Overview
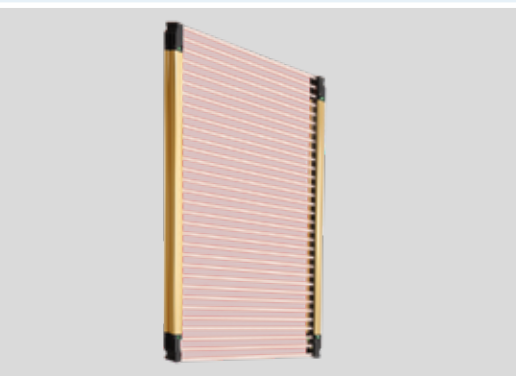
AUTOMATION PRODUCTS – KEY PRODUCTS

Panasonic Industry Automation Products:

The manufacturing industry is changing – and its technological requirements are changing with it. In an industry where automation has served so far mainly to boost production volume, flexibility has been discovered as a response to rising labor costs, declining availability and constantly changing consumer demand. As an industrial partner, we must therefore meet both needs: on the one hand standard products and on the other more complex, tailor-made solutions supplemented by added value services. Panasonic Industry offers not only a wide range of industry products covering the entire chain 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.
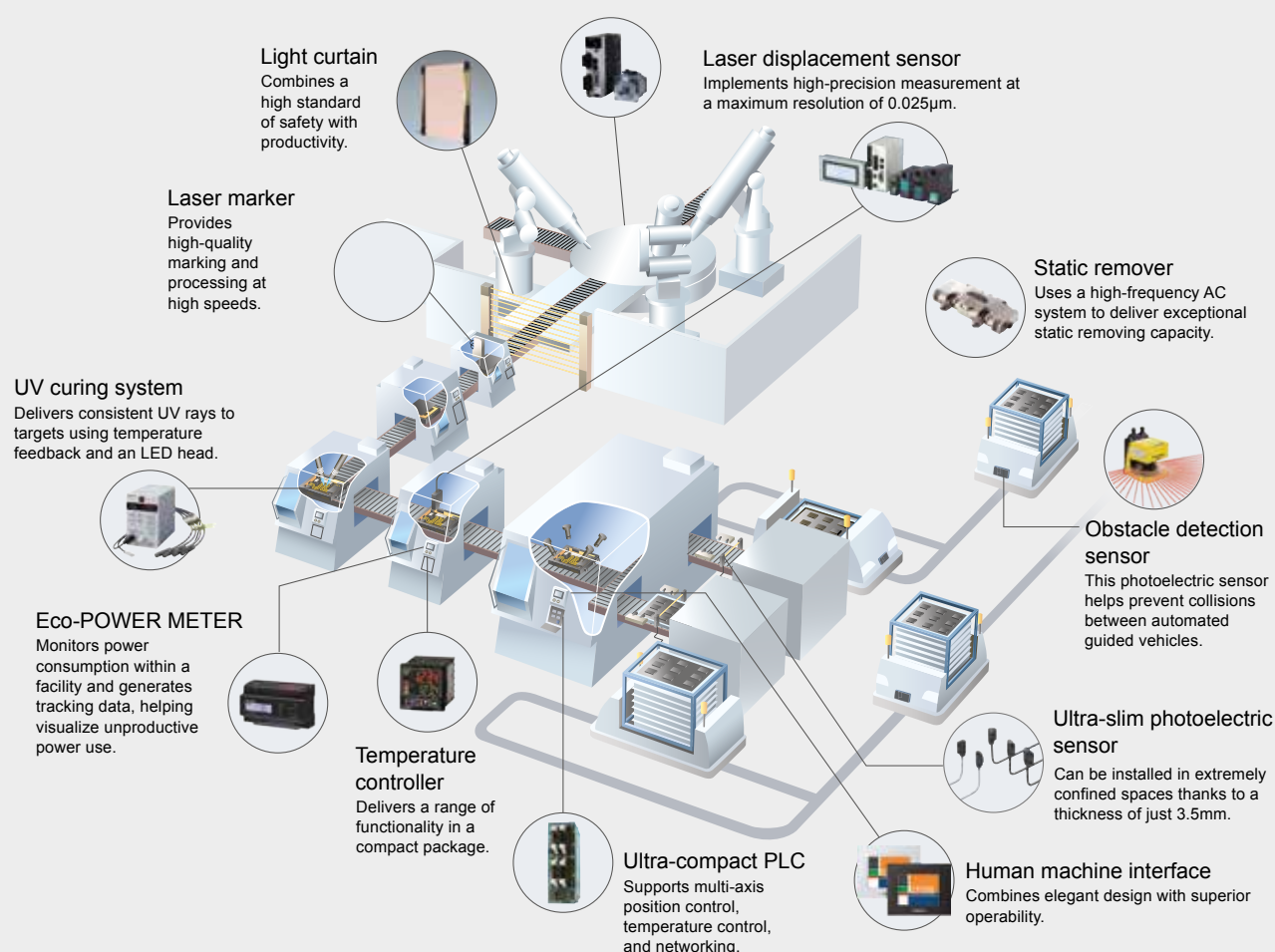
Quality standards of Panasonic Industry

During development, all Panasonic products are subjected to much more severe conditions than they will ever encounter in actual operation. However, such tests help us identify weak spots and eliminate them. In fact we are so convinced about the quality of our products that many come with a 3-year rather than the customary 2-year warranty.

Ecological automation

All together, Panasonic specifies 14 forbidden and hazardous substances. Panasonic's specifications permit less than one-tenth of the level allowed by the RoHS guideline for the 6 most important hazardous substances . Moreover, Panasonic has forbidden the use of another 8 hazardous substances in its products that are not even covered by the RoHS Directive. Hence our own requirements are far more strict than those required by law.

Light curtain
Combines a high standard of safety with productivity.

Laser displacement sensor
Implements high-precision measurement at a maximum resolution of 0.025µm.

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.

UV curing system
Delivers consistent UV rays to targets using temperature feedback and an LED head.

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

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

Ultra-slim photoelectric sensor
Can be installed in extremely confined spaces thanks to a thickness of just 3.5mm.

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

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

Human machine interface
Combines elegant design with superior operability.

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. Panasonic offers a wide range of Eco-POWER METERS that process acquired data as multi-communication gateways and provide support for users in implementing measures to save energy.

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 and the resulting cost savings represent a tremendous market potential for retail business. Remote diagnostics of maintenance, even including a resource management system, can be reliably implemented by Panasonic Industry with a combination of smart sensors, touch panels, plus control and network technology.
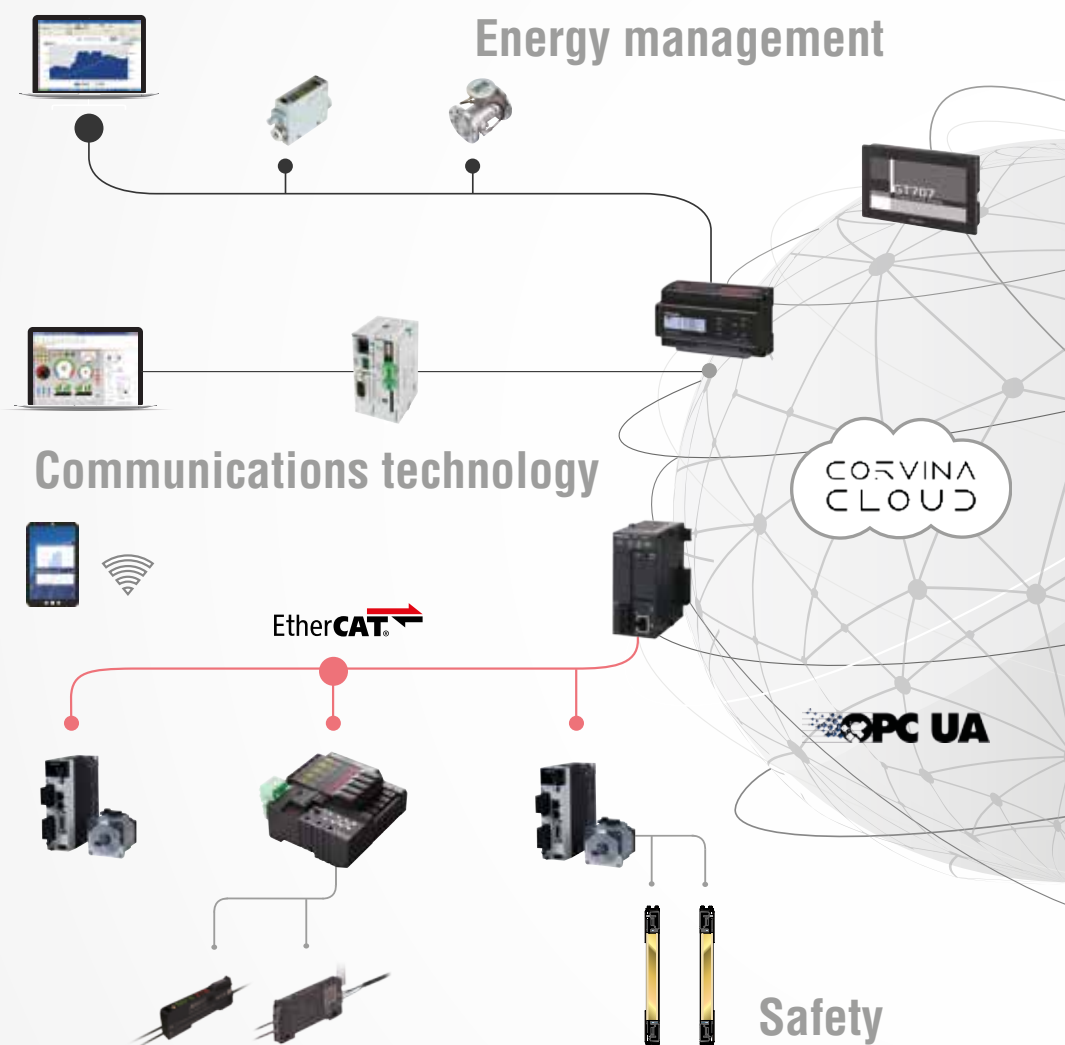
Safety solutions

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.

Laboratory automation / measurement engineering

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. High-resolution measurement sensors, proximity switches and thru-beam sensors for object and location detection from Panasonic Industry are ideally suited for these applications. High processing speeds and contactless object detection boost productivity while shortening work cycles.
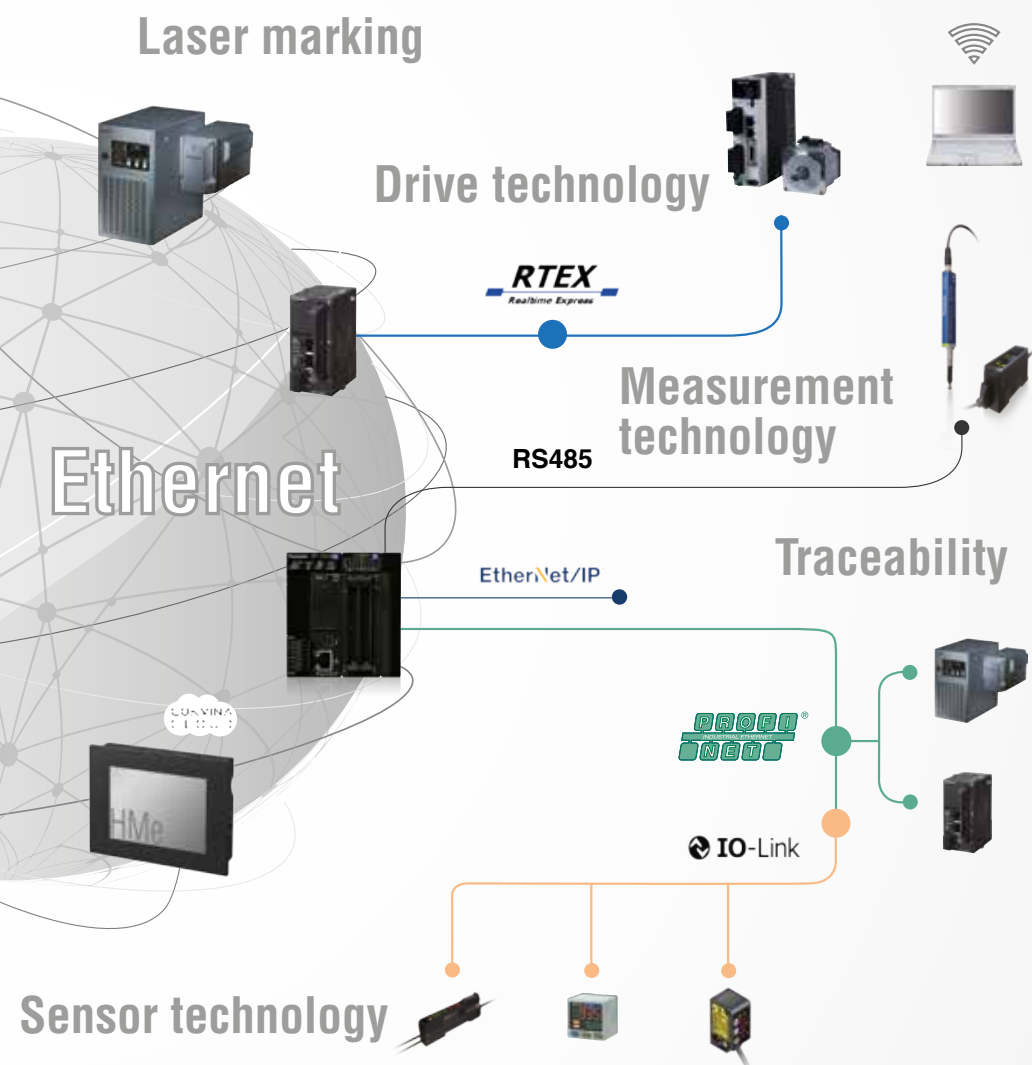
Energy management

