Panasonic
INDUSTRY

Top seller
Automation products

Sensors · PLCs · Touch terminals
Servo drives · Laser markers
Factory automation components

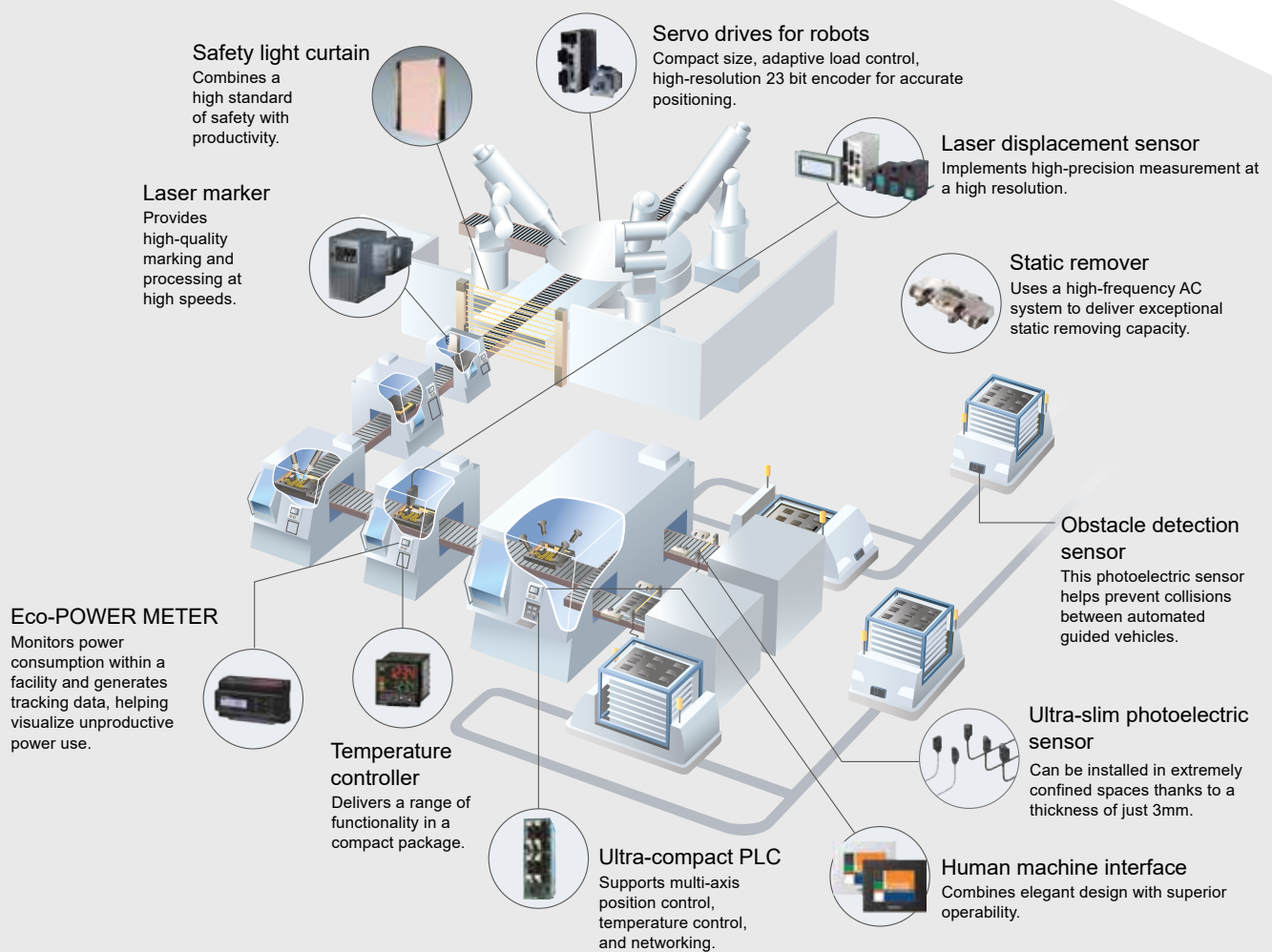## Safety light curtain
Combines a high standard of safety with productivity.

Servo drives for robots
Compact size, adaptive load control, high-resolution 23 bit encoder for accurate positioning.

Laser displacement sensor
Implements high-precision measurement at a high resolution.

Laser marker
Provides high-quality marking and processing at high speeds.

Static remover
Uses a high-frequency AC system to deliver exceptional static removing capacity.

Eco-POWER METER
Monitors power consumption within a facility and generates tracking data, helping visualize unproductive power use.

Temperature controller
Delivers a range of functionality in a compact package.

Obstacle detection sensor
This photoelectric sensor helps prevent collisions between automated guided vehicles.

Ultra-slim photoelectric sensor
Can be installed in extremely confined spaces thanks to a thickness of just 3mm.

Ultra-compact PLC
Supports multi-axis position control, temperature control, and networking.

Human machine interface
Combines elegant design with superior operability.

Panasonic Industry automation products

The digital revolution offers the manufacturing industry a wide range of opportunities to further expand production automation. Networked manufacturing systems can not only increase the production volume, but also the flexibility of the production itself. This means that manufacturers can react quickly to new requirements and trends, which increases overall production efficiency.

As an industrial partner, we must therefore meet above all two needs: on the one hand standard products and on the other hand complex, tailor-made solutions supplemented by added value services.

Panasonic Industry offers not only a wide portfolio of industry products covering the entire range of automation tasks, but also tailor-made consulting and support services. Our core business consists of machine and equipment building, the medical and pharmaceutical industries, building automation, water and waste water treatment, environmental technology and energy management.

Traceability

To be networked throughout – this is one of the core demands of companies wishing to go beyond the paradigm of Industry 4.0. An important part of this is traceability - i.e. the complete traceability of components and products. Today, production is done mostly by lot sizes which have to be marked in a unique way to ensure high product safety, process reliability, and quality control. Due to environmental influences during production and use, markings on all types of products not only need to guarantee good readability to ensure traceability, but must also be resistant against scratches, temperature, light, and lubricants so that they are durable throughout the product's lifetime.

For marking their applications with a laser, the industry needs systems that are able to mark materials such as metals or plastics durably, quickly and accurately. Fiber lasers from Panasonic are a particularly good choice for this task.

Internet of Things

The Internet of Things (IoT) also requires remote access devices, similar to M2M (machine to machine) communication. However, the IoT is also about collecting and processing data locally from sensors and actuators and sending them later via a gateway to the headquarter or into the cloud.

Here again, Panasonic Industry has been offering a versatile and flexible product that provides various solutions for this type of application for almost 20 years in the form of the FP Web-Server. Panasonic Industry offers a wealth of new equipment and technologies (IO-Link, PROFINET, EtherCAT, Ether-Net/IP interfaces in our motors, sensors and programmable controllers) which are capable of implementing state-of-the-art solutions in the field of communication, such as the new Corvina Cloud with fast remote diagnostics, maintenance and more.

Communications technology

M2M solutions streamline work processes while boosting productivity. Automatic orders can communicate independently to a central computer that they need to be refitted and which specific items are needed. The streamlining achieved with M2M solutions and the resulting cost savings represent a tremendous market potential for retail business.

Effective maintenance thanks to remote diagnostics or the implementation of a resource management system can be reliably implemented by Panasonic Industry with a combination of smart sensors, touch panels, plus control and network technology.

Laboratory automation / measurement engineering

Laboratory automation places high demands on measurement technology: The extensive field of applications ranges from identifying blood tests to checking closure caps on collection tubes in in-vitro diagnostics.

Laboratory automation requires fast and precise acquisition of measured data. Panasonic Industry offers a variety of suitable solutions such as high-resolution measurement sensor, proximity switches and sensors for object detection and position detection. Thanks to high processing speeds and contactless object detection, productivity is boosted while work cycles are being shortened.
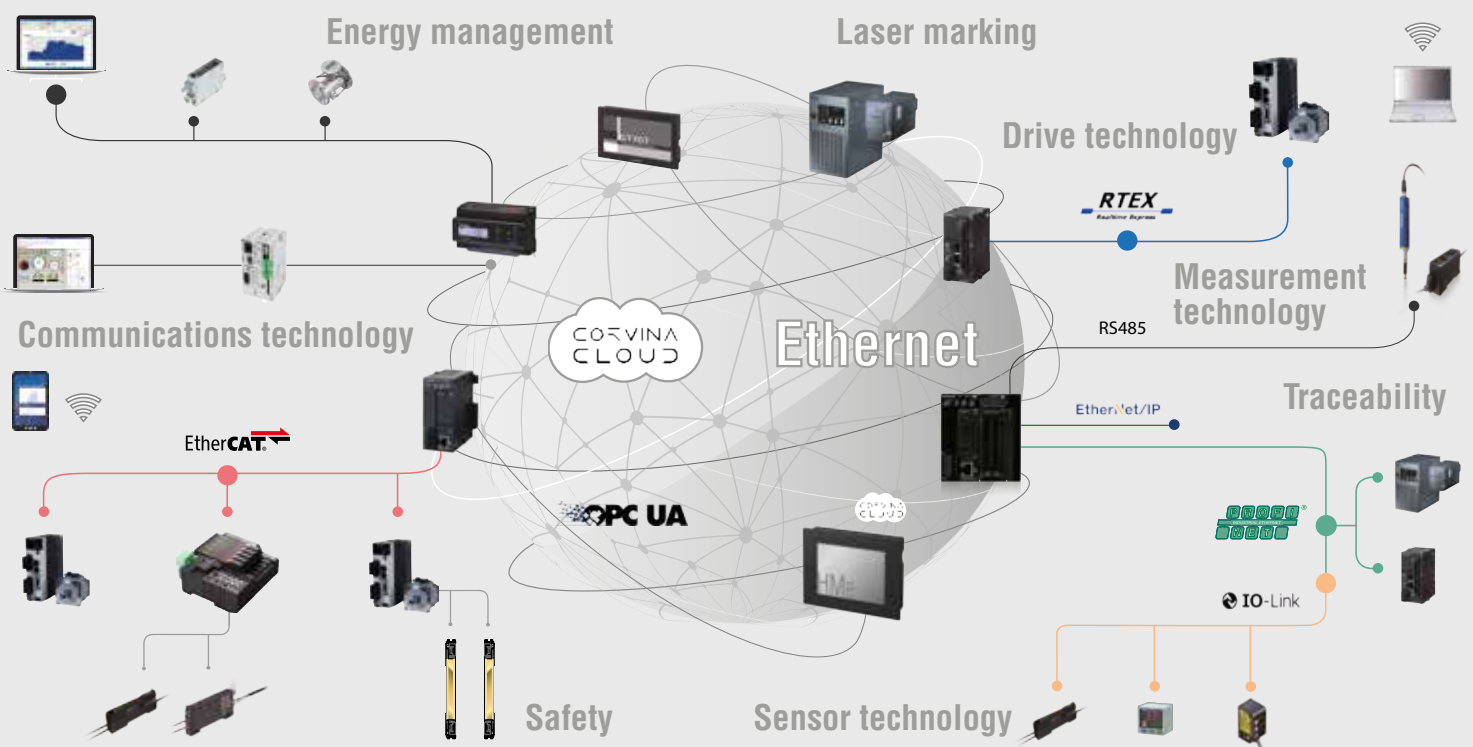
Safety solutions

Mechanical and hydraulic and forming presses, punching and riveting machines, forming systems, grommet presses and other automechanical assembly systems have exposed movable parts and therefore constitute a hazard zone for employees and personnel.

Panasonic Industry clearly addresses employee well-being with its range of safety light curtains, muting sensors, safety switches and safety control units. The individual parts are compatible with each other, which makes them easy to connect and configure.

Saving energy

Installing Eco-POWER METERS from Panasonic in lighting, air conditioning, and production equipment allows users to measure energy consumption and to check the current status of these systems. We offer a large portfolio of Eco-POWER METERS that process acquired data as multi-communication gateways and provide support for users in implementing measures to save energy.

Energy management

Laser marking

Drive technology

RTEX
Realtime Express

Measurement technology

Communications technology

CORVINA CLOUD

Ethernet

RS485

EtherCAT

EtherNet/IP

Traceability

OPC UA

CORVINA CLOUD

IO-Link

Safety

Sensor technology

GX-300

Cylindrical inductive sensor with IO-Link type

Functions and features

> High response frequency
> IoT ready with IO-Link models product no. GX-308 and higher
> LED function indicator for 360° degree
> Over 300 types available
> Connector, pigtail or cable type

Accessories

> For the threaded type: nuts: 2 pcs., toothed lock washer: 1 pc

Product no.	Type *	Detection distance	Output	Supply voltage	N.O./N.C.	Cable / connector **
GX-303S-A-P	non-threaded	0.8mm	PNP	10 - 30VDC	N.O.	Cable, 2m
GX-308M-B-P	threaded	1.5mm	PNP	10 - 30VDC	N.C.	Cable, 2m
GX-312M-A-N-Z	threaded	2mm	PNP	10 - 30VDC	N.O.	M12 connector
GX-318M-B-N-J	threaded	5mm	PNP	10 - 30VDC	N.C.	Pigtail with M12 connector
GX-330MK-A-N-C5	threaded	15mm	PNP	10 - 30VDC	N.O.	Cable, 5m
GX-312MLK-A-P	threaded	8mm	PNP / IO-Link	10 - 30VDC	N.O.	Cable, 2m

* Further models available
** The connector and pigtail types do not come with a connection cable. Please order separately (CN-24-S-C2)

GX-F/H

Rectangular inductive sensors

Functions and features

> Built-in amplifier
> Mutual interference prevention
> Oil and water resistant
> Easy-to-see indicator
> Industry No. 1 in stable sensing

Product no.	Type	Working distance	Output	Supply voltage	N.O./N.C.	Cable / connector
GX-F6A-P	Front sensing	1.6mm	PNP	12–24V DC	N.O.	Cable 1m
GX-F8A-P	Front sensing	2.5mm	PNP	12–24V DC	N.O.	Cable 1m
GX-H8A-P	Top sensing	2.5mm	PNP	12–24V DC	N.O.	Cable 1m
GX-F12A-P	Front sensing	4mm	PNP	12–24V DC	N.O.	Cable 1m
GX-F12B-P	Front sensing	4mm	PNP	12–24V DC	N.C.	Cable 1m
GX-H12A-P	Top sensing	4mm	PNP	12–24V DC	N.O.	Cable 1m
GX-H12B-P	Top sensing	4mm	PNP	12–24V DC	N.C.	Cable 1m
GX-F15A-P	Front sensing	5mm	PNP	12–24V DC	N.O.	Cable 1m
GX-HL15A-P	Top sensing	8mm	PNP	12–24V DC	N.O.	Cable 1m

