

BCN-P5999-0859-F(2306)

VS20M-□F310

VS20M-□F410

VS20C-□F410

Before Using the Product

Please read this document before use. Keep the document in a safe place for future reference. Make sure that the end users read the document.

SAFETY PRECAUTIONS

(Read these precautions before using this product.)

Before using this product, please read this manual and the relevant manuals carefully and pay full attention to safety to handle the product correctly. The precautions given in this manual are concerned with this product only. For the safety precautions of the programmable controller system, refer to the user's manual for the CPU module used. In this manual, the safety precautions are classified into two levels: "⚠ WARNING" and "⚡ CAUTION".

⚠ WARNING	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚡ CAUTION	Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Under some circumstances, failure to observe the precautions given under "⚡ CAUTION" may lead to serious consequences. Observe the precautions of both levels because they are important for personal and system safety. Make sure that the end users read this manual and then keep the manual in a safe place for future reference.

[Installation Precautions]

⚠ WARNING

- Before touching the Vision Sensor, be sure to touch an electric conductor such as grounded metal to discharge the static electricity from your body. Otherwise, damage or faulty operation of the Vision Sensor may occur.
- Be sure to install an I/O connector module to the main module. If not installed, dust or water-proof performance may not be obtained.

[Installation Precautions]

⚡ CAUTION

- IP protection rating is guaranteed only when all the connectors are connected with cables or sealed with sealing caps.
- The cable is designed to connect with its key aligned with the keyway of the connector on the Vision Sensor. Do not force the connections or damage may occur.

[Wiring Precautions]

⚡ CAUTION

- Use only 24 VDC and observe the indicated polarity. Otherwise, fire or damage may result.
- The frame ground terminal of the I/O module and the shield ground of each connector (RS232 OUT port and SENSOR port) are internally conducting. The system ground is designed on the condition that a ground connection is provided. The ground potential may affect the vision sensor and peripheral devices such as programmable controllers via cables. For safe operation, it is recommended to connect all the ground connections securely.

[Security Precautions]

⚠ WARNING

- To maintain the security (confidentiality, integrity, and availability) of the programmable controller and the system against unauthorized access, denial-of-service (DoS) attacks, computer viruses, and other cyberattacks from external devices via the network, take appropriate measures such as firewalls, virtual private networks (VPNs), and antivirus solutions.

[Startup and Maintenance Precautions]

⚡ CAUTION

- Do not clean the Vision Sensor with highly irritating or corrosive solvent such as caustic alkali solution, methyl ethyl ketone (MEK), and gasoline. Doing so may cause a fault.

[Disposal Precautions]

⚠ CAUTION

- When disposing of this product, treat it as industrial waste.

PRÉCAUTIONS DE SÉCURITÉ

(Lisez ces précautions avant d'utiliser ce produit.)

Avant d'utiliser ce produit, veuillez lire attentivement ce manuel ainsi que les manuels appropriés, et porter toute l'attention nécessaire à la sécurité afin de manipuler le produit correctement. Les précautions données dans ce manuel ne concernent que ce produit. Pour les précautions de sécurité du système de contrôleur programmable, reportez-vous au manuel d'utilisateur du module CPU utilisé.

Dans ce manuel, les précautions de sécurité sont classées en deux niveaux : "⚠ AVERTISSEMENT" et "⚡ ATTENTION".

⚠ AVERTISSEMENT	Indique qu'une mauvaise manipulation peut créer une situation de danger avec risque de mort ou de blessures graves.
⚡ ATTENTION	Indique qu'une mauvaise manipulation peut créer une situation de danger avec risque de blessures légères ou de gravité moyenne ou risque de dommages matériels.

Dans certaines circonstances, le non-respect des précautions introduites sous "⚡ ATTENTION" peut avoir des conséquences graves.

Les précautions de ces deux niveaux doivent être observées car elles sont importantes pour la sécurité des personnes et du système. Veuillez à ce que les utilisateurs finaux lisent ce manuel et le conservent dans un endroit sûr afin de s'y référer ultérieurement.

[Précautions d'installation]

⚠ AVERTISSEMENT

- Avant de toucher le capteur de vision, assurez-vous de toucher un conducteur électrique comme un objet métallique mis à la masse pour décharger l'électricité statique de votre corps. Dans le cas contraire, des dommages ou une défaillance du capteur de vision peuvent se produire.
- Assurez-vous d'installer le module de connecteur E/S au module principal. S'il n'est pas installé, les performances d'étanchéité à l'eau/la poussière risquent de ne pas être obtenues.

[Précautions d'installation]

⚡ ATTENTION

- L'indice de protection IP n'est garanti que si tous les connecteurs sont connectés avec les câbles ou scellés avec des joints.
- Le câble est conçu pour être connecté avec sa clé alignée avec la rainure de clavette du connecteur sur le capteur de vision. N'essayez pas de forcer les connexions, sinon des dommages peuvent se produire.