Communications technology

EtherCAT

CORVINA CLOUD

OPC UA

Safety

Traceability

To be seamlessly networked – this is one of the core requirements for companies wishing to continue developing in line with Industry 4.0 One important part of Industry 4.0 is traceability – being able to trace any product back right to its source. 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 high 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, industry needs systems that are able to mark materials such as metals or resin durably and accurately. Fiber lasers from Panasonic are a particularly good choice for this task.

Internet of Things (IoT)

The Internet of Things (IoT) also requires remote access devices, similar to M2M 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 tool that provides various solutions for this type of application for almost 20 years in the form of the FP Web-Server. Panasonic offers a wealth of new equipment and technologies (IO-Link, Profinet, EtherCat Ethernet 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 our new Corvina Cloud with fast remote diagnostics, maintenance and more.

Laser marking

Drive technology

RTEX
Realtime Express

Ethernet

Measurement technology

RS485

EtherNet/IP

Traceability

PROFINET
INDUSTRIAL ETHERNET

HMe

IO-Link

Sensor technology

GX-F/H

Rectangular inductive sensors

Features

■ Key points

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

Product no.	Type	Sensing range	Out-put	Supply voltage	N.O./N.C.	Cable/connector
GX-F6A-P	Proximity sensor, rectangular shape	1.6mm	PNP	12–24V DC	N.O. contact	Cable 1m
GX-F8A-P	Proximity sensor, rectangular shape	2.5mm	PNP	12–24V DC	N.O. contact	Cable 1m
GX-H8A-P	Proximity sensor, rectangular shape	2.5mm	PNP	12–24V DC	N.O. contact	Cable 1m
GX-F12A-P	Proximity sensor, rectangular shape	4mm	PNP	12–24V DC	N.O. contact	Cable 1m
GX-F12B-P	Proximity sensor, rectangular shape	4mm	PNP	12–24V DC	N.C.	Cable 1m
GX-H12A-P	Proximity sensor, rectangular shape	4mm	PNP	12–24V DC	N.O. contact	Cable 1m
GX-H12B-P	Proximity sensor, rectangular shape	4mm	PNP	12–24V DC	N.C.	Cable 1m
GX-F15A-P	Proximity sensor, rectangular shape	5mm	PNP	12–24V DC	N.O. contact	Cable 1m

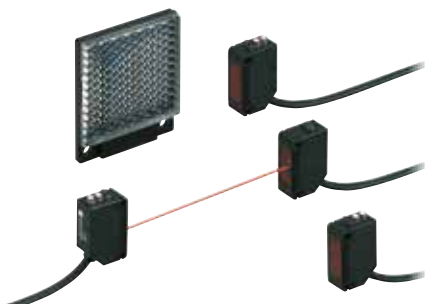# CY-100

Cylindric photoelectric sensors

Features

■ Key points

› Standard or side view types
› 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

Product no.	Type	Sensing range	Output	Supply voltage	Light-ON/Dark-ON	Cable/connector
CY-111A-P	Thru-beam type, front sensing	15m	PNP	12–24V DC	Light-ON	Cable 2m
CY-111A-P-Z	Thru-beam type, front sensing	15m	PNP	12–24V DC	Light-ON	M12
CY-111B-P	Thru-beam type, front sensing	15m	PNP	12–24V DC	Dark-ON	Cable 2m
CY-111B-P-Z	Thru-beam type, 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

CX-400

Compact photoelectric sensors

Features

■ Key points

› Huge variety
› 5-turn adjuster
› Low hysteresis
› Light-ON/Dark-ON
› IP67 degree of protection
› Short-circuit protection
› Polarizing filter

■ Accessories

› Mounting bracket
› M8 connector type
› Slit masks

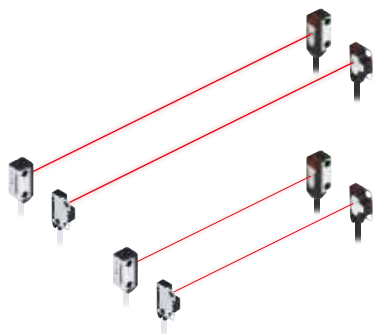| Product no.	Type	Sensing range	Output	Supply voltage	Light-ON/ Dark-ON	Cable/ connector
CX411P	Thru-beam type	10m	PNP	12–24V DC	Switchable	Cable 2m
CX411PZ	Thru-beam type	10m	PNP	12–24V DC	Switchable	M8
CX412P	Thru-beam type	15m	PNP	12–24V DC	Switchable	Cable 2m
CX412PZ	Thru-beam type	15m	PNP	12–24V 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 polarisation filter	3m	PNP	12–24V DC	Switchable	Cable 2m
CX491PZ	Retroreflective type with polarisation 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

CX-44x

Compact photoelectric sensors with background suppression

Features

■ Key points

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

Product no.	Type	Sensing range	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

Features

■ Key points

› Smallest sensor 8 x 14 x 3mm (W x H x D)
› Operating range of thru-beam type: 50 to 500mm
› Minimum sensing size from 0.3 to 1mm
› Front and side sensing type available
› Clearly visible beam spot

■ Accessories

› Mounting bracket

Product no.	Type	Sensing range	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 type, front sensing	50mm	PNP	12–24V DC	Light-ON	Cable 2m
EX-Z11FB-P	Thru-beam type, 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 type, front sensing	200mm	PNP	12–24V DC	Light-ON	Cable 2m
EX-Z12FB-P	Thru-beam type, 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 type, front sensing	500mm	PNP	12–24V DC	Light-ON	Cable 2m
EX-Z13FB-P	Thru-beam type, front sensing	500mm	PNP	12–24V DC	Dark-ON	Cable 2m

EX-10

Ultra-slim photoelectric sensors

Features

■ Key points

› Models with narrow beam can detect objects with a diameter of just 0.5mm
› Response time only 0.5ms
› Front sensing or side sensing versions
› New: Up to 35% less power consumption
› New: Improved ambient light immunity
› Thru-beam type or diffuse reflective type available
› 2 indicator LEDs
› IP67 degree of protection

■ Accessories

› Mounting bracket
› Slit masks

Product no.	Type	Sensing range	Output	Supply voltage	Light-ON/ Dark-ON	Cable/ connector
EX11BPN	Thru-beam type, 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 type, front sensing	150mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX13BPN	Thru-beam type, 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 type, 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 type, front sensing	1m	PNP	12–24V DC	Light-ON	Cable 2m
EX19BPN	Thru-beam type, 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

Features

Key points

› Miniaturized construction
› Response time only 0.5ms
› LED red
› New: Up to 35% less power consumption
› New: Improved ambient light immunity
› Adjustable sensitivity
› Thru-beam type
› Diffuse reflective type
› IP67 degree of protection
› 2 indicator LEDs

Accessories

› Slit masks
› Reflectors
› Mounting bracket

Product no.	Type	Sensing range	Output	Supply voltage	Light-ON/Dark-ON	Cable/connector
EX21BPN	Thru-beam type, 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

EX-30

Miniature photoelectric sensors in threaded design

Features

Key points

› Threaded design (M4 thru-beam type and M6 reflective type)
› Response time only 0.5ms
› New: Up to 35% less power consumption
› New: Improved ambient light immunity
› LED red
› Adjustable sensitivity (EX-32, EX-33)
› Two-color input and output indicators
› IP67 degree of protection
› Light ON / dark ON mode selectable (EX-33)

Accessories

› Slit masks
› Sensor mounting brackets

Product no.	Type	Sensing range	Output	Supply voltage	Light-ON/Dark-ON	Cable/connector
EX31APN	Thru-beam type	500mm	PNP	12–24V DC	Light-ON	Cable 2m
EX31BPN	Thru-beam type	500mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX32APN	Diffuse reflective type	50mm	PNP	12–24V DC	Light-ON	Cable 2m
EX32BPN	Diffuse reflective type	50mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX33PN	Thru-beam type	800mm	PNP	12–24V DC	Switchable	Cable 2m

EQ-30

Sensors with background suppression

Features

■ Key points

> Trigonometric detection principle with 2m sensing range
> Highly independent of object color
> Background suppression
> 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: 2m or 5m cable

Product no.	Type	Sens-ing range	Out-put	Supply voltage	Light-ON/ Dark-ON	Cable/ connec-tor
EQ34PN	Background sup-pression	2m	PNP	12–24V DC	Switchable	Cable 2m
EQ34PNJ	Background sup-pression	2m	PNP	12–24V DC	Switchable	M12

EQ-500

Background and foreground suppression sensors

Features

■ Key points

> Adjustable long sensing range: 1.0m or 2.5m
> Background / foreground suppression
> Unaffected by color or surface condition of the object
> Response time 2ms
> NPN/PNP transistor output
> Compact design 68 x 26 x 68mm (H x W x D)
> Time function (EQ-5□□T only)
> Short-circuit proof
> IP67 degree of protection

■ Accessories

> Sensor mounting brackets
> Foot Angled Mounting Bracket

Product no.	Type	Sensing range	Output	Supply voltage	Light-ON/ Dark-ON	Cable/ connector
EQ501	Background / foreground suppression	0.1-2.5m	Relays	24 to 240V AC, 12–240V DC	Switchable	Screw terminal
EQ501T	Foreground/background suppression, timer	0.1-2.5m	Relays	24 to 240V AC, 12–240V DC	Switchable	Screw terminal
EQ502	Background / foreground suppression	0.1-1.0m	Relays	24 to 240V AC, 12–240V DC	Switchable	Screw terminal
EQ502T	Foreground/background suppression, timer	0.1-1.0m	Relays	24 to 240V AC, 12–240V DC	Switchable	Screw terminal
EQ511	Background / foreground suppression	0.1-2.5m	PNP & NPN	12–24V DC	Switchable	Screw terminal
EQ511T	Foreground/background suppression, timer	0.1-2.5m	PNP & NPN	12–24V DC	Switchable	Screw terminal
EQ512	Background / foreground suppression	0.1-1.0m	PNP & NPN	12–24V DC	Switchable	Screw terminal
EQ512T	Foreground/background suppression, timer	0.1-1.0m	PNP & NPN	12–24V DC	Switchable	Screw terminal

IO-Link

Easy integration into the field level

Features

■ Key points

› Universal IO link interface
› Built-in self-diagnosis function
› Measurement sensor with repeatability of 10µm
› Pressure sensor with 0.05% resolution
› Fiber-optic amplifier with high transmission power

■ 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

LX-100

Digital mark sensors

Features

■ Key points

› 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 or cable type
› IP67 degree of protection

■ Accessories

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

Product no.	Type	Sensing range	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

Features

■ Key points

› 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 simplifies procurement
› 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	Sensing range	Output	Supply voltage	Light-ON/ Dark-ON	Cable/ connec- tor
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

