

MELSENSOR
Code Reader

e-Factory



MELSENSOR

GLOBAL IMPACT OF MITSUBISHI ELECTRIC



Through Mitsubishi Electric's vision, "Changes for the Better" are possible for a brighter future.

Changes for the Better

We bring together the best minds to create the best technologies. At Mitsubishi Electric, we understand that technology is the driving force of change in our lives. By bringing greater comfort to daily life, maximizing the efficiency of businesses and keeping things running across society, we integrate technology and innovation to bring changes for the better.

Mitsubishi Electric is involved in many areas including the following:

Energy and Electric Systems

A wide range of power and electrical products from generators to large-scale displays.

Electronic Devices

A wide portfolio of cutting-edge semiconductor devices for systems and products.

Home Appliance

Dependable consumer products like air conditioners and home entertainment systems.

Information and Communication Systems

Commercial and consumer-centric equipment, products and systems.

Industrial Automation Systems

Maximizing productivity and efficiency with cutting-edge automation technology.

Code reader quickly reads various codes, realizing easier traceability

Compact-size code readers can read even challenging codes.
Quality control and traceability are realized in various production lines.



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In the e-F@ctory, data read by code readers are utilized for quality control and traceability. Mitsubishi Electric code readers are highly compatible with Mitsubishi Electric factory automation products. Read data are seamlessly coordinated with the edge computing level, realizing TCO*¹ reduction.

Highest read rates for any challenging codes

Powerful algorithm can decode even the most damaged 2-D codes, scratched, poorly printed 1-D codes and codes with reflection.

Challenging codes such as on shiny, highly reflective, mirror or high-speed moving surfaces can be read.

Auto-tuning allows easy setup

Auto-tuning function enables automatic focusing and lighting adjustment.

Optimum setup according to the environment is easily done just by pressing a button.

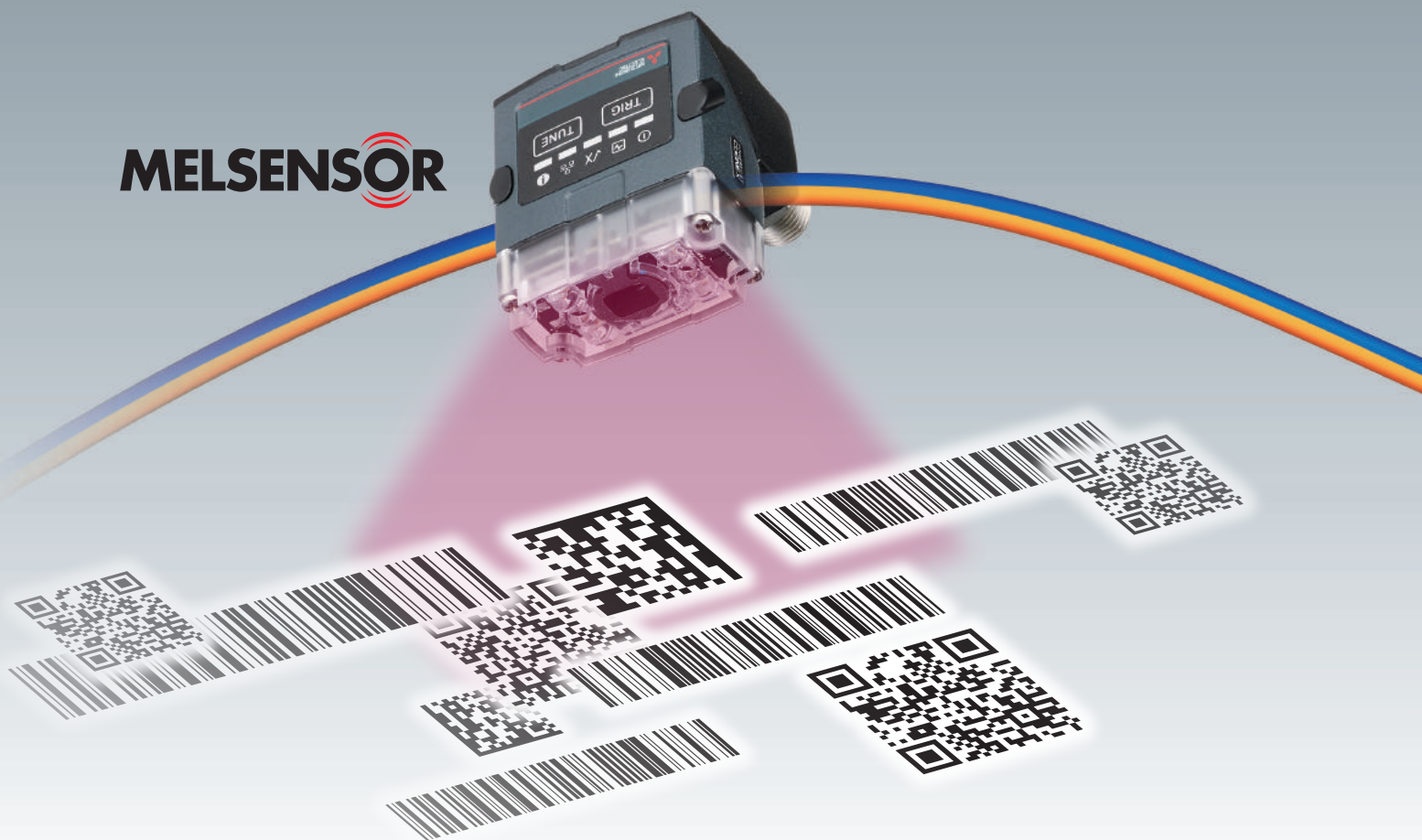
Enhanced compatibility with Mitsubishi Electric programmable controllers

Mitsubishi Electric code readers which support CC-Link IE Field Network Basic and SLMP communication are highly compatible with factory automation products such as Mitsubishi Electric programmable controllers.

