PCS Controllers

DIN-rail mounted softstarters up to 85A. Larger softstarter frame sizes up to 480A (400HP @480V)

Sprecher + Schuh DIN-rail mounted Controllers can be direct connected to CA7 contactors to provide isolation or to KT7 Motor Circuit Controllers for branch circuit protection (for models up to 37A)

The PCS Softstarter Controller is a Sprecher + Schuh's solid-state controllers with rich features at an economical price. This softstarter is specifically designed to start 3-phase motors (up to 400HP@460V / 500HP@575V), but is very compact, easy to use and DIN-rail mountable for models up to 85A. Four standard starting modes are available with the PCS Controller:

- Soft Start
- Soft Start with Selectable Kick-Start
- Current Limit Starting
- Soft Start with Soft Stop

All PCS Softstarters are designed to control either a standard 3-phase squirrel-cage induction motor or a wye-delta motor (700HP @ 460V/900HP @ 575V Y-D).

For use anywhere

PCS Softstarters come in three different frame sizes. The smallest frame is from 3A...37A, the middle size is from 43A...85A and the largest frame size is 108A...480A. These units are available from 200V...600V - 50/60 Hz. This assures the devices can be used anywhere in the world.

Many convenient features

Easy Set-up – Digital rotary switches are quickly and easily set to the exact value. LED indication of all faults is standard.

Built-in Overload Protection – PCS Softstarters are equipped with electronic overload protection, accomplished with the use of current transformers on each of the three phases. Protection is programmable, providing total flexibility. Overload trip class selection includes OFF, 10, 15 or 20 seconds. In addition, either manual or automatic trip reset may be selected. Trip rating is 120% of dial setting.

Bypass Contactor – PCS controllers are equipped with a bypass contactor on each phase. Once the motor is up to speed, the load is removed from the SCRs, increasing their life and reducing heat.

Over Temperature Protection – The Softstarter monitors SCR temperature by means of internal thermistors. When the power poles maximum rated temperature is reached, the microcomputer switches off the PCS, a TEMP fault is

indicated via LED, and the 97/98 fault contact closes.

Phase Reversal Protection – When enabled via a DIP-switch, 3-phase input power will be verified before starting. If input power phasing is detected to be incorrect, the start will be aborted and a fault indicated.

Phase Loss / Open Load – The PCS will not attempt to start if there is a single phase condition on the line. This protects from motor burnout during single phase starting.

Phase Imbalance – The unit monitors for imbalance between phase currents. To prevent motor damage, the unit will trip if the difference between the minimum phase current and the maximum phase current exceeds 65% for 3 seconds, and a fault will be indicated.

Shorted SCR – Prior to every start and during starting, the unit will check all SCRs for shorts and unit load connections to the motor. If there is a shorted SCR in the PCS and/or open load, the start will be aborted and a shorted SCR or open load fault will be indicated. This prevents damage from phase imbalance.

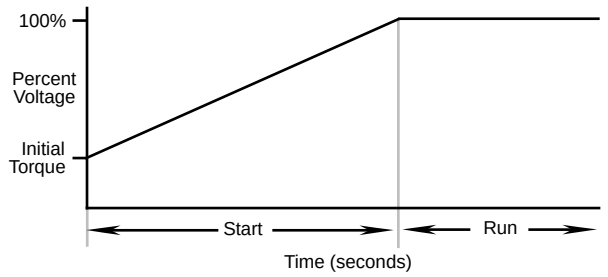
Push to Test – The unit with control wiring can be tested for fault conditions by using the Push to Test function. Hold down the Reset button for 7 seconds to activate the fault Aux (97, 98) and shut down the PCS. To clear, either push the Reset button or cycle control power to the device.

LED Description (Number of Flashes)

1. Overload
2. Overtemperature
3. Phase Reversal
4. Phase Loss/Open Load
5. Phase Imbalance
6. Shorted SCR
7. Test

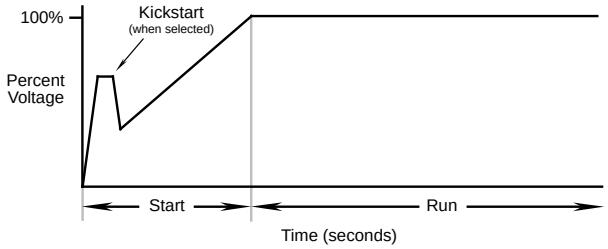
Modes of Operation (Standard)

Soft Start



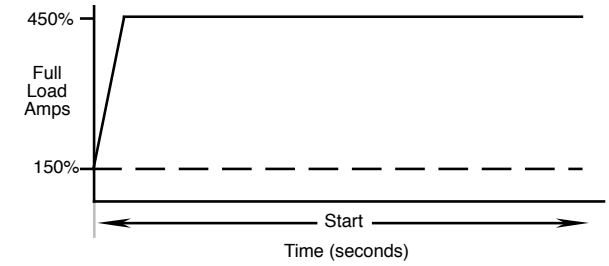
This method has the most general application. The motor is raised from an initial torque value to full voltage. Initial torque is adjustable to 15%, 25%, 35% or 65% locked rotor torque. The motor voltage is gradually increased during the acceleration ramp time, which can be adjusted from 2, 5, 10, 15, 20, 25 or 30 seconds.