Features

■ Key points

› 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 operating elements required for operation: The large jog switch and the mode key
› Supply voltage via only one cable for up to 16 amplifiers
› Up to four sensor heads can be installed closely
› 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	Sensing range	Out- put	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. CN73Cx

FX-500/550

Fiber-optic sensors

Features

■ Key points

› 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
› Premium quality fibers
› Entry-level model series FX-550

■ 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	Sensing range	Output	Supply voltage	Light-ON/ Dark-ON	Cable/ connector
FX-501P	Fiber amplifier	Depends on the fiber used*	PNP	12–24V DC	Setting by teaching	Connector**
FX-502P	Fiber amplifier	Depends on the fiber used*	2x PNP	12–24V DC	Setting by teaching	Connector**
FX-505P-C2	Fiber amplifier	Depends on the fiber used*	2x PNP + 4–20mA	12–24V DC	Setting by teaching	Cable 2m
FX-551P	Fiber amplifier	Depends on the fiber used*	PNP	12–24V DC	Setting by teaching	Connector
FX-551P-C2	Fiber amplifier	Depends on the fiber used*	PNP	12–24V DC	Setting by teaching	Cable 2m

* Please ask for relevant fiber cables!
** The connector type does not come with a connection cable. Please order it separately.
   CN73Cx (FX501) or CN74Cx (FX502)

Standard fibers

for FX-100/300/500/550

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.
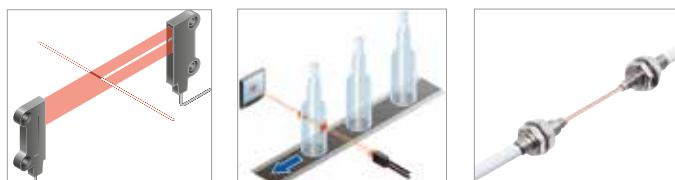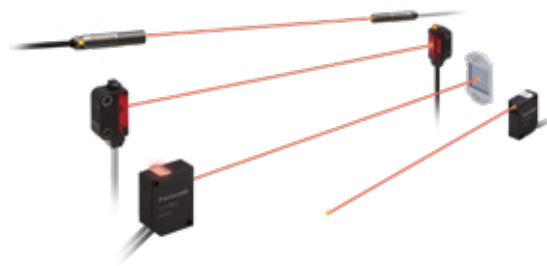
■ Key points

› 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 (1 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.

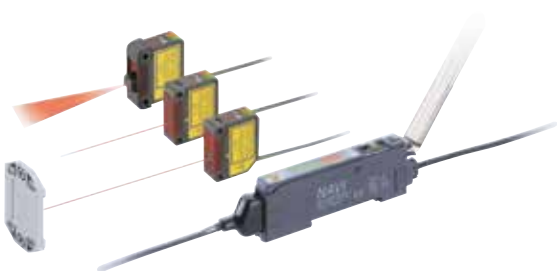# LS-500

Digital laser sensors

Features

■ Key points

› Different sensor heads available
› Small beam diameter of 6mm with a sensing range up to 2.5m
› Coaxial beam alignment
› Various settings integrated in the amplifier
› Easy to combine with other amplifiers

■ Accessories

› Mounting bracket
› Reflector for retroreflective type

Product no.	Type	Sensing range	Output	Supply voltage	Light-ON/ Dark-ON	Cable/ connector
LS-501P	Amplifiers for LS-500 heads	–	2x PNP, 4–20mA	12–24V DC	Set by teaching	Connector*
LS-501P-C2	Amplifiers for LS-500 heads	–	2x 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	2.5mm				

** The connector type does not come with a connection cable. Please order it separately. CN74Cx

LS-400

Digital laser sensors

Features

■ Key points

› Retroreflective type: Coaxial lenses with polarized filters
› Reflective types: Spot type and line type
› Red light laser diode laser class 1 or 2
› Adjustment to the beam spot size
› Ultra-compact dimensions

■ Accessories

› Mounting bracket
› Lens LSMR1 for line reflection type

Product no.	Type	Sensing range	Output	Supply voltage	Light-ON/ Dark-ON	Cable/ connector
LS401P	Controller for LS laser heads	–	2x PNP	12–24V DC	Setting by teaching	Connector*
LS401PC2	Controller for LS laser heads	–	2x PNP	12–24V DC	Setting by teaching	Cable 2m
LSH21	LS laser head, diffuse reflective spot type	1m				
LSH22	LS laser head, diffuse reflective line type	1m				
LSH91	LS laser head, coaxial retroreflective	30m				

** The connector type does not come with a connection cable. Please order it separately. CN74Cx

EX-L200

Laser sensors

Features

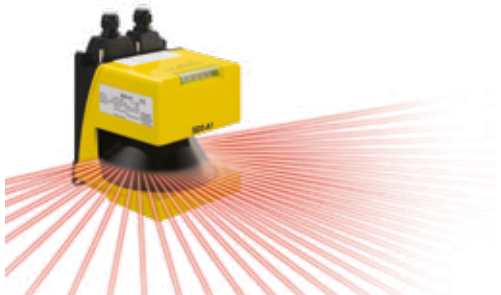### ■ Key points

› 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	Sensing range	Out-put	Supply volt-age	Light-ON/ Dark-ON	Cable/ connector
EX-L211-P	Laser thru beam, spot 6 x 4mm	1m	PNP	12–24V DC	Switchable	Cable 2m
EX-L211-P-J	Laser thru beam, spot 6 x 4mm	1m	PNP	12–24V DC	Switchable	Pigtailed M8
EX-L212-P	Laser thru beam, spot 8 x 5.5mm	3m	PNP	12–24V DC	Switchable	Cable 2m
EX-L212-P-J	Laser thru beam, spot 8 x 5.5mm	3m	PNP	12–24V DC	Switchable	Pigtailed M8
EX-L221-P	Laser spot reflective type	45-300mm	PNP	12–24V DC	Switchable	Cable 2m
EX-L221-P-J	Laser spot reflective type	45-300mm	PNP	12–24V DC	Switchable	Pigtailed M8
EX-L261-P	Laser reflective type, con-vergent	20-50mm	PNP	12–24V DC	Switchable	Cable 2m
EX-L261-P-J	Laser reflective type, con-vergent	20-50mm	PNP	12–24V DC	Switchable	Pigtailed M8
EX-L262-P	Laser convergent reflective line type	20-70mm	PNP	12–24V DC	Switchable	Cable 2m
EX-L262-P-J	Laser convergent reflective line type	20-70mm	PNP	12–24V DC	Switchable	Pigtailed M8
EX-L291-P	Laser retroreflective	4m	PNP	12–24V DC	Switchable	Cable 2m
EX-L291-P-J	Laser retroreflective	4m	PNP	12–24V DC	Switchable	Pigtailed M8

SD3-A1

Safety laser scanners

Features

■ Key points

› Warning zone, max. radius 15m
› Protection zone, max. radius 4m
› Adjustment of response times enables interference prevention
› Up to 8 freely switchable zone patterns
› Smallest dimensions in its class: 140 x 195 x 135mm (W x H x D)
› SIL2, PLd

■ Accessories

› Configuration plug (optional), handy for storing, recovering and transferring settings
› Programming cable
› Mounting bracket
› Operation check tool to simulate the digital inputs and monitor the SD3 outputs
› Cleaning set

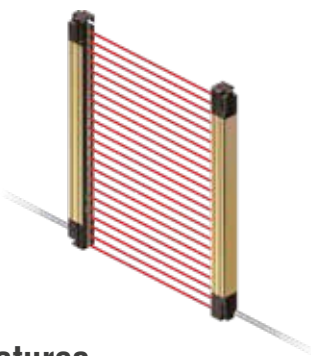| Product no.	Type	Sensing range	Output	Supply volt-age	Cable/ connector
SD3-A1	Safety laser scanner, SIL2, PLd	Protection zone with radius 4m, 190°angle	PNP (2x OSSD)	24V DC	Cable with connector

SF4D

Safety light curtains

Features

■ Key points

› Time-saving setup
› High intensity LED
› 15m operating range in long-range operation
› 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

Product no.	Type	Sensing range	Protective height	Output	Power supply voltage	Cable/ connector
SF4D-F23	Safety light curtain, SIL3, Ple, finger type	0-12m	230mm	PNP or NPN switchable (2x OSSD)	24V DC	Connector*
SF4D-F31	Safety light curtain, SIL3, Ple, finger type	0-12m	310mm	PNP or NPN switchable (2x OSSD)	24V DC	Connector*
SF4D-F39	Safety light curtain, SIL3, Ple, finger type	0-12m	390mm	PNP or NPN switchable (2x OSSD)	24V DC	Connector*
SF4D-F47	Safety light curtain, SIL3, Ple, finger type	0-12m	470mm	PNP or NPN switchable (2x OSSD)	24V DC	Connector*
SF4D-F95	Safety light curtain, SIL3, Ple, finger type	0-12m	950mm	PNP or NPN switchable (2x OSSD)	24V DC	Connector*
SF4D-H12	Safety light curtain, SIL3, Ple, hand type	0-15m	230mm	PNP or NPN switchable (2x OSSD)	24V DC	Connector*
SF4D-H16	Safety light curtain, SIL3, Ple, hand type	0-15m	310mm	PNP or NPN switchable (2x OSSD)	24V DC	Connector*
SF4D-H20	Safety light curtain, SIL3, Ple, hand type	0-15m	390mm	PNP or NPN switchable (2x OSSD)	24V DC	Connector*
SF4D-H24	Safety light curtain, SIL3, Ple, hand type	0-15m	470mm	PNP or NPN switchable (2x OSSD)	24V DC	Connector*
SF4D-H28	Safety light curtain, SIL3, Ple, hand type	0-15m	550mm	PNP or NPN switchable (2x OSSD)	24V DC	Connector*
SF4D-H32	Safety light curtain, SIL3, Ple, hand type	0-15m	630mm	PNP or NPN switchable (2x OSSD)	24V DC	Connector*
SF4D-A18	Safety light curtain, SIL3, Ple, arm type	0-15m	710mm	PNP or NPN switchable (2x OSSD)	24V DC	Connector*
SF4D-A20	Safety light curtain, SIL3, Ple, arm type	0-15m	790mm	PNP or NPN switchable (2x OSSD)	24V DC	Connector*
SF4D-A24	Safety light curtain, SIL3, Ple, arm type	0-15m	950mm	PNP or NPN switchable (2x OSSD)	24V DC	Connector*
SF4D-A28	Safety light curtain, SIL3, Ple, arm type	0-15m	1110mm	PNP or NPN switchable (2x OSSD)	24V DC	Connector*
SF4D-A32	Safety light curtain, SIL3, Ple, arm type	0-15m	1270mm	PNP or NPN switchable (2x OSSD)	24V DC	Connector*
SF4D-A36	Safety light curtain, SIL3, Ple, arm type	0-15m	1430mm	PNP or NPN switchable (2x OSSD)	24V DC	Connector*

*Please ask for relevant cables!

SF4B

Safety light curtains

Features

■ Key points

› 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

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

*Please ask for relevant cables!

SF4C

Safety light curtains

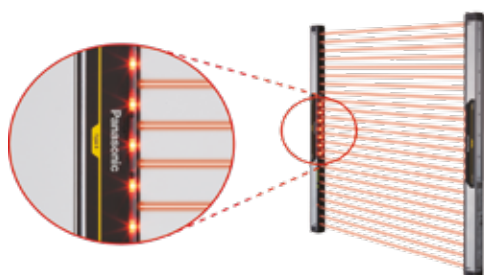### ■ Key points

> 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 function connectors
> Various muting functions (end muting function, etc.)

■ Accessories

> Extension Cable
> Front Protection Cover

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

SF4B-C

Safety light curtains

Features

■ Key points

> Easy and flexible mounting with no blind zone
> 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 (2x 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 (2x 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 (2x 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 (2x OSSD)	24V DC	Cable 5m
SF4B-H48C	Safety light curtain, SIL3, Ple, hand type	0-7m	983.4mm	PNP or NPN switchable (2x OSSD)	24V DC	Cable 5m
SF4B-H96C	Safety light curtain, SIL3, Ple, hand type	0-7m	1943.4mm	PNP or NPN switchable (2x OSSD)	24V DC	Cable 5m
SF4B-A8CA-J05	Safety light curtain, SIL3, Ple, arm type	0-7m	343.4mm	PNP or NPN switchable (2x 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 (2x 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 (2x 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 (2x OSSD)	24V DC	Cable 5m
SF4B-A24C	Safety light curtain, SIL3, Ple, arm type	0-7m	983.4mm	PNP or NPN switchable (2x OSSD)	24V DC	Cable 5m
SF4B-A48C	Safety light curtain, SIL3, Ple, arm type	0-7m	1943.4mm	PNP or NPN switchable (2x OSSD)	24V DC	Cable 5m

*Please ask for relevant cables!

