

**Easy to use settings and compact controller,  
developed with the leading company in safety solutions**



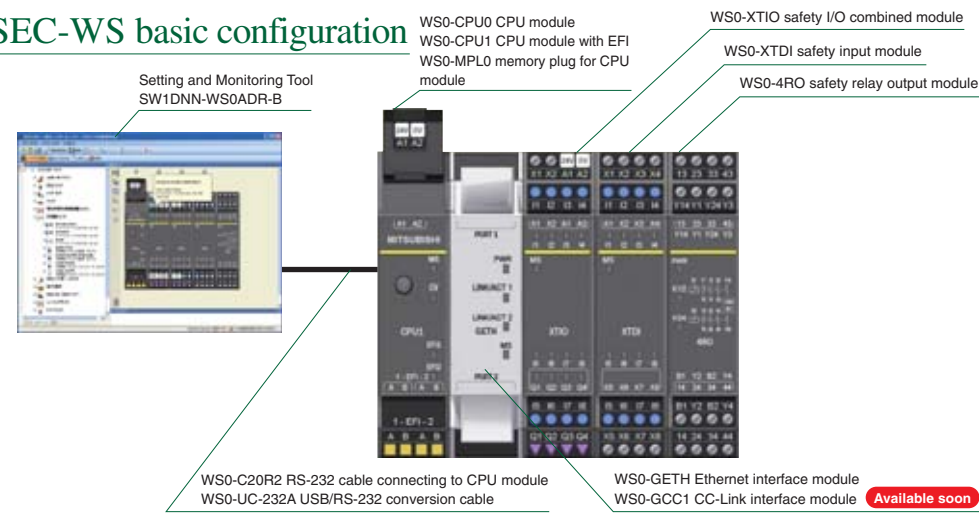
## Best suited for small and medium safety systems! A compact new solution featuring easy to use settings.

### MELSEC-WS series-a new safety controller

This compact new safety controller complies with ISO13849-1 PLe and IEC61508 SIL3 safety standards.

The most suitable application of MELSEC-WS is to ensure safe operation of stand-alone machines or systems. To meet your system configuration, it allows you to have additional I/O points of up to 144. Also, you can easily make settings and create logic by using the Setting and Monitoring Tool exclusively provided for the controller.

### MELSEC-WS basic configuration



Model nickname	Full model name	Description
WS0-CPU0	WS0-CPU000200	Program size: 255 FBs, Scan cycle: from 4 ms, Interface: RS-232
WS0-CPU1	WS0-CPU130202	EFI-equipped-EFI is the communication interface for setting and monitoring SICK's safety products. Program size: 255 FBs, Scan cycle: from 4 ms, Interface: RS-232
WS0-MPL0	WS0-MPL000201	Memory plug for storing CPU parameters and programs (required)
WS0-XTDI	WS0-XTDI80202	Safety input: 8-point single or 4-point dual-channel with spring clamp terminal block
WS0-XTIO	WS0-XTIO84202	Safety input: 8-point single or 4-point dual-channel, Safety output: 4-point single or 2-point dual-channel Output current: 2 A/point maximum, Spring clamp terminal block, Fast shut off response of 8 ms
WS0-4RO	WS0-4RO4002	Safety output: 2-point safety relay output-4-output 2 EDM contacts and 2 diagnostic outputs, Rated load current: 6 A/point maximum
WS0-C20R2	WS0-C20R2	RS-232 cable between PC and CPU module
WS0-UC-232A	WS0-UC-232A	USB/RS-232 conversion cable
WS0-GETH	WS0-GETH00200	Connecting to Ethernet communication (non-safe communication)
WS0-GCC1	WS0-GCC100202	Connecting to CC-Link communication (non-safe communication) <b>Available soon</b>
WS0-TBS4	WS0-TBS4	Screw-in replacement terminal block-4 terminal blocks included
WS0-TBC4	WS0-TBC4	Spring clamp replacement terminal block-4 terminal blocks included
SW1DNN-WS0ADR-B	SW1DNN-WS0ADR-B	MELSEC-WS Setting and Monitoring Tool

Powered by  
**SICK**

The MELSEC-WS series is jointly developed and manufactured by Mitsubishi Electric and SICK. SICK, a German company, is a supplier of safety solutions. SICK designs and manufactures a broad range of safety products including industrial-use sensors and automatic identification systems.