CY-100

Cylindrical photoelectric sensors

Product no.	Type	Detection distance	Output	Supply voltage	Light-ON / Dark-ON	Cable / connector
CY-111A-P	Thru-beam, front sensing	15m	PNP	12–24V DC	Light-ON	Cable 2m
CY-111A-P-Z	Thru-beam, front sensing	15m	PNP	12–24V DC	Light-ON	M12
CY-111B-P	Thru-beam, front sensing	15m	PNP	12–24V DC	Dark-ON	Cable 2m
CY-111B-P-Z	Thru-beam, front sensing	15m	PNP	12–24V DC	Dark-ON	M12
CY-111VA-P	Thru-beam, side sensing	15m	PNP	12–24V DC	Light-ON	Cable 2m
CY-111VA-P-Z	Thru-beam, side sensing	15m	PNP	12–24V DC	Light-ON	M12
CY-111VB-P	Thru-beam, side sensing	15m	PNP	12–24V DC	Dark-ON	Cable 2m
CY-111VB-P-Z	Thru-beam, side sensing	15m	PNP	12–24V DC	Dark-ON	M12
CY-121A-P	Diffuse reflective, front sensing	10cm	PNP	12–24V DC	Light-ON	Cable 2m
CY-121A-P-Z	Diffuse reflective, front sensing	10cm	PNP	12–24V DC	Light-ON	M12
CY-121B-P	Diffuse reflective, front sensing	10cm	PNP	12–24V DC	Dark-ON	Cable 2m
CY-121B-P-Z	Diffuse reflective, front sensing	10cm	PNP	12–24V DC	Dark-ON	M12
CY-121VA-P	Diffuse reflective, side sensing	10cm	PNP	12–24V DC	Light-ON	Cable 2m
CY-121VA-P-Z	Diffuse reflective, side sensing	10cm	PNP	12–24V DC	Light-ON	M12
CY-122A-P	Diffuse reflective, front sensing	60cm	PNP	12–24V DC	Light-ON	Cable 2m
CY-122A-P-Z	Diffuse reflective, front sensing	60cm	PNP	12–24V DC	Light-ON	M12
CY-192A-P-Y	Retroreflective, front sensing	4m	PNP	12–24V DC	Light-ON	Cable 2m
CY-192B-P-Y	Retroreflective, front sensing	4m	PNP	12–24V DC	Dark-ON	Cable 2m

Functions and features

> Standard or side sensing types
> M18 thread size for convenient mounting
> Cable or M12 plug connection
> Available as thru-beam, retroreflective (with and without polarization filters) and diffuse reflective types
> Diffuse reflective types include sensitivity adjuster
> Thru-beam type includes test input

Accessories

> Various reflectors
> Variety of mounting brackets
> For M12 connector types: 2m or 5m connection cable

CX-400

Compact photoelectric sensors

Product no.	Type	Detection distance	Output	Supply voltage	Light-ON / Dark-ON	Cable / connector
CX411P	Thru-beam type	10m	PNP	12–24V DC	Switchable	Cable 2m
CX411PZ	Thru-beam type	10m	PNP	12–24V DC	Switchable	M8
CX412P	Thru-beam type	15m	PNP	12–24V DC	Switchable	Cable 2m
CX412PZ	Thru-beam type	15m	PNP	12–24V DC	Switchable	M8
CX421P	Diffuse reflective type	30cm	PNP	12–24V DC	Switchable	Cable 2m
CX421PZ	Diffuse reflective type	30cm	PNP	12–24V DC	Switchable	M8
CX422P	Diffuse reflective type	80cm	PNP	12–24V DC	Switchable	Cable 2m
CX422PZ	Diffuse reflective type	80cm	PNP	12–24V DC	Switchable	M8
CX423P	Diffuse reflective type	7-30cm	PNP	12–24V DC	Switchable	Cable 2m
CX423PZ	Diffuse reflective type	7-30cm	PNP	12–24V DC	Switchable	M8
CX481P	Retroreflective type for transparent object sensing	5-50cm	PNP	12–24V DC	Switchable	Cable 2m
CX481PZ	Retroreflective type for transparent object sensing	5-50cm	PNP	12–24V DC	Switchable	M8
CX482PZ	Retroreflective type for transparent object sensing	0.1-2m	PNP	12–24V DC	Switchable	M8
CX491P	Retroreflective type with polarization filter	3m	PNP	12–24V DC	Switchable	Cable 2m
CX491PZ	Retroreflective type with polarization filter	3m	PNP	12–24V DC	Switchable	M8
CX493P	Laser retroreflective	5m	PNP	12–24V DC	Switchable	Cable 2m
CX493PZ	Laser retroreflective	5m	PNP	12–24V DC	Switchable	M8

Functions and features

> Huge variety
> 5-turn adjuster
> Low hysteresis
> Light-ON /Dark-ON
> IP67 degree of protection
> Short-circuit protection
> Retroreflective type with or without polarizing filter

Accessories

> Mounting bracket
> M8 connector type
> Slit masks
> Polarizing filter for thru-beam type

CX-44x

Compact photoelectric sensors with foreground or background suppression

Functions and features

> Background / foreground suppression
> Visible spot
> 5-turn adjuster
> Low hysteresis
> Light-ON /Dark-ON
> Automatic cross talk suppression
> IP67 degree of protection
> Short-circuit protection

Product no.	Type	Detection distance	Output	Supply voltage	Light-ON / Dark-ON	Cable / connector
CX441P	Background / foreground suppression	2–50mm	PNP	12–24V DC	Switchable	Cable 2m
CX441PZ	Background / foreground suppression	2–50mm	PNP	12–24V DC	Switchable	M8
CX442P	Background / foreground suppression	20–300mm	PNP	12–24V DC	Switchable	Cable 2m
CX442PZ	Background / foreground suppression	20–300mm	PNP	12–24V DC	Switchable	M8
CX444P	Background / foreground suppression	15–100mm	PNP	12–24V DC	Switchable	Cable 2m
CX444PZ	Background / foreground suppression	15–100mm	PNP	12–24V DC	Switchable	M8
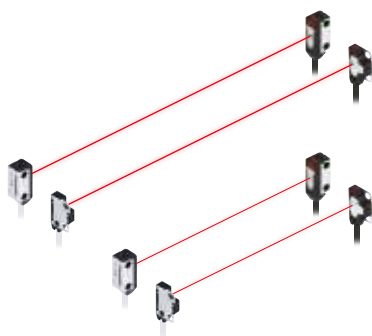
EX-Z

Miniature thru-beam sensors

Functions and features

> Smallest sensor 8 x 14 x 3mm (W x H x D)
> Sensing range of thru-beam type:
  50 to 500mm
> Minimum size of objects to be sensed from 0.3 to 1mm
> Front and side sensing type available

Accessories

> Mounting bracket

Product no.	Type	Detection distance	Output	Supply voltage	Light-ON / Dark-ON	Cable / connector
EX-Z11A-P	Thru-beam, side sensing	50mm	PNP	12–24V DC	Light-ON	Cable 2m
EX-Z11B-P	Thru-beam, side sensing	50mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX-Z11FA-P	Thru-beam, front sensing	50mm	PNP	12–24V DC	Light-ON	Cable 2m
EX-Z11FB-P	Thru-beam, front sensing	50mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX-Z12A-P	Thru-beam, side sensing	200mm	PNP	12–24V DC	Light-ON	Cable 2m
EX-Z12B-P	Thru-beam, side sensing	200mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX-Z12FA-P	Thru-beam, front sensing	200mm	PNP	12–24V DC	Light-ON	Cable 2m
EX-Z12FB-P	Thru-beam, front sensing	200mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX-Z13A-P	Thru-beam, side sensing	500mm	PNP	12–24V DC	Light-ON	Cable 2m
EX-Z13B-P	Thru-beam, side sensing	500mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX-Z13FA-P	Thru-beam, front sensing	500mm	PNP	12–24V DC	Light-ON	Cable 2m
EX-Z13FB-P	Thru-beam, front sensing	500mm	PNP	12–24V DC	Dark-ON	Cable 2m

EX-10

Ultra-slim photoelectric sensors

Functions and features

> Models with narrow beam can detect objects with a diameter of just 0.5mm
> Response time only 0.5ms
> Front and side sensing type available
> Thru-beam type or diffuse reflective type available
> 2 indicator LEDs
> IP67 degree of protection

Accessories

> Mounting bracket
> Slit masks

Product no.	Type	Detection distance	Output	Supply voltage	Light-ON / Dark-ON	Cable / connector
EX11BPN	Thru-beam, front sensing	150mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX11EAPN	Thru-beam, side sensing	150mm	PNP	12–24V DC	Light-ON	Cable 2m
EX11EBPN	Thru-beam, side sensing	150mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX11SBPN	Thru-beam, front sensing	150mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX13BPN	Thru-beam, front sensing	500mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX13EAPN	Thru-beam, side sensing	500mm	PNP	12–24V DC	Light-ON	Cable 2m
EX13EBPN	Thru-beam, side sensing	500mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX13SBPN	Thru-beam, front sensing	500mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX14APN	Diffuse reflective, convergent, front sensing	2 to 25mm	PNP	12–24V DC	Light-ON	Cable 2m
EX14BPN	Diffuse reflective, convergent, front sensing	2 to 25mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX19APN	Thru-beam, front sensing	1m	PNP	12–24V DC	Light-ON	Cable 2m
EX19BPN	Thru-beam, front sensing	1m	PNP	12–24V DC	Dark-ON	Cable 2m
EX19SAPN	Thru-beam, narrow beam, front sensing	1m	PNP	12–24V DC	Light-ON	Cable 2m

EX-20

Compact photoelectric sensors

Functions and features

> Miniaturized construction
> Response time only 0.5ms
> LED red emitting diode
> Adjustable sensitivity
> Thru-beam type
> Diffuse reflective type
> IP67 degree of protection
> 2 indicator LEDs

Accessories

> Slit masks
> Reflectors
> Mounting bracket

Product no.	Type	Detection distance	Output	Supply voltage	Light-ON / Dark-ON	Cable / connector
EX21BPN	Thru-beam, front sensing	1m	PNP	12–24V DC	Dark-ON	Cable 2m
EX22APN	Diffuse reflective, side sensing	160mm	PNP	12–24V DC	Light-ON	Cable 2m
EX22BPN	Diffuse reflective, side sensing	160mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX23PN	Thru-beam, side sensing	2m	PNP	12–24V DC	Light-ON	Cable 2m
EX24APN	Diffuse reflective, convergent, front sensing	2 to 25mm	PNP	12–24V DC	Light-ON	Cable 2m
EX26APN	Diffuse reflective, convergent, side sensing	6 to 14mm	PNP	12–24V DC	Light-ON	Cable 2m
EX28APN	Diffuse reflective, side sensing	45 to 115mm	PNP	12–24V DC	Light-ON	Cable 2m

EQ-30

Sensors with background suppression

Functions and features

> Detection range of 2m with background suppression
> Highly independent of object color
> Automatic crosstalk suppression
> Compact design
> Short-circuit protection
> Switchable output operation (detection on/off)
> M12 connector (-J) or cable type

Accessories

> Mounting bracket
> M12 connector type

Product no.	Type	Detection distance	Output	Supply voltage	Light-ON / Dark-ON	Cable / connector
EQ34PN	Background suppression	0.1–2.0m	PNP	12–24V DC	Switchable	Cable 2m
EQ34PNJ	Background suppression	0.1–2.0m	PNP	12–24V DC	Switchable	M12

EQ-500

Background and foreground suppression sensors

Functions and features

> Two types:
  » Maximum detection range of 1.0m and 2.5m
  » Detection range adjustable with a 2-turn knob
> Background / foreground suppression
> Unaffected by color or surface condition of the object
> Response time 2ms
> NPN/PNP transistor output
  » Also available: relay output types with 24-240V AC supply voltage
> Compact design 68 x 26 x 68mm (H x W x D)
> Timer function (EQ-5xT only)
> Short-circuit protection
> IP67 degree of protection

Accessories

> Foot angled mounting bracket

Product no.	Type	Detection distance	Output	Supply voltage	Light-ON / Dark-ON	Cable / connector
EQ-501		0.1-2.5m	Relays	24 to 240V AC, 12–240V DC	Switchable	Screw terminal
EQ-501T	Timer	0.1-2.5m	Relays	24 to 240V AC, 12–240V DC	Switchable	Screw terminal
EQ-502		0.1-1.0m	Relays	24 to 240V AC, 12–240V DC	Switchable	Screw terminal
EQ-502T	Timer	0.1-1.0m	Relays	24 to 240V AC, 12–240V DC	Switchable	Screw terminal
EQ-511		0.1-2.5m	PNP & NPN	12–24V DC	Switchable	Screw terminal
EQ-511T	Timer	0.1-2.5m	PNP & NPN	12–24V DC	Switchable	Screw terminal
EQ-512		0.1-1.0m	PNP & NPN	12–24V DC	Switchable	Screw terminal
EQ-512T	Timer	0.1-1.0m	PNP & NPN	12–24V DC	Switchable	Screw terminal

IO-Link

Easy integration into the field level

Functions and features

> Universal IO-Link interface
> Built-in self-diagnosis function
> Measurement sensor series HG-C with repeatability up to 10µm
> Pressure sensor with 0.05% resolution
> Fiber-optic amplifier with high transmission power
> Safety light curtain SF4D series: easy setup and maintenance

Accessories

> EtherCAT master
> PROFINET master
> EtherNet/IP master

Product no.	Type	Working range	Interface	Connector
FX-551L3-P-J	Fiber-optic amplifier		IO-Link	M12
DP-101ZL3-M-P-C	Pressure sensor	-1 to +1bar	IO-Link	M12
DP-102ZL3-M-P-C	Pressure sensor	-1 to 10bar	IO-Link	M12
HG-C1030L3-P-J	Measurement sensor	30mm ±5mm	IO-Link	M12
HG-C1050L3-P-J	Measurement sensor	50mm ±15mm	IO-Link	M12
HG-C1100L3-P-J	Measurement sensor	100mm ±35mm	IO-Link	M12
HG-C1200L3-P-J	Measurement sensor	200mm ±80mm	IO-Link	M12
HG-C1400L3-P-J	Measurement sensor	400mm ±200mm	IO-Link	M12
GX-330MLK-A-P-Z	Inductive sensor*	30mm	IO-Link	M12
GX-312M-A-P-Z	Inductive sensor*	2mm	IO-Link	M12
SFD-WL3	Communication unit for SF4D	–	IO-Link	M12

