Panasonic
INDUSTRY

Your Committed Enabler

Top seller Automation products

Sensors • PLC • Touch terminals
Servo drives • Laser Marking Systems
Ionizers • Factory automation components

IN Your Innovation

IN Your Innovation

Contents

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

Laser Marking Systems
Provides high-quality marking and processing at high speeds.

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

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

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

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

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

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

Human machine interface
Combines elegant design with superior operability.
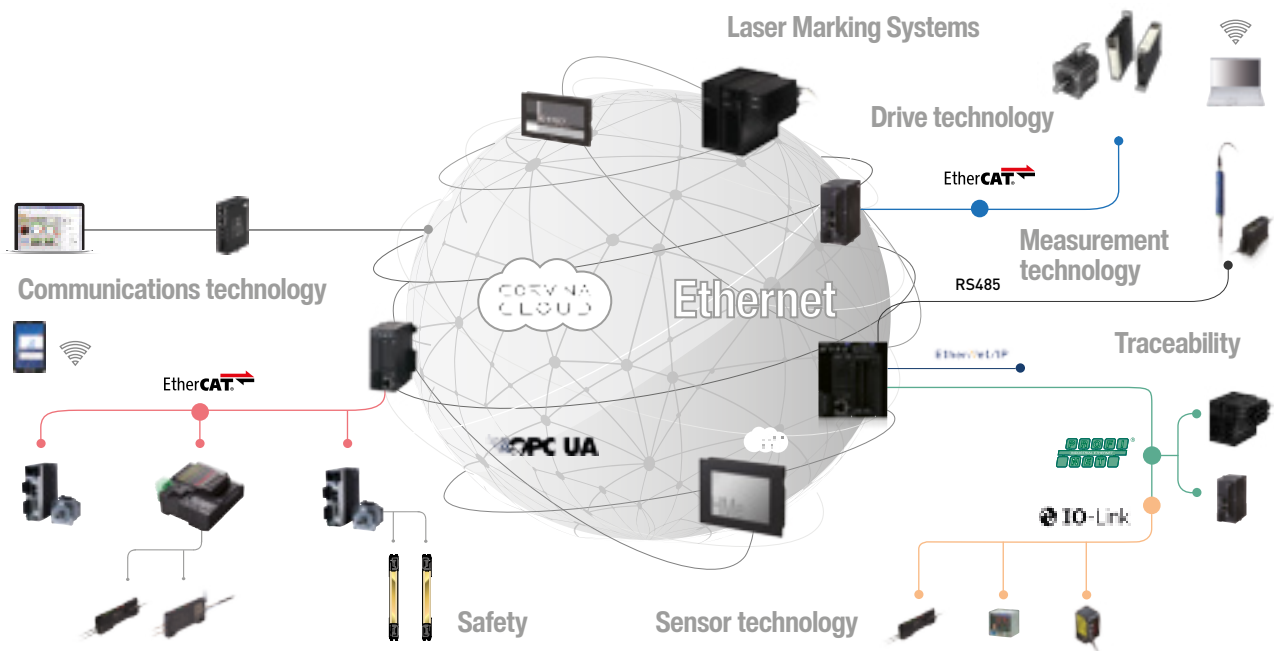
"Panasonic Industry –
Everything from a single source"

With our wide portfolio of automation products, we are the partner you are looking for to create solutions for completely networked manufacturing systems.

Laser Marking Systems

Drive technology

EtherCAT.

Measurement technology

RS485

Communications technology

EtherCAT.

Ethernet

CORONA CLOUD

OPC UA

EtherNet/IP

Traceability

IO-Link

Safety

Sensor technology

Panasonic Industry automation products

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

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

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

Laboratory automation / measurement engineering

For laboratory automation, process reliability is the overruling principle. Thanks to their compact and miniaturized design, a large number of our products is installed in analytical testing systems. Small optical sensors in particular help to monitor the production process and the transport of samples. But also applications such as quality assurance (such as checking the caps for in-vitro diagnostics) show the versatility of our products. In addition to these standard sensors, Panasonic Industry also offers application-specific products such as bubble sensors that can reliably detect air bubbles in tubing.

Ionizers

In order to safely handle the increasingly sensitive electronic components in the production process and, for example, to avoid that samples are contaminated by adhering dust, it is becoming increasingly important to prevent static charges. Panasonic Industry offers different types of ionizers to remove electrostatic charge. Among the models with and without built-in fans, versions with different working widths, and a possible reduction of the residual voltage down to ± 10V, there is a suitable solution for almost all tasks.

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.

GX-300

Cylindrical inductive sensors with IO-Link

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

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

* Further models available
** The connector and pigtail types do not come with a connection cable.
   Please order it separately (product no. CN-24-S-C2).

GX-F/H

Rectangular inductive sensors

- Built-in amplifier
- 2 alternate frequencies for interference prevention
- Oil and water resistant according to IP68G
- Easy-to-see indicator
- Industry No. 1 in stable sensing

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

CX-400

Compact photoelectric sensors
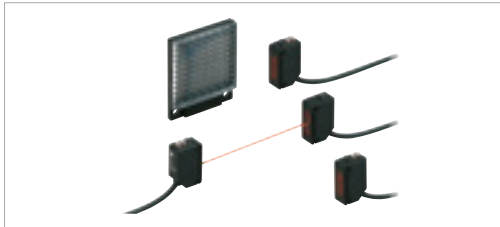
- Huge variety
- 5-turn adjuster
- Version available with modified hysteresis for detecting transparent objects (CX48x)
- Light-ON/Dark-ON
- IP67 degree of protection
- Short-circuit protection
- Retroreflective type with or without polarizing filter
- All models available with NPN output

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 polarization filter	3m	PNP	12–24V DC	Switchable	Cable 2m
CX491PZ	Retroreflective type with polarization filter	3m	PNP	12–24V DC	Switchable	M8
CX493P	Laser retroreflective	5m	PNP	12–24V DC	Switchable	Cable 2m
CX493PZ	Laser retroreflective	5m	PNP	12–24V DC	Switchable	M8

CX-44x

## Compact photoelectric sensors with foreground or background suppression

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

Product no.	Type	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
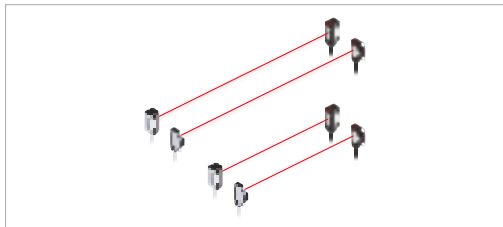
- Smallest sensor with 8 x 14 x 3mm (W x H x D)
- Sensing range of thru-beam type: 50 to 500mm
- Minimum size of objects to be sensed from 0.3 to 1mm
- Front and side sensing type available

Accessories
- Mounting bracket

Product no.	Type	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, front sensing	50mm	PNP	12–24V DC	Light-ON	Cable 2m
EX-Z11FB-P	Thru-beam, front sensing	50mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX-Z12A-P	Thru-beam, side sensing	200mm	PNP	12–24V DC	Light-ON	Cable 2m
EX-Z12B-P	Thru-beam, side sensing	200mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX-Z12FA-P	Thru-beam, front sensing	200mm	PNP	12–24V DC	Light-ON	Cable 2m
EX-Z12FB-P	Thru-beam, front sensing	200mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX-Z13A-P	Thru-beam, side sensing	500mm	PNP	12–24V DC	Light-ON	Cable 2m
EX-Z13B-P	Thru-beam, side sensing	500mm	PNP	12–24V DC	Dark-ON	Cable 2m
EX-Z13FA-P	Thru-beam, front sensing	500mm	PNP	12–24V DC	Light-ON	Cable 2m
EX-Z13FB-P	Thru-beam, front sensing	500mm	PNP	12–24V DC	Dark-ON	Cable 2m

