Alarmschaltgerät AS 5
Alarm Switchgear AS 5
Coffret d’alarme AS 5
Alarmschakelkasten AS 5

Betriebsanleitung

Operating Instructions
These operating instructions contain fundamental information and precautionary notes. Please read the manual thoroughly prior to installation of unit, connection to power supply and commissioning. It is imperative to comply with all other operating instructions referring to components of this unit.

Notice de service
Cette notice de service contient toutes les informations et directives fondamentales. Avant toute mise en place, raccordement électrique et mise en service, lire impérativement ce document. De plus, les notices de service concernant les composants de ce coffret d’alarme sont également à observer.

Bedrijfsvoorschrift
Dit bedrijfsvoorschrift bevat belangrijke aanwijzingen en waarschuwingen. Wij vragen u dringend dit bedrijfsvoorschrift voor het inbouwen, de elektrische aansluiting en het in bedrijf nemen te lezen. Er dient bovendien rekening te worden gehouden met de overige bedrijfsvoorschriften, welke betrekking hebben op de componenten van dit aggregaat.
Konformitätserklärung / EC Declaration of Conformity / Déclaration de conformité / Verklaring van overeenstemming

Hiermit erklären wir, dass das elektrische/elektronische Produkt
Herewith we declare that the alarm switchgear
Par la présente, nous déclarons que le dispositif électrique/électronique
Hiermee verklaren wij, dat het elektrische/elektronische product
As 5

folgenden einschlägigen Bestimmungen in der jeweils gültigen Fassung entspricht:
complies with the following provisions as applicable in their current version:
correspondent aux dispositions pertinentes suivantes dans la version respective en vigueur :
voldoet aan de huidige versie van de volgende bepalingen:

EC electromagnetic compatibility directive 89/336/EEC, Annex I
and EC directive on low-voltage equipment 73/23/EEC, Annex III B
Richtlinie 89/336/EWG "Elektromagnetische Verträglichkeit", Anhang I
und der Richtlinie 73/23/EWG "Niederspannungsrichtlinie", Anhang III B
Directive "CE" relative à la compatibilité électromagnétique 89/336/CEE, Annexe I
Directive "CE" relative à la basse tension 73/23/CEE, annexe III B
de richtlijn 89/336/EEG "Elektromagnetische compatibiliteit", Bijlage I
en de "laagspanningsrichtlijn" 73/23/EEG, Bijlage III B

Angewendete harmonisierte Normen, insbesondere
Applied harmonised standards, in particular
Normes harmonisées utilisées, notamment
Gebruikte geharmoniseerde normen, in het bijzonder
EN 50 081-1, EN 50 081-2, EN 50 082-1, EN 50 082-2, EN 60 439-1