Soft Start with Selectable Kickstart



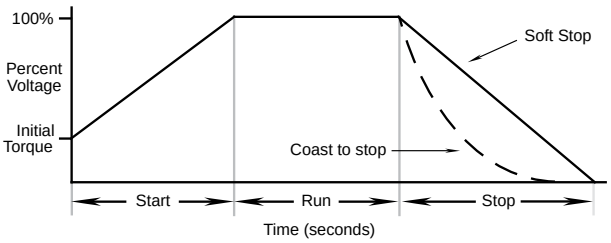
During the Soft Start phase, an initial kickstart or boost can be provided. This supplies a current pulse of 450% of full load current and is adjustable from 0.5 to 1.5 seconds. This allows the motor to develop additional torque for starting high inertia loads.

Current Limit Starting



This starting mode is used when it is desired to limit the maximum starting current (inrush). It can be adjusted for 150%, 250%, 350% or 450% of full load amps. Start times are selectable from 2, 5, 10, 15, 20, 25 or 30 seconds. If the motor is not up to speed after the selected time elapses, the controller transitions to full voltage.

Soft Stop

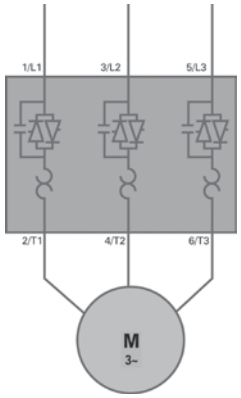


Soft Stop can be used for applications requiring an extended coast-to-rest, such as frictional type loads that tend to stop suddenly when voltage is removed from the motor. When enabled, the voltage ramp down time is equal to one, two or three times the start time selected. The load stops when the motor voltage drops to a point where the load torque is greater than the motor torque.

Open Type - Line Connected Controllers ❷❸❺

Rated Voltage (V AC)	Current Rating (Amps) ❶	Starting Duty kW 50 Hz	Starting Duty Hp 60Hz	With 100...240V AC Control Voltage Catalog Number	With 24V AC/DC Control Voltage Catalog Number
200/208	1...3	~	0.5	**PCS-003-600V**	**PCS-003-600V-024**
	3...9	~	0.75...2	**PCS-009-600V**	**PCS-009-600V-024**
	5.3...16	~	1.5...3	**PCS-016-600V**	**PCS-016-600V-024**
	6.3...19	~	1.5...5	**PCS-019-600V**	**PCS-019-600V-024**
	9.2...25	~	3...7.5	**PCS-025-600V**	**PCS-025-600V-024**
	10...30	~	3...7.5	**PCS-030-600V**	**PCS-030-600V-024**
	12.3...37	~	5...10	**PCS-037-600V**	**PCS-037-600V-024**
	14.3...43	~	5...10	**PCS-043-600V**	**PCS-043-600V-024**
	20...60	~	7.5...15	**PCS-060-600V**	**PCS-060-600V-024**
	28.3...85	~	10...25	**PCS-085-600V**	**PCS-085-600V-024**
	27...108	~	20...30	**PCS-108-600V**	**PCS-108-600V-024** ❹
	34...135	~	25...40	**PCS-135-600V**	**PCS-135-600V-024** ❹
	67...201	~	40...60	**PCS-201-600V**	**PCS-201-600V-024** ❹
	84...251	~	50...75	**PCS-251-600V**	**PCS-251-600V-024** ❹
	106...317	~	60...100	**PCS-317-600V**	**PCS-317-600V-024** ❹
	120...361	~	75...125	**PCS-361-600V**	**PCS-361-600V-024** ❹
	160...480	~	100...150	**PCS-480-600V**	**PCS-480-600V-024** ❹
230	1...3	0.55	0.5	**PCS-003-600V**	**PCS-003-600V-024**
	3...9	2.2	0.75...2	**PCS-009-600V**	**PCS-009-600V-024**
	5.3...16	4	1.5...5	**PCS-016-600V**	**PCS-016-600V-024**
	6.3...19	4	2...5	**PCS-019-600V**	**PCS-019-600V-024**
	9.2...25	5.5	3...7.5	**PCS-025-600V**	**PCS-025-600V-024**
	10...30	7.5	5...10	**PCS-030-600V**	**PCS-030-600V-024**
	12.3...37	7.5	5...10	**PCS-037-600V**	**PCS-037-600V-024**
	14.3...43	11	5...15	**PCS-043-600V**	**PCS-043-600V-024**
	20...60	15	7.5...20	**PCS-060-600V**	**PCS-060-600V-024**
	28.3...85	22	15...30	**PCS-085-600V**	**PCS-085-600V-024**
	27...108	30	20...40	**PCS-108-600V**	**PCS-108-600V-024** ❹
	34...135	37	25...50	**PCS-135-600V**	**PCS-135-600V-024** ❹
	67...201	55	40...75	**PCS-201-600V**	**PCS-201-600V-024** ❹
	84...251	75	50...100	**PCS-251-600V**	**PCS-251-600V-024** ❹
	106...317	90	60...125	**PCS-317-600V**	**PCS-317-600V-024** ❹
	120...361	110	75...150	**PCS-361-600V**	**PCS-361-600V-024** ❹
	160...480	132	100...200	**PCS-480-600V**	**PCS-480-600V-024** ❹

