



**POWERTRAN<sup>®</sup>**  
Industrial Automation



## PT Series

AC Variable Speed Drive

0.37kW–37kW / 0.5HP–50HP

**220V–480V** Single & 3 Phase Input

**General Purpose Drive**  
Easy control for all motor types

# PT Series

## Easy to Use

### General Purpose Drive

Focused on ease of use, **PT Series E3** provides unrivalled simplicity of installation, connection and commissioning, allowing the user to benefit from precise motor control and energy savings within minutes.

## IP20

### Up to 37kW

- ❖ Easy to use
- ❖ Compact & robust

## IP66

### Up to 22kW

- ❖ Outdoor rated
- ❖ Dust-tight
- ❖ Washdown ready





### Simple Commissioning

With just 14 basic parameters and application macro functions providing rapid set up, PT Series E3 minimises start-up time.



### Intuitive Keypad Control

Precise digital control at the touch of a button.




### Application Macros

Switch between **Industrial, Pump & Fan** modes to optimise PT Series E3 for your application.

Industrial | Pump | Fan

### Key Features

- ❖ Internal Category C1 EMC filter
- ❖ Internal PI control
- ❖ Internal brake chopper
- ❖ Dual analogue inputs
- ❖ Operates up to 50°C
- ❖  Bluetooth connectivity

### Internal Category C1 EMC Filter

An internal filter in every PT Series E3 saves cost and time for installation.

Cat C1 according to EN61800-3:2004

### Modbus RTU CAN

on-board as standard



### Sensorless Vector Control for all Motor Types

Precise and reliable control for IE2, IE3 & IE4 motors

**IM** IE2 & IE3 Induction Motors

**PM** AC Permanent Magnet Motors

# PT Series

Compact, robust and reliable general purpose drive for panel mounting

**IP20**

Up to 37kW

## Simple Installation

DIN rail and keyhole mounting options

### Fast Connection

5mm rising clamp terminals with captive screws



Power supply connects at top

### Quick Reference

Integrated help card



Operates up to 50°C

### Modbus RTU CAN

on-board as standard



### Optistick Smart


Rapid commissioning tool



Dual analogue inputs

Motor supply connects at base

## Incredibly Easy to Use

- ❖ Built in PI control, EMC filter (C1) & brake chopper
- ❖ Application macros for industrial, fan and pump operation
- ❖  Bluetooth connectivity

## Simply Power Up

PT Series E3 provides precise motor control and energy savings using the factory settings. Simply power up and the drive can immediately deliver energy savings.

14 basic parameters allow simple adjustment for your application if required, with up to 50 parameters available in total for a highly flexible performance.

4 sizes cover global supply ratings



**IP66**

**Up to 22kW**

Enclosed drives for direct machine mounting, dust tight and ready for washdown duty

**Coated Heatsink as Standard**

Ideal for hygiene based operations requiring washdown — such as food and beverage



Switched or non-switched

Conformal coating as standard



**Locally customisable**

Flat front to terminal cover with mounting points for switches and an internal PCB.

**IP66 outdoor rated**

Built with tough polycarbonate plastics specifically chosen to withstand degradation by ultra violet (UV), greases, oils and acids. Also robust enough not to be brittle at -20°C.

**Dust-Tight Design**

Install directly on your processing equipment and be sure of protection from dust and contaminants.

**Washdown Ready**

With a sealed ABS enclosure and corrosion resistant heatsink, the PT Series E3 IP66 is ideal for high-pressure washdown applications.

**Switched models**

Simply wire up the drive, turn the inbuilt potentiometer and the motor will start running – allowing immediate energy savings.

Saving energy cannot be easier than this!



