



RS PRO VMX-PFE

Quick Start Guide

200-480VAC 5-40 Amps



DIN Rail Mounted

Internally Bypassed

Over-current Protected

RS PRO VMX-PFE

Quick Start Guide

RS Components Ltd
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Corby,
NN17 9RS
United Kingdom

Important information

Installers should read and understand the instructions in this guide prior to installing, operating and maintaining the soft-starter. The following symbols may appear in this guide or on the soft-starter to warn of potential hazards or to draw attention to certain information.



Dangerous Voltage

DANGER! Hazardous Voltage. Will cause death or serious injury. Hazardous voltage is also present in the OFF/STOP status of the soft-starter when the supply voltage is switched on (Ue).

GEFAHR! Gefährliche Spannung. Lebensgefahr oder schwere Verletzungsgefahr. Bei eingeschalteter Versorgungsspannung (Ue) steht auch im AUS-/STOP-Zustand des Softstarters am Ausgang gefährliche Spannung an.

DANGER ! Tension dangereuse. Danger de mort ou risque de blessures graves. En cas de tension d'alimentation (Ue) enclenchée, la tension dangereuse existe aussi en position d'Arrêt à la sortie du démarreur progressif.

PERICOLO! Tensione pericolosa. Può provocare morte o lesioni gravi. Con la tensione di alimentazione (Ue) inserita, anche nello stato OFF/STOP del softstarter è presente tensione pericolosa in uscita.

¡PELIGRO! Tensión peligrosa. Puede causar la muerte o lesiones graves. Si la tensión de alimentación está conectada (Ue), existe también en la salida tensión peligrosa con el arrancador suave en estado OFF/STOP.



Electric Shock Risk

DANGER! Only skilled or instructed persons may carry out the following operations.

Lebensgefahr durch elektrischen Strom!

Nur Elektrofachkräfte und elektrotechnisch unterwiesene Personen dürfen die im Folgenden beschriebenen Arbeiten ausführen.

Tension électrique dangereuse!

Seules les personnes qualifiées et averties doivent exécuter les travaux ci-après

Tensione elettrica: Pericolo di morte!

Solo persone abilitate e qualificate possono eseguire le operazioni di seguito riportate.

¡Corriente eléctrica! ¡Peligro de muerte!

El trabajo a continuación descrito debe ser realizado por personas cualificadas y advertidas.

Model number description

It is essential to check the RS PRO VMX-PFE and AC motor nameplate and ensure the soft-starter is properly sized for your AC motor.

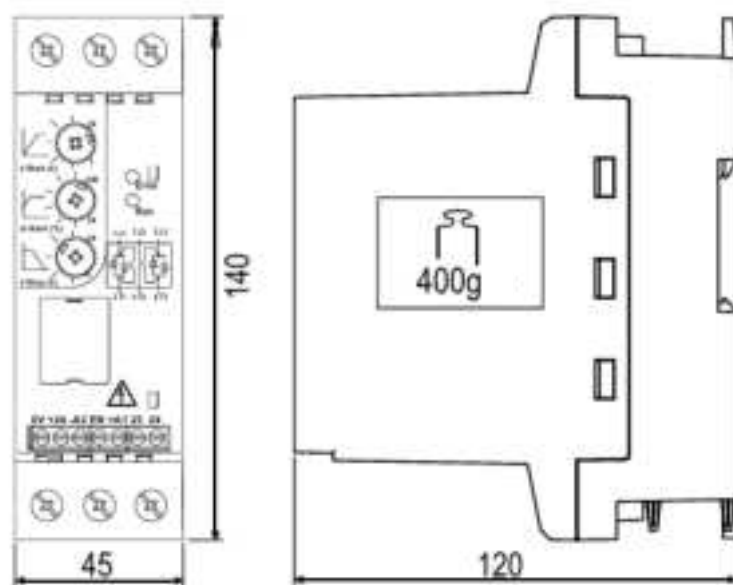
RS PRO Stock Number (I _e)	Frame Size	kW rating @ 400VAC	Main supply voltage	Control supply U _s
206-080 (5A)	1	2.2 kW	200-480VAC	24VDC
206-082 (7A)	1	3 kW	200-480VAC	24VDC
206-083 (9A)	1	4 kW	200-480VAC	24VDC
206-085 (12A)	1	5.5 kW	200-480VAC	24VDC
206-086 (16A)	1	7.5 kW	200-480VAC	24VDC
206-088 (22A)	2	11 kW	200-480VAC	24VDC
206-089 (30A)	2	15 kW	200-480VAC	24VDC
206-091 (36A)	2	18.5 kW	200-480VAC	24VDC
206-092 (41A)	2	22 kW	200-480VAC	24VDC

