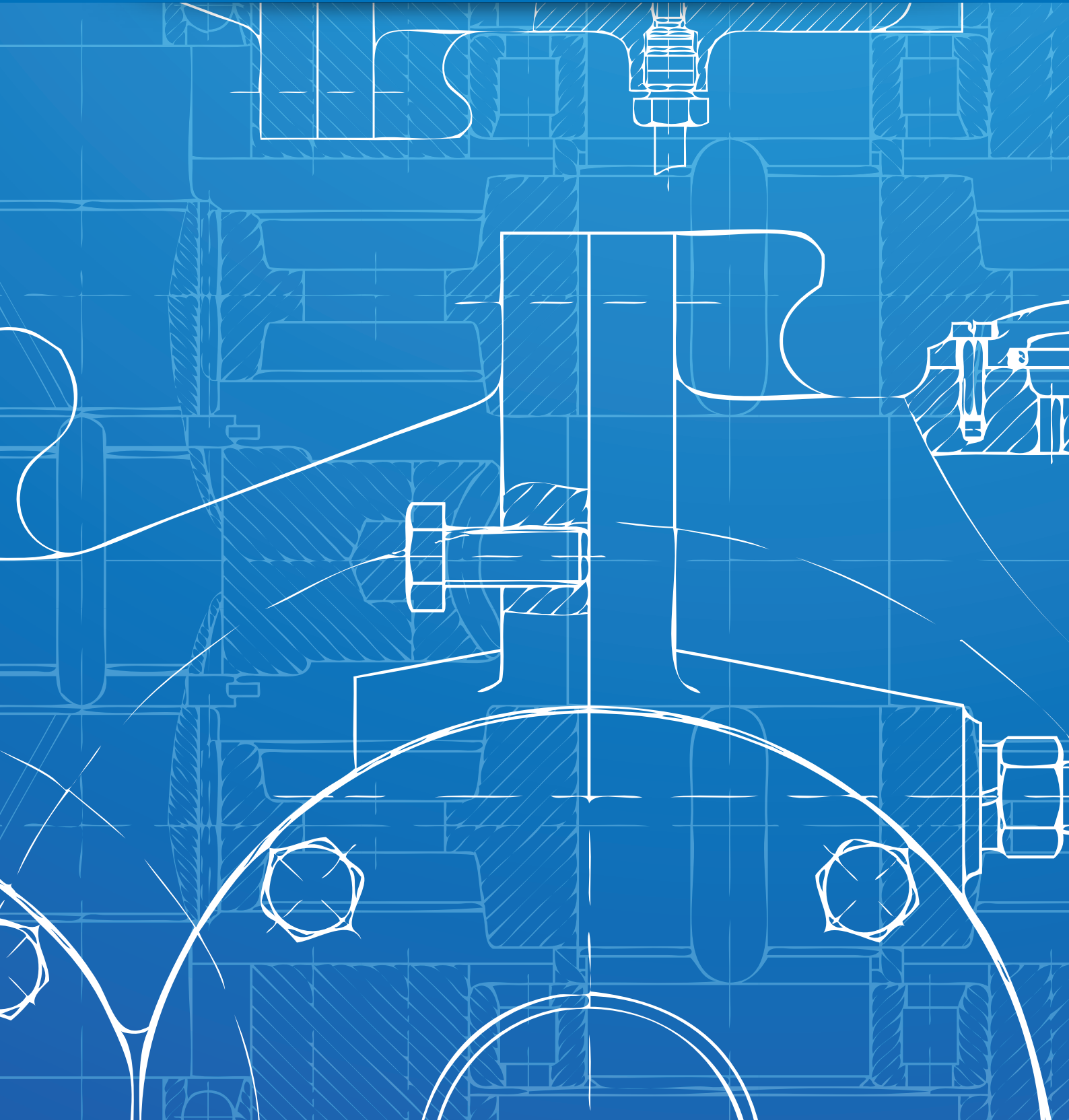


# Industrial Automation Portfolio 2016

Input, Logic, Output & Safety



# 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 PORTFOLIO is your essential tool to select best-in-class devices for your automation system. It highlights our core competence in sensing, control, visualisation, motion and panel components.

Of course, Omron offers a much larger range of products than you can find in this catalogue. For more products and 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

## Find information fast!

Quick Links shortens your search. Quick Links are unique codes assigned to Omron products listed in this guide. Enter Quick Link codes in the search box on industrial.omron.eu to access detailed information on products in this guide.



Quick Link

# Industrial Automation Portfolio 2016

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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

37,000

Employees worldwide

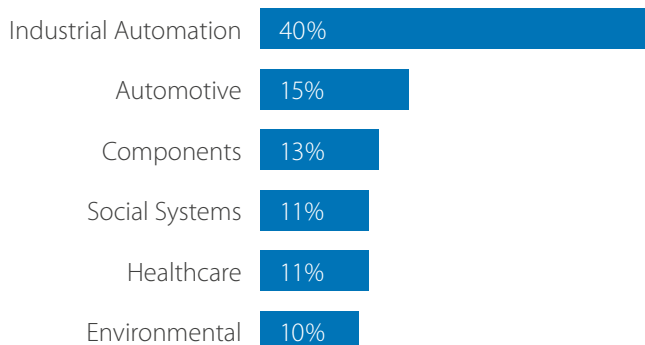
210

Locations worldwide

22

Countries in EMEA

## Working for the benefit of society



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

200,000 products ranging  
input, logic and output

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

## Our Services

18

we can answer your questions in 18 different local languages

400

technical engineers available in the field

90%

of your delivery in 1 day

# 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.

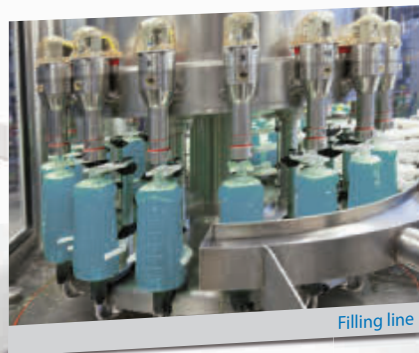


Machine Automation Controller

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

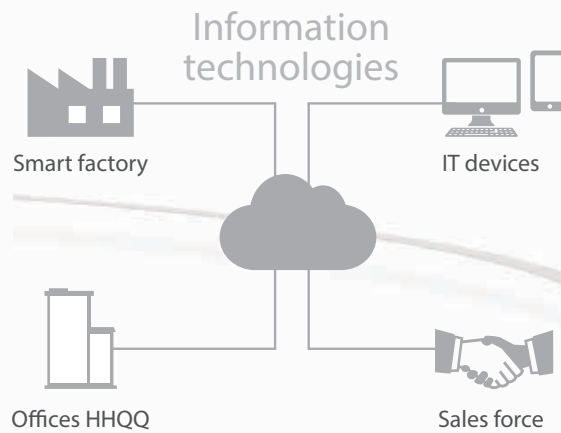


Assembly

- 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



- 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.

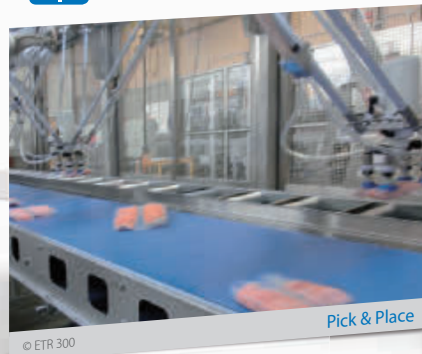
- ✓ **Integrated Automation Control:**  
The Sysmac platform is scalable and provides the performance and functionality for a wide range of solutions from simple machines through to manufacturing cells

## Vision



- 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



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

## Sensing



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

# Product selection table

Automation systems	 <p>10 Machine automation controller</p>	 <p>14 Programmable logic controllers (PLC)</p>	 <p>18 Remote I/O</p>	 <p>22 Human machine interfaces (HMI)</p>
Motion & Drives	 <p>26 Motion controllers</p>	 <p>30 Servo systems</p>	 <p>34 Robots</p>	 <p>38 Frequency inverters</p>
Sensing	 <p>42 Photoelectric sensors</p>	 <p>46 Mark and Color sensors</p>	 <p>50 Lightcurtains and area sensors</p>	 <p>54 Fiber optic sensors and amplifiers</p>
Quality control & Inspection	 <p>70 Inspection &amp; Ident systems</p>	 <p>74 Measurement sensors</p>		
Safety	 <p>78 Emergency stop and control devices</p>	 <p>82 Safety limit switches</p>	 <p>86 Safety door switches</p>	 <p>90 Safety sensors</p>
Control components	 <p>102 Temperature controllers</p>	 <p>106 Power supplies</p>	 <p>110 Uninterruptible power supplies (UPS)</p>	 <p>114 Timers</p>
Switching components	 <p>138 Electromechanical relays</p>	 <p>142 Solid state relays</p>	 <p>146 Low voltage switchgear</p>	 <p>152 Monitoring products</p>
Software	 <p>164 Software</p>			



58 Inductive sensors



62 Mechanical sensors/Limit switches



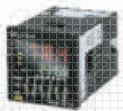
66 Rotary encoders



94 Safety logic control systems



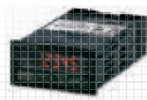
98 Safety outputs



118 Counters



122 Programmable relays



126 Digital panel indicators



130 Energy monitoring devices



134 Photovoltaic



160 Pushbutton switches

# Machine automation controller

## NX7/NJ-SERIES MACHINE AUTOMATION CONTROLLER

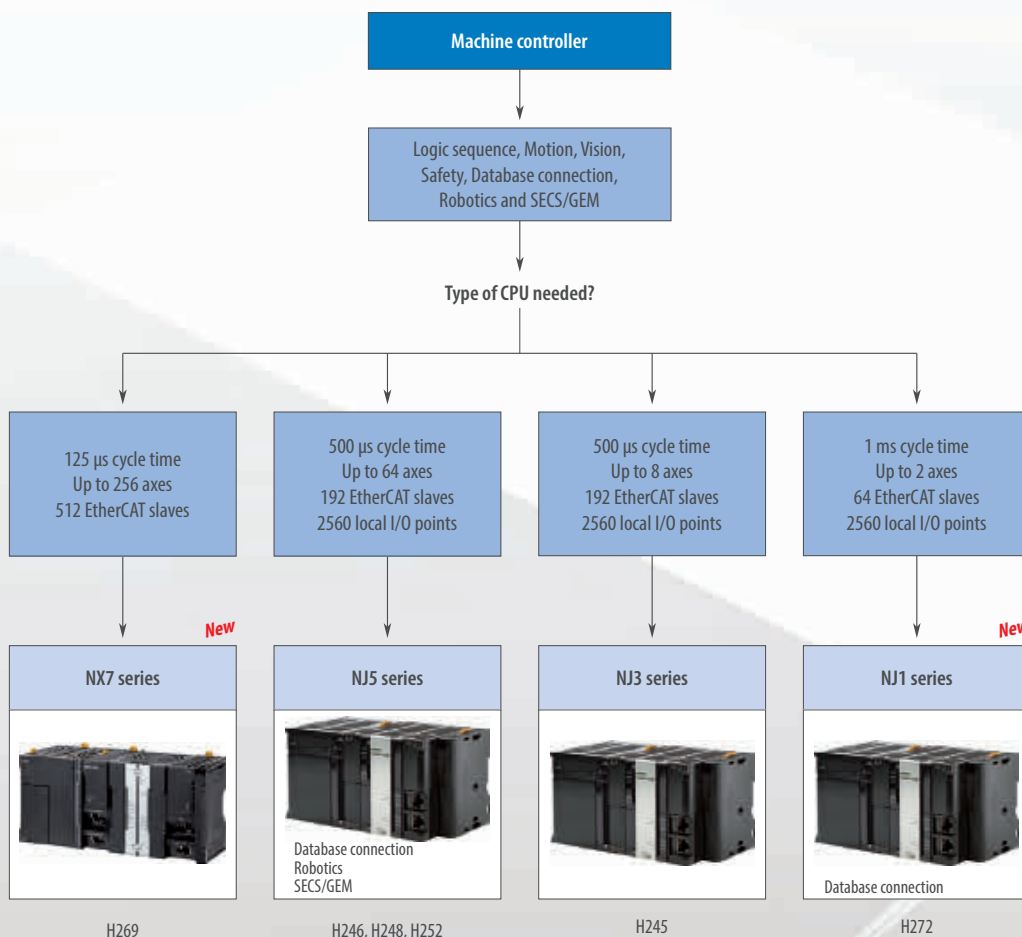
### Complete and robust machine automation

The Machine Automation Controller is at the heart of the Sysmac platform. One integrated machine controller that offers speed, flexibility, scalability of software and a centric architecture without compromising on the traditional reliability and robustness that you have come to expect from Omron PLCs. The Machine Controller is designed to meet extreme machine control requirements in terms of fast and accurate motion control, accuracy, communication, security and system robustness. You just create...





- Fastest cycle time: 125  $\mu$ s
- Up to 256 synchronized axes
- Fully conforms with IEC 61131-3 standards
- PLCopen Function Blocks for Motion Control
- Advanced motion with Robotics functionality
- Built-in EtherCAT and EtherNet/IP ports



**SYSMAC**  
always in control





Machine automation controller				
				
<b>Model</b>	<b>NX7</b>	<b>NJ5</b>	<b>NJ3</b>	<b>NJ1</b>
<b>Fastest cycle time</b>	125 µs	500 µs	500 µs	1 ms
<b>Number of axes</b>	256, 128	64, 32, 16	8, 4	2, 0
<b>Task</b>	Multi-tasking program			
<b>Motion core</b>	2 synchronized motion cores		Synchronized motion core	
<b>Functions</b>	<ul style="list-style-type: none"> <li>Logic sequence</li> <li>Motion</li> </ul>	<ul style="list-style-type: none"> <li>Logic sequence</li> <li>Motion</li> <li>Robotics</li> <li>Database connection</li> <li>SECS/GEM</li> </ul>	<ul style="list-style-type: none"> <li>Logic sequence</li> <li>Motion</li> </ul>	<ul style="list-style-type: none"> <li>Logic sequence</li> <li>Motion</li> <li>Database connection</li> </ul>
<b>Software tool</b>	Sysmac Studio			
<b>Programming languages</b>	<ul style="list-style-type: none"> <li>Ladder</li> <li>Structured Text</li> <li>In-Line ST</li> </ul>			
<b>Standard programming</b>	<ul style="list-style-type: none"> <li>IEC 61131-3</li> <li>PLCopen Function Blocks for Motion Control</li> </ul>			
<b>Program capacity</b>	80 MB	20 MB	5 MB	3 MB
<b>SD memory card</b>	SD and SDHC memory card			
<b>Built-in port</b>	<ul style="list-style-type: none"> <li>EtherNet/IP</li> <li>EtherCAT</li> <li>USB 2.0</li> </ul>			
<b>EtherCAT slaves</b>	512	192		64
<b>Servo drive</b>	Accurax G5/EtherCAT			
<b>Motion control</b>	<ul style="list-style-type: none"> <li>Axes groups interpolation and single axis moves</li> <li>Electronic cams and gearboxes</li> <li>Direct position control for axis and groups</li> </ul>			
<b>Robotics</b>	–	Up to 8 Delta robot control	–	–
<b>Supported SQL servers</b>	–	<ul style="list-style-type: none"> <li>Microsoft SQL Server</li> <li>Oracle</li> <li>IBM DB2</li> <li>MySQL</li> <li>Firebird</li> </ul>	–	<ul style="list-style-type: none"> <li>Microsoft SQL Server</li> <li>Oracle</li> <li>IBM DB2</li> <li>MySQL</li> <li>Firebird</li> </ul>
<b>Local I/O points</b>	–	2560		
<b>Mounting</b>	DIN rail			
<b>Global standards</b>	CE, cULus		CE, cULus, NK, LR	
<b>Page/Quick Link</b>	H269	H246, H248, H252	H245	H272

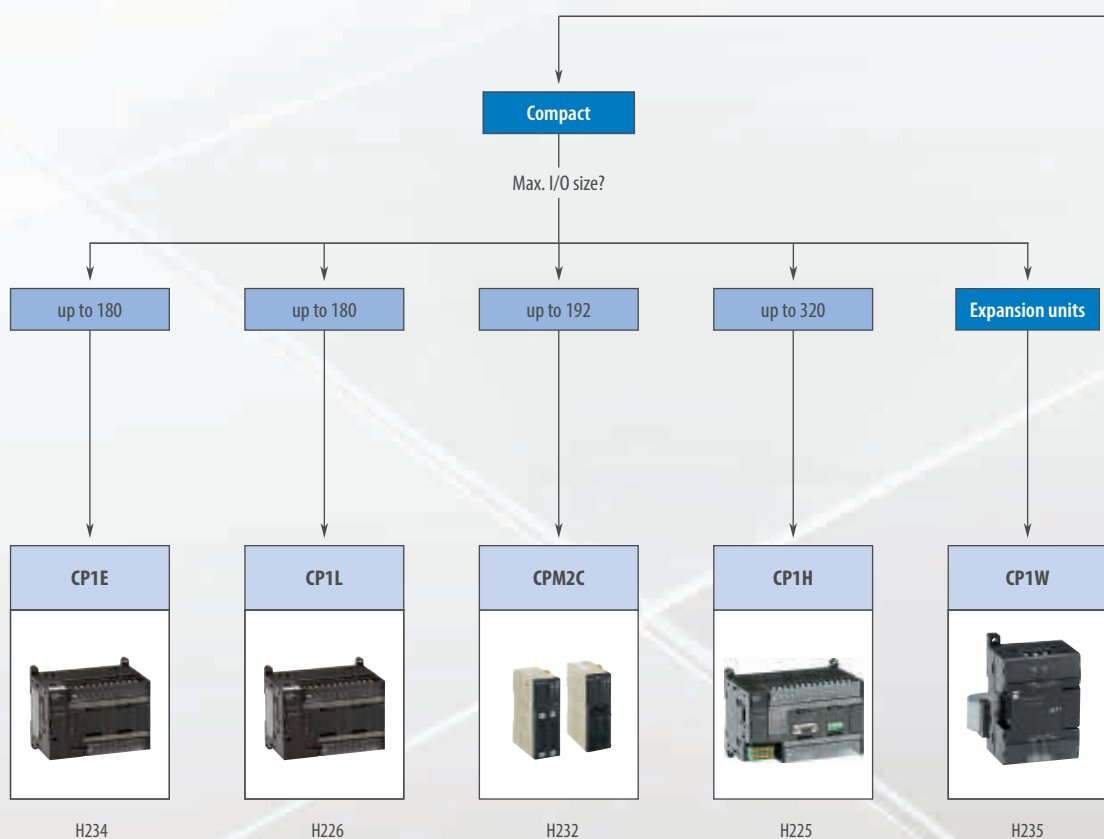
# Programmable logic controllers (PLC)

## KNOW ONE ... KNOW THEM ALL!

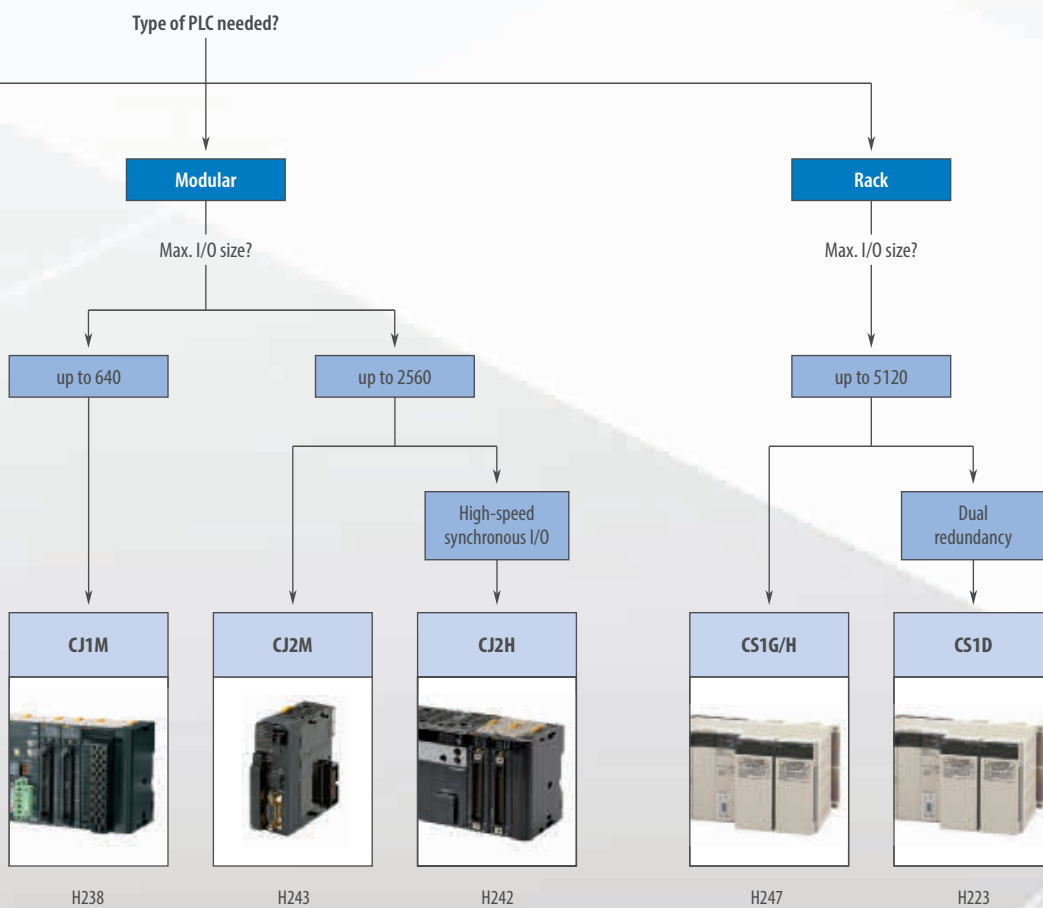
Whether your automation requires a simple and economical solution, or your target is advanced, high-speed control, you can find what you need in Omron's line-up of Programmable Controllers.

And if your systems grow, or change due to market demand, you will find that only Omron offers a full range of Compact PLCs and Modular PLCs that share the same architecture. Therefore your programs are fully upward compatible, both in memory allocation and instruction set.




- One scalable PLC family to always match exactly with your application
- Transparent communication routing through different networks
- The best size/performance ratio in the industry









# Selection table

		Compact PLC series			
					
Model		CPM2C	CP1E	CP1L	CP1H
Max digital I/O points <sup>*1</sup>		192	180	180	320 <sup>*2</sup>
Built-in	Digital I/O	10 to 32	10 to 60	10 to 60	20 or 40
	Interrupt inputs	2 or 4	4 or 6	2, 4, or 6	6 or 8
	Counter inputs	2 or 4	5 or 6	4	2 or 4
	Pulse outputs <sup>*1</sup>	2	2	2	2 or 4
CPU features <sup>*1</sup>		Compact size Expansion units Quick-response inputs High-speed counter Pulse output with PWM RS-232C port Real time clock	USB port Expansion I/O units Quick-response inputs High-speed counter Pulse output with PWM RS-232C port RS-485 port Real time clock 2 Analog adjusters See Analog I/O section	USB or Ethernet port Expansion I/O units Quick-response inputs High-speed counter Pulse output with PWM Up to 2 serial option boards Real time clock 1 Analog adjuster See Analog I/O section	USB port Expansion I/O units CJ-series Special I/O Units CJ-series CPU Bus Units Quick-response inputs High-speed counter Pulse output with PWM RS-232C port Option board slots Real time clock 1 Analog adjuster LED display, 2 digit See Analog I/O section
Instruction Execution time (bit instruction)		0.64 µs	1.19 µs	0.55 µs	0.10 µs
Program memory		4K words	2 or 8K steps	5 or 10K (+10K Function block) steps	20K steps
Data memory		2K words	2 or 8K words	10 or 32K words	32K words
External memory		Expansion memory unit	–	Memory cassette	Memory cassette
Analog I/O		Analog I/O unit Temperature sensor unit	Built-in for E-NA model (2 in + 1 out) Analog I/O Expansion Units Temperature Input Expansion Units	Built-in for EL/EM model (2 inputs) Analog I/O Expansion Units Temperature Input Expansion Units	Built-in for XA model (4 in + 2 out) Analog I/O Expansion Units Temperature Input Expansion Units CJ Analog I/O Units CJ Temperature Units
Special function units		–	–	–	CJ-series Special I/O Units CJ-series CPU Bus Units
Fieldbus master		–	ModBus	Ethernet ModBus	Ethernet EtherNet/IP Controller Link DeviceNet PROFIBUS-DP PROFINET ModBus CompoNet CompoBus/S CAN (freely configurable)
Fieldbus I/O		CompoBus/S DeviceNet	PROFIBUS-DP CompoBus/S DeviceNet	PROFIBUS-DP CompoBus/S DeviceNet	PROFIBUS-DP CompoBus/S DeviceNet
Page/Quick Link		H232	H234	H226	H225

<sup>\*1</sup> Some features listed are not available for all CPU types within each series. Please review specifications for more information on CPU features and performance.

<sup>\*2</sup> Represents local I/O capacity. If a fieldbus master is used more I/O is possible.

		Modular PLC series			Rack PLC series	
						
Model		CJ1M/G	CJ2M	CJ2H	CS1G/H	CS1D
Max. digital I/O points*1		1280	2560	2560	5120	5120
Built-in*1	Digital I/O	16	–	–	–	–
	Interrupt inputs	4	–	–	–	–
	Counter inputs	2	–	–	–	–
	Pulse outputs	2	–	–	–	–
CPU features*1		Compact size No backplane required Large program capacity Easy backups Built-in pulse I/O Loop control CPU type Real time clock	USB port Ethernet/IP port High-speed I/O units Option board plug-in Structures and arrays Tag data links Compact size No backplane required Large program capacity Function Block memory Easy backups Real time clock	USB port Ethernet/IP port High-speed I/O units Structures and arrays Tag data links Synchronous I/O Compact size No backplane required Extra Large program capacity Easy backups Real time clock	High I/O capacity Inner board support Large program capacity Backwards compatible Easy backups Real time clock	Redundant CPU Redundant power supply Hot swapping High I/O capacity Inner board support Large program capacity Backwards compatible Easy backups Real time clock
Instruction Execution time (bit instruction)		0.10/0.04 µs	0.04 µs	0.016 µs	0.04/0.02 µs	0.04/0.02 µs
Program memory		5 to 60K steps	5 to 60K steps	50 to 400K steps	10 to 250K steps	10 to 250K steps
Data memory		32 to 128K words	64 to 160K words	160 to 832K words	64 to 448K words	64 to 448K words
CompactFlash memory		Up to 512 MB				
Analog I/O		Analog I/O unit Temperature sensor unit Temperature control unit				
Special function units		Temperature control High-speed counters (500 kHz) SSI encoder input Position control Protocol macro RFID sensor unit Weighing unit Data collection & storage unit		Temperature control High-speed counters (500 kHz) SSI encoder input Position control Protocol macro RFID sensor unit High-speed I/O Synchronised Position Data collection & storage unit	Temperature control SSI encoder input High-speed counters (500 kHz) Position control Motion control Process control Protocol macro RFID sensor unit Data collection & storage unit	
Fieldbus master		Ethernet EtherNet/IP Controller Link DeviceNet PROFIBUS-DP PROFINET ModBus CompoNet CompoBus/S CAN (freely configurable)				
Fieldbus I/O		DeviceNet PROFIBUS-DP CAN (freely configurable)				
Page/Quick Link		H238	H243	H242	H247	H223

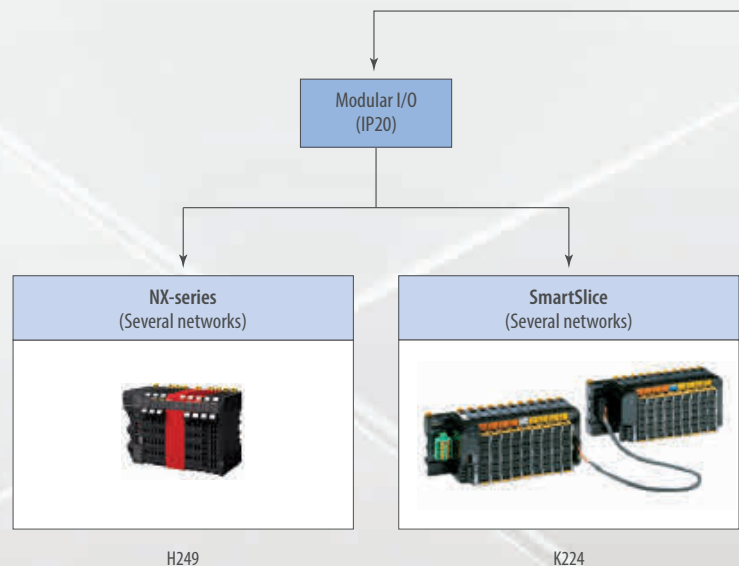
\*1 Some features listed are not available for all CPU types within each series. Please review specifications for more information on CPU features and performance.

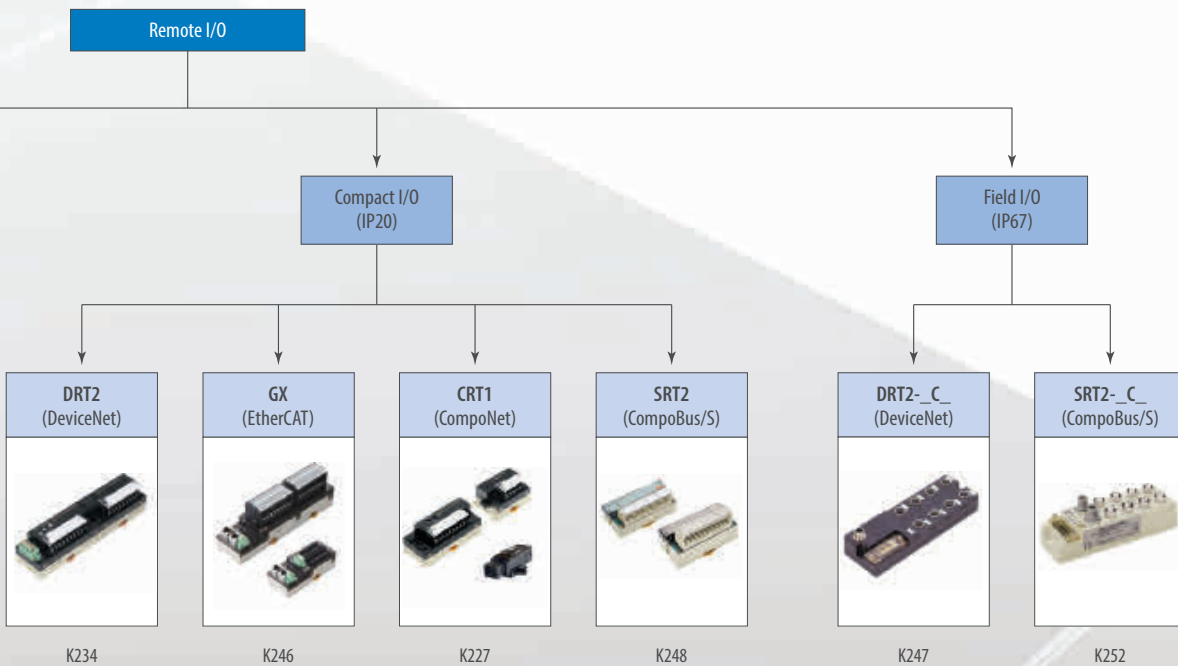
## I/O SYSTEMS TO MEET EVERY NEED

### Choose by network, style and flexibility






Compact remote I/O units combine a fixed number of I/O points in a space-saving housing. Built-in smart monitoring functions for voltage level, broken wire, actuator and cycle time will assist in planning preventive maintenance for machines and eliminating costly downtime. Compact smart slaves are available for the open EtherCAT, DeviceNet and CompoNet networks whilst Omron's CompoBus/S offers a more simple and cost-efficient solution.




Modular remote I/O systems offer the possibility to install just the right number and type of I/O's where you need them. I/O modules range from basic and economical digital I/O's to high-performance modules with intelligent functions. With a choice of communication couplers for various open networks, you can adapt to existing installations and end-user demands, or make the right trade-off between performance and ease-of-use. Besides EtherCAT as main machine automation network, Omron offers connectivity to EtherNet/IP, DeviceNet, CompoNet, PROFINET IO, PROFIBUS DP, and MECHATROLINK-II.







	Modular I/O		Compact I/O		
					
<b>Model</b>	<b>NX-series</b>	<b>SmartSlice</b>	<b>GX</b>	<b>DRT2</b>	<b>CRT1</b>
<b>Network connection</b>	EtherCAT in- and outgoing connections by RJ45 ethernet ports, EtherNet/IP with built-in Ethernet switch and 2 RJ45 ports	DeviceNet, CompoNet, PROFIBUS DP, PROFINET I/O, EtherCAT, MECHATROLINK-II	EtherCAT in- and outgoing connections by RJ45 ethernet plug	DeviceNet with open-style push-in terminal block	CompoNet, unshielded 4-wire flat cable and IDC connectors, or general-purpose 2-wire cable by screw terminals
<b>I/O types</b>	Digital standard and high-speed synchronous, analog standard and high-speed, temperature, encoders, pulse output, safety I/O	Digital I/O, analog I/O, temperature inputs, high-speed counter with control outputs	8 DI + 8 DO 16 DI+extension 16 DO+extension 16 relay out 4 AI (V/I) 2 AO (V/I) Incremental encoder (24 V/line driver)	8/16 DI+extension, 8/16 DO+extension, 8 DI + 8 DO 16 relay out, 4 AI (V/I, TC, Pt100), 2 AO (V/I),	8/16 DI+extension, 8/16 DO+extension, 8 DI + 8 DO 4 AI, 2 AO, 2 DI, 2 DO
<b>I/O connection technology</b>	Push-in wiring on removable terminal block, MIL connectors, M3 screw terminals and Fujitsu connectors	Push-in wiring on removable terminal block	M3 screw terminals (1- or 3-wire DI)	M3 screw terminals (1- or 3-wire DI)	M3 screw terminals
<b>Smart features</b>	Synchronous I/O and time-stamping on EtherCAT, safety I/O	I/O and power supply diagnostics, operation timers and counters per I/O point	Automatic or fixed address allocation	I/O and power supply diagnostics, operation timers and counters per I/O point, analog value calculations and alarms	I/O and power supply diagnostics, operation timers and counters for each I/O point, analog value calculations and alarms
<b>Ingress Protection class</b>	IP20 (DIN rail mounting in cabinets)	IP20 (DIN rail mounting in cabinets)	IP20 (DIN rail mounting in cabinets)	IP20 (DIN rail mounting in cabinets)	IP20 (DIN rail mounting in cabinets)
<b>Page/Quick Link</b>	H249	K224	K246	K234	K227

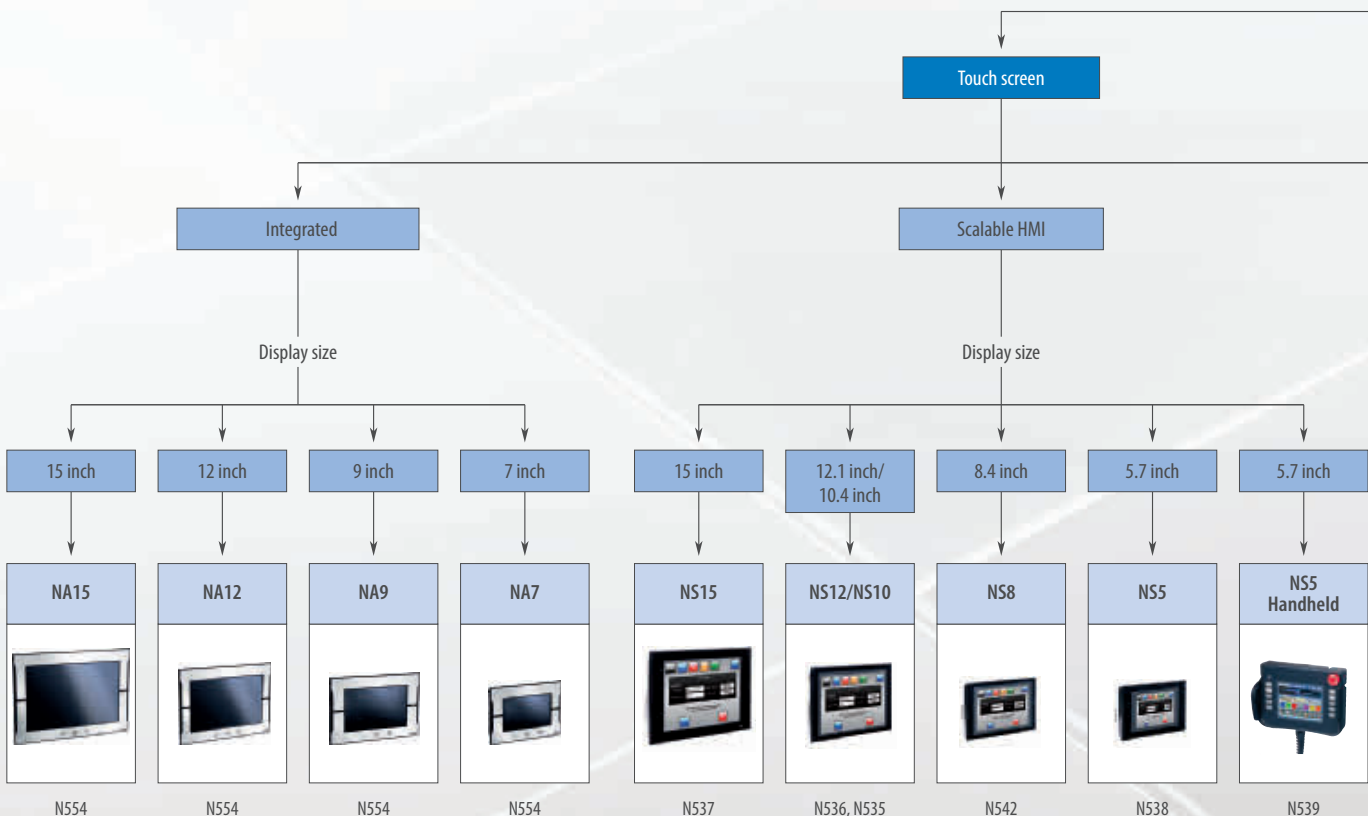
	Compact I/O	Field I/O	
			
<b>Model</b>	<b>SRT2</b>	<b>DRT2- C</b>	<b>SRT2- C</b>
<b>Network connection</b>	CompoBus/S, (2-wire + power) by M3 screw terminals	DeviceNet with M12 micro connector	CompoBus/S, by 4-wire M12 connector, unshielded
<b>I/O types</b>	4/8/16 DI, 4/8/16 DO, 8/16 relay out, 4 AI (V/I) 2 AO (V/I)	8/16 DI, 8/16 DO, 8DI + 8 DO	4/8 DI, 4/8 DO
<b>I/O connection technology</b>	M3 screw terminals (1- or 3-wire DI)	M12, 1 or 2 I/O signals per connector, 7/8" I/O Power connector	M12 connectors, one I/O point per connector
<b>Smart features</b>	I/O isolation, status indication	I/O and power supply diagnostics, operation timers and counters per I/O point	I/O isolation, status indication
<b>Ingress Protection class</b>	IP20 (DIN rail mounting in cabinets)	IP67, flat mounting by two M5 screws	IP67, flat mounting by three M5 screws
<b>Page/Quick Link</b>	K248	K247	K252

# Human machine interfaces (HMI)

## NA AND NB SERIES

If you are looking for a smart and dependable HMI for use with our compact and modular PLC's, look no further than the NB series. It offers you - among various other features – an LED backlit TFT LCD, a portrait and landscape mode and USB memory stick support. It is available with screen sizes from 3.5 to 10 inches.

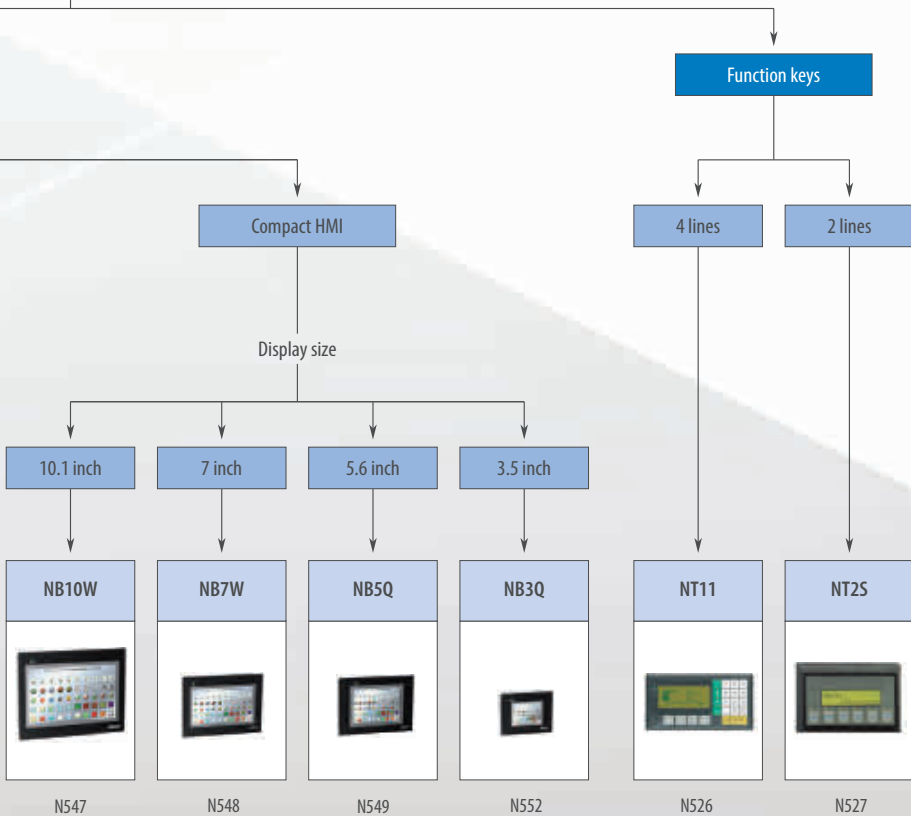
For faster, more efficient control and monitoring, the scalable NA series HMI offers a more natural, proactive machine/operator environment that will evolve to meet your ever-changing needs. Based on the Sysmac Platform, the NA series is fully aware of the total machine and brings together all areas of automation including: logic, motion, vision, safety and visualization. It gives you a clear view in one integrated project. The high resolution wide screens are available in 7" and 9" (800 × 480 pixel ) as well as 12" and 15" (1280 × 800 pixel)

















Interaction type





# Selection table

Integrated HMI				
				
<b>Model</b>	<b>NA15</b>	<b>NA12</b>	<b>NA9</b>	<b>NA7</b>
<b>Display</b>	15 inch widescreen TFT color	12 inch widescreen TFT color	9 inch widescreen TFT color	7 inch widescreen TFT color
<b>Resolution</b>	1280 × 800 pixels	1280 × 800 pixels	800 × 400 pixels	800 × 400 pixels
<b>Colors</b>	24 bit	24 bit	24 bit	24 bit
<b>Communication</b>	3 × USB 2 × Ethernet 1 × RS-232 SD Card 24 VDC	3 × USB 2 × Ethernet 1 × RS-232 SD Card 24 VDC	3 × USB 2 × Ethernet 1 × RS-232 SD Card 24 VDC	3 × USB 2 × Ethernet 1 × RS-232 SD Card 24 VDC
<b>Dimensions in mm (H×W×D)</b>	420×291 391×267 (cut-out)	340×244 309×220 (cut-out)	290×190 260×165 (cut-out)	236×165 196×140 (cut-out)
<b>Page/Quick Link</b>	N554			

Scalable HMI						
						
<b>Model</b>	<b>NS15</b>	<b>NS12</b>	<b>NS10</b>	<b>NS8</b>	<b>NS5</b>	<b>NS5 handheld</b>
<b>Display</b>	15 inch TFT color	12.1 inch TFT color	10.4 inch TFT color	8.4 inch TFT color	5.7 inch TFT color	5.7 inch STN color
<b>Resolution</b>	1024 × 768 pixels (XGA)	800 × 600 pixels (SVGA)	640 × 480 pixels (VGA)	640 × 480 pixels (VGA)	320 × 240 pixels (QVGA)	320 × 240 pixels (QVGA)
<b>Number of colors</b>	256 (32,768 for image data)	256 (32,768 for image data)	256 (32,768 for image data)	256 (32,768 for image data)	256 (32,768 for image data)	256 (4,096 for image data)
<b>Memory Size</b>	60 MB screen memory	60 MB screen memory, 32,768 words + 32,768 bits internal memory and 8192 words + 8192 bits retentative memory	60 MB screen memory, 32,768 words + 32,768 bits internal memory and 8192 words + 8192 bits retentative memory	60 MB screen memory, 32,768 words + 32,768 bits internal memory and 8192 words + 8192 bits retentative memory	60 MB screen memory, 32,768 words + 32,768 bits internal memory and 8192 words + 8192 bits retentative memory	60 MB screen memory, 32,768 words + 32,768 bits internal memory and 8192 words + 8192 bits retentative memory
<b>Options</b>	Controller Link, Video input board (NS-CA002)	Ethernet, Controller Link, Video input board (RGB/Composite)	Ethernet, Controller Link, Video input board (RGB/Composite)	Ethernet, Video input board (RGB/Composite)	Ethernet	RS-232 or RS-422 communication depending on cable
<b>Dimensions in mm (H×W×D)</b>	300×400×80	241×315×48.5	241×315×48.5	177×195×48.5	142×195×54	176×223×70.5 (excl. emergency button)
<b>Page/Quick Link</b>	N537	N536	N535	N542	N538	N539

		Compact HMI			
					
Model		NB10W	NB7W	NB5Q	NB3Q
Display		10.1 inch Wide TFT LCD	7 inch Wide TFT LCD	5.6 inch TFT LCD	3.5 inch TFT LCD
Resolution		800 × 480 pixels	800 × 480 pixels	320 × 234 pixels	320 × 240 pixels
Number of colors		65,536	65,536	65,536	65,536
Memory		128 MB (including system area)	128 MB (including system area)	128 MB (including system area)	128 MB (including system area)
Communication ports	Serial Communication	1 × RS-232C & 1 × RS-232C/422A/485	1 × RS-232C & 1 × RS-232C/422A/485	1 × RS-232C & 1 × RS-232C/422A/485	1 × RS-232C/422A/485
	USB (USB Host only on TW01 model)	1 × USB Host & 1 × USB Slave	1 × USB Host & 1 × USB Slave	1 × USB Host & 1 × USB Slave	1 × USB Host & 1 × USB Slave
	Ethernet	1 × Ethernet	1 × Ethernet (TW01 model)	1 × Ethernet (TW01 model)	1 × Ethernet (TW01 model)
Dimensions in mm (H×W×D)		210.8×268.8×54.0	148×202×46	142×184×46	103.8×129.8×52.8
Page/Quick Link		N547	N548	N549	N552

		Function-key HMI			
					
Model		NT11	NT25		
Type of Display		LED backlight LCD	LED backlight LCD		
Number of F-keys		22	6 or 20 depending on model		
Number of characters		20 × 4 lines	16 × 2 lines		
Printer connection		Yes	Depending on model		
Number of screens		250	65,000 (limited by memory)		
Size in mm (H×W×D)		113×218×38.2	6 F-keys 60×109×43 20 F-keys 107×107×43		
Page/Quick Link		N526	N527		

# Motion controllers

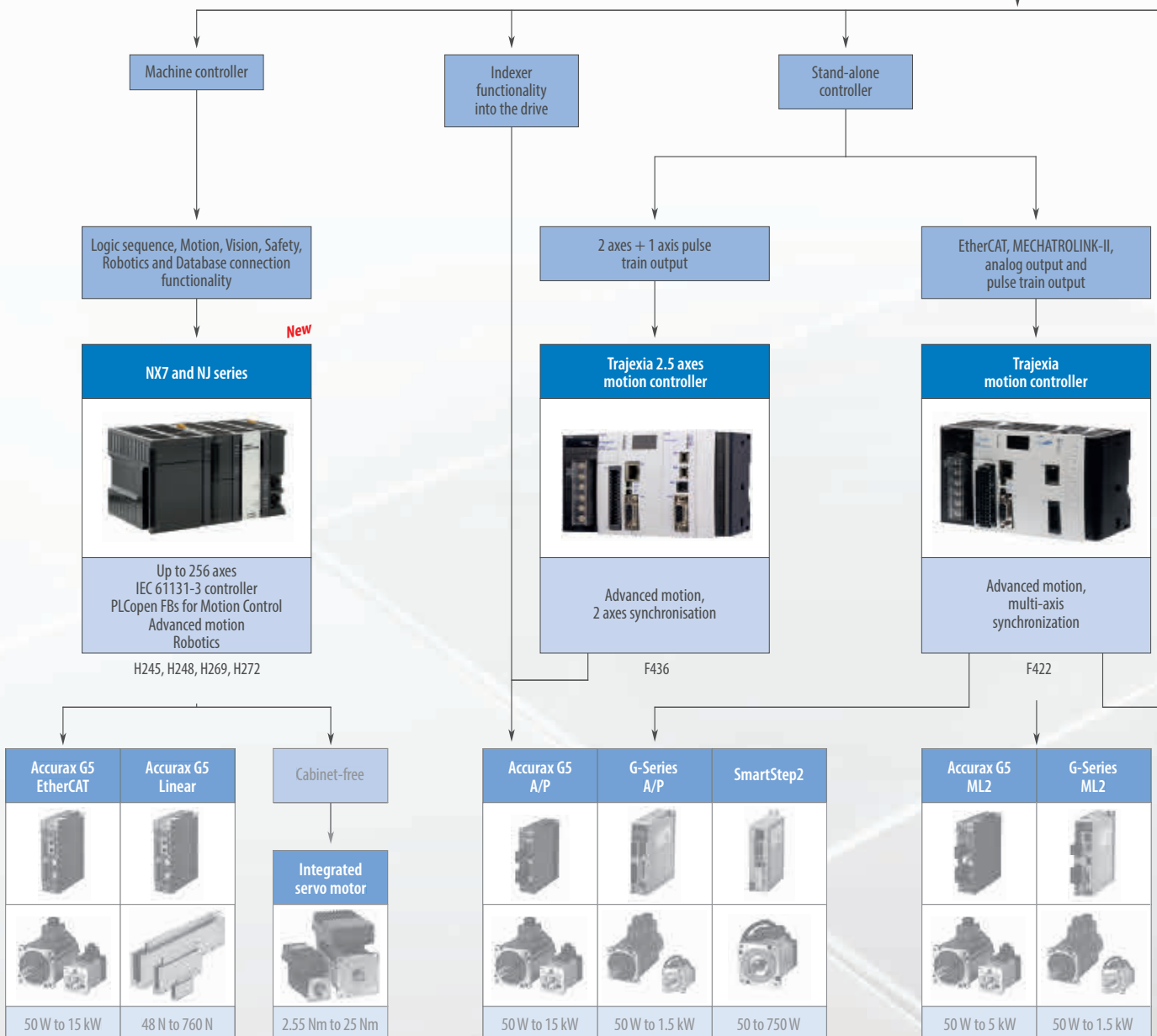
## NX7/NJ series machine controller

- Integration of logic and motion in one Intel CPU
- Scalable motion control: CPUs from 2 up to 256 axes
- Fully conforms with IEC 61131-3 standards
- PLCopen Function Blocks for Motion Control
- Advanced motion with Robotics functionality
- Built-in EtherCAT and EtherNet/IP ports



**SYNTRAC**  
always in control

Which motion architecture do you need?



