

# Industrial Automation Guide 2016



Industrial Products & Systems

# Targeted Technologies

## Creating maximum output with minimum input

By identifying the many ways of innovation in specific industries we developed the 'targeted technologies' concept. It's a way of thinking about technology in a prioritized format. Prioritized according to our customers' most pressing needs. The result? A set of solutions that make immediate impact on the core of our customers' businesses. A set of solutions that hit the target every time. Take a look at the examples on our website.

[industrial.omron.eu/technologies](https://industrial.omron.eu/technologies)





## PROplus Line

If you have a complex application or one where you need to address special needs, then the PROplus Line is the answer. That's because PROplus products are designed to be customizable.

The possibility to modify a PROplus product means you can adapt your solution to meet a specific application, process or machine. This is the only way to ensure that your solution is truly customized. It's the only way to ensure that your solution is truly customized. It's the only way to ensure that your solution is truly customized.

For example, the PROplus 4000 series robot arm is designed to be customized. It's the only way to ensure that your solution is truly customized. It's the only way to ensure that your solution is truly customized. It's the only way to ensure that your solution is truly customized.

The new ES-NH temperature controller is designed to be customized. It's the only way to ensure that your solution is truly customized. It's the only way to ensure that your solution is truly customized. It's the only way to ensure that your solution is truly customized.

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## The 361° Approach

At Omron, we asked ourselves these questions too. And by identifying the answers in specific industries we developed the 'targeted technologies' concept. It's a way of thinking about technology in a prioritized format. Prioritized according to our customers' most pressing needs. The result? A set of solutions that make immediate impact on the core of our customers' businesses. A set of solutions that hit the target every time. Take a look at the examples below.

## Technologies

### Creating maximum output with minimum input

Whatever type of automated machinery you are specialized in, you know that there are many ways to innovate. You are already aware that there are many possible areas for improvement. But where do you start? Where do you focus your efforts? Where can you make the biggest difference with the least amount of effort?

At Omron, we asked ourselves these questions too. And by identifying the answers in specific industries we developed the 'targeted technologies' concept. It's a way of thinking about technology in a prioritized format. Prioritized according to our customers' most pressing needs. The result? A set of solutions that make immediate impact on the core of our customers' businesses. A set of solutions that hit the target every time. Take a look at the examples below.

## Technologies

### Sysmac: the all-in-one platform

We know that machine builders prefer different product solutions for different challenges. But this can cause hierarchy headaches and communications issues. That's why we developed Sysmac: a single unified platform that is open, scalable, flexible, and totally focused on maximizing the speed and flexibility of machines. A platform that integrates robotic, motion and sequential logic control into a single multitasking system.

[Learn more](#)

### 361°: the perfect match

When it comes to sensors and components, we know that our customers all have different needs. That's why our product development in this area is driven by the 361° Approach. It produces product families that offer a total all-round choice. From quality products suited to standard environments to specialist devices that can handle extremes. A full circle of choice, all with an extra degree of quality and proven reliability.

[Learn more](#)



## The 361° portfolio

**PROplus**  
PROplus products are designed for specialty applications or customer demands.

[Learn more](#)



### LITE

LITE sensors are the effective solution for standard applications.

[Learn more](#)



## Related product news



With new G2B sensors, you only pay for what you need. Optimizing relative proximity sensors in the new G2B range has been specifically designed to offer a cost-effective sensing solution or standard industrial conditions, making it unnecessary to buy more sensors than you actually need.

[Learn more](#)

## Related product news



ES16 - Omron's new photo sensors combine simplicity with performance.

Drawing on our experience of manufacturing over a million photoelectric sensors a year, we have developed a new generation of ES16 photo sensors that combine simple selection, installation with reliability, versatility, rugged construction and value for money.

[Learn more](#)

## Related product news



RS-485 Control: New step towards the full integration of automation equipment.

The RS-485 Control is a new step towards the full integration of automation equipment. It is a new step towards the full integration of automation equipment. It is a new step towards the full integration of automation equipment.

[Learn more](#)



ES16 (IO) for Machine Control: New step towards the full integration of automation equipment.

[Learn more](#)

# Welcome to our world

## Our best-in-class devices for your automation system

Welcome to Omron's world of advanced industrial automation. The INDUSTRIAL AUTOMATION GUIDE is your essential tool to select best-in-class devices for your automation system. It highlights our core competences in sensing, control, visualisation, motion and panel components.

Of course, Omron offers a much larger range of products than you can find on the attached DVD. For more information on services and company competence visit our website.

Here you will find:

- Latest product news
- Technical product specifications
- 2D / 3D CAD Library
- Customer references
- Technology concepts
- Supporting product documentation
- Knowledge Base - "myOmron"
- Events Calendar
- Contact information

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“To the machine the work of the machine,  
to man the thrill of further creation.”

Kazuma Tateisi, founder of Omron

# Omron at a glance

200.000 products ranging  
input, logic and output

Sensing, Control Systems, Visualization, Drives, Robots, Safety,  
Quality Control & Inspection, Control and Switching Components

7%

Investment in Research & Development

Innovation track  
record of 80 years

Top 150 global patent assignee

1.200 employees dedicated to R&D

11.000 + issued and pending patents

37.000

Employees worldwide

210

Locations worldwide

22

Countries in EMEA

Working for the  
benefit of society



## Close to your needs

Technical training & seminars, technical support, Automation Technology Centers, online community (MyOmron), online catalogues and technical documentation, customer service & sales support, inter-operability labs (Tsunagi), safety services, repairs.

# Your needs, our focus

## Solutions perfectly matching your needs

We asked ourselves: 'What do you need in sensors and components?' Well, first you need reliability. Then a variety and choice of performance levels. You may also want advanced functionality, with special features defined by you – or you may want standardized solutions, with highly competitive prices.

Whatever it is, it can all add up to a wish list that is difficult to fulfil. Until now. That's because our new 361° Approach not only provides a complete all-round offer without gaps, it also puts you at the very centre of the product selection process. It's an approach that leads to a Perfect Match – one with the extra degree of confidence that comes from choosing Omron.

### 361° in one view



Quality



Line-up



Application



Customization



Global availability



Specs

	Quality	Line-up	Application	Customization	Global availability	Specs
<b>PRO<sup>plus</sup></b>	Premium	Tailored	Special	Yes	Yes	Application oriented
<b>PRO</b>	Premium	Complete	Advanced	Yes	Yes	Above Standard
<b>LITE</b>	Premium	Standard	Basic	No	No	Basic
	'Quality' refers to the standard of manufacturing and the materials used – this translates into reliability	'Line-up' refers to the number of model types	'Application' indicates the complexity of the automation	'Customization' is the possibility to modify the product		'Specs' refers to the choice of performance levels



# The extra degree of advantage

## Three distinct lines of sensors and components

### Three distinct lines

361° Approach offers three distinct lines within each sensor or component product category. LITE products are cost-effective without any compromise in quality. PRO products represent the “install & forget” option, offering longer lifetime, higher protection, and more features. While PROplus products are designed for specific applications or customer demands.

