

TOSVERT VF-AS1/PS1

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ATEX Guide

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ATEX applications in explosive gas atmosphere  
or in the presence of combustible dust



\*E6581502REV03\*

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# 1. Functional Safety and ATEX applications

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## 1.1 General

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The variable speed drives TOSVERT VF-AS1/PS1 integrate the “Power Removal” safety function which prohibits unintended equipment operation. The motor no longer produces torque. The use of the “Power Removal” Safety function allows the drive to be installed as a part of the safety-related electrical, electronic and programmable electronic control systems, dedicated to the safety of a machine or an industrial process. This safety function complies with the standard for safety of machinery EN 954-1, category 3. It complies also with the standard for functional safety IEC/EN 61508 and with the power drive systems’ product standard IEC/EN 61800-5-2, SIL2 capability.

The use of the “Power Removal” safety function also allows TOSVERT VF-AS1/PS1 variable speed drives to control and command motors installed in explosive atmospheres (ATEX).

**Protection of the ATEX motor:**

The PWR input is connected to the switching system which is embedded in the thermal detector to the ATEX motor ( or connected to the switching system of the control system if ATEX sensor or PTC type are used ).

**Warning :** The TH+ and TH- inputs of Expansion I/O Card Option 1, ETB003Z, for VF-AS1/PS1 available for the motor thermal protection by using PTC detector, shall not be used for the motor thermal protection in an ATEX application. Only the PWR input of the drive is dedicated to ATEX application.

TOSVERT VF-AS1 and VF-PS1 listed on table 1 & 2 integrate the “Power Removal” safety function.

Table 1 VF-AS1 type-form with the “ Power Removal” safety function

Input voltage class	Basic commercial references	Optional additional reference marking
200-240V	VFAS1-2004PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-2007PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-2015PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-2022PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-2037PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-2055PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-2075PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-2110PM	...PM-WP1/ WN1/ Y-A*
	VFAS1-2150PM	...PM-WP1/ WN1/ Y-A*
	VFAS1-2185PM	...PM-WP1/ WN1/ Y-A*
	VFAS1-2220PM	...PM-WP1/ WN1/ Y-A*
	VFAS1-2300PM	...PM-WP1/ WN1/ Y-A*
	VFAS1-2370PM	...PM-WP1/ WN1/ Y-A*
	VFAS1-2450PM	...PM-WP1/ WN1/ Y-A*
	VFAS1-2550P	...P-WP1/ WN1/ A*/ Y-A*
VFAS1-2750P	...P-WP1/ WN1/ A*/ Y-A*	
380-480V	VFAS1-4007PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-4015PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-4022PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-4037PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-4055PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-4075PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-4110PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-4150PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-4185PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-4220PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-4300PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-4370PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-4450PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-4550PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-4750PL	...PL-WP1/ WN1/ Y-A*
	VFAS1-4900PC	...PC-WP1/ WN1/ A*/ Y-A*
	VFAS1-4110KPC	...PC-WP1/ WN1/ A*/ Y-A*
	VFAS1-4132KPC	...PC-WP1/ WN1/ A*/ Y-A*
	VFAS1-4160KPC	...PC-WP1/ WN1/ A*/ Y-A*
	VFAS1-4200KPC	...PC-WP1/ WN1/ A*/ Y-A*
VFAS1-4220KPC	...PC-WP1/ WN1/ A*/ Y-A*	
VFAS1-4280KPC	...PC-WP1/ WN1/ A*/ Y-A*	
VFAS1-4355KPC	...PC-WP1/ WN1/ A*/ Y-A*	
VFAS1-4400KPC	...PC-WP1/ WN1/ A*/ Y-A*	
VFAS1-4500KPC	...PC-WP1/ WN1/ A*/ Y-A*	
500-690V	VFAS1-6022PL	...PL-WN/ HN
	VFAS1-6030PL	...PL-WN/ HN
	VFAS1-6055PL	...PL-WN/ HN
	VFAS1-6075PL	...PL-WN/ HN
	VFAS1-6110PL	...PL-WN/ HN
	VFAS1-6150PL	...PL-WN/ HN
	VFAS1-6185PL	...PL-WN/ HN
	VFAS1-6220PL	...PL-WN/ HN
	VFAS1-6300PL	...PL-WN/ HN
	VFAS1-6370PL	...PL-WN/ HN
	VFAS1-6450PL	...PL-WN/ HN
	VFAS1-6550PL	...PL-WN/ HN
	VFAS1-6750PL	...PL-WN/ HN
	VFAS1-6900PL	...PL-WN/ H1
	VFAS1-6110KPC	...PC-WN/ H1
	VFAS1-6132KPC	...PC-WN/ H1
	VFAS1-6160KPC	...PC-WN/ H1
	VFAS1-6200KPC	...PC-WN/ H1
	VFAS1-6250KPC	...PC-WN/ H1
	VFAS1-6315KPC	...PC-WN/ H1
VFAS1-6400KPC	...PC-WN/ H1	
VFAS1-6500KPC	...PC-WN/ H1	
VFAS1-6630KPC	...PC-WN/ H1	

Table 2 VF-PS1 type-form with the “ Power Removal” safety function

Input voltage class	Basic commercial references	Optional additional reference marking
200-240V	VFPS1-2004PL	...PL- / WP/ WN/ Y-A*
	VFPS1-2007PL	...PL- / WP/ WN/ Y-A*
	VFPS1-2015PL	...PL- / WP/ WN/ Y-A*
	VFPS1-2022PL	...PL- / WP/ WN/ Y-A*
	VFPS1-2037PL	...PL- / WP/ WN/ Y-A*
	VFPS1-2055PL	...PL- / WP/ WN/ Y-A*
	VFPS1-2075PL	...PL- / WP/ WN/ Y-A*
	VFPS1-2110PM	...PM- / WP/ WN/ Y-A*
	VFPS1-2150PM	...PM- / WP/ WN/ Y-A*
	VFPS1-2185PM	...PM- / WP/ WN/ Y-A*
	VFPS1-2220PM	...PM- / WP/ WN/ Y-A*
	VFPS1-2300PM	...PM- / WP/ WN/ Y-A*
	VFPS1-2370PM	...PM- / WP/ WN/ Y-A*
	VFPS1-2450PM	...PM- / WP/ WN/ Y-A*
	VFPS1-2550P	...P- / WP/ WN/ A* /Y-A*
VFPS1-2750P	...P- / WP/ WN/ A* /Y-A*	
VFPS1-2900P	...P- / WP/ WN/ A* /Y-A*	
380-480V	VFPS1-4007PL	...PL- / WP/ WN/ Y-A* ...PLE/ PDE-WP/ WN
	VFPS1-4015PL	...PL- / WP/ WN/ Y-A* ...PLE/ PDE-WP/ WN
	VFPS1-4022PL	...PL- / WP/ WN/ Y-A* ...PLE/ PDE-WP/ WN
	VFPS1-4037PL	...PL- / WP/ WN/ Y-A* ...PLE/ PDE-WP/ WN
	VFPS1-4055PL	...PL- / WP/ WN/ Y-A* ...PLE/ PDE-WP/ WN
	VFPS1-4075PL	...PL- / WP/ WN/ Y-A* ...PLE/ PDE-WP/ WN
	VFPS1-4110PL	...PL- / WP/ WN/ Y-A* ...PLE/ PDE-WP/ WN
	VFPS1-4150PL	...PL- / WP/ WN/ Y-A* ...PLE/ PDE-WP/ WN
	VFPS1-4185PL	...PL- / WP/ WN/ Y-A* ...PLE/ PDE-WP/ WN
	VFPS1-4220PL	...PL- / WP/ WN/ Y-A* ...PLE/ PDE-WP/ WN
	VFPS1-4300PL	...PL- / WP/ WN/ Y-A* ...PLE/ PDE-WP/ WN
	VFPS1-4370PL	...PL- / WP/ WN/ Y-A* ...PLE/ PDE-WP/ WN
	VFPS1-4450PL	...PL- / WP/ WN/ Y-A* ...PLE/ PDE-WP/ WN
	VFPS1-4550PL	...PL- / WP/ WN/ Y-A* ...PLE/ PDE-WP/ WN
	VFPS1-4750PL	...PL- / WP/ WN/ Y-A* ...PLE/ PDE-WP/ WN
	VFPS1-4900PC	...PC- / WP/ WN/ A* /Y-A* ...PLE/ PDE-WP/ WN
	VFPS1-4110KPC	...PC- / WP/ WN/ A* /Y-A*
	VFPS1-4132KPC	...PC- / WP/ WN/ A* /Y-A*
	VFPS1-4160KPC	...PC- / WP/ WN/ A* /Y-A*
	VFPS1-4220KPC	...PC- / WP/ WN/ A* /Y-A*
	VFPS1-4250KPC	...PC- / WP/ WN/ A* /Y-A*
	VFPS1-4280KPC	...PC- / WP/ WN/ A* /Y-A*
	VFPS1-4315KPC	...PC- / WP/ WN/ A* /Y-A*
	VFPS1-4400KPC	...PC- / WP/ WN/ A* /Y-A*
	VFPS1-4500KPC	...PC- / WP/ WN/ A* /Y-A*
VFPS1-4630KPC	...PC- / WP/ WN/ A* /Y-A*	
500-690V	VFPS1-6030PL	...PL-WN/ HN
	VFPS1-6055PL	...PL-WN/ HN
	VFPS1-6075PL	...PL-WN/ HN
	VFPS1-6110PL	...PL-WN/ HN
	VFPS1-6150PL	...PL-WN/ HN
	VFPS1-6185PL	...PL-WN/ HN
	VFPS1-6220PL	...PL-WN/ HN
	VFPS1-6300PL	...PL-WN/ HN
	VFPS1-6370PL	...PL-WN/ HN
	VFPS1-6450PL	...PL-WN/ HN
	VFPS1-6550PL	...PL-WN/ HN
	VFPS1-6750PL	...PL-WN/ HN
	VFPS1-6900PL	...PL-WN/ HN
	VFPS1-6110KPC	...PC-WN/ H1
	VFPS1-6132KPC	...PC-WN/ H1
	VFPS1-6160KPC	...PC-WN/ H1
	VFPS1-6200KPC	...PC-WN/ H1
	VFPS1-6250KPC	...PC-WN/ H1
	VFPS1-6315KPC	...PC-WN/ H1
	VFPS1-6400KPC	...PC-WN/ H1
VFPS1-6500KPC	...PC-WN/ H1	
VFPS1-6630KPC	...PC-WN/ H1	

