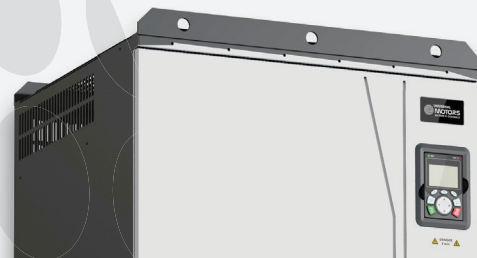




Variable Speed drives

Universal Motors





Universal Motors is a Portuguese company, created in 2004, dedicated to the supply, production and technical support of electric motors, inverters, control panels and speed reducers.

Our products are distributed throughout the country and abroad through specialised and qualified partners.

We continuously develop our organisation and our products to provide advanced technology solutions and quality services to ensure that we are reliable and trustworthy partners.

We are aware of environmental issues and therefore we are concerned in offering equipment with the highest energy saving features and produced with recycled materials.



Index

03 **General table** - Model comparison

UMB1

04 Nomenclature
Applications

05 UMB1 family
Customised Services

06 Technical specifications

07 Control circuit diagram
Models

UMA1

08 Nomenclature
Applications

09 UMA1 family
Customised Services

10 Technical specifications

11 Control circuit diagram
Models

UMP1

12 Nomenclature
Applications

13 UMP1 family
Customised Services

14 Technical specifications

15 Control circuit diagram
Models

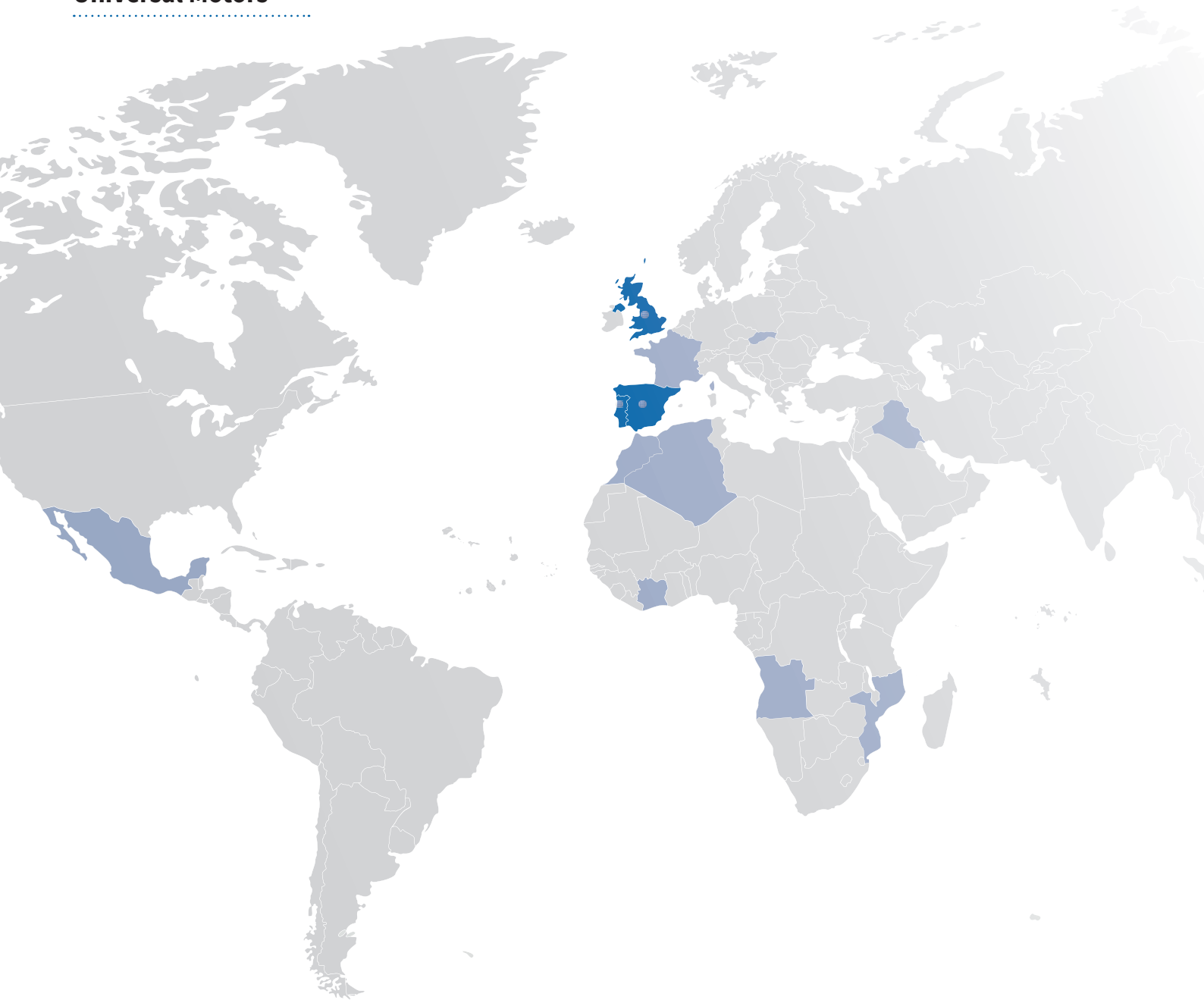
OPTIONS

16 Options

18 Expansion cards

19 **Control Panels**

Universal Motors



Customer service



Logistics & distribution



Field service



Spare parts and repair



International support



Service contracts



Knowledge management



Technical support

General table - Model comparison



	UMB1	UMA1	UMP1
Input Voltage (V)	AC 1PH 220V (-15%) ~ 240V (+10%) AC 3PH 380V (-15%) ~ 440V (+10%)	AC 3PH 220V (-15%) ~240V (+10%) AC 3PH 380V (-15%) ~440V (+10%)	AC 3PH 380V (-15%) ~440V (+10%)
Input Frequency (Hz)	47~63Hz		
Output Frequency (Hz)	0~400Hz		
Control Mode	V/F, SVC	V/F, SVC	V/F, SVC and FVC
Motor	Asynchronous Motor	Asynchronous Motor	Asynchronous Motor and Synchronous Motor
Adjustable-speed Ratio	Asynchronous 1:100 (SVC)	Asynchronous 1:100 (SVC)	Asynchronous: 1:200 (SVC) Synchronous, 1:20 (SVC); 1:1000 (FVC)
Speed Control Accuracy	±0.2% (SVC)	±0.2% (SVC)	± 0.2% (SVC); ± 0.02% (FVC)
Speed Fluctuation	± 0.3% (SVC)		
Torque Response	<20ms (SVC)	<20ms (SVC)	< 20ms (SVC); < 10ms (FVC)
Torque Control Accuracy	10%	10%	10% (SVC); 5% (FVC)
Starting Torque	0.5Hz/150% (SVC)	0.5Hz/150% (SVC)	AMs: 0.25Hz/150% (SVC) SMs: 2.5Hz/150% (SVC) 0Hz/200% (FVC)
Overload Capability	150% of rated current: 1 min 180% of rated current: 10 sec 200% of rated current: 1 sec		
Frequency Setting Method	digital, analogue, pulse, multi-step, PID, MODBUS.		
Fault Protection	Fault protection: overcurrent, overvoltage, undervoltage, overload, overheating, phase loss, etc.		
Restart After Rotating Speed Tracking	Smooth starting of the rotating motor.		
Analog Input Resolution	≤ 20mV		
Digital Input Resolution	≤ 2ms		
Analog Input	1 (AI2) 0~10V/0~20mA 1 (AI3) -10~10V	1 (AI2) 0~10V/0~20mA e 1 (AI3) -10~10V	1 (AI1): 0~10V/0~20mA; 1 (AI2): -10~10V
Analog Output	1 (AO1) 0~10V/0~20mA *	2 (AO1, AO2) 0~10V/0~20mA	1 (AO1) 0~10V/0~20mA
Digital Input	4 DI, Max. frequency: 1kHz; 1 HDI, Max. frequency: 50kHz	8 DI, Max. frequency: 1kHz; 1HDI, Max. frequency: 50kHz	4DI; Max. frequency: 1kHz; 2 HDI; Max. frequency: 50kHz;
