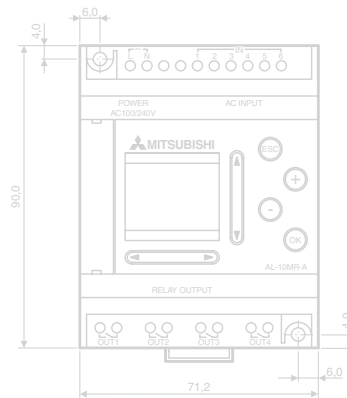
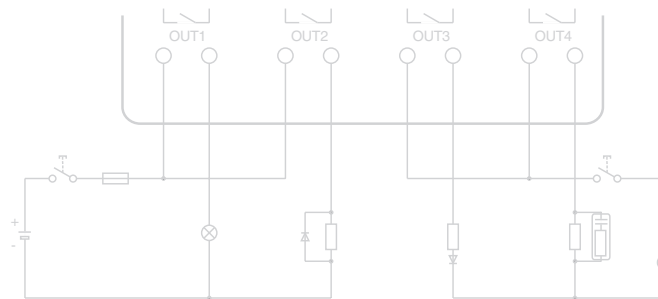
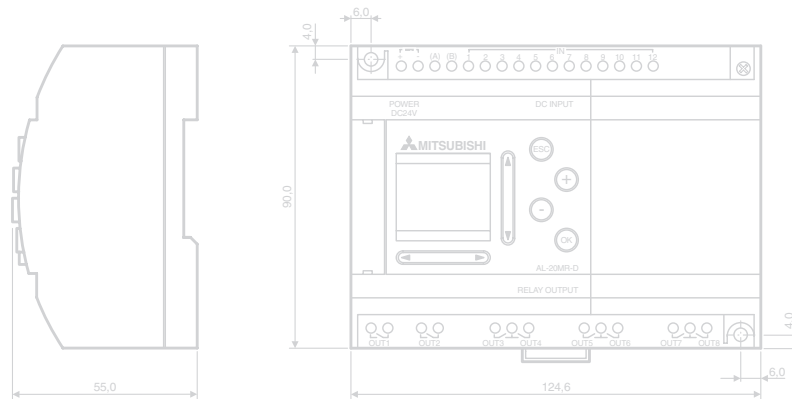


ALPHA



Technical Catalogue

A controller concept pointing the way

The new Alpha

With the new ALPHA controller Mitsubishi Electric defines a new performance class in the factory automation.

Thanks to its outstanding performance potential the ALPHA controller dominates this class.

Single components like time relays, counters, comparators, running time meters, clock generators, hysteresis controllers are directly available functions.

Further publications within the PLC range

Technical Catalogues



Q, AnU, QnA, AnS, QnAS Series Technical Catalogues

Product catalogues for programmable logic controllers and accessories for the further MELSEC PLC series



FX1S, FX1N, FX2N Series Technical Catalogue

Product catalogue for programmable logic controllers and accessories for the MELSEC FX family (art. no. 136744)



HMI Technical Catalogue

Product catalogue for operator terminals, supervision software, and accessories (art. no. 68542)



Networks Technical Catalogue

Product catalogue for Master and Slave modules as well as accessories for the use of programmable logic controllers in open and MELSEC networks (art. no. 136730)

About this product catalogue

This catalogue is periodically updated due to product range enlargement, technical changes or new or changed features.

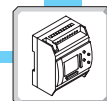
For current information about updates, changes, news, or even support matters, please have a look at the MITSUBISHI ELECTRIC web pages under www.mitsubishi-automation.com. This medium is nearly daily updated and available in two languages.

Texts, figures and diagrams shown in this product catalogue are intended exclusively for explanation and assistance in planning and ordering the programmable logic controllers of the ALPHA series and the associated accessories. Only the manuals supplied with the modules are relevant for installation, commissioning and handling of the controllers and the accessories. The information given in this documentation must be read before installation and commissioning of the modules.

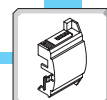
Should questions arise with regard to the planning of modules described in this product catalogue, do not hesitate to contact the German branch of the MITSUBISHI ELECTRIC EUROPE B.V. in Ratingen or one of its distributors (see cover page).

ALPHA**BASIC COMPONENTS**

- ◆ System description 4
- ◆ Description of units and specifications 6

**EXTENSIONS**

- ◆ Actuator Sensor Interface Network 8
- ◆ AS Interface Module 9

**ACCESSORIES**

- ◆ EEPROM cassette 10
- ◆ PC cable 10
- ◆ Simulation box 10

**TERMINAL ASSIGNMENT + DIMENSIONS**

- ◆ Terminal assignment 11
- ◆ Dimensions 12

**SOFTWARE**

- ◆ Programming software 13
- ◆ Description of function blocks 15



The ALPHA Series

Description

- Compact
- Self-sufficient
- Cost effective
- Versatile

The new ALPHA closes the present gap between single components and a PLC system. It combines all advantages of a PLC system in a very compact housing and therefore provides a room and cost saving alternative to relays and contactors.

Up to 64 functions (or 1.5 kB data) can be processed by a program. Each of the available functions (timers, counters, analog processing, calendar/clock function etc.) can be used in all programs as frequently as needed.

System structure

- Master controller with complete PLC functions
- Integrated power supply unit
- CPU
- Maintenance-free EEPROM memory
- Integrated inputs and outputs
- Analog signal processing for up to 8 configurable analog inputs (controllers with 24 V DC supply)
- Direct programming via the integrated control panel with graphical LCD display
- Control panel can be used as simple operator terminal (HMI)
- Comfortable calendar/clock function
- Serial interface for external communications with a PC
- User-friendly programming software AL-PCS/WIN for comprehensive and structured programming under MS Windows 95/98/NT
- Connectable to the AS-Interface field bus via extension module (ALPHA 20 only)

Features

The master controllers are available in different variations regarding the power supply and the kind of outputs.

Controllers for a 230 V AC or 24 V DC power supply and with relay or transistor outputs are supplied.

All units feature the same CPU and the same characteristics. The ALPHA 20 can additionally be extended by a plug-in module.

Integrated calendar/real-time function with up to 350 switch ON or OFF commands

The communication with a computer is supported by the **integrated serial interface**.

Flexible mounting through integrated DIN rail adapter and screw fixing

Up to **8 inputs** can be used as digital or analog inputs (controllers with 24 V DC supply).

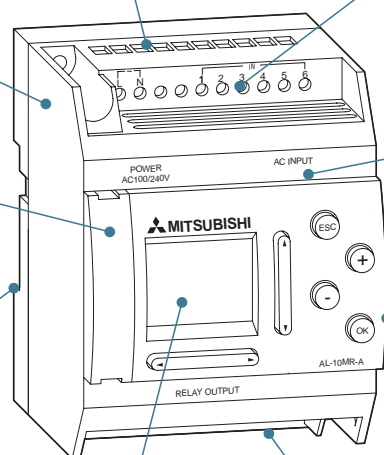
The **analog inputs** (0 – 10 V, 8 bits resolution) can be used very easily due to the integrated gain function and a Schmitt-trigger.

