INSTRUCTION MANUAL
codes 273S.A/3- /4- /5

BIDIRECTIONAL DRIVES FOR 24V DC PERMANENT MAGNET MOTORS

REV.1
10/10/16

These drives are mosfet switching regulators, AC/DC input, or DC only and DC output and can be used for:
- Bi-directional torque/speed regulation for DC permanent magnet motors, with option feedback from armature or from tacho-generator;
- DC voltage regulation for proportional Electro valves with or without feedback;
- DC voltage regulation for brakes or frictions.

Technical Characteristics

- **Supply voltage - absolute limits:**

AC: Min. 16VAC at 50-60Hz - Max. 44VAC at 50-60Hz
DC: Min. 20VDC - Max. 62VDC
Supply limits to guarantee rated ourputs 24V / 48V are indicated on the table below.
Warning: getting over the maximum absolute limits can severely damage the device while, powering below the absolute minimum limits cause disablement of the run.
Warning: When controlling 48Vdc motors in alternating supply, use transformers with max 40Vdc secondary (**don't use 48Vac, or else the drive will break).**

CODE	*Min. Supply VAC		*Min. Supply VDC		In OUT (A)	Imax DRIVE JAMMI-NG (A)	gLRAPID SUPPLY FUSE (A)	TRASFORMER				BRAKING			MAX POWER DISSIPA-TED from the CASE (W)	FAN	WEIGHT (Kg)
								rated output 24Vdc		rated output 48Vdc							
	rated output 24VDC	rated output 48VDC	rated outpu-t24V-DC	rated output 48VDC				Pn (VA)	VAC sec. (V)	Pn (VA)	VAC sec. (V)	MINIMUM RESISTA-NCE (Ohm)	Pn (KW)	gLRAPID FUSE (A)			
273S.A/3.20A.AC	19	36	26	50	20	80	25	600	24	1200	40	4	1	16	60	NO	2,8
273S.A/4.40A.AC	19	36	26	50	40	150	45	1200	24	2400	40	2	2	32	150	YES	3,2
273S.A/3.20A.DC	-	-	26	50	20	80	25	-	-	-	-	4	1	16	20	NO	2,7
273S.A/4.40A.DC	-	-	26	50	40	150	45	-	-	-	-	2	2	32	35	NO	2,8
273S.A/5.70A.DC	-	-	26	50	70	150	80	-	-	-	-	2	2	32	85	YES	3

- **Output Characteristics:**

- Regulation range: from **0 to ± 50Vdc** suitable for motors 12Vdc, 24Vdc, 48Vdc
- Switching frequency: 15KHz
- Built in braking module for the dissipation of the rigenerated current on external resistance, operating at 65Vdc.

- **Regulations:**

- Speed reg. from analogue signal ± 10VDC with differential input or from potentiometer.
- Torque (current) reg. from analogue signal +10VDC or from potentiometer.
- Feedback type selection by means of armature or by tachometer max 24Vdc.
- Slipping compensation.

- **Protections:**

- Against short-circuit in power output and on +15Vdc reference.
- Against BUSDC overvoltage from the motor re-generation at 75V.
- Against overtemperature for power modules

- **Environment conditions:**

- Operating temperature -5°C/ + 40°C.
- Stocking temperature -25°C/ +70°C
- Non condensated relative humidity from 5% till 95%

Conformity to Standards

- General standard applied**: CEI EN 60204-1**
- General standard applied **EMC 89/336/CEE** with reference to Norm **CEI EN 61800-3,** if the following rules are respected**:**
  - use of the net filter (contact Rowan Technical dept.)
  - use of shielded cables for connecting motor, tacho generator and potentiometer, with shielding connected to the ground.
  Motor and tacho cables must be connected to the ground, both to the board side and the motor side.
- Specific Standards applied with reference to Electromagnetic Compatibility: **IEC 801.4**.

CONNECTION DESCRIPTION

1 - 4 = ± 10Vdc differential input for speed regulation
2 = +10Vdc voltage reference output for external regulation potentiometers; max load 10mA.
3 = - 10Vdc voltage reference output for external regulation potentiometers; max load 10mA.
5 - 6 = Speed feedback input by max ±24Vdc tachometer.
6 = Common negative
7 - 8 = DC motor, EV, BRAKES, FRICTIONS command output. **Warning**! switching output at 15Khz, use shielded cable.
9 - 10 = drive supply. See table on page 1 and diagram on page 3.

