PENTAIR

PENTEK®
ELECTRONICS CATALOG

MOTORS, CONTROLS AND DRIVES

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PENTAIR

PENTEK®

Tested. Tough. Proven.

From the dawn of civilization, providing and managing a dependable source of water has been essential to mankind's survival. Serving this most basic human need has driven the development of countless new technologies. In the 21st century, Pentek® is at the forefront of developing new and better electronic technology for water management.

We start with the fact that our motors, controls and other products have to be exceptionally tough. Submersible pumps live deep inside a difficult environment, and only a tough motor with a hard-working, precision-engineered control system can meet the constant demand for water. Where technology must be tough, Pentek has been tested and trusted by our customers.

Pentek will continue to bring you new innovations in motors and controls, because of our rich heritage of expertise in water management systems. Pentek is the leading electronics brand of Pentair, North America's largest water pump manufacturer. Pentair sets demanding standards for pumps, motors and controls that are lab-tested and field-tested, to prove they're tough enough, before they ever ship to our customers.

Pentek offers the exceptional technical support you expect from Pentair, and a level of advanced "tough technology" unmatched in the industry. So, demand more, and put us to the test. Our vision is to prove, time and time again, we are your best choice.



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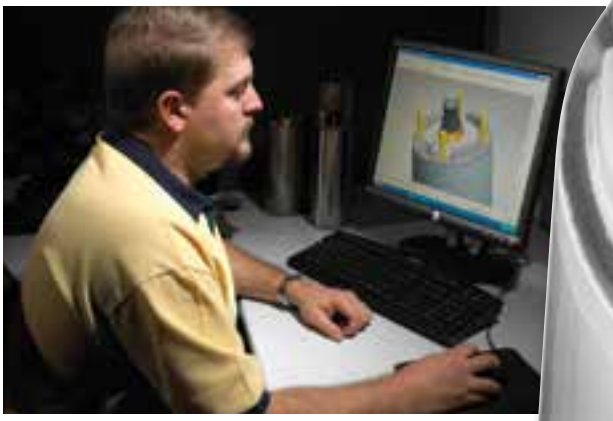
4" Submersible Motors XE-SERIES

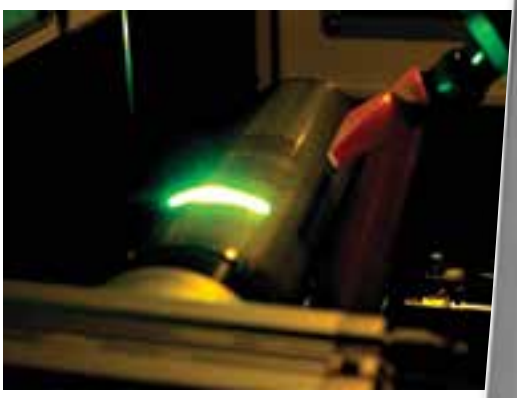
For high-thrust water well applications

1/2 – 5 HP, Single Phase, 2 & 3 Wire, 115V and 230V, 60 Hz

1/2 – 10 HP, Three Phase, 3 Wire, 200V, 230V, 460V and 575V, 60 Hz

Pentek® offers a complete line of XE Series 4" Submersible High-Thrust Motors. Built with the latest design, manufacturing, and testing technology, they feature laser-welded 304L stainless steel construction, higher-thrust capacities and higher efficiencies.





XE-SERIES

Engineered EPOXY STATOR Design

The Pentek® XE Series submersible motors utilize a 304L stainless steel "encapsulated, epoxy stator design," and professional-grade Class F insulation providing longer life in harsh environments. Each motor is 100% factory pressure and run tested to support our high quality standards.

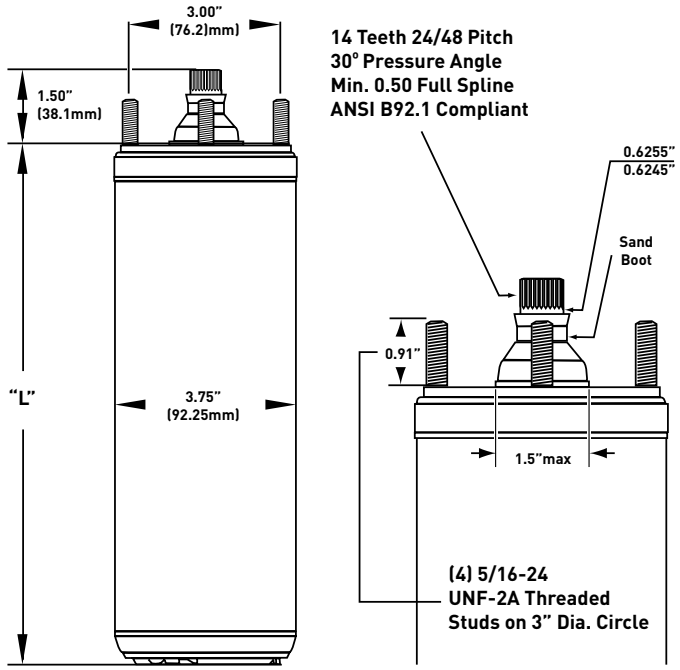
Features

Pentek submersible motors are unique in providing the industry with innovative and robust design features that will extend the life of your installation:

- Oversized Kingsbury-type Thrust Bearing Design– Large high-performance bearings are standard on all HPs allowing for higher thrust loads, providing many years of trouble-free service under severe-duty operation
- 2-Wire Permanent Split Capacitor Design insures quiet operation and improved operating efficiency
- 3-Wire Motors operate with Pentek SMC-CR, VIP Pro and Pentek Intellidrive™ products
- All Stainless Steel Exterior
- Professional-Grade Class F-Compliant Motor Insulation – Allows for longer service life
- 100% Factory Pressure and Run Tested
- Automatic Thermal Protection on 2-wire designs to 1-1/2 HP models and 3-wire designs to 1 HP single-phase
- All 115V and 230V motors are equipped with surge arrestors to provide maximum protection against lightning, transient and voltage surge conditions

Technical data can be found on page 8

Mounting Configuration



Materials of Construction

PARTS	MATERIALS
End Bell	304L cast stainless steel, rounded bottom
Shell	304L stainless steel, laser-welded to end bells
Motor Shaft	17-4 precipitation hardened SS
Insulation	Class F, 311°F (155°C)
Max. Water Temp.	86°F (30°C)
Fasteners	304-grade stainless steel
Lip Seal	Nitrile
Sand Boot	Nitrile
Cable	Field-serviceable, controlled compression design UL, CSA, NSF approved
Cable Length	48" - 1/2 HP to 1-1/2 HP; 100" - 2 HP and above
Diaphragm	EPDM
Thrust Bearings	Kingsbury-type, pivot shoe, carbon graphite mating ring
Thrust Load Capacity	Varies by rating. See table on page 8

Consult Pentek Electronics Manual for high-temperature applications

4" Submersible Motors XE-SERIES

Innovations focused on dependable performance

Capacitor

- Patented encapsulated toroidal capacitor on 2-wire motor design provides smoother, noise-free operation without the need for a control box
- Lower starting current with both main and start windings engaged at all times

Motor End Bells & Shell

- Upper & lower 304L stainless steel (SS) end bells are designed for 100% corrosion-resistance and durability
- Rounded bottom on lower end bell reduces well casing interference
- Upper 304L SS end bell is designed with internal cord entry feature
- Motor shell is constructed of 304L SS tubing, with a laser-etched nameplate and warning label

Motor Leads

- Replaceable lead is held in place by 2 screws for controlled compression
- Each lead is tested twice to 250 PSI
- UL, CSA, NSF approved

Kingsbury-type Thrust Bearings

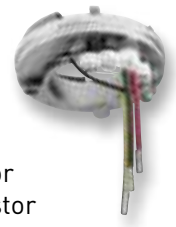
- Large high-performance bearings are standard on all HPs, allowing higher thrust loads, for many years of trouble-free service under severe-duty operation
- Stainless steel pivot shoe is securely positioned over the carbon graphite disk for even load disbursement

XE-SERIES

Class F Insulation

- Professional-grade Class F-compliant motor insulation allows for longer service life and more reliable motor operation

Surge Arrestors



- Surge arrestors are mounted within the upper end bell
- Design provides each conductor circuit with its own surge arrestor
- Designed to optimize clamping voltage, energy absorption/dissipation and response time

Drive Shaft

- 17-4 precipitation hardened stainless steel shaft with precision finished bearing surfaces
- NEMA standard mounting and shaft height

Sand Slinger

- Provides ultimate protection against sand and grit intrusion
- Stamped stainless steel upper cover is designed to prevent sand entry

4" Submersible Motors

For high-thrust water well applications — 1/2 - 10 HP, single- and three-phase

XE SERIES PERFORMANCE

MOTOR TYPE	CATALOG NUMBER	RATING					FULL LOAD AMPS	MAX. LOAD (SF LOAD) AMPS	WINDING		LOCKED ROTOR AMPS	LENGTH		WEIGHT		THRUST RATING
		HP	KW	VOLTS	HZ	SERVICE FACTOR			MAIN RESISTANCE	START RESISTANCE		IN	MM	LB	KG	
PSC 2-WIRE	P42B0005A1	1/2	0.37	115	60	1.6	7.4	9.5	1.3-1.8		36.4	11.0	279	19.2	8.7	
	P42B0005A2	1/2	0.37	230	60	1.6	3.7	4.7	4.5-5.2		19.5	11.0	279	19.2	8.7	
	P42B0007A2	3/4	0.55	230	60	1.5	5.0	6.4	3.0-4.8		24.8	12.4	314	22.7	10.3	
	P42B0010A2	1	0.75	230	60	1.4	7.9	9.1	4.2-5.2		21.7	13.3	337	24.5	11.1	
	P42B0015A2	1 1/2	1.1	230	60	1.3	9.2	11.0	1.9-2.3		42.0	14.9	378	28.9	13.1	
	P42B0005A1-01	1/2	0.37	115	60	1.6	7.9	9.8	1.4-2.0		28	10.5	267	18.1	8.2	
	P42B0005A2-01	1/2	0.37	230	60	1.6	4.0	4.7	6.1-7.2		16	10.5	267	18.1	8.2	
	P42B0007A2-01	3/4	0.55	230	60	1.5	5.0	6.2	5.9-6.9		18	11.9	302	21.4	9.7	
	P42B0010A2-01	1	0.75	230	60	1.4	6.7	8.1	4.2-5.2		24	12.5	318	23.2	10.5	
	P42B0015A2-01	1 1/2	1.1	230	60	1.3	9.0	10.4	1.8-2.4		44	14.2	361	27.3	12.4	
							Y/B/R	Y/B/R								
CSIR 3-WIRE	P43B0005A1	1/2	0.37	115	60	1.6	11.0/11.0/0	12.6/12.6/0	0.9-1.6	5.7-7.0	49.6	10.0	253	18.9	8.6	
	P43B0005A2	1/2	0.37	230	60	1.6	5.5/5.5/0	6.3/6.3/0	4.2-4.9	17.4-18.7	22.3	9.7	246	18.1	8.2	700
	P43B0007A2	3/4	0.55	230	60	1.5	7.2/7.2/0	8.3/8.3/0	2.6-3.6	11.8-13.0	32.0	10.8	275	21.4	9.7	
	P43B0010A2	1	0.75	230	60	1.4	8.4/8.4/0	9.7/9.7/0	2.2-3.2	11.3-12.3	41.2	11.7	297	23.1	10.5	
	P43B0005A1-01	1/2	0.37	115	60	1.6	8.8/8.8/0	10.9/10.9/0	1.0-1.4	2.5-3.1	44	9.6	244	17.9	8.1	
	P43B0005A2-01	1/2	0.37	230	60	1.6	5.3/5.3/0	6.1/6.1/0	5.1-6.1	12.4-13.7	21	9.2	234	16.7	7.6	
	P43B0007A2-01	3/4	0.55	230	60	1.5	6.6/6.6/0	7.8/7.8/0	2.6-3.3	10.4-11.7	32	10.3	262	19.8	9.0	
	P43B0010A2-01	1	0.75	230	60	1.4	8.1/8.1/0	9.4/9.4/0	2.0-2.6	9.3-10.4	41	11.2	284	22.0	10.0	
CSCR 3-WIRE	P43B0005A2	1/2	0.37	230	60	1.6	4.1/4.1/2.2	4.9/4.4/2.1	4.2-4.9	17.4-18.7	22.3	9.7	246	18.1	8.2	
	P43B0007A2	3/4	0.55	230	60	1.5	5.1/5.0/3.2	6.3/5.6/3.1	2.6-3.6	11.8-13.0	32.0	10.8	275	21.4	9.7	
	P43B0010A2	1	0.75	230	60	1.4	6.1/5.7/3.3	7.2/6.3/3.3	2.2-3.2	11.3-12.3	41.2	11.7	297	23.1	10.5	
	P43B0015A2	1 1/2	1.1	230	60	1.3	9.7/9.5/1.4	11.1/11.0/1.3	1.6-2.3	7.9-8.7	47.8	13.6	345	27.4	12.4	
	P43B0020A2	2	1.5	230	60	1.25	9.9/9.1/2.6	12.2/11.7/2.6	1.6-2.2	10.8-12.0	49.4	15.1	383	31.0	14.1	900
	P43B0030A2	3	2.2	230	60	1.15	14.3/12.0/5.7	16.5/13.9/5.6	1.1-1.4	2.0-2.5	76.4	18.3	466	40.0	18.1	
	P43B0050A2	5	3.7	230	60	1.15	24/19.1/10.2	27.0/22.0/10.0	0.62-0.76	1.36-1.66	101.0	27.7	703	70.0	31.8	1500
	P43B0005A2-01	1/2	0.37	230	60	1.6	4.2/4.1/1.8	4.8/4.3/1.8	5.1-6.1	12.4-13.7	21	9.2	234	16.7	7.6	
	P43B0007A2-01	3/4	0.55	230	60	1.5	4.8/4.4/2.5	6.0/4.9/2.3	2.6-3.3	10.4-11.7	32	10.3	262	19.8	9.0	
	P43B0010A2-01	1	0.75	230	60	1.4	6.1/5.2/2.7	7.3/5.8/2.6	2.0-2.6	9.3-10.4	41	11.2	284	22.0	10.0	
	P43B0015A2-01	1 1/2	1.1	230	60	1.3	9.1/8.2/1.2	10.9/9.4/1.1	2.1-2.5	10.0-10.8	49	12.8	325	26.0	11.8	

