1EP

ELECTRIC CONTROL PANELS FOR SUBMERSED AND SURFACE ELECTRIC PUMPS

Protection and control electric control panel for one electric pump. Functioning in manual mode or in automatic mode via pressure switche or float. When functioning two clamps are envisioned. Protection against dry running is ensured by the P.MIN pressure switch or by the float (the intervention stops the electric pump and is indicated by the relevant indicators and with remote contacts). The control panel protects the motors from overloading and missing phase. Any protections tripped are signalled on the control panel itself and at a distance via potential free contacts. The protection against overloading and missing phase, is automatic reset for three times, manual at the fourth intervention (any interventions, from 1 to 3, are cancelled after one hour from the last intervention).

TECHNICAL DETAILS

- P.MIN= Functioning against dry running (control using a float or minimum pressure switch) with automatic reset on water return
- PR1= Start and stop control of pump n° 1
- Motor protection against overloads with three automatic reset events, manual at the fourth
- Overload protection against short circuits, with fuses for starting the motor
- Protection of the transformer and auxiliary circuits with fuses
- Remote signalling with potential free NC-NA contact of the protections tripped

TECHNICAL DATA

- Power supply: 230V +10-15% 50/60 Hz (single phase)
  400V +10-15% 50/60 Hz (trifase)
- Temperature: from -10°C to +40°C
- Protection degree: IP55
- Reference Standards: EN 60204-1, EN 60439-1, EN 61000-6-3, EN 61000-6-1 (for civil environments)

ELECTRIC DATA TABLES

Model Single phase 230V +10-15% - 50Hz	[HP]	[kW]	Nominal curr. [A]	Protection range [A]
1EP 0,37 - 2,2 M UA	0,55 ÷ 3	0,37 ÷ 2,2	16	3,2 ÷ 16

Control panels supplied without capacitor. For more information please contact our sales network.

Model Three phase 400V +10-15% - 50Hz	[HP]	[kW]	Nominal curr. [A]	Protection range [A]
1EP 2,2 T	0,55 ÷ 3	0,37 ÷ 2,2	6	3,2 ÷ 16
1EP 7,5 T	4 ÷ 10	3 ÷ 7,5	16	3,2 ÷ 16
1EP 11 SD UA	15	10	25	9 ÷ 15
1EP 15 SD UA	20	15	31	12 ÷ 18
1EP 18,5 SD UA	25	18,5	36	16 ÷ 24
1EP 22 SD UA	30	22	50	23 ÷ 32
1EP 30 SD UA	40	30	62	30 ÷ 40
1EP 37 SD UA	50	37	77	37 ÷ 50

1EPBH

ELECTRIC CONTROL PANELS FOR SUBMERSED AND SURFACE ELECTRIC PUMPS

Protection and control panels for a submersed or surface electric pump with direct start-up. The control panel can manually and automatically control an electric pump.
In the automatic function, the electric pump is controlled by the pressure switch, the float or signals that come from the electric probes or from the floats.

TECHNICAL DETAILS

- Protection against dry running (control using an electric probe) with automatic reset and water return
- Reservoir filling level control with two electric probes or floats
- Reservoir emptying level control with two electric probes or floats
- Cosφ module, optional for controlling against dry running without the use of the electric probes
- Motor protection against overloads and an automatic reset phase for three interventions, manual at the fourth
- Pump protection against excessive start-ups
- Overload and board protection, against short circuits, with fuses
- Remote displaying with NC-NO potential free contact of the present fault or alarm float
- Clamps for connecting any single phase motor starter capacitor
- Clamps for connecting a pressure switch
- Clamps for connecting an alarm float

TECHNICAL DATA

- 230V +10-15% 50/60 Hz power supply (single phase)
  400V +10-15% 50/60 Hz (three phase + N)
- Temperature of the liquid: from -10°C to +40°C
- IP55 Protection rating
- Reference Standards: EN 60204-1, EN 60439-1, EN 61000-6-2, EN 61000-6-4 (for domestic and light industry application)

ELECTRIC DATA TABLE 4" SINGLE PHASE BOREHOLE MOTORS

Model Single phase 230V +10-15% - 50Hz	[HP]	[kW]	[A] max		Recommended capacitor µF		[V]
			[OY]	[WY]	[OY]	[WY]	
1EPBH 0,37 M	0,5	0,37	3,6	4	20	16	450
1EPBH 0,55 M	0,75	0,55	4,5	5,9	25	20	450
1EPBH 0,75 M	1	0,75	6	7,3	35	35	450
1EPBH 1,1 M	1,5	1,1	8,2	8,6	40	40	450
1EPBH 1,5 M	2	1,5	11	10,4	60	50	450
1EPBH 2,2 M	3	2,2	14,8	15,3	80	70	450

