

V6

Operating instructions

English



ALMEMO® Bluetooth network

Device CPU ZA2719BC, Device slave MA2790BT1XS
CPU module ZA1719BCU/-BC, Slave ZA1719BT1XS

V2.1
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1. OPERATING CONTROLS

Bluetooth CPU device ZA2719-BC



(1) Output socket A1

- A1 Data cables
 - USB (ZA 1919-DKU)
 - V24 (ZA 1909-DK5)
 - Optic fiber (ZA 1909-DKL)
 - Ethernet (ZA 1945-DK)
 - Bluetooth (ZA 1719-BT1XS)

(2) DC socket

- DC 5 to 12V and USB (ZA1919DKU5)
- Mains adapter (ZA 1312-NA8, 12V)
- 12V and RS422 (ZA 5099-FSV)

(3) LCD, graphics display

- 7 rows for functions
- 1 row for softkeys F1, , , , F2
- Shown in brackets

(4) Operating keys

- Main menu
- Display illumination ON
- Programming
- F: Function selection
- Programming
- To change the function
- P: To enter data
- To cancel the function

Rear of device:

(5) Battery compartment

- 3 AA alkaline-manganese batteries

Bluetooth modules

(6) USB-CPU ZA1719-BCU connection at USB socket on PC

(7) ALMEMO-CPU ZA1719-BC connection at socket A2

(7) ALMEMO-Slave ZA1719-BT1XS connect. at socket A1

LGreen LED
Yellow LED

Power supply ON = OK
Connection status; Flashing = searching;
ON = OK

7



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3. GENERAL

We should like to congratulate you on your purchase of these new and innovative ALMEMO® Bluetooth devices. The wireless system in particular stands out by virtue of its excellent specifications. Thanks to its power amplifier it provides a wide operating range (up to 300 meters free field). Using the CPU up to seven simultaneously active links to ALMEMO® Bluetooth slave modules can be configured quickly and easily. With the AMR-Control operating software and the clear and readily understandable graphics display these devices are easy and convenient to operate. You are strongly advised to take the time to carefully read these operating instructions and to properly familiarize yourself with the system's numerous functions and features. This is the best way to avoid operating errors and prevent damage to these devices. To help you find answers to your questions as quickly and easily as possible an index is provided at the end of these instructions and at the end of the Manual.

3.1 Warranty

Each and every device, before leaving our factory, undergoes numerous quality tests. We provide a guarantee, lasting two years from delivery date, that your device will function trouble-free. In the unlikely event that a device does prove defective and you need to return it, please wherever possible use the original packaging materials for dispatch and enclose a clear and informative description of the fault and of the conditions in which it occurs.

This guarantee will not apply in the following circumstances:

- Any form of unauthorized tampering or alteration inside the device
- Use of the device in environments or conditions for which it is not suited
- Use of the device with an unsuitable power supply and / or in conjunction with unsuitable peripheral equipment
- Use of the device for any purpose other than that for which it is intended
- Damage caused by electrostatic discharge or lightning
- Failure to properly observe these operating instructions

The manufacturer reserves the right to change the product's characteristics in the light of technical progress or to benefit from the introduction of new components.

3.2 Standard delivery

When you unpack the device check carefully for any signs of transport damage and ensure that delivery is complete:

ZA 2719-BPVU	ALMEMO® Bluetooth CPU ZA 2719-BC, ALMEMO® USB data cable, with power supply ZA1919-DKU5 ALMEMO® Bluetooth slave module ZA 1719-BT1XS
ZA 1719-BPVU	ALMEMO® Bluetooth USB CPU module ZA 1719-BCU, ALMEMO® Bluetooth slave module ZA 1719-BT1XS
ZA 1719-BNV	ALMEMO® Bluetooth CPU module ZA 1719-BC, ALMEMO® Bluetooth slave module ZA 1719-BT1XS

Each with: These operating instructions, CD with AMR-Control software and various useful accessories

In the event of transport damage please retain the packaging material and inform your supplier immediately.

3.3 Waste disposal



This symbol means that the product is subject to European Union regulations covering segregated waste disposal. This applies both to the product itself and to any accessories marked with the same symbol. Disposal of any such item as unsorted domestic waste is strictly forbidden.

Batteries and rechargeable battery packs are special waste and must not be discarded as normal domestic waste.

Please dispose of packaging materials, plastics, and electronic components separately and in the proper manner.