COALBED METHANE - XE SERIES PERFORMANCE

MOTOR TYPE	CATALOG NUMBER	RATING					FULL LOAD AMPS (Y/B/R)	MAX. LOAD (SF LOAD) AMPS (Y/B/R)	WINDING		LOCKED ROTOR AMPS	LENGTH		WEIGHT		THRUST RATING
		HP	KW	VOLTS	HZ	SERVICE FACTOR			MAIN RESISTANCE	START RESISTANCE		IN.	MM	LB	KG	
CSCR 3-WIRE	P43S0020A2	2	1.5	230	60	1.25	9.9/2.6/9.1	12.2/2.6/11.7	1.6-2.2	10.8-12.0	49.4	19.3	491	47.0	21.3	900
	P43S0030A2	3	2.2	230	60	1.15	14.3/5.7/12.0	16.5/5.6/13.9	1.1-1.4	2.0-2.5	76.4	22.3	567	53.0	24.0	
	P43S0050A2	5	3.7	230	60	1.15	24/10.2/19.1	27/10.0/22.0	0.62-0.76	1.36-1.66	101.0	28.6	726	74.0	33.6	1500

XE-SERIES

XE SERIES PERFORMANCE

MOTOR TYPE	CATALOG NUMBER	RATING					FULL LOAD AMPS	MAX. LOAD (SF LOAD) AMPS	LINE TO LINE RESISTANCE OHMS	LOCKED ROTOR AMPS	LENGTH		WEIGHT		THRUST RATING
		HP	KW	VOLTS	HZ	SERVICE FACTOR					IN	MM	LB	KG	
3-PHASE	P43B0005A8	1/2	0.37	200	60	1.6	2.9	3.4	4.1-5.2	22	10	254	18.9	8.6	700
	P43B0005A3	1/2	0.37	230	60	1.6	2.4	2.9	5.72-7.2	17.3	10	254	18.9	8.6	
	P43B0005A4	1/2	0.37	460	60	1.6	1.3	1.5	23.6-26.1	9	10	254	18.9	8.6	
	P43B0007A8	3/4	0.55	200	60	1.5	3.8	4.5	2.6-3.0	32.0	10.8	274	21.4	9.7	
	P43B0007A3	3/4	0.55	230	60	1.5	3.3	3.9	3.3-4.3	27	10.8	274	21.4	9.7	
	P43B0007A4	3/4	0.55	460	60	1.5	1.7	2.0	14.4-16.2	14	10.8	274	21.4	9.7	
	P43B0010A8	1	0.75	200	60	1.4	4.6	5.5	3.4-3.9	29.0	11.7	297	23.1	10.5	
	P43B0010A3	1	0.75	230	60	1.4	4.0	4.7	4.1-5.1	26.1	11.7	297	23.1	10.5	
	P43B0010A4	1	0.75	460	60	1.4	2.2	2.5	17.8-18.8	13.0	11.7	297	23.1	10.5	
	P43B0015A8	1 1/2	1.1	200	60	1.3	6.3	7.2	1.9-2.5	40.0	11.7	297	23.1	10.5	
	P43B0015A3	1 1/2	1.1	230	60	1.3	5.2	6.1	2.8-3.4	32.4	11.7	297	23.1	10.5	
	P43B0015A4	1 1/2	1.1	460	60	1.3	2.8	3.2	12.3-13.1	16.3	11.7	297	23.1	10.5	
	P43B0015A5	1 1/2	1.1	575	60	1.3	2	2.4	19.8-20.6	11.5	11.7	297	23.1	10.5	
	P43B0020A8	2	1.5	200	60	1.25	7.5	8.8	1.4-2.0	51.0	13.8	351	27.4	12.4	900
	P43B0020A3	2	1.5	230	60	1.25	6.5	7.6	1.8-2.4	44.0	13.8	351	27.4	12.4	
	P43B0020A4	2	1.5	460	60	1.25	3.3	3.8	8.00-8.67	23.0	13.8	351	27.4	12.4	
	P43B0020A5	2	1.5	575	60	1.25	2.7	3.3	9.4-9.7	21.4	15.3	389	32	14.5	
	P43B0030A8	3	2.2	200	60	1.15	10.9	12.0	0.9-1.3	71.0	15.3	389	32	14.5	
	P43B0030A3	3	2.2	230	60	1.15	9.2	10.1	1.3-1.7	58.9	15.3	389	32	14.5	
	P43B0030A4	3	2.2	460	60	1.15	4.8	5.3	5.9-6.5	30.0	15.3	389	32	14.5	
	P43B0030A5	3	2.2	575	60	1.15	3.7	4.1	9.4-9.7	21.4	15.3	389	32	14.5	
	P43B0050A8	5	3.7	200	60	1.15	18.3	20.2	0.4-0.8	113.0	21.7	551	55	24.9	1500
	P43B0050A3	5	3.7	230	60	1.15	15.7	17.5	0.85-1.25	93.0	21.7	551	55	24.9	
	P43B0050A4	5	3.7	460	60	1.15	7.6	8.5	3.58-4.00	48.0	21.7	551	55	24.9	
	P43B0050A5	5	3.7	575	60	1.15	7.0	7.6	3.6-4.2	55.0	27.7	703	70	31.8	
	P43B0075A8	7 1/2	5.6	200	60	1.15	27.0	30.0	0.5-0.6	165.0	27.7	703	70	31.8	
	P43B0075A3	7 1/2	5.6	230	60	1.15	24.0	26.4	0.55-0.85	140.0	27.7	703	70	31.8	
	P43B0075A4	7 1/2	5.6	460	60	1.15	12.2	13.5	1.9-2.3	87.0	27.7	703	70	31.8	
	P43B0075A5	7 1/2	5.6	575	60	1.15	9.1	10.0	3.6-4.2	55.0	27.7	703	70	31.8	
	P43B0100A4	10	7.5	460	60	1.15	15.6	17.2	1.8-2.2	110.0	30.7	780	78	35.4	

COALBED METHANE - XE SERIES PERFORMANCE

MOTOR TYPE	CATALOG NUMBER	RATING					FULL LOAD AMPS	MAX. LOAD (SF LOAD) AMPS	LINE TO LINE RESISTANCE OHMS	LOCKED ROTOR AMPS	LENGTH		WEIGHT		THRUST RATING
		HP	KW	VOLTS	HZ	SERVICE FACTOR					IN	MM	LB	KG	
3-PHASE	P43S0030A3	3	2.2	230	60	1.15	9.2	10.1	1.3-1.7	58.9	19.3	491	47	21.3	900
	P43S0030A4	3	2.2	460	60	1.15	4.8	5.3	5.9-6.5	30.0	19.3	491	47	21.3	
	P43S0050A3	5	3.7	230	60	1.15	15.7	17.5	.85-1.25	93.0	22.6	573	59	26.8	1500
	P43S0050A4	5	3.7	460	60	1.15	7.6	8.5	3.58-4.00	48.0	22.6	573	59	26.8	
	P43S0075A3	7 1/2	5.6	230	60	1.15	24.0	26.4	0.55-0.85	140.0	28.6	726	74	33.6	
	P43S0075A4	7 1/2	5.6	460	60	1.15	12.2	13.5	1.9-2.3	87	28.6	726	74	33.6	
	P43S0100A4	10	7.5	460	60º	1.15	15.6	17.2	1.8-2.2	110	31.6	802	80	36.3	

4" Submersible Motors

Innovations focused on dependable performance

PENTEK® XE-SERIES

4" SUBMERSIBLE MOTORS

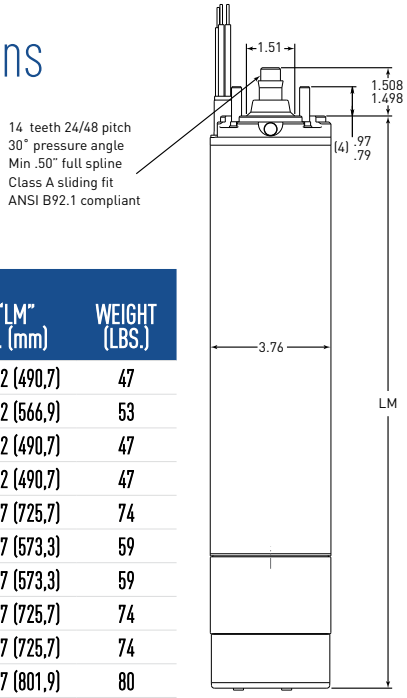
The quality of the water-filled Pentek® XE Series 4" submersible motors has been proven through years of operation in the field. The new Series features water-filled motors which are built for reliability in potentially contaminated (sand or coal fines) well installations.

The Pentek XE Series gives you 40 different choices, including the new coal Bed lineup:

- 230-Volt Single-Phase 2 to 5 HP
- 230-Volt Three-Phase 3 to 7.5 HP
- 460-Volt Three-Phase 3 to 10 HP

Pentek Severe Duty Series Motors are rated for continuous duty in 86° F water, and feature a silicon carbide mechanical seal and diaphragm filter to help prevent sand/debris entry.

Motor Dimensions



DESCRIPTION			"LM" In. (mm)	WEIGHT (LBS.)
HP	PHASE	VOLTAGE		
2	1	230	19.32 (490,7)	47
3		230	22.32 (566,9)	53
3	3	230	19.32 (490,7)	47
3		460	19.32 (490,7)	47
5	1	230	28.57 (725,7)	74
5	3	230	22.57 (573,3)	59
5		460	22.57 (573,3)	59
7.5		230	28.57 (725,7)	74
7.5		460	28.57 (725,7)	74
10		460	31.57 (801,9)	80

Materials of Construction

PARTS	MATERIALS
Upper bearing housing	304L SS
Lower bearing housing	Cast iron
Shell	304L SS
Stator ends	304L SS
Shaft	17-4SS
Seal cover	Sintered bronze
Seal	SiC/SiC mech seal
Diaphragm	Nitrile rubber
Slinger	Nitrile butadyne rubber
Lead wire (or cable)	XLPE
Lead potting	Epoxy
Lead screws/clamp	316 SS
Filter	Polyethylene

Specifications subject to change without notice.

4" Submersible Motor Adapter

For high-thrust water well applications

The PKG 4 x 6, Pump/Motor Adapter allows you to use a 6" motor to power your 4" submersible pump.

Applications

Water Systems... For residential, industrial, commercial, multiple housing and farm use.

Specifications

- All Stainless Steel Construction – adapter casting, coupling, intake screen, beveled wire forms, socket head cap-screws, studs, and fasteners

Features

- Extends Single-Phase Power Availability to 4" submersible pumps through 10 HP using 6" single-phase motors
- Easy Assembly – Easy jobsite assembly
- Double-Suction Screens – Reduces inlet suction velocity, reducing the amount of suspended solids ingested by pump

CATALOG NUMBER	PUMP END	MOTOR	MAXIMUM HP	WEIGHT LBS.
PKG 4X6	4" NEMA	6" NEMA	10	5

* The PKG 4 x 6, Pump/Motor Adapter Is Sold Separately

Submersible Motor Controls

Standard controls for single-phase 3-wire submersible motors

1/2 - 5 HP, Single-Phase Controls, 50/60 Hz

For Hitachi® Submersible Motors see pages 22-25.

Pentek® offers a full range of 1/2 - 5 HP models that are interchangeable with existing motor controls for Capacitor Start/Induction Run (CSIR) and Capacitor Start/Capacitor Run (CSCR) applications. Pentek is the professional choice in harsh and high temperature installations.

C US

Applications

Water systems...for residential, multiple housing, farm and commercial installations, where a submersible 3-wire motor is used.

Design Features

Enclosure

- Rugged NEMA 3R Enclosure – suitable for indoor/outdoor use
- Multiple-Size Electrical Knockouts
- Rated for 50°C (122°F)

Internals

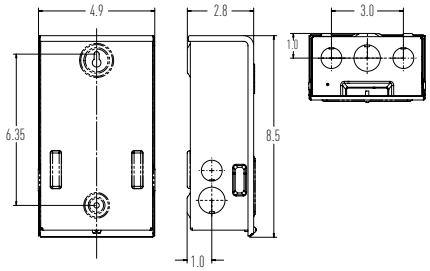
- High-Load Voltage Relay
- Heavy-Duty Contacts
- External Access to Overload Reset – 1.5HP - 5HP
- Heavy-Duty Terminal Connectors – suitable for up to #4 AWG wire
- Industry Standard Wiring Connections – easy-to-read wiring diagrams
- Overload Protection Built-in (50 Hz models)

Agency Approvals

- CSA CUS Certified

Pentek Submersible Motor Controls can be used with Pentek XE Series and other 4" single-phase motors.