Control panels supplied without capacitor

ELECTRIC DATA TABLE 4" THREE PHASE BOREHOLE MOTORS

Model Three phase 400V +10-15% - 50Hz	[HP]	[kW]	[A] max	
			[OY]	[WY]
1EPBH 0,37÷1,1 T	0,5÷1,5	0,37÷1,1	1,6÷3,4	1,03÷2,8
1EPBH 1,5 T	2	1,5	4,6	3,9
1EPBH 2,2 T	3	2,2	6,2	5,5
1EPBH 3 T	4	3	8	7,5
1EPBH 4 T	5,5	4	10,2	9,9
1EPBH 5,5 T	7,5	5,5	14,4	12,6
1EPBH 7,5 T	10	7,5	19,5	17,1

ELECTRIC DATA TABLE 6" THREE PHASE BOREHOLE MOTORS

Model Three phase 400V +10-15% - 50Hz	[HP]	[kW]	[A] max [OY]	[A] max [WY]
1EPBH 4 T	5,5	4	8,9	9,3
1EPBH 5,5 T	7,5	5,5	12,4	12,5
1EPBH 7,5 T	10	7,5	17,2	16
1EPBH 9,2÷11 T AVSE 2E*	12,5÷15	9,2÷11	22÷23,9	20,7÷23,3
1EPBH 15 T AVSE 2E*	20	15	31,4	31,3
1EPBH 18,5 T AVSE 2E*	25	18,5	41,5	38,5
1EPBH 22 T AVSE 2E*	30	22	46,5	45,3
1EPBH 30 T AVSE 2E*	40	30	63	63,5
1EPBH 37 T AVSE 2E*	50	37	79,2	73
1EPBH 45 T AVSE 2E*	60	45	-	89,5

*= Start with reactance -2 isolators

ELECTRIC DATA TABLE 8" THREE PHASE BOREHOLE MOTORS

Model Three phase 400V +10-15% - 50Hz	[HP]	[kW]	[A] max [WY]
1EPBH 30 T AVSE 2E*	40	30	61
1EPBH 37 T AVSE 2E*	50	37	74
1EPBH 45 T AVSE 2E*	60	45	89
1EPBH 55 T AVSE 2E*	75	55	108
1EPBH 75 T AVSE 2E*	100	75	145
1EPBH 93 T AVSE 2E*	125	93	190
1EPBH 110 T AVSE 2E*	150	110	222

*= Start with reactance -2 isolators

HERTZ ONE - TWIN

ELECTRIC CONTROL PANEL WITH INVERTER

HERTZ ONE

HERTZ TWIN

The HERTZ ONE control panel is an automatic control and protection system for one (HERTZ ONE) or two (HERTZ TWIN) electric centrifugal pumps equipped with three phase induction motors.
The control panel power supply can be three phase or single phase.
The HERTZ ONE and HERTZ TWIN control panels include a pump control software and allow regulation of motor speed via an electronic frequency changer (INVERTER) that powers the pump motor. On varying the rotation speed, the pump performance varies in terms of flow rate and head, allowing optimal use in every condition and saving energy.

TECHNICAL DETAILS

- Energy saving: the controller modulates the pump according to the hydraulic energy request of the plant with respect to a direct connection in the network
- Quicker and improved regulation
- Hammering reduced thanks to gradual start-up and stop
- Improved comfort in the heating, air conditioning and pressure boosting systems
- Reduced peak current
- Exchange at every powered pump re-start (HERTZ TWIN)
- Speed modulation on both pumps for excellent regulation (HERTZ TWIN)

