

# PSE – The efficient range

## Description



### Product description

- Wide rated operational voltage 208 – 600 V AC
- Wide rated control supply voltage 100 – 250 V, 50/60 Hz
- Rated operational current 18 to 370 A
- Wide ambient temperature range, -25 to +60 °C
- Coated circuit boards for reliable operation in harsh environment
- Built-in by-pass on all sizes, saving energy and reducing installation time
- User friendly HMI with illuminated language neutral display and four button keypad
- Optional external keypad, IP66
- Torque control for excellent control of pumps
- Current limit, adjustable between  $1.5 - 7 \times I_e$
- Motor overload protection with classes 10A, 10, 20 and 30
- Motor underload protection to detect pumps running dry
- Locked rotor protection, detecting jammed pumps
- Kick start to start jammed pumps or conveyor belts
- Analog output showing operational current, 4 – 20 mA
- Optional fieldbus communication using Profibus, Modbus, Devicenet or CANopen
- Sophisticated algorithm eliminating the DC-component and thereby providing excellent starting performance.

The PSE softstarter range is the world's first compact softstarters with Torque Control. This makes the PSE range an excellent choice for pumping application where water hammering normally is a big problem. With its compact design and advanced functionality, the PSE is also a very efficient solution for other common applications such as compressors and fans.

### Torque control

The most important function when stopping pumps is torque control. Since the PSE softstarter is optimized for controlling pumps, this feature is a must.

### Built-in by-pass for energy saving

Using by-pass after reaching full voltage will greatly reduce the power loss and thereby save energy. In the PSE softstarter range, the by-pass is built-in on all sizes, which will give the most compact starting solution and reduce the need for wiring during installation.

### Coated circuit boards

All circuit boards in the new PSE softstarter have a protective coating to ensure a reliable operation even in tough environments like wastewater plants, where corrosive gases and acids may exist.

### Motor protection

The PSE softstarter is equipped with built-in electronic overload protection, protecting the motor from overheating. Since no additional overload device is needed, our efficient design saves both space, installation time, and ultimately money.

### Analog output

The analog output terminals can be connected to an analog current meter to show the current during operation and thereby eliminating the need for an additional current transformer. The analog output signal can also be used as an analog input to a PLC.

### Display and keypad

The set-up of the PSE softstarter is done using the four button keypad and the illuminated display, providing a quick and easy set-up. While operating, the display will also provide important status information such as current and voltage.

### External keypad

As an option the PSE softstarter can be equipped with an external keypad for easy set-up and monitoring of the unit without opening the enclosure door. The keypad can also be used to copy parameters between different softstarters.

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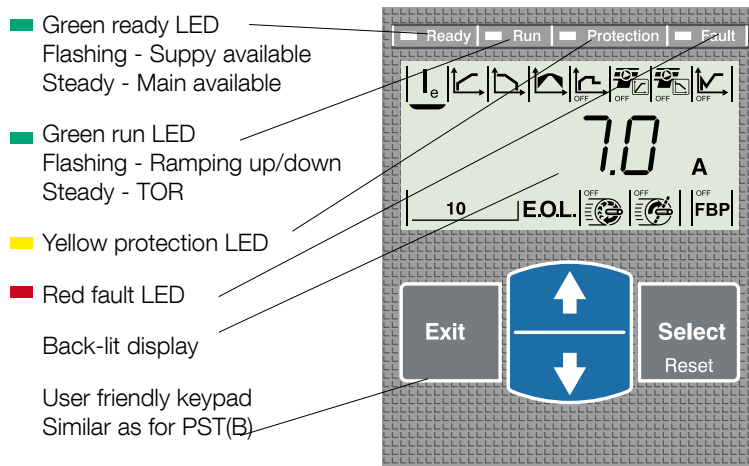
## Description

The PSE Softstarter can be selected according to the rated motor power in normal duty applications like pumps, compressors, elevators, escalators, short conveyor belts and bow thrusters. See page 30.

For heavy duty applications like centrifugal fans, crushers, mixers, mills, stirrers and long conveyor belts, select a softstarter from page 31.