Digital Output	1 DO (Y1)	1HDO máx frequency: 50kHz; 1 DO (Y1)	1HDO máx frequency: 50kHz; 1 DO (Y1)
Programmable Relay Output	1 Inverter relay Contact capacity: 3A/AC250V, 1A/CC 30V **	2 Inverter relays; Contact capacity: 3A/AC250V, 1A/CC 30V	2 Inverter relays; Contact capacity: 3A/ AC250V, 1A/CC 30V
Working temperature	-10 ~ 50°C		
Braking Unit	Built-in braking unit ≤ 30kW Optional for the other powers		Built-in braking unit ≤ 37kW Optional for the other powers
Protection	IP20	IP20	IP20/IP55
EMC Filters	Filter C2 and C3 optional	Filter C3 built-in Filter C2 optional	
Expansion Cards	No capacity for expansion cards	No capacity for expansion cards	Up to three extensible interfaces: SLOT1, SLOT2 and SLOT3 (PG cards, PLC, communication I/O extensions, etc)

* 2 analog outputs for the model of ≥ 4 kW

** 2 relay outputs for the model of ≥ 4 kW

UMB1

Inverters

Inverter with excellent drive and control performance thanks to its vector technology, with IP20 protection.

Easy to use and highly reliable due to its advanced hardware and software configurations. Very compact for space optimisation to respond to various industrial applications.



Nomenclature

UMB1 - 2R2G - 4

Voltage type | S2: 230V
4:400V

Power code | Ex:
OR7G: 0,75kW
2R2G: 2,2kW
04G4: 4kW

Version | **B: Basic**
A: Advanced
P: Plus

Universal Motors

Applications



UMB1 Family

1. Overload capacity

150% of rated current: 1 min
 180% of rated current: 10 sec
 200% of rated current: 1 sec

2. Various braking modes

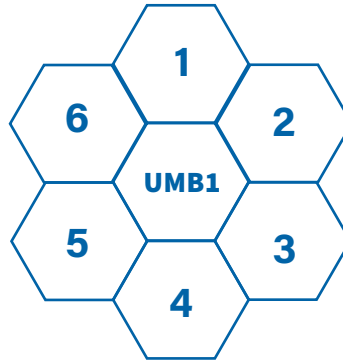
Dynamic braking;
 DC braking;
 Flux braking;
 Short-circuit braking

6. Various mounting methods

Compatible with DIN rail mounting, wall mounting and flange mounting.

5. Easy to use and maintain

Replaceable cooling fan
 Common optional external keyboard or with parameter copying



4. Other functions

PID control (with pause function).
 Automatic voltage regulation (AVR), torque compensation
 torque compensation function.
 Customised services such as STO; fire mode, pump mode.

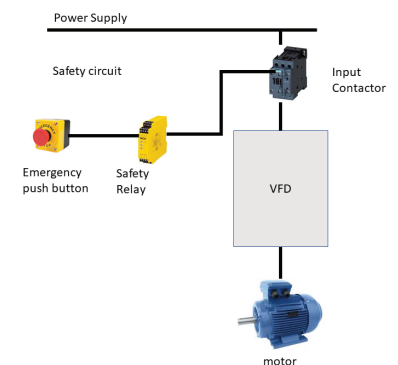
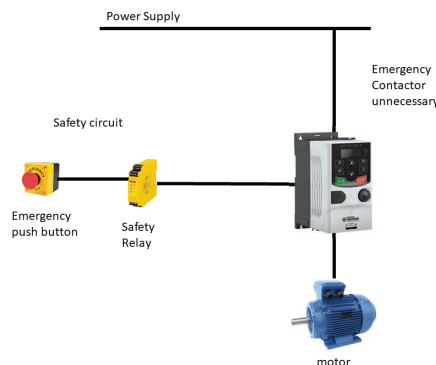
3. Hardware advantages

≤ 37kW built-in braking unit;
 45~110kW Optional braking unit;
 ≥ 18.5kW DC reactance built-in;
 C3 EMC filter : 3ph 220V 1.5kW, 3ph 380V 4kW;
 Optional external C2 EMC filter

Customised services - STO / Fire mode / Pump mode

STO

UMB1 inverters feature a safe torque off (STO) function, which enables simple integration of safety circuits into the machines. This reduces costs, space, installation and assembly time. Better safety system compared with the mechanical solution. Better connection to the motor, single cable, without interruption.



Fire mode

In this mode, the drive ignores all emergency signals and alarms and remains in operation for as long as possible. Essential for smoke extraction in the event of a building fire. This mode is flexible, allowing the speed and direction of rotation of the motor and react to normally open or normally closed signals, responding to the needs of your emergency control system.



Pump mode

This mode allows you to have high quality pumping control and energy efficiency. Applicable to all types of pumps in the industrial area and for swimming pools and spas.

