*DRIVER MOS-FET UNIDIRECTIONAL AM** SERIES*

Instruction Manual for use

SAFETY RULES

All the electrics/electronics apparatus can be a risk for people safety.
The final user is responsible in order that the installation is made according to the actual rules and laws.
The installing and maintenance operations should be executed by a qualified operator following the instructions of this manual.
For every question please contact the manufacturer.

GENERAL INSTRUCTIONS

(DPR nr. 224 of 24/05/88) Dirett. CEE nr. 374/85 of 25/07/85

This driver should be installed, adjusted and used by a qualified operator.
H e should know the complete running of the device.
The use should be as per the actual specifications of this item.

This device is connected to the net system, so the buyer should provide it with a dissection zone that permit the entry into the system without danger.
The buyer should provide the whole system where the driver will be fitted with safety and security precautions in order to protect the operator in case of damages.

The UNITEC Srl. Society will not be responsible for every direct or indirect damage it may occur for the incorrect use of the material.

CONFORMITY DECLARATION CEE

UNITEC S.R.L. Via Breda n° 120, Milan. The legal agent states that:

The driver for motors with C.C , electric panels, digital instruments for automation and control, and other products, use electric material according to the actual rules of the CEE.
This products have been built following the same rules and lows, CEI EN60204-1.

-LVD LOW TENSION
-EMC 89/336 ELECTROMAGNETIC COMPATIBILITY

Our Society has made a test according to EMI standard
CISPR, EN, ETS, FCC and ANSI C63.4,VCC and VDE and with the right instrumentation in the Engineering University.

Before the installation please read the manual.

TECHICAL DATAS AND CHARACTERISTICS

TABLE

STANDARD CODE	POWER W.	POWER SUPPLY	AMP.	EXECUTION
AM - 0 - 12 - 5 - M - C	60	12 VCC	5	NOT. INS.
AM - 0 - 12 - 10 - M - C -	120	12 VCC	10	"
AM - 0 - 24 - 5 - M - C -	120	24 VCC	5	NOT. INS.
AM - 0 - 24 - 10 - M - C -	240	24 VCC	10	"
AM - 0 - 24 - 5 - M - C -	120	24 VAC	5	NOT. INS.
AM - 0 - 24 - 10 - M - C -	240	24 VAC	10	"
AM - 0 - 48 - 5 - M - C -	240	48 VAC	5	NOT. INS.
AM - 0 - 48 - 10 - M - C -	480	48 VAC	10	"
AM - 0 -110 - 2.5 - M - C -	250	115 VAC	2,5	NOT. INS
AM - 0 -110 - 5 - M - C -	500	115 VAC	5	"
AM - 0 -110 - 10 - M - C -	1000	115 VAC	10	"
AM –0-220/240 - 2,5 -M-C -	500	230 VAC	2,5	NOT. INS.
AM -0 -220/240 - 5 -M -C	1000	230 VAC	5	"
AM -0 -220/240 - 10 -M -C	2000	230 VAC	10	"

.

STANDARD DATAS FOR ALL CONVERTORSI

- **Operating temperature** = From 0 to 40° C internal frame;
  Max. temperature 65° with declassing of 1,3% for each degree starting from 40°.
- **Stocking and transport temperature** = From-20° to + 70°
- **Relative humidity altitude** = Max 85 % without condensate (IEC 146)
  1000 m upon sea level with declassing of 1.22% each 100 m. until max 3000 mtrs.
- **Standard running** = Speed adjustment (and possibility to adjust in corr.)
- **Form factor** = 1,05
- **Speed static error with tacho with exhaustion of transistors** = +/- 2% the max speed for change charge from 5 to 100% +/- 2% of the real speed for change of temperature from 0° to 65°
- **Input impedance** = 47 Kohm
- **Regulating field** = From 1 to 100 in tacho reaction
  = From 1 to 10 in armature reaction
- **Protection class** = IPOO

