

**VARIABLE FREQUENCY  
DRIVE SOLUTION**





# “EMOTION<sub>IN</sub>MOTION”

**TVT Drive1** originates from the Orange1 Group's strategy to offer a constantly evolving range of products, matching the Group's direction and targets. Drive1 is produced in Italy within EME S.p.a. manufacturing dynamic and custom made solutions with the drives technology.

This new catalogue lists the basic range of drives applicable on asynchronous AC motors, DC motors, step motors and brush-less, to be installed on the panel or directly into terminal box of the motors.

The most significant applications of our drives are in automotive and textile industry, to manage car wash systems, home-lift, and tire changers. We have custom made a large numbers of projects in handling goods with gearboxes, packaging, hydraulic managed by solar panels systems. Innovative solutions for ventilation, extraction and cleaning systems complete our range.

This catalogue includes users interface and drives software.  
"Made in Italy...Loved in America".

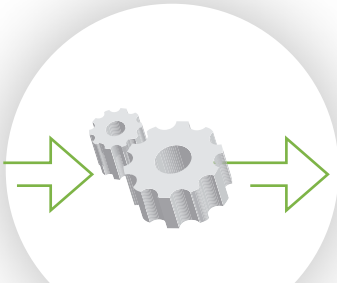
# Drives for AC motors

*It is all about control of power..*

The AC Drive is an electronic device designed to convert AC power input into alternating current AC output, or to make synthetic AC from DC direct current.

This device is mainly used for two reasons:

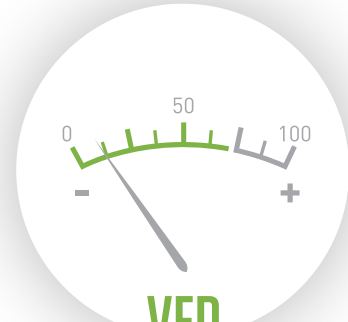
1. to change the frequency of the asynchronous electric motors in industrial application. Without the VFD these motors will run with constant speed as they get a constant frequency of 60Hz (50 Hz in Europe)
2. to convert the direct current of renewable energy systems to alternating current output to be sold to the National electricity network. This is a typical domestic application.



**VFD WITH PLC  
INTEGRATED**



**VFD INTEGRATED  
INTO THE MOTOR**



**VFD  
WITH PFC**



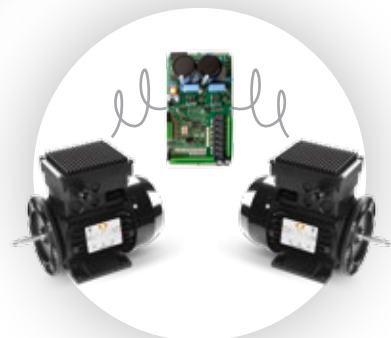
**VFD FOR INDUSTRIAL  
PHOTOVOLTAIC**

**COMBI VFD**  
*Control two motors*



**VFD  
LOW VOLTAGE**

*Inverter 24, 26 48Vdc*



# TVT D1-230

All in One

230 Vac VFD motor mountable



MODEL TVT D1-230		IMV/F 2004F#4	IMV/F 2007F#4	IMV/F 2011F#4	IMV/F 2015F#4	IMV/F 2022F#4
SIZES	IP54	[195x125xh95] mm			[255x170xh110] mm	
POWER SUPPLY	Voltage Vin	230Vac ± 15% single phase				
	Frequency	47 ÷ 63 Hz				
	EMC Compatibility	EN 61800-3				
	EMC Filter	Class A – Category C3				
	Protection	None				
OUTPUT	Current (A)	1,7	3,2	4,7	6,5	9,5
	Voltage	Three-phase 0 ÷ Vin				
	Frequency	0 ÷ 200 Hz				
	KW	0,4	0,75	1,1	1,5	2,2
	HP	0,5	1	1,5	2	3
CONTROL	Control method	burnt in voltage, high resolution synchronous pwm				
	Frequency Resolution	0,1 Hz digital				
	Frequency Precision	0,01% digital, 0,1% analog				
	Gear V/F	50 ÷ 960 Hz				
	Boost	0 ÷ 20%				
	Supporting	default 4KHz				
	Braking	On ramp, CC o DI				
	Surcharge capacity	100 ÷ 150 % (200% for 1 second)				
	Surcharge time	10 ÷ 60 S				
OPERATION	Control method and referring speed	Remote keyboard/HW input/ Serial TTL/ Analog input/ Potentiometer				
	Acc./dec. times	0,1 ÷ 99,9 S				
INPUT/OUTPUT	Input/Output	3 digital multifunctional optoinsulated input 1 serial TTL				
PROTECTION FUNCTIONS	Motor inverter block	Over voltage – Under voltage - Over current- Overload – Over temperature				
	7mo IGBT R Braking	No				
OPERATING CONDITIONS	Temperature of working room	-5 °C / +45 °C				
	Temperature of storage room	-15 °C / +80 °C				
	Relative humidity	20 ÷ 85 % No condensation				
	Height	Till 1000 m above sea level, no drift				
	Service	S1				
	Cooling system	Natural				
OPTIONAL BOARD	OPT_ONE	1 relay output 24Vdc 3A, 2 analog input set by dipswitch 0÷5Vdc 0÷10Vdc 0÷20mA 1 analog output 0÷5Vdc 1 serial Rs485				
	OPT_TWO	FILTER EMC / CLASS A – CATEGORY C23,2				

# TVT D2

All in One

230 or 460Vac VFD  
motor mountable



MODEL TVT D2		IMV/F 4307F#4	IMV/F 4315F#4	IMV/F 4322F#4	IMV/F 4330F#4	IMV/F 4337F#4
SIZES	IP54	[255x170xh110] mm				
POWER SUPPLY	Voltage Vin	400Vac ± 15% Three phase				
	Frequency	47 ÷ 63 Hz				
	EMC Compatibility	EN 61800-3				
	EMC Filter	Class A – Category C3				
	Protection	None				
OUTPUT	Current (A)	1,8	3,75	5,5	7,5	9,25
	Voltage	Three-phase 0 ÷ Vin				
	Frequency	0 ÷ 200 Hz				
	KW	0,75	1,5	2,2	3	3,7
	HP	1	2	3	4	5
CONTROL	Control method	V/F or Sensorless-Vector & Brushless sensorless or Brushless sensed				
	Frequency Resolution	0,1 Hz digital				
	Frequency Precision	± 0,1% ± 0,5 RPM				
	Gear V/F	50 ÷ 960 Hz				
	Boost	0 ÷ 20%				
	Supporting	4..14KHz V/F – 4..8KHz Vectorial – 10..16KHz Brushless				
	Braking	On ramp, CC o DI				
	Surcharge capacity	100 ÷ 150 % (200% for 1 second)				
Surcharge time	10 ÷ 60 S					
OPERATION	Control method and referring speed	Remote keyboard/HW input/ Serial TTL/ Analog input/ Potentiometer				
	Brushless sensed control method	With encoder line receiver or push-pull or through sensors hall effect				
	Acc./dec. times	0,1 ÷ 99,9 S				
INPUT/OUTPUT	Input/Output	3 digital multifunctional optoinsulated input 1 serial TTL				
PROTECTION FUNCTIONS	Motor inverter block	Over voltage – Under voltage - Over current- Overload – Over temperature				
	7mo IGBT R Braking	No				
OPERATING CONDITIONS	Temperature of working room	-5 °C / +45 °C				
	Temperature of storage room	-15 °C / +80 °C				
	Relative humidity	20 ÷ 85 % No condensation				
	Height	Till 1000 above sea level, no drift				
	Service	S1				S2
OPTIONAL BOARD	Cooling system	Natural				
	OPT_ONE	1 relay output 24Vdc 3A, 2 analog input set by dispswitch 0÷5Vdc 0÷10Vdc 0÷20mA 1 analog output 0÷5Vdc 1 serial/ serial Rs485				
	OPT_TWO	FILTER EMC CLASS A – CATEGORY C2				

