



Synco™700

RMZ781
RMZ782
RMZ783

Option Modules

- Option modules for use with the RMH760 heating controller to provide the following auxiliary functions:
 - Demand-dependent boiler temperature control
 - Maintained boiler return temperature with mixing circuit
 - Control of a heating circuit
 - DHW heating
- Operation via the RMH760 heating controller

Use

For use in heating plants controlled by the RMH760 heating controller. For the heating controller's field of use, refer to Data Sheet N3131.

Functions

Functions with boiler module RMZ781

Measuring and input functions

- 2 ready configured measuring inputs (averaging possible) for:
 - Boiler temperature
 - Return temperature
- 1 configurable input for:
 - Heat requisition with a digital signal (on / off)
 - Heat requisition with a DC 0...10 V signal

- Control and limitation functions
- Demand-dependent boiler temperature control
 - Maximum limitation of the boiler temperature
 - Minimum limitation of the boiler return temperature **or** maintained boiler return temperature (this function also requires heating circuit module RMZ782)

- Switching functions
- Ready configured switching outputs for:
- Control of a modulating **or** 1- or 2-stage burner
 - Control of the boiler pump or system pump or bypass pump

- Other functions
- Boiler operating mode with or without shutdown
 - Minimum limitation of running time (cycling protection)
 - Frost protection for the boiler
 - Protective startup
 - Protection against overtemperatures

Functions with heating circuit module RMZ782

- Measuring and input functions
- 1 ready configured measuring input for the controlled variable (averaging possible); depending on the basic plant type selected on the heating controller, this is:
 - The flow temperature (heating circuit control, averaging possible), **or**
 - The return temperature (maintained boiler return temperature, average possible)
 - 2 configurable inputs for:
 - Room temperature (averaging possible)
 - Return temperature
 - Changeover of room operating mode
 - Timer function
 - Remote adjustment of setpoint and setpoint readjustments

- Control and limitation functions
- Weather-compensated flow temperature control of a heating circuit through control of the mixing valve
 - Minimum and maximum limitation of the return temperature

- Switching functions
- Ready configured switching outputs for:
- Control of an actuator with 3-position **or** DC 0...10 V control
 - Pump control (heating circuit pump)

- Other functions
- The heating circuit control functions, supervisory and protective functions, and service and operating functions are the same as those of the heating controller, provided
- the respective input and output terminals on the heating circuit module are available
 - additionally required input and output terminals can be provided by other modules

Functions with DHW module RMZ783

- Measuring and input functions
- 2 ready configured measuring inputs (averaging possible) for:
 - The storage tank flow temperature
 - The storage tank temperature at the top
 - 2 configurable inputs for:
 - The primary flow temperature
 - The storage tank temperature at the bottom
 - The changeover of DHW operating mode
 - Forced charging contact

- DHW heating
- Control of the storage tank temperature

- Storage tank charging via the common flow, with pump or mixing valve, **or** storage tank charging via the heat exchanger, with pump or mixing valve
 - Storage tank charging according to a time program
- Switching functions
- Ready configured switching outputs for the
 - control of a 3-position actuator
 - control of the charging pump
 - 2 configurable relay outputs with N.O. contact for the
 - control of a circulating pump
 - control of a primary pump
 - release of an electric immersion heater
 - 1 configurable output DC 0...10 V for the control of a modulating actuator

Note For more detailed information about all functions of the heating controller and the option modules, refer to Basic Documentation P3131.

Type summary

<i>Type of module</i>	<i>Type reference</i>
Boiler module	RMZ781
Heating circuit module	RMZ782
DHW module	RMZ783

Ordering

When ordering, please give the type reference.

Equipment combinations

With each heating controller RMH760, a maximum of 4 option modules RMZ78... can be used.

For the sensors, room units, remote setpoint adjusters and actuators used in connection with the system, refer to Data Sheet N3131.

Product documentation

<i>Type of document</i>	<i>Number</i>
Mounting Instructions	74 319 0353 0
Product Range Description	CE1S3110en
Basic Documentation, detailed description of all functions	CE1P3131en
Data Sheet on the heating controller	CE1N3131en
Declaration of Conformity (CE)	CE1T3110en
Environmental Declaration	CE1E3110en02

Technical design

Mode of operation

The RMZ78... option modules complement the RMH760 heating controller and can not operate autonomously.

