

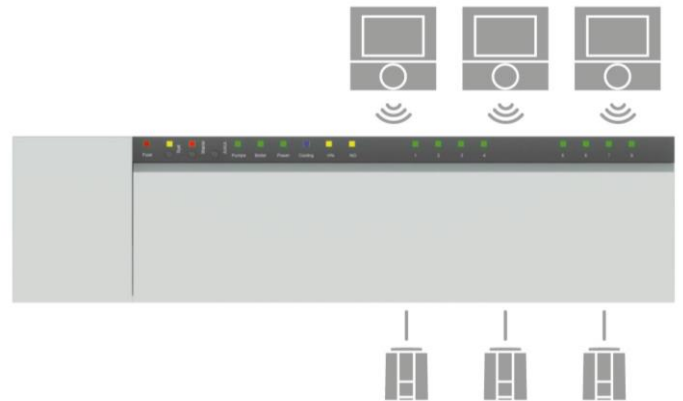
OEM Alpha 2: Base Stations Radio

The **OEM Alpha 2: System Radio** is the intelligent room-by-room temperature control for the future, ensuring maximum comfort and energy efficiency for surface temperature adjustment.

The **OEM Base Stations Radio 24 V and 230 V** with 4, 8 and 12 zones are the intelligent control and connection units of the systems for the central processing of information and communication with all system components. They register and utilise a huge amount of measuring data for the individual, energy-efficient temperature control in every room as well as for maximum user comfort. For this, the 868 MHz radio technology ensures a safe, bi-directional communication of the allocated room control devices, Base Stations and connected actuators, all this with a minimum of radio load. Already in standard design, the highly developed system software fulfils all requirements of current and future systems – adaptations and updates for a technologically changing environment can be carried through comfortably through a MicroSD card slot.

The Ethernet version not only allows the flawless integration into the home network, and thus a comfortable control via PC and/or smart phone as well as over the Internet. The XML interface additionally enables an integration in superior building management and automation systems. Thus, the OEM Alpha 2: System Radio is Smart Home ready.

With the OEM Alpha 2: System and its numerous visual and functional differentiation possibilities you can ensure an optimum market position, allowing you to offer a perfectly adjusted all-in-one system to your customers.



1.1 Features

- High-quality, modern OEM design
- OEM differentiation of appearance and function
- 24 V and 230 V versions
- Variants with 4, 8 or 12 zones
- All-in-one – complete equipment for heating and/or cooling applications, already in the standard design
- Coupling of a maximum of 7 base stations via radio and/or syBus
- Automatic configuration thanks to plug-and-play, also for future system extensions
- Simple, intuitive installation, operation and maintenance
- Connection of a maximum of 18 A5 actuators (1 - 2 per zone)
- Initial condition selectable between NC and NO
- proven cable guide and strain relief
- Screwless plug-in/clamping connection technique
- MicroSD card slot for individual settings by means of Micro SD card via Möhlenhoff OEM on-line service
- Easy operation, programming, initialisation
- Perfect interaction of several Base Stations via bus
- Integrated system clock
- *Only Ethernet variant:* Smart Home ready, can easily be integrated into superior building automation systems via XML
- *Only Ethernet variant:* Easy integration into the home network
- *Only Ethernet variant:* Web-based application software for a comfortable control via PC and smartphone as well as over the Internet
- Smart Start function for a more energy-efficient operation

1.2 Variants

In the basic version, the Alpha 2: Base Stations Radio are delivered as neutral devices without logo and in grey. The subsequent list shows the available NC (normally closed) versions. All versions are also available with the initial status NO (normally open).

Version	Operating voltage	Zones	Delivery state:	Transformer	Web server	Scope of supply
BSF 40112-04	24 V	4	NC	✓	-	<ul style="list-style-type: none"> • OEM Alpha 2: Base station in individual packing (24 V variant including transformer) • Quick Install Guide for overall system in 12 languages
BSF 40112-08	24 V	8	NC	✓	-	
BSF 40112-12	24 V	12	NC	✓	-	
BSF 40212-04	24 V	4	NC	✓	✓	
BSF 40212-08	24 V	8	NC	✓	✓	
BSF 40212-12	24 V	12	NC	✓	✓	
BSF 20102-04	230 V	4	NC	-	-	
BSF 20102-08	230 V	8	NC	-	-	
BSF 20102-12	230 V	12	NC	-	-	
BSF 20202-04	230 V	4	NC	-	✓	
BSF 20202-08	230 V	8	NC	-	✓	
BSF 20202-12	230 V	12	NC	-	✓	

