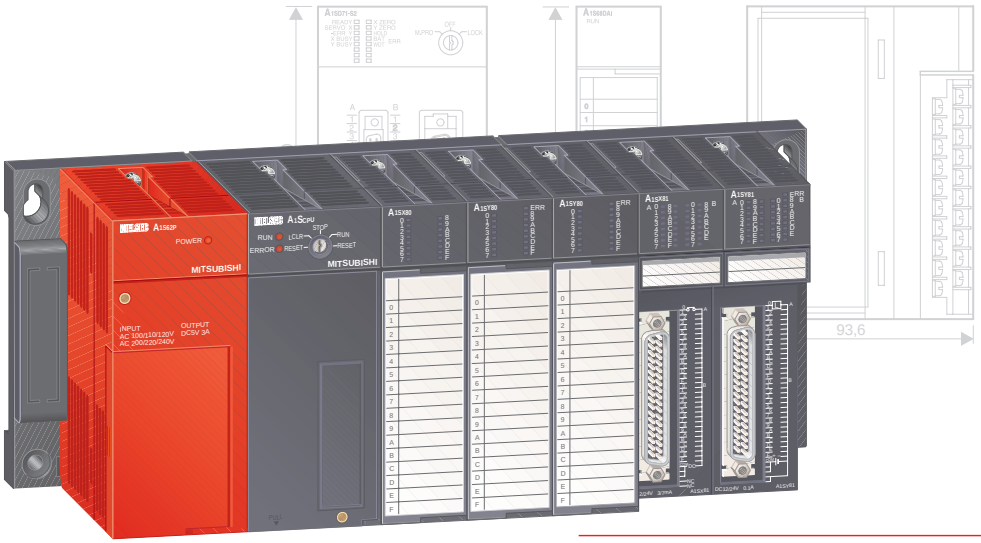
MITSUBISHI ELECTRIC

Programmable
Logic
Controllers

MELSEC AnS, QnAS



Technical Catalogue

2000

Return

New Items in this Catalogue

New Products 03/00

Basic Components

The SLOT PLC A80BDE-A2USH-S1 adds a MELSEC CPU in the form of a plug-in board for a personal computer to the CPUs of the AnS/QnAS series.

Communications and Special Functions Modules

The line of MELSECNET/10 modules is extended by the floating master module AJ71QLR21 for coaxial connections.

The former MELSECNET/10 interface boards A7BDE-J71LP21 and A7BDE-J71BR11 were replaced by the 4 newly developed boards A70BDE-J71QLP23, A70BDE-J71QLP23GE, A70BDE-J71QLR23, and A70BDE-J71QBR13.

For the AS interface the master module A1SJ71AS92 is provided for the connection between the AnS/QnAS and the AS-I network.

Software

The graphical programming software IDR-BLOK for closed-loop control systems is supplemented by the co-processor module A1SD51S-IDR and the function modules IDR10F-STD and IDR10F-ADV

Further Publications within the PLC Range

Technical Catalogues

AnU, QnA Series Technical Catalogue

Product catalogue for programmable logic controllers and accessories for the MELSEC A and Q series (art no. 61747)

FX 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)

TÜV CERT DIN ISO 9001 / EN 29001

CE

About this product catalogue

This catalogue is periodically updated due to product range enlargement, technical changes or new or changed features. For actual information about updates, changes, news or even support matters please contact the MITSUBISHI MEL-FAX faxback system (fax: +49 2102 486-485 or -790) or have a look at the MITSUBISHI ELECTRIC web pages under www.mitsubishi-automation.com. Both media are nearly daily updated and available in two languages.

Texts, figures and diagrams shown in this product catalogue are intended exclusively for explanation and assistance in planning and ordering the programmable logic controllers of the MELSEC 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 this documentation must be read before installation and commissioning of the units or software.

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

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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.

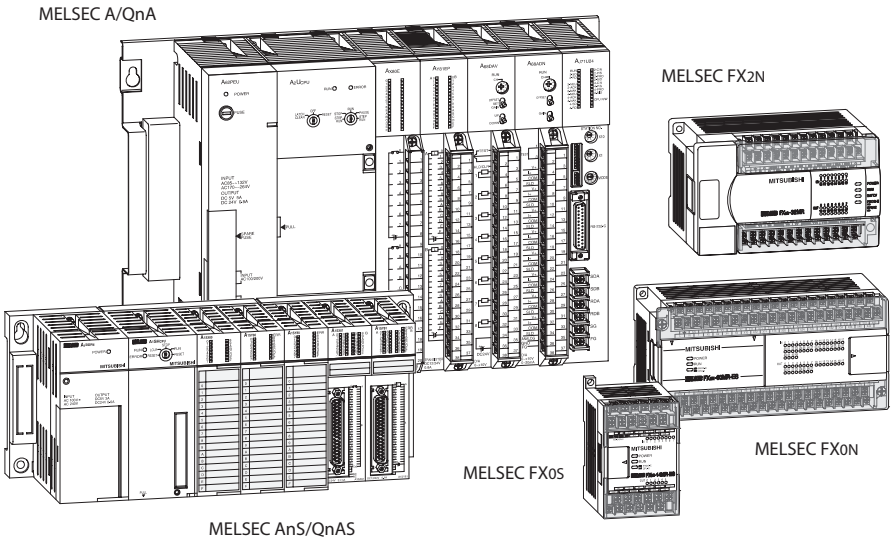
The small size and the communications capability are two important characteristics of the MELSEC AnS. Its compactness ensures that it occupies less space in the switchgear cabinet and its diverse communication facilities guarantee flexibility and openness. Expandable from 32 to 1024 inputs/outputs, this 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 a local network (MELSECNET), 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

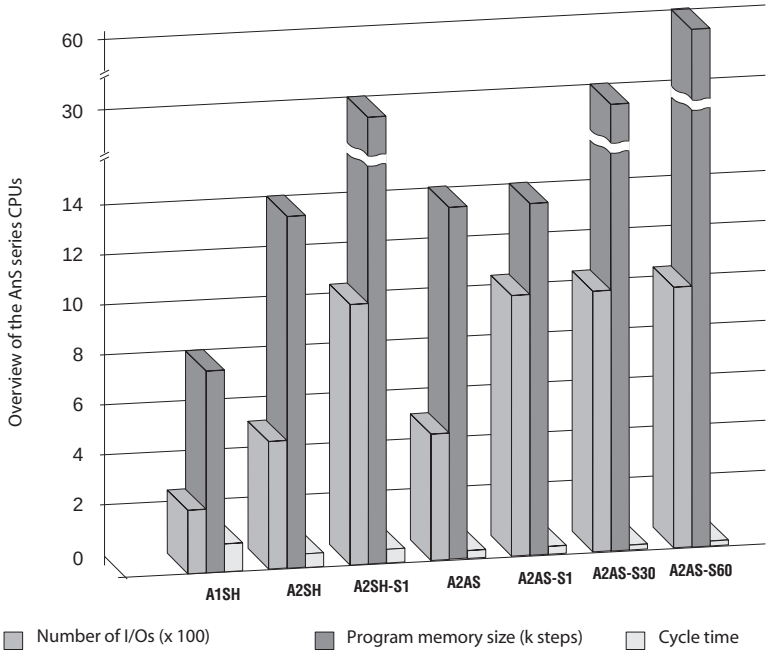
In the AnS series, simply changing the CPU ensures that the performance of the PLC grows with the application. Thus, up to 1024 input/output addresses and up to 60 k program memories can be accessed.

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.

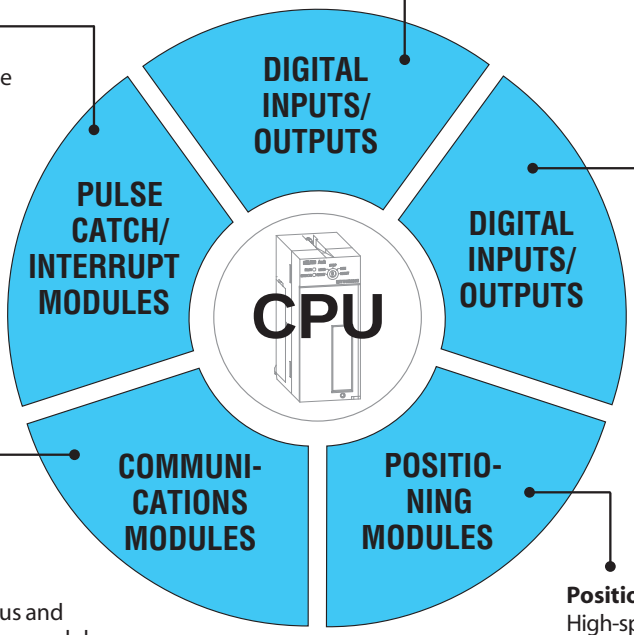


Equipment Features

Owing to the modular concept, the AnS 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

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	AnU/QnA series	A1SHCPU, A2SHCPU(-S1)	A2ASCPU(-S1), A2ASCPU-S30/-S60	Q2ASCPU(-S1), Q2ASHCPU(-S1)
A1SJ71UC24-R2 (PRF/R4), A1SJ71E71-B2(-S3), A1SD51S	AD51(-S3), AD51H(-S3), AD57G(-S3), AJ71C22, AJ71C24(-S3/-S6/-S8), AJ71UC24, AJ71E71(-S3)	up to 2 modules per system	up to 6 modules per system	up to 6 modules per system
A1SI61	AI61(-S1)	only 1 module per system	only 1 module per system	only 1 module per system
A1SJ71AT21B, A1SJ71AR21	AJ71AT21B, AJ71AR21, AJ71AP21	only 1 module per system	up to 2 modules per system *	up to 2 modules per system *
A1SJ71BR11, A1SJ71LP21GE, A1SJ71LP21	AJ71BR11, AJ71LP21GE, AJ71LP21	only 1 module per system	up to 4 modules per system *	not possible
A1SJ71QBR11, A1SJ71QLP21	AJ71QBR11, AJ71QLP21, AJ71QLP21G	not possible	not possible	up to 4 modules per system *
A1SJ71QE71-B2/-B5	AJ71QE71	not possible	not possible	
A1SJ71QC24(-R2)	AJ71QC24	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)

The MELSEC QnAS Series

Description

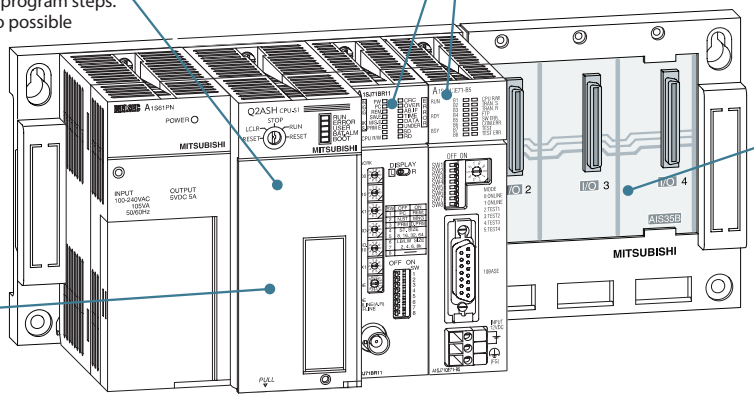
The MELSEC QnAS(H) series is an extremely compact and very powerful new generation of controllers from MITSUBISHI ELECTRIC. Outstanding features include very fast program cycles, ample memory for large amounts of data (approx. 1 mega words) and significantly increased network access speed. These controllers 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, A1SJ71QE71-B2/B5
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

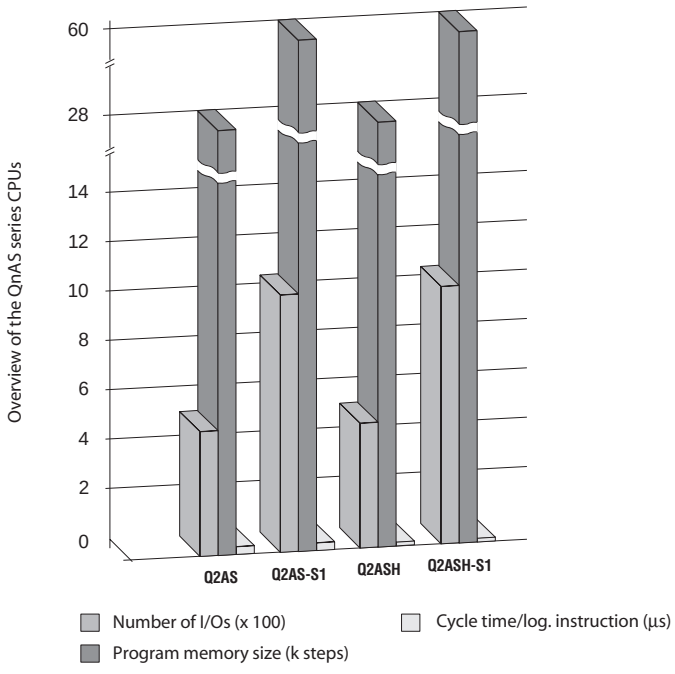
As with other Mitsubishi controllers the power of the QnAS series grows with your application – you simply replace the CPU. The system can be upgraded to a maximum capacity of 1024 centralised I/Os or 8192 remote I/Os.

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.

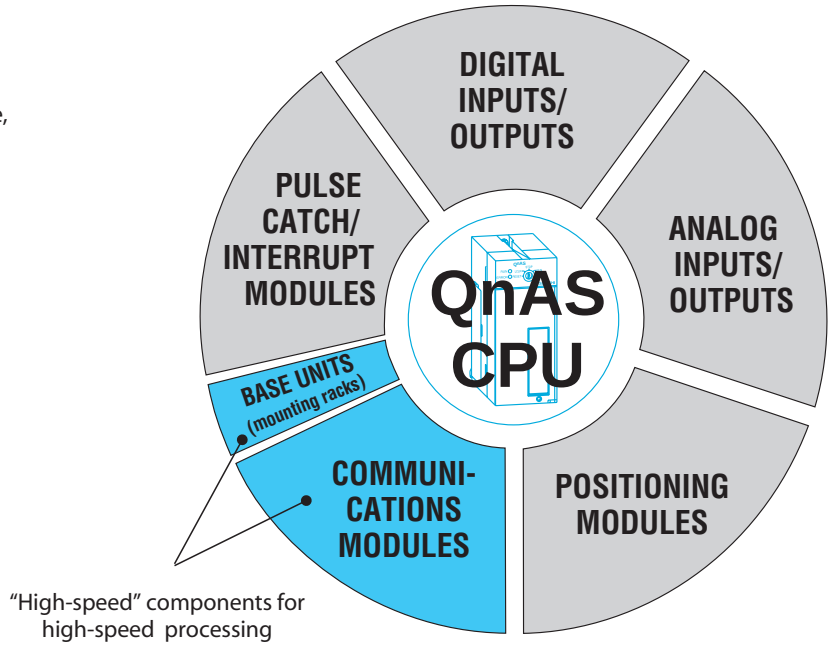


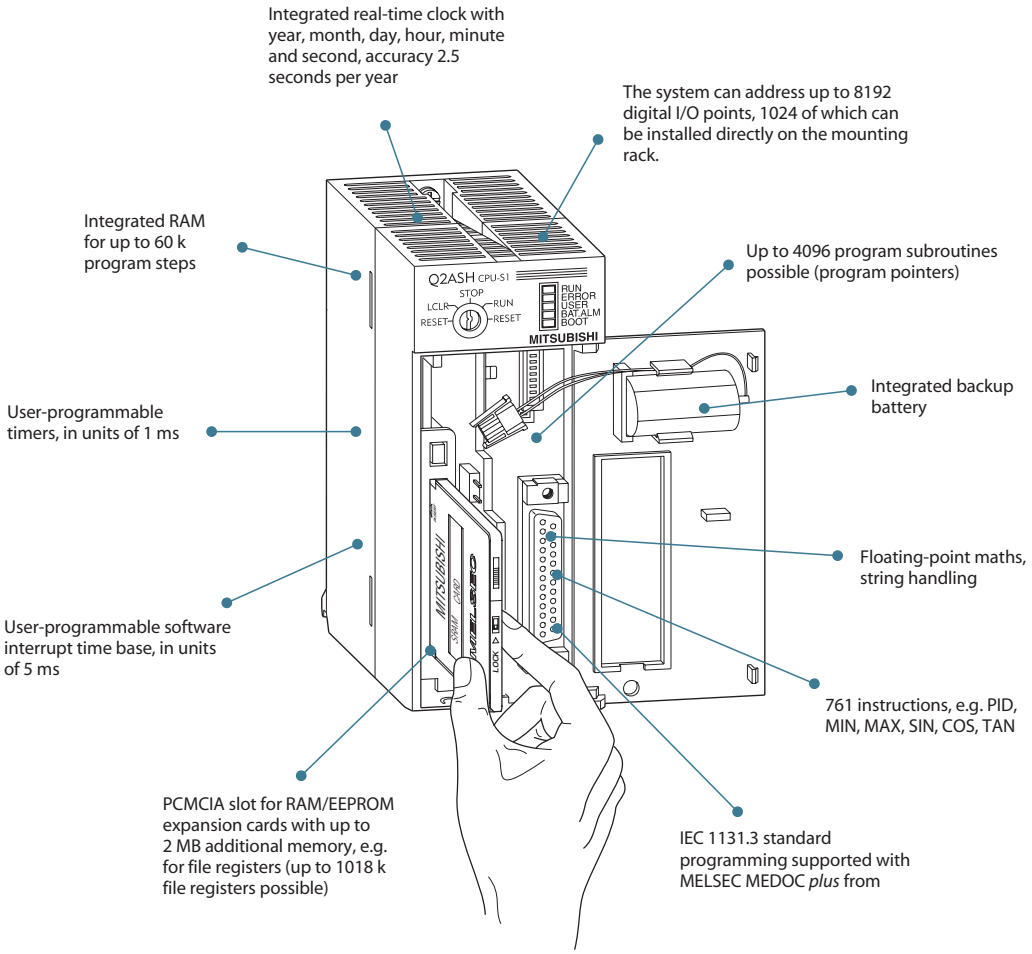
Equipment Features

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.





Configuration

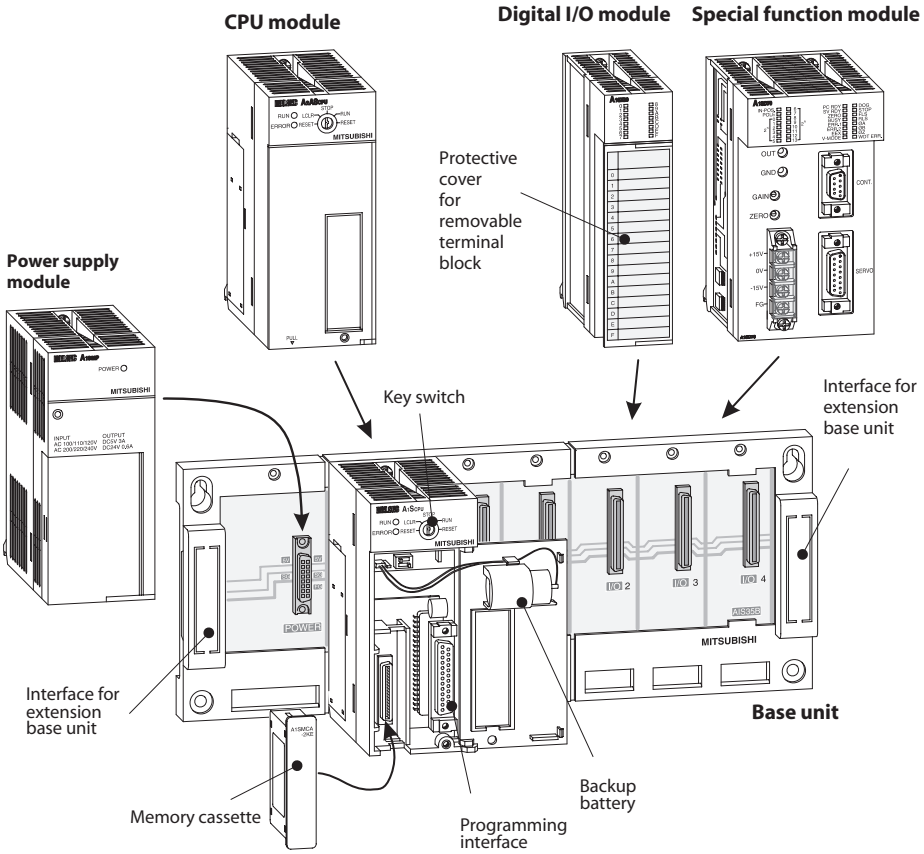
System structure

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.



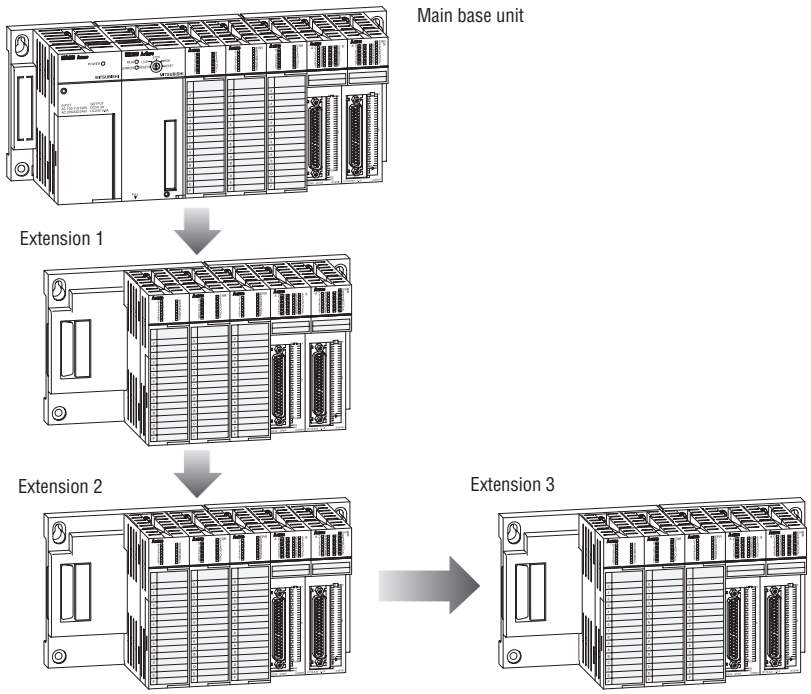
Extension

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.

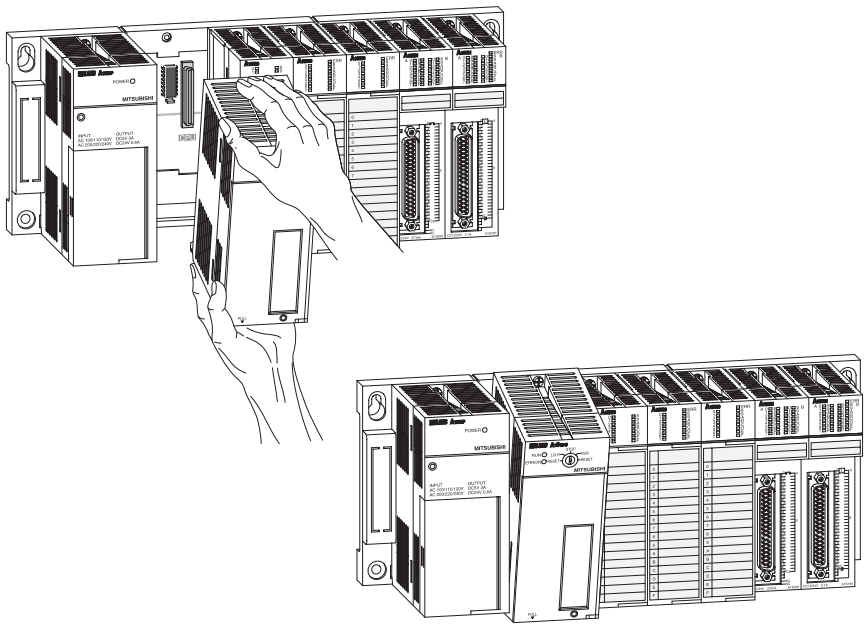


Handling

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.

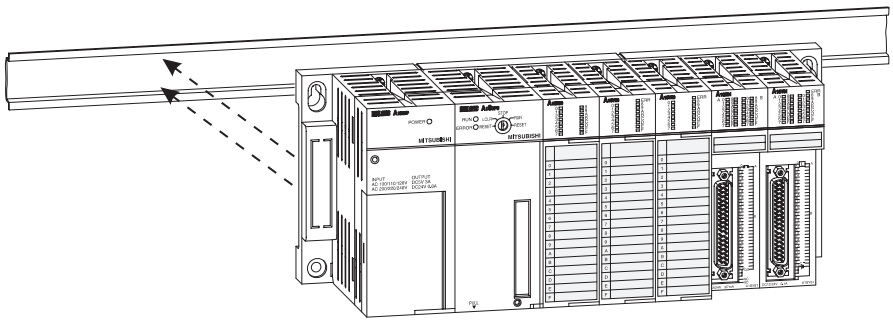
If it becomes necessary to change an I/O module, the screw terminal block can be removed beforehand. Thus, it is not necessary to disconnect the entire cabling but only 2 screws.



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 und -NET(II)

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

MELSECNET/B

A cost-effective alternative within the production level. Enables implementation of easily-manageable configurations for complex applications by means of distributed intelligence.

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 I/O-LINK

Remote module distribution to the machine. Devices of third party manufacturers can be integrated. Cabling with twisted pair cable in a tree structure.

MELSEC FX Peer-to-Peer

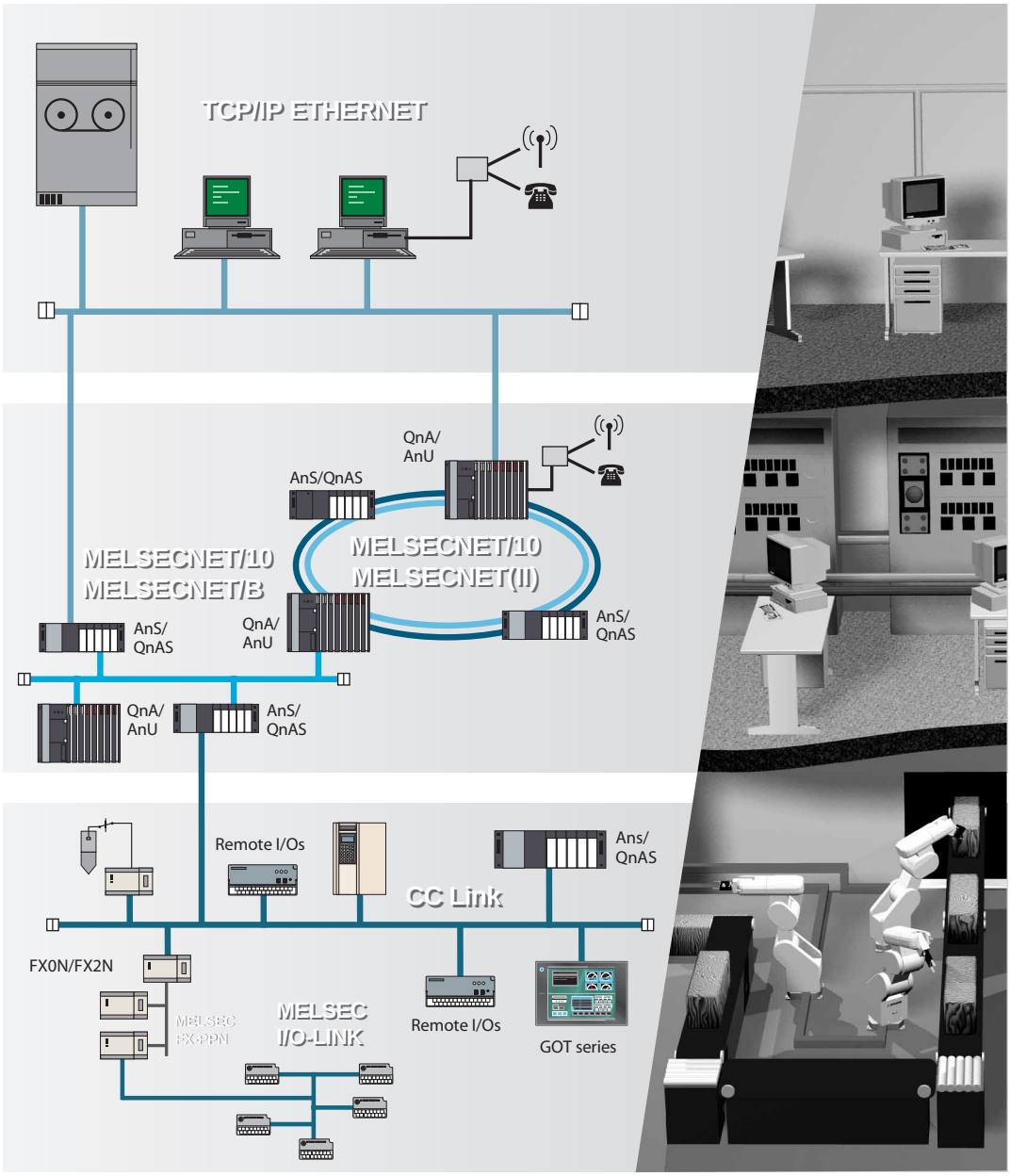
The PPN construction enables a network for up to 8 FX2N and FX0N controllers as clients.

The max. coverage is up to 500 m.
A standard twisted-pair cable can be used as the communications media.

COMMAND LEVEL
TCP/IP ETHERNET

CONTROL LEVEL
MELSECNET/10
MELSECNET(II)
MELSECNET/B

PRODUCTION LEVEL
CC-Link
MELSEC I/O-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.

Profibus FMS

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

Profibus DP

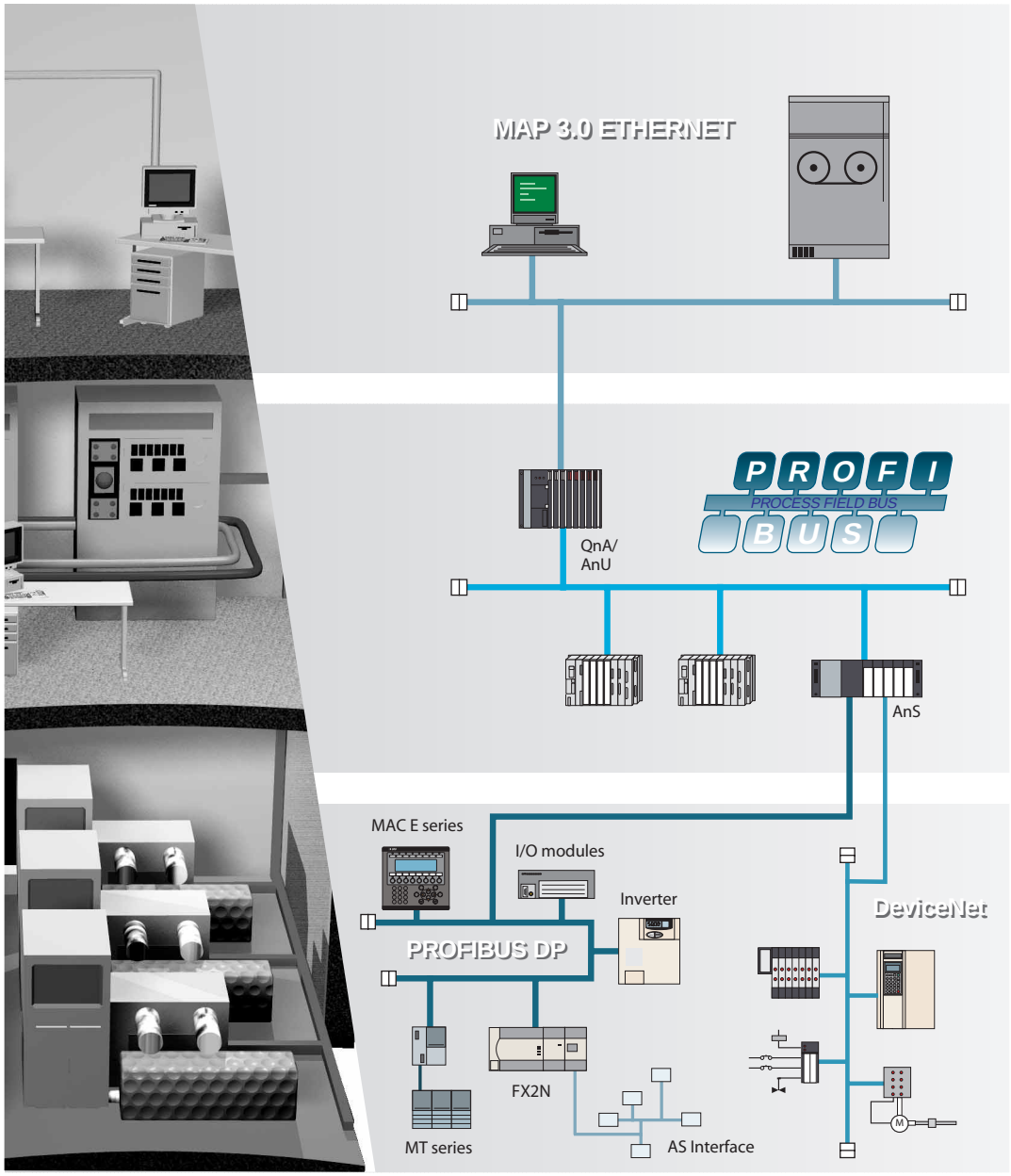
Enables quick and simple connection of sensors and actuators from different manufacturers to MELSEC PLCs, with data transfer rates of up to 12 Mbaud.

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.

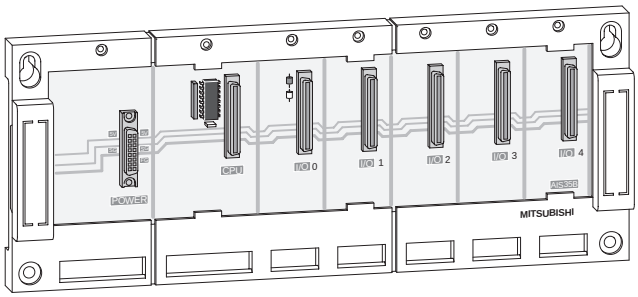


COMMAND LEVEL
MAP 3.0 ETHERNET

CONTROL LEVEL
Profibus FMS

PRODUCTION LEVEL
Profibus DP
DeviceNet
AS Interface

■ 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.