EX-10

Compact photoelectric sensors

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

Accessories
- Mounting bracket
- Slit masks

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

EX-20

Compact photoelectric sensors

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

Accessories
- Slit masks
- Reflectors
- Mounting bracket

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

EQ-500

Background and foreground suppression sensors

- Two types:
    - » 1m or 2.5m sensing range
    - » Transistor or relay output
- Background / foreground suppression
- Unaffected by color or surface condition of the object
- Response time 2ms (PNP / NPN)
- Response time 20ms (relay type)
- Compact design 68 x 26 x 68mm (H x W x D)
- Timer function (EQ-5xT only)
- Short-circuit protection
- IP67 degree of protection
- M12 connector type

Accessories
- Mounting bracket

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

IO-Link

Easy integration into the field level

- Universal IO-Link interface
- Built-in self-diagnosis function
- Measurement sensor series HG-C with repeatability up to 10μm
- Pressure sensor DP-100L with 0.05% resolution
- Fiber-optic amplifier with high transmission power
- Safety light curtain SF4D series: easy setup and maintenance

Accessories
- EtherCAT master
- PROFINET master
- EtherNet/IP master

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

* Further models available

FX-100

Fiber-optic sensors

- 4-digit green, 4-digit red LC display
- Copy settings via wiring
- 3-level operation: basic settings to additional settings
- External input
- Direct installation possible without bracket or DIN rail
- Cable or M8 connector
- Key lock function
- Light-ON /dark-ON mode set by teaching
- Automatic threshold value adjustment

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

* Please ask for relevant fiber cables!

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

FX-500/550

Fiber-optic sensors

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

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

*   Please ask for relevant fiber cables!

** The connector type does not come with a connection cable.

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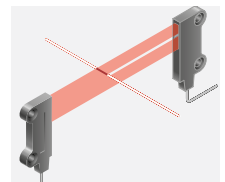- End plate for DIN rail
- Protection cover

Standard fibers

for FX-100/300/500/550

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

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

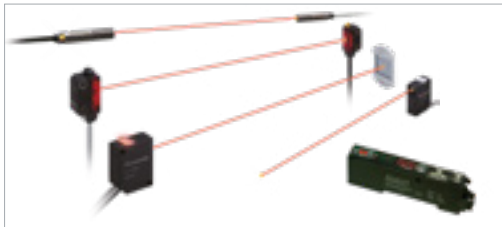For further information on optical fibers, please refer to the Fiber Book.

Accessories
- Focusing lenses for diffuse reflective types (emission spot size can be focused down to 0.1mm)
- Lenses for thru-type wide beam types (to extend the sensing range)

LS-500

Digital laser sensors

- Different sensor heads available
- Coaxial beam alignment (retroreflective type)
- Various setting options and possibilities for evaluation
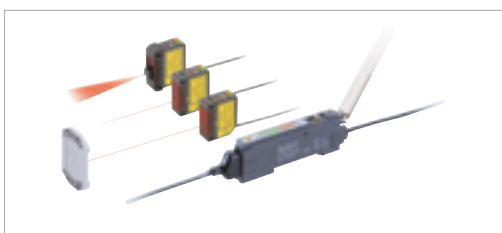
Accessories
- Mounting bracket
- Reflector for retroreflective type

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

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

LS-400

Digital laser sensors

- Retroreflective type: Coaxial beam alignment
- Reflective types: Spot type and line type (240mm line width at a distance of 1m)
- Red light laser diode laser class 1 or 2
- Adjustable spot size
- Ultra-compact dimensions
- External input (LS-401PC2)

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

Product no.	Type	Sensing range	Output	Supply voltage	Light-ON/ Dark-ON	Cable / connector
LS-401P	Controller LS-400	–	2 x PNP	12–24V DC	Setting by teaching	Connector*
LS-401PC2	Controller LS-400	–	2 x PNP	12–24V DC	Setting by teaching	Cable 2m
LS-H21	LS laser head, diffuse reflective spot type	1m	–	–	–	–
LS-H22	LS laser head, diffuse reflective line type	1m	–	–	–	–
LS-H91	LS laser head, coaxial retroreflective	30m	–	–	–	–

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

EX-L200

Laser sensors

- Miniature design
- Response time only 0.5ms
- Visible red laser diode
- Sensitivity adjuster incorporated
- Thru-beam type, retroreflective type, and diffuse reflective type available
- IP67 degree of protection
- 2 indicator LEDs

Accessories
- Sensor mounting brackets
- Reflector for retroreflective type

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

SG-P

Non-contact safety door switch

- Versions for installation in doors with or without frame
- Model with display of safety status visible from all directions
- Simplification of safety applications
- Serial connection of up to 30 units
- RFID encoded door switch
- Standard type with interchangeable actuator (low level coded)
- No prior pairing
- SIL level 3
- Safety category 4

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

SF4D

Safety light curtains

- Time-saving setup
- Protective height corresponds to actual height (no blind zone)
- Extreme long sensing range up to 15m
- Easy-to-use software
- Extremely sturdy housing
- Very rapid response time of 10ms (ON > OFF)
- Muting and blanking function
- SIL3 and PLe

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

| Product no.	Type	Sensing range	Protective height	Output	Cable / connector
SF4D-F31	Finger protection, beam pitch 10mm	0.2–12m	310mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-F39	Finger protection, beam pitch 10mm	0.2–12m	390mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-F47	Finger protection, beam pitch 10mm	0.2–12m	470mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-F95	Finger protection, beam pitch 10mm	0.2–12m	950mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-H12	Hand protection, beam pitch 20mm	0.2–15m	230mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-H16	Hand protection, beam pitch 20mm	0.2–15m	310mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-H20	Hand protection, beam pitch 20mm	0.2–15m	390mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-H24	Hand protection, beam pitch 20mm	0.2–15m	470mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-H28	Hand protection, beam pitch 20mm	0.2–15m	550mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-A18	Arm / foot protection, beam pitch 40mm	0.2–15m	710mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-A20	Arm / foot protection, beam pitch 40mm	0.2–15m	790mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-A24	Arm / foot protection, beam pitch 40mm	0.2–15m	950mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-A28	Arm / foot protection, beam pitch 40mm	0.2–15m	1110mm	PNP or NPN switchable (2 x OSSD)	Connector*
SF4D-A32	Arm / foot protection, beam pitch 40mm	0.2–15m	1270mm	PNP or NPN switchable (2 x OSSD)	Connector*

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

SF4C

Safety light curtains

- Large built-in multi-purpose LED indicators (externally controlled)
- 4 blocks of beam-axis adjustment indicators
- Digital error indication
- Fast response time of 7ms for all models
- Manual reset / auto reset
- 2 N.C. safety inputs
- Muting and blanking function
- Flat design - ideal for manual manufacturing workplaces
- SIL3 and PLe

Accessories
- Extension cable
- Front protection cover
- Handy controller for parametrization

Product no.	Type	Detection distance	Protective height	Output	Cable / connector
SF4C-F15	Finger protection, beam pitch 10mm	0.1–3m	160mm	PNP or NPN switchable (2 x OSSD)	Cable 5m
SF4C-F23	Finger protection, beam pitch 10mm	0.1–3m	240mm	PNP or NPN switchable (2 x OSSD)	Cable 5m
SF4C-F31	Finger protection, beam pitch 10mm	0.1–3m	320mm	PNP or NPN switchable (2 x OSSD)	Cable 5m
SF4C-F39	Finger protection, beam pitch 10mm	0.1–3m	400mm	PNP or NPN switchable (2 x OSSD)	Cable 5m
SF4C-F47	Finger protection, beam pitch 10mm	0.1–3m	480mm	PNP or NPN switchable (2 x OSSD)	Cable 5m
SF4C-F55	Finger protection, beam pitch 10mm	0.1–3m	560mm	PNP or NPN switchable (2 x OSSD)	Cable 5m
SF4C-F63	Finger protection, beam pitch 10mm	0.1–3m	640mm	PNP or NPN switchable (2 x OSSD)	Cable 5m
SF4C-H8	Hand protection, beam pitch 20mm	0.1–3m	160mm	PNP or NPN switchable (2 x OSSD)	Cable 5m
SF4C-H12	Hand protection, beam pitch 20mm	0.1–3m	240mm	PNP or NPN switchable (2 x OSSD)	Cable 5m
SF4C-H16	Hand protection, beam pitch 20mm	0.1–3m	320mm	PNP or NPN switchable (2 x OSSD)	Cable 5m
SF4C-H20	Hand protection, beam pitch 20mm	0.1–3m	400mm	PNP or NPN switchable (2 x OSSD)	Cable 5m
SF4C-H24	Hand protection, beam pitch 20mm	0.1–3m	480mm	PNP or NPN switchable (2 x OSSD)	Cable 5m
SF4C-H28	Hand protection, beam pitch 20mm	0.1–3m	560mm	PNP or NPN switchable (2 x OSSD)	Cable 5m