1.3 Accessories

- Active antenna
- Repeater
- External timer DS2000
- Humidity sensor

1.4 Optional extensions or differentiations to the basic version

Differentiation possibilities

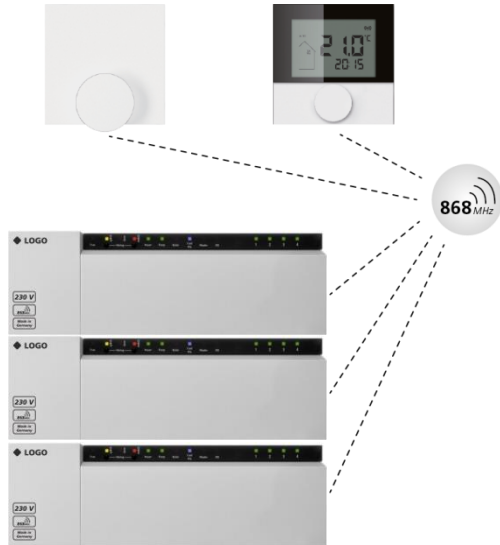
Packaging	Packaging can be manufactured and printed individually according to requirements.
Imprint on casing	Laser marking of the company logo and the individual type designation and your device designation
Light strip	Individual adaptation of colour, operating elements (square or round push-buttons) and indications (round, square or rectangular)
Casing	Bottom – adaptation of colour, marked casing lines on request Cover – completely overlapping cover, individual colour and transparency, shape and discontinuation by casing lines
Please contact us if you have further wishes.	

Extension options

Instructions, language set 1	The scope of delivery is extended by detailed instructions for the base station and the room control units in the following languages (otherwise these are available for download under www.ezr-home.de).	German
		English
		French
		Dutch
		Italian
		Spanish
Instructions, language set 2	The scope of delivery is extended by detailed instructions for the base station and the room control units in the following languages (otherwise these are available for download under www.ezr-home.de).	English
		Danish/Norwegian
		Finnish
		Swedish
		Polish
DIN rail	The scope of delivery is extended by a DIN rail for installation in the heating circuit distributor	
MicroSD Card	The scope of delivery is extended by a MicroSD card for the comfortable configuration and software updates to be performed via the MicroSD card slot of the base station.	

2 Function

System functions of all designs

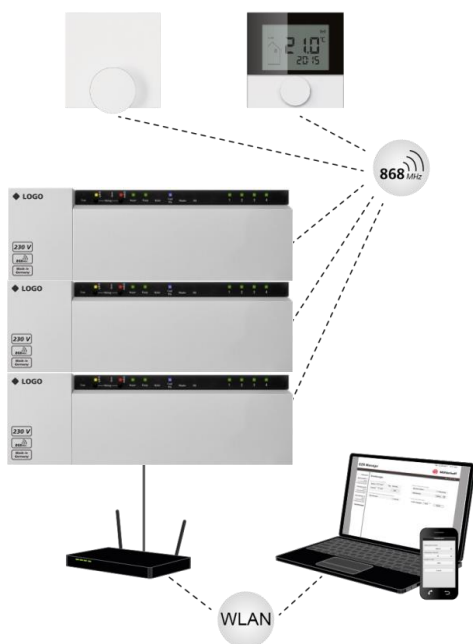


- **Coupling of a maximum of 7 Base Stations**
 - Safe communication between the Base Stations via 868-MHz radio technology and/or System BUS (syBUS)
 - Forwarding of change-over signals (e. g. heating/cooling) and operating statuses
- **Bi-directional 868 MHz radio technology**
 - For a safe communication between the room control units and Base Stations
 - Long range with minimum radio load
 - Transmission of status and warning messages to the room control units.
- **Minimum cabling efforts thanks to radio system**
 - Optimal for new construction and redevelopment projects
- **Simple pairing at the touch of a button**
 - Fast allocation of room control units to the desired zones
- **Programming and control via the Room Control Unit Radio with display**
 - Comfortable commissioning of the system without auxiliary material
 - All functions available via menus at the Room Control Unit Radio with display
 - Reset to factory settings of the corresponding zone via Room Control Unit Radio with display



