Level Control Unit

LevelControl Basic 2

Type Series Booklet

BS

BC

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Type Series Booklet LevelControl Basic 2

Contents

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LevelControl Basic 2

BS BC

General description

Level-dependent pump control and monitoring unit with display for either 1 or 2 pumps.

LevelControl Basic 2 can be used for tank drainage and tank filling.[1].

The ATEX-compliant version of the control unit can be used for pumps in potentially explosive atmospheres. The control unit is installed outside the potentially explosive atmosphere.

Main applications

Fields of applications:

- Grey water
- Waste water
- Service water supply
- Waste water lifting units / pump stations

Applications:

- Draining of pits, shafts, etc.
- Dewatering
- Drainage
- Water extraction
- Fluid transport
- Disposal

Compatible pumps:

- Ama-Drainer
- Ama-Drainer-Box (LevelControl Basic 2 included in the scope of supply)
- MK
- Ama-Porter
- Amarex
- Amarex N
- Amarex KRT
- CK pump stations (LevelControl Basic 2 included in the scope of supply in some cases)
- mini-Compacta / Compacta (LevelControl Basic 2 included in the scope of supply)
- Sewatec / Sewabloc
- Etaline
- Etanorm / Etabloc
- Other pumps on request

Variants

LevelControl Basic 2 is available in 2 variants:

- Type Basic Compact (plastic housing)
- Type Basic Control Cabinet (sheet steel housing)

Type Basic Compact (BC)	
	Pump control and monitoring unit with display in compact housing for 1 or 2 pumps with power ratings of up to 4 kW each. Level detection performed using at least one float switch, an analog sensor 4-20 mA or an integrated pressure sensor (pneumatic or bubbler control up to 2 mwc[2]), for motors with DOL starting.

Type Basic Control Cabinet (BS)	
	Pump control and monitoring unit with display in steel housing for 1 or 2 pumps. Level detection performed using at least one float switch, an analog sensor 4-20 mA or an integrated pressure sensor (pneumatic or bubbler control) for motors with DOL starting or star-delta starting.

1 Using float switches, digital level switches or 4-20 mA analog sensors
2 For bubbler control in BC housing, option O1 (master switch in BC housing) cannot be used.

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Designation

Example: BC 2 400 D F N O 100

Designation key

Code	Description	
LevelControl	Type series	
BC	Type	
	BC	Basic Compact (plastic housing)
	BS	Basic control cabinet (sheet steel housing)
2	Number of pumps	
	1	Single-pump lifting unit
	2	Dual-pump lifting unit
400	Voltage, number of wires	
	230	230 V, 3-wire connection
	400	400 V, 4-wire connection / 5-wire connection
D	Starting method	
	D	DOL starting up to 4 kW[3)]
	S	Star-delta starting up to 22 kW[3)]
	W	Soft start
	X	3-wire connection capacitor motor 25 µF
	Y	3-wire connection capacitor motor 40 µF
	Z	3-wire connection capacitor motor 40 µF, start capacitor 66 µF
F	Sensors	
	F	Float switch
	P	Pneumatic level measurement 3.5 m
	M	Pneumatic level measurement 10.5 m
	L	Bubbler control 2 m
	H	Bubbler control 3 m
	U	Analog input 4 - 20 mA
	V	Voltage input 0.5 - 4.5 V
	D	Digital level switch
N	ATEX	
	N	Without ATEX functions
	E	With ATEX functions
O	Installation variants	
	O	Standard
	A	With rechargeable battery
	M	With motor protection switch (if not included in standard version)
	N	With rechargeable battery and motor protection switch (if not included in standard version)
	P	With PTC relay (if not included in standard version; standard for 5.5 kW and above)
	Q	With rechargeable battery and PTC relay (if not included in standard version; standard for 5.5 kW and above)
	R	Without PTC relay for > 4 kW versions (standard for 5.5 kW and above)
	S	Without PTC relay for > 4 kW versions (standard for 5.5 kW and above), with rechargeable battery
100	Nominal current	
	010	1,0 A
	016	1,6 A
	025	2,5 A
	040	4,0 A
	063	6,3 A
	100	10 A
	140	14 A
	180	18 A
	230	23 A
	250	25 A

3 Higher ratings on request.

Code	Description	
100	400	40 A
	630	63 A
	>63 A available on request	

Product benefits

- Ample connection space allows straightforward connection of pumps and sensors
- Reliability provided by detailed information on the display, including key measurement values and parameters as well as "in operation" and general fault indication per pump
- Comprehensive functionality for high system availability

Selection information

Lightning protection

- Electrical installations must be protected against overvoltage (compulsory since 14 December 2018) (see DIN VDE 0100-443 (IEC60364-4-44:2007/A1:2015, modified) and DIN VDE 0100-534 (IEC 60364-5-53:2001/A2:2015, modified). Whenever modifications are made to existing installations, retrofitting a surge protective device (SPD) in accordance with VDE is mandatory.
- The associated lightning protection concept must be provided by the operator or by a suitable provider commissioned by the operator. Surge protective devices can be found in the extended accessories range (type series booklet 4041.51) as optional control unit components.

Indoor installation:

- A maximum cable length of 10 metres should not be exceeded between the surge protective device (usually type 1, internal lightning protection) installed at the service entrance and the equipment to be protected. For longer cables, additional surge protective devices (type 2) must be provided in the sub-distribution board upstream of the equipment to be protected or directly in the equipment itself.
- Sensor cables that cross the boundaries between lightning protection zones must be additionally protected by suitable surge protective devices (e.g. when using a 4 - 20 mA immersion probe).

Outdoor installation:

- Control units installed outdoors (e.g. in outdoor cabinets) should always be equipped with Type 1 surge protective devices (lightning protection), as they will not normally be protected by a suitable upstream service entrance SPD.

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Technical data

The control unit is selected on the basis of the nominal current of the pump. Higher currents and power ratings are available on request.

The standard variant of LevelControl Basic 2 is not suitable for use in IT mains. Variants for IT mains are available on request.

For the following special voltages (3~ only) LevelControl Basic 2 can be configured via KSB EasySelect:

- 208 V, 220 V, 230 V, 380 V, 415 V, 440 V, 460 V, 480 V, 500 V

Technical data

Characteristic		Value	
		Type Basic Compact (BC)	Type Basic Control Cabinet (BS)
Nominal operating voltage	U [V AC]	3~400: +10 %-15 % 1~230: +10 %-15 %	
Mains frequency	F [Hz]	50 / 60 Hz ± 2 %	
Nominal insulation voltage	U [V AC]	500	
Nominal current per motor	I [A]	1 to max. 10	1 to max. 63
Rated power per motor	P [kW]	DOL starting: up to max. 4	DOL starting / star-delta starting: 0.35 to 30
Enclosure		IP54	
Material		Plastic (polycarbonate) Colour: RAL 7035, light grey	Sheet steel Colour: RAL 7035, light grey
Operating temperature	T [°C]	-10 to +50	
Bearing temperature	T [°C]	-10 to +70	

Technical specifications for sensors

4 float switches / digital level switches, 12 - 25.2 V DC or 230 V AC

For ATEX with float switches:

- ATEX-compliant versions in BS housing
- Single-pump station: 2 intrinsic safety barriers, type Stahl 9002/13-280-093-001
- Dual-pump station: 3 intrinsic safety barriers, type Stahl 9002/13-280-093-001

For ATEX with digital level switches (selected via KSB EasySelect):

- ATEX-compliant versions in BS housing
- Single-pump station: incl. 3 intrinsic safety barriers, type Stahl 9002/13-280-093-001
- Dual-pump station: incl. 4 intrinsic safety barriers, type Stahl 9002/13-280-093-001

4 - 20 mA

- 2-wire connection and 3-wire connection
- Input resistance ≤ 300 Ω
- ATEX-compliant versions in BS housing
- For ATEX-compliant version incl. 1 intrinsic safety barrier, type Stahl 9002/13-280-110-001

Integrated pneumatic pressure sensor

- For open pressure bell or closed pressure bell
- Up to 3 metres of water
- Optional: up to 10 metres of water

Integrated pressure sensor with compressor for bubbler control

- For open pressure bell
- Compressor up to 2 metres of water
- Optional: up to 3 metres of water

Motor protection sensors

- Maximum of two (thermal circuit breaker) bimetal switches for each pump, 24 V, motor monitoring
- From 5.5 kW star-delta starting: PTC thermistor for motor monitoring for each pump (optionally available for < 5.5 kW)[4)]
- Max. one leakage monitor for each Amarex / Amarex N / Amarex KRT pump

Process inputs

- 1 external alarm input, 24 V
- 1 remote acknowledgement, 24 V

Process outputs

- 1 volt-free signalling output changeover contact (250 V, 1 A, NO/NC contact)
- 1 signalling output (12.6 to 13.2 V, max. 200 mA), e.g. for connecting a horn, alarm combination or alarm strobe light (12 V)

Rechargeable battery

Connection for rechargeable battery, for mains-independent power supply of:

- Electronics
- Sensors
- Alarm equipment

4 Not for installation variants R and S

Battery life:

- Approx. 10 hours when supplying the integrated piezo buzzer 85 dB(A), electronics, and sensors
- Approx. 4 hours when supplying external alarm equipment (e.g. horn, alarm combination, or alarm strobe light)

Charging time:

- Approx. 11 hours (if rechargeable battery is fully discharged)

Dimensions and weights

Dimensions and weights

Type	Nominal current per pump max. [A]	H × W × D [mm]	[kg]
BC	10	400 × 281 × 135	4,5 - 4,7
BS1	10	400 × 300 × 155	12
BS1[5)]	10	600 × 400 × 200	12
BS1	14	600 × 400 × 200	20
BS1	18	600 × 400 × 200	20
BS1	23	600 × 400 × 200	20
BS1	25	600 × 400 × 200	20
BS1	40	800 × 600 × 200	30
BS1	63	800 × 600 × 200	30
BS2	10	400 × 300 × 155	13
BS2[5)]	10	600 × 400 × 200	13
BS2	14	800 × 600 × 200	30
BS2	18	800 × 600 × 200	30
BS2	23	800 × 600 × 200	30
BS2	25	800 × 600 × 200	30
BS2	40	800 × 600 × 200	33
BS2	63	800 × 600 × 200	33

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5 ATEX-compliant version with float switch or digital switch

LevelControl Basic 2 for Ama-Drainer

Documented device versions

Control units for single-pump station

Size	Float switch incl. 4 - 20 mA input		Pneumatic	
	DFNO	SFNO	DPNO	SPNO
230 V: up to 10 A	BC1 230 DFNO 100	-	BC1 230 DPNO 100	-
400 V: 1,6 - 2,5 A	BC1 400 DFNO 025	-	BC1 400 DPNO 025	-
400 V: 2,5 - 4,0 A	BC1 400 DFNO 040	-	BC1 400 DPNO 040	-
400 V: 4,0 - 6,3 A	BC1 400 DFNO 063	-	BC1 400 DPNO 063	-
400 V: 6,3 - 10 A	BC1 400 DFNO 100	-	BC1 400 DPNO 100	-
400 V: 13 - 18 A	-	BS1 400 SFNO 180	-	BS1 400 SPNO 180

Control units for dual-pump station

Size	Float switch incl. 4 - 20 mA input		Pneumatic	
	DFNO	SFNO	DPNO	SPNO
230 V: up to 10 A	BC2 230 DFNO 100	-	BC2 230 DPNO 100	-
400 V: 1,6 - 2,5 A	BC2 400 DFNO 025	-	BC2 400 DPNO 025	-
400 V: 2,5 - 4,0 A	BC2 400 DFNO 040	-	BC2 400 DPNO 040	-
400 V: 4,0 - 6,3 A	BC2 400 DFNO 063	-	BC2 400 DPNO 063	-
400 V: 6,3 - 10 A	BC2 400 DFNO 100	-	BC2 400 DPNO 100	-
400 V: 13 - 18 A	-	BS2 400 SFNO 180	-	BS2 400 SPNO 180