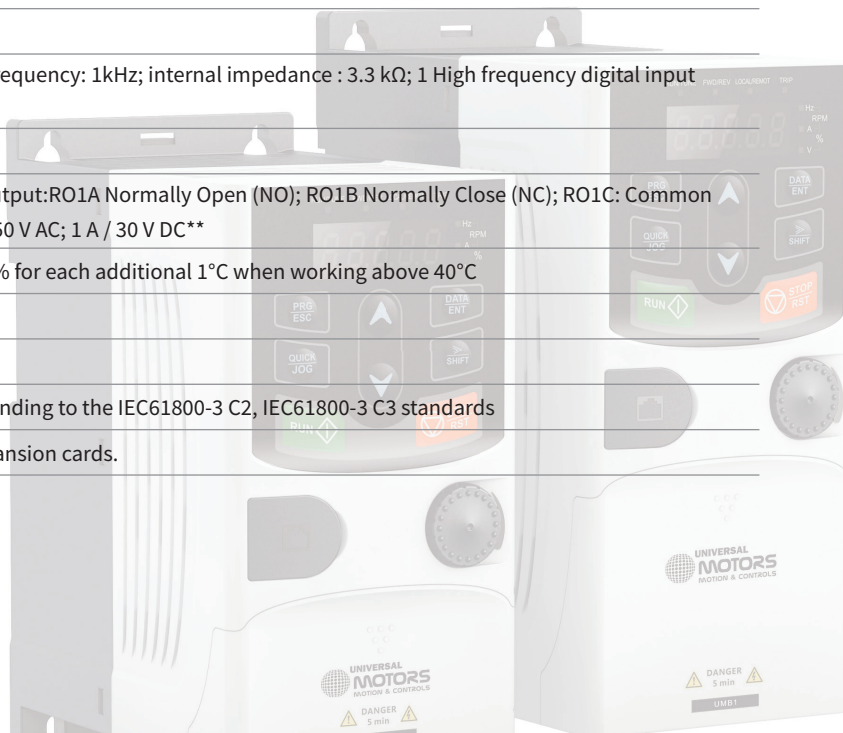


Technical specifications

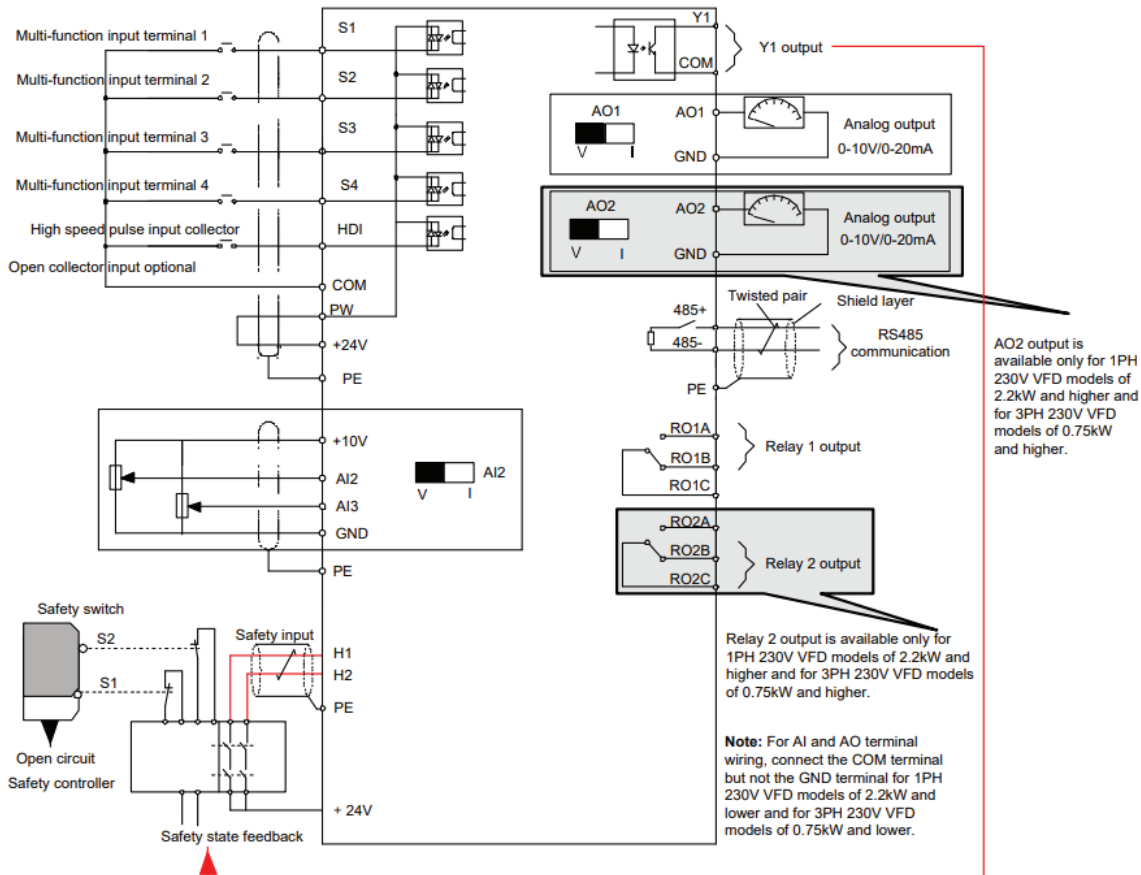
Function	UMB1
Input Voltage (V)	AC 1PH 220V (-15%) ~ 240V (+10%); AC 3PH 380V (-15%) ~ 440V (+10%)
Input Current (A)	See models table
Input Frequency (Hz)	50Hz or 60Hz Allowable range: 47~63Hz
Output Voltage (V)	0 ~ input voltage
Output Current (A)	See models table
Output Power (kW)	See models table
Output Frequency (Hz)	0 ~ 400Hz
Control Mode	V/F, SVC
Motor	Asynchronous Motor
Adjustable-speed Ratio	Asynchronous 1:100 (SVC)
Speed Control Accuracy	±0.2% (SVC)
Speed Fluctuation	± 0.3% (SVC)
Torque Response	<20ms (SVC)
Torque Control Accuracy	10%
Starting Torque	0.5Hz/150% (SVC)
Overload Capability	150% of rated current: 1 min; 180% of rated current: 10 sec; 200% of rated current: 1 sec
Frequency Setting Method	Digital, analogue, pulse frequency, multi-step speed operation, PID and MODBUS communication adjustment. Settings can be combined, and the settings channels can be switched.
Voltage Autoregulation	The output voltage can be kept constant even if the grid voltage is irregular.
Fault Protection	Provides more than 30 fault protection functions: overcurrent, overvoltage, undervoltage, overheating, phase loss and overload, etc.
Speed Tracking Restart	Used to implement impact-free smooth start up for rotating motors. Note: Only available for the 4 kW inverter.
Analog Input Resolution	≤ 20mV
Digital Input Resolution	≤ 2ms
Analog Input	1 (AI2) 0~10V/0~20mA and 1 (AI3) -10~10V
Analog Output	1 (AO1) 0~10V/0~20mA *
Digital Input	8 regular inputs -> max.frequency: 1kHz; internal impedance : 3.3 kΩ; 1 High frequency digital input -> max.frequency: 50kHz
Digital Output	1 Y1 digital output
Programmable Relay Output	1 programmable relay output:RO1A Normally Open (NO); RO1B Normally Close (NC); RO1C: Common Contact Capacity: 3 A / 250 V AC; 1 A / 30 V DC**
Working temperature	-10 ~ 50°C, downgrade 1% for each additional 1°C when working above 40°C
Braking Unit	Built-in braking unit
Protection	IP20
EMC Filters	Optional filters: corresponding to the IEC61800-3 C2, IEC61800-3 C3 standards
Expansion Cards	Without capacity for expansion cards.