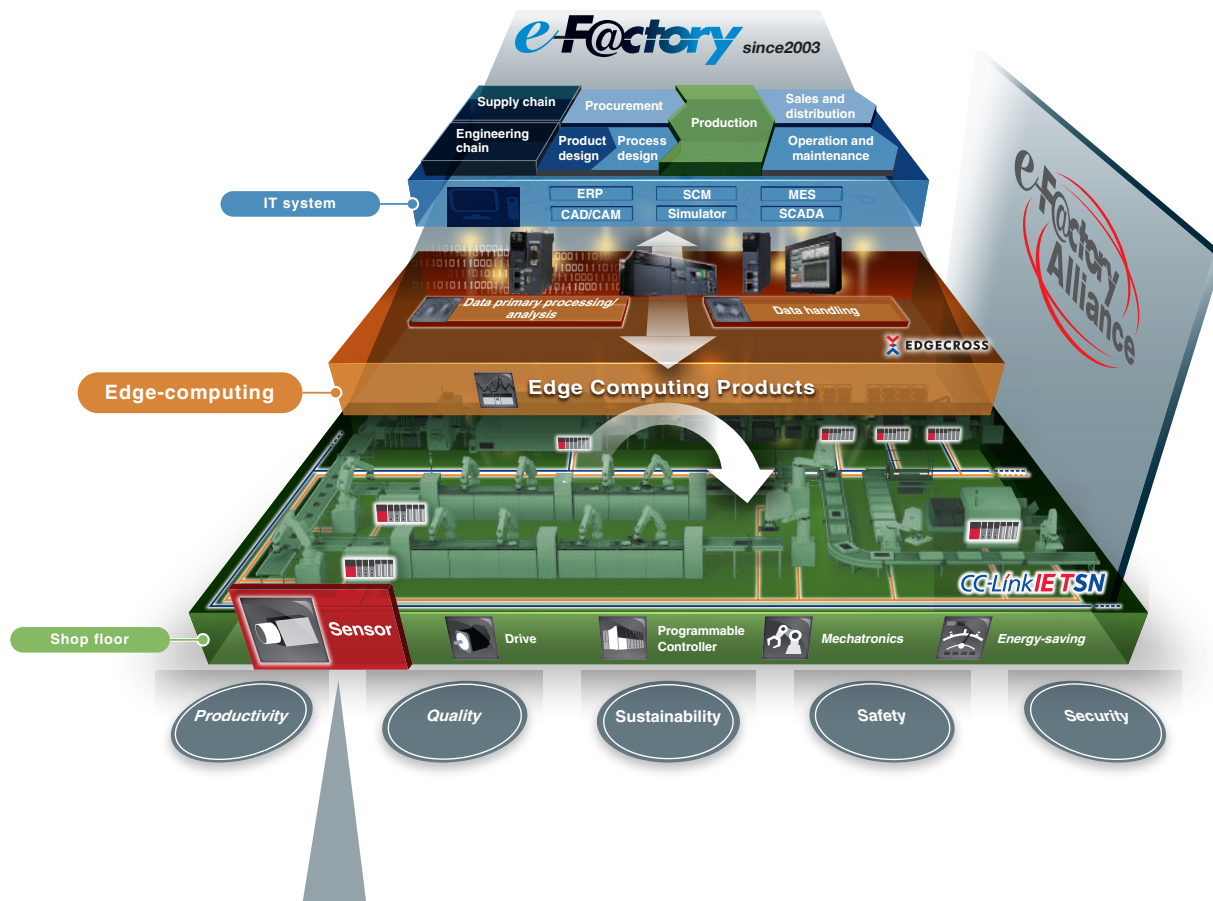
Supporting iQSS*², code readers are automatically detected on the engineering tool, reducing configuration time.

*1. Total Cost of Ownership

*2. iQ Sensor Solution

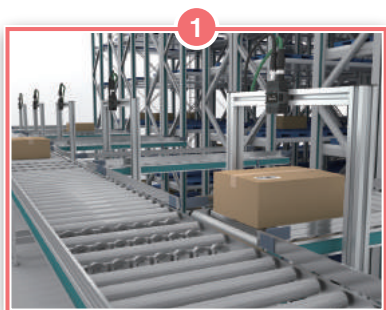
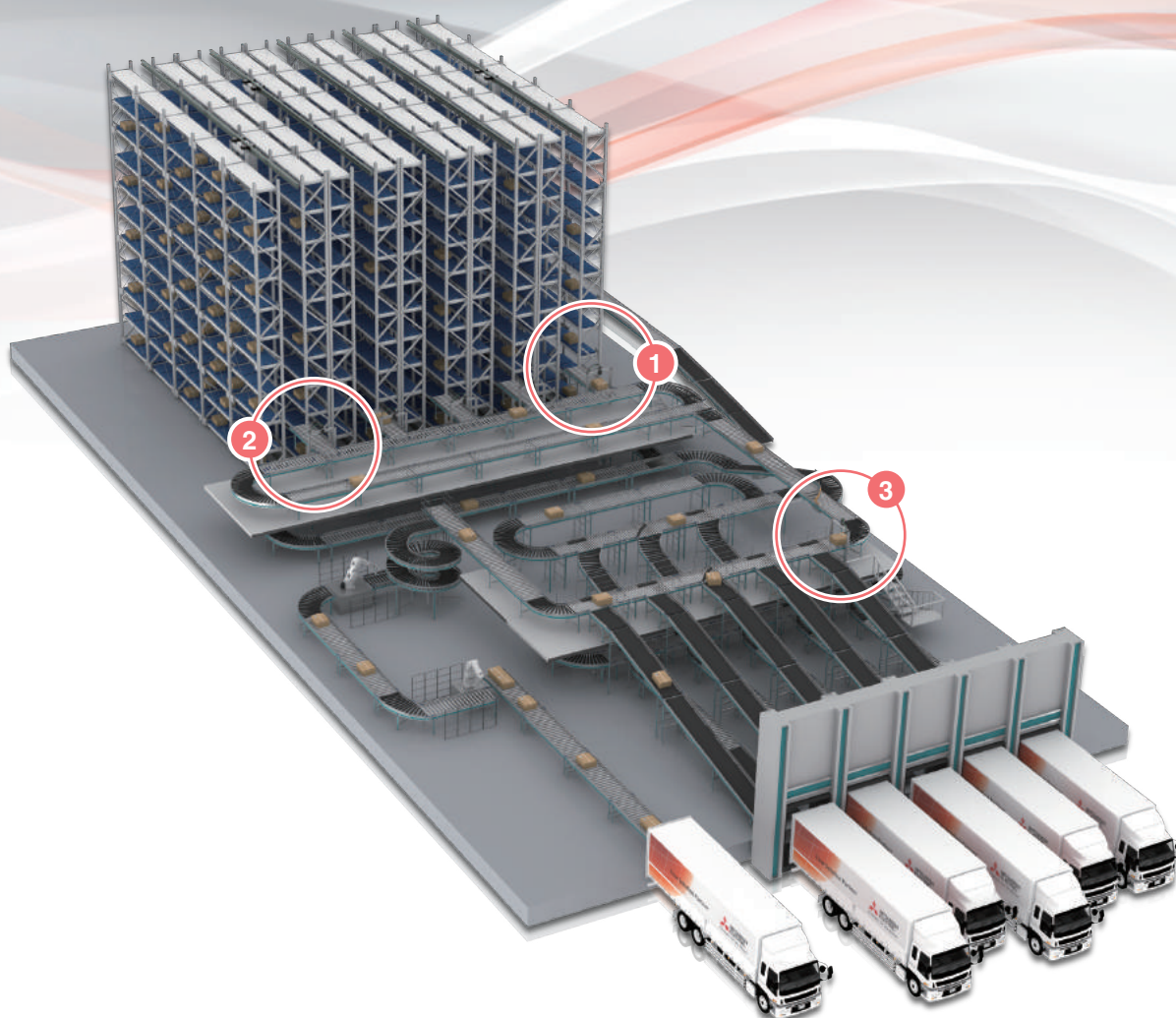


e-F@ctory is the Mitsubishi Electric solution for improving the performance of any manufacturing enterprise by enhancing productivity, and reducing the maintenance and operations costs together with seamless information flow throughout the plant by using a combination of factory automation and IT technologies.