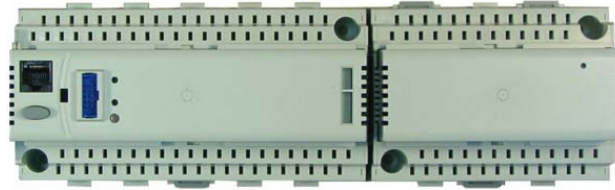
Use of the option modules is determined by the selection of the basic type. All settings required in connection with the option modules are made on the heating controller.

The signals from sensors, signal sources, etc., are delivered to the heating controller and then handled; the control signals and commands generated by the controller are fed to the respective option module from where they are passed on to the connected actuating devices.

Mechanical design

Basic design

In terms of mechanical design, the option modules are identical to the heating controller RMH760. No wiring between the modules or to the heating controller is required; the electrical connections are made by attaching the modules to the controller.

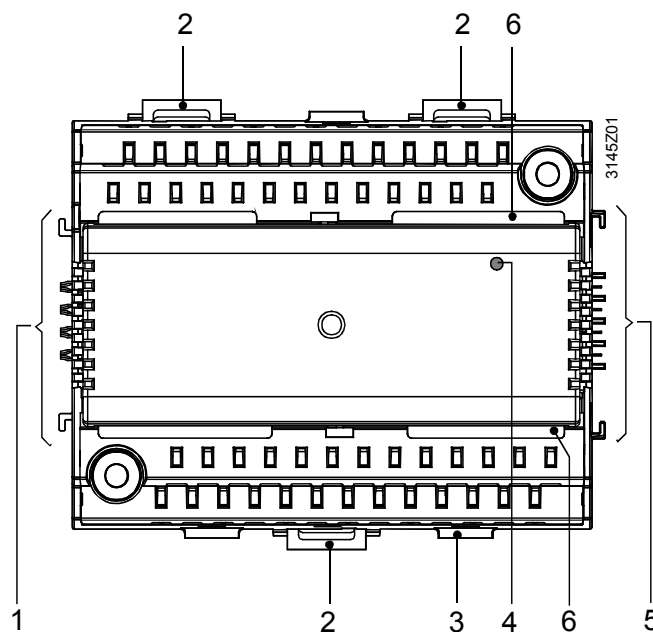


Heating controller
RMH760 with attached
option module RMZ78...

Operation

The option modules have no setting and operating elements; operation takes place with the operator unit RMZ790 or RMZ791. There is one exception, the module has an LED for indicating the operating state.

Indicating and connecting elements



- 1 Connecting elements for the RMH760 heating controller or for one option module
- 2 Mounting facility for fitting the module to a top hat rail
- 3 Fixing facility for the cable tie
- 4 LED (green) for indication of operation
- 5 Connecting elements for one option module
- 6 Rest for the terminal cover

Accessories

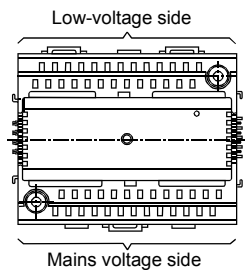
Accessories	Type reference	Data Sheet
Module connector	RMZ780	N3138

Engineering notes

- Fuses, switches, wiring and grounding must be in compliance with local safety regulations
- Sensor cables should not be run parallel to mains-carrying cables powering loads such as actuators and pumps

Mounting and installation notes

- The module are designed for:
 - Mounting in a standard cabinet as per DIN 43 880
 - Wall mounting on an existing tophat rail (EN 50 022-35×7.5)
 - Wall mounting using two fixing screws
 - Flush panel mounting
- Not permitted are wet or damp spaces; the permissible ambient temperatures must be observed
- Disconnected the system from the power supply prior to mounting and installation the module
- **The module insert may not be removed from the terminal base!**
- The module must be fitted to the right of the controller in the correct order
- The extension modules need not be wired between themselves or to the controller. The electrical connections are made automatically when plugging the modules. If it is not possible to arrange all extension modules side by side, the first of the detached modules must be connected to the previous module or the controller by using the RMZ780 module connector. In that case, the cumulated cable length may not exceed 10 meters
- The connection terminals for protective extra low-voltage are located in the upper half of the module, those for mains voltage (actuators and pumps) at the bottom
- Only one solid or stranded wire may be connected to each terminal (spring cage terminals). For fixing the wires, the cables must be stripped by 7 to 8 mm. To introduce the wires into the spring cage terminals, or to remove them, a screw driver size 0 or 1 is required. Cable strain relief can be ensured with the help of the lugs for cable ties
- The module mounted on the top hat rail together with other modules can only be removed from the rail after the 3 catches have been brought into their release-and-hold position (audible "click"). After removal, the catches must be pushed back into their snap-on position
- The module is supplied complete with Mounting Instructions



Commissioning notes


During the commissioning process, the outputs are in a defined off state.

