

Compact automation platform

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Company: Joyoung International Trading Co., Limited
Attn : Smiling
Mobile/WhatsApp/Wechat: +86 18050035902
Email: info@htechplc.com
Website: <https://www.joyoungintl.com/>



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Compact Automation Platform

Contents

Compact Automation Platform	CPUs selection guide		pages 2 and 3
	Presentation		pages 4 to 7
	Backplanes	HDTA	page 8
	CPUs	PC-E984	pages 9 to 13
	Power supply modules	P120, PRTU	pages 14 and 15
Discrete I/O Modules	Selection guide		pages 16 to 23
	Discrete VDC and VAC input modules	DEP, DEO	pages 24 to 28
	Discrete VDC and VAC output modules	DAP, DAO	pages 29 to 31
	Discrete combined input / output modules	DAP	pages 32 to 33
	References		pages 34 and 35
Analog I/O Modules	Selection guide		pages 36 to 43
	Analog voltage and current input modules	ADU	pages 44 to 49
	Analog voltage and current output modules	DAU	pages 50 and 51
	References		pages 52 and 53
Intelligent and Specialty Modules	Selection guide		pages 54 to 61
	Counter and Frequency modules	VRC, CTR	page 63
	Single-axis Motion modules	MOT	page 64
	Frequency input modules	FRQ	page 65
	High-speed counter, Counter/positioner modules	ZAE	pages 66 and 67
InterBus Communication Modules	Selection guide		pages 68 and 69
	InterBus Communication Modules	BKF, DEA	pages 70 and 71
	References		pages 72 and 73
Programming	Concept software		pages 74 to 79
	ProWORX software		page 80
	References		pages 80 and 81
Services	User documentation	840 / 890 USE	page 82
	Product certification		page 82
	Copyright		page 83
	Schneider Alliances		pages 84 to 93
	Schneider Worldwide		pages 94 and 95

Compact Automation Platform

CPUs

Selection guide

Module type	Central processing unit		
I/O expansion	512 words (256 in, 256 out)	1024 words (512 in, 512 out)	



Communication interfaces	2 Modbus ports, 1 Modbus Plus port, 1 PCMCIA II slot			
Conformal coating	No	Yes	No	Yes
Railroad standard EN 50155	No			
Total data memory	48 K words		96 K words	
Memory Startup RAM RAM Flash PROM PCMCIA II card	32K 512K 1 Mb Yes		64K 1 Mb 1 Mb Yes	
Logic memory for Modsoft LL for Concept IEC	16K words 220 kB		32K words 620 kB	

Model	PC-E984-275 PC-E984-275C PC-E984-285 PC-E984-285C			
Page	10			

256 words (128 in, 128 out)



2 Modbus ports

1 Modbus Plus port

Yes

No

Yes

No

Yes

Yes

No

48 K words

24 K words

32K
512K
1 Mb
No

16K
512K
1 Mb
No

16 K words
220 kB

8 K words
220 kB

PC-E984-258R

PC-E984-258

PC-E984-258C

PC-E984-265

PC-E984-265C

Compact Automation Platform

Presentation

General

With its broad spectrum of compatible high-performance modules, the Modicon Compact Automation Platform provides the perfect solution for medium-range systems. Its adaptable, modular architecture allows for easy installation and configuration. The Compact platform combines very small size with robust industrial design so that inexpensive and reliable installation is ensured even under difficult environmental conditions.

System Architecture

The Compact range has an open system architecture, permitting a maximum of potential solutions for all of the demanding requirements associated with automation technology. This flexibility is made possible by using open standard-based hardware platforms, with open and standardized communication buses, including the Interbus for remote I/O and IEC 1331-3 compliant software. Together, these features ensure cross-system compatibility for existing Schneider users, as well as for new customers.

Standards

High noise immunity according to IEC 801/IEC 1131-2, as well as high shock and vibration resistance (IEC 801/IEC 1131-2), are standard for the entire Compact family. In addition, the Compact product complies with UL, CSA, VDE, CE, and FM standards.

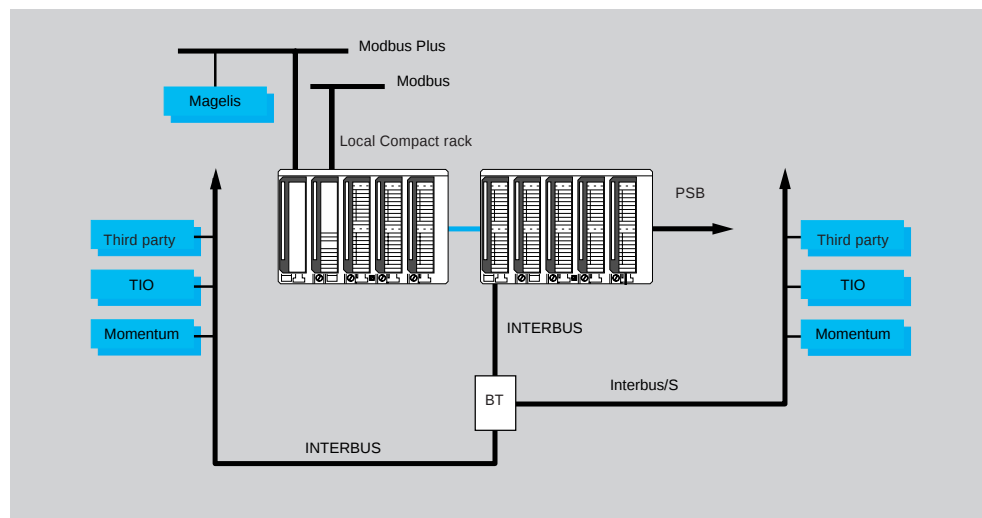
Two Compact CPUs - the PC-E984-258 and PC-E984-285 - are available with an extended operating temperature range of $-40...+70^{\circ}\text{C}$. Only the E984-258C meets the German railway standard (EN 50 155). In addition, all four Compact PLCs are available with conformal coating, allowing them to be used reliably under extreme environmental conditions.

I/O modules with the designation AS-BXXX-25X are available with an extended operating temperature range of $-40...+70^{\circ}\text{C}$, in order to comply with German railway Standard EN 50 155. These modules are also available with conformal coating for extreme environmental conditions.

An extended temperature range of $-25...+70^{\circ}\text{C}$ is also available through the use of additional enclosures.

Configuration

The Compact Automation Platform provides a wide range of applications for a diversity of problems. Individual I/O modules (with up to 16 I/O points) can be included in systems comprising several I/O stations with up to 16 384 total I/O points. Besides the central processing unit, one local system can accommodate up to 18 modules. The variable memory management system ensures a suitable basis for even the most demanding applications. The simultaneous use of multiple bus systems within one PLC offers a multitude of possibilities without affecting the limits of individual bus systems.



Compact Automation Platform

Presentation

System components

Central Processing Units

The Central Processing Unit (CPU) of the Compact Platform is double-wide. It comprises:

- the operating system, application memory, and communications interfaces
- RAM and flash PROM for data programs
- LED displays, to assist in system troubleshooting by displaying the status of the PLC and its communications

In addition, a built-in power supply provides the backplane bus with power and protects the system from interference voltage and voltage fluctuations. In case of unforeseen power problems, it ensures the PLC has sufficient time for a safe and orderly shutdown.

Power Supplies

Six power supplies are available. The P120-000 is an isolated power supply that accepts input voltages from 115 VAC or 230 VAC ($\pm 15\%$) AC source and outputs a 24VDC supply to the CPU at 1A continuous current. The P120-125 is an isolated power supply that accepts input voltages from 105 to 150 VDC sources and outputs 24 VDC to the CPU at up to 1.5A continuous current. Both supplies feature overload and over voltage protection and come with an LED status indicator.

The AS- PRTU-252 and 252C are isolated power supplies with an extended operating temperature range. They accept 90 - 264 VAC and 8.5 - 13.8 VDC power in and provide 24 VDC 2A output. If the AC input voltage fails the 12 VDC input serves as backup input power. The power supplies switch to the backup in a bumpless transfer and provide a 24 VDC output that can be monitored as notification AC input power failure. The AS-PRTU-258 and AS-PRTU 258C are similar to the AS-PRTU-252 and AS-PRTU-252C except that they provide for 30 - 70 VDC backup input power.

Backplanes

The Compact primary backplane (HDTA-200) can accommodate the CPU and three I/O modules. Local system expansion is possible with up to three secondary backplanes (HDTA-201). Most I/O modules may be used in any of these backplanes. Another secondary backplane (HDTA-202) is designed to accommodate two I/O modules. Both the primary and secondary backplanes are available with conformally coated electronics.

Discrete I/O Modules

The Compact Platform offers a broad spectrum of powerful discrete I/O modules, all of which meet the requirements of the international IEC Standard, ensuring reliability even in the harshest industrial environments. All speciality modules are filtered and protected against noise, overload, and over-voltage. LED indicators show the input/output status. Each discrete output module may be assigned one of three fault modes: shut off all outputs, store the last word or enter a predefined status, to preserve system integrity if communication errors occur.

Analog I/O Modules

The Compact's Analog I/O modules permit performance of a wide range of control and monitoring tasks. Depending on the module, both voltage values and current values can be input and output. In addition, modules can be configured as resistance temperature detectors (RTD) and thermocouples (TC). A wire-break monitor is provided for almost every channel by the software and an LED indicator.

Speciality modules and system enhancements

An assortment of speciality modules and optional products are available for a variety of applications.

- **Counter modules** - the BZAE and BFRQ modules can be used to count events or parts, group objects, monitor flow volumes, perform linear measurements, and measure speeds, frequencies, and time.
- **Motion control** - flexibility in motion control applications is provided by the BMOT 201 and 202 motion modules, which offer multi-axis control of encoder and resolver inputs and outputs.
- **Modbus Plus communications** - Modbus Plus combines high-speed, peer-to-peer communications with easy installation. This local area network enables communication between third party computers, automation devices, and other data sources as peers within the system using low-cost twisted pair cable. Modbus Plus is simple to implement because all Modbus Plus functions, including data transfer and network statistics, are configured using one function block.
- **Interbus communications** - Interbus is an industry-standard communication protocol for industrial applications which transfers data between Interbus devices using the RS 485 standard. The topology consists of a ring system including one master and multiple slaves. Interbus uses distributed shift requesters, in which the data is read and written bit by bit. Each device and its registers are part of this shift register. The total cable length can be up to 10 km (6.21 miles) using fiber optic cables in both remote and distributed I/O stations.
- **Operator terminals** - The Magelis series of operator terminals provide a powerful human-machine interface. The product ranges from small, plain-language 2 x 20 character displays to full-function operator terminals with graphic displays.

Compact Automation Platform

Presentation

System components (continued); software

Compatibility with Existing Components

The new range of Compact PLCs is compatible with existing Compact systems, including the backplanes, cables, and most I/O modules, thereby ensuring a smooth transition. Existing Compact PLCs can be exchanged with newer models, and will gain increased performance and enhanced compatibility with Schneider Electric's Micro, Quantum, and Momentum Automation products.

Software

Two popular programming software packages are available for the 386-based Compact controllers, Concept and ProWORX NxT. Both are Microsoft Windows-based programs. Concept supports all five IEC 1131-3 programming languages and 984 Ladder Logic. ProWORX NxT supports 984 Ladder Logic only.

Within Concept's feature-rich environment, overall design, startup, and maintenance costs are reduced, with a resultant significant decrease in development time. ProWORX NxT's 984 programming environment supports a wider range of Modicon PLCs than any other programming software package. ProWORX includes the ability to automatically generate system wiring diagrams in Autocad-compatible PCX format files, in addition to the standard PLC program documentation. Both Concept and ProWORX support a family of loadable functions which include:

- **Starling gas flow loadables**, for performing custody transfer approvable flow measurements using American Gas Association (AGA) 3 and 8 calculations.
- **XMIT loadables**, function blocks supporting on-demand Modbus master, modem control, and ASCII read and write.

Programming with Concept

Economical implementation of the varied tasks of drive technology, control automation engineering, and RTU requires powerful tools. Concept offers a single development tool for effective system configuration that meets all requirements of the international IEC 1131-3 standard.

Concept maintains the same look and feel for all steps of system project planning and in all editors. Most of the project design steps, in particular the program creation, are independent of the PLC.

Because of Concept's unique design, it can be used with other Schneider Electric automation products, thus eliminating the time and effort needed to learn multiple programming products. Extensive help functions are only a click away at every step to aid in programming tasks. The module library is equipped with useful elements for quick, simple programming even of complex tasks. Programs are easily debugged using the built-in software simulator.

Programming with ProWORX NxT

ProWORX NxT is the 984 Ladder Logic programming tool that offers unrivaled support for the Compact PLC range. The familiar Windows-based programming environment means you spend less time learning how to do things, and more time being productive. ProWORX uses familiar Windows features like user-defined screens, drag-and-drop, cut and paste, search, and global replace.

A powerful analysis tool, the Data Watch Window shows you information from your plant in real-time, or logs it to disk for in-depth historical analysis later on. Easily get the data you need to make informed, effective production decisions. View and edit data in full page display, see trends and track data points against time in a spreadsheet, and monitor any combinations of discretes and analogs.

Save hours of painstaking effort with ProWORX NxT's I/O Drawing Generator, which automatically creates wiring diagrams for the I/O cards defined in the Traffic Cop. Generate necessary drawings all at once or just one card at a time – simply select an address the I/O card uses with the Network Editor, then click the drawing button on the Hardware Back Referencing panel. NxT displays the diagram, and if desired, saves it as an AUTOCAD-compatible .DXF file or prints it.

With the Network Editor, ProWORX NxT reduces development time by using the same commands and instructions for every controller. Simply cut, copy, and paste networks from one platform to any other.

Find the controller you need fast and simplify network diagnostics with ProWORX NxT's powerful Network Scan feature. Network Scan searches your Modbus or Modbus Plus networks, then identifies and graphically displays each device found and shows its status.

Programming under the advanced graphic user interface makes system configuration and development easy. The package offers easy drag-and-drop network editing, and provides a number of unique productivity enhancing tools. Features such as the automatic generation of CAD files, data acquisition, and elemental trending provide the user with the engineering tools necessary to complete a project entirely from a single package.

Compact Automation Platform

Presentation

System characteristics

Physical characteristics

Weight range	kg	0.22 ... 1.165
Dimensions	Height	mm Modules: 130, Module racks: 142
	Depth	mm Modules: 128
	Width	mm Single-width modules: 40, Double-width modules (CPU, DEA and BMOT): 80
Wire cross-section for the terminal blocks	mm²	0.25 ... 2.5
Material (Enclosure and cover frame)		Lexan 241 (Polycarbonate)
Space required in the module rack		1 slot per module (except CPU, DEA and BMOT 202: 2 slots)

Electrical characteristics

Noise immunity per EN 61000-4-2 (Electrostatic discharge)	kV	Air: ± 8 Contact: ± 4
Noise immunity per EN 61000-4-3 (Electromagnetic fields)		10 V/m 30 ... 1000 MHz
Noise immunity per EN 61000-4-4 (Voltage immunity)	kV	Power supply: ± 2 Signals: ± 1
Noise immunity per EN 61000-4-12 (1 MHz pulse)	kV	1
Emission EN 55 011		Class A
Power supply Noise immunity per EN 61000-4-11		Rated voltage: +15% -10%; Frequency: $\pm 5\%$; Ripple: $\pm 5\%$; VAC interruption: 10 ms

Environmental characteristics during operation

Temperature range	°C	0 ... 60 or -40 ... 75 for the expanded temperature range
Relative humidity		0 ... 93% non-condensing at 60 °C
Operating altitude		Fully functional up to 2500 m
Chemical interactions		SO ₂ ≤ 0.5 ml/m ³ (per IEC 68-2-42), H ₂ S ≤ 0.1 ml/m ³ (per IEC 68-2-43)

Environmental characteristics during storage

Temperature range	°C	-40 ... +85 without battery, -40 ... +70 with battery
Relative humidity		0 ... 93% non-condensing at 60 °C
Standards compliance		UL, CSA, CE, (FM)

Compact Automation Platform

Backplanes

General, Description, References

General

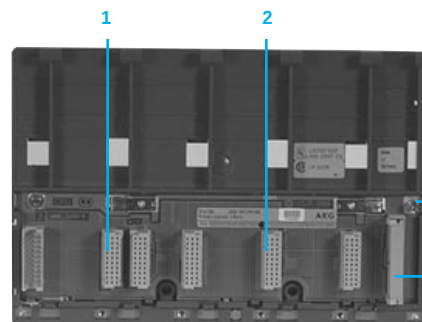
The Compact HDTA series backplanes are designed so that they mount easily on a DIN rail. The DIN rail serves as the system ground.

Three different backplanes are available, with or without conformal coating. [The conformal coating is applied over the backplane board, and protects the electronic components against harsh environmental conditions.] Suitable backplanes with different capacities are available for each stage of expansion. The **primary backplane** can accept one CPU and up to three I/O modules. The **secondary backplanes** offer additional support for two or five modules. Up to three backplanes can be connected in series to the primary backplane.

The built-in parallel backplane bus connects each slot of a backplane to the data bus and the 5 V supply. The backplanes can be mounted in either a stacked or linear fashion, as the application warrants. There is a maximum local expansion of 18 I/O module slots plus the slot for the CPU. The data bus and 5V supply can be passed to the other backplanes in the system using the WBXT-201 extension cable.

An access cover is supplied with every backplane to protect the front of the modules. Transparent holders provide space for user-defined labels.

Description



The Compact backplane is comprised as follows:

- 1 PLC connector
- 2 I/O bus connector
- 3 Reference ground point
- 4 Bus extension connector

References

Backplanes

Description	Slots	Width (mm)	Reference	Weight g (lb)
Primary	2 CPU, 3 I/O	211	AS-HDTA-200	330 (.73)
Secondary	5 I/O	211	AS-HDTA-201	330 (.73)
Secondary	2 I/O	90	AS-HDTA-202	150 (.33)
Primary, conformal coating	2 CPU, 3 I/O	211	AS-HDTA-200C	330 (.73)
Secondary, conformal coating	5 I/O	211	AS-HDTA-201C	330 (.73)
Secondary, conformal coating	2 I/O	90	AS-HDTA-202C	150 (.33)

Accessories

Description	Use	Length (m)	Reference	Weight g (lb)
I/O bus extension cable 30-pin female-to-female		0.5	AS-WBXT-201	--
I/O bus extension cable 30-pin female-to-male		0.5	AS-WBXT-203	--
I/O module cover	2 slots	--	043507936	--
I/O module cover	5 slots	--	043507935	--

Compact Automation Platform

CPUs

General, Description

General

The Compact Automation Platform central processing units (CPUs) use flash memory for the operating system and command set storage. This nonvolatile memory provides cost and time saving upgrades on site: instead of replacing EEPROMs or memory assemblies, only one file needs to be loaded into the CPU to upgrade data.

For both decentralized data transfer and programming, every CPU is equipped with at least two Modbus interfaces. The larger CPUs also have one Modbus Plus interface. The bus interfaces are easily accessible at the module's front panel. Two rotary switches are located on the front for models with Modbus Plus. These switches are used to set the addresses of the Modbus interfaces.

The CPU stores the application program in battery-backed RAM. The battery is located on the front of the module and can be replaced without loss of data during operation. Storing the user program in flash ROM secures data even during operation without a battery.

Two slide switches provide simplified user control of key functions. The memory protection switch prevents programming devices or other input devices from overwriting the user program. The Modbus interface switch sets the Modbus data transfer parameters as either ASCII, RTU, or any other protocol that can be set manually.

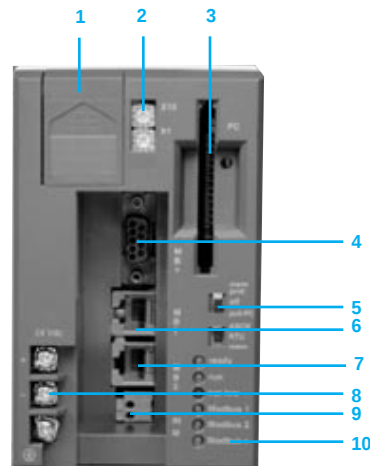
A slot for PCMCIA cards - available in the 275 and 285 series CPUs - provide another programming interface or memory expansion possibility.

Every CPU has a real-time clock that provides both the date and the time. The 258, 265, 275, and 285 controllers provide an input for synchronizing the clock with the Global Positioning System (GPS).

The 258C/R central processing units correspond to Railroad Standard EN 50 155. They have an expanded temperature range, flash ROM for the user program on the CPU (no battery required), and yellow LEDs.

All controllers are available with protective conformal coating on the electronic components.

Description



The Compact CPU is comprised as follows:

- 1 Battery
- 2 Address switches
- 3 PCMCIA card slot
- 4 Modbus Plus connector
- 5 Micro switches
- 6 Modbus 1 connector
- 7 Modbus 2 connector
- 8 24 VDC power connectors
- 9 GPS time-synch input
- 10 Four indicator lights (LEDs):
 - READY : startup diagnostics
 - RUN : program is being executed
 - MODBUS : active status of Modbus interface(s)
 - BAT LOW : battery needs to be replaced

Compact Automation Platform

CPU

Characteristics

Module type			PC-E984-258R	PC-E984-258	PC-E984-258C	PC-E984-265	PC-E984-265C
Processor type			80386				
Frequency		MHz	25				
I/O expansion		wds	256	256 (128 in, 128 out)			
Memory	Startup RAM	K				16	
	RAM	K	512				
	Flash PROM	MB	1				
	PCMCIA II card		No				
Modsoft memory							
	Logic memory	wds	16 K			8 K	
	User logic size	wds	16 K			8 K	
Concept logic memory		kB	220				
Data memory		wds	32 K			16 K	
	Total size	wds	48 K			24 K	
Cycle time	1 kbit instructions	ms	0.36				
Local I/O expansion							
	Discrete		288				
	Analog		144				
Lithium battery	No. included with CPU		0	1	0	1	
	Voltage		3.6				
	Capacity	mAh	850				
	Service life		Minimum 100 days operation; minimum 5 years use installed (not installed: 10 years)				
Communications interfaces							
	Modbus		2				
	Modbus Plus		0			1	
Current (typical / maximum)		A	0.5 / 0.9			0.61 / 1.0	
Accuracy of the internal clock							
	at 0 ... 60 °C	ppm	10 ... 100				
	at 25 °C	ppm	50				
Operating temperature		°C	-40 ... 70			0 ... 60	
Conformal coating			Yes	No	Yes	No	Yes
Railroad standard EN 50 155			Yes	No	Yes	No	No
Approvals			CE	UL, CSA, CE, FM			
Internal power supply							
Voltage	Input	VDC	24				
	Input range	VDC	16.8 ... 30			19.2 ... 30	
	Minimum stored energy time	ms	20 at 20 VDC, 3.0 A			20 at 24 VDC, 3.5 A	
	Peak input voltage	VDC	33.6 for 1.0 s				
Current	Inrush current	A	18 after 5 ms				
	Max. bus current	A	2.1			2.45	
	Typical efficiency		0.725 at 24 VDC, 3.0 A				

Compact Automation Platform

CPU's

Characteristics

Module type			PC-E984-275	PC-E984-275C	PC-E984-285	PC-E984-285C
Processor			80386			
Frequency		MHz	25			
Memory	Startup RAM	K	32			64
	RAM	bytes	512 K			1 M
	Flash PROM	MB	1			
	PCMCIA II card		Yes			
I/O expansion		wds	512 (256 in, 256 out)			1024 (512 in, 512 out)
Modsoft memory						
	Logic memory	wds	16 K			32 K
	User logic size	wds	16 K			32 K
Concept IEC memory						
	Memory	kB	220			620
Data memory		wds	32 K			64 K
	Total size	wds	48 K			96 K
Cycle time	1 kbit instructions	ms	0.36			
Local I/O expansion						
	Discrete I/O		288			
	Analog I/O		144			
Lithium Battery	No. included with CPU		1			
	Voltage		3.6			
	Capacity	mAh	850			
	Service life		Minimum 100 days operation; minimum 5 years use installed (not installed: 10 years)			
Communications interfaces						
	Modbus (RS232)		2			
	Modbus Plus		1			
	PCMCIA II slots		1			
Module current, typical / max.		A	0.61 / 1.05			
PCMCIA current max.		A	0.06			
Real-time clock			Yes			
Accuracy of the internal clock						
	at 0 ... 60 °C	ppm	10 ... 100			
	at 25 °C	ppm	50			
Operating temperature		°C	0 ... 60 (32...140 °F)			-40 ... 70 (-40...158 °F) *2
Conformal coating			No	Yes	No	Yes
Railroad Standard EN 50 155			No			
Approvals			UL, CSA, CE, FM			
Internal power supply						
Voltage	Input	VDC	24			
	Input range	VDC	19.2 ... 30			
	Minimum					
	Stored energy time	ms	20 at 24 VDC, 3.5 A			
Current	Peak input voltage	VDC	33.6 for 10.0 s			
	Inrush current	A	18 after 5 ms			
	Max. bus current	A	2.5			
	Typical efficiency		0.725 at 24 VDC, 3.0 A			

Compact Automation Platform

CPU's

References

CPU's

Memory (RAM)	Ports	PCMCIA II slot	Reference (1) (2)	Weight g (lb)
512 Kb	2 Modbus	No	PC-E984-258R	550 (1.21)
512 Kb	2 Modbus	No	PC-E984-258	550 (1.21)
512 Kb	2 Modbus	No	PC-E984-258C	550 (1.21)
512 Kb	2 Modbus, 1 Modbus Plus	No	PC-E984-265	540 (1.25)
512 Kb	2 Modbus, 1 Modbus Plus	No	PC-E984-265C	540 (1.25)
512 Kb	2 Modbus, 1 Modbus Plus	Yes	PC-E984-275	580 (1.27)
512 Kb	2 Modbus, 1 Modbus Plus	Yes	PC-E984-275C	580 (1.27)
1 Mb	2 Modbus, 1 Modbus Plus	Yes	PC-E984-285	580 (1.27)
1 Mb	2 Modbus, 1 Modbus Plus	Yes	PC-E984-285C	580 (1.27)

Accessories

Description	Length (m)	Reference (1)	Weight g (lb)
4 MB PCMCIA flash memory card		AS-FLSH-004	
4 MB PCMCIA flash memory card		AS-FLSH-004C	
Modbus programming cable (RJ45 connector)	1	110XCA28201	
Modbus programming cable (RJ45 connector)	3	110XCA28202	
Modbus programming cable (RJ45 connector)	6	110XCA28203	
Modbus Plus programming cable	3.7	110XCA28203	
RJ45 programming cable adapter		110XCA20300	
CPU replacement battery (3.6 VDC)		SL 350	
Modbus Plus Plug-In Communications card for PC/AT bus		AM-SA85-000	
Redundant Modbus Plus Plug-In Communications card for PC/AT bus		AM-SA85-002	
Modbus Plus Plug-In communications Card for PCMCIA II interface PCs		416 NHM 212 00	
Modbus Plus cable	300 m roll	97-9841-015	
Modbus Plus connector (dark gray)		AS-MBKT-085	
Modbus Plus terminator (light gray)		AS-MBKT-185	
Modbus Plus connection accessories kit		AS-MBPL-001	
Front cover for DTA 202 module rack		ABH 202	

(1) "C" following the reference number indicates product is conformally coated

(2) "R" following the reference number indicates product is suitable for railroad applications

Compact Automation Platform

CPU

References (continued)

System accessories

Description	Length	Catalog Number	Weight kg
DIN rail per DIN-EN 50022, 35 x 7.5 mm section	(Sold by the meter)	HUT 3575	
Floppy disk box		AS-HBOX-201	
Bus extension cable for skipping rows	0.5 m	AS-WBXT-201	
Capacitive discharge terminal		GND 001	
Over-voltage protector for 10 A		OVP 001	
Over-voltage protector for 25 A		OVP 2480	
Cable grounding rail for 8 cables		CER 001	
Grounding clamp		EDS 000	
Grounding inductor, 20 µH, 16 A		SCUTZLDR	
Three-phase AC power filter (3 x 380 VAC, 50/60 Hz, 4 x 16 A)		FSF DS 416	
Cable with guard shield 2 x 2 x 0.5 mm ²	(Sold by the meter)	KAB-2205-LI	
Shielded cable 5 x 0.5 mm ² GR. braided wire	(Sold by the meter)	KAB-0505-MI	
Suppressor diode		1N5646A	
Cable, 8 x 0.75 mm ² twisted pair	(Sold by the meter)	KAB-0875-LI	
Shielded cable, 10 x 0.5 mm ² twisted pair	(Sold by the meter)	KAB-1005-LI	
Cable, 10 x 0.14 mm ² twisted pair	(Sold by the meter)	KAB-1014-LI	
Extension cable for DCF77E, 2 x 2 mm ² shielded	(Sold by the meter)	KAB-2277-LI	

Compact Automation Platform

Power supplies

General, Description, Characteristics

General

Six power supplies are available for a variety of applications.

