V/F AND VECTOR INVERTERS

Advantages

TDE MACNO digital V/F and vector control inverters are the result of a significant experience in the design and development of products for industrial automation.

EASE-OF-USE AND EASY SET UP

Thanks to the automatic functions of auto tuning of the motor, TDE MACNO' s products are easy to adjust to any kind of motor type. The programming software from PC allows a rapid and precise use of all the operations and makes the set-up easy and extremely quick.

ADVANCED CHARACTERISTICS

The inverter series has been specifically developed to meet demanding process control needs. The control software enables particular functions such as Energy Saving, Electrical Gearing, Up and Down function, Regeneration Function for Short Power Interruptions, Flying Start, Line Loss Restart, Braking through DC current injection for a high flexibility in the control of the motor. The advanced control system of the speed and current loop allows high dynamic performances. In addition to the serial line RS485 with Modbus protocol, Can Bus and Profibus DP protocols are available.

PARAMETER SETTING SOFTWARE

The programming software, developed in Windows operating system, leads the user to the programming of the drive: it displays all the set-up and control parameters and enables customised solutions.

FLEXIBILITY AND CUSTOMISED SOLUTIONS

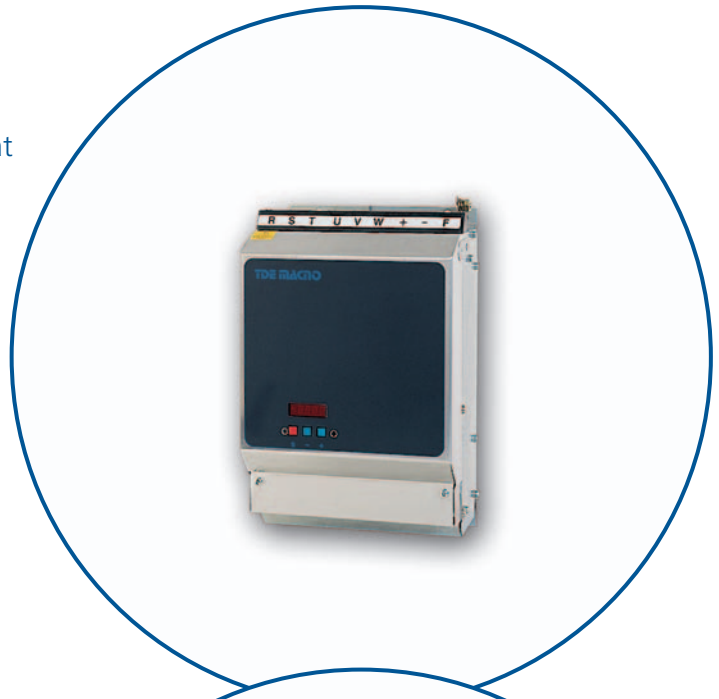
Based on our experience as application and systems engineers for industrial automation we provide our know-how to realise in a flexible way customised solutions for the specific needs of the customers.

RELIABILITY

Since it's establishment in 1976 TDE MACNO has been designing and developing comprehensive and straight forward solutions to a wide variety of industrial automation applications. We have a strong commitment to the continuous development of high quality and reliable solutions. This has made TDE MACNO your reliable partner.

DIGITAL INVERTERS DVET SERIES

The DVET series vector inverters have been designed for the control of three-phase asynchronous motors with feedback from speed sensors.
This inverter offers remarkably easy setup, complete flexibility, outstanding performance and exceptional torque at any speed (even at zero rpm), quiet and efficient operation.

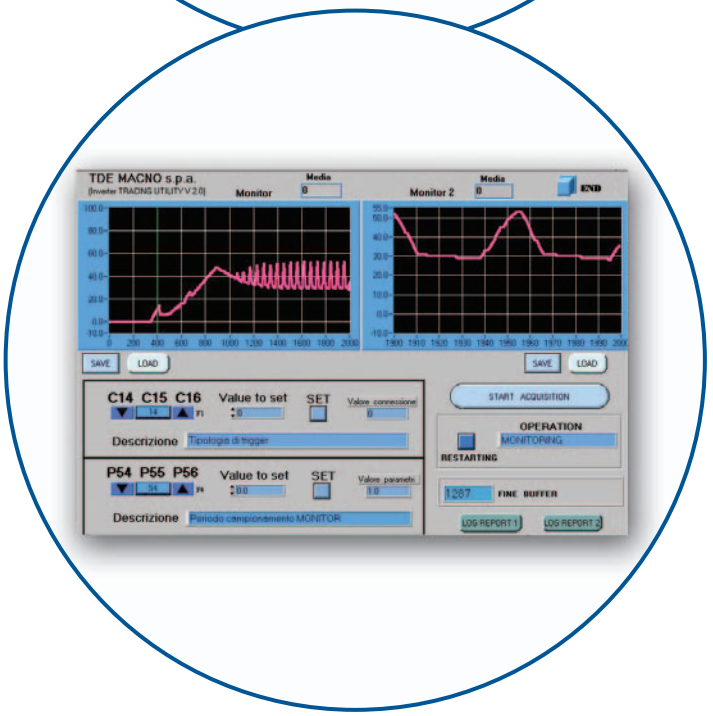


MAIN FEATURES

- SPECIAL FUNCTIONS

Motor interface:

- Auto test for:
  - Utilised speed sensor
  - U V W phases connection
  - Motor poles number
- Measurement of the electric motor characteristics:
  - Stator resistance
  - Leakage inductance
  - Magnetising current and magnetic characteristic
  - Rotor and stator time constant
- Auto tuning of current and flux regulators according to motor parameters
- Line compensation of the variation of rotor resistance



Technology and control

- Regulation system with speed, flux or voltage and current loop
- Max torque set point
- Max current set point
- Max current limitation depending on motor and converter temperature
- Regeneration function during short power interruptions
- DC voltage limitation in braking mode
- Inverter temperature self monitoring system
- Over modulation

Feedback possibilities

- TTL line driver Encoder
- Sin/Cos Encoder
- Resolver

DIGITAL INVERTERS

Special functions

- Electrical gearing and master/slave function and continuous positioning control in space loop
- Indexing function for spindle applications
- Torque control and speed limit function

Set-up and programming

- PC monitor software with scope function for an easy setup and drive diagnostic
- Parameters and alarms storing and displaying
- RS485 serial port with Modbus protocol (RTU or ASCII)
- Diagnostic and programming keypad with logical parameters clustering
- Diagnostic and programming via fieldbus (option)
- Possibility of parameters storing of two motors with different electric characteristics
- Possibility to adjust the inverters for the control of open loop asynchronous motors without sensor feedback

POWER

Technical data

- Three-phase 400 ÷ 440V –15% + 10%, frequency 50/60 Hz ± 5%
- Power supply from external DC bus
- IGBT power stage with built in clamping circuit (external resistor)
- PWM frequency: 3 ÷ 8,5 kHz
- Built in soft start device also with external enabling
- Maximum overload: 150% for 30 sec (S1) - 200% for 30 sec (S2)

CONTROL AND REGULATION

Features

- Closed loop vector control for excellent torque at all speeds
- Output frequency: 0 ÷ 1.300 Hz
- Independent ramps with S or linear motion profile

Protections

- Drive diagnostics through display or from serial line:
  - Short-circuit phase-to-phase/phase-to-ground
  - Short-circuit clamping circuit
  - Inverter over temperature (heatsink thermal switch or NTC)
  - Motor over temperature
  - Motor overload
  - Over voltage and under voltage
  - Max torque limit of the motor
  - Max torque limit during braking
  - Max current limit with automatic decrease

Signals and references

- 8 opto isolated configurable digital inputs
- 3 inputs for speed reference:
  - 2 analogue references ± 10V at 10 or 12 bit
  - 1 digital frequency reference (2 channels or frequency and up/down)
  - 3 digital speed references
- 2 analogue inputs ± 10V at 10 bit (torque reference and torque limit)
- digital potentiometer function with up/down logic inputs
- 2 programmable analogue outputs ± 10V
- 3 opto isolated configurable digital outputs
- 1 tacho generator output (if the speed sensor is a resolver)
- 1 configurable simulated encoder output

DVET SERIES

OPTIONS

Communication cards

- CAN BUS (can open)
- PROFIBUS DP
- RS232 / 485 interface card for PC connection with monitor software
- MULTIDRIVE software version: MULTIDRIVE series offers in one inverter the possibility to configure the system in five different operating modes:
  - V/F open loop
  - Vector closed loop
  - Brushless
  - Sensorless vector control (in development)
  - Regenerative
- Resolver feedback board
- Sinusoidal encoder feedback board

Accessories

- Remote keypad for parameters setting
- Clamping resistors
- Line inductors
- EMC filters
- Predisposition for analog inputs 4 ÷ 20 mA

