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PC/PCE800 series

DIGITAL BRUSHLESS SERVO DRIVES

pacific
SCIENTIFIC

PC/PCE800 SERIES SERVO DRIVES DELIVER

The PC800 and PCE800 Series are the next generation of Pacific Scientific's all-digital brushless servo drives. They bring you a unique level of speed, functionality, quality, innovation and cost-effectiveness all in a significantly smaller package. Combine all this with just-in-time product availability and you've got a level of dependability and performance unparalleled in the industry.

The PC/PCE800 Series is ideal for a wide range of applications including electronic assembly, semiconductor manufacturing, robotics, packaging, printing, material handling, and more. With two input voltage ranges– 120/240 for the PC800, and 380-480 for the PCE800 – the family of drives is at home anywhere on the globe.

For over 45 years, Pacific Scientific has partnered with OEM manufacturers around the world to develop and deliver the innovative servo drive solutions that keep plant operations running productively and cost-effectively. The PC/PCE800 Series is another example of Pacific Scientific's commitment to offering you high performance, customized products designed to fit your unique applications.

INDUSTRY LEADING LEAD TIMES

Pacific Scientific brings you the shortest product lead time in the industry. Faster than you expect, a hardworking PC/PCE800 Series servo drive can be on its way to your plant, allowing you to meet your customers' needs quickly, without increased inventory costs. When it arrives, the PC/PCE800's easy-to-use software utility simplifies set-up and makes it easier to get systems up and running rapidly.

SMALLER FOOTPRINT–40% OR BETTER

The PC/PCE800 Series' comprehensive all-digital servo capabilities come in a package with a smaller footprint than equivalent older drives - up to 40% less, making them ideal for applications where space is at a premium. The low-voltage PC800 fits into a standard 8" cabinet. The high-voltage PCE 800 fits into a 10" cabinet. With both drives, all connections are accessible from the front panel.

POWERFUL, FLEXIBLE, EASY TO USE

Like all Pacific Scientific drives, the PC/PCE800 Series can accept either step and direction or analog commands. Motion profiling is standard -- the PC/PCE800 Series' internal profile generator allows pre-set index moves. The PC/PCE800 Series features Pacific Scientific's patented, 24-bit DRDC (Digital Resolver to Digital Conversion) algorithm to provide the smoothest low-speed performance in its class and position accuracy as low as five arc seconds. And, its 400Hz velocity-loop bandwidth is the highest in the industry. These features bring you the utmost in simplified drive set-up and tuning for complicated mechanical systems. Advanced tuning also allows systems to settle quickly.

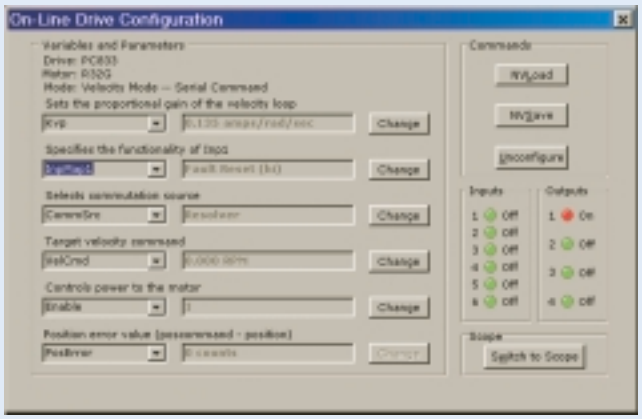
Designed for operation from a 120 or 240V ac line, the three power levels of the PC800 drives provide system performance ranging from 500 to 1500 Watts of shaft output power. The PCE800 drives operate from a 380 - 480V ac line. With two power levels from which to choose, the PCE800 family offers between 1500 and 5000 Watts of shaft power. Using the optional fan kit, continuous currents increase by 50%. Its advanced anti-resonance filters are ideal for complicated mechanical systems. The PC/PCE800 drive supports both hall/encoders or resolver feedback in the same package. Each product comes complete with easy-to-use Windows®-based 800Tools software to facilitate simplified set up. The PC800 Series is fully UL, cUL and CE compliant, and meets the CE low voltage directive without requiring additional isolation. UL, cUL, and CE are pending for the PCE800.