Disposal notes

Larger plastic parts carry material identifications conforming to ISO/DIS 11 469 to facilitate environment-compatible disposal.

Technical data

Power supply (via the controller)	Rated voltage	AC 24 V \pm 20 %
	Power consumption	3 VA
Analog inputs (B..., X...)	Sensors	
	Passive	1 or 2 (averaging) LG-Ni 1000
	Active	DC 0...10 V
	Signal sources	
Passive	0...2500 Ω	
Active	DC 0...10 V	
Digital Inputs (X...)	Contact sensing	
	Voltage	DC 15 V
	Current	5 mA
	Requirements for the status and impulse contacts	
	Signal coupling	potential-free
	Type of contact	maintained or impulse contacts
Insulating strength against mains potential	AC 3750 V to EN 60 730	

	Perm. resistance	
	Contacts closed	max. 200 Ω
	Contacts open	min. 50 kΩ
Positioning Outputs	Output voltage	DC 0...10 V
	Output current	±1 mA
	Max. load	continuous short-circuit
 Switching outputs (Q...)	External supply line fusing	
	Non renewable fuse (slow)	max. 10 A
	Automatic line cutout	max. 13 A
	Release characteristic	B, C, D to EN 60 898
	Cable length	max. 300 m
	Relay contact data	
	Switching voltage	max. AC 265 V / min. AC 19 V
	AC current	max. 4 A res., 3 A ind. (cos φ = 0.6)
	– At 250 V	min. 5 mA
	– At 19 V	min. 20 mA
	Switch-on current	max. 10 A (1 s)
	Contact life at AC250 V	guide values:
	At 0.1 A res.	2×10 ⁷ cycles
	At 0.5 A res.	4×10 ⁶ cycles (N.O.)
		2×10 ⁶ cycles (changeover)
		3×10 ⁵ cycles (N.O.)
		1×10 ⁵ cycles (changeover)
	At 4 A res.	0.85
	Red. fakt. at ind. (cos φ = 0.6)	
	Insulating strength	
	– Between relay contacts and system electronics (reinforced insulation) (Q..., Y1, Y2, Y5, Y6, K...)	AC 3750 V, to EN 60 730-1
	– Between neighboring relay contacts (operational insulation), RMZ781: K4 ↔ K5; K6 ↔ Q2	AC 1250 V, to EN 60 730-1
	RMZ782: Y1 ↔ Y2	AC 1250 V, to EN 60 730-1
	RMZ783: Y5 ↔ Y6; Q8 ↔ Q9 ↔ Q3	AC 1250 V, to EN 60 730-1
	– Between relay groups (reinforced insulation), RMZ781: (K4,K5) ↔ (K6,Q2)	AC 3750 V, to EN 60 730-1
	RMZ782: (Y1,Y2) ↔ (Q1)	AC 3750 V, to EN 60 730-1
	RMZ783: (Y5,Y6) ↔ (Q8,Q9,Q3)	AC 3750 V, to EN 60 730-1
Power supply external devices (G1)	Voltage	AC 24 V
	Current	max. 4 A
Interfaces	Extension bus	
	Connector specification	4 contacts SELV/PELV
	Number of plugging cycles	max. 10
Electrical connections	Connections terminals	spring cage terminals
	For solid wires	0.6 mm dia... 2.5 mm ²
	For stranded wires without ferules	0.25...2.5 mm ²
	For stranded wires with ferules	0.25...1.5 mm ²
Degrees of protection	Degree of protection of housing to IEC 60 529	IP 20 (when mounted)
	Safety class to EN 60 730	device suited for use with equipment of safety class II
Environmental conditions	Operation to	IEC 60 721-3-3
	Climatic conditions	class 3K5
	Temperature (housing with electronics)	0...50 °C
	Humidity	5...95 % r. h. (non-condensing)
	Mechanical conditions	class 3M2
	Transport to	IEC 60 721-3-2
	Climatic conditions	class 2K3
	Temperature	–25...+70 °C
	Humidity	<95 % r.h.
	Mechanical conditions	class 2M2
Classifications to EN 60 730	Mode of operation, automatic controls	type 1B
	Degree of contamination, controls' environment	2
	Software class	A
	Rated surge voltage	4000 V
	Temperature for ball-test of housing	125 °C

