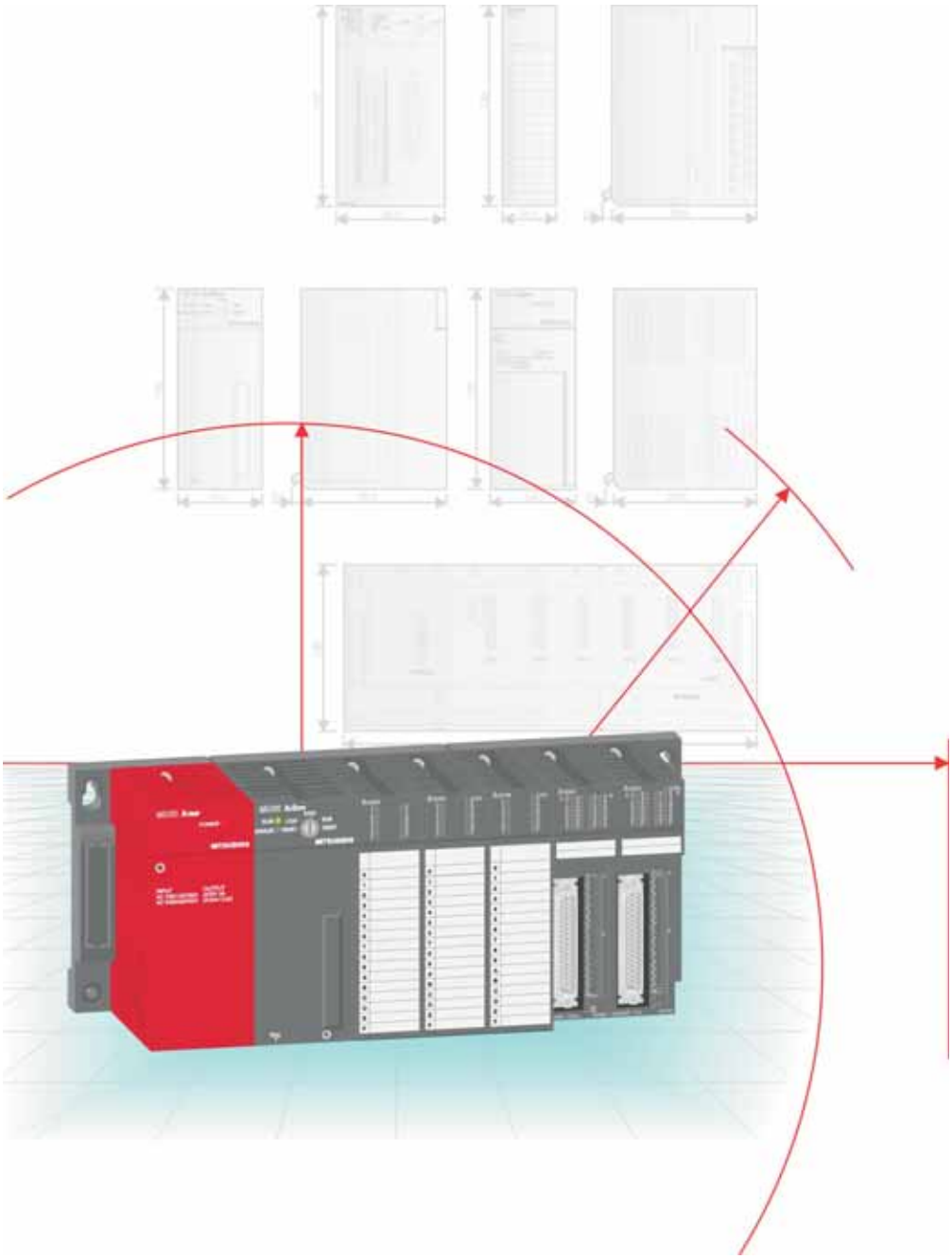
MITSUBISHI ELECTRIC

Programmable
Logic
Controllers



MELSEC
AnS
QnAS

Technical Catalogue

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2005

The MELSEC AnS/QnAS Series

Software

Version 8.0 of the GX-Developer programming software package has now been released. New functions have been added to the IEC-1131 programming software package GX IEC Developer, which is now available in version 6.0.

With MX4 SCADA a new process visualisation system is available, that can handle everything from simple installations to complex production control systems.

Further Publications within the PLC Range

System Q Technical Catalogue

Product catalogue for programmable logic controllers and accessories for the MELSEC System Q (art no. 136731)

FX1S, FX1N, FX2N, FX2NC Series Technical Catalogue

Product catalogue for programmable logic controllers and accessories for the MELSEC FX family (art. no. 68544)

HMI Technical Catalogue

Product catalogue for operator terminals, visualisation 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)

Additional Services

You will find current information on updates, alterations, new items, and technical support on MITSUBISHI ELECTRIC's web pages (www.mitsubishi-automation.com).

The products section of the MITSUBISHI home site includes various documentations of the whole product range by MITSUBISHI ELECTRIC as well as the current version of this catalogue on hand. All manuals and cataloques can be downloaded. The content is updated daily and to date is provided in German and English.

About this product catalogue

Due to the constantly growing product range, technical alteration, and new or changed characteristical features, this catalogue is updated frequently.

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 MELSEC AnS and QnAS series and the associated accessories. Only the manuals supplied with the units are relevant for installation, commissioning and handling of the units and the accessories. The information given in these documentations must be read before installation and commissioning of the units or software.

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).

MELSEC AnS/QnAS

SYSTEM DESCRIPTION

BASIC COMPONENTS

DIGITAL MODULES

SPECIAL FUNCTION MODULES

ACCESSORIES

TERMINALS AND DIMENSIONS

PROGRAMMING SYSTEMS

PROGRAMMING

APPENDIX

BASICS

The MELSEC AnS Series

Description

With the MELSEC AnS system, MITSUBISHI ELECTRIC presents its most compact modular PLC, permitting access to the world of network technology.

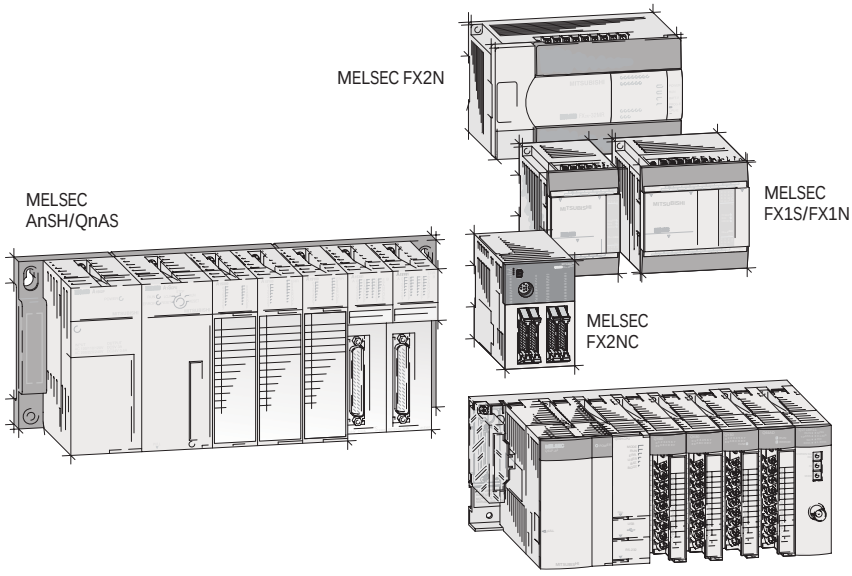
The small size and the communications capability are two important characteristics of the MELSEC AnS. Its compactness ensures that it occupies less space in the switchgear cabinet and its diverse communication facilities guarantee flexibility and openness. Expandable from 32 to 1024 inputs/outputs, this controller is particularly suitable for performing small to medium automation tasks, very fast automation also being possible with the A2ASCPU.

The individual systems can be installed in divers networks (MELSECNET, Ethernet, etc.), enabling them to communicate with one another. The number of I/O points can thus be increased several times over.
All CPU types can be combined freely with one another.

The MELSEC AnS is a member of the MELSEC PLC family, which offers compatibility across the range.

Special features

- expandable from 32 to 1024 inputs/output points
- interchangeable intelligence
- diverse communications facilities
- easy installation
- individual adaptation to existing systems
- innovative technology for future applications



Expandability and performance

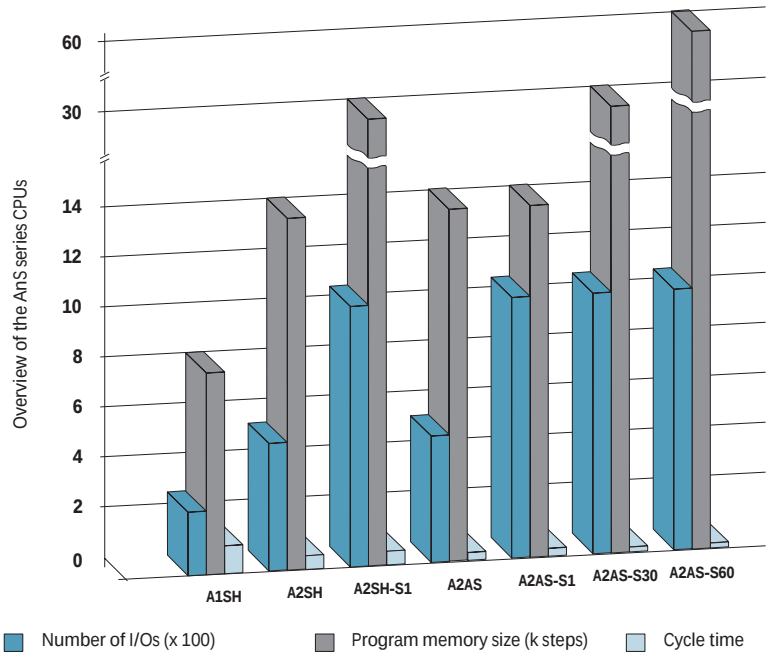
In the AnS series, simply changing the CPU ensures that the performance of the PLC grows with the application. Thus, up to 1024 input/output addresses and up to 60 k program memories can be accessed.

The AnS CPUs all have a permanently installed RAM of up to 256 kbyte in which, among other things, the PLC program can be saved. However, EPROM and EEPROM memory cassettes are also available for permanent storage.

In all CPU modules, the memory content is protected by an integrated backup battery.

The MELSEC AnS offers tailor-made performance through seven different CPUs:

- **A1SHCPU**, the standard CPU with 256 I/O points and a PLC program memory of 8 k steps
- **A2SHCPU**, the more powerful alternative with 512 I/O points and a PLC program memory of 14 k steps
- **A2SHCPU-S1**, the extended version of the A2SHCPU with 1024 I/O points and a PLC program memory of 30 k steps
- **A2ASCPU**, the most powerful CPU for realizing extremely fast automation tasks with 512 I/O points and a PLC program memory of 14 k steps
- **A2ASCPU-S1, A2ASCPU-S30/-S60** the extended alternative to the A2ASCPU for up to 1024 I/O points and a PLC program memory of 14 k steps for the A2ASCPU-S1 and 30 k or 60 k steps for the A2ASCPU-S30 and A2ASCPU-S60.
- With up to 0.15 µs per logical instruction, time-critical automation tasks can also be performed. The A2ASCPU-S30 and A2ASCPU-S60 is thus intended for very complex applications.



Equipment Features

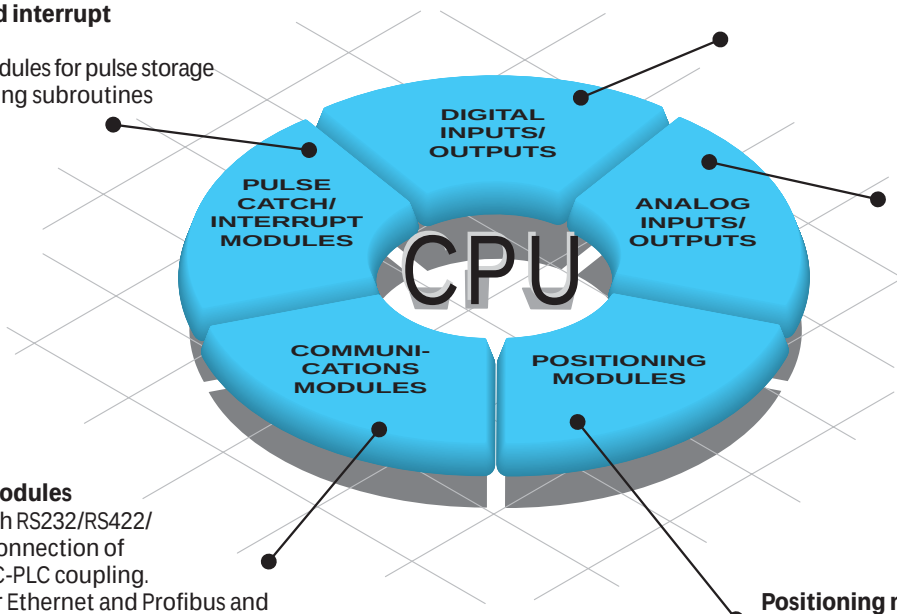
Owing to the modular concept, the AnS/QnAS series has a broad range of use with many possible applications.
The following modules are available for assembling the system:

To maximize the operational safety, all modules are isolated from the environment by means of optocouplers.

All I/O modules with screw contacts have their own removable terminal blocks which ensures easy handling during installation.

Digital input/output modules
for various signal levels with triac, relay or transistor switches

Pulse catch and interrupt modules
Digital input modules for pulse storage and for processing subroutines



Analog input/output modules
for current/voltage signals and for temperature measurement as well as temperature controlling with facility for direct connection of Pt100 resistance thermometers or thermocouplers

Communications modules
Interface modules with RS232/RS422/RS485 interface for connection of peripherals or for PLC-PLC coupling. Network modules for Ethernet and Profibus and for setting up MITSUBISHI networks. Master modules for use of local analog or digital I/O modules

You can find all network modules and accessories in the new Network Technical Catalogue.

Positioning modules
High-speed counter modules with possibility for connection of incremental shaft encoder or multiaxial positioning modules for servo and step drive

Use of digital and special function modules

The use of digital and analog modules and most special function modules is dependent only on the maximum addressable number of addresses and thus on the CPU used in each case.

With some special function modules, the use within a system is limited. These restrictions also apply to the use of modules of the MELSEC AnU series in the AnS system.

All affected modules are listed in the adjacent table.

Module types	Limitation		
AnS/QnAS series	A1SHCPU, A2SHCPU(-S1)	A2ASCPU(-S1), A2ASCPU-S30/-S60	Q2ASCPU(-S1), Q2ASHCPU(-S1)
A1SJ71UC24-R2 (PRF/R4), A1SJ71E71N-B2, A1SJ71E71N-B5, A1SJ71E71N3-T A1SD51S	up to 2 modules per system	up to 6 modules per system	up to 6 modules per system
A1SI61	only 1 module per system	only 1 module per system	only 1 module per system
A1SJ71AT21B, A1SJ71AR21	only 1 module per system	up to 2 modules per system *	up to 2 modules per system *
A1SJ71BR11, A1SJ71LP21GE, A1SJ71LP21	only 1 module per system	up to 4 modules per system *	not possible
A1SJ71QBR11, A1SJ71QLP21	not possible	not possible	up to 4 modules per system *
A1SJ71QE71N-B2, A1SJ71QE71N-B5, A1SJ71QE71N3-T,	not possible	not possible	
A1SJ71QC24N(-R2)	not possible	not possible	no limit

* In this case the total number of modules is limited to 4 (e.g. 2 x AJ71AT21B + 2 x A1SJ71BR11)

BASICS

The MELSEC QnAS Series

Description

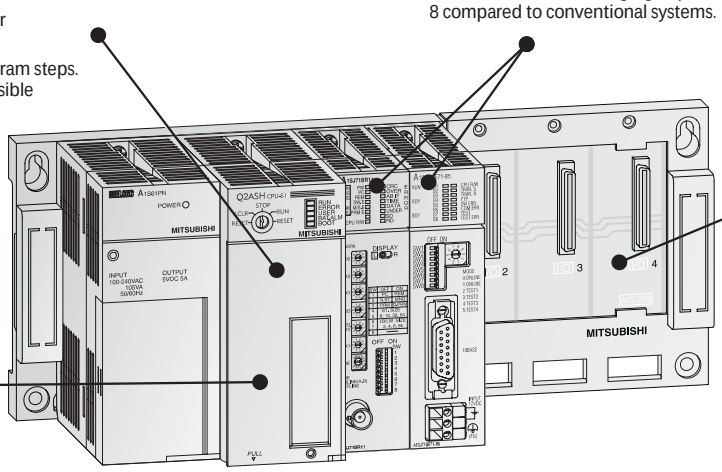
The MELSEC QnAS(H) series is an extremely compact and very powerful new generation of controllers from MITSUBISHI ELECTRIC. Outstanding features include very fast program cycles, ample memory for large amounts of data (approx. 1 mega words) and significantly increased network access speed. These controllers are ideal for medium-scale applications requiring up to 1024 centralised I/Os in the switchgear cabinet or up to 8192 remote I/Os.

The QnAS series is also hardware-compatible to the AnS series – this means you can continue to use your modules from this series.

QnAS(H)CPU
Ideal for time-critical applications with execution speeds as fast as 0.075 µs per logical instruction.

Integrated memory for up to 60 k program steps. Many additional functions are also possible without additional instruction

A1SJ71QBR11, A1SJ71QE71N-B2/B5, A1SJ71QE71N3-T
QnAS series networks support high-speed access to CPU data during the END instruction, bringing a speed increase of up to a factor of 8 compared to conventional systems.



A1S38HB
High-speed base unit that significantly increases the overall performance of the entire system.
If high-speed access to the QnAS series CPU via the network is not necessary, a standard base unit can be used.

PCMCIA RAM/EEPROM
One slot for PCMCIA RAM/ EEPROM cards

Expansion capability and performance

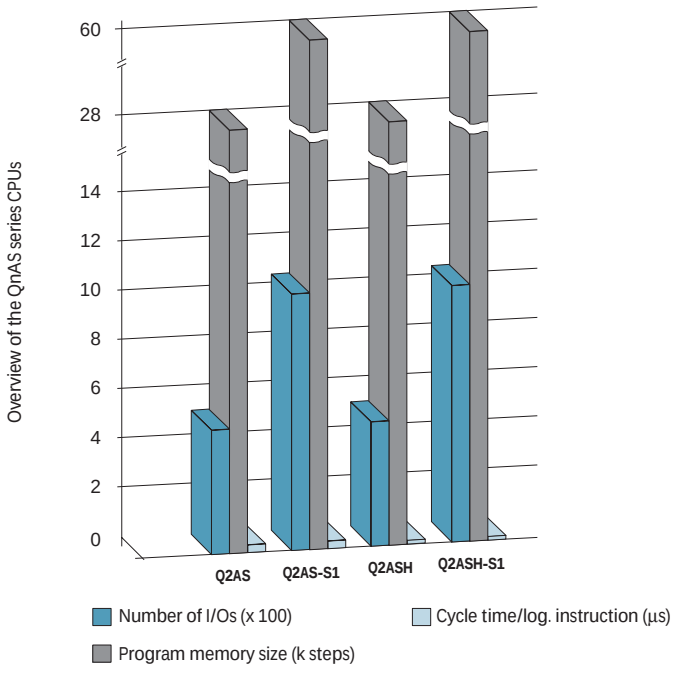
As with other Mitsubishi controllers the power of the QnAS series grows with your application – you simply replace the CPU. The system can be upgraded to a maximum capacity of 1024 centralised I/Os or 8192 remote I/Os.

The integrated memory of 240 KB RAM can easily be expanded by up to 2 MB at any time just by slotting in a PCMCIA RAM card.

PCMCIA EEPROM cards are also available for permanent storage of your controller programs. An integrated battery protects the data in the CPU's internal RAM against power failures.

The QnAS(H) series includes four different CPU models for tailor-made configurations:

- **Q2ASCPU** 28 k steps program memory, program cycle period 0.15 µs/logical instruction, 512 I/O points on the system rack.
- **Q2ASCPU-S1** 60 k steps program memory, program cycle period 0.15 µs/logical instruction, 1024 I/O points on the base unit.
- **Q2ASHCPU** 28 k steps program memory, program cycle period 0.075 µs/logical instruction, 512 I/O points on the base unit.
- **Q2ASHCPU-S1** 60 k steps program memory, program cycle period 0.075 µs/logical instruction, 1024 I/O points on the base unit.