## 2. Applications for explosive atmosphere (ATEX)

### 2.1 Classification of ATEX Zones

- The European directive 1999/92/EC (also called ATEX 137, or directive for protection of workers) classifies the ATEX zones and the type of products compatible with. The user should define the ATEX zone in which the ATEX motor will be installed.
- The variable speed drive VF-AS1/PS1 shall always be installed into a safe area, outside the hazardous ATEX zone. Different schemes for installation are suggested in this document. They are compatible for the use of motors in ATEX zones 2 ; 22 ; 1 or 21. The table below summarises characteristics related to each ATEX zone.

Atmosphere	Zone	Definition	Presence of explosive atmosphere per year
Gas	0	Explosive atmosphere is present continuously, for long periods or frequently due to malfunctions	> 1000 h
Dust	20		
Gas	1	Explosive atmosphere is likely to occur due to expected malfunctions	10 – 1000 h
Dust	21		
Gas	2	Explosive atmosphere is unlikely to occur or, if occurring, is likely to only be of short duration and not in normal duty	< 10 h
Dust	22		

Note : Neither electrical equipments nor motors can be installed into ATEX zone 0 or 20.

### 2.2 General

The European directive 94/9/CE (also called ATEX 95, or product directive) defines applicable requirements for ATEX products and requirements for procedure of certification.

**OEMs, installers, users are responsible for the choice and the commissioning of the products they use in order to realise the ATEX protection of systems that they design or systems that they implement.**

- The motor is to be ATEX certified and to be compatible for use in zone 2/22 or 1/21.
- The motor shall be equipped with thermal detector(s) with embedded switching system ATEX certified, or shall be equipped with thermal detector(s) ATEX certified, associated to a control unit, which is to be also ATEX certified.

Warning : Usually, the control unit are designed to be used outside the hazardous ATEX zone. Then it is possible to install the control unit near the variable speed drive, into the safe area.

The switching system, embedded into the thermal detector, or included into the control unit of the thermal protection of the ATEX motor, shall be connected to the PWR input of the variable speed drive VF-AS1/PS1. When the excessive temperature of the ATEX motor is reached, the control system trips automatically the Power Removal safety function. The electrical power of the motor is removed in order to guarantee a temperature of the motor frame below the dangerous temperature for the gas or the dust atmosphere in which the ATEX motor is installed.

When the ATEX application needs to apply the “ Power Removal “ safety function, a safety module (type Preventa), is to be used. The suggested schemes describe how the switching system, embedded into the thermal detector or included into the control unit, is connected to the safety module. The output of the safety module is to be connected to the PWR input of the variable speed drive VF-AS1/PS1.

**Remark :** Stopping category related to the IEC/EN 60204-1

The schemes for installation, suggested in this document, show the use of a safety module (type Preventa XPS-AC) in combination with an ATEX application, with the use of the safety function when the stopping category 0, related to IEC/EN 60204-1, is required.

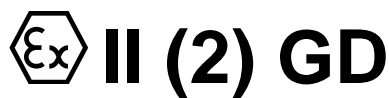
The user should take care for using a temporised safety module (type Preventa XPS-ATE), in combination with the ATEX application when the stopping category 1, related to IEC/EN 60204-1, is required.

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## 2.3 Identification of the ATEX marking

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The variable speed drive VF-AS1/PS1, ATEX certified, can be recognised by the specific marking reproduced hereafter :



**INERIS 07ATEX0028X**

Single marking complies with all of applications covered by the ATEX certification of the drive.

**0080** is the identification number of the notified body INERIS, which has delivered the notifications for systems of production quality assurance of production lines for drives, in compliance with the standard EN 50980.

**INERIS 07ATEX0028X** is the identification code of the certification report delivered by the notified body INERIS to demonstrate the compliance of the variable speed drive with the requirements of the ATEX 94/9/EC directive.



is the logo related to the identification of an ATEX product

**II** is related to the use of products for ATEX application in surface industries. ( ATEX applications for mines industries are prohibit )

**(2)** Parenthesis identify the variable speed drive VF-AS1/PS1 as a product associated with the control & command of an ATEX motor installed into a hazardous zone. The number 2 identifies the ATEX motor as a product of category 2 for use into ATEX zones 1 or 21. Motors of category 3 for use into ATEX zones 2 or 22 are also covered by this marking.

**G** for Gas, is related to ATEX applications into atmospheres with explosive gas.

**D** for Dust, is related to ATEX applications into atmospheres with a mixture of explosive dust.

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## 3. Schemes of cabling for ATEX applications

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### 3.1 General

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Installation and commissioning of apparatus, including connection of cables shall comply with the local regulations where products are installed. Requirements provided by the ATEX standards for installation should be fulfilled, when applicable :

- IEC 60079-14 for applications into atmospheres with explosive gas.
- IEC 61241-14 for applications into atmospheres with presence of combustible dust.

**in ATEX zones 1 or 2, for applications into atmospheres with explosive gas, the requirements of the IEC 60079-14 standard for installation are applicable.**

**IEC 60079-14: Electrical apparatus for explosive gas atmospheres – Part 14: Electrical installations in hazardous areas (other than mines)).**

**in ATEX zones 21 or 22, for applications into atmospheres with presence of combustible dust, the requirements of the IEC 61241-14 standard for installation are applicable.**

**IEC 61241-14 : Electrical apparatus for use in the presence of combustible dust – Part 14: Selection and installation**

Schemes suggested in this document for installation and commissioning of variable speed drive VF-AS1/PS1 for ATEX applications are taking into account the different types of thermal detectors used with the ATEX motor.

- If the ATEX motor, installed into an hazardous zone 2 or 22, includes at least one thermal detector with an embedded switching system (as defined in 3.1.4 of the IEC/EN 60947-8 standard) then, the switching system of this thermal detector can be directly connected to the PWR input of the variable speed drive. See Scheme for ATEX installation No.1 page 8 and Scheme for ATEX installation No.2 page 9.
- If the ATEX motor, installed into an hazardous zone 1 or 21, includes at least two thermal detectors with an embedded switching system (as defined in 3.1.4 of the IEC/EN 60947-8 standard) then, the switching system of these thermal detectors can be directly connected in series to the PWR input of the variable speed drive. See Scheme for ATEX installation No.5 page 12 and Scheme for ATEX installation No.6 page 13.
- If the ATEX motor, installed into an hazardous zone 2 or 22, includes at least one thermal detector without any embedded switching system ( for example a PTC sensor ), then this one thermal detector shall be connected to a control unit ( as defined in 3.1.15 of the IEC/EN 60947-8 standard ). The control unit is a device which converts into a switching function the variation of the characteristic of a thermal detector. See Scheme for ATEX installation No.3 page 10 and Scheme for ATEX installation No.4 page 11.

**Remark :** The same requirement applies to thermal detectors without any embedded switching system for motors installed into an hazardous zone 1 or 21. See Scheme for ATEX installation No.7 page 14 and Scheme for ATEX installation No.8 page 15.

