Comprehensive motor protection and control from VAMP

VAMP 40, VAMP 52, VAMP 230, VAMP 255, VAMP 257 and VAMP 265M

VAMP Motor protection relays are used for the selective protection of motor control centres, motor cabling and termination, asynchronous motor and the primary load of the machine. Typical applications are low and medium voltage industrial processes, power plants, marine and offshore installations. Besides a comprehensive range of standard protection functions the VAMP relays also offers temperature measurement with external RTD input module.

A unique feature of VAMP relays is the arc flash fault protection system integrated into the relays. The extremely fast arc fault protection option adds a new dimension to the total safety of the installation and the reliability of the motor protection system.

Further, the VAMP relays incorporate power quality assessment based on fast Fourier transform. Following a network or motor fault, the relays support fault analysis by providing event sequence recordings, fault value registration and disturbance recorder capability.

Customer specific configuration is obtained by freely configurable mimic display and logic programming using the easy-to-use VAMPSET software. VAMP products also have a multilingual human machine interface.

CUSTOMER BENEFITS

- **Complete protection for motors**
  Comprehensive selection of protection functions for asynchronous circuit breaker controlled motors.

- **Temperature measurement**
  Interface to external VIO 12A RTD input module for twelve Pt, Ni or Cu temperature sensors. The external module enables the sensor connection point to be close to the motor, minimising sensor cable length. Measurements are transferred to the relay via RS485 or optical interface for the required protection stages, logic or measurements.

- **Ultra-fast arc flash protection**
  VAMP motor protection has an unique integrated arc fault protection functionality for enhanced safety of the motor termination box, switchgear as well as people and other property. This optional arc flash protection module enables the protection relay to become a part of the substation level arc flash protection system.

- **Comprehensive measurements**
  Motor control, measurement of electrical quantities, disturbance and event capturing as well as extensive range of industrial protocol interfaces are standard features in VAMP motor protection relays and managers.

- **Extensive communication**
  Large number of supported communication protocols including IEC 61850, IEC 60870-5-101, IEC 60870-5-103, Modbus TCP, Modbus RTU, Profibus DP, TCP/IP, SPA-bus slave, DNP 3.0 and DeviceNet.

VAMP Protection offers a solution to maximise safety in all applications.

Schneider Electric

Quick selection table

EASE OF USE

User-friendliness has always been a feature of VAMP products, and the motor protection is no exception. A great deal of effort has gone into the design of the operational aspects of the new products.

The rapid setting and download/upload is achieved with the unique VAMPSET setting software which dramatically improves usability. Unicode support allows the menu text and settings to be translated into various international languages including for example Russian and Chinese. The informative human machine interface shows all of the required information to the user with support of customized legend texts.

Product range:			VAMP 40	VAMP 52	VAMP 230	VAMP 255	VAMP 257			VAMP 265M
Motor size		< 1MW	■ optimal	■ optimal	■ advanced	■ advanced	■ advanced			■ advanced
		2 MW > Synchronous motors	■ advanced	■ advanced	■ optimal	■ optimal	■ optimal			■ optimal
		10 MW > Synchronous motors	■ advanced	■ advanced	■ optimal	■ optimal	■ optimal			■ optimal
Optional hardware		VIO 12 RTD input module	■	■	■	■	■			■
		Profibus DP /Modbus RTU/TCP	■	■	■	■	■			■
		IEC 61850		■	■	■	■			■
Inputs / outputs		Digital inputs (DI) max	2	2 (7)	6 (8)	18 (20)	18 (20)	22 (24)	30 (32)	6 (8)
		Output relays (DO) max	5	5 (6)	7	9	9	19	13	7
		Self-supervision controls	1	1	1	1	1			1

■ = optimal solution   ■ = advanced solution   ■ = supported features

Product highlights

VAMP 40

- Unique digital multifunctionality at basic cost
- One type designation only; wide power supply range; 19-265 V ac/dc
- Small installation depth dimension
- 2 Digital Inputs (fixed)
- Connectivity to PTD input module

VAMP 52

- Digital multifunction relay for asynchronous motors
- Large display for mimic and measurements
- Control keys for operational mode changes
- Control keys for object control
- Optional mA output
- Two optional module slots for arc sensor, Input/Output extension or various communication interfaces
- Connectivity to PTD input module
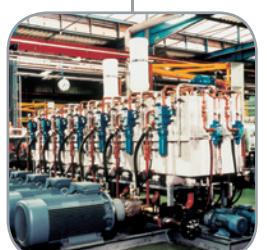
VAMP 230/255/257

- Digital multifunction motor manager for asynchronous and synchronous motors
- Voltage transformer connections allow use of directional overcurrent and earth fault protection in addition to various motor protection stages
- Active, reactive and apparent power as well as energy measurement
- Input/Output capacity varies per product type
- Connectivity to PTD input module

VAMP 265M

- Optimized for motor applications; settings proportional to motor current
- Connectivity to PTD input module
- For large synchronous and asynchronous motors
- Large quantity of motor protection stages with differential protection

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 incorporates tools for analyzing relay events, waveforms and trends from data recorded by the relays, e.g. during a network fault situation.

Using a standard serial cable the PC running VAMPSET connects to the front or rear port of the VAMP relays. The VAMPSET software also supports TCP/IP communication via an optional 10Base-T connection. Featuring true multi-language support the software runs on Windows 7/Vista/XP/2000/NT/98/95 without any need for configuration of the PC. The VAMPSET software is future-proof supporting coming updates and new VAMP products.

The VAMPSET software size is approximately 1Mbyte; you may conveniently distribute it by e-mail saving valuable transport and waiting time and money.
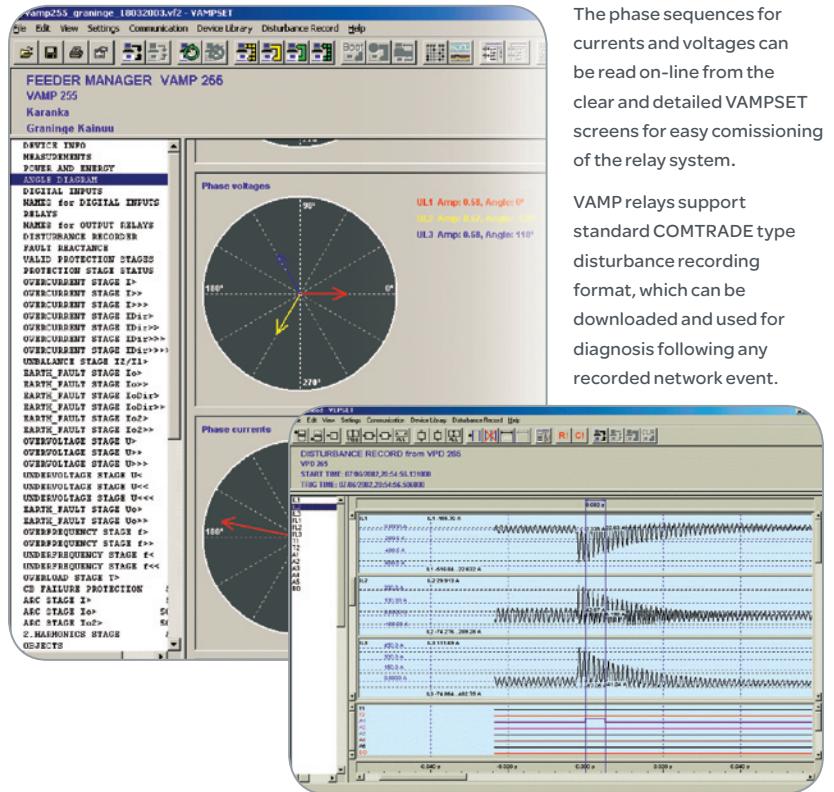
The phase sequences for currents and voltages can be read on-line from the clear and detailed VAMPSET screens for easy comissioning of the relay system.

VAMP relays support standard COMTRADE type disturbance recording format, which can be downloaded and used for diagnosis following any recorded network event.

VAMPSET views from motor protection relays

Protection setting example
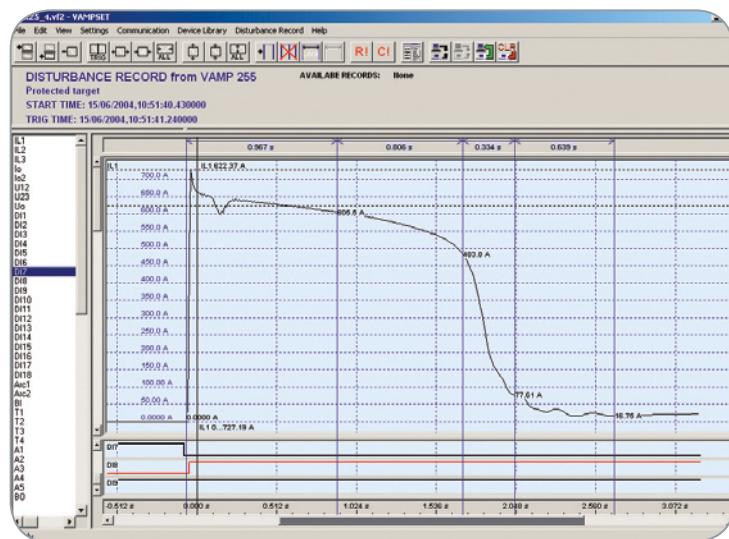
The motor start-up register stores values (start current, duration, etc.) which facilitates the correct setting of the relay, even if critical motor data is unavailable from the manufacturer.
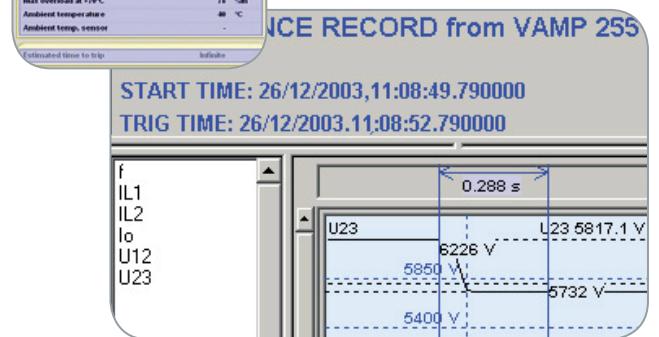
An average mode recording was used to capture a lengthy voltage drop while the motor was starting. The phase voltage fluctuated from 6,226 kV down to 5,732 kV.