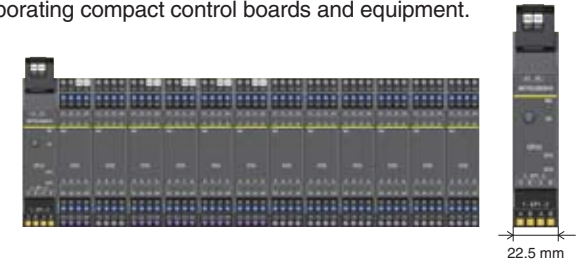
\*The specifications and warranty terms of MELSEC-WS are different from MELSEC-Q/QS, see the specification (page 4-5) and warranty terms (page 6).

## Intuitively understandable setting operations, plus flexible expandability. The compact profile includes full cutting-edge safety technologies.

### Feature:1

#### To meet today's needs - compact safety controller with flexible expandability

- The module is 22.5 mm wide. This compact size is best suited for incorporating compact control boards and equipment.
- Maximum expandable modules include 12 safety input/I/O modules, 4 safety relay output modules, and 2 network modules.
- At the maximum configuration of safety input and I/O modules, I/O points are 96 for single input and 48 for single output-totalling 144.



### Feature:2

#### The original Setting and Monitoring Tool makes intuitively configuration

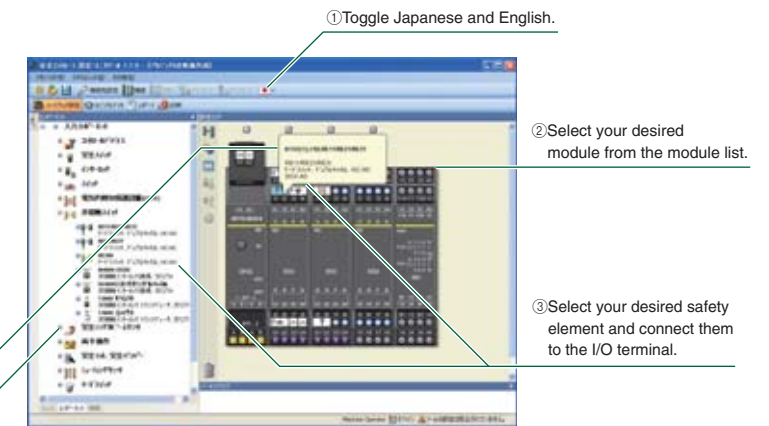
##### Configuration

Use the various equipments to set your hardware configuration easily and quickly.

##### What are elements?

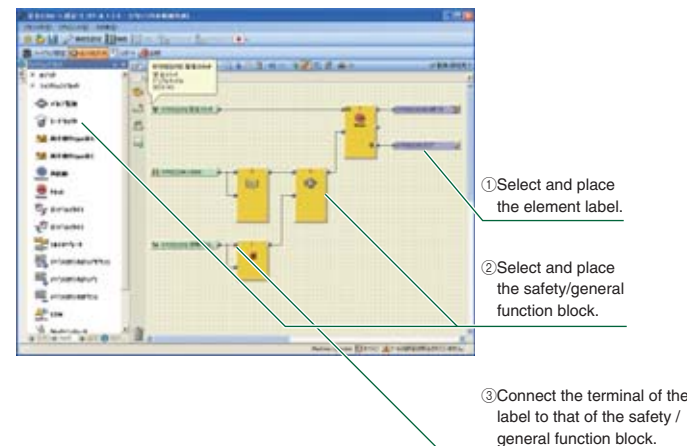
Connecting parameters of major safety equipment, such as Emergency stop and Safety door switches and Light curtain, are expressed by an icon. Make settings simply by drag-and-drop decision. \*Elements for Safety devices of Mitsubishi's partners are also available. Please contact your local Mitsubishi representative.

- ④ Major parameters are set into the icons. You can change the parameters if desired.
- ⑤ Register new elements for safety equipments.