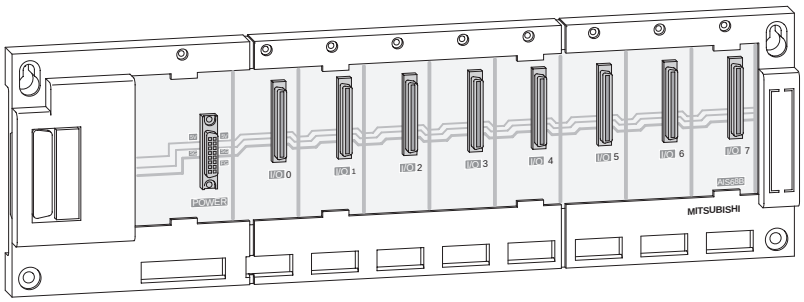
Special features:

- 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.

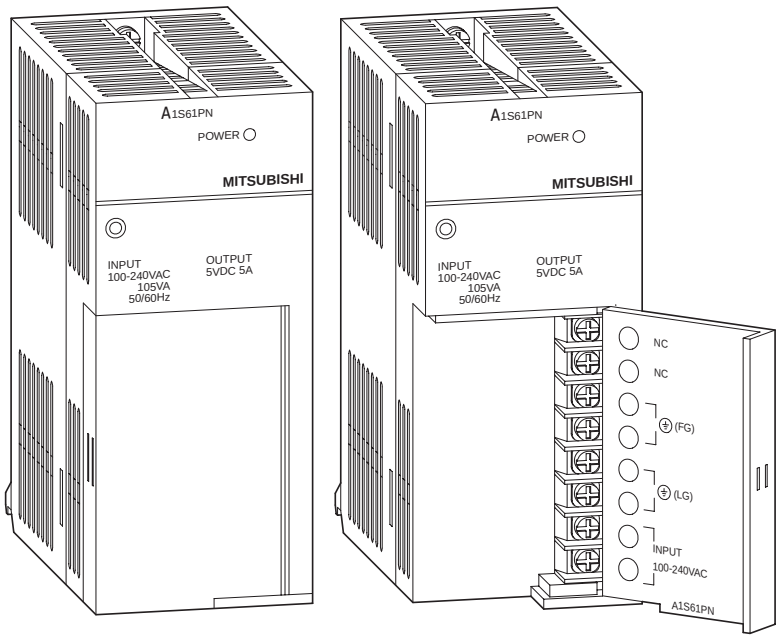
An extension base unit with a power supply module must be used in the following cases:

- 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 79)				

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

■ MELSEC AnS/QnAS Power Supply Modules



Power supply modules

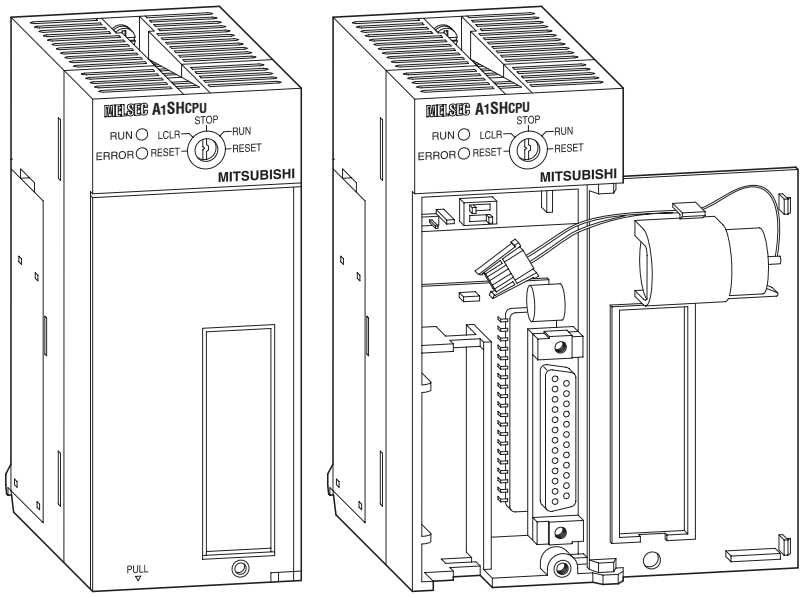
They supply the individual modules with the voltages required for operation. The choice is dependent on the power consumption of the individual modules.

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.

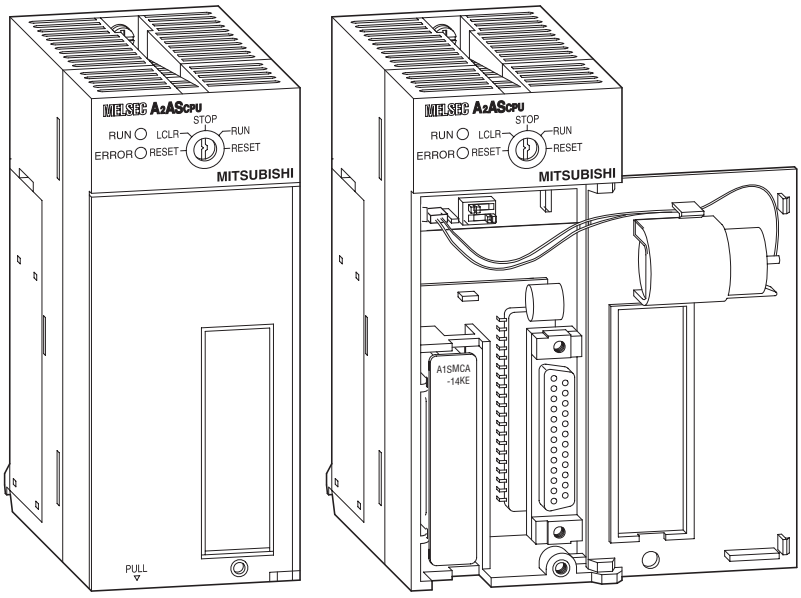
Special features:

- 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 78)		

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 dispose of more program capacity and shorter cycle time.

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

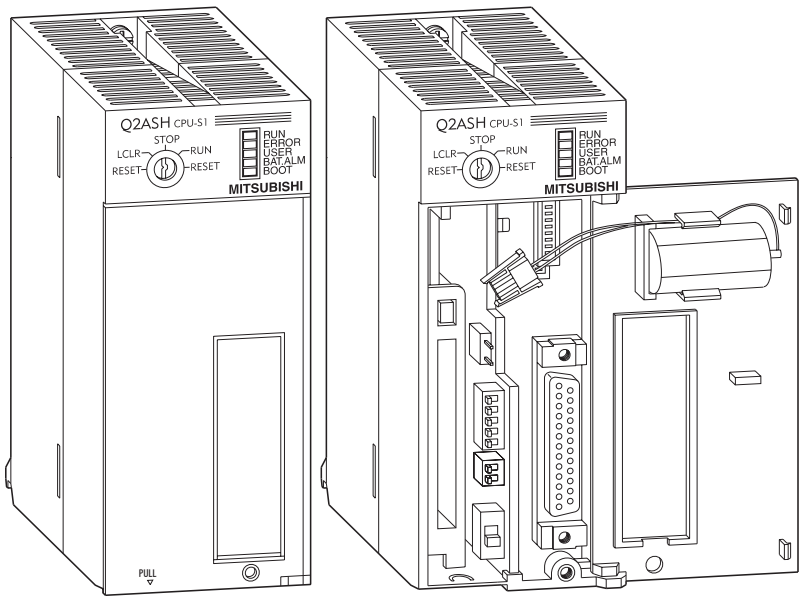
Special features:

- 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	0.15 µs/log. instruction	0.15 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)			6144 / 256	6144 / 256	6144 / 256	6144 / 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 80)			

① Independent
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.

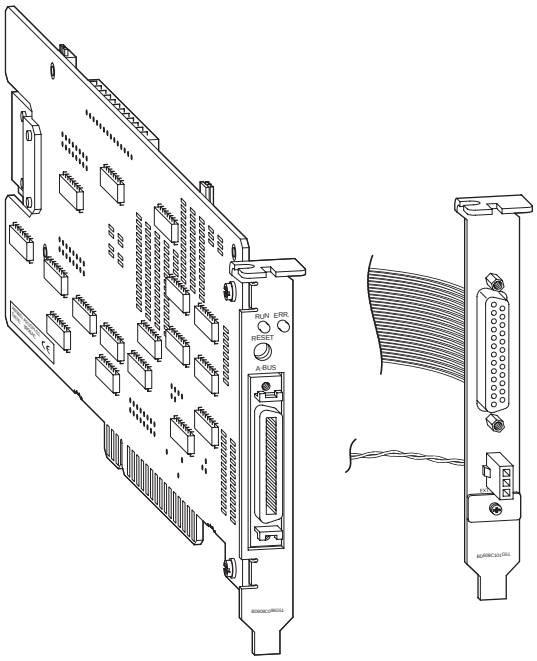
Special features:

- 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 80)			

① Interdependent
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 Window NT (from version 4.0)

Special features:

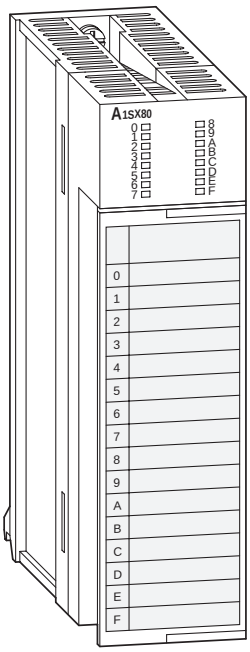
- 32 bit PCI board with 33 MHz bus clock rate
- Extension units with modules of the AnU/AnS series can be connected
- Installation software included when shipped
- Programmabel by MELSEC MEDOC *plus* and GPP/Win
- Access to devices of the CPU with the help of the programming languages Visual C++ or Visual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

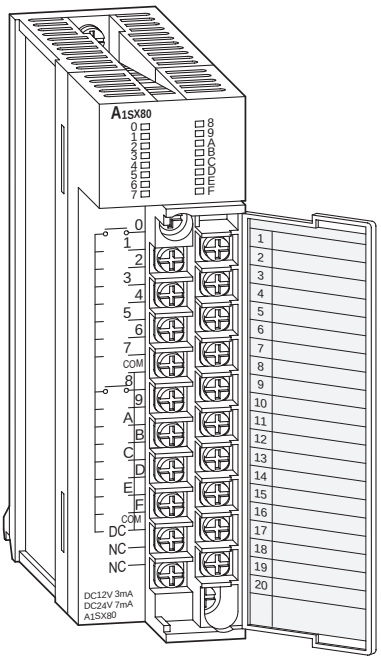
Specifications			A80BDE-A2USH-S1
Max. I/O points			8192 total / 1024 on base unit (192 I/O points 00-BF used by the system)
CPU self-diagnostic functions			Program plausibility, Watch Dog (time), battery check, memory error detection, CPU error detection, power supply error detection, fuse test
Backup battery			The board is equipped with a lithium-battery with a durability of 5 years.
Memory type			RAM, EPROM
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
Dimension			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, memory cassette art. no.: 24706, 24746, 4103

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

■ MELSEC AnS/QnAS Digital Input Modules





Detection of process signals

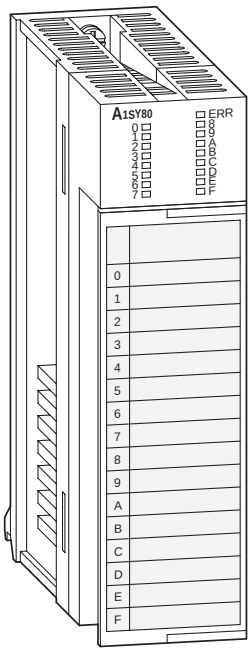
Various input modules are available for converting the digital process signals with different voltage levels into the levels required by the PLC.

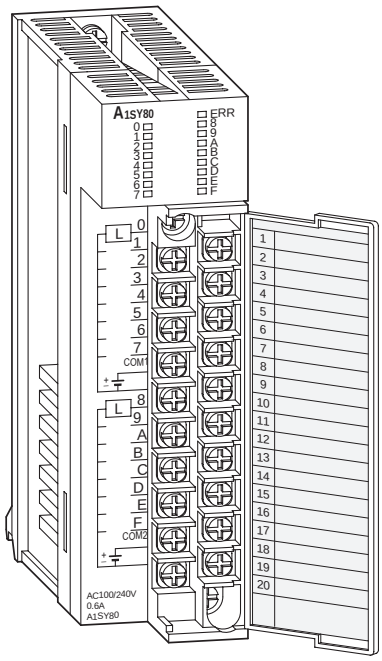
Special features:

- 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 77)
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.

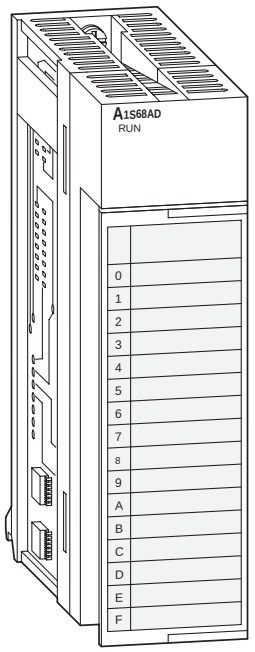
Special features:

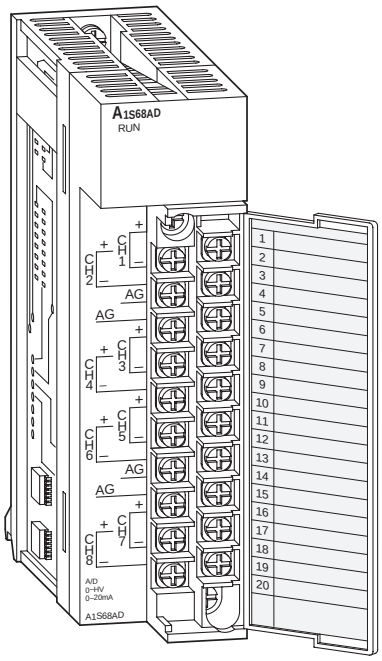
- Output modules with relay, transistor or triac switches
- Potential isolation between process and control by means of an optocoupler is a standard feature
- Modules with potential isolation between the channels
- Modules with 16 protection points have removable terminal blocks with screws
- Modules 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	A1SY28EU	A1SY68A	A1SY80	A1SY81
Outputs			16	12	8	16	8	8	16	32
Output type			Relay	Relay	Relay	Triac	Triac	Transistor	Transistor	Transistor
Common terminal arrangement		points	8	4	1	8	4	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	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)	24 V AC (15 mA) 100 V AC (15 mA) 240 V AC (15 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	264 V AC	—	—	—
Max. output current		A	2	2	2	0.6	0.6	2	0.8	0.1
Output current per group TYP.		A	8	8	2	2.4	1.9	2	3.2	2
Inrush current			—	—	—	20 A for 10 ms, 8 A for 100 ms	30 A for 10 ms, 15 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)	1.5 mA (240 V AC / 60 Hz)	0.1	0.1	0.1
Response time	OFF ⟶ ON	ms	10	10	10	1	1	3	2	2
	ON ⟶ OFF	ms	12	12	12	0.5 period +1 ms	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)	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	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	0.75 – 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	240 V AC	—	12/24 V DC	12/24 V DC
Internal power consumption (5 V DC)		mA	120	120	240	270	270	110	120	500
Weight		kg	0.25	0.25	0.25	0.24	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	34.5 x 130 x 93.6
Order information		Art. no.	53666	54349	53667	24976	54348	33199	24977	24978
Accessories			—	—	—	—	—	—	—	Adapter cable

① Does not comply to CE standard

MELSEC AnS/QnAS Analog Input Modules





Detection of analog process signals

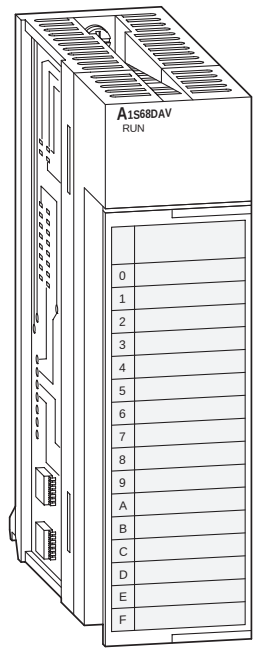
The analog input modules convert analog process signals, for example pressure, flow or fill level, linearly into digital values, which are further processed by the AnS/QnAS CPU.

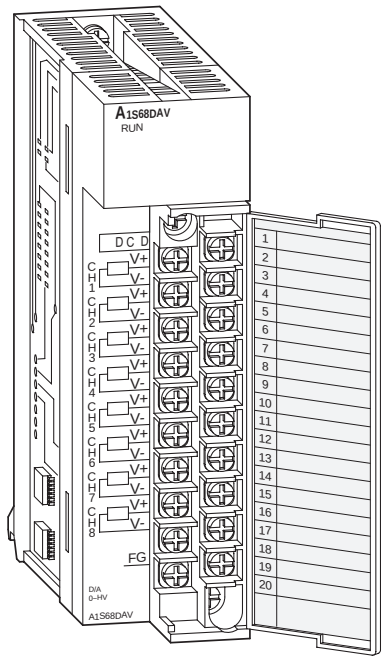
Special features:

- 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

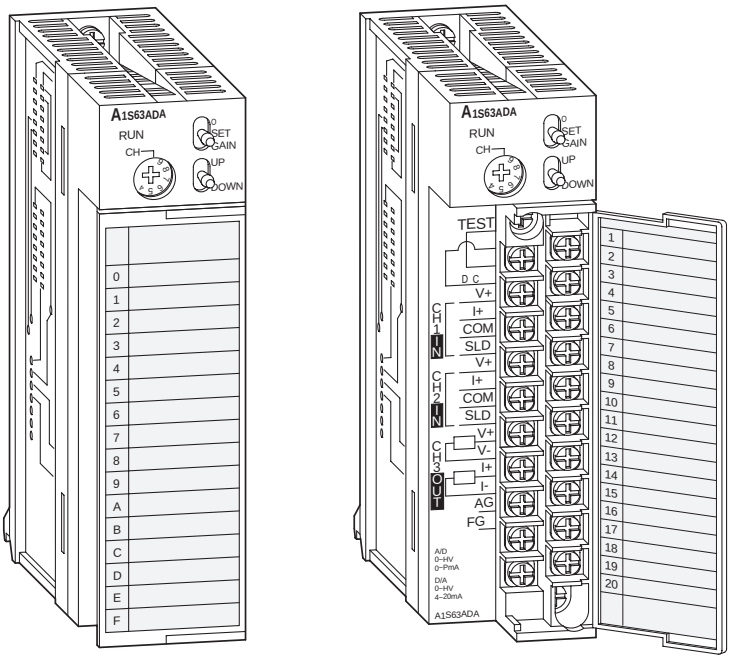
The analog output modules convert digital values predetermined by the CPU into an analog current or voltage signal. For example, frequency inverters, valves or slide valves are controlled by means of these signals.

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 characteristics	digital input	1/4000	1/8000	1/12000	**Voltage output**		**Voltage output**		
		4000 2000 0 -2000 -4000	8000 4000 0 -4000 -8000	12000 6000 0 -6000 -12000	+10 V +5 V 0 V -5 V -10 V	2000 1000 0 -1000 -2000	+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 characteristics	digital input	1/4000	1/8000	1/12000	**Current output**	—	—		**Currrent output**
		4000 2000 0	8000 4000 0	12000 6000 0	20 mA 12 mA 4 mA			4000 2000 0	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

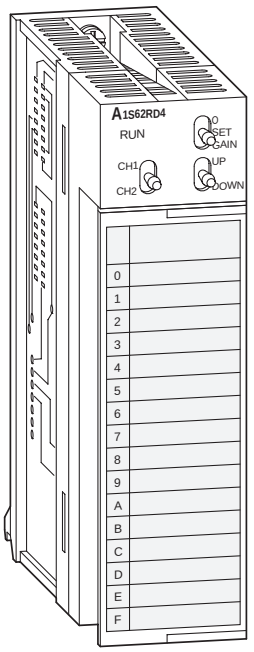
These modules have both analog inputs and one or two analog outputs. Individual channels operate autonomously but can also be coupled to one another.

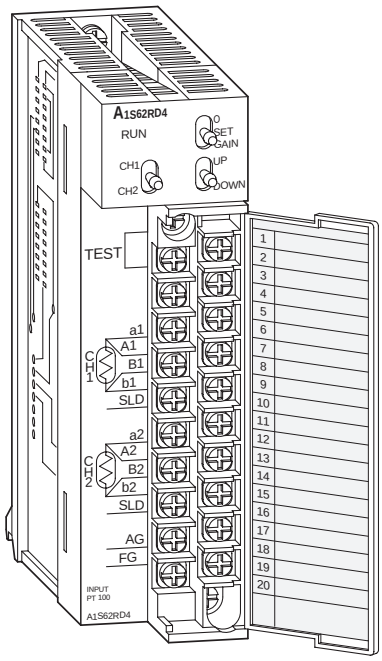
Special features:

- 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

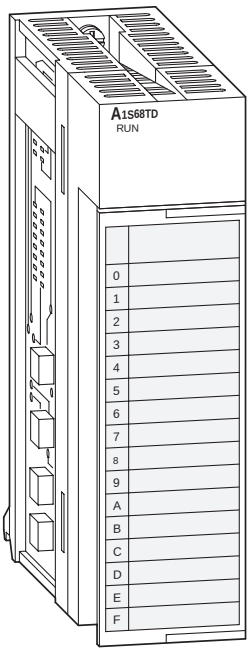
These analog modules are used for direct connection of Pt100 resistance thermometers. The measurement is based on the three-conductor or four-conductor method.

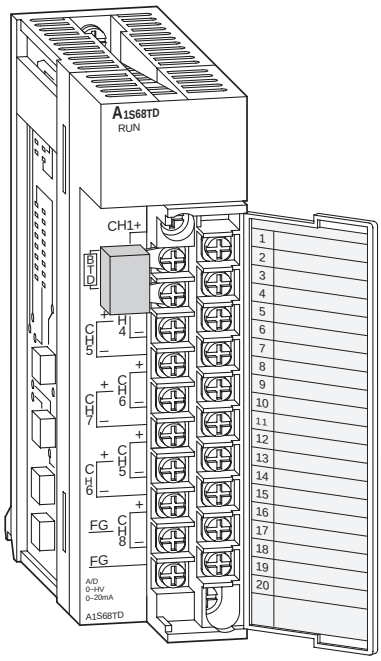
Special features:

- 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 thermoelectric 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.

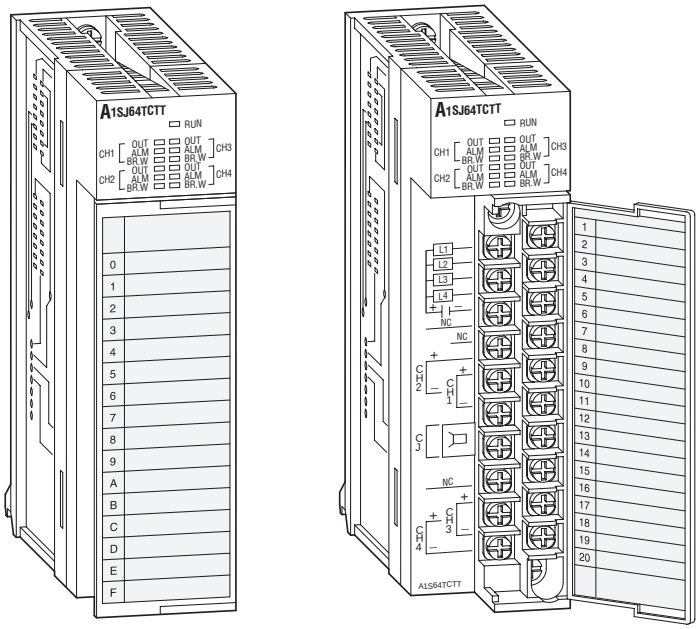
Specifications		A1S68TD			
Input points		8			
Temperature input range	°C	0 – 1 700			
Detected temperature value		16 bits signed binary: 0 – 17000 (value to the first decimal place x 10)			
Scaling value	°C	16 bits signed: 0 – +2000			
Thermocouple		**Type**	**Temperature measurement range**	**Conversion 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

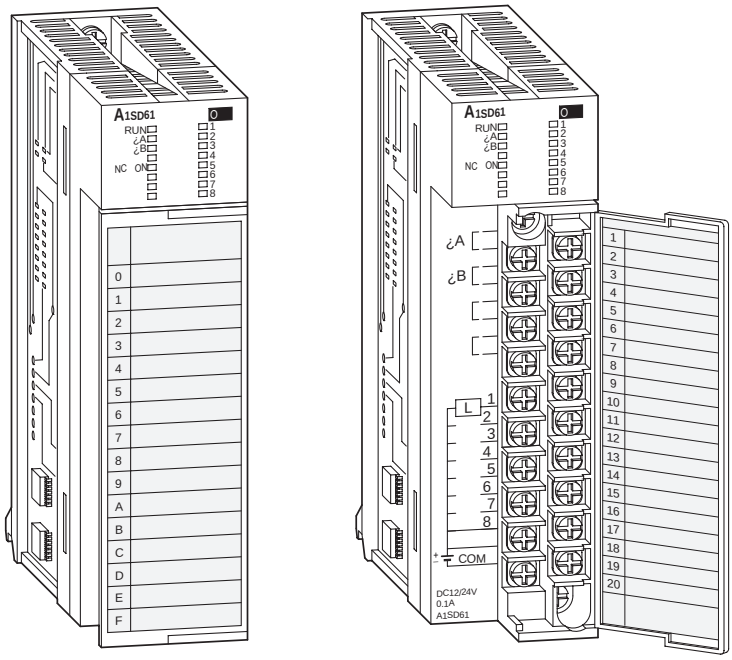
These modules enable PID algorithm temperature control without placing any load on the PLC CPU for the temperature control tasks.

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

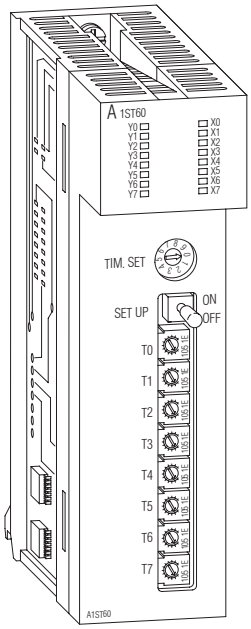
These counter modules detect signals with a frequency which cannot be detected by normal input modules. For example, simple positioning tasks or frequency measurements can be realized.

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.

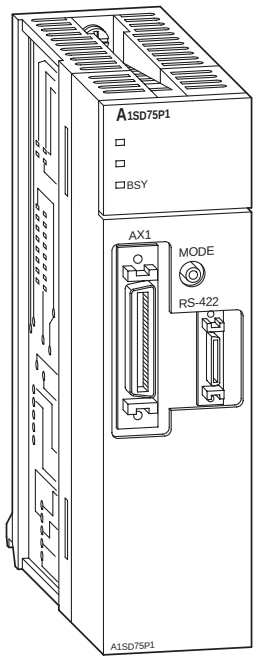
Special features:

- 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.

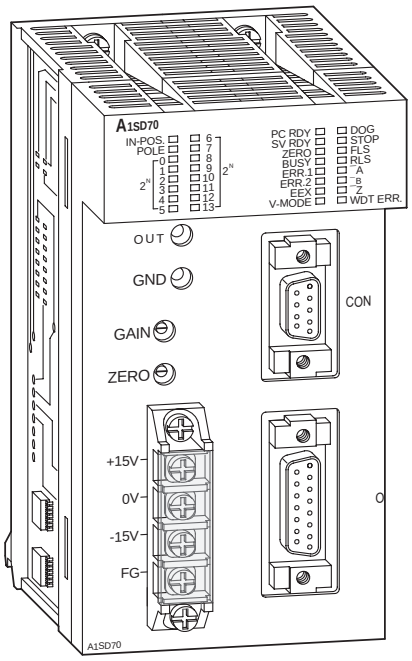
Special features:

- Control of up to three axes with linear interpolation (A1SD71-S2, A1SD75P2/P3) or circular interpolation (A1SD75P2/P3)
- Storage of up to 400 positional data in the A1SD71-S2 (battery-supported) or 600 positional data in the A1SD75P1/P2/P3 (flash ROM)
- Units of travel can be defined in pulses, mm, inch or degrees.
- In the A1SD71-S2, configuration and presetting of positional data is performed via the PLC program or with the aid of the teaching unit AD71TU.
- In the A1SD75P1/P2/P3, configuration and presetting of positional data is carried out by means of the PLC program (all 400 positional data) or with the aid of the MS-DOS software SW1IVD-AD75PE

Specifications		A1SD71-S2	A1SD75P1-S3	A1SD75P2-S3	A1SD75P3-S3
Control axes		2	1	2	3
Interpolation		Linear interpolation	—	Linear and circular interpolation	Linear and circular interpolation
Points per axis		400	Peripheral: 600, PC: 100	Peripheral: 600, PC: 100	Peripheral: 600, PC: 100
Output signal		Pulse generator phase	Pulse generator phase	Pulse generator phase	Pulse generator phase
Output frequency	kHz	10 – 200000	1 – 400000	1 – 400000	1 – 400 000
Positioning	method	Pulse control: absolute data and/or incremental; speed/position swiching control: incremental; locus control: absolute data and/or incremental			
	positioning units	1 – 16252928 pulse, max. 162 m (command unit: 0.1 – 10 mm/pulse), max. 16200 degree or max. 16200 inch (command unit: 1 x 10^5 – 0.001 degree/pulse 1 x 10^5 – 0.001 inch/pulse)	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	10 – 200000 pulse/s, 10 – 120000 mm/min, 1 – 12000 degree/min, 1 – 12000 inch/min	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 acceleration and deceleration	Automatic trapezoidal or S-pattern acceleration and deceleration		
	acceleration and deceleration time	64 – 50000 ms	1 – 65535 [8388608]* ms (4 patterns each can be set)		
	rapid stop decceleration time		1 – 65535 [8388608]* ms		
I/O points		48 (2 slots)	32	32	32
Internal power consumption (5 V DC)	mA	800	700	700	700
External power consumption (4.75 – 26.4 V DC)	mA	50	—	—	—
Weight	kg	0.38	0.35	0.35	0.35
Dimensions (W x H x D)	mm	69.5 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.	33200	65028	65029	65030
Accessories		Software for all A1SD75: SW1□VD-AD75PE, art. no.: 65619; adapter cable: A1SD75-C01H, art. no.: 54943; spare part plug for axis control, 36 pins, art. no.: 62890			

* Values in brackets indicate stepping motor mode

■ 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.

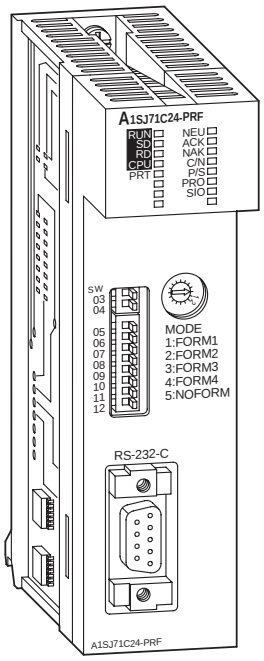
Special features:

- 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

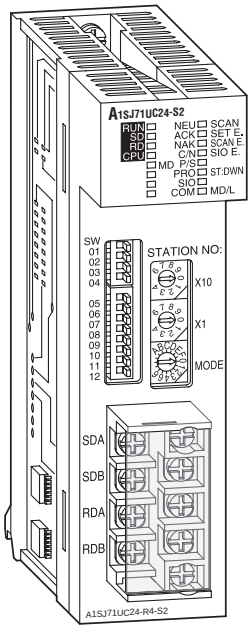
This module enables communication with peripheral devices via a standard RS-232C interface. The peripherals are connected point-to-point on a 1:1 basis.

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

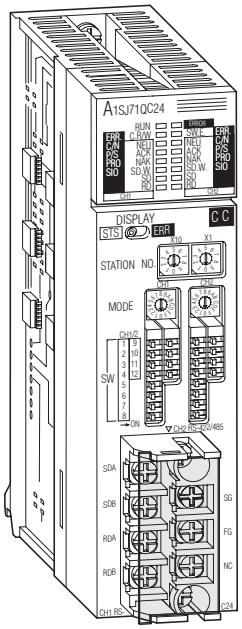
The A1SJ71UC24-R4-S2 and A1SJ71UC24-R2-S2 enable third-party devices to access MELSEC AnS and QnAS controllers using the MODBUS protocol.

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 79)	

■ MELSEC QnAS Interface Modules



High-speed data communications

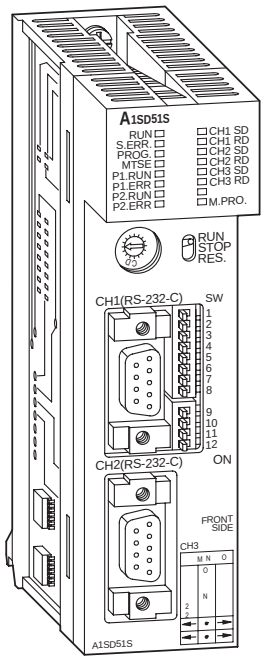
The QnAS interface modules provide extremely high data throughput rates, which can be invaluable for process supervision software and similar applications. Up to 480 data words can be exchanged between the PLC CPU and the PC per END instruction.

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			A1SJ71QC24-R2	A1SJ71QC24	
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**	**RS422/485**
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	160	240	
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.	66542	66543	
Accessories			Interface converter CR01-R2/R4 SET, art. no. 56172 (refer to page 79)		

■ 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:

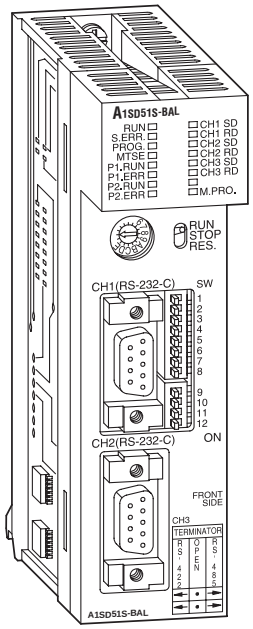
- Two RS232C interfaces and one RS422/485 interface
- Two BASIC programs can be operated in parallel (multitasking).
- The tasks can be stored in the module as interpreter programs or in compiled form.
- The integrated EEPROM is used for storage.
- Online and offline program creation is possible.
- The 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 or CP524 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			—

ETHERNET

Data communications

ETHERNET is now one of the most widely-used networks. It provides the link between the office world and control systems. ETHERNET is a platform for a very wide range of data communications protocols. The combination of ETHERNET and the extremely widespread TCP/IP protocol enables high-speed data communications between process supervision systems and the MELSEC AnSH, QnAS, AnU and QnA series.

