Energy Training Solutions - Modular Offers

Catalogue 2018

schneider-electric.com/teaching-solutions
Modular offers

The modular offers are designed for developing and setting up the products used in the residential and small services or industrial sectors.

With the modular offer it is possible to make your own configurations using training modules that can be mounted on a support structure. These training modules are designed to be connected and powered using a uniform connection system in complete safety.

The operating parts simulate simple, real processes. The control parts are also designed for connection with some of the operating parts included in the training solutions catalog, either using sockets or Sub-D connections.

The Modular Offers consist of a range of specific automation and energy management components according to the type of offering. There are seven different offers:

- The KNX modular offer making it possible to implement components for the building and small services sectors.
- The Residential and Small Services (RSS) modular offer allows you to implement the components of an electrical installation for homes and small services.
- The Solar modular offer allows you to understand how energy is produced using solar panels.
- The iRIO Telemetry offer that is used to optimize energy consumption.
- The Industry modular offer (automation, motor-starter and machine safety) will allow you to implement automation solutions.

Each modular offer can be adapted to the specific situation by acquiring the modules separately.

Examples of modules

Advantages:
- Scalable solution
- Space-saving and easy-to-store
- Quick to install
- Possibility of setting up different configurations without any wiring constraints
- Safety and connections guaranteeing a long service life for the connection devices
Catalog organization

The catalog is divided into sections to help you make your choice

Building management modules
Solution for making an electrical installation in complete safety in the small services and building sectors.

Overall energy management modules
Systems that will allow you to use renewable energy systems and manage energy consumption.

Process and machine management modules
- Industrial automation and communication:
  Solutions that will allow you to understand programming and communications between systems.
- Automated systems:
  Solutions for implementing automated systems or production lines.
- Speed controller and movement control:
  Variable speed drive systems for synchronous, asynchronous and brushless motors.

Machine safety modules
Solutions allowing you to study the basic components for automation and machine safety systems.
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Building management modules

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Products compliant with the provisions of European Directives

Compliance report available on request

All our discovery packs are supplied with a digital medium containing the documents in PDF format and the other user files.

Secure cords are sold separately, see additional modules and accessories section
Building management modules

KNX modular offer

**Training objectives:**
- Analyze the functionalities and principles of a home automation installation
- Wire the components
- Configure the system according to various scenarios.

**Electrical and mechanical characteristics**
- **Power supply:**
  230 V ~ single phase + G / 200 VA
- **Dimensions (H x L x D) - weight:**
  Structure: 1030 x 910 x 400 mm – 6.5 kg
  Single module: 244 x 150 x 70 mm – 0.7 kg

**Package presentation**

The KNX modular offer allows you to explore the very latest in intelligent building solutions:
- Internationally recognised standard, and certified system
- Flexible and cost-effective

The products proposed allow you to perform functions such as:
- Roller shutter control
- Lighting control and dimming
- Heating control and variation
- Measurement and supervision

**The KNX modular offer comprises:**

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**Inputs and sensors:**
- Artec double pushbutton module
- Artec 8-key multifunction pushbutton module with infrared receiver
- Artec 4-key multifunction pushbutton module
- M-PLAN 8-key multifunction pushbutton module with infrared receiver
- 4-button pushbutton module with thermostat function
- 230 VAC 4-input module
- 2-binary input module
- Room temperature thermostat module
- Motion sensor modules
- Occupancy sensor module
- Motion and light sensor module with infrared receiver
- Compact weather station module with associated sensor
- 8-ON/OFF input module
- 3-channel metering module

**Display and control:**
- Logic module
- Programmable timer module
- 8-LED module
- 7” screen module
- InsideControl smartphone function router module
- HomeLink router and controller module

**System components:**
- KNX bus 160 power supply module
- KNX bus 320 power supply module
- 24 VAC / VDC power supply module
- 24 VDC power supply module
- Single-phase protection module
- System coupler module
- USB interface module
- KNX / IP router module

All these components are interconnected via the KNX bus which complies with the ISO/IEC 14 543-3 international standard.
The functions are configured on a PC using ETS 5 Pro or Lite software.
The KNX modular offer comprises (cont’d):

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All these components are interconnected via the KNX bus which meets the ISO/IEC 14 543-3 international standard.
The functions are configured on a PC using ETS 5 Pro or Lite software. The licenses are supplied in the MD1AMLKNXxxx predefined packs. The ETS5 Lite license allows you to create an application with 20 participants at the most. There is no limit with the Pro version.
The licenses are provided on a USB memory stick and can be validated on a KNX.org account.
Building management modules

Actuator modules

4-OUTPUT ACTUATOR MODULE MD1AM3 003

Characteristics

- **Function:**
  Heating, air conditioning, lighting

- **Power supply:** KNX bus
  - Rated voltage: 230 VAC
  - Rated current: 16 A (Cos = 0.6)
  - Rated power:
    - 230 VAC incandescent lamps: 3600 W
    - 230 VAC halogen lamps: 2500 W
    - 230 VAC fluorescent lamps: 2500 W

- **Contents:**
  One pair of jumpers (red and black)

The 4-output actuator module allows you to switch the four outputs independently from each other via the NO or NC contact. All the outputs can be actuated manually using the switches on the front of the module. A green LED indicates the module’s operating status.

- Examples of software functions:
  - Time delay for each channel
  - Timer
  - Alert
  - Interlock
  - Scenarios

Module comprises:
- MTN647593 - 4-output actuator module

PROGRAMMABLE TIMER MODULE MD1AM3 006

Characteristics

- **Power supply:** KNX bus
  - Operating accuracy: < + 1 s / day
  - Power reserve: 1.5 years

- **Contents:**
  One pair of jumpers (red and black)

The programmable timer module includes a 4-channel annually programmable quartz clock. Programming is done manually on the device, or on a PC using the Obelisk software (option).

- Characteristics:
  - 324 permanent switching times for daily, weekly or fixed-date operations, pulse control.
  - 1 operation for public holidays
  - 10 weekly programs per channel for public holidays
  - Choice of forming channel blocks + week days
  - Manual operation possible by pre-selecting operations and permanent switching
  - Random program
  - Control without network connection

- Examples of software functions:
  - Switch
  - Variable control
  - Date and time transmission on the bus

Module comprises:
- MTN6606-0008

Schneider Electric

Modular offers catalog 2017
### 1-CHANNEL VARIABLE CONTROL MODULE
**MD1AM3 005**

#### Characteristics

- **Function:** Lighting
- **Power supply:** KNX bus
  - Rated voltage: 230 VAC
  - Rated power: 500 W / VA
  - Minimum rated power:
    - Resistive loads: > 30 W
    - Capacitive loads: > 50 VA
- **Contents:** One pair of jumpers (red and black)

The variable control module allows you to switch and vary the current on an output. The output can be actuated manually using the pushbutton on the front of the module. A green LED indicates the module’s operating status. A yellow and green LED respectively indicate the channel's status and a fault on the channel.

- **Examples of software functions:**
  - Reaction to switching on
  - Memory function
  - Various variation speeds and curves
  - Switching off by relative variation
  - Minimum brightness level
  - Configuring in case of bus cutout / restoration

Module comprises:
- MTN649350 - Variable control actuator

### 4-CHANNEL VARIABLE CONTROL ACTUATOR
**MD1AM3 046**

#### Characteristics

- **Function:** Lighting
- **Power supply:**
  - 4*150 W resistive load - 25 W (minimum)
  - Resistive-inductive load - 50 VA (minimum)
  - Resistive-capacitive load - 50 VA (minimum)
- **Contents:** One pair of jumpers (red and black)

- **Examples of software functions:**
  - Manual control
  - Automatic detection of the type of load
  - Connection of different manual control phases that can be activated/deactivated via the bus
  - Function for changing the min / max variation value
  - The variation and value object switches channel b
  - Time delay at closing and/or opening
  - Variation curve with 3 configurable thresholds
  - Reduction of the variation time with object
  - Stairway timer with / without manual cutout, possibility of re-opening, configurable advance notice
  - Time adding
  - Scenario (1 byte) 8
  - Logical operation or AND, OR priority forcing
  - Switching status return /brightness value / error

Module comprises:
- MTN649315
The variable control module allows you to switch and vary the current on 2 independent outputs. The outputs can be actuated manually using the pushbutton on the front of the module. Allows you to control resistive / inductive / capacitive loads of 50 VA minimum and 300 W maximum. It automatically detects the type of load.

- Examples of software functions:
  - Min / max variation value
  - Central and the scenarios
  - Time delay at closing and/or opening
  - Variation curve with 3 configurable thresholds
  - Reduction of the variation time
  - Configurable variation curves
  - Timer
  - Status and brightness value feedback
  - Configuring in case of bus cutout / restoration

Module comprises:
- MTN649315 - Variable control actuator

Controls a Dali ballast
Associates with the KNX DALI MD1AM3 020 module
The module includes an interface between the KNX bus and the stabilizers / transformers with 1 – 10 V control.

- control via the 1 – 10 V interface
- power supply from 220 to 240 V
- line frequency: 0 Hz / 50 Hz / 60 Hz
- line voltage: 198 to 264 V
- dimming range: 3 to 100 % of the luminous flux
- lamp comes on within 0.6 s
- service life: > 100,000 hrs (for T = 65° C at Tc)
- Automatic cutout of defective lamps and at end of life

- EEI index: A1 BAT
- protection against overheating: heat management at high temperature TC
- connection to the lamp (not supplied) with 4 mm safety sockets

Module comprises:
- OSRAM - 060860
Building management modules

Actuator modules

3-CHANNEL 1-10 V ACTUATOR MODULE MD1AM3 042

Characteristics

- **Function:** Lighting
- **Power supply:** KNX bus
  - Rated voltage: 230 VAC
  - Switching current: 16 A, \( \cos = 0.6 \)
- **Contents:** One pair of jumpers (red and black)

The module includes an interface between the KNX bus and the stabilisers / transformers with 1 – 10 V control.

- **KNX software functions**
  - Various variation speeds and curves
  - Identical variation time
  - Memory function
  - Switching on/off time delay
  - Stairwell timer with/without manual cutout function
  - Ambience (calling up to 8 recorded brightness values)
  - Central function
  - Logical operators or forced guiding
    - Interlock
    - Status return message
    - Reaction to bus voltage restoration.

Module comprises:
- MTN646991

KNX/DALI ETH GATEWAY MODULE MD1AM3 020

Characteristics

- **Function:** Lighting
- **Power supply:** KNX bus
- **Contents:** One pair of jumpers (red and black)

The module includes an interface between the KNX bus and the stabilisers / transformers with 0 – 10 V control.

- **KNX software functions**
  - Various variation speeds and curves
  - Identical variation time
  - Memory function
  - Switching on/off time delay
  - Stairwell timer with/without manual cutout function
  - Ambience (calling up to 8 recorded brightness values)
  - Central function
  - Logical operators or forced guiding
    - Interlock
    - Status return message
    - Reaction to bus voltage restoration.

Module comprises:
- MTN6725-0001
Building management modules

Actuator modules

**230 V ROLLER SHUTTER ACTUATOR MODULE MD1AM3 008**

**Characteristics**

- **Function:**
  - Openings

- **Power supply: KNX bus**
  - Input voltage: 230 VAC
  - Contact current: 10 A (Cos = 0.6)
  - Motor load: 230 VAC, max 1000F

- **Contents:**
  - One pair of jumpers (red and black)

The roller shutter actuator module allows you to switch two blind or roller shutter drives independently. A “Hand” pushbutton and an associated red LED enable manual operation. In this mode, all the outputs can be actuated manually by means of pushbuttons. Yellow LEDs indicate the status of each channel. A green LED indicates the module’s operating status.

- Examples of software functions:
  - Choice of the type of blind
  - Operating / Pause time
  - Interlock
  - Weather alarm
  - Scenarios
  - Feedback

Module comprises:
- MTN649802 - 230 VAC roller shutter actuator

---

**24 V POWER BLIND ACTUATOR MODULE MD1AM3 041**

**Characteristics**

- **Function:**
  - Openings

- **Power supply: KNX bus**
  - Input voltage: 230 VAC
  - Contact current: 0.13 A

- **Contents:**
  - One pair of jumpers (red and black)

The function of the shutter channels can be freely configured. All the shutter outputs can be actuated manually using the keys on the front of the actuator. A green LED indicates the operating status.

- KNX software functions:
  - Slat management
  - Operating time
  - Pause time
  - Length of each step
  - Differentiated interlock functions
  - Weather alarms
  - 8-bit positioning for height and slats
  - Scenarios
  - Manual / Automatic function
  - Differentiated information and status feedback functions

Module comprises:
- MTN648704 - Switching actuator
- ABL8MEM24012 - Module power supply 24 VDC
**FAN-HEATER ACTUATOR MODULE**  
**MD1AM3 033**

**Characteristics**

- **Function:** Heating, air conditioning
- **Power supply:** KNX bus  
  Rated voltage: 230 VAC  
  Switching power for 0.5 A 24 – 230 VAC valves
- **Contents:** One pair of jumpers (red and black)

The module includes an actuator for adjusting the heating, ventilation and air conditioning. The actuator is used to control 3-speed fan-convector heaters and 3-point motor drives (continuous / pulsed modulation) or 2-point thermal drives. The actuator functions with 2-tube and 4-tube systems. Two binary inputs, for example for the window contact and the filling level contact, for the condensate recuperation tank.

- **Type of regulator:** PI regulation (PWM and continuous)
- **Regulator mode:** heating and/or air conditioning with shared or separate valves.
- **Operating modes:** the selection is made using the multifunction push-button with thermostat.

**Outputs:**
- 3 no-voltage contacts (fan)
- 2 switches for valves

**Module comprises:**
- MTN645094 - Fan coil REG-K actuator KNX

---

**SERVO-MOTOR MODULE**  
**MD1AM3 021**

**Characteristics**

- **Function:** Heating, air conditioning
- **Power supply:** KNX bus
- **Contents:** One pair of jumpers (red and black)

The module includes a proportional electric servomotor with integrated bus coupler, a microprocessor control with automatic detection of valve travel and two integrated binary inputs ("window open" sensor).

- **Examples of software functions:**
  - Position of the set value
  - Effective position
  - Status message
  - Forced adjustment
  - Limited value

- **Travel range:**
  - 1.0 mm min
  - 4.5 mm max
  - Operating time: 25 s / mm

**Module comprises:**
- MTN6921-0001
SERVO-MOTOR MODULE
MD1AM3 034

Characteristics
- Function:
  Heating, air conditioning
- Power supply:
  Input voltage: 230 VAC

The module includes a thermostatic regulator for opening and closing the valves. For the 2-point or PMW regulators for heater, air conditioning and ventilation appliances, the room-by-room regulation for surface heating systems, the control of the heating circuit distributors, radiators, convectors, air-conditioning ceiling.

- First-Open function: on reception, the drive is open (NO). The heating can therefore function even in the construction phase
- Normally Closed (NC)
- Display of the functions (opening, closing, intermediate steps)
- Normally Closed (NC)
- Display of the functions (opening, closing, intermediate steps)
- Adaptation control
- Anti-dismantling protection

Module comprises:
- MTN639125 - Thermo-electric servomotor
Building management modules

Input modules and sensors

ARTEC DOUBLE PUSHBUTTON MODULE MD1AM3 009

Characteristics

- **Function:** Openings
- **Power supply:** KNX bus
- **Contents:** One pair of jumpers (red and black)

The module includes a double pushbutton (4 keys with serigraphy suited to roller shutter control). The programming micro-switch and LED are accessible by unclipping the module.

- Examples of software functions:
  - The keys can be configured in pairs (start upwards, stop downwards) or as individual keys.
  - Switching on
  - Switching off
  - Variation
  - Scenarios
  - Control of blinds (configuration in pairs)

Module comprises:

- MTN626299 - ARTEC double control pushbutton
- MTN626760 - ARTEC - ALUMINUM double control

ARTEC 8-KEY MULTIFUNCTION PUSHBUTTON MODULE + INFRARED MD1AM3 010

Characteristics

- **Function:** Heating, air conditioning, lighting
- **Power supply:** KNX bus
- **Contents:** One pair of jumpers (red and black)

The module includes a quadruple pushbutton (8 keys) and an infrared receiver for the remote control. The lower center part on the front can be configured as an additional control key.

The keys can be configured:

- Paired: ON on one key and OFF on another
- One by one: ON and OFF on the same key

Operation and status blue indicator light for each key.

The programming micro-switch and LED are accessible by unclipping the module.

- Examples of software functions:
  - Switch with short press / long press
  - anti-bounce
  - Switch
  - Variable control (paired or single)
  - Control of blinds (paired or single)
  - Leading edges triggering data packets (1 to 8 bits)
  - Leading edges with 2-byte data packets
  - 8-bit sliding controller
  - Scenario storage and recall
  - Interlock

Module comprises:

- MTN628460 - Artec 8 multifunction pushbutton
Building management modules

Input modules and sensors

ARTEC 4-KEY MULTIFUNCTION PUSHBUTTON MODULE
MD1AM3 011

Characteristics

- **Function:**
  Heating, air conditioning, lighting

- **Power supply:** KNX bus

- **Contents:**
  One pair of jumpers (red and black)

The keys can be configured:
- Paired: ON on one key and OFF on another
- One by one: ON and OFF on the same key

Operation and status blue indicator light for each key.
The programming micro-switch and LED are accessible by unclipping the module.

- Examples of software functions:
  - Switch with short press / long press/ anti-bounce
  - Variable control (paired or single)
  - Control of blinds (paired or single)
  - Leading edges triggering data packets (1 to 8 bits)
  - Leading edges with 2-byte data packets
  - 8-bit sliding controller
  - Interlock

Module comprises:
- MTN628160 - ARTEC 4 multifunction pushbutton

ROOM TEMPERATURE THERMOSTAT MODULE
MD1AM3 037

Characteristics

- **Function:**
  Heating, air conditioning, lighting

- **Power supply:** KNX bus

- **Contents:**
  One pair of jumpers (red and black)

The room temperature thermostat module can be used for heating or cooling with continuously variable KNX servomotors to control the switching and heating actuators.
The back-lit color screen displays the time, date, temperature and operating mode.

- Example of functions:
  - Heating / cooling with regulator output
  - Heating / cooling with separate regulator outputs
  - Heating / cooling with 2 regulator outputs

Module comprises:
- ALB45154
Building management modules

Input modules and sensors

**M-PLAN 8-KEY MULTIFUNCTION PUSHBUTTON MODULE + INFRARED MD1AM3 019**

**Characteristics**
- **Function:**
  - Lighting
- **Power supply:** KNX bus
- **Contents:**
  - One pair of jumpers (red and black)

The module includes a quadruple pushbutton (8 keys) and an infrared receiver for the remote control. The lower center part on the front can be configured as an additional control key. The keys can be configured in pairs (ON on one key and OFF on another) or one by one (ON and OFF on the same key). Operation and status blue indicator light for each key. The programming micro-switch and LED are accessible by unclipping the module.

- Examples of software functions:
  - Switch with short, long press
  - Switch
  - Variable control (paired or single)
  - Control of blinds (paired or single)
  - Leading edges triggering data packets
  - Leading edges with 2-byte data packets
  - 8-bit sliding controller
  - Scenario storage and recall
  - Interlock

Module comprises:
- MTN627960

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**4-BUTTON PUSHBUTTON MODULE MD1AM3 017**

**Characteristics**
- **Function:**
  - Heating, air conditioning, lighting
- **Power supply:** KNX bus
- **Contents:**
  - One pair of jumpers (red and black)

The module includes 4 control keys with a display screen and a thermostat, an operating indicator that also serves as night-light and a piezo buzzer alarm. The thermostat can be used for heating or air conditioning by means of continuously adjustable KNX servomotors or for the binary control of switching or heating actuators. Type of regulator: 2-point regulation, continuous PI regulation, PI regulation with switching (PWM). For example, the white-display screen displays: the time, date, temperature and operating mode.

The keys can be configured:
- Paired: ON on one key and OFF on another
- One by one: ON and OFF on the same key

The programming micro-switch and LED are accessible by unclipping the module.

- Examples of software functions:
  - Switch with short, long press, and anti-bounce
  - Switch
  - Variable control (paired or single)
  - Control of blinds (paired or single)
  - Time delay
  - Alarm
  - 8-bit sliding controller
  - Interlock
  - Cyclic reading of the outdoor temperature

Module comprises:
- MTN6212-0460 - M-Plan multifunction pushbutton module
Building management modules

Input modules and sensors

**M-PLAN 4-BUTTON MULTIFUNCTION MODULE MD1AM3 027**

**Characteristics**

- **Function:**
  Lighting

- **Power supply:** KNX bus

- **Contents:**
  One pair of jumpers (red and black)

The keys can be configured:
- Paired: ON on one key and OFF on another
- One by one: ON and OFF on the same key

Operation and status blue indicator light for each key. The programming micro-switch and LED are accessible by unclipping the module.

Examples of software functions:
- Switch with short, long press, and anti-bounce
- Switch
- Variable control (paired or single)
- Control of blinds (paired or single)
- Leading edges triggering data packets (1 to 8 bits)
- Leading edges with 2-byte data packets
- 8-bit sliding controller
- Interlock

**Examples of software functions:**

- Switch with short, long press, and anti-bounce
- Switch
- Variable control (paired or single)
- Control of blinds (paired or single)
- Leading edges triggering data packets (1 to 8 bits)
- Leading edges with 2-byte data packets
- 8-bit sliding controller
- Interlock

Module comprises:
- MTN486160 - 4-button ALU Plan

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**M-PLAN 4-BUTTON MODULE WITH THERMOSTAT MD1AM3 029**

**Characteristics**

- **Function:**
  Lighting

- **Power supply:** KNX bus

- **Contents:**
  One pair of jumpers (red and black)

The module includes 4 control keys with a display screen and a thermostat, an operating indicator that also serves as night-light and a piezo buzzer alarm.

The thermostat can be used for heating or air conditioning by means of continuously adjustable KNX servomotors or for the binary control of switching or heating actuators.

Type of regulator: 2-point regulation, continuous PI regulation, PI regulation with switching (PWM).

The white-display screen displays for example: time, date, temperature and operating mode

The keys can be configured:
- Paired: ON on one key and OFF on another
- One by one: ON and OFF on the same key

The programming micro-switch and LED are accessible by unclipping the module.