Materials and colors	Terminal base	Polycarbonate, RAL 7035 (light-gray)
	Module insert	Polycarbonate, RAL 7035 (light-gray)
	Packaging	corrugated cardboard
Norms and standards	Product safety	
	Automatic electrical controls for household and similar use	EN 60 730-1
	Special requirements for energy controllers	EN 60 730-2-11
	Electromagnetic compatibility	
	Immunity (industrial sector)	EN 61 000-6-2
	Emissions (domestic sector, light industry)	EN 61 000-6-3
	CE -conformity to	
EMV directive	89/336/EEC	
Low-voltage directive	73/23/EEC	
Weight	C -conformity to	
	Australian EMC Framework	Radio communication act 1992
	Radio Interference Emission Standard	AS/NZS 3548
Weight	Module excl. packaging	0.28 kg

Connection terminals

Boiler module RMZ781

Low-voltage inputs

<i>Terminal</i>	<i>Configuration</i>	<i>Measuring variable</i>	<i>Signal source</i>	<i>Range</i>
B2	Fixed	Boiler temperature	1 or 2 sensors LG-Ni 1000	-50...+150 °C
B7	Fixed	Return temperature	1 or 2 sensors LG-Ni 1000	-50...+150 °C
X3	Free	Heat requisition	External contact	On / Off
			Consumer	DC 0...10 V
M	Fixed	Ground	-	-

Mains voltage side

All mains voltage terminals are ready configured and designed for AC 24...230 V. The function of K44, K54 and K64 depends on the type of burner.

<i>Terminal</i>	<i>Function</i>	<i>Type of contact</i>
K43	Input for K44	N.O.
K44	<ul style="list-style-type: none"> Multistage burner: First stage on Modulating burner: Basic stage on 	
K53	Input for K54	N.O.
K54	<ul style="list-style-type: none"> Multistage burner: Second stage on Modulating burner: Opens (modulating) 	
K63	Input for K64	N.O.
K64	<ul style="list-style-type: none"> Multistage burner: No function Modulating burner: Closes (modulating) 	
Q21	Input for Q22, Q24	Changeover contact
Q22	Boiler pump off	
Q24	Boiler pump on	

Heating circuit module RMZ782

Low-voltage inputs

<i>Terminal</i>	<i>Configu- ration</i>	<i>Measuring variable / power supply</i>	<i>Signal source or signal receiver</i>	<i>Range, voltage, state</i>
B1	Fixed	Controlled variable (de- pending on the basic type)	1 or 2 sensors LG-Ni 1000	-50...+150 °C
X2, X3	Free	Room temperature	1 or 2 sensors LG-Ni 1000	-50...+50 °C
		Return temperature	1 or 2 sensors LG-Ni 1000	-50...+150 °C
		Room operating mode	External contact	On / off
		Comfort extension	External contact	On / off
		Room temperature set- point	Room unit QAA25	5...35 °C
		Room temperature set- point	Remote setpoint ad- juster BSG21.1	0...50 °C
M	Fixed	Ground	-	-

Low-voltage outputs

Y9	Free	Continuous signal	Configurable*	DC 0...10 V
G1	Fixed	System potential	Device connected to the module	AC 24 V
G0	Fixed	System neutral		AC 24 V

* E.g. modulating actuators

Mains voltage

All mains voltage terminals are ready configured and designed for AC 24...230 V.

<i>Terminal</i>	<i>Function</i>	<i>Signal receiver</i>	<i>Type of contact</i>
Y13	Input for Y14	3-position actuator	N.O.
Y14	Mixing valve opens		
X23	Input for Y24	3-position actuator	N.O.
Y24	Mixing valve closes		
Q13	Input for Q14	Heating circuit pump	N.O.
Q14	Heating circuit pump		

DHW module RMZ783

Low-voltage inputs

<i>Terminal</i>	<i>Configu- ration</i>	<i>Measuring variable / power supply</i>	<i>Signal source or signal receiver</i>	<i>Range, voltage, state</i>
B3	Fixed	Charging temperature	1 or 2 sensors LG-Ni 1000	-50...+150 °C
B4	Fixed	Storage tank temperature or storage tank tempera- ture at the top	1 or 2 sensors LG-Ni 1000	-50...+150 °C
X3, X4	Free	Primary flow temperature (in the heat exchanger's primary circuit)	1 or 2 sensors LG-Ni 1000	-50...+150 °C
		Storage tank temperature at the bottom	1 or 2 sensors LG- Ni 1000	-50...+150 °C
		DHW operating mode	External contact	On / off
		Forced charging	External contact	On / off
M	Fixed	Ground	-	-

Low-voltage outputs

Y9	Free	Continuous signal	Configurable*	DC 0...10 V
G1	Fixed	System potential	Device connected to the module	AC 24 V
G0	Fixed	System neutral		AC 24 V

* E.g. modulating actuator

Mains voltage

All mains voltage terminals are designed for AC 24...230 V.

