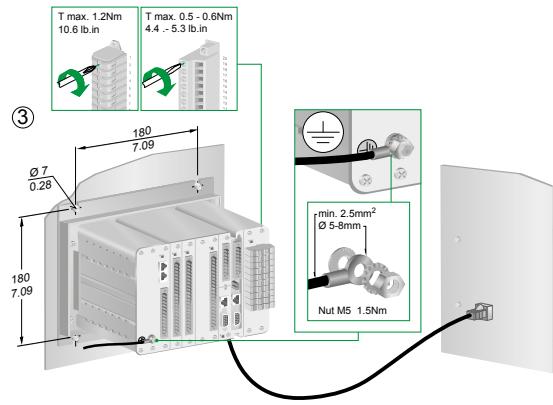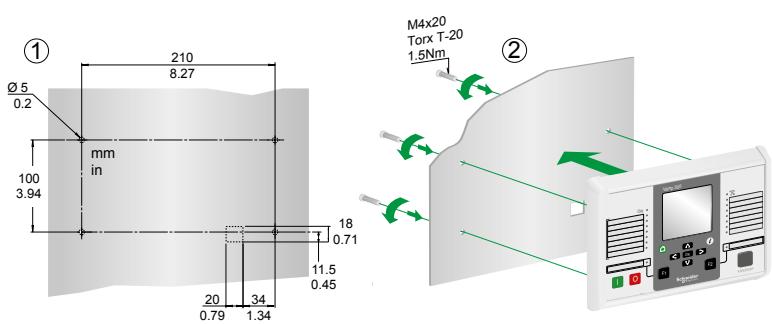


The VAMP 300 Series is designed with user-friendliness in mind.

# Order codes

SLOT NUMBERS, see page 3

V300☐ [1][2][3][4][5][6][7][8][9][10] A-☐☐

| Application | |
|---|---|
| F = | Feeder |
| M = | Motor |

| Supply voltage [V] | |
|---|---|
| C = | Power C 110 - 240 (80 - 265 Vac/dc, 5 x DO heavy duty, A1, SF) |
| D = | Power D 24 - 48 (18 - 60Vdc, 5 x DO heavy duty, A1, SF) |

| I/O Card I | |
|---|---|
| A = | None |
| B = | 3BIO+2Arc (3 x BI/BO, 2 x Arc sensor, T2, T3, T4) |
| C = | F2BIO+1Arc (Fibre 2 x BI/BO, 1 x Arc loop sensor, T2, T3, T4) |
| G = | 6DI+4DO (6 x DI, 4 x DO) |
| H = | 6DI+4DO (6 x DI, 4 x DO(NC)) |
| I = | 10DI (10 x DI) |

| I/O Card II | |
|---|---|
| A = | None |
| G = | 6DI+4DO (6 x DI, 4 x DO) |
| H = | 6DI+4DO (6 x DI, 4 x DO(NC)) |
| I = | 10DI (10 x DI) |

| I/O Card III | |
|---|---|
| A = | None |
| G = | 6DI+4DO (6 x DI, 4 x DO) |
| H = | 6DI+4DO (6 x DI, 4 x DO(NC)) |
| I = | 10DI (10 x DI) |

| I/O Card IV | |
|---|---|
| A = | None |
| D = | 2IGBT (2 x IGBT high speed outputs) |
| G = | 6DI+4DO (6 x DI, 4 x DO) |
| H = | 6DI+4DO (6 x DI, 4 x DO(NC)) |
| I = | 10DI (10 x DI) |

| Option card I | |
|---|---|
| A = | None |
| D = | 4Arc (4 x Arc sensor) |
| K = | RS232 (RS232) |
| P = | PP (Plastic / Plastic serial fibre) |
| R = | GG (Glass / Glass serial fibre) |
| S = | Line diff and distance FW with optical diff. comms. card for V300F |
| T = | Line diff and distance FW with RS232 for external diff comms. converter for V300F |

| Future option | |
|---|---|
| A = | None |

| Analog measurement card | |
|---|---|
| C = | 3L (5 A)+4U+2Io (5+1 A) |
| D = | 3L (5 A)+4U+2Io (1+0.2 A) |

| Communication interface I | |
|---|---|
| A = | None |
| B = | RS232 |
| C = | RS232+RJ (RS232 + Ethernet RJ-45 100 Mbs) |
| D = | RS232+LC (RS232 + Ethernet LC 100 Mbs) |
| N = | 2 x RJ-45 100Mbs ethernet interface |
| O = | 2 x LC 100Mbps ethernet fibre interface |
| P = | PP (Plastic / Plastic serial fibre) |
| R = | GG (Glass / Glass serial fibre) |

| Future option | |
|---|---|
| A = | None |

| Display type | |
|---|---|
| B = | 128 x 128 (128 x 128 LCD matrix) |
| C = | 128 x 128Ext (128 x 128 LCD matrix, detachable, 2 m cable) [1 |

| DI nominal voltage | |
|---|---|
| 1 = | 24 Vdc/ac |
| 2 = | 110 Vdc/ac |
| 3 = | 220 Vdc/ac |
| A = | 24Vdc/ac, WITH conformal coating |
| B = | 110 Vdc/ac, WITHconformal coating |
| C = | 220 Vdc/ac, WITH conformal coating |