Line Connected



❶ Motor FLA rating must fall within the specified current range for unit to operate properly. The overload setting must be set to the motor FLA regardless if the Overload Function is "OFF" disabled.

❷ See page D23 for maximum starts per hour.

❸ Prior to the initial start of the motor at the final installation location:

– The bypass relays on the main circuit may be in an undefined switching state due to handling during shipping. Before connecting the main power source, apply the control voltage to set the bypass relays to a defined switching state. If this step is not performed, inadvertent operation of the motor may occur.

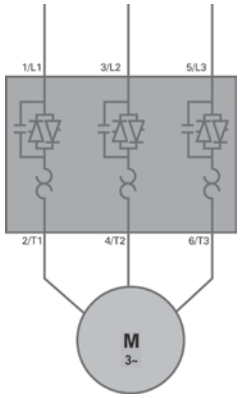
❹ Separate 120V or 240V single phase is required for PCS fan operation.

❺ Controllers rated 108A and greater are not equipped with the line and load terminal lugs. See page D18 for terminal lug kits.

Open Type - Line Connected Controllers cont. ❷❸❺

Rated Voltage (V AC)	Current Rating (Amps) ❶	Starting Duty kW 50 Hz	Starting Duty Hp 60Hz	With 100...240V AC Control Voltage Catalog Number	With 24V AC/DC Control Voltage Catalog Number
380/400/415/460	1...3	1.1	0.5...1.5	PCS-003-600V	PCS-003-600V-024
	3...9	4	1.5...5	PCS-009-600V	PCS-009-600V-024
	5.3...16	7.5	5...10	PCS-016-600V	PCS-016-600V-024
	6.3...19	7.5	5...10	PCS-019-600V	PCS-019-600V-024
	9.2...25	11	7.5...15	PCS-025-600V	PCS-025-600V-024
	10...30	15	7.5...20	PCS-030-600V	PCS-030-600V-024
	12.3...37	18.5	10...25	PCS-037-600V	PCS-037-600V-024
	14.3...43	22	10...30	PCS-043-600V	PCS-043-600V-024
	20...60	30	15...40	PCS-060-600V	PCS-060-600V-024
	28.3...85	45	25...60	PCS-085-600V	PCS-085-600V-024
	27...108	55	50...75	PCS-108-600V	PCS-108-600V-024 ❹
	34...135	75	60...100	PCS-135-600V	PCS-135-600V-024 ❹
	67...201	95...110	75...150	PCS-201-600V	PCS-201-600V-024 ❹
	84...251	95...132	100...200	PCS-251-600V	PCS-251-600V-024 ❹
	106...317	95...160	125...250	PCS-317-600V	PCS-317-600V-024 ❹
	120...361	110...200	250...300	PCS-361-600V	PCS-361-600V-024 ❹
	160...480	160...250	300...400	PCS-480-600V	PCS-480-600V-024 ❹
500/575	1...3	1.5	0.75...2	PCS-003-600V	PCS-003-600V-024
	3...9	5.5	3...7.5	PCS-009-600V	PCS-009-600V-024
	5.3...16	7.5	5...10	PCS-016-600V	PCS-016-600V-024
	6.3...19	11	7.5...15	PCS-019-600V	PCS-019-600V-024
	9.2...25	15	7.5...20	PCS-025-600V	PCS-025-600V-024
	10...30	18.5	10...25	PCS-030-600V	PCS-030-600V-024
	12.3...37	22	15...30	PCS-037-600V	PCS-037-600V-024
	14.3...43	22	15...40	PCS-043-600V	PCS-043-600V-024
	20...60	37	20...50	PCS-060-600V	PCS-060-600V-024
	28.3...85	55	30...75	PCS-085-600V	PCS-085-600V-024
	27...108	75	60...100	PCS-108-600V	PCS-108-600V-024 ❹
	34...135	90	75...125	PCS-135-600V	PCS-135-600V-024 ❹
	67...201	75...132	100...200	PCS-201-600V	PCS-201-600V-024 ❹
	84...251	90...160	125...250	PCS-251-600V	PCS-251-600V-024 ❹
	106...317	100...200	200...300	PCS-317-600V	PCS-317-600V-024 ❹
	120...361	132...250	200...350	PCS-361-600V	PCS-361-600V-024 ❹
	160...480	200...315	250...500	PCS-480-600V	PCS-480-600V-024 ❹

Line Connected



❶ Motor FLA rating must fall within the specified current range for unit to operate properly. The overload setting must be set to the motor FLA regardless if the Overload Function is "OFF" disabled.