Functionality of VAMP motor protection relays

| Type of fault	IEEE Device No.	IEC Symbol	Protection function/measurement	VAMP 40	VAMP 52	VAMP 230	VAMP 255	VAMP 257	VAMP 265M
Protection									
Short circuit	50/51	$3I >$	Three-phase non-directional overcurrent, low-set stage, definite or inverse time	✓	✓	✓	✓	✓	✓
	50/51	$3I >>$	Three-phase non-directional overcurrent, high-set stage, definite time	✓	✓	✓	✓	✓	✓
	50/51	$3I ' >$	Three-phase non-directional overcurrent, low-set stage, definite or inverse time (secondary side)						✓
	50/51	$3I ' >>$	Three-phase non-directional overcurrent, high-set stage, definite time (secondary side)						✓
	50/51	$3I >>>$	Three-phase non-directional overcurrent, high-set stage, definite time	✓	✓	✓	✓	✓	
	67 or 50/51	$3I > \rightarrow$	Three-phase directional or non dir. o/c, low-set stage, definite or inverse time			✓	✓	✓	
	67 or 50/51	$3I >> \rightarrow$	Three-phase directional or non dir. o/c, high-set stage, definite or inverse time			✓	✓	✓	
	67 or 50/51	$3I >>> \rightarrow$	Three-phase directional or non dir. o/c, high-set stage, definite time			✓	✓	✓	
	67 or 50/51	$3I >>>> \rightarrow$	Three-phase directional or non dir. o/c, high-set stage, definite time			✓	✓	✓	
Earth-fault	50N/51N	$3Io >$ / SEF	Non-directional earth-fault, low-set stage, sensitive, definite or inverse time	✓	✓	✓	✓	✓	✓
	50N/51N	$3Io >>$	Non-directional earth-fault, high-set stage, definite time	✓	✓	✓	✓	✓	✓
	50N/51N	$3Io >>>$	Non-directional earth-fault, high-set stage, definite time	✓	✓	✓	✓	✓	✓
	50N/51N	$3Io >>>>$	Non-directional earth-fault, high-set stage, definite time	✓	✓	✓	✓	✓	✓
	67N or 50N/51N	$3Io\varphi >$ / SEF	Directional or non dir. earth-fault, low-set stage, sensitive, definite or inverse time	✓	✓	✓	✓	✓	✓
	67N or 50N/51N	$3Io\varphi >>$	Directional or non dir. earth-fault, high-set stage, definite or inverse time	✓	✓	✓	✓	✓	✓
	59N	$U_0 >$	Zero sequence voltage, low-set stage	✓	✓	✓	✓	✓	✓
	59N	$U_0 >>$	Zero sequence voltage, high-set stage	✓	✓	✓	✓	✓	✓
	50N/51N	REF	Restricted earth fault (application)	✓		✓	✓	✓	✓
Overload	49M	$T>$	Three-phase thermal overload (motors & generators)	✓	✓	✓	✓	✓	✓
Voltage	59	$1U>/3U>$	One-/Three-phase overvoltage, low-set stage	1	1	3	3	3	
	59	$1U>>/3U>>$	One-/Three-phase overvoltage, high-set stage	1	1	3	3	3	
	59	$1U>>>/3U>>>$	One-/Three-phase overvoltage, high-set stage	1	1	3	3	3	
	27	$1U</3U<$	One-/Three-phase undervoltage, low-set stage	1	1	3	3	3	
	27	$1U<</3U<<$	One-/Three-phase undervoltage, high-set stage	1	1	3	3	3	
	27	$1U<<</3U<<<$	One-/Three-phase undervoltage, instantaneous stage	1	1	3	3	3	
	47	$U_2>$	Negative sequence overvoltage (pgr stage)			✓	✓	✓	
Arc protection	50ARC/50NARC	$3\ I> / I_0>, L>$	Electrical arc protection stage, point sensors, Optional	✓	✓	✓	✓	✓	✓
Other functions	68	$I_{f2} >$	Second harmonic	✓	✓	✓	✓	✓	✓
	46	$I_2 >$	Phase unbalance protection	✓	✓	✓	✓	✓	✓
	46	$I'2 >$	Phase unbalance protection (secondary side)						✓
	47	$I_2 >>$	Phase sequence / reversal protection	✓	✓	✓	✓	✓	✓
	48	$I_{ST} >$	Stall protection	✓	✓	✓	✓	✓	✓
	37	$3I<$	Loss of load / under current protection	✓	✓	✓	✓	✓	✓
	86		Latched trip	✓	✓	✓	✓	✓	✓
	87	$3\ \Delta I>$	Three phase biased differential stage, low-set stage, 2nd harmonic blocking						✓
	87	$3\ \Delta I>>$	Three phase differential stage, high-set stage						✓
	66	$N>$	Frequent start protection	✓	✓	✓	✓	✓	✓
	50BF	CBFP	Circuit breaker failure protection	✓	✓	✓	✓	✓	✓
	81H/ 81L	$f ><, f >><<$	Overfrequency and underfrequency protection			✓	✓	✓	
	81L	$f<, f<<$	Underfrequency protection			✓	✓	✓	
	81R	df/dt	Rate of change of frequency (ROCOF) protection			✓	✓	✓	
	25	$\Delta f,\ \Delta U,\ \Delta\varphi$	Synchrocheck			✓	✓	✓	
			Short circuit fault location			✓	✓	✓	
	99		8 Programmable stages	✓	✓	✓	✓	✓	✓
		DR	Disturbance recorder	✓	✓	✓	✓	✓	✓

| Type of measurement	IEEE Device No.	IEC Symbol	Protection function/measurement	VAMP 40	VAMP 52	VAMP 230	VAMP 255	VAMP 257	VAMP 265M
Measurements									
Primary current		3 d I >	Three-phase differential current						●
		3Io	Neutral current	●	●	●	●	●	●
		I_2	Current unbalance	●	●	●	●	●	●
		IL	Average and maximum demand current	●	●	●	●	●	●
Primary voltage		U/3U	One-/Three-phase and line voltages	1	1	3	3	3	
		U_0	Zero sequence voltage	●		●	●	●	
		U_2 / U_1	Voltage unbalance (prg)			●	●	●	
Short-circuit fault reactance		Xfault	Short-circuit fault reactance			●	●	●	
Frequency		f	System frequency	●	●	●	●	●	●
Power		P	Active power	*	*	●	●	●	
		Q	Reactive power	*	*	●	●	●	
		S	Apparent power	*	*	●	●	●	
Energy		E+, E-	Active Energy, exported / imported	*	*	●	●	●	
		Eq+, Eq-	Reactive Energy, exported / imported	*	*	●	●	●	
Power factor		PF	Power factor	*	*	●	●	●	
Harmonics		I	2nd to 15th and THD of phase currents	●	*	●	●	●	●
		U	2nd to 15th and THD of measured voltages			●	●	●	
Voltage sags / swells		U	Voltage sags / swells			●	●	●	
Analog mA output, 1 channel		AO	Any measured or calculated value, freely scalable		1)				
Analog mA output, 4 channels		AO	Any measured or calculated value, freely scalable, Optional			●	●		
Control									
Digital inputs (DI)			Number of digital inputs (max)	2	7	8	20	32	8
Output relays (DO)			Number of trip relays (max)	4	5	2	4	14	2
			Number of alarm relays	1	1	5	5	5	5
Object status indication			Single line diagram, 8 objects			●	●	●	●
Local and remote control			Number of controllable objects	6	6	6	6	6	6
Interlocking and logic			Configurable	●	●	●	●	●	●
Condition monitoring									
Trip circuit		TCS	Trip Circuit Supervision	●	●	●	●	●	●
		TCS	Trip Circuit Supervision with DI for T5...T8		1)		●		
CT Supervision			CT Supervision	●		●	●		●
VT Supervision	60		VT Supervision/Fuse failure supervision			●	●	●	
CB Wear			Breaker wear	●	●	●		●	●
Communication									
IEC 60870-5-101				●	●				●
IEC 60870-5-103				●	●	●	●	●	●
Modbus TCP				●	●	●	●	●	●
Modbus RTU				●	●	●	●	●	●
Profibus DP				●	●	●	●	●	●
DNP 3.0				●	●	●	●	●	●
SPA-bus communication				●	●	●	●	●	●
IEC 61850					●	●	●	●	●
DeviceNet				●		●	●	●	●
Ethernet / IP				●	●	●	●	●	●
Human-Machine-Communication, display				●	●	●	●	●	●
Human-Machine-Communication, PC				●	●	●	●	●	●
General functions									
Self Supervision				●	●	●	●	●	●
Annunciating, event generating and value recording				●	●	●	●	●	●
Measurement and parameter display				●	●	●	●	●	●
Real time clock			Year, month, day, hour, minutes, seconds, milliseconds	●	●	●	●	●	●

* = limited functionality   1) = Option

Typical applications

VAMP 40

- LED indicators
- External support to arc interface module

CB or contactor

VAMP 40
50/51,50/51N, 50GS, 46, 49M, 48, 66, 37, 67N, 32

1
3
1

< 1000 kW
< 1300 hp
M

n

VIO 12 (RTD)	38, 39
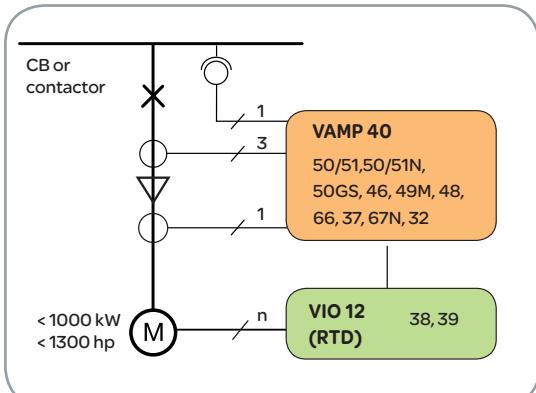
## VAMP 52

- Large mimic
- LED indicators
- 2 Configurable keys
- Control of CB
- DI/DO or Arc optional expansion
- mA option

VAMP 52
50/51,50/51N,50BF, 50NARC,46,49M,47, 48,59,66,74TC,37, 67NT,37,27,59,86, 8 prg

1
3
1

< 1000 kW
< 1300 hp
M

n

VIO 12 (RTD)	38, 39
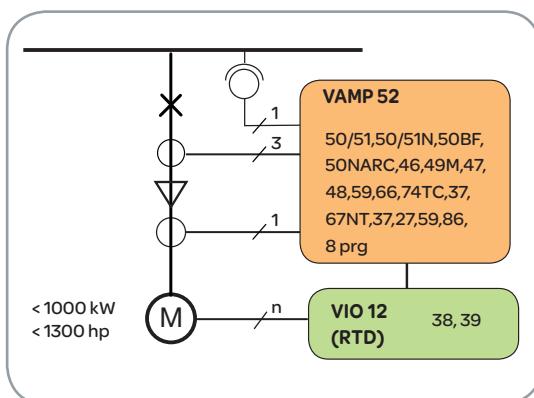
VAMP 230/255/257

- Extended DI/DO for breaker status indication and control
- Three phase voltage inputs for directional overcurrent protection, power and energy measurements
- VAMP 257 for double busbar control

