GLOBAL IMPACT OF MITSUBISHI ELECTRIC

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.

Changes for the Better

The new future of automation made possible by next-generation intelligent robots and e-F@ctory

Providing improvements in productivity, quality, environmental protection, safety and security to help reduce companies’ TCO* and boost their corporate value

We offer solutions that use FA technology and IT to reduce total costs in everything from development through to production and maintenance, supporting customers to continuously improve their business operations and achieve truly cutting-edge manufacturing.

*TCO: Total Cost of Ownership

e-F@ctory is Mitsubishi Electric’s trademark and registered trademark.

**Seeing: Improvement**
IT systems feed the results of analysis back into the production site

**Observing: Analysis**
Primary processing of data collected using FA (edge computing).

**Watching: Visibility**
Helping to increase corporate value through “Visibility” (visualized) — seeing, observing, watching and “Usability”

Providing improvements in productivity, quality, environmental protection, safety and security to help reduce companies’ TCO* and boost their corporate value

We offer solutions that use FA technology and IT to reduce total costs in everything from development through to production and maintenance, supporting customers to continuously improve their business operations and achieve truly cutting-edge manufacturing.

*TCO: Total Cost of Ownership

e-F@ctory is Mitsubishi Electric’s trademark and registered trademark.
Integrate. Collaborate.
Simpler and Easier

Mitsubishi Electric Collaborative Robot - MELFA ASSISTA can share a workspace with humans. Simpler, Easier and more flexible. This robot will change your perception of what a "ROBOT" is.

Easy operation with the Operation button. Easy Control

No robot programming expertise required. Easy Programming

Easy connectivity with a wide variety of components. Easy Connecting
Easy Control

Move Easily with the Operating Buttons

The operating buttons on the robot arm provide you with easy control for ASSISTA and the teaching pendant for programming and teaching is no longer needed. The LED on the robot arm display the status of the robot.
Easy Programming

No Expertise for Robot Required.

You can create programs visually using intuitive operations with RT-Visual-Box. "Visual Programming" - This software allows operators to simply program this robot with a "train by demonstration" programming interface. This allows them to move the robot arm position and set way-points easily.
Easy Connecting

A Wide Variety of Components and Applications

ASSISTA offers a wide variety of components—Grippers, Fingers, Vision and other peripherals—developed by a group of organizations known as MELFA Robot Partners. These tools can easily be setup and configured for your application. ASSISTA can also be configured to move freely as part of an AGV/AMR or as a mobile robot.

AGV: Automated Guided Vehicle
AMR: Autonomous Mobile Robot
Simply Connect Grippers to Robot Arm
The ASSISTA Set-up wizard provides operators with an easier more intuitive methodology for gripper configurations.

RT Visual Box (Engineering Software) lets operators set up grippers intuitively and easily.

Co-act EGP-C40 -N-N-ASSISTA(SCHUNK)
Electric-powered Gripper

- Weight: 885g (incl. attachments, fingers)
- Grip Force: 35N (min)/140N (max) (4 levels)
- Stroke: 6-22mm

HRC-03-099455 (Zimmer/Nabeya Bi-Tech Kaisha)
Electric-powered Gripper

- Weight: 916g (incl. attachments, fingers)
- Grip Force: 52N (min)/180N (max)
- Stroke: 10-22mm

ROB-SET ECBM ASSISTA(SCHMALZ)
Electric-powered Adhesion Gripper

- Weight: 631g (incl. attachments, adhesive pads)
- Vacuum Pressure: -600KPa
- Flow rate: 1.6L/min

KIT-ASSISTA-G (GIMATIC)
Electric-powered Gripper (Gripper parts be prepared separately)

- Weight: 922g (incl. attachments)
- Grip Force: 98N
- Stroke: 17.5x2mm

* These products may not be available in the region where you consider purchase. For details, please inquire at each company.
ASSISTA and the camera capture the target using the “RT VisualBox” auto-focus function.

“RT VisualBox” proprietary engineering tool

The vision camera focus adjustment and work registration can be configured simply by touching the screen. This means that you can use it even without special robot knowledge.

Vision Sensor In-Sight

The high-performance camera identifies the target and fixes position at high speed. Its compact size makes it ideal for attaching to the ASSISTA robot hand. This wire-saving type is equipped with PoE.

