



Smart  
connections.

Data sheet

**INVEOR MP**

# KOSTAL InverterApp – the simple way of operation.

The KOSTAL INVERTER app can be used to very simply access all KOSTAL variable frequency drives in the INVEOR family with Bluetooth via your smartphone or tablet.

## QUICK

The integrated assistant enables even first-time users to quickly commission and set the parameters of the variable frequency drive even without the manual.

## CONVENIENT

In hard-to-reach places, the variable frequency drive can be operated and monitored using the app and Bluetooth.

All operating data and device utilisation are available in the KOSTAL INVERTER app.

## SIMPLE

Simple transfer of data records to other devices (clones).

Easy analysis and remote diagnosis: in addition to parameters, all other operating data and the error history are stored and can be e-mailed directly from the app.






### + App features

- Assistant-guided commissioning
- Variable frequency drive clones
- Send data records by e-mail
- Parameter settings in plain text
- Control mode, control the variable frequency drive via your mobile end device
- Access to all process parameters and device information
- Error analysis, error history with additional data
- Demo mode
- Data records compatible with KOSTAL INVERTERpc software
- Multi-lingual (9 languages)



## 400 V devices, technical data for INVEOR MP

Size	A					B				C			D								
Recommended motor rating <sup>1)</sup> [kW]	0.55	0.75	1.1	1.5	2.2 LD <sup>5)</sup>	2.2	3	4	5.5 LD <sup>5)</sup>	5.5	7.5	11 LD <sup>5)</sup>	11	15	18.5	22	30 LD <sup>5)</sup>				
Supply voltage	3x200 V AC -10%...480 V AC +10 % 280 V DC -10%...680 V DC +10 % <sup>2)</sup>																				
Grid frequency	50/60 Hz ± 6%																				
Network configurations	TN / TT																				
Line current [A]	1.4	1.9	2.6	3.3	3.9	4.6	6.2	7.9	9.3	10.8	13.8	18.3	23.2	28.2	33.2	38.2	49.8				
Rated current output eff. [IN at 4 kHz]	1.7	2.3	3.1	4	4.8	5.6	7.5	9.5	11	13	16.5	22	28	34	40	46	60				
Min. brake resistance [Ω]	100					50				30											
Overload for 60 sec. [%]	150					110				150			110		150			110			
Overload for 3 sec. [%]	200					150				200			150		200			150			
Switching frequency	Automatic regardless of temperature, 2 kHz, 4 kHz, 6 kHz, 8 kHz, 12 kHz, 16 kHz (factory setting 4 kHz)																				
Output frequency	0 Hz – 599 Hz																				
Nominal output apparent power [kVA]	1.06	1.43	1.93	2.49	2.99	3.49	4.68	5.92	6.86	8.11	10.29	13.72	17.46	21.2	24.94	28.68	37.41				
Mains cycles of operation / restart	Unlimited <sup>3)</sup>												> 2 min.								
DIN EN 61800-9-2 touch current	< 3.5 mA <sup>4)</sup>																				
Protective function	Overvoltage and undervoltage, I <sup>2</sup> t restriction, short-circuit, ground leak, motor and variable frequency drive temperature, stall prevention, blocking detection, PID dry run protection, functional safety (SIL 3/PLe)																				
Software functions	Torque control <sup>6)</sup> , multiple pumps, process control (PID controller), fixed frequencies, data record changeover, flying restart, motor current limit																				
Soft PLC	IEC61131-3, FBD, ST, AWL																				
Housing	Two-part aluminium die-cast casing																				
Dimensions [L x W x H] mm	233 x 153 x 120					270 x 189 x 140				307 x 223 x 181			414 x 294 x 232								
Weight including adapter plate [kg]	3.9					5.0				8.7			21.0								
Protection class [IPxy]	IP 65												IP 55								
Cooling	Passive Cooling												Active Cooling								
Climate class (DIN EN 60721-3-3)	3K3 (50°C)					3K3 (40°C)	3K3 (50°C)			3K3 (40°C)	3K3 (50°C)		3K3 (40°C)	3K3 (50°C)			3K3 (40°C)				
Ambient temperature	-40 °C (non condensing) to +50 °C (without derating)					up to +40°C		-40 °C (non condensing) to +50 °C (without derating)			up to +40°C		-40 °C to +50 °C > 50 °C (with derating)		to +40°C		-40 °C to +50 °C > 50 °C (with derating)			to +40°C	
Storage temperature	-40 °C...+85 °C																				
Altitude of the installation location	Up to 1000 m above sea level / over 1000 m with reduced performance (1 % per 100 m) / above 2000 m see operating manual																				
Relative air humidity	≤ 96 %, condensation not permitted.																				
Vibration class (DIN EN 60721-3-3) <sup>7)</sup>	3M7 (3g)																				
EMC (DIN-EN-61800-3)	C2																				
Energy efficiency class (EN 61800-9-2)	IE2																				
Certificates and conformity	  																				