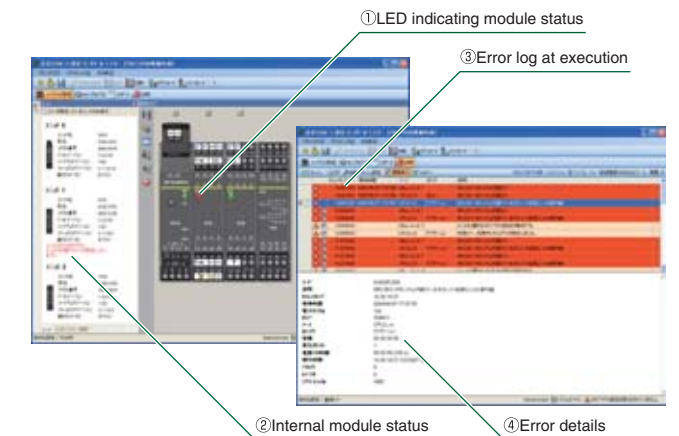
##### Logic Editor

Elements you connect to the I/O terminal are automatically labeled, enabling you to create logic easily using labels and function blocks.



##### Diagnosis

You can monitor the internal status of modules and error logs.



## Feature:3

### Fast shut off with a response of 8 ms

Fast shut off lets the safety I/O module shut off safety output not via the CPU module, speeding up response to 8 ms.

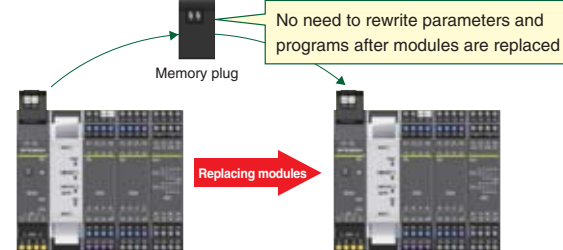
Shorten safety distances in your safety systems.



## Feature:4

### Easy CPU module replacement

Save parameters and programs from the Setting and Monitoring Tool to the memory plug at CPU module - avoiding rewriting parameters and programs after replacing the CPU module.



## Feature:5

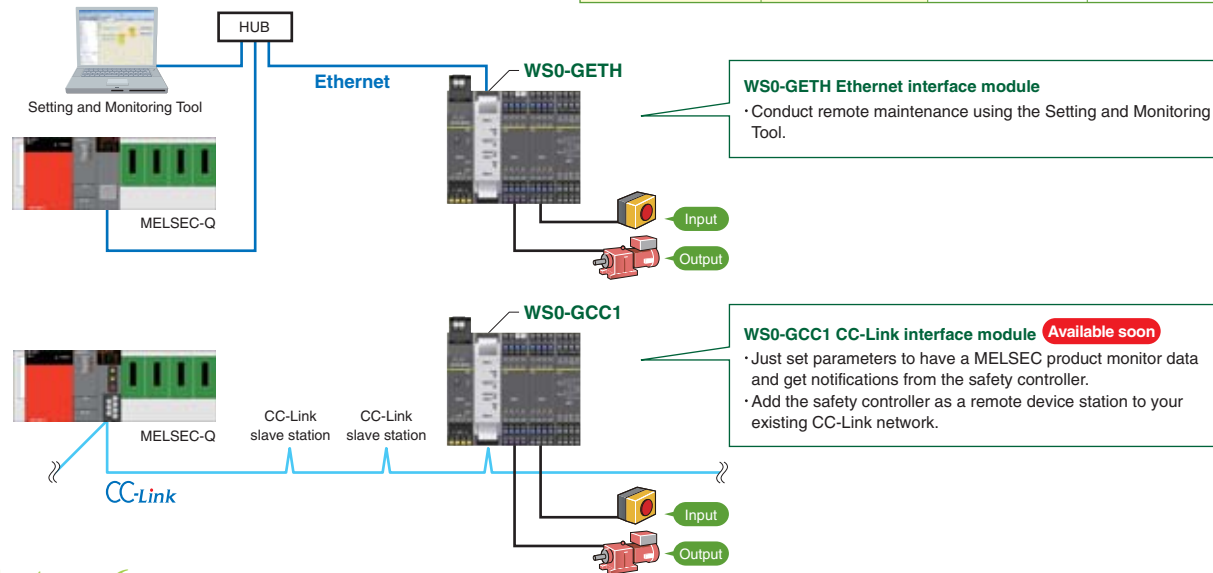
### Connecting with various equipments via network

The MELSEC-WS uses the network interface module to communicate with PCs and MELSEC programmable controllers so they can monitor data such as CPU logic results, I/O signal status, and module status and get notifications<sup>\*1</sup> such as a machine startup and stops from the MELSEC-WS.

\*1 This is not safety-guaranteed data for Ethernet and CC-Link because they are not a safety network.