[Précautions de câblage]

⚠ ATTENTION

- Utilisez seulement 24 V CC et respectez la polarité indiquée. Dans le cas contraire, cela peut provoquer un incendie ou des dommages.
- La borne de mise à la terre du cadre et le bouclier de mise à la terre de chaque connecteur (port RS-232 OUT, port SENSOR) sont connectés à l'intérieur du module I/O. Le système de mise à la terre est conçu à condition qu'une connexion de mise à la terre soit fournie. Le potentiel de terre peut affecter le système de vision et les appareils périphériques tels que le séquenceur, via les câbles. Pour un fonctionnement en toute sécurité, il est conseillé de brancher fermement tous les connexions de mise à la terre.

[Précautions de sécurité]

⚠ AVERTISSEMENT

- Pour maintenir la sécurité (confidentialité, intégrité et disponibilité) de l'automate programmable et du système contre les accès non autorisés, les attaques par déni de service (DoS), les virus informatiques et autres cyberattaques d'appareils externes via le réseau, prendre les mesures appropriées telles que la configuration d'un pare-feu ou d'un réseau privé virtuel (VPN), ou l'installation d'un logiciel antivirus sur l'ordinateur.

[Précautions de mise en service et de maintenance]

⚡ ATTENTION

- Ne nettoyez pas le capteur de vision VS20 avec des solvants très irritants ou corrosifs tels qu'une solution alcaline caustique, la cétone méthyl-éthylque (MEK), et de l'essence. Le non-respect de cette consigne pourrait provoquer une défaillance.

[Précautions de mise au rebut]

⚠ ATTENTION

- Lors de sa mise au rebut, ce produit doit être traité comme un déchet industriel.

PRECAUTIONS FOR USE

Observe the following precautions when installing and operating the vision sensor, to reduce the risk of injury or equipment damage:

- This device requires the use of an LPS or NEC class 2 power supply.
- To reduce the risk of damage or malfunction due to over-voltage, line noise, electrostatic discharge (ESD), power surges, or other irregularities in the power supply, route all cables away from high-voltage power sources.
- Do not install the vision sensor where they are directly exposed to environmental hazards such as excessive heat, dust, moisture, humidity, impact, vibration, corrosive substances, flammable substances, or static electricity.
- Do not expose an image sensor to laser light; image sensors can be damaged by direct or reflected laser light. If your application requires the use of laser light that may strike the image sensor, a lens filter at the corresponding laser's wavelength is recommended. Consult your local system integrator or application engineer for suggestions.
- A vision sensor does not contain user-serviceable parts. Do not make electrical or mechanical modifications to a vision sensor. Any modification may void your warranty.
- Changes or modifications not expressly approved by the party responsible for regulatory compliance could void the user's authority to operate the equipment.
- Service loops (extra wire length) should be included with all cable connections.
- If the bend radius or service loop is smaller than 10 times of the cable diameter, the cable may cause cable shielding degradation, cable damage, or wear out in a short period.
- The bend radius must begin at least 152.4 mm from the connector.
- This equipment is a Class A device. Using this equipment in a domestic environment may cause radio disturbance. In this case, the user may be required to take appropriate measures.
- If there is concern about noise, set a noise filter (SNR-10-223, COSEL or an equivalent) between the vision sensor and the stabilized DC power supply.
- When using the vision sensor for the first time, update its firmware to the latest by using the latest In-Sight Explorer (vision sensor setup tool).

CONDITIONS OF USE FOR THE PRODUCT

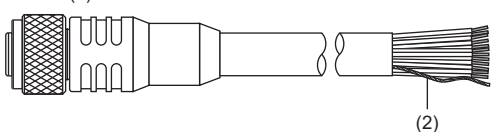
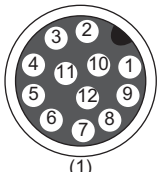
- This vision sensor shall be used in conditions:
 - where any problem, fault or failure occurring in the vision sensor, if any, shall not lead to any major or serious accident; and
 - where the backup and fail-safe function are systematically or automatically provided outside of the vision sensor for the case of any problem, fault or failure occurring in the vision sensor.
- This vision sensor has been designed and manufactured for the purpose of being used in general industries. MITSUBISHI ELECTRIC SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY THIS VISION SENSOR THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI ELECTRIC USER'S, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR THE VISION SENSOR. ("Prohibited Application") Prohibited Applications include, but not limited to, the use of the vision sensor in; Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the vision sensor. Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User. Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property. Notwithstanding the above restrictions, Mitsubishi Electric may in its sole discretion, authorize use of the vision sensor in one or more of the Prohibited Applications, provided that the usage of the vision sensor is limited only for the specific applications agreed to by Mitsubishi Electric and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the vision sensors are required. For details, please contact the Mitsubishi Electric representative in your region.
- Mitsubishi Electric shall have no responsibility or liability for any problems involving programmable controller trouble and system trouble caused by DoS attacks, unauthorized access, computer viruses, and other cyberattacks.

