

# TCDH EXd

ATEX Roof Mounted Fans

Motor II 2G Exd IIB T4 Gb or II 2G Exd IIB+H2 T4 Gb



# SOMMAIRE

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## 1. GENERAL POINTS

### 1.1 Warnings

This manual applies to centrifugal fans for use in ATEX areas.

A potentially explosive atmosphere (ATEX) is a serious hazard to life, health and safety – strict attention to risk prevention must be applied by all persons. In Europe ATEX Directive 1994/9/EC applies to products, and Directive 1999/92/EC applies to worker protection.

This instruction manual contains important information and must be read carefully by competent persons prior to any handling, transport, inspection or installation of this product. Every care has been taken in the preparation of the instructions and information; however, it is the responsibility of the installer to ensure the system complies with relevant national and international regulations, especially safety. This document refers to direct drive and in-direct drive / belt drive centrifugal fans. Further guidance is contained in the specific motor manufactures manual, where applicable, supplied with the product.

The manufacturer accepts no responsibility for breakages, accidents or any inconvenience caused by failure to comply with the instructions contained in this manual.

The fans referred to in this manual have been manufactured in accordance with rigorous quality control and International standard ISO 9001.

The purchaser, installer, user is responsible for ensuring that the fan is installed, operated and serviced by qualified personnel, acting in accordance with all safety precautions applicable and as required by law, regulations and standards in the country applicable.

ATEX Fans, which, according to European Directive 1994/9/EC, are designed and restricted to use in the:-

- Specific application applicable,
- Equipment Group and Category applicable,
- Explosion Group for gases and vapours applicable, or
- Gas or Dust type applicable,
- Temperature class applicable.

The user / employer / competent body is responsible for ATEX risk analysis. Fan equipment is determined by this ATEX risk. Refer IEC EN 60079-14 Electrical installations in hazardous areas (other than mines) especially Section 5.

Fan equipment Name plate / Label includes ATEX specification applicable, Fan serial number, Fan type, motor data, year of manufacture, and where applicable, belt drive, bearing, grease information, CE mark, and any corresponding documentation.

Any other use, application or installation requiring a superior specification to fan equipment is prohibited.

TCDH EXD fans are designed for room air extraction where the atmosphere presents a risk of explosion within the meaning of Directive 1994/9/EC ATEX, for use in standard atmospheric conditions as defined in IEC 60079-0, and following conditions:

- Outdoor installation
- Environment temperature: -20 ° C / + 50 ° C
- Maximum temperature of the exhaust air in continuous operation : 40 ° C
- Relative humidity: max 95 % non-condensing
- Compliance with Directive 1994/9/EC ATEX Group II Category 2 Gas fans , for installation in Zone 1 T4 or 2 T4
- Atmosphere with low salinity, without corrosive chemical components.

## 1.2 Safety instructions

Safety on site is responsibility of competent personnel and in accordance with applicable International, National and Local regulations, especially for hazardous ATEX areas. Fan equipment should be electrically isolated and locked out before any work started.

Installation of ATEX fan equipment requires extra attention to ensure safe operation.

Safety guard accessories are available from S&P if required due to specific installation.

Safety protective clothing, equipment, hearing protection, and tools may be required.

Ensure fan/motor temperature protection devices are fitted and operating correctly, especially for all ATEX Exd motored products speed controlled by VSD Frequency Inverter

Ensure system operation is safe in event of power cut / power outage / disruption to power supply. If ventilation is stopped due to disruption to power supply, ensure no risk due to build-up of hazardous substance, excessive temperature etc. Care may be needed when restarting fan after disruption to power supply.

Avoid risk of foreign objects, debris being drawn into, or falling into fan impeller.

Allow safe access to fan for inspection, maintenance, replacement of parts, cleaning/housekeeping, especially for dust hazards. Ensure all necessary safety guards are fitted and secure to prevent injury.

The installer is responsible for initial inspection of workplace ATEX system before it is set to work. Refer IEC EN 60079 - 14

## 1.3 Reception – Storage

Check that the fan is in perfect condition while unpacking. Any fault or damage caused in origin is covered by the S&P guarantee. Make sure that the fan coincides with the product you ordered and that the details on the rating plate fulfil your requirements.

The packaging used for this fan has been designed to support normal transport conditions. The fan must always be transported in its original packaging as not doing so could deform or damage the product.

Storage must be in a safe, flat, controlled environment to prevent damage, especially from water, sand, dust, moisture, corrosion, temperature. Recommend that duct connections (inflow and outflow) are closed/covered to avoid dust / debris entering the equipment.

Storage must not exceed 1 year, without review by supplier / manufacturer for possible damage to motor, bearings, grease, drive belts. Regular inspection and check list to be completed

## 1.4 Guarantee

The equipment is guaranteed - parts only - from the date of invoice.