Structure

Up to 5 ETHERNET segments can be linked to one another per repeater. There are two standard cable types: "Yellow" cable using the 10BASE5 interface and "Cheapernet" cable (Thin Ethernet) using the 10BASE2 interface.

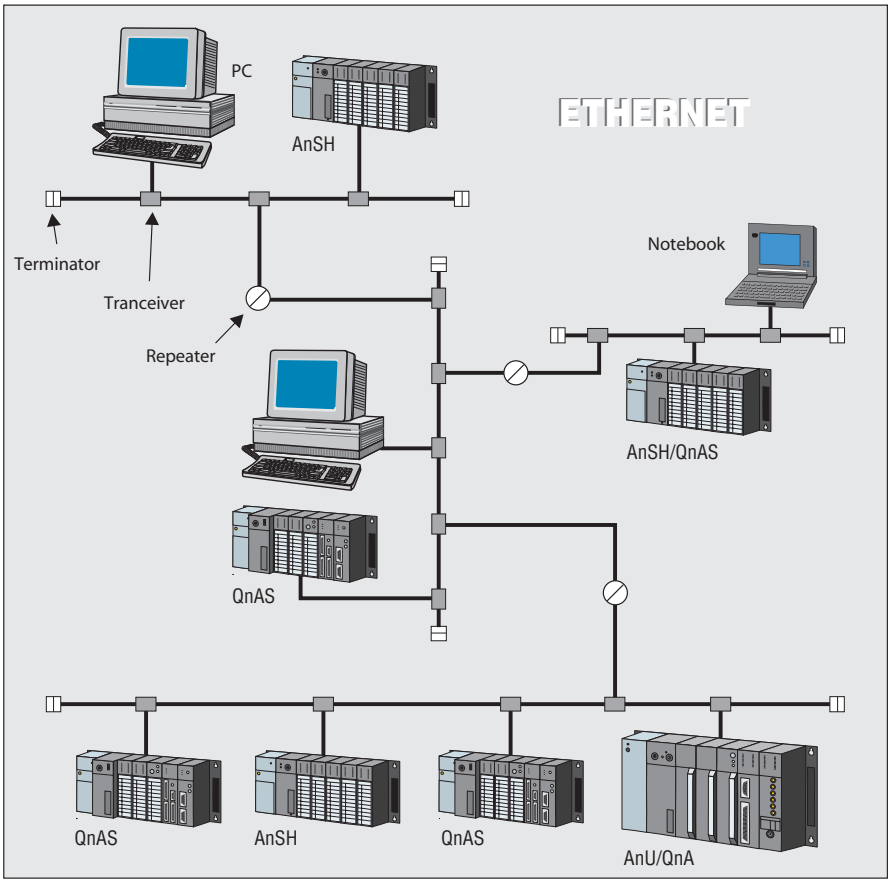
Bus segments using Yellow cable can be up to 500m long. Cheapernet configurations support bus segment cable lengths of up to 185m.

Data exchange

TCP/IP provides logical point-to-point links between two ETHERNET stations. Using the TCP/IP protocol a process supervision system can request 256 data words per query, or a full 480 words if a QnAS compatible ETHERNET card is used. The speed of the response to the query varies depending on the type of CPU used (AnAS or QnAS) and the ETHERNET module. The response time of a pure QnAS system (QnAS + A1SJ71QE71-B2/B5) is around eight times faster than that of an equivalent AnAS system.

FTP server functionality

The QnAS compatible ETHERNET modules also provide FTP server functionality, in addition to the normal TCP/IP communications services. This means that a personal computer running standard communications software can read from and write to the QnAS CPU sequence program via the Internet.



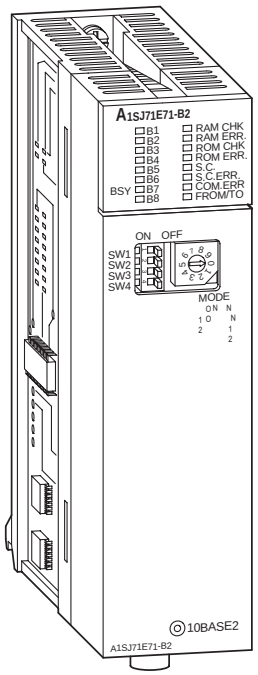
Administration

MELSEC MEDOC *plus* function blocks are available for all the PLC CPUs, making the configuration of one or more TCP/IP links a quick and easy process.

Cable and logic diagnostics are also simple because all MELSEC ETHERNET cards support the PING instruction.

Specifications	Yellow Cable	Thin Ethernet, Cheapernet
Cable type	10BASE5	10BASE2
Max. distance between 2 stations	2500 m	925 m
Min. distance between 2 stations	2.5 m	0.5 m
Max. segment length	500 m	185 m
Max. permitted no. of repeaters	4	4
Max. stations per segment	100	30

■ MELSEC AnS ETHERNET Module



The high-speed connection to the PLC

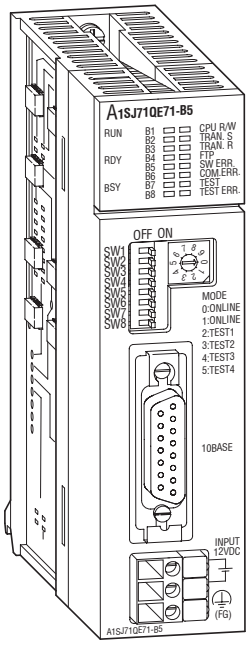
This module connects the MELSEC AnS system to the open, non-proprietary ETHERNET. This enables process supersion packages and other programs from a wide variety of vendors to access all devices of the controller at a rate of 10 Mbits per second.

Special features:

- Both cable types are supported:
  - 10BASE2 (Cheapernet using RG58 coax cable)
  - 10BASE5 (ETHERNET using Yellow cable)
- Communications protocol TCP/IP with ARP
- Module and communication status indicated by LEDs
- Full support for the MELSEC MEDOC *plus* programming software package (read and write programs, monitoring, remote PLC operating mode change (RUN/STOP))
- Ready-to-use MELSEC MEDOC *plus* function block available
- Integrated bus cable diagnostics
- PING diagnostics function support
- Automatically detects whether the communication partner is ready to communicate.

Specifications			A1SJ71E71-B2-S3	A1SJ71E71-B5-S3
Module type			Client / server	Client / server
Communications method			ETHERNET: CSMA/CD	ETHERNET: CSMA/CD
Interface		type	10BASE2	10BASE5
Communications data	transfer rate	Mbit/s	10	10
	transfer type		Base band	Base band
	max. network length	m	925	2500
	max. segment length	m	185	500
	nodes		Max. 30/segment	Max. 100/segment
	min. distance between 2 nodes	m	0.5	2.5
Data buffer	fixed buffer		2 kbyte x 8	2 kbyte x 8
	RAM buffer		6 kbyte x 2	6 kbyte x 2
Simultaneous connections			Max. 8	Max. 8
Transport protocol			TCP/IP with ARP, UDP/IP	TCP/IP with ARP, UDP/IP
I/O points			32	32
Internal power consumption (5 V DC)		mA	520	350
Weight		kg	0.27	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.	62663	62662
Accessories			—	—

■ MELSEC QnAS ETHERNET Module



The high-speed connection for the QnAS series

This module connects the MELSEC QnAS system to the open, non-proprietary ETHERNET. This enables process supervision packages and other programs from a wide variety of vendors to access all devices of the QnAS controller at a rate of 10 Mbits per second.

Special features:

- Both cable types are supported:
  - 10BASE2 (Cheapernet using RG58 coax cable)
  - 10BASE5 (ETHERNET using Yellow cable)
- Communications protocol TCP/IP with ARP
- PING diagnostics function support
- FTP server function enabling program uploads and downloads via the Internet with standard communications software
- Rapid response times because the system can exchange 480 data words per protocol
- Integrated easy bus cable diagnostics
- A function block library for MELSEC MEDOC *plus* makes the configuration of TCP/IP links quick and easy.

Specifications			A1SJ71QE71-B2	A1SJ71QE71-B5
Module type			Client / server	Client / server
Communications method			ETHERNET: CSMA/CD	ETHERNET: CSMA/CD
Interface		type	10BASE2	10BASE5
Communica-tions data	transfer rate	Mbit/s	10	10
	transfer type		Base band	Base band
	max. network length	m	925	2500
	max. segment length	m	185	500
	nodes		30	100
	min. distance between 2 nodes	m	0.5	2.5
Data buffer	fixed send/receive buffer		1 k words x 8	1 k words x 8
	variable buffer		6 k words	6 k words
Simultaneous connections			8 + 1 FTP connection	8 + 1 FTP connection
Transport protocol			TCP/IP with ARP, UDP/IP	TCP/IP with ARP, UDP/IP
I/O points			32	32
Internal power consumption (5 V DC)		mA	800	600
Weight		kg	0.28	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.	66550	66546
Accessories			—	—

MELSECNET/10 Network

Data communications

MELSECNET/10 enables extremely fast cyclic data exchange between the MELSEC PLCs of the AnSH, QnS, AnA/U and QnA series. It can also be used to connect remote I/O modules to these controllers.

You can connect up to 255 individual MELSECNET/10 networks to one another. An integrated routing function makes it very easy to pass data from one network to another.

Structure

The ring structure of MELSECNET/10 enables very large network coverage of up to 30 km.

Cable types

MELSECNET/10 gives you a wide choice of cable types and topologies:

- Coaxial bus (max. 500 m)
- Coaxial duplex loop (max. 30 km)
- Fibre-optics duplex loop (max. 30 km)

Data exchange

Efficient cyclic data exchange is ensured with an exceptionally large data volume of 8192 words and 8192 relays.

Administration

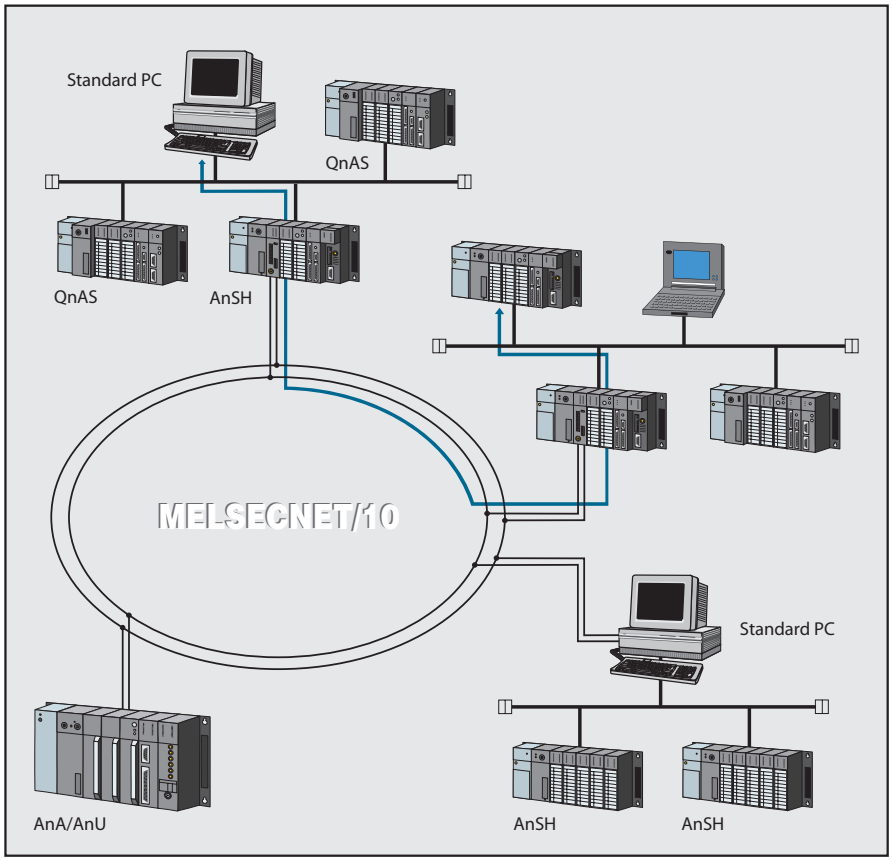
MELSECNET/10 enables you to program and monitor every PLC in the system from any station.

The Floating Master architecture ensures reliable network operation even if the network manager fails.

Special features

In parallel to the cyclic data exchange it is also possible for any station to send data to and read data from any other station, even across several networks. The system also supports multicast and broadcast functions.

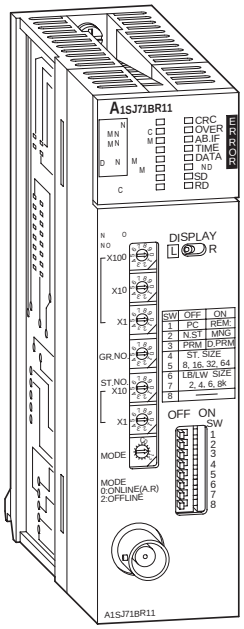
In MELSECNET/10 systems you only have to set parameters for the network manager, making installation very quick and simple.



Specifications			Electrical		Optical		
Cable type			Coaxial bus	Coaxial duplex loop	Glass fibre SI185/230 µm	Glass fibre GI50/125 µm	Glass fibre GI62.5/125 m
Data transfer	rate	Mbit/s	10	10 (20)	10 (20)	10 (20)	10 (20)
	distance between 2 stations	m		500	1 000	2 000	2 000
	total coverage	m	≤500 (2500)	≤30000	≤30000	≤30000	≤30000
Media	impedance (100 kHz)	Ω	75	75	—	—	—
	transmission losses		—	—	≤5.5 dB / km	≤3 dB / km	≤3 dB / km
	transmission bandwidth		—	—	≥20 MHz / km	≥300 MHz / km	≥300 MHz / km
Connectors							
Connection system			RG59	RG59	CA7003	CA9003S	CA9003S
Order information		Art. no.	—	—	69365	29603	29603

Cable type	Layout	Max. length	Order information	Art. no.
SI cable	Connection plugs at both ends; 2-conductor type for interior installation; simple cable protection	Fixed length 2 m	AS-2P-2M-A	126228
		Fixed length 5 m	AS-2P-5M-A	62430
		Fixed length 30 m	AS-2P-30M-A	52353
		Fixed length 50 m	AS-2P-50M-A	62457
GI cable GI62,5/125 µm	Connection plugs at both ends; 2-conductor type for interior installation; simple cable protection	Fixed length 5 m	AGS-2P-05 M-625A	104330
GI cable GI50/125 µm		Fixed length 5 m	AG-2P-5M-A	38784
GI cable GI50/125 µm	Adapter cable from Hitachi CA9103S plug – ST plug	Fixed length 4 m	AGS-CS-4M-50A	58630
GI cable GI62,5/125 µm		Fixed length 3 m	AGS-CS-3M-625A	58632
		Fixed length 4 m	AGS-CS-4M-625A	58631

■ MELSEC AnS MELSECNET/10 Modules



Reliable and flexible communications

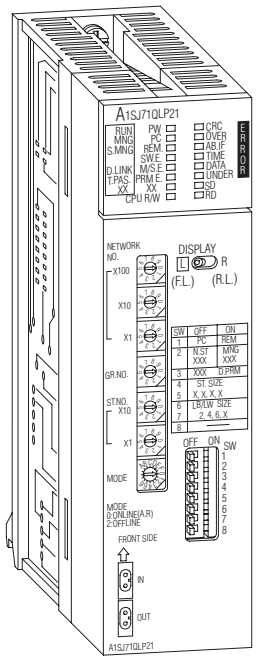
MELSECNET/10 is the most powerful MELSEC network, supporting both high-speed cyclic communications and powerful acyclic communications functions.

Special features:

- High data transfer rate (10 Mbits/s) with coaxial bus systems and optional 10/20 Mbits/s with optical loop systems
- The A1SJ71 BR11 and A1SJ71LP21(GE) modules can be used for:
  - PLC ↔ PLC, PC data communications
  - PLC ↔ remote I/O control
- Floating Master technology guarantees trouble-free operation no matter which station in the system is powered down.
- Up to four MELSECNET/10 modules can be installed in a single PLC, handling routing functions across up to as many as 255 networks.
- The network system supports data communications between any two stations no matter how many networks lie between them.
- Large data volumes via link devices for cyclic data communications.

Specifications			A1SJ71BR11	A1SJ71LP21	A1SJ71LP21GE
Module type			Manager / local stations	Floating Master	Floating Master
Communications method			Token bus	Token ring	Token ring
Topology			Coaxial bus system	Redundant optical loop system	Redundant optical loop system
Synchronisation			Frame synchronisation method	Frame synchronisation method	Frame synchronisation method
Transmission channel			Single bus	Redundant loop	Redundant loop
Link registers			8192 (0 – 1FFF)	8192 (0 – 1FFF)	8192 (0 – 1FFF)
Max. cyclic data for link in one station			≤ 2000 bytes	≤ 2000 bytes	≤ 2000 bytes
Modulation method			Manchester	NRZI	NRZI
Transmission format			Conforms to HDLC	Conform to HDLC	Conforms to HDLC
Terminating resistor		Ω	75	—	—
No. of networks in one system			Max. 255	Max. 255	Max. 255
Stations per network			32 (1 manager, 31 local stations)	64 (1 manager, 63 local stations)	64 (1 manager, 63 local stations)
Groups (multicast)			Max. 9	Max. 9	Max. 9
Transmission	rate	Mbit/s	10	10 (20)	10 (20)
	distance		300 m / 500 m (depends on cable used)	SI 200/220: 500 m, QSI 185/230: 1000 m	GI 62.5/125: 2000 m
	cable		RG59 BU / RG6 AU	—	—
	connectors		BNC-P-3-Ni / BNC-P-5	CA7003	CA7003S
Max. compensation time during power failure		ms	≤ 20	≤ 20	≤ 20
I/O points			32	32	32
Internal power consumption (5 V DC)		mA	800	650	650
Weight		kg	0.33	0.33	0.33
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.	47869	47868	53457
Accessories			Terminating resistor: BNC-75 OHM, art. no.: 53871	Optical duplex plug for SI cable: CA7003, art. no. 9546 Optical duplex plug for GI cable: CA9003S, art. no. 29603 Optical SI cable: 2 m: AS-2P-2M-A, art. no. 126228, 5 m: AS-2P-5M-A, art. no. 62430, 30 m: AS-2P-30M-A, art. no. 52353, 50 m: AS-2P-50M-A, art. no. 62457; up to 1000 m on request Optical GI cable: fibre optics GI62,5/125 mm; AGS-GS-3M-625A, art. no. 58632 fibre optics GI62,5/125 mm; AGS-GS-4M-625A, art. no. 58631	

■ MELSEC QnAS MELSECNET/10 Modules



Reliable and flexible communications

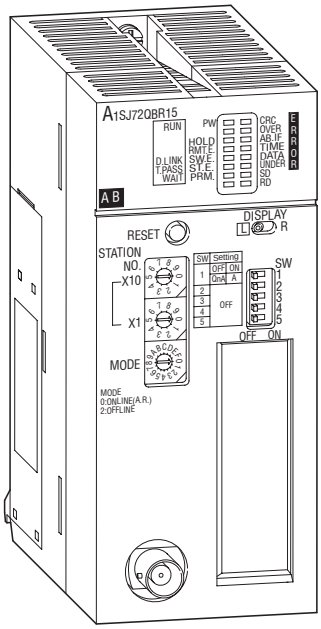
MELSECNET/10 is the most powerful MELSEC network, supporting both high-speed cyclic communications and powerful acyclic communications functions. The extremely high-speed data access performance of the QnAS CPUs guarantees very short response times in communications between two controllers.

Special features:

- High data transfer rate (10Mbits/s) with coaxial bus systems and optional 10/20Mbits/s with optical loop systems
- The modules can be used for:
  - PLC ↔ PLC, PC data communications
  - PLC ↔ remote I/O control
- Otherwise these modules have the same features as the modules on the previous page, plus they can also be used for the configuration of a redundant master system for remote I/Os in MELSECNET/10.

Specifications			A1SJ71QBR11	A1SJ71QLR21	A1SJ71QLP21
Module type			Floating master	Floating master	Floating master
Communications method			Token bus	Token ring	Token ring
Topology			Coaxial bus system	Coaxial bus system	Optical loop system
Synchronisation			Frame synchronisation method	Frame synchronisation method	Frame synchronisation method
Transmission channel			Single bus	Redundant loop	Redundant loop
Link register			8192 (0 – 1FFF)	8192 (0 – 1FFF)	8192 (0 – 1FFF)
Max. cyclic data for link in one station			≤ 2000 bytes	≤ 2000 bytes	≤ 2000 bytes
Modulation method			Manchester	Manchester	NRZI
Transmission format			Conforms to HDLC	Conforms to HDLC	Conforms to HDLC
Terminating resistor		Ω	75	75	—
No. of networks in one system			255	255	255
Stations per network			32 (1 manager, 31 local stations)	64 (1 manager, 63 local stations)	64 (1 manager, 63 local stations)
Groups (multicast)			Max. 9	Max. 9	Max. 9
Transmission	rate	Mbit/s	10	10 (acc. to 20 multiplex)	10 (acc. to 20 multiplex)
	distance	m	300 m / 500 m (depends on cable used)	300 m / 500 m (depends on cable used)	SI 200/220: 500 m, QSI 185/230: 1000 m
	cable		RG59 BU / RG6 AU	RG59 BU / RG6 AU	—
	plug		BNC-P-3-Ni / BNC-P-5	BNC-P-3-Ni / BNC-P-5	CA7003
Max. compensation time during power failure		ms	≤ 20	≤ 20	≤ 20
I/O points			32	32	32
Internal power consumption (5 V DC)		mA	800	650	650
Weight		kg	0.3	0.3	0.3
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.	66540	128797	66541
Accessories			Terminating resistor: BNC-75 OHM, art. no.: 53871	Terminating resistor: BNC-75 OHM, art. no.: 53871	Optical duplex plug for SI cable: CA7003, art. no. 69365 Optical SI cable: 2 m: AS-2P-2M-A, art. no. 126228, 5 m: AS-2P-5M-A, art. no. 62430, 30 m: AS-2P-30M-A, art. no. 52353 50 m: AS-2P-50M-A, art. no. 62457; up to 1000 m on request

■ MELSEC QnAS MELSECNET/10 Module



Complex remote Inputs/Outputs

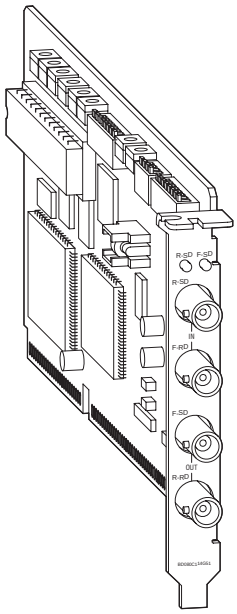
Enables fast and cost-effective connection of extremely complex remote I/Os to a host PLC CPU in MELSECNET/10 networks.

Special features:

- Enables configuration of very complex remote inputs and outputs with:
  - Digital I/Os
  - Analog I/Os
  - Positioning modules
  - Communications modules (ETHERNET/ Computer Link)
  - Etc.
- Supports definition of a Standby Master for remote I/Os in MELSECNET/10 networks (only with AnS and QnAS series CPUs).
- The Master CPU can be programmed and monitored from the remote module.
- Installation on the main base unit in the place of the PLC CPU.

Specifications			A1SJ72QBR15	A1SJ72QLP25
Module type			Slave	Slave
Communications method			Token bus	Token ring
Topology			Coaxial bus system	Optical loop system
Synchronisation			Frame synchronisation method	Frame synchronisation method
Transmission channel			Single bus	Redundant loop
No. of I/Os in a network			Max. 8192	Max. 8192
No. of data per slave			Max. 1600 bytes	Max. 1600 bytes
Modulation method			Manchester	NRZI
Transmission format			Conforms to HDLC	Conforms to HDLC
Terminating resistor		Ω	75	—
No. of networks in one system			255	255
Stations per network			33 (1 manager, 32 local stations)	64 (1 manager, 63 local stations)
Transmission	rate	Mbit/s	10	10 (20)
	distance	m	300 m / 500 m (depends on cable used)	SI 200/220: 500 m, QSI 185/230: 1000 m
	cable		RG59 BU / RG6 AU	—
	plug		BNC-P-3-Ni / BNC-P-5	CA7003
Max. compensation time during power failure		ms	≤ 20	≤ 20
I/O points			—	—
Internal power consumption (5 V DC)		mA	700	520
Weight		kg	0.43	0.41
Dimensions (W x H x D)		mm	54.5 x 130 x 93.6	54.5 x 130 x 93.6
Order information		Art. no.	68450	68449
Accessories			Terminating resistor: BNC-75 OHM, art. no.: 53871	Optical duplex plug for SI cable: CA7003, art. no. 69365 Optical SI cable: 2 m: AS-2P-2M-A, art. no. 126228, 5 m: AS-2P-5M-A, art. no. 62430, 30 m: AS-2P-30M-A, art. no. 52353 50 m: AS-2P-50M-A, art. no. 62457; up to 1000 m on request

■ Interface Boards for MELSECNET/10



Interface boards for MELSECNET/10

These interface boards enable you to integrate personal computers into a MELSECNET/10-Netzwerk.

Special features:

- Fast data rates between the personal computer and the programmable logic controller (faster than ETHERNET)
- The PC can access all other CPUs, even across multiple networks (integrated routing function)
- Perfect for PLC programming at MELSECNET/10
- Ideal for data and program archiving
- Up to 4 interface boards can be installed in each personal computer.

Specifications			A70BDE-J71QLP23	A70BDE-J71QLP23GE	A70BDE-J71QLR23	A70BDE-J71QBR13
Module type			Local station	Local station	Local station	Local station
Transmission method			Duplex loop	Duplex loop	Duplex loop	Single bus
Transmission path			Token ring	Token ring	Token ring	Token bus
Synchronisation method			Frame synchronisation method	Frame synchronisation method	Frame synchronisation method	Frame synchronisation method
Modulation			NRZI (Non Return to Zero Inverted)	NRZI (Non Return to Zero Inverted)	Manchester	Manchester
Link points per connection			2 x W + (B+Y)/8 ≤ 2000 bytes	2 x W + (B+Y)/8 ≤ 2000 bytes	2 x W + (B+Y)/8 ≤ 2000 bytes	2 x W + (B+Y)/8 ≤ 2000 bytes
Link devices			8192 link relays / registers	8192 link relays / registers	8192 link relays / registers	8192 link relays / registers
Transmission format			Conforms to HDLC	Conforms to HDLC	Conforms to HDLC	Conforms to HDLC
Max. link points in one system			Max. 239	Max. 239	Max. 239	Max. 239
Stations per network			Max. 64	Max. 64	Max. 64	Max. 32
Max. number of local station groups			9	9	9	9
Trans-mission	type/medium		Optical (SI 200/220, QSI 185/230)	Optical (GI 62.5/125)	Electrical	Electrical
	rate	Mbit/s	10 / acc. to 20 multiplex	10 / acc. to 20 multiplex	10 / acc. to 20 multiplex	100
	distance between 2 stations	m	SI 200/220: 500 m, QSI 185/230: 1000 m	GI 62,5/125: 1000 m	3C-2V: 300 m, 5C-2V: 500 m, 2500 with Repeater	3C-2V: 300 m, 5C-2V: 500 m, 2500 with Repeater
	cable		Fibre optics	Fibre optics	Coaxial cable	Coaxial cable
	connectors		CA7003 for SI cable, CA7003 for QSI cable	CA9103S for GI cable	BNC-P-5 / BNC-P-3-NI or equivalent	BNC-P-5 / BNC-P-3-NI or equivalent
Error detection			CRC based and overflow	CRC based and overflow	CRC based and overflow	CRC based and overflow
Boards per PC			Max. 4	Max. 4	Max. 4	Max. 4
Internal current consumption (5 V DC)		A	1.3	1.3	1.3	1.3
Weight		kg	0.5	0.5	0.5	0.5
Dimensions		mm	ISA bus board	ISA bus board	ISA bus board	ISA bus board
Order information		Art. no.	126888	126887	128856	126889

Accessories	Optical fibre cable, SI type	5 m: AS-2P-5M-A, art. no. 62430; 30 m: AS-2P-30M-A, art. no. 52353; 50 m: AS-2P-50M-A, art. no. 62457; up to 1000 m on request	Terminating resistor: BNC-75 OHM, art. no.: 53871

The MELSECNET(II) Network

Data communications

MELSECNET(II) enables cyclic data exchange between personal computers and MELSEC programmable logic controllers of the AnSH, QnAS, AnA/U and QnA series. The network also supports the integration of remote I/O modules. A subordinate MELSECNET(II) or MELSECNET/B network can be connected to a MELSECNET(II) configuration.

Structure

The loop architecture of MELSECNET(II) enables the configuration of large networks with a coverage of up to 10 km.

Cable type

The network supports two different cable types:

- Coaxial duplex loop (max. 10 km)
- Fibre-optics duplex loop (max. 10 km)

Data exchange

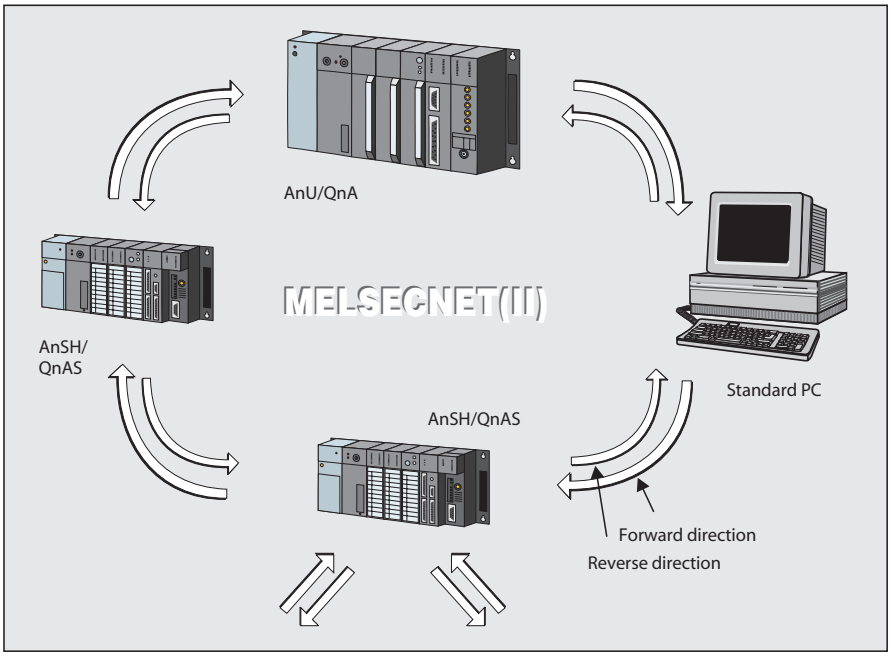
The network supports a large cyclic data exchange volume of 1024 (4096) words and 1024 (4096) relays.

Administration

In parallel to the cyclic data exchange you can also program and monitor every slave PLC in the system from the master PLC. The Master/Slave procedure ensures extremely efficient network management. Cable breaks are registered automatically and continued operation is ensured by the redundant data cable.

Special features

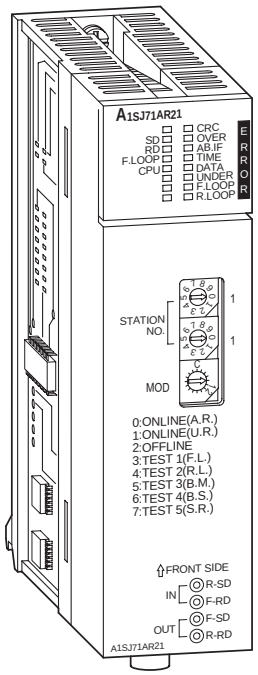
MELSECNET(II) is very simple to install. The only parameters that need to be entered are in a table for the master station specifying the data available for the cyclic data exchange process.



Data			Electrical	Optical		
Cable type			Coaxial duplex loop	Glass fibre SI200/250 µm	Glass fibre GI50/120 µm	Glass fibre GI62,5/125 µm
Trans-mission	rate	Mbit/s	1.25	1.25	1.25	1.25
	distance between 2 stations	m	500	1000	2000	2000
	total coverage	m	≤10000	≤10000	≤10000	≤10000
Media	impedance (100 kHz)	Ω	75	—	—	—
	transmission losses		—	≤5.5 dB / km	≤3 dB / km	≤3 dB / km
	transmission band width		—	≥20 MHz / km	≥300 MHz / km	≥300 MHz / km
Connectors						
Connection system			RG59	CA7003	CA9003S	CA9003S
Order information		Art. no.	—	69365	29603	29603

Cable type	Layout	Max. length	Order information	Art. no.
SI cable	Connection plugs at both ends; 2-conductor type for interior installation; simple cable protection	Fixed length 2 m	AS-2P-2M-A	126228
		Fixed length 5 m	AS-2P-5M-A	62430
		Fixed length 30 m	AS-2P-30M-A	52353
		Fixed length 50 m	AS-2P-50M-A	62457
GI cable GI62,5/125 µm	Connection plugs at both ends; 2-conductor type for interior installation; simple cable protection	Fixed length 5 m	AGS-2P-05 M-625A	104330
GI cable GI50/125 µm		Fixed length 5 m	AG-2P-5M-A	38784
GI cable GI50/125 µm	Adapter cable from Hitachi CA9103S plug – ST plug	Fixed length 4 m	AGS-CS-4M-50A	58630
GI cable GI62,5/125 µm		Fixed length 3 m	AGS-CS-3M-625A	58632
		Fixed length 4 m	AGS-CS-4M-625A	58631

■ MELSECNET(II) Modules



Communication with redundant coaxial cable

MELSECNET(II) permits a dual communication line. One is in the standby mode and maintains the communication in the event of an error on the active line (cable break).

