

VARMECA 10

Variable speed motors and geared motors

Parameter-setting manual

VARMECA 10

Variable speed motors and geared motors

NOTE

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LEROY-SOMER gives no contractual guarantee whatsoever concerning the information published in this document and cannot be held responsible for any errors it may contain, nor for any damage resulting from its use.

CAUTION

For the user's own safety, this VARMECA 10 motor must be connected to an approved earth (\oplus terminal).

It is imperative that the equipment is supplied via an isolating device and a circuit-breaking device (power contactor) which can be controlled by an external safety system (emergency stop, fault detector).

The VARMECA 10 motor is fitted with safety devices which, in the event of a fault, control stopping and thus stop the motor. The motor itself can become jammed for mechanical reasons. Voltage fluctuations, and in particular power cuts, may also cause the motor to stop.

The removal of the causes of the shutdown can lead to restarting, which may be dangerous for certain machines or installations. In such cases, it is essential that the user takes appropriate precautions against the motor restarting after an unscheduled stop.


VARMECA 10 is a component designed to be integrated in an installation or an electrical machine. It is the responsibility of the user to take all necessary precautions to ensure that the system complies with current standards.

For safety reasons, LEROY-SOMER prohibits the use of VARMECA 10 for lifting applications.
LEROY-SOMER declines all responsibility in the event of the above recommendations not being observed.

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SAFETY AND OPERATING INSTRUCTIONS FOR ELECTRICAL ACTUATORS (In accordance with the low voltage directive 73/23/EEC modified by 93/68/EEC)

 Throughout the manual, this symbol warns of consequences which may arise from inappropriate use of the VARMECA 10, since electrical risks may lead to material or physical damage as well as constituting a fire hazard.

1 - General

Depending on their degree of protection, VARMECA 10 motors may contain moving parts, as well as hot surfaces, during operation.

Unjustified removal of protections, incorrect use, faulty installation or inappropriate operation could represent a serious risk to personnel, animals and equipment.

For further information, consult the manual.

All work relating to transportation, installation, commissioning and maintenance must be performed by experienced, qualified personnel (see IEC 364 or CENELEC HD 384, or DIN VDE 0100 and national specifications for installation and accident prevention).

In these basic safety instructions, qualified personnel means persons competent to install, mount, commission and operate the product and possessing the relevant qualifications.

2 - Use

VARMECA 10 motors are components designed for integration in installations or electrical machines.

When integrated in a machine, commissioning must not take place until it has been verified that the machine conforms with directive 89/392/EEC (Machinery Directive).

It is also necessary to comply with standard EN 60204, which stipulates in particular that electrical actuators (which include VARMECA 10) cannot be regarded as circuit-breaking devices and certainly not as isolating switches.

Commissioning can take place only if the requirements of the Electromagnetic Compatibility Directive (89/336/EEC, modified by 92/31/EEC) are met.

VARMECA 10 motors meet the requirements of the Low Voltage Directive 73/23/EEC, modified by 93/68/EEC. The harmonised standards of the DIN VDE 0160 series in connection with standard VDE 0660, part 500 and EN 60146/VDE 0558 are also applicable.

The technical characteristics and instructions concerning the connection conditions specified on the nameplate and in the documentation provided must be observed without fail.

3 - Transportation, storage

All instructions concerning transportation, storage and correct handling must be observed.

The climatic conditions specified in the technical manual must be observed.

4 - Installation

The installation and cooling of equipment must comply with the specifications in the manual supplied with the product.

VARMECA 10 motors must be protected against excessive stress. In particular, there must be no damage to parts and/or modification of the clearance between components during transportation and handling. Avoid touching the electronic components and contact parts.

VARMECA 10 motors contain parts which are sensitive to electrostatic stress and may be easily damaged if handled incorrectly. Electrical components must not be exposed to mechanical damage or destruction (risks to health!).

5 - Electrical connection

When work is performed on VARMECA 10 motors which are powered up, national accident prevention specifications must be respected.

The electrical installation must comply with the relevant specifications (for example conductor cross-sections, protection via fused circuit-breaker, connection of protective conductor). More detailed information is given in the manual. Instructions for an installation which meets the requirements for electromagnetic compatibility, such as screening, earthing, presence of filters and correct insertion of cables and conductors, are given in the documentation supplied with the VARMECA 10. These instructions must be followed in all cases, even if the VARMECA 10 carries the CE mark.

Adherence to the limits given in the EMC legislation is the responsibility of the manufacturer of the installation or the machine.

6 - Operation

Installations incorporating VARMECA 10 motors must be fitted with additional protection and monitoring devices as laid down in the current relevant safety regulations : law on technical equipment, accident prevention regulations, etc. Modification of VARMECA 10 motors using control software is permitted.

Active parts of the device and live power connections must not be touched immediately after the VARMECA 10 is powered down, as the capacitors may still be charged. In view of this, the warnings fixed to VARMECA 10 motors must be observed.

During operation, all doors and protective devices must remain closed.

7 - Servicing and maintenance

Refer to the manufacturer's documentation.

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GENERAL INFORMATION

1 - GENERAL INFORMATION

1.1 - Operating principle

This manual describes access to the parameter settings of the VARMECA 10 (VMA 11 - 12 - 13 - 14) range, using a CDC-VMA console or PEGASE VMA 10 PC software.

Combined with the VARMECA 10, these tools can simplify programming, diagnostics and displaying parameters.

1.2 - General characteristics

1.2.1 - "CDC-VMA console" OPTION

CONTENTS OF THE KIT:

- 1 power supply unit to connect to single phase mains supply 230 V - 50/60 Hz.
- 1 connection cable (length = 1.5 m) to connect to the VARMECA 10.
- 1 console with digital LCD display - 2 lines of 16 characters.
- 1 parameter-setting manual.

1.2.2 - "PEGASE VMA 10 programming software" OPTION

CONTENTS OF THE KIT:

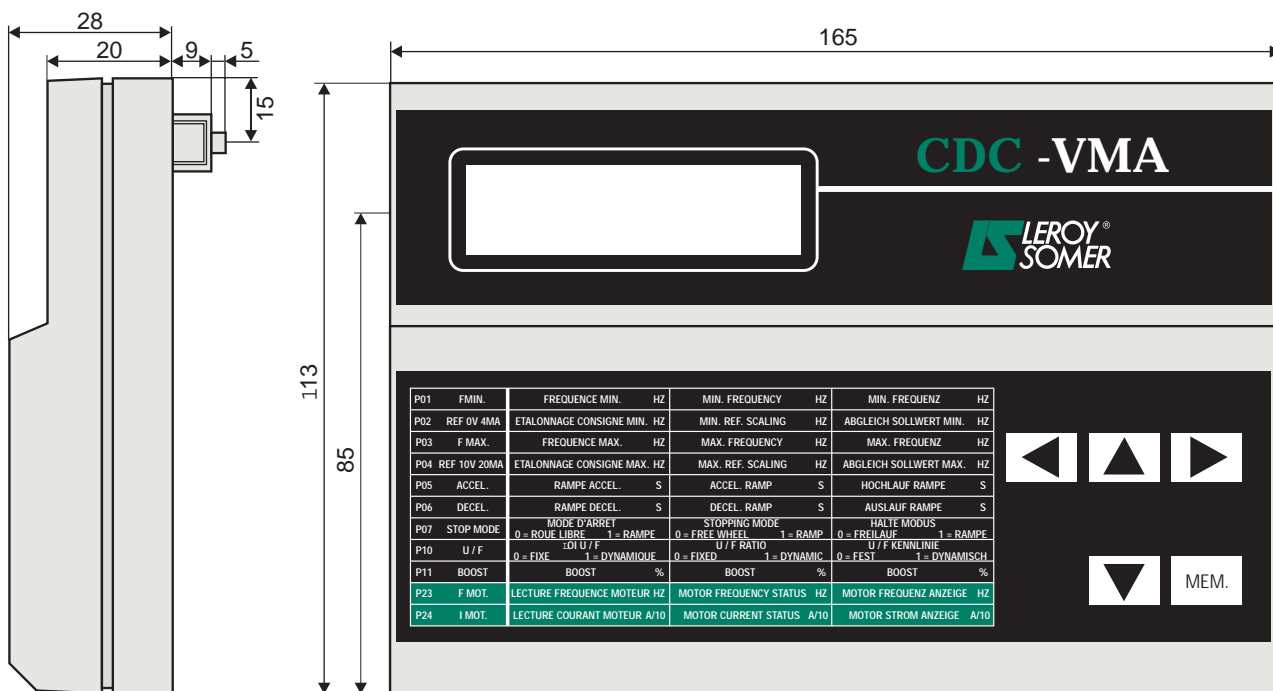
- 1 connection cable (length = 3m) to connect to the VARMECA 10,
- 3 disks for loading the software onto a PC (or 1 CD-ROM).
- 1 parameter-setting manual.

MINIMUM PC CONFIGURATION:

- Pentium 100 MHz.
- 8 Mb of RAM.
- WINDOWS 95 or 98.

1.3 - Weight and dimensions of the CDC-VMA console

See the following diagram.



Weight : 0,3 kg

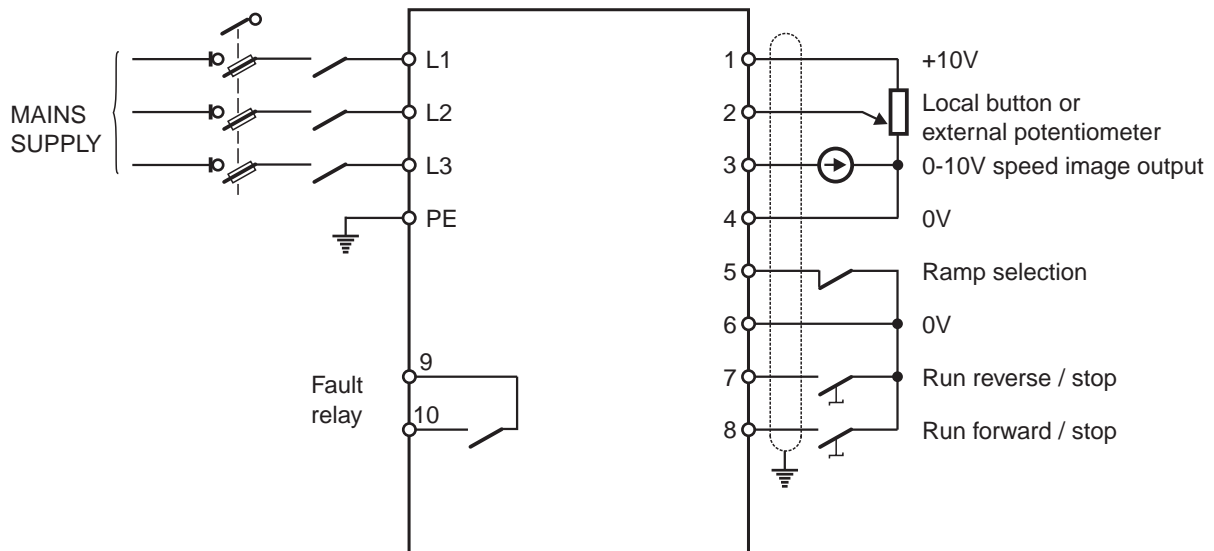
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GENERAL INFORMATION

1.4 - Wiring diagram

1.4.1 - Standard configuration (factory setting)



Terminals	Specifications
1	+10 V analogue source Rated current: 3 mA
2	Analogue reference input 0 to +10 V or 4-20 mA
3	Analogue output 0 to +10 V Rated current: 3 mA 0 V = zero speed 10 V = max. speed
4	0 V - common with terminal 6
5	Ramp selection logic input 1s (50 Hz) = terminals 5 and 6 not connected 3s (50 Hz) = terminals 5 and 6 connected
6	0 V - common with terminal 4
7	Logic input run reverse/stop
8	Logic input run forward/stop
9 - 10	Relay output 250 V - 1A <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="margin-right: 10px;"> </div> Switched off or faulty </div> <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="margin-right: 10px;"> </div> On </div>

Associated parameter setting

Reference	K4	K1
Local button	OFF	-
External potentiometer or external 0-10 V	ON	ON
4 -20 mA reference	ON	OFF

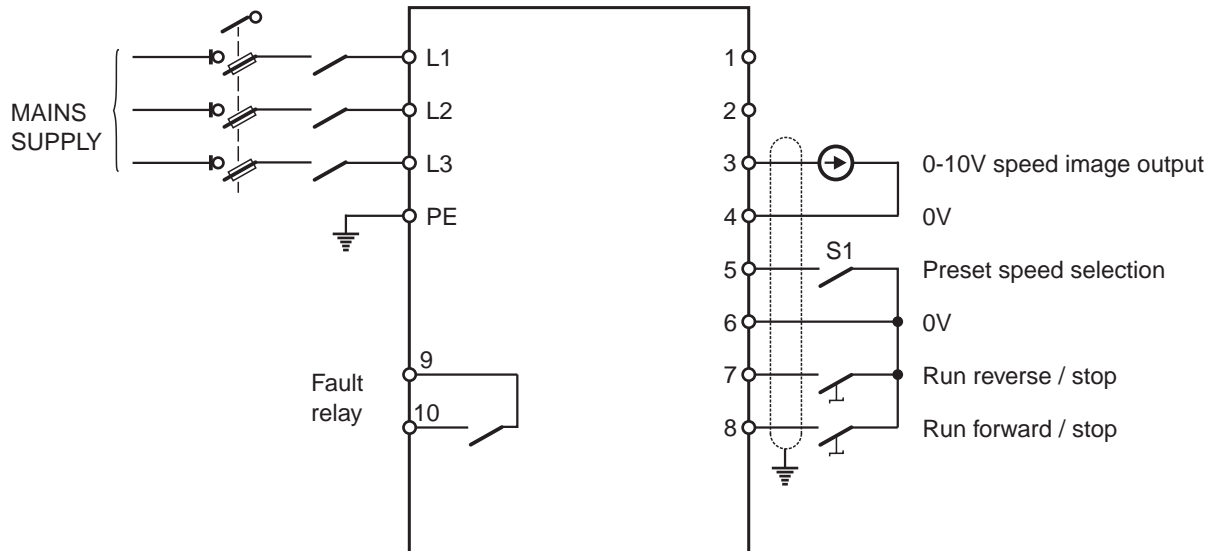
Setting other parameters
see sections 2 and 3