4. SAFETY INSTRUCTIONS



CAUTION This sign is intended to warn the user of a risk of damage to the device.

The user should carefully read the operating instructions in order to avoid errors, damage to equipment, and even the risk of personal injury. The device may only be opened by duly authorized and qualified service technicians.



WARNING This sign is intended to warn the user of a possibly life-threatening situation with risk of fatal injury through exposure to dangerously high voltage.

Before connecting any equipment to the power supply always ensure that the operating voltage is correct.

Please note that the device may be susceptible to damage by electrostatic discharge or lightning.

Do not run wires in the vicinity of high-voltage power cables.

4.1 Special notes on use



If the device is brought into the work-room from a cold environment there is a risk that condensation might form on the electronics. You are advised therefore, before starting to use the device, to wait until it has adjusted to the ambient temperature.

4.2 Handling batteries / rechargeable batteries correctly



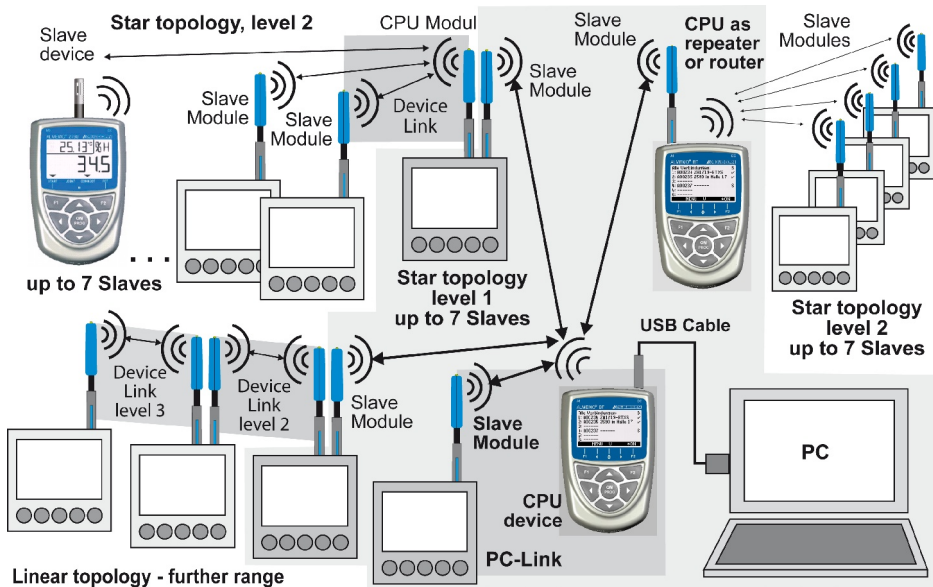
When inserting batteries / rechargeable batteries ensure that the polarity is correct. If the device will probably not be needed for a relatively long period of time or if the batteries are empty, remove the batteries; this will prevent battery acid leaking onto the device and damaging it. Rechargeable batteries should be recharged as and when necessary.

You should never attempt to recharge an ordinary (non-rechargeable) battery; it may explode !

Batteries / rechargeable batteries must never be short-circuited or thrown onto the fire.

5. ALMEMO® BLUETOOTH NETWORK

Bluetooth CPUs and slave modules can be connected to any ALMEMO® measuring instrument; they can then be operated as part of the new ALMEMO® Bluetooth wireless network. Per CPU up to seven measuring instruments can be linked up via slave modules and then be scanned from the PC via just one COM interface. It is also possible to cascade further ALMEMO® CPU modules or device CPUs with a plug-in slave module (router) and thus extend the operating range or increase the number of links. A break in any such link automatically triggers an attempt to re-establish it. The number of wireless links that can be operated at the same time is virtually infinite; they cause no mutual interference.



The easiest way to connect to the PC is to use the PC's link to the device CPU; all links can then be configured and monitored on the graphics display.


Or, alternatively, the PC link can be provided by a USB-CPU module; this too is preconfigured with an ALMEMO® slave module and can manage up to seven slaves. The ALMEMO® CPU module can also be used to provide a wireless link from one ALMEMO® device to the next (a device link) or to maximum 7 other ALMEMO® devices. The first link per CPU functions automatically; all further links must be activated using the AMR-Control software.

Normally as slave the universal plug-in Bluetooth slave modules can be used; however, there are also slave measuring instruments, compact and autonomous, with an internal Bluetooth module; and there is even an option with integrated temperature and humidity sensor.