# TVT D3

All in One

460Vac High Power VFD  
motor mountable



MODEL TVT D3		IMF 4337F#1	IMF 4355F#1	IMF 4375F#1	IMF 4399F#1	
SIZES	IP55	[170x255x170] mm				
POWER SUPPLY	Voltage Vin	400Vac ± 15% Three phase				
	Frequency	47 ÷ 63 Hz				
	EMC Compatibility	EN 61800-3				
	EMC Filter	Class A – Category C3				
	Protection	None				
MOTOR OUTPUT	Current (A)	9,2	13,7	18,7	25	
	Voltage	Trifase 0 ÷ Vin				
	Frequency	0 ÷ 200 Hz				
	KW	3,7	5,5	7,5	11	
	HP	5	7,5	10	15	
CONTROL	Control method	V/F or Sensorless-Vector				
	Frequency Resolution	0,1 Hz				
	Frequency Precision	± 0,1% ± 0,5 RPM				
	Timing	10 ms				
	Supporting	4..14KHz V/F – 4..8KHz Vectorial				
	Surcharge capacity	100 ÷ 150 % (200% for 1 second)				
	Surcharge time	10 ÷ 60 S				
OPERATION	Referring speed	Remote keyboard / HW inputs / Seriali / Analog input / Potentiometer				
	Acc./dec. times	0,001 ÷ 2,000 S				
INPUT/OUTPUT	Input/Output	3 digital input multifunction opto-isolated NPN				
PROTECTION FUNCTIONS	Motor inverter block	Over voltage – Under voltage - Over current- Overload – Over temperature				
	7th IGBT braking	No				
OPERATING CONDITIONS	Temperature of working	-5 °C / +45 °C				
	Temperature of storage	-15 °C / +80 °C				
	Relative humidity	20 ÷ 85 % no condensation				
	Height	Till 1000 m above sea level, no drift				
	Service	S1		S2		S3
	Cooling system	Natural		Forced		

# TVT D4-230

All in One

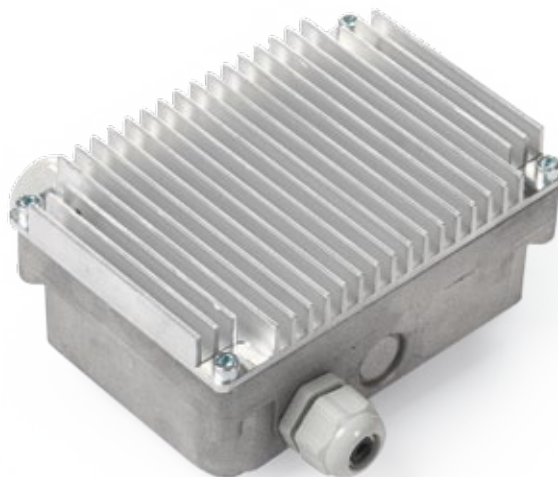
230Vac sensor-less vector  
motor mountable



MODEL TVT D4-230		IMF 2004F#4	IMF 2007F#4	IMF 2011F#4	IMF 2015F#4	IMF 2022F#4
SIZES	IPO0	[135x150Xh70] mm			[135x155Xh100] mm	
POWER SUPPLY	Voltage Vin	230Vac ± 15% single-phase				
	Frequency	47 ÷ 63 Hz				
	EMC Compatibility	EN 61800-3				
	EMC Filter	Class A – Category C3				
	Protection	None				
OUTPUT	Current (A)	1,8	3,4	5	6,8	10
	Voltage	Trifase 0 ÷ Vin				
	Frequency	0 ÷ 200 Hz				
	KW	0,4	0,75	1,1	1,5	2,2
	HP	0,5	1	1,5	2	3
CONTROL	Control method	V/F or Sensorless-Vector & Brushless sensorless or Brushless sensed				
	Frequency Resolution	0,1 Hz				
	Frequency Precision	± 0,1% ± 0,5 RPM				
	Response times	10 ms				
	Supporting	4..14KHz V/F – 4..8KHz Vectorial – 10..16KHz Brushless				
	Surcharge capacity	100 ÷ 150 % (200% for 1 second)				
	Surcharge time	10 ÷ 60 S				
OPERATION	Referring speed	Remote keyboard / HW inputs / RS485 or TTL owner / Analog input / Potentiometer				
	Brushless sensed control method	With encoder line receiver or push-pull or through sensors hall effect				
	Acc./dec. times	0,001 ÷ 2,000 S				
INPUT/OUTPUT	Input	3 NPN multifunction optoisolated digital inputs				
PROTECTION FUNCTIONS	Motor inverter block	Over current – Under voltage – Over voltage – Overload Over temperature				
	7th IGBT brake	No				
OPERATING CONDITIONS	Temperature of working	-5 °C / +45 °C				
	Temperature of storage	-15 °C / +80 °C				
	Relative humidity	20 ÷ 85 % No condensation				
	Height	Till 1000 m above sea level, no drift				
	Service	S1			S2	S3
	Cooling system	Natural				

# TVT D5-230

SmAll in One  
Tiny 230Vac VFD motor mountable



MODEL TVT D5-230		IMV/F 2004F#4	IMV/F 2007F#4	IMV/F 2011F#4	IMV/F 2015F#4	IMV/F 2022F#4
SIZES	IP54	[195x125xh95] mm			[255x170xh110] mm	
POWER SUPPLY	Voltage Vin	230Vac ± 15% single phase				
	Frequency	47 ÷ 63 Hz				
	EMC Compatibility	EN 61800-3				
	EMC Filter	Class A – Category C3				
	Protection	None				
OUTPUT	Current (A)	1,7	3,2	4,7	6,5	9,5
	Voltage	Three-phase 0 ÷ Vin				
	Frequency	0 ÷ 200 Hz				
	KW	0,4	0,75	1,1	1,5	2,2
	HP	0,5	1	1,5	2	3
CONTROL	Control method	burnt in voltage, high resolution synchronous pwm				
	Frequency Resolution	0,1 Hz digital				
	Frequency Precision	0,01% digital, 0,1% analog				
	Gear V/F	50 ÷ 960 Hz				
	Boost	0 ÷ 20%				
	Supporting	default 4KHz				
	Braking	On ramp, CC o DI				
	Surcharge capacity	100 ÷ 150 % (200% for 1 second)				
	Surcharge time	10 ÷ 60 S				
OPERATION	Control method and referring speed	Remote keyboard/HW input/ Serial TTL/ Analog input/ Potentiometer				
	Acc./dec. times	0,1 ÷ 99,9 S				
INPUT/OUTPUT	Input/Output	3 digital multifunctional optoinsulated input 1 serial TTL				
PROTECTION FUNCTIONS	Motor inverter block	Over voltage – Undervoltage - Over current- Overload – Overtemperature				
	7mo IGBT R Braking	No				
OPERATING CONDITIONS	Temperature of working room	-5 °C / +45 °C				
	Temperature of storage room	-15 °C / +80 °C				
	Relative humidity	20 ÷ 85 % No condensation				
	Height	Till 1000 m above sea level, no drift				
	Service	S1				
	Cooling system	Natural				
OPTIONAL BOARD	OPT_ONE	1 relay output 24Vdc 3A, 2 analog input set by dipswitch 0÷5Vdc 0÷10Vdc 0÷20mA 1 analog output 0÷5Vdc 1 serial Rs485				
	OPT_TWO	FILTER EMC / CLASS A – CATEGORY C23,2				