Local Speed Potentiometer

Run Reverse / Off / Run Forward Switch

Lockable Mains Disconnect / Isolator

# PT Series


## Application Macros

Switch modes at the touch of a button to optimise PT Series E3 for your application



### Industrial Mode

**Industrial Mode** optimises PT Series E3 for load characteristics of typical industrial applications.



**Applications include :**


- ❖ Conveyors
- ❖ Mixers
- ❖ Treadmills

---

**Sensorless Vector** provides high starting torque and excellent speed regulation

---

**IP20** panel mount units or **IP66** for direct machine mounting




---


Rapid parameter cloning using **OPTISTICK** Smart

### Pump Mode

**Pump Mode** makes energy efficient pump control easier than ever.

**Applications include :**

- ❖ Dosing Pumps
- ❖ Borehole Pumps
- ❖ Transfer Pumps
- ❖ Swimming Pools
- ❖ Spas
- ❖ Fountains




---

- ❖ Constant or variable torque
- ❖ Internal PI control

### Fan Mode (inc. fire operation)

makes air handling a breeze, ideal for simple HVAC systems.


**Applications include :**

- ❖ Air Handling Units
- ❖ Ventilation Fans
- ❖ Circulating Fans
- ❖ Air Curtains
- ❖ Kitchen Extract

- ❖ High efficiency **variable torque** motor control
- ❖ Flying start capability
- ❖ Mains loss ride through
- ❖ PI control

**Instant Power Savings**

The graph below shows the incredible efficiency of PT Series E3 for controlling airflow compared to traditional damper control methods.






Air Volume (%)	Outlet Damper (kW Consumed %)	Inlet Damper (kW Consumed %)	PT Series E3 (kW Consumed %)
0	0	0	0
20	55	35	5
40	75	45	15
60	85	55	30
80	95	75	55
100	100	100	100

## Drive Rating

	kW	HP	Amps	Frame	Model Code	Product Family	Generation	Frame Size	Voltage Code	Output Current x 10	Supply Phases	EMC Filter	Brake Transistor	Enclosure Option		
200–240V ± 10% 1 Phase Input	0.37	0.5	2.3	1	PTE	-	3	-	1	2	0023	-	1	#	1	#
	0.75	1	4.3	1	PTE	-	3	-	1	2	0043	-	1	#	1	#
	1.5	2	7	1	PTE	-	3	-	1	2	0070	-	1	#	1	#
	1.5	2	7	2	PTE	-	3	-	2	2	0070	-	1	#	4	#
	2.2	3	10.5	2	PTE	-	3	-	2	2	0105	-	1	#	4	#
	4	5	15.3	3	PTE	-	3	-	3	2	0153	-	1	0	4	#
380–480V ± 10% 3 Phase Input	0.75	1	2.2	1	PTE	-	3	-	1	4	0022	-	3	#	1	#
	1.5	2	4.1	1	PTE	-	3	-	1	4	0041	-	3	#	1	#
	1.5	2	4.1	2	PTE	-	3	-	2	4	0041	-	3	#	4	#
	2.2	3	5.8	2	PTE	-	3	-	2	4	0058	-	3	#	4	#
	4	5	9.5	2	PTE	-	3	-	2	4	0095	-	3	#	4	#
	5.5	7.5	14	3	PTE	-	3	-	3	4	0140	-	3	#	4	#
	7.5	10	18	3	PTE	-	3	-	3	4	0180	-	3	#	4	#
	11	15	24	3	PTE	-	3	-	3	4	0240	-	3	#	4	#
	15	20	30	4	PTE	-	3	-	4	4	0300	-	3	#	4	#
	18.5	25	39	4	PTE	-	3	-	4	4	0390	-	3	#	4	#
	22	30	46	4	PTE	-	3	-	4	4	0460	-	3	#	4	#
	30	40	61	5	PTE	-	3	-	5	4	0610	-	3	#	4	#
	37	50	72	5	PTE	-	3	-	5	4	0720	-	3	#	4	#

Replace # in model code with colour-coded option

## Enclosure Types

<b>A</b>		<b>IP66 Outdoor Use</b> Non-switched
<b>B</b>		<b>IP66 Outdoor Use</b> Switched
<b>2</b>		<b>IP20</b>