3.2 Cables

Câbles

Wiring of the Breakout Cable

Câblage du câble de dérivation



(1)Vision Sensor side

(2)Power Supply return path

Pin number	Signal name	Wire Color
1	HS OUT 2	Yellow
2	RS-232 Tx	White/Yellow
3	RS-232 Rx	Brown
4	HS OUT 3	White/Brown
5	IN 0	Violet
6	INPUT COMMON	White/Violet
7	+24VDC	Red
8	GND	Black
9	OUTPUT COMMON	Green
10	TRIGGER	Orange
11	HS OUT 0	Blue
12	HS OUT 1	Grey

English	French
Vision Sensor side	Côté capteur de vision
Power Supply return path	Chemin de retour d'alimentation
Pin number	Numéro de broche
Signal name	Nom de signal
Wire Color	Couleur du fil
INPUT COMMON	ENTRÉE COMMUNE
+24VDC	24 V CC
OUTPUT COMMON	SORTIE COMMUNE
TRIGGER	GÂCHETTE
Yellow	Jaune
White/Yellow	Bianc/jaune
Brown	Marron
White/Brown	Bianc/marron
Violet	Violet
White/Violet	Bianc/violet
Red	Rouge
Black	Noir
Green	Vert
Orange	Orange
Blue	Bleu
Grey	Gris

Wiring of Ethernet connector

Câblage du connecteur Ethernet

For cables connected to the Ethernet connector, refer to the manuals listed in 1. Related manuals.

Pour les câbles connectés au connecteur Ethernet, reportez-vous aux manuels énumérés dans 1. Manuels connexes.

Wiring of power source, I/O and RS-232 connector

Câblage de la source d'alimentation, de I/O et du connecteur RS-232

For cables connected to the power source, I/O and RS-232 connectors, refer to the manuals listed in 1. Related manuals.

Pour les câbles connectés à la source d'alimentation, I/O et les connecteurs RS-232, reportez-vous aux manuels énumérés dans 1. Manuels connexes.

4. Connection and wiring

Connexion et câblage

For connection and wiring to the connector of modules, refer to the manuals listed in 1. Related manuals.

Pour des informations sur la connexion et le câblage vers les connecteurs des modules, reportez-vous aux manuels énumérés dans 1. Manuels connexes.

5. EMC and Low Voltage Directives

For EMC and Low Voltage Directives, refer to the manual described in 1. Relevant manuals.

This product is out of the requirement for conformance to the Low Voltage Directive.

6. Information and services

For further information and services, please consult your local Mitsubishi representative.

7. Contact of the co-branded product

COGNEX Cognex Corporation
www.cognex.com

WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired or exchanged free of charge via the sales representative or Mitsubishi Service Company.

However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module. [Gratis Warranty Term]

The gratis warranty term of the product shall be for eighteen (18) months after the date of purchase or delivery to a designated place.

Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be twenty-four (24) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs. [Gratis Warranty Range]

- The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
- Even within the gratis warranty term, repairs shall be charged for in the following cases.
 - Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
 - Failure caused by unapproved modifications, etc., to the product by the user.
 - When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
 - Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
 - Failure caused by external Irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
 - Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
 - Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

- Damages caused by any cause found not to be the responsibility of Mitsubishi.
- Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.
- Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.
- Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

1. Relevant manuals

Details of the product are also described in the manual shown below (sold separately). Please read the manual and understand the functions and performance of the product to use it correctly.

- Vision Sensor VS20 User's Manual SH-081769ENG (13JX76)
- Vision Sensor Connection Guide BCN-P5999-0861

2. Packing list

Check that the following items are included in the package.

Item	Quantity
Module	1
"Before Using the Product" (this document)	1

3. Specifications

Use this product in the following ranges.

Utilisez les produits en respectant les caractéristiques suivantes.

3.1 Module

Item	Specifications
Ambient operating temperature	0 to 40°C
Storage ambient temperature	-10 to 60°C
Maximum humidity	Less than 95% RH, non-condensing
Power consumption	24 VDC ± 10%, 48 W(2.0A) maximum when the illumination is ON.

Caractéristique	Valeurs
Température ambiante de service	0 à 40 °C
Température ambiante de stockage	-10 à 60 °C
Humidité maximale	95 % (humidité relative), pas de condensation
Consommation	24 V CC ±10 %, maximum de 48 W (2,0 A) lorsque la lumière est allumée