* Further models available

LX-100

Digital mark sensors

Functions and features

> Three different emitting LEDs (red, green, blue)
> High precision coaxial reflective optical system
> High resolution 12-bit A/D converter
> 4-digit digital display
> Teach-in for simple settings (external teaching also possible)
> Timer function (ON/OFF delay)
> Two inverse outputs (cable type)
> Compact dimensions
> M12 connector or cable type
> IP67 degree of protection

Accessories

> For connector types: 2m or 5m cable
> Mounting bracket

Product no.	Type	Detection distance	Output	Supply voltage	Light-ON / Dark-ON	Cable / connector
LX101P	Color mark sensor, coaxial reflective	10 ±3mm	PNP	12–24V DC	Set by teaching	Cable 2m
LX101PZ	Color mark sensor, coaxial reflective	10 ±3mm	PNP	12–24V DC	Set by teaching	M12

FX-100

Fiber-optic sensors

Functions and features

> 4-digit green, 4-digit red LC display
> Copy settings via wiring
> 3-level operation: basic settings to additional settings
> External input for external adjustment
> Direct installation possible without bracket or DIN rail
> Commercially available connector
> Key lock function
> Light-ON /dark-ON mode set by teaching
> Threshold values can automatically adjust to changes in incident light
> Intensity of emitted light can be reduced automatically to ensure stable sensing

Accessories

> Communication units for CC-Link/EtherCAT/RS485
> Quick connection cables in lengths of 1, 2 or 5m
> End plates
> Protection cover

Product no.	Type	Detection distance	Output	Supply voltage	Light-ON / Dark-ON	Cable / connector
FX101PCC2	Fiber amplifier	Depends on the fiber used*	PNP	12–24V DC	Set by teaching	Cable 2m
FX101PZ	Fiber amplifier	Depends on the fiber used*	PNP	12–24V DC	Set by teaching	M8 Connector
FX102PCC2	Fiber amplifier, long sensing range	Depends on the fiber used*	PNP	12–24V DC	Set by teaching	Cable 2m
FX102PZ	Fiber amplifier, long sensing range	Depends on the fiber used*	PNP	12–24V DC	Set by teaching	M8 Connector

* Please ask for relevant fiber cables!

FX-300

Fiber-optic sensors

Functions and features

> Long-range sensing made possible with built-in optical lens
> Optical communication function enables data to be copied and saved (up to 16 amplifiers)
> 35µs response time (FX-301HS)
> 4-digit, 7-segment red LED display and LED indicator
> Only two switches necessary for operation: the big jog switch and the MODE key
> Supply voltage via only one cable for up to 16 amplifiers
> Automatic interference prevention for up to 4 fiber heads
> Reduced intensity mode for transparent objects
> Copy-lock function

Accessories

> Communication units for CC-Link/EtherCAT/RS485
> Bank selection unit FX-CH2
> PLC remote maintenance system SC
> Main and sub cable: 1, 2 or 5m
> End plates

Product no.	Type	Detection distance	Output	Supply voltage	Light-ON / Dark-ON	Cable / connector
FX301P	Fiber amplifier	Depends on the fiber used*	PNP	12–24V DC	Set by teaching	Connector**
FX311P	Fiber amplifier, manual setting	Depends on the fiber used*	PNP	12–24V DC	Switchable	Connector**

* Please ask for relevant fiber cables!
** The connector type does not come with a connection cable. Please order it separately. (product no. CN73Cx (FX301) or CN74Cx (FX311)).

FX-500/550

Fiber-optic sensors

Functions and features

> 4-digit green, 4-digit red LC display
> Copy settings via optical interface
> Input for external settings, i.e. threshold value (not available for FX-501)
> Up to 8 settings can be saved and loaded (data bank)
> Light intensity and gain setting for transparent object detection
> Threshold tracking function
> Self-diagnosis output
> FX-505 equipped with analog output

Product no.	Type	Detection distance	Output	Supply voltage	Light-ON / Dark-ON	Cable / connector
FX-501P	Advanced	Depends on the fiber used*	PNP	12–24V DC	Setting by teaching	Connector**
FX-502P	Double output	Depends on the fiber used*	2 x PNP	12–24V DC	Setting by teaching	Connector**
FX-505PC2	Additional analog output	Depends on the fiber used*	2 x PNP + 4–20mA	12–24V DC	Setting by teaching	Cable 2m
FX-551P	Standard	Depends on the fiber used*	PNP	12–24V DC	Setting by teaching	Connector
FX-551PC2	Standard	Depends on the fiber used*	PNP	12–24V DC	Setting by teaching	Cable 2m
FX-551L3PJ	IO-Link	Depends on the fiber used*	IO-Link	12–24V DC	Setting by teaching	M12

* Please ask for relevant fiber cables!
** The connector type does not come with a connection cable.

Accessories

> Communication units for CC-Link/EtherCAT/RS485
> Quick connection cables in lengths of 1, 2 or 5m
> End plates
> Protection cover

Standard fibers

for FX-100/300/500/550

Functions and features

The optical fibers are compatible with all sensors of the FX-100, FX-300, FX-500, and FX-550 series. In addition to a large selection of standard optical fibers, particular use types are available for special tasks.

> Threaded and threadless fiber heads
> Versions with rectangular shape
> Heat-resistant models (-60 to +350°C)
> Types with wide beam (measurement field height up to 32mm)
> Versions with extremely small bending radius (to 1mm) and great flexibility (10 million bends possible)
> Chemical-resistant types
> Special shapes for level sampling
> Special types for sensing glass substrates and wafers
> Versions for lens attachment (coaxial attachment in some cases)
> Special lengths

Accessories

> Focusing lenses for diffuse reflective type (up to 0.1mm), lenses for thru-beam types (to extend the sensing range)

For further information on optical fibers, please refer to the Fiber Book.
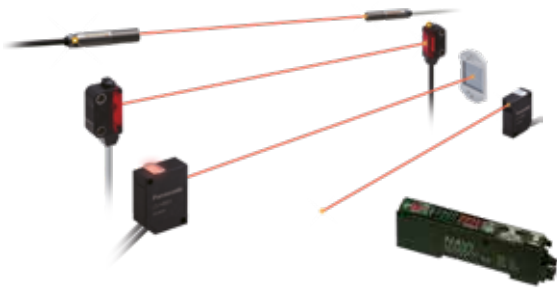
# LS-500

Digital laser sensors

Functions and features

> Different sensor heads available
> Small beam diameter of 6mm with a sensing range up to 2.5m
> Coaxial beam alignment (retroreflective type)
> Various settings integrated in the amplifier

Accessories

> Mounting bracket
> Reflector for retroreflective type

Product no.	Type	Detection distance	Output	Supply voltage	Light-ON / Dark-ON	Cable / connector
LS-501P	Amplifiers for LS-500 heads	–	2 x PNP, 4–20mA	12–24V DC	Set by teaching	Connector*
LS-501P-C2	Amplifiers for LS-500 heads	–	2 x PNP, 4–20mA	12–24V DC	Set by teaching	Cable 2m
LS-H101	Sensor head, thru-beam, cylindrical	1m	–	–	–	–
LS-H102	Sensor head, thru-beam, rectangular	1m	–	–	–	–
LS-H201	Sensor head, coaxial diffuse reflective type	750mm	–	–	–	–
LS-H901	Sensor head, coaxial retroreflective type	2.5m	–	–	–	–

* The connector type does not come with a connection cable. Please order it separately (product no. CN74Cx).
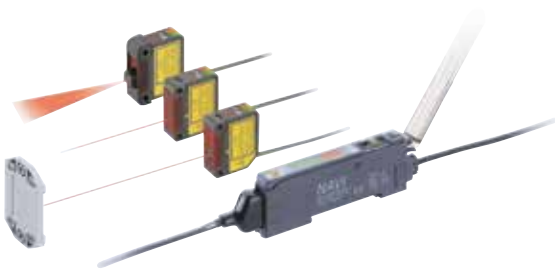
LS-400

Digital laser sensors

Functions and features

> Retroreflective type: Coaxial beam alignment
> Reflective types: Spot type and line type
> Red light laser diode laser class 1 or 2
> Adjustment of the beam spot size
> Ultra-compact dimensions

Accessories

> Mounting bracket
> Lens LS-MR1 for line reflection type

Product no.	Type	Detection distance	Output	Supply voltage	Light-ON / Dark-ON	Cable / connector
LS-401P	Controller for LS laser heads	–	2 x PNP	12–24V DC	Setting by teaching	Connector*
LS-401PC2	Controller for LS laser heads	–	2 x PNP	12–24V DC	Setting by teaching	Cable 2m
LS-H21	LS laser head, diffuse reflective spot type	1m	–	–	–	–
LS-H22	LS laser head, diffuse reflective line type	1m	–	–	–	–
LS-H91	LS laser head, coaxial retroreflective	30m	–	–	–	–

* The connector type does not come with a connection cable. Please order it separately (product no. CN74Cx)

EX-L200

Laser sensors

Functions and features

> Miniature design
> Response time only 0.5ms
> Visible red laser diode
> Sensitivity adjuster incorporated
> Available as thru-beam, retroreflective and spot reflective types
> Line spot type
> IP67 degree of protection
> 2 indicator LEDs

Accessories

> Sensor mounting brackets
> Reflector for retroreflective type

Product no.	Type	Detection distance	Output	Supply voltage	Light-ON / Dark-ON	Cable / connector
EX-L211-P	Thru beam, emission spot size 6 x 4mm	1m	PNP	12–24VDC	Switchable	Cable 2m
EX-L211-P-J	Thru beam, emission spot size 6 x 4mm	1m	PNP	12–24VDC	Switchable	Pigtailed M8
EX-L212-P	Thru beam, emission spot size 8 x 5.5mm	3m	PNP	12–24VDC	Switchable	Cable 2m
EX-L212-P-J	Thru beam, emission spot size 8 x 5.5mm	3m	PNP	12–24VDC	Switchable	Pigtailed M8
EX-L221-P	Spot reflective	45–300mm	PNP	12–24VDC	Switchable	Cable 2m
EX-L221-P-J	Spot reflective	45–300mm	PNP	12–24VDC	Switchable	Pigtailed M8
EX-L261-P	Convergent reflective spot	20–50mm	PNP	12–24VDC	Switchable	Cable 2m
EX-L261-P-J	Convergent reflective spot	20–50mm	PNP	12–24V DC	Switchable	Pigtailed M8
EX-L262-P	Convergent reflective line spot	20–70mm	PNP	12–24VDC	Switchable	Cable 2m
EX-L262-P-J	Convergent reflective line spot	20–70mm	PNP	12–24VDC	Switchable	Pigtailed M8
EX-L291-P	Retro reflective	4m	PNP	12–24VDC	Switchable	Cable 2m
EX-L291-P-J	Retro reflective	4m	PNP	12–24VDC	Switchable	Pigtailed M8

SG-P

Non-contact safety door switch

Functions and features

> High visibility even from outside
> Simplification of safety applications
> Serial connection of up to 30 units
> High code actor for high safety standard
> No prior pairing
> SIL level 3
> Safety category 4

Product no.	Type	Detection distance	Output	Supply voltage	Cable / connector
SG-P1010-M-N	Compact type	Low level code	NPN	24VDC	Cable, 5m
SG-P1010-M-P	Compact type	Low level code	PNP	24VDC	Cable, 5m
SG-P1010-S	Compact type, slave	Low level code	-	24VDC	Cable, 3m
SG-P1020-M-N	Visible type	Low level code	NPN	24VDC	Cable, 5m
SG-P1020-M-P	Visible type	Low level code	PNP	24VDC	Cable, 5m
SG-P1020-S	Visible type, slave	Low level code	-	24VDC	Cable, 3m
SG-P2010-M-N	Compact type	High level code	NPN	24VDC	Cable, 5m
SG-P2010-M-P	Compact type	High level code	PNP	24VDC	Cable, 5m
SG-P2010-S	Compact type, slave	High level code	-	24VDC	Cable, 3m
SG-P2020-M-N	Visible type	High level code	NPN	24VDC	Cable, 5m
SG-P2020-M-P	Visible type	High level code	PNP	24VDC	Cable, 5m
SG-P2020-S	Visible type, slave	High level code	-	24VDC	Cable, 3m

SF4D

Safety light curtains

Product no.	Type	Detection distance	Protective height	Output	Cable / connector
SF4D-F31	Safety light curtain, SIL3, Ple, finger protection type, beam pitch 10mm	0-12m	310mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-F39	Safety light curtain, SIL3, Ple, finger protection type, beam pitch 10mm	0-12m	390mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-F47	Safety light curtain, SIL3, Ple, finger protection type, beam pitch 10mm	0-12m	470mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-F95	Safety light curtain, SIL3, Ple, finger protection type, beam pitch 10mm	0-12m	950mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-H12	Safety light curtain, SIL3, Ple, hand protection type, beam pitch 20mm	0-15m	230mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-H16	Safety light curtain, SIL3, Ple, hand protection type, beam pitch 20mm	0-15m	310mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-H20	Safety light curtain, SIL3, Ple, hand protection type, beam pitch 20mm	0-15m	390mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-H24	Safety light curtain, SIL3, Ple, hand protection type, beam pitch 20mm	0-15m	470mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-H28	Safety light curtain, SIL3, Ple, hand protection type, beam pitch 20mm	0-15m	550mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-A18	Safety light curtain, SIL3, Ple, arm protection type, beam pitch 40mm	0-15m	710mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-A20	Safety light curtain, SIL3, Ple, arm protection type, beam pitch 40mm	0-15m	790mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-A24	Safety light curtain, SIL3, Ple, arm protection type, beam pitch 40mm	0-15m	950mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-A28	Safety light curtain, SIL3, Ple, arm protection type, beam pitch 40mm	0-15m	1110mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-A32	Safety light curtain, SIL3, Ple, arm protection type, beam pitch 40mm	0-15m	1270mm	PNP or NPN switchable (2 x OSSD)	Connector*

* Please contact us for further models in different heights and for relevant cables.