- **Ready for the future thanks to MicroSD card slot**
 - Quick upload, backup and transmission of system parameters
 - Upload of time programs as e. g. work/rest days, all days the same, special program
 - Conversion of Base Stations from Celsius to Fahrenheit
 - Parametrisation for NC or NO actuators
 - Deactivation of valve and pump protection function

Additional system functions of the Ethernet version



- **Integration into the home network**
 - Quick and easy implementation into the home network
 - System interface for superior control systems
- **Control via PC/smartphone**
 - Comfortable parametrisation and configuration of the systems via notebook, smartphone or tablet
 - Maximum comfort feeling in every room
- **Remote access to the entire installation**
 - Comfortable remote access to all functions and parameters of the installation
 - Rendezvous server for the realisation of a secure and direct connection over the Internet
- **Maximum comfort due to web application**
 - Intuitive web interface for comprehensive overview
 - Complete control over all functions
- **Individual software application**
 - Customer-specific software solutions/parametrisations for an optimum adjustment of your overall system including unique position characteristics
 - Visual differentiation of the software interface by integration of your logo and adaptation of colours to your corporate design
- **Smart Home ready**
 - Integration into superordinate building management and automation systems via XML interface
 - Easy communication via an existing IP based network

Regulation and control functions

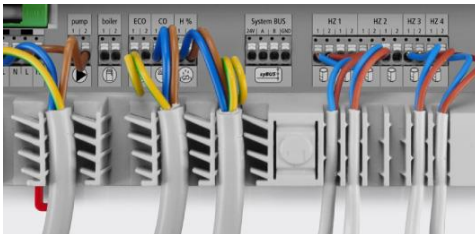
- **Variants with 4, 8 and 12 zones**
 - Perfect for the use in detached and multi-family houses
 - Connections of up to two actuators per zone
 - Grouping of several heating circuits with only one room control unit in large rooms
- **Comfortable plug-in/clamping technology**
 - Quick connections of up to 18 actuators
 - Minimum effort for an integration of the pump control, of a dew point sensor and the control of a boiler
- **Pilot function for heating and cooling via the boiler outlet**
 - Manual toggle of the overall system between the operating modes heating and cooling
- **Toggle between heating and cooling via external signal**
 - Supply of an external signal via potential-free contact
- **Dew point monitoring via potential-free contact**
 - Against mould formation and damage of the building structure by dew water
- **Integrated pump module including pump protection function**
 - Triggering of the pump via potential-free contact (all variants)
 - Base station as interconnected 230 V source for a direct connection of the pump (only 230 V variants)
 - Starting and coasting delay predefined with 2 minutes (parametrisable)
 - Cyclic switching of the pump in order to avoid damage during longer times of standstill
- **Connection for safety temperature limiter**
 - Prevents excessive flow temperatures of floor heatings in order to protect sensitive floor coverings
- **Emergency operation**
 - Cyclic triggering of the actuators of a zone if no signal is received from it for a prolonged time (e. g. due to empty batteries).
 - Prevents a complete cooling of the affected zone.
- **Antifreeze protection**
 - Avoids the freezing of lines during times without temperature control (e. g. in case of absence)
- **Floor temperature monitoring**
 - Ensures a minimum surface temperature in case of external heat input if floor sensors are used (cabled or infra-red) with the room control unit
- **Valve protection function at all outputs**
 - Cyclical triggering of actuators (parametrisable)
 - Avoids the clogging of valves in times without temperature control
- **Möhlenhoff OEM on-line service (www.ezr-home.de)**
 - Parametrisation of individual system settings and week programs
 - World-wide access to and control of the OEM Alpha 2: System
 - Extensive product documentation downloadable
- **Customer-specific functions**
 - Download of special system settings, individual week programs
 - Individual programs possible at any time on request
- **Smart Start function**
 - With self-learning effect
 - Automatic calculation of required heating lead times
 - Exact provision of the temperature desired by the user at the set point of time with as low energy consumption as possible
 - No over-heating of rooms