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

SF4B-C

Safety light curtains
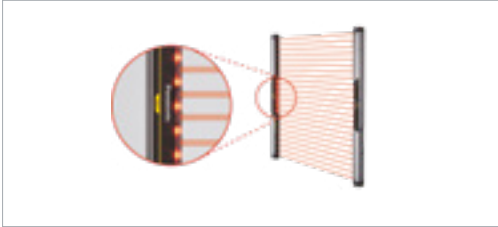
- Easy and flexible mounting
- Light weight
- LED indicators
- Hand and arm protection
- Beam-axis alignment indicator
- Auxiliary output
- Muting and blanking function
- SIL and PLe

Accessories
- Mounting bracket
- Handy controller for parametrization

Product no.	Type	Detection distance	Protective height	Output	Cable / connector
SF4B-H12CA-J05	Hand protection, beam pitch 20mm	0.3–7m	263.4mm	PNP or NPN switchable (2 x OSSD)	Cable with connector 0,5m*
SF4B-H48CA-J05	Hand protection, beam pitch 20mm	0.3–7m	983.4mm	PNP or NPN switchable (2 x OSSD)	Cable with connector 0,5m*
SF4B-H96CA-J05	Hand protection, beam pitch 20mm	0.3–7m	1943.4mm	PNP or NPN switchable (2 x OSSD)	Cable with connector 0,5m*
SF4B-H12C	Hand protection, beam pitch 20mm	0.3–7m	263.4mm	PNP or NPN switchable (2 x OSSD)	Cable 5m
SF4B-H48C	Hand protection, beam pitch 20mm	0.3–7m	983.4mm	PNP or NPN switchable (2 x OSSD)	Cable 5m
SF4B-H96C	Hand protection, beam pitch 20mm	0.3–7m	1943.4mm	PNP or NPN switchable (2 x OSSD)	Cable 5m
SF4B-A8CA-J05	Arm / foot protection, beam pitch 40mm	0.3–7m	343.4mm	PNP or NPN switchable (2 x OSSD)	Cable with connector 0,5m*
SF4B-A24CA-J05	Arm / foot protection, beam pitch 40mm	0.3–7m	983.4mm	PNP or NPN switchable (2 x OSSD)	Cable with connector 0,5m*
SF4B-A48CA-J05	Arm / foot protection, beam pitch 40mm	0.3–7m	1943.4mm	PNP or NPN switchable (2 x OSSD)	Cable with connector 0,5m*
SF4B-A8C	Arm / foot protection, beam pitch 40mm	0.3–7m	343.4mm	PNP or NPN switchable (2 x OSSD)	Cable 5m
SF4B-A24C	Arm / foot protection, beam pitch 40mm	0.3–7m	983.4mm	PNP or NPN switchable (2 x OSSD)	Cable 5m
SF4B-A48C	Arm / foot protection, beam pitch 40mm	0.3–7m	1943.4mm	PNP or NPN switchable (2 x OSSD)	Cable 5m

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

PM

Ultra-compact fork sensors for positioning tasks

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

Product no.	Type	Detection distance	Output	Supply voltage	Cable / connector
PM-U25-P	U type	6mm	PNP	5-24V DC	Cable 1m
PM-F25	F type	6mm	NPN	5-24V DC	Cable 1m
PM-L25	L type	6mm	NPN	5-24V DC	Cable 1m
PM-L45-P	L type	6mm	PNP	5-24V DC	Cable 1m
PM-L65	L type	6mm	NPN	5-24V DC	JST connector

HG-F

Long-range laser measurement sensor

- TOF technology allows measurements up to 3m
- Laser class one offers a small accurate laser beam
- Flashing mode for easy installation
- Compact design with numerical display
- Teaching functions available
- Digital and analog output is integrated

Product no.	Type	Measurement center distance and measuring range	Output	Supply voltage	Cable / connector
HG-F13A-A-P	Measurement sensor, PNP	250–3000mm	0–5V, 4–20mA	24V DC	Cable, 2m
HG-F13A-A-N	Measurement sensor, NPN	250–3000mm	0–5V, 4–20mA	24V DC	Cable, 2m

HG-S

Contact measurement sensor

- Resolution up to 0.1µm
- Equipped with high-resolution CMOS
- Easy-to-use 2-line digital display controller
- Connection of up to 15 slave sensors in series
- 3 switching inputs
- 3 switching outputs
- Analog output 4–20mA

Product no.	Type	Measurement range	Inputs / outputs	Supply voltage	Cable / connector
HG-S1010	Standard type, resolution 0.5µm; measurement range 10mm	0–10mm	-	-	Connector
HG-S1050	Standard type, resolution 0.5µm; measurement range 50mm	0-10mm	-	-	Connector
HG-S1110	Standard type, resolution 0.1µm; measurement range 10mm	0–10mm	-		Connector
HG-S1010-AC	Sensor head, air-driven type, resolution 0.5µm; measurement range 10mm	0–10mm	-	-	Connector
HG-S1110-AC	Sensor head, air-driven type, resolution 0.1µm; measurement range 10mm	0–10mm	-	-	Connector
HG-S1032	Standard type, resolution 0.5µm; measurement range 32mm	0–32mm	-	-	Connector
HG-SC101-P	Amplifier, master sensor, analog current output + digital outputs, PNP	-	3x inputs and outputs (PNP), 4-20mA	24V DC	Cable 2m
CN-HS-C3	Detector connection cable <-> amplifier, straight connector, 3m	-	-	-	Connector

* Please ask for relevant cables!

HG-C

Measurement sensors for displacement measuring

- 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 output (0-5V, 4-20mA)
- Switching input and output (PNP)
- IO-Link type
- Response time 1.5ms

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

HL-G1

High-accuracy measurement sensors

- Resolution of 0.5μm
- Measurement distance up to 400mm
- An integrated display for monitoring measurement results, status and settings
- 3 switching outputs (NPN/PNP, selectable)
- Analog outputs (0-10V, 4-20mA)
- Serial interface (RS422/RS485) with multifunction type
- Built-in controller
- Laser class 2 or laser class 1 (different models)
- Beam spot size up to 0.1 x 0.1mm^2
- Operation with software possible

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

* Please ask for relevant cables!