Examples of software functions:
- Switch with short, long press, and anti-bounce
- Switch
- Variable control (paired or single)
- Control of blinds (paired or single)
- Time delay
- Alarm
- 8-bit sliding controller
- Interlock
- Cyclic reading of the outdoor temperature

Module comprises:
- MTN6212-4146 - Multifunction control
Building management modules

Input modules and sensors

**OCCUPANCY AND BRIGHTNESS SENSOR + INFRARED**
**MD1AM3 014**

**Characteristics**
- **Function:** Lighting
- **Power supply:** KNX bus
  - Detection angle: 360°
  - Range: 10 to 17 m
  - Brightness sensor: Continuously adjustable from 10 to 1000 lux approx.
- **Contents:**
  - One pair of jumpers (red and black)

The module includes an indoor motion sensor with infrared receiver for the remote control. An integrated brightness sensor makes it possible to adjust the lighting level according to the presence of people. When a movement is detected, a data telegram defined during the programming stage is sent. The programming micro-switch and LED are accessible by unclipping the module.

- **Examples of software functions:**
  - Brightness threshold adjustment
  - Triggering of up to 3 functions on detection
  - Feedback

**Module comprises:**
- MTN630919 - Outdoor presence sensor + Infrared

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**MOTION SENSOR**
**MODULE 180**
**MD1AM3 013**

**Characteristics**
- **Function:** Lighting
- **Power supply:** KNX bus
  - Detection angle: 180°
  - Range: 8 m
  - Brightness sensor: Continuously adjustable from 5 to 1000 lux approx.
- **Contents:**
  - One pair of jumpers (red and black)

The module includes an indoor motion sensor with a brightness sensor. When a movement is detected, a data telegram defined during the programming stage is sent. The programming micro-switch and LED are accessible by unclipping the module.

- **Examples of software functions:**
  - Time delay
  - Operation timer (stairwell)
  - Triggering of up to 4 functions on detection
  - Feedback

**Module comprises:**
- MTN632660 - ALU motion sensor
Building management modules

Input modules and sensors

**230 VAC 4-INPUT MODULE**  
**MD1AM3 004**

**Characteristics**

- **Function:** Heating, air conditioning, lighting
- **Power supply:** KNX bus  
  - Input voltage: 230 VAC  
  - Contact current: 12 mA  
  - Low level threshold: 40 V  
  - High level threshold: 160 V
- **Contents:** One pair of jumpers (red and black)

The 4-input module is used to connect conventional devices with 230 VAC outputs. The four inputs have a yellow status display LED. A green LED indicates the module’s operating status.

- **Examples of software functions:**  
  - Switch with short press / long press / anti-bounce  
  - Variable current control or shutter control  
  - Leading edges triggering data packets (1 to 8 bits)  
  - Scenarios  
  - Interlock  
  - NO contact / NC contact

Module comprises:  
- **MTN644990** - 230 VAC 4-binary input module

**2-BINARY INPUT MODULE**  
**MD1AM3 015**

**Characteristics**

- **Function:** Heating, air conditioning, lighting
- **Power supply:** KNX bus  
  - Contact voltage: < 3 V (SELV) for each input / output  
  - Contact current: < 0.5 mA  
  - Output current: 2 mA max
- **Contents:** One pair of jumpers (red and black)

The module includes an interface that generates an internal signal for connecting conventional pushbuttons or no-voltage contacts. There are two switches wired for local simulation. The two inputs have a yellow status display LED.

- **Examples of software functions:**  
  - Switch with short press / long press / anti-bounce  
  - Variable current control or shutter control  
  - Leading edges triggering data packets (1 to 8 bits)  
  - Scenarios  
  - Meter  
  - Interlock  
  - NO contact / NC contact

Module comprises:  
- **MTN670802** - 2-binary input module
**8-ON/OFF INPUT MODULE**
**MD1AM3 051**

**Characteristics**
- **Function:** Heating, air conditioning, lighting
- **Power supply:** Power supply: 24 VDC
- **Contents:** One pair of jumpers (red and black)

24 VDC 8-input module. This module has been specially designed to be used with the IO virtual home solution presented on page 40, but it can also be used in control mode instead of the KNX pushbutton (for example by using the conventional MD1AM6xxx pushbutton). To be used with the MD1AM0 029 module.

- **Examples of software functions:**
  - ON/OFF switch, ON switching, OFF switching
  - Variable control (control on 1 or 2 inputs)
  - Blinds / roller shutters (control on 1 or 2 inputs, values of the blind / roller shutter and slat positions)
    - Wavefronts (1, 2, 4 or 8 bits)
    - 8-bit sliding controller
    - Scenarios
    - Pulse and switching counter with resetting
    - Cyclic monitoring
    - Locking function
    - Short press / long press function
    - NO contact / NC contact
    - Anti-bounce interval

**Module comprises:**
- MTN644592

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**MOTION SENSOR MODULE**
**MD1AM3 018**

**Characteristics**
- **Function:** Lighting
- **Power supply:** KNX bus
- **Contents:** One pair of jumpers (red and black)

The module includes an indoor motion sensor with infrared receiver for the remote control. When a movement is detected, a data telegram defined during the programming stage is sent. When the device is functioning in relation with the brightness (for the lighting control), it permanently checks the brightness in the room and stops the artificial lighting actuator when there is a sufficient level of natural light, even if there is someone in the room. A brightness sensor is used to adjust the level of brightness when there is someone present in the room. The programming micro-switch and LED are accessible by unclipping the module.

- **Examples of software functions:**
  - Brightness threshold adjustment
  - Triggering of up to 3 functions on detection
  - Feedback

**Module comprises:**
- MTN632760
Building management modules
Input modules and sensors

COMPACT WEATHER STATION MODULE
MD1AM3 047

Characteristics

● Function:
Heating, air conditioning, lighting

● Power supply:
Power supply: 230 VAC required for the heating
Detection angle: 150°
Measurement ranges: -20 ... +55 °C and from 1 to 100,000 lux

● Contents:
One pair of jumpers (red and black)

The weather station measures the weather data and sends them to the bus: wind, brightness and temperature can be used independently or combined.
● 4 universal channels.
● 3 solar protection channels for controlling the blinds / roller shutters
● activation on twilight threshold.

Module comprises:
● MTN663990

3-CHANNEL METERING MODULE
MD1AM3 048

Characteristics

● Function:
Measuring

● Power supply:
Rated voltage: 220/230 VAC, 50/60 Hz
Number of channels: 3
Current per channel: 16 A max. - 20 mA min. (power factor 1)
Accuracy: class 1

● Contents:
One pair of jumpers (red and black)

Device for measuring and monitoring the consumptions on 3 channels.
● Memorisation in case of power cut:
○ Adjustable power unit (Wh / kWh)
○ Total and partial meter (reset)
○ Transmission of the instantaneous power and values.
○ Power-save function: commands can be sent on threshold overshoots
○ Alarm-on-threshold function
○ Consumption values

○ Adjustable rated voltage (210-240 V).
○ 4 tariff-related power meters.
○ Sum of the values from the various channels and of the external values
○ Power overshoot, total power and tariff status

Module comprises:
● MTN6600-0603
Building management modules

Input modules and sensors

CO2/HUMIDITY/TEMPERATURE MODULE
MD1AM3 052

Characteristics
- Power supply: KNX bus
- Contents: One pair of jumpers (red and black)

Management of the air quality in meeting rooms, offices, classrooms, homes with controlled ventilation. Alert when the dewpoint is reached for the cooling system.

- Examples of software functions:
  - Adjustment of the thresholds between 500 and 2550 ppm (physical value object between 0 and 9999 ppm)
  - Three independent thresholds for the CO2 and humidity, and one level for the temperature (an action can be performed if the threshold level is not reached or is overshot). Each threshold has a locking level.
  - Transmission of values or of switching

- Measurement ranges:
  - CO2: 300 to 9999 ppm (accuracy ± 120 ppm to ± 300 ppm)
  - Temperature: 0-40 °C (accuracy: ± 1 °C)
  - Relative humidity: 1 to 100% (accuracy: ± 5%)

Module comprises:
- MTN6005-0001

REMOTE CONTROL MODULE
MTN5761-0000

Characteristics
- Power supply: Two AAA batteries type IEC LR 0.3 AAA (not included)

Universal infrared remote control, 10 channels.

Operating principle: infrared communication with infrared receivers using telegrams. Coding compatible with the infrared receivers.

- Screen: 1 red LED
- Max. range: 12 m

To be used with modules MD1AM3 010, MD1AM3 014, MD1AM3 019.

Module comprises:
- MTN5761-0000
Building management modules

Human-Machine Interface modules

7” SCREEN MODULE
MD1AM3 024

Characteristics

- **Function:** Display and control
- **Power supply:** KNX bus
  - Power supply: 115/230 VAC, 50Hz
  - Consumption: 4.3 to 8 W
- 17.8 cm (7”) screen 800x480 pixels TFT, 65000 colours with LED back-lighting
- Configuring in ETS with dedicated plug-in (ergonomic programming and preview of the screen pages)
- 1 LAN connection (10/100 Mbits/s) + 1 KNX connection + 1 USB port
- Operating System: Windows CE.NET

The KNX 7” touchscreen is used to display and monitor the building switching and lighting variation functionalities.

- Examples of software functions:
  - Roller shutter/blind management
  - Integrated temperature controller
  - Scenario storage and recall
  - Transmission and display of values (1 bit to 4 bytes)
  - Logical functions
  - Locking module
  - Dynamic selection of the language via a KNX object
  - Time programmer with synchronisation via KNX or Internet
  - Presence simulation (sequence storage and recall)

- Alarm log
- Internet browser
- Automatic standby mode: freeze frame, slide show or screen switched off
- Password-protected
- Configurable user interface

Module comprises:
- MTN6260-1007

KNX/IP INSIDE CONTROL GATEWAY MODULE
MD1AM3 044

Characteristics

- **Function:** Display and control
- **Power supply:** choice between
  - External 12-24 VAC or 12-30 VDC (SELV)
  - MDAM3 032 or MD1AM3 023 modules
  - Power over Ethernet
- **Contents:** One pair of jumpers (red and black)

The InSideControl gateway connects the KNX installation to the IP network (LAN). Up to 5 smartphones or tablets can control the installation via the Inside Control App/HD App, available for IOS and Android.

- The gateway supports the DHCP Internet protocol. Its IP address can be assigned dynamically (DHCP server) or manually (parameters in ETS).
- The gateway can serve as interface for accessing the bus (for example for ETS programming).
- The application’s functionalities are configured using the InSideControl Builder software (free download from www.schneider-electric.com/fr).

- Easy to configure:
  - Configuring of the functionalities via the InSideControl Builder software (Windows or Mac)
- User friendly:
  - Room-by-room or overall control of the lighting, blinds, scenarios and temperature from a tablet or smartphone
  - Display of the status and information feedback: temperature, wind speed, power consumption, etc.
  - Consumption: 800 mW max.
  - Display: 2 LEDs (KNX and Ethernet programming)
  - Width: Two 18-mm modules

Module comprises:
- MTN6500-0113
Human-Machine Interface modules

**HOMELINK MODULE**
**MD1AM3 049**

**Characteristics**

- **Function:**
  - Viewing, communication and control

- **Power supply:**
  - Input voltage: 24 VDC
  - MDAM3 032 module

- **Contents:**
  - One pair of jumpers (red and black)

- **Examples of software functions:**
  - Lighting, openings, HVAC and status feedback
  - Calendars (day, month, year, holidays)
  - Power management
  - Camera
  - Viewing from Smartphones, tablets, PCs, and web touchscreens
  - Remote access control
  - Integration of Modbus devices
  - Creation of BACnet points (BACnet server functionality)
  - Alerts
  - Logical functions

**KNX/MODBUS GATEWAY MODULE**
**MD1AM3 050**

**Characteristics**

- **Function:**
  - Viewing and communication

- **Power supply:**
  - KNX bus

- **Contents:**
  - One pair of jumpers (red and black)

- **Examples of software functions:**
  - Lighting, openings, HVAC and status feedback
  - Calendars (day, month, year, holidays)
  - Power management
  - Camera
  - Viewing from Smartphones, tablets, PCs, and web touchscreens
  - Remote access control
  - Integration of Modbus devices
  - Creation of BACnet points (BACnet server functionality)
  - Alerts
  - Logical functions

The Modbus / KNX measurement Gateway transmits the measured power and the consumption values from the Slave Modbus meters connected to the BUS. Maximum of ten meters.
The ETS application has pre-programmed templates for 17 different models of Modbus Schneider Electric Modbus equipment.
For the other Modbus products, up to 40 registers can be assigned directly to KNX communication objects.

**Module comprises:**
- LSS100100
- MTN6503-0201
BUS 160 MA POWER SUPPLY MODULE MD1AM3 001

Characteristics

- **Function:**
  - BUS power supply
- **Power supply:**
  - Input voltage: 230 VAC
- **Contents:**
  - One pair of jumpers (red and black)

The module is connected to the 230 V mains power downline of an appropriate electrical protection device (single-phase 230 VAC / 10 A protection module, reference MD1AM2 001). It delivers the power required for KNX bus operation.

- **Characteristics:**
  - Maximum number of participants on the bus: 32
  - Protection: short-circuit proof
  - Three 4-mm safety sockets identified L, N and ground are available for distributing the power to the other modules.

Module comprises:
- MTN684016

24 VDC POWER SUPPLY MODULE MD1AM3 032

Characteristics

- **Function:**
  - Module power supply
- **Power supply:**
  - KNX bus
  - Network voltage: 230 VAC
  - Output voltage: 24 VDC (± 3%)
  - Output current: 0.4 A

The module has a 24 VDC, 0.4 A power supply. Protection against short-circuits and overloading.

Module comprises:
- MTN693003 - REG power supply, 24 V

System Architecture Modules
Building management modules

System Architecture Modules

SYSTEM COUPLER MODULE MD1AM3 002

Characteristics

- **Function:**
  Line creation

- **Power supply:** KNX bus

- **Contents:**
  One pair of jumpers (red and black)

The system coupler module provides the logical link and the galvanic separation of lines and domains. There is a switch for switching from "coupler" mode to "amplifier" mode.

In coupler mode, the component is wired in parallel to the bus and creates a new line (or zone).

In amplifier mode, the bus enters into the component to be shaped and then exits.

Module comprises:

- MTN680204 - System Coupler / Repeater

USB INTERFACE MODULE MD1AM3 007

Characteristics

- **Function:**
  ETS programming

- **Power supply:** KNX bus

- **Contents:**
  One USB 1.1 / 2.0 cable
  One pair of jumpers (red and black)

The module includes a USB / KNX interface for programming and diagnosis. The PC, with the ETS software, is connected to the USB module using the USB cable supplied.

- **Characteristics:**
  - Compatibility: USB 1.1 or USB 2

Module comprises:

- MTN681829 - USB interface module
Building management modules

System Architecture Modules

### 24 VDC + 24 VAC/2.5 A POWER SUPPLY MODULE
**MD1AM3 023**

**Characteristics**

- **Function:** System architecture
- **Power supply:** KNX bus
  - Rated voltage: 230 VAC

The module is connected to the 230 V mains power downline of an appropriate electrical protection device (single-phase 230 VAC / 10 A protection module, reference MD1AM2 001).

It delivers the power required for the operation of modules powered with 24 VDC and VAC. The max current is 2.5 A.

Module comprises:
- ABL7RM24025 - Modular power supply

### KNX 320 MA POWER SUPPLY MODULE
**MD1AM3 028**

**Characteristics**

- **Function:** BUS power supply
- **Power supply:** KNX bus
  - Network voltage: 230 VAC
  - Output voltage: 29 VDC +/- 1V
  - Output current: 320 mA max
- **Contents:** One pair of jumpers (red and black).

The module is connected to the 230 V mains power downline of an appropriate electrical protection device (single-phase 230 VAC / 10 A protection module, reference MD1AM2 001).

It delivers the power required for KNX bus operation.

- **Characteristics:**
  - Maximum number of participants on the bus: 64
  - Protection: short-circuit proof
  - Three 4-mm safety sockets identified L, N and ground are available for distributing the power to the other modules.

Module comprises:
- MTN684032 - KNX power supply
Building management modules

System Architecture Modules

**IP ROUTER MODULE
MD1AM3 031**

Characteristics

- **Function:**
  ETS programming

- **Power supply: KNX bus**
  Input voltage: 12 to 30 VDC
  (For 24 VDC 40 mA), 12 to 24 VAC

- **Contents:**
  One pair of jumpers (red and black)

The module is used to connect a programming or diagnosis device to KNX via an Ethernet network. There is a directly accessible RJ45 port on the component.

The IP address can be assigned dynamically via a DHCP server or by manual configuring (ETS parameters).

Other functionality: system coupler.

Module comprises:
  - MTN680329 - KNX IP router

**INTÉSIS BOX GATEWAY
MODULE
MD1AM3 039**

Characteristics

- **Function:**
  ModBus communication

- **Power supply:**
  Power supply block provided

- **Contents:**
  One pair of jumpers (red and black)

The module includes a KNX interface: Server-type ModBus.

Maximum of 100 group addresses can be defined.

ModBus functions 03 and 04 are used in read mode.

ModBus functions 06 and 16 are used in write mode.

Module comprises:
  - IBOX-KNX-MBRTU-100
Building management modules

Modules for operational parts

8-LIGHT MODULE
MD1AM3 035

Characteristics

- Function:
  Operational part

- Power supply: KNX bus
  Rated voltage: 230 VAC

The module includes 8 green indicator lights fitted with black sockets.

Module comprises:

- ZB6DV3 - Green rectangular indicator light head
- 2B6M3B - Complete body for green indicator light

15 W LAMP BRACKET
MODULE
MD1AMP 004

Characteristics

- Function:
  Operational part

- Power supply:
  Rated voltage: 230 VAC
  Power rating: 15 W

The operational part comprises an incandescent lamp with a power rating of 15 W. It is designed to serve as load for KNX modules.

It comprises:

- A transparent window for checking that the lamp functions.
- Two black sockets for powering the lamp with 230 VAC
Building management modules

Modules for operational parts

**ELECTRIC SHUTTER MODULE**
**MD1AMP 007**

**Characteristics**
- **Function:** Operational part
- **Power supply:**
  - Rated voltage: 230 VAC

The operational part represents a motorised electric shutter. The electric shutter is controlled by two commands: “raise” and “lower”. Automatic stopping is ensured in the raised, shutter open, and in the lowered, shutter closed positions.

Control voltage: 230 VAC.

The module comprises:
- A motorised shutter mechanical system
- One LED simulating a lamp in the home
- Two 4-mm black sockets for the “raise” command
- One yellow LED indicating presence of the “raise” command
- Two 4-mm black sockets for the “lower” command

**50 W FLU+HALO+LED LAMP SUPPORT MODULE**
**MD1AMP 009**

**Characteristics**
- **Function:** Operational part

The operational part can serve as load for the KNX modules for example.

It comprises:
- A transparent window for checking that the lamp functions.
- Two black sockets for powering the lamp with 230 VAC

Three versions are available:
- Module for 18 W compact fluo lamp bracket operational part: MD1AMP 026
- Module for 6 W LED lamp bracket operational part: MD1AMP 027
- Module for 230 V halogen lamp bracket operational part: MD1AMP 028
Building management modules

Modules for operational parts

DALI-T/E BALLAST MODULE MD1AMP 021

Characteristics

- **Function:** Operational part
- DALI T/E 1x18-57 W DIM ballast Operational Part + DULUX D/E 18 W lamp
  - Associates with the KNX DALI MD1AM3 020 module

1-10 V BALLAST MODULE MD1AMP 022

Characteristics

- **Function:** Operational part
- **Power supply:**
  - Input voltage: 230 VAC
  - Power rating: 18 W
- 1-10 V 1x18-57W DIM ballast Operational art + DULUX D/E 18 W lamp
  - Associates with the MD1AM3 042 module
Building management modules

Modules for operational parts

DALI RGB MODULE
MD1AMP 025

Characteristics

- **Function:**
  Operational part

- **Power supply:**
  Input voltage: 230 VAC

DALI Ballast operational part
Management of 3 independent DALI addresses.
Management of 3 independent colors.

Each channel has 2 or 3 colored LEDs:
- channel 1: red
- channel 2: blue
- channel 3: green

2 KW HEATING RADIATOR MODULE
MD1AMP 010

Characteristics

- **Function:**
  Operational part

- **Power supply:**
  Rated voltage: 230 VAC
  Power rating: 2000 W

The operational part consists of an electric radiator and 4-mm safety sockets for easy connection to the various control modules.
Building management modules

Modules for operational parts

230/400 V ROLLER SHUTTER MODULE
MD1AMP 015

Characteristics

- **Function:** Opening
- **Power supply:**
  - Rated voltage: 230 VAC

Equivalent to the MD1AA SHUTTER module.
The module includes a standard roller shutter with raise and lower orders via 4-mm safety sockets.
Height: 600 mm
Width: 550 mm

VENETIAN BLIND MODULE
MD1AMP 023

Characteristics

- **Function:** Opening
- **Power supply:**
  - Rated voltage: 24 VDC

The module includes a Venetian blind with adjustable slats.
The 24 VDC motor actuates the raise, lower and slat angle adjustment movements.
The self-locking brake can stop the blind at any height.
Building management modules

Modules for operational parts

WATER METERING MODULE
MD1AMP 017

Characteristics

- **Function:** Operational part
- **Power supply:** Input voltage: 24 VDC

The water metering module consists of a measuring device that is used to evaluate an installation's water consumption. A meter is based on the principle that it is not possible to precisely measure the volume of water that has passed through a pipe: this is therefore an estimate of the real flow. The only reliable method would be to measure the volume poured into a container in a given length of time.

The cost of water treatment is very high. The monitoring and exact calculation of the consumptions are becoming a requirement for consumers. The installation of individual water meters (homes, industry and shops, communities, etc.) is inevitable, despite a certain amount of disagreement regarding the ways of achieving this.

PT100 TEMPERATURE MODULE
MD1AMP 018

Characteristics

- **Function:** Operational part

Consisting of a PT100 probe and a 0/10 V converter, this module can be associated with the Weather Station or iRIO analog inputs.
Building management modules

Modules for operational parts

Software - interface package making it possible to enjoy the home automation experience to the full, this solution is designed to function with KNX- instructional modules.

The HOME I/O software with its 8I/8O interface makes it possible to create a 3D virtual home that can be controlled by external devices. The package can advantageously take the place of the real operational parts, while keeping the connections to the home-automation sensors and actuators.

Power consumption will evolve according to the control settings and weather conditions. You can accelerate time to allow you to model system functioning.

Developed in partnership with Reims University and the Real Games company, the HOME I/O software is marketed by Schneider Electric. This software was acknowledged to be of educational Interest by the French Ministry of Education in 2014.

External control can be ensured using a KNX bench.
A KNX connection module is proposed as an option (MD1AM3 051 module).

● One licence for the HOME I/O software.
● One ON/OFF 8-input and 8-output interface box.