6. OPERATING WITH THE BLUETOOTH DEVICE CPU

With the device CPU (ZA2719-BC) the task of operating a Bluetooth link is easy and readily understandable. All links can be configured via the computer keyboard and display. Slave modules can be paired with the CPU very easily by simply plugging them in. All links can be established quickly, easily, and reliably.

6.1 Putting into service

1. Plug **slave module** (ZA1719-BT1XS) for the PC link in at **socket A1** on the first ALMEMO® device, switch the ALMEMO® device on, and set the device address preferably to G01 (corresponds to connection 1).
2. If required plug **further slave modules** onto other ALMEMO® devices as above, switch on, and set the device addresses accordingly.
3. Before plugging the USB cable into the computer install the USB driver from the enclosed CD. In Device Manager check the COM port used by the cable 'Silicon Labs CP210x USB to UART Bridge (COMx)'.
4. Connect one end of **USB data supply cable ZA1919-DKU5** to the **DC** socket (2) on the device CPU (ZA2719-BC) and the other to a USB socket on the computer. Or, alternatively, power the CPU via the mains unit connected at the DC socket or from batteries and use any standard data cable between socket A1 (1) and the computer. (s 6.2)
5. **To switch the device CPU ON** press **ON PROG** Menu **All connections** item 1 should already be prepopulated with the PIN code for the slave module in question.
6. If no PIN code appears or if links are to be established to other slaves, the **PIN codes** for the slaves in question must be entered one by one. (s. 6.5.1; 6.4.2) Or, alternatively, the slave modules can, one by one as each link is selected, be plugged in at socket A1 and be paired by pressing the **PAIR** key. The various links can then be activated from top to bottom by pressing the **ON** key. Each link will now be activated with the name or designation appearing after the associated PIN code; the tick symbol  will indicate each link successfully established.
7. Once all the ALMEMO® devices have been set to the various device addresses, the chosen **data acquisition software** (e.g. WinControl) can be launched. For this purpose the baud rate (default 9600 baud) and the device addresses must be entered in the COM port settings for the USB connection (see above). All devices and all measuring points should now be detected automatically; if so, a measuring operation can now be started.
8. If configuration fails to function as described here, it often helps if the CPU is simply switched OFF and then ON again. If certain modules are not detected, this may be because the operating range has been exceeded. Try reducing the distance or using repeaters; or try using a cable for the wireless modules and re-aligning.

6.2 Connecting the Bluetooth device CPU

To connect the device CPU to the PC the standard procedure is to plug USB data cable ZA1919-DKU5 with integrated power supply in at the DC socket. However, for data transmission purposes, all other ALMEMO® data cables (RS232, USB, Ethernet, RS422) are also suitable. These must be plugged in at socket A1. In this case an additional mains unit will usually be required at socket DC.(s. 6.3)



Important note ! There must never be two data cables plugged in at sockets A1 and DC at the same time

6.3 Power supply

Power can be supplied to the **Bluetooth CPU** in any of the following ways :

Supply and USB connection via ALMEMO® data cable ZA1919-DKU5

Supply and RS422 network connection via ALMEMO® connector ZA5099-FSV

Mains adapter 12 V, 1 A, with ALMEMO® connector ZA 1312-NA8

External DC voltage, 5 to 30 V via ALMEMO® connector ZA 1000-FSV

3 AA alkaline batteries, in the device.

6.3.1 External power supply

Since the Bluetooth CPU is usually operated directly on the PC, USB cable ZA 1919-DKU5 (included) is the most suitable way of connecting the interface and supplying power at the same time via the **DC** socket (2). Or, alternatively, combined connection can also be provided to the ALMEMO® network via ALMEMO® connector ZA 5099-FSV. Other data cables (RS232, optic fiber, Ethernet) should be plugged in at socket **A1** (1); a mains adapter (e.g. ZA 1312-NA8, 12 V / 1 A) should be connected to the **DC** socket. An ALMEMO® connector (ZA 1000-FSV) can also be used at this socket to directly connect a DC voltage of 5 to 30 V (minimum 0.2 A).