❷ See page D23 for maximum starts per hour.

❸ Prior to the initial start of the motor at the final installation location:

– The bypass relays on the main circuit may be in an undefined switching state due to handling during shipping. Before connecting the main power source, apply the control voltage to set the bypass relays to a defined switching state. If this step is not performed, inadvertent operation of the motor may occur.

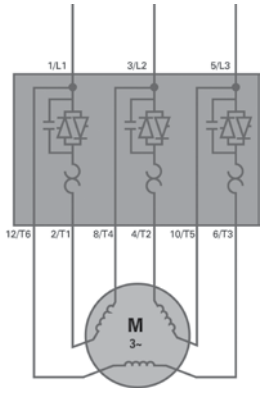
❹ Separate 120V or 240V single phase is required for PCS fan operation.

❺ Controllers rated 108A and greater are not equipped with the line and load terminal lugs. See page D18 for terminal lug kits.

Open Type - Delta Connected Controllers ❷❹❺

Rated Voltage (V AC)	Current Rating (Amps) ❶	Starting Duty kW 50 Hz	Starting Duty Hp 60Hz	With 100...240V AC Control Voltage Catalog Number	With 24V AC/DC Control Voltage Catalog Number
200/208	1.7...5.1	~	1	**PCS-003-600V**	**PCS-003-600V-024**
	5.1...16	~	1.5...3	**PCS-009-600V**	**PCS-009-600V-024**
	9.1...27.6	~	3...7.5	**PCS-016-600V**	**PCS-016-600V-024**
	10.9...32.8	~	3...10	**PCS-019-600V**	**PCS-019-600V-024**
	14.3...43	~	3...10	**PCS-025-600V**	**PCS-025-600V-024**
	17.3...52	~	5...10	**PCS-030-600V**	**PCS-030-600V-024**
	21...64	~	7.5...20	**PCS-037-600V**	**PCS-037-600V-024**
	25...74	~	7.5...20	**PCS-043-600V**	**PCS-043-600V-024**
	34.6...104	~	15...30	**PCS-060-600V**	**PCS-060-600V-024**
	50....147	~	15...40	**PCS-085-600V**	**PCS-085-600V-024**
	47...187	~	20...60	**PCS-108-600V**	**PCS-108-600V-024 ❸**
	59...234	~	20...75	**PCS-135-600V**	**PCS-135-600V-024 ❸**
	116...348	~	75...100	**PCS-201-600V**	**PCS-201-600V-024 ❸**
	145...435	~	100...150	**PCS-251-600V**	**PCS-251-600V-024 ❸**
	183...549	~	100...200	**PCS-317-600V**	**PCS-317-600V-024 ❸**
	208...625	~	125...200	**PCS-361-600V**	**PCS-361-600V-024 ❸**
	277...831	~	200...300	**PCS-480-600V**	**PCS-480-600V-024 ❸**
230	1.7...5.1	0.25...1.1	1	**PCS-003-600V**	**PCS-003-600V-024**
	5.1...16	1.1...4	1...5	**PCS-009-600V**	**PCS-009-600V-024**
	9.1...27.6	2.2...7.5	3...10	**PCS-016-600V**	**PCS-016-600V-024**
	10.9...32.8	2.2...7.5	3...10	**PCS-019-600V**	**PCS-019-600V-024**
	14.3...43	4...11	3...15	**PCS-025-600V**	**PCS-025-600V-024**
	17.3...52	4...15	5...15	**PCS-030-600V**	**PCS-030-600V-024**
	21...64	5.5...18.5	7.5...20	**PCS-037-600V**	**PCS-037-600V-024**
	25...74	5.5...22	7.5...25	**PCS-043-600V**	**PCS-043-600V-024**
	34.6...104	7.5...30	15...40	**PCS-060-600V**	**PCS-060-600V-024**
	50...147	15...45	20...50	**PCS-085-600V**	**PCS-085-600V-024**
	47...187	55	20...60	**PCS-108-600V**	**PCS-108-600V-024 ❸**
	59...234	75	25...75	**PCS-135-600V**	**PCS-135-600V-024 ❸**
	116...348	110	75...125	**PCS-201-600V**	**PCS-201-600V-024 ❸**
	145...435	132	100...150	**PCS-251-600V**	**PCS-251-600V-024 ❸**
	183...549	160	125...200	**PCS-317-600V**	**PCS-317-600V-024 ❸**
	208...625	200	150...250	**PCS-361-600V**	**PCS-361-600V-024 ❸**
	277...831	250	200...300	**PCS-480-600V**	**PCS-480-600V-024 ❸**

Delta Connected



All PCS Models are Wye-Delta compatible

❶ Motor FLA rating must fall within the specified current range for unit to operate properly. The overload setting must be set to the motor FLA regardless if the Overload Function is "OFF" disabled.