### Optimized reliability

All three lines are backed by the Omron commitment to quality, so even when you need a price-competitive advantage, you can be confident that they will never let you down.

### Solutions that perfectly match your needs

The 361° Approach ensures that you can quickly and easily identify the perfect match solution to your needs – nothing more, nothing less.

### Optimized costs

Your sensor and component costs are also minimized – because it eliminates over-specification.

### Why an extra 1°?

The extra degree is what you get when you do business with Omron, and that means different things to different customers – all depending on their needs. For example, if you need specification advice, the extra degree is ‘service’. But ultimately, to everyone it means “an extra degree of confidence in the perfect match”.



# Sysmac: A fully integrated platform

## Integration and Functionality

Sysmac is an integrated automation platform dedicated to providing complete control and management of your automation plant. At the core of this platform, the Machine Controller series offers synchronous control of all machine devices and advanced functionality such as motion, robotics and database connectivity. This multidisciplinary concept allows you to simplify solution architecture, reduce programming and optimize productivity.



Machine Automation Controller

FACTORY  
AUTOMATION

MACHINE  
CONTROL



Motion



Filling line

- Motion Control: Integrated within the IDE, and operating in real-time
- Standard PLCopen Function Blocks plus Omron generated motion FB's
- Direct Synchronous control for Position, Speed and Torque



Safety



Assembly

- All safety related data is synchronized with the whole network
- Safety functions such as muting, guard locking, EDM and valve monitoring are simple to manage

- ✓ **One Integrated Development Environment software** for Configuration, Programming, Simulation and Monitoring



## Information



Pills blister packing

- Sysmac communicates in real-time with Databases such as SQL
- Secure Data: In the event of a server going down or losing communications, data is automatically stored in internal memory
- Sysmac operates with Databases at high speed [1000 table element/ 100 ms] ensuring realistic Big Data Processing to improve productivity and aid predictive maintenance etc.

### ✓ Integrated Automation Control:

The Sysmac platform is scalable and provides the performance and functionality for a wide range of solutions from simple machines through to manufacturing cells

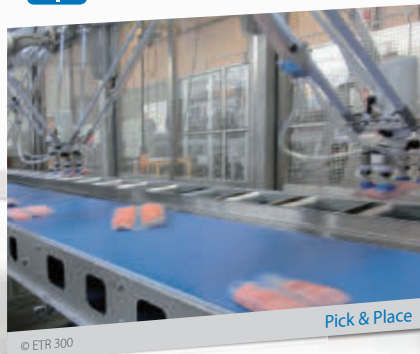
## Vision



Quality inspection

- Higher resolution images available without increasing the vision processing time
- Shape search technology: Provides more stable and accurate object detection for Pick & Place projects

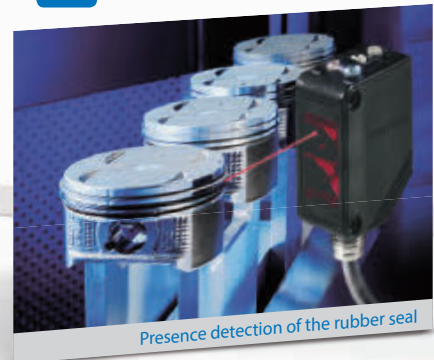
## Robotics



Pick & Place

- Up to 8 Delta robots with one controller
- Time-based Robotic Function Blocks make programming easier

## Sensing



Presence detection of the rubber seal

- Full control of the process parameter setting and predictive maintenance functions
- High precision detection and positioning data synchronized on the network

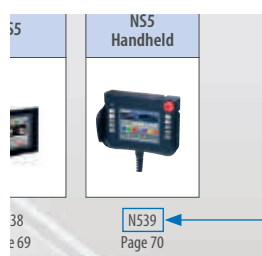
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	96 Motion controllers	112 Servo systems	170 Robots	202 Frequency inverters
Sensing				
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	370 Inspection & Ident systems	426 Measurement sensors		
Safety				
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Software				