6.3.2 Battery operation and supply voltage monitoring

The CPU can be powered via 3 AA alkaline batteries but for a limited period only. Basic current consumption is approx. 35 mA; this gives an operating period of up to 80 hours. However, if display illumination is switched on, this period will be reduced to approx. 45 hours. The available operating voltage is displayed in the device configuration, thus allowing the user to assess the operating period remaining. (see 6.5.4)

As soon as the remaining battery capacity drops to approx. 10 percent, the battery symbol in the softkey bar of the display will start to flash and display illumination will switch off. If the batteries are completely discharged the device itself will switch off. To replace old batteries first unscrew the battery compartment cover (5) on the rear of the device.

6.3.3 Switching ON / OFF, reinitialization

To switch the device ON briefly press and release the key **ON** (4) located in the middle of the keypad; to switch the device OFF press the key **ON** and hold down.

If interference (e.g. electrostatic) or a malfunction (e.g. battery failure) causes the device to behave abnormally, it can be reinitialized; to do so press key **F2** when switching on. This will restore all settings to factory default status; i.e. all connection data is deleted. Or, alternatively, it may be possible to remedy certain connection problems by initiating a limited reset; to do this, press key **F1** when switching on; this merely deactivates the connections. If this limited reset is used, connections must be reactivated - if possible from top to bottom.

6.4 Display and operation of the CPU

The Bluetooth CPU incorporates a graphics display (3) and a keypad (4) for the purposes of configuring the device and operating all links. These are listed in the main menu together with each associated status.

6.4.1 Function keys

The effect of pressing function keys **F1**, **F2** (4) and cursor keys **◀**, **▶**, **▲**, **▼** may vary from menu to menu. The particular function is indicated as an abbreviation in the bottom line of the display (softkeys).

In the instructions and documentation these softkey abbreviations are shown in angle brackets.

e.g.

To access the menu selection screen

To open the functions menu

To switch display illumination ON / OFF

To switch the device OFF

To select the function press

The symbol for function selection lights up in the middle of the softkey bar

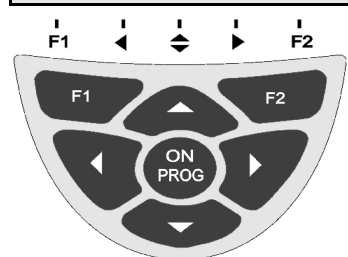
The function currently selected is highlighted in inverse font

Depending on the function the keys are assigned an abbreviation

To activate / deactivate a connection

To cancel the function

All Connections:		S✓
1:	A00234 ZA1719-BTXS	✓
2:	A00235 2590 Hall 17	✓
3:	-----	
4:	A00237 -----	\$
5:	-----	
6:	-----	
MENU		*ON



<MENU>

PROG or ▶

<*ON> , <*OFF>

ON press and hold down key

PROG , ▲ or ▼ ...

<F> select the function

A01234

<ON> , <OFF>

<ESC>

6.4.2 Entering data

If a programmable function is selected you can clear or reprogram the current value directly. (6.4.1)

To program press

You should now be in programming mode

The cursor, below the first input position, blinks

To clear the programmed values press

To increment the selected digit press

To decrement the selected digit press

To select the next position press

The cursor, now below the second digit, blinks

To move back to the previous digit press

Each position is programmed like the first

To save and exit press

To cancel without saving press

PROG

<P> (in the middle of the softkey bar)

A00000

<CLR>

▲ ...

▼ ...

▶

A00234

◀

▲ / **▼** ..., **▶** ...

PROG

<ESC>

6.5 Menus

Bluetooth links can be managed via the main menu item "All connections". In the menu selection screen the menu items "Connection configuration" and "Device configuration" can be selected (s. 6.5.2).

6.5.1 All connections

The main menu lists all programmed links each with its associated serial number and PIN code. While the system is searching for a link, letter "S" appears in the first line on the right. For all links found the system displays the type or name, and the connection status.

```

All connections          $
1: A00234 ZA1719-BTXS   ✓
2: A00235 2590 Hall 17  ✓
3: -----
4: A00237 -----        $
5: -----
6: -----
MENU  V      *ON
    
```

Configuring connections

Programming

By pressing keys **PROG** , **▲** / **▼** the PIN codes for each link can be selected and, if required also programmed. The PIN code can be found on the stick-on label attached to the slave module you wish to use to establish the link.

```

All connections          $
1: A00234 ZA1719-BTXS   ✓
2: A00235 2590 Hall 17  ✓
3: -----
4: A00237 -----        $
5: -----
6: -----
OFF  ESC  F  ▶  PAIR
    
```

Direct pairing

The quickest and most reliable way to append a slave module to the list of links is to plug it in briefly at socket A1 on the CPU. When **PROG**, **▲** / **▼** are pressed the associated link will be selected automatically.