<Functions available with network interface>

		WS0-GETH	WS0-GCC1
Connected to a PLC or PC	Monitoring data	○	○
	Notification data	○	○
Connected to the Setting and Monitoring Tool	Connection via network	○	—



## Feature:6

### Enhanced by the distinctive technologies of SICK-the leading company of safety solutions

Through the EFI interface on the WS0-CPU1 CPU module, the MELSEC-WS safety controller enables you to retrieve safety data, make settings, and conduct diagnostics on SICK's safety products.

#### EFI: SICK original network Interface between WS0-CPU1 and SICK's safety products

Supported equipment ●C4000 light curtain ●M4000 light barrier ●S3000/S300 laser scanner

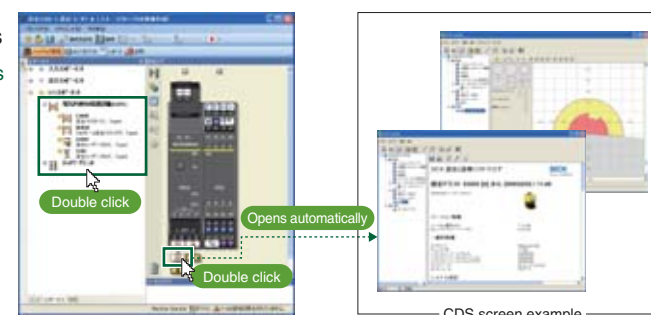
Features ●Up to 4 safety products can be daisy-chain-connected per EFI port

●Retrieve safety data, make settings, and conduct diagnostics on SICK's safety products

CDS diagnostics software used exclusively for such SICK safety products as light curtains and laser scanners is included into the Setting and Monitoring Tool. Note that CDS is a product of SICK not covered under the Mitsubishi Electric warranty. Contact SICK for CDS information as follows:

SICK URL▶<http://www.sick.com>

\*The Setting and Monitoring Tool is all you need to connect the MELSEC-WS and build a safety system with SICK's safety products. CDS enables you to use expansion functions such as SICK's safety product diagnostics.



## General Specifications

Item	Specifications				
Operating ambient temperature	-25 to 55°C <sup>*4</sup>				
Storage ambient temperature	-25 to 70°C <sup>*4</sup>				
Operating ambient humidity	10 to 95 % RH, non-condensing <sup>*4</sup>				
Storage ambient humidity	10 to 95 % RH, non-condensing <sup>*4</sup>				
Vibration resistance	Conforms to IEC 61131-2				
	Frequency range	Constant acceleration	Half amplitude	Sweep count	
	Under intermittent vibration	5 to 8.4 Hz	—	3.5 mm	10 times each in X, Y, Z directions
	Under continuous vibration	8.4 to 150 Hz	9.8 m/s <sup>2</sup>	—	—
Shock resistance	5 to 8.4 Hz	—	1.75 mm	—	
	8.4 to 150 Hz	4.9 m/s <sup>2</sup>	—	—	
Shock resistance	Conforms to IEC 61131-2 (147 m/s <sup>2</sup> , 3 times each in X, Y, Z directions)				
Operating ambience	No corrosive gases				
Operating altitude <sup>*1</sup>	2,000 m or less				
Installation location	Inside control panel				
Overvoltage category <sup>*2</sup>	II or less				
Pollution degree <sup>*3</sup>	2 or less				
Equipment category	Class III				

