

# VAMP 120 & 121

## Arc Flash Protection Units



### CUSTOMER BENEFITS

- **Reduces Loss of Production**

The shorter the operating time of the arc flash protection unit the smaller the damage caused by the arc fault will be and the shorter the possible outage of the power supply.

- **Prolonged Switchgear Life Cycle**

A modern arc protection unit increases the life-cycle expectancy of switchgear installations, investment decisions in new switchgear installations can be postponed and money can be saved by re-Vamping existing switchgear systems.

- **Reduced Insurance Costs**

The faster and better the protection system of a power installation is, the more generous the insurance terms and costs will be.

- **Low Investment Costs and Fast Installation**

A comprehensive arc protection is characterized by low investment costs and a fast installation and commissioning time. One successful operation of the arc flash protection units provides immediate investment pay off.

- **Reliable Operation**

Function is based on appearance of light or alternatively on the appearance of light and current from an external equipment. Immune to nuisance trippings!

- **Vast Experience**

Schneider Electric is the pioneer in the field of arc flash protection with more than 15.000 VAMP arc flash protection systems and units with over 300.000 arc detecting sensors in service world-wide

Modern society heavily depends on an uninterrupted supply of electric power.

Prolonged power outages cause loss of business to the power supplier and loss of production to the power consumer.

Regardless how safe a power system is, faults do occur. This being the case the damage caused by power system faults must be kept to a minimum level.

The ultimate solution is to selectively isolate the fault as fast as possible, while maintaining the operation of the healthy network parts.

## SECURE YOUR ASSETS AND STAFF SAFETY

Vamp arc flash protection increases the safety and minimizes the material damage of the installation in the most hazardous power system fault situations. The arc protection unit detects an arc flash in an installation and trips the feeding breaker.

On detection of a fault the arc flash protection unit immediately trips the concerned circuit breaker(s) to isolate the fault.

An arc flash protection system operates much faster than conventional protection relays and thus damage caused by an arc short circuit can be kept to a minimum level.



## WHY ARC FLASH PROTECTION?

When the traditional time-grading or blocking based protection coordination principle is used, the traditional protection systems may not provide fast enough protection of substation faults. Further, high-impedance type of earth-faults may cause prolonged operation times of earth-fault relays leading to the significant release of the arcing energy. These facts pose a considerable risk to operators and economical assets.