When softkey **<PAIR>** is actuated the CPU programs the PIN code and hardware address of the connected slave module to this connection channel (PIN code flashes).



Old Bluetooth modules ZA 1709-BT1 and -BT2 cannot be paired automatically because they have no integrated microcontroller. Nor can they be programmed and cannot therefore output a name but only the type designation s. 6.5.3.

Activation

To activate a link press

<ON> 2:A00235 2590 Hall 17

To deactivate a link press

<OFF> 2:A00235

Up to a total of 7 links can be preconfigured.

Putting a link into service

To put a link into service the slave module is plugged in at socket A1 on the appropriate measuring instrument and this is switched on.

The CPU then searches automatically for the slave module on the basis of the PIN code entered and, if applicable, the hardware address assigned.

The following states can be observed :

1. Searching for a link

On the slave module two LEDs indicate the current status

For the duration of this search the following information for all new links appears in the first line of the CPU display :

Display on slave module:

Green LED lights up continuously.
Yellow LED flashes.

Display on CPU:

\$ Search (flashing)

2. Preparing a link

When exchanging PIN codes and hardware addresses the following appears in the status field

P Pairing

3. Establishing a link

The partner data thus found is registered.

C Connect

4. Putting a link into service (connected)

If all slaves are connected, the names or type designations are displayed. After this and in the first line the following lights up:

✓ OK

Display on slave module:

Green LED lights up continuously.
Yellow LED lights up continuously

5. Link not established

If the first attempt to establish a link (pairing) fails - because of a slave being not ready-to-operate or an operating range being exceeded, the following appears :

F Failure

Once the error has been remedied, the CPU must be switched OFF and then switched ON again



In so doing please note that inside buildings interior walls or other similar obstacles may cause the operating range to drop sharply.

Link interrupted

A wireless link may be disturbed or interrupted by a variety of events, e.g. power failure, radio interference, an operating range being exceeded, etc. These states are displayed as follows :

After about 10 seconds the search for the link is started again; and the "S" symbol reappears in the first line.

Display on CPU:

\$ Search (flashing)

6.5.2 Menu selection screen

To obtain a detailed display of all links and device configuration special menus are available. These can be accessed via the menu selection screen.

```
Bluetooth-CPU ZA2719 V6.01
PIN-Code:      A80931
All connections ►
Connection configuration
Device configuration

F ► *ON
```

To access the menus selection screen press

To select a menu press

```
<MENU>
▲ / ▼ , ►
```

6.5.3 Connection configuration

In the menu 'Connection configuration' the link parameters are displayed in detail. This display also shows the type designation of the slave and the hardware address assigned. In the 'Name' function the link can be given a name; this can be up to 16 digits long (e.g. device type and location of slave module)(s. 6.4.2).

```
Connection: 1
Pincode:     A00234
activ:       ✓
Slave :      ZA1719-BTX U1.2
Address :    123456789012
Name:        2590 Hall 17
state:       connected
MENU V *ON
```

6.5.4 Device configuration

In the menu 'Device configuration' certain basic settings for the CPU can be made, namely the baud rate for the serial interface to the control device, the menu language, and the display illumination mode. This display also shows the

```
* DEVICECONFIGURATION *
Baud rate: 9600 Bd
Search duration: 06 Sec
Language: Deutsch
Display: ✓ duration: 20sec
Contrast: 50 %
UBat: 4.5 V
MENU *ON
```

supply voltage '**UBat**'.

6.5.4.1 Baud rate, data format

On leaving the factory the baud rate for all interface modules is programmed to 9600 baud. To avoid unnecessary problems when networking several devices together the baud rate should not be altered; instead, the computer should be set to match. However, it is possible in the '**Baud rate**' function to enter a value 1200, 2400, 4800, 9600 baud or 57.6, 115.2 kbaud. To do so the appropriate data cable must be plugged in at the correct socket.

USB cable ZA1919-DKU5 or RS422 connector ZA5099-FSV (each with integrated power supply) must be plugged in at the DC socket; all other data cables and slave modules must be plugged in at socket A1.

Setting the baud rate (s. 6.4.2) in the function: **Baud rate: 9600 bd**

Data format: 8 data bits, 1 stop bit, no parity (cannot be changed)



Theoretically the baud rate in Bluetooth slaves may differ from that set for the CPU - on condition that they are not further networked with a device link.