## EMC Filter

<b>F</b>	Internal EMC Filter
<b>0</b>	No Internal EMC Filter



IP20		1	2	3	4	5
mm	Height	173	221	261	420	486
mm	Width	83	110	131	171	222
mm	Depth	123	150	175	212	226
kg	Weight	1.0	1.7	3.2	9.1	18.1
	Fixings	4xM5	4xM5	4xM5	4xM8	4xM8



IP66		1	2	3	4
mm	Height	232	257	310	360
mm	Width	161	188	210.5	240
mm	Depth	162	182	238	275
kg	Weight	2.5	3.5	7.0	9.5
	Fixings	4xM4	4xM4	4xM4	4xM4

## Drive Specification

Input Ratings	Supply Voltage	200 – 240V ± 10% 380 – 480V ± 10%		
	Supply Frequency	48 – 62Hz		
	Displacement Power Factor	> 0.98		
	Phase Imbalance	3% Maximum allowed		
	Inrush Current	< rated current		
	Power Cycles	120 per hour maximum, evenly spaced		
Output Ratings	Output Power	230V 1 Ph Input: 0.37–4kW (0.5–5HP) 400V 3 Ph Input: 0.75–22kW		
	Overload Capacity	150% for 60 Seconds 175% for 2.5 seconds		
	Output Frequency	0 – 500Hz, 0.1Hz resolution		
	Acceleration Time	0.01 – 600 seconds		
	Deceleration Time	0.01 – 600 seconds		
	Typical Efficiency	> 98%		
Ambient Conditions	Temperature	Storage: –40 to 60°C Operating: –20 to 50°C		
	Altitude	Up to 1000m ASL without derating Up to 2000m maximum UL approved Up to 4000m maximum (non UL)		
	Humidity	95% Max, non condensing		
	Vibration	Conforms to EN61800-5-1		
Enclosure	Ingress Protection	IP20, IP66		
Programming	Keypad	Built-in keypad as standard Optional remote mountable keypad		
	Display	7 Segment LED		
	PC	OptiTools Studio		
Control Specification	Control Method	Sensorless Vector Speed Control PM Vector Control BLDC Control Synchronous Reluctance		
	PWM Frequency	4–32kHz Effective		
	Stopping Mode	Ramp to stop: User Adjustable 0.1–600 secs Coast to stop		
	Braking	Motor Flux Braking Built-in braking transistor (not frame size 1)		
	Skip Frequency	Single point, user adjustable		
	Setpoint Control	Analog Signal	0 to 10 Volts 10 to 0 Volts 0 to 20mA 20 to 0mA 4 to 20mA 20 to 4mA	
		Digital	Motorised Potentiometer (Keypad) Modbus RTU CANopen EtherNet/IP	
	Fieldbus	Built-in	CANopen	125–1000 kbps
			Modbus RTU	9.6–115.2 kbps selectable
	I/O Specification	Power Supply	24 Volt DC, 100mA, Short Circuit Protected 10 Volt DC, 10mA for Potentiometer	
Programmable Inputs		4 Total 2 Digital 2 Analog / Digital selectable		
Digital Inputs		8 – 30 Volt DC, internal or external supply Response time < 4ms		
Analog Inputs		Resolution: 12 bits Response time: < 4ms Accuracy: ± 2% full scale Parameter adjustable scaling and offset		
Programmable Outputs		2 Total 1 Analog / Digital 1 Relay		
Relay Outputs		Maximum Voltage: 250 VAC, 30 VDC Switching Current Capacity: 6A AC, 5A DC		
Analog Outputs		0 to 10 Volt		
Application Features		PI Control	Internal PI Controller Standby / Sleep Function	
		Fire Mode	Bidirectional Selectable Speed Setpoint (Fixed / PI / Analog / Fieldbus)	
Maintenance & Diagnostics		Fault Memory	Last 4 Trips stored with time stamp	
	Data Logging	Logging of data prior to trip for diagnostic purposes: Output Current Drive Temperature DC Bus Voltage		
	Monitoring	Hours Run Meter		
Standards Compliance	Low Voltage Directive	Adjustable speed electrical power drive systems. EMC requirements		
	EMC Directive	2014/30/EU Cat C1 according to EN61800-3:2004		
	Machinery Directive	2006/42/EC		
	Conformance	CE, UL, RCM		



### ❖ Low Power Applications

Dedicated to low power applications, PT Series E3 combines innovative technology, reliability, robustness and ease of use in a range of compact IP20 & IP66 enclosures.