* 2 analog outputs for the model of ≥ 4 kW

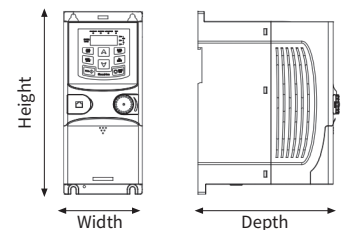
** 2 relay outputs for the model of ≥ 4 kW



Control circuit diagram



Models



Model	Input voltage	Constant torque / Variable Torque			Size	Dimensions (mm)		
		Output power (kW)	Input current (A)	Output current (A)		Height	Width	Depth
UMB1-0R4G-S2	1 PH 230V	0.4	6.5	2.5	1	150.0	80.0	123.5
UMB1-0R7G-S2		0.75	9.3	4.2	1			
UMB1-1R5G-S2		1.5	15.7	7.5	2	175.0	80.0	140.5
UMB1-2R2G-S2		2.2	24.0	10.0	2			
UMB1-004G-S2		4.0	32.0	16.0	3	256.0	146.0	167.0
UMB1-0R7G-4	3 PH 400V	0.75	3.4	2.5	2	175.0	80.0	123.5
UMB1-1R5G-4		1.5	5.0	4.2	2			
UMB1-2R2G-4		2.2	5.8	5.5	2			
UMB1-004G-4		4.0	13.5	9.5	3	256.0	146.0	167.0
UMB1-5R5G-4		5.5	19.5	14	3			
UMB1-7R5G-4		7.5	25.0	18.5	4			
UMB1-011G-4	11.0	32.0	25.0	4	320.0	170.0	196.3	

UMA1

Inverters

New generation drive with excellent general purpose performance, with open loop vector control, DSP control system and with IP20 protection.

Used in applications such as compressors industrial machinery, HVAC applications, etc.

Three phase power supply for power ranging from 0.75kW and 500kW.



Nomenclature

UMA1 - 2R2G - 4

Voltage type | S2: 230V
4:400V

Power code | Ex:
OR7G: 0,75kW
2R2G: 2,2kW
04G4: 4kW

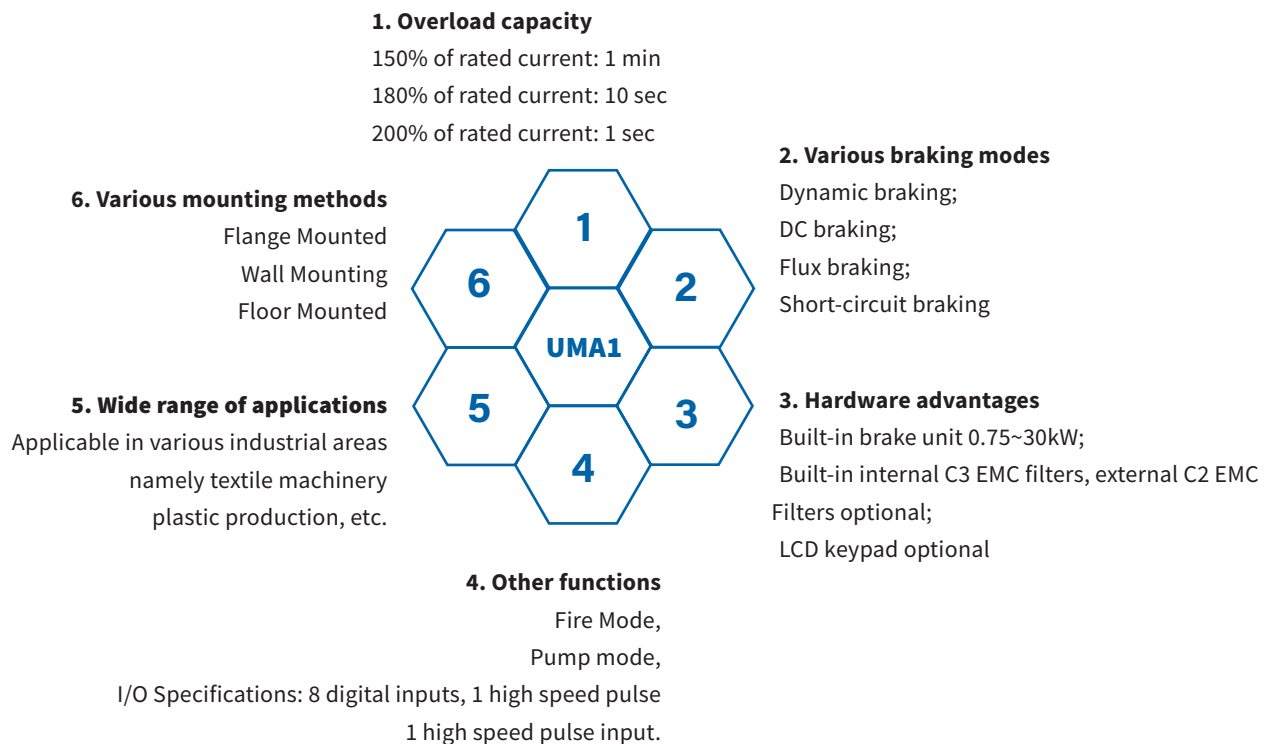
Version | B: Basic
A: Advanced
P: Plus

Universal Motors

Applications



UMA1 Family



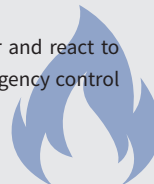
Customised services - Fire mode / Pump mode

Fire mode

In this mode, the drive ignores all emergency signals and alarms and remains in operation for as long as possible.

Essential for smoke extraction in the event of a building fire.