## CPU module specifications

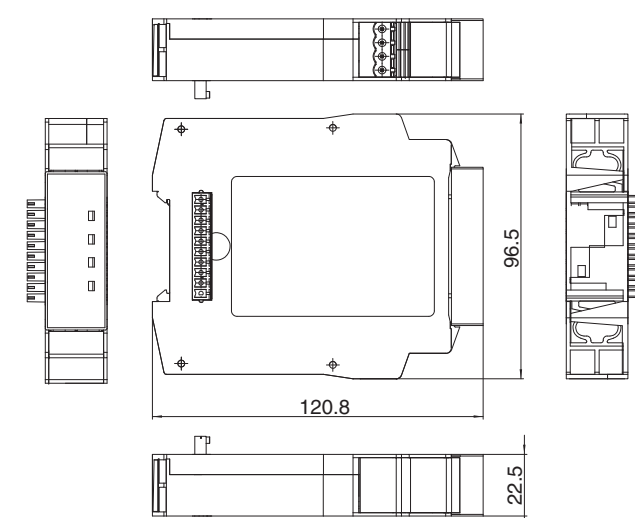
Item	Specifications		
	WS0-CPU0	WS0-CPU1	
Category	Category 4 (EN/ISO 13849-1) Category 4 (EN 954-1)		
Safety Integrity Level (SIL)	SIL3 (IEC 61508) SILCL3 (IEC 62061)		
Performance level (PL)	PLe (EN/ISO 13849-1)		
PFHd	1.07×10 <sup>-9</sup> 1/h	1.69×10 <sup>-2</sup> 1/h	
Enclosure rating (EN/IEC 60529)	Terminals: IP20, Housing: IP40		
EMC	EN61000-6-2, EN55011(Class A) <sup>*4</sup>		
Protection class			
Number of EFI interfaces	0	2	
EFI connection	By spring clamp terminal block		
Data interface	Backplane bus (FLEX BUS+)		
Configuration interface	RS-232		
Cross-circuit of connecting wires	Single-core or finely stranded: 1×0.14 mm <sup>2</sup> to 2.5 mm <sup>2</sup> or 2×0.14 mm <sup>2</sup> to 0.75 mm <sup>2</sup>		
	Finely stranded with ferrules to EN 46228: 1×0.25 mm <sup>2</sup> to 2.5 mm <sup>2</sup> or 2×0.25 mm <sup>2</sup> to 0.5 mm <sup>2</sup>		
Dimensions (W×H×D)	22.5×96.5×120.8 mm	22.5×101.7×120.8 mm	
Weight	100 g	110 g	
External power specs	Supply voltage	24 V DC (16.8 to 30 V DC)	
	Type of supply voltage	PELV or SELV (The current of the power supply unit that supplies the CPU module has to be limited to a maximum of 4 A - either by the power supply unit itself or by a fuse.)	
	Power consumption	Max. 2.5 W	
	Switch-on time	Max. 18 seconds	
	Short-circuit protection	4 A gG (with tripping characteristics B or C)	

## Ethernet interface module specifications

Item	Specifications		
	WS0-GETH		
Number of modules mountable to the safety controller	Max. 2 modules (in total of WS0-GETH and WS0-GCC1)		
Communication	Network type	Ethernet (TCP/IP)	
	Transmission rate	100Base-TX	10Base-T
	Connection technique	100Mbps 10Mbps	
Number of connections	RJ45		
Enclosure rating (EN/IEC 60529)	Max. 4 connections+1 connection (for Setting and Monitoring Tool only)		
Data interface	IP20		
Internal power consumption	Backplane bus (FLEX BUS+)		
Dimensions (W×H×D)	Max. 2.4 W		
Weight	22.5×96.5×120.8 mm		
	125 g		

\*1 :Do not store or use the programmable controller under the pressure higher than the atmospheric pressure of altitude 0 m.  
\*2 :This indicates the section of power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within the premises. Category II applies to equipment for which electrical power is supplied from fixed facilities. The surge voltage withstand level for up to the rated voltage of 300 V is 2500 V.  
\*3 :This index indicates the degree to which conductive material is generated in the environment where the device is used. Pollution degree 2 is when only non-conductive pollution occurs. However, temporary conductivity caused by condensation is to be expected.  
\*4 :Specifications of MELSEC-WS differ from MELSEC-Q/OS mainly in:  
① General specifications (Operating ambient temperature, storage ambient temperature, etc.)  
② EMC standards: MELSEC-WS - EN61000-6-2, EN55011  
MELSEC-Q/OS - IEC 61131-2

## External Dimensions of Safety Controller



Unit: mm



# Mitsubishi Safety Controller

## MELSEC-WS Series

### Precautions for Choosing the Products

This catalog explains the typical features and functions of the WS Series safety controller and does not provide restrictions and other information on usage and module combinations. When using the products, always read the user's manuals of the products. Also, confirm the "Warranty" on page 6 before using the products.

### For safe use

- To use the products given in this catalog properly, always read the manuals before starting to use them.
- Confirm the "Warranty" on page 6 before using the products.