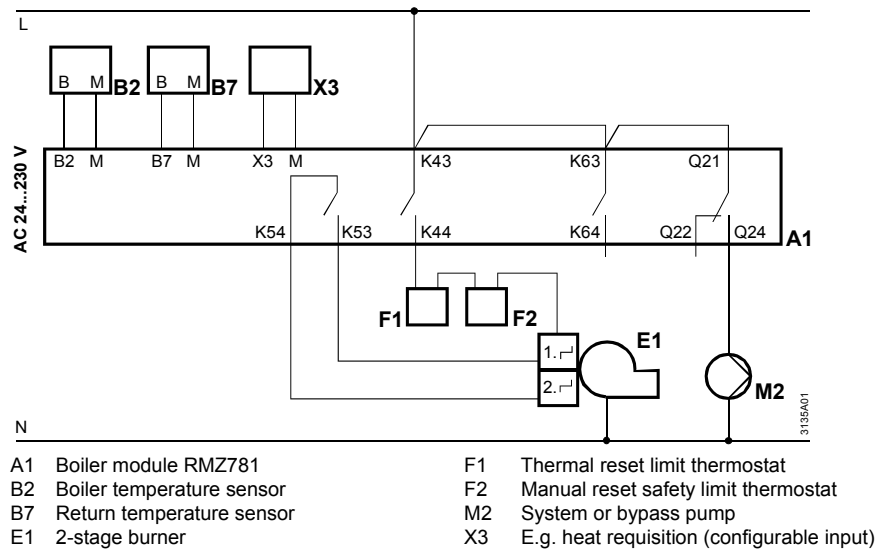
Terminal	Configuration	Function	Signal receiver	Type of contact
Y53	Fixed	Input for Y54	3-position actuator Y1	N.O.
Y54	Fixed	Mixing valve opens		
Y63	Fixed	Input for Y64	3-position actuator Y1	N.O.
Y64	Fixed	Mixing valve closes		
Q83	Fixed	Input for Q84	*	N.O.
Q84	Free	Switching on / off		
Q93	Fixed	Input for Q94	*	N.O.
Q94	Free	Switching on / off		
Q31	Fixed	Input for Q32, 34	Charging pump M3	Changeover contact
Q32	Fixed	Pump off		
Q34	Fixed	Pump on		