HOME IO VIRTUAL HOME MODULE MD1AM0 029

Characteristics

● Function:
  Operational part

● Power supply:
  Input voltage: 24 VDC
Building management modules

Auxiliary parts

24 VDC POWER SUPPLY MODULE 2.5 A
MD1AM4 001

The module is a voltage converter that is used to power the various 24 VDC modules.

This single-format module comprises:
- One red socket marked 24 V for the power supply
- One blue socket marked 0 V
- One “Europa” connector for the mains power supply
- One green ON indicator light to indicate the module is powered up

Characteristics

- **Power supply:**
  - Output voltage: 24 VDC
  - Input voltage: 230 VAC
  - Current: 2.5 A

- **Contents:**
  - One pair of jumpers (red and blue)
  - Power supply cable

SINGLE-PHASE PROTECTION MODULE
MD1AM2 001

This single-format protection module comprises:
- One 10 A 30 mA residual current circuit-breaker equipped with an undervoltage trip coil.
- One mains socket for connecting the power cord supplied.
- A white “Power ON” light indicating module status
- An emergency stop button for instantaneously cutting out the power supply.
- Set of three safety sockets (black, blue and yellow / green) for easy connection to other modules

Characteristics

- **Power supply:**
  - Rated voltage: 230 VAC
  - Current: 10 A

- **Contents:**
  - Power supply cable
  - One pair of black jumpers

Module comprises:
- ZB6AS834 - Emergency stop button head
- ZB622B - Complete one “O” contact body
- ZB6AV1 - White indicator light round head
- ZB6EM1B - Body for white 230 V LED indicator light
- ZBEY009 - Base for body
- 24201 - C60N two-pole circuit-breaker 10 A
- 26509 - VIGI C60N two-pole block 30 mA - 25 A
- 26960 - MN 230 VAC trip
The KNX Discovery pack is referenced MD1AML KNXCI, and comprises:

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<th>Designation</th>
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Technical and training manual on digital medium
## Building management modules

### KNX discovery packs

The KNX Discovery pack is referenced MD1AA KNXD, and comprises:

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*Technical and training manual on digital medium*
Building management modules

KNX standard pack

The KNX Professional pack is referenced MD1AML KNXPRO.

The KNX-PRO solution is a standard training package for the KNX solution and its most common functions:
- ON/OFF switching (lighting, heating).
- Light dimming.
- Electric roller shutter control.

It allows you to highlight the implementation advantages compared with conventional wiring through the wiring of a non-KNX pushbutton or of a Hotel badge reader function.

The activities are more varied thanks to the 4 pushbuttons (simple or multifunction) and an IR remote control. It has a KNX motion sensor in order to program condition-dependent actions.

It also allows you to use the light dimmer solution via the 1-10V output and power measurement on KNX.

KNX bus programming is done via USB or the local area network.

It consists of:

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<th>Reference</th>
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Technical and training manual on digital medium
Building management modules

**KNX standard pack**

The complete KNX pack is referenced MD1AM3BA, and comprises:

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**Technical and training manual on digital medium**
Building management modules

Energy Efficiency packs

The KNX Techno pack is referenced MD1AML KNXEE. This bench is used to learn about the KNX solutions that meet the RT2012 requirements, that’s to say ensure active energy efficiency and comfort. It includes the most commonly used functions that will generate energy savings thanks to control via the KNX protocol. The components are taught using boxes to be installed on a support, and connected by secure cords. This pack can be completed by real operational parts such as the roller shutter proposed as an option.

It consists of:

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Technical and training manual on digital medium
Building management modules

Residential and small services modular offer

Training objectives:
- Learn about and carry out component wiring
- Optimize energy consumption by using appropriate products
- Maintenance operations on an installation

Overall presentation

The Residential and Small Services (RSS) modular offer allows you to study and install the components of an electrical installation for homes and small services. It consists of four training packs designed to help you discover, learn about and use the main functions found when making electrical installations in homes and in the small services sector.

These packs are of increasing complexity and complement one another:
- The first pack allows you to create the functions found in one- or two-room type accommodation.
- The second pack consists of products that complement those in the first pack and implements functions found in three- and four-room type accommodation.
- The third pack includes products that complement the first two, and examines the main functions found in small service sector buildings.
- The fourth pack - the energy efficiency pack - allows you to examine all the economic and energy management aspects through the utilization of programmer, twilight switching, timer, time-switch type products.

Electrical and mechanical characteristics

- Power supply: 230 V - 50 Hz / < 15 A
- Dimensions (H x L x D) - weight:
  - Structure: 1030 x 910 x 400 mm – 6.5 kg
  - Single module: 244 x 150 x 70 mm – 0.7 kg

Main sectors concerned
- Electrical engineering
- Civil engineering

Other sectors
- All energy-related sectors

Designation

- DB90 circuit breaker panel module with tariff meter
- 1P + N 10 A circuit-breaker module
- 1P + N 16 A circuit-breaker module
- 1P + N 16 A residual current circuit-breaker module
- 1P + N 20 A residual current circuit-breaker module
- 16 A remote control switch with integrated function
- Remote control switch with centralized control auxiliary
- Programmable timer switch module
- 2F 25 A modular contactor module
- MIN’ clic 1 to 7 min timer module
- Advance OFF warning module
- Twilight switch module with IC200 sensor
- CDS single-phase 1-channel load shedder module
- Two-way switch module
- Pushbutton module
- Illuminated pushbutton module
- Double pushbutton module
- 2P + G 10 / 16 A socket module
- Motion sensor module
- Timer module with outdoor OFF warning
- Ambient temperature probe module
- TH4 3-threshold thermostat module
- TV700 remote variable control module
- Room temperature thermostat module
- Hotel badge reader module
- Double two-way module

Circuit-breaker panel module MD1AM6 001

Pushbutton + indicator light module MD1AM6 016
Building management modules

Distribution modules

CIRCUIT-BREAKER PANEL MODULE MD1AM6 001

Characteristics

- **Function:** Protection
- **Power supply:**
  Rated voltage: 230 VAC

The circuit-breaker panel module consists of:

- **DB 90 “selective residual current” incoming circuit-breaker**
  It is used at the head of the consumer's installation. You can set its rating to 15 / 20 / 45 A. For operations you should set it to 15 A. The sensitivity of the residual current device (500 mA) protects people against indirect contacts and the installations against insulation faults.

- **Tariff meter**
  This is used to meter electricity consumption, it makes the distinction between the different electricity tariffs (peak / off-peak periods; special tariffs, time delay, etc.)
  It must absolutely be set to a rating of 15 A.
  Do not close the incoming circuit-breaker until all the chosen function connections have been completed.

Module comprises:

- 13120 - DB90 two-pole circuit-breaker
- CR13MM11 - Energy meter

10 A CIRCUIT-BREAKER MODULE MD1AM6 002

Characteristics

- **Function:** Protection
- **Power supply:**
  Rated voltage: 230 VAC

The module provides protection against overloading and short-circuits on the line and receivers located downline.

Module comprises:

- 20725 - D’clic 1P + N 10 A circuit-breaker
Building management modules

Distribution modules

The module provides protection against overloading and short-circuits on the line and receivers located downline.

16 A CIRCUIT-BREAKER MODULE MD1AM6 003

Characteristics

- **Function:** Protection
- **Power supply:**
  Rated voltage: 230 VAC

Module comprises:
- 20726 - D’clic 1P + N 16 A circuit-breaker

The module controls the downline receiver circuits.

It also ensures the protection:
- for people against indirect or direct contacts \( \geq 30 \text{ mA} \)
- and installations against insulation faults

It trips instantaneously and contributes to total vertical discrimination in conjunction with an incoming circuit-breaker with a selective residual current device.

RESIDUAL CURRENT CIRCUIT-BREAKER MODULE MD1AM6 004

Characteristics

- **Function:** Protection
- **Power supply:**
  Rated voltage: 230 VAC

Module comprises:
- A9N21444 - 1P + N 16A residual current circuit-breaker
The module controls the downline receiver circuits. It also ensures the protection:
- for people against indirect or direct contacts $\geq 30$ mA
- and installations against insulation faults

It trips instantaneously and contributes to total vertical discrimination in conjunction with an incoming circuit-breaker with a selective residual current device.

Module comprises:
- A9N21446 - 1P + N20 A residual current circuit-breaker
Building management modules

Control Part modules

REMOTE CONTROL SWITCH MODULE MD1AM6 006

The module is used for local pulse control purposes.

Characteristics

- **Function:**
  - Lighting

- **Power supply:**
  - Rated voltage: 230 VAC

Module comprises:

- A9C33811 - 16 A remote control switch with integrated function

REMOTE CONTROL SWITCH MODULE + CONTROL MD1AM6 007

Each pulse delivered by a pushbutton makes it possible to reverse the remote-control switch's operating state, causing its contact to open or close.

Centralised control auxiliary that fits on at the level of a remote-control switch by locking on with two latches, providing centralised control of the remote-control switch while keeping the local individual control of each remote-control switch active.

Characteristics

- **Function:**
  - Lighting

- **Power supply:**
  - Rated voltage: 230 VAC

Module comprises:

- A9C15409 - Centralized control and indicating
- A9C30811 - Single-pole remote-control switch 16 A - 230 VAC
Building management modules
Control Part modules

**TIMER SWITCH MODULE**
**MD1AM6 008**

The IHP programmable timer module controls the opening and closing of one or more independent circuits according to a program written by the user and stored in memory. They can control lighting, heating, signage, access control circuits, etc. Block programming for repetitive weekly switching operations, daylight saving option, 56 places in memory, periods of absence, override, etc.

**Characteristics**
- **Function:** Lighting
- **Power supply:** Rated voltage: 230 VAC

Module comprises:
- **CCT16652 - Programmable timer switch**

**2F 25 A CONTACTOR MODULE**
**MD1AM6 009**

Controlled by the tariff meter’s “off peak” contact, by a programmable clock, load shedder, it controls a power circuit (water heater, heating, washing machine, etc.). It includes a three-position selector switch: temporary forced operation, automatic mode and off.

**Characteristics**
- **Function:** Lighting, heating and ventilation
- **Power supply:** Rated voltage: 230 VAC

Module comprises:
- **A9C25732 - Two-pole contactor CT HC 25A**
Control Part modules

MIN’ TIMER MODULE
MD1AM6 010

Characteristics

• Function:
  Lighting

• Power supply:
  Rated voltage: 230 VAC

This module closes and then opens a contact after an adjustable preset time of up to 7 min. Overriding possible, permanently lit by means of a mini-switch on the product.

Module comprises:
• 16655 - MIN’clic 1 to 7 min. timer 16 A

TIMER MODULE WITH EARLY OFF WARNING
MD1AM6 020

Characteristics

• Power supply:
  Rated voltage: 230 VAC

This module closes and then opens a contact after an adjustable preset time of up to 7 min. Overriding possible, permanently lit by means of a mini-switch on the product.

Module comprises:
• CCT15233 - Timer with early OFF warning
Building management modules

Control Part modules

**SWITCH MODULE**

**MD1AM6 012**

The module commands closing or opening of a circuit (shop window lighting, signage, etc.) when the brightness threshold detected by the cell reaches the set threshold: 2 to 200 lux.

**Characteristics**

- **Function:** Lighting
- **Power supply:** Rated voltage: 230 VAC

Module comprises:
- C2T15284 - IC200 twilight switch

**CDS MONO.LOAD SHEDDER MODULE**

**MD1AM6 013**

When the current exceeds the preset threshold, the load shedder placed just after the incoming circuit-breaker temporarily sheds (5 to 10 min.) the circuits chosen as not being priority. This avoids untimely tripping of the incoming circuit-breaker or allows the number of receivers to be increased without changing the subscribed power or reducing it.

This contactor sheds two circuits in cascade (I and II) and reconnects them in reverse order (II and I). The shed circuit is indicated by a yellow light.

It includes a forced load shedding input.
Its tripping threshold point can be set to: 5 / 10 / 15 / 20 / 25 / 30/ 40 / 45 / 50 / 60 / 75 and 90 A. It must correspond to the maximum set value of the incoming circuit-breaker located online.

For safety reasons, and to comply with the wiring accessories used, do not set the load shedder to a rating higher than 15 A. As we have asked for the incoming circuit-breaker to be set at a value of 15 A at the most, the load shedder will not function if it is set to a value higher than 15 A.

Module comprises:
- A9C15908 - CDS load shedder contactor
Control Part modules

Modular offers catalog 2017

**Building management modules**

**Control Part modules**

**MODULE FIP’ CLIC 2-ZONE MODULE + CORE**  
**MD1AM6 024**

**Characteristics**

Electronic thermostat with weekly programming designed for all types of heating (convectors, valve, burner, air-conditioning heat pump).

- In heating mode: comfort, reduced, frost protection, manual
- In cooling mode: off, reduced, comfort, manual

The “manual” temperature set value can be overridden remotely using one of the three additional contacts using a telephone remote control. Supplied with an outdoor temperature probe which only displays the outdoor temperature.

Module comprises:
- 15897

---

**AMBIENT TEMPERATURE PROBE MODULE**  
**MD1AM6 029**

**Characteristics**

A comprehensive range of ambient temperature probes makes it possible to meet all requirements: public buildings, hotels, hospitals, schools and shopping malls. The design of the detectors means they fit in well in the most modern buildings. Their simple and practical means of installation, allows them to be mounted directly on the wall or on other supports. The probes are compatible with Vista, Micronet / Sigma or Continuum.

Module comprises:
- CCT15846 - Temperature probe
The ambient temperature module can be installed in individual or multiple occupancy homes and in service sector buildings (no setting on the ambient temperature probe). It regulates the temperature between +8 and +26 °C according to 3 power (hot water, heating, washing machine, etc.) set points (comfort, reduced and frost protection). It includes a three-position selector switch: temporary forced operation, automatic mode and off.

Indicator lights:
- Green light: “frost protection” mode
- Yellow light: “reduced” mode
- Red light: output contact in ON position

Module comprises:
- CCT15841 - TH4 three-threshold thermostat
Building management modules

Control modules

TWO-WAY SWITCH MODULE
MD1AM6 014

Characteristics

- Power supply:
  Rated voltage: 230 VAC

Flush-mounted 2-channel switch with quick installation and connection with power socket.

Degree of protection:
  - IP20
  - IK02

Module comprises:
  - S260204 - Alcyon switch

PUSHBUTTON MODULE
MD1AM6 015

Characteristics

- Power supply:
  Rated voltage: 230 VAC

Flush-mounted 2-channel switch with quick installation and connection with power socket.

Degree of protection:
  - IP20
  - IK02

Module comprises:
  - S260206 - Alcyon single pushbutton
Flush-mounted 2-channel switch with quick installation and connection with power socket.

Degree of protection:
- IP20
- IK02

Module comprises:
- S260276 - Illuminated pushbutton

Flush-mounted 2-channel Open / Closed switch with quick installation and connection with power socket.

Degree of protection:
- IP20
- IK02

Module comprises:
- S260216 - Double pushbutton
**TV700 REMOTE VARIABLE CONTROL MODULE**

**MD1AM6 025**

**Characteristics**

- **Function:** Variable control
- **Power supply:** Input voltage: 230 VAC

---

**Ovalis dimmer function knob**

- Two-wire connection: inductive load / resistive load
- Dimmer control: 270° rotary adjustment, ON/OFF pushbutton
- Type of load: 230 VAC 40...400 W incandescent lamp, 40...400 W low voltage halogen lamp
- \((U_e)\) rated operational voltage: 230 VAC 50 Hz
- Number of terminals: 4 screw terminals

---

**TH AMBIENT TEMPERATURE THERMOSTAT MODULE**

**MD1AM6 027**

**Characteristics**

- **Power supply:** Input voltage: 230 VAC

---

**Thermostat 5 A, bimetal, 230 VAC**

- +/- 0.5 C accuracy with powered output (to control convector heaters, valves or burners).
- +/- 1.5 C accuracy in dry contact between L and output (to control boilers with low-voltage input, for example 24 V).
- Summer / Winter contact.
- Delivered with worksite protection.
Module used in hotel rooms to enable power supply and heating. Badge switch.

- Product presentation: mechanism
- (Ue) rated operational voltage: 230 V AC +/- 10 % 50 Hz
- Control: 54 x 86 x 0.85 mm card (maximum)
- Type of load: 230 VAC - 1470 W incandescent lamp, 230 VAC - 1470 W halogen lamp, 230 VAC - 1470 W fan, 230 VAC - 1470 W convective heater, 1470 VA low voltage halogen lamp with electronic transformer, 1470 VA fluorescent tube with ferromagnetic transformer, 1470 VA compact fluorescent lamp, 1470 W LED lamp, contactor
- Utilisation conditions: control via appropriate relay
- Rated operational voltage: 10 A

- Indicator light: locator light
- Marking: vertical insertion pictogram
- Connections: terminals, soldered connectors
- Number of cables: 1 flexible <= 2.5 mm² + 1 rigid <= 2.5 mm²
- Type of fuse: electronic
- Maximum number of switching operations: 50,000

Module comprises:
- MGU3.283.30
Building management modules

Operational part modules

2P + G 10 / 16 A SOCKET
MODULE
MD1AM6 018

Characteristics

- **Power supply:**
  Rated voltage: 230 VAC

Standard flush-mounted 2-circuit electrical power socket, with quick installation and connection thanks to screw terminals, it is attached with screws and claws.

Degree of protection:
- IP20
- IK02

Module comprises:
- S260059 - 16 A power socket

MOTION SENSOR
MODULE
MD1AM6 019

Characteristics

- **Power supply:**
  Rated voltage: 230 VAC

Argus 360° motion sensor, made of polycarbonate with a 10-m lateral detection face and one 16-m frontal detection. Ceiling mounted 2.5 m above the floor.

Characteristics:
- Type of settings: Adjustable photosensitivity and time setting
- Light brightness setting: 3 to 1000 Lux

Degree of protection:
- IP55
- IK02

Module comprises:
- MTN564419 - Motion sensor
Building management modules

Discovery packs

One-/Two-room domestic pack, reference MD1AM6 121. Must be used with packs MD1AM6 122, MD1AM6 123 and MD1AM6 130.

It consists of:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Designation</th>
<th>Reference</th>
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<tbody>
<tr>
<td>1</td>
<td>DB90 / 500mA circuit breaker panel module with tariff meter</td>
<td>MD1AM6 001</td>
</tr>
<tr>
<td>3</td>
<td>1P + N 10A circuit-breaker module</td>
<td>MD1AM6 002</td>
</tr>
<tr>
<td>1</td>
<td>1P + N 16A circuit-breaker module</td>
<td>MD1AM6 003</td>
</tr>
<tr>
<td>2</td>
<td>1P + N 16A residual current circuit-breaker module</td>
<td>MD1AM6 004</td>
</tr>
<tr>
<td>1</td>
<td>1P + N 20A residual current circuit-breaker module</td>
<td>MD1AM6 005</td>
</tr>
<tr>
<td>5</td>
<td>16A remote control switch with integrated function</td>
<td>MD1AM6 006</td>
</tr>
<tr>
<td>4</td>
<td>ALCYON two-way switch module</td>
<td>MD1AM6 014</td>
</tr>
<tr>
<td>4</td>
<td>10 / 16A power socket module</td>
<td>MD1AM6 018</td>
</tr>
<tr>
<td>4</td>
<td>15W lamp support module</td>
<td>MD1AMP 004</td>
</tr>
<tr>
<td>1</td>
<td>Support structure</td>
<td>MD1AM 000</td>
</tr>
</tbody>
</table>

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Three-/Four-room domestic pack, reference MD1AM6 122. Must be used with pack MD1AM6 121.

It consists of:

<table>
<thead>
<tr>
<th>Quantity</th>
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</tr>
<tr>
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<td>1P + N 16A circuit-breaker module</td>
<td>MD1AM6 003</td>
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<td>1P + N 16A residual current circuit-breaker module</td>
<td>MD1AM6 004</td>
</tr>
<tr>
<td>1</td>
<td>16A remote control switch with integrated function</td>
<td>MD1AM6 006</td>
</tr>
<tr>
<td>1</td>
<td>Remote control switch module with centralized control auxiliary</td>
<td>MD1AM6 007</td>
</tr>
<tr>
<td>1</td>
<td>Programmable timer switch module</td>
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<tr>
<td>1</td>
<td>2F 25A modular contactor module</td>
<td>MD1AM6 009</td>
</tr>
<tr>
<td>2</td>
<td>ALCYON two-way switch module</td>
<td>MD1AM6 014</td>
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<tr>
<td>6</td>
<td>ALCYON single pushbutton module</td>
<td>MD1AM6 015</td>
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<td>Double pushbutton module</td>
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<tr>
<td>2</td>
<td>10 / 16A power socket module</td>
<td>MD1AM6 018</td>
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<tr>
<td>5</td>
<td>15W lamp support module</td>
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<td>1</td>
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</tr>
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</table>

Technical and training manual on digital medium
Building management modules

Discovery packs

Small services sector pack, reference MD1AM6 123. Must be used with pack MD1AM6 121.

It consists of:

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<thead>
<tr>
<th>Quantity</th>
<th>Designation</th>
<th>Reference</th>
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<td>4</td>
<td>1P + N 16A circuit-breaker module</td>
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<td>2F 25A modular contactor module</td>
<td>MD1AM6 009</td>
</tr>
<tr>
<td>2</td>
<td>2F 25A modular contactor module</td>
<td>MD1AM6 010</td>
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<tr>
<td>1</td>
<td>Twilight switch module, type IC200</td>
<td>MD1AM6 012</td>
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<tr>
<td>1</td>
<td>CDS single-phase 1-channel load shedder module</td>
<td>MD1AM6 013</td>
</tr>
<tr>
<td>3</td>
<td>Luminous single pushbutton module</td>
<td>MD1AM6 016</td>
</tr>
<tr>
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<td>Timer module with early OFF warning</td>
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Technical and training manual on digital medium
### Building management modules

#### Discovery packs

The Residential and Small Services pack is referenced MD1AM6 126, and comprises:

<table>
<thead>
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<td>Remote control switch module with centralized control auxiliary</td>
<td>MD1AM6 007</td>
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<tr>
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<td>Programmable timer switch module</td>
<td>MD1AM6 008</td>
</tr>
<tr>
<td>5</td>
<td>2F 25A modular contactor module</td>
<td>MD1AM6 009</td>
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<td>Advance OFF warning module</td>
<td>MD1AM6 011</td>
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<td>CDS single-phase 1-channel load shedder module</td>
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<tr>
<td>7</td>
<td>Two-way switch module</td>
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<td>6</td>
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<td>MD1AM6 016</td>
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<tr>
<td>1</td>
<td>Double pushbutton module</td>
<td>MD1AM6 017</td>
</tr>
<tr>
<td>6</td>
<td>10 / 16A power socket module</td>
<td>MD1AM6 018</td>
</tr>
<tr>
<td>9</td>
<td>15W lamp support module</td>
<td>MD1AMP 004</td>
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*Technical and training manual on digital medium*
Building management modules

**Discovery packs**

The Residential and Small Services pack, reference MD1AM6 130. Must be used with pack MD1AM6 121.