- The P120-000 is an isolated power supply that accepts input voltages from 115 VAC or 230 VAC ($\pm 15\%$) AC source and outputs a 24VDC supply to the CPU at 1A continuous current. The P120-125 is an isolated power supply that accepts input voltages from 105 to 150 VDC sources and outputs 24 VDC to the CPU at up to 1.5A continuous current. Both supplies feature overload and over voltage protection and come with an LED status indicator.
- The AS- PRTU-252 and 252C are isolated power supplies with an extended operating temperature range. They accept 90 - 264 VAC and 8.5 - 13.8 VDC power in and provide 24 VDC 2A output. If the AC input voltage fails the 12 VDC input serves as backup input power. The power supplies switch to the backup in a bumpless transfer and provide a 24 VDC output that can be monitored as notification AC input power failure. The 252C is conformally coated.
- The AS-PRTU-258 and AS-PRTU 258C are similar to the AS-PRTU-252 and AS-PRTU-252C except that the 258 power supplies provide for 30 - 70 VDC backup input power.

Description



The Compact power supply is comprised as follows:

- 1 LED status indicators
- 2 Ground connector
- 3 Power connection screw terminals

Characteristics

Model type		AS-P120-000	AS-P120-125
Input ratings	input voltage range	V 95...253 AC	105...150 DC
	frequency range	Hz 47...63	-
	ground leakage	<1.5 mA @ 265 VAC	-
	input current	0.6 A @ 115 VAC nominal 0.3 A @ 220 VAC nominal	0.5 A @ 125 VDC nominal
	inrush current	6 A typical @ 115 VAC	1 A typical @ 125 VDC
Output ratings	output voltage	VDC 24 (+5%)	24 (+5%)
	current	A 0...1 continuous	.1...1.5 continuous
	ripple/noise	mV 100 peak-to-peak	650 peak-to-peak
	holdup	Operates in regulation for periods >12 ms with half-cycle dropout in nominal AC input voltage	Operates in regulation after removal of power (typical 10 ms, minimum 6 ms).
	transient load performance	20% change in load, linear ramp over 200 ms	-
	power-up stability	From AC power application to regulation within 5 s; will not overshoot regulation tolerance during power-up	From DC power application to regulation within 10 s; will not overshoot regulation tolerance during power-up
Reliability	service life	5 years	
	MTBF	hr 50,000 (minimum) at 30°C, assuming fixed ground and component stress within maximum specifications	51,800 (minimum) at 30°C, assuming fixed ground and component stress within maximum specifications
Dimensions	W x H x D	mm (in) 40.3 x 145 x 117.5 (1.6 x 5.6 x 4.5)	
	Weight	g (lb) 220 (.5)	
Agency Approvals	designed to meet	VDE 0160, UL 508, Factory Mutual Class I, Division 2 and CSA 142 standards	UL 508, CSA 142 standards

Compact Automation Platform

Power supplies

Characteristics (continued), References

Characteristics

Model type			AS-PRTU-252/252C	AS-PRTU-258/258C
Input ratings	input voltage range	V	90...264 AC and 8.5...13.8 DC	90...264 AC and 30...70 DC
	frequency range	Hz	47...63	
	isolation		2500 VRMS I/O, 1500 VRMS I/Gnd	
	input current		0.8 A at 120 VAC 5 A at 12 VDC	0.8 A at 120 VAC 1.2 A at 48 VDC
	inrush current		12 A at 120 VAC, 25 A at 240 VAC	
Output ratings	output voltage	VDC	24 (+5 V)	
	current	A	0.1 ...2.0, continuous	
	ripple/noise	mV	+ 250 peak-to-peak	
	holdup time		> 12 ms at 120 VAC, > 15 ms at 240 VAC	
	transient load performance		20% change in load, linear ramp over 200 ms	
	power-up stability		Power-up and be in regulation within 2 seconds of input power being applied	
Reliability	service life		5 years	
	MTBF	hr	50,000 hours minimum at 30°C, based on ground benign and component stress levels within maximum specifications	
Dimensions	W x H x D	mm (in)	86.3 x 145 x 117.5 (3.4 x 5.6 x 4.5)	
	Weight	g (lb)	590 (1.3)	
Agency Approvals	designed to meet		UL 508, CSA C22.2 142M 1987, IEC 950 / CE	

References

Power supplies

Description	Output / Temperature range	Battery backup	Reference (1)	Weight g (lb)
120 VAC			AS-P120-000	220 (.5)
125 VDC			AS-P120-125	220 (.5)
RTU	2 A, -40...+70°C	120 VDC	AS-PRTU-252	590 (1.3)
RTU	2 A, -40...+70°C	120 VDC	AS-PRTU-252C	590 (1.3)
RTU	2 A, -40...+70°C	30 ... 60 VDC	AS-PRTU-258	590 (1.3)
RTU	2 A, -40...+70°C	30 ... 60 VDC	AS-PRTU-258C	590 (1.3)

(1) The letter "C" following the reference number indicates the product is conformally coated.

Compact Automation Platform

Discrete I/O

VDC input modules
Selection guide

Module type	Discrete input modules			
				
Number of inputs	2 groups of 8			
Input voltage	12 ... 60 VDC, true high	5 VDC TTL, true low, sink	24 VDC, true high	24 VDC, true low, sink
Electrical isolation	Optocoupler on every input			
ON status input current	7 mA at 24 VDC 8.5 mA at 30 VDC	3.5 mA at 0 VDC	7 mA at 20 VDC 8.5 mA at 30 VDC	7 mA at 24 VDC
Input level ON voltage at 12 VDC current at 12 VDC voltage at 60 VDC current at 60 VDC	+9 ... +15 VDC + 5.1 ... + 7.1 mA +45 ... +75 VDC + 2.0 ... +2.5 mA	-1 ... +2 VDC + 5.1 ... + 7.1 mA +45 ... +75 VDC + 2.0 ... +2.5 mA	+ 12 ... + 30 VDC + 5.1 ... + 7.1 mA +45 ... +75 VDC + 2.0 ... +2.5 mA	≥ external -6 VDC + 5.1 ... + 7.1 mA +45 ... +75 VDC + 2.0 ... +2.5 mA
Input level OFF voltage at 12 VDC current at 12 VDC voltage at 60 VDC current at 60 VDC	- 0.6 ... +1.8 VDC - 0.6 ... + 1 mA - 3 ... + 9 VDC - 1.7 ... +2.5 mA	+4 ... +5 VDC - 0.6 ... + 1 mA - 3 ... + 9 VDC - 1.7 ... +2.5 mA	-2 ... + 5 VDC - 0.6 ... + 1 mA - 3 ... + 9 VDC - 1.7 ... +2.5 mA	≤ external -12 VDC - 0.6 ... + 1 mA - 3 ... + 9 VDC - 1.7 ... +2.5 mA
Conformal Coating	No			
Cycle time, typical	4 ms	1 ms	4 ms	
Model	AS-BDEP-214	AS-BDEP-215	AS-BDEP-216	AS-BDEP-217
Page	25			

Discrete input modules



24 VDC, true high

12 ... 60 VDC, true high

24 VDC, true high

110 VDC, $\pm 40\%$

7 mA at 24 VDC
8.5 mA at 30 VDC

2.2 mA at 110 VDC

+ 12 ... + 30 VDC
+ 5.1 ... + 7.1 mA
+45 ... +75 VDC
+ 2.0 ... +2.5 mA

+ 9 ... + 15 VDC
+ 5.1 ... + 7.1 mA
+45 ... +75 VDC
+ 2.0 ... +2.5 mA

+ 12 ... + 30 VDC
+ 5.1 ... + 7.1 mA
+45 ... +75 VDC
+ 2.0 ... +2.5 mA

+ 55 ... + 170 VDC
+ 5.1 ... + 7.1 mA
+45 ... +75 VDC
+ 2.0 ... +2.5 mA

- 2 ... + 5 VDC
- 0.6 ... + 1 VDC
- 3 ... +9 VDC
- 1.7 ... + 2.5 mA

- 0.6 ... +1.8 VDC
- 0.6 ... + 1 VDC
- 3 ... +9 VDC
- 1.7 ... + 2.5 mA

- 2 ... + 5 VDC
- 0.6 ... + 1 VDC
- 3 ... +9 VDC
- 1.7 ... + 2.5 mA

- 2 ... + 10 VDC
- 0.6 ... + 1 VDC
- 3 ... +9 VDC
- 1.7 ... + 2.5 mA

Yes; AS-BDEP-254C

Yes; AS-BDEP-256C

Yes; AS-BDEP-257C

0.5 ms

4 ms

6 ms

AS-BDEP-220

AS-BDEP-254

AS-BDEP-256

AS-BDEP-257

26

Compact Automation Platform

Discrete I/O

VDC and VAC input modules
Selection guide

Module type	Discrete VDC input modules		
			
Number of inputs	1 group of 16	2 groups of 8	
Input voltage	24 VDC, true high	48 VDC, true high	60 VDC, true high
Electrical isolation	No electrical isolation to the I/O bus	Optocoupler on every input	
Input current status ON OFF	7 mA at 24 VDC, 8.5 mA at 30 VDC --	7 mA at 48 VDC --	7 mA at 60 VDC --
Input level ON voltage ON current OFF voltage OFF current	+12 ... +30 VDC -- -2 ... +5 VDC --	+29 ... + 56 VDC -- -3 ... +10 VDC --	+35 ... +70 VDC -- - 4 ... +13 VDC --
Bus current	15 mA	25 mA	
External operating voltage	20 ... 30 VDC	38.4 ... 60 VDC	35 ... 70 VDC
Cycle time, typical OFF-ON ON-OFF	4 ms		
Model	AS-BDEO-216	AS-BDEP-297	AS-BDEP-296
Page	27		

Discrete VAC input modules



1 group of 8

8 groups of 1

2 groups of 8

230 VAC, true high

115 VAC, true high

6 mA at 230 VAC
0.5 mA max

15.5 mA at 115 VAC, 6 mA at 80 VAC, 20 mA at 132 VAC
3 mA max

195 ... 264 VAC at 50 Hz
--
97 ... 138 VAC at 50 Hz
--

80 ... 132 VAC at 50 Hz
--
0 ... 35 VAC at 50 Hz
--

30 mA

35 mA

50 mA

170 ... 264 VAC

80 ... 132 VAC

25 ms
50 ms

10 ms
40 ms

AS-BDEP-208

AS-BDEP-210

AS-BDEP-211

AS-BDEP-218

Compact Automation Platform

Discrete I/O

VDC output modules, VDC/VAC output modules Selection guide

Module type	Discrete VDC ouput modules			Discrete VDC/VAC output modules
				
Number of inputs	2 x 8 transistors			4 x 1 relay
Output voltage	24 VDC, true high		5 ... 24 VDC, true low, sink	24 ... 154 VDC 24 ... 250 VAC
Electrical isolation	No isolation	Every channel is electrically isolated from the I/O bus. Every group is electrically isolated from every other group.		Individual electrically isolated relays.
Maximum cycle time	1 ms			10 ms
Maximum switching current per output at 230 VAC at 24 VDC at 60 VDC at 140 VDC	-- 0.5 mA -- --		-- 0.3 mA -- --	2A continuous, 4A surge 2A continuous, 4A surge 1A continuous 0.3A continuous
Current source I/O bus current external source	30 mA 24 VDC, 5A at 30 VDC	50 mA 24 VDC	60 mA 5 ... 24 VDC	25 mA max 24 VDC, 80 mA max
Conformal Coating	No			
Power dissipation, typical	5 W	1 W	3.5 W	2 W
Model	AS-BDAO-216	AS-BDAP-216N	AS-BDAP-217	AS-BDAP-204
Page	29			30

Discrete VDC/VAC output modules



8 x 1 relay

2 x 4 triacs

2 x 8 triacs

1 x 8 relays

24 ... 230 VAC, true high

24 ... 154 VDC, 24 ... 250 VAC

Electrically isolated relays

Electrically isolated from the bus

Eight electrically isolated relay contacts

8.34 ms at 60 Hz

10 ms typical

60 mA max
24 VDC, 150 mA max

70 mA max
24 ... 230 VAC

175 mA max
24 ... 230 VAC

60 mA
24 VDC, 150 mA max

Yes; AS-BDAP-258C

7.2 W

13 W

2 W

AS-BDAP-208

AS-BDAP-210

AS-BDAP-218

AS-BDAP-258

31

Compact Automation Platform

Discrete I/O

VDC and VAC input / output modules
Selection guide

Module type	Discrete combined input / output modules		
			
Number of inputs	4	1 group of 8	
Number of outputs	4	1 group of 4 relays	
Input voltage	120 VAC	24 VDC, true high	60 VDC, true high
Output voltage	120 VAC, - 15%, + 10%	24 ... 110 VDC, 24 ... 250 VAC	20 ... 30 VDC, true high
Electrical isolation	Groups consist of 1 input and 1 output. Each group is isolated from each other group.	The relay output contacts are individually electrically isolated; the input group is electrically isolated from the output group.	
Input voltage level ON status OFF status	120 VAC, -15%, +10% --	+ 12 ... + 30 VDC - 1 ... + 5 VDC	35 ... 70 VDC - 4 ... + 13 VDC
Maximum switching current per output at 115/230 VAC at 24 VDC at 60 VDC at 110 VDC A per group maximum	2 A per output, 3 A per module max -- -- -- --	2 A continuous, 4 A surge 2 A continuous, 4 A surge 1 A continuous 0.45 A continuous Sum of the maximum per output	
Cycle time, typical	--	Inputs: 4 ms	Inputs: 4 ms, outputs: 10 ms
Conformal coating	No		
Model	AS-BDAP-211	AS-BDAP-212	AS-BDAP-292
Page	32		

Discrete VAC input modules



1 group of 8

1 group of 8 transistors

1 group of 4 relays

24 VDC, true high

66 ... 154, true high

20 ... 30 VDC, true high

24 ... 110 VDC, 24 ... 250 VAC

24 ... 154 VDC, 24 ... 250 VAC

Every channel is optoelectrically isolated from the I/O bus.

The relay output contacts are individually electrically isolated.
The input group is electrically isolated from the output group.

+ 12 ... + 30 VDC
- 2 ... + 5 VDC

+ 55 ... + 170 VDC
- 2 ... + 10 VDC

2 A continuous, 4 A surge
0.01 A ... 2 A
1 A continuous
0.45 A continuous
8 A

2 A continuous, 4 A surge
2 A continuous, 4 A surge
1 A continuous
0.45 A continuous
Sum of the maximum per output

Inputs: 6 ms, outputs: 10 ms

Inputs: <4ms, outputs: < 1ms

Inputs: 7 ms, outputs: 10 ms

Inputs: 6 ms, outputs: 10 ms

No

Yes: AS-BDAP-250 C

Yes: AS-BDAP-252C

No

AS-BDAP-220

AS-BDAP-250

AS-BDAP-252

AS-BDAP-253

Compact Automation Platform

Discrete I/O Modules

General, Description

General

The Compact Platform's discrete I/O modules consist of input modules, output modules, and combined input/output modules. LEDs provide at a glance the operating state of the module and the status of the inputs and outputs. The physical organization of the LEDs allows quick diagnostics of all corresponding modules.

The Compact I/O modules are entirely software configurable. Any module can be configured in any slot. All configuration parameters for each individual I/O module appear on the configuration screen of the I/O configuration list. Once configured, the software program detects missing or defective modules and sends the appropriate signal to the CPU.

Both electrically isolated and non-isolated modules are available. Peripherals are connected by means of a screw terminal strip. The screw terminal strip can be removed for installation and, as an option, protected against incorrect connections.

The alternating voltage range of the I/O modules extends from 24 VAC to 250 VAC. All alternating voltage modules operate reliably at least in the frequency range from 47 to 63 Hz (sinusoidal with <5% harmonic content).

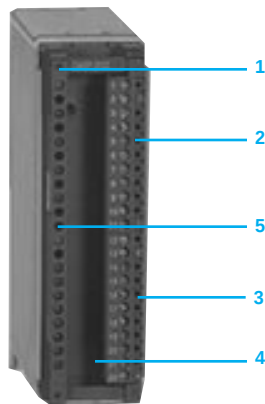
The direct voltage range extends from 5 VDC input and output modules for TTL and CMOS to 10... 60 VDC and 24 ... 154 VDC for relay output modules.

The Compact platform uses the following type designations:

- DEP - digital input modules, electrically isolated
- DAP - digital output modules, electrically isolated
- DEO / DAO - digital input / output modules without electrical isolation.

Modules with the type designation "AS-B-xxx-25x" have an expanded temperature range and are suitable for railroad applications. Electronic components with conformal coating are identified with the suffix "C" in the type designation.

Description



A typical Compact discrete module is comprised as follows:

- 1 Operating status LED of the module
- 2 Terminal block 1
- 3 Terminal block 2
- 4 Cable locking barrier
- 5 Input/output status indicator lights (LEDs):
 - 1 and 12, green, yellow : bus connection present
 - 2 and 13, yellow : output current exceeded
 - 11 and 22 : no LED
 - 3 .. 10 and 14 ... 21, red : inputs or outputs active

Compact Automation Platform

Discrete VDC Input Modules

Characteristics

Module type			DEP 214	DEP 215	DEP 216	DEP 217	DEP 220	
Number of inputs			2 groups of 8					
Electrical isolation			Octocoupler on every input					
Input voltage		VDC	12 ... 60, true high	5 TTL, true low, sink	24, true high	24, true low, sink	24, true high	
LEDs			16 red, 2 green					
Addresses Discrete 1x/0x			16 In / 0 Out					
On status input current		mA	7 at 24VDC 8.5 at 30 VDC	3.5 at 0 VDC	7 at 20 VDC 8.5 at 30 VDC	7 at 24 VDC	7 at 24 VDC 8.5 at 30 VDC	
Input Level	On	Voltage	VDC	+9 ... +15 at 12VDC	-1 ... 2	+12 ... 30	≥ external -6	+12 ... 30
		Current	mA	+5.1 ... +7.1 at 12VDC				
		Voltage	VDC	+11 ... +30 at 24VDC				
		Current	mA	+6.0 ... +7.1 at 24VDC				
		Voltage	VDC	+33 ... +60 at 48VDC				
		Current	mA	+2.0 ... +2.5 at 48VDC				
		Voltage	VDC	+45 ... +75 at 60VDC				
		Current	mA	+2.0 ... +2.5 at 60VDC				
	Off	Voltage	VDC	-0.6 ... +1.8 at 12 VDC	4 ... 5	-2 ... +5	≤ external -12	-2 ... +5
		Current	mA	-0.6 ... +1 at 12 VDC				
		Voltage	VDC	-3 ... +5 at 24 VDC				
		Current	mA	-1.7 ... +2.9 at 24 VDC				
		Voltage	VDC	-6 ... +10 at 48 VDC				
		Current	mA	-3.4 ... +2.5 at 48 VDC				
		Voltage	VDC	-3 ... +9 at 60 VDC				
		Current	mA	-1.7 ... +2.5 at 60 VDC				
Cycle time, typical		ms	4	1	4		0.5	
Bus current		mA	22					10
Power dissipation, typical		W	4	2		3	2	
External operating voltage		VDC	12 ... 60	4.5 ... 5.5	20 ... 30			
External fuses			2 x 0.16 A		1 x 0.16 A			
Operating temperature		°C (F)	0...60 (32...140)					
Weight		kg (lb)	0.26 (0.57)	0.22 (0.5)				
Compatible panel software								
	Concept		2.1 or higher					
	ProWORX NxT		2.0 or higher					

Compact Automation Platform

Discrete VDC Input Modules

Characteristics

Module type			DEP 254	DEP 254C	DEP 256	DEP 256C	DEP 257	DEP 257C	
Number of inputs			2 groups of 8						
Electrical isolation			Optocoupler on every input						
Input voltage		VDC	12 ... 60, True High		24, True High		110 ± 40%		
LEDs			16 red, 2 green				16 red, 2 yellow		
Addresses	Discrete 1x/0x		16 In / 0 Out						
On status input current		mA	7 at 24VDC 8.5 at 30 VDC				2.2 at 110 VDC		
Input Level	On	Voltage	VDC	+9 ... +15 at 12VDC		+12 ... 30		55...170	
		Current	mA	+5.1 ... +7.1 at 12VDC					
		Voltage	VDC	+11 ... +30 at 24VDC					
		Current	mA	+6.0 ... +7.1 at 24VDC					
		Voltage	VDC	+33 ... +60 at 48VDC					
		Current	mA	+2.0 ... +2.5 at 48VDC					
		Voltage	VDC	+45 ... +75 at 60VDC					
		Current	mA	+2.0 ... +2.5 at 60VDC					
	Off	Voltage	VDC	-0.6 ... +1.8 at 12 VDC		-2 ... +5		-2 ... +10	
		Current	mA	-0.6 ... +1 at 12 VDC					
		Voltage	VDC	-3 ... +5 at 24 VDC					
		Current	mA	-1.7 ... +2.9 at 24 VDC					
		Voltage	VDC	-6 ... +10 at 48 VDC					
		Current	mA	-3.4 ... +2.5 at 48 VDC					
		Voltage	VDC	-3 ... +9 at 60 VDC					
		Current	mA	-1.7 ... +2.5 at 60 VDC					
Cycle time, typical		ms	4				6		
Bus current		mA	22		15		25		
Power dissipation, typical		W	3		2		3		
External operating voltage		VDC	10 ... 70		20 ... 30		66...154		
External fuses			2 x 0.16 A		1 x 0.16 A		2 x 0.16 A		
Operating temperature		°C (F)	- 40 ... 70 (-40 ... 158)						
Conformal coating			No	Yes	No	Yes	No	Yes	
Suitable for railroad applications			Yes						
Weight		kg (lb)	0.26 (0.57)	0.27 (0.6)	0.22 (0.5)	0.27 (0.6)	0.22 (0.5)		
Compatible panel software									
	Concept		2.1 or higher						
	ProWORX NxT		2.0 or higher						

Compact Automation Platform

Discrete VDC input modules

Characteristics

Module type			DEO 216	DEP 297	DEP 296
Number of inputs			1 group of 16	2 groups of 8	
Electrical isolation			No electrical isolation to the I/O bus	Optocoupler on every input	
Input voltage		VDC	24, True High	48, True High	60, True High
LEDs			16 red, 2 green		
Addresses		Discrete 1x/0x	16 In / 0 Out		
On status input current		mA	7 at 24VDC 8.5 at 30 VDC	7 at 48 VDC	7 at 60 VDC
Input Level					
On	Voltage	VDC	+12 ... 30	29 ... 56	35 ... 70
	Current	mA	-	-	-
Off	Voltage	VDC	-2 ... +5	-3 ... +10	-4 ... +13
	Current	mA	-		
Cycle time, typical		ms	4		
Bus current		mA	15	25	
Power dissipation, typical		W	2	3	4
External operating voltage		VDC	20 ... 30	38.4 ... 60	35 ... 70
External fuses		A	1 x 0.16	1 x 0.15	
Operating temperature		°C (F)	0 ... 60 (32 ... 140)		
Weight		kg	0.22 (0.5 lb)		
Compatible panel software					
	Concept		2.1 or higher		
	ProWORX NxT		2.0 or higher		