Table 1

Dimensions

Size 1

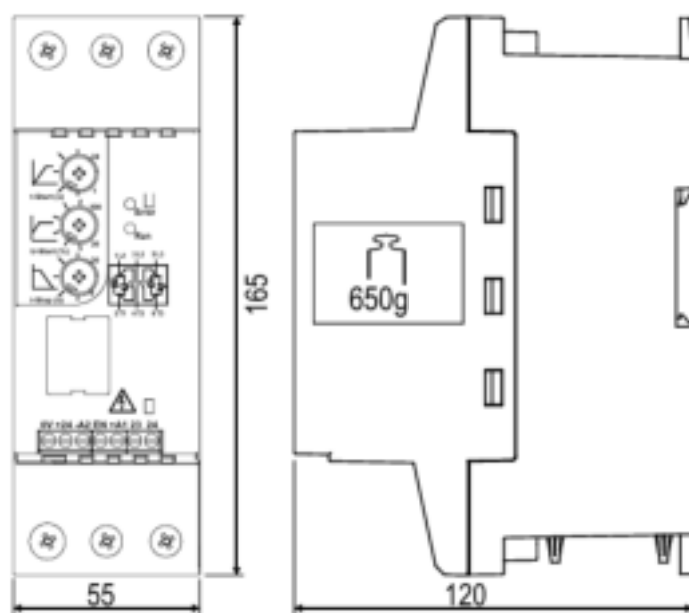
206-080 (5A) to 206-086 (16A)



Mounting Centres 30mm x 130mm

Size 2

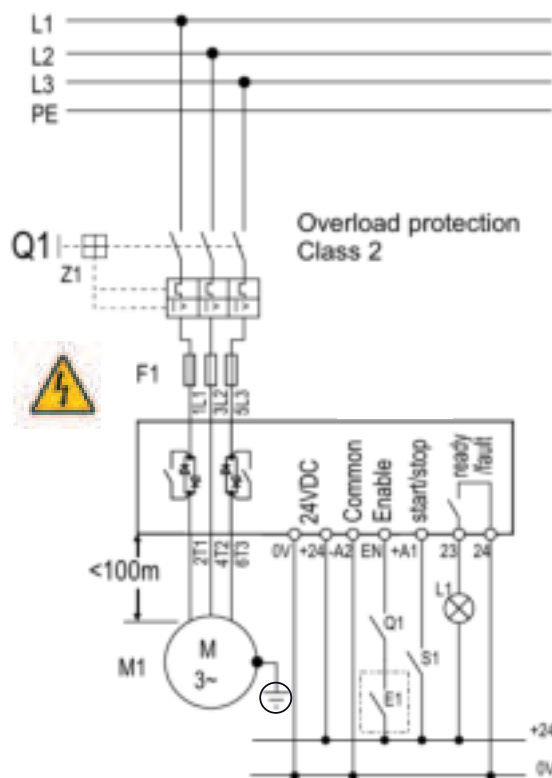
206-088 (22A) to 206-092 (41A)



Mounting Centres 40mm x 155mm

Wiring connection

Three-phase connection



F1 = Coordination type 1:

Recommended semiconductor fuses:

206-080 (5A) to 206-085 (12A)	SIBA 2018920-35
206-086 (16A)	SIBA 2018920-40
206-088 (22A) to 206-092 (41A)	SIBA 2018920-125

UL Requirement:

Short circuit rating 5000A, 480VAC when protected by fuses or circuit breakers, rated as indicated in table below:

Model	Class J or T Fuse	Circuit Breaker
RS PRO VMX-PFE	Rated 600VAC	Rated 600VAC
206-080 (5A)	15A	-
206-082 (7A)	15A	-
206-083 (9A)	30A	-
206-085 (12A)	40A	-
206-086 (16A)	50A	-
206-088 (22A)	80A	80A
206-089 (30A)	100A	100A
206-091 (36A)	125A	125A
206-092 (41A)	150A	150A