The manufacturer agrees to replace parts or equipment whose operation is found to be defective by our services, to the exclusion of any damages or penalties as operating losses, commercial damage or other consequential or indirect damages.

Defects related to abnormal use or not in conformity with the recommendations of our notices, defects observed as a result of normal wear, incidents caused by neglect, lack of supervision or maintenance, defects due to improper installation of equipment or poor storage before assembly are excluded from guarantee. In no case, the manufacturer is responsible if the fans has been transformed, repaired, even partially.

## 2. PRODUCT PRESENTATION

### 2.1 Range

- 2 groups:
  - IIB (II 2G EXd IIB T4 Gb)
  - IIC (II 2G EXd IIB+H2 T4 Gb)
- Temperature class : T4
- 11 sizes : 010 / 020 / 030 / 040 / 060 / 080 / 105 / 110 / 140 / 195 / 250
- Air volume from 700 to 25 000 m<sup>3</sup>/h depending on the model

### 2.2 Construction

- Direct drive centrifugal backward impeller made of galvanized sheet steel
- Hub manufactured from aluminium alloy
- Base plate fitted with brass inlet bellmouth. Base plate and supports made of galvanized sheet steel
- The whole assembly inlet bellmouth + impeller + motor support form a non-spark un système anti étincelles
- Cowl manufactured from galvanized sheet steel
- Outlet guard protection grille in accordance with EN ISO 12499

### 2.3 Motorisation

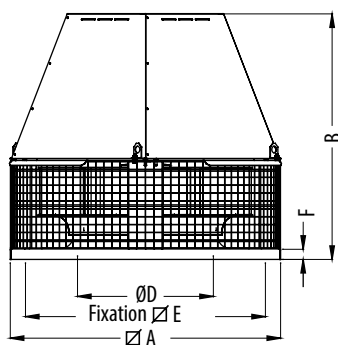
- Motor B5, three-phase, IP55, class F insulation, class B overheating
  - 1 speed 230/400V, 50Hz
  - 2 speed 400V, 50Hz
  - IIB T4 or IIC T4
- 1 speed motor, speed controllable through frequency inverter
  - Thermistors positive temperature coefficient (PTC) integrated in the motor windings and to be connected to a control relay (not supplied) to ensure a safe stop of the motor.

## 3. INSTALLATION

Installation must be carried out by competent personnel and in accordance with applicable International, National and Local regulations, especially for hazardous areas. Fan equipment should be electrically isolated and locked out before any work started.

Working area must be safe, all tools must be safe to use in area, and checked in and out after installation, all cable connections, glands must comply with Zone / area requirements. Refer relevant prevailing guidance, especially IEC EN 60079-14

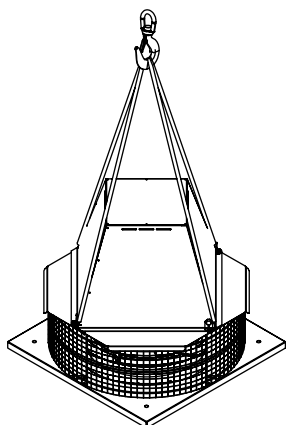
## 3.1 Dimensions and weight



Model	A	B	D	E	F	Weight (kg)
TCDH Exd 010	430	425	181	344	30	22
TCDH Exd 020	430	450	217	344	30	25
TCDH Exd 030	540	539	256	450	30	32
TCDH Exd 040	540	562	294	450	30	35
TCDH Exd 060	660	650	326	570	30	57
TCDH Exd 080	660	662	362	570	30	68
TCDH Exd 105	800	726	399	668	30	90
TCDH Exd 110	800	759	444	668	30	96
TCDH Exd 140	946	896	490	830	30	110
TCDH Exd 195	946	920	537	830	30	126
TCDH Exd 250	1030	980	581	830	40	150

Dimensions in mm

## 3.2 Manutention



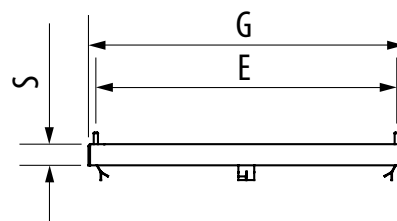
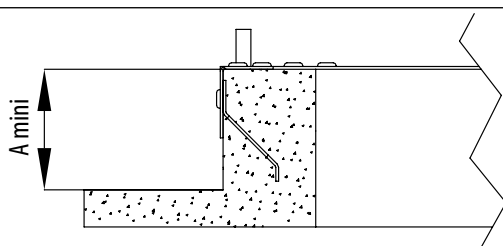
All identified fan lifting points are used to support weight and ensure safe transport via hoists, sling, spreader bar as appropriate, without damage. Maximum included angle of any support sling must not exceed 30°.