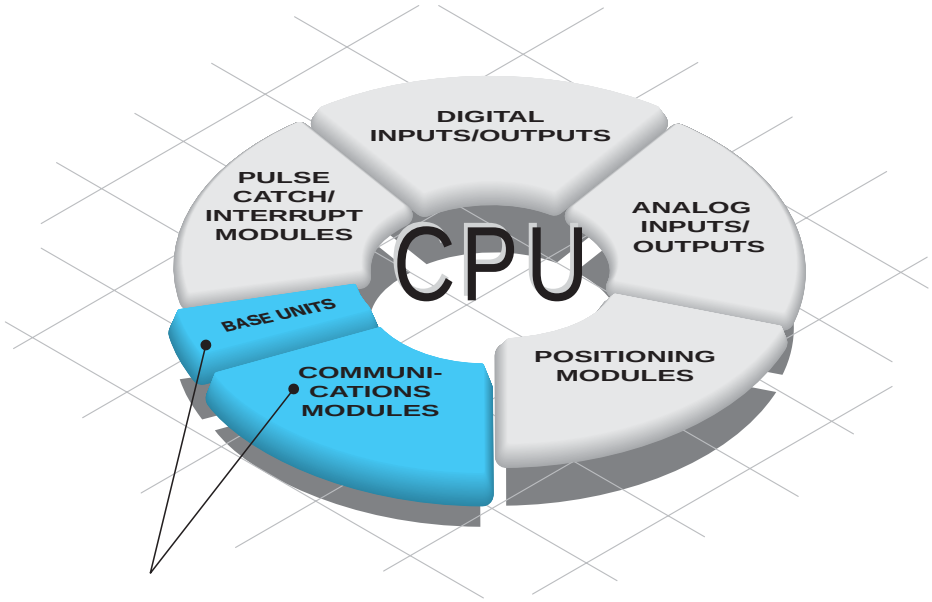


Equipment Features

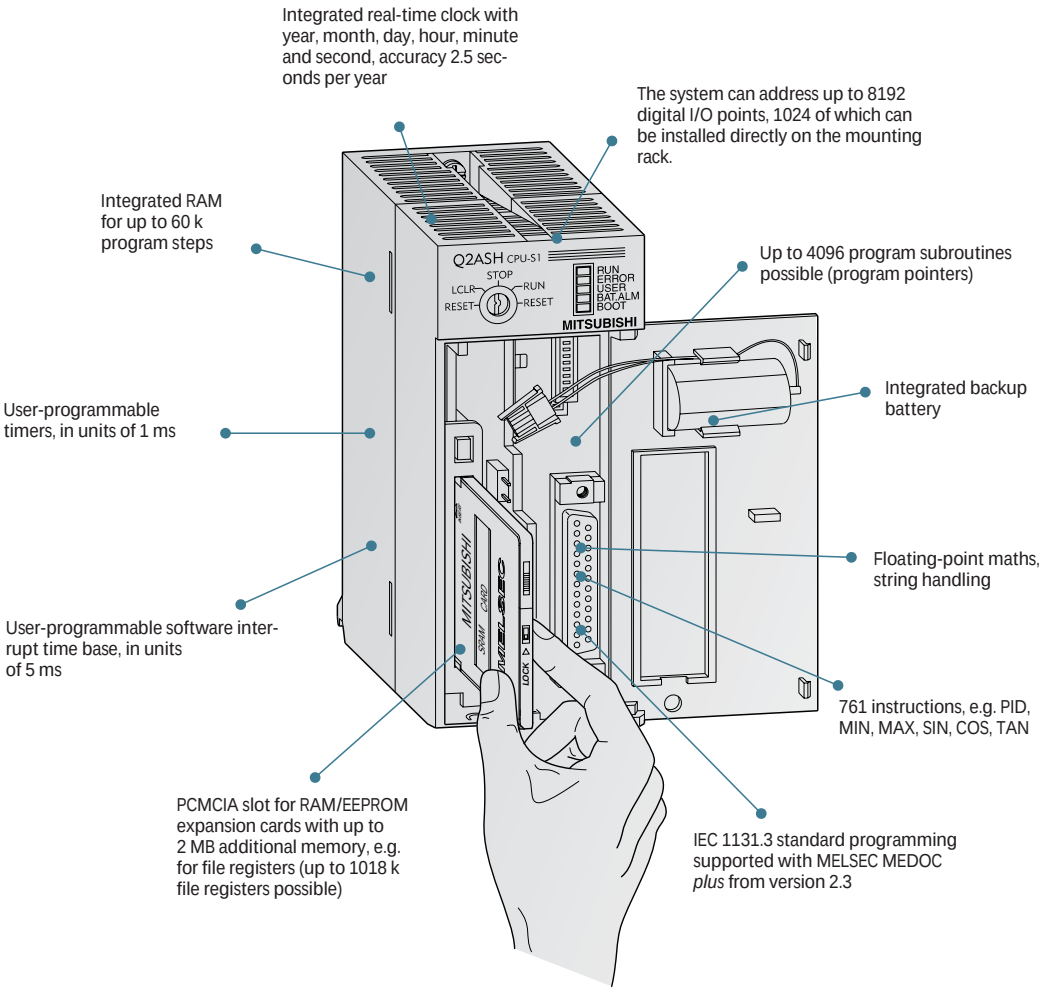
QnAS highlights

High program execution speed and extremely fast network access were top priorities in the development of this new generation of controllers. At the same time, our engineers also took utmost care to maintain full compatibility to the existing A1S hardware to protect our users investment in their existing systems.

The QnAS CPU's high-speed network access features require the A1S38HB high-speed base unit in combination with the appropriate network card. All conventional I/O modules (both analog and digital) and positioning modules can be used on the high-speed base unit.



"High-speed" components for high-speed processing



BASICS

Configuration

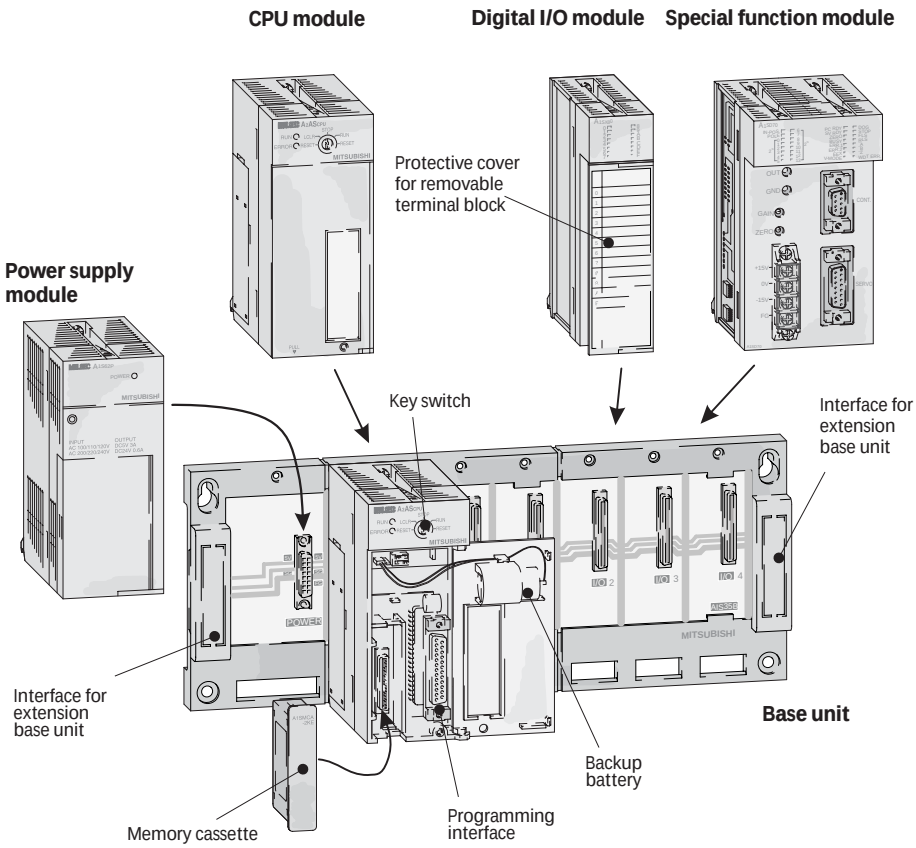
System structure

The CPU and modules are held in a base unit which has an internal bus connection for communication between the individual modules and the CPU. The power supply module which supplies the voltage for the entire system is also installed on this base unit.

The main base units are available in 4 different versions with 2 to 8 module slots. Each base unit can be supplemented by means of an extension base unit, providing additional slots.

If you wish to keep open the option of subsequent extension of your PLC or if you have free slots on your main base unit, you can insert dummy modules here. They serve to protect the free slots from soiling or from mechanical effects but can also be used for reserving I/O points.

For cabling larger systems and machines - e.g. in a modular design - the use of remote I/O modules offers additional communications facilities. These modules are connected by means of a shielded two-wire cable.



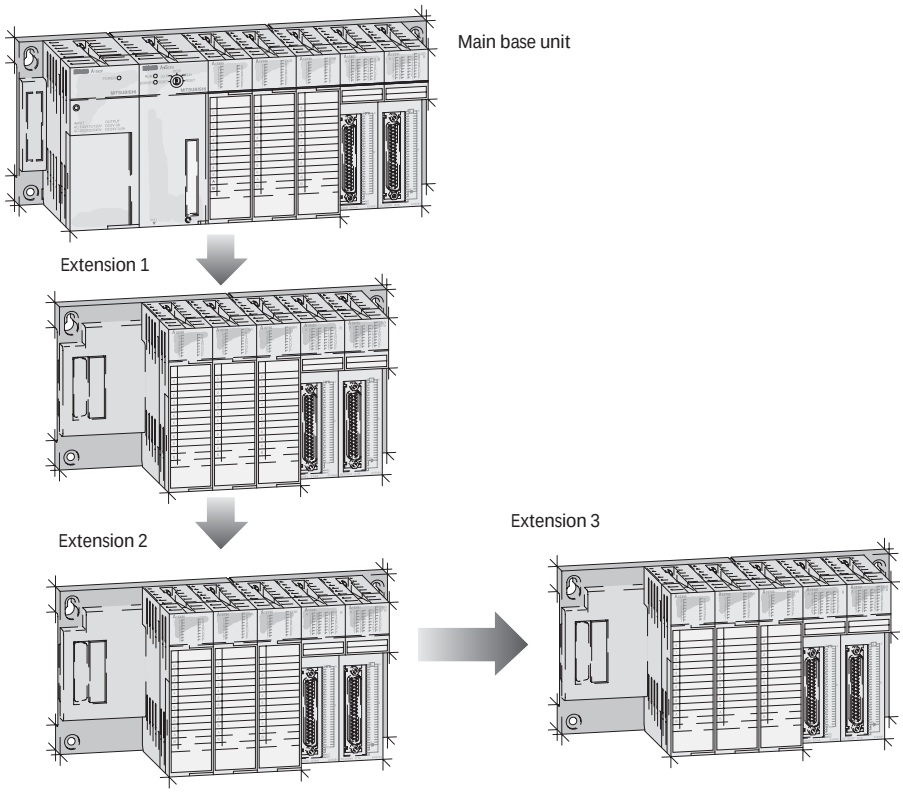
Extension

The main base unit and extension base units are simply connected to one another by extension cables. These connecting cables also supply the extension base units with the operating voltage of 5 V DC.

Up to three extension base units can be connected to a main base unit. The extension may be in the horizontal or vertical direction.

When choosing the power supply module, the total power consumption of the I/O modules, of the special function modules and of the peripherals must be taken into account. If necessary, an extension base unit with a further power supply module should be used.

Base units of the MELSEC AnA/AnU series can also be combined with the AnS series using a special cable.

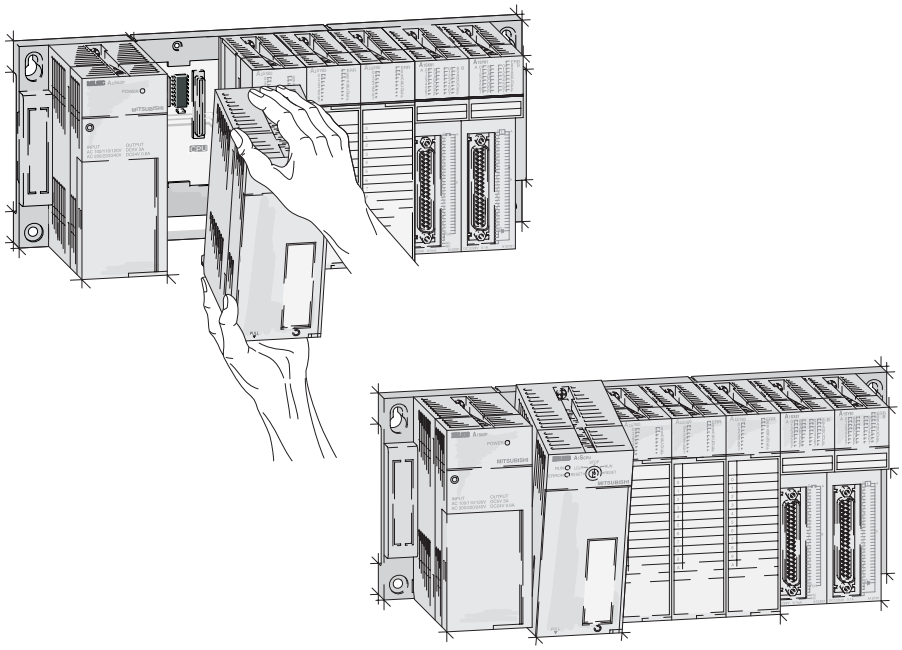


Handling

Mounting the modules

The modules are easily mounted on the main base unit with the aid of a guide lug and a fixing screw. Installation can thus be carried out quickly and without problems.

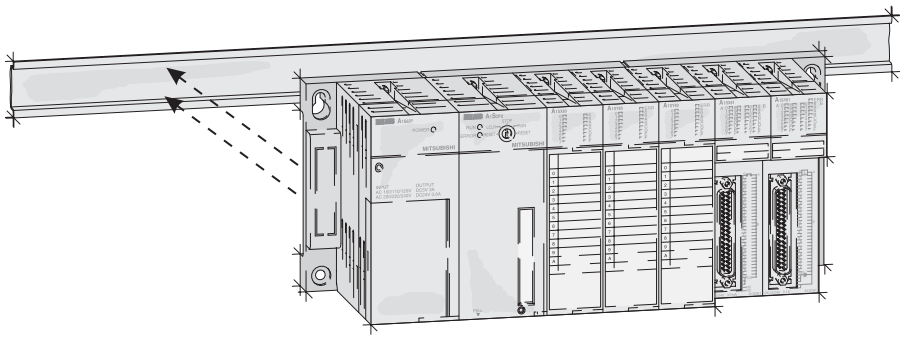
If it becomes necessary to change an I/O module, the screw terminal block can be removed beforehand. Thus, it is not necessary to disconnect the entire cabling but only 2 screws.



Mounting the base unit

The base unit can be mounted on a DIN rail or by conventional screw attachments.

The individual base units can be mounted either side by side or up to 6 m apart.



General specifications

General Specifications	Data
Ambient temperature	0 – +55 °C
Storage temperature	-20 – +75 °C
Ambient relative humidity	max. 90 % (non-condensing)
Protection	IP 20
Noise durability	1500 Vpp with noise generator; 1 µs at 25 – 60 Hz
Insulation withstand voltage	AC 1500 V, 1 min.
Shock resistance	10 G (3 times each in 3 directions)
Vibration resistance	2 G: resistant to vibrations from 10 – 55 Hz for 2 hours along all 3 axes; 0,5 G for DIN rail mounting
Insulation resistance	>5 MΩ (500 V DC)
Ground	Class 3
Environment	Avoid environments containing corrosive gases, install in a dust-free location.
Certifications ①	UL / CSA / CE / DNV / RINA / LR

① Approvals for MELSEC AnS series and CE certifications for MELSEC QnAS series as described on the following pages.

MELSEC Networks

TCP/IP ETHERNET

Ready for immediate operation with the worldwide standard TCP/IP protocol. A PC connected to the Ethernet has full access to all PLCs in the MELSECNET, all the way down to the I/Os on the production level.

MELSECNET/10

Low-cost cabling, brilliantly simple set-up and maximum availability thanks to redundancy and Floating Master. The maximum coverage is up to 30 km.

CC-Link

The network for the control and I/O level comprises capabilities like real-time processing and distributed intelligence. Modules of third party manufacturers can be integrated.

MELSEC FX Peer-to-Peer

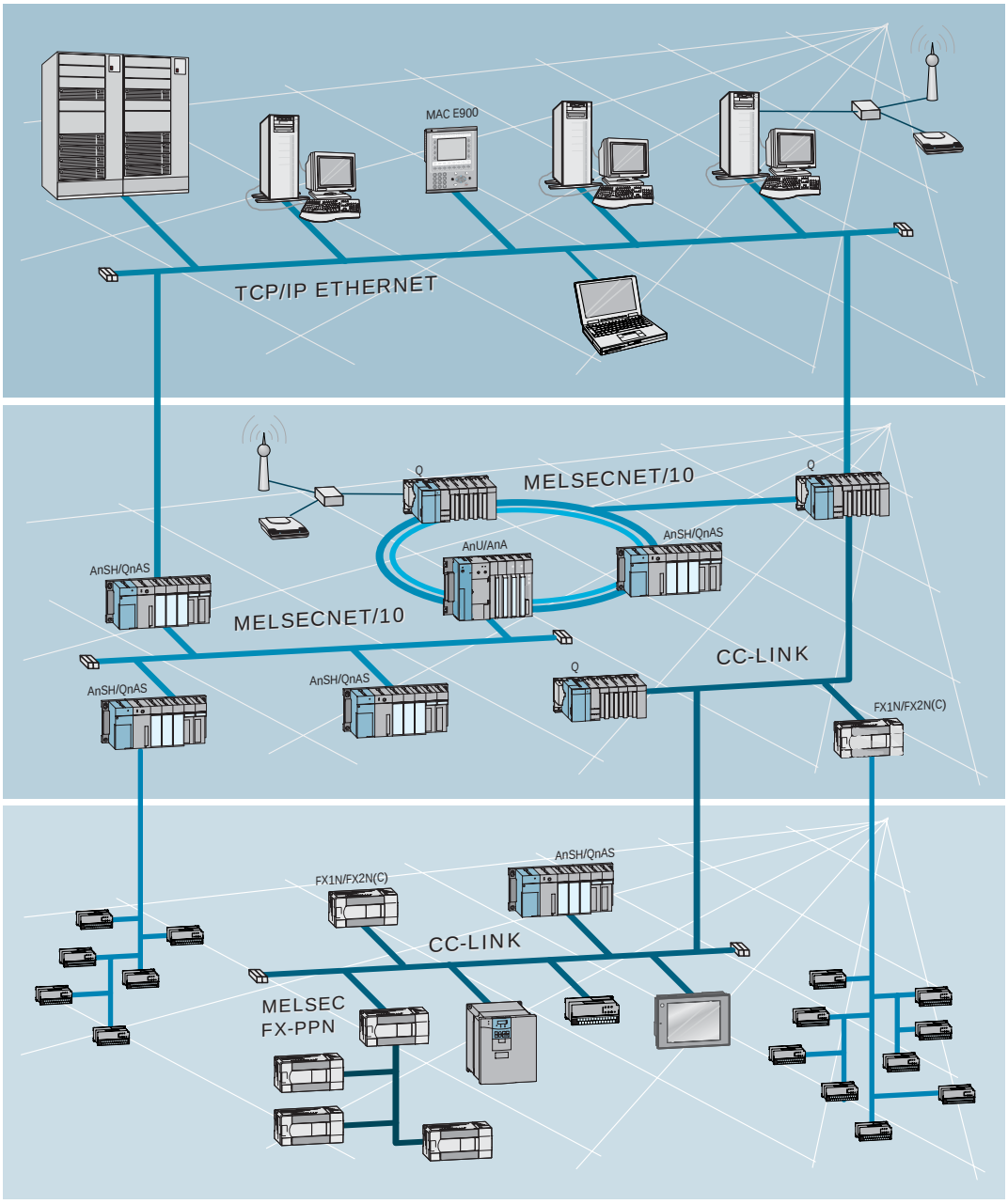
The PPN construction enables a network for up to 8 FX2N controllers as clients. A standard twisted-pair cable can be used as the communications media.

Please refer to the new Networks Technical Catalogue for the network modules and accessories for the AnS/QnAS series. There you can find further information for the wide network product range of Mitsubishi Electric.

COMMAND LEVEL
TCP/IP ETHERNET

CONTROL LEVEL
CC-Link
MELSECNET/10

PRODUCTION LEVEL
CC-Link
MELSEC FX-PPN



Open Networks

MAP 3.0 ETHERNET
Interdepartmental data exchange between the command and production levels using a non-proprietary protocol with short throughput times.

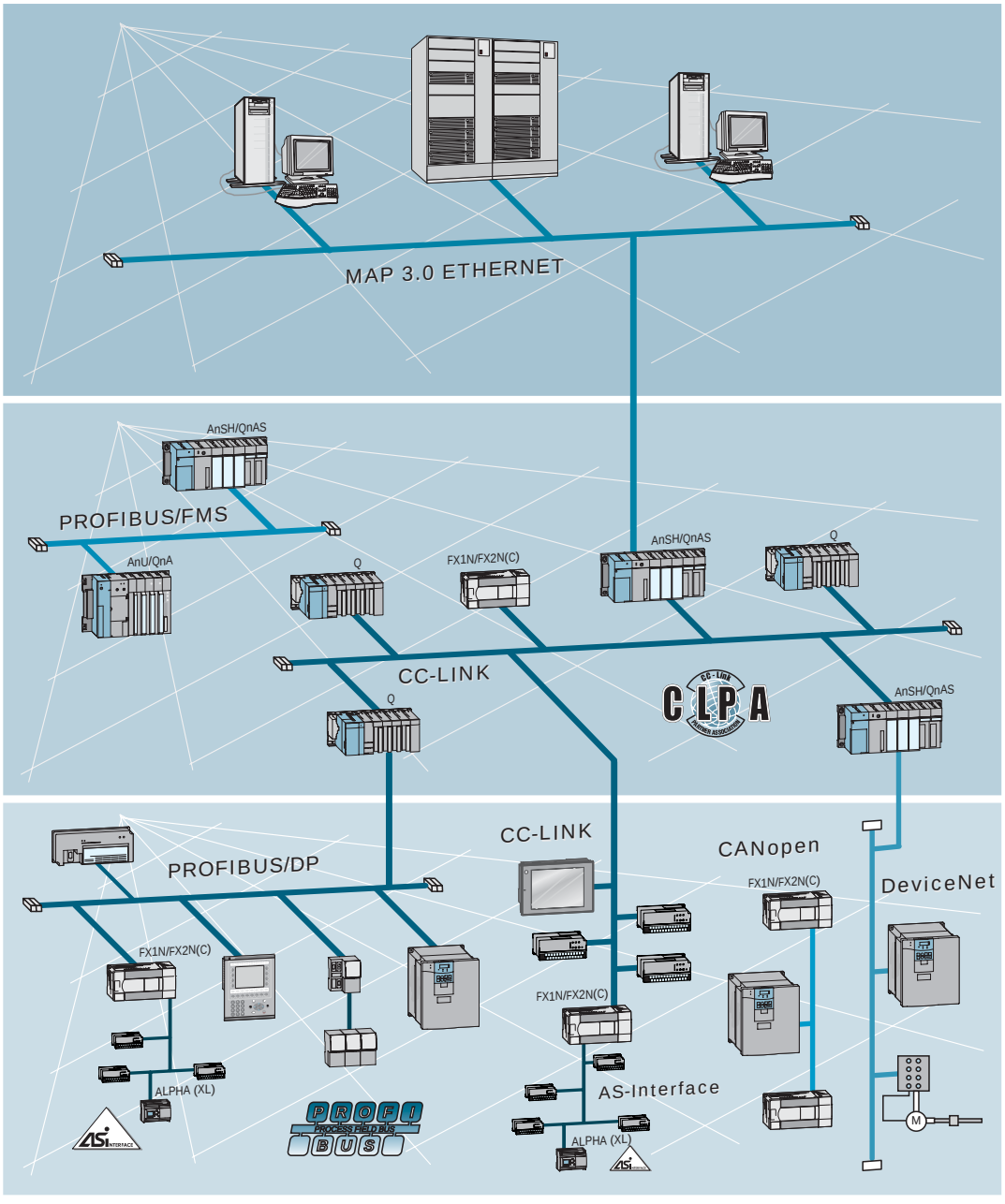
CC-Link
The new open network for the control and I/O level. Sensors and actuators from different manufacturers can be connected. Up to 24 station can be integrated.