Compact Automation Platform

Discrete VAC input modules

Characteristics

Module type			DEP 208	DEP 210	DEP 211	DEP 218
Number of inputs			1 group of 8		8 groups of 1	2 groups of 8
Electrical isolation			Optocoupler on every input			
Input voltage		VAC	230, True High	115, True High		
LEDs			8 red, 1 green			16 red, 1 green
Addresses	Discrete 1x/0x		8 In / 0 Out			16 In / 0 Out
Input current with status						
	On	mA	6 at 230 VAC	15.5 at 115 VAC, 6 at 80 VAC, 20 at 132 VAC		
	Off (maximum)	mA	0.5	3		
Input Level at 50 Hz						
	Voltage on	VAC	195 ... 264	80 ... 132		
	Voltage off	VAC	97 ... 138	0 ... 35		
Frequency range		Hz	47 ... 65			
Cycle time						
	Off-on typical	ms	25	10		
	On-off typical	ms	50	40		
Withstand voltage						
	Group to group	kV	1.8			
	Group to bus	kV	1.8			
Bus current		mA	30	35		50
Power dissipation, typical		W	2	3		
External operating voltage		VAC	170 ... 264	80 ... 132		
External fuses		A	1 x 1.6	1 x 0.2	8 x 0.1	2 x 0.2
Operating temperature		°C (F)	0 ... 60 (32 ... 140)			
Weight		kg(lb)	0.22 (0.5 lb)	0.25 (0.55 lb)		0.30 (0.66 lb)
Compatible panel software						
	Concept		2.1 or higher			
	ProWORX NxT		2.0 or higher			

Compact Automation Platform

Discrete VDC output modules

Characteristics

Module type		DAO 216	DAP 216 N	DAP 217
Number of outputs		2 x 8 transistors		
Electrical isolation		No electrical isolation	Every channel is electrically isolated from the I/O bus. Every group is electrically isolated from every other group.	
Output voltage	VDC	24, True High		5 ... 24, True Low, sink
LEDs		16 red, 1 green	16 red, 2 green, 2 yellow	16 red, 2 green
Addresses	Discrete 1x/0x	0 In / 16 Out		
Signal output level				
On signal	VDC	V = Vs - 3 V		5 ... 24
Off signal	VDC	0 ... +2 at <1 mA		0.7 ... 2 at 4 ... 300 mA
Maximum switching current				
per output	mA	0.5		0.3
per group	A	4		0.8
per module	A	2 x 4		2 x 0.8
Maximum cycle time	ms	1		
External operating voltage	VDC	20 ... 30		5 ... 24
Current source				
I/O bus current	mA	30	50	60
External source		24 VDC, 5A at 30 VDC	24 VDC	5 ... 24 VDC
Power dissipation, typical	W	5	1	3.5
External fuses	A	1 x 4	2 x 2	2 x 1
Operating temperature	°C (F)	0 ... 60 (32 ... 140)		
Weight	kg(lb)	0.25 (0.55)	0.22 (0.5 lb)	
Compatible panel software				
Concept		2.1 or higher		
ProWORX NxT		2.0 or higher		

Compact Automation Platform

Discrete VDC/VAC Output Modules

Characteristics

Module type		DAP 204	DAP 208	DAP 210	DAP 218
Number of outputs		4 x 1 relay	8 x 1 relay	2 x 4 triacs	2 x 8 triacs
Electrical isolation		Individual electrically isolated relays	Electrically isolated relays	Electrically isolated from the bus	
Output voltage		24 ... 154VDC, 24 ... 250 VAC		24 ... 230 VAC, True High	
LEDs		1 green, 4 red	1 green, 8 red		1 green, 16 red
Addresses	Discrete 1x/0x	0 In / 8 Out			0 In / 16 Out
Frequency range		Hz	47 ... 63		
Maximum switching current per output		at 230 VAC			
		2 A continuous (resistive load) 4 A surge (resistive load) 1 A continuous (cos Φ = 0.5)			
	at 24 VDC	2 A continuous (resistive load) 4 A surge (resistive load) 1 A continuous (L/R = 30 ms)			
	at 60 VDC	1 A continuous (resistive load) 0.6 A (L/R = 30 ms)			
	at 140 VDC	0.3 A continuous (resistive load) 0.15 A (L/R = 20 ms)			
Cycle time	maximum	ms	10		8.34 at 60 Hz
	Cycle time (freq.)	Hz	-		
External operating values		Voltage			
		24 ... 154 VDC, 24 ... 250 VAC		24 ... 230 VAC	
Current source	I/O bus current	mA	max. 25	max. 60	max. 70
	External source		24 VDC, max. 80 mA	24 VDC, max.150 mA	24 ... 230 VAC
Power dissipation typical		W	2		7.2
					13
Fuses	internal	A	-		2 x 6.3
	external	A	1 x 0.16, 2 x 4 A	1 x 0.16 , 4 x 4 A	
Operating temperature		°C (F)	-25 ... +70 (-13...+158)	0 ... 60 (32 ... 140)	
Weight		kg(lb)	0.24 (0.53)	0.36 (0.8)	0.45 (1)
					0.90 (2.0)
Compatible panel software					
	Concept	2.1 or higher			
	ProWORX NxT	2.0 or higher			

Compact Automation Platform

Discrete VDC/VAC Output modules

Characteristics

Module type		DAP 258	DAP 258C
Number of outputs		1 x 8 relays	
Electrical isolation		Eight electrically isolated relay contacts	
Output voltage		24 ... 154 VDC, 24 ... 250VAC	
LEDs		1 green, 8 red	
Addresses	Discrete 1x/0x	0 In/8 Out	
Frequency range	Hz	47 ... 63	
Maximum switching current per output	at 230 VAC	2 A continuous (resistive load) 4 A surge (resistive load) 1 A continuous (cos Φ = 0.5)	
	at 24 VDC	2 A continuous (resistive load) 4 A surge (resistive load) 1 A continuous (L/R = 30 ms)	
	at 60 VDC	1 A continuous (resistive load) 0.6 A (L/R = 30 ms)	
	at 140 VDC	0.3 A continuous (resistive load) 0.15 A (L/R = 20 ms)	
	per group	A	Sum of the output currents
Cycle time, inputs and outputs typical	ms	10	
Current source	I/O bus current	mA	60
	External source	24 VDC, max. 150 mA	
Power dissipation typical	W	2	
External Fuses	A	4 x 4, 1 x 0.16	
Operating temperature	°C (F)	-40 ... +70 (-40 ... +158)	
Conformal coating		No	Yes
Suitable for railroad applications		Yes	
Weight	kg(lb)	0.24 (0.52)	
Compatible panel software	Concept	2.1 or higher	
	ProWORX NxT	2.0 or higher	

Compact Automation Platform

Discrete Combined Input / Output Modules

Specifications

Module type			DAP 211	DAP 212	DAP 292	DAP 220
Number of inputs			4	1 group of 8	1 group of 8	1 group of 8
Number of outputs			4	1 group of 4 relays		1 group of 8 transistors
Electrical isolation			Groups consist of 1 input and 1 output. Each group is isolated from each other group.	The relay output contacts are individually electrically isolated; the input group is electrically isolated from the output group.		Every channel is optoelectrically isolated from the I/O bus.
LEDs			1 green, 8 red		2 yellow, 12 red 16 red	2 green, 1 yellow,
Addresses	Discrete 1x/0x		4 in / 4 out	8 in/4 out		8 in/8 out
Input voltage		V	120 AC	24 DC, True High	60 DC, True High	24 DC, True High
Input level						
Voltage	On status	V	120 AC -15%, +10%	+12 ... +30 DC	35 ... 70 DC	+12 ... +30 DC
	Off status	VDC	-	-2 ... +5	-4 ... +13	-2 ... +5
Output voltage			120 VAC - 15%, +10%	24 ... 110 VDC 24 ... 250 VAC		20 ... 30 VDC true high
Output frequency range		Hz	47 ... 63			
Maximum switching currents per output at 115/230 VAC			2 A per output max 3 A max per module	2 A continuous (resistive load) 4 A surge (resistive load) 1 A continuous (cos Φ = 0.5)		
	at 24 VDC		-	2 A continuous (resistive load) 4 A surge (resistive load) 1 A continuous (L/R = 30 ms)		0.01 A ... 2 A
	at 60 VDC		-	1 A continuous (resistive load) A (L/R = 30 ms)		
	at 110 VDC		-	0.45 A continuous (resistive load) 0.25 A (L/R = 30 ms)		
	per group max.	A	-	Sum of the max. per output		8
Cycle time, inputs and outputs typical		ms	-	Inputs: 4	Inputs: 4, Outputs: 10	Inputs: 4, Outputs: 1
Power supply						
	I/O bus current	mA	35 typical	25		≤ 60
	external source <th></th> <td>120 VAC</td> <td>24 VDC, max. 80 mA</td> <td>60 VDC, 150 mA; 24 VDC, 150 mA</td> <td>20 ... 30 VDC</td>		120 VAC	24 VDC, max. 80 mA	60 VDC, 150 mA; 24 VDC, 150 mA	20 ... 30 VDC
Power dissipation typical		W	5	2		
External fuses			-	2 x 0.15 A, 2 x 4 A	2 x 4 A, 2 x 0.15 A	1 x 0.16 A, 1 x 10 A
Operating temperature		°C(F)	0 ... +60 (32 ... 140)			
Weight		kg(lb)	0.19 (0.4)	0.24 (0.53)		0.22 (0.48)
Compatible panel software						
	Concept		2.2 or higher	2.1 or higher		
	ProWORX NxT		2.0 or higher			

Compact Automation Platform

Discrete Combined Input / Output Modules

Characteristics

Module type		DAP 250	DAP 250C	DAP 252	DAP 252C	DAP 253	
Number of inputs		1 group of 8					
Number of outputs		1 group of 8 transistors		1 group of 4 relays			
Electrical isolation		Every channel is optoelectrically isolated from the I/O bus.		The relay output contacts are individually electrically isolated. The input group is electrically isolated from the output group.			
LEDs		2 green, 1 yellow, 16 red		2 green, 12 red		2 yellow, 12 red	
Addresses	Discrete 1x/0x	8 in/8 out		8 in/4 out			
Input voltage		VDC	24, true high	24, true high		66 ... 154, true high	
Input level	Voltage	VDC	+12 ... +30			55 ... 170	
	On status	VDC	-2 ... +5			-2 ... +10	
Output voltage			20 ... 30 VDC, true high	24 ... 110 VDC, 24 ... 250 VAC		24 ... 154 VDC, 24 ... 250 VAC	
Output frequency range		Hz	74 ... 63				
Switching currents per output at 115/230 VAC				2 A continuous (resistive load), 4 A surge (resistive load), 1 A continuous (cos Φ = 0.5)		2 A continuous (resistive load), 4 A surge (resistive load), 1 A continuous (cos Φ = 0.5).	
		at 24 VDC		0.01 A ... 2 A	2 A continuous (resistive load), 4 A surge (resistive load), 1 A continuous (L/R = 30 ms)		2 A continuous (resistive load), 4 A surge (resistive load), 1 A continuous (L/R = 30 ms).
		at 60 VDC			1 A continuous (resistive load), 0.6 A (L/R = 30 ms)		1 A continuous (resistive load), 0.6 A (L/R = 30 ms).
		at 110 VDC			0.45 A continuous (resistive load), 0.25 A (L/R = 30 ms)		
		at 140 VDC					0.3 continuous (resistive load), 0.15 A (L/R = 30 ms)
		per group max.	A	8	Sum of the maximum per output		
		Cycle time, inputs and outputs typical		ms	Inputs: <4, Outputs: <1	Inputs: 7, Outputs: 10	
Power supply							
		I/O bus current	mA	60	25		15
external source			20 ... 30 VDC max. 150 mA	24 VDC, 24 VDC, 70 mA		110 VDC ± 40%, 20 mA	
Power dissipation typical		W	2				
External fuses			1 x 0.16 A, 1 x 10 A		2 x 0.15 A, 2 x 4 A		
Operating temperature		°C (F)	-40 ... +70 (-40 ... 158)			-25 ... +70 (-25 ... 158)	
Conformal coating			No	Yes	No	Yes	
No						No	
Suitable for railroad applications			Yes				
Weight		kg (lb)	0.22 (0.48 lb)		0.19 (0.4 lb)		
			0.24 (0.52 lb)				
Compatible panel software							
Concept			2.1 or higher				
ProWORX NxT			2.0 or higher				

Compact Automation Platform

Discrete I/O Modules

References

Discrete input modules

Description	Input Voltage	Reference (1)	Weight kg
2 x 8 inputs, true high	12...60 VDC	AS-BDEP-214	0.26
2 x 8 inputs, true low, sink	5V TTL	AS-BDEP-215	0.22
2 x 8 inputs, true high	24 VDC	AS-BDEP-216	0.22
2 x 8 inputs, true low, sink	24 VDC	AS-BDEP-217	0.27
2 x 8 high speed inputs, true high	24 VDC	AS-BDEP-220	0.22
2 x 8 high speed inputs, true high expanded temperature range	12...60 VDC	AS-BDEP-254	0.26
2 x 8 high speed inputs, true high expanded temperature range	24 VDC	AS-BDEP-256	0.22
2 x 8 high speed inputs, true high expanded temperature range	110 VDC	AS-BDEP-257	0.22
2 x 8 high speed inputs, true high expanded temperature range	12...60 VDC	AS-BDEP-254C	0.26
2 x 8 high speed inputs, true high expanded temperature range	24 VDC	AS-BDEP-256C	0.26
2 x 8 high speed inputs, true high expanded temperature range	110 VDC	AS-BDEP-257C	0.26
1 x 16 inputs, true high	24 VDC	AS-BDEO-216	0.22
2 x 8 inputs, true high	48 VDC	AS-BDEP-297	0.22
2 x 8 inputs, true high	60 VDC	AS-BDEP-296	0.22
1 x 8 inputs, true high	230 VAC	AS-BDEP-208	0.22
1 x 8 inputs, true high	115 VAC	AS-BDEP-210	0.25
8 x 1 inputs, true high	115 VAC	AS-BDEP-211	0.25
2 x 8 inputs, true high	115 VAC	AS-BDEP-218	0.3

Discrete output modules

Description	Output Voltage	Catalog Number	Weight kg
1 x 16 transistor outputs, true high	24 VDC	AS-BDAO-216	0.25
2 x 8 transistor outputs, true high	24 VDC	AS-BDAP-216N	0.22
2 x 8 transistor outputs, true low, sink	5...24 VDC	AS-BDAP-217	0.22
4 x 1 relay outputs	24...110 VDC or 24...230 VAC	AS-BDAP-204	0.24
8 x 1 relay outputs	24...110 VDC or 24...230 VAC	AS-BDAP-208	0.36
2 x 4 triac outputs, true high	24...230 VAC	AS-BDAP-210	0.45
2 x 8 triac outputs, true high	24...230 VAC	AS-BDAP-218	0.90
1 x 8 relay outputs, expanded temperature range	24...154 VDC or 24...250 VAC	AS-BDAP-258	0.24
2 x 8 relay outputs, expanded temperature range	24...154 VDC or 24...250 VAC	AS-BDEP-258C	0.24

(1) The letter "C" following the reference number indicates the product is conformally coated.

Compact Automation Platform

Discrete I/O Modules

References (continued)

Discrete combined input / output modules

Description	Input Voltage	Output Voltage	Reference (1)	Weight kg
2 x 4 inputs 2 x 4 outputs	120 VAC	120 VAC	<u>AS-BDAP-211</u>	0.19
1 x 8 inputs 1 x 4 relay outputs, true high	24 VDC	24...110 VDC or 24...250 VAC	<u>AS-BDAP-212</u>	0.19
1 x 8 inputs 1 x 4 relay outputs, true high	60 VDC	24...110 VDC or 24...250 VAC	<u>AS-BDAP-292</u>	0.24
1 x 8 inputs 1 x 8 transistor outputs, true high	24 VDC	20...30 VDC	<u>AS-BDAP-220</u>	0.22
1 x 8 inputs 1 x 8 transistor outputs true high, expanded temperature range	24 VDC	20...30 VDC	<u>AS-BDAP-250</u>	0.22
1 x 8 inputs 1 x 4 relay outputs, true high, expanded temperature range	24 VDC	24...110 VDC or 24...250 VAC	<u>AS-BDAP-252</u>	0.19
1 x 8 inputs 1 x 4 relay outputs, true high, expanded temperature range	66...154 VDC	24...110 VDC or 24...250 VAC	<u>AS-BDAP-253</u>	0.24
1 x 8 inputs 1 x 8 transistor outputs, true high, expanded temperature range	24 VDC	20...30 VDC	<u>AS-BDAP-250C</u>	0.22
1 x 8 inputs 1 x 4 relay outputs, true high, expanded temperature range	24 VDC	24...110 VDC or 24...250 VAC	<u>AS-BDAP-252C</u>	0.19

Accessories

Description	Reference	Weight kg
Empty module for prewiring	<u>AS-BNUL-200</u>	
Empty module for potential supports	<u>AS-BNUL-202</u>	
Simulator module with 8 rocker switches	<u>SIM-011</u>	
Simulator module with 16 rocker switches	<u>SIM-216</u>	
Floppy disk box for the module racks	<u>AS-HBOX-201</u>	
Pulling tool for module screw terminal strip	<u>AS-OTBP-000</u>	
Socket module 12 + 2	<u>CON-212</u>	
Connector (pins 1-11)	<u>AG-0020-000</u>	
Connector (pins 12 - 22)	<u>AG-0021-000</u>	

Compact Automation Platform

Analog voltage and current input modules

Selection guide

Module type	Analog voltage and current input module	
		
Number of inputs	4 two-pole inputs	
Electrical isolation	No isolation	Optoelectrically isolated from the bus
Power supply, I/O bus external	< 50 mA None	60 mA typical 24 VDC, 70 mA typical, 100 mA max.
Input voltage ranges bipolar unipolar max. input voltage input impedance	Rated value: ± 10 VDC; max: ± 19.99 VDC -- ± 30 VDC 50 k Ω	± 1 VDC, ± 10 VDC 0 ... 1, 0 ... 10 VDC ± 30 VDC >1000 k Ω , >1M Ω
Input current ranges bipolar unipolar max. input current input impedance	Rated value: ± 20 mA; max: ± 39.95 mA -- ± 44 mA 50 Ω at ± 20 mA	± 20 mA 0 ... 20 mA 40 mA 50 Ω
A/D conversion resolution conversion time	12 bits + sign every input at 4096 in: < 80 ms at 50 Hz, < 66 ms at 60 Hz; every input at 2048 in : < 60 ms at 50 Hz, < 50 ms at 60 Hz	11 bits + sign < 10 ms per input
operating error limit	0.5% of the input value for 0 ... 60° C	0.4% of the input voltage for 0 ... 60° C 0.56% of the input value for 0 ... 60° C
Model	AS-BADU-205	AS-BADU-206
Page	45	

Analog voltage and current input module



2 two-pole inputs

Optoelectrically isolated channel-to-channel and from the bus

40 mA typical, 90 mA max.
24 VDC, 60 mA typical, 120 mA max.

± 5 VDC, ± 10 VDC
0 ... 5 VDC, 0 ... 10 VDC
 ± 30 VDC max.
>1000 k Ω , >1M Ω

± 20 mA
--
48 mA
250 Ω

15 bits + sign
< 270 for all inputs

0.56% of the input current for 0 ... 60° C
0.1% of the input value at 25° C

AS-BADU-210

Compact Automation Platform

Analog voltage and current input modules

Selection guide

Module type	Voltage, current, and temperature measurement modules		
			
Number of inputs	4 four-pole RTDs or 8 two-pole voltage sensors		
Electrical isolation	No isolation		
Railroad standard EN 50155	No		Yes
Voltage measurement bipolar	± 0.5 VDC linear, ± 0.99 VDC nonlinear -- >10 M Ω 12 bits + sign 0.4 % of input value ± 24 VDC	± 0.5 , ± 1 , ± 5 , ± 10 VDC 0...0.5, 0...1, 0...5, 0...10 VDC 1 Ω 0.003% range value, 15 bits + sign 5, 10V: $\pm 0.02\%$ of MFV, ± 0.11 MV 30 VDC, 24V supply ON, 20 OFF	± 0.5 VDC linear, ± 0.99 VDC nonlinear -- >10 M Ω -- -- --
unipolar input impedance resolution error at 0 ... 60° C max. over-voltage	--	--	--
Current measurement bipolar	--	± 10 mA (± 0.5 V), ± 20 mA (± 1 V)	--
unipolar	--	0...10 mA (0...0.5V), 0...20 mA (0...1V)	--
unipolar with offset	--	2...10 mA (0.1...0.5V), 4...20 mA (0.2...1V)	--
Temperature measurement (RTD) Pt100 range input impedance	-200 ... +800° C, resolution 0.25° C > 10 M Ω	-160 ... +160° C, resolution $\leq 0.02^\circ$ C > 1M Ω	-200 ... +800° C, resolution 0.25° C > 10 M Ω
Conformal coating	No		
Model	AS-BADU-204	AS-BADU-214	AS-BADU-254
Page	47		46



4 two-pole inputs

Optoelectrically isolated from the bus

± 1 VDC, ± 10 VDC
0 ... 1VDC, 0 ... 10 VDC
> 1 M Ω
--
--
--

± 20 mA
0 ... 20 mA
4 ... 20 mA

Yes

No

Yes

AS-BADU-254C

AS-BADU-256

AS-BADU-256C

Compact Automation Platform

Analog voltage and current input modules

Selection guide

Module type	8-channel electrically isolated Thermocouple and RTD modules	
		
Number and type of inputs	2 groups x 4 (1 input per group for RTD) = 8 (total 2 inputs for RTD)	
Isolation	Electrically isolated by group	
Power supply I/O bus current external source dissipation	< 80 mA (TTL loading) 20 ... 30 VDC 2.5 W	450 mA (max. 600 mA) None (current from I/O bus) 3.0 W
A/D conversion Resolution Integer with 12 bits Integer with 16 bits Signal integration time Conversion time	1 part in 4096 counts (Dec) 1 part in +32767 to -32768 counts (Dec) 2, 5, 33.3, 40, 50, 60, 100, and 200 ms (selectable by group) (integration x 1.5 ms) + 10 ms typical per channel	
RTD input signals PT100, 100W (385,392 α) voltage current cold junction sensor	Platinum: 3 or 2/4 wire cable, -200 ... 800° C (-328 ... 472° F) , 0.15 or greater ±50, 500, 2000, 5000, 10000 mV DC 4 ... 20 mA for 12 bits, ± 20 mA for 16 bits (IEEE 754) --	
Thermocouple input signals J K N T E R, S B	0 ... 760° C (32 ... 1400° F) 0 ... 1000° C (32 ... 1832° F) -- -100 ... 400° C (-212 ... 752° F) 0 ... 1000° C (32 ... 1832° F) 500 ... 1750° C (932 ... 3182° F) 500 ... 1800° C (932 ... 3272° F)	
Model	AS-BADU-211	AS-BADU-212
Page	48	

Electrically isolated Thermocouple and RTD modules



8 channels

Electrically isolated from the bus

100 mA (max. 150 mA)
None (current from I/O bus)
0.5 (max. 1) W

--
0 ... 65535 counts (Dec)
--
< 1500 ms for all 8 inputs

--
0 ... 72.8 (1.1 μ V/digit)
--
--

Ambient ... 1100° C (2012° F)
Ambient ... 1370° C (2498° F)
--
--
--
--
--

AS-BADU-216



4 four-pole RTDs, 8 thermocouple

Electrically isolated channel-to-channel, 400 VDC max

120 mA typical
5 V from I/O bus
--

--
--
--
--

IEC 751 PT100, 200, 500, 1000 = -200 ... +850° C (-328 ... +1562° F)
SAMA PT100, 200, 500, 1000 = -200 ... +650° C (-328 ... +1112° F)
DIN 43760 Ni100, 200, 500, 1000 = -60 ... +250° C (-76 ... +482° F)
AD592 = -25 ... +105° C (-13 ... +221° F)

-210 ... +1200° C (-346 ... +2192° F)
-270 ... +1372° C (-454 ... +2501° F)
-270 ... +1300° C (-454 ... +2372° F)
-270 ... +400° C (-454 ... +752° F)
-270 ... +1000° C (-454 ... +1832° F)
-50 ... +1768° C (-58 ... +3214° F)
+50 ... +1800° C (+122 ... +3272° F)

AS-BADU-257

49

Compact Automation Platform

Analog voltage and current output modules

Selection guide

Module type	Analog output module	
Output voltage bipolar unipolar	+ 10 (>5k Ohms) --	+ 1, + 5 + 10 0 ... 1, 0 ... 5, 0 ... 10
 		
Number of outputs	2 channels	2 x 2 channels
Electrical isolation	Optoelectronically isolated from bus	Channel (1, 2) to (3, 4) electrically isolated from bus
Power supply, I/O bus External power supply	60 mA max., 40 mA typical 24 VDC, 150 mA max	< 1 mA (TTL loading) 24 VDC, 250 mA
A/D conversion conversion time resolution overdrive	11 ms per channel 11 bits + sign approx. 2.4%	< 5 ms per channel 12 bits + sign --
Precision overall output error range deviation/temp.	$\pm 0.4\%$ of full-scale reading ± 0.6 for 0 ... 60° C --	$\pm 0.2\%$ of full-scale reading at 25° C -- Current: $\leq \pm 0.002$ full-scale; voltage $\leq \pm 0.005$ reading
Dielectric strength channel to channel channel to bus	700 VDC 700 VDC	Ch. 1, 2 to 3, 4: 500 VDC; 1 to 2 and 3 to 4: not isolated 500 VDC at 60 Hz
Conformal coating	No	
Module	AS-BDAU-202	AS-BDAU-204
Page	50	

Analog output module

± 10 (> 3.3 kOhm)
 --

+ 10 (>5 kOhm)
 --



8 channels

2 channels

Electrically isolated from bus

Optoelectrically isolated from bus

30 mA max., 20 mA typ.
 24 VDC, 120 mA max.