Direct programming via **8 function keys** on the front control panel without any additional programming device

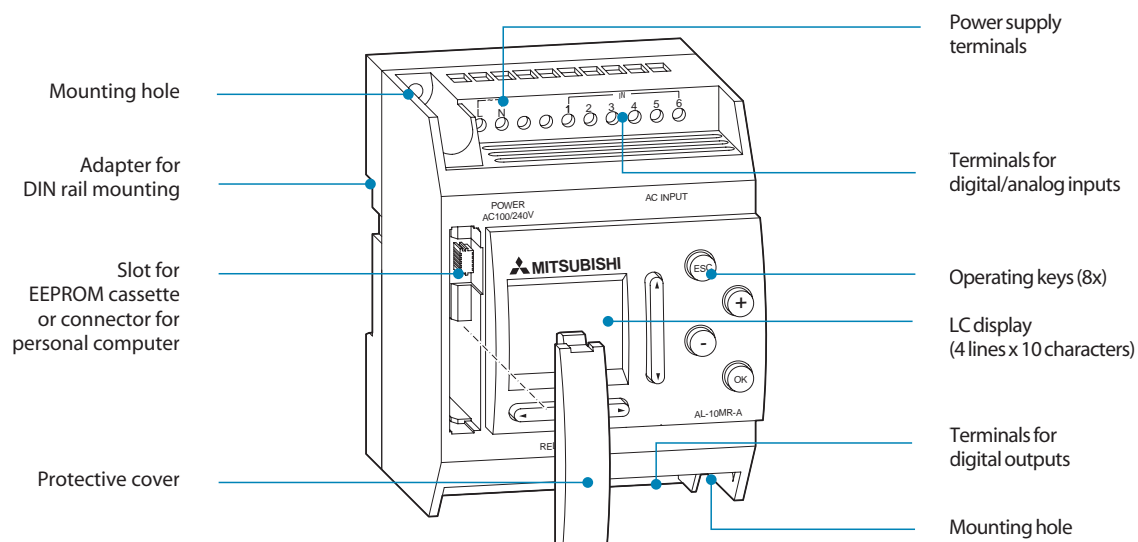
The program is stored in a maintenance-free **EEPROM** with a memory capacity of 1500 bytes. A backup battery is not required.

LC display for programming, entering, and editing plain text and values

A know-how saving **password protection** can be activated.



Description of the Module Components

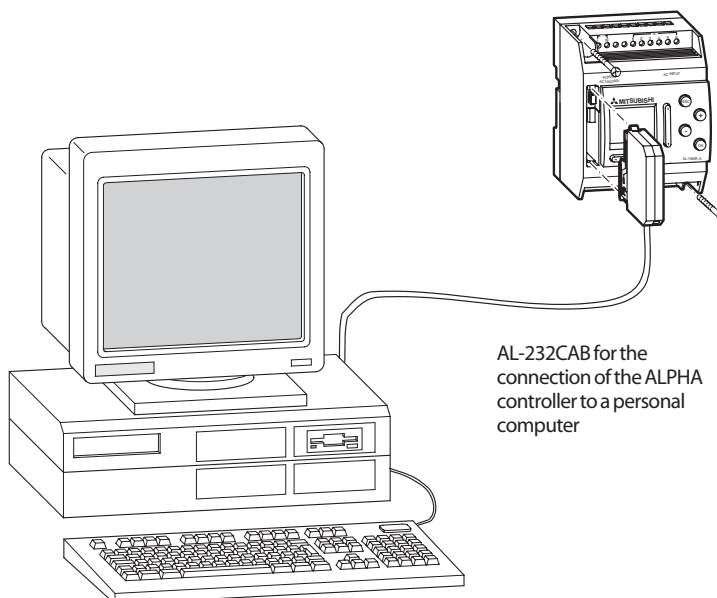


Description of the Module Components

AL	-	10	M	R	-	A
1		2	3	4		5

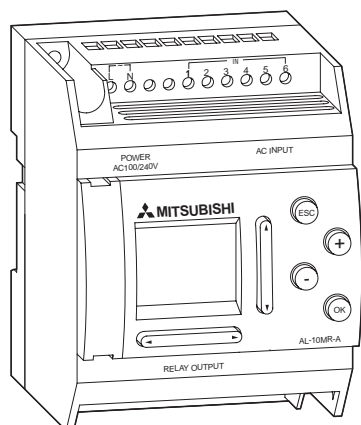
The key in detail:

- Designation of the ALPHA series
- Number of inputs/outputs e.g. 10 I/Os
- Designation of the module:
M = Master controller
- Designation of the output type:
R = Relay
T = Transistor
- Designation of the power supply:
A = 100/240 V AC
D = 24 V DC

