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VRTMS



04/05



**REGOLATORE DI TENSIONE TRIFASE PER VENTILATORI
MANUALE DI ISTRUZIONE 06/04 PER MODELLI SLAVE**



**VOLTAGE REGULATOR FOR THREE-PHASE FANS
06/04 INSTRUCTION MANUAL FOR SLAVE MODEL**



FAE Fagan Applicazioni Elettroniche

Vicenza – Italy

	Page
PRELIMINARY CHECKS	1
SPECIFICATIONS OF USE	1
Code and models	2
Technical specifications	2
 GENERAL SPECIFICATIONS	 3
Overall dimensions	3
Mechanical and electrical installations	4
 POWER AND COMMAND TERMINALS.....	 5-6-7

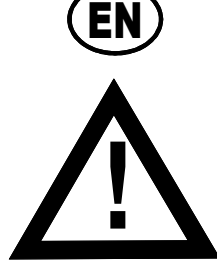


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WARNINGS

Before installing the *VRTMS* regulator, read the manual and follow the all instructions carefully. When the regulator supply is on, DO NOT touch the electrical parts inside!

In compliance with European regulations and the EMC rules and regulations we repeat that the *VRTMS* regulator is designed to be installed inside a machine or a standard electrical cabinet and is therefore considered a component. The installer must guarantee that the machine conforms to such regulations. In the event that regulator operation failure could cause damage to objects or physical injury, it is the responsibility of the installer to add devices or systems that protect against, or warn of, control failure. Fae Fagan Applicazioni Elettroniche reserves the right to make technical modifications in order to improve the quality and features of their products at any time.

PRELIMINARY CHECKS - GUARANTEE

Before installing the *VRTMS* regulator check to make sure it has not been damaged during transport and that it corresponds to the model which was ordered, verifying that the technical specifications printed on the label correspond to those on the order form.

The regulator is guaranteed for up to 12 months on delivery. The guarantee covers production defects which are NOT attributable to goods which have been incorrectly used or tampered with in any way. Any defects due to shipping must be indicated to the shipping company according to the norms of the law.

INTRODUCTIONS

The instructions regard the *VRTMS* regulators running with software version V1.7 – V1.8.

SERIAL NUMBER _____ / _____

SOFTWARE _____

***VRTM* SPECIFICATIONS OF USE**

The *VRTMS* electronical voltage regulator is designed to control fans speed in systems of refrigeration and heating. It is based on the principle of symmetrical phase partialisation. *VRTMS* functions as a simple 3-phase voltage regulator whose a commad signal is provided by a remote control (*VRTM* functioning as master or other device) or a potentiometer.

CODE

Position 1 2 3 4 5 6 7

VRTMS 12 B AD PL 55 V1.7 (code example)

Pos. 1 :	Regulator mode	VRTMS = three phase slave regulator
Pos. 2 :	Nominal current	8 = 8A / 12 = 12A ...
Pos. 3 :	Power supply	A = 230V~ 50Hz B = 400V~ 50Hz D = 440V~ 60Hz
Pos. 4 :	Type command	AD = analog 0...10V=, 4..20mA, digital pwm
Pos. 5 :	Box	PL = plastic MT = metallic
Pos. 6 :	IP grade	55 = IP55 / 20 = IP20
Pos. 7 :	Software version	V1.7 (cut off 120V~Supply / command 3V=)

VRTMS MODELS

Model	Power Max kVA	Current nominal A rms	Current max ** A rms	Power dissipation W	Supply voltage V~	Freq. Hz
VRTMS 8B	5,5	8	12	30	400V	50
VRTMS10B*	6,5	10	12	30	400V	50
VRTMS12B	8	12	18	80	400V	50
VRTMS16B*	11	16	18	100	400V	50
VRTMS20B	13	20	30	120	400V	50
VRTMS28B	19	28	50	170	400V	50
VRTMS40B	26	40	70	260	400V	50
VRTMS50B	35	50	70	330	400V	50

For VRTMXXD models at 440V-60Hz all current are the same

*** Only for IP20 grade.**

****Max current refers to an enviroment temperature of 50°C for a maximum time of 10 second every 5 minutes (In +50%, class 12, 3%).**