❷ Prior to the initial start of the motor at the final installation location:

– The bypass relays on the main circuit may be in an undefined switching state due to handling during shipping. Before connecting the main power source, apply the control voltage to set the bypass relays to a defined switching state. If this step is not performed, inadvertent operation of the motor may occur.

❸ Separate 120V or 240V single phase is required for PCS fan operation.

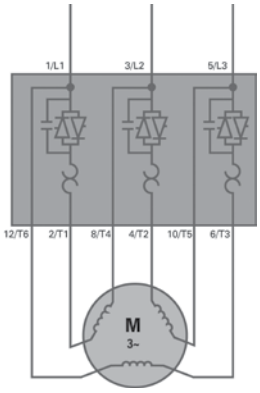
❹ Controllers rated 108A and greater are not equipped with the line and load terminal lugs. See page D18 for terminal lug kits.

❺ It is recommended that an isolation contactor be added to the circuit to provide galvanic isolation of the motor and final electromechanical removal of power.

Open Type - Delta Connected Controllers cont. ❷❹❺

Rated Voltage (V AC)	Current Rating (Amps) ❶	Starting Duty kW 50 Hz	Starting Duty Hp 60Hz	With 100...240V AC Control Voltage Catalog Number	With 24V AC/DC Control Voltage Catalog Number
380/400/415/460	1.7...5.1	0.55...2.2	0.5...2	**PCS-003-600V**	**PCS-003-600V-024**
	5.1...16	2.2...7.5	2...7.5	**PCS-009-600V**	**PCS-009-600V-024**
	9.1...27.6	4...11	5...15	**PCS-016-600V**	**PCS-016-600V-024**
	10.9...32.8	4...15	5...15	**PCS-019-600V**	**PCS-019-600V-024**
	14.3...43	5.5...22	7.5...20	**PCS-025-600V**	**PCS-025-600V-024**
	17.3...52	7.5...22	7.5...30	**PCS-030-600V**	**PCS-030-600V-024**
	21...64	7.5...30	10...30	**PCS-037-600V**	**PCS-037-600V-024**
	25...74	11...37	10...40	**PCS-043-600V**	**PCS-043-600V-024**
	34.6...104	15...55	20...60	**PCS-060-600V**	**PCS-060-600V-024**
	50...147	22...75	25...75	**PCS-085-600V**	**PCS-085-600V-024**
	47...187	90	40...150	**PCS-108-600V**	**PCS-108-600V-024** ❸
	59...234	132	50...150	**PCS-135-600V**	**PCS-135-600V-024** ❸
	116...348	160	150...250	**PCS-201-600V**	**PCS-201-600V-024** ❸
	145...435	250	200...350	**PCS-251-600V**	**PCS-251-600V-024** ❸
	183...549	315	250...450	**PCS-317-600V**	**PCS-317-600V-024** ❸
	208...625	355	300...500	**PCS-361-600V**	**PCS-361-600V-024** ❸
	277...831	450	350...700	**PCS-480-600V**	**PCS-480-600V-024** ❸
500/575	1.7...5.1	0.75...3	1...3	**PCS-003-600V**	**PCS-003-600V-024**
	5.1...16	3...7.5	3...10	**PCS-009-600V**	**PCS-009-600V-024**
	9.1...27.6	5.5...15	7.5...25	**PCS-016-600V**	**PCS-016-600V-024**
	10.9...32.8	5.5...22	7.5...30	**PCS-019-600V**	**PCS-019-600V-024**
	14.3...43	7.5...22	10...40	**PCS-025-600V**	**PCS-025-600V-024**
	17.3...52	11...30	15...50	**PCS-030-600V**	**PCS-030-600V-024**
	21...64	11...37	15...60	**PCS-037-600V**	**PCS-037-600V-024**
	25...74	15...45	20...60	**PCS-043-600V**	**PCS-043-600V-024**
	84.6...104	22...55	30...100	**PCS-060-600V**	**PCS-060-600V-024**
	50...147	30...90	40...150	**PCS-085-600V**	**PCS-085-600V-024**
	47...187	132	50...150	**PCS-108-600V**	**PCS-108-600V-024** ❸
	59...234	160	60...200	**PCS-135-600V**	**PCS-135-600V-024** ❸
	116...348	250	250...300	**PCS-201-600V**	**PCS-201-600V-024** ❸
	145...435	315	250...400	**PCS-251-600V**	**PCS-251-600V-024** ❸
	183...549	400	300...500	**PCS-317-600V**	**PCS-317-600V-024** ❸
	208...625	450	350...600	**PCS-361-600V**	**PCS-361-600V-024** ❸
	277...831	560	400...900	**PCS-480-600V**	**PCS-480-600V-024** ❸

Delta Connected



All PCS Models are Wye-Delta compatible

❶ Motor FLA rating must fall within the specified current range for unit to operate properly. The overload setting must be set to the motor FLA regardless if the Overload Function is "OFF" disabled.