SIZE A



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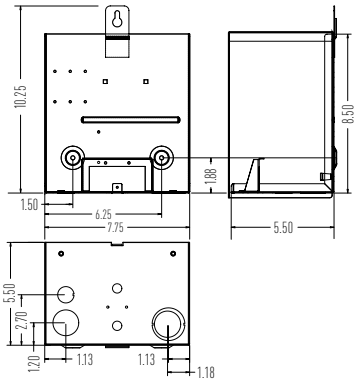

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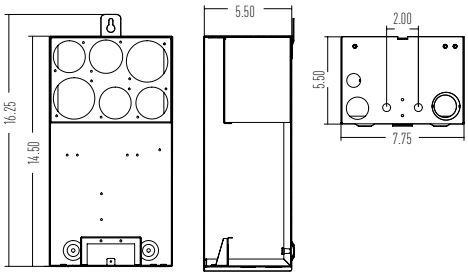

CSIR – Capacitor Start/Induction Run

HP	KW	PHASE	VOLTS	WEIGHT LBS.	WEIGHT KG	ENCLOSURE SIZE	60 HZ CATALOG NO.	50 HZ CATALOG NO.
1/2	0.37	1	115	4	1.8	A	SMC-IR0511 (-6pk)*	-
1/2	0.37	1	230	4	1.8	A	SMC-IR0521 (-6pk)*	-
3/4	0.55	1	230	4	1.8	A	SMC-IR0721 (-6pk)*	-
1	0.75	1	230	4	1.8	A	SMC-IR1021 (-6pk)*	-

CSCR – Capacitor Start/Capacitor Run

HP	KW	PHASE	VOLTS	WEIGHT LBS.	WEIGHT KG	ENCLOSURE SIZE	60 HZ CATALOG NO.	50 HZ CATALOG NO.
1/2	0.37	1	230	5	2.3	A	SMC-CR0521 (-6pk)*	-
3/4	0.55	1	230	5	2.3	A	SMC-CR0721 (-6pk)*	SMC5-CR0721
1	0.75	1	230	5	2.3	A	SMC-CR1021 (-6pk)*	SMC5-CR1021
1-1/2	1.1	1	230	7	3.2	B	SMC-CR1521	SMC5-CR1521
2	1.5	1	230	7	3.2	B	SMC-CR2021	SMC5-CR2021
3	2.2	1	230	7	3.2	B	SMC-CR3021	SMC5-CR3021
5	3.7	1	230	8	3.6	B	SMC-CR5021	SMC5-CR5021

CSCR PLUS – Capacitor Start/Capacitor Run PLUS Magnetic Contactor

HP	KW	PHASE	VOLTS	WEIGHT LBS.	WEIGHT KG	ENCLOSURE SIZE	60 HZ CATALOG NO.	50 HZ CATALOG NO.
2	1.5	1	230	7	3.2	B	SMC-CRP2021	SMC5-CRP2021
3	2.2	1	230	8	3.6	B	SMC-CRP3021	SMC5-CRP3021
5	3.7	1	230	12	5.4	C	SMC-CRP5021	-

* Submersible Motor Controls are available in single and six packs. Include the suffix '-6pk' after the PN if 6 packs are required.

VIP Pro Controls

Capacitor start, capacitor run —
designed for the full range of single-phase
1/2, 3/4, 1, 1-1/2, 2, 3 and 5 HP, 3-wire submersible motors

Applications

Water systems...for residential, multiple housing, farm and commercial installations, where a 4" submersible 3-wire motor is used.

Design Features

Enclosure

1. Weather resistant construction – NEMA 3R/IP24 rated enclosure for indoor/outdoor use
2. Control box rated for 50°C (122°F) ambient temperature
3. One screw removal for easy panel access with motor running
4. Pentek® proprietary dielectric control panel board, UL and CSA Certified

Internals

5. Universal controls -designed to work on most manufacturers 3-wire submersible motors
6. Large wiring area offers generous space to make your wiring connections. Incorporates 1/2", 3/4" and 1" conduit knock-outs
7. Control box is functional with the cover removed, offering easier in-the-field troubleshooting
8. Made in USA, 330 Volt Start Capacitor

Agency Approvals

CSA CUS Certified

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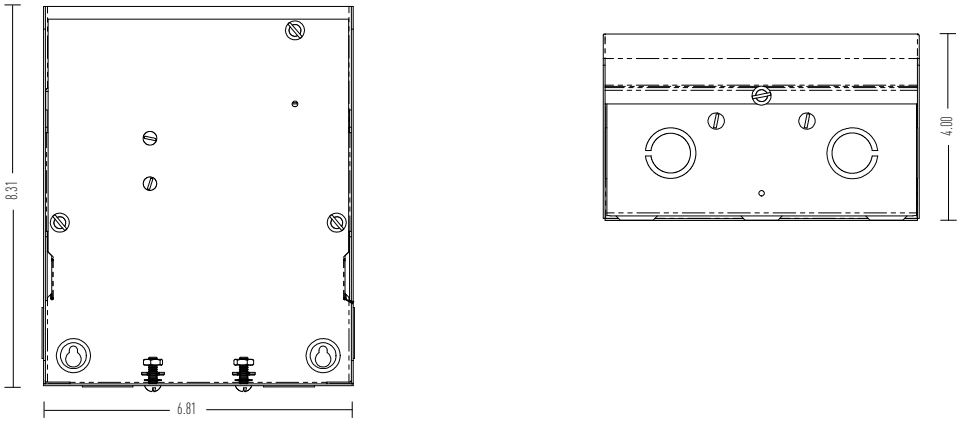

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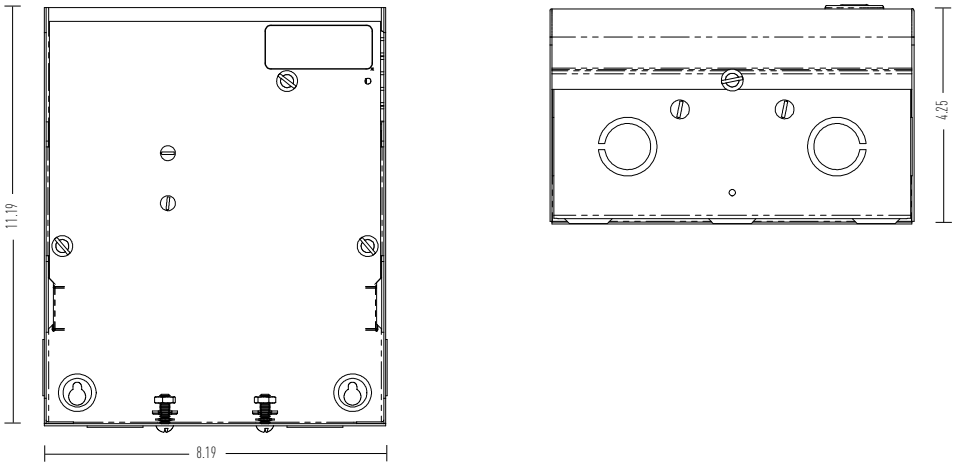


VIP Control Box Specification

CATALOG NUMBER	HP	KW	PHASE	VOLTS	HERTZ	TYPE	WEIGHT LBS	WEIGHT KG	ENCLOSURE SIZE	START CAPACITOR PN	START CAPACITOR RATING	RUN CAPACITOR PN	RUN CAPACITOR RATING	VOLTAGE RELAY	PROTECTOR
VIP4C02	0.50	0.37	1	230	60	CSCR	4.6	2.1	A	U17-1422	43MFD-270V-15kΩ	U17-1419	15MFD-370V	U17-1592	None
VIP4D02	0.75	0.55	1	230	60	CSCR	4.4	2.0	A	U17-1423	59MFD-270V-15kΩ	U17-1292	15MFD-370V	U17-1592	None
VIP4E02	1.00	0.75	1	230	60	CSCR	4.4	2.0	A	U17-1424	86MFD-270V-15kΩ	U17-1292	23MFD-370V	U17-1592	None
VIP4F02	1.50	1.1	1	230	60	CSCR	4.6	2.1	A	U17-1430	105MFD-330V-15kΩ	U17-1438	10MFD-370V	U17-1592	CGP69JB-7
VIP4G02	2.00	1.5	1	230	60	CSCR	4.6	2.1	A	U17-1430	105MFD-330V-15kΩ	U17-1440	10MFD-370V	U17-1592	CET38EB-7
VIP4H02	3.00	2.2	1	230	60	CSCR	5.4	2.4	A	U17-1428	208MFD-330V-15kΩ	U17-1443	45MFD-370V	U17-1592	CGT66DD-07
VIP4J02	5.00	3.7	1	230	60	CSCR	8.2	3.7	B	U17-1437	270MFD-330V-15kΩ	U17-1442	2 pcs-40MFD-370V	U17-1592	BET00EE-21

Control boxes are designed to be used on Pentair motors with the same HP and Voltage ratings. Do not use on motors with different ratings.

Single-Phase Protectors

Engineered protection for single-phase motors

1/3 - 15 HP, Single Phase, 50/60 Hz applications

Pentek® offers a full range of 1/3 - 15 HP Protectors for Residential, Commercial, Multiple Housing and Farm Water System applications where a 4" submersible, 2 and 3-wire motor is used and for above-ground pressure-boost applications.

Applications

Pentek offers 5 models for your application needs based on HP and Motor Type: SPP-111P, SPP-111P-3RL, SPP-231P, SPP-233P and SPP-235P.

Protects Pumps From

- Dry Well
- Overvoltage
- Overcurrent (Jammed Impeller)
- Rapid Cycling
- Undervoltage
- Flow Restriction (Dead Head)

Specifications

	115 VOLT MODELS		230 VOLT MODELS		
Model #	SPP-111P	SPP-111P-3RL	SPP-231P	SPP-233P	SPP-235P
Enclosure Type	Insider	NEMA 3R	Insider	NEMA 3R	NEMA 3R
1-Phase Line Voltage	115VAC	115VAC	230VAC	230VAC	230VAC
Load Range	1/3 - 1/2 HP	1/3 - 1 HP	1/2 - 1 HP	1/2 - 3 HP	5 - 15 HP
Frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Operating Points					
Overload (% of Cal. Point)	125%	125%	125%	125%	125%
Overvoltage Reset Point	132VAC	132VAC	265VAC	265VAC	265VAC
Undervoltage Reset Point	95VAC	95VAC	190VAC	190VAC	190VAC
Trip Delay (Overload)	10 sec.	10 sec.	10 sec.	5 sec.	5 sec.
Trip Delay (Dry Well)	2 sec.	2 sec.	2 sec.	2 sec.	2 sec.
Optional Trip Delay	4 sec.	4 sec.	4 sec.	4 sec.	4 sec.
Restart Delay Time					
Over/Under Voltage Delay	5 sec.	5 sec.	5 sec.	5 sec.	5 sec.
All Other Faults (Dry Well REC. Timer)	2-225 min.	2-225 min.	2-225 min.	2-225 min.	2-225 min.
Output Contact Rating (SPST)	1 HP	1 HP	1 HP (17 amps max.)	3 HP (17 amps max.)	480VA @ 240VAC
Power Consumption (max.)	5 amps	5 amps	5 amps	5 amps	5 amps
Weight w/o Enclosure	10 oz.	-	10 oz.	14 oz.	14 oz.
Weight w/Enclosure	-	1.6 lbs.	-	1.6 lbs.	1.6 lbs.
Enclosure Size	2.2" x 2.8"	6"x 6"x 4"	2.2"x 2.8"	6"x 6"x 4"	6"x 6"x 4"

"The Insider" SPP-111P & SPP-231P

For 1/3–1 HP applications

NRTL/C

Applications

Water systems...for residential, multiple housing, farm and commercial installations, where a 4" submersible 3-wire motor is used.

SPP-111P & SPP-231P Insiders are "current monitors" designed to protect Single-Phase pumps, which fit inside 1/3 - 1 HP 115V and 230V CSIR control boxes. A simple adjustment allows the Insider to be calibrated to your specific pumping applications, reducing the possibility of false or nuisance tripping. Its unique microprocessor constantly monitors the incoming power for fluctuations in voltage and current. If loss of suction or other abnormality is detected, the Insider deactivates its output relay and directly disconnects the pump motor. Then it begins its user-selectable "Restart Delay/ Dry Well Recovery" timer. When the timer counts zero or power is removed and reapplied, the Insider reactivates its output relay and turns the pump back on.

The Pentek® Informer Remote Handheld Diagnostic Tool (sold separately) communicates directly with all Pentek Pump Protectors and instantly displays 16 parameters including calibration points, running points and last fault (see page 15).

SPP-231P installed

Protects pumps from

- Dry Well
- Overvoltage
- Flow Restriction (Dead Head)
- Undervoltage
- Overcurrent (Jammed Impeller)

Features

- Restart delay can be set up to 225 minutes or placed in manual reset mode
- Can be calibrated to specific pump/motor combinations and various conditions
- Infrared communication with the Pentek Informer makes diagnostics simple
- Fits in existing 3-wire motor control boxes

HP	PHASE	VOLTS	FREQUENCY	CATALOG NUMBER	WEIGHT	
					LBS.	KG
1/3–1/2	1	115	50-60 Hz	SPP-111P	1	0.45
1/3–1	1	230	50-60 Hz	SPP-231P	1	0.45

SPP-111P-3RL, SPP-233P & SPP-235P

For 1/2–15 HP applications

NRTL/C

Applications

Water systems...for residential, multiple housing, farm and commercial installations, where a 4" 2 or 3-wire submersible motor or above-ground motor is used.

Protects Pumps From

- Dry Well
- Flow Restriction (Dead Head)
- Overcurrent (Jammed Impeller)
- Overvoltage
- Undervoltage

Features

The SPP-111P-3RL, SPP-233P & SPP-235P single-phase protectors include a unique microcontroller-based voltage and current-sensing circuit that constantly monitors the incoming power for fluctuations including overcurrent and undercurrent. When an abnormality, such as loss of suction, is detected, the control deactivates its output relay and directly disconnects the pump motor. The SPP then begins its user-selectable restart delay (dry-well recovery) timer. When the timer counts to zero or power is removed and reapplied, the SPP reactivates its output relay and turns the pump back on. An infrared LED communicates directly with a handheld diagnostic tool called the Informer (sold separately). The Informer displays 16 parameters including calibration point, trip point, running points, and last fault. The SPPs are all mounted in a NEMA 3R enclosure.

HP	PHASE	VOLTS	FREQUENCY	CATALOG NUMBER	WEIGHT	
					LBS.	KG
1/2 – 1	1	115	50-60 Hz	SPP-111P-3RL	1.6	0.7
1/2 – 1-1/2	1	230	50-60 Hz	SPP-233P-1.5	1.6	0.7
1/2 – 3	1	230	50-60 Hz	SPP-233P	1.6	0.7
5 & 7-1/2	1	230	50-60 Hz	SPP-235P-75*	2	0.9
10	1	230	50-60 Hz	SPP-235P-100*	2	0.9
15	1	230	50-60 Hz	SPP-235P-150*	2	0.9

* Current transformer included.

The Informer

Remote handheld diagnostic tool

Applications

The Pentek® Informer is a handheld diagnostic tool designed for use with Pentek Single-Phase Pump Protectors equipped with infrared LED transmitters (SPP-111P, 231P, 233P & 235P models).

Features

The Pentek Informer uses an infrared receiver to access data sent from the SPP, allowing remote troubleshooting of the system.

