AMC2 - Access Modular Controller

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▶ Intelligent access manager for one to eight entrances

▶ Four interfaces include the reader power supply

▶ Standard 2 GB compact flash

▶ LCD display for displaying information

▶ Self-controlling send and receive switching

The AMC2 (Access Modular Controller) is used as an access controller in the access control systems ACE (ACCESS ENGINE) from version 2.0 onward, Access Personal Edition, and Access Professional Edition. The device controls a group of one to eight access points. These access points, also known as entrances, mainly consist of doors, gates, barriers, turn stiles, revolving doors, mantraps, ID card readers, door opening elements and sensors. The AMC2 can control up to eight ID card readers (depending on the reader type) and is designed for fully processing the access logic at the assigned entrances.

Status checks can be carried out using the eight analog inputs. The eight relay outputs are used to activate the door opening elements and/or generate the security activation and signaling. The AMC2 stores all necessary information in a battery-buffered memory and a compact flash storage element so that, even when the unit is offline, it is able to carry out independent authorization checks on access points, take access decisions, control closing/opening elements and register movement events.

System overview
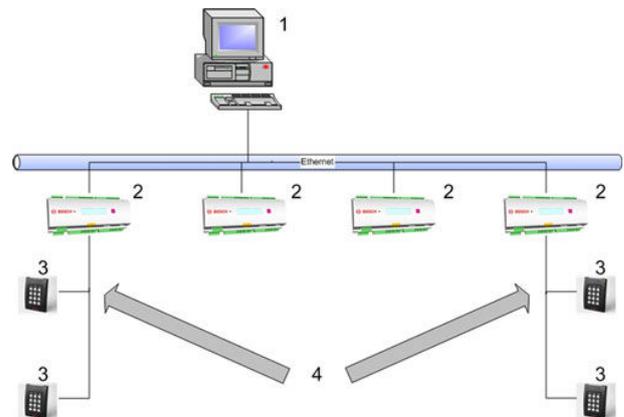
1 = Host computer
2 = AMC2
3 = Card reader
4 = Communication and power supply

As shown in the diagram, the AMC2 is integrated between the host system (e.g. Access Engine) and the peripheral devices.

They are connected to the host system via RS485, RS232 (e.g. modem operation) or Ethernet, depending on the size of the system. The relevant host interface is selected during installation. All three interfaces are

available on the device by default. With RS485 operation, a maximum of eight AMC2's can be connected to one party line.
There are up to four slots on the peripheral bus for readers, including the slot for the power supply.

Functions

- Storing downloaded data as listed below:
  - Master data
  - Authorizations
  - Access models
  - Display texts
  - Reader configurations
- Interpretation of transaction data from reader
  - Authorization check
  - Host request
  - PIN code
- Control/monitoring
  - Denial or door release
  - Switching alarm
  - Door statuses
  - Reader operation statuses
  - Internal alarm statuses
- Messages to Access Engine
  - Host requests
  - Transaction data for storing
  - Error and malfunction messages
  - Alarm messages
- Power supply for
  - Readers
  - Door openers
  - Contact current feeds

Certifications and approvals

Region	Certification	
Europe	CE	EC-Declaration of Conformity
	EN50131	2101498_0551-QUA_EMC IEC 60950-1 Safety general
	EN50131	2101498.0552-QUAIEMC EMC Directive 2004/108/EC
	EN50131	EN60950 210440750 IEC 60950-1 Safety General
Poland	CNBOP	0902 PL_CNBOP 0902
	CNBOP	0903 PL_CNBOP 0903

Installation/configuration notes

Power supply
An external power supply (10 to 30 V DC) for the AMC2 is connected to the first (positive) and third pin (negative).
When using an uninterruptible power supply (UPS), the relevant UPS output relay is connected to the pins
- 4 and 7 for alternating current
- 5 and 7 for the battery
- 6 and 7 for direct current
Otherwise, these pins will short-circuit.
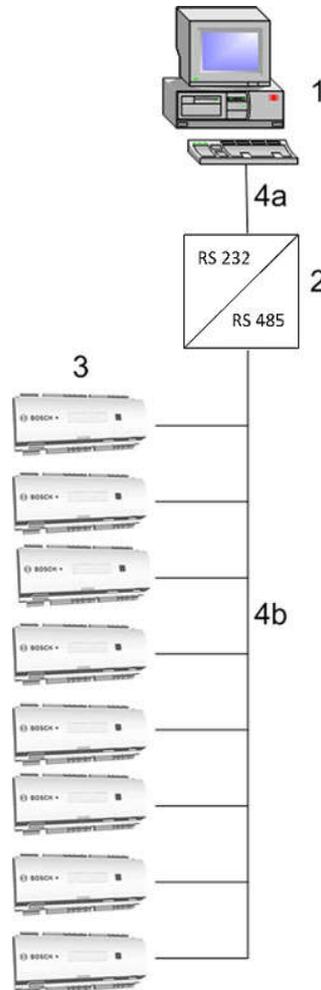
Host connections