Any lifting equipment must be safe and of suitable capacity for weight and size, plus lift distance. Special attention may be required to ensure fan assembly does not distort or tilt as weight distribution may vary.

Use slings greater or equal to twice the length of the fan height. Ensure that the slings do not rub on the fan cowl. In case of doubt, remove the fan cowl to avoid damage

## 3.3 Roof fan accessories assembly

### 3.3.1 Sealing frame: JMS



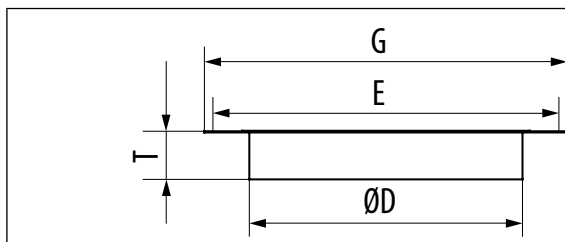
Embed the sealing frame in the built up-stand and ensure that the fixing feet are correctly embedded in the cement base.

Roof fan model	Accessory size	A*	E*	G*	S*	Weight (kg)
010/020	JMS1	70	344	368	30	2
030/040	JMS2	70	450	478	30	2,5
060/080	JMS3	70	570	598	40	4

Roof fan model	Accessory size	A*	E*	G*	S*	Weight (kg)
105/110	JMS4	70	668	698	40	4,5
140/195/250	JMS5	70	830	866	40	6

\*Dimensions in mm

### 3.3.2 Adapter plate: JPA



The adapter plate allows connecting a circular duct directly to the roof fan inlet. This adapter is used only to connect the duct not to support the weight of the fan.

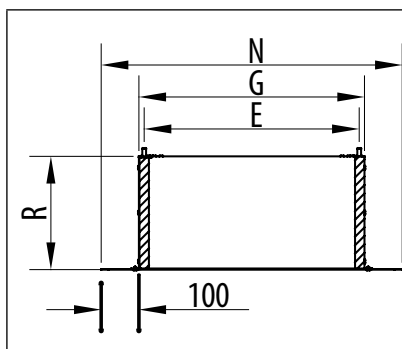
Roof fan model	Accessory size	G*	E*	T*	ØD*	Weight (kg)
010/020	JPA1	368	344	50	250	1
010/020	JPA1	368	344	50	315**	0,7
010/020	JPA1	368	344	65	355**	0,4
030/040	JPA2	478	450	50	315	1,8
030/040	JPA2	478	450	65	355	1,5
030/040	JPA2	478	450	80	400	1,2
030/040	JPA2	478	450	80	450**	0,8
060/080	JPA3	598	570	80	400	3,6
060/080	JPA3	598	570	80	450	3,1

Roof fan model	Accessory size	G*	E*	T*	ØD*	Weight (kg)
060/080	JPA3	598	570	80	500	2,5
060/080	JPA3	598	570	80	560**	1,7
105/110	JPA4	698	668	80	450	5,1
105/110	JPA4	698	668	80	500	4,5
105/110	JPA4	698	668	80	560	3,7
105/110	JPA4	698	668	90	630	2,7
140/195/250	JPA5	866	830	80	560	11,8
140/195/250	JPA5	866	830	90	630	10,3
140/195/250	JPA5	866	830	120	710	8,3

\*Dimensions in mm

### 3.3.3 Flat roof up-stand: JBS

It is possible to use an adapter plate JPA together with the flat roof up-stand.

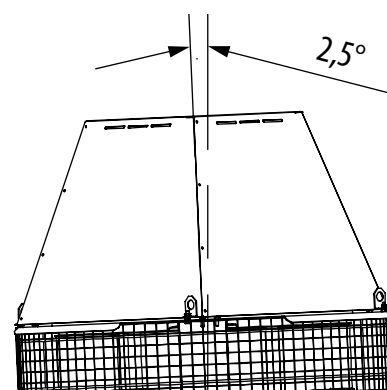
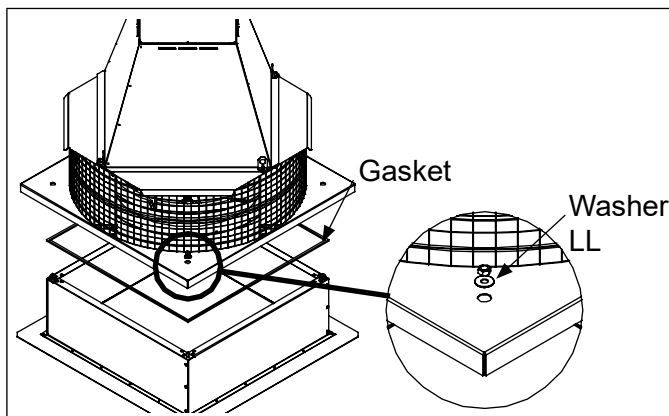