Functions and features

> Time-saving setup
> High intensity LED
> Extreme long sensing range up to 15m
> Easy-to-use software
> Extremely sturdy housing
> Very rapid response time of 6ms

Accessories

> Mounting bracket
> Cable
> Communication unit
> Corner mirror
> Protection cover
> IO-Link to communication unit

SF4B

Safety light curtains

Product no.	Type	Detection distance	Protective height	Output	Supply voltage	Cable / connector
SF4B-F23(V2)	Safety light curtain, SIL3, Ple, finger protection type	0-7m	230mm	PNP or NPN switchable (2 x OSSD)	24V DC	Connector*
SF4B-F31(V2)	Safety light curtain, SIL3, Ple, finger protection type	0-7m	310mm	PNP or NPN switchable (2 x OSSD)	24V DC	Connector*
SF4B-F39(V2)	Safety light curtain, SIL3, Ple, finger protection type	0-7m	390mm	PNP or NPN switchable (2 x OSSD)	24V DC	Connector*
SF4B-F47(V2)	Safety light curtain, SIL3, Ple, finger protection type	0-7m	470mm	PNP or NPN switchable (2 x OSSD)	24V DC	Connector*
SF4B-F95(V2)	Safety light curtain, SIL3, Ple, finger protection type	0-7m	950mm	PNP or NPN switchable (2 x OSSD)	24V DC	Connector*
SF4B-H12(V2)	Safety light curtain, SIL3, Ple, hand protection type	0-9m	230mm	PNP or NPN switchable (2 x OSSD)	24V DC	Connector*
SF4B-H16(V2)	Safety light curtain, SIL3, Ple, hand protection type	0-9m	310mm	PNP or NPN switchable (2 x OSSD)	24V DC	Connector*
SF4B-H20(V2)	Safety light curtain, SIL3, Ple, hand protection type	0-9m	390mm	PNP or NPN switchable (2 x OSSD)	24V DC	Connector*
SF4B-H24(V2)	Safety light curtain, SIL3, Ple, hand protection type	0-9m	470mm	PNP or NPN switchable (2 x OSSD)	24V DC	Connector*
SF4B-H28(V2)	Safety light curtain, SIL3, Ple, hand protection type	0-9m	550mm	PNP or NPN switchable (2 x OSSD)	24V DC	Connector*
SF4B-H32(V2)	Safety light curtain, SIL3, Ple, hand protection type	0-9m	630mm	PNP or NPN switchable (2 x OSSD)	24V DC	Connector*
SF4B-H36(V2)	Safety light curtain, SIL3, Ple, hand protection type	0-9m	710mm	PNP or NPN switchable (2 x OSSD)	24V DC	Connector*
SF4B-H40(V2)	Safety light curtain, SIL3, Ple, hand protection type	0-9m	790mm	PNP or NPN switchable (2 x OSSD)	24V DC	Connector*
SF4B-H48(V2)	Safety light curtain, SIL3, Ple, hand protection type	0-9m	950mm	PNP or NPN switchable (2 x OSSD)	24V DC	Connector*
SF4B-H56(V2)	Safety light curtain, SIL3, Ple, hand protection type	0-9m	1110mm	PNP or NPN switchable (2 x OSSD)	24V DC	Connector*
SF4B-H64(V2)	Safety light curtain, SIL3, Ple, hand protection type	0-9m	1270mm	PNP or NPN switchable (2 x OSSD)	24V DC	Connector*
SF4B-H72(V2)	Safety light curtain, SIL3, Ple, hand type	0-7m	1430mm	PNP or NPN switchable (2 x OSSD)	24V DC	Connector*

* Please contact us for further models in different heights and for relevant cables.

Functions and features

> Short response time (max. 14ms ON->OFF)
> Protective height corresponds to actual height (no blind zone)
> OSSD1 and OSSD2 switchable for NPN/PNP
> With built-in muting function
> Fixed and floating blanking function
> Extraneous light monitoring
> LED display for beam-axis alignment, which simplifies mounting

Accessories

> Cable for series connection without blind zone
> Sensor mounting brackets
> Front protection cover
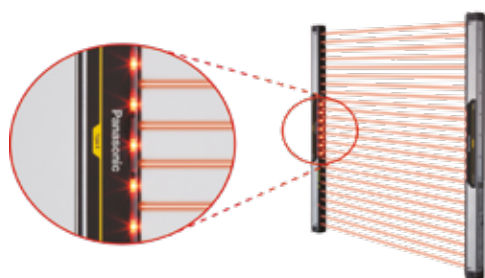> Communication unit

SF4C

Safety light curtains

Functions and features

> Large built-in multipurpose LED indicators
> Automatic interference prevention function = ELCA function
> 4 blocks of beam-axis adjustment indicators
> Digital error indication
> PNP or NPN switchable
> Fast response time of 7ms for all models
> Various blanking functions
> Manual reset / auto reset
> EDM input (external safety monitoring function)
> 2 N.C. safety inputs
> Various muting functions (end muting function, etc.)

Accessories

> Extension cable
> Front protection cover

Product no.	Type	Detection distance	Protective height	Output	Supply voltage	Cable / connector
SF4C-F15	Safety light curtain, SIL3, Ple, finger type	0-3m	160mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable 5m
SF4C-F23	Safety light curtain, SIL3, Ple, finger type	0-3m	240mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable 5m
SF4C-F31	Safety light curtain, SIL3, Ple, finger type	0-3m	320mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable 5m
SF4C-F39	Safety light curtain, SIL3, Ple, finger type	0-3m	400mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable 5m
SF4C-F47	Safety light curtain, SIL3, Ple, finger type	0-3m	480mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable 5m
SF4C-F55	Safety light curtain, SIL3, Ple, finger type	0-3m	560mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable 5m
SF4C-F63	Safety light curtain, SIL3, Ple, finger type	0-3m	640mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable 5m
SF4C-H8	Safety light curtain, SIL3, Ple, hand type	0-3m	160mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable 5m
SF4C-H12	Safety light curtain, SIL3, Ple, hand type	0-3m	240mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable 5m
SF4C-H16	Safety light curtain, SIL3, Ple, hand type	0-3m	320mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable 5m
SF4C-H20	Safety light curtain, SIL3, Ple, hand type	0-3m	400mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable 5m
SF4C-H24	Safety light curtain, SIL3, Ple, hand type	0-3m	480mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable 5m
SF4C-H28	Safety light curtain, SIL3, Ple, hand type	0-3m	560mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable 5m

* Please contact us for further models in different heights and for relevant cables.

SF4B-C

Safety light curtains

Functions and features

> Easy and flexible mounting
> Light weight
> LED indicators
> Hand and arm protection
> External safety monitoring function
> Automatic interference prevention function
> Auxiliary output

Accessories

> Test rod for hand protection

Product no.	Type	Sensing range	Protective height	Output	Supply voltage	Cable / connector
SF4B-H12CA-J05	Safety light curtain, SIL3, Ple, hand type	0-7m	263.4mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable with connector 0,5m*
SF4B-H48CA-J05	Safety light curtain, SIL3, Ple, hand type	0-7m	983.4mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable with connector 0,5m*
SF4B-H96CA-J05	Safety light curtain, SIL3, Ple, hand type	0-7m	1943.4mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable with connector 0,5m*
SF4B-H12C	Safety light curtain, SIL3, Ple, hand type	0-7m	263.4mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable 5m
SF4B-H48C	Safety light curtain, SIL3, Ple, hand type	0-7m	983.4mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable 5m
SF4B-H96C	Safety light curtain, SIL3, Ple, hand type	0-7m	1943.4mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable 5m
SF4B-A8CA-J05	Safety light curtain, SIL3, Ple, arm type	0-7m	343.4mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable with connector 0,5m*
SF4B-A24CA-J05	Safety light curtain, SIL3, Ple, arm type	0-7m	983.4mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable with connector 0,5m*
SF4B-A48CA-J05	Safety light curtain, SIL3, Ple, arm type	0-7m	1943.4mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable with connector 0,5m*
SF4B-A8C	Safety light curtain, SIL3, Ple, arm type	0-7m	343.4mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable 5m
SF4B-A24C	Safety light curtain, SIL3, Ple, arm type	0-7m	983.4mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable 5m
SF4B-A48C	Safety light curtain, SIL3, Ple, arm type	0-7m	1943.4mm	PNP or NPN switchable (2 x OSSD)	24V DC	Cable 5m

* Please contact us for further models in different heights and for relevant cables.

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PM

Ultra-compact fork sensors for positioning tasks

Functions and features

> Various shapes to suit a wide range of mounting conditions
> Bright operation indicator for easy setup
> Fork width 6mm
> Repeatability 0.01mm
> Cable or connector types
> Resistant to interference by ambient light
> 62 different models available
> Equipped with 2 outputs (Light-ON and Dark-ON)

Product no.	Type	Detection distance	Output	Supply voltage	Light-ON / Dark-ON
PM-U25-P	U shape	6mm	PNP	12-24V DC	Cable 2m
PM-F25	F type	6mm	NPN	12-24V DC	Cable 2m
PM-L25	L type	6mm	NPN	12-24V DC	Cable 2m
PM-L45-P	L type	6mm	PNP	12-24V DC	Cable 2m
PM-L65	L type	6mm	NPN	12-24V DC	JST connector

HG-S

Contact measurement sensor

Functions and features

> Resolution 0.1µm
> Accuracy: 1µm (full measurement range), 0.5µm (restricted measurement range)
> Rapid response time of 3ms
> Insensitive to lateral load
> Equipped with high-resolution CMOS
> Easy-to-use 2-line digital display controller
> With intuitive circle diagram
> Connection of up to 15 slave sensors in series

Accessories

> Fastening wrench and mounting nut

Product no.	Type	Detection distance	Output	Supply voltage	Cable / connector
HG-S1010	Contact-type measuring sensor, standard type, resolution 0.5µm; accuracy 2µm; measurement range 10mm	0-10mm	-	-	Connector
HG-S1050	Contact-type measuring sensor, standard type, resolution 0.5µm; accuracy 3.5µm; measurement range 50mm	0-50mm	-	-	Connector
HG-S1110	Contact-type measuring sensor, standard type, resolution 0.1µm; accuracy 1µm; measurement range 10mm	0-10mm	-	-	Connector
HG-S1010-AC	HG-S contact-type measuring sensor, sensor head, air-driven type, resolution 0.5µm; accuracy 2µm; measurement range 10mm	0-10mm	-	-	Connector
HG-S1110-AC	HG-S contact-type measuring sensor, sensor head, air-driven type, resolution 0.1µm; accuracy 1µm; measurement range 10mm	0-10mm	-	-	Connector
HG-S1032	Contact-type measuring sensor, standard type, resolution 0.5µm; accuracy 3µm; measurement range 32mm	0-32mm	-	-	Connector
HG-SC101-P	Contact-type measuring sensor, amplifier, master sensor, analog and digital outputs, PNP	-	PNP, current output 4-20mA	24V DC	-
CN-HS-C3	Detector connection cable <-> amplifier, straight connector, 3m	-	-	-	-

*   Please ask for relevant cables!

HG-C

Measurement sensors for displacement measuring

Functions and features

> Repeatability 10µm
> Sensor head and controller in one housing
> Compact and light 20 x 44 x 25mm (W x H x D)
> Display of measurement values
> Analog (4–20mA / 0–5V) and digital output
> IO-Link type

Product no.	Type	Measurement center distance and range	Output	Supply voltage	Cable / connector
HG-C1030-P	Measurement sensor, PNP	30 ±5mm	0–5V 4–20mA	12–24V DC	Cable 2m
HG-C1050-P	Measurement sensor, PNP	50 ±15mm	0–5V 4–20mA	12–24V DC	Cable 2m
HG-C1100-P	Measurement sensor, PNP	100 ±35mm	0–5V 4–20mA	12–24V DC	Cable 2m
HG-C1200-P	Measurement sensor, PNP	200mm ±80mm	0–5V 4–20mA	12–24V DC	Cable 2m
HG-C1400-P	Measurement sensor, PNP	400mm ±200mm	0–5V 4–20mA	12–24V DC	Cable 2m
HG-C1030L3-P-J	Measurement sensor, IO-Link	30mm ±5mm	IO-Link	24V DC	M12
HG-C1050L3-P-J	Measurement sensor, IO-Link	50mm ±15mm	IO-Link	24V DC	M12
HG-C1100L3-P-J	Measurement sensor, IO-Link	100mm ±35mm	IO-Link	24V DC	M12
HG-C1200L3-P-J	Measurement sensor, IO-Link	200mm ±80mm	IO-Link	24V DC	M12
HG-C1400L3-P-J	Measurement sensor, IO-Link	400mm ±200mm	IO-Link	24V DC	M12

HL-G1

High-accuracy measurement sensors

Functions and features

> Resolution of 0.5µm
> Measurement distance up to 400mm
> An integrated display for monitoring measurement results, status and settings
> 3 transistor outputs, 2 analog outputs and RS485/RS422 interface (high-functionality type)
> A new CMOS receiving element that has revolutionized high accuracy
> Built-in controller

Product no.	Type	Measurement center distance and range	Output	Supply voltage	Cable / connector
HL-G103-A-C5	Measurement sensor, laser class 2	30 ±4mm	0-10V, 4-20mA, 3 x NPN/PNP selectable	24V DC	Cable 5m
HL-G103-S-J	Measurement sensor, laser class 2, RS422 or RS485 selectable	30 ±4mm	0–10V, 4-20mA, 3 x NPN/PNP selectable	24V DC	Cable with connector 0,5m*
HL-G105-A-C5	Measurement sensor, laser class 2	50 ±10mm	0-10V, 4-20mA, 3 x NPN/PNP selectable	24V DC	Cable 5m
HL-G105-S-J	Measurement sensor, laser class 2, RS422 or RS485 selectable	50 ±10mm	0–10V, 4-20mA, 3 x NPN/PNP selectable	24V DC	Cable with connector 0,5m*
HL-G108-A-C5	Measurement sensor, laser class 2	85 ±20mm	0–10V, 4-20mA, 3 x NPN/PNP selectable	24V DC	Cable 5m
HL-G108-S-J	Measurement sensor, laser class 2, RS422 or RS485 selectable	85 ±20mm	0-10V, 4-20mA, 3 x NPN/PNP selectable	24V DC	Cable with connector 0,5m*
HL-G112-A-C5	Measurement sensor, laser class 2	120 ±60mm	0-10V, 4-20mA, 3 x NPN/PNP selectable	24V DC	Cable 5m
HL-G112-S-J	Measurement sensor, laser class 2, RS422 or RS485 selectable	120 ±60mm	0-10V, 4-20mA, 3 x NPN/PNP selectable	24V DC	Cable with connector 0,5m*
HL-G125-A-C5	Measurement sensor, laser class 2	250 ±150mm	0-10V, 4-20mA, 3 x NPN/PNP selectable	24V DC	Cable 5m
HL-G125-S-J	Measurement sensor, laser class 2, RS422 or RS485 selectable	250 ±150mm	0–10V, 4-20mA, 3 x NPN/PNP selectable	24V DC	Cable with connector 0,5m*

*   Please ask for relevant cables!