# TVT D6-230

SmALL in One  
Tiny 230Vac vectorial sensorless VFD motor mountable



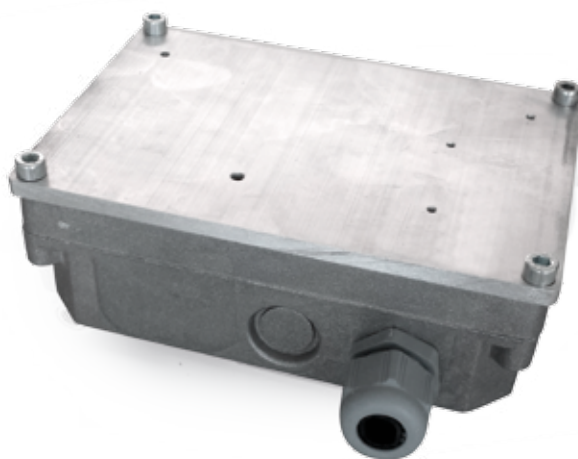
MODEL TVT D6-230		IMF 2004F#4	IMF 2007F#4	IMF 2011F#4	IMF 2015F#4	IMF 2022F#4
SIZES	IPO0	[135x150Xh70] mm			[135x155Xh100] mm	
POWER SUPPLY	Voltage Vin	230Vac ± 15% single-phase				
	Frequency	47 ÷ 63 Hz				
	EMC Compatibility	EN 61800-3				
	EMC Filter	Class A – Category C3				
	Protection	None				
OUTPUT	Current (A)	1,8	3,4	5	6,8	10
	Voltage	Trifase 0 ÷ Vin				
	Frequency	0 ÷ 200 Hz				
	KW	0,4	0,75	1,1	1,5	2,2
	HP	0,5	1	1,5	2	3
CONTROL	Control method	V/F or Sensorless-Vector & Brushless sensorless or Brushless sensed				
	Frequency Resolution	0,1 Hz				
	Frequency Precision	± 0,1% ± 0,5 RPM				
	Response times	10 ms				
	Supporting	4..14KHz V/F – 4..8KHz Vectorial – 10..16KHz Brushless				
	Surcharge capacity	100 ÷ 150 % (200% for 1 second)				
	Surcharge time	10 ÷ 60 S				
OPERATION	Referring speed	Remote keyboard / HW inputs / RS485 or TTL owner / Analog input / Potentiometer				
	Brushless sensed control method	With encoder line receiver or push-pull or through sensors hall effect				
	Acc./dec. times	0,001 ÷ 2,000 S				
INPUT/OUTPUT	Input	3 NPN multifunction optoisolated digital inputs				
PROTECTION FUNCTIONS	Motor inverter block	Over current – Under voltage – Over voltage – Overload Over temperature				
	7th IGBT brake	No				
OPERATING CONDITIONS	Temperature of working	-5 °C / +45 °C				
	Temperature of storage	-15 °C / +80 °C				
	Relative humidity	20 ÷ 85 % No condensation				
	Height	Till 1000 m above sea level, no drift				
	Service	S1			S2	S3
	Cooling system	Natural				

# TVT D7-LV

SmAll in One

Tiny low voltage VFD

Motor mountable



MODEL TVT D7-LV		IMF 2404F#6	IMF 3606F#6	IMF 4808F#6
SIZES	IP54	[135x150xh70] mm		
POWER SUPPLY	Voltage Vin	24 Vdc ± 10%	36 Vdc ± 10%	48 Vdc ± 10%
	EMC Compatibility	EN 61800-3		
	Protection	Fuse		
OUTPUT	Current (A)	17		
	Voltage	Three phase 0 ÷ Vin		
	Frequency	0 ÷ 200 Hz		
	KW	0,4	0,6	0,8
	HP	0,6	0,9	1,2
CONTROL	Control method	V/F or Sensorless-Vector or Brushless sensorless or Brushless sensed		
	Frequency Resolution	0,1 Hz		
	Frequency Precision	± 0,1% ± 0,5 RPM		
	Response times	10 ms		
	Supporting	4..14KHz V/F – 4..8KHz Vectorial – 10..16KHz Brushless		
	Overload capacity	100 ÷ 150 % (200% for 1 second)		
	Overload time	10 ÷ 60 S		
OPERATION	Referring speed	Remote keyboard / HW inputs / RS485 or TTL owner / Analog input / Potentiometer		
	Contro method Brushless sensed	With encoder line receiver or push-pull or hall effect sensors		
	Acc./dec. times	0,001 ÷ 2,000 S		
INPUT/OUTPUT	Inputs	3 digital inputs multifunction opto-isolated NPN		
PROTECTION FUNCTIONS	Motor inverter block	Over voltage – Under voltage – Over current - Overload Over temperature		
	7th IGBT braking resistor	No		
OPERATING CONDITIONS	Temperature of work	-5 °C / +45 °C		
	Temperature of storage	-15 °C / +80 °C		
	Relative humidity	20 ÷ 85 % No condensation		
	Height	Till 1000 m above sea level, no drift		
	Cooling system	Natural		

# TVT D11-230SV

All in One  
230Vac sensorless Vector  
VFD motor mountable



MODEL TVT D11-230		IMF 2004F#4	IMF 2007F#4	IMF 2011F#4	IMF 2015F#4	IMF 2022F#4
SIZES	IP54	[195x125Xh95] mm			[255x170xh110] mm	
POWER SUPPLY	Voltage Vin	230Vac ± 15% single-phase				
	Frequency	47 ÷ 63 Hz				
	EMC Compatibility	EN 61800-3				
	EMC Filter	Class A – Category C2				
	Protection	None or internal or panel fuse				
OUTPUT	Current (A)	1,7	3,2	4,7	6,5	9,5
	Voltage	Trifase 0 ÷ Vin				
	Frequency	0 ÷ 200 Hz				
	KW	0,4	0,75	1,1	1,5	2,2
	HP	0,5	1	1,5	2	3
CONTROL	Control method	Sensorless-Vector				
	Frequency Resolution	0,1 Hz				
	Frequency Precision	5%				
	Response times	10 ms				
	Torque	150% from 60RPM for max 60s				
	Supporting	Defaults 5KHz				
	Braking	On ramp, CC o DI				
	Surcharge capacity	100 ÷ 150% (200% for 1 second)				
Surcharge time	10 ÷ 60 S					
OPERATION	Control method and referring speed	Remote keyboard on board / HW input / Serial / Analog input / Potentiometer				
	Acc./dec. times	0,1 ÷ 99,9 S				
INPUT/OUTPUT	Input/Output	4 digital multifunctional optoinsulated output set by dipswitch PNP or NPN or self powered				
PROTECTION FUNCTIONS	Motor inverter block	Over voltage - Under voltage – Over current Overload - Over temperature				
	7mo IGBT R braking	No				
OPERATING CONDITIONS	Temperature of working room	-5 °C / +45 °C				
	Temperature of storage room	-15 °C / +80 °C				
	Relative humidity	20 ÷ 85 % No condensation				
	Height	Till 1000 m above sea level, no drift				
	Service	S1				
	Cooling system	Natural				
OPTIONAL BOARD	OPT_ONE	1 relay output 230Vac 3A, 1 analog output PWM 0 ÷ 5Vdc 0 ÷ 10Vdc, 1 analog input set by dipswitch 0 ÷ 5Vdc 0 ÷ 10Vdc 0 ÷ 20mA				
	OPT_TWO	Rs485 with owner's protocol ModBus				
	OPT_TREE	CanBus				