## Settings



# PSE – The efficient range

## Overview



### PSE18 ... PSE105

|                                                                                                                                               |                                                                     |          |          |           |          |          |            |          |           |
|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----------|----------|-----------|----------|----------|------------|----------|-----------|
| <b>Normal start</b><br><b>In-line connected</b><br><br><b>(400 V) kW</b><br><b>IEC, Max. A</b><br><b>(440-480 V) hp</b><br><b>UL, Max FLA</b> | <b>Softstarter. Type</b>                                            |          |          |           |          |          |            |          |           |
|                                                                                                                                               | PSE18                                                               | PSE25    | PSE30    | PSE37     | PSE45    | PSE60    | PSE72      | PSE85    | PSE105    |
|                                                                                                                                               | 7.5                                                                 | 11       | 15       | 18.5      | 22       | 30       | 37         | 45       | 55        |
|                                                                                                                                               | 18                                                                  | 25       | 30       | 37        | 45       | 60       | 72         | 85       | 106       |
|                                                                                                                                               | 10                                                                  | 15       | 20       | 25        | 30       | 40       | 50         | 60       | 75        |
|                                                                                                                                               | 18                                                                  | 25       | 28       | 34        | 42       | 60       | 68         | 80       | 104       |
|                                                                                                                                               | <b>400 V, 40 °C</b>                                                 |          |          |           |          |          |            |          |           |
|                                                                                                                                               | <b>MCCB (35 kA), type</b>                                           |          |          |           |          |          |            |          |           |
|                                                                                                                                               | T2N160                                                              |          |          |           |          |          |            |          | T3N250    |
|                                                                                                                                               | <b>MCCB (50 kA), type</b>                                           |          |          |           |          |          |            |          |           |
| T2S160                                                                                                                                        |                                                                     |          |          |           |          |          |            | T3S250   |           |
| Using MCCB only, type 1 coordination will be achieved                                                                                         |                                                                     |          |          |           |          |          |            |          |           |
|                                                                                                                                               |                                                                     |          |          |           |          |          |            |          |           |
| To achieve type 2 coordination, semi-conductor fuses must be used                                                                             | <b>Fuse protection (85 kA), Semiconductor fuses, Bussmann, type</b> |          |          |           |          |          |            |          |           |
|                                                                                                                                               | 170M1563                                                            | 170M1564 | 170M1566 | 170M1567  | 170M1568 | 170M1569 | 170M1571   | 170M1572 | 170M3819  |
| Suitable switch fuse for recommended semi-conductor fuses                                                                                     | <b>Switch fuse, type</b>                                            |          |          |           |          |          |            |          |           |
|                                                                                                                                               | OS32GD03P                                                           |          |          | OS63GD03P |          |          | OS125GD03P |          | OS250D03P |
| The line contactor is not required for the softstarter itself but often used to open if OL trips                                              | <b>Line contactor, type</b>                                         |          |          |           |          |          |            |          |           |
|                                                                                                                                               | AF26                                                                |          | AF30     | AF38      | A50      | A63      | A75        | A95      | A110      |
| Overload protection is used to protect the motor from over heating                                                                            | <b>Electronic overload relay, type</b>                              |          |          |           |          |          |            |          |           |
|                                                                                                                                               | Built-in                                                            |          |          |           |          |          |            |          |           |
| The by-pass will reduce the power loss of the softstarter.                                                                                    | <b>By-pass, type</b>                                                |          |          |           |          |          |            |          |           |
|                                                                                                                                               | Built-in                                                            |          |          |           |          |          |            |          |           |

A50 ... A300 might be replaced by AF50 ... AF300  
 The table above is an overview of possible combinations of devices.  
 Complete coordination tables are available at [www.abb.com/lowvoltage](http://www.abb.com/lowvoltage)

# PSE – The efficient range

## Overview



PSE142 ... PSE170

PSE210 ... PSE370

Normal start  
In-line connected

(400 V) kW  
IEC, Max. A  
(440-480 V) hp  
UL, Max FLA

Using MCCB only, type 1  
coordination will be achieved

### Softstarter. Type

| PSE142 | PSE170 | PSE210 | PSE250 | PSE300 | PSE370 |
|--------|--------|--------|--------|--------|--------|
| 75     | 90     | 110    | 132    | 160    | 200    |
| 143    | 171    | 210    | 250    | 300    | 370    |
| 100    | 125    | 150    | 200    | 250    | 300    |
| 130    | 169    | 192    | 248    | 302    | 361    |

400 V, 40 °C

### MCCB (35 kA), type

|        |        |        |        |
|--------|--------|--------|--------|
| T3N250 | T4N320 | T5N400 | T5N630 |
|--------|--------|--------|--------|

### MCCB (50 kA), type

|        |        |        |        |
|--------|--------|--------|--------|
| T3S250 | T4S320 | T5S400 | T5S630 |
|--------|--------|--------|--------|