60 mA max., 40 mA typ.
 24 VDC, 150 mA max.

< 1 ms per channel
 11 bits + sign
 ± 2.4 % (max. ± 10.24 VDC)

25 ms per output
 11 bits + sign
 approx. 2.4%

± 0.1 for 0 ... 60° C
 --
 --

$\pm 0.4\%$ of full-scale reading
 ± 0.6 for 0 ... 60° C
 --

--
 700 VDC

700 VDC
 700 VDC

Yes

AS-BDAU-208

AS-BDAU-252

AS-BDAU-252C

51

Compact Automation Platform

Analog I/O Modules

General, Description

General

The Compact analog modules consist of input and output modules similar to the discrete modules. LEDs provide a quick look at the operating state of the unit and status of the inputs and outputs. The physical organization of the LEDs allows for quick diagnostics of all corresponding modules.

The Compact analog I/O modules are entirely software configurable. Any module can be configured in any slot. All configuration parameters for each individual I/O module appear on the configuration screen of the I/O configurator list. Once configured, the software program detects missing or defective modules and sends the appropriate signal to the PLC.

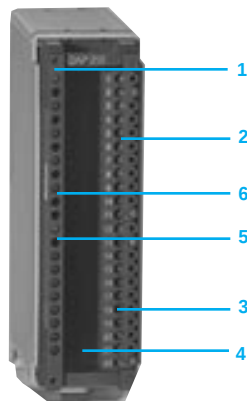
Modules are available for current, voltage, and resistance measurements. Special modules process resistance measurements with thermocouple types B, E, J, K, L, N, R, S, and T. Resistance measurement is supplemented with modules having remote thermal detection (RTD) channels for the most varied parameters. Two-wire, three-wire and four-wire RTD sensors are supported. Value ranges (unipolar, bipolar, and unipolar with offset) can be set in software to increase measurement and sensor accuracy.

The Compact platform offers both non-isolated and electrically isolated modules. Peripherals are connected by means of a screw terminal strip, which can be removed for installation and optionally protected against incorrect connection.

The type designation ADU is used for Analog-to-Digital Converters (inputs) and DAU for Digital-to-Analog Converters (outputs).

Modules with the type designation "AS-B-xxx-25x" have an expanded temperature range and are suitable for railroad applications. Electronic components with conformal coating are identified by the suffix "C" in the type designation.

Description



A typical Compact analog module is comprised as follows:

- 1 Operating status LED of the module
- 2 Terminal block 1
- 3 Terminal block 2
- 4 Cable locking barrier
- 5 Overcurrent display of the outputs
- 6 Input/output status indicator lights (LEDs):
 - 1, green : bus connection and voltage present
 - 2 and 13, yellow, green : output current exceeded
 - 11 and 22 : no LED
 - 3 .. 10 and 14 ... 21, red : inputs or outputs active

Compact Automation Platform

Analog voltage and current input modules

Characteristics

Module type		ADU 205	ADU 206	ADU 210
Number of inputs		4 two-pole inputs		2 two-pole inputs
Electrical isolation		No isolation	Optoelectrically isolated from the bus	Optoelectrically isolated channel-to-channel and from the bus
LEDs		1 green	2 green	
Addresses	Registers 3x/4x	4 in/0 out	5 in/1 out	4 in/0 out
Input voltage ranges	Bipolar	VDC	Rated value: ± 10 , max: ± 19.99	
	Unipolar	VDC	± 1 , ± 10 0 ... 1, 0 ... 10	
	Unipolar with offset	VDC	0.2 ... 1, 2 ... 10	
	Max. input voltage	VDC	max. ± 30	
	Input impedance	k Ω	>1000 >1M Ω	
Input current ranges	Bipolar	mA	Rated value: ± 20 , max: ± 39.95	
	Unipolar	mA	± 20 0 ... 20	
	Unipolar with offset	mA	4 ... 20	
	Max. input current	mA	40	
	Input impedance	Ω	50 at ± 20 mA	
A/D conversion	Resolution	Bits	12 + sign	
	Conversion time	ms	every input at 4096 in: <80 at 50 Hz, <66 at 60 Hz; every input at 2048 in: <60 at 50 Hz, <50 at 60 Hz	
	Operating error limit	%	0.5 of the input value for 0 ... 60 °C	
			0.4 of the input voltage for 0 ... 60 °C, 0.56 of the input value for 0 ... 60 °C	
Common-mode interference		dB	>86	
Dielectric Strength			>60	
	Channel to channel	VDC	no isolation	
	Channel to bus	VDC	500	
Power supply			>105	
	I/O bus current	mA	<50	
	external source		typ. 60	
Power dissipation		W	24 VDC, typ. 70 mA, max. 100 mA	
External fuses			24 VDC, typ. 60 mA, max. 120 mA	
Operating temperature		°C (F)	0.2	
Weight		kg(lb)	0.22 (0.5)	
Compatible panel software			2	
	Concept		1 x 0.16	
	ProWORX NxT		0.33 (0.725)	
			0.32 (0.7)	
			3 max., 2 typical	
			receives current from the I/O bus	
			0 ... 60 (32 ... 140)	
			2.1 or higher	
			2.2 or higher	

Compact Automation Platform

Analog voltage and current input modules

Characteristics

Module type			ADU 254	ADU 254C	ADU 256	ADU 256C
Number of inputs			4 four-pole RTDs or 8 two-pole voltage sensors		4 two-pole inputs	
Electrical isolation			No isolation		Optoelectrically isolated from bus	
LEDs			1 green		2 green	
Addresses	Registers 3x/4x		4 in/0 out		5 in/1 out	
Voltage measurement						
Range	Bipolar	VDC	+ 0.5 linear, + 0.99 nonlinear		+ 1, + 10	
	Unipolar	VDC			0 ... 1, 0 ... 10	
	Unipolar with offset	VDC			0.2 ... 1, 2 ... 10	
	Input impedance max.	MΩ	>10		>1	
	Input voltage	VDC	+ 24		+ 30	
Current measurement						
Range	Bipolar	mA			+ 20	
	Unipolar	mA			0 ... 20	
	Unipolar with offset	mA			4 ... 20	
	Input impedance	W			50	
	Max. input current	mA			40	
Temperature measurement (RTD)						
Range	Pt 100	°C	-200 ... +800, Resolution 0.25 °C			
Input impedance		MΩ	>10			
A/D conversion						
	Resolution	ms	12 bits + sign		11 bits + sign	
	Conversion time per Input	ms	<80 at 50 Hz, <66.6 at 60 Hz;		<10 for 4 inputs	
	Operating error - limit		0.4 % of input value for 0 ... 60 °C		0.4 % of input voltage at 0 ... 60 °C	
					0.56 % of input current for 0 ... 60 °C	
Common-mode interference		dB	≥40		>60	
Dielectric Strength						
	Channel to channel	VDC	not isolated			
	Channel to bus	VDC	not isolated		500	
Power supply						
	I/O bus current	mA	<50		typ. 60	
	external source		current via I/O bus		24 VDC, typ. 70 mA, max. 100 mA	
Power dissipation typical		W	0.15		2	
Operating temperature		°C (F)	-40 ... 70 (-40 ... 158)		-40 ... 70 (-40 ... 158)	
Conformal coating			No	Yes	No	Yes
Suitable for railroad applications			Yes			
External fuses			current via I/O bus		1 x 0.16	
Weight		kg(lb)	0.22 (0.5)		0.33 (0.725)	
Compatible panel software						
	Concept		2.1 or higher			
	ProWORX NxT		2.0 or higher			

Compact Automation Platform

Analog voltage and current input modules

Characteristics

Module type		ADU 204	ADU 214
Number of inputs		4 four-pole RTDs or 8 two-pole voltage sensors	
Electrical isolation		No isolation	
LEDs		1 green	2 green
Addresses Registers 3x/4x		4 in/0 out	3 in/2 out
Voltage measurement			
Range	Bipolar	VDC + 0.5 linear, + 0.99 nonlinear	+ 0.5, +1, +5, +10
	Unipolar	VDC	0 ... 0.5, 0 ... 1, 0 ... 5, 0 ... 10
	Unipolar with offset	VDC	0.1 ... 0.5, 0.2 ... 1, 1 ... 5, 2 ... 10
	Input impedance	MΩ	>10
	Resolution	12 bits+ sign	ca. 0.003 % of range final value, 15 bits+ sign
	Error at 0 ... 60 °C	0.4 % of input value	for range 5, 10V: +0.02% of MFV, + 0.11% of MV
	Max. over voltage	VDC + 24	+30 (24 V supply ON), +20 (24 V supply OFF)
Current measurement			
Range with 50 Ω, TC 25 ppm	Bipolar	mA	+ 10 (+ 0.5 V), + 20 (+ 1 V)
	Unipolar	mA	0 ... 10 (0 ... 0.5 V), 0 ... 20 (0 ... 1 V)
	Unipolar with offset	mA	2 ... 10 (0.1 ... 0.5 V), 4 ... 20 (0.2 ... 1 V)
Range with 100 Ω, TC 25 ppm	Bipolar	mA	+ 5 (+ 0.5 V), + 10 (+ 1 V)
	Unipolar	mA	0 ... 5 (0 ... 0.5 V), 0 ... 10 (0 ... 1 V)
	Unipolar with offset	mA	1 ... 5 (0.1 ... 0.5 V), 2 ... 10 (0.2 ... 1 V)
	Resolution		approx. 0.003 % of range final value, 15 bits + sign
	Critical values		See voltage range, 50 Ω 0.1 W max. 40 mA const.
Temperature measurement (RTD)			
Range	Pt 100, 200, 500, 1000 °C	only Pt 100: -200 ... +800, Resolution 0.25 °C	-160 ... +160, Resolution ≤0.02 °C, -200 ... +320, Resolution ≤0.04 °C, -200 ... +640, Resolution ≤0.08 °C
	Ni 100, 200, 500, 1000 °C		-60 ... +160, Resolution <0.25 °C
	Input impedance	MΩ	>10
	Resolution		12 bits + sign
	Error		<0.012 % of range final value, ≥ 13 bits + sign depending on RTD type & range: 0.3...1.6°C of MFV
Temperature measurement (4-wire)			
	Measuring range	Ω	0 ... 100, 0 ... 200, 0 ... 500, 0 ... 1000, 0 ... 2000
	Input impedance	MΩ	>1
	Resolution		<0.005 % of range final value, ≥ 14 Bit
	Error at 25 °C		for measuring range 100...2000 Ω : ± 0.1 % of MFV
	Error for 0 ... 60 °C		for measuring range 100 Ω : ± 0.30 % of MFV for measuring range 200 Ω : ± 0.25 % of MFV for measuring range 500...2000 Ω : ± 0.20 % of MFV
	continuous current		approx. 1.5 mA for measuring range 0 ... 2000 Ω
Input converter			
	Conversion time	ms	<80 at 50 Hz, <66.6 at 60 Hz; per channel
	Delay time for HF	ms	0.2
	Integration time	ms	20 at 50 Hz, 16.66 at 60 Hz, adjustable
Differential-mode interference		dB	≥ 40
Power supply			
	I/O bus current	mA	< 50
	external source		supplied via the I/O bus
Power dissipation typical		W	0.15
Operating temperature		°C (F)	0 ... 60 (32 ... 140)
Weight		kg	0.22 (0.5 lb)
Compatible panel software			
	Concept		2.1 or higher
	ProWORX NxT		2.0 or higher

Compact Automation Platform

Analog voltage and current input modules

Characteristics

Module type		ADU 211	ADU 212	ADU 216
Number of inputs		2 groups x (4 (1 for RTD)) = 8 (2 for RTD)		8 channels
Electrical isolation		electrically isolated by group		electrically isolated from the bus
LEDs		1 green, 1 yellow		1 (green or red), 1 green
Addresses Registers 3x/4x		3 in/3 out		5 in/1 out
Input signals				
Thermocouple J		°C (F) 0 ... 760 (32 ... 1400)		Ambient... 2012
	K	°C (F) 0 ... 1000 (32 ... 1832)		Ambient... 2498
	T	°C (F) -100 ... 400 (-212 ... 752)		
	E	°C (F) 0 ... 1000 (32 ... 1832)		
	R, S	°C (F) 500 ... 1750 (932 ... 3182)		
	B	°C (F) +500 ... 1800 (932 ... 3272)		
RTD	PT100, 100 W (385,392 α)	°C (F) Platinum: 3 or 2/4 wire cable, -200...800, 0.15 or greater (-328... 472)		
	Voltage	mV ± 50, 500, 2000, 5000, 10000 DC		0 ... 72.8 (1.1 µV/digit)
	Current	mA 4 ... 20 for 12 bits, ± 20 for 16 bits (IEEE 754)		
Input impedance		MΩ	typical 10	<500 for thermocouples and PTC sensor
Noise suppression				
Common-mode interference		dB	68 at 50 or 60 Hz	55 at 50 or 60 Hz (1 kHz minimum)
Absolute precision				
Thermocouple J		°C (F) + 1.5 (2.7)		
	K	°C (F) + 2.0 (3.6)		
	T	°C (F) + 3.0 (5.4)		
	E	°C (F) + 1.2 (2.2)		
	R, S	°C (F) + 7.0 (12.5)		
	B	°C (F) + 15.0 (27.0)		
RTD	of range, final value	% 385 alpha: ± 0.40 typ., ± 1.0 max.		
	of range, final value	% 392 alpha: ± 0.40		
	Voltage	50 mVDC: ± 0.40 % of full scale reading 0.5, 2, 5 & 10 VDC: ± 0.11 % of full scale reading		
	Current	% 4 to 20 mA, ± 20 mA: ± 0.20 % of full scale reading		
A/D conversion				
Resolution	Integer with 12 bits	1 part in 4096 counts (Dec)		
	Integer with 16 bits	1 part in +32767 to -32768 counts (Dec)		0 ... 65535 counts (Dec)
	Signal integration time	ms	2, 5, 33.3, 40, 50, 60, 100, and 200 (selectable by group)	
	Conversion time	ms	(Integration x 1.5) + 10 ms typical per channel	<1500 for all 8 inputs
	Error limit	%		0.1 of input value ± 0.15 °C at 25 °C ± 0.3 of input value ± 0.75 °C
Dielectric Strength				
Channel to bus		VDC	500	+ 300
Channel to channel		VDC	+ 30 in groups	not isolated
Power supply				
I/O bus current	external source	mA	<80 (TTL loading)	450 (max. 600 mA)
		VDC	20 ... 30	No (current from I/O bus)
Power dissipation typical		W	2.5	3.0
External fuses		A	2 x 0.5 A	0.5 (max. 1)
Operating temperature		°C (F)	0 ... 60 (32 ... 140)	
Weight		kg	0.36 (0.80 lb)	0.33 (0.725 lb)
Compatible panel software				
Concept		2.22SR2 or higher		2.1 or higher
ProWORX NxT		2.0 or higher		

Compact Automation Platform

Analog voltage and current input modules

Characteristics

Module type		ADU 257
Number of inputs		4 four-pole RTDs, 8 thermocouple
Electrical isolation		electrically isolated channel-to-channel, 400 VDC max
LEDs		1 red, 12 green
Addresses Registers 3x/4x		20 in /0 out
Input signals		
Thermocouples J	°C (F)	-210 ... +1200 (-346 ... +2192)
K	°C (F)	-270 ... +1372 (-454 ... +2501)
N	°C (F)	-270 ... +1300 (-454 ... +2372)
T	°C (F)	-270 ... +400 (-454 ... +752)
E	°C (F)	-270 ... +1000 (-454 ... +1832)
R, S	°C (F)	-50 ... +1768 (-58 ... 3214)
RTD	°C (F)	+50 ... +1800 (+122 ... +3272)
IEC 751 PT100, 200, 500, 1000	°C (F)	-200 ... +850 (-328 ... +1562)
SAMA PT100, 200, 500, 1000	°C (F)	-200 ... +650 (-328 ... +1112)
DIN 43760 Ni100, 200, 500, 1000	°C (F)	-60 ... +250 (-76 ... +482)
Cold Junction Sensor AD592	°C (F)	-25 ... +105 (-13 ... +221)
Overload protection	VDC	+ 30 continuous
Measuring range	Ω	0 ... 4000
Input resolutions supported		12 bit, 16 bit, 32 bit, 15 bit plus sign
Input characteristics		
Rejection	dB	> 110
Conversion time	ms	800 maximum
Dielectric Strength		
Channel to channel	VDC	400 maximum
Channel to bus	VAC	500
Power supply		
I/O bus current	mA	120 typical
external source	V	5 from I/O bus
Agency approvals		ADU 257, VDE 0160, UL 508, CSA 22.2 No. 142, and European Directive EMC 89/336/EEC
Operating temperature	°C (F)	-40 ... +70 (-40 ... 158)
Weight	kg(lb)	0.32 (0.71)
Compatible panel software		
Concept		2.2 or higher
ProWORX NxT		2.0 or higher

Compact Automation Platform

Analog voltage and current output modules

Characteristics

Module type		DAU 202	DAU 204	DAU 208
Number of outputs		2 channels	2 x 2 channels	8 channels
Electrical isolation		optoelectrically isolated from bus	channel (1, 2) to (3, 4) electrically isolated from bus	electrically isolated from bus
LEDs		2 green	5 green, 4 red, 1 yellow	2 green
Addresses	Registers 3x/4x	0 in/2 out	1 in/6 out	0 in/8 out
Operating voltage	Bipolar	VDC ±10 (>5 kOhm)	± 1, ± 5, ± 10	± 10 (> 3.3 kOhm)
	Unipolar	VDC -	0 ... 1, 0 ... 5, 0 ... 10	-
	Unipolar with offset	VDC -	-	-
Operating current	Bipolar	mA ± 20 (<500 Ohm)	-	-
	Unipolar	mA -	0 ... 20	-
	Unipolar with offset	mA -	4 ... 20	-
A/D conversion	Conversion time	ms 11 per channel	<5 per channel	<1 per channel
	Resolution	11 bits + sign	12 bits + sign	11 bits + sign
	Overdrive	% approx. 2.4	-	± 2.4 (max. ± 10.24 VDC)
Precision	Overall	% ± 0.4 of full scale reading	± 0.2 of full scale reading at 25°C	± 0.1 for 0 ... 60 °C
	Output error range	+ 0.6 for 0 ... 60 °C	-	-
	Deviation/temp.	%/°C -	Current: <± 0.002 full-scale Voltage: <± 0.005 reading	-
Dielectric Strength	Channel to channel	VDC 700	Ch. 1, 2 to 3, 4: 500 V; 1 to 2 and 3 to 4: not isolated	-
	Channel to bus	VDC 700	500 at 60 Hz	700
Power supply	I/O bus current	mA max. 60, typ. 40	<1 (TTL loading)	max. 30, typ. 20
	external source	24 VDC, max. 150 mA	24 VDC, 250 mA	24 VDC, max. 120 mA
Power dissipation typical		W 2	-	3
External fuses		A 1 x 0.16	1 x 0.5	1 x 0.16
Operating temperature		°C (F) 0 ... 60 (32 ... 140)		
Weight		kg(lb) 0.3 (0.6)	0.453 (1.0)	0.35 (0.77)
Compatible panel software				
	Concept	2.1 or higher		
	ProWORX NxT	2.0 or higher		

Compact Automation Platform

Analog voltage and current output modules

Characteristics

Module type		DAU 252	DAU 252C
Number of outputs		2 channels	
Electrical isolation		Optoelectrically isolated from the bus	
LEDs		2 green	
Addresses Registers 3x/4x		0 in/2 out	
Operating voltage	Bipolar	VDC	+ 10 (>5 kOhm)
	Unipolar	VDC	
	Unipolar with offset	VDC	
Operating current	Bipolar	mA	+ 20 (<500 Ohm)
	Unipolar	mA	
	Unipolar with offset	mA	
A/D conversion	Conversion time	ms	25 per output
	Resolution		11 bits + sign
	Overdrive	%	approx. 2.4
Precision	Overall	%	+ 0.4 of full scale reading
	Output error range		+ 0.6 for 0 ... 60 °C
Dielectric strength	channel to channel	VDC	700
	Channel to bus	VDC	700
Power supply	I/O bus current	mA	max. 60, typ. 40
	external source		24 VDC, max. 150 mA
Power dissipation typical		W	2
Conformal coating		No	Yes
Suitable for railroad applications		Yes	
External fuses		A	1 x 0.16
Operating temperature		°C (F)	-40 ... +70 (-40 ... 158)
Weight		kg	0.3 (0.6 lb)
Compatible panel software			
Concept			2.1 or higher
ProWORX NxT			2.0 or higher

Compact Automation Platform

Analog I/O modules

References

Analog input modules

Description	Input Values	Reference (1)	Weight kg
4 channels, 11 bits + sign	$\pm 10\text{ V}$ or $\pm 20\text{ mA}$	AS-BADU-205	0.22
4 channels, 11 bits + sign, electrically isolated from bus	$\pm 10\text{ V}$ or $\pm 20\text{ mA}$	AS-BADU-206	0.33
4 channels, 14 bits + sign, electrically isolated from bus	$\pm 5\text{ V}$ or $\pm 10\text{ V}$ or $\pm 20\text{ mA}$	AS-BADU-210	0.32
8 channels, 12 bits, thermocouple Types J, K, E, R, S, B, T, electrically isolated in groups	4 ... 20 mA	AS-BADU-211	0.36
8 channels, 12 bits, thermocouple Types J, K, E, R, S, B, T, electrically isolated, in groups no external supply	4 ... 20 mA	AS-BADU-212	0.36
4/8 channels, 16 bits, thermocouple Types J, K, electrically isolated from bus		AS-BADU-216	0.33
4 channels, Pt100, 12 bits + sign	$\pm 500\text{ mV}$	AS-BADU-204	0.22
4/8 channels, 15 bits, Pt100 ... 1000, Ni100 ... 1000		AS-BADU-214	0.22
4 channels, Pt100, 12 bits + sign, expanded temperature range	$\pm 500\text{ mV}$	AS-BADU-254	0.22
4 channels, Pt100, 12 bits + sign, expanded temperature range,	$\pm 500\text{ mV}$	AS-BADU-254C	0.22
4 channels, 11 bits + sign, electrically isolated from bus, expanded temperature range	$\pm 10\text{ V}$ or $\pm 20\text{ mA}$	AS-BADU-256	0.33
4 channels, 11 bits + sign, electrically isolated from bus, expanded temperature range	$\pm 10\text{ V}$ or $\pm 20\text{ mA}$	AS-BADU-256C	0.33
4 pole RTD, 8 thermocouple Types J, K, E, R, S, B, T, K, and CJC, expanded temperature range		AS-BADU-257	0.32

(1) The letter "C" following the reference number indicates the product is conformally coated.