# Switching components

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*Quick Link*



# Switching components

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# Low voltage switchgear

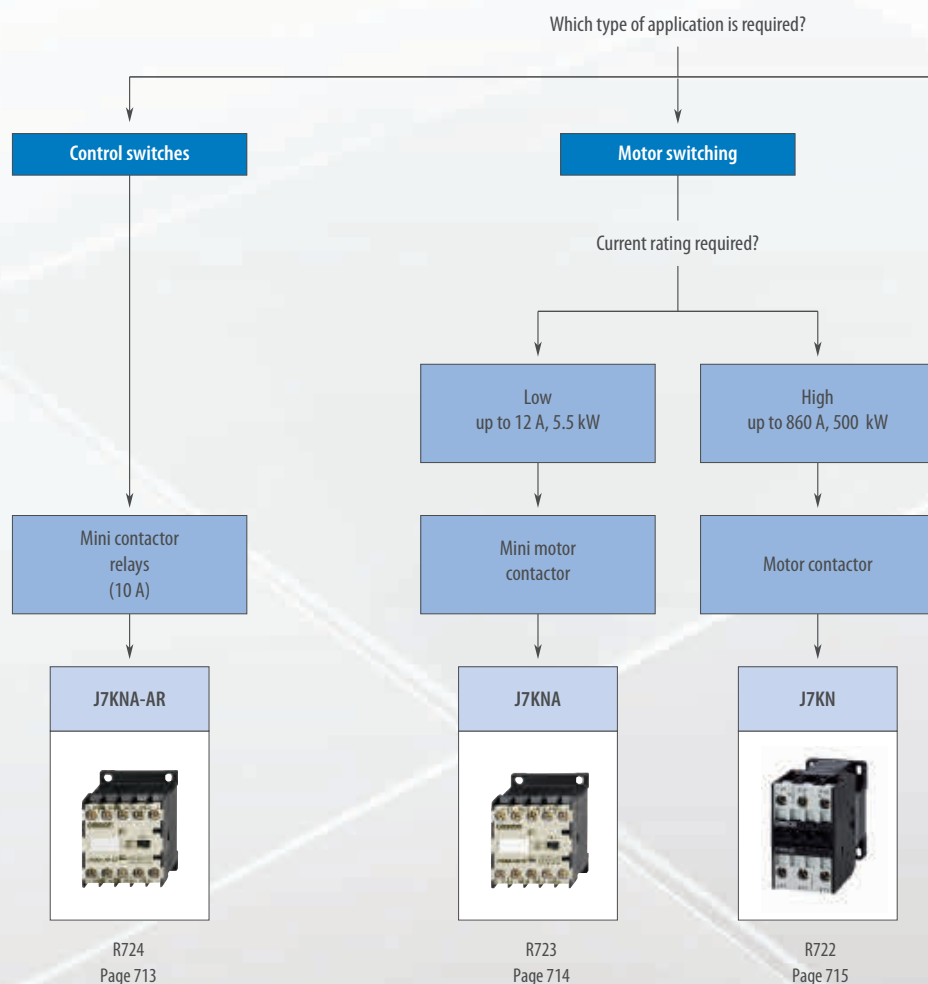
## J7KN MOTOR CONTACTOR

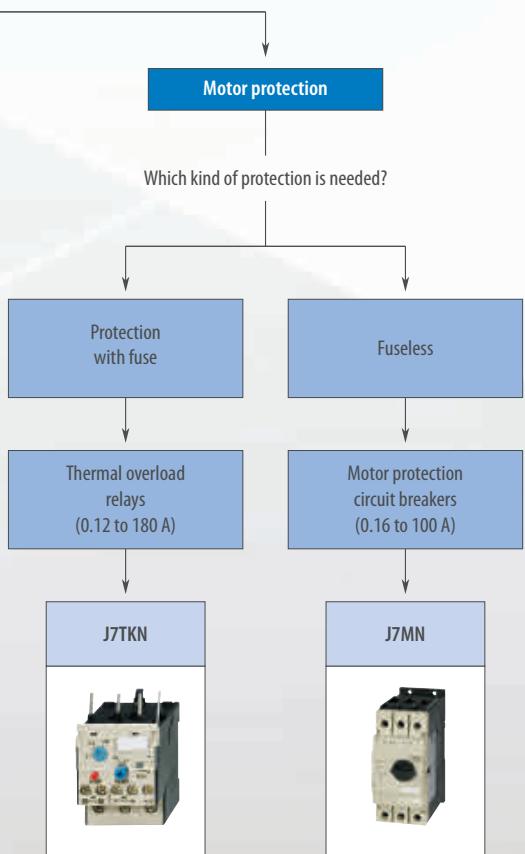
### J7KN – Motor contactors

The popular J7KN series offers many outstanding benefits, such as space-saving, small footprint, great reliability, and an ambient temperature rating up to +90°C. But now we've replaced it with a completely new design that extends its application range and will make your life even easier.

The new J7KN 10D to 22D series has the same footprint and severe ambient temperature rating, but has an improved design affording better protection, easier maintenance plus an integrated auxiliary double contact suitable for switching electronic circuits (17 V, 5 mA).

- Basic units can be combined with auxiliary contacts (top/side mounting)
- 3-main-pole and 4-main-pole versions are possible
- The power range covers 4 to 500 kW
- Different coil voltages (AC and DC)
- J7KN-10D to J7KN-22D models have integrated auxiliary contact for electronic circuits (3-pole versions)










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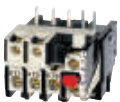



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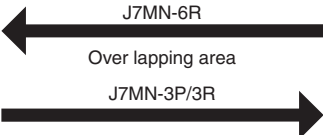


# Selection table









Category		Motor protection circuit breaker	
MPCB			
	Type		J7MN-3P/3R
	Setting range current		0.16 - 32 A
	Number of ranges		16
	Auxiliary contact external		front 1 NO and 1 NC or 2 NO, side 1 NO and NC or 2 NO or 2 NC
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Category		Contactors					
Contactors							
	Type	J7KNA-AR	J7KNA-09/12	J7KN(G)-10(D)	J7KN(G)-14(D)	J7KN(G)-18(D)	J7KN(G)-22(D)
	Maximum power AC3-380/415 V	–	4 kW or 5 kW	4 kW	5.5 kW	7.5 kW	11 kW
	Rated current AC3-380/415 V	10 A th	9/12 A	10 A	14 A	18 A	22 A
	Main contacts	4 in 4 configurations	3 or 4	3 or 4			
	Auxiliary contacts	Included	–	1	1 NO or 1 NC		
		External	4 in different combinations	4 contacts <sup>*1</sup>			
	Page/Quick Link	713/R724	714/R723	715/R722		715/R722	

Category		Thermal overload	
Thermal overload			
	Type	J7TKN-A	J7TKN-B
	Setting range D.O.L.	0.12 - 14 A	0.12 - 32 A
	Number of ranges	13	16
	Auxiliary contacts included	1 NO and 1 NC	1 NO and 1 NC
	Page/Quick Link	717/R726	717/R726

<sup>\*1</sup> Using J7KN with DC double wiring coils results in 1 aux. less

Motor protection circuit breaker		
		
	<b>J7MN-6R</b>	<b>J7MN-9R</b>
	26 - 63 A	63 - 100 A
	5	4
front 1 NO and 1 NC or 2 NO, side 1 NO and NC or 2 NO or 2 NC		
719/R725		



Contactors							
							
<b>J7KN(G)-24</b>	<b>J7KN(G)-32</b>	<b>J7KN(G)-40</b>	<b>J7KN-50</b>	<b>J7KN-62</b>	<b>J7KN-74</b>	<b>J7KN-90</b>	<b>J7KN-115</b>
11 kW	15 kW	18.5 kW	22 kW	30 kW	37 kW	45 kW	55 kW
24 A	32 A	40 A	50 A	62 A	74 A	90 A	115 A
3			3			3	
–			–			–	
front and side 8-contacts <sup>*1</sup>			front and side 8-contacts <sup>*1</sup>			front and side 11-contacts	
715/R722			715/R722			715/R722	




Thermal overload		
		
<b>J7TKN-C</b>	<b>J7TKN-D</b>	<b>J7TKN-E</b>
28 - 42 A	40 - 74 A	60 - 120 A
1	3	2
1 NO and 1 NC	1 NO and 1 NC	1 NO and 1 NC
717/R726	717/R726	717/R726

<sup>\*1</sup> Using J7KN with DC double wiring coils results in 1 aux. less



## Selection table

Category			Contactors			
Contactors						
	Type		J7KN-151	J7KN-176	J7KN-210	J7KN-260
	Maximum power AC3-380/415 V		75 kW	90 kW	110 kW	132 kW
	Rated current AC3-380/415 V		150 A	175 A	210 A	260 A
	Main contacts		3 or 4		3	
	Auxiliary contacts	Included	–		–	
		External	front and side 6-contacts		front and side 8-contacts	
Page/Quick Link		715/R722				

Category		Thermal overload			
Thermal overload					
	Type		J7TKN-E	J7TKN-F	J7TKN-G
	Setting range D.O.L.		60 - 120 A	120 - 180 A	144 - 320 A
	Number of ranges		2	1	2
	Auxiliary contacts included		1 NO and 1 NC	1 NO and 1 NC	1 NO and 1 NC
	Page/Quick Link		717/R726		

Contactors



J7KN-316	J7KN-450-22	J7KN-550-22	J7KN-700-22	J7KN-860-22
160 kW	250 kW	300 kW	400 kW	500 kW
315 A	450 A	550 A	700 A	860 A
3	3	3	3	3
–	4	4	4	4
front and side 8-contacts	front 4-contacts	front 4-contacts	front 4-contacts	front 4-contacts
715/R722				

Thermal overload



J7TKN-G	J7TKN-H
144 - 320 A	240 - 800 A
2	3
1 NO and 1 NC	1 NO and 1 NC
717/R726	





Main mini contactor relay, 4-pole

Three basic units can be combined with different additional auxiliary contacts. 4-pole, 6-pole and 8-pole versions in different configurations are possible as well as different coil voltages (AC and DC). Accessories such as suppressors are available.