VAMP 230/255/257
50/51,50/51N, 46,49 M,47, 48,66,37,67N, 37,27,59,81

3
3
1

> 2000 kW
> 2700 hp
M

n

VIO 12 (RTD)	38, 39
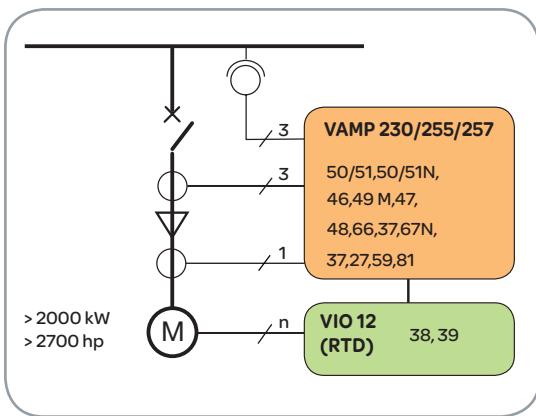
VAMP 265M

- Combined motor and differential protection
- Differential stage optimized for motors

VAMP 265M
50/51,50I/51I,37,87, 46,47.48,66,49, 50N/51N,50NI/51NI, 50BF,99, 50ARC, 50NARC

3
1

> 2000 kW
> 2700 hp
M

3
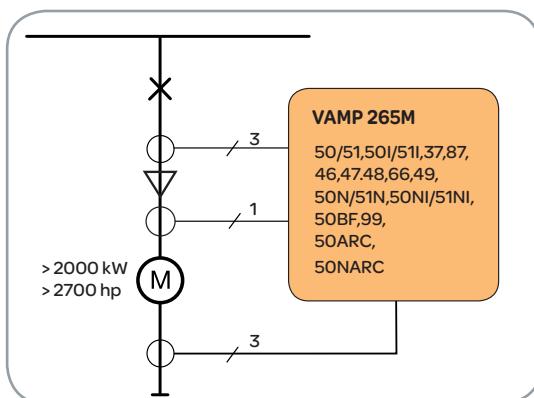
Redundant protection with VAMP 52 and VAMP 265M

- Motor protection and back-up motor protection with differential element

3
3
1

> 5000 kW
> 6700 hp
M

3

VAMP 52	VAMP 265M
50/51,50/51N, 50BF, 50NARC, 46, 49M, 47, 48, 59,66,74TC, 37, 67NT,37,27, 59,86, 8 prg	50/51, 50I/51I, 37,87, 46,47.48,66,49, 50N/51N, 50NI/51NI, 50BF,99, 50ARC, 50NARC
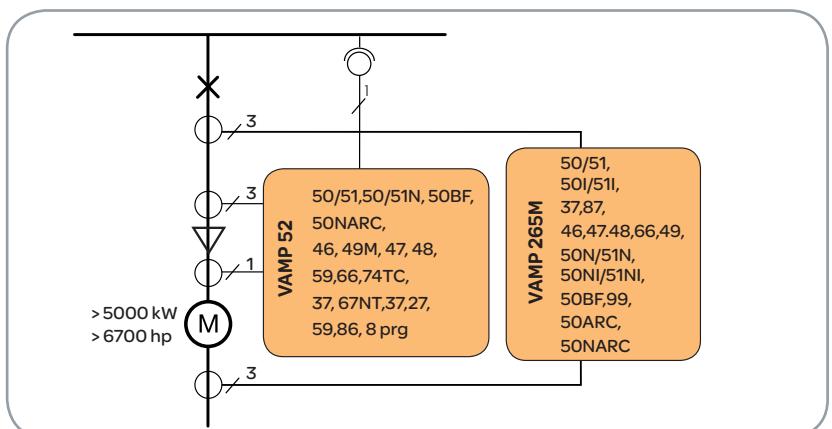
VIO 12 RTD input module

VIO 12 RTD module is used for extending the measuring quantities of VAMP motor protection relays. The VIO 12 module has channels for RTD sensors, mA inputs and outputs and PTC input.

The interface to the relay is either RS-232, RS-485 or glass fibre, allowing the input module to be close to the motor and limit the length of temperature sensor cables. All information measured by the VIO module is available in the protection relay for protection elements, measurements, logic, alarms and event reporting.

Function	VIO12 AA	VIO12 AB	VIO12 AC	VIO12 AD
Glass fibre Tx communication	■		■	■
Glass fibre Rx communication			■	■
RS 232 communication with VAMP 40 only	■		■	■
RS 485 communication		■	■	■
No. of RTD channels for Pt100, Ni100, Ni120, Cu10	12	12	12	12
No. of mA inputs			4	4
No. of mA outputs			4	4
PTC input			1	1
Auxiliary supply	24 – 230 Vac/dc		24 V dc	48 – 230 V

VAMP 52 motor protection with VIO RTD input module

RTD connection

Up to 12 RTD inputs, plus one contact (speed switch etc.)

VIO 12AA

Up to 2000 meters via single fiber-optic cable
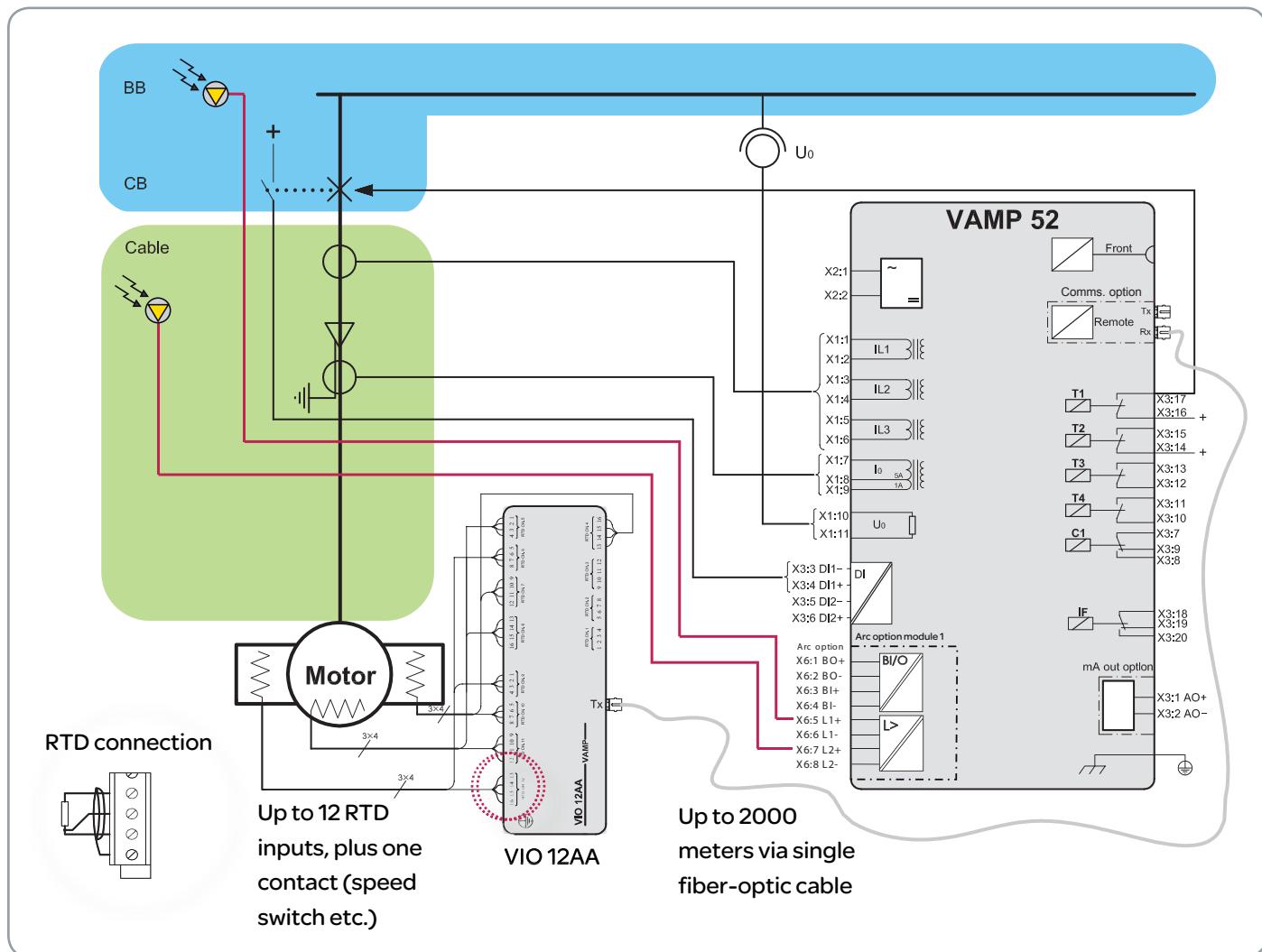
Arc flash protection

When time-grading or blocking based protection coordination priciples are used, traditional protection systems may not provide fast enough protection of substation faults. Further, high-impedance type faults may cause prolonged operation times of earth-fault relays, leading to significant release of arc energy. These facts pose a considerable risk to human beings and economical assets. By applying a modern, high-speed arc flash protection system, the damage may be considerably reduced. Such an arc flash protection system is an optional feature that can be incorporated in all current measuring VAMP relays.

VAMP relays measure fault current and with the optional arc protection, also measure light via arc sensor channels which monitor the whole switchgear. Should an arcing fault occur in the switchgear the arc flash protection system provides extremely fast tripping of the circuit breaker. The fault will be prevented from spreading and quickly isolated, which may save human lives and valuable economical assets.
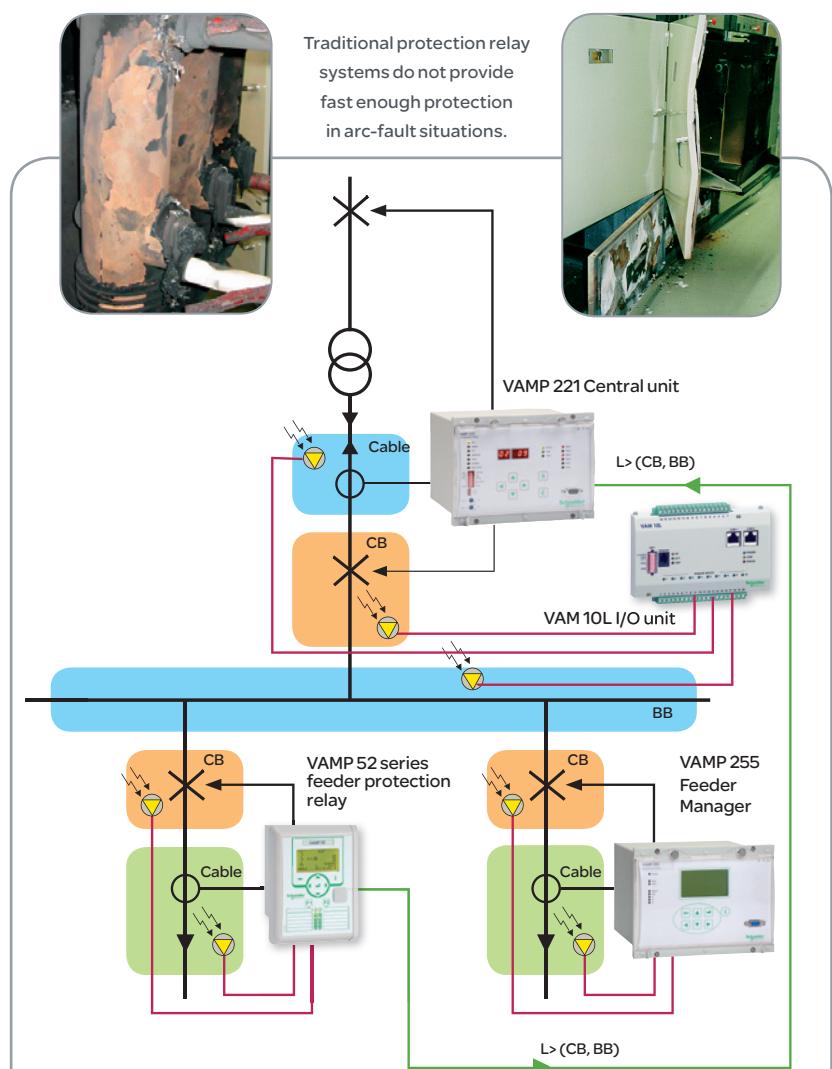
The VAMP arc flash protection devices also provide cost efficient high-speed MV busbar protection.