## Trajexia with EtherCAT

- Motion control of 64 axes
- Scalability with EtherCAT masters for 4, 16 and 64 axes
- Supports servos, inverters, vision systems and distributed I/O modules



EtherCAT®

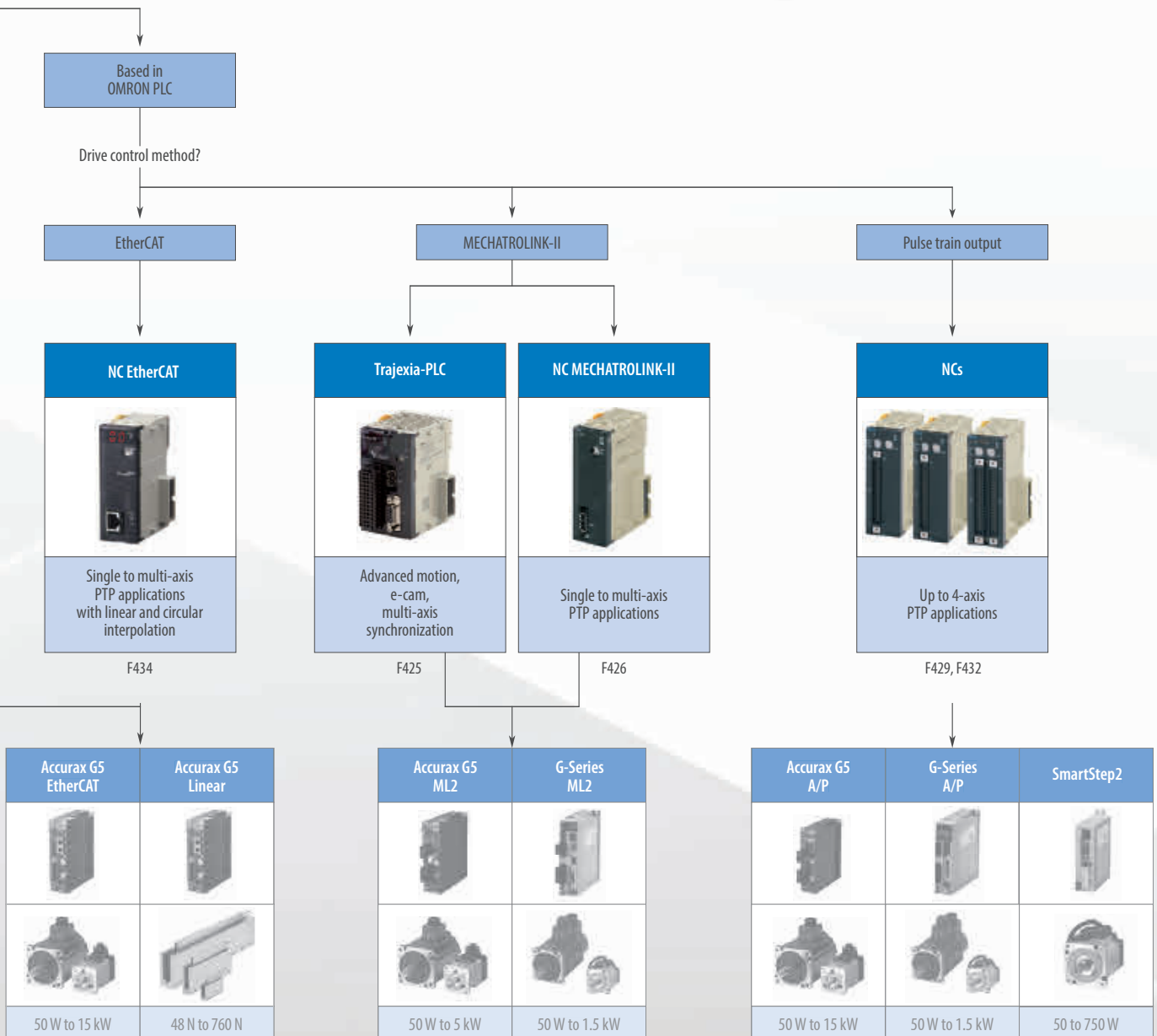
## CJ-Series PLC with EtherCAT

- Position control unit CJ1W-NC with EtherCAT
- Support for up to 16 axes and 64 inverters, vision systems and distributed I/O modules











EtherCAT®

Motion controllers





Motion controllers				
				
Model	<b>NX and NJ series machine controller</b>	<b>Trajexia stand-alone</b>		<b>NC EtherCAT</b>
	Logic sequence, Motion, Robotics and Database connection functionality	The advanced stand-alone motion controller	Trajexia 2.5 axes motion controller	16-axis point-to-point positioning controller
Axes control method	EtherCAT	EtherCAT, MECHATROLINK-II, analog output and pulse-train output	2 axes for position, speed and torque control and 1 axis for pulse train output in open loop	EtherCAT
Number of axes	2, 4, 8, 16, 32, 64, 128, 256	4, 16, 64	2	2, 4, 8, 16
Applicable servo drive	Accurax G5 and Integrated servomotor	Accurax G5 and G-Series	Accurax-G5	Accurax G5
Application	Advance motion including robotics	Advanced motion, e-cam, ELS, Phase shift, Registration	Advanced motion, e-cam, ELS, Phase shift, Registration	From simple PTP to multi axis PTP with linear and circular interpolation
Servo control mode	Position, speed and torque	Position, speed and torque	Position, speed and torque	Position, speed and torque
PLC series	NX and NJ series	Stand-alone motion controller: Serial and Ethernet/IP built-in, PROFIBUS-DP, DeviceNet and CANopen communication options	Stand-alone motion controller: Serial and EtherNet/IP built-in, PROFIBUS-DP, DeviceNet and CANopen communication options	CJ
Page/Quick Link	H245, H248, H269, H272	F422	F436	F434

Motion controllers				
				
Model	<b>Trajexia-PLC</b>	<b>NC MECHATROLINK-II</b>	<b>CJ1W-NC__3</b>	<b>CJ1W-NC__4</b>
	Advanced multi-axes motion controller in a PLC	16-axis point-to-point positioning controller	4-axis point-to-point positioning controller	4-axis point-to-point positioning controller with synchronization
Axes control method	MECHATROLINK-II	MECHATROLINK-II	Pulse train output	Pulse train output
Number of axes	4, 30	2, 4, 16	1, 2, 4	2, 4
Applicable servo drive	Accurax G5 and G-Series	Accurax G5 and G-Series	SmartStep 2 and Accurax G5	SmartStep 2 and Accurax G5
Application	Advanced motion, e-cam, ELS, Phase shift, Registration	From simple PTP to multi axis PTP coordinated systems	Point to point applications	Point-to-point with complex interpolations
Servo control mode	Position, speed and torque	Position, speed and torque	Open loop position with linear interpolation	Open loop position with linear and circular interpolation
PLC series	CJ	CJ and CS1	CJ an CS1	CJ
Page/Quick Link	F425	F426	F429	F432

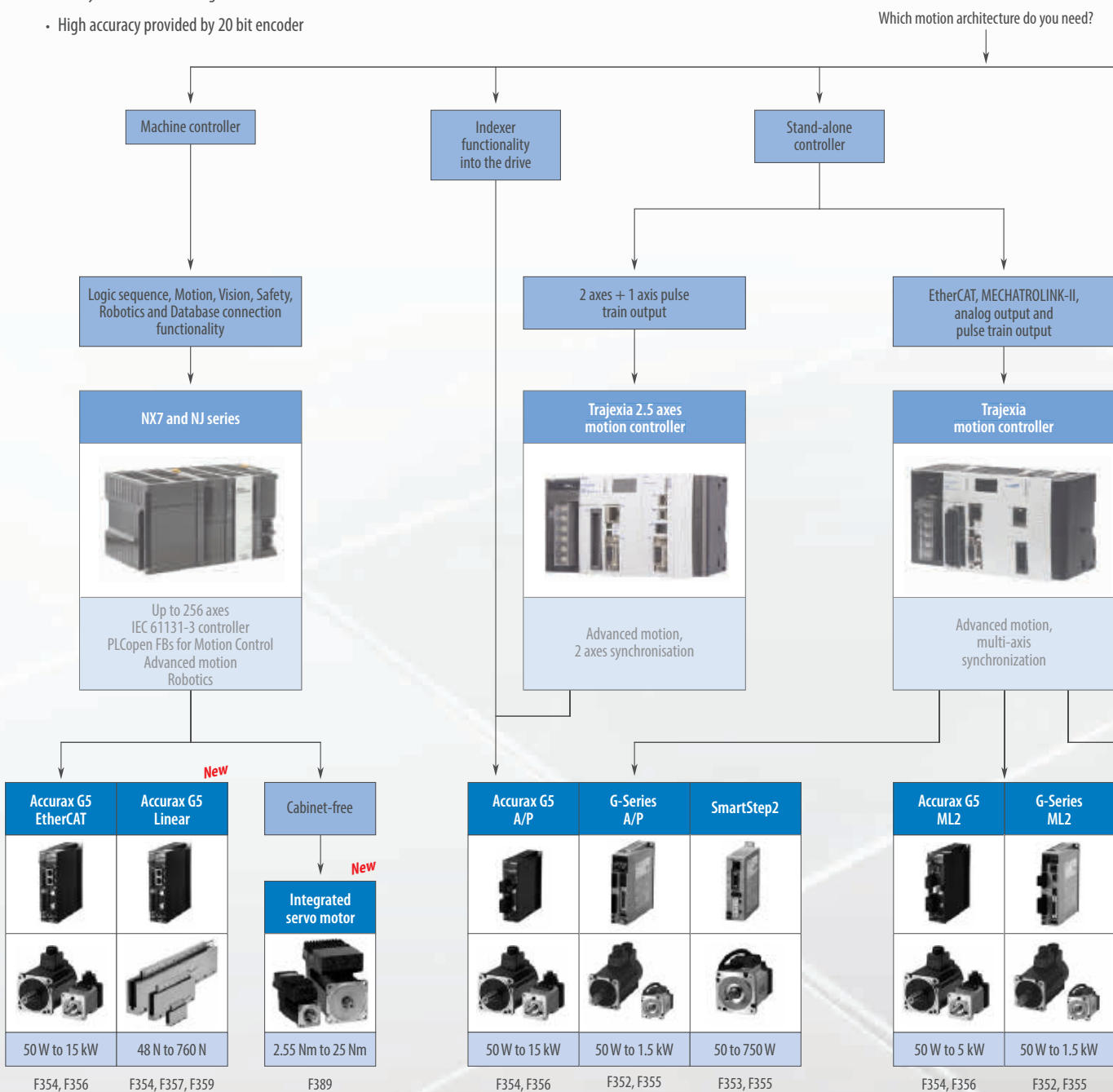
# Servo systems

## EXTREME MECHATRONICS MEETS X-STREAM AUTOMATION

### At the heart of every great machine

Great machines are born from a perfect match between control and mechanics. Accurax G5 gives you the extra edge to build more accurate, faster, smaller and safer machines. You will benefit from an almost 25% reduction in motor weight, and gain 50% cabinet space. You will achieve sub micron precision and ms settling time. Some might call it perfection, we just call it tireless innovation to help you build great machines.

- EtherCAT, ML-II and analog/pulse models
- High response frequency of 2 kHz
- Safety built-in conforming ISO13849-1 PL-d
- High accuracy provided by 20 bit encoder







Based in OMRON PLC

Drive control method?

EtherCAT

MECHATROLINK-II

Pulse train output

NC EtherCAT



Single to multi-axis PTP applications with linear and circular interpolation

Trajexia-PLC



Advanced motion, e-cam, multi-axis synchronization

NC MECHATROLINK-II



Single to multi-axis PTP applications

NCs



Up to 4-axis PTP applications

Accurax G5 EtherCAT

Accurax G5 Linear New



50 W to 15 kW

48 N to 760 N

F354, F356

F354, F357, F359

Accurax G5 ML2

G-Series ML2



50 W to 5 kW

50 W to 1.5 kW

F354, F356

F352, F355

Accurax G5 A/P

G-Series A/P

SmartStep2



50 W to 15 kW

50 W to 1.5 kW





50 to 750 W





F354, F356




F352, F355





F353, F355



# Selection table


Servo drives				
				
	Accurax G5		G-Series	SmartStep 2
	Rotary servo drive	Linear servo drive	Compact size and ML2 motion bus	Pulse train input with ultra-compact size
Ratings 230 V single-phase	100 W to 1.5 kW	200 W to 1.5 kW	100 W to 1.5 kW	100 W to 750 W
Ratings 400 V three-phase	600 W to 15 kW	600 W to 5 kW	N/A	N/A
Applicable servomotor	Accurax G5 and G-Series rotary motors	Accurax linear motors	G-Series	G-Series
Position control	EtherCAT, MECHATROLINK-II or Pulse train input	EtherCAT	MECHATROLINK-II or Pulse train input	Pulse train input
Speed control	EtherCAT, MECHATROLINK-II or Analog input $\pm 10$ V	EtherCAT	MECHATROLINK-II or Analog input $\pm 10$ V	N/A
Torque control	EtherCAT, MECHATROLINK-II or Analog input $\pm 10$ V	EtherCAT	MECHATROLINK-II or Analog input $\pm 10$ V	Torque limits only
Drive programming	Embedded indexer functionality (Only for G5 Analog/Pulse model)	N/A	N/A	N/A
Safety approvals	PLd (EN ISO 13849-1) SIL2 (IEC 61508)	PLd (EN ISO 13849-1) SIL2 (IEC 61508)	N/A	N/A
Safety function	STO	STO	N/A	N/A
Full closed loop	Built-in	N/A	N/A	N/A
Page/Quick Link	F354	F354	F352	F353

Accurax G5 servo motors				
				
	Standard models			
	3,000 r/min motor	2,000 r/min motor	1,500 r/min motor	1,000 r/min motor
Rated speed	3,000 rpm	2,000 rpm	1,500 rpm	1,000 rpm
Maximum speed	4,500 to 6,000 rpm	3,000 rpm	2,000 to 3,000 rpm	2,000 rpm
Rated torque	0.16 Nm to 15.9 Nm	1.91 Nm to 23.9 Nm	47.8 Nm to 95.5 Nm	8.59 Nm to 28.7 Nm
Sizes	50 W to 5 kW	400 W to 5 kW	7.5 kW to 15 kW	900 W to 6 kW
Applicable servo drive	Accurax G5 servo drive	Accurax G5 servo drive	Accurax G5 servo drive	Accurax G5 servo drive
Encoder resolution	20-bit incremental/ 17-bit absolute	20-bit incremental/ 17-bit absolute	17-bit absolute	20-bit incremental/ 17-bit absolute
IP rating	IP67	IP67	IP67	IP67
Page/Quick Link	F356			

Accurax G5 servo motors			
			
	High inertia models		
	3,000 r/min motor	2,000 r/min motor	1,500 r/min motor
Rated speed	3,000 rpm	2,000 rpm	1,500 rpm
Maximum speed	5,000 rpm	3,000 rpm	2,000 to 3,000 rpm
Rated torque	0.64 Nm to 2.4 Nm	4.77 Nm to 23.9 Nm	47.8 Nm
Sizes	200 W to 750 W	1 kW to 5 kW	7.5 kW
Applicable servo drive	Accurax G5 servo drive	Accurax G5 servo drive	Accurax G5 servo drive
Encoder resolution	20-bit incremental/ 17-bit absolute	20-bit incremental/ 17-bit absolute	17-bit absolute
IP rating	IP65	IP67	IP67
Page/Quick Link	F356		

	G-Series servo motors – Cylindrical type –			G-Series servo motors – Flat type –
				
	<b>3,000 r/min motor</b>	<b>2,000 r/min motor</b>	<b>1,000 r/min motor</b>	<b>3,000 r/min motor</b>
Rated speed	3,000 rpm	2,000 rpm	1,000 rpm	3,000 rpm
Maximum speed	4,500 to 5,000 rpm	3,000 rpm	2,000 rpm	5,000 rpm
Rated torque	0.16 Nm to 4.77 Nm	4.8 Nm to 7.15 Nm	8.62 Nm	0.32 Nm to 1.3 Nm
Sizes	50 to 1,500 W	1 to 1.5 kW	900 W	100 to 400 W
Applicable servo drive	SmartStep 2, G-Series and Accurax G5 servo drives	SmartStep 2, G-Series and Accurax G5 servo drives	SmartStep 2, G-Series and Accurax G5 servo drives	SmartStep 2, G-Series and Accurax G5 servo drives
Encoder resolution	10,000 pulses/revolution or 17-bit absolute/incremental	10,000 pulses/revolution or 17-bit absolute/incremental	10,000 pulses/revolution or 17-bit absolute/incremental	10,000 pulses/revolution or 17-bit absolute/incremental
IP rating	IP65	IP65	IP65	IP65
Page/Quick Link	F355			

	Accurax linear motors	
		
Type	<b>Iron-core linear motor</b>	<b>Ironless linear motor</b>
Continuous force range	48 N to 760 N	29 N to 423 N
Peak force range	105 N to 2000 N	100 N to 2100 N
Maximum speed	1 to 10 m/s	1.2 to 16 m/s
Magnetic attraction force	300 N to 4440 N	Zero
Applicable servo drive	Accurax G5 linear drive	
Page/Quick Link	F357, F359	

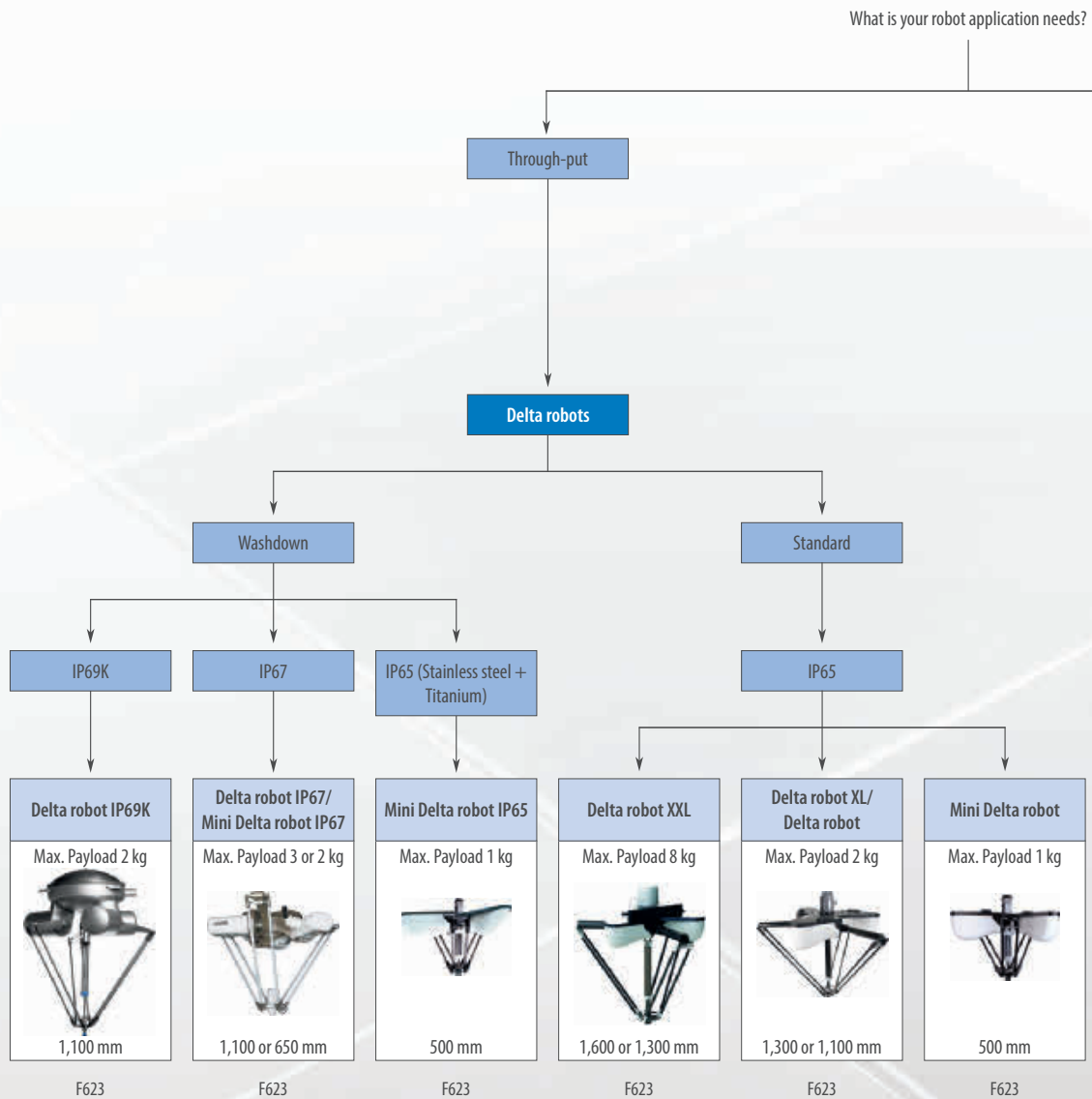
	Integrated servo motors
	
Rated torque	<b>2.55 Nm to 25 Nm</b>
Rated speed	3,000 rpm
Maximum speed	4,000 rpm
Encoder resolution	15-bit incremental/18-bit absolute
IP rating	IP65
Page/Quick Link	F389

## PICK & PLACE SOLUTIONS



### Delta robots

The new solutions centred on Delta robots allow you to build very high through-put machines that can handle more than one hundred picking operations per minute.



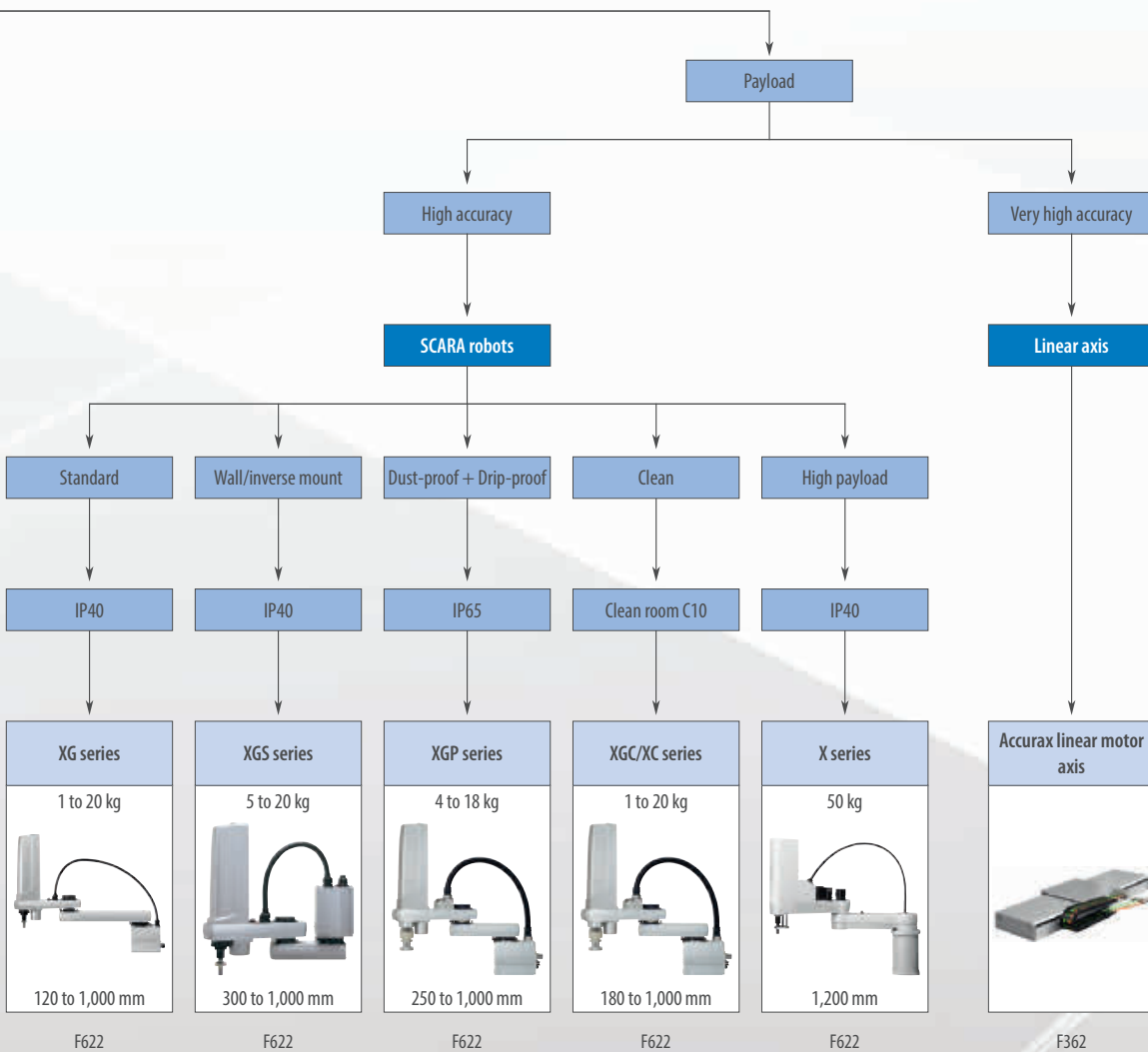
## SCARA robots

With more than 70 robot models, the SCARA based solutions are excellent when you face heavy part handling in combination with high speed cycles.









## Linear axis

If precise positioning is requested then the Linear motor family provides repeatability down to the micrometer level which is achievable even while the machine performs high dynamic tasks.



# Selection table

Delta robots				
				
<b>Model</b>	Delta robot IP69K	Delta robot IP67	Mini Delta robot IP67	Mini Delta robot IP65
<b>Type</b>	Washdown Delta robot series			
<b>Max. Payload</b>	2 kg	3 kg	2 kg	1 kg
<b>Degrees of freedom</b>	3 + 1 (rotation optional)			
<b>Rated working range</b>	Ø 1,100 × 250 mm (Max. 400)	Ø 1,100 × 300 mm (Max. 450)	Ø 650 × 150 mm (Max. 250)	Ø 500 × 155 mm/ Ø 500 × 130 mm (with rotational axis)
<b>Cycle time</b>	25/305/25 mm (0.1 kg): Up to 150 cycle/min		25/305/25 mm (0.1 kg): Up to 200 cycle/min	
<b>Position repeatability</b>	±0.2 mm (X, Y, Z)		±0.1 mm (X, Y, Z)	±0.2 mm (X, Y, Z)
<b>Angular repeatability</b>	±0.3° (q)	±0.1° (q)		±0.3° (q)
<b>Protection class</b>	IP69K	IP67	IP65 (Stainless steel + Titanium)	
<b>Rotational axis type</b>	Shaft mounting	Tool Center Point mounting - Low or High inertia -		Shaft mounting
<b>Option</b>	-	Anti-collision detection	-	
<b>Machine controller</b>	NJ5 Robotics			
<b>Servo drive</b>	Accurax G5 rotary servo drive - EtherCAT			
<b>Page/Quick Link</b>	F623			

Delta robots					
					
<b>Model</b>	Delta robot XXL (1,600)	Delta robot XXL (1,300)	Delta robot XL	Delta robot	Mini Delta robot
<b>Type</b>	Delta robot series				
<b>Max. Payload</b>	8 kg		2 kg	1 kg	
<b>Degrees of freedom</b>	3 + 1 (rotation optional)				
<b>Rated working range</b>	Ø 1,600 × 350 mm (Max. 550)	Ø 1,300 × 300 mm (Max. 450)	Ø 1,300 × 250 mm (Max. 400)	Ø 1,100 × 250 mm (Max. 400)	Ø 500 × 155 mm/ Ø 500 × 130 mm (with rotational axis)
<b>Cycle time</b>	25/300/25 mm (8 kg): Up to 60 cycle/min 200/1000/200 mm (8 kg): Up to 35 cycle/min	25/300/25 mm (8 kg): Up to 65 cycle/min 200/1000/200 mm (8 kg): Up to 40 cycle/min	25/305/25 mm (0.1 kg): Up to 120 cycle/min	25/305/25 mm (0.1 kg): Up to 150 cycle/min	25/305/25 mm (0.1 kg): Up to 200 cycle/min
<b>Position repeatability</b>	±1 mm (X, Y, Z)		±0.2 mm (X, Y, Z)	±0.3 mm (X, Y, Z)	±0.2 mm (X, Y, Z)
<b>Angular repeatability</b>	±0.3° (q)			±0.4° (q)	±0.3° (q)
<b>Protection class</b>	IP65				
<b>Rotational axis type</b>	Shaft mounting				
<b>Machine controller</b>	NJ5 Robotics				
<b>Servo drive</b>	Accurax G5 rotary servo drive - EtherCAT				
<b>Page/Quick Link</b>	F623				

SCARA robots



Model	XG series	XGS series	XGP series	XGC/XC series	X series
Type	SCARA robot series				
Typical environment	Normal conditions		Food	Pharmaceutical	Normal conditions
Max. Payload range	1 to 20 kg	5 to 20 kg	4 to 18 kg	4 kg (XGC series) 1 to 20 kg (XC series)	50 kg
Reach range	120 to 1,000 mm	300 to 1,000 mm	250 to 1,000 mm	250 to 600 mm (XGC series) 180 to 1,000 mm (XC series)	1,200 mm
Protection class	IP40		IP65	Clean room C10	IP40
Mounting options	Standard	Wall/inverse mount	Standard		
Page/Quick Link	F622				

Accurax linear motor axis



Model	Accurax linear motor axis
Type	Linear motor axis
Continuous force range	48 to 760 N
Peak force range	105 to 2,000 N
Maximum speed	5 m/s
Magnetic attraction force	300 to 4,440 N
Applicable servo drive	Accurax G5 linear drive
Page/Quick Link	F362

# Frequency inverters

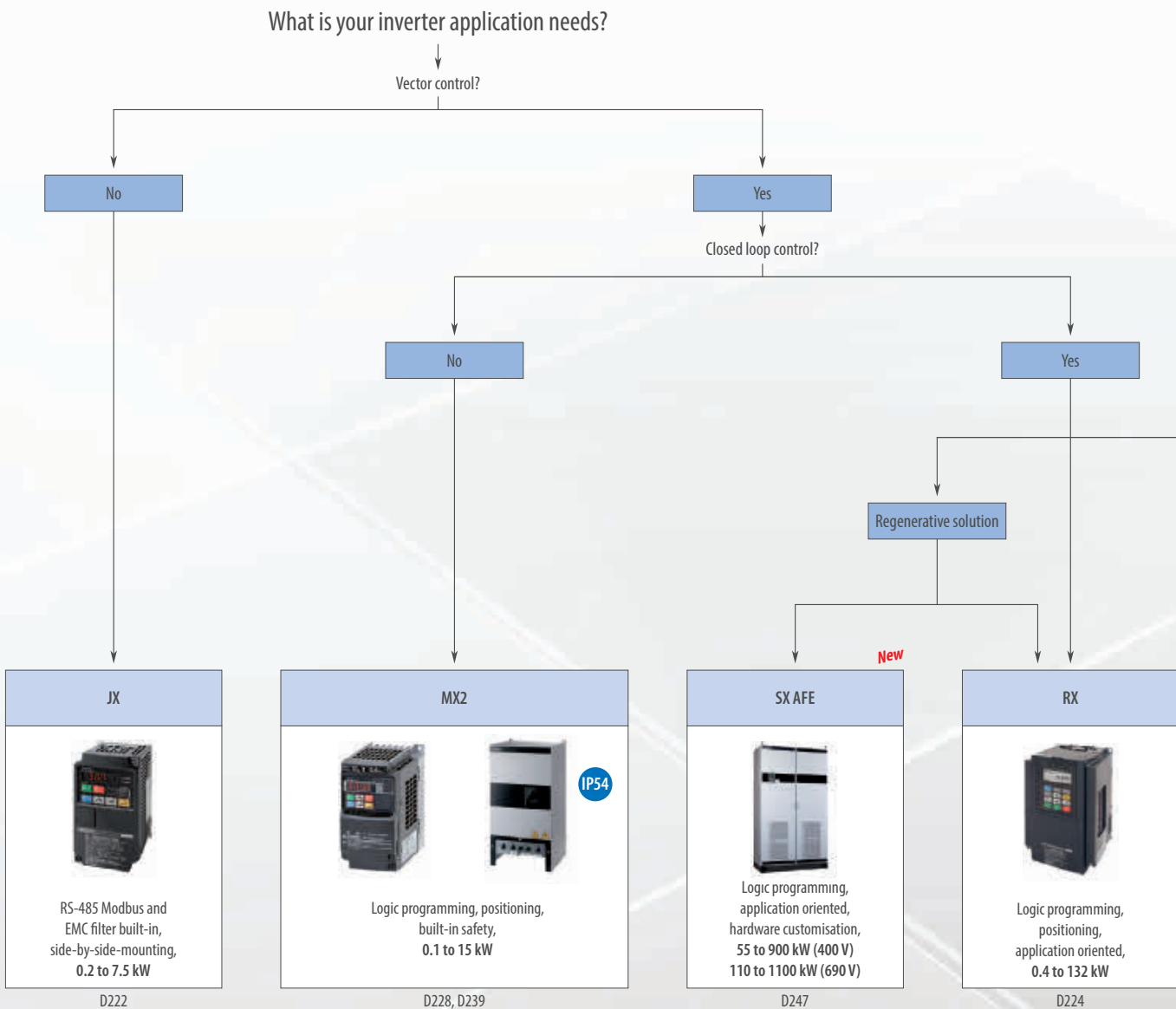
## BORN TO DRIVE MACHINES

### Harmonised motor and machine control

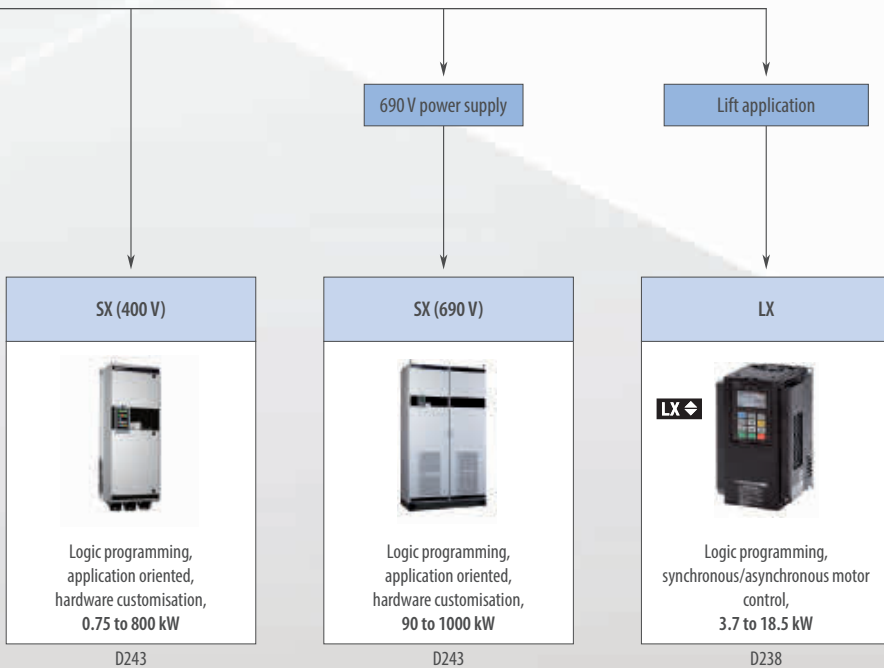
Specifically created for your application, the MX2 was developed to harmonise advanced motor and machine control. Thanks to its advanced design and algorithms the MX2 provides smooth control down to zero speed, plus precise operation for fast cyclic operations and torque control capability in open loop.

The MX2 also gives you comprehensive functionality for machine control such as positioning, speed synchronisation and logic programming. The MX2 is fully integrated within the Omron smart automation platform.



The MX2 is the child of a true leader in machine automation.













Model	RX	LX
		 LX ⇄
	<b>Customised to your machine</b>	<b>Lift applications</b>
400 V three-phase	0.4 kW to 132 kW	3.7 kW to 18.5 kW
200 V three-phase	0.4 kW to 55 kW	–
Application	High performance, built-in know-how functionality	Lift control with asynchronous and synchronous motors
Control method	Open and closed loop for vector and V/F control	Open and closed loop vector control and V/F control
Torque features	200% at 0.0 Hz (CLV) 150% at 0.3 Hz (OLV)	150% at 0.0 Hz (CLV) 200% at 0.3 Hz (OLV)
Connectivity	Modbus, DeviceNet, PROFIBUS, MECHATROLINK-II, EtherCAT, CompoNet	Modbus
Logic programming	Standard firmware	Standard firmware
Page/Quick Link	D224	D238

Model	MX2	JX
	 IP54	
	<b>Born to drive machines</b>	<b>Compact and complete</b>
400 V three-phase	0.4 kW to 15 kW	0.4 kW to 7.5 kW
200 V three-phase	0.1 kW to 15 kW	0.2 kW to 7.5 kW
200 V single-phase	0.1 kW to 2.2 kW	0.2 kW to 2.2 kW
Application	Harmonized motor and machine control	General purpose built-in communications
Control method	Open loop speed and torque control for vector and speed for V/F control	V/F control
Torque features	200% at 0.5 Hz	150% at 3 Hz
Connectivity	Modbus, DeviceNet, PROFIBUS, MECHATROLINK-II, EtherCAT, CompoNet, EtherNet IP	Modbus
Logic programming	Standard firmware	N/A
Customisation options	IP54 enclosure	N/A
Page/Quick Link	D228, D239	D222

Model	SX (400 V)	SX (690 V)
		
	<b>High performance vector control</b>	
400 V three-phase	0.75 kW to 800 kW	–
690 V three-phase	–	90 kW to 1,000 kW
Application	High power flux vector and variable torque applications	High power flux vector and variable torque applications
Control method	Flux vector and V/F control	Flux vector and V/F control
Torque features	120% at 0,0 Hz (CLV) 120% at 0,5 Hz (OLV)	120% at 0,0 Hz (CLV) 120% at 0,5 Hz (OLV)
Connectivity	Modbus, DeviceNet, PROFIBUS, EtherCAT, Modbus TCP, CAN	Modbus, DeviceNet, PROFIBUS, EtherCAT, Modbus TCP, CAN
Logic programming	Standard firmware	Standard firmware
Customisation options	Hardware customisation (main switch, liquid cooling, 12-pulse rectifier, ...)	Hardware customisation (main switch, liquid cooling, 12-pulse rectifier, ...)
Protection class	IP54	IP54
Energy saving option	Low harmonic/Regenerative (D247)	
Page/Quick Link	D243	D243

# Photoelectric sensors

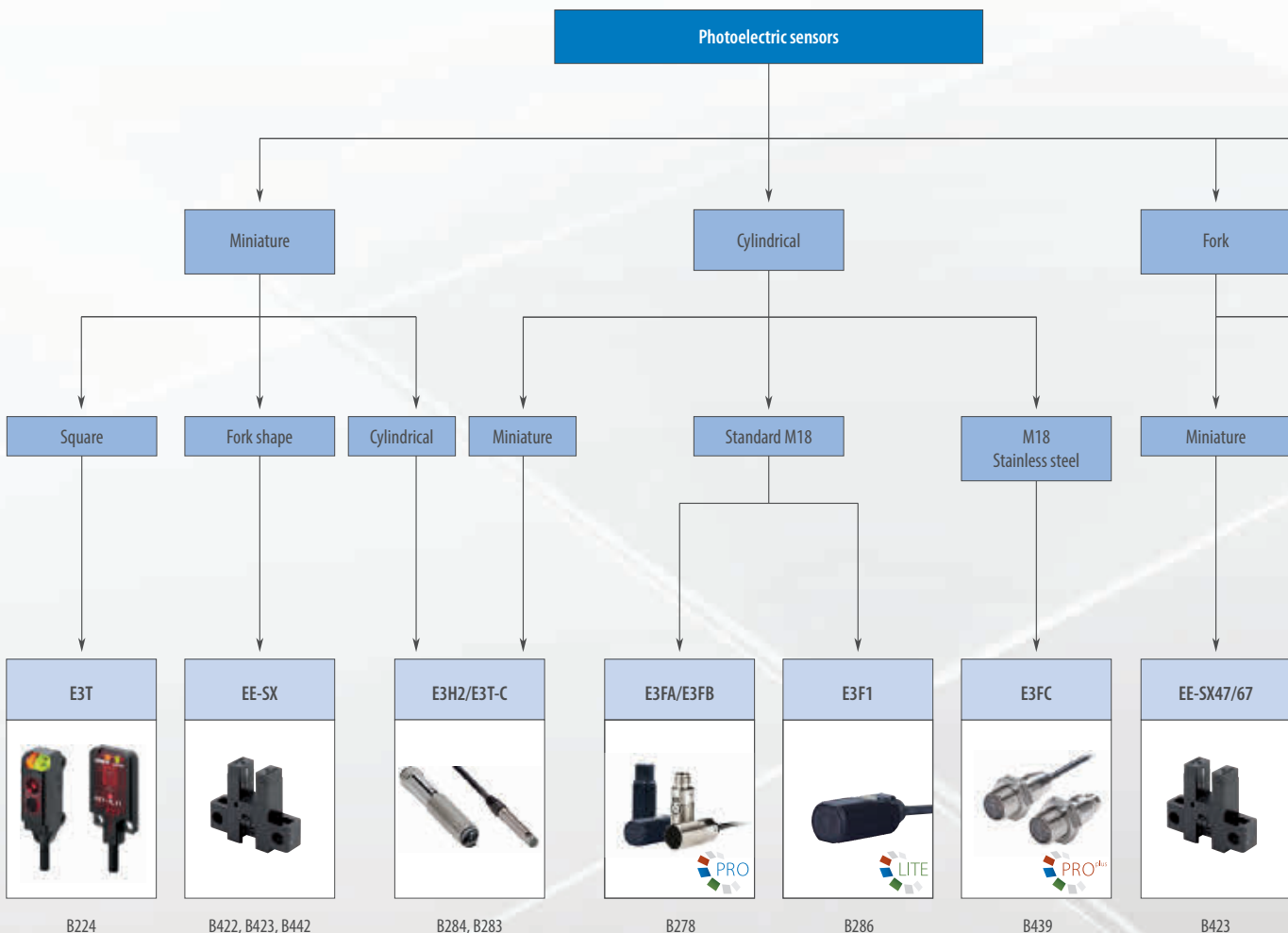
## FOR MACHINES BUILT TO LAST

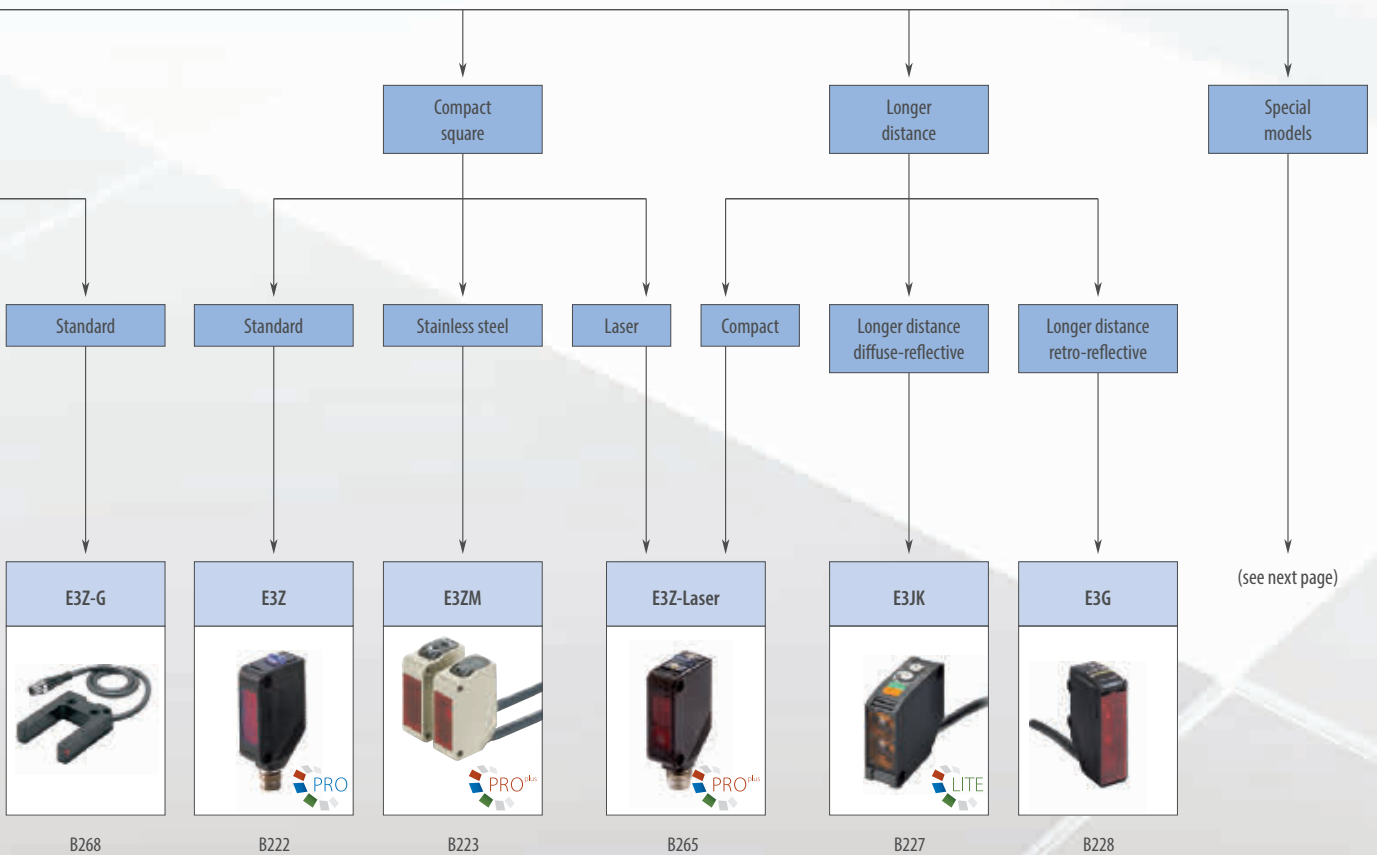
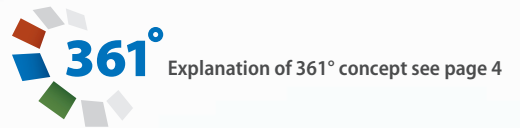
Reliability and accuracy confirmed by millions . . . every day

With more than one million units sold, OMRON Photoelectric sensors are among the world's most popular and successful photoelectric sensors.