HG-T

Laser thru-beam sensor

Functions and features

> Sensor head for standard type / slim type
> Intuitive device for beam alignment at the controller
> Preset functions, e.g. edge detection
> Analog current/voltage output
> 3 digital outputs PNP/NPN
> Predictive maintenance for monitoring the light intensity
> Easy expansion with up to 14 slave units

Accessories
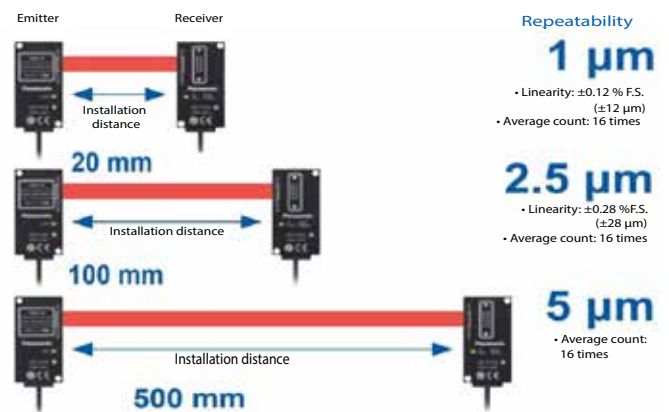
> Side view mirror for deflecting the laser beam

Standard type   Slim type
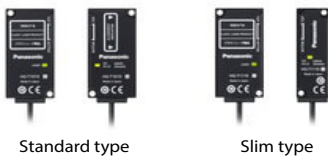
Emitter   Receiver

Sensor heads

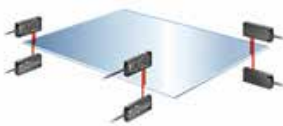| Product no.	Type	Measurement height	Model	Cable / connector
HG-T1010	Laser thru-beam sensor, laser belt 10mm, standard type, measurement range 0 to 500mm	10mm	Standard type	Cable 2m, 5m, 10m to 20m
HG-T1110	Laser thru-beam sensor, laser belt 10mm, slim type, measurement range 0 to 500mm	10mm	Slim type	Cable 2m, 5m, 10m to 20m

Controllers

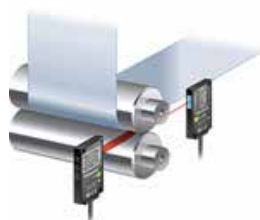| Product no.	Type	Outputs	Supply voltage	Cable / connector
HG-TC101	Master unit, analog current/ voltage output, PNP	0–5V 4–20mA	12 to 24V DC (+/-10%)	2m
HG-TC101-P	Master unit, analog current/ voltage output, PNP	0–5V 4–20mA	12 to 24V DC (+/-10%)	2m
HG-TC111	Slave units, high performance type, PNP	-	12 to 24V DC (+/-10%)	2m
HG-TC111-P	Slave units, high performance type, NPN	-	12 to 24V DC (+/-10%)	2m
HG-TC113	Slave units, wire-saving type	-	12 to 24V DC (+/-10%)	2m

Emitter   Receiver

Installation distance

Repeatability

1 µm
• Linearity: ±0.12 % F.S. (±12 µm)
• Average count: 16 times

20 mm
Installation distance

2.5 µm
• Linearity: ±0.28 %F.S. (±28 µm)
• Average count: 16 times

100 mm
Installation distance

5 µm
• Average count: 16 times

500 mm

Applications

Glass substrate positioning

Detection of clearance between rollers

Shaft diameter measurement

DP-0

Pressure sensors

Functions and features

> Digital pressure sensors for non-corrosive gas
> Two-stage setting mode for easy operation
> Simple, clear 2-color display
> Very low dimensions and low weight

Accessories

> Mounting bracket
> Cable
> Front protection cover

Product no.	Type	Pressure port	Measurement range	Outputs	N.O./N.C.	Supply voltage	Cable / connector
DP-001-P	Pressure sensor for non-corrosive gases	M5 female thread	-1 to +1bar	PNP	Selectable with button	12–24V DC	Cable with connector, 2m
DP-001	Pressure sensor for non-corrosive gases	M5 female thread	0 to +10bar	NPN	Selectable with button	12–24V DC	Cable with connector, 2m
DP-002-P	Pressure sensor for non-corrosive gases	M5 female thread	-1 to +1bar	PNP	Selectable with button	12–24V DC	Cable with connector, 2m
DP-002	Pressure sensor for non-corrosive gases	M5 female thread	0 to +10bar	PNP	Selectable with button	12–24V DC	Cable with connector, 2m

DP-100

Pressure sensors

Functions and features

> High resolution and repeatability
> Low and high pressure types
> Dual 3-color display (red, green, orange)
> Analog output switchable to current or voltage
> Current and threshold value in one view
> Copy function; new global standard
> IO-Link type available
> Equipped with an ECO mode
> M8 connector type

Accessories

> Connector attached cable 1, 3, 5m
> Sensor mounting brackets
> Panel mounting brackets
> Front protection cover

Product no.	Type	Pressure port	Measurement range	Outputs	N.O./N.C.	Supply voltage	Cable / connector
DP-101AEP	Pressure sensor for non-corrosive gases	G1/8 M5	-1 to +1bar	PNP, 1–5V, 4–20mA	Selectable	12–24V DC	Cable with connector, 2m
DP-101EP	Pressure sensor for non-corrosive gases	G1/8 M5	-1 to +1bar	2 x PNP	Selectable	12–24V DC	Cable with connector, 2m
DP-102AEP	Pressure sensor for non-corrosive gases	G1/8 M5	-1 to +10bar	PNP, 1–5V, 4–20mA	Selectable	12–24V DC	Cable with connector, 2m
DP-102EP	Pressure sensor for non-corrosive gases	G1/8 M5	-1 to +10bar	2 x PNP	Selectable	12–24V DC	Cable with connector, 2m
DP-111AEPJ	Pressure sensor for non-corrosive gases	G1/8 M5	-1 to +1bar	PNP, 1–5V, 4–20mA	Selectable	12–24V DC	M8 Connector
DP-111EPJ	Pressure sensor for non-corrosive gases	G1/8 M5	-1 to +1bar	2 x PNP	Selectable	12–24V DC	M8 Connector
DP-112AEPJ	Pressure sensor for non-corrosive gases	G1/8 M5	-1 to +10bar	PNP, 1–5V, 4–20mA	Selectable	12–24V DC	M8 Connector
DP-112EPJ	Pressure sensor for non-corrosive gases	G1/8 M5	-1 to +10bar	2 x PNP	Selectable	12–24V DC	M8 Connector
DP-102ZL3-M-P-C	Pressure sensor for non-corrosive gases	M5 female thread	-1 to +1bar	IO-Link	Selectable	12–24V DC	M12

DPH-100/DPC-100

Pressure sensors

Functions and features

> Miniaturized pressure sensor with separate sensor heads
> Stainless steel pressure ports
> Type for combined low and high pressure measurement
> Voltage output
> Response time only 0.5ms

Product no.	Type	Pressure port	Measure-ment range	Outputs	N.O./N.C.	Supply voltage	Cable / connector
DPH-101-M3	Pressure sensor head for non-corro-sive gases	M3	-1 to +1bar	1 to 5V	–	12–24V DC	Cable 2m
DPH-101-M5	Pressure sensor head for non-corro-sive gases	M5	-1 to +1bar	1 to 5V	–	12–24V DC	Cable 2m
DPH-102-M5	Pressure sensor head for non-corro-sive gases	M5	0 to +10bar	1 to 5V	–	12–24V DC	Cable 2m
DPH-103-M3	Pressure sensor head for non-corro-sive gases	M3	-1 to 0 bar	1 to 5V	–	12–24V DC	Cable 2m
DPH-103-M5	Pressure sensor head for non- cor-rosive gases	M5	-1 to 0 bar	1 to 5V	–	12–24V DC	Cable 2m
DPC-101P-J	Controller for DP-H pressure sensors	–	–	2 x PNP, 1–5V or 4–20mA	Switchable	12–24V DC	Cable with connector, 2m

FM-200

Flow sensors

Functions and features

> Main functions
> Easy-to-read, 2-color display with sub display
> High precision of ±3% F.S.
> Bidirectional flow measurement
> High flow rate type for up to 1000l/min
> Reset function for integrated setting values
> Analog voltage output and digital outputs
> Key-lock function
> Rattle prevention function (response time setting)
> Display rate setting
> ECO mode

Accessories

> Sensor mounting brackets

Product no.	Type	Port size	Flow rate range	Outputs	N.O./N.C.	Supply voltage	Cable / connector
FM-213-4-P	Bidirectional flow sensor for air and nitrogen	4mm push-in for tubes	1l/min	1 to 5V	Switchable	12–24V DC	Cable with con-nector 1m
FM-214-4-P	Bidirectional flow sensor for air and nitrogen	4mm push-in for tubes	10l/min	1 to 5V	Switchable	12–24V DC	Cable with con-nector 1m
FM-215-8-P	Bidirectional flow sensor for air and nitrogen	8mm push-in for tubes	100l/min	1 to 5V	Switchable	12–24V DC	Cable with con-nector 1m
FM-216-AG2-P	Bidirectional flow sensor for air and nitrogen	G1/2	1.000l/min	1 to 5V	Switchable	12–24V DC	Cable with con-nector 1m
FM-252-4-P	Bidirectional flow sensor for air and nitrogen	4mm push-in for tubes	0.5l/min	1 to 5V	Switchable	12–24V DC	Cable with con-nector 1m
FM-253-4-P	Bidirectional flow sensor for air and nitrogen	4mm push-in for tubes	5l/min	1 to 5V	Switchable	12–24V DC	Cable with con-nector 1m
FM-254-8-P	Bidirectional flow sensor for air and nitrogen	8mm push-in for tubes	50l/min	1 to 5V	Switchable	12–24V DC	Cable with con-nector 1m
FM-255-AG2-P	Bidirectional flow sensor for air and nitrogen	G1/2	500l/min	1 to 5V	Switchable	12–24V DC	Cable with con-nector 1m

Ionizers

Functions and features

> Prevents electrostatic charge in materials
> Ion balance down to +/- 10V or less
> Several models and principles to choose from
> Versions with or without built-in fan
> Supply voltage 24V DC

Product no.	Type	Description	Charge removable width	Supply voltage
ER-Q	Built-in fan	Ultra-compact, stand alone	200mm	24V DC
ER-F12	Built-in fan	Compact, stand alone	700mm	24V DC

Product no.	Type	Description	Air pressure range	Charge removable width	Supply voltage
EC-G02	Compressed air	Pulsed air gun	0.5–5bar	–	24V DC
ER-VW	Compressed air	Double spot	0.5–5bar	300mm	24V DC

Product no.	Type	Description	Air pressure range	Charge removable width	Supply voltage
ER-VS02	Compressed air	Single needle, different nozzles available	0.5-7bar	–	24V DC
ER-VAS	–	Shower nozzle for ER-VS02	–	Spot 300mm	–
ER-VAB020	–	Straight bar nozzle for ER-VS02	–	200mm	–
ER-VAB032	–	Straight bar nozzle for ER-VS02	–	320mm	–
ER-VAB065	–	Straight bar nozzle for ER-VS02	–	650mm	–

Product no.	Type	Description	Air pressure range	Charge removable width	Supply voltage
ER-XC02	–	Controller for ER-X ionizer heads	–	–	24V DC
ER-X016	Compressed air	Ionizer head for ER-XC02	0–5bar	160mm	–
ER-X032	Compressed air	Ionizer head for ER-XC02	0–5bar	320mm	–
ER-X048	Compressed air	Ionizer head for ER-XC02	0–5bar	480mm	–
ER-X064	Compressed air	Ionizer head for ER-XC02	0–5bar	640mm	–

FP7 series

Modular & high connectivity

Functions and features

> Compact size with room for expansion functions
> Equipped with a cassette interface.
> Add-on cassettes can be added to the CPU to increase functionality without increasing the width of the unit. Communication cassettes support communication via RS232C, RS422, and RS485.
> Up to 16 different units can be connected to a single CPU.
> High-capacity SD (SDHC) memory cards of up to 32GB are supported.
> High performance (min. scan time 1ms, max. 20μs for 60k steps); the processing speed is less susceptible to frequent Ethernet communication.
> GT power supply terminals

Number of expansion units	Processing speed	Max. capacity
64 units + application cassettes	11ns/step (for basic instructions)	234k program steps, 999k data
	Communication	Interfaces
	PROFIBUS, PROFINET, EtherCAT, DeviceNet, CANopen, Modbus TCP, EtherNet/IP, PLC Link, MEWTOCOL	1 x RS232 or RS422/RS485, 1 x mini USB

FP0H series

High speed and high performance type

Functions and features

> Cassette system reduces unit cost and footprint for serial communciation
> Data logging
> SD memory card slot for data recording function and program memory
> Two integrated Ethernet ports
> Integrated PWM output
> Built-in 4-axis pulse output

Number of expansion units	Processing speed	Max. capacity
7 units	10ns/step (for basic instructions)	64k steps
	Communication	Interfaces
	Modbus TCP, EtherNet/IP, MEWTOCOL	1 x RS232C, 2 x RJ45, 1 x mini USB

FP0R series

Very compact

Number of expansion units	Processing speed	Max. capacity
3 modules	80ns/step (for basic instructions)	32k steps
	Communication	Interfaces
	PROFIBUS, Modbus (master & slave), S-Link, MEWTOCOL, PLC link	1 x RS232C or 1 x RS485, 1 x mini USB

Functions and features

> Ultra compact 25 x 90 x 60 (mm)
> Maintenance-free and battery-free backup of all data
> USB port and RS232 interface included as standard
> Built-in positioning functions for up to 4 axes
> Expandable with up to 3 expansion units

FP-X series

Compact and powerful

Number of expansion units	Processing speed	Max. capacity
8 units + add-on cassettes (up to 3)	320ns/step (for basic instructions)	32k steps
	Communication	Interfaces
	PROFIBUS, Modbus RTU, S-Link, PLC link, MEWTOCOL	1 x RS232C, RS485 or 1 x Ethernet, 1 x USB