- Mirror contacts
- Screw fixing and snap fitting (35 mm DIN-rail)
- Rated current = 10 A ( $I_{th}$ )
- Suitable for electronic devices (DIN 19240)
- Finger proof (BGV A2)

Ordering information

Operation	Contacts		Distinctive number according to DIN EN 50011	Ratings		Thermal rated current	Order code	Coil voltage <sup>*1</sup> , replace ___ with:				
	NO	NC		AC15 230 V A	400 V A	I <sub>thr</sub> A						
4-pole, with screw terminals												
AC	4	0	40 E	3	2	10	J7KNA-AR-40___	24	110	230	–	–
	3	1	31 E	3	2	10	J7KNA-AR-31___	24	110	230	–	–
	2	2	22 E	3	2	10	J7KNA-AR-22___	24	110	230	–	–
DC solenoid	4	0	40 E	3	2	10	J7KNA-AR-40___	–	–	–	24D	110D
	3	1	31 E	3	2	10	J7KNA-AR-31___	–	–	–	24D	110D
	2	2	22 E	3	2	10	J7KNA-AR-22___	–	–	–	24D	110D
DC solenoid with diode	4	0	40 E	3	2	10	J7KNA-AR-40_____	–	–	–	24VS	–
	3	1	31 E	3	2	10	J7KNA-AR-31_____	–	–	–	24VS	–
	2	2	22 E	3	2	10	J7KNA-AR-22_____	–	–	–	24VS	–

<sup>\*1</sup> Other coil voltages available on request

Accessories

Contacts		Ratings		Thermal rated current		Order code
NO	NC	AC15 230 V A	400 V A	$I_{th}$ , A		
1	1	3	2	10		J73KN-A-11
0	2	3	2	10		J73KN-A-02
4	0	3	2	10		J73KN-A-40
2	2	3	2	10		J73KN-A-22
0	4	3	2	10		J73KN-A-04

Specifications

Suffix to contactor type e.g. J7KNA-09-10-24	Voltage marking at the coil for		Rated control voltage $U_s$ range for			
	50 Hz V	60 Hz V	50 Hz min. V	max. V	60 Hz min. V	max. V
24	24	24	22	24	24	24
110	110 to 115	120 to 125	110	115	120	125
230	220 to 230	240	220	230	240	250



## Motor contactors from 4 to 5.5 kW for normal duty switching

This modular system consists of main contactors and additional contact blocks. The basic units can be combined with auxiliary contacts (top mounting). Reversed versions, including integrated mechanical interlock, are available as well as 3-main-pole and 4-main-pole versions.

- 4 kW and 5.5 kW versions are available
- Different coil voltages (AC and DC)
- Mini and normal-size versions are available
- The contactors can be mounted with screw fixing and snap fitting on a DIN-rail
- All components are finger proof

## Ordering information

Operation	Poles	Rating AC2, AC3			Rated current		Auxiliary contact		Overload relay	Size in mm (H×W×D)	Order code	Coil voltage*1, replace ___ with:					
		380 V 400 V 415 V kW	500 V kW	660 V 690 V kW	AC3 400 V A	AC1 690 V A						VAC					
							NO	NC				VDC					
AC/DC solenoid	3	4	4	4	9	20	1	0	J7TKN-A	57.5×45×49	J7KNA-09-10_ _ _	24	110	230	400	24D	
							0	1	J7TKN-A		J7KNA-09-01_ _ _	24	110	230	400	24D	
		5.5	5.5	5.5	12	20	1	0	J7TKN-A		J7KNA-12-10_ _ _	24	110	230	400	24D	
							0	1	J7TKN-A		J7KNA-12-01_ _ _	24	110	230	400	24D	
DC solenoid with diode	3	4	4	4	9	20	0	0	J7TKN-A	57.5×45×49	J7KNA-09-4_ _ _	24	110	230	400	24D	
							1	0	J7TKN-A		J7KNA-09-10_ _ _	—	—	—	—	24VS	
							0	1	J7TKN-A		J7KNA-09-01_ _ _	—	—	—	—	24VS	
		5.5	5.5	5.5	12	20	1	0	J7TKN-A		J7KNA-12-10_ _ _	—	—	—	—	24VS	
AC/DC solenoid reversing contactors	3	4	4	4	9	20	0	1	J7TKN-A	57.5×94.5×50	J7KNA-12-01_ _ _	—	—	—	—	24VS	
							0	1	J7TKN-A		J7KNA-09-01 R_ _ _	24	110	230	400	24D	
		5.5	5.5	5.5	12	20	0	1	J7TKN-A		J7KNA-12-01 R_ _ _	24	110	230	400	24D	
		4	4	4	9	20	0	1	J7TKN-A		J7KNA-09-01 R_ _ _	—	—	—	—	24VS	
DC solenoid with diode	3	5.5	5.5	5.5	12	20	0	1	J7TKN-A	57.5×94.5×50	J7KNA-12-01 R_ _ _	—	—	—	—	24VS	
							0	1	J7TKN-A		J7KNA-12-01 R_ _ _	—	—	—	—	24VS	

\*1 Other coil voltages available on request

## Accessories

Auxiliary contacts				
Contacts		Rated current		Order code
NO	NC	AC15 230 V	400 V	
1	1	3 A	2 A	J73KN-AM-11
0	2	3 A	2 A	J73KN-AM-02
2	2	3 A	2 A	J73KN-AM-22
Auxiliary contacts for reversing contactors				
1	1	3 A	2 A	J73KN-AM-11V
1	1	3 A	2 A	J73KN-AM-11X
Link modules between MPCB & contactors				
For MPCB J7MN-3P/J7MN-3R				J77MN-VKA-3
Insulated wiring system for J7KNA-09-01-R...(D) and J7KNA-12-01-R...(D)				
Reversing Starter Connector for Mini Reversing Contactors, mechanical interlocked				J74-WKR-A

## Specifications

Suffix to contactor type e.g. J7KNA-09-10-24	Voltage marking at the coil for		Rated control voltage U <sub>s</sub> range for			
	50 Hz V	60 Hz V	50 Hz min. V	max. V	60 Hz min. V	max. V
24	24	24	22	24	24	24
110	110 to 115	120 to 125	110	115	120	125
230	220 to 230	240	220	230	240	250

Main contacts		J7KNA-09- _ _ _	J7KNA-12- _ _ _
Rated insulation voltage U <sub>i</sub>		690 VAC	690 VAC
Making capacity I <sub>eff</sub> at U <sub>e</sub> = 690 VAC		165 A	165 A
Breaking capacity I <sub>eff</sub> cosφ = 0.65	400 VAC	100 A	100 A
	500 VAC	90 A	90 A
	690 VAC	80 A	80 A
Mechanical life AC operated		5 × 10 <sup>6</sup>	5 × 10 <sup>6</sup>
DC operated		15 × 10 <sup>6</sup>	15 × 10 <sup>6</sup>
Short time current 10 s current		96 A	120 A





### Motor contactors from 4–500 kW for normal and heavy-duty switching

This modular system consists of main contactors and additional contact blocks. The basic units can be combined with auxiliary contacts. DC-DC versions, integrated mechanical interlock, are available as well as 3-main-pole and 4-main-pole versions.