# TVT D11-460SV

All in One

460Vac sensorless vector VFD  
motor mountable



MODEL TVT D11-460SV		IMF 4307F#4	IMF 4315F#4	IMF 4322F#4	IMF 4330F#4	IMF 4337F#4
SIZES	IP54	[255x170xh110] mm				
POWER SUPPLY	Voltage Vin	400Vac ± 15% three phase				
	Frequency	47 ÷ 63 Hz				
	EMC Compatibility	EN 61800-3				
	EMC Filter	Class A – Category C2				
	Protection	none or internal or panel fuse				
OUTPUT	Current (A)	1,8	3,75	5,5	7,5	9,25
	Voltage	Three phase 0 ÷ Vin				
	Frequency	0 ÷ 200 Hz				
	KW	0,75	1,5	2,2	3,0	3,7
	HP	1	2	3	4	5
CONTROL	Control method	Sensorless-Vector				
	Frequency Resolution	0,1 Hz				
	Frequency Precision	5%				
	Response times	10 ms				
	Torque	150% from 60RPM for max 60s				
	Supporting	Defaults 5KHz				
	Braking	On ramp, CC o DI				
	Surcharge capacity	100 ÷ 150% (200% for 1 second)				
Surcharge time	10 ÷ 60 S					
OPERATION	Control method and referring speed	Remote keyboard on board / HW input / Serial / Analog input / Potentiometer				
	Acc./dec. times	0,1 ÷ 99,9 S				
INPUT/OUTPUT	Input/Output	4 digital multifunctional optoinsulated output set by dipswitch PNP or NPN or self powered				
PROTECTION FUNCTIONS	Motor inverter block	Over voltage - Under voltage – Over current Overload - Over temperature				
	7mo IGBT R braking	Yes				
OPERATING CONDITIONS	Temperature of working room	-5 °C / +45 °C				
	Temperature of storage room	-15 °C / +80 °C				
	Relative humidity	20 ÷ 85 % no condensation				
	Height	Till 1000 m above sea level, no drift				
	Service	S1				S2
	Cooling system	Natural				
OPTIONAL BOARD	OPT_ONE	1 relay output 230Vac 3A, 1 analog output PWM 0 ÷ 5Vdc 0 ÷ 10Vdc, 1 analog input set by dipswitch 0 ÷ 5Vdc 0 ÷ 10Vdc 0 ÷ 20mA				
	OPT_TWO	Rs485 with owner's protocol ModBus				
	OPT_TREE	CanBus				

# TVT D12-230

Wall V/F 230Vac VFD



MODEL TVT D12-230		PDV/F 2004F#4	PDV/F 2007F#4	PDV/F 2011F#4	PDV/F 2015F#4	PDV/F 2022F#4
SIZES	IP20	[192x84xh116] mm				
POWER SUPPLY	Voltage Vin	230Vac ± 15% single phase				
	Frequency	47 ÷ 63 Hz				
	EMC Compatibility	EN 61800-3				
	EMC Filter	Class A – Category C3				
	Protection	None				
OUTPUT	Current (A)	1,7	3,2	4,7	6,5	9,5
	Voltage	Three phase 0 ÷ Vin				
	Frequency	0 ÷ 200 Hz				
	KW	0,4	0,75	1,1	1,5	2,2
	HP	10,5	1	1,5	2	3
CONTROL	Control method	burnt in voltage, high resolution synchronous pwm				
	Frequency Resolution	0,1 Hz digital				
	Frequency Precision	0,01% digital, 0,1% analog				
	Gear V/F	50 ÷ 960 Hz				
	Boost	0 ÷ 20%				
	Supporting	default 4KHz				
	Braking	On ramp, CC o DI				
	Surcharge capacity	100 ÷ 150% (200% for 1 second)				
	Surcharge time	10 ÷ 60 S				
OPERATION	Control method and referring speed	Remote keyboard/HW input/ Serial/ Analog input/ Potentiometer				
	Tempi di acc. / dec. Acc./dec. Times	0,1 ÷ 99,9 S				
INPUT/OUTPUT	Input/Output	6 digital multifunctional optoisolated input 4 digital multifunctional optoisolated output 1 analog input 0÷20mA 0÷5Vdc 0÷10Vdc 2 serial Rs485				
PROTECTION FUNCTIONS	Motor inverter block	voltage –Under voltage - Over current- Overload –Over temperature				
	7mo IGBT R braking	No				
OPERATING CONDITIONS	Temperature of working room	-5 °C / +45 °C				
	Temperature of storage room	-15 °C / +80 °C				
	Relative humidity	20 ÷ 85 % no condensation				
	Height	Till 1000 m above sea level, no drift				
	Service	S1				
	Cooling system	Natural			Forced	
OPTIONAL BOARD	OPT_ONE	6 optoisolated multifunction digital input 4 optoisolated multifunction digital output 2 driver step by step 0,5AxF e 2,5AxF				

# TVT-D13-230SV

IP20 Sensorless Vector 230Vac VFD



MODEL TVT D13-230SV		PDV 2004F#4	PDV 2007F#4	PDV 2011F#4	PDV 2015F#4	PDV 2022F#4
SIZES	IP20	[192x84xh116] mm				
POWER SUPPLY	Voltage Vin	230Vac ± 15% single phase				
	Frequency	47 ÷ 63 Hz				
	EMC Compatibility	EN 61800-3				
	EMC Filter	Class A – Category C3				
	Protection	None				
OUTPUT	Current (A)	1,7	3,2	4,7	6,5	9,5
	Voltage	Three phase 0 ÷ Vin				
	Frequency	0 ÷ 200 Hz				
	KW	0,4	0,75	1,1	1,5	2,2
	HP	0,5	1	1,5	2	3
CONTROL	Control method	Vector sensorless				
	Frequency Resolution	0,1 Hz				
	Frequency Precision	5%				
	Response time	10 ms				
	Torque	150% from 60RPM for max 60 s				
	Supporting	default 5KHz				
	Braking	On ramp, CC o DI				
	Surcharge capacity	100 ÷150% (200% for 1 second)				
OPERATION	Surcharge time	10 ÷ 60 S				
	Control method and referring speed	Remote keyboard/HW input/ Serial/ Analog input/ Potentiometer				
INPUT/OUTPUT	Acc./dec. Times	0,1 ÷ 99,9 S				
	Input/Output	6 digital multifunctional optoisolated input 4 digital multifunctional optoisolated output 1 analog input 0÷20mA 0÷5Vdc 0÷10Vdc 2 serial Rs485				
PROTECTION FUNCTIONS	Motor inverter block	voltage –Under voltage - Over current- Overload –Over temperature				
	7mo IGBT R braking	No				
OPERATING CONDITIONS	Temperature of working room	-5 °C / +45 °C				
	Temperature of storage room	-15 °C / +80 °C				
	Relative humidity	20 ÷ 85 % no condensation				
	Height	Till 1000 m above sea level, no drift				
	Service	S1				
	Cooling system	Natural			Forced	
OPTIONAL BOARD	OPT_ONE	6 optoisolated multifunction digital input 4 optoisolated multifunction digital output 2 driver step by step 0,5AxF e 2,5AxF				

# TVT D14-230

IP00 MTO 230Vac VFD



MODEL D14-MTO		PDA 2004F#4	PDA 2007F#4	PDA 2011F#4	PDA 2015F#4	PDA 2022F#4
SIZES	IP00	[173x200x145] mm				
POWER SUPPLY	Voltage Vin	230Vac ± 15% monofase/ single phase				
	Frequency	47 ÷ 63 Hz				
	EMC Compatibility	EN 61800-3				
	EMC Filter	Class A – Category C2				
	Protection	None				
OUTPUT	Current (A)	1,7	3,2	4,7	6,5	9,5
	Voltage	Three phase 0 ÷ Vin				
	Frequency	0 ÷ 200 Hz				
	KW	0,4	0,75	1,1	1,5	2,2
	HP	0,5	1	1,5	2	3
CONTROL	Control method	impressed voltage, high resolution synchronous pwm				
	Frequency Resolution	0,1 Hz digital				
	Frequency Precision	0,01% digital, 0,1% analog				
	Gear V/F	50÷ 200 Hz				
	Boost	0 ÷ 20%				
	Supporting	default 4KHz				
	Braking	On ramp, CC o DI				
	Surcharge capacity	100 ÷150% (200% for 1 second)				
OPERATION	Surcharge time	10 ÷ 60 S				
	Control method and referring speed	Remote keyboard/HW input/ Serial TTL/ Analog input/ Potentiometer				
INPUT/OUTPUT	Acc./dec. Times	0,1 ÷ 99,9 S				
	Ingressi/Uscite Input/Output	3 digital optoinsulated multifunction input 1 serial TTL – 1 serial Rs485				
PROTECTION FUNCTIONS	Motor inverter block	Over voltage –Under voltage - Over current- Overload –Over temperature				
	7mo IGBT R braking	No				
OPERATING CONDITIONS	Temperature of working room	-5 °C / +45 °C				
	Temperature of storage room	-15 °C / +80 °C				
	Relative humidity	20 ÷ 85 % no condensation				
	Height	Till 1000 m above sea level, no drift				
	Service	S1				
	Cooling system	Forced				
OPTIONAL BOARD	OPT_ONE	1 relay output 24Vdc 3A, 2 analog input set by dipswitch 0÷5Vdc 0÷10Vdc 0÷20mA 1 analog output 0÷5Vdc 1 serial Rs485				