The PC800 and PCE800 Series share similar functionality and power output with the SC900 and SCE900 Series drives shown, but look at the size difference!

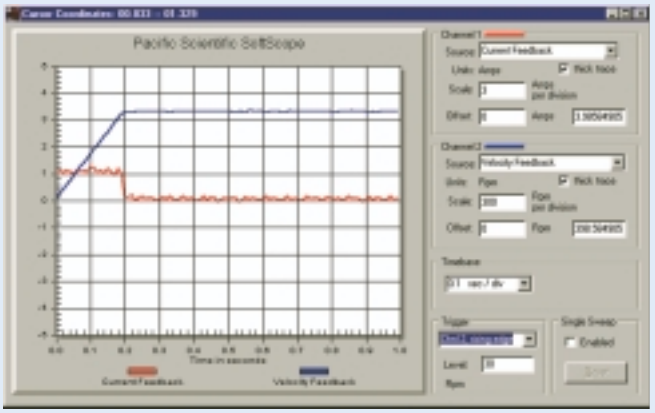
SPEED & VERSATILITY

PACIFIC SCIENTIFIC MOTORS COMPLETE THE PACKAGE

The PMA Series and S Series brushless servomotors pair with the PC/PCE800 Series digital brushless servo drives to offer the best solution to your compact servo application needs. You can use the charts (on pages 5&7) to obtain the recommended pairing of drives and motors. In matching the PC/PCE800 family with its brushless servomotors, Pacific Scientific engineers analyzed real-world motion control applications and optimized the windings for maximum system performance. The combination of Pacific Scientific motors and drives results in higher performance and efficiency, delivering more continuous usable torque (from .21 to 31.5 Nm) in your application.



Intuitive on-line drive configuration is part of the 800Tools™ software suite. Make parameter selections or changes with a few clicks of the mouse. Saved selections go into non-volatile memory within the drive.



The powerful digital oscilloscope function within 800Tools™ greatly streamlines the start-up of your application. Using the oscilloscope, you can combine the PC/PCE800's auto-tuning feature with the diagnostic graphic representation of the servo's parameters. You'll be up and running in no time.

UNMATCHED CUSTOMER SUPPORT AND QUALITY

Pacific Scientific is committed to offering you the highest performance products available, tailored to fit your unique applications. Each and every product is backed by unmatched customer support and quality.

Our sales and service experts are highly trained to help you find the right solutions for your needs, and to keep them running.

PART NUMBER CONFIGURATION

To construct a motor model number code, select the combination of features required and put all the coded information in the proper sequence. Please account for an entry in each field. The model number shown is an example of a properly specified motor.

PACIFIC SCIENTIFIC SERVO DRIVE FAMILY DESIGNATION

PC8 = PC800
240V Input Voltage

PCE8 = PCE800
480V Input Voltage

COMMAND INTERFACE DESIGNATION

3	RS-232/485, ± 10V dc, Step/Dir., Indexing
4	SERCOS Network

ACCESSORIES

N	No accessories
A	D-sub connector kit
T	Terminal board adapter connector kit
F	Terminal block adapter and D-sub for feedback (SERCOS only)

P	C CE	8	3	2	–	0	0	1	–	T

PC800 POWER LEVEL

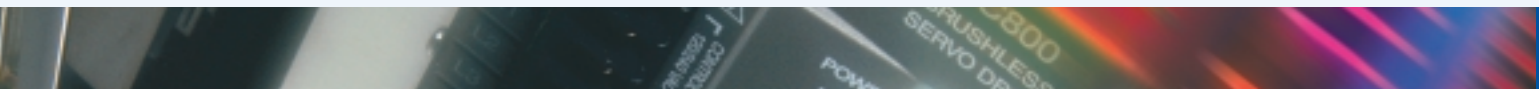
2	2.7A_{RMS} cont. @ 25-40°C, 5.3A_{RMS} peak
3	3.6A_{RMS} cont. @ 25-40°C, 10.6A_{RMS} peak
4	7.1A_{RMS} cont. @ 25-40°C, 21.2A_{RMS} peak