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26.06.2006
<table>
<thead>
<tr>
<th>Inhaltsverzeichnis</th>
<th>Seite</th>
<th>Sommaire</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Allgemeines</td>
<td>4</td>
<td>Généralités</td>
<td>14</td>
</tr>
<tr>
<td>2 Sicherheit</td>
<td>4</td>
<td>Sécurité</td>
<td>14</td>
</tr>
<tr>
<td>3 Transport und Zwischenlagerung</td>
<td>5</td>
<td>Transport et stockage temporaire</td>
<td>15</td>
</tr>
<tr>
<td>4 Beschreibung</td>
<td>5</td>
<td>Description du produit</td>
<td>15</td>
</tr>
<tr>
<td>5 Einbau</td>
<td>5</td>
<td>Installation</td>
<td>15</td>
</tr>
<tr>
<td>6 Inbetriebnahme</td>
<td>6</td>
<td>Mise en service</td>
<td>16</td>
</tr>
<tr>
<td>7 Wechsel des Akkumulators</td>
<td>6</td>
<td>Remplacement de l'accu</td>
<td>16</td>
</tr>
<tr>
<td>8 Wartung</td>
<td>7</td>
<td>Maintenance</td>
<td>17</td>
</tr>
<tr>
<td>9 Störungen/Ursache und Beseitigung</td>
<td>7</td>
<td>Incidents / Causes et remèdes</td>
<td>17</td>
</tr>
<tr>
<td>10 Anschlussplan</td>
<td>8</td>
<td>Schéma électrique</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contents</th>
<th>Page</th>
<th>INHOUDSOPGAVE</th>
<th>Pag.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 General</td>
<td>9</td>
<td>1 Algemeen</td>
<td>19</td>
</tr>
<tr>
<td>2 Safety</td>
<td>9</td>
<td>2 Veiligheid</td>
<td>19</td>
</tr>
<tr>
<td>3 Transport and Interim Storage</td>
<td>10</td>
<td>3 Transport en tussentijdse opslag</td>
<td>20</td>
</tr>
<tr>
<td>4 Description of the Product</td>
<td>10</td>
<td>4 Beschrijving</td>
<td>20</td>
</tr>
<tr>
<td>5 Installation at Site</td>
<td>10</td>
<td>5 Inbouw</td>
<td>20</td>
</tr>
<tr>
<td>6 Commissioning / Start-up</td>
<td>11</td>
<td>6 In bedrijf nemen</td>
<td>21</td>
</tr>
<tr>
<td>7 Changing the Accumulator</td>
<td>11</td>
<td>7 Wisselen van de accumulator</td>
<td>21</td>
</tr>
<tr>
<td>8 Maintenance</td>
<td>11</td>
<td>8 Onderhoud</td>
<td>22</td>
</tr>
<tr>
<td>9 Trouble-shooting</td>
<td>12</td>
<td>9 Storingen/Oorzaak en opheffen</td>
<td>22</td>
</tr>
<tr>
<td>10 Wiring Diagram</td>
<td>13</td>
<td>10 Aansluitschema</td>
<td>23</td>
</tr>
</tbody>
</table>
1 General
This unit has been developed in accordance with state-of-the-art technology; it is manufactured with utmost care and subject to continuous quality control. These operating instructions are intended to facilitate familiarisation with the unit and its designated use. The manual contains important information for reliable, proper and efficient operation. Compliance with the operating instructions is of vital importance to ensure reliability and a long service life of the unit and to avoid any risks. These operating instructions do not take into account local regulations; the operator must ensure that such regulations are strictly observed by all, including the personnel called in for installation. This unit must not be operated beyond the limit values specified in the technical documentation for operating voltage, rated mains frequency, ambient temperature, switching capacity. Make sure that operation is in accordance with the instructions laid down in this manual or in the contract documentation.

Please indicate the type series in all queries and repeat orders.

If you need any additional information or instructions exceeding the scope of this manual or in case of damage please contact KSB’s nearest customer service centre.

2 Safety
These operating instructions contain fundamental information which must be complied with during installation, operation and maintenance. Therefore this operating manual must be read and understood both by the installing personnel and the responsible trained personnel / operators prior to installation and commissioning, and it must always be kept close to the location of operation of the unit for easy access. Not only must the general safety instructions laid down in this chapter on "Safety" be complied with, but also the safety instructions outlined under specific headings.

2.1 Marking of Instructions in the Manual
The safety instructions contained in this manual whose non-observance might cause hazards to persons are specially marked with the general hazard sign, namely safety sign in accordance with ISO 7000 – 0434.

The electrical danger warning sign is safety sign in accordance with IEC 417 – 5036.

The word Caution is used to introduce safety instructions whose non-observance may lead to damage to the unit and its functions.

2.2 Personnel Qualification and Training
All personnel involved in the operation, maintenance, inspection and installation of the unit must be fully qualified to carry out the work involved. Personnel responsibilities, competence and supervision must be clearly defined by the operator. If the personnel in question is not already in possession of the requisite know-how, appropriate training and instruction must be provided. If required, the operator may commission the manufacturer / supplier to take care of such training. In addition, the operator is responsible for ensuring that the contents of the operating instructions are fully understood by the responsible personnel.

2.3 Non-compliance with Safety Instructions
Non-compliance with safety instructions can jeopardise the safety of personnel, the environment and the unit itself. Non-compliance with these safety instructions will also lead to forfeiture of any and all rights to claims for damages. In particular, non-compliance can, for example, result in:
- failure of important unit functions
- failure of prescribed monitoring practices
- hazard to persons by electrical, mechanical and chemical effects.

2.4 Safety Awareness
It is imperative to comply with the safety instructions contained in this manual, the relevant national health and safety regulations and the operator’s own internal work, operation and safety regulations.

2.5 Safety Instructions for the Operator / User
Electrical hazards must be eliminated. (In this respect refer to the relevant safety regulations applicable to different countries and/or the local energy supply companies.)