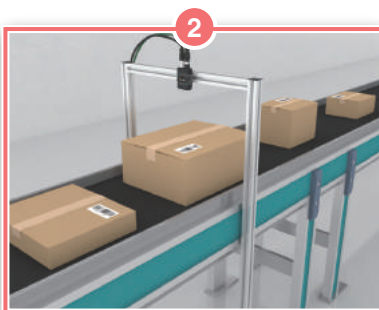
Realize automated sorting and inventory management

Logistics industry



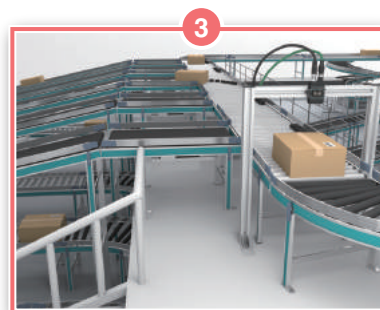
1 Barcode inventory management

Easily manage inventory by reading codes on goods.



2 Codes in different orientations and locations

Reads codes with variations in orientation and location.



3 Automated sorting

Automatically sort cartons according to products by reading codes on cartons.

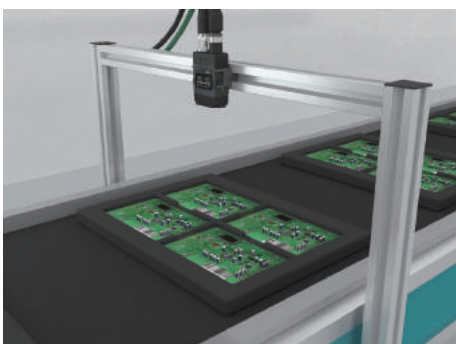
Automotive industry



■ Decode challenging codes

Reads codes on cylindrical forms and metal surfaces with light and dark adjustment. In addition, codes on mirror and shiny surfaces with reflection can be read.

Electric/electronics industry



■ Batch read multiple codes

With a wide-field-view, the code reader can read multiple codes on electric boards at a time.

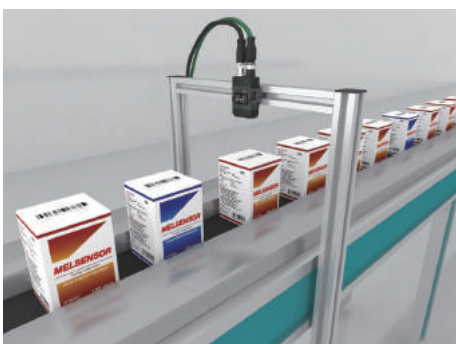
Food industry



■ Scan codes moving at high speed

Reads codes on high-speed moving objects. If within the visual field, the code reader can read codes not in right locations or orientations.

Pharmaceutical industry



■ Check product type

Reading barcodes on products prevents other products from being mixed.

Fixed-mount code reader CF26



Read various codes

The code reader CF26 is equipped with 2-D code reading algorithm PowerGrid™ and 1-D code image processing algorithm HotBars II™. PowerGrid™ technology provides reliable reading of challenging 2-D codes which exhibit damage to or complete elimination of the finder pattern, clocking pattern, and quiet zone. In addition, HotBars II™ delivers reading of reflected, damaged or poorly printed 1-D codes as small as 0.8 pixels per module.



■ Reliably read codes with difficult conditions

A combination of high-powered light, polarized front cover and liquid lens provides a good reading condition. Codes at long working distances, on high-speed application, on round, shiny, highly reflective, or specular surfaces can be reliably read.



Codes on the round surface



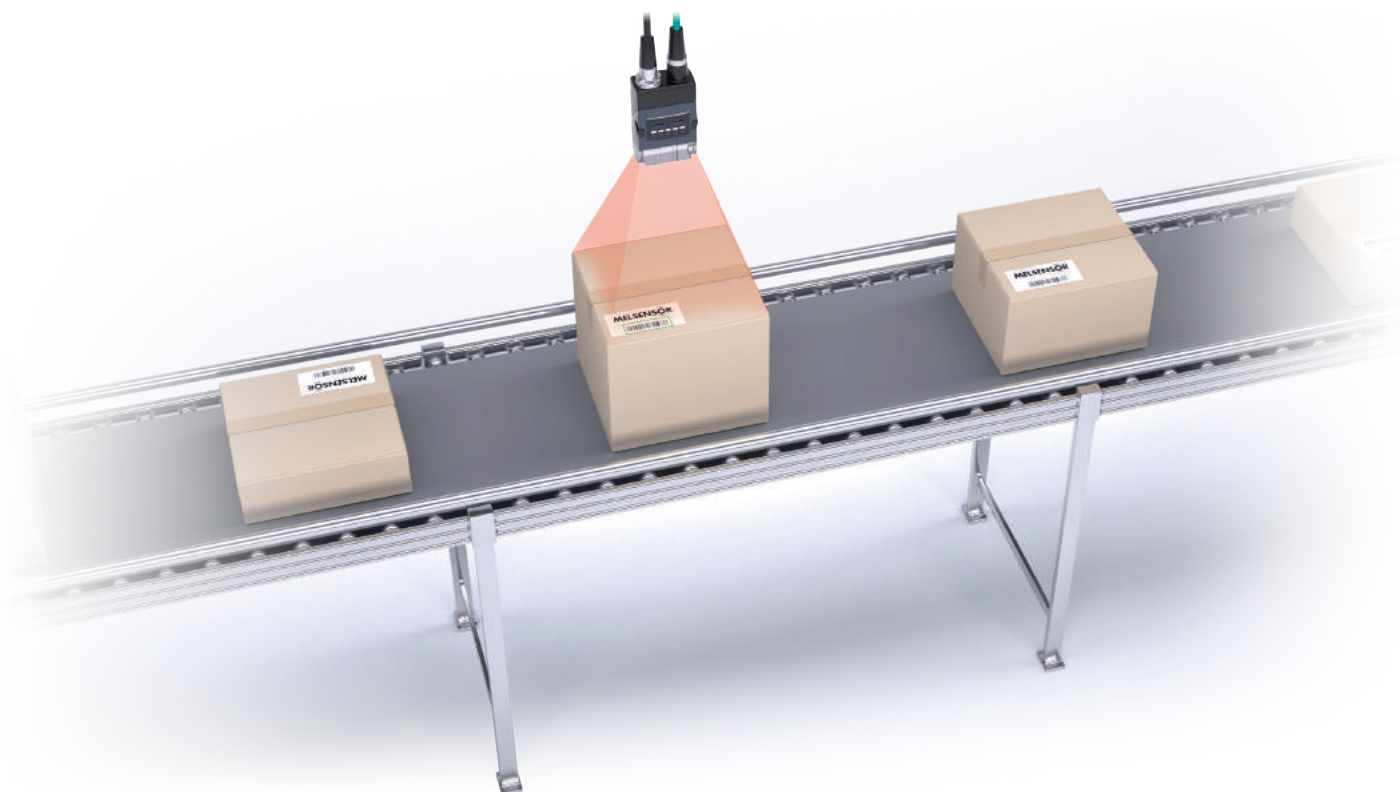
Codes on the shiny and highly reflective surface



Codes moving at high speed

■ Codes in different locations and heights

A wide-field code reader equipped with unique algorithm can read codes in different locations and depths. This is ideal for codes in different locations such as cartons with different heights on the moving conveyor.



Easy installation reduces setup cost

■ Embedded autofocus function

Pressing a button on the code reader quickly sets the optimum focus automatically. Manual focus setting is unnecessary, simplifying the setup.