HG-T

Laser thru-beam sensor

- Sensor head as standard type and slim type
- Preset functions, such as edge detection, gap width and diameter
- Analog current/voltage output
- 3 digital outputs PNP/NPN
- Repeatability 1μm
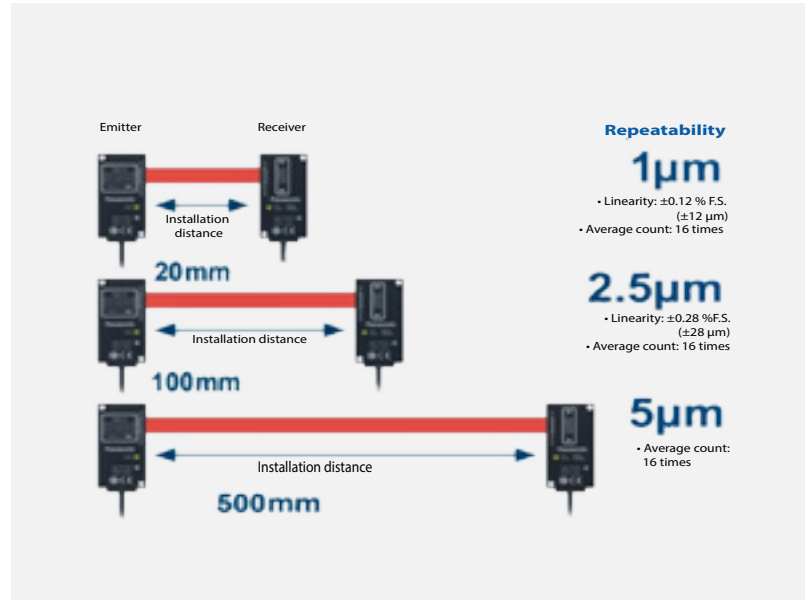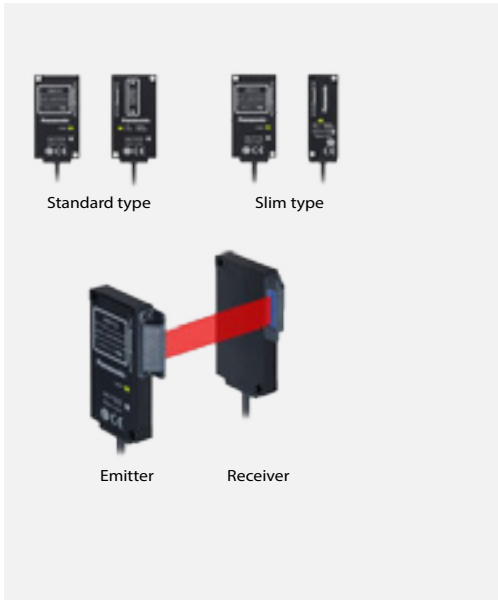- Easy expansion with up to 14 slave units

Accessories
- Units for digital communication (CC-Link, USB, RS485)
- Operating software for USB communication unit

Sensor heads

Product no.	Type	Measurement range (width of laser belt)	Measure-ment range	Cable / connector
HG-T1010	Sensor head, standard type	10mm	0 to 500mm	Cable 2m, 5m, 10m to 20m
HG-T1110	Sensor head, slim type	10mm	0 to 500mm	Cable 2m, 5m, 10m to 20m

Controllers

Product no.	Type	Inputs/outputs	Supply voltage	Cable / connector
HG-TC101	Controller master unit, NPN version	1-5V, 4-20mA, 3x NPN (inputs), 3x NPN (outputs)	24V DC (± 10%)	2m
HG-TC101-P	Controller master unit, PNP version	1-5V, 4-20mA, 3x PNP (inputs), 3x PNP (outputs)	24V DC (± 10%)	2m
HG-TC111	Slave unit, NPN type	1-5V, 4-20mA, 3x NPN (inputs), 3x NPN (outputs)	24V DC (± 10%)	2m
HG-TC111-P	Slave unit, PNP type	1-5V, 4-20mA, 3x PNP (inputs), 3x PNP (outputs)	24V DC (± 10%)	2m

Standard type   Slim type

Emitter   Receiver

Emitter   Receiver

Installation distance

20 mm

Installation distance

100 mm

Installation distance

500 mm

Repeatability

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

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

5μm
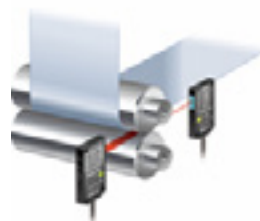- Average count: 16 times

Applications

Glass substrate positioning

Detection of clearance between rollers

Shaft diameter measurement

DP-0

Pressure sensors

- Digital pressure sensors for non-corrosive gas
- Two-stage setting mode for easy operation
- Simple, clear 3-color display
- Very low dimensions and low weight
- Pressure port: M5 female thread
- 3 output modes (standard, hysteresis, window comparator)

Accessories
- Mounting bracket
- Cable
- Front protection cover

Product no.	Measurement range	Outputs	N.O./N.C.	Supply voltage	Cable / connector
DP-001-P	-1 to +1bar	PNP	Switchable with key	12–24V DC	Cable with connector, 2m
DP-001	-1 to +1bar	NPN	Switchable with key	12–24V DC	Cable with connector, 2m
DP-002-P	0 to +10bar	PNP	Switchable with key	12–24V DC	Cable with connector, 2m
DP-002	0 to +10bar	NPN	Switchable with key	12–24V DC	Cable with connector, 2m

DP-100

Pressure sensors

- High resolution and repeatability
- Low and high pressure types
- Dual 3-color display (red, green, orange)
- Multifunction type: analog output switchable to current or voltage output or external input
- Standard type with 2 switching outputs
- Current and threshold value in one view
- IO-Link type available
- M8 connector type
- Various output modes (leak test, hysteresis, window comparator)
- Various thread types available:
  NPT 1/8, R1/8, G1/8, M5

▪ Accessories
- Cable with connector 1m, 3m, 5m
- Frame for panel installation
- Front protection cover

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

DPH-100/DPC-100

Pressure sensors

- Miniaturized pressure sensors with separate sensor heads
- Stainless steel pressure ports
- Type for combined low and high pressure measurement
- Voltage output
- Response time only 0.5ms
- Various output modes (leak test, hysteresis, window comparator)
- Minimum weight of sensor head without cable only 6g

Model no.	Type	Pressure port	Measurement 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

BE-A

Optical bubble sensor

- Safe detection of air bubbles (min. 0.8mm) in tubes
- For tubes Ø2mm, Ø3mm and Ø4mm
- Ø1.6mm upon request
- Response time 80µs
- Easy to install

Product no.	Type	Outer diameter tube	Output	Supply voltage	Cable / connector
BE-A201	Bubble sensor	Ø2mm	2x NPN	5 to 24V DC	Cable 1m
BE-A201P	Bubble sensor	Ø2mm	2x PNP	5 to 24V DC	Cable 1m
BE-A301	Bubble sensor	Ø3mm	2x NPN	5 to 24V DC	Cable 1m
BE-A301P	Bubble sensor	Ø3mm	2x PNP	5 to 24V DC	Cable 1m
BE-A401	Bubble sensor	Ø4mm	2x NPN	5 to 24V DC	Cable 1m
BE-A401P	Bubble sensor	Ø4mm	2x PNP	5 to 24V DC	Cable 1m

Ionizers

- Prevents electrostatic charge in materials
- Residual voltage up to ±10V
- Several models and principles to choose from
- Versions with or without built-in fan
- Supply voltage 24V DC

Product no.	Type	Description	Charge removable width	Supply voltage
ER-Q	Built-in fan	Ultra-compact, stand alone	200mm	24V DC
ER-F12A	Built-in fan	Compact, stand alone	700mm	24V DC

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

ER-VS02	Compressed air	Single needle, different nozzles available	0.5-7bar	–	24V DC
ER-VAS	–	Shower nozzle for ER-VS02	–	Spot 300mm	–
ER-VAB020	–	Straight bar nozzle for ER-VS02	–	200mm	–
ER-VAB032	–	Straight bar nozzle for ER-VS02	–	320mm	–
ER-VAB065	–	Straight bar nozzle for ER-VS02	–	650mm	–

ER-XC02	–	Controller for ER-X ionizer heads	–	–	24V DC
ER-X016	Compressed air	Ionizer head for ER-XC02	0–5bar	160mm	–
ER-X032	Compressed air	Ionizer head for ER-XC02	0–5bar	320mm	–
ER-X048	Compressed air	Ionizer head for ER-XC02	0–5bar	480mm	–
ER-X064	Compressed air	Ionizer head for ER-XC02	0–5bar	640mm	–

Internet of Things

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

Here again, Panasonic Industry has been providing a versatile and flexible product that provides various solutions for this type of application in the form of the FP-I4C. Panasonic Industry 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 the new Corvina Cloud with fast remote diagnostics, maintenance and more.