PCE800 POWER LEVEL

3	3.75A_{RMS} cont. @ 40°C, 7.5A_{RMS} peak
5	7.5A_{RMS} cont. @ 40°C, 22.5A_{RMS} peak

CUSTOMIZATION CODE

001	Standard unit
XYZ	Factory assigned hardware customization



COMBINE VERSATILITY, POWER AND COST-EFFECTIVENESS IN A NEW SMALLER SIZE

With 120/240V ac input, three power levels, multiple input, command interface (including pre-set motion indexing at no additional cost), a full 40% smaller footprint, rugged, PLC-like optically isolated I/O, Windows®-based 800Tools software utility, and just-in-time delivery, the PC800 Series offers a great value for your servo drive investment. Only Pacific Scientific can bring you the high-quality, dependable brushless digital servo drive your application demands, delivered, up and running, and performing to your specifications, all in a matter of days.

NOW YOU CAN TAKE ADVANTAGE OF SERCOS

Now manufacturers around the world can take advantage of SERCOS (Serial Real-time Communications System) technology with the new PC840 Series digital brushless servo drives. The PC840 Series brings you the same quality, reliability and performance you've come to expect from Pacific Scientific and now it delivers the capability to utilize the enhanced digital two-way control and drive communication capabilities of SERCOS.

Using the latest SERCON816 ASIC, the PC840 Series delivers network communication rates for distributed motion control up to 16 MHz. The PC840 Series complies with IEC/EN 61491, the industry's only open control standard, assuring integration with controls or devices supporting SERCOS. Its noise-immune fiber-optic cable and ring network topology greatly reduce wiring costs, installation and set-up time, and speed tuning and troubleshooting by supporting a rich set of diagnostic capabilities.

PC800 SERIES PERFORMANCE FEATURES

- 240V ac nominal input power
- 2.7, 3.6 and 7.1A_{RMS} continuous, 5.3, 10.6 and 21.2A_{RMS} peak output current
- Standard analog and digital interfaces
  - – Step/Direction Digital interface-position or velocity control
  - – Preset moves using an internal profile generator
  - – ±10V Analog interface-velocity or torque control
  - – Quadrature encoder digital interface-electronic gearing follower
- All digital DSP-based RS-232/485 serial interface allows programming with an IBM-compatible PC
- Simple ASCII Protocol (SAP) compatible with many operator interfaces
- SERCOS connectivity offers communications via fiber optic network at up to 16MHz
- Windows®-based 800Tools configuration software simplifies set-up:
  - – Digital oscilloscope feature quickly shows drive function graphically
  - – Intuitive parameter configuration-up and running in minutes
  - – Advanced digital tuning for reduced settling time
  - – All system and application parameters are set and saved
  - – Automated diagnostic routine reduces troubleshooting time
- Rugged, PLC-like digital and analog I/O maximize application flexibility:
  - – Six optically-isolated inputs
  - – Three optically-isolated outputs
  - – One relay output, 30V dc @ 1A
  - – Differential ±10V analog input
  - – Single-end analog input, ±5V dc
  - – Two analog outputs, ±5V dc
  - – Encoder quadrature output- up to 16,384 PPR
    - – Encoder quadrature input (Step/Direction)
    - – Enable input
    - – +5V dc @ 200 mA user output
    - – +24V dc @ 100 mA power supply for optically-isolated inputs
- Single resolver feedback survives hostile environments
- Hall/Encoder feedback allows application flexibility
  - – makes it suitable for use with many popular linear motors
- All connections on front-easy access to clearly marked connectors
- Optional Terminal Block Adapter speeds connections even further
- Separate logic supply input keeps logic power working when bus power is disconnected
- Extensive protection circuits and diagnostics to ease set-up
- 400 Hz velocity loop bandwidth
- Inaudible, high frequency, Digital PWM sine wave current control
- IGBT Power stage- more efficient, less audible noise

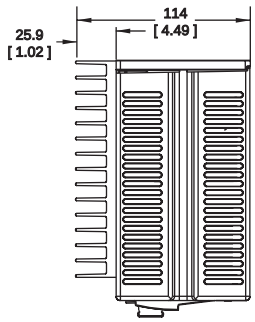
AGENCY APPROVAL

- UL recognized
  - – 508C (Type R)
  - – file #E137798
- cUL approved
- Meets IEC Vibration Standard, #68-2-6
- Models CE Compliant: EMC standard EN61800-3 and safety standard EN50178