TECHNICAL DATA

- Current limits for 60 seconds 1.6 times the current set for 60 seconds. Automatic restore for three times, manual restore on the fourth intervention
- Limits of use (environment temperature): from -10°C to +40°C
- IP55 Protection rating (IP44 TWIN TT 2x3, 3x4)
- Conformity to the CE mark, EN 60204-1; Security electrical equipment. - EN 60439-1; Switchgear and controlgear assemblies.
  EMC standards applied:
  - CEI EN 61000-6-1; immunity for residential, commercial, and light-industrial environments.
  - CEI EN 61000-6-2; industrial immunity.
  - CEI EN 61000-6-3; emission for residential, commercial and light-industrial environments.
  - CEI EN 61000-6-4; industrial emission.
  - CEI EN 61000-3-2; harmonic current emission <= 16A (use XL.L line inductance to be installed on request, see ref. 8.1, 8.2). Emissions: conformity for residential environments. Immunity: conformity for industrial environments.
- Recommended minimum output frequency: 30 Hz
- Power supply voltage (single phase version): 230V +10% -15%
- Power supply voltage (three phase version): 400V +10% -15%
- Number of pumps that can be connected: 1 (HERTZ ONE), 2 (HERTZ TWIN)
- Motor power: from 0.25 kW to 4 kW

E-*drive*

FREQUENCY INVERTER FOR THE CONTROL OF ELECTRIC PUMPS

The E-*drive* is a device for the control and protection of pumping systems based on frequency variations in the power supply of the pump.
The E-*drive* can be connected to any pump on the market, it manages operation to maintain set physical quantities constant (pressure, flow or temperature of fluid or more) depending on the conditions of use. In this way the pump is operated only as and when needed without wasting energy and as such extending its life.

APPLICATIONS

- Domestic and industrial water supply
- Irrigation
- Heating and air conditioning
- Filtering and pressure washing

TECHNICAL FEATURES

- Energy and financial savings
- Easy system installation and at a lower cost
- Longer system life
- Increased reliability

GENERAL FEATURES

- Power supply frequency: 50 - 60 Hz (+/- 2%)
- Max. working ambient temperature under a nominal load: 40°C (104 °F)
- Max. altitude under a nominal load: 1000 m
- Degree of protection: IP55 (NEMA 4)
- Configurable digital outputs NO or NC:
  1. running motor signal
  2. alarm
  3. pump control DOL 1
  4. pump control DOL 2
- Analogue inputs, (10 or 15 Vdc):
  1. 4-20 mA
  2. 4-20 mA
  3. 4-20 mA / 0 - 10 Vdc (configurable)
  4. 4-20 mA / 0 - 10 Vdc (configurable)
- 4 Digital inputs, configurable NO or NC, to start and stop motor
- Serial RS485

ELECTRIC DATA TABLE

Model	V_{in} +/- 15% [V]	Max. V_{out} [V]	I_{out} [A]	P_2 Typical motor [kW]
E-*drive* 1500	1 x 230	1 x 230	9	1,1
		3 x 230	7	1,5
E-*drive* 3000	1 x 230	1 x 230	9	1,1
		3 x 230	11	3
E-*drive* 2200	3 x 400	3 x 400	6	2,2
E-*drive* 4000	3 x 400	3 x 400	9	4
E-*drive* 5500	3 x 400	3 x 400	14	5,5
E-*drive* 7500	3 x 400	3 x 400	18	7,5
E-*drive* 11000	3 x 400	3 x 400	25	11
E-*drive* 15000	3 x 400	3 x 400	30	15

PRESSCOMFORT

PRESSURE REGULATOR

PRESSCOMFORT is an automatic electronic appliance, destined to regulate functioning of the electric pumps without using booster reservoirs.
This unit manages the automatic start and stop of the pump when opening or closing any tap or valve of the installation.
When the pump starts, it keeps running while it exists any tap opened in the system, giving flow and pressure to the hydraulic net while ther is demand.
If there is no suction air, the pump stops automatically.
PRESSCOMFORT allows:
- manual restore (RESET key)
- automatic restore after 1, 6, 12 o 24 hours.
If on suction the water returns to a pressure exceeding the fixed value for pump start-up, PRESSCOMFORT is restored automatically.

TECHNICAL DETAILS

- The PRESSCOMFORT is replacing the traditional expansion tank, pressure switch, check valves, level switch
- Version with or without cables
- Automatic regulation
- Adjustable start-up pressure
- Incorporated non-return valve
- Plate with functioning indicator
- Connection cable on the pump terminal box (for wired version only)
- Power supply cable (1.5 m) with standard socket (for wired version only)

TECHNICAL DATA

- Maximum temperature of the water: 60° C
- Maximum flow rate: 10,000 l/h
- Start-up pressure: 1.5 - 2.5 bar
- Maximum use pressure: 10 bar
- Power supply voltage: 220 ±10% - 50/60 Hz
- Maximum current intensity: 10A
- IP65 Protection rating
- G1 connections (pump and outlet side)
- Weight: 0,6 kg

PRESS·O·MATIC

INVERTER FOR CONTROLLING THE ELECTRIC PUMPS

Electronic device for controlling the electric pumps based on inverter technology. Controls start-up and stop of the electric pump and modulates the motor revs. depending on the withdrawal of water from the plant.

