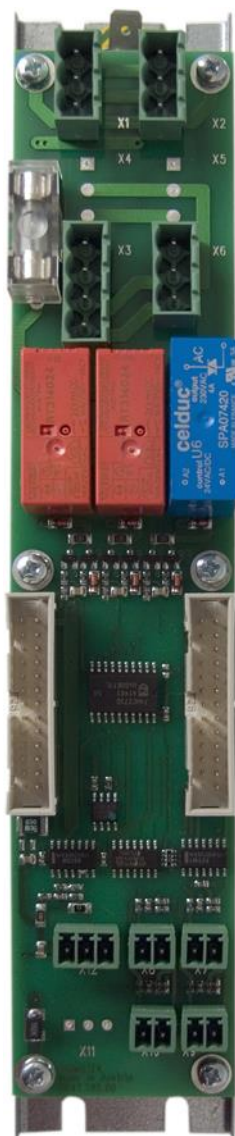


Internal Solar Module

HZS 535



Configuration

➤ HZS 535 internal solar module for the heating controller

- Collector (PT1000/-50 ... +200 °C/1.0°C/±1.0°C/2-pin)
 - Return flow collector (PT 1000/-50 ... +200 °C/1.0°C/±1.0°C/2-pin)
 - Storage temperature 1 (PT1000/-10 ... +120 °C/0.2 °C/±0.5 °C/2-pin)
 - Storage temperature 2 (PT1000/-10 ... +120 °C/0.2 °C/±0.5 °C/2-pin)

 - Heat counter input (digital input +24 V/max. 200 Hz/3-pin)

 - Switching valve open (relay output/230 V AC/3 A)
 - Switching valve closed (relay output/230 V AC/3 A)
 - Solar pump (TRIAC output/100 ms min./1.5 A/3-pin)
- }
- 230 V AC supply in and out (2x 3-pin)
 - Ribbon cable connection to the controller and the next expansion module

⇒ **The internal expansion modules must be placed close to one another! Placing the internal expansion modules in such a way that the ribbon cable must be extended between the individual modules is not permitted!**

Power supply

Relay power supply	230 VAC
Fuse	5 A for relay outputs and/or 3 A for solar module
Internal electronics power supply	+24 V (from HZS 511), must be connected to the expansion controller
+24 V current consumption	HZS 535 maximum 15 mA (without relays) maximum 40 mA (with relays)

Digital input specifications (counter input)

Input signal	open collector
Input frequency	maximum 200 Hz
Signal evaluation	1X
Counter resolution	8-bit
Input delay	typically 0,2 ms
Number of ...	1 on solar module
Connection technology	3-pin Phoenix RM 3.5 mm

Specifications for the digital outputs: Relay output - 230 V AC 1 A/or 3 A

Output voltage	230 V AC	
Max. Output current	1 A output current	3 A output current
Number on the heating circuit module	2	1
Number on the buffer module	2	1
Amount on solar module	0	2
Relay types	normally open	
Relays	RT 314024	
Switching range	16.8-30 V DC	
Switching current	typically 9 mA at +24 V	
Switching time	< 10 ms	
Switching power	see data sheet: Tyco Schrack RT1 series	
Fuse	3 AT	
Connection technology	3-pin Phoenix RM 5.08 mm 3 A relay output 4-pin Phoenix RM 5.08 mm 1 A relay output (or 3 A on solar module)	

Technische Daten Relais RT314024

 Tyco
Electronics

General Purpose Relays

SCHRACK

Power PCB Relay RT1

1 pole 12/16 A, 1 CO or 1 NO contact
DC- or AC-coil
Sensitive coil 400 mW
5 kV/10 mm coil-contact, reinforced insulation
Ambient temperature 85°C (DC-coil)
WG version: Product in accordance to IEC60335-1
RoHS compliant (Directive 2002/95/EC) as per product date code 0413



Applications

Boiler control, timers, garage door control, POS automation, interface modules

F0144-B

Approvals

 REG.-Nr. 6106,  US E214025,  14385,  C0786,  98.4118.01,
 Technical data of approved types on request