- Basic units can be combined with auxiliary contacts (top/side mounting)
- 3-main-pole and 4-main-pole versions are possible
- The power range covers 4 to 500 kW
- Different coil voltages (AC and DC)
- J7KN-10D to J7KN-22D models have integrated auxiliary contact for electronic circuits (3-pole versions)

### Ordering information

Operation	Poles	AC3 400 V rated motor current	Rating AC2, AC3			Rated current	Auxiliary contact		Overload relay	Size in mm (H × W × D)	Order code	Coil voltage*1, replace ____ with:							
			380 V 400 V 415 V kW	500 V kW	660 V 690 V kW							AC1 690 V A	VAC			VDC			
			NO	NC															
AC or DC	3	10 A	4	5.5	5.5	25	1	0	J7TKN-B	67 × 45 × 82.5	J7KN-10D-10_	24	110	230	400	24D	110D		
			4	5.5	5.5	25	0	1			J7KN-10D-01_	24	110	230	400	24D	110D		
		14 A	5.5	7.5	7.5	25	1	0			J7KN-14D-10_	24	110	230	400	24D	110D		
			5.5	7.5	7.5	25	0	1			J7KN-14D-01_	24	110	230	400	24D	110D		
		18 A	7.5	10	10	32	1	0			J7KN-18D-10_	24	110	230	400	24D	110D		
			7.5	10	10	32	0	1			J7KN-18D-01_	24	110	230	400	24D	110D		
		22 A	11	10	10	32	1	0			J7KN-22D-10_	24	110	230	400	24D	110D		
			11	10	10	32	0	1			J7KN-22D-01_	24	110	230	400	24D	110D		
		24 A	11	15	15	50	0	0	J7TKN-C	78 × 45 × 104.5	J7KN-24_	24	110	230	400	24D	110D		
		32 A	15	18.5	18.5	65	0	0			J7KN-32_	24	110	230	400	24D	110D		
		40 A	18.5	18.5	18.5	80	0	0			J7KN-40_	24	110	230	400	24D	110D		
		AC and DC*2		50 A	22	30	30	110	0	0	J7TKN-D	112 × 60 × 113	J7KN-50_	24	110	230	400	24D	110D
				62 A	30	37	37	120	0	0			J7KN-62_	24	110	230	400	24D	110D
				74 A	37	45	45	130	0	0			J7KN-74_	24	110	230	400	24D	110D
90 A	45				55	55	160	0	0	J7TKN-E			155 × 90 × 136	J7KN-90_ *2	24	110	230	400	24
AC and DC*2		115 A	55	75	55	200	0	0	J7TKN-F	290 × 110 × 162	J7KN-115_ *2	24	110	230	400	24	110		
		150 A	75	75	75	230	0	0			J7KN-151_ *2	24	110	230	400	24	110		
		175 A	90	90	90	250	0	0			J7KN-176_ *2	24	110	230	400	24	110		
		210 A	110	160	160	350	0	0	J7TKN-G	200 × 145 × 208	J7KN-210_ *2	24	110	230	400	24	110		
		260 A	132	210	210	450	0	0			J7KN-260_ *2	24	110	230	400	24	110		
		315 A	160	250	250	500	0	0			J7KN-316_ *2	24	110	230	400	24	110		
		450 A	250	375	375	600	2	2	J7TKN-H	258 × 220 × 225	J7KN-450-22_ *2	24	110	230	400	24	110		
		550 A	300	475	475	760	2	2			J7KN-550-22_ *2	24	110	230	400	24	110		
		700 A	400	630	630	1000	2	2		310 × 280 × 291	J7KN-700-22_ *2	24	110	230	400	24	110		
		860 A	500	700	700	1100	2	2		361 × 280 × 291	J7KN-860-22_ *2	24	110	230	400	24	110		
		DC operated solenoid motor contactor		10 A	4	5.5	5.5	25	1	0	J7TKN-B	67 × 45 × 82.5	J7KNG-10-10_	–	–	–	–	24D	110D
					4	5.5	5.5	25	0	1			J7KNG-10-01_	–	–	–	–	24D	110D
				14 A	5.5	7.5	7.5	25	1	0			J7KNG-14-10_	–	–	–	–	24D	110D
					5.5	7.5	7.5	25	0	1			J7KNG-14-01_	–	–	–	–	24D	110D
18 A	7.5			10	10	32	1	0	J7KNG-18-10_	–			–	–	–	24D	110D		
	7.5			10	10	32	0	1	J7KNG-18-01_	–			–	–	–	24D	110D		
22 A	11			10	10	32	1	0	J7KNG-22-10_	–			–	–	–	24D	110D		
	11			10	10	32	0	1	J7KNG-22-01_	–			–	–	–	24D	110D		
24 A	11			15	15	50	0	0	J7TKN-B	78 × 45 × 104.5	J7KNG-24_	–	–	–	–	24D	110D		
32 A	15			18.5	18.5	65	0	0	J7TKN-C		J7KNG-32_	–	–	–	–	24D	110D		
40 A	18.5	18.5	18.5	80	0	0	J7KNG-40_	–	–		–	–	24D	110D					

<sup>\*1</sup> Other coil voltages available on request

<sup>\*2</sup> Universal current (AC and DC)

Operation	Poles	AC3 400 V rated motor current	Rating AC2, AC3		Rated current	Auxiliary contact		Overload relay	Size in mm (H × W × D)	Order code	Coil voltage <sup>*1</sup> , replace ___ with:					
			380 V 400 V 415 V kW	AC1 400 V kW		NO	NC				VAC				VDC	
AC	4	10 A	4	17.5	25	0	0	–	67 × 45 × 82.5	J7KN-10D-4_ _ _ _	24	110	230	400	–	
		14 A	5.5	17.5	25	0	0			J7KN-14D-4_ _ _ _	24	110	230	400		
		18 A	7.5	22	32	0	0			J7KN-18D-4_ _ _ _	24	110	230	400		
		22 A	11	22	32	0	0			J7KN-22D-4_ _ _ _	24	110	230	400		
DC solenoid mo- tor contactor	4	10 A	4	17.5	25	0	0	–	67 × 45 × 82.5	J7KNG-10-4_ _ _ _	–				24D	110D
		14 A	5.5	17.5	25	0	0			J7KNG-14-4_ _ _ _					24D	110D
		18 A	7.5	22	32	0	0			J7KNG-18-4_ _ _ _					24D	110D
		22 A	11	22	32	0	0			J7KNG-22-4_ _ _ _					24D	110D
AC and DC <sup>*2</sup>	4	150 A	75	159	230	0	0	–	170 × 110 × 162	J7KN-151-4_ _ _ _ <sup>*2</sup>	24	110	230	400	24	110
		175 A	90	173	250	0	0			J7KN-176-4_ _ _ _ <sup>*2</sup>	24	110	230	400	24	110