TECHNICAL DETAILS

- Constant pressure thanks to the regulation of the electric pump revs.
- Energy saving
- Gradual pump start-up and stop that reduce hammering and eliminate peak current on ignition
- Protection against dry running if there is no suction air
- Reset automatic in the case of stopping due to dry running
- Effective leak control (protection of the pump in the case of continuous re-starts)
- Indication of the pressure on the display
- Amperometric motor control
- Indication of the various functioning/error states via luminous indicators and messages on the display
- Functioning in twin units alternately
- Double set-point that can be commanded at a distance
- Electric pump remote start and stop
- Rotation direction inversion via software
- Removable electric clamps to easy wiring
- The use of an expansion vessel is recommended

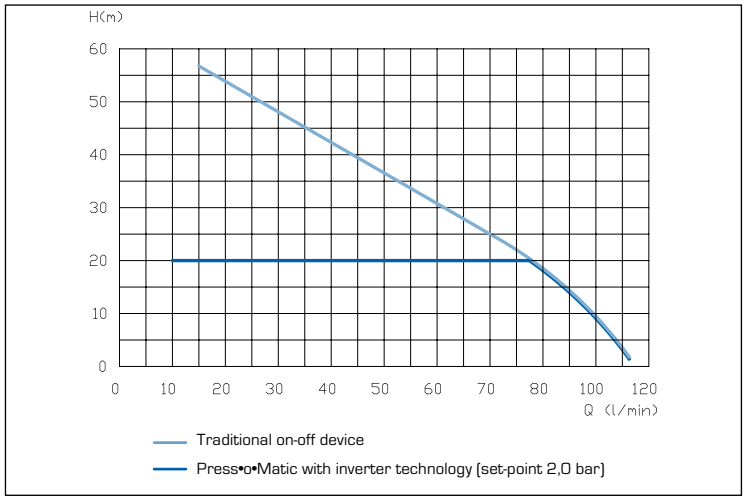
TECHNICAL DATA

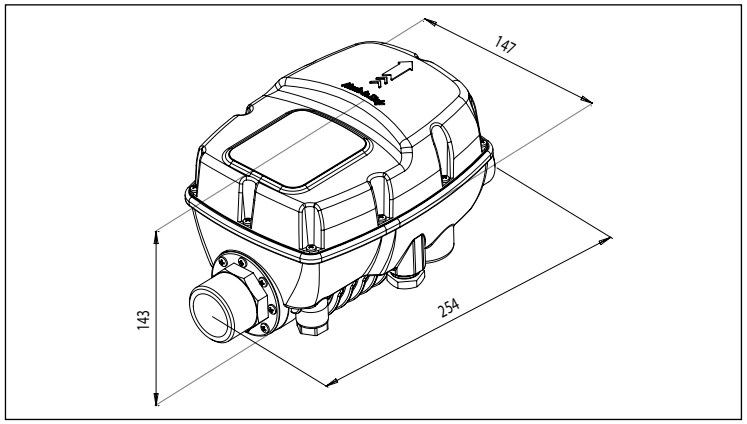
- Mains power supply: single phase 230V ± 10%, 50Hz
- Motor supply: three phase 220V
- Maximum motor power: 2200W - 3HP
- Maximum motor current: 9,7A
- Maximum line absorption: 16A at 230V
- Maximum pressure accepted: 8 bar
- Maximum temperature of the liquid: 50°C
- Pressure drop: 0.1 bar at 150 l/min
- Set-point regulation range: 1.5÷7 bar
- Start pressure regulation range: 1÷6.7 bar
- Hydraulic connection: G1¼ male-male
- Frequency modulation range: 25÷50 Hz
- Protection rating: IP 65

