

BCN-P5999-0915-F(2306)			
VS70M-□-E	VS70M-□-ER	VS70M-□	VS70M-□-R
VS70C-□-R			

## 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".

<b>⚠ WARNING</b>	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
<b>⚠ CAUTION</b>	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]

<b>⚠ WARNING</b>	<ul style="list-style-type: none"><li>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.</li> <li>Be sure to install an I/O connector module to the main module. If not installed, dust or water-proof performance may not obtained.</li></ul>
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### [Installation Precautions]

<b>⚠ CAUTION</b>	<ul style="list-style-type: none"><li>IP protection rating is guaranteed only when all the connectors are connected with cables or sealed with sealing caps.</li> <li>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.</li></ul>
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### [Wiring Precautions]

<b>⚠ CAUTION</b>	<ul style="list-style-type: none"><li>Use only 24 VDC and observe the indicated polarity. Otherwise, fire or damage may result.</li> <li>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.</li></ul>
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### [Security Precautions]

<b>⚠ WARNING</b>	<ul style="list-style-type: none"><li>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.</li></ul>
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### [Startup and Maintenance Precautions]

<b>⚠ CAUTION</b>	<ul style="list-style-type: none"><li>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.</li></ul>
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### [Disposal Precautions]

<b>⚠ CAUTION</b>	<ul style="list-style-type: none"><li>When disposing of this product, treat it as industrial waste.</li></ul>
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## 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".

<b>⚠ AVERTISSEMENT</b>	Indique qu'une mauvaise manipulation peut créer une situation de danger avec risque de mort ou de blessures graves.
<b>⚠ ATTENTION</b>	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]

<b>⚠ AVERTISSEMENT</b>	<ul style="list-style-type: none"><li>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.</li> <li>Assurez-vous d'installer le module de connecter 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.</li></ul>
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### [Précautions d'installation]

<b>⚠ ATTENTION</b>	<ul style="list-style-type: none"><li>L'indice de protection IP n'est garanti que si tous les connecteurs sont connectés avec les câbles ou scellés avec des joints.</li> <li>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.</li></ul>
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### [Précautions de câblage]

<b>⚠ ATTENTION</b>	<ul style="list-style-type: none"><li>Utilisez seulement 24 V CC et respectez la polarité indiquée. Dans le cas contraire, cela peut provoquer un incendie ou des dommages.</li> <li>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.</li></ul>
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### [Précautions de sécurité]

<b>⚠ AVERTISSEMENT</b>	<ul style="list-style-type: none"><li>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.</li></ul>
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### [Précautions de mise en service et de maintenance]

<b>⚠ ATTENTION</b>	<ul style="list-style-type: none"><li>Ne nettoyez pas le capteur de vision avec des solvants très irritants ou corrosifs tels qu'une solution alcaline caustique, la cétone méthyl-éthylique (MEK), et de l'essence. Le non-respect de cette consigne pourrait provoquer une défaillance.</li></ul>
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### [Précautions de mise au rebut]

<b>⚠ ATTENTION</b>	<ul style="list-style-type: none"><li>Lors de sa mise au rebut, ce produit doit être traité comme un déchet industriel.</li></ul>
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## PRECAUTIONS FOR USE

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

- The power for a vision sensor is intended to be supplied by UL or NRTL approved power supply with a lowest rated output voltage of 24 V DC with at least 2 A of current, a maximum short circuit current rating of less than 8 A, a maximum power rating of less than 100 VA, and marked Class 2 or LPS (Limited Power Source). Any other voltage creates a risk of fire or shock and can damage the components. Applicable national and local wiring standards and rules must be followed.
- 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 a 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

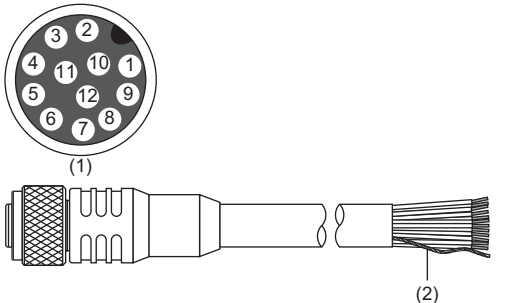
- This vision sensor shall be used in conditions;
  - where any problem, fault or failure occurring in the vision sensor, if any, shall not lead to any major or serious accident; and
  - where the backup and fail-safe function are systematically or automatically provided outside of the vision sensor 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

<b>Câbles</b>
Cables are sold separately. Les câbles sont vendus séparément.

### Wiring of the Breakout Cable

<b>Câblage du câble de dérivation</b>
The power and I/O breakout cable provides connections to an external power supply, the acquisition trigger input, a generalpurpose input, high-speed outputs, and RS-232 serial communications. Breakout cables are not terminated. Le câble d'alimentation et de dérivation E/S permet une connexion à une source d'alimentation extérieure, à une entrée de déclenchement d'acquisition, une entrée universelle, à des sorties à vitesse rapide et à des dispositifs RS-232. Les câbles de dérivation ne sont pas munis de connecteurs.



(1)Vision Sensor side  
(2)Power Supply return path

Pin number	Signal name	Wire Color
1	HS OUT 2	Yellow
2	Reserved	White/Yellow
3	Reserved	Brown
4	HS OUT 3	White/Brown
5	IN 1	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
Reserved	Réservé
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

<b>Wiring of Ethernet cable</b>
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<b>Câblage du connecteur Ethernet</b>
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 External light cable

<b>Câblage du connecteur External light</b>
For external light cables, refer to the manuals listed in 1. Related manuals. Pour les câbles connectés àu connecteurs External light, 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

### 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 VS70 User's Manual SH-081889ENG (13JX81)
- 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
Case temperature	0 to 50°C <sup>1</sup>
Storage ambient temperature	-20 to 80°C
Maximum humidity	Less than 80% RH, non-condensing
Power consumption	24 V DC ± 10%, 36 W(1.5A) maximum
Power supply output	DC24V/750mA.(Maximum outputs to external light)

<sup>\*1</sup> Use a vision sensor in the environment where the temperature around the vision sensor is about 0 to 40 °C because the case temperature is easily influenced by the environment the vision sensor is installed in.

Caractéristique	Valeurs
Température ambiante de service	0 à 50 °C <sup>2</sup>
Température ambiante de stockage	-20 à 80 °C
Humidité maximale	80 % (humidité relative), pas de condensation
Consommation	24 V CC ±10 %, 36 W (1,5 A) maximum
Sortie d'alimentation	24 V CC/750 mA (sortie maximale vers une lumière extérieure)

<sup>\*2</sup> Utilisez le capteur de vision avec une température ambiante située entre 0 et 40 °C, car la température du boîtier dépend fortement de la température de l'environnement entourant le capteur de vision.