Contact data

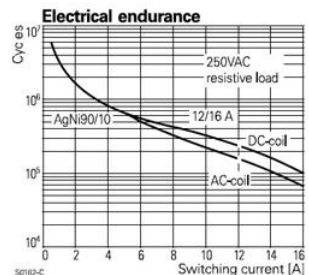
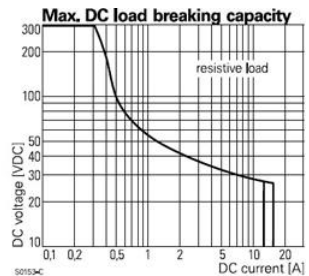
Contact configuration	1 CO or 1 NO contact
Contact set	single contact
Type of interruption	micro disconnection
Rated current	12 A 16 A
Rated voltage / max. switching voltage AC	250/400 VAC
Limiting continuous current	UL: 20 A
Maximum breaking capacity AC	3000 VA 4000 VA
Limiting making capacity, max 4 s, df 10%	25 A 30 A
Contact material	AgNi 90/10, AgNi 90/10 gold plated
Mechanical endurance DC coil	> 30 x 10 ⁶ cycles
AC coil	> 10 x 10 ⁶ cycles
Rated frequency of operation with / without load	6 / 1200 min ⁻¹

Contact ratings

Type	Load	Cycles
RT314	16 A, 250 VAC, NO contact, 85°C, DF 10%, UL508	50x10 ³
RT314	16 A, 250 VAC, NC contact, 70°C, 30min ⁻¹	53x10 ³
RT314	20 A, 250 VAC, NO contact, 85°C, UL508	6x10 ³
RT314	1000 W incandescent lamp, 250 VAC	1.2x10 ³
RT314	10 A, 250 VAC, cosφ=0.6, CO contact, 70°C	200x10 ³
RT314	5 A / 2 A, 250 VAC, cosφ=1, motor, NO contact, 10min ⁻¹ , 70°C	1.1x10 ⁶
RT314	0.26 A / 0.01 A, 230 VAC, cosφ=0.38, valve, NO contact, 25min ⁻¹	7.6x10 ⁶
RT314	Pilot duty A300 (NO contact), B300 (CO/NC contact), UL508	
RT314	1hp @ 240 VAC, 1/2hp @ 120 VAC, NO contact, UL508	
RT314	AC15, 6 A, 250 VAC, NO and NC contact, 85°C, EN60947-5-1	
RT314	DC13, 2 A / 24 VDC, 0.2 A / 250 VDC, NO and NC contact, 85°C, EN60947-5-1	

Coil data

Rated coil voltage range DC coil	5...110 VDC
AC coil	24...230 VAC
Coil power DC coil	typ 400 mW
AC coil	typ 0.75 VA
Operative range	2
Coil insulation system according UL1446	class F



Specifications for the 230 V AC/1.5 A TRIAC output

Output voltage	230 V AC
Max. Output current	1.5 A output current
Number of ...	1 (solid state relay)
Connection technology	1x 3-pin. Phoenix RM 5.08 mm

PT1000 analog output specifications

Number of channels	Heating circuit module: 2 Buffer module: 3 Solar module: 2	Heating circuit module: 0 Buffer module: 0 Solar module: 2	Expansion controller: 1
Sensor type	PT1000 (Ohmic temperature sensor)		
Measurement range	-10 ... +120 °C	-50 ... +200 °C	-50 ... +70 °C
Sensor range	960.86-1460.68	803.06-1758.56	803.06-1270.75
Resolution	0.2 °C	1.0 °C	0.2 °C
Measurement precision	±0.5 °C	±1 °C	±0.5 °C
Measurement value	14-bit		
Typical current measuring	0.9 mA		
Input resistance	10 KΩ		
Input filter	100 ms		
Connection technology	2-pin Phoenix RM 3.5 per PT1000 input		