Functions and features

> PLC with screw terminal block
> Built-in USB port for programming
> Many expansion options
> High security thanks to password protection
> Up to 3 serial communication interfaces per CPU
> Multi-point PID control
> FP-X will be discontinued from September 2021

FP-XH series

The universal solution

Number of expansion units	Processing speed	Max. capacity
7 FP-X expansion units + 3 FP0R expansion units	40ns/step (for basic instructions)	40k steps
	Communication	Interfaces
	PLC Link, Modbus RTU, MEWTOCOL, RTEX (integrated)	1 x RS232C, 2 x Ethernet, 1 x USB

Functions and features

> PLC with integrated motion controller
> Motion control for up to 8 axes
> Real-time communication via network-based RTEX protocol
> Compatible with the expansion units of the FP-X and FP0R series
> PLC with screw terminal block

FP-I4C

Communication for Industry 4.0 and IoT

Inputs/outputs	Processing speed	Max. capacity
2 for mode selection	IMX6UL (ARM Cortex-A7, 528MHz)	2.4GB
Number of expansion units	Communication	Interfaces
3 units (FP0/FP0R)	Modbus TCP, MEWTOCOL	1 x RS232C + 1 x RS232C/ 1 x RS485, 2 x USB, 2 x Ethernet

Functions and features

> Two Ethernet ports (separated or combined networks), two USB ports, 1 x RS232 (not isolated) and 1 x RS232/RS485 (selectable, isolated)
> Combinable with all programmable controllers from the FP series
> Ultra compact 25 x 90 x 60mm
> Open message protocol MQTT
> Data exchange with standard type OPC UA
> Integrated web server for PLC data
> Configuration via browser
> Data logging (internally or via USB flash drive)
> Stand-alone operation possible (e.g. for data logging)
> FTP client: for logged data
> Corvina Cloud
> SMTP, DHCP (server/client), NTP, SNMP, Script, OpenVPN, SSH, VNC

FP Web

Server & Expansion unit

Functions and features

> The FP Web-Server unit connects all FP series controllers to the Ethernet. No changes to the PLC program are necessary. Simply assign an IP address to the FP Web-Server and connect the PLC to the FP Web-Server via the serial RS232C interface. A standard browser, e.g. Microsoft Internet Explorer or Mozilla Firefox, can be used for access by the PC.

> Uses existing Intranet, saves wiring
> Uses standard browser, saves SCADA software
> For remote programming and monitoring
> Alarm information via e-mail
> With FP Web Expansion Unit:

> Data logging, SD memory card slot
> USB port, e.g. for communicating with GT panels
> RS485 interface

Product no.	FP Web-Server and FP Web Expansion Unit
FPWEB2	FP Web-Server 2, Ethernet unit with 10/100MBit/s
FPWEBEXP	FP Web Expansion Unit for FPWEB2
AIGT8192	Connection cable from TOOL port of FP series PLC to FPWEB2, 2m

Control FPWIN Pro

The Panasonic PLC programming software

Functions and features

> Control FPWIN Pro is the Panasonic programming software developed according to the international standard IEC 61131-3 (for Windows XP/Vista/Windows 7, 8.

> 5 programming languages: IL (Instruction List), LD (Ladder Diagram), FBD (Function Block Diagram), SFC (Sequential Function Chart), ST (Structured Text)

> Well-structured through program organization units, task and project management

> Remote programming, service and diagnostics via modem or Ethernet

> Extensive comments and online documentation created hand in hand with the program

> Min. program size through optimized compiler

> Powerful debugging and monitoring tools provide information on the current status of the PLC

> Comprehensive printed documentation and support for function blocks and libraries help to get your hardware running in record time while maintaining rigorous quality standards

> Reuse of functions and function blocks saves time

Product no.	Control FPWIN Pro programming software
FPWINPRO7	Control FPWIN Pro 7 for all PLCs of the FP series (including FP7)
AFC8513D	Programming cable for GT touch panel and FP0R/2/-e/-Sigma/-X TOOL port (mini-DIN connector, 5-pin angled type) <-> 9-pin Sub-D connector PC/FPWEB/GN series, 3m

HMs700 series

High-end multi touch terminal

Model	HMs705	HMs707	HMs710	HMs715	HMs721
Display size	5˝ TFT	7˝ TFT	10.1˝ TFT	15,6˝ TFT	21.5˝ TFT
Resolution	800 x 480, PCAP	1024 x 600, PCAP	1280 x 800, PCAP	1366 x 768, PCAP	1920 x 1080, PCAP
Sensors	Temperature, 3-axis accelerometer				
Wi-fi	Not available	IEEE 802.11a/b/g			
Brightness	300cd/m² typ.	400cd/m² typ.			
Touchscreen	Projected-capacitive touch glass, multi-touch				
Ethernet	10/100 PoE				
USB	1 (host V2.0, max. 500mA, available with special cable)				
Protection Class	IP67 (requires appropriate accessories and cables)				
CPU	ARM Cortex-A9 dual core - 800MHz			ARM Cortex-A9 quad core - 800MHz	
Operating system	Linux RT				
RAM / FLASH / FRAM	1GB / 4GB / 64KB			2GB / 8GB / 64KB	

HMx700 series

High-end multi touch terminal

	AIHMX705	AIHMX707	AIHMX710	AIHMX715	AIHMX721
Display size	5˝ TFT 16:9 LED	7˝ TFT 16:9 LED	10.1˝ TFT 16:9 LED	15.6˝ TFT 16:9 LED	21.5˝ TFT 16:9 LED
Resolution	800 x 480	800 x 480	1200 x 800	1366 x 768	1920 x 1080
Brightness	300 cd/m²	500 cd/m²	500 cd/m²	400 cd/m²	300 cd/m²
Color depth	64K colors	16M colors	16M colors	16M colors	16M colors
Touchscreen	Capacitive	Capacitive	Capacitive	Capacitive	Capacitive
Ethernet port	2 x 10/100MBit	3 x 10/100MBit	3 x 10/100MBit	3 x 10/100MBit	3 x 10/100MBit
Serial interface	1 x programmable multi-standard interface	1 x programmable multi-standard interface	1 x programmable multi-standard interface	1 x programmable multi-standard interface	1 x programmable multi-standard interface
USB port	1 x host	2 x host	2 x host	2 x host	2 x host
CPU	ARM Cortex-A8 1GHz	ARM Cortex-A9 dual core 800MHz	ARM Cortex-A9 dual core 800MHz	ARM Cortex-A9 quad core 800MHz	ARM Cortex-A9 quad core 800MHz
RAM	512MB	1GB	2GB	2GB	2GB

Functions and features (HMs700 and HMx700 series)

> Capacitive glass touch panel
> Display sizes: 5˝, 7˝, 10,1˝, 15,6˝ and 21.5˝
> High-resolution wide display with multi-touch functionality
> Hardware and firmware optimised for fast operation

> Extended operation temperature range: -20° to +60°C
> Real-time clock
> Fast start < 10 seconds

HMe series

Economy

	AIHME04	AIHME07	AIHME10
Display size	4,3'' TFT 6:9 LED	7'' TFT 16:9 LED	10,1'' TFT 16:9 LED
Resolution	480 x 272	800 x 480	1024 x 600
Color depth	64K colors	64K colors	64K colors
Touchscreen	Resistive	Resistive	Resistive
Ethernet port	1 x	1 x	1 x
Serial interface	1 x RS232C/ RS422/ RS485	1 x RS232C/ RS422/ RS485	1 x RS232C/ RS422/ RS485
USB port	1 x host	1 x host	1 x host

Functions and features

> A top product in its class
> Inexpensive
> Reliable
> Industrial-grade

HM500 series

Compact and robust

	AIHM504	AIHM507	AIHM510	AIHM513
Display size	4,3'' TFT 16:9 LED	7'' TFT 16:9 LED	10,1'' TFT 16:9 LED	13,3'' TFT16:9 LED
Resolution	480 x 272, WQVGA	800 x 480, WVGA	800 x 600, SVGA	1280 x 800, WXGA
Color depth	64K colors	64K colors	64K colors	64K colors
Touchscreen	Resistive	Resistive	Resistive	Resistive
Ethernet port	1 x	1 x	1 x	1 x
Serial interface	1 x RS232C/ RS422/ RS485	1 x RS232C/ RS422/ RS485	1 x RS232C/ RS422/ RS485	2 x RS232C/ RS422/ RS485
USB port	1 x host	1 x host	1 x host	2 x host

Functions and features

> Innovative full-metal housing
> 2 Ethernet ports with integrated switch
> Low current consumption

GT series

Ultra compact touch terminals

Functions and features

GT707 series

The first 7-inch touch panel with TFT color screen and excellent screen display

GT703/704 series

All models are IoT-capable thanks to the built-in Ethernet interface.

GT03-E/32-E series

Weatherproof "outdoor" touch panel

GT02/05/12 series

Compact touch panels with real-time clock

GT02 series

Compact and innovative 3.8-inch STN display for clear and vivid images

GT05 series

3.5-inch high-contrast black QVGA-LC display

GT12 series

Housing with IP67 rating, excellent brightness

GT32-R series

Clear and beautiful display thanks to high-definition, long-life LED backlight

Product no.	GT707 description
AIG707WCL1G2	7'' TFT LCD, 65536 colors, IP65, 800 x 480 dots, RS232 9-pin Sub-D male + USB-B mini (prog.), 24V DC, SD/SDHC slot, black front panel

Product no.	GT703/704 description
AIG704WGNMB2	4.6'', 64 shades of gray, 640 x 240 dots, Ethernet + RS422/485 + mini USB (prog.), 24V DC
AIG703WGN1B2	3.8'', 64 shades of gray, 480 x 192 dots, Ethernet + RS232 + mini USB (prog.), 24V DC
AIG704WMN1S2	4.6'', 64 shades of gray, 640 x 240 dots, Ethernet + RS232 + mini USB (prog.), 24V DC

Product no.	GT03-E/32-E description
AIG03MQ03DE	Monochrome type, 3.5'', RS232 + USB mini B, 24V DC, silver front panel
AIG03TQ13DE	4096 colors, 3.5'', RS232 + USB Mini B (prog.), 24V DC, SD/SDHC card slot, silver frame
AIG32MQ03D	Monochrome type 5,7'', RS232 + USB-B, 24V DC, SD/SDHC memory card slot, silver front panel
AIG32TQ03D	4096 colors, 5.7'', 320 x 240 dots, RS232 + USB-B, 24V DC, SD/SDHC memory card slot, silver front panel

Product no.	GT02 description
AIG02GQ02D	RS232, 5V DC, black front panel, LED backlight: red, orange, green, no SD memory card slot
AIG02GQ12D	RS232, 24V DC, black front panel, LED backlight: red, orange, green, no SD memory card slot
AIG02GQ14D	RS422/485, 24V DC, black front panel, LED backlight: red, orange, green, no SD memory card slot
AIG02GQ22D	RS232, 24V DC, black front panel, LED backlight: red, orange, green, SD/SDHC memory card slot, real-time clock
AIG02MQ03D	RS232, 5V DC, silver front panel, LED backlight: white, red, pink, no SD memory card slot

Product no.	GT05 description
AIG05GQ02D	RS232, 24V DC, black front panel, color of backlight: red, orange, green, SD/SDHC memory card slot
AIG05MQ02D	RS232, 24V DC, black front panel, color of backlight: white, red, pink, SD/SDHC memory card slot
AIG05SQ02D	RS232, 24V DC, black front panel, TFT color display, SD/SDHC memory card slot
AIG05SQ03D	RS232, 24V DC, silver front panel, TFT color display, SD/SDHC memory card slot

Product no.	GT12 description
AIG12GQ12D	24V DC, SD/SDHC memory card slot, black front panel, backlight: red, orange, green

Product no.	GT32-R description
AIG32MQ02DR	5.7'', TFT monochrome 16 shades of gray LCD, 700 Cd/m^2, IP 67, 320 x240 dots, RS232 + USB-B (prog.), 24V DC, SD/SDHC memory card slot
AIG32TQ03D	5.7'', TFT LCD, 4096 colors, 600 Cd/m^2, IP 67, 320 x 240 dots, RS232 + USB-B (prog.), 24V DC, SD/SDHC memory card slot

PRODUCT FINDER FOR SERVO DRIVES

Find the right servo drive within seconds!

MINAS A6 series

Servo drivers

Type	Standard	RS485 communication	Multifunction	Network type	
	A6SE	A6SG	A6SF	A6N	A6B
RTEX	–	–	–	X	–
EtherCAT	–	–	–	–	X
External encoder	–	–	X	X	
Safety function STO	–	–	X	X	
RS232/485 (Modbus)	–	X	X	-	
Velocity control, torque control	–	–	X	X	
Position control with digital I/O (like MINAS A4P)	X	X	X	–	
Position control	X	X	X	X	

Rated power	50W–5kW (200V AC), 200W–5kW (400V AC)
Supply voltage	1/3-phase (200V AC), 3-phase (400V AC)
Bandwidth (velocity response)	3200Hz
Rated rotational speed	2000–3000rpm
Max. rotational speed	3000–6500rpm
Rated torque	0.16–15.9Nm (200V AC), 0.64–23.9Nm (400V AC)
Peak torque	0.48–47.7Nm (200V AC), 2.23–71.6Nm (400V AC)
Control functions	Position control	Position, velocity, torque control
IP degree of protection (motor)	IP67
Control input	Pulse	Pulse, analog	Network type

Functions and features

> Fast (max. 6500rpm)
> Powerful
> Compact
> Precise
> Lightweight
> The same interfaces, accessories, and flange as MINAS A5 in an even more compact housing
> Even smaller, high-resolution 23-bit encoder that can be used both as an absolute and as an incremental encoder
> Oil seal with triple lip (optional)

MINAS A6 series

Servo motors

Model	MSMF		MDMF		MHMF	
	Low inertia		**Medium inertia**		**High inertia**	
Rated power W	Flange Ø mm	Rated rotational speed (max.) rpm	Flange Ø mm	Rated rotational speed (max.) rpm	Flange Ø mm	Rated rotational speed (max.) rpm
200V AC						
50	38	3000 (6000)	–	–	40	3000 (6500)
100	38		–	–	40	
200	60		–	–	60	
400	60		–	–	60	
750	80		–	–	80	3000 (6000)
1000	80/100	3000 (6000)/ 3000 (5000)	130	2000 (3000)	80/130	3000 (6000)/ 2000 (3000)
1500	100	3000 (5000)	130	2000 (3000)	130	2000 (3000)
400V AC						
200	-	-	-	-	60	3000 (6500)
400	-	-	-	-	60	
750	-	-	-	-	80	3000 (6000)
1000	100	3000 (5500)	130	2000 (3500)	80/130	3000 (6000)/ 2000 (3500)
1500	100		130		130	2000 (3500)
2000	100		130		176	
3000	120		176		176	
4000	130	3000 (5000)	176		176	
5000	130		176	2000 (3000)		2000 (3000)
Features	Low to high power range, low inertia, suitable for all kinds of applications, also suitable for high-speed applications, especially for machinery with high rigidity and repetition rate		Medium to high power range, medium inertia, suitable for belt-driven machinery with low rigidity		Low to high power range, high inertia, suitable for belt-driven machinery with low rigidity	
Applications	Equipment for transistor production (like bonders, SMD machinery), packaging machines, machines for food production, etc.		Conveyor machinery, robots, textile machines, etc.		Conveyor machinery, robots, machines for LCD production, etc.	