<sup>\*1</sup> Other coil voltages available on request

<sup>\*2</sup> Universal current (AC and DC)

## Accessories

Auxiliary contact blocks	Rated operational current			Contacts		Order code
Suitable for:	AC15 230 V A	AC15 400 V A	AC1 690 V A	NO	NC	
J7KN-10D... to -74...	3	2	10	1	–	J73KN-B-10
	3	2	10	–	1	J73KN-B-01
	3	2	10	1	–	J73KN-B-10U
	3	2	10	–	1	J73KN-B-01U
	6	4	25	1	–	J73KN-B-10A
	6	4	25	–	1	J73KN-B-01A
J7KN-24... to -115...	3	3	10	1	1	J73KN-C-11S
J7KN-151... to -316...	3	2	10	1	1	J73KN-D-11F
	3	2	10	2	2	J73KN-D-22F
	3	2	10	1	1	J73KN-D-11S
J7KN-450... to -860...	3	2	10	2	2	J73KN-E-22F

Pneumatic timers	Function		Time range	Contacts		Order code
Suitable for:						
J7KN-10D... to -74...	3	2	10	1	–	J73KN-B-10
	3	2	10	–	1	J73KN-B-01
	3	2	10	1	–	J73KN-B-10U
	3	2	10	–	1	J73KN-B-01U
	6	4	25	1	–	J73KN-B-10A
	6	4	25	–	1	J73KN-B-01A
J7KN-24... to -115...	3	3	10	1	1	J73KN-C-11S
J7KN-151... to -316...	3	2	10	1	1	J73KN-D-11F
	3	2	10	2	2	J73KN-D-22F
	3	2	10	1	1	J73KN-D-11S
J7KN-450... to -860...	3	2	10	2	2	J73KN-E-22F

Mechanical interlocks	Interlocks contactor with contactor	Order code
Mounting	Order code + Order code	
Horizontal	J7KN(G)-10D to -40 + J7KN(G)-10D to -40	J74KN-B-ML
	J7KN-24 to -74 + J7KN-24 to -74	J74KN-C-ML
	J7KN-90 to -115 + J7KN-90 to -115	J74KN-D2-ML
	J7KN-151 to -316 + J7KN-151 to -316	J74KN-E-ML

Suppressor units	Type		Applicable coil voltage	Order code
Suitable for contactors				
J7KNA(-AR)	AC/DC	RC-unit snap-on contactor	12 to 48 V	J74KN-D-RC24
	AC/DC		48 to 127 V	J74KN-D-RC110
	AC/DC		110 to 250 V	J74KN-D-RC230
J7KN-10D to -74	AC/DC	RC-unit snap-on contactor	12 to 48 V	J74KN-C2-RC24
	AC/DC		48 to 127 V	J74KN-C2-RC110
	AC/DC		110 to 230 V	J74KN-C2-RC230
	AC/DC		230 to 415 V	J74KN-C2-RC400

Additional terminals single pole	Cable cross-sections to clamp (mm <sup>2</sup> )			Order code	
	Suitable for contactors	Solid or stranded	Flexible with multi-core cable end		
J7KN-50 to -74		4 to 35	6 to 25	4 to 25	J74KN-LG-9030
J7KN-151 to -176		16 to 120	–	16 to 95	J74KN-LG-11224

Terminal covers	Specification	Order code
Suitable for contactors		
J7KN-151 to -176	One unit for 3 terminals, 2 units for one contactor	J74KN-LG-10404
J7KN-210 to -316		J74KN-LG-11457

Marking systems	Specification	Order code
Description		
Marking plate	2-section without marking, divisible	J74KN-P487-1
Marking plate	4-section without marking, divisible	J74KN-P245-1

Insulated wiring systems	Suitable for contactors	Max. current (A)	Order code
Function			
For reversing contactors (2 parts)	J7KN-10D to -22D	22	J74-WKR-B2
	J7KN-24 to -40	40	J74-WKR-C
For star-delta combination (4 parts)	J7KN-10D to -22D	22	J74-WKSD-B2
	J7KN-24 to -40	40	J74-WKSD-C

## Specifications

Coil voltages	Suffix to contactor type:						
Contactor type	24	48	110	180	230	400	500
J7KN-10D to J7KN-74	yes	yes	yes	yes	yes	yes	yes
J7KN-90 to J7KN-860	yes	yes	yes	–	yes	yes	–



### Thermal overload relays for J7KN(A) contactors

J7TKN relays protect motors against thermal overload. They can be mounted on the contactor or separately. The relays comply with IEC 60947 (single-phase sensitivity).

- Series of overload relays covering a setting range from 0.12 A to 800 A (D.O.L.)
- Manual and/or auto reset models available

### Ordering information

Applicable contactors	Setting range		Size in mm (H × W × D) (incl. standard J7KN[A] contactor)	Order code
	D.O.L. (A)	Star-delta (A)		
J7KNA-09..., J7KNA-12...	0.12 to 0.18	–	95 × 48.5 × 77	J7TKN-A-E18
	0.18 to 0.27	–		J7TKN-A-E27
	0.27 to 0.4	–		J7TKN-A-E4
	0.4 to 0.6	–		J7TKN-A-E6
	0.6 to 0.9	–		J7TKN-A-E9
	0.8 to 1.2	–		J7TKN-A-1E2
	1.2 to 1.8	–		J7TKN-A-1E8
	1.8 to 2.7	–		J7TKN-A-2E7
	2.7 to 4	–		J7TKN-A-4
	4 to 6	7 to 10.5		J7TKN-A-6
	6 to 9	10.5 to 15.5		J7TKN-A-9
	8 to 11	14 to 19		J7TKN-A-11
J7KN-10D... to J7KN-40...	10 to 14	18 to 24	126.5 × 45 × 70 (J7KN-10D to J7KN-22D); 141.5 × 45 × 87.5 (J7KN-24 to J7KN-40)	J7TKN-A-14
	0.12 to 0.18	–		J7TKN-B-E18
	0.18 to 0.27	–		J7TKN-B-E27
	0.27 to 0.4	–		J7TKN-B-E4
	0.4 to 0.6	–		J7TKN-B-E6
	0.6 to 0.9	–		J7TKN-B-E9
	0.8 to 1.2	–		J7TKN-B-1E2
	1.2 to 1.8	–		J7TKN-B-1E8
	1.8 to 2.7	–		J7TKN-B-2E7
	2.7 to 4	–		J7TKN-B-4
	4 to 6	7 to 10.5		J7TKN-B-6
	6 to 9	10.5 to 15.5		J7TKN-B-9
	8 to 11	14 to 19		J7TKN-B-11
	10 to 14	18 to 24		J7TKN-B-14
J7KN-24... to J7KN-40...	13 to 18	23 to 31	136 × 67 × 96.5	J7TKN-B-18
	17 to 24	30 to 41		J7TKN-B-24
	23 to 32	40 to 55		J7TKN-B-32
J7KN-24... to J7KN-40...	28 to 42	48 to 73	180 × 69 × 108	J7TKN-C-42
J7KN-50... to J7KN-74...	40 to 52	70 to 90	180 × 69 × 108	J7TKN-D-52
	52 to 65	90 to 112		J7TKN-D-65
	60 to 74	104 to 128		J7TKN-D-74
J7KN-90... to J7KN-115...	60 to 90	104 to 156	260 × 107 × 120	J7TKN-E-90
	80 to 120	140 to 207		J7TKN-E-120
J7KN-151... to J7KN-176...	120 to 180	208 to 312	290 × 110 × 162	J7TKN-F-180
J7KN-210... to J7KN-316...	144 to 216	250 to 374	362 × 145 × 208	J7TKN-G-216
	216 to 320	374 to 554		J7TKN-G-320
J7KN-450... to J7KN-860...	240 to 360	416 to 623	372 × 1246 × 1225 (J7KN-450)	J7TKN-H-360
	360 to 540	623 to 935	395 × 1246 × 1225 (J7KN-550)	J7TKN-H-540
	540 to 800	935 to 1385	487 × 1280 × 1291 (J7KN-700) 540 × 1280 × 1291 (J7KN-860)	J7TKN-H-800