To achieve type 2 coordination,  
semi-conductor fuses  
must be used

### Fuse protection (85kA), Semiconductor fuses, Bussmann, type

|          |          |          |          |          |          |
|----------|----------|----------|----------|----------|----------|
| 170M5809 | 170M5810 | 170M5812 | 170M5813 | 170M6812 | 170M6813 |
|----------|----------|----------|----------|----------|----------|

Suitable switch fuse for re-  
commended semi-conductor  
fuses

### Switch fuse, type

|           |           |
|-----------|-----------|
| OS400D03P | OS630D03P |
|-----------|-----------|

The line contactor is not  
required for the softstarter  
itself but often used to open  
if OL trips

### Line contactor, type

|      |      |      |      |      |       |
|------|------|------|------|------|-------|
| A145 | A185 | A210 | A260 | A300 | AF400 |
|------|------|------|------|------|-------|

Overload protection is used  
to protect the motor from  
over heating

### Electronic overload relay, type

|          |
|----------|
| Built-in |
|----------|

The by-pass will reduce the  
power loss of the softstarter.

### By-pass, type

|          |
|----------|
| Built-in |
|----------|

### How to select correct size

By using the guide here, you can quickly  
select a suitable softstarter for the most  
common applications.

If a more precise selection is required, you  
can use Prosoft, a selection software avail-  
able at [www.abb.com/lowvoltage](http://www.abb.com/lowvoltage)

### Quick guide for selection

#### Normal start Class 10

Ordering - see page 30

#### Heavy duty start class 30

Ordering - see page 31

#### Typical applications

- Bow thruster
- Compressor
- Elevator
- Centrifugal pump
- Conveyor belt (short)
- Escalator
- Centrifugal fan
- Crusher
- Mixer
- Conveyor belt (long)
- Mill
- Stirrer

**!** If more than 10 starts/h  
Select one size larger than the standard selection

# PSE – The efficient range

## Normal starts, class 10, In-Line, ordering details



### PSE18 ... PSE370

Rated operational voltage,  $U_e$ , 208 - 600 V AC

Rated control supply voltage,  $U_c$ , 100 - 250 V AC, 50/60 Hz

Motor power

| 230 V<br>$P_e$<br>kW | 400 V<br>$P_e$<br>kW | 500 V<br>$P_e$<br>kW | IEC<br>Max rated<br>operational<br>current $I_e$<br>A | Type          | Order code        | Weight<br>kg<br>1 piece |
|----------------------|----------------------|----------------------|-------------------------------------------------------|---------------|-------------------|-------------------------|
| 4                    | 7.5                  | 11                   | 18                                                    | PSE18-600-70  | 1SFA897 101 R7000 | 2.4                     |
| 5.5                  | 11                   | 15                   | 25                                                    | PSE25-600-70  | 1SFA897 102 R7000 | 2.4                     |
| 7.5                  | 15                   | 18.5                 | 30                                                    | PSE30-600-70  | 1SFA897 103 R7000 | 2.4                     |
| 9                    | 18.5                 | 22                   | 37                                                    | PSE37-600-70  | 1SFA897 104 R7000 | 2.4                     |
| 11                   | 22                   | 30                   | 45                                                    | PSE45-600-70  | 1SFA897 105 R7000 | 2.4                     |
| 15                   | 30                   | 37                   | 60                                                    | PSE60-600-70  | 1SFA897 106 R7000 | 2.4                     |
| 18.5                 | 37                   | 45                   | 72                                                    | PSE72-600-70  | 1SFA897 107 R7000 | 2.5                     |
| 22                   | 45                   | 55                   | 85                                                    | PSE85-600-70  | 1SFA897 108 R7000 | 2.5                     |
| 30                   | 55                   | 75                   | 106                                                   | PSE105-600-70 | 1SFA897 109 R7000 | 2.5                     |
| 40                   | 75                   | 90                   | 143                                                   | PSE142-600-70 | 1SFA897 110 R7000 | 4.2                     |
| 45                   | 90                   | 110                  | 171                                                   | PSE170-600-70 | 1SFA897 111 R7000 | 4.2                     |
| 59                   | 110                  | 132                  | 210                                                   | PSE210-600-70 | 1SFA897 112 R7000 | 12.4                    |
| 75                   | 132                  | 160                  | 250                                                   | PSE250-600-70 | 1SFA897 113 R7000 | 13.9                    |
| 90                   | 160                  | 200                  | 300                                                   | PSE300-600-70 | 1SFA897 114 R7000 | 13.9                    |
| 110                  | 200                  | 250                  | 370                                                   | PSE370-600-70 | 1SFA897 115 R7000 | 13.9                    |