Functions and features

> High-precision encoder, 23bit/rev; 8.38 mil. pulses/rev
> Max. rotational speed: 6500rpm
> Low cogging torque
> Even more compact design with new housing (split core structure, encoder even more narrow)
> IP67 rating for all motors with connector
> 50W to 5000W
> Common encoder (usable as an absolute and an incremental encoder)
> Triple-lip oil seal

MINAS A6 Multi

400V servo drive system.
Compact, modular design for
maximum performance
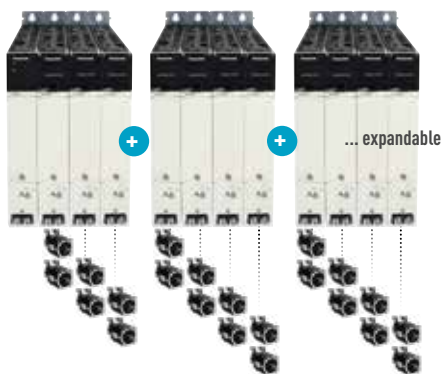
Functions and features

> Compact servo drive in book format
> Modular construction
> DC link bus system
> Quick servo control technology
> Anti vibration technology
> State-of-the-art network technology

> 18 integrated safety functions
> Configuration via EtherCAT
> Robust round connectors according to IEC, CENELEC, and IEEE
> Remote control via EoE
> Dual-axis servo driver

Power supply units

Product no.	Size	Input voltage	Rated power
MADMPN14	A	3-phase 380–480V AC	15kW
MBDMPN24	B	3-phase 380–480V AC	30kW

Servo driver units

Product no.	Size	Number of axes	Rated power
MADM2A4KBX	A	2	For motors 0.4–0.75kW**
MADM2A6KBX	A	2	For motors 0.75–1.5kW**
MADM2AAKBX	A	2	For motors 1.5–3.0kW**
MBDM1ABKBX	B	1	For motors 3.0–5.0kW

** Also combinable

MINAS LIQI

AC servo drivers and motors

Functions and features

> Cost effective
> Reliable
> Powerful
> Easy to use
> Excellent price-performance ratio

Supply voltage	Rated power	Control mode	Torque
1 x 200V, 1 x 200V AC	50–1000 W	Position control	0.16–3.2 (Nm) min

MINAS BL

Brushless

Functions and features

> Highly effective
> Powerful
> Excellent price-performance ratio

Motor series	GV	GP	KV	KP
Rated power	50–130W	50–130W	50–750W	50–750W
Motor speed	30–4000rpm	30–4000rpm	100–4000rpm	100–4000rpm
Control mode	Velocity control	Position control	Velocity control	Position control

LP-M series

High-performance 3D fiber lasers

Functions
and features

> 3D marking
> Laser head with IP64 rating
> Output class: 20W, 50W
> Especially well suited for: metal, deep engraving

LP-Z series

Fiber lasers with built-in
Z axis control

Functions
and features

> 3D function for marking complex surfaces
> On-the-fly marking of moving workpieces
> High pulse peak power
> Large marking field: 330 x 330mm
> Output class: 13W, 25W
> Especially well suited for: plastics, metal

LP-RV series

20W short pulse fiber laser system for applications with extra small characters and high contrast

Functions and features

> Small thermal effect on the workpiece thanks to the short pulses
> Exact marking of extra small characters as small as 0.15mm × 0.15mm
> Switchable pulse duration: 1ns to 200ns
> Removable head with IP64 rating
> PROFINET / EtherNET/IP network units are provided to support the PLC connection
> Output class: 20W
> Especially well suited for: high contrast marking on plastics

LP-RF series

The best choice for uncomplicated 2D plastic and metal applications

Functions and features

> With new easy handling software NAVI smart
> Direct linkage with image processing device
> Removable head with IP64 rating
> PROFINET / EtherNET/IP network units are provided to support the PLC connection
> Output class: 20W
> Especially well suited for: 2D plastic and metal applications

LC 3000

Workstation

Functions and features

Panasonic provides a standalone laser protective enclosure as a manual manufacturing workplace for prototyping and individual production. The workstation LC 3000 is able to tackle numerous tasks and offers a wide range of possible applications.

The workstation allows the necessary freedom of movement and is available in three different models:

> Rotary indexing table Ø 650mm
> 360° rotation axis
> Servo driven X, Y and Z axes

Standard specification

> Laser class 1
> Mobile laser safety cabin
> Servo driven X, Y and Z axis
> Servo driven cabin protective door
> Internal extraction unit with filter insert optional
> Grooved plate or perforated plate as an option
> Connector 230V / 16A
> Industrial PC with Windows and special laser software:
  » FontMaker
  » LaserMarkerNAVI plus
  » Logo Data Conversion Software
  » Logo Data Editing Software
> Interior LED lighting
> Optical window with laser protection glass

All Panasonic fiber lasers and the LP-GS can be integrated.

Accessories

Panasonic recommends employing an extraction unit when using a laser marker.
This extends the service life of the laser and protects the operator from health hazards. Panasonic offers suitable extraction units for a variety of marking tasks. In addition, we are happy to provide advice on specialized solutions.

LT4H / LT4H-W

Digital timer

Functions and features

LT4H

> 8 operation modes
> Time range: 0.001s to 999.9h
> Operating voltage range: 12–24V DC, 24V AC/DC, 100–240V AC
> Relay output: 5A / 250V AC (resistive load)
> Transistor output: 100mA / 30V DC
> IP66 degree of protection (front)
> Terminal: pin type / screw terminal type
> Dimensions: 48 x 48 x 65.5mm / 48 x 48 x 70mm

Key points

> Bright and easy-to-read display
> Two-color LC backlight
> Changeable panel cover, black/white

Product no.	Description
LT4H240ACJ	LT4H digital timer, 100-240V AC, relay output, 11 pins
LT4H240ACSJ	LT4H digital timer, 100-240V AC, relay output, screw terminal
LT4H24ACJ	LT4H digital timer, 24V AC, relay output, 11 pins
LT4H24J	LT4H digital timer, 12–24V DC, relay output, 11 pins
LT4H24SJ	LT4H digital timer, 12–24V DC, relay output, screw terminal
LT4H8240ACJ	LT4H digital timer, 100–240V AC, relay output, 8 pins
LT4HT24J	LT4H digital timer, 12–24V DC, transistor output, 11 pins
LT4HW240ACJ	LT4H digital timer, 100–240V AC, relay output, 11 pins
LT4HW240ACSJ	LT4H-W digital timer, 100-240V AC, relay output, screw terminal
LT4HW24SJ	LT4HW digital timer, 12-24V DC, relay output, screw terminal

LC2H

Digital counter

Functions and features

> Counter range: 8 digits
> Operating voltage range: 24V DC (preset type)
> Transistor output: 100mA, 30V DC PNP/NPN (preset type)
> Input signals: non-voltage or open collector
> Dimensions: 48 x 24 x 54.4mm

Key points

> Industry first, bright, 2-color back light
> Counting speed switchable between 30Hz and 5kHz
> Operation modes:
   » addition / subtraction
   » with reset
   » preset value setting

Product no.	Description
LC2HF2KKJ	LC2H counter, counting speed 2kHz/30Hz, standard type
LC2HFDL2KKBJ	LC2H counter, counting speed 2kHz/30Hz, backlight type, voltage input
LC2HFDL2KKJ	LC2H counter, counting speed 2kHz/30Hz, standard type, voltage input
LC2HFE2KKJ	LC2H counter, counting speed 2kHz/30Hz, standard type
LC2HFEDL2KKJ	LC2H counter, counting speed 2kHz/30kHz, standard type
LC2HFFV30J	LC2H counter, counting speed 30Hz, standard type
LC2HPFEWB24VJ	LC2H counter, counting speed 5kHz/30kHz, preset counter

LC4H/LC4H-W

Digital counter

Functions and features

LC4H

> Operation modes: 5 input modes
> Counter range: 4 digits or 6 digits
> Counting speed: 30Hz or 5kHz
> Operating voltage range: 12–24V DC, 24V AC/DC, 100–240V AC
> Relay output: 5A / 250V AC (resistive load)
> Transistor output: 100mA / 30V DC
> IP66 degree of protection
> Terminal: pin type / screw terminal type
> Dimensions: 48 x 48 x 64.5mm / 48 x 48 x 70.1mm

Key points

> Bright and easy-to-read display
> Easy to use
> Changeable panel cover, black/white
> Two-stage presetting (upper and lower limits)
> Two outputs
> Changeable panel cover, black/white

Product no.	Description
LC4HR4240ACJ	LC4H electronic counter, 100–240V AC, 4 digits, 11 pins
LC4HR4240ACSJ	LC4H electronic counter, 100–240V AC, 4 digits, screw
LC4HR424ACJ	LC4H electronic counter, 24V AC, 4 digits, 11 pins
LC4HR424SJ	LC4H electronic counter, 12–24V DC, 4 digits, screw
LC4HR6240ACJ	LC4H electronic counter, 100–240V AC, 6 digits, 11 pins
LC4HR6240ACSJ	LC4H electronic counter, 100–240V AC, 6 digits, screw
LC4HR624ACJ	LC4H electronic counter, 24V AC, 6 digits, 11 pins
LC4HR624SJ	LC4H electronic counter, 24V DC, 6 digits, screw

Functions and features

> Operation modes: 5 input modes
> Counter range: 4 digits or 6 digits
> Counting speed: 30Hz or 5kHz
> Operating voltage range: 12–24V DC, 24V AC/DC, 100–240V AC
> Relay output: 5A / 250V AC (resistive load)
> Transistor output: 100mA / 30V DC
> IP66 degree of protection
> Terminal: pin type / screw terminal type
> Dimensions: 48 x 48 x 64.5mm / 48 x 48 x 70.1mm

LC4H-S

Digital counter

Key points

> Scale factor
> 12V DC power supply to connect photoelectric sensors, proximity switches or encoders (at 240V AC types)
> Bright and easy-to-read display
> Bright, two-color backlight LCD display
> Changeable panel cover, black/white

Product no.	Description
LC4HPSVR6240ACSJ	LC4H electronic counter, 100–240V AC, 6 digits, scale factor, screw
LC4HST424SJ	LC4H electronic counter, 12–24V DC, 4 digits, scale factor, screw terminal type, transistor output
LC4HSR424SJ	LC4H electronic counter, 12–24V DC, 4 digits, scale factor, screw terminal type, relay output
LC4HST624SJ	LC4H electronic counter, 12–24V DC, 6 digits, scale factor, screw terminal type, relay output
LC4HSVR424J	LC4H electronic counter, 12–24V DC, 4 digits, scale factor, 11 pins
LC4HSVR624J	LC4H electronic counter, 12–24V DC, 6 digits, scale factor, 11 pins
LC4HSVR624SJ	LC4H electronic counter, 12–24V DC, 6 digits, scale factor, screw terminal type, relay output

LH2H

Digital hour meter

Functions and features

> Operating voltage: built-in battery; 4.5V–30V DC, 24–240V AC
> Output: no output (standard type)
> Display: 7 digits; day / hour; hour; hour / min. / sec.
> Battery life: 10 years
> Reset: yes / no (standard type)
> Dimensions: 48 x 24 x 54.4mm

Key points

> Industry first, bright, 2-color back light
> Easy-to-read display
> Battery replacement easy

Product no.	Description
LH2HFDHKDLBJ	LH2H hour meter, backlight type
LH2HFDHKDLJ	LH2H hour meter, standard type, voltage input
LH2HFDHKJ	LH2H hour meter, standard type, non-voltage input
LH2HFHMKFVJ	LH2H hour meter, standard, frame type, free voltage, free voltage input type (24-240V AC/DC)
LH2HFHMKJ	LH2H hour meter, standard type with installation frame, non-voltage input

KT4R/KT4H(B)

Temperature controllers

Functions and features

KT4R

> Built-in rearing auto tuning function
> Large display and keys
> Compact design
> IP66 degree of protection (front)
> Sampling time 125ms
> Dimensions: 48 x 48 x 58.8mm
> Program control: 9-step pattern control (ramp function)

Key points

> Dimensions 48 x 48 x 135mm (W x H x D)
> 11-segment display with 3 colors for PV
> 4 set values (externally selectable)
> TOOL port included as standard
> Heater burn-out alarm supports 3-phase heaters

Product no.	Description
AKT4R111100	KT4R temperature controller, multi-input, relay output, 1 x alarm output, 100–240V AC, 48 x 48mm
AKT4R112100	KT4R temperature controller, multi-input, transistor output 12V 40mA, 1 x alarm output, 100–240V AC, 48 x 48mm
AKT4R112100	KT4R temperature controller, multi-input, transistor output 12V 40mA, 1 x alarm output, 100–240V AC, 48 x 48mm

Product no.	Description
AKT4H111200	KT4H temperature controller, multi-input, relay output, 2 x alarm output, 240V AC
AKT4H111100	KT4H temperature controller, multi-input 240V AC, relay output, 1 x alarm output
AKT4H111110	KT4H temperature controller, multi-input 100–240V AC, relay output, 1 x alarm output, heating/cooling control relay output
AKT4H1111002	KT4H temperature controller, multi-input 2240V AC, relay output, 1 x alarm output, contact input

KT7

Temperature controller

Functions and features

> Size 22.5 x 75 x 135mm (WxHxD)
> Screw terminal type
> DIN-rail mounting
> Alarm output
> Analog value converter function

Product no.	Description
AKT7111100J	KT7 temperature controller, 100–240V AC, relay output, alarm output
AKT71121001J	KT7 temperature controller, 100–240V AC, transistor output, alarm output, RS485
AKT7112100J	KT7 temperature controller, 100–240V AC, transistor output, alarm output
AKT7211100J	KT7 temperature controller, 24V AC/DC, relay out, alarm out
AKT7212100J	KT7 temperature controller, 24V AC/DC, transistor out, alarm out