Control Circuit Elements:

E1= Optional switch to allow trip reset without operating main breaker Q1

Q1= Auxillary contact of main breaker Q1

S1= Start/Stop control switch

L1= Indicator: On: Ready
 Off: Fault

Other Elements

Q1 = Cable Protection - Leitungsschutz - Protezione di linea - Proteccion de cable - Protection de cables

Z1 = Overload Relay - Überlastrelais - Rele termico - Rele de sobrecarga - Rele thermique

F1 = Semiconductor fuse for type 1 coordination, in addition to Q1

Halbleitersicherung für Zuordnungsart 1, zusätzlich zu Q1

Per avere la protezione del semiconduttore in coordinamento so tipo 1, e necessario un fusibile in aggiunta a Q1

Fusible semiconductor para tipo de coordinacion 1, adicionalmente a Q1

Fusible pour semi-conducteurs pour coordination de type 1, additionnel a Q1

VMX-PFE = soft-starter - Halbleiterchutz - Contactor semiconductor - Cantattore a semiconduttori - Contacteur a semi-conducteurs

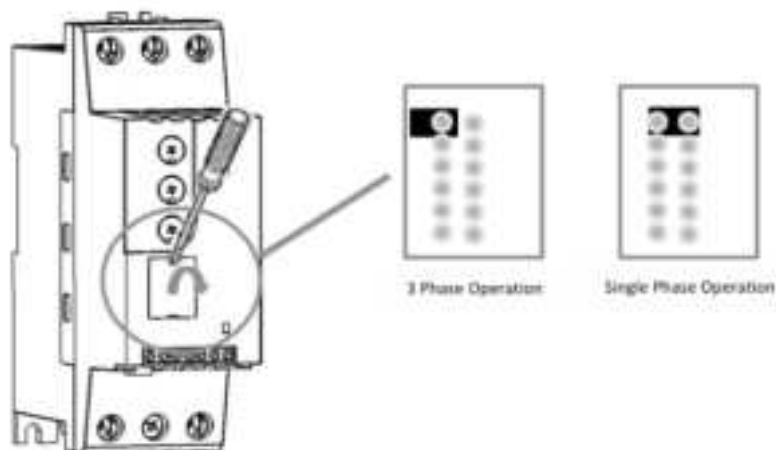
A1, A2 = Start/Stop - Start/Stopp - Start/Stop - Arranque/Paranda - Demarreange/Arret

Wiring connection (continued)

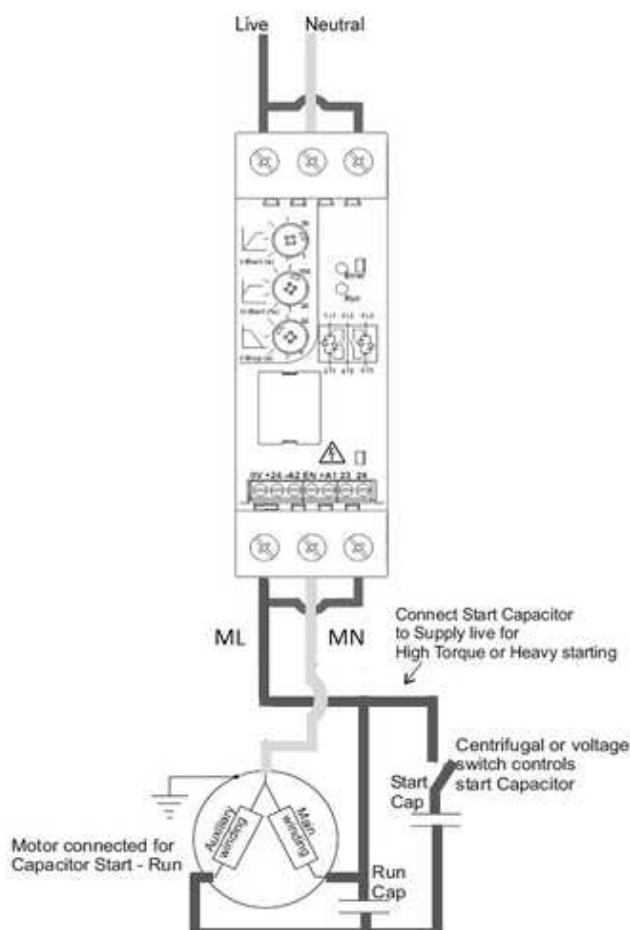
Single-phase connection

Introduction:

The RS PRO VMX-PFE soft-starter controller may be utilised to accomplish motor starting using the reduced voltage method for single-phase applications (Non UL). Soft-starter sizing is determined by the kW rating of the motor. The soft-starter controller selection process for single-phase control is identical to three-phase for standard and heavy duty applications. To configure the RS PRO VMX-PFE soft-starter for single-phase operation, see below:



Mains connection of the RS PRO VMX-PFE soft-starter in a single-phase application is detailed below (see three-phase connection for protective switch-gear and fuse details).



Wiring connection (continued)

Conductor sizes and torques

Terminal	Models	Conductor Strip Length	Conductor Size		Torque	
		mm	mm ²	AWG	Nm	Lb-in
Main terminal	206-080 (5A) to 206-086 (16A)	9	1-4	18-12	1.3	12
Cu only	206-088 (22A) to 206-092 (41A)	12	2.5-10	12-8	2.5	22
Control Terminals	All models	6	0.5-2.5	20-14	0.4	3.5
Cu only						

Where several conductors are to be connected, the difference between the wires/cables used must not exceed one DIN standard size level.

Bei Mehrleiteranschluss darf maximal ein DIN-Normgrößen-Sprung zwischen den verwendeten Leitern liegen.

En cas de raccordement de plusieurs conducteurs, il faut 1 écartement normalisé max. entre les conducteurs.

In caso di collegamento a più conduttori, è ammesso al massimo un salto di grandezze DIN standard fra i conduttori utilizzati.

En caso de conexión de múltiples conductores puede haber como máximo un salto de magnitud normalizada DIN entre los conductores utilizados.

NOTE: The actual conductor used must comply with local wiring regulations.

Technical information

Product standard	IEC/EN 60947-4-2		
Rated Operational Voltage (Ue)	200-480VAC (3-Phase)		
Rated Insulation Voltage (Ui)	500V		
Rated Frequency	50-60Hz ± 5Hz		
Index Rating	Over-current ≥ 3 x I _e for 5 seconds (See rating table for I _e)		
Form Designation	Form 1, Internally Bypassed		
Rated Impulse Withstand Voltage (Uimp)	2.5kV		
Pollution Degree	2		
Rated Short Circuit Current (Iq)	5kA ¹⁾		
Short Circuit Co-ordination (when protected by recommended semiconductor fuse)	Type 1 ¹⁾		
IP Rating	IP20		
Control Supply (Us)	24VDC approx 4VA supplied to terminals 0V , + 24V	24VDC Isolated power supply protected by a 4A UL listed fuse	
Enable Control	24VDC galvanically isolated terminals -A2 , EN		
Start/Stop Control	24VDC galvanically isolated terminals -A2 , +A1		
Auxiliary Circuits Relay	Ready/Fault - 23/24 250VAC, 1A, AC-15 250VAC, 2.5A (Resistive load)		
Indication	Red = Error Green = Run LEDs		
Start Duty	3 x FLC for 5 seconds at standard rating		
Starts/Hour	- Standard = 10 starts per hour OR 5 starts and 5 soft stops per hour - With optional fan = 60 starts per hour OR 30 starts and 30 soft stops per hour		
t-Start	1 to 30 seconds		
t-Stop	0 to 30 seconds		
U-Start	30% - 100%		

¹⁾ When protected by recommended semiconductor fuses (see page 6)

Technical information (standards)