Roof fan model	Accessory size	E	G	N	R	Weight JBS (kg)	Weight Roof adapter sound attenuator (kg)
010/020	JBS1	344	368	568	300	8,5	23,5
030/040	JBS2	450	478	678	300	11	34
060/080	JBS3	570	598	798	300	13,5	51
105/110	JBS4	668	698	898	300	20,5	65,5
140/195/250	JBS5	830	866	1066	300	25,5	90,5

\*Dimensions in mm

## 3.4 Roof fan assembly

The contact surface that will support the fan base should be as flat as possible. A gasket or similar seal (not supplied) is recommended between the contact surface and the fan base. The maximum slope between the motor shaft and the vertical should be under 2.5° (see drawing).



The base of the roof fan must completely cover the up-stand to ensure a good seal. Ensure that the support is adapted to the weight of the fan and its accessories. Fit the fan by means of the 4 holes Ø20 provided for this purpose. It is recommended to use LL washer. Improper tightening of the fixing screws may cause noise and vibrations. Once the fan is properly fitted, make sure the motor impeller rotates freely without friction or noise.

## 4. ELECTRICAL WIRING DIAGRAMS

### 4.1 Prior cautions

- Connection to main supply must be carried out by competent personnel and in accordance with applicable International, National and Local regulations, especially for hazardous areas. Fan equipment should be electrically isolated and locked out before any work started.
- Check fan equipment name plate data is appropriate to the location electrical supply, especially Voltage, Frequency, Phase, Amps, speed are correct.
- Check fan equipment name plate data is correct type and appropriate to the location requirement, especially the EPL / Zone, Equipment Group, equipment temperature class, IP grade, and ambient temperature are correct
- ATEX Exd motors may be run via PWM type VSD frequency inverter, where motor has factory fitted PTC temperature sensors to control surface temperature. They may not be run at more than nameplate speed, or less than 40% of nameplate speed. VSD manufacturer may also limit minimum switching frequency. Refer IEC EN 60079-14. PTC temperature sensors must be connected to a safe external control circuit (see « Wiring diagram with frequency inverter »).
- Ensure system operation is safe in event of power cut / power outage / disruption to power supply. If ventilation is stopped due to disruption to power supply, ensure no risk due to build-up of hazardous substance, excessive temperature etc. Care may be needed when restarting fan after disruption to power supply
- The Installer is responsible to ensure that cable, cable gland and their installation are suitable and safe for application for ATEX and Flameproof applications.
- Motor O + M Instructions is included with the fan equipment for extra assistance to Installer. Refer these for further motor guidance Connect the cable to the motor terminal box according to the wiring diagram shown below.

