



**This manual is to be given to
the end user**

DEVICE NET

Option card for VARMECA 20

Installation and maintenance

LEROY-SOMER	INSTALLATION AND MAINTENANCE	3656 en - 05.2006 / b
DEVICE NET Option card for VARMECA 20		

NOTE

LEROY-SOMER reserves the right to modify the characteristics of its products at any time in order to incorporate the latest technological developments. The information contained in this document may therefore be changed without notice.

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 20 must be connected to an approved earth ($\perp$ 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 20 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.

The VARMECA 20 is a component designed to be integrated in an installation or electrical machine. It is therefore 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 20 for hoisting 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 20, 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 20 may contain moving parts, as well as hot surfaces, during operation.

Unjustified removal of protection devices, 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, 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 20 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 20) 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 20 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 20 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 20 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 20 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 shielding, earthing, presence of filters and correct insertion of cables and conductors, are given in the documentation supplied with the VARMECA 20. These instructions must be followed in all cases, even if the VARMECA 20 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 20 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 20 using control software is permitted.

Active parts of the device and live power connections must not be touched immediately after the VARMECA 20 is powered down, as the capacitors may still be charged. In view of this, the warnings fixed to VARMECA 20 must be observed.

During operation, all protection devices must remain fixed in place.

7 - Servicing and maintenance

Refer to the manufacturer's documentation.

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INTRODUCTION

1 - INTRODUCTION

NOTE DRIVE PARAMETERS ARE DENOTED IN THIS MANUAL BY “#MM.PP”, WHERE MM REFERS TO THE MENU NUMBER, AND PP REFERS TO THE PARAMETER NUMBER WITHIN THAT MENU. PLEASE REFER TO THE VARMECA 20 MANUAL FOR FULL PARAMETER DEFINITIONS.

1.1 - DEVICE NET for VARMECA 20

The DEVICE NET for VARMECA 20 is a dual option card that fits neatly inside the Drive. The DEVICE NET interface uses a 16-bit processor and is capable of communicating at 500 kbits/sec, currently the fastest data rate available for DEVICE NET. Parameter data is transferred to and from the VARMECA 20 using a 2-wire CAN link into the serial communications connector on the VARMECA 20.

1.2 - Product Conformance Certification

The VARMECA 20 DEVICE NET interface has been submitted to the DEVICE NET Club for testing, and Product Conformance Certification is pending.

1.3 - Overview Specification

- Auto-configuration of the serial communications port when the DEVICE NET interface is connected to the VARMECA 20.
- Supported data rates (bits/sec): 500k, 250k, 125k.
- Three 16 bit input/output words.
- Explicit communication supported
- LEROY-SOMER non-cyclic data channel (optional).