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### 3.2 ATEX periodic test

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The complete safety loop ( which starts from the ATEX motor thermal sensor up to the “ Power Removal” safety function embedded in the drive ), shall be activated at least once a year for preventive maintenance purposes, in order to check that the electrical power is always automatically removed from the motor in case of excessive temperature.

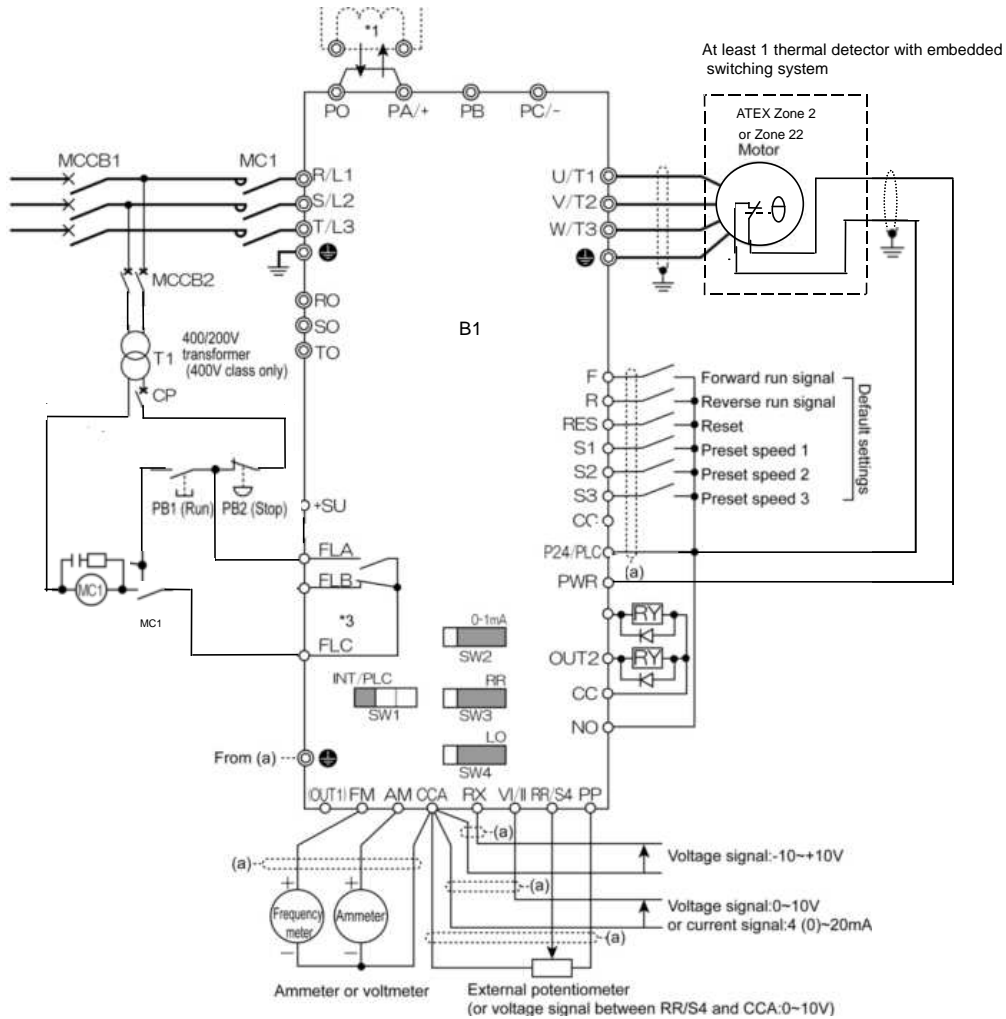
# 3.3 Scheme for ATEX installation No.1

ATEX motor into Zone 2 or 22:

PWR input used for protection of the ATEX motor only:

Thermal protection of the ATEX motor by using of an ATEX thermal detector with embedded switching system.

- Connection In source mode ( common: P24)



Symbols	Description
B1	Inverter VF-AS1 or VF-PS1
MCCB1	Circuit breaker
MC1	Magnetic conductor
MCCB2	Circuit breaker for control transformer
T1	Control transformer 400/200V (For 400V class only)
CP	Circuit protector
PB1	Push button switch (Run)
PB2	Push button switch (Stop/emergency stop)

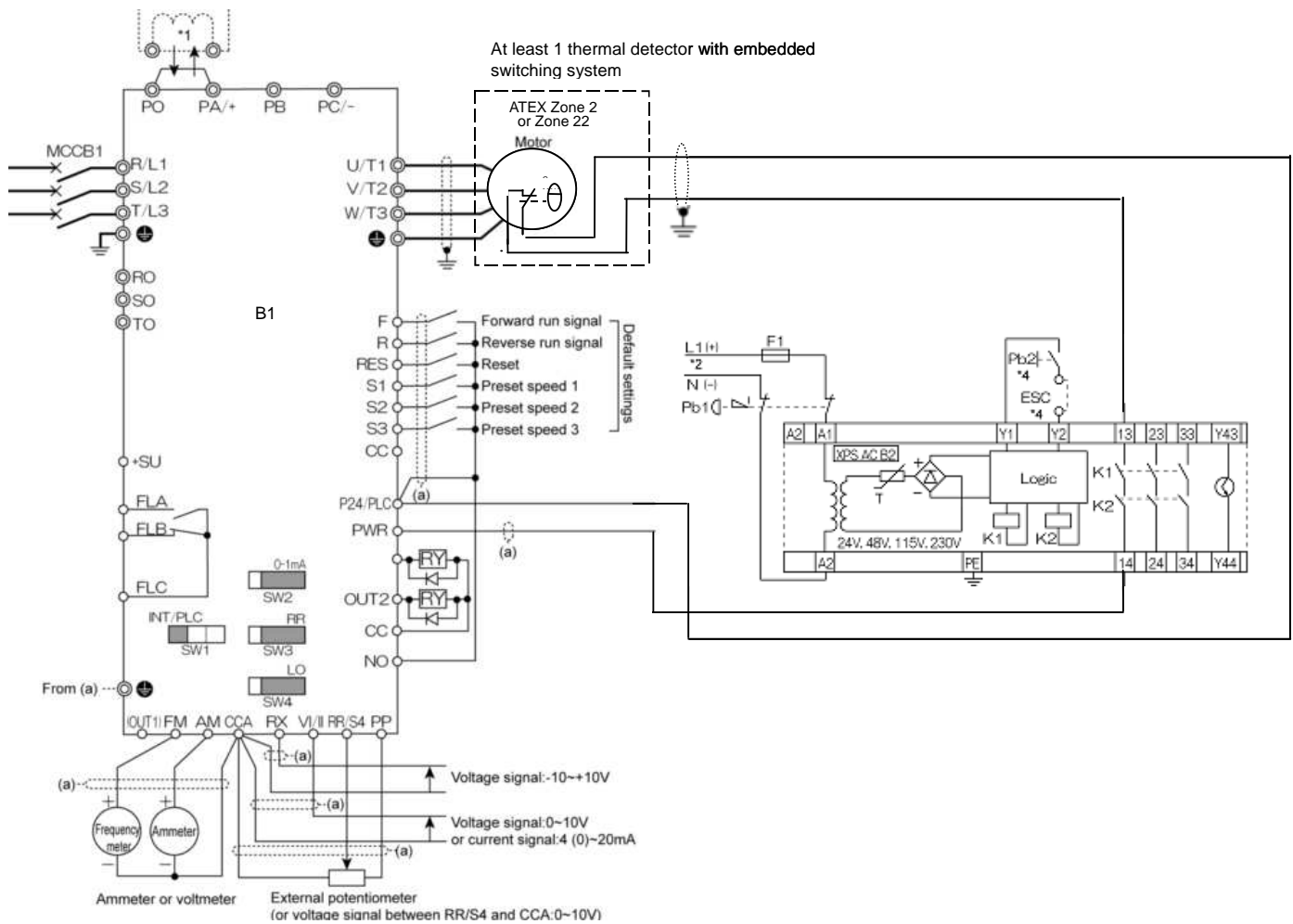
# 3.4 Scheme for ATEX installation No.2

ATEX motor into Zone 2 or 22:

PWR input used for protection of the ATEX motor and for the functional safety of Category 3 (EN 954-1) and for SIL 2 ( IEC/EN 61508 or IEC/EN 61800-5-2 ) in stopping category 0 according to IEC/EN 60204-1:

Thermal protection of the ATEX motor by using of an ATEX thermal detector with embedded switching system.