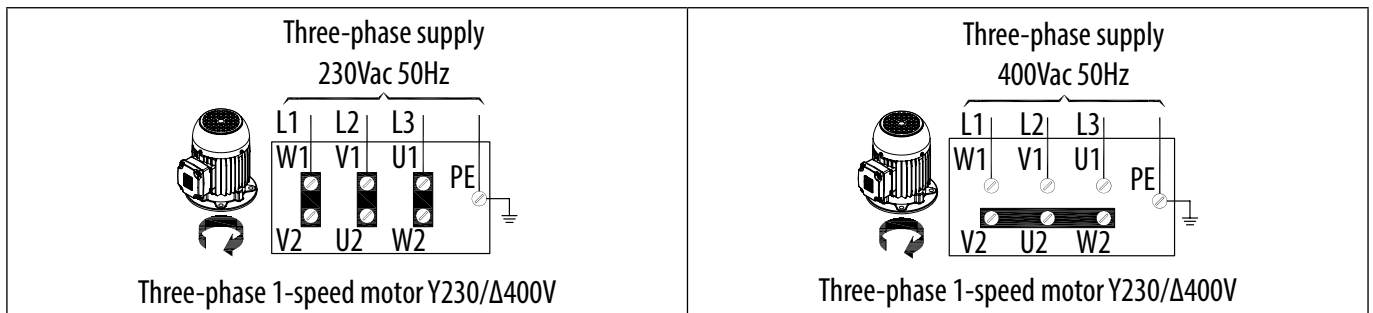
### 4.2 Technical characteristics

Description	Exd IIB T4 / Exd IIC T4 Motors			
	Nominal speed (rpm)	Nominal power (kW)	Nominal current (A) 230/400V	Is/In
<b>Three phase, 1-speed 4 pole motors</b>				
TCDH Exd 010-4 tri	1500	0,25	1,20/0,72	4,9
TCDH Exd 020-4 tri	1500	0,25	1,20/0,72	4,9
TCDH Exd 030-4 tri	1500	0,37	1,90/1,10	5
TCDH Exd 040-4 tri	1500	0,55	2,60/1,50	5,1
TCDH Exd 060-4 tri	1500	0,75	3,60/2,07	5,3
TCDH Exd 080-4 tri	1500	1,50	5,70/3,30	5
TCDH Exd 105-4 tri	1500	2,20	8,30/5,10	5,6
<b>Three phase, 1-speed 6 pole motors</b>				
TCDH Exd 020-6 tri	1000	0,18	1,30/0,75	2,5
TCDH Exd 030-6 tri	1000	0,18	1,30/0,75	2,5
TCDH Exd 040-6 tri	1000	0,25	1,60/0,90	3,5
TCDH Exd 060-6 tri	1000	0,25	1,60/0,90	3,5
TCDH Exd 080-6 tri	1000	0,37	1,90/1,10	3
TCDH Exd 105-6 tri	1000	0,75	3,80/2,20	4,4
TCDH Exd 110-6 tri	1000	1,10	6,40/3,70	4,2
TCDH Exd 140-6 tri	1000	2,20	9,90/5,70	4,5
TCDH Exd 195-6 tri	1000	3,00	11,60/6,70	5,5
TCDH Exd 250-6 tri	1000	5,50	22,50/13,00	6
<b>Three phase, 1-speed 8 pole motors</b>				
TCDH Exd 060-8 tri	750	0,12	1,20/0,68	2,4
TCDH Exd 080-8 tri	750	0,18	1,70/1,10	3
TCDH Exd 105-8 tri	750	0,37	2,40/1,40	3,4
TCDH Exd 110-8 tri	750	0,55	3,30/1,90	2,9
TCDH Exd 140-8 tri	750	1,10	5,20/3,00	2,7
TCDH Exd 195-8 tri	750	1,50	7,60/4,40	2,6
TCDH Exd 250-8 tri	750	3,00	17,30/10,00	3,3

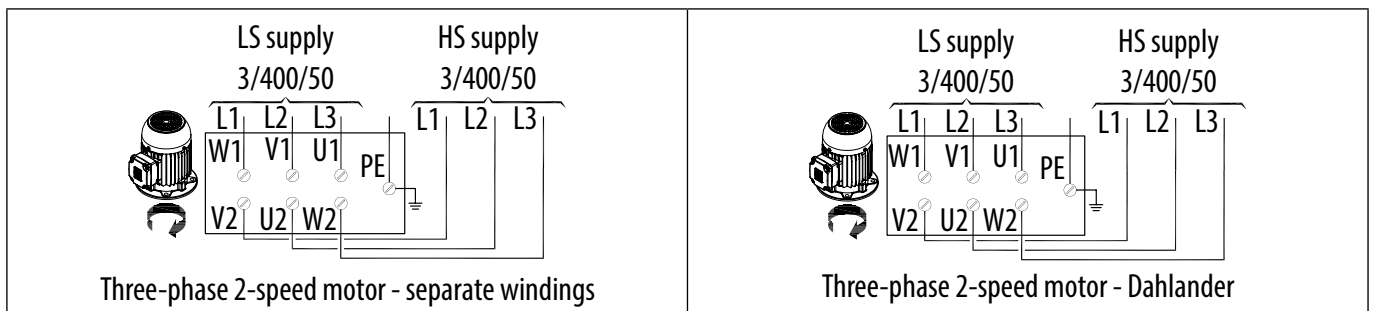
Description	Exd IIB T4 / Exd IIC T4 Motors			
	Nominal speed (rpm)	Nominal power GV/PV (kW)	Nominal current (A) GV/PV 400V	Is/In GV
<b>Three phase, 2-speed 4/8 pole motors</b>				
TCDH Exd 030-4/8 tri	1500/750	0,55/0,13	1,90/0,85	4,5
TCDH Exd 060-4/8 tri	1500/750	1,15/0,28	3,10/1,25	4,3
<b>Three phase, 2-speed 4/6 pole motors</b>				
TCDH Exd 060-4/6 tri	1500/1000	1,10/0,37	3,3/1,4	4,6
<b>Three phase, 2-speed 6/8 pole motors</b>				
TCDH Exd 060-6/8 tri	1000/750	0,37/0,12	1,15/0,75	5
TCDH Exd 080-6/8 tri	1000/750	0,40/0,12	1,5/0,9	3
TCDH Exd 105-6/8 tri	1000/750	0,88/0,55	3,4/2,6	3,7
TCDH Exd 140-6/8 tri	1000/750	2,20/0,88	8/3,2	4
TCDH Exd 195-6/8 tri	1000/750	3,70/1,50	11/5,5	4,6

## 4.3 Motor wiring diagram

### 4.3.1 Three-phase 1-speed motors



### 4.3.2 Moteurs triphasés 2 vitesses



## 4.4 Connection with ATEX isolation switch

A three point lockable isolation switch (INTZ ATEX), ATEX approved, can be provided (optional) with the fan. Refer to the instructions of the switch for further information.