TECHNICAL SPECIFICATIONS

POWER SUPPLY	400V~ +10%/-15%, (230 V~, 440 V~ on request)
FREQUENCY	50/60Hz
VOLTAGE POWER OUT	0-99% of power supply
COMMAND SIGNALS	0..10V=, 4..20mA, pwm square wave amplitude 5/10V=
DIGITAL OUTPUTS	Emerg. relay (1A-250V~/3A-30V=), not for VRTMS8.
ANALOG OUTPUT	10V= (max load 50mA)
OPERATING TEMPERATURE	-10°C/+50°C
STORAGE TEMPERATURE	-20°C/+80°C
MAX TEMP.DISSIPATOR	75°C

PROTECTION GRADE	Plastic covering which is self-extinguishing IP55 for 120°C environment, pollutin grade 3, fire resistance D, impact resistance (6J). Metallic covering IP20 upon request.
ELECTRIC CLASSIFICATION	Class II at the command inputs (insulation of 4kV between commands block and the device supplied parts). Class I as regards the accessible parts.
PROTECTIONS	Phase lost, inside overheating. <u>Attention: the regulator restores automatical</u>
ACTION-DISCONNECTION	Protection against power surges Class II
SOFTWARE CLASS	Type 1(Y). Residual current motor < 15mA Class A
ELECTRICAL CONNECTION	For VRTMS8-12-20 Class X, for VRTMS 28-40-50 Class M.

NORMS

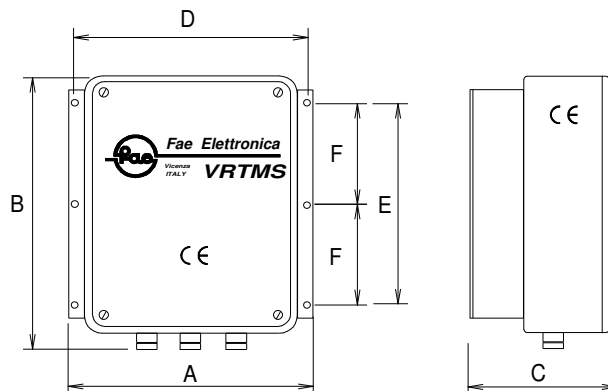
According to safety directive B.T. 73/23, reference standard EN60730-1. According to EMC 89/336, reference standard EN 61800-3. With refer to some typical applications, the VRTMS8-12-20 regulators are suitable for residential and commercial ambients, while the VRTMS28-40-50 regulators are suitable for industrial ambients. VRTMS regulators are designed to be installed inside a machine or a standard electrical cabinet and are therefore considered a component. The installer must guarantee that the machine conforms to such regulations.

WARNING This control does not contain current harmonics filter and it may cause interfeence, in which case the user may be required to take adequate measures with refer at EN 61000-2-4 ed EN 61000-3-4.

OVERALL DIMENSIONS

Model	Weight (Kg)	Dimensions (mm)						Fixing screw(mm) Ø
		A	B	C	D	E	F	
VRTMS 8/10	2,5	230	165	150	220	90	/	M4
VRTMS12/16	4	230	265	165	220	200	/	M4
VRTMS20	4,8	230	265	230/165*	220	200	/	M4
VRTMS28	7	340	270	235	322	165	/	M5
VRTMS40	9	340	270	235	322	165	/	M5
VRTMS50	13	340	440	235	322	340	170	M5

*Metallic version



MECHANICAL INSTALLATION

The VRTMS regulator must be mounted to walls vertically, in order to guarantee adequate dispersion of heat in the dissipator. In order to prevent the formation of condensation and regular working also cold temperature it is recommended you insure a constant power supply, avoiding turning it off continually. Avoid positioning it near heat sources and keep out of direct sunlight. The regulator has covering IP55 but must be protected from sprays of water, oil, corrosive liquids, deposits of metallic dust and gas. Make sure also that it is not exposed to vibrations. Set the regulator in a ventilated place to let the heat come out.

ELECTRICAL INSTALLATIONS

Attach the regulator to a non-painted plate with anti-corrosive treatment.

If the length of the motor cable exceeds 5 metres, use shielded cable. To avoid dispersion currents, both ends of the motor cable shield, the motor earth, and the regulator earth must be connected to the same earth pole. If the control cable length exceeds 2 metres, use shielded cable, connecting the shield only at the end of the regulator. Ensure that the control 0 volt is not connected to earth.

If the length of the power, motor and control cables exceeds 10m, make sure they are separated by at least 0.3 metres to avoid creating a coupling effect.