Manufactured to exceptionally high engineering standards, you can take the performance reliability for granted.

- Optimal sensing performance tuned to your application
- Various housing designs fitting your application concept
- Proven performance and unmatched reliability














# Selection table

Type	Compact square			Longer distance	
					
Model	E3Z	E3ZM	E3Z Laser	E3S-CL	E3JK
361°	PRO	PRO <sup>plus</sup>	PRO <sup>plus</sup>	n.a.	LITE
Housing	PBT	Stainless steel	PBT	Zinc diecast	ABS
Through-beam	15 m, 30 m	15 m	60 m	–	40 m
Retro-reflective with M.S.R.	5 m	4 m	15 m	–	7 m
Diffuse-reflective (energetic)	1 m	1 m	–	–	2.5 m
Diffuse-reflective (background suppression)	200 mm	200 mm	300 mm	500 mm	–
Page/Quick Link	B222	B223	B265	B249	B227

Type	Cylindrical			
				
Model	E3FA/E3FB	E3F1	E3FC	E3H2
361°	PRO	LITE	PRO <sup>plus</sup>	n.a.
Housing	M18 PBT, metal	ABS	M18 stainless steel	M12 metal, M8 stainless steel
Through-beam	20 m	15 m	20 m	4 m, 2 m
Retro-reflective with M.S.R.	4 m	3 m	4 m	2 m
Diffuse-reflective (energetic)	1 m	300 mm	1 m	300 mm
Diffuse-reflective (background suppression)	200 mm	–	200 mm	–
Page/Quick Link	B278	B286	B439	B284

Type	Miniature			Fork
				
Model	E3T-C	E3T	EE-SX47/67	E3Z-G
361°	n.a.	n.a.	n.a.	n.a.
Housing	M5, M6 stainless steel	PBT	PBT	PBT
Through-beam	1 m	1 m, 2 m	5 mm (slot width)	25 mm
Retro-reflective with M.S.R.	–	200 mm	–	–
Diffuse-reflective (energetic)	50 mm	30 mm	–	–
Diffuse-reflective (background suppression)	–	30 mm	–	–
Page/Quick Link	B283	B224	B423	B268

Type	Oil resistant	Mark detection	Transparent detection			
						
<b>Model</b>	<b>E3ZM-C</b>	<b>E3ZM-V</b>	<b>E3ZM-B</b>	<b>E3Z-B</b>	<b>E3F_-B/-V</b>	<b>E3S-DB</b>
361°	PRO <sup>plus</sup>	PRO <sup>plus</sup>	PRO <sup>plus</sup>	PRO <sup>plus</sup>	PRO <sup>plus</sup>	PRO <sup>plus</sup>
<b>Key features</b>	Oil and lubricant resistant stainless steel housing	White LED for optimal contrast recognition	Optimised optical system for all transparent objects	Optical system for standard transparent objects	Optimised optical system for all transparent objects	Enhanced performance for all transparent objects, SmartTeach, Narrow spot
<b>Housing</b>	Stainless steel	Stainless steel	Stainless steel	PBT	M18 PBT/metal	PBT/ABS
<b>Through-beam</b>	20 m	–	–	–	–	–
<b>Retro-reflective with M.S.R.</b>	4 m	–	500 mm	500 mm, 2 m	2 m	4.5 m
<b>Diffuse-reflective</b>	1 m	12mm±2mm	–	–	–	–
<b>Diffuse-reflective (background suppression)</b>	200 mm	–	–	–	50 mm	–
<b>Page/Quick Link</b>	B267	B274	B266	B271	B285	B346

Type	High precision positioning	Structured object detection	Multi voltage power supply
			
<b>Model</b>	<b>E3NC Laser Sensors</b>	<b>E3S-LS3</b>	<b>E3JK, E3JM, E3G-_M</b>
361°	n.a.	n.a.	n.a.
<b>Key features</b>	0.1 mm Laser spot, line beam, CMOS BGS, EtherCAT connectivity	Wide beam	AC/DC power supply and relay output
<b>Housing</b>	PBT	PBT	ABS, ABS, PBT
<b>Through-beam</b>	–	–	40 m, 10 m, –
<b>Retro-reflective with M.S.R.</b>	8 m	–	9 m, 4 m, 10 m
<b>Diffuse-reflective</b>	1.2 m	60 mm	2.5 m, 700 mm, 2 m
<b>Diffuse-reflective (background suppression)</b>	250 mm	–	–, –, 1.2 m
<b>Page/Quick Link</b>	B289, B292	B259	B227, B226, B282

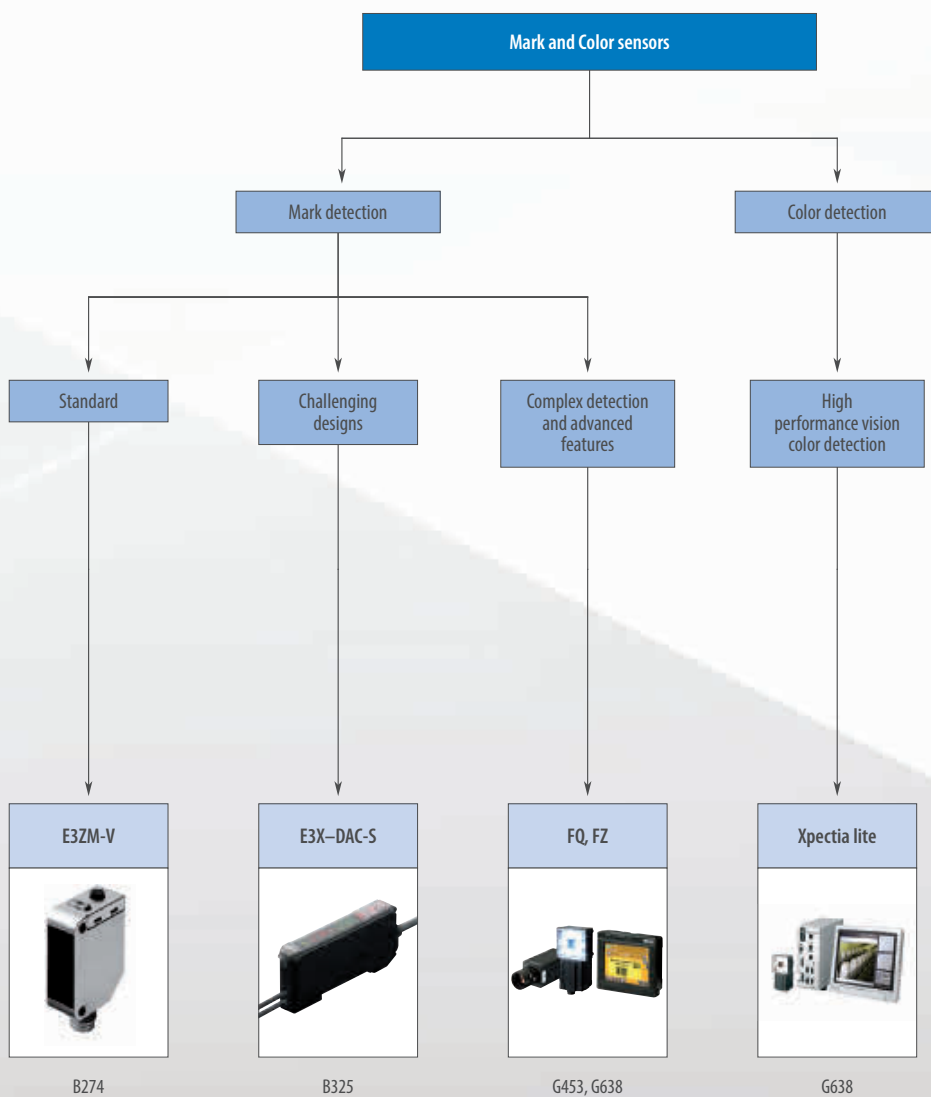
## FAST ADAPTION TO CHANGING PACKAGINGS

### Choose the performance you need




Packaging machines have to adapt quickly to a large variety of different packaging designs with minimal change-over time and no quality loss. For sensors detecting registration marks or colors this requires flexibility and simplicity in handling while keeping the precision and operational stability. At OMRON we closely work together with leading packaging machine makers to evaluate the requirements for sensors from commonly used packaging material as well as most critical designs or materials. Our portfolio is set up to balance the performance and budget requirements in these situations ... simply choose the performance you need.


- Reliable mark detection even in changing environmental conditions during machine operation
- Fast and easy setup up after packaging material exchange
- Performance levels fitting the machine value concept







Type	Standard print mark detection	Challenging designs	Complex detection and advanced features
			
<b>Model</b>	E3ZM-V	E3X-DAC-S	FQ, FZ
<b>Key feature</b>	White LED, stainless steel housing	White LED, RGB ratio comparison and extended functionality	High performance vision inspection functionality
<b>Detection distance</b>	12±2 mm	5–50 mm	See QUALITY CONTROL AND INSPECTION GUIDE
<b>Response time</b>	50 µs	60 µs	
<b>Page/Quick Link</b>	B274	B325	G453, G638

Type	High performace vision color detection						
							
<b>Model</b>	Xpectia lite						
<b>No of simultaneous color inspections</b>	1 to 128						
<b>Output</b>	<table border="1"> <tr> <td>Color detected – digital out</td> <td>■</td> </tr> <tr> <td>RGB value out (via ethernet)</td> <td>■</td> </tr> <tr> <td>HSI value out (via ethernet)</td> <td>■</td> </tr> </table>	Color detected – digital out	■	RGB value out (via ethernet)	■	HSI value out (via ethernet)	■
Color detected – digital out	■						
RGB value out (via ethernet)	■						
HSI value out (via ethernet)	■						
<b>Tolerance adjustment</b>	<table border="1"> <tr> <td>Teachable</td> <td>■</td> </tr> <tr> <td>Manually adjustable</td> <td>■</td> </tr> <tr> <td>Advanced</td> <td>■</td> </tr> </table>	Teachable	■	Manually adjustable	■	Advanced	■
Teachable	■						
Manually adjustable	■						
Advanced	■						
<b>Page/Quick Link</b>	G638						

# Lightcurtains and area sensors

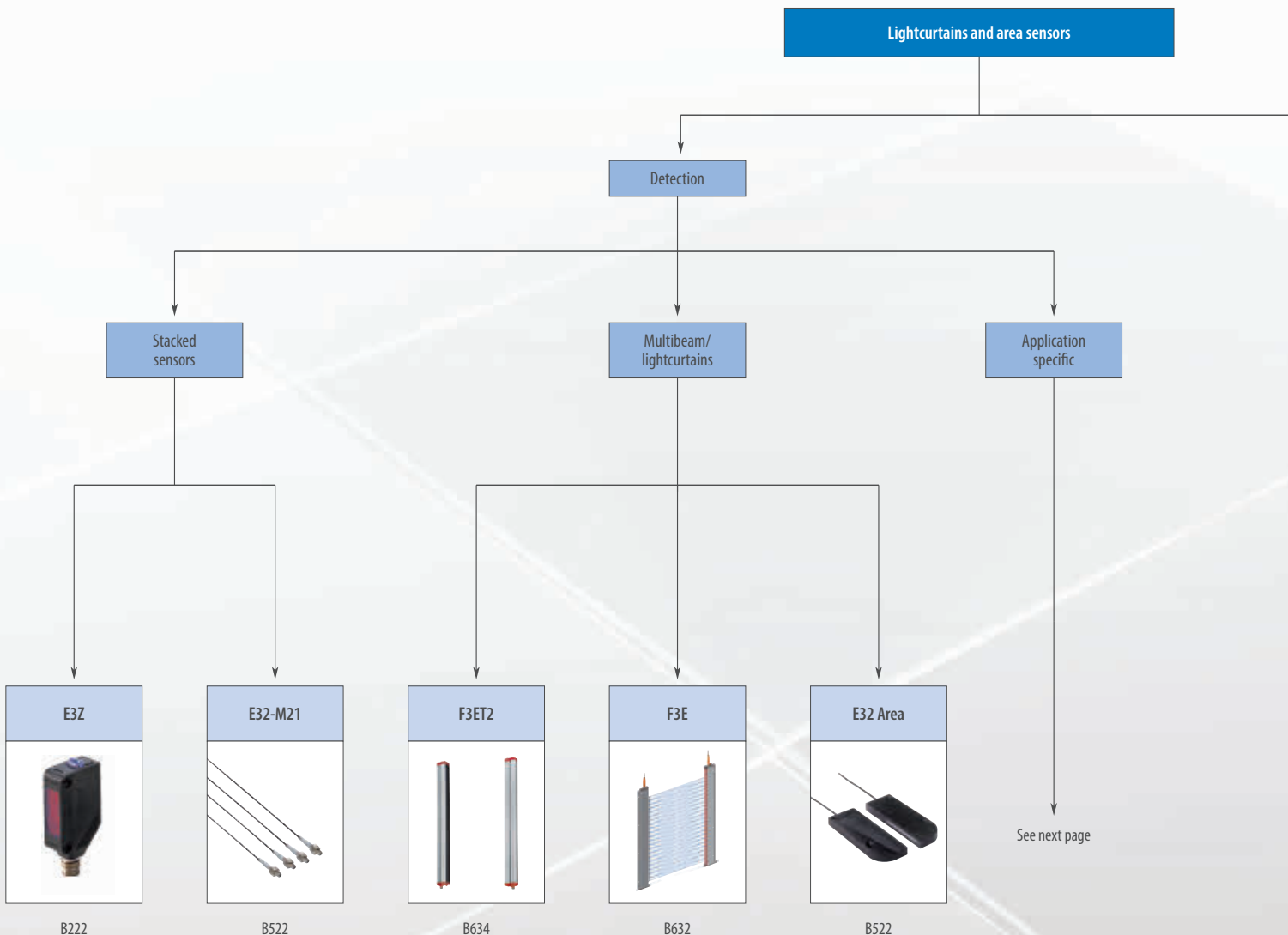
## PRESENCE, HEIGHT OR PROFILE ...

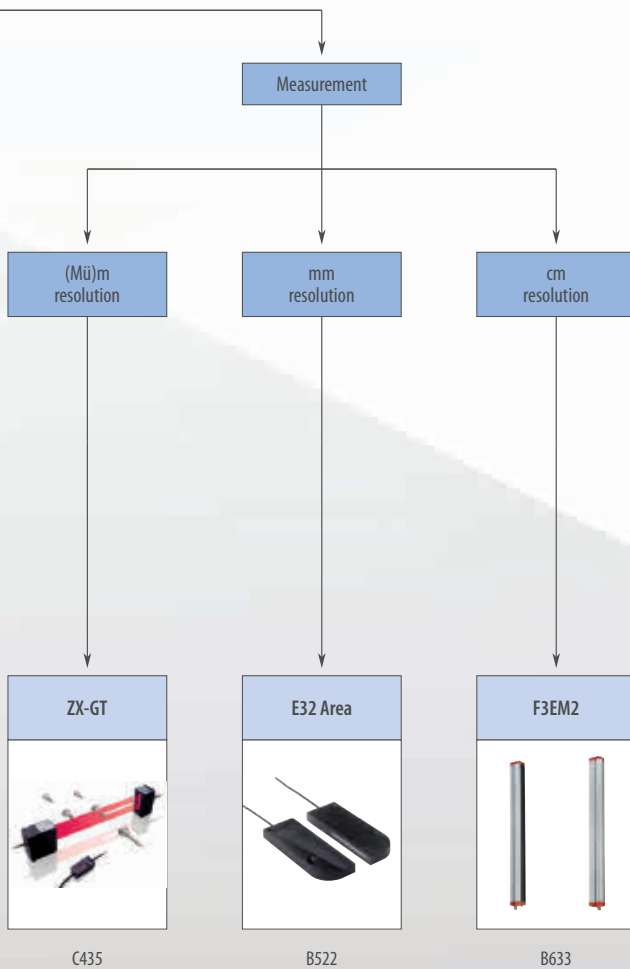
### ... choose the accuracy you need

Objects with varying positions or heights or objects with holes can create multiple signals or stay undetected when using single beam sensors. These objects (e.g. parcels, bikes or natural products like ham or fish) are then wrongly classified as multiple smaller items or are not detected correctly.




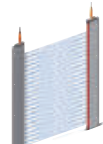


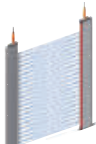
Detecting these objects over their whole length or acquiring the more detailed object profile can be realized using multiple sensors or light curtains.




Omron offers a wide range of models with varying max detection heights, different resolutions and with digital, analog or serial outputs to provide the best performance match fitting your application.







Type	Stacked sensors		Multibeam sensors/lightcurtains			Application specific lightcurtains	
							
<b>Model</b>	E3Z	E32-M21	F3ET2	F3E	E32 area	Safety lightcurtains	F3E Elevator lightcurtains
<b>Key features</b>	Mutual interference prevention	4 × M3 heads combined in one fiber	Models with 5 and 18 mm pitch	Thin aluminum housing	Teachable sensitivity	Type 2, type 4 or application specific	Fulfills EN81-70
<b>Max. sensing distance</b>	60 m	1.3 m	15 m	5 m	4 m	50 m	5 m
<b>Max. detection height</b>	n. a.	4 m	2.1 m	1.8 m	70 mm	2.4 m	1.8 m
<b>Page/Quick Link</b>	B222	B522	B634	B632	B522	90	B632

Type	Measuring lightcurtains		
			
<b>Model</b>	F3EM2	E32 area	ZX-GT
<b>Key features</b>	cm accuracy	mm accuracy	µm accuracy
<b>Max. sensing distance</b>	15 m	4 m	0.5 m
<b>Max. measurement height</b>	2.1 m	70 mm	28 mm
<b>Page/Quick Link</b>	B633	B522	C435

# Fiber optic sensors and amplifiers

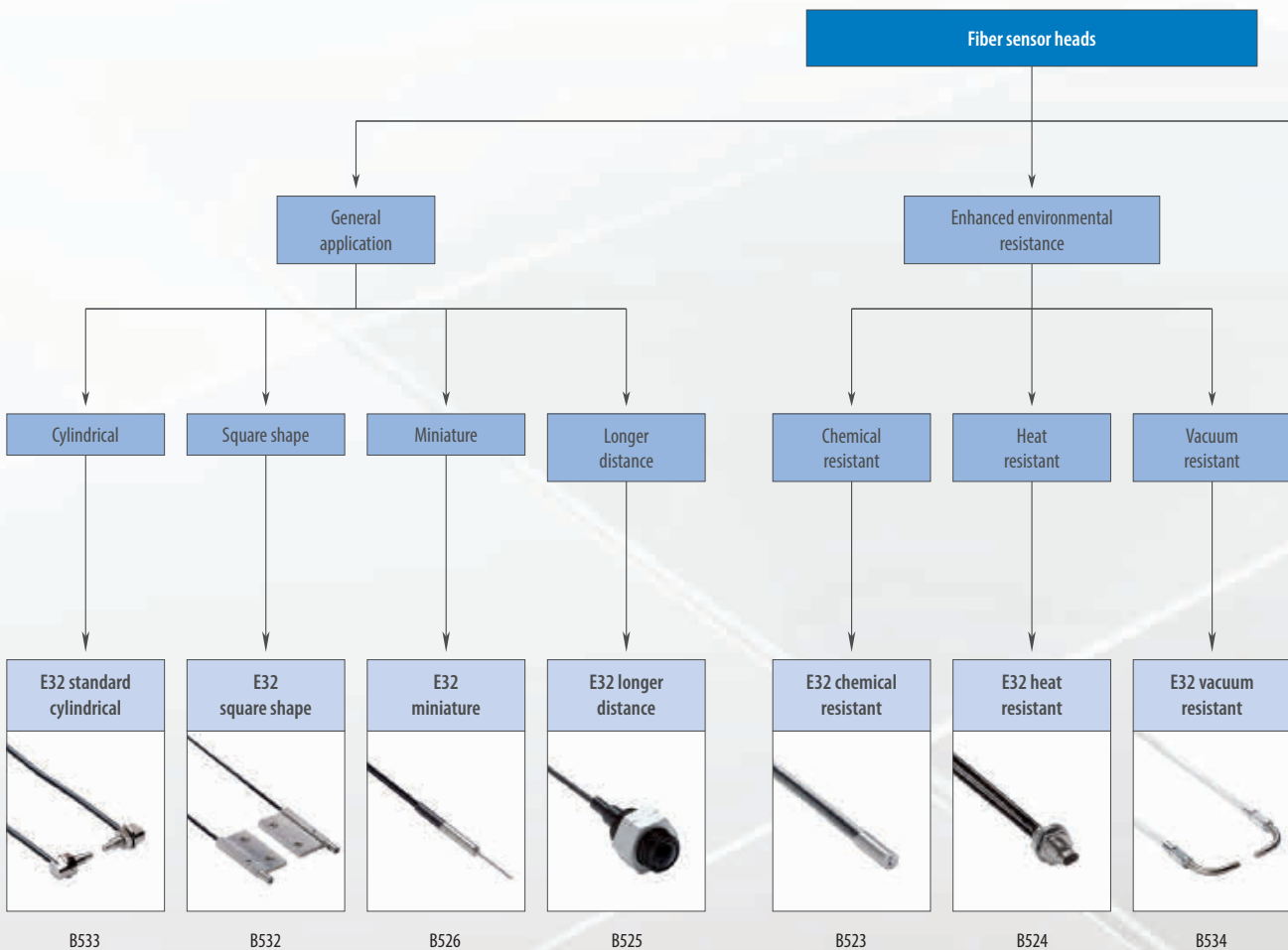
## HIGH PRECISION IN SMALL SPACES

### Precision and performance you can rely on

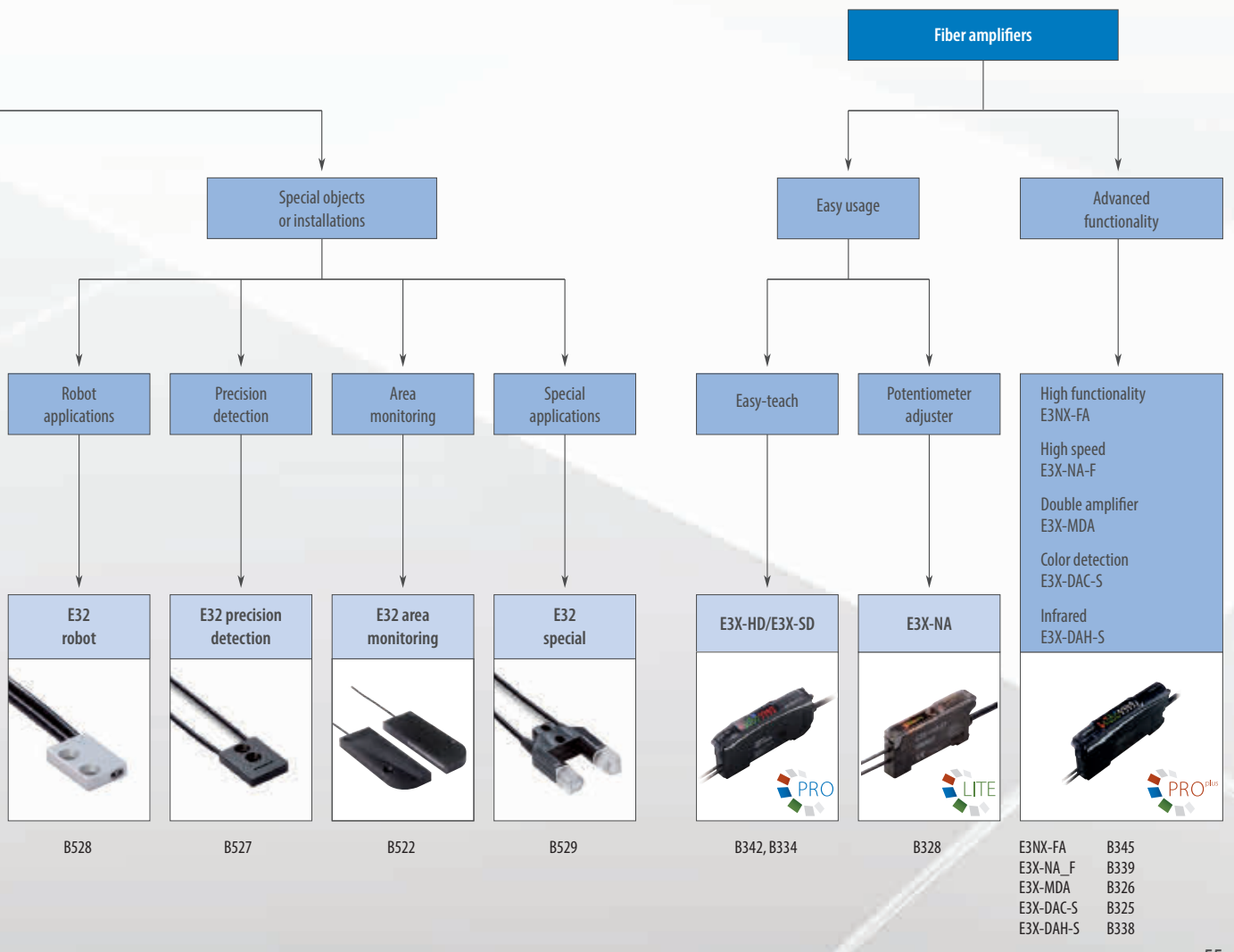
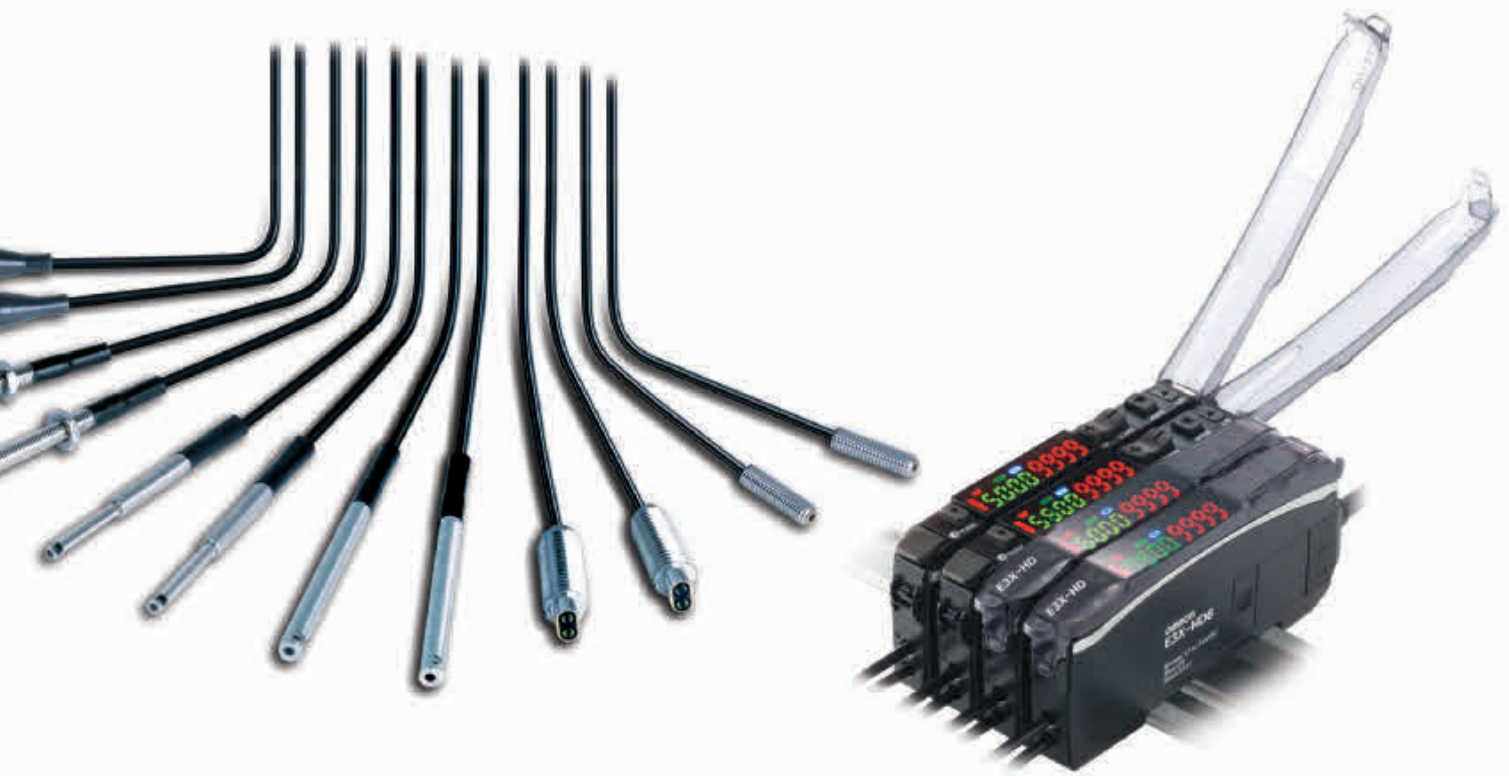
The requirements for fiber optic solutions can be very demanding particularly for applications with extreme temperatures and aggressive chemicals or for applications requiring highest precision with limited mounting space.

With the wide range of E32 fiber heads and the easy-usage amplifiers, the best performance fit for your application can be provided. The highest quality control procedures in design and manufacturing ensure that you get the precision and long service life that you can rely on.

- Long operational life
- Easy to install and adjust
- Wide portfolio range for best performance fit



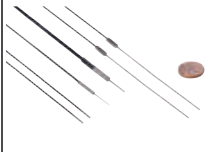













# Selection table





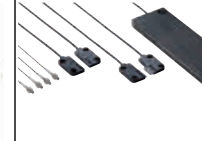
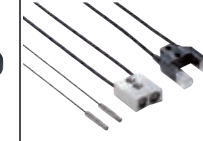
## Fiber sensor heads

Type	Cylindrical	Square shape	Miniature	Longer distance	Chemical resistant
					
Model	E32 standard cylindrical	E32 square shape	E32 miniature	E32 longer distance	E32 chemical resistant
Key features	<ul style="list-style-type: none"> <li>Standard and high-flex fibers</li> <li>Sizes M3 to M6</li> </ul>	<ul style="list-style-type: none"> <li>3 or 4 mm thin housing</li> <li>Models in X,Y or Z-axis</li> <li>Direct mounting without bracket</li> </ul>	<ul style="list-style-type: none"> <li>Sizes from dia 500 μm to 3 mm</li> <li>Bendable sleeves</li> </ul>	<ul style="list-style-type: none"> <li>Built in focal lenses</li> </ul>	<ul style="list-style-type: none"> <li>Fluoroplastic cover or coating</li> </ul>
Through-beam	1,550 mm	1,550 mm	1,550 mm	20 m	4 m
Retro-reflective	250 mm	–	–	1.5 m	–
Diffuse-reflective	650 mm	600 mm	600 mm	1.4 m	350 mm
Page/Quick Link	B533	B532	B526	B525	B523

Note: All sensing distances measured with E3X-DA-SE-S. Longer sensing distances up to 80% can be achieved with E3X-DA-S.

## Fiber amplifiers

Type	Easy teach/double display	Easy teach/single display	Potentiometer adjuster	High performance	Double amplifier
					
Model	E3X-HD	E3X-SD	E3X-NA	E3NX-FA	E3X-MDA
361°	PRO	LITE	LITE	PRO <sup>plus</sup>	n.a.
Key features	<ul style="list-style-type: none"> <li>Easy operation by smart tuning</li> <li>Dynamic power control</li> <li>Fieldbus connectivity</li> </ul>	<ul style="list-style-type: none"> <li>1 button object teaching</li> <li>Auto teach during operation</li> </ul>	<ul style="list-style-type: none"> <li>Easy adjustment by potentiometer</li> </ul>	<ul style="list-style-type: none"> <li>High functionality signal processing (timer, counter, dynamic power control, etc.)</li> <li>High signal resolution</li> <li>Increased sensing distance</li> <li>Double output/external input</li> <li>Fieldbus connectivity</li> </ul>	<ul style="list-style-type: none"> <li>2 inputs and AND, OR signal comparison</li> </ul>
Response time (min.)	1 ms (50 μs in super-high-speed mode)	1 ms	200 μs	1 ms (30 μs in super-high-speed mode)	1 ms (130 μs in high speed mode)
Page/Quick Link	B342	B334	B328	B345	B326

Heat resistant	Vacuum resistant	Robot applications	Precision detection	Area monitoring	Special application
					
<b>E32 heat resistant</b>	<b>E32 vacuum resistant</b>	<b>E32 robot</b>	<b>E32 precision detection</b>	<b>E32 area monitoring</b>	<b>E32 special</b>
<ul style="list-style-type: none"> <li>Heat resistant up to 400°C</li> </ul>	<ul style="list-style-type: none"> <li>Leakage rate of <math>1 \times 10^{-10}</math> Pa*m<sup>3</sup>/s max</li> </ul>	<ul style="list-style-type: none"> <li>Free moving multicore fibers for &gt;1 Mio bending cycles</li> </ul>	<ul style="list-style-type: none"> <li>Detection accuracy up to 100 µm</li> <li>Coaxial fibers</li> <li>Adjustable focal points</li> </ul>	<ul style="list-style-type: none"> <li>Area monitoring up to 70 mm</li> </ul>	<ul style="list-style-type: none"> <li>Detection of special objects (wafer, liquid level, flat glass, print mark ...)</li> </ul>
3 m	950 mm	1,350 mm	3.8 m	4 m	3.8 m
–	–	–	–	–	–
500 mm	–	350 mm	600 mm	300 mm	20 mm
B524	B534	B528	B527	B522	B529

High speed	Color/print mark detection	Infrared LED
		
<b>E3X-NA-F</b>	<b>E3X-DAC-S</b>	<b>E3X-DAH-S</b>
n.a.	n.a.	n.a.
<ul style="list-style-type: none"> <li>Short turn on time of 20 µs</li> </ul>	<ul style="list-style-type: none"> <li>White LED and RGB ratio comparison</li> </ul>	<ul style="list-style-type: none"> <li>Infrared LED</li> </ul>
20 µs	1 ms (60 µs in super high speed mode)	1 ms (55 µs in super high speed mode)
B339	B325	B338

# Inductive sensors

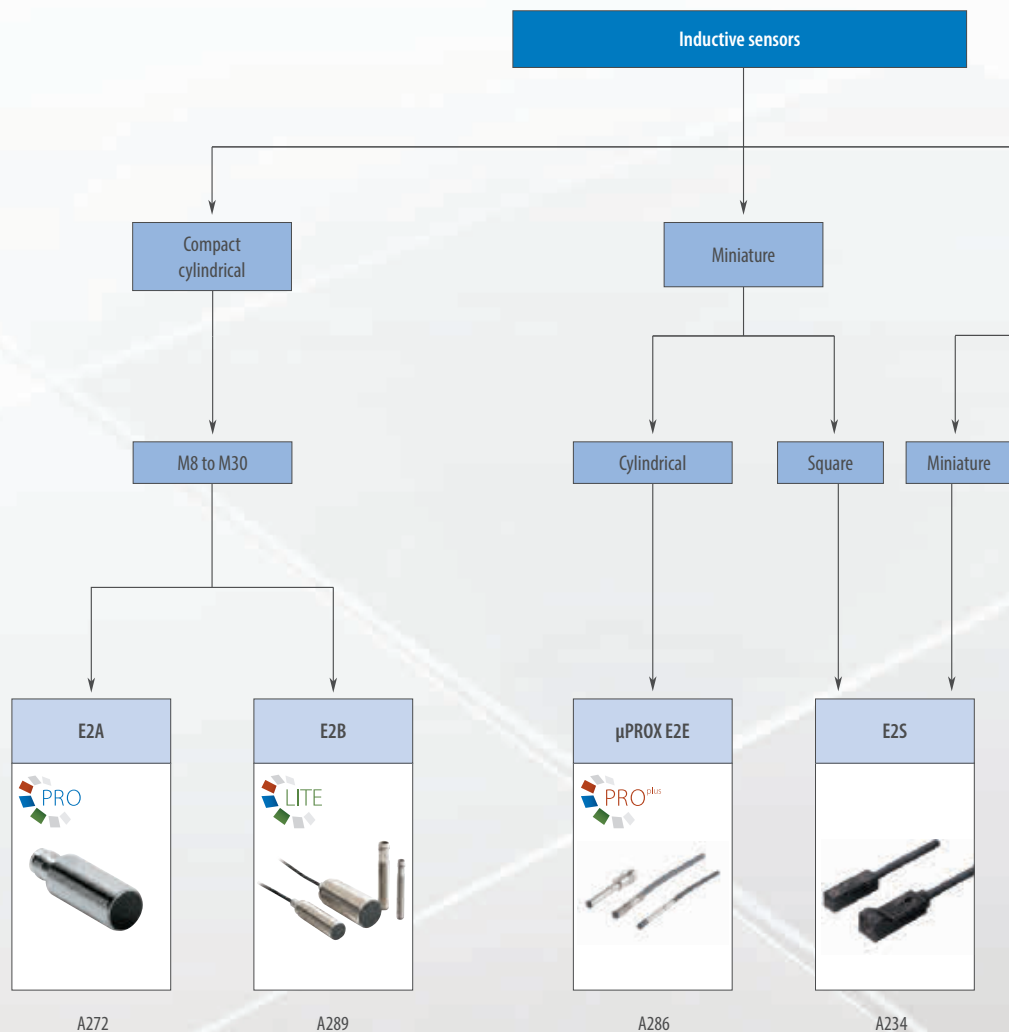
## ZERO TOLERANCE ON FAILURE

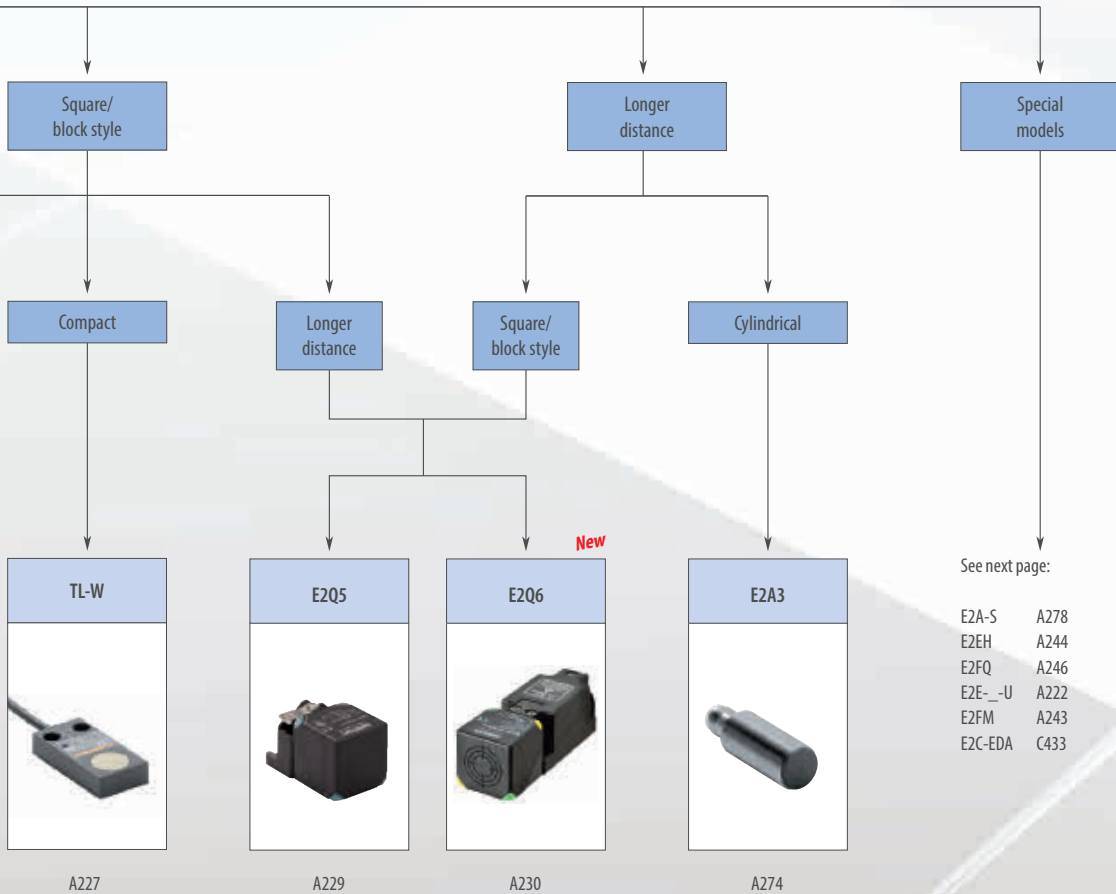
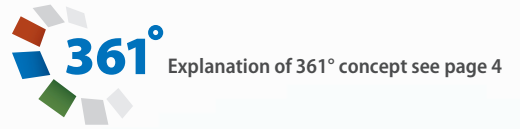
### Tested reliability for demanding conditions

Our inductive sensors are designed and tested to ensure a long service life and to achieve maximum machine availability even in the harshest environments.

This trusted reliability makes the E2A one of the world's most popular and successful inductive proximity sensors with more than one million units sold every year.

- Wide portfolio and application range
- Highest reliability even in demanding environments
- Designed for flexibility - modular housing design for best performance fit












See next page:

- |         |      |
|---------|------|
| E2A-S   | A278 |
| E2EH    | A244 |
| E2FQ    | A246 |
| E2E-_-U | A222 |
| E2FM    | A243 |
| E2C-EDA | C433 |

# Selection table



Format		Cylindrical			
					
Model	E2A	E2A3	E2A-S	E2B	
361° product line	PRO	PRO <sup>plus</sup>	PRO	LITE	
Type	Compact	Long distance	Compact	Compact	
Material	Brass, SUS	Brass	Stainless steel	Stainless steel	
Max. sensing distance	dia. 3	-	-	-	
	dia. 4	-	-	-	
	M5	-	-	-	
	dia. 6.5	-	-	-	
	M8	2/4 mm	3 mm	2/4 mm	2/4 mm
	M12	4/8 mm	6 mm	4/8 mm	4/8 mm
	M18	8/16 mm	11 mm	8/16 mm	8/16 mm
	M30	15/30 mm	20 mm	15/20 mm	15/30 mm
	19 × 6 × 6	-	-	-	-
	22 × 8 × 6	-	-	-	-
	31 × 18 × 10	-	-	-	-
53 × 40 × 23	-	-	-	-	
67 × 40 × 40	-	-	-	-	
Mount.	Shielded	■	■	■	
	Non-shielded	■	-	■	
Oper. mode	NO	■	■	■	
	NC	■	■	■	
	NO + NC	■	-	■	
Wiring	DC 2-wire	■	-	-	
	DC 3-wire	■	■	■	
	DC 4-wire	■	-	■	
	AC 2-wire	-	-	-	
Voltage	10 to 30 VDC	■	■	■	
	12 to 240 VAC	-	-	-	
IP rating	IP67	■	■	■	
	IP69K	■	■	-	
Page/Quick Link	A272	A274	A278	A289	

## Special models

Type	Detergent and heat resistant	Chemical resistant	Small diameter	Full metal face
				
Model	E2EH	E2FQ	μPROX E2E	E2FM
361° product line	PRO <sup>plus</sup>	PRO <sup>plus</sup>	PRO <sup>plus</sup>	PRO <sup>plus</sup>
Key features	<ul style="list-style-type: none"> <li>Stainless steel housing</li> <li>120°C heat resistance</li> </ul>	<ul style="list-style-type: none"> <li>PTFE housing</li> </ul>	<ul style="list-style-type: none"> <li>High frequency of 5 kHz: suitable for high-speed counting</li> <li>All sizes are also available as non-shielded types</li> </ul>	<ul style="list-style-type: none"> <li>Immune to aluminum and cast iron chips on sensing surface</li> <li>Oil resistant</li> </ul>
dia. 3	-	-	■	-
dia. 4	-	-	■	-
dia. 6.5	-	-	■	-
M5	-	-	■	-
M8	-	-	-	■
M12	■	■	-	■
M18	■	■	-	■
M30	■	■	-	■
Page/Quick Link	A244	A246	A286	A243

Format		Square			
					
Model	TL-W	E2S	E2Q5	E2Q6	
Type	Compact	Miniature	Long distance	Long distance	
Material	ABS	Polyarylate	PBT	PBT	
Max. sensing distance	dia. 3	-	-	-	
	dia. 4	-	-	-	
	M5	-	-	-	
	dia. 5.4	-	-	-	
	M8	-	-	-	
	M12	-	-	-	
	M18	-	-	-	
	M30	-	-	-	
	19 × 6 × 6	-	1.6 mm	-	
	22 × 8 × 6	3 mm	2.5 mm	-	
31 × 18 × 10	5 mm	-	-		
53 × 40 × 23	20 mm	-	-		
67 × 40 × 40	-	-	40 mm	30 mm	
Mount.	Shielded	■	-	■	■
	Non-shielded	■	■	■	■
Oper. mode	NO	■	■	■	-
	NC	■	■	-	-
	NO + NC	-	-	■	■
Wiring	DC 2-wire	■	■	-	-
	DC 3-wire	■	■	■	■
	DC 4-wire	-	-	■	■
	AC 2-wire	-	-	-	-
Voltage	10 to 30 VDC	■	■	■	■
	12 to 240 VAC	-	-	-	-
IP rating	IP67	■	■	■	■
	IP69K	-	-	■	-
Page/Quick Link	A227	A234	A229	A230	

## Special models

Type	Oil resistant	High precision positioning
		
Model	E2E- U	E2C-EDA
361° product line	PRO <sup>plus</sup>	PRO <sup>plus</sup>
Key features	<ul style="list-style-type: none"> <li>• Tested oil resistance on commonly used lubricants</li> </ul>	<ul style="list-style-type: none"> <li>• Distance teaching up to μm accuracy</li> </ul>
dia. 3	-	■
dia. 4	-	-
dia. 6.5	-	-
M5	-	-
M8	■	-
M12	■	■
M18	■	■
M30	■	-
Page/Quick Link	A222	C433

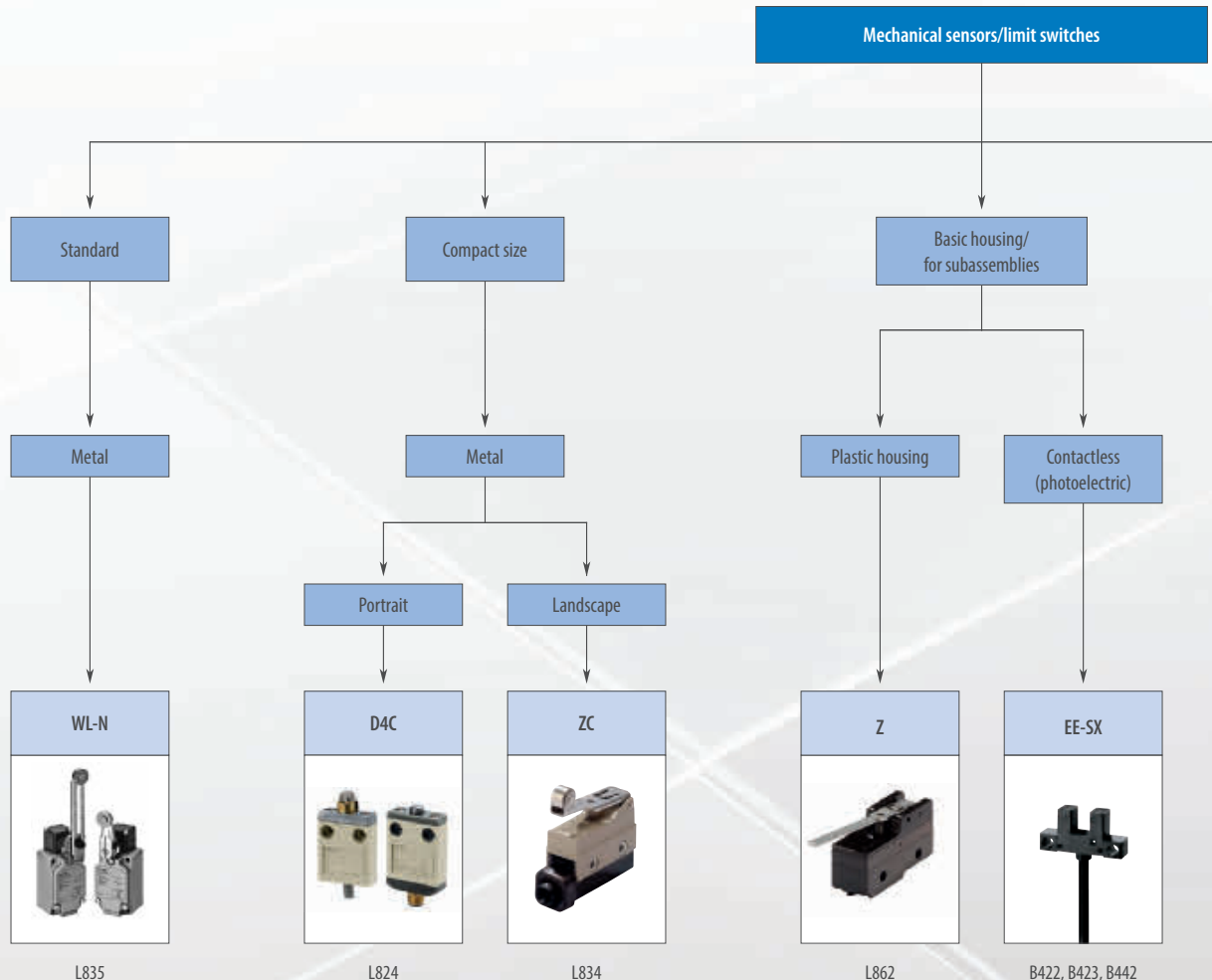
■ Standard    □ Available    - No/not available

# Mechanical sensors/Limit switches

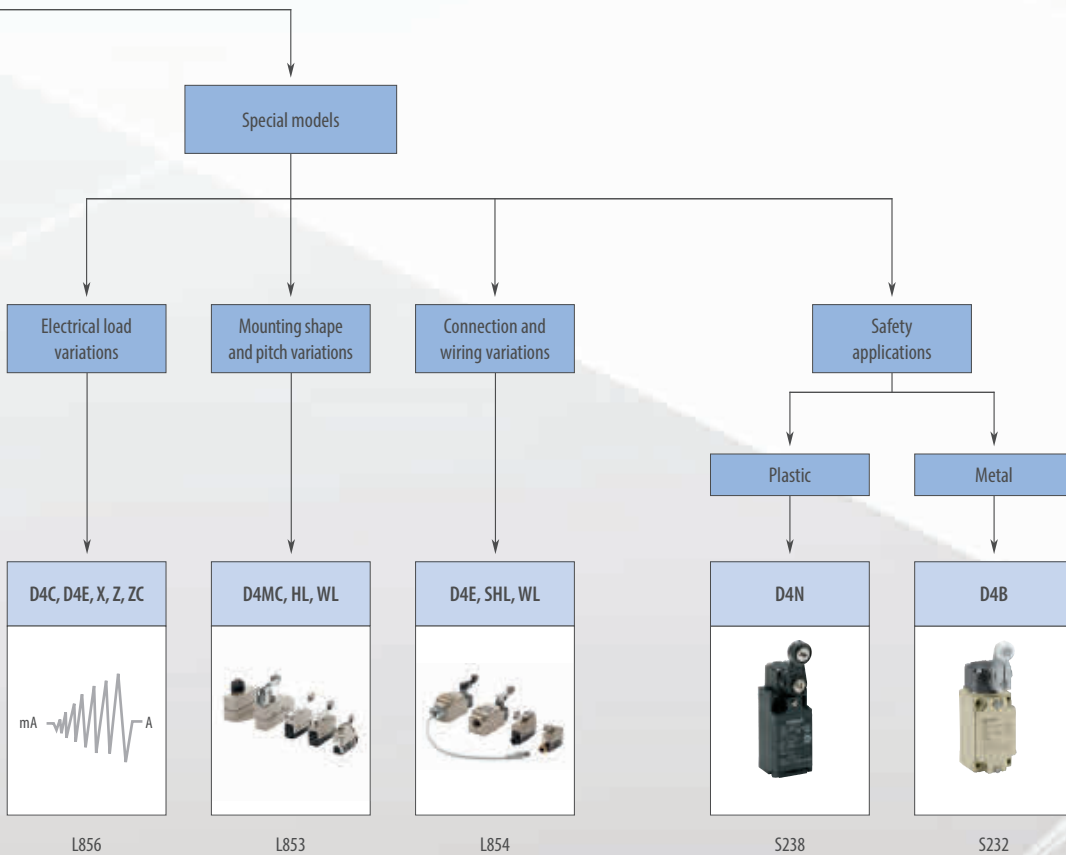
## THE RELIABLE AND FLEXIBLE WAY ...