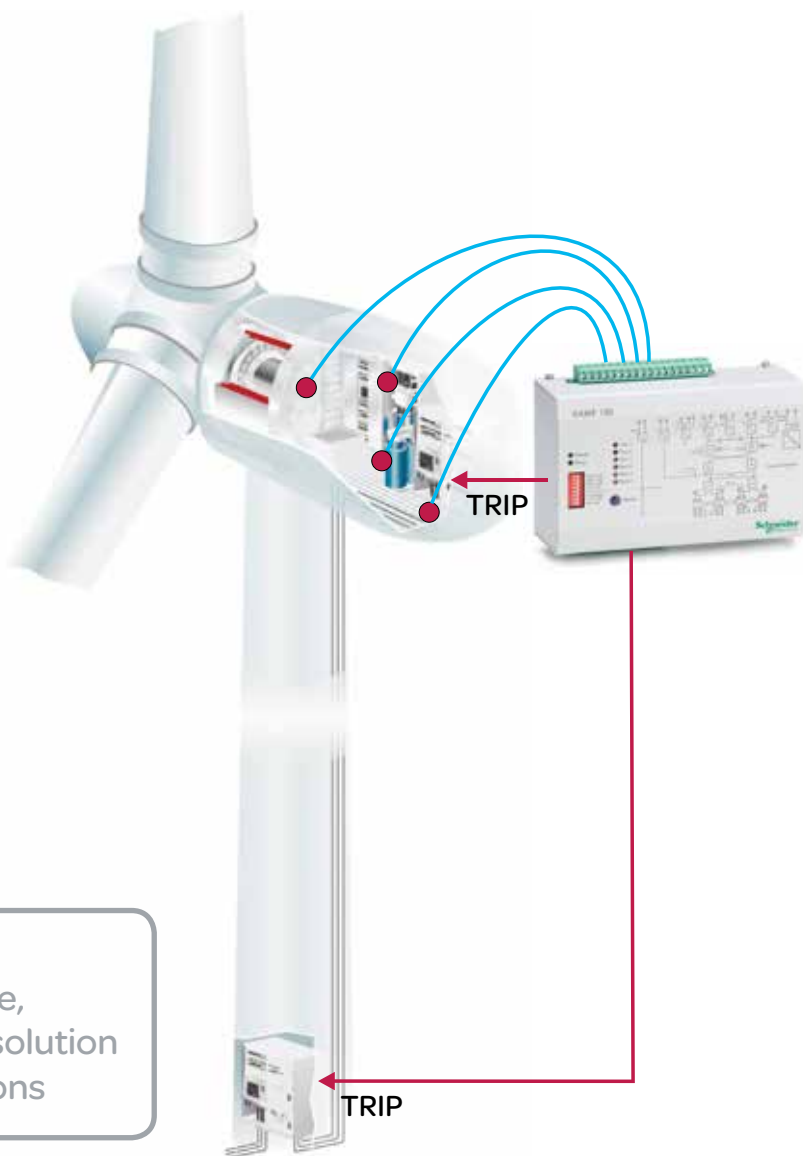
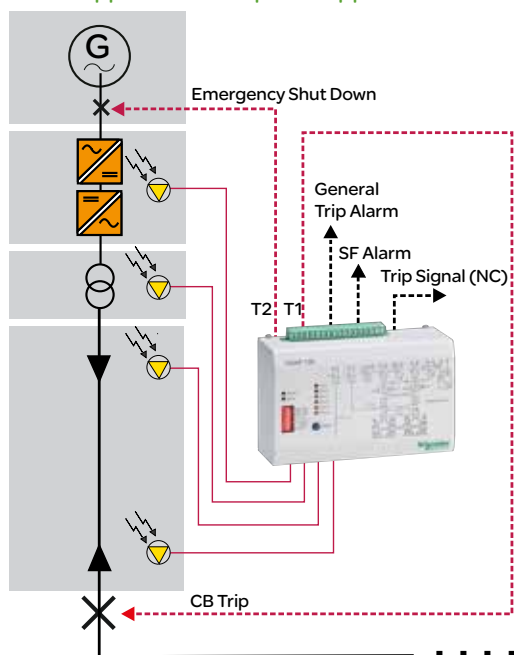
VAMP arc flash protection is an extremely fast protection system for LV and MV switchgear and controlgear.

It is especially designed to increase the safety and to minimize material damage caused by arc faults.

Minimized damage also means limited need for repair work and enables a rapid restoration of the power supply.