Operation and indication



- **Programming and operation via pushbuttons**
 - Comfortable programming and operation of Base Stations via pushbuttons (always accessible even when the cover is closed)
- **Clearly arranged, always well visible LED status indications for**
 - Operating status (on/off)
 - Fuse
 - Cooling mode
 - Warning message in case of thawing
 - Control direction of the switching outputs (NO: Normally open / NC: Normally closed)
 - System pairing
 - System errors
 - One status LED per heating zone
 - Poor reception
 - Low battery
 - RBG pairing

Connections and outputs



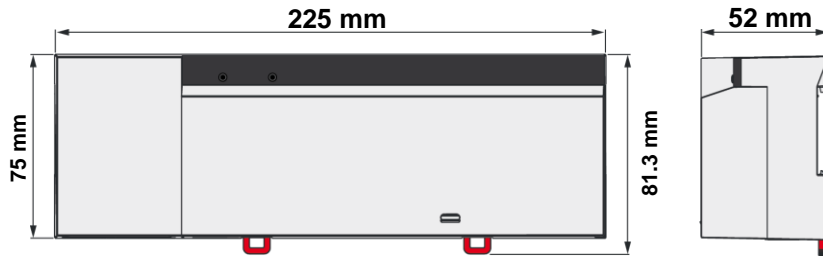
- **Proven cable guidance and strain relief of the Alpha-Basis product family**
- **Plugged and clamped terminals for solid and stranded cables 0.5 – 1.5 mm²**
- **MicroSD card slot for updates and settings**
- **Inputs:**
 - Change over (CO) (potential-free contact)
 - Dew point sensor (potential-free contact)
 - Setback (ECO operation)
 - Safety temperature limiter
- **Outputs:**
 - Heat generator / Change over
 - Pump (also for high efficiency pumps)
- **Other connections:**
 - Actuators
 - Mains connection
 - Mains connection tap (e. g. for the supply of a pump) *only for 230 V variants*
 - SystemBUS for the coupling of several Base Stations
 - External antenna RJ 12 (only Base Station Radio)
 - Ethernet (optional)