B = 3BIO+2Arc (3 x BI/BO, 2 x Arc sensor, T2, T3, T4)

G = 6DI+4DO (6 x DI, 4 x DO)

C = RS232+RJ (RS232 + Ethernet RJ-45 100 Mbs)

D = RS232+LC (RS232 + Ethernet LC 100 Mbs)

Note:

(1 Cable type: VX001-x, where x = 1, 2 or 3 meters. Default length is 2 meters.

## Accessories

| Order code | Description | Note |
|---|---|---|
| VX052-3 | USB programming cable (VAMPSET) | Cable length 3 m |
| VX067 | VAMP 300/321 split cable for COM1-2 and COM 3-4 ports | Cable length 3 m |
| | | |
| VSE001PP | Fiber optic interface module (plastic - plastic) | Max. distance 1 km |
| VSE001GG | Fiber optic interface module (glass - glass) | Max. distance 1 km |
| VSE001GP | Fiber optic Interface Module (glass - plastic) | Max. distance 1 km |
| VSE001PG | Fiber optic Interface Module (plastic - glass) | Max. distance 1 km |
| VSE002 | RS485 module | |
| VSE009 | DeviceNet module | |
| | | |
| VPA3CG | Profibus DP fieldbus option module | |
| VX072 | VAMP 300/321 profibus cable | Cable length 3m |
| | | |
| 3P014 | MOXA TCF-90 | Max. distance 40 km |
| VX048 | RS232 converter cable for MOXA TCF-90 | Cable length 3 m |
| 3P022 | MOXA TCF-142-S-ST | Max. distance 40 km |
| VX062 | RS232 converter cable for MOXA TCF-142-S-ST | Cable length 3 m |
| | | |
| VA 1 DA-6 | Arc sensor | Cable length 6 m |
| VA 1 DA-20 | Arc sensor | Cable length 20 m |
| VA 1 DA-6s | Arc sensor, shielded | Cable length 6 m |
| VA 1 DA-20s | Arc sensor, shielded | Cable length 20 m |
| VA 1 EH-6 | Arc sensor (pipe type) | Cable length 6 m |
| VA 1 EH-20 | Arc sensor (pipe type) | Cable length 20 m |
| VA 1 GIS-1,5 | Arc Sensor, shielded with GIS adapter | Cable lenght 1,5 m |
| VA 1 GIS-3 | Arc Sensor, shielded with GIS adapter | Cable lenght 3 m |
| VA 1 GIS-5 | Arc Sensor, shielded with GIS adapter | Cable lenght 5 m |
| VA 1 GIS-10 | Arc Sensor, shielded with GIS adapter | Cable lenght 10 m |
| ARC SLm-x | Fiber sensor, 8 000 lx | x = fiber lenght (1 |
| | | |
| VIO 12 AB | RTD module, 12 pcs RTD inputs, RS 485 communication (24-230 Vac/dc) | Always conformally coated |
| VIO 12 AC | RTD/mA Module, 12 pcs RTD inputs, PTC, mA inputs/outputs, RS232, RS485 and optical Tx/Rx communication (24 Vdc) | Always conformally coated |
| VIO 12 AD | RTD/mA module, 12 pcs RTD inputs, PTC, mA inputs/outputs, RS232, RS485 and optical Tx/Rx communication (48-230 Vac/dc) | Always conformally coated |
| | | |
| VYX695 | Projection for 300-series | Height 45 mm |