Profibus/FMS
Communication between equipment from different manufacturers within a single plant. Automatic data exchange with MELSEC networks.

Profibus/DP
Enables quick and simple connection of sensors and actuators from different manufacturers to MELSEC PLCs, with data transfer rates of up to 12 Mbaud.

DeviceNet
Cost-effective CAN-based network communications. Fault-resistant network structure where components of different manufacturers can be integrated quickly and easily.

AS Interface
International standard for the lowest field bus level. Connection of conventionel sensors and actuators with twisted pair cable.

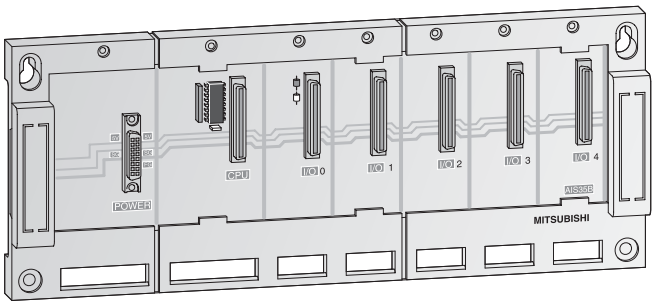


COMMAND LEVEL
MAP 3.0 ETHERNET

CONTROL LEVEL
Profibus FMS
CC-Link

PRODUCTION LEVEL
Profibus DP
Device Net
AS-Interface
CC-Link
CAN open

MELSEC AnS/QnAS Main Base Units



The main base unit is used for holding and coupling CPU, power supply unit, input modules, output modules and special function modules.

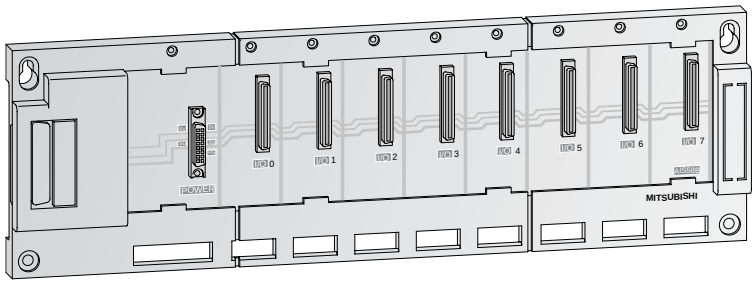
Special features:

- The modules are automatically addressed. In general, it is assumed that base units with 8 slots will be used. Dummy slots or missing slots (in the case of base units with less than 8 slots) are assigned to 16 addresses. The automatic addressing can be changed by means of the function "I/O assignment".
- The units are mounted by means of screws or on a profiled rail with an integrated adapter.

Specifications		A1S32B-E	A1S33B-E	A1S35B-E	A1S38B-E	A1S38HB-EU
I/O modules		2	3	5	8	8
Installation		All base units possess an installation hole ∅ 6 mm and M5 screws. *				
Weight	kg	0.52	0.65	0.75	0.97	1.0
Dimensions (W x H x D)	mm	220 x 130 x 28	255 x 130 x 28	325 x 130 x 28	430 x 130 x 28	430 x 130 x 28
Order information	Art. no.	48370	48371	48372	48373	69663

* An adapter is integrated for mounting on a DIN rail.

MELSEC AnS/QnAS Extension Base Units



The extension base units are connected to the main base unit by means of assembled bus cables. Thus, an AnS/QnAS system can be expanded to 32 I/O modules. Extension base units with or without their own power supply module are available.

Special features:

- A total of three extension base units can be connected to a main base unit.
- The maximum distance from the first to the last base unit is 6 m.

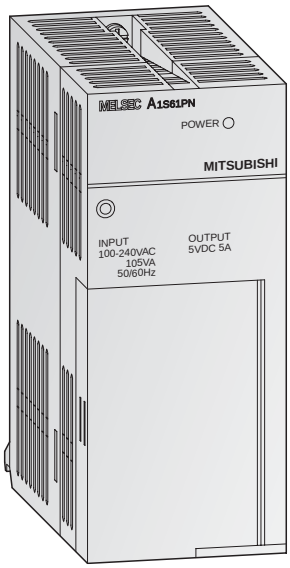
An extension base unit with a power supply module must be used in the following cases:

- If the power consumption of the inserted modules exceeds the capacity of the power supply module on the main base unit.
- If the voltage drops below 4.75 V between the main base unit and the extension base unit.

Specifications		A1S52B-S1	A1S55B-S1	A1S58B-S1	A1S65B-S1	A1S68B-S1
Power supply modules		—	—	—	1	1
I/O modules		2	5	8	5	8
Installation		All base units possess an installation hole ∅ 6 mm and M5 screws. *				
Weight	kg	0.38	0.61	0.87	0.71	0.95
Dimensions (W x H x D)	mm	155 x 130 x 28	260 x 130 x 28	365 x 130 x 28	315 x 130 x 28	420 x 130 x 28
Order information	Art. no.	39667	38073	38072	38071	38070
Accessories		Connection cables (refer to page 38)				

* An adapter is integrated for mounting on a DIN rail.

MELSEC AnS/QnAS Power Supply Modules



Power supply modules

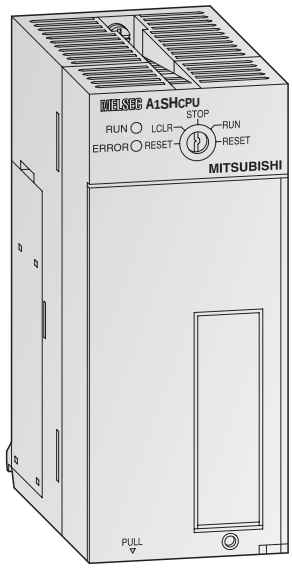
They supply the individual modules with the voltages required for operation. The choice is dependent on the power consumption of the individual modules.

Special features:

- The readiness for operation is indicated by a red LED.
- For example, controllers can be supplied by means of additional 24 V DC output (A1S62PN).
- The power supply modules A1S61PN and A1S62PN can be used world wide because they support the wide input range from 100 to 240 V AC at 50/60 Hz.

Specifications			A1S61PN	A1S62PN	A1S63P
Input voltage	(+10%, -15%)	V AC	100 – 240	100 – 240	—
	(+30%, -35%)	V DC	—	—	24
Input frequency		Hz	50 / 60 (±5 %)	50 / 60 (±5 %)	—
Inrush current			20 A within 8 ms	20 A within 8 ms	81 A within 8 ms
Max. input apparent power			105 VA	105 VA	41 W
Rated output current	5 V DC	A	5	3	5
	24 V DC ±10 %	A	—	0.6	—
Overcurrent protection	5 V DC	A	≥ 5.5	≥ 3.3	≥ 5.5
	24 V DC	A	—	≥ 0.66	—
Overvoltage protection	5 V DC	V	5.5 – 6.5	5.5 – 6.5	5.5 – 6.5
	24 V DC	V	—	—	—
Efficiency			≥ 65 %	≥ 65 %	≥ 65 %
Insulation withstand voltage	between primary and 5 V DC		2830 V AC, 1 min.	2830 V AC, 1 min.	500 V AC, 1 min.
	between primary and 24 V DC		—	2830 V AC, 1 min.	—
Max. compensation time at power failure		ms	20	20	1
Power indicator			All modules possess a power LED display.		
Terminal screw size			All modules possess terminal screw size M 3.5 x 7.		
Applicable wire size			AWG 18 – 14	AWG 18 – 14	AWG 16 – 22
Weight		kg	0.8	0.8	0.5
Dimensions (W x H x D)		mm	54.5 x 130 x 93.6	54.5 x 130 x 93.6	54.5 x 130 x 93.6
Order information		Art. no.	65051	65052	29536

MELSEC AnS CPU Modules



A1SHCPU, A2SHCPU(-S1)

7 different CPUs with graded performance are available for the MELSEC AnS. All versions are upwardly compatible. Thus, the MELSEC AnS can grow with the application if the CPU is changed.

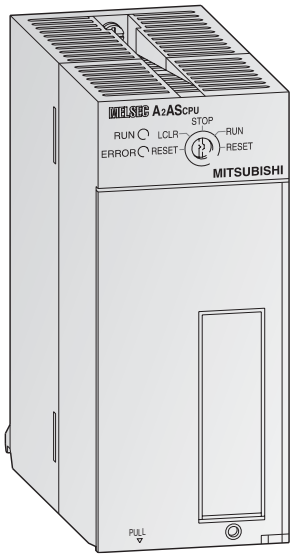
Special features:

- Integrated RAM as standard feature for storing the PLC program and data
- Integrated backup battery for backing up the RAM and definable PLC operands
- Nonvolatile EPROM and EEPROM memories can be inserted as options
- Integrated programming interface in the form of a differential interface (RS422)
- Processing of the inputs and outputs in direct mode or as refresh mode

Specifications			A1SHCPU	A2SHCPU	A2SHCPU-S1
I/O points (internal)			256	512	1024
Total I/O points (with remote I/O units)			2048	2048	2048
CPU self-diagnostic functions			CPU error detection, Watch Dog, battery error detection, memory error detection, program check, power supply error detection, fuse error detection		
Battery buffer			All modules are fitted with a lithium-battery with a life expectancy of 5 years.		
Memory type			RAM, EPROM, EEPROM	RAM, EPROM, EEPROM	RAM, EPROM, EEPROM
Program capacity ①	overall	kByte	64	64	192
	max. for PLC program		8 k steps	14 k steps	30 k steps
	max. for internal microcomputer program	kByte	14	14	30
Cycle time			0.333 µs/log. instruction	0.25 µs/log. instruction	0.25 µs/log. instruction
Timer (T)			256	256	256
Counter (C)			256	256	256
Internal / special relay (M)			2048 / 256	2048 / 256	2048 / 256
Data register / special register (D)			1024 / 256	1024 / 256	1024 / 256
File register (R) ②			Max. 8192	Max. 8192	Max. 8192
Interrupt pointer (I)			32	32	32
Pointer (P)			256	256	256
Annunciator (F)			256	256	256
Accumulator (A)			2	2	2
Index register (V, Z)			2	2	2
Link relay (B) / link register (W)			1024 / 1024	1024 / 1024	1024 / 1024
Comments ②			Max. 4032	Max. 4032	Max. 4032
Instructions			261	261	261
Internal power consumption (5 V DC)		mA	300	400	400
Max. compensation time at power failure		ms	20	20	20
Weight		kg	0.33	0.33	0.33
Dimensions (W x H x D)		mm	54.5 x 130 x 93.6	54.5 x 130 x 93.6	54.5 x 130 x 93.6
Order information		Art. no.	66612	66613	66611
Accessories			Memory cassettes (refer to page 40)		

① Dependent on one another
② Number dependent on the memory configuration

MELSEC AnS CPU Modules



A2ASCPU(-S1), A2ASCPU-S30/-S60

In performance, the CPU types A2AS(-S1) correspond to the A1S/A2S(-S1) types. The A2ASCPU-S30/-S60 dipose of more program capacity and shorter cycle time.

The AnAS types are also particularly suitable for applications where short PLC cycle times are required.

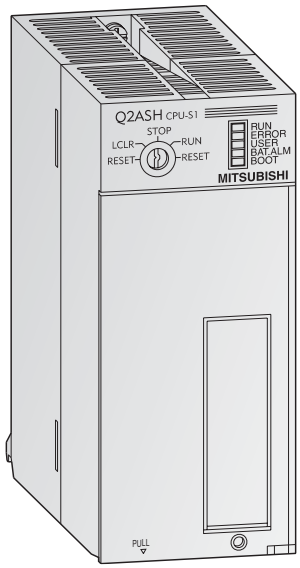
Special features:

- Processing the inputs and outputs with refresh mode
- Floating point arithmetic according to IEEE 754
- Special statements for processing PID control loops
- Mathematical functions, such as angle/exponential functions and logarithm

Specifications			A2ASCPU	A2ASCPU-S1	A2ASCPU-S30	A2ASCPU-S60
I/O points			512	1024	1024	1024
CPU self-diagnostic functions			CPU error detection, Watch Dog, battery error detection, memory error detection, program check, power supply error detection, fuse error detection			
Battery buffer			All modules are fitted with a lithium-battery with a life expectancy of 5 years.			
Memory type			RAM, EPROM, EEPROM	RAM, EPROM, EEPROM	RAM, EPROM, EEPROM	RAM, EPROM, EEPROM
Program capacity ①	overall	kByte	64	256	256	256
	max. for PLC program		14 k steps	14 k steps	30 k steps	60 k steps
Cycle time			0.2 µs/log. instruction	0.2 µs/log. instruction	0.2 µs/log. instruction	0.2 µs/log. instruction
Timer (T)			2048	2048	2048	2048
Counter (C)			1024	1024	1024	1024
Internal / special relay (M)			8192 / 256	8192 / 256	8192 / 256	8192 / 256
Data register / special register (D)			8192 / 256	8192 / 256	8192 / 256	8192 / 256
File register (R) ②			Max. 8192	Max. 8192	Max. 8192	Max. 8192
Interrupt pointer (I)			32	32	32	32
Pointer (P)			256	256	256	256
Annunciator (F)			2 048	2 048	2 048	2 048
Accumulator (A)			2	2	2	2
Index register (V, Z)			14	14	14	14
Link relay (B) / link register (W)			4096 / 4096	4096 / 4096	4096 / 4096	4096 / 4096
Comments /expanded comments ②			Max. 4032 / max. 3968	Max. 4032 / max. 3968	Max. 4032 / max. 3968	Max. 4032 / max. 3968
Instructions			463	463	463	463
Internal power consumption (5 V DC)		mA	320	320	320	320
Max. compensation time at power failure		ms	20	20	20	20
Weight		kg	0.41	0.41	0.41	0.41
Dimensions (W x H x D)		mm	54.5 x 130 x 93.6	54.5 x 130 x 93.6	54.5 x 130 x 93.6	54.5 x 130 x 93.6
Order information		Art. no.	38067	42615	56084	63884
Accessories			Memory cassettes (refer to page 40)			

① Independent; the monitor function may be limited at 100 % utilization of the program memory
② Number depends on memory configuration

MELSEC QnAS CPU Modules



Q2ASCPU(-S1), Q2ASHCPU(-S1)

These controllers make it possible to use small modular systems in complex production systems calling for short cycle times.
These CPUs can also handle really large recipes, making them ideal for use in networks.

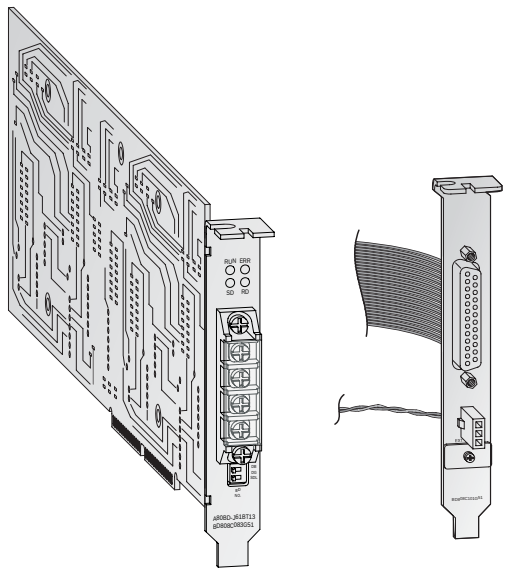
Special features:

- Processing of inputs and outputs as process I/O image (direct processing instructions are available)
- IEEE 754 floating point maths
- Dedicated instructions for PID controller circuits
- Mathematical functions including trig, exponents and logarithms
- The CPU can store an entire controller cycle program including the graphical information. This means that the entire program information is available when you download the program from the CPU to the PC.

Specifications			Q2ASCPU	Q2ASCPU-S1	Q2ASHCPU	Q2ASHCPU-S1
Max. I/O points overall			8192	8192	8192	8192
Max. I/O points on mounting rack			512	1024	512	1024
CPU self-diagnostic functions			Program plausibility, watchdog (time), battery check, memory test, CPU test, line voltage monitor, fuse test			
Battery buffer			All modules are fitted with a lithium-battery with a life expectancy of 5 years.			
Memory type			RAM, EEPROM	RAM, EEPROM	RAM, EEPROM	RAM, EEPROM
Program capacity ①	overall	kByte	112	240	112	240
	max. for PLC program		28 k steps	60 k steps	28 k steps	60 k steps
Cycle period		µs	LD: 0.20 / MOV: 0.60	LD: 0.20 / MOV: 0.60	LD: 0.075 / MOV: 0.225	LD: 0.075 / MOV: 0.225
Timers (T)			2048	2048	2048	2048
Counters (C)			1024	1024	1024	1024
Relays / special relays (M)			8192 / 2048	8192 / 2048	8192 / 2048	8192 / 2048
Data registers / special registers (D)			12288 / 2048	12288 / 2048	12288 / 2048	12288 / 2048
File registers (R) ③			1018 k words x 1 (PCMCIA memory card required. Number of file registers depends on capacity of PCMCIA memory card.)			
Interrupt pointer (I)			48	48	48	48
Pointer (P)			4096	4096	4096	4096
Annunciator (F)			2048	2048	2048	2048
Index register (Z)			16	16	16	16
Link relay (B) / link register (W)			8192 / 8192	8192 / 8192	8192 / 8192	8192 / 8192
Comments ②			Approx. 64 k (PCMCIA memory card required. Number of comments depends on capacity of PCMCIA memory card.)			
Instructions			Sequential: 39, others: 722	Sequential: 39, others: 722	Sequential: 39, others: 722	Sequential: 39, others: 722
Internal power consumption (5 V DC)		mA	300	300	700	700
Max. compensation time at power failure		ms	Depends on power supply unit used, see page 13.			
Weight		kg	0.5	0.5	0.5	0.5
Dimensions (W x H x D)		mm	54.5 x 130 x 110	54.5 x 130 x 110	54.5 x 130 x 110	54.5 x 130 x 110
Order information		Art. no.	61039	61031	61044	61045
Accessories			Memory cards (refer to page 40)			

① Independent; the monitor function may be limited at 100 % utilization of the program memory
② Number depends on memory configuration

MELSEC Slot PLC



PLC based controller

The slot PLC A80BDE-A2USH-S1 is a MELSEC CPU in the form of a PC slot-in board and is designed for the installation in a PC with the operating system MS Windows NT (from version 4.0)

Special features:

- 32 bit PCI board with 33 MHz bus clock rate
- Extension units with modules of the AnU/AnS series can be connected
- Installation software included when shipped
- Programmable by GX Developer and GX IEC Developer
- Access to devices of the CPU with the help of the programming languages Visual C++ or Visual Basic (from version 5)
- Extensive software package (see accessories in the table below)

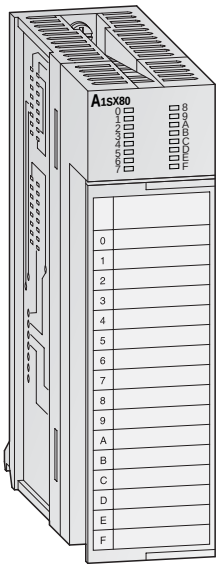
Specifications			A80BDE-A2USH-S1
Max. I/O points			8192 total / 1024 on base unit (192 I/O points 00-BF used by the system)
CPU self-diagnostic functions			Program plausibility, Watch Dog (time), battery check, memory error detection, CPU error detection, power supply error detection, fuse test
Backup battery			The board is equipped with a lithium-battery with a durability of 5 years.
Memory type			RAM
Program capacity ①	overall	kBytes	448
	max. for PLC program		30 k steps
Cycle time			0.09 µs/log. instruction
Timer (T)			2048
Counter (C)			1024
Internal relay / special relay (M)			8192 / 256
Data register / special register (D)			8192 / 256
File register (R) ②			Max. 8192
Interrupt pointer (I)			32
Pointer (P)			256
Annunciator (F)			2048
Accumulator (A)			2
Index register (V, Z)			14
Link relay (B) / link register (W)			8192 / 8192
Comments ②			Max. 4032
Instructions			462
Internal current consumption		A	Max. 2
External voltage supply			+5 V DC (+-5%)
Weight		kg	0.5
Dimensions			Standard PCI board

Order information	Art. no.	129404

Accessories	Base driver software for CPU—PC communications: SW3D5F-CSKP-E, software tool for simple data exchange between CPU and MS-EXCEL: SW3D5F-OLEX-E, user programmable visualization package: SW3D5F-XMOP-E

① Dependent on one another
② Number dependent on the memory configuration

■ MELSEC AnS/QnAS Digital Input Modules



Detection of process signals

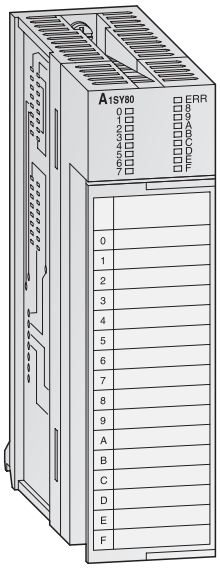
Various input modules are available for converting the digital process signals with different voltage levels into the levels required by the PLC.