❷ Prior to the initial start of the motor at the final installation location:

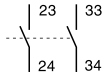
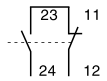
– The bypass relays on the main circuit may be in an undefined switching state due to handling during shipping. Before connecting the main power source, apply the control voltage to set the bypass relays to a defined switching state. If this step is not performed, inadvertent operation of the motor may occur.

❸ Separate 120V or 240V single phase is required for PCS fan operation.

❹ Controllers rated 108A and greater are not equipped with the line and load terminal lugs. See page D18 for terminal lug kits.

❺ It is recommended that an isolation contactor be added to the circuit to provide galvanic isolation of the motor and final electromechanical removal of power.

Auxiliary Contact Blocks (1 & 2 Pole) ❶

Contact Block	Description	NO	NC	Contact Arrangement	For use with…	Catalog Number
	• For side mounting with sequence terminal designations • Snap-on design – mounts without tools • One block per device only	1	0		All PCS & PCEC Controllers	**PCS-PA-10**
		2	0			**PCS-PA-20**
		0	1			**PCS-PA-01**
		1	1			**PCS-PA-11**

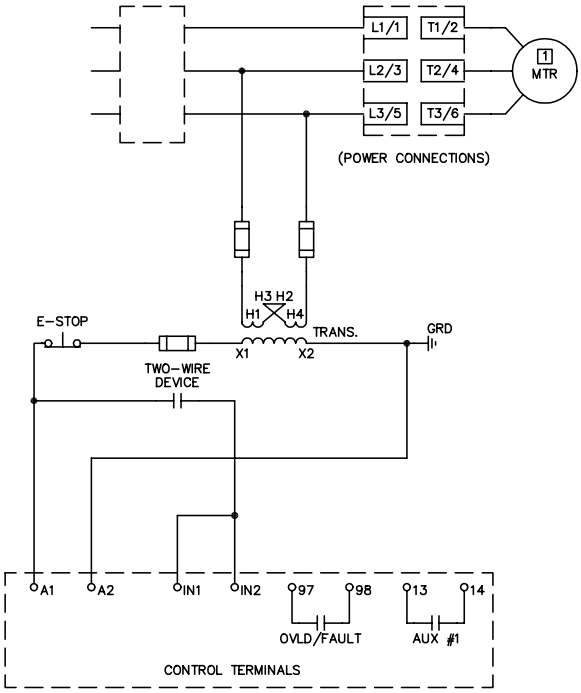
Accessories

Accessory	Description	For use with…	Catalog Number
 **PCV-064**	**Internal PCS Fan** • Attaches directly to PCS Controller • Recommended for enclosed PCS-003...37A Controllers • Fan is included as standard on PCS-043…480A devices • For PCS-108...480A units, separate 120V or 240V single phase is required for fan operation.	PCS-003…037	**PCV-064**
		PCS-043...085	**PCV-147**
		PCS-108...135	**PCV-234**
		PCS-201..251	**PFV-0251**
		PCS-317...480	**PFV-0480**
	**Connecting Module** • For direct connection of PCS Controller to KT7 Motor Circuit Controller • Motor Circuit Controller and PCS Controller must each be mounted • See Section F for KT7 Mounting Modules	KT7-25S to PCS-003…025	**PCS-25S-CC25**
		KT7-25H to PCS-003…025	**PCS-25H-CD25**
		KT7-45H to PCS-003…037	**PCS-45H-CF45**
	**Connecting Module** • For direct connection of PCS Controller to CA7 contactor • CA7 Contactor and PCS Controller must each be mounted • See Section F for KT7 Mounting Modules	CA7-9…23 to PCS-003…019	**PCS-23-CI23**
		CA7-30…37 to PCS-003…037	**PCS-37-CI37**
	**600V Protective Module** • Protects power components from transient voltage spikes and shunts noise energy away from the controller electronics • PCS (3 Lead) Line Connected Applications: Protective modules may be installed on the line and/or load side • PCS (6 Lead) Delta Connected Applications: Protective modules must be installed on the line side only	PCS-003...037-600V PCS-043...085-600V	**PCP-064-600V** **PCP-147-600V**
		PCS-108...480	**PFP-0480-600V**

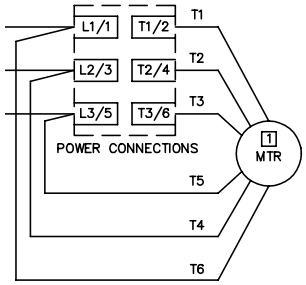
❶ One Auxiliary Contact block (one or two pole) may be mounted on the right side of the controller.