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NA1

Cross-beam scanning system to detect slim objects

Features

■ Key points

› 11 emitter and receiver elements for each housing (grid spacing 10mm)
› Operating range up to 100cm
› Maximum detection field dimensions 10 x 100cm
› Smallest detectable object size: Ø 13.5mm
› Clearly visible LED indicators (continuous/flashing)
› Light-ON/Dark-ON
› Slim line design (10mm)

■ Accessories

› Mounting bracket

Product no.	Type	Sensing range	Output	Supply voltage	Light-ON/Dark-ON	Cable/connector
NA15PN	Area sensor, 100mm height	0.1 to 1.2m	PNP	12–24V DC	Switchable	Cable 2m
NA15PNJ	Area sensor, 100mm height	0.1 to 1.2m	PNP	12–24V DC	Switchable	Cable with connector 0.3m* M12
NA1PK5PN	Area sensor, 100mm height, long sensing range	0.2 to 3m	PNP	12–24V DC	Switchable	Cable 2m
NA1PK5PNJ	Area sensor, 100mm height, long sensing range	0.2 to 3m	PNP	12–24V DC	Switchable	Cable with connector 0.3m* M12

*Please ask for relevant cables!

HG-S

Contact measurement sensor

Features

■ Key points

› 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	Measurement center distance and measuring range	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-S1110	Contact-type measuring sensor, standard 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	Cable 2m
CN-HS-C3	Detector connection cable <-> amplifier, straight connector, 3m				

HG-C

Measurement sensor for displacement measuring

Features

■ Key points

› 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

Product no.	Type	Measurement center distance and range	Out-puts	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

HL-G1

High-accuracy measurement sensors

Features

■ Key points

› 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	Outputs	Supply voltage	Cable/connector
HL-G103-A-C5	Laser displacement sensor, Laser class 2	30 ±4mm	0-10V, 4-20mA, 3x NPN/PNP selectable	24V DC	Cable 5m
HL-G103-S-J	Laser displacement sensor, Laser class 2, RS422 or RS485 selectable	30 ±4mm	0–10V, 4-20mA, 3x NPN/PNP selectable	24V DC	Cable with con-nector 0,5m*
HL-G105-A-C5	Laser displacement sensor, Laser class 2	50 ±10mm	0–10V, 4-20mA, 3x NPN/PNP selectable	24V DC	Cable 5m
HL-G105-S-J	Laser displacement sensor, Laser class 2, RS422 or RS485 selectable	50 ±10mm	0–10V, 4-20mA, 3x NPN/PNP selectable	24V DC	Cable with con-nector 0,5m*
HL-G108-A-C5	Laser displacement sensor, Laser class 2	85 ±20mm	0–10V, 4-20mA, 3x NPN/PNP selectable	24V DC	Cable 5m
HL-G108-S-J	Laser displacement sensor, Laser class 2, RS422 or RS485 selectable	85 ±20mm	0–10V, 4-20mA, 3x NPN/PNP selectable	24V DC	Cable with con-nector 0,5m*
HL-G112-A-C5	Laser displacement sensor, Laser class 2	120 ±60mm	0–10V, 4-20mA, 3x NPN/PNP selectable	24V DC	Cable 5m
HL-G112-S-J	Laser displacement sensor, Laser class 2, RS422 or RS485 selectable	120 ±60mm	0–10V, 4-20mA, 3x NPN/PNP selectable	24V DC	Cable with con-nector 0,5m*
HL-G125-A-C5	Laser displacement sensor, Laser class 2	250 ±150mm	0–10V, 4-20mA, 3x NPN/PNP selectable	24V DC	Cable 5m
HL-G125-S-J	Laser displacement sensor, Laser class 2, RS422 or RS485 selectable	250 ±150mm	0–10V, 4-20mA, 3x NPN/PNP selectable	24V DC	Cable with con-nector 0,5m*

*Please ask for relevant cables!

DP-0

Pressure sensors

Features

■ Key points

› Digital pressure sensors for 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

Model no.	Type	Pressure port	Mea-sure-ment range	Out-puts	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 con-nector, 2m
DP-001	Pressure sensor for non corrosive gases	M5 female thread	0 to +10bar	NPN	Selectable with button	12–24V DC	Cable with con-nector, 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 con-nector, 2m
DP-002	Pressure sensor for non corrosive gases	M5 female thread	0 to +10bar	PNP	Selectable with button	12–24V DC	Cable with con-nector, 2m

DP-100

Pressure sensors

Features

■ Key points

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

Product no.	Type	Pressure port	Mea-sure-ment range	Out-puts	N.O./N.C.	Supply voltage	Cable/connector
DP101AEP	Pressure sensor for non corrosive gases	G1/8 M5	-1 to +1bar	PNP, 1–5V, 4–20mA	Selectable	12–24V DC	Cable with con-nector, 2m
DP101EP	Pressure sensor for non corrosive gases	G1/8 M5	-1 to +1bar	2x PNP	Variable	12–24V DC	Cable with con-nector, 2m
DP102AEP	Pressure sensor for non corrosive gases	G1/8 M5	-1 to +10bar	PNP, 1–5V, 4–20mA	Selectable	12–24V DC	Cable with con-nector, 2m
DP102EP	Pressure sensor for non corrosive gases	G1/8 M5	-1 to +10bar	2x PNP	Variable	12–24V DC	Cable with con-nector, 2m
DP111AEPJ	Pressure sensor for non corrosive gases	G1/8 M5	-1 to +1bar	PNP, 1–5V, 4–20mA	Selectable	12–24V DC	M8 Connector
DP111EPJ	Pressure sensor for non corrosive gases	G1/8 M5	-1 to +1bar	2x PNP	switchable	12–24V DC	M8 Connector
DP112AEPJ	Pressure sensor for non corrosive gases	G1/8 M5	-1 to +10bar	PNP, 1–5V, 4–20mA	switchable	12–24V DC	M8 Connector
DP112EPJ	Pressure sensor for non corrosive gases	G1/8 M5	-1 to +10bar	2x PNP	switchable	12–24V DC	M8 Connector

■ Accessories

› Connector attached cable 1, 3, 5m
› Sensor mounting brackets
› Panel mounting brackets
› Front Protection Cover

DPH-100/DPC-100

Pressure sensors

Features

■ Key points

› 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	Mea-surement range	Outputs	N.O./ N.C.	Supply voltage	Cable/ connector
DPH-101-M3	Pressure sensor head for non corrosive gases	M3	-1 to +1bar	1 to 5V		12–24V DC	Cable 2m
DPH-101-M5	Pressure sensor head for non corrosive gases	M5	-1 to +1bar	1 to 5V		12–24V DC	Cable 2m
DPH-102-M5	Pressure sensor head for non corrosive gases	M5	0 to +10bar	1 to 5V		12–24V DC	Cable 2m
DPH-103-M3	Pressure sensor head for non corrosive gases	M3	-1 to 0 bar	1 to 5V		12–24V DC	Cable 2m
DPH-103-M5	Pressure sensor head for non corrosive gases	M5	-1 to 0 bar	1 to 5V		12–24V DC	Cable 2m
DPC-101P-J	Controller for DP-H pressure sensors			2x PNP, 1–5V or 4–20mA	Switchable	12–24V DC	Cable with connector, 2m

FM-200

Flow sensors

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

Model no.	Type	Port size	Flow rate range	Out-puts	N.O./ N.C.	Supply voltage	Cable/ connector
FM-213-4-P94	Bidirectional flow sensor for air and nitrogen	4mm push-in for tubes	1l/min	1 to 5V	Switchable	12–24V DC	Cable with connector, 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 connector, 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 connector, 1m
FM-216-AG2-P94	Bidirectional flow sensor for air and nitrogen	G1/2	1.000l/min	1 to 5V	Switchable	12–24V DC	Cable with connector, 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 connector, 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 connector, 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 connector, 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 connector, 1m

■ Accessories

› Sensor mounting brackets

Ionizers

Features

Key points

› Prevents electrostatic charge in materials
› Several models and principles to choose from
› No external controllers needed
› Supply voltage 24V DC

Product no.	Type	Air pressure range	Charge removable width (max)	Supply voltage
ER-Q	Ionizer, fan type, ultra-compact		200mm	24V DC
ER-F12	Ionizer, fan type		700mm	24V DC
EC-G01	Ionizers, compressed air type, manually operated	0,5-5bar		24V DC
ERVW	Ionizer, compressed air type, double spot	0,5-5bar	300mm	24V DC
ERVS02	Ionizers, compressed air type, shower nozzles and straight bar nozzles	0,5-7bar		24V DC
ERVAS	Shower nozzle for ERVS02		spot 300mm	
ERVAB020	Straight bar nozzle for ERVS02		200mm	
ERVAB032	Straight bar nozzle for ERVS02		320mm	
ERVAB065	Straight bar nozzle for ERVS02		650mm	
ER-XC02	Controller for ER-X ionizer heads			24V DC
ER-X016	Ionizer head for ER-XC02 controller, airless or low pressure type	0–0.5bar	160mm	
ER-X032	Ionizer head for ER-XC02 controller, airless or low pressure type	0–0.5bar	320mm	
ER-X048	Ionizer head for ER-XC02 controller, airless or low pressure type	0–0.5bar	480mm	
ER-X064	Ionizer head for ER-XC02 controller, airless or low pressure type	0–0.5bar	640mm	

UJ30/35

LED spot reflective type curing system

Features

Main functions

› UV LED technology with irradiation intensity of up to 20,900mW/cm^2
› Available wavelengths: 365nm, 385nm and 405nm
› Up to four independently controllable heads
› Stable UV intensity (accuracy ±3%)
› Fanless construction
› Different heads available with spot diameters from 3mm to 10mm

Accessories

› UV sensor
› Mounting bracket

Model no.	Type	Wavelength	Max. power mW/cm²
ANUJ3000	Controller UJ30	-	-
ANUJ3500	Controller UJ35	-	-
ANUJ6180	LED head, short version, cable with connector 0.2m	365nm	12,500mW/cm²
ANUJ6184	LED head, short version, cable with connector 0.2m	385nm	14,700mW/cm²
ANUJ6187	LED head, short version, cable with connector 0.2m	405nm	15,500mW/cm²
ANUJ6423	Standard lens for LED head, spot diameter 3mm	-	-
ANUJ6420	Standard lens for LED head, spot diameter 10mm	-	-
ANUJ6428SV	Side view lens for LED head, (angle: 90 degrees), spot diameter 8mm	-	-

FP7

High-performance PLC
Seven steps to higher efficiency

Features

■ Main functions

› Compact size with room for expansion functions
› Equipped with a cassette interface.
› Add-on cassettes can be added to the CPU to increase function-ality without increasing the footprint of the system.
› 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 (scan time min. 1ms, max. 20µs for 60k steps)

Product no.	FP7 communication cassettes
AFP7CCS2	RS422 or RS485, 2 channels (insulated)
AFP7CCM1	1x RS232C (insulated)
AFP7CCM2	RS232C, 2 channels (insulated)
AFP7CCS1	RS422 or RS485, 1 channel (insulated)
AFP7CCS1M1	RS232C, 1 channel (insulated) and RS485, 1 channel (insulated)
AFP7CCET1	Ethernet 100Base-TX/10Base-T

Product no.	FP7 CPUs
AFP7CPS21	64k steps, operation speed 14 ns, no Ethernet support
AFP7CPS31	120k steps, operation speed 11ns, no Ethernet support
AFP7CPS31E	120k steps, operation speed 11ns, Ethernet communication available
AFP7CPS41E	196k steps, operation speed 11ns, Ethernet communication available

Product no.	FP7 application cassettes
AFP7FCAD21	2-channel analog input, 1-channel analog output, voltage/current
AFP7FCTC2	2-channel thermocouple input, K/J type

Product no.	FP7 thermocouple and RTD units
AFP7TC8	8 input channels, resolution 0.1°C, K, J, T, N, R, S, B, E thermocouples, [current/voltage] resolution: max. 16 bits
AFP7RTD8	8 channels, analog input, resolution 0.1°C, Pt100/JPt100/Pt1000