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GENERAL INFORMATION

1.4.2 - Configuration option 1: 2 preset speeds - 2 operating directions



Terminals	Specifications
1	+10 V analogue source Rated current: 3 mA
2	Analogue input not used
3	Analogue output 0 to +10 V Rated current: 3 mA 0 V = zero speed 10 V = max. speed
4	0 V - common with terminal 6
5	Logic input S1
6	0 V - common with terminal 4
7	Logic input run reverse/stop
8	Logic input run forward/stop
9 - 10	Relay output 250 V - 1A <div style="display: flex; align-items: center; gap: 10px;"> <div style="border-bottom: 1px solid black; width: 20px; margin-right: 5px;"></div> <div style="border-bottom: 1px solid black; width: 20px; margin-right: 5px;"></div> <div style="font-size: 1.2em;">}</div> <div>Switched off or faulty</div> </div> <div style="display: flex; align-items: center; gap: 10px; margin-top: 5px;"> <div style="border-bottom: 1px solid black; width: 20px; margin-right: 5px;"></div> <div style="border-bottom: 1px solid black; width: 20px; margin-right: 5px;"></div> <div style="font-size: 1.2em;">}</div> <div>On</div> </div>

Associated parameter setting

CDC-VMA	PEGASE VMA 10
P14 = 1	Terminal block configuration ● OPTION 1 VP1 OPTION 1(Hz) VP2 OPTION 1(Hz)
P15 = VP1-1(Hz)	
P16 = VP2-1(Hz)	
MINI DIP K4 = ON	

Reference	S1
VP1-1	1
VP2-1	0

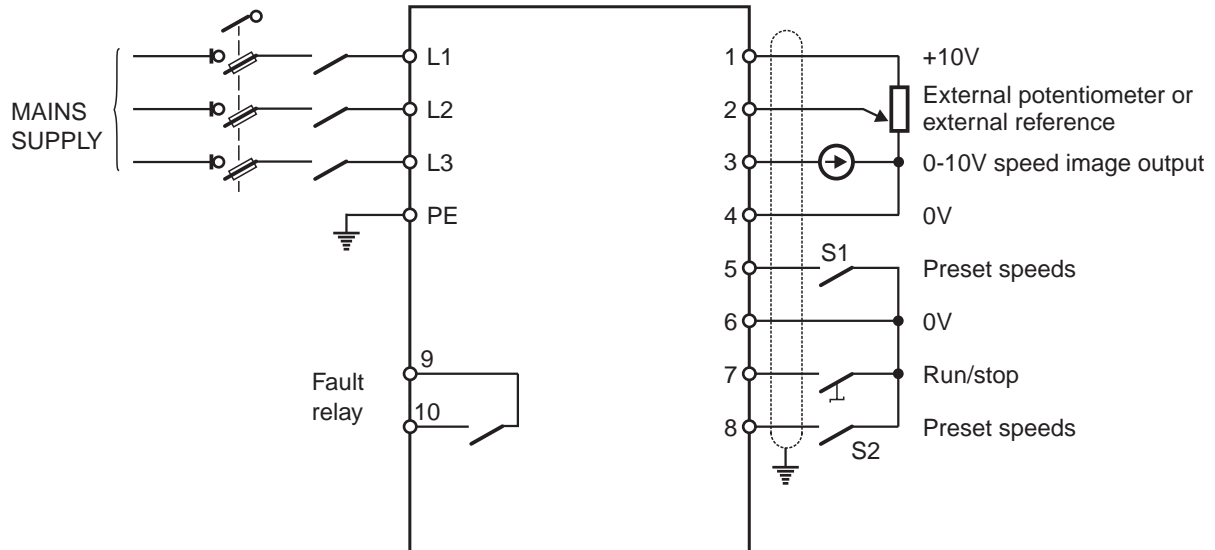
Setting other parameters
see sections 2 and 3

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GENERAL INFORMATION

1.4.3 - Configuration option 2: analogue reference and 3 preset speeds - 1 operating direction



Terminals	Specifications
1	+10 V analogue source Rated current: 3 mA
2	Analogue input reference
3	Analogue output 0 to +10 V Rated current: 3 mA 0 V = zero speed 10 V = max. speed
4	0 V - common with terminal 6
5-8	Logic inputs S1- S2
6	0 V - common with terminal 4
7	Logic input run forward/stop
9 - 10	Relay output 250 V - 1A <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> </div> Switched off or faulty </div> <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="margin-right: 10px;"> </div> On </div>

Associated parameter setting

CDC-VMA	PEGASE VMA 10
	Terminal block configuration
P14 = 2	● OPTION 2
P16 = VP1-2(Hz)	VP1 OPTION 2(Hz)
P17 = VP2-2(Hz)	VP2 OPTION 2(Hz)
P18 = VP3-2(Hz)	VP3 OPTION 2(Hz)
MINI DIP K4 = ON	

Reference	Mini DIP K1
0 - 10 V	ON
4 - 20 mA	OFF

Reference	S1	S2
VP1-2	0	1
VP2-2	1	0
VP3-2	0	0
Analogue reference	1	1

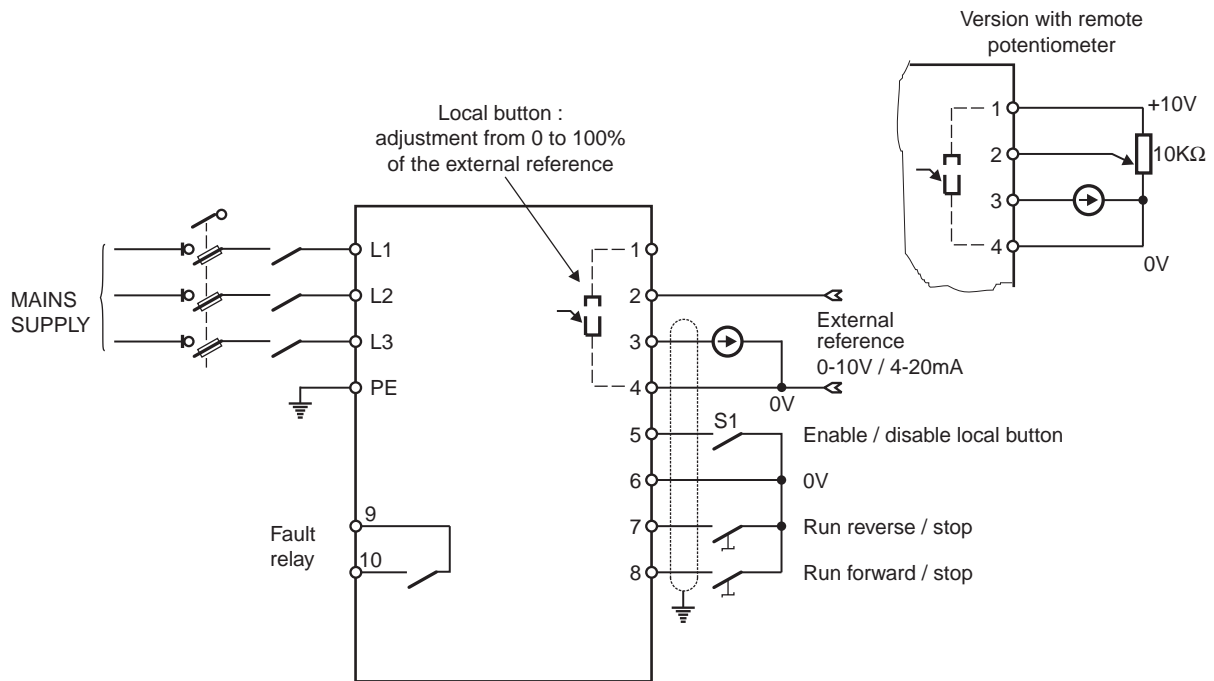
Setting other parameters
see sections 2 and 3