Terminal requirements

Connection technology	Connector terminals are not included in delivery! The following spring terminals are required: 3x 3-pin FKC 2,5/3-ST-5,08 Phoenix Contact spring terminal connector 1x 4-pin 3-pin FKC 2,5/3-ST-5,08 Phoenix Contact spring terminal connector 4x 2-pin FK-MCP 1,5/2-ST-3,5 Phoenix Contact spring terminal connector 1x 3-pin FK-MCP 1,5/3-ST-3,5 Phoenix Contact spring terminal connector
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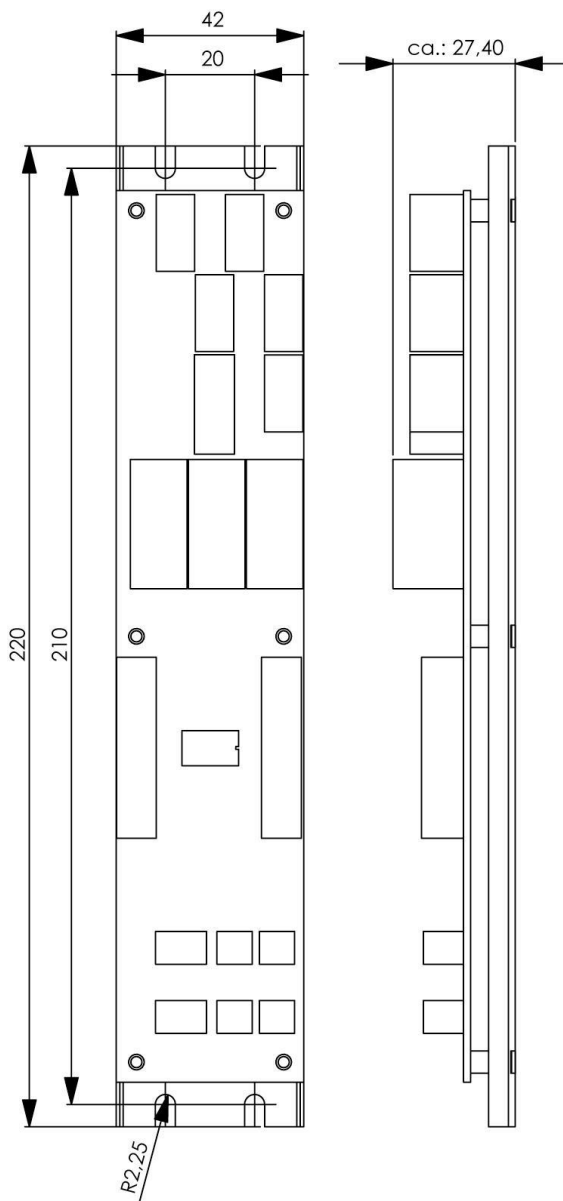
Miscellaneous

Article number	05-895-535	
HW Version	1.x	
HW classes	hzs535 hzs53x => can be used for all	