It consists of:

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<tr>
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<td>1P + N 16A residual current circuit-breaker module</td>
<td>MD1AM6 004</td>
</tr>
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<td>1</td>
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<tr>
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<td>CDS single-phase 1-channel load shedder module</td>
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<td>Motion sensor module</td>
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<td>Ambient temperature probe module</td>
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<td>1</td>
<td>TH4 thermostat module</td>
<td>MD1AM6 030</td>
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<td>4</td>
<td>15W lamp support module</td>
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<tr>
<td>1</td>
<td>2 KW heating radiator module</td>
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</tr>
<tr>
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<td>MD1AM 000</td>
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</table>

**Technical and training manual on digital medium**

![Image of modular panel with labels and control units]
Overall energy management modules
## Contents

### Overall energy management modules

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<tr>
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</table>

**Products compliant with the provisions of European Directives**

Compliance report available on request

All our discovery packs are supplied with a digital medium containing the documents in PDF format and the other user files.

Secure cords are sold separately, see additional modules and accessories section.
Overall energy management modules

Solar modular offer

Training objectives:
- Learn the fundamentals for producing energy using solar panels
- Discover and identify the component parts

Electrical and mechanical characteristics
- Power supply: 12 VDC
- Dimensions (H x L x D) - weight: Structure: 1030 x 910 x 400 mm – 6.5 kg
  Single module: 244 x 150 x 70 mm – 0.7 kg

Main sectors
- Electrical engineering
- Civil engineering

Overall presentation
The solar modular offer allows you to understand how energy is produced using solar panels.

The following different subjects are examined:
- Equipment identification
- Solar panel design, sizing and implementation
- Characteristics of a solar panel, depending on the temperature, its angle and the hours of sunshine
- Using an inverter
- Using a controller
- Analyzing the different battery charging and discharging modes

The solar modular offer comprises:

<table>
<thead>
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<th>Designation</th>
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<tr>
<td>Ammeter / voltmeter module</td>
</tr>
<tr>
<td>Shunt controller module</td>
</tr>
<tr>
<td>12 VDC battery module</td>
</tr>
<tr>
<td>230 VAC inverter module</td>
</tr>
<tr>
<td>Solar panel module</td>
</tr>
<tr>
<td>15 W lamp support module</td>
</tr>
<tr>
<td>50 W lamp support module</td>
</tr>
</tbody>
</table>

Support frame MD1AM 000

Measurement module MD1AMS 001

Controller module MD1AMS 002

Solar panel module MD1AMS 005
### Overall energy management modules

#### Control Part modules

**AMMETER/VOLTMETER MODULE**  
**MD1AMS 001**

**Characteristics**
- **Power supply:**  
  Rated voltage: 12 VDC
- **Contents:**  
  One pair of jumpers (red and blue)

The current / voltage measurement module includes two measurement devices:
- Current measurement: 0 – 500 mA analog galvanometer
- Voltage measurement: 0 - 30 VDC analog galvanometer

Two red and blue 4-mm safety sockets located on the left of the box for the upline connection marked “SOLAR CELL”.
Two red and blue 4-mm safety sockets located on the right of the box for the downline connection marked “USE”.

This module can be connected between:
- The solar panel and the controller to measure the voltage and current at the solar panel output.
- The controller and the battery in order to measure the battery charging voltage and current.

![AMMETER/VOLTMETER MODULE](image)

**SHUNT CONTROLLER MODULE**  
**MD1AMS 002**

**Characteristics**
- **Power supply:**  
  Rated voltage: 12 VDC  
  Battery voltage: 12 – 14 VDC  
  Max. power rating: 50 W  
  End-of-charge voltage: 13.9 VDC  
  Controller consumption: 0.6 mA
- **Contents:**  
  One pair of jumpers (red and blue)

The controller module includes an electronic controller circuit.
- **Type of regulation:** Series
- **The controller stops charging when the lead battery’s end-of-charge voltage has been reached (13.9). Charging resumes when the voltage on the battery’s terminals falls below 13 V.**

- **RED “Charge” indicator light**
  - The red LED comes on when the charger’s voltage (solar panel) is sufficient for charging the battery.
  - The red LED goes out when the charger’s voltage is lower than the battery’s voltage.

- **GREEN “OK” indicator light**
  - The green LED comes on when the end-of-charge voltage has been reached. Battery charged
  - The green LED remains off as long as the end-of-charge voltage has not been reached.

![SHUNT CONTROLLER MODULE](image)
Overall energy management modules

Control Part modules

12 VDC BATTERY MODULE MD1AMS 003

Characteristics

- **Power supply:**
  Rated voltage: 12 VDC
  Output voltage: 12 VDC

- **Contents:**
  One pair of jumpers (red and blue)

The module includes a 12-V lead battery.
The battery has a capacitance of 2.3 Ah or 2.1 Ah depending on the supplier.
There are two fuse holders with fuses located upline and downline from the battery. They protect the battery against over-currents and short-circuits.

Type of fuse: 5 x 20 F4 A 250 V

- Two red and blue 4-mm safety sockets located on the left of the box for the upline connection marked “+ and -”.
- Two red and blue 4-mm safety sockets located on the right of the box for the downline connection marked “+ and –”

This module can be connected between:

- The controller and the inverter
- The measurement module and the inverter

230V AC INVERTER MODULE MD1AMS 004

Characteristics

- **Power supply:**
  Rated voltage: 12 VDC
  Output voltage: 230 V - 50 Hz
  Output power (continuous): 30 W
  Apparent power: 30 VA
  Max. output power (5 min.): 40 W
  No-load inrush current < 0.35 A

- **Contents:**
  One pair of jumpers (red and blue)

The inverter includes a 12 VDC to 230 VAC converter.
The inverter converts the 12 VDC delivered by the battery into 230 VDC.

- **GREEN indicator light:**
  - The green LED comes on when the inverter is powered up (presence of 12 V DC). In this case, a 230 VAC voltage is present at the output on the black terminals.
  - The green LED goes out when the input voltage is not sufficient for inverter operation.
  - Two red and blue 4-mm safety sockets located on the left of the box for the upline connection marked “INPUT 12 VDC”

  - Two red and blue 4-mm safety sockets located on the right of the box for the downline connection marked “OUTPUT 230 VAC”

This module is connected between the battery and the lamp.
Overall energy management modules

Control Part modules

The polycrystalline solar panel module has an aluminum frame holding a rectangular one-piece element that supports the photovoltaic cells. There is a terminal block on the back of the panel. It has red and blue cables with 4-mm safety connectors (cable length: 1 m) for fast connection to the various modules. When the solar panel is exposed to sunlight (or an appropriate light source) it delivers electrical energy which is used to recharge a 12-V battery, after being regulated.

The energy stored in the battery is consumed by the 12 V DC - 230V AC inverter which powers a 230V AC - 15 W or 50 W lamp.

This solar panel can be laid down flat or fixed in an appropriate position facing the sun.

SOLAR PANEL MODULE
MD1AMS 005

Characteristics

- Power supply:
  - Rated voltage: 230 VDC
  - Dimensions (H x L x D) - weight:
  - Structure: 301 x 356 x 28 mm – 1.5 kg
Overall energy management modules

Modules for operational parts

15 W LAMP BRACKET
MODULE
MD1AMP 004

The operational part comprises an incandescent lamp with a power rating of 15 W. It is designed to serve as load for KNX modules.

It comprises:
- A transparent window for checking that the lamp functions.
- Two black sockets for powering the lamp with 230 VAC
- Two red and two black sockets for transmission from the KNX bus.

Characteristics

- Power supply:
  Rated voltage: 230 VAC

50 W LAMP BRACKET
MODULE
MD1AMP 009

The operational part comprises an incandescent lamp with a power rating of 50 W. It is designed to serve as load for KNX modules.

It comprises:
- A transparent window for checking that the lamp functions.
- Two black sockets for powering the lamp with 230 VAC
- Two red and two black sockets for transmission from the KNX bus.

Characteristics

- Power supply:
  Rated voltage: 230 VAC
Overall energy management modules

Discovery pack

The Solar pack is referenced MD1AML SOL, and comprises:

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<tr>
<th>Quantity</th>
<th>Designation</th>
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<td>Ammeter / Voltmeter module</td>
<td>MD1AMS 001</td>
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<td>1</td>
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<td>1</td>
<td>12 V battery module</td>
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<tr>
<td>1</td>
<td>Solar panel module</td>
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<tr>
<td>1</td>
<td>15 W lamp support module</td>
<td>MD1AMP 004</td>
</tr>
<tr>
<td>1</td>
<td>Support structure</td>
<td>MD1AM 000</td>
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Technical and training manual on digital medium
Overall energy management modules

iRIO telemetry modular offer

Training objectives:
- Optimize energy consumption by showing the distribution of energy by type of use (fluid, electricity).
- Configure an installation in order to optimise energy consumption while improving the occupants’ comfort.
- Understand the constraints imposed by RT2012.
- Implement a remote management solution.

Overall presentation
The central element of the Telemetry modular offer is a controller from the iRIO range which collects and stores the data generated by energy and fluid meters or sensors (temperature, pressure, etc.).

The iRIO controller can handle pulse-type information, Modbus series links, M-Bus open communication and analog data. (0-10 V, PT100, PT1000, etc.).

Simply using a web browser, it can operate and control the installation remotely and centralize remote management and monitoring of operations via a single, easy-to-use interface.

Smart Interface Modules (SIM) with integrated digital Inputs / Outputs and analog inputs allow the use of mixed architectures combining wired solutions and wireless Zigbee wireless solutions. The data collected can be displayed in the form of mimic diagrams, dashboards and graphs.

The iRIO controller can also accomplish simple control and regulation functions (control of contactors within a time-slot, time-proportional control of electric heating, etc.).

The iRIO telemetry modular offer includes:

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<td>Three-phase protection module</td>
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<td>Central measurement modules</td>
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<td>Thermal sensor module</td>
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<td>Modbus energy sensor module</td>
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<td>Thermostat module</td>
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<tr>
<td>WiFi CAN controller module</td>
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<tr>
<td>Wireless switch module</td>
</tr>
<tr>
<td>6 I/O ES SSL module</td>
</tr>
</tbody>
</table>

Electrical and mechanical characteristics
- **Power supply:** 240 V ~ single-phase
- **Dimensions (H x L x D) - weight:**
  - Structure: 1030 x 910 x 400 mm – 6.5 kg
  - Single module: 244 x 150 x 70 mm – 0.7 kg
  - Double module: 244 x 300 x 70 mm – 1.4 kg

Main sectors concerned
Vocational baccalauréate (science and technology of industry and sustainable development (STI2D), electrical engineering, energy and communication equipment (ELEEC)
BTS (vocational training certificate) in electrical engineering (ET), fluids, energies, environments (FEE)
University Institute of Technology, electrical engineering, electronics and industrial computing.

Other sectors concerned
BTS (vocational training certificate) in design and implementation of automated systems (CSRA) and industrial control & automatic regulation (CIRA)
University Institute of Technology, industrial engineering & maintenance, and physical measurements
Overall energy management modules

Control Part modules

SINGLE-PHASE PROTECTION MODULE MD1AM2 001

Characteristics

- Power supply:
  Rated voltage: 230 VAC

- Contents:
  Power supply cable
  Connection jumpers

This single-format protection module comprises:
- One 10 A 30 mA residual current circuit-breaker equipped with an under-voltage trip coil.
- One mains socket for connecting the power cord supplied.
- A white “Power ON” light indicating module status
- An emergency stop button for instantaneously cutting out the power supply.
- Set of three safety sockets (black, blue and yellow / green) for easy connection to other modules

THREE-PHASE PROTECTION MODULE MD1AM2 002

Characteristics

- Power supply:
  Rated voltage: 400 VAC

- Contents:
  Power supply cable
  Connection jumpers

This single-format three-phase protection module comprises:
- One 10 A - 30 mA residual current circuit-breaker equipped with an under-voltage trip coil.
- One mains socket for connecting the power cord supplied.
- A white “Power ON” light indicating module status
- An emergency stop button for instantaneously cutting out the power supply.
- Set of four safety sockets (3 black, 1 yellow / green) for easy connection to other modules
Control Part modules

Overall energy management modules

CENTRAL MEASUREMENT MODULE
MD1AM2 003

Characteristics

- **Power supply:**
  - Rated voltage: 230/400 VAC

- **Contents:**
  - RJ45 Ethernet cable

This module is an electrical measurement and energy metering device for 1Ph + N, 3Ph and 3Ph + N low voltage systems.

The functions provided by power monitors have the various measuring capabilities required for monitoring an electrical installation such as the current, voltage, power, power factor, frequency and energy.

Power monitors have the following key features:

- Monitoring of electrical parameters such as I, In, U, V, energy quality standards, E, FP, Hz
- Power/current demand, peak demand,
- Time-and-date stamped alarms,
- Minimum/maximum,
- Management of 4 tariffs at the most
- Up to 2 digital inputs and 2 digital outputs
- Communication Modbus

To be used with the MD1AM2 004 module.

Module comprises:

- METSEPM3250 - PM3250 power monitor
- ALB08530 - RJ45 cable / RJ45 MALE Cat5

3-CURRENT TRANSFORMER. MODULE
MD1AM2 004

Characteristics

- **Power supply:**
  - Rated voltage: 230/400 VAC
  - Current transformation ratio: 50/5

This module is a current transformer (CT) that covers the entire low-voltage range from 40 to 6000 A. The primary current can be measured using two distinct models: CT with through primary or connection of the primary with a screw and nut.

- A wide range of ratings from 40 to 6000 A.
- Safety: sealable insulating cover.
- Installation: on DIN rail, mounting plate or busbars

Module comprises:

- METSECT5CC005 - 50 A core
Overall energy management modules

Control Part modules

**EGX300 GATEWAY MODULE**
**MD1AM2 005**

**Characteristics**
- **Power supply:** Rated voltage: 24 VDC
- **Contents:**
  - RJ45 Ethernet cable

The EGX300 module is used as an Ethernet gateway for devices communicating via the Modbus RS485 protocol. It also offers additional functions such as display of raw data via web pages.

- 10/100 Base TX Ethernet Port
- RS485/RS232 serial port (2 or 4 wires)
- Embedded web server
- Short-term data storage

Module comprises:
- EGX300 - Integrated gateway server
- VDIP181546005 - RJ45 cable / RJ45 Male Cat5

**IRIO CONTROLLER MODULE**
**MD1AM2 006**

**Characteristics**
- **Power supply:** Rated voltage: 24 VDC
- **Contents:**
  - One pair of jumpers (red and blue)
  - Coaxial cable
  - RJ45 Ethernet cable

This module is an iRIO controller, and it is used for:
- Concentrating data / measurements (Modbus, Ethernet and serial communication, logical and analog inputs / outputs)
- Local storage of these data (with date-and-time stamping)
- Process:
  - Simple mathematical calculations
  - Alarm detection and time-and-date stamping (notification by email, or SMS with GSM modem)
  - Simple load control
- Publish the following information:
  - Customer-defined dashboards
  - Energy monitoring graphs
- Embedded web browser for:
  - Parameter setting and display

Module comprises:
- TMYAAHRP00011 - iRIO GSM Controller
- VDIP181546005 - RJ45 cable / RJ45 Male Cat5
Control Part modules

MODBUS INTERFACE MODULE (SIM10M) MD1AM2 007

Characteristics

- **Power supply:**
  Rated voltage: 24 VDC

- **Contents:**
  One pair of jumpers (red and blue)
  RJ45 Ethernet cable

The METSIM10M Modbus slave module is connected to the EGX300 gateway in Modbus slave mode.
- 6 digital pulse or status inputs,
- 2 analog inputs,
- 2 digital outputs,
- 24 V electrical power supply

Module comprises:
- **METSIM10M - ModBus Slave Interface**

ZIGBEE INTERFACE MODULE (SIM10Z) MD1AM2 008

Characteristics

- **Power supply:**
  Rated voltage: 24 VDC

- **Contents:**
  RJ45 Ethernet cable
  One pair of jumpers (red and blue)

The data collected by this SIM10Z module are retrieved directly on the iRIO controller (site management) or on the EGX300 portal server (remote management) or via an EGX100 Ethernet portal via wired or wireless networks.
- Wired RS485 Modbus protocol
  - The SIM module is connected to the iRIO controller or to the Ethernet / RS485 EGX100 or EGX300 portals via a shielded twisted pair.
- ZigBee wireless protocol
  - Widely used for radio frequency WPANs (wireless personal area networks). The SIM modules are connected to a specific EGX105Z Ethernet / ZigBee portal via a ZigBee RF network.

- This module includes:
  - 6 digital pulse or status inputs
  - 2 analog inputs
  - 2 digital outputs

Module comprises:
- **METSIM10Z - ZigBee/ModBus master interface**
Overall energy management modules

Control Part modules

**EGX105Z GATEWAY MODULE**

MD1AM2 009

**Characteristics**
- **Power supply:**
  - Rated voltage: 24 VDC
  - RJ45 Ethernet port
- **Contents:**
  - One pair of jumpers (red and blue)

**EGX105Z Ethernet/ZigBee gateway module**

It enables:
- remote access to the local I/Os on each ZigBee SIM master or battery-powered module (Modbus emulation mode)
- routing of the Modbus frames exchanged with the higher-level supervision and control software ("Modbus tunnelling" mode).

**Module comprises:**
- **METEGX105Z** - ZigBee Ethernet gateway server

**WIFI ROUTER MODULE**

MD1AM2 010

**Characteristics**
- **Function:**
  - Communication
- **Power supply:**
  - Rated voltage: 24 VDC
- **Contents:**
  - One pair of jumpers (red and blue), RJ45 Ethernet cable

**The WiFi router module**

The WiFi router module consists of a set of wireless communication protocols governed by the IEEE 802.11 group standards (ISO / IEC 8802-11). It enables the wireless connection of several different devices (computer, touchscreen tablet) or in a computer network so they can exchange data with each other.
Overall energy management modules

Control Part modules

0-10 V ANEMOMETER MODULE MD1AM2 011

The 0-10V Anemometer module with 0-10 V interface is used to convert the wind speed into electrical signals. The signals are generated by a Reed contact closed by means of magnets. A shaft fixed to the anemometer takes the magnets beyond the Reed contact. This generates pulses which are transformed into an output voltage proportional to the wind speed.

Characteristics

- Power supply: Input voltage: 24 VDC
- Contents: One pair of jumpers (red and blue)

Module comprises:
- MTN663591

RAIN SENSOR MODULE MD1AM2 012

The rain detector module with 0-10 V interface is used to record and evaluate the rainfall. It is designed for outdoor installation. Thanks to a wave shape sensor using the water’s conductivity, the rainfall is determined, evaluated and converted into an output signal (dry = 0, rain= 10 V). The intermediate values are not recorded.

Characteristics

- Power supply: Input voltage: 24 VDC
- Contents: One pair of jumpers (red and blue)

Module comprises:
- MTN663595
Overall energy management modules

Control Part modules

LIGHT GRAY THERMAL SENSOR MODULE
MD1AM2 013

Characteristics

- **Power supply:**
  Input voltage: 24 VDC

- **Contents:**
  One pair of jumpers (red and blue)

The climate data are received and converted into analog voltage signals (0 to 10 V) by a measuring transducer: thermal sensor. The transmittal of these signals requires the quadruple REG-K weather station capable of transmitting communication and value telegrams to the bus. The sensor is fitted with climatic membranes preventing any accumulation of humidity in the box.

Module comprises:
- Thermal sensor: MTN663596

TEMPERATURE PROBE MODULE
MD1AM2 014

Characteristics

- **Power supply:**
  Input voltage: 24 VDC

- **Contents:**
  One pair of jumpers (red and blue)

The ambient temperature probe module makes it possible to meet all the demands.
- Output: NTC thermistor:
  - 0 to 50 °C, max.
  - 95% RH.
- For: public buildings, hotels, hospitals, schools and shopping malls.

The design of the detectors means they fit in well in the most modern buildings. Their simple and practical means of installation allows them to be mounted directly on the wall or on other supports.

Module comprises:
- STR600
### Overall energy management modules

#### Control Part modules

**MODBUS ENERGY METER MODULE**  
**MD1AM2 015**

**Characteristics**

- **Power supply:**  
  - Input voltage: 230/400 VAC  
  - Current: 16 A max

- **Contents:**  
  - One pair of jumpers (red and blue)

This three-phase energy meter with integrated core delivers the essential metrics (current, voltage, energy) required to monitor a single-phase electrical installation.

- **Key characteristics:**  
  - Direct measurement + measurement accuracy  
  - 4-quadrant energy measurements  
  - Multi-tariff: controlled by a clock, digital inputs, or communications  
  - Digital inputs and outputs  
  - MID compliant  
  - Overload alarm  
  - Communication by Modbus

**Module comprises:**  
- A9MEM3225

**MODBUS CENTRAL MEASURING MODULE**  
**MD1AM2 018**

**Characteristics**

- **Power supply:** RS485 ModBus  
  - Input voltage: 230/400 VAC  
  - Current: 16 A max

This single-phase energy meter with integrated core delivers the essential metrics (current, voltage, energy) required to monitor a single-phase electrical installation.

- **Key characteristics:**  
  - Measurement of the active (class 1 accuracy) and reactive (class 2 accuracy) energies  
  - LCD display: basic measurement and configuring of the current, voltage, power and energy  
  - Communication by Modbus

**Module comprises:**  
- A9MEM2150
Overall energy management modules

Control Part modules

**ZIGBEE WIRELESS SMART CONTROLLER MODULE MD1AM2 017**

**Characteristics**

- **Power supply:**
  Input voltage: 24 VDC
- **Contents:**
  One pair of jumpers (red and blue)

Smart Controller / Thermostat.

This consists of two products: a terminal controller and a relay box. Together they provide a simple solution for controlling fan-convector heaters without requiring the addition of other components such as relays, transformers, controllers or sensors. The wiring between the fan-convector heater and the ambient temperature controller can be re-used, thus cutting the labor and installation costs in the case of renovation projects. It is possible to ensure greater flexibility and make energy savings by adding optional door and window switches.

An intuitive user interface with back-lit touch-screen is used to configure it and set its parameters according to the application.