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GENERAL INFORMATION

1.4.4 - Configuration option 3: correction of an external reference with the speed control button - 2 operating directions - enabling/disabling the control button



Terminals	Specifications
1	+10 V analogue source rated current: 3 mA
2	Analogue reference input 0 to +10 V or 4 - 20 mA
3	Analogue output 0 to +10 V Rated current: 3 mA 0 V = zero speed 10 V = max. speed
4	0 V - common with terminal 6
5	Logic input, for enabling/disabling the correction S1 open = correction possible S1 closed = no correction
6	0 V - common with terminal 4
7	Logic input run reverse/stop
8	Logic input run forward/stop
9 - 10	Relay output 250 V - 1A <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> </div> Switched off or faulty </div> <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="margin-right: 10px;"> </div> On </div>

Associated parameter setting

CDC-VMA	PEGASE VMA 10
	Terminal block configuration
P14 = 3	● OPTION 3
MINI DIP K4 = ON	

Reference	Mini DIP K1
0 - 10 V	ON
4 - 20 mA	OFF

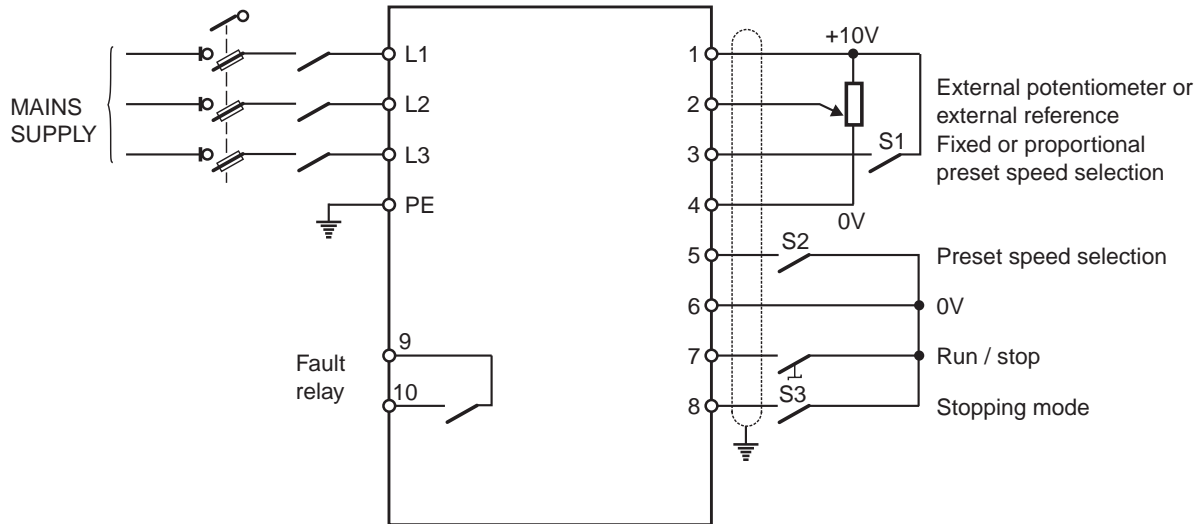
Setting other parameters
see sections 2 and 3

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GENERAL INFORMATION

1.4.5 - Configuration option 4: 2 preset speeds fixed or proportional to the reference - 1 operating direction



Terminals	Specifications
1	+10 V analogue source rated current: 3 mA
2	Analogue reference input
3	Analogue input S1
4	0 V - common with terminal 6
5	Logic input S2
6	0 V - common with terminal 4
7	Logic input run/stop
8	Logic input S3
9 - 10	Relay output 250 V - 1A <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> </div> Switched off or faulty </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> </div> On </div>

Associated parameter setting

CDC-VMA	PEGASE VMA 10
P14 = 4	Terminal block configuration
P15 = VP1(Hz)	● OPTION 4
P16 = VP2-1(Hz)	VP1 OPTION 1-4(Hz)
	VP2 OPTION 1-4(Hz)
MINI DIP K4 = ON	

Reference	Mini DIP K1
0 - 10 V	ON
4 - 20 mA	OFF

VP1-1 VP2-1	S1
Fixed	0
Proportional	1

Reference	S2
VP1-1	1
VP2-1	0

Stop mode	S3
Free wheel	0
Ramp	1

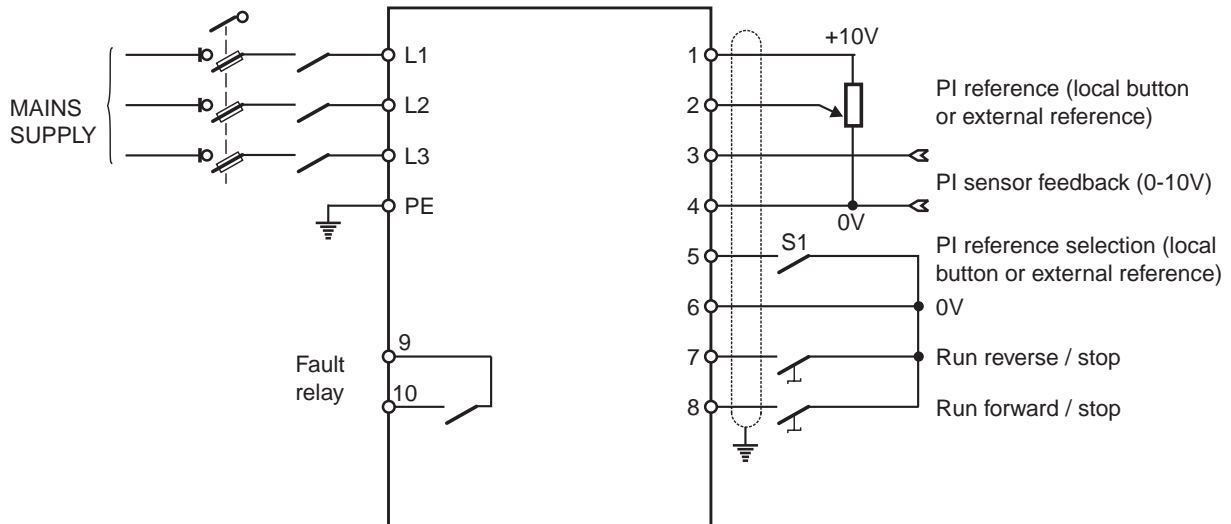
Setting other parameters
see sections 2 and 3