If controls are set up in environment subject to electromagnetic disturbance, they should be housed inside a suitable metallic enclosure.

All connections wires must resist to a 80°C working temperature.

Avoid routing any electric wires near the copper coils of the filter, for control cables use the suitable plastic support !

Tighten all wires on control and power terminal boards fully down, avoiding protrusion of the multi-stranded wire.

Do NOT touch the electronic equipment when the power line is on !

During voltage insulation tests disconnect the regulator power lines In/Out.

Use a true RMS tester to measure the current or voltage values

Terminals	Description	Section wires (ISO mm ²)			
		VRTMS8/10	VRTMS12/16	VRTMS20	VRTMS28/40/50
	GROUND	1,5	2,5	4	16
L1 L2 L3	SUPPLY	1,5	2,5	4	16
T1 T2 T3 (U V W)	MOTOR	1,5	2,5	4	16
	COMMANDS	0,2÷1,5	0,2÷1,5	0,2÷1,5	0,2÷1,5

To connect wiring to the spring terminals, apply leverage with a screwdriver on the lever or on the upper hole to open the terminal. The power wires of the VRTMS 28-40 regulators must be crimped to form an eyelet (M5 hole) and the nuts (E8) tightened with a wrench.

The power wires of the VRTMS 50 regulators must be crimped to form an eyelet (M6 hole) and the nuts (E10) tightened with a wrench.

LINE PROTECTION

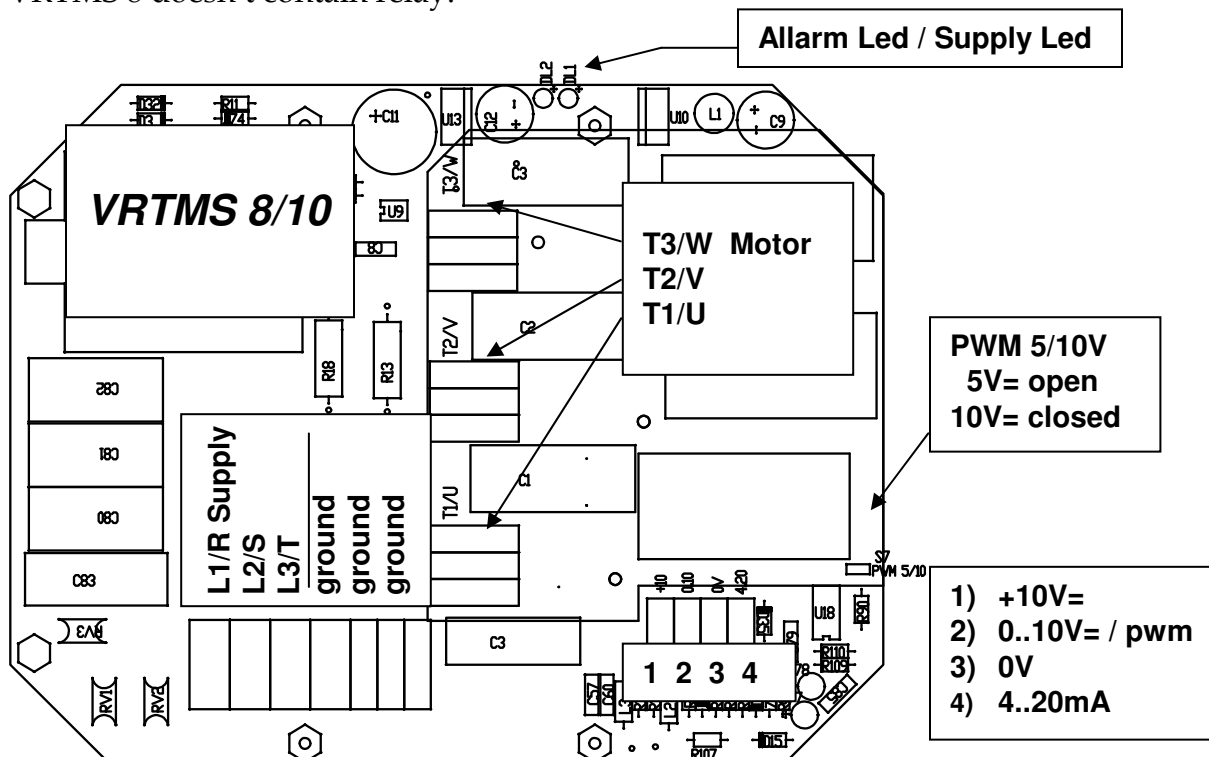
To protect the power line and the regulator, the installation technician must install extra-rapid semiconductor fuses upstream of the power supply. If a differential circuit breaker is installed, it must be of the delayed action type.