Product no.	FP7 analog input and output units
AFP7DA4H	Voltage output, 4 channels, voltage/current, conversion time 25µs/channel, resolu-tion max. 16 bits accuracy max. ±0.05% F.S. (at 25°C)
AFP7AD4H	Analog input, 4 channels, voltage/current, conversion time 25µs/channel, resolu-tion max. 16 bits, accuracy max. ±0.05% F.S. (at 25°C)
AFP7AD8	Analog input, 8 channels, voltage/current, conversion time 25µs/channel, resolu-tion max. 16 bits, accuracy max. ±0.1% F.S. (at 25°C)

Product no.	FP7 EtherCAT module
AFP7MC16EC	16 axes, electronic gear and cam control function, linear interpolation, circular interpolation
AFP7MC32EC	32 axes, electronic gear and cam control function, linear interpolation, circular interpolation
AFP7MC64EC	64 axes, electronic gear and cam control function, linear interpolation, circular interpolation

Product no.	FP7 Fieldbus Master Units
AFP7NCANM	CANopen Fieldbus Master Unit
AFP7NDNM	DeviceNet Fieldbus Master Unit
AFP7NPFBM	PROFIBUS Fieldbus Master Unit
AFP7NPFNM	PROFINET Fieldbus Master Unit

Product no.	FP7 digital I/O units
AFP7X16DW	16 IN, 12–24V DC, configurable input time constant
AFP7XY64D2P	32 IN, 32 OUT, source (PNP); input: 24V DC, 32 points/common; output: Load current: 0.3A/0.1A, 3.2A/common, 32 points/common
AFP7X32D2	32 IN, 12–24V DC, configurable input time constant
AFP7X64D2	64 IN, 12–24V DC, configurable input time constant
AFP7Y16R	16 OUT, 2A/point, 5A/common, 16 points/common
AFP7Y16P	16 OUT, source (PNP), load current 1.0A, 5A/common, 16 points/common
AFP7Y32P	32 OUT, source (PNP), load current 0.3A, 3.2A/common, 32 points/common
AFP7Y64P	64 OUT, source (PNP), load current 0.3A/0.1A, 3.2A/common, 32 points/common

Product no.	FP7 expansion units (master and slave)
AFP7EXPM	Up to 3 slave modules can be connected to an expansion master unit
AFP7EXPS	Up to 16 I/O modules can be connected to an expansion slave unit

Product no.	FP7 positioning units
AFP7PP02L	Line driver, 2 axes,1–500kpps, electronic gear and cam function, linear interpolation, circular interpolation
AFP7PP04L	Line driver, 4 axes,1–500kpps, electronic gear and cam function, linear interpolation, circular interpolation
AFP7PP02T	Transistor, 2 axes, 1–4Mpps, electronic gear and cam function, linear interpolation, circular interpolation
AFP7PP04T	Transistor, 4 axes, 1–4Mpps, electronic gear and cam function, linear interpolation, circular interpolation

Product no.	FP7 multi I/O unit
AFP7MXY32DWDH	Inputs: 16 digital (24V), 4 HSC, 8 interrupt outputs: 16 digital (24V NPN/PNP), 4 impulse, 4 PWM, 4-channel positioning function

Product no.	FP7 SCU module
AFP7NSC	2 cassettes

Control Web Creator

This is a graphics creation tool that allows you to easily design web content that is published by the FP7. You can creatively design content by arranging web components such as switches, lamps and meters on the screen and then setting the properties. Your content will be linked to information in the PLC without you needing any knowledge of HTML.

Menu Bar

Web component property settings

Screen creation area

Tool Bar

› Same style of operation as GTWIN, the screen design tool for touch panels
› Drag and drop components to arrange them.
› Component details are defined in an easy way using the object properties.

› Components do not lose quality when enlarged or reduced, and you can color them as desired.
› Images can be pasted in.

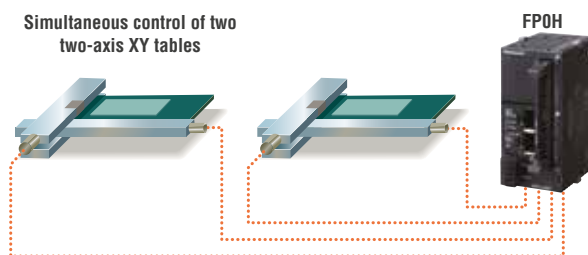| Product no.	FP7 Web Creator
AFPSWCKEY	License key for Control Web Creator software (FP7 CPU / KW2M-X). 1 license for the USB port

FP0H

The ultra-compact PLC with 2 Ethernet interfaces

Features

■ Main functions

› 2 Ethernet interfaces
› MEWTOCOL master/slave, MODBUS-TCP master/slave, FTP server/client
› High processing speed of 10ns per basic instruction (up to 10k steps)
› High memory capacity with up to 64k program memory 24k / 32k / 40k / 64k steps
› High memory capacity for data: 12k / 24k / 32k / 64k steps
› 16 inputs / 16 outputs (transistor)

Product no.	Description
AFP0HC32EP	64k steps, 16DE/16DA transistor PNP, HSC/pos. 4ch, 2 x Ethernet 10/100MBit, COM port: RS232, SD card, pin strip with 40 pins (MIL-C-83503), 24VDC
AFP0HXY64D2P	32DE/32DA, (p+n) switching/transistor (PNP), 2*pin strip with 40 pins (MIL-C-83503), 24VDC

Simultaneous control of two two-axis XY tables

FP0H

FP-XH

The universal solution

Features

■ Main functions

All-in-one solution - PLC and motion controller in a single module, the CPU for an extensive range of applications/main functions
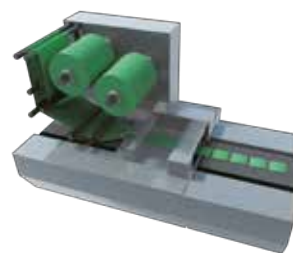
› Electronic gear
› Electr. cam/coupling control
› RTEX communication
› 8 inputs / 8 outputs (transistor)

Product no.	Description
AFPXHM8N16PD	FP-XH RTEX control unit, 24k / 32k / 40k step (switching), 8 IN /8 OUT (24V DC / 0.5A), terminal block, 24V DC, 8-axis RTEX motion control unit

Control of portal systems

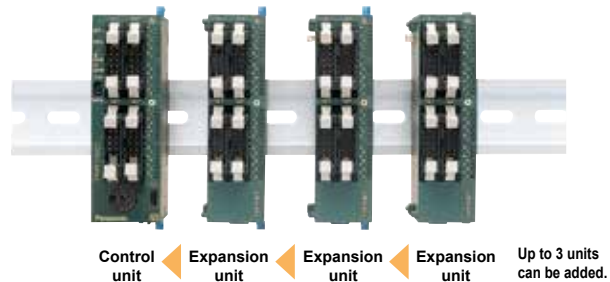**Control of cam table systems**

FP0R series

Ultra-compact PLC series

Features

■ Main functions

An ultra-high speed processing of 0.08μs/step for basic instructions for the first 3000 steps and 0.58μs/step thereafter. The FP0R is ideal for positioning and process automation applications, e.g. in labeling machines.

> Max. 64 inputs / 64 outputs transistor or 54 outputs relay
> Max. 24 analog inputs / 12 analog outputs
> 2x RS232C interfaces, USB2.0 port
> Large program memory: 16,000 to 32,000 steps
> Data memory: 12,315 to 32,765 words
> PROFIBUS, Ethernet TCP/IP, Modbus, S-Link, CC-Link, PLC Link
> Advanced built-in positioning functions
> 24 V DC power supply input
> Tool port: RS232C & Mini USB
> Types with COM port: RS232C

| Control unit | Expansion unit | Expansion unit | Expansion unit | Up to 3 units can be added. |

Product no.	Analog I/O expansion units description
AFP0RA21	2x 14-bit inputs (-10 to +10V, -5 to +5V, 0–10V, 0–5V, 0–20mA) and 1x 14-bit output (-10 to +10V, -5 to +5V, 0–10V, 0–5V, 0–20mA, 4–20mA)
AFP0RA42	2x 14-bit inputs (-10 to +10V, -5 to +5V, 0–10V, 0–5V, 0–20mA) and 2x 14-bit outputs (-10 to +10V, -5 to +5V, 0–10V, 0–5V, 0–20mA, 4–20mA)
AFP0RAD4	4x 14-bit inputs (-10 to +10V, -5 to +5V, 0–10V, 0–5V, 0–20mA)
AFP0RAD8	8x 14-bit inputs (-10 to +10V, -5 to +5V, 0–10V, 0–5V, 0–20mA)
AFP0RDA4	4x 14-bit outputs (-10 to +10V, -5 to +5V, 0–10V, 0–5V, 0–20mA, 4–20mA)
Product no.	Digital I/O expansion units description
AFP0RE8RS	4 IN, 4 OUT relay, screw terminal block
AFP0RE8X	8 IN, MIL connector
AFP0RE8YP	8 OUT (transistor, PNP), MIL connector
AFP0RE8YRS	8 OUT relay, screw terminal block
AFP0RE16P	8 IN, 8 OUT (transistor, PNP), MIL connector
AFP0RE16RS	8 IN, 8 OUT, relay, screw terminal block
AFP0RE16X	16 IN, MIL connector
AFP0RE16YP	16 OUT (transistor, PNP), MIL connector
AFP0RE32P	16 IN, 16 OUT (transistor, PNP), MIL connector
AFP0RE32T	16 IN, 16 OUT (transistor, NPN), MIL connector
FP0E32RSD	16 IN,16 OUT relay, screw terminal block
Product no.	FP0R Temperature control units description
FP0TC4J	4 IN, thermo element
FP0TC8J	8 IN, thermo element
FP0RTD6D	6 E, PT100/PT1000/NI1000, -200°C to +500°C, 0.1° resolution

Product no.	FP0R - CPUs description
AFP0RC10RS	16k steps, 6 IN, 4 OUT relay, screw terminal block, Tool port
AFP0RC14RS	16k steps, 8 IN, 6 OUT relay, screw terminal block, Tool port
AFP0RC14CRS	16k steps, 8 IN, 6 OUT relay, screw terminal block, TOOL port, COM port
AFP0RC14MRS	16k steps, 8 IN, 6 OUT (relay), screw terminal block, TOOL port, COM port RS485
AFP0RC16P	16k steps, 8 IN, 8 OUT (transistor) PNP, MIL connector, TOOL port
AFP0RC16T	16k steps, 8 IN, 8 OUT (transistor, NPN), MIL connector, TOOL port
AFP0RC16CP	16k steps, 8 IN, 8 OUT (transistor, PNP), MIL connector, TOOL port, COM port
AFP0RC16CT	16k steps, 8 IN, 8 OUT (transistor, NPN), MIL connector, TOOL port, COM port
AFP0RC16MP	16k steps, 8 IN, 8 OUT (transistor, PNP), MIL connector, TOOL port, COM port, RS485
AFP0RC32P	16k steps, 16 IN, 16 OUT (transistor, PNP), MIL connector, TOOL port
AFP0RC32T	16k steps, 16 IN, 16 OUT (transistor, NPN), MIL connector, TOOL port
AFP0RC32CP	32k steps, 16 IN, 16 OUT (transistor, PNP), MIL connector, TOOL port, COM port
AFP0RC32MP	32k steps, 16 IN, 16 OUT (transistor, PNP), MIL connector, TOOL port, COM port, RS485
AFP0RT32CP	32k steps, 16 IN, 16 OUT (transistor, PNP), MIL connector, TOOL port, COM port, clock/calendar function
AFP0RT32CT	32k steps, 16 IN, 16 OUT (transistor, NPN), MIL connector, TOOL port, COM port, clock/calendar function
AFP0RT32MP	32k steps, 16 IN, 16 OUT (transistor, PNP), MIL connector, TOOL port, COM port, RS485, clock/calendar function
AFP0RF32CP	32k steps, 16 IN, 16 OUT (transistor, PNP), MIL connector, TOOL port, COM port, FRAM

■ Accessories

Product no.	I/O cables description
AFP0521COLD	10-pin MIL connector and 10 colored wires, set of two cables, 1m, 2 pieces
AFP0522COLD	10-pin MIL connector and 10 colored wires, set of two cables, 2m, 2 pieces