### ❖ Simple Commissioning

14 parameter basic setup. Default settings suitable for most applications. Contactor style connection for simple wiring.

### ❖ PT Series E3 IP66

Environmentally protected, IP66 rated models can be mounted directly on your processing equipment.

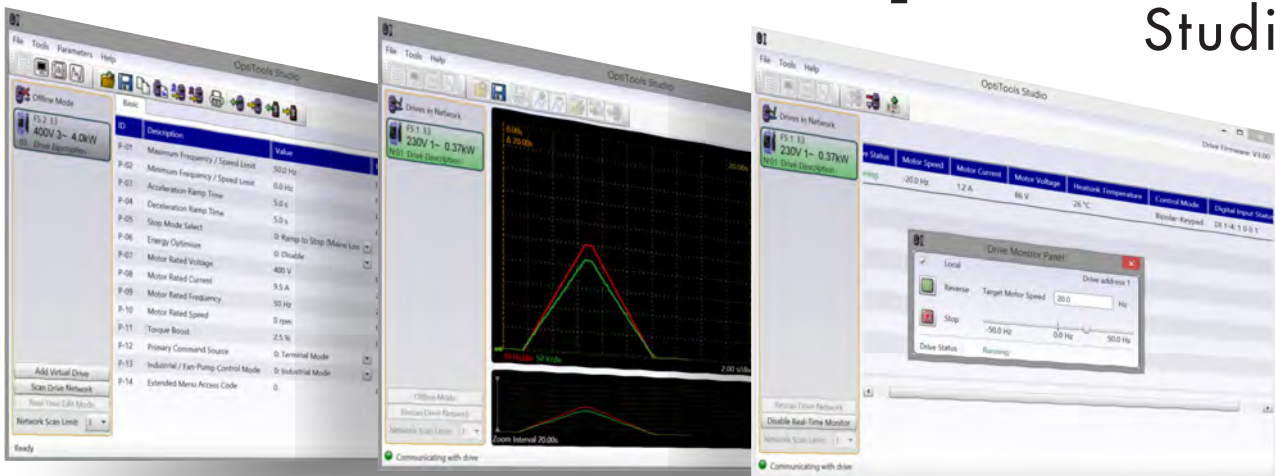
### ❖ Washdown Ready

With a sealed ABS enclosure and corrosion resistant heatsink, PT Series E3 IP66 models are ideal for high-pressure washdown applications.

### ❖ On-drive Control

IP66 models feature optional, convenient controls for speed control, REV/OFF/FWD and Power ON/OFF, complete with safety lock.

# OptiTools Studio



## Drive commissioning and parameter backup

- ❖ Real-time parameter editing
- ❖ Parameter upload, download and storage
- ❖ Real-time scope function and data logging
- ❖ Drive network communication
- ❖ Simple PLC function programming
- ❖ Real-time data monitoring

## Compatible with :

Windows Vista & Windows 7, Windows 8, Windows 8.1 & Windows 10

# Options & Accessories

## Optistick Smart



### Optistick Smart    OPT-3-STICK-IN

Rapid Commissioning Tool

- ❖ Allows copying, backup and restore of drive parameters
- ❖ Provides Bluetooth interface to a PC running OptiTools Studio or the OptiTools Mobile app on a smartphone
- ❖ Onboard NFC (Near Field Communication) for rapid data transfer

## Remote Keypads



### Optipad    OPT-3-OPPAD-IN

Remote Keypad & TFT Display

### Optiport 2    OPT-2-OPORT-IN

Remote Keypad & LED Display

## EtherNet Module



### EtherNet Module    OPT-2-ETHEG-IN

- ❖ ODVA compliant EtherNet/IP Modbus Translator Device
- ❖ Compatible with all drive platforms: P2, E3 & Eco
- ❖ Integrated network switch: simplifying network architecture
- ❖ Compatible with RSLogix and CoDeSys PLCs