Special features:

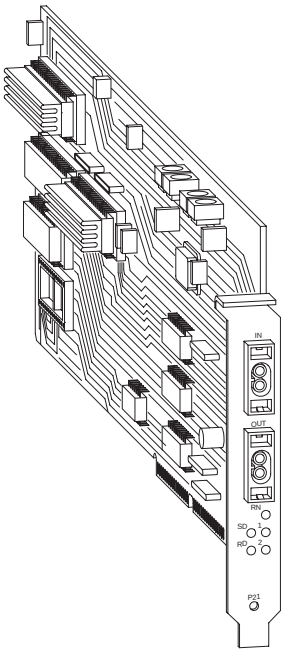
- Ring topology with coaxial or optical cable as transmission line
- Very simple start-up of cyclic and acyclic communication
- Loopback function in the event of failure of a local station
- Central programming and program monitoring of all stations in the network
- Extensive diagnostics facilities via peripherals or internal register

Specifications			A1SJ71AR21	A1SJ71AP21
Module type			Master / slave	Master / slave
Communications method			Half duplex	Half duplex
Synchronisation			Frame synchronisation method	Frame synchronisation method
Transmission channel			Duplex loop	Duplex loop
Link register			4096 (0 – FFF)	4096 (0 – FFF)
Max. cyclic data for link in one station			≤ 2 048	≤ 2048
Stations per network			65 (1 master/64 slaves)	65 (1 master/64 slaves)
Modulation method			CMI	CMI
Transmission format			Conforms to HDLC	Conforms to HDLC
Remote I/O points			512	512
Transmission	rate	Mbit/s	1.25	1.25
	distance	m	500, max. total length 10000	1000, max. total length 10000
Cable type			RG59B/U	SI200/250µm
Max. compensation time during power failure		ms	≤ 10	≤ 10
I/O points			32	32
Internal power consumption (5 V DC)		mA	630	330
Weight		kg	0.33	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.	42069	42323

Accessories	Optical fibre cable with attached connectors; SI type:	2 m: AS-2P-2M-A, art. no. 126228, 5 m: AS-2P-5M-A, art. no. 62430; 30 m: AS-2P-30M-A, art. no. 52353; 50 m: AS-2P-50M-A, art. no. 62457; up to 1000 m on request

■ Interface Boards for MELSECNET (II)



Interface boards for MELSECNET (II)

These interface boards enable you to integrate personal computers into a MELSECNET (II) network.

Special features:

- Very high-speed data rates between personal computers and controller, faster than ETHERNET
- Access to all data in the entire network
- The PC can access all other CPUs
- Available for both coaxial and fibre-optics cables

Specifications			A7BDE-J71AP21	A7BDE-J71AR21
Module type			Master / slave	Master / slave
Transmission method			Half duplex, bit serial	Half duplex, bit serial
Max. link points in one system			4.096 link relay / register	4.096 link relay / register
Transmission format			Conforms to HDLC	Conforms to HDLC
Demodulation method			CMI	CMI
Number of linkable networks			Max. 65	Max. 65
Stations per network			1 Master, up to 64 slaves	1 Master, up to 64 slaves
Transmission	rate	Mbit/s	1.25	1.25
	distance between 2 stations	m	Max. 1000; overall max. 10000	Max. 500; overall max. 10000
	cable		Fibre-optics cable	Coaxial cable
	type		SI200 / SI250 µm	RG59 BU / RG6 AU
	connector		CA9003	BNC-P-5 / BNC-P-3-NI
Boards per PC			1	1
Internal current consumption (5 V DC)		A	0.9	1.3
Weight		kg	0.4	0.4
Dimensions (W x H x D)		mm	362 x 143 x 30 (long AT-bus slot)	362 x 143 x 30 (long AT-bus slot)
Order information		Art. no.	29622	29621

Accessories		
	Device driver and test software:	SW1-IM-M NET, art. no. 32191
	Optical fibre cable with attached connectors; SI type:	2 m: AS-2P-2M-A, art. no. 126228, 5 m: AS-2P-5M-A, art. no. 62430; 30 m: AS-2P-30M-A, art. no. 52353; 50 m: AS-2P-50M-A, art. no. 62457; up to 1000 m on request

The MELSECNET/B Network

Data communications

MELSECNET/B is an extremely cost-effective network, providing cyclic data communication for MELSEC AnSH, QnAS, AnU and QnA controllers. You can also integrate remote I/O modules in the network. A lower-level MELSECNET(II) or MELSECNET/10 network can be connected to a MELSECNET/B configuration.

Structure

The bus cable can be up to 1200 m long, depending on the data transfer rate.

Up to 32 stations can be connected to one network.

Cable type

This network type uses shielded twisted-pair cabling as the data transfer medium (2 pairs).

Data exchange

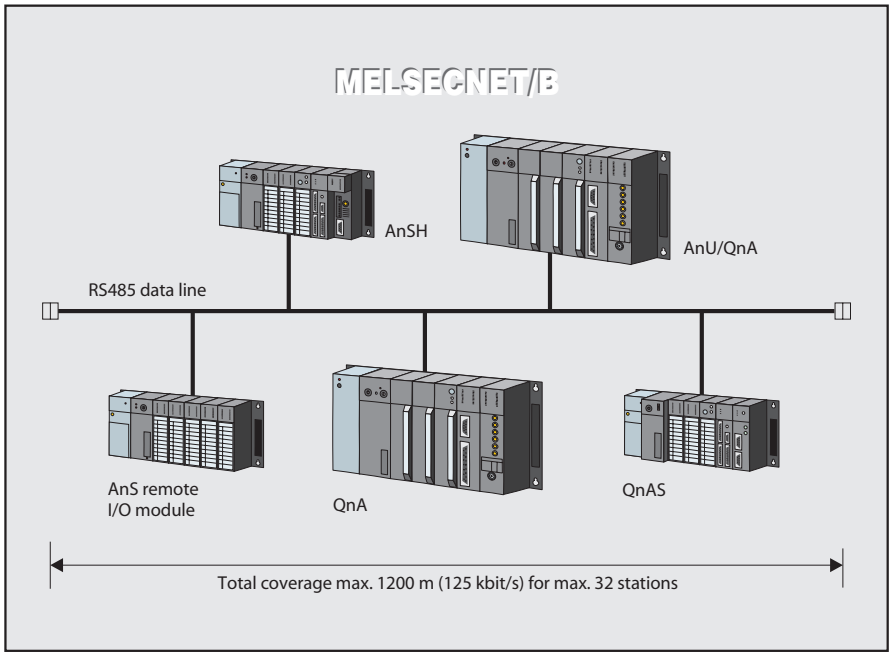
MELSECNET/B's cyclic data exchange provides an excellent data volume of 1024 (4096) words and 1024 (4096) relays, depending on the master PLC used: 1024 relays and words with the CPU types A1S, A1S-S1, A2S, and 4096 relays and words with all other CPU types.

Administration

In parallel to the cyclic data exchange you can also program and monitor every slave PLC in the system from the master PLC. The Master/Slave procedure ensures extremely efficient network management.

Special features

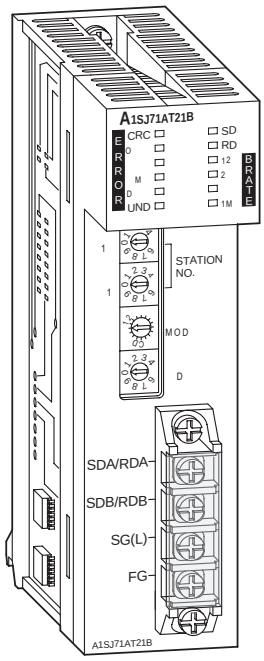
MELSECNET/B is very simple to install. The only parameters that need to be entered are in a table for the master station specifying the data available for the cyclic data exchange process.



Interface	RS485
Cable type	Shielded twisted-pair
No. of pairs	2
DC resistance	39.4 Ω / km
Insulation resistance (20°C)	10 MΩ / km
Electrostatic capacity (1kHz)	70 nF / m or less
Impedance (100 kHz)	110 Ω ±10 Ω

Cable recommendation: Lappkabel Unitronic-Li2YCYv(TP)/AWG20 2x2x0,50

■ MELSECNET/B Module



Communication with economical two-wire line

MELSECNET/B makes it possible to establish an integrated system of up to 32 MELSEC PLC systems via an RS485 interface.

Special features:

- Bus topology with shielded two-wire line as transmission medium
- Very simple start-up of cyclic and acyclic communication
- Automatic data exchange with MELSECNET(II) and MELSECNET/10 possible
- Central programming and program monitoring of all stations in the network
- Extensive diagnostics facilities via peripherals or internal register
- Remote I/Os can be connected to the network by installing the module A1SJ72T25B as a slave in the PLC CPU location of the main base unit.

Specifications			A1SJ71AT21B	A1SJ72T25B
Module type			Master / slave	Slave (remote I/O link module)
Communications method			Half duplex	Half duplex
Topology			Bus	Bus
Synchronisation			Frame synchronisation method	Frame synchronisation method
Link register / bus			4096 (0 – FFF)	4096 (0 – FFF)
Max. cyclic data for link in one station			≤ 2048	≤ 2048
Stations per network			32	32
Modulation method			NRZI	NRZI
Transmission format			Conforms to HDLC	Conforms to HDLC
Remote I/O points			512	512
Transmission	rate	kbit/s	125 / 250 / 500 / 1000	125 / 250 / 500 / 1000
	distance	m	1200 / 600 / 400 / 200 (depends on the transmission rate)	1200 / 600 / 400 / 200 (depends on the transmission rate)
	cable		Shielded twisted-pair	Shielded twisted-pair
Max. compensation time during power failure		ms	≤ 20	≤ 20
I/O points			32	—
Internal power consumption (5 V DC)		mA	660	660
Weight		kg	0.22	0.4
Dimensions (W x H x D)		mm	34.5 x 130 x 93.6	54.5 x 130 x 93.6
Order information		Art. no.	25723	47871

The CC-Link Network

Data communications

The MELSEC CC-Link network provides fast data communications with different devices. The following components among others can be integrated:

- Remote digital inputs/outputs
- Remote analogue inputs/outputs
- High-speed counters
- Positioning modules
- Modules for temperature measurement
- Distributed intelligence (e.g. FX2N)
- Frequency inverters (e.g. FR-A 540)
- Operator terminals (e.g.. GOT)
- Third party devices like gateways, solenoid valves, barcode readers, etc.

Structure

The maximum bus segment extension is 1,200 m (at 156 kbit/s max.). With a reduced extension, transfer rates of up to 10 Mbit/s can be achieved.

Cable types

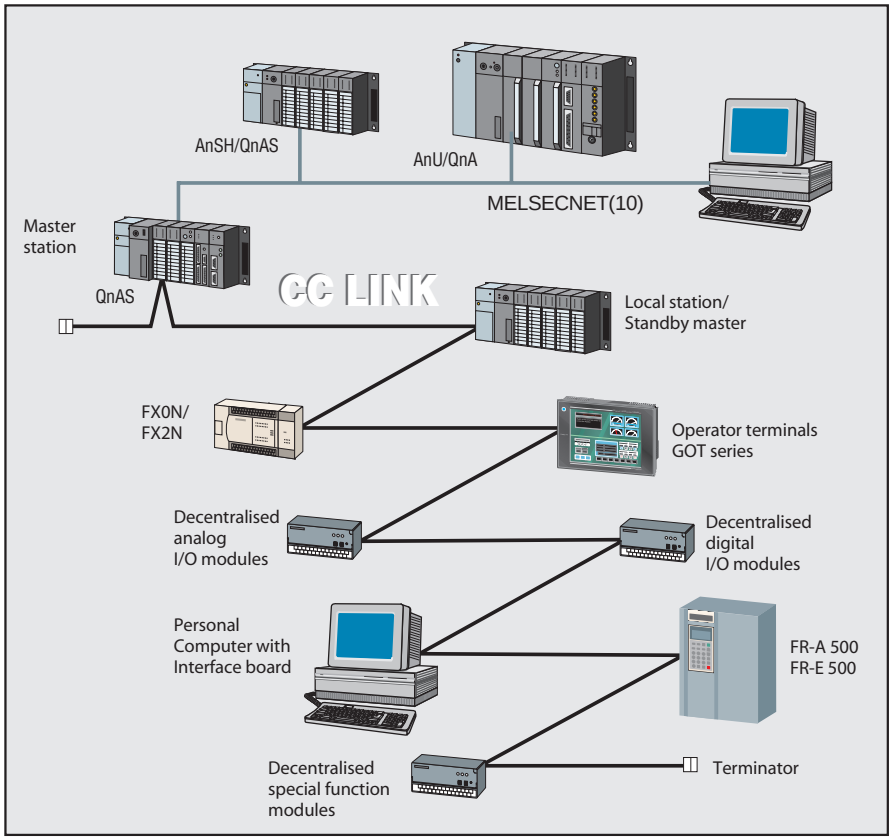
The data communications requires standardized shielded twisted-pair cable.

Data exchange

Various data like digital and analogue data can be exchanged easily. In addition to the cyclic transmission of word data, CC-Link systems handle transient transmission (message transmission) as well. This enables data communication with intelligent devices such as display devices, bar code readers, measuring devices, and personal computers.

Administration

The programming software packages MELSEC MEDOC *plus* and MELSEC MEDOC GPP/WIN ensure an easy setup and commissioning.

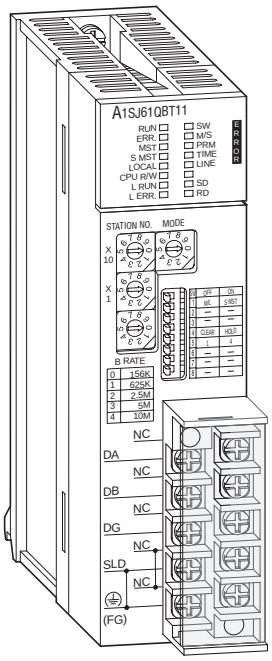


Various special features provide a particular economic network administration:

- Automatic online return function after the removal of a unit from the network.
- Stand-by master function for redundancy across the system.
- Automatic link cutoff function of a faulty slave station without interrupting network communications.
- Link status confirmation.
- Extensive test and diagnostics functions.

Cabel	Shielded twisted-pair
Diameter	0,5 mm² (1 pair)
Cable resistance (20 °C)	≤37,8 Ω / km
Electrostatic capacity (1kHz)	60 nF / km
Impedance (1 MHz)	100 Ω ±15 %
Insulation resistance	≥10.000 MΩ / km
Voltage withstand	500 V DC for 1 minute
Maximal distance	1.200 m

■ CC-Link Master Module



Connection of remote inputs/outputs

The CC-Link enables the control and monitoring of I/O modules on a remote machine. The data is transferred to the central controllers via the master module.

Special features:

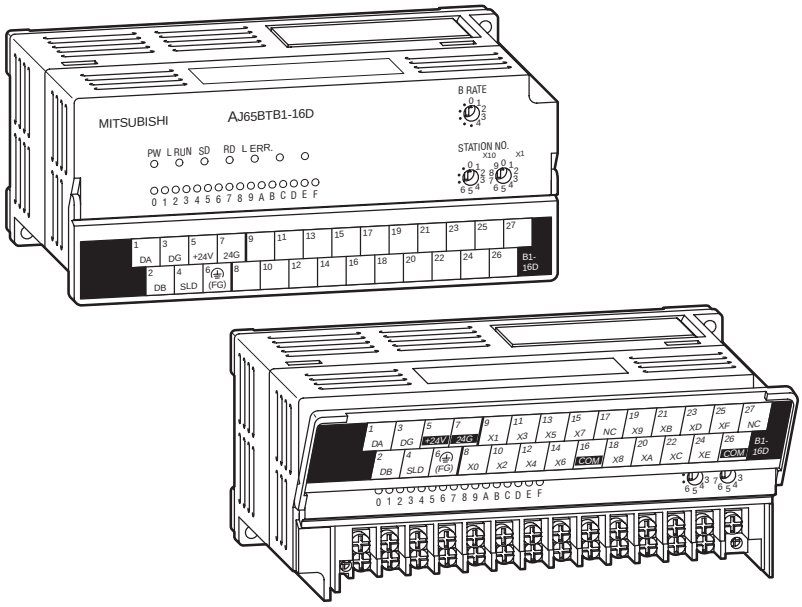
- The parameters of all modules across the network are set directly via the master module.
- The communication between the remote modules and the master module is performed automatically (refresh rate of up to 3.9 ms for 2048 I/O points).
- With one master module a system can be extended by up to 2048 remote I/O points.
- An additional stand-by master establishes a duplex system.
- Automatic link cutoff function of a faulty slave station without interrupting network communications.
- Automatic online return of a station after error corrective action without network reset.
- Data transfer via shielded twisted pair cable.

Specifications			A1SJ61BT11	A1SJ61QBT11
Module type			Master / Local Station	Master / Local Station
CPU series			MELSEC AnS series	MELSEC QnAS series
Link points per station	I/O points		32	
	register		8	
Decentral I/O points			2048	
Number of connectable modules			Max. 64 (Remote I/O modules: max. 64; Remote special function modules: max. 42; local stations: max. 24)	
I/O refresh time		ms	3.9 – 6.7	
Transmission	speed	Mbit/s	10; 5; 2.5; 0.62; 0.15	
	type		Bus	
	distance	m	100 m at 10 Mbit/s; 150 m at 5 Mbit/s; 200 m at 2.5 mbit/s; 600 m at 0,62 Mbit/s; 1200 m at 0.15 Mbit/s	
	total distance	m	Max. 1200m	
Synchronizations method			Frame synchronisation	
Modulation			NRZI	
Tramsmission route type			Bus (RS485)	
Transmission format			HDLC	
Transmission cable	type		Shielded twisted-pair	
	no. of cores		2	
	cable resistance (20 °c)		Max. 37.8 Ω/km	
	insulation resistance (1 kHz)		Max. 60 nF/km	
	characteristic impedance (100 kHz)		100 ±15Ω	
	cable resistance (20 °C)		10000 MΩ/km	
	diameter		0.5 mm²	
I/O points			32	
Internal power consumption (5 V DC)		mA	400	
Weight		kg	0.25	
Dimensions (W x H x D)		mm	37.5 x 130 x 93.6	

Order information	Art. no.	75497	126738

Accessories	Programming software: MELSEC MEDOC *plus* or MELSEC MEDOC GPP/WIN (see page 92)

CC-Link Remote Digital Input and Combination Modules



Remote inputs

The remote input modules acquire the signals within short distance from the machine. The advantage is a reduced cabling requirement and the capability of aquiring data and operation results of individual machine modules autonomously, electrically, and mechanically.

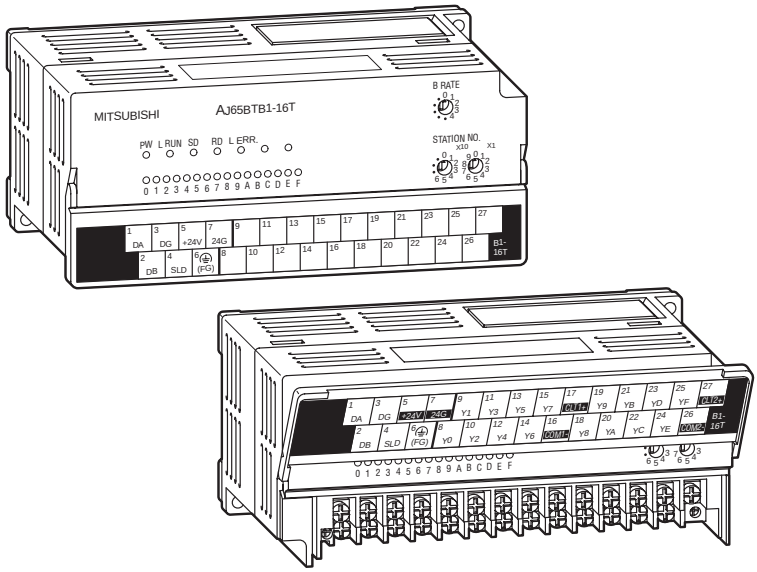
Besides three different input modules with up to 32 inputs, a combined module with 8 inputs and 8 outputs is available.

Special features:

- Up to 64 I/O modules with a maximum of 32 inputs each can be connected.
- All modules are very compact.
- Tough, highly shock-resistant pattern.
- Status indicator LEDs for the inputs.
- Standard electrical isolation between process and control via optocouplers.
- Mounting with DIN rail adapters or screws.
- Modules can be mounted in horizontal arrangement or in one of 4 orientations on a flat surface.

Specifications			AJ65BTB1-16D	AJ65BTB2-16D	AJ65BTC1-32D	AJ65BTB1-16DT
Module type			Input modules			Combination module
Inputs			16	16	32	8
Outputs			—	—	—	8
Input type			DC input (sink / source type)	DC input with 8 potential terminals (sink / source type)	DC input (sink / source type)	DC input (sink type)
No. of points per module			16	16	32	8
Output type			—	—	—	Transistor
No. of points per module			—	—	—	8
Insulation type			All modules feature photocoupler insulation.			
Input voltage			24 V DC	24 V DC	24 V DC	24 V DC
Input current		mA	7	7	7	7
Max. output current	per output		—	—	—	0,5
	per group		—	—	—	4
Damping voltage	ON voltage	V	≥ 14	≥ 14	≥ 14	≥ 14
	OFF voltage	V	≤ 6	≤ 6	≤ 6	≤ 6
Response time	OFF ⟶ ON	ms	≤ 2	≤ 2	≤ 2	≤ 10
	ON ⟶ OFF	ms	≤ 2	≤ 2	≤ 2	≤ 12
Status display of inputs			All modules provide LEDs for each input.			
Error (RUN) display of stations			LED	LED	LED	LED
I/O points			16	16	32	16
Connection terminals			Terminal block	Terminal block	Connector	Terminal block
Applicable wire size		mm^2	0.75 – 2.0	0.75 – 2.0	0.75 – 2.0	0.75 – 2.0
Internal power consumption		mA	60	60	70	70
Weight (without terminal block)		kg	0.32	0.4	0.27	0.33
Dimensions (W x H x D)		mm	151.9 x 65 x 46	197.4 x 65 x 46	165 x 65 x 46	151.9 x 65 x 46
Order information		Art. no.	75447	75450	75455	75448

CC-Link Remote Digital Output Modules



Remote outputs

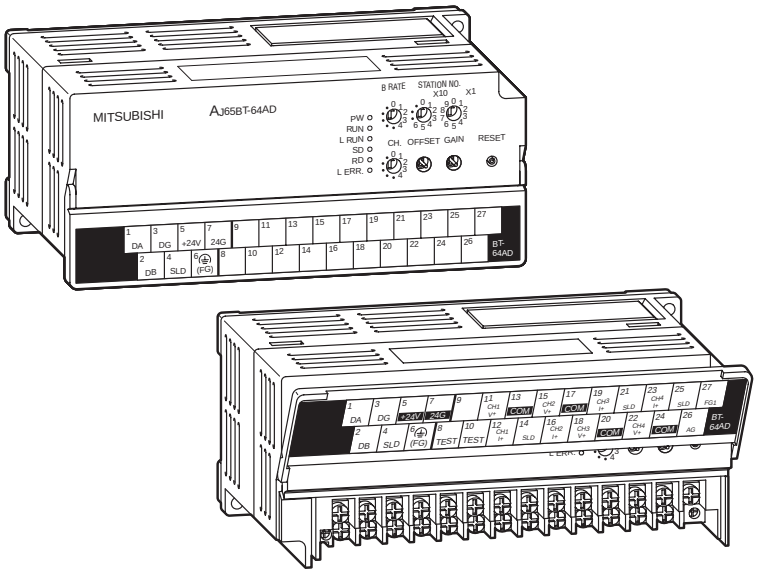
The remote output modules output the signals within short distance to the machine. The advantage is a reduced cabling requirement and the capability of controlling and monitoring data and operation results of individual machine modules autonomously, electrically, and mechanically.

Special features:

- Up to 64 I/O modules with a maximum of 32 outputs each can be connected.
- All modules are very compact.
- Tough, highly shock-resistant pattern.
- Status indicator LEDs for the outputs.
- Standard electrical isolation between process and control via optocouplers.
- Mounting with DIN rail adapters or screws.
- Modules can be mounted in horizontal arrangement or in one of 4 orientations on a flat surface.

Specifications			AJ65BTB1-16T	AJ65BTC1-32T	AJ65BTB2-16R
Module type			Output modules		
Outputs			16	32	16
Output type			Transistor	Transistor	Relay
No. of points per module			8	32	8
Insulation type			All modules feature photocoupler insulation.		
Output rated voltage			12/24 V DC	12 /24 V DC	24 V DC 240 V AC
Max. output current	per output	A	0.5	0.1	2
	per group	A	4	2	8
Leak current output OFF					
Response time	OFF ⟶ ON	ms	≤ 2	≤ 2	≤ 10
	ON ⟶ OFF	ms	≤ 2	≤ 2	≤ 12
Overvoltage protection			Zener diode	Clamp diode	—
Status display of outputs			All modules provide LEDs for each output.		
Error (RUN) display of stations			LED	LED	LED
I/O points			16	32	16
Connection terminals			Terminal block	Connector	Terminal block
Applicable wire size		mm^2	0.75 – 2.0	0.75 – 2.0	0.75 – 2.0
Internal power consumption		mA	80	115	85
Weight (without terminal block)		kg	0.34	0.28	0.47
Dimensions (W x H x D)		mm	151.9 x 65 x 46	165 x 65 x 46	197.4 x 65 x 46
Order information		Art. no.	75449	75456	75453

CC-Link Remote Analog Input Modules



Analog linking to the CPU

The analog input module AJ65BT-64AD converts analog process signals into digital values that can be processed by the CPU.

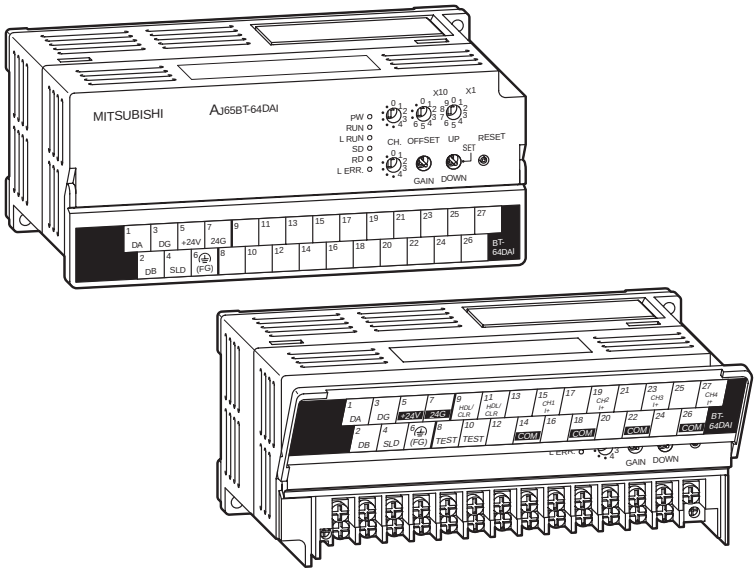
Special features:

- 4 analog input channels per module.
- Selectable current or voltage input.
- Resolution 5 mV and 20 mA.
- Converting time 1 ms per channel.
- Converts analogue values in the range of -10 to 10 V or -20 to +20 mA into digital values from -2000 to +2000.
- Status indicator LEDs.
- Standard electrical isolation between process and control via optocouplers.
- Input characteristics can be user-modified via offset/gain settings.
- Ready for use with all CC-Link master modules.

Specifications		AJ65BT-64AD			
Analog inputs		4			
Resolution		16 bit, -2048 / +2047			
I/O characteristics		**Analog input**		**Digital output**	
		Voltage	Current	Voltage	Current
		-10 V – 10 V 0 – 10 V 0 – 5 V 1 – 5 V	-20 – 20 mA 0 – 20 mA 0 – 20 mA 4 – 20 mA	0 – 4000 0 – 4000 0 – 4000 0 – 4000	-2000 – 2000 -2000 – 2000 -2000 – 2000 -2000 – 2000
Max. resolution		-10 V – 10 V 0 – 10 V 0 – 5 V 1 – 5 V	-20 – 20 mA 0 – 20 mA 0 – 20 mA 4 – 20 mA	5 mV 2.5 mV 1.25 mV 1 mV	20 µA 10 µA 5 µA 4 µA
Overall accuracy		±1.0 % (for the whole measurement range)			
Max. conversion time		1 ms/channel			
Max. input	voltage	±15 V			
	current	±30 mA			
Isolation		Photocoupler isolation between output terminals and PC power for all modules.			
I/O points		2 stations (each 32 devices)			
External power consumption		24 V DC			
Applicable wire size	mm^2	0.75 – 2.00			
Internal power consumption (24 V DC)	mA	120			
Weight	kg	0.35			
Dimensions (W x H x D)	mm	152 x 65 x 63			

Order information	Art. no.	75444

■ CC-Link Remote Analog Output Modules



Digital to analog converter modules

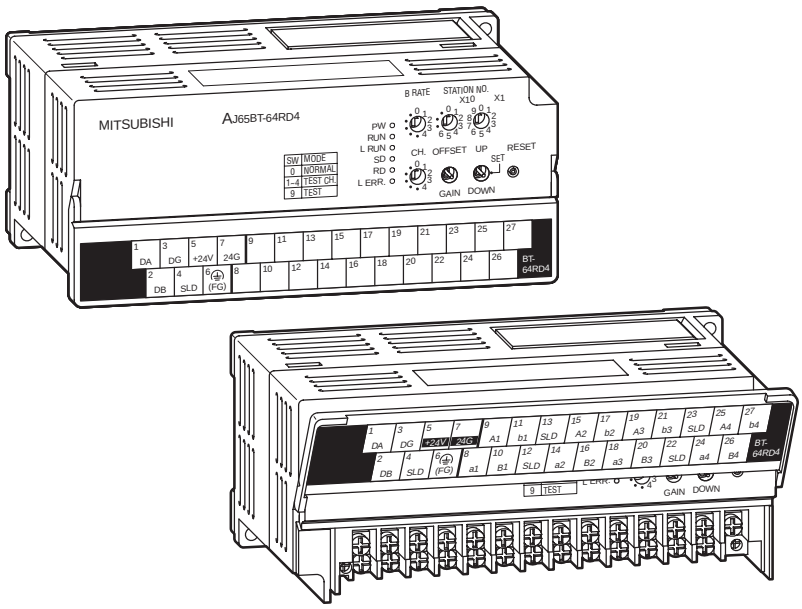
These modules serve as remote 4-channels digital to analog converter modules with 12-bit or 13-bit binary resolution and output an analog current or voltage signal. With this signal for example, frequency inverters, valves or sliders can be controlled.

Special features:

- Up to 4 channels per module.
- Resolution of the digital input signals selectable in 3 steps: 1/4000, 1/8000, 1/12000.
- Gain and offset setting provided for each channel.
- Converting time of 1 ms per channel and 4 ms for 4 channels.
- Status indicator LEDs.
- Standard electrical isolation between process and control via optocouplers.
- Ready for use with all CC-Link master modules.

Specifications		AJ65BT-64DAV		AJ65BT-64DAI	
Analog outputs		4		4	
Resolution		12 bit, -2048 to +2.047		12 bit, 0 – 4095	
Analog output		-10 V – 0 V – +10 V DC (external input resistance 2 kΩ – 1 MΩ)		4 – 20 mA DC (external input resistance 0 – 600 Ω)	
I/O characteristics		**Digital input**	**Analog output**	**Digital input**	**Analog output**
		Resolution	Voltage	Resolution	Current
		2000 1000 0 -1000 -2000	+10 V +5 V 0 V -5 V -10 V	4000 2000 0	+20 mA +12 mA +4 mA
Offset/Gain setting		Yes (users or factory setting)		Yes (users or factory setting)	
Overall accuracy		±1.0 % (for the whole measurement range)		±1.0 % (for the whole measurement range)	
Max. conversion time		Max. 1 ms/1 channel, 4 ms/4 channels		Max. 1 ms/1 channel, 4 ms/4 channels	
Isolation method		All modules fitted with photocoupler isolation between input terminals and internal circuit.			
I/O points		2 stations (32 devices)		2 stations (32 devices)	
Applicable wire size	mm^2	0.75 – 2.0		0.75 – 2.0	
Internal power consumption (24 V DC)	mA	180		270	
Weight	kg	0.4		0.4	
Dimensions (W x H x D)	mm	152 x 65 x 63		152 x 65 x 63	
Order information	Art. no.	75446		75445	

■ CC-Link Remote Analog Input Modules for Pt100-Elements



Connection of Pt100-elements

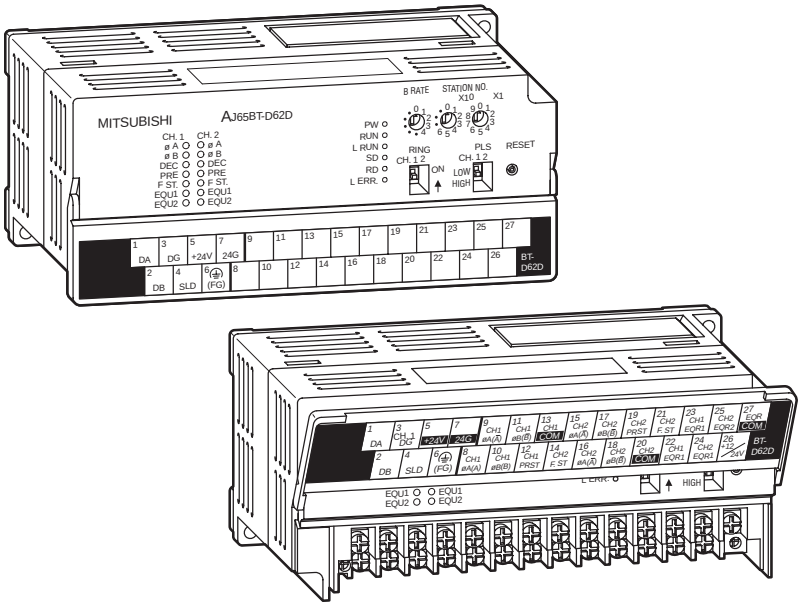
The analog modules AJ65BT-64RD3 and AJ65BT-64RD4 provide analog inputs for measuring values of Pt100 elements.