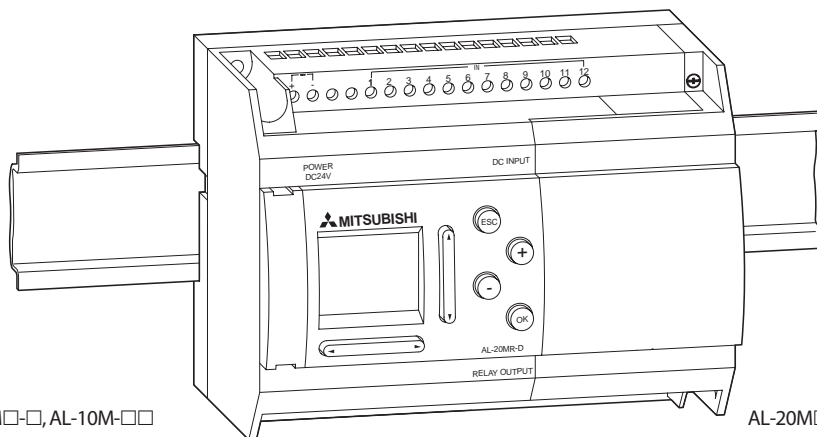


AL-232CAB for the connection of the ALPHA controller to a personal computer

Specifications



AL-6MR-A, AL-10MR-A



AL-20MR-D

Specifications		AL-6MR-A	AL-10MR-A	AL-10MR-D	AL-10MT-D	AL-20MR-A	AL-20MR-D	AL-20MT-D
Electrical specifications								
Integrated inputs/outputs		6	10	10	10	20	20	20
Power supply	AC range (+10 %, -15 %)	100–240 V AC	100–240 V AC	24 V DC	24 V DC	100–240 V AC	24 V DC	24 V DC
	Frequency at AC	Hz 50–60 Hz	50–60 Hz	—	—	50–60 Hz	—	—
	Voltage fluctuation	-15 – +10 %	-15 – +10 %	-15 – +20 %	-15 – +20 %	-15 – +10 %	-15 – +20 %	-15 – +20 %
Max. permissible voltage drop time		ms 10	10	5	5	10	5	5
Max. power consumption		W 3	4	3	2	8	7	5
Typ. power consumption	All I/Os ON	W 2.5	3.0	2.0	2.0	5.0	5.0	5.0
	All I/Os OFF	W 1.5	1.5	0.3	0.3	1.5	0.3	0.3
Inrush current		≤1.5 (at 240 V AC)	≤1.5 (at 240 V AC)	≤7.0 (at 24 V DC)	≤7.0 (at 24 V DC)	≤1.5 (at 240 V AC)	≤7.0 (at 24 V DC)	≤7.0 (at 24 V DC)
Digital inputs								
Integrated inputs		number 4	6	6	6	12	12	12
Input voltage		100–240 V AC	100–240 V AC	24 V DC	24 V DC	100–240 V AC	24 V DC	24 V DC
Input current		0.24 mA at 240 V	0.24 mA at 240 V	5.0 mA at 24 V	5.0 mA at 24 V	0.24 mA at 240 V	5.0 mA at 24 V	5.0 mA at 24 V
Response time		ms 50	50	10–40	10–40	50	10–40	10–40
Input frequency		Hz 5	5	20	20	5	20	20
Analog inputs								
Channels		—	—	6	6	—	8	8
Analog input range		—	—	0–250	0–250	—	0–250	0–250
Resolution		—	—	10.000/250 mV	10.000/250 mV	—	10.000/250 mV	10.000/250 mV
Conversion speed		ms —	—	10	10	—	10	10
Voltage		—	—	0–10 V DC	0–10 V DC	—	0–10 V DC	0–10 V DC
Impedance		—	—	< 150 kΩ	< 150 kΩ	—	< 150 kΩ	< 150 kΩ
Accuracy		—	—	±5 % (0.5 V DC)	±5 % (0.5 V DC)	—	±5 % (0.5 V DC)	±5 % (0.5 V DC)
Outputs								
Integrated outputs		number 2	4	4	4	8	8	8
Type		Relay	Relay	Relay	Transistor	Relay	Relay	Transistor
Switched voltage (max.)		V 250 V AC, 30 V DC	250 V AC, 30 V DC	250 V AC, 30 V DC	5–24 V DC	250 V AC, 30 V DC	250 V AC, 30 V DC	5–24 V DC
Rated current		A 8	8	8	1 (at 8–24 V DC), 0.1 (at 5–8 V DC)	8	8	1 (at 8–24 V DC), 0.1 (at 5–8 V DC)
Max. switched load	- inductive load	—	—	—	1 A / 24 V DC	—	—	1 A / 24 V DC
	- resistive load	—	—	—	3 W / 24 V DC	—	—	3 W / 24 V DC
Minimum load		50 mW	50 mW	50 mW	1.0 mA	50 mW	50 mW	1.0 mA
Response time		ms ≤10	≤10	≤10	≤1	≤10	≤10	≤1
Leakage current		—	—	—	≤0.1 mA / 24 V DC	—	—	≤0.1 mA / 24 V DC
Relay contact lifetime cycles		100.000 (at 8 A)	100.000 (at 8 A)	100.000 (at 8 A)	—	100.000 (at 8 A)	100.000 (at 8 A)	—
Mechanical specifications								
Weight		kg 0.2	0.2	0.2	0.2	0.32	0.32	0.32
Dimensions (W x H x D)		mm 71.2 x 90 x 55	71.2 x 90 x 55	71.2 x 90 x 55	71.2 x 90 x 55	124.6 x 90 x 55	124.6 x 90 x 55	124.6 x 90 x 55
Order information		art. no. 87659	87660	87661	87672	125635	125636	125637

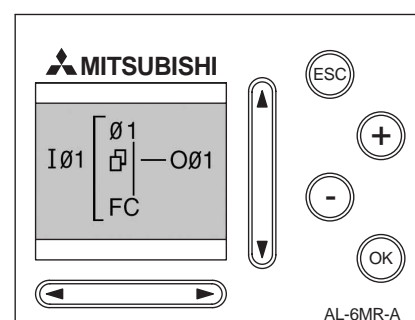
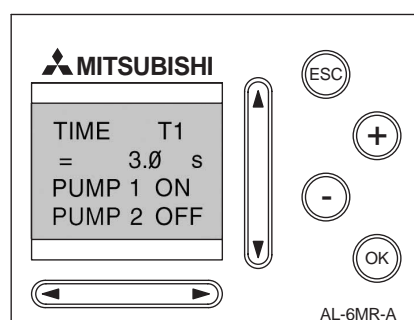
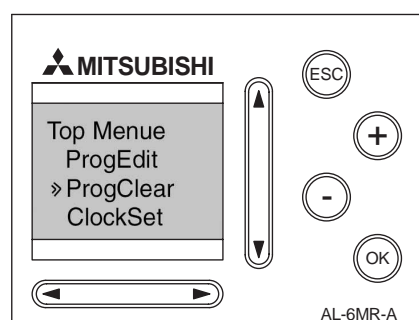
General Operating Conditions

Operating condition	Specification
Ambient temperature	0 – 55 °C
Operating temperature	0 – 55 °C
Storage temperature	-30 – +70 °C
Protection rating	IP 20
Noise immunity	1000 Vpp; 1 µs at 30 – 100 Hz, tested by noise simulator
Dielectric withstand voltage	3750 V AC, >1 min. acc. to EN60730
Relative humidity	35 – 85 % (no condensation)
Shock resistance	Acc. to IEC 68-2-27: 147 m/s ² acceleration, 11 ms 3 x 3 directions
Vibration resistance	direct mounting
	Acc. to IEC 68-2-6: 147 m/s ² acceleration, 80 min. in each direction
Vibration resistance	DIN rail mounting
	Acc. to IEC 68-2-27: 9.8 m/s ² acceleration, 80 min. in each direction
Insulation resistance	500 V DC, 7 MΩ acc. to EN60730-1
Grounding	None
Ambient conditions	No corrosive gases, no dust
Approvals	CE, UL/cUL
Tests	UL 508, EN60730-1, EN61010, EN50081-1, EN50082-1, EN50082-2

General System and Programming Specifications

System specifications	
Programm specifications	
Programming method	Function block
Program capacity	64 function blocks or 1500 bytes (internally)
Programm processing	Cyclic processing of the stored program
Number of available instructions	22 different function blocks (see page 15)
Programm storage	Integrated EEPROM and optional additional EEPROM cassette
Data storage	At voltage loss the current status of values, running time meters, and real-time data are stored for up to 20 days (at temperatures of 0 to 25 °C) through integrated capacitors
Processing time	Fixed time 1 ms + 20 µs / log. instruction (complex commands 500 µs / instruction)
Real-time clock	Seconds, minutes, hours, day of week, month, year (4-digit); accuracy: 5 s / day; automatic summer and winter time toggling
Program protection	Password protection supported

Control Terminal Functions



The ALPHA controllers can be completely programmed directly via the control terminal without any additional devices. 8 operating keys and LC display (4 rows x 10 characters) are provided for this purpose.

The menus can be displayed in 5 different languages (D, GB, F, I, E).

The LC display is user-programmable so that besides ALPHA internal values as well plain text messages can be displayed.

Displayed values of counters, timers, or running time meters can be edited directly via the 8 keys on the controller. Moreover, the keys are user-programmable similar to bits.

For the representation of function blocks all information is available on the display at the same time.