Functional comparison

Symbols key

Symbol	Description
d	Digital display of switching points
o	Optional
✗	Control unit feature
-	Not a control unit feature

Comparison of functions of Ama-Drainer single-pump stations and dual-pump stations

Feature	Single-pump station				Dual-pump station			
	Float switch incl. 4 - 20 mA		Pneumatic		Float switch incl. 4 - 20 mA		Pneumatic	
	DFNO	SFNO	DPNO	SPNO	DFNO	SFNO	DPNO	SPNO
Functions								
Draining	✗				✗			
Filling using float switch(es)	✗		-		✗		-	
Stand-by pump: 1 pump redundant	-		-		✗		✗	
Pump changeover after each start	-		-		✗		✗	
Pump changeover in event of fault	-		-		✗		✗	
Peak load operation function	-		-		✗		✗	
Runtime limitation	✗				✗			
OFF via after-run time	✗				✗			
OFF via level	✗				✗			
Functional check run after idle period	✗				✗			
Alert history	✗				✗			
Display and operation								
7-segment display	✗				✗			
Indication of water level	d		✗		d		✗	
Operation / fault / pump running (displayed for each pump)	Multicolour LED				Multicolour LED			
General fault (traffic light)	LED				LED			
High water	LED				LED			
Mains voltage	✗				✗			
Operating hours of each pump	✗				✗			
Starts per pump	✗				✗			

Feature	Single-pump station				Dual-pump station			
	Float switch incl. 4 - 20 mA		Pneumatic		Float switch incl. 4 - 20 mA		Pneumatic	
	DFNO	SFNO	DPNO	SPNO	DFNO	SFNO	DPNO	SPNO
Rotary field recognition of mains power supply	✗				✗			
Phase monitoring	✗				✗			
Change of switching levels	-		✗		-		✗	
Housing H × W × D [mm], IP54								
Plastic 400 × 281 × 135	✗	-	✗	-	✗	-	✗	-
Sheet steel 600 × 400 × 200	-	✗	-	-	-	-	-	-
Sheet steel 800 × 600 × 200	-	-	-	-	-	✗	-	✗
Built-in components								
Master switch (lockable)	o	✗	o	✗	o	✗	o	✗
Manual-0-automatic selector switch per pump	✗				✗			
DOL starting	✗	-	✗	-	✗	-	✗	-
Star-delta starting	-	✗	-	✗	-	✗	-	✗
Motor protection								
Fuse (in 230 V devices)	✗	-	✗	-	✗	-	✗	-
Motor protection switch (in 400 V devices)	✗				✗			
Motor temperature warning input	✗				✗			
Motor temperature alert input	✗				✗			
Pump								
Thermal circuit breaker/bimetal	1~230 V AC: ▪ Ama-Drainer N 301/302/303, Ama-Drainer N 358, Ama-Drainer NE 4 / 5: bimetal switch in the motor. (The bimetal switch is not connected to the control unit.) 3~400 V AC: ▪ Ama-Drainer ND 4 / 5, Ama-Drainer (B) 80 / (B)100: The bimetal switch is brought out in the pump power cable for connection to the control unit.							
Optional components								
Rechargeable battery for powering the device	o				o			
Control cabinet heating for type BS	-	o	-	o	-	o	-	o
Alarm equipment								
1 free alarm input	✗				✗			
1 digital input for high water alert	✗				✗			
Volt-free contact (changeover contact)	✗				✗			
Piezo buzzer 85 dB(A)	✗				✗			
Horn / alarm combination / alarm strobe light 12 V DC	o				o			
Inputs/outputs								
Inputs for float switches	4		-		4		-	
4-20 mA analog input	✗		-		✗		-	
Pneumatic pressure sensor	-		✗		-		✗	
Remote acknowledgement	✗				✗			
12 V DC connection for horn, etc.	✗				✗			
Sensor accessories								
Float switch (NO contact)	o		-		o		-	
Redundant high water float switch	-		o		-		o	
Open pressure bell	-		o		-		o	
Closed pressure bell	-		o		-		o	
F1 leakage sensor	o				o			
Tools								
KSB ServiceTool for Windows XP	o				o			

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Ama-Drainer with control unit type BC

1~230 V: Ama-Drainer N 301/302/303, Ama-Drainer N 358, Ama-Drainer NE 4 /5 , Ama-Porter NE

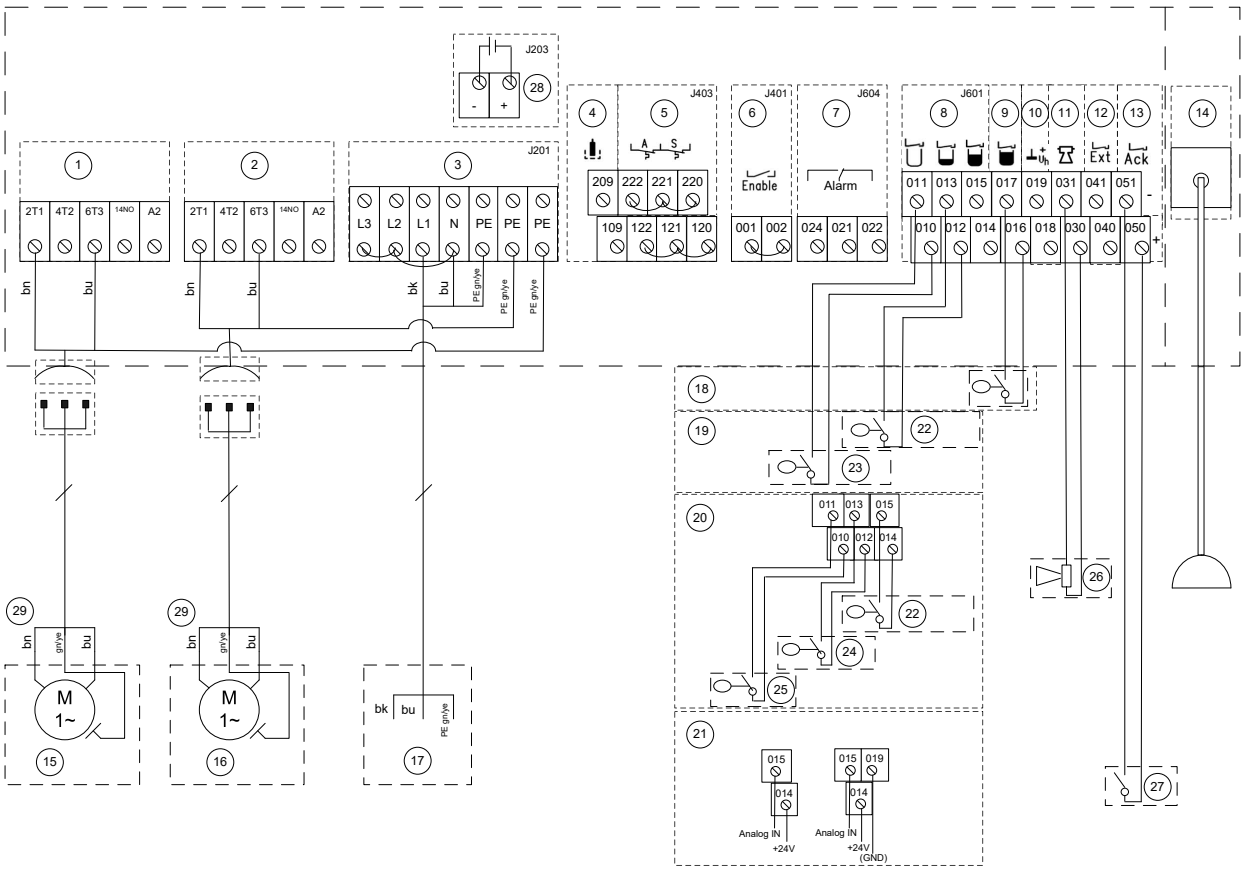

Fig. 1: Circuit diagram: Ama-Drainer N 301/302/303, Ama-Drainer N 358, Ama-Drainer NE 4 /5 , Ama-Porter NE

1	Contactor pump 1	16	Pump 2
2	Contactor pump 2	17	Power supply
3	Mains connections 3~400 V, 1~230 V	18	High-water float switch
4	Leakage monitor	19	Float switch
5	Thermal circuit breaker	20	Digital switch
6	Release	21	Analog sensor 4 - 20 mA
7	Volt-free alarm contact	22	Peak load ON
8	Float switch / digital switch	23	Pump ON/OFF
9	High-water float switch	24	Base load ON
10	mini-Compacta/Compacta sensors	25	Pumps OFF
11	Connection for alarm equipment	26	Signal transmitter 12 V
12	External alarm input	27	Contact
13	Remote acknowledgement	28	Rechargeable battery connection
14	Pneumatic	29	230 V bk (black) bu (blue) bn (brown) PE: gn/ye (green/yellow)
15	Pump 1		

3~400 V: Ama-Drainer ND 4 / 5

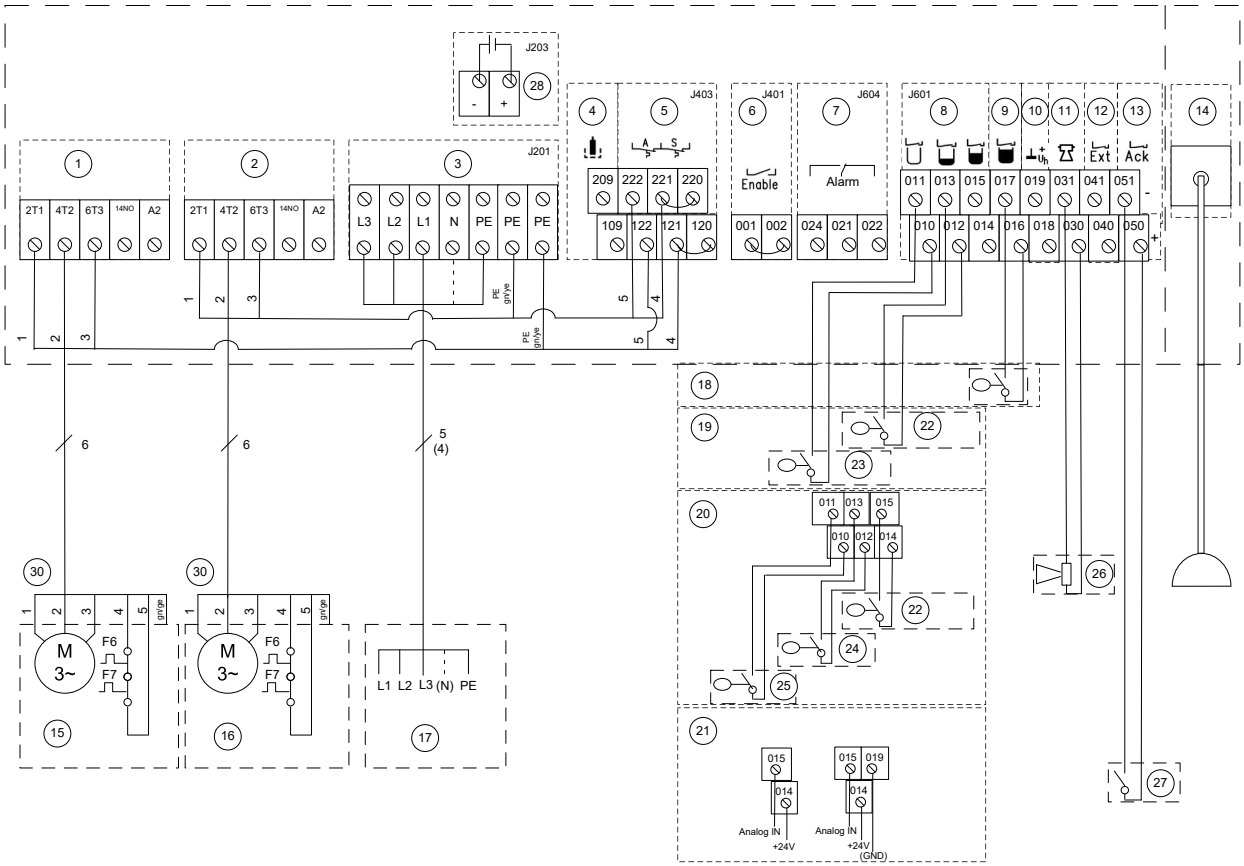

Fig. 2: Circuit diagram: Ama-Drainer ND 4 / 5

1	Contactor pump 1	16	Pump 2
2	Contactor pump 2	17	Power supply
3	Mains connections 3~400 V, 1~230 V	18	High-water float switch
4	Leakage monitor	19	Float switch
5	Thermal circuit breaker	20	Digital switch
6	Release	21	Analog sensor 4 - 20 mA
7	Volt-free alarm contact	22	Peak load ON
8	Float switch / digital switch	23	Pump ON/OFF
9	High-water float switch	24	Base load ON
10	mini-Compacta/Compacta sensors	25	Pumps OFF
11	Connection for alarm equipment	26	Signal transmitter 12 V
12	External alarm input	27	Contact
13	Remote acknowledgement	28	Rechargeable battery connection
14	Pneumatic	30	400 V U1: bk (black) V1: bu (blue) W1: bn (brown) PE: gn/ye (green/yellow)
15	Pump 1		