Each Pentek SPP is equipped with an infrared LED that transmits information from the device. The Informer must be aimed at the SPP as shown in the figure below. As soon as power is applied, the Informer begins receiving both past and present information and displays it on the LCD.

The green COMM STATUS light indicates when the Informer is receiving data from the SPP. If communication is lost, the Informer will hold the last values it received.

Displayed Parameters

Diagnostic information received and displayed in real-time:

- Voltage, Current, Power, Dry Well
- Overload Trip Points
- Calibration Voltage
- Last Fault
- Highest/Lowest Voltage Since Last Calibration

CATALOG NUMBER	WEIGHT	
	LBS.	KG
SPP-Informer	1	0.45

6" Submersible Motors

For high-thrust water well applications

5-30hp, 230V, 60hz, 3 phase, 5-50hp, 460/380V, 60/50hz, 3 phase

Pentair's line of Pentek® motors are designed for long service life and years of dependable operation. Innovative design and robust characteristics make this the perfect motor for your pumping applications.

ENCAPSULATED, WATER-FILLED DESIGN

The Pentek submersible motor combines internal lubrication (a cooling blend of water, glycol, and propylene), along with superior materials, to provide the industry with innovative and advanced design features that will extend the serviceable life of your installation. The encapsulated design provides superior insulation, heat transfer properties, and stability to the motor's windings (protecting the windings from "flexing" or "vibration").

ADDITIONAL FEATURES

Exceptional insulation rating (Class F) and temperature rating (95°F / 35°C)
Vertical or horizontal mounting orientation
VFD-compatible
IP 68 protection rating

Thrust Bearing
Water lubricated, Kingsbury-Type – industry-accepted standard for thrust bearing construction.

Mechanical Seal
Silicone Carbide – excellent abrasion, wear, and corrosion resistance; resists deflection in high-pressure, high heat, and high-speed conditions; high thermal conductivity (heat dissipation). Provides superior protection against sand intrusion.

Pressure Equalizing Diaphragm
Minimizes expansion pressure inside the motor due to changes in temperature and pressure.

Motor lead – 157" / 4m – potted connection, including ground wire. Non-jacketed wire assembly for easier handling and connections. Fully replaceable.

Shaft – standard NEMA-splined, 431 stainless steel; excellent tensile and torque strength, and corrosion resistance

External sand slinger – added protection against sand and other abrasives

Upper bracket – "dual-flange"-style; easier and faster assembly to the pump

Upper bracket – epoxy-coated cast iron; applied via electrodesposition – provides better adhesion of the coating and more consistent coverage, delivering a longer lasting, more durable coating

Motor casing – 304 stainless steel; excellent forming and welding characteristics, and corrosion resistance

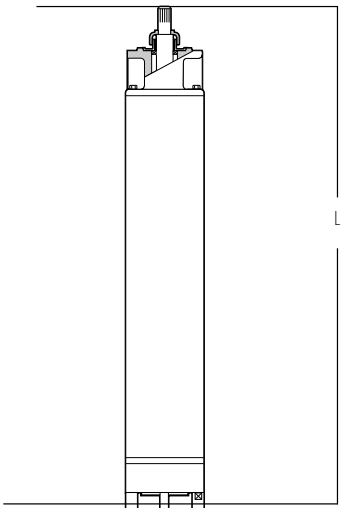
Lower bracket – epoxy-coated cast iron; applied via electrodesposition – provides better adhesion of the coating and more consistent coverage, delivering a longer lasting, more durable coating

CE

Materials of Consturction

PARTS	MATERIALS
Motor sleeve, fasteners	304 stainless steel
Castings	cast iron - epoxy coated (applied via electrodesposition)
Shaft	NEMA splined, 431 stainless steel
Thrust bearings	Kingsbury-type disc - carbon (resin impregnated) pad - 420 stainless steel
Mechanical seal	silicon carbide
Diaphragm, sand slinger	nitrile rubber

Motor Dimensions



PENTEK 6" encapsulated - motor data sheet

Nominal diameter 6"/152.4 mm
Effective diameter 5.43"/138 mm
Shaft extension length 2.87" / 73 mm

MOTOR TYPE	PHASE	NOTE	PENTEK MODEL #	HP	KW	HZ	VOLTS	RATED AMPS	RATED EFF. %	RATED P.F. %	SERVICE FACTOR 1.15 AMPS	SERVICE FACTOR 1.15 EFF. %	SERVICE FACTOR 1.15 P.F. %	LOCKED ROTOR AMPS	KVA CODE	THRUST LOAD (LBS)	INSULATION CLASS	WINDING RESISTANCE (OHM)	RPM	LENGTH IN*	LENGTH MM*	LENGTH IN**	LENGTH MM**	WEIGHT LBS	WEIGHT KG
6"	Three	Motors are 60 Hz only	6PM2-5-2	5	3.7	60	230	15.8	77	78	17.4	77	81	97.5	J	1763	F	0.79	3445	22.7	577	21.1	535	90	41
			6PM2-7-2	7-1/2	5.5			22.0	79	82	24.4	79	84	147.9	J			0.54	3450	24.9	632	22.7	577	102	46
			6PM2-5-2-01	5	3.7			15.8	77	78	17.4	77	81	97.5	J	3485		0.79	3445	22.7	577	21.1	535	90	41
			6PM2-7-2-01	7-1/2	5.5			22.0	79	82	24.4	79	84	147.9	J			0.54	3450	24.9	632	22.7	577	102	46
			6PM2-10-2	10	7.5			30.8	77	81	33.0	78	83	187.6	J			0.40	3440	29.2	741.5	24.9	632	116	53
			6PM2-15-2	15	11.0			43.2	78	84	47.0	78	86	281.8	J			0.28	3450	31.8	807.5	27.5	698	121	55
			6MP2-20-2	20	15.0			57.4	79	85	63.0	79	87	394.5	J			0.21	3450	35.1	892.5	35.1	892.5	147	67
			6PM2-25-2	25	18.5			69.0	81	86	76.0	80	88	480.2	J			0.16	3450	38.0	964.5	38.0	964.5	165	75
			6PM2-30-2	30	22.0			76.6	84	88	85.0	84	89	614.2	K			0.14	3500	41.8	1,060.5	41.1	1,044.5	190	86
		Motors are dual rated 50 Hz & 60 Hz	6PM2-5-4	5	3.7	50	380	9.1	76	84				45.5	G	1763		2.97	2800	22.7	577	21.1	535	90	41
						60	460	7.9	77	78	8.7	77	81	48.8	J				3445						
			6PM2-7-4	7-1/2	5.5	50	380	12.8	78	86				67.9	G			1.98	2810	24.9	632	22.7	577	102	46
						60	460	11.0	79	82	12.2	79	84	74.0	J				3450						
			6PM2-5-4-01	5	3.7	50	380	9.1	76	84				45.5	G	3485		2.97	2800	22.7	577	21.1	535	90	41
						60	460	7.9	77	78	8.7	77	81	48.8	J				3445						
			6PM2-7-4-01	7-1/2	5.5	50	380	12.8	78	86				67.9	G			1.98	2810	24.9	632	22.7	577	102	46
						60	460	11.0	79	82	12.2	79	84	74.0	J				3450						
			6PM2-10-4	10	7.5	50	380	17.8	78	85				85.6	G			1.46	2800	29.2	741.5	24.9	632	116	53
						60	460	15.4	77	81	16.5	78	83	93.8	J				3440						
			6PM2-15-4	15	11.0	50	380	25.6	77	87				127.0	F			0.99	2810	31.8	807.5	27.5	698	131	55
						60	460	21.6	78	84	23.5	78	86	140.9	J				3450						
			6PM2-20-4	20	15.0	50	380	34.0	78	89				170.2	G			0.72	2810	35.1	892.5	35.1	892.5	147	67
						60	460	28.5	79	85	31.5	79	87	197.3	J				3450						
			6MP2-25-4	25	18.5	50	380	41.0	79	89				219	G			0.56	2820	38.0	964.5	38.0	964.5	165	75
						60	460	34.5	81	86	38.0	80	88	240.1	J				3450						
			6PM2-30-4	30	22.0	50	380	46.0	83	90				276.8	G			0.50	2880	41.8	1060.5	41.1	1044.5	190	86
						60	460	38.0	84	88	42.5	84	89	307.1	J				3500						
			6PM2-40-4	40	30	50	380	62.5	83	90				393.1	H	6182		0.40	2860	47.1	1197	44.7	1134.5	209	95
						60	460	52.7	84	88	58.0	84	89	439.7	K				3490						
			6PM2-50-4	50	37	50	380	77.6	83	90				449.8	G			0.33	2840	49.9	1267	47.4	1204.5	292	132
						60	460	64.3	85	87	70.8	85	89	500.5	J				3480						

* = Motors with serial numbers beginning with 200, and serial numbers between 20105213xxxx and 20109113xxxx, are equipped with a 4-stud, "single-flange"-style mounting bracket.
** = Motors with serial numbers beginning with 20109213xxxx are equipped with a "dual-flange"-style mounting bracket.
50 Hz performance numbers are at a service factor of 1.0.

6" Hitachi® Submersible Motors

For high-thrust water well applications

5-50 HP, Single and Three Phase, 200V, 230V and 460V, 60 Hz, 3,600 RPM

Hitachi® Motors are designed for long service life and years of dependable operation. Innovative design and robust characteristics make this the perfect motor for your pumping applications.

Encapsulated, Water-Filled Design

Combined with exceptional insulation and a patented epoxy fill resin, these motors exceed NEMA requirements for high water temperature by 18°F (-7.7°C). Designed with internal lubrication and cooling blend of water, antifreeze, and an antirust mixture, Hitachi submersible motors are unique in providing the industry with innovative and robust design features that will extend the serviceable life of your installation.

Features

- Higher Efficiencies and Lower Current Consumption – For reduced energy costs
- Corrosion-Resistant Design – For long life
- High-Capacity Kingsbury-type Bearings – For dependable performance
- Low-Profile NEMA Design – For ease of installation
- Replaceable Plug-in Motor Lead – For ease of maintenance
- Dual Voltage Type – For application versatility (5 HP – 30 HP 3-Phase Motors)
- VFD-Compatible

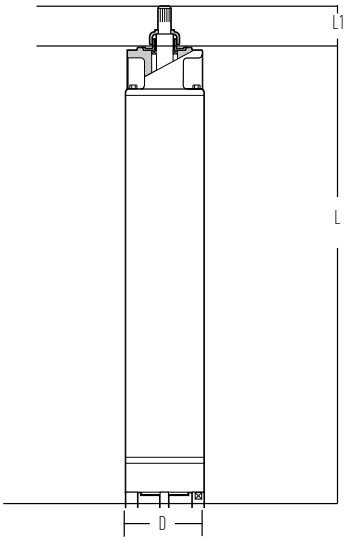
NSF®

ISO 14001 EG97J1095
ISO 9001 JQA-1153
Hitachi submersible motors in this brochure are produced at the factory registered under the ISO 14001 standard for environmental management system and the ISO 9001 standard for motor quality management system.

Materials Of Construction

PARTS	MATERIALS
Motor Sleeve	Stainless steel construction
Castings	Baked epoxy-coated gray iron
Fasteners	Stainless steel
Shaft	NEMA splined stainless steel
Flange	NEMA standard type
Rotor	Double epoxy-coated
Thrust Bearings	Kingsbury-type 420 stainless steel
Mechanical Seal	Nitrile rubber (NBR), grease packed
Diaphragm	Nitrile rubber
Sand Cap	Polyurethane
Sand Slinger	Stainless steel
Lead Wire (or Cable)	Double-insulated, heat and water-resistant, 167°F/75°C, 600V

Motor Dimensions



DIAMETER	HP	KW	VOLTS	PH	HZ	CATALOG NUMBER	SERVICE FACTOR	WINDING RESISTANCE (OHMS)	RATED INPUT AMPS	SERVICE FACTOR INPUT AMPS	LOCKED ROTOR AMPS	SHAFT EXTENSION (L1)	LENGTH (L2)	DIAMETER (D)	THRUST CAPACITY	WEIGHT
6	5	3.7	200	3	60	6HIT2-5-8	1.15	0.618	17.5	19.5	124	2.87"	22.95"	5.5"	3,500	95
6	5	3.7	230	1	60	6HIT2-5-1	1.15	R-Y, B-Y, R-B, 2.172, 0.512, 2.627	24	27.5	124	2.87"	26.97"	5.5"	3,500	110
6	5	3.7	230	3	60	6HIT2-5-2	1.15	0.806	15	17	110	2.87"	22.95"	5.5"	3,500	95
6	5	3.7	460	3	60	6HIT2-5-4	1.15	3.05	7.5	8.5	55	2.87"	22.95"	5.5"	3,500	95
6	7.5	5.5	200	3	60	6HIT2-7-8	1.15	0.504	25.4	28.5	158	2.87"	24.80"	5.5"	3,500	99
6	7.5	5.5	230	1	60	6HIT2-7-1	1.15	R-Y, B-Y, R-B, 1.401, 0.400, 1.774	36	41	167	2.87"	29.92"	5.5"	3,500	128
6	7.5	5.5	230	3	60	6HIT2-7-2	1.15	0.651	22	26	144	2.87"	24.80"	5.5"	3,500	99
6	7.5	5.5	460	3	60	6HIT2-7-4	1.15	2.43	11	13	72	2.87"	24.80"	5.5"	3,500	99
6	10	7.5	200	3	60	6HIT2-10-8	1.15	0.315	33.3	37.2	236	2.87"	26.97"	5.5"	3,500	110
6	10	7.5	230	1	60	6HIT2-10-1	1.15	R-Y, B-Y, R-B, 1.052, 0.316, 1.310	50	58	202	2.87"	29.92"	5.5"	3,500	128
6	10	7.5	230	3	60	6HIT2-10-2	1.15	0.448	29	33	208	2.87"	26.97"	5.5"	3,500	110
6	10	7.5	460	3	60	6HIT2-10-4	1.15	1.619	14.5	16.5	104	2.87"	26.97"	5.5"	3,500	110
6	15	11	200	3	60	6HIT2-15-8	1.15	0.213	47.4	53.5	347	2.87"	29.92"	5.5"	3,500	128
6	15	11	230	1	60	6HIT2-15-1	1.15	R-Y, B-Y, R-B, 0.678, 0.230, 0.850	72	85	275	2.87"	33.46"	5.5"	3,500	148
6	15	11	230	3	60	6HIT2-15-2	1.15	0.312	42	46	320	2.87"	29.92"	5.5"	3,500	128
6	15	11	460	3	60	6HIT2-15-4	1.15	1.074	21	23	160	2.87"	29.92"	5.5"	3,500	128
6	20	15	200	3	60	6HIT2-20-8	1.15	0.189	61.2	69.5	431	2.87"	31.5"	5.5"	3,500	137
6	20	15	230	3	60	6HIT2-20-2	1.15	0.258	54	60	392	2.87"	31.5"	5.5"	3,500	137
6	20	15	460	3	60	6HIT2-20-4	1.15	0.861	27	30	196	2.87"	31.5"	5.5"	3,500	137
6	25	18.5	200	3	60	6HIT2-25-8	1.15	0.146	77.3	87.5	578	2.87"	36.22"	5.5"	3,500	161
6	25	18.5	230	3	60	6HIT2-25-2	1.15	0.21	68	76	530	2.87"	36.22"	5.5"	3,500	161
6	25	18.5	460	3	60	6HIT2-25-4	1.15	0.666	34	38	265	2.87"	36.22"	5.5"	3,500	161
6	30	22	200	3	60	6HIT2-30-8	1.15	0.119	91.8	104	674	2.87"	38.19"	5.5"	3,500	176
6	30	22	230	3	60	6HIT2-30-2	1.15	0.166	82	94	610	2.87"	39.19"	5.5"	3,500	176
6	30	22	460	3	60	6HIT2-30-4	1.15	0.554	41	47	305	2.87"	38.19"	5.5"	3,500	176
6	40	30	460	3	60	6HIT2-40-4	1.15	0.358	56	61	420	2.87"	40.55"	5.5"	5,000	187
8	50	37	460	3	60	86HIT2-50-4*	1.15	0.331	65	73	435	2.87"	45.28"	7.52"	5,000	353
8	60	45	460	3	60	86HIT2-60-4*	1.15	0.278	80	90	556	2.87"	48.03"	7.52"	5,000	408