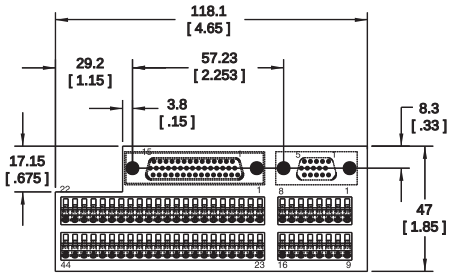
SPEED & VERSATILITY

PC830/840 DIMENSIONS

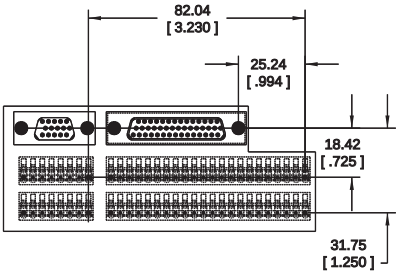
dimensions mm [in.]



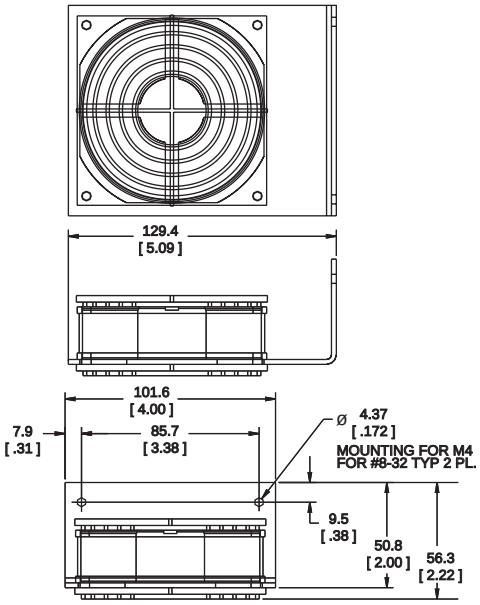
TERMINAL BLOCK ADAPTER



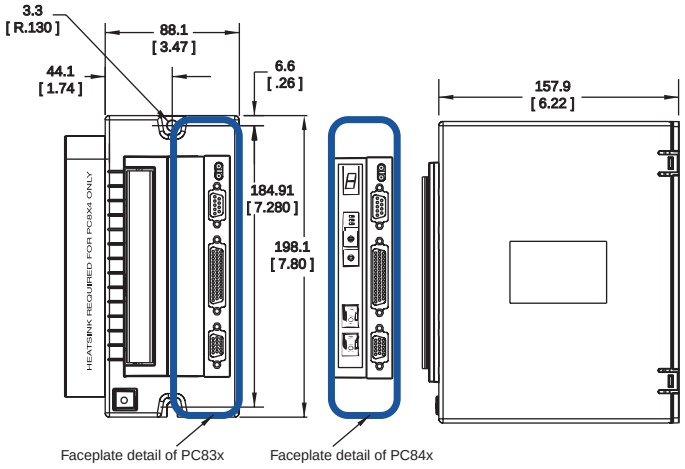
2 x 22 PIN CONNECTOR WECO P/N: 934-22
2 x 8 PIN CONNECTOR WECO P/N: 934-08