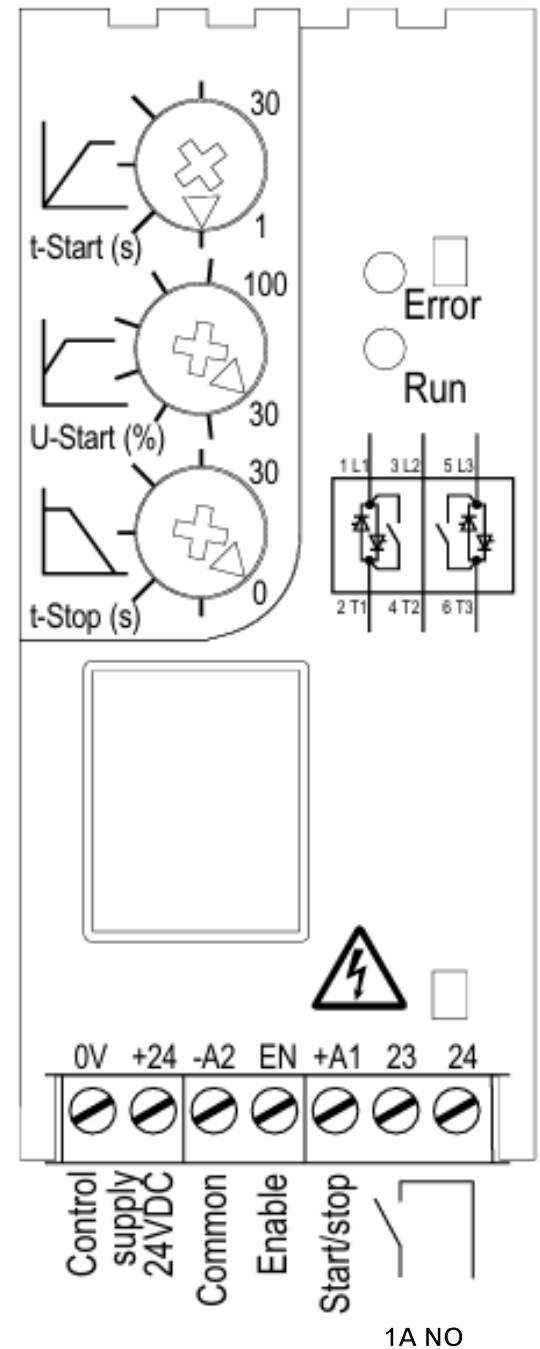
EMC Emission and Immunity Levels	
ESD immunity IEC 61000-4-2	4kV Contact 8kV Air Discharge
RF immunity IEC 61000-4-6	140dB μ v over 0.15-80MHz
RF immunity IEC 61000-4-3	10V/m over 80-1000MHz
Fast transient immunity IEC 61000-4-4	2kV/5kHz
Surge immunity IEC 61000-4-5	2kV line to ground 1kV line to line
Conducted RF emissions EN 55011	Class A
Radiated RF emissions EN 55011	Class A
NOTE:	
This product has been designed for environment A. Use of this product in environment B may cause unwanted electromagnetic disturbances, in which case the user may be required to take adequate mitigation measures	

Technical information (environmental)

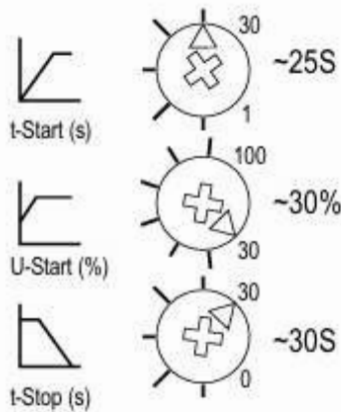
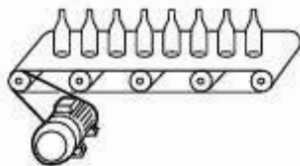
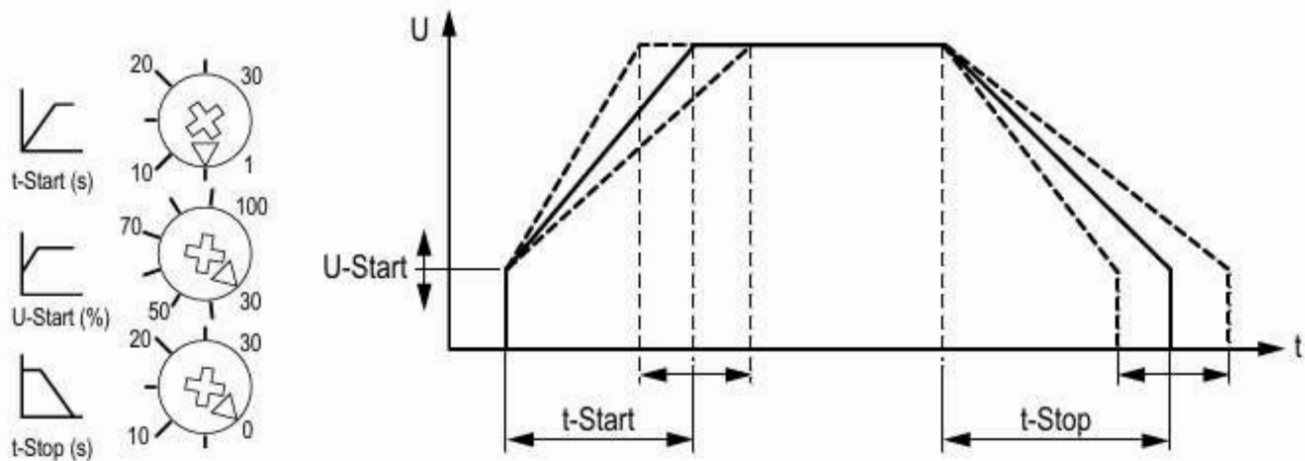
Altitude	1000m 1000-2000m de-rate 1% of unit FLC per 100m up to 2000m
Humidity	Max. 85%, non-condensing, not exceeding 50% at 40°C
Ambient Temperature	0°C - 40°C Above 40°C de-rate linearly by 2% of unit FLC per °C to a de-rate of 40% at 60°C (not UL)
Transport and Storage	-25°C to +60°C