### ... to stop your machines


For the detection of machine part movement especially for the detection of end positions, the mechanical and optical limit switches provide accurate and reliable operation with a large variety of actuation possibilities optimized for a widest range of application and usage requirements. The easy positioning and intuitive installation, the high immunity to changing environmental influences (electromagnetic fields, sunlight, temperatures, etc.) as well as the possibility to directly switch loads with up to 15 A make these sensors ideal for a wide range of conveying and handling applications.








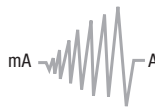







Type		Standard			Compact	Basic housing
						
Model		D4N	D4B	WL-N	D4C	Z
Material		Plastic	Metal	Metal	Metal	Plastic
Screw terminal	No conduit	-	-	-	-	■
	Cable dia. 8.5 to 10.5	-	-	-	-	-
	M20	■	■	■	-	-
	PG13.5	□	-	■	-	-
	G1/2	□	□	■	-	-
Cable connector	1/2-14NPT	□	□	■	-	-
	M12	■	-	■	■	-
Degree of protection		IP67				IP00
Page/Quick Link		S238	S232	L835	L824	L862

Special models

Type	High precision multi direction	Compact
		
Model	D5B	ZC
Material	Metal	Metal
Key Features	<ul style="list-style-type: none"> <li>- X, Y, Z action</li> <li>- several µm switching accuracy</li> <li>- M5, M8, M10 sizes</li> </ul>	<ul style="list-style-type: none"> <li>- Small housing size</li> <li>- Screw terminals</li> <li>- IP67</li> </ul>
Page/Quick Link	L833	L834

Type	Highest precision tactile measurement	Electrical load variations	Mounting shape and pitch variations	Connection and wiring variations	Safety limit switches
					
Model	ZX-T	D4C, D4E, X, Z, ZC	D4MC, HL, WL	D4E, SHL, WL	D4 Safety
Material	Plastic	Plastic and Metal	Metal	Metal	Plastic and Metal
Key Features	Measurement resolution up to 0.1 µm	<ul style="list-style-type: none"> <li>- Microloads (1 mA to 100 mA)</li> <li>- High current at high voltage switching (10 A at 125 VDC)</li> <li>- Double circuit switching</li> </ul>	<ul style="list-style-type: none"> <li>- Mounting shapes and pitches popular in different countries in the world</li> <li>- Mounting pitch variations (base mounting, diagonal pitches, ...)</li> <li>- Alternative actuator positions</li> </ul>	<ul style="list-style-type: none"> <li>- Screw conduit variations (PG13.5, G1/2, 1/2"14NPT)</li> <li>- Cable exit variations (pigtails, rubber snap on covers, rubber snap on covers, with or without cable breakage protection for different cable diameters)</li> </ul>	<ul style="list-style-type: none"> <li>- Mechanical form lock</li> <li>- Manual reset</li> <li>- Door hinge switches</li> </ul>
Page/Quick Link	C428	Contact your OMRON representative/L856, L853, L854			82

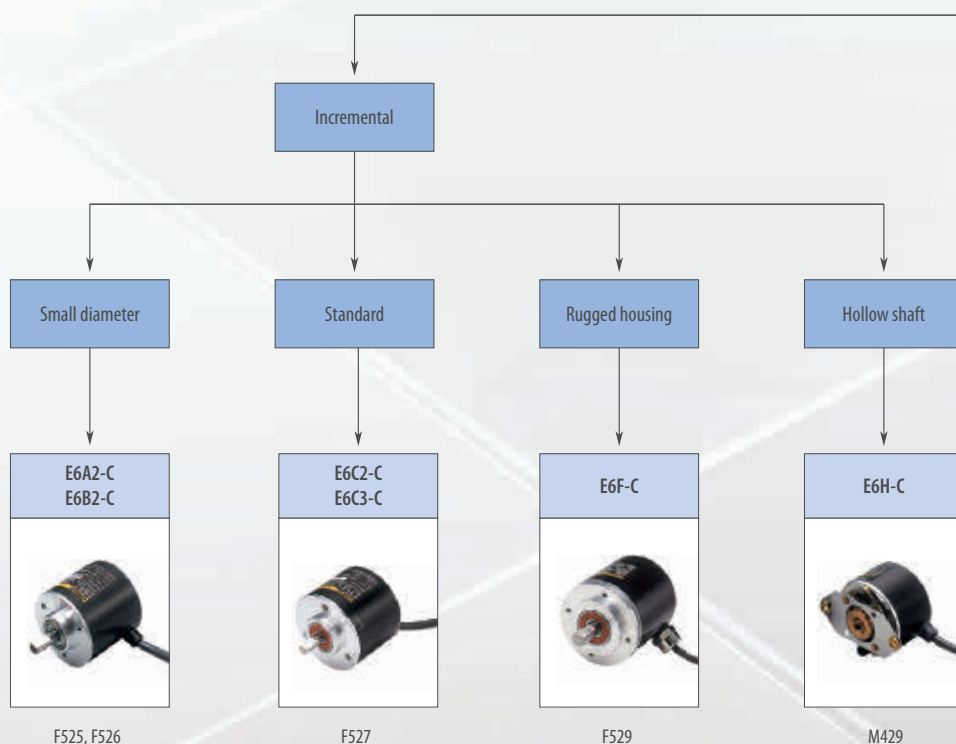
# Rotary encoders

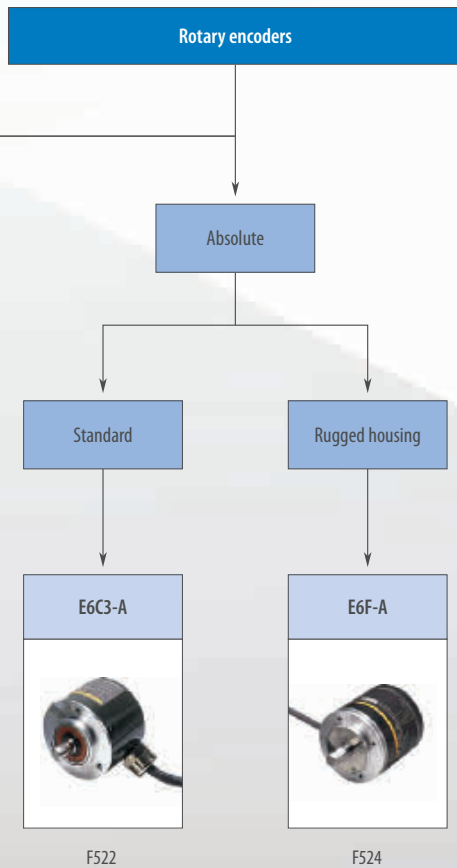
## ACCURACY AND ROBUSTNESS MADE RELIABLE

### Close the loop – angle, position and velocity on hand

Rotary encoders create information which represent the movement of your application. To meet challenging demands, Omron offers a wide range of absolute and incremental encoders.


- Wide resolution variety
- Models with rugged housing
- Models for multi- turn applications







Output		Incremental				
						
Model		E6A2-C	E6B2-C	E6C2-C	E6C3-C	E6F-C
Type		Small diameter shaft			Standard	Rugged housing
Resolution range	Min.	10			100	
	Max.	500	2,000		3,600	1,000
Output	NPN	■	■	■	■	■
	PNP	-	■	■	-	-
Size dia. in mm		25	40	50	50	60
Max. force	Radial	10	30	50	80	120
	Axial	5	20	30	50	50
IP rating	IP50	■	■	-	-	-
	IP64	-	-	■	-	-
	IP65	-	-	-	■	■
Max. rotation frequency		5,000		6,000		5,000
Page/Quick Link		F525		F526	F527	F529

Output		Incremental	Absolute			
						
Model		E6H-C	E6C3-A	E6F-A		
Type		Hollow shaft	Standard	Rugged housing		
Resolution Range	Min.	300	6	256		
	Max.	3,600	1,024			
Output	NPN	■	■	■		
	PNP	-	■	■		
Size dia. in mm		40 (hollow)	50	60		
Max. force	Radial	29.4	80	120		
	Axial	4.9	50	50		
IP rating	IP50	■	-	-		
	IP64	-	-	-		
	IP65	-	■	■		
Max. rotation frequency		10,000	5,000	5,000		
Page/Quick Link		M429	F522	F524		

■ Standard    □ Available    - No/not available

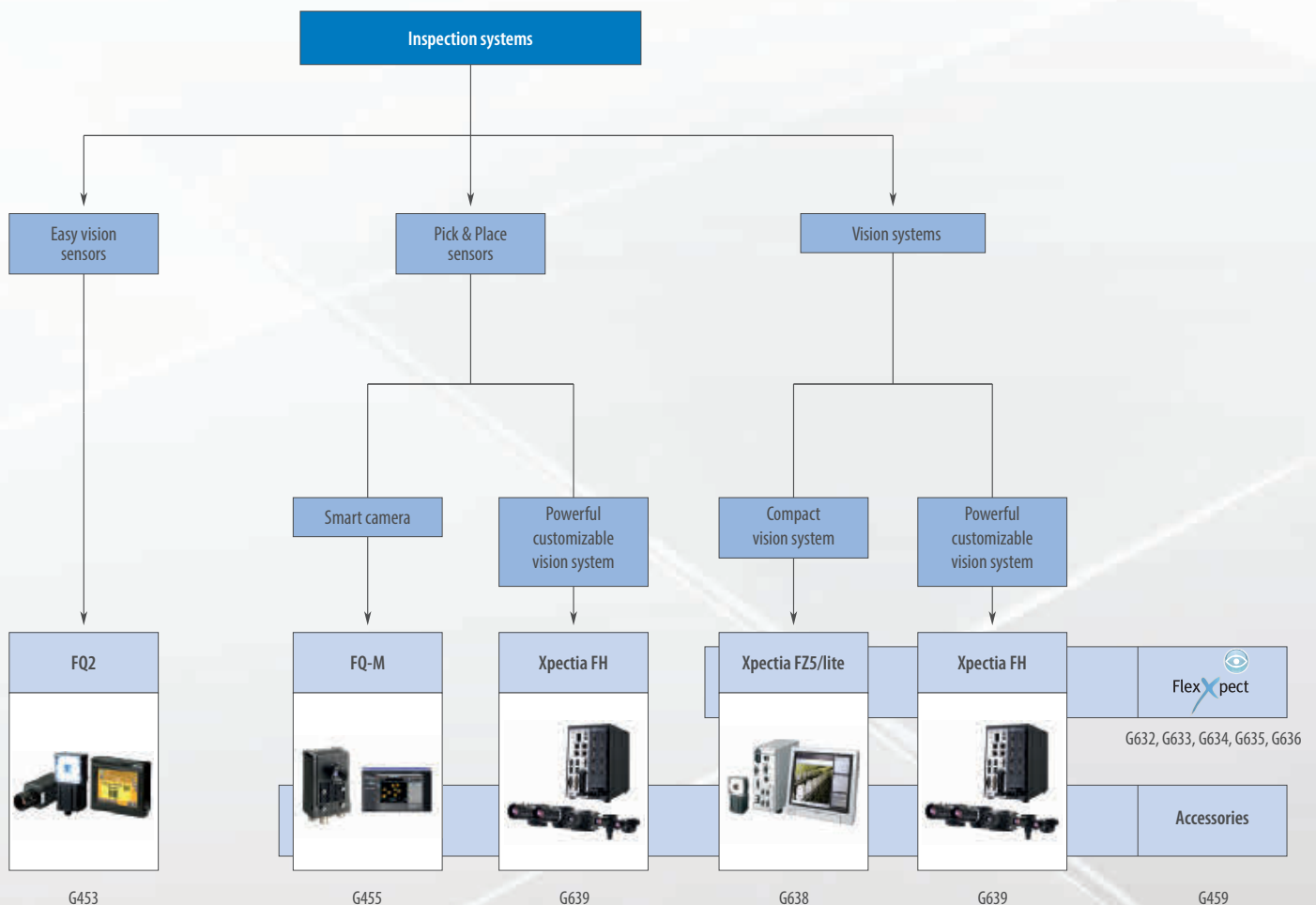
# Inspection & Ident systems

## EASY VISION: TOUCH, COMMUNICATE AND GO

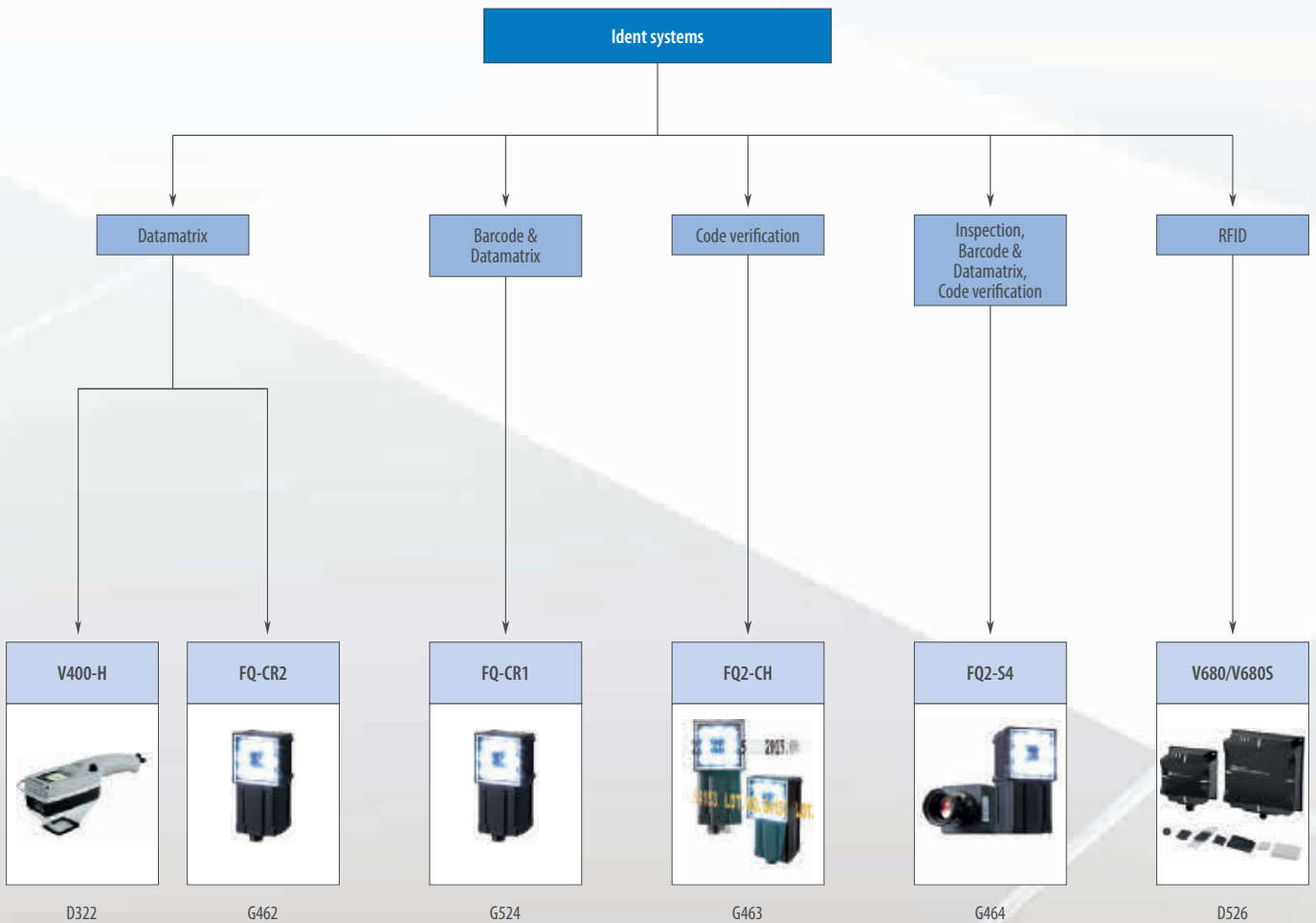
### Built-in LCD monitor for setup and immediate image visualization

The easy vision sensor FQ2 solves the applications by an intuitive teach & go procedure. For advanced applications features such as multiple inspections, position correction, intelligent image filtering and ethernet communication are offered by the Xpectia lite. The high end is addressed by the Xpectia FJ.

- Easy vision – intuitive user interfaces
- Communication – centralized set-up & inspection via Ethernet
- High-end vision – PC-based system for challenging applications
- True color – close to human eye identification and image processing







D322

G462






G524





G463

G464

D526

# Selection table

		Vision sensor	Pick & Place	Vision systems			
							
Model		FQ2	FQ-M	Xpectia FH	Xpectia FZ5/Lite	Xpectia FH	
Selection criteria	Number of connectable cameras	Smart camera	Smart camera	8	4	8	
	Camera type	Monochrome/Color	Color	Digital color or black & white	Digital color or black & white	Digital color or black & white	
	Resolution (usable)	752 × 480	752 × 480	from 640 × 480 to 2,040 × 2,048	from 640 × 480 to 2,488 × 2,044	from 640 × 480 to 2,040 × 2,048	
	Display dots	928 × 828 1,280 × 1,024					
	Working distance mm	Min.	8	Depends on selected lens	Depends on selected lens	Depends on selected lens	Depends on selected lens
		Max.	970	–	–	–	–
	Field of view	Min.	7.5 × 4.7	Depends on selected lens	Depends on selected lens	Depends on selected lens	Depends on selected lens
		Max.	300 × 268	–	–	–	–
	Number of storable configurations	32	32	–	–	–	
	Number of tools/configuration	32	32	limited only by memory space	limited only by memory space	limited only by memory space	
IP-Rating camera head	IP67	IP40	Depends on setup & tools, IP20	Depends on setup & tools, IP20	Depends on setup & tools, IP20		
Supply voltage	24 VDC	24 VDC	–	–	–		
Features	Image processing tools	Search, shape search II, sensitive search, area, color data, edge position, edge pitch, edge width, labeling, FQ2-S4 has additional: OCR, Bar code, 2D-code, 2D-code (DMP) and Model dictionary The types of characters and codes to be read are the same as those of FQ2-CH and FQ-CR1 & FQ-CR2	Contour based search, labelling, edge position	App. 70 processing tools for object or defect recognition, measurements, calculations, input/output, display and more. Includes also character recognition and high precision edge code inspection tools	App. 70 processing tools for object or defect recognition, measurements, calculations, input/output, display and more. Includes also character recognition and high precision edge code inspection tools	App. 70 processing tools for object or defect recognition, measurements, calculations, input/output, display and more. Includes also character recognition and high precision edge code inspection tools	
	Image preprocessing	High dynamic range (HDR), polarizing filter (attachment), and white balance	High dynamic range (HDR), white balance	Smoothing, edge enhancement, edge extraction, erosion, dilation, median, background suppression - multiple passes, configurable	Smoothing, edge enhancement, edge extraction, erosion, dilation, median, background suppression - multiple passes, configurable	Smoothing, edge enhancement, edge extraction, erosion, dilation, median, background suppression - multiple passes, configurable	
	Flow programming	–	–	■	■	■	
	User interface	PC-Tool or Touch Display	PC-Tool or Touch Display	■	■	■	
	Optional PC configuration software	Yes	Yes	■	■	■	
	Security tools	–	■	–	–	–	
	RS-232C	Optional via FQ-SDU2	–	■	■	■	
Communication	USB	–	–	■	■	■	
	Ethernet	Yes	■	■	■	■	
	EtherCAT	–	Yes	Yes	–	Yes	
	Number of digital I/O	7 in/3 out	9 in/5 out	19 in/34 out	11 in/26 out	19 in/34 out	
Page/Quick Link	G453	G455	G639	G638	G639		

		Code reader					
							
Model		FQ-CR1	FQ-CR2	FQ2-CH	FQ2-S4	V400-H	
Selection criteria	Number of connectable cameras	Smart camera	Smart camera	Smart camera	Smart camera	1	
	Camera type	Monochrome	Monochrome	Monochrome	Monochrome/Color	Digital black & white	
	Resolution (usable) Display dots	752 × 480	752 × 480	752 × 480	752 × 480 928 × 828 1,280 × 1,024	–	
	Working distance mm	Min.	8	8	8	8	40 mm
		Max.	970	970	970	970	40 mm
	Field of view	Min.	7.5 × 4.7	7.5 × 4.7	7.5 × 4.7	7.5 × 4.7	5 × 5 mm
		Max.	300 × 191	300 × 191	300 × 191	300 × 268	30 × 30 mm
	Number of storable configurations	32	32	32	32	limited by SD card	
	Number of tools/configuration	32	32	32	32	–	
	IP-Rating camera head	IP67	IP67	IP67	IP67	IP64	
Supply voltage	24 VDC	24 VDC	24 VDC	24 VDC	5 VDC		
Features	Image processing tools	2D-codes: Data Matrix, QR Code, Micro QR Code, PDF417, Micro PDF417, GS1-Data Matrix Bar codes: JAN/EAN/UPC, Code39, Codabar (NW-7), IFT (interleaved2 of 5), Code93, Code128/GS1-128, GS1-DataBar, GS1-128 Composite Code, Pharmacode	2D-codes: Data Matrix, QR Code	OCR - Alphabet A to Z - Number 0 to 9 - Symbol '-./: Model dictionary	Search, shape search II, sensitive search, area, color data, edge position, edge pitch, edge width, labeling, OCR, Bar code, 2D-code, 2D-code (DMP) and Model dictionary The types of characters and codes to be read are the same as those of FQ2-CH and FQ-CR1 & FQ-CR2	Data Matrix, ECC200, 10×10 to 64×64, 8×18 to 16×48, QR Code (Models 1, 2), 21×21 to 57×57 (Versions 1 to 10).	
	Image preprocessing	High dynamic range (HDR), polarizing filter (attach- ment), and white balance	High dynamic range (HDR), polarizing filter (attach- ment), and white balance	High dynamic range (HDR), polarizing filter (attach- ment), and white balance	High dynamic range (HDR), polarizing filter (attach- ment), and white balance	–	
	Flow programming	–	–	–	–	–	
	User interface	PC-Tool or Touch Display	PC-Tool or Touch Display	PC-Tool or Touch Display	PC-Tool or Touch Display	–	
	Optional PC configuration software	Yes	Yes	Yes	Yes	–	
	Security tools	–	–	–	–	–	
	–	–	–	–	–	–	
Communication	RS-232C	–	–	Optional via FQ-SDU2	Optional via FQ-SDU2	–	
	USB	–	–	–	–	–	
	Ethernet	Yes	Yes	Yes	Yes	–	
	EtherCAT	–	–	–	–	–	
	Number of digital I/O	7 in/3 out	7 in/3 out	7 in/3 out	7 in/3 out	–	
Page/Quick Link	G524	G462	G463	G464	D322		

■ Standard

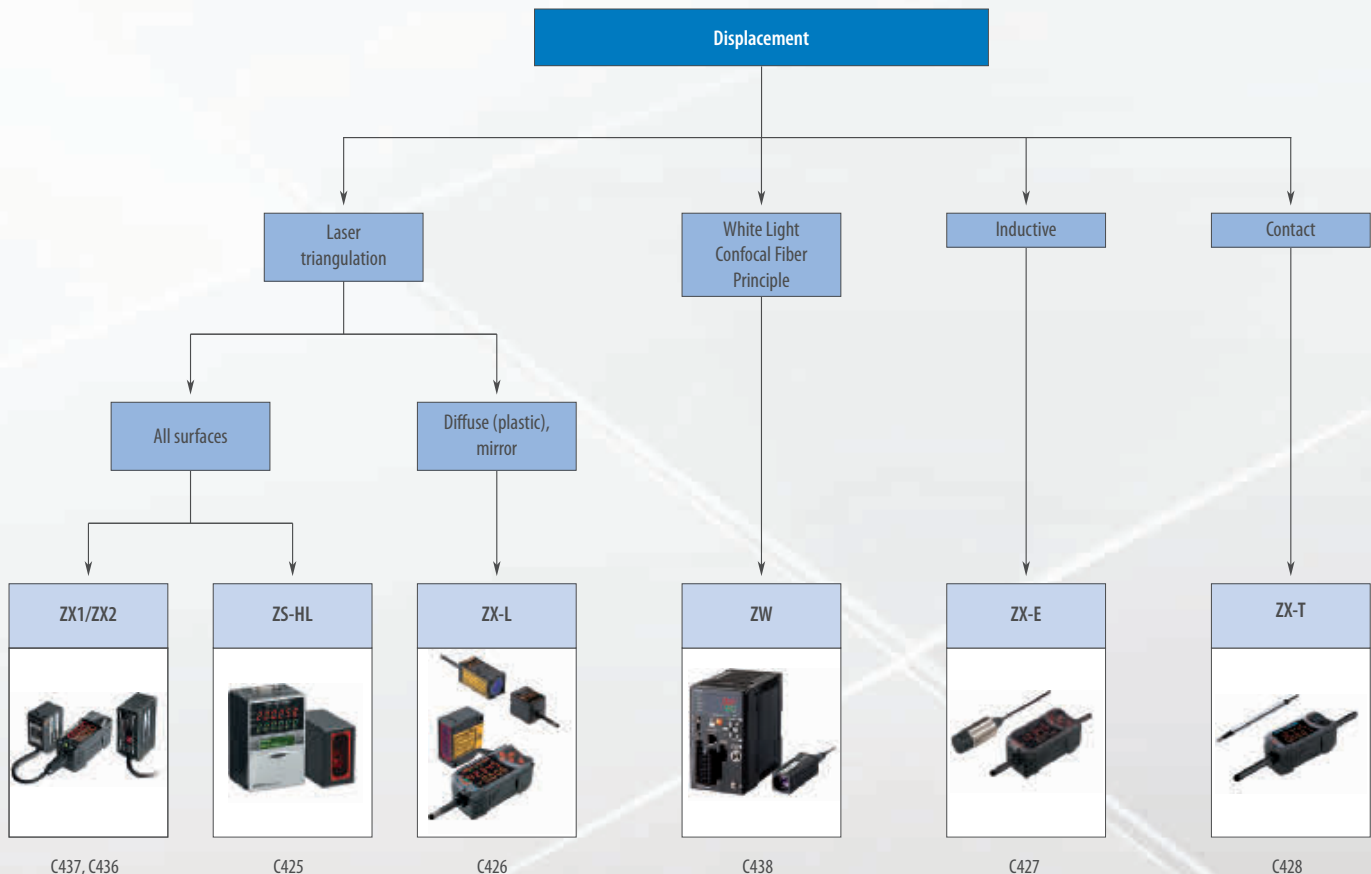
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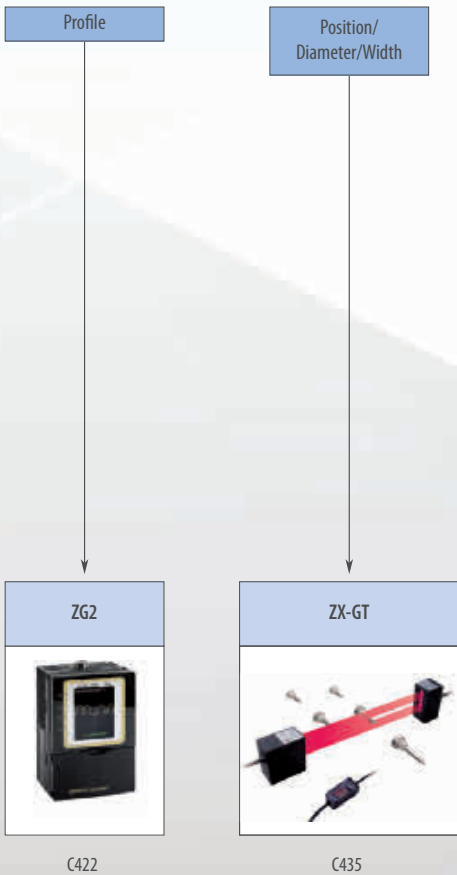
## HIGH PRECISION QUALITY INSPECTION

### Zero defect becomes reality – scalable accuracy in inspection

The Smart displacement sensor family offers a modular and scalable approach to solve the most challenging measurement tasks. The powerful portfolio enables you to measure profiles, thickness, distance, evenness/warpage, as well as width, edge, etc. Several measurement profiles can be performed simultaneously, using a single- or multi-controller unit. Aided by Omron's advanced technologies, the highest accuracy over long distances, speed and reliability will be achieved.

- Accurate and fast – 0.25  $\mu\text{m}$  at less than 110  $\mu\text{s}$  sampling time
- Scalable – multi-controller unit to coordinate and calculate up to 9 units
- Smart – data storage and remote control via networking capabilities





# Selection table

		Laser displacement sensor			Confocal fiber sensor
					
Selection criteria	Model	ZX1/ZX2	ZS-HL	ZX-L	ZW
	Measurement range Z Min.	50±10 mm	10±0.5 mm	30±2 mm	7 mm
	Max.	600±400 mm	1500±500 mm	300±200 mm	40 mm
	Measurement range X Min.	–	–	–	–
	Max.	–	–	–	–
	Resolution Z	1.5 µm	0.25 µm	0.25 µm	0.01 µm
	Resolution X	–	–	–	–
	Linearity (±% of full scale)	0.05%	0.05%	0.2%	0.1%
	Response time	60 µs	110 µs	150 µs	500 µs
	Spot beam	■	■	■	■
	Line beam	■	■	■	–
	IP-rating head	IP67	IP64/IP67	IP50	IP40
	IP-rating controller	IP40	IP40	IP40	IP20
	Ambient oper. temperature	0 to 50°C	0 to 50°C	0 to 50°C	0 to 40°C
	Number of connectable sensors	5	9	5	4
Features	Thickness measurement	■	■	■	■
	Eccentricity	■	■	■	–
	Height	■	■	■	■
	Step	■	■	■	–
	Profile	–	–	–	–
	Distance	–	–	–	–
	Evenness	–	–	–	–
	Warpage	–	–	–	–
	Edge	–	–	–	–
	Width	–	–	–	–
	Peak	■	■	■	–
	Peak to peak	■	■	■	–
	Bottom	■	■	■	–
	Self-trigger	■	■	■	–
	Calibration	■	■	■	■
Signal scaling	■	–	–	■	
PC-software	–	■	■	■	
Application	Mirror	■	■	–	■
	Glass	■	■	–	■
	Metal	■	■	□	■
	Plastic	■	■	■	■
	Black rubber	■	■	–	■
	Paper	■	■	□	■
Supply voltage	12 to 24 VDC	■	–	■	■
	21.6 to 26.4 VDC	–	■	–	■
Control I/O	4 to 20 mA	■	■	■	■
	1 to 5 VDC	■	–	■	–
	Judgement output High/Pass/Low	■	■	■	■
	Trigger	■	■	■	■
Communication	RS-232C	■	■	■	–
	USB2.0	■	■	–	–
Page/Quick Link	C437, C436	C425	C426	C438	

	Inductive displacement sensor	Contact displacement sensor	Profile sensor	Laser micrometer	
					
Selection criteria	Model	ZX-E	ZX-T	ZG2	ZX-GT
	Measurement range Z Min.	0.5 mm	1 mm	20 ±0.5 mm	–
	Max.	7 mm	10 mm	210 ±30 mm	28 mm
	Measurement range X Min.	–	–	3 mm	–
	Max.	–	–	70 mm	–
	Resolution Z	1 µm	0.1 µm	0.2 µm	10 µm
	Resolution X	–	–	3 mm/631 pixels	–
	Linearity (±% of full scale)	0.5%	0.3%	0.5%	0.1%
	Response time	150 µs	1 ms	5 ms	150 µs
	Spot beam	–	–	–	–
	Line beam	–	–	☐	–
	IP-rating head	IP67	IP67	IP64/66	IP40
	IP-rating controller	IP40	IP40	IP20	IP40
Ambient oper. temperature	0 to 50°C	0 to 50°C	0 to 50°C	0 to 50°C	
Number of connectable sensors	5	7	1	5	
Features	Thickness measurement	■	■	■	■
	Eccentricity	■	■	■	■
	Height	■	■	■	■
	Step	■	■	■	■
	Profile	–	–	☐	–
	Distance	■	■	–	–
	Evenness	■	■	–	–
	Warpage	■	■	–	–
	Edge	–	–	–	■
	Width	–	–	☐	■
	Peak	■	■	■	■
	Peak to peak	■	■	■	■
	Bottom	■	■	■	■
	Self-trigger	■	■	■	■
	Calibration	–	–	■	–
Signal scaling	■	■	–	■	
PC-software	■	■	■	■	
Application	Mirror	–	■	■	■
	Glass	–	■	■	■
	Metal	■	■	■	■
	Plastic	–	■	■	■
	Black rubber	–	■	■	■
	Paper	–	–	■	■
Supply voltage	12 to 24 VDC	■	■	–	■
	21.6 to 26.4 VDC	–	–	■	■
Control I/O	4 to 20 mA	■	■	■	■
	1 to 5 VDC	■	■	–	■
	Judgement output High/Pass/Low	■	■	■	■
	Trigger	■	■	■	■
Communication	RS-232C	■	■	■	■
	USB2.0	■	–	■	–
	Page/Quick Link	C427	C428	C422	C435

■ Standard      ☐ Available      – No/not available

# Emergency stop and control devices

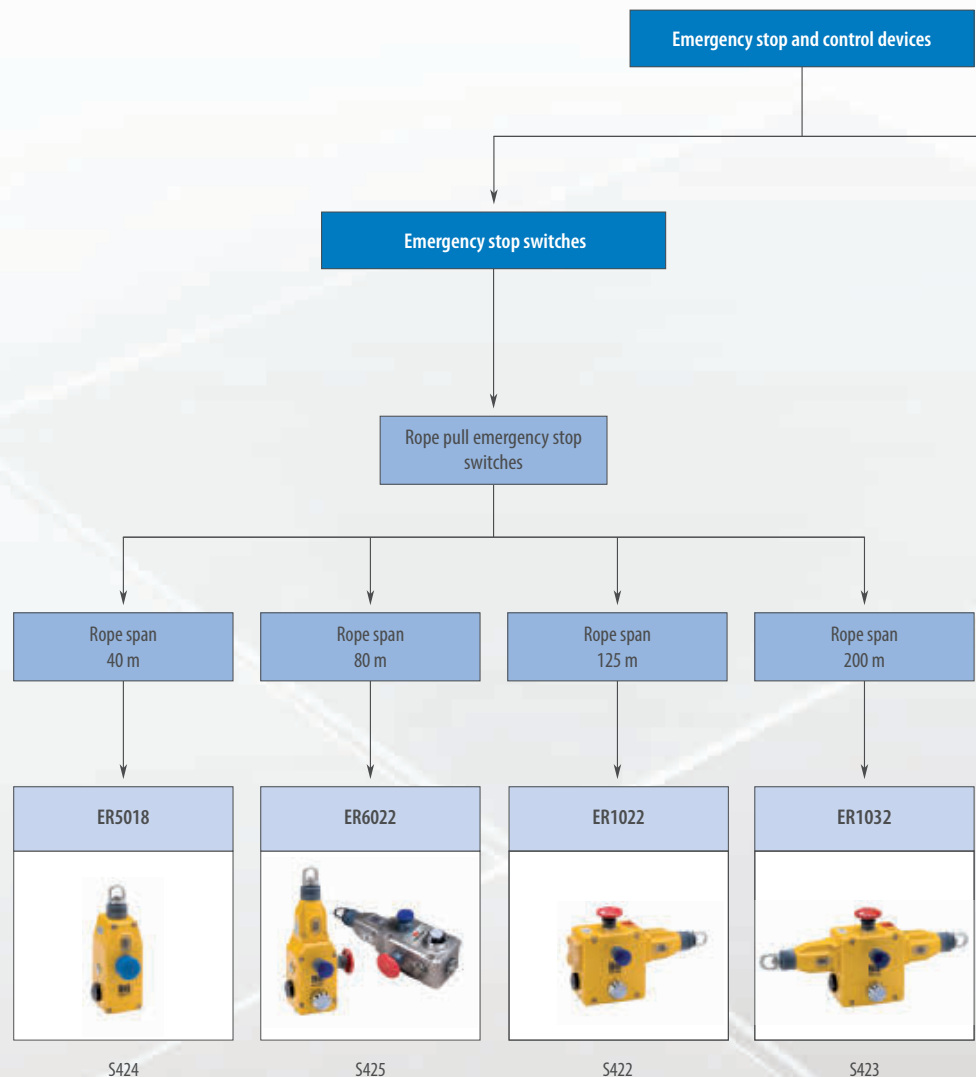
## INTERACT WITH YOUR MACHINE

### Emergency stop rope pull switches

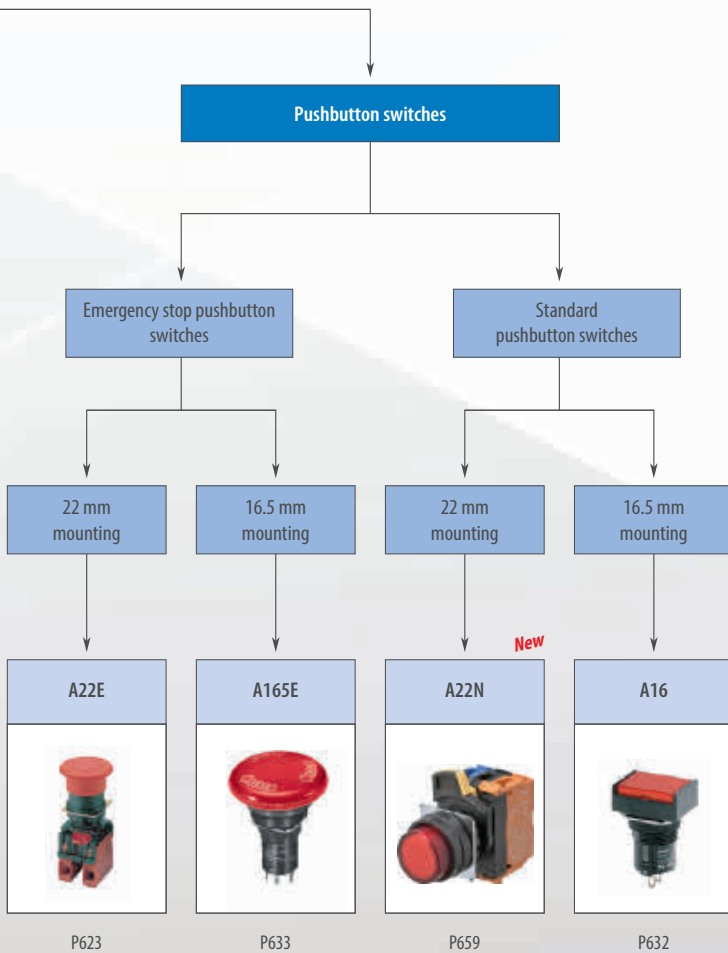
Conveyor systems require Emergency stop function along the whole length of the machine. Rope pull emergency stop switches provide this function along the whole line with minimal wiring effort. Long rope spans, simple tensioning of the rope and a range of accessories in stainless steel support fast installation and enhanced durability.

### Emergency stop pushbutton switches





Emergency stop switches are used to prevent movements that would endanger workers' hands. They are used in industrial applications such as switchboards, two-hand-operation consoles and all other kinds of machines.













# Selection table

Category		Pushbutton switch		
				
Model		A16	A22N	
Selection criteria	Mounting	Nut-mounting		
	Size	16 mm	22 mm	
	Shape			
Pushbutton color	Incandescent lamp-lighted	Red	■	–
		Yellow	■	–
		Green	■	–
		White	■	–
		Blue	■	–
	LED-lighted	Red	■	■
		Yellow	■	■
		Green	■	■
		White	■	■
		Blue	■	■
	Non-lighted	Red	■	■
		Yellow	■	■
		Green	■	■
		White	■	■
		Blue	■	■
		Black	■	■
	Features	Momentary operation	■	■
		Self-holding	■	■
Number of contacts		2	6	
IP rating		IP65	IP66	
Legend plate		■	■	
Switch ratings [A]	125 VAC	5	10	
	250 VAC	3	6	
	30 VDC	3	10	
	Rated resistive load	5 A at 125 VAC, 3 A at 250 VAC, 3 A at 30 VDC	10 A at 120 VAC 6 A at 240 VAC	
Terminals	Solder	■	–	
	PCB	–	–	
	Screw-less Clamp	–	–	
Operating voltage	5 VAC/VDC	■	–	
	12 VAC/VDC	■	–	
	24 VAC/VDC	■	■	
	120/240 VAC	–	■	
Form	SPDT	■	–	
	DPDT	■	–	
	SPST-NO	–	■	
	SPST-NC	–	■	
	SPST-NO + SPST-NC	–	■	
	DPST-NO	–	■	
DPST-NC	–	■		
Page/Quick Link		P632	P659	

Category		Emergency stop pushbutton switches	
			
Model		A165E	A22E
Selection criteria Features	Housing	Plastic	
	Protection class	IP65	
	Operating temperature range	–10 to 55°C	–20 to 70°C
	Head size	30 mm, 40 mm	30 mm, 40 mm, 60 mm
	Conformity	EN 60947-5-1	
	Max. rope span	–	
	Conduit size M20	–	
	Additional E-Stop button	–	
	LED indicator beacon	–	
	Stainless steel housing	–	
	Explosion proof housing	–	
	Lighted head	■	
	Push lock – pull reset	–	■
Push lock – turn reset	■		
Application	E-Stop application	■	
	General safety application	■	
Contact configuration	SPST (NC)	■	
	DPST (NC)	■	
	SPST (NO) + SPST (NC)	–	■
	TPST (NC)	■	–
Page/Quick Link		P633	P623

Category		Rope pull switches			
					
Model		ER 5018	ER 6022	ER 1022	ER 1032
Selection criteria	Housing	Metal			
	Protection class	IP67			
	Operating temperature range	-25 to 80°C			
	Head size	-			
	Conformity	EN60947-5-1:2004, EN60947-5-5:1997+A1:2005; EN60204-1; EN ISO 13850:2006			
Features	Max. rope span	40 m	80 m	125 m	200 m
	Conduit size M20	■			
	Additional E-Stop button	■			
	LED indicator beacon	-	■	■	■
	Stainless steel housing	-	Available	-	-
	Explosion proof housing	-	■	■	■
	Lighted head	-			
	Push lock – pull reset	-			
Push lock, turn reset	-				
Push lock, lock key reset	-				
Application	E-Stop application	■			
	General safety application	■			
Contact configuration	2NC+1NO	■	■	-	-
	3NC	■	■	-	-
	4NC+2NO	-	-	■	■
Page/Quick Link	S424	S425	S422	S423	

■ Standard    □ Available    - No/not available

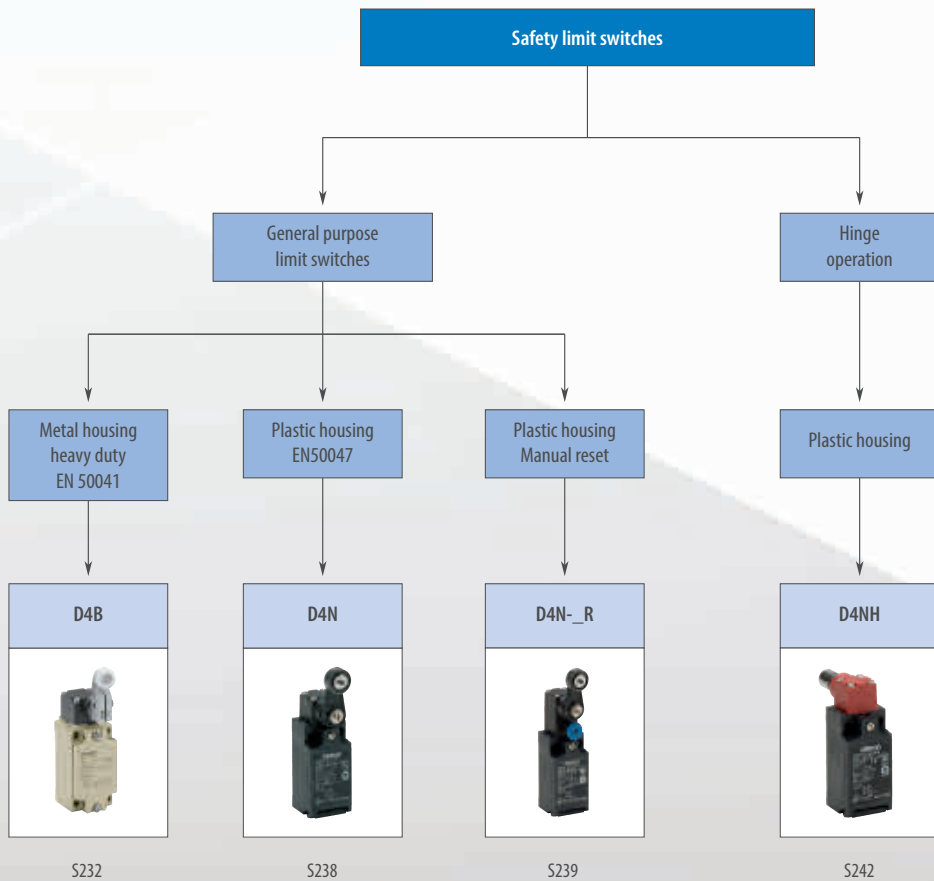
# Safety limit switches

## PRECISE MONITORING OF GUARD POSITION

### Detect linear or rotational movement of guards: D4N

Guards and covers on machines protect workers. They limit access to the dangerous parts of the machine. Our safety limit switches guarantee that the guards and covers are in place before the machine is started.