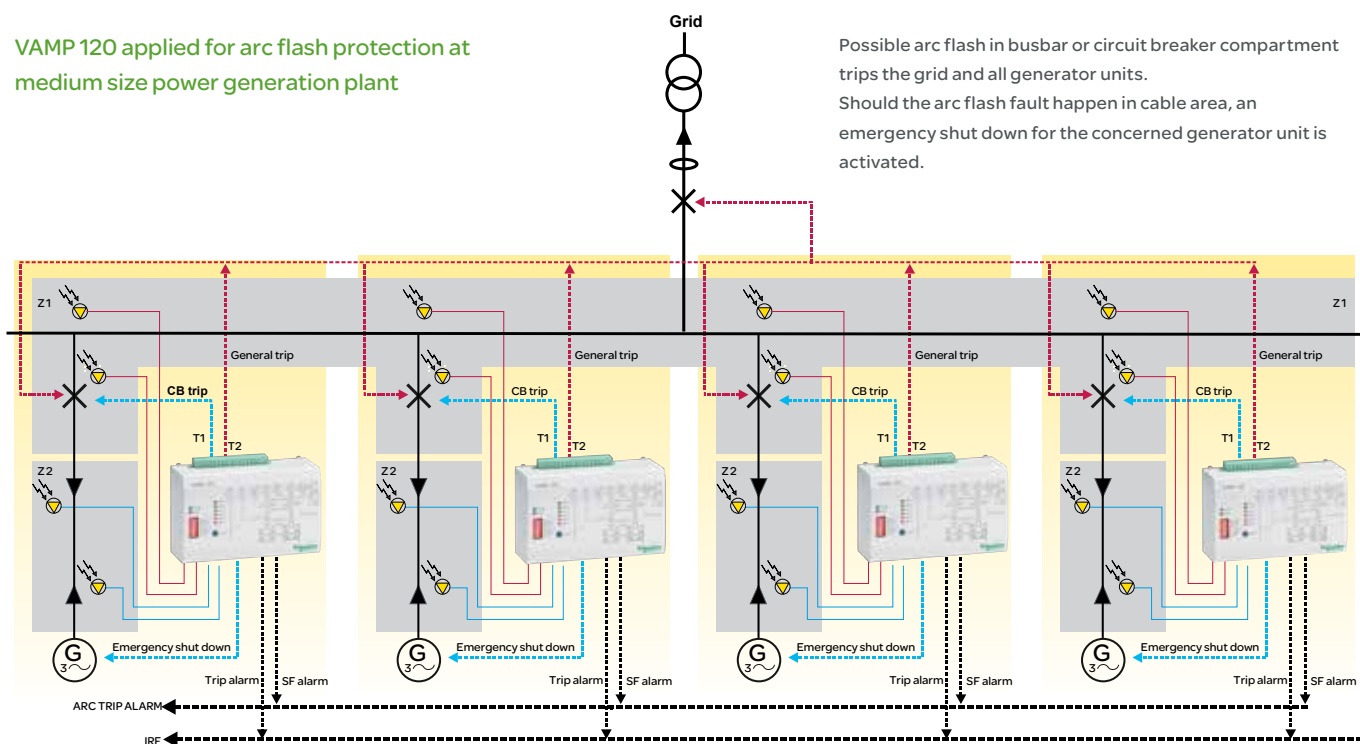
## TYPICAL APPLICATIONS

VAMP 120 applied for wind power applications



VAMP 120 provides the most simple, straight-forward and economical solution designed for wind power applications

VAMP 120 applied for arc flash protection at medium size power generation plant



## PRODUCT CHARACTERISTICS AND HIGHLIGHTS

### Common Features

- Operation on light only
- Supports point or smoke sensors
- Straight-forward installation
- Cost-efficient solution
- Self-supervision

### VAMP 120



- Integrated 19–256 V ac/dc aux. supply
- Optimized for wind power and other small applications
- Up to 4 sensors
- Selective trip for 2 zones and possibility for generator set emergency trip (separate contact)
- Operation time typically 7 ms (including the output relay)
- Non-volatile trip status
- Input for current criteria for I> & L> operation
- NO & NC trip outputs (Zone 1)

### VAMP 121



- Operation on light only
- Up to 10 sensors
- Single trip contact
- Operation time typically 9 ms (including the output relay)
- Binary input for blocking or resetting (programmable) the unit
- Possibility for double arc channel activation trip criteria
- BIO light transfer to other Vamp device



Supply unit 3P004



Alarm relay 7P004

## SENSORS & ACCESSORIES



Point sensor VA1EH-x (pipe)



Point sensor VA1DA-x (surface)

### Point Sensors

- Easy installation and replacement
- Enables fault location indication
- Surface mounting
- Tube mounting
- Continuous self-supervision



Portable sensor VA1DP-5



### VAMP 4R

#### Trip Multiplier Relay

- 4 + 4 trip outputs (4 x NO and 4 x NC)
- Two separate tripping groups
- Enables a 7 ms total operation time to a large number of CBs (controlled by binary output(BO) of VAMP 121 unit)
- External auxiliary power supply



### Sensor Mounting Plates

- Z- or L-shaped
- Wall mounting to VA1DA-x sensors (no extra holes in the switchgear)