DEVICE NET

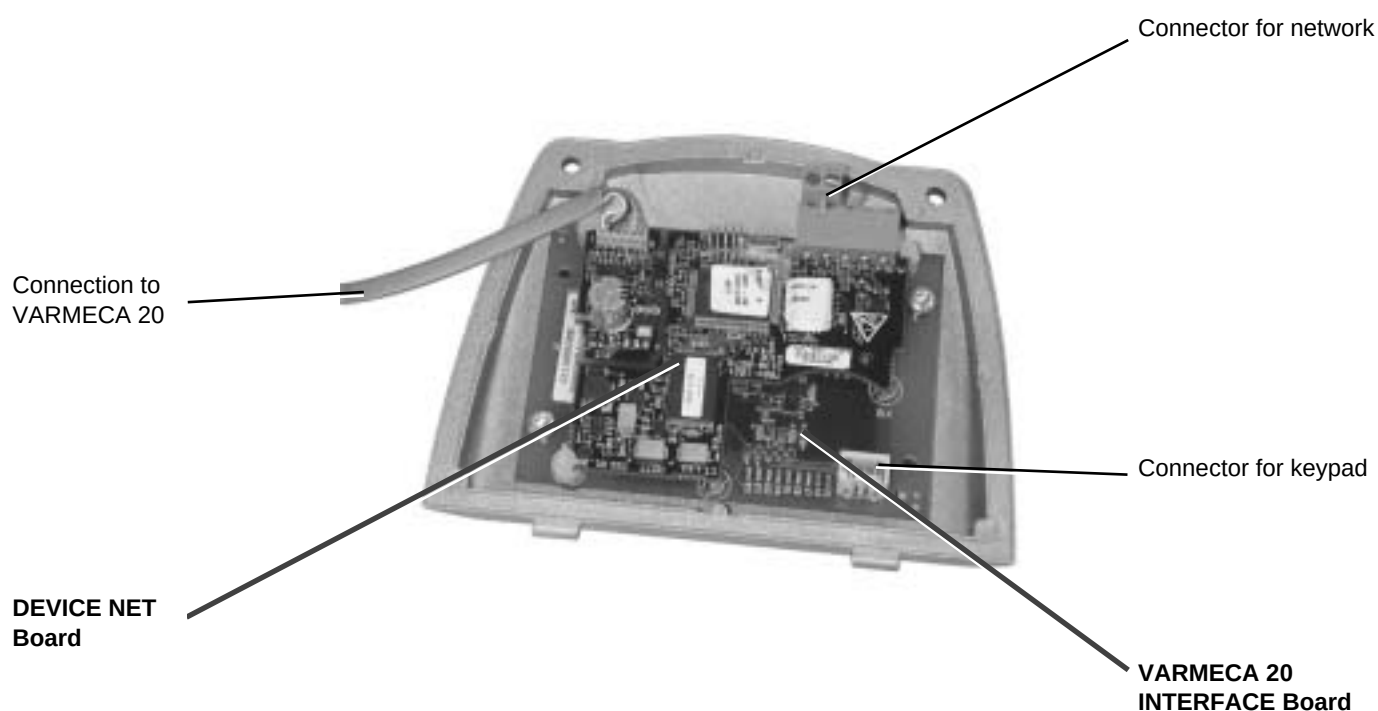
Option card for VARMECA 20

MECHANICAL INSTALLATION

2 - MECHANICAL INSTALLATION

2.1 - VARMECA 20

Fitted in VARMECA 20 cover, the option is based on two printed circuit boards: one supporting all DEVICE NET components and another one supporting micro controller for interfacing DEVICE NET with VARMECA 20.



DEVICE NET

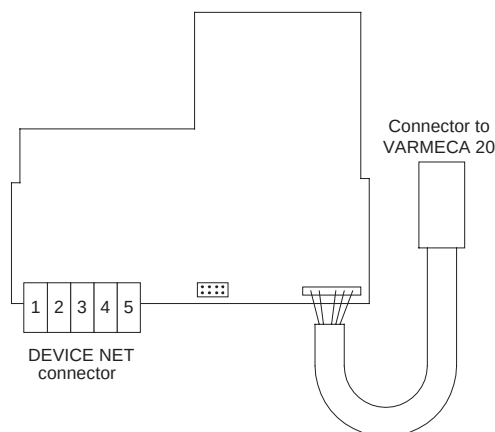
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ELECTRICAL INSTALLATION

3 - ELECTRICAL INSTALLATION

3.1 - DEVICE NET connector

The VARMECA 20 DEVICE NET interface has a single 5-way screw terminal block connector for the DEVICE NET data connections.

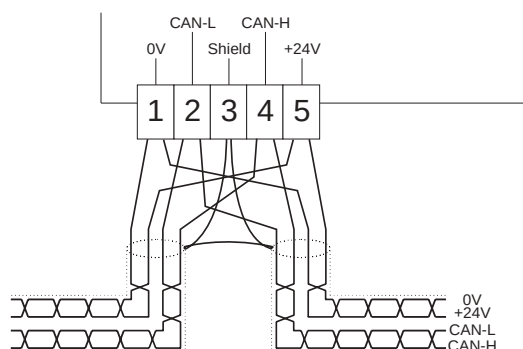


The connections for the DEVICE NET connectors are given in the table below.

Terminal	Function	Description
1	0V	0V Isolated
2	CAN-L	Negative data line
3	Shield	Cable braided shield connection
4	CAN-H	Positive data line
5	+24V	+24V DEVICE NET power supply

3.2 - DEVICE NET Data Connections

To connect the VARMECA 20 to the DEVICE NET network, make the connections as shown in the diagram below. The length of the "pigtail" shield connection should be kept as short as possible.



3.3 - DEVICE NET Cable

DEVICE NET cable has two twisted pairs plus overall shielding. The data wires are blue and white, while the power wires are red and black. They should be connected as shown in the table below.

Cable	Data signal	Terminal	Description
Black	0V	1	0V DEVICE NET power supply, isolated
Blue	CAN-L	2	Negative data line
Braided Shield	Shield	3	Cable shield
White	CAN-H	4	Positive data line
Red	+24V	5	+24V DEVICE NET power supply

DEVICE NET networks run at high data rates, and require cable specifically designed to carry high frequency signals. Low quality cable will attenuate the signals, and may render the signal unreadable for the other nodes on the network. For cable specifications and a list of approved manufacturers of cable for use on DEVICE NET networks, please contact LEROY-SOMER.

NOTE LEROY-SOMER can only guarantee correct and reliable operation of its DEVICE NET interfaces if all other equipment installed (including the network cable) has been approved.

3.4 - DEVICE NET Cable Shield Connections

The VARMECA 20 DEVICE NET interface should be wired with the cable shields isolated from earth at each Drive. The cable shields should be linked together at the point where they emerge from the cable, and formed into a short pigtail to be connected to pin 3 on the DEVICE NET connector.

NOTE The DEVICE NET cable shield should be grounded at one place **ONLY** in the network. This is to prevent it from becoming live in the unlikely event of a fault in one of the interfaces.