ADJUSTMENTS AND CONNECTIONS

TERMINALS TABLE NR.1

TERMINAL NR. 10 = POWER SUPPLY ENTRY OF LINE 1
TERMINAL NR. 9 = POWER SUPPLY ENTRY OF LINE 2
TERMIANL NR. 8 = EXIT + EXCITATION
TERMINAL NR. 7 = EXIT-EXCITATION
TERMINAL NR. 6 = EXIT-ARMATURE
TERMINAL NR. 5 = EXIT + ARMATURE. POSITIVE D.T
TERMINAL NR. 4 = D.T ENTRANCE (ENCODER, PROX, NAMUR)
TERMINAL NR. 3 = POTENTIOMETER MIN. SPEDD
TERMINAL NR 2 = REFERENCE SIGNAL ENTRANCE (CENTRAL POTENTIOMETER)
TERMINAL NR.1 = NEGATIVE EXIT AS PER DESIRED OPTIONS FOR COMMAND POTENTIOMETER POWER SUPPLY (2-10 KOHM)
TERMINAL NR. L = ENTRANCE FOR CONVERTER QUALIFICATION
TERMINAL NR. B = NEGATIVE EXIT FROM -12 TO -16 VCC FOR CONVERTER ON

TERMINALS TABLE NR. 2 (OPTIONAL)

TERMINAL NR. 1 = EXIT OF THE CONTACT OF ZERO SPEED RELAIS (N.A OR N.C)
TERMINAL NR. 2 = EXIT OF THE CONTACT OF ZERO SPEED RELAIS

REGULATING TRIMMER

P1 = MAX. SPEED ADJUSTMENT
P2 = MIN. SPEED ADJUSTMENT
P3 = ADJUSTMENT OF ACCELERATION/DECELERATION TIME
P4 = MAX CURRENT REGULATION (made on factory)
P5 = RxI COMPENSATION ADJUSTMENT (OPTIONAL)

GENERAL RULES FOR THE ABOLITION OF NET INTERFERENCES

EMC 89-336 ELECTRO-MAGNETIC COMPATIBILITY (CD MARK)

Your apparatus has been made according to the actual rule concerning the electro-magnetic compatibility. All tests made in university laboratory give us the possibility to establish the correct emission of the electro-magnetic interferences.
Being the drivers the components of an electric apparatus and in order to grant the Ce mark it is necessary to apply a net filter.
Please find here below a table showing the different kind of net filter we have tested concerning the different kind of drivers that should be fitted between the net and the power supply as indicated on the connection scheme.
If on the same apparatus there are more drivers, it will be better to have a general net filter (please follow the notices on others publications.)

AM-24-5 or 10 Amp	Type of Filter FN2060-10/06	or	10DRCG5 DELTA
AM-48-5 or 10 Amp	Type of Filter FN2060-10/06	or	10DRCG5 DELTA
AM-110 or 220/240-2,5 Amp	Type of Filter FN2060-6/06	or	02DRCG5 DELTA
AM-110 or 220/240- 5 Amp	Type of Filter FN2060-6/06	or	05DRCG5 DELTA
AM-110 or 220/240-10 Amp	Type of Filter FN2060-10/06	or	10DRCG5 DELTA

WRING SECTION-RUNNING PROCEDURE AND ADJUSTMENT PROCEDURE

Concerning the assembling into the apparatus it is necessary to have enough space for the driver in order to permit air circulation.
In case of assembling with other apparatus particularly hot please provide the system with a forced ventilation into the box.
Please execute the connections as per description of pages n° 5 and 6.
The power supply should be according the voltage indicated on the identification label and on the transformer.
If all operations have been made correctly you will have the lighting of the LD1 led with the writing **"WRITING PRESENCE OF VOLTAGE".**
This led will remain in on position also after the converter turning off indicating that the electrolytic condenser is again on charge.
For complete condenser discharge and led turning off you have to wait about 60".
Before converter qualification please check that the jumper situated upon the terminals table(near the terminal n° 3) is correctly installed depending for the desired reaction (dynamo, encoder armature) see following description:
Now it is possible to qualify the converter through the B-L consent possibly of clear contact.
Please note: **B** = negative exit 12/16 V
L = entrance with tension from 8 to 24 V
With circa 5 mA current. (protect industrial entrance)
Fr regulating field adjustment, please rotate the command potentiometer all in zero volt direction (terminal n° 3) than with **P2** trimmer adjust the zero or the min. speed desired.
Than rotate the command potentiometer all in the opposite direction and with the **P1** trimmer adjust the max speed desired.
If the potentiometer is predisposed for the running in armature reaction the different adjustments with P1 in standard execution are:

Power V230(Res. 100 Kohm) P1 all in anti-clockwise direc=125V All in clockwise direction=180V
Power V115 (Res. 56 Kohm) P1 all in anti-clockwise direc= 75 V All in clockwise direction=105 V
Power V48 (Res.20 Kohm) P1 all in anti-clockwise direc.= 35 V All in clockwise direction= 48 V
Power V24 (Res.8,2 Kohm) P1 all in anti-clockwise direc.=18 V All in clockwise direction= 24 V

P3 SLOPE ADJUSTMENT (opzional)

With this trimmer (if it is predisposed) it is possible to set up a gradual acceleration and deceleration of the converter.
The standard adjustments are:
With trimmer rotation all in anti-clockwise direction = 0/max. 0,2".
With trimmer rotation all in clockwise direction = 0/max. 5-8".
Upon request it will be possible to have others slope times or the only acceleration or the only deceleration regulation.
In case of BI contact opening the slope will go to zero immediately.

P4 CURRENT

With this trimmer it is possible to reduce the max. current of the driver. Normally the adjustment will be made on factory, but in any case it is possible to adjust the driver with a low current until go to zero.

P5 – COMPENSATION RxI (Opzional)

This trimmer works only in armature reaction and is necessary in order to compensate the turns loss of the motor caused by the charge especially on low speeds.

It is very important to operate carefully with this adjustment otherwise the motor can runs wrong.

ZERO SPEED RELAIS (Opzional)

With this option it is available a clear contact that permit the inversion of his position in case of exit voltage from the armature.
The relais usually is excited when the exit voltage is 0 and the led is on.
Yellow led: In case of exit voltage from the driver.
If continues in that position a few seconds after the armature voltage stops.

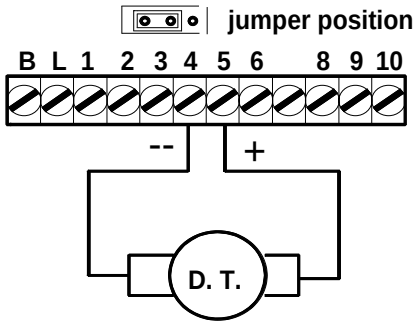
* The relais is directly connected to the armature voltage, is not possible to connect it to a tacho dynamo reaction and is not possible to adjustment it.

INDICATOR TO STOP THE ARMATURE

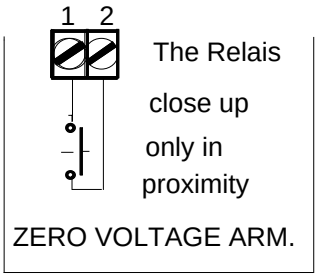
This type of driver has an electronic control of the armature current that makes to block the driver if the current overcomes the max. regulating for 5".

At the beginning the driver can supply almost the 150% of the nominal current for 5" to permit the motor to start working if nothing interrupts the indicator to block the motor and if the red led is on.
The same thing happened when in the normal working the armature current overcomes the limits depending on the type of driver for more than 5"
For the normal working is enough to turn on and turn off the driver. If the problem continues check the connection motor and the way of working of this one.