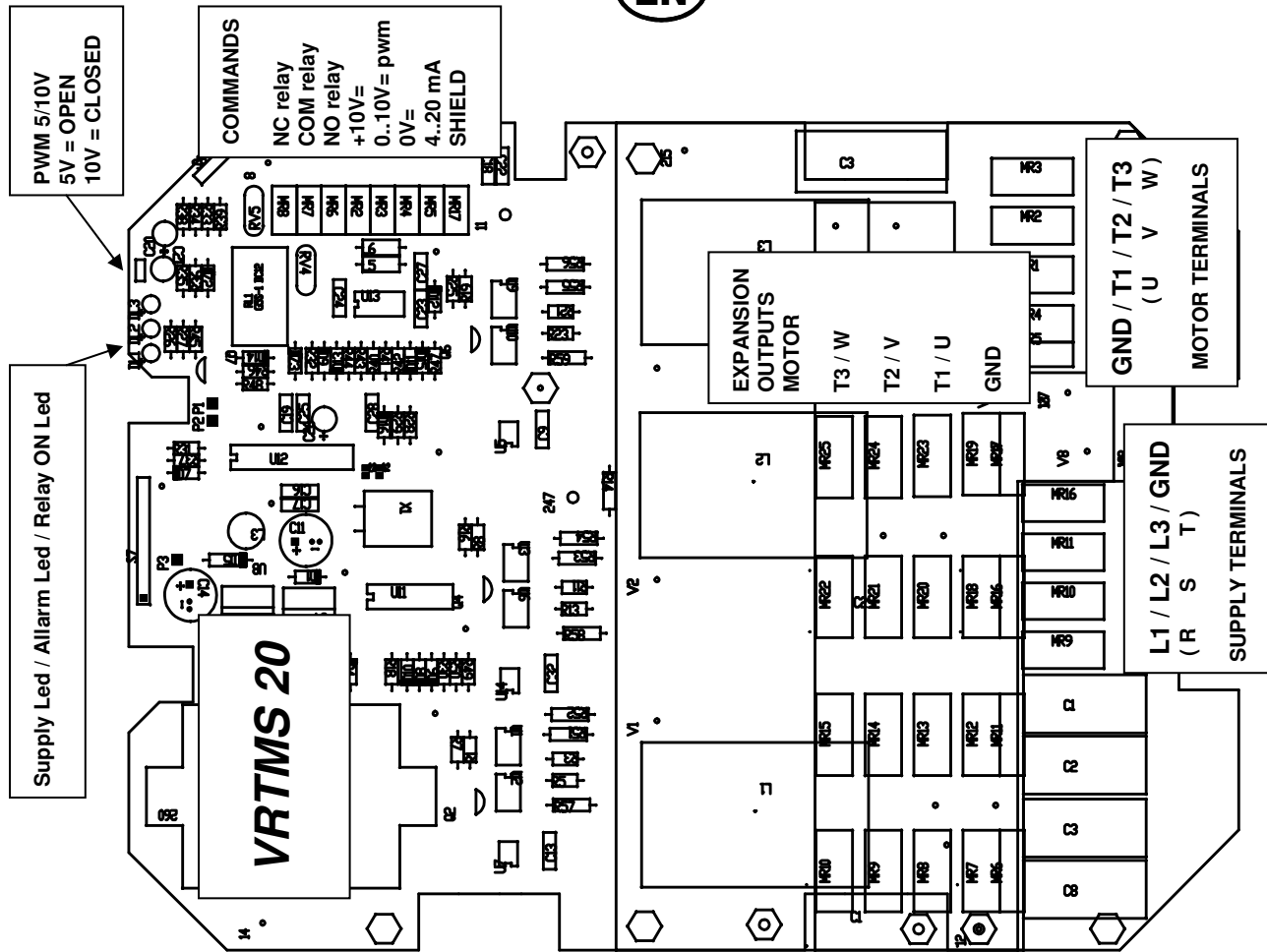
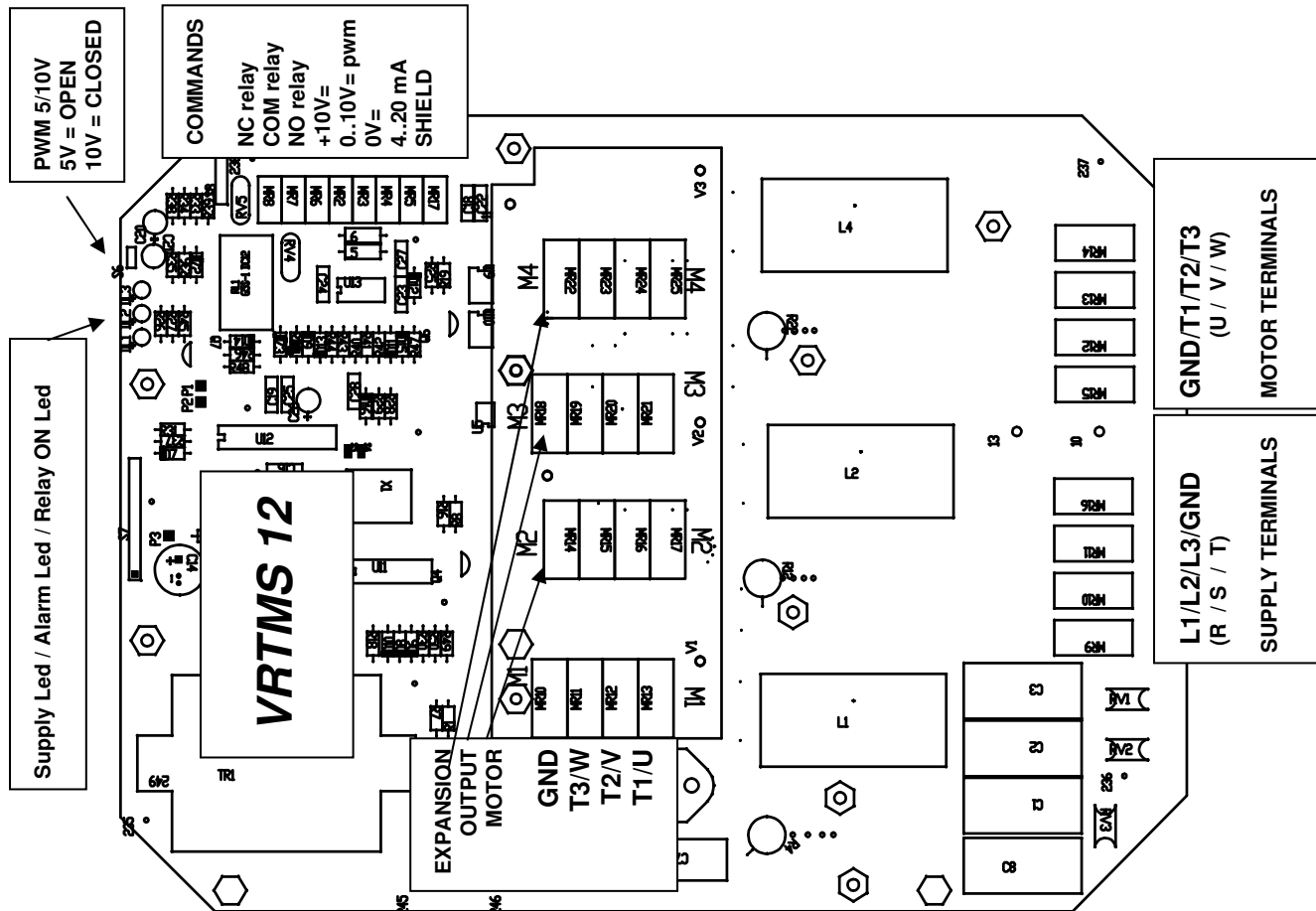
Model	Nominal current	Max current	Fuse
VRTMS 8/10	8/10 Arms	12 Arms	10/16A
VRTMS12/16	12/16 Arms	18 Arms	16/25A
VRTMS20	20 Arms	30 Arms	25A
VRTMS28	28 Arms	50 Arms	35A
VRTMS40	40 Arms	70 Arms	63A
VRTMS50	50 Arms	70 Arms	80A