DEVICE NET

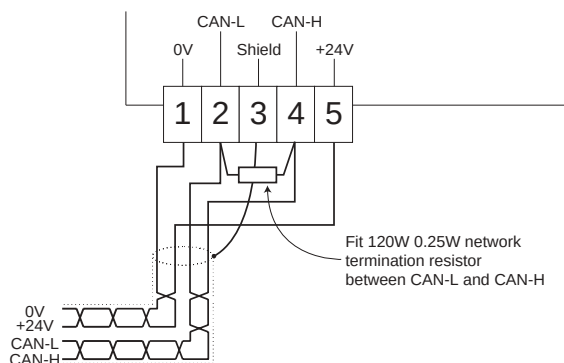
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ELECTRICAL INSTALLATION

3.5 - DEVICE NET Network Termination

It is very important in high-speed communications networks that the network communications cable is fitted with the specified termination resistor network at each end of the cable. This prevents signals from being reflected back down the cable and causing interference.

A 120Ω 1% 0.25W termination resistor should be fitted between the CAN-H and CAN-L lines on the nodes at each of the network.



The termination resistor is not fitted on the VARMECA 20 DEVICE NET interface itself, so it is the user's responsibility to ensure that suitable termination resistors are fitted, and fitted correctly.

NOTE Failure to terminate a network correctly can seriously affect the operation of the network. If termination is not fitted, the noise immunity of the network is greatly reduced.

3.6 - Backup Power Supply Requirements

The back-up power supply should be +24V ±20%, and should have sufficient current capability to supply all VARMECA 20 DEVICE NET nodes connected to it. This condition will occur if the main power supply to the VARMECA 20 is lost. The consumption of the DEVICE NET interface is dependent on the supply voltage, with typical and maximum currents listed in the table below.

Back-up Supply Voltage	Typical Current
19.2V (24V -20%)	45mA
21.6V (24V -10%)	40mA
24V nominal	38mA
26.4V (24V +10%)	35mA
30V (24V+20%)	35mA

Under normal operating conditions, the VARMECA 20 and the back-up power supply share the power supply requirements of the DEVICE NET interface. The Typical Current column shows the current drawn from the back-up power supply for the typical, minimum and maximum voltages.

3.7 - Maximum Network Length

The maximum number of nodes that can be connected to a single DEVICE NET network segment is 64 nodes. The maximum length of network cable for a DEVICE NET network is specified by the Open DEVICE NET Vendors Association, and depends on the data rate to be used. For full details of network cable lengths and wiring limitations, please contact LEROY-SOMER.

Data Rate (bits/sec)	Maximum Trunk Length (m)	Maximum Drop Length (m)	Max. Cumulative Drop (m)
125K	500	6	156
250K	250	6	78
500K	100	6	39

DEVICE NET

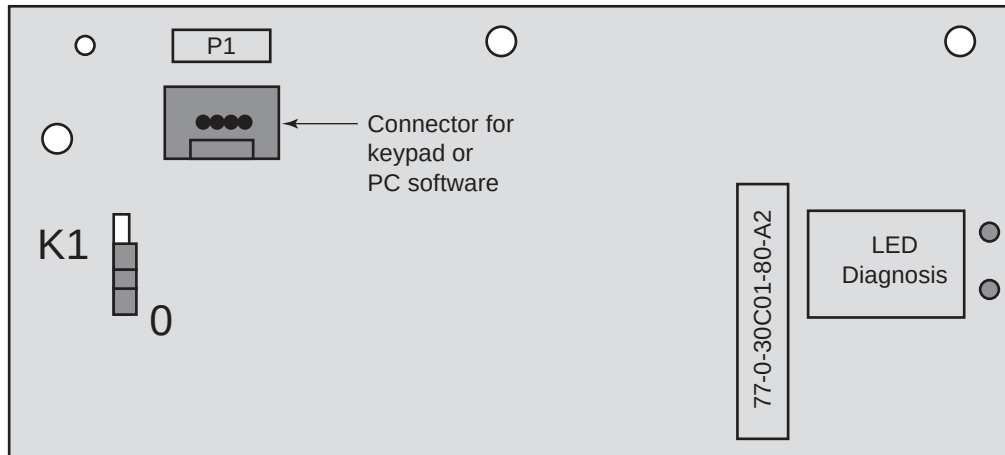
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GETTING STARTED

4 - GETTING STARTED

4.1 - Commissioning for VARMECA 20 DEVICE NET extension

- 1 - Preset of parameters via CDC VMA20 keypad (software read in LOG CDC VMA should be 0138 or greater) or PEGASE VMA20 soft (issue 1.08 and above) by disabling DEVICE NET board through K1 to be set to 0.



- 2 - Set or check VARMECA20 internal parameters : (parameter name as seen on display between ")
Turning parameter 1551 to ON will set the parameters of the fieldbus as per attached

1570 BUS ENABLE = ON	➔	serial communication enable (fieldbus)
1571 SUPERVISION = ON	➔	supervision of serial communication
1572 REF. VIA BUS = ON	➔	speed reference F via serial communication
1573 REF. N = xxxHz	➔	speed reference F

- 3 - To test operation of serial communication, switch VARMECA20 ON and OFF :

1580 VMA CONTROL = 02	➔	VARMECA 20 is ON
1580 VMA CONTROL = 00	➔	VARMECA 20 is OFF

- 4 - Set of DEVICE NET parameter :

"1503 ADRESS VMA	➔	VARMECA20 address
"1511 P2 IN CYCL.	➔	Read parameter
"1512 P3 IN CYCL.		
"1521 P2 OUT CYCL	➔	Write parameter
"1522 P3 OUT CYCL		

- 5 - Disconnect keypad and turn K1 back to 1 for fieldbus operation

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DEVICE NET Option card for VARMECA 20 GETTING STARTED		

4.2 - LED diagnosis on interface board

LED <i>Green</i>	LED <i>red</i>	OPERATION
OFF	OFF	DEVICE NET board is not connected to interface board. Keypad is or is not connected.
ON	1 to 2 pulses	Signalling when connecting DEVICE NET board to interface board.
ON	OFF	DEVICE NET board connected to interface board without network message.
Flashing (fast)	OFF	Network message sent. Fieldbus communication OK
ON	OFF	Network connection removed.