NOTE: with speed regulation by external potentiometer, make a BRIDGE between terminals 1-6 as shown in the picture of page 3.

A = +15Vdc/0.2A regulated supply for external devices. Protected against short-circuit.
B = 0/+10Vdc analogue input for torque regulation.
C = digit input for run command of the drive; to activate the run, give min 10Vdc, max 35Vdc.
D (No) **E** (Nc) **F** (Com) = drive relay contact in run: excited when running, de-energized when off-running or locked-out.
G (+Vbusdc) **H** (out braking) = connection of braking resistance (see table).
0 = -Vbusdc
G - 0 = supply for DC versions. See table on page 1 and diagram on page 3.

Warning! The drive has no protections on the braking resistance command.
Insert a rapid GL 6A protection fuse for the short-circuit.

TRIMMERS DESCRIPTION

P0 = Offset zero rounds regulation
P1 = Acceleration/deceleration ramp regulation on speed: Min. 0.1sec, max 10sec.
Clockwise it raises the ramp duration.
P2 = Maximum speed regulation. Clockwise it raises the maximum speed.
P3 = Maximum current regulation. It is set by Rowan for the nominal current of the drive in continuous service.
Clockwise it raises the maximum current.
Warning! P3 has a default regulation for the rated current in continuous service: do not set higher values.
P4 = Speed control stability regulation. Anti-clockwise it stabilizes oscillations.
P5 = Motor slipping compensation. Set clockwise to limit the reducing of speed from empty DC motor to loaded, paying attention not to oscillate the speed control.
ATTENTION! when there is feedback from tacho-generator, adjust P5 completely anti-clockwise.
P6 = Braking intervention. Fabric setting, for authorized personnel only.
P7 = Switching frequency regulation. Fabric setting, for authorized personnel only.

MICROSWITCHES DESCRIPTION

S1 = Feedback type selection:
S1 closed = internal feedback by armature.
S1 open = feedback by max 24Vdc external tachodynamo.

S2 = Selection of the maximum current internal/external regulation:
S2 closed = internal regulation
S2 open = external regulation.