Fault / operating conditions

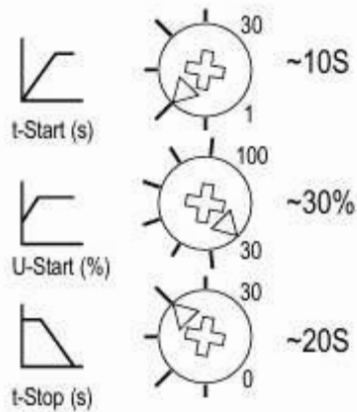
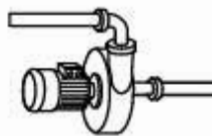
Fault / Operation	LED Colour	Status
Not Enabled	Red and Green	Stable - No flash
Initialising	Red and Green	Slow flash
Running	Green	-
Ready for Operation "Enabled"	Green	Slow flash
Starting	Green	Quick flash
Full Volts	Green	Stable
Stopping	Green	Quick flash
Starting to trip on Over-current	Green	Very Quick flash
Error Codes	LED Colour	Status
SCR or Supply	Red	1 x flash
Too Hot or Cold	Red	2 x flash
Control Supply Voltage low	Red	3 x flash
Bypass Relay Failure	Red	4 x flash
Shearpin (4.4 x Ie)	Red	5 x flash
Over-current	Red	6 x flash



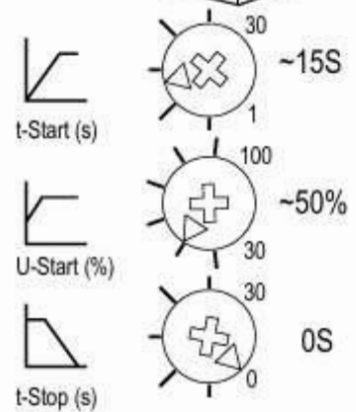
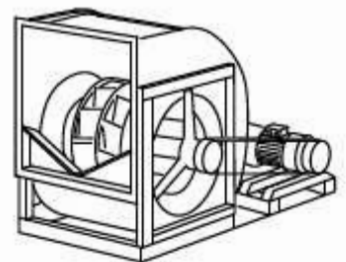
Common applications