Module comprises:
- SE8300

**WIRELESS THERMOSTAT MODULE MD1AM2 016**

**Characteristics**

- **Power supply:**
  Input voltage: 24 VDC
- **Contents:**
  One pair of jumpers (red and blue)

The ambient temperature and humidity probe is associated with a set value fixed by means of a potentiometer. The energy required is produced by the conversion of the ambient indoor light by a solar generator. The probe is designed to measure the ambient temperature and humidity.

- Measurement ranges: 0 to 40 °C and 0 to 100% RH, measurements taken every 100 seconds
- Box made of ASA, and wall-mounted
- IP protection index: 30
- Humidity accuracy: +/- 3%
- Weight: 50 g
- Technology: EnOcean
- Transmission frequency: 868.3 MHz

Module comprises:
- LSS226172
Overall energy management modules

Control Part modules

### WIFI 6I/6O CAN CONTROLLER MODULE MD1AM0 031

**Characteristics**

- **Function:** PLC
- **Power supply:** 24 VAC or 24 VDC
- **Contents:** One pair of jumpers (red and blue)

The controller (MPM) is the ideal solution for controlling, managing and carrying out energy appraisals on sites via a Web interface. Its programming functions and Inputs/Outputs provide a solution for regulation and comfort management.

- **Functions:**
  - Physical inputs and outputs (6 inputs, 6 outputs).
  - ZigBee pro wireless control (optional).
  - EnOcean wireless control (optional).
  - IP/RTU ModBus.
  - Programmable via Web StruxureWare™ server.
  - Feedback from points via BACnet, EcoStruxure Web Services (EWS) & oBIX.
  - Programming function via script or object programming.

- **Protocols and networks**
  - Wireless - ZigBee pro wireless mesh network.
  - Wired - Bus topology (CanBus).
  - IP/Ethernet - Ethernet port.
  - IP/RTU ModBus.
  - BACnet.

- **Embedded Gateway**
  - EnOcean (Wireless) to BACnet IP / oBIX / EWS.
  - ZigBee pro (Wireless) to BACnet IP / oBIX / EWS.
  - ModBus to BACnet IP / oBIX / EWS.

Module comprises:

- MPM-UN-DI4-5045

### 6 I/O ES SSL MODULE MD1AM0 039

**Characteristics**

- **Function:** PLC
- **Power supply:** 230 VAC

The extension module connects up to the different MPM controllers via the wireless network (ZigBee Pro). It is used to optimise an installation by increasing the number of controller inputs and outputs. SEC-TE can only be programmed and controlled using MPM systems.

- **Communication**
  - The SEC-TE is fitted with an external antenna (optional) making it possible to communicate with MPM controllers via the ZigBee Pro protocol.

Module comprises:

- SECTEAR245045
Overall energy management modules

Control Part modules

**ENOCEAN 2S WIRELESS RECEIVER MODULE**
**MD1AM2 019**

**Characteristics**
- **Power supply:**
  - 15 to 24 VDC / 24 VAC
  - 0 - 10 V output / max. 20 mA

The EnOcean radio receiver has one or two 0 - 10 V analog outputs. The average level of the output values depends on the data transmitted by the EnOcean sensors.

- Dimmer function:
  - modification of the output value
  - definition of the minimum output value

The flush-mounted 1-10 V dimmer receiver is used to vary lighting equipped with 1-10 V ballast in order to provide lighting control according to the amount of natural ambient light. It can also be used to manually adjust the lighting level using EnOcean switches.

**Module comprises:**
- LSS502931

**ENOCEAN MOTION AND BRIGHTNESS SENSOR MODULE**
**MD1AM2 020**

**Characteristics**
- **Power supply:**
  - 3 batteries: Easy Sens LS14250 - 1.1 Ah / 3.6 V / 1/2 AA

The ceiling-mounted multi-sensors are dedicated to motion sensing and measuring the brightness in homes and offices. The values measured can be used by the lighting controllers to ensure the control of the lighting according to the amount of natural light available and depending on the presence of someone in the room.

- MDS functions:
  - 360° motion sensing
  - Integrated 0-510 Lux brightness sensor:
  - Integrated 0-51° temperature sensor

**Module comprises:**
- LSS396462
Overall energy management modules

Control Part modules

**ENOCEAN WIRELESS ON/OFF 1-OUTPUT RECEIVER MODULE MD1AM2 021**

**Characteristics**

- **Power supply:**
  - 230 VAC
  - Max. output voltage: 2,500 W resistive, 1,200 W HV Halo HT and 600 VA inductive

The multifunction 1-circuit radio is used to switch various electrical devices with a 230 V load (incandescent and halogen lamps, electronic ballasts, fans) from a wireless EnOcean radio without batteries.

The ESV channel is used to activate the lighting remotely using a simple programmer switch (options available) and ER mode can be used to manage an electric motor.

![](image1)

Module comprises:

- LSS10020061

---

**ENOCEAN WIRELESS BLINDS 2-OUTPUT RECEIVER MODULE MD1AM2 022**

**Characteristics**

- **Power supply:**
  - 230 VAC
  - Max. output voltage: 500 W resistive, 100 W Halo HV and 100 VA inductive

The 2-circuit blinds receiver is used to command electric blind raising or lowering from a wireless EnOcean radio transmitter without a battery.

The ‘raise’ and ‘lower’ outputs are used to control a roller shutter or blinds fitted with a switch limit (230V / 50Hz motor). Before utilization, the transmitters must be assigned to a receiver (32 transmitters max.). Each sensor or transmitter can control an unlimited number of receivers.

![](image2)

Module comprises:

- LSS10020055
Overall energy management modules

Control Part modules

**WIRELESS SWITCH MODULE**
**MD1AM6 032**

**Characteristics**
- **Contents:**
  One pair of jumpers (red and blue)

*This switch transmitter is wireless, does not have batteries and is completely autonomous. It sends a radio signal using the energy generated when pressed. The switch can be mounted on any type of surface (partition, glazing, wall).*

- Transmission power: 10 mW max
- Switching cycle > 50,000
- Technology: EnOcean
- Transmission frequency: 868.3 MHz

**Module comprises:**
- LSS10020049

---

**WIRELESS DOUBLE SWITCH MODULE**
**MD1AM6 034**

**Characteristics**
- **Function:**
  ON / OFF switch

*This switch transmitter is wireless, does not have batteries and is completely autonomous. It sends a radio signal using the energy generated when pressed. The wireless double switch can be mounted on any type of surface (partition, glazing, wall).*

- Transmission power: 10 mW max
- Switching cycle > 50,000
- Technology: EnOcean
- Transmission frequency: 868.3 MHz

**Module comprises:**
- LSS10020048
Overall energy management modules

Modules for operational parts

**WATER METERING MODULE**
**MD1AMP 017**

**Characteristics**
- **Power supply:**
  - Rated voltage: 24 VDC
- **Contents:**
  - One pair of jumpers (red and blue)

The water metering module consists of a measuring device that is used to evaluate an installation’s water consumption. A meter is based on the principle that it is not possible to precisely measure the volume of water that has passed through a pipe: this is therefore an estimate of the real flow. The only reliable method would be to measure the volume poured into a container in a given length of time.

The cost of water treatment is very high. The monitoring and exact calculation of the consumptions are becoming a requirement for consumers. The installation of individual water meters (homes, industry and shops, communities, etc.) is inevitable, despite a certain amount of disagreement regarding the ways of achieving this.

**PT100 TEMPERATURE MODULE**
**MD1AMP 018**

**Characteristics**
- **Power supply:**
  - Rated voltage: 24 VDC
- **Contents:**
  - One pair of jumpers (red and blue)

The PT100 temperature module has a resistance of 100 Ohms at 0 °C2 and 138.5 Ohms at 100 °C2. The PT100 is no longer sufficient for weather characterization purposes. The platinum resistor probe (or thermometer with a TRP platinum resistor), defined as an interpolation instrument by ITS-90 (International Temperature Scale of 1990), is more elaborate and provides highly accurate temperature measurements.

The utilization of this probe is associated with interpolation polynomials corresponding to the temperature ranges explored in order to establish the relationship between the platinum resistor and the temperature.

This probe has a resistance of 25 Ohms at the triple point of water and a resistance of the order of 41 Ohms at the Indium fixed point (156.5985 °C).
Overall energy management modules

Ancillary Part modules

24 VDC POWER SUPPLY
MODULE 2.5 A
MD1AM4 001

Characteristics

- **Power supply:**
  Input voltage: 230 VAC
  Output voltage: 24 VDC
  Current: 2.5 A

- **Contents:**
  One pair of jumpers (red and blue)
  Power supply cable

The module is a voltage converter that is used to power the various 24 VDC modules.

This single-format module comprises:

- One red socket marked 24 V for the power supply
- One blue socket marked 0 V
- One “Europa” connector for the mains power supply
- One green ON indicator light to indicate the module is powered up
## Overall energy management modules

### Building energy telemetry pack

The Building energy telemetry pack is referenced MD1AML iRIO.

- Power management
- Measurement and control: wired network Zigbee wireless

It consists of:

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<th>Quantity</th>
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<td>1</td>
<td>PM3250 central measuring module</td>
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<td>+ RJ45 Cable</td>
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<td>SIM10M Slave Modbus module</td>
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<td>+ RJ45 Cable</td>
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<td>SIM10Z Zigbee Master Modbus module</td>
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<td>Water metering module</td>
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<td>1</td>
<td>Temperature probe module</td>
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<tr>
<td>1</td>
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<td>MD1AM 000</td>
</tr>
</tbody>
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Technical and training manual on digital medium

![Building energy telemetry pack](image-url)
Overall energy management modules

Discovery pack

The Ventilation energy efficiency pack is referenced MD1AML ATVEE.

This equipment is designed to accomplish the equivalent of the mock-up and prototyping energy efficiency case. The mock-up makes it possible to highlight the energy savings that could be made in a ventilation or pumping installation. The comparison is made between electro-mechanical control with a contactor and electronic control with a speed controller. The ventilation flow rate is adjusted by means of an iris or a speed controller.

The module comprises:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Designation</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Thermal relay module</td>
<td>MD1AM1 007</td>
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<td>Contactor module</td>
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<td>Central measuring module</td>
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<td>3-CT module</td>
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<td>EGX300 gateway module</td>
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<td>24 VDC power supply module</td>
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<td>1</td>
<td>Altivar 312 module</td>
<td>MD1AM5 001</td>
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<td>Speed controller command module</td>
<td>MD1AM7 001</td>
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<td>Motor start control module</td>
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<td>1</td>
<td>Fan motor module</td>
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<tr>
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<tr>
<td>1</td>
<td>RJ45 / RJ45 cable, 1 m</td>
<td>VDIP184546010</td>
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<td>1</td>
<td>Support structure</td>
<td>MD1AM 000</td>
</tr>
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</table>

Technical and training manual on digital medium
Overall energy management modules

Discovery pack

The Zigbee and EnOcean wireless energy management pack is referenced MD1AML SSL.

It consists of:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Designation</th>
<th>Reference</th>
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<tbody>
<tr>
<td>1</td>
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<td>1</td>
<td>Single-phase protection module</td>
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<tr>
<td>1</td>
<td>Temperature probe module</td>
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<td>1</td>
<td>Wireless thermostat module</td>
<td>DM1AM2 016</td>
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<td>1</td>
<td>ZIGBEE wireless smart controller module</td>
<td>DM1AM2 017</td>
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<tr>
<td>1</td>
<td>ModBus central measuring module</td>
<td>DM1AM2 018</td>
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<tr>
<td>1</td>
<td>Module</td>
<td>DM1AM2 020</td>
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<td>1</td>
<td>Module</td>
<td>DM1AM2 021</td>
</tr>
<tr>
<td>1</td>
<td>Module</td>
<td>DM1AM2 022</td>
</tr>
<tr>
<td>1</td>
<td>24 VDC + 24 VAC/2.5 A power supply module</td>
<td>DM1AM3 023</td>
</tr>
<tr>
<td>1</td>
<td>Motion sensor module</td>
<td>DM1AM6 019</td>
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<tr>
<td>1</td>
<td>Wireless switch module</td>
<td>DM1AM6 032</td>
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<td>1</td>
<td>Wireless double switch module</td>
<td>DM1AM6 034</td>
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<tr>
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<td>15 W lamp support module</td>
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<td>1</td>
<td>Electric shutter module</td>
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<tr>
<td>1</td>
<td>SSL I/O module</td>
<td>DM1AMP 030</td>
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<td>1</td>
<td>Support structure</td>
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Technical and training manual on digital medium
Overall energy management modules
Process and machine management modules
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**Process and machine management modules**

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Products compliant with the provisions of European Directives

Compliance report available on request

All our discovery packs are supplied with a digital medium containing the documents in PDF format and the other user files.

Secure cords are sold separately, see additional modules and accessories section
Process and machine management modules

Automation modular offer

Training objectives:
- Study and implement the different types of PLC
- Study the human/machine dialog
- Learn the fundamental communication principles

Electrical and mechanical characteristics
- **Power supply:**
  230 V ~ single-phase + G
- **Dimensions (H x L x D) - weight:**
  Structure: 1030 x 910 x 400 mm – 6.5 kg
  Single module: 244 x 150 x 70 mm – 0.7 kg
  Double module: 244 x 300 x 70 mm – 1.4 kg

Main sectors
- Electrical engineering
- Industrial engineering and maintenance

Other sectors
- Industrial science and technology

Package presentation
The automation modulation offer allows you to learn about:
- The different types of Programmable Logic Controllers (M221 and M340)
- Industrial buses and networks (Modbus, CANopen, ASi, Ethernet)
- The different types of human/machine dialog terminals
- Communication between PLCs, speed controllers, communicating motor-starters and human / machine interface tools

Depending on the choice made, the user can discover the different types of programming, the different communication functions and the regulation functions. This offer makes it possible to build automation architectures implementing the most commonly used components and communication networks.

The automation modular offer includes:

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<th>Designation</th>
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<td>M340 PLC module</td>
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<tr>
<td>M221 PLC module</td>
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<tr>
<td>16 ON/OFF input interface module</td>
</tr>
<tr>
<td>16 ON/OFF output interface module</td>
</tr>
<tr>
<td>Analog 4 I / 4 O interface module</td>
</tr>
<tr>
<td>MAGELIS XBTR411 module</td>
</tr>
<tr>
<td>MAGELIS XBTGT4340 module</td>
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<tr>
<td>Ethernet Hub module</td>
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<td>Modbus Hub module</td>
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<tr>
<td>MAGELIS XBTGT450 module</td>
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<tr>
<td>Fast metering module</td>
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<tr>
<td>USB interface simulator module</td>
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<tr>
<td>HMISTU855 terminal module</td>
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<td>Metering function module</td>
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<td>ZELIO COM logic module</td>
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<tr>
<td>HMISTU655 module</td>
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<tr>
<td>RFID sensors module</td>
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<tr>
<td>EGX100 gateway module</td>
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<tr>
<td>Ethernet OTB module</td>
</tr>
<tr>
<td>M340COM-NOE module</td>
</tr>
<tr>
<td>Ethernet switch module</td>
</tr>
<tr>
<td>Ethernet router module</td>
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<tr>
<td>RS232 module</td>
</tr>
<tr>
<td>CANopen OTB module</td>
</tr>
<tr>
<td>Factory IO software module with interfaces on terminals</td>
</tr>
<tr>
<td>WIFI 6/6O CAN module</td>
</tr>
<tr>
<td>TM221 PLC module</td>
</tr>
<tr>
<td>Zigbee gateway module</td>
</tr>
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<td>CANopen module</td>
</tr>
<tr>
<td>Traffic management module</td>
</tr>
<tr>
<td>Automatic barrier module</td>
</tr>
</tbody>
</table>

Support frame MD1AM 000

M340 PLC module MD1AM0 003
Process and machine management modules

API modules

**ZELIO LOGIC MODULE**
**MD1AM0 001**

**Characteristics**
- **Function:** Programmed logic
- **Power supply:**
  - Rated voltage: 24 VDC
  - ON/OFF 16 Inputs / 10 Outputs
- **Contents:**
  - One pair of jumpers (red and blue)
  - Programming software and PC connection cord supplied

This double-format ZELIO logic module comprises:
- On the left-hand part, a ZELIO SR3 B261BD PLC with:
  - Ten 24 VDC ON/OFF inputs
  - Six ON/OFF or Analog inputs
  - Eight 8 A relay outputs
  - Two 5 A relay outputs
- On the right-hand part:
  - A set of 10 switches associated with 4-mm safety sockets for the ON/OFF inputs
  - A set of 4-mm safety sockets for the ON/OFF or analog inputs
  - A set of 4-mm safety sockets for the outputs

This module is connected to the operational parts by means of 4-mm safety sockets and/or Sub D 25 and 37-pt connectors.

LD, FB or SFC programming with the Zeliosoft 2 software provided.

**Module comprises:**
- SR3B261BD - ZELIO module
- SR2USB01 - USB cable for ML / PC

**ZELIO COM LOGIC MODULE**
**MD1AM0 018**

**Characteristics**
- **Function:** Programmed logic
- **Power supply:**
  - Rated voltage: 24 VDC
  - GSM modem
- **Contents:**
  - One pair of jumpers (red and blue)

This double-format Zelio com logic module is used to send and receive SMS messages. It includes:
- A 10 Input / Output Zelio module SR3B101BD
- An Ethernet Extension module SR3NET01BD
- A communication interface SR2COM01
- A GSM modem (SIM card not provided) SR2MOD02
- A GSM antenna

Programming with the Zeliosoft 2 software provided.

**Module comprises:**
- SR3B101BD - ZELIO logic module
- SR3NET01BD - Ethernet extension module
- SR2COM01 - MODEM communication interface
- SR2MOD02 - GSM communication interface
Process and machine management modules

API modules

**M340 PLC MODULE**
**MD1AM0 003**

**Characteristics**
- **Function:** Programmed logic
- **Power supply:**
  - Rated voltage: 24 VDC
  - HE10 ON-OFF 16 Inputs / 16 Outputs
- **Contents:**
  - One pair of jumpers (red and blue)
  - One PC connection cord

The double-format M340 PLC module includes an M340 PLC consisting of:
- A 4-module BMX XBP 0400 rack
- A BMX P34 2020 processor with:
  - A Modbus port and an Ethernet port
- A BMX CPS 2010 24 VDC 16.8 W power supply module
- A 16 ON/OFF input / 16 transistor output BMW DDM3202K
- A USB-USB cord for programming on PC

Programming with the Unity software not provided.

**M340 PLC AND ETHERNET MODULE**
**MD1AM0 024**

**Characteristics**
- **Function:** Programmed logic
- **Power supply:**
  - Input voltage: 24 VDC

The double-format M340 PLC module includes a M340 PLC consisting of:
- A 4-module BMX XBP 0400 rack
- A BMX P34 2020 processor with
- A Modbus port and an Ethernet port
- A BMX CPS 2010 24 VDC 16.8 W power supply module
- A BMXNOE0110 Ethernet card: messaging-type Ethernet function, Scan IO, DHCP, SNTP, Web.
- A 16 ON/OFF input / 16 transistor output BMW DDM3202K
- A BMXFCC053 HE double cable to MD1AM0 004 and MD1AM0 005
- A USB-USB cord for programming on PC

Programming with the Unity software not provided.
Process and machine management modules

API modules

**TM221 PLC MODULE**
**MD1AM0 032**

**Characteristics**
- **Function:** Programmed logic
- **Power supply:**
  - Rated voltage: 24 VDC

The single-format M221 PLC module includes a M221 PLC consisting of:
- A TM221ME32TK processor, with:
  - Sixteen 24 VDC ON-OFF inputs
  - Sixteen 24 VDC transistor outputs
  - An RS485 serial port.
  - An ETHERNET MODBUS TCP/IP port
- An HE10 26-pt connection interface that ensures compatibility with the 16-input and 16-output modules

Programming with the SoMachine Basic software provided.

**M221 PLC MODULE WITH SOCKETS**
**MD1AM0 033**

**Characteristics**
- **Contents:**
  - One pair of jumpers (red and blue)

The single-format M221 PLC module includes a M221 PLC consisting of:
- A TM221ME16R processor, with:
  - Eight 24 VDC ON/OFF inputs
  - Eight relay outputs
  - An RS485 serial port.
  - An ETHERNET MODBUS TCP/IP port
- A set of 4-mm safety sockets for the inputs / outputs

Programming with the SoMachine Basic software provided.
Process and machine management modules

Interface modules

16 ON/OFF INPUT INTERFACE MODULE
MD1AM0 005

Characteristics

- **Function:** Wiring interface and input simulation
- **Power supply:**
  - Rated voltage: 24 VDC
  - 16 inputs on 4-mm safety
  - SubD 37-pt connector
- **Contents:**
  - One pair of jumpers (red and blue)

This single-format 16-input interface module comprises:
- 16 simulation switches for each input
- 16 status display yellow LEDs
- 16 yellow 4-mm safety sockets for wiring each input
- Two 20-pt HE10 connectors for connection to the PLC
- 1 SubD 37-pt connector for connection to the compatible operational parts

Module to be used with the API M340, M221 and M241 modules that have HE10 connections

Caution: not compatible with the ZELIO logic module (MD1AM0 001)

16 ON/OFF OUTPUT INTERFACE MODULE
MD1AM0 006

Characteristics

- **Function:** Wiring interface and input simulation
- **Power supply:**
  - Rated voltage: 24 VDC
  - 16 inputs on 4-mm safety
  - SubD 25-pt connector
- **Contents:**
  - One pair of jumpers (red and blue)
  - One pair of black jumpers

This single-format 16-output interface module comprises:
- 16 status display green LEDs
- 16 green 4-mm safety sockets for wiring each relay output
- 2 black 4-mm safety sockets for the relay output common connections
- 2 safety straps for shunting the common connections on the 24 VDC
- Two 20-pt HE10 connectors for connection to the PLC
- 1 SubD 25-pt connector for connection to the compatible operational parts

Module to be used with the API M340, M221 and M241 modules that have HE10 connections
Process and machine management modules

Interface modules

This single-format analog 4 I / 4 O interface module comprises:

- On the left-hand part:
  - 1 graduated potentiometer, 10 KOhms associated with 3 black 4-mm safety sockets
  - 2 red and blue 4-mm safety sockets delivering a fixed 10 VDC 500 mA voltage.
  - 8 yellow 4-mm safety sockets for the 4 analog inputs
  - One 25-pt SubD connector for connection to the PLC

- Module to be used with the API M340, M221 and M241 modules that have HE10 connections

- On the right-hand part:
  - 1 digital voltmeter with needle, 0 - 10 VDC associated with two red and blue 4-mm safety sockets
  - 1 fixed 500-Ohm resistor associated with two black 4-mm safety sockets for current measurement (0 - 20 mA or 4 - 20 mA)
  - 8 green 4-mm safety sockets for the 4 analog outputs
  - One 25-pt SubD connector for connection to the PLC.
Process and machine management modules

Communication modules

**ETHERNET OTB MODULE MD1AM0 023**

Characteristics

- **Function:**
  Inputs / outputs extension

- **Power supply:**
  Rated voltage: 24 VDC

[Image of Ethernet OTB Module]

Module comprises:

- OTB1E0DM9LP

Ethernet input/output module.