ORDER CODES

VAMP 120

Order code	Description
V120	Arc flash protection unit

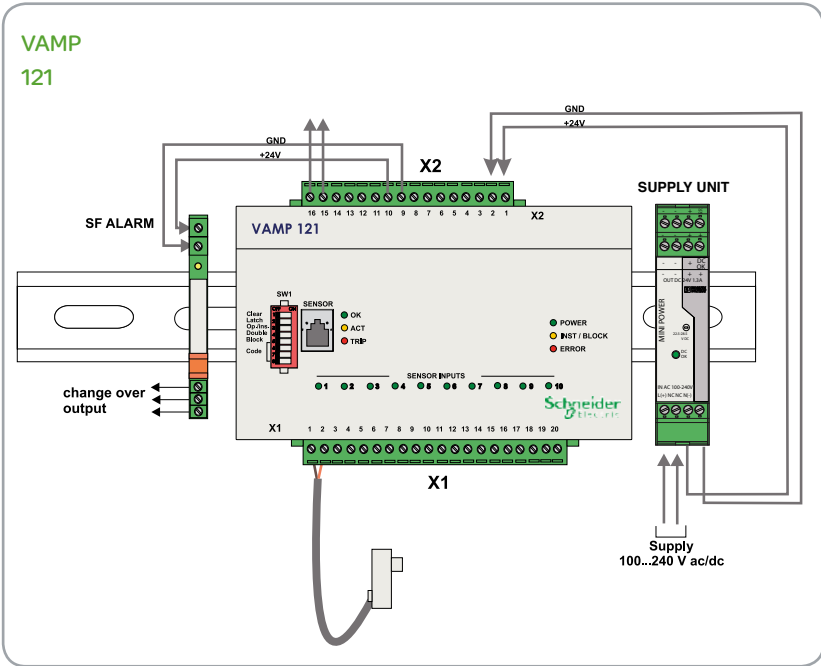
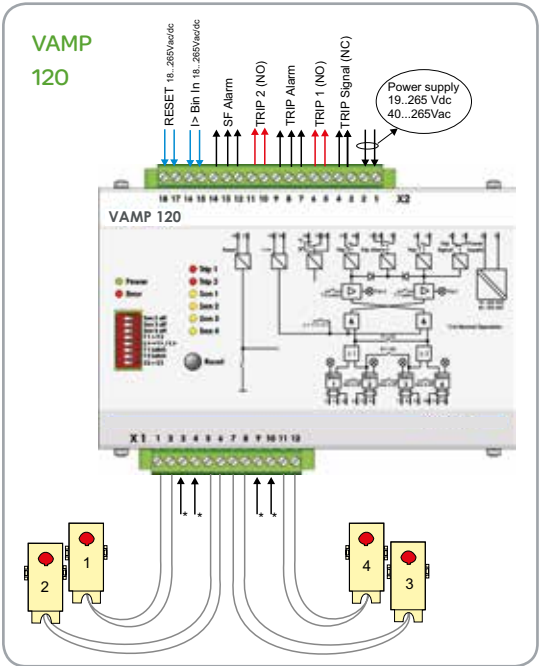
VAMP 121

Order code	Description
V121	Arc flash protection unit
V121D	Arc flash protection unit, door mounted
V121 KIT1	V121 Arc Protection Unit, 8 x VA1DA-6, MINI-PS-100-240AC/24DC/1.3, Self Supervision Relay DEK-REL-G24/21
3P004	Supply unit, Phoenix MINI-PS-100-240AC/24DC/1.3
3P007	Alarm relay, Phoenix DEK-REL-G24/21
VA1DP-5	Portable sensor

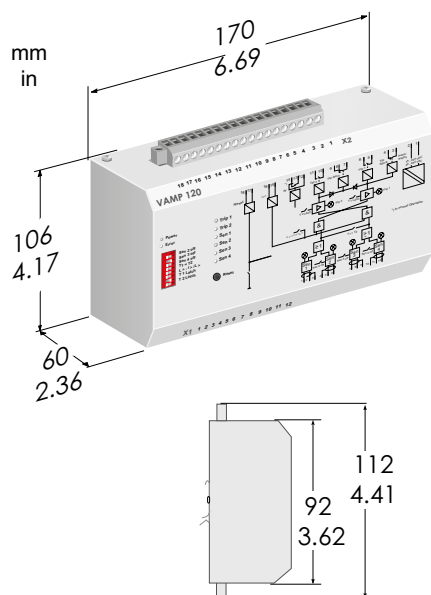
Accessories

Order code	Description	Note
VAMP4RSE	Trip multiplier relay	4 x NO and 4 x NC
VA1DA-6	Arc sensor	Cable length 6 m
VA1DA-20	Arc sensor	Cable length 20 m
VA1EH-6	Arc sensor (pipe type)	Cable length 6 m
VA1EH-20	Arc sensor (pipe type)	Cable length 20 m
VYX001	Surface mounting plate for sensors	Z-shaped
VYX002	Surface mounting plate for sensors	L-shaped