- Wide variety of actuators to fit wide range of applications
- Gold-plated contacts for reliable operation with micro loads





		Safety limit switches			
					
Model		D4B	D4N	D4NH	D4N- R
Selection criteria	Housing	Metal	Plastic	Plastic	Plastic
	M12 Plug connector	-	■	■	-
	Protection class	IP67			
	Operating Temperature Range	-40 to 80°C	-30 to 70°C	-30 to 70°C	-30 to 70°C
	Conformity	EN50047, EN1088			
Features	Conduit size M20	■	■	■	■
	Gold clad contacts	■	■	■	■
	Actuators				
	Resin roller, resin lever	-	■	-	■
	Resin roller, metal lever	■	■	-	-
	Metal roller, metal lever	-	■	-	-
	Bearing lever, metal lever	-	■	-	-
	Adj. resin roller, metal lever	■	■	-	■
	Adj. Rubber roller, metal lever	-	■	-	■
	Adj. Rod lever	■	-	-	-
	Top plunger	■	■	-	■
	Top roller plunger	■	■	-	■
	Horizontal roller arm lever	-	■	-	■
	Vertical roller arm lever	-	■	-	■
	Cat whisker	-	■	-	-
	Plastic Rod	■	■	-	-
	Fork lever lock (right operation)	-	■	-	-
Fork lever lock (left operation)	-	■	-	-	
Hinge operation	■	-	■	-	
Application	Position monitoring	■	■	■	■
Contact configuration	1NC/1NO snap action	■	■	-	-
	2NC snap action	-	■	-	-
	1NC/1NO slow action	■	■	■	■
	2NC slow action	■	■	■	■
	2NC/1NO slow action	-	■	■	■
	3NC slow action	-	■	■	■
	1NC/1NO (MBB slow action)	-	■	■	-
	2NC/1NO (MBB slow action)	-	■	■	-
Page/Quick Link	S232	S238	S242	S239	

■ Standard      - No/not available

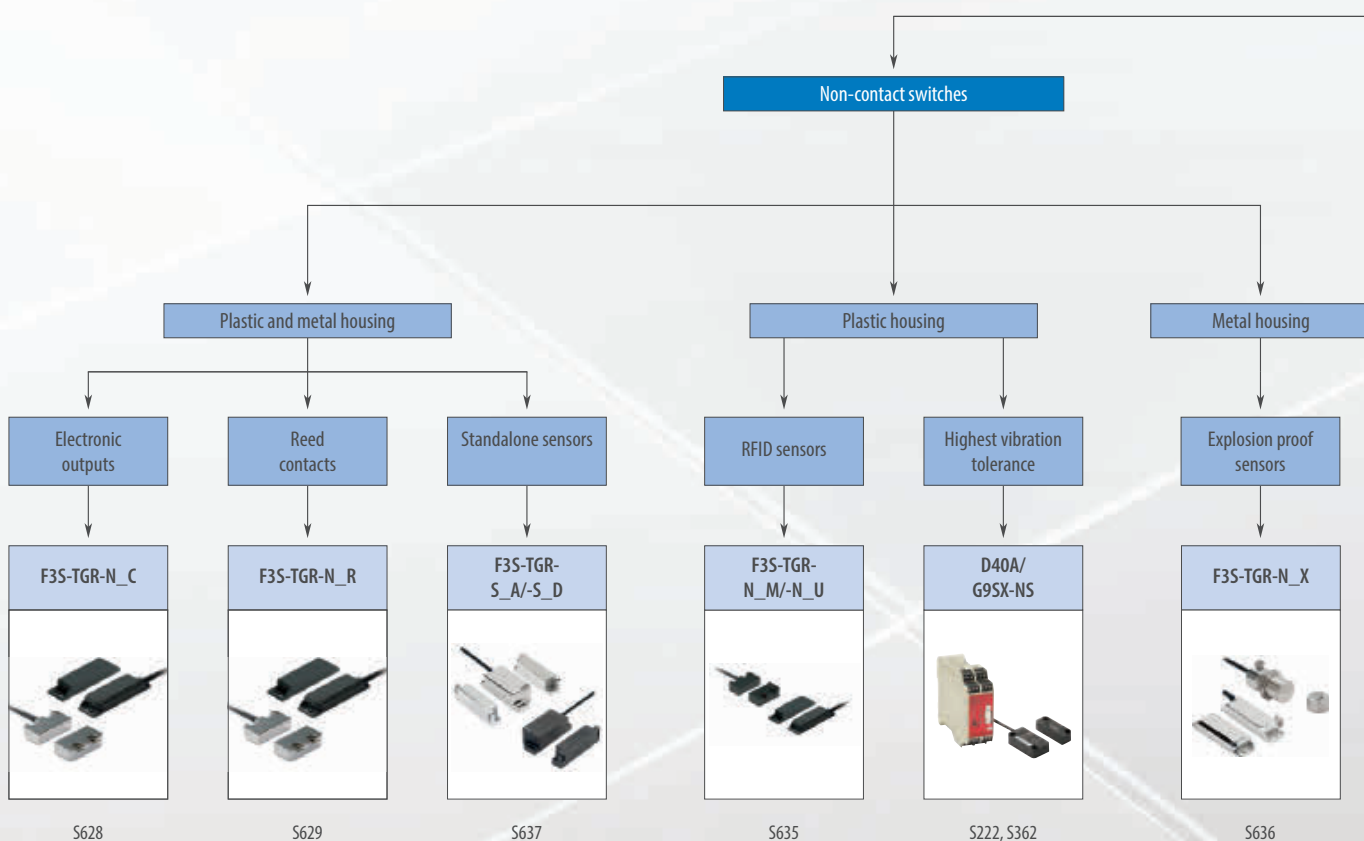
# Safety door switches

## BREAK CONVENTIONAL BARRIERS IN SAFETY DESIGN

### Flexibility selecting best fit control device for non-contact switch application: F3S-TGR-N

Omron has introduced a series of magnetic coded contactless switches for interlocking machine guard doors. The switches feature a built-in control function, thus saving the cost and space required for an external controller. The non-contact switches offer advantages in applications where a precise approach of the guard and lock is not possible. Applications with a large amount of dirt or high hygienic standards can also be addressed.

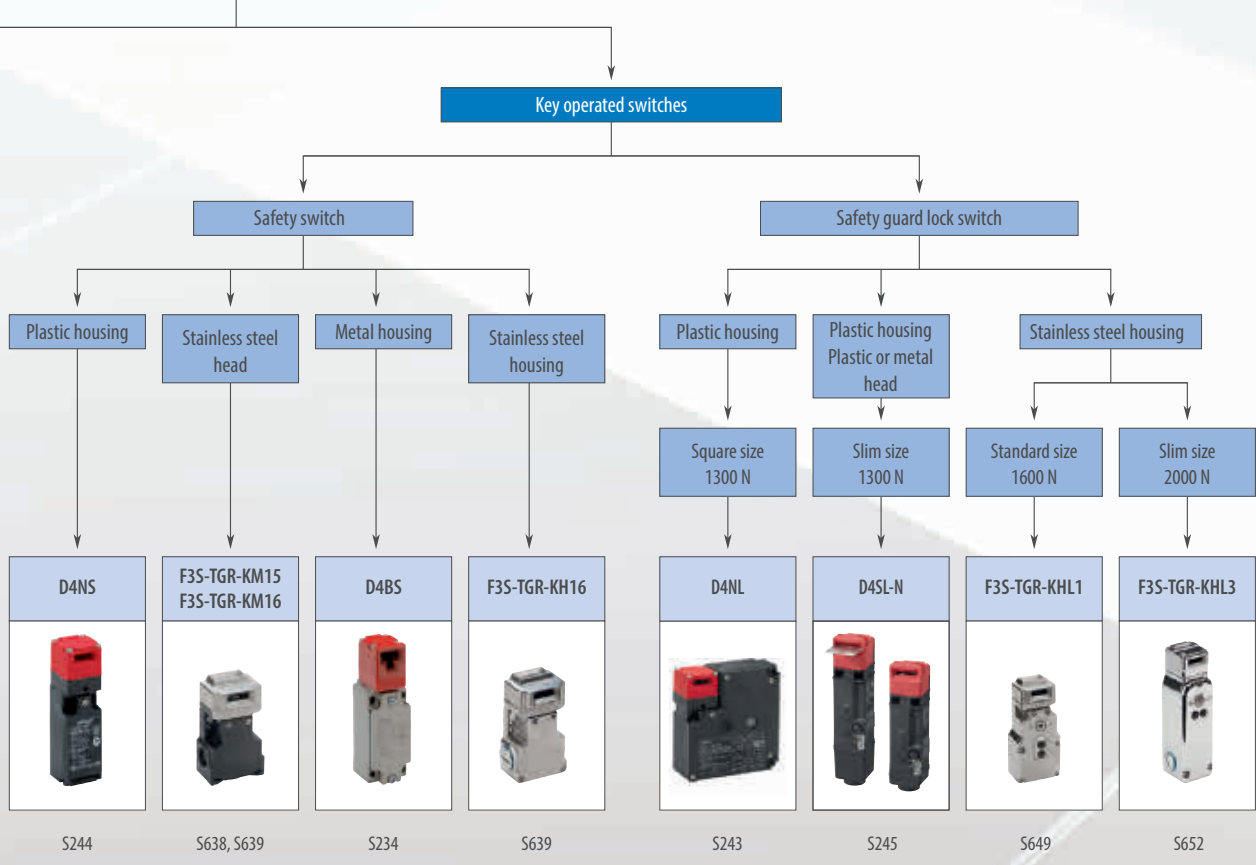
- Operates with all Omron safety relay units and safety bus interfaces
- Operates behind stainless steel fittings
- Non-contact – no abrasion – no particles
- Conforms to safety categories up to 4 acc. EN 954-1 and PLe acc. EN ISO 13849-1













Safety door switches



# Selection table

		Non-contact safety door switches					
							
Model		F3S-TGR-N_C	F3S-TGR-N_R	F3S-TGR-N_M/-N_U	F3S-TGR-S_A/-S_D	F3S-TGR-N_X	D40A/G95X-NS
Selection criteria	Housing	Plastic/Metal	Plastic/Metal	Plastic	Plastic/Metal	Metal	Plastic
	Protection class	IP67/IP69K	IP67/IP69K	IP67/IP69K	IP67/IP69K	IP67	IP67
	Conformity	EN ISO 13849-1, EN60947-5-3	EN ISO 13849-1, EN60947-5-3	EN ISO 13849-1, EN60947-5-3	EN ISO 13849-1, EN60947-5-3	EN ISO 13849-1, EN60947-5-3	EN ISO 13849-1
Features	Cable length 2 m	■	■	-	-	-	■
	Cable length 5 m	■	■	■	■	■	■
	Cable length 10 m	■	■	■	■	■	-
	Connector type M12	■	■	■	■	■	-
	High temperature sensor	■	■	-	-	-	-
	Operates with G9SA, G9SB	■	■	■	■	■	-
	Operates with G9SX	■	■	■	■	■	■
	Operates with programmable safety units G9SP and NE1A	■	■	■	■	■	-
Application	Door monitoring	■	■	■	■	■	■
Contact configuration	1NC/1NO	-	-	-	-	-	■
	2NC	■	■	-	-	-	-
	2NC/1NO	■	■	■	■	■	-
	Force guided relays	-	-	-	■	-	-
Page/Quick Link		S628	S629	S635	S637	S636	S222, S362

	Safety door switches					Safety door lock switches					
											
Model	D4NS	F3S-TGR-KM15	F3S-TGR-KM16	D4B5	F3S-TGR-KH16	D4NL	D4SL-N	F3S-TGR-KHL1	F3S-TGR-KHL3		
Selection criteria	Housing	Plastic	Plastic body Metal head	Plastic body Metal head	Metal	Stainless steel	Plastic	Plastic/metal head available	Stainless steel	Stainless steel	
	Head mounting	4 directions	2 directions	2 directions	4 directions	2 directions	4 directions	4 directions	2 directions	4 directions	
	Actuation	Straight	Straight	Straight	Straight	Straight	Straight	Straight	Straight	Straight	
	Key holding force	–	–	–	–	–	1,300 N	1,300 N	1,600 N	2,000 N	
	Protection class	IP67	IP67	IP67	IP67	IP69k	IP67	IP67	IP69k	IP69k	
	Conformity	EN50047, EN1088	EN1088	EN1088	EN50047, EN1088	EN1088	EN1088	EN1088	EN1088	EN1088	
Features	Conduit size M20	■	■	■	PG 13.5	■	■	■	■	■	
	Screw terminal	■	■	■	■	■	■	■	■	■	
	Connector terminal	–	–	–	–	–	–	■	–	–	
	Operation key horizontal	■	■	■	■	■	■	■	■	■	
	Operation key vertical	■	■	■	■	■	■	■	■	■	
	Operation key adjustable horizontal	■	■	■	■	■	■	■	■	■	
	Operation key adjustable horizontal and vertical	■	■	■	–	■	■	■	■	■	
	Mechanical lock/ 24 VDC solenoid release	–	–	–	–	–	■	■	■	■	
	Mechanical lock/ 110 VAC solenoid release	–	–	–	–	–	■	–	–	–	
	Mechanical lock/ 230 VAC solenoid release	–	–	–	–	–	■	–	–	–	
	24 VDC solenoid lock/ mechanical release	–	–	–	–	–	■	■	–	–	
	110 VAC solenoid lock mechanical release	–	–	–	–	–	■	–	–	–	
	240 VAC solenoid lock mechanical release	–	–	–	–	–	■	–	–	–	
	High temperature sensor	–	–	–	–	–	–	–	–	–	
	Operates with G9SR	■	■	■	■	■	■	■	■	■	
	Operates with G9SA, G9SB	■	■	■	■	■	■	■	■	■	
	Operates with G9SX	■	■	■	■	■	■	■	■	■	
	Operates with programmable safety units G9SP and NE1A	■	■	■	■	■	■	■	■	■	
	Application	Door monitoring	■	■	■	■	■	■	■	■	■
		Door locking	–	–	–	–	–	■	■	■	■
Contact configuration	2 contact models	■	–	–	■	–	–	–	–	–	
	3 contact models	■	■	■	–	■	–	–	–	–	
	4 contact models	–	–	–	–	–	–	■	■	■	
	5 contact models	–	–	–	–	–	■	■	–	–	
	6 contact models	–	–	–	–	–	–	■	–	–	
	Slow action contacts	■	■	■	–	■	–	–	■	■	
Page/Quick Link	S244	S638	S639	S234	S639	S243	S245	S649	S652		

■ Standard

– No/not available

# Safety sensors

## PROTECT OPERATORS AND PRODUCTION

### Safety light curtains

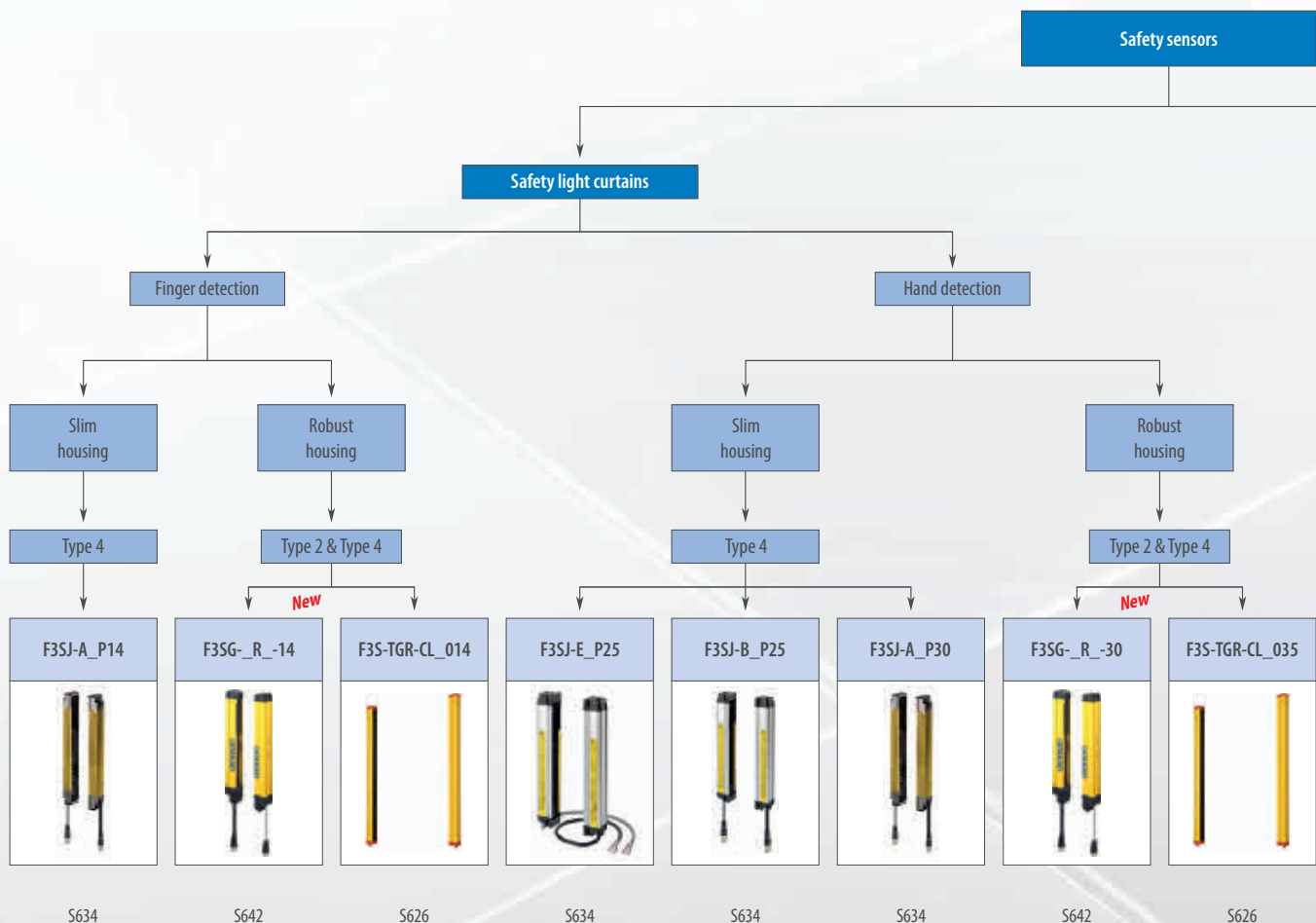
Dangerous points and hazardous areas are safeguarded with safety light curtains. Depending on the type, finger and hand protection are available with operating distances of up to 20m. They are available in safety categories 2 and 4 (according to IEC 61496).

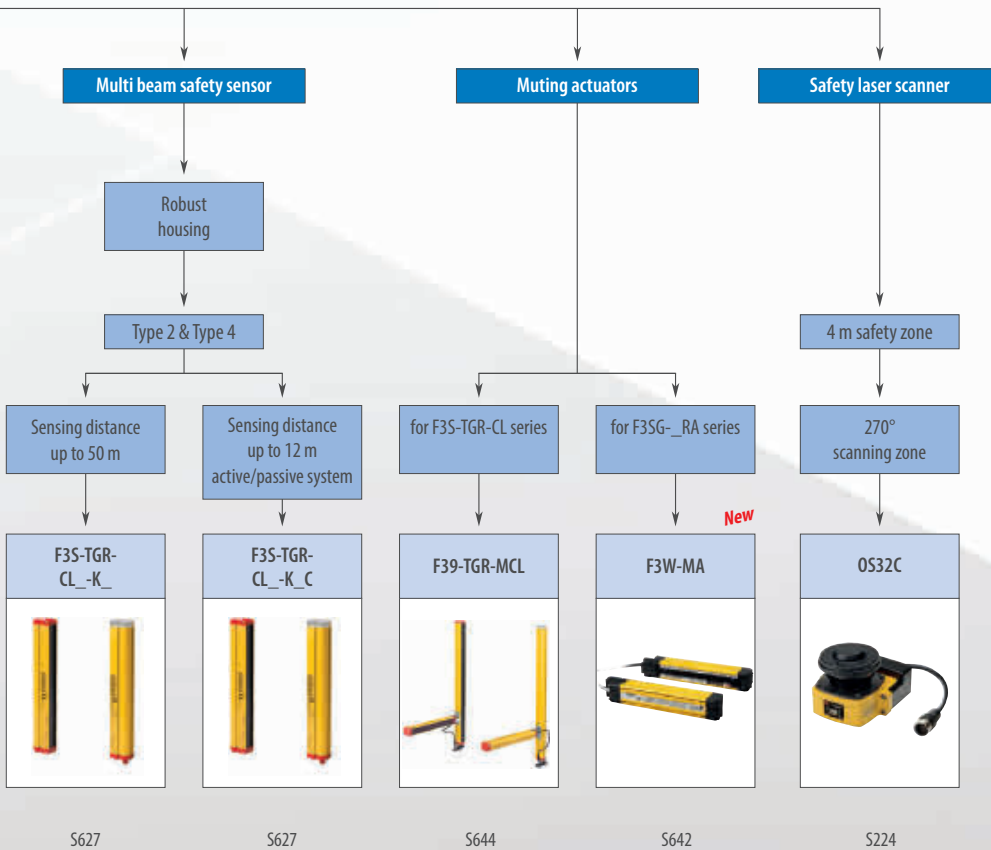
### Multi beam safety sensor

Hazardous areas can be safeguarded by using multi-beam photoelectric safety guards. They are used as non-contact access guarding and consist of sender and receiver or can be implemented as an active/passive system to save wiring effort.




### Safety laser scanner

Horizontal and vertical guarding of dangerous areas are the applications for safety laser scanners in mobile and stationary application. This covers collision avoidance on automated guided vehicles (AGVs) as well as presence and intrusion detection on access points of machinery by providing a wide safety scanning range of 3 m covering 270° around the sensor head.



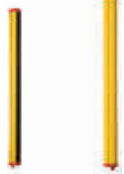





# Selection table

		Safety light curtain					
							
Model	F3SG- RA	F3SG_RE	F3S-TGR-CL_A	F3S-TGR-CL_B	F3SJ-A		
Selection criteria	Type of ESPE (IEC 61496-1)	Type 2 & 4		Type 2 & 4		Type 4	
	Resolution	14, 30 mm		14, 35 mm		14, 30 mm	
	Beam pitch	-		-		-	
	Protective height	160 to 2,080 mm (14) 190 to 2,510 mm (30)		150 to 2,400 mm		245 to 1,271 mm (14) 245 to 2,495 mm (30)	
	Operating range	0.3 to 10.0 m (14) 0.3 to 20.0 m (30)		0.2 to 6.0 m (14) 0.2 to 14.0 m (35)		0.3 to 9.0 m (14) 0.3 to 9.0 m (30)	
	Operating temperature	-10 to 55°C		-10 to 55°C		-10 to 55°C	
	Degree of protection (IEC 60529)	IP65 and IP67		IP65		IP65	
	Response time ON to OFF	8 to 18 ms		5 to 15ms	14 to 103 ms		10 to 25 ms
	Parameter setting	Dip switch	Software	-	Dip switch		Software
Features	EDM	■	●	-	■	■	●
	Interlock	■	●	-	■	■	○
	Pre-Reset	■	●	-	■	-	-
	External test	■	-	-	■	■	○
	PNP/NPN selection	■	-	-	-	-	-
	Scan code selection	■	-	-	■	■	-
	Operating range selection	■	-	○	■	■	-
	Fixed blanking	■	●	-	■	-	●
	Floating blanking	■	●	-	■	-	●
	SD/BD	-	-	-	■	-	-
	Muting	- <sup>*1</sup>	●	-	■	-	●
	Override	○	●	-	○	-	●
	Reduced resolution	-	●	-	-	-	-
	Warning zone	-	●	-	-	-	●
Response time adjustment	-	●	-	-	-	-	
Cascade connection	up to 3 sets		-	option	-	up to 4 sets	
In- and Outputs	Safety outputs (OSSD)	2 PNP transistor outputs		2 PNP transistor outputs		2 PNP transistor outputs	
	Non-safety auxiliary output	1 PNP or NPN	-	-	-	2 PNP	
	Test input	Yes	Yes	Yes	Yes	Yes	
	EDM input	Yes	-	Yes	Yes	Yes	
	Reset input	Yes	-	Yes	Yes	Yes	
	Muting sensor input	Yes	-	Yes	-	-	
Communication	Bluetooth option		-	-	-		
Page/Quick Link	S642	S642	S626		S634		

\*1 Factory default setting: Standard Muting mode

		Safety light curtain		Multi-beam safety sensors		Safety laser scanner
						
Model		F3SJ-B	F3SJ-E	F3S-TGR-CL_A-K_	F3S-TGR-CL_B-K_	OS32C
Selection criteria	Type of ESPE (IEC 61496-1)	Type 4	Type 4	Type 2 & 4		Type 3
	Resolution	25 mm	25 mm	-		30, 40, 50, 70 mm
	Beam pitch	-	-	300, 400, 500 mm		-
	Protective height	185 to 2,065 mm	185 to 1,105 mm	500 to 1,200 mm		-
	Operating range	0.2 to 7.0 m	0.2 to 7.0 m	0.2 to 40.0 m (K) 0.2 to 12.0 m (K2C)		3, 4m
	Operating temperature	-10 to 55°C	-10 to 55°C	-10 to 55°C		-10 to 55°C
	Degree of protection (IEC 60529)	IP65	IP65	IP65		IP65
	Response time ON to OFF	15 ms	15 ms	13 ms		80 to 680 ms
	Parameter setting	-	-	Dip switch		Software
Features	EDM	○	-	■	■	●
	Interlock	○	-	■	■	●
	Pre-Reset	-	-	■	-	-
	External test	○	○	■	■	-
	PNP/NPN selection	-	-	-	-	-
	Scan code selection	-	-	■	■	-
	Operating range selection	-	-	■	■	-
	Fixed blanking	-	-	-	-	-
	Floating blanking	-	-	-	-	-
	SD/BD	-	-	-	-	-
	Muting	○	-	■	-	-
	Override	○	-	○	-	-
	Reduced resolution	-	-	-	-	-
	Warning zone	-	-	-	-	●
Response time adjustment	-	-	-	-	●	
Cascade connection	up to 3 sets	-	-	-	-	
In- and Outputs	Safety outputs (OSSD)	2 PNP transistor outputs	2 PNP transistor outputs	2 PNP transistor outputs		2 PNP transistor outputs
	Non-safety auxiliary output	1 PNP	-	-		2 PNP or NPN
	Test input	Yes	Yes	Yes	Yes	-
	EDM input	Yes	-	Yes	Yes	Yes
	Reset input	Yes	-	Yes	Yes	Yes
	Muting sensor input	-	-	Yes	-	-
Communication	-	-	-	-	Ethernet/IP option	
Page/Quick Link	S634	S634	S627		S224	

■ Setting by Dip switch    ● Setting by Configuration tool    ○ Setting by Wiring    - No/not available

# Safety logic control systems

## BREAK THROUGH BARRIERS IN SAFETY DESIGN

### Configurable, scalable and simple

Omron safety controllers, offer a wide solution portfolio from safety relay units to a distributed and integrated safety logic control systems. It allows to solve any safety needs from a simple machines through to manufacturing cells.

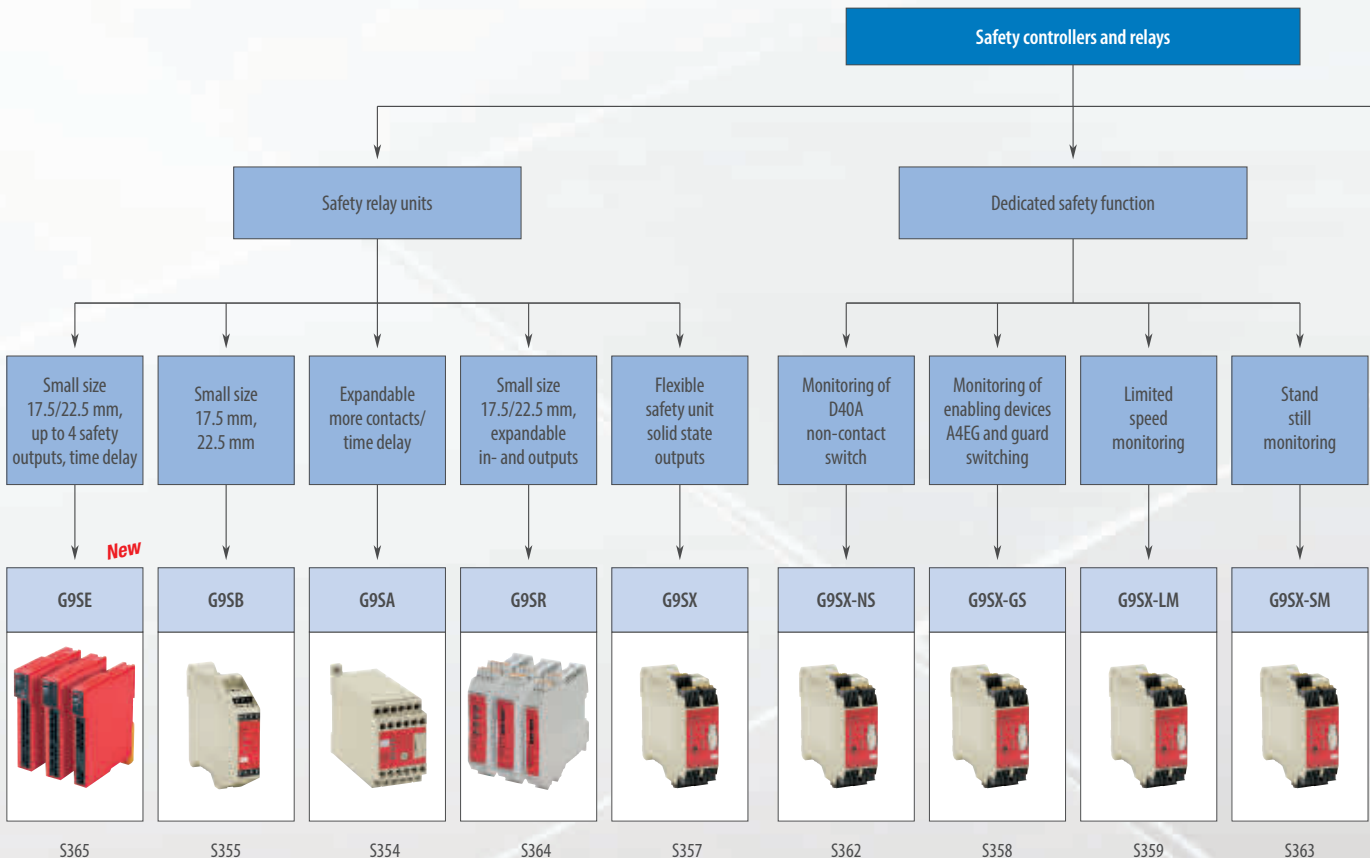
Safety relay units covers the most exigent safety wired needs. The compact safety controller is simple to configure and setup and overcomes limitations of hard-wired solutions by adding flexibility of a software - based solution. The expandable and programmable modular safety controller series provides a complex logic solution for stand alone designs. The distributed safety, allows to manage all safety complexity and integrated architecture types reducing your engineering time.

Omron provides from dedicated safety network such as DeviceNet Safety to Integrated and distributed safety like Fail Safe over EtherCAT.

- EN ISO 13849-1 (PLe) and IEC 61508 (SIL3) certification for future-proof design of the safety system
- Predefined and validated function blocks for simple configuration
- Scalable safety solution for compact, distributed and fully integrated safety systems



Safety relay unit







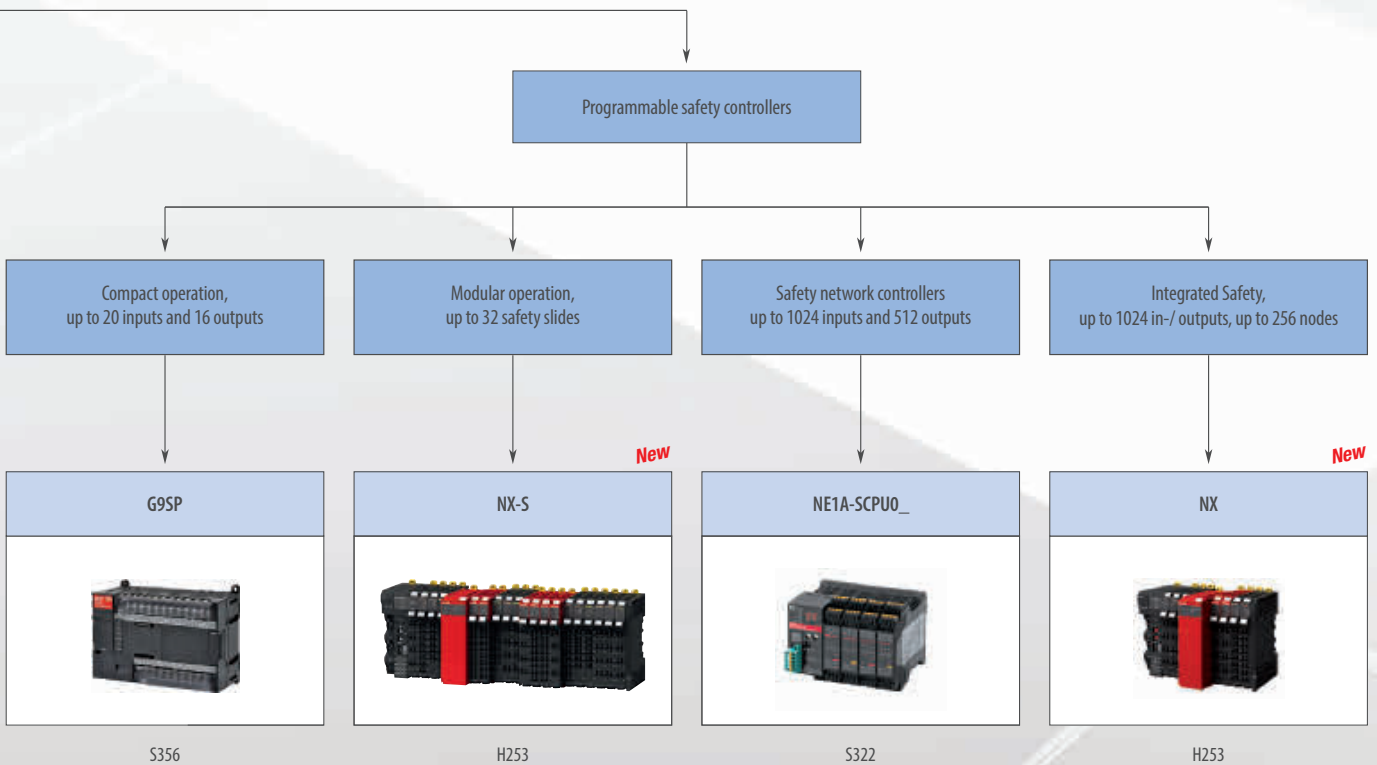
Distributed and integrated Programmable safety controller








Modular Programmable safety controller







Compact Programmable safety controller



# Selection table

		Safety relay units					
							
Model		G9SE	G9SA	G9SB	G9SR	G9SX	
Selection criteria	Performance level	up to PLe acc. EN ISO 13849-1 depending on application					
	Safety integrity level (IEC 61508)	SIL 3	–	–	SIL 3	SIL 3	
	Reaction time	max. 15 ms	max. 10 ms	max. 10 ms	depend on safety application	15 ms	
	DeviceNet safety Bus interface	–	–	–	–	–	
	Standard DeviceNet Bus interface	–	–	–	–	–	
	EDM function	■	■	■	■	■	
	Interlock function	■	■	■	■	■	
	Logical 'AND' connection	–	–	–	■	■	
	Relay expansion units	–	■	–	–	■	
	Housing	Plastic	Plastic	Plastic	Plastic	Plastic	
	Operating temperature	–10 to 55°C	–25 to 55°C	–25 to 55°C	–10 to 55°C	–10 to 55°C	
	Flux-tight	–	–	–	–	–	
Features	Number of poles	–	–	–	–	–	
	Gold clad contacts	–	–	–	–	–	
	Relay socket	–	–	–	–	–	
	Detachable cage clamp terminals	–	–	–	■	■	
	Screw terminals	–	■	■	optional	■	
	Push-in terminals	■	–	–	–	–	
	Safe timing functions	off-delay	■	–	on-delay and off-delay	■	
	USB-interface	–	–	–	–	–	
	Programming software	–	–	–	–	–	
	Application	E-Stop application	■	■	■	■	■
Door switch monitoring		■	■	■	■	■	
Safety light curtain monitoring		■	■	■	■	■	
EDM monitoring		■	■	■	■	■	
Interlock function		■	■	■	■	■	
Logic function blocks		–	–	–	■	–	
Safe ON delay timer		–	–	–	■	–	
Safe OFF delay timer		■ (Off delay)	■	–	■	■	
Two-Hand control		–	■	–	–	–	
Manual/automatic reset		■	■	■	■	■	
Non-contact switches monitoring		■	–	–	■	■	
Guard switching/enabling function		–	–	–	■	■	
limited speed monitoring		–	–	–	–	■	
standstill monitoring		–	–	–	–	■	
General safety application	■	■	■	■	■		
Supply voltage	24 VDC	■	■	■	■	■	
	100 VAC to 240 VAC	–	■	–	–	–	
In- and outputs	Safety inputs	–	■	■	■	■	
	Test signal output	–	–	–	■	■	
	Solid state safety outputs	–	–	–	■	■	
	Safety relay outputs	DPST-NO, 4PST-NO	3PST-NO, 5PST-NO	DPST-NO, 3PST-NO	DPST-NO, 3PST-NO	■	
	Auxiliary outputs	Solid state, SPST-NO	SPST-NC	SPST-NC	Solid state, SPST-NO	■	
	4PST-NO + DPST-NC	–	–	–	–	–	
	3PST-NO + 3PST-NC	–	–	–	–	–	
	3PST-NO + SPST-NC	–	–	–	–	–	
	DPST-NO + DPST-NC	–	–	–	–	–	
5PST-NO + SPST-NC	–	–	–	–	–		
Page/Quick Link	S365	S354	S355	S364	S357		

Programmable safety system				
				
Model	G9SP	NX-Safety stand alone modular I/O system	NE1A	NX-Safety
Safety Architecture	Compact	Modular	Distributed	Distributed and Integrated
Programming Language	FBs	IEC 61131-3	FB's	IEC 61131-3
PL (Performance Level)	PL e (EN ISO 13849-1)	PL e (EN ISO 13849-1)	PL e (EN ISO 13849-1)	PL e (EN ISO 13849-1)
SIL (Safety Integrity Level)	SIL3 (IEC 61508) SILCL3 (EN 62061)	SIL3 (IEC 61508) SILCL3 (EN 62061)	SIL3 (IEC 61508) SILCL3 (EN 62061)	SIL3 (IEC 61508) SILCL3 (EN 62061)
PFH	9.4E-11	3.1E-10	5.1E-10	3.0E-10
TM Mission time	20 years (ISO 13849)	20 years (ISO 13849)	20 years (ISO 13849)	20 years (ISO 13849)
Approvals	TÜV- Rheinland; CE,UL, CSA, KOSHA	TÜV- Rheinland; CE,UL, CSA, cULus, ANSI, C-Tick, KC,	TÜV- Rheinland; CE,UL, CSA, ANSI, KOSHA	TÜV- Rheinland; CE,UL, CSA, cULus, ANSI, C-Tick, KC,
Safety Network	Non	Non	Device Net Safety	FSoE EtherCAT safety
No. of safety connections	non	32	32	128
Safety I/O Refreshing mode	–	yes	–	yes
Standard Fieldbus/Industrial Network	via gateway: EtherNet/IP	on board: EtherNet/IP	on board: DeviceNet	On system: EtherCAT, EtherNet/IP
Programming Software tool	G9SP Configurator	Sysmac Studio	DeviceNet Network Configurator	Sysmac Studio
Safety Zones	1	Multiple	Multiple	Multiple
Simulation	yes	yes	yes	yes
Housing	Plastic	Plastic	Plastic	Plastic
Operating Temperature	0 to +55°C	0 to +55°C	0 to +55°C	0 to +55°C
Programming connection	USB	USB	USB	USB/EtherNet
Safety memory for user program	cassette	internal 512 KB	internal	internal up to 2 MB
Terminal type	Screw	Clamp	Clamp	Clamp
Power Supply	24 VDC	24 VDC	24 VDC	24 VDC
Safety Digital Inputs (S-DI's)	10/10/20	up to 256	up to 1024	up to 1024
Test Signal Outputs	yes	yes	yes	yes
Safety Digital Outputs (S-DO's)	4/16/8	up to 256	up to 512	up to 512
Safety Relay Outputs	–	–	yes	–
Enclosure rating	IP20	IP20	IP20	IP20
Page/Quick Link	S356	H253	S322	H253

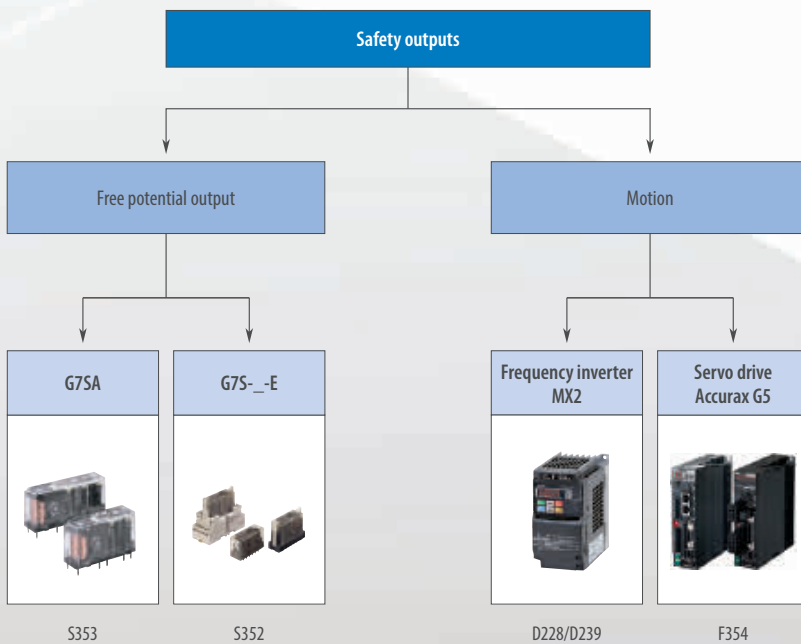
■ Standard

– No/not available



## STOPPING ALL DANGEROUS MOVEMENTS


Our solution helps you to stop all dangerous movements that you have in your machine. From a switch off the power, until stop some safety motion movement.

- Free potential outputs -Safety relays
- Frequency Inverters
- Servo Drives






		Safety relays	
			
Model		G7SA	G7S- -E
Selection criteria	Housing	Plastic	Plastic
	Operating temperature	-40 to 85°C	-25 to 70°C
	Flux-tight	■	■
	Number of poles	4 pole and 6 pole	6 pole
Features	Gold clad contacts	■	-
	Relay socket	■	■
Application	General safety application	■	■
Supply voltage	24 VDC	■	■
In- and outputs	4PST-NO + DPST-NC	■	■
	3PST-NO + 3PST-NC	■	■
	3PST-NO + SPST-NC	■	-
	DPST-NO + DPST-NC	■	-
	5PST-NO + SPST-NC	■	-
Page/Quick Link		S353	S352

		Frequency inverters	
			IP54

Model	MX2
400 V three-phase	0.4 kW to 15 kW
200 V three-phase	0.1 kW to 15 kW
200 V single-phase	0.1 kW to 2.2 kW
Application	Harmonized motor and machine control
Control method	Open loop speed and torque control for vector and speed for V/F control
Torque features	200% at 0.5 Hz
Connectivity	Modbus, DeviceNet, PROFIBUS, MECHATROLINK-II, EtherCAT, CompoNet, EtherNet IP
Logic programming	Standard firmware
Safety approvals	ISO13849-1 Category 3, Performance Level PLd
Customisation options	IP54 enclosure
Page/Quick Link	D228, D239

		Servo drives	
			

		Accurax G5	
		EtherCAT network and safety built-in	
Ratings 230 V single-phase		100 W to 1.5 kW	
Ratings 400 V three-phase		600 W to 15 kW	
Applicable servomotor		Accurax G5 and G-Series rotary motors	
Position control		EtherCAT, MECHATROLINK-II or Pulse train input	
Speed control		EtherCAT, MECHATROLINK-II or Analog input ±10 V	
Torque control		EtherCAT, MECHATROLINK-II or Analog input ±10 V	
		Embedded indexer functionality	
Safety approvals		ISO13849-1:2008 (PL d), EN 954-1:1996 (Cat-3)	
Full closed loop		Built-in	
Page/Quick Link		F354	

# Temperature controllers

## E5\_C – THE NEW STANDARD

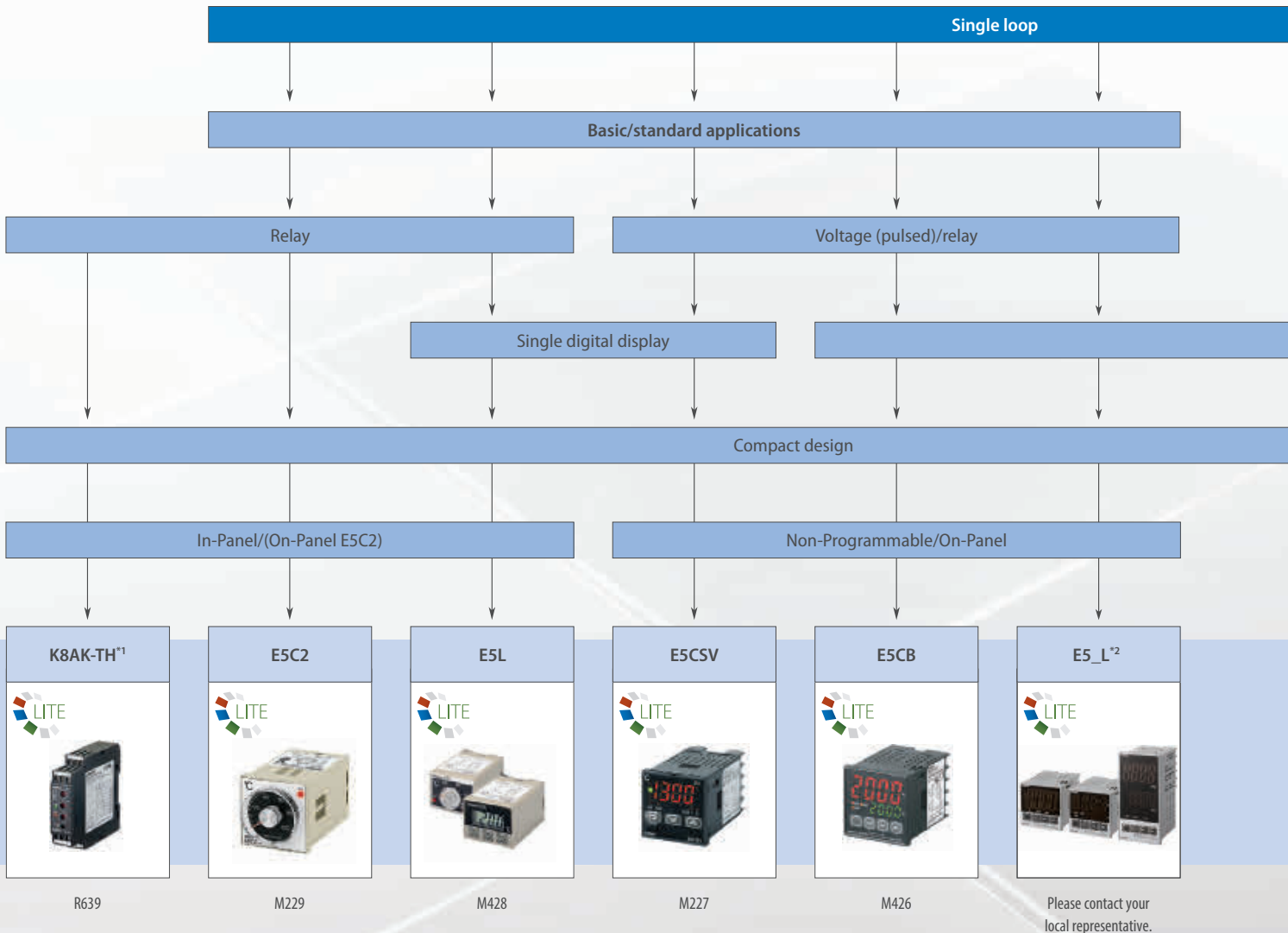
### ...in temperature control

Omron has been an active innovator in temperature control since introducing its first temperature controller in 1967. Now temperature control has taken a giant leap forward with Omron's next generation of controllers – the E\_C, which set new global standards in the crucial areas of precision, user friendliness and control performance. The E\_C series will save you time and effort in set-up and operation, while enabling faster and more accurate monitoring/control of your process. The high visibility display of the new series is also extremely easy to read and virtually eliminates any possibility for human error.