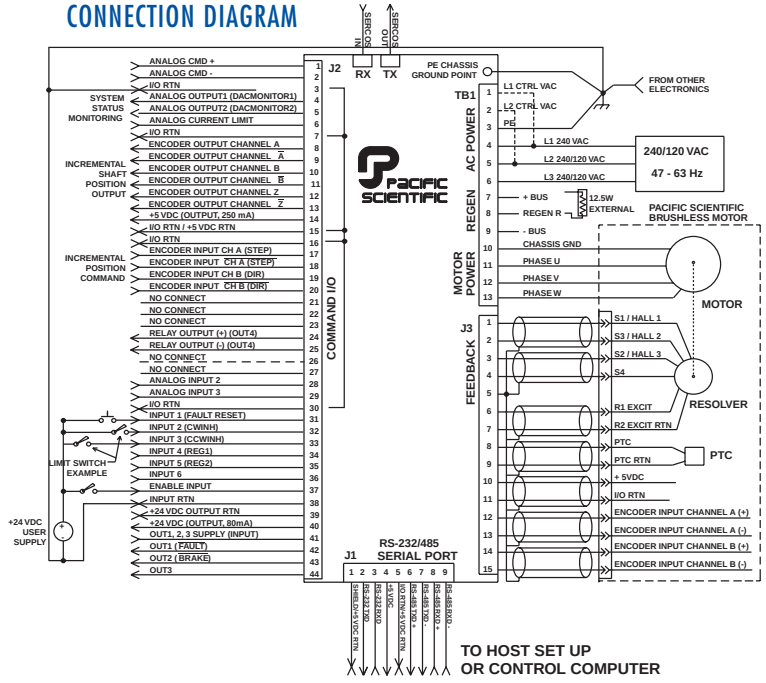
FAN KIT OPTION shown without electrical connection cable.



PC830/840 SERIES



CONNECTION DIAGRAM



MOTORS	PC800 MOTOR DRIVE COMBINATIONS								
	PC832/PC842 2.7A$_{RMS}$ CONT. 5.4A$_{RMS}$ PEAK			PC833/PC843 3.6A$_{RMS}$ CONT. 10.6A$_{RMS}$ PEAK			PC834/PC844 7.1A$_{RMS}$ CONT. 21.2A$_{RMS}$ PEAK		
	CONT. TORQUE AT RATED SPEED (NM)	RATED SPEED (RPM)	CONT. SHAFT POWER AT RATED SPEED (WATTS)	CONT. TORQUE AT RATED SPEED (NM)	RATED SPEED (RPM)	CONT. SHAFT POWER AT RATED SPEED (WATTS)	CONT. TORQUE AT RATED SPEED (NM)	RATED SPEED (RPM)	CONT. SHAFT POWER AT RATED SPEED (WATTS)
PMA11A	0.21	7000	154						
PMA12A	0.48	8500	427						
PMA13B	0.6	9000	565						
PMA21A	0.5	6050	317						
PMA22B	1	5750	602	1.1	4650	536			
PMA23C				1.6	4200	704			
PMA24C				2.2	3000	691			
PMA23D							1.4	6450	946
PMA24D							2.2	4950	1140
PMA42N	3.9	1600	653	3.8	1950	776			
PMA43N				5.8	1250	759			
PMA44N				7.9	850	703			
PMA45N				9.9	600	622			
PMA42Q							3.4	3800	1353
PMA43Q							5.2	3000	1634
PMA44Q							7.3	2100	1605
PMA45Q							9.4	1650	1624
PMA53Q							9.6	1300	1307
PMA54Q							12.4	1200	1558
PMA55Q							16	900	1508
S21H	0.27	12500	353	0.3	12500	393			
S22H	0.59	9100	562	0.7	7600	557			
S24G	1.4	4000	586	1.5	3400	534			
S24H							0.6	8000	503
S31H	1.4	4600	674	1.9	3500	696			
S32G	3	2200	691	3.6	1500	565			
S33A				4.7	1500	738			
S33G	4.6	1400	674						
S34A				5.1	1500	801			
S34G	4.9	1300	667						
S32H							2.8	3900	1144
S33D							3.7	3600	1395
S34H							6.4	2000	1340

COMPATIBILITY WITH EUROPEAN VOLTAGE REQUIREMENTS

The new PCE830 and PCE840 Series brushless servo drives bring you all the performance and reliability you've come to expect from Pacific Scientific with the added benefit of 480V operation, and compatibility with voltage requirements throughout Europe, the UK and Australia. The PCE830 and PCE840 also offer significantly smaller footprints compared to our 900 series, measuring only 4.79 or 5.76 inches wide x 10 inches tall x 7.56 inches deep. Now you can bring the easy-to-install, easy-to-use, productivity advantages of Pacific Scientific brushless digital servo drives anywhere you have 380-480V supply.