Conveyor

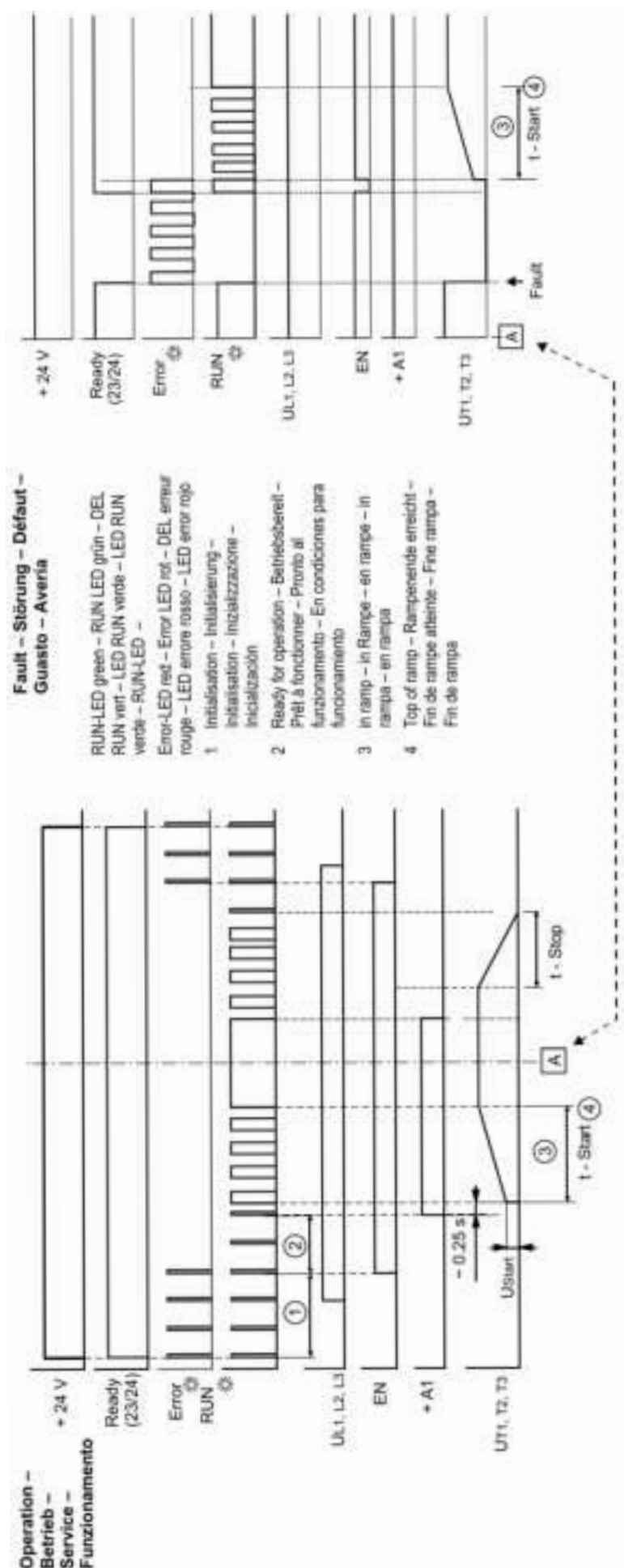


Pump



Fan

Operation parameters



Rating table

Type RS PRO VMX-PFE.. (I _e)	I _e A ³⁾	kW ¹⁾		FLA A ³⁾	HP ²⁾				U _s
		230V	400V		200V	208V	220 - 240V	440 - 480V	
206-080 (5A)	5	1.1	2.2	5	1	1	1	3	24VDC
206-082 (7A)	7	1.5	3	5	1.5	1.5	2	3	
206-083 (9A)	9	2.2	4	9	2	2	2	5	
206-085 (12A)	12	3	5.5	12	3	3	3	7.5	
206-086 (16A)	16	4	7.5	16	3	3	5	10	
206-088 (22A)	22	5.5	11	22	5	5	7.5	15	
206-089 (30A)	29	7.5	15	30	7.5	7.5	10	20	
206-091 (36A)	35	7.5	18.5	36	10	10	10	25	
206-092 (41A)	41	11	22	40	10	10	10	30	

Notes:

¹⁾ Rated operational powers in kW as per IEC 60072-1 (primary series) corresponding to IEC current rating.

²⁾ Rated operational powers in HP corresponding to FLA current rating according to UL508 and Table 430.250 of the National Electrical Code.

³⁾ The I_e and FLA rating applies for a maximum surrounding air temperature of 40°C. Above 40°C de-rate linearly by 2% of I_e or FLA per °C to a maximum of 60°C (Not UL)

Electric current, Danger to life!
Only skilled or instructed persons may carry out the operations.

Lebensgefahr durch Strom!
Nur Elektrofachkräfte und elektrotechnisch unterwiesene Personen dürfen die im Folgenden beschriebenen Arbeiten ausführen.