## 4.5 Connection with ATEX differential pressure switch

A differential pressure switch (BDEZ ATEX), ATEX approved, can be provided (optional) with the fan. Refer to the instructions of the differential pressure switch for further information.

## 4.6 Wiring diagram with frequency inverter

**WARNING: Inverter must be installed out of the ATEX zone**

When using EXD motors with frequency converters, besides the general criteria for selection of material, we must also take into account:

- ATEX Exd motors may be run via PWM type VSD frequency inverter, where motor has factory fitted PTC temperature sensors to control surface temperature. They may not be run at more than nameplate speed, or less than 40% of nameplate speed. VSD manufacturer may also limit minimum switching frequency. Refer IEC EN 60079-14.
- PTC temperature sensors must be connected to a safe external control circuit kind of signals to the motor.



### PTC characteristics:

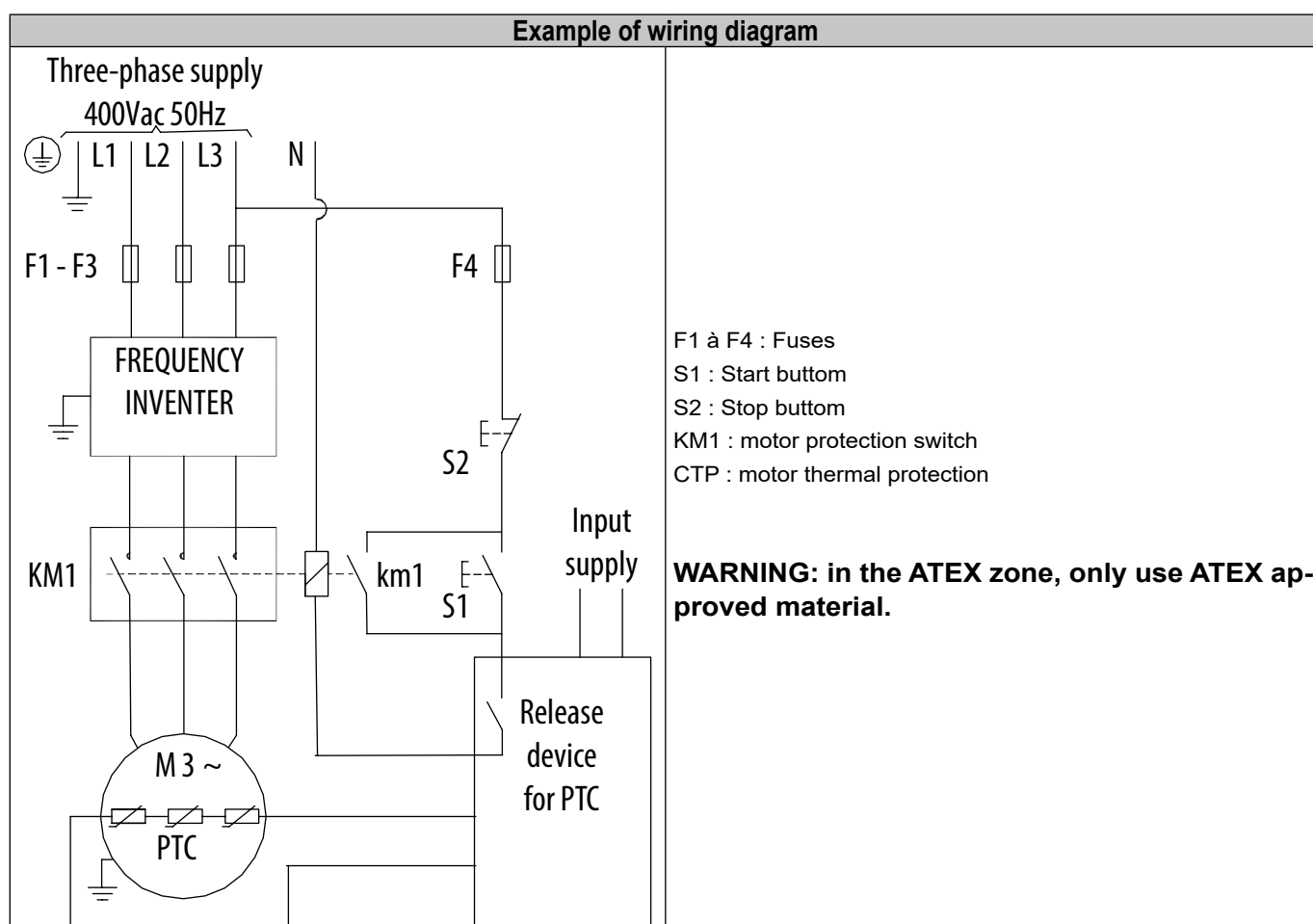
When the nominal operating temperature is reached, the resistance value of the PTC sensors greatly increases, triggering the control relay enabling the motor stops.