Special features:

- The input points can be operated alternatively as positive or negative switching.
- Potential isolation between process and control by means of an optocoupler is a standard feature
- Indication of input status via LEDs
- Modules with 16 connection points have removable terminal blocks with screws.
- Modules with 32 connection points have a 37-pin D-sub plug (supplied with the module)
- Assembled cables are available for modules with D-sub plugs (A32CBL: 3 m).

Specifications			A1SX10EU	A1SX20EU	A1SX80	A1SX80-S1	A1SX81
Input points			16	16	16	16	32
Isolation method			Photocoupler isolation between input terminals and PC power for all modules.				
Rated input voltage			110 – 120 V AC (50 / 60 Hz)	200 – 240 V AC (50 / 60 Hz)	12 / 24 V DC	24 V DC	12 / 24 V DC
Operating voltage range			AC 85 – 132 V AC	170 – 264 V AC	—	—	—
Max. simultaneously ON			100 %	60 % (at 220 V AC)	100 % (at 26.4 V DC)	100 % (at 26.4 V DC)	60 % (at 26.4 V DC)
Inrush current			200 mA for 1 ms (at 132 V AC)	500 mA for 1 ms (at AC 264 V)	—	—	—
Rated input current		mA	7 mA (at 120 V AC, 60 Hz)	ca. 11 (at 240 V AC, 60 Hz)	ca. 3 / ca. 7	ca. 7	ca. 3 / ca. 7
ON	voltage	V	≥ AC 80	≥ AC 80	≥ DC 8	≥ DC 17	≥ DC 8
	current	mA	≥ AC 5	≥ AC 4	≥ DC 2	≥ DC 5	≥ DC 2
OFF	voltage	V	≤ AC 30	≤ AC 30	≤ DC 4	≤ DC 5	≤ DC 4
	current	mA	≤ AC 1	≤ AC 1	≤ DC 1	≤ DC 1.7	≤ DC 1
Load resistance		kΩ	ca. 21 (50 Hz) / ca. 18 (60 Hz)	ca. 27 (50 Hz) / ca. 22 (60 Hz)	ca. 3.3	ca. 3.3	ca. 3.3
Response time	OFF → ON	ms	≤ 20 (100 V AC, 60 Hz)	≤ 30 (200 V AC, 60 Hz)	≤ 10 (24 V DC)	≤ 0,4 (24 V DC)	≤ 10 (12 / 24 V DC)
	ON → OFF	ms	≤ 35 (100 V AC, 60 Hz)	≤ 55 (200 V AC, 60 Hz)	≤ 10 (24 V DC)	≤ 0,5 (24 V DC)	≤ 10 (12 / 24 V DC)
Common terminal arrangement			16	16	16	16	32
Power indicator			All modules possess a status LED per input/output.				
Connection terminal			20-point removable terminal block	20-point removable terminal block	20-point removable terminal block	20-point removable terminal block	Compact plug type 37 D-Sub
No. of occupied I/O points			16	16	16	16	32
Applicable wire size		mm^2	0.75 – 1.5	0.75 – 1.5	0.75 – 1.5	0.75 – 1.5	0.3
Internal power consumption (5 V DC)		mA	50 (all input points ON)	50 (all input points ON)	50 (all input points ON)	50 (all input points ON)	80 (all input points ON)
Weight		kg	0.21	0.23	0.2	0.2	0.24
Dimensions (W x H x D)		mm	34.5 x 130 x 93.6	34.5 x 130 x 93.6	34.5 x 130 x 93.6	34.5 x 130 x 93.6	34.5 x 130 x 93.6
Order information		Art. no.	54914	53665	24973	31536	24974
Accessories			—	—	—	—	Adapter cable (see page 38)
Spare parts			20-point removable terminal block and cover: A1STEC-S, art. no. 31248				

MELSEC AnS/QnAS Digital Output Modules



Adapted output technology

The MELSEC AnS output modules have different switching elements for adaptation to many control tasks.

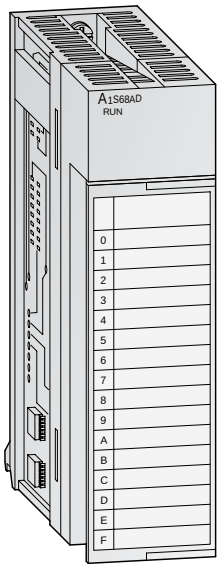
Special features:

- Output modules with relay, transistor or triac switches
- Potential isolation between process and control by means of an optocoupler is a standard feature
- Modules with potential isolation between the channels
- Modules with 16 protection points have removable terminal blocks with screws
- Modules with 32 connection points have a 37-pin D-sub plug (supplied with the module)
- Assembled cables are available for the modules with D-sub plugs (A32CBL: 3 m)

Specifications			A1SY10EU	A1SY14EU	A1SY18AEU	A1SY22①	A1SY68A	A1SY80	A1SY81
Outputs			16	12	8	16	8	16	32
Output type			Relay	Relay	Relay	Triac	Transistor	Transistor	Transistor
Common terminal arrangement		points	8	4	1	8	1	8	32
Isolation method			Photocoupler isolation between output terminals and PC power for all modules.						
Rated output voltage			24 V DC / 120 V AC	24 V DC / 240 V AC	24 V DC / 240 V AC	100 – 240 V AC	5 / 12 / 24 / 48 V DC	12 / 24 V DC	12 / 24 V DC
Operating voltage range			—	—	—	—	4.5 – 52.8 V DC	10.2 – 30 V DC	10.2 – 30 V DC
Min. switching load			5 V DC (1 mA)	5 V DC (1 mA)	5 V DC (1 mA)	24 V AC (100 mA) 100 V AC (10 mA) 240 V AC (20 mA)	—	—	—
Max. switching voltage			125 V DC / 132 V AC	125 V DC / 264 V AC	125 V DC / 264 V AC	264 V AC	—	—	—
Max. output current		A	2	2	2	0.6	2	0.8	0.1
Output current per group TYP.		A	8	8	2	2.4	2	3.2	2
Inrush current			—	—	—	20 A for 10 ms, 8 A for 100 ms	8 A for 10 ms	8 A for 10 ms	0.4 A for 10 ms
Leakage current at OFF		mA	—	—	—	1.5 mA (120 V AC), 3 mA (240 V AC)	0.1	0.1	0.1
Response time	OFF ⟶ ON	ms	10	10	10	1	3	2	2
	ON ⟶ OFF	ms	12	12	12	0.5 period +1 ms	10	2	2
Life	mechanical		Switching 20 million times			—	—	—	—
	electrical		Switching 100000 times or more			—	—	—	—
Max. switching frequency			Switching 3600 times/h			—	—	—	—
Noise suppression			—	—	—	CR (0.01µF,47Ω)	Zener diode	Zener diode	Zener diode
Fuse		A	—	—	—	5	—	5	3,2
Power indicator			All modules possess a status LED per output.						
Fuse blown indicator			—	—	—	LED	—	LED	LED
Connection terminal			20-point removable terminal block						D-Sub plug
No. of occupied I/O points			16	16	16	16	16	16	32
Applicable wire size		mm^2	0.75 – 1.5	0.75 – 1.5	0.75 – 1.5	0.75–1.5	0.75 – 1.5	0.75 – 1.5	0.3
Ext. power supply req.	voltage	mA	90	100	75	2	—	20	8
	current		24 V DC, ±10 %	24 V DC, ±10 %	24 V DC, ±10 %	100 – 240 V AC	—	12/24 V DC	12/24 V DC
Internal power consumption (5 V DC)		mA	120	120	240	270	110	120	500
Weight		kg	0.25	0.25	0.25	0.24	0.2	0.2	0.23
Dimensions (W x H x D)		mm	34.5 x 130 x 93.6	34.5 x 130 x 93.6	34.5 x 130 x 93.6	34.5 x 130 x 93.6	34.5 x 130 x 93.6	34.5 x 130 x 93.6	34.5 x 130 x 93.6
Order information		Art. no.	53666	54349	53667	24976	33199	24977	24978
Accessories			—	—	—	—	—	—	Adapter cable

① Does not comply to CE standard

MELSEC AnS/QnAS Analog Input Modules



Detection of analog process signals

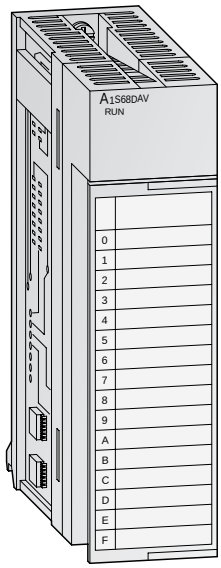
The analog input modules convert analog process signals, for example pressure, flow or fill level, linearly into digital values, which are further processed by the AnS/QnAS CPU.

Special features:

- Up to 8 channels per module (A1S68AD) and up to 256 channels per system (A2SCPU-S1/A2ASCPU-S1/-S30/-S60)
- Resolution of 0.83 mV and 3.33 µA (A1S64AD)
- Conversion time of 0.5 msec./channel (A1S68AD)
- Calculation of average value over the time or measurement cycles can be configured
- Potential isolation between process and control by means of an optocoupler is a standard feature.
- The module is provided with a removable terminal block fastened with screws.

Specifications			A1S64AD				A1S68AD		
Input points			4				8		
Analog input			-10 V / +10 V (-20 mA / +20 mA)				-10 V / +10 V (0 mA / +20 mA)		
Resolution			16 bits binary (incl. sign)				16 bits binary (incl. sign)		
Load resistance	voltage	MΩ	1				1		
	current	Ω	250				250		
Max. input	voltage	V	±15				±35		
	current	mA	±30				±30		
I/O characteristics			**Analog input**		**Digital output**			**Analog input**		**Digital output**
			Voltage	Current	1/4000	1/8000	1/12000	Voltage	Current	
			+10 V +5 V 0 V -5 V -10 V	+20 mA 0 mA - 20 mA	4000 2000 0 -2000 -4000	8000 4000 0 -4000 -8000	12000 6000 0 -6000 -12000	0 – +10 V -10 – +10 V 0 – +5 V 1 – +5 V	0 – 20 mA 4 – 20 mA	0 – +4000 -2000 – +2000 0 – +4000 0 – +4000
Max. resolution	resolution				1/4 000	1/8000	1/12000			
	voltage input				2.5 mV	1.25 mV	0.83 mV	0 – +10 V -10 – +10 V 0 – +5 V 1 – +5 V		2.5 mV 5 mV 1.25 mV 1 mV
	current input				10 µA	5 µA	3.33 µA	0 – 20 mA 4 – 20 mA		5 µA 4 µA
Overall accuracy			±1.0 % (for the whole measurement range)					±1.0 % (for the whole measurement range)		
Max. conversion time		ms/ channel	20					0.5		
Isolation method			Photocoupler isolation between output terminals and PC power for all modules.							
I/O points			32					32		
Connection terminal			All modules are fitted with a terminal block with 20 screw terminals.							
External power consumption			Not neccessary for both modules							
Applicable wire size		mm^2	0.75 – 1.5					0.75 – 1.5		
Internal power consumption (5 V DC)		mA	400					400		
Weight		kg	0.25					0.27		
Dimensions (W x H x D)		mm	34.5 x 130 x 93.6					34.5 x 130 x 93.6		
Order information		Art. no.	25707					46478		

MELSEC AnS/QnAS Analog Output Modules



Output of analog control signals

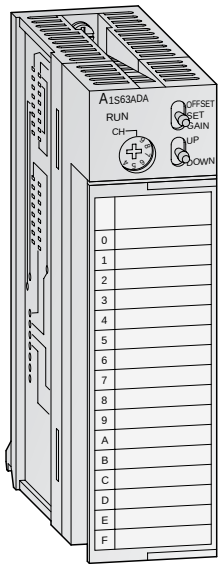
The analog output modules convert digital values predetermined by the CPU into an analog current or voltage signal. For example, frequency inverters, valves or slide valves are controlled by means of these signals.

Special features:

- Up to 8 channels per module (A1S68DAV/DAI) and up to 256 channels per system (A2SCPU-S1/A2ASCPU-S1/-S30/-S60)
- Resolution of 0.83 mV and 1.7 µA (A1S62DA)
- Conversion time of 4 msec. / 8 channels (A1S68DAV/DAI)
- Potential isolation between process and control by means of an optocoupler is a standard feature.
- The module is provided with a removable terminal block fastened with screws.

Specifications		A1S62DA				A1S68DAV		A1S68DAI	
Output points		2				8		8	
Digital input		-4000 – +4000 -8000 – +8000 -12000 – +12000				-2048 – +2047		0 – +4096	
Analog output		-10 V DC – +10 V DC (0 mA – +20 mA DC)				-10 V DC – +10 V DC		4 mA – +20 mA DC	
Load resistance	voltage	2 kΩ – 1 MΩ				2 kΩ – 1 MΩ		—	
	current	0 – 600 Ω				—		0 – 600 Ω	
Voltage output									
I/O characte-ristics	digital input	1/4000 4000 2000 0 -2000 -4000	1/8000 8000 4000 0 -4000 -8000	1/12000 12000 6000 0 -6000 -12000	**Voltage output** +10 V +5 V 0 V -5 V -10 V	 2000 1000 0 -1000 -2000	**Voltage output** +10 V +5 V 0 V -5 V -10 V	—	—
Max. resolution		2.5 mV	1.25 mV	0.83 mV	(10 V)	5 mV	—	—	—
Current output									
I/O characte-ristics	digital input	1/4000 4000 2000 0	1/8000 8000 4000 0	1/12000 12000 6000 0	**Current output** 20 mA 12 mA 4 mA	—	—	4000 2000 0	**Currrent output** 20 mA 12 mA 4 mA
Max. resolution		5 µA	2.5 µA	1.7 µA	(20 mA)	—	—	4 µA	
Overall accuracy		±1.0 % (for the whole measurement range)				±1.0 % (for the whole measurement range)		±1.0 % (for the whole measurement range)	
Max. conversion time		25 ms / 2 channels (or 1 channel)				4 ms / 8 channels		4 ms / 8 channels	
Isolation method		Photocoupler isolation between output terminals and PC power for all modules.							
I/O points		32				32		32	
Connection terminal		All modules are fitted with a terminal block with 20 screw terminals.							
Applicable wire size	mm^2	0.75 – 1.5				0.75 – 1.5		0.75 – 1.5	
Internal power consumption (5 V DC)	mA	800				650		850	
Weight	kg	0.32				0.28		0.28	
Dimensions (W x H x D)	mm	34.5 x 130 x 93.6				34.5 x 130 x 93.6		34.5 x 130 x 93.6	
Order information	Art. no.	25709				46475		46477	

MELSEC AnS/QnAS Analog Input/Output Modules



Analog modules with inputs and outputs

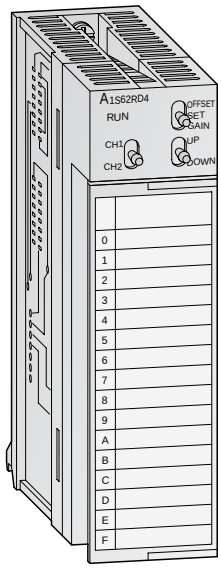
These modules have both analog inputs and one or two analog outputs. Individual channels operate autonomously but can also be coupled to one another.

Special features:

- 2 or 4 analog input points and 1 or 2 analog output points
- Resolution of 0.83 mV and 3.3 µA (input)/1.7 µA (output)
- Extremely short processing time due to high-speed conversion with the A1S66ADA
- Linkage of input/output via formulae or X/Y graph
- Potential isolation between process and control by means of an optocoupler is a standard feature.
- The modules are provided with a removable terminal block fastened with screws.

Specifications		A1S63ADA	A1S66ADA
A/D conversion			
Analog input		-10 V DC – +10 V DC (-20 mA – +20 mA DC)	-10 – 0 – +10 V DC (0 – 20 mA DC)
Resolution		-4096 – +4095 (1/4000), -8192 – +8191 (1/8000), -12288 – +12287 (1/12000)	0 – 4095 (12 bit binary)
I/O characteristics		Analog input: -10 – +10 V; -20 – 20 mA / Digital output: -4000 – 4000, -8000 – 8000, -12000 – 12000, -2000 – 2000, -4000 – 4000, -6000 – 6000	Analog input: 0 – 10 V, 0 – 5 V, 1 – 5 V, -10 – 10 V, 0 – 20 mA, 4 – 20 mA / Digital output: 0 – 4095
Max. resolution	voltage input	0.83 mV (at resolution 1/12000)	1 mV (for analog input range from 1 to 5 V)
	current input	3.3 µA (at resolution 1/12000)	4 µA (for analog input range from 4 to 20 mA)
Overall accuracy		±1.0 %	±1.0 %
Max. conversion time		1 ms/channel (at 1/4000); 2 ms/channel (at 1/8000); 3 ms/channel (at 1/12000)	≤400 µs (for 4 channels); scan time 80 µs (for 1 channel)
Absolute max. input		Voltage: ±15 V, current: ±30 mA	Voltage: ±15 V, current: ±30 mA
Analog input points		2	4
D/A conversion			
Digital input		-4000 – +4000 (1/4000), -8000 – +8000 (1/8000), -12000 – +12000 (1/12000) 0 – +4000 (1/4000), 0 – +8000 (1/8000), 0 – +12000 (1/12000))	0 – 4000 (12 bit binary)
Analog output		-10 V – +10 V (0 – +20 mA DC)	-10 – 0 – 10 V DC (0 – 20 mA DC)
I/O characteristics		Digital input: -4000 – 4000, -8000 – 8000, -12000 – 12000, -2000 – 2000, -4000 – 4000, -6000 – 6000 / Analog output: -10 – +10 V, 4 – 20 mA	Digital input: 0 – 4000 / Analog output: 0 – 10 V, 0 – 5 V, 1 – 5 V, -10 – 10 V, 0 – 20 mA, 4 – 20 mA
Max. resolution	voltage input	0.83 mV (at resolution 1/12.000)	1 mV (for analog input range from 1 to 5 V)
	current input	1.7 µA (at resolution 1/12.000)	4 µA (for analog input range from 4 to 20 mA)
Overall accuracy		1.0 % (to the maximum value)	1.0 % (to the maximum value)
Max. conversion time		1 ms (1/4000), 2 ms (1/8000), 3 ms (1/12000)	≤240 µs (for 2 channels); scan time 80 µs (for 1 channel)
Absolute max. output		Voltage: ±12 V, current: ±28 mA	Voltage: ±12 V, current: ±28 mA
Analog output points		1	2
Isolation method		Photocoupler isolation between output terminals and PC power.	Photocoupler isolation between output terminals and PC power.
I/O points		32	64
Connection terminal		The module is fitted with a terminal block with 20 screw terminals.	The module is fitted with a terminal block with 20 screw terminals.
Applicable wire size	mm^2	0.75 – 1.5	0.75 – 1.5
Internal power consumption (5 V DC)	mA	800	210
Weight	kg	0.3	0.33
Dimensions (W x H x D)	mm	34.5 x 130 x 93.6	34.5 x 130 x 93.6
Order information	Art. no.	36251	70543

MELSEC AnS/QnAS Analog Modules for Pt100-Elements



Temperature measurement by resistance thermometer

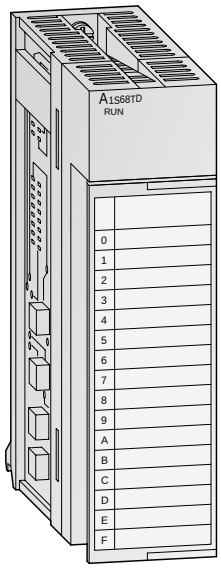
These analog modules are used for direct connection of Pt100 resistance thermometers. The measurement is based on the three-conductor or four-conductor method.

Special features:

- Linearized measuring range from -180 °C to 600 °C
- Pt100 elements according to DIN and JIS are supported.
- A cable break is indicated to the CPU by the module.
- Calculation of average value over the time or measurement cycles can be configured.
- Potential isolation between process and control by means of an optocoupler is a standard feature.
- The module is provided with a removable terminal block fastened with screws.

Specifications		A1S62RD3	A1S62RD4
Method of measurement		3-wire type	4-wire type
Pt100-input points		2	2
Connectable temperature measuring resistants	type	Pt100 (conforms to JIS C 1604-1989 and DIN IEC 751), JPt100 (conforms to JIS C 1604-1981)	
Temperature input range	°C	Pt 100: -180 – 600 (27.08 Ω – 313.59 Ω), JPt 100: -180 – 600 (25.8 Ω – 317.28 Ω)	
Detected temperature value		16 bits signed binary: -1800 – +6000 32 bits signed binary: -180000 – +600000	16 bit signed binary: -1800 – +6000 32 bit signed binary: -180000 – +600000
Max. resolution	°C	0.025	0.025
Overall accuracy		±1 % (to the maximum value)	±1 % (to the maximum value)
Max. conversion time		40 ms per channel ON	40 ms per channel ON
Isolation method		No isolation between channels. Photocoupler isolation between input terminal and PC CPU power.	
I/O points		32	32
Connection terminal		All modules are fitted with a terminal block with 20 screw terminals.	
Applicable wire size	mm^2	0.75 – 2	0.75 – 2
Internal power consumption (5 V DC)	mA	540	440
Weight	kg	0.29	0.28
Dimensions (W x H x D)	mm	34.5 x 130 x 93.6	34.5 x 130 x 93.6
Order information	Art. no.	25710	25712

MELSEC AnS/QnAS Analog Module for Temperature Measurement



Temperature measurement by thermocouple

This module is used for temperature measurement by means of a thermocouple. The reference temperature is determined by means of a Pt100 resistance thermometer.

