Riotronic ECO / B / BMS

4 104 671-Ed.01/2007.01 DDD

D Einbau- und Betriebsanleitung
GB Installation and operating instructions
F Notice de montage et de mise en service
NL Inbouw- en bedieningsvoorschriften
I Istruzioni di montaggio, uso e manutenzione

Fig.1:

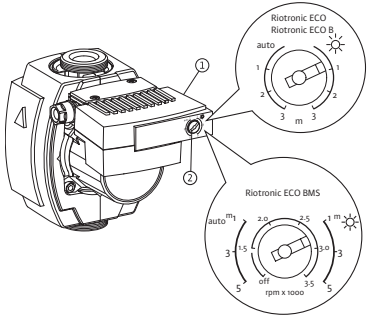


Fig.2a:

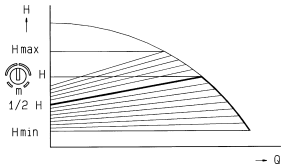


Fig.2b:

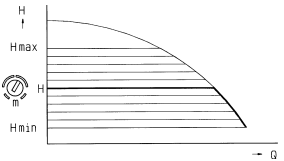


Fig.3:

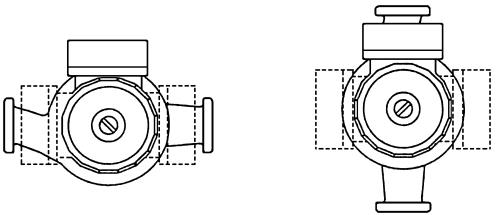


Fig.4:

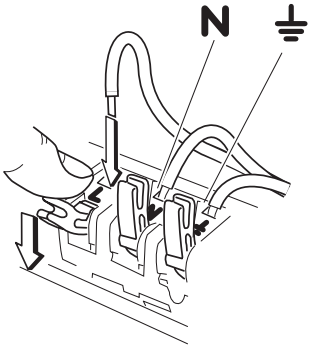


Fig.5:

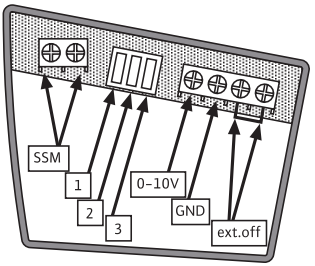
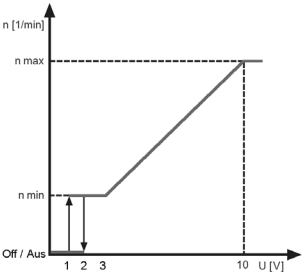


Fig.6:



1 Safety

Please read these instructions completely before installation. Failure to follow these instructions can result in serious injury or damage to the device. After installation, hand these instructions to the user. Keep the instructions in the vicinity of the pump for reference in case problems occur later. We do not accept any liability if these instructions are not followed.

Designation of information in the operating instructions

Symbols:

General danger symbol

Danger due to electrical voltage

NOTE: ...

Signal words:
DANGER!
Acutely dangerous situation.
Non-observance results in death or the most serious of injuries.

WARNING!
The user can suffer (serious) injuries. 'Warning' implies that (serious) injury to persons is probable if this information is disregarded.

CAUTION!
There is a risk of damaging the pump/unit. Caution implies that damage to the product is likely if the information is disregarded.

NOTE:
Useful information on handling the product. It draws attention to possible problems.

Personnel qualifications
The installation personnel must have the appropriate qualifications for this work.

Regulations
When installing, observe the accident prevention regulations, VDE 0370/part 1, and also other local regulations (e.g. IEC, VDE etc.).

Conversion
The pump must not be modified or converted.

2 Transport and interim storage

Check the pump/installation for damage in transit immediately on arrival.

Caution! Risk of damage to the pump
Danger of damage due to improper handling during transport and storage.