SAME GREAT FEATURES AS THE PC800 FAMILY

The new PCE800 family of digital brushless servo drives share a common platform with their lower input voltage kin. Serial RS-232/485 communications allow easy setup and configuration using 800Tools software utility. SERCOS availability means the new PCE800 drives can interface seamlessly with almost all manufacturers' SERCOS equipment. The same high level of input and output functionality means maximum application flexibility, now packaged into a drive that works anywhere your product or machine might ship.

PCE830/840 PERFORMANCE FEATURES

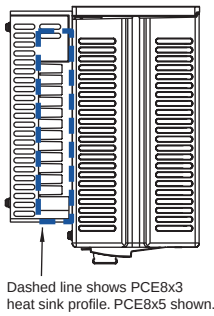
- 480V ac nominal input power
- $3.75A_{RMS}$ and $7.5A_{RMS}$ continuous,
- $7.5A_{RMS}$ and $22.5A_{RMS}$ peak output power
- Standard analog and digital interfaces
  - – Step/Direction Digital interface-position or velocity control
  - – Preset moves using an internal profile generator
  - – ±10V Analog interface-velocity or torque control
  - – Quadrature encoder digital interface-electronic gearing follower
- All digital DSP-based
- RS-232/485 serial interface allows programming with an IBM-compatible PC
- Simple ASCII Protocol (SAP) compatible with many operator interfaces
- SERCOS connectivity offers communications via fiber optic network at up to 16MHz
- Windows®-based 800Tools configuration software simplifies set-up:
  - – Digital oscilloscope feature quickly shows drive function graphically
  - – Intuitive parameter configuration- up and running in minutes
  - – Advanced digital tuning for reduced settling time
  - – All system and application parameters are set and saved
  - – Automated diagnostic routine reduces troubleshooting time
- Rugged, PLC-like digital and analog I/O maximize application flexibility:
  - – Six optically-isolated inputs
  - – Three optically-isolated outputs
  - – One relay output, 30V dc @ 1A
  - – Differential ±10V analog input
  - – Single-end analog input, ±5V dc
  - – Two analog outputs, ±5V dc
  - – Encoder quadrature output- up to 16,384 PPR
    - – Encoder quadrature input (Step/Direction)
    - – Enable input
    - – +5V dc @ 200 mA user output
    - – +24V dc @ 100 mA power supply for optically-isolated inputs
- Single resolver feedback survives hostile environments
- Hall/Encoder feedback allows application flexibility
  - – makes it suitable for use with many popular linear motors
- All connections on front-easy access to clearly marked connectors
- Optional Terminal Block Adapter speeds connections even further
- Separate logic supply input keeps logic power working when bus power is disconnected
- Extensive protection circuits and diagnostics to ease set-up
- 400 Hz velocity loop bandwidth
- Inaudible, high frequency, Digital PWM sine wave current control
- IGBT Power stage- more efficient, less audible noise

AGENCY APPROVAL

- UL, cUL and CE approvals pending as of publication date

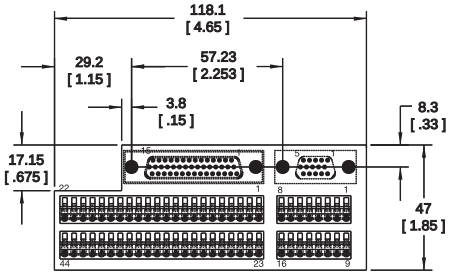
SPEED & VERSATILITY

PCE830/840 DIMENSIONS
dimensions mm [in.]

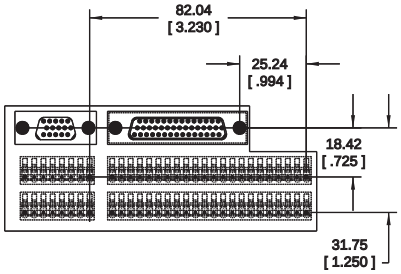


Dashed line shows PCE8x3 heat sink profile. PCE8x5 shown.