Application circuit board model	Basic	Standard	Functional safety
Available for size	A - B		A - D
I/O interfaces	2 DI / 1 DO / 1 AI / - AO / relay	4 DI / 2 DO / 2 AI / 1 AO / 2 relays	4 DI / 2 DO / 2 AI / 1 AO / relay / 2 STO channels
Potentiometer on device	Option	Option	Option
Foil keypad	Option	Option (only size A-B)	Option (only size A-B)
MMI option	Option	Option	Option
Bluetooth	Option	Option	Option
Internal power supply	24 V DC, 100 mA / 10 V DC, 30 mA / short-circuit proof		
External feed-in 24 V DC	-	24 V DC +/-15 %	24 V DC +/-15 %
Fieldbus integrated	Modbus RTU		
Fieldbus option	-	CANopen / PROFIBUS / PROFINET / EtherCAT / Sercos III / Ethernet IP	

Technical data for 400 V devices INVEOR MP (subject to technical changes)

- <sup>1)</sup> Recommended motor rating (4-pole asynchr. motor) is given based on the 400 V AC supply voltage.  
<sup>2)</sup> In compliance with the overvoltage category.  
<sup>3)</sup> < 3s may result in power failure/intermediate circuit undervoltage faults.  
<sup>4)</sup> With 1LA7 asynchronous motor, motor-mounted.  
<sup>5)</sup> Low-duty devices with reduced output currents.  
<sup>6)</sup> Only for synchronous and reluctance motors.  
<sup>7)</sup> Installation- and application-related resonant frequencies can damage the devices.

# INVEOR – "Smart connections." on five levels

## 1 The INVEOR

IP65 protection class

Integrated soft PLC

Multiple-pump function

Pre-fitted cable glands

Design without a fan up to 11 kW

Cover level and internal space for e.g. the customer to mount a switch

Grid connection can be plugged in (Harting plug HAN Q4/2, Quickon)

Optional slot

Brake module

Robust and vibration-resistant housing concept

STO functional safety

Internal PTC brake resistor

## 3 Operation and observation

Potentiometer

M12 RS485 service interface

Main switch

Integrated foil keypad

MMI handheld controller

MMI cover option

Touch operating terminal

PC software: KOSTAL INVERTERpc

App: KOSTAL INVERTERapp



## 4 Motor adaptations

Robust and vibration-resistant adapter concept

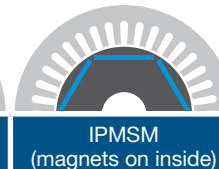
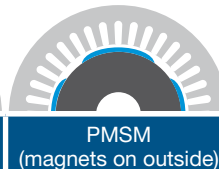
Motor adapter concept compatible with all commercially available motors

Mechanics of motor adapter compatible with INVEOR M product group

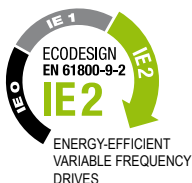
## 5 Control process

Supports all synchronous reluctance, synchronous and asynchronous motors with maximum energy efficiency

## 2 Communication



INVEOR variable frequency drives meet the most stringent of energy efficiency requirements.