LED <i>Green</i>	LED <i>red</i>	OPERATION
OFF	ON	Connection failure between interface board and VARMECA20, when keypad is connected → check connection
OFF with few flashes	ON with few losses	Connection failure between interface board and VARMECA20, when DEVICE NET board is connected and network ON → check connection
Flashing (+ or – fast) or OFF with few flashes	Flashing) or OFF with few flashes	Both keypad and DEVICE NET board are connected in the same time, with or without network communication. → remove keypad connection and set connection for DEVICE NET board
Flashing (low with longer OFF	OFF with few flashes	Connection failure between DEVICE NET board and interface board during network communication → check connection
ON with few losses	OFF with few flashes	Connection failure between DEVICE NET board and interface board following one stop of network communication. → check connection (flashing of LED Red, LED Green OFF) → check connection of DEVICE NET board
ON	OFF	Network communication OK but VARMECA20 address wrong → change 1503_ADRESS_VMA
Flashing (fast)	Flashing (fast)	Network communication OK but with wrong values → check setting values for parameter 1521_P2_OUT_CYCL and 1522_P3_OUT_CYCL

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EDS FILES

5 - EDS FILES

5.1 - VARMECA 20 EDS File

DEVICE NET networks are configured using a front-end DEVICE NET configuration package, such as RSNetWorx™ from Rockwell Software. These Software packages use Electronic Data Sheets (EDS files) to describe the functions supported by DEVICE NET slave devices, and allow the DEVICE NET Scanner to be configured to communicate with the DEVICE NET slave nodes.

The generic EDS file for use with VARMECA 20 is available from your local LEROY-SOMER Drive Centre.

EDS File	VARMECA 20 Firmware	EDS File Version
G1D_MEC.EDS	V1.xx.xx	3.0

5.3 - DEVICE NET Data Rate

VARMECA 20 : #15.04

Every node must be set to operate at the same data rate. If a node is configured with an incorrect data rate, the node may prevent the network from operating. The data rates supported by the VARMECA 20 DEVICE NET interface are listed in the table below.

#15.04	bits/sec	#15.04	bits/sec
0	Reserved	3	250K
1	Reserved	4	125K
2	500 K		

5.2 - DEVICE NET Data Formats

The default data format is 3 Polled Words only. This is the same data format as used on the Unidrive and Mentor II DEVICE NET interfaces. Each polled data word is mapped to a VARMECA 20 parameter with default mappings as shown in the table below.

Cyclic Channel	Default Mapping Status
IN Word 1	Status word
IN Word 2	Post-ramp speed reference
IN Word 3	Motor load current as % of rated load current
OUT Word 1	Control word
OUT Word 2	Digital speed reference 1
OUT Word 3	Not mapped

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DIAGNOSTICS

6 - DIAGNOSTICS

The information from the parameters described below should always be noted before contacting LEROY-SOMER for technical support.

6.1 - Fieldbus Code

VARMECA 20 : #15.01

#15.01	Fieldbus
1	Profibus-DP
2	Interbus
3	Reserved
4	Reserved
5	Device Net
6	CANopen

6.2 - Firmware Version

VARMECA 20 : #15.02

The version of firmware present in the DEVICE NET interface can be read from #15.02 in the VARMECA 20.

Major Code (#15.02)	Minor Code (#15.50)	Firmware Version
1	0	V0.01.00

6.3 - Node Address

VARMECA 20 : #15.03

Every DEVICE NET node must be assigned a unique node address. If two or more nodes have the same address, this will cause a conflict when the master attempts to initialise the network.

Ideally, the node address should be configured on each node BEFORE any attempt is made to connect it to the network. #15.03 can be modified using the keypad on the VARMECA 20 itself.

6.4 - Network Data Rate

VARMECA 20 : #15.04 (Read only)

The VARMECA 20 DEVICE NET interface automatically detects the network data rate, and display the data rate in #15.04. The data rates supported by the VARMECA 20 DEVICE NET interface are listed in the table below.

Data Rate (#15.04)	bits/sec
4	125K
3	250K
2	500K

6.5 - No Data Transfer

If data is not being transferred from the master controller to the VARMECA 20, make the following checks :

- The mapping parameters have been programmed correctly. If an incorrect mapping was entered, it will have been reset to 0.
- Check that there are no mapping parameter conflicts, i.e. an analogue input is not trying to control the same parameter as a polled OUT channel. The "Linking Screen" in SESoft shows all input and output mapping parameters on a single screen for this purpose.