3~400 V: Ama-Drainer B (80)

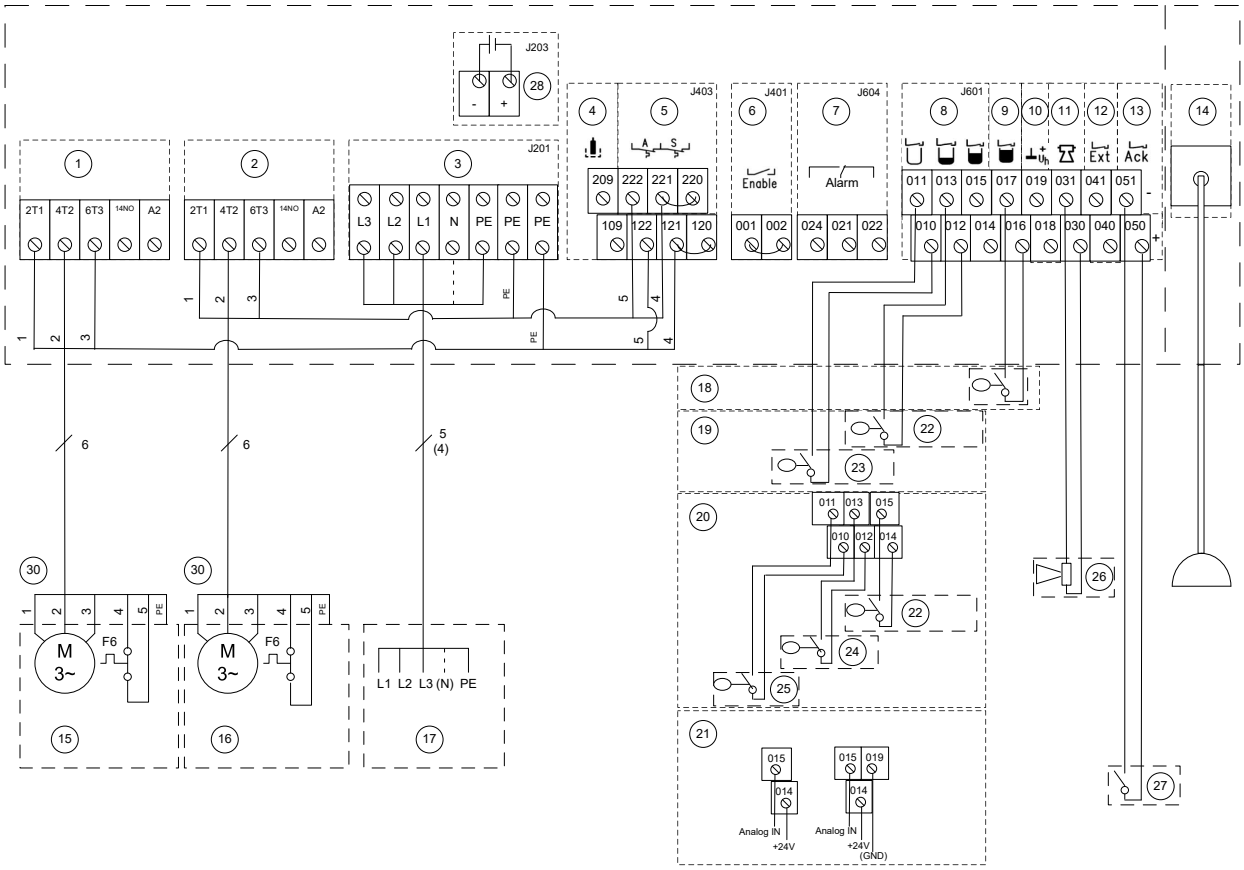

Fig. 3: Circuit diagram: Ama-Drainer B (80)

1	Contactor pump 1	16	Pump 2
2	Contactor pump 2	17	Power supply
3	Mains connections 3~400 V, 1~230 V	18	High-water float switch
4	Leakage monitor	19	Float switch
5	Thermal circuit breaker	20	Digital switch
6	Release	21	Analog sensor 4 - 20 mA
7	Volt-free alarm contact	22	Peak load ON
8	Float switch / digital switch	23	Pump ON/OFF
9	High-water float switch	24	Base load ON
10	Sensors for mini-Compacta/Compacta	25	Pumps OFF
11	Connection for alarm equipment	26	Signal transmitter 12 V
12	External alarm input	27	Contact
13	Remote acknowledgement	28	Rechargeable battery connection
14	Pneumatic	30	400 V U1: bk (black) V1: bu (blue) W1: bn (brown) PE: gn/ye (green/yellow)
15	Pump 1		

LevelControl Basic 2 for Ama-Porter

Documented device variants

Control units for single-pump station

Size	Float switch incl. 4 - 20 mA input	Pneumatic	Bubbler control	
	DFNO	DPNO	DLNO in BS housing	DLNO in BC housing
230 V: up to 10 A	BC1 230 DFNO 100	BC1 230 DPNO 100	BS1 230 DLNO 100	BC1 230 DLNO 100
400 V: 2,5 - 4,0 A	BC1 400 DFNO 040	BC1 400 DPNO 040	BS1 400 DLNO 040	BC1 400 DLNO 040
400 V: 4,0 - 6,3 A	BC1 400 DFNO 063	BC1 400 DPNO 063	BS1 400 DLNO 063	BC1 400 DLNO 063

Control units for dual-pump station

Size	Float switch incl. 4 - 20 mA input	Pneumatic	Bubbler control	
	DFNO	DPNO	DLNO in BS housing	DLNO in BC housing
230 V: up to 10 A	BC2 230 DFNO 100	BC2 230 DPNO 100	BS2 230 DLNO 100	BC2 230 DLNO 100
400 V: 2,5 - 4,0 A	BC2 400 DFNO 040	BC2 400 DPNO 040	BS2 400 DLNO 040	BC2 400 DLNO 040
400 V: 4,0 - 6,3 A	BC2 400 DFNO 063	BC2 400 DPNO 063	BS2 400 DLNO 063	BC2 400 DLNO 063

Functional comparison

Symbols key

Symbol	Description
d	Digital display of switching points
o	Optional
✗	Control unit feature
-	Not a control unit feature

Comparison of functions of Ama-Porter single-pump stations and dual-pump stations

Feature	Single-pump station				Dual-pump station			
	DFNO	DPNO	DLNO (BS housing)	DLNO (BC housing)	DFNO	DPNO	DLNO (BS housing)	DLNO (BC housing)
Functions								
Draining	✗				✗			
Filling using float switch(es)	✗	-	-	-	✗	-	-	-
Stand-by pump: 1 pump redundant	-				✗			
Pump changeover after each start	-				✗			
Pump changeover in event of fault	-				✗			
Peak load operation function	-				✗			
Runtime limitation	✗				✗			
OFF via after-run time	✗				✗			
OFF via level	✗				✗			
Functional check run after idle period	✗				✗			
Display and operation								
7-segment display	✗				✗			
Indication of water level	d	✗	✗	✗	d	✗	✗	✗
Operation / fault / pump running (displayed for each pump)	Multicolour LED				Multicolour LED			
General fault (traffic light)	LED				LED			
High water	LED				LED			
Mains voltage	✗				✗			
Operating hours of each pump	✗				✗			
Starts per pump	✗				✗			
Rotary field recognition of mains power supply	✗				✗			
Phase monitoring	✗				✗			
Change of switching levels	-	✗	✗	✗	-	✗	✗	✗
Housing H × W × D [mm], IP54								
Plastic 400 × 281 × 135	✗	✗	-	✗	✗	✗	-	✗

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Feature	Single-pump station				Dual-pump station			
	DFNO	DPNO	DLNO (BS housing)	DLNO (BC housing)	DFNO	DPNO	DLNO (BS housing)	DLNO (BC housing)
Sheet steel 400 × 300 × 155	-	-	✗	-	-	-	✗	-
Built-in components								
Master switch (lockable)	o	o	✗	-	o	o	✗	-
Manual-0-automatic selector switch per pump	✗				✗			
DOL starting	✗				✗			
Motor protection								
Fuse (in 230 V devices)	✗				✗			
Motor protection switch (in 400 V devices)	✗				✗			
Motor temperature warning input	✗				✗			
Motor temperature alert input	✗				✗			
Pump								
Thermal circuit breaker/bimetal	✗				✗			
Optional components								
Rechargeable battery for powering the device	o				o			
Control cabinet heating for type BS	-	-	o	-	-	-	✗	-
Alarm equipment								
1 free alarm input	✗				✗			
1 digital input for high water alert	✗				✗			
Volt-free contact (changeover contact)	✗				✗			
Piezo buzzer 85 dB(A)	✗				✗			
Horn / alarm combination / alarm strobe light 12 V DC	o				o			
Inputs/outputs								
Inputs for float switches	4	-	-	-	4	-	-	-
4 - 20 mA analog input	✗	-	-	-	✗	-	-	-
Pneumatic pressure sensor	-	✗	-	-	-	✗	-	-
Bubbler control with compressor	-	-	✗	✗	-	-	✗	✗
Remote acknowledgement	✗				✗			
12 V DC connection for horn, etc.	✗				✗			
Sensor accessories								
Float switch (NO contact)	o	-	-	-	o	-	-	-
Redundant high water float switch	-	o	o	o	-	o	o	o
Open pressure bell	-	o	o	o	-	o	o	o
Closed pressure bell	-	o	-	-	-	o	-	-
F1 leakage sensor	o				o			
Tools								
KSB ServiceTool for Windows XP	o				o			