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GENERAL INFORMATION

1.4.6 - Standard configuration: regulation with the integrated PI loop - PI reference using the local button or external reference - 2 operating directions



Terminals	Specifications
1	+10 V analogue source rated current: 3 mA
2	Analogue input PI reference
3	Analogue input - PI sensor feedback 0 to +10 V - Impedance = 100 kΩ
4	0 V - common with terminal 6
5	Logic input S1 PI reference selection
6	0 V - common with terminal 4
7	Logic input run reverse/stop
8	Logic input run forward/stop
9 - 10	Relay output 250 V - 1A <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> </div> Switched off or faulty </div> <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="margin-right: 10px;"> </div> On </div>

Associated parameter setting

CDC-VMA	PEGASE VMA 10
	Terminal block configuration
P14 = 0	<input checked="" type="radio"/> STANDARD
P20 = 1	Terminal N°3 assignment <input checked="" type="radio"/> PI input

PI reference selection

Reference	S1	switches	
		K1	K4
Local button	1	-	ON
Ext. ref. 0 - 10 V	0	ON	ON
Ext. ref. 4 - 20 mA	0	OFF	ON

Setting other parameters
see sections 2 and 3

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COMMISSIONING THE CDC-VMA CONSOLE

2 - COMMISSIONING THE CDC-VMA CONSOLE

2.1 - Installation

2.1.1 - Checks on receipt

When you receive your CDC-VMA console, make sure that it has not been damaged during transport. If necessary, report any damage to the delivery company.

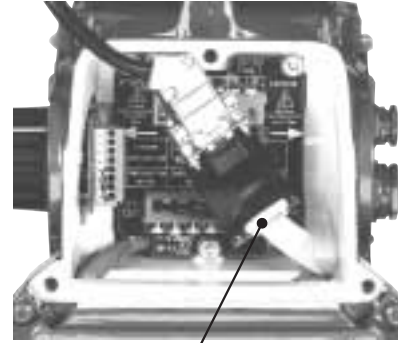
THE CONSOLE KIT COMPRISES:

- the CDC-VMA console
- 1 connection cable (length = 1.5 m) with RS 232 socket.
- 1 power supply unit 230 V single phase - 50/60 Hz,
- 1 parameter-setting manual.



2.1.2 - Connection

- Open the front cover of the VARMECA 10.
- Connect the 20-pin socket on the end of the cable to the connector on the VARMECA 10 rolled cable.
- The RS 232 socket on the cable is connected to the console socket.



VARMECA 10 connector

2.2 - Presentation of the keypad

CDC -VMA

P01	FMIN.	FREQUENCE MIN. HZ	MIN. FREQUENCY HZ	MIN. FREQUENZ HZ
P02	REF 0V 4MA	ETALONNAGE CONSIGNE MIN. HZ	MIN. REF. SCALING HZ	ABGLEICH SOLLWERT MIN. HZ
P03	F MAX.	FREQUENCE MAX. HZ	MAX. FREQUENCY HZ	MAX. FREQUENZ HZ
P04	REF 10V 20MA	ETALONNAGE CONSIGNE MAX. HZ	MAX. REF. SCALING HZ	ABGLEICH SOLLWERT MAX. HZ
P05	ACCEL.	RAMPE ACCEL. S	ACCEL. RAMP S	HOCHLAUF RAMPE S
P06	DECEL.	RAMPE DECEL. S	DECEL. RAMP S	AUSLAUF RAMPE S
P07	STOP MODE	MODE D'ARRET 0 = ROUE LIBRE 1 = RAMPE	STOPPING MODE 0 = FREE WHEEL 1 = RAMP	HALTE MODUS 0 = FREILAUF 1 = RAMPE
P10	U / F	0 = FIXE 1 = DYNAMIQUE	U / F RATIO 0 = FIXED 1 = DYNAMIC	U / F KENNLINIE 0 = FEST 1 = DYNAMISCH
P11	BOOST	BOOST %	BOOST %	BOOST %
P23	F MOT.	LECTURE FREQUENCE MOTEUR HZ	MOTOR FREQUENCY STATUS HZ	MOTOR FREQUENZ ANZEIGE HZ
P24	I MOT.	LECTURE COURANT MOTEUR A/10	MOTOR CURRENT STATUS A/10	MOTOR STROM ANZEIGE A/10

Summary table of main parameters

Keys for accessing and modifying the different parameters

Key for storing settings

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COMMISSIONING THE CDC-VMA CONSOLE

2.3 - Read mode




If when the console is powered up, it is not connected to the VARMECA 10 or if the VARMECA 10 is switched off, the message **CONSOLE LINK FAULT** will appear

- Power up the VARMECA 10.
- Connect the 230 V socket on the console power supply unit.
- On power-up, the console display is positioned on the 1st parameter PO1 FMIN.

The 1st line of the display unit indicates the parameter designation.

The 2nd line indicates the parameter value and unit.

The  key is used for scrolling through parameters P01 to P29.

The  key is used for scrolling in the opposite direction.






2.4 - Parameter-setting mode




Parameter modifications must be performed with the VARMECA 10 stopped (run command disabled)

To modify a setting, use the  or  keys to select the parameter.


The  key is used to make the parameter, which is to be modified, flash.

Modify the setting value with the  or  keys.

As soon as the value differs from the stored value, the **MEM?** message appears.

When the desired setting value has been reached, it can be stored using the  key.

The **MEM?** indication disappears.

The  key is used to quit the parameter-setting mode.

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COMMISSIONING THE CDC-VMA CONSOLE

2.5 - The VARMECA 10 parameters

List and description of the parameters which can be accessed by the CDC-VMA console

Display	Description	Adjustment range in increments of 1	Factory setting
P01 F min	minimum operating frequency	6 to 30 Hz	12 Hz
P02 REF 0 V - 4 mA	calibration of the min. reference 0 V or 4 mA	0 to 30 Hz	12 Hz
P03 F max	maximum operating frequency (according to mini DIP K2 position)	32 to 220 Hz	50 or 80 Hz
P04 REF 10 V - 20 mA	calibration of the max. reference	32 to 220 Hz	50 or 80 Hz
P05 ACCEL.	acceleration ramp ramp value to pass from 0 to 50 Hz	0 to 20 s	3 s
P06 DECEL.	deceleration ramp ramp value to pass from 50 to 0 Hz	0 to 20 s	3 s
P07 STOP MODE	stop mode 0 = freewheel stop 1 = stop according to ramp	0 or 1	1
P08 UN MOT (1)	voltage applied to the motor from the base frequency (percentage of mains voltage: base 400 V)	0 to 100 %	100 %
P09 FN MOT (1)	motor base frequency	50 to 150 Hz	50 Hz
P10 U / F (1)	selection of voltage/frequency ratio 0 = fixed U / F the P08 voltage will be applied at the P08 frequency point 1 = dynamic U / F the voltage adapts automatically to the motor load	0 or 1	0 from 0.25 to 1.1 kW 1 from 1.5 to 7.5 kW
P11 BOOST (1)	value of voltage applied in low frequencies (percentage of mains voltage)	0 to 40 %	adapted to the motor according to the power
P12 OVER BOOST (1)	value of voltage during starting phase (percentage of mains voltage)	0 to 100 %	adapted to the motor according to the power
P13 F PWM	switching frequency 0 = 4 kHz 1 = 6 kHz 2 = 8 kHz 3 = 11 kHz	0 to 3	3 from 0.25 to 2.2 kW 2 from 3 to 4kW
P14 CONFIG	terminal block configuration 0 = standard 1 = option 1 - 2 preset speeds and 2 operating directions 2 = option 2 - analogue reference and 3 preset speeds - 1 operating direction 3 = option 3 - correction of an external reference with the local button - 2 operating directions 4 = option 4 - 2 preset speeds proportional to the reference - 1 operating direction	0 to 4	0
P15 VP1-1	preset speed 1 in options 1 and 4	6 to 220 Hz	50 Hz
P16 VP2-1 VP1-2	preset speed 2 in options 1 and 4 or preset speed 1 in option 2	6 to 220 Hz	60 Hz
P17 VP2-2	preset speed 2 in option 2	6 to 220 Hz	40 Hz
P18 VP3-2	preset speed 3 in option 2	6 to 220 Hz	70 Hz