Special features:

- The module has 8 thermocouple inputs and a Pt100 input for the reference temperature.
- Linearized measuring range up to 1700 °C (thermocouple-dependent)
- The thermocouple types B, R, S, K, E, J and T with the thermo-electric voltage curves according to DIN IEC 584-1 are supported.
- Potential isolation between process and control by means of an optocoupler is a standard feature.
- The module is provided with a removable terminal block fastened with screws.

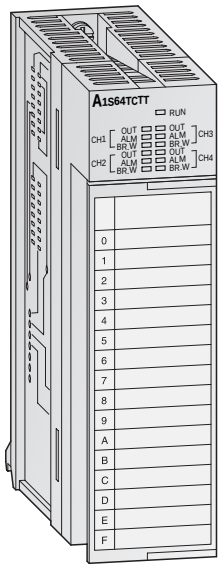
Specifications		A1S68TD			
Input points		8			
Temperature input range	°C	0 – 1 700			
Detected temperature value		16 bits signed binary: 0 – 17000 (value to the first decimal place x 10)			
Scaling value	°C	16 bits signed: 0 – +2000			
Thermocouple		**Type**	**Temperature measurement range**	**Conversion accuracy** (at operating ambient temperature is Ta = 25 ± 5°C)	**Temperature characteristic** (when operating ambient temperature varies by ΔT = 1 °C)
		B	800 – 1700 °C	±2.5 °C	±0.4 °C
		R	300 – 1600 °C	±2 °C	±0.3 °C
		S	300 – 1600 °C	±2 °C	±0.3 °C
		K	0 – 1200 °C	±0.5 °C or 0.25 % of the measured temperature which ever is larger	±0.07 °C or 0.02 % of the measured temperature which ever is larger
		E	0 – 800 °C		
		J	0 – 750 °C		
		T	0 – 350 °C		
Cold junction compensation accuracy		±1 °C			
Overall accuracy		(Conversion accuracy Ta) + (temperature characteristic) x (operating ambient temperature variation) ± 1 °C *			
Max. resolution		B, R, S: 0.3 °C K, E, J, T: 0.1 °C			
Max. conversion time		400 ms / 8 channels, without respect to the number of used channels			
Absolute max. input voltage	V	± 5			
Isolation method		Transformer			
I/O points		32			
Connection terminal		The module is fitted with a terminal block with 20 screw terminals.			
Applicable wire size	mm^2	0.75 – 1.5			
Internal power consumption (5 V DC)	mA	320			
Weight	kg	0.28			
Dimensions (W x H x D)	mm	34.5 x 130 x 93.6			

Order information	Art. no.	46476

* Example:
Overall accuracy = (conversion accuracy at Ta = 25 °C ±5 °C) + (temperature characteristic by ΔT = 1 °C) x (operating ambient temperature variation) + (± 1 °C)
Example for thermocouple type 3 when the operating ambient temperature is 35 °C = (±2.5 °C) + (±0.4 °C) x (5 °C) + (±1 °C) = ±5.5 °C

Ta = operating ambient temperature
ΔT = operating ambient temperature variation

MELSEC AnS/QnAS Temperature Control Modules



Temperature control modules with PID algorithm

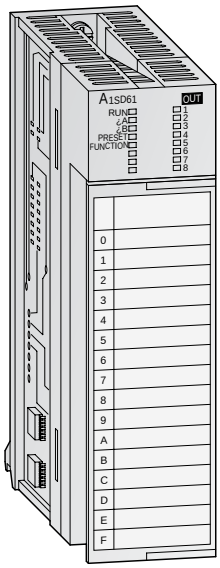
These modules enable PID algorithm temperature control without placing any load on the PLC CPU for the temperature control tasks.

Special features:

- Four temperature input channels
- Auto-tuning function for the 4 PID control circuits
- Temperature control can continue even when the PLC program is stopped
- Transistor output with pulse train to drive the actuator in the control circuit
- The module is provided with a removable terminal block fastened with screws

Specifications			A1S64TCRT-S1	A1S64TCTT-S1
Control output		type	Transistor	Transistor
Inputs			4 channels per module	4 channels per module
Supported thermocouples			Pt100 (-200 – +600 °C), JPt100 (-200 – +500 °C)	R, K, J, T, S, B, E, N, U, L, P L II, W5Re/W26Re
Sampling cycle			0.5 s / 4 channels	0.5 s / 4 channels
Control output cycle		s	1 – 100	1 – 100
Input filter			1 – 100 s (0 s: input filter OFF)	1 – 100 s (0 s: input filter OFF)
Temperature control method			PID ON/OFF impulse or 2-position control	PID ON/OFF impulse or 2-position control
PID constant range	PID constant setting		Setting with automatic tuning possible	Setting with automatic tuning possible
	proportional band P		0.0 – 100.0 % (0 %: 2-position control)	0.0 – 1000.0 % (0 %: 2-position control)
	integral constant I		1 – 3600 s	1 – 3600 s
	differential constant D		1 – 3600 s (0 setting for PID control)	1 – 3600 s (0 setting for PID control)
Target value setting range			Within the temperature range of the Pt100 sensor used	Within the temperature range of the thermocouple used
Dead band setting range			0.1 – 10.0 %	0.1 – 10.0 %
Transistor output	output signal		ON/OFF pulse	ON/OFF pulse
	rated load voltage		10.2 – 30 V DC	10.2 – 30 V DC
	max. load current		0.1 mA/1 point, 0.4 mA/common	0.1 mA/1 point, 0.4 mA/common
	max. rush current		400 mA for 10 ms	400 mA for 10 ms
	max. voltage drop when ON		0.1 V DC (TYP) 0.1 A 2.5 V DC (MAX) 0.1 A	0.1 V DC (TYP) 0.1 A 2.5 V DC (MAX) 0.1 A
	response time		OFF → ON: < 2 ms ON → OFF: < 2 ms	OFF → ON: < 2 ms ON → OFF: < 2 ms
Isolation method			Transformer	Transformer
I/O points			32	32
Connection terminals			The module is fitted with a terminal block with 20 screw terminals.	The module is fitted with a terminal block with 20 screw terminals.
Applicable wire size		mm^2	0.75 – 1.5	0.75 – 1.5
Internal power consumption (5 V DC)		mA	330	420
Weight		kg	0.27	0.3
Dimensions (W x H x D)		mm	34.5 x 130 x 93.6	34.5 x 130 x 93.6
Order information		Art. no.	126507	66227

MELSEC AnS/QnAS High-Speed Counter Modules



High-speed counter with automatic detection of rotation direction

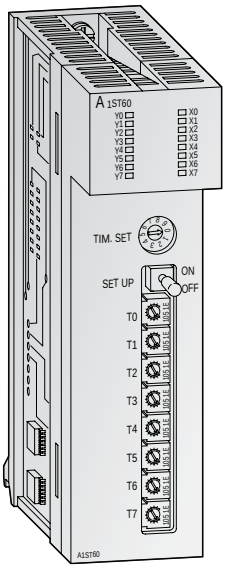
These counter modules detect signals with a frequency which cannot be detected by normal input modules. For example, simple positioning tasks or frequency measurements can be realized.

Special features:

- Input for incremental shaft encoder with automatic forward and reverse detection
- Preset count via external signals or the PLC program with the aid of the PRESET function
- Ring counter function for counting up to a predefined value with automatic resetting to the starting value
- Functions such as speed measurement, definition of switching points or periodic counting are available.
- The module is provided with a removable terminal block fastened with screws.

Specifications			A1SD61	A1SD62E
Counter inputs			1 for incremental rotary transducer	2
Signal levels			5 / 12 / 24 V DC (2 – 5 mA)	5 / 12 / 24 V DC (2 – 5 mA)
Max. counting frequency		kHz	50	100
Max. counting speed	1-phase-input	kHz	50 or 10	100 or 10
	2-phase-input	kHz	50 or 7	100 or 7
Counting range			31 bits + sign (binary), -2147483648 – +2147483647	23 bits + sign (binary), 0 – 16777215
Counter type			Both modules are equipped with UP/DOWN preset counter and ring counter function.	
Comparison range			31 bits + sign (binary)	24 bits + sign (binary)
External digital input points			Preset, function start	Preset, function start
Rated voltage/current for external input			5 / 12 / 24 V DC (3 – 6 mA)	5 / 12 / 24 V DC (2 – 5 mA)
External digital output points (Coincidence signal)			8 transistor outputs (open collector) 12 / 24 V DC, 0.1 A/point, 0.8 A/common	4 transistor outputs (2/point) (source type) 12 / 24 V DC, 0.1 A/point, 0.4 A/common
I/O points			32	32
Connection terminal			All modules are fitted with a detachable terminal block with 20 screw terminals.	
Applicable wire size		mm^2	0.75 – 1.5	0.75 –1.5
Internal power consumption (5 V DC)		mA	350	100
Weight		kg	0.27	0.25
Dimensions (W x H x D)		mm	34.5 x 130 x 93.6	34.5 x 130 x 93.6
Order information		Art. no.	25713	54951

MELSEC AnS/QnAS Timer Module



Set timers directly without any programming

The A1ST60 provides 8 timers that can be set directly with a screwdriver to values between 0.1 and 600 seconds.

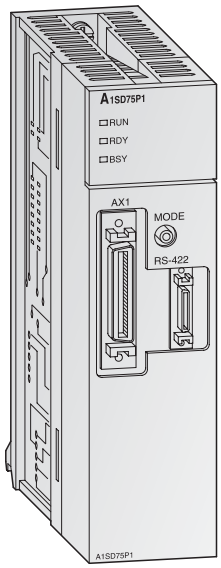
Special features:

- Eight additional hardware timers to supplement the PLC CPU's own internal timers
- Timer setting ranges:
  - 0.1 to 1.0 s
  - 1 to 10 s
  - 10 to 60 s
  - 60 to 600 s
- Timer status indicated by LEDs
- Integrated pause function for stopping the time of active timers

Specifications		A1ST60
Input points		8 potentiometers for timer setting
Timer setting range		0.1 – 1.0 s, 1 – 10 s, 10 – 60 s, 60 – 600 s
Overall accuracy		±2.0 %
Setting possibilities		Separate setting with potentiometers and DIP switches
I/O points		16
Applicable wire size	mm^2	0.75 – 1.5
Internal power consumption (5 V DC)	mA	55
Weight	kg	0.13
Dimensions (W x H x D)	mm	34.5 x 130 x 93.6

Order information	Art. no.	33196

MELSEC AnS/QnAS Axes Positioning Modules



Positioning with an open control loop

The modules generate the travel command via a pulse chain. The speed is proportional to the pulse frequency and the distance travelled is proportional to the pulse length.

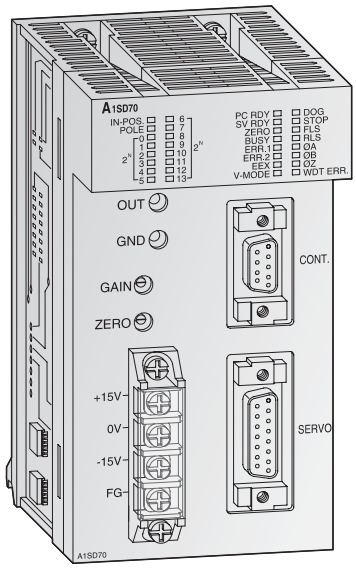
A1SD75M1, A1SD75M2 and A1SD75M3 are designed for the operation across the motion network SSCNET.

Special features:

- Control of up to three axes with linear interpolation (A1SD75P2/P3) or circular interpolation (A1SD75P2/P3)
- Storage of up to 600 positional data in the A1SD75P1/P2/P3 (flash ROM)
- Units of travel can be defined in pulses, mm, inch or degrees.
- Configuration and presetting of positional data is carried out by means of the PLC program or with the aid of the software GX-Configurator-AP .

Specifications			A1SD75P1-S3	A1SD75M1	A1SD75P2-S3	A1SD75M2	A1SD75P3-S3	A1SD75M3
Control axes			1		2		3	
Interpolation			—		Linear and circular interpolation		Linear and circular interpolation	
Points per axis			600		600		600	
Output type			Differential driver	SSCNET	Differential driver	SSCNET	Differential driver	SSCNET
Output signal			Pulse generator phase	Bus	Pulse generator phase	Bus	Pulse generator phase	Bus
Output frequency		kHz	1 – 400000		1 – 400000		1 – 400000	
Positioning	method		Pulse control: absolute data and/or incremental; speed/position swiching control: incremental; locus control: absolute data and/or incremental					
	positioning units		Absolute data method: -2147483648 – 2147483647 pulse; -214748364.8 – 214748364.7 µm; -21474.83648 – 21474.83647 inch; 0 – 359.99999 degree Incremental method: -2147483,648 – 2147483 647 pulse; -214 748 364.8 – 214 748 364.7 µm; -21 474.83648 – 21 474.83647 degree; -21 474.83648 – 21 474.83647 nch Speed/position switching control: 0 – 2147483647 pulse; 0 – 214748364.7 µm; 0 – 21474.83647 degree; 0 – 21474.83647 inch				
	positioning speed		1 – 1000000 pulse/min; 0.01 – 6000000.00 mm/min; 0.001 – 600000.000 degree/min; 0.001 – 600000.000 inch/min					
	acceleration/deceleration processing		Automatic trapezoidal or S-pattern acceleration and deceleration					
	acceleration and deceleration time		1 – 65535 [8388608]* ms (4 patterns each can be set)					
I/O points			32		32		32	
Internal power consumption (5 V DC)		mA	700		700		700	
External power consumption (4.75 – 26.4 V DC)		mA	—		—		—	
Weight		kg	0.35		0.35		0.35	
Dimensions (W x H x D)		mm	34.5 x 130 x 93.6		34.5 x 130 x 93.6		34.5 x 130 x 93.6	
Order information		Art. no.	65028	69976	65029	69974	65030	69975
Accessories			Software for all A1SD75: GX-Configurator-AP, art. no.: 132222; adapter cable: A1SD75-C01H, art. no.: 54943 spare part plug for axis control, 36 pins, art. no.: 62890					

■ MELSEC AnS/QnAS Single Axis Positioning Module



Positioning with position control loop

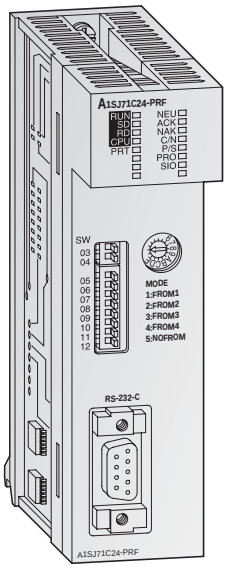
The module is used for positioning by means of servo drives. Here, the output delivers an analog voltage.
To monitor the position, the displacement transducer is fed back to the module.

Special features:

- The positional data is preset by means of the PLC program.
- Integrated digital/analog converter for converting the digital adjustment into an analog signal
- Online speed and address change possible
- Online monitoring of setpoint value (command pulses), actual value (feedback pulses) and adjustment (difference between command and feedback)
- An electronic gear function permits adjustment of the distance travelled per pulse

Specifications		A1SD70
Axes		1 (with position control)
Signal input level		5 V DC (TTL, RS422), 12 V DC (open collector)
Max. counting frequency	kHz	100
Counting resolution		31 bits + sign (binary), -2 147 483 648 – +2 147 483 647
Acceleration/deceleration time	ms	2 – 9999
Positioning speed		1 – 400000 pulses/s
External digital inputs		Zero, stop, upper/lower range limit, servo ready, control mode
Input rating		5 – 24 V DC (6 mA)
External digital outputs		Servo error / module error
Output rating		5 – 24 V DC
In position control range		Adjustable between 1 – 2047 pulses (hard / smooth)
Acceleration and deceleration		Automatic, trapeziodal acceleration and deceleration
Analog output for speed control		≤ 10 V DC (adjustable between ±5 V and ±10 V)
I/O points		48 (2 slots)
Internal power consumption (5 V DC)	mA	300
External power consumption		200 mA (+15 V DC), 20 mA (-15 V DC)
Weight	kg	0.4
Dimensions (W x H x D)	mm	69.5 x 130 x 93.6
Order information	Art. no.	29539

MELSEC AnS/QnAS Interface Modules



Data exchange with peripheral devices

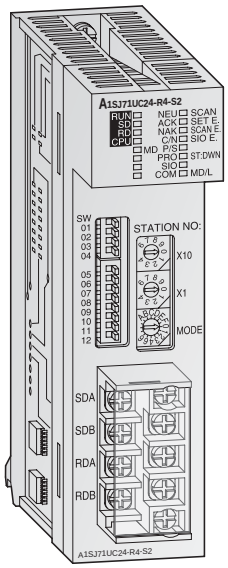
This module enables communication with peripheral devices via a standard RS-232C interface. The peripherals are connected point-to-point on a 1:1 basis.

Special features:

- Enables PCs connected to the system to access the full data set of the MELSEC AnS CPU using graphic process supervision or monitoring software
- Support for plain ASCII data exchange with connected devices such as barcode readers, scales and identification systems
- Options for connection of a printer
- Integrated 32KB EEPROM memory for logging quality, productivity or alarm data that can be printed out when required
- Module and communications status shown by LEDs
- The A1SJ71UC24-R4 has the same features as the A1SJ71UC24-R2. The only difference is that a PC can access up to 32 controllers via RS422/485 version.

Specifications			A1SJ71UC24-R2	A1SJ71UC24-R4	A1SJ71C24-PRF
Interface		type	RS232C	RS422 / 485	RS232C
Communications mode			Full duplex / half duplex	Full duplex / half duplex	Full duplex / half duplex
Synchronisation			Asynchronous communications	Asynchronous communications	Asynchronous communications
Data transfer	rate	bit/s	300 – 19200	300 – 19200 (computer link) 19200 – 38400 (multidrop)	300 – 19200
	distance	m	15	500	15
Max. no of stations in a multidrop network			—	32	—
Data format			1 start bit, 7 or 8 data bits, 1 or 0 parity bits, 1 or 2 stop bits	1 start bit, 7 or 8 data bits, 1 or 0 parity bits, 1 or 2 stop bits	1 start bit, 7 or 8 data bits, 1 or 0 parity bits, 1 or 2 stop bits
Error correction			Parity check, checksum	Parity check, checksum	Parity check, checksum
DTR/DSR control			YES / NO selectable	YES / NO selectable	YES / NO selectable
X ON / X OFF (DC1 / DC3)			YES / NO selectable	YES / NO selectable	YES / NO selectable
EEPROM memory			—	—	32 kbyte (400 x 80 characters)
I/O points			32	32	32
Internal power consumption (5 V DC)		mA	100	100	100
Weight		kg	0.49	0.55	0.22
Dimensions (W x H x D)		mm	34.5 x 130 x 93.6	34.5 x 130 x 93.6	34.5 x 130 x 93.6
Order information		Art. no.	64561	64562	29537

MELSEC AnS/QnAS MODBUS Slave Interface Modules



Modbus protocol via RS232 / RS422 / RS485

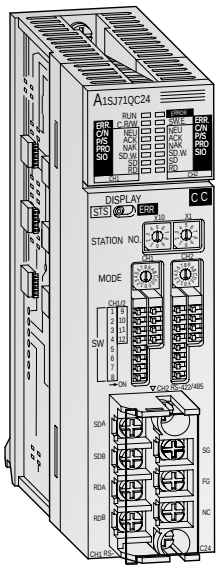
The A1SJ71UC24-R4-S2 and A1SJ71UC24-R2-S2 enable third-party devices to access MELSEC AnS and QnAS controllers using the MODBUS protocol.

Special features:

- Support for both ASCII and RTU procedures
- Slave functionality – up to 31 MELSEC controllers can be allocated to a third-party device.
- Support for functions 1, 3, 5–8, 11, 12, 15–17, 20 and 21
- Enables access to the entire data of AnAS respec. QnAS CPUs.

Specifications			A1SJ71UC24-R2-S2	A1SJ71UC24-R4-S2
Module type			Slave	Slave
Interface		type	RS232	RS422 / 485
Communications mode			Half duplex	Half duplex
Synchronisation			Asynchronous communications	Asynchronous communications
Data transfer	rate	bit/s	300 – 19200	300 – 19200
	distance	m	15	500
	mode		ASCII and RTU	ASCII and RTU
Data format		bit	1 start bit, 7 or 8 data bits, 1 or 0 parity bits, 1 or 2 stop bits	1 start bit, 7 or 8 data bits, 1 or 0 parity bits, 1 or 2 stop bits
Error correction			Parity check (ASCII mode: LRC, RTU mode: CRC-16)	Parity check (ASCII mode: LRC, RTU mode: CRC-16)
Isolation method			Photocoupler	Photocoupler
I/O points			32	32
Internal power consumption (5 V DC)		mA	100	100
Weight		kg	0.49	0.55
Dimensions (W x H x D)		mm	34.5 x 130 x 93.6	34.5 x 130 x 93.6
Order information		Art. no.	54355	54354
Accessories			Interface converter CR01-R2/R4 SET, art. no. 56172 (refer to page 38)	

MELSEC QnAS Interface Modules



High-speed data communications

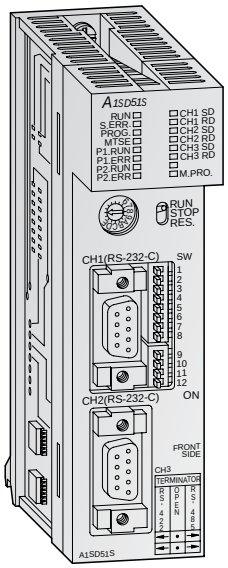
The QnAS interface modules provide extremely high data throughput rates, which can be invaluable for process supervision software and similar applications. Up to 480 data words can be exchanged between the PLC CPU and the PC per END instruction.