▪Connection In source mode ( common: P24)



Symbols	Description
B1	Inverter VF-AS1 or VF-PS1
MCCB1	Circuit breaker
B2	Safety relay: XPS-AC (manufactured by Schneider Electric)
F1	Fuse
Pb1	Push button switch 2b contact (for emergency stop)
Pb2	Push button switch (for reset and start)

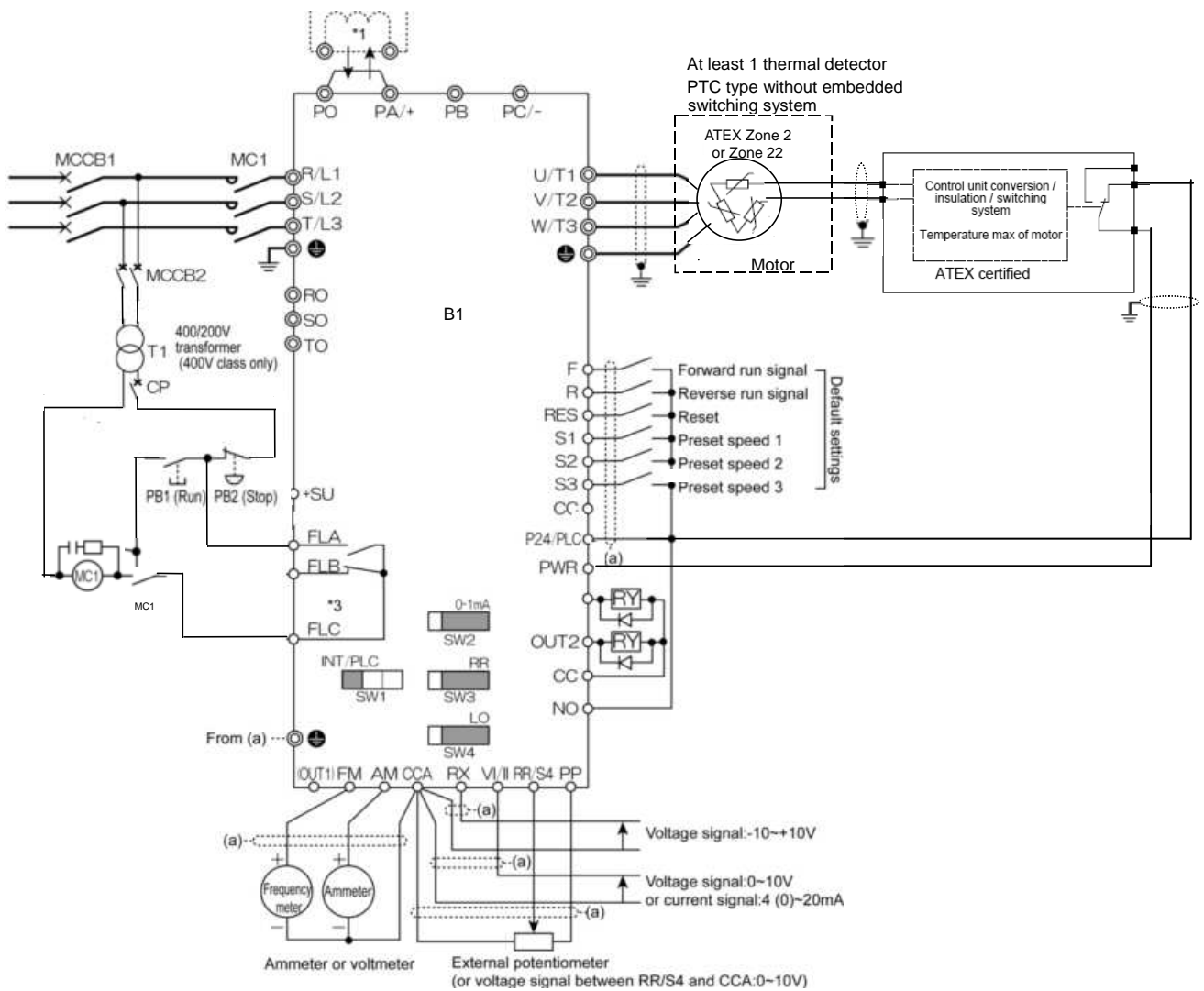
# 3.5 Scheme for ATEX installation No.3

ATEX motor into Zone 2 or 22:

PWR input used for protection of the ATEX motor only:

Thermal protection of the ATEX motor by using of an ATEX thermal detector ( PTC type, without embedded switching system), and a control unit for the PTC conversion, including the switching system.

- Connection In source mode ( common: P24)



Symbols	Description
B1	Inverter VF-AS1 or VF-PS1
MCCB1	Circuit breaker
MC1	Magnetic conductor
MCCB2	Circuit breaker for control transformer
T1	Control transformer 400/200V (For 400V class only)
CP	Circuit protector
PB1	Push button switch (Run)
PB2	Push button switch (Stop/emergency stop)

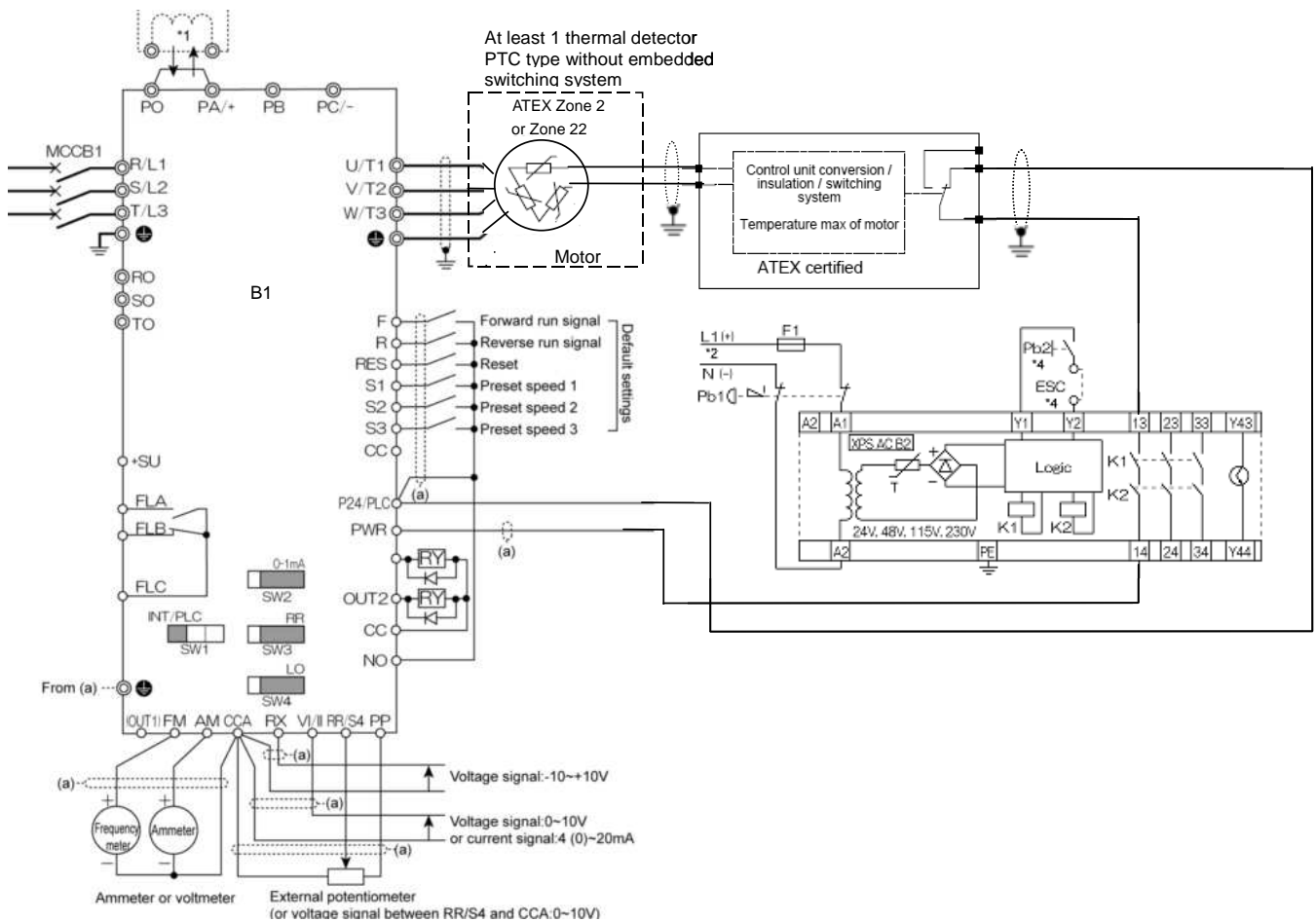
# 3.6 Scheme for ATEX installation No.4

ATEX motor into Zone 2 or 22:

PWR input used for protection of the ATEX motor and for the functional safety of Category 3 (EN 954-1) and for SIL 2 ( IEC/EN 61508 or IEC/EN 61800-5-2 ) in stopping category 0 according to IEC/EN 60204-1:

Thermal protection of the ATEX motor by using of an ATEX thermal detector ( PTC type, without embedded switching system), and a control unit for the PTC conversion, including the switching system.