COMMANDS TERMINALS

Terminals	Function	Descrizione
NC	Relay* contact	Normally closed
C	Relay* contact	Common (1A-250V~ / 3A-30V=)
NO	Relay* contact	Normally open
1	+10Vdc	Available supply (max 50mA)
2	IN1	Input 0-10Vdc (impedance 10kohm) and pwm (+)
3	0V	0V (-)
4	IN2	Input 4..20mA (impedance 100ohm)

* VRTMS 8 doesn't contain relay.

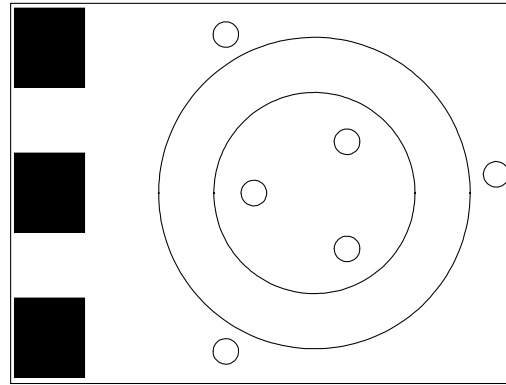




VRTMS 28 / 40 / 50

PWM 5/10V
5V = OPEN
10V = CLOSED

Relay ON Led / Allarm Led / Supply Led

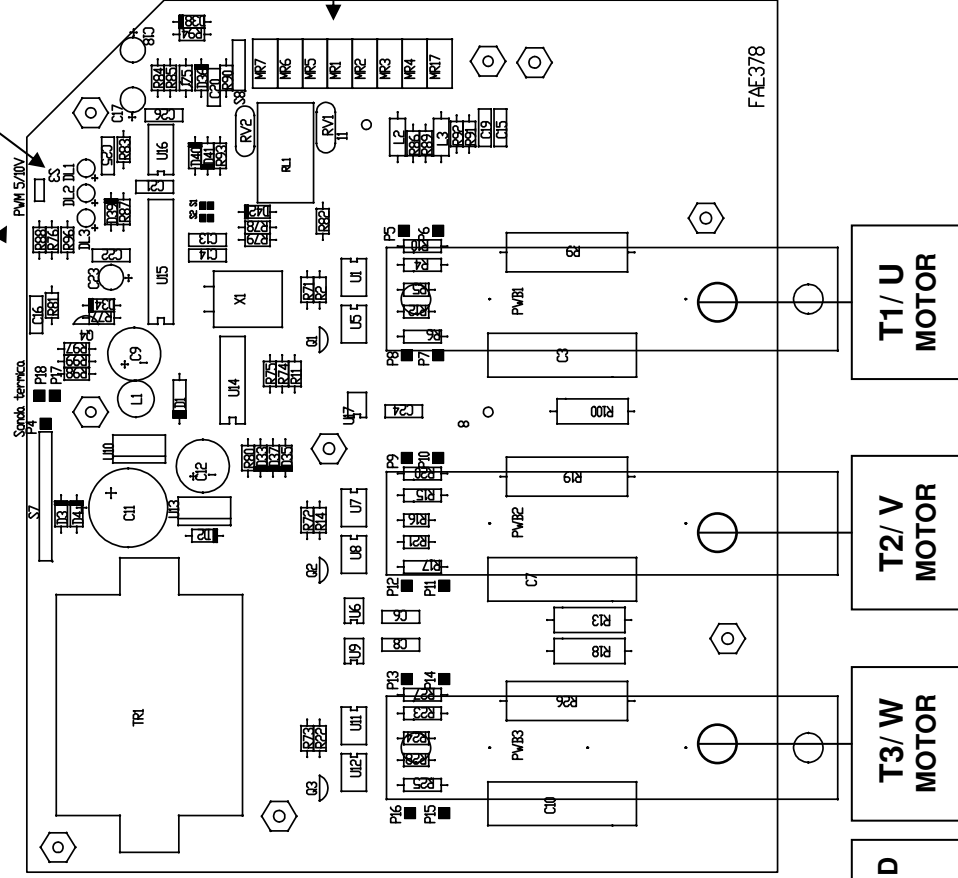


L1/R
SUPPLY

L2/S
SUPPLY

L3/T
SUPPLY

GROUND



COMMANDS
NC relay
COM relay
NO relay
1) +10V =
2) 0..10V = / pwm
3) 0V =
4) 4..20 mA
5) SHIELD