Communications technology

M2M solutions streamline work processes while boosting productivity. Automatic orders can communicate independently to a central computer that they need to be refitted and which specific items are needed. The streamlining achieved with M2M solutions and the resulting cost savings can be a tremendous competitive advantage for the retail business. Effective maintenance thanks to remote diagnostics or the implementation of a resource management system can be reliably implemented by Panasonic Industry with a combination of smart sensors, touch panels, plus control and network technology.

FP7 series

Modular and limitless connectivity

- Compact size with room for expansion functions
- Interface for communication and application cassettes
- Add-on cassettes can be added to the CPU to increase functionality without increasing the width of the unit. Communication cassettes support communication via RS232C, RS422, and RS485.
- Up to 64 units can be connected
- High-capacity SD (SDHC) memory cards of up to 32GB are supported.
- Equipped with a large memory capacity (up to 220k program steps or up to 500k data words) and a high-speed processor (11ns/step)
- GT power supply terminals

Number of expansion units	Processing speed	Max. capacity
	11ns/step (for basic instructions)	234k program steps, 999k data
64 units + application cassettes	Communication	Interfaces
	PROFIBUS, PROFINET, EtherCAT, DeviceNet, CANopen, Modbus TCP, EtherNet/IP, PLC Link, MEWTOCOL	1 x RS232 or RS422/RS485, RJ45, 1 x mini USB

FP0H series

High speed and
high performance type

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

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

FP0R series

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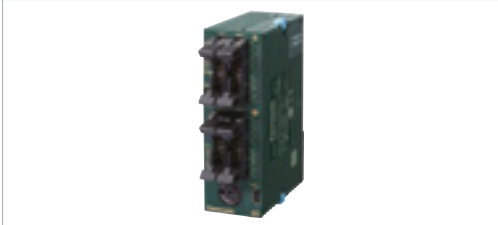
- Ultra compact 25 x 90 x 60mm
- Maintenance-free and battery-free backup of all data
- USB port and RS232 interface included as standard
- Built-in positioning functions for up to 4 axes
- Expandable with up to 3 expansion units

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

FP-XH series

Compact and powerful

- High processing speed
- Large program memory
- Expandable to up to 300 inputs and outputs
- Multi-axis positioning control
- Network available
- Up to 5 communication ports incl. 2 communication cassettes and TOOL port.

Number of expansion units	Processing speed	Max. capacity
8 units + up to 4 add-on cassettes	0.04µs/basic step (up to 7000 steps)	40k steps
	Communication	Interfaces
	Modbus RTU, S-Link, PLC link, MEWTOCOL	1 x RS232C, RS485 or 1 x Ethernet, 1 x USB

FP-I4C

Communication for Industry 4.0 and IoT

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

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

Control FPWIN Pro7

The Panasonic PLC programming software

- Control FPWIN Pro7 is the Panasonic programming software developed according to the international standard IEC 61131-3 (for Windows 10 and 11).
- 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 Pro7 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

Cloud solution for remote maintenance

Corvina Cloud is a secure Cloud solution based on OpenVPN and SSL, which enables the remote administration of industrial systems. With this platform, the administration of your IIoT business is as easy as child's play.

Roles and applications
You can define different roles with different user rights. You can assign access rights to the roles depending on the needed data and the application.

Secure connectivity
In its core, Corvina Cloud is a high-performance server with the latest open technologies to manage data and control flows, thus acting as a Platform as a Service (PaaS).

Gateways and endpoints
Our touch terminals (HM series) together with FP-I4C act as gateways to the local network. They connect to a central server. All Panasonic PLCs, IP cameras, and other devices capable of connecting to the Internet can act as endpoints.

GM1

Motion Controller

- Synchronized motion control 32 axes
- Ethernet: 2 ports (independent IP address)
- EtherNet/IP, Modbus TCP
- Slot for SD card (32GB)
- 2 channels for high-speed counter input: 4MHz/8MHz
- 4 channels for PWM output: up to 100kHz
- 16 digital inputs, 16 digital outputs (PNP)
- Up to 15 expansion units possible (max. 992 I/O)
- Communication cycle: 0.5ms

Product types

Controller

Product name	Number of axes	Network	Inputs/outputs	High-speed counter	Rated voltage	Specifications Output	Product no.
GM1 Controller	16 axes	RTEX	16 inputs 16 outputs	2 channels	24V DC	Transistor output (NPN)	AGM1CSRX16T
	32 axes	EtherCAT				Transistor output (PNP)	AGM1CSEC16P

Input/output unit

Product name	Type	Inputs/outputs	Specifications	Product no.
Digital input/output unit	DC input	64 inputs	24V DC, 32 inputs /1 common	AGM1X64D2
	Transistor output (PNP)	64 outputs	Maximum load current: 0.3A (20.4 to 26.4V DC), 30mA (4.75V DC); 3.2A / common, 32 outputs / 1 common	AGM1Y64P
	DC input Transistor output (PNP)	32 inputs 32 outputs	Input: 24V DC, 32 inputs / 1 common Output: Maximum load current: 0.3A (20.4 to 26.4V DC), 30mA (4.75V DC); 3.2A / common, 32 outputs / 1 common	AGM1XY64D2P

Analog input / output unit

Product name	Specifications	No. of channels	Product no.
Analog input unit	Conversion time 50µs/channel Resolution 16 bit (maximum) Accuracy max. ±0.2% F.S. (at +25℃)	8 channels	AGM1AD8
Analog output unit	Conversion time 50µs/4 channels Resolution 16 bit (maximum) Accuracy max. ±0.2% F.S. (at +25℃)	4 channels	AGM1DA4

Pulse output unit

Product name	Output type	Number of control axes	Pulse output	Product no.
Pulse output unit	Non-contact input (transistor input)	4 axes	Max. 500kpps	AGM1PG04T
	Line driver		Max. 4Mpps	AGM1PG04L

Accessories

Product name	Product no.
Discrete-wire connector set	AFP2801J
Flat-cable connector set	AFP2802J
Power supply cable	AFPG805J

Servo drivers and motors

With their broad spectrum, servo drives by Panasonic Industry are perfectly suitable for highly dynamic, small, and complex applications as well as mobile applications with DC motors.

Servo drives are a fundamental element in modern automation concepts. Using products by Panasonic Industry can improve the productivity and energy efficiency of industrial systems and equipment. After all, productivity and energy efficiency play a key role in the modern factory. New and higher performing industrial solutions are conquering the field of factory automation to increase efficiency in production. Automation mostly affects the transport and the processing of parts for an end product. This requires servo drives to control the motors that process parts or move them from one place to another. Depending on the type of production, different machines and different servo drives are needed. Here Panasonic Industry offers a wide range of servo drives and motors for all types of applications.