•Connection In source mode ( common: P24)



Symbols	Description
B1	Inverter VF-AS1 or VF-PS1
MCCB1	Circuit breaker
B2	Safety relay: XPS-AC (manufactured by Schneider Electric)
F1	Fuse
Pb1	Push button switch 2b contact (for emergency stop)
Pb2	Push button switch (for reset and start)

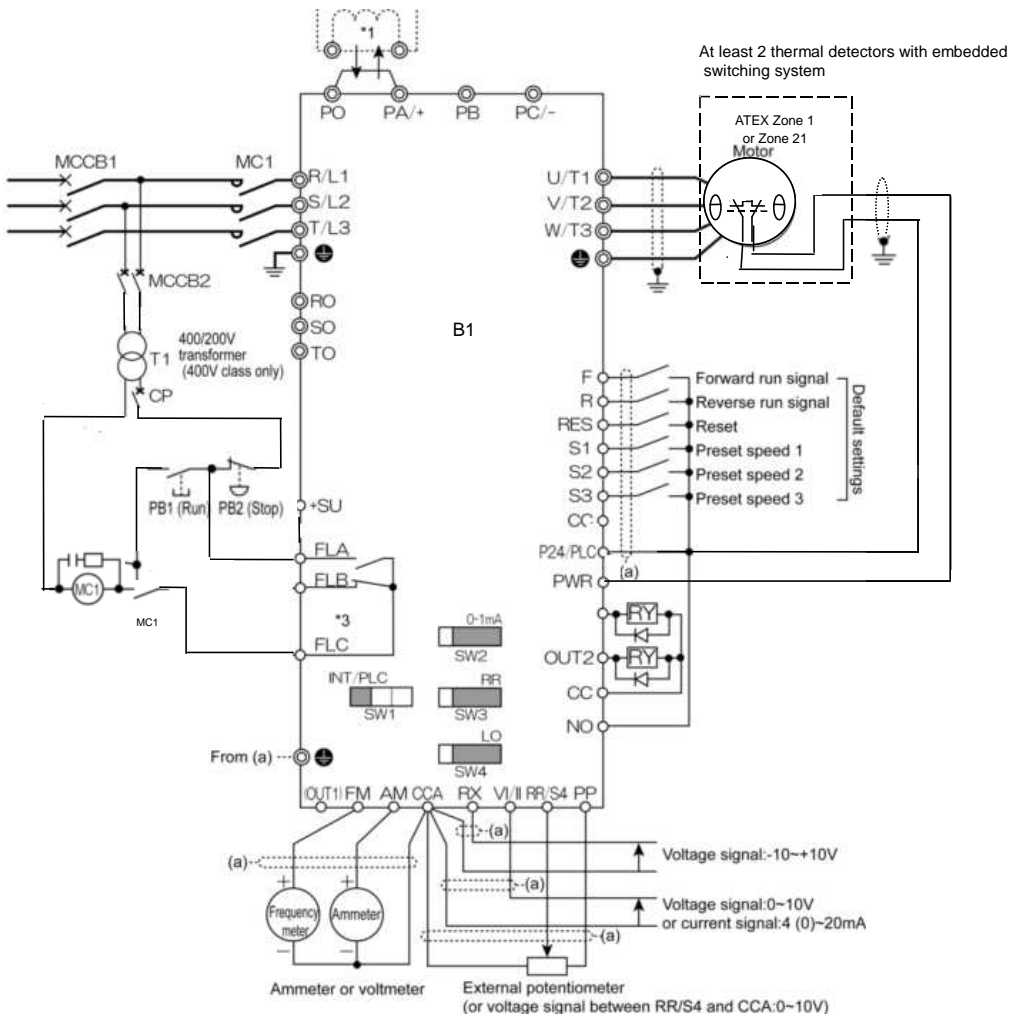
# 3.7 Scheme for ATEX installation No.5

ATEX motor into Zone 1 or 21:

PWR input used for protection of the ATEX motor only:

Thermal protection of the ATEX motor by using of ATEX thermal detectors with embedded switching system.

- Connection In source mode ( common: P24)



Symbols	Description
B1	Inverter VF-AS1 or VF-PS1
MCCB1	Circuit breaker
MC1	Magnetic conductor
MCCB2	Circuit breaker for control transformer
T1	Control transformer 400/200V (For 400V class only)
CP	Circuit protector
PB1	Push button switch (Run)
PB2	Push button switch (Stop/emergency stop)

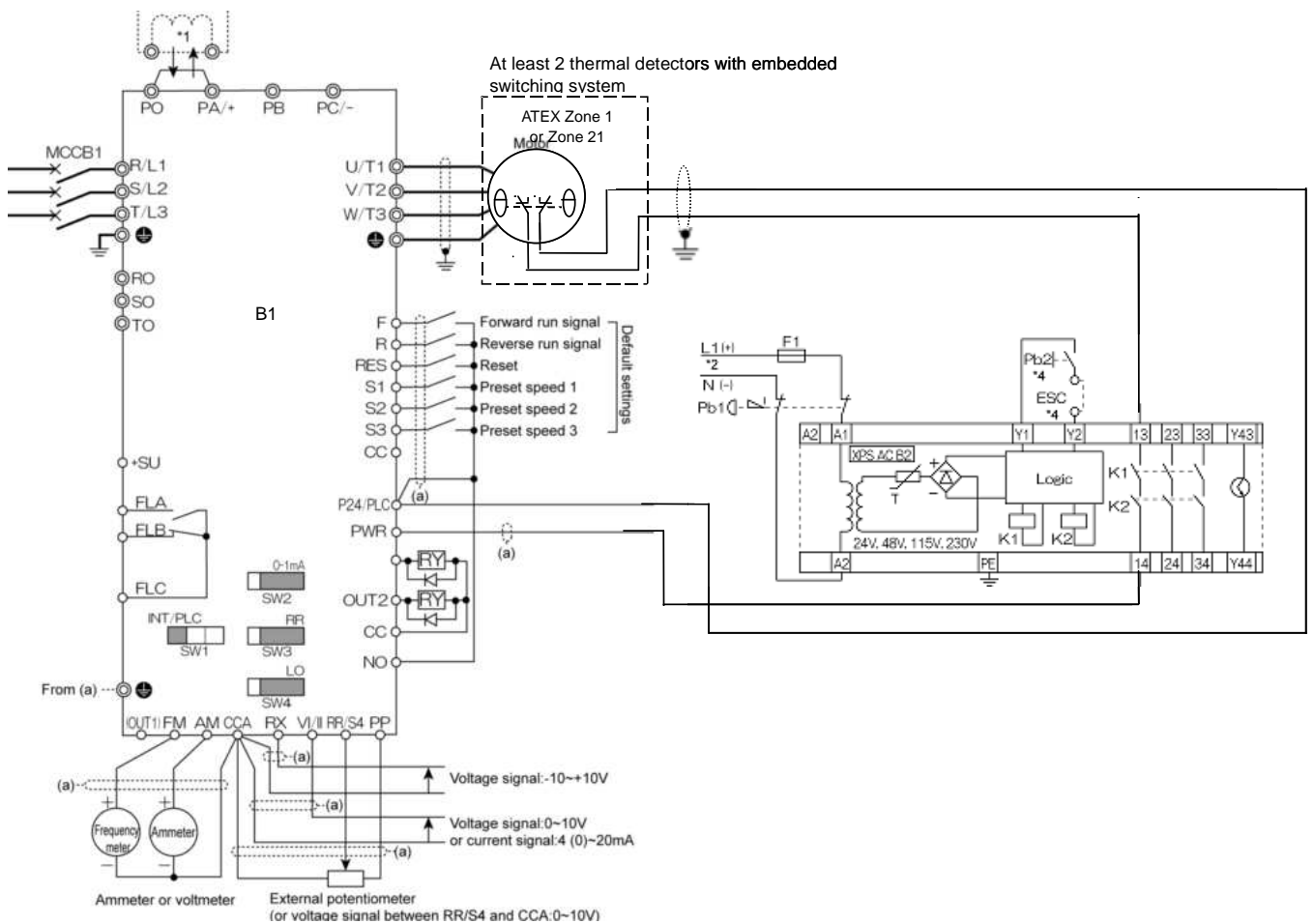
# 3.8 Scheme for ATEX installation No.6

ATEX motor into Zone 1 or 21:

PWR input used for protection of the ATEX motor and for the functional safety of Category 3 (EN 954-1) and for SIL 2 ( IEC/EN 61508 or IEC/EN 61800-5-2 ) in stopping category 0 according to IEC/EN 60204-1:

Thermal protection of the ATEX motor by using of ATEX thermal detectors with embedded switching system.