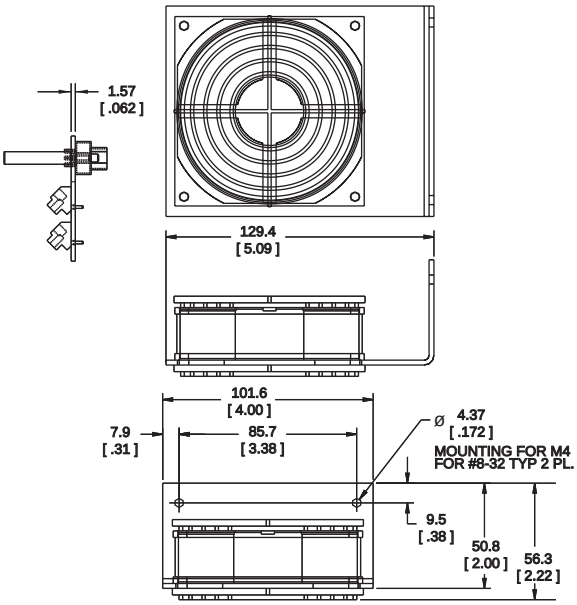
TERMINAL BLOCK ADAPTER



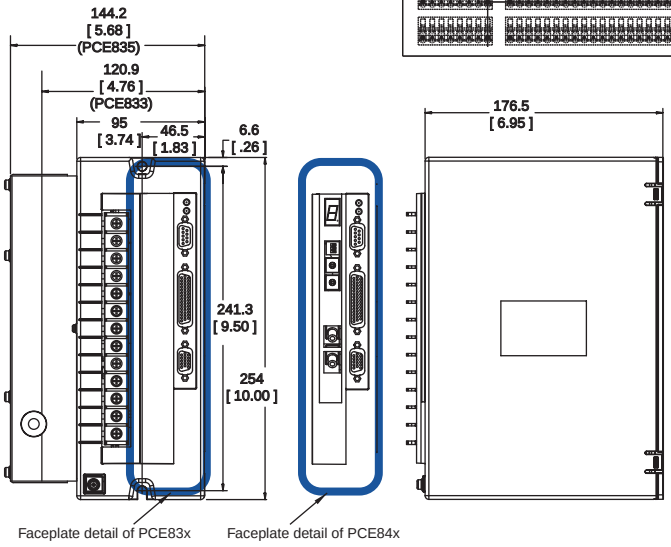
2 x 22 PIN CONNECTOR WECO P/N: 934-22
2 x 8 PIN CONNECTOR WECO P/N: 934-08



FAN KIT OPTION shown without electrical connection cable.