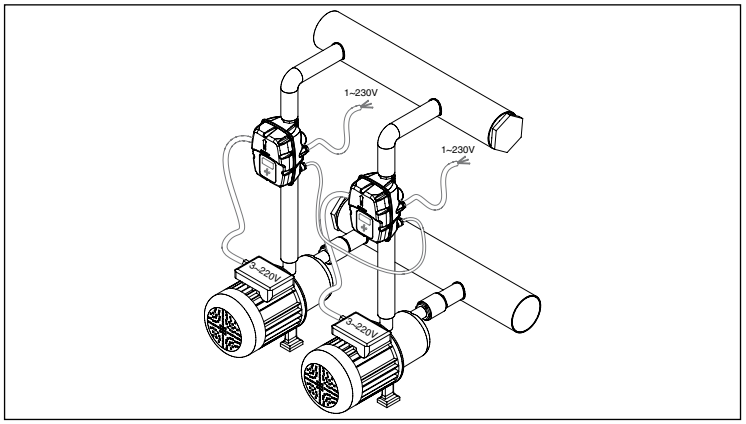
SPECIAL VERSION

- Frequency modulation range 30÷60 Hz
- Connection cable for functioning in pairs 4x0.5 mm² 100 cm (SR-CBL4X05-100)

PRESSURE-FLOW RATE GRAPHICS (ELECTRIC PUMP 1,5 HP)







SPECIFIC PERFORMANCE

The specifications below qualify the curves shown in our catalogues and Data Book (see www.ebaraeurope.com).
All the performance curves are calculated according to ISO 9906 Attachment A.

Tolerance according to ISO 9906 Attachment A. The curves refer to an effective speed of the 50 Hz asynchronous motors.
The measurements are made with water temperature of 20°C and cinematic viscosity of ν= 1 mm^2/s (1 cSt).
During the pump selection,consider to get a safety margin of at least 0.5 m.
The continuous curves indicate the recommended working range. The dotted curve is only a guide.
In order to prevent the risk of overheating, the pumps must not be used at a flow rate below 10% of the maximum efficiency flow rate.

During selection of the pumps, there is a safety margin of at least 1 m.
Symbols:

Q	= Volume flow rate [m^3/h]
H	= Total head [m]
P^1	= Power absorbed by the electric line
P^2	= Pump power input (shaft power)
η	= Pump efficiency
NPSH	= Net positive suction head required by the pump
MEI	= Minimum Efficiency Index

The minimun efficiency index (MEI) is a measure of the quality of a pump size in respect to its mean efficiency.
The minimum efficiency index is based on the hydraulic efficiency and on the head at the best efficiency point.

The efficiency of a pump with trimmed impeller is usually lower than that of a pump with the full impeller diameter.
The trimming of the impeller will adapt the pump to a fixed duty point, leading to reduced energy consumption.
The minimum efficiency index (MEI) is based on the full impeller diameter.

The operation of these water pumps with variabile duty points may be more efficient end economic when controlled, for example, by the use of a variable speed drive that matches the pump duty to the system.

DNV

DNV BUSINESS ASSURANCE

MANAGEMENT SYSTEM CERTIFICATE

Certificato No. / Certificate No. ***CERT-17819-2006-AQ-VEN-SINCERT***

Si attesta che / This is to certify that

EBARA PUMPS EUROPE S.p.A.

Sede e Stabilimento di Brendola: Via Pacinotti, 32 - 36040 Brendola (VI) - Italy
Stabilimento di Cles: Via Campo Sportivo, 30 - 38023 Cles (TN) - Italy
Filiale di Palermo: Via Don Luigi Sturzo, 181/183 - Z. I. - 90040 Carini (PA) - Italy
Filiale di Cagliari: Via del Fangario, 29 - 09122 Cagliari (CA) - Italy

è conforme ai requisiti della norma per i sistemi di gestione:
has been found to conform to the management system standard:

UNI EN ISO 9001:2008 (ISO 9001:2008)

Questa Certificazione è valida per il seguente campo applicativo:
This Certificate is valid for the following product or service ranges:

Progettazione, produzione, vendita e commercializzazione di pompe e sistemi di pompaggio
(Settore EA : 18 - 17)

Design, manufacture, sales and trade of pumps and pumping systems
(Sector EA : 18 - 17)

Data Prima Emissione/Initial Certification Date:
2006-10-13
Il Certificato è valido fino al:
This Certificate is valid until:
2015-10-10
L'audit è stato eseguito sotto la supervisione di/
The audit has been performed under the supervision of
Michele Gaiba
Lead Auditor

ACCREDIA

Luogo e Data/Place and Date:
Agrate Brianza (MB), 2012-10-02
Per l'Organismo di Certificazione:
For the Accredited Unit:
Zeno Beltrami
Management Representative

La validità del presente Certificato è subordinata al rispetto delle condizioni contenute nel Contratto di Certificazione.
Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.