- Ethernet TCP/IP RJ45 Modus protocol
- Transmission mode: 1 twisted pair at 10/100 Mbit/s
- Transparent Ready A10 class web server
- 2 yellow terminal inputs
- 8 relay outputs with green terminals

**CANOPEN OTB MODULE MD1AM0 028**

Characteristics

- **Function:**
  Inputs / outputs extension

- **Power supply:**
  Rated voltage: 24 VDC

[Image of CANopen OTB Module]

Module comprises:

- OTB1C0DM9LP

Input / output module

- CANopen protocol
  - 12 yellow terminal inputs
  - 8 relay outputs with green terminals
Process and machine management modules

Communication modules

**RFID MODBUS SENSOR MODULE MD1AM0 021**

**Characteristics**

- **Function:** Traceability
- **Power supply:** Rated voltage: 24 VDC

RFID Read/Write station. Radio frequency sensor used in industry for traceability functions. This RFID antenna communicates with the standard 13.56 MHz labels (ISO 18000-3, ISO 15693, ISO 14443). It also communicates with the API and the displays in RS485 support series Modbus format.

Module comprises:
- XGC - Ositrack compact station
- XGBH90E340 - Ositrack ISO badge

**RFID ETHERNET SENSOR MODULE MD1AM0 038**

**Characteristics**

- **Function:** Traceability
- **Power supply:** Rated voltage: 24 VDC

Ethernet input/output module
- CANopen protocol
  - 12 yellow terminal inputs
  - 8 relay outputs with green terminals

Module comprises:
- XGCS850C201
Process and machine management modules

Communication modules

**ETHERNET SWITCH MODULE MD1AM0 025**

**Characteristics**

- **Function:**
  Ethernet network connections

- **Power supply:**
  Rated voltage: 24 VDC

**Module comprises:**

- TCSESU053FN0

**RS232 MODULE MD1AM0 027**

**Characteristics**

- **Function:**
  Frame viewing

RS232 connection making it possible to view the frames transmitted via the BNC connectors to be connected to an oscilloscope.
Process and machine management modules

Communication modules

**CANOPEN MODULE**

**MD1AM0 036**

Characteristics

- **Function:**
  Ethernet network routing

CANopen branch box. It is used to connect via 2 DBS 2 end-of-line CANopen slaves by Switch. Modbus configuration port for speed controllers.

**Module comprises:**

- VD3CANTAP2.

---

**ETHERNET HUB MODULE**

**MD1AM0 010**

Characteristics

- **Function:**
  Ethernet network connections

- **Power supply:**
  Rated voltage: 24 VDC
  4 Ethernet ports 10/100

- **Contents:**
  One pair of jumpers (red and blue)

This single-format Ethernet HUB module comprises:

- One 4-port Ethernet switch
  - 10 Base-T Ethernet or 100 Base-Tx Fast Ethernet
  - Auto MDI / MDI-X (crossed cable detection)
  - 1 green LED for each port: Link / Data indication and 100Mb/S mode

**Module comprises:**

- VDI533009 - Ethernet 4+1 switch
- VDI517009 - Power supply connector
Modular offers catalog 2017

Process and machine management modules

Communication modules

MODBUS HUB MODULE
MD1AM0 011

This single-format Modbus HUB module comprises:
- One Modbus splitter
  - Eight RJ45 connectors
  - One RJ45 IN connector
  - One RJ45 OUT connector

Characteristics

- **Function:**
  Network connections

- **Power supply:**
  Rated voltage: 24 VDC
  10 ModBus ports

- **Contents:**
  One pair of jumpers (red and blue)

Module comprises:
- LU9GC3 - MODBUS splitter
Process and machine management modules

Human-Machine Interface modules

MAGELIS XBTR411
MODULE
MD1AM0 008

Characteristics

- **Function:**
  Alphanumeric display, RS232 or RS485 serial link, Modbus or Unitelway protocol

- **Power supply:**
  Rated voltage: 24 VDC
  SubD 25-pt connector

- **Contents:**
  One pair of jumpers (red and blue)

This single-format MAGELIS XBTR module comprises:

- One Magelis XBTR411 dialog terminal:
  - Four lines of 20 alphanumerical characters
  - Eight “System” keys
  - 12-Key digital keyboard with LEDs

- One SubD 25-pt connector for connection to the PLC or to the programming PC.

EGX100 GATEWAY
MODULE
MD1AM0 022

Characteristics

- **Function:**
  Ethernet RS485 gateway

- **Power supply:**
  Rated voltage: 24 VDC

The EGX100 module is used as an Ethernet gateway for devices communicating via the Modbus RS485 protocol.

- 10/100 Base TX Ethernet Port
- RS485/RS232 serial port (2 or 4 wires)

Module comprises:

- EGX100
Process and machine management modules

Human-Machine Interface modules

MAGELIS XBTGT4340
MODULE
MD1AM0 009

Characteristics

- **Function:**
  Graphic display

- **Power supply:**
  Rated voltage: 24 VDC

- **Contents:**
  One USB 1.1 / 2.0 cable
  One pair of jumpers (red and blue)

This double-format MAGELIS XBTGT logic module comprises:

- One XBTGT 4340 touchscreen graphic dialog terminal
- 7.5” TFT 640 x 480-pt touchscreen graphic dialog terminal
- Two COM1 and COM2 serial ports
- One USB port
- 32 Mb application memory
- Slot for Compact Flash memory card
- Composite video input
- Audio input
- Embedded Ethernet port (RJ45)
- RCA Video IN connector
- Audio IN jack connector

Ethernet TCPIP and RS232 or RS485 serial communication, Modbus or Unitelway protocol

Programming with the Vijeo Designer software not provided.

Module comprises:

- HMIGTO 4330

HMISTU855 TERMINAL
MODULE
MD1AM0 016

Characteristics

- **Function:**
  Human-Machine Interface

- **Power supply:**
  Rated voltage: 24 VDC

- **Contents:**
  One USB 1.1 / 2.0 cable
  One pair of jumpers (red and blue)

The HMISTU855 Magelis STO and STU Terminal module with 5.7” color graphic touchscreen features technological innovations making it possible to improve machine productivity.

- A single configuration software application,
- Multiprotocol RS485/232 RJ45 ports,
- Mini-USB port, memory stick, USB keyboard.

Programming with the Vijeo Designer software not provided.
Process and machine management modules

Human-Machine Interface modules

HMISTU655 MODULE MD1AM0 019

Characteristics

- **Function:**
  - Graphic display

The HMISTU655 Magelis STO and STU Terminal module with 3.5” color graphic touchscreen features technological innovations making it possible to improve machine productivity.

- One configuration software,
- Multiprotocol RS485/232 RJ45 ports,
- Mini-USB port, memory stick, USB keyboard.

Programming with the Vijeo Designer software not provided.

---

RFID MODULE MD1AMP 016

Characteristics

- **Function:**
  - RFID operational part

- **Power supply:**
  - Rated voltage: 24 VDC

- **Contents:**
  - One pair of jumpers (red and blue)
  - One set of 10 ISO Ositrack badges
  - RJ45 Ethernet cable

RFID (Radio Frequency identification) wires on the basis of one set of interactive cards. It can also be used to study and understand the notions of traceability and identification used in many applications (logistics, access control, luggage sorting and follow-up).

The single-format RFID module comprises:
- A Read / Write pad
- A Modbus / Ethernet gateway
- A MAGELIS color graphic touchscreen terminal
- An RJ45 connection for connection to a computer

Module comprises:
- TCSECL1M3M3S2 - M12 Ethernet cable
- XGSZ33ETH - Ositrack box
- XGC4901201 - Ositrack compact station
- TCSESU953FN0 - Unmanaged Connexium
- XGBH90E340 - Ositrack ISO badge
- HMISTU655 - MAGELIS graphic terminal
- ALV08530 - RJ45 cable - straight RJ45
- ABL7RM24025 - 24 VDC power supply - 2.5 A
- XGBH90E340 - Set of 10 ISO Ositrack badges
- XZC-P1564L05 - M12 power supply cables
- XGSZ09L2 - M12 power supply extension cable
Process and machine management modules

Operational part modules

TRAFFIC MANAGEMENT MODULE
MD1AMP 003

Characteristics

- **Function:** Operational part
- **Power supply:**
  Rated voltage: 24 VDC (2.5 A or 4.2 A)
- **Contents:**
  One pair of jumpers (red and blue)

The operational part represents a set of crossroads' traffic lights. Designed for studying the programming of industrial programmable logic controllers, it consists of:

- A crossroads represented by an etching on the front face
- Two three-color traffic lights: red, amber and green
- Six black 4-mm sockets for controlling the two traffic lights
- One pushbutton for the “PEDESTRIAN CALL” function and its two black 4-mm sockets.

Two types of power supply are available:

- 24 V - 2.5 A power supply MD1AM4 001
- 24 V - 4.2 A power supply MD1AM4 002

AUTOMATIC BARRIER MODULE
MD1AMP 005

Characteristics

- **Function:** Access control
- **Power supply:**
  Rated voltage: 24 VDC
- **Contents:**
  One pair of jumpers (red and blue)

The operational part represents an automatic barrier. Designed for studying the programming of industrial programmable logic controllers, it includes:

- Two motorized barriers
- Four red LEDs indicating the out-of-limit position of the barriers.
- Six illuminated pushbuttons for manual or automatic barrier control.
- Two HE10 connectors for the PLC I/O connections.
Process and machine management modules

Operational part modules

TEMPERATURE CONTROL MODULE.
MD1AMP 006

Characteristics

- **Function:**
  Operational part

- **Power supply:**
  Rated voltage: 24 VDC

- **Contents:**
  One pair of jumpers (red and blue)

The operational part represents an oven in which the heater element is an incandescent lamp. Designed for learning about and studying regulation, it includes:

- A PT100 probe and a measurement transmitter.
- A thermal chamber (oven) whose heater element is an incandescent lamp.
- An AUTO / MANU operating mode switch
- A potentiometer for controlling heating in manual mode
  - A disturbance fan controlled by means of a potentiometer.
  - Two green sockets for the analog control
  - Two yellow sockets for measuring the temperature, 0 - 10 V

PROCESS CONTROL MODULE
MD1AMP 008

Characteristics

- **Function:**
  Operational part

- **Power supply:**
  Rated voltage: 24 VDC

- **Contents:**
  One pair of jumpers (red and blue)

The operational part is used to:

- Simulate an industrial process consisting of:
  - A conveyor belt
  - A product presence detector
  - A cylinder
- Generate products in a random way. The exercise then consists of:
  - Conveying these products to the cylinder
  - Stopping the conveyor belt
  - Operating the cylinder (lowering then raising)

The module is connected directly by means of an HE10 connector, it can therefore be used directly by the PLC modules and does not require any input/output interfacing modules. Display is ensured by means of LEDs.
Process and machine management modules

Operational part modules

USB INTERFACE SIMULATOR MODULE MD1AM0 015

Characteristics

- **Function:** Simulation of an operational part
- **Power supply:**
  - Rated voltage: 24 VDC
- **Contents:**
  - One USB 1.1 / 2.0 cable
  - One pair of jumpers (red and blue)
  - An HE10 ON/OFF programming cord
  - A CD and Dongle containing the SIMU 3D software

The USB interface simulator module connects the SIMULATEUR 3D software to the M340 PLC.

SIMULATEUR 3D is an educational software that is used to teach users how to program industrial PLCs. The simulated virtual environments are very true-to-life thanks to their total interactivity on the one hand, and to the realism of the real-time 3D graphic animations, dynamics and sounds on the other. The simulated environment consists of several highly realistic systems that can be connected to an M340 PLC.

Simulation avoids having to run the risk of injury for the students and of damaging the equipment.

The simulated virtual environments:

- **Case sorting system,** the main aim of which is to transport cases from a feed conveyor to goods lifts while sorting them by size.
- **“Batch” stirring system** that simulates a paint stirring process. The goal is to mix three colors (red, green and blue) to obtain the desired color.
- **Automatic pallet packer** that is used to pack pallets with up to three levels of boxes.
- **Pick & Place robot** that puts parts in a case using a 3-axis manipulator.
- **Automated store** that moves, stores and finds cases on shelves.
Process and machine management modules

Operational part modules

FACTORY I/O SOFTWARE
MODULE + INTERFACE
ON TERMINALS
MD1AM0 030

Characteristics

- **Function:** Simulation of an operational part

FACTORY I/O is an educational software that is used to teach users how to program M340 and M221 industrial PLCs. The virtual environments proposed are very true-to-life thanks to their total interactivity, and to the realism of the real-time 3D graphic animations, dynamics and sounds. It is used to build, simulate and troubleshoot virtual industrial systems. The systems are electrically connected to the APIs. The simulator provides access to a control panel with an AUTO mode, emergency shutdown and three pushbuttons (START, STOP, RESET).

Ref. MODULAR FACTORY I/O .

2-METER MOTORIZED
CONVEYOR MODULE
MD1AMP 024

Characteristics

- **Function:** Motor and sensor control

- **Power supply:**
  Rated voltage: 230/400 VAC

- **Dimensions (H x L x D) - weight:**
  Structure: 420 x 2010 x 280 mm – 20 kg
  Conveyor width: 80 mm
  Belt length: 2 m

The operational part is a conveyor that consists of:
- Green polyurethane belt
- A Motovario r reduction gear = 30 (belt speed 6 m / min)
- 230 / 400 V 120 Watt motor
- 3 black sockets U1 V1 W1
- 3 black sockets U2 V2 W2
- 1 yellow / green socket for grounding

The conveyor is equipped with a 2-photoelectric cell barrier
The Analog sensor operational part consists of:
- A photo-electric sensor essentially made of a light emitter (LED) associated with a receiver that is sensitive to the amount of light received (photo-transistor). Detection occurs when the target enters into the light beam emitted by the sensor and sufficiently modifies the amount of light received by the receiver to cause a change in the output state. The 24 VDC sensor, 4-20 mA output, is associated with 4-20 mA PLC inputs.
- A steel attachment bracket.

Module comprises:
- XU5M18AB20D - Photo-electric sensor
- XUZA118 - Steel attachment bracket
Process and machine management modules

Auxiliary parts

24 VDC POWER SUPPLY
MODULE 2.5 A
MD1AM4 001

The modules are voltage converters that are used to power the various 24 VDC modules.

Two versions are available:
- 24 VDC - 2.5 A power supply module MD1AM4 001
- 24 VDC - 4.2 A power supply module MD1AM4 002

These single-format modules include:
- One red socket marked 24 V for the power supply.
- One blue socket marked 0 V
- One “Europa” connector for the mains power supply.
- One green ON indicator light to indicate the module is powered up.

Characteristics
- Power supply:
  Rated voltage: 230 VDC
- Contents:
  One pair of jumpers (red and blue)
  Power supply cable

SINGLE-PHASE
PROTECTION MODULE
MD1AM2 001

This single-format protection module comprises:
- One 10 A 30 mA residual current circuit-breaker equipped with an undervoltage trip coil.
- One mains socket for connecting the power cord supplied.
- A white “Power ON” light indicating module status.
- An emergency stop button for instantaneously cutting out the power supply.
- Set of three safety sockets (black, blue and yellow / green) for easy connection to other modules.

Characteristics
- Power supply:
  Rated voltage: 230 VDC
- Contents:
  Power supply cable
Process and machine management modules

Discovery packs

The RFID pack is referenced MD1AML RFID, and comprises:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Designation</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24 VDC 2.5 A power supply module</td>
<td>MD1AM4 001</td>
</tr>
<tr>
<td>1</td>
<td>+ mains cord</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>24 VDC power supply module</td>
<td>MD1AM4 001</td>
</tr>
<tr>
<td>1</td>
<td>RFID operational part module with touchscreen terminal</td>
<td>MD1AMP 016</td>
</tr>
<tr>
<td>1</td>
<td>+ configuration badge</td>
<td>XG2-ZCNF01</td>
</tr>
<tr>
<td>10</td>
<td>+ set of RFID labels</td>
<td>XGH-B90E340</td>
</tr>
<tr>
<td>32</td>
<td>+ set of adhesive cards</td>
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<tr>
<td>1</td>
<td>+ RJ45 / RJ45 cable - Length: 1 meter</td>
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</tr>
<tr>
<td>1</td>
<td>Support structure</td>
<td>MD1AM 000</td>
</tr>
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Technical and training manual on digital medium

The M340 PLC pack is referenced MD1AML MR, and comprises:

<table>
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<tr>
<th>Quantity</th>
<th>Designation</th>
<th>Reference</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>M340 PLC module with one 16 I / 16 O card</td>
<td>MD1AM0 003</td>
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<td>1</td>
<td>+ HE10 connection cord</td>
<td>BMXFC053</td>
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<td>1</td>
<td>+ PC programming cord</td>
<td>BMXXCAUSBH018</td>
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<tr>
<td>1</td>
<td>16-ON/OFF input module</td>
<td>MD1AM0 005</td>
</tr>
<tr>
<td>1</td>
<td>16 ON/OFF output module</td>
<td>MD1AM0 006</td>
</tr>
<tr>
<td>1</td>
<td>24 VDC 2.5 A power supply module</td>
<td>MD1AM4 001</td>
</tr>
<tr>
<td>1</td>
<td>+ mains cord</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>HMISTU655 module</td>
<td>MD1AM0 019</td>
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<tr>
<td>1</td>
<td>+ Magelis / PLC 38 connection cord</td>
<td>XBTZ938</td>
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<tr>
<td>1</td>
<td>+ Magelis / PC programming cord</td>
<td>XBTZ925</td>
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<td>1</td>
<td>+ USB / RS485 converter</td>
<td>TSXCUSB485</td>
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<td>1</td>
<td>Machine control module</td>
<td>MD1AM7 002</td>
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Technical and training manual on digital medium
Process and machine management modules

Discovery packs

The 221 pack is referenced MD1AML 221, and comprises:

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<th>Designation</th>
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<tr>
<td>1</td>
<td>16-ON/OFF input module</td>
<td>MD1AM0 005</td>
</tr>
<tr>
<td>1</td>
<td>16 ON/OFF output module</td>
<td>MD1AM0 006</td>
</tr>
<tr>
<td>1</td>
<td>HMISTU655 module</td>
<td>MD1AM0 019</td>
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<tr>
<td>1</td>
<td>+ HMI / PC and PC / API programming cord</td>
<td>BMXXCAUSBH018</td>
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<tr>
<td>1</td>
<td>+ USB / RS485 converter</td>
<td>TSXCU485</td>
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<tr>
<td>1</td>
<td>TM221 PLC module</td>
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<td>2</td>
<td>+ HE10 connection cord</td>
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<td>1</td>
<td>24 VDC 2.5 A power supply module</td>
<td>MD1AM4 001</td>
</tr>
<tr>
<td>1</td>
<td>+ mains cord</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Machine control module</td>
<td>MD1AM7 002</td>
</tr>
<tr>
<td>1</td>
<td>Support structure</td>
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</table>

Technical and training manual on digital medium

The ZELIO PLC pack is referenced MD1AML ZL, and comprises:

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<th>Quantity</th>
<th>Designation</th>
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<tbody>
<tr>
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<td>ZELIO logic module</td>
<td>MD1AM0 001</td>
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<tr>
<td>1</td>
<td>24 VDC 2.5 A power supply module</td>
<td>MD1AM4 001</td>
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<tr>
<td>1</td>
<td>+ mains cord</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Machine control module</td>
<td>MD1AM7 002</td>
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<tr>
<td>1</td>
<td>Traffic management module</td>
<td>MD1AMP 003</td>
</tr>
<tr>
<td>1</td>
<td>Support structure</td>
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</table>

Technical and training manual on digital medium
## Discovery packs

The modular communication pack is referenced MD1AML COM, and comprises:

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<th>Quantity</th>
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<tr>
<td>1</td>
<td>RFID sensor module</td>
<td>MD1AM0 021</td>
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<tr>
<td>1</td>
<td>EGX100 gateway module</td>
<td>MD1AM0 022</td>
</tr>
<tr>
<td>1</td>
<td>Ethernet OTB module</td>
<td>MD1AM0 023</td>
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<tr>
<td>1</td>
<td>M340COM-NOE module</td>
<td>MD1AM0 024</td>
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<tr>
<td>1</td>
<td>Ethernet switch module</td>
<td>MD1AM0 025</td>
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<tr>
<td>1</td>
<td>RS232 module</td>
<td>MD1AM0 027</td>
</tr>
<tr>
<td>1</td>
<td>CANopen OTB module</td>
<td>MD1AM0 028</td>
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<tr>
<td>1</td>
<td>CANopen TAP Module</td>
<td>MD1AM0 036</td>
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<tr>
<td>1</td>
<td>Magnetic protection module</td>
<td>MD1AM1 004</td>
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<tr>
<td>1</td>
<td>Central measuring module</td>
<td>MD1AM2 003</td>
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<tr>
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<td>3-CT module.</td>
<td>MD1AM2 004</td>
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<td>1</td>
<td>WiFi router module</td>
<td>MD1AM2 010</td>
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<td>1</td>
<td>24 VDC power supply module</td>
<td>MD1AM4 001</td>
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<td>1</td>
<td>Altivar 312 module</td>
<td>MD1AM5 001</td>
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<tr>
<td>1</td>
<td>USB cable</td>
<td>BMXXCAUSBH018</td>
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<td>5</td>
<td>RJ45 cable, 1 m</td>
<td></td>
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<tr>
<td>1</td>
<td>Support structure</td>
<td>MD1AM 000</td>
</tr>
</tbody>
</table>

*Technical and training manual on digital medium*
Process and machine management modules

Motor starter modular offer

Training objectives:
- Learn about the speed controller
- Design and make various motor starter diagrams
- Familiarize yourself with the equipment and the different implementation possibilities
- Make the power control equipment

Overall presentation
The motor starter modular offer allows you to use power control equipment components. The bench and packs proposed are designed for designing and making product installations that are used for the electro-mechanical or electronic control of motor starters. The bench consists of the most commonly used products, with their instructions in the boxes. Two different educational packs are proposed for learning how to use the main functions encountered when making electrical power control installations.