*Models are 8" motors with 6" pump connection.

Hitachi® Control Boxes:

- Type 1 NEMA Enclosure
- In-Panel Circuit Breaker
- Magnetic Contactor
- Terminal Blocks for External Controls
- UL Recognized

HP	KW	PH	VOLTS	CATALOG NUMBER
5	3.7	1	230	HIT-5CBD
7.5	5.5	1	230	HIT-7.5CBD
10	7.5	1	230	HIT-10CBD
15	11	1	230	HIT-15CBD

8"-14" Hitachi® Submersible Motors

For high-thrust water well applications

7.5-300 HP, Three Phase, 460V, 60 Hz, 2-Pole, 3,600 RPM. 4-Pole, 1800 RPM

Hitachi® Motors are designed for long service life and years of dependable operation. Innovative design and robust characteristics make this the perfect motor for your pumping applications.

Rewindable, water-tight Design

Specially developed leak-resistant denatured polypropylene completely protects the copper coil conductors from internal cooling fluids for long service life in severe operating condidtions. Hitachi submersible motors are unique in providing the industry with innovative and robust design features that will extend the serviceable life of your installation.

Features

- Higher Efficiencies and Lower Current Consumption – For reduced energy costs
- Corrosion-Resistant Design – For long life
- High-Capacity Kingsbury-type Bearings – For dependable performance
- Low-Profile NEMA Design – For ease of installation
- VFD-Compatible

NSF®

ISO 14001
EG97/1095
ISO 9001
JQA-1153

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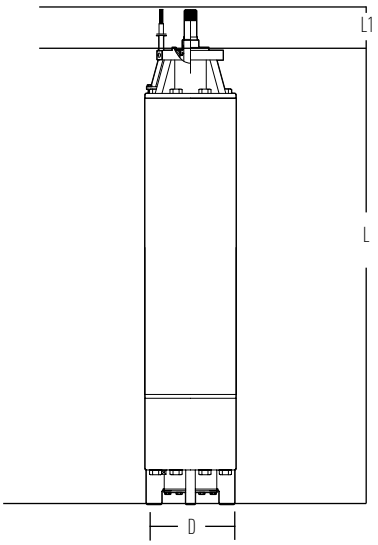
8"-14" Hitachi® Submersible Motors

For high-thrust water well applications

Materials Of Construction

PARTS	MATERIALS
Housing	Baked epoxy-coated gray iron
Fasteners	Stainless steel
Shaft	Splined or keyed stainless steel
Rotor	Double epoxy-coated
Thrust Bearings	Kingsbury®-type 420 stainless steel
Mechanical Seal	Nitrile rubber (NBR), grease packed
Diaphragm	Nitrile rubber
Sand Slinger	Baked epoxy-coated gray iron
Lead Wire (or Cable)	Double-insulated, heat and water-resistant, 167°F/75°C, 600V

Motor Dimensions



DIAMETER	HP	KW	VOLTS	PH	HZ	CATALOG NUMBER	SERVICE FACTOR	WINDING RESISTANCE (OHMS)	RATED INPUT AMPS	SERVICE FACTOR INPUT AMPS	LOCKED ROTOR AMPS	SHAFT EXTENSION (L1)	LENGTH (L2)	DIAMETER (D)	THRUST CAPACITY	WEIGHT
8	7.5	5.5	460	3	60	8HIT4-7-4	1.15	2.178	13	14	98	4.000	37.40	7.52	10000	298
8	10	7.5	460	3	60	8HIT4-10-4	1.15	2.178	16	18	98	4.000	37.40	7.52	10000	298
8	15	11	460	3	60	8HIT4-15-4	1.15	1.519	23	26	151	4.000	41.34	7.52	10000	320
8	20	15	460	3	60	8HIT4-20-4	1.15	1.519	29	33	151	4.000	41.34	7.52	10000	320
8	25	18.5	460	3	60	8HIT4-25-4	1.15	0.888	38	43	207	4.000	44.09	7.52	10000	342
8	30	22	460	3	60	8HIT4-30-4	1.15	0.888	44	50	207	4.000	44.09	7.52	10000	342
8	40	30	460	3	60	8HIT2-40-4	1.15	0.372	56	63	380	4.000	44.09	7.52	10000	320
8	50	37	460	3	60	8HIT2-50-4	1.15	0.331	65	73	435	4.000	46.44	7.52	10000	353
8	60	45	460	3	60	8HIT2-60-4	1.15	0.278	80	90	556	4.000	49.19	7.52	10000	408
8	75	55	460	3	60	8HIT2-75-4	1.15	0.218	96	109	675	4.000	53.15	7.52	10000	463
8	100	75	460	3	60	8HIT2-100-4	1.15	0.164	127	145	855	4.000	58.27	7.52	10000	518
8	125	90	460	3	60	8HIT2-125-4	1.15	0.132	161	180	1122	4.000	66.14	7.52	10000	595
8	150	110	460	3	60	8HIT2-150-4	1.15	0.115	197	220	1331	4.000	70.08	7.52	10000	661
10	40	30	460	3	60	10HIT4-40-4	1.15	0.408	62	71	286	4.000	49.21	8.52	10000	507
10	50	37	460	3	60	10HIT4-50-4	1.15	0.408	73	83	286	4.000	49.21	8.52	10000	507
10	60	45	460	3	60	10HIT4-60-4	1.15	0.288	91	104	474	4.000	59.84	8.52	10000	639
10	75	55	460	3	60	10HIT4-75-4	1.15	0.257	106	121	485	4.000	59.84	8.52	10000	639
10	100	75	460	3	60	10HIT4-100-4	1.15	0.171	145	166	670	5.000	69.68	8.52	10000	794
10	125	90	460	3	60	10HIT4-125-4	1.15	0.171	175	200	693	5.000	69.68	8.52	10000	794
10	200	150	460	3	60	10HIT2-200-4	1.15	0.0929	235	270	1260	5.000	69.68	8.52	10000	948
10	250	185	460	3	60	10HIT2-250-4	1.15	0.0776	295	340	1500	5.000	79.53	8.52	10000	1455
12	150	110	460	3	60	12HIT4-150-4	1.15	0.138	190	218	1021	5.000	56.3	10.53	10000	959
12	200	150	460	3	60	12HIT4-200-4	1.15	0.119	220	250	1195	5.000	68.11	10.53	10000	1235
12	300	225	460	3	60	12HIT2-300-4	1.15	0.0386	350	396	2700	5.000	78.75	10.53	10000	1455
14	250	185	460	3	60	14HIT4-250-4	1.15	0.0552	305	350	1870	5.000	68.31	12.60	10000	1698
14	300	225	460	3	60	14HIT4-330-4	1.15	0.0517	370	425	2300	5.000	76.18	12.60	10000	1940

*Motor is 8" diameter, but constructed to operate with a 6" liquid end.
**8" motors with 6" flange when using stainless steel bolts have a thrust rating of 5,000 lbs.
A thrust value of 10,000 lbs. can be obtained using grade-8 heat-treated stainless steel bolts.

PPX NEMA Pump Panels

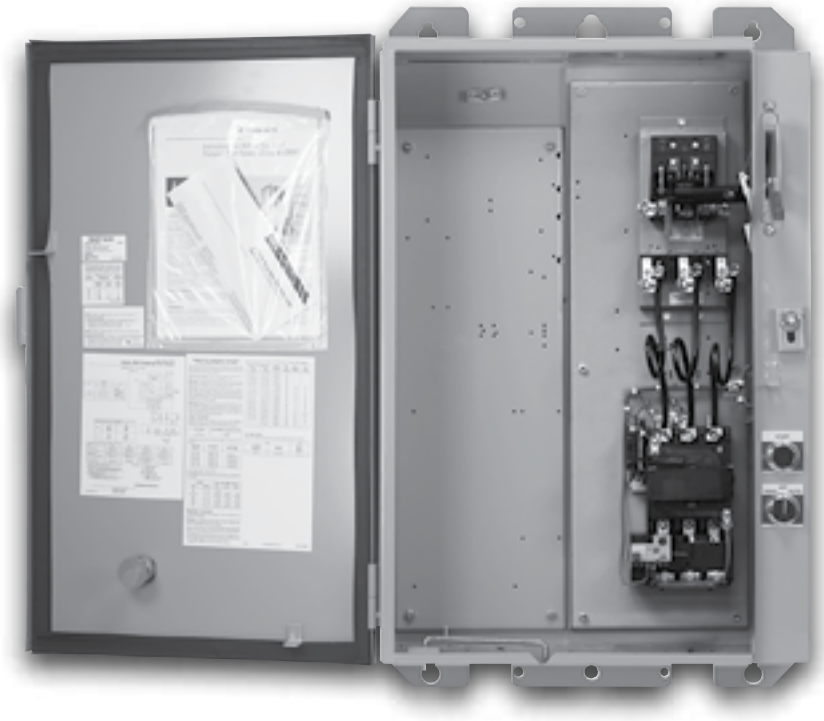
NEMA Certified, heavy-duty design for outdoor applications

NEMA Pump Panels, Size 1 – 5, 208V, 230 – 240V, 460 – 480V, 575 – 600V

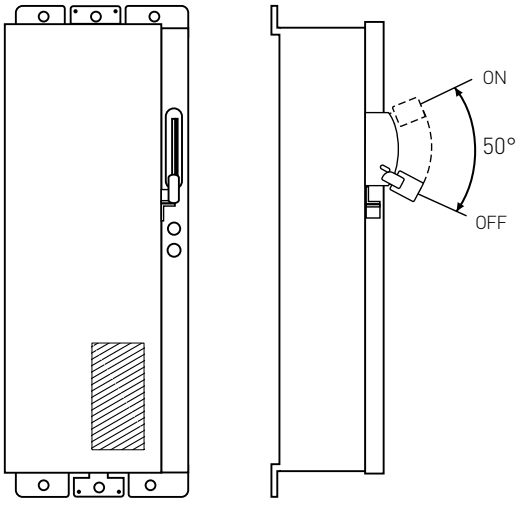
Pentek® PPX Pump Panels are designed for agricultural and commercial above-ground pumping applications and provide full-voltage control of AC motors up to 200 HP. PPX panels are offered in NEMA 3R (outdoor rated) enclosures with a door gasket to protect electrical components from harsh environments.

Features

- NEMA 3R (Outdoor Rated) Enclosure
- Class R Fusible Disconnect (fuses not included)
- NEMA rated components
- Electronic overloads with user-selectable current ranges, trip characteristic and manual/automatic restart
- External Overload Reset
- Split mounting plate design enables easy mounting of devices without disconnecting the main motor circuit



Mounting Configuration



PPX Selection Guide

208 VAC

NEMA SIZE	MAX HP OF CONTACTOR	DISCONNECT A	MAX TOTAL A OF PPX PANEL	OIL CURRENT RANGE	CATALOG NUMBER	DIMENSIONS H x W x D	WEIGHT (LBS.)
1	7.5	30	13.5	6.5–13.5	PPX-1A-13-30R	34 x 21 x 7	85
			27	13–27	PPX-1A-27-30R	34 x 21 x 7	85
2	10	60	50	25–50	PPX-2A-50-60R	34 x 21 x 7	90
3	25	100	70	35–70	PPX-3A-70-100R	47.5 x 25 x 9	195
			100	65–135	PPX-3A-135-100R	47.5 x 25 x 9	195
4	40	200	135	65–135	PPX-4A-135-200R	47.5 x 25 x 9	195

Note: For HPs with multiple part numbers, use motor amperage to select a panel.

230-240 VAC

NEMA SIZE	MAX HP OF CONTACTOR	DISCONNECT A	MAX TOTAL A OF PPX PANEL	OIL CURRENT RANGE	CATALOG NUMBER	DIMENSIONS H x W x D	WEIGHT (LBS.)
1	7.5	30	13.5	6.5–13.5	PPX-1B-13-30R	34 x 21 x 7	85
			27	13–27	PPX-1B-27-30R	34 x 21 x 7	85
2	15	60	50	25–50	PPX-2B-50-60R	34 x 21 x 7	90
3	30	100	70	35–70	PPX-3B-70-100R	47.5 x 25 x 9	195
			100	65–135	PPX-3B-135-100R	47.5 x 25 x 9	195

Note: For HPs with multiple part numbers, use motor amperage to select a panel.