MINAS A6 series

Servo drivers

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

Type	200/400V AC					400V AC
	Standard	RS485 communication	Multifunction	Network		400V AC Modular
	A6SE	A6SG	A6SF	A6N	A6B	A6 Multi
RTEX	–	–	–	X	–	–
EtherCAT	–	–	–	–	X	X
External encoder	–	–	X	X		X
Safety function STO	–	–	X	X		X
Advanced safety function	–	–	–	–		X
RS232/485 (Modbus)	–	X	X	–		–
Velocity control, torque control	–	–	X	X		X
Position control with digital I/O (like MINAS A4P)	X	X	X	–		–
Position control	X	X	X	X		X

Rated power	50W–1.5kW (200V AC), 1kW–5kW (400V AC)		400W–5kW
Supply voltage	1/3-phase (200V AC), 3-phase (400V AC)		3-phase
Bandwidth (velocity response)	3200Hz		
Rated rotational speed	2000–3000 rpm		
Max. rotational speed	3000–6500 rpm		
Rated torque	0.16–15.9Nm (200V AC), 0.64–23.9Nm (400V AC)		
Peak torque	0.48–47.7Nm (200V AC), 2.23–71.6Nm (400V AC)		
Control functions	Position control	Position, velocity, torque control	
IP degree of protection (motor)	IP67		
Control input	Pulse	Pulse, analog	Network	Network

MINAS A6 series

Servo motors

- 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

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

MINAS A6 Multi

**400V servo drive system.
Compact, modular design for
maximum performance**

- Compact servo drive in book format
- Modular construction
- DC link bus system
- Quick servo control technology
- Anti vibration technology
- State-of-the-art network technology
- 18 integrated safety functions
- Configuration via EtherCAT
- Robust rotatable screw connections according to IEC, CENELEC, and IEEE
- Remote control via EoE
- Dual-axis servo driver

Power supply units

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

Servo driver units

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

MINAS LIQI

AC servo drivers and motors

- Cost effective
- Reliable and high-performance
- Easy to use
- Excellent price-performance ratio

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

MINAS A6V

Low voltage, high performance

- Servo drives and servo motors
- Modbus RTU communication
- Position, velocity, and torque control
- Rated rotational speed up to 3000rpm

Supply voltage	Driver			Motor			
	Pulse	EtherCAT	RTEX	Rated power	Low inertia	High inertia	Flat type
24V DC	Multifunction type	X	X	50W	X	–	–
	RS485 type						
	Multifunction type	X	X	100W	X	–	X
	RS485 type			133W	–	X	X
48V DC	Multifunction type	X	X	50W	X	X	–
	RS485 type			100W	X	X	X
	Multifunction type	X	X	200W	–	X	X
	RS485 type			266W	–	X	X

Communication between humans and machinery

The developments in the current industrial revolution demand the communication between humans and machinery in all areas. The touch panel of the machine, which serves as a communication port, is of major importance for successful networking. A logical display of processes and data on the screen is of utmost importance for the intuitive and correct operation of devices and machines by humans.

What would be more intuitive than a multi-touch operation that behaves similar to a smartphone? Panasonic Industry has expanded its touch terminal portfolio accordingly. Panasonic Industry touch terminals are combining the benefits from both worlds: on one hand, high-end devices for complex applications in the IoT area with corresponding functions and protocols and, on the other hand, a large bandwidth of functions without sacrificing robustness.

HMs700 series

High-end multi-touch terminal

- PoE (Power over Ethernet)
- IP67, -20℃ to 55℃
- Linux RT operating system
- Multi-touch and gesture control
- Robust 3.2 mm touch screen made of tempered glass
- Integrated IoT sensors
  (temperature and acceleration)
- Camera
- Wi-fi
- Countless mounting options

Model	HMs705	HMs707	HMs710	HMs715	HMs721
Display size	5" TFT	7" TFT	10.1" TFT	15.6" TFT	21.5" TFT
Resolution	800 x 480, PCAP	1024 x 600, PCAP	1280 x 800, PCAP	1366 x 768, PCAP	1920 x 1080, PCAP
Sensors	Temperature, 3-axis accelerometer				
Wi-fi	Not available	IEEE 802.11a/b/g			
Brightness	300cd/m^2 typ.	400cd/m^2 typ.			
Touchscreen	Projected-capacitive touch glass, multi-touch				
Ethernet	10/100 PoE				
USB	1 (host V2.0, max. 500mA, available with special cable)				
Protection Class	IP67 (requires appropriate accessories and cables)				
CPU	ARM Cortex-A9 dual core - 800MHz			ARM Cortex-A9 quad core - 800MHz	
Operating system	Linux RT				
RAM / FLASH / FRAM	1GB / 4GB / 64KB			2GB / 8GB / 64KB	

HMx700 series

High-end multi-touch terminal

- Capacitive glass touch panel
- Display sizes: 5", 7", 10,1", 15,6" und 21,5"
- High-resolution wide display with multi-touch functionality
- Extended operation temperature range: -20° to +60℃
- Real-time clock
- Fast start < 10 seconds
- Hardware and firmware optimized for fast operation

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

HMe series

Excellent price-performance ratio

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

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

HMWIN Studio

Visualization software HMWIN Studio
Intuitive and effective

HMWIN Studio is a high-performance and flexible software platform for easy and intuitive programming of visualization solutions. Its advanced graphics engine is based on SVG technology. The client-server architecture corresponds to state-of-the-art web technology and corresponding remote access options.

Remote access is possible via common browsers and also via Internet-ready mobile devices.

In addition, the list of features includes comprehensive symbol and parts libraries as well as functions such as e-mail, RSS, PDF Reporting, and much more.
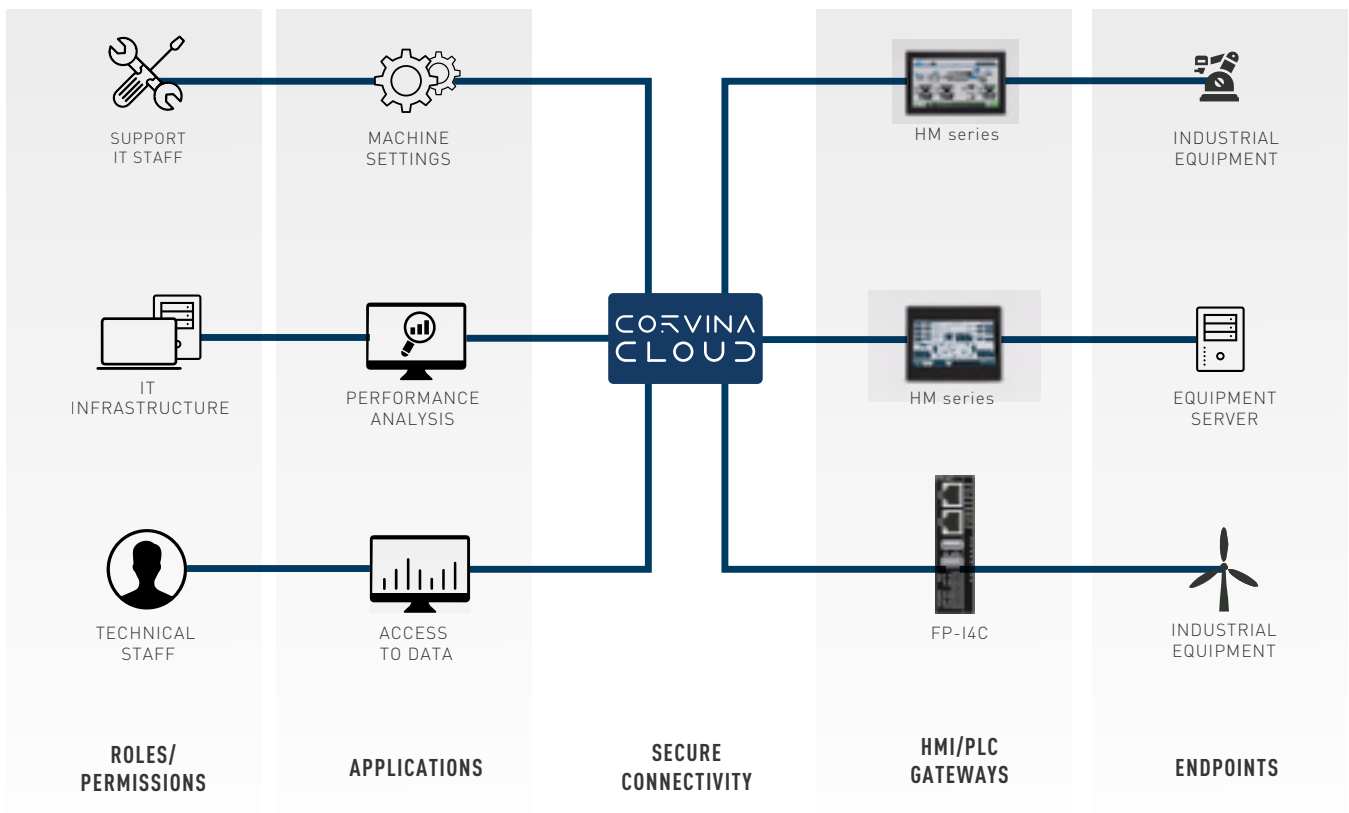
- Easy and intuitive operation
- Well-structured project navigation to the individual program modules
- Import of project variables from Panasonic programmable controllers
- Comprehensive adaptation options
- High-performance JavaScript engine for flexible and interactive HMI solutions

More than a panel

HM Series touch terminals as gateway to the IIoT

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 modern browser or from a 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 Panasonic PLC, SVG graphics, Javascript, OPC UA Server / Client gateway, Modbus TCP (RTU), EtherNet/IP. This makes the HM series a perfect tool for IIoT implementation and Industry 4.0 in a controlled and safety-aware manner.