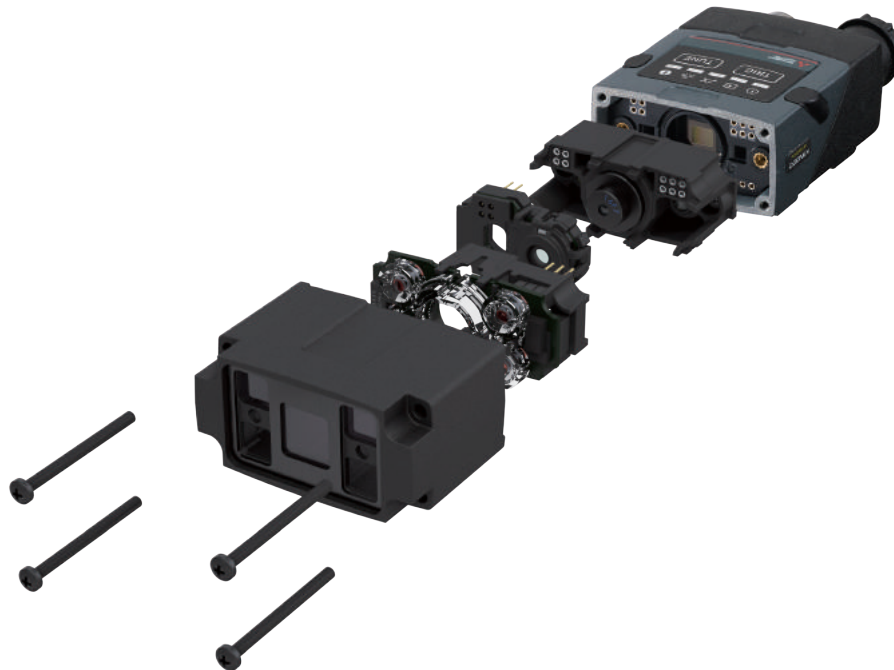
■ Integrated code reader

• High-power illumination is integrated

Four high-powered red LED illuminations provide an optimum illumination condition. The code reader has integrated lighting and does not require angle adjustment of illumination. Additionally, hardware cost can be reduced by eliminating the need for separate illumination.

• Liquid lens

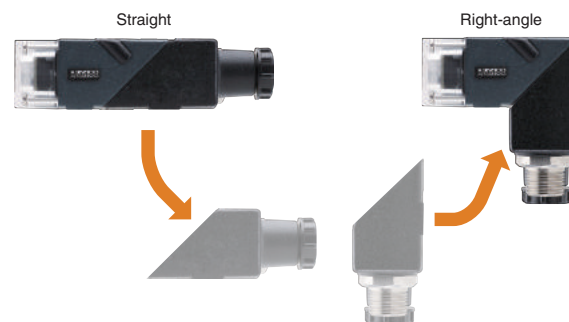
The code reader uses liquid lenses which do not have any moving parts that can wear out or fail, thereby reducing maintenance cost.



Customizable according to installation conditions

■ Configuration can be changed according to the installation space

The configuration can be changed between in-line and right-angle. By changing the configuration according to the installation space, the code reader can be installed by the wall or in tight spaces where wiring orientation is constrained.



■ Compact palm size

The CF26-SR is a compact size with 44.0 × 22.5 × 79.3 (mm) and can be used in a tight installation space.

Compatible with Mitsubishi Electric factory automation products

The code reader which supports CC-Link IE Field Network Basic, SLMP, and iQSS*¹ is compatible with programmable controllers. Controlling, monitoring, and outputting results of the code reader can be done just by turning on/off of the programmable controller device data.

■ CC-Link IE Field Network Basic compatible

Equipped with CC-Link IE Field Network Basic interface, setting to connect with a programmable controller is easily done and read results can be acquired via the network.

■ Data transfer realizes traceability

Recognition result images of the coder reader can be transferred to the HMI(GOT) and IT system. Read results including code images failed to read and recognized images are transferred to the IT system to save, allowing analysis and diagnosis.

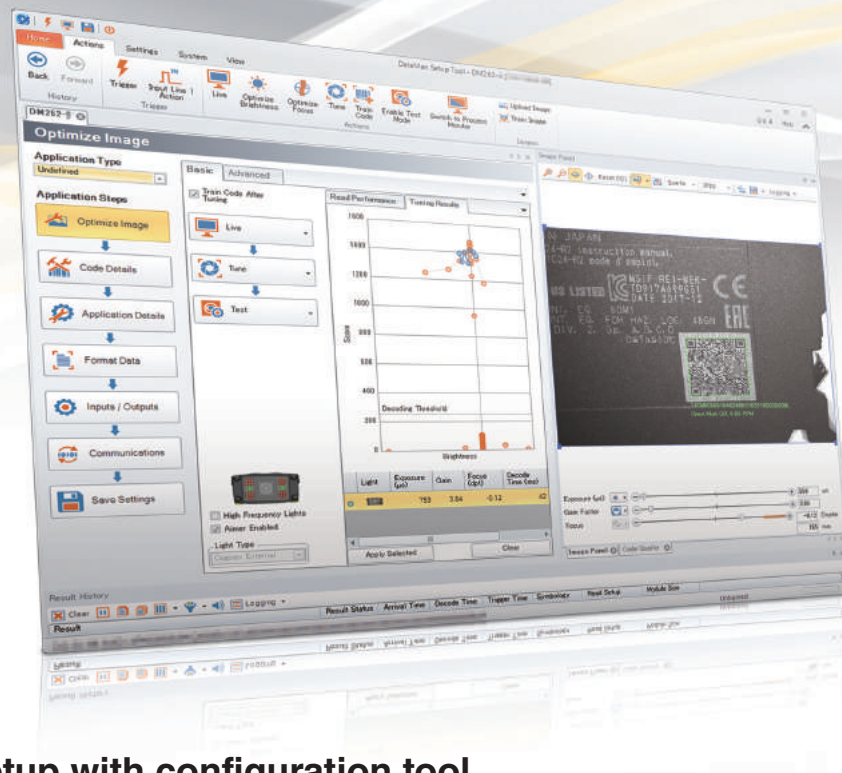


■ iQSS compatible

Supporting iQSS, the code reader is automatically detected on the engineering tool. Tool link-up function enables reduction in total cost in development/setup/operation/maintenance.

*1. For details, please refer to "Sensor solution iQ Sensor Solution catalog L(NA)16029ENG".