(1) : the voltage/frequency ratio is illustrated at the end of the table

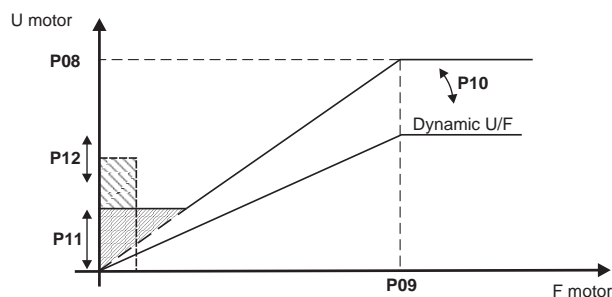
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COMMISSIONING THE CDC-VMA CONSOLE

Display	Description	Adjustment range in increments of 1	Factory setting
P19 ROTATION	choice of directions of rotation in the configuration option 2 0 = clockwise 1 = anti-clockwise	0 to 1	0
P20 SELECT 3	terminal 3 assignment 0 = speed image output 1 = PI feedback input	0 to 1	0
P21 PI KPRO	proportional gain of the PI loop	1 to 100	10
P22 PI KINT	integral gain of the PI loop	1 to 100	10
P23 F_MOT	motor operating frequency	0 to 220 Hz	
P24 I_MOT	motor current (in tenths of an ampere) A/10	0 to 150% of I_n	
P25 FAULT	last fault in memory fault code 0 = no fault 1 = motor overheating 2 = overvoltage 3 = overcurrent 4 = locked rotor 5 = DC bus undervoltage 6 = EEPROM 7 = serial link 8 = power module fault	0 to 8	0
P26 STOP Fmin	enabling of the STOP USING REFERENCE function 0 = disabled 1 = enabled when the reference is less than Fmin, it forces the motor to stop	0 to 1	0
P27 LOG CDC-VMA	console software version		
P28 CAL MOT	VARMECA 10 power rating setting code of ratings 0 = 0.37 kW 1 = 0.55 kW 2 = 0.75 kW 3 = 0.9 kW 4 = 1.1 kW 5 = 1.5 kW 6 = 1.8 kW 7 = 2.2 kW 8 = 3 kW 9 = 4 kW 10 = 0.25 kW 11 = test 12 = special 1.1 kW 13 = 5.5 kW 14 = 7.5 kW	0 to 14	adapted to the motor according to the power
P29	access code	reserved LEROY-SOMER	0

Representation of voltage/frequency ratio



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COMMISSIONING THE PEGASE VMA 10 PC PARAMETER-SETTING SOFTWARE

3 - COMMISSIONING THE PEGASE VMA 10 PC PARAMETER-SETTING SOFTWARE

3.1 - Connection

3.1.1 - Checks on receipt

When you receive your parameter-setting kit, make sure that it has not been damaged during transport. If necessary, report any damage to the delivery company .

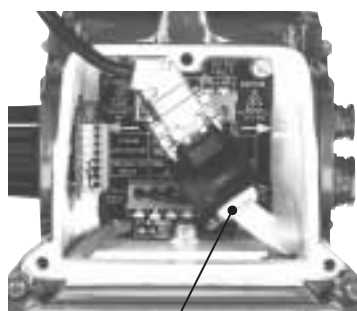
THE KIT COMPRISES:

- 1 connection cable (length = 3m) with RS 232 socket.
- 3 disks or 1 CD-ROM,
- 1 parameter-setting manual.



3.1.2 - Connection

- The RS 232 socket on the cable is connected to the RS232 socket on the PC.
- The 20-pin socket on the cable connects to the connector on the VARMECA 10 rolled cable.



VARMECA 10 connector

3.2 - Software installation

- Start up your PC.
- Insert disk n°1 (or the CD ROM).
- Open the "install" file.
- Follow the instructions given on the screen, in particular those relating to changing disks.
- When the "Installation complete" message appears, click on OK - The PEGASE VMA software is installed.




Depending on the PC used, the serial port may need to be reassigned if communication proves to be impossible (consult LEROY-SOMER)

VARMECA 10

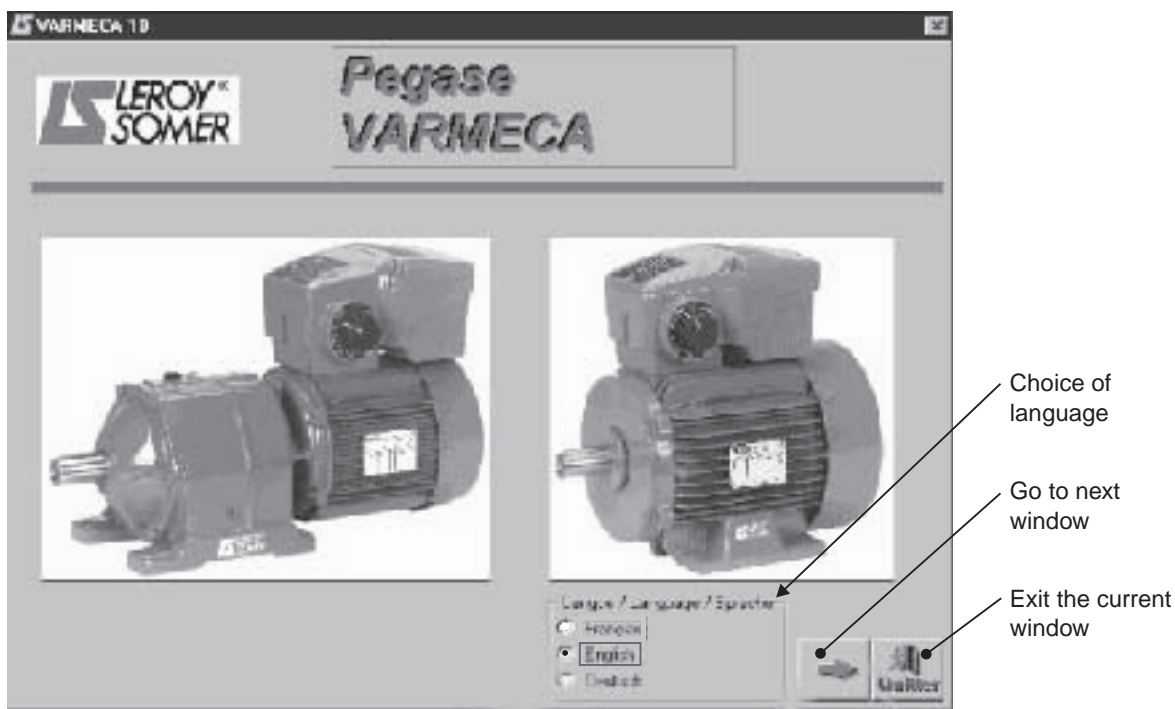
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COMMISSIONING THE PEGASE VMA 10 PC PARAMETER-SETTING SOFTWARE