The Network with Actuator Sensor Interface

Data transfer

The AS interface is an international standard for the lowest field bus level. The network suits versatile demands, is very flexible and particularly easy to install.

The following parts are controlled:

- Sensors
- Actuators
- I/O units
- Gateways

Structure

ASI networks can be configured in any random tree structure.

The maximum extension without repeater is 100 m. Up to 2 repeaters are supported providing a maximum communication distance of 300 m. Terminating resistors are not needed.

Cable types

A special coded 2-wire cable is required.

The modules are connected to the cable via penetration clamp connections while the coding ensures a reverse protection.

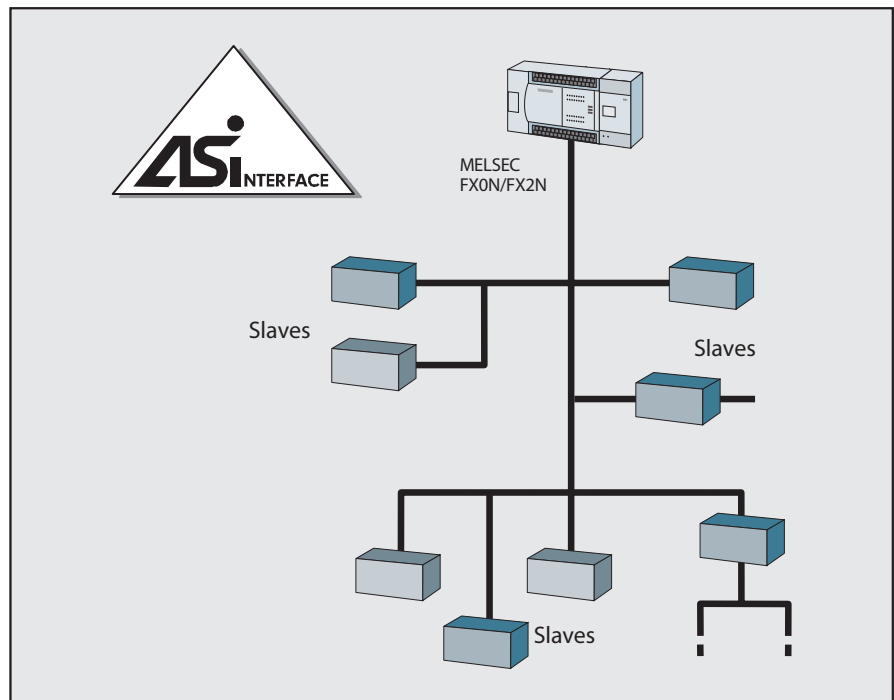
A communication via screw clamp connectors is also possible as well as other unshielded cables can be used.

Data exchange

The AS interface supports the connection of conventional sensors and actuators following the master-slave principle.

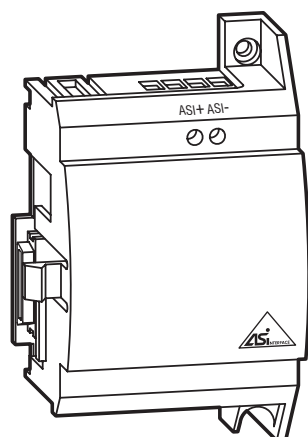
Administration

The I/O points of the slave devices are assigned electronically through the bus connection or the PLC program addressing the master within the network.



Specifications	AS interface
Network management	Master/slave
Cabling	Coded twisted-pair cable (unshielded)
Data transfer rate	kBit/s 167
Bus cycle time	≤5 ms
Max. overall distance	m 100 (300 with repeater)
Slave units per master	31
Repeaters per network	2

AS Interface Module AL-ASI-BD



The Actuator Sensor Interface module AL-ASI-BD in combination with an ALPHA controller AL-20M□-□ facilitates the data communications via an AS interface system.

The AL-ASI-BD is plugged on the AL-20M□-□ and forms a slave unit. Up to 4 inputs and 4 outputs can be exchanged with the ASI master.

The addresses of the slave devices in the ASI interface are assigned either automatically via the master in the network or via a programming device (software).

The maximum communication distance is 100 m without repeater. If 2 repeaters are used, the distance is extended to up to 300 m.

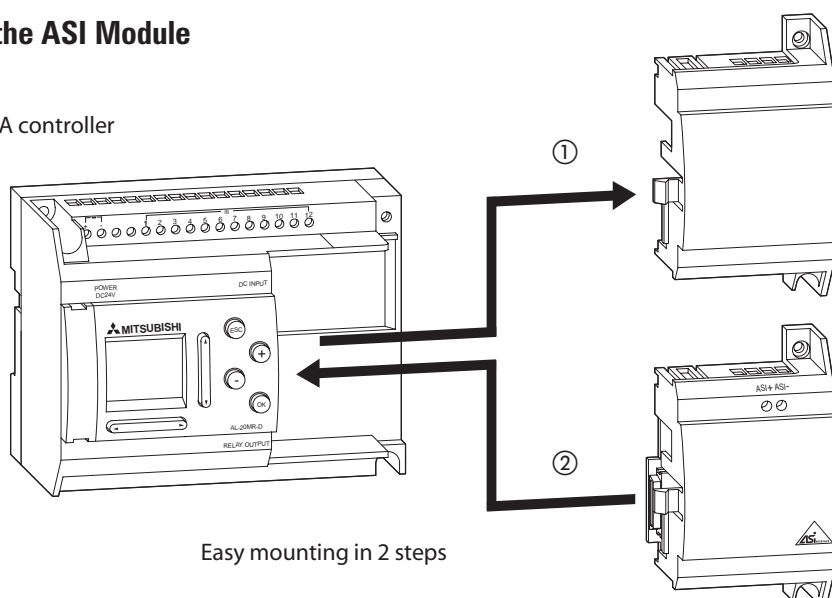
For the AS interface a separate power supply is required.

The communication signal is superimposed on the power supply of the AS interface bus.

Specifications	AL-ASI-BD
Module type	Slave module
Number of I/O addresses	4 inputs, 4 outputs
General operating conditions	Corresponding to ALPHA master controllers
External power supply	30.5 V DC (AS interface power supply)
External current consumption	Max. 150 mA
Communications protocol	ASI standard
Transfer rate	167000 bit/s
Communications method	APM (Alternating Pulse Modulation)
Communications cable	ASI standard cable
Communications distance	100 (300 with repeater)
Max. data transfer per slave	4 read / 4 write; up to 31 slave modules
I/O refresh	Max. 5 ms
Number of modules per master	31
Weight	kg 0.03
Dimensions (W x H x D)	mm 61.5 x 90 x 26.5
Order information	art. no. 124894

Mounting of the ASI Module

ALPHA controller

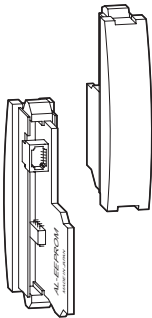


Easy mounting in 2 steps

Remove module cover from the ALPHA 20.

Plug the AL-ASI-BD module on the ALPHA 20.

Memory cassette: AL-EEPROM



By means of the memory cassette a new program can be transferred to the internal system memory of the ALPHA controller or the program of the internal system memory can be saved on the external memory cassette.