How does Corvina Cloud work?

SUPPORT IT STAFF	MACHINE SETTINGS		HM series	INDUSTRIAL EQUIPMENT
IT INFRASTRUCTURE	PERFORMANCE ANALYSIS	CORVINA CLOUD	HM series	EQUIPMENT SERVER
TECHNICAL STAFF	ACCESS TO DATA		FP-I4C	INDUSTRIAL EQUIPMENT
ROLES/ PERMISSIONS	**APPLICATIONS**	**SECURE CONNECTIVITY**	**HMI/PLC GATEWAYS**	**ENDPOINTS**

Roles & applications

It is possible to define different roles with different user rights. Roles can be given access rights depending on the data needed and the application.

Secure connectivity

In its core, Corvina Cloud is a high-performance server with the latest open technologies to manage data and control flows, thus acting as a Platform as a Service (PaaS).

Gateways & endpoints

Our touch panels serve as gateways to the local network (HMe series, HMx700 series, HMs700 series, FP-I4C). They connect to a central server. All Panasonic PLCs, IP cameras, and other devices capable of connecting to the Internet can act as endpoints.
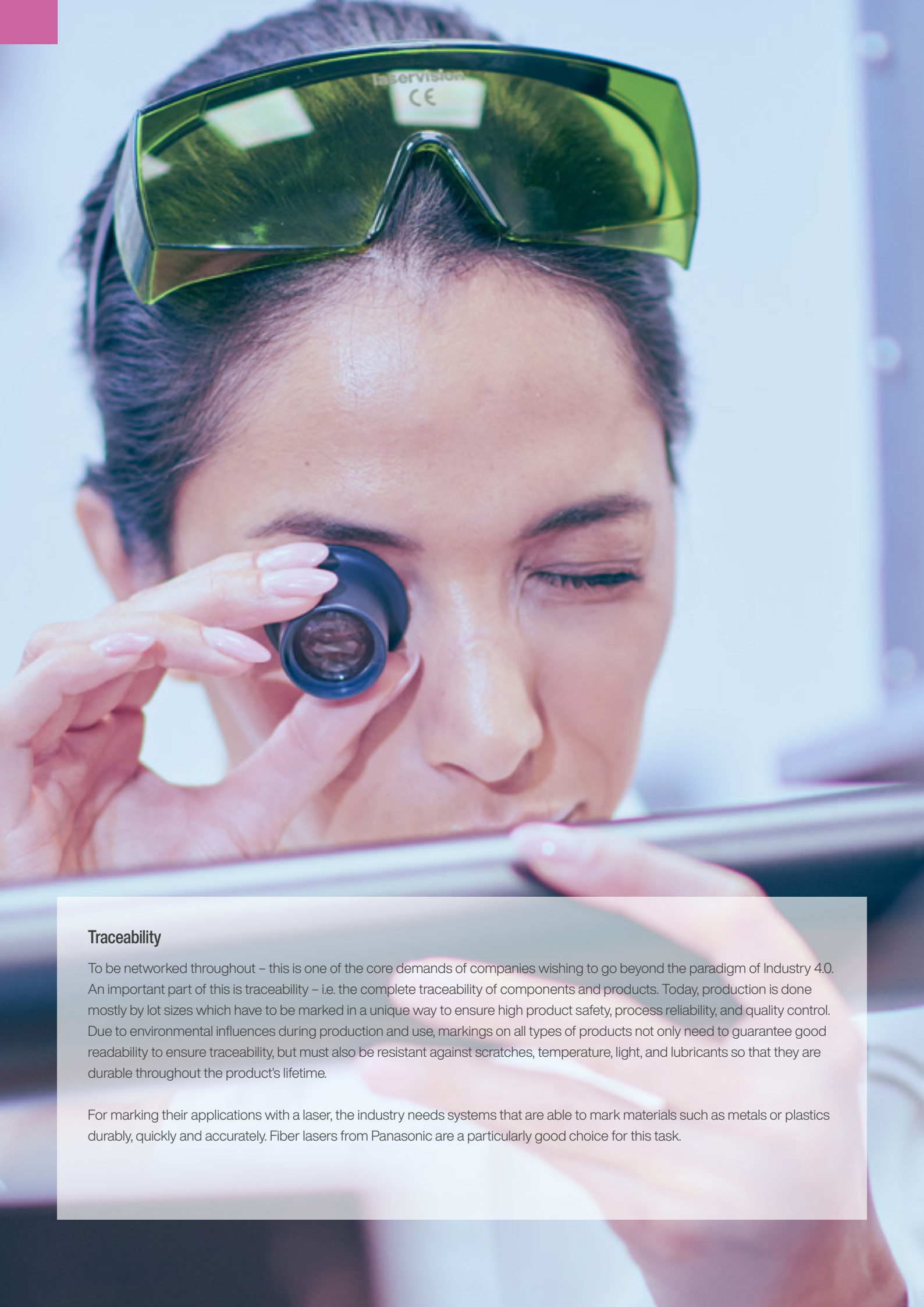
Traceability

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

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

LP-ZV series

3D short-pulse fiber laser marker boasting high marking definition on metal and plastic. Simple marking setting with a built-in camera for sharp and clear color image for accurate positioning.

- Small thermal effect on the workpiece thanks to the short pulses
- The wide marking field of 330mm × 330mm enables large size marking in a single marking operation.
- The 3D control allows for the marking of oblique, convex and concave surfaces in an area of 50mm (±25mm).
- Removable head with IP64 rating enhanced flexibility of equipment design and integration
- PROFINET / EtherNET/IP network units are provided to support the PLC connection
- Output class: 20W, 50W
- Especially well-suited for: high contrast marking on metal and plastics
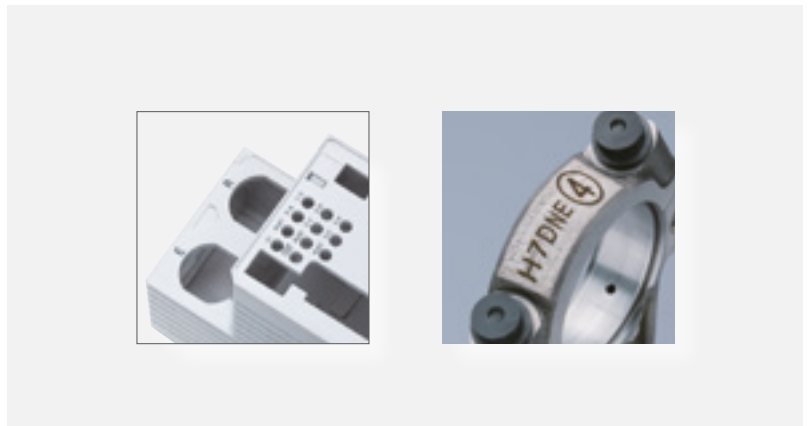
LP-RH series

These CO2 laser marking systems are especially designed for industries with particularly high demands on speed and functionality. Thanks to their small laser beam diameter, certain models are especially well suited to apply very small markings on small components.