<table>
<thead>
<tr>
<th>Model Name</th>
<th>Manufacturer</th>
<th>Inquiries, (End of April 2020)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-Sight 8402M-363-50</td>
<td>Cognex</td>
<td>Cognex</td>
<td>Supports PatMax RedLine® PatMax RedLine® cannot be used in combination with RT VisualBox</td>
</tr>
<tr>
<td>In-Sight 8402M-373-50</td>
<td>Cognex</td>
<td>Cognex</td>
<td></td>
</tr>
</tbody>
</table>

* These products may not be available in the region where you consider purchase. For details, please inquire at each company.
You can freely move ASSISTA wherever needed whenever necessary.

The “AGV/AMR” unmanned transport cart secures the safety of various sensors and coexists with the operator. The company also provides a cart exclusively for use with ASSISTA, thereby enabling flexible response to changes in factory layout or the location where it is used.

**List of Collaborative Robot Partners**

**Gripper**

**SCHUNK Intec, K.K.**

Schunk offers the most extensive lineup of compact grippers and all-purpose grippers in the industry, and has full range of accessories for the perfect match between arms and tools, thereby enabling it to support the most diversified needs.

**Contact Information**

- **Location:** Minato-ku, Tokyo, Japan
- **Tel.:** +81-3-6451-4327
- **Fax:** +81-3-6451-4327
- **Email:** info@schunk.com

**Model:** Coact EGP-C40 II/NS-Assista

- **Weight:** 830g (including attachments and fingers)
- **Stroke:** 12mm (Single-claw stroke 6mm x 2)
- **Grip Force:** 35N, 70N, 105N, 140N (adjustable within 4-stages)

**ZIMMER / Nabeya Bi-tech Kaisha**

As an authorized distributor for Zimmer products in Japan, it offers a vast lineup of air grippers/electric grippers with high grip force (maximum 1800N).

**Contact Information**

- **Location:** Sankoku-ku, Thessaloniki, Greece
- **Tel.:** 0030-2310-1934-1
- **Email:** info@zimmertech.gr

**Model:** HRC-02-00405

- **Weight:** 10Kg (including attachments and fingers)
- **Stroke:** 20mm (Single-claw stroke 10mm x 2)
- **Grip Force:** 120N, 90N, 140N, 190N (adjustable within 4-stages)

* These products may not be available in the region where you consider purchase. For details, please inquire at each company.
Gimatic Japan Ltd.

As a gripper manufacturer, Gimatic offers a broad lineup of air and electric grippers, and can support the design, manufacture, and assembly of end-effectors based on suspension molded part extraction.

Contact (Japan)
1F TOC Bldg., 1-20-11 Nishi-Gotanda, Shinagawa-ku, Tokyo 141-0031, Japan
Tel: +81-3-3420-4235/Fax: +81-3-6803-2770
E-mail: info.jp@gimatic.com

Contact (Europe)
Gimatic Srl
Via Bosco Ferrari 2/4 20330 Rosate (MI) Italy
Tel: +39 030 2086855
E-mail: info.gimatic.com

Contact (China)
GIMATIC AUTOMATION ENGINEERING (SHANGHAI) CO., LTD
Room 802, No. 203 SOUTHEAST AVENUE
CHANGSHU RC 215500
Phone: +86051262977365
E-mail: info.cn@gimatic.com

GIMATIC USA – Ohio
2830 Old Euclid Ave Wickliffe, OH 44092
Phone: +1 216 535 4833
E-mail: sales.gimaticusa.com

This parallel/open/close plug-and-play gripper has a built-in driver. Maintenance is not required for 10 million cycles. Its original mechanism means that it does not consume power while the jaw is stopped, and it maintains its gripped state even in case of a power outage.

Schmalz Inc.

Schmalz is a vacuum transport device manufacturer founded in 1910. From highly versatile suction-type robot hands to suction pads, and high-performance vacuum generators, the company provides customers with a wide range of products that meet the needs of each industry, as well as vacuum know-how cultivated on a global scale.