Special features:

- Linear measuring range without adjustment of the measuring values.
- Direct output of the measuring values in °C.
- Temperature measuring range of -180°C to +600°C in combination with a Pt100-element according to DIN IEC 751.
- Platinum sensors can be connected directly.
- A line break is indicated to the PLC by the module.
- The conversion can be enabled or disabled for each channel individually.
- Averaging on time or measuring cycles can be parametrized.
- Status indicator LEDs.
- Standard electrical isolation between process and control via optocouplers.
- Ready for use with all CC-Link master modules.

Specifications			AJ65BT-64RD3	AJ65BT-64RD4
Pt100-input points			4	4
Method of measurement			3-wire type	4-wire type
Connectable temperature measuring resistants			Pt100 (conforms to JIS C 1604-1989 and DIN IEC 751), JPt100 (conforms to JIS C 1604-1981)	
Temperature	Measurement range	°C	-180 – +600	-180 – +600
	Detected value		16 bits signed binary: -1800 – +6000 32 bits signed binary: -180000 – +600000	16 bits signed binary: -1800 – +6000 32 bits signed binary: -180000 – +600000
Overall accuracy	at 25 °C (±5%)		±0.1 % (for the whole measurement range)	±0.1 % (for the whole measurement range)
	at <20 °C or > 30 °C		±0.25 % (for the whole measurement range)	±0.25 % (for the whole measurement range)
Resolution		°C	0.025	0.025
Max. conversion time			40 ms / Pt100 input	40 ms / Pt100 input
Isolation			Photocoupler isolation between output terminals and PC power for all modules.	
Modules per network			Max. 16 Pt100 analog input modules in one network	Max. 16 Pt100 analog input modules in one network
I/O points			4 stations (128 devices)	4 stations (128 devices)
Applicable wire size		mm^2	0.75 – 2.0	0.75 – 2.0
External voltage sopply			24 V DC	24 V DC
Internal power consumption (24 V DC)		mA	170	170
Weight		kg	0.38	0.38
Dimensions (W x H x D)		mm	152 x 65 x 63	152 x 65 x 63
Order information		Art. no.	88026	88027

■ CC-Link Remote High-Speed Counter Modules



Automatic hardware counter

The high-speed counter modules acquire signals at a frequency which conventional input modules can not acquire. Positioning tasks or frequency measurements for example can be performed.

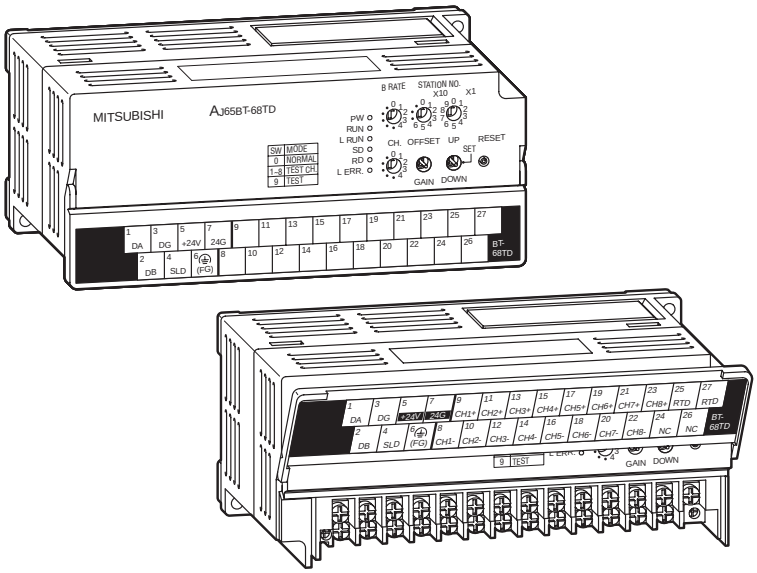
Special features:

- Input for incremental shaft encoder with automatic forward and reverse detection.
- Count preset via external signals or via the PLC program by the PRESET function.
- Ring counter for counting up to a predefined valuewith automatic reset to the initial value.
- Functions such as velocity measurement, determining switching points or periodical counting are provided.
- Automatic multiplication of the counted values.
- Status indicator LEDs.
- Ready for use with all CC-Link master modules.

Specifications			AJ65BT-D62	AJ65BT-62D / 62D-S1
Counter inputs			2 (1 or 2 phases)	2 (1 or 2 phases)
Signal levels			5 / 12 / 24 V DC (2 – 5 mA)	EIA Standard, RS-422-A difference driver
Max. counting frequency		pulse/s	200000	400000
Counting range			23 bits + sign (binary), 0 – 16777215	23 bits + sign (binary), 0 – 16777215
Comparison range			24 bits + sign (binary)	24 bits + sign (binary)
Counter type			Both modules are equipped with UP/DOWN preset counter and ring counter function.	
External digital input points			Preset, count disable function	Preset, count disable function
Min. input pulse width			1 / 2 phase: 5 µs 1 phase: 100 µs; 2 phase: 142 µs	1 phase: 2.5 µs; 2 phase: 3.3 µs; 1 phase: 100 µs; 2 phase: 142 µs
External	inputs		5 / 12 / 24 V DC (2 – 5 mA)	5 / 12 / 24 V DC (2 – 5 mA)
	response time	OFF ⟶ ON	< 0.5 ms	< 0.5 ms
		ON ⟶ OFF	< 3 ms	< 3 ms
External	outputs		2 A	2 A
	response time		< 0.1 ms	< 0.1 ms
I/O points			4 stations (128 devices)	4 stations (128 devices)
Applicable wire size		mm^2	0.75 – 2.0	0.75 – 2.0
Internal power consumption (24 V DC)		mA	70	D62D: 100; D62D-S1: 120
Weight		kg	0.41	0.42
Dimensions (W x H x D)		mm	152 x 65 x 63	152 x 65 x 63

Order information	Art. no.	88028	88029 / 88030

■ CC-Link Remote Input Modul for Temperature Measurement



Temperature measuring via thermoelement

This module supports temperature measurements via thermocouples.

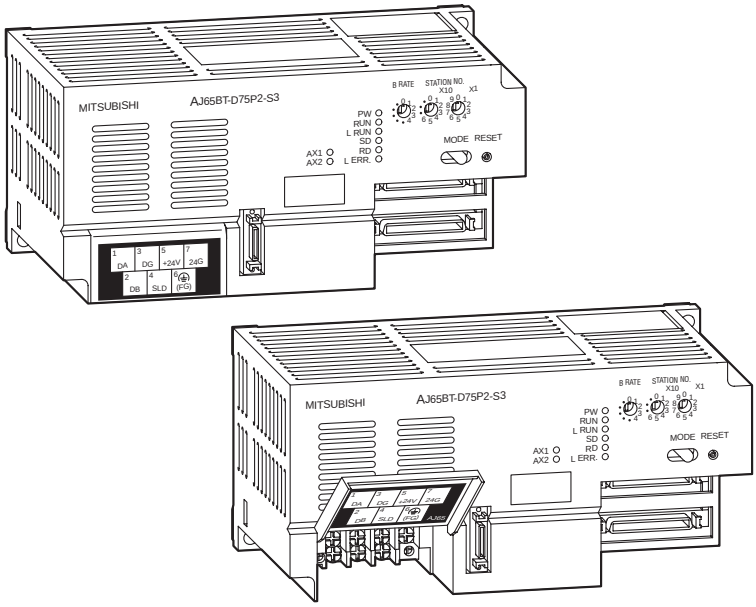
Special features:

- The module provides 8 thermoelement inputs that can be addressed independently.
- Linearized measuring range up to 1700 °C (depending on thermoelement).
- Support for thermoelement types B, R, S, K, E, J, T with characteristics of thermoelectric voltages according to DIN IEC 584-1.
- Line break detection for each input channel.
- Cold junction compensation is possible.
- Standard electrical isolation between process and control via optocoupler.

Specifications		AJ65BT-68TD			
Input points		8			
Temperature input range	°C	0 – 1700			
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	600 – 1700 °C	±2.5 °C	±0.4 °C
		R	200 – 1600 °C	±2 °C	±0.3 °C
		S	200 – 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. conversion time		45 ms / channel, without respect to the number of used channels			
Absolute max. input voltage	V	± 5			
Isolation method		Transformer			
I/O points		4 stations (128 devices)			
Applicable wire size	mm^2	0.75 – 2.0			
Internal power consumption (5 V DC)	mA	81			
Weight	kg	0.40			
Dimensions (W x H x D)	mm	152 x 65 x 63			

Order information	Art. no.	88025

CC-Link Remote Positioning Module



Positioning with an open control loop

The module generates the go command via a pulse chain. The velocity is proportional to the pulse frequency. The travel is proportional to the pulse length.

Special features:

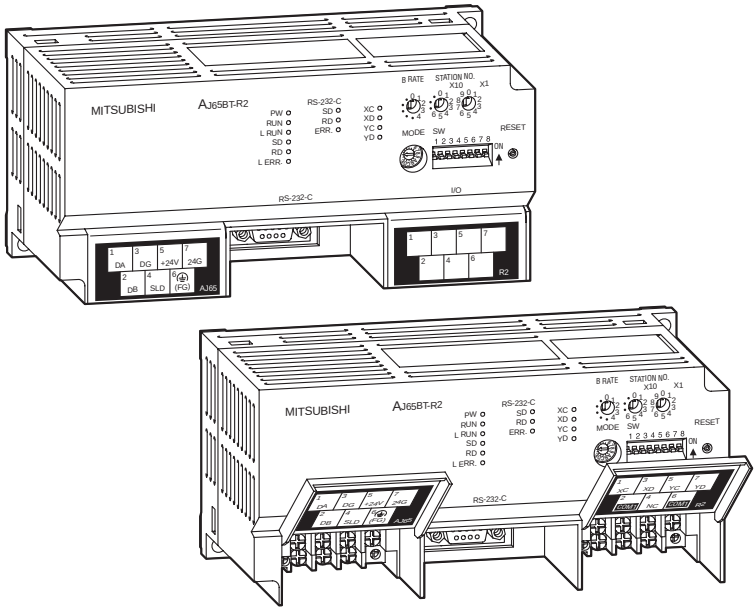
- Control of up to two axes, linear interpolation or circular interpolation.
- Storage of up to 600 items of positioning data.
- Travel unit can be specified pulse, mm, inch or degree.
- In connection with the MELSERVO MR-J2 servo amplifier an absolute position detection system can be configured.
- 7 types of home position return functions are available.
- Parameterization and specification of positioning data can be be done entirely by the PLC program or by the MS-DOS Software SW1IVD-AD75PE.

Specifications		AJ65BT-D75P2-S3
Control axes		2
Interpolation		Linear interpolation (2 axes), circular interpolation(2 axes)
Points per axis		600
Positioning	method	Pulse control "Point to Point" (absolute data and/or incremental); speed/position swiching control: (incremental); locus control (absolute data and/or incremental)
	positioning units	absolute data: -2147483648 – 2147483647 pulse -214748364.8 – 214748364.7 µm -21474.83648 – 21474.83647 inch 0 – 359.99999 degree incremental: -2147483648 – 2147483647 pulse -214748364.8 – 214748364.7 µm -21474.83648 – 21474.83647 degree -21474.83648 – 21474.83647 inch 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 ms (4 patterns each can be set)
Offset		Electronic gear and backlash compensation
I/O points		4 stations with each 128 devices
Internal power consumption (5 V DC)	mA	300
Weight	kg	0.5
Dimensions (W x H x D)	mm	170 x 63.5 x 80

Order information	Art. no.	88002

Accessories	Software for all MELSEC positioning modules: SW1IVD-AD75PE, art. no.: 65619; adapter cabel: A1SD75-C01H, art. no.: 54943

CC-Link Remote RS232C Interface Module



Data exchange with peripherals

This module serves for the communication with peripheral devices through a standard RS232C interface. The peripherals are connected point to point (1:1).

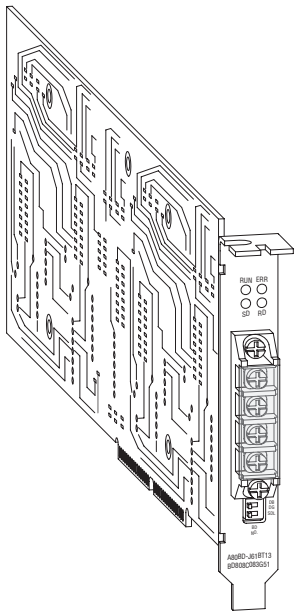
Special features:

- Access capabilities of host PCs with visualization or monitor software to the complete data set of the MELSEC AnAS CPU.
- Supported ASCII data exchange with connected devices such as bar code readers, weighing or identification systems.
- Two universal digital inputs and outputs each.
- Printer control options.
- LED indicators for the module and communications status.

Specifications			AJ65BT-R2
Interface		Typ	RS232C (D-Sub, 9 pole)
Communications mode			Full duplex (without protocol)
Synchronisation			Start/stop synchronisation
Data transfer	speed	bit/s	300, 600, 1200, 2400, 4800, 9600, 19200 (selectable)
	channel		Bus (RS485)
	distance	m	15
Data format			1 start bit, 7 or 8 data bits, 1 or 0 parity bits, 1 or 2 stop bits
Error correction			Parity check, checksum
DTR/DSR control			YES / NO selectable
X ON / X OFF (DC1 / DC3)			YES / NO selectable
Universal I/Os	input data		2 inputs 24 V DC (sink / source type)
	output data		2 Transistor outputs 12/24 V DC
I/O points			1 station (32 adresses)
External power supply		V DC	24
Internal power consumption (5 V DC)		mA	110
Weight		kg	0.4
Dimensions (W x H x D)		mm	170 x 80 x 63,5

Order information	Art. no.	88003

■ Interface Boards for CC-Link



Interface board for CC-Link

The interface board serves for the integration of a personal computer as local station into the CC-Link network.

Special features:

- PCI board for plug-and-play without DIP switch configuration.
- Monitor and test function of data available within the network supported.
- Prepared for user-defined programming.

Specifications			A80BD(E)-J61BT13
Module type			Slave
Transmission speed		Mbit/s	0.156; 0.625; 2.5; 5; 10 (selectable)
Max. transmission distance			Dependend on the transmission speed (see master module)
Link devices	per system		2048 link relays , 256 registers
	per station		30 link relays , 256 registers
Communications method			Polling
Synchronisation method			Frame synchronisation method
Modulation			NRZI
Transmission method			Bus (RS485)
Transmission format			HDLC
Boards per network			Max. 4
System requirements (PC)			Windows NT Workstation 4.0 or higher, with Pentium prozessor ≥133 MHz, 1 free PCI slot, min. 32 MB RAM, min. 20 MB ROM (harddisk)
Internal power consumption (5 V DC)		mA	400
Weight		kg	0.16
Dimensions (W x H x D)		mm	192 x 107 x 8.8

Order information	Art. no.	102866

MELSEC I/O Link Network

Communications Modules

MELSEC I/O Link enables you to operate up to 64 remote inputs and 64 remote outputs.

All I/Os in the network are automatically and cyclically updated at 5.4 µs intervals.

Up to 16 I/O modules can be connected to a master unit.

Structure

The data line's tree topology enables you to install T-junctions at any point, similar to a normal house service installation. You only need to ensure that the total coverage of the network does not exceed 200 m.

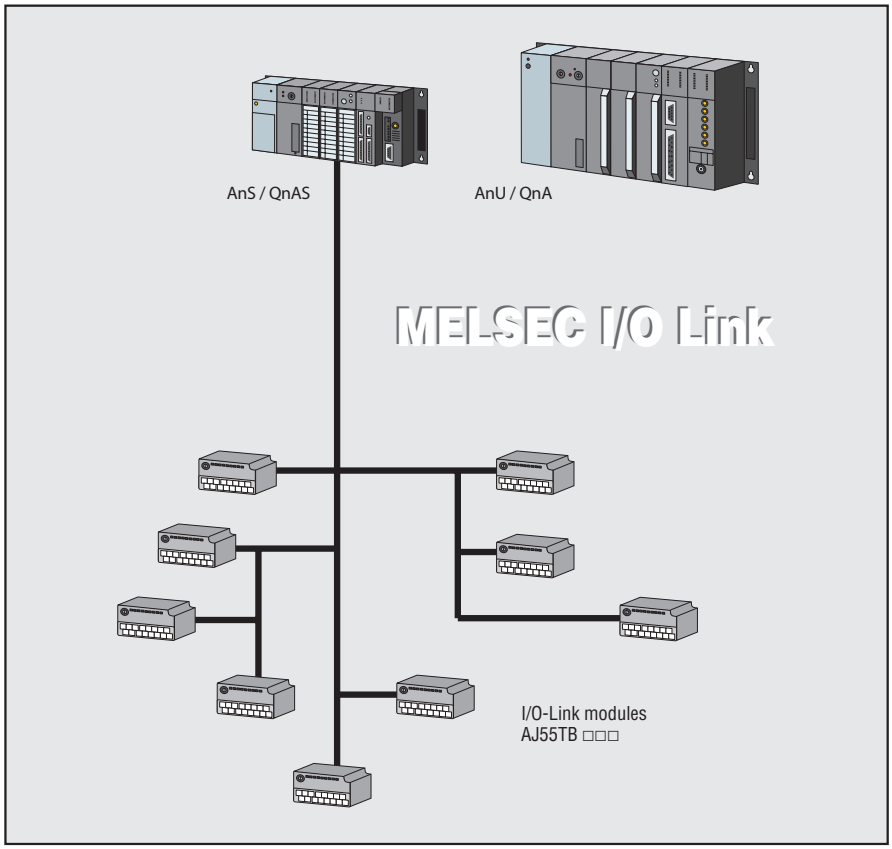
Cable type

The network uses ordinary shielded twisted-pair cabling as the communications medium.

Administration

For the control program there is no difference at all between the remote I/Os and the local I/Os on the PLC's base units.

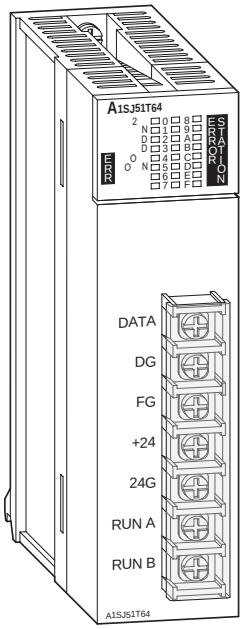
The station numbers of the remote I/O modules are set with simple rotary switches, making installation very easy. You also need to set the master station DIP switches for the assigned station numbers to ON.



Interface	Shielded twisted-pair cabling
Cross-section	0.75 mm² (1 pair)
Loop resistance	≤ 29 Ω / km
Electrostatic capacity	75 nF / km
Impedance (100 kHz)	110 Ω ±10 %
Insulation resistance	≥ 500 MΩ / km
Maximum distance	200 m

Important: Do not exceed the specified electrostatic capacity!

■ MELSEC I/O Link Master Module



Local I/Os with flexible installation

The MELSEC I/O Link is very simple to handle.
To put it into operation, all that is necessary is to set DIP switches to indicate which stations are present. Otherwise, the local I/Os behave in the same way as locally installed ones and are programmed in the same way via the PLC program.

Special features:

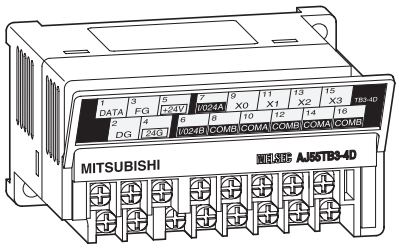
- Online diagnostics by means of LEDs
- Cabling in tree structure (T connections possible)
- Up to 128 inputs/outputs per module
- Refresh time of 5.4 ms for 64 I/Os
- The number of master modules is limited only by the address range of the CPU.
- Transmission distance up to 200 m (cable length)
- Indication of faulty stations by means of LEDs

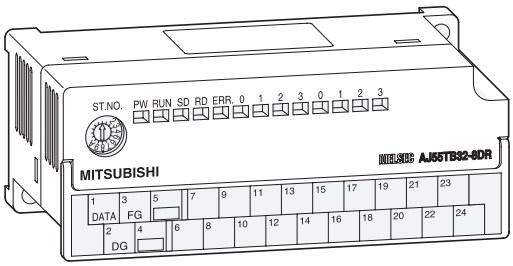
Specifications			A1SJ51T64
Controllable I/O points			128 (using mixed modules with 4 inputs / 4 outputs)
I/O refresh time		ms	ca. 5.4
Communication	rate	bit/s	38400
	method		Register insertion method
	synchronization method		Combination of frame-synchronization and bit-synchronization
	error control system		Parity check
	transmission path		Bus / tree system
	transmission total distance	m	200
	I/O stations		16 (modules with 4 I/Os)
Communication cable	type		Shielded twisted pair cable
	no. of cores		2
	diameter		≥ 0.5 mm²
Error (RUN) display of stations			LED
No. of occupied I/O points			64 (definable by I/O assignment)
Applicable wire size		mm²	≥ 0.75
External	voltage supply		21.6 – 27.6 V DC
	current supply (24 V DC)	mA	90
Internal power consumption (5 V DC)		mA	115
Weight		kg	0.3
Dimensions (W x H x D)		mm	34.5 x 130 x 93.6

Order information	Art. no.	47192

Accessories	I/O link modules AJ55TB □□□ (refer to the following page)

■ MELSEC I/O Link Modules for A1SJ51T64





Local I/Os in compact design

The local I/Os have little granularity. For example, mixed modules with 2 input points and 2 output points are available.
This system is perfect for updating existing machinery.

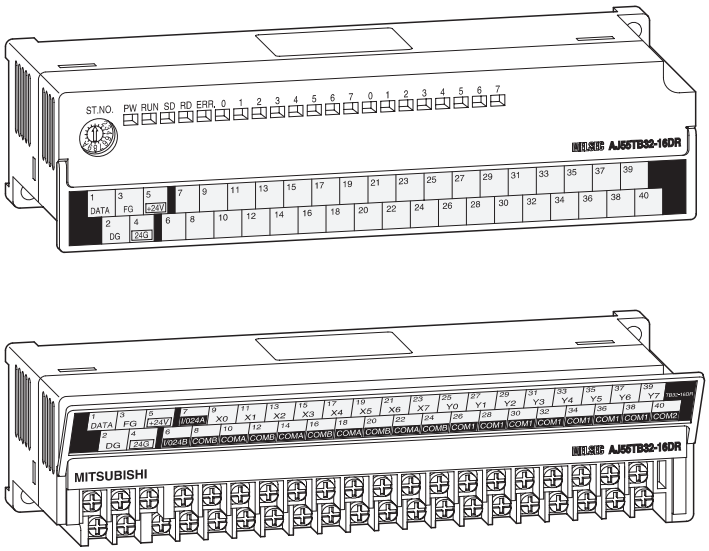
Special features:

- Very compact design
- Three-conductor connection technology for input points
- Installation by screws or integrated DIN rail adapter
- Modules with 4, 8 and 16 input/output points
- Galvanic isolation between process and controller by photocoupler is a standard feature.
- Indication of the status of the input/output points by LEDs
- Adjustment of station numbers via rotaryswitch

Specifications			AJ55TB3-4D	AJ55TB3-8D	AJ55TB3-16D	AJ55TB32-4DR	AJ55TB32-8DR	AJ55TB32-16DR
Controllable I/O points			4	8	16	2 + 2	4 + 4	8 + 8
Operating voltage range		V DC	19.2 – 26.4	19.2 – 26.4	19.2 – 26.4	21.6 – 26.4	21.6 – 26.4	21.6 – 26.4
Rated input voltage			24 V DC (7 mA)	24 V DC (7 mA)	24 V DC (7 mA)	24 V DC (7 mA)	24 V DC (7 mA)	24 V DC (7 mA)
Rated output voltage			—	—	—	24 V DC (2 A/point) 240 V AC (4 A/common)	24 V DC (2 A/point) 240 V AC (4 A/common)	24 V DC (2 A/point) ①
Switch ON	voltage	V	≥ 14	≥ 14	≥ 14	≥ 14	≥ 14	≥ 14
	current	mA	≥ 3.5	≥ 3.5	≥ 3.5	≥ 3.5	≥ 3.5	≥ 3.5
Switch OFF	voltage	V	≤ 6	≤ 6	≤ 6	≤ 6	≤ 6	≤ 6
	current	mA	≤ 1.7	≤ 1.7	≤ 1.7	≤ 1.7	≤ 1.7	≤ 1.7
Load resistance		kΩ	3.3	3.3	3.3	3.3	3.3	3.3
Min. switching load			—	—	—	5 V DC (1 mA)	5 V DC (1 mA)	5 V DC (1 mA)
Max. switching voltage		V	—	—	—	250 V AC / 110 V DC	250 V AC / 110 V DC	49.9 V AC
Response time	OFF ⟶ ON	ms	≤ 10	≤ 10	≤ 10	In: ≤ 10 / Out: ≤ 10	In: ≤ 10 / Out: ≤ 10	In: ≤ 10 / Out: ≤ 10
	ON ⟶ OFF	ms	≤ 10	≤ 10	≤ 10	In: ≤ 10 / Out: ≤ 12	In: ≤ 10 / Out: ≤ 12	In: ≤ 10 / Out: ≤ 12
Life	mechanical		—	—	—	20 Mio. cycles	20 Mio. cycles	20 Mio. cycles
	electrical		—	—	—	100000 cycles	100000 cycles	100000 cycles
Max. switching frequency			—	—	—	3600 cycles/h	3600 cycles/h	3600 cycles/h
Max. inputs ON simultaneously			100 %	100 %	100 %	100 %	100 %	100 %
Input/output indicator			All modules provide a red LED for each input/output.					
Isolation method			All modules fitted with photocoupler isolation between input terminals and internal circuit.					
Communication cable			Shielded twisted pair 0.75 mm² x 1P / lead cable 0.75 mm² x 2C (for further information contact the Mitsubishi Electric service)					
I/O unit power supply	voltage	V DC	15.6 – 27.6	15.6 – 27.6	15.6 – 27.6	15.6 – 27.6	15.6 – 27.6	15.6 – 27.6
	current	mA	35	45	60	40	50	70
External voltage supply			—	—	—	24 V DC / 240 V AC	24 V DC / 240 V AC	24 V DC
External power consumption (24 V DC)		mA	—	—	—	12	23	45
Weight		kg	0.2	0.3	0.4	0.2	0.3	0.4
Dimensions (W x H x D)		mm	82 x 45 x 66	114 x 45 x 66	177 x 45 x 66	82 x 45 x 66	114 x 45 x 66	177 x 45 x 66
Ordering information		Art. no.	47191	47190	58548	47186	47185	58546
Accessories			—					

① In case of 240 V AC the unit does not comply to CE-standard.

■ MELSEC I/O Link Modules for A1SJ51T64



Specifications			AJ55TB2-4R	AJ55TB2-8R	AJ55TB2-16R
Controllable I/O points			4	8	16
Operating voltage range		V DC	—	—	—
Rated input voltage			—	—	—
Rated output voltage			24 V DC (2 A/point) 240 V AC (8 A/common)	24 V DC (2 A/point) 240 V AC (8 A/common)	24 V DC (2 A/point, 8 A/common) ①
Switch ON	voltage	V	—	—	—
	current	mA	—	—	—
Switch OFF	voltage	V	—	—	—
	current	mA	—	—	—
Load resistance		kΩ	—	—	—
Min. switching load			5 V DC (1 mA)	5 V DC (1 mA)	5 V DC (1 mA)
Max. switching voltage			250 V AC / 110 V DC	250 V AC / 110 V DC	49.9 V AC
Response time	OFF ⟶ ON	ms	≤ 10	≤ 10	≤ 10
	ON ⟶ OFF	ms	≤ 12	≤ 12	≤ 12
Life	mechanical		20 Mio. cycles	20 Mio. cycles	20 Mio. cycles
	electrical		100000 cycles	100000 cycles	100000 cycles
Max. switching frequency			3600 cycles/h	3600 cycles/h	3600 cycles/h
Max. inputs ON simultaneously			—	—	—
Input/output indicator			All modules provide a red LED for each input/output.		
Isolation method			All modules fitted with photocoupler isolation between input terminals and internal circuit.		
Communication cable			Shielded twisted pair 0.75 mm² x 1P / lead cable 0.75 mm² x 2C (for further information contact the Mitsubishi Electric service)		
I/O unit power supply	voltage		15.6 – 27.6 V DC	15.6 – 27.6 V DC	15.6 – 27.6 V DC
	current	mA	50	65	85
External voltage supply			24 V DC / 240 V AC	24 V DC / 240 V AC	24 V DC
External power consumption (24 V DC)		mA	23	45	90
Weight		kg	0.2	0.3	0.4
Dimensions (W x H x D)		mm	82 x 45 x 66	114 x 45 x 66	177 x 45 x 66
Ordering information		Art. no.	47189	47187	58549
Accessories			—		

① In case of 240 V AC the unit does not comply to CE-standard.

The PROFIBUS/DP Network

Data Communications

The open PROFIBUS/DP network enables extremely fast data exchange with a very wide variety of slave devices, including:

- Remote digital I/Os
- Remote analog I/Os
- Remote intelligence PLC (FX0N, FX2N)
- Frequency inverters (FR-A 240, FR-A 540 (L), FR-E 500)
- Operator terminals (MAC E series)
- A range of other devices from third-party manufacturers

Structure

The maximum coverage of a bus segment is 1200 m (at a maximum of 93.75 kbit/s). Up to 3 repeaters are allowed. Thus the maximum distance between 2 stations is calculated with 4800 m.

Cable types

To help reduce costs PROFIBUS/DP uses RS 485 technology with simple twisted-pair cabling.

Suitable cables include the UNITRONIC BUSLD from Lappkabel and the DUE 4451 from Alcatel.

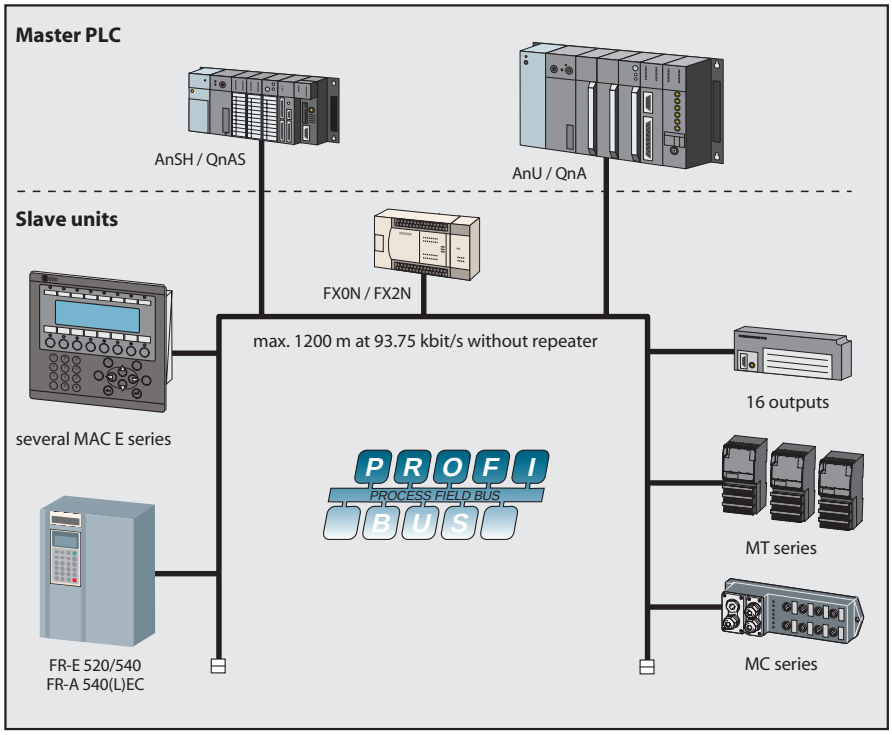
Data exchange

The PROFIBUS AJ71PB92D and A1SJ71PB92D master modules support slave device data exchange with up to 244 send bytes and 244 receive bytes. This means you can exchange a total of up to 128 bytes with a slave unit per network cycle.

Administration

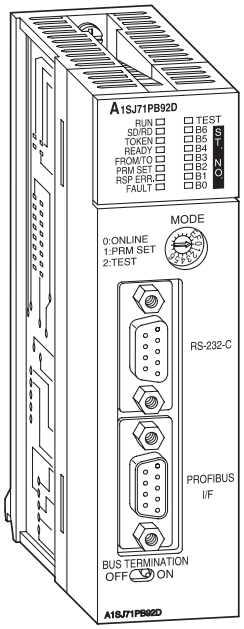
In combination with the MELSEC ProfiMap configuration software the AJ71PB92D PROFIBUS/DP master unit gives you user-friendly plug-and-play technology. The configuration software is self-explanatory, using a graphical model for setting up the network. You simply select the slave unit (e.g. FX2N), assign the station numbers and specify where the information is stored in the master CPU.

Of course, PROFIBUS/DP slaves from MITSUBISHI ELECTRIC can also be connected to master devices from other manufacturers.



Specifications			Master AJ71PB92	Master A1SJ71PB92D
Communications protocol			EN 50170 / DIN 19245-T3	
Cabling			Shielded twisted-pair with 24 AWG = 0.22 mm², impedance: 100 – 130 Ω; Shielded twisted-pair with 22 AWG = 0.34 mm², impedance: 135 – 165 Ω;	
Interface			RS485	
Data transfer rate	distance			
	1 200 m	kbit/s	9.6 / 19.2 / 93.75	
	1 000 m	kbit/s	187.5	
	400 m	kbit/s	500	
	200 m	kbit/s	1 500	12000 / 6000 / 3000 (100 m) 1500 (200 m)
Max total distance		m	4800 (3 repeaters)	
Slave units per master			60	
Stations per segment			32	
Repeaters per network			3	
Accessories			ProfiConT: PROFIBUS 9-pin D-SUB plug connector for up to 12 Mbaud, art. no. 87035 (refer to page 82)	

■ PROFIBUS DP/FMS Module



The open standard for MELSEC PLCs

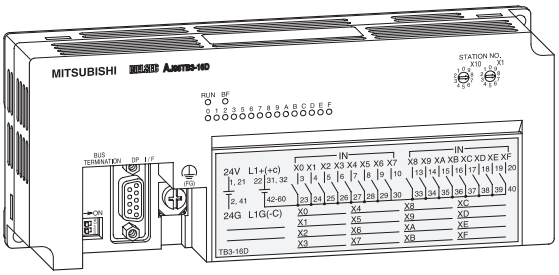
The A1SJ71PB96F PROFIBUS/FMS module and the A1SJ71PB92D PROFIBUS/DP module enable MELSEC programmable logic controllers to communicate with other PROFIBUS devices.