- New NAVI smart software makes it easy for operators to set up and monitor marking processes.
- Easy fine adjustment, the work distance can be adjusted within +/- 3mm without moving the laser head or the tool.
- Simplified installation thanks to head rotating mechanism on standard model or small installation footprint (Din B5) with the tower model.
- PROFINET / EtherNET/IP network units are provided to support the PLC connection
- Output class: 10W, 20W, 30W
- Especially well-suited for: 2D plastic and other organic materials (glass, wood, ceramics, etc.) applications
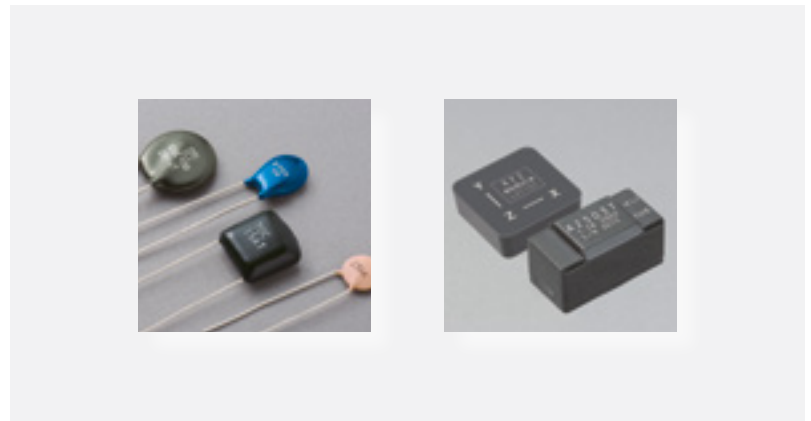
LC-3000

Workstation

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

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

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

Standard specification

- Laser class 1
- Mobile laser safety cabin
- Servo driven X, Y and Z axis
- Servo driven cabin protective door
- Internal extraction unit with filter insert optional
- Grooved plate or perforated plate as an option
- Connector 230V / 16A
- Industrial PC with Windows and special laser software:
- 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.

Our service packages

Outstanding service is a matter of course for us. Therefore, we offer different services in three different services packages according to your needs.

- Guaranteed availability of all series-specific spare parts during the entire contract period
- Individual spare parts bundles
- 48h spare part and replacement system delivery
- Emergency hotline
- Firmware update
- Training for the operators
- If required: short-term support by Panasonic service technicians

Included service features	Maintenance Service	Replacement Service	Premium Service
Inspection: Visual inspection and a functional test	✓		✓
Preventive maintenance	✓		✓
Firmware update	✓		✓
Recommended actions for operators	✓		✓
Prioritized repair	✓		✓
Replacement system for the duration of the repair period		✓	✓
Prioritized troubleshooting services	✓	✓	✓
Guaranteed availability of all series specific spare parts during the entire contract period			✓
24/48h spare part and replacement system delivery		✓	✓
Series-specific spare part packages			✓
Emergency hotline: advanced technical support until 22:00 CET			✓
10% discount on spare parts for inhouse repairs			✓

Safety and sustainability

Nowadays, global environmental challenges, including climate change, represent some of the most pressing challenges in the world that require comprehensive solutions. Panasonic Industry is addressing these topics on many levels, including research, development, and the distribution of components and solutions that support security, increase efficiency and that analyze and optimize the utilization of energy.

From digital counters, temperature sensors and safety switches to networked energy management systems: Panasonic Industry offers components for factory automation that optimize the safety and efficiency of production in many industries.

MAC-I

Safety components

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

Key points

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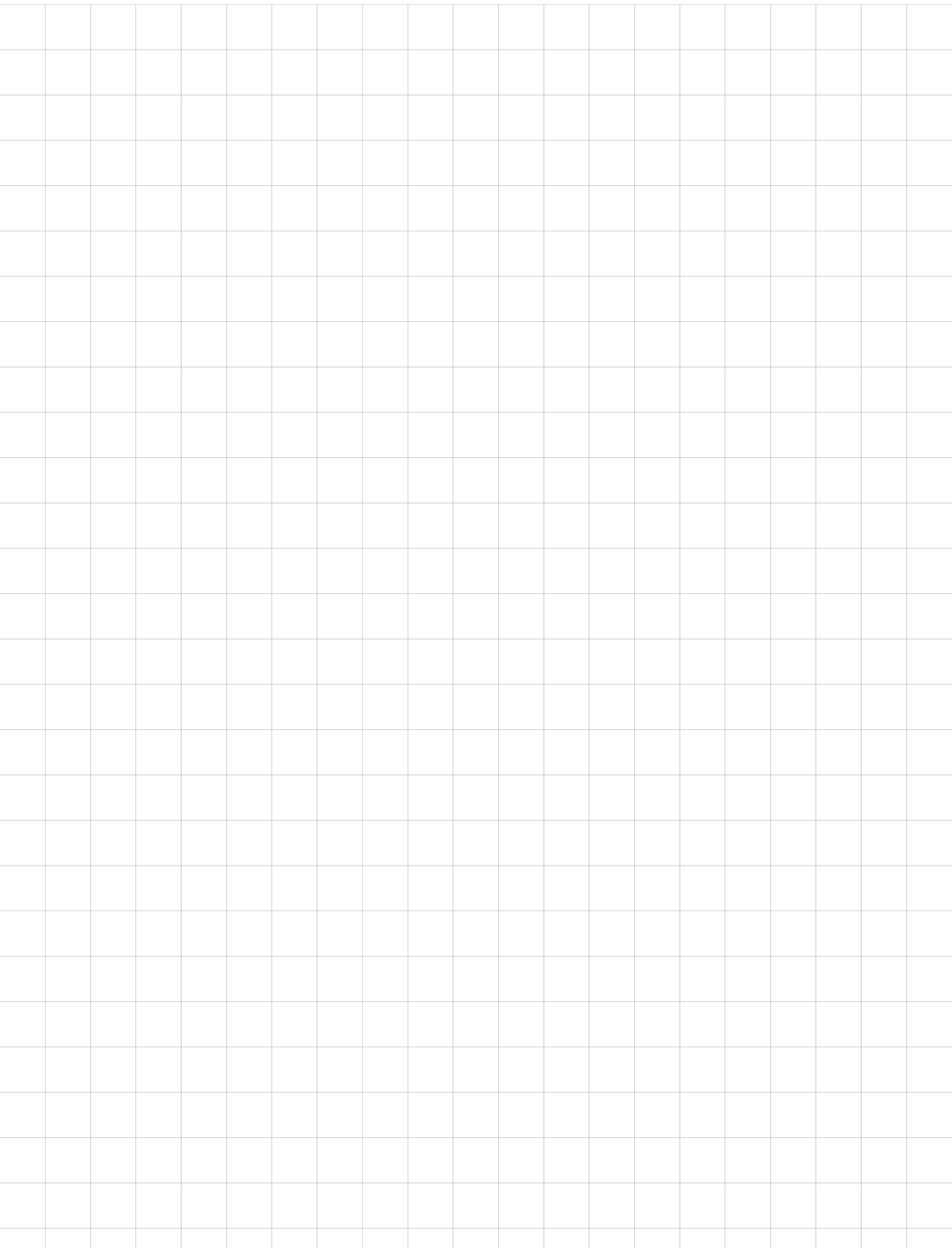
MAC-I

Positioning switch

- 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

Memo

Panasonic
INDUSTRY

Sales region	Telephone number
Austria	+43 223626846
Benelux and Scandinavia	+31 499 372727
Czech and Slovakia	+420 541 217 001
France	+33 1 60 13 57 57
Germany	+49 89 45 354 1000
Italy	+39 0456752711
Poland and CEE countries	+48 42 230 96 33
Spain and Portugal	+34 913293875
Switzerland	+41 417997050
United Kingdom and Ireland	+44 1908 231555

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