Electrical and mechanical characteristics

- **Power supply:**
  Motor rated power: 230 V or 400 V - 0.18 KW
  Control circuit voltage: 24 VDC
  Power circuit voltage: 230 V or 400 V three-phase

- **Dimensions (H x L x D) - weight:**
  Structure: 1030 x 910 x 400 mm – 6.5 kg
  Single module: 244 x 150 x 70 mm – 0.7 kg
  Double module: 244 x 300 x 70 mm – 1.4 kg

Main sectors concerned
Electrical engineering

The motor starter modular offer includes:

<table>
<thead>
<tr>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TeSys U module</td>
</tr>
<tr>
<td>Magnetic protection module 1.6 A</td>
</tr>
<tr>
<td>Magneto-thermal protection modules</td>
</tr>
<tr>
<td>Magnetic protection module</td>
</tr>
<tr>
<td>Magnetic protection module 2.5 A</td>
</tr>
<tr>
<td>Magnetic protection module 0.63 A</td>
</tr>
<tr>
<td>Switch module with Vario cutout</td>
</tr>
<tr>
<td>Magneto-thermal module 1.6 / 2.5 A</td>
</tr>
<tr>
<td>Magneto-thermal module 0.4 / 0.63 A</td>
</tr>
<tr>
<td>Fuse holder cutout module</td>
</tr>
<tr>
<td>Thermal relay module 1.6 / 2.5 A</td>
</tr>
<tr>
<td>Thermal relay module 0.4 / 0.63</td>
</tr>
<tr>
<td>Thermal relay module 1 / 1.6 A</td>
</tr>
<tr>
<td>Contactor module 9 A - 24 VDC</td>
</tr>
<tr>
<td>TeSys U module 1.25 / 5 A</td>
</tr>
<tr>
<td>Contactor module 9 A - 24 VDC</td>
</tr>
<tr>
<td>Inverter contactor module</td>
</tr>
<tr>
<td>Soft starter module</td>
</tr>
<tr>
<td>Auxiliary contactor module</td>
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<tr>
<td>Time-delayed auxiliary contactor module</td>
</tr>
<tr>
<td>Contactor module 25 A - 230 VAC</td>
</tr>
<tr>
<td>Thermal relay module 9 / 13 A</td>
</tr>
<tr>
<td>ZIGBEE - ZBRR A module</td>
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<tr>
<td>ZIGBEE - ZBRR C module</td>
</tr>
<tr>
<td>Soft starter module 380 / 415 V</td>
</tr>
<tr>
<td>Altivar 312 module</td>
</tr>
<tr>
<td>Altivar 12 module</td>
</tr>
</tbody>
</table>

Dimensions (H x L x D) - weight:
Structure: 1030 x 910 x 400 mm – 6.5 kg
Single module: 244 x 150 x 70 mm – 0.7 kg
Double module: 244 x 300 x 70 mm – 1.4 kg
Process and machine management modules

Motor starter modules

**TESYS U MODULE**
**MD1AM1 001**

**Characteristics**
- **Power supply:**
  - Rated voltage: 400 VAC or 230 VAC – G
  - Control voltage: 24 VDC

The single-format TeSysU module includes a one-operating-direction motor starter equipped with:
- A 12 A power base
- A 0.35 to 1.4 A multifunction control unit
- 3 black L1 L2 L3 sockets for the 230 V or 400 VAC three-phase power supply
- 3 black T1 T2 T3 sockets for connecting the asynchronous motor
- 2 blue and red +24 V – 0 V sockets for powering the control unit
- 2 blue and red A1 – A2 sockets for connecting the coil
- 2 red sockets marked 13 - 14 for connecting the auxiliary contact NO
- 2 red sockets marked 21 - 22 for connecting the auxiliary contact NC

Module comprises:
- LUB12 - 12 A Power base - screw clamps
- LUCM05BL - Multifunction control unit

**TESYS U MODULE - 1.25 TO 5 A**
**MD1AM1 022**

**Characteristics**
- **Power supply:**
  - Rated voltage: 400 VAC or 230 VAC – G
  - Control voltage: 24 VDC

The single-format TeSysU module includes a one-operating-direction motor starter equipped with:
- A 12 A power base
- A 1.25 to 5 A multifunction control unit
- 3 black L1 L2 L3 sockets for the 230 V or 400 VAC three-phase power supply
- 3 black T1 T2 T3 sockets for connecting the asynchronous motor
- 2 blue and red +24 V – 0 V sockets for powering the control unit
- 2 blue and red A1 – A2 sockets for connecting the coil
- 2 red sockets marked 13 - 14 for connecting the auxiliary contact NO
- 2 red sockets marked 21 - 22 for connecting the auxiliary contact NC

Module comprises:
- LUC M05BL
Motor starter modules

**MAGNETIC PROTECTION MODULE 1.6 A**
**MD1AM1 002**

**Characteristics**
- **Power supply:**
  - Rated voltage: 400 VAC or 230 VAC – G

A magnetic protection circuit-breaker GV2L06, rated 1.6 A, equipped with:
- 3 black L1 L2 L3 sockets for the 230 V or 400 VAC three-phase power supply
- 3 black T1 T2 T3 sockets for output connections
- A block with two instantaneous auxiliary NO+NO contacts marked 53 - 54 and 97 - 98 with fault indicating
- 2 red sockets marked 53 - 54 for connecting the instantaneous NO auxiliary contact
- 2 red sockets marked 97 - 98 for connecting the NO contact with fault indicating

Module comprises:
- GV2L06 - Three-pole magnetic circuit-breaker
- GV2AD1010 - Side-mounting F+F contact block

---

**MAGNETIC PROTECTION MODULE 4 A**
**MD1AM1 004**

**Characteristics**
- **Power supply:**
  - Rated voltage: 400 VAC or 230 VAC – G

This single-format magneto-thermal module comprises:
- A magnetic protection circuit-breaker, rated 4 A, equipped with:
  - 3 black L1 L2 L3 sockets for the 230 V or 400 VAC three-phase power supply
  - 3 black T1 T2 T3 sockets for output connections
  - A block with two instantaneous auxiliary NO+NO contacts marked 53 - 54 and 97 - 98 with fault indicating
  - 2 red sockets marked 53 - 54 for connecting the instantaneous NO auxiliary contact
  - 2 red sockets marked 97 - 98 for connecting the NO contact with fault indicating

Module comprises:
- GV2L08 - Three-pole magnetic circuit-breaker
- GV2AD1010 - Side-mounting F+F contact block
**Process and machine management modules**

**Motor starter modules**

**MAGNETIC PROTECTION MODULE 2.5 A MD1AM1 019**

**Characteristics**

- **Power supply:**
  - Rated voltage: 400 VAC or 230 VAC – G

A magnetic protection circuit-breaker GV2L07, rated 2.5 A, equipped with:
- 3 black L1 L2 L3 sockets for the 230 V or 400 VAC three-phase power supply
- 3 black T1 T2 T3 sockets for output connections
- A block with two instantaneous auxiliary NO+NO contacts marked 53 - 54 and 97 - 98 with fault indicating
- 2 red sockets marked 53 - 54 for connecting the instantaneous NO auxiliary contact
- 2 red sockets marked 97 - 98 for connecting the NO contact with fault indicating

**Module comprises:**

- GV2L07

---

**MAGNETIC PROTECTION MODULE 0.63 A MD1AM1 023**

**Characteristics**

- **Power supply:**
  - Rated voltage: 400 VAC or 230 VAC – G

A magnetic protection circuit-breaker GV2L04, rated 0.4 to 0.63 A, equipped with:
- 3 black L1 L2 L3 sockets for the 230 V or 400 VAC three-phase power supply
- 3 black T1 T2 T3 sockets for output connections
- A block with two instantaneous auxiliary NO+NO contacts marked 53 - 54 and 97 - 98 with fault indicating
- 2 red sockets marked 53 - 54 for connecting the instantaneous NO auxiliary contact
- 2 red sockets marked 97 - 98 for connecting the NO contact with fault indicating

**Module comprises:**

- GV2L04
Process and machine management modules

Motor starter modules

**MAGNETO-THERMAL MODULE 1.6 / 2.5 A MD1AM1 020**

**Characteristics**

- **Power supply:**
  - Rated voltage: 400 VAC or 230 VAC – G

This single-format magneto-thermal module comprises:

- A magnetic protection circuit-breaker, rated 1.6 to 2.5 A, equipped with:
  - 3 black L1 L2 L3 sockets for the 230 V or 400 VAC three-phase power supply
  - 3 black T1 T2 T3 sockets for output connections
  - A block with two instantaneous auxiliary NO+NO contacts marked 53 - 54 and 97 - 98 with fault indicating
  - 2 red sockets marked 53 - 54 for connecting the instantaneous NO auxiliary contact
  - 2 red sockets marked 97 - 98 for connecting the NO contact with fault indicating

**MAGNETO-THERMAL MODULE 0.4 TO 0.63 A MD1AM1 024**

**Characteristics**

- **Power supply:**
  - Rated voltage: 400 VAC or 230 VAC – G

This single-format magneto-thermal module comprises:

- A magnetic protection circuit-breaker, rated 0.4 to 0.63 A, equipped with:
  - 3 black L1 L2 L3 sockets for the 230 V or 400 VAC three-phase power supply
  - 3 black T1 T2 T3 sockets for output connections
  - A block with two instantaneous auxiliary NO+NO contacts marked 53 - 54 and 97 - 98 with fault indicating
  - 2 red sockets marked 53 - 54 for connecting the instantaneous NO auxiliary contact
  - 2 red sockets marked 97 - 98 for connecting the NO contact with fault indicating

Schneider Electric

Modular offers catalog 2017
Process and machine management modules

Motor starter modules

**MAGNETO-THERMAL PROTECTION MODULE 1 TO 1.6 A**
**MD1AM1 003**

**Characteristics**
- **Power supply**: Rated voltage: 400 VAC or 230 VAC – G

This single-format magneto-thermal module comprises:
- A magnetic protection circuit-breaker, rated 1.6 A, equipped with:
  - 3 black L1 L2 L3 sockets for the 230 V or 400 VAC three-phase power supply
  - 3 black T1 T2 T3 sockets for connecting the 1 to 1.6 A outputs
  - A block with two instantaneous auxiliary NO+NO contacts marked 53 - 54 and 97 - 98 with fault indicating
  - 2 red sockets marked 53 - 54 for connecting the instantaneous NO auxiliary contact
  - 2 red sockets marked 97 - 98 for connecting the NO contact with fault indicating

Module comprises:
- GV2P06 - Magneto-thermal circuit-breaker
- GVAD1010 - Side-mounting C+C contact block

---

**MAGNETO-THERMAL PROTECTION MODULE 0.25 TO 0.4 A**
**MD1AM1 015**

**Characteristics**
- **Power supply**: Rated voltage: 400 VAC or 230 VAC - G

This single-format magneto-thermal module comprises:
- A magnetic protection circuit-breaker equipped with:
  - 3 black L1 L2 L3 sockets for the 230 V or 400 VAC three-phase power supply
  - 3 black T1 T2 T3 sockets for connecting the 0.25 to 0.4 A outputs
  - A block with two instantaneous auxiliary NO+NO contacts marked 53 - 54 and 97 - 98 with fault indicating
  - 2 red sockets marked 53 - 54 for connecting the instantaneous NO auxiliary contact
  - 2 red sockets marked 97 - 98 for connecting the NO contact with fault indicating

Module comprises:
- GV2P03 - Magneto-thermal circuit-breaker
- GVAD1010 - Side-mounting contact block
Process and machine management modules

Motor starter modules

THERMAL RELAY MODULE 1.6 TO 2.5 A MD1AM1 021

Characteristics

- **Power supply:**
  - Rated voltage: 400 VAC or 230 VAC – G

This single-format magneto-thermal module comprises:

- A magnetic protection circuit-breaker, rated 1.6 to 2.5 A, equipped with:
  - 3 black L1 L2 L3 sockets for the 230 V or 400 VAC three-phase power supply
  - 3 black T1 T2 T3 sockets for output connections
  - A block with two instantaneous auxiliary NO+NO contacts marked 53 - 54 and 97 - 98 with fault indicating
  - 2 red sockets marked 53 - 54 for connecting the instantaneous NO auxiliary contact, 2 red sockets marked 97 - 98 for connecting the NO contact with fault indicating

Module comprises:
- LRD07

THERMAL RELAY MODULE 0.4 TO 0.63 A MD1AM1 025

Characteristics

- **Power supply:**
  - Rated voltage: 400 VAC or 230 VAC – G

This single-format magneto-thermal module comprises:

- A magnetic protection circuit-breaker, rated 0.4 to 0.63 A, equipped with:
  - 3 black L1 L2 L3 sockets for the 230 V or 400 VAC three-phase power supply
  - 3 black T1 T2 T3 sockets for output connections
  - A block with two instantaneous auxiliary NO+NO contacts marked 53 - 54 and 97 - 98 with fault indicating
  - 2 red sockets marked 53 - 54 for connecting the instantaneous NO auxiliary contact, 2 red sockets marked 97 - 98 for connecting the NO contact with fault indicating

Module comprises:
- LRD04
Motor starter modules

**THERMAL RELAY MODULE 1 TO 1.6 A**

**MD1AM1 007**

**Characteristics**

- **Power supply:**
  - Rated voltage: 400 VAC or 230 VAC – G

This single-format thermal relay module comprises:

- A thermal protection relay LRD06, rated 1 to 1.6 A, equipped with:
  - 3 black L1 L2 L3 sockets for the 230 V or 400 VAC three-phase power supply
  - 3 black T1 T2 T3 sockets for output connections
  - 2 auxiliary NC+NO contacts with fault indicating marked 95 - 96 and 97 - 98
  - 2 red sockets marked 95 - 96 for connecting the NO auxiliary contact
  - 2 red sockets marked 97 - 98 for connecting the NC auxiliary contact

**Module comprises:**

- LRD06 - Thermal protection relay
- LAD7B106 - Terminal block for thermal relay

**THERMAL RELAY MODULE 9 TO 13 A**

**MD1AM1 014**

**Characteristics**

- **Power supply:**
  - Rated voltage: 400 VAC or 230 VAC – G

This single-format thermal relay module comprises:

- A thermal protection relay, rated 9 to 13 A, equipped with:
  - 3 black L1 L2 L3 sockets for the 230 V or 400 VAC three-phase power supply
  - 3 black T1 T2 T3 sockets for output connections
  - 2 auxiliary NC+NO contacts with fault indicating marked 95 - 96 and 97 - 98
  - 2 red sockets marked 95 - 96 for connecting the NO auxiliary contact
  - 2 red sockets marked 97 - 98 for connecting the NC auxiliary contact

**Module comprises:**

- LRD16 - Thermal protection relay
- LAD7B106 - Terminal block for thermal relay
**Process and machine management modules**

**Motor starter modules**

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**CONTACTOR MODULE 9**

**A - 24 VDC**

**MD1AM1 008**

**Characteristics**

- **Power supply:**
  - Rated voltage: 400 VAC or 230 VAC – G
  - Control voltage: 24 VDC

This single-format 9 A / 24 VDC contactor module comprises:

- A three-pole contactor LC1D09BD, rated 9 A, equipped with:
  - 3 black L1 L2 L3 sockets for the 230 V or 400 VAC three-phase power supply
  - 3 black T1 T2 T3 sockets for output connections
  - 2 blue and red A1 - A2 sockets for connecting the 24 VDC coil.
  - 2 red sockets marked 95 - 96 for connecting the NO auxiliary contact
  - 2 red sockets marked 97 - 98 for connecting the NC auxiliary contact

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**INVERTER CONTACTOR MODULE**

**MD1AM1 009**

**Characteristics**

- **Power supply:**
  - Rated voltage: 400 VAC or 230 VAC – G
  - Control voltage: 24 VDC

This single-format inverter contactor module comprises:

- A three-pole inverter contactor, rated 9 A, equipped with:
  - 6 black L1 L2 L3 sockets for the 230 V or 400 VAC three-phase power supply
  - 6 black T1 T2 T3 sockets for output connections
  - Mechanical lockout
  - 4 blue and red A1 - A2 sockets for connecting the 24 VDC coil.
  - 4 red sockets marked 13 - 14 for connecting the NO auxiliary contact
  - 4 red sockets marked 21 - 22 for connecting the NC auxiliary contact

---

Module comprises:

- **LC1D09BD** - Three-pole contactor, 9 A 24 VDC

Module comprises:

- **LC2D09BD** - Inverter contactor, 9 A 24 VDC
Motor starter modules

25 A CONTACTOR MODULE MD1AM1 013

Characteristics

- **Power supply:**
  - Rated voltage: 400 VAC or 230 VAC – G
  - Control voltage: 230 VDC

This single-format contactor module comprises:

- A three-pole contactor LC1D25P7, rated 25 A, equipped with:
  - 3 black L1 L2 L3 sockets for the 230 V or 400 VAC three-phase power supply
  - 3 black T1 T2 T3 sockets for output connections
  - 2 blue and red A1 - A2 sockets for connecting the 230 VAC coil.
  - 2 red sockets marked 95 - 96 for connecting the NO auxiliary contact
  - 2 red sockets marked 97 - 98 for connecting the NC auxiliary contact

![Module image]

Module comprises:
- LC1D25U7 - 15 A three-pole contactor

AUXILIARY CONTACTOR MODULE MD1AM1 011

Characteristics

- **Power supply:**
  - Rated voltage: 24 VDC

This single-format 3F / 20 24 VDC auxiliary contactor module comprises:

- TeSysU CAD-32 – 3 F + 2 O – instantaneous auxiliary contactor
- Operating current 10 A
- 24 VDC control voltage with interference suppressor
- Connection to 10 red sockets
- 2 blue and red A1 - A2 sockets for connecting the 24 VDC coil.
- 2 red sockets marked 13 - 14 for connecting the NO contact
- 2 red sockets marked 43 - 44 for connecting the NO contact
- 2 red sockets marked 03 - 04 for connecting the NO contact
- 2 red sockets marked 21 - 22 for connecting the NC contact
- 2 red sockets marked 31 - 32 for connecting the NC contact

![Module image]

Module comprises:
- CAD32BD - 3C + 2O auxiliary contactor
Process and machine management modules

Motor starter modules

AUXILIARY TIME-DELAY CONTACTOR MODULE
MD1AM1 012

Characteristics

- Power supply:
  Rated voltage: 24 VAC

The auxiliary 1 to 30-second time-delay contactor module with 4-mm adaptors is used to delay the action of a contactor (switching it on or off). It includes:

- TeSys time-delayed auxiliary block,
- 2 delayed-action contacts (1C+1O), with 1 to 30-sec. time delay,
- Front-mounted, connected to screw-clamp terminals,
- Four 4-mm red sockets.

Module comprises:
- LADS2 - Delayed-action auxiliary bloc YD

VARIABLE SWITCH MODULE
MD1AM1 005

Characteristics

- Power supply:
  Rated voltage: 400 VAC or 230 VAC – G

This single-format variable selector switch module comprises:

- Selector switch VN 12 rated 12 A equipped with:
  - 3 black L1 L2 L3 sockets for the 230 V or 400 VAC three-phase power supply
  - 3 black T1 T2 T3 sockets for output connections
  - An instantaneous auxiliary NO contact block marked 13 – 14
  - 2 red sockets marked 13 - 14 for connecting the NO auxiliary contact

Module comprises:
- KAF1PZ - Black padlockable handle
- VN12 - Variable cutout switch 12 A
- VZN06 - Auxiliary contacts C+0
Process and machine management modules

Motor starter modules

The LS1D32 is a single-format fuse-holder cutout module. It includes:

- A fuse-holder cutout LS1D32, rated 32, equipped with:
  - 3 black L1 L2 L3 sockets for the 230 V or 400 VAC three-phase power supply
  - 3 black T1 T2 T3 sockets for output connections
  - 3 fuses 10 x 38 mm – 2 Am
  - A block with two instantaneous NC+NO contacts marked 13 - 14 and 21 - 22.
  - 2 red sockets marked 13 - 14 for connecting the NO auxiliary contact
  - 2 red sockets marked 21 - 22 for connecting the NC auxiliary contact

Module comprises:
- LS1D32 - Fuse-holder cutout, 32 A
- GVAE11 - Auxiliary contact clock 10 + 1F
- DF2CA02 - Fuse
Process and machine management modules

Motor starter modules

**ZIGBEE - ZBRA Module**

**MD1AM1 016**

**Characteristics**

- **Power supply:**
  
  Rated voltage: 24 VAC

- **Contents:**
  
  One pair of jumpers (red and blue)

This single-format module comprises:

- A ZBRA programmable receiver with 2 relay outputs
- 4 blue and red sockets marked 24 V and 0 V for powering the module with 24 V
- 3 red sockets marked 11 – 12 – 14 for connecting the Q1 relay’s NO and NC contacts
- 3 red sockets marked 21 – 22 – 24 for connecting the Q2 relay’s NO and NC contacts

This module can be used with the ZigBee pushbutton box, reference MD1AM7 003

**ZIGBEE ZBRRC Module**

**MD1AM1 017**

**Characteristics**

- **Power supply:**
  
  Rated voltage: 24 VDC

- **Contents:**
  
  One pair of jumpers (red and blue)

This single-format module comprises:

- A ZBRRC programmable receiver with 4 PN 3W outputs.
- 4 blue and red sockets marked
- +24 V and 0 V for powering the module with 24 VDC.
- 4 green sockets marked Q1 to Q4 for connecting the outputs
- 4 blue sockets marked 0 V for connecting the output common points

This module can be used with the ZigBee pushbutton box, reference MD1AM7 003
Motor starter modules

This single-format soft starter module comprises:

- An Altistart01 soft starter, rated 6 A, equipped with:
  - 3 black L1 L2 L3 sockets for the 400 VAC three-phase power supply
  - 3 black T1 T2 T3 sockets for output connections
  - 1 red socket marked L1+ for powering input L1 or L2 or both
  - 2 yellow sockets marked L1 – L2 for connecting the 2- or 3-wire control
  - 2 red sockets marked R1A-R1C for connecting the NO auxiliary contact

Module comprises:
- ATS01N206LU - Soft start/Soft stop unit 6 A

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This single-format soft starter module comprises:

- An Altistart01 soft starter, rated 6 A, equipped with:
  - 3 black L1 L2 L3 sockets for the 230 VAC three-phase power supply
  - 3 black T1 T2 T3 sockets for output connections
  - 1 red socket marked L1+ for powering input L1 or L2 or both
  - 2 yellow sockets marked L1 – L2 for connecting the 2- or 3-wire control
  - 2 red sockets marked R1A-R1C for connecting the NO auxiliary contact

Module comprises:
- ATS01N206NQ - Soft start/Soft stop unit 6 A
Process and machine management modules

Speed controller modules

**ALTIVAR 312 MODULE**
**MD1AM5 001**

Characteristics

- **Power supply:**
  - Rated voltage: 240 VAC single-phase
  - Motor: 230 / 400 V - 180 W Max
  - Delta coupling

This is a single-format module. It includes:

- A 312 speed controller for three-phase asynchronous motors.
  - Power supply: 240 VAC
  - Max power: 0.18 KW
  - Communication: ModBus and CANopen
  - Display and adjustment knob
  - 3 black, blue and green/yellow sockets for connecting the network to input.
  - 4 black and green/yellow sockets for connecting the asynchronous motor
  - 4 yellow sockets marked LI1 to LI4 for connecting the 2- or 3-wire control and pre-programmed speeds and 1 red socket marked +24 V
  - 2 green sockets marked R1A - R1C for connecting the NO auxiliary contact
  - 2 green sockets marked AOC-COM for connecting the analog output
  - 3 red, yellow and blue sockets for connecting the analog input.