- **The pump must be protected against moisture and mechanical damage through impact.**
- **The pumps must not be exposed to any temperatures outside the range –10°C to +50°C.**

3 Use

The circulation pumps in the Riotronic ECO/B/BMS series are designed for warm water heating systems and similar systems with constantly changing flow volumes. An infinite adjustment of the pump output to the actual heat demand of the system is achieved with the electronic differential pressure control of this pump.

4 Product details

4.1 Technical data

KSB	Riotronic ECO...			
	25(30)-40	25(30)-60	25-60 BMS	25-60 B
Connected load	1 ~ 230 V +10%, -15%, 50 Hz +/-5%			
Water temperatures*	15 to 110°C			
Max. ambient temperature*	40°C			
Min. inlet pressure	0.3 bar / 1.0 bar			
At T_{max}	95°C / 110°C			

* Water temperature max. 110 °C at max. ambient temperature 25 °C
max. 95 °C at max. ambient temperature 40 °C

4.2 Fluids:

- Heating water according to VDI 2035,
- Water and water/glycol mixtures in mixing ratio up to 1:1. If glycol is added, the delivery data of the pump must be corrected according to the higher viscosity, depending on the percentage mixing ratio.
- KSB's approval must be obtained for use of other media.

4.3 Scope of delivery

- Circulation pump, complete
- Installation and operating instructions

5 Description and function

5.1 Description of the pump

Pump (Fig. 1)
The circulation pump is equipped with a wet-running motor. The circulation pumps in the Riotronic ECO / B / BMS series are designed for warm water heating systems and similar systems with constantly changing flow volumes. Because of the choice of materials and design, it is corrosion-resistant to all the constituents in the drinking water.
The pump housing is clad with an **insulating shell** for heat insulation.
An electronic control module (item 1) is located on the motor housing, which controls the differential pressure of the pump to an adjustable value between 1 and 3 m or 1 and 5 m. Therefore, the pump adapts continuously to a changing output demand of the installation, as occurs with the use of thermostatic valves in particular.

Control mode (Fig. 2 a, b):
Variable differential pressure (Δp-v): The differential pressure setpoint is increased linearly over the permitted volume flow range between ½H and H. The differential pressure generated by the pump is adjusted to the corresponding differential pressure setpoint (Fig. 2a).
Constant differential pressure (Δp-c): Only in the case of Riotronic ECO BMS: The differential pressure generated by the pump is kept constant over the permitted volume flow range at the differential pressure setpoint set on the control

knob (Fig. 2b).
The pump **automatically** follows the **night reduction** of the heating system through electronic evaluation of a temperature sensor. The pump then switches to minimum speed. When the heating boiler heats up again, the pump switches back to the pre-set setpoint stage. The automatic night reduction system can be switched off (Fig. 1, item 2):

auto → Night reduction on, control mode at setpoint and automatic temperature controlled night reduction (further energy saving).

☼ → Night reduction off, control mode at setpoint.

NOTE:
If there is insufficient supply to the heating/air conditioning system (heat output too low), check whether the night reduction is switched on. Switch off the night reduction if necessary.

Controls (Fig. 1):

- Control knob for differential pressure setpoint (Fig. 1, item 2)
- Selection ranges:
  - Riotronic ECO...-40 → H_{min} = 1 m, H_{max} = 3 m
  - Riotronic ECO...-60 → H_{min} = 1 m, H_{max} = 5 m

6 Installation and electrical connection

Installation and electrical connection must be carried out in accordance with local regulations and only by specialist personnel!

Warning! Danger of personal injury
Existing regulations for the prevention of accidents must be followed.

Warning! Danger of electric shock
Exposure to electrical currents must be eliminated.

The instructions of local or general regulations [e.g. IEC, VDE, etc.] and of the local utility companies must be observed.