3 Technical data

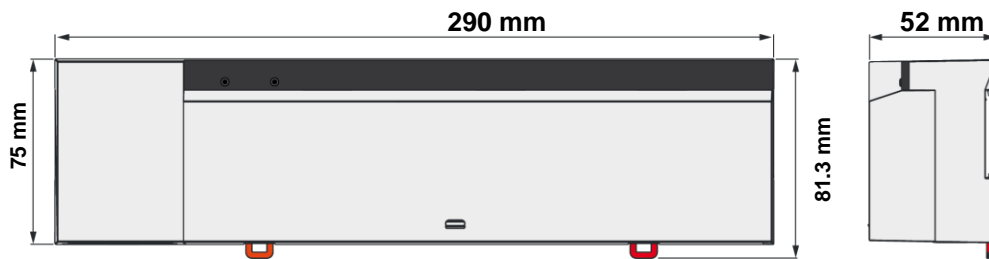
	BSF 20102-04	BSF 20202-04	BSF 20102-08	BSF 20202-08	BSF 20102-12	BSF 20202-12	BSF 40112-04	BSF 40212-04	BSF 40112-08	BSF 40212-08	BSF 40112-12	BSF 40212-12
Max. Number of heating zones	4		8		12		4		8		12	
Operating voltage	230 V / $\pm 15\%$ / 50 Hz						24 V / $\pm 20\%$ / 50 Hz / external system transformer					
Power consumption in idle operation/with transformer 20402	1.5 W / -	2.4 W / -	1.5 W / -	2.4 W / -	1.5 W / -	2.4 W / -	0.3 W / 0.6 W	1.1 W / 1.4 W	0.3 W / 0.6 W	1.1 W / 1.4 W	0.3 W / 0.6 W	1.1 W / 1.4 W
max. power input (without pump)	50 W						50 W (limited by the system transformer)					
Fuse	5 x 20 mm, T4AH						5 x 20 mm, T2A					
Protection class	II											
Degree of protection	IP20						IP20					
Radio technology	Radio, 868 MHz SRD band											
Max. Number of actuators	2x2 + 2x1		4x2 + 4x1		6x2 + 6x1		2x2 + 2x1		4x2 + 4x1		6x2 + 6x1	
max. nominal load of all actuators	24 W (12 x 2 W or 8 x 3 W resp. 18 x 1 W)						24 W (12 x 2 W or 8 x 3 W resp. 18 x 1 W)					
Switching element design	Relay						Noiseless electronic (Triac) switch					
Switching power per heating zone	Max. 1 A admissible						Max. 1 A admissible					
Overcharge protection	Current limitation via device fuse						Power limitation caused by system transformer					
Pump connection	Contact: 1C (monopolar switching/direct supply of the pump) / no through-connection possible						Contact: 1C (monopolar switching) / no through-connection possible					
Lead time/follow-up time	parametrisable											
High efficiency pump	parametrisable											
Switching power	8 A at $\cos\phi=1$ / inductive max. 200 VA											
Boiler connection/CO output	Contact 1 A (monopolar, make contact)/invertible											
Lead time/follow-up time	parametrisable											
Switching power	1 A at $\cos\phi=1$ / inductive max. 200 VA											
Reduction input	Switchable via potential-free contact											
Potential-free CO input	Switchable via potential-free contact											
TPS input	1 input for several sensors (via open collector), 1 connection for floating wiring											
Overtemperature limiter input	Voltage-guided switching input						Voltage-guided switching input / 24 V _{AC} ..230 V _{AC} tolerant					
System bus connection	RS485 with GND and 24 V possible for the supply of ext. components with a max. power consumption of 2 W											
External antenna	RJ12 socket / 5 m standard line length, EMC tested up to a length of 10 m											
Ethernet connection	-	RJ45	-	RJ45	-	RJ45	-	RJ45	-	RJ45	-	RJ45
Connection terminals												
Line cross-section: massive	0.2 to 1.5 mm ²						0.2 to 1.5 mm ²					
Conductor section: Finely stranded with ADH without plastic sleeve	Max. 1.0 mm ²						max. 1.0 mm ²					
Conductor section: Finely stranded with ADH with plastic sleeve	Max. 0.75 mm ²						max. 0.75 mm ²					
Wire stripping length	8 to 9 mm						8 to 9 mm					
Control response	PI / 2-point adjustable						PI / 2-point adjustable					
Controlling precision of the set target value:	± 1 K						± 1 K					
Hunting	± 0.2 K						± 0.2 K					
Admissible ambient temperature	0 to 60 °C						0 to 60 °C					
Admissible ambient humidity	5 to 80%, not condensing						5 to 80%, not condensing					
Storage/transport temperature	-25 °C to +70 °C						-25 °C to +70 °C					
Standards and regulations	EN 60730-1 / EN60730-2-9 / ElektroG resp. RoHS compliant											
ERP class acc. to EU 811/2013	1=1%											
Mains connection design	NYM connection terminals 3 x 1.5 mm ²						System transformer with Euro plug					
Material	PC+ABS						PC+ABS					
Colour	RAL7035 (light grey)						RAL7035 (light grey)					
Outer dimensions	225 x 52 x 75 mm	290 x 52 x 75 mm		355 x 52 x 75 mm		305 x 52 x 75 mm	370 x 52 x 75 mm		435 x 52 x 75 mm			
Weight	500 g	650 g		760 g		350 g	500 g		610 g			
System transformer weight	-						600 g					

3.1 Dimensions

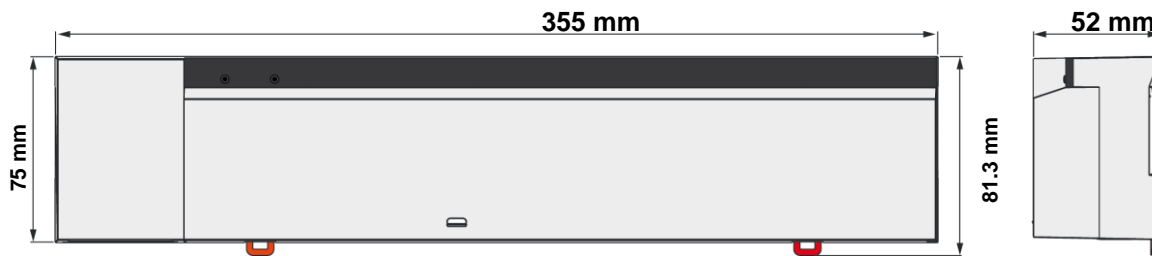
3.1.1 4 zone Base Station



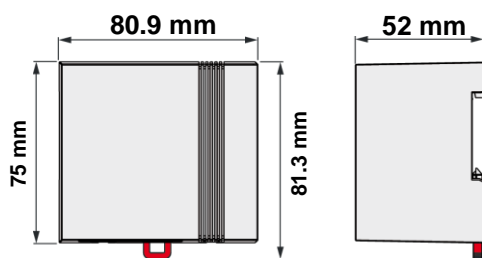
3.1.2 8 zone Base Station



3.1.3 12 zone Base Station



3.1.4 Transformer dimensions for 24 V variants



3.2 Approvals & certificates

All Möhlenhoff products are extensively tested and certified by independent testing institutes.