Country/Region	Sales office	Tel/Fax
USA	Mitsubishi Electric Automation Inc. 500 Corporate Woods Parkway, Vernon Hills, IL 60061, USA	Tel: +1-847-478-2100 Fax: +1-847-478-0327
Brazil	MELCO-TEC Rep. Com.e Assessoria Tecnica Ltda. Av. Paulista, 1439-C.J. 72 Cerqueira Cesar CEP 01311-200, Sao Paulo, SP, CEP: 01311-200, Brazil	Tel: +55-11-3146-2200 Fax: +55-11-3146-2217
Germany	Mitsubishi Electric Europe B.V. German Branch Gothaer Strasse 8, D-40880 Ratingen, Germany	Tel: +49-2102-486-0 Fax: +49-2102-486-1120
UK	Mitsubishi Electric Europe B.V. UK Branch Travellers Lane, Hatfield, Hertfordshire, AL10 8XB, UK.	Tel: +44-1707-276100 Fax: +44-1707-278992
Italy	Mitsubishi Electric Europe B.V. Italy Branch Viale Colleoni 7-20041 Agrate Brianza (Milano), Italy	Tel: +39-039-60531 Fax: +39-039-6053312
Spain	Mitsubishi Electric Europe B.V. Spanish Branch Ctra. de Rubí 76-80-AC.420, E-08190 Sant Cugat del Vallés (Barcelona), Spain	Tel: +34-93-565-3131 Fax: +34-93-589-1579
France	Mitsubishi Electric Europe B.V. French Branch 25, Boulevard des Bouvets, F-92741 Nanterre Cedex, France	Tel: +33-1-5568-5568 Fax: +33-1-5568-5757
Czech Republic	Mitsubishi Electric Europe B.V. Czech Branch Avenir Business Park, Radlická 714/113a CZ-158 00 Praha 5	Tel: +420-251-551-470 Fax: +420-251-551-471
Poland	Mitsubishi Electric Europe B.V. Polish Branch ul. Krakowska 50 32-083 Balice, Poland	Tel: +48-12-630-47-00 Fax: +48-12-630-47-01
Russia	Mitsubishi Electric Europe B.V. Moscow Office 52/3, Kosmodamianskaya nab., 115054, Moscow, Russia	Tel: +7-812-633-3497 Fax: +7-812-633-3499
South Africa	Circuit Breaker Industries Ltd. Private Bag 2016, ZA-1600 Isando, South Africa	Tel: +27-11-928-2000 Fax: +27-11-392-2354
China	Mitsubishi Electric Automation (Shanghai) Ltd. 17/F, ChuangXing Financial Center No.288 West Nanjing Road, Shanghai 200003	Tel: +86-21-2322-3030 Fax: +86-21-2322-3000
Taiwan	Setsuyo Enterprise Co., Ltd. 6F, No.105 Wu-Kung 3rd Rd, Wu-Ku Hsiang, Taipei Hsien 248, Taiwan	Tel: +886-2-2299-2499 Fax: +886-2-2299-2509
Korea	Mitsubishi Electric Automation Korea Co., Ltd. 1480-6, Gayang-dong, Gangseo-ku, Seoul 157-200, Korea	Tel: +82-2-3660-9552 Fax: +82-2-3664-8372
Singapore	Mitsubishi Electric Asia Pte, Ltd. 307 Alexandra Road #05-01/02, Mitsubishi Electric Building Singapore 159943	Tel: +65-6470-2460 Fax: +65-6476-7439
Thailand	Mitsubishi Electric Automation (Thailand) Co., Ltd. Bang-Chan Industrial Estate No.111 Soi Serithai 54, T.Kannayao, A.Kannayao, Bangkok 10230 Thailand	Tel: +66-2-517-1326 Fax: +66-2-517-1328
Indonesia	P.T. Autoteknindo Sumber Makmur Muara Karang Selatan, Block A / Utara No.1 Kav. No.11, Kawasan Industri Pergudangan, Jakarta- Utara 14440, P.O.Box 5045 Jakarta11050-Indonesia	Tel: +62-21-663-0833 Fax: +62-21-663-0832
India	Messung Systems Pvt., Ltd. Electronic Sadan NO: III Unit No.15, M.I.D.C. Bhosari, Pune-411026, India	Tel: +91-20-2712-3130 Fax: +91-20-2712-8108
Australia	Mitsubishi Electric Australia Pty. Ltd. 348 Victoria Road, Rydalmere, N.S.W. 2116, Australia	Tel: +61-2-9684-7777 Fax: +61-2-9684-7245



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