Traditional protection relay systems do not provide fast enough protection in arc-fault situations.

VAMP 221 Central unit

L> (CB, BB)

Cable

CB

VAM 10L I/O unit

BB

CB

VAMP 52 series feeder protection relay

Cable

CB

VAMP 255 Feeder Manager

Cable

L> (CB, BB)

BB

CB

The integrated arc flash sensors monitor for possible arc fault in combined circuit breaker and cable compartment (CB) and in cable termination (CTB) box.

CTB

M

Connection diagrams

VAMP 40 CONNECTION DIAGRAM
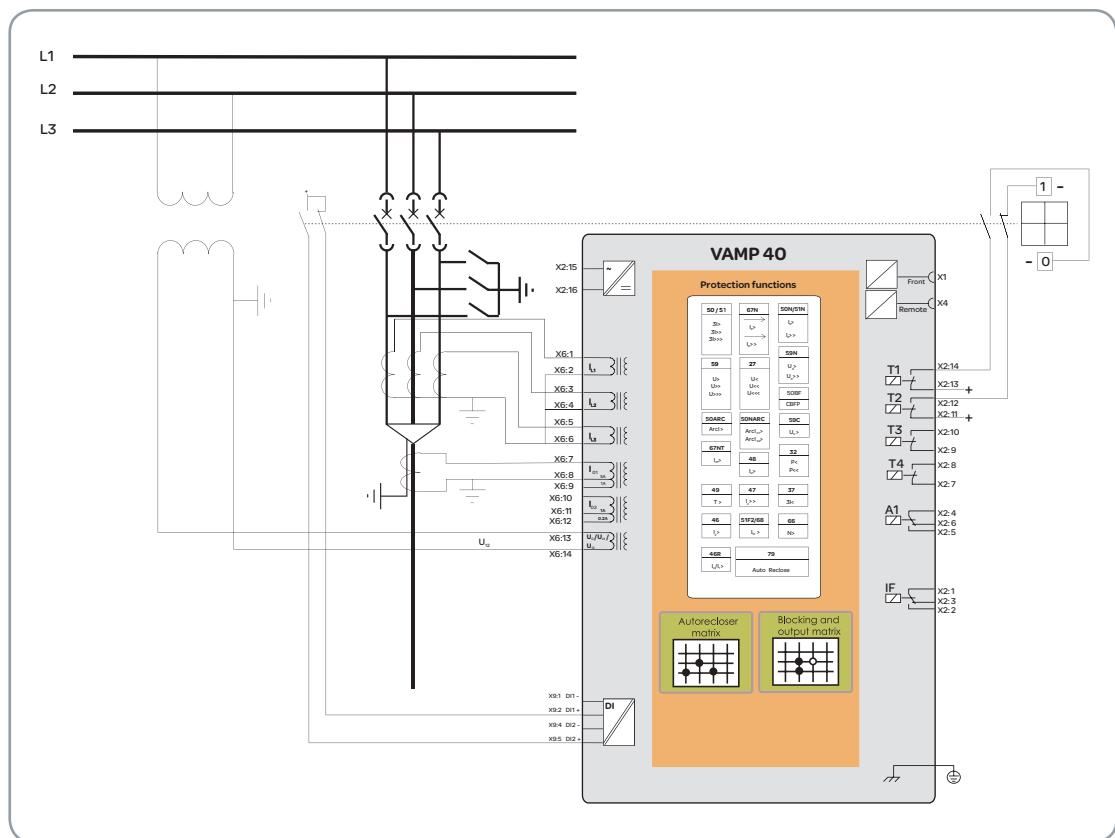
VAMP 52 CONNECTION DIAGRAM
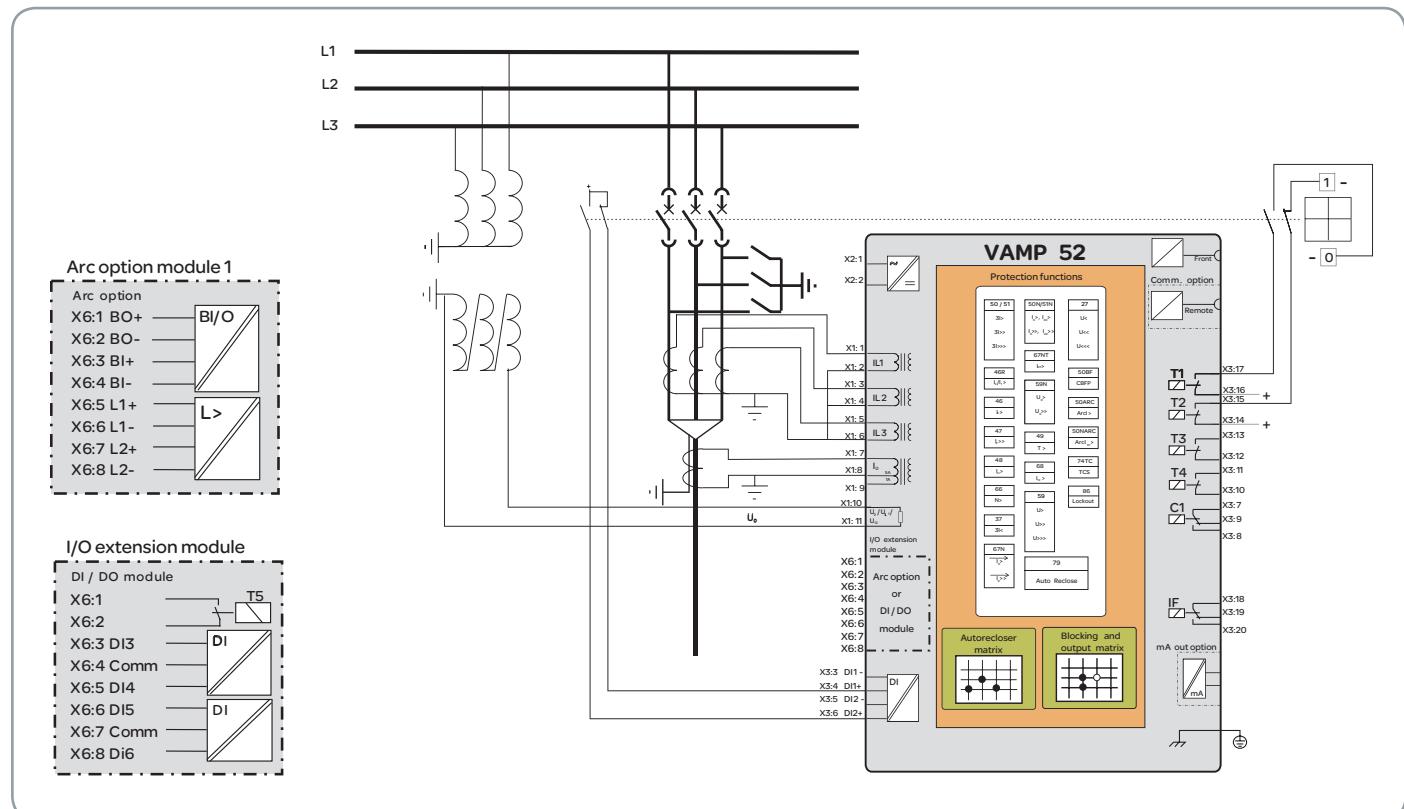
VAMP 255 CONNECTION DIAGRAM
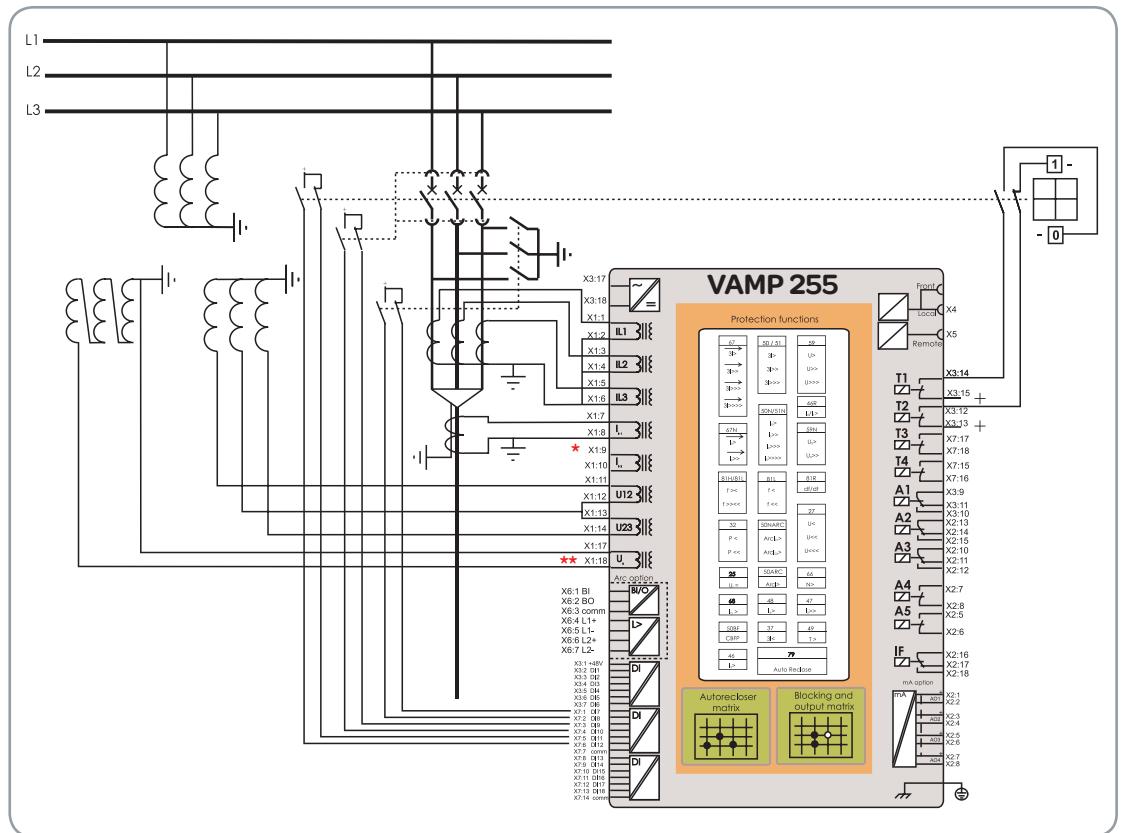
VAMP 257 CONNECTION DIAGRAM
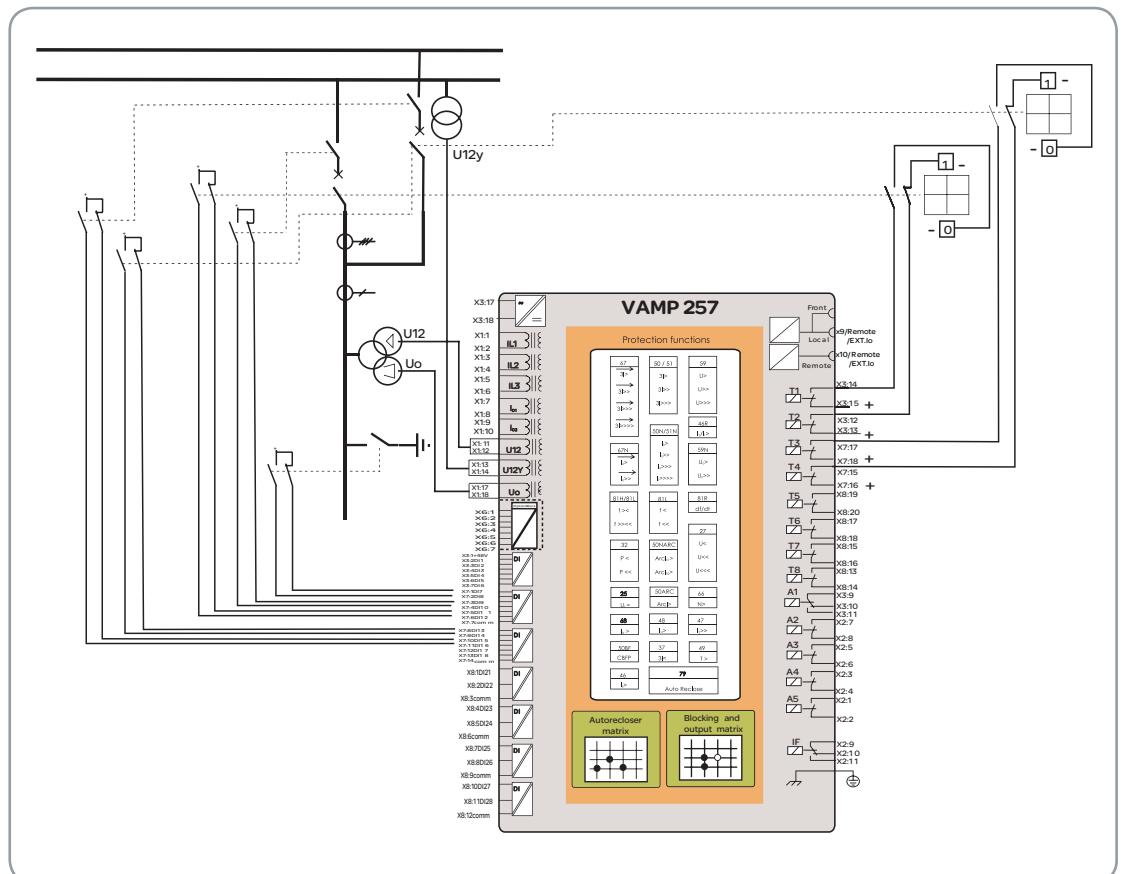
VAMP 265M CONNECTION DIAGRAM
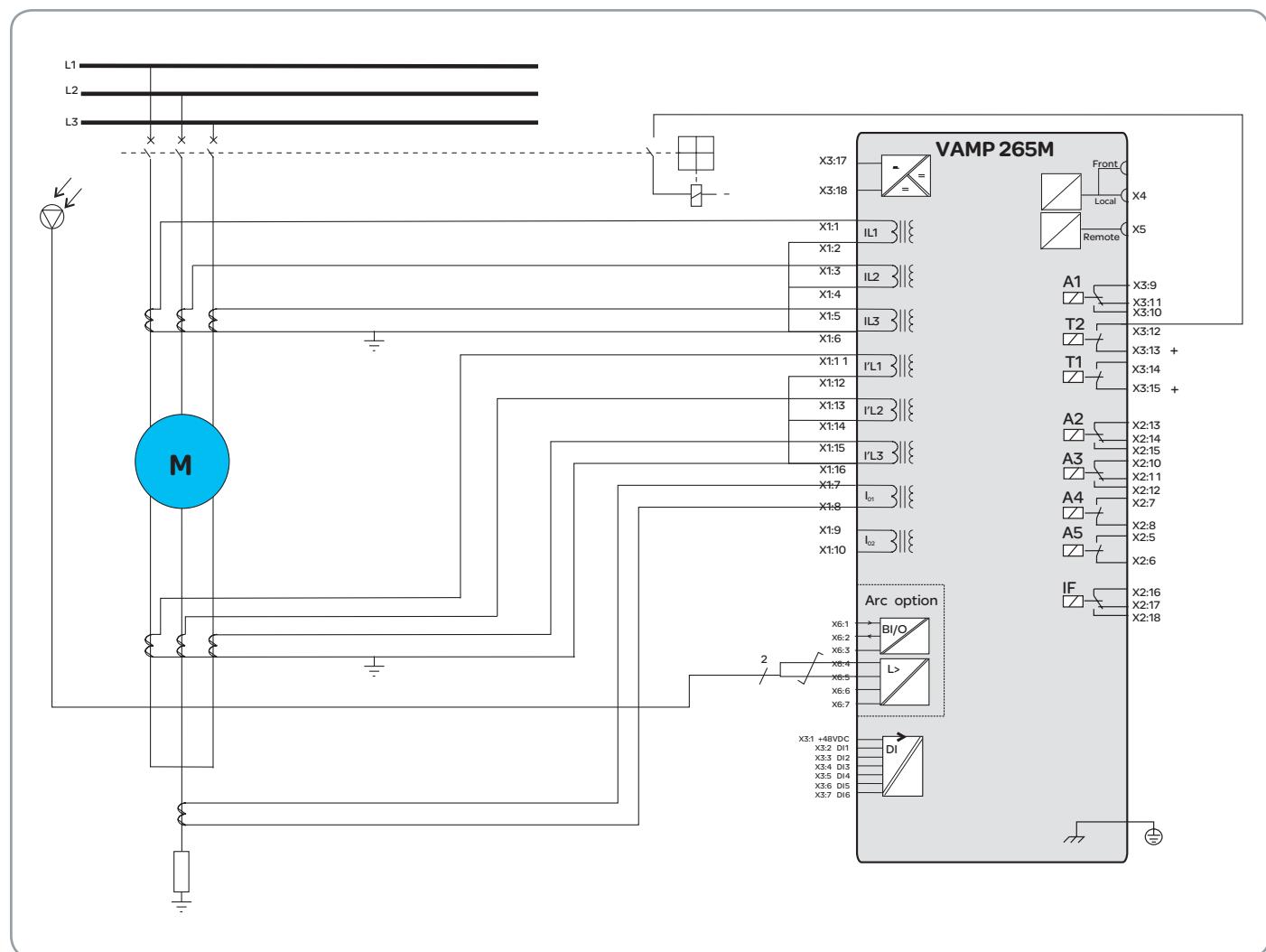
Dimensional drawings