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ADVANCED FEATURES

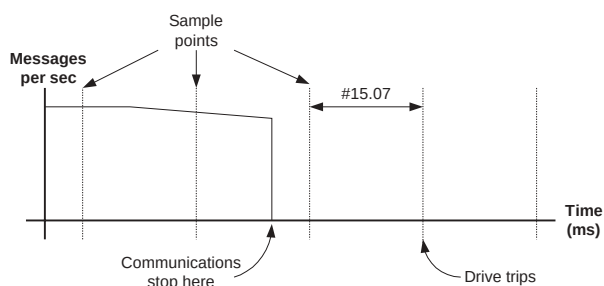
7 - ADVANCED FEATURES

7.1 - Network Loss Trip

VARMECA 20 : #15.07

0 = trip disabled 1 to 2000 = trip delay time

The DEVICE NET interface counts the number of valid network cycles received in a time period specified by #15.07. The trip is triggered if no messages are received in a given sample period, and messages were received in the previous sample period. The default setting for #15.07 is 200ms.



As can be seen from the diagram, the actual time from network loss to Drive trip will range from #15.07 ms to $2 * \#15.07$ ms. By decreasing #15.07, the maximum trip time will be reduced, but if the trip time is set too low, spurious network loss trips will be seen.

The actual network loss trip time depends entirely on the number of messages per second being received under normal operation. As a rough guide, the network loss trip time (#15.07) should be set such that a minimum of 10 messages will be received in any given sample period under normal operating conditions.

7.2 - Multi-Master Networks

DEVICE NET networks can operate with more than one master device connected to the same lines. VARMECA 20, Unidrive and Mentor II DEVICE NET interfaces can all operate on multi-master networks, but each device can only be assigned to one of the master devices.

Consult the supplier of your master controller for more details about implementing multi-master DEVICE NET networks.

7.3 - Non Cyclic Data

"Explicit data" is the non-cyclic data on DEVICE NET that provides access to any parameters within the VARMECA 20.

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DEVICE NET Option card for VARMECA 20 QUICK REFERENCE		

8 - QUICK REFERENCE

8.1 - DEVICE NET Parameter List (Access via CDC VMA20 keypad or PEGASE VMA20 soft)

Display	Designation	Setting range	Factory setting
1500 LOG. OPTION	Software issue of interface board		
1501 TYPE OPTION	Option Identity code : 1 = PROFIBUS DP, 2 = INTERBUS S, 5 = DEVICE NET, 6 = CAN OPEN	1, 2, 5 or 6	5
1502 LOG1 CT	Software issue of fieldbus board		
1503 ADRESS VMA	VARMECA 20 node address	0 / 255	12
1504 BAUD RATE	Baud rate : 2 = 500kbits/s, 3 = 250kbits/s, 4 = 125kbits/s	2 to 4	
1505 DATA CONFIG	Data format : HW byte = 1 = one acyclic word LW byte = 2 = two cyclic words LW byte = 3 = three cyclic words	1 acycl. 3 cycl. 0 acycl. 3 cycl. 0 acycl. 2 cycl.	1 acycl. 3 cycl.
1507 TIMEOUT	Time out delay (loss of connexion)	0 to 250 ms	20
1508 BYTE CONFIG	Byte configuration : OFF = VARMECA 20 ON = other products	ON / OFF	OFF
1511 P2 IN CYCL	Cyclic parameter #2 read	Any of the parameter	0017
1512 P3 IN CYCL	Cyclic parameter #3 read	Any of the parameter	0016
1521 P2 OUT CYCL	Cyclic parameter #2 write	Any of the parameter	0043
1522 P3 OUT CYCL	Cyclic parameter #3 write	Any of the parameter	0010
1550 LOG2 CT	Software issue of fieldbus board		
1551 BUS FACTORY SETTINGS	Fieldbus parameter factory settings	ON / OFF	OFF
1570 BUS ENABLE	Assignment of control I/O : OFF = local ON = fieldbus	ON / OFF	ON
1571 SUPERVISION	Monitoring of communication : ON / OFF	ON / OFF	OFF
1572 REF VIA BUS	Assignment of reference input : OFF = local ON = fieldbus	ON / OFF	ON
1573 LOCAL REF.	Speed reference via fieldbus		50 Hz
1580 CTRL WORD	Control word of VARMECA 20 (access via P1 IN CYCL, cannot be modified)		
1581 STATUS WORD	Status word of VARMECA 20		

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QUICK REFERENCE

8.2 - DEVICE NET Data Formats

Format (#15.05)	Non-cyclic words	Cyclic words	Consistency	Comment
0.02	0	2	Full	PPO3
0.02	0	2	None	
0.03	0	3	Full	
0.03	0	3	None	
1.03	1	3	Full	These modes are the formats used by the Unidrive and Mentor II DEVICE NET interfaces
1.03	1	3	None	