460-480 VAC

NEMA SIZE	MAX HP OF CONTACTOR	DISCONNECT A	MAX TOTAL A OF PPX PANEL	OIL CURRENT RANGE	CATALOG NUMBER	DIMENSIONS H x W x D	WEIGHT (LBS.)
1	10	30	13.5	6.5–13.5	PPX-1C-13-30R	34 x 21 x 7	85
			27	13–27	PPX-1C-27-30R	34 x 21 x 7	85
2	25	60	50	25–50	PPX-2C-50-60R	34 x 21 x 7	90
3	50	100	70	35–70	PPX-3C-70-100R	47.5 x 25 x 9	195
			100	65–135	PPX-3C-135-200R	47.5 x 25 x 9	195
4	100	200	135	65–135	PPX-4C-135-200R	47.5 x 25 x 9	195
5	200	400	270	130–270	PPX-5C-270-400R	52 x 22 x 10	285

Note: For HPs with multiple part numbers, use motor amperage to select a panel.

575-600 VAC

NEMA SIZE	MAX HP OF CONTACTOR	DISCONNECT A	MAX TOTAL A OF PPX PANEL	OIL CURRENT RANGE	CATALOG NUMBER	DIMENSIONS H x W x D	WEIGHT (LBS.)
1	10	30	13.5	6.5–13.5	PPX-1D-13-30R	34 x 21 x 7	85
			27	13–27	PPX-1D-27-30R	34 x 21 x 7	85
2	25	60	50	25–50	PPX-2D-50-60R	34 x 21 x 7	90
3	50	100	70	35–70	PPX-3D-70-100R	47.5 x 25 x 9	195
			100	65–135	PPX-3D-135-100R	47.5 x 25 x 9	195
4	100	200	135	65–135	PPX-4D-135-200R	47.5 x 25 x 9	195
5	200	400	270	130–270	PPX-5D-270-400R	52 x 22 x 10	285

Note: For HPs with multiple part numbers, use motor amperage to select a panel.

PENTEK INTELLIDRIVE™
WATER PRESSURE CONTROL CENTER

CONSTANT PRESSURE FOR WELL PUMP SYSTEMS

For use with both Submersible and Above Ground Well Pumps to Control Changes in Water Demand

Most homeowners with well systems know what happens when demand for water changes. If they're taking a shower, water pressure drops when someone starts the dishwasher or turns on a faucet. Weak showers, unclean dishes and other water pressure problems become frustrating daily experiences.

A "Variable Frequency Drive" for Submersible or Above Ground Well Pumps.

The Pentek Intellidrive™ Water Pressure Control Center directs changes in pump motor speed, responding to fluctuations in demand. If water pressure starts dropping, an electronic pressure transducer signals the drive to accelerate the pump motor to increase water volume going into the home.

The Benefit? Strong, equal pressure, everywhere.

Homeowners will recognize the difference right away. Water flows smoothly and evenly throughout the home. Regardless of changes in demand, water pressure stays the same: in the shower, the dishwasher, and from every other faucet and fixture.

And when homeowners are outside, they'll enjoy a lush, green lawn and landscaping. Sprinkler systems will perform at their best, with consistent spray patterns, constantly pressurized to achieve complete coverage.

The pump and motor will last longer.

Pentek Intellidrive™ features "Soft Start/Coast to Stop" design, which minimizes mechanical stress. And during long-running applications like lawn irrigation, pressure-cycling is eliminated...another system stress reducer. Pentek Intellidrive Leading-edge technology for a premium residential water system that makes life better!

ADVANCED TECHNOLOGY. SUPERIOR PERFORMANCE.

KEYHOLE MOUNT
For fast and easy installation

LCD INFORMATION CENTER
Displays installation, status and fault information in easy-to-understand language instead of codes

GROUND DETECTION
Message Center shows if there is a grounding problem

MULTIPLE ACCESSORY INPUTS
Additional inputs allow use of multiple drive accessories at the same time

BEST-IN-CLASS EMI/RFI FILTER
Superior noise and interference protection, including AM radio signals

SPACIOUS WIRING AREA
For fast and easy installation

PROGRAMMABLE INPUT/OUTPUT RELAYS
Provide application flexibility

EASY-ACCESS CONDUIT OPENINGS
Align with appropriate terminals for straight-in accessibility. Fits 1/2", 3/4" or 1-1/4"

ELECTRONIC PRESSURE TRANSDUCER
More accurate and reliable than mechanical pressure switch, with piezo resistive technology designed to resist water hammer

TEMPERATURE-SENSITIVE INTELLIGENT FAN
Operates when needed for quiet operation

SD CARD SLOT
For easy software updates when provided by manufacturer

SPRING TERMINALS
For secure connections and easy installation without special tools

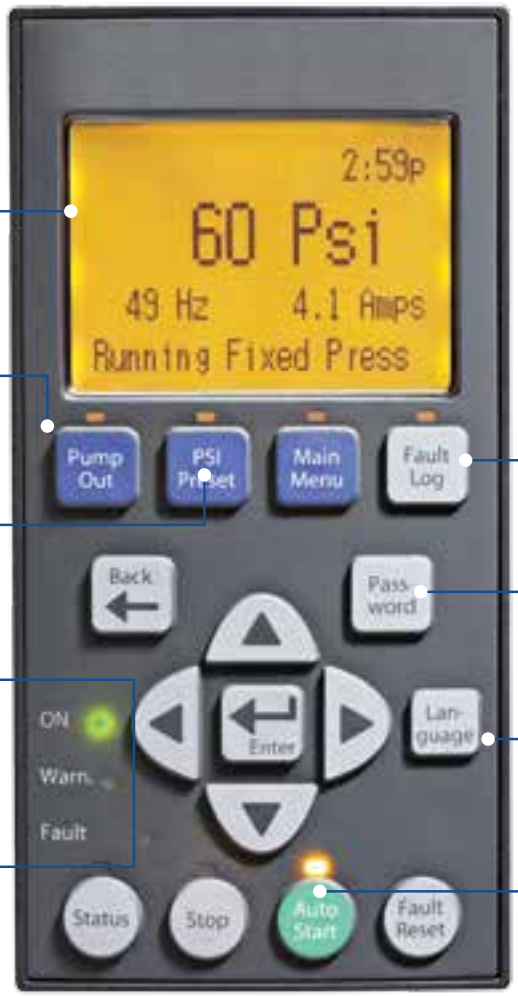
REMOVABLE TERMINAL BLOCKS
For easy wiring of motor and power supply – field replaceable

AN INTELLIGENT CONTROL... SIMPLE TO OPERATE, EASY TO UNDERSTAND.

No other variable frequency drive provides such an effective operator interface with easy touchpad operation and a spectrum of features that allows easy configuration for most residential water control applications. And the LCD Information Center communicates clearly in words, instead of confusing light codes.

START-UP IS SIMPLE...

6 CHOOSE "PUMP OUT" OR "AUTO START"



BACKLIT LCD DISPLAY

DIAGNOSTICS INDICATOR
Self diagnostic messaging for ease of service

PUMP-OUT BUTTON
For cleaning of new wells and fixed frequency operation

PSI PRESET
Sets pressure to any value desired

FAULT LOG
Stores 15 faults with timestamps

KEYPAD LOCKOUT
For security against tampering and unintended adjustments

LED STATUS INDICATION

MULTI-LINGUAL OPTIONS
English, French or Spanish

AUTO-START
With automatic line-fill functionality, providing constant pressure operation

Product Line Overview

MODEL NUMBER	MOTOR TYPE	MAXIMUM HP	INPUT VOLTAGE	OUTPUT AMPS	ENCLOSURE RATING
PID10	1-PHASE 2-WIRE*	1.0	190-265	9.5	3R
	1-PHASE 3-WIRE	1.0	190-265	7.5	3R
	3-PHASE	1.0	190-265	5.0	3R
PID20	1-PHASE 2-WIRE*	1.5	190-265	11.0	3R
	1-PHASE 3-WIRE	2.0	190-265	13.5	3R
	3-PHASE	2.0	190-265	8.5	3R
PID50	1-PHASE 2-WIRE*	1.5	190-265	11.0	3R
	1-PHASE 3-WIRE	2.0	190-265	13.5	3R
	3-PHASE	5.0	190-265	18.0	3R

*Pentek® (PSC) 2-wire motors only

VFD-ALT

Alternating Control Panel for the PENTEK INTELLIDRIVE™

The Alternating Panel is designed to equalize wear on the pumps by alternating two Pentek Intellidrive™ VFD's every 24 hours. This panel alternates which pump is the lead and lag in a duplex system. It can also be used independently of the lead/lag function.

Applications

Alternate Pentek Intellidrive VFD's on pressure boosting systems. Equalize wear on pumps.

- Power On Indicator
- Pump 1 Enabled Indicator
- Pump 2 Enabled Indicator
- Alternate/Off Switch

Specifications

- 120 VAC
- 6 ft. Power Cord
- NEMA 1 Enclosure
- 4 Terminal Blocks To Connect VFD's - Use 18 AWG Wire

The Alternating Pentek Intellidrive Control Panel will alternate pumps that are connected to the Pentek Intellidrive.

* Additional programming is necessary in the Pentek Intellidrive.

System Overview

After the panel is mounted, wire the panel, plug it into a 120 VAC outlet, and turn the switch to Alternate. "Pump 1" will turn on and the "pump 1 enable" LED will illuminate. After 24 hours "Pump 2" will turn on and the "pump 2 enable" LED will illuminate.

MODEL NUMBER	RATED VOLTS	HZ	DIMENSIONS (IN.)			WEIGHT LBS.
			HEIGHT	WIDTH	DEPTH	
VFD-ALT	120 VAC	50/60	5.375	3.25	1.625	1.0

Surge Protection Kits

120/240 VAC Protection for PENTEK INTELLIDRIVE™

Surge protection device for use with any 230V Pentek Intellidrive™. Line side arrester easily installed in the circuit breaker. Load side installed on the drive output. LED Diagnostic lights help provide positive indication of power and surge protection.*

Features

- Compact size to fit most applications
- Diagnostic LEDs to indicate system power & surge protection
- Weatherproof design allows for use in most environments
- Service Voltage: 240 VAC (line side); 240VAC (Load side)
- Parallel connection for easy installation
- Auto reset to handle multiple surges

VFD-SGA: Surge Protection Kit (includes line & load side)

VFD-SGA-LN: Line Side Surge Protection

VFD-SGA-LD: Load Side Surge Protection

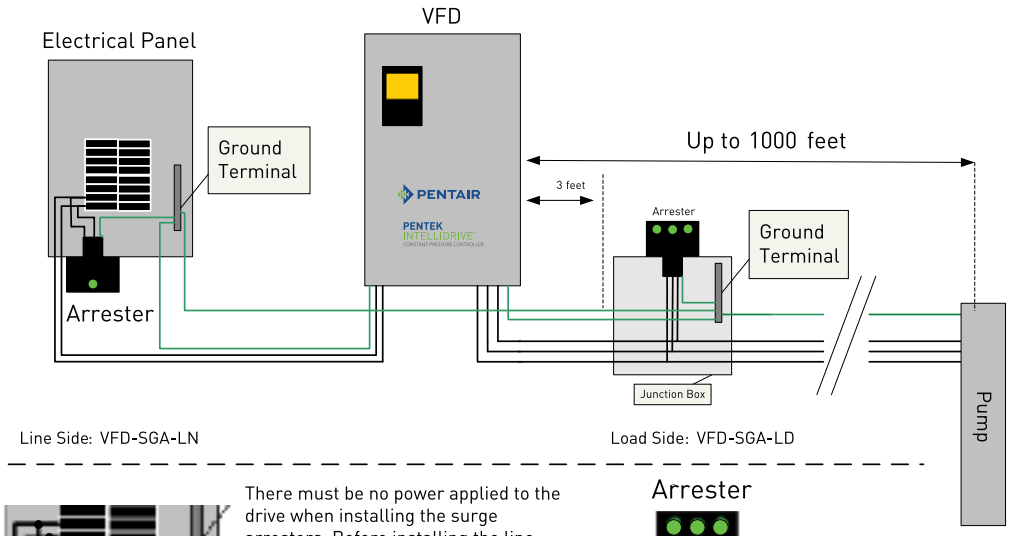
Load Side:

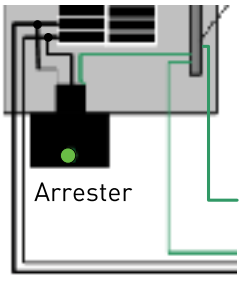
SERVICE WIRING	PEAK SURGE CURRENT	MCOV
Two Power Cords + Ground	75,000A	320V

Line Side:

SERVICE WIRING	PEAK SURGE CURRENT	MCOV	UL 1449, 3rd Ed, V.P.R.	SHORT CIRCUIT RATING	UL 1449, 3rd Ed. I_n V.P.R.
Two Power Cords + Ground	72,000A/Phase 36,000A/Mode	130/260V	500V L-G, 900V L-L	10,000A	10,000A

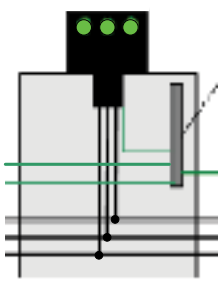
PENTEK INTELLIDRIVE
Surge Arrester
Connection Diagram





There must be no power applied to the drive when installing the surge arresters. Before installing the line and the load surge arresters the circuit breaker must be in the off position.

NOTE:
The load side arrester must be mounted in a junction box (not provided) and must be at least 3 feet away from the drive. There must be 3 feet of wire from the output of the drive to the junction box.



NOTE:
Make load side connections according to the diagram for 3-wire and 3 phase motors.

For 2-wire motors connect only 2 of the arrester wires and put a wire nut on the extra arrester wire.

VFD-WS

Moisture Sensor

The Moisture Sensor is designed to shut off your Pentek Intellidrive™ if water is detected. When water touches the two detection points on the bottom of the Moisture Sensor, it sends a signal to the VFD to shut it off.