6.1 Installation

- Only install the pump after all welding and soldering work has been completed and the pipe system has been flushed through.
- When installing in the supply leg of open systems, the safety supply must branch off upstream of the pump (DIN 4751).
- Install with the power switched off and the pump motor in the horizontal position. See fig. 3 for installation positions of the module. Other installation positions on request.
- Direction arrows on the pump housing and the insulation indicate he direction of flow.
- If the installation position of the module is changed, the motor housing has to be turned as follows:
  - Lever up the insulation with a screwdriver and remove,
  - Undo 2 hexagon socket screws,
  - Turn the motor housing, including control module,

Caution! Risk of damage to the pump
The seal may be damaged when the motor housing is turned. Replace the defective seal immediately
Seal size: ø86 x ø76 x 2.0 mm, EP

- Tighten socket head screws again,
- Fit the insulation again.

6.2 Electrical connections

Warning! Danger of electric shock
The electrical connection must be made by an electrician approved by the local utility company according to the local regulations in force [e.g. VDE regulations].

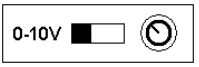
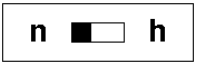
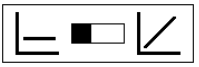
- Current type and voltage of the mains connection must correspond to the details on the name plate.

- Connect according to Fig. 4.
  - Mains connection: L, N, PE.
  - max. fuse protection: 10 A, slow.
  - The connection cable can be taken through the PG screwed connection right or left. The PG screwed connection and the dummy plug (PG 11) have to be changed over if necessary.
  - Earth the pump according to the regulations.
- The electrical connection must be made in accordance with VDE 0700/part 1 via a fixed connecting cable, which is provided with a plug device or an all-pole switch with a contact opening width of at least 3 mm.
- For drip protection and strain relief at the PG screwed connection, a connecting cable with an adequate outside diameter is necessary (e.g. H05W-F3G1.5 or AVMH-3x1.5).
- The connecting cable must be laid so that the pipe and or the pump and motor housing are not touched under any circumstances
- Riotronic ECO BMS: Make signal connections according to Fig. 5.

NOTE:
The pump must be switched off If no BMS functions are to be used, the PG screwed connections must be closed with the dummy plugs supplied.
The integrated, potential-free collective fault signal (SSM) of the Riotronic ECO BMS is available at the connection (Fig. 5, item 1) as an NC contact. SSM opens approx. 120 seconds after a fault occurs or after all the re-start attempts have lapsed and closes after the fault has been remedied or after switching off the mains.
Contact load:
- minimum permitted: 12 V DC, 10 mA,
- maximum permitted: 250 V AC, 1 A.

- **SSM:** Make the connection according to Fig. 5 and as described below.
  - Take the cable through the PG screwed connection (PG 9 with sole use of the SSM function specified for cables between 5–8 mm and a cable cross section of 0.5–1.5 mm^2)
  - Connect cable according to item 1
  - The LED lights up green in normal operation. The LED lights up red if the following faults occur:
    - Blockage
    - Motor defect
    - Internal short-circuit
- **External OFF:** Make connection according to Fig. 5 as described below:
  - Remove bridge!
  - Take the cable through the PG screwed connection (PG 9 with sole use of the External OFF function specified for cables between 5–8 mm and a cable cross-section of 0.5-1.0 mm^2)
  - Connect cable according to Fig. 5.
- **0–10V:** Make the connection according to Fig. 5 and as described below.
  - Take the cable through the PG screwed connection (PG 11 for cables between 6–10 mm and a cable cross-section of 0.5–1.5 mm^2).
  - Connect cable according to Fig. 5.
  - Control diagrams according to Fig. 6.

- **DIP switch:**

Function	Possible positions	Description
DIP 1: External / local		Pump control system: a) via 0–10 V interface b) manually or via red knob
DIP 2: Speed / head		10V controls: a) Speed b) Head
DIP 3: Control mode		Select between: a) Delta p-c control mode b) Delta p-v control mode

NOTE:
Disconnect the pump from the mains before operating the DIP switch.
Important switch positions:
Selecting the DIP switch 2 at position 'n' means that the pump is not controlling any more, because it is now running in the remote speed control mod (fixed speed).
Selecting the DIP switch 1 in position '0–10V' means that the pump can no longer be operated locally at the red button.