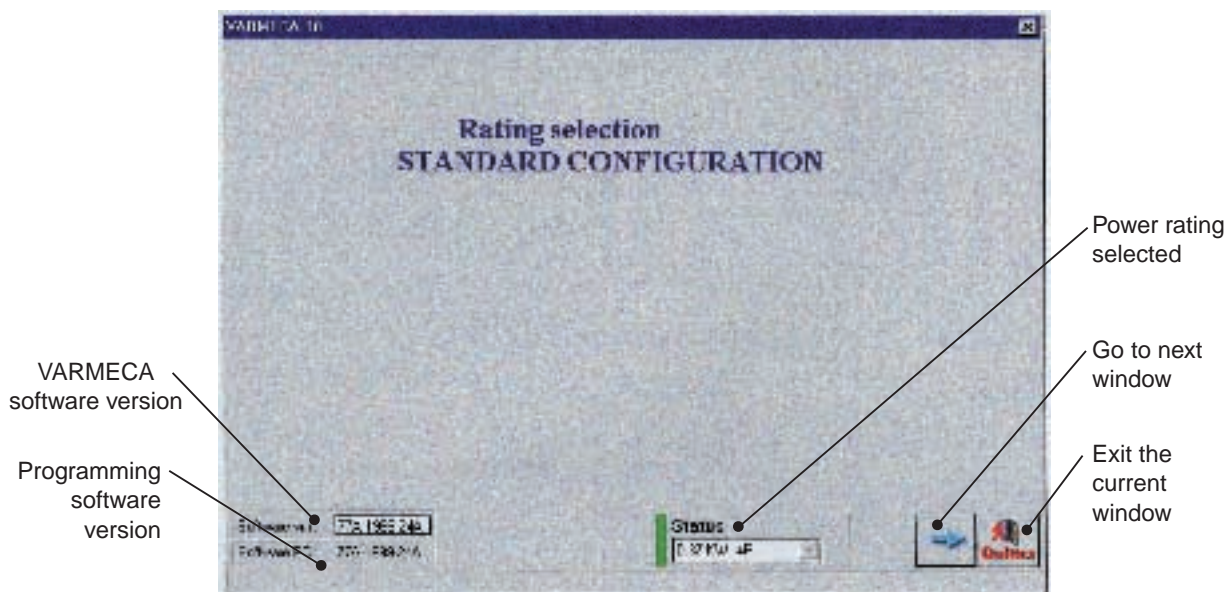
3.3 - Use

- Double-click on the  icon
- The first window appears.

3.3.1 - Detail of the 1st window



3.3.2 - Detail of the 2nd window

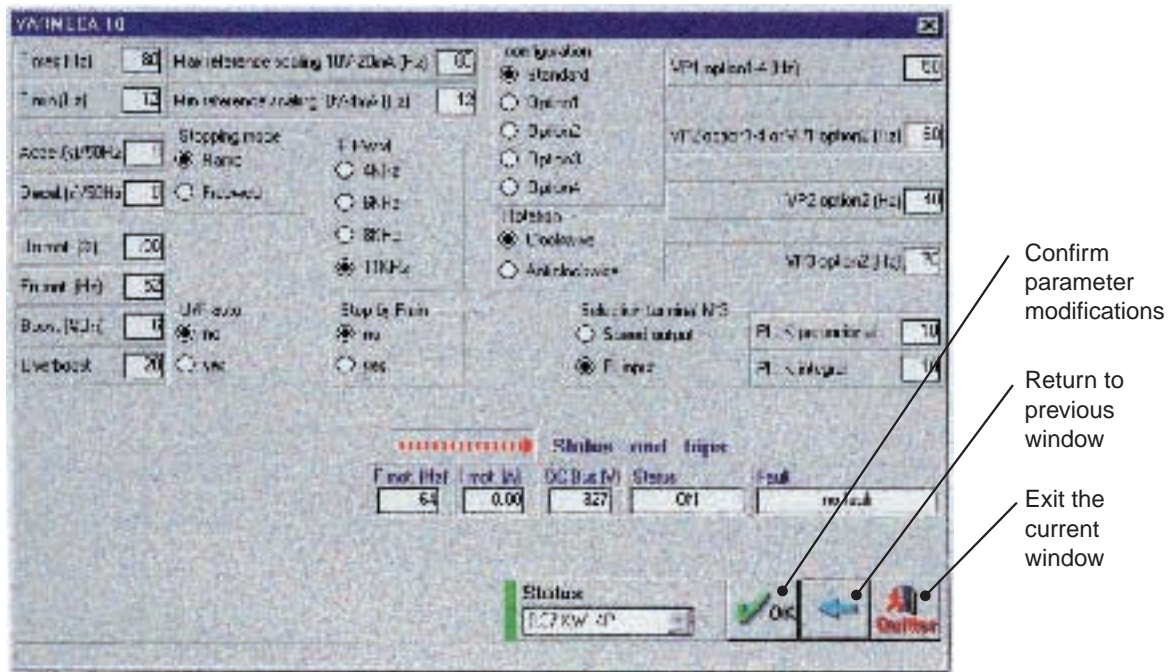


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3.3.3 - Detail of the 3rd window (access to parameters)



Parameter modifications must be made whilst the VARMECA 10 is powered up, but in the "stop" position (run command disabled)

3.4 - The VARMECA 10 parameters

Description of parameters which can be accessed from the PC.

Display	Description	Adjustment range in increments of 1	Factory setting
F max	maximum operating frequency (according to mini DIP K2 position)	32 to 220 Hz	50 or 80 Hz
F min	minimum operating frequency	6 to 30 Hz	12 Hz
ACCEL	acceleration ramp value to pass from 0 to 50 Hz	0 to 20 s	3 s
DECEL	deceleration ramp value to pass from 50 to 0 Hz	0 to 20 s	3 s
U _n mot (1)	voltage applied to the motor at base frequency (percentage of mains voltage: base 400 V)	0 to 100 %	100 %
F _n mot (1)	base frequency of motor	50 to 150 Hz	50 Hz
BOOST (1)	value of voltage applied in low frequencies (percentage of mains voltage)	0 to 40 %	adapted to the motor according to the power
OVERBOOST (1)	value of voltage applied during starting phase (percentage of mains voltage)	0 to 100 %	adapted to the motor according to the power