VAMP 40

All dimensions in mm

Panel mounting

VAMP 50

All dimensions in mm

Panel mounting
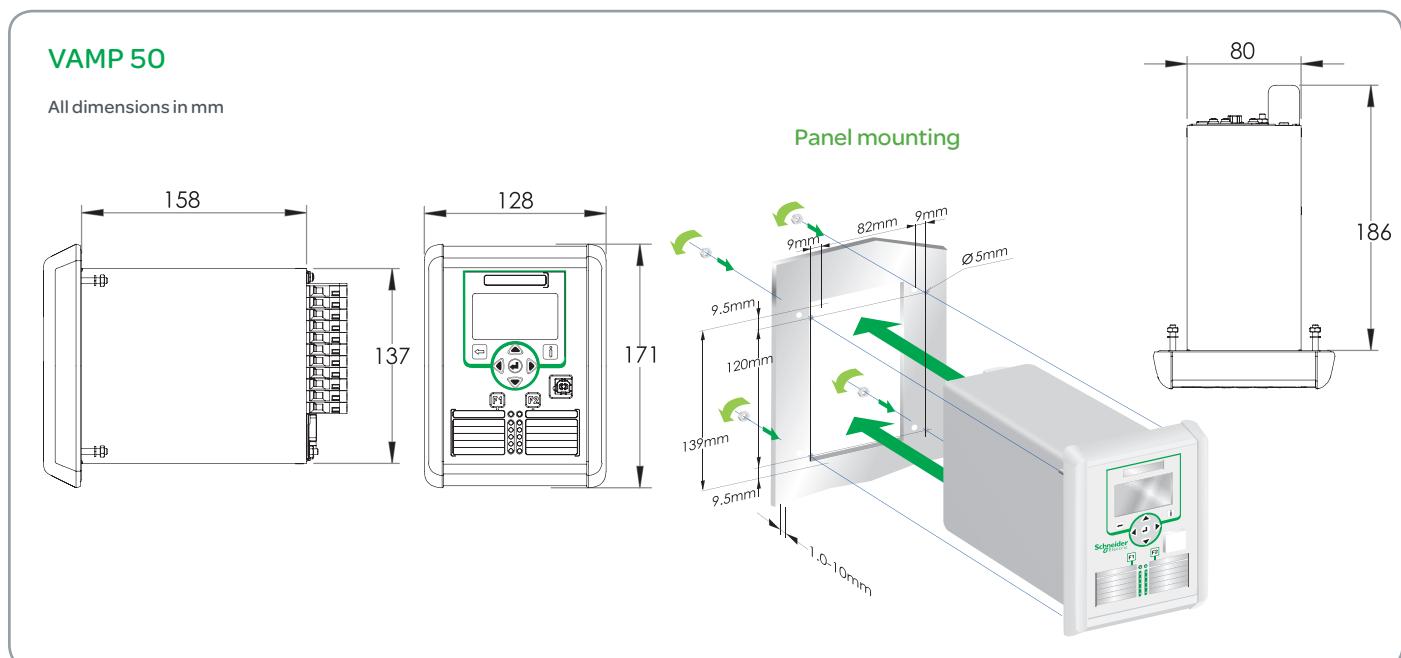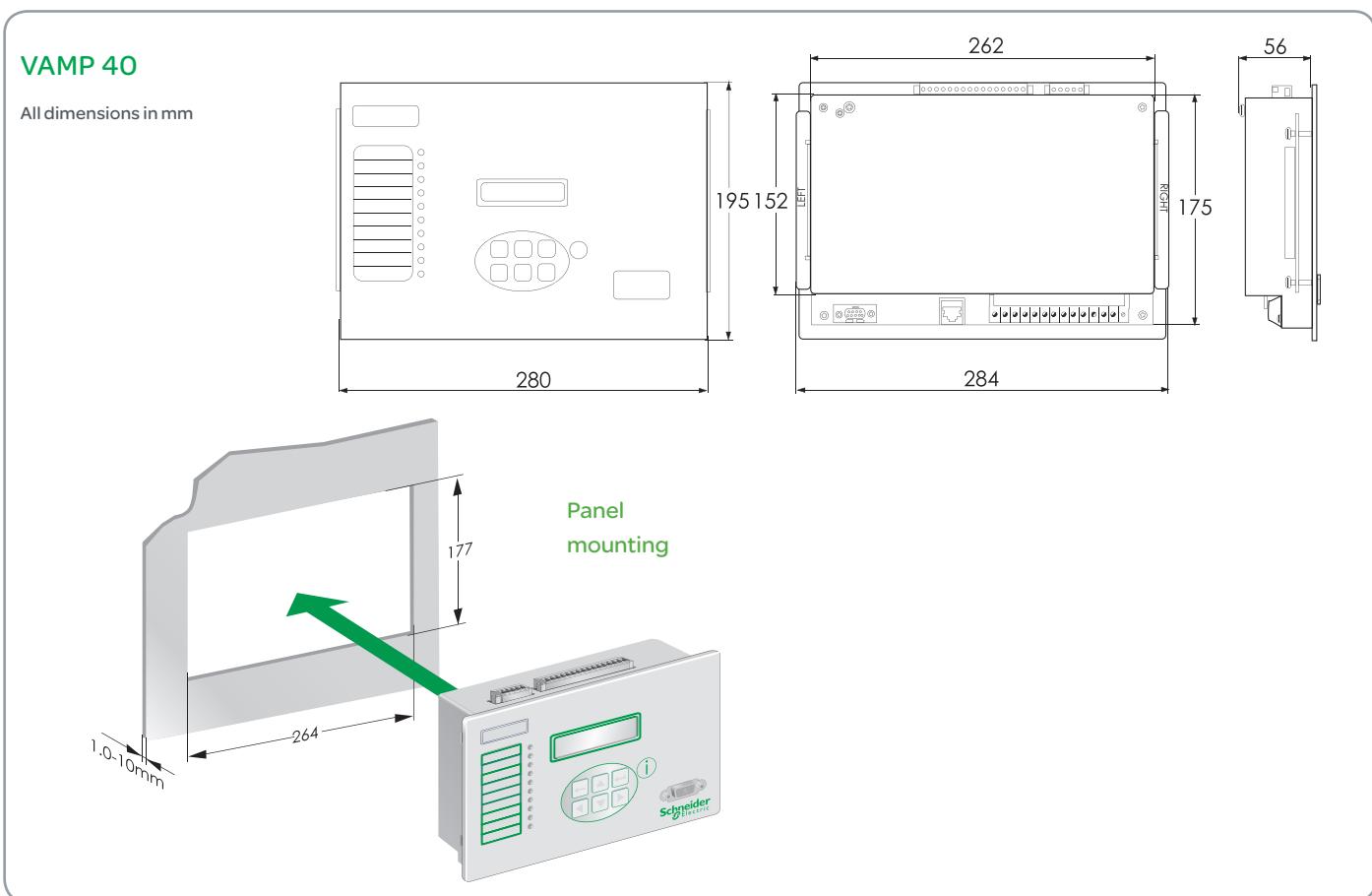
VAMP 230 / 255 / 257 / 265M

All dimensions in mm
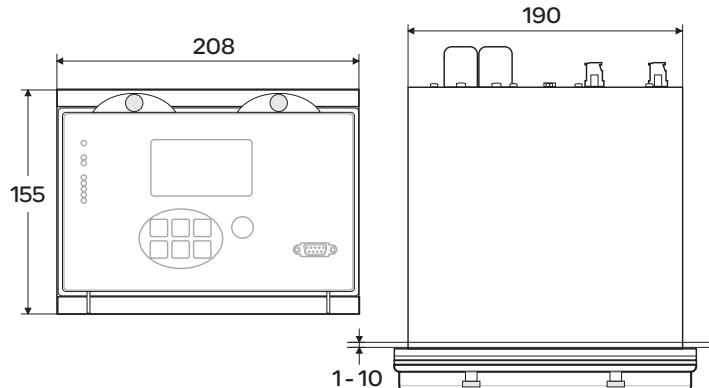
Semi-flush mounting
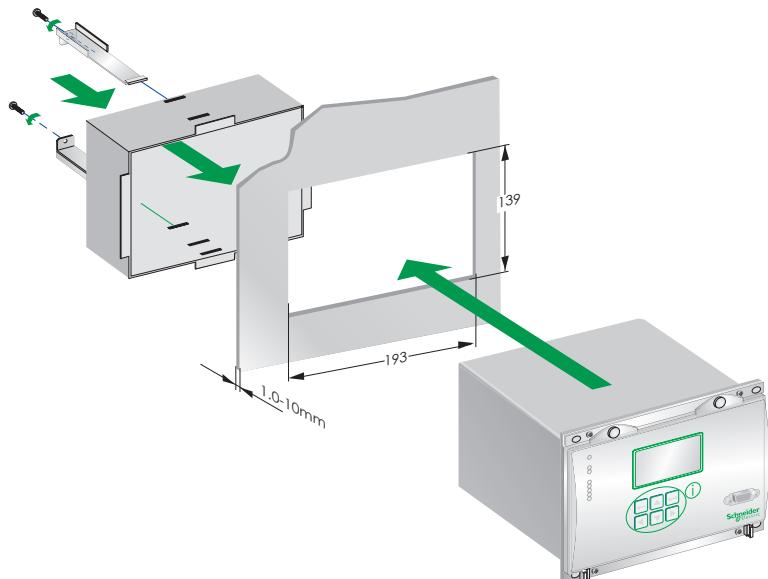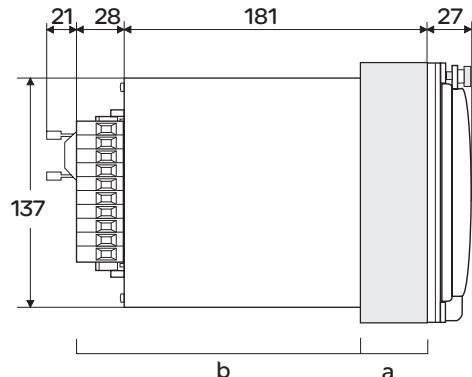
Depth with raising frames

Type designation	a (mm)	b (mm)	Fixing bracket
VYX 076	40	169	Standard for 200 serie s
VYX 077	60	149	Standard for 200 serie s
VYX 233	100	109	2 x VYX199

Order codes

ORDER CODES FOR VAMP 52

Accessories, see page 19

V 52 - 3
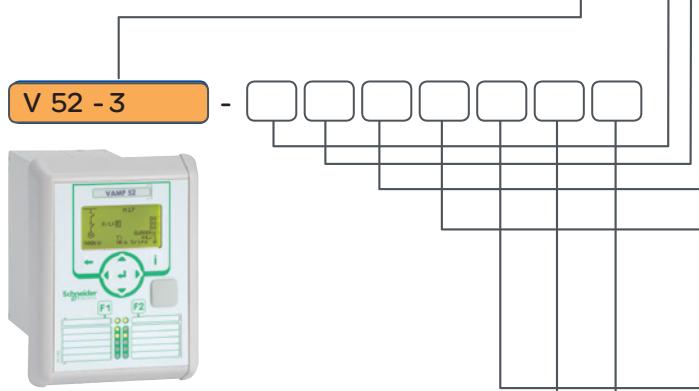
[1] Communication module 2 only available when combined with Communication module 1 options:
(B) RS 485 or
(L) RS232

ORDER CODE FOR VAMP 40

Accessories, see page 19

V 40

Phase current inputs [A]
3 = 1A / 5A

Earth-fault current input [A]
A = 1 A / 5 A
B = 0.2 A /1 A

Optional I/O extension modules
A = None
B = Digital I/O 4 x DI, 1 x DO
C = Arc Protection; 2 x Sensor, BIO

Supply Voltage [V]
A = 40.. 265 Vac/dc
B = 18 ... 36 Vdc

mA output option
A = None
B = mA output

DI threshold voltage
1 = 24 VDC /110 VAC
2 = 110 VDC /220 VAC
3 = 220 VDC

| Optional communication module 1 |
| --- |
| A = None |
| B = RS 485 interface with option for module 2 |
| C = RS 232 interface |
| D = Plastic/Plastic serial fibre interface |
| E = Glass/Glass serial fibre interface |
| F = Rx Plastic/Tx Glass serial fibre interface |
| G = Rx Glass/Tx Plastic serial fibre interface |
| H = Ethernet RJ-45, 10 Mbps interface |
| K = IEC 61850 RJ-45, 10 Mbps interface |
| L = RS-232 inteface with option for module 2 |
| P = Profibus interface 2) |
| R = 2 x ST 100 Mbps Ethernet fibre interface with 61850 |
| S = 2 x RJ-45 100 Mbps Ethernet interface with 61850 |

Optional communication module 2
A = None
B = IRIG-B timesyncronisation input [1]
C = RTD fiber optic interface [1]
D = RJ-45 Ethernet Interface 10 Mbps [1]
E = RJ-45 IEC 61850 10 Mbps interface [1]
F = LC 100 Mbps Ethernet fibre interface [1]
G = LC IEC 61850 100 Mbps Ethernet fibre interface [1]

ORDER CODES FOR VAMP 230 / VAMP 255

Accessories, see page 19

| V 230 - 3 | | | 7 | | |
| V 255 - 3 | | | 7 | | |
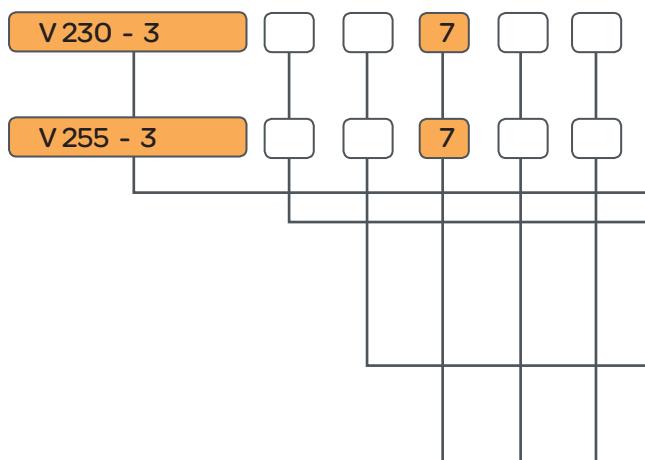
Nominal current [A]

3 = 1 A / 5 A

Nominal earth-fault current Io1 & Io2 [A]

C = 1 A / 5 A

D = 0,2 A / 1 A

Frequency [Hz]

7 = 50/60 Hz

Supply voltage [V]