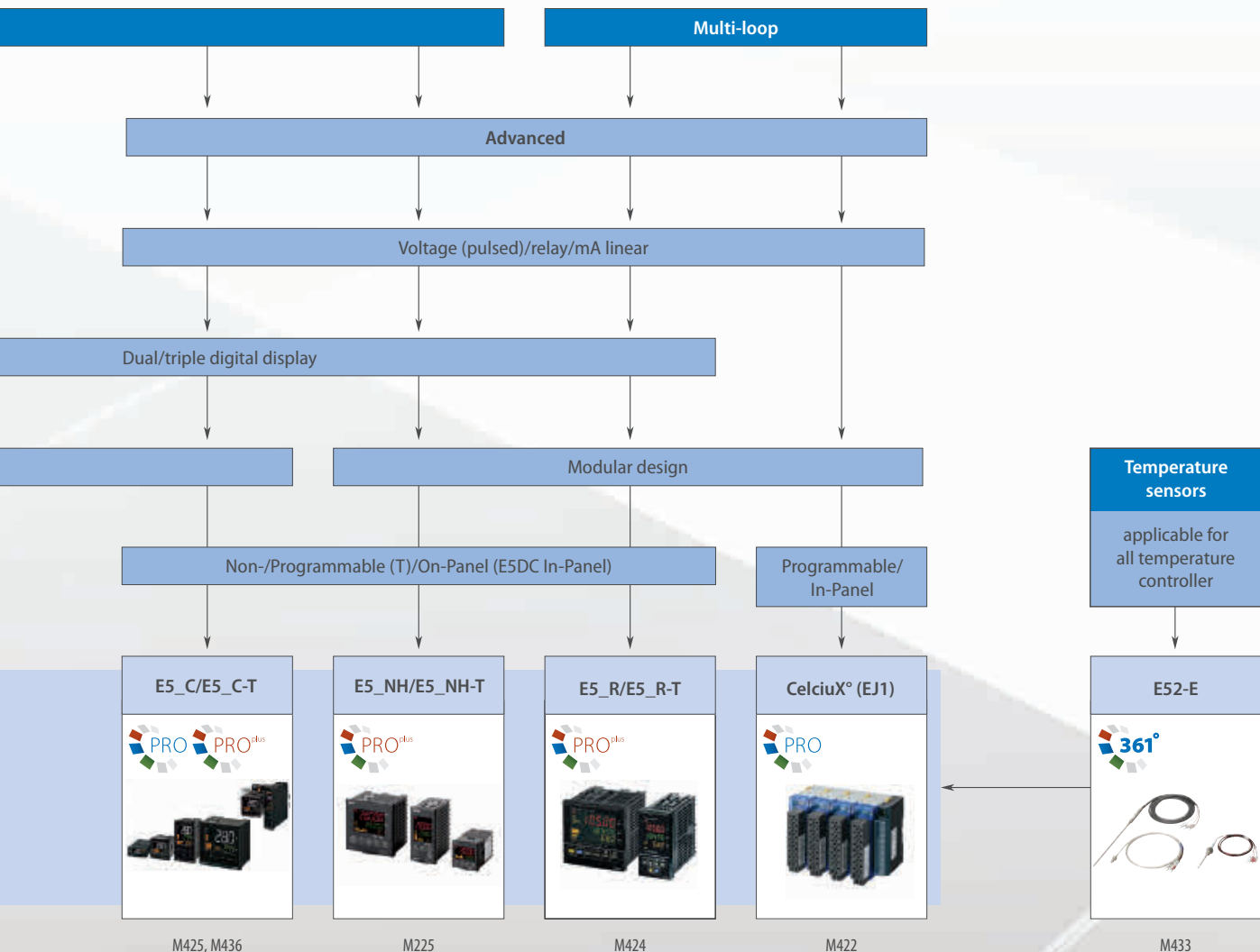
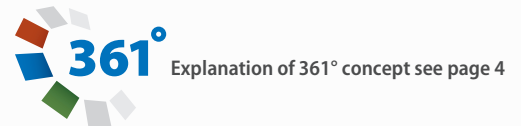


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Temperature controllers

<sup>1</sup> Temperature limiter

<sup>2</sup> Only available in Africa, Middle East and Russia

# Selection table

Category		Analog temperature controller	Analog/digital temperature controller	Digital temperature controller			
							
Model		ESC2	E5L-A/C	E5CSV	E5CB	E5_L	
Selection criteria	Type	Lite line					
	Panel	On-panel/In-Panel	In-Panel	On-panel			
	Loops	1	1	1	1	1	
	Size	1/16 DIN	45 × 35 mm	1/16 DIN	1/16 DIN	1/16, 1/32 DIN	
Control mode	ON/OFF   PID   2-PID <sup>*1</sup>	■/P   ■   -	■   -   -	■   -   ■	■   -   ■	■   -   ■	
	Operation <sup>*2</sup>	H/C	H/C	H/C	H/C	H/C	
	Valve Control <sup>*3</sup>	-	-	-	-	-	
Features	Accuracy	-	±1°C	±0.5%	±0.5%	±0.5%	
	Auto-/Self-/Gradient-tuning	-   -	-   -	■   ■	■   ■   -	■   ■   -	
	Transfer output	-	-	-	-	-	
	Remote input	-	-	-	-	-	
	Number of alarms	-	-	1	1	1	
	Heater alarm	-	-	-	-	-	
	IP rating front panel	IP40	IP40	IP66	IP66	IP50	
	Display	-	Analog (A)/3 digit (C)	Single 3.5 digit	Dual 4 digit	Dual 4 digit	
Supply voltage	110/240 VAC	■	■	■	■	■	
	24 VAC/VDC	-	-	□	□	-	
Comms	RS-232   RS-485	-   -	-   -	-   -	-   -	-   -	
	Event IP	-	-	-	-	-	
	QLP port	-	-	-	■ <sup>*4</sup>	-	
	DeviceNet	-	-	-	-	-	
	Modbus	-	-	-	■	-	
	PROFIBUS	-	-	-	-	-	
	Modbus TCP	-	-	-	-	-	
ProfiNet	-	-	-	-	-		
Control output	Relay   SSR	-   -	-   -	■   -	■   -	■   -	
	Voltage (pulse)	-	-	■	■	■	
	Linear voltage	-	-	-	-	-	
	Linear current	-	-	-	-	-	
Input type – linear	mA	-	-	-	-	-	
	mV	-	-	-	-	-	
	V	-	-	-	-	-	
Input type	Thermocouple	K	■	-	■	■	■
		J	■	-	■	■	■
		T	-	-	■	■	■
		E	-	-	-	-	-
		L	-	-	■	-	-
		U	-	-	■	-	-
		N	-	-	■	-	-
		R	-	-	■	■	■
		S	-	-	-	■	■
		B	-	-	-	-	-
		W	-	-	-	-	-
	PLII	-	-	-	-	-	
	RTD	Pt100   JPt100   THE	■   -   ■	-   -   ■ <sup>*5</sup>	■   ■   -	■   -   -	■   -   -
Page/Quick Link		M229	Please contact your local representative.	M227	M426	Please contact your local representative.	

\*1 2-PID is Omron's easy to use high performance PID algorithm

\*2 H = heat, H/C = heat or cool, H & C = heat and/or cool

\*3 Valve control = relay up and down

\*4 QLP: Quick Link Port to connected TC to PC using the smart USB cable E58-CIFQ2

\*5 SP sensor provided



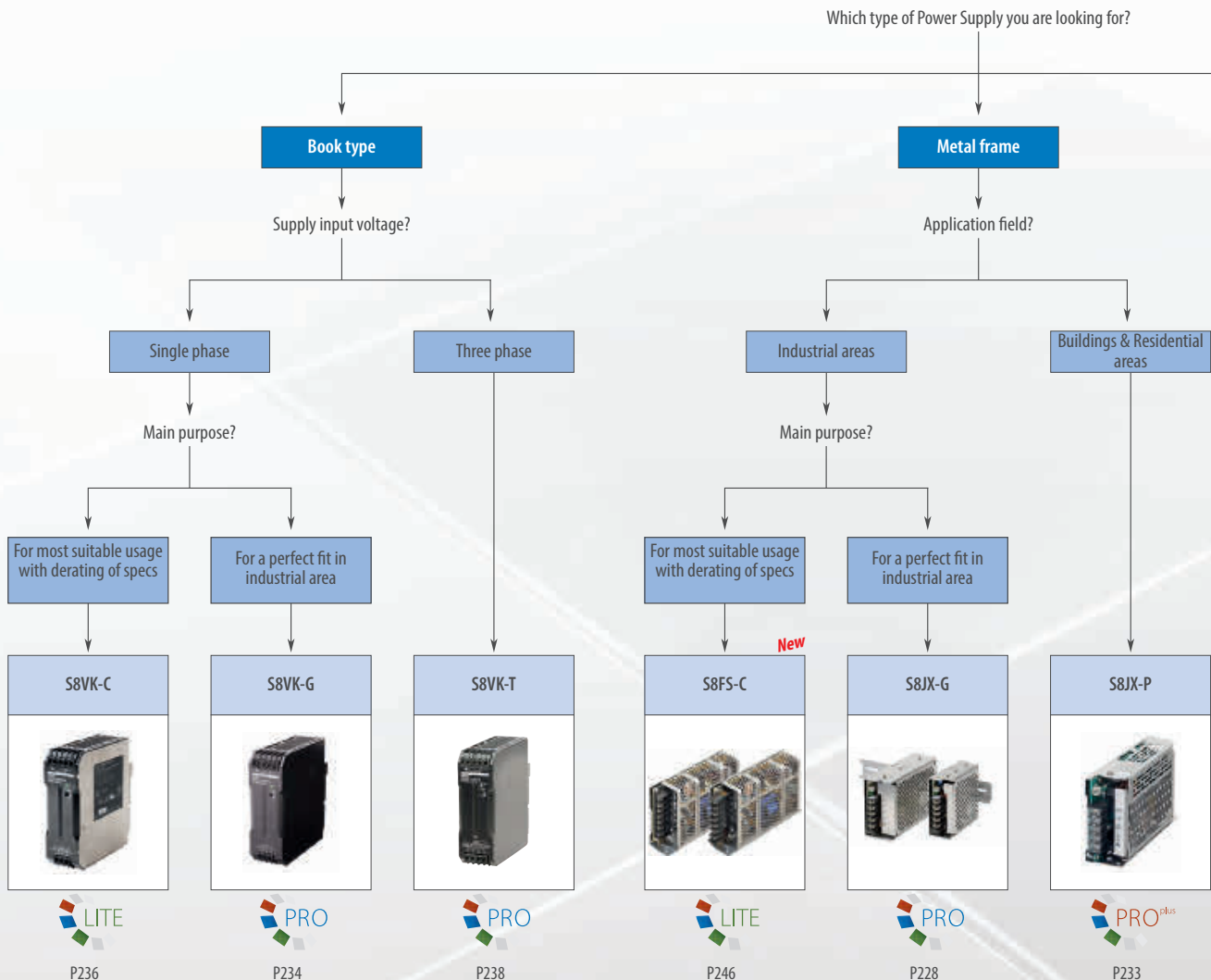
# Power supplies

## RELIABLE AND EASY OPERATION – WORLDWIDE

### S8VK-G – The right power supply for your application

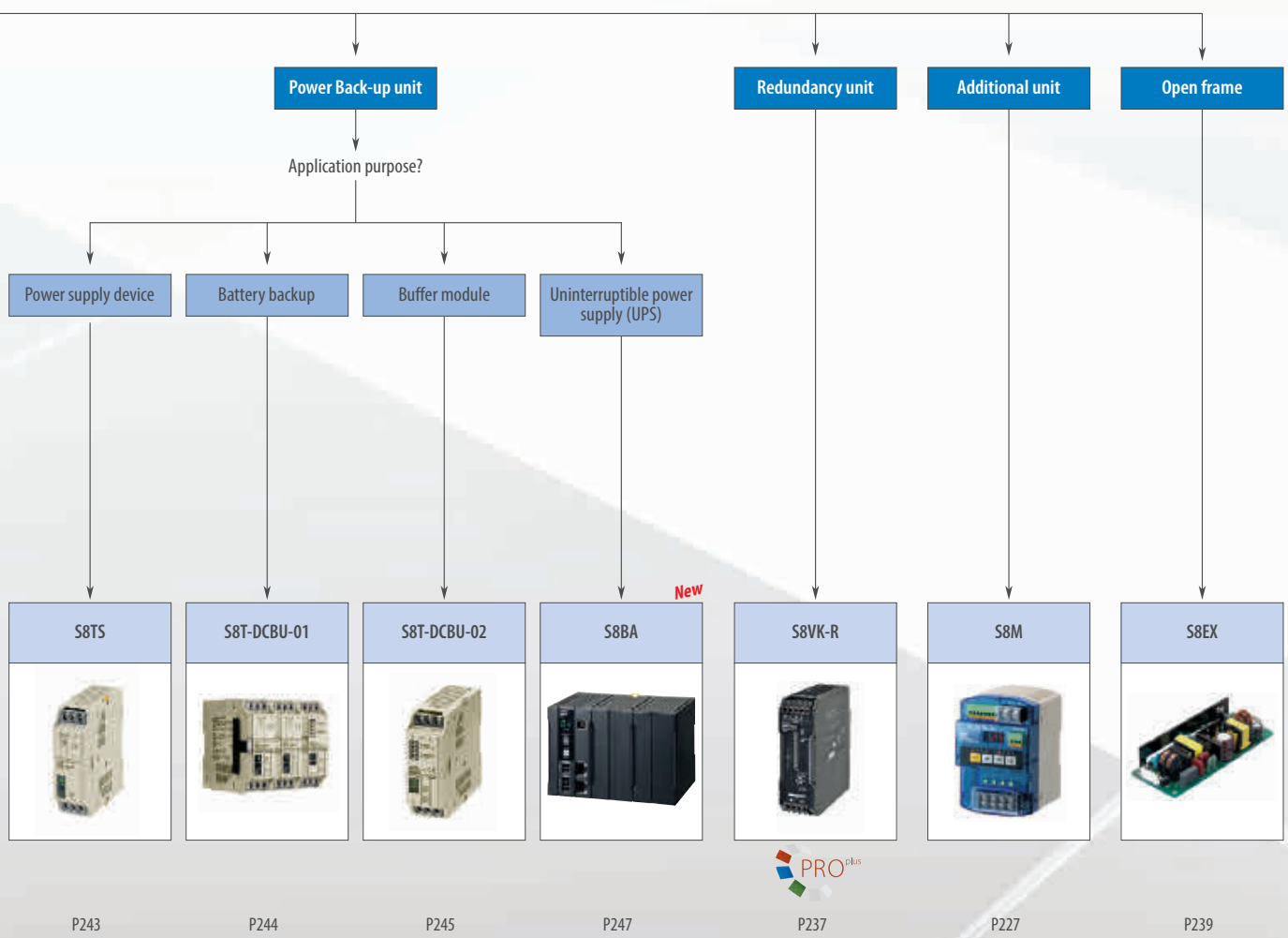
The S8VK-G offers a wide product range (from 15 W up to 480 W), in a very compact size. It is 13% smaller than comparable power supplies and the smallest on the market of its type.

- Wide operating temperature range (–40 to +70°C) to guarantee operation stability
- Double set of DC output terminals (three for the negative) to provide easy wiring
- High efficiency (90%) to reduce energy consumption
- Power Boost functionality (120%)
- Improved DIN-rail mounting clip to provide better vibration resistance and allow for easy installation
- For harsh environments coated models are now available. PCB coating protects against dust, corrosive gas and humidity.
- RoHS compliant









**361°** Explanation of 361° concept see page 4



Power supplies



# Selection table

Category		Book type power supply				Metal frame power supply					
											
Model		S8VK-G				S8VK-C	S8VK-T	S8JX-P			
Selection Criteria	Type	Pro line				Lite line	Pro line	Pro <sup>plus</sup> line			
	Phases	Single phase					Three phases	Single phase			
	Rated voltage	100 V to 240 VAC (90 to 350 VDC)				100 V to 240 VAC	3 × 320 V to 576 VAC	100 V to 240 VAC			
Power	Voltage	5 V	12 V	24 V	48 V	24 V	24 V	5 V	12 V	24 V	48 V
	15 W	■ 3 A	■ 1.2 A	■ 0.65 A	–	–	–	–			
	25 W	–				–	–	–			
	30 W	■ 5 A	■ 2.5 A	■ 1.3 A	–	–	–	–			
	35 W	–				–	–	–			
	50 W	–				–	–	■ 10 A	■ 4.2 A	■ 2.1 A	■ 1.1 A
	60 W	–	■ 4.5 A	■ 2.5 A	–	■ 2.5 A	–	–			
	75 W	–				–	–	–			
	90 W	–				–	–	–			
	100 W	–				–	–	■ 20 A	■ 8.5 A	■ 4.5 A	■ 2.1 A
	120 W	–	–	■ 5 A	–	■ 5 A	■ 5 A	–			
	150 W	–				–	–	■ 30 A	■ 13 A	■ 6.5 A	■ 3.3 A
	180 W	–				–	–	–			
	200 W	–				–	–	–			
	240 W	–	–	■ 10 A	■ 5 A	■ 10 A	■ 10 A	–			
	300 W	–				–	–	■ 60 A	■ 27 A	■ 14 A	■ 7 A
	350 W	–				–	–	–			
	480 W	–	–	■ 20 A	■ 10 A	■ 20 A	■ 20 A	–			
	600 W	–				–	–	■ 120 A	■ 53 A	■ 27 A	■ 13 A
	960 W	–				–	■ 40 A	–			
1,500 W	–				–	–	–				
Features	Conformes to EN61000-3-2	■				–	■	■			
	DC back-up	–				–	–	–			
	Capacitor back-up	□				□	□	□			
	Undervoltage alarm	–				–	–	–			
	Oversvoltage protection	■				■	■	■			
	Overload protection	■				■	■	■			
	DIN-rail mounting	■				■	■	■			
	Screw mounting (with bracket)	■				■	■	■			
	EMI Class B	■				–	■	■			
	UL Class 2	■ 15 W, 30 W, 60 W only				–	–	–			
N+1 Redundancy	□				□	□	–				
Parallel operation	■ by 2 units				–	■ by 2 units	■ 300 W, 600 W only by 5 units				
Power Boost	■ 120%				–	■ 120%	■ 300 W, 600 W at 24 V 115%				
Page/Quick Link	P234				P236	P238	P233				

Metal frame power supply					Modular					Open frame power supply									
																			
<b>S8JX-G</b>					<b>S8FS-C</b>					<b>S8TS</b>					<b>S8EX</b>				
Pro line					Lite line														
Single phase																			
100 V to 240 VAC					100 V to 240 VAC					100 V to 240 VAC					100 to 240 VAC (85 to 264 VAC)				
5 V	12 V	15 V	24 V	48 V	5 V	12 V	15 V	24 V	36 V	48 V	5 V	12 V	24 V	5 V	12 V	15 V	24 V	36 V	48 V
■ 3 A	■ 1.3 A	■ 1.0 A	■ 0.65 A	■ 0.35 A	■ 3 A	■ 1.3 A	■ 1 A	■ 0.7 A	-	-	-	-	-	■ 3 A	■ 1.3 A	■ 1.0 A	■ 0.7 A	-	■ 0.32 A
-	-	-	-	-	■ 5 A	■ 2.1 A	■ 1.7 A	■ 1.1 A	-	-	■ 5 A	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	■ 2.5 A	-	■ 6 A	■ 2.5 A	■ 2 A	■ 1.3 A	-	■ 0.65 A
■ 7 A	■ 3 A	■ 2.4 A	■ 1.5 A	■ 0.75 A	■ 7 A	■ 3 A	■ 2.4 A	■ 1.5 A	-	-	-	-	-	-	-	-	-	-	-
■ 10 A	■ 4.2 A	-	■ 2.1 A	■ 1.1 A	■ 10 A	■ 4.2 A	■ 3.4 A	■ 2.2 A	-	■ 1.1 A	-	-	-	■ 10 A	■ 4.3 A	-	■ 2.1 A	-	■ 1.1 A
-	-	-	-	-	-	-	-	-	-	-	-	■ 5 A	■ 2.5 A	-	-	-	-	-	-
-	-	-	-	-	■ 14 A	■ 6.2 A	■ 5 A	■ 3.2 A	-	■ 1.6 A	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	■ 7.5 A	-	-	-	-	-	-	-
■ 20 A	■ 8.5 A	-	■ 4.5 A	■ 2.1 A	■ 20 A	■ 8.5 A	■ 7 A	■ 4.5 A	■ 2.8 A	■ 2.3 A	-	-	-	■ 20 A	■ 8.5 A	-	■ 4.3 A	-	■ 2.1 A
-	-	-	-	-	-	-	-	-	-	-	-	■ 10 A	■ 5 A	-	-	-	-	-	-
■ 30 A	■ 13 A	-	■ 6.5 A	■ 3.3 A	■ 26 A	■ 12.5 A	■ 10 A	■ 6.5 A	■ 4.3 A	■ 3.3 A	-	-	-	■ 30 A	■ 12.5 A	-	■ 6.3 A	-	■ 3.2 A
-	-	-	-	-	-	-	-	-	-	-	-	-	■ 7.5 A	-	-	-	-	-	-
-	-	-	-	-	■ 40 A	■ 17 A	-	■ 8.8 A	■ 5.9 A	■ 4.43 A	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	■ 10 A	-	-	-	-	■ 10 A	■ 6.7 A	■ 5 A
■ 60 A	■ 27 A	-	■ 14 A	■ 7 A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	■ 60 A	■ 29 A	-	■ 14.6 A	■ 9.7 A	■ 7.32 A	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
■ 120 A	■ 53 A	-	■ 27 A	■ 13 A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	■ Up to 150 W models	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	□	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	□	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	■ Up to 150 W models	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	■ 1 unit	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	■ 300 W, 600 W only by 5 units	-	-	-	-	-	-	-	■	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P228					P246					P243					P239				

■ Standard    □ Available    - No/not available

# Uninterruptible power supplies (UPS)

## RELIABLE AND EASY OPERATION – WORLDWIDE

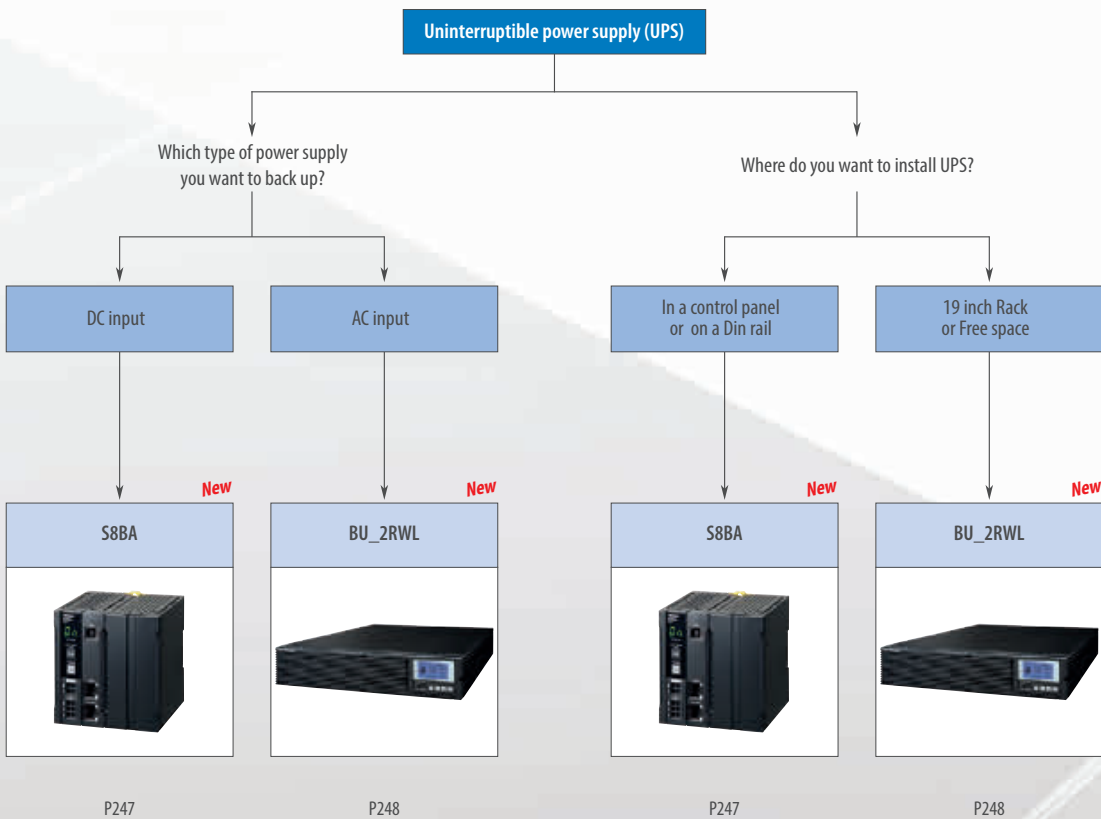
### S8BA

The easy DIN-rail mountable, DC-DC type UPS is ideal countermeasure for momentary voltage drops and power failures of industrial computers (IPCs) and controllers, switching power supply. They secure full functional reliability of systems by backing up the supply of 24 VDC power source for a guaranteed period of time.

### BU\_2RWL

- Multiple mounting online AC-AC type UPS, useful in variety of applications.
- They are available as a stand-alone device or for mounting in a 19" rack.
- Optimum UPS for industrial equipment and embedded applications.
- UPS devices are single-phase uninterruptible power supplies.














# Selection table

# Uninterruptible power supplies (UPS)

		S8BA				BU_2RWL		
								
Model		S8BA-24D24D120LF	S8BA-24D24D240LF	S8BA-24D24D360LF	S8BA-24D24D480LF	BU2002RWLG	BU3002RWLG	BU5002RWLG
Selection Criteria	Type	Din-rail mounting				19 inch rack mounting		
	Input-Output type	DC-DC				AC-AC		
	Phases	Single phase						
	Input rated voltage/Maximum current	24 VDC/5.9 A	24 VDC/11.7 A	24 VDC/17.5 A	24 VDC/23.3 A	200 to 240 VAC/9 A	200 to 240 VAC/14 A	200 to 240 VAC/23 A
	Input terminal	Push-in terminal block				Terminal block		NEMA L6-30P/ Terminal block
	Output rated voltage/Maximum current	24 VDC/5 A	24 VDC/10 A	24 VDC/15 A	24 VDC/20 A	Terminal block		NEMA L6-30P/ Terminal block
	Output terminal	Push-in terminal block				Terminal block		NEMA L6-30R × 2, Terminal block
Power	120W	■	–	–	–	–	–	–
	240W	–	■	–	–	–	–	–
	360W	–	–	■	–	–	–	–
	480W	–	–	–	■	–	–	–
	1400W	–	–	–	–	■	–	–
	2100W	–	–	–	–	–	■	–
	3500W	–	–	–	–	–	–	■
Battery	Type	Lithium-ion				Sealed lead		
	Expected battery life	2.5 years (50°C), 5 years (40°C), 10 years (25°C)				2.5 year (40°C), 5 years (25°C)		
	Hot swapping	■						
	Backup time (Maximum power)	6 min				5 min		
	Auto battery check function	■						
	Battery life counter function	■						
Features	Under voltage alarm	■						
	Overvoltage protection	■						
	Overload protection	■						
	UL508	■				–		
	C22.2 No.107.1-01	■				–		
	UL1778	–				■		
	CE	■						
	VCCI class A	–				■		
	Serial communication/RS232C (Interface terminal)	■ (RJ45)				■ (D-sub 9pin)		
	Serial communication/USB (Interface terminal)	■ (B connector)				–		
I/O signal	■ (RJ45)				■ (D-sub 9pin)			
Page/Quick Link	P247				P248			

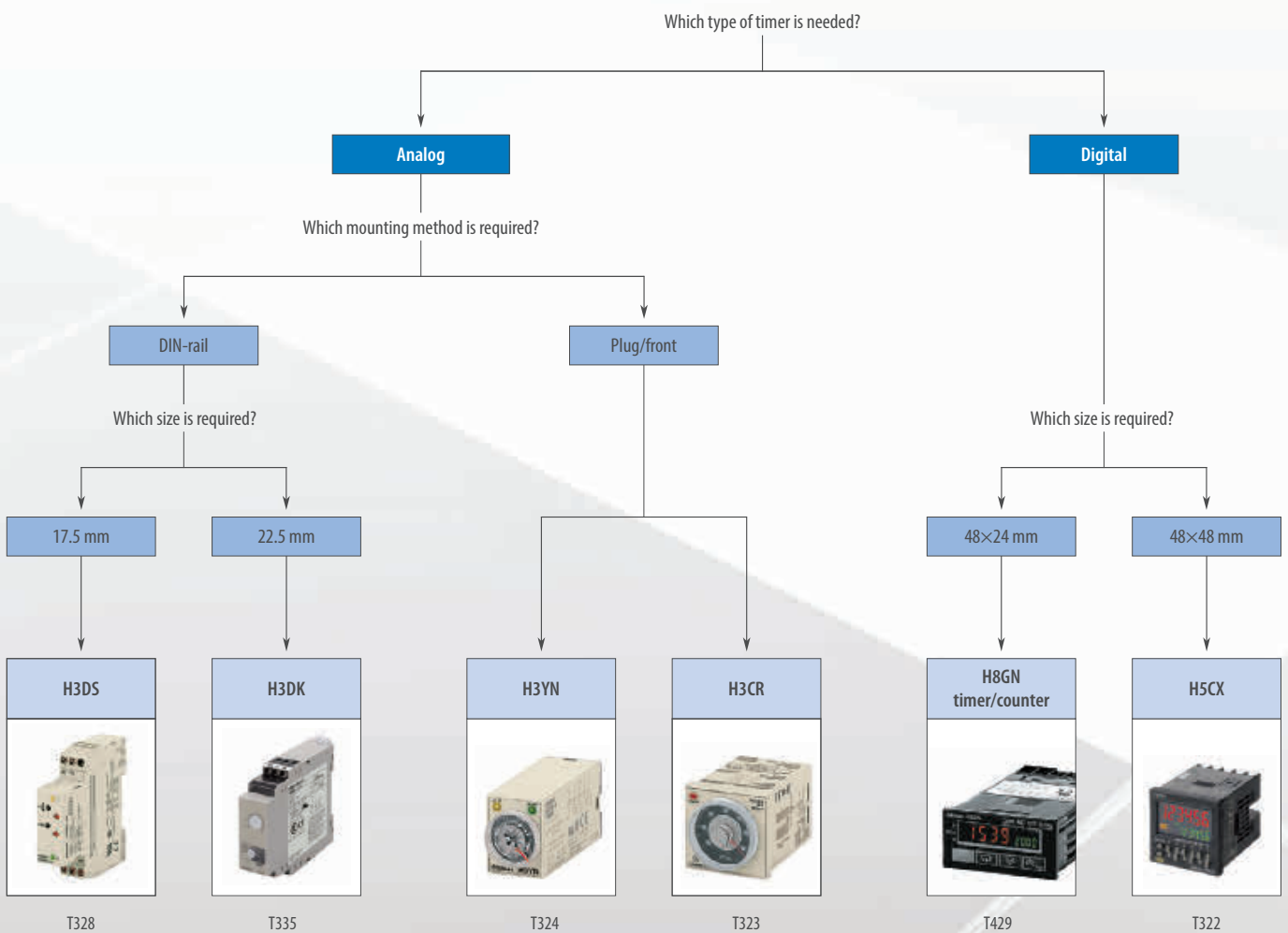
■ Standard      – No/not available

## WHEN TIMING ACCURACY MATTERS!












### H5CX – The most complete digital timer








The H5CX series offers multiple-functions and -timing ranges for precise timing control, as well as real twin-timing and memory function. These and other added-value features ensure that the H5CX covers almost every possible user requirement in timers.

- 15 different time functions
- Three color display value, red, orange or green
- Models with instantaneous contact outputs
- 0.001 s to 9999 h, 10 ranges



# Selection table

Category		Analog solid state timer											
													
Model		H3DS-M	H3DS-S	H3DS-A	H3DS-F	H3DS-G	H3DS-X	H3DK-M	H3DK-S	H3DK-F	H3DK-G	H3DK-H	
Selection criteria	Mounting	DIN-rail											
	Size	17.5 mm						22.5 mm					
	Type	Multi-functional			Twin timer	Star-delta	Two-wired	Multi-functional			Twin timer	Star-delta	Power OFF-delay
Contact configuration	Time limit	■	■	■	■	■	■	■	■	■	■	■	
	Instantaneous	-	-	-	-	-	-	■	■	-	-	-	
	Programmable contacts	-	-	-	-	-	-	■	■	-	-	-	
	14 pins	-	-	-	-	-	-	-	-	-	-	-	
	11 pins	-	-	-	-	-	-	-	-	-	-	-	
	8 pins	-	-	-	-	-	-	-	-	-	-	-	
	Screw terminals	■	■	■	■	■	■	■	■	■	■	■	
	Screw-less clamp terminals	□	□	□	□	□	□	-	-	-	-	-	
	Screw-less clamp sockets	-	-	-	-	-	-	-	-	-	-	-	
Inputs	Voltage input	□	□	□	-	-	-	□	□	-	-	-	
	Transistor	-	-	-	-	-	-	-	-	-	-	-	
Outputs	Relay	■	■	■	■	■	■	■	■	■	■	■	
	SCR	-	-	-	-	-	■	-	-	-	-	-	
	Relay output type	SPDT	■	■	■	■	-	-	□	■	■	■ (2x)	■
		SPST-NO	-	-	-	-	■ (2x)	-	-	-	-	-	-
		DPDT	-	-	-	-	-	-	□	■	-	-	-
4PDT		-	-	-	-	-	-	-	-	-	-	-	
Features	Time range	Total time range	0.1 s to 120 h	1 s to 120 h	2 s to 120 h	0.1 s to 12 h	1 s to 120 s	0.1 s to 120 h	0.1 s to 1,200 h	0.1 s to 1,200 h	0.1 s to 1,200 h	1 s to 120 s	0.1 s to 120 s
		Number of sub ranges	7	7	7	6	2	7	12	12	8	2	2 (model dependent)
	Supply voltage	24 to 230 VAC or 24 to 48 VDC	24 to 230 VAC or 24 to 48 VDC	24 to 230 VAC or 24 to 48 VDC	24 to 230 VAC or 24 to 48 VDC	24 to 230 VAC or 24 to 48 VDC	24 to 230 VAC or 24 to 48 VDC	24 to 230 VAC or 24 to 48 VDC	24 to 240 VAC/DC or 12 VDC	24 to 240 VAC/DC or 12 VDC	24 to 240 VAC/DC or 12 VDC	24 to 240 VAC/DC, 240 to 440 VAC, 12 VDC	100 to 120 VAC, 200 to 240 VAC, 24 to 48 VAC/DC
	Number of operating modes	8	4	1	2	1	1	8	4	1	1	1	1
Functions	ON-delay	■	■	-	-	-	■	■	■	-	-	-	
	Flicker OFF start	■	-	-	■	-	-	■	-	■	-	-	
	Flicker ON start	■	■	-	■	-	-	■	■	■	-	-	
	Signal ON-/OFF-delay	■	-	-	-	-	-	■	-	-	-	-	
	Signal OFF-delay	■	-	-	-	-	-	■	-	-	-	■	
	Interval (signal or power start)	■	■	-	-	-	-	■	■	-	-	-	
	One-shot output (ON-delay)	■	■	-	-	-	-	■	■	-	-	-	
	ON-delay (fixed)	-	-	■	-	-	-	-	-	-	■	-	
	Independent ON/OFF time setting	-	-	-	-	-	-	-	-	-	-	-	
Star-delta	-	-	-	-	■	-	-	-	-	-	-		
Remarks	Transistor	-	-	-	-	-	■	-	-	-	-	-	
Page/Quick Link		T328						T335					

Category		Analog solid state timer					Digital timer		
									
Model		H3YN	H3CR-A	H3CR-F	H3CR-G	H3CR-H	H5CX	H8GN	
Selection criteria	Mounting	Socket/on panel							
	Size	21.5 mm	1/16 DIN						1/32 DIN
	Type	Miniature	Multi-functional	Twin timer	Star-delta	Power OFF-delay	Multi-functional	Preset counter/timer	
Contact configuration	Time limit	■	■	■	■	■	■	■	
	Instantaneous	-	■	-	■	■	■	-	
	Programmable contacts	-	-	-	-	-	■	■	
	14 pins	■	-	-	-	-	-	-	
	11 pins	-	□	□	□	□	□	-	
	8 pins	■	□	□	□	□	□	-	
	Screw terminals	-	-	-	-	-	□	■	
	Screw-less clamp terminals	-	-	-	-	-	-	-	
Screw-less clamp sockets	□	-	-	-	-	-	-		
Inputs	Voltage input	-	□	-	-	-	-	-	
	Transistor	-	□	-	-	-	□	-	
Outputs	Relay	■	□	■	■	■	□	■	
	SCR	-	-	-	-	-	-	-	
	Relay output type	SPDT	-	□	-	-	□	□	■
		SPST-NO	-	-	-	■ (2x)	-	-	-
		DPDT	□	□	■	-	□	-	-
4PDT	□	-	-	-	-	-	-		
Features	Time range	Total time range	0.1 s to 10 h (model dependent)	0.05 s to 300 h, 0.1 s to 600 h (model dependent)	0.05 s to 30 h or 1.2 s to 300 h (model dependent)	0.5 s to 120 s	0.05 s to 12 s, 1.2 s to 12 min	0.001 s to 9999 h (configurable)	0.000 s to 9999 h (configurable)
		Number of sub ranges	2	9	14	4	4	10	9
	Supply voltage	24, 100 to 120, 200 to 230 VAC, 12, 24, 48, 100 to 110, 125 VDC	100 to 240 VAC, 100 to 125 VDC, 24 to 48 VAC, 12 to 48 VDC	100 to 240 VAC, 12 VDC, 24 VAC/DC, 48 to 125 VDC	100 to 120 VAC, 200 to 240 VAC	100 to 120 VAC, 200 to 240 VAC, 24 VAC/DC, 48 VDC, 100 to 125 VDC	100 to 240 VAC, 24 VAC, 12 to 24 VDC	24 VDC	
	Number of operating modes	4	6 (model dependent)	-	1	1	15	6	
Functions	ON-delay	■	□	-	-	-	■	■	
	Flicker OFF start	■	□	■	-	-	■	■	
	Flicker ON start	■	□	■	-	-	■	-	
	Signal ON-/OFF-delay	-	□	-	-	-	■	-	
	Signal OFF-delay	-	□	-	-	■	■	■	
	Interval (signal or power start)	■	□	-	-	-	■	■	
	One-shot output (ON-delay)	-	□	-	-	-	■	-	
	ON-delay (fixed)	-	-	-	-	-	■	-	
	Independent ON/OFF time setting	-	-	-	-	-	■	■	
Star-delta	-	-	-	■	-	-	-		
Remarks	Transistor	-	□	-	-	-	■	-	
Page/Quick Link		T324	T323				T322	T429	

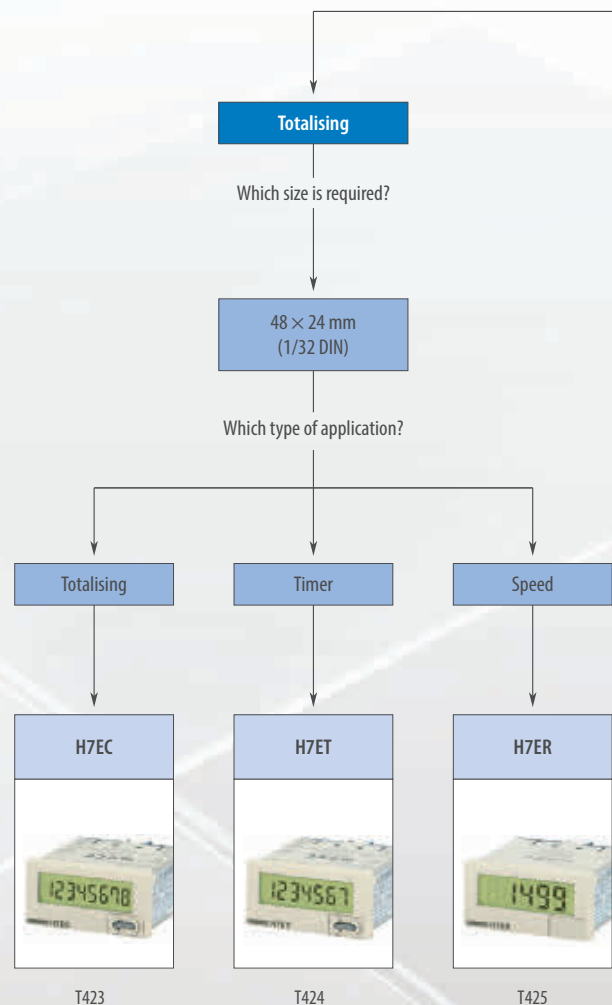
■ Standard □ Available - No/not available

## MULTI-FUNCTIONAL PRESET COUNTER

### H7CX – Designed with value added features

The H7CX series offers the ultimate in versatility and intuitive programming.

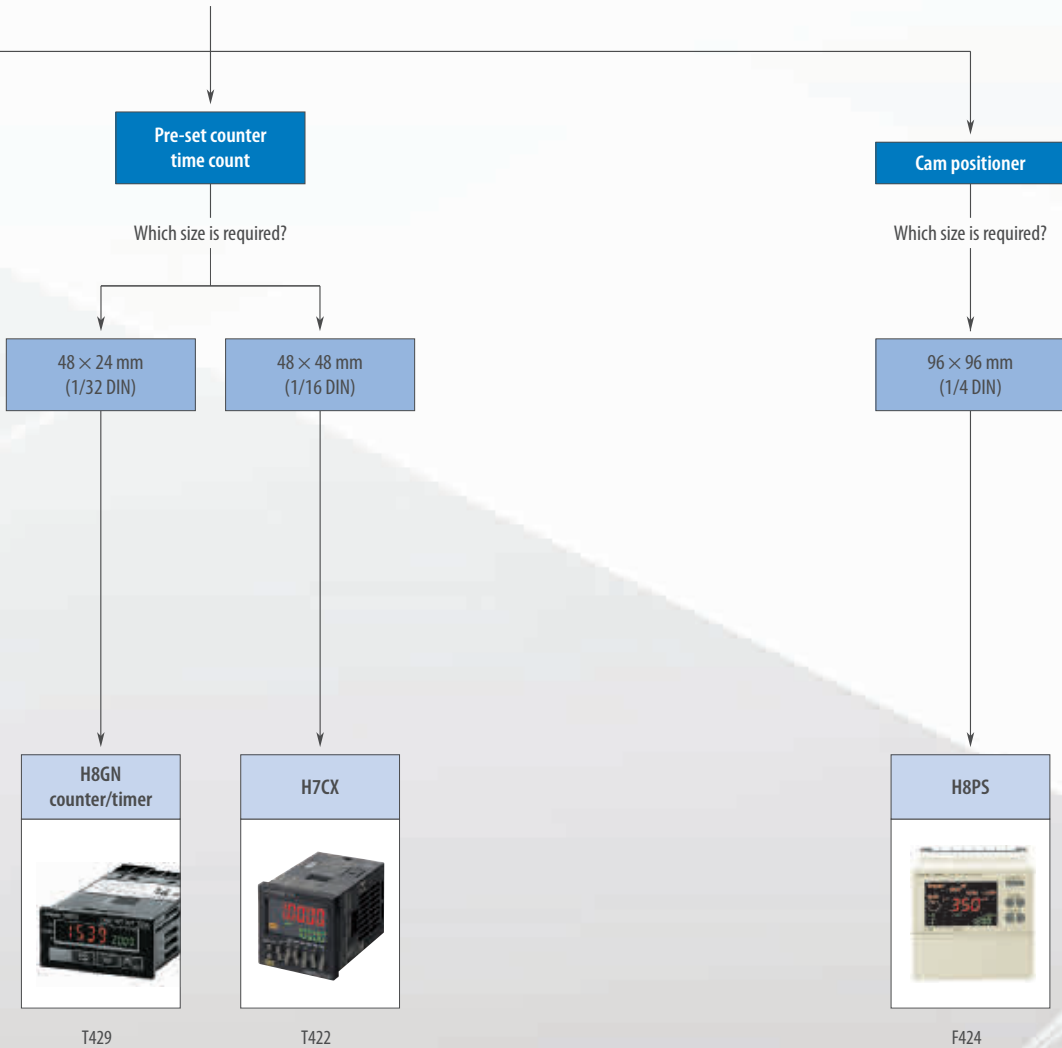
- 7 basic functions in one
- Switching color on threshold, green, orange & red
- Twin counter mode
- 12 different outputs modes
- Display 6 digits from -100 K +1 up to 1 M -1













What is the type of counting application?