Contact (Japan)
3001-7 Oshinari, Tsubakino, Yōkaitei-ku, Matsuyama-shi, Ehime 791-0127, Japan
Tel: +81-89-965-0152/Fax: +81-89-965-0153
E-mail: info@schmalz.co.jp

Contact (Europe)
Schmalz (Shanghai) Co. Ltd.
No. 1, Zhonglian Road, CN-200231 Pudong, Shanghai, China
Tel: +86-21-5035-0409/Fax: +86-21-5035-0408
E-mail: schmalz@schmalz-set.com

Schmalz Inc.
5861 De Forest Drive, Raleigh, NC 27616 USA
TEL: +1 (919) 712-0680
Fax: schmalzvn@schmalz.info
HTTPS://www.schmalz-usa.com

This is the industry’s most compact, lightweight electric vacuum pump. It achieves vacuum transport without using air or a hose. Its smart body also makes it perfect for bin picking.

Convum Myotoku Ltd.

Device that act as robot hands are available. The fully standard- ized CTK Series includes brush, arm, and suction pad. Its design work is required and delivery can be completed in a short period of time. Please contact us to discuss our suction hands.

Contact
502, Meikokanmachi Bldg. No. 2-4-17 Meikokanmachi, Naka-ku, Nagoya City, Aichi Prefecture, 460-0005, Japan
Tel: +81-52-633-3120
E-mail: your_name@convum.com

Regions supported: Japan, Europe, China, North America, ASEAN, other overseas locations

OnRobot Japan

Capable of connecting to various types of robots from each company via a shared mount-type quick-changer. Plans are to increase the quantity of products to 40 beginning in 2020.

Contact
457, Suzuki-cho 60 Bldg., 3-1-1 Saitama-ku, Saitama-ku, Tokyo 170-0845, Japan
Tel: +81-3-3957-3794
E-mail: takashi.sakai@onrobot.com
Regions supported: Japan, Europe, China, North America, ASEAN, other overseas locations

Yasojima Proceed Co., Ltd.

Proposes a robot hand that can fully utilize the characteristics of 3D printers. Achieves consistency from design to manufacturing.

Contact
5F (T Res) Bldg., 3-11-32 Naka-ku, Nagoya City 460-0002, Japan
Tel: +81-52-533-4300
E-mail: usa@yasojima.co.jp
Regions supported: Japan

THK Intechs

THK Intechs, through its experience with various types of collaborative robot engineering, has developed several convenient options for utilizing collaborative robots. Selecting these superior options will create unimaginable performance benefits. This will not only increase work efficiency, but also further increase the versatility of your collaborative robots.

Model: THD-SAP-ASSISTA-C
Weight: 187g (Hand not included)
Stroke: Compliance stroke 40mm
Portable max: 3kg (weight of hands, fingers, etc.)

By attaching this to a robot, it is possible to detect touch from the top and bottom clamping directions and mechanically protect robot and hard parts, peripheral devices, and body parts.

Consideration is given to safety, with a built-in high-rigidity LM guide and 3Dx 6D safety sensor.

Contact
2-13-10 Shibaura, Minato-ku, Tokyo 115-0003, Japan
Tel: +81-3-5730-3814 (direct line to Robot Dept.)
Fax: +81-3-5730-3813
E-mail: robot@thkintechs.co.jp

Regions supported: Japan

Sensor

THK Intechs

THK Intechs, through its experience with various types of collaborative robot engineering, has developed several convenient options for utilizing collaborative robots. Selecting these superior options enables the realization of unimaginable performance benefits. This will not only increase work efficiency, but also further increase the versatility of your collaborative robots.

Model: THD-SAP-ASSISTA-C
Weight: 187g (Hand not included)
Stroke: Compliance stroke 40mm
Portable max: 3kg (weight of hands, fingers, etc.)

Based on the concept of “plug-and-play that can be used right away,” it is equipped with an 8200403-1-compliant robot brush and can be simply attached without requiring the manufacturing of attachments. Electrical cabling is simply connected with one connector and it can operate using just one pipe.

SMC Corporation

SMC was founded in 1959 as a general manufacturer of pneumatic devices. Its currently manufactures and sells automatic control equipment. Support is provided for labor-saving devices and ISO 14012 air valves in various regions and areas.