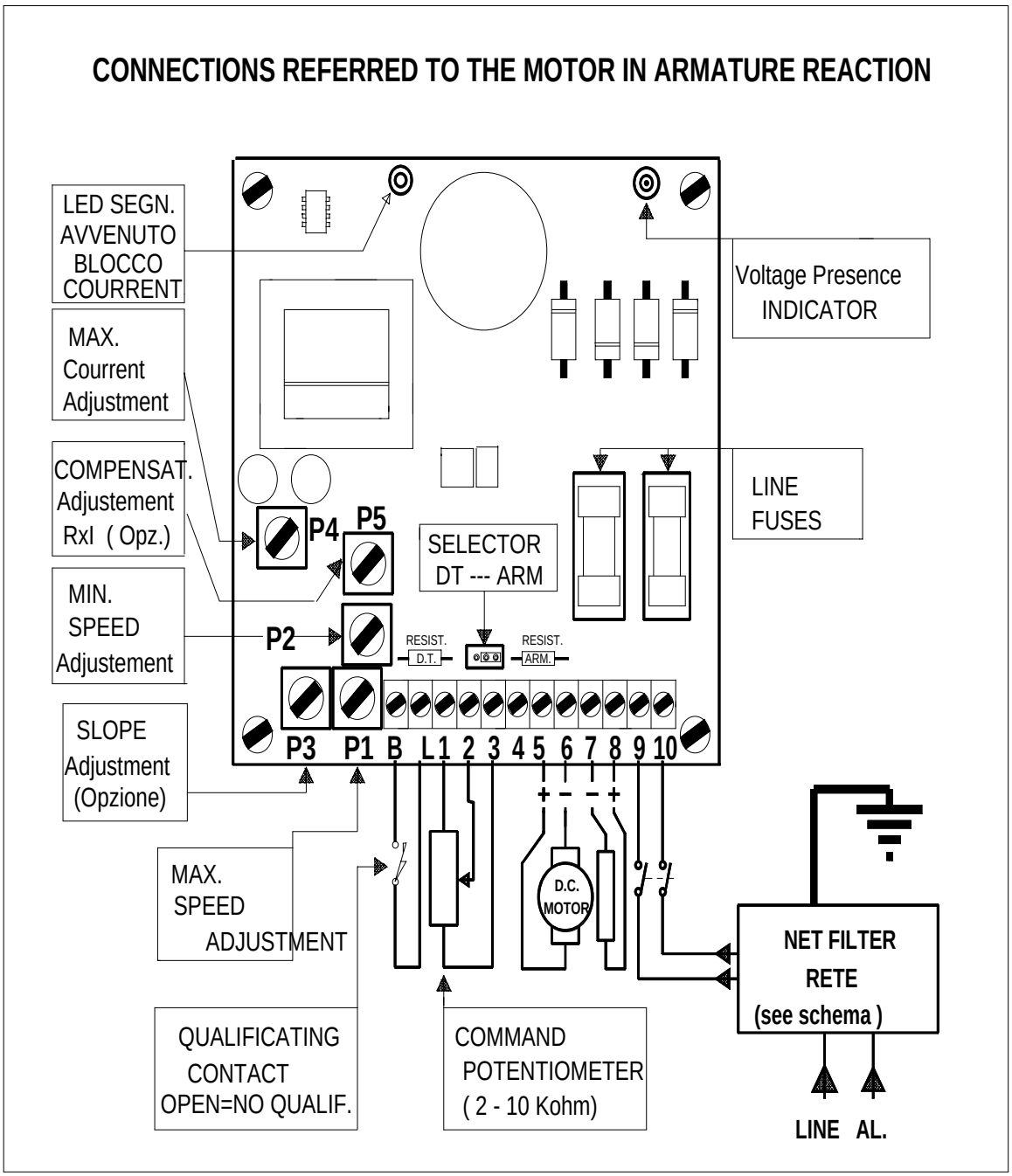
TACHO DYNAMO CONNECTION.



M2 EXIT.-ZERO V.RELAIS



C.C. POWER SUPPLY



Upon request it is possible to supply some drivers with C.C. power supply.
The characteristics are the same as the A.C. version.
The exit voltage is from 0 to 95% of the power supply voltage.