7 Commissioning

Warning! Risk of burns!
Depending on the pump or system operating conditions (fluid temperature), the entire pump can become very hot. Touching the pump can cause burns!

7.1 Filling and ventilation

Fill and bleed the system correctly. The pump rotor chamber normally bleeds automatically after a short time in operation.

However, if the rotor chamber has to be bled directly, proceed as follows:

- Switch off the pump,
- Close the shut-off device on the pressure side,

Warning! Risk of scalding!
Depending on the system pressure and temperature of the fluid, when the bleeder screw is opened, hot liquid or gaseous fluid may escape or shoot out at high pressure. There is a risk of scalding!

- Push through the perforation in the centre of the name plate and carefully open the bleeder screw,
- Protect electrical parts from any water that escapes,
- Carefully push back the pump shaft with a screwdriver several times.

Caution! Risk of damage to the pump
The pump may jam with the plug screw open depending on the operating pressure. Close the bleeder screw again before switching on.

- Close the bleeder screw again,
- Open the shut-off device again,
- Switch on the pump.

7.2 Selection of pump flow rate

- Select the control mode (see 6.1).
- Preselect the pump output (delivery head) depending on the need at the setting knob (Fig. 1, item 2).
- If the nominal delivery head is not known, we recommend starting with the setting 1.5 m.
- If the heating output is not adequate, gradually increase the set value.
- If the heating output is too high, or flow noises occur, gradually reduce the set value.
- Select automatic night reduction mode, i.e. switch on or off (see 5.1).

8 Maintenance

Maintenance and repair work should only be carried out by qualified specialist personnel!

Warning! Danger of electric shock
Prevent dangers through exposure to electrical currents.

- **For all maintenance and repair work, the pump must be switched off. It must not be possible to switch it on again without authorisation.**
- **In principle, damage to the connection cable must only be repaired by a qualified electrician.**

9 Faults, causes and remedies

Pump does not run with the power switched on:

- Check the mains fuses,
- Check the voltage at the pump (check name plate data),
- Pump blocked:
  - Switch off the pump,

Warning! Risk of scalding
Depending on the temperature of the fluid and system pressure, hot liquid or gaseous fluid may escape or shoot out at high pressure at the bleeder screw. There is a risk of scalding!

- Close shut-off devices upstream and downstream of the pump and allow the pump to cool down. Remove the bleeder screw. Check the movement of the pump by turning the slotted rotor shaft with a screwdriver and release.
- Switch on the pump.
- If the blockage does not correct itself automatically via the automatic release routine, see the manual procedure described above.

Pump makes noises

- Check the differential pressure setting and re-set.
- Heating power too low, ways to increase it:
  → Increase setpoint,
  → Switch off night reduction,
  To turn off the night reduction quickly (to check the setting), it is sufficient to turn the setting button backwards and forwards slightly.
- If there are cavitation noises, increase the system supply pressure within the permitted range.

If the operating fault cannot be correct, get in touch with qualified firms in the trade or your nearest KSB customer support service or agent.

We reserve the right to make changes.