This mode is flexible, allowing the speed and direction of rotation of the motor and react to normally open or normally closed signals, responding to the needs of your emergency control system.



Pump Mode

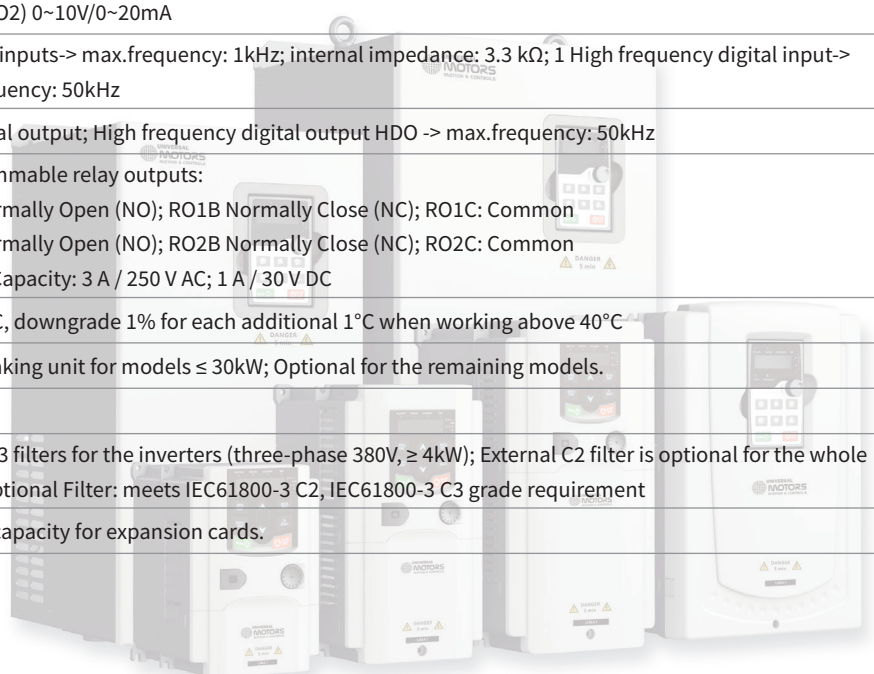
This mode allows you to have high quality pumping control and energy efficiency.

Applicable to all types of pumps in the industrial area and for swimming pools and spas.

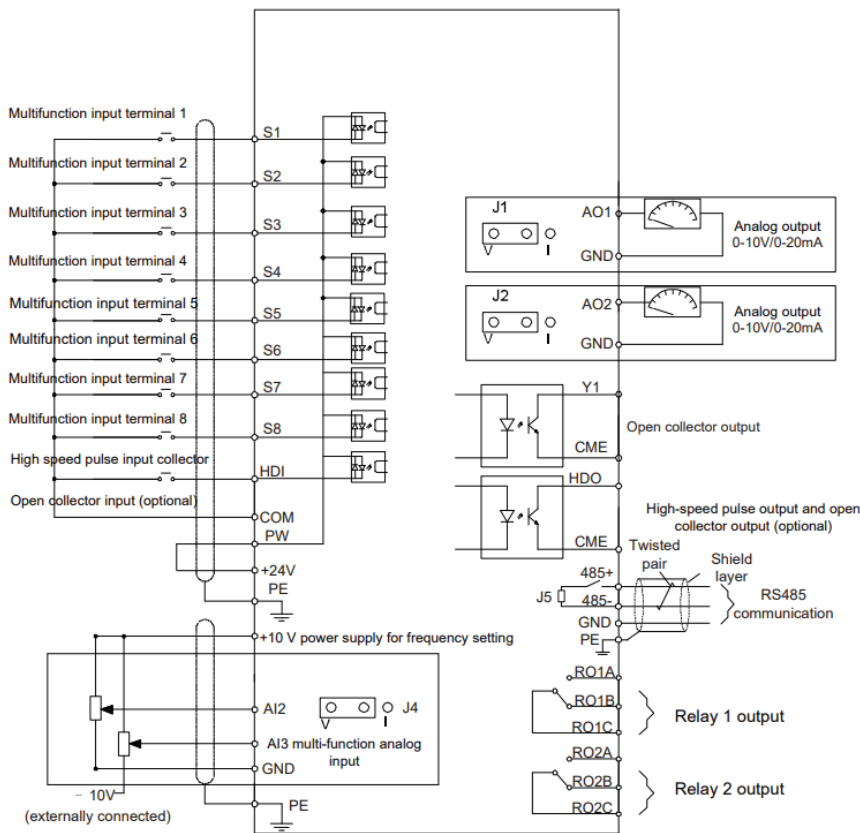


Technical specifications

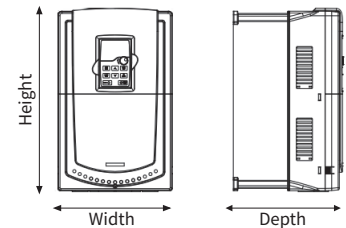
Function	UMA1
Input Voltage (V)	AC 3PH 380V (-15%) ~ 440V (+10%)
Input Current (A)	See models table
Input Frequency (Hz)	50Hz or 60Hz Allowable range: 47~63Hz
Output Voltage (V)	0 ~ input voltage
Output Current (A)	See models table
Output Power (kW)	See models table
Output Frequency (Hz)	0~400Hz
Control Mode	V/F, SVC
Motor	Asynchronous Motor
Adjustable-speed Ratio	Asynchronous 1:100 (SVC)
Speed Control Accuracy	±0.2% (SVC)
Speed Fluctuation	± 0.3% (SVC)
Torque Response	<20ms (SVC)
Torque Control Accuracy	10%
Starting Torque	0.5Hz/150% (SVC)
Overload Capability	150% of rated current: 1 min; 180% of rated current: 10 sec; 200% of rated current: 1 sec
Frequency Setting Method	Digital, analogue, pulse frequency, multi-step speed operation, PID, Basic PLC, and MODBUS Communication adjustment. Settings can be combined, and the settings channels can be switched.
Voltage Autoregulation	The output voltage can be kept constant even if the grid voltage is irregular.
Fault Protection	Provides more than 30 fault protection functions: overcurrent, overvoltage, undervoltage, overheating, phase loss and overload, etc.
Speed Tracking Restart	Used to implement impact-free smooth start up for rotating motors. Note: Available for inverters ≥4kW
Analog Input Resolution	≤ 20mV
Digital Input Resolution	≤ 2ms
Analog Input	1 (AI2) 0~10V/0~20mA and 1 (AI3) -10~10V
Analog Output	2 (AO1, AO2) 0~10V/0~20mA
Digital Input	8 regular inputs-> max.frequency: 1kHz; internal impedance: 3.3 kΩ; 1 High frequency digital input-> max.frequency: 50kHz
Digital Output	1 Y1 digital output; High frequency digital output HDO -> max.frequency: 50kHz
Programmable Relay Output	2 programmable relay outputs: RO1A Normally Open (NO); RO1B Normally Close (NC); RO1C: Common RO2A Normally Open (NO); RO2B Normally Close (NC); RO2C: Common Contact Capacity: 3 A / 250 V AC; 1 A / 30 V DC
Working temperature	-10 ~ 50°C, downgrade 1% for each additional 1°C when working above 40°C
Braking Unit	uilt-in braking unit for models ≤ 30kW; Optional for the remaining models.
Protection	IP20
EMC Filters	Built-in C3 filters for the inverters (three-phase 380V, ≥ 4kW); External C2 filter is optional for the whole series; Optional Filter: meets IEC61800-3 C2, IEC61800-3 C3 grade requirement
Expansion Cards	Without capacity for expansion cards.