PSE18 ... PSE105



PSE142 ... PSE170



PSE210 ... PSE370

# PSE – The efficient range

## Heavy duty starts, class 30, In-Line, ordering details



### PSE18 ... PSE370

Rated operational voltage,  $U_o$ , 208 - 600 V AC

Rated control supply voltage,  $U_s$ , 100 - 250 V AC, 50/60 Hz

Motor power



| 230 V<br>P<br>kW | 400 V<br>P<br>kW | 500 V<br>P<br>kW | IEC<br>Max rated<br>operational<br>current $I_e$<br>A | Type          | Order code        | Weight<br>kg<br>1 piece |
|------------------|------------------|------------------|-------------------------------------------------------|---------------|-------------------|-------------------------|
| 3                | 5.5              | 7.5              | 12                                                    | PSE18-600-70  | 1SFA897 101 R7000 | 2.4                     |
| 4                | 7.5              | 11               | 18                                                    | PSE25-600-70  | 1SFA897 102 R7000 | 2.4                     |
| 5.5              | 11               | 15               | 25                                                    | PSE30-600-70  | 1SFA897 103 R7000 | 2.4                     |
| 7.5              | 15               | 18.5             | 30                                                    | PSE37-600-70  | 1SFA897 104 R7000 | 2.4                     |
| 9                | 18.5             | 22               | 37                                                    | PSE45-600-70  | 1SFA897 105 R7000 | 2.4                     |
| 11               | 22               | 30               | 45                                                    | PSE60-600-70  | 1SFA897 106 R7000 | 2.4                     |
| 15               | 30               | 37               | 60                                                    | PSE72-600-70  | 1SFA897 107 R7000 | 2.5                     |
| 18.5             | 37               | 45               | 72                                                    | PSE85-600-70  | 1SFA897 108 R7000 | 2.5                     |
| 22               | 45               | 55               | 85                                                    | PSE105-600-70 | 1SFA897 109 R7000 | 2.5                     |
| 30               | 55               | 75               | 106                                                   | PSE142-600-70 | 1SFA897 110 R7000 | 4.2                     |
| 40               | 75               | 90               | 143                                                   | PSE170-600-70 | 1SFA897 111 R7000 | 4.2                     |
| 45               | 90               | 110              | 171                                                   | PSE210-600-70 | 1SFA897 112 R7000 | 12.4                    |
| 59               | 110              | 132              | 210                                                   | PSE250-600-70 | 1SFA897 113 R7000 | 13.9                    |
| 75               | 132              | 160              | 250                                                   | PSE300-600-70 | 1SFA897 114 R7000 | 13.9                    |
| 90               | 160              | 200              | 300                                                   | PSE370-600-70 | 1SFA897 115 R7000 | 13.9                    |

# PSE – The efficient range

## Accessories

### Cable connectors for Cu cables

| For softstarter type | Wire range mm <sup>2</sup> | Tightening torque max. Nm | Type         | Order code         | Pack <sup>ing</sup> piece | Weight kg 1 piece |
|----------------------|----------------------------|---------------------------|--------------|--------------------|---------------------------|-------------------|
| PSE142 ...170        | 6-185                      | 16                        | –            | 1SDA 023 354 R0001 | 3                         | 0.200             |
| PSE142 ...170        | 2 x (50-120)               | 16                        | LZ185-2C/120 | 1SFN 074 709 R1000 | 3                         | 0.300             |
| PSE210 ... 370       | 16-240                     | 25                        | –            | 1SDA 023 368 R0001 | 3                         | 0.400             |

### Cable connectors for Al and Cu cables

| For softstarter type | Wire range mm <sup>2</sup> | Tightening torque max. Nm | Type | Order code         | Pack <sup>ing</sup> piece | Weight kg 1 piece |
|----------------------|----------------------------|---------------------------|------|--------------------|---------------------------|-------------------|
| PSE142 ...170        | 35-95                      | 13.5                      | –    | 1SDA 023 356 R0001 | 3                         | 0.100             |
| PSE142 ...170        | 25-150                     | 31                        | –    | 1SDA 023 357 R0001 | 3                         | 0.100             |
| PSE210 ... 370       | 120-240                    | 43                        | –    | 1SDA 023 370 R0001 | 3                         | 0.100             |