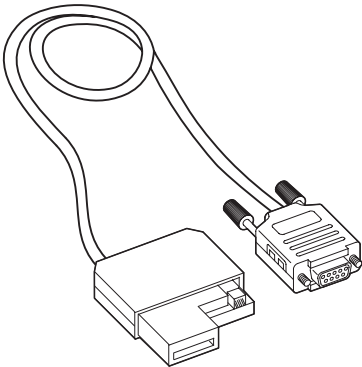
If the memory cassette is used, a certain program can be run temporarily by simply plugging the external memory module.

After removing the memory cassette the former program in the internal memory is active again.

The memory cassette AL-EEPROM is not a memory expansion but a medium for data exchange. Its capacity is 1500 Bytes what corresponds to 64 function blocks.

Data		AL-EEPROM
Memory type		EEPROM
Memory capacity		1500 Byte
Dimensions (W x H x D)	mm	10 x 45 x 25
Order information	Art. no.	87673

Interface cable: AL-232CAB

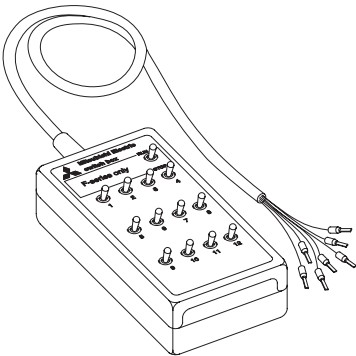


The AL-232CAB is an RS232C interface cable. It connects the ALPHA controller to a personal computer running the programming software for the ALPHA controller.

The cable ensures a galvanic isolation between the ALPHA controller and the personal computer. The cable AL-232CAB can not be used for any other connection.

Data		AL-232CAB
Application		ALPHA <-> PC
Length	m	2.5
Order information	Art. no.	87674

Simulation box



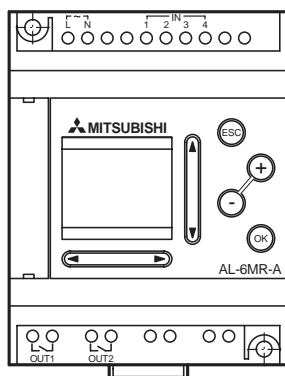
The simulation box provides 12 switches for simulating digital inputs.

The box can be used on all ALPHA controllers.

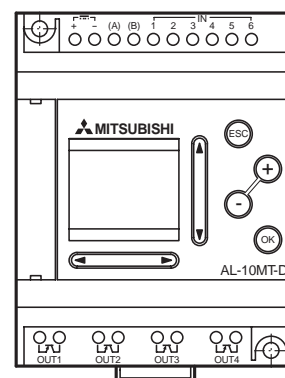
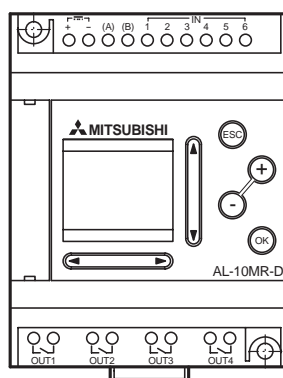
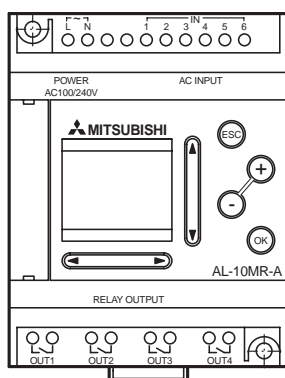
Data		Simulation box
Switches		12
Dimensions (W x H x D)	mm	50 x 100 x 25
Order information	Art. no.	3386

Terminal Assignment of the Master Controllers

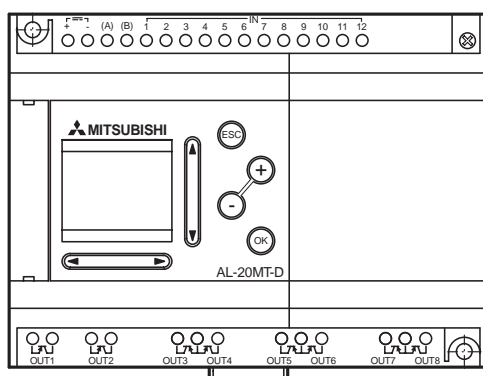
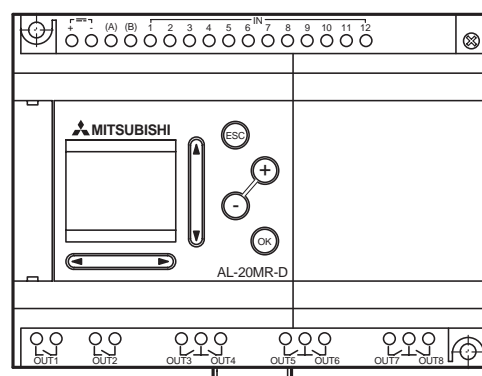
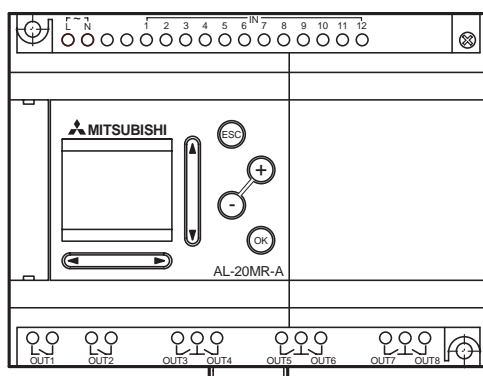
AL-6M□-□



AL-10M□-□

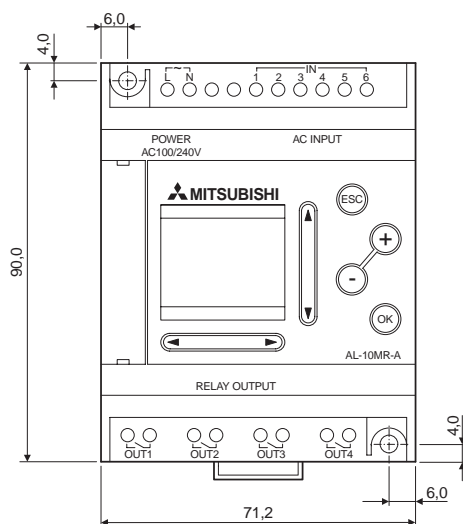
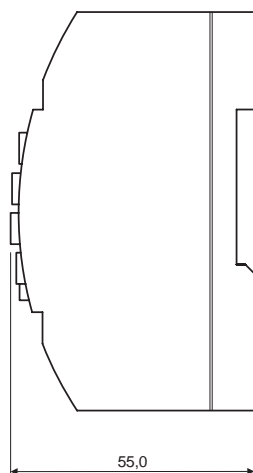