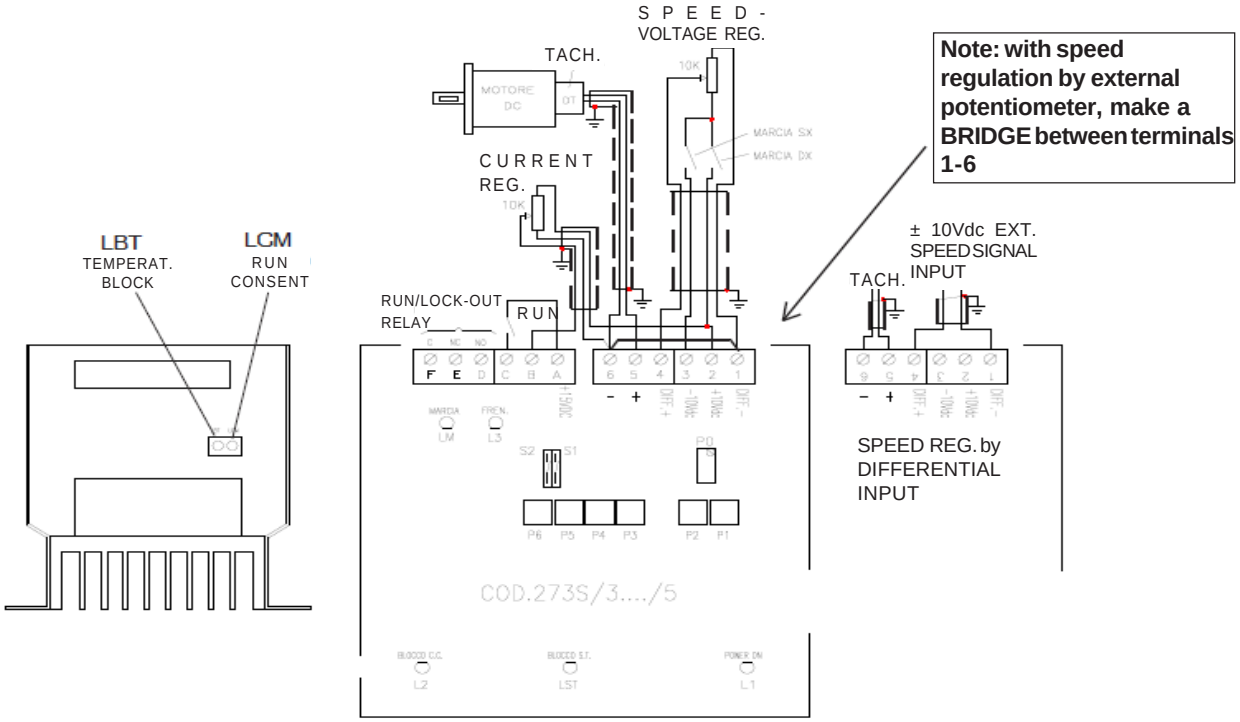
LED DESCRIPTION

L1 = Power on (ON when it is supplied)
L2 = Locked-out by short-circuit (ON when the jamming max current has been passed - see table). In this case, leave out the supply and check to find the possible external causes - cables or motor.
L3 = Braking on external resistance (ON when the voltage on Bus DC gets over 65Vdc)
LM = Run (ON when the contact between A and C is closed)
LST= Locked-out by BusDC overvoltage (ON when the voltage on Bus DC gets over 75Vdc)

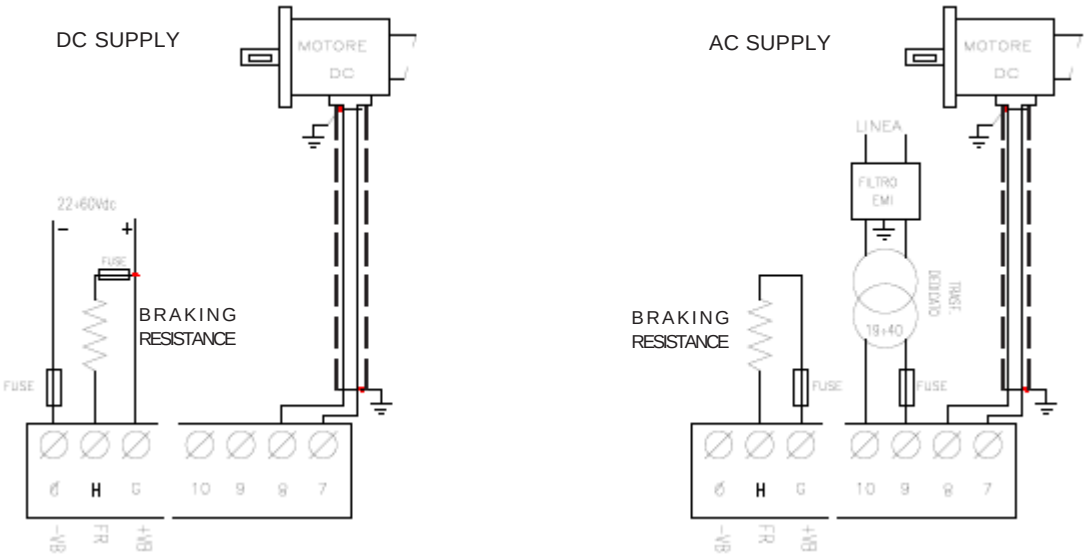
Boards side
LBT= Temperature locking (ON when the power module internal temperature gets over 90°C).
In this case leave out the supply, check the air flowing being not blocked and let the device to get cooled.
LCM = Run consent for the power board (ON when the drive is working Ok, OFF when voltages are irregular or there has been a temperature block)

TRIMMERS, MICROSWITCHES and LED CONNECTION DIAGRAMS and LAYOUT

COMMANDS TERMINAL BOARD CONNECTION (upper drive)



POWER TERMINAL BOARD CONNECTION (lower drive)



CAUTION!