Applications

Prevent flooding from broken pipes or leaks! The VFD-WS is designed to connect to, and shut off, the Pentek Intellidrive when water from broken pipes is detected. The entire property you are providing water to is protected from flooding.

- Detects water At 1/16"
- Waterproof epoxy encapsulated enclosure
- Indicators for alarm condition and ready condition
- Auto reset

Specifications

- 24 VDC
- Detects water at 1/16"
- Auto reset
- Red alarm indicator for a water alarm
- Green ready indicator to indicate the systems is ready for operation
- 4 Conductor 18 gauge cable
- 15 Foot cord length

Pentek® Moisture Sensors detect water and shut down your Pentek Intellidrive in the event of a water leak.

Model Number & System Overview

MODEL NUMBER	RATED VOLTS	HZ	DIMENSIONS (IN.)			WEIGHT LBS.
			HEIGHT	WIDTH	DEPTH	
VFD-WS	24VDC	N/A	1.075	3.0	1.5	1.0

System Overview

(**Fig. 1** - When the sensor is dry and the system has power, the green "Ready" indicator will be illuminated.) (**Fig. 2** - The red "Alarm" indicator light will illuminate if water is touching both detection points on the bottom of the Moisture Sensor.) The Moisture Sensor can be automatically reset by wiping of the sensors on the bottom of the unit. (**Fig. 3** - When the Moisture Sensor is dry, the green "Ready" indicator will illuminate.) The Pentek Intellidrive™ must be "Reset" to return to normal operation.

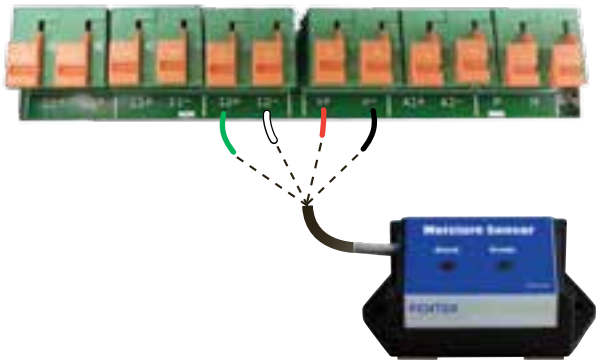


Fig. 1
Green "Ready" Indicator Illuminated

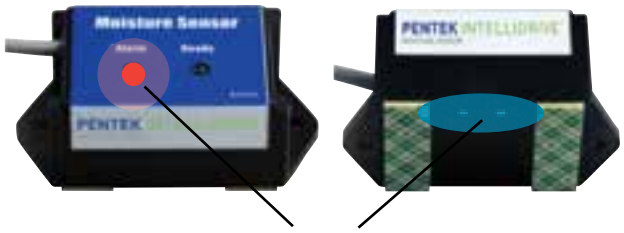


Fig. 2
Red "Alarm" Indicator is illuminated if water is touching the two detection points on the bottom of the Moisture Sensor.

Fig. 3
Green "Ready" Indicator Illuminated

PPC3 & PPC5

State-of-the-art pump protection and controllers

Pentek® Pump Controllers provide innovative pumping solutions for maximizing pump functionality, optimizing pump system design and reducing operating energy costs.

Pentek PPCs can be used on all centrifugal motor-driven pumps including close-coupled motor drive, frame mount, submersible and line shaft turbine pumps, in a wide range of applications.

PPC5 NEMA 1

PPC5 NEMA 1

PPC3 NEMA 1

*NEMA 1 Enclosure meant for Indoor Use

PPC Features

The Pentek® PPC3 and PPC5 Pump Controllers are programmed with the Pentek Assistant and pre-jumpered, providing ease of setup for constant pressure applications. The Pentek Assistant defaults to pre-defined parameters and prompts the user for application-specific information. The 'Help' key activates parameter descriptions, providing easy reference to the programming guide.

Pentek Assistant

- Guides the user through the setup process for constant pressure applications, taking less than 2 minutes to program; allows for local or remote operation
- Includes macros for both submersible and above-ground pump applications
- System harmonics evaluation process

Additional Application Functions

- Auto-Restart Functionality – re-starts pump after power loss
- Easily configured for constant flow applications by adjusting 2 additional menu parameters
- Multiple System Setpoints or Operating Condition – includes 2 independent process control setpoints to allow operation under a second process
- Time Function supports 4 Daily and Weekly START/STOP/BOOST times

Process Benefits

Variable Speed Control

- Meets requirements of process control with constant pressure at variable flow conditions or constant flow at variable pressure conditions

Reduced Energy Costs

- Calculate energy savings online using BEC2 software at www.bec2.net

Pump Protection

- From loss of prime, dead head and blocked suction

Motor Protection

- From ground fault, short circuit, phase loss and imbalance, overload, undervoltage and overvoltage

System Protection (PPC5 only)

- From harmonics, featuring an input choke that exceeds the performance of a fixed 5% impedance line reactor

Phase Conversion

- The PPC5 will convert 1-phase power into 3-phase power, allowing the use of a 3-phase motor
- The PPC3 is available in both 1 & 3 phase models

PPC Selection Guide

PPC3, PPC5

PPC3 / PPC5 Comparison

FEATURES	PPC3	PPC5
HP Ratings	1 – 30	1/2 – 200
Voltages	230, 460	230, 460, 575
Frequency	50/60 Hz	50/60 Hz
Floating Choke	No	Yes
Harmonic Signature	Good	Best
No. of Relays	1	3 (ext. to 6 available)
Digital Inputs	5	6
Multiple Pump Capable	No	Yes
Mod. Bus	No	Yes
Enclosure Type	NEMA 1	NEMA 1, 12

The output current (or amps) of the PPC must be greater than or equal to the maximum rated motor current.

PPC3 Selection

200-240 Volt – 1-Phase IN, 3-Phase OUT

OUTPUT AMPS	ENCLOSURE SIZE	MOUNTING	MODEL NUMBER NEMA 1
4.7	R1	WALL	PPC3-1-4A7-1
6.7	R1	WALL	PPC3-1-6A7-1
7.5	R2	WALL	PPC3-1-7A5-1
9.8	R2	WALL	PPC3-1-9A8-1

200-240 Volt – 3-Phase IN, 3-Phase OUT

OUTPUT AMPS	ENCLOSURE SIZE	MOUNTING	MODEL NUMBER NEMA 1
4.7	R1	WALL	PPC3-2-4A7-1
6.7	R1	WALL	PPC3-2-6A7-1
7.5	R1	WALL	PPC3-2-7A5-1
9.8	R2	WALL	PPC3-2-9A8-1
17.6	R2	WALL	PPC3-2-17A6-1
24.4	R3	WALL	PPC3-2-24A4-1
31.0	R4	WALL	PPC3-2-31A0-1
46.2	R4	WALL	PPC3-2-46A2-1

380-480 Volt – 3-Phase IN, 3-Phase OUT

OUTPUT AMPS	ENCLOSURE SIZE	MOUNTING	MODEL NUMBER NEMA 1
2.4	R1	WALL	PPC3-4-2A4-1
3.3	R1	WALL	PPC3-4-3A3-1
4.1	R1	WALL	PPC3-4-4A1-1
5.6	R1	WALL	PPC3-4-5A6-1
8.8	R1	WALL	PPC3-4-8A8-1
12.5	R3	WALL	PPC3-4-12A5-1
15.6	R3	WALL	PPC3-4-15A6-1
23.1	R3	WALL	PPC3-4-23A1-1
31.0	R4	WALL	PPC3-4-31A0-1
38.0	R4	WALL	PPC3-4-38A0-1
44.0	R4	WALL	PPC3-4-44A0-1

PPC5 Selection

208-240 Volt – 3-Phase IN, 3-Phase OUT

OUTPUT AMPS	ENCLOSURE SIZE	MOUNTING	MODEL NUMBER NEMA 1	MODEL NUMBER NEMA 12
4.6	R1	Wall	PPC5-2-4A6-1	PPC5-2-4A6-12
6.6	R1	Wall	PPC5-2-6A6-1	PPC5-2-6A6-12
7.5	R1	Wall	PPC5-2-7A5-1	PPC5-2-7A5-12
11.8	R1	Wall	PPC5-2-11A-1	PPC5-2-11A-12
16.7	R1	Wall	PPC5-2-16A-1	PPC5-2-16A-12
24.2	R2	Wall	PPC5-2-24A-1	PPC5-2-24A-12
30.8	R2	Wall	PPC5-2-30A-1	PPC5-2-30A-12
46.2	R3	Wall	PPC5-2-46A-1	PPC5-2-46A-12
59.4	R3	Wall	PPC5-2-59A-1	PPC5-2-59A-12
74.8	R4	Wall	PPC5-2-74A-1	PPC5-2-74A-12
88	R4	Wall	PPC5-2-88A-1	PPC5-2-88A-12
114	R4	Wall	PPC5-2-114A-1	PPC5-2-114A-12
143	R6	Wall	PPC5-2-143A-1	-
178	R6	Wall	PPC5-2-178A-1	-
221	R6	Wall	PPC5-2-221A-1	-
248	R6	Wall	PPC5-2-248A-1	-

Specifications are based on a 3-phase supply voltage, 208 volt or 230 volt. For operation on 1-phase input power, de-rate the drive output current by 50%. Drive output is always 3-phase voltage.

400-480 Volt – 3-Phase IN, 3-Phase OUT

OUTPUT AMPS	ENCLOSURE SIZE	MOUNTING	MODEL NUMBER NEMA 1	MODEL NUMBER NEMA 12
3.3	R1	Wall	PPC5-4-3A3-1	PPC5-4-3A3-12
4.1	R1	Wall	PPC5-4-4A1-1	PPC5-4-4A1-12
6.9	R1	Wall	PPC5-4-6A9-1	PPC5-4-6A9-12
8.8	R1	Wall	PPC5-4-8A8-1	PPC5-4-8A8-12
11.9	R1	Wall	PPC5-4-11A-1	PPC5-4-11A-12
15.4	R2	Wall	PPC5-4-15A-1	PPC5-4-15A-12
23	R2	Wall	PPC5-4-23A-1	PPC5-4-23A-12
31	R3	Wall	PPC5-4-31A-1	PPC5-4-31A-12
38	R3	Wall	PPC5-4-38A-1	PPC5-4-38A-12
44	R4	Wall	PPC5-4-44A-1	PPC5-4-44A-12
59	R4	Wall	PPC5-4-59A-1	PPC5-4-59A-12
72	R4	Wall	PPC5-4-72A-1	PPC5-4-72A-12
77	R5	Wall	PPC5-4-77A-1	PPC5-4-77A-12
96	R5	Wall	PPC5-4-96A-1	PPC5-4-96A-12
124	R6	Wall	PPC5-4-124A-1	-
157	R6	Wall	PPC5-4-157A-1	-
180	R6	Wall	PPC5-4-180A-1	-
196	R7	Floor	PPC5-4-196A-1	-
245	R7	Floor	PPC5-4-245A-1	-

The output current (or amps) of the PPC must be greater than or equal to the maximum rated motor current.

500-600 Volt – 3-Phase IN, 3-Phase OUT

OUTPUT AMPS	ENCLOSURE SIZE	MOUNTING	MODEL NUMBER NEMA 1	MODEL NUMBER NEMA 12
2.7	R1	Wall	PPC5-5-2A7-1	PPC5-5-2A7-12
3.9	R1	Wall	PPC5-5-3A9-1	PPC5-5-3A9-12
6.1	R1	Wall	PPC5-5-6A1-1	PPC5-5-6A1-12
9	R1	Wall	PPC5-5-9A0-1	PPC5-5-9A0-12
11	R1	Wall	PPC5-5-11A-1	PPC5-5-11A-12
17	R2	Wall	PPC5-5-17A-1	PPC5-5-17A-12
22	R2	Wall	PPC5-5-22A-1	PPC5-5-22A-12
27	R3	Wall	PPC5-5-27A-1	PPC5-5-27A-12
32	R3	Wall	PPC5-5-32A-1	PPC5-5-32A-12
41	R4	Wall	PPC5-5-41A-1	PPC5-5-41A-12
52	R4	Wall	PPC5-5-52A-1	PPC5-5-52A-12
62	R4	Wall	PPC5-5-62A-1	PPC5-5-62A-12
77	R5	Wall	PPC5-5-77A-1	PPC5-5-77A-12
99	R6	Wall	PPC5-5-99A-1	PPC5-5-99A-12

Reactors & Filters

Increase motor life expectancy

Installing an output reactor or filter can increase motor life and performance in many applications.

Reactor Enclosed

Filter Enclosed

Application

Variable frequency drives produce voltage spikes that are a function of voltage rise time and length of motor cable. In extreme cases, peak voltages may exceed three times nominal operating voltage. Ideal for use with Pentek® PPC3 and PPC5 Pump Controllers.

Reactors and Filters

A reactor is a resistance and inductance device that reduces the voltage spikes. This is accomplished both by increasing the voltage rise time as well as by improving the impedance match of the motor and cable.
A filter combines a reactor with a capacitor network. The capacitor network absorbs a portion of the voltage spike, further reducing the peak voltage seen by the motor.