Ama-Porter with control unit type BC

Ama-Porter NE

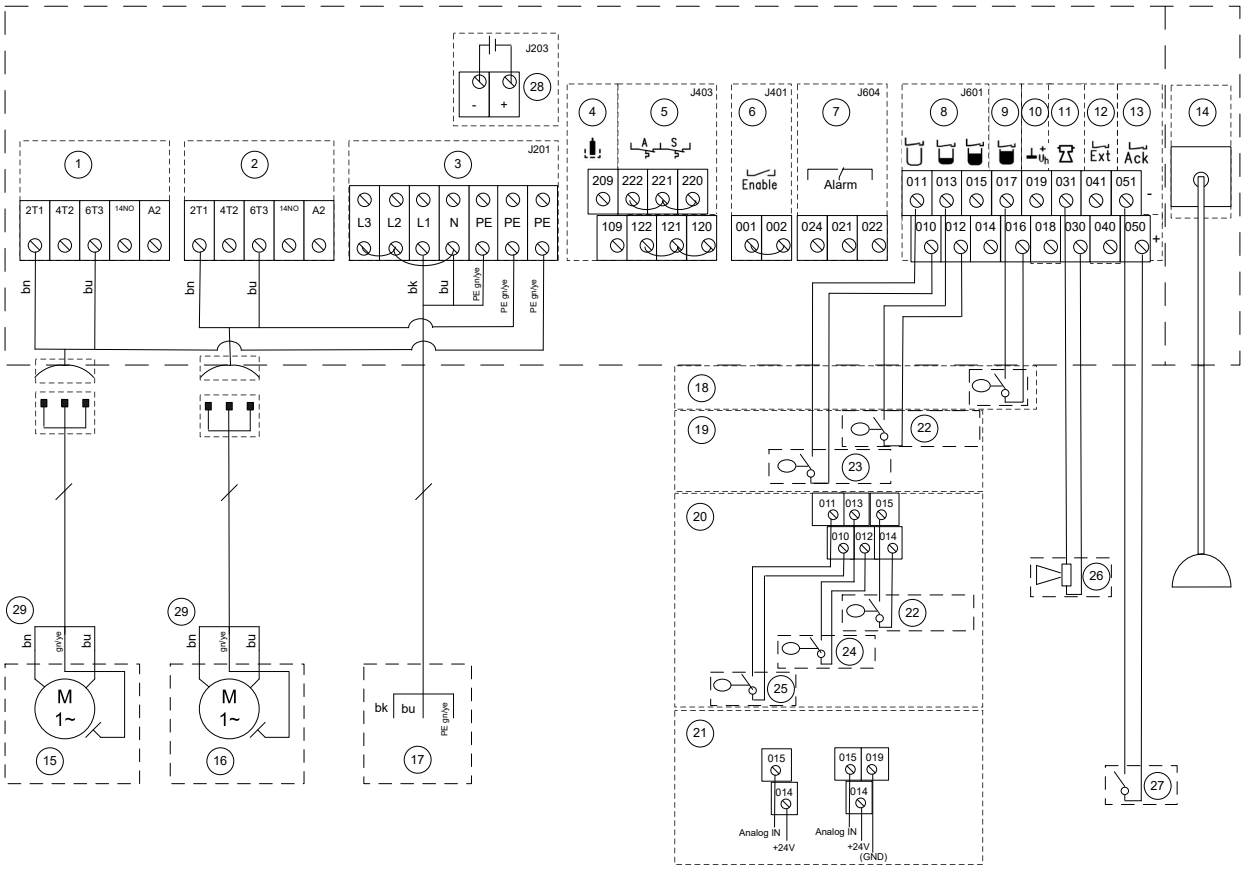

Fig. 4: Circuit diagram:Ama-Porter NE

1	Contactor pump 1	16	Pump 2
2	Contactor pump 2	17	Power supply
3	Mains connections	18	High-water float switch
4	Leakage monitor	19	Float switch
5	Thermal circuit breaker	20	Digital level switch
6	Release	21	Analog sensor 4 - 20 mA
7	Volt-free alarm contact	22	Peak load ON
8	Float switch / digital level switch	23	Pump ON/OFF
9	High-water float switch	24	Base load ON
10	Sensors for mini-Compacta/Compacta	25	Pump OFF
11	Connection for alarm equipment	26	Signal transmitter 12 V
12	External alarm input	27	Contact
13	Remote acknowledgement	28	Rechargeable battery connection
14	Pneumatic	29	230 V bk (black) bu (blue) bn (brown) PE: gn/ye (green/yellow)
15	Pump 1		

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Ama-Porter ND

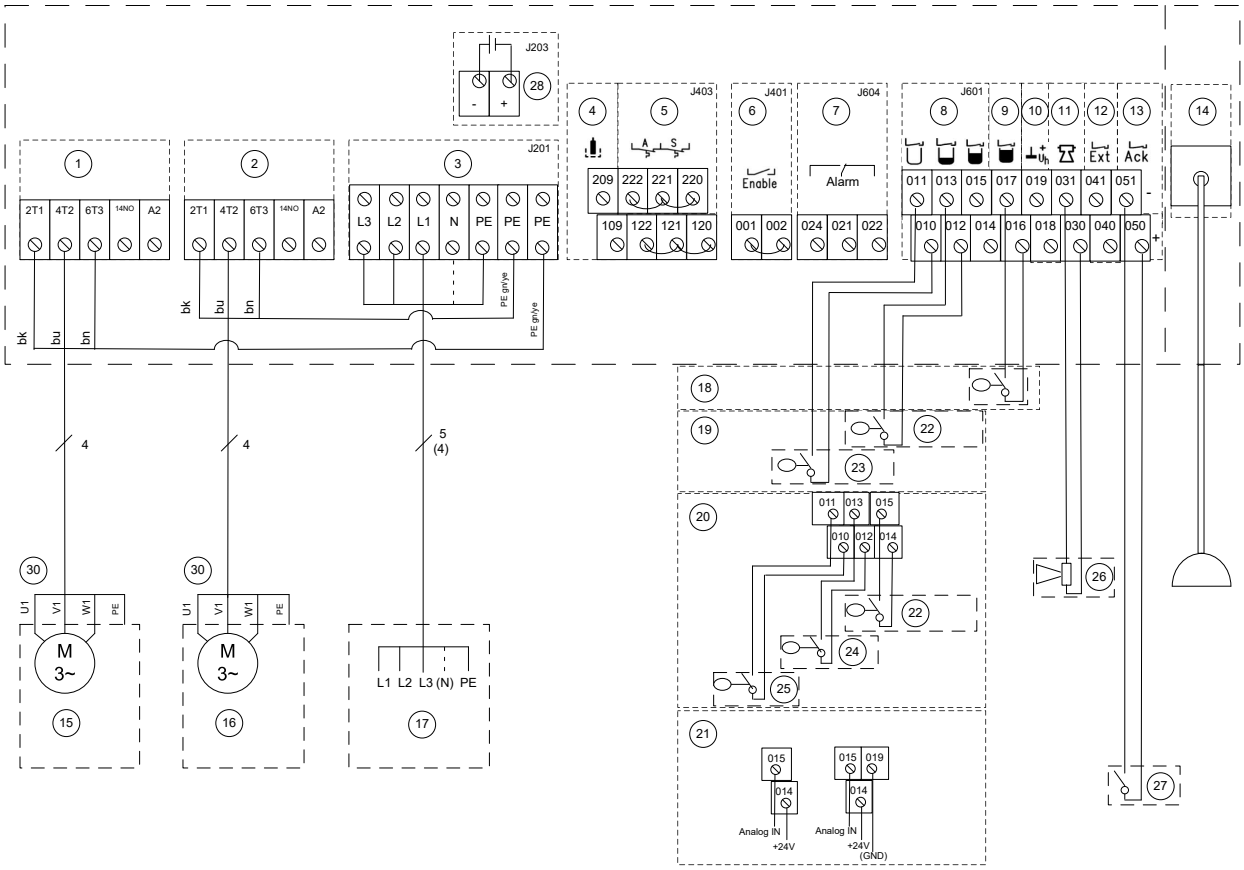

Fig. 5: Circuit diagram: Ama-Porter ND

1	Contactor pump 1	16	Pump 2
2	Contactor pump 2	17	Power supply
3	Mains connections	18	High-water float switch
4	Leakage monitor	19	Float switch
5	Thermal circuit breaker	20	Digital level switch
6	Release	21	Analog sensor 4 - 20 mA
7	Volt-free alarm contact	22	Peak load ON
8	Float switch / digital level switch	23	Pump ON/OFF
9	High-water float switch	24	Base load ON
10	Sensors for mini-Compacta/Compacta	25	Pump OFF
11	Connection for alarm equipment	26	Signal transmitter 12 V
12	External alarm input	27	Contact
13	Remote acknowledgement	28	Rechargeable battery connection
14	Pneumatic	30	400 V U1: bk (black) V1: bu (blue) W1: bn (brown) PE: gn/ye (green/yellow)
15	Pump 1		

LevelControl Basic 2 for Amarex / Amarex N

Non-ATEX-compliant versions

Documented device versions

Control units for single-pump station, non-ATEX-compliant

Size	Float switch incl. 4-20 mA input	Pneumatic	Bubbler control	
	DFNO	DPNO	DLNO in BS housing	DLNO in BC housing
400 V: 2,5 - 4,0 A	BC1 400 DFNO 040	BC1 400 DPNO 040	BS1 400 DLNO 040	BC1 400 DLNO 040
400 V: 4,0 - 6,3 A	BC1 400 DFNO 063	BC1 400 DPNO 063	BS1 400 DLNO 063	BC1 400 DLNO 063
400 V: 6,3 - 10 A	BC1 400 DFNO 100	BC1 400 DPNO 100	BS1 400 DLNO 100	BC1 400 DLNO 100

Control units for dual-pump station, non-ATEX-compliant

Size	Float switch incl. 4-20 mA input	Pneumatic	Bubbler control	
	DFNO	DPNO	DLNO in BS housing	DLNO in BC housing
400 V: 2,5 - 4,0 A	BC2 400 DFNO 040	BC2 400 DPNO 040	BS2 400 DLNO 040	BC2 400 DLNO 040
400 V: 4,0 - 6,3 A	BC2 400 DFNO 063	BC2 400 DPNO 063	BS2 400 DLNO 063	BC2 400 DLNO 063
400 V: 6,3 - 10 A	BC2 400 DFNO 100	BC2 400 DPNO 100	BS2 400 DLNO 100	BC2 400 DLNO 100

Functional comparison

Symbols key

Symbol	Description
d	Digital display of switching points
o	Optional
✗	Control unit feature
-	Not a control unit feature

Comparison of functions of Amarex / Amarex N single-pump stations and dual-pump stations, non-ATEX-compliant version

Feature	Single-pump station				Dual-pump station			
	DFNO	DPNO	DLNO (BS housing)	DLNO (BC housing)	DFNO	DPNO	DLNO (BS housing)	DLNO (BC housing)
Functions								
Draining	✗				✗			
Filling using float switch(es)	✗	-	-	-	✗	-	-	-
Stand-by pump: 1 pump redundant	-				✗			
Pump changeover after each start	-				✗			
Pump changeover in event of fault	-				✗			
Peak load operation function	-				✗			
Runtime limitation	✗				✗			
OFF via after-run time	✗				✗			
OFF via level	✗				✗			
Functional check run after idle period	✗				✗			
Alert history	✗				✗			
Display and operation								
7-segment display	✗				✗			
Indication of water level	d	✗	✗	✗	d	✗	✗	✗
Operation / fault / pump running (displayed for each pump)	Multicolour LED				Multicolour LED			
General fault (traffic light)	LED				LED			
High water	LED				LED			
Mains voltage	✗				✗			
Operating hours of each pump	✗				✗			
Starts per pump	✗				✗			
Rotary field recognition of mains power supply	✗				✗			
Phase monitoring	✗				✗			

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Feature	Single-pump station				Dual-pump station			
	DFNO	DPNO	DLNO (BS housing)	DLNO (BC housing)	DFNO	DPNO	DLNO (BS housing)	DLNO (BC housing)
Change of switching levels	-	✗	✗	✗	-	✗	✗	✗
Housing H × W × D [mm], IP54								
Plastic 400 × 281 × 135	✗	✗	-	✗	✗	✗	-	✗
Sheet steel 400 × 300 × 155	-	-	✗	-	-	-	✗	-
Built-in components								
Master switch (lockable)	o	o	✗	-	o	o	✗	-
Manual-0-automatic selector switch per pump	✗				✗			
DOL starting	✗				✗			
Motor protection								
Motor protection switch	✗				✗			
Motor temperature warning input	✗				✗			
Motor temperature alert input	✗				✗			
Pump								
Thermal circuit breaker/bimetal	✗				✗			
Motor leakage/moisture monitoring	✗				✗			
Optional components								
Rechargeable battery for powering the device	o				o			
Control cabinet heating for type BS	-	-	o	-	-	-	o	-
Alarm equipment								
1 free alarm input	✗				✗			
1 digital input for high water alert	✗				✗			
Volt-free contact (changeover contact)	✗				✗			
Piezo buzzer 85 dB(A)	✗				✗			
Horn / alarm combination / alarm strobe light 12 V DC	o				o			
Inputs/outputs								
Inputs for float switches	4	-	-	-	4	-	-	-
4 - 20 mA analog input	✗	-	-	-	✗	-	-	-
Pneumatic pressure sensor	-	✗	-	-	-	✗	-	-
Bubbler control with compressor	-	-	✗	✗	-	-	✗	✗
Remote acknowledgement	✗				✗			
12 V DC connection for horn, etc.	✗				✗			
Sensor accessories								
Float switch (NO contact)	o	-	-	-	o	-	-	-
Redundant high water float switch	-	o	o	o	-	o	o	o
Open pressure bell	-	o	o	o	-	o	o	o
Closed pressure bell	-	o	-	-	-	o	-	-
F1 leakage sensor	o				o			
Tools								
KSB ServiceTool for Windows XP	o				o			

ATEX-compliant versions

The control units are not explosion-proof, which means that they must not be operated in potentially explosive atmospheres.