# Selection table

Category		Self-powered total	Self-powered timer	Self-powered tachometer
				
Model		H7EC	H7ET	H7ER
Selection criteria	Display	LCD		
	Size	1/32 DIN		
Outputs	Control outputs	-	-	-
	5 stage	-	-	-
	Total	■	■	-
	Time	-	■	-
	Preset	-	-	-
	Batch	-	-	-
	Dual	-	-	-
	Tachometer	■	-	■
Inputs	Control inputs	No-voltage, PNP/NPN, DC-voltage, AC/DC multi-voltage	No-voltage, PNP/NPN, DC-voltage, AC/DC multi-voltage	No-voltage, PNP/NPN
Features	Dual operation	-	-	-
	Number of digits	8	7	4 or 5
	NPN/PNP switch	■	■	■
	Back-lit	□	□	□
	External reset	■	■	-
	Manual reset	■	■	-
	Number of banks	-	-	-
	Built-in sensor power supply	-	-	-
Terminals	IP rating	IP66	IP66	IP66
	Screw terminals	■	■	■
	PCB terminals	-	-	-
Supply voltage	11-pin socket	-	-	-
	100 to 240 VAC	-	-	-
	12 to 24 VDC	-	-	-
	24 VDC	□	□	□
Functions	Comms	-	-	-
	Up	■	■	-
	Down	-	-	-
	Up/down	-	-	-
	Reversible	-	-	-
	Speed	0 to 30 Hz or 0 to 1 kHz	-	1 or 10 kHz
	Counting range	0 to 99999999	0.0 h to 999999.9 h <--> 0.0 h to 3999 d 23.9 h or 0 s to 999 h 59 min 59 s <--> 0.0 min to 9999 h 59.9 min	1000 s-1 or 1000 min-1; 1000 s-1 or 1000 min-1 <--> 10000 min-1
Color	Beige	■	■	■
	Black	■	■	■
Page/Quick Link		T423	T424	T425

Counter type		Pre-set counter/timer	Pre-set counter	Cam positioner
				
Model		H8GN	H7CX	H8PS
Selection criteria	Display	LCD negative transmissive		
	Size	1/32 DIN	1/16 DIN	1/4 DIN
Outputs	Control outputs	1 relay (SPDT)	1 relay (SPDT), transistor	NPN or PNP, cam outputs 8/16/32, run out, tachometer
	5 stage	■	□	–
	Total	■	□	–
	Time	■	–	–
	Preset	■	□	–
	Batch	■	□	–
	Dual	■	□	–
Tachometer	–	□	–	
Inputs	Control inputs	No-voltage	No-voltage, PNP/NPN	Encoder
Features	Dual operation	■	■	□
	Number of digits	PV: 4, SV: 4	PV: 4, SV: 4 or PV: 6, SV: 6	7
	NPN/PNP switch	–	■	–
	Back-lit	–	■	■
	External reset	■	■	–
	Manual reset	■	■	8 (16- and 32-output models only)
	Number of banks	4	–	–
	Built-in sensor power supply	–	■	–
IP rating	IP66	IP66	IP40	
Terminals	Screw terminals	■	■	■
	PCB terminals	–	–	■
	11-pin socket	–	□	–
Supply voltage	100 to 240 VAC	–	■	–
	12 to 24 VDC	–	■	–
	24 VDC	■	–	■
Comms	□	–	–	
Functions	Up	■	■	–
	Down	■	■	–
	Up/down	–	■	–
	Reversible	■	■	–
	Speed	0 to 30 Hz or 0 to 5 kHz	0 to 30 Hz or 0 to 5 kHz	–
	Counting range	-999 to 9999	-99999 to 999999	–
Color	Beige	–	–	■
	Black	■	■	–
Page/Quick Link		T429	T422	F424

■ Standard

□ Available

– No/not available

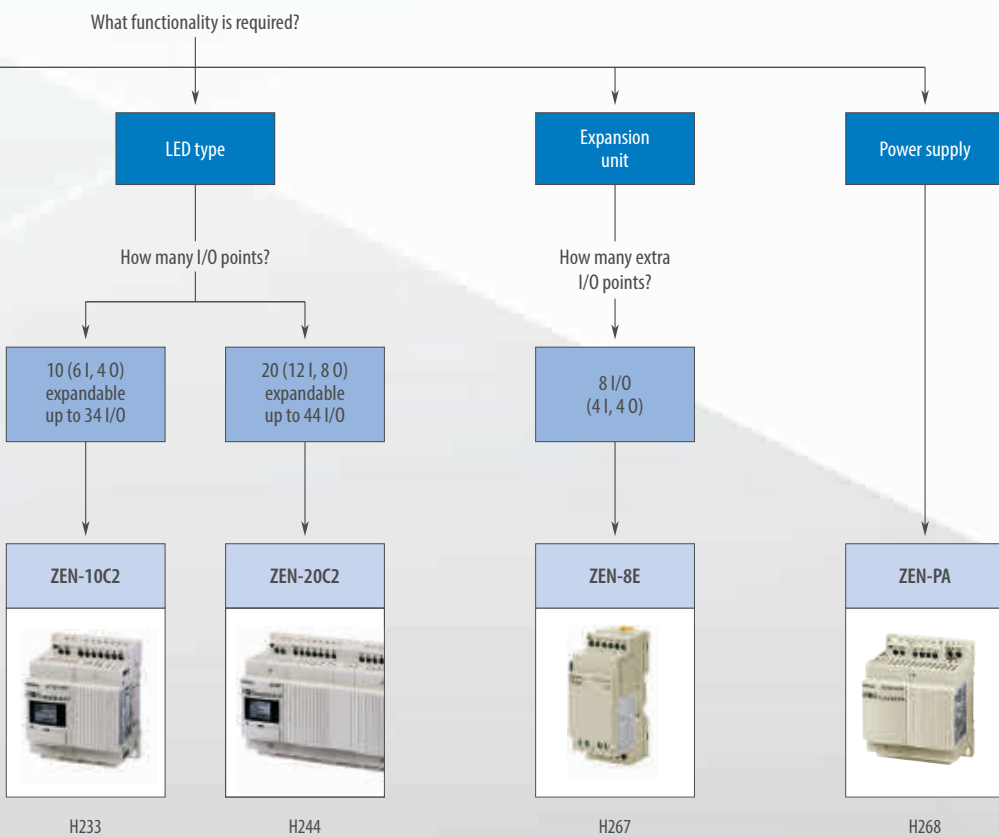
# Programmable relays

## ZEN - SIMPLICITY AT ITS BEST



The ZEN series offers simple logic control for a wide variety of applications. With many on-board functions like season and weekly timers, counters, analog inputs and using the ladder logic, you can automate the application very quickly. Adjustments and maintenance is easy using the models with an LCD.

- RS-485 communication
- Expandable I/O
- Memory Data backup







				
<b>Model</b>	ZEN-10C	ZEN-20C		
<b>Type</b>	CPU unit	CPU unit		
<b>Features C1</b>	With LCD Display, program/control buttons, calendar and real-time clock	With LCD display, program/control buttons, calendar and real-time clock		
<b>Features C2</b>	With LED indication Logic control Programming by software	With LED indication Logic control Programming by software		
<b>Features C3</b>	Same as C1 but not expandable.	Same as C1 but not expandable.		
<b>Features C4</b>	Same as C1 but instead of one output relay you get RS-485 communication.	-		
<b>Features Starter kits</b>	Complete set with C1 CPU including software, cable and manual	-		
<b>Number of I / O points</b>	10 expandable up to 34 I/O (C4 up to 33 I/O)	20 expandable up to 44 I/O		
<b>Inputs</b>	6	12		
<b>Inputs/power supply</b>	100 to 240 VAC or 12 to 24 VDC	100 to 240 VAC or 12 to 24 VDC		
<b>Outputs</b>	4 relays (C4 = 3 relays) or 4 transistors	8 relays or 8 transistors		
<b>Page/Quick Link</b>	H233	H244		

- No/not available

# Digital panel indicators

## LOOKING FOR PERFECT MEASURING & READ-OUT?

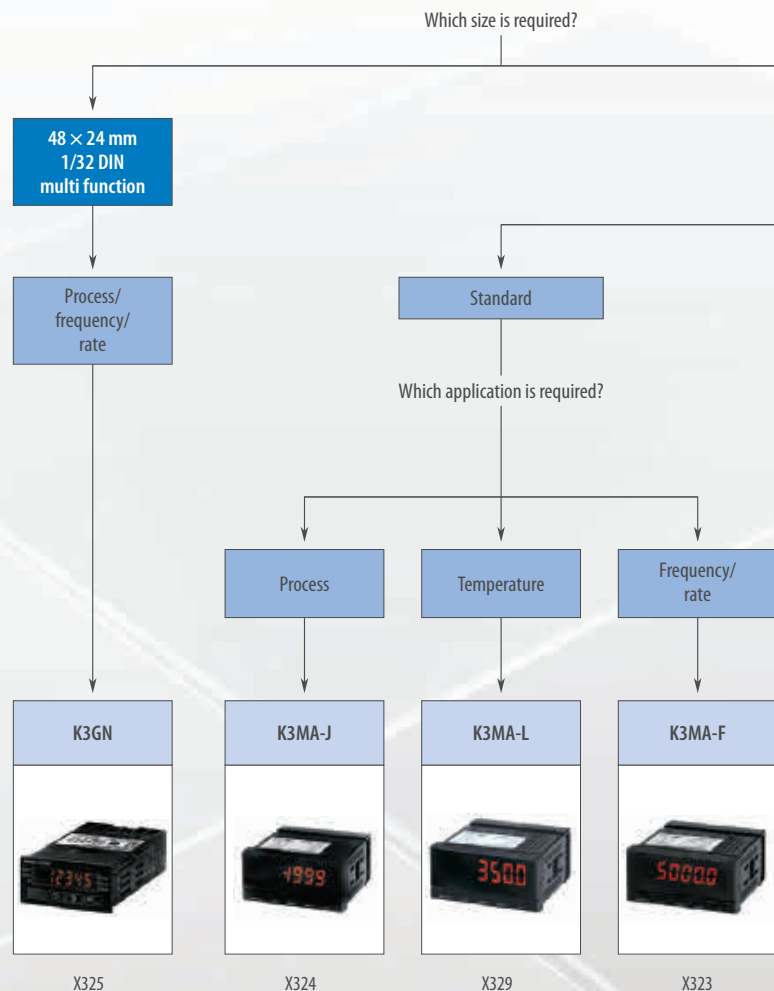
### K3HB-V – For perfect weighing

With our K3HB series we cover a wide range of applications. One of them is the weighing indicator which performs perfect measurement in any weighing application.

The instrument can be equipped with a load-cell power supply of 10V/100 mA.

Several option boards for communication, contact output boards or event inputs are also available. On top of these you can get direct DeviceNet communication.

- High speed sampling 20 ms
- Equipped with position meter
- Two color display for easy recognition







96 × 48 mm  
(1/8 DIN)

Advanced

Which application is required?

Process

Temperature

Weighing

Linear sensor

Up/down  
counting pulse

Time interval

Rotary pulse

K3HB-X

K3HB-H

K3HB-V

K3HB-S

K3HB-C

K3HB-P

K3HB-R



X335

X332

X334






X333

X326

X327

X328

# Selection table

Category	Multifunctional digital panel indicator	Process indicator	Temperature indicator	Frequency/rate indicator	Process indicator	
						
Model	K3GN	K3MA-J	K3MA-L	K3MA-F	K3HB-X	
Size	1/32 DIN	1/8 DIN				
Features	Color change display	■	■	■	■	
	Number of digits	5	5	4	5	
	Leading zero suppression	■	■	■	■	
	Forced zero function	■	■	■	■	
	Min./max. hold function	■	■	■	■	
	Average processing	■	■	■	■	
	User selectable inputs	■	■	■	■	
	Start-up compensating time	■	–	–	■	
	Key protection	■	■	■	■	
	Decimal point position setting	■	■	■	■	
Accuracy	±0.1% of full scale	±0.1% of full scale	±0.1% of full scale	±0.1% of full scale	±0.1% of full scale (DC voltage & DC current), ±0.5% of full scale (AC voltage & AC current)	
Input range	0 to 20 mA, 4 to 20 mA or 0 to 5 V, 1 to 5 V, -5 to 5 V, -10 to 10 V or 0 to 30 Hz or 0 to 5 kHz	0 to 20 mA, 4 to 20 mA or 0 to 5 V, 1 to 5 V, -5 to 5 V, -10 to 10 V	Pt100, JPt100 or thermocouple K, J, T, E, L, U, N, R, S, B	0 to 30 Hz or 0 to 5 kHz	0.000 to 10.000 A, 0.0000 to 19.999 mA, -199.99 to 199.99 mA, 4.000 to 20.000 mV, 0.0 to 400.0 V, 0.0000 to 1.999 V, -199.99 to 199.99 V, 1.0000 to 5.0000 V	
Sample rate	250 ms	250 ms	500 ms	–	20 ms	
Features	Remote/local processing, parameter initialisation, programmable output configuration, process value hold	Teaching, comparative output pattern selection, parameter initialisation, programmable output configuration, process value hold	Programmable output configuration, process value hold	Teaching, comparative output pattern selection, programmable output configuration, process value hold	Scaling, teaching, averaging, output hysteresis, output OFF-delay, output test, bank selection, reset, comparative output	
Sensor power supply	–	–	–	■	□	
Front protection	IP66	IP66	IP66	IP66	IP66	
Supply voltage	24 VDC	24 VAC/VDC or 100 to 240 VAC	24 VAC/VDC or 100 to 240 VAC	24 VAC/VDC or 100 to 240 VAC	100 to 240 VAC or 24 VAC/VDC	
Inputs	NPN	■	–	■	■	□
	PNP	■	–	■	■	□
	Temperature	–	–	–	–	–
	Contact	–	–	–	■	–
	Voltage pulse	–	–	–	■	–
	Load cell	–	–	–	–	–
	DC voltage	■	■	■	–	□
	DC current	■	■	–	–	□
	AC voltage	–	–	–	–	□
AC current	–	–	–	–	□	
Outputs	Relay	■	■	■	■	□
	NPN	■	–	–	–	□
	PNP	■	–	–	–	□
	Linear	–	–	–	–	□
	BCD	–	–	–	–	–
	Comms	■	–	–	–	□
Page/Quick Link	X325	X324	X329	X323	X335	

Temperature indicator	Weighing indicator	Linear sensor indicator	Up/down counting pulse indicator	Time interval indicator	Rotary pulse indicator
K3HB-H	K3HB-V	K3HB-S	K3HB-C	K3HB-P	K3HB-R
1/8 DIN					
■	■	■	■	■	■
5	5	5	5	5	5
■	■	■	■	■	■
■	■	■	■	■	■
■	■	■	■	■	■
■	■	■	■	■	■
■	■	■	■	■	■
■	■	■	■	■	■
■	■	■	■	■	■
■	■	■	■	■	■
■	■	■	■	■	■
Thermocouple: ±0.3% of full scale, Pt-100: ±0.2% of full scale	±0.1% of full scale	One input: ±0.1% of full scale, two inputs: ±0.2% of full scale		±0.08% rgd ±1 digit	±0.006% rgd ±1 digit ±0.02% rgd ±1 digit
Pt100, thermocouple K, J, T, E, L, U, N, R, S, B, W	0.00 to 199.99 mV, 0.000 to 19.999 mV, 100.00 mV, 199.99 mV	0 to 20 mA, 4 to 20 mA, 0 to 5 V, -5 to 5 V, -10 to 10 V	No voltage contact: 30 Hz, voltage pulse: 50 kHz, open collector: 50 kHz	No voltage contact: 30 Hz, voltage pulse: 50 kHz, open collector: 50 kHz	No voltage contact: 30 Hz, voltage pulse: 50 kHz, open collector: 50 kHz
20 ms	20 ms	0.5 ms	–	–	–
Scaling, teaching, averaging, output hysteresis, output OFF-delay, output test, bank selection, reset, comparative output	Scaling, teaching, averaging, output hysteresis, output OFF-delay, output test, bank selection, reset, comparative output	Scaling, 2-input calculation, teaching, averaging, output hysteresis, output OFF-delay, output test, bank selection, reset, comparative output	Scaling, measurement operation selection, output hysteresis, output OFF-delay, output test, display value selection, display color selection, key protection, bank selection, display refresh period, maximum/minimum hold, reset	Scaling, measurement operation selection, output hysteresis, output OFF-delay, output test, teaching, display value selection, display color selection, key protection, bank selection, display refresh period, maximum/minimum hold, reset	Scaling, measurement operation selection, averaging, previous average value comparison, output hysteresis, output OFF-delay, output test, teaching, display value selection, display color selection, key protection, bank selection, display refresh period, maximum/minimum hold, reset
□	□	□	□	□	□
IP66	IP66	IP66	IP66	IP66	IP66
100 to 240 VAC or 24 VAC/VDC	100 to 240 VAC or 24 VAC/VDC	100 to 240 VAC or 24 VAC/VDC	100 to 240 VAC or 24 VAC/VDC	100 to 240 VAC or 24 VAC/VDC	100 to 240 VAC or 24 VAC/VDC
□	□	□	■	■	■
□	□	□	■	■	■
■	–	–	–	–	–
–	–	–	–	–	–
–	–	–	■	■	■
–	■	–	–	–	–
–	–	■	–	–	–
–	–	■	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
□	□	□	□	□	□
□	□	□	□	□	□
□	□	□	□	□	□
□	□	□	□	□	□
–	–	–	□	□	□
□	□	□	□	□	□
X332	X334	X333	X326	X327	X328

■ Standard    □ Available    – No/not available

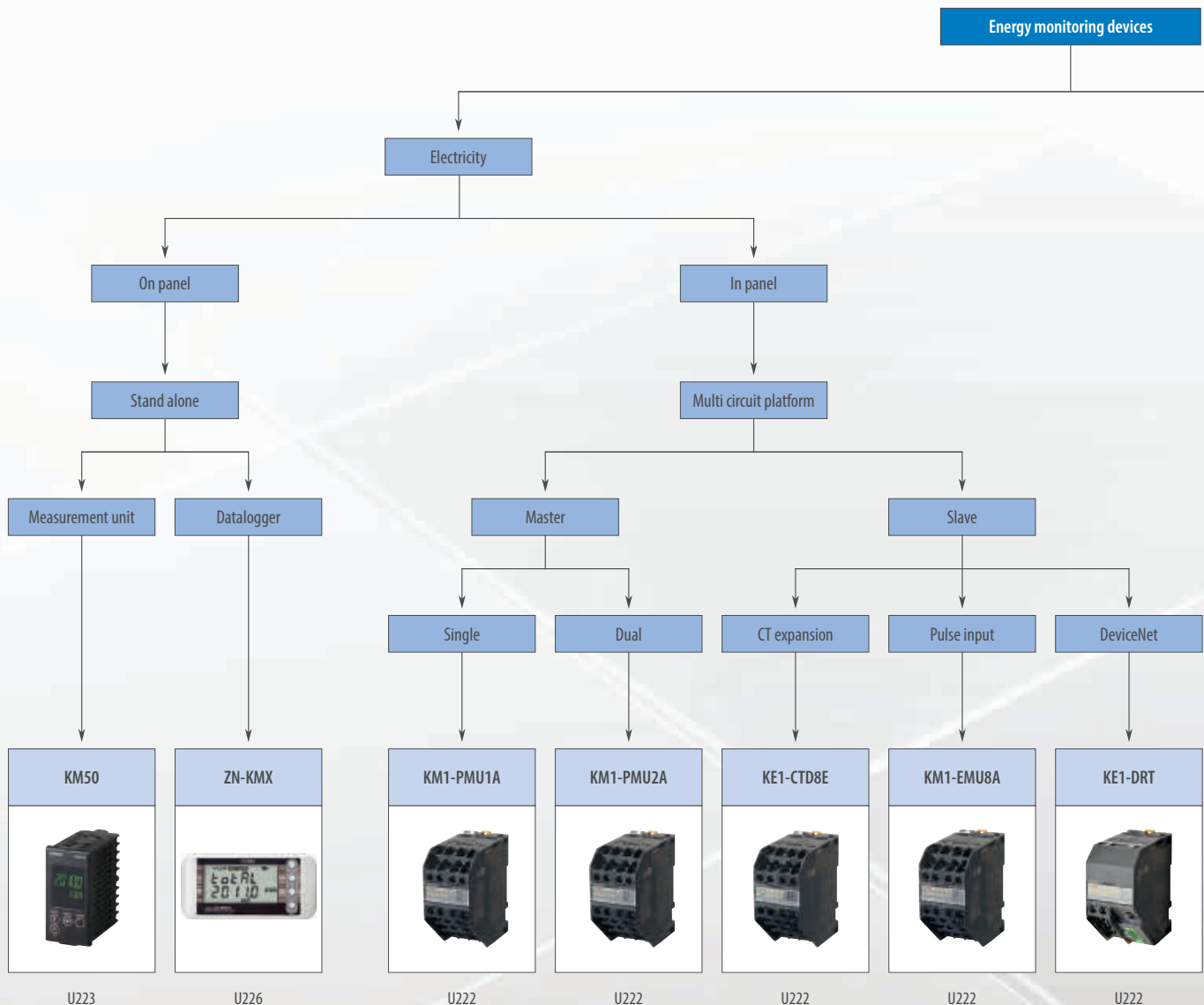
# Energy monitoring devices

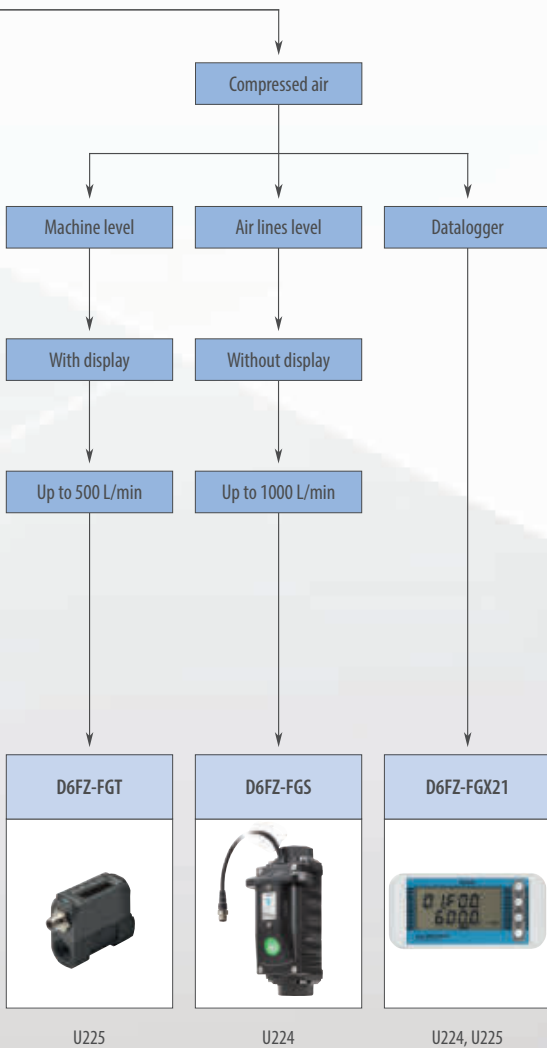
## RISE ABOVE YOUR ENERGY CHALLENGES

### Energy monitoring devices

Understanding energy usage is the first step in becoming energy efficient. Learn how to expose energy waste deep within your system with new hardware and software solutions that target devices consuming excess power.

- Measure more lines with fewer devices
- Accurate measurements with minimal installation space
- Monitor electrical and other forms of energy











U225

U224

U224, U225

# Selection table

	KM1 series				KM50 series	ZN-KMX series	
							
<b>Model</b>	KM1-PMU_A	KE1-CTD8E	KM1-EMU8A	KE1-DRT-FLK	KM50-E1-FLK	ZN-KMX-21A	
<b>Type</b>	In panel, reduced wiring, space-saving, multi-circuit measurement				On panel type	Data logger for KM50 series	
<b>Application</b>	Electricity measurements						
<b>Installation</b>	In panel, DIN track				On panel, option DIN track	Magnet mounting, screw mounting, hook, free standing	
<b>Display</b>	-				Eleven segment LEDs	7-seg, 5-digit 2-step LCD display	
<b>Size (W × H × D) [mm]</b>	45 × 96 × 90 (maximum width of 45 × 5 when five Units are linked together)				DIN 48 × 96, Depth: 88	117.2 × 56.8 × 24.6	
<b>Applicable phase</b>	Single-phase, two-wire	Yes	Yes	-	-	Yes	Depending on connected KMs
	Three-phase, three-wire	Yes	Yes	-	-	Yes	
	Three-phase, four-wire	PMU1A only	Yes	-	-	Yes	
<b>400-V direct measurement</b>	Yes	-	-	-	Yes		
<b>Power supply</b>	100 to 240 VAC	Provided by Master	100 to 240 VAC		100 to 240 VAC	DC input: 24 VDC ±10%	
<b>Measured items</b>	Energy	Yes	Yes	-	-	Yes	Yes
	Active power	Yes	Yes	-	-	Yes	Yes
	Reactive power	Yes	Yes	-	-	Yes	-
	Current	Yes	Yes	-	-	Yes	-
	Voltage	Yes	-	-	-	Yes	-
	Power factor	Yes	Yes	-	-	Yes	-
	Frequency	Yes	-	-	-	Yes	-
Pulse count	-	-	Yes	-	Yes	Yes	
<b>Communication interface</b>	RS-485	-	RS-485	DeviceNet or RS485	RS-485	RS-485 KM side/ Ethernet PC side	
<b>Alarm output</b>	Yes	Yes	-	-	Yes	Yes	
<b>Data logging</b>	Yes	-	-	-	Yes	SD card	
<b>Page/Quick Link</b>	U222				U223	U226	

		D6FZ series			
					
Model	D6FZ-FGT200		D6FZ-FGT500	D6FZ-FGS1000	D6FZ-FGX21
Type	Air flow sensor up to 200 l/min		Air flow sensor up to 500 l/min	Air flow sensor up to 1,000 l/min	Data logger for D6FZ series
Application	Air flow and nitrogen (N2) measurement				
Installation	Mounting bracket			–	Mounting magnet
Display	11-segment digital display			–	7-seg. 5-digit 2-step LCD display
Size (W × H × D) [mm]	30 × 77 × 63.7		–	64 × 93 × 195	117.2 × 56.8 × 24.6
Applicable pipe	Rc1/4 (8 A)		Rc1/2 (15 A)	Rc1 (25 A)	–
Power supply	12 to 24 VDC ±10%			–	24 VDC ±10%
Measured items	Flow	Yes	Yes	Yes	–
	Leakage	Yes	Yes	Yes	–
	Pressure	–	–	Yes	–
	Temperature	–	–	Yes	–
Communication interface	Analog (4 to 20 mA), pulse, RS-485				Ethernet PC side
Alarm output	Threshold value				Yes
Data logging	–		–	–	SD card
Page/Quick Link	U225			U224	U224, U225

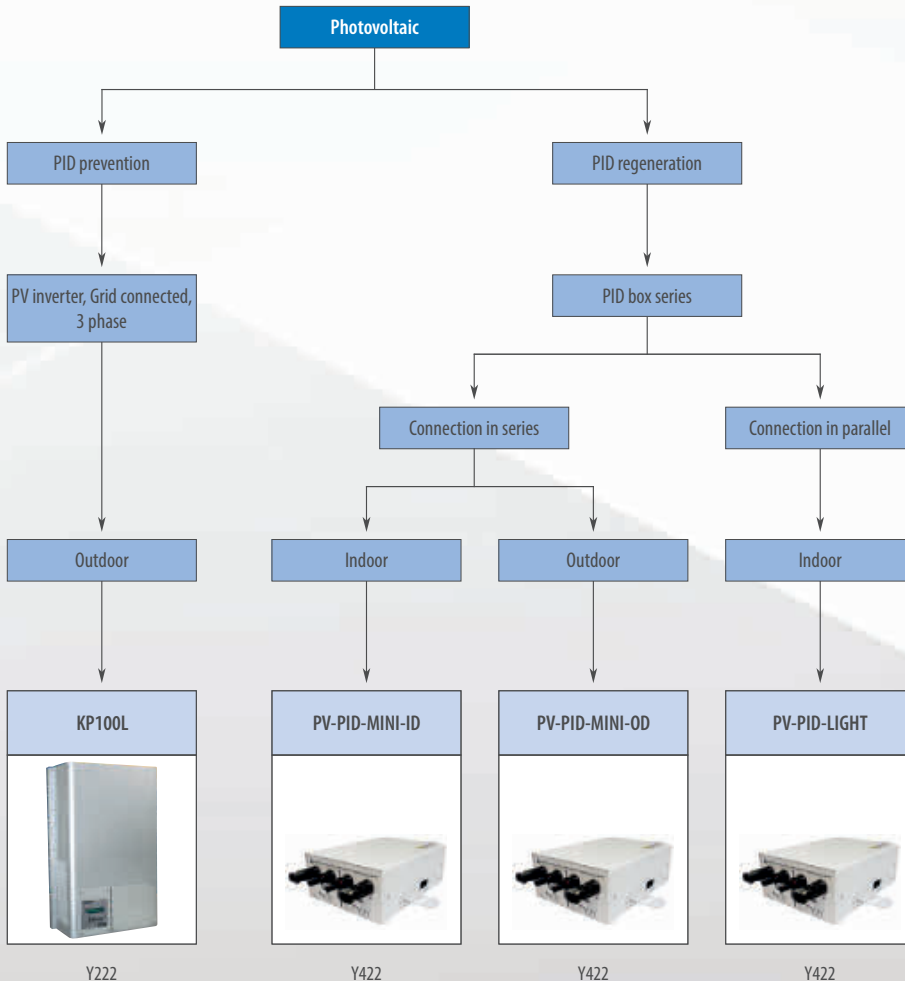
## REVIVE & RENEW PV PLANTS

### Protection against the problem of PID

Improve your power generation with our new photovoltaic technologies. Whether you are designing a new system or improving an existing installation, we have the photovoltaic solutions to help optimize your solar plant.

- Prevent PID with ZCC technology integrated in the PV inverter
- Revive PV panels with a complete retrofit solution based on PID box series
- TÜV Rheinland test approved









Y222

Y422

Y422

Y422



	PID recovering box			Photovoltaic inverter
				
Model	PV-PID-MINI-ID	PV-PID-MINI-OD	PV-PID-LIGHT	KP100L-OD-EU
Description	PID box for retrofit	PID box for retrofit	PID box for retrofit	On grid, 10 kW, three-phase PV inverter
Prevents PID on installed PV modules	–	–	–	Yes
Regenerates modules affected with PID	Yes	Yes	Yes	–
Connection type	series	series	parallel	–
Fast PID recovery	+++	+++	+ <sup>*1</sup>	–
Able to recover modules in all stages of PID	+++	+++	+ <sup>*1</sup>	–
System size <sup>*2</sup>	0 to 20 A per independent input	0 to 20 A per independent input	max. 100 kWp <sup>*3</sup>	0 to 13 A per independent input (max. 33 A)
Number of MPPT's	2	2	2	3
Grounding possible at inverter side	Yes	Yes	No	Negative pole always grounded during inverter operation, due to ZCC.
Disconnects from the inverter	Yes	Yes	No	–
Outdoor use	No	Yes <sup>*4</sup>	No	Yes
Approval is required from the manufacturer of the inverter	No	No	Yes	–
Easy to implement	++	++	+++	+
Page/Quick Link	Y422	Y422	Y422	Y222

<sup>\*1</sup> Depending on the inverter

<sup>\*2</sup> Look at the Isc of the modules and the number of strings in parallel. This may never exceed the max current of the PID-box. Also consider the tolerances.

<sup>\*3</sup> Inputs have to be secured with 2 A fuses

<sup>\*4</sup> Power supply is rated IP30. Place it indoor.

# Electromechanical relays

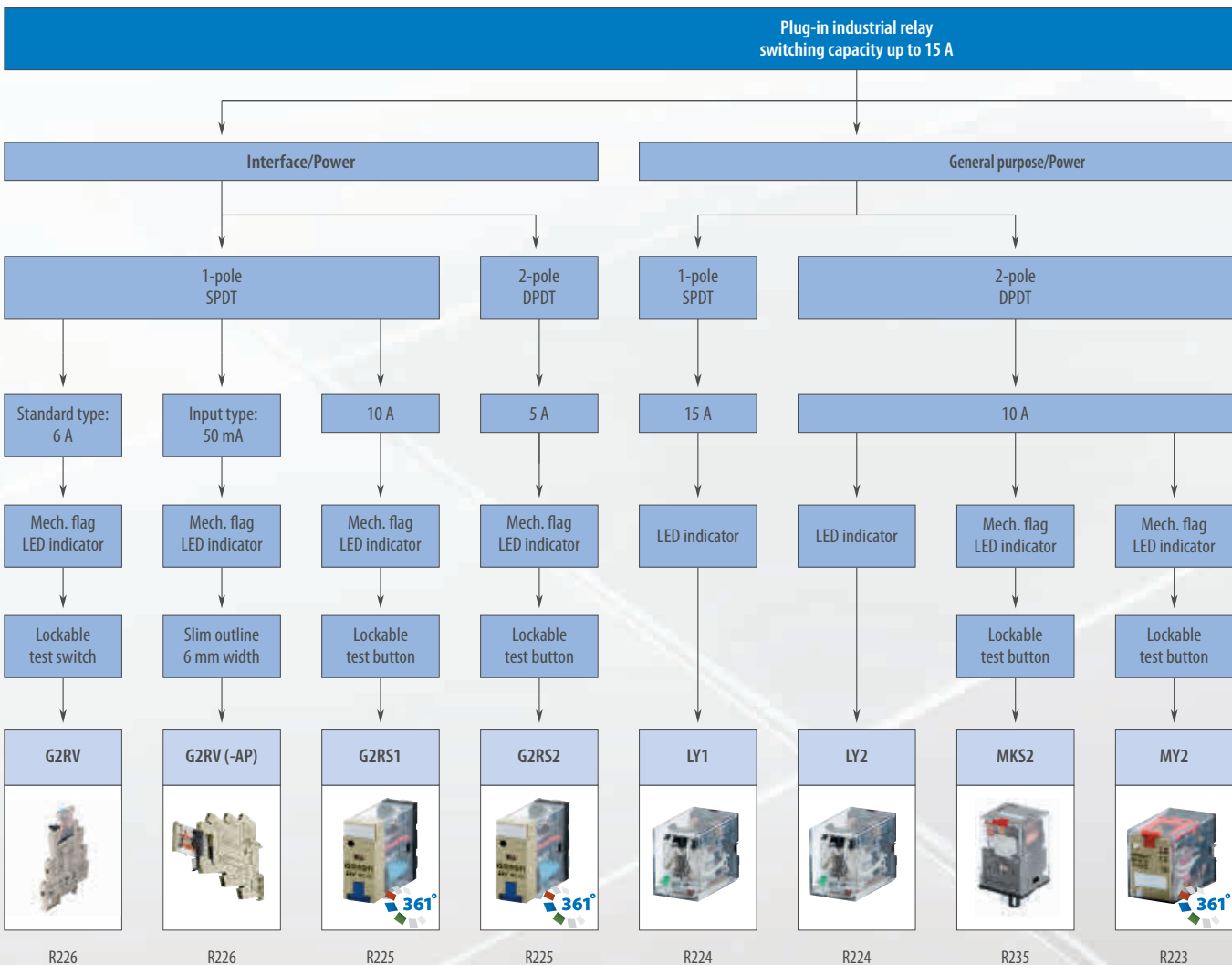
**UNIQUE!**

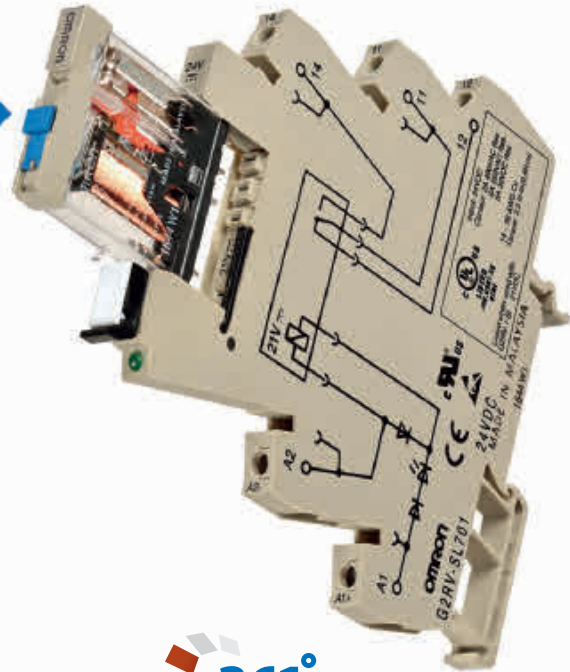
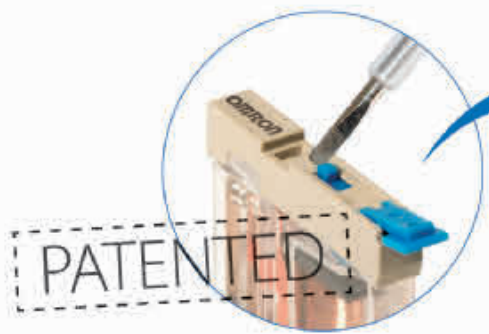
## G2RV-SL□□ 1-6 mm relay with lockable test switch

At the heart of the industrial G2RV relay is a strong mechanical pin with a large contact surface that ensures reliable connection and high conductivity between the socket and relay. The patented switch design with rotating protection cover is (almost) impossible to achieve in an adapted PCB relay.

Benefits lockable test switch:

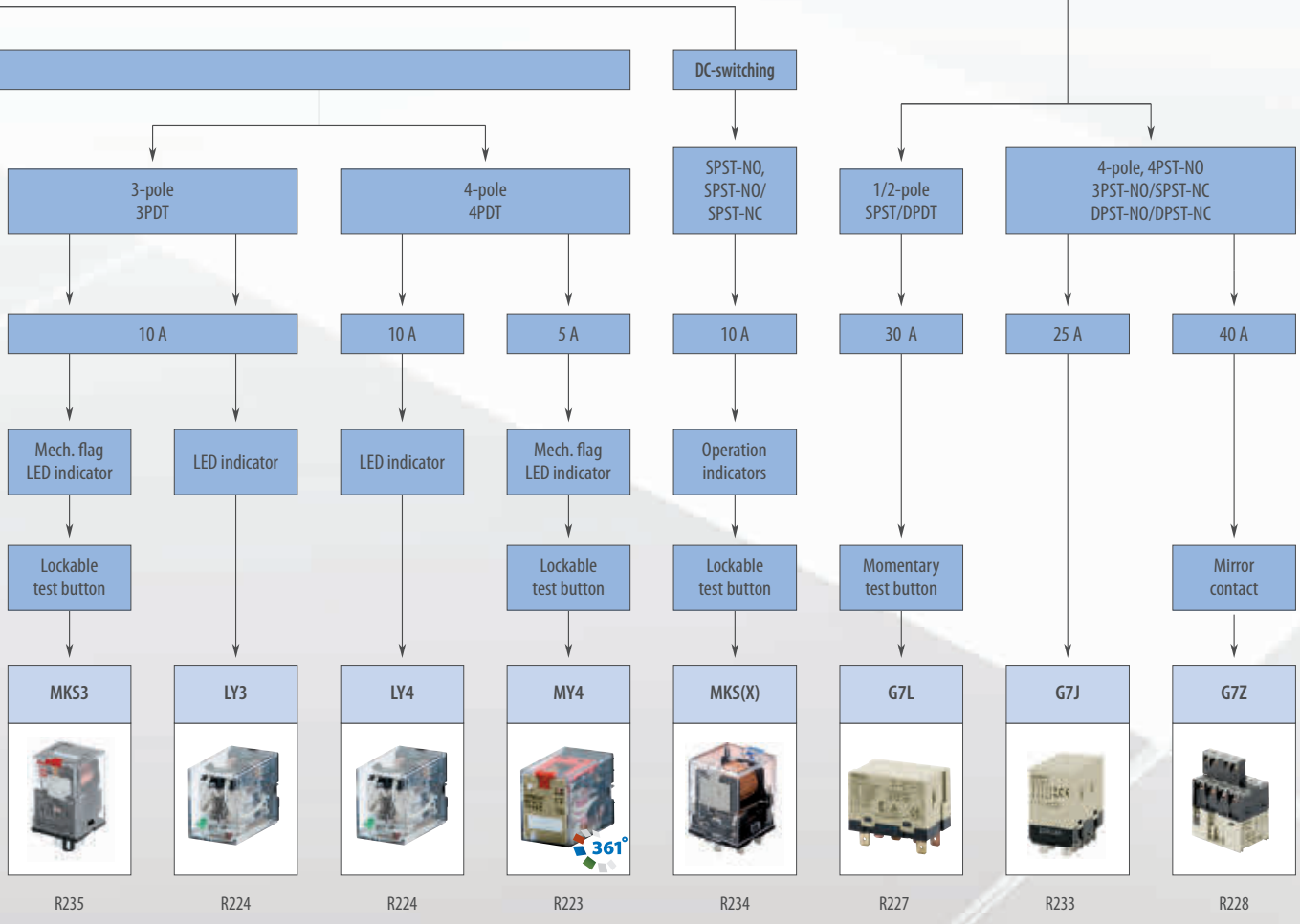
- Test panel, machine or system functionality, or simulate an actuator when one or more modules are offline or have been removed
- Rotating protection cover stops accidental operation
- See from distance that the switch is protected – eg, in a hazardous environment








Explanation of 361° concept see page 4



High power relays up to 40 A






Electromechanical relays

# Selection table

Category		Interface/Power				General purpose/Power		
								
Family		G2RV		G2R- <u>  </u> -S		MY		
Selection criteria	1-pole	■	■	■	–	–	–	–
	2-pole	–	–	–	■	■	–	–
	3-pole	–	–	–	–	–	–	–
	4-pole	–	–	–	–	–	■	■
	Contact configuration	SPDT	SPDT	SPDT	DPDT	DPDT	4PDT	4PDT bifurcated
	Contact material	AgSnIn	AgSnIn + gold plating	AgSnIn	AgSnIn	Ag	AgNi + Au	AgNi + Au
	Max. switching current	6 A	50 mA	10 A	5 A	10 A	5 A	5 A
	Min. switching current	10 mA at 5 VDC	1 mA at 100 mVDC	100 mA at 5 VDC	10 mA at 5 VDC	1 mA at 5 VDC	1 mA at 1 VDC	0.1 mA at 1 VDC
	Gold clad/plate	–	■	□	□	–	■	■
Width max. (Relay only)	5.2 mm	5.2 mm	13.0 mm	13.0 mm	21.5 mm	21.5 mm	21.5 mm	
Features	LED indication	■	■	□	□	□	□	□
	Mechanical flag	■	■	■	■	■	■	■
	Momentary testbutton	–	–	–	–	–	–	–
	Momentary/Lockable testbutton (/switch)	□	–	□	□	□	□	□
	Label	□	□	□	□	□	□	□
	Diode (DC coil)	■	■	□	□	□	□	□
	Varistor (AC coil)	–	–	–	–	–	–	–
CR network (AC coil)	■	■	–	–	□	□	□	
Wiring to socket	Screw (plate clamp)	–	–	□	□	□	□	□
	Screw (box clamp)	□	□	□	□	□	□	□
	Screw-less clamp	□	□	□	□	□	□	□
Page/Quick Link		R226		R225		R223		

Category		High power relays								
										
Family		G7J				G7L		G7Z		
Selection criteria	1-pole	–	–	–	–	■	–	–	–	–
	2-pole	–	–	–	–	–	■	–	–	–
	3-pole	–	–	–	–	–	–	–	–	–
	4-pole	■	■	■	■	–	–	■	■	■
	Contact configuration	4PST-NO	4PST-NO	3PST-NO/SPST-NC	DPST-NO/DPST-NC	SPST-NO	DPST-NO	4PST-NO	3PST-NO/SPST-NC	DPST-NO/DPST-NC
	Max. switching current	25 A	25 A	25 A	25 A	30 A	25 A	40 A	40 A	40 A
	Min. permissible load	100 mA at 24 VDC	100 mA at 24 VDC	100 mA at 24 VDC	100 mA at 24 VDC	100 mA at 5 VDC	100 mA at 5 VDC	2 A at 24 VDC	2 A at 24 VDC	2 A at 24 VDC
Relay terminals	Auxiliary contact block mirror contact	–	–	–	–	–	–	■	■	■
	Momentary testbutton	–	–	–	–	□	□	–	–	–
	Screw	□	□	□	□	□	□	□	□	□
Mounting	Quick-connect	□	□	□	□	□	□	–	–	–
	PCB terminals	□	□	□	□	□	□	–	–	–
	Screw	–	–	–	–	–	–	□	□	□
	DIN rail	–	–	–	–	–	–	□	□	□
	Clip (screw)	□	□	□	□	□	□	–	–	–
Flange (screw)	□	□	□	□	□	□	–	–	–	
DIN rail (adapter)	–	–	–	–	□	□	–	–	–	
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Category		General purpose/Power									
											
Family		LY					MKS			MKS(X)	
Selection criteria	1-pole	■	-	-	-	-	-	-	■	-	
	2-pole	-	■	■	-	-	■	-	-	■	
	3-pole	-	-	-	■	-	-	■	-	-	
	4-pole	-	-	-	-	■	-	-	-	-	
	Contact configuration	SPDT	DPDT	DPDT bifurcated	3PDT	4PDT	DPDT	3PDT	SPST-NO	SPST-NO/SPST-NC	
	Contact material	AgSnIn	AgSnIn	AgSnIn	AgSnIn	AgSnIn	AgSnIn	AgSnIn	AgSnIn	AgSnIn	
	Max. switching current	15 A	10 A	7 A	10 A	10 A	10 A	10 A	10 A, 220 VDC; 15 A, 250 VAC	5 A, 220 VDC; 15 A, 250 VAC	
	Min. switching current	100 mA at 5 VDC	100 mA at 5 VDC	10 mA at 5 VDC	100 mA at 5 VDC	100 mA at 5 VDC	10 mA at 1 VDC	10 mA at 1 VDC	10 mA at 24 VDC	10 mA at 24 VDC	
	Gold clad/plate	-	□	■	-	-	-	-	-	-	
	Width max. (Relay only)	21.5 mm	21.5 mm	21.5 mm	31.5 mm	41.5 mm	34.5 mm	34.5 mm	34.5 mm	34.5 mm	
Features	LED indication	□	□	□	□	□	□	□	□	□	
	Mechanical flag	-	-	-	-	-	■	■	-	-	
	Momentary testbutton	-	-	-	-	-	-	-	-	-	
	Momentary/Lockable testbutton	-	-	-	-	-	□	□	□	□	
	Label	-	-	-	-	-	□	□	-	-	
	Diode (DC coil)	□	□	□	□	□	□	□	Optional for socket	Optional for socket	
	Varistor (AC coil)	-	-	-	-	-	□	□	-	-	
	CR network (AC coil)	-	□	□	-	-	-	-	-	-	
Wiring to socket	Screw (plate clamp)	□	□	□	□	□	□	□	□	□	
	Screw (box clamp)	-	-	-	-	-	□	□	-	-	
	Screw-less clamp	-	-	-	-	-	-	-	-	-	
Page/Quick Link		R224					R235			R234	

■ Standard      □ Available      - No/not available

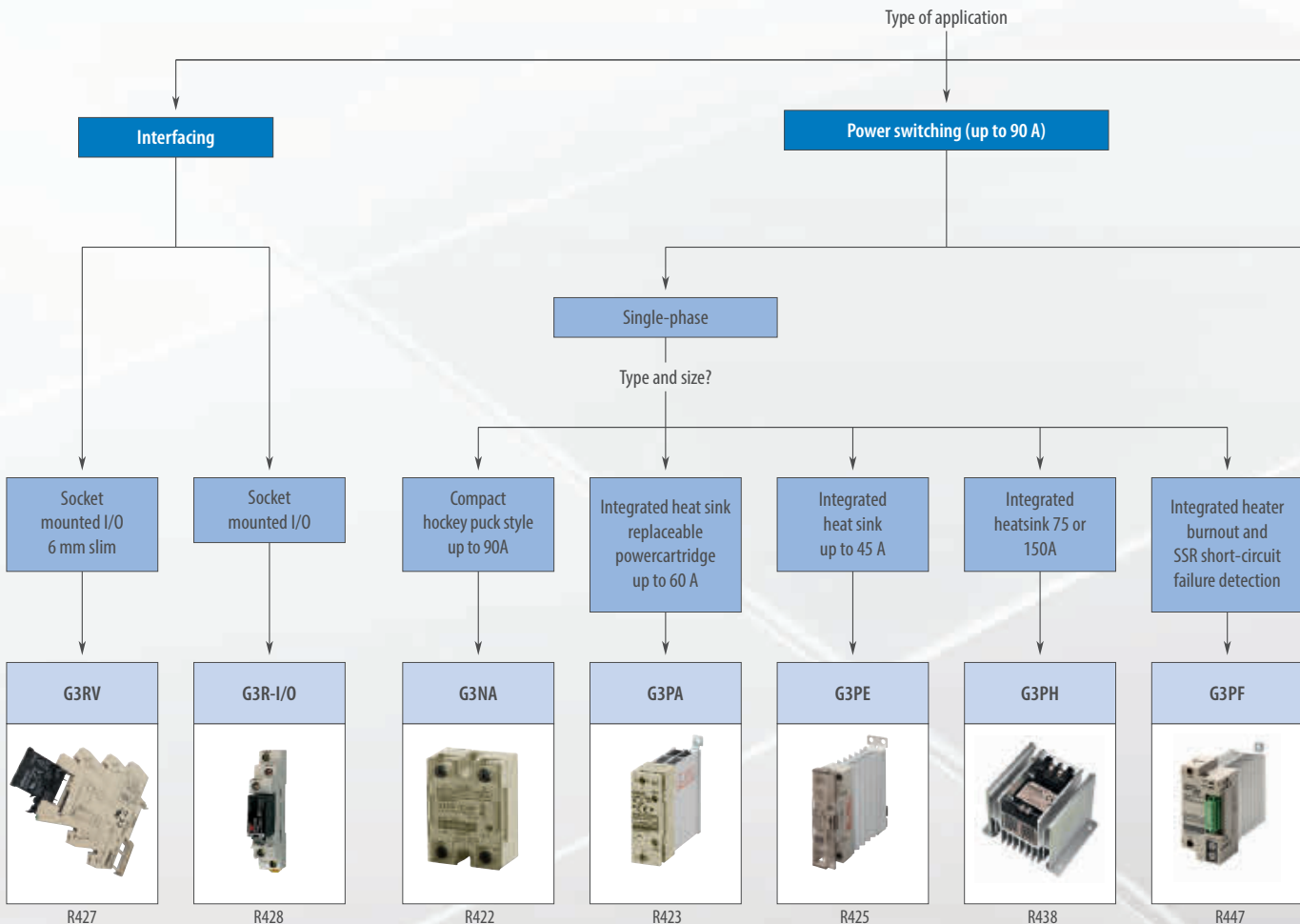
# Solid state relays

## COMPACT SOLID STATE RELAYS

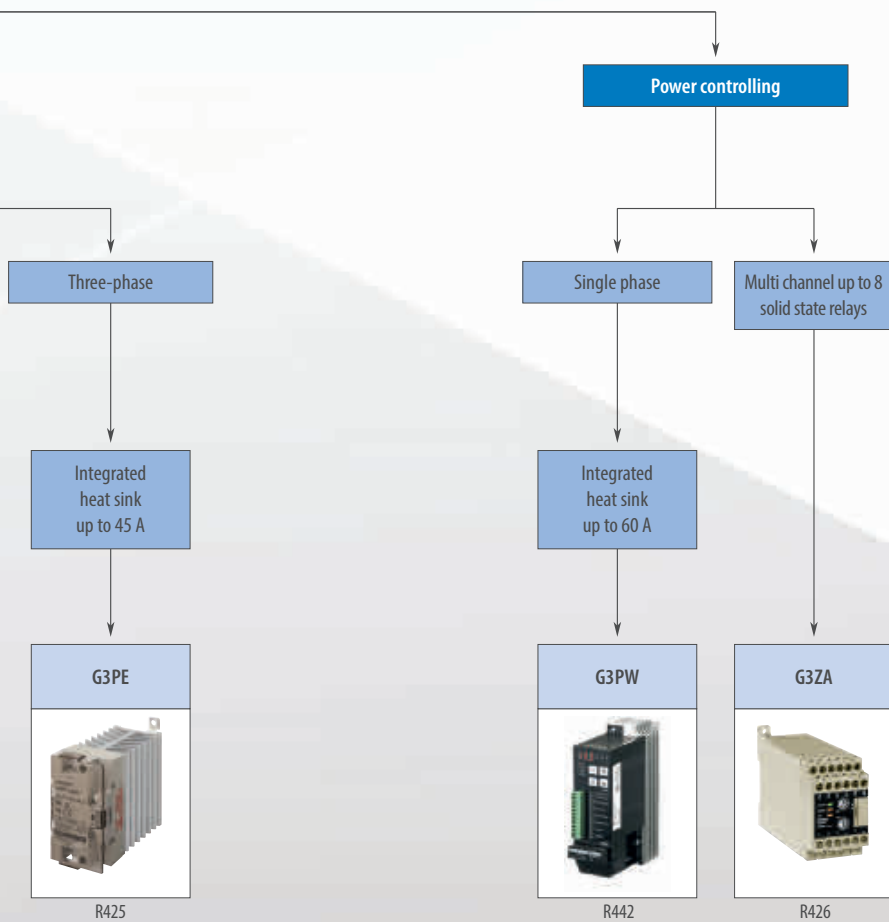
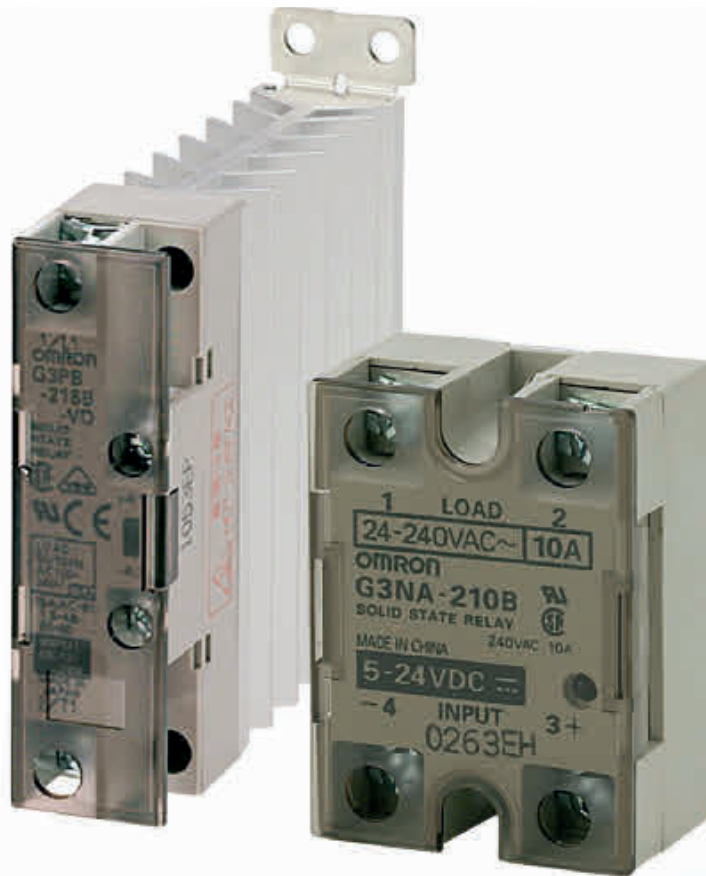
### G3\_ series – Reliable interfacing and power switching

With a wide variety of output currents and voltages, our control-panel mounted types of power switching SSRs are available with (G3PE & G3PH) and without (G3NA) built-in heat-sink. The compact SSRs for I/O Interfacing G3RV & G3R offer high-speed models (G3R).