Special features:

- Enables PCs connected to the system to access the full data set of the MELSEC QnAS CPU with process supervision or monitoring software
- Support for plain ASCII data exchange with connected devices such as barcode readers, scales and identification systems
- Compatible to A1SJ71UC24R2/R4 with protocol formats 1 – 4
- When the special dedicated Q instructions are used (protocol format 5) PC process supervision software can access data at least 5 times faster than it is now possible using the conventional protocol formats 1 – 4.
- The integrated EEPROM can store up to 200 pre-programmed protocols for accessing third-party devices.

Specifications			A1SJ71QC24N-R2	A1SJ71QC24N		
Interface		Typ	2 x RS232C	1 x RS232, 1 x RS422 / 485		
Communications mode			Full duplex / half duplex	Full duplex / half duplex		
Synchronisation			USART	USART		
Data transfer	rate	bit/s	300 – 19200	300 – 19200		
	distance	m	15	1200		
Max. stations in a multidrop network			—	32		
Data format		bits	1 start bit, 7 or 8 data bits, 1 or 0 parity bits, 1 or 2 stop bits	1 start bit, 7 or 8 data bits, 1 or 0 parity bits, 1 or 2 stop bits		
Error correction			Parity check, checksum	Parity check, checksum		
			RS232	**RS232**	**RS422**	**RS422/485**
Flow control	DTR / DSR		●	●	●	—
	RS / CS		●	●	—	—
	CD		●	●	—	—
	DC		●	●	●	●
X ON / X OFF (DC1 / DC3)			YES / NO selectable	YES / NO selectable		
I/O points			32	32		
Internal power consumption (5 V DC)		mA	300	350		
Weight		kg	0.249	0.294		
Dimensions (W x H x D)		mm	34.5 x 130 x 93.6	34.5 x 130 x 93.6		
Order information		Art. no.	150835	150834		
Accessories			Interface converter CR01-R2/R4 SET, art. no. 56172 (refer to page 38)			

MELSEC AnS/QnAS High-Speed Communications Module



Programmable interface module

This module works through its own program independently of the PLC CPU. Thus, peripherals can be operated or mathematical operations performed without imposing an additional load on the PLC CPU. Programming is in AD51H BASIC.

Special features:

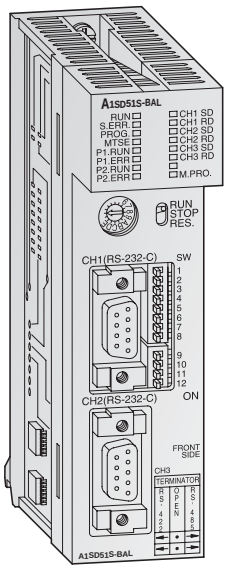
- Two RS232C interfaces and one RS422/485 interface
- Two BASIC programs can be operated in parallel (multitasking).
- The tasks can be stored in the module as interpreter programs or in compiled form.
- The integrated EEPROM is used for storage.
- Online and offline program creation is possible.
- The module and communication status is indicated by means of LEDs.

Specifications			A1SD51S
Interfaces		type	1 x RS422/485, 2 x RS232
Microprocessor		type	80C186 (15 MHz)
Number of parallel tasks			Max. 2
Start conditions for tasks			Started by power on, started by the start command from another task, start by an interruption from the PC CPU.
Data transfer	rate	bit/s	300 – 19200
	distance	m	500 (RS422/485), 15 (RS232C)
Program language			AD51H-BASIC
Internal memory	program memory	kbyte	64 x 1 task or 32 x 2 tasks
	common memory for tasks	kbyte	8
	data buffer to PLC	kbyte	6
	extension relays		1024
	extension data registers		1024 (2 kbyte)
Memory backup capability			Provided for common memory, extension relay and extension register.
Memory for programs			EEPROM memory: 64 kbyte
I/O points			32 (1 slot)
Internal power consumption (5 V DC)		mA	400
Weight		kg	0.3
Dimensions (W x H x D)		mm	34.5 x 130 x 93.6

Order information	Art. no.	46276

Accessories	Programming software for PC/AT (MS-DOS): SW1IX-AD51HPE, art. no.: 33102

MELSEC AnS/QnAS High-Speed Communications Module



Communications module with 3964R procedure

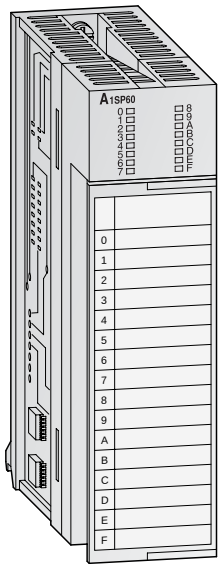
The A1SD51S-BAL has 3 standard interfaces for communications with intelligent peripheral devices that support the 3964R (RK512 active) communications protocol. This makes it possible to connect products from other manufacturers without any additional programming.

Special features:

- All three interfaces can be used simultaneously.
- You can store up to 30 commissions by setting the appropriate parameters.
- Up to 10 commissions can be executed simultaneously.
- Optoelectronic couplers for isolation of process and control systems are fitted as standard equipment
- The module can request data from e.g. a S5-CP525, CP524 or CP544 via the 3964(R)RK512 procedure.
  However, it can not respond to the requests of other devices.

Specifications			A1SD51S-BAL
Interface		type	2 x RS232, 1 x RS422
Transmission system			Half duplex / full duplex
Synchronisation			Asynchronous communications
Data transfer	rate	bit/s	300 – 9600
	distance		15 m at RS232, 500 m at RS422
Data format			1 start bit, 7 or 8 data bits, 1 or 0 parity bit, 1 or 2 stop bit
Error correction method			Parity check, checksum
Supported 3964R (RK512) functions			FETCH and SEND data block (active). The module can not respond to requests from other stations.
Supported data blocks			DB0 and DB255
Supported A series devices			D, W, R
Processing time for FETCH or SEND of 32 data words		ms	Approx. 300
X ON / X OFF (DC1 / DC3)			YES / NO selectable
I/O points			32
Internal power consumption (5 V DC)		mA	400
Weight		kg	0.3
Dimensions (W x H x D)		mm	34.5 x 130 x 93.6
Order information		Art. no.	65065
Accessories			—

MELSEC AnS Pulse Catch Module



Digital pulse catch

The A1SP60 is a digital input module capable of detecting narrow pulses independently of the program cycle time.

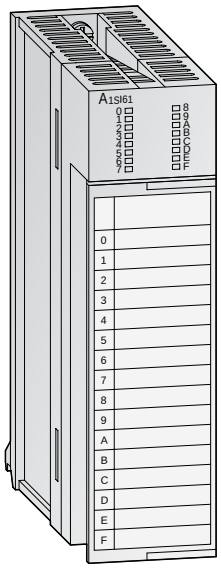
Special features:

- Possibility of working with pulse function or with normal input function
- In the case of the pulse function, it is ensured that a signal applied at the input (>0.5 ms) is caught.
- By means of DIP switches, it is possible to specify, in groups of 4 input points, whether they are used as normal input points or with pulse catch.
- Galvanic isolation between process and controller by means of an photocoupler is a standard feature

Specifications			A1SP60
Input points			16
Rated input voltage		V DC	24
Operating voltage range		V DC	19.2 – 26.4
Max. input points simultaneous ON			100 %
Input	resistance	kΩ	ca. 3.3
	current	mA	ca. DC 7
Switch ON	voltage	V	≥ DC 13
	current	mA	≥ DC 3.5
Switch OFF	voltage	V	≤ DC 6.5
	current	mA	≤ DC 1.7
Response time	OFF → ON	ms	≤ 0.5
	ON → OFF	ms	≤ 1.0
Min. input pulse width		ms	0.5
Status display of inputs			LED
Isolation			All modules fitted with photocoupler isolation between input terminals and internal circuit.
No. of occupied I/O points			16
Connection terminal			The module is fitted with a terminal block with 20 screw terminals.
Applicable wire size		mm^2	0.75 – 1.5
Internal power consumption (5 V DC)		mA	55
Weight		kg	0.19
Dimensions (W x H x D)		mm	34.5 x 130 x 93.6

Order information	Art. no.	33197

MELSEC AnS Interrupt Module



Branching to subroutines

The A1SI61 is suitable for applications in which it is necessary to respond very rapidly to events.

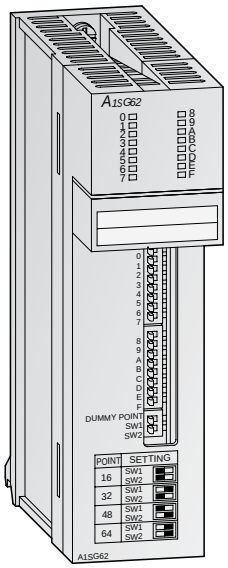
Special features:

- Every input in this module is assigned a pointer which serves as a branch mark for a subroutine.
- If an interrupt/alarm signal is applied at an input, the PLC program is interrupted after it has worked through the current statement and a subroutine assigned to the input is first processed.
- Galvanic isolation between process and controller by means of an photocoupler is a standard feature
- Only one A1SI61 can be installed to one PLC system

Specifications			A1SI61
Input points			16
Rated input voltage		V DC	12 / 24
Operating voltage range		V DC	10.2 – 26.4
Max. input points simultaneous ON			100 %
Input	resistance	kΩ	ca. 2.7
	current	mA	ca. DC 4 / 8
ON	voltage	V	≥ DC 9
	current	mA	≥ DC 3
OFF	voltage	V	≤ DC 4
	current	mA	≤ DC 1
Response time	OFF → ON	msec	≤ 0.2
	ON → OFF	msec	≤ 0.2
Status display of inputs			LED
Isolation method			All modules fitted with photocoupler isolation between input terminals and internal circuit.
No. of occupied I/O points			32
Connection terminal			The module is fitted with a terminal block with 20 screw terminals.
Applicable wire size		mm^2	0.75 – 1.5
Internal power consumption (5 V DC)		mA	57 (all points ON)
Weight		kg	0.2
Dimensions (W x H x D)		mm	34.5 x 130 x 93.6

Order information	Art. no.	33195

MELSEC AnS Dummy Modules



Place keeper and mechanical protection

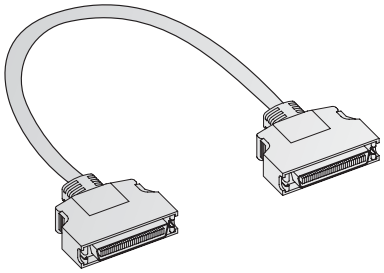
The dummy modules protect unused slots on the base unit from foreign bodies and reserve I/O addresses.

Special features:

- The A1SG62 has 16 simulation switches by means of which digital inputs can be set and reset.
- Indication of the status of the inputs/outputs by means of LEDs.

Specifications		A1SG60	A1SG62
I/O points		16	Max. 64 (16, 32, 48 or 64 can be selected by DIP-switches)
Application		Used to protect any vacant slot from dust.	Used to reserve I/O points for a later to install I/O module.
Current consumption	mA	—	60
Weight	kg	0.08	0.13
Dimensions (W x H x D)	mm	34.5 x 130 x 93.6	34.5 x 130 x 93.6
Order information	Art. no.	26596	30030

Connection Cable



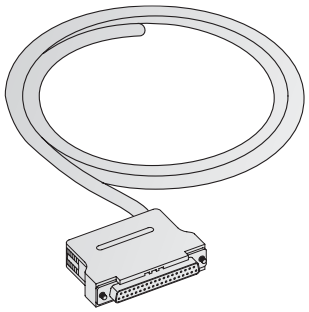
Connection cable for subracks

The connection cables A1SC01B, A1SC03B, A1SCO12B and A1SC30B are used for connecting main base units to the extension base units. They have been cut to the correct length for each application.

The A1SC05NB cable is used for connecting MELSEC A series extension base units to AnS/QnAS series main base units.

Specifications		A1SC01B	A1SC03B	A1SC12B	A1SC30B	A1SC60B	A1SC05NB
For extension base units	type	MELSEC AnS/QnAS	MELSEC AnS/QnAS	MELSEC AnS/QnAS	MELSEC AnS/QnAS	MELSEC AnS/QnAS	MELSEC A to AnS/QnAS, AnS/QnAS
Length	mm	55	330	1.200	3.000	6.000	450
Ohmic resistance R of the cable	Ω	0.020	0.021	0.055	0.121	0.182	0.037
Order information	Art. no.	24979	24980	24981	24982	68294	24983

Adapter Cable 37 pin

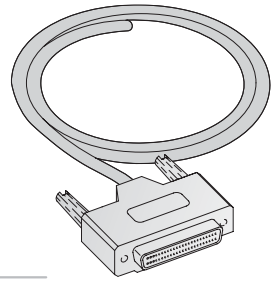


Assembled cable with D-SUB plug

The cable A32CBL is used for connecting the modules AX82 and AY82 of the MELSEC A series and the modules A1SX81 and A1SY81 of the MELSEC AnS series.

Specifications		A32CBL	A32CBL-5m
Connection cable for	type	AX82, AY82 (MELSEC A), A1SX81, A1SY81 (MELSEC AnS)	AX82, AY82 (MELSEC A), A1SX81, A1SY81 (MELSEC AnS)
Inputs/outputs		32	32
Length	m	3	5
Order information	Art. no.	3895	56052

Adapter Cables and Connectors 40 pin



Assembled cables and connectors

The cables Q40CBL-3M and Q40CBL-5M serve as connecting cables for I/O modules with 40-pin plug connection.

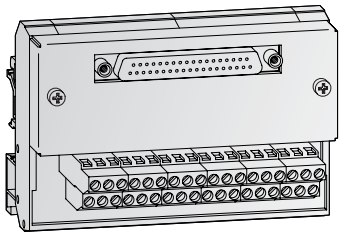
The cables are prefabricated, i.e. a 40-pin connector is already attached to one cable end.

For self-made cables the 40-pin connectors are available in four different connection versions that differ in the way the leads are connected.

Whilst for the connectors A6CON-1 to A6CON-3 the cable is attached straight into the connector, in the case of the A6CON-4 the lead is angled.

Specifications		Q40CBL-3M	Q40CBL-5M	A6CON-1	A6CON-2	A6CON-3	A6CON-4
Type		Adapter cable with connector	Adapter cable with connector	Connector only; soldering type	Connector only; crimp-contact type	Connector only; Pressure displ. type	Connector only; soldering type
Application	type	All modules with 40-pin connectors (e.g. A1SD71S2)					
Length	m	3.0	5.0	—	—	—	—
Order information	Art. no.	140991	140997	134139	134140	134141	146923

Systemterminals



Transfer modules for simplified system cabling

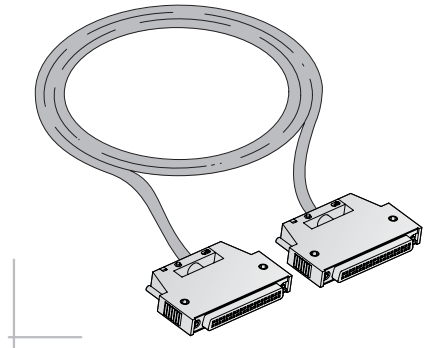
The system terminals are transfer modules for simplified cabling and to supplement the performance of the modules. In particular, these terminals permit a far higher output current through the addition of a transistor, relay or triac. Furthermore there are also terminals with built-in serial diodes for parallel switching available.

For easy cabling the system terminals ST16-3 and ST32-3 have connection rows for voltage terminals (24 V / 0 V).

With the aid of prefabricated, screened cables that can also be supplied (see below), this connection concept provides independence from the output module connector technology and various special function modules.

Specifications		ST32	ST32-DIOD	ST32-3	ST16-3	ST16-SOCKET
Working environment		I/O modules	Output modules	I/O modules	I/O modules	Output modules
Channels		32	32	32	16	16
Type		Plain	Serial diode integrated	3 terminal rows with voltage terminals	3 terminal rows with voltage terminals	Sockets for relay, transistor or triac
Application		All I/O modules with type 37 pin D-SUB female	All output modules with type 37 pin D-SUB female	All I/O modules with type 37 pin D-SUB female	All I/O modules with type 37 pin D-SUB female	All output modules with type 37 pin D-SUB female
Dimensions (W x H x D)	mm	112.5 x 77 x 62	112.5 x 77 x 62	180 x 77 x 75	112.5 x 77 x 75	180 x 77 x 56
Order information	Art. no.	146888	146890	146891	146894	146895
Accessories		Plug relay 6 A (8 pcs.) TB-RELAY-6A for ST16-SOCKET; art. no.: 149034 Plug transistor 2 A (8 pcs.) TB-TRANSISTOR-2A for ST16-SOCKET; art. no.: 149035 Jumper cable ST-JUMPER to bridge 16 terminal screws; art. no.: 146915				

Adapter Cable



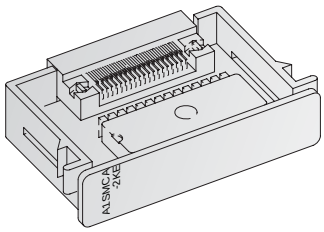
Connection cables for system terminals

The connection cables are for the connection of the system terminals to the input/output or special function modules of the MELSEC range.

Thanks to the different lengths that are available, the correct cable can be selected for every application.

Specifications		Q32-ST-CAB03M	Q32-ST-CAB06M	Q32-ST-CAB15M	Q32-ST-CAB30M	Q40-ST40-CAB-06M	Q40-ST40-CAB-15M	Q40-ST40-CAB-30M
Operation range (system terminal)		ST16/ST32	ST16/ST32	ST16/ST32	ST16/ST32	ST40	ST40	ST40
Application		All I/O modules with type 37 pin D-SUB connector				All modules with 40 pin D-SUB connec.		
Length	m	0.3	0.6	1.5	3.0	0.6	1.5	3.0
Order information	Art. no.	146905	146906	146907	146908	146909	146910	146911

MELSEC AnS Memory Cassettes



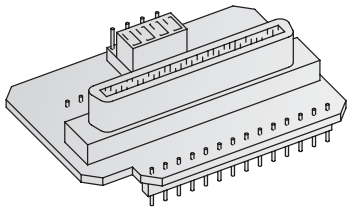
MELSEC AnS memory cassettes

The AnSCPUs all have a permanently installed RAM with 8 k, 14 k, 30 k or 60 k steps. EPROM and EEPROM memory cassettes are available for permanent storage.

The EPROMs are programmed via the A6WA-28P (A1SNMCA-8KP) or A2SWA-28P (A2SNMCA-□□KP) with the aid of GX Developer or GX IEC Developer.

Specifications		A1SNMCA-2KE	A1SNMCA-8KE	A1SNMCA-8KP	A2SMCA-14KP	A2SNMCA-30KE	A2SMCA-30KP	A2SMCA-60KE
Memory cassette	type	EEPROM	EEPROM	EPROM	EPROM	EEPROM	EPROM	EEPROM
For CPU type		A1SH	A1SH	A1SH	A2S	A2SH	A2AS	A2AS
Memory capacity	kbyte	8	20	20	32	64	64	128
	instructions	2 k	8 k	8 k	14 k	30 k	30 k	60 k
Order information	Art. no.	68835	68834	68832	38066	68831	54922	68000

MELSEC AnS Adapter Units

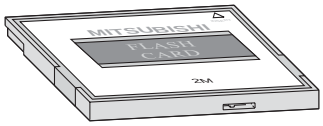


EPROM write adapter

The write adapters A2 SWA-28P and A6 WA-28P are used for writing on the memory cassettes A2S(N)MCA-□□KP and A1SMCA-□□ of the MELSEC AnS series.

Specifications		A2 SWA-28P	A6 WA-28P
For memory cassettes	type	A2SMCA-14KP/30KP	A1SMCA-8KP
Order information	Art. no.	38069	24987

MELSEC QnAS Memory Cards



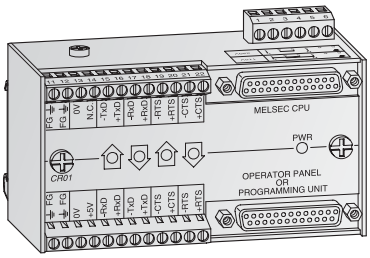
MELSEC QnAS memory cards

The QnASCPUs all have a permanently installed RAM. This memory can be extended with a variety of PCMCIA-memory cards.

The combination cards (with two memory types) have a non-volatile EEPROM memory which is programmable by GX IEC Configurator (former MM *plus*).

Specifications		Q1MEM-1MS	Q1MEM-2MS	Q1MEM-256SE	Q1MEM-512SE	Q1MEM-1MSE
Memory	type	Card	Card	Card	Card	Card
Memory capacity		1 MB SRAM	2 MB SRAM	128 kB SRAM, 128 kB EEPROM	256 kB SRAM, 256 kB EEPROM	512 kB SRAM, 512 kB EEPROM
Order information	Art. no.	64197	64196	64193	64204	68031

Interface Converter CR01-R2/R4 SET and CR01-R4/R4

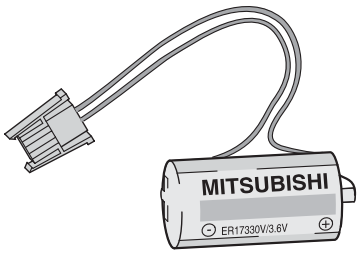


Photocoupler isolation

This module is a signal amplifier with photocoupler isolation for RS422 signals. It is used to connect a PLC with external devices like operation panels or a personal computer, especially when a potential isolation is required and when the wiring length takes more than 15 meters.

Specifications		CR01-R4/R4	CR01-R2/R4 SET
Interface converter		RS422 ↔ RS422	RS422 ↔RS232
Order information	Art. no.	56173	56172

Battery A6BAT



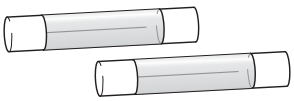
Data protection

The A6BAT lithium cell battery is already installed in every MELSEC A series memory cassette.