2.6 Safety Instructions for Maintenance, Inspection and Installation Work
The operator is responsible for ensuring that all maintenance, inspection and installation work be performed by authorised, qualified specialist personnel who are thoroughly familiar with the manual. Work on the unit must be carried out only after it has been disconnected from the power supply. Immediately following completion of the work, all safety-relevant and protective devices must be re-installed and/or re-activated. Please observe all instructions set out in the chapter on "Commissioning" before returning the unit to service.
2.7 Unauthorised Modification and Manufacture of Spare Parts
Modifications or alterations of the unit are only permitted after consultation with the manufacturer. Original spare parts and accessories authorised by the manufacturer ensure safety. The use of other parts can invalidate any liability of the manufacturer for consequential damage.

2.8 Unauthorised Modes of Operation
The warranty relating to the operating reliability and safety of the unit supplied is only valid if it is used in accordance with its designated use as described in the following sections. The limits stated in the documentation must not be exceeded under any circumstances.

3 Transport and Interim Storage
During transport please avoid impacts on the AS alarm switchgear and make sure that it cannot drop down. The alarm switchgear must be stored in a dry, frost-proof room not exposed to direct sunlight.

4 Description of the Product
4.1 Technical Specification
The switchgear can be used for all pump sets equipped with an alarm contact for which alarm signalling is required.

4.2 Designation

Alarm Switchgear Code number

4.3 Design Details
The AS 5 alarm switchgear is designed to signal a limit value in response to a contact mechanism (e.g. a float switch). Signalling is done by means of a flashing light, a signalling unit (for ex., an alarm horn 12 V / 1.2 W - accessories) and, additionally, by means of a volt-free relay contact (for transmitting the alarm signal to a control room).

To deactivate the alarm signal, the acknowledgement key has to be pressed. The flashing light will not go out until the cause of the alarm has been eliminated. A green LED shows that the unit is mains-operated. AS 5 is equipped with a maintenance-free, self-charging power pack (lead-gel accumulator) for 10 hours’ operation in case of a mains failure.

4.4 Technical Data
Rated operating voltages to IEC 38
Mains voltage 1/N AC 230 V / 45-60 Hz
Mains type TN-C-S mains
Control voltage, auxiliary supply 12 V DC

Insulation
Nominal circuit insulation voltage
1st active-current circuit, 2nd active-current circuit and mains supply 630 V AC.

The first active-current circuit (alarm horn) is internally wired to the connection for the contactor.

Power input 5 VA
Standby power supply
Lead-gel accumulator 12 V
Standby operation in the event of a mains failure: 6 months
Duration of alarm in the event of a mains failure: 10 hours
Service life of the accumulator on the mains: 4-5 years (at an ambient temperature of 20 °C)

We recommend to replace the accumulator every 4 to 5 years!

Active-current circuits
1. Connection for alarm horn 12 V DC / 1.2 VA (100 mA)
2. Volt-free relay contact;
   switching current max. 4 A AC 1, switching voltage max. 250 V AC 1, making and breaking capacity max. 500 VA AC 1.

Safety class II to VDE 0106
Ambient operating temperature 0 ... 40 °C

Housing
Insulating housing for wall mounting
Colour RAL 7035
Mounting position: as required
Enclosure IP 41
Dimensions HxWxD 185 x 213 x 95 mm

Weight 1850 g

Supply terminals
Screw-type terminals with cable lugs

Terminal connections
- Mains
- Contactors: input for NO contact element, 12 V auxiliary supply available
- Connection for signalling unit: alarm horn 12 V DC / 1.2 W
- Volt-free relay contact: NO contact / connection to common potential / NC contact

Indicator elements
- Red flashing LED indicating "ALARM"
- Green LED indicating "MAINS"

Operating elements
ACKNOWLEDGEMENT key

5 Installation at Site
5.1 Safety Regulations
Your electrical installation must be in accordance with VDE 0100/IEC 364 standards; for example, the sockets must have earthing terminals.
The operation and use of the alarm switchgear is governed by EN 50 110 standards.
Caution! Disconnect all components (pump and alarm switchgear) from the electric mains prior to each assembly and disassembly or other work on the equipment.
Make sure that all electrical equipment, such as socket and alarm switchgear, are installed in a dry, flood-proof location.
5.2 Installing a Fuse

Only replace a defective fuse by the same type of fuse!

Insert the quick-acting microfuse 1A of the emergency power supply in the fuse holder on the right-hand side of the supply terminals.

Remove the fuse when the unit is taken out of service to minimise the self-discharge action of the accumulator.

**Note:** You will find the slow-acting microfuse 0.315 A for the accumulator charging electronics in the terminal compartment on the left.