Compact Automation Platform

Analog I/O modules

References

Analog output modules

Description	Output voltages	Reference	Weight kg
2 channels, 11 bits + sign, electrically isolated	$\pm 10\text{ V}$ or $\pm 20\text{ mA}$	AS-BDAU-202	0.3
4 channels, 11 bits + sign or 12 bits	$\pm 1, 5$ or 10 V , $\pm 20\text{ mA}$ or $4\dots 20\text{ mA}$	AS-BDAU-204	0.45
8 channels, 11 bits + sign, electrically isolated from bus	$\pm 10\text{ V}$	AS-BDAU-208	0.35
2 channels, 11 bits + sign, electrically isolated from bus, expanded temperature range	$\pm 10\text{ V}$ or $\pm 20\text{ mA}$	AS-BDAU-252	0.3
2 channels, 11 bits + sign, electrically isolated from bus, expanded temperature range	$\pm 10\text{ V}$ or $\pm 20\text{ mA}$	AS-BDAU-252C	0.3

Accessories

Description	Catalog Number	Weight kg
Empty module for prewiring	AS-BNUL-200	
Empty module for potential supports	AS-BNUL-202	
Simulator module, analog with 2 potentiometers, 1 indicator	SIM-203	
Floppy disk box for the module racks	AS-HBOX-201	
Pulling tool for module screw terminal strip	AS-OTBP-000	
Socket module 12 + 2	CON-212	

Compact Automation Platform

Intelligent and specialty modules

Selection guide

Module type	Counter and frequency modules		
			
Number of inputs	4		
Electrical isolation	30 VDC channel-to-bus		
Signal voltage range	0.25 ... 36 VAC	5 VDC (± 0.5 VDC)	
Accuracy	$\pm 0.1\%$ of full scale, ± 1 count	± 1 count over full range	
Frequency inputs Counter mode Frequency mode pulse width overspeed	0 ... 10 kHz 0 ... 10 kHz 0 ... 10 kHz 20 μ minimum 12.5 kHz detection		
Power required Internal External, regulated or unregulated External source, typical	275 mA at 5 VDC maximum from the backplane 20 ... 30 VDC 70 mA at 24 VDC		
Model	AS-BVRC-200	AS-BCTR-205	
Page	63		

Counter and frequency modules



12 VDC (± 1.2 VDC)

24 VDC (± 2.4 VDC)

AS-BCTR-212

AS-BCTR-224

Compact Automation Platform

Intelligent and specialty modules

Selection guide

Module type		Sensor signal motion control module
		
Module topology discrete inputs discrete outputs analog outputs	➤	5 1 1
Power supply from I/O bus	➤	5 VDC at 300 mA
Digital output drive capability Digital input impedance	➤	150 mA 3.5 kΩ (ON at 15 VDC minimum, OFF at 5 VDC maximum)
Analog drive capability Analog resolution Analog accuracy	➤	10 VDC, 3 mA 12 bits ± 10 mVDC without offsets, + 50 mVDC with offsets
Drive interface fault input enable relay DC motor signal	➤	True high Form C contacts, 30 VDC at 0.5 A resistive ± 10 VDC at 3 mA differential
Communications interface baud rate 5 VDC supply	➤	1 RS-232 Modbus serial port 3000 ... 9600 (9600 default) 75 mA maximum
Encoder feedback differential signal input impedance encoder frequency resolution power from CPU	➤	2 V minimum 145 Ω nominal 500 Hz square wave maximum, 350 ns minimum time between edges 4 times encoder line count 5 V nominal, 4.4 V minimum, 75 mA maximum
Resolver feedback reference drive sine/cosine inputs repeatability resolution system accuracy	➤	-- -- -- -- --
Model	➤	AS-BMOT-201
Page	➤	64

Resolver signal motion control module



5 VDC at 600 mA

3.75 ± 0.05 kHz; 2 ± 1.0 Vrms4
7 k Ω impedance
 ± 3 minutes of arc
12 bits to 6000 RPM; 14 bits to 1350 RPM
16 bits to 300 RPM + 115 minutes of arc maximum

AS-BMOT-202

Compact Automation Platform

Intelligent and specialty modules

Selection guide

Module type	Frequency input module
	
Power supply external 24 VDC counter in/outputs external 5 VDC counter inputs internal from I/O bus	24 VDC, 1.1 A approx. 5 VDC, 20 mA 5 V, 100 mA max., 75 mA typical
Operating temperature	0 ... 60° C (32 ... 140° F)
Frequency inputs number of inputs min pulse width counting range counting frequency 5 V TTL signal level 1 signal 0 signal input current 24 V signal level 1 signal 0 signal input current Accuracy (time = 5) at 5 Hz at 25 Hz at 100 Hz at 1 kHz	4 for input pulses with 5 VDC (TTL) or 24 VDC 0.35 ms 0 ... 32,767 1 kHz max (input 1 with 5V pulses, max 50 kHz) > + 2.3 V 0 ... + 1 V < 2.5 mA at 0 v (current sink) + 12 ... + 30 - 2 ... + 5 V < 6 at 30 V (current source) 0.5% of operating mode < 20 Hz 4% of operating mode < 1 kHz 1% of operating mode < 1 kHz 0.1% of operating mode < 1 kHz
Semiconductor outputs number of outputs working voltage U 1 signal output level 0 signal output level load current / output operating delay switching cycles	4 Us = 24 VDC U = Us - 0 ... 2 V 0 ... +2 V, < 1 mA 500 mA max (current source) < 1 ms 1000/h (0.28/s) with inductive load and 100/s with ohmic load
Process inputs number of inputs type of networking rated signal value 1 signal level 0 signal level input current input delay	4 Potential free (optical coupler) to the I/O bus + 24 V + 12 ... + 30 V - 2 ... + 5 V 7 mA at 24 V, 8.5 mA at 30 V 4 ms
Meets railroad standard EN 50155	No
Model	AS-BFRQ-204
Page	65

Frequency input module



- 40 ... +70° C (- 104 ... +158° F)

Yes

AS-BFRQ-254

Compact Automation Platform

Intelligent and specialty modules

Selection guide

Module type	Counter / positioner module
	
Module topology operating mode counting inputs enable inputs relay outputs	Switch-selectable counter / positioner -- -- 2
Electrical isolation	No isolation
Power supply external at 24 VDC external at 5 VDC internal from I/O bus	24 VDC, 30 mA maximum for all operating modes -- 5 V, 100 mA maximum
Max contact current working voltage range load at 230 VAC load at 24 VDC wetting current contact delay time	24 ... 60 VDC, 24 ... 250 VAC 2 A continuous resistive; 4 instantaneous resistive 2 A continuous resistive; 4 instantaneous resistive 5 mA approx. 10 ms
Max wire length 24 V pulse generator 5 V pulse generator Resolution Accuracy	20 m (65 ft) 50 m (163 ft) 12 bits ± 10 mVDC without offsets, ± 50 mVDC with offsets
Relay contact service life	20,000,000 mechanical switching cycles
Counter input signal level at 5 V characteristics On signal Off signal input current	-- -- -- --
Counter input signal level at 24 V characteristics On signal Off signal input current min 0 pulse width mark-space ratio counting range counting frequency	-- -- -- -- -- -- -- --
Semiconductor outputs number of outputs working voltage V	-- --
Model	AS-BZAE-201
Page	66

High-speed counter module



High-speed counter

4

4

4 24 VDC outputs

Optocoupler on each field point

Count inputs 25 mA max.; gate inputs 30 mA max.; outputs 1 A max.

Count inputs 10 mA

5 VDC, 100 mA maximum, 75 mA typical

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For input pulses of 5 VDC (TTL) or 24 VDC

≥ 2.3 V

0 ... 1 V

≤ 2.5 mA each at 0 V (current sink)

For input pulses of 5 VDC (TTL) or 24 VDC

12 ... 30 V

- 2 ... + 5 V

< 6 mA each at 30 V (current source)

0.35 ms

65 / 35% maximum allowable

0 ... 32,767 or - 32,768 ... 0 ... +32,767, depending on operating mode

1 kHz maximum, Input 1 with 5 V pulses, 10 kHz maximum

4

V_S = 24 VDC

AS-BZAE-204

Compact Automation Platform

Intelligent and Specialty Modules

General

General

Functions such as counting work pieces, determining rotational speed and frequency, and positioning a moving unit require counting, motion, and positional capabilities that can no longer be implemented using standard digital inputs with a counting frequency below 100 Hz. For this reason, the Compact platform (using Concept software) has three modules with counting frequencies up to 500 kHz, along with specialized motion control modules.

Counting and positioning modules

The AS-BZAE-201 module is a high-speed counter used for positioning and position detection. Its counting range spans 7 decades (23 bits). The counting frequency to be processed is a function of the signal level: it may be a maximum of 500 kHz at 5 VDC or a maximum of 50 kHz at 24 VDC. The modes "Counting" and Position Detection" are set on the module. An additional 24 VDC enabled input makes it possible to implement counting gates or reference cams. Two relay outputs are also available. The module is supplied with 5 VDC power internally via the backplane bus and externally with 24 VDC or 5 VDC for high-speed counting operations.

The AS-BVRC-200 and AS-BCTR-205/212/224 series of counter input modules allow direct connection of up to four high-speed pulses or four VRC (turbine flow meters, positive displacement meters, AC waveforms, etc.) to a single module. The module is configurable with K and M factor information to perform the American Gas Association's Report 7 calculation. The VRC/CTR modules operate identically; each supports a different voltage level:

- AS-BVRC-200 - Variable reluctance coil (turbine meter) inputs (.025 to 36 VAC peak typical)
- AS-BCTR-205 - 5 VDC
- AS-BCTR-212 - 12 VDC
- AS-BCTR-224 - 24 VDC

The VRC/CTR series are replacements for the AS-BVIC series of modules.

Measuring frequency and rotational speed

The AS-BFRQ-204 and AS-BFRQ-254 modules are used to measure frequency and rotational speed. They have four frequency inputs for counting pulse voltages at 5 VDC (TTL) or 24 VDC and can be inserted into any rack slot. The inputs can count frequencies up to 1 kHz or 1 x 50 kHz. In addition, there are four permanently assigned 24 VDC semiconductor outputs (0.5A). These outputs monitor limit-related faults (short-circuit, overload protection, shutdown with storage, group display of overload/short circuit shut down, centralized short circuit alarm and hardware reset to acknowledge the overload). An additional four 24 VDC processed inputs are available.

The module is supplied with 5 VDC power internally via the backplane bus and externally with 24 VDC for the 24 VDC counting inputs, the outputs, and the frequency inputs. In addition, 5 VDC can be connected externally for 5 VDC input pulses. The AS-BFRQ-254 module differs only from the AS-BFRQ-204 in that it is suitable for railroad applications and supports an extended temperature range.

Single-axis motion control

The AS-BMOT-201 and AS-BMOT-202 modules are designed specifically for single-axis motor controllers (positioners). The AS-BMOT-201 is a single-width module, which controls brushless DC motors. It operates by processing incremental travel sensor signals, which contain position information. The fourteen LEDs provide information on the status of the process and of the module. The AS-BMOT-202 is a double-width module, which determines the position and speed of the axis to be controlled using resolver signals. Both modules are supported with an additional software driver. All connections and displays are readily accessible on the front panel of the modules.

Compact Automation Platform

Intelligent and Specialty Modules

Counter and frequency modules characteristics

Module type		VRC 200	CTR 205	CTR 212	CTR 224
Number of inputs		4			
Electrical isolation		VDC	30		
LEDs		1 green, 1 yellow, 4 red			
Addresses Registers 3x/4x		3 in/ 3 out			
Supply voltage		VDC	24, ± 2.4	-	
Signal voltage range		V	0.25 ... 36 AC	5 DC, ± 0.5 DC	12 DC, ± 1.2 DC 24 DC, ± 2.4 DC
Frequency					
	Inputs	kHz	0 ... 10		
	Counter mode	kHz	0 ... 10		
	Frequency mode	kHz	0 ... 10		
	Pulse width	µs	20 minimum		
	Overspeed		12.5 kHz detection		
Accuracy			± 0.1% of full scale, +1count	+ 1 count over full range	
Power required					
	internal		275 mA at 5 VDC max from the backplane		
	external, regulated or unregulated	VDC	20 ... 30		
	external source typical		70 mA at 24 VDC		
Operating temperature		°C (F)	-0 ... 60 (32 ... 140)		
Agency approvals			VDE 0160, UL 508, CSA 22.2 No. 142, FM class 1, Div 2 and European Directive EMC 89/336/EEC		
Weight		kg(lb)	0.30 (0.7)		
Compatible panel software					
	Concept		2.2SR2 or higher		
	ProWORX NxT		2.0 or higher		

Compact Automation Platform

Intelligent and Specialty Modules

Motion module characteristics

Module type		MOT 201	MOT 202
Module topology			
	Discrete inputs	5	
	Discrete outputs	1	
	Analog outputs	1	
Electrical isolation		Digital inputs optoelectrically isolated to 500 VDC	
Power supply from I/O bus		5 VDC at 300 mA	5 VDC at 600 mA
LEDs		3 green, 4 yellow, 7 red	3 green, 4 yellow, 8 red
Addresses	Registers 3x/4x	6 in / 6 out	
Inputs / Outputs			
Digital	Output drive capability	mA	150
	Input impedance	kΩ	3.5 (On at 15 VDC min, Off at 5 VDC max)
Analog	Drive capability		10 VDC, 3 mA
	Resolution		12 bits
	Accuracy	mVDC	± 10 without offsets, ± 50 with offsets
Drive interface			
	Fault input	True high	
	Enable relay	Form C contacts, 30 VDC at 0.5 A resistive	
	DC motor signal	+ 10 VDC at 3mA differential	
Communications			
	Interface	1 RS-232 Modbus serial port	
	Baud rate	300 ... 9600 (9600 default)	
	5 VDC supply	mA	75 maximum
Encoder feedback			
	Differential signal	2 V minimum	
	Input impedance	Ω	145 nominal
	Encoder frequency	500 kHz square wave max, 350 ns minimum time between edges	
	Resolution	4 times encoder line count	
	Power from CPU	V	5 nominal, 4.4 minimum, 75 mA maximum
Resolver feedback			
	Reference drive	-	3.75 ± 0.05 kHz; 2 ± 1.0 Vrms
	Sine/cosine inputs	kΩ	7 impedance
	Repeatability	-	± 3 min of arc
	Resolution	-	12 bits to 6000 RPM; 14 bits to 1350 RPM
	System accuracy	-	16 bits to 300 RPM ± 115 min of arc maximum
Temperature			
	Operating	°C (F)	0 ... 60 (32 ... 140)
	Storage	°C (F)	-40 ... +85 (-40 ... 185)
Humidity		°C	93% relative humidity at 60, noncondensing
Weight		kg(lb)	0.36 (0.8) 0.61 (1.35)
Agency approvals		VDE 0160, UL508, CSA C22.2 No. 142 , and European Directive EMC 89/336/EEC (MOT 201 only)	
Compatible panel software			
	Concept	2.1 or higher	
	ProWORX NxT	2.0 or higher	

Compact Automation Platform

Intelligent and Specialty Modules

Frequency input modules characteristics

Module type		FRQ 204	FRQ 254
Power supply	External	24V counter in/outputs	VDC 24, 1.1 A approx.
		5 V counter inputs	VDC 5, 20 mA
	Internal	from I/O bus	5 V, max. 100 mA, typical 75 mA
Power loss		W	1.3 typical
LEDs			2 green, 1 yellow, 8 red
Addresses		Registers 3x/4x	5 in / 0 out
Frequency inputs			
	Number of inputs		4 for input pulses with 5 VDC (TTL) or 24 VDC
	Minimum pulse width	ms	0.35
	Counting range		0 ... 32 767
	Counting frequency	kHz	1 max. (Input 1 with 5 V pulses, max 50 kHz)
Signal level at 5 V TTL	1 signal	V	> +2.3
	0 signal	V	0 ... +1
	Input current	mA	< 2.5 at 0 V (current sink)
Signal level at 24 V	1 signal	V	+12 ... +30
	0 signal	V	-2 ... +5
	Input current	mA	< 6 at 30 V (current source)
Accuracy (time = 5)	at 5 Hz		0.5% of operating mode < 20 Hz
	at 20 Hz		2% of operating mode < 20 Hz
	at 25 Hz		4% of operating mode < 1 kHz
	at 100 Hz		1% of operating mode < 1 kHz
	at 1 kHz		0.1% of operating mode < 1 kHz
	at 5 ... 50 kHz		0.05% of operating mode < 50 kHz
	Type of networking		Potential free (optical coupler) to I/O bus
Process inputs			
	Number of inputs		4
	Type of networking		Potential free (optical coupler) to I/O bus
	Rated signal value	V	+24
	1 signal level	V	+12 ... +30
	0 signal level	V	-2 ... +5
	Input current	mA	7 at 24 V, 8.5 at 30 V
	Input delay	ms	4
Semiconductor outputs			
	Number of outputs		4
	Type of networking		Potential free (optical coupler) to I/O bus
	Working voltage U		Us = 24 VDC
	Signal logic		Positive
	1 signal output level		U = Us - 0 ... 2 V
	0 signal output level		0 ... +2 V, <1 mA
	Load current /output	mA	500 max (current source)
	Operating delay	ms	< 1
	Switching cycles		1000/h (0.28/s) with inductive load and 100/s with ohmic load
Maximum cable lengths			
	Counter inputs	m(ft)	100 (984) max, shielded
	Outputs/enable inputs	m(ft)	400 (1312) max, unshielded; 1000 (3281) max, shielded
Operating temperature		°C (F)	0 ... 60 (32 ... 140) -40 ... +70 (-104 ... 158)
Suitable for railroad applications			No Yes
Weight		kg(lb)	0.30 (0.66)
Agency approvals			VDE 0160, UL508, CSA C22.2 No. 142, and European Directive EMC 89/336/EEC / Low Voltage 79/23/EEC
Compatible panel software			
	Concept		2.1 or higher
	ProWORX NxT		2.0 or higher

Compact Automation Platform

Intelligent and Specialty Modules

Counter/positioner module characteristics

Module type		ZAE 201
Module topology		
	Operating mode	Switch-selectable counter/positioner
	Counting inputs	-
	Enable inputs	-
	Relay outputs	2
Electrical isolation		No isolation
Power supply		
External	at 24 VDC maximum	VDC 24, 30 mA for all operating modes
	at 5 VDC	VDC -
Internal	from I/O bus	5 V, 100 mA maximum
LEDs		2 green, 2 yellow, 3 red
Addresses	Registers 3x/4x	3 in / 3 out
Electrical Characteristics		
Max Contact current	Working voltage range	V 24 ... 60 DC, 24 ... 250 AC
	Load at 230 VAC	A 2 continuous resistive; 4 instantaneous resistive
	Load at 24 VDC	A 2 continuous resistive; 4 instantaneous resistive
	Wetting current	mA 5
Max wire length	Contact delay time	ms 10 approx
	24 V pulse generator	m (ft) 20 (65)
	5 V pulse generator	m (ft) 50 (163)
	Resolution	12 bits
Accuracy		mVDC + 10 without offsets, + 50 with offsets
Input Characteristics		
24 V input selection	5 V input selection	V 12 V peak-to-peak maximum, 400 mV peak-to-peak minimum
	for 1 signal	V 12 ... 30
	for 0 signal	V -2 ... +5
	Count gate/ref trip	VDC 1 = 12 min, 0 = 5 max
Max count frequency	Duration	ms > 10
	for 5 V input	kHz 500
	for 24 V input	kHz 50
	PNP Encoder Quad	Two-track plus marker signal
Relay contact service life		
Elec switching cycles, resistive load	Mech. switching cycles	20,000,000
	at 230 VAC / 0.2 A	10,000,000
	at 230 VAC / 0.5 A	7,000,000
	at 30 VDC / 2 A	with clamping diode, 8,000,000 typical
Elec switching cycles, inductive load at 230 VAC / 0.5 A	at 60 VDC / 1 A	with clamping diode, 1,000,000 typical, 3,000,000 maximum, 3000 cycles/hr maximum
Weight		kg(lb) 0.3 (0.7)
Agency approvals		VDE 0160, UL508, CSA C22.2 No. 142 , and FM Class 1, Div. 2 Standards
Compatible panel software		
	Concept	2.1 or higher
	ProWORX NxT	2.0 or higher

Compact Automation Platform

Intelligent and Specialty Modules

High-speed counter module characteristics

Module type		ZAE 204
Module topology		
Operating mode		High-speed counter
Counting inputs		4
Enable inputs		4
Outputs		4 24 VDC outputs
Electrical isolation		Optocoupler on each field point
Power supply		
External	at 24 VDC maximum	VDC Count inputs 25 mA; gate inputs 30 mA; outputs 1 A
	at 5 VDC	VDC Count inputs 10 mA
Internal	from I/O bus	5 V, 100 mA maximum; 75 mA typical
LEDs		2 green, 1 yellow, 8 red
Addresses	Registers 3x/4x	6 in / 1 out
Counter inputs		
	Characteristics	For input pulses of 5 VDC (TTL) or 24 VDC
Signal level at 5V	On signal	V ≥ 2.3
	Off signal	V 0 ... 1
	Input current	mA ≤ 2.5 each at 0 V (current sink)
Signal level at 24V	On signal	V 12 ... 30 V
	Off signal	V -2 ... +5
	Input current	mA < 6 each at 30 V (current source)
	Min. 0 pulse width	ms 0.35
	Mark-space ratio	65/35% maximum allowable
	Counting Range	0 ... 32,767 or -32,768 ... 0 ... +32,767, depending on operating mode
	Counting frequency	1 kHz maximum; Input 1 with 5V pulses, 10 kHz maximum
Enable inputs (gate)		
	Number of inputs	4
	Rated signal value	V 24
	High signal level	V +12 ... +30
	Low signal level	V -2 ... +5
	Input current	mA 7 at 24 V
	Input delay	ms 4
Semiconductor outputs		
	Number of outputs	4
	Working voltage V	$V_s = 24$ VDC
	Signal language	True high
	On signal output level	$V_s - 0 \dots +2$ V
	Off signal output level	0 ... +2 V, < 1 mA
	V_s	20 ... 30 VDC
	Load current /output	mA 500 max
	Load current all output	A 1 max
	Switching delay	ms < 1
	Power dissipation	W 1.25
	Inrush current	5 W maximum for lamps
Operating frequency		
	Resistive load	100/s
	Inductive load 500mA	1000/hr
	Bulb load	8/s at 1.2 W, 1000/hr at 5 W
Weight		kg(lb) 0.3 (0.7)
Agency approvals		VDE 0160, UL508, CSA C22.2 No. 142 , and FM Class 1, Div. 2 Standards
CPU and software compatibility		
	CPUs	Not compatible with 386 processor-based CPUs
	ProWORX NxT	2.0 or higher

Compact Automation Platform

InterBus communication modules

Selection guide

Module type	InterBus master module	InterBus slave module
		
Discrete 3x/4x addresses	16 in / 16 out and 64 in / 64 out	16 in / 16 out
Number of registers 3x input 4x output	63 words 63 words	15 words 15 words
Internal I/O bus power supply	5 VDC, 190 mA typical, 250 mA maximum	5300 mA maximum
External power supply input voltage fusing power ON current	-- -- --	
RS 485 field bus	150 Ω, non-isolated	150 Ω in, potential-free; 150 Ω in, potential-bound
Number of modules supported	15 max in 16 word mode, 3 in 64 word mode	15 max
Power dissipation	13 W maximum, 1 W typical	1.5 W maximum
Agency approvals	VDE 0160, UL 508	
Model	AS-BBKF-201	AS-BBKF-202
Page	71	

InterBus remote bus interface



0 in / 0 out

1 word required for system data
31 words available for communications

--

UB = 24 VDC, 0.85 A maximum
1.25 A, medium time lag
20 A, 1 ms time constant

Potential-free, serial

1 module per HDTA sub-rack

6 W typical

VDE 0160, UL 508, CSA C22.2 No. 142, European Directive EMC 89/336/ EEC / Low Voltage 79/23/EEC

AS-BDEA-202

Compact Automation Platform

InterBus Communication Modules

General, Description

General

The Compact Platform includes a master InterBus module (AS-BBKF-201) and two slave modules (AS-BBKF-202 and AS-BDEA-202). The master module is the interface between the PLC and the external InterBus user. The slave module serves as the contact unit of an external system of modules having the master module in the base station. All nodes operate in full duplex, i.e., all outputs are read, and all inputs are written within a module "message cycle."

The InterBus protocol is structured as a data ring with one central master-slave access method. Consequently, it has the structure of a spatially distributed shift register through which the data is clocked bit by bit. Every module and its I/O data are a component part of the registering. To simplify system installation, the ring system is placed within a cable harness. The external appearance of the system is that of a tree topology. Every module has an identification code containing information such as the module type, data length, and status. In addition, the I/O modules contain input and output registers for data transfer.

The InterBus system has two cycle modes:

- The **ID cycle** executed at startup and following a reset. In the ID cycle, the identification register of every module is read. This data is used to generate the process image on the bus master, thereby defining the size and structure of the shift register.
- The **data cycle** is the actual working cycle that performs data transfer. In the data cycle, the input data is transferred from the registers of all modules into the master module and the output data is transferred from the master to the modules.

Test procedures

After every cycle, special test procedures are used to check for correct data transfer. Upon completion of error-free transfer, the data are accepted into the master module or transmitted to the module outputs. If an error is detected, the data of the faulty cycle is discarded, since a new cycle can be completed faster than correcting the corrupt data.

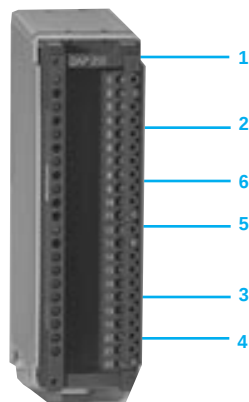
Expansion

The InterBus master module can be installed in any backplane slot. Master modules installed in the backplane require 64 I/O words each (= 128 words) in the PLC, leaving 63 I/O words available to the InterBus user to be connected. In the secondary backplane, the master module each handles 15 I/O words for addressing the InterBus users and occupies a memory area of 16 I/O words each in the PLC. The slave modules are designed to match the master module, so it can exchange 15 I/O words.

ProfiBus slave module

A ProfiBus slave module, the AS-BDEA-203, is available when connection to a ProfiBus network is desired.

Description



The Compact InterBus module is comprised as follows:

- 1 Operating status LED of the module
- 2 Terminal block 1
- 3 Terminal block 2
- 4 Cable locking barrier
- 5 InterBus remote bus port
- 6 Input/output status indicator lights (LEDs):
 - 1, green : bus connection and voltage present
 - 3, green : InterBus ready
 - 4, green : InterBus transmission active
 - 5, red, : InterBus transmission error
 - 6, red : error on InterBus slave device
 - 2 and 8-12 : no LED
 - 14 ... 21, red : number of InterBus node with error condition

Compact Automation Platform

InterBus Communication Modules

Characteristics

Module type		BKF 201	BKF 202	DEA 202
Function		InterBus master module	InterBus slave module	InterBus remote bus interface
Internal I/O bus power supply	VDC	5, 190 mA typ, 250 mA max	5, 300 mA max	--
External power supply				
input voltage		--		UB=24 VDC, 0.85 A max
fusing	A	--		1.25, med time-lag
power ON current	A	--		20, 1 ms time constant
LEDs		11 red, 3 green	1 red, 3 green	1 red, 5 green
Addresses Discrete 3x/4x		16 In/16 Out and 64 In/64 Out	16 In/16 Out	0 In/0 Out
Number of registers				
3x input	wds	63	15	1 word required for system data
4x output	wds	63	15	31 available for communications
RS 485 field bus	Ω	150, non-isolated	150 in, potential-free 150 in, potential-bound	potential-free, serial
Number of modules supported	max	15 in 16 word mode, 3 in 64 word mode	15	1 per HDTA subrack
Power dissipation	W	1.3 max, 1 typical	1.5 max	6 typical
Operating temperature	°C (F)	0 ... 60 (32 ... 140)		
Weight	kg(lb)	0.21 (0.46)	0.25 (0.55)	0.5 (1.1)
Agency approvals		VDE 0160, UL508		VDE 0160, UL508, CSA C22.2 No. 142, Euro Direct EMC 89/336/ EEC / Low Voltage 79/23/EEC
Compatible panel software				
Concept		2.1 or higher		
ProWORX NxT		2.0 or higher		

Compact Automation Platform

Intelligent and Specialty Modules

References

Intelligent modules

Description	Reference	Weight kg
Switch selectable counter/positioner relay output	AS-BZAE-201	0.3
High-speed counter, counting and enable inputs	AS-BZAE-204	0.3
4 Frequency and 4 process inputs, 4 semiconductor outputs module	AS-BFRQ-204	0.3
4 Frequency and 4 process inputs, 4 semiconductor outputs, expanded temperature suitable for railroad applications	AS-BFRQ-254	0.3
10 kHz, VRC (turbine meter) input and frequency, 4 inputs, performs AGA 7 for factored count 12.5 kHz overspeed detection	AS-BVRC-200	0.3
10 kHz, 5, 12, or 24 volt pulse, 4 inputs calculates factored count 2.5kHz overspeed detection	AS-BCTR-205, 212, 224	0.3

Accessories for intelligent modules

Description	Length m (ft)	Reference	Weight kg
Data cable, 11-conductor, screw/ clamp-type terminal, 9-conductor socket	2.5 (8.2)	YDL-063	
Printer cable, 11-conductor, screw / clamp-type terminal, 25-pin connector	3 (9.8)	YDL-064	

Motion modules

Description	Reference	Weight kg
Single-axis motion control module, incremental encoder inputs	AS-BMOT-201	0.36
Single-axis motion control module incremental encoder and resolver inputs	AS-BMOT-202	0.61

Accessories for motion modules

Description	Length m (ft)	Reference	Weight kg
Cyberline connecting cable, amplifier front connection	2.44 (8) 4.57 (15)	AS-W920-008 AS-W920-015	
Cyberline connecting cable, amplifier plug connection	2.44 (8) 4.57 (15)	AS-W921-008 AS-W921-015	
BMOT adapter and cable, customer wiring	2.44 (8) 4.57 (15)	AS-W922-008 AS-W922-015	
BMOT encoder connecting cable, connection box, 2 encoders	0.91 (8) 1.82 (6)	AS-W923-003 AS-W923-006	

Compact Automation Platform

InterBus communication Modules

References

InterBus modules

Description	Reference	Weight kg
InterBus master module	AS-BBKF-201	0.21
InterBus slave module	AS-BBKF-202	0.25
InterBus remote bus interface module	AS-BDEA-202	0.25

InterBus accessories

Description	Length	Reference	Weight kg
InterBus cable, prefabricated	1 m	170 MCI 100 00	
InterBus connector set, socket/pin 9-pin, DSUB, cut clamping technology		171 XTS 00 00	
Remote bus cable, LIYCY 3 x 2 x 0.25 mm ²	(Sold by the meter)	KAB-3225-LI	

ProfiBus module

Description	Reference	Weight kg
ProfiBus DP slave module	AS-BDEA-203	0.5

Compact Automation Platform

Programming software

Concept

PLC hardware configuration

Concept is a software configuration and application programming tool for the Compact Automation Platform. It is a Windows-based software that can be run on a standard personal computer. The configuration task can be carried out online (with the PC connected to the Compact CPU) or offline (PC only). Concept supports the configuration by recommending only permissible combinations, thereby preventing misconfiguration. During online operation, the configured hardware is checked immediately for validity, and illegal statements are rejected.