A = 40.. 265 Vac/dc

B = 18.. 36 Vdc

C = 40.. 265 Vac/dc + ARC Protection

D = 18.. 36 Vdc + ARC Protection

E = 40.. 265 Vac/dc + DI19, DI20 + arc channel, optional

Optional hardware 1

A = None

B = Plastic/Plastic fibre interface

C = Profibus Interface

D = RS485 interface

E = Glass/Glass serial fibre interface

F = Rx Plastic/Tx Glass serial fibre interface

G = Rx Glass/Tx Plastic serial fibre interface

H = RJ-45 10Mbps ethernet interface

M = RJ-45 10Mbps ethernet with IEC 618500

O = LC 100 Mbps Ethernet fibre interface with IEC 61850

P = RJ-45 100 Mbps Ethernet interface with IEC 61850

R = 2 x LC 100 Mbps Ethernet fibre interface with IEC 61850

S = 2 x RJ-45 100 Mbps Ethernet interface with IEC 61850

Analog Outputs & firmware

A = None, version 6 firmware

B = 4 pcs, version 6 firmware

E = None, standard firmware

F = 4 pcs, standard firmware

ORDER CODES FOR VAMP 257

V 257 - 3

Nominal current [A]

3 = 1 A / 5 A

Nominal earth-fault current Io1 & Io2 [A]

C = 1 A / 5 A

D = 0,2 A / 1 A

Additional I/O (X8 terminal)

6 = None

7 = 8 standard inputs, 4 TCS Hybrid inputs/outputs

8 = 10 outputs

9 = 8 standard inputs and 4 outputs

Supply voltage [V]

A = 40.. 265Vac/dc

B = 18.. 36Vdc

C = 40.. 265Vac/dc + ARC Protection

D = 18.. 36Vdc + ARC Protection

E = 40.. 265Vac/dc + DI19, DI20 + arc channel, Optional

F = 18.. 36Vdc + DI19, DI20 + arc channel, Optional

Optional hardware (communication port 1)

A = TTL/RS-232

B = Plastic/Plastic fibre interface (VCM fiber PP)

C = N/A

D = RS 485 Interface (VCM 485-4)

E = Glass/Glass serial fibre interface (VCM FIBRE GG)

F = Rx Plastic/Tx Glass serial fibre interface (VCM FIBRE PG)

G = Rx Glass/Tx Plastic serial fibre interface (VCM FIBRE GP)

I = RJ-45 connection (RS-232, VCM 232)

M = ST Fibre ethernet Interface with IEC 61850

N = RTD interface (Glass Optic, VCM RTD)

Optional hardware (communication port 2)

A = None

C = RJ-45 connection (RS-232, VCM 232)

D = RS-485 Interface (VCM 485-2)

L = RJ-45 Inbuilt Ethernet

M = RJ-45 Inbuilt Ethernet with IEC 61850

N = RTD interface (Glass Optic, VCM RTD)

ORDER CODES FOR VAMP 265M

Accessories, see page 19

V 265M - [ ][ ][7][ ][ ][ ]

Nominal current, HV & LV side [A]
1 = 1A & 1A
3 = 1A & 5A
4 = 5A & 1A
5 = 5A & 5A

Nominal earth-fault currents Io & I'o [A]
A = 5A & 5A
B = 5A & 1A
C = 1A & 5A
D = 1A & 1A

Frequency [Hz]
7 = 50/60Hz

Supply voltage [V]
A = 40.. 265Vac/dc
B = 18.. 36Vdc
C = 40.. 265Vac/dc + ARC Protection
D = 18.. 36Vdc + ARC Protection
E = 40.. 265Vac/dc + DI19, DI20 + arc channel, Optional
F = 18.. 36Vdc + DI19, DI20 + arc channel, Optional

Optional hardware
A = None
B = Plastic/Plastic fibre interface
C = Profibus Interface
D = RS485 Interface
E = Glass/Glass serial fibre interface
F = Rx Plastic/Tx Glass serial fibre interface
G = Rx Glass/Tx Plastic serial fibe interface
H = RJ-45 10Mbps ethernet interface
M = RJ-45 10Mbps ethernet with IEC 61850
O = LC 100 Mbps Ethernet fibre interface, with IEC 61850
P = RJ-45 100Mbps Ethernet interface with IEC 61850
R = 2 x LC 100 Mbps Ethernet fibre interface with IEC 61850
S = 2 x RJ-45 100 Mbps Ethernet interface with IEC 61850

Software
M = Standard firmware, Motor functions

Order codes for accessories

Order code	Description	Note	VAMP 40	VAMP 52	VAMP 230	VAMP 255	VAMP 257	VAMP 265M
VEA 3 CGi	External Ethernet Interface Module		■		■	■	■	■
VPA 3 CG	Profibus Interface Module		■	■	■	■	■	■
VSE001	Fiber optic Interface Module		■	■	■	■	■	■
VSE002	RS485 Interface Module		■	■	■	■	■	■
VSE003	RS485 Interface Module, Ext I/O interface				■	■		■
VSE004	RS485 Interface Module, Ext I/O interface		■					
VCM 485+00	RS 485 interface			■				
VCM 485+FI	RS 485 with RTD fiber optic interface			■				
VCM 485+ET	RS 485 with RJ45 ethernet interface 10Mbps			■				
VCM 485+I6	RS 485 with RJ45 ethernet interface 10Mbps (IEC61850)			■				
VCM 485+IR	RS 485 with Irig-B time synchronization interface			■				
VCM 485+LC	RS 485 with LC ethernet interface 100Mbps			■				
VCM 485+L6	RS 485 with LC ethernet interface 100Mbps (IEC61850)			■				
VCM 232+ET	RS 232 with RJ45 ethernet interface 10Mbps			■				
VCM FIBRE PP	Serial fibre interface (Plastic/Plastic)			■				
VCM FIBRE GG	Serial fibre interface (Glass/Glass)			■				
VCM PB	Profibus DP interface			■				
VOM Arc+BI	ARC option card (2S+BI)			■				
VOM Arc+3S	ARC option card (3S)			■				
VOM4DI1DO	Digital Input/Output Option Card			■				
VCM 485-4	RS-485 Interface Module, integrated for VAMP257						■	
VCM 485-2	RS-485 Interface Module, integrated for VAMP257						■	
VCM fiber	Fiber Interface Module, integrated for VAMP257						■	
VCM 232	RS-232 Interface Module, RJ-45, integrated for VAMP257						■	
VX003-3	Programming Cable (VAMPSET, VEA 3 CG+200series)	Cable length 3 m	■		■	■	■	■
VX004-M3	TTL/RS232 Converter Cable (for PLC, VEA3CG+200series)	Cable length 3 m			■	■	■	■
VX028-3	Interface cable to VPA 3 CG (Profibus module)	Cable length 3 m	■					
VX030-3	Interface cable to VEA 3 CG (Ethernet module)	Cable length 3 m	■					
VX032-3	Rear panel programming cable	Cable length 3 m	■					
VX052-3	USB Programming Cable	Cable length 3 m		■				
VP40	Arc option		■					
VA1DA-6	Arc sensor	Cable length 6 m	■	■	■	■	■	■
VA1DA-20	Arc sensor	Cable length 20 m	■	■	■	■	■	■
VYX076	Raising Frame for 200-series	Height 40 mm			■	■	■	■
VYX077	Raising Frame for 200-series	Height 60 mm			■	■	■	■
VYX233	Raising Frame for 200-series	Height 100 mm			■	■	■	■
VYX 256A	Optional seal for IP54		■					
VIO 12 AA	RTD Module, 12pcs RTD inputs, Optical Tx Communication				■	■	■	■
VIO 12 AB	RTD Module, 12pcs RTD inputs, RS 485 Communication				■	■	■	■
VIO 12 AC	RTD Module, 12pcs RTD inputs, PTC, mA inputs/outputs,				■	■	■	■
VIO 12 AD	RS232, RS485 and Optical Tx/Rx Communication				■	■	■	■
VAM 16D	External LED module				■	■	■	■

Technical data

Auxiliary voltage

	VAMP 40	VAMP 52	VAMP 230/255	VAMP 257	VAMP 265M
Rated voltage Uaux Type A (standard)	19...265 V ac/dc	40...265 V ac/dc	40...265 V ac/dc	40...265 V ac/dc	40...265 V ac/dc
	For rated voltages 24...240 V ac/dc	110/ 120/ 220/ 240 V ac	110/ 120/ 220/ 240 V ac	110/ 120/ 220/ 240 V ac	110/ 120/ 220/ 240 V ac
		48/ 60/ 110/ 125/ 220 V dc	48/ 60/ 110/ 125/ 220 V dc	48/ 60/ 110/ 125/ 220 V dc	48/60/110/125/220 V dc
Rated voltage Uaux Type B (option)		18...36 V dc	18...36 V dc	18...36 V dc	18...36 V dc
		24 V dc	24 V dc	24 V dc	24 V dc
Power consumption	< 7 W (normal conditions)				
	< 15 W (output relays activated)				

Measuring circuitry

	VAMP 40	VAMP 52	VAMP 230/255	VAMP 257	VAMP 265M
Rated phase current In	5 A (configurable for CT secondaries 1-10 A)				
Current measuring range	0...50xI_n (0...250 A)				
Thermal withstand	4 x I_n (20 A continuously)				
	100 A (for 10 s)				
	500 A (for 1 s)				
Burden	< 0,2 VA				
Rated phase current In					In = 1A (configurable for CT secondaries 1-10 A)
Current measuring range					0...50xI_n (0...50 A)
Thermal withstand					4 x I_n (4 A) (continuously)
					20 A (for 10 s)
					100 A (for 1 s)
Burden					< 0,1 VA
Rated residual current 3Io	I_{01} = 5 A / 1 A	5A/1A (optionally 1 A / 0.2 A)	I_{02} input option C 5 A (configurable for CT secondaries 1-10 A)	I_{02} input option C 5 A (configurable for CT secondaries 1-10 A)	1A (configurable for CT secondaries 0.1-10 A)
Current measuring range	0...50 A/10 A	0...50 A/10 A	0...50 A	0...50 A	0...5 A
Thermal withstand	4 x I_{on} continuously				
	20 x I_{on} (for 10 s)				
	100 x I_{on} (for 1 s)				
Burden	< 0,2 VA				< 0,1 VA
Rated residual current 3Io	I_{02} = 1 A/ 0.2 A		(I_{02} input option C / I_{02} input option D) 1 A (configurable for CT secondaries 0.1-10 A)	I_{02} input option D 1 A (configurable for CT secondaries 0.1-10 A)	5 A (configurable for CT secondaries 1-10 A)
Current measuring range	0...10 A/2 A		0...10 A (for VAMP 255) 0...5 A (for VAMP 230)	0...10 A	0...25 A
Thermal withstand	4 x I_{o2n} (continuously)			4 x I_{o2n} (continuously)	
	20 x I_{o2n} (for 10 s)			20 x I_{o2n} (for 10 s)	
	100 x I_{o2n} (for 1 s)			100 x I_{o2n} (for 1 s)	
Burden	< 0,2 VA		< 0,1 VA	< 0,1 VA	< 0,2 VA
Rated residual current 3Io			I_{02} input option D I_{o1} = 0.2 A (configurable for CT secondaries 0.1-10 A)	I_{02} input option D I_{o1} = 0.2 A (configurable for CT secondaries 0.1-10 A)	
Current measuring range			0...2 A (for VAMP 255) 0...1 A (for VAMP 230)	0...2 A	
Thermal withstand			4 x I_{o1} (continuously)		
			20 x I_{o1} (for 10 s)		
			100 x I_{o1} (for 1 s)		
Burden			< 0,1 VA		
Rated voltage Un	100 V (configurable for VT secondaries 50 - 120 V)				
Voltage measuring range	0 – 160 V	0 – 300 V	0 – 160 V (100 V/110 V)	0 – 160 V (100 V/110 V)	
Continuous voltage withstand	250 V	300 V	250 V	250 V	
Burden	< 0,5 VA	< 0,5 VA	< 0,5 VA	< 0,5 VA	
Rated frequency fn	45 – 65 Hz	45 – 65 Hz	45 – 65 Hz	45 – 65 Hz	45 – 65 Hz
Frequency measuring range	16 – 75 Hz		16 – 75 Hz	16 – 75 Hz	
Terminal Block	max wire dimension for solid or stranded wire : 4 mm^2 (10-12 AWG)				