Tension électrique dangereuse!
Seules les personnes qualifiées et averties doivent exécuter les travaux ci-après.

¡Corriente eléctrica! ¡Peligro de muerte!
El trabajo a continuación descrito debe ser realizado por personas cualificadas y advertidas.

Tensione elettrica: Pericolo di morte!
Solo persone abilitate e qualificate possono eseguire le operazioni di seguito riportate.

触电危険！
只允许专业人员和受过专业训练的人员进行下列工作。

Электрический ток! Опасно для жизни!
Только специалисты или проинструктированные лица могут выполнять следующие операции.

Levensgevaar door elektrische stroom!
Uitsluitend deskundigen in elektriciteit en elektrotechnisch geïnstrueerde personen is het toegestaan, de navolgend beschreven werkzaamheden uit te voeren.

Livsfare på grund af elektrisk strøm!
Kun uddannede el-installatører og personer der er instruerede i elektrotekniske arbejdsopgaver, må udføre de nedenfor anførte arbejder.

Προσοχή, κίνδυνος ηλεκτροπληξίας!
Οι εργαστές που αναφέρονται στη συνέχεια θα πρέπει να εκτελούνται μόνο από ηλεκτρολόγους και ηλεκροτεχνίτες.

Perigo de vida devido a corrente eléctrica!
Apenas electricistas e pessoas com formação electrotécnica podem executar os trabalhos que a seguir se descrevem.

Livsfara genom elektrisk ström!
Endast utbildade elektriker och personer som undervisats i elektroteknik får utföra de arbeten som beskrivs nedan.

Hengenvaarallinen jännite!
Vain pätevät sähköasentajat ja opastusta saaneet henkilöt saavat suorittaa seuraavat työt.

Nebezpečí úrazu elektrickým proudem!
Niže uvedené práce smějí provádět pouze osoby s elektrotechnickým vzděláním.

Eluohhtlik! Elektrilöögioht!
Järgnevalt kirjeldatud töid tohib teostada ainult, elektriala spetsialist või elektrotehnilise, järgnevalt kirjeldatud töid tohib teostada ainult, instrueerimise läbinud personal.

Életveszély az elektromos áram révén!
Csak elektromos szakemberek és elektrotechnikában képzett személyek végezhetik el a következőkben leírt munkákat.

ElektriskÖ strÖva apdraud dzNvNbu!
TÖÖk aprakstNtos darbus drNkst veikt tikai elektrospeciÖlisti un darbam ar elektrotehniskÖm iekÖrtÖm instruntÖs personas!

Porażenie prądem elektrycznym stanowi zagrożenie dla życia!
Opisane poniżej prace mogą przeprowadzać tylko wykwalifikowani elektrycy oraz osoby odpowiednio poinstruowane w zakresie elektrotechniki.

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Pavojus gyvybei dji elektros srovjs!
Tik elektrikai ir elektrotechnikos specialistai gali atlikti žemiau aprašytus darbus.

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Življenjska nevarnost zaradi električnega toka!
Spodaj opisana dela smejo izvajati samo elektrostrokovnjaki in elektrotehnično poučene osebe.

Nebezpečenstvo ohrozenia života elektrickým prúdom!
Práce, ktoré sú nižšie opísané, smú vykonávať iba elektrodoborníci a osoby s elektrotechnickým vzdelaním.

Опасност за живота от электрически ток!
Операциите, описани в следващите раздели, могат да се извършват само от специалисти-електротехници и инструктиран електротехнически персонал.

Atenție! Pericol electric!
Toate lucrările descrise trebuie efectuate numai de personal de specialitate calificat și de persoane cu cunoștințe profunde în electrotehnică.

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California Customers: California Proposition 65 Warning

WARNING: this product and associated accessories may contain chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm. For more information visit <https://p65warnings.ca.gov>

For further regulatory information, please see Article33 Declaration on website. User specific SCIP details are also available upon request.

To assist with assessing your Environmental impact, International Recycling codes are printed/stamped on unit boxes, to cover all enclosed packing materials.

RS PRO reserves the right to make changes or updates with respect to or in the content of this document or the format thereof, at any time without notice.

This product is for professional use only and requires a level of training, it should not be supplied to consumers and is therefore outside the scope of the PSTI act.



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