When the connection between programming unit (PC) and Compact CPU is established, the configured values (e.g., from the variables editor) are checked and compared with actual hardware resources. If a mismatch is detected, an error message is issued.

Concept editors support five IEC programming languages:

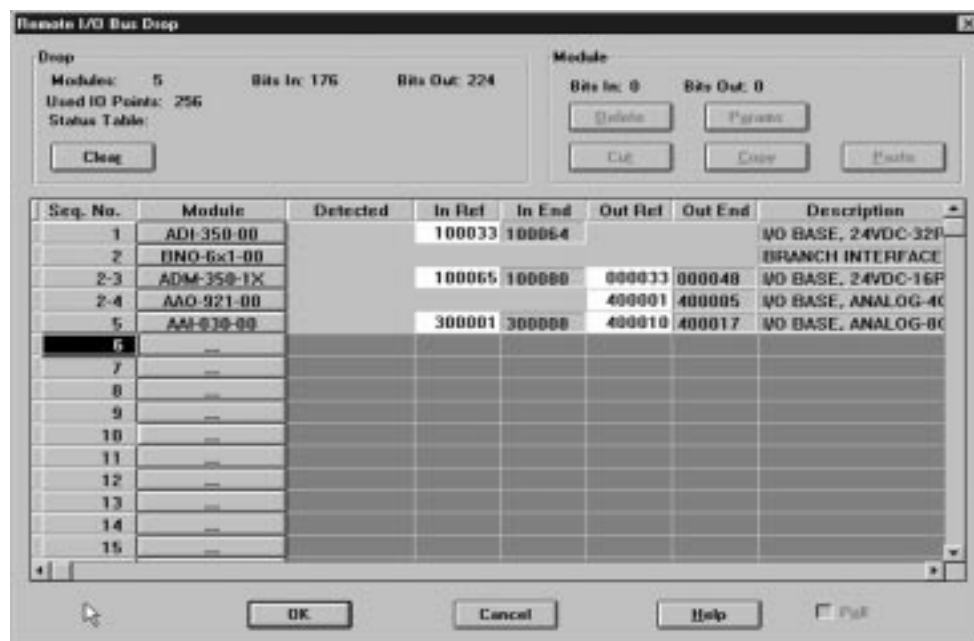
- ☐ Function block diagram (FBD)
- ☐ Ladder diagram (LD)
- ☐ Sequential function chart (SFC)
- ☐ Instruction list (IL)
- ☐ Structured text (ST)

as well as Modsoft-compatible ladder logic (LL984). IEC 1131-3 compliant data types are also available. With the data type editor, custom data types can be converted to and from the IEC data types.

The basic elements of the FBD programming language are functions and function blocks that can be combined to create a logical unit. The same basic elements are used in the LD programming language; additionally, LD provides contact and coil elements. The SFC programming language uses basic step, transition, connection, branch, join and jump elements. The IL and ST text programming languages use instructions, expressions, and key words. The LL984 programming language uses an instruction set and contact and coil elements.

You can write your control program in logical segments. A segment can be a functional unit, such as conveyor belt control. Only one programming language is used within a given segment. You build the control program, which the automation device uses to control the process, by combining segments within one program. Within the program, IEC segments (written in FBD, LD, SFC, IL and ST) can be merged. The LL984 segments are always processed as a block by the IEC segments. Concept's sophisticated user interface uses windows and menus for easy navigation. Commands can be selected and executed quickly and easily using a mouse. Context-sensitive help is available at each editing step.

Variables for linking basic objects within one section are not required by the graphic programming languages (FBD, LD, SFC and LL984) since these links are created by connections. These connections are managed by the system, which eliminates any configuration effort. Other variables, such as variables for data transfers between different sections, are configured with the variables editor. With the data type editor, custom data types can be derived from existing data types.



Compact Automation Platform

Programming software

Concept Languages

Concept provides an editor for each programming language. These editors contain custom menus and tool bars. You can select the editor to be used as you create each program segment.

In addition to the language editors, Concept provides a data type editor, a variables editor and a reference data editor.

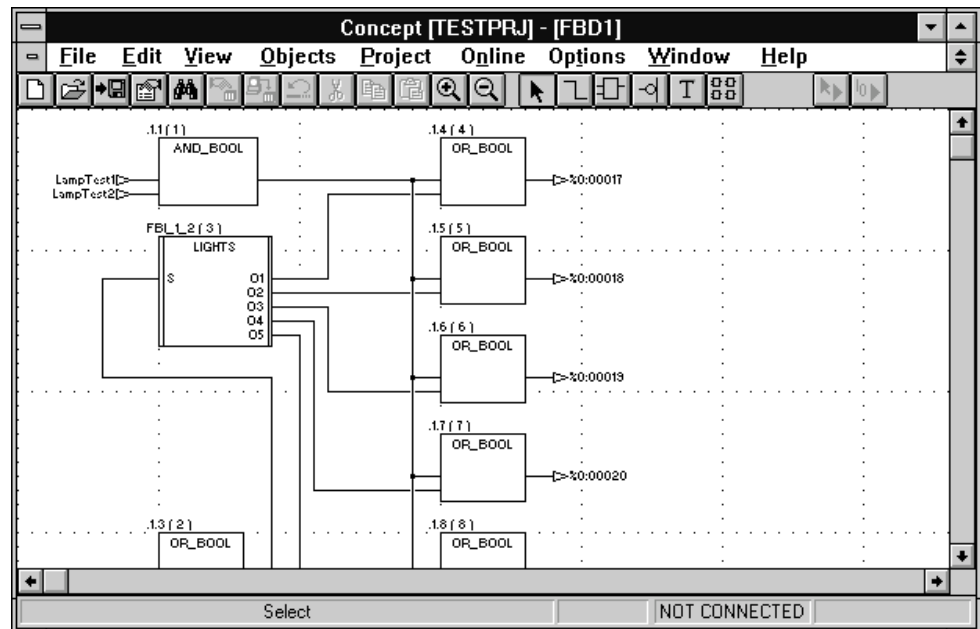
Function block diagram (FBD)

With the IEC 1131-3 function block diagram language, you can combine elementary functions, elementary function blocks (EFBs) and derived function blocks (all three of which are known as FFBs) with variables in an FBD. FFBs and variables can be commented. Text can be freely placed within the graphic. Many FFBs offer an option for input extensions.

Concept provides various block libraries with predefined EFBs for programming an FBD. EFBs are grouped in the libraries according to application types to facilitate the search.

In the FBD editor, you can display, modify and load initial values; current values can be displayed. The CLC and CLC_PRO libraries allow you to display animated diagrams of the FFBs and a graph of the current values.

For custom function blocks (DFBs), the Concept-DFB editor is used. In this editor, you can create your own function blocks from EFBs or existing DFBs. DFBs created in the FBD editor can be recalled in the LD, IL and ST editors, and DFBs created in the LD, IL and ST editors can be used in the FBD editor.



Compact Automation Platform

Programming software

Concept Languages

Ladder diagram (LD)

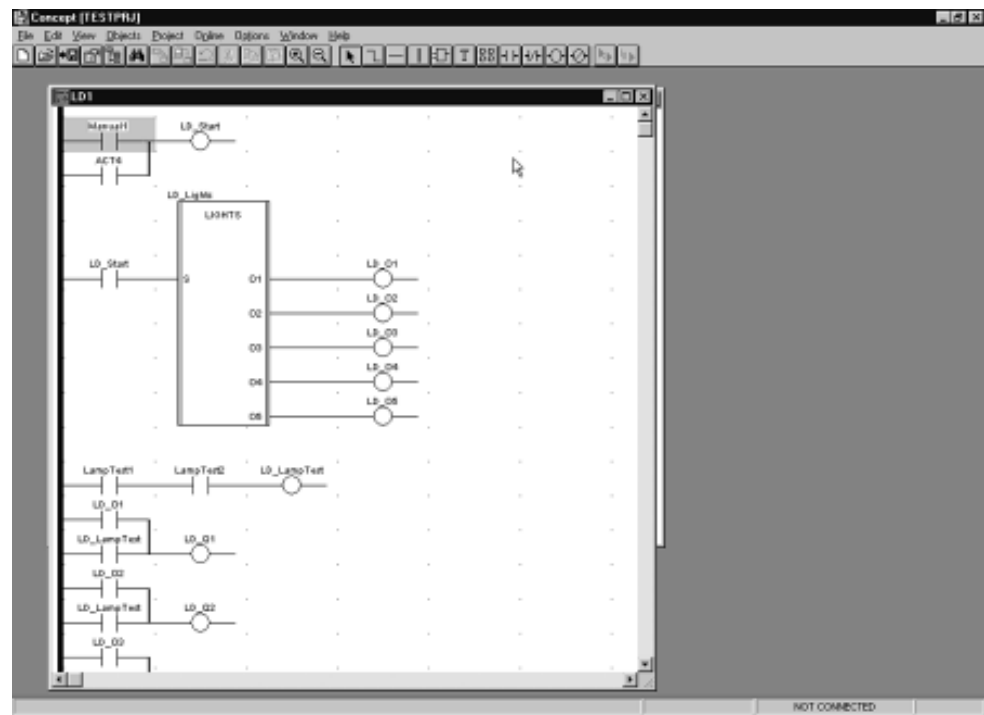
With the IEC 1131-3 ladder diagram language, you can build an LD program with elementary functions, function blocks and derived function blocks (all of which are known as FFBs), along with contacts, coils and variables. FFBs, contacts, coils and variables can be commented. Text can be placed freely within the graphics. Many FFBs offer an option for input extensions.

The structure of an LD segment corresponds to that of a current path for relay circuits. On its left side is a left bus bar, which corresponds to the phase (L conductor) of a current path. As with a current path, only the LD objects (contacts, coils) are processed in LD programming. The right bus bar, which corresponds to the neutral conductor, is not visible. However, all coils and FFB outputs are internally connected to it in order to create a current flow.

The same EFB block libraries available for the FBD editor can be used in the LD editor to program a ladder diagram.

In the LD editor, initial values can be displayed, modified and loaded; current values can be displayed. For the EFBs in libraries CLC and CLC_PRO, animated diagrams of the FFBs and a graph of the current values can be displayed.

For custom function blocks (DFBs), the Concept-DFB editor is used. With this editor, you can create your own function blocks from EFBs or existing DFBs. DFBs created in the LD editor can be recalled in the FBD, IL and ST editors, and DFBs created in the FBD, IL and ST editors can be used in the LD editor.



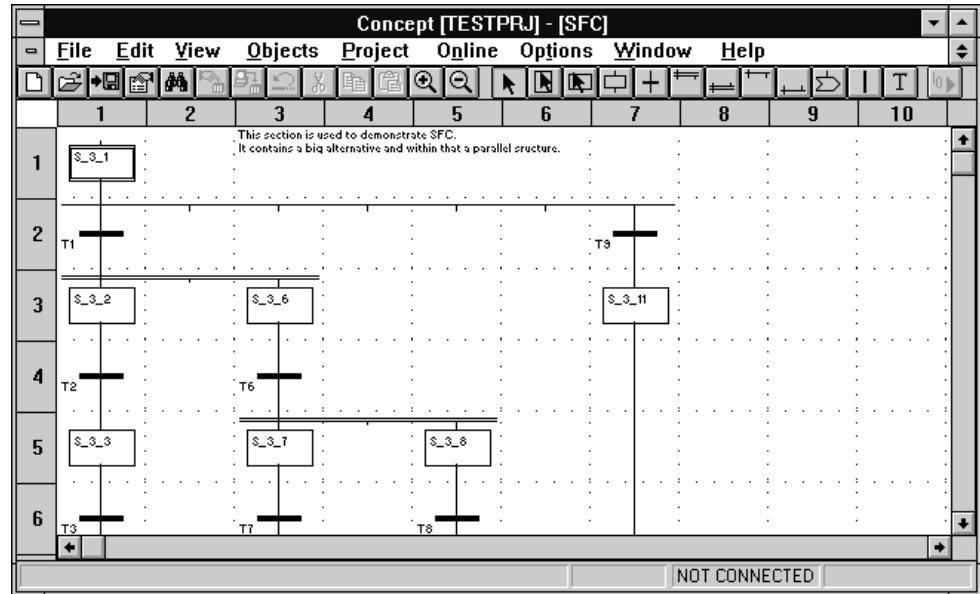
Compact Automation Platform

Programming software

Concept
Languages

Sequential function chart (SFC)

With the IEC 1131-3 sequential function chart (SFC) language, you can define a series of SFC objects that comprise a control sequence. Steps, transitions and jumps in the sequence can be commented. You can place text freely within graphics. You can assign any number of actions to every step. A series of monitoring functions—e.g., maximum and minimum monitoring time—can be integrated into each step's characteristics. The actions can be assigned an attribute symbol (as required by IEC) to control the action's performance after it has been activated—e.g., a variable can be set to remain active after exiting.



Instruction list (IL)

With the IEC 1131-3 IL language, you can call entire functions and function blocks conditionally or unconditionally, execute assignments and make conditional and unconditional jumps within a program segment.

IL is a text-based language, and standard Windows word processing tools can be used to generate code. The IL editor also provides several word processing commands. Keywords, separators and comments are spell-checked automatically as they are entered. Errors are highlighted in color.

For custom function blocks (DFBs), the Concept-DFB editor is used. In this editor, you can create your own function blocks from EFBs or existing DFBs. DFBs created in the IL editor can be recalled in the ST, LD and FBD editors, and DFBs created in the ST, LD and FBD editors can be used in the IL editor.

Compact Automation Platform

Programming software

Concept

Variable and data editors; Libraries

Data type editor

The data type editor defines new derived data types. Any elementary data types and derived data types already existing in a project can be used for defining new data types. With derived data types, various block parameters can be transferred as one set. Within the program, this set is divided again into single parameters, processed, then output as either a parameter set or individual parameters. Derived data types are defined in text format, and standard Windows word processing tools can be used. The data type editor also provides several word processing commands.

Variables editor

The variables editor contains input options for:

- ☐ The variable type (located variable, unlocated variable, constant)
- ☐ The symbolic name
- ☐ The data type
- ☐ Direct address (explicit, if desired)
- ☐ Comments
- ☐ Identification as human-machine interface (HMI) variable for data exchange

Reference data editor

In online mode, the reference data editor displays, forces and controls variables. The editor contains the following options:

- ☐ Default values for the variable
- ☐ Status display for the variable
- ☐ Various format definitions
- ☐ The ability to isolate the variable from the process

IEC Library

The IEC library contains the EFBs defined in IEC 1131-3 (calculations, counters, timers, etc).

EXTENDED Library

The extended library contains useful supplements to various libraries. It provides EFBs for mean value creation, maximum value selection, negation, triggering, converting, building a traverse with interpolation of the first order, edge detection and determination of the neutral range for process variables.

SYSTEM

The system library contains EFBs in support of system functions. It provides EFBs for cycle time detection, utilization of various system clocks, control of SFC sections and system status display.

CLC and CLC_PRO

The CLC library is used for defining process-specific control loops. It contains control, differentiation, integration and polygon graph EFBs. The CLC_PRO library contains the same EFBs as the CLC library along with data structures.

COMM

The communication libraries of built-in function blocks provide easy integration of programs which allow communication between PLCs or HMI devices from within the PLC's application program. Like other function blocks, these EFBs can be used in all languages to share data, or provide data to the HMI device for display to the operator.

DIAGNOSTICS

The diagnostics library is used for troubleshooting the control program. It contains EFBs for action, reaction, interlocking, and process prerequisite diagnostics, along with signal monitoring.

LIB984

The LIB984 library provides common function blocks used in both the 984 ladder logic editor and the IEC languages. This allows for easy transition of portions of application code from the 984LL environment to the IEC environment.

FUZZY

The fuzzy library contains EFBs for fuzzy logic.

ANA_IO

The ANA_IO library is used to process analog values.

Compact Automation Platform

Programming software

ProWORX

General features; References

The ProWORX programming software is a full-featured, Modicon PLC programming software that is compatible with any Windows platform - 3.1/95/98/NT. A few of the new ProWORX features follow:

Windows environment

The familiar Windows-based programming environment means you spend less time learning how to do things, and more time being productive. ProWORX uses familiar Windows features like user-defined screens, drag-and-drop, cut and paste, search, and global replace.

Intuitive Register Editor

A powerful analysis tool, the Data Watch Window shows you information from your plant in real-time, or logs it to disk for in-depth historical analysis later on. Easily get the data you need to make informed, effective production decisions. View and edit data in full page display, see trends and track data points against time in a spreadsheet, and monitor any combinations of discretes and analogs.

I/O drawing generator

Save hours of painstaking effort with ProWORX NxT's I/O Drawing Generator, which automatically creates wiring diagrams for the I/O cards defined in the Traffic Cop. Generate necessary drawings all at once or just one card at a time – simply select an address the I/O card uses with the Network Editor, then click the drawing button on the Hardware Back Referencing panel. NxT displays the diagram, and if desired, saves it as an AUTOCAD-compatible .DXF file or prints it.

Network editor

With the Network Editor, ProWORX NxT reduces development time by using the same commands and instructions for every controller. Simply cut, copy, and paste networks from one platform to any other.

Real-time network status

Find the controller you need fast and simplify network diagnostics with ProWORX NxT's powerful Network Scan feature. Network Scan searches your Modbus or Modbus Plus networks, then identifies and graphically displays each device found and shows its status.

Advanced I/O management

Ensure that the I/O card you are configuring in the software matches the one on your plant floor with Pro WORX NxT's graphical Traffic Cop. It displays I/O cards on your screen the same way they look in real life, eliminating all confusion. To place a card, just select it from the convenient drop down menu and then drag it into the controller slot you want. To save even more time, the Traffic Cop automatically associates the card's I/O points with with a block of free addresses in your controller. Once configured, manage your I/O with NxT's complete documentation tools, with references for each head, drop, rack, slot and address. And the Traffic Cop's graphical display shows you at a glance that your I/O is healthy.

References

Concept software

Description	License type	Reference	Weight kg
Concept Packages			
Concept S Version 2.5	single-user license	372 SPU 471 01 V25	-
Concept M Version 2.5	single-user license	372 SPU 472 01 V25	-
Concept XL Version 2.5	single-user license	372 SPU 474 01 V25	-
	three-user license	372 SPU 474 11 V25	-
	10-user license	372 SPU 474 21 V25	-
	network license	372 SPU 474 31 V25	-
Concept EFB Tool Kit Version 2.5		372 SPU 470 01 V25	-

Note: All versions of Concept software version 2.5 are shipped with the software in 4 languages: English, French, German, and Spanish.

The EFB Tool Kit is only available in English.

Compact Automation Platform

Programming Software

Concept and ProWORX

References (continued)

Concept Upgrade Support Program

Description	License type	Reference	Weight kg
Concept XL V2.2 to Concept XL V.2.5	single-user license	372 ESS 474 01	-
	three-user license	372 ESS 474 03	-
	ten-user license	372 ESS 474 10	-
	network license	372 ESS 474 00	-
Concept S V2.2 to Concept S Version 2.5		372 ESS 471 01	-
Concept M V2.2 to Concept M Version 2.5		372 ESS 472 01	-
Modsoft to Concept XL Version 2.5		372 ESS 485 01	-
Concept EFB Tool Kit V 2.x to V 2.5		372 ESS 470 01	-

ProWORX software

Description	License type	Reference	Weight kg
ProWORX Packages			
ProWORX NxT Online	single-user license	372 SPU 681 01 NONL	-
ProWORX NxT Offline/Online	single-user license	372 SPU 680 01 NDEV	-
	three-user license	372 SPU 680 01 NSTH	-
	ten-user license	372 SPU 680 01 NSTE	-
	twenty-user license	372 SPU 680 01 NSTW	-
ProWORX NxT Lite Offline/Online	single-user license	372 SPU 610 01 NLDV	-
	three-user license	372 SPU 610 01 NLTH	-
	ten-user license	372 SPU 610 01 NLTE	-
	twenty-user license	372 SPU 610 01 NLTW	-
ProWORX Upgrades Modsoft upgrade to ProWORX NDEV	single-user license	372 SPU 684 01 NXUP	-
	three-user license	372 SPU 684 01 MSTH	-
	ten-user license	372 SPU 684 01 MSTE	-
	twenty-user license	372 SPU 684 01 MSTW	-
ProWORX Plus upgrade to NxT NDEV	single-user license	372 SPU 684 01 NXPW	-
	three-user license	372 SPU 684 01 NPTH	-
	ten-user license	372 SPU 684 01 NPTE	-
	twenty-user license	372 SPU 684 01 NPTW	-

Documentation

Description	Number of volumes	Reference (1)	Weight kg
Concept Installation Instructions	1	840 USE 492 0x	-
Concept User Manual	3	840 USE 493 0x	-
Concept IEC Block Library	13	840 USE 494 0x	-
Concept 984 LL Block Library	2	840 USE 496 0x	-
Concept EFB Tool Kit User Manual	1	840 USE 495 01	-
ProWORX NxT Programming Software User Manual		372 SPU 680 01 NMAN	-

(1) x = 0 in this position indicates English language; 1 indicates French language; 2 indicates German language; 3 indicates Spanish language.

Compact Automation Platform

User documentation and product certification

References

User documentation

Description	Order No.
Compact Automation Platform Controllers User Guide	890 USE 108 00
Compact Automation Platform I/O Modules User Guide	890 USE 109 00
Starling Associates Gas Flow Loadable Function Block User Guide	890 USE 137 00
Modbus Protocol Reference Guide	PI-MBUS-300
Modbus Plus Network I/O Servicing Planning Guide	English language 840 USE 104 00 French language 840 USE 104 01
Modbus Plus to Sy/Max Gateway Programmable Bridge Mux User Guide	840 USE 110 00
Quantum/Compact Transmit Loadable Function Block User Guide	840 USE 113 00

Product certification

In some countries, certification of certain electrical components is enforced by the law. A standard conformity certificate is then issued by the official organization. Each certified product must carry approval symbols when enforced. Use on board merchant navy vessels generally requires prior approval (= certification) of an electrical device by certain marine classification authorities.

Key	Certification organization	Country
CSA	Canadian Standards Association	Canada
ED	European Directive	Europe
GL	Germanischer Lloyd	Germany
UL	Underwriters Laboratories	USA

Key	Classification standard
UL	UL 508
CSA	CAN/CSA C22.2 No. 142
GL	Germanischer Lloyd, Part 1
ED	EN 50081-2
	EN 50082-2
	EN 61131-2
RRS	Railroad standard EN 50155

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Compact Automation Platform

Schneider Alliances

Program overview



www.schneideralliances.com

The **Schneider Alliances** partnership program is an answer to the many customers which are expecting from their preferred vendors much more than simple products : complete integrated and validated automation solutions. **Schneider Alliances** is both an industrial and commercial program between Schneider and its partners providing hardware or software automation products, system integration or services complementary to the Schneider offering.

The **Schneider Alliances** partnership program is comprised of :

- **Products vendors :**
Design and distribute hardware or software automation products complementary to the Schneider offering and well integrated in Schneider solutions and architectures. This **Schneider Alliances** product offering includes industrial devices, communication hardware and software, HMI and supervisory software, application software packages, development and test tools, ...
The design and manufacturing of these products may require a transfer of technology from Schneider.
- **System integrators :**
Provide custom automation solutions for a specific project bringing together Schneider products and third party devices and equipment. They deploy their industry and application expertise to the implementation, installation and management of complete automation projects.

Thanks to **Schneider Alliances**, customers are able to choose among the best in class products with a assurance of proper integration within Schneider architectures. They also have access to a network of system integrators specialized in their industry and able to achieve their automation project in the best conditions of time and cost.