## Accessories

## Sets for single mounting

For overload relays	Cable cross-section to clamp (mm <sup>2</sup> )			Order code
	Solid or stranded	Flexible	Flexible with multi-core cable	
J7TKN-AB	0.75 to 6	0.75 to 4	0.5 to 4	J74TK-M-AB
J7TKN-B	0.75 to 6	0.75 to 4	0.5 to 4	J74TK-SM

## Busbar sets for thermal overload relays

For overload relays	For motor contactors	Order code
J7TKN-H-360/540	J7KN-450/550	J74TK-SU-550
J7TKN-H-540/800	J7KN-700/860	J74TK-SU-860

## Specifications

Type		J7TKN-A	J7TKN-B	J7TKN-C	J7TKN-D	J7TKN-E	J7TKN-F	J7TKN-G	J7TKN-H
Rated insulation voltage U <sub>i</sub>		690 VAC				750 VAC	1000 VAC		
Permissible ambient temperature	Operation	-25 to 60°C							-25 to 55°C
	Storage	-50 to 70°C							-40 to 70°C
Trip class according to IEC 947-4-1		10 A				20 A	10 A		
Cable cross-section	Solid or stranded mm <sup>2</sup>	0.75 to 6 0.75 to 2.5	0.75 to 6	0.75 to 10	4 to 35	Without terminals, suitable for bushing one connector 70 mm <sup>2</sup> (stranded) per phase	Busbar 18×4 Screw M8	Busbar 25×6 Screw M10	See accessories
Main connector	Flexible mm <sup>2</sup>	0.75 to 4 0.5 to 2.5	1 to 4	0.75 to 6	6 to 25				
	Flexible with multi-core cable end mm <sup>2</sup>	0.5 to 2.5 0.5 to 1.5	0.75 to 4	0.75 to 6	4 to 25				
Cables per clamp	Number	1 + 1	2	2	1	–	1	1	1
Auxiliary connector	Solid mm <sup>2</sup>	0.75 to 2.5							1 to 2.5
	Flexible mm <sup>2</sup>	0.5 to 2.5							1 to 2.5
	Flexible with multi-core cable end mm <sup>2</sup>	0.5 to 1.5							1 to 2.5
Cables per clamp	Number	2							
Auxiliary contacts									
Rated insulation voltage U <sub>i</sub>	same potential	690 VAC							500 VAC
	different potential	440 VAC		250 VAC		440 VAC			500 VAC
Rated operational current I <sub>e</sub> Utilization category AC15	24 V	5 A	3 A	4 A		5 A	3 A		4 A
	230 V	3 A	2 A	2.5 A	2.5 A	3 A	2 A		2.5 A
	400 V	2 A	1 A	1.5 A	1.5 A	2 A	1 A		1.5 A
	690 V	0.6 A	0.5 A	0.6 A			0.5 A		0.6 A
Rated operational current I <sub>e</sub> Utilization category DC13	24 V	1.2 A	1 A	1.2 A					
	110 V	0.15 A							
	220 V	0.1 A							
Short circuit protection (without welding 1 kA)	Highest fuse rating gL (gG)	6 A	4 A	6 A			4 A		6 A
Setting range		to 23 A	All	28 to 42 A	52 to 65 A	All	–	–	–
Power loss per current path (max.)	Minimum setting value	1.1 W	1.1 W	1.3 W	2.9 W	1.1 W	–	–	–
	Maximum setting value	2.3 W	2.3 W	3.3 W	4.5 W	2.5 W	–	–	–



### J7MN motor protection circuit breakers from 0.10 A to 100 A

J7MN starters protect motors against thermal overload and short circuit. The J7MN can be equipped with additional auxiliary contacts, tripping indicator (alarm), undervoltage release and/or shunt release. All models can be locked for safe maintenance.

- Rated operational currents of 32 A for the rocker type
- Rated operational currents of 32 A, 63 A and 100 A for the rotary types
- Switching capacity is 100 kA/415 V up-to 13 A and 50 kA/415 V up-to 100 A
- Electrical/mechanical link modules available up-to 11 kW motor protection units
- All components are finger proof