Analog intrinsic safety barriers are required in ATEX-compliant versions for 4 - 20 mA (see Optional components). Selection via KSB EasySelect.

Documented device versions

Control units for single-pump station, ATEX-compliant version

Size	Float switch	Pneumatic	Bubbler control	
	DFEO	DPEO	DLEO in BS housing	DLEO in BC housing
400 V: 2,5 - 4,0 A	BS1 400 ^{DFEO} 040	BC1 400 ^{DPEO} 040	BS1 400 ^{DLEO} 040	BC1 400 ^{DLEO} 040
400 V: 4,0 - 6,3 A	BS1 400 ^{DFEO} 063	BC1 400 ^{DPEO} 063	BS1 400 ^{DLEO} 063	BC1 400 ^{DLEO} 063
400 V: 6,3 - 10 A	BS1 400 ^{DFEO} 100	BC1 400 ^{DPEO} 100	BS1 400 ^{DLEO} 100	BC1 400 ^{DLEO} 100

Control units for dual-pump station, ATEX-compliant version

Size	Float switch	Pneumatic	Bubbler control	
	DFEO	DPEO	DLEO in BS housing	DLEO in BC housing
400 V: 2,5 - 4,0 A	BS2 400 ^{DFEO} 040	BC2 400 ^{DPEO} 040	BS2 400 ^{DLEO} 040	BC2 400 ^{DLEO} 040
400 V: 4,0 - 6,3 A	BS2 400 ^{DFEO} 063	BC2 400 ^{DPEO} 063	BS2 400 ^{DLEO} 063	BC2 400 ^{DLEO} 063
400 V: 6,3 - 10 A	BS2 400 ^{DFEO} 100	BC2 400 ^{DPEO} 100	BS2 400 ^{DLEO} 100	BC2 400 ^{DLEO} 100

Functional comparison

Symbols key

Symbol	Description
d	Digital display of switching points
o	Optional
✗	Control unit feature
-	Not a control unit feature

Comparison of functions of Amarex / Amarex N single-pump stations and dual-pump stations, ATEX-compliant version

Feature	Single-pump station				Dual-pump station			
	DFEO	DPEO	DLEO (BS housing)	DLEO (BC housing)	DFEO	DPEO	DLEO (BS housing)	DLEO (BC housing)
Functions								
Draining	✗				✗			
Filling using float switch(es)	✗	-	-	-	✗	-	-	-
Stand-by pump: 1 pump redundant	-				✗			
Pump changeover after each start	-				✗			
Pump changeover in event of fault	-				✗			
ATEX mode	✗				✗			
Peak load operation function	-				✗			
Runtime limitation	✗				✗			
OFF via after-run time	✗				✗			
OFF via level	✗				✗			
Functional check run after idle period	✗				✗			
Alert history	✗				✗			
Display and operation								
7-segment display	✗				✗			
Indication of water level	d	✗	✗	✗	d	✗	✗	✗
Operation / fault / pump running (displayed for each pump)	Multicolour LED				Multicolour LED			
General fault (traffic light)	LED				LED			
High water	LED				LED			
Mains voltage	✗				✗			
Operating hours of each pump	✗				✗			
Starts per pump	✗				✗			
Rotary field recognition of mains power supply	✗				✗			

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Feature	Single-pump station				Dual-pump station			
	DFEO	DPEO	DLEO (BS housing)	DLEO (BC housing)	DFEO	DPEO	DLEO (BS housing)	DLEO (BC housing)
Phase monitoring	✗				✗			
Change of switching levels	-	✗	✗	✗	-	✗	✗	✗
Housing H × W × D [mm], IP54								
Plastic 400 × 281 × 135	-	✗	-	✗	-	✗	-	✗
Sheet steel 400 × 300 × 155	-	-	✗	-	-	-	✗	-
Sheet steel 600 × 400 × 200	✗	-	-	-	✗	-	-	-
Built-in components								
Master switch (lockable)	✗	o	✗	-	✗	o	✗	-
Manual-0-automatic selector switch per pump	✗				✗			
DOL starting	✗				✗			
Motor protection								
Motor protection switch per pump	✗				✗			
Motor temperature warning input	✗				✗			
Motor temperature alert input	✗				✗			
Pump								
Thermal circuit breaker/bimetal	✗				✗			
Motor leakage/moisture monitoring	✗				✗			
Optional components								
Rechargeable battery for powering the device	o				o			
Control cabinet heating for type BS	o	-	o	-	o	-	o	-
Alarm equipment								
1 free alarm input (non-ATEX-compliant)	✗				✗			
1 digital input for high water alert[6)]	✗	-	✗	✗	✗	-	✗	✗
Volt-free contact (changeover contact)	✗				✗			
Piezo buzzer 85 dB(A)	✗				✗			
Horn / alarm combination / alarm strobe light 12 V DC	o				o			
Inputs/outputs								
Inputs for float switches	2	-	-	-	3	-	-	-
Intrinsic safety barrier for float switch	2	-	-	-	3	-	-	-
Pneumatic pressure sensor	-	✗	-	-	-	✗	-	-
Bubbler control with compressor	-	-	✗	✗	-	-	✗	✗
Remote acknowledgement	✗				✗			
12 V DC connection for horn, etc.	✗				✗			
Sensors								
Float switch (NO contact)	o	-	-	-	o	-	-	-
Open pressure bell	-	o	o	o	-	o	o	o
Closed pressure bell	-	o	-	-	-	o	-	-
Tools								
KSB ServiceTool for Windows XP	o				o			

6 Additional intrinsic safety barrier required for high water float switch (see Optional components)

Amarex with control unit type BC

Amarex

For non-ATEX-compliant pumps, the thermal circuit breaker may also be connected to terminals 120 / 121 or 220 / 221. Thermal faults will thus become self-acknowledging.

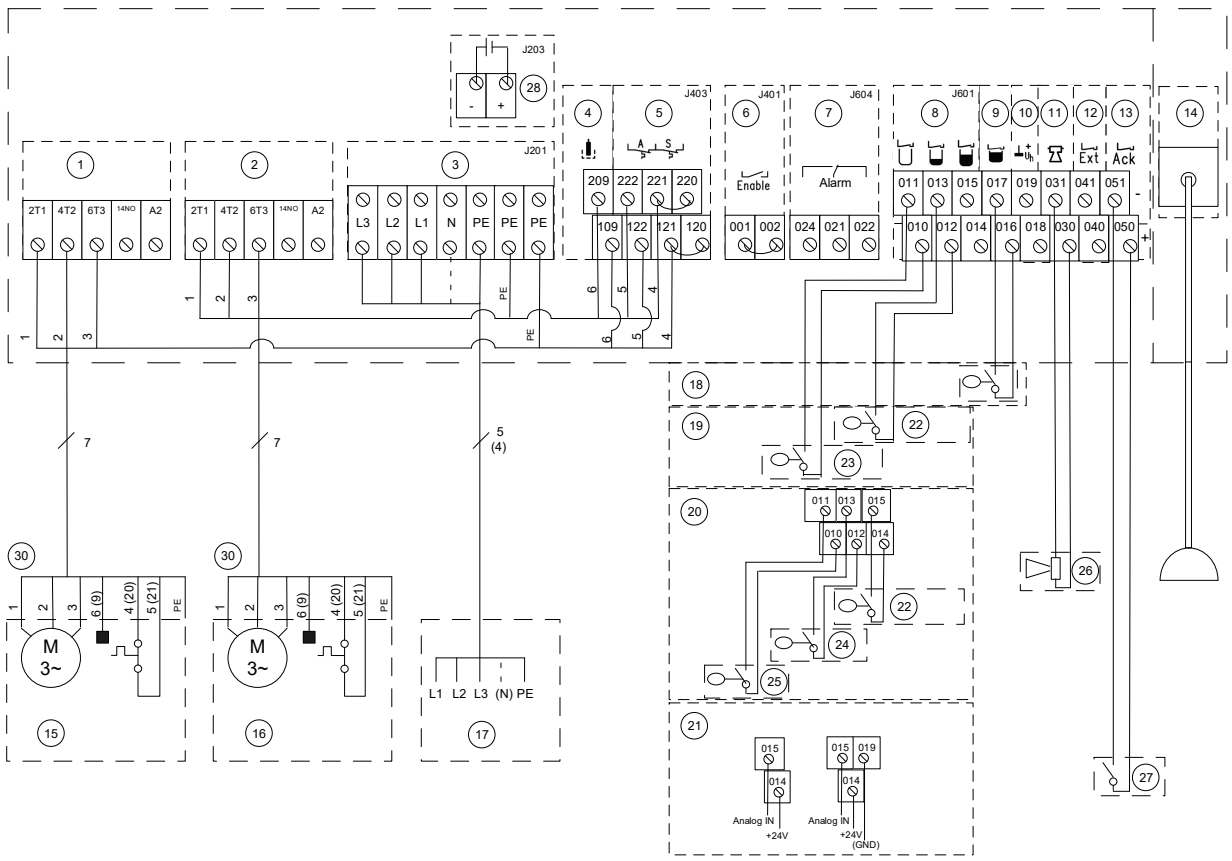

Fig. 6: Circuit diagram: Amarex

1	Contactor pump 1	16	Pump 2
2	Contactor pump 2	17	Power supply
3	Mains connections	18	High-water float switch
4	Leakage monitor	19	Float switch
5	Thermal circuit breaker	20	Digital level switch
6	Release	21	Analog sensor 4 - 20 mA
7	Volt-free alarm contact	22	Peak load ON
8	Float switch / digital level switch	23	Pump ON/OFF
9	High-water float switch	24	Base load ON
10	Sensors for mini-Compacta/Compacta	25	Pump OFF
11	Connection for alarm equipment	26	Signal transmitter 12 V
12	External alarm input	27	Contact
13	Remote acknowledgement	28	Rechargeable battery connection
14	Pneumatic	30	Pump connection
15	Pump 1		

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Amarex N with control unit type BC