The battery protects the data in the cassette RAM when the power supply is switched off or in the event of power failures. It has a service life of around five years.

Specifications		A6BAT
Voltage	V DC	3,6
Backup time during power failure		A3NMCA-0 : 10800 h A3NMCA-40: 1400 h
Dimensions (Ø x H)	mm	Ø16 x 30
Order information	Art. no	4077

Fuses



Overcurrent protection

The output modules A1SY22, A1SY80 and A1SY81 are equipped with dedicated fuses for device protection.

Specifications	HM50C	LM50	LM32
For module	A1SY22	A1SX80	A1SY81
Rating	5 A	5 A	3.2 A
Type	Solder fuse	Plug fuse	Plug fuse
Order information Art. no	38361	32301	32303

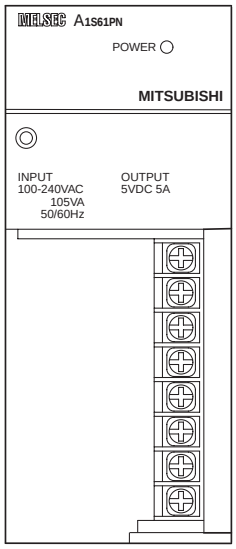
Dust Cover

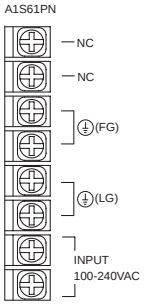
Dust and dirt protection

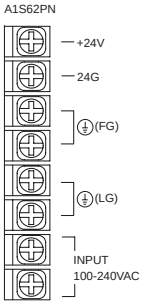
If I/O devices are mounted on an extension base unit, then the first module on the extension base unit should be equipped with a dust cover.

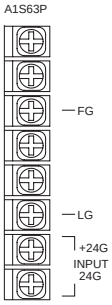
Specifications		Dust Cover
Material		Plastics
Dimensions (W x H)	mm	44 x 129
Order information	Art. no.	32299

MELSEC AnS Power Supply Modules

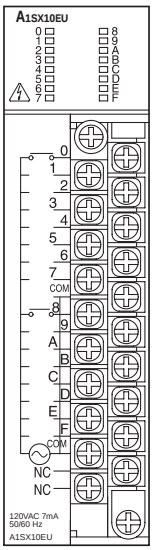


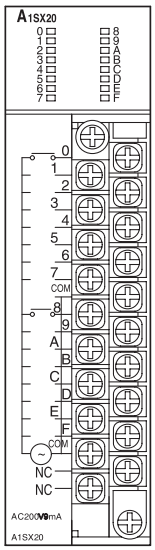


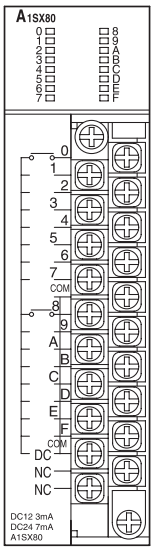


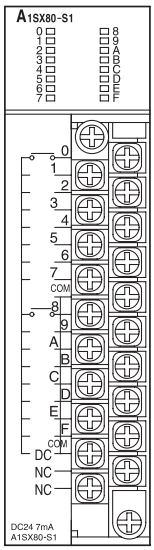


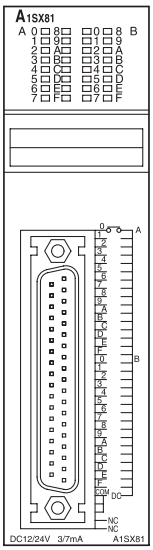
MELSEC AnS Digital Input Modules



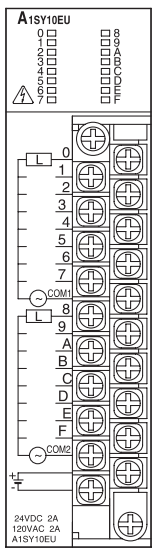


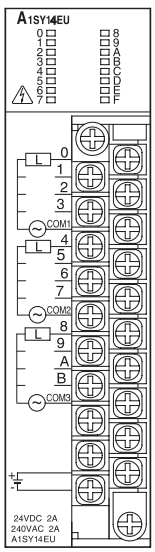


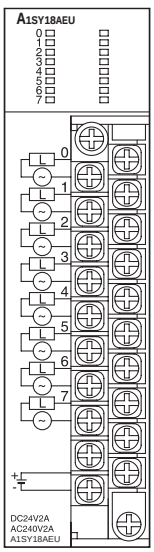


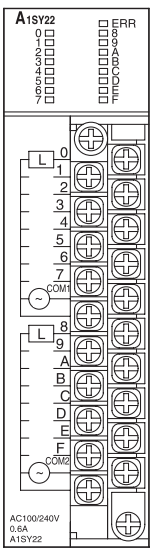


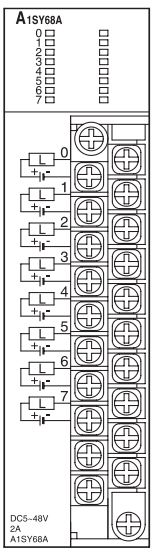
MELSEC AnS Digital Output Modules

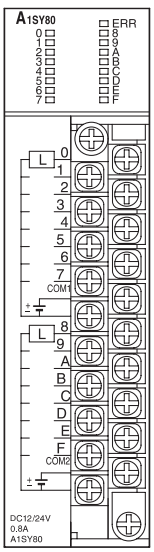


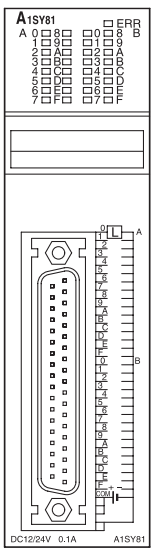




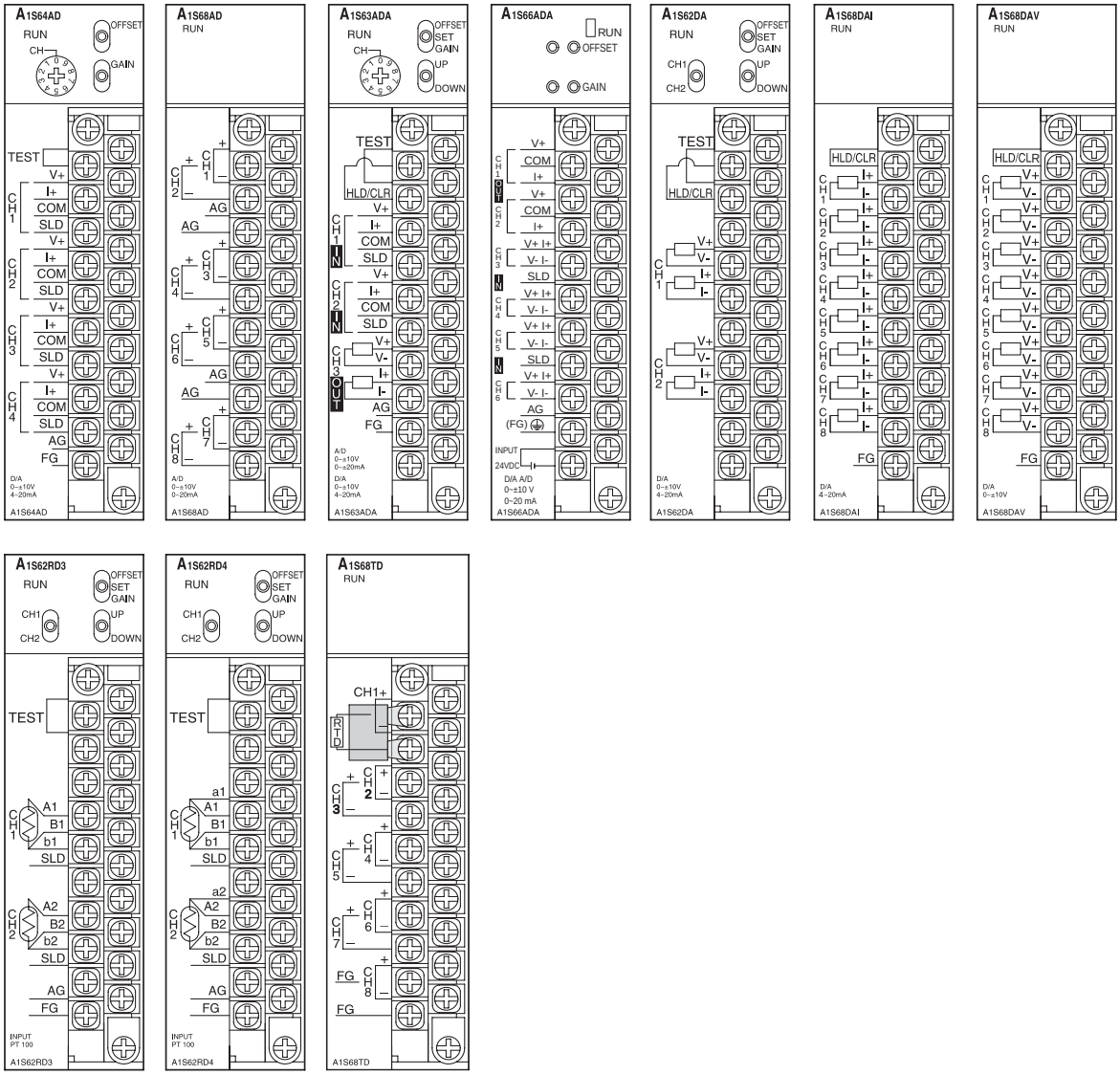




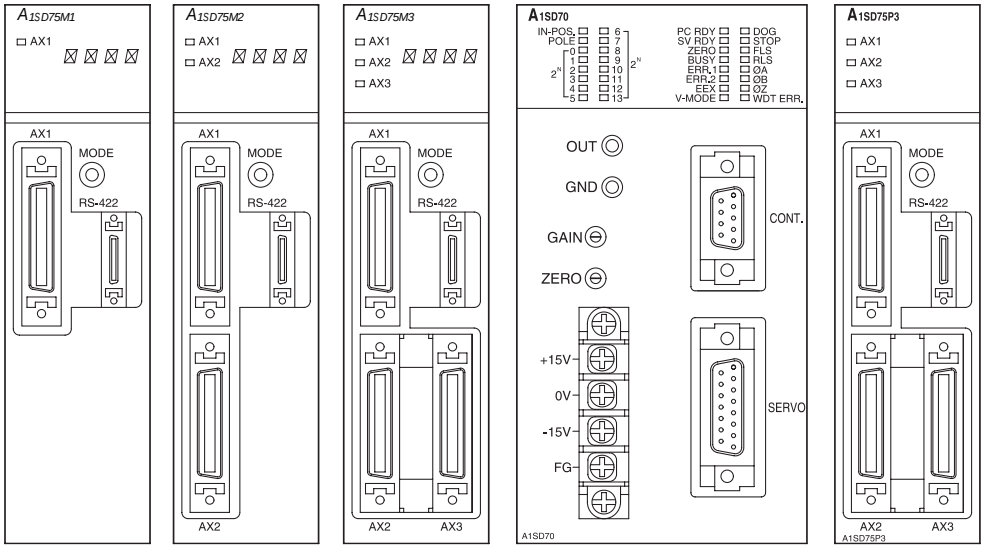




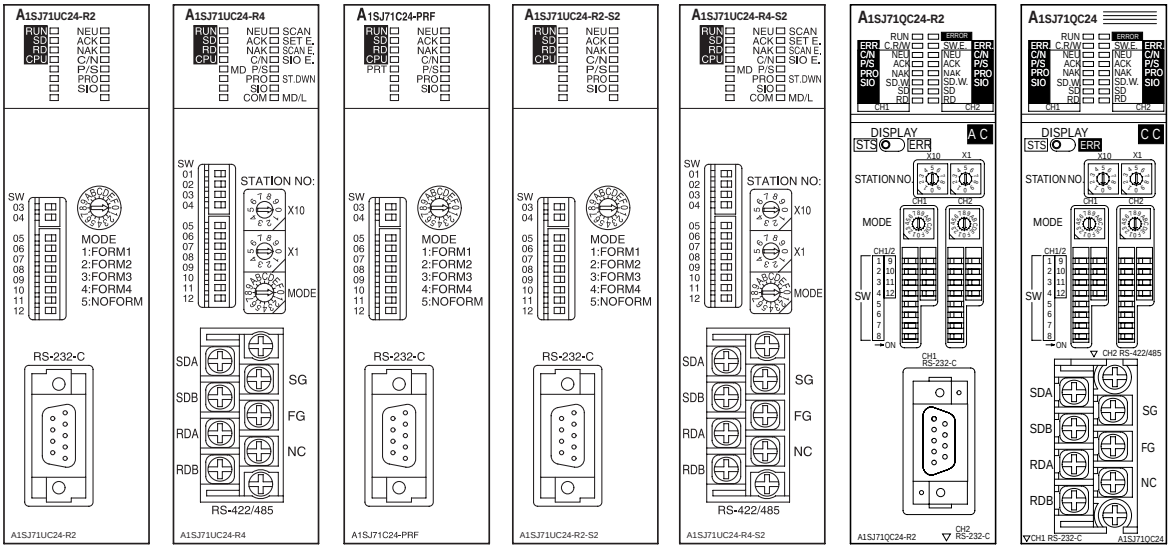
■ MELSEC AnS Analog Input/Output Modules



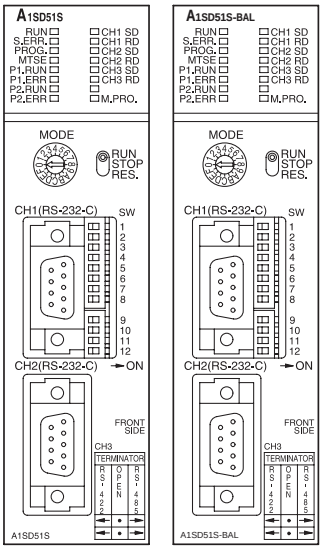
■ MELSEC AnS Positioning Modules



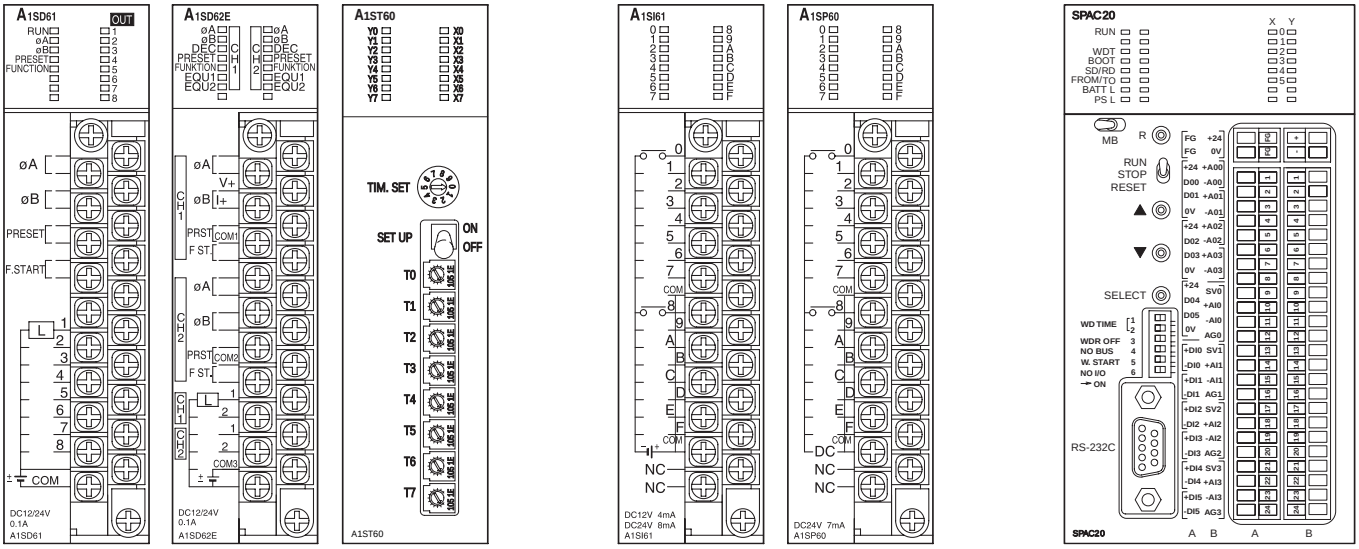
MELSEC AnS Interface Modules



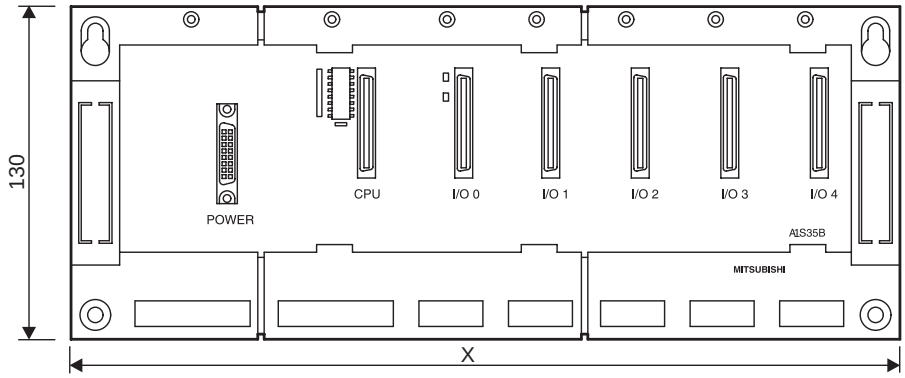
MELSEC AnS Communications Modules



MELSEC AnS Counter and Timer Modules, Pulse Catch and Interrupt Modules, Co-Processor module

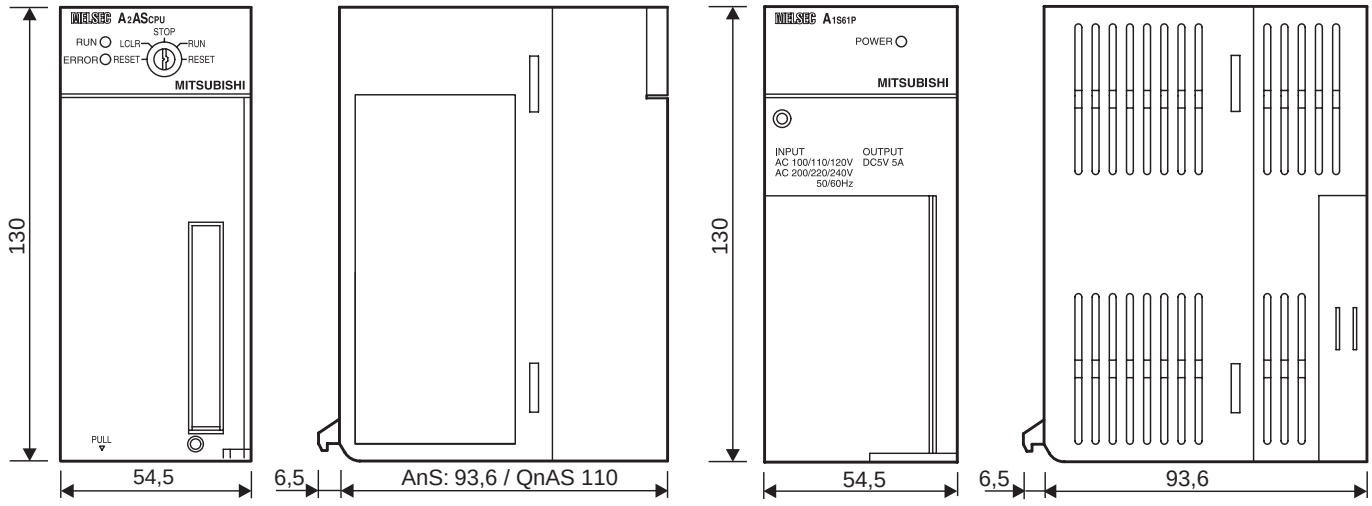


Base Units

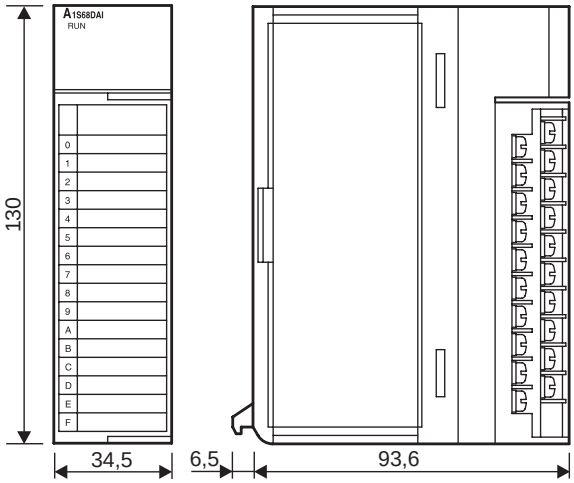


Type	X (in mm)
A1S32B-E	220
A1S33B-E	255
A1S35B-E	325
A1S38B-E	430
A1S38HB	430
A1S52B-S1	155
A1S55B-S1	260
A1S58B-S1	365
A1S65B-S1	315
A1S68B-S1	420