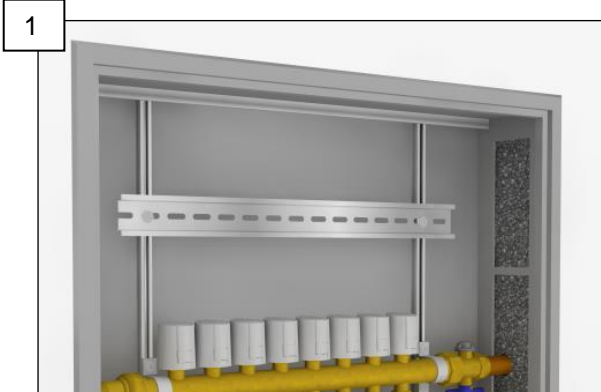


The CE identification documents that the products placed on the market comply with the applicable requirements of the EU Directives.



4 Installation notes

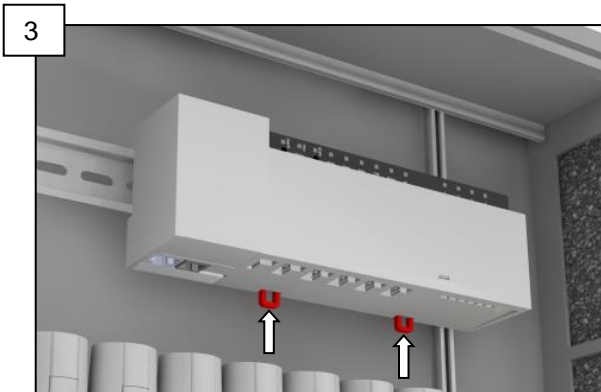
4.1 Installation



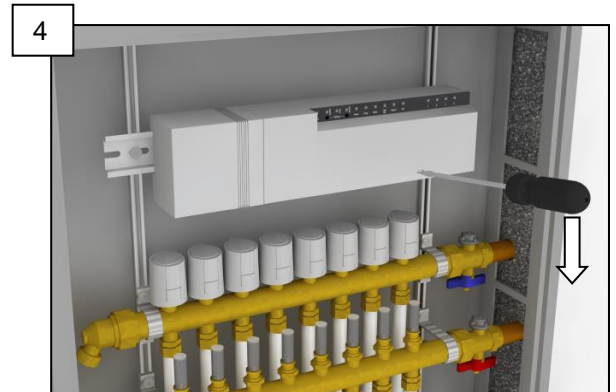
1 Install a DIN rail on-surface or in the heating circuit distributor cabinet.



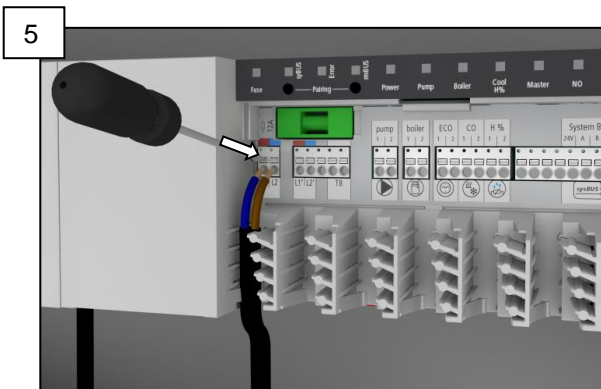
2 Position the Base Station slightly tilted onto the DIN rail and latch it in.



3 Fix the Base Station securely with the locking mechanism on the DIN rail.



4 Remove the cover with a screwdriver.



5 Lay the cable into the casing through the strain relief and install all cables to the Base Station using the clamping/plug-in technology; this is possible in a very short time.



6 Close the cover. Now the Base Station is ready to operate.