(1) : the voltage/frequency ratio is illustrated at the end of the table

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Display	Description	Adjustment range in increments of 1	Factory setting
Max. reference point	calibration of the max. reference 10 V or 20 mA	32 to 220 Hz	50 or 80 Hz
Min. reference point	calibration of the min. reference 0 V or 4 mA	0 to 30 Hz	12 Hz
Stop mode	choice of stop mode	ramp or freewheel	ramp
auto U / F (1)	selection of voltage/frequency ratio NO = fixed U / F ratio voltage U_n mot is applied at the frequency point F_n mot YES = dynamic U / F ratio the voltage adapts automatically to the motor load	YES or NO	NO from 0.25 to 1.1 kW YES from 1.5 to 7.5 kW
F switching	switching frequency	4, 6 , 8, 11 kHz	11 kHz from 0.25 to 2.2 kW 8 kHz from 3 to 4 kW
Terminal block configuration	choice of terminal block configuration option 1 = 2 operating directions, 2 preset speeds option 2 = 1 operating direction, 3 preset speeds + reference option 3 = correction of an external reference using the local button option 4 = 2 preset speeds proportional to the reference	standard, option 1, option 2, option 3, option 4	standard
VP1 option 1-4	preset speed 1 in configuration options 1 and 4	0 to 220 Hz	50 Hz
VP2 option 1-4 VP1 option 2	preset speed 2 in configuration options 1 and 4 or preset speed 1 in configuration option 2	0 to 220 Hz	60
VP2 option 2	preset speed 2 in configuration option 2	0 to 220 Hz	40 Hz
VP3 option 2	preset speed 3 in configuration option 2	0 to 220 Hz	70 Hz
Terminal N°3 assignment	choice of terminal n°3 assignment speed output = analogue output image of the 0 - +10 V frequency 0 V = stop +10 V = max. frequency PI input = analogue input 0 to +10 V for the PI feedback	speed output or PI input	speed output
PI : K proportional	PI loop proportional gain setting	1 to 100	10
PI : K integral	PI loop integral gain setting	1 to 100	10
Stop by reference	enabling of stop by reference YES = when the reference is less than the minimum frequency, it forces the motor to stop NO = when the reference is less than the minimum frequency, the motor operates at the minimum frequency	YES, NO	NO
<i>(1) : the voltage/frequency ratio is illustrated at the end of the table</i>			

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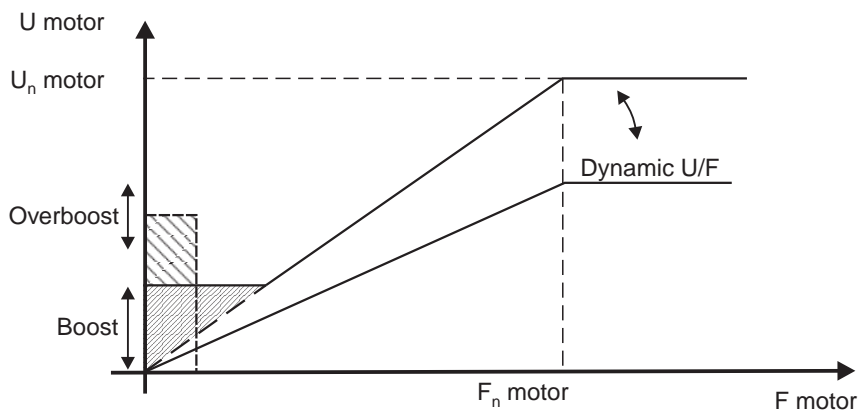
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Display	Description	Adjustment range in increments of 1	Factory setting
F mot	motor frequency reading	0 to 220 Hz reading	
V bus	voltage of the speed controller DC bus $(V_{mains} = \frac{V_{bus}}{\sqrt{2}})$	reading from 0 to 800 V	
Status	speed controller status	stop or run	
Fault	speed controller fault indication	POSSIBLE INDICATIONS: no fault motor overheating overvoltage overcurrent locked rotor bus undervoltage EEPROM serial link module fault	NO FAULT

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Representation of voltage/frequency ratio



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TROUBLESHOOTING

4 - TROUBLESHOOTING

Faults are indicated on the CDC-VMA console by a code from 0 to 8.

With the PEGASE VMA 10 software the faults are indicated clearly in the fault window.

The table below can be used to analyse faults and specifies any checks which should be performed.

Fault code on CDC-VMA	Indication of fault on PEGASE	Checks to make, possible causes
0	NO FAULT	
1	MOTOR OVERHEATING <i>Red LED illuminated</i>	overheating fault I2t - check if the motor is overloaded (orange LED illuminated) - check the set rating and the motor power - make sure that the boost adjustment (P11) has not been modified
2	OVERVOLTAGE <i>Red LED flashing</i>	- check the mains supply voltage - check that the deceleration ramp is long enough for applications with high inertia
3	OVERCURRENT <i>Red LED illuminated</i>	- check that there is no short circuit occurring from a motor winding or on the connections - check the motor insulation - check that the deceleration ramp is long enough for applications with high inertia - check the set rating and the motor power - internal product fault
4	LOCKED ROTOR <i>Red LED illuminated</i>	- check if the motor is overloaded or has stalled (green LED flashing)
5	BUS UNDERVOLTAGE <i>Red LED flashing</i>	- check the mains supply voltage
6	EEPROM <i>Red LED illuminated</i>	- make sure that the VARMECA 10 is not affected by interference - internal product fault
7	SERIAL LINK <i>Red LED illuminated</i>	- communication fault between the EEPROM and the controller - product fault
8	MODULE FAULT <i>Red LED illuminated</i>	- very sudden overcurrent (possible causes: see OVERCURRENT fault) - IGBT power module overheating. Check that the unit is not operating at an ambient temperature which is too high - IGBT power module fault. Internal product fault
FAULTS CAN ONLY BE CLEARED BY SWITCHING OFF THE VARMECA 10.		
Fault specific to the use of the CDC-VMA console		CONSOLE LINK FAULT - Check the connection cable. - Check that the VARMECA 10 is correctly supplied.
Fault specific to the use of the software PEGASE VMA 10		COMMUNICATION PROBLEM WITH THE VARMECA 10 - Check the connection cable. - Check that the VARMECA 10 is correctly supplied. - Check that the serial port is correctly configured.

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SUMMARY OF SETTINGS

5 - SUMMARY OF SETTINGS

The table below can be used to note the settings entered in the VARMECA 10 in order to keep a record should a replacement product be needed.

Settings made using the CDC-VMA console

Parameters	Value set
P01 F MIN	
P02 REF 0 V -4 mA	
P03 F MAX	
P04 REF 10 V - 20 mA	
P05 ACCEL	
P06 DECEL.	
P07 STOP MODE	
P08 Un MOT	
P09 Fn MOT	
P10 U / F	
P11 BOOST	
P12 OVERBOOST	
P13 F PWM	
P14 CONFIG	

Parameters	Value set
P15 VP1-1	
P16 VP2-1 VP1-2	
P17 VP2-2	
P18 VP3-2	
P19 ROTATION	
P20 SELECT 3	
P21 PI K PRO	
P22 PI K INT	
P23 F MOT	
P24 I MOT	
P25 FAULT	
P26 STOP Fmin	
P27 LOG CDC-VMA	
P28 CAL MOT	

Settings made using the PEGASE VMA 10 software