Control circuit diagram



Models



Model	Input voltage	Constant torque / Variable Torque			Size	Dimensions (mm)		
		Output power (kW)	Input current (A)	Output current (A)		Height	Width	Depth
UMA1-0R7G-4	3 PH 400V	0.75	3.4	2.5	1	186	126	174.5
UMA1-1R5G-4		1.5	5.0	3.7	1			
UMA1-2R2G-4		2.2	5.8	5	1			
UMA1-004G/5R5P-4		4/5.5	13.5/19.5	9.5/14	2	256	146	181
UMA1-5R5G/7R5P-4		5.5/7.5	19.5/25	14/18.5	2			
UMA1-7R5G/011P-4		7.5/11	25/32	18.5/25	3			
UMA1-011G/015P-4		11/15	32/40	25/32	3	320	170	216
UMA1-015G/018P-4		15/18.5	40/47	32/38	3			
UMA1-018G/022P-4		18.5/22	47/56	38/45	4			
UMA1-022G/030P-4		22/30	56/70	45/60	5	407	255	245
UMA1-030G/037P-4		30/37	70/80	60/75	5			
UMA1-037G/045P-4		37/45	80/94	75/92	6			
UMA1-045G/055P-4		45/55	94/128	92/115	6	555	270	325
UMA1-055G/075P-4		55/75	128/160	115/150	6			
UMA1-075G/090P-4		75/90	160/190	150/180	7			
UMA1-090G/110P-4		90/110	190/225	180/215	7	680	325	365
UMA1-110G/132P-4		110/132	225/265	215/260	7			
UMA1-132G/160P-4	132/160	265/310	260/305	8				
UMA1-160G/185P-4	160/185	310/345	305/340	8	870	500	360	

UMP1

Inverters

High-performance, high-end drive with closed loop vector control that integrates speed, torque, and position control. Versatile inverter that can be applied both to asynchronous and synchronous motors, it also offers great expansion capability through the use of its expansion cards (PG, PLC, Communication and I/O). It can have IP20 or IP55 protection, responding to the different and varied demands of the industry.

Inverter oriented to the OEM market. Three-phase power supply between 1,5 and 132kw.



Nomenclature

UMP1 - 2R2G - 4

Voltage type | 4:400V

Power code | Ex:
1R5G: 1,5kW
2R2G: 2,2kW
04G4: 4kW

Version | B: Basic
A: Advanced
P: Plus

Universal Motors

Applications



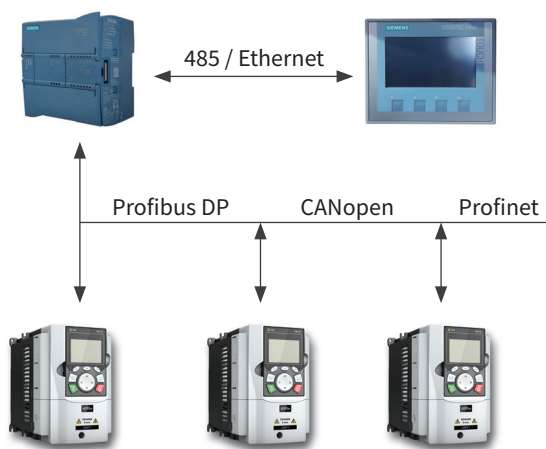
UMP1 Family

Advantages:

Control of asynchronous and synchronous permanent magnet motors;
 Closed loop control, allowing for greater control accuracy;
 STO function;
 Addition of expansion cards allows an increase of functionalities;
 Supports various types of communication protocols such as: CanOpen, Profibus DP, Profinet, EtherCat, etc...

Type of controllable motors:

Direct drive motor
 Asynchronous servo motor
 Spindle motor
 Common asynchronous motor
 Synchronous motor



**NEW PRODUCT
UMP1 IP55**

Customised services - **STO**

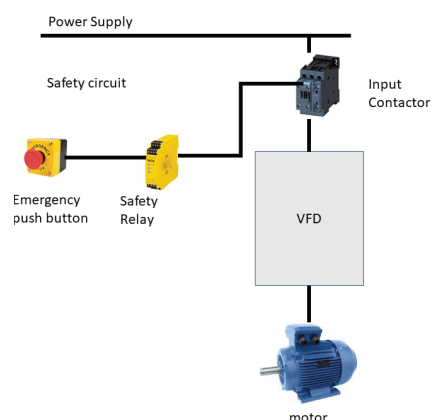
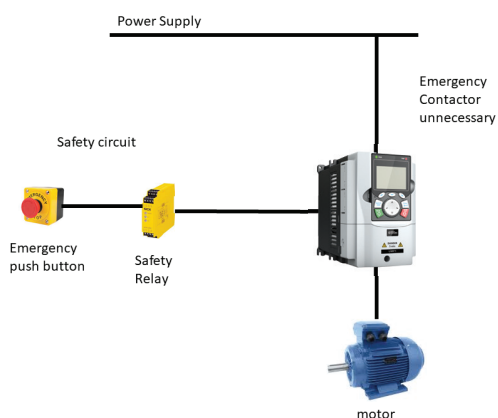
STO

UMP1 inverters feature a safe torque off (STO) function, which enables simple integration of safety circuits into the machines.

This reduces costs, space, installation, and assembly time.