Dataman Setup Tool for MELSENSOR Code Reader

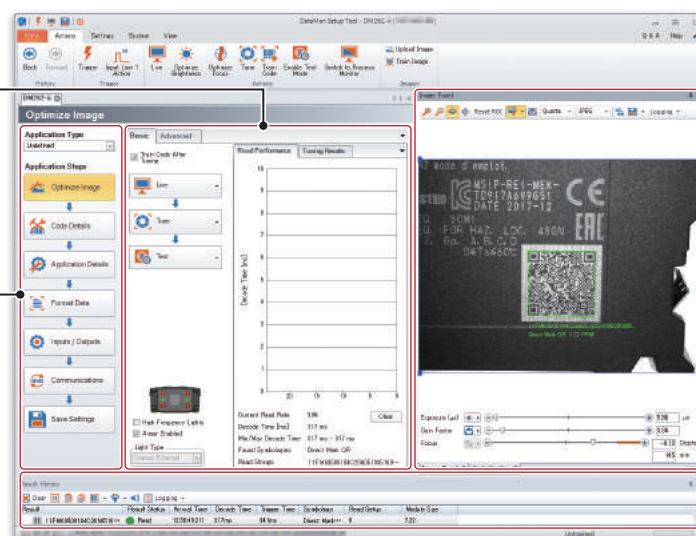


Easy setup with configuration tool

Application settings are easily done with DataMan Setup Tool for MELSENSOR Code Reader just by setting each process such as code reader connection, adjustment, reading test in the order of the left navigation.

The screen changes according to the selected application step. Various settings can be easily set by clicking a mouse

By following user friendly step instructions from the top to the bottom, settings are easily done

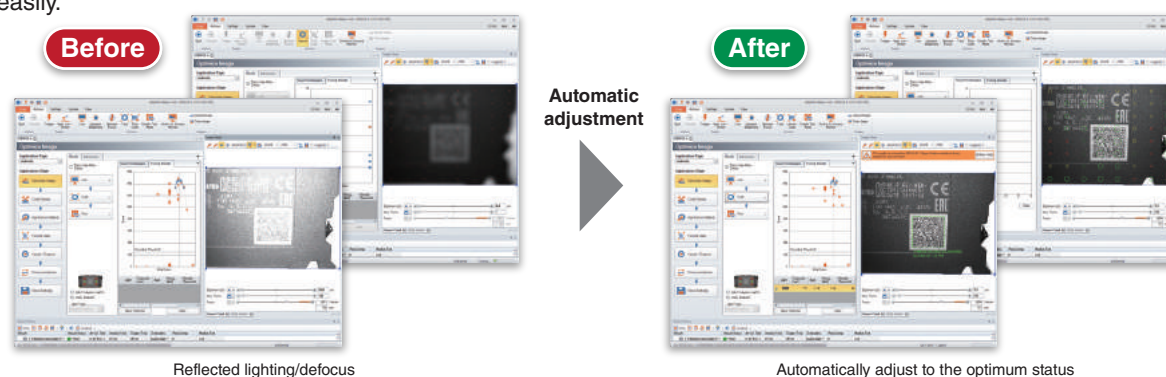


Displays a captured image. When reading a code, a captured image is displayed graphically and read character strings are also shown.

Displays the history of read character strings

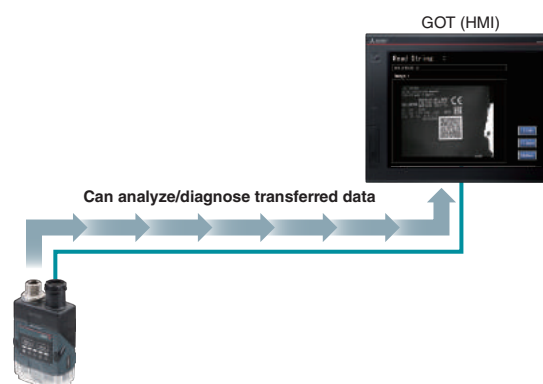
Easier setting with automatic adjustment

Auto-tuning function enables automatic focusing and lighting adjustment. Optimum setup according to the environment is easily done just by pressing a button on the code reader. Even novice users can make settings easily.



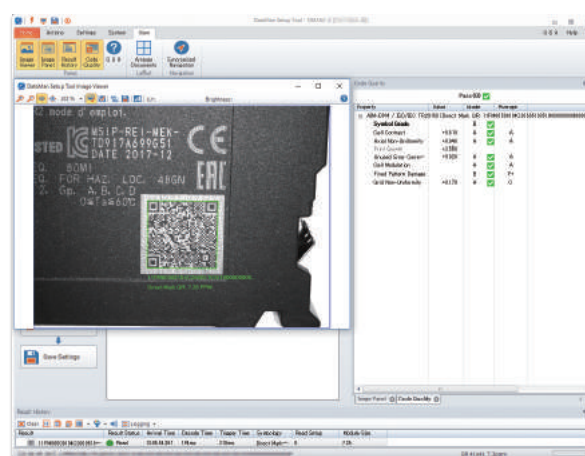
Save history of acquired codes

Recognition result images of the coder reader can be transferred to the HMI(GOT) and IT system. By analyzing and diagnosing the transferred data, the cause of reading failure is identified, allowing improvement.