Technical data

Mains supply

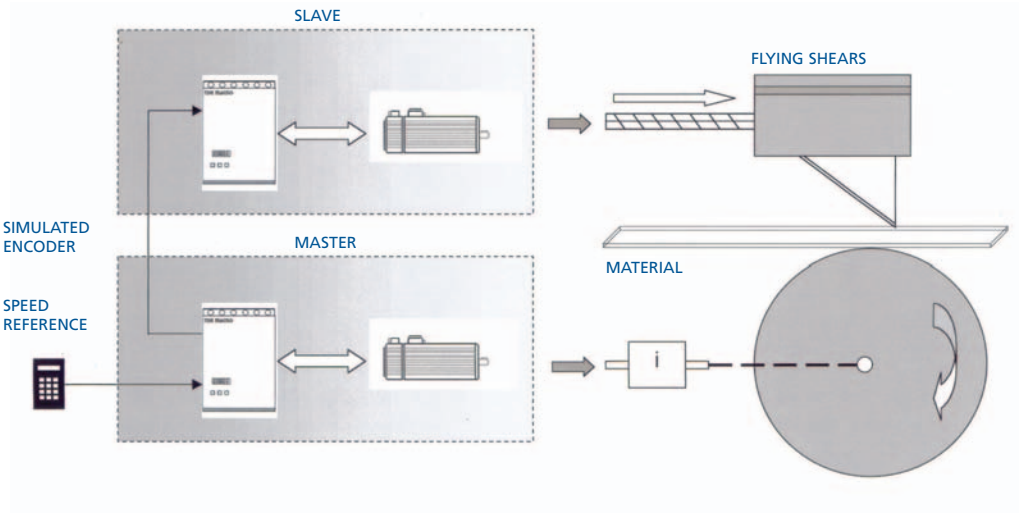
Voltage supply	V a.c.	three-phase 400 ÷ 440V a.c. -15% / -10%
Line frequency	Hz	50 ÷ 60 ± 5%
Power supply from external DC bus		
Environment temperature	°C	0 ÷ 45
Protection	IP 20	

Sizes	Motor power 400V	S1 Series				S2 Series				
		Overload 150% for 30 sec		Overload 120% for 30 sec		Overload 200% for 3 sec 155% for 30 sec			Overload 200% for 30 sec	
	KW	I rated (A)	I max (A)	I rated (A)	I max (A)	I rated (A)	I max (A)	I limit (A)	I rated (A)	I max (A)
1,5	1,84	4	6	4,5	5,4	3,75	7,5	5,8	3,2	6,4
3	3	7	10,5	8	9,6	6,75	13,5	10,5	5,75	11,5
4	4	10	15	11	13	9,5	19	14,7	8	16
5,5	5,5	12	18	13,5	16	11,5	23	18	10	20
7,5	7,5	17	25,5	19	23	16,5	33	25,5	14	28
11	11	24	36	27	32	21	42	35,5	18	36
15	15	32	48	36	43	-	-	-	-	-
18,5	18,5	37	55	42	50	35	70	54	30	60
22	22	48	72	54	65	46	92	71	40	80
30	30	60	90	67,5	81	57	114	88	48	96
37	37	70	105	79	95	67	134	104	57	114
45	45	90	135	101	121	86	172	133	74	148
55	55	107	161	118	142	100	200	155	85	170
75	75	150	225	167	201	140	280	217	120	240
90	90	175	263	195	234	165	330	256	140	280
110	110	220	330	248	298	210	420	325	180	360
132	132	250	375	280	336	238	476	369	203	406

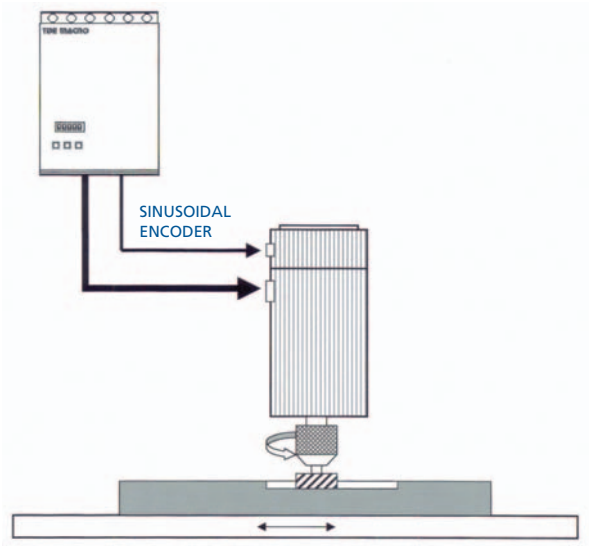
Size		1,5	3	4	5,5	7,5	11	15	18,5	22	30	37	45	55	75	90	110	132
Dimensions mm	H	330		360				460			520	680		680	905		905	1050
	L	126		230				230			230	230		230	475		475	475
	P	292		185				230			270	250		290	300		300	300

SOME APPLICATIONS

FLYING CUT



ELECTRO SPINDLE



TEXTIL - TRAVERSE FUNCTION