8.3 - Control word

bit	Description VARMECA 20 (0-80)
0	Not used
1	ON / OFF
2	Not used
3	Rotation direction can only be changed when OFF
4	Not used
5	Not used
6	Reserved
7	Reserved
8	Reserved
9	Reserved
10	Reserved
11	Reserved
12	Reserved
13	Reserved
14	Reserved
15	Not used

8.4 - Status word

bit	Description VARMECA 20 (0-81)
0	Not used
1	Status Drive
2	Signal for 0 speed
3	Not used
4	Not used
5	Signal for reference reached
6	Not used
7	Signal for Thermal limitation
8	Signal for current limitation
9	Signal for maximal pressure
10	Signal for pump priming
11	Not used
12	Reserved
13	Not used
14	Not used
15	Not used

en

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8.5 - Parameter address

Parameter address Menu.Address	Type of parameter	Unit	Display on Keypad	Designation	Setting range		Factory setting
					VMA A20	VMA B20	
00.01	Read / Write	Hz	P01 F- min	Minimum operating frequency	6 to Fmax		12Hz
00.20	Read / Write	Hz	P02 REF 0V/ 4mA	Calibration of the minimum reference 0 V or 4 mA	0 to Fmax		12Hz
00.02	Read / Write	Hz	P03 F- max	Maximum operating frequency	32 to 220Hz	32 to 100Hz	50 or 80Hz
00.19	Read / Write	Hz	P04 REF 10V/ 20mA	Calibration of the maximum reference 10 V or 20 mA	32 to 220Hz	32 to 100Hz	50 or 80Hz
00.03	Read / Write	s	P05 ACCEL. RAMP	Acceleration ramp Time to pass from 0 to 50 Hz Increment	0 to 100s 1s	0 to 40s 0.1s	3s
00.04	Read / Write	s	P06 DECEL. RAMP	Deceleration ramp Time to pass from 50 to 0 Hz Increment	0 to 100s 1s	0 to 40s 0.1s	3s
00.30	Read / Write	switch	P07 STOP MODE	Stop mode : freewheel = freewheel stop ramp = stop according to ramp	ramp, freewheel		ramp
00.06	Read / Write	V	P08 UN - MOT	Voltage applied to the motor from the base frequency	0 to 480V		230 or 400V
00.07	Read / Write	Hz	P09 FN - MOT	Motor base frequency	50 to Fmax		50Hz
00.54	Read / Write	switch	P10 CONTROL U/F	Selection of voltage / frequency ratio constant = fixed U/F, the P08 voltage will be applied at the P09 frequency point dynamic = dynamic U/F, the voltage adapts automatically the motor voltage to the motor load (according to K3 position)	constant, dynamic		Adapted to rating
00.21	Read / Write	%	P11 BOOST	Value of voltage applied in low frequencies (percentage of voltage)	0 to 40%		Adapted to rating
00.22	Read / Write	%	P12 OVERBOOST	Value of voltage during starting phase (percentage of voltage)	0 to 50%		Adapted to rating
00.32	Read / Write	switch	P13 F PWM	Switching frequency	4,6,8,11KHz		Adapted to rating
00.34	Read / Write	switch	P14 CONFIG	Terminal block configuration : STANDARD CONFIG.1 = 2 preset speeds + analog reference CONFIG.2 = 3 preset speeds and analog reference — 1 operating direction CONFIG.3 = correction of an external reference with the local button CONFIG.4 = 2 preset speeds proportional to the reference — 1 operating direction CONFIG.5 = Pressure or flow control with PI regulation CONFIG.6 = Jog control CONFIG.7 = Faster and slower control (require P60 turned ON)	STANDARD CONFIG.1 CONFIG.2 CONFIG.3 CONFIG.4 CONFIG.5 CONFIG.6 Not available	STANDARD CONFIG.1 Not available CONFIG.3 CONFIG.4 Not available CONFIG.6 CONFIG.7	STANDARD
00.10	Read / Write	Hz	P15 VP1-1	Preset speed 1 in CONFIG. 1 and 4	6 to Fmax	6 to Fmax	50Hz
00.11	Read / Write	Hz	P16 VP2-1 VP1-2	Preset speed 2 in CONFIG. 1 and 4 or preset speed 1 in CONFIG. 2	6 to Fmax	6 to Fmax	60Hz
00.12	Read / Write	Hz	P17 VP2-2 VP3-1	Preset speed 2 in CONFIG. 2 or preset speed 3 in CONFIG. 1 with extension ESFR VMA	6 to Fmax	6 to Fmax	40Hz
00.13	Read / Write	Hz	P18 VP3-2	Preset speed 3 in CONFIG. 2	6 to Fmax	Not available	70Hz
00.35	Read / Write	switch	P19 ROTATION	Choice of direction of rotation in CONFIG. 2	FORWARD / REVERSE		FORWARD
00.33	Read / Write	switch	P20 SELECT - N 2	Terminal 2 assignment : OUTPUT N = Analog output of frequency image : 0V = 0 Hz / 10V = Fmax. INPUT PI = Analog input of PI regulation 0-10V or 4-20mA (according to minidip K2) OUTPUT I = Analog output of motor current image : 0V = 0A / 10V = 10A OUTPUT P = Analog output of motor power image : 0V = 0kW / 10V = 5kW	OUTPUT N INPUT PI OUTPUT I OUTPUT P	OUTPUT N Not available Not available Not available	OUTPUT N
00.08	Read / Write		P21 PI - K PROPO.	Proportional gain of the PI loop	1 to 100	Not available	10
00.09	Read / Write		P22 PI - K INTEG.	Integral gain of the PI loop	1 to 100	Not available	10
00.17	Read only	Hz	P23 F - MOT	Value of motor operating frequency	Value in Hz		
00.16	Read only	A	P24 I - MOT	Value of motor operating current	Value in A		
00.36	Read only	switch	P25 FAULT	Last fault in memory OK = no fault I2T MOTOR = motor overheating LEVEL In = exceeded current threshold before overload trip OVER CURRENT = overcurrent LOCKED ROTOR = locked rotor UNDER VOLT. = DC bus undervoltage EEPROM = eeprom fault RS 232 = serial communication fault ENABLE = drive enabled and locked LIMIT.I = current limitation reached OVERLOAD = motor overload UNDER P1 = under pressure operation FAULT POSITION K2 = short circuit on supply of control I/O	OK I2T MOTOR Not available OVER CURRENT LOCKED ROTOR UNDER VOLT. EEPROM RS 232 ENABLE LIMIT.I OVERLOAD UNDER P1 FAULT POSITION K2	OK I2T MOTOR LEVEL In OVER CURRENT LOCKED ROTOR UNDER VOLT. EEPROM RS 232 ENABLE LIMIT.I OVERLOAD Not available FAULT POSITION K2	
00.53	Read / Write	switch	P26 STOP - F-min	Enabling of STOP signal. When the reference is less than Fmin, it forces the motor to stop.	OFF / ON		OFF
00.44	Read / Write	switch	P27 RELAY	Relay assignment : FAULT = relay assigned to fault F-MOT=REFERENCE = speed reference achieved (end of ramp) BRAKE = brake control	FAULT F-MOT=REFERENCE BRAKE		FAULT
00.18	Read only	V	P30 V Bus DC	Value of DC bus voltage U _{main} = VDCbus / 1.4	value in Volts DC		