- Industrial 6 mm 'slim' SSR which is G2RV compatible (G3RV)
- G2RS compatible high-speed interface solutions (G3R-I/O)
- G3NA with 5-90 A output current, G3PB up to 45 A
- Output voltages up to 480 VAC / 200 VDC available on G3NA
- Effectively absorbing of external surge thanks to the built-in varistor









# Selection table

Category		Control panel mounting type			
					
Model		G3RV	G3R-I/O	G3NA	G3PA
Selection criteria	Type of load	Output module (interface)	Input Module (interface)	Output Module (interface)	Normal resistive heaters Motor control
	1-phase control	-	-	-	■
	2-phase control	-	-	-	-
	3-phase control	-	-	-	-
	Function	Signal switching	Signal switching	Signal switching	Heater control, motor control
	Max. current rating	2 A (AC); 3 A (DC)	100 mA	2 A	90 A
Load voltage/ current [VAC]	24 to 240	-	-	-	■
	100 to 240	■	-	■	-
	200 to 480	-	-	-	■
Load voltage/ current [VDC]	5 to 200	3 to 26.4	4 to 32	■	-
	5 to 24 VDC	-	■	■	■
Input voltages [VDC or VAC]	12 to 24 VDC	12 VDC ±10%; 24 VDC ±10%	■	-	■
	24 VAC	■ 24 VAC/DC ±10%	-	-	■
	100 to 120 VAC	■ 110 VAC ±10%	■	-	■
	200 to 240 VAC	■ 230 VAC ±10%	■	-	■
	Analog input	-	-	-	-
	Features	Built-in heat sink	-	-	-
Zero-cross		□	-	□	■
Built-in varistor		-	-	-	■
LED operation indicator		■	■	■	■
Protective cover		NA	NA	NA	■
3-phase loads via 3 single-phase SSRs		NA	NA	NA	■
Replaceable power cartridge		-	-	-	■
Alarm output		NA	NA	NA	-
Built-in failure detection		NA	NA	NA	-
SSR open circuits detection		NA	NA	NA	-
SSR short circuits detection	NA	NA	NA	-	
Mounting	DIN-rail	■	-	-	■
	Screw	-	-	-	■
	Mounting socket	■	■	■	-
Page/Quick Link	R427	R428	R422	R423	

Control panel mounting type				Power regulator	
					
G3PE	G3PE	G3PH	G3PF	G3PW	G3ZA
Normal resistive heaters	Normal resistive heaters	Normal resistive & lamp heaters	Normal resistors	Alloy heater Pure metal heater, nonmetal heater (Constant-current models recommended.)	Depends on the SSR used Distributes loop/control output levels (mV%) to SSRs
■	-	■	■	■	Depends on the SSR used
-	■	-	-	-	Depends on the SSR used
-	■	-	-	-	Depends on the SSR used
Heater control	Heater control	(Lamp) heater control	Heater control and diagnostics	Single-phase power control	Intelligent power control
45 A	45 A	150 A	35 A	60 A	Depends on the SSR used
-	-	-	-	-	-
■	■	■	■	■	■
■	■	■ (180 to 480)	■	-	■ 400 to 480
-	-	-	-	-	-
-	-	■	-	-	-
■	■	-	■	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	■ (100 to 240 VAC)	-	-	-
-	-	■ (100 to 240 VAC)	-	-	-
-	-	-	-	4 to 20 mA DC, 1 to 5 VDC	-
■	□	■	■	■	-
□	■	□	■	□	-
-	-	-	-	-	-
■	■	■	■	■	■
■	■	■	■	■	-
■	-	-	-	-	-
-	-	■	-	-	-
-	-	-	■	■	■
-	-	-	■	■	■
-	-	-	-	■	■
-	-	-	■	■	■
■	■	-	■	-	■
■	■	■	■	■	■
-	-	-	-	-	-
R425		R438	R447	R442	R426

■ Standard    □ Available    - No/not available    NA Not applicable

# Low voltage switchgear

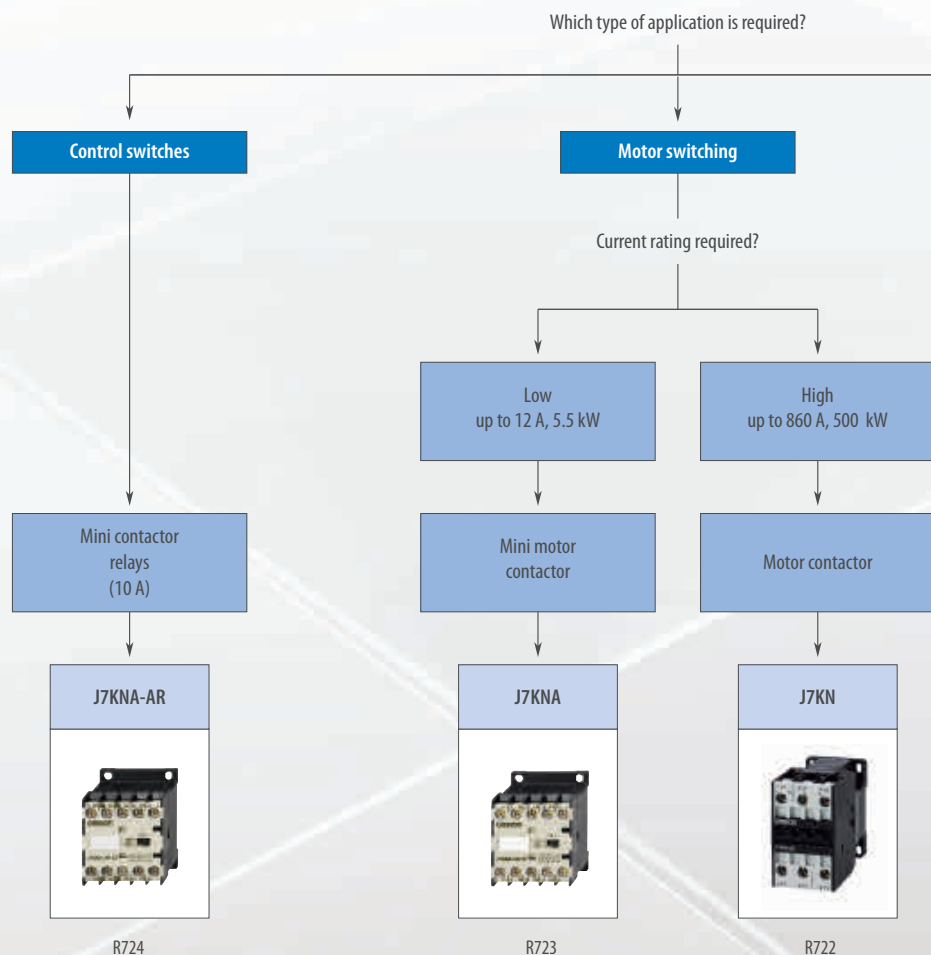
## J7KN MOTOR CONTACTOR

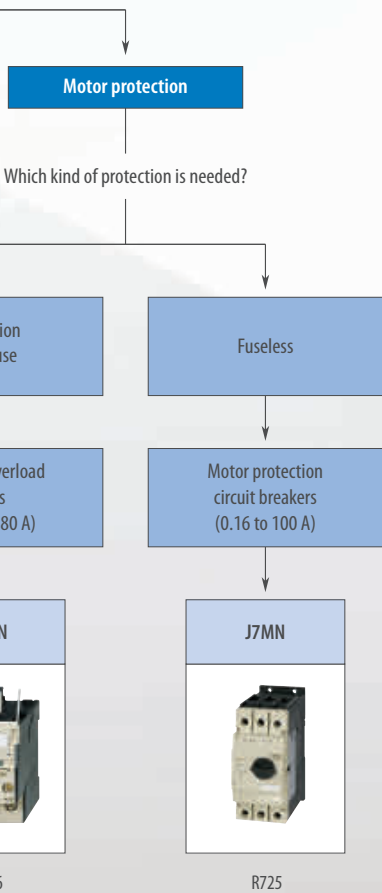
### J7KN – Motor contactors

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)









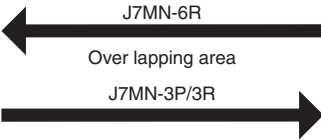
# Selection table









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
Page/Quick Link	R725	




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	R724	R723	R722		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	R726	R726

\*1 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	
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	
R722			R722			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
R726	R726	R726

\*1 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	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	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

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

R726

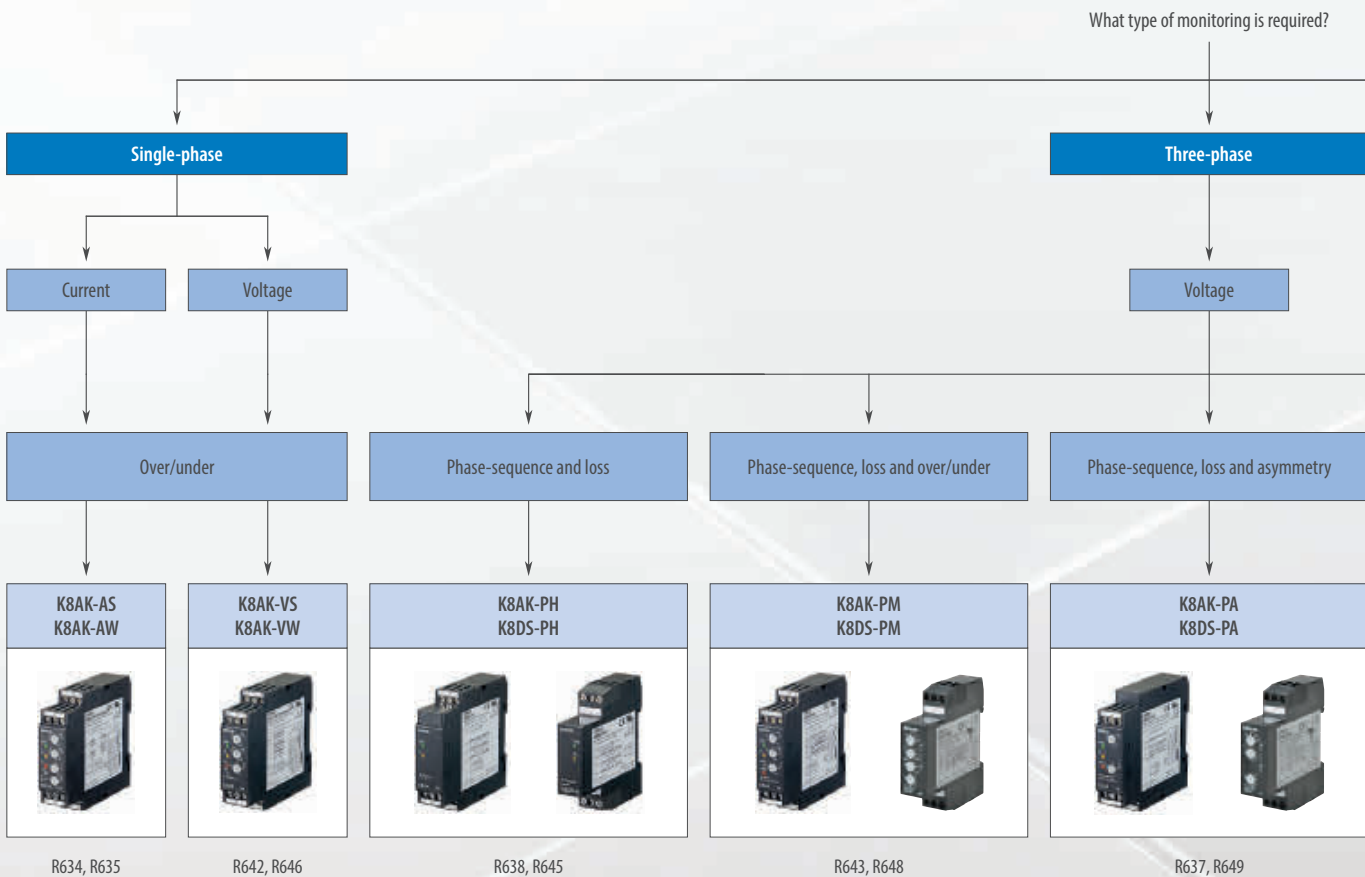
# Monitoring products

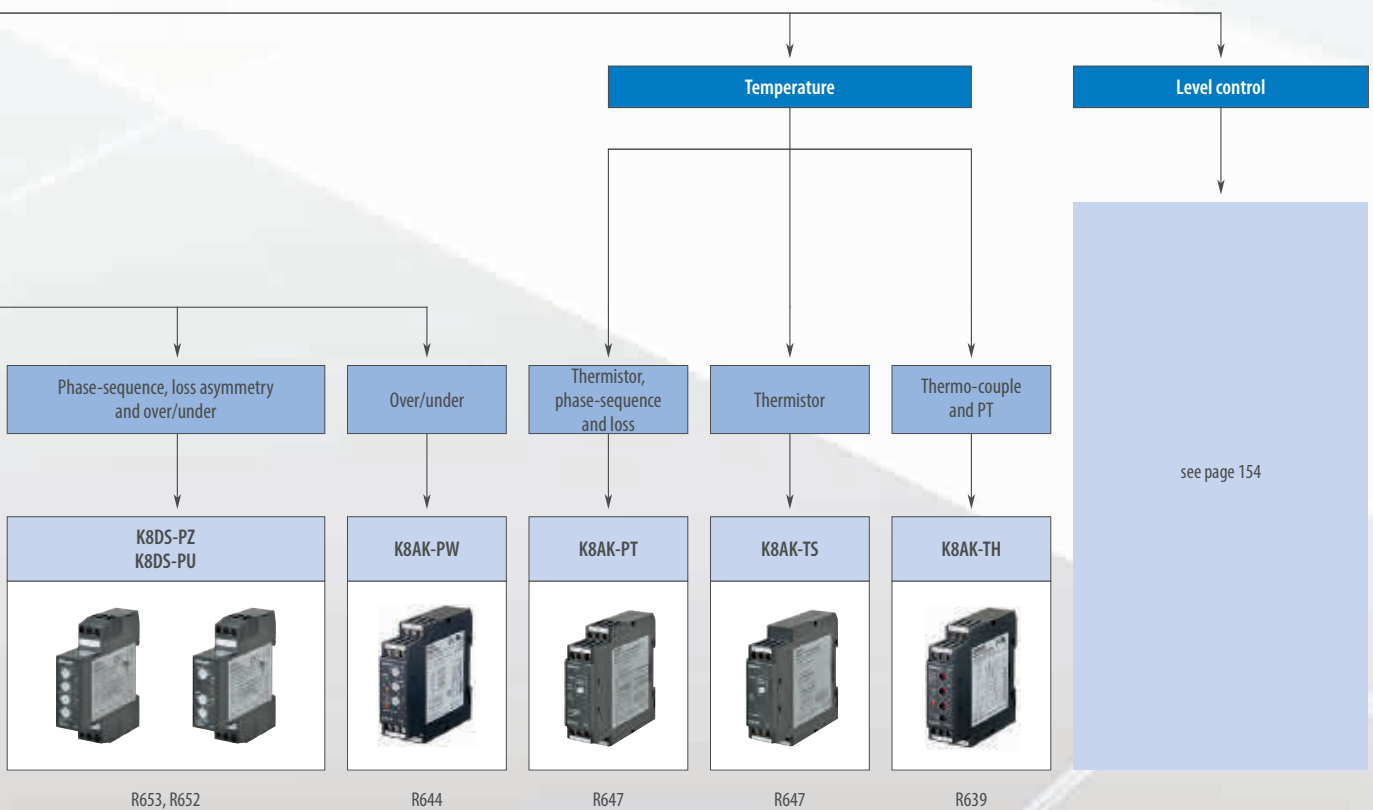
## THE COMPLETE MONITORING RANGE

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

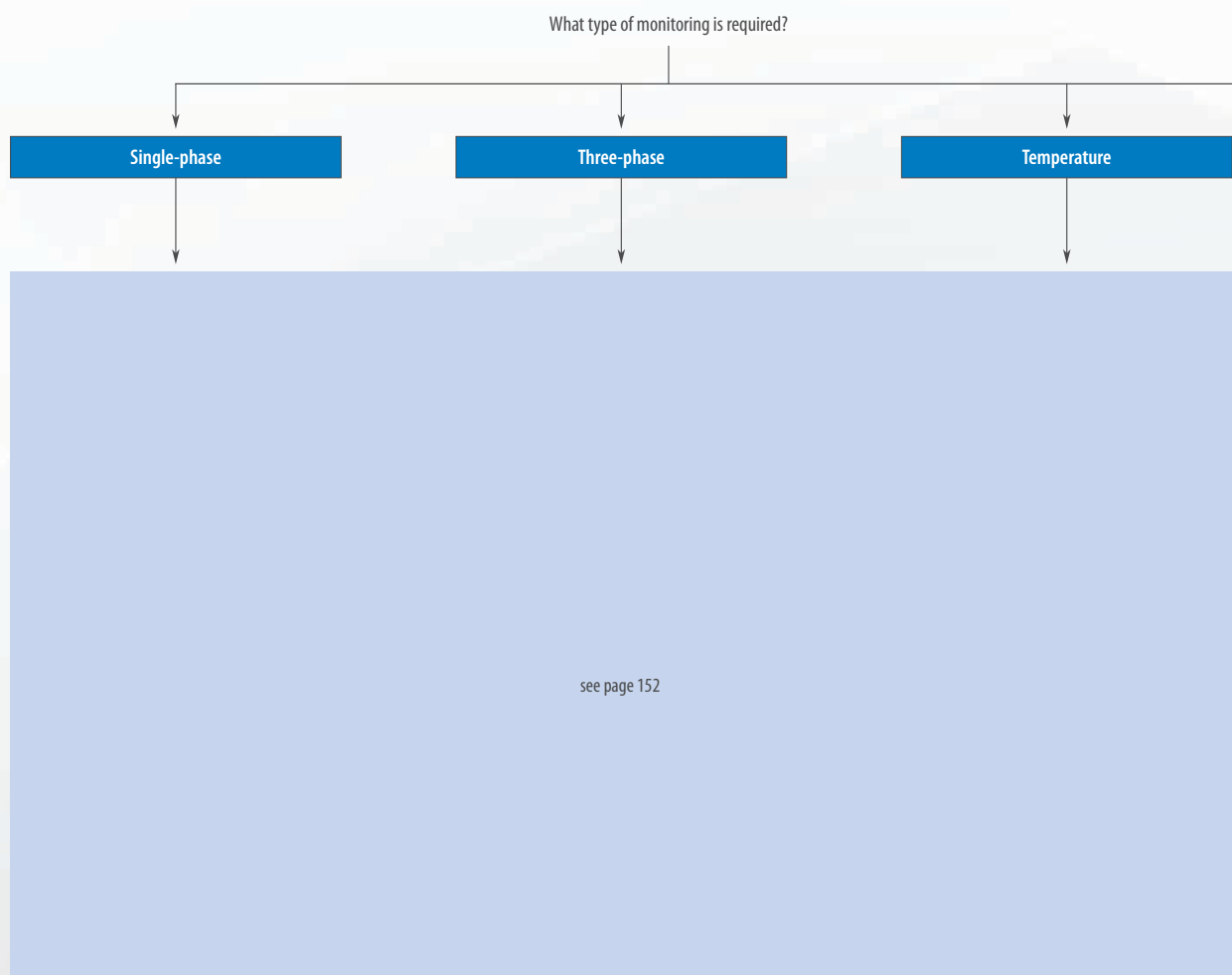
The K8 series offers you a flexible and complete one-stop shopping solution!  
This monitoring range can be split into models for single-phase current and single-phase voltage, three-phase voltage, conductive level and a temperature alarm unit.

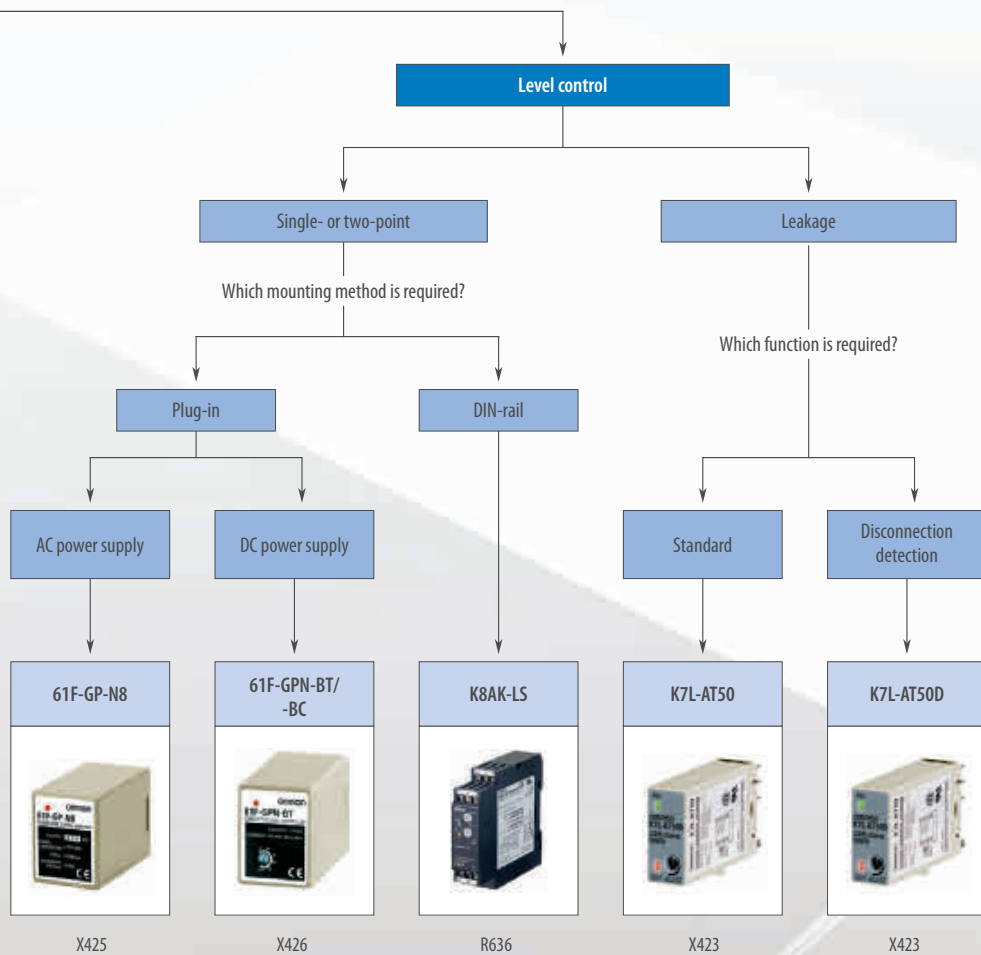
- 1-phase: full-span of range setting, all models with timer function
- 3-phase: wide range of global voltage settings
- Temperature monitoring relay: wide temperature range with precision increased
- Easy-to-set parameters





# Monitoring products





X425





X426









R636

X423

X423

# Selection table






Category		1-phase current		1-phase voltage		3-phase voltage phase-sequence/phase-loss		3-phase voltage phase-sequence/phase-loss over/under	
									
Model		K8AK-AS	K8AK-AW	K8AK-VS	K8AK-VW	K8AK-PH	K8DS-PH	K8AK-PM	K8DS-PM
Selection criteria	Specialty	Ideal for current monitoring for industrial heaters and motors.		Ideal for voltage monitoring for industrial facilities and equipment.		Ideal for phase-sequence and phase-loss monitoring for industrial facilities and equipment.		Ideal for monitoring 3-phase power supplies for industrial facilities and equipment.	
	Sensing range (configurable)	20 mA to 8 A, 100 or 200 A with current transformer		1 to 600 V		Same as supply voltage			
Supply voltage AC	24 VAC	■	■	■	■	-	-	-	-
	100 VAC	-	-	-	-	-	-	-	-
	110 VAC	-	-	-	-	-	-	-	-
	115 VAC	-	-	-	-	-	-	-	-
	120 VAC	-	-	-	-	-	-	-	-
	200 VAC	-	-	-	-	-	-	-	-
	220 VAC	-	-	-	-	-	-	-	-
	230 VAC	-	-	-	-	-	-	-	-
	240 VAC	-	-	-	-	-	-	-	-
	100 to 240 VAC	■	■	■	■	-	-	-	-
	200 to 480 VAC	-	-	-	-	■	■	-	-
	200 to 240 VAC	-	-	-	-	-	-	■ (-PM1, 3-wire)	■
	115 to 138 VAC	-	-	-	-	-	-	■ (-PM1, 4-wire)	-
380 to 480 VAC	-	-	-	-	-	-	■ (-PM2, 3-wire)	■	
220 to 277 VAC	-	-	-	-	-	-	■ (-PM2, 4-wire)	-	
Supply voltage DC	24 VDC	■	■	■	■	-	-	-	-
	12 to 24 VDC	-	-	-	-	-	-	-	-
Control output	Transistor NPN	-	-	-	-	-	-	-	-
	Transistor PNP	-	-	-	-	-	-	-	-
	Relay	■ (1 SPDT)	■ (2 SPDT)	■ (1 SPDT)	■ (2 SPDT)	■ (1 DPDT)	■ (1 SPDT)	■ (2 SPDT)	■ (1 SPDT)
Features	LED operation indicator	■	■	■	■	■	■	■	■
	Adjustable sensitivity	-	-	-	-	-	-	-	-
	Electrode types	-	-	-	-	-	-	-	-
Page/Quick Link		R634	R635	R642	R646	R638	R645	R643	R648

3-phase voltage phase-sequence, loss and asymmetry		3-phase voltage phase-sequence, loss, asymmetry and over/under		3-phase voltage over/under	Temperature thermistor, phase-sequence and loss	Temperature thermistor	Temperature thermo-couple and PT
							
<b>K8AK-PA</b>	<b>K8DS-PA</b>	<b>K8DS-PZ</b>	<b>K8DS-PU</b>	<b>K8AK-PW</b>	<b>K8AK-PT</b>	<b>K8AK-TS</b>	<b>K8AK-TH</b>
Ideal for 3-phase voltage asymmetry monitoring for industrial facilities and equipment.		Ideal for monitoring 3-phase power supplies for industrial facilities and equipment		Ideal for monitoring 3-phase power supplies for industrial facilities and equipment.	Monitor temperature rise through internal motor		Compact and slim relay ideal for temperature alarms and monitoring
Same as supply voltage					100 to 240 VAC 24 VAC/DC		100 to 240 VAC 24 VAC/DC
-	-	-	-	-	■	■	■
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	■	■	■
-	-	-	-	-	-	-	-
■ (-PA1, 3-wire)	■	■	■	■ (-PW1, 3-wire)	-	-	-
■ (-PA1, 4-wire)	-	-	-	■ (-PW1, 4-wire)	-	-	-
■ (-PA2, 3-wire)	■	■	■	■ (-PW2, 3-wire)	-	-	-
■ (-PA2, 4-wire)	-	-	-	■ (-PW2, 4-wire)	-	-	-
-	-	-	-	-	■	■	■
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
■ (1 SPDT)	■ (1 SPDT)	■ (1 SPDT)	■ (1 SPDT)	■ (2 SPDT)	■ (1 SPDT)	■ (1 SPDT)	■ (1 SPDT)
■	■	■	■	■	■	■	■
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
R637	R649	R653	R652	R644	R647	R647	R639

■ Standard      □ Available      - No/not available





Category		Conductive level controller				Liquid leakage sensor amplifier	
							
Model		61F-GP-N8	61F-GPN-BT	61F-GPN-BC	K8AK-LS	K7L-AT50	K7L-AT50D
Selection criteria	Specialty	Single or two-point	AC sine wave between electrodes for stable detection with no electrolysis	AC sine wave between electrodes for stable detection with no electrolysis	Ideal for level control for industrial facilities and equipment	Sensor amplifier, AC sine wave between electrodes for stable detection with no electrolysis	Sensor amplifier with disconnection detection function
	Sensing range (configurable)	4 to 50 kΩ	0 to 100 kΩ	1 to 100 kΩ	10 to 100 kΩ	0 to 50 MΩ	1 to 50 MΩ
Supply voltage AC	24 VAC	<input type="checkbox"/>	-	-	<input type="checkbox"/>	-	-
	100 VAC	<input type="checkbox"/>	-	-	-	-	-
	110 VAC	<input type="checkbox"/>	-	-	-	-	-
	115 VAC	-	-	-	-	-	-
	120 VAC	<input type="checkbox"/>	-	-	-	-	-
	200 VAC	<input type="checkbox"/>	-	-	-	-	-
	220 VAC	<input type="checkbox"/>	-	-	-	-	-
	230 VAC	<input type="checkbox"/>	-	-	-	-	-
	240 VAC	<input type="checkbox"/>	-	-	-	-	-
	100 to 240 VAC	-	-	-	<input checked="" type="checkbox"/>	-	-
	200 to 480 VAC	-	-	-	-	-	-
	200 to 240 VAC	-	-	-	-	-	-
115 to 138 VAC	-	-	-	-	-	-	
380 to 480 VAC	-	-	-	-	-	-	
220 to 277 VAC	-	-	-	-	-	-	
Supply voltage DC	24 VDC	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-	-
	12 to 24 VDC	-	-	-	-	<input type="checkbox"/>	<input type="checkbox"/>
Control output	Transistor NPN	-	-	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Transistor PNP	-	-	-	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Relay	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (1 SPDT)	-	-
Features	LED operation indicator	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Adjustable sensitivity	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Electrode types	Electrode holder: PS-S, PS-31, BF-1 and BS-1			-	Liquid leakage sensor band F03-16PE	
Page/Quick Link	X425	X426		R636	X423		

■ Standard      □ Available      - No/not available

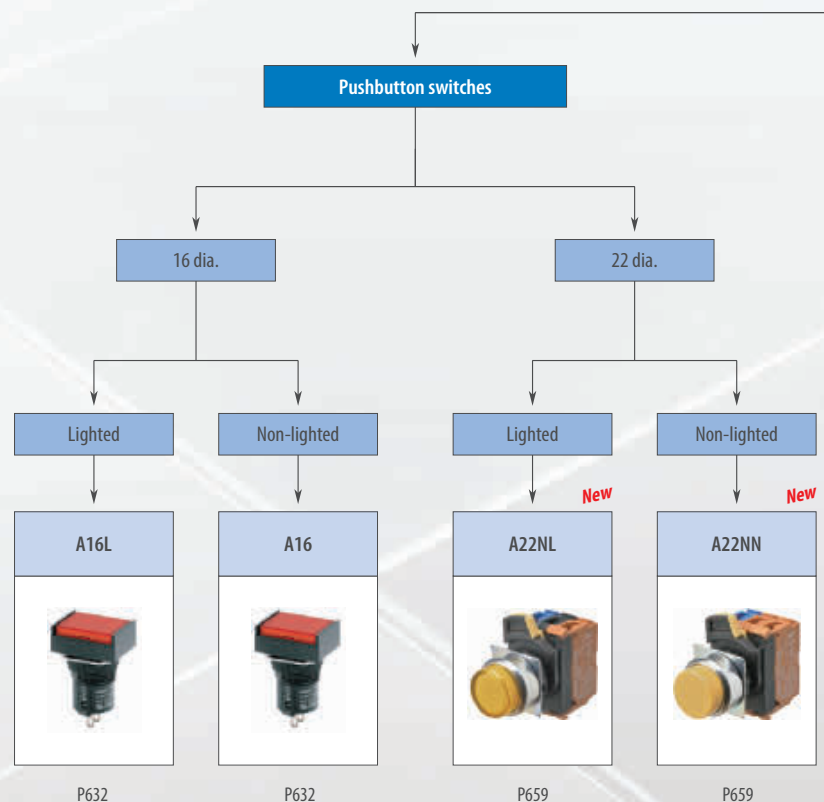
# Pushbutton switches

## FULL RANGE OF 16 AND 22 MM ASSEMBLED AND SUB-ASSEMBLED PUSHBUTTON SWITCHES AND INDICATORS

### A22N pushbuttons with round plastic, brushed metal or metal bezels

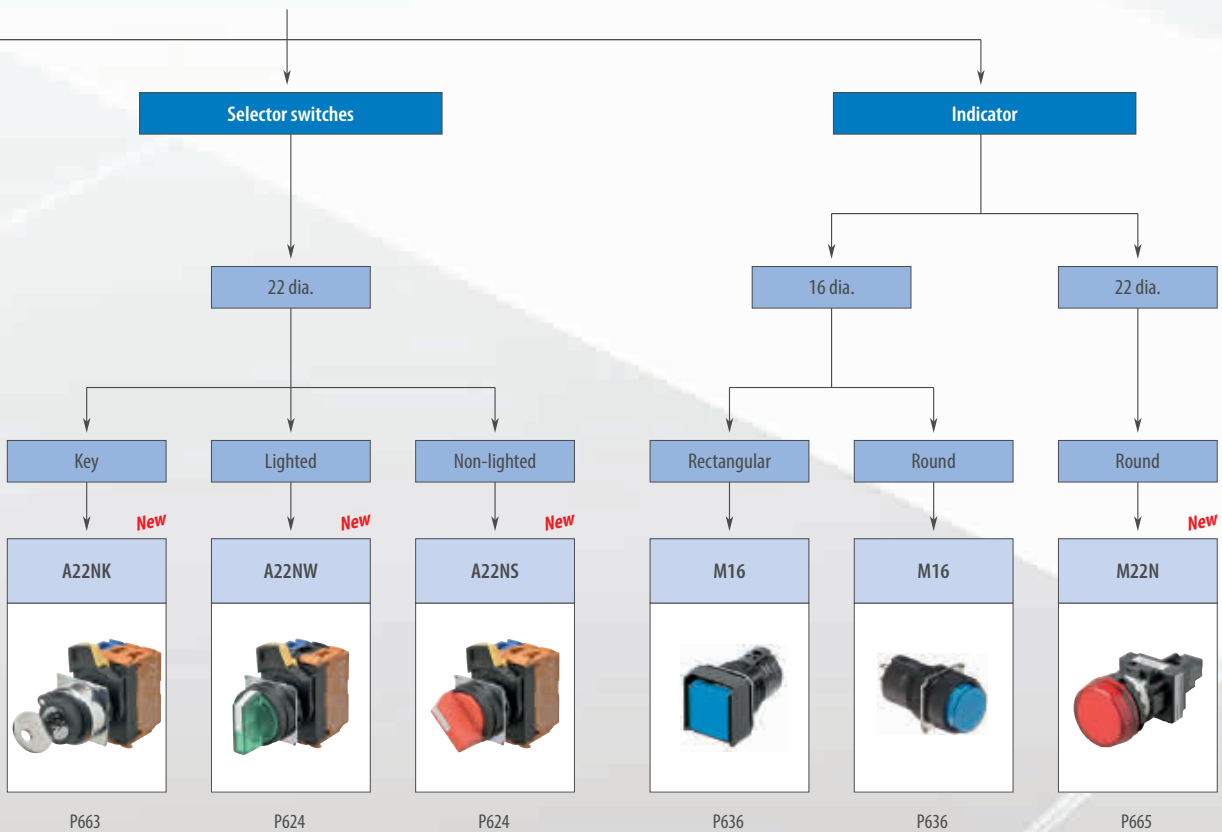
Complete line of 22 mm pushbuttons, selectors, keyed selectors and indicator lights. These reliable switches are offered in a wide range of shapes and colors

- Aesthetic design
- Reduced mounting depth
- Quick, easy and tool-free assembly













Which application is required?





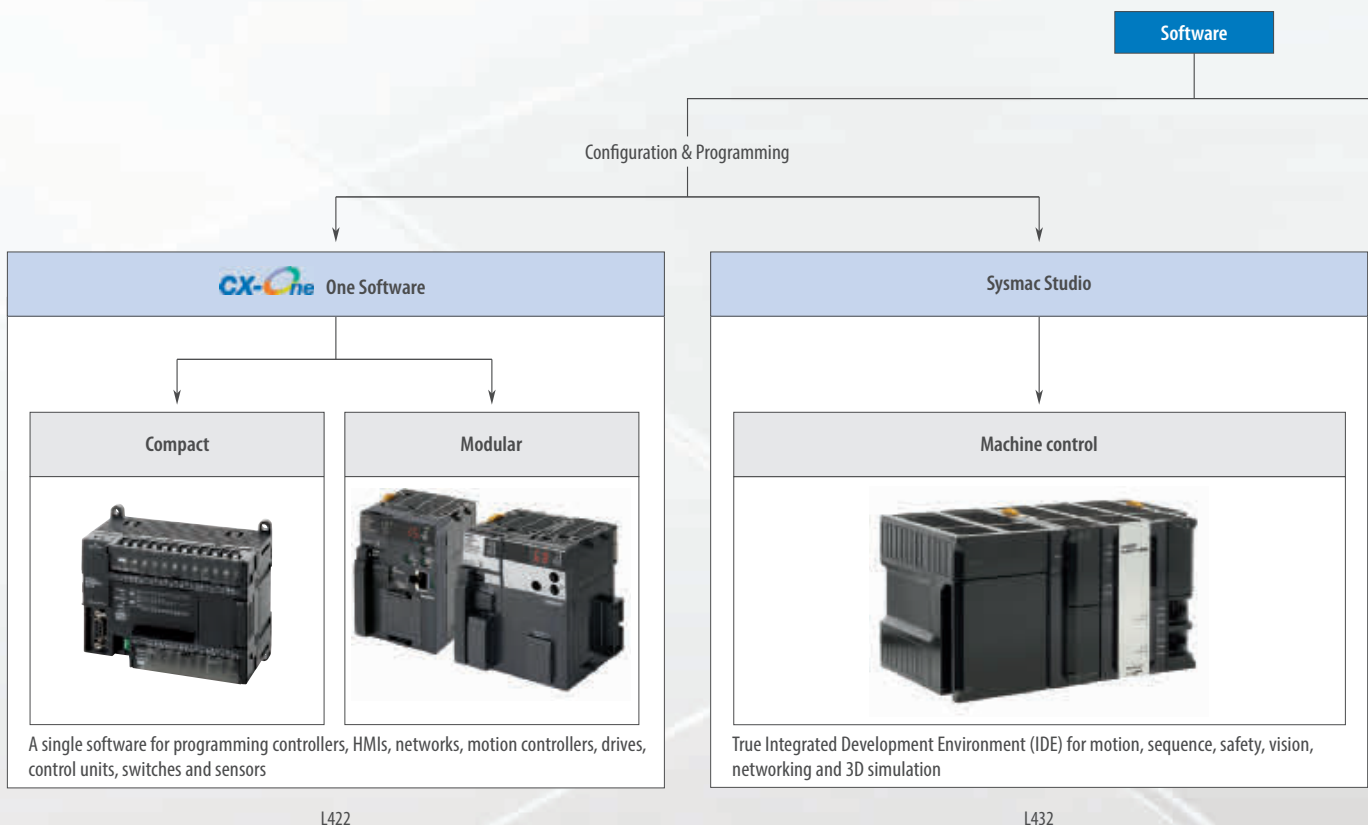
Category		Pushbutton switch		Indicator		
						
Model		A16	A22N	M16	M22N	
Selection criteria	Mounting	Nut-mounting				
	Size	16 mm	22 mm	16 mm	22 mm	
	Shape					
Pushbutton color	Incandescent lamp-lighted	Red	■	-	■	-
		Yellow	■	-	■	-
		Green	■	-	■	-
		White	■	-	■	-
		Blue	■	-	■	-
	LED-lighted	Red	■	■	■	■
		Yellow	■	■	■	■
		Green	■	■	■	■
		White	■	■	■	■
		Blue	■	■	■	■
	Non-lighted	Red	■	■	-	-
		Yellow	■	■	-	-
		Green	■	■	-	-
		White	■	■	-	-
		Blue	■	■	-	-
Features	Momentary operation	■	■	-	-	
	Self-holding	■	■	-	-	
	Number of contacts	2	6	-	-	
	IP rating	IP40, IP65	IP66	IP40, IP65	IP66	
	Legend plate	■	■	■	■	
Switch ratings [A]	125 VAC	5	10	-	-	
	250 VAC	3	6	-	-	
	30 VDC	3	10	-	-	
	Rated resistive load	5 A at 125 VAC, 3 A at 250 VAC, 3 A at 30 VDC	10 A at 120 VAC 6 A at 240 VAC	-	-	
Terminals	Solder	■	-	■	-	
	PCB	-	-	■	-	
	Screw-less Clamp	-	-	■	-	
Operating voltage	5 VDC	■	■	■	■	
	12 VDC	■	■	■	■	
	24 VDC	■	■	■	■	
	120/240 VAC	-	■	-	■	
Form	SPDT	■	-	-	-	
	DPDT	■	-	-	-	
	SPST-NO	-	■	-	-	
	SPST-NC	-	■	-	-	
	SPST-NO + SPST-NC	-	■	-	-	
	DPST-NO	-	■	-	-	
DPST-NC	-	■	-	-		
Page/Quick Link		P632	P659	P636	P665	

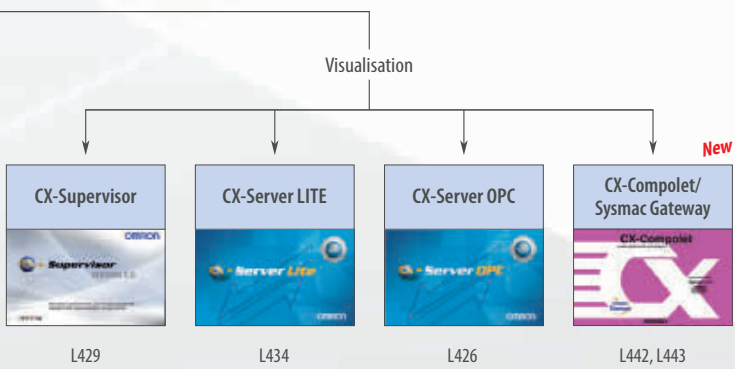
■ Standard    □ Available    - No/not available

## ONE SOFTWARE-ONE CONNECTION-ONE MINUTE

### One software for all your automation needs

“One Software” is a key component of the overall architecture of Omron software. Whether for our Compact & Modular range or our new Sysmac platform, integration of software technologies brings value direct to the customer. These softwares integrate configuration, programming and monitoring in packages designed for those platforms. Integrated software gives you the power and efficiency to develop and create like never before.









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# Targeted Technologies

## Creating maximum output with minimum input

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