Series FPΣ (Sigma)

The next generation compact PLC

Features

■ Main functions

› Equipped with a high-speed RISC processor, achieving high-speed processing with a scan time of less than 2ms for 5000 steps

› High-speed positioning unit: A pulse output speed of up to 4 million pulses per second and a start-up time of just 0.005ms make the FP-Sigma perfect for high-precision servo drive applications

› Max. 192 inputs / 192 outputs transistor or 56 outputs relay

› Max. 40 analog inputs / 28 analog outputs

› Communication: 3 x RS232C or 2 x RS232C + 1x RS485 interfaces

› Program memory: 32k steps

› Data memory: 32k to 1056k words

› PROFIBUS, Ethernet TCP/IP, Modbus, CC-Link, S-Link, CANopen, DeviceNet

› Motion control functions

Product no.	FPΣ (Sigma) CPUs
FPG-C24R2H	32k steps, 16 IN, 8 OUT (relay), screw terminal block
FPGC24R2HTM	32k steps, 16 IN, 8 OUT (relay). 2 thermistor inputs, screw terminal block
FPG-C28P2H	32k steps, 16IN/12OUT transistor, PNP, MIL connector
FPGC28P2HTM	32k steps, 16IN, 12 OUT (transistor, PNP), 2 thermistor inputs, MIL connector
FPG-C32T2H	32k steps, 16IN/16OUT transistor NPN, MIL connector

Product no.	FP (Sigma) communication cassettes
FPG-COM1	1x RS232C (5-pin)
FPG-COM2	2x RS232C (2 x 3-pin)
FPG-COM3	1 x RS485 (3-pin)
FPG-COM4	1 x RS485 - COM1 (2-pin) and 1 x RS232C - COM2 (3-pin)

Product no.	FPΣ (Sigma) expansion units
FPG-XY64D2P	32 IN, 32 OUT (transistor, PNP), MIL connector
FPG-XY64D2T	32 IN, 32 OUT (transistor, NPN), MIL connector

Product no.	FP (Sigma) field bus expansion master units
FPG-CAN-M	FPΣ (Sigma) CANopen FMU Master
FPG-DEV-M	PΣ (Sigma) DeviceNet FMU master
FPG-DPV1-M	FPΣ (Sigma) PROFIBUS DP master FMU, PROFIBUS version 1

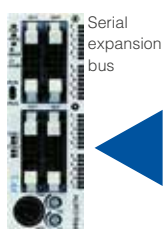| Product no.	FPΣ (Sigma) field bus slave expansion slave units
FPG-CAN-S	FPΣ (Sigma) CANopen slave unit
FPG-DEV-S	FPΣ (Sigma) DeviceNet slave unit
FPG-DPV1-S	FPΣ (Sigma) PROFIBUS DP slave unit
FPG-PRT-S	FPΣ (Sigma) PROFINET I/O slave unit

Product no.	FPΣ (Sigma) positioning units
FPGPP21	2-axis motion control unit with transistor outputs
FPGPP22	2-axis motion control unit with line driver outputs
FPGPN8AN	8-axis RTEX motion control unit

Product no.	Description
AFPG804	Battery for FPΣ (Sigma), FP-e, with plug connection
AFPG805	Power supply cable, white 3-pin connector with ferrite core, 1m
AFPG807	FPΣ (Sigma) battery holder

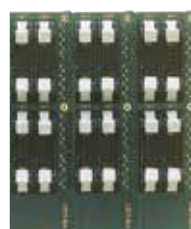Parallel expansion bus

Max. 4 expansion units each 64 I/Os = 256 I/Os

Serial expansion bus

CPU max. 32 I/Os

Max. 3 expansion units each 32 I/Os = 96 I/Os

FP-X

Advanced compact PLC

Features

■ Main functions

› FP-X is a highly flexible and expandable PLC which satisfies a wide range of applications and demands

› Add-on cassettes can expand functionality while saving space. Up to three add-on cassettes can be attached to the control unit. The 16 types of add-on cassettes, including the communication and analog types, cover a wide variety of applications.

› max. 382 I/Os

› Max. 28 analog inputs / 16 analog outputs

› Communication:
3 × RS232C or 2 × RS232C + 1 × RS485 interfaces

› CPU C-30 and C-60 equipped with additional USB programming *port

› Program memory: 16k and 32k steps

› Data memory: 32,765 words

› PROFIBUS, Ethernet TCP/IP, Modbus

› Motion control functions

Product no.	FP-X Add-On Cassettes
AFPXCOM1	1x RS232C (5-pin)
AFPXCOM2	2x RS232C (2 x 3-pin)
AFPXCOM3	1x RS422/485 (5-pin)
AFPXCOM4	1 x RS485 - COM1 (2-pin) and 1 x RS232C - COM2 (3-pin)
AFPXCOM5	1x Ethernet COM port 1 and 1x RS232C COM port 2 (3-pin)
AFPX-COM6	1x RS485 COM port 1 (2-pin) and 2x RS485 (insulated) (2-pin)
AFPX-A21	Analog I/O, 2 IN (0–10V or 0-20mA, 2 channels), 1 OUT (0–10V or 0-20mA, 1 channel)
AFPX-DA2	2 voltage outputs (0–10V or 0–20mA), FP-X version 2.4
AFPX-TC2	2 thermocouple inputs, 2 channels, K/J type, -50°C to +500°C, resolution 0.2°C
AFPXAD2	Analog input, 2 inputs (0–10V or 0-20mA)
AFPXIN8	Digital input, 8 IN screw terminal block
AFPXMRTC	Master memory cassette with real-time clock
AFPXTR8	8 digital outputs (transistor, NPN), screw terminal block

Product no.	FP-X CPUs description
AFPXC14PD	16k steps, 8 IN, 6 OUT transistor PNP, screw terminal block, 24V DC
AFPXC14RD	16k steps, 8 IN, 6 OUT relay, screw terminal block, 24V DC
AFPXC14R	16k steps, 8 IN, 6 OUT relay, screw terminal block, 230V AC
AFPXC30PD	32k steps, 16 IN, 14 OUT (transistor, PNP), screw terminal block, 24V DC
AFPXC30P	32k steps, 16 IN, 14OUT transistor PNP, screw terminal block, 230V AC
AFPXC30RD	32k steps, 16 IN, 14 OUT relay, screw terminal block, 24V AC
AFPXC30R	32k steps, 16 IN, 14 OUT relay, screw terminal block, 230V DC
AFPXC30TD	32k steps, 16 IN, 14OUT transistor NPN, screw terminal block, 24V DC
AFPXC30T	32k steps, 16 IN, 14OUT transistor NPN, screw terminal block, 230V AC
AFPXC60PD	32k steps, 32 IN, 28OUT transistor PNP, screw terminal block, 24V DC
AFPXC60P	32k steps, 32 IN, 28OUT transistor PNP, screw terminal block, 230V AC
AFPXC60RD	32k steps, 32 IN, 28 OUT relay, screw terminal block, 24V DC
AFPXC60R	32k steps, 32 IN, 28 OUT relay, screw terminal block, 230V AC

Product no.	FP-X expansion unit
AFPXE16P	8 IN, 8 OUT, transistor PNP, screw terminal block ATTENTION: It's not possible to install two units of this kind without power input side by side
AFPXE16R	8 IN, 8 OUT, relay, screw terminal block
AFPXE30PD	16 IN, 14 OUT transistor PNP, screw terminal block, 24V DC
AFPXE30RD	16 IN, 14 OUT relay, screw terminal block, 24V DC
AFPXE30R	16 IN, 14 OUT relay, screw terminal block, 230V AC
AFPX-E16X	16 IN, screw terminal block ATTENTION: It's not possible to install two units of this kind without power input side by side
AFPXEFP0	FP-X adapter for connecting FP0R expansion units, 24V DC

■ Accessories

Product no.	Description
AFPXBATT	Battery with cable for FP-X and GT02/05/12/32, for clock and data

FP Web

Server & Expansion unit

Features

■ Main functions

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

Features

■ Main functions

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

HM series touch panels

More than just touch panels

Features

■ HM series touch panels

All terminals are equipped with Ethernet ports and support VNC technology. The web server architecture is based on current HTML5 web technology providing users with advanced control and remote monitoring from any browser, any device (smartphone, tablet, or computer). The ability to capture, store and share data in higher-level structures makes the HM series the perfect choice for integrating systems across the entire enterprise.
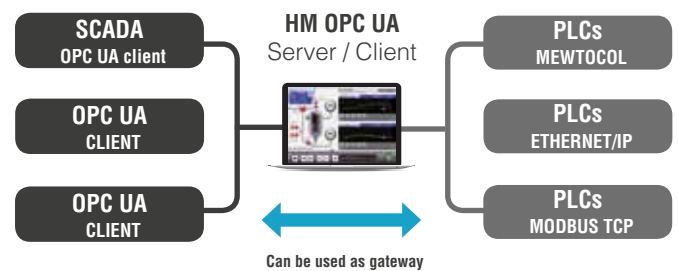
The HM series supports SVG graphics, Javascript, Panasonic PLCs, OPC UA server / client gateway, Modbus TCP (RTU), EtherNet/IP and S7 Ethernet driver.

This makes the HM series a perfect tool for IIoT implementation and Industry 4.0 in a controlled and safety-aware manner.

Product no.	Description of the HM500 series
AIHM504	4.3" TFT, 64k color depth, 480 x 272 WQVGA, slot for SD memory card, 1x RS232/485, 1x USB host, 2x LAN 10/100Mbit with built-in switch
AIHM507	7" TFT, 64k color depth, 800 x 480 WVGA, slot for SD memory card, 1x RS232/485, 2x USB host, 2x LAN 10/100Mbit with built-in switch
AIHM510	10.4" TFT, 64k color depth, 800 x 600 SVGA, 1x RS232/485, 2x USB host, 2x LAN 10/100Mbit with built-in switch
AIHM513	13.3" TFT, 64k color depth, 1280 x 800 WXGA, slot for SD memory card, 1x RS232/485, 2x USB host, 2x LAN 10/100Mbit with built-in switch

Product no.	Description of the HMe series
AIHME04	4.3" 16:9 LED wide screen, 64K colors, 480x272, 1 x 1 RS-232/422/485, 1 x USB host, 1 x LAN 10/100
AIHME07	7" TFT, 64k color depth, 800 x 480 WVGA, 1x RS232/485, 1x USB host, 1x LAN 10/100Mbit
AIHME10	10.1" TFT, 64k color depth, 800 x 480 WVGA, 1x RS232/485, 1x USB host, 1x LAN 10/100Mbit

■ Ready for Industry 4.0 and the Internet of Things (IoT)

SCADA OPC UA client	HM OPC UA Server / Client	PLCs MEWTOCOL
OPC UA CLIENT		PLCs ETHERNET/IP
OPC UA CLIENT	Can be used as gateway	PLCs MODBUS TCP

OPC UA is one of the key communication protocols for Industry 4.0 and the IoT:

› Available for the HM500 series and the new HMe series
› All tags in the HMWin project database can be published automatically.
› Automatic gateway function
› Supports OPC-UA alarms, alarm history and trends

www.panasonic-electric-works.com

HMWin program-ming software

Simply the best

Features

■ Main functions

Thanks to HMWin's scalable and high-performance architecture, it is possible to implement all kinds of applications – from the smallest to the largest. Whatever the scope, every application can be expanded at any time. Thanks to the user-friendly HMWin user interface, customers can quickly and efficiently create and apply HMI applications.

HMWin creates the bridge between the factory floor and the corporate data management level. As one of the key communication protocols for Industry 4.0 and the IoT, OPC UA is the "heart" of the software. HMWin is a must-have companion for factory environments. View information about your plant whenever and wherever you need it. From PLCs, sensors, servo drives to touch panels, you will be able to connect any piece of equipment to HMWin.

Corvina Cloud

Completely networked communication service for industry

Features

■ Main functions

Corvina Cloud is a secure Open VPN and SSL-based solution that allows you to administer your connected industrial installation using a centralized server via gateways. Depending on requirements (costs, safety and performance) customers can choose between different solutions. Use the HMI Cloud Enabler software solution as a cost-effective variant, or choose PLCM07 for the Secure Cloud Connector with a multitude of possibilities.