DEVICE NET

Option card for VARMECA 20

QUICK REFERENCE

Parameter address Menu.Address	Type of parameter	Unit	Display on Keypad	Designation	Setting range		Factory setting
					VMA A20	VMA B20	
00.26	Read only	switch	P31 ETAT K1- K2- K3	Status of minidip K1,K2,K3 K1 : selection of analog reference 010 = 0 to 10V ; 420 = 4 to 20mA K2 : selection of analog input terminal 2 010 = 0 to 10V ; 420 = 4 to 20mA K3 : Selection of voltage / frequency ratio U/F cst = fixed U/F independantly of P10 U/F dyn = factory setting defined in P10	010 - 010 - U/F dyn 010 - 420 - U/F dyn 010 - 010 - U/F cst 010 - 420 - U/F cst 420 - 010 - U/F dyn 420 - 420 - U/F dyn 420 - 010 - U/F cst 420 - 420 - U/F cst		
00.75	Read only	switch	P32 STATUS N13	Status of added logic input with extension ESFR VMA terminal # 13 (see P69 and P70)	Not available	OFF / ON	
00.27	Read only	switch	P33 STATUS N9	Status of logic input terminal # 9	OFF / ON		
00.28	Read only	switch	P34 STATUS N8	Status of logic input terminal # 8	OFF / ON		
00.29	Read only	switch	P35 STATUS N7	Status of logic input terminal # 7	OFF / ON		
00.47	Read only	switch	P36 VARMECA	Status of VARMECA	OFF / ON		
00.68	Read only	°C	P42 O CTN ELEC	Value of IGBT temperature	Value in °C		
00.56	Read only		P90 LOG1VARMECA	VARMECA software issue (year #)			
00.57	Read only		P91 LOG2VARMECA	VARMECA software issue (week & day #)			
00.82	Read only		P92 LOG2VARMECA	VARMECA software issue			
	Not available		P93 LOG CDC_VMA	Keypad software issue			
00.14	Read / Write		P28 CAL MOT	VARMECA20 rating			
	Not available		P29 CODE	Acces code (limited)	reserved LEROY-SOMER		
00.69	Read / Write	s	P50 T1 - P - min	Temporization at draining pressure	0 to 120s	Not available	10s
00.70	Read / Write	%	P51 P - min	Pump draining pressure (% of max. pressure)	0 to 100%		10%
00.71	Read / Write	s	P52 T2 - F - min	Stop delay for minimal pressure	0 to 120s		10s
00.74	Read / Write	Hz	P54 PI DECAL	PI delay	0 to 5 Hz		0
00.23	Read only		P55 REF.PI	Value of PI reference	0 to 20000		
00.52	Read only		P56 INPUT PI	Value of PI feedback	0 to 20000		
00.73	Read only	switch	P57 ALARM	Status of pump operation in CONFIG.5 OK = No fault UNDER P1 = Pump in under pressure operation ALARM Q = Alarm for low or high flow	OK UNDER P1 ALARM Q		
00.72	Read / Write	Hz	P58 VP5	Digital preset speed (PI reference) in CONFIG.5	from 0 to 100% of Fmax		0
Not available			P59 BAR FACTOR	Direct reading pressure (in bars) factor on keypad CDCVMA20	1 to 20		1
00.66	Read / Write	switch	P60 CONTROL DYN.	Enable of "Handling" configuration	OFF/ON		OFF
00.58.	Read / Write	Hz	P61 FD BRAKE	Brake release frequency	1 to 20 Hz		0
00.59.	Read / Write	Hz	P62 FB BRAKE	Brake hold frequency	1 to 20HZ		0
00.60	Read / Write	s/100	P63 TD BRAKE	Brake release temporization (unit = 0,01s)	0 to 100		0
00.61	Read / Write	s/100	P64 TORQUE	Brake magnetization temporization (unit = 0,01s)	0 to 100		0
00.62	Read / Write	s/100	P65 T DC INJECT.	DC injection temporization at end of deceleration (unit = 0,01s)	0 to 1000		0