Two Wire Configuration

Line Connected ❶



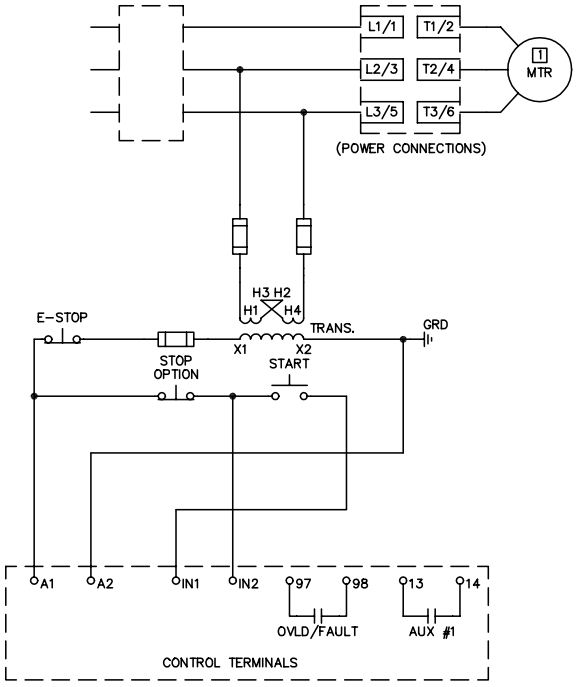
Delta Connected ❶



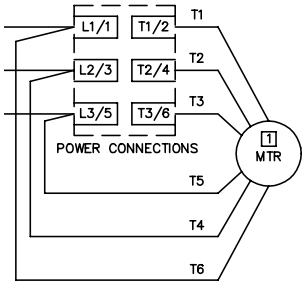
❶ Line or Delta Connected selection are determined by the customer.
- PCS DIP Switch #15 "**ON**": PCS set for Line Connected Motors
- PCS DIP Switch #15 "**OFF**": PCS set for Delta Connected Motors

Three Wire Configuration

Line Connected ❶



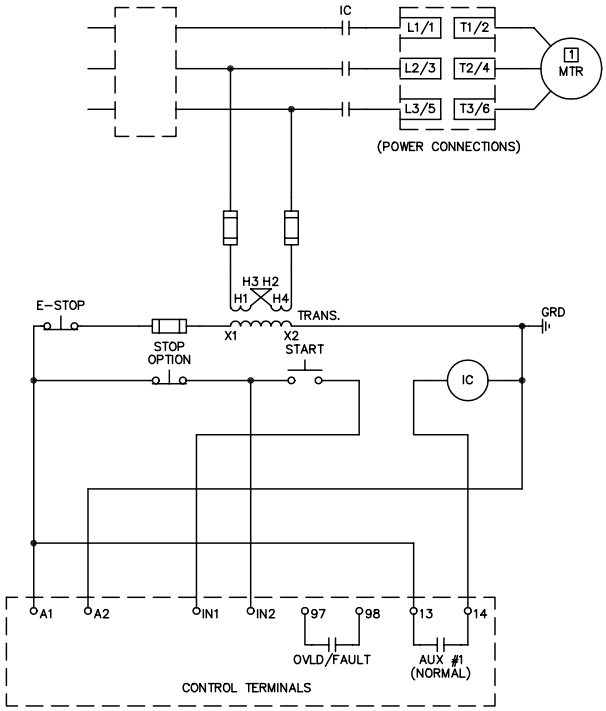
Delta Connected ❶



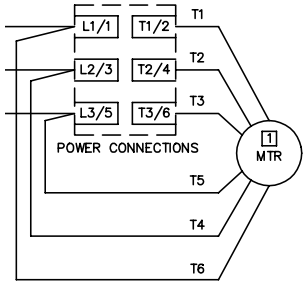
❶ Line or Delta Connected selection are determined by the customer.
- PCS DIP Switch #15 "**ON**": PCS set for Line Connected Motors
- PCS DIP Switch #15 "**OFF**": PCS set for Delta Connected Motors