The **Schneider Alliances** partners network is a win-win association which brings to everyone, products vendor or system integrator, more business and turnover.

Compact Automation Platform

Schneider Alliances

Partnership directory

Products partnership

Product category \ Company	Communication interface boards	Communication software	Communication hardware	HMI/operator panel	HMI/SCADA	Programming software	Electrical I/O interface	Pneumatic I/O interface/HMI/3e	Motion/axis control	Miscellaneous sensor	Miscellaneous actuator	Automation controller	Services	Miscellaneous software	Miscellaneous hardware
A															
ABB Industrial Systems															
ABB Power T&D Co.,															
ABB Robotic															
ACC Systemes															
Acuity Imaging, Inc.															
AFCON															
Applicom International															
Arc Informatique															
Areal															
Aro															
ARORA Software															
ARTEC Systems															
Asco Joucomatic															
AspenTech															
Atlas Copco															
Automated Mining Systems															
Automated Solutions, Inc.															
Automation & Control Technologies, Inc.															
Automation & Systèmes															
Automation Science, Inc.															
AVG Automation															
B															
Beckwood Services, Inc.															
Bihl & Wiedemann															
Bitronics, Inc.															
BLH Electronics, Inc.															
C															
Cape Software															
Ci Technologies Pty Ltd.															
CimQuest, Inc.- Products Group															
Cimtech															
Codra															
Commercial Timesharing, Inc.															
Control Techniques Drives, Inc.															
ControlSoft, Inc.															
Curry Controls Company															
Cutler-Hammer, Inc.															
CyberLogic Technologies, Inc.															
Cycle Software, Inc.															
D															
Danfoss Electronic Drives															
Data-Linc Group															
Delta Computer Systems, Inc.															
DLRA Projects (Pty) Ltd.															
Doble Engineering															
E															
ELECTRO Industries / Gaugetech															
Endress + Hauser															
Escort Memory Systems															
Etic															
ExperTune, Inc.															

1/3

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Schneider Alliances

Partnership directory

Products partnership

Product category Company	Communication interface boards	Communication software	Communication hardware	HMI/4operator panel	HMI/SCADA	Programming software	Electrical I/O interface	Pneumatic I/O interfaceHMI/4e	Motion/axis control	Miscellaneous sensor	Miscellaneous actuator	Automation controller	Services	Miscellaneous software	Miscellaneous hardware
F															
Festo															
Fiber Options, Inc.															
Fisher Rosemount															
FORTH, Inc.															
Foxboro Company															
G															
Gensym Corporation															
Georges Renault (GRIN)															
GSE Systems, Inc.															
H															
Hewlett Packard															
Hilco Technologies, Inc.															
Hilscher GmbH															
Hirschmann															
HMS Fieldbus Systems AB															
Honeywell															
Honeywell Industrial Automation															
I															
Iconics, Inc.															
Indramat															
Industrial Systems Monitoring/AdVoTech															
Integrated Control Technology Inc.															
Integrated Industrial Technologies, Inc.															
Intellution															
IPAC Technologies, Inc.															
Itmi Aptor															
K															
Kuka															
M															
Mac Valves, Inc.															
MagneTek, Inc.															
Mauell Corporation															
MDT Software															
Mettler-Toledo, Inc.															
Mitsubishi Electric Automation Inc.															
N															
Nemasoft, Inc.															
NexxCorp Information Systems, Inc.															
Niobrara Research & Development Corp.															
NovaTech, LLC															
P															
Panel-Tec, Inc.															
Parker															
ProSoft Technology, Inc.															
Prosyst															

1/4

Compact Automation Platform

Schneider Alliances

Partnership directory

Products partnership

Product category Company	Communication interface boards	Communication software	Communication hardware	HMI/Operator panel	HMI/SCADA	Programming software	Electrical I/O interface	Pneumatic I/O interface	HMI/5e	Motion/axis control	Miscellaneous sensor	Miscellaneous actuator	Automation controller	Services	Miscellaneous software	Miscellaneous hardware
R																
RACO Manufacturing & Engineering																
Robicon																
S																
SAF Drive Systems Ltd.																
Schweitzer Engineering Lab., Inc.																
Sciaky																
Secheron Ltd.																
Silicomp																
Simulation Sciences																
SISCO, Inc.																
Sofrel Telecontrol																
Spectrum Controls, Inc.																
S-S Technologies Inc.																
Steeplechase Software																
SWAC																
T																
TA Engineering Co., Inc.																
Tasnet, Inc.																
Toshiba																
TR Electronic																
TURCK, Inc.																
W																
Weed Instrument																
Wonderware																
X																
Xycom, Inc.																

1/5

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Products directory

Company	Tel./Fax/URL	Reference	Category	Technology
ABB Industrial Systems, Inc. 16250 W. Glendale New Berlin, WI 53151 United States	Tel. +1 414-785-3416	CDI 300	Drive	Modbus Plus
	Fax +1 414-785-0397	Advant OCS	Miscellaneous hardware	Modbus Plus
	URL www.abb.com			
ABB Industrial Systems, Inc. 16250 W. Glendale New Berlin, WI 53151 United States	Tel. +1 614-261-2000	ABB DCS 500	Miscellaneous hardware	Modbus
	Fax +1 614-261-2172	Advant OCS	Miscellaneous hardware	Modbus Plus
	URL www.abb.com			
ABB Power T&D Co., Inc. 7036 Snowdrift Road Allentown, PA 18106 United States	Tel. +1 610-395-7333	2000, 2000R series product family	Miscellaneous hardware	Modbus Plus
	Fax +1 610-395-1055	REL 512/506	Miscellaneous hardware	Modbus Plus
	URL www.abb.com/papd	REL 356	Miscellaneous hardware	Modbus Plus
		REL 350/352	Miscellaneous hardware	Modbus Plus
		PRICOMT	HMI/SCADA	Modbus Plus
ABB Robotic 5, chemin de l'Equerre ZI des Bethunes F-95310 Saint Ouen L'Aumône France	Tel. +33 (0)1 34 40 23 49	S4C Robot controller	Motion/axis control	Fipio
	Fax +33 (0)1 34 40 23 80			
	URL www.abb.se/flexible			
ACC Systemes 5 rue des aTeliers-BP 203 F- 60 202 Compiègne Cedex France	Tel. +33 (0)3 44 38 66 66	CEASAR	HMI/SCADA	Ethway Uni-Tel.way Modbus
	Fax +33 (0)3 44 38 66 67			
	URL www.acc.fr			
Acuity Imaging, Inc. 9 Townsend West Nashua, NH 03063 United States	Tel. +1 603-598-8400	InTel.ligent Visual Sensor (IVS)	Miscellaneous sensor	Modbus Plus
	Fax +1 603-598-4684			
	URL www.acuityimaging.com			
AFCON 1014 East Algonquin Road Schaumburg, IL 60173 United States	Tel. +1 847-397-6900	P-CIM	HMI/SCADA	Ethway Fipway Uni-Tel.way Modbus Plus
	Fax +1 847-397-6987			
	URL www.afcon-inc.com			
Applicom International 43 Rue Mazagran F-76320 Caudebec-les-Elbeufs France	Tel. +33 (0)2 32 96 04 20	PC1000, PCI1000, PC2000, PC4000 and PCI4000	Communication interface boards	Modbus Uni-Tel.way Fipway Ethway
	Fax +33 (0)2 32 96 04 21			
	URL www.applicom-int.com			
Arc Informatique 2 Avenue de la cristallerie F-92310 Sèvres France	Tel. +33 (0)1 41 14 36 00	PCVUE 32, FRONTVUE, DATAVUE	HMI/SCADA	Modbus, Modbus Plus, Fipway, Ethway, Uni-Tel.way, Symax/Synet, Autres
	Fax +33 (0)1 46 23 86 02			
	URL www.arcinfo.com			
Areal 16 Avenue Jean Moulin F-77167 Savigny le Temple France	Tel. +33 (0)1 60 63 07 52	Topkapi	HMI/SCADA	Ethway Fipway Uni-Tel.way Modbus
	Fax +33 (0)1 64 41 90 15			
Aro 1 Avenue de Tours F-72500 Château du Loir France	Tel. +33 (0)2 43 44 74 00	Micro 2x16 III welding controller	Miscellaneous actuator	Fipio Uni-Tel.way Modbus
	Fax +33 (0)2 43 44 74 01			
	URL www.aronet.com			
ARORA Software 1755 East Plumb Lane, Suite 159, Reno, NV 89502 United States	Tel. +1 702-348-1816	System 816	HMI/SCADA	Modbus, Modbus Plus
	Fax +1 702-348-7336	Dialer2000	Communication software	Modbus
	URL www.arora@sierra.net			
ARTEC Systems 5530 NE 33rd Avenue Fort Lauderdale, FL 33308 United States	Tel. +1 954-771-9007	Drivers	Communication software	Modbus Plus
	Fax +1 954-771-9524			
	URL www.artec-systems.com			
Asco Joucomatic 32 Avenue Albert 1°-BP 312 F-92506 Rueil Malmaison France	Tel. +33 (0)1 47 14 32 00	BUSLINK and BUSLINK ISO pneumatic valves	Pneumatic I/O interface	Fipio
	Fax +33 (0)1 47 08 53 85			
	URL www.ascojoucomatic.fr			
AspenTech 14701 St Mary's Lane Houston, TX 77079-2995 United States	Tel. +1 281-584-1000	SetCim	HMI/SCADA	Modbus Plus
	Fax +1 281-584-4329			
	URL www.aspentech.com			
Atlas Copco En Montillier,4 CH-1303 Penthaz Switzerland	Tel. +41 (0)21 863 63 63	Socapel PAM	Drive	Fipio
	Fax +41 (0)21 863 63 99			
	URL www.atlascopco.com/controls			
Automated Mining Systems 16 Mary Street, Unit 3 Aurora, Ontario L4G 1G2 Canada	Tel. +1 905-713-3700	Broadband Gateway	Communication hardware	Modbus Plus
	Fax +1 905-713-3708			
	URL www.robominer.co			
Automated Solutions, Inc. 1415 Fulton Road, #205 Santa Rosa, CA 95403 United States	Tel. +1 707-578-5882	ASMBPLUS.OCX	Communication software	Modbus Plus
	Fax +1 707-579-5756	ASMBSERIAL		Modbus
	URL www.automatedsolutions.com			
Automation & Control Technologies, Inc. 11838 Borman Dr., Suite 200 St. Louis, MO 63146-4113 United States	Tel. +1 314-993-4080	GEMINI	Miscellaneous software	S800, Quantum
	Fax +1 314-993-7183			
	URL www.act/stl.com			
Automation & Systèmes Domaine de l'Etoile Hameau Topaze F-06610 La Gaude France	Tel. +33 (0)4 93 07 51 07	IN'COM	Communication interface boards	Ethway, Fipway, Uni-Tel.way, Modbus, Modbus Plus
	Fax +33 (0)4 93 07 52 09	Software development	Services	Ethway, Fipway, Uni-Tel.way, Modbus, Modbus Plus

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Partnership products Schneider Alliances

Products directory

Company	Tel./Fax/URL	Reference	Category	Technology
Automation Science, Inc. 150 Buckskin Drive Weston, MA 02193 United States	Tel. +1 508-358-4186 Fax +1 508-358-4186	OMNIRAMA	HMI/SCADA	Modbus Modbus Plus
AVG Automation 343 St. Paul Boulevard Carol Stream, IL 60188 United States	Tel. +1 630-668-3900 Fax +1 630-668-4676 URL www.AVG.net	Resolver Interface-DeviceNet Scanner Module	Motion/axis control Communication interface boards	Modbus Plus Quantum
Beckwood Services, Inc. P.O. Box 985, 27 Hale Spring Road - Plaistow, NH 03865 United States	Tel. +1 603-382-3840 Fax +1 603-382-3852 URL www.beckwood.com	DeviceNet interface	Miscellaneous hardware	Autres
Bihl & Wiedemann Kaeferaler Str. 164 Mannheim, D-68167 Germany	Tel. +49-621-339-2723 Fax +49-621-339-2239 URL www.bihl-wiedemann.de	AS-i/Modbus Plus Gateway 1090/1091	Communication hardware	Modbus Plus
Bitronics Inc. P.O. Box 22290 261 Brodhead Road Lehigh Valley, PA 18002 United States	Tel. +1 610-865-2444 Fax +1 610-865-2743 URL www.bitronics.com	MultiComm Power Meter & Power Plex Digital Transducer	Miscellaneous sensor	Modbus
BLH Electronics, Inc. 75 Shawmut Road Canton, MA 02021 United States	Tel. +1 781-821-2000 Fax +1 781-828-1451 URL www.blh.com	LCp-100, LCp-200, DXp-40 Weight indicator controllers	Miscellaneous sensor	Modbus Modbus Plus
Cape Software 333 N. Sam Houston Pkwy, Suite 290, Houston, TX 77060 United States	Tel. +1 281-448-5177 Fax +1 281-448-2607 URL www.capesoftware.com	VP Link	Miscellaneous software	Modbus Plus
Ci Technologies Pty Ltd. Pymble NSW 2088 Australia	Tel. + 61 2-9855-1000 Fax + 61 2-9488-9164 URL www.cit.com.au	Citect	HMI/SCADA	Modbus Plus
CimQuest, Inc.- Products Group 518 Kimberton Road, Suite 325 Phoenixville, PA 19460 United States	Tel. +1 610-935-8282 Fax +1 610-935-1902 URL www.cimquest.com	IN-GEAR ActiveX	Communication software	Modbus Modbus Plus
Cimtech 20 rue de l'industrie B-1400 Nivelles Belgium	Tel. +32 (0) 67 88 36 66 Fax +32 (0) 67 88 36 88 URL www.cimview.com	CIMVIEW	HMI/SCADA	Ethway Fipway Uni-Telway Modbus
Codra 10 Avenue de Norvège, Narvik F-91953 Courtaboeuf Cedex France	Tel. +33 (0)1 60 92 34 34 Fax +33 (0)1 60 92 34 35 URL www.codra.fr	Panorama	HMI/SCADA	Ethway Fipway Uni-Telway Modbus, Modbus Plus Autres
Commercial Timesharing, Inc. 2650 South Arlington Road Akron, OH 44319 United States	Tel. +1 330-644-3059 Fax +1 330-644-8110 URL www.comtime.com	SA85 for Windows NT/Unix	Communication software	Modbus Plus
Control Techniques Drives, Inc. 359 Lang Boulevard Grand Island, NY 14072 United States	Tel. +1 716-773-2321 Fax +1 716-774-8327 URL www.ctdrives.com	Unidrive, Mentor II/ Quantum III	Drive	Modbus Plus
ControlSoft, Inc. 14077 Cedar Avenue, Suite 200 Cleveland, OH 44118 United States	Tel. +1 216-397-3900 Fax +1 216-381-5001 URL www.controlsoftinc.com	INTUNE V4 MANTRA NT	Miscellaneous software Miscellaneous software	Modbus Modbus Modbus Plus
Curry Controls Company P.O. Box 5408 1019 Pipkin Road Lakeland, FL 33811 United States	Tel. +1 941-646-5781 Fax +1 941-646-3899 URL www.currycontrols.com	Modpac Plus RF Modem	Communication hardware	Modbus Modbus Plus
Cutler-Hammer, Inc. P.O. Box 6166 173 Heatherdown Drive Westerville, OH 43081 United States	Tel. +1 614-882-3282 Fax +1 614-895-7111 URL www.cutlerhammer.com	PanelMate 500 AMI 6000	HMI/operator panel HMI/operator panel	Modbus Plus Modbus Plus
CyberLogic Technologies, Inc. 340 East Big Beaver Rd Suite 208 United States	Tel. +1 248-740-9842 Fax +1 248-740-9821 URL www.cyberlogictech.com	MBX Driver Remote MBX Driver Virtual MBX Driver MBX Bridge	Communication software Communication software Communication software Communication software	Modbus, Modbus Plus Modbus, Modbus Plus Modbus, Modbus Plus Modbus, Modbus Plus
Cycle Software, Inc. 130 Prospect Street, Suite 202 Cambridge, MA 02139 United States	Tel. +1 617-576-6900 Fax +1 617-576-6501 URL www.livedata.com	Live Data Live Data Quantum	Communication software Communication software	Modbus, Modbus Plus Quantum
Danfoss Electronic Drives 2995 Eastrock Drive Rockford, IL 61109 United States	Tel. +1 815-398-2770 Fax +1 815-398-2869 URL www.danfoss.com	VTL Series 5000	Drive	Modbus Plus

Compact Automation Platform

Partnership products Schneider Alliances

Products directory

Company	Tel./Fax/URL	Reference	Category	Technology
Data-Linc Group 2635 151st PL. NE Redmond, WA 98052 United States	Tel. +1 425-882-2206 Fax +1 425-867-0865 URL www.data-linc.com	FDM7000, MDL500 FSK, LCM100 FSK, SRM6000, DLM4000-DL, DLM4000-LL, CCS9000, LLM1 100 Bell 202 FSK, SRM6200E	Communication hardware	Modbus
Delta Computer Systems, Inc. 11719 Northeast 95th Street, Suite D Vancouver, WA 98682 United States	Tel. +1 360-254-8688 Fax +1 360-254-5435 URL www.deltacompsys.com	MMC120 00 2 axis MMC188/40/41 4 axis RMC100 2/8 axis	Motion/axis control Motion/axis control Motion/axis control	Quantum S800 Modbus Plus
DLRA Projects (Pty) Ltd. P.O. Box 483 - 108 Hendrick Verwoerd Dr., Randburg Pinegowrie 2123 South Africa	Tel. +27 11-886-4704 Fax +27 11-886-5739 URL www.dlra.co.za	Adroit	HMI/SCADA	Modbus Plus
Doble Engineering 85 Walnut Street Watertown, MA 02473 United States	Tel. +1 617-926-4900 Fax +1 617-926-0528 URL www.doble.com	INSITE	Miscellaneous software	Modbus Plus
ELECTRO Industries/Gaugetech 1800 Shames Drive Westbury, NY 11590 United States	Tel. +1 516-334-0870 Fax +1 516-338-4741 URL www.electroind.com	Futura+ Series	Miscellaneous sensor	Modbus, Modbus Plus
		DWVA 300	Miscellaneous sensor	Modbus
		DMMS 300+	Miscellaneous sensor	Modbus, Modbus Plus
Endress + Hauser 3 rue du Rhin F-68330 Huningue France	Tel. +33 (0)3 89 69 67 68 Fax +33 (0)3 89 69 48 02 URL www.endress.com	ZA 674 gateway	Communication hardware	Fipio
Escort Memory Systems 3 Victor Square Scotts Valley, CA 95066 United States	Tel. +1 831-438-7000 Fax +1 831-438-5768 URL www.ems-rfid.com	CM900	Communication hardware	Compact
		CM1000	Communication hardware	S800
		CM41/CM42	Communication hardware	Modbus Plus
Etic 13, Chemin du Vieux Chêne ZIRST 4201 38942 Meylan Cedex France	Tel. +33 (0)4 76 04 20 00 Fax +33 (0)4 76 04 20 01	FT300 UTW remote control front end	Communication hardware	Uni-Telway
Expertune, Inc. 4734 Sonseeahray Drive Hubertus, WI 53033 United States	Tel. +1 414-628-0088 Fax +1 414-628-0087 URL www.expertune.com	PID analyser tuner	Communication software	Modbus
Festo 5 Rue Montgolfier F-93116 Rosny sous Bois France	Tel. +33 (0)1 49 35 23 23 Fax +33 (0)1 49 35 23 33 URL www.festo.com	type 02, 03 and 04B (ISO),	Pneumatic I/O interface	Fipio
		type 10 (CPV) and 12 (CPA)	Pneumatic I/O interface	Fipio
Fiber Options, Inc. 80 Orville Drive, Suite 102 Bohemia, NY 11716 United States	Tel. +1 516-567-8320 Fax +1 516-567-8322 URL www.fiberoptions.com	2291M	Communication hardware	Modbus Plus
		2281M	Communication hardware	Autres
Fisher Rosemount 1 Rue Traversière, Silic 125 F-94523 Rungis Cedex France	Tel. +33 (0)1 49 79 73 00 Fax +33 (0)1 49 79 73 99 URL www.frco.com	MG-HRT-WF-002-FR Hart / Fipio gateway	Communication hardware	Fipio
FORTH, Inc. 111 N. Sepulveda Blvd., Suite 300 Manhattan Beach, CA 90266 United States	Tel. +1 310-372-8493 Fax +1 310-318-7130 URL www.forth.com	Express	Miscellaneous software	Modbus Plus
Foxboro Company 33 Commercial Street Foxboro, MA 02035 United States	Tel. +1 508-543-8750 Fax +1 508-549-4800 URL www.foxboro.com	Intelligent Automation Series	Communication interface boards	Modbus Modbus Plus
		G2 Real-time Expert System	Communication software	Modbus Plus
Gensym Corporation 125 Cambridge Park Drive Cambridge, MA 02140 Etats-Unis	Tel. +1 617-547-2500 Fax +1 617-547-1962 URL www.gensym.com	SMA 68000 screwing controller	Miscellaneous actuator	Uni-Telway
Georges Renault (GRIN) 99 Route de Clisson F-44230 Sebastien sur Loire France	Tel. +33 (0)2 40 80 20 00 Fax +33 (0)2 40 33 27 07	SNCC D/3	Miscellaneous hardware	Modbus Plus S800
GSE Systems, Inc. 9189 Red Branch Road Columbia, MD 02145 United States	Tel. +1 410-772-3500 Fax +1 410-772-3611 URL www.gses.com	Driver HP UX	Communication software	Ethway
Hilco Technologies, Inc. 3300 Rider Trail South Suite 300 Earth City, MO 63045-1338 United States	Tel. +1 314-298-9100 Fax +1 314-298-1729 URL www.hilco.com	Monitrol	HMI/SCADA	Modbus Plus

Compact Automation Platform

Partnership products Schneider Alliances

Products directory

Company	Tel./Fax/URL	Reference	Category	Technology
Hilscher GmbH Rheinstrabe 78 Hattersheim, D-65796 Germany	Tel. +49 6190 9907 0 Fax +49 6190 9907 50 URL www.hilscher.com	KPO 104-MBP, PVK 20-MBP CIF 30-MBP, SCA-MBP	Communication interface boards	Modbus Plus
Hirschmann PO Box 1649 D-72606 Nürtingen Germany	Tel. +49 7127 14 1479 Fax +49 7127 14 1495 URL www.hirschmann.com	OZD FIP	Communication hardware	Fipio, Fipway
HMS Fieldbus Systems AB Pilefeltsgatan 73 S-302 50 Halmstad Sweden	Tel. +46 (0)35 168 200 Fax +46 (0)35 168 210 URL www.hms.se	AnyBus AB64	Communication interface boards	Fipio
		AnyBus Data Transfer	Communication interface boards	Modbus Modbus Plus
Honeywell Parc Technologique Bât. Mercury BP 87 F-91193 Gif sur Yvette France	Tel. +33 (0)1 60 19 80 00 Fax +33 (0)1 60 19 81 81 URL www.honeywell.com	Excel 500	Automation controller	Fipway
Honeywell Industrial Automation 16404 N. Black Canyon Highway Phoenix, AZ 85053 United States	Tel. +1 602-313-5000 Fax +1 602-313-4990 URL www.iac.honeywell.com	SCAN 3000	Miscellaneous hardware	Modbus Modbus Plus
Iconics, Inc. 100 Foxborough Boulevard Foxborough, MA 02035 United States	Tel. +1 508-543-8600 Fax +1 508-543-1503 URL www.iconics.com	GENISIS-32	HMI/SCADA	Modbus Plus
Indramat Dr Nebel strasse, 2 D-97816 Lohr am Main Germany	Tel. +49 (0)93 5240 0 Fax +49 (0)93 5240 4885 URL www.indramat.com	MTC 200 CNC	Motion/axis control	Fipway
Industrial Systems Monitoring/AdVoTech 3201 Lorna Road Birmingham, AL 35216 United States	Tel. +1 205-824-0222 Fax +1 205-824-0291 URL www.voicemmi.com	Voice MMI	HMI/operator panel	Modbus, Modbus Plus
		ISM communicator	HMI/operator panel	Modbus
Integrated Control Technology Inc. 871 Turnpike Street, Suite 208 North Andover, MA 01845 United States	Tel. +1 978-557-5882 Fax +1 978-557-5884 URL www.ictglobal.com	IBS-802 gateway Interbus-S	Communication hardware	Modbus Plus
Integrated Industrial Technologies, Inc. 221 Seventh Street, Suite 200 Pittsburgh, PA 15238 United States	Tel. +1 412-828-1200 Fax +1 412-828-0320 URL www.i2t-inmotion.com	IFC 020 2-Axis resolver	Motion/axis control	Quantum
		SCM 020/120 Stepper Motor Control	Motion/axis control	Quantum Compact
Intellution 1 Edgewater Drive Norwood, MA 02062 United States	Tel. +1 781-769-8878 Fax +1 781-769-1990 URL www.intellution.com	Fix Dmacs	HMI/SCADA	Modbus Plus
IPAC Technologies, Inc. 260 South Campbell Valparaiso, IN 46385 United States	Tel. +1 219-464-7212 Fax +1 219-462-5387 URL www.ipact.com	IPACT SA85 Device Driver	Communication software	Modbus Plus
		IPACT Communication Library	Communication software	Modbus Plus
Itmi Aptor 61 Chemin du Vieux Chêne F-38244 Meylan France	Tel. +33 (0)4 76 41 40 00 Fax +33 (0)4 76 41 28 05	CIU communicator	Communication hardware	Ethway Fipway
Kuka 1 Rue Blaise Pascal F-91380 Chilly Mazarin France	Tel. +33 (0)1 69 79 80 00 Fax +33 (0)1 69 79 80 01 URL www.kuka.com	KR C1 robot controller	Motion/axis control	Fipio
Mac Valves, Inc. 30569 Beck Road Wixom, MI 48393-7011 United States	Tel. +1 248-624-7700 Fax +1 248-624-0549 URL www.macvalves.com	Air Valve Interface	Pneumatic I/O interface	Modbus Plus
MagneTek, Inc. 16555 W Ryerson Road New Berlin, WI 53151 United States	Tel. +1 414-782-0200 Fax +1 414-782-1283 URL www.magnetek.com	GPD 515	Drive	Modbus Plus
		GPD333AC	Drive	Modbus Plus
MaueI Corporation 31 Old Cabin Hollow Road Dillsburg, PA 17019-8815 United States	Tel. +1 717-432-8686 Fax +1 717-432-8688 URL www.maueI-us.com	DI64 Plus 99-61-886	Electrical I/O interface	Modbus Plus
		DO128 Plus 99-61-P91N	Electrical I/O interface	Modbus Plus
MDT Software 2520 NorthWinds Parkway Suite 100 Alpharetta GA678/297-1000 United States	Tel. +1 678-297-1050 Fax +1 678-297-1003 URL www.mdtsoft.com	Mass Autosave	Miscellaneous software	Modbus Modbus Plus
Mettler-Toledo, Inc. 350 West Wilson Bridge Road Worthington, OH 43085 United States	Tel. +1 614-438-4511 Fax +1 614-438-4770 URL www.mt.com	Jaguar Weigh Scale	Miscellaneous sensor	Modbus Plus
Mitsubishi Electric Automation, Inc. 500 Corporate Woods Parkway Vernon Hills IL60061 United States	Tel. +1 847-478-2000 Fax +1 847-478-0327 URL www.meau.ea.com	FR-A500	Drive	Modbus Plus