**Note 1.** Fiber lengths 1, 5, 10, 15, 20, 25, 30, 35, 40, 50, 60 or 70 m

# Tests and enviromental

| Disturbance tests | Standard & Test class / level | Test value |
|---|---|---|
| Emission | EN 61000-6-4 / IEC 60255-26 | |
| - Conducted | EN 55011, Class A / IEC 60255-25 | 0.15 – 30 MHz |
| - Emitted | EN 55011, Class A / IEC 60255-25 / CISPR 11 | 30 – 1 000 MHz |
| Immunity | EN 61000-6-2 / IEC 60255-26 | |
| - 1Mhz damped oscillatory wave | IEC 60255-22-1 | ±2.5 kVp CM, ±2.5 kVp DM |
| - Static discharge (ESD) | EN 61000-4-2 Level 4 / IEC 60255-22-2 Class 4 | ± 8 kV contact, ± 15 kV air |
| - Emitted HF field | EN 61000-4-3 Level 3 / IEC 60255-22-3 | 80 - 2700 MHz, 10 V/m |
| - Fast transients (EFT) | EN 61000-4-4 Level 4 / IEC 60255-22-4 Class A | ± 4 kV 5/50 ns, 5 kHz |
| - Surge | EN 61000-4-5 Level 4 / IEC 60255-22-5 | ± 4 kV, 1.2/50 µs, CM |
| | | ± 2 kV, 1.2/50 µs, DM |
| - Conducted HF field | EN 61000-4-6 Level 3 / IEC 60255-22-6 | 0.15 - 80 MHz, 10 Vemf |
| - Power-frequency magnetic field | EN 61000-4-8 | 300 A/m (continuous), 1000 A/m 1–3 s |
| - Pulse magnetic field | EN 61000-4-9 Level 5 | 1000 A/m, 1.2/50 µs |
| - Voltage interruptions | EN 61000-4-29 / IEC 60255-11 | 30 %/1 s, 60 %/0.1 s, 100 %/0.05 s |
| - Voltage alternative component | EN 61000-4-17 / IEC 60255-11 | 12 % of operating voltage (DC) / 10 min |
| - Voltage dips and short interruptions | EN 61000-4-11 | 30 % / 10 ms, 100 % / 10 ms, 60 % /100 ms, < 95 % / 5000 ms |

| Electrical safety tests | | |
|---|---|---|
| - Impulse voltage withstand | EN 60255-5, Class III | 5 kV, 1.2 / 50 µs |
| - Dielectric test | EN 60255-5, Class III | 2 kV, 50 Hz |
| - Insulation resistance | EN 60255-5 | > 100Mohm, 500 V / 100 V |
| - Protective bonding resistance | EN 60255-27 | < 0.1 ohm |
| - Power supply burden | IEC 60255-1 | > 20 W internal |

| Mechanical tests | | |
|---|---|---|
| Device in operation | | |
| - Vibrations | IEC 60255-21-1, Class II / IEC 60068-2-6, Fc | 1Gn, 10Hz – 150 HZ |
| - Shocks | IEC 60255-21-2, Class II / IEC 60068-2-27, Ea | 10Gn/11 ms |
| Device de-energized | | |
| - Vibrations | IEC 60255-21-1, Class II / IEC 60068-2-6, Fc | 2Gn, 10 Hz – 150 HZ |
| - Shocks | IEC 60255-21-2, Class II / IEC 60068-2-27, Ea | 30Gn/11 ms |
| - Bump | IEC 60255-21-2, Class II / IEC 60068-2-27, Ea | 20 Gn/16 ms |

| Environmental tests | | |
|---|---|---|
| Device in operation | | |
| - Dry heat | EN / IEC 60068-2-2, Bd | +70°C |
| - Cold | EN / IEC 60068-2-1, Ad | -40°C |
| - Damp heat, cyclic | EN / IEC 60068-2-30, Db | From +25°C to +55°C, From 93% RH to 98% RH, 6 days |
| - Damp heat, static | EN / IEC 60068-2-78, Cab | +40°C, 93% RH, 10 days |
| Device in storage | | |
| - Dry heat | EN / IEC 60068-2-2, Bb | +70°C |
| - Cold | EN / IEC 60068-2-1, Ab | -40°C |

| Environmental conditions | |
|---|---|
| Ambient temperature, in-service | -40 – +60°C |
| Ambient temperature, storage | -40 – +70 °C |
| Relative humidity | < 95%, no condensation allowed |
| Maximum operating altitude | 2000 m |
| Degree of protection (IEC 60529) | IP54 (from front when panel mounted) |
| Weight | 3.2 kg or higher (depends of options) |
| Dimension (W x H x D) | 270 x 176 x 230 mm |

| Package | |
|---|---|
| Dimensions (W x H x D) | 315 x 210 x 257 mm |
| Weight (IED, Package and Manual) | 5.2 kg or higher (depends of options) |

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## Device track record

- Schneider Electric's VAMP range specialises in protection relays, arc flash protection and measuring and monitoring units for power systems.

- VAMP's medium-voltage and sub-transmission protection relays are used in numerous applications, from overhead line feeders and substations to power plants and industrial power system. Their unique integrated arc flash fault protection functionality enhances the safety of both people and property and has made VAMP a leading range in arc flash protection worldwide. VAMP products meet the latest international standards and regulations.

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