- Connection In source mode ( common: P24)



Symbols	Description
B1	Inverter VF-AS1 or VF-PS1
MCCB1	Circuit breaker
B2	Safety relay: XPS-AC (manufactured by Schneider Electric)
F1	Fuse
Pb1	Push button switch 2b contact (for emergency stop)
Pb2	Push button switch (for reset and start)

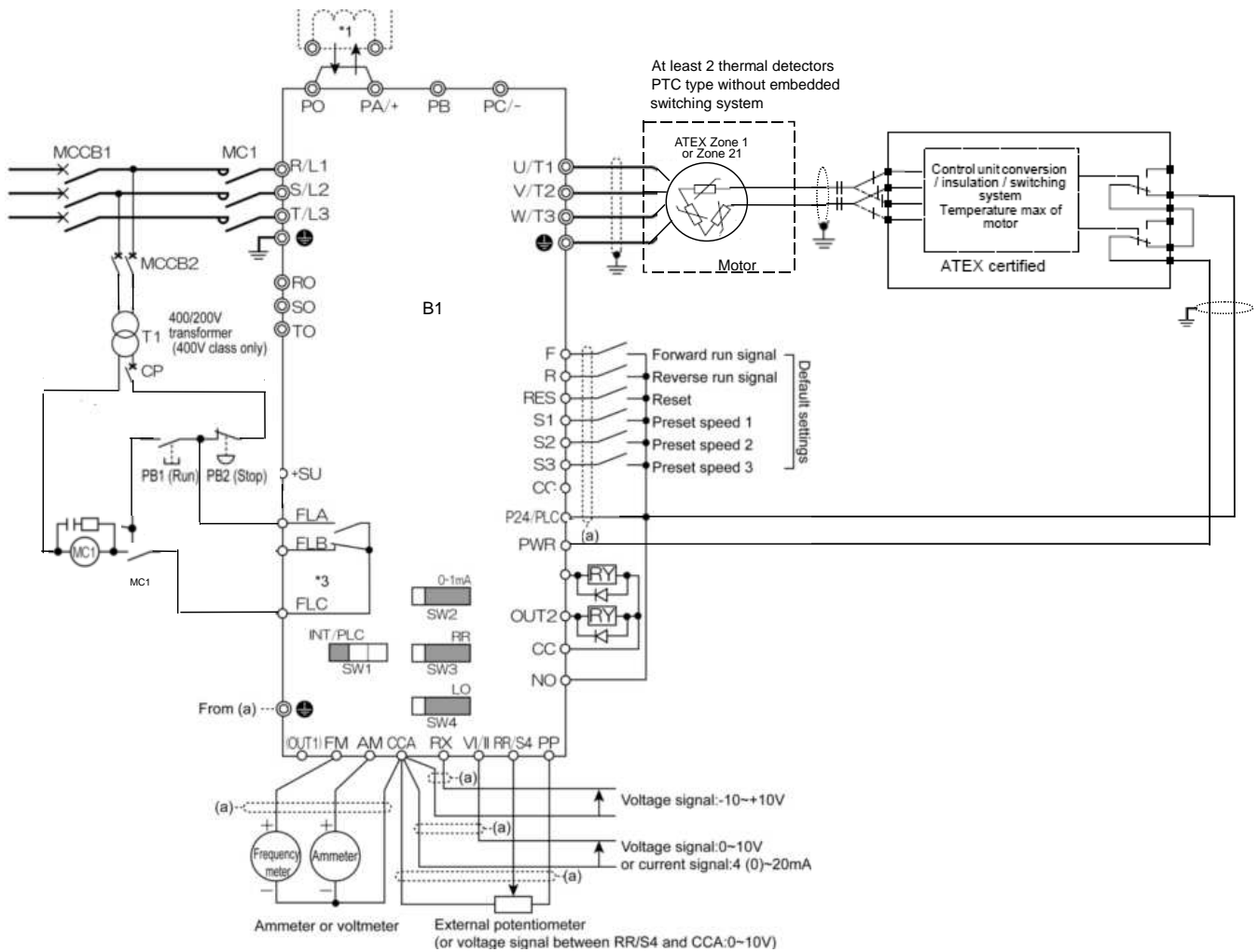
# 3.9 Scheme for ATEX installation No.7

ATEX motor into Zone 1 or 21:

PWR input used for protection of the ATEX motor only:

Thermal protection of the ATEX motor by using of ATEX thermal detectors ( PTC type, without embedded switching system), and a control unit for the PTC conversion, including the switching system.

- Connection In source mode ( common: P24)



Symbols	Description
B1	Inverter VF-AS1 or VF-PS1
MCCB1	Circuit breaker
MC1	Magnetic conductor
MCCB2	Circuit breaker for control transformer
T1	Control transformer 400/200V (For 400V class only)
CP	Circuit protector
PB1	Push button switch (Run)
PB2	Push button switch (Stop/emergency stop)

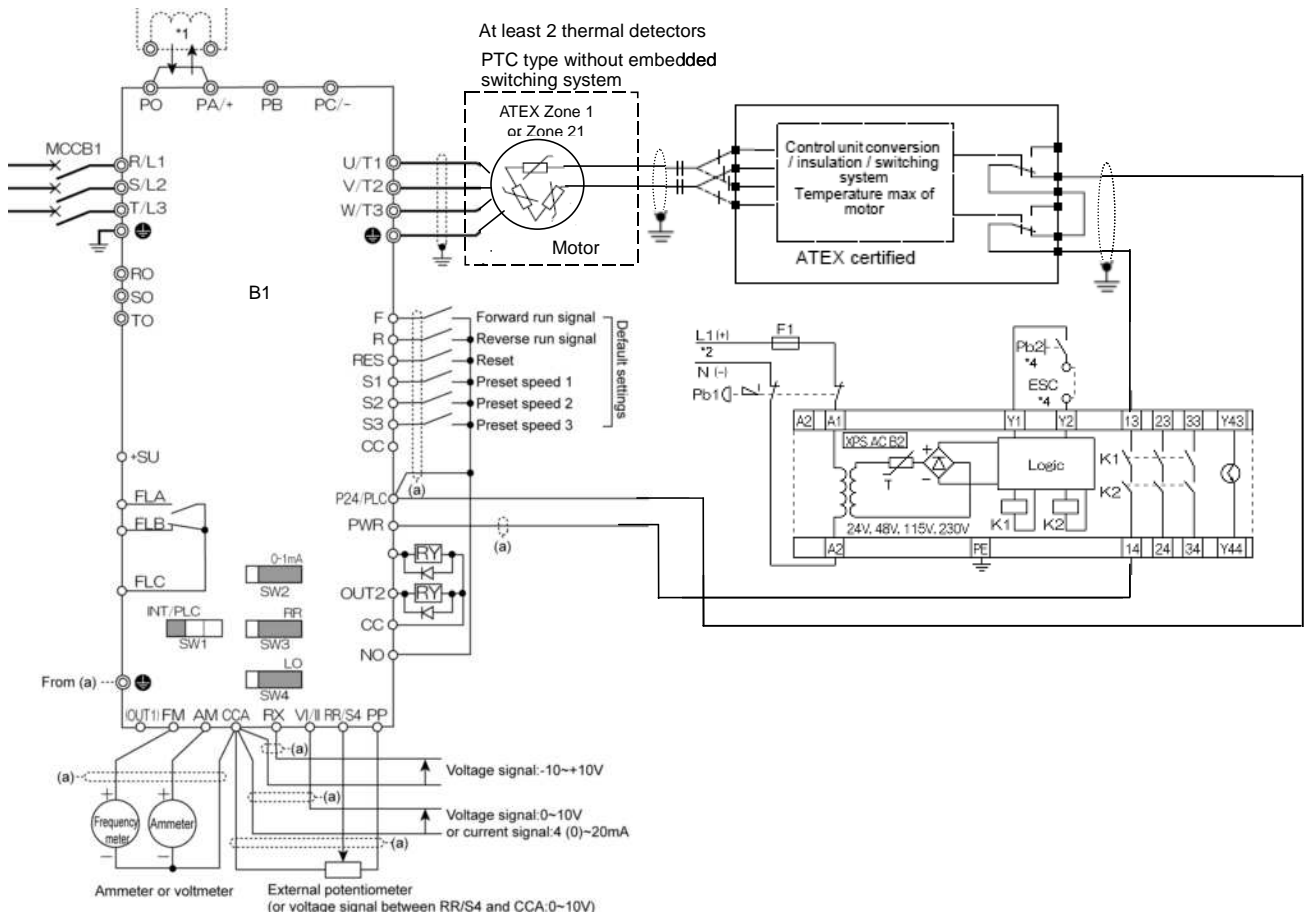
# 3.10 Scheme for ATEX installation No.8

ATEX motor into Zone 1 or 21:

PWR input used for protection of the ATEX motor and for the functional safety of Category 3 (EN 954-1) and for SIL 2 ( IEC/EN 61508 or IEC/EN 61800-5-2 ) in stopping category 0 according to IEC/EN 60204-1:

Thermal protection of the ATEX motor by using of ATEX thermal detectors ( PTC type, without embedded switching system), and a control unit for the PTC conversion, including the switching system.