RS232 host interfaces
The Access Engine application administers up to 32 serial direct connections (ports), theoretically allowing 32 AMC2's to be directly connected in series.

> **ℹ Notice**
> Since PCs only have a maximum of two COM interfaces by default, the following connection variants are preferable for configurations with more than two AMC2's:

1 = Host computer
2 = RS232/485 converter
3 = AMC2
4a = RS232 connection
4b = RS485 connection: Up to eight AMC2's can be connected to one RS485 interface for each converter. The interface converter should be used if more than two AMC2's are connected.
The interface converter generates an RS485 bus (2 or 4-wire) from a COM port and thus allows up to eight AMC2's to be connected with the RS485-typical distances (1200 m/3900 ft.).

Alternatively, the RS485 host interface (2 or 4-wire) can be activated in the AMC2 via a jumper. There are two sets of connection points; one for the incoming and one for the outgoing bus system.

Quantity restrictions
- Please follow the Access Engine installation and configuration instructions regarding the maximum number of access controllers on one access control system and the number of cardholders.
- Max. 4 access points/entrances
- Max. 4 ID card readers
- Max. 3 peripheral devices via internal RS485 bus
- Max. 200,000 cardholders

ID card reader connections

Wiegand interfaces
The AMC2 4W has four connections for connecting up to four ID card readers.
ID card reader and door control element interfaces are split into four channels, each with four connection plugs.
The following definitions apply to the Wiegand interface:
- 10-wire interface (incl. shield)
- Maximum cable length of 158 m (500 ft.) to ID card reader
- 26-bit Wiegand format
- 37-bit Wiegand format

Default configuration of the Wiegand interface on the ID card reader:

1	12V+ reader power supply
2	12V- reader power supply
3	Data line 0
4	Data line 1
5	Shield
6	Green LED
7	Red LED
8	Acoustic signal
9	Delay
10	Show card

RS485 interfaces
The AMC2 4R4 has four connections for connecting up to eight ID card readers. The interfaces are divided to two busses – all possible readers (up to eight) can be connected to one interface.
RS485 interface definition:
- 2-wire interface: Using the 10-pin pluggable connector.
- Max. length of the bus: 1200 m
- Transfer rates: 9,6 or 19,2 kBit/s

Default configuration of the Rs485 interface on the ID card reader:

1	12V+ reader power supply
2	12V- reader power supply
3	Shield
4	Data RxTx+
5	Data RxTx-
6	Data shield (PAG)
7	Not connected
8	Not connected
9	Not connected
10	Not connected

Reader and door models
The AMC2 controls the connected reader via predefined door models.
Door models govern in accordance with the relevant security requirements
- Number and usage of the readers connected to the AMC2, e.g. input and output readers, input readers and buttons etc.
- Number and application type of the AMC inputs, e.g. door status, output button, revolving door position, GMA etc.
- Number and usage of AMC outputs, e.g. door opener, mantrap contact, signal light switching etc.

The maximum number of entrances to be managed by one AMC2 is ultimately defined by the door models used and their requirements regarding readers and inputs/outputs.

> **i** **Notice**
> Therefore, when planning an access system, you must first assign the relevant door models to all entrances that are to be controlled. Only then can you configure the AMC reader.

Voltage equalization - grounding
- Different voltages can be equalized using jumpers with protective ground.
- A line (shield, equipotential bonding line) with protective ground can only be connected in one position.
- For further instructions, please see the operating manual!

Contacts

Inputs
The eight analog inputs can be used as digital or analog contacts. For analog use, resistance values can be specified that make it possible to carry out a further check for cable breaks and short-circuits.

Relay outputs
The relay outputs offer the following functions:
- The outputs can operate with potential free contacts for external power supply (dry mode).

- The outputs can operate using the internal voltage of power supply (wet mode).
- Only ohm resistive loads can be connected to the relay.
- Inductive loads must be bypassed via recovery diodes. These diodes (1N4004) are enclosed.