Digital inputs

	VAMP 40	VAMP 52	VAMP 230/255	VAMP 257	VAMP 265M
Internal operating voltage			48 V dc	48 V dc	48 V dc
Number of inputs (internal voltage)			6 pcs	6 pcs	6 pcs
Polarity, NO = normally open, NC = normally closed		NO / NC			
External operating voltage	18 V ... 265 V dc	Rated voltage selectable in order code:	18 V ... 265 V dc (only VAMP 255)	18 V ... 265 V dc	
		A: 24 V dc/ 110 V ac			
		B: 110 V dc/ 220 V ac			
		C: 220 V dc			
Number of inputs with external voltage, pcs / max. depends on ordering code	2	2 / 7	12 / 14	12 / 14 20 / 22 24 / 26	2
Terminal block	Max wire dimension / Phoenix MVSTBW or equivalent : 2.5 mm² (13-14 AWG)				

Trip contacts

	VAMP 40	VAMP 52	VAMP 230/255	VAMP 257	VAMP 265M
Number of contacts, pcs / max. depends on ordering code	4	4	2 (VAMP 230) 4 (VAMP 255)	4/8/14	2
Rated voltage	250 V ac/dc				
Continuous carry	5 A				
Make and carry, 0.5 s	30 A				
Make and carry, 3 s	15 A				
Breaking capacity, AC	2000 VA				
Breaking capacity, DC (L/R=40ms)	at 48 V dc: 5 A				
	at 110 V dc: 3 A				
	at 220 V dc: 1 A				
Contact material	AgNi 90/10				
Terminal Block	Max. wire dimension / Phoenix MVSTBW or equivalent : 2.5 mm² / (13-14 AWG)				

Alarm contacts

	VAMP 40	VAMP 52	VAMP 230/255	VAMP 257	VAMP 265M
Number of contacts	2 change-over contacts (relays A1 and IF)	2 change-over contacts (relays A1 and IF)	3 change-over contacts (relays A1, A2, A3) 2 making contacts (relays A4 and A5) 1 change-over contact (IF relay)		
Rated voltage	250 V ac/dc				
Max. make current, 4s at duty cycle 10%			15 A	15 A	15 A
Continuous carry	5 A				
Max. making current					
Breaking capacity, AC			2 000 VA	2 000 VA	2 000 VA
Breaking capacity, DC (L/R=40ms)	at 48 V dc: 1,3 A				
	at 110 V dc: 0,4 A				
	at 220 V dc: 0,2 A				
Contact material	AgNi 0.15 gold plated		AgNi 0.15 gold plated AgNi 90/10		AgNi 0.15 gold plated
Terminal Block	Max. wire dimension / Phoenix MVSTBW or equivalent : 2.5 mm² / (13-14 AWG)				

Local serial ports

	VAMP 40	VAMP 52	VAMP 230/255	VAMP 257	VAMP 265M
Number of ports, pcs					
front	1	1	1	1	1
rear (optional)	1		1	(1)	1
Electrical connection	RS 232	USB	RS 232	RS 232	RS 232
Data transfer rate	2 400 – 187500 kb/s				

Remote serial ports

	VAMP 40	VAMP 52 – Option	VAMP 230/255	VAMP 257	VAMP 265M
Number of ports	1 on rear panel	1 slot on rear panel	1 on rear panel	1 on rear panel	1 on rear panel
Electrical connection	RS 232	RS 232	TTL (standard)	TTL with VCM TTL (standard)	TTL (standard)
		RS 485	RS 232 (option)	RS 485 with VCM 485-4 (option)	RS 232 (option)
		Plastic fibre connection	RS 485 (option)	RS 232 with VCM TTL (standard)	RS 485 (option)
		Glass fibre connection	Plastic fibre connection (option)	Plastic fibre connection with VCM fibre (option)	Plastic fibre connection (option)
		Ethernet 10 Base-T	Glass fibre connection (option)	Glass fibre connection with VCM fibre (option)	Glass fibre connection (option)
Data transfer rate	1 200 – 19 200 kb/s	1 200 – 19 200 kb/s	1 200 – 19 200 kb/s	1 200 – 19 200 kb/s	1 200 – 19 200 kb/s
Protocols	ModBus, RTU master	ModBus, RTU master	ModBus, RTU master	ModBus, RTU master	ModBus, RTU master
	ModBus, RTU slave	ModBus, RTU slave	ModBus, RTU slave	ModBus, RTU slave	ModBus, RTU slave
	SpaBus, slave	SpaBus, slave	SpaBus, slave	SpaBus, slave	SpaBus, slave
	IEC 60870-5-103	IEC 60870-5-103	IEC 60870-5-103	IEC 60870-5-103	IEC 60870-5-103
	IEC 60870-5-101	IEC 60870-5-101	IEC 60870-5-101	IEC 60870-5-101	
	ProfiBus DP (external module)	ProfiBus DP (external module)	ProfiBus DP (option or external module)	ProfiBus DP (option or external module)	ProfiBus DP (option or external module)
	DNP 3.0	DNP 3.0	DNP 3.0	DNP 3.0	DNP3.0

Ethernet connection

	VAMP 40	VAMP 52	VAMP 230/255	VAMP 257	VAMP 265M
Number of ports, pcs	nill	1	1 / 2	1	1 / 2
Electrical connection		Ethernet RJ-45 (Ethernet 10-Base-T)	Ethernet RJ-45 (Ethernet 10-Base-T)	Ethernet RJ-45 (Ethernet 10-Base-T)	Ethernet RJ-45 (10-Base-T, option, external module)
Data transfer rate		10 Mb/s	10 Mb/s	10 Mb/s	10 Mb/s
Protocols		VAMPSET	VAMPSET	VAMPSET	VAMPSET
		ModBus TCP	ModBus TCP	ModBus TCP	ModBus TCP
		IEC 61850	IEC 61850	IEC 61850	IEC 61850
		DNP 3.0	DNP 3.0	DNP 3.0	DNP 3.0

Analogue outputs

	VAMP 40	VAMP 52 – Option	VAMP 230/255 – Option	VAMP 257	VAMP 265M
Number of analogue mA output channels		1	4		
Range output current		1–20 mA, step 1 mA	1–20 mA, step 1 mA		

Arc protection interface (option)

	VAMP 40	VAMP 52	VAMP 230/255	VAMP 257	VAMP 265M
Number of arc sensor inputs	2	2	2	2	2
Sensor type to be connected	VA 1 DA-6, VA1DA-20, VA1-EH5				
Operating voltage level	12 V dc				
Number of binary inputs (BI) (optically isolated)	1	1	1	1	1
Number of binary outputs (BO)	1	1	1	1	1
Operating voltage level of BI/BO	+48 V dc	+48 V dc	+48 V dc	+48 V dc	+48 V dc

Casing

	VAMP 40	VAMP 52	VAMP 230/255	VAMP 257	VAMP 265M
Degree of protection (IEC 60529)	IP20 (IP54 with sealing)	IP54	IP20	IP20	IP20
Dimensions (W x H x D)	280 x 195 x 55 mm	130 x 170 x 210 mm	208 x 155 x 225 mm	208 x 155 x 225 mm	208 x 155 x 225 mm
Material	1 mm steel plate				
Weight	2.0 kg	2.0 kg	4.2 kg	4.2 kg	4.2 kg
Color code	RAL 7032 (Casing) / RAL 7035 (Black plate)				

Package

	VAMP 40	VAMP 52	VAMP 230/255	VAMP 257	VAMP 265M
Dimensions (W x H x D)	315 x 260 x 105 mm	320 x 215 x 175 mm	215 x 160 x 275 mm	215 x 160 x 275 mm	215 x 160 x 275 mm
Weight (Relay, Package and Manual)	3.0 kg	3.0 kg	5.2 kg	5.2 kg	5.2 kg

Test voltages

	VAMP 40	VAMP 52	VAMP 230/255	VAMP 257	VAMP 265M
Insulation test voltage (IEC 60255-5)	2 kV, 50 Hz, 1 min	2 kV, 50 Hz, 1 min	2 kV, 50 Hz, 1 min (Class III)	2 kV, 50 Hz, 1 min (Class III)	2 kV, 50 Hz, 1 min (Class III)
Surge voltage (IEC 60255-5)	5 kV, 1.2/50 as, 0.5 J (Class III)	5 kV, 1.2/50 as, 0.5 J (Class III)	5 kV, 1.2/50 as, 0.5 J (Class III)	5 kV, 1.2/50 as, 0.5 J (Class III)	5 kV, 1.2/50 as, 0.5 J (Class III)

Enviromental conditions

	VAMP 40	VAMP 52	VAMP 230/255	VAMP 257	VAMP 265M
Operating temperature	-40°C to +65°C	-40°C to +65°C	-40°C to +65°C	-10°C to +65°C	-10°C to +65°C
Transport and storage temperature	–40 to +70 °C				
Relative humidity	< 75 % (1 year, average value)				
	< 90 % (30 days per year, no condensation permitted)	< 95 % (30 days per year, no condensation permitted)	< 90 % (30 days per year no condensation permitted)		

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 systems. Their unique integrated arc flash fault protection functionality enhances the safety of both people and property and has made VAMP a leading brand in arc flash protection worldwide. All VAMP products meet the latest international standards and regulations.

- Our success is based on competitive standard products, constant development by our designers possessing experience from three protection relay generations, our long-term partnerships, flexibility and 24 hour customer care.

As standards, specifications and designs change from time to time, please ask for confirmation of the information given in this publication.

Design: Schneider Electric Industries SAS - Sonovision
Photos: Schneider Electric Industries SAS
Printed: Altavia Connexion - Made in France

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