6.5.4.2 Search duration

In the search for the correct slaves - from among dozens of Bluetooth devices (cellphones, PDAs, MP3 players, mouse / pointer devices, keyboards, etc.) - the function 'Search duration' may provide useful assistance. If the Bluetooth environment is particularly wide-ranging and pairing between slaves and the CPU proves impossible, the search duration should be prolonged.

6.5.4.3 Language

As menu language the user can choose between

'Deutsch' / 'English' / 'Français'; (other languages are available on request).

The softkeys are international; these cannot be changed.

Selecting the function Language :

Language: English

To change the language :

<SET>

6.5.4.4 Display illumination and contrast

The display can be illuminated but this consumes more power. In battery mode therefore the illumination switches OFF automatically if no key is touched for a certain settable period of time.

To switch display illumination ON press

<# ON>

Illumination ✓

To switch display illumination OFF

<# OFF>

Illumination: -

To enter the illumination period press

<SET>

Duration: 20 sec

To switch illumination ON permanently press

Duration: - -

To switch ON again without this function press

ON or **◀**

To set the contrast (5 to 100 %) press

<-> or **<+>**

Contrast: 50%

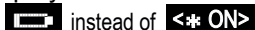
6.5.4.5 Battery voltage

To view current operating voltage:

UBat: 4.5 V

6. Operating with the Bluetooth device CPU

As soon as battery voltage drops below 3.5 V display illumination is switched OFF automatically:



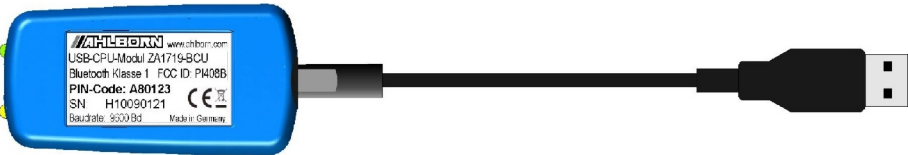
As soon as battery voltage drops below 3.0 V the device itself is switched OFF automatically.

7. OPERATING WITH BLUETOOTH CPU MODULES

There is a convenient alternative to the **PC link** with device CPU, namely the combination of USB-CPU module with ALMEMO® slave module. To network ALMEMO® devices together a **device link** is needed; this comprises an ALMEMO® CPU module and an ALMEMO® slave module. Each of these two preconfigured links can be expanded to up to 7 slaves.

7.1 PC link with USB-CPU module

PC link ZA1719-BPVU, comprising USB-CPU module ZA1719-BCU and ALMEMO® slave module ZA1719-BT1XS, is already paired; apart from installing the USB driver it requires no further configuration steps; (see enclosed instructions).



The USB-CPU module is connected at a USB socket on the computer and the ALMEMO® slave module is connected at socket A1 on an ALMEMO® measuring instrument; the link is established automatically and is ready for use as soon as the yellow LEDs on both sides light up continuously. The measuring instrument can now be accessed by the computer via its device address and the correct baud rate (default 9600 baud).

Power to the USB module is supplied via the USB interface; power to the slave module is supplied via the ALMEMO® device.

7.2 Device link with ALMEMO® CPU module

To implement a wireless link between two ALMEMO® devices a device link ZA1719-BNV is needed; this comprises an ALMEMO® CPU module ZA1719-BC and an ALMEMO® slave module ZA1719-BT1XS.

The Bluetooth modules are already paired and are used like a network channel; the CPU module is connected at socket A2 on the first measuring instrument (as seen from the PC) and the slave module is connected at socket A1 on the second measuring instrument. Since such modules can also receive their power supply from the devices, these should wherever possible be supplied from external sources (e.g. using mains adapters) in order to ensure uninterrupted operation. When the devices are switched ON the link is established automatically and is ready for use as soon as the yellow LEDs on both sides light up continuously. Device links can be easily cascaded without any further configuration steps required; this extends operating ranges several times over. However when measured data is scanned by the WinControl software attention should be paid not only to the correct baud rate setting (default 9600 baud) and correct device addressing but also to longer delays; this is because commands and responses cannot be transmitted from device to device simultaneously - only consecutively.

7.3 Expanding with ALMEMO® slave modules

All CPU modules are able to establish not only the first link with the paired slave but also six more links via additional ALMEMO® slave modules. Since this cannot be managed via the keypad and display (as is the case with the device CPU), the AMR-Control software is required. In the main menu select 'Bluetooth module links'.