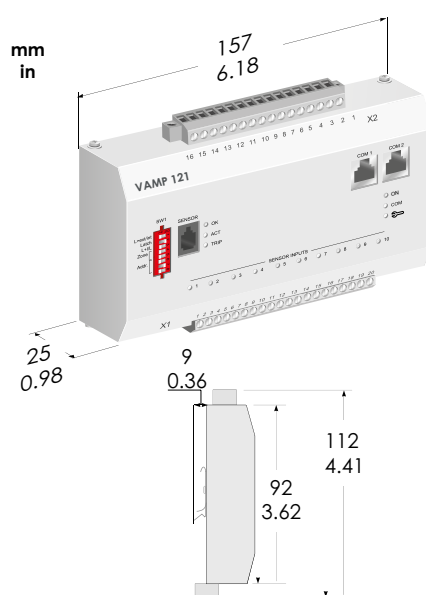
CONNECTION DIAGRAMS



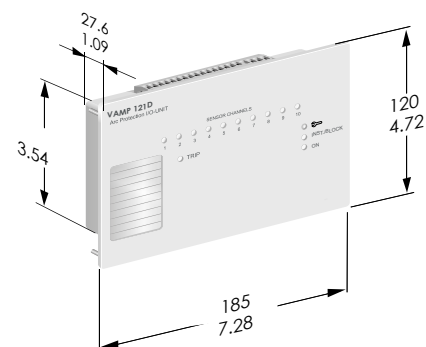
## VAMP 120



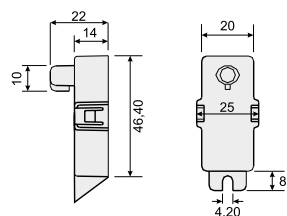
## VAMP 121



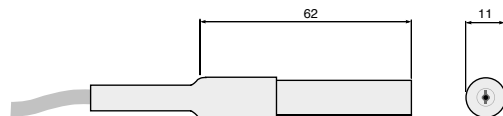
VAMP 121D



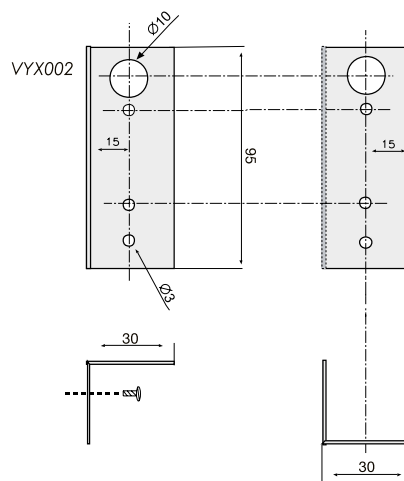
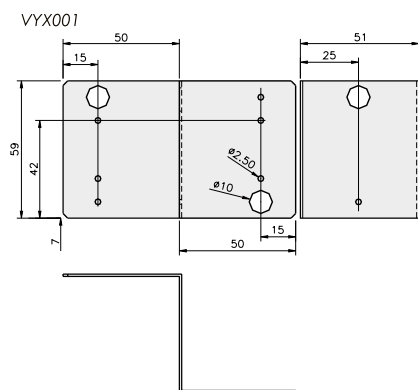
## Arc Sensor VA1DA-



## Arc Sensor VA1EH-



## Mounting Plates for VA1DA



## TECHNICAL DATA

### VAMP 120 unit

Power Supply	
Us	19 – 265 V dc / 40 – 265 V ac
Pmax	4 W
TRIP Contacts 2 pcs	
Rated voltage	250 V ac/dc
Continuous carry	5 A
Make and carry for 0.5 s	30 A
Make and carry for 3 s	15 A
t>	7 ms
Digital Inputs	
Rated voltage	18 – 265 V ac/dc
Number of inputs	2

### VAMP 121 / 121D units

Power Supply	
Us	24 V dc
In (stand-by)	30 mA
I sensAct	20 mA
Iarc	120 mA ( I sensAct x n ) *
Tripping Contacts 1 pc NO	
Rated voltage	250 V ac/dc
Continuous carry	5 A
Make and carry for 0.5 s	30 A
Make and carry for 3 s	15 A
Breaking capacity DC, when time constant L/R=40 ms	50 W
Contact material	AgNi
t>	9 ms
BIO Inputs/Outputs	
Rated voltage	+24 V
Rated current / output	20 mA (max)
Rated current / input	5 mA
Number of inputs	1
Number of outputs	1