### Ordering information

Rated current in A	Suitable for motors 3 ~ 400 V kW	Current setting range		Short-circuit breaking capacity at 3 ~ 400 V kA	Size in mm (H × W × D)	Order code
		Thermal overload release A	Instantaneous short-circuit release A			
0.16	–	0.10–0.16	2.1	100	98 × 45 × 75	J7MN-3P-E16
0.25	0.06	0.16–0.25	3.3	100		J7MN-3P-E25
0.4	0.09	0.25–0.4	5.2	100		J7MN-3P-E4
0.63	0.18	0.4–0.63	8.2	100		J7MN-3P-E63
1	0.25	0.63–1	13	100		J7MN-3P-1
1.6	0.55	1–1.6	20.8	100		J7MN-3P-1E6
2.5	0.75	1.6–2.5	32.5	100		J7MN-3P-2E5
4	1.5	2.5–4	52	100		J7MN-3P-4
6	2.2	4–6	78	100		J7MN-3P-6
8	3	5–8	104	100		J7MN-3P-8
10	4	6–10	130	50		J7MN-3P-10
13	5.5	9–13	169	50		J7MN-3P-13
17	7.5	11–17	221	20		J7MN-3P-17
22	7.5	14–22	286	15		J7MN-3P-22
26	11	18–26	338	15		J7MN-3P-26
32	15	22–32	416	15		J7MN-3P-32
0.16	–	0.10–0.16	2.1	100	98 × 45 × 100	J7MN-3R-E16
0.25	0.06	0.16–0.25	3.3	100		J7MN-3R-E25
0.4	0.09	0.25–0.4	5.2	100		J7MN-3R-E4
0.63	0.18	0.4–0.63	8.2	100		J7MN-3R-E63
1	0.25	0.63–1	13	100		J7MN-3R-1
1.6	0.55	1–1.6	20.8	100		J7MN-3R-1E6
2.5	0.75	1.6–2.5	32.5	100		J7MN-3R-2E5
4	1.5	2.5–4	52	100		J7MN-3R-4
6	2.2	4–6	78	100		J7MN-3R-6
8	3	5–8	104	100		J7MN-3R-8
10	4	6–10	130	100		J7MN-3R-10
13	5.5	9–13	169	100		J7MN-3R-13
17	7.5	11–17	221	50		J7MN-3R-17
22	7.5	14–22	286	50		J7MN-3R-22
26	11	18–26	338	50		J7MN-3R-26
32	15	22–32	416	50		J7MN-3R-32
26	12.5	18–26	338	50	140 × 55 × 144	J7MN-6R-26
32	15	22–32	416	50		J7MN-6R-32
40	18.5	28–40	520	50		J7MN-6R-40
50	22	34–50	650	50		J7MN-6R-50
63	30	45–63	819	50	165 × 70 × 171	J7MN-6R-63
63	30	45–63	819	50		J7MN-9R-63
75	37	55–75	975	50		J7MN-9R-75
90	45	70–90	1170	50		J7MN-9R-90
100	–	80–100	1300	50		J7MN-9R-100



## Accessories

Description	Version	For circuit breaker	Order code	
Transverse auxiliary contact block				
Contact block	1 NO + 1 NC	All	J77MN-11F	
	2NO		J77MN-20F	
	2NC		J77MN-02F	
Auxiliary contact block for left hand side mounting (max. 2 pc. per circuit breaker)				
Contact block (9 mm)	1 NO + 1 NC	All	J77MN-11S	
	2NO		J77MN-20S	
	2NC		J77MN-02S	
Signalling switch for left hand side mounting (max. 1 pc. per circuit breaker)				
Signalling switch (18 mm)	1 NO + 1 NC any tripping condition	J7MN-3P/-3R	J77MN-TA-11S	
		J7MN-6R/-9R	J77MN-TB-11S	
	1 NO + 1 NC short circuit tripping condition	All	J77MN-T-11S	
Undervoltage releases for right hand side mounting (max 1 pc. per circuit breaker)				
Trips the circuit breaker when the voltage is interrupted. Prevents the motor from being restarted accidentally when the voltage is restored, suitable for EMERGENCY STOP according to VDE 0113	AC 50 Hz	AC 60 Hz		
	24 V	28 V	All	J77MN-U-24
	110–127 V	120 V		J77MN-U-110
	220–230 V	240–260 V		J77MN-U-230
	240 V	277 V		J77MN-U-240
	380–400 V	440–460 V		J77MN-U-400
	415–440 V	460–480 V		J77MN-U-415
	Shunt releases for right hand side mounting (max 1 pc. per circuit breaker)			
Trips the circuit breaker when the release coil is energized	AC 50 Hz	AC 60 Hz		
	24 V	28 V	All	J77MN-S-24
	110–127 V	120 V		J77MN-S-110
	220–230 V	240–260 V		J77MN-S-230
	240 V	277 V		J77MN-S-240
	380–400 V	440–460 V		J77MN-S-400
	415–440 V	460–480 V		J77MN-S-415
Terminal block				
Terminal block	Up to 600 V according to UL 489 not for transverse auxiliary contact block	J7MN-3R	J77MN-TB32	
		J7MN-9R	J77MN-TB100	

## Insulated 3-Phase Busbar System IP20

Description	Connection type	Version	For Units (MPCB)	Order code
3-phase busbars; modular spacing = 45 mm	Spade	for 2 units	J7MN-3P; J7MN-3R	J77MN-CPM-3-45-2S
		for 3 units		J77MN-CPM-3-45-3S
		for 4 units		J77MN-CPM-3-45-4S
		for 5 units		J77MN-CPM-3-45-5S
Line side terminal 3-pole, connection from above; conductor cross-section solid or stranded 6–25 mm <sup>2</sup> with end sleeve 4–16 mm <sup>2</sup>	Spade	acc. IEC/EN 60947-1, 60947-2, 60947-4-1 and VDE 0660	J7MN-3P; J7MN-3R	J77MN-BTC-63-SE
Line side terminal 3-pole, connection from above; conductor cross-section solid or stranded 6–25 mm <sup>2</sup> with end sleeve 4–16 mm <sup>2</sup>	Spade	up to 600 V acc. UL 489	J7MN-3P; J7MN-3R	J77MN-BTC-63-SEV
Shrouds for unused terminals on busbar system	Spade		J7MN-3P; J7MN-3R	J77MN-TA-63S

## Specifications

Type		J7MN-3P	J7MN-3R	J7MN-6R	J7MN-9R
Number of poles		3	3	3	3
Max. rated current $I_{nmax}$ (= max. rated operational current $I_e$ )	A	32	32	63	100
Permissible ambient temperature	Storage/transport	-50 to 80°C			
	Operation	-20 to 60°C			
Rated operational voltage $U_e$	V	690			
Rated frequency	Hz	50/60			
Rated insulation voltage $U_i$	V	690			
Rated impulse withstand voltage $U_{imp}$	kV	6			
Utilization category	IEC 60 947-2 (circuit breaker)	A			
	IEC 60 947-4-1 (motor starter)	AC-3			
Class	According to IEC 60 947-4-1	10			
Degree of protection	According to IEC 60 529	IP20	IP20	IP20	IP20
Phase failure sensitivity	According to IEC 60 947-4-1	Yes			
Explosion protection	According to EC Directive 94/19/EC	Yes			
Isolator characteristics	According to IEC 60 947-3	Yes			
Main and EM. STOP switch characteristics	According to IEC 60 204-1 (VDE113)	Yes			
Safe isolation between main and auxiliary circuits According to DIN VDE 0106 Part 101	Up to 400 V + 10%	Yes			
	Up to 415 V + 5%	Yes			
Mechanical endurance	Operating cycles	100,000	100,000	50,000	50,000
Electrical endurance		100,000	100,000	25,000	25,000
Max. operating frequency per hour (motor starts)	1/h	25	25	25	25

## THE COMPLETE MONITORING RANGE

### K8 series – The smart way to protect your system

The K8 series offers you a flexible and complete one-stop shopping solution!  
This monitoring range can be split into models for single-phase current and single-phase voltage, three-phase voltage, conductive level and a temperature alarm unit.

- 1-phase: full-span of range setting, all models with timer function
- 3-phase: wide range of global voltage settings
- Temperature monitoring relay: wide temperature range with precision increased
- Easy-to-set parameters