General instructions
- AMC2 and related equipment should be mounted in a "secured area".
- Detailed connection conditions are specified in the operating manual!
- After purchase, primary AC power must be carried out by a licensed electrician.

Technical specifications

Hardware	CPU RENESAS M32C84 Integrated Microcontroller (32Bit, 30MHz)
	512 kB-EPROM/FLASH
	256 kB-SRAM
	Serial EEPROM
	RTC
	Pluggable 2 GB compact flash
	Battery for SRAM and RTC
	Host address can be set via sliding switch
	Host interface: - RS485 (2- or 4-wire); opto-decoupled - RS232 - Ethernet 10/100BaseT (TCP/IP) with RJ45
	4 reader interfaces: - Wiegand or - RS-485, 2-wire, opto-coupled, 19.200 Bd
	8 relay outputs: - max. switching voltage: 30 V DC - max. switching current: 1,25 A
	8 monitored analog inputs
	Tamper switch
	Reset button
Temperature	0°C to +50°C (32°F to 122°F)
Power supply	10 to 30 VDC, max. 60 VA Available for external devices: 55 VA
Environment class	IP 30
Housing	Base: PPO (UL 94 V-0) Upper: Polycarbonate (UL 94 V-0)
Color	White
Dimensions	WxHxD: 232 x 90 x 63 mm (9.13 x 3.54 x 2.48 in.)

Weight	Approx. 0.53 kg (1.17 lb)
Type	Rail mounting

Ordering information

AMC2 4W-CF - Wiegand Interfaces
Four Wiegand interfaces for up to 4 card readers, network connection to the host system and Compact Flash memory (2 GB).
Order number **APC-AMC2-4WCF**

AMC2 4R4-CF - RS-485 Interfaces
Four RS-485 interfaces for up to 8 card readers, network connection to the host system and Compact Flash memory (2 GB).
Order number **APC-AMC2-4R4CF**

AMC2 8I-8O-EXT
8 input/output extension board, up to three per AMC, can be combined with the AMC2 16I-EXT and the AMC2 16I-16O-EXT
Order number **API-AMC2-8IOE**

AMC2 16I-16O-EXT
16 input/output extension board, up to three per AMC, can be combined with the AMC2 16I-EXT and the AMC2 8I-8O-EXT
Order number **API-AMC2-16IOE**

AMC2 16I-EXT
16 input extension board, up to three per AMC, can be combined with the AMC2 16I-16O-EXT and the AMC2 8I-8O-EXT
Order number **API-AMC2-16IE**

AMC2-16ION
Standalone Controller with inputs and outputs only. Compatible with BIS in combination with OPC Server only.
Order number **API-AMC2-16ION**

Accessories
AMC2 4W-EXT - Wiegand Extension Board
The extension module AMC2 4W-EXT is equipped with four Wiegand type reader-interfaces plus eight inputs and eight outputs. Hence with the AMC2 4W-EXT it is possible to double the number of readers on an AMC2 4W from 4 to 8.
Order number **API-AMC2-4WE**

AMC2 ENC-UL1 - Enclosure - Small
AMC2 enclosure with single din rail.
Order number **AEC-AMC2-UL1**

AMC2 ENC-UL2 - Enclosure - Large
AMC2 enclosure with two din rails.
Order number **AEC-AMC2-UL2**

AEC-PANEL19-4DR - Mounting plate with four DIN rails
Mounting plate with four DIN rails for 19" racks to connect max. four AMC2 devices.
Order number **AEC-PANEL19-4DR**

AEC-PANEL19-UPS - Mounting plate with two DIN rails
Mounting plate with two DIN rails, a battery bracket, and screw sockets for the power supply to mount into 19" racks.
Order number **AEC-PANEL19-UPS**

PBC-60 - power supply and battery charger
A power supply unit with an integrated battery charging device.
Order number **APS-PBC-60**

Gel Battery 12 V / 7.2 Ah
(DU = 1 unit)
Order number **IPP-12V-7.2Ah**

AMC RAIL-250 mounting rail
Mounting rail (250 mm) for mounting the access controller AMC-4W without the metal housing AMC ENC-V1.
Order number **ACX-RAIL-250**

AMC RAIL-400 mounting rail
Mounting rail (400 mm) for mounting the AMC-4W, AMC PS-12V-60W and AMC UPS-12V when the metal housing AMC ENC-V1 is not used.
Order number **ACX-RAIL-400**