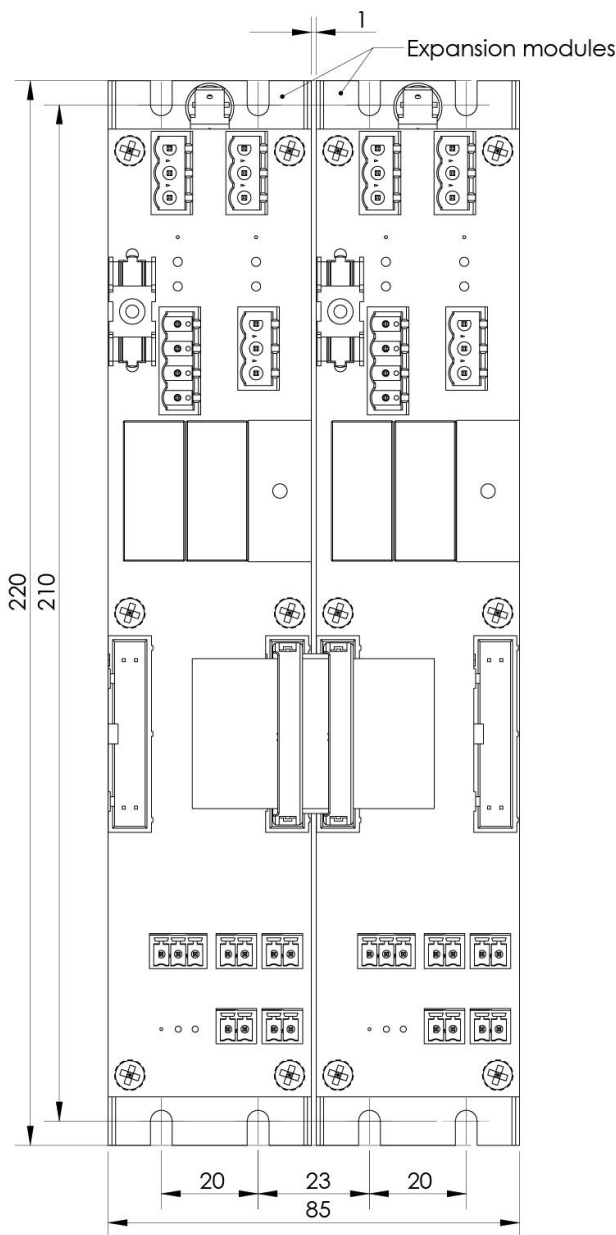
Environmental conditions

Storage temperature	-20 ... +70 °C	
Operating temperature	0 ... +60 °C	
Humidity	0-95 %, uncondensed	
EMV stability	according to EN 61000-6-2:2001	
Shock resistance	EN 60068-2-27	150 m/s²

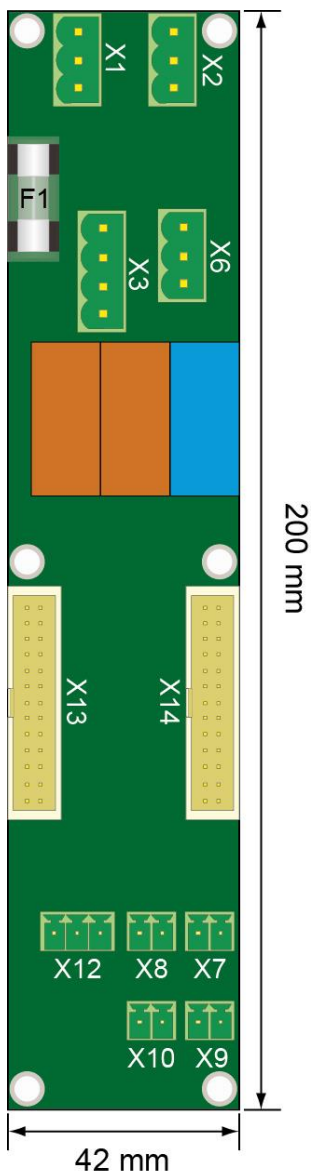
HZS 535 Mechanical Dimensions



Assembly instructions



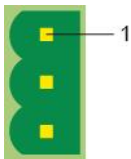
Connector Layout for the HZS 535 Internal Solar module



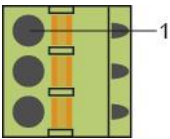
Internal Solar Module Connector Pin Assignment

X1 – 230 V AC – mains- Phoenix RM 5.08

3-pin spring connector terminal

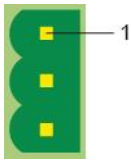


Pin	Signal	Function
1	L	Phase
2	N	Neutral
3	PE	Earth wire

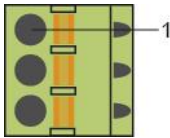


X2 – 230 V AC power line – Phoenix RM 5.08

3-pin spring connector terminal



Pin	Signal	Function
1	L	Phase
2	N	Neutral
3	PE	Earth wire

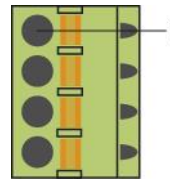


X3 – 230 V AC relay output: switching valve open and close – Phoenix RM 5.08 DO01 and DO02)