Module comprises:

- ATV312H018M2 - Speed controller, 0.18 kW

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**ALTIVAR 12 MODULE**
**MD1AM5 002**

Characteristics

- **Power supply:**
  - Rated voltage: 240 VAC single-phase
  - Motor: 230 / 400 V - 180 W Max
  - Delta coupling

This is a single-format module. It includes:

- A 12 speed controller for three-phase asynchronous motors.
  - Power supply: 240 VAC
  - Max power: 0.18 KW
  - Communication: ModBus and CANopen
  - Display and adjustment knob
  - 3 black, blue and green/yellow sockets for connecting the network to input.
  - 4 black and green/yellow sockets for connecting the asynchronous motor
  - 4 yellow sockets marked LI1 to LI4 for connecting the 2- or 3-wire control and pre-programmed speeds and 1 red socket marked +24 V
  - 2 green sockets marked R1A - R1C for connecting the NO auxiliary contact
  - 2 green sockets marked AOC-COM for connecting the analog output
  - 3 red, yellow and blue sockets for connecting the analog input.

Module comprises:

- ATV12H018M2 - Speed controller, 0.18 kW
**Process and machine management modules**

**Speed controller modules**

**SPEED CONTROLLER COMMAND MODULE**

**MD1AM7 001**

**Characteristics**

- **Power supply:**
  Rated voltage: 24 VDC

- **Contents:**
  One pair of jumpers (red and blue)

This module is used to command a speed controller, and it includes:

- 4 red and blue sockets for the module's 24 VDC power supply.
- A green 24 VDC indicator light with 2 black sockets.
- 4 manual switches marked L1 to L4 are used to command the speed controller and choose the pre-programmed speeds. They have 4 yellow sockets and 1 red socket.
- 1 potentiometer, 2.2 KΩ with 3 red sockets ensures the speed controller's analog command.
- 1 digital display, 0-10 V, with 2 red and blue sockets is used to display the analog output from the speed controller.

**MACHINE CONTROL MODULE**

**MD1AM7 002**

**Characteristics**

- **Function:**
  Operational part

- **Power supply:**
  Rated voltage: 24 VDC

- **Contents:**
  One pair of jumpers (red and blue).

The module is used for commanding a motor-starter. This is a single-format module comprising:

- A pre-wired power-up sequence, consisting of:
  - An ON pushbutton and an OFF pushbutton
  - An emergency stop pushbutton
  - An “in service” dry contact, with two black 4-mm sockets
  - A “cycle” indicator light and two black 4-mm sockets
  - A “START” pushbutton and its normally open contact with two black 4-mm sockets
  - A “STOP” pushbutton and its normally closed contact with two black 4-mm sockets
  - An “AUTO / MANUAL” pushbutton and its NO and NC contacts with four black 4-mm sockets
Process and machine management modules

Speed controller modules

MOTOR START CONTROL MODULE
MD1AM7 004

Characteristics

- Power supply:
  Rated voltage: 24 VDC
- Contents:
  One pair of jumpers (red and blue)

This single-format module is used to control an operational part and includes:

- 4 red 24 VDC sockets
- 4 blue 0 V sockets
- An emergency stop pushbutton, NC contact, on two black 4-mm sockets
- A STOP pushbutton, NC contact, on two black 4-mm sockets
- A “Forward” pushbutton, NO contact, on two black sockets and integrated indicator light on two black sockets
- A “Reverse” pushbutton, NO contact, on two black sockets and integrated indicator light on two black sockets
Process and machine management modules

Modules for operational parts

**ASYNCHRONOUS MOTOR MODULE MD1AMP 001**

**Characteristics**
- **Power supply:**
  - Rated voltage: 230/400 VAC
  - Power rating: 180 W

**1-METER MOTORIZED CONVEYOR MODULE MD1AMP 002**

**Characteristics**
- **Power supply:**
  - Rated voltage: 230/400 VAC
- **Dimensions (H x L x D) - weight:**
  - Structure: 420 x 1005 x 280 mm – 10 kg
  - Conveyor width: 80 mm
  - Belt length: 1 m

The operational part consists of an asynchronous motor on 180 W – 230 / 400 V – 1300 rpm base.

- **Weight:** 7 kg
- **Height:** 250 mm
- **Length:** 390 mm
- **Width:** 205 mm

- 3 black sockets U1-V1- W1, and 3 black sockets U2-V2-W2 for the motor windings
- 1 yellow/green socket for grounding.

The operational part is a conveyor that consists of:
- Green polyurethane belt
- A Motovario r reduction gear = 30 (belt speed 6 m / min)
- 230 / 400 V 120 Watt motor
- 3 black sockets U1 V1 W1
- 3 black sockets U2 V2 W2
- 1 yellow / green socket for grounding

The conveyor is fitted with a photoelectric cell.
Process and machine management modules

Modules for operational parts

**ASYNCHRONOUS MOTOR MODULE**
**MD1AMP 013**

**Characteristics**
- **Power supply:**
  - Rated voltage: 400 V / 690 VAC
  - Power rating: 180 W

The operational part consists of an asynchronous motor on 180 W – 400 / 690 V – 1300 rpm base.

- 3 black sockets U1-V1-W1, and 3 black sockets U2-V2-W2 for the motor windings
- 1 yellow/green socket for grounding.

**FAN MOTOR MODULE**
**MD1AMP 014**

**Characteristics**
- **Power supply:**
  - Rated voltage: 230/400 VAC
  - Power rating: 180 W

The operational part is a motorized centrifugal fan. A diaphragm and a transparent column are attached to the fan output. There is a foam ball in the column showing the expelled air flow. The diaphragm is used to vary the flow rate to keep the ball between the two marks at the top of the column.

- 3 black sockets U1-V1-W1, and 3 black sockets U2-V2-W2 for the motor windings
- 1 yellow/green socket for grounding.
Process and machine management modules

Auxiliary parts

24 VDC POWER SUPPLY MODULE MD1AM4 001

Characteristics

- **Power supply:**
  Input voltage: 230 VDC
  Output voltage: 24 VDC
  Current: 2.5 A

- **Contents:**
  One pair of jumpers (red and blue)
  Power supply cable

The modules are voltage converters that are used to power the various 24 VDC modules.

Two versions are available:
- 24 VDC - 2.5 A power supply module MD1AM4 001
- 24 VDC - 4.2 A power supply module MD1AM4 002

These single-format modules include:
- One red socket marked 24 V for the power supply.
- One blue socket marked 0 V.
- One “Europa” connector for the mains power supply.
- One green ON indicator light to indicate the module is powered up.

This single-format protection module comprises:
- One 10 A 30 mA residual current circuit-breaker equipped with an undervoltage trip coil.
- One mains socket for connecting the power cord supplied.
- A white “Power ON” light indicating module status.
- An emergency stop button for instantaneously cutting out the power supply.
- Set of three safety sockets (black, blue and yellow / green) for easy connection to other modules.

SINGLE-PHASE PROTECTION MODULE MD1AM2 001

Characteristics

- **Power supply:**
  Rated voltage: 230 VAC

- **Contents:**
  Power supply cable
## Discovery packs

The Motor-starter pack is referenced MD1AML DM, and comprises:

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<thead>
<tr>
<th>Quantity</th>
<th>Designation</th>
<th>Reference</th>
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<td>1</td>
<td>Magnetic circuit-breaker module</td>
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<td>Fuse holder cutout module</td>
<td>MD1AM1 006</td>
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<td>1</td>
<td>Thermal relay module</td>
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### Discovery packs

The motor-starter 2 pack is referenced MD1AML DM2, and comprises:

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Process and machine management modules

Discovery packs

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<td>Speed controller command module</td>
<td>MD1AM7 001</td>
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<td>1</td>
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</tbody>
</table>

Technical and training manual on digital medium
Process and machine management modules

Discovery packs

The Ventilation energy efficiency pack is referenced MD1AML ATVEE.

This equipment is designed to accomplish the equivalent of the mock-up and prototyping energy efficiency case. The mock-up makes it possible to highlight the energy savings that could be made in a ventilation or pumping installation. The comparison is made between electro-mechanical control with a contactor and electronic control with a speed controller. The ventilation flow rate is adjusted by means of an iris or a speed controller.

The module comprises:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Designation</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Magnetic protection module</td>
<td>MD1AM1 004</td>
</tr>
<tr>
<td>1</td>
<td>Thermal relay module</td>
<td>MD1AM1 007</td>
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<tr>
<td>1</td>
<td>Contactor module</td>
<td>MD1AM1 008</td>
</tr>
<tr>
<td>1</td>
<td>Central measuring module</td>
<td>MD1AM2 003</td>
</tr>
<tr>
<td>1</td>
<td>3-CT module.</td>
<td>MD1AM2 004</td>
</tr>
<tr>
<td>1</td>
<td>EGX300 gateway module</td>
<td>MD1AM2 005</td>
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<tr>
<td>1</td>
<td>24 VDC power supply module</td>
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</tr>
<tr>
<td>1</td>
<td>Altivar 312 module</td>
<td>MD1AM5 001</td>
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<tr>
<td>1</td>
<td>Speed controller command module</td>
<td>MD1AM7 001</td>
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<tr>
<td>1</td>
<td>Motor start control module</td>
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<tr>
<td>1</td>
<td>Fan motor module</td>
<td>MD1AM 014</td>
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<tr>
<td>1</td>
<td>USB / Modbus cable, 2.5 m</td>
<td>TCSMCNAM3M002P</td>
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<tr>
<td>1</td>
<td>RJ45 / RJ45 cable, 1 m</td>
<td>VDIP184546010</td>
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<td>1</td>
<td>Support structure</td>
<td>MD1AM 000</td>
</tr>
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</table>

Technical and training manual on digital medium
Process and machine management modules
Machine safety modules
Machine safety modules

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Products compliant with the provisions of European Directives

Compliance report available on request

All our discovery packs are supplied with a digital medium containing the documents in PDF format and the other user files.

⚠️ Secure cords are sold separately, see additional modules and accessories section
Machine safety modules

Machine safety modular offer

Training objectives:
- Learn about the devices to be used to secure an industrial machine
- Determine the risk levels
- Familiarize yourself with the applicable legislation

Overall presentation
This pack allows you to analyze the risk assessment and implement the solutions that meet the applicable standards:
- EN/ISO 12100: General principles for design
- EN 954-1: Solution category
- EN ISO 13849-1: Maximum performance level of the solution
- EN IEC 62061: Maximum Safety Integrity Level of the solution.

This last standard - SIL (Safety Integrity Level) - takes the use of new technologies into account in the products and safety solutions and proposes guidelines for calculating the probability of failures.

The Safety Integrity Level (SIL) is the new assessment specified by the IEC 61508 standard concerning the probability of a safety function or system failure.

The machine safety modular offer implements certain safety component. These modules ensure the maximum level of protection for all the safety functions found in an automated system.

The following safety functions are examined:
- Monitoring of safety switch emergency stops
- Monitoring of coded magnetic switches
- Zero speed control in conjunction with a key-operated safety switch

The machine safety modular offer includes:

<table>
<thead>
<tr>
<th>Designation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency stop module - XPS AC5121 - category 4</td>
<td></td>
</tr>
<tr>
<td>Emergency stop module and limit switch</td>
<td></td>
</tr>
<tr>
<td>Coded magnetic switch module - XPSDMB1132</td>
<td></td>
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<tr>
<td>Time-delay module - XPSTSA5142P category 3</td>
<td></td>
</tr>
<tr>
<td>Zero speed module - XPSVNE1142P - category 3</td>
<td></td>
</tr>
<tr>
<td>Time-delay module - XPSTSW5142P - category 3</td>
<td></td>
</tr>
<tr>
<td>Machine safety bench module</td>
<td></td>
</tr>
</tbody>
</table>

Electrical and mechanical characteristics
- **Power supply:** Motor rated power: 230 V single-phase + G
- **Dimensions (H x L x D) - weight:**
  - Structure: 1030 x 910 x 400 mm – 6.5 kg
  - Single module: 244 x 150 x 70 mm – 0.7 kg
  - Operational part: 640 x 1000 x 410 mm – 29 kg

Main sectors concerned
- Industrial engineering and maintenance
- Electrical engineering

Support frame MD1AM 000

Emergency stop module

Safety switch monitoring module
Machine safety modules

Control Part modules

**EMERGENCY STOP MODULE**
**MD1AM9 001**

**Characteristics**
- **Power supply:**
  Rated voltage: 24 VDC
- **Contents:**
  One pair of jumpers (red and blue).

The XPS AC5121 safety module is used to monitor emergency safety circuits in line with the EN/ISO 13850 and EN/IEC 60204-1 standards. It also meets the safety requirements for the electrical monitoring of switches in protection devices according to the EN 1088/ISO 14119 standard. It protects the operator and the machine by immediately stopping the dangerous movement, after having received a stop command from the operator or on detection of a fault in the safety system itself. In order to make diagnosis easier, the module is fitted with LEDs indicating the status of the monitoring circuit. The XPS AC module has 3 safety outputs and one solid-state output for sending messages to the PLC.

*Module comprises:*
- XPSAC5121 - Emergency stop monitoring safety device

**EMERGENCY STOP MODULE + LIMIT SWITCH**
**MD1AM9 002**

**Characteristics**
- **Power supply:**
  Rated voltage: 24 VDC
- **Contents:**
  One pair of jumpers (red and blue).

The XPS AF5130 safety module is designed in compliance with EN 954-1 standard category 4. It is used to monitor emergency stop circuits according to the EN/ISO 13850 and EN/IEC 60204-1 standards. for the electrical monitoring of switches actuated by protection devices according to the EN 1088 standard. In order to make diagnosis easier, the module is fitted with 3 LEDs on its front face. These LEDs indicate the status of the monitoring circuit. The Start button’s monitoring function is configured by means of the wiring.

*Module comprises:*
- XPSAF5130 - Emergency stop and limit switch monitoring safety device
Machine safety modules

Control Part modules

**MAGNETIC SWITCH MODULE**
**MD1AM9 003**

**Characteristics**
- **Power supply:**
  Rated voltage: 24 VDC
- **Contents:**
  One pair of jumpers (red and blue).

The XPS DMB1132 safety module is dedicated to monitoring coded magnetic safety switches. It has two safety outputs and two solid-state outputs for sending messages to the process PLC.

In compliance with EN 954-1/ISO 13849-1 category 4, the XPS DMB1132 module is capable of monitoring two independent sensors. In order to monitor a greater number of sensors using this safety module, you simply have to place the sensors in parallel series, while meeting the requirements of EN 954-1/ISO 13849-1 category 3.

In order to make diagnosis easier, the modules are fitted on their front face with LEDs indicating the status of the monitoring circuit.

Module comprises:
- XPSDMB1132 - Switch monitoring safety device

**TIME-DELAY MODULE**
**MD1AM9 004**

**Characteristics**
- **Power supply:**
  Rated voltage: 24 VDC
- **Contents:**
  One pair of jumpers (red and blue).

The XPS TSA5142P safety module is used in applications requiring safety time-delays with interlocking on machines subject to inertia (release of protections after completion of the safety time-delay).

The time-delay on the safety circuits can be set to 16 predetermined values using 2 selectors on the front face of the module.

In order to make diagnosis easier, the module is fitted with LEDs indicating the status of the monitoring circuit, and with 2 solid-state outputs for sending messages to the process PLC.

Module comprises:
- XPSTSA5142P - Time-delay monitoring
Machine safety modules

Control Part modules

The Preventa zero speed detection safety module XPSVNE11342P is used to detect the stop condition on electric motors. They are mainly used for commanding the release of the locking system on mobile protections, controlling the rotation direction of motors that have a reversing mechanism, or applying the locking brake when a motor has come to a halt. When they slow down, electric motors produce a remanent voltage in their winding owing to the residual magnetism, whose value decreases in proportion with the rotation speed. This remanent voltage is measured in a redundant way in order to detect the motor stop condition.

The connection between the motor's winding and the inputs to the XPS VNE module is also controlled to make it possible to ensure that the stop condition is not simulated in the case of a cable breakage. A transformer must not be used to connect the motor to terminals Z1, Z2 and Z3, otherwise monitoring of the motor winding via the resistance measurement would not be ensured.

Module comprises:
- XPSVNE1142P - Zero speed monitoring

The XPS TSW5142P safety module is used in applications requiring safety time-delays with a safety switchover contact (shunting contact in association with the XPS VN modules for zero speed monitoring, solenoid valve monitoring).

The time-delay on the safety circuits can be set to 16 predetermined values using 2 selectors on the front face of the modules. In order to make diagnosis easier, the module is fitted with LEDs indicating the status of the monitoring circuit, and with 2 solid-state outputs for sending messages to the process PLC.

Module comprises:
- XPSTSW5142P - Time-delay monitoring

### ZERO SPEED MODULE

**MD1AM9 005**

**Characteristics**

- **Power supply:**
  Rated voltage: 24 VDC

- **Contents:**
  One pair of jumpers (red and blue).

### TIME-DELAY MODULE

**MD1AM9 006**

**Characteristics**

- **Power supply:**
  Rated voltage: 24 VDC

- **Contents:**
  One pair of jumpers (red and blue).
Machine safety modules

Operational part module

The operational part simulates a machine movement protected by a grid and a fan which also has a grid.

- There is a movable protective casing on the top left-hand part with two limit switches marked S01 and S02. Next to each limit switch there are 6 associated safety sockets for making the connection. There is an asynchronous motor behind the protective casing, with a reduction gear and visible disk. This device is used to simulate a machine in operation. Underneath, there are 6 associated safety sockets U1 - V1 - W1 and U2 - V2 - W2 as well as a green / yellow male grounding socket for making the connection.

- There is a protective casing on the top right-hand part associated with a limit switch marked S03 and a safety switch with interlocking and electromagnetic locking marked S1 / Y1. Next to the limit switch S03 there are 6 associated safety sockets for making the connection. Underneath the safety switch with electrical locking, there are safety sockets marked S1 for the associated contacts and marked Y1 for the associated electro-magnet. There is a 230 VAC fan behind the protective casing, this device is used to simulate a machine with a high degree of inertia. In the middle there is an “emergency stop” mushroom-head pushbutton and the 4 associated safety sockets.

Characteristics

- Power supply:
  Rated voltage: 24 VDC
  Dimensions (H x L x D) - weight:
  Structure: 640 x 1000 x 410 mm – 29 kg

Module comprises:
- XCSM3902L1 - Limit switch with roller plunger
- XCSM3902L1 - Magnetic switch
- XCSM3902L1 - Safety switch with electronic lock
- XCSM3902L1 - Straight actuator key
- XB4BA51 - Yellow pushbutton with 1 ‘F’ contact
- XB4BVB5 - Complete indicator light with yellow LED
- ZB4BW7A1721 - Pushbutton head
- ZB4BW0B35 - Complete body with green LED
- ZB6AS834 - Emergency stop mushroom pushbutton
- ZB4BZ104 - Complete body with 2 ‘O’ contacts
Machine safety modules

Ancillary Part modules

The modules are voltage converters that are used to power the various 24 VDC modules.

These single-format modules include:
- One red socket marked 24 V for the power supply
- One blue socket marked 0 V
- One “Europa” connector for the mains power supply
- One green ON indicator light to indicate the module is powered up

24 VDC POWER SUPPLY
MODULE 2.5 A
MD1AM4 001

Characteristics

- **Power supply:**
  - Input voltage: 230 VAC
  - Output voltage: 24 VDC
  - Current: 2.5 A

- **Contents:**
  - One pair of jumpers (red and blue).
  - Power supply cable
## Machine safety modules

### Discovery pack

The Machine safety pack is referenced MD1AML SECU, and comprises:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Designation</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Emergency stop monitoring safety module</td>
<td>MD1AM9 001</td>
</tr>
<tr>
<td>1</td>
<td>Emergency stop + limit switch monitoring safety module</td>
<td>MD1AM9 002</td>
</tr>
<tr>
<td>1</td>
<td>Magnetic code monitoring safety module</td>
<td>MD1AM9 003</td>
</tr>
<tr>
<td>1</td>
<td>Time-delay monitoring safety module</td>
<td>MD1AM9 004</td>
</tr>
<tr>
<td>1</td>
<td>Zero speed monitoring safety module</td>
<td>MD1AM9 005</td>
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<tr>
<td>1</td>
<td>Time-delay monitoring safety module</td>
<td>MD1AM9 006</td>
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<tr>
<td>1</td>
<td>24 VDC power supply module</td>
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<tr>
<td>1</td>
<td>Magneto-thermal protection module</td>
<td>MD1AM1 015</td>
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<tr>
<td>3</td>
<td>Contactor modules</td>
<td>MD1AM1 008</td>
</tr>
<tr>
<td>1</td>
<td>Support structure</td>
<td>MD1AM 000</td>
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</tbody>
</table>

**“Machine safety” documentation**

Technical and training manual on digital medium

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![Machine safety pack diagram](image-url)
Machine safety modules
Website

Find out all about the Schneider Electric offering on our website: www.schneider-electric.fr

In the Energy training (Enseignement) section you will find:
- details on the training solutions:
  - additional technical aspects
  - practical exercises
- information on the Schneider Electric businesses
- contact details.

Energy University

The training modules provide a practical way of learning the skills required for measuring, analyzing, controlling and reducing energy consumption. The solutions presented in the Energy University framework will enable you to make savings as high as 30% on your energy bill. This represents a considerable gain given that the cost of energy is going to rise significantly in the coming years, notably owing to the growing demand in the emerging countries.

Discover the Energy University on the website: www.myenergyuniversity.com
Your training contacts

Export project leader

Sergio FERREIRA
Project leader
Phone: +33 (0)6.80.42.87.32
Sergio.ferreira@schneider-electric.com

Quentin MERAND
Project leader
Phone: +33 (0)6.78.25.44.30
Quentin.merand@schneider-electric.com