

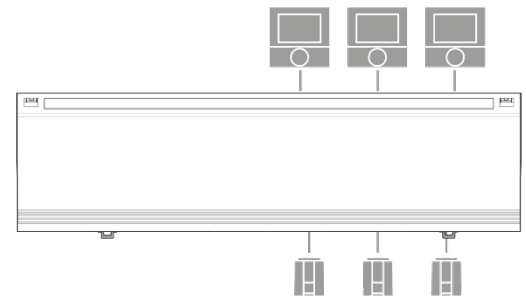
OEM Alpha direct Balance

As a smart, wired single room temperature control system of the future, the OEM Alpha direct Balance base station offers maximum comfort and high energy efficiency for panel heating systems in heating and cooling systems.

The OEM Alpha direct Balance base station automatically performs hydraulic balancing on water-based heating systems from the heating manifold onwards, without the need for additional equipment such as flow limiters.. The automated hydraulic balancing carried out using this control system is considered to be at least equivalent to conventional hydraulic balancing and is certified by TÜV Rheinland.

By intelligently distributing the available flow rates over time, the OEM Alpha direct Balance base station ensures that the individual heating circuits are supplied according to their requirements. The time-delayed control of the thermal valve actuators ensures a uniform heat supply to all panel heating circuits, even if they are not optimally pre-set hydraulically. This mode of operation is only used with inert heating systems such as panel heating systems.

Furthermore, the OEM Alpha direct Balance base station can also perform the cooling function by inverting the input signals from standard thermostats. Standard room thermostats can be connected, which is particularly advantageous when retrofitting. The system recognises the thermostat's requirements and automatically adjusts itself accordingly. This means that no special heating/cooling thermostats are required. Standard NC-version thermal valve actuators are used as the actuating element.



1.1 Features

- Version with 8 zones / thermostat
- Available in either 24 V or 230 V
- Connection for up to 17 valve drives
- Equipment for heating and/or cooling systems
- Initial state: NC
- automated hydraulic balancing, certified by TÜV Rheinland (→ Chapter 4)
- Following a 30-minute commissioning phase, normal operation resumes immediately, without any prior learning phases
- Automatic detection of connected thermostats
- Simple, intuitive installation and operation, without flow and return sensors
- Status indication via LEDs
- Pump and boiler control
- Connection for dew point monitor and setback temperature input
- Tried-and-tested cable routing and strain relief
- Screwless plug-in / clamp connection method
- Clearly arranged terminals
- High operational reliability
- Maintenance-free
- No initialisation or calibration required
- Block cooling can be restricted on a zone-by-zone basis
- OEM differentiation through design and function

1.2 Variants

The basic version of the OEM Alpha direct Balance is supplied as a neutral version without a logo, in light grey with a transparent lid. The list below shows the available versions.

Type	Version	Operating voltage	Zones	Equipment	Contents of the package
B 41902-08N2	Balance	24 V	8	Heating / cooling, pump and boiler control, status indication	• OEM Alpha direct Balance Base station in individual packaging • Instructions in 12 languages
B 21902-08N2		230 V			

1.3 Optional extensions or variations on the basic version

Options for differentiation

Packaging	Packaging can be custom-printed and manufactured to meet specific requirements.
Imprint on casing	Laser engraving of the company logo (e.g. (logo), the individual type and its device name
Housing	Lower section – colour adjustment, Housing cover – Full-coverage housing cover, customisable colour, transparency and shape

Please do get in touch with us if you have any further requests.

Expansion options

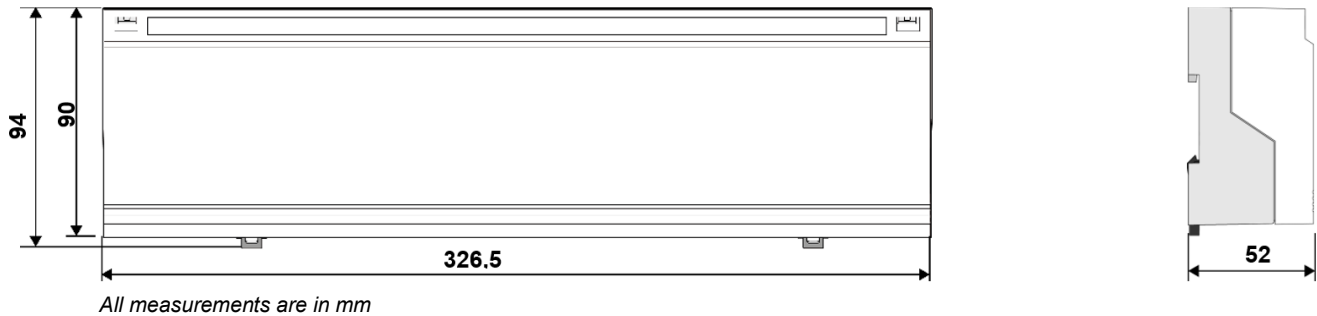
DIN rail	The scope of delivery has been expanded to include a DIN rail for fitting to the heating manifold
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2 Technical Specifications