Verbindungen									
Datei Ansicht									
BluetoothCPU									
Slaves									
BluetoothCPU	Suchzeit	Aktiv	Pin	Hardwareadresse	Typ	Name	Version	Gefundene	Mögliche
CPU1	6s	Aktiv	A80033	00:12:F3:0D:9D:8F		Bluetooth-CPU	6.B0	7	3
Verbindungen	...	Aktiv	Pin	Hardwareadresse	Typ	Name	Version	Modus	Leistung
Slave1		Aktiv	A00821	00:80:98:E9:12:FB	ZA1719-BT1XS	Slave 821	1.3	Verbunden	100
Slave2		Aktiv	A00824	00:80:98:E9:12:C6	ZA1719-BT1XS	BT-Slave824	3.3	Verbunden	100
Slave3		Passiv	A00894						
Slave4		Passiv	A-----						
Slave5		Passiv	A-----						
Slave6		Passiv	A-----						
Slave7		Passiv	A-----						
BluetoothCPU	Suchzeit	Aktiv	Pin	Hardwareadresse	Typ	Name	Version	Gefundene	Mögliche
CPU2		Passiv							
CPU hinzufügen									
Liste aktualisieren									
Liste zyklisch aktualisieren									
Aktualisierung stoppen									
Schließen									

First the PIN code for the CPU must be entered and then the list must be updated. All data for the CPU and for the paired slaves should now appear. To append further slaves these must be plugged in at socket A1 on the new ALMEMO® devices, their PIN codes must be entered in the table, and then activated (as far as possible from top to bottom). Basically configuration is the same as when putting the device CPU into service.

8. ALMEMO® BLUETOOTH SLAVE DEVICE 2790

The ALMEMO® slave modules discussed so far are ideally suitable for a wide variety of applications because they can be connected to virtually any ALMEMO® measuring instrument. However, ALMEMO® Bluetooth slave device MA2790-BT1XS is specially designed for use with a sensor with Bluetooth module already integrated. As an option this device can also be fitted with a temperature / humidity sensor or with an internal absolute pressure sensor for atmospheric pressure. This device can be used in place of any terminal with a slave module - except for the fact that no CPU modules can be connected for the purposes of further network expansion. It can be powered by batteries or via a mains unit. .



9. STARTING DATA EXCHANGE

Once all links are up and running properly data exchange can be started. As in any network the first step is to ensure that each slave device has a unique address assigned. (see Manual, Section 5.3)

Each link can be individually tested using the AMR-Control software by addressing from the terminal. (see Manual 6.2.1)

However, cyclic scanning in the network can only be performed using the Win-Control software. In a star-configured network all devices should be reached straight away. For network links involving several stages the switchover time must be prolonged by 200 ms per stage; this can be done in menu <Settings - Manage connections - Properties - Extended - ALMEMO® (2)>.

10. TROUBLE-SHOOTING

The Bluetooth modules can be configured and programmed in many different ways. It is possible, thanks to this technology, to network many different devices. However, wireless links and their propagation behavior are difficult to assess. Given this uncertainty the system may not always behave quite as expected. The cause of such unexpected behavior is only very rarely a device defect; usually the cause is incorrect operation by the user, an invalid setting, or temporary radio interference. In such event try to clear the problem or to at least pinpoint and isolate its cause with the aid of the following tests.

Error On initial start-up the CPU remains in search status and no link is detected. (All display “S” and / or the yellow slave LEDs continue flashing).

Remedy Are all slaves switched ON, are they plugged in at the correct socket A1, do the PIN codes match? Deactivate all links (F1 reset see 6.3.3). Switch the CPU OFF and then back ON again. Reactivate the slaves one after the other.

Error On initial start-up the CPU remains in search status; some links are established but not all; (some are marked with a tick (Ø) but others with an “F”; some yellow slave LEDs light up continuously but others continue flashing).

Remedy Are the missing slaves switched ON, are they plugged in at the correct socket A1, do the PIN codes match ? In the event of a problem affecting the operating range, try moving the slave nearer or try using a cable and re-aligning. Once error has been remedied, switch the CPU OFF and then back ON again.

Error All links have been established - but not all names are found.

Remedy Activate the slave; then switch the CPU OFF and then back ON again.

Error All links have been properly established and all names have been found - but the software finds no or not all connected devices.