### 3P004 supply unit

Phoenix type as used in table below	MINI-PS-100- 240AC/24DC/1.3
Input Data	
Nominal input voltage	100 V ac – 240 V ac
Nominal output voltage	24 V dc 11%
AC input voltage range	85 V ac – 264 V ac
DC input voltage range	90 V ac – 350 V dc
AC frequency range	45 Hz – 65 Hz
DC frequency range	0 Hz
Output Data	
Nominal output voltage	24 V DC 11%
Output current	1.3 A (-25 °C – 60 °C)

### 3P007 alarm relay

Phoenix Type	DEK-REL-G24/21
Coil side	
Nominal input voltage Un	24 V DC
Contact type	Single contact, 1-PDT
Input voltage range in reference to Un	0.8 – 1.1
Limiting continuous current	6 A
Nominal input current at Uin	9 mA
Contact material	AgSnO
Typical response time	8 ms
Maximum switching voltage	250 V ac/dc
Minimum switching voltage	12 V 68 ac/dc
Maximum inrush current	6 A
Min. switching current	10 mA
Limiting continuous current	6 A



### Disturbance standards

Emission	EN 61000-6-4, IEC 60255-26
Conducted	EN 55011, IEC 60255-25 0.01 - 30 MHz
Emitted	EN 55011, 30 - 1 000 MHz
Immunity	EN 61000-6-2, IEC 60255-26
Static discharge (ESD)	EN 61000-4-2, class III, IEC 60255-22-2 6 kV contact discharge 8 kV air discharge
Fast transients (EFT)	EN 61000-4-4, class IV, IEC 60255-22-4 4 kV, 5/50 ns, 5 kHz, +/-
Surge	EN 61000-4-5, class III, IEC 60255-22-5 2 kV, common mode 1 kV, differential mode
Conducted HF field	EN 61000-4-6, IEC 60255-22-6 0.15 - 80 MHz, 10 V
Emitted HF field	EN 61000-4-3, IEC 60255-22-3 80 - 2700 MHz, 10 V / m
	EN 61000-4-8 Power frequency magnetic field (VAMP 121)
	EN 61000-4-9 Pulse magnetic field (VAMP 121)
	IEC 60255-22-1 1 MHz damped oscillatory waves (VAMP 121)

### Test voltage standards

Insulation Test Voltage	IEC 60255-5
	2 kV, 50 Hz, 1 min
Impulse Test	IEC 60255-5
	5 kV, 1.2/50 ms, 0.5 J

### Mechanical standards

Shock Response	IEC 60255-21-2, class I
	half sine 11 ms, Acceleration 5 g 6 directions, 3 pulse each dir.
Shock Withstand	IEC 60255-21-2, class I
	half sine 11 ms, Acceleration 15 g 6 directions, 3 pulse each dir.
Bump Test	IEC 60255-21-2, class I
	half sine 16 ms, Acceleration 10 g 6 directions, 1000 pulse each dir.
Vibration	
Sinusoidal Response	IEC 60255-21-1, class I
	Amplitude 0.035 mm Frequency 10 - 150 Hz Acceleration 0.5 g 3 directions, 1 sweep, rate 1 oct/min
Sinusoidal Endurance	IEC 60255-21-1, class I
	Frequency 10 - 150 Hz Acceleration 1 g 3 directions, 20 sweeps, rate 1 oct/min

### Environmental conditions

Operating Temperature	-10 - +55°C
Transport and Storage Temperature	- 40 - +70°C
Relative Humidity	< 75% (1 year, average value) < 90% (30 days per year, no condensation permitted)
Degree of protection (IEC 60529)	IP 20



### 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.

### Schneider Electric Industries SAS

35, rue Joseph Monier  
CS 30323  
F - 92506 Rueil Malmaison Cedex (France)  
Tel.: +33 (0) 1 41 29 70 00  
RCS Nanterre 954 503 439  
Capital social 896 313 776 €  
www.schneider-electric.com

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