### Terminal enlargements

| For softstarter type | Dimensions hole ø mm <sup>2</sup> | bar mm   | Type  | Order code         | Pack <sup>ing</sup> piece | Weight kg 1 piece |
|----------------------|-----------------------------------|----------|-------|--------------------|---------------------------|-------------------|
| PSE18...105          | 10.5                              | 17.5 x 5 | LW110 | 1SFN 074 307 R1000 | 1                         | 0.100             |
| PSE142...170         | 10.5                              | 20 x 5   | LW185 | 1SFN 074 707 R1000 | 1                         | 0.450             |
| PSE210...370         | 13                                | 40 x 6   | LW300 | 1SFN 075 107 R1000 | 1                         | 1.230             |

### Terminal nut washer

| For softstarter type | Req. qty | Type  | Order code         | Pack <sup>ing</sup> piece | Weight kg 1 piece |
|----------------------|----------|-------|--------------------|---------------------------|-------------------|
| PSE142...170         | 2        | LE185 | 1SFN 074 716 R1000 | 2                         | 0.200             |
| PSE210...370         | 2        | LE300 | 1SFN 075 116 R1000 | 2                         | 0.300             |

### Terminal shrouds

| For softstarter type | Suitable for     | Req. qty | Type     | Order code         | Pack <sup>ing</sup> piece | Weight kg 1 piece |
|----------------------|------------------|----------|----------|--------------------|---------------------------|-------------------|
| PSE142...170         | Cable connectors | 2        | LT185-AC | 1SFN 124 701 R1000 | 2                         | 0.050             |
| PSE142...170         | Compression lugs | 2        | LT185-AL | 1SFN 124 703 R1000 | 2                         | 0.220             |
| PSE210...370         | Cable connectors | 2        | LT300-AC | 1SFN 125 101 R1000 | 2                         | 0.070             |
| PSE210...370         | Compression lugs | 2        | LT300-AL | 1SFN 125 103 R1000 | 2                         | 0.280             |

### External keypad including a 3m cable

| For softstarter type | Type  | Order code         | Pack <sup>ing</sup> piece | Weight kg 1 piece |
|----------------------|-------|--------------------|---------------------------|-------------------|
| PSE18...370          | PSEEK | 1SFA 897 100 R1001 | 1                         | –                 |

### Fieldbus plug connection accessory

| For softstarter type             | Type    | Order code         | Pack <sup>ing</sup> piece | Weight kg 1 piece |
|----------------------------------|---------|--------------------|---------------------------|-------------------|
| The same accessory for all sizes | PS-FBPA | 1SFA 896 312 R1002 | 1                         | 0.060             |

ABB Field Bus Plug suitable for all sizes. See page 50-53



LZ...



1SFN0909-011C1



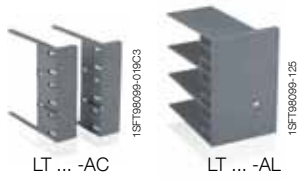
LW...

1SFN0909-011C3



LE185

1SFC132321F0001



LT ... -AC

LT ... -AL

1SFN0909-019C3



PSEEK

1SFC132328F0001



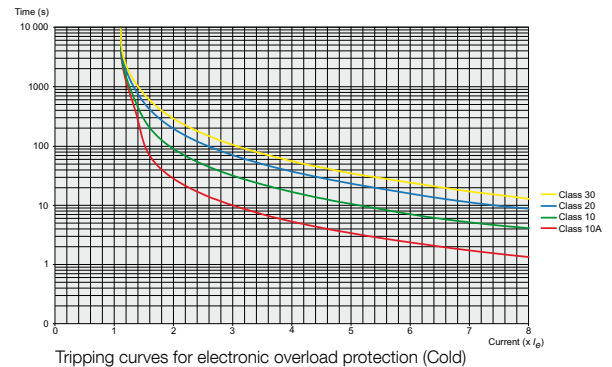
PS-FBPA

1SFC132168F0002

# PSE – The efficient range

## Technical data

|                                                                                |                                               |                                    |                                  |
|--------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------|----------------------------------|
| <b>Rated insulation voltage <math>U_i</math></b>                               | 600 V                                         | <b>Analog output</b>               |                                  |
| <b>Rated operational voltage <math>U_e</math></b>                              | 208 ... 600 V +10 %/-15 %                     | Output signal reference            | 4 ... 20 mA                      |
| <b>Rated control supply voltage <math>U_s</math></b>                           | 100 ... 250 V +10 %/-15 %, 50/60 Hz $\pm 5$ % | Type of output signal              | I Amp                            |
| <b>Rated control circuit voltage <math>U_c</