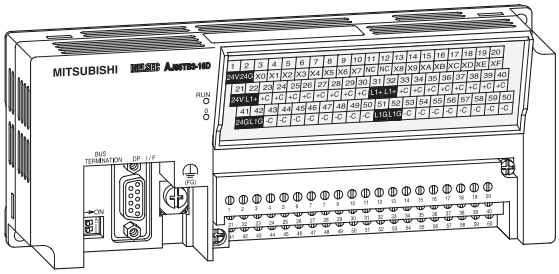
Special features:

- The A1SJ71PB92D PROFIBUS/DP master can communicate with up to 60 slave units. Up to 32 input bytes and 32 output bytes can be processed at a time per slave station. Supported functions include Sync, Freeze and specialised diagnostics messages for the specific slave types used.
- The A1SJ71PB96F PROFIBUS/FMS master supports up to 32 links and supports simple variables, records and arrays.

Specifications			A1SJ71PB96F	A1SJ71PB92D
Module type			Master	Master
Protocol			EN50170, DIN19245T1+2	EN50170, DIN19245T3
Interface		type	RS485	RS485
Communications mode			Logical token ring with subordinate Master/Slave procedure	Logical token ring with subordinate Master/Slave procedure
Topology			Bus	Bus
Modulation			NRZ	NRZ
Cabling			Shielded twisted-pair	Shielded twisted-pair
Communications distance	9.6 kbps 19.2 kbps 93.75 kbps	m	1200	1200, 4800 (3 repeaters)
	187 kbps	m	600	1000, 4000 (3 repeaters)
	500 kbps	m	200	400, 1600 (3 repeaters)
	1500 kbps	m	100	200, 800 (3 repeaters)
	3 Mbps 6 Mbps 12 Mbps	m	—	100, 400 (3 repeaters)
Max. nodes			32, 62 (1 repeater), 92 (2 repeaters), 122 (3 repeaters)	32, 62 (1 repeater), 92 (2 repeaters), 126 (3 repeaters)
Repeaters per network			Max. 3	Max. 3
I/O points			32	32
Internal power consumption (5 V DC)		mA	560	560
Weight		kg	0.27	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.	46421	63393
Accessories			Configuration software incl. configuration cable for A1SJ71PB92D, A1SJ71PB96F: MELSEC ProfiMap, art. no.: 102996 PROFIBUS plug connector for up to 12 Mbaud: ProfiConT, art. no 87035 (refer to page 82)	

■ PROFIBUS/DP Compact I/O Modules





Compact I/O modules for PROFIBUS/DP

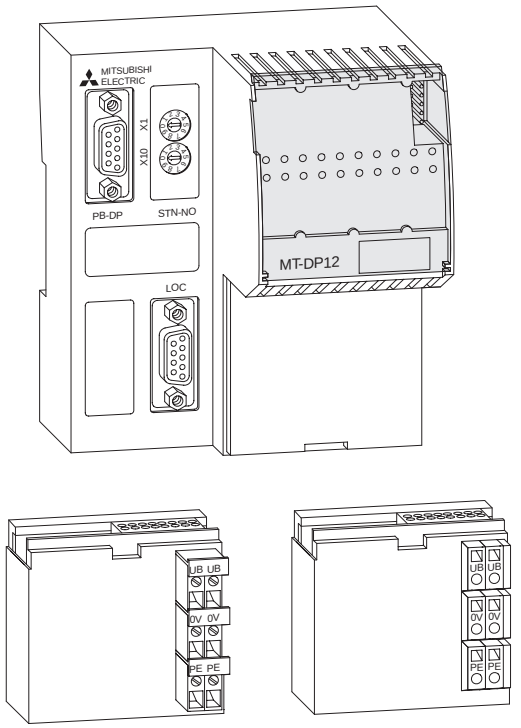
These PROFIBUS/DP I/O modules enable signal registration at the machine with relatively short cables. The reduced cabling requirements and the ability to activate individual machine components automatically are among the great advantages of these modules.

Special features:

- I/Os and PROFIBUS/DP cable electrically isolated from the internal circuitry
- Outputs protected with melt fuse
- Support for data transfer rates from 9 600 baud to 12 Mbaud
- 3-pole sensor connection technology
- Removable terminal block with screw terminals
- Integrated switchable terminating resistors
- Rotary switch station number allocation
- Both DIN rail and screw mounting supported

Specifications			AJ95TB3-16D	AJ95TB2-16T	AJ95TB32-16DT
Controllable I/O points			16 Input points	16 Transistor outputs	8 Input points / 8 transistor outputs
I/Os in groups with			16	8	8
Occupied stations			1	1	1
Input data					
Operating voltage range		V DC	19.2 – 26.4	—	19.6 – 26.4
Rated input voltage			24 V DC (7 mA)	—	24 V DC (7 mA)
Switch ON	voltage	V	≥ 14	—	≥ 14
	current	mA	≥ 3.5	—	≥ 3.5
Switch OFF	voltage	V	≤ 6	—	≤ 6
	current	mA	≤ 1.7	—	≤ 1.7
Input resistance		kΩ	3.3	—	3.3
Input type			Sink/souce	Source output	Sink/source input, source output
Output data					
Output voltage			—	12/24 V DC (0.8 A/channel) (3.2 A/total)	—
Max. output load				0.8 A / output	0.8 A / output
Response time	OFF ⟶ ON	ms	≤ 10 (input)	≤ 2 (output)	≤ 10 (input), ≤ 2 (output)
	ON ⟶ OFF	ms	≤ 10 (input)	≤ 2 (output)	≤ 10 (input), ≤ 2 (output)
External voltage supply			—	10.8 – 26.4 V DC	10.8 – 26.4 V DC
External power consumption (24 V DC)		mA	—	35, all I/Os ON, no load	18, all I/Os ON, no load
Withstand strength		V AC	500	500	500
Isolation resistance			≥ 10 MΩ	≥ 10 MΩ	≥ 10 MΩ
Common data					
Isolation			All modules fitted with photocoupler isolation between I/Os.		
Power consumption	voltage	V DC	15.6 – 31.2	15.6 – 31.2	15.6 – 31.2
	current	mA	174 (24 V DC)	188 (24 V DC)	183 (24 V DC)
Applicable wire size		mm^2	0.18 – 2	0.18 – 2	0.18 – 2
Weight		kg	0.45	0.45	0.45
Dimensions (W x H x D)		mm	197.4 x 80 x 46.5	197.4 x 80 x 46.5	197.4 x 80 x 46.5
Order information		Art. no.	63079	63080	63081
Accessories			PROFIBUS plug connector for up to 12 Mbaud: ProfiConT; art. no 87035 (refer to page 82)		

■ PROFIBUS/DP MT Modules



Basic module (head station) of the MT series

The basic module connects the extension modules of the MT series (MT = Modular Type) to the PROFIBUS/DP. The MT devices are mounted to a DIN rail. Due to the additional second interface on the basic module the extension modules can be installed in two rows.

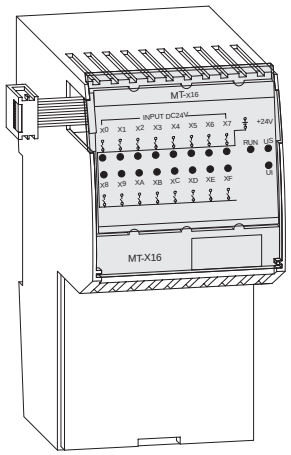
The modules on the separate DIN rail are supplied with data and the system voltage via an extension cable and the local system extension module.

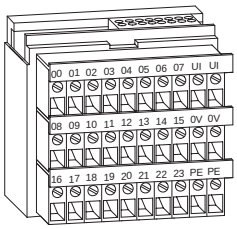
Special features:

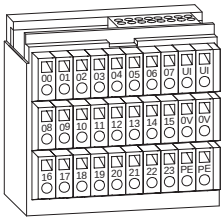
- Up to 16 digital and 8 analog extension modules can be connected.
- Automatic detection of the data transfer rate
- Optocouplers between interface and system
- Two selectable types of connecting terminals: screw type and cache clamp terminals
- Supported installation in two rows through the local extension MT-LE-SET to be connected to the basic module.
- Up to 256 digital inputs/outputs per basic module

Specifications			MT-DP12	MT-DP12E
Module type			Basic module of the MT series, PROFIBUS/DP slave	Basic module of the MT series, PROFIBUS/DP slave
Commu-nications	protocol		DIN 19245-T3	EN50170, DIN 19245-T3
	medium		Shielded twisted-pair with 24AWG = 0.22 mm², impedance: 100 – 130 Ω; Shielded twisted-pair with 22AWG = 0.34 mm², impedance: 135 – 165 Ω	Shielded twisted-pair with 24AWG = 0.22 mm², impedance: 100 – 130 Ω; Shielded twisted-pair with 22AWG = 0.34 mm², impedance: 135 – 165 Ω
Interface			RS485	RS485
Operation modes			Sync mode and freeze mode are supported	Sync mode and freeze mode are supported
Communications rate			9.6; 19.2; 93.75; 187.5; 500 kBit/S, 1.5; 3; 6; 12 Mbit/s	9.6; 19.2; 93.75; 187.5; 500 kBit/S, 1.5; 3; 6; 12 Mbit/s
Max. total distance		m	4800 (3 repeater)	4800 (3 repeater)
No. of connectable extension modules			Max. 16 extension modules (digital and analog I/O modules)	Max. 4 extension modules (digital and analog I/O modules)
Adressable digital I/Os			256	72
I/O points			—	—
Integrated inputs				
Digital inputs			—	8
Isolation			—	Optocoupler isolation between input terminals and internal power.
Rated input current			—	24 V DC (18 – 30 V)
Response time	OFF ⟶ ON	ms	—	1
	ON ⟶ OFF	ms	—	1
Short circuit protection			—	Electronic
Status display for inputs			—	The module posseses of status LEDs for all inputs.
Common data				
Applicable wire size		mm²	0.75 – 2.5	0.75 – 2.5
Power supply		V DC	24	24
Internal power consumption (24 V DC)		A	Max. 0.5 (with maximum configuration)	Max. 0.5 (with maximum configuration)
Weight		kg	0.28	0.35
Dimensions (W x H X D)		mm	96 x 114 x 60	96 x 114 x 60
Order information		Art.-Nr.	68887	124622
Accessories			Local system adapter MT-LE with extension cable MT-LE-CBL50 (length 0,5 m) = MT-LE-SET, art. no. 69759 Screw type terminal block MT-DP12-TBS, art. no. 68888 Cache clamp terminal block MT-DP12-TBC, art. no. 68889 PROFIBUS connector for up to 12 Mbaud: ProfiConT, art. no. 87035 (see page 82)	Screw type terminal block MT-DP12E-TBS, art. no.: 124624 Cache clamp terminal block MT-DP12E-TBC, art. no.: 124623 ROFIBUS connector for up to 12 Mbaud: ProfiConT, art. no. 87035 (see page 82)

■ PROFIBUS/DP MT Modules







Digital input/mixed modules

The digital input modules of the MT series facilitate the evaluation of process data (contacts, limit switches, etc.) via a PROFIBUS/DP master. Modules with 4, 8 and 16 inputs are supplied.

Beside the 4 inputs the mixed module MT-X4Y4T consists of 4 transistor outputs.

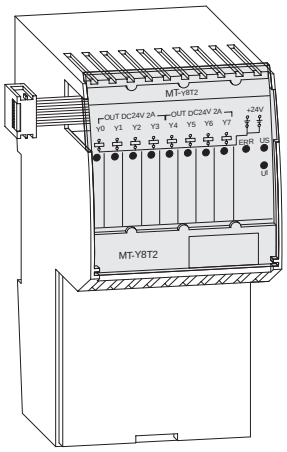
Special features:

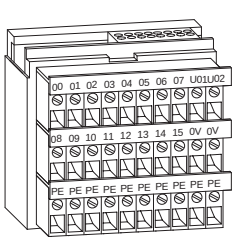
- For the 16-type modules potential terminal blocks in three-wire technique are available.
- The driving power supplying the sensors and actors (except relay output) is directly fed into the module.
- Connection of the sensory circuits in three-wire technique
- Standard potential isolation between process and module
- Two selectable types of connecting terminals: screw type and cache clamp terminals

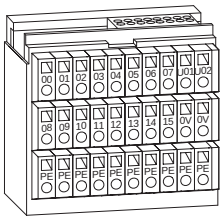
Specifications			MT-X8	MT-X16	MT-X4Y4T
Inputs			8	16	4
Simultaneously ON inputs			70 %	70 %	100 %
Outputs			—	—	4
Output type			—	—	Transistor
Common terminal arrangement			—	—	4
Isolation			Optocoupler isolation between input terminals and internal power for all modules.		
Input voltage (sensor supply)			24 V DC (±25 %)	24 V DC (±25 %)	24 V DC (±25 %)
Output voltage range			—	—	24 V DC (-1 %)
Output voltage (actor supply)			—	—	24 V DC (±25 %)
Max. switching voltage			—	—	—
Rated input current		A	0.7	0.7	0.7
Max. current	per output	A	—	—	0.5
	per group	A	—	—	4
Inrush current			—	—	—
Leakage current at OFF			—	—	< 50 µA
Response time	OFF ⟶ ON	ms	≤ 1	≤ 1	≤ 14
	ON ⟶ OFF	ms	≤ 1	≤ 1	≤ 0.05
Short circuit protection			Electronic	Electronic	Electronic
Status display for inputs			All modules have one or two status LEDs per input.		
Error indicator			LED	LED	LED
I/O points			8	16	8
Connection terminal			All modules can be fitted with screw type or cache clamp terminal blocks (see accessories).		
Applicable wire size		mm^2	0.75 – 2.5	0.75 – 2.5	0.75 – 2.5
External sensor/actor supply			24 V DC (≤30 mA)	24 V DC (≤30 mA)	24 V DC (≤20 mA)
Internal power consumption (8 V DC)		mA	25	30	35
Weight (without terminal block)		kg	0.16	0.17	0.22
Dimensions (W x H x D)		mm	56 x 114 x 60	56 x 114 x 60	56 x 114 x 60
Order information		Art. no.	68893	68896	124625
Accessories*		Terminal blocks	MT-X8-TBS, no. 68894 MT-X8-TBC, no. 68895	MT-X16-TBS, no. 68897 MT-X16-TBC, no. 68898 MT-X16-PTBS, no. 69400 MT-X16-PTBC, no. 69397	MT-X4Y4T-TBS, no. 124626 MT-X4Y4T-TBC, no. 124627

* Description of the terminal blocks: TBS=screw type terminal block, TBC=cache clamp terminal block, PTBS=screw type terminals with potential terminal, PTBC=cache clamp terminals with potential terminal

■ PROFIBUS/DP MT Modules







Digital output modules

The digital output modules of the MT series facilitate the evaluation of process data (contacts, limit switches, etc.) via a PROFIBUS/DP master. Modules with 4, 8 and 16 inputs are supplied.

The digital output modules supply different function elements for the customisation to the required control functions.

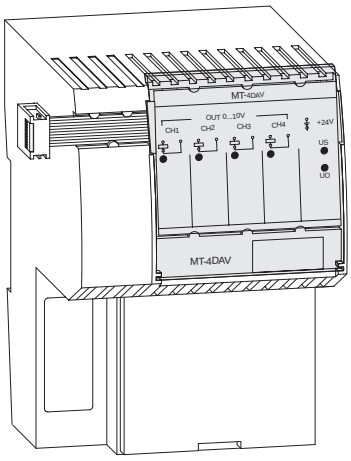
Special features:

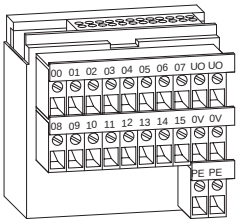
- For the 16-type modules potential terminal blocks in three-wire technique are available.
- The output modules provide transistor outputs rated at 0.5 A and 2 A, and relay outputs with up to 3 A (AC).
- The driving power supplying the sensors and actors (except relay output) is directly fed into the module.
- Connection of the sensory circuits in three-wire technique
- Standard potential isolation between process and module
- Two selectable types of connecting terminals: screw type and cache clamp terminals

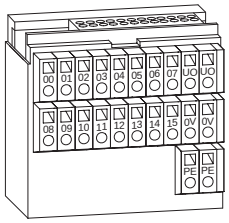
Specifications			MT-Y8T	MT-Y16T	MT-Y8T2	MT-Y4R	MT-Y8R5
Outputs			8	16	8	4	8
Output type			Transistor	Transistor	Transistor	Relay	Relay
Common terminal arrangement			8	8	4	1	1
Isolation			Optocoupler isolation between input and output terminals and internal power for all modules.				
Output voltage range			24 V DC (-1 %)	24 V DC (-1 %)	24 V DC (-0.5 %)	24 / 110 / 230 V DC, AC	24 / 110 / 230 V DC, AC
Output voltage (actor supply)			24 V DC (±25 %)	24 V DC (±25 %)	24 V DC (±25 %)		
Max. switching voltage			—	—	—	250 V AC	250 V AC
Switching capacity conf. EN60947/5/1		at 24 V	—	—	—	2 A (AC15) / 1.3 A (DC 13)	5 A (AC12) / 3 A (AC15) / 1.0 A (DC 13)
		at 110 V	—	—	—	2 A (AC15) / 0.25 A (DC 13)	5 A (AC12) / 3 A (AC15) / 0.2 A (DC 13)
		at 220 V	—	—	—	2 A (AC15) / 0.1 A (DC 13)	5 A (AC12) / 3 A (AC15) / 0.1 A (DC 13)
Max. current	per output	A	0,5	0,5	2	—	—
	per group	A	4	4	4	—	—
Leakage current at OFF			<50 µA	<50 µA	6 µA	—	—
Response time	OFF → ON	ms	≤ 0.14	≤ 0.14	≤ 0.3	10 ms	10 ms
	ON → OFF	ms	≤ 0.05	≤ 0.05	≤ 0.08	5 ms	5 ms
Short circuit protection			Electronic	Electronic	Electronic	—	—
Status display for outputs			All modules have one or two status LEDs per output.				
Error indicator			LED	LED	—	—	—
I/O points			8	16	8	8	8
Connection terminal			All modules can be fitted with screw type or cache clamp terminal blocks (see accessories).				
Applicable wire size		mm²	0.75 – 2.5	0.75 – 2.5	0.75 – 2.5	0.75 – 2.5	0.75 – 2.5
External sensor/actor supply			24 V DC (≤20 mA)	24 V DC (≤20 mA)	24 V DC (≤20 mA)	24 V DC (≤20 mA)	24 V DC (≤20 mA)
Internal power consumption (8 V DC)		mA	35	60	35	Max. 45	Max. 120
Weight (without terminal block)		kg	0.16	0.16	0.18	0.175	0.325
Dimensions (W x H x D)		mm	56 x 114 x 60	56 x 114 x 60	56 x 114 x 60	56 x 114 x 60	112 x 114 x 60
Order information		Art. no.	68899	68902	68905	68908	124628
Accessories*		Terminal blocks	MT-Y8T-TBS, no. 68900 MT-Y8T-TBC, no. 68901	MT-Y16T-TBS, no. 68903 MT-Y16T-TBC, no. 68904 MT-Y16T-PTBS, no. 69399 MT-Y16T-PTBC, no. 69398	MT-Y8T2-TBS, no. 68906 MT-Y8T2-TBC, no. 68907	MT-Y4R-TBS, no 69401 MT-Y4R-TBC, no. 69402	MT-Y8R5-TBSLR, no. 125534 MT-Y8R5-TBCLR, no. 125533

* Description of the terminal blocks: TBS=screw type terminal block, TBC=cache clamp terminal block, PTBS=screw type terminals with potential terminal, PTBC=cache clamp terminals with potential terminal

■ PROFIBUS/DP MT Modules







Analog input/output modules

Analog input modules of the MT series convert analog process data like pressure, temperature, etc. into digital values that are sent to the PROFIBUS/DP master.

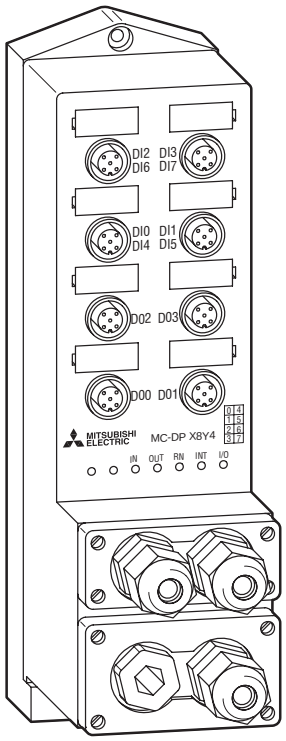
The analog output modules convert the digital values sent from the PROFIBUS/DP master into an analog voltage signal. This signal can be used to control valves, inverters, servomotors, etc.

Special features:

- 4 separately parameterisable channels per module
- Voltage, current, and temperature evaluation (MT-4AD) can be set via parameter.
- The driving power supplying the sensors and actors is directly fed into the module.
- With the analog input module current, voltage, and 4-wire PT100 inputs can be operated in parallel
- Two selectable types of connecting terminals: screw type and cache clamp terminals
- Standard potential isolation between process and module

Specifications			MT-4AD		MT-4DA		MT-4DAV	
Module type			Analog input module		Analog output module		Analog output module	
No. of channels			4		4		4	
Analog input			-10 V – +10 V, -20 mA – +20 mA, 4 – 20 mA, -180 – +600 °C (PT100)		—		—	
Resolution of digital output			16 bits binary (incl. sign)		—		—	
Resolution of digital input			—		16 bits binary (incl. sign)		16 bits binary (incl. sign)	
Analog output			—		-10 – +10 V, 0 – +20 mA		0 – 10 V DC	
Input resistance	voltage	kΩ	176		—		—	
	current	Ω	50		—		—	
Max. input	voltage	V	±15		—		—	
	current	mA	±30		—		—	
Max. output load			—		≥750 Ω		≥750 Ω	
I/O characteristics			**Analog input** -10 – +10 V -20 – +20 mA 4 – 20 mA -180 – +600 °C	**Digital output** -4000 – +4000 -4000 – +4000 0 – +4000 -1800 – +6000	**Digital input** - 2000 – +2000 0 – 2000	**Analog output** -10 – +10 V 0 – +20 mA	**Digital input** 0 – 4000	**Analog output** 0 – 10 V
Max. resolution			2.5 mV 5 µA 4 µA 0.125 °C		5 µV 10 µA		—	2.5 mV
Overall accuracy in % of the measurement range			±50 mV (-10 – +10 V) ±80 µA (-20 – +20 mA) ±76 µA (4 – 20 mA) ±4.2 °C (-180 – +600 °C)		—		—	±30 mV (0 – +10 V)
Max. conversion time			50 ms/channel		1 ms/4 channels		1 ms/channel	
Isolation			Optocoupler isolation between input terminals and internal power					
Connection terminal			All modules can be fitted with screw type or cache clamp terminal blocks (see accessories).					
External sensor/actor supply			24 V DC (≤50 mA)		24 V DC (≤50 mA)		24 V DC (≤120 mA)	
Applicable wire size		mm^2	0.75 – 1,5		0.75 – 1,5		0.75 – 1,5	
Internal power consumption (8 V DC)		mA	80				60	
Weight		kg	0.225		0.225		0.22	
Dimensions (W x H X D)		mm	76 x 114 x 60		56 x 114 x 60		76 x 114 x 60	
Order information		Art. no.	68909		124643		68912	
Accessories		Terminal blocks	Screw type terminal block MT-4AD-TBS, no. 68910 Cache clamp terminal block MT-4AD-TBC, no. 68911		Screw type terminal block MT-4DA-TBS, no. 124645 Cache clamp terminal block MT-4DA-TBC, no. 124644		Screw type terminal block MT-4DAV-TBS, no. 68913 Cache clamp terminal block MT-4DAV-TBC, no. 68914	

■ PROFIBUS/DP MC Modules



Digital input, output, and combined modules acc. to IP67

The digital I/O modules of the MC series support the evaluation of process signals (contacts, limit switches, etc.) directly on the machine via a PROFIBUS/DP master. The sensors and actuators are connected via plug-type/screw terminals.

Different modules with 16 inputs max. and 8 outputs max. as well as a combined I/O module with 8 inputs and 4 outputs are available.

Special features:

- The driving power for the sensors and actuators is supplied directly on the module.
- Connection of the sensory circuits in 3-wire cabling.
- Standard electrical isolation between process and control via optocoupler.
- Overload and short-circuit protection.

Specifications			MC-DPX8	MC-DPX16	MC-DPY8	MC-DPX8Y4
Inputs			8	16	—	8
Outputs			—	—	8	4
Output type			—	—	Transistor	Transistor
Isolation			Optocoupler isolation between input terminals and internal power			
Input voltage (sensor supply)			24 V DC (±25 %)	24 V DC (±25 %)	24 V DC (±25 %)	24 V DC (±25 %)
Rated output voltage			—	—	24 V DC (-1 %)	24 V DC (-1 %)
Output voltage (actor supply)			—	—	24 V DC (±25 %)	24 V DC (±25 %)
Max. switching voltage		A	—	—	2	2
Max. input current		A	< 0.1	<0.1	—	<0.1
Max. current	per output	A	—	—	2	2
	per group	A	—	—	10 at 0–55 °C, 16 at 0–40 °C	10 bei 0–55 °C, 16 bei 0–40 °C
Leakage current at OFF			—	—	<10 µA	<10 µA
Response time	OFF ⟶ ON	ms	1	1	0.5	0.5
	ON ⟶ OFF	ms	1	1	0.5	0.5
Short circuit protection			Electronic	Electronic	Electronic	Elektronisch
Status display for outputs			All modules have one status LEDs per output.			
Error indicator			LED	LED	LED	
I/O points			8	16	8	16
Connection terminal			All modules can be fitted with screw type or cache clamp terminal blocks.			
Applicable wire size		mm^2	0.75 – 2.5	0.75 – 2.5	0.75 – 2.5	
External sensor/actor supply			24 V DC (≤100 mA)	24 V DC (≤100 mA)	24 V DC (≤100 mA)	24 V DC (≤100 mA)
Internal power consumption (8 V DC)		mA	80	80	80	80
Weight (without termninal block)		kg	0.47	0.47	0.47	0.47
Dimensions (W x H x D)		mm	62 x 217.5 x 70.5	62 x 217.5 x 70.5	62 x 217.5 x 70.5	62 x 217.5 x 70.5
Order information		Art.-Nr.	127208	127211	127209	127210

DeviceNet Network

Data Communications

The DeviceNet represents a cost-effective solution for the network integration of low-level terminal equipment.
Up to 64 devices including a master can be integrated in one network.

Structure

Due to the supported tree structure of the data line, a T-junction can be installed in any place. It has to be considered that the overall extension must not exceed 500 m.

Using repeaters increases the overall extension to 3 km.

Cable types

For the data exchange a cable with two shielded twisted-pair cables is used.

Parameterization

Parameterization is done with the configuration software SyCon from Ver. 2.0.6.2 by the Hilscher company.

Communications

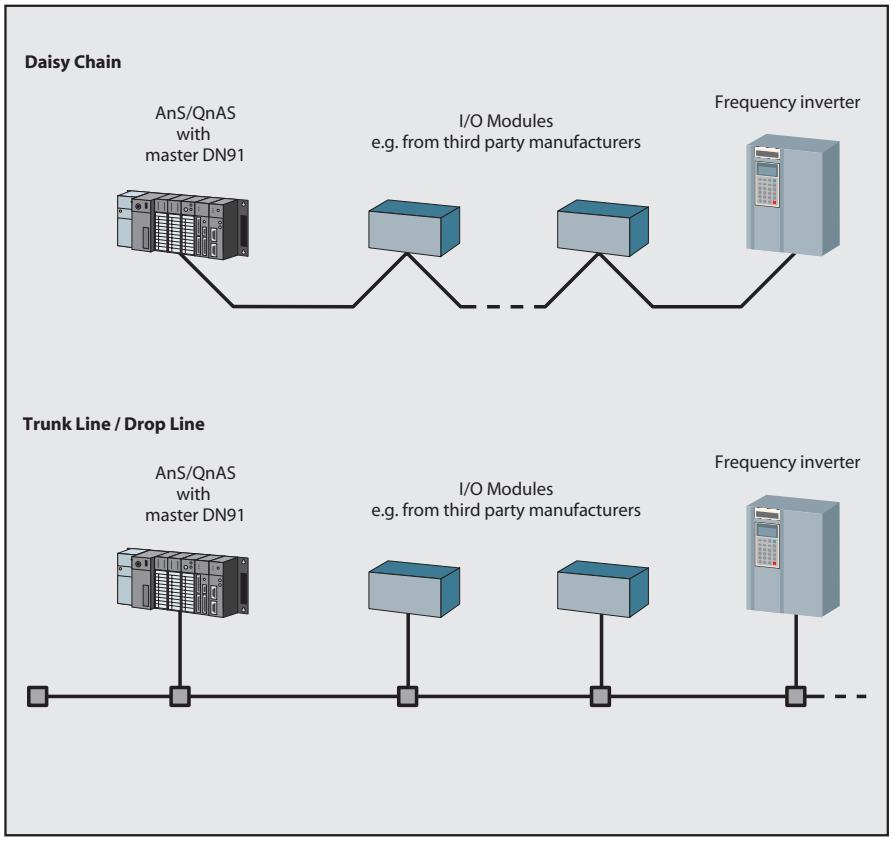
The bus accessing method CSMA/NDA ensures an extremely fast and efficient access of the link devices to the bus.

Based on the Producer/Consumer network model this method ensures greater determinism of all data.

The slave modules communicate via the following methods:

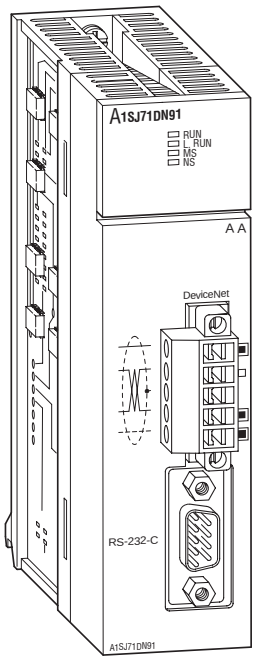
- Polling
- Bit strobe
- Change of state
- Cyclic

Information at a size of 8 bytes per data packet can be transmitted. Packets exceeding these 8 bytes are fragmented automatically.



Cabel		Thick Cable	Thin Cable
Outline diameter	mm	12.2	6.9
Inside wire for data (blue / white)		18AWG19x30 zinc plated	24AWG19x36 zinc plated
Inside wire for power supply (red / black)		15AWG19x28 zinc plated	22AWG19x34 zinc plated
Trunkline		Yes	Yes
Dropline		Yes	Yes
Max. distance	m	500	500
Max. distance incl. Repeater	m	3000	3000

DeviceNet Master Module



CAN based network for low level terminals

The DeviceNet represents a cost-effective solution for the network integration of low-level terminal equipment. Up to 64 devices including a master can be integrated in one network.

Special features:

- Up to 64 devices including a master station can be configured within one network.
- The positions of master and slave stations are user-selectable.
- Transfer rates of 125, 250 and 500 kBaud.
- Distances of up to 500 m.
- Communication methods
  - Polling
  - Bit strobe
  - Change of state
  - Cyclic

Specifications			A1SJ71DN91
Module type			Master
Applicable PLC series			MELSEC AnS/QnAS series
Nodes per network			Group 2 Client
Stations per network			0 up to 63
Max. number of slave stations			63
Communi-cations volume	I/O communication		2048 adresses (256 bytes)
	Message communication		240 bytes
Communica-tion speed	Cabel length	500 m	125 kBaud
		250 m	250 kBaud
		100 m	500 kBaud
Network power consumption		mA	26.5
I/O points			32
Internal power consumption (5 V DC)		mA	240
Weight		kg	0.23
Dimensions (W x H x D)		mm	130 x 34.5 x 93.6

Order information	Art.-No.	124373

Accessories	Configuration software SyCon from Fa. Hilscher

The Network with Actuator Sensor Interface

Data transfer

The AS interface is an international standard for the lowest field bus level.

The network suits versatile demands, is very flexible and particularly easy to install.

Controlled are

- Sensors
- Actors
- I/O units
- Gateways

Structure

ASI networks can be configured in any random tree structure.

Up to 2 repeaters are supported providing a maximum communication distance of 300 m. Terminating resistors are not needed.

Cable types

A special coded 2-wire cable or a round cable is required.

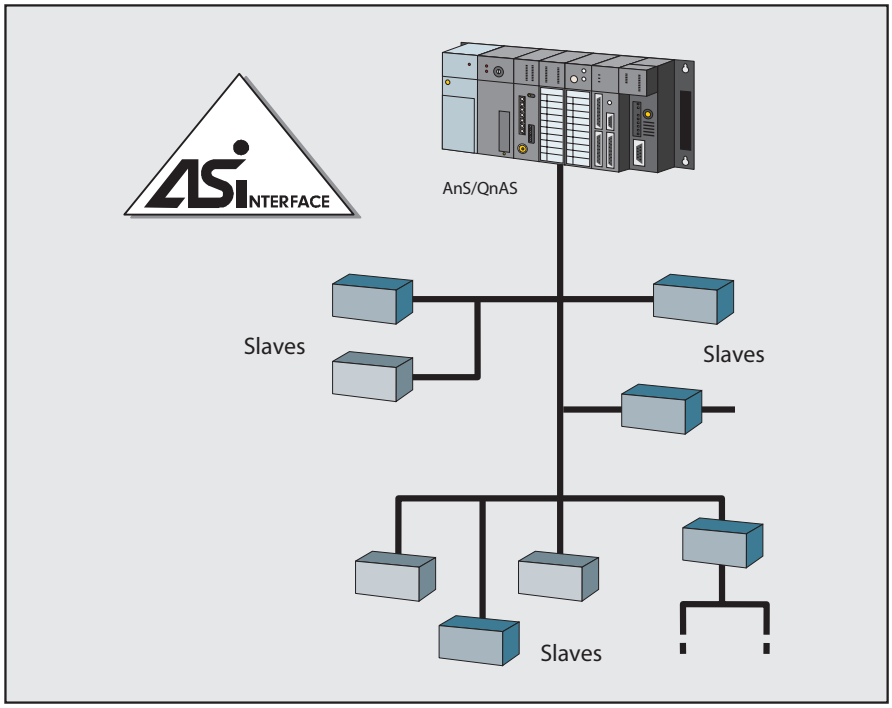
When using a flat cable the modules are connected to the cable via push-through connections while the coding ensures a reverse protection.