D EG – Konformitätserklärung
GB EC – Declaration of conformity
F Déclaration de conformité CEE

Hiermit erklären wir, dass die Bauarten der Baureihe : **Riotronic ECO/B/BMS**
Herewith, we declare that this product:
Par le présent, nous déclarons que cet agrégat :

in der gelieferten Ausführung folgenden einschlägigen Bestimmungen entspricht:
in its delivered state complies with the following relevant provisions:
est conforme aux dispositions suivants dont il relève:

Elektromagnetische Verträglichkeit – Richtlinie **89/336/EWG**
Elektromagnetic compatability – directive i.d.F/ as amended/ avec les amendements suivants:
Compatibilité électromagnétique– directive 91/263/EWG
92/31/EWG
93/68/EWG

Niederspannungsrichtlinie **73/23/EWG**
Low voltage directive i.d.F/ as amended/ avec les amendements suivants :
Direction basse–tension 93/68/EWG

Angewendete harmonisierte Normen, insbesondere: **EN 55014–1–2**
Applied harmonized standards, in particular: **EN 60335–2–51,**
Normes harmonisées, notamment: **EN 61000–6–1,**
EN 61000–6–2,
EN 61000–6–3,
EN 61000–6–4.

Pegnitz, 1. 12. 2006

Siegfried Wendel
Produktmanager Pumpen Regenwassernutzung,
Heizung und Gebäudetechnik

KSB Aktiengesellschaft
Bahnhofplatz 1
D–91257 Pegnitz

NL **EG-verklaring van overeenstemming**

Hiermede verklaren wij dat dit aggregaat in de geleverde uitvoering voldoet aan de volgende bepalingen:

Elektromagnetische compatibiliteit 89/336/EEG als vervolg op 91/263/EEG, 92/31/EEG, 93/68/EEG

EG-laagspanningsrichtlijn 73/23/EEG als vervolg op 93/68/EEG

Gebruikte geharmoniseerde normen, in het bijzonder: **1)**

I **Dichiarazione di conformità CE**

Con la presente si dichiara che i presenti prodotti sono conformi alle seguenti disposizioni e direttive rilevanti:

Compatibilità elettromagnetica 89/336/CEE e seguenti modifiche 91/263/CEE, 92/31/CEE, 93/68/CEE

Direttiva bassa tensione 73/23/CEE e seguenti modifiche 93/68/CEE

Norme armonizzate applicate, in particolare: **1)**

E **Declaración de conformidad CE**

Por la presente declaramos la conformidad del producto en su estado de suministro con las disposiciones pertinentes siguientes:

Directiva sobre compatibilidad electromagnética 89/336/CEE modificada por 91/263/CEE, 92/31/CEE, 93/68/CEE

Directiva sobre equipos de baja tensión 73/23/CEE modificada por 93/68/CEE

Normas armonizadas adoptadas, especialmente: **1)**

P **Declaração de Conformidade CE**

Pela presente, declaramos que esta unidade no seu estado original, está conforme os seguintes requisitos:

Compatibilidade electromagnética 89/336/CEE com os aditamentos seguintes 91/263/CEE, 92/31/CEE, 93/68/CEE

Directiva de baixa voltagem 73/23/CEE com os aditamentos seguintes 93/68/CEE

Normas harmonizadas aplicadas, especialmente: **1)**

S **CE- försäkran**

Härmed förklarar vi att denna maskin i levererat utförande motsvarar följande tillämpliga bestämmelser:

EG–Elektromagnetisk kompatibilitet – riktlinje 89/336/EWG med följande ändringar 91/263/EWG, 92/31/EWG, 93/68/EWG

EG–Lågspänningsdirektiv 73/23/EWG med följande ändringar 93/68/EWG

Tillämpade harmoniserade normer, i synnerhet: **1)**

N **EU-Overensstemmelseserklæring**

Vi erklærer hermed at denne enheten i utførelse som levert er i overensstemmelse med følgende relevante bestemmelser:

EG–EMV–Elektromagnetisk kompatibilitet 89/336/EWG med senere tilføyelser: 91/263/EWG, 92/31/EWG, 93/68/EWG

EG–Lavspenningsdirektiv 73/23/EWG med senere tilføyelser: 93/68/EWG

Anvendte harmoniserte standarder, særlig: **1)**

FIN **CE-standardinmukaisuusseloste**

Ilmoitamme täten, että tämä laite vastaa seuraavia asiaankuuluvia määräyksiä:

Sähkömagneettinen soveltuvuus 89/336/EWG seuraavin täsmennyksin 91/263/EWG 92/31/EWG, 93/68/EWG

Matalajännite direktiivit: 73/23/EWG seuraavin täsmennyksin 93/68/EWG

Käytetyt yhteensovitetut standardit, erityisesti: **1)**

DK **EF-overensstemmelseserklæring**

Vi erklærer hermed, at denne enhed ved levering overholder følgende relevante bestemmelser:

Elektromagnetisk kompatibilitet: 89/336/EWG, følgende 91/263/EWG, 92/31/EWG, 93/68/EWG

Lavvolts-direktiv 73/23/EWG følgende 93/68/EWG

Anvendte harmoniserede standarder, særligt: **1)**

H

EK. Azonossági nyilatkozat

Ezennel kijelentjük,hogy az berendezés az alábbiaknak megfelel:

Elektromágneses zavarás/türés: 89/336/EWG és az azt kiváltó 91/263/EWG, 92/31/EWG, 93/68/EWG

Kisfeszültségü berendezések irány-Elve: 73/23/EWG és az azt kiváltó 93/68/EWG

Felhasznált harmonizált szabványok, különösen: **1)**

CZ

Prohlášení o shodě EU

Prohlašujeme tímto, že tento agregát v dodaném provedení odpovídá následujícím příslušným ustanovením:

Směrnicím EU–EMV 89/336/EWG ve sledu 91/263/EWG, 92/31/EWG, 93/68/EWG

Směrnicím EU–nízké napětí 73/23/EWG ve sledu 93/68/EWG

Použité harmonizační normy, zejména: **1)**

PL

Deklaracja Zgodności CE

Niniejszym deklarujemy z pełną odpowiedzialnoscią że dostarczony wyrób jest zgdony z następującymi dokumentami:

Odpowiedniość elektromagnetyczna 89/336/EWG ze zmianą 91/263/EWG, 92/31/EWG, 93/68/EWG

Normie niskich napięć 73/23/EWG ze zmianą 93/68/EWG

Wyroby są zgodne ze szczegółowymi normami zharmonizowanymi: **1)**

RUS

Деклация о соответствии Европейским нормам

Настоящим документом заявляем, что данный агрегат в его объеме поставки соответствует следующим нормативным документам:

Электромагнитная устойчивость 89/336/EWG с поправками 91/263/EWG, 92/31/EWG, 93/68/EWG

Директивы по низковольтному напряжению 73/23/EWG с поправками 93/68/EWG

Используемые согласованные стандарты и нормы, в частности : **1)**

GR

Δήλωση προσαρ ογής της Ε.Ε.

Δηλώνου ε ότι το προϊόν αυτό σ' αυτή την κατάσταση παράδοσης ικανοποιεί τις ακόλουθες διατάξεις :

Ηλεκτρο αγνητική συ βατότητα EG-89/336/EWG
όπως τροποποιήθηκε 91/263/EWG 92/31/EWG, 93/68/EWG

Οδηγία χα ηλής τάσης EG–73/23/EWG όπως τροποποιήθηκε 93/68/EWG

Εναρ ονισ ένα χρησι οποιού ενα πρότυπα, ιδιαίτερα: **1)**

TR

EC Uygunluk Teyid Belgesi

Bu cihazın teslim edildiği ºekliyle aºağıdaki standartlara uygun olduğunu teyid ederiz:

Elektromanyetik Uyumluluk 89/336/EWG ve takip eden, 91/263/EWG, 92/31/EWG, 93/68/EWG

Alçak gerilim direktifi 73/23/EWG ve takip eden, 93/68/EWG

Kısmen kullanılan standartlar: **1)**

1) **EN 55014-1-2 EN 61000-6-2, EN 60335-2-51, EN 61000-6-3, EN 61000-6-1, EN 61000-6-4.**

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