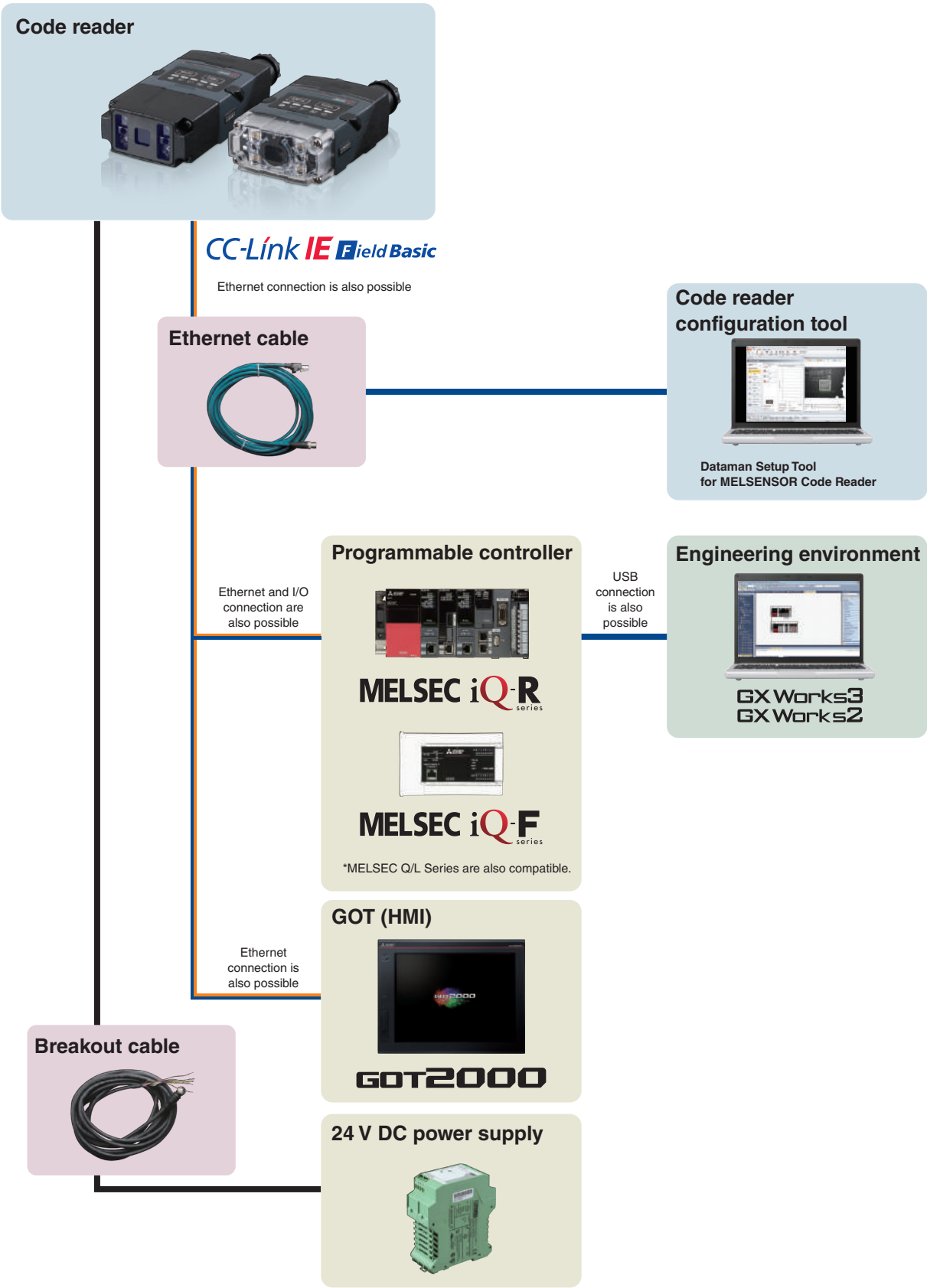
Check change in code quality

Printing statuses of acquired codes are output with interim grades. Change in code quality can be checked in real-time, allowing utilization for preventive maintenance



Note: For details on how to obtain the configuration tool, please contact your local Mitsubishi Electric sales office or representative.

System configuration



Product List

Code reader

| Name | Model | Outline |
|------|---------|---|
| CF26 | CF26-SR | Short distance (40...200 mm), 6.2 mm liquid lens, clear lens cover |
| | CF26-LR | Long distance (80...1000 mm), 16 mm liquid lens, half-polarized extended lens cover |

Option product

*Option products are manufactured by Cognex Inc.

| Type | Model | Outline |
|------------------------|--------------------|---|
| Lens | | |
| Liquid lens | DM260-KIT-16LL | 16 mm liquid lens set (16 mm F7.0 liquid lens, liquid lens module, high-powered red illumination, half-polarized extended lens cover) |
| Lens cover | | |
| For CF26-SR cover | DM150-CVR-CLR | Clear lens cover |
| | DM150-CVR-ESD | Clear lens cover with electrostatics protection |
| | DM260-LENS-62CVR-F | Half-polarized lens cover |
| Lens cover for CF26-LR | DM260-LENS-16CVR | Un-polarized extended lens cover |
| | DM260-LENS-16CVR-P | Half-polarized extended lens cover |
| | DM260-LENS-16CVR-F | Fully polarized extended lens cover |
| Mounting bracket | | |
| Mounting bracket | DM100-UBRK-000 | General-purpose mounting bracket |
| | DM100-PIVOTM-00 | Pivot mounting bracket |
| | DM-TPODAP-00 | Bracket for VS20, CF26 |
| Cable | | |
| Breakout cable | CCB-M12X12FS-05 | 5 m cable, M12 connector ⇄ 12 stranded wires, unshielded cable, straight |
| | CCB-PWRIO-05 (R) | 5 m cable, M12 connector ⇄ 12 stranded wires, shielded twisted-pair cable, straight (right-angle) |
| | CCB-PWRIO-10 (R) | 10 m cable, M12 connector ⇄ 12 stranded wires, shielded twisted-pair cable, straight (right-angle) |
| | CCB-PWRIO-15 (R) | 15 m cable, M12 connector ⇄ 12 stranded wires, shielded twisted-pair cable, straight (right-angle) |
| Ethernet cable | CCB-84901-2001-01 | 0.6 m cable, M12 connector ⇄ RJ-45 Connector, straight |
| | CCB-84901-2001-02 | 2 m cable, M12 connector ⇄ RJ-45 Connector, straight |
| | CCB-84901-2001-05 | 5 m cable, M12 connector ⇄ RJ-45 Connector, straight |
| | CCB-84901-2001-10 | 10 m cable, M12 connector ⇄ RJ-45 Connector, straight |
| | CCB-84901-2001-15 | 15 m cable, M12 connector ⇄ RJ-45 Connector, straight |
| Light | | |
| Light | DM150-LED-WHT | White LED for CF26, Using with a 6.2 mm lens only. |
| | DM150-LED-BLU | Blue LED for CF26, Using with a 6.2 mm lens only. |

Application examples

Code reader

Configuration tool

System configuration

Product List

Specifications

External dimensions

Specifications

General specifications

| Item | Specification |
|-------------------------------|---|
| Operating ambient temperature | 0...40°C |
| Storage ambient temperature | −10...60°C |
| Maximum humidity | Less than 95% RH, non-condensing |
| Vibration resistance | IEC 60068-2-6: A vibration of 10 G (10...500 Hz at 100 m/s ² with 15 mm width) was applied to each of the three main axes for 2 hours. |
| Shock resistance | IEC 60068-2-27: IEC 60068-2-27: 1000 half sinusoidal shocks with 11 G in 10 ms were applied. |
| Protective structure | IP65 |
| Installation location*1 | Outside a control panel |

- *1. Do not install it in the following places:
- Where the ambient temperature or humidity exceed the applicable ranges
 - Where condensation occurs due to sudden temperature changes
 - Where there is corrosive or flammable gas
 - Where there are a lot of conductible dust, iron filings, or salt
 - Where in danger of organic solvents, such as benzene, thinner, and alcohol or strong alkaline substances such as caustic soda to adhere
 - Where subject to much vibration or shock
 - Where in danger of liquid such as water, oil, or chemicals to adhere

Performance specifications

| Item | | CF26-SR | CF26-LR |
|---|---------|---|---|
| Supported codes | | | |
| 1-D code | | Code 128, Code 25, Code 93, Code 39, PharmaCode, Codabar, Interleaved 2 of 5, UPC/EAN/JAN, MSI | |
| 2-D code | | Data Matrix (ECC 0, 50, 80, 100, 140, 200), QR Code, Micro QR Code, MaxiCode, Aztec Code | |
| Stacked code | | PDF 417, EAN.UCC Composite, Micro PDF 417, DataBar | |
| Reading direction | | | |
| Reading direction for 1-D code | | All directions | |
| Algorithm | | | |
| Reading algorithm | | 1DMax™, 2DMax™ (PowerGrid™ technology is available), HotBars II™ | |
| Optical characteristic | | | |
| Image sensor | | 1/3 inch CMOS, 4.8 mm × 3.6 mm (W × H), 3.75 μm sq.pixels, global shutter | |
| Lens | | S-mount/6.2 mm F: 5, liquid lens | S-mount/16 mm F: 7, liquid lens |
| Image resolution (pixels) | | 1280 × 960 | |
| Processing speed | | | |
| Maximum image acquisition speed*2 (frame/s) | | 45 | |
| Maximum decode rate (code/s) | | 45 | |
| Power supply | | | |
| Power supply requirements | | External power supply: 24 V DC ±10% (max. 1 A) LPS or NEC class 2 only | |
| Power consumption | | Max. 5W | |
| Input/output | | | |
| Input 0 (trigger) | | Opto-isolated general-purpose input × 1 | |
| | Voltage | ON: 15...25 V DC (standard 24 V DC), OFF: 0...5 V DC (standard 0 V DC) | |
| | Current | 4.2 mA/24 V DC | |
| Input 1 (general-purpose input) | | Opto-isolated general-purpose input × 1 | |
| | Voltage | ON: 15...25 V DC (standard 24 V DC), OFF: 0...5 V DC (standard 0 V DC) | |
| | Current | 4.2 mA/24 V DC | |
| Output 0...3 | | Opto-isolated general-purpose output × 4 | |
| | Voltage | 28 V DC maximum through external load | |
| | Current | ON: Max. 50 mA (sink or source) OFF: Leakage current Max. 100 μA External load resistance: 150 Ω/12 V DC, 470 Ω/24 V DC | |
| Communication | | | |
| Communication | | RS-232 (R × D, T × D (TIA/EIA-232-F compliant)), Ethernet, CC-Link IE Field Network Basic, SLMP, FTP | |
| RS-232 communication method | | Full-duplex communication or half-duplex communication | |
| Ethernet communication speed | | 10/100 Mbps | |
| Others | | | |
| Material | | Aluminum | |
| Installation | | M3 screw hole × 4 | |
| External dimensions (mm) | | Straight-configuration: 44.0 × 22.5 × 79.3 Right-angle configuration: 44.0 × 52.0 × 49.3 | Straight-configuration: 44.0 × 22.5 × 94.5 Right-angle configuration: 44.0 × 52.0 × 64.5 |
| Weight (kg) | | 0.14 | 0.19 |