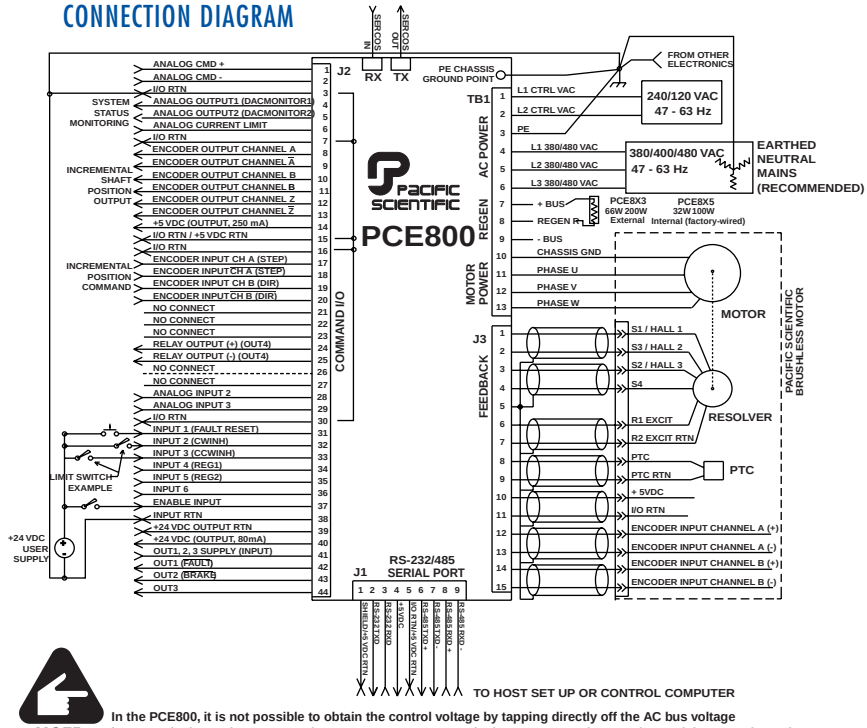


PCE830/840 SERIES



Faceplate detail of PCE83x Faceplate detail of PCE84x

CONNECTION DIAGRAM



NOTE: In the PCE800, it is not possible to obtain the control voltage by tapping directly off the AC bus voltage because the bus voltage range of 380VAC to 480VAC exceeds the 265VAC maximum voltage of the control supply.

MOTORS	PCE800 MOTOR DRIVE COMBINATIONS						
	PCE833/PCE843 3.75A$_{RMS}$ CONT. 7.5A$_{RMS}$ PEAK			PCE835/PCE845 7.5A$_{RMS}$ CONT. 22.5A$_{RMS}$ PEAK			
	CONT. TORQUE AT RATED SPEED (NM) 400/480V ac	RATED SPEED (RPM) 400/480V ac	CONT. SHAFT POWER AT RATED SPEED (WATTS) 400/480V ac	CONT. TORQUE AT RATED SPEED (NM) 400/480V ac	RATED SPEED (RPM) 400/480V ac	CONT. SHAFT POWER AT RATED SPEED (WATTS) 400/480V ac	
PMA42N	3.2/2.8	4300/5550	1440/1625				
PMA43N	5.3/5/1	2800/3350	1550/1785				
PMA44N	7.3/7.2	2100/2400	1600/1800				
PMA45N	9.5/9.3	1600/1900	1590/1850				
PMA42P				3.1/2.8	4750/5550	1540/1625	
PMA43P				5.1/4.9	3300/3850	1760/1975	
PMA43Q				4.2/3.8	5600/6450	2460/2565	
PMA44Q				5.2/4.7	4100/4750	2230/2335	
PMA45Q				8.1/7.6	3200/3700	2710/2940	
PMA53Q	8.2/7.8	2900/3350	2490/2735				
PMA54Q	11.4/11.0	2400/2800	2860/3225				
PMA55Q	14.8/14.5	1900/2200	2940/3340				
PMA53R				7.2/6.8	4200/4750	3090/3380	*
PMA54R				10/9.7	3750/4300	3925/4360	*
PMA55R				13.7/13.3	3000/3400	4300/4730	*
PMA57R				19/18.6	2100/2400	4175/4670	*
PMA65R				25/24	1600/1900	4180/4775	*
PMA66R				31.4/30.5	1350/1600	4430/5110	*
S33A	4/3.6	3000/3900	1250/1470				
S34A	4.3/3.8	3000/3600	1350/1430				

*OPTIONAL FAN KIT REQUIRED TO ACHIEVE CONTINUOUS TORQUE AND POWER RATINGS

Pacific Scientific is a leading technology-driven manufacturer with almost a century of experience answering the challenges of industries around the globe, and over 45 years of experience serving the specific needs of the motion control industry. We serve OEMs in industries ranging from semiconductor, robotics, and packaging, to medical and fitness equipment, to specialty automation equipment, and more. Our products can be found powering everything from small medical pumps to huge industrial robots with motor and drive systems from 100 to 5000 Watts.

Pacific Scientific is a strong brand of Danaher Motion, and an integral part of the multi-billion, industry-leading Danaher Corporation. Some of the other well-known brands in our family include Kollmorgen, Portescap, and Superior Electric. Danaher Motion is focused on helping industry become more productive by providing the best motion control solutions possible. Products manufactured by Danaher Motion brands include electric motors, drives, encoders, linear resolvers, controls, linear actuators, brakes, and ball screws. You can depend on the stability, commitment, service and expertise of Pacific Scientific and Danaher Motion to engineer and deliver the innovative motion control solutions your company needs to respond to today's ever-changing and ever-challenging world marketplace.

To learn more about Pacific Scientific, Danaher Motion and our solutions for your motion control needs, call 1-800-4-PACSCI or visit our website at www.DanaherMotion.com

PACIFIC SCIENTIFIC

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