Compact Automation Platform

Partnership products Schneider Alliances

Products directory

Company	Tel./Fax/URL	Reference	Category	Technology
Nemasoft, Inc. 124 Washington St., Suite 201 Foxboro, MA 02035 United States	Tel. +1 508-698-3611 Fax +1 508-698-3782 URL www.nemasoft.com	Paragon 500/550, AutoNet, PowerVIEW	HMI/SCADA	Modbus Modbus Plus
NexxCorp Information Systems, Inc. 235 Beatty Avenue Oshawa, Ontario L1H 3B4 Canada	Tel. +1 905-433-7566 Fax +1 905-579-5699	ModLINX	Communication software	Modbus Modbus Plus
Niobrara Research & Development Corp. P.O. Box 3418 2400 Tanyard Road Joplin, MO 64803 United States	Tel. +1 417-624-8918 Fax +1 417-624-8920 URL www.niobrara.com	MEB-TCP	Communication hardware	Modbus Plus
		Bridge PMN Modbus Plus to POWERLOGIC	Communication hardware	Modbus Plus
		QSPXM Seriplex Master	Communication interface boards	Quantum
		QUCM Universal Communications	Communication interface boards	Quantum
NovaTech, LLC 13604 West 107th Street Lenexa, KS 66215 United States	Tel. +1 913-451-1880 Fax +1 913-451-2845 URL www.novatech-llc.com	MUCM-B	Communication interface boards	Momentum
		Modem Micro PLC	Communication interface boards	Autres
Panel-Tec, Inc. P.O. Box 23942607 Leeman Ferry Road, Suite 7 Huntsville, AL 35804 United States	Tel. +1 256-534-8132 Fax +1 256-534-4769 URL www.panel-tec.com	BG-3500	Communication interface boards	Modbus Plus
		MD-3000	Communication interface boards	Modbus Plus
Parker Rue Henri Becquerel F-27031 Evreux France	Tel. +33 (0)2 32 23 34 00 Fax +33 (0)2 32 28 98 07 URL www.parker.com	Valvetronic 164	Pneumatic I/O interface	Fipio
ProSoft Technology, Inc. 9801 Camino Media, # 105 Bakersfield, CA 93311 United States	Tel. +1 805-664-7208 Fax +1 805-664-7233 URL www.prosoft-technology.com	SCANport Communication Adapter 1560-MBP	Communication hardware	Modbus Plus
Prosyst 70 Rue Jean Jaures 59770 - Marly France	Tel. +33 (0)3 20 90 43 33 Fax +33 (0)3 20 90 43 34 URL www.prosyst.fr	SIMAC	Miscellaneous software	Modbus Plus
RACO Manufacturing & Engineering 1400 62nd Street Emeryville, CA 94608 United States	Tel. +1 510-658-6713 Fax +1 510-658-3153 URL www.racomn.com	Verbatim Gateway	HMI/operator panel	Modbus Plus
Robicon 500 Hunt Valley Drive New Kensington, PA 15068 United States	Tel. +1 724-339-9500 Fax +1 724-339-8100 URL www.robicon.com	Clean Power, 454, Perfect Harmony	Drive	Modbus Modbus Plus
SAF Drive Systems Ltd. 88 Ardelt Avenue Kitchener, Ontario N2C 2C9 Canada	Tel. +1 519-743-5491 Fax +1 519-743-3610 URL www.safdrives.com	SAFphire - Programmable Linear Controller	Automation controller	Modbus Modbus Plus Symax/Synet
Schweitzer Engineering Laboratories, Inc. 2350 NE Hopkins Court Pullman, WA 99163-5603 United States	Tel. +1 509-332-1890 Fax +1 509-332-6187 URL www.seline.com	SEL-2711	Communication interface boards	Modbus Plus
Sciaky 119 Quai Jules Guesde, BP 43 F-94401 Vitry sur Seine France	Tel. +33 (0)1 45 73 43 00 Fax +33 (0)1 46 82 58 80 URL www.sciaky.com	CPS2000 RL2	Miscellaneous actuator	Fipio
Secheron Ltd. 14 Avenue de Secheron Geneva 21 Switzerland	Tel. +41 22 739 4111 Fax +41 22 738 7305 URL www.secheron.com	VMB OZ	Communication interface boards	Modbus Plus
Silicomp 195 Rue Lavoisier F-38330 Montbonnot St Martin France	Tel. +33 (0)4 76 41 66 66 Fax +33 (0)4 76 41 66 67 URL www.silicomp.com	Software development	Services	Fipio Fipway
Simulation Sciences 2500 City West Boulevard, Ste. 1200, Houston, TX 77042 United States	Tel. +1 713-683-1710 Fax +1 713-683-6613 URL www.simsci.com	AIM AIMAT	HMI/SCADA	Modbus Modbus Plus
SISCO, Inc. 6605 19 1/2 Mile Road Sterling Heights, MI 48314-1408 United States	Tel. +1 810-254-0020 Fax +1 810-254-0053 URL www.sisconet.com	AX-S4 MMS	Miscellaneous software	Modbus Modbus Plus
Sofrel Telecontrol 2 rue du Plessis F-35770 Vern sur Seiche France	Tel. +33 (0)2 99 04 89 00 Fax +33 (0)2 99 04 89 01	SOFREL S50, RTU for technical facilities	HMI/SCADA	Uni-Telway Modbus
		SOFREL S50 Thermix, RTU for HVAC applications	HMI/SCADA	Uni-Telway Modbus
Spectrum Controls, Inc. P.O. Box 5533 2700 Richards Road, Suite 200 Bellevue, WA 98005 United States	Tel. +1 425-746-9481 Fax +1 425-641-9473 URL www.spectrumctls.com	140 ACI 051 : 32-Ch analog input	Electrical I/O interface	Quantum
		SOI-260	HMI/operator panel	S800

Compact Automation Platform

Partnership products Schneider Alliances

Products directory

Company	Tel./Fax/URL	Reference	Category	Technology
S-S Technologies Inc. 50 Northland Road Waterloo, Ontario N2V 1N3 Canada	Tel. +1 519-725-5136	Universal Communication System	Communication interface boards	Modbus
	Fax +1 519-725-1515	Modicon RIO Interface Card	Communication interface boards	S800
	URL www.sstech.on.ca	QNX 4.X Device Administrator	Communication software	Modbus Plus
		PICS Simulation software	Miscellaneous software	Autres
		X-Link	Communication software	Modbus, Modbus Plus
Steeplechase Software 1330 Eisenhower Place Ann Arbor, MI 48108 United States	Tel. +1 734-975-8100	Visual Logic Controller - VLC-PDK	Miscellaneous software	Autres
	Fax +1 734-975-8123			
	URL www.steeplechase.com			
SWAC Odenpullach 1 82041 Oberhaching Germany	Tel. +49 89 316 8660	BTK 16, 32, 64, BT.GDA	HMI/operator panel	Modbus Plus
	Fax +49 89 316 866 80			
	URL www.swac.de			
TA Engineering Co., Inc. 1150 Moraga Way Moraga, CA 94556 United States	Tel. +1 925-376-8500	AIMAX for Windows	HMI/SCADA	Modbus Modbus Plus
	Fax +1 925-376-4977			
	URL www.ta-eng.com			
Tasnet, Inc. 5271 102nd Ave. North Pinellas Park, FL 33782 United States	Tel. +1 727-544-1555	Substation Automation and Communication Software Systems	Communication interface boards	Modbus
	Fax +1 727-545-8975			
	URL www.tasnet.com			
Toshiba 13131 West Little York Rd Houston, TX 77041 United States	Tel. +1 713-466-0277	G3 Inverter	Drive	Modbus Plus
	Fax +1 713-466-8773			
	URL www.toshiba.com			
TR Electronic Eglishalde, 6 D-78647 Trossingen Germany	Tel. +49 (0) 7425 228 0	CE65 absolute rotary encoders	Miscellaneous sensor	Fipio
	Fax +49 (0) 7425 228 33	LA 68K linear absolute coders	Miscellaneous sensor	Fipio
	URL www.trelectronic.com			
TURCK, Inc. 3000 Campus Drive Plymouth, MN 55441 United States	Tel. +1 612-553-7300	Sensoplex MC	Communication interface boards	Modbus Plus
	Fax +1 612-553-0708			
	URL www.turck.com			
Weed Instrument P.O. Box 300 707 Jeffrey Way Round Rock, TX 78680-0300 United States	Tel. +1 512-434-2844	Fiber Optic Modem 6000 EoTec	Communication hardware	Modbus Modbus Plus S800
	Fax +1 512-434-2851			
	URL www.weed-instrument.com			
Wonderware 100 Technology Drive Irvine, CA 92718 United States	Tel. +1 949-727-3200	Intouch	HMI/SCADA	Ethway Fipway Uni-Telway Modbus Plus
	Fax +1 949-727-3270			
	URL www.wonderware.com			
Xycom, Inc. 750 North Maple Road Saline Michigan MI 48176 United States	Tel. +1 734-429-4971	34XX	HMI/operator panel	Uni-Telway Modbus Modbus Plus
	Fax +1 734-429-1010			
	URL www.xycom.com			

Schneider worldwide



Country	Address		Country	Address	
Algeria	■ Schneider Electric Bureau de Liaison Algérie 04 rue du Berry - El Mouradia 16070 Algiers	Tel: (213) 269 80 03 Fax: (213) 269 80 02	Germany	■ Schneider Electric GmbH Gothaer Straße 29 D-40880 Ratingen	Tel: (49) 2102 4040 Fax: (49) 2102 404256 www.schneiderelectric.de
Argentina	■ Schneider Argentina Viamonte 2850 1678 Caseros (provincia B. Aires)	Tel: (54) 17 16 88 88 Fax: (54) 17 16 88 77	Greece	■ Schneider Electric AE 14th km - RN Athens-Lamia GR - 14564 Kifissia	Tel: (30) 16 29 52 00 Fax: (30) 16 29 52 10
Australia	■ Schneider PTY Ltd 2, Solent circuit Norwest Business Park NSW 2143 Baulkham Hill	Tel: (61) 298 51 28 00 Fax: (61) 296 29 83 40	Hong Kong	■ Schneider Electric (Hong Kong) Ltd 20/F, Cornwall House-Taikoo Place 979 King's Road Quarry Bay - Hong Kong	Tel: (852) 25 65 06 21 Fax: (852) 28 11 10 29
Austria	■ Schneider Austria Ges.m.b.H. Birostrasse 11 1239 Wien	Tel: (43) 1 610 540 Fax: (43) 1 610 54 65	Hungary	■ Merlin Gerin Vertesz XI Kerulet, Fehérvári ut 108 - 112 1116 Budapest	Tel: (36) 1 206 14 10 Fax: (36) 1 206 14 51
Belgium	■ Schneider MGTE N.V. - S.A. Dieweg 3 1180 Brussels	Tel: (32) 2 373 7711 Fax: (32) 2 375 3858 www.schneider.be	India	■ Schneider Electric India Pvt Ltd. D-27-South Extention Part II 110 049 New Dehli	Tel: (91) 116 25 76 58 Fax: (91) 116 25 80 80
Brazil	■ Schneider Electric Brazil S.A. Avenida Das Nações Unidas 23223 Jurubatuba CEP 04795-907 São Paulo-SP	Tel: (55) 115 24 52 33 Fax: (55) 115 22 51 34	Indonesia	■ Schneider Indonesia Ventura Building 7th Floor Jalan R.A. Kartini - Kav.26 Cilandak 12430 Jakarta	Tel: (62) 217 50 44 06 Fax: (62) 217 50 44 15
Bulgaria	■ Schneider Electric Expo 2000 Boulevard Vaptzarov 1407 Sofia	Tel: (359) 2 919 42 Fax: (359) 2 962 44 39	Iran	■ Telemecanique Iran 1047 Avenue VALI ASSR P.O. Box 15875-3547 15116 Teheran	Tel: (98) 218 71 01 42 Fax: (98) 218 71 81 87
Cameroon	■ Schneider Electric SA - Cameroun BP12087 16, rue de l'hôtel de ville Douala	Tel : (237) 30 13 99 Fax : (237) 43 11 94	Ireland	■ Schneider Electric Ireland Maynooth Road Celbridge - Co. Kildare	Tel: +353(0) 1 627 40 30 Fax: +353(0) 1 627 08 59 www.schneiderelectric.ie
Canada	■ Schneider Canada 19, Waterman Avenue M4 B1Y2 Toronto - Ontario	Tel: (1) 416 752 8020 Fax: (1) 416 752 4203 www.schneider.ca	Israel	■ Schneider Electric 11 Sha'ar Hayam 46606 Herzliya Pituach	Tel: (972) 99 58 25 01 Fax: (972) 99 56 57 15
Chile	■ Schneider Electric Chile S.A. Avda. Presidente Eduardo Frei Montalva, 6115-B Conchali Santiago	Tel: (562) 623 59 59 Fax: (562) 623 59 76	Italy	■ Schneider Electric S.p.A. Centro Direzionale Colleoni Palazzo Sirio - Viale Colleoni, 7 20041 Agrate Brianza (Mi)	Tel: (39) 39 655 8111 Fax: (39) 39 609 1510 www.schneider.it
China	■ Schneider Beijing Landmark bldg-Room 1801 8 North Dong Sanhuan Rd, Chaoyang District 100004 Beijing	Tel: (86) 10 65 90 69 07 Fax: (86) 10 65 90 00 13	Japan	■ Schneider Electric Japan Ltd SK Bldg, Sendagaya 4-14-4, Sendagaya Shibuya-Ku - 151 Tokyo	Tel: (81) 354 74 44 74 Fax: (81) 354 74 44 70 www.schneiderelectric.co.jp
Columbia	■ Schneider De Colombia S.A. Calle 45A#102-45 Santafe de Bogota Bogota	Tel: (57) 14 13 91 81 Fax: (57) 14 13 90 12	Kenya	■ Schneider East Africa Power Technics Complex PO Box 46345 - Nairobi	Tel : (254) 2 824 156 Fax : (254) 2 824 157
Cote d'Ivoire	■ Schneider Electric Afrique de l'Ouest Sarl 18 B.P.2027 Abidjan 18	Tel : (225) 25 69 69 Fax : (225) 25 69 86	Kuwait	■ Schneider Electric Kuwait c/o Marafie Sons Co. Algas Tower PO Box 122 13 002 Safat	Tel: (965) 240 75 46 Fax: (965) 240 75 06
Croatia	■ Schneider Electric SA Fallero_vo_etal_i te 22 10000 Zagreb	Tel : (385) 1 367 100 Fax : (385) 1 367 111	Malaysia	■ Schneider Malaysia Sdn Bhd No.11 Jalan U1/19, Seksyen U1 Hicom-Glenmarie Industrial Park Shah Alam 40150 Selangor Darul Ehsan	Tel: (60) 37 05 11 50 Fax: (60) 37 05 11 70
Cuba	■ Schneider Electric Bureau de Liaison de La Havane Calle 36- N°308-Apto-1- Entre 3ra y 5ta Avenida Miramar - Playa Habana	Tel: (53) 724 15 59 Fax: (53) 724 12 17	Mexico	■ Groupe Schneider Mexico Calz. Rojo Gomez N° 1121 Col. Guadalupe del Moral - México 09300	Tel: (525) 686 3000 Fax: (525) 686 2409
Czech Republic	■ Schneider Electric AS KOVO Building - Jankovcova 2 170 88 Praha 7	Tel: (420) 2 66 78 36 21 Fax: (420) 2 78 30 71	Morocco	■ Schneider Electric Maroc 26, rue Ibnou Khalikane Quartier Palmier 20100 Casablanca	Tel: (212) 299 08 48 to 58 Fax: (212) 299 08 67 to 69
Denmark	■ Schneider Electric A/S Baltorpbakken 14 DK - 2750 Ballerup	Tel: (45) 44 68 7888 Fax: (45) 44 68 5255	Netherlands	■ Schneider MGTE B.V. Waarderweg 40 - Postbus 836 2003 RV Haarlem	Tel: (31) 23 512 4124 Fax: (31) 23 512 4100 www.schneider.nl
Dominican Republic	■ Schneider Electric Calle Proyecto 27 de Febrero N° 5 Apto 102, Miraflores Santo Domingo	Tel: 1 (809) 686 82 66 Fax: 1 (809) 686 81 89	New Zealand	■ Schneider Ltd 14 Charann Place - Avondale P.O. Box 15355 New Lynn - Auckland	Tel: (64) 98 20 18 20 Fax: (64) 98 20 18 21
Ecuador	■ Schneider Ecuador Av. de los Shyris y Rio Coca Esq. Edificio Eurocentro - Segundo Piso 6466 Quito	Tel: (593) 2 25 03 23 Fax: (593) 2 43 49 40	Nigeria	■ Merlin Gerin Nigeria Ltd Plot 25, Sanni Tola Sonolki Close Off Harold Sodipo Crescent PO Box 12 505 Ikeja - Lagos	Tel: (234) 14 93 63 99 Fax: (234) 14 97 45 99
Egypt	■ Schneider Egypt 68, El Tayaran Street Nasr City Cairo	Tel: (20) 24 01 01 19 Fax: (20) 24 01 66 87	Norway	■ Schneider Electric Norge A/S Solgaard Skog 2 - Postboks 128 1501 Moss	Tel: (47) 6924 9700 Fax: (47) 6925 7871
Finland	■ Schneider Electric Oy Sinikalliontie 16 02630 Espoo	Tel: (358) 9 527 000 Fax: (358) 9 5270 0376 www.schneider.fi	Peru	■ Schneider Electric Peru S.A. Fransisco Canaval y Moreyra #452 Piso 15, of.2 San Isidro L - 27 Lima	Tel: (511) 221 54 60 Fax: (511) 221 81 84
France	■ Schneider Electric 43-45 bd Franklin Roosevelt 92500 Rueil Malmaison	Tel: 33 (0)1 41 29 80 00 Fax: 33 (0)1 41 29 81 95	Philippines	■ Schneider Electric Philippines, Inc 1314 Batangas Street Makati City Metro-Manila	Tel : (63) 28 44 84 18 Fax : (63) 28 16 00 63
France	■ Schneider Electric World Trade Centre 5, place R.Schuman 38050 Grenoble	Tel: 33 (0)4 76 57 60 60 Fax: 33 (0)4 76 90 49 64			

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Country	Address		Country	Address	
Poland	■ Schneider Electric Polska Sp. z o.o. Ul. Domaniewska 41 02-672 - Warszawa	Tel: (48) 22 606 25 00 Fax: (48) 22 606 11 66 (48) 22 606 11 58	United Kingdom	■ Schneider Ltd Braywick House East Windsor Road Maidenhead Berkshire SL6 1 DN	Tel: (44) 01628 508 500 Fax: (44) 01628 508 508 www.schneider.co.uk
Portugal	■ Schneider Electric Portugal Av. do Forte, 3 Edifício Suécia II, Piso 3-A CP 2028 Carnaxide 2795 Linda-A-Velha	Tel: (351) 1 416 5800 Fax: (351) 1 416 5857	United States	■ Groupe Schneider North American Division 1415 Roselle Road Palatine - IL 60067	Tel: (1) 847 397 2600 Fax: (1) 847 925 7500 www.squared.com www.modicon.com
Qatar	■ Schneider Electric Qatar Branch c/o K.B.F. P.O. Box 4484 Doha	Tel: (974) 42 39 38 Fax: (974) 32 28 61	Uruguay	■ Schneider Uruguay Gabriel Pereira 11300 Montevideo	Tel: (598) 27 07 23 92 Fax: (598) 27 09 07 13
Reunion	■ Schneider Electric Immeuble Futura 190, rue des 2 canons BP 646 97497 Sainte Clothilde	Tel : (262) 28 14 28 Fax : (262) 28 39 37	Venezuela	■ Schneider Mg SD TE, S.A. Calle 5 Con Calle 9 Edificio Marte, Piso 1 La Urbina - Aptdo. postal 75319 1070 Caracas	Tel: (58) 22 41 13 44 Fax: (58) 22 42 43 30 www.schneiderven.com
Rumania	■ Schneider Electric Bd Ficusului n° 42 «Apimondia», Corp.A, et.1, Sector 1 Bucuresti	Tel: (40) 1 203 06 50 Fax: (40) 1 232 15 98	Vietnam	■ R.R.O. Of Schneider Electric S.A. KM Plaza - 2nd Floor 51-53, Vo Van Tan Street - Q3 Ho Chi Minh City	Tel: (84) 88 29 60 72 Fax: (84) 88 29 60 67
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Slovenia	■ Schneider Electric Techniski Biro - Dunasjka 106 pp 69 61000 Ljubljana	Tel: (386) 61 168 5007 Fax: (383) 61 168 5426			
South Africa	■ Schneider Electric South Africa PO Box 482 CNR Old Pretoria Road & Impala Road Eastgate Ext.8 2012 Bergviel-Sandton	Tel: (27) 11 802 52 72 Fax: (27) 11 804 41 79			
South Korea	■ Schneider Electric Korea Ltd Seoul 2/3Floor, Jail Bldg., 94-46, 7-Ka Youngdeungpodong, Youngdeungpo-ku 137-037 Seoul	Tel : (82) 26 30 97 00 Fax : (82) 26 30 98 00 to 03			
Spain	■ Schneider Electric España, S.A. Pl. Dr. Letamendi, 5-7 08007 Barcelona	Tel: (34) 93 484 3100 Fax: (34) 93 484 3308 www.schneiderelectric.es			
Sweden	■ Schneider Electric AB Djupdalsvägen 17/19 19129 Sollentuna	Tel: (46) 8 623 84 00 Fax: (46) 8 623 84 85			
Switzerland	■ Schneider Electric (Switzerland) S.A. Schermenwaldstrasse 11 - Postfach 3063 Ittigen	Tel: (41) 31 917 3333 Fax: (41) 31 917 3355 www.schneiderelectric.ch			
Taiwan	■ Schneider Electric Taiwan Co Ltd 11-2, N°51, Keelung Road, Sec.2 110 Taipei	Tel: (886) 27 33 14 64 Fax: (886) 27 33 64 10			
Thailand	■ Schneider Thailand Ltd (HQ) 75/77, Sukhumvit 26 rd - 21 st Floor Richmond Office Bldg Klongtoey 10110 Bangkok	Tel: (66) 22 60 82 20 Fax: (66) 22 60 82 51			
Tunisia	■ Schneider Electric Sarl 13, rue El Mansourah El Mensal IV Ariana 2080 Tunis	Tel: (216) 175 00 99 Fax: (216) 175 03 42			
Turkey	■ Schneider Elektrik A.S. Sanayi Ve Ticaret A.S. Tütüncü Mehmet Efendi Cad. N°:110 Kat: 1 81080 Göztepe-Istanbul	Tel: (90) 21 63 86 95 70 Fax: (90) 21 63 86 38 75 www.schneiderelectric.com.tr			
Ukraine	■ Schneider Electric Rue Krechtchatik 2 252601 Kiev	Tel : (380) 44 462 04 25 Fax : (380) 44 462 04 24			
United Arab Emirates	■ Schneider Electric Dubai PO Box 9251 Dubai	Tel: (971) 431 36 19 Fax: (971) 431 36 98			

For all countries throughout the world or countries not mentioned above (except France), coordination is ensured by :

for Europe: **Schneider Electric SA-Division Europe**
43-45, Bd. Franklin Roosevelt
92500 Rueil Malmaison Cedex - France
T : (33)1 41 29 80 00
Tf: (33)1 47 32 99 09

for : Africa - South America - Asia - Caribbean - India - Middle East - Pacific areas
Schneider Electric-Division Internationale
World Trade Center
5, Place Robert Schuman
38000 Grenoble - France
T : (33)4 76 57 60 60
Tf: (33)4 76 60 63 63

www.schneiderautomation.com

Schneider Electric
Industries SA

Marketing Headquarters

5, rue Nadar
F - 92566 Rueil-Malmaison
Cedex
Tel. : +33 (0)1 41 29 82 00
Fax : +33 (0)1 47 51 80 20

European Division

43-45, bd Franklin Roosevelt
F - 92504 Rueil-Malmaison
Cedex
Tel. : +33 (0)1 41 29 80 00
Fax : +33 (0)1 47 14 07 47

International Division

World Trade Center - Europole
F - 38050 Grenoble
Cedex
Tel. : +33 (0)4 76 57 60 60
Fax : +33 (0)4 76 60 63 63

North America Division

1415, South Roselle Road
USA - Palatine, IL 60173
Tel. : 00+ 1 847 397 2600
Fax : 00+ 1 847 925 7500



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