AL-20M□-□

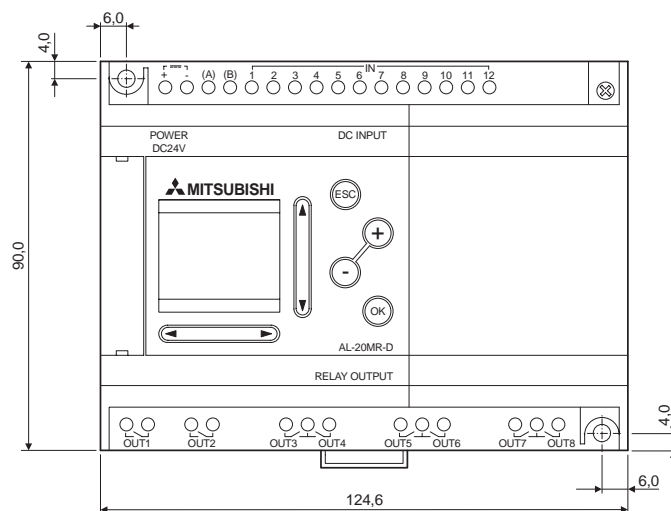
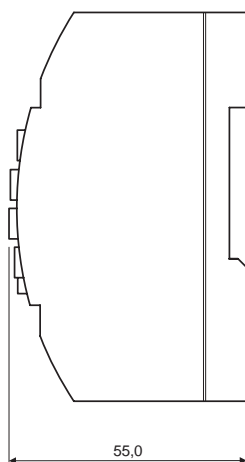


Dimensions of the Master Controllers

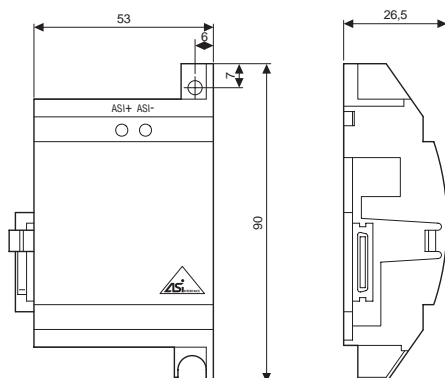
AL-6M□-□, AL-10M□-□



AL-20M□-□



AL-ASI-BD



All dimensions in mm

Highly Efficient PC Programming Software AL-PCS/WIN

All controllers of the ALPHA series can be programmed with the MS Windows software AL-PCS/WIN. This software is very easy to use and requires no previous experience of the user.

The software can be installed in 5 different languages (D, GB, F, I, E) and also provides online help in the respective language.

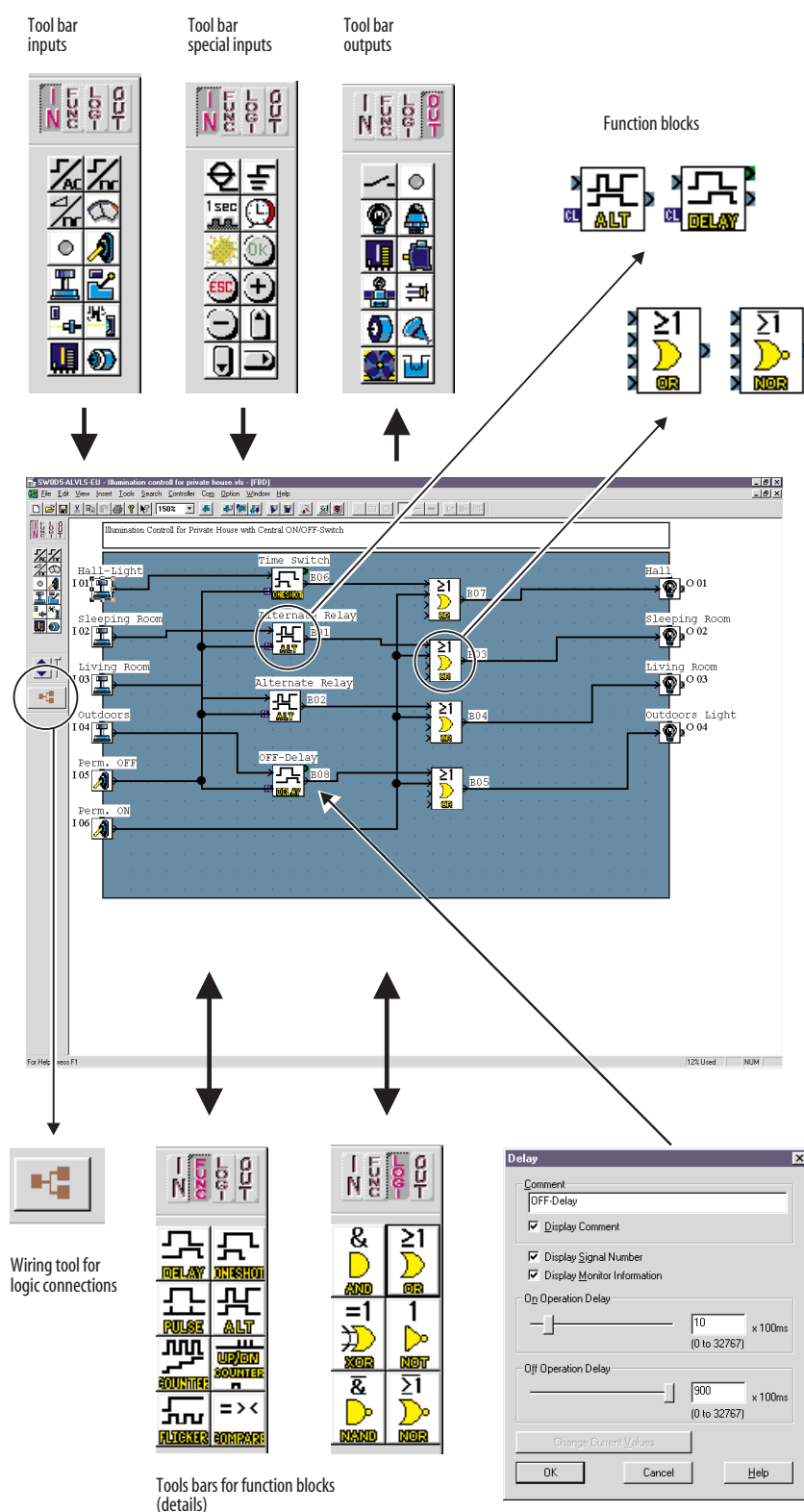
Programming the ALPHA is very easy and is done by placing the different program elements on a graphical programming environment: The inputs on the left, the outputs on the right, and in between the different predefined function blocks (timers, counters, real-time clock, etc.). The connections (wiring) between the inputs, function blocks, and outputs are drawn graphically by mouse click to build the logic. Programs with up to 64 function blocks (or 1500 bytes) can be created, where each single function in a program can be used as many times as desired. By a double-click on the respective function block the parameters of the function block are set (e.g. relay switching times, counter presets).

A complete documentation of the program can be created directly from AL-PCS/WIN.

Extent of delivery for AL-PCS/WIN and AL-PCS/WIN-DEMO*

- CD-ROM with programming software AL-PCS/WIN (5 languages: D, F, GB, I, E)
- Product presentation of the ALPHA controller in different languages
- Complete documentation of the ALPHA controller in different languages (PDF files)
- Sample programs for all instructions of the ALPHA with comments in different languages
- Sample program with concrete program applications and comments in different languages.