Amarex N

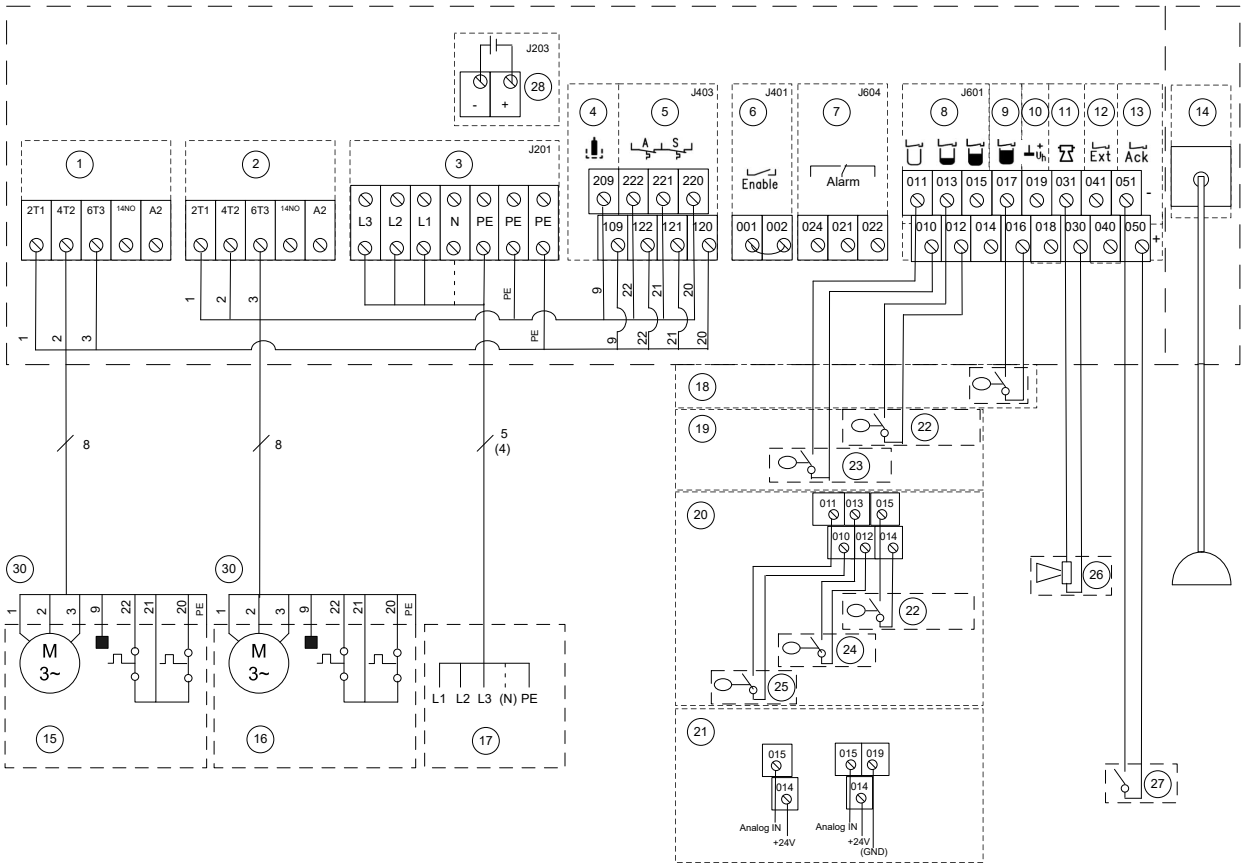

Fig. 7: Circuit diagram: Amarex N

1	Contactor pump 1	16	Pump 2
2	Contactor pump 2	17	Power supply
3	Mains connections	18	High-water float switch
4	Leakage monitor	19	Float switch
5	Thermal circuit breaker	20	Digital level switch
6	Release	21	Analog sensor 4 - 20 mA
7	Volt-free alarm contact	22	Peak load ON
8	Float switch / digital level switch	23	Pump ON/OFF
9	High-water float switch	24	Base load ON
10	Sensors for mini-Compacta/Compacta	25	Pump OFF
11	Connection for alarm equipment	26	Signal transmitter 12 V
12	External alarm input	27	Contact
13	Remote acknowledgement	28	Rechargeable battery connection
14	Pneumatic	30	Pump connection
15	Pump 1		

LevelControl Basic 2 for Amarex KRT

Documented device versions

Control units for single-pump station, ATEX-compliant version

Size	Float switch incl. 4 - 20 mA input	Float switch	Pneumatic	Bubbler control
	xFNO	xFEO (ATEX-compliant)	xPEO (ATEX-compliant)	xLEO (ATEX-compliant)
400 V: 6,3 - 10 A	BS1 400 ^{DFNO} 100	BS1 400 ^{DFEO} 100	BS1 400 ^{DPEO} 100	BS1 400 ^{DLEO} 100
400 V: 9 - 14 A	BS1 400 ^{SFNO} 140	BS1 400 ^{SFEO} 140	BS1 400 ^{SPEO} 140	BS1 400 ^{SLEO} 140
400 V: 13 - 18 A	BS1 400 ^{SFNO} 180	BS1 400 ^{SFEO} 180	BS1 400 ^{SPEO} 180	BS1 400 ^{SLEO} 180
400 V: 17 - 23 A	BS1 400 ^{SFNO} 230	BS1 400 ^{SFEO} 230	BS1 400 ^{SPEO} 230	BS1 400 ^{SLEO} 230
400 V: 20 - 25 A	BS1 400 ^{SFNO} 250	BS1 400 ^{SFEO} 250	BS1 400 ^{SPEO} 250	BS1 400 ^{SLEO} 250
400 V: 25 - 40 A	BS1 400 ^{SFNO} 400	BS1 400 ^{SFEO} 400	BS1 400 ^{SPEO} 400	BS1 400 ^{SLEO} 400
400 V: 40 - 63 A	BS1 400 ^{SFNO} 630	BS1 400 ^{SFEO} 630	BS1 400 ^{SPEO} 630	BS1 400 ^{SLEO} 630

Control units for dual-pump station, ATEX-compliant version

Size	Float switch incl. 4 - 20 mA input	Float switch	Pneumatic	Bubbler control
	xFNO	xFEO (ATEX-compliant)	xPEO (ATEX-compliant)	xLEO (ATEX-compliant)
400 V: 6,3 - 10 A	BS2 400 ^{DFNO} 100	BS2 400 ^{DFEO} 100	BS2 400 ^{DPEO} 100	BS2 400 ^{DLEO} 100
400 V: 9 - 14 A	BS2 400 ^{SFNO} 140	BS2 400 ^{SFEO} 140	BS2 400 ^{SPEO} 140	BS2 400 ^{SLEO} 140
400 V: 13 - 18 A	BS2 400 ^{SFNO} 180	BS2 400 ^{SFEO} 180	BS2 400 ^{SPEO} 180	BS2 400 ^{SLEO} 180
400 V: 17 - 23 A	BS2 400 ^{SFNO} 230	BS2 400 ^{SFEO} 230	BS2 400 ^{SPEO} 230	BS2 400 ^{SLEO} 230
400 V: 20 - 25 A	BS2 400 ^{SFNO} 250	BS2 400 ^{SFEO} 250	BS2 400 ^{SPEO} 250	BS2 400 ^{SLEO} 250
400 V: 25 - 40 A	BS2 400 ^{SFNO} 400	BS2 400 ^{SFEO} 400	BS2 400 ^{SPEO} 400	BS2 400 ^{SLEO} 400
400 V: 40 - 63 A	BS2 400 ^{SFNO} 630	BS2 400 ^{SFEO} 630	BS2 400 ^{SPEO} 630	BS2 400 ^{SLEO} 630

Functional comparison

Symbols key

Symbol	Description
d	Digital display of switching points
o	Optional
✗	Control unit feature
-	Not a control unit feature

Comparison of functions of Amarex KRT single-pump stations and dual-pump stations

Feature	Single-pump station				Dual-pump station			
	xFNO	xFEO	xPEO	xLEO	xFNO	xFEO	xPEO	xLEO
Functions								
Draining	✗				✗			
Stand-by pump: 1 pump redundant	-				✗			
Pump changeover after each start	-				✗			
Pump changeover in event of fault	-				✗			
ATEX mode	-	✗	✗	✗	-	✗	✗	✗
Peak load operation function	-				✗			
Runtime limitation	✗				✗			
OFF via after-run time	✗				✗			
OFF via level	✗				✗			
Functional check run after idle period	✗				✗			
Alert history	✗				✗			
Display and operation								
7-segment display	✗				✗			
Indication of water level	d		✗		d		✗	
Operation / fault / pump running (displayed for each pump)	Multicolour LED				Multicolour LED			
General fault (traffic light)	LED				LED			
High water	LED				LED			
Mains voltage	✗				✗			

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Feature	Single-pump station				Dual-pump station			
	xFNO	xFEO	xPEO	xLEO	xFNO	xFEO	xPEO	xLEO
Operating hours of each pump	✗				✗			
Starts per pump	✗				✗			
Display and operation								
Rotary field recognition of mains power supply	✗				✗			
Phase monitoring	✗				✗			
Change of switching levels	-		✗		-		✗	
Housing H × W × D [mm], IP54								
Sheet steel 400 × 300 × 155	Up to 10 A				Up to 10 A			
Sheet steel 600 × 400 × 200	14 to 25 A / up to 10 A (float switch, ATEX-compliant)				Up to 10 A (float switch, ATEX-compliant)			
Sheet steel 800 × 600 × 200	40 to 63 A				14 A to 63 A			
Built-in components								
Master switch (lockable)	✗				✗			
Manual-0-automatic selector switch per pump	✗				✗			
DOL starting	≤10 A				≤10 A			
Star-delta starting	>10 A				>10 A			
Motor protection								
Motor protection switch per pump	✗				✗			
Motor temperature warning input	✗				✗			
Motor temperature alert input	✗				✗			
Pump								
Thermal circuit breaker/bimetal	✗				✗			
PTC thermistor per pump	✗				✗			
Motor leakage/moisture monitoring	✗				✗			
Optional components								
Rechargeable battery for powering the device	o				o			
Additional intrinsic safety barrier	-	o	o	o	-	o	o	o
Control cabinet heating	o				o			
Alarm equipment								
1 free alarm input	✗				✗			
1 digital input for high water alert[7)]	-	✗	o	o	-	✗	o	o
Volt-free contact (changeover contact)	✗				✗			
Piezo buzzer 85 dB(A)	✗				✗			
Horn / alarm combination / alarm strobe light 12 V DC	o				o			
Inputs/outputs								
Inputs for float switches	4	2	-	-	4	3	-	-
Intrinsic safety barrier for float switch	-	2	-	-	-	3	-	-
4 - 20 mA analog input	✗	o[8)]	-	-	✗	o[8)]	-	-
Pneumatic pressure sensor	-	-	✗	-	-	-	✗	-
Bubbler control with compressor	-	-	-	✗	-	-	-	✗
Remote acknowledgement	✗				✗			
12 V DC connection for horn, etc.	✗				✗			
Sensors								
Float switch (NO contact)	o		-		o		-	
Redundant high water float switch[9)]	-		o		-		o	
Open pressure bell	-		o		-		o	
Closed pressure bell	-	-	o	-	-	-	o	-
Tools								
KSB ServiceTool for Windows XP	o				o			

7 Additional intrinsic safety barrier required for high water float switch (see Optional components)

8 Analog intrinsic safety barriers are required in ATEX-compliant versions for 4 - 20 mA (see Optional components). Selection via KSB EasySelect.