# TVT D14-460

IP00 MTO 460Vac VFD



MODEL TVT D14-460		PDA 4315F#4	PDA 4322F#4	PDA 4337F#4	PDA 4355F#4	PDA 4375F#4
SIZES	IP00	[173x200x145] mm				
POWER SUPPLY	Voltage Vin	400Vac ± 15% Three phase				
	Frequency	47 ÷ 63 Hz				
	EMC Compatibility	EN 61800-3				
	EMC Filter	Class A – Category C2				
	Protection	None				
OUTPUT	Current (A)	3,75	5,5	9,25	13,75	18,75
	Voltage	Three phase 0 ÷ Vin				
	Frequency	0 ÷ 200 Hz				
	KW	1,5	2,2	3,7	5,5	7,5
	HP	2	3	5	7,5	10
CONTROL	Control method	burnt in voltage, high resolution synchronous pwm				
	Frequency Resolution	0,1 Hz digital				
	Frequency Precision	0,01% digital, 0,1% analog				
	Gear V/F	50 ÷ 200 Hz				
	Boost	0 ÷ 20%				
	Supporting	default 4KHz				
	Braking	On ramp, CC o DI				
	Surcharge capacity	100 ÷ 150% (200% for 1 second)				
OPERATION	Surcharge time	10 ÷ 60 S				
	Control method and referring speed	3 digital multifunctional optoinsulated input 1 serial TTL – 1 serial Rs485				
INPUT/OUTPUT	Acc./dec. Times	0,1 ÷ 99,9 S				
	Input/Output	3 digital optoinsulated multifunction input 1 serial TTL – 1 serial Rs485				
PROTECTION FUNCTIONS	Motor inverter block	Over voltage – Under voltage - Over current- Overload – Over temperature				
	7mo IGBT R braking	No				
OPERATING CONDITIONS	Temperature of working room	-5 °C / +45 °C				
	Temperature of storage room	-15 °C / +80 °C				
	Relative humidity	20 ÷ 85 % no condensation				
	Height	Till 1000 m above sea level, no drift				
	Service	S1				
	Cooling system	Forced				
OPTIONAL BOARD	OPT_ONE	1 relay output 24Vdc 3A, 2 analog input set by dipswitch 0÷5Vdc 0÷10Vdc 0÷20mA 1 analog output 0÷5Vdc 1 serial Rs485				



# TVT D15

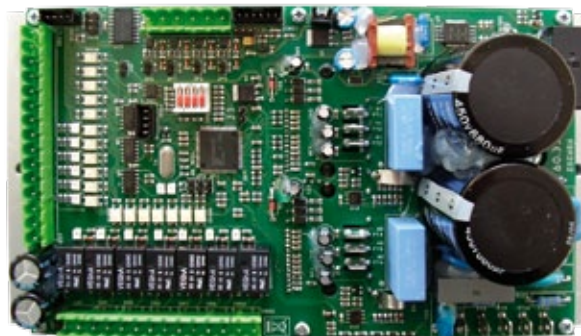
## IP00 MTO 400Vac High Power VFD



MODEL TVT D15		PDA43 0015F#4	PDA43 0018F#4	PDA43 0022F#4	PDA43 0030F#4
SIZES	IP00	[300x345xh160] mm			
POWER SUPPLY	Voltage Vin min	500 Vdc			
	Voltage Vin max	750 Vdc			
	Protection & Filter	None, to be provided in the electrical cabinet			
OUTPUT	Current (A)	25	30	36	50
	Voltage	Three phase Vin, max 400Vac			
	Frequency	35 ÷ 55 Hz			
	KW	15	18	22	30
	HP	20	24	30	40
CONTROL	Control method	MPPT 500-600			
	Frequency Resolution	0,1 Hz			
	Supporting	2,5KHz (default)			
	Surcharge capacity	100 ÷ 150 % (200% for 1 second)			
	Surcharge time	0 ÷ 60 S			
OPERATION	Referring speed	photovoltaic energy			
	Acc / dec times	0 ÷ 60 S			
INPUT / SERIAL	Input	3 digital input multifunction opto-isolated NPN			
	Serial	Rs485 for control panel & Rs485 for multi-pumps system			
PROTECTION FUNCTIONS	Motor inverter block	Over voltage – Under voltage Over current – Over load – Over temperature			
	7mo IGBT R braking	Yes			
OPERATING CONDITIONS	Temperature of working	-5 °C / +45 °C			
	Temperature of storage	-15 °C / +80 °C			
	Relative humidity	20 ÷ 85 % no condensation			
	Height	Till 1000 m above sea level, no drift			
	Cooling system	Forced			
OPTIONAL BOARD	OPT_ONE	1 relay output 24Vdc 3A, 2 analog input set by dipswitch 0÷5Vdc 0÷10Vdc 0÷20mA			
	OPT_TWO	1 relay output 24Vdc 3A, 2 analog input set by dipswitch 0÷5Vdc 0÷10Vdc 0÷20mA 1 analog output 0÷5Vdc 1 serial Rs485			
	OPT_THREE	4 relay output 250Vac 5A 2 analog input set by dipswitch 0÷5Vdc 0÷10Vdc 0÷20mA			

# TVT D16

General Purpose  
2 Wall 230Vac VFD in One



MODEL TVT D16		C020 04/22F#1	C020 07/22F#1	C020 11/22F#1	C020 15/22F#1
SIZES	IP00	[120x200xh120] mm			
POWER SUPPLY	Voltage Vin	230Vac ± 15% single-phase			
	Frequency	47 ÷ 63 Hz			
	EMC Compatibility	EN 61800-3			
	EMC Filter	Class A – Category C3			
	Protection	None			
MOTOR OUTPUT	Current (A)	1,7 e 9,5	3,2 e 9,5	4,7 e 9,5	6,5 e 9,5
	Voltage	Three-phase 0 ÷ Vin			
	Frequency	0 ÷ 200 Hz			
	KW	1 from 0,4 and 1 from 2,2	1 from 0,75 and 1 from 2,2	1 from 1,1 and 1 from 2,2	1 from 1,5 and 1 from 2,2
	HP	1 from 0,5 and 1 from 3	1 from 1 and 1 from 3	1 from 1,5 and 1 from 3	1 from 2 and 1 from 3
	CONTROL	Control method	Burnt in voltage, high resolution pwm		
Frequency Resolution		0,1 Hz digital			
Frequency Precision		0,01% digital, 0,1% analog			
Gear V/F		50÷ 960 Hz			
Boost		0 ÷ 20%			
Supporting		default 4KHz			
Braking		On ramp, CC o DI			
Surcharge capacity		100 ÷ 150 % (200% per 1 second)			
OPERATION	Control method and referring speed	Remote keyboard/HW input/ Serial TTL/ Analog input/ Potentiometer			
	Acc./dec. times	0,1 ÷ 99,9 S			
INPUT/OUTPUT	Input/Output	6 digital multifunctional optoinsulated input 6 relay output 24Vdc 3A 4 analog input 0÷20mA 0÷5Vdc 0÷10Vdc			
PROTECTION FUNCTIONS	Motor inverter block	Over voltage – Under voltage – Over current- Overload – Over temperature			
	7mo IGBT R braking	No			
OPERATING CONDITIONS	Temperature of working room	-5 °C / +45 °C			
	Temperature of storage room	-15 °C / +80 °C			
	Relative humidity	20 ÷ 85 % no condensation			
	Height	Till 1000 m above sea level, no drift			
	Service	S2			
	Cooling system	Natural			