* The AL-PCS/WIN-DEMO version is not capable of transferring a written program from the PC to the ALPHA controller (otherwise same range of functions).



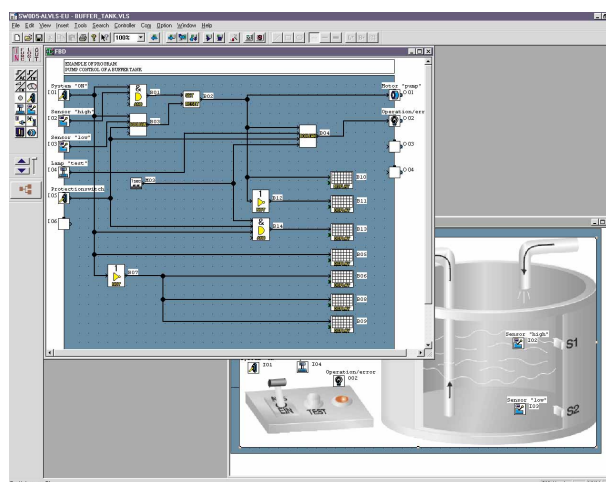
Special Features of the Programming Software AL-PCS/WIN

Program simulation

A particular convenient advantage is the supported program simulation without a connected ALPHA controller. For this purpose the application program is simulated in the simulation module of the AL-PCS/WIN software.

By a mouse click, for example, inputs can be enabled and the status of the function blocks and the processes in the program are displayed graphically.

The simulation reduces the programming effort considerably - especially the programming of malfunctions is significantly minimized. A program can be tested locally separated from the hardware without endangering the hardware.

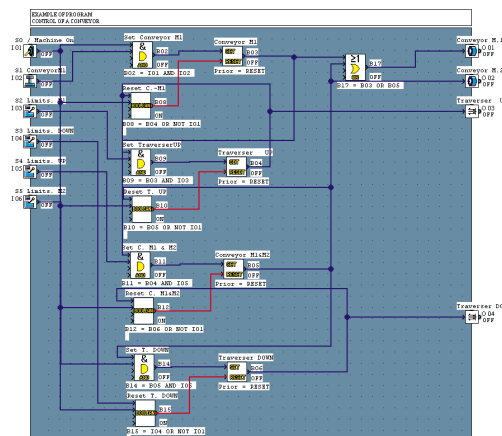


Monitor function

By means of the AL-PCS/WIN function "Monitor" the program execution can be monitored online on a PC (with connected ALPHA controller) under real conditions.

In this operation mode the real status of the inputs/outputs and function blocks is displayed during the program execution.

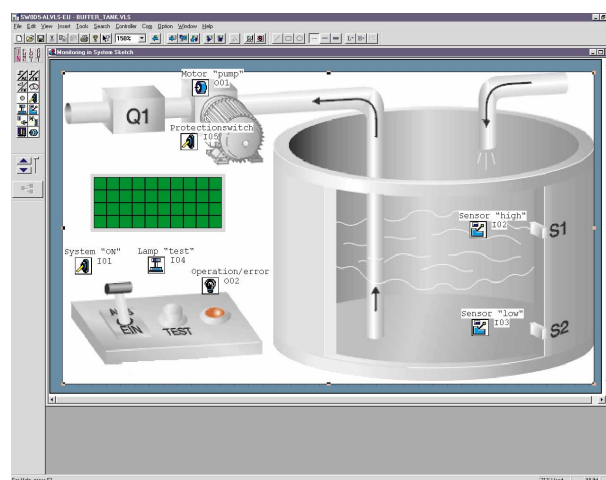
The monitoring function reduces programming times and the programming costs because failure diagnosis and debugging are speeded up significantly.



Process visualization

By means of the "System Sketch" window the AL-PCS/WIN software provides a simple process visualization as standard.

In a window separated from the programming environment graphical elements and elements from the program (inputs, outputs, function blocks, etc.) or other MS Windows applications can be copied and configured. By this a graphical simulation and supervision of the program can be performed without accessing the programming environment. This enables an easy setup and maintenance of your application.



Data	AL-PCS/WIN-EU	AL-PCS/WIN-EU-DEMO
Version	Full featured version	Demo version (no communication with ALPHA controller)
Language	5 languages (German/English/French/Italian/Spanish)	5 languages (German/English/French/Italian/Spanish)
Extent of supply	CD-ROM including program and extensive documentation	CD-ROM including program and extensive documentation
Order information	Art. no. 125687	124364

Function Blocks of the Programming Software AL-PCS/WIN

Function	Symbol	Description	Function	Symbol	Description	Function	Symbol	Description
AND		AND connection with up to 4 signals, vacant inputs are processed as ON.	OR		OR connection with up to 4 signals, vacant inputs are processed as OFF.	XOR		EXCLUSIVE OR connection with 2 signals
NAND		NOT AND connection with up to 4 signals, vacant inputs are processed as OFF.	NOR		NOT OR connection with up to 4 signals, vacant inputs are processed as ON.	NOT		Inverts a signal. Outputs become ON, when inputs are OFF and vice versa.
BOOLEAN		User programmable complex boolean connections with up to 4 signals, bracket notation and simulation option.	SET/RESET		Sets (ON) or resets (OFF) an output with priority detection.	DELAY		Time delay for leading or trailing edge (or both) of a signal.
ONE SHOT		One shot (Increases or decreases a pulse). Value range: 0.1 – 6553.5 s	PULSE		Generates a pulse for one cycle at leading or trailing edge of an input signal.	FLICKER		Symmetric or asymmetric pulse generator with defineable number of pulses and total length. Value range: 0.1 – 3276.7 s
ALT		Alternating pulse relay (alternating self retaining ON/OFF status of the output).	COUNTER		Up counter with count and RESET input; generates an output signal when the setting value is exceeded. Value range: 0 – 32767	UP/DOWN COUNTER		Up/down counter with 2 inputs and 2 reset inputs; output signal when exceeding the setting value. Value range: -32767 – 32767
COMPARE		Compares two values (less than, greater than, less than or equal, greater than or equal, not equal).	TIME SWITCH		Switches an output ON or OFF depending on date and time of the real-time clock (weekly or date programming).	GAIN		Increases signal (for analog value processing).
DISPLAY		Displays messages or data on the LC display.	ZONE COMPARE		Sets or resets an output, when a value is within a specified range. Value range: -32767 – 32767	SCHMITT TRIGGER		Sets output ON when reaching an upper limit value. Resets to OFF when reaching a lower limit value (or vice versa).
HOURLY METER		Running time meter counts hours and minutes; with output signal when exceeding the setting value. Value range: up to 32767 h and 59"						