Type	B 41902-08N2	B 21902-08N2
Operating voltage	24 V / ± 20 % / 50 Hz	230 V / ± 10 % / 50 Hz
Power consumption (excluding pump/boiler)	max. 50 VA	
Power consumption (idle)	<1 W	
Fuse	T2A	T4AH
Number of heating zones (HZ)	8	
Switching capacity per heating zone	max. 1 A	
Max. number of actuators	17 (1x5 + 1x4 + 2x2 + 4x1)	
Inrush current per actuator	max. 500 mA	
Rated load of all actuators	max. 24 W	
Control direction normally closed (NC) / normally open (NO)	NC	
Pump connection	Normally open contact (single-pole switching)	
Lead time / follow-up time	2 minutes	
Switching capacity	2, A, 200 VA inductive	
Boiler connection	Normally open contact (single-pole switching)	
Lead time / follow-up time	2 minutes	
Switching capacity	2, A, 200 VA inductive	
Pump protection function	3 days / 5 mins.	
Valve protection function	16 days / 5 mins	
Ambient temperature	0 ... 50°C	
Storage and transport temperature	-20°C ... +70°C	
Ambient humidity	5 ... 80 per cent non-condensing	
ERP class according to EU 811/2013	1=1 %	
Contamination degree	2	
Protection class	III	II
Protection type	IP20	
Function	Type 1	Type 1.C
Switching element design	Relay	
Overcharge protection	Current limitation via the device fuse	
Setback temperature input	can be switched via a potential-free contact	
CO input	can be switched via a potential-free contact	
Temperature limiter or dew point monitor	via a potential free normally closed contact, switchable	
Cover latch	Double latching of cover on casing, not to be opened without tools	
Terminal blocks	Plug-in terminal	
Wire cross-section: solid	0.2 ... 1.5 mm ²	
Wire cross-section: finely stranded with ADH, without plastic collar	max. 1.0 mm ²	
Wire cross-section: finely stranded with ADH and plastic collar	max. 0.75 mm ²	
Wire stripping length	8 ... 9 mm	
Temperature cone pressure test	550 °C	
Rated surge voltage	1500 V	
Standards and regulations	EN 60730-1 / EN 60730-2-9 / ElektroG or RoHS-compliant	
Power supply version	Terminals for NYM connection, 3 x 1.5 mm ²	
Strain relief	integrated	
Material	ABS	
Type of installation	Wall installation/DIN rail (TS35/35 x 7.5 mm)	
Colour housing	light grey (RAL 7035)	
Colour of cover	Transparent, with a polished finish in the area of the LEDs	
External dimensions	90 × 326.5 × 52 mm	
Weight	465 g	600 g
LED	Heating zones	green (one LED per half-cycle)
	Fuse	red
	Power	green
	Pump	green
	Boiler	green
	Heating / Cooling	blue

2.1 Dimensions

2.1.1 8-zone base station



3 Approvals and certificates

All Möhlenhoff products are comprehensively tested and certified by independent testing bodies.



The CE marking serves to certify that the products placed on the market comply with the applicable guidelines of the EU.



The product is certified by TÜV Rheinland.



The product is certified by TÜV Rheinland for the automated hydraulic balancing process for water-based underfloor heating systems and is therefore considered equivalent to manual hydraulic balancing.

4 Technical information on automated hydraulic balancing

4.1 Automated hydraulic balancing procedure

The method developed provides a temperature-based alternative to hydraulic balancing, based on a synchronisation-based optimisation method that does not require individual balancing of the heat exchange units in accordance with DIN 94679-4. The aim of the process is to distribute the available heat output of the heat generator efficiently across several active heating circuits, thereby ensuring that the connected rooms are supplied with heat in line with demand, without limiting instantaneous flow rates. Optimisation is not achieved by directly controlling the flow rate of individual heating circuits, but by coordinating the timing of the valve openings. This specifically reduces the simultaneous demand for heat and prevents individual rooms from being under-supplied, even when several rooms are demanding heat at the same time. The system is designed to control thermally actuated valves which regulate the flow in panel heating systems (e.g. underfloor heating systems). It is particularly suitable for systems with several individual zones and slow-responding heat transfer elements.

4.2 System requirements: Selecting suitable room thermostats

Automated hydraulic balancing only works in conjunction with room thermostats featuring a PWM output. With 2-point thermostats, the module does not become active.

When using third-party products with the OEM Alpha direct Balance system, please note the following: Thermostats with cycle times of more than 30 minutes are unsuitable for use in the OEM Alpha direct Balance system. When such thermostats are used, the base station passes the thermostat signal through to the valve drive on a 1:1 basis. The relevant heating zone is not included in the balancing process. Standard thermostats on the market have a cycle time of less than 30 minutes.

Guidance on carrying out hydraulic balancing in accordance with Method B: It should be noted that the use of the OEM Alpha direct Balance base station does not fully replace the hydraulic balancing procedure carried out in accordance with Method B. The base station can only control those parts of the pipework network that are located downstream of the heating manifold. Technical information on carrying out hydraulic balancing in accordance with Method B is available via the following link:

<https://faqdoc.info/systemauswahl/alpha-direct-bs/automatic-hydraulic-balancing-ad/>

4.3 Instructions for commissioning

Every time the mains power is switched on, a 30-minute start-up mode is initiated. During this period, the controller signals are passed through to the outputs on a one-to-one basis. The pump contact operates with a 2-minute turn-on delay and follow-up time. During these 30 minutes, the input signals are analysed and used to calculate the hydraulic balancing, which begins after the commissioning mode. The control signals are continuously analysed during operation, and any changes in control behaviour are implemented.

4.4 Intended use

When using the appliance in conjunction with a heat pump: Please observe the manufacturer's instructions for ensuring minimum flow rates! In some circumstances, additional hydraulic measures may need to be taken.