5.3 Assembly

- Clear the required number of cable entries in the front panel or at the bottom of the housing.
- Insert cable bushings and cut open.
- Fasten housing by means of three screws (drilled holes in the lower housing part).
- Lead cables into the housing through the cable entries.
- Wire up in accordance with the relevant wiring diagram.

5.4 Connection to Power Supply

Connection to the power supply must be effected by a trained electrician.

Only have KSB alarm transmitters, float switches or alarm contactors M 1 connected.

After having completed this work, check the devices for proper functioning.

5.5 Wiring

Only use cables with a phase-to-phase insulation voltage of at least 500 V AC! Cable cross-section: 0.75 - 2.5 mm² (single-conductor or litz wire)

1. Connect the transmitter's connecting leads to the transmitter connection terminals.
2. Connect the signalling unit’s connecting leads for the alarm horn etc. (12 V DC, max. 1.2 VA) to the alarm output terminals, observing the polarity, if necessary.
3. Connect the volt-free relay contacts to the supply lines of the signalling units or control room.
4. Connect the power supply cable (1/N 230 V AC / 50 Hz) to the mains terminals (sequence of PEN conductor and phase without significance). **Although it is not necessary for safe operation of the unit to connect the earthed conductor to the PE terminal, this can be done if a mains supply cable including an earthed conductor is used.**
5. Close the lid of the terminal compartment and screw it on.

The unit’s shock-hazard protection (safety class II) is only intact, if the lid is screwed on.

6. Wiring of the unit completed, put the mains plug into the socket.

- **Mains LED** (green)
- **Alarm LED** (red)
- **Acknowledgement key**

7 Commissioning / Start-up

- The service life and capacity of the accumulator (and, as a result, the alarm period in case of a mains failure) depend on the ambient temperature!
- The optimum ambient temperature ranges at about 20 °C.
- We, therefore, recommend to test the unit’s function once a year (point 3) to check the required minimum alarm period!
1. Connect the unit to the power supply by putting the plug into the socket; the green “Mains” LED lights up.
2. Close the transmitter contact by way of trial. The red “Alarm” LED flashes; a 12 V current is supplied to the “horn” output; the volt-free contacts “S W” close and “W O” open.
3. After interrupting the power supply (pull mains plug out of the socket), the green “Mains” LED goes out; the alarm status continues to be signalled.
4. By pressing the “Acknowledgement” key, signalling of the alarm status by means of the output and relay contacts is interrupted; the red “Alarm” LED continues to flash.
5. To stop the alarm signal, break the make output operation at the transmitter input.

7 Changing the Accumulator

- Only have the unit connected and serviced by authorised persons (trained electricians)!
- Always disconnect the unit from the power supply before removing the housing lid!
- It is recommended to replace the accumulator every 4 to 5 years!
1. Undo the screws in the front housing panel, remove front panel, replace accumulator, connect it to the terminals with the correct poles (red + / blue -) and insert with the valve openings and pole terminals facing upwards (see diagram on the next page).
2. Always replace the accumulator by an equivalent model by the same manufacturer. Please make sure that the old accumulator is disposed of as required by the relevant regulations.

8 Maintenance
The unit’s operating reliability is increased if the contactor is checked regularly for proper functioning. Please check from time to time that there are no deposits on the transmitter. If necessary, please clean.

9 Trouble-shooting
Disconnect the unit from the power supply.

<table>
<thead>
<tr>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm is not activated</td>
<td></td>
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<tr>
<td>Alarm is not deactivated</td>
<td></td>
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<tr>
<td>No voltage.</td>
<td>Check the electrical equipment.</td>
</tr>
<tr>
<td>Alarm contactor defective.</td>
<td>Carry out a contactor continuity check using</td>
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<td></td>
<td>an ohmmeter; if required, inform KSB Service.</td>
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<tr>
<td>Dirt, fibres or fluff block</td>
<td>Clean float and sensor tube.</td>
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<tr>
<td>the float.</td>
<td></td>
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<tr>
<td>Wrong working principle (NC</td>
<td>Turn float by 180°.</td>
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<td>function).</td>
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<tr>
<td>No alarm in case of mains</td>
<td>Accumulator defective.</td>
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<tr>
<td>failure.</td>
<td></td>
</tr>
<tr>
<td>The mains plug is not in</td>
<td>Put the mains plug into the socket.</td>
</tr>
<tr>
<td>the socket.</td>
<td></td>
</tr>
</tbody>
</table>
9.3 Wiring diagram for connecting M 1 alarm contactor with alarm switch gear types AS 5