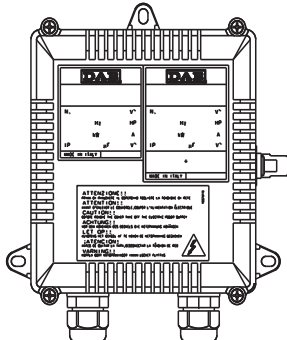


CONTROL AND PROTECTION SYSTEMS

FOR BOREHOLE PUMPS

Control Box

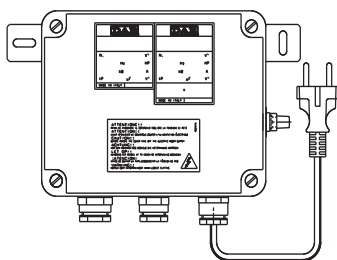
Supplied as standard in CS series



Electrical control box for operation of single-phase electric pumps motors, containing manually resettable overload protection, capacitor, and terminals for electrical connections.

Complete with terminals for connection of a pressure switch / float switch if required. Complete with 1.5 m cable with SCHUKO plug CEE 7- VII UNEL 47166-68. Wall-mounting box in self-extinguishing thermoplastic.

HS control unit



Control unit to increase starting torque of single phase electric pumps with power ratings of 0.5 – 0.75 – 1.5 HP 220V~ containing a manually resettable micro cut-out for overload protection, the start capacitor, a capacitor to boost starting torque, and terminals for electrical connections.

Protection rating: IP 55

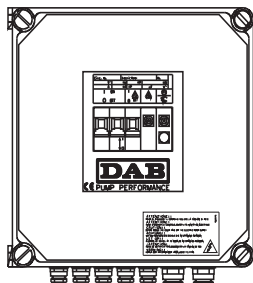
Ambient operating temperature: -10°C + 40°C

Complete with 1.5 m power cable 3G1.5 H07 VV-F.

Wall-mounting box in self-extinguishing thermoplastic.

MODEL	POWER INPUT 50 HZ	MAX POWER kW	MAX CURRENT A	START CAPAC. µF	STARTING TORQUE BOOST CAPACITOR µF	GROSS WEIGHT kg
Control HS 0.5	1x220 V~	0,37	4	16	20	2,1
Control HS 0.75	1x220 V~	0,55	5	20	30	2,2
Control HS 1	1x220 V~	0,75	6	30	40	2,2
Control HS 1.5	1x220 V~	1,1	10	40	60	2,4

ES 1 M - ES 3 M



Control box for dry run protection of borehole single-phase electric pumps (see table). The control box is protected and it protects the electric pump from overloads and short circuits, with manual reset facility.

Complete with:

- Terminals for min/max level control (with float switches, pressure switches, etc.)
- Terminals for connection of a remote control
- Pump manual run button
- Timer to control stop time to protect against dry running.
- Protection against excessive number of starts (can be bypassed).
- Terminals (voltage-free) for remote feeding of an audible alarm.

Facility for operation with 1, 2 or 3 sensors, depending on application.

Protection rating IP 55. Operating range: from -10°C to +40°C

Supplied as standard with an electric probe and wall-mounting brackets.

Wall-mounting box in self-extinguishing thermoplastic.

MODEL	POWER INPUT 50-60 HZ	POWER KW P2 MOT.	NOM. DUTY POWER (MAX) (KW)	MAX CURRENT A	DIMENSIONS			GROSS WEIGHT kg
					A	B	H	
ES 1 M	1x220-240 V~	0,25-0,37-0,55-0,75	1,85	10	270	300	190	5,6
ES 3 M	1x220-240 V~	1,1-1,5-2,2	2,2	16	270	300	190	5,6

Electrode probe

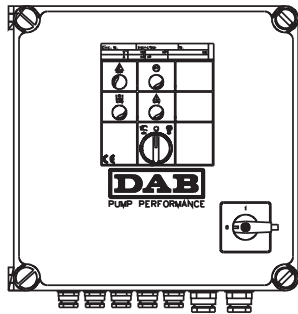
For use with ES control boxes for supervision of dry running/level control. Suitable for conductive liquids with temperature up to +40°C. Can be connected to electrical panel using 1.5 mm² cable with 550V insulation capacity (not supplied).