## RJ45 Accessories



Ideal for simple and fast connection of Modbus RTU/ CAN networks

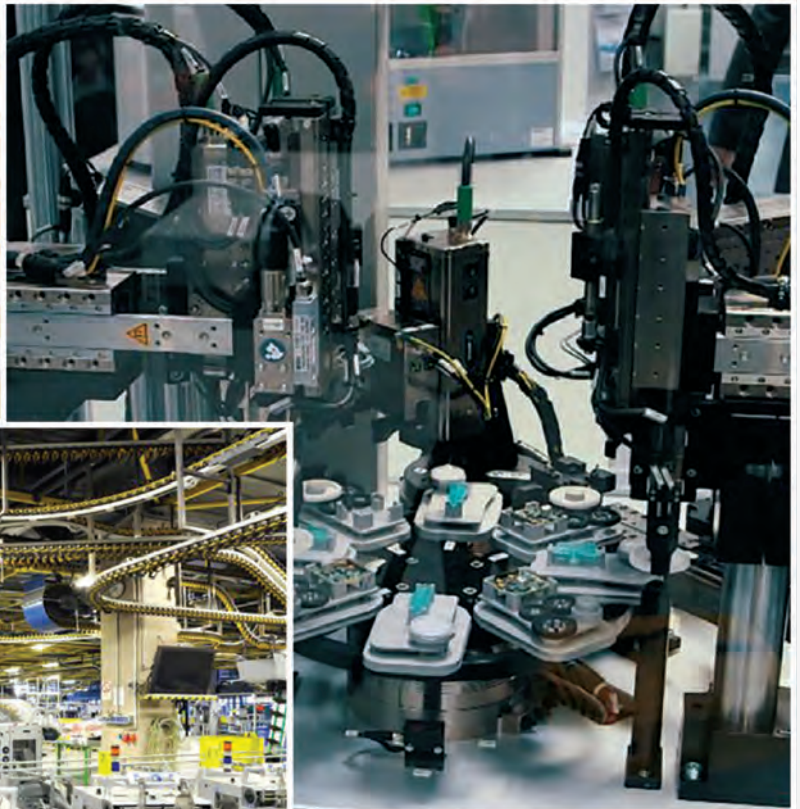
- |                     |                                      |
|---------------------|--------------------------------------|
| <b>OPT-J4505-IN</b> | RJ45 Cable 0.5m                      |
| <b>OPT-J4510-IN</b> | RJ45 Cable 1.0m                      |
| <b>OPT-J4530-IN</b> | RJ45 Cable 3.0m                      |
| <b>OPT-J45SP-IN</b> | RS485 3 Way Data Cable Splitter RJ45 |

## External EMC Filters, Input Chokes & Output Filters are available

See [www.jkfennerindia.com](http://www.jkfennerindia.com) for details



# AUTOMATION APPLICATIONS



# **POWERTRAN**<sup>®</sup>

Industrial Automation



**JK Fenner**

[www.jkfennerindia.com](http://www.jkfennerindia.com)

Cat.No.2516800

Ver 1.0

Printed / FEBRUARY 2020 / 1K

---

Plant Address : Plot No.11&12, Phase IV, TSIIC, IDA, Pashamailaram-502 307. Medak Dist, Telangana, India  
Tel : 08455-224501, Email : [info-ia@jkfenner.com](mailto:info-ia@jkfenner.com)

---

Registered Address : No.3, Madurai-Melakkal Road, Kochadai, Madurai - 625 016, Tamilnadu, India  
Tel : 0452-2383801 / 4283800, Email : [info-ia@jkfenner.com](mailto:info-ia@jkfenner.com)

---

Corporate Address : Khivraj Complex II, 480, Anna Salai, Nandanam, Chennai-600 035, Tamilnadu, India  
Tel : 044-43994666, Email : [info-ia@jkfenner.com](mailto:info-ia@jkfenner.com)

---