HEADQUARTERS		EUROPAN REPRESENTATIVES		EUROPAN REPRESENTATIVES		MIDDLE EAST REPRESENTATIVES	
MITSUBISHI ELECTRIC EUROPE B.V. German Branch Gothaer Straße 8 D-40880 Ratingen Phone: +49 (0) 21 02 / 486-0 Fax: +49 (0) 21 02 / 4 86-1 12 e mail: megfamail@meg.mee.com	EUROPE	GEVA GmbH Wiener Straße 89 A-2500 Baden Phone: +43 (0) 2252 / 85 55 20 Fax: +43 (0) 2252 / 488 60 e mail: office@geva.co.at	AUSTRIA	Beijer Electronics AS Teglervksveien 1 N-3002 Drammen Phone: +47 (0) 32 / 24 30 00 Fax: +47 (0) 32 / 84 85 77 e mail: info@beijer.no	NORWAY	TEXEL Electronics LTD. Rehov Hamerkava 19 IL-42160 Netanya Phone: +972 (0) 9 / 863 08 91 Fax: +972 (0) 9 / 885 24 30 e mail: texel_me@netvision.net.il	ISRAEL
MITSUBISHI ELECTRIC EUROPE B.V. FRENCH BRANCH 25, Boulevard des Bouvets F-92741 Nanterre Cedex Phone: +33 1 55 68 55 68 Fax: +33 1 49 01 07 25 e mail: factoryautomation@fra.mee.com	FRANCE	Getronics Industrial Automation B.V. Control Systems Pontbeeklaan 43 B-1731 Asse-Zellik Phone: +32 (0) 2 / 467 17 51 Fax: +32 (0) 2 / 467 17 45 e mail: infoautomation@getronics.com	BELGIUM	MPL Technology SP. z.o.o ul. Wroclawska 53 PL-30-011 Kraków Phone: +48 (0) 12 / 632 28 85 Fax: +48 (0) 12 / 632 47 82 e mail: krakow@mpl.com.pl	POLAND	ILAN & GAVISH LTD 24 Shenkar St., Qiryat-Arie 49513 IL-49001 Petach-Tikva Phone: +972 (0) 3 / 922 18 24 Fax: +972 (0) 3 / 972 39 24 07 61 e mail: iandg@internet-zahav.net	ISRAEL
MITSUBISHI ELECTRIC EUROPE B.V. ITALIAN BRANCH Via Paracelso 12 I-20041 Agrate Brianza (MI) Phone: +39 039 6053 1 Fax: +39 039 6053 312 e mail: factoryautomation@it.mee.com	ITALY	TELECON CO. 4, A. Ljapchev Blvd. BG-1756 Sofia Phone: +359 2 97 44 05 8 Fax: +359 2 97 44 06 1 e mail: —	BULGARIA	Sirius Trading & Services srl Bd. Ghica nr. 112, Bl. 41, Sc.2, ap. 98 RO-72235 Bucuresti 2 Phone: +40 (0) 1 / 210 55 11 Fax: +40 (0) 1 / 210 55 11 e mail: sirius_t_s@fx.ro	ROMANIA		
MITSUBISHI ELECTRIC EUROPE B.V. SPANISH BRANCH Carretera de Rubí 76-80 E-08190 Sant Cugat del Vallés Phone: +34 9 3 / 565 3131 Fax: +34 9 3 / 589 2948 e mail: industrial@sp.mee.com	SPAIN	AutoCont Control Systems s.r.o. Nemocnicni 12 CZ-702 00 Ostrava 2 Phone: +420 (0) 69 / 615 21 11 Fax: +420 (0) 69 / 615 21 12 e mail: —	CZECHIA	ACP Autocomp a.s. Chalupkova 7 SK-81109 Bratislava Phone: +421 7 52 92 22 54 Fax: +421 7 52 92 22 48 e mail: —	SLOVAKIA	MITSUBISHI ELECTRIC EUROPE B.V. 12/1 Goncharnaya St, suite 3C RUS-109240 Moscow Phone: +7 (0) 95 / 915-8624/02 Fax: +7 (0) 95 / 915-8603	RUSSIA
MITSUBISHI ELECTRIC EUROPE B.V. UK Branch Travellers Lane GB-Hatfield Herts. AL10 8 XB Phone: +44 (0) 1707 / 27 61 00 Fax: +44 (0) 1707 / 27 86 95	UK	louis poulsen Geminivej 32 DK-2670 Greve Phone: +45 (0) 43 / 95 95 95 Fax: +45 (0) 43 / 95 95 91 e mail: lpia@lpmail.com	DENMARK	INEA d.o.o. Ljubljanska 80 SI-1230 Domžale Phone: +386 (0) 1 / 721 80 00 Fax: +386 (0) 1 / 724 16 72 e mail: zoran.marinsek@inea.si	SLOVENIA	NPP Uralelektra Sverdlova 11A RUS-620027 Ekaterinburg Phone: +7 34 32 / 53 27 45 Fax: +7 34 32 / 53 24 61 E mail: elektra@etel.ru	RUSSIA
MITSUBISHI ELECTRIC CORPORATION Office Tower "Z" 14 F 8-12,1 chome, Harumi Chuo-Ku Tokyo 104-6212 Phone: +81 3 / 622 160 60 Fax: +81 3 / 622 160 75	JAPAN	UTU Elektrotehnika AS Pärnu mnt.160i EE-11317 Tallinn Phone: +372 6 / 51 72 80 Fax: +372 6 / 51 72 88 e mail: utu@utu.ee	ESTONIA	Beijer Electronics AB Postbus 426 S-20124 Malmö Phone: +46 (0) 40 / 35 86 00 Fax: +46 (0) 40 / 35 86 02 e mail: info@beijer.se	SWEDEN	JV-CSC Automation 15, M. Raskovoyi St., Floor 10, Office 1010 U-02002 Kiev Phone: +380 (4) 4 / 238 83 16 Fax: +380 (4) 4 / 238 83 17 E mail: mkl@csc-a.kiev.ua	UKRAINE
MITSUBISHI ELECTRIC AUTOMATION 500 Corporate Woods Parkway Vernon Hills, IL 60061 Phone: +1 847 / 478 21 00 Fax: +1 847 / 478 22 83	USA	Beijer Electronics OY Elannontie 5 FIN-01510 Vantaa Phone: +358 (0) 9 / 615 20 11 Fax: +358 (0) 9 / 615 20 500 e mail: info@beijer.fi	FINLAND	ECONOTEC AG Postfach 282 CH-8309 Nürensdorf Phone: +41 (0) 1 / 838 48 11 Fax: +41 (0) 1 / 838 48 12 e mail: info@econotec.ch	SWITZERLAND		
		MITSUBISHI ELECTRIC EUROPE B.V. – Irish Branch Westgate Business Park IRL-Dublin 24 Phone: +353 (0) 1 / 419 88 00 Fax: +353 (0) 1 / 419 88 90 e mail: sales.info@meuk.mee.com	IRELAND	GTS Darülaceze Cad. No. 43A KAT: 2 TR-80270 Okmeydani-Istanbul Phone: +90 (0) 212 / 320 1640 Fax: +90 (0) 212 / 320 1649 e mail: gts@turk.net	TURKEY		
		Getronics Industrial Automation B.V. Control Systems Donauweg 10 NL-1043 AJ Amsterdam Phone: +31 (0) 20 / 586 15 92 Fax: +31 (0) 20 / 586 19 27 e mail: infoautomation@getronics.com	NETHERLANDS				