00.63	Read / Write	s/100	P66 TB BRAKE	Brake hold temporization (unit = 0,01s)	0 to 200		0
00.64	Read / Write	V	P67 UC DC INJECT.	Level of DC injection at end of deceleration (unit = % of motor base voltage)	0 to 100%		0
00.65	Read / Write	%	P68 ID BRAKE	Current threshold before brake release (unit = % of motor rated current)	0 to 100%		0
00.83	Read / Write	switch	P69 VMA ESFR	Enable of extension ESFR VMA	Not available	OFF / ON	OFF
00.84	Read / Write	switch	P70 N13	Terminal # 13 assignment (only with ESFR VMA) : VP3-1 preset speed 3 in CONFIG.1 D Brake brake control relay	Not available	VP3-1 D Brake	VP3-1
00.85	Read / Write	%	P71 LEVEL IN	Current threshold for overload trip unit = % of motor rated current	Not available	0 to 100%	0
00.86	Read / Write	s	P72 T LEVEL IN	Trip delay when current exceed P71(unit = 0,01s)	Not available	0 to 100	0
15.00	Read only		1500 LOG. OPTION	Software issue of interface board			
15.01	Read only		1501 TYPE OPTION	Option Identity code : 1 = PROFIBUS DP, 2 = INTERBUS S, 5 = DEVICE NET, 6 = CAN OPEN			5
15.02	Read only		1502 LOG1 CT	Software issue of fieldbus board			
15.03	Read only		1503 ADRESS VMA	VARMECA 20 node address	0 / 255		12
15.04	Read only	switch	1504 BAUD RATE	Baud rate : 2 = 500kbits/s, 3 = 250kbits/s, 4 = 125kbits/s	2 to 4		2
15.05	Read / Write	switch	1505 DATA CONFIG	Data format : HW byte = 1 = one acyclic word LW byte = 2 = two cyclic words LW byte = 3 =three cyclic words	1 acycl. 3 cycl. 0 acycl. 3 cycl. 0 acycl. 2 cycl.		1 acycl. 3 cycl.
15.07	Read / Write	ms	1507 TIMEOUT	Time out delay (loss of connexion)	0 to 250 ms		20
15.08	Read / Write	switch	1508 BYTE CONFIG	Byte configuration : OFF = VARMECA 20 ON = other products	ON / OFF		OFF
15.11	Read / Write		1511 P2 IN CYCL	Cyclic parameter #2 read	Any of the parameter		0.17
15.12	Read / Write		1512 P3 IN CYCL	Cyclic parameter #3 read	Any of the parameter		0.16
15.21	Read / Write		1521 P2 OUT CYCL	Cyclic parameter #2 write	Any of the parameter		0.43
15.22	Read / Write		1522 P3 OUT CYCL	Cyclic parameter #3 write	Any of the parameter		0.10
15.50	Read only		1550 LOG2 CT	Software issue of fieldbus board			
15.51	Read / Write	switch	1551 BUS FACTORY SETTING	Fieldbus parameter factory settings	ON / OFF		OFF
00.37	Read / Write	switch	1570 BUS ENABLE	Assignment of control I/O : OFF = local ON = fieldbus	ON / OFF		ON
00.39	Read / Write	switch	1571 SUPERVISION	Monitoring of communication : ON / OFF	ON / OFF		OFF
00.43	Read / Write	Hz	1573 LOCAL REF.	Speed reference via fieldbus			50 Hz
00.79	Read / Write	switch	1572 REF VIA BUS	Assignment of reference input : OFF = local ON = fieldbus	ON / OFF		ON
00.80	Read / Write		1580 CTRL WORD	VARMECA 20 CONTROL WORD (access via P1 IN CYCL, cannot be modified)			
00.81	Read only		1581 STATUS WORD	VARMECA 20 STATUS WORD			

Parameters CAN ONLY be changed when VARMECA 20 is OFF

LEROY-SOMER	INSTALLATION AND MAINTENANCE	3656 en - 05.2006 / b
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MOTEURS LEROY-SOMER 16015 ANGOULÊME CEDEX - FRANCE

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