# EM42

## Packaging

2 Motor 230Vac VFD in One



MODEL EM42		COP20 04/07F#1	COP20 04/15F#1	COP20 07/15F#1	COP20 07/22F#1
SIZES	IPO0	[160x300xh80] mm			
POWER SUPPLY	Voltage Vin	230Vac ± 15% three-phase			
	Frequency	47 ÷ 63 Hz			
	EMC Compatibility	EN 61800-3			
	EMC Filter	Class A (C2 o C3)			
	Protection	None			
OUTPUT	Current (A)	1,7 and 3,2	1,7 and 6,5	3,2 and 6,5	3,2 and 9,5
	Voltage	Three phase 0 ÷ Vin			
	Frequency	0 ÷ 200 Hz			
	KW	0,4 and 0,7	0,4 and 1,5	0,75 and 1,5	0,75 and 2,2
	HP	0,5 and 1	0,5 and 2	1 and 2	1 and 3
CONTROL	Control method	V/F with Space Vector Modulation			
	Frequency Resolution	0,1 Hz			
	Frequency Precision	0,01% digital, 0,1% analog			
	Gear V/F	50 ÷ 200 Hz			
	Boost	0 ÷ 30 %			
	Supporting	default 4KHz			
	Braking	On ramp			
	Surcharge capacity	(200% per 1 second)			
OPERATION	Surcharge time	None			
	Control method and referring speed	Remote keyboard/HW input/ Serial/ Analog input/ Potentiometer			
INPUT/OUTPUT	Acc./dec. times	0,1 ÷ 99,9 S			
	Input/Output	11 digital optoinsulated input 2 analog optoinsulated input Optional: 3 digital optoinsulated input 2 digital optoinsulated input 1 relay output			
PROTECTION FUNCTIONS	Motor inverter block	Over voltage - Under voltage - Over current - Overload - Over temperature			
	7mo IGBT braking resistance	No			
OPERATING CONDITIONS	Temperature of working room	-5 °C / +45 °C			
	Temperature of storage room	-15 °C / +80 °C			
	Relative humidity	20 ÷ 85 % no condensation			
	Height	Till 1000 m above sea level, no drift			
	Service	S2			
	Cooling system	Natural			

# EM13

## Wall specific vectorial sensorless VFD



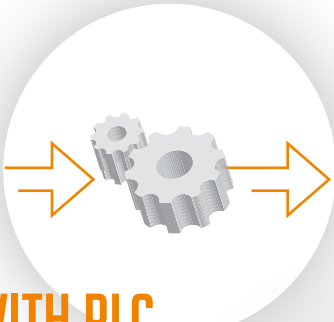
MODEL EM13		GEN 4315F#5	GEN 4322F#5	GEN 4337F#5	GEN 4355F#5	GEN 4375F#5
SIZES	IPO0 without a heat sink	[130x210x80] mm				
POWER SUPPLY	Tensione/Voltage Vin	400Vac ± 15% three -phase				
	Frequenza/Frequency	47 ÷ 63 Hz				
	Compatibilità/ Compatibility EMC	EN 61800-3				
	Filtro/Filter EMC	Class A (C2 e C3)				
	Protezione/Protection	None				
OUTPUT	Current (A)	3,75	5,5	9,25	13,75	18,75
	Voltage	Three -phase 0 ÷ Vin				
	Frequency	0 ÷ 200 Hz				
	KW	1,5	2,2	3,7	5,5	7,5
	HP	2	3	5	7,5	10
CONTROL	Control method	V/F or Sensorless Vector				
	Frequency Resolution	0,1 Hz				
	Frequency Precision	5%				
	Response times	10 ms				
	Torque	150% from 60 rpm for max 60 S (on Vect mode)				
	Supporting	default 4KHz				
	Braking	On ramp, CC o DI				
	Surcharge capacity	100 ÷ 150% (200% for 1 second)				
	Surcharge time	10 ÷ 60 S				
OPERATION	Control method and referring speed	Remote keyboard on board/HW input/ Serial/ Analog input/ Potentiometer				
	Acc./dec. Times	0,1 ÷ 99,9 S				
INPUT/OUTPUT	Input/Output	V/F 3 digital optoinsulated input –TTL connection to remote small keyboard Vect 6 digital optoinsulated input – 1 analog input –relay output–TTL connection to remote small keyboard – RS485 optional				
PROTECTION FUNCTIONS	Motor inverter block	Over voltage - Under voltage - Over current- Overload –Over temperature				
	7mo IGBT braking resistance	Yes				
OPERATING CONDITIONS	Temperature of working room	-5 °C / +45 °C				
	Temperature of storage room	-15 °C / +80 °C				
	Relative humidity	20 ÷ 85 % no condensation				
	Height	Till 1000 m above sea level, no drift				
	Cooling system	Natural				

# Drives for PM motors

## TVT - PM

PM Drive is an electronic device having AC Drive functions with higher performance on firmware and hardware.  
The Pm motors have mainly three advantages:

1. Smaller dimensions
2. It's a synchronous motor, it accomplishes strictly the orders of the drive in terms of torque, acceleration and deceleration according to the application.
3. Top efficiency makes it perfect to meet the efficiency norms.



### VFD WITH PLC INTEGRATED

*Gamma Inverter con PLC integrato*



### VFD INTEGRATED INTO THE MOTOR

*Gamma Inverter per alloggiamento su motore*

### VFD WITH PFC

*Gamma Inverter con filtro integrato*



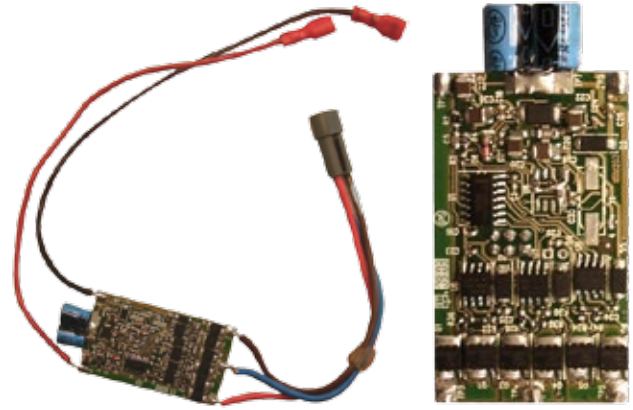
### VFD LOW VOLTAGE

*Gamma Inverter bassa tensione 12, 24 Vdc.*



# EM51

## Sensorless DC brushless drive



MODEL EM51		GEN 4315F#5
SIZES	IPO0 without a heat sink and without cable	[57x33xh18] mm
POWER SUPPLY	Voltage Vin	12Vdc ± 15%
	Cable length	[15÷25] m
OUTPUT	Current (A)	38
	Voltage	Three phase 0 ÷ Vin
	RPM	According to the engine
	cable length	[1÷4] m
CONTROL	Control method	Brushless sensorless
	Velocity precision	± 5%
	Response times	10 ms
	Supporting	10KHz
OPERATION	Referring speed	default in the firmware
	Control method	sensorless
	Acc./dec. Times	0,1 ÷ 10,0 S default in the firmware
PROTECTION FUNCTIONS	Input	3 multifunction digital input
	Output	1 output with led display for operation and alarm
OPERATION	Blocks	Overcurrent
OPERATING CONDITIONS	Temperature of working room	-5 °C / +45 °C
	Temperature of storage room	-15 °C / +80 °C
	Relative humidity	20 ÷ 85 % no condensation
	Height	Till 1000 m above sea level, no drift
	Service	S1
	Cooling system	Natural