CPUs and Power Supply Modules

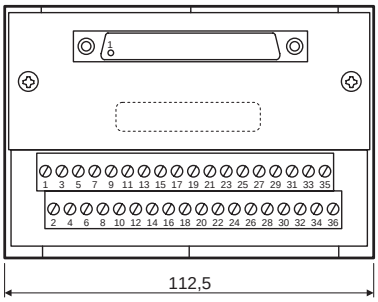


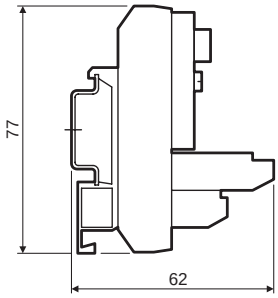
Digital and Special Function Modules



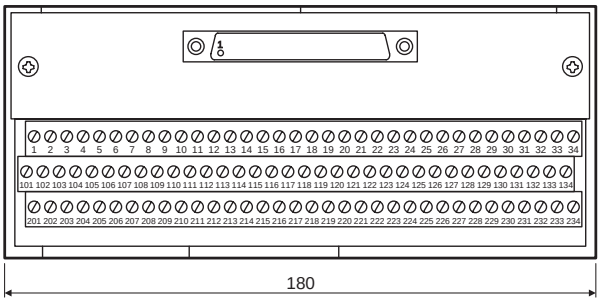
Systemterminals

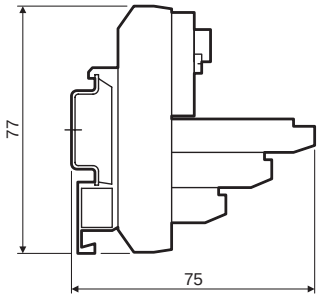
ST32 / ST-32-Diod



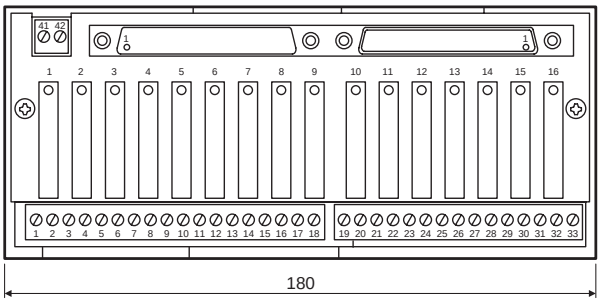


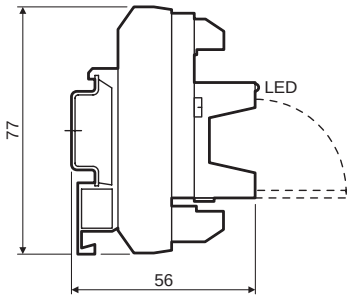
ST32-3



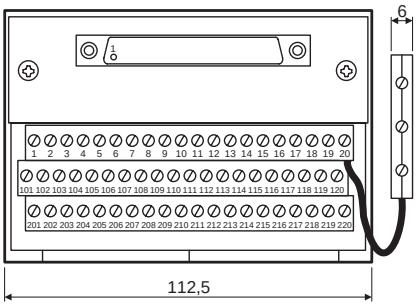


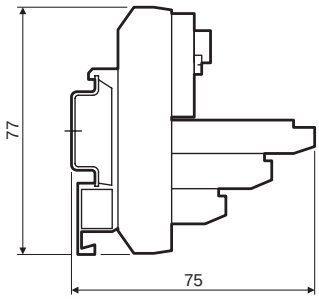
ST16-Socket



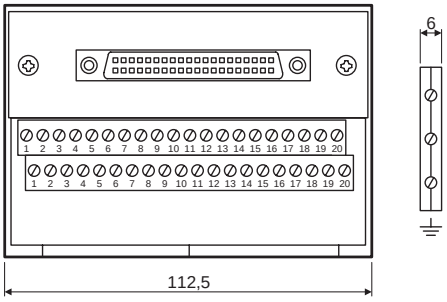


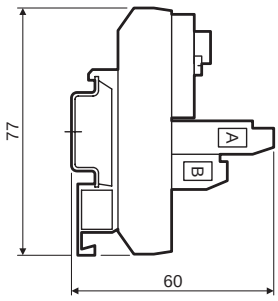
ST16-3





ST40





MELSOFT – Programming and Documentation Software for Standard Personal Computers

With the MELSOFT software family Mitsubishi Electric offers efficient software packages helping to reduce programming and setup times to a high degree.
The MELSOFT software family provides instant access, direct communications, compatibility, and open exchange of variables.

The MELSOFT family comprises:

- Programming packages like GX Developer and GX IEC Developer
- Network configuration software like for example GX Configurator DP
- Visualization software like for example MX Scada
- Software for a dynamic data exchange like MX Change
- Various development software for operator terminals (please refer to the technical catalogue HMI)

GX Developer is the right decision for a universal programming package. If additionally to the FX1N and FX2N series the programming of the Q series should be included, the GX Developer is the right choice.

For structured programming the IEC1131 (EN 61131) conform programming software GX IEC Developer is recommended.

For detailed information please order our separate MELSOFT brochure.

GX Developer

GX Developer is the standard programming software for all MELSEC PLC series and combines all functions of MELSEC MEDOC with the user guidance of Microsoft Windows.

With this software you can comfortably create PLC programs alternatively in the form of Ladder Diagrams or Instruction Lists. Both forms of representation can be toggled easily during operation.

Besides efficient monitoring and diagnostics functions GX Developer features an offline simulation of any PLC type.

With GX Developer all MELSEC PLCs from the FX1S to the Q25H (MELSEC System Q) are supported.

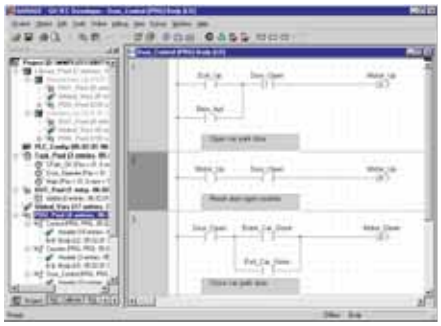
This software provides all the Windows-specific advantages and is especially suited to all MELSEC PLCs.

GX Developer can be run under Windows 95/98/XP and Windows NT/2000.

The software is supplied without a programming cable, which has to be ordered separately if required and which is used for the connection between the PLC and a serial interface of a personal computer.

Software		GX Developer V0800-1LOC-G	GX Developer V0800-1LOC-E
Series		All MELSEC PLCs	All MELSEC PLCs
Language		German	English
Disk type		CD ROM	CD ROM
Order information	Art. no.	152816	150420
Accessories		Programming cable SC-09, art. no.: 43393	

GX IEC Developer



GX IEC Developer provides all functions of the pre-mentioned programs and in addition meets the programming standard for the future: IEC 1131.3 (EN 61131). This makes the software ready for the programming standard of the future and offers beside the FX version in addition the full version as a basis for the on-leading programming of the MELSEC A and Q series.

GX IEC Developer can be run under Windows 95/98/XP and Windows NT/2000.

The software is supplied without a programming cable, which has to be ordered separately if required and which is used for the connection between the PLC and a serial interface of a personal computer.

Software		GX IEC Developer V0610-1LOC-G	GX IEC Developer V0610-1LOC-E
Series		All MELSEC PLCs	All MELSEC PLCs
Language		German	English
Disk type		CD ROM	CD ROM
Order information	Art. no.	160637	160643
Accessories		Programming cable SC-09, art. no.: 43393	

Visualization Software and Software for Dynamic Data Exchange

MX Change

MX Change is integrated in the MELSOFT family as the “heart of automation”.
The software package consists of a Server and a Super Project Manager, other automation programs can be connected to.
Since MX Change operates across a network, any variable once declared can be used by all other systems connected to the database.

Through this method following the principle “define once and use anywhere” the development time can even be decreased drastically.
The software runs under Windows 95/98 and Windows NT/2000.

Software	MX Change V0220-1LOC-E	MX Change 2000T V0220-0LOC-DEMO
Language	English	English
Executable tags		200
Disk type	CD ROM	CD ROM
Order information Art. no.	146559	146561

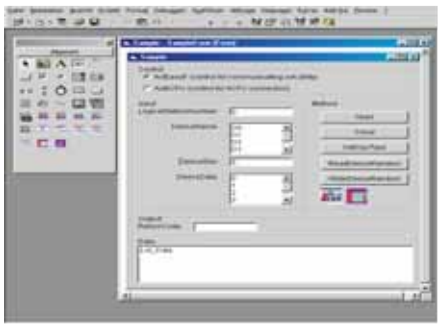
MX OPC Server

The OPC standard was developed for manufacturer independent communications between processes and Microsoft Windows® applications in client/server architecture.
OPC means "OLE for Process Control" and represents an application of the Microsoft DCOM technology (Distributed Component Object Model). In contrast to Active-X the OPC based data exchange especially features a higher performance.

The MX OPC server is a standardized software interface that enables Microsoft Windows® applications to access a Mitsubishi PLC quick and easily.
The software runs under Windows 95/98 and Windows NT/2000.

Software	MX OPC Server V0301-1LOC-E
Series	All MELSEC PLCs
Language	English
Disk type	CD ROM
Order information Art. no.	152233

MX Components



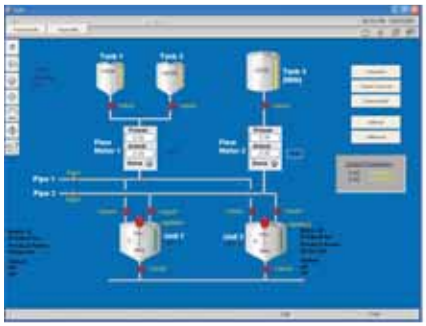
This software provides you with powerful Active-X elements. An internal driver manages the complete communications between your Microsoft Windows application and your process. Via MX components and a programming language (e.g. Visual Basic, Visual C++, etc.) you can easily create your own PC applications or integrate existing PC applications.

Moreover, via MX Components and VBA the complete MS Office range is at your service. Without high effort you can integrate online process data of a Mitsubishi PLC in your existing office software (e.g. MS Access or MS Excel etc.).

The software runs under Windows 95/98 and Windows NT/2000.

Software		MX Components V0200-1LOC-E
Series		All MELSEC PLCs
Language		English
Disk type		CD ROM
Order information	Art. no.	142848

MX4 SCADA



MX4 SCADA is a process visualisation system that can handle everything from simple installations to complex production control systems. The software package can administer an almost unlimited objects.

MX4 HMI is designed for small applications where there is no need for an extensive networked solution. However, if the application expands then it is easy to upgrade to MX4 SCADA.

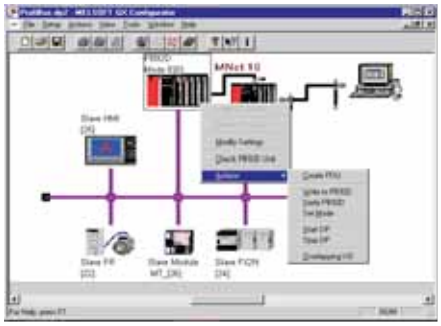
Also included with MX4 SCADA/MX4 HMI is FastLinx, a communication and data exchange tool that make set-up simple and directly links MX4 to GX IEC Developer to ensure consistent use of PLC devices.

The software runs under MS Windows® 95/98/NT4/2000 and XP and is available in a variety of different versions geared to the objects to be handled.

Software		Development version	Run-time version
Series		All MELSEC PLCs	All MELSEC PLCs
Language		English	English
Disk type		CD ROM	CD ROM
Order information	Art. no.	On request	On request

Software for Profibus Networks

GX Configurator DP



The Software GX Configurator DP is a user friendly configurations software for the open network PROFIBUS/DP.

The software package is a 32 bit application and runs under Windows 95/98 and Windows NT4.0. Configuration of all PROFIBUS modules for the MELSEC A and the MELSEC system Q and also the FX family is possible.

Due to the supported extended user parameters of a GSD file, easy parameter setting of PROFIBUS/DP slave devices is possible even for third party devices.

The Software GX Configurator DP enables the download of all configuration data via an overriding network.

All PROFIBUS modules are configured via the backside bus.

Software	GX Configurator DP V0600-1L0C-E
Supported Profibus/DP master modules for the Mitsubishi MELSEC series	A1SJ71PB92D, AJ71PB92D, QJ71PB92D
Language	English / German
Disk type	CD ROM
Order information Art. no.	155928
Accessories	Programming cable QC30R2, art. no.: 128424; QC30-USB, art. no.: 136577

GX Monitor DP

With the new GX Monitor DP Software it is possible to make Diagnostics in graphical or text for PROFIBUS/DP networks and PLC via Internet. With the use of the standard Internet Explorer® it is quite simple to use and easy to run on different PC platforms.

GX Monitor DP kann unabhängig oder in Kombination mit GX Configurator DP verwendet werden.

This software can be used independent or in combination with GX Configurator DP.

Software	GX Monitor DP V0100-1L0C-E
Supported PROFIBUS/DP master modules for the Mitsubishi MELSEC series	A1SJ71PB92D, AJ71PB92D, QJ71PB92D, QJ71PB93D
Language	English
Disk type	CD ROM
Order information Art. no.	143971
Accessory	Programming cable SC-09, art. no.: 43393

PROFIBUS Master Simulator

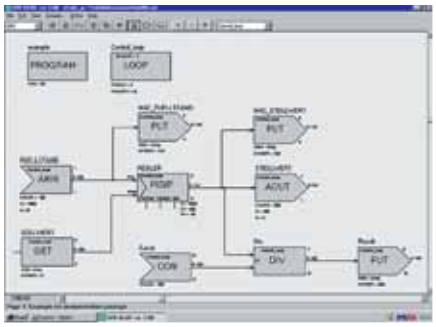
The PROFIBUS Master Simulator is an easy to use and versatile utility for the specifications exchange with PROFIBUS slaves. For this purpose the PROFIBUS Master Simulator is capable of exchanging the specifications with many slaves even without a GSD file, a type file, and a PROFIBUS master. Without further input or additional files PROFIBUS slaves can be startet using their base I/O range.

Input specifications can be read and output specifications can be written. Furthermore, the PROFIBUS DP Master Simulator obviously supports GSD files as well as entering particular configurations for starting the specifications exchange with PROFIBUS slaves. Adressing is supported either. The PROFIBUS Master Simulator provides an option to scan the entire PROFIBUS for connected participants and display them graphically.

The PROFIBUS Master Simulator is a development of the company Bihl & Wiedemann GmbH (www.bihl-wiedemann.de) and is not distributed by Mitsubishi Electric.

Graphical Programming for Closed-loop Control Systems

IDR BLOK



IDR-BLOK is a user-friendly development tool for programming closed-loop applications using PLC technology. Configuring a controlled system couldn't be simpler – you just assemble it graphically by placing function blocks on the screen and the integrated compiler than generates the code for the PLC. The open design means that the user can intervene and change the control parameters at any time with the PLC program.

Additional function blocks for autotuning, fuzzy logic and ATHC are available in combination with the run-time module IDR10F-ADU.

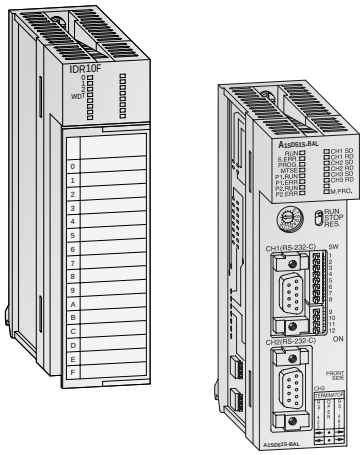
IDR-BLOK turns a sequential logic controller into a multi-loop controller. It is the closed-loop programming software package for all AnSH/QnAS* controllers (*QnAS only in combination with a co-processor module).

The software runs under Windows 95/98 and Windows NT.

Software		Full version	Compact version	Demo version
Application	CPU	AnSH (AnN)*		
	with Co-Processor*	AnAS, QnAS (AnU, AnA, QnA)*		
Max. used blocks per application		1.024	64	16
Language		English		
Disk type		CD ROM		
Order information	Art. no.	129666	129665	on request

* For the AnN, AnU, AnA and QnA series the following accessories are required:
connection cable A1SC05NB (art.no. 24983) and extension base unit A1S52B-S1 (art.no. 39667).

RUN-Time Products for IDR BLOK



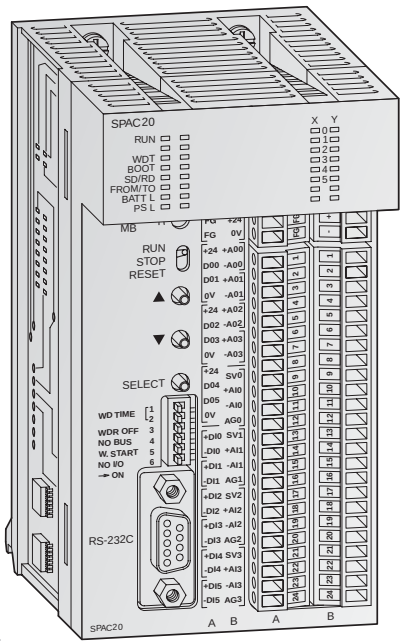
To use the IDR-BLOK software the hereafter described run-time modules are necessary. These modules are available as single modules or within a bundle package.

The IDR function module IDR10F is an integrated necessary part of the run-time package. It provides supervisory functions for the customer with digital output watch dog alarm signals and protects the process control against unexpected troubles.

The A1SD51S-IDR is a co-processor module which is a standard MELSEC high-speed communication module A1SD51S with a preloaded IDR BLOK interpreter.

Specifications		IDR10F-STD	IDR10F-ADV	IDR bundle 1	IDR bundle 2
Shipping contents		1 x IDR10F-STD	1 x IDR10F-ADV	IDR-BLOK software, 1 x IDR10F-STD, 1 x A1SD51S-IDR	IDR-BLOK software, 1 x IDR10F-ADV, 1 x A1SD51S-IDR
Program features	Function blocks	Max. 1024	Max. 1024	Max. 1024	Max. 1024
	Additional functions	—	Fuzzy logic, GAT, ATHC	—	Fuzzy logic, GAT, ATHC
Software		—	—	IDR-BLOK 4.10	IDR-BLOK 4.10
Module dimensions		34.5 x 130 x 93.6	34.5 x 130 x 93.6	34.5 x 130 x 93.6	34.5 x 130 x 93.6
Order information	Art. no.	125359	129658	87511	on request

■ Co-Processor Module SPAC20



MELSEC SPAC20

The SPAC20 is a co-processor module for special process applications and high-end process control. It is the ideal supplementation for the IDR BLOK Software.

Furthermore self-developed control applications can be realized with C programming language.

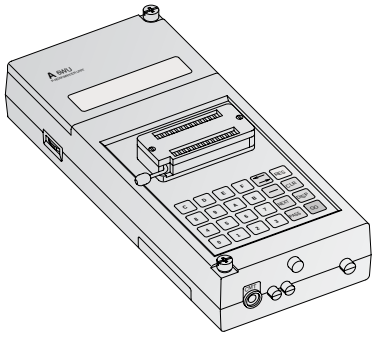
Special features:

- C programmed user's tasks
- Communication with PLC processor via fast back plane bus
- Real-time execution
- Special non-linear processes with fast FUZZY controller
- Integrated fast digital and analog inputs and outputs
- Stand-alone possibility

Specifications		SPAC 20
Working environment		MELSEC AnS/QnS or AnU/QnA* series PLCs or as stand alone device without CPU
Processor		40 MHz Texas Instruments TMS 320C32 DSP with floating point
Memory		2 MB RAM battery backed-up, 2 MB FLASH
Peripheral communication		RS232C, up to 56 Kbaud
Digital inputs	Number	6
	Response time	< 20 µs in high-speed mode
	Voltage	24 V (OFF < 5V, ON > 12V)
	Nominal input current	7.7 mA
	Max. input voltage range	-24 V bis +40 V
	Frequency meters	4 digital inputs can be used as frequency meters (up to 20 kHz each)
	Galvanic isolation	Separate for each channel, no common
Digital outputs	Number	6
	Nominal current	0.5 A
	Protection	Short-circuit, thermal overload, reverse polarity
	Galvanic isolation	Between each pair of outputs and A-BUS
Analog inputs	Number	4
	Sampling rate	80 µs in fast mode, 160 µs in normal mode
	Resolution	16 bits
	Galvanic isolation	Between analog common and A-BUS
	Voltage	-10 V to +10 V DC
	Current	-20 mA to +20 mA
	Optional Piggy back modules	Pt-100/Pt-1000, R100/R1000 Ω, separate galvanic isolation 4–20 mA
Analog outputs	Number	4
	Refresh rate	80 µs in fast mode, 160 µs in normal mode
	Resolution	12 Bit + sign in voltage mode, 12 bit in current mode
	Galvanic isolation	Between analog common and A-BUS
	Voltage	±10 V DC
	Current	0/4 to 20 mA
	Protection	Short-circuit in voltage mode
Power supply	From the back plane	Approx. 0.4 A at 5 V DC
	External voltage	24 V DC (±20 %)
	Current	Approx. 15 mA for digital outputs; up to 200 mA for analog I/O board
Programmable with		IDR BLOK and/or TI "C" programming language
Order information	Art. no.	on request
Accessory		Clamp type terminal blocks, Piggy back module Pt-100/Pt-1000 or R100/R1000 Ω, Piggy back module separate galvanic isolated analog input channels 4–20 mA, IDR BLOK programming tool, TI development tools for "C" language programming

* Connection to the MELSEC AnU/QnA series is only possible via extension base unit A1S52B-S1

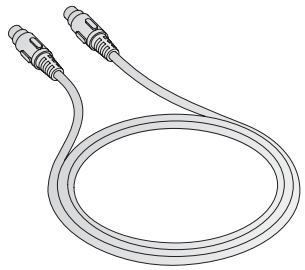
A6WU EPROM Writer



The EPROM writer A6WU is used for transfering the PLC programs of the MELSEC Q controller to the EPROM memory cassette. Conversely, existing programs on the memory cassette can be written into the CMOS RAM of the controller and program comparisons can be carried out.

		A6WU
Order information	Art. no.	3921

Connecting Cable



The cables AC30R4 and AC300CR4 are used for connecting the hand-held programming unit to the controller.

The cable AC 30WU is used for connecting the EPROM writer.

Specifications		AC 30R4	AC300CR4	AC 30WU
Connecting device		A7PU	A7PU	A6WU
Length	m	3	30	3
Order information	Art. no.	3930	3928	15033

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Order declaration

Pos.	Number	Item (type)	Article number	Description	Remarks

Notes when ordering:
When ordering, please use only the type designations and order numbers shown in this catalogue.

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