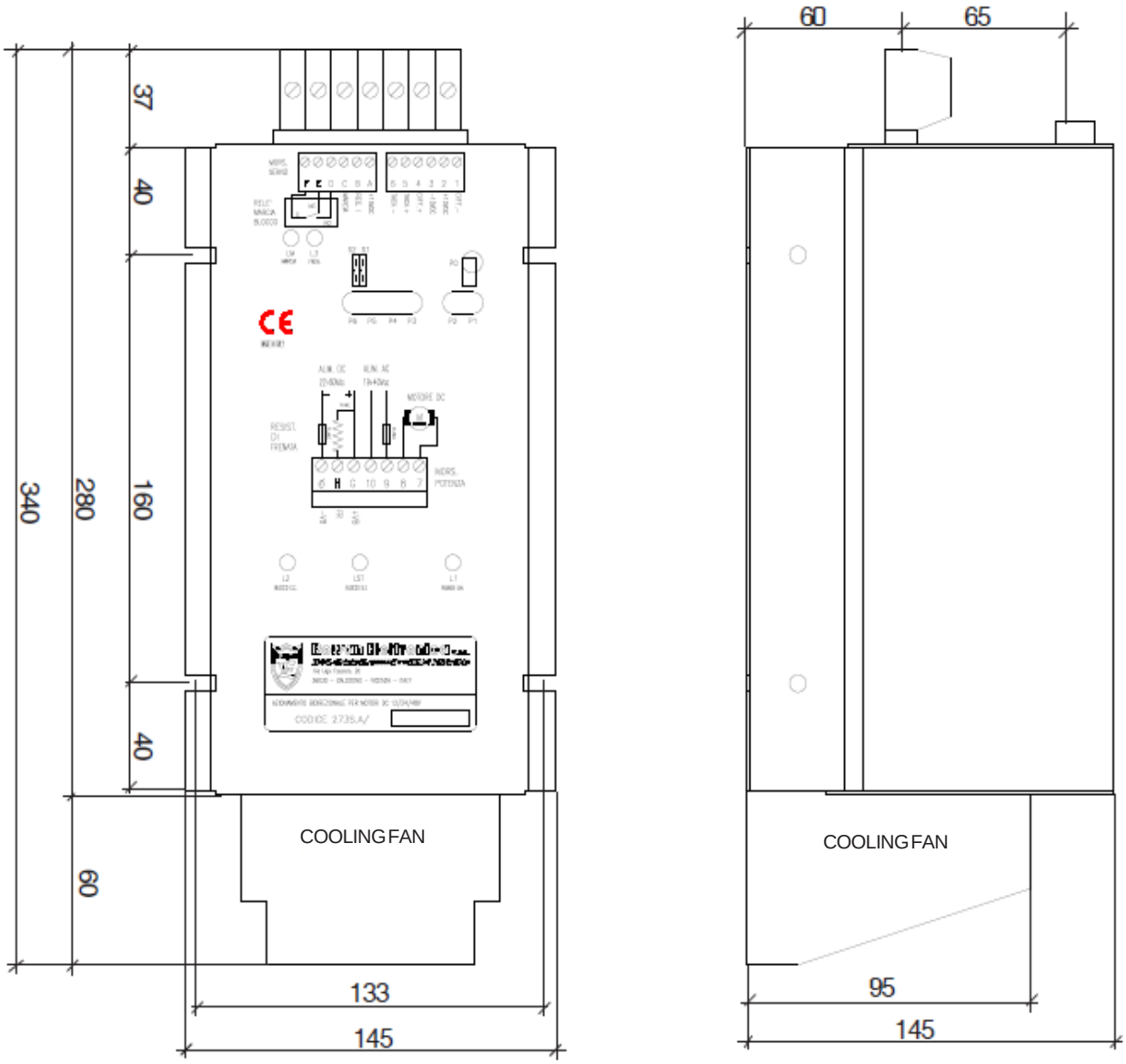
- The NEGATIVE of the board (TERMINAL 6 and -VB) is not decoupled from the supply so you need to pay attention to the following instructions:

1) Don't connect togheter the supply 24VAC and the NEGATIVE of the board to the ground.

2) Don't connect all the NEGATIVE of the boards togheter if you have several C273S supplied from the same trasformer.

3) If the boards are supplied from the same trasformer (as same as point 2) it is possible to connect input DIFF- (1) and DIFF+ (4) togheter in parallel: for example, if the speed range will be regulated from a unique supply ±10Vdc (Ex. PLC); in this case the generator of the signal must be insulated from AC/DC supply of the C273S drives.

OVERALL DIMENSIONS (mm)



CONFORMITY

EMC

CE

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CERTIFIED IQNet MANAGEMENT SYSTEM