* E.g. circulating pump, primary pump, electric immersion heater

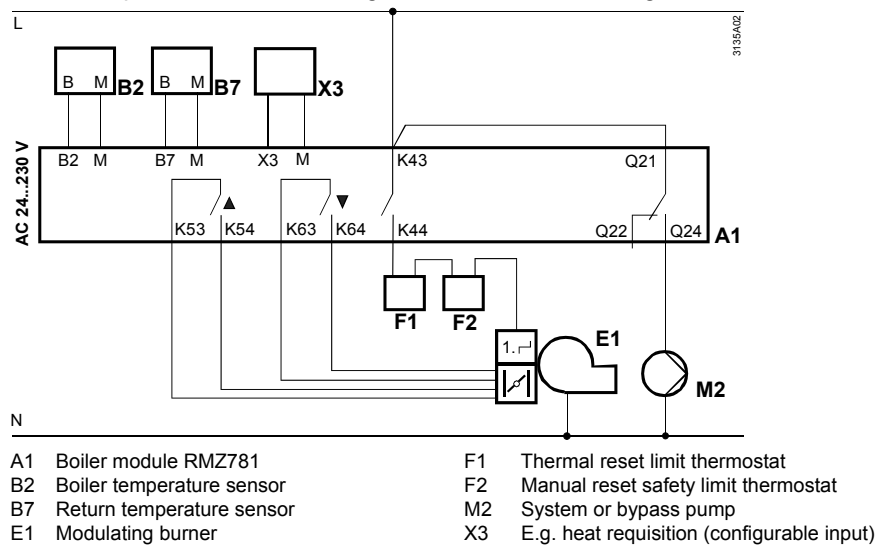
Connection diagrams

Boiler module RMZ781

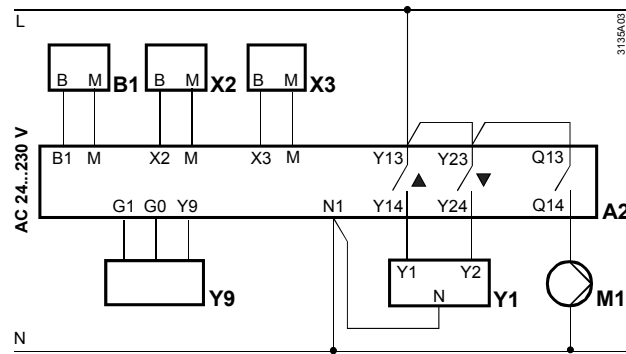
Boiler temperature control through control of a 2-stage burner



Boiler temperature control through control of a modulating burner

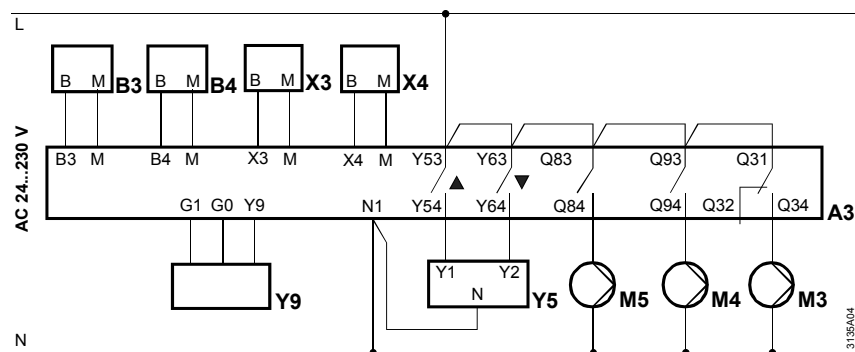


Heating circuit module RMZ782



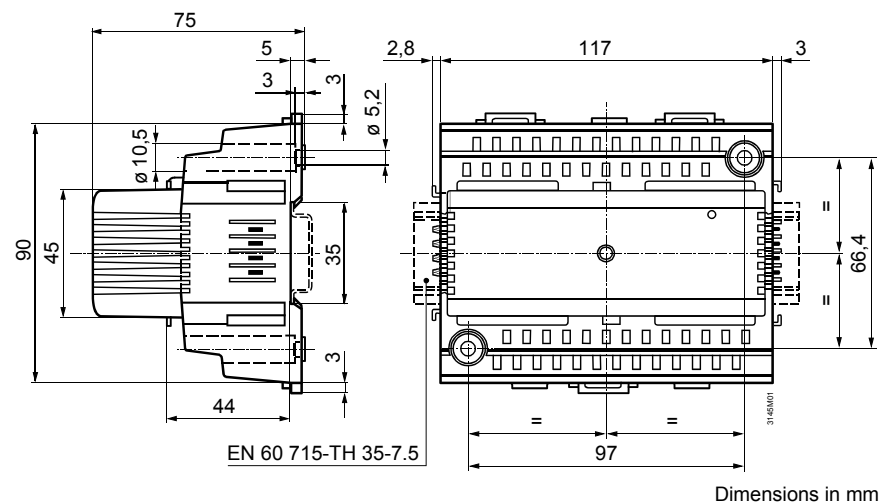
- A2 Heating circuit module RMZ782
- B1 Flow temperature sensor
- M1 Heating circuit pump
- X2 E.g. room temperature sensor (configurable input)
- X3 E.g. return temperature sensor (configurable input)
- Y1 3-position actuator
- Y9 E.g. actuator with DC 0...10 V input (configurable output)

DHW module RMZ783



- A3 DHW module RMZ783
- B3 Charging temperature sensor
- B4 Storage tank temperature sensor
- M3 Charging pump
- M4 E.g. circulating pump (configurable output)
- M5 E.g. primary pump (configurable output)
- X3 E.g. primary flow temperature sensor (configurable input)
- X4 E.g. storage tank temperature sensor at the bottom (configurable input)
- Y5 3-position actuator for mixing valve (plant types DHW2, DHW3, DHW4)
- Y9 E.g. actuator with DC 0...10 V input (configurable output)

Dimensions



Dimensions in mm