KT8R

Temperature controller

Functions and features

> Dimensions 48 x 96 x 58.8mm
> IP66 degree of protection (front)
> Sampling time 125ms
> Program control: 9-step pattern control (ramp function)

Product no.	Description
AKT8R111100	KT8R temperature controller, multi-input, relay output, 1 x alarm output, 100–240V AC, 48 x 96mm
AKT8R111200	KT8R temperature controller, multi-input, relay output, 2 x alarm output, 100–240V AC, 48 x 96mm
AKT8R112100	KT8R temperature controller, multi-input, 100-240V AC, transistor output, 1 x alarm output
AKT8R112200	KT8R temperature controller, multi-input, 100-240V AC, transistor output, 2 x alarm output

KT9R

Temperature controller

Functions and features

> Dimensions 96 x 96 x 58.8mm
> IP66 degree of protection (front)
> Accuracy 0.1%
> Sampling time 125ms
> Built-in rearing auto tuning function
> Large display and keys
> Program control: 9-step pattern control (ramp function)

Product no.	Description
AKT9R111100	KT9R temperature controller, multi-input, relay output, 1 x alarm output, 100–240V AC
AKT9R113100	KT9R temperature controller, multi-input, current output, 1 x alarm output, 100–240V AC

MAC-I

Safety components

Functions and features

› Visible operation
› Able to switch strong currents (10A conventional thermal current)
› Precise operating points (consistency).
› Immune to electromagnetic disturbances
› Electrically separated contacts.
› N.C. contacts with positive opening operation
› Extremely compact with optimal air cooling

Key points

› Diversity of contact blocks and electrical connection
› Resistant polymeric housing
› Robust metal and aluminum housing in various series

MAC-I

Positioning switch

Functions and features

› IP65 rating with polycarbonate housing
› IP66 rating with metal box
› IP67 rating for MEP/MEM series
› Types with built-in cable (MEP-/MEM series)
› Forced opening of the contacts (IEC 60947-5-1, EN 60947-5-1)

Key points

› High-quality, robust metal casings
› Shock-resistant polymeric casing with double insulation
› Large choice of fiber actuators

KW2M

Eco-POWER METER
Extreme and Advanced

Functions and features

> Main unit expandable with up to 3 expansion units
> Each unit can measure up to 2 circuits
> Accuracy: 0.2% for V, I and 0.5% for kWh
> Power quality measurement
> Demand measurement
> Web server functionality integrated
> 2 Ethernet ports, 1 RS485 interface
> 1 input, 2 outputs
> Quick wiring thanks to push-in terminals
> DIN-rail mounting
> 4GB internal memory (3GB for log data)(KW2M-X)
> RTC
> Real-time monitoring screen

Expansion unit - analog unit:

> Analog input (voltage/current) 3 channels: 0 to 60V, 0 to 20mA, 4 to 20mA
> Resistance temperature detector (RTD) 2 channels: PT100/PT1000

Expansion unit - digital unit:

> Number of inputs/outputs: Pulse train 2 channels, feedback output 4 channels
> Input type selection: Non-voltage contact or open collector

Product no.	Description
AKW263100A	Eco-POWER METER KW2M-A advanced, kW, kWh, kvar, A, V, PF, Hz, temperature °C, RS485, MEWTOCOL/Modbus (RTU), DIN-rail mounting, 0–690V AC, three-phase/four-conductor system, 2 x Ethernet, THD, clock/calendar function, demand measurement
AKW264100A	Eco-POWER METER KW2M-X extreme, 4GB internal memory, kW, kWh, kvar, A, V, PF, Hz, temperature °C, RS485, MEWTOCOL/Modbus (RTU), DIN-rail mounting, 0–690V AC, three-phase/four-conductor system, 2 x Ethernet, THD, clock/calendar function, demand measurement
AKW272100A	Expansion unit for Eco-POWER METER KW2M
AKW273230A	Expansion unit for Eco-POWER METER KW2M (analog inputs)
AKW274240A	Expansion unit for Eco-POWER METER KW2M (digital I/O)

KW1M/-H

Eco-POWER METER

Functions and features

> Screw and DIN-rail installation possible
> Integrated RS485 interface (Modbus RTU/MEWTOCOL)
> Automatic logging of measurement data at numerous selectable intervals (can be saved on SD memory card with KW1M-H)
> Diverse alarm functions, e.g. when current consumption levels are exceeded
> Clock/calendar function
> Suitable for measuring 3-phase currents of up to 400V AC
> Display of calculated CO2 use
> Integrated pulse counter and hour meter
> Pulse OUT
> Free software for graphically displaying the most important measurement values

Key points

> Monitors and displays the most important electrical parameters:
> Instantaneous power
> Energy consumption

> Current
> Voltage
> Power factor
> Frequency, etc.

Product no.	Description
AKW1111B	KW1M Eco-POWER METER, kW, kWh, MWh, A, V, cos phi, Hz, RS485, MEWTOCOL/Modbus (RTU), screw connection, DIN-rail and screw mounted type, 100/200/400V AC, 1/3-phase measurement
AKW1121B	KW1M Eco-POWER METER, kW, kWh, MWh, A, V, cos phi, Hz, RS485, MEWTOCOL/Modbus (RTU), screw connection, DIN-rail and screw mounted type, SD card slot, 100/200/400V AC, 1/3-phase measurement

KW9M

Eco-POWER METER
Standard and Advanced Type

Functions and features

> Panel-mounted type
> Input voltages that can be measured: up to 500V (L-L), 289V (L-N)
> Accuracy class according to
  » EN 62053-21 class 0.5S (active power measurement)
  » EN 62053-23 class 2. (reactive power measurement)
> 4-line LCD display
> RS485 (Modbus RTU, MEWTOCOL protocol)
> USB port
> Display of all electrical parameters
> Sum of the 3 phases (e.g. current, energy, power)
> Demand management (compliant with the IEC standard)
> Harmonic measurement Total Harmonic Distortion (THD) measurement
> High accuracy: 0.2 %

> Up to 3 circuits can be measured (1P2L), (3P4L -> 1 circuit)
> Currents as low as 1mA can be measured
> Bidirectional energy measurement (energy produced and energy consumed)
> Can be connected with AC or DC voltage
> Direct connection to 1A/5A current transformers (secondary side current)

Additional features of advanced type:

> N-phase measurement (with 4th current transformer)
> Pulse train and alarm output
> Unbalanced current and voltage measurement

Product no.	Description
AKW91110	KW9M Eco-POWER METER, panel mounting, kW, kWh, kvar, A, V, PF, Hz, temperature °C, RS485, MEWTOCOL/Modbus (RTU), 0–500V AC three-phase/four-conductor system, USB port
AKW92112	KW9M Eco-POWER METER, panel mounting, kW, kWh, kvar, A, V, PF, Hz, temperature °C, RS485, MEWTOCOL/Modbus (RTU), 0–500V AC three-phase/four-conductor system, USB port, THD and demand measurement
AKW9-DINRAIL	KW9M adapter for DIN-rail mounting

AKW4 current transformers

Suitable for KW4M, KW7M, KW8M, KW2G, KW1M

Characteristics	Clamp type				Closed type		
	AKW4801B	AKW4802B	AKW4803B	AKW4804B	AKW4506B	AKW4507B	AKW4508B
Prim. nominal current	5A/50A	100A	250A	400A	50A/100A	250A/400A	600A
Diameter	ø10	ø16	ø24	ø36	ø17	ø36	

JS current transformers

Suitable for KW2M/ KW9M

	JS17S-Ipn/1A						JS24S-Ipn/1A						JS36S-Ipn/1A			
Prim. nominal current (Ipn) in A	60	75	100	125	150	200	100	125	150	200	250	300	300	400	500	600
Class 0.5 : Burden in VA	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	0.5	0.5
Class 1.0 : Burden in VA	-	-	-	-	-	-	-	-	-	0.5	1	1.5	1.5	-	-	-
Class 3.0 : Burden in VA	0.2	0.5	0.5	1	1	1	1	1	1	-	-	-	-	-	-	-

	JS17S-Ipn/5A	JS24S-Ipn/5A						JS36S-Ipn/1A					
	150	100	150	200	250	300	400	200	250	300	400	500	600
Class 0.5 : Burden in VA	-	-	-	-	-	-	-	-	-	-	0.5	0.5	0.5
Class 1.0 : Burden in VA	-	-	-	0.5	0.5	0.5	105	-	0.5	0.5	2.5	2.5	5.0
Class 3.0 : Burden in VA	1.5	1.5	1.5	-	-	-	-	2.5	-	-	-		

ASFP series

DC Fans

Functions and features

› Dimensions:
  » 40 x 40 x 10mm
  » 60 x 60 x 25mm
  » 80 x 80 x 25mm
  » 92 x 92 x 25mm
  » 120 x 120 x 25mm
  » 120 x 120 x 38mm
› Operating voltages: 5VDC, 12V DC, 24V DC
› Different rotation speeds per model
› Blockage protection with automatic restart
› Reverse polarity and overvoltage protection
› Optional: with lock sensor output (alarm if fan is blocked)

Key points

› Long lifetime
› Quiet operation

Product no.	Description
ASFP60372	Axial fan, 24V DC, 60 x 60 x 25mm
ASFP62391	Axial fan with sensor output, 12V DC, 60 x 60 x 25mm
ASFP80392	Axial fan with sensor output, 24V DC, 80 x 80 x 25mm

Most models of the ASFN series have been improved to achieve a better performance.

ASEN series

AC Fans

Functions and features

› Dimensions:
  » 60 x 60 x 30mm
  » 80 x 80 x 25mm
  » 80 x 80 x 38mm
  » 92 x 92 x 25mm
  » 120 x 120 x 25mm
  » 120 x 120 x 38mm
  » 150 x 172 x 38mm
› 6 rated voltages: 100V AC to 240V AC
› Three rotation speeds per model
› Fan with aluminum housing
› Propeller made of reinforced plastic material
› Optional: Cable (length 300mm) or Faston-terminal
  (2.8 x 0.5mm, Faston #110)

Key points

› Long lifetime
› Quiet operation

Product no.	Description
ASEN10216	AC fan, 230V AC, 120 x 120 x 25mm, connecting cable
ASEN50756	AC fan 230V AC, 150 x 172 x 38mm
ASEN80216	AC fan, 230V AC, 80 x 80 x 25mm, connecting cable

The models ASEN80211 and ASEN80212 have been improved to achieve a better performance. Please note their new order numbers ASEP80211 and ASEP80212, respectively.
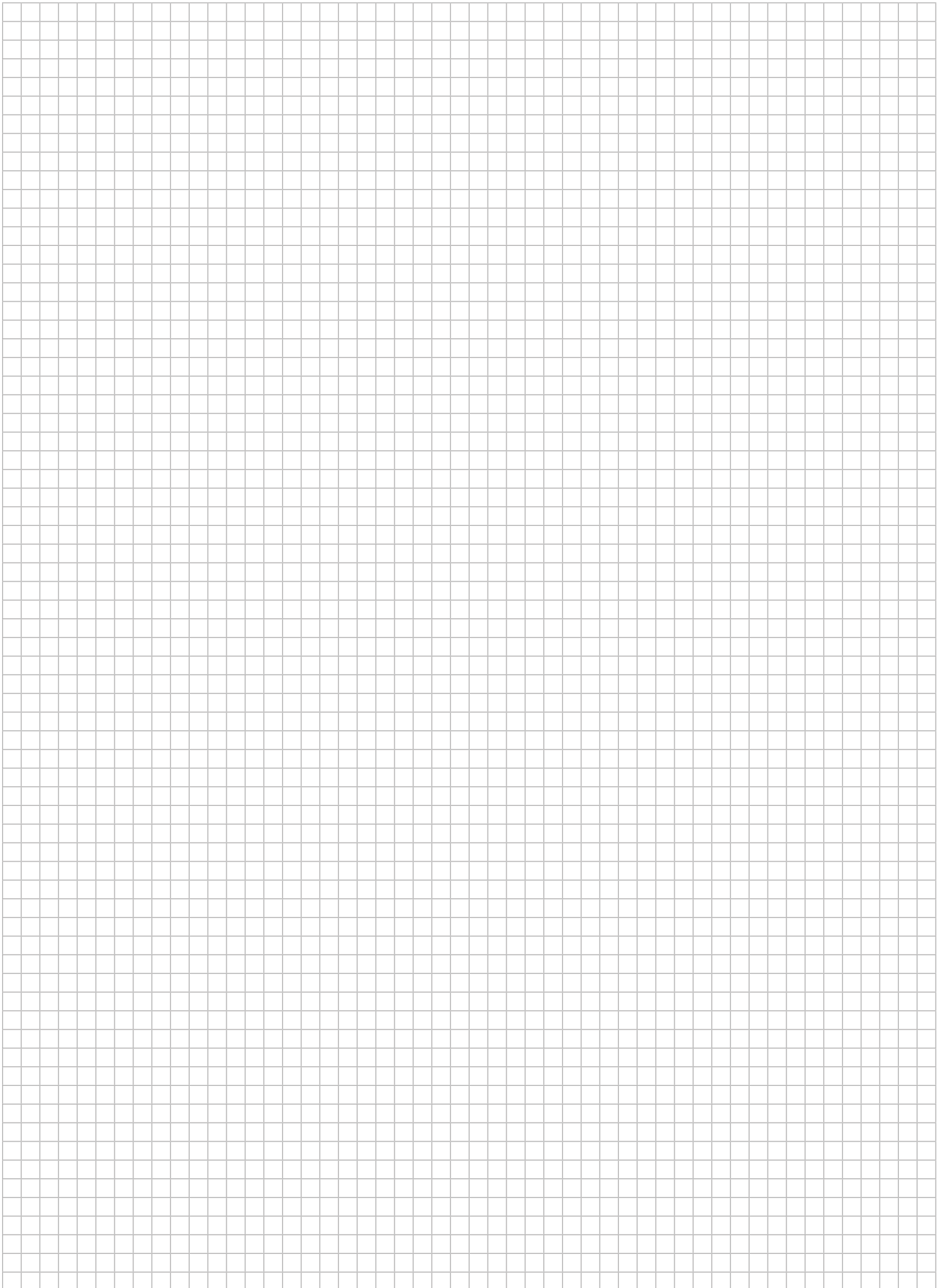
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