Resistance values:

Caution: The motors are fitted with 3 PTC connected in series, so you have to multiply the resistance values below by 3.

Range of temperature	Resistance values given by DIN44081 and DIN 44082	Max. operating tension = 30V Max. measurement tension = 2.5VCC  Ttnf = Nominal operating temperature with T4 temperature class, Ttnf=130°C
$T < (T_{tnf} - 20K)$	$R < 250 \text{ Ohms}$	
$(T_{tnf} - 20K) < T < (T_{tnf} - 5K)$	$R < 550 \text{ Ohms}$	
$(T_{tnf} - 5K) < T < (T_{tnf} + 5K)$	$R > 1330 \text{ Ohms}$	
$(T_{tnf} + 5K) < T$	$R > 4000 \text{ Ohms}$	

Note: For  $T < (T_{tnf} - 20K)$ , the resistance value is not defined and may be between 20 and 250 ohms. Protection devices, according to the standard, trigger between 1650 and 4000 Ohms



## 5. COMMISSIONING

- Pre start-up inspection and starting must be carried out by competent personnel and in accordance with applicable International, National and Local regulations, especially for ATEX hazardous areas. Fan equipment should be electrically isolated and locked out before any work started.
- Refer §7 to check list prior to start up .
- Check earth connections, electrical terminations and terminal box lid, with any seals, if fitted, are correct.
- In compliance with Machine Directive 89/392/EU, if the fan is accessible to operators and is a health and safety risk, adequate protection must be fitted, information for safety equipment, including guards, can be found in S&P accessories catalogue
- Check impeller clearance with inlet cone to ensure correct gap "S" is maintained throughout 360° and

record these data on check list. In absence of any specific data this should be a minimum of 1% of the impeller diameter "D" and never less than 2 mm or more than 20 mm, in radial or axial directions. Warning: This running clearance "S" between impeller "D" and duct / case or inlet cone is critical for safe fan operation.

- Check all rotating parts have free, unobstructed movement and no foreign bodies inside the fan, or that can be drawn into, or fall into fan.
- Check the structure is complete and has no damage.
- Check installation and area is safe and energise fan and start motor. Check that the impeller and airflow direction is correct, check current (Amps) does not exceed fan equipment nameplate data.
- After two hours of operation, check that all fixings are tight and adjust if necessary.

Once the installation and testing completed, present the user the main points of the operation and maintenance manual, explaining:

- How to start up and stop.
- How to change the operating modes.

Hand to the user the operating instructions manual of the fan, motor and installed accessories (switch, frequency converter, etc.) so they can be viewed at any time

## 6. MAINTENANCE

Maintenance must be carried out by competent personnel and in accordance with applicable International, National and Local regulations, especially for hazardous areas. Fan equipment should be electrically isolated and locked out before any work started

Fan equipment should be regularly cleaned, frequency depending upon service load and application, but no less than every 6 months. Cleaning should include all areas where dust can accumulate in the fan equipment. Routine checking of fan equipment should be based on specific working conditions. Special attention should be made to any unusual sounds, vibration or temperature. If any problems are detected the fan equipment should be stopped immediately and cause inspected.

Impeller clearance "S" between fixed and rotating parts must be inspected to ensure compliance with minimum values measured in Pre-Start checklist. In absence of any specific data this should be a minimum of 1% of the impeller diameter "D" and never less than 2mm or more than 20mm, in radial or axial directions.