•Connection In source mode ( common: P24)



Symbols	Description
B1	Inverter VF-AS1 or VF-PS1
MCCB1	Circuit breaker
B2	Safety relay: XPS-AC (manufactured by Schneider Electric)
F1	Fuse
Pb1	Push button switch 2b contact (for emergency stop)
Pb2	Push button switch (for reset and start)

**TOSHIBA**

**MANUFACTURER'S DECLARATION OF CONFORMITY**

We : TOSHIBA (TSIJ)  
1-19-30, Aoi Higashi-Ku, Nagoya,  
Aichi, 461-0004 JAPAN

declare under our own responsibility that the products manufactured after the date below :

TRADEMARK: TOSHIBA  
NAME, TYPE: Drive, type TOSVERT VF-AS1  
MODELS: VFAS1 followed by four digits, followed by one to four characters, may be followed by one to two characters, may be followed by one to two digits.  
0.4 kW to 5.5 kW, 200 to 240 Vac single phase or 0.4 kW to 75 kW 200 to 240 Vac three phase or 0.75 kW to 500 kW 380 to 480 Vac three phase or 2.2 kW to 630 kW, 500 to 690 Vac three phase power supply, 50 / 60 Hz  
Options with combination of 2 to 6 characters and 3 to 7 digits for use with VF-AS1 series.

to which this declaration refers, conform to the APPLICABLE EUROPEAN DIRECTIVES:

- ATEX Directive** No 94/9/EC for ATEX zones 1, 21, 2, 22
- EMC Directive** No 2004/108/EC
- Low Voltage Directive** No 2006/95/EC
- Machinery Directive** No 2006/42/EC

for those application areas where this marking is mandatory and according to the STANDARD OR NORMATIVE DOCUMENTS:

- IEC 61800-3 (2004) - Semiconductor power converters for adjustable frequency drive systems environments 1 and 2.
- IEC 61800-5-1 (2007) - Adjustable speed electrical power drive systems safety requirements – Electrical, thermal and energy.
- IEC 61800-5-2 (2007) - Adjustable speed electrical power drive systems safety requirements – Functional.
- EN 954-1 (1996): Category 3, EN ISO 13849-1 (2008): Category 3 PLd, IEC 61508 (2010) (part 1 and 2): SIL 2, IEC 62061 (2005): SIL2 CL2, EN 50495 (2010): SIL 2 - see ATEX guide.

**Subject to correct installation, maintenance and use conforming to its (their) intended purpose, to the applicable regulations and standards, to the supplier's instructions and to accepted rules of the art, the product(s) complies(y) with the provisions of the above European Directives.**

Compliance with the ATEX & EMC Directives will require the application of:  
- ATEX guide and EMC guide giving details and advices for installation of products used.  
These ATEX and EMC guides are attached with the product.

Our products are manufactured under ISO 9001:2000 procedure and ISO 14001:2004 and manufacturing quality assurance system of each manufacturing plant has been notified under the following notification references by INERIS (European Notified Body identified under the number 0080) :

- INERIS07ATEXQ702 for STIE in France
- INERIS07ATEXQ709 for TSIC in Japan
- INERIS08ATEXQ705 for SEMB in Indonesia
- INERIS07ATEXQ707 for SSD in China

The CE marking on the product and/or their packaging signifies that TOSHIBA (TSIJ) holds the reference technical file available to the European Union Authorities.

Technical File detained by  
S.T.I.E.  
Rue Andre Blanchet, 27120 Pacy sur Eure, France  
Name: Fredric Roussel  
Title: Certification Manager

Issued and authorized on 14th Jun. 2012 by  
TOSHIBA (TSIJ)  
1-19-30, Aoi Higashi-Ku, Nagoya, Aichi, 461-0004, JAPAN  
Name: Shin Okada  
Title: Offer Marketing, Senior Manager

Signature: 

Signature: 

# TOSHIBA

## MANUFACTURER'S DECLARATION OF CONFORMITY

Type-form of TOSVERT VF-AS1		
200 to 240Vac	380 to 480Vac	500 to 690Vac
VFAS1-2004PL-WP1/WN1 /Y-A*	VFAS1-4007PL-WP1/WN1 /Y-A*	VFAS1-6022PL-WN /HN
VFAS1-2007PL-WP1/WN1 /Y-A*	VFAS1-4015PL-WP1/WN1 /Y-A*	VFAS1-6030PL-WN /HN
VFAS1-2015PL-WP1/WN1 /Y-A*	VFAS1-4022PL-WP1/WN1 /Y-A*	VFAS1-6055PL-WN /HN
VFAS1-2022PL-WP1/WN1 /Y-A*	VFAS1-4037PL-WP1/WN1 /Y-A*	VFAS1-6075PL-WN /HN
VFAS1-2037PL-WP1/WN1 /Y-A*	VFAS1-4055PL-WP1/WN1 /Y-A*	VFAS1-6110PL-WN /HN
VFAS1-2055PL-WP1/WN1 /Y-A*	VFAS1-4075PL-WP1/WN1 /Y-A*	VFAS1-6150PL-WN /HN
VFAS1-2075PL-WP1/WN1 /Y-A*	VFAS1-4110PL-WP1/WN1 /Y-A*	VFAS1-6185PL-WN /HN
VFAS1-2110PM-WP1/WN1 /Y-A*	VFAS1-4150PL-WP1/WN1 /Y-A*	VFAS1-6220PL-WN /HN
VFAS1-2150PM-WP1/WN1 /Y-A*	VFAS1-4185PL-WP1/WN1 /Y-A*	VFAS1-6300PL-WN /HN
VFAS1-2185PM-WP1/WN1 /Y-A*	VFAS1-4220PL-WP1/WN1 /Y-A*	VFAS1-6370PL-WN /HN
VFAS1-2220PM-WP1/WN1 /Y-A*	VFAS1-4300PL-WP1/WN1 /Y-A*	VFAS1-6450PL-WN /HN
VFAS1-2300PM-WP1/WN1 /Y-A*	VFAS1-4370PL-WP1/WN1 /Y-A*	VFAS1-6550PL-WN /HN
VFAS1-2370PM-WP1/WN1 /Y-A*	VFAS1-4450PL-WP1/WN1 /Y-A*	VFAS1-6750PL-WN /HN
VFAS1-2450PM-WP1/WN1 /Y-A*	VFAS1-4550PL-WP1/WN1 /Y-A*	VFAS1-6900PL-WN /HN
VFAS1-2550P-WP1/WN1/A* /Y-A*	VFAS1-4750PL-WP1/WN1 /Y-A*	VFAS1-6110KPC-WN /H1
VFAS1-2750P-WP1/WN1/A* /Y-A*	VFAS1-4900PC-WP1/WN1/A* /Y-A*	VFAS1-6132KPC-WN /H1
-	VFAS1-4110KPC-WP1/WN1/A* /Y-A*	VFAS1-6160KPC-WN /H1
-	VFAS1-4132KPC-WP1/WN1/A* /Y-A*	VFAS1-6200KPC-WN /H1
-	VFAS1-4160KPC-WP1/WN1/A* /Y-A*	VFAS1-6250KPC-WN /H1
-	VFAS1-4200KPC-WP1/WN1/A* /Y-A*	VFAS1-6315KPC-WN /H1
-	VFAS1-4220KPC-WP1/WN1/A* /Y-A*	VFAS1-6400KPC-WN /H1
-	VFAS1-4280KPC-WP1/WN1/A* /Y-A*	VFAS1-6500KPC-WN /H1
-	VFAS1-4355KPC-WP1/WN1/A* /Y-A*	VFAS1-6630KPC-WN /H1
-	VFAS1-4400KPC-WP1/WN1/A* /Y-A*	-
-	VFAS1-4500KPC-WP1/WN1/A* /Y-A*	-
-	-	-

**TOSHIBA**

**MANUFACTURER'S DECLARATION OF CONFORMITY**

We : TOSHIBA (TSIJ)  
1-19-30, Aoi Higashi-Ku, Nagoya,  
Aichi, 461-0004 JAPAN

declare under our own responsibility that the products manufactured after the date below :