Product no.	Description
AFPSCLOUDENABLER	License for secure VPN connection to the Corvina Cloud
AIHMCLOUD07	Plug-in module for the HM500 series for a secure VPN connection to the Corvina Cloud, two separate Ethernet interfaces

GT series

Ultra-compact touch panels – quality you can see

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

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

■ GT05

3.5-inch high-contrast black QVGA-LC display

■ GT12

Housing with IP67 rating, excellent brightness

■ GT32-R

Clear and appealing precision display with 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.	Description of the GT703/704 series
AIG704WGNMB2	4.6", 64 shades of gray, 640x240 dots, Ethernet + RS422/485 + mini USB(prog.), 24 V DC
AIG703WGN1B2	3.8", 64 shades of gray, 480x192 dots, Ethernet + RS232 + mini USB(prog.), 24 V DC
AIG704WMN1S2	4.6", 64 shades of gray, 640x240 dots, Ethernet + RS232 + mini USB(prog.), 24 V DC

Product no.	Description of the GT03-E/32-E series
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 connectors, 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.	Description of the GT32-R series
AIG32MQ02DR	5.7", TFT monochrome 16 shades of gray LCD, 700 Cd/m2, IP 67, 320x240 dots, RS232 + USB-B(prog.), 24V DC, SD/SDHC memory card slot
AIG32TQ03D	5.7", TFT LCD, 4096 colors, 600 Cd/m2, IP 67, 320x240 dots, RS232 + USB-B(prog.), 24V DC, SD/SDHC memory card slot

PRODUCT FINDER FOR SERVO DRIVES

NEW!

Find the right servo drive in just seconds!

MINAS A6 series

AC servo drives

Features

MINAS A6SF servo drivers

> Multifunction type
> Ultrafast response frequency: 3.2kHz band-width
> Feedback outputs 4 Mpps and feedback inputs with up to 8 Mpps (Mpps = million pulses/second)
> Improved real-time auto-gain tuning during operation (6ms transient recovery time)
> 5 notch filters: manual/automatic
> 4 damping filters: manual/automatic
> PANATERM V6.0 software upgrade with setup mode
> Integrated safety function STO (EN61800-5-2)
> Little noise generation
> Modbus RTU interface
> Control action of linear and torque motors

MINAS A6SG servo drivers

> RS485 interface
> Modbus RTU interface
> Multifunction type (like MINAS A6SF)
> Attractive price-performance ratio
> Exclusively for position control
> Easy wiring using standard Ethernet cables (CAT5e, up to 100m between units)

MINAS A6SB servo drivers

> Real-time communication: 100 million pulse/s with the CAN application protocol via EtherCAT (CoE)
> Supports position control (pp, csp, ip, hm), velocity control (pv, csv) and torque control (tq, cst)
> Manual and automatic damping filters
> Complete instruction set for up to 65535 axes per network
> Easy wiring using standard Ethernet cables (CAT5e, up to 100m between units)
> Conforms to safety standards according to: EN 954-1 (CAT3), ISO 13849-1 (PLd), EN 61508 (SIL2), EN 62061 (SIL2), EN 61800-5-2 (STO), IEC 61326-3-1

MINAS A6SE servo drivers

> Entry-level model
> Multifunction type (like MINAS A6SF)
> Attractive price-performance ratio
> Exclusively for position control

MINAS A6N servo drivers

> RTEX network
> Real-time communication: 100Mbit/s via RTEX protocol
> Supports position, velocity and torque control
> Manual and automatic damping filters
> Full scope of instruction set for up to 32 axes per RTEX network. RTEX position control mode for FP∑ (Sigma)
> Easy wiring using standard Ethernet cables (CAT5e, up to 100m between units)
> Conforms to safety standards according to ISO 13849-1 (PL e, CAT3), EN 61508(SIL3), EN 62061(SILCL3), EN 61800-5-2 (SIL3, STO), IEC 61326-3-1, IEC 60240-1

MINAS A6B servo driver (EtherCAT network type)

> Real-time communication: 100Mbit/s with the CAN application protocol via EtherCAT (CoE)
> Supports position control (pp, csp, ip, hm), velocity control (pv, csv) and torque control (tq, cst)
> Manual and automatic damping filters
> Complete instruction set for up to 65535 axes per network
> Supported scan time of 125µs
> Easy wiring using standard Ethernet cables (CAT5e, up to 100m between units)
> Conforms to safety standards according to: ISO13849-1(PL e, CAT3), EN61508(SIL3), EN62061(SILCL3), EN61800-5-2(SIL3, STO), IEC61326-3-1, IEC60240-1
> STO), IEC 61326-3-1, IEC 60240-1

Product no.	MINAS A6 driver (1-phase) 200V
MADLT05SF	Position, velocity and torque control, 50/100W
MADLT15SF	Position, velocity and torque control, 200W
MBDLT25SF	Position, velocity and torque control, 400W
MCDLT35SF	Position, velocity and torque control, 750W
MDDLN55SF	Position, velocity and torque control, 1/1.5kW
MADLT05SG	Position control via pulse input, Modbus, 50/100W
MADLT15SG	Position control via pulse input, Modbus, 200W
MBDLT25SG	Position control via pulse input, Modbus, 400W
MCDLT35SG	Position control via pulse input, Modbus, 750W
MDDLN55SG	Position control via pulse input, Modbus, 1/1.5kW
MADLN05NE	RTEX network servo driver, 50/100W
MADLN15NE	RTEX network servo driver, 200W
MBDLN25NE	RTEX network servo driver, 400W
MCDLN35NE	RTEX network servo driver, 750W
MDDLN55NE	RTEX network servo driver, 1/1.5kW
MADLN05BE	EtherCat network servo driver, 50/100W
MADLN15BE	EtherCat network servo driver, 200W
MBDLN25BE	EtherCat network servo driver, 400W
MCDLN35BE	EtherCat network servo driver, 750W
MDDLN55BE	EtherCat network servo driver, 1/1.5kW

Servo driver model key

MAD	L	N	1	5	S	E

External dimension:
MAD: A
MBD: B
MCD: C
MDD: D
MED: E
MFD: F

L: A6 series

Safety function:
N: Without safety function
T: With safety function

Maximum rated current:

0: 6A	5: 40A
1: 8A	8: 60A
2: 12A	A: 100A
3: 22A	B: 120A
4: 24A	

Type:

Pulse/analog type
SE: Standard (pulse)
SF: Multifunction (pulse, analog)
SG: RS485 (pulse)

Network type:
NE: RTEX without safety function
NF: RTEX with safety function
BE: EtherCAT without safety function
BF: EtherCAT with safety function

Power voltage:
K1: 1-phase, 100V
3: 3-phase, 200V
5: 1-/3-phase, 200V

MINAS A6 series
Motors

Features

An overview of the MINAS A6 motors that can be used with all servo drivers. A6SE, A6SG, A6SF, A6N.

■ Main functions

❯ 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

Product no.	MINAS A6 motor – medium inertia
MDMF102L1G5	1kW, 4.77Nm, key-way shaft, oil seal
MDMF102L1H5	1kW, 4.77Nm, key-way shaft, oil seal, holding brake
MDMF152L1G5	1.5kW, 7.16Nm, key-way shaft, oil seal
MDMF152L1H5	1.5kW, 7.16Nm, key-way shaft, oil seal, holding brake

Product no.	MINAS A6 motor – low inertia
MSMF5AZL1U1	50W, 0.16Nm, key-way shaft, oil seal
MSMF5AZL1V1	50W, 0.16Nm, key-way shaft, oil seal, holding brake
MSMF012L1U1	100W, 0.32Nm, key-way shaft, oil seal
MSMF012L1V1	100W, 0.32Nm, key-way shaft, oil seal, holding brake
MSMF022L1U1	200W, 0.64Nm, key-way shaft, oil seal
MSMF022L1V1	2000W, 0.64Nm, key-way shaft, oil seal, holding brake
MSMF042L1U1	400W, 1.27Nm, key-way shaft, oil seal
MSMF042L1V1	400W, 1.27Nm, key-way shaft, oil seal, holding brake
MSMF082L1U1	750W, 2.39Nm, key-way shaft, oil seal
MSMF082L1V1	750W, 2.39Nm, key-way shaft, oil seal, holding brake
MSMF092L1U1	1kW, 3.18Nm, key-way shaft, oil seal, flange 80mm
MSMF092L1V1	1kW, 3.18Nm, key-way shaft, oil seal, holding brake, flange 80mm
MSMF102L1G5	1kW, 3.18Nm, key-way shaft, oil seal
MSMF102L1H5	1kW, 3.18Nm, key-way shaft, oil seal, holding brake
MSMF152L1G5	1.5kW, 4.77Nm, key-way shaft, oil seal
MSMF152L1H5	1.5kW, 4.77Nm, key-way shaft, oil seal, holding brake

Product no.	MINAS A6 motor – high inertia
MHMF5AZL1U1	50W, 0.16Nm, key-way shaft, oil seal
MHMF5AZL1V1	50W, 0.16Nm, key-way shaft, oil seal, holding brake
MHMF012L1U1	100W, 0.32Nm, key-way shaft, oil seal
MHMF012L1V1	100W, 0.32Nm, key-way shaft, oil seal, holding brake
MHMF022L1U1	200W, 0.64Nm, key-way shaft, oil seal
MHMF022L1V1	200W, 0.64Nm, key-way shaft, oil seal, holding brake
MHMF042L1U1	400W, 1.27Nm, key-way shaft, oil seal
MHMF042L1V1	400W, 1.27Nm, key-way shaft, oil seal, holding brake
MHMF082L1U1	750W, 2.39Nm, key-way shaft, oil seal
MHMF082L1V1	750W, 2.39Nm, key-way shaft, oil seal, holding brake
MHMF092L1U1	1kW, 3.18Nm, key-way shaft, oil seal, holding brake, flange 80mm
MHMF092L1V1	1kW, 3.18Nm, key-way shaft, oil seal, holding brake, flange 80mm
MHMF102L1G5	1kW, 3.18Nm, key-way shaft, oil seal
MHMF102L1H5	1kW, 3.18Nm, key-way shaft, oil seal, holding brake
MHMF152L1G5	1.5kW, 4.77Nm, key-way shaft, oil seal
MHMF152L1H5	1.5kW, 4.77Nm, key-way shaft, oil seal, holding brake

Configuration software for MINAS series

■ PANATERM software

Real-time auto-gain tuning during operation and many other helpful functions.

For the free download visit our website: www.panasonic-electric-works.com

■ M-SELECT software

M-SELECT is a software program to help you select the correct motor capacity and servo driver from Panasonic's MINAS series. Find the optimal type of motor with regards to the mechanical layout and the dynamic requirements. It is a very valuable tool for mechanical engineering as it also provides CAD data in 2D and 3D. The software offers a complete analysis and detailed usage instructions for the MINAS A6 series in all sizes.

MINAS A6B series

EtherCAT version of AC Servo Drives

Features

EtherCAT (Ethernet for Control Automation Technology) offers similarly excellent features compared to RTEX. However, Ether-CAT is an open, standardized field bus that allows an open data exchange with all other EtherCAT motion controllers.

■ Main functions

› Real-time communication: 100 million pulse/s with the CAN application protocol via EtherCAT (CoE)
› Supports position control (pp, csp, ip, hm), velocity control (pv, csv), torque control (tq, cst) and safety standards
› Manual and automatic damping filters
› Complete instruction set for up to 65535 axes per network

› Easy wiring using standard Ethernet cables (CAT5e, up to 100m between units)

Product no. MINAS A6B	Motor drive 200V, 1/3-phase
MADLT05BF	EtherCAT network servo driver with safety function STO, 50/100W
MADLT15BF	EtherCAT network servo driver with safety function STO, 200W
MBDLT25BF	EtherCAT network servo driver with safety function STO, 400W
MCDLT35BF	EtherCAT network servo driver with safety function STO, 750W

MINAS LIQI series

AC servo drivers and servo motors

Features

MINAS LIQI, the simple and cost-effective servo drive solution from Panasonic. Especially for dynamic applications MINAS LIQI offers many advantages as far as reliability, speed, and precise position control are concerned compared to stepping motors, asynchronous motors or pneumatic solutions. As for the MINAS A5 series, the PANATERM and the M-SELECT configuration software assist users in setting up and configuring the MINAS LIQI series. The series is optimally suited for the processing industries involving food, packaging, printing, metals, and plastics.