9 Additional intrinsic safety barrier for redundant high water float switch in variants for pneumatic and bubbler control

Amarex KRT with control unit type BS, from 5.5 kW

Amarex KRT

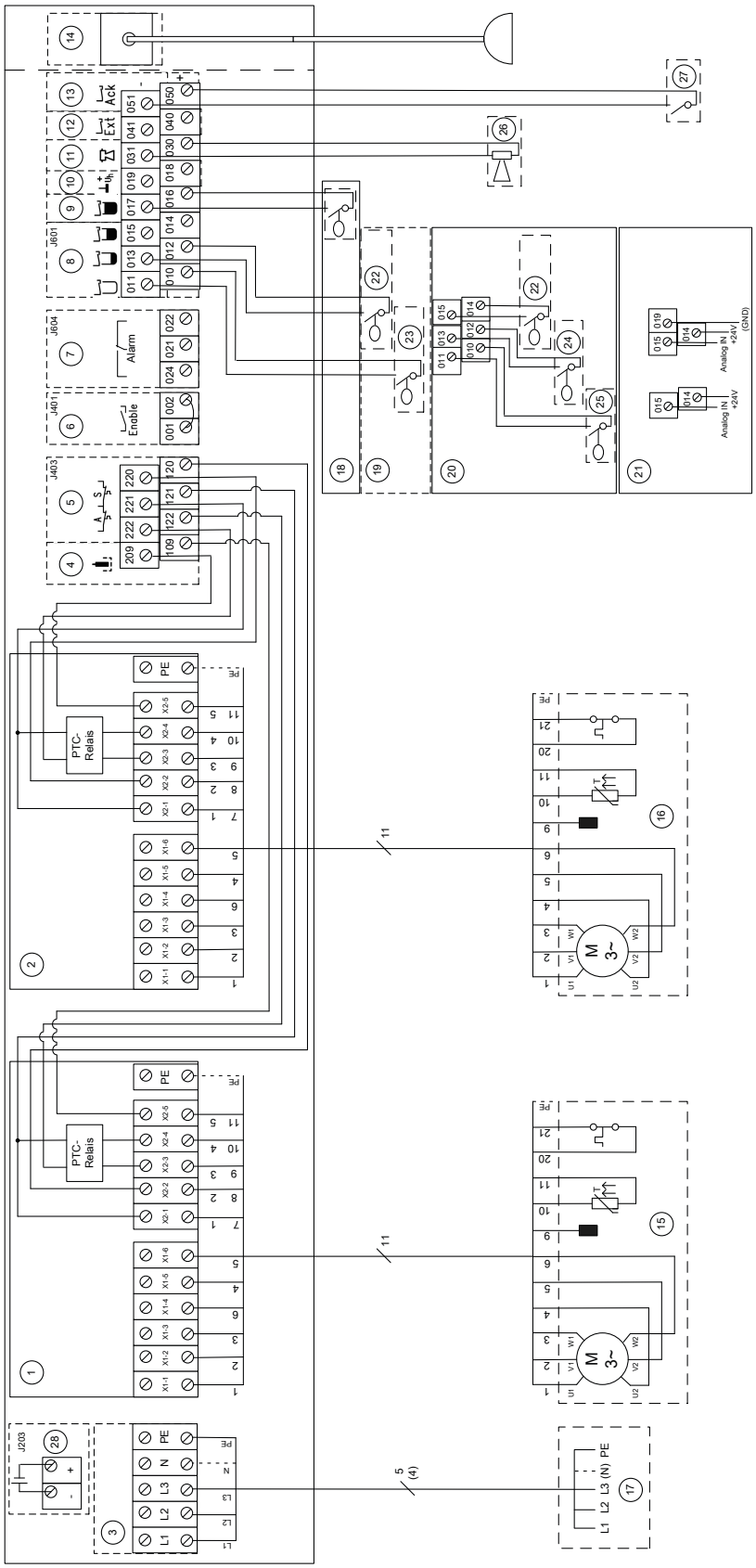

Fig. 8: Circuit diagram: Amarex KRT

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1	Contactor pump 1	15	Pump 1
2	Contactor pump 2	16	Pump 2
3	Mains connections	17	Power supply
4	Leakage monitor	18	High-water float switch
5	Thermal circuit breaker	19	Float switch
6	Release	20	Digital switch
7	Volt-free alarm contact	21	Analog sensor 4 - 20 mA
8	Float switch / digital switch	22	Peak load ON
9	High-water float switch	23	Pump ON/OFF
10	Sensors for mini-Compacta/Compacta	24	Base load ON
11	Connection for alarm equipment	25	Pumps OFF
12	External alarm input	26	Signal transmitter 12 V
13	Remote acknowledgement	27	Contact
14	Pneumatic	28	Rechargeable battery connection

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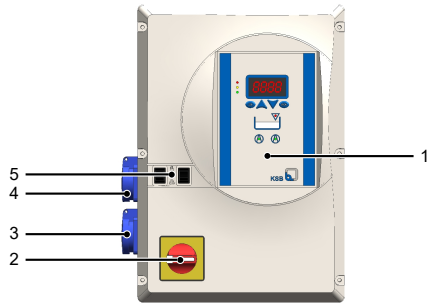
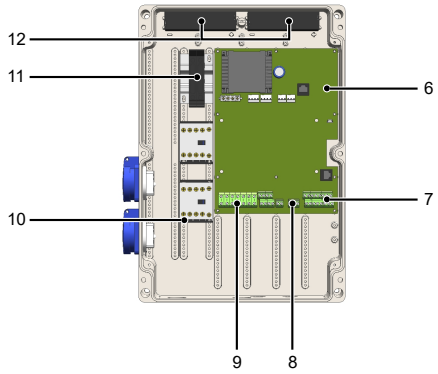
Examples

Type: BC2 230 DFNO 100

1~230 V AC, DOL starting up to 10 A, float switch, 4 .. 20 mA, digital level switch for:

- Ama-Drainer N 301/302/303
- Ama-Drainer N 358
- Ama-Drainer NE 4.. /5.. ~230 V AC
- Ama-Porter NE ~230 V AC



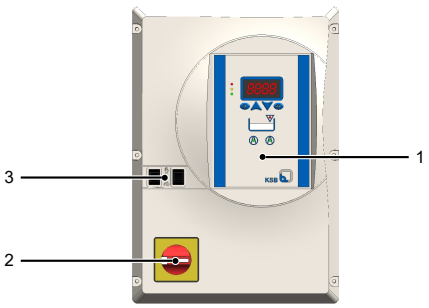


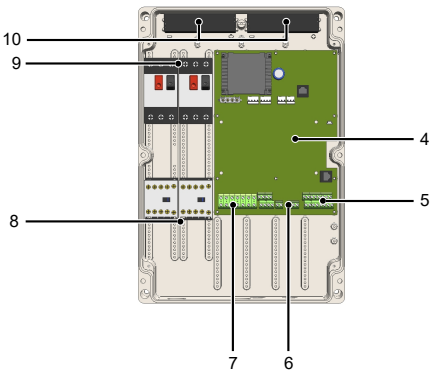
1	Control panel	7	Digital inputs, 4 .. 20 mA, 12 V for horn, etc.
2	Master switch (optional)	8	Volt-free contact
3	Connection for pump 1	9	Mains supply
4	Connection for pump 2	10	Contactors
5	Manual-0-automatic switch	11	Motor protection switch (pumps)
6	Control board	12	Rechargeable battery (optional)

Type: BC2 400 DFNO 010-100

3~400 V AC, DOL starting 1.6 -10 A, float switch, 4 .. 20 mA, digital level switch for:

- Ama-Drainer NE 4.. /5.. ~400 V AC
- Rotex
- Ama-Porter ND ~400 V AC
- Amarex N - non-ATEX-compliant version





1	Control panel	6	Volt-free contact
2	Master switch (optional)	7	Mains supply
3	Manual-0-automatic switch	8	Contactors (pump connection)
4	Control board	9	Motor protection switch (pumps)
5	Digital inputs, 4 .. 20 mA, 12 V for horn, etc.	10	Rechargeable battery (optional)

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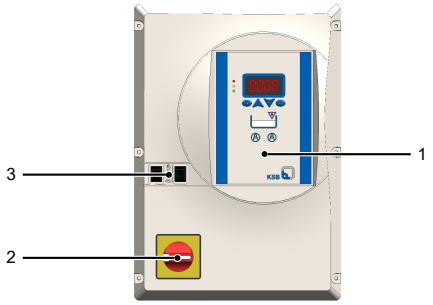
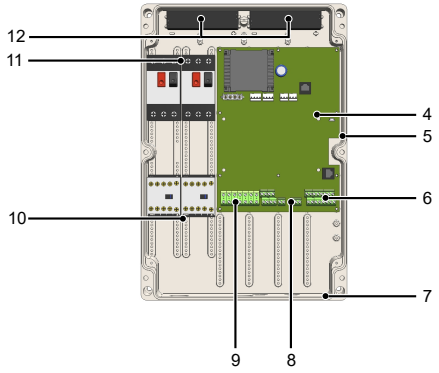
Type: BC2 400 DFNO 010-100 / BC2 400 DPNO 010-100

3~400 V AC, DOL starting up to 10 A, pneumatic

- Ama-Porter ND - 400 V AC
- Amarex N - non-ATEX-compliant version and ATEX-compliant version
- CK pump station



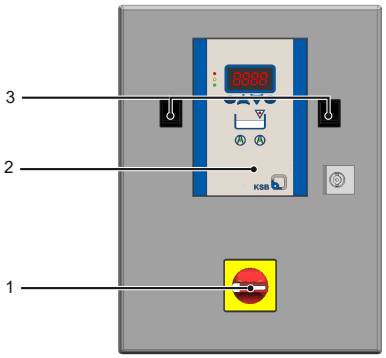


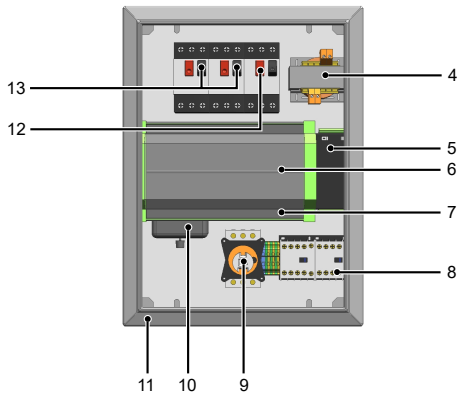
1	Control panel	7	Connection (open/closed pressure bell)
2	Master switch (optional)	8	Volt-free contact
3	Manual-0-automatic switch	9	Mains supply
4	Control board	10	Contactors (pump connection)
5	Internal pressure sensor	11	Motor protection switch (pumps)
6	Pneumatic,12 V for horn, etc.	12	Rechargeable battery (optional)

Type: BS2 400 DLNO 010-100 / BS2 400 DLEO 010-100

3~400 V AC, DOL starting up to 10 A, bubbler control

- Ama-Porter ND ~ 400 V AC
- Amarex N - non-ATEX-compliant version and ATEX-compliant version
- CK pump station



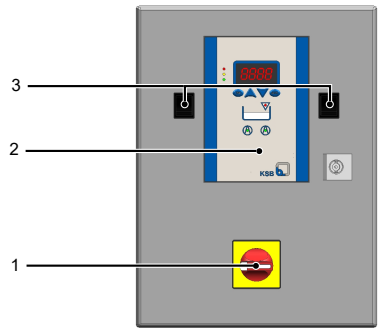


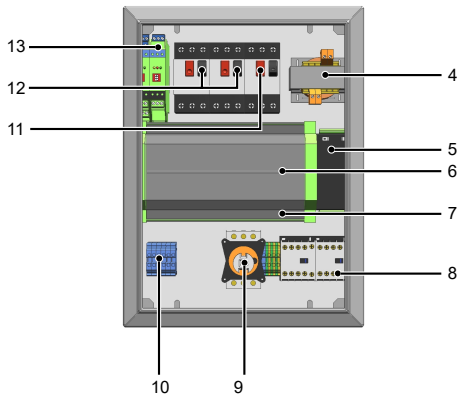
1	Master switch	7	12 V for horn, etc.
2	Control panel	8	Contactors (pump connection)
3	Manual-0-automatic switch	9	Mains supply
4	Control transformer	10	Compressor
5	Rechargeable battery (optional)	11	Connection for open pressure bell
6	Control electronics	12	Motor protection switch (control circuit)
		13	Motor protection switch (pumps)

Type: BS2 400 DFEO 010-100

3~400 V AC, DOL starting 1.0 -10 A, float switch, digital level switch, ATEX-compliant version

- Amarex N/KRT - ATEX-compliant version





1	Master switch	7	Digital inputs, 4 .. 20 mA, 12 V for horn, etc.
2	Control panel	8	Contactors (pump connection)
3	Manual-0-automatic switch	9	Mains supply
4	Control transformer	10	Connection (float switch, digital level switch) via intrinsic safety barriers
5	Rechargeable battery (optional)	11	Motor protection switch (control circuit)
6	Control electronics	12	Motor protection switch (pumps)
		13	Intrinsic safety barrier

Overview of outdoor cabinets

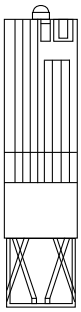
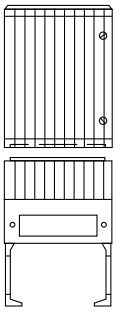
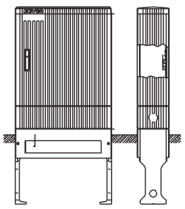
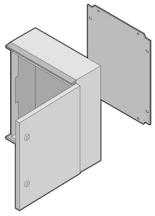
Enclosure IP44 = protection against splashing water.
Ventilation via ventilation ducts to prevent condensation.
The ventilation ducts are designed as a labyrinth to prevent the ingress of foreign bodies and are poke proof.