TRADEMARK: **TOSHIBA**  
NAME, TYPE: **Drive, type TOSVERT VF-PS1**  
MODELS: VFPS1 followed by four digits, followed by one to four characters, may be followed by one to two characters, may be followed by one to two digits.  
0.4 kW to 5.5 kW, 200 to 240 Vac single phase or 0.4 kW to 90 kW 200 to 240 Vac three phase or 0.75 kW to 630 kW 380 to 480 Vac three phase or 3.0 kW to 630 kW , 500 to 690 Vac three phase power supply, 50 / 60 Hz.  
0.75 kW to 90 kW enclosed IP54, 380 to 480 Vac three phase power supply, 50 / 60 Hz.  
IP54 basic products with PLE conform to EMC class A. Those with PDE conform to EMC class B  
Options with combination of 2 to 6 characters and 3 to 7 digits for use with VF-PS1 series.

to which this declaration refers, conform to the APPLICABLE EUROPEAN DIRECTIVES:

**ATEX Directive** No 94/9/EC for ATEX zones 1, 21, 2, 22  
**EMC Directive** No 2004/108/EC  
**Low Voltage Directive** No 2006/95/EC  
**Machinery Directive** No 2006/42/EC

for those application areas where this marking is mandatory and according to the STANDARD OR NORMATIVE DOCUMENTS:

- IEC 61800-3 (2004) – Semiconductor power converters for adjustable frequency drive systems environments 1 and 2.
- IEC 61800-5-1 (2007) – Adjustable speed electrical power drive systems safety requirements – Electrical, thermal and energy.
- IEC 61800-5-2 (2007) - Adjustable speed electrical power drive systems safety requirements – Functional.
- EN 954-1 (1996): Category 3, EN ISO 13849-1 (2008): Category 3 PLd, IEC 61508 (2010) (part 1 and 2): SIL 2, IEC 62061 (2005): SIL2 CL2, EN 50495 (2010): SIL 2 - see ATEX guide.

**Subject to correct installation, maintenance and use conforming to its (their) intended purpose, to the applicable regulations and standards, to the supplier's instructions and to accepted rules of the art, the product(s) complies(y) with the provisions of the above European Directives.**

Compliance with the ATEX & EMC Directives will require the application of:  
- ATEX guide and EMC guide giving details and advices for installation of products used.  
These ATEX and EMC guides are attached with the product.

Our products are manufactured under ISO 9001:2000 procedure and ISO 14001:2004 and manufacturing quality assurance system of each manufacturing plant has been notified under the following notification references by INERIS (European Notified Body identified under the number 0080) :

INERIS07ATEXQ702 for STIE in France  
INERIS07ATEXQ709 for TSIC in Japan  
INERIS08ATEXQ705 for SEMB in Indonesia  
INERIS07ATEXQ707 for SSD in China

The CE marking on the product and/or their packaging signifies that TOSHIBA (TSIJ) holds the reference technical file available to the European Union Authorities.

Technical File detained by  
  
S.T.I.E.  
Rue Andre Blanchet, 27120 Pacy sur Eure, France  
  
Name: **Fredric Roussel**  
Title: **Certification Manager**

Issued and authorized on 14th Jun. 2012 by  
  
TOSHIBA (TSIJ)  
1-19-30, Aoi Higashi-Ku, Nagoya, Aichi, 461-0004,  
JAPAN  
  
Name: **Shin Okada**  
Title: **Offer Marketing, Senior Manager**

Signature: 

Signature: 

**TOSHIBA**

**MANUFACTURER'S DECLARATION OF CONFORMITY**

Type-form of TOSVERT VF-PS1		
200 to 240Vac	380 to 480Vac	500 to 690Vac
VFPS1-2004PL- ___/WP/WN /Y-A*	VFPS1-4007PL- ___/WP/WN /Y-A* VFPS1-4007PDE-WP/WN VFPS1-4007PLE-WP/WN	VFPS1-6030PL-WN/ HN
VFPS1-2007PL- ___/WP/WN /Y-A*	VFPS1-4015PL- ___/WP/WN /Y-A* VFPS1-4015PDE-WP/WN VFPS1-4015PLE-WP/WN	VFPS1-6055PL-WN/ HN
VFPS1-2015PL- ___/WP/WN /Y-A*	VFPS1-4022PL- ___/WP/WN /Y-A* VFPS1-4022PDE-WP/WN VFPS1-4022PLE-WP/WN	VFPS1-6075PL-WN/ HN
VFPS1-2022PL- ___/WP/WN /Y-A*	VFPS1-4037PL- ___/WP/WN /Y-A* VFPS1-4037PDE-WP/WN VFPS1-4037PLE-WP/WN	VFPS1-6110PL-WN/ HN
VFPS1-2037PL- ___/WP/WN /Y-A*	VFPS1-4055PL- ___/WP/WN /Y-A* VFPS1-4055PDE-WP/WN VFPS1-4055PLE-WP/WN	VFPS1-6150PL-WN/ HN
VFPS1-2055PL- ___/WP/WN /Y-A*	VFPS1-4075PL- ___/WP/WN /Y-A* VFPS1-4075PDE-WP/WN VFPS1-4075PLE-WP/WN	VFPS1-6185PL-WN/ HN
VFPS1-2075PL- ___/WP/WN /Y-A*	VFPS1-4110PL- ___/WP/WN /Y-A* VFPS1-4110PDE-WP/WN VFPS1-4110PLE-WP/WN	VFPS1-6220PL-WN/ HN
VFPS1-2110PM- ___/WP/WN /Y-A*	VFPS1-4150PL- ___/WP/WN /Y-A* VFPS1-4150PDE-WP/WN VFPS1-4150PLE-WP/WN	VFPS1-6300PL-WN/ HN
VFPS1-2150PM- ___/WP/WN /Y-A*	VFPS1-4185PL- ___/WP/WN /Y-A* VFPS1-4185PDE-WP/WN VFPS1-4185PLE-WP/WN	VFPS1-6370PL-WN/ HN
VFPS1-2185PM- ___/WP/WN /Y-A*	VFPS1-4220PL- ___/WP/WN /Y-A* VFPS1-4220PDE-WP/WN VFPS1-4220PLE-WP/WN	VFPS1-6450PL-WN/ HN
VFPS1-2220PM- ___/WP/WN /Y-A*	VFPS1-4300PL- ___/WP/WN /Y-A* VFPS1-4300PDE-WP/WN VFPS1-4300PLE-WP/WN	VFPS1-6550PL-WN/ HN
VFPS1-2300PM- ___/WP/WN /Y-A*	VFPS1-4370PL- ___/WP/WN /Y-A* VFPS1-4370PDE-WP/WN VFPS1-4370PLE-WP/WN	VFPS1-6750PL-WN/ HN
VFPS1-2370PM- ___/WP/WN /Y-A*	VFPS1-4450PL- ___/WP/WN /Y-A* VFPS1-4450PDE-WP/WN VFPS1-4450PLE-WP/WN	VFPS1-6900PL-WN/ HN
VFPS1-2450PM- ___/WP/WN /Y-A*	VFPS1-4550PL- ___/WP/WN /Y-A* VFPS1-4550PDE-WP/WN VFPS1-4550PLE-WP/WN	VFPS1-6110KPC-WN/ H1
VFPS1-2550P- ___/WP/WN/A* / Y-A*	VFPS1-4750PL- ___/WP/WN /Y-A* VFPS1-4550PDE-WP/WN VFPS1-4550PLE-WP/WN	VFPS1-6132KPC-WN/ H1
VFPS1-2750P- ___/WP/WN/A* / Y-A*	VFPS1-4900PC- ___/WP/WN/A* / Y-A* VFPS1-4900PDE-WP/WN VFPS1-4900PLE-WP/WN	VFPS1-6160KPC-WN/ H1
VFPS1-2900P- ___/WP/WN/A* / Y-A*	VFPS1-4110KPC- ___/WP/WN/A* / Y-A*	VFPS1-6200KPC-WN/ H1
-	VFPS1-4132KPC- ___/WP/WN/A* / Y-A*	VFPS1-6250KPC-WN/ H1
-	VFPS1-4160KPC- ___/WP/WN/A* / Y-A*	VFPS1-6315KPC-WN/ H1
-	VFPS1-4220KPC- ___/WP/WN/A* / Y-A*	VFPS1-6400KPC-WN/ H1
-	VFPS1-4250KPC- ___/WP/WN/A* / Y-A*	VFPS1-6500KPC-WN/ H1
-	VFPS1-4280KPC- ___/WP/WN/A* / Y-A*	VFPS1-6630KPC-WN/ H1
-	VFPS1-4315KPC- ___/WP/WN/A* / Y-A*	VFPS1-6800KPC-WN/ H1
-	VFPS1-4400KPC- ___/WP/WN/A* / Y-A*	-
-	VFPS1-4500KPC- ___/WP/WN/A* / Y-A*	-
-	VFPS1-4630KPC- ___/WP/WN/A* / Y-A*	-