■ Main functions

› Incremental encoder: 2500 pulses per revolution
› Response frequency: 1kHz bandwidth (velocity response)
› PANATERM: Free software for configuration and motion simulation via USB port
› Real-time auto-tuning function during operation
› Damping (1–200Hz) and notch filters (50–5000Hz)
› Rotary Switch (RSW) to set stiffness manually

Product no.	MINAS LIQI servo driver, 1-phase, 200V
MBDJT2207	50/100/200W, position control via pulse train, no analog input
MBDJT2210	400W, position control via pulse train, no analog input
MCDJT3220	750/1000W, position control via pulse train, no analog input

Product no.	MINAS LIQI motor IP65
MSMD5AZJ1S	50W, rated speed 3000 rpm, 0.16Nm, key-way shaft
MSMD5AZJ1T	50W, rated speed 3000 rpm, 0.16Nm, key-way shaft, holding brake
MSMD012J1S	100W, rated speed 3000 rpm, 0.32Nm, key-way shaft
MSMD012J1T	100W, rated speed 3000 rpm, 0.32Nm, key-way shaft, holding brake
MSMD022J1S	200W, rated speed 3000 rpm, 0.64Nm, key-way shaft
MSMD022J1T	200W, rated speed 3000 rpm, 0.64Nm, key-way shaft, holding brake
MSMD042J1S	400W, rated speed 3000 rpm, 1.3Nm, key-way shaft
MSMD042J1T	400W, rated speed 3000 rpm, 1.3Nm, key-way shaft, holding brake
MSMD082J1S	750W, rated speed 3000 rpm, 2.4Nm, key-way shaft
MSMD082J1T	750W, rated speed 3000 rpm, 2.4Nm, key-way shaft, holding brake
MSMD102J1S	1000W, rated speed 3000 rpm, 3.2Nm, key-way shaft
MSMD102J1T	1000W, rated speed 3000 rpm, 3.2Nm, key-way shaft, holding brake

RC-GV   BL-KV   BL-GP

MINAS BL

AC servo drives MINAS BL (brushless)

Features

The MINAS BL series is a further development of the tried and tested MINAS series. The innovative split core structure helps to save not only energy, but also space and costs. The motors, which compared to AC induction motors are far more powerful, are particularly suited for materials handling as well as the food and the textile industry.

■ Main functions

> Velocity range: 30 to 4000rpm (rated rotational speed: 3000rpm).
> The position is detected by a Hall sensor, which guarantees a balanced control response.
> Starting torque up to 150% of the rated torque As opposed to induction motors, the MINAS-BL series offers a constant torque when starting or at lows speeds.
> Constant torque characteristics: The speed variation is 0.5% max. of the nominal torque. Such an extremely precise control ensures high productivity and excellent quality.
> Parameters can be set to enable trapezoidal and S-curve acceleration/deceleration control.
> PANATERM: Free software for configuration and motion simulation via USB port
> Conformity with international standards
> Range of reduction ratio from 1:3 to 1:200

■ MINAS BL-GV

> Velocity control 50–130W
> RS485 interface
> Gear head 1:3 to 1:200

■ MINAS BL-KV

> Velocity control 50–750W
> RS485 interface

■ MINAS BL-GP

> Position control type 50–750W
> RS485 interface
> Built-on gear 1:3 to 1:200

Product no.	Servo driver MINAS BL-GV, with RS485
MBEG9A5BDV	90W, 1/3-phase, 230V AC
MBEG1E5BDV	130W, 1/3-phase, 230V AC

Product no.	Motor MINAS BL-GV
MBMU9A2AZ	90W, 0.27Nm, 3000rpm
MBMU1E2AZ	130W, 0.41Nm, 3000rpm

Product no.	Gear head MINAS BL-GV
MZ9G10B	Reduction ratio 1:10
MZ9G30B	Reduction ratio 01:30
MZ9G100B	Reduction ratio 1:100

Product no.	Servo driver MINAS BL-KV
MBEK015BDV	100W, 1/3-phase, 230V AC
MBEK025BDV	200W, 1/3-phase, 230V AC
MBEK045BDV	400W, 1/3-phase, 230V AC
MBEK083BDV	750W, 3-phase, 230V AC

Product no.	Motor MINAS BL-KV
MBMS012BLU	100W, 0.32Nm, 3000rpm
MBMS022BLU	200W, 0.64Nm, 3000rpm
MBMS042BLU	400W, 1.27Nm, 3000rpm
MBMS082BLU	750W, 2.34Nm, 3000rpm, key-way shaft

Product no.	Servo driver MINAS BL-GP
MBEG9A5BDP	90W, 1/3-phase, 230V AC
MBEG1E5BDP	130W, 1/3-phase, 230V AC

Product no.	Motor MINAS BL-GP
MBMU9A2AZ	90W, 0.27Nm, 3000rpm
MBMU1E2AZ	130W, 0.41Nm, 3000rpm

Product no.	Gear head MINAS BL-GP
MB9G10BV	Reduction ratio 10:1
MB9G30BV	Reduction ratio 30:1
MB9G50BV	Reduction ratio 50:1

LP-M series

High-performance 3D fiber lasers

Features

■ **Main functions**

› 3D marking
› Laser head with IP64 rating
› Power range: 20W, 50W
› Especially well suited for: Metal, deep engraving

LP-Z series

Fiber lasers with built-in
Z axis control

Features

■ **Main functions**

› 3D function for marking surfaces
› On-the-fly marking
› High pulse peak power
› Large marking field, 330 x 330mm
› Power range: 13W, 25W
› Especially well suited for: Plastic material, metal

LP-S series

High-performance and environmentally resistant fiber laser

Features

■ Main functions

> Laser head with IP67G rating
> High-speed marking thanks to high output power
> Built-in laser power meter
> Removable optical fiber
> Power range: 20W, 50W
> Especially well suited for: Deep engraving in metal

LP-V

Fiber laser designed for high quality marking on metal and resin

Features

■ Main functions

> High pulse peak power
> Integrated pre- and master oscillator
> On-the-fly marking
> Power range: 12 W
> Especially well suited for: Plastic material, metal

LC 3000

Workstation

Features

■ Main functions

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

> Mobile laser safety cabin
> Servo driven Z axis (traveling distance 300mm)
> Servo driven cabin protective door
> Internal extraction unit with filter insert optional
> Grooved plate with perforated plate as an option
> Connector 230V/16A
> Industrial PC with Windows 8.1 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

Features

■ Main functions 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
› Degree of protection: IP66 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

PM4H/PM4H-W

Analog timer

Features

■ Main functions PM4H

› PM4H-A: 8 operation modes
› PM4H-M: 5 operation modes
› PM4H-S: Power ON delay
› Time range: 0.1s - 500h
› Operating voltage range: 12V DC, 24V AC/DC, 100V–AC
› Relay output: 5A / 250V AC (resistive load)
› Degree of protection: IP50 or IP65 front
› Terminal: pin type / screw terminal type
› Dimensions: 48 x 48 x 62.5mm / 48 x 48 x 66.5mm

■ Key points

› Easy setting
› Easy-to-read analog setting
› Changeable panel cover, black/white

Product no.	Description
PM4HAH24J	PM4H-A multi-range timer, 24V AC/DC, pin type, IP50
PM4HAHAC240J	PM4H-A multi-range timer, 100-240V AC, pin type, IP50
PM4HAHAC240SJ	PM4H-A digital timer, 100-240V AC, screw terminal, IP50
PM4HMH24J	PM4H-M multi-range timer, 24V AC/DC, pin type, IP50
PM4HMHAC240J	PM4H-M multi-range timer, 100-240V AC, pin type, IP50
PM4HSH24J	PM4H-S multi-range timer, 24V AC/DC, pin type, IP50
PM4HSHAC240J	PM4H-S multi-range timer, 100-240V AC, pin type, IP50
PM4HWH24J	PM4H-W twin timer, 24V AC/DC, pin type, IP50
PM4HWHAC240J	PM4H-W twin timer, 100–240V AC/DC, pin type, IP50

S1DXM

Miniature multi-range timer

Features

■ Main functions

> S1DXM-A: Power ON delay
> S1DXM-M: 4 operation modes
> 4 different time ranges: 0.05s to 10h
> Output types: relay (2c), relay (4c)
> Operating voltage range: 12V DC, 24V DC, 24V AC, 110–120V AC, 200–220V AC, 220–240V AC
> Dimensions: 22.1 x 28.5 x 52.7mm
> Terminal: pin type / solder terminal
> Protection IP40 (IP50 with protective cover)

■ Key points

> S1DXM-M multifunctional
> Useable with HJ relay terminal socket
> Space-saving design
> Easy and safe handling
> Wide time range
> Settings adjustable on front panel

Product no.	Description
S1DXMA2C10MDC24V	Digital timer, 0.2s to 10min, 24V DC
S1DXMM2C10MAC240V	Digital timer, 0.05s to 10min, 240V DC
S1DXMM2C10MDC24V	Digital timer, 0.2s to 10min, 24V DC
S1DXMM2C30MDC24V	Digital timer, 0.2s to 30min, 24V DC

LC2H

Digital counter

Features

■ Main functions

> 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

Features

■ Main functions

› 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
› Degree of protection: IP66
› Terminal: pin type / screw terminal type
› Dimensions: 48 x 48 x 64.5mm / 48 x 48 x 70.1mm

■ Key points LC4H

› Bright and easy-to-read display
› Easy to use
› Changeable panel cover, black/white

■ Key points LC4H-W

› 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

LC4H-S

Digital counter

Features

■ Main functions

› 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
› Degree of protection: IP66
› Terminal: pin type / screw terminal type
› Dimensions: 48 x 48 x 64.5mm / 48 x 48 x 70.1mm

■ 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

Features

■ Main functions

› 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 controller

Features

■ Key points KT4R

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

■ Key points of KT4H(B)

› Size 48 x 48 x 135mm (WxHxD)
› 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, 1x alarm output, 100–240V AC, 48 x 48mm
AKT4R112100	KT4R temperature controller, multi-input, transistor output 12V 40mA, 1x alarm output, 100–240V AC, 48 x 48mm
AKT4R112100	KT4R temperature controller, multi-input, transistor output 12V 40mA, 1x alarm output, 100–240V AC, 48 x 48mm

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

KT7

Temperature controller

Features

■ Main functions

› 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 out, alarm out
AKT71121001J	KT7 temperature controller, 100–240V AC, transistor out, alarm out, RS485
AKT7112100J	KT7 temperature controller, 100–240V AC, transistor out, alarm out
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

Features

■ Main functions

› Dimensions 48 x 96 x 58.8mm
› IP66 rating (front)
› Sampling time 125ms
› Program control: 9-step pattern control (ramp function)

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

KT9R

Temperature controller

Features

■ Main functions

› Dimensions 96 x 96 x 58.8mm
› IP66 rating (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, 1x alarm output, 100–240V AC
AKT9R113100	KT9R temperature controller, multi-input, current output, 1x alarm output, 100–240V AC

MAC-I

Safety components

Features

■ Main functions

- › 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, aluminium housing in various series

MAC-I

Positioning switch

Features

■ Main functions

- › 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

Features

■ Main functions

› 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 module:

› No. of points: 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, 2x 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, 2x 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

KW1M-H Eco-POWER METER

Features

■ Main functions

› 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
› Suited 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 that allows you to display 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

Features

■ Main functions

› 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 %

■ Key points

› 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 series current transformers

Suitable for KW4M, KW7M,KW8M, KW2G, KW1M

Item	Clamp-on type				Through type		
	AKW4801B	**AKW4802B**	**AKW4803B**	**AKW4804B**	**AKW4506B**	**AKW4507B**	**AKW4508B**
Primary side rated current	5A/50A	100A	250A	400A	50A/100A	250A/400A	600A
Through hole	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	–	–	–		

ASFN series

DC Fans

Features

■ Main functions

› 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, (48V DC - for ASFN1*B** type only)
› 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
ASFN60372	Axial fan, 24V DC, 60x60x25mm
ASFN62391	Axial fan with sensor output, 12V DC, 60x60x25mm
ASFN80392	Axial fan with sensor output, 24V DC, 80x80x25mm

ASEN series

AC Fans

Features

■ Main functions

› 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, 120x120x25mm, connecting cable
ASEN50756	AC fan 230V AC, 150x172x38mm
ASEN80216	AC fan, 230V AC, 80x80x25mm, connecting cable

North America	Europe	Asia Pacific	China	Japan

Panasonic Electric Works

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