Isolation Contactor Configuration

Line Connected ❶



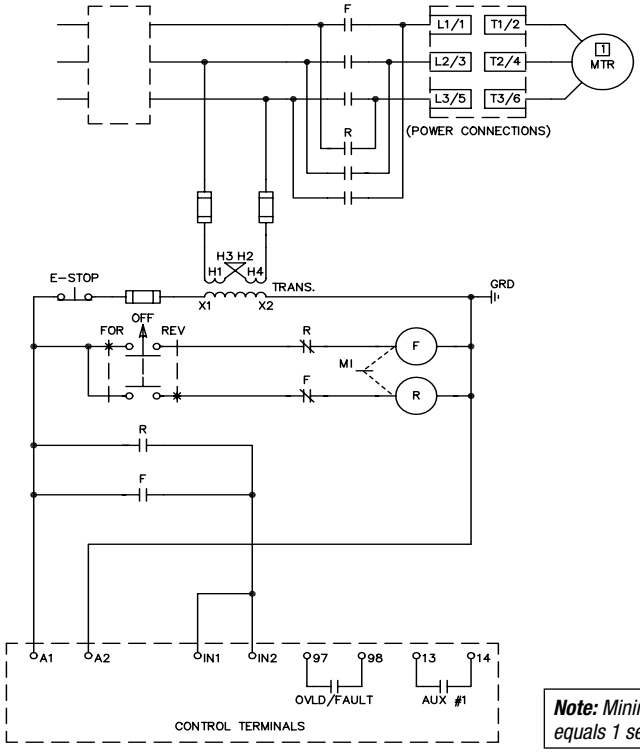
Delta Connected ❶



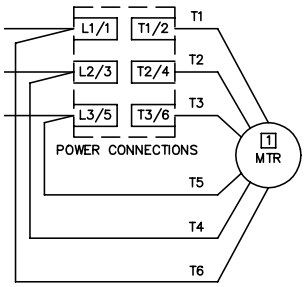
❶ Line or Delta Connected selection are determined by the customer.
- PCS DIP Switch #15 "**ON**": PCS set for Line Connected Motors
- PCS DIP Switch #15 "**OFF**": PCS set for Delta Connected Motors

Reversing Configuration

Line Connected ❶



Delta Connected ❶

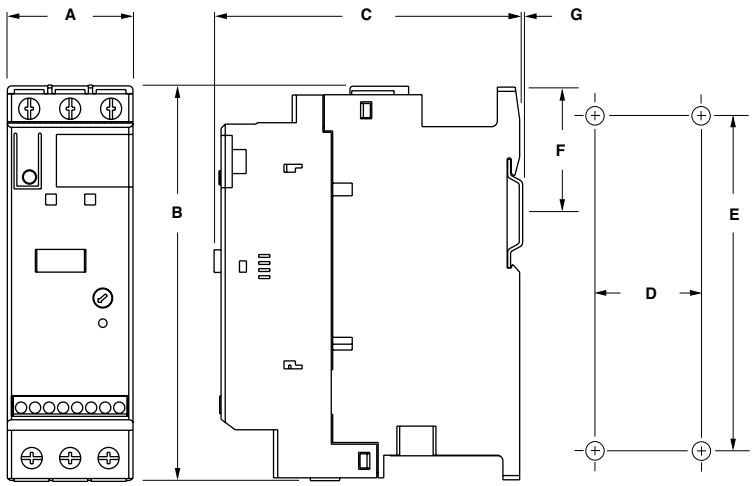


❶ Line or Delta Connected selection are determined by the customer.
- PCS DIP Switch #15 "**ON**": PCS set for Line Connected Motors
- PCS DIP Switch #15 "**OFF**": PCS set for Delta Connected Motors

Note: *Minimum off time equals 1 second*

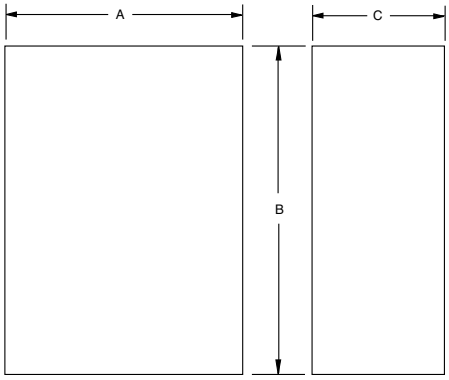
PCS Softstarter Controller

Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.



Controller	A	B	C	D	E	F	G	Mounting Hole Size	Weight (kg (lbs)
3…37A	44.8 (1-49/64)	139.7 (5-1/2)	100 (4-21/64)	35 (1-3/8)	132 (5-13/64)	46.4 (1-13/16)	2 (1/16)	4.6 (0.18)	0.86 (1.9)
43…85A	72 (2-26/32)	206 (8-1/8)	130 (5-1/8)	55 (2-5/32)	198 (7-25/32)	102 (4)	2 (1/16)	5.3 (0.21)	2.25 (5.0)
108...135A	196.4 (7.74)	443.7 (17.47)	205.2 (8.08)	166.6 (6.56)	367 (14.45)	~	~	7.5 (0.295)	15 (33)
201...251	225 (8.86)	560 (22.05)	265.3 (10.45)	150 (5.91)	504.1 (19.85)	~	~	11.5 (0.45)	30.4 (67)
317...480	290 (11.42)	600 (23.62)	298 (11.73)	200 (7.87)	539 (21.23)	~	~	11.5 (0.45)	45.8 (101)

Minimum Enclosure Size



Controller	Height B	Width A	Depth C	Fan Requirements
3…37 A	305 (12)	224 (9)	152 (6)	none
43…85 A	406 (16)	305 (12)	203 (8)	none
108...135 A	762 (30)	610 (24)	305 (12)	none
201...251 A	965 (38)	762 (30)	356 (14)	none
317...480 A	1295 (51)	914 (36)	356 (14)	none