When to use a Reactor and Filter

The chart below will provide some guidelines as to when to use a reactor or filter. Careful considerations should be given when:

- Long motor lead lengths are used
- Using NEMA standard, premium efficiency, submersible motors
- Quality and age of the motor are unknown
- Using a submersible motor over 230V
- The cost of replacing the motor is prohibitive
- Consistency of environment and/or power quality is unknown

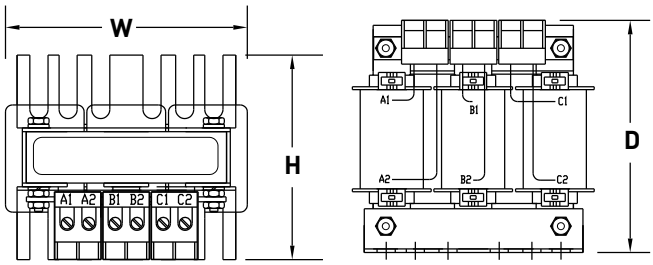
LEAD LENGTH	UP TO 50'		50'-150'		150'-1000'	
MOTOR TYPE	230V	460V	230V	460V	230V	460V
NEMA ABOVE-GROUND STANDARD EFFICIENCY	–	–	●	●	●	●
NEMA ABOVE-GROUND STANDARD EFFICIENCY	–	–	–	●	●	●
SUBMERSIBLE	–	●	●	●	●	●

REACTOR ● FILTER ●

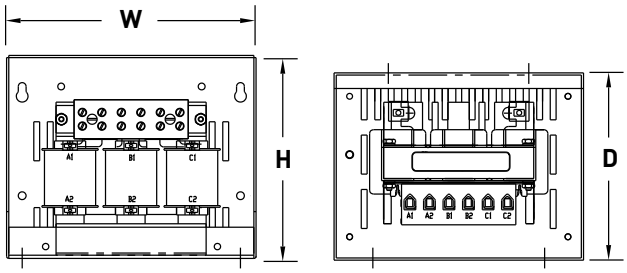
Reactors

Increase motor life by eliminating voltage spikes

Reactor open



Reactor enclosed



Open Design (Low-Z) – CSA Listed, 230V or 460V Input, 50/60 Hz

MODEL #	RATED AMPS	DIMENSIONS (IN.) HEIGHT	WIDTH	DEPTH	WEIGHT LBS.	MINIMUM CAB SIZE
KDRA3P	7.6	4	4.18	4	4	–
KDRA4P	11	4	4.18	4	5	–
KDRB1P	14	5	6	4	7	–
KDRD1P	21	6	7.2	4	10	–
KDRD2P	27	6	7.2	4	10	–
KDRD3P	34	6	7.2	4	12	–
KDRD4P	40	6	7.2	4	12	–
KDRC1P	52	6	7.2	5	15	–
KDRF1P	65	7	9	6	25	–
KDRF2P	77	7	9	6	25	–
KDRF3P	96	7	9	6	30	–
KDRH1P	124	9	11	7	40	–
KDRI1P	156	9	11	7	50	–
KDRI2P	180	9	11	7	45	–
KDRG1P	240	9	11	7	60	–

Enclosed NEMA 1 Design – CSA Listed, 230V or 460V Input

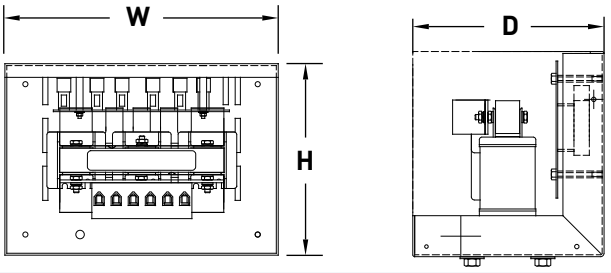
MODEL #	RATED AMPS	DIMENSIONS (IN.) HEIGHT	WIDTH	DEPTH	WEIGHT LBS.	MINIMUM CAB SIZE
KDRA1PC1	3.4	6.5	8	6	8	C1
KDRA2PC1	4.8	6.5	8	6	8	C1
KDRA3PC1	7.6	6.5	8	6	8	C1
KDRA4PC1	11	6.5	8	6	9	C1
KDRB1PC1	14	6.5	8	6	11	C1
KDRD1PC2	21	7.5	10	7	16	C2
KDRD2PC2	27	7.5	10	7	16	C2
KDRD3PC2	34	7.5	10	7	18	C2
KDRD4PC2	40	7.5	10	7	18	C2
KDRC1PC2	52	7.5	10	7	21	C2
KDRF1PC3	65	9	12	8	37	C3
KDRF2PC3	77	9	12	8	37	C3
KDRF3PC4	96	15.5	15	13	65	C4
KDRH1PC4	124	15.5	15	13	75	C4
KDRI1PC4	156	15.5	15	13	75	C4
KDRI2PC4	180	15.5	15	13	80	C4
KDRG1PC4	240	15.5	15	13	95	C4

Enclosed NEMA 1 Design – CSA Listed, 575V Input

MODEL #	RATED AMPS	DIMENSIONS (IN.) HEIGHT	WIDTH	DEPTH	WEIGHT LBS.	MINIMUM CAB SIZE
KDRA31PC1	2.7	6.5	8	6	8	C1
KDRA35PC1	3.9	6.5	8	6	8	C1
KDRA33PC1	6.1	6.5	8	6	8	C1
KDRA34PC1	9	6.5	8	6	9	C1
KDRA36PC1	11	6.5	8	6	11	C1
KDRD31PC2	17	7.5	10	7	16	C2
KDRD32PC2	22	7.5	10	7	16	C2
KDRD35PC2	27	7.5	10	7	18	C2
KDRD33PC2	32	7.5	10	7	18	C2
KDRD34PC2	41	7.5	10	7	21	C2
KDRC31PC2	52	7.5	10	7	21	C2
KDRF31PC3	62	9	12	8	37	C3
KDRF32PC3	77	9	12	8	37	C3
KDRF33PC4	99	15.5	15	13	65	C4
KDRH31PC4	125	15.5	15	13	75	C4
KDRI31PC4	144	15.5	15	13	75	C4
KDRI32PC4	192	15.5	15	13	80	C4
KDRG31PC4	242	15.5	15	13	95	C4

Filters

Eliminate and dampen voltage spikes for long motor life



Filters Enclosed

Enclosed NEMA 1 Design, 230V, 460V or 575V Input

MODEL #	RATED AMPS	HZ	DIMENSIONS (IN.) HEIGHT	WIDTH	DEPTH	WEIGHT LBS.
KLC4BE	4	50/60	6.5	8	6	9
KLC6BE	6	50/60	6.5	8	6	9
KLC8BE	8	50/60	6.5	8	6	11
KLC12BE	12	50/60	6.5	8	6	11
KLC16BE	16	50/60	6.5	8	6	13
KLC25BE	25	50/60	7.5	10	7	16
KLC35BE	35	50/60	7.5	10	7	17
KLC45BE	45	50/60	7.5	10	7	18
KLC55BE	55	50/60	7.5	10	7	19
KLC80BE	80	50/60	9	12	8	32
KLC110BE	110	50/60	16	15	13	88
KLC130BE	130	50/60	16	15	13	96
KLC160BE	160	50/60	16	15	13	100
KLC200BE	200	50/60	16	15	13	115
KLC250BE	250	50/60	16	15	13	116

Enclosed NEMA 1 Design, CUL Listed, 230V, 460V or 575V Input

MODEL #	RATED AMPS	HZ	DIMENSIONS (IN.) HEIGHT	WIDTH	DEPTH	WEIGHT LBS.
KLCUL4A1	4	50/60	12.25	12.5	6.75	15
KLCUL6A1	6	50/60	12.25	12.5	6.75	15
KLCUL8A1	8	50/60	12.25	12.5	6.75	15
KLCUL12A1	12	50/60	12.25	12.5	6.75	15
KLCUL16A1	16	50/60	12.25	12.5	6.75	18
KLCUL18A1	18	50/60	12.25	12.5	6.75	21
KLCUL21A1	21	50/60	12.25	12.5	6.75	21
KLCUL25A1	25	50/60	12.25	12.5	6.75	21
KLCUL27A1	27	50/60	12.25	12.5	6.75	21
KLCUL35A1	35	50/60	12.25	12.5	6.75	22
KLCUL45A1	45	50/60	12.25	12.5	6.75	22
KLCUL55A1	55	50/60	12.25	12.5	6.75	23
KLCUL80A2	80	50/60	19.13	15.5	15.5	60
KLCUL110A2	110	50/60	19.13	15.5	15.5	64
KLCUL130A2	130	50/60	19.13	15.5	15.5	70
KLCUL160A2	160	50/60	19.13	15.5	15.5	84
KLCUL200A3	200	50/60	22.13	20.5	24.37	108
KLCUL250A3	250	50/60	22.13	20.5	24.37	117

Transducers, Leads & Repair Parts

Pentek Intellidrive™ Repair Parts

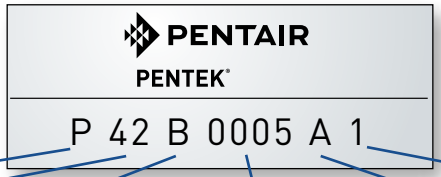
MODEL #	ITEM	DESCRIPTION	MANUFACTURER
PID-CON2	2-POLE CONNECTOR (LINE IN)	2-POLE CONNECTOR (LINE IN)	PENTEK
PID-CON3	3-POLE CONNECTOR (LINE OUT)	3-POLE CONNECTOR (LINE OUT)	PENTEK
PID-FAN	REPLACEMENT FAN	REPLACEMENT FAN	PENTEK
PID-HMI	REPLACEMENT KEYPAD	REPLACEMENT KEYPAD	PENTEK
U17-1561	TRANSDUCER (PID CONTROL)	0 – 100 PSIG, 4~20MA, LESS LEAD	PENTEK
U18-1593R	TRANSDUCER CABLE, FOR U17-1561	10 FT. – 18-GAUGE SHIELDED	PENTEK
U18-1594R	TRANSDUCER CABLE, FOR U17-1561	25 FT. – 18-GAUGE SHIELDED	PENTEK
U18-1595R	TRANSDUCER CABLE, FOR U17-1561	50 FT. – 18-GAUGE SHIELDED	PENTEK
U18-1596R	TRANSDUCER CABLE, FOR U17-1561	100 FT. – 18-GAUGE SHIELDED	PENTEK
U18-1597R	TRANSDUCER CABLE, FOR U17-1561	150 FT. – 18-GAUGE SHIELDED	PENTEK
U18-1598R	TRANSDUCER CABLE, FOR U17-1561	200 FT. – 18-GAUGE SHIELDED	PENTEK

PPC3/PPC5 Repair Parts

MODEL #	ITEM	DESCRIPTION	MANUFACTURER
U17-1336	PPC3/PPC5 CONTROL PANEL (KEYPAD)	PPC3/PPC5 CONTROL PANEL (KEYPAD)	PENTEK
U97-188	DRIVE WINDOWS LIGHT	DRIVE WINDOWS LIGHT	PENTEK
U97-189	PPC5 JUMPER COMB	PPC5 JUMPER COMB	PENTEK
U97-190	PPC3 JUMPER COMB	PPC3 JUMPER COMB	PENTEK
U17-1329	TRANSDUCER	0-60 PSIG, 4~20MA, LESS LEAD	TURCK
U17-1330	TRANSDUCER	0-100 PSIG, 4~20MA, LESS LEAD	TURCK
U17-1331	TRANSDUCER	0-200 PSIG, 4~20MA, LESS LEAD	TURCK
U17-1332	TRANSDUCER	0-500 PSIG, 4~20MA, LESS LEAD	TURCK
U17-1333	RIGHT ANGLE LEAD, FOR U17-1329 TO 1332	2-WIRE, 6.5 FEET	TURCK
U17-1334	RIGHT ANGLE LEAD, FOR U17-1329 TO 1332	2-WIRE, 13.0 FEET	TURCK
U17-1335	RIGHT ANGLE LEAD, FOR U17-1329 TO 1332	2-WIRE, 19.6 FEET	TURCK

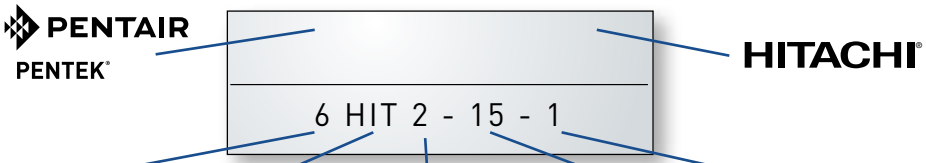
Nomenclature

4" Submersible Motors



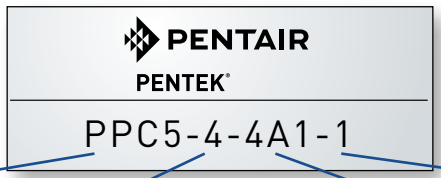
BRAND	MOTOR SIZE	MOTOR MATERIAL	HORSEPOWER	FREQUENCY	VOLTAGE / PH
P – PENTEK®	42 – Four Inch 2-Wire	A – Stainless Steel w/Cast Iron End Bells	0005 – 1/2 HP	A – 60 Hz	1 – 115V, 1 PH
			0007 – 3/4 HP	B – 50 Hz	2 – 230V, 1 PH
	43 – Four Inch 3-Wire	B – All Stainless Steel	0010 – 1 HP	C – 50/60 Hz	3 – 230V, 3 PH
			0015 – 1-1/2 HP		4 – 460V, 3 PH
			0020 – 2 HP		5 – 575V, 3 PH
			0030 – 3 HP		8 – 200V, 3 PH
			0050 – 5 HP		
			0075 – 7-1/2 HP		
			0100 – 10 HP		

6"-14" Submersible Motors



MOTOR DIAMETER	HITACHI MOTOR	POLE	HORSEPOWER	VOLTAGE/PH
6	HIT/PM	2 = 2-POLE	15 = 15 HP	1 - 230V, 1-PHASE
8		4 = 4-POLE		2 - 230V, 3-PHASE
10				4 - 460V, 3-PHASE
12				8 - 200V, 3-PHASE
14				

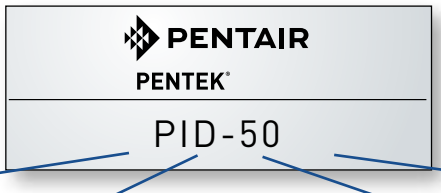
PPC Model Number Key



SERIES	INPUT VOLTAGE	OUTPUT AMP RATING	ENCLOSURE RATING
PPC5	2 – 230V, 3 PH	4A1	1 (NEMA 1)
PPC3	4 – 460V, 3 PH	4A1 = 4.1 AMPS	12 (NEMA 12)
	5 – 575V, 3 PH	(Amps A tenths)	

The output current (or amps) of the PPC must be greater than or equal to the maximum rated motor current. Output of all drives is 3-phase power.

PENTEK INTELLIDRIVE™



SERIES	VOLTAGE	HORSEPOWER	ENCLOSURE RATING
PID	1-230V 1-Phase In/230V 3-Phase Out/1-Phase Out	50=5HP	3 (NEMA 3R)

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