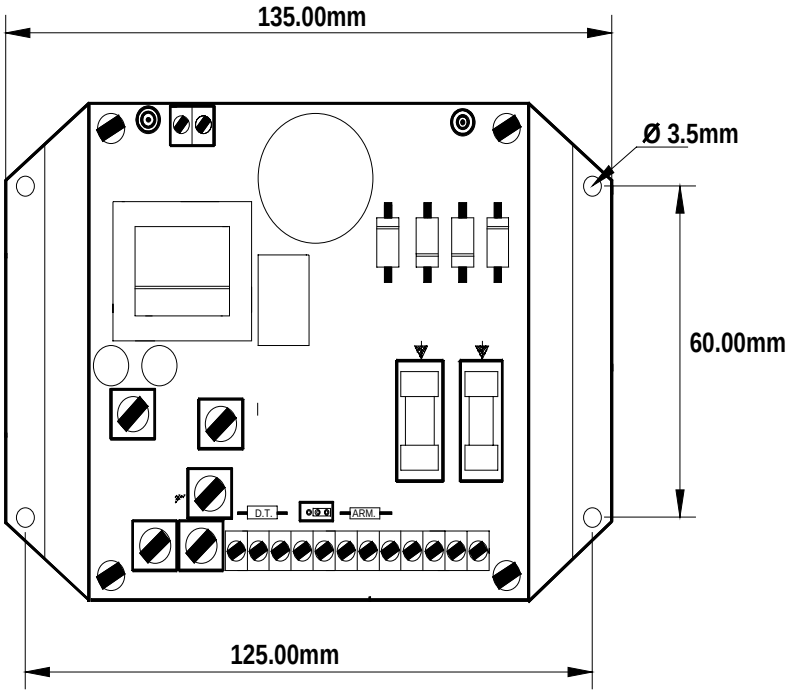
C.C LEVERLLING INDUCTANCE

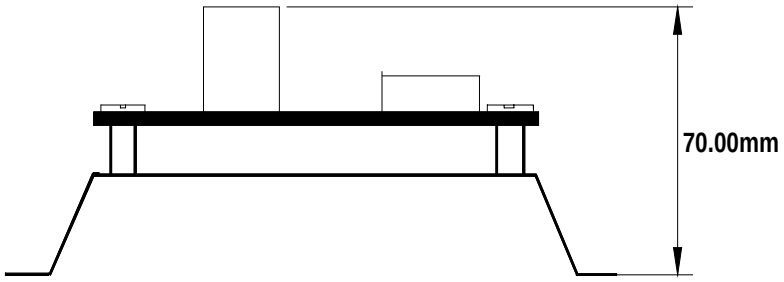
Due the high speed of commutation of the Mos-Fet drivers, the form factor of the C.C. is 1.05 so it is not necessary the levelling inductance between motor and driver.
Only for special motor with very low inductance it can be necessary. In this case the calculation to be made is the following:

Power supply voltage A.C. x 1.41 x 0.05

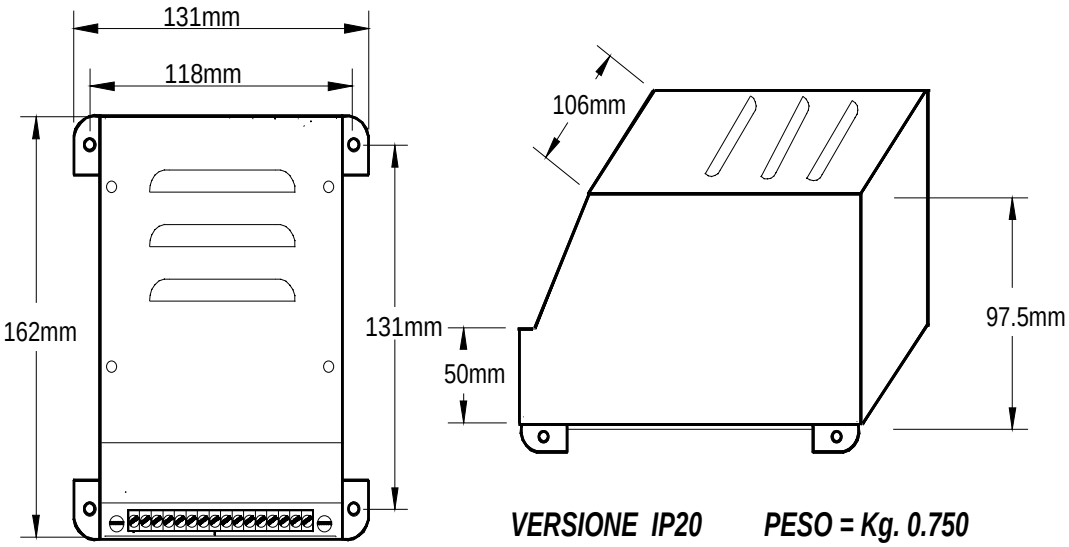
_____ (:)

Nominal current of the driver (or motor) = inductance in millimeters.





VERSIONE A GIORNO PESO = 500 g.



VERSIONE IP20 PESO = Kg. 0.750

UNITEC S.R.L. Cernusco S/N -MI- Tel. 02 92140200