# Variable frequency drive losses in accordance with EN 61800-9-2

Device	Supply voltage [V]	Nominal current [A]	Measurement (90; 100)	Measurement (50; 100)	Measurement (10; 100)	Measurement (90; 50)	Measurement (50; 50)	Measurement (10; 50)	Measurement (50; 25)	Measurement (10; 25)	Standby losses [W]	IE-Class
			Absolute power loss [W] <sup>1) 2)</sup>									
			Relative losses [%] <sup>1) 2) 3)</sup>									
Size A 0,55 kW	400	1.7	24	24	27	22	20	25	24	25	5	IE2
			2.3	2.2	2.5	2	1.9	2.4	2.2	2.3		
Size A 0,75 kW	400	2.3	29	28	32	23	21	28	25	27	5	IE2
			2	1.9	2.2	1.6	1.5	2	1.7	1.9		
Size A 1,1 kW	400	3.1	35	30	38	27	26	31	26	28	5	IE2
			1.8	1.6	2	1.4	1.3	1.6	1.4	1.4		
Size A 1,5 kW	400	4.0	45	39	46	31	27	36	25	31	5	IE2
			1.8	1.6	1.8	1.3	1.1	1.4	1	1.2		
Size A 2,2 kW LD	400	4.8	56	51	54	39	36	40	35	33	5	IE2
			1.9	1.7	1.8	1.3	1.2	1.3	1.2	1.1		
Size B 2,2 kW	400	5.6	61	60	65	46	38	48	37	42	7	IE2
			1.7	1.7	1.9	1.3	1.1	1.4	1	1.2		
Size B 3,0 kW	400	7.5	83	62	80	54	38	58	28	51	7	IE2
			1.8	1.3	1.7	1.2	0.8	1.3	0.6	1.1		
Size B 4,0 kW	400	9.5	107	80	98	66	51	70	31	58	7	IE2
			1.8	1.4	1.7	1.1	0.9	1.2	0.5	1		
Size B 5,5 kW LD	400	11.0	137	117	122	71	67	70	50	56	7	IE2
			2	1.7	1.8	1	1	1	0.7	0.8		
Size C 5,5 kW	400	13.0	149	114	125	69	52	76	44	70	7	IE2
			1.8	1.4	1.5	0.9	0.6	0.9	0.5	0.9		
Size C 7,5 kW	400	16.5	203	157	166	98	75	95	58	78	7	IE2
			2	1.5	1.6	0.9	0.7	0.9	0.6	0.8		
Size C 11,0 kW LD	400	22.0	323	226	244	151	123	133	80	99	7	IE2
			2.4	1.6	1.8	1.1	0.9	1	0.6	0.7		
Size D 11,0 kW	400	28.0	249	222	245	148	133	140	101	109	18	IE2
			1.4	1.3	1.4	0.8	0.8	0.8	0.6	0.6		
Size D 15,0 kW	400	34.0	314	279	298	181	163	173	122	134	18	IE2
			1.5	1.3	1.4	0.9	0.8	0.8	0.6	0.6		
Size D 18,5 kW	400	40.0	381	333	347	211	189	202	140	152	18	IE2
			1.5	1.3	1.4	0.8	0.8	0.8	0.6	0.6		
Size D 22,0 kW	400	46.0	485	398	392	247	189	276	197	194	18	IE2
			1.7	1.4	1.4	0.9	0.7	1	0.7	0.7		
Size D 30,0 kW LD	400	60.0	710	579	581	360	284	317	125	243	18	IE2
			1.9	1.5	1.6	1	0.8	0.8	0.3	0.6		

<sup>1)</sup> Loss values were determined at 4 kHz switching frequency  
<sup>2)</sup> Loss values include 10% supplement in accordance with standard  
<sup>3)</sup> Relative losses in relation to the device's rated apparent power



KOSTAL Industrie Elektrik GmbH  
 Lange Eck 11, 58099 Hagen, Deutschland

Telephone: +49 2331 8040-468  
 info-industrie@kostal.com

[www.kostal-drives-technology.com](http://www.kostal-drives-technology.com)