4-pin spring connector terminal

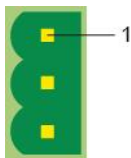


Pin	Signal	Function
1	Lopen	Switching valve open relay output
2	Lclosed	Switching valve close relay output
3	N	Neutral
4	PE	Earth wire

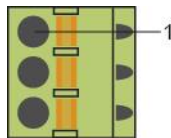


X6 – 230 V AC TRIAC output: solar pump – Phoenix RM 5.08 (DO03)

3-pin spring connector terminal



Pin	Signal	Function
1	LPump	TRIAC output
2	N	Neutral
3	PE	Earth wire

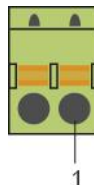


X7 – Collector temperature input 3.5 – Phoenix RM 3.5 (AI1)

2-pin spring connector terminal



Pin	Signal	Function
1	AI1	Analog input AI1 PT1000 (-50 ... +200 °C)
2	AGND	AGND

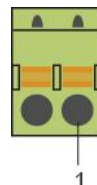


X8 – Return flow collector temperature input 3.5 – Phoenix RM 3.5 (AI2)

2-pin spring connector terminal



Pin	Signal	Function
1	AI2	Analog input AI2 PT1000 (-50 ... +200 °C)
2	AGND	AGND

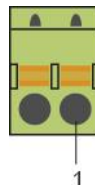


X9 – Storage temperature input 1 – Phoenix RM 3.5 (AI3)

2-pin spring connector terminal

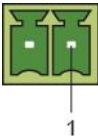


Pin	Signal	Function
1	AI3	Analog input AI3 PT1000 (-10 ... +120 °C)
2	AGND	AGND

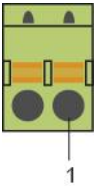


X10 – Storage temperature input 2 – Phoenix RM 3.5 (AI4)

2-pin spring connector terminal

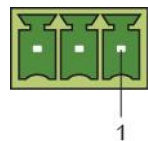


Pin	Signal	Function
1	AI4	Analog input AI4 PT1000 (-10 ... +120 °C)
2	AGND	AGND

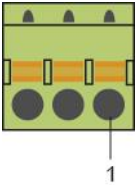


X12 – digital input – heat counter input – Phoenix RM 3.5

3-pin spring connector terminal



Pin	Signal	Function
1	+24 V	+24 V DC supply
2	DI	Digital Input: heat counter
3	GND	GND connection



X13 and x14 - ribbon cable connection to internal expansion modules - 26-pin blade terminal

The internal solar module communicates with the controller (X13) over this ribbon cable connection.

All signals are encoded and/or sent to the next internal expansion (X14).

Wiring Guidelines

The signals recorded by the analog inputs are very small in comparison to the digital signals. To ensure error-free operation, a careful wiring method must be followed:

- The lines connected to the source of the analog signals must be as short as possible and parallel wiring to digital signal lines must be avoided.
- The signal lines must be shielded.
- 230 V AC lines (power circuit and relay outputs etc.) must not be wired parallel to analog and digital input lines.

Wiring guidelines for digital inputs

The input filters used, which suppress noise signals, allow operation in harsh environmental conditions. In addition, a careful wiring method is recommended to ensure error-free function.

The following guidelines should be observed:

- Avoid parallel connections between input lines and load bearing or AC circuits.
- Correct wiring to mass

General information on the relay outputs

All relay coils are powered by the internal +24 V DC supply. The cross sectional area of the relay outputs must be large enough for the maximum continuous current at 230 V AC for each connected load as stated in the specifications for the relay outputs. It is important to note that at high currents, thermal loads affect the wiring and with continuous over loading can lead to a break down! Hi voltages can current leakage or arcing between different potentials!

To ensure error-free operation, a careful wiring method must be followed.

- Avoid parallel wiring between input lines and load-bearing circuits.

CAN Bus Communication

A detailed description of the CAN bus communication can be found in the respective class description.