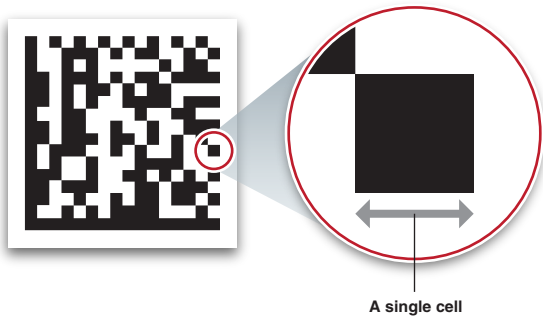
*2. Maximum frame rate at minimum exposure

Working distance

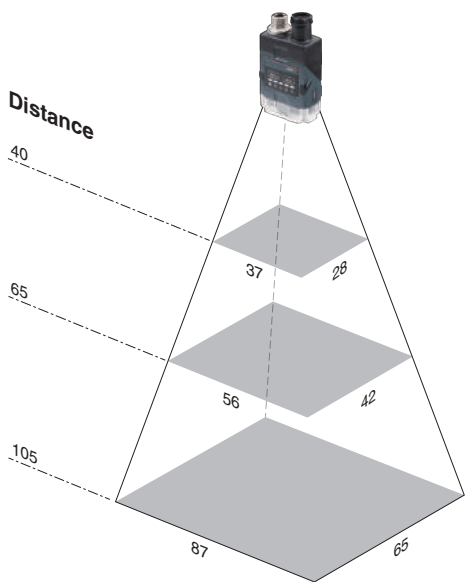
■ CF26-SR (6.2 mm lens)

Reading distance and minimum cell size (unit: mm)

| Distance | 1-D code | 2-D code |
|----------|----------|----------|
| 40 | 0.0508 | 0.0762 |
| 65 | 0.0508 | 0.1016 |
| 105 | 0.127 | 0.1778 |



Minimum code sizes per single cell that can be read in each working distance

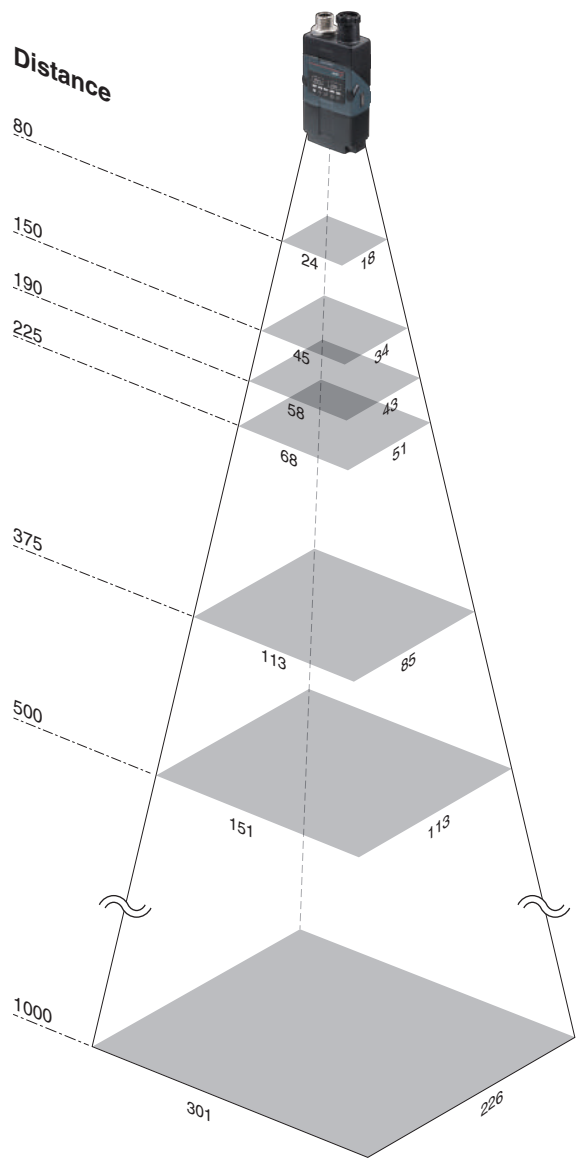


■ CF26-LR (16 mm lens)

Reading distance and minimum cell size (unit: mm)

| Distance | 1-D code | 2-D code |
|----------|----------|----------|
| 80 | 0.0508 | 0.0508 |
| 150 | 0.0508 | 0.0762 |
| 190 | 0.0508 | 0.1016 |
| 225 | 0.0762 | 0.1016 |
| 375 | 0.1016 | 0.1778 |
| 500 | 0.1524 | 0.254 |
| 1000 | 0.381 | 0.508 |