# EM09-230

Sensorless or sensed 230Vac DC brushless drive motor mountable



MODEL EM09-230		IMF 2004F#4	IMF 2007F#4	IMF 2011F#4	IMF 2015F#4	IMF 2022F#4
SIZES	IPO0	[135x150Xh70] mm			[135x155Xh100] mm	
POWER SUPPLY	Voltage Vin	230Vac ± 15% single-phase				
	Frequency	47 ÷ 63 Hz				
	EMC Compatibility	EN 61800-3				
	EMC Filter	Class A – Category C3				
	Protection	None				
OUTPUT	Current (A)	1,8	3,4	5	6,8	10
	Voltage	Trifase 0 ÷ Vin				
	Frequency	0 ÷ 200 Hz				
	KW	0,4	0,75	1,1	1,5	2,2
	HP	0,5	1	1,5	2	3
CONTROL	Control method	V/F or Sensorless-vector & Brushless sensorless or Brushless sensed				
	Frequency Resolution	0,1 Hz				
	Frequency Precision	± 0,1% ± 0,5 RPM				
	Response times	10 ms				
	Supporting	4..14KHz V/F – 4..8KHz Vectorial – 10..16KHz Brushless				
	Surcharge capacity	100 ÷ 150 % (200% for 1 second)				
	Surcharge time	10 ÷ 60 S				
OPERATION	Referring speed	Remote keyboard / HW inputs / RS485 or TTL owner / Analog input / Potentiometer				
	Brushless sensed control method	With encoder line receiver or push-pull or through sensors hall effect				
	Acc./dec. times	0,001 ÷ 2,000 S				
INPUT/OUTPUT	Input	3 NPN multifunction optoisolated digital inputs				
PROTECTION FUNCTIONS	Motor inverter block	Over current – Under voltage – Over voltage – Overload Over temperature				
	7th IGBT brake	No				
OPERATING CONDITIONS	Temperature of working	-5 °C / +45 °C				
	Temperature of storage	-15 °C / +80 °C				
	Relative humidity	20 ÷ 85 % No condensation				
	Height	Till 1000 m above sea level, no drift				
	Service	S1			S2	S3
	Cooling system	Natural				

# EM09-460

Sensorless or sensed 460Vac  
DC brushless drive  
motor mountable



MODEL EM09-460		IMV/F 4307F#4	IMV/F 4315F#4	IMV/F 4322F#4	IMV/F 4330F#4	IMV/F 4337F#4
SIZES	IP54	[255x170xh110] mm				
POWER SUPPLY	Voltage Vin	400Vac ± 15% Three phase				
	Frequency	47 ÷ 63 Hz				
	EMC Compatibility	EN 61800-3				
	EMC Filter	Class A – Category C3				
	Protection	None				
OUTPUT	Current (A)	1,8	3,75	5,5	7,5	9,25
	Voltage	Three-phase 0 ÷ Vin				
	Frequency	0 ÷ 200 Hz				
	KW	0,75	1,5	2,2	3	3,7
	HP	1	2	3	4	5
CONTROL	Control method	V/F or Sensorless-Vector & Brushless sensorless or Brushless sensed				
	Frequency Resolution	0,1 Hz digital				
	Frequency Precision	± 0,1% ± 0,5 RPM				
	Gear V/F	50 ÷ 960 Hz				
	Boost	0 ÷ 20%				
	Supporting	4..14KHz V/F – 4..8KHz Vectorial – 10..16KHz Brushless				
	Braking	On ramp, CC o DI				
	Surcharge capacity	100 ÷ 150 % (200% for 1 second)				
Surcharge time	10 ÷ 60 S					
OPERATION	Control method and referring speed	Remote keyboard/HW input/ Serial TTL/ Analog input/ Potentiometer				
	Brushless sensed control method	With encoder line receiver or push-pull or through sensors hall effect				
	Acc./dec. times	0,1 ÷ 99,9 S				
INPUT/OUTPUT	Input/Output	3 digital multifunctional optoinsulated input 1 serial TTL				
PROTECTION FUNCTIONS	Motor inverter block	Over voltage – Under voltage - Over current- Overload – Over temperature				
	7mo IGBT R Braking	No				
OPERATING CONDITIONS	Temperature of working room	-5 °C / +45 °C				
	Temperature of storage room	-15 °C / +80 °C				
	Relative humidity	20 ÷ 85 % No condensation				
	Height	Till 1000 above sea level, no drift				
	Service	S1				S2
	Cooling system	Natural				
OPTIONAL BOARD	OPT_ONE	1 relay output 24Vdc 3A, 2 analog input set by dispswitch 0÷5Vdc 0÷10Vdc 0÷20mA 1 analog output 0÷5Vdc 1 serial/ serial Rs485				
	OPT_TWO	FILTER EMC CLASS A – CATEGORY C2				