ES 0,75 T

1 T - 1,5 T

3 T - 4 T - 7,5 T



Control box for dry run protection of borehole three-phase electric pumps (see table). The control box is protected and it protects the electric pump from overloads and short circuits, with manual reset. Complete with:

- Terminals for min/max level control (with float switches, pressure switches, etc.)
- Terminals for connection of a remote control
- Pump manual/automatic operation selector
- Timer to control stop time to protect against dry running.
- Protection against excessive number of starts (can be bypassed).
- Terminals (voltage-free) for remote feeding of an audible alarm.

Facility for operation with 1, 2 or 3 sensors, depending on application. Protection rating IP 55. Operating range: from -10°C to +40°C Supplied as standard with an electric probe and wall-mounting brackets. Wall-mounting box in self-extinguishing thermoplastic.

MODEL	POWER INPUT 50-60 HZ	POWER kW P2 MOT.	NOM. DUTY POWER (MAX.) (KW)	MAX CURRENT A	DIMENSIONS			GROSS WEIGHT kg
					A	B	H	
ES 0,75 T	3x400 V~	0,25-0,37-0,55	0,88	1,6	270	300	190	5,6
ES 1 T	3x400 V~	0,75	1,38	2,5	270	300	190	5,6
ES 1,5 T	3x400 V~	1,1	2,2	4	270	300	190	5,6
ES 3 T	3x400 V~	1,5 - 2,2	3,5	6,3	270	300	190	5,6
ES 4 T	3x400 V~	3	5,5	10	270	300	190	5,6
ES 7,5 T	3x400 V~	4-5,5	7,5	14	270	300	190	5,6

ESC 3M - 4T - 10T



Electric control units for the protection of single and three-phase borehole pumps. The control unit protects the pump from:

- overloads
- phase loss (three-phase version only)
- short circuit
- dry running

The display shows pump operating conditions by means of LEDs:

- Running (green ON)
- Low water level (yellow) – automatic restart test (Stand-by)
- Dry (red) motor stopped (no water)
- Overload (red) – motor stopped (overload)

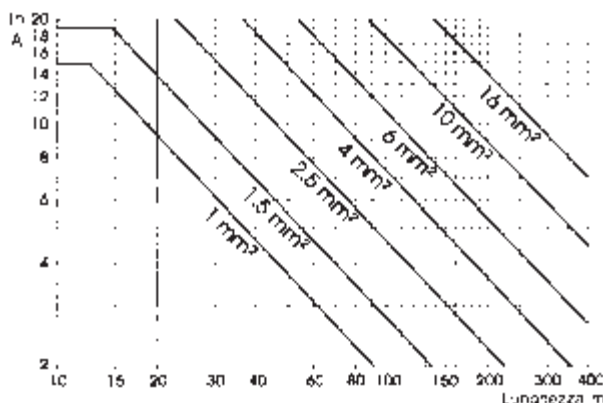
The water level is not controlled by electrode probes but rather by means of changes of the cos ϕ value (power factor) of the motor. In the case of dry running the system automatically checks 4 times for water level sufficient for automatic starting; after these attempts the motor remains Off (no water).

- protection rating IP 43
- working temperature: from 0°C to +40°C

MODEL	POWER INPUT 50 Hz	MAX POWER kW	MAX CURRENT A	DIMENSIONS			GROSS WEIGHT kg
				A	B	H	
ESC 3 M	1x 220-240V	2,2	18	270	270	165	1,1
ESC 4 T	3x400 V	3,0 incl.	10	270	270	165	1,2
ESC 10 T	3x400 V	4,0-7,5 incl.	20	270	270	165	1,7

TABLES TO ESTABLISH POWER CABLE CROSS SECTION IN RELATION TO LENGTH

Voltage 1x220/240 V ~ direct starting
Voltage drop 3%
Ambient temperature 30°C



Voltage 3x400 V ~ direct starting
Voltage drop 3%
Ambient temperature 30°C