Model: JRUH2-MD-J06H2-ASSISTA
Weight: 500 g (including product attachment/Isot and straight pro)
Stroke: 10mm (Single-caw stroke 5mm x 2)
Grip Force: 32.09N (at outer diameter gph=339.9N)
43.91N (at inner diameter gph=656.9N)

Contact (Japan)
TSP Adachi 107, 3-4-1 Aoi-Ku, Osaka-Shi, Osaka 101-0001, Japan
Tel: +81-6-5207-6277/Fax: +81-6-5208-5535
E-mail: yokotaуницип@nec.com
## The list of robot option equipment

<table>
<thead>
<tr>
<th>Item</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine cable (replacement)</td>
<td>1F-CE/UCBL-41</td>
<td><em>Not supported by RT Visualbox.</em></td>
</tr>
<tr>
<td>Solenoid valve set</td>
<td>1F-VDO-11100E</td>
<td>Set with one series relay available. 84 mm-diameter output face. The number that replaces 11 indicates the number of valves the solenoid has. 1 or 2.</td>
</tr>
<tr>
<td>3-axis force sensor conversion cable set</td>
<td>1F-ASSISTA-ADCBL</td>
<td>3-axis force sensor conversion cable set (hand cables/floor cables) required to connect the force sensor to the robot.</td>
</tr>
<tr>
<td>Vision sensor measuring bracket</td>
<td>1F-ASSISTA-200VLS</td>
<td>Bracket required to connect a sensor to the hand.</td>
</tr>
</tbody>
</table>

## The list of the controller option equipment and special specification

<table>
<thead>
<tr>
<th>Item</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy-setup kit</td>
<td>1F-ASSISTA15 - 15 (Japan/North America), 1F-ASSISTA20A - 20A (Europe/China)</td>
<td>A kit which adds a setup that consists of switches, a connector, and a 24 V power supply.</td>
</tr>
<tr>
<td>RT VisualBox</td>
<td>5G-35C-WINE</td>
<td>Windows 10, supporting English.</td>
</tr>
<tr>
<td>Single-touching pedal</td>
<td>T17TE01011 12</td>
<td>Cable length 700. Cable length 1050.</td>
</tr>
<tr>
<td>Highly efficient teaching pendant</td>
<td>S15B150319 15</td>
<td>Cable length 1650. Cable length 1050.</td>
</tr>
<tr>
<td>Parallel I/O interface</td>
<td>20F-FT02SS64 3W</td>
<td>20-32 point. 32-64 point.</td>
</tr>
<tr>
<td>Extension kit cable (for Parallel I/O interface)</td>
<td>20F-FT02</td>
<td>32-64 point. (64 point) for 193. 64 point. Contact the nearest Mitsubishi Electric office for cable specifications.</td>
</tr>
<tr>
<td>CF-Link interface</td>
<td>20F-FT01</td>
<td>Contact Mitsubishi Electric office for cable specifications.</td>
</tr>
<tr>
<td>Ethernet-based communication interface</td>
<td>20F-TF03</td>
<td>Communication interface for connecting the Mitsubishi CompactCom module manufactured by HMS. The customer needs to purchase the CompactCom module manufactured by HMS.</td>
</tr>
<tr>
<td>Network base card (Ethernet interface)</td>
<td>20F-TF03</td>
<td>Communication interface for connecting the Mitsubishi CompactCom module manufactured by HMS. The customer needs to purchase the CompactCom module manufactured by HMS.</td>
</tr>
<tr>
<td>Network base card (Profinet interface)</td>
<td>20F-TF318-FN</td>
<td>Contact Mitsubishi Electric office for cable specifications.</td>
</tr>
<tr>
<td>Network base card (EtherCAT interface)</td>
<td>20F-DOS5</td>
<td>Communication interface for connecting the Mitsubishi CompactCom module manufactured by HMS. The customer needs to purchase the CompactCom module manufactured by HMS.</td>
</tr>
<tr>
<td>Network base card (Industrial Ethernet interface)</td>
<td>20F-DOS5-EC</td>
<td>Communication interface for connecting the Mitsubishi CompactCom module manufactured by HMS. The customer needs to purchase the EtherCAT module (CS804157) manufactured by HMS.</td>
</tr>
<tr>
<td>Ethernet relay</td>
<td>20F-TM040</td>
<td>Relay body sold separately by HMS.</td>
</tr>
</tbody>
</table>

## The list of function extension device

<table>
<thead>
<tr>
<th>Item</th>
<th>Type name</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vision sensor set</td>
<td>1F-FT05S711100</td>
<td>List of devices necessary for the vision system to operate. Each vision sensor is an optional set, and separate software.</td>
</tr>
</tbody>
</table>

## ASSISTA Startup Configuration

- **MELFA ASSISTA**
- **Options: RT VisualBox**
- **Options: Easy-setup kit**

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### 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.

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*Not all products are available in all countries.*

**Your Solution Partner**

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