# EM61

## IP20 sensored sinusoidal brushless drive

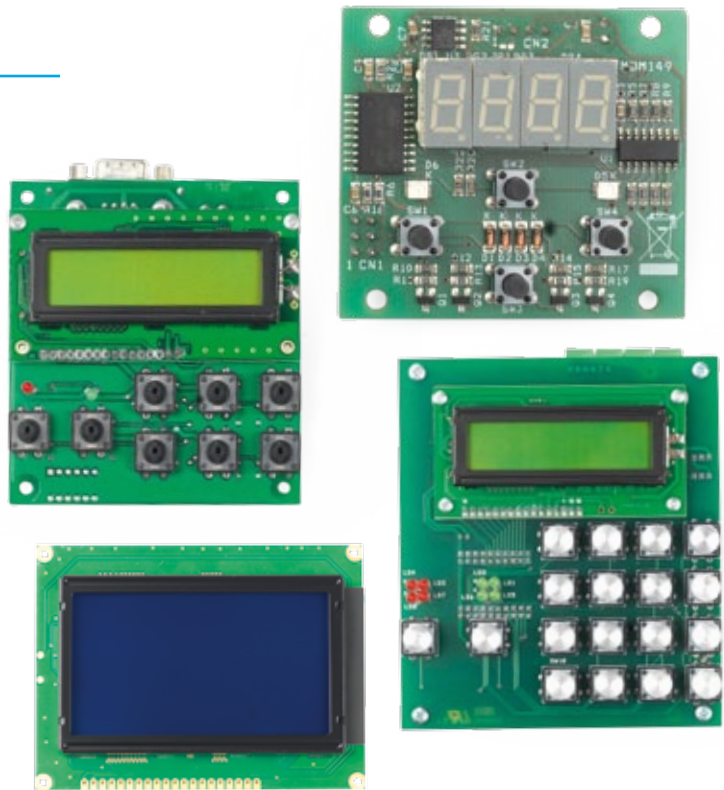


MODEL EM61		BRAC-SR 2004F#4	BRAC-SR 2007F#4	BRAC-SR 2011F#4	BRAC-SR 2015F#4	BRAC-SR 2022F#4
SIZES	IP20	[192x84xh116] mm				
POWER SUPPLY	Voltage Vin	230Vac ± 15% single phase				
	Frequency	47 ÷ 63 Hz				
	EMC Compatibility	EN 61800-3				
	EMC Filter	Class A – Category C3				
	Protection	Bus available for support on the power supply in case of power failure				
OUTPUT	Current (A)	1,7	3,2	4,7	6,5	9,5
	Voltage	Three-phase 0 ÷ Vin				
	Frequency	0 ÷ 200 Hz				
	KW	0,4	0,75	1,1	1,5	2,2
	HP	0,5	1,0	1,5	2	3
CONTROL	Control method	Brushless sensored				
	Frequency Resolution	0,1 Hz				
	Frequency Precision	± 0,1% ± 0,5 RPM				
	Response times	10 ms				
	Torque	150% from 0 RPM for max 60 s				
	Supporting	default 10KHz				
	Surcharge capacity	100 ÷ 150 % (200% per 1 second)				
	Surcharge time	10 ÷ 60 S				
OPERATION	Referring speed	Remote keyboard / HW input/ Rs485 or Canbus owners / Analog input / Potentiometer				
	Control method	By incremental encoder Endat 2.2 or encoder SSI are optionals				
	Acc / Dec Times	0,001 ÷ 2,000 S				
INPUT/OUTPUT	Input	5 multifunction digital optoinsulated input 1 analog input 0÷20mA 0÷5Vdc 0÷10Vdc 3 relay output 24Vdc 3A 1 digital output open collector				
PROTECTION FUNCTIONS	Motor inverter block	Over voltage - Under voltage - Over current- Overload Over temperature - PTC engine - short between phases				
	7mo IGBT R Braking	SI				
OPERATING CONDITIONS	Temperature of working room	-5 °C / +45 °C				
	Temperature of storage room	-15 °C / +80 °C				
	Relative humidity	20 ÷ 85 % No condensation				
	Height	Fino a/ Till 1000 m. above sea level, sno drift				
	Service	SI				
	Cooling system	Natural		Forced		

# TVT HMI

## Human Machine Interface

The Human Machine Interface are electronic devices, the communication with our AC - DC Drives and PM Drives gives the functioning report of the Drives to the user. The HMI adjust the parameterization of the Drives to get a perfect performances of the machine. The HMI reports errors and specific alerts to the machine and/or alerts of the Drives.



MODEL TVT HMI		HMI-8LCD	HMI-18LCD	HMI-7S	HMI-GRAPH
SIZES	IP00	[94x84xP45] mm	[125x108xP50]mm	[50x56xP35] mm	[90x100xP30] mm
POWER SUPPLY	Voltage Vin	5Vdc	24Vdc	5Vdc	5Vdc
DISPLAY	Typology	1 LCD 2 lines for 16 characters	1 LCD 2 lines for 16 characters	4 modules, 7 segments	64x128 dot
	Colour	Green	Green	Red	Blue
	Backlight	Yes white	Yes white	no	Yes white
	Vin 2 voltage backlight	24Vdc	-	-	-
KEYS	Quantity	8	18	4	6
	Type	Mechanical inner	Mechanical inner	Mechanical inner	External membrane
COMMUNICATION	Serial	Rs485	Rs485	TTL o Rs485	TTL o Rs485
ADDITIONAL FEATURES	Optional	-	-	-	EEProm 1M And date clock circuit
OPERATING CONDITIONS	Temperature of working room	-5 °C / +45 °C			
	Temperature of storage room	-15 °C / +80 °C			
	Relative humidity	20 ÷ 85 % no condensation			
	Height	Till 1000 m above sea level, no drift			
	Service	S1			
	Cooling system	Natural			



# TV+ AMERICA

Comparative sheet

# Comparative sheet

PAGE	PRODUCT NAME	LOGGING	VOLTAGE RANGE	FILTER	POWER RANGE	CONTROL SYSTEM
4	D1	IP54 and IP55 on motor	230Vac and phot.	C3	0,4kW÷2,2kW	V/F
5	D2	IP54 and IP55 on motor	230 and 400Vac and phot.	C3	0,75kW÷3.0kW	V/F o Vector sensorless
6	D3	IP55 on motor	230 and 400Vac	C3	3,7kW÷11kW	V/F o Vector sensorless
7	D4	IP54 and IP55 for motor	230Vac and phot.	C3	0,4kW÷2,2kW	V/F o Vector sensorless
8	D5	IP55 V. changing tires with flat dissipator medium or tall	230Vac	C3	0,4kW÷2,2kW	V/F
9	D6	IP55 V. changing tires with flat dissipator medium or tall	230Vac	C3	0,4kW÷2,2kW	V/F o Vector sensorless
10	D7-LV	IP55 V.changing tires with flat dissipator medium or tall	24÷48Vdc	C3	0,4kW÷0,8kW	V/F o Vector sensorless
11	D11-230SV	IP54 e IP55 on motor	230Vac	C2	0,4kW÷2,2kW	Vector sensorless
12	D11-460SV	IP54 and IP55 on motor	400Vac	C2	1,5kW÷3,7kW	Vector sensorless
13	D12	IP20 on panel	230Vac	C3	0,4kW÷2,2kW	V/F
14	D13SV	IP20 on panel	230Vac	C3	0,4kW÷2,2kW	Vector sensorless
15	D14-230	IP00 on panel	230 and phot.	C2	0,4kW÷2,2kW	V/F
16	D14-460	IP00 on panel	400Vac and phot.	C2	0,75kW÷11.0kW	V/F up to 5,5kW, vector over
18	D15	IP00 on panel	400Vac and phot.	C2	15kW÷55kW	Vettoriale sensorless
19	D16	IP00 on panel	230Vac	C3	2X (0,4kW÷2,2kW)	V/F
20	EM42	IP00 on panel	230Vac	C2	2X (0,4kW÷2,2kW)	V/F
21	EM13	IP00 on panel	230 and 400Vac	C2	1,5kW÷11kW	Vector sensorless
22	EM51	IP00 on panel	12Vdc	C3	150W	DC brushless sensorless
23	EM09-230	IP54 and IP55 on motor	230Vac and phot.	C3	0,4kW÷2,2kW	V/F o vector sensorless or DC brushless sensorless e sensed
24	EM09-460	IP54 and IP55 on motor	400Vac	C3	1,5kW÷3,7kW	V/F o vector sensorless or DC brushless sensorless e sensed
25	EM61	IP20 on panel	230Vac	C3	0,4kW÷2,2kW	Sinusoidal brushless sensed
26	TVT HMI	IP00, IP00 on panel, IP20 remote	-	-	-	-

 Drive for AC motors

 Drive for PM motors

 HMI

INPUT	OUTPUT	ANALOG INPUT	SERIAL DOOR	SEVENTH BRAKE IGBT	OPTIONAL EXPANSION
3	0	0	1 TTL	NO	10 - 1AI - 1AO 1 Rs485 - C2 filter
3	0	0	1 TTL	NO	10 - 1AI - 1AO 1 Rs485 - C2 filter
3	0	0	1 TTL	NO	10 - 1AI - 1AO 1 Rs485 - C2 filter
3	0	0	1 TTL	NO	10 - 1AI - 1AO 1 Rs485 - C2 filter
3	0	0	1 TTL	NO	10 - 1AI - 1AO
3	0	0	1 TTL	NO	10 - 1AI - 1AO
3	0	0	1 TTL	NO	10 - 1AI - 1AO
4	0	0	1 TTL	NO	10 - 1AI - 1AO 1 Rs485 - 1 Canbus
4	0	0	1 TTL	YES	10 - 1AI - 1AO 1 Rs485 - 1 Canbus
8	4	1	2 Rs485	NO	8I - 4O - 2 driver P-P
8	4	1	2 Rs485	NO	8I - 4O - 2 driver P-P
3	0	0	1 TTL, 1 Rs485	NO	40 - 2AI
3	0	0	1 TTL, 1 Rs485	NO	40 - 2AI
3	0	0	1 TTL, 1 Rs485	YES	40 - 2AI
6	6	4	1 TTL	NO	NO
11	0	2	1 TTL	NO	NO
6	1	1	1 TTL, 1 Rs485	YES	NO
3	1	0	NO	NO	NO
3	0	0	1 TTL	OPTIONAL	10 - 1AI - 1AO 1 Rs485 - C2 filter
3	0	0	1 TTL	NO	10 - 1AI - 1AO 1 Rs485 - C2 filter
5	4	1	1 RS485	YES	NO
-	-	-	-	-	-



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