Data exchange

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

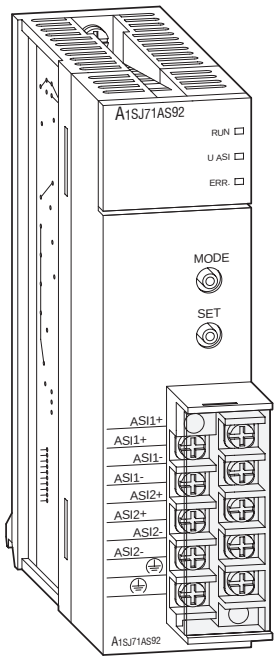
Administration

The I/O points are assigned electronically through the bus connection or through the PLC program of the AnS/QnAS controller.



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

■ AS Interface Module A1SJ71AS92



AS Interface master for AnS-/QnAS-CPUs

The A1SJ71AS92 serves as master module for the connection of the AnS/QnAS series to the AS Interface system.

The A1SJ71AS92 can control up to 62 slave units (31 per channel) with up to 4 inputs and 4 outputs each per address. The addresses of the slave devices across the AS Interface are assigned automatically by the master.

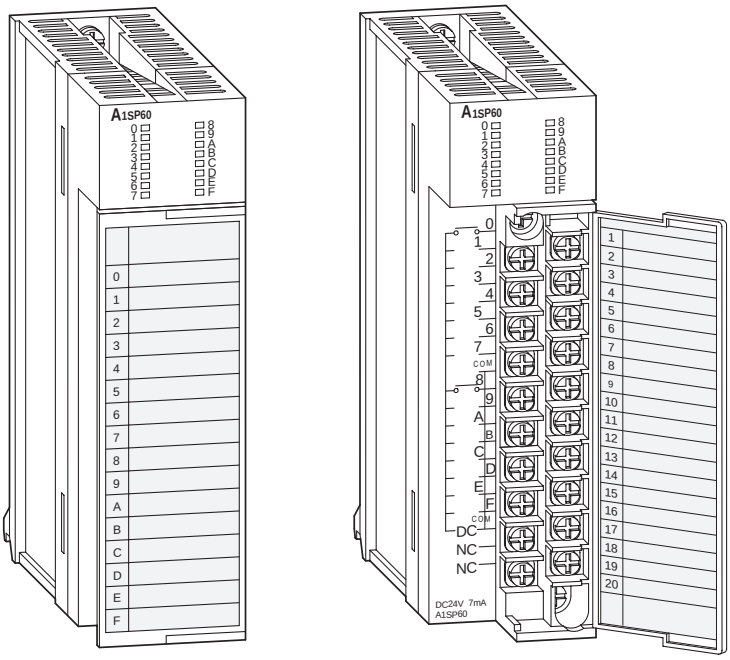
Special features:

- Up to 62 slave units can be configured across two networks.
- Up to 496 digital inputs/outputs can be driven via the master.
- Communications via AS-I conform coded flat cable or round cable
- Highly efficient error securing system
- Automatic data exchange with the PLC

Specifications		A1SJ71AS92
Module type		Master
Application range		MELSEC AnS/QnAS series
Max. number of slave stations to be controlled		31 x 2
Assignable I/O points		Max. 2 x124 inputs, 2 x 124 outputs
Data transfer rate		167 kBaud
I/O refresh time		Max. 5 ms
Communications method		APM modulation
Error handling		Parity check
Transmission	method	Bus
	distance	100 m (300 m with repeater)
ASI network cable		Acc. to IEC62026-2 (yellow cable), round cable
Assigned I/O points		32
External power supply		ASI power supply (30.5 V DC)
Power consumption	mA	100
Weight	kg	0.3
Dimensions (W x H x D)	mm	130 x 34.5 x 93.6

Order information	Art. no.	129936
Accessories		External AS-I power supply: ASI-PS-2.8, art. no.: 130259

■ 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.

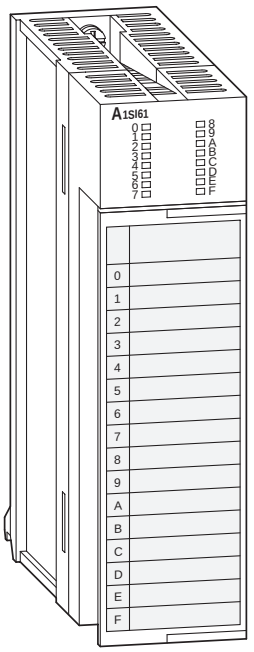
Special features:

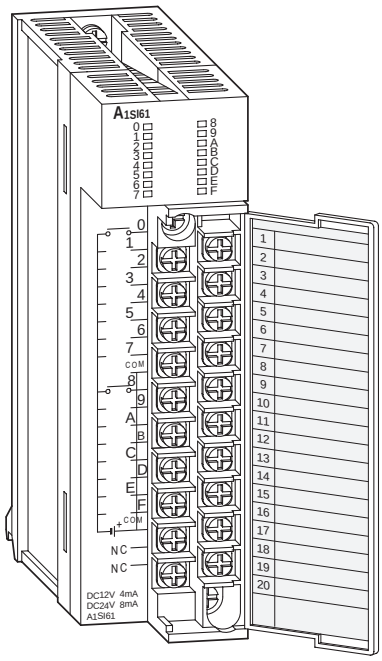
- Possibility of working with pulse function or with normal input function
- In the case of the pulse function, it is ensured that a signal applied at the input (>0.5 ms) is caught.
- By means of DIP switches, it is possible to specify, in groups of 4 input points, whether they are used as normal input 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.

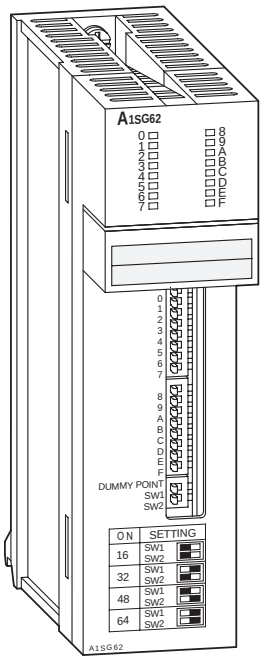
Special features:

- 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

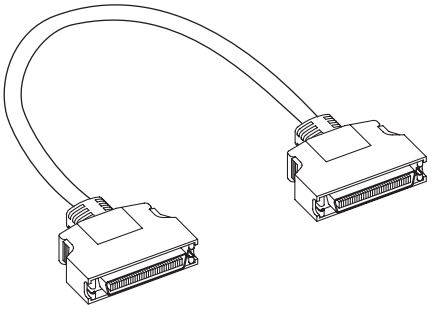
The dummy modules protect unused slots on the base unit from foreign bodies and reserve I/O addresses.

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

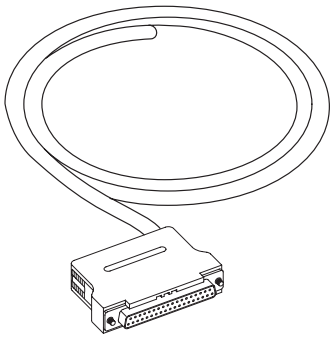
The connection cables A1SC01B, A1SC03B, A1SCO12B and A1SC30B are used for connecting main base units to the extension base units. They have been cut to the correct length for each application.

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

Connection of a base unit of the AnS/QnAS series to an A870GOT operator panel is also possible.

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 to A870GOT
Length	mm	55	330	1200	3000	6000	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

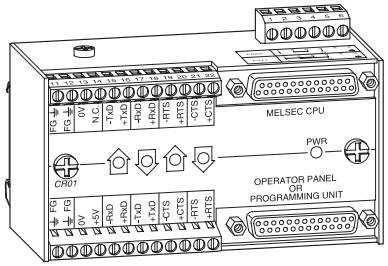


Assembled cable with D-SUB plug

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

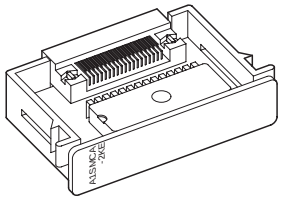
■ Interface Converter CR01-R2/R4 SET and CR01-R4/R4



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

MELSEC AnS Memory Cassettes



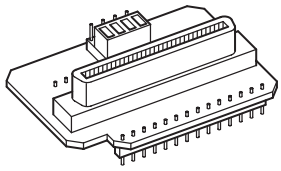
MELSEC AnS memory cassettes

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 MELSEC MEDOC *plus*.

Specifications		A1SNMCA-2KE	A1SNMCA-8KE	A1SNMCA-8KP	A2SMCA-14KP	A2SNMCA-30KE	A2SMCA-30KP	A2SMCA-60KE
Memory cassette	type	EEPROM	EEPROM	EPROM	EPROM	EEPROM	EPROM	EPROM
For CPU type		A1SH	A1SH	A1SH	A2SH	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

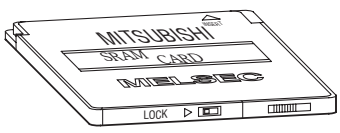


EPROM write adapter

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



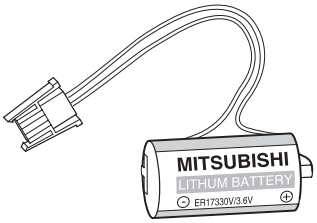
MELSEC QnAS memory cards

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 MELSEC MEDOC *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

Battery A6BAT

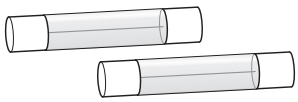


The A6BAT lithium cell battery is already installed in every MELSEC A series memory cassette.

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



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

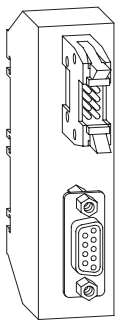
Specifications		HM50C	LM50	LM32
For module		A1SY22	A1SX80	A1SY81
Rating		5 A	5 A	3.2 A
Type		Solder fuse	Plug fuse	Plug fuse
Order information	Art. no	38361	32301	32303

Dust Cover

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

Local System Extension Set for the MT Series

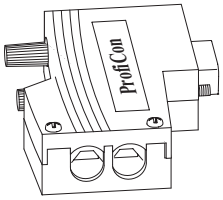


For the extension of the MT series to a second connecting level the local system extension MT-LE and the connecting cable MT-LE-CBL50 are required.

The extension and the cable are available only as complete set, which is called MT-LE-SET.

Specifications		MT-LE-SET
Application		MT series
Cable length	m	0.5
Dimensions (W x H x D)	mm	22.5 x 97 x 36
Order information	Art. no.	69759

ProfiConT Profibus Connector

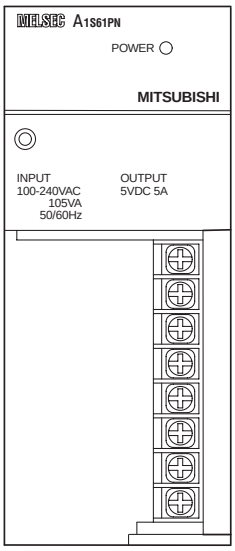


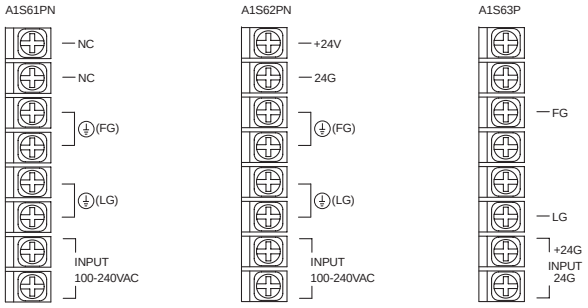
The ProfiCon bus connector plug is designed for connecting DIN 19245 standard Profibus components with data transfer rates of up to 12 Mbaud.

The connector is available with a selectable termination resistor.

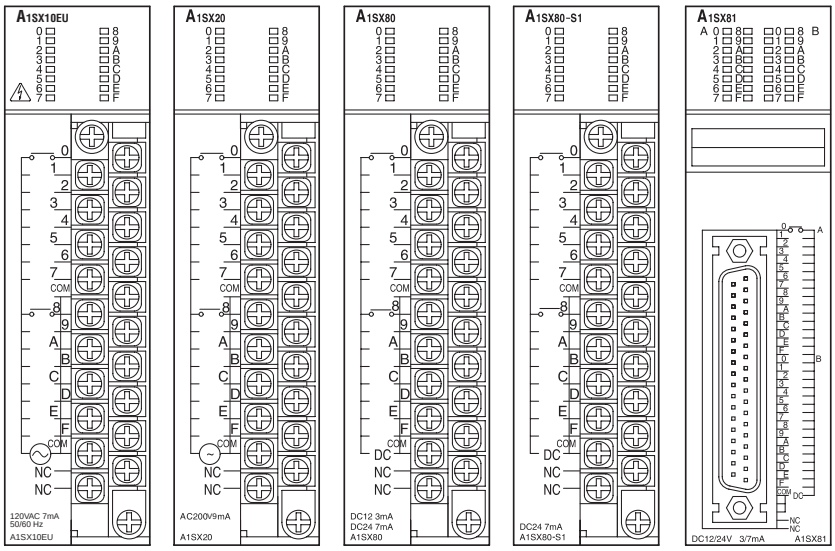
Specifications		ProfiConT
Data rate 12 Mbit/s		supported
Terminator		Yes (selectable)
Order information	Art. no.	87035

MELSEC AnS/QnAS Power Supply Modules

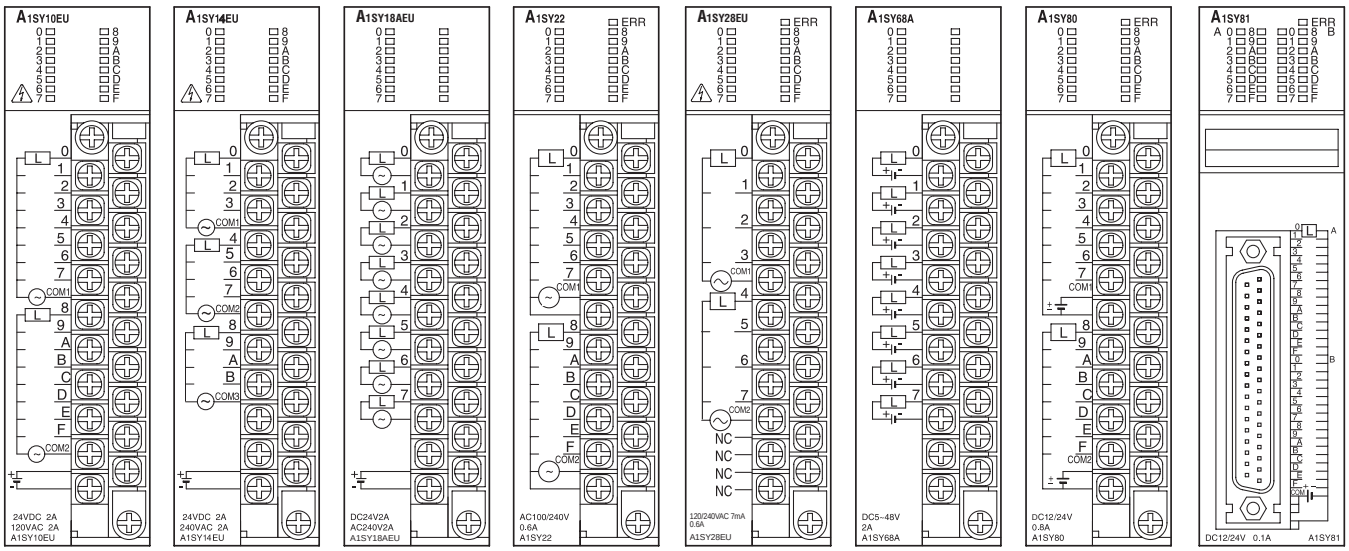




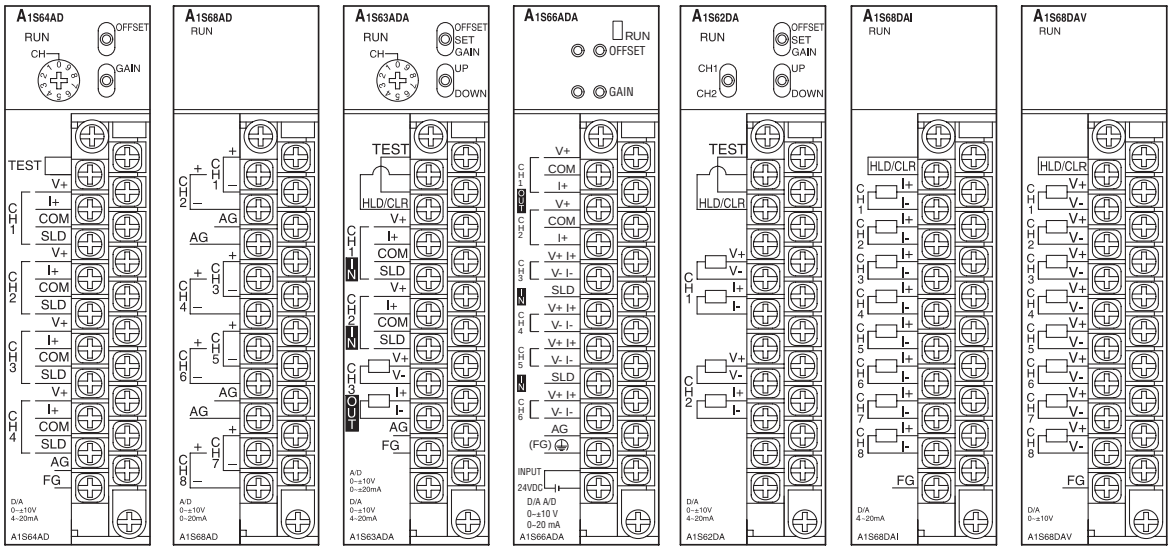
MELSEC AnS/QnAS Digital Input Modules



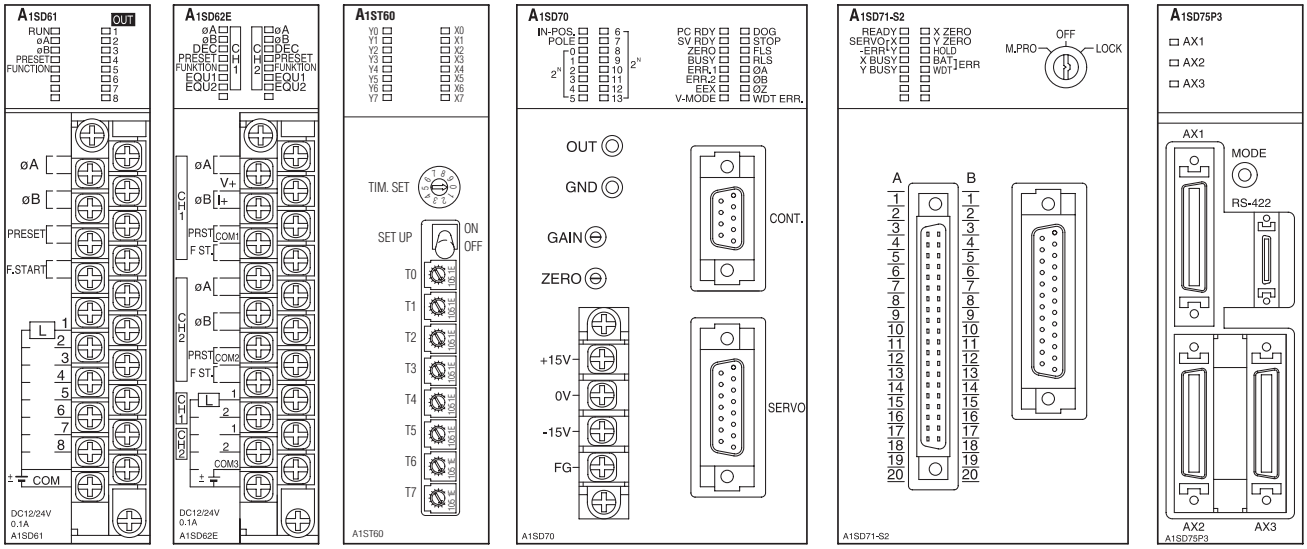
MELSEC AnS/QnAS Digital Output Modules



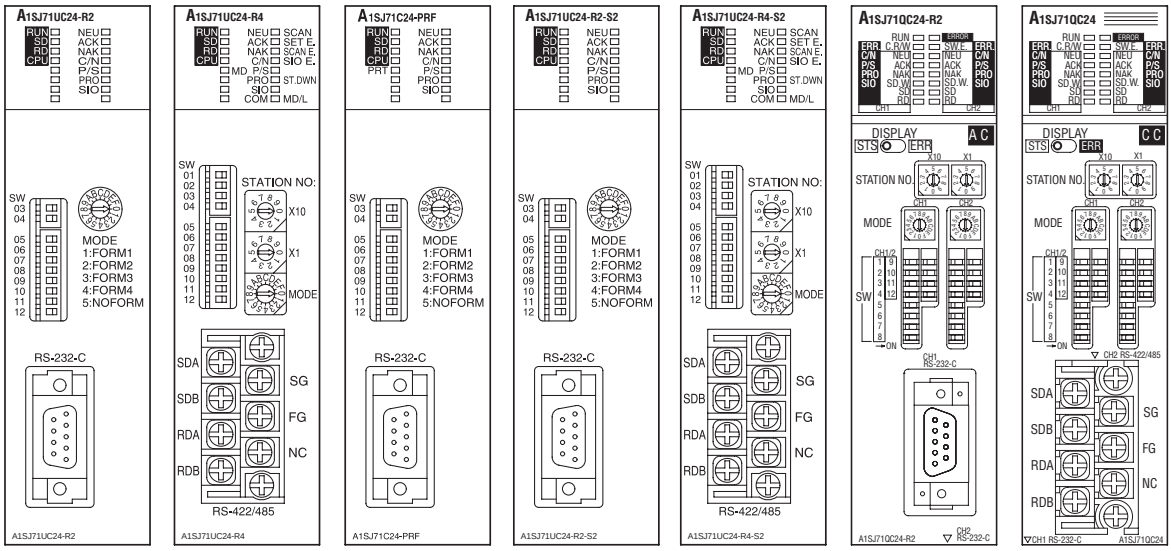
■ MELSEC AnS Analog Input/Output Modules



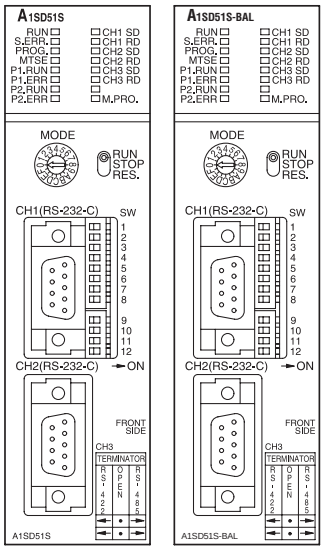
■ MELSEC AnS Counter, Timer and Positioning Modules



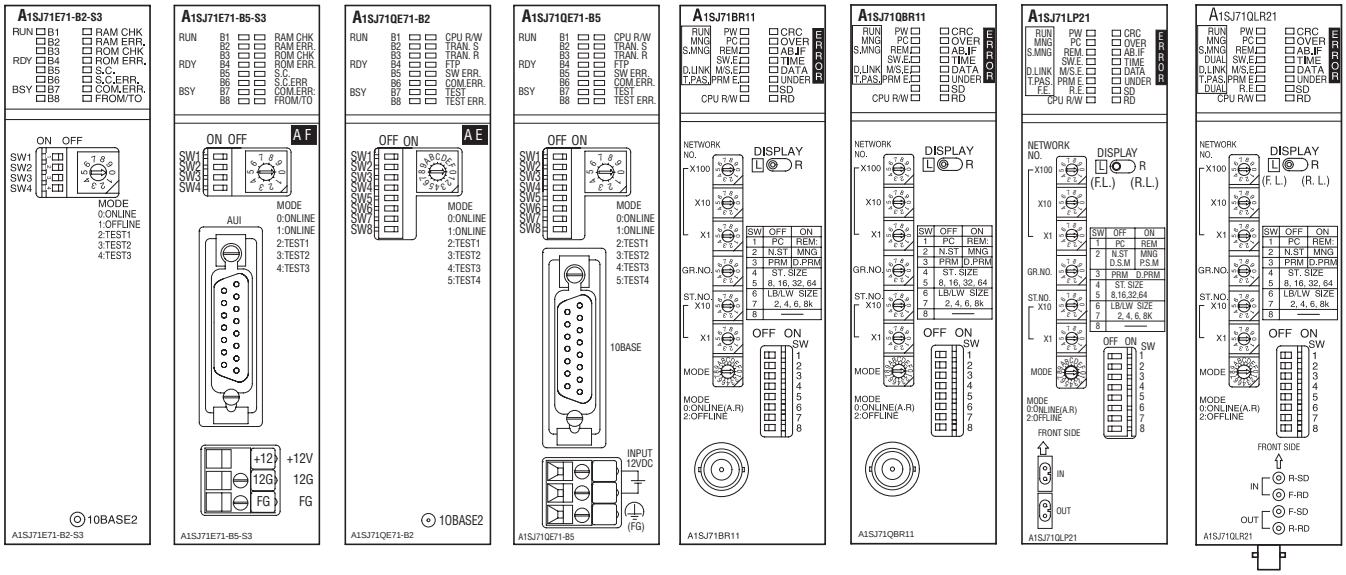
MELSEC AnS/QnAS Interface Modules



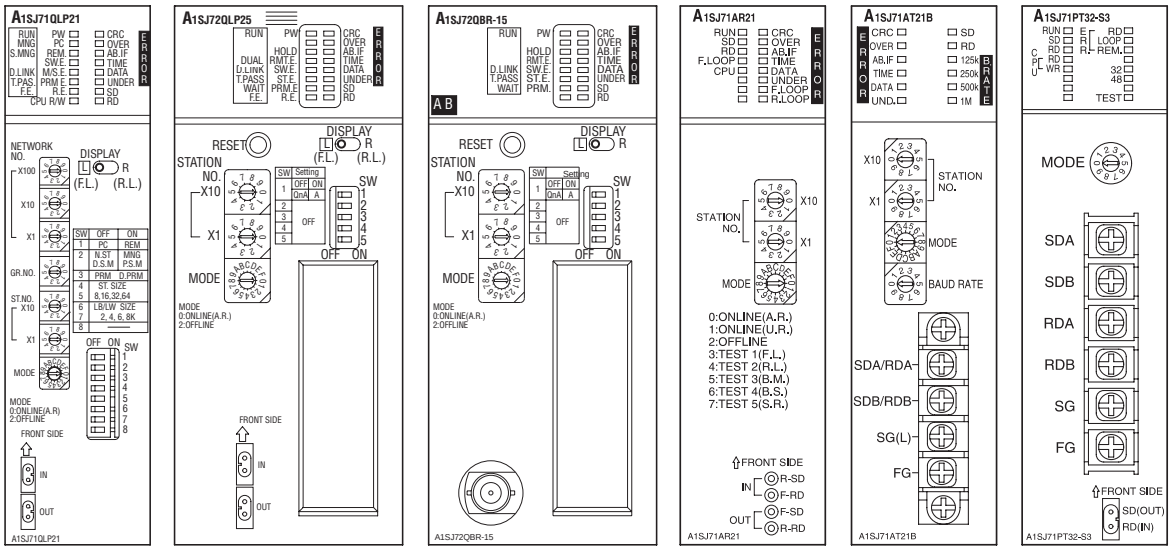
MELSEC AnS/QnAS Communications Modules



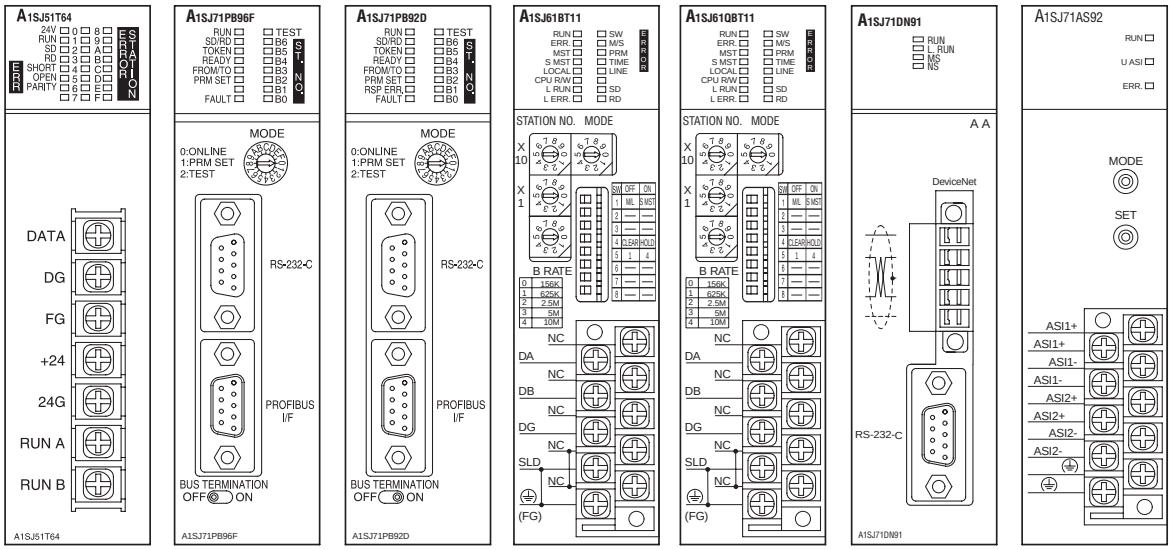
MELSEC AnS/QnAS Communications Modules for Ethernet and MELSECNE4T Networks



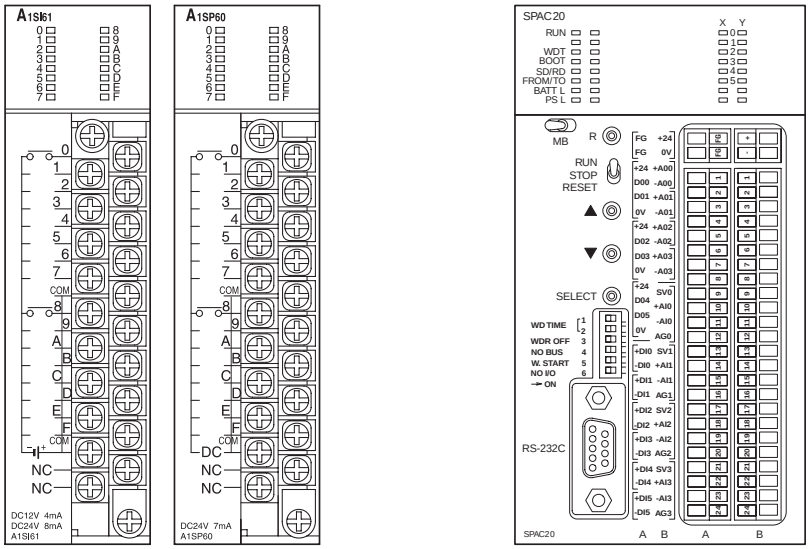
MELSEC AnS/QnAS Communications Modules for MELSECNET Networks



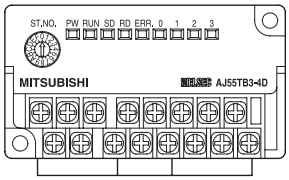
MELSEC AnS/QnAS Communications Modules for I/O-Link, Profibus, CC-Link, DeviceNet and AS Interface



MELSEC AnS/QnAS Pulse Catch and Interrupt Modules, Co-Processor module



■ MELSEC I/O Link Decentralised Digital Input/Output Modules



AJ55TB3-4D

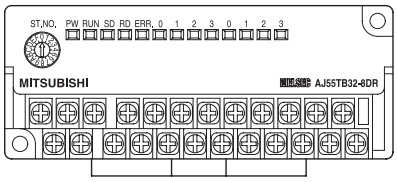
1	3	5	7	9	11	13	15	2	4	6	8	10	12	14	16
DATA	FG	+24V	I/O24A	X0	X1	X2	X3	DG	24G	I/O24B	COMB	COMA	COMB	COMA	COMB

AJ55TB32-4DR

1	3	5	7	9	11	13	15	2	4	6	8	10	12	14	16
DATA	FG	+24V	I/O24A	X0	X1	Y0	Y1	DG	24G	I/O24B	COMB	COMA	COM1	COM1	COM2

AJ55TB2-4R

1	3	5	7	9	11	13	15	2	4	6	8	10	12	14	16
DATA	FG	+24V	I/O24V	Y0	Y1	Y2	Y3	DG	24G	I/O24G	COM1	COM1	COM1	COM1	COM2



AJ55TB3-8D

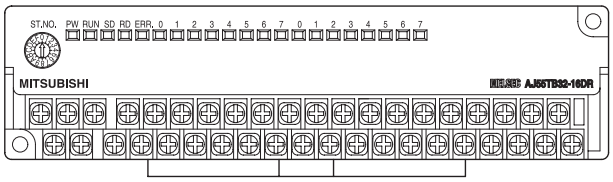
1	3	5	7	9	11	13	15	17	19	21	23	2	4	6	8	10	12	14	16	18	20	22	24
DATA	FG	+24V	I/O24A	X0	X1	X2	X3	X4	X5	X6	X7	DG	24G	I/O24B	COMB	COMA	COMB	COMA	COMB	COMA	COMB	COMA	COMB

AJ55TB32-8DR

1	3	5	7	9	11	13	15	17	19	21	23	2	4	6	8	10	12	14	16	18	20	22	24
DATA	FG	+24V	I/O24A	X0	X1	X2	X3	Y0	Y1	Y2	Y3	DG	24G	I/O24B	COMB	COMA	COMB	COMA	COMB	COM1	COM1	COM1	COM2