To prevent condensation inside the housing, grout the foundation up to the height of the cable fixing rail after installation.

LevelControl Basic 2 for 230 V is designed with sockets on the side wall (connection of the pump/s).
To make sure the connections can be made at the plugs, outdoor cabinets for this version are selected one size larger than usual.

LevelControl Basic 2 for outdoor installation:
Type BC: Using a heater is recommended.
Type BS: A heater must be used.

Overview of outdoor cabinets

Control unit	Material, enclosure control unit	Dimensions H × W × D [mm]	Outdoor cabinet / wall-mounted cabinet	Item	Installation
BC1 010/016/025/040/063/100 BC2 010/016/025/040/063/100 	Plastic, IP54	400 × 281 × 135	Outdoor cabinet type 142, IP44 	O10	Suitable for buried installation
BS1 010/016/025/040/063/100/140/180/230/250 BS2 010/016/025/040/063/100 	Sheet steel, IP54	400 × 300 × 155 600 × 400 × 200	Outdoor cabinet type 0/845, IP44 	O11	Suitable for buried installation
BS1 400/630 BS2 140/180/230/250/400/630 	Sheet steel, IP54	800 × 600 × 200	Outdoor cabinet type 1/1005, IP44 	O12	Suitable for buried installation
BC1 010/016/025/040/063/100 BC2 010/016/025/040/063/100 	Plastic, IP54	400 × 281 × 135	Wall-mounted cabinet KS 	O14	Wall-mounted model

Accessories

Optional Components

LevelControl Basic 2 can be configured via KSB EasySelect for the following special voltages (3~ only):

- 208 V, 220 V, 230 V, 380 V, 415 V, 440 V, 460 V, 480 V, 500 V

LevelControl Basic 2 optional components[10)]

Item		Description	Mat. No.	[kg]
	O1	Master switch for LevelControl Basic 2 BC, fitted	01143084	0,2
	O2	Control cabinet heating for type BS, fitted	19074269	0,3
	O7	Intrinsic safety barrier for additional float switch in potentially explosive atmospheres, for example, high water float switch for pneumatic measurement or bubbler control in potentially explosive atmospheres Only in combination with type BS: Stahl 9002/13-280-093-001	01085568	0,2
	O9	Intrinsic safety barrier for 4-20 mA in potentially explosive atmospheres Only in combination with type BS: Stahl 9002/13-280-110-001	01110746	0,1
	O10	Outdoor cabinet type 142 with base, for type BC External dimensions H × W × D [mm]: 1420 × 320 × 225 Internal dimensions H × W × D [mm]: 600 × 276 × 165 IP 44, glass fibre reinforced polyester, colour: RAL 7035, locking device: profile half cylinder, can be buried	19071911	15
	O11	Outdoor cabinet type 0/845 for types BS1 (up to 25 A) and BS2 (up to 10 A) Control unit housing dimensions H × W × D [mm]: 400 × 300 × 155 and 600 × 400 × 200 Dimensions of upper section H × W × D [mm]: 845 × 585 × 315 Dimensions of base H × W × D [mm]: 900 × 585 × 315 IP44, glass fibre reinforced polyester, colour: RAL 7035, DIN 43 629, locking device: profile half cylinder, can be buried, including metal frame for setting in concrete	19071440	40
	O12	Outdoor cabinet type 1/1005 for types BS1 (from 40 A) and BS2 (from 14 A) Dimensions of control unit housing H × W × D [mm]: 800 × 600 × 200 Dimensions of upper section H × W × D [mm]: 1005 × 780 × 315 Dimensions of base H × W × D [mm]: 900 × 780 × 315 IP44, glass fibre reinforced polyester, colour: RAL 7035, locking device: profile half cylinder, suitable for buried installation, including metal frame for setting in concrete	19071960	57
	O14	Plastic wall-mounted cabinet for type BC Additional housing for LevelControl Basic 2 type BC, single-pump / dual-pump station, up to 10 A Enclosure: IP66, Wall-mounted model, lock: double-bit key, colour: RAL 7035 Dimensions H × W × D [mm]: 530 × 430 × 200 Material: impact-resistant, glass fibre reinforced, unsaturated polyester, self-extinguishing to ASTM D 635 and UL 94 VO, temperature-resistant between -30 °C and 80 °C	01822669	10
-	O15	Outdoor cabinet for type BS Dimensions of housing H × W × D [mm]: 1200 × 800 × 300 Complete with rain canopy, base suitable for buried installation, and locking system Dimensions of upper section H × W × D [mm]: 1500 × 1000 × 420 Dimensions of base H × W × D [mm]: 900 × 1000 × 420 Enclosure: IP54 to IEC 60529, weather-proof design Material: glass fibre reinforced polyester, colour: RAL 7035 Locking system with handle, profile half cylinder and 3 keys Base suitable for buried installation	19066405	99,5
	O200	Signalling module for LevelControl Basic 2 BC	19075182	0,2
	O201	Signalling module for type BC, with pressure sensor 3 mWC for redundant pneumatic level measurement or redundant bubbler system	19075183	1,1
	O202	Signalling module for type BC, with pressure sensor 10 mWC for redundant pneumatic level measurement	19075184	1,4
	O203	Signalling module for type BS[11)]	19075185	1,1
	O204	Signalling module for type BS, with pressure sensor 3 mWC for redundant pneumatic level measurement or redundant bubbler system[11)]	19075186	0,8
	O205	Signalling module for type BS, with pressure sensor 10 mWC for redundant pneumatic level measurement[11)]	19075187	0,8

10 Processed via KSB EasySelect, to avoid supply as unmounted item.

11 The initial scope of supply is configured via KSB EasySelect; when retrofitting check beforehand whether there is sufficient space in the control cabinet.

Item		Description		Mat. No.	[kg]
	O210	Pump current measuring module Can only be used in combination with signalling module	Measuring range: 0.5 - 10 A (15 A)	19075188	0,15
	O211		Measuring range: 10 - 20 A (30 A)	19075189	0,15
	O212		Measuring range: 20 - 40 A (60 A)	19075190	0,15
	O213		Measuring range: 40 - 75 A (110 A)	19075191	0,15

Control unit/switchgear accessories

Control unit / switchgear accessories

Item		Description	Cable length / tube length [m]	Mat. No.	[kg]
	E60	Float switch with free cable end Function: circuit closed in upper float position (NO contact) Float switch housing: polypropylene Fluid temperature: 70 °C max. Power cable: H07RN-F3G1	3	11037742	0,5
			5	11037743	0,8
			10	11037744	1,3
			15	11037745	1,8
			20	11037746	2,4
			25	11037747	2,9
			30	11037748	3,4
			40	01888522	5,2
			50	01888523	6,1
	E61	Float switch with free cable end, oil-resistant Function: circuit closed in upper float position (normally open contact) Float switch housing: polypropylene Fluid temperature: 70 °C max. Power cable: PUR 3×1.0 mm²	5	11037753	0,8
			10	11037754	1,2
			20	11037755	2
	E63	Float switch with free cable end(NO contact) With declaration of compliance with explosion protection standards Function: Circuit closed in upper float position Power cable: (H07RN-F 3G1)	5	01148226	0,7
			10	01148247	1
			20	01148248	2
	E64	F1 leakage sensor Contactor for alarm switchgears AS 0, AS 2, AS 4 or as alarm transmitter for LevelControl Basic 2 Alarm transmission options: High water alert by suspending the sensor in a (pump) sump above the pump start-up point. Warning at a water level of 1 mm in areas with a flooding or leakage risk (e.g. in the cellar or next to the washing machine in the kitchen or bathroom) Dimensions [mm]: 52 × 21 × 20 (H × W × D)	3 m	19072366	0,2
	E65	Open pressure bell set, pneumatic and bubbler control with polyamide tube 8 x 1 mm	10	19071721	1,2
			20	19071837	2
			50	19074200	2,5
	E66	Closed pressure bell set, pneumatic with polyamide tube 8 x 3 mm	10	19071722	3,5
			> 10	On request	-
	E70	Horn, 12 V DC, 105 dB, 150 mA, IP54 Suitable for indoor installation and outdoor installation. Protect against moisture.	-	01086547	0,1
	E71	Alarm combination (yellow lamp and piezo buzzer 92 dB), 12 V DC, 120 mA, IP65	-	01139930	0,1
	E72	Yellow alarm strobe light, 12 V DC, 195 mA, IP65	-	01056355	0,3
	E73	KSB ServiceTool for Windows XP, RS 232 interface	-	47121210	0,2
	E90	Rechargeable battery retrofit kit for LevelControl Basic 2, type BC Scope of supply: 2 rechargeable batteries (6 V, 1.3 Ah) and charge controller	-	19074194	0,8
	E91	Rechargeable battery retrofit kit for LevelControl Basic 2, type BS Scope of supply: 1 rechargeable battery (12 V, 1.2 Ah) and charge controller[12)]	-	19074199	1
	E95	Plastic handle with safety cylinder insert for KS wall-mounted cabinet (O14) Order 2 pieces for KS cabinet.	-	01855128	0,086

12 The initial scope of supply is configured via KSB EasySelect; when retrofitting check beforehand whether there is sufficient space in the control cabinet.

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Item		Description	Cable length / tube length [m]	Mat. No.	[kg]
-	E100	Operating manual in German[13)]	-	01148254	0,155
		Operating manual in English[13)]	-	01148255	0,155
		Operating manual in French[13)]	-	01148256	0,155
		Operating manual in Dutch[13)]	-	01148337	0,155
		Operating manual in Spanish[13)]	-	01148338	0,155
		Operating manual in Swedish[13)]	-	01148339	0,155
		Operating manual in Finnish[13)]	-	01148340	0,155
		Operating manual in Polish[13)]	-	01148341	0,155
		Operating manual in Italian[13)]	-	01148342	0,155
		Operating manual in Czech[13)]	-	01148343	0,155
		Operating manual in Russian[13)]	-	01149725	0,155
		Operating manual in Hungarian[13)]	-	01148344	0,155
		Operating manual in Turkish[13)]	-	01235989	0,155
		Operating manual in Bulgarian[13)]	-	01350442	0,155
		Operating manual in Slovakian[13)]	-	01350443	0,155
		Operating manual in Romanian[13)]	-	01372504	0,155
		Operating manual in Danish[13)]	-	01425519	0,155
		Operating manual in Croatian[13)]	-	01434132	0,155
		Operating manual in Serbian[13)]	-	01434131	0,155
		Operating manual in Slovenian[13)]	-	01427735	0,155
		Operating manual in Norwegian[13)]	-	01470719	0,155
		Operating manual in Estonian[13)]	-	01623524	0,155
		Operating manual in Portuguese[13)]	-	01802910	0,155

13 For additional copies. The operating manual and the parameter label are enclosed with the device. The operating manual can be downloaded free of charge from the KSB website (www.ksb.com).

28/01/2021

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