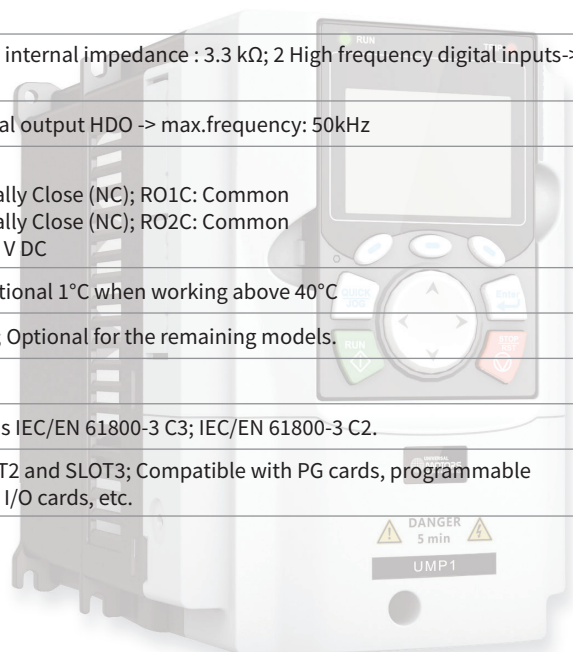
Better safety system compared with the mechanical solution.

Better connection to the motor, single cable, without interruption.

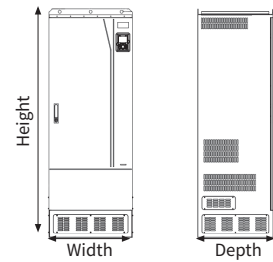
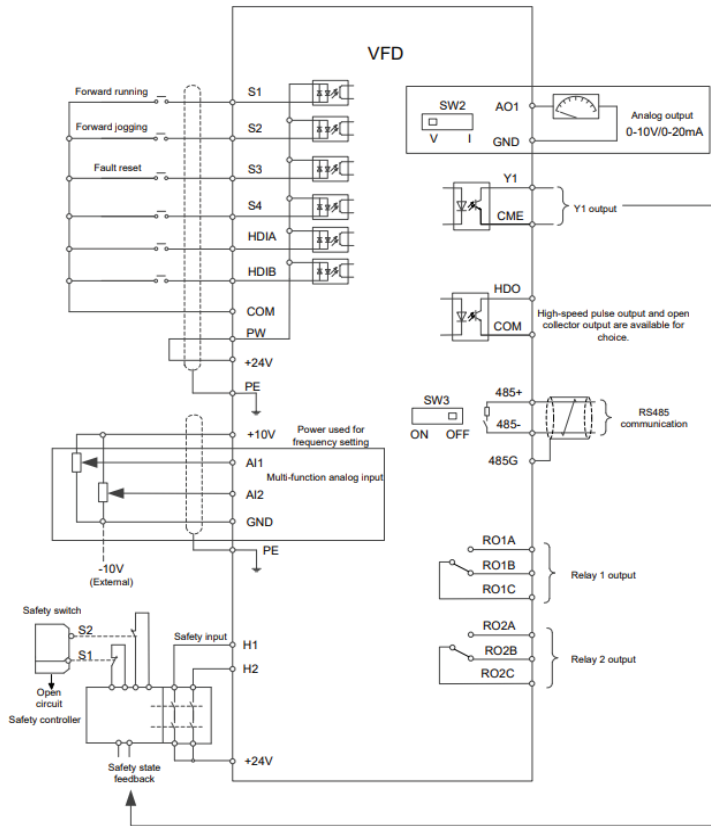


Technical specifications

Function	UMP1
Input Voltage (V)	AC 3PH 380V (-15%)~440V (+10%)
Input Current (A)	See models table
Input Frequency (Hz)	50Hz or 60Hz Allowable range: 47~63Hz
Output Voltage (V)	0 ~ input voltage
Output Current (A)	See models table
Output Power (kW)	See models table
Output Frequency (Hz)	0~400Hz
Control Mode	V/F, SVC and FVC
Motor	Asynchronous Motor, Synchronous motor
Adjustable-speed Ratio	For asynchronous motor: 1:200 (SVC); for synchronous motor, 1:20 (SVC); 1:1000 (FVC)
Speed Control Accuracy	± 0.2% (SVC); ± 0.02% (FVC)
Speed Fluctuation	± 0.3% (SVC)
Torque Response	< 20ms (SVC); < 10ms (FVC)
Torque Control Accuracy	10% (SVC); 5% (FVC)
Starting Torque	For AMs: 0.25Hz/150% (SVC); For SMs: 2.5Hz/150% (SVC); 0Hz/200% (FVC)
Overload Capability	150% of rated current: 1 min; 180% of rated current: 10 sec, 200% of rated current: 1 sec
Frequency Setting Method	Digital, analogue, pulse frequency, multi-step speed operation, PID, Basic PLC, and MODBUS communication adjustment. Settings can be combined, and the settings channels can be switched.
Voltage Autoregulation	The output voltage can be kept constant even if the grid voltage is irregular.
Fault Protection	Provides more than 30 fault protection functions: overcurrent, overvoltage, undervoltage, overheating, phase loss and overload, etc.
Speed Tracking Restart	Used to implement impact-free smooth start up for rotating motors. Note: Available for inverters ≥4kW
Analog Input Resolution	≤ 20mV
Digital Input Resolution	≤ 2ms
Analog Input	1 (AI1) 0~10V/0~20mA and 1 (AI2) -10~10V
Analog Output	1 (AO1) 0~10V/0~20mA
Digital Input	4 regular inputs-> max.frequency: 1kHz; internal impedance : 3.3 kΩ; 2 High frequency digital inputs-> max.frequency: 50kHz
Digital Output	1 Y1 digital output; High frequency digital output HDO -> max.frequency: 50kHz
Programmable Relay Output	2 programmable relay outputs: RO1A Normally Open (NO); RO1B Normally Close (NC); RO1C: Common RO2A Normally Open (NO); RO2B Normally Close (NC); RO2C: Common Contact Capacity: 3 A / 250 V AC; 1 A / 30 V DC
Working temperature	-10 ~ 50°C, downgrade 1% for each additional 1°C when working above 40°C
Braking Unit	Built-in braking unit for models ≤ 37 kW; Optional for the remaining models.
Protection	IP20/ IP55
EMC Filters	Optional filters: Correspond to standards IEC/EN 61800-3 C3; IEC/EN 61800-3 C2.
Expansion Cards	Three extensible interfaces: SLOT1, SLOT2 and SLOT3; Compatible with PG cards, programmable expansion cards, communication cards, I/O cards, etc.