Minimum code sizes per single cell that can be read in each working distance

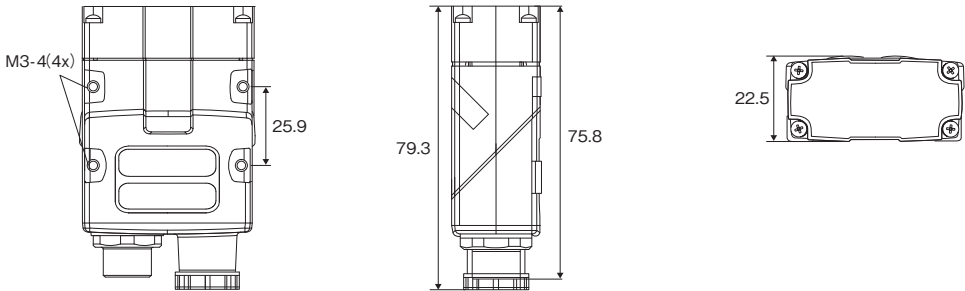


External dimensions

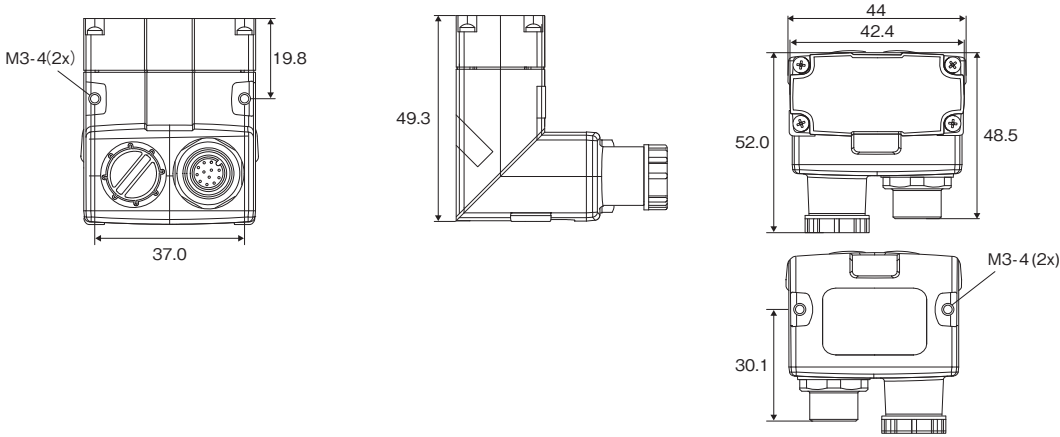
(Unit: mm)

■ CF26-SR

Straight-configuration

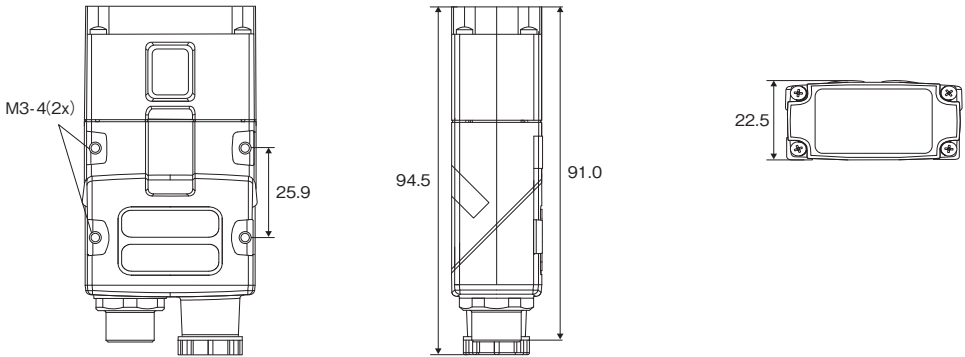


Right-angle configuration

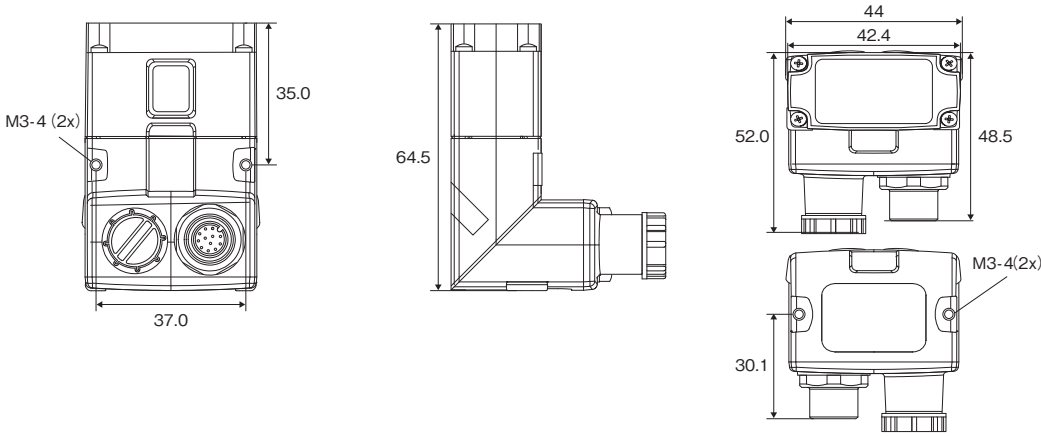


■ CF26-LR

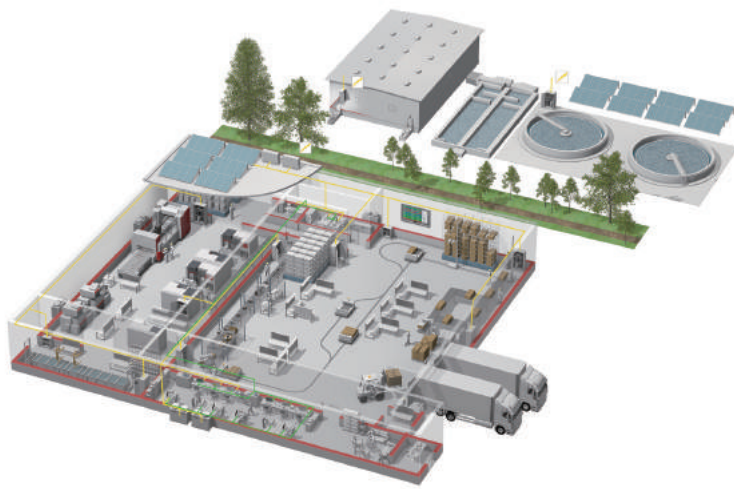
Straight-configuration



Right-angle configuration



YOUR SOLUTION PARTNER



Mitsubishi Electric offers a wide range of automation equipment from PLCs and HMIs to CNC and EDM machines.

A NAME TO TRUST

Since its beginnings in 1870, some 45 companies use the Mitsubishi name, covering a spectrum of finance, commerce and industry.

The Mitsubishi brand name is recognized around the world as a symbol of premium quality.

Mitsubishi Electric Corporation is active in space development, transportation, semi-conductors, energy systems, communications and information processing, audio visual equipment and home electronics, building and energy management and automation systems, and has 237 factories and laboratories worldwide in over 121 countries.

This is why you can rely on Mitsubishi Electric automation solution - because we know first hand about the need for reliable, efficient, easy-to-use automation and control in our own factories.

As one of the world's leading companies with a global turnover of over 4 trillion Yen (over \$40 billion), employing over 100,000 people, Mitsubishi Electric has the resource and the commitment to deliver the ultimate in service and support as well as the best products.



Low voltage: MCCB, MCB, ACB



Medium voltage: VCB, VCC



Power monitoring, energy management



Compact and Modular Controllers



Inverters, Servos and Motors



Visualisation: HMIs



Numerical Control (NC)



Robots: SCARA, Articulated arm



Processing machines: EDM, Lasers, IDS



Transformers, Air conditioning, Photovoltaic systems

* Not all products are available in all countries.

| Country/Region | Sales office | Tel/Fax |
|----------------|--|---|
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| UAE | <p> MITSUBISHI ELECTRIC EUROPE B.V. Dubai Branch Dubai Silicon Oasis, P.O.BOX 341241, Dubai, U.A.E. </p> | <p> Tel : +971-4-3724716 Fax : +971-4-3724721 </p> |
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