Remedy Check the COM port and the baud rate used by CPU and PC; ensure that all devices have been assigned unique addresses and that this address range has also been activated in the software.

If, after performing the above-listed checks and remedial steps, a device still fails to behave as described in the operating instructions, it must be returned to our factory in Holzkirchen, accompanied by a brief explanatory note, error description, and if available test printouts. (see 10.1) With the AMR-Control software you can print out screenshots showing the relevant programming and save and / or print out a comprehensive "Function test" in the device list or terminal mode.

10.1 Your contact partner

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11. DECLARATION OF CONFORMITY

Ahlborn Mess- und Regelungstechnik GmbH declares herewith that Bluetooth CPU ZA-2719-BC, Bluetooth modules ZA-1719-BCU, ZA-1719-BC, and ZA-1719-BT1XS, and Bluetooth slave device MA-2790-BT1XS all carry the CE label and comply with the basic requirements of EU directives relating to low voltage and to electromagnetic compatibility (EMC) (89/336/EWG).

The following standards have been applied in evaluating these products :

Safety / security	EN 61010-1: 2001
EMC:	EN 61326: 2006



If a product is modified in any manner not agreed with us in advance, this declaration becomes void.

**Even the greatest possible care cannot exclude the possibility of inaccuracies.
We reserve the right to make technical changes without advance notice.**

12. ANNEX

12.1 Technical data

Wireless standard

Protocol:	Bluetooth 2.0, class 1, output 17 dBm
Operating range	SPP (sequence packet protocol) (128-bit encryption) approx. 300 meters free field, in buildings much less
Number of CPU connections	(maximum 7)
ALMEMO® data rate	1200 baud up to 115.2 kbaud

Bluetooth module ZA-1719-BX

Power supply	Via ALMEMO® device
Current consumption (at 9 V)	CPU approx. 20 mA ; Slave approx. 35 mA
Module housing	(LxWxH) 61 x 30 x 12 mm; ABS PC GF (-20 to +70 °C)

Bluetooth CPU ZA2719-BC

Power supply	USB-PC cable ZA1919DKU5 or mains adapter ZA1312NA8 1 V, 1 A or batteries (3 AA batteries)
Current consumption (at 5 V)	Standard approx. 30 to 40 mA with illumination approx. 60 to 70 mA
Display	Graphics display 128 x 64 (55 x 30 mm) Illumination 2 white LEDs
Keypad	7 silicone keys (of which 4 softkeys)
Housing	(LxWxH) 127 x 83 x 42 mm ABS (acrylonitrile butadiene styrene)
Weight	approx. 290 g
Suitable conditions	
Operating temperature	-10 to +50 °C ; Storage temperature -20 to +60 °C
Ambient atmospheric humidity	10 to 90 % RH (non-condensing)

12.2 Product overview

	Order-No.
ALMEMO® Bluetooth PC link comprising Device CPU and ALMEMO® slave module, paired, and USB data cable with power supply	ZA2719BPVU
ALMEMO® Bluetooth PC link, repeater / router same but with mains unit ZA1312NA8 (12 V / 1 A), no data cable	ZA2719BPVN
ALMEMO® Bluetooth PC link comprising USB-CPU module and ALMEMO® slave module, paired	ZA1719BPVU
ALMEMO® Bluetooth device link comprising ALMEMO® CPU module and ALMEMO® slave module, paired - All links ready-to-operate by pairing, no need for configuration	ZA1719BNV
ALMEMO® plug-in Bluetooth slave module Class 1PA	ZA1719BT1XS
ALMEMO® plug-in Bluetooth connector Class 2 (20 meters, free field) - It may be possible to improve links involving Bluetooth modules by using a 1-meter cable and re-aligning.	ZA1709BT2 (on request)
ALMEMO® Bluetooth slave device 2790 1 measuring input, display Option RH Integrated digital temperature / humidity sensor Option AP Integrated digital atmospheric pressure sensor	MA2790BT1XS OA2790RHS OA2790APS
Accessories	
ALMEMO® USB data cable, electr. isolated, maximum 115.2 kbaud	ZA1919DKU
ALMEMO® Ethernet data cable, electr. isol., maximum 115.2 kbaud	ZA1945DK
ALMEMO® data supply connector with RS422 interface	ZA5099-FSV
Fixture for DIN rail mounting	ZB2490HS
Rubber guard, gray	ZB2490GS2

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12.4 Your contact partner

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