AJ55TB2-8R

1	3	5	7	9	11	13	15	17	19	21	23	2	4	6	8	10	12	14	16	18	20	22	24
DATA	FG	+24V	I/O24V	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	DG	24G	I/O24G	COM1	COM1	COM1	COM1	COM1	COM1	COM1	COM1	COM2



AJ55TB3-16D

1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
DATA	FG	+24V	I/O24A	X0	X1	X2	X3	X4	X5	X6	X7	X8	X9	XA	XB	XC	XD	XE	XF	DG	24G	I/O24B	COMB	COMA	COMB	COMA	COMB	COMA	COMB	COMA	COMB	COMA	COMB	COMA	COMB	COMA	COMB	COMA	COMB	COMA	COMB

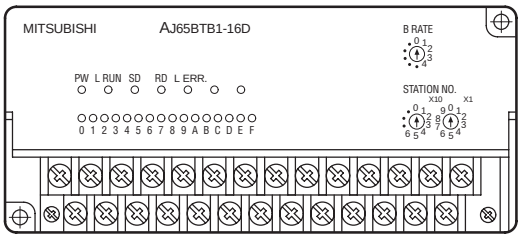
AJ55TB32-16DR

1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
DATA	FG	+24V	I/O24A	X0	X1	X2	X3	X4	X5	X6	X7	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	DG	24G	I/O24B	COMB	COMA	COMB	COMA	COMB	COMA	COMB	COMA	COMB	COMA	COMB	COM1	COM1	COM1	COM1	COM1	COM1	COM1	COM2

AJ55TB2-16R

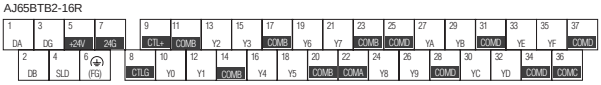
1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
DATA	FG	+24V	I/O24V	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	YA	YB	YC	YD	YE	YF	DG	24G	I/O24G	COM1	COM1	COM1	COM1	COM1	COM1	COM1	COM1	COM2	COM2	COM3	COM3	COM3	COM3	COM3	COM3	COM3	COM4

CC-Link Decentralised Digital Input/Output Modules



AJ65BTB2-16D

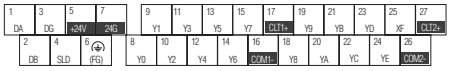
AJ65BTB2-16R



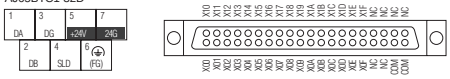
AJ65BTB1-16D

AJ65BTB1-16DT

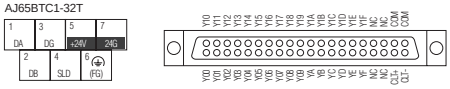
AJ65BTB1-16T



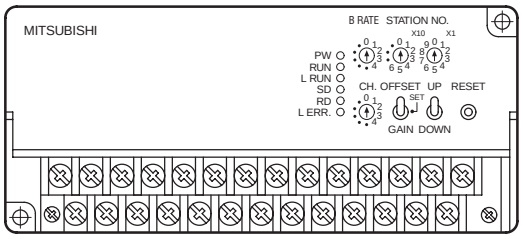
AJ65BTC1-32D



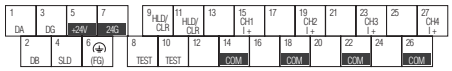
AJ65BTC1-32T



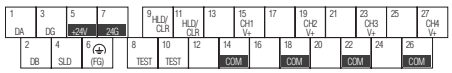
CC-Link Decentralised Digital Input/Output Modules and Special Function Modules



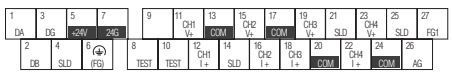
AJ65BT-64DAI



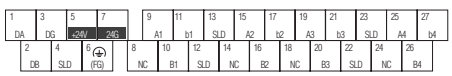
AJ65BT-64DAV



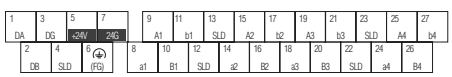
AJ65BT-64AD



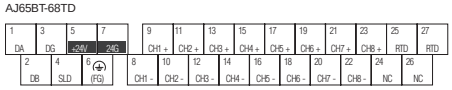
AJ65BT-64RD3

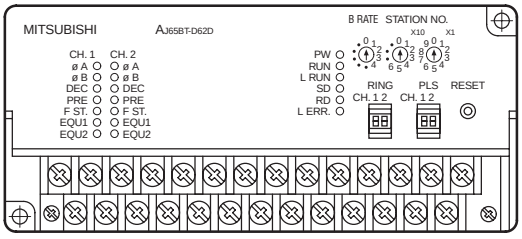


AJ65BT-64RD4

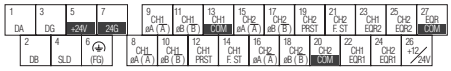


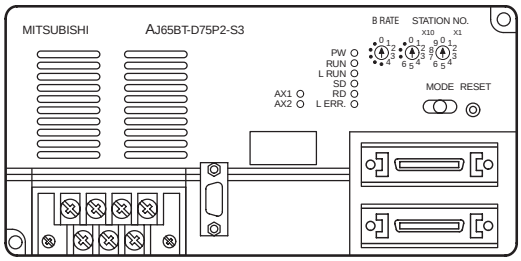
AJ65BT-68TD



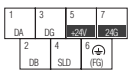


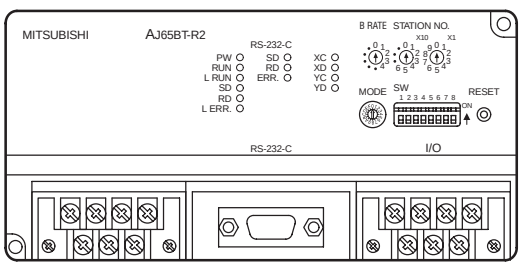
AJ65BT-D62D





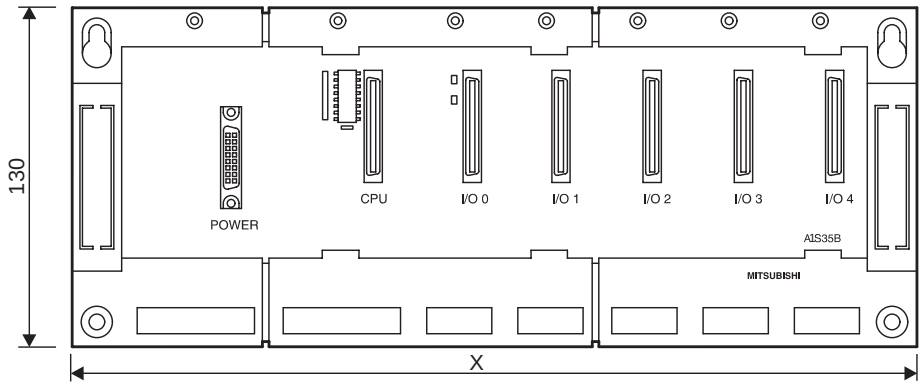
AJ65BT-D75P2-S3





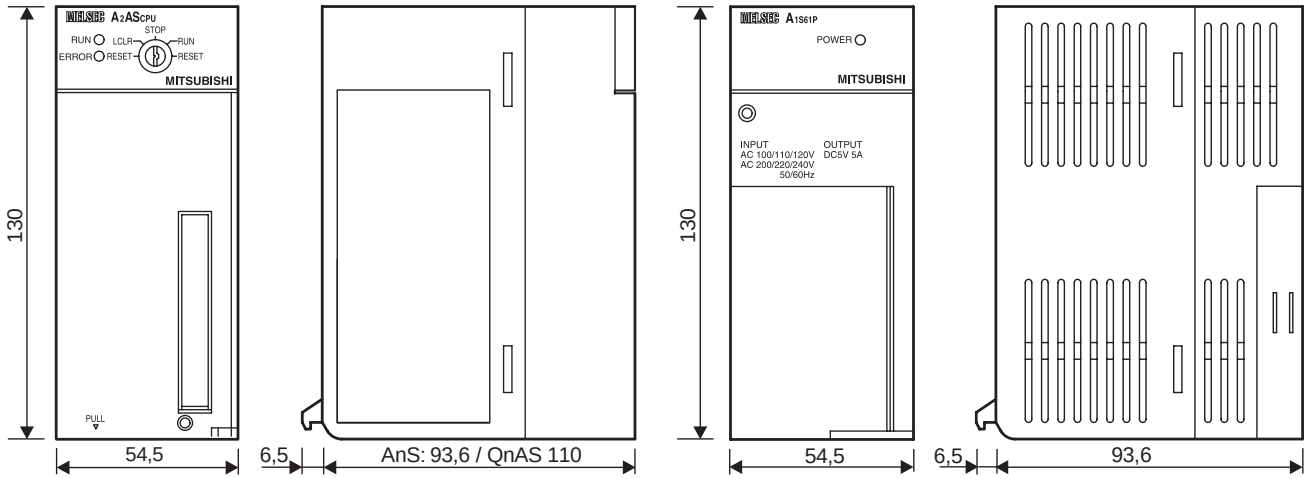
AJ65BT-R2

Base Units

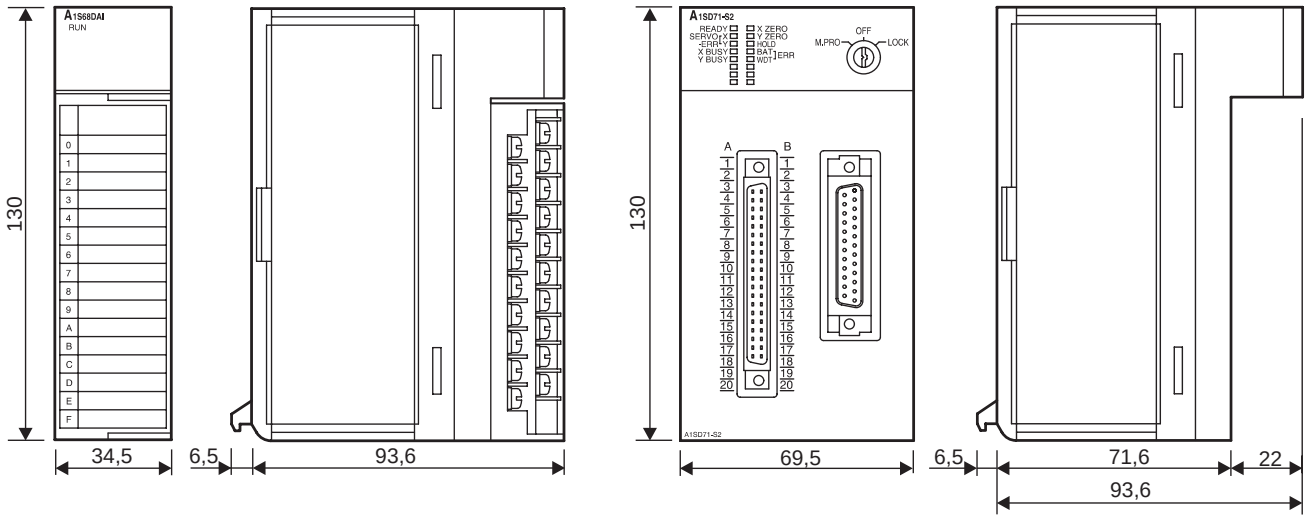


Type	X (in mm)
A1S32B-E	220
A1S33B-E	255
A1S35B-E	325
A1S38B-E	430
A1S38HB	430
A1S52B-S1	155
A1S55B-S1	260
A1S58B-S1	365
A1S65B-S1	315
A1S68B-S1	420

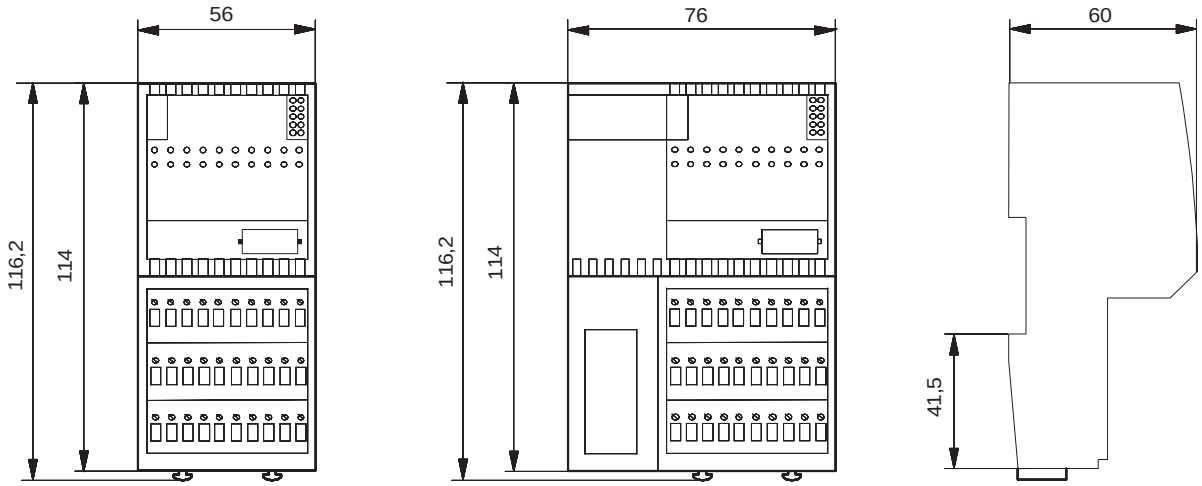
CPUs and Power Supply Modules

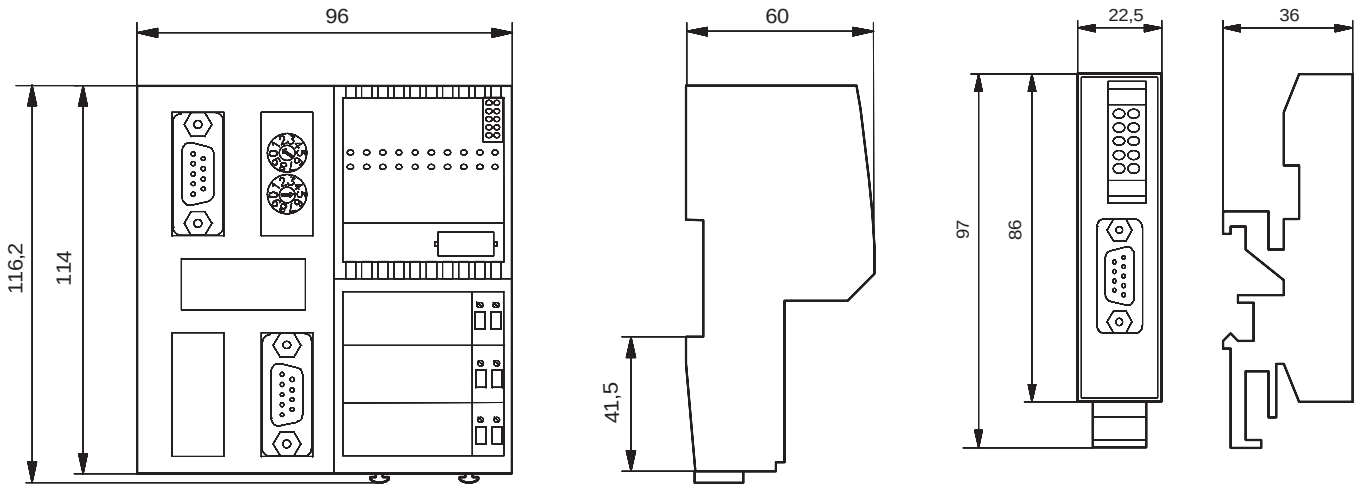


Digital and Special Function Modules

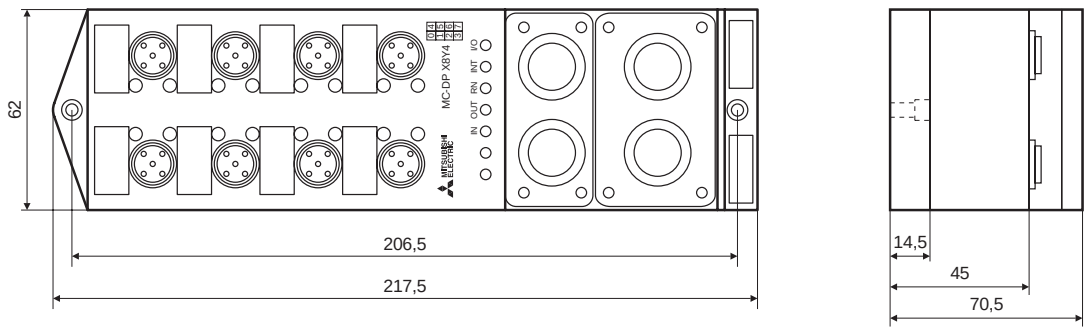


■ Profibus/DP MT Modules

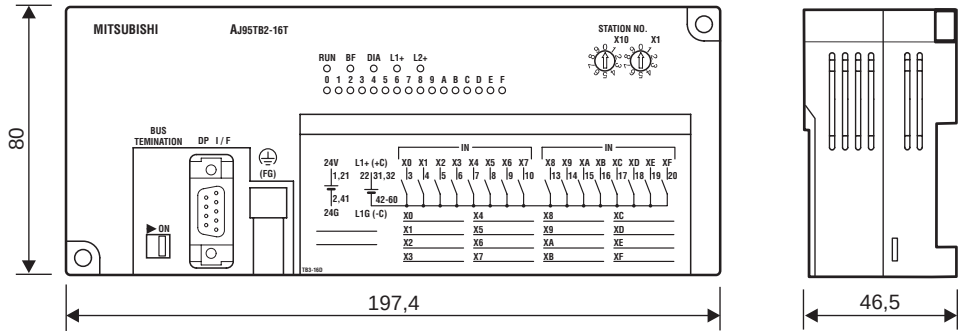




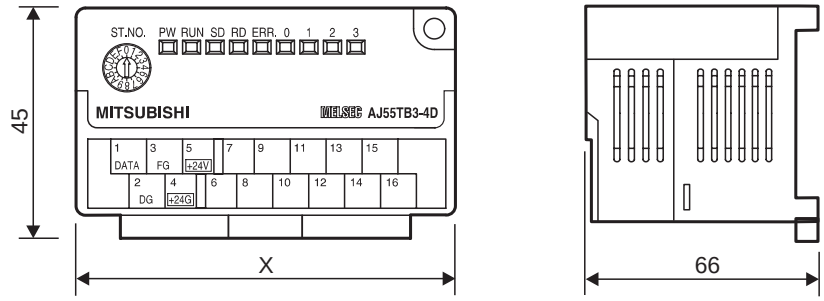
■ Profibus/DP MC Modules



■ Profibus/DP Compact I/O Modules

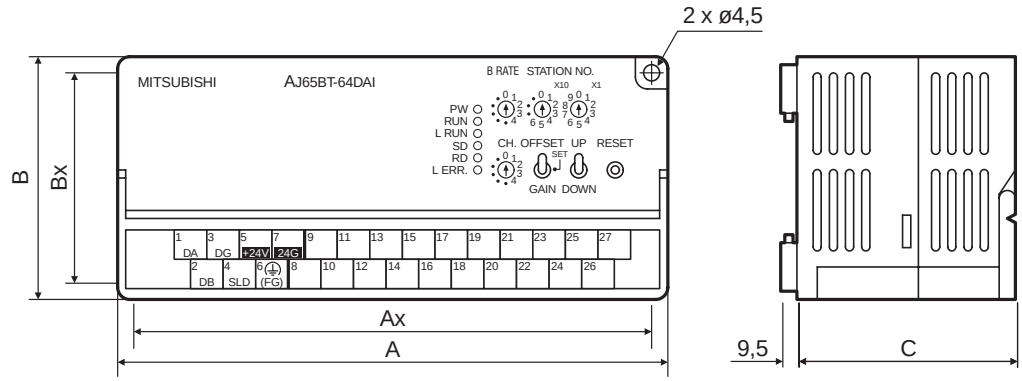


■ MELSEC AnS/QnAS Decentralised Input/Output Modules



Type	X (in mm)
AJ55TB3-4D	82
AJ55TB3-8D	114
AJ55TB3-16D	177
AJ55TB32-4DR	82
AJ55TB32-8DR	114
AJ55TB32-16DR	177
AJ55TB2-4R	82
AJ55TB2-8R	114
AJ55TB2-16R	177

■ CC-Link Decentralised Input/Output Modules and Special Function Modules



Type	I/O Modules							Analog modules				Special Funktion Modules		
	AJ65BTB1-16D	AJ65BTB2-16D	AJ65BTC1-32D	AJ65BTB1-16DT	AJ65BTB1-16T	AJ65BTC1-32T	AJ65BTB2-16R	AJ65BT-64AD	AJ65BT-64DAV/DAI	AJ65BT-68TD	AJ65BT-64RD3/4	AJ65BT-D62	AJ65BT-D75P2-S3	AJ65BT-R2
A	151.9	197.4	165	151.9	151.9	165	197.4	151.9	151.9	151.9	151.9	151.9	170	170
Ax	142.9	188.4	156	142.9	142.9	156	188.4	142.9	142.9	142.9	142.9	142.9	161	161
B	65	65	65	65	65	65	65	65	65	65	65	65	80	80
Bx	56	56	56	56	56	56	56	56	56	56	56	56	71	71
C	46	46	46	46	46	46	46	63	63	63	63	63	63.5	63.5

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:

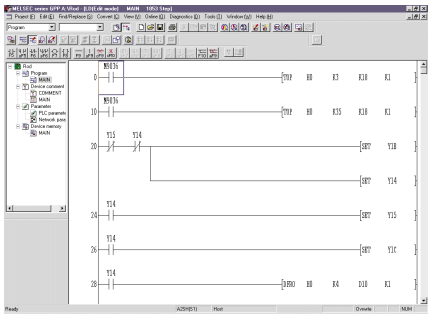
- Programming packages like GPP/WIN and MELSEC MEDOC *plus*
- Network configuration software MELSEC ProfiMap
- Visualization software MX SCADA
- Software for a dynamic data exchange like MXChange
- Various development software for operator terminals (refer to the Technical Catalogue HMI)

GPP/WIN is recommended as a cost-effective beginners package for the A/Q series. This package offers a quick and easy introduction to programming.

For structured programming the IEC1131 conform programming software MELSEC MECOC *plus* is recommended.

For detailed information please order our separate MELSoft brochure.

■ GPP/WIN



GPP/WIN is the standard programming software for the MELSEC A/Q series and combines all functions of MELSEC MEDOC with the user guidance of Microsoft Windows.

With GPP/WIN 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.

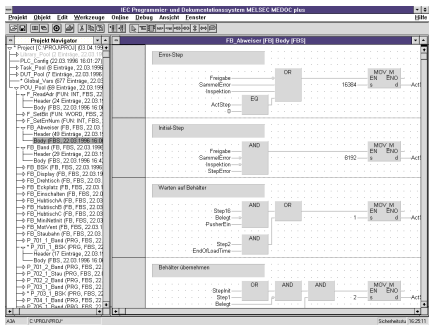
Besides efficient monitoring and diagnostics functions GPP/WIN features an offline simulation of any PLC type from the FX0S to the Q4AR.

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

GPP/WIN can be run under Windows 95 and Windows NT.

Software		MM GPP/WIN	
Series		All MELSEC PLCs	All MELSEC PLCs
Language		English / German	English / German
Disk type		CD ROM	CD ROM
Included accessory		Converter	—
Order information	Art. no.	126047	126048

■ MELSEC MEDOC *plus*



MELSEC MEDOC *plus* provides all functions of the pre-mentioned programs and meets the programming standard for the future: IEC 1131.3. This makes MELSEC MEDOC *plus* ready for the programming standard of the future and offers in addition the basis for the on-leading programming of the MELSEC A and Q series.

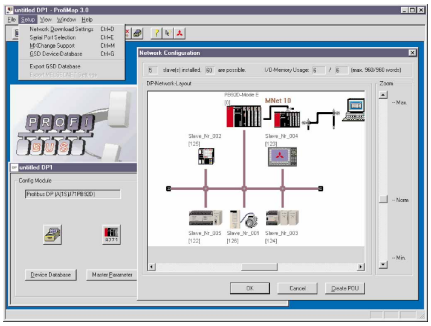
MELSEC MEDOC *plus* can be run under Windows 3.11 and Windows 95/98.

The software is supplied complete with an SC-09N serial interface cable.

Software		S-Set	Q-Set
Series		AnS(H), AnAS, AnUS, FX family	All MELSEC PLCs
Language		English / German	English / German
Disk type		CD ROM	CD ROM
Order information	Art. no.	126810	126811

Network Configurations Software, Visualization Software and Software for Dynamic Data Exchange

■ MELSEC ProfiMap



MELSEC ProfiMap V3.0 is a user friendly configurations software for open networks like MAP 3.0/ETHERNET and PROFIBUS/DP or PROFIBUS/FMS.

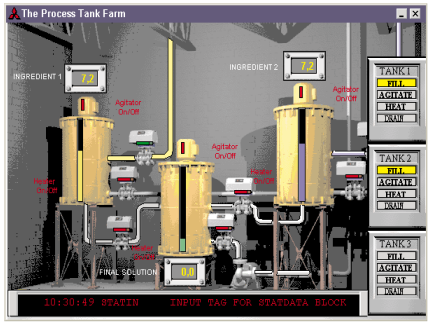
The software package is a 32 bit application for Windows 95 and Windows NT4.0. Configuration of all PROFIBUS modules for the MELSEC Ans/QnAS and A/Q series is possible.

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 new ProfiMap V3.0 enables the download of all configuration data via an overriding network.

Software		ProfiMap 3.0 CD-Set	ProfiMap 3.0 CD
Supported master modules for the Mitsubishi MELSEC AnS/QnAS and A/Q series		Profibus/DP: A1SJ71PB92D, AJ71PB92D Profibus/FMS: A1SJ71PB96F, AJ71PB96F MAP3.0/Ethernet: AJ71M56EF2	Profibus/DP: A1SJ71PB92D, AJ71PB92D Profibus/FMS: A1SJ71PB96F, AJ71PB96F MAP3.0/Ethernet: AJ71M56EF2
Language		English	English
Configuration cable		ProfiCab is included	ProfiCab is not included
Disk type		CD ROM	CD ROM
Order information	Art. no.	128585	128586

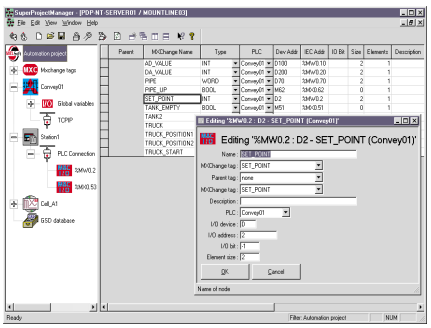
■ MELSEC MX SCADA



MELSEC MX SCADA is a process visualisation system that can handle everything from simple installations to complex production control systems. The software package can administer up to 100000 objects. A variety of interfaces are supported, including ETHERNET. The software runs under Windows 95 and Windows NT and is available in a variety of different versions geared to the objects to be handled.

Software		Development version	Run-time version	DEMO version
Series		All MELSEC PLC	All MELSEC PLC	All MELSEC PLC
Language		English	English	English
Disk type		CD ROM	CD ROM	CD ROM
Order information	Art. no.	On request	On request	65135

■ MELSEC MX Change



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

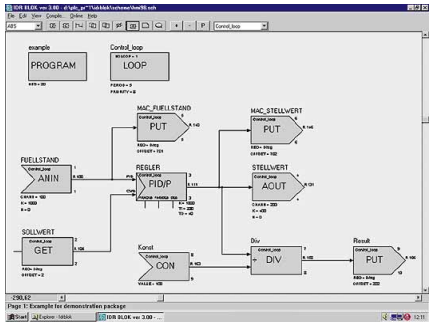
Through this method following the principle "define once and use anywhere" the development time can even be decreased drastically.

The software runs under Windows 95 and Windows NT.

Software		MXChange Network	Stand-alone	Stand-alone
Language		English	English	English
Executable tags		10.000	10.000	500
Disk type		CD ROM	CD ROM	CD ROM
Order information	Art. no.	129639	129640	129641

Graphical Programming for Closed-loop Control Systems

■ MELSEC 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.

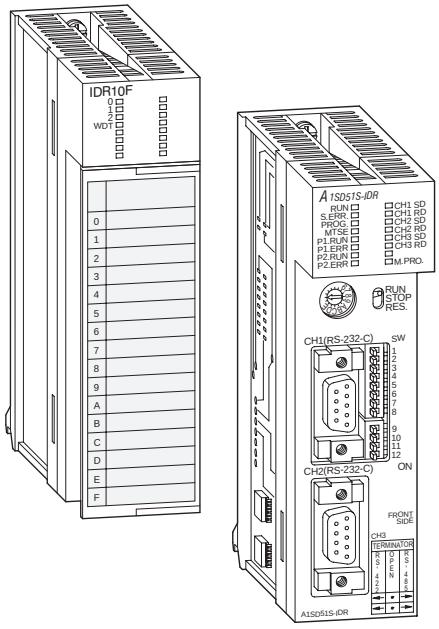
IDR-BLOK turns a sequential logic controller into a multi-loop controller. It is the closed-loop programming software package for all AnSH/QnAS* controllers (*QnAS only in combination with a co-processor module).

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

Software		Full version	Compact version	Demo version
Application	CPU	AnSH (AnN)*		
	mit Co-Prozessor*	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



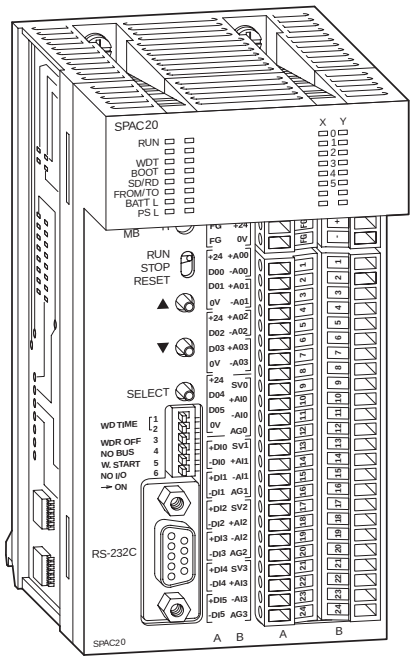
To use the IDR-BLOK software the hereafter described run-time modules are necessary. These modules are available as single modules or within a bundle package.

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:

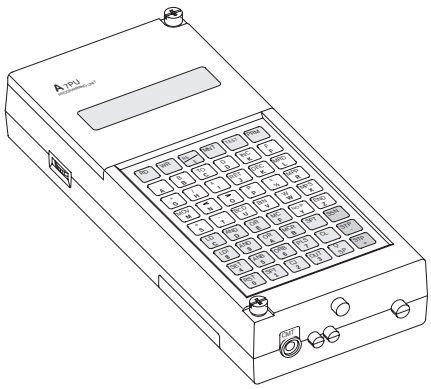
- C programmed user's tasks
- Communication with PLC processor via fast back plane bus
- Real-time execution
- Special non-linear processes with fast FUZZY controller
- Integrated fast digital and analog inputs and outputs
- Stand-alone possibility

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

■ Hand-held Programming Unit A7PU



The hand-held programming unit A7PU is used for the MELSEC A controllers.

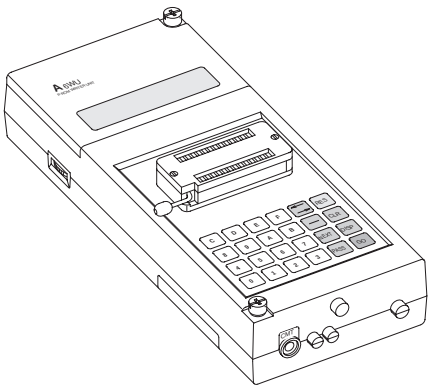
The programming unit can be mounted directly on the controller or connected by a cable.

Programming takes the form of an instruction list.

The unit is suitable for minor program changes directly on the machine.

Specifications		A7PU
General specifications		Conform to basic components of AnS/QnAS
Ambient temperature		0 – 40 °C
Ambient relative humidity (non-condensing)		85 %
Power supply		5 V DC (from PLC)
Current consumption	mA	300
Display		LCD
Character display		16 x 2
Keyboard		54 keys
Cable, is adjoined		J1, to connect a standard cassette-player
Weight	kg	0.5
Dimensions (W x H x D)	mm	188 x 79 x 44.5
Oder information	Art. no.	3922

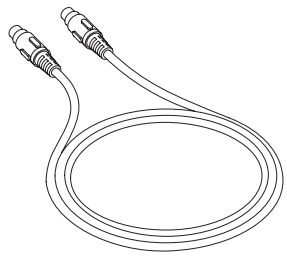
■ A6WU EPROM Writer



The EPROM writer A6WU is used for transfering the PLC programs of the MELSEC AnS 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

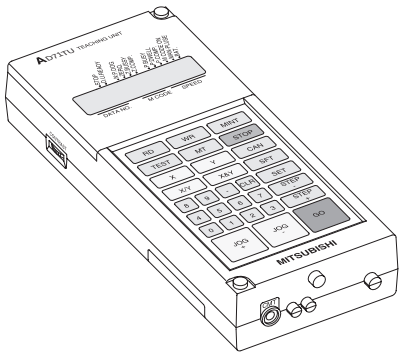


The cables AC30R4 and AC300CR4 are used for connecting the hand-held programming unit to the controller.

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

Teaching Unit AD71TU



The AD71TU teaching unit is used for setting parameters and entering position data for the AD71 and AD72 positioning modules.

Position parameters are read and written via the handy unit's integrated RS422 interface.

This unit is often used for on-site system setup and commissioning.

An additional interface is provided for the connection of a standard cassette recorder for data storage.

Specifications		AD71TU
General specifications		Conforms to MELSEC A series basic components
Ambient temperature		0 – 40 °C
Storage temperature		-20 °C – 50 °C
Power supply	V	DC 5 (by positioning module)
Power consumption	mA	0.3
Display type		LCD
Display format		16 characters x 2 lines
Keypad		Membrane keypad, 30 keys
Cassette recorder cable		J1, for connection of a standard cassette recorder
Programming software		SW0-AD71PE, art. no. 4191
Programming cable		AC30R4, art. no. 3930
Weight	kg	0.45
Dimensions (W x H x D)	mm	79 x 188 x 23
Order information	Art. no.	4193

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