Control circuit diagram





Models

Model	Input voltage	Constant torque/ Variable torque			Size	Dimensions (mm)		
		Output power (kW)	Input current (A)	Output current (A)		Height	Width	Depth
UMP1-1R5G/2R2P-4	3 PH 400V	1.5/2.2	5.0/5.8	3.7/5	1	186	126	185
UMP1-2R2G/003P-4		2.2/3	5.8/11	05/07	1			
UMP1-004G/5R5P-4		4/5.5	13.5/19.5	9.5/12.5	2			
UMP1-5R5G/7R5P-4		5.5/7.5	19.5/23	14/17	2	186	126	201
UMP1-7R5G/011P-4		7.5/11	25/30	18.5/23	3			
UMP1-011G/015P-4		11/15	32/40	25/32	4	320	170	220
UMP1-015G/018P-4		15/18.5	40/45	32/38	4			
UMP1-018G/022P-4		18.5/22	45/51	38/45	5	340.6	200	208
UMP1-022G/030P-4		22/30	51/64	45/60	5			
UMP1-030G/037P-4		30/37	64/80	60/75	6	400	250	223
UMP1-037G/045P-4		37/45	80/98	75/92	6			
UMP1-045G/055P-4		45/55	98/128	92/115	7	560	282	258
UMP1-055G/075P-4		55/75	128/139	115/150	7			
UMP1-075G-/090P4		75/90	139/168	150/170	7	554	338	330
UMP1-090G/110P-4		90/110	168/201	180/215	8			
UMP1-110G/132P-4		110/132	201/265	215/260	8			
IP55 Inverters with main switch								
UMP0004G-45-AS	3 PH 400V	4	13.5	9.5	1	403	196	212.0
UMP05R5G-45-AS		5.5	19.5	14	1			
UMP07R5G-45-AS		7.5	25	18.5	2			
UMP0011G-45-AS		11	32	25	2	475	223	250.7
UMP0015G-45-AS		15	40	32	2			
UMP0018G-45-AS		18.5	45	38	3	522	274	246.0
UMP0022G-45-AS		22	51	45	3			
UMP0030G-45-AS		30	64	60	4	587	318	242.9
UMP0037G-45-AS		37	80	75	4			

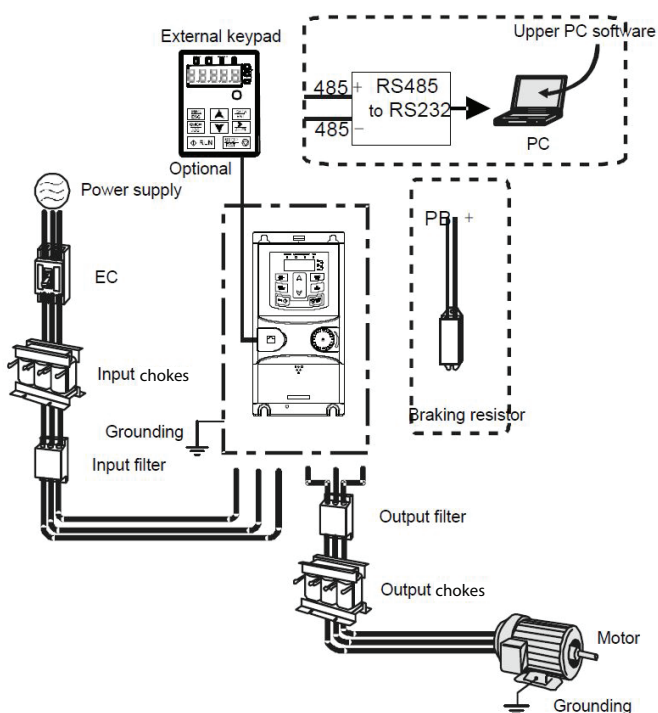
OPTIONALS

			UMB1	UMA1	UMP1
EXTERNAL KEYPADS		<p>External keypads gave us the possibility to program the inverter, upload its parameters and download them to different inverters</p> <p>The LCD keypad also supports multiple languages and facilitates fault detection and correction.</p>	✓		
				✓	
					
INPUT CHOKES		<p>The electric components of the inverters are highly sensitive to anomalies caused by the power supply. As such, there is a need for the use of reactances that allow to reduce the harmonics in the power supply current, thus increasing the output quality and the lifetime of the inverter.</p> <p>Normally, the output of the inverter is satisfactory, but in certain situations, namely in where the motor is located at a great distance from the inverter, it is advisable the use of reactances.</p>	✓	✓	✓
			✓	✓	✓
			✓	✓	✓
FILTERS		<p>These components serve to reduce the electromagnetic interference caused by the inverter itself. UMA1 and UMP1 inverters have integrated C3 filters, although some applications require the optional C2 filters.</p>	✓	✓	✓
			✓		

OPTIONALS

			UMB1	UMA1	UMP1
BRAKING RESISTORS		In certain applications, the motors controlled by the inverters act as generators. This affects the DC bus of the inverter, which consequently affects the operation of the inverter and its lifetime. To avoid the negative consequences of this situation, braking resistors are used, together with braking units, which convert the electrical energy produced into thermal energy, thereby protecting the inverter.	✓	✓	✓
BRAKING UNIT		For inverters up to 37 kW of the UMA1 series, and up to 45 kW of the UMP1 series, the braking unit is incorporated, and for higher power ratings, external braking units must be purchased.	✓	✓	✓

Connection diagram



Expansion cards

Only applicable to inverters of the UMP1 family

The expansion cards permit the inverter's capacities to be increased, depending on requirements. They allow you to increase control inputs and outputs, apply different types of communication, allow more advanced PLC programming, and allows the use of different types of encoders.

Type	Model	Objective
I/O expansion card	EC-IO501-00	It allows the Inverters Control inputs and outputs to be increased
Programmable expansion card	EC-PC502-00	Increases the programming capabilities of the inverter, allowing more complex applications to be developed without the need for an additional device.
Communication cards	EC-TX501-1/EC-TX501-2	Enables communication via Bluetooth
	EC-TX502-1/EC-TX502-2	Enables communication via WIFI
	EC-TX503	Enables PROFIBUS-DP communication
	EC-TX504	Enables communication via Ethernet
	EC-TX505	Enables communication via CAN OPEN
	EC-TX511	Enables communication via PROFINET
	EC-TX509	Allows CAN master/slave control communication
PG cards	EC-PG502	Sin/cos pulse generator
	EC-PG503-05	Incremental pulse generator
	EC-PG504-00	Pulse generator for resolvers
	EC-PG505-12	Multifunction incremental pulse generator
	EC-PG505-24	24V incremental pulse generator
	EC-PG507-12	Simplified incremental pulse generator

Control Panels



Electrical Diagrams



Software Development



Production



- ✓ For constant pressure systems
- ✓ For waste water systems
- ✓ For air conditioning systems
- ✓ For fire fighting systems
- ✓ Customised electrical panels



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