Motors require no specific maintenance. They are fitted with sealed bearings lubricated for life

**Repairs must be carried out by competent personnel and in accordance with applicable International, National and Local regulations, especially for hazardous areas. Fan equipment should be electrically isolated and locked out before any work started.**

**It may be desirable to remove fan to a non-hazardous area / workshop for repairs.**

**Any work undertaken on ATEX fan equipment by persons other than those from manufacturer or agreed with manufacturer, will invalidate the provisions of the guarantee.**

**When any repair is made to ATEX fan equipment an "R" label with relevant data to indicate "Repair" and who is responsible, must be applied to product – Refer IEC EN 60079-19.**

## 7. WASTE MANAGEMENT – END OF LIFE

### 7.1 Treatment of non hazardous waste and packaging

Packaging (non-returnable pallets, cartons, films, wood packaging) and other non-hazardous waste must be recovered by an approved provider. It is strictly forbidden to burn them, bury them or bring them into illegal dumping

### 7.2 Treatment of WEEE Professional

This product should not be landfilled or treated as household waste but should be left at the appropriate collection point for electrical and electronic equipment (WEEE).

## 8. PRE-START CHECKLIST

Project ID: Fan ID: Fan Code: Fan ATEX Code: Fan Serial No:		Customer:  Motor ATEX Code: Motor serial No:			
Initial Pre-inspection schedule, prior to start, by competent inspector: Refer IEC EN 60079-14					Fan Motor type
<b>A</b>	<b>General</b>	<b>Ex d</b>	<b>Ex e</b>	<b>Ex n</b>	<b>Ex t</b>
A1	Equipment is correct type and appropriate to the EPL / zone requirements of the location, and recorded here:-				
A2	Equipment Group is correct, and recorded here:-				
A3	Equipment temperature class is correct - Gas, and recorded here:-				
A4	Equipment temperature class is correct - Dust, and recorded here:-				
A5	Degree of protection (IP grade) of equipment is appropriate for the level of protection / group / conductivity, and recorded here:-				
A6	Equipment circuit identified is correct				
A7	Equipment circuit identification is available				
A9	There is no damage or unauthorised modifications				
A10	There is no evidence of unauthorised modification				
A11	Bolts , cable entry devices ( direct and indirect) and blanking elements are of the correct type and are complete and tight				
	Physical check				
A12	Threaded covers on enclosures are of the correct type, are tight and secured				
	Physical check				
A13	Joint surfaces are clean and undamaged and gaskets, if any, are satisfactory and positioned correctly				
A14	Condition of enclosure gaskets is satisfactory				
A15	There is no evidence of ingress of water or dust in the enclosure in accordance with the IP rating				
	Dimension of flanged joint gaps are:				
A16	a) within the limits in accordance with the manufactures documentation or				
	b) within maximum values permitted by the relevant construction standard at time of installation or				
	c) within maximum values permitted by site documentation				
A17	Electrical connections are tight				
A18	Unused terminals are tightened				
A	Equipment specific - Safety				
A34	Impeller rotates freely and gap between impeller and fixed duct / inlet is measured and recorded here (mm)				
A35	All safety, protection guards fitted, no tools or debris in air ducts or area served by fan				
A	Equipment specific - Motors				
A29	Motor is correct Voltage, Hz, Phase, IP, ambient temperature. Has sufficient clearance to the enclosure and / or covers for cooling ventilation, cooling system is undamaged, motor fixings have no indentations or cracks.				
A30	The ventilation airflow to motor is not impeded				
A31	Insulation resistance (IR) of the motor windings is satisfactory				
A32	Motor overheat protection / PTC connected (if fitted)				
A33	Motor vibration / temperature sensor connected (if fitted)				
B	Installation - General				
B1	Type of cable is appropriate				
B2	There is no obvious damage to cables				
B3	Sealing of trunking, ducts, pipes and / or conduits is satisfactory				
B6	Earthing connections, including any supplementary earthing bonding connections are satisfactory, tight and sufficient cross section				
	Physical check				
B9	Automatic electrical protective devices operate within permitted limits (if fitted)				
B10	Specific conditions of use are compliant, including ambient operating temperature				
B13	Variable voltage / frequency installation complies with documentation and requirement (if fitted)				
B	Installation - Motors				
B23	Motor protection devices operate within the permitted tE or tA time limits for Ex e motor.				
B24	Motor overheat protection PTC connected and operational (if fitted)				
B25	Motor vibration / temperature sensor connected and operational (if fitted)				
C	Environment				
C1	Equipment is adequately protected against corrosion, weather, vibration and other adverse factors.				
C2	No undue accumulation of dust and dirt.				
C3	Electrical insulation is clean and dry				
<ul style="list-style-type: none"> <li>Refer: IEC EN 60079-14: Explosive atmospheres - Electrical installations design, selection and erection.</li> <li>IEC EN 60079-14: identifies initial inspection schedules, derived from IEC EN 60079-17: Electrical installations inspection and maintenance.</li> <li>IEC EN 14986:2007 Section 7, requires supplier manual to contain; "forms for check sheet quality system"</li> <li>IEC EN 14986:2007 Section 7, requires these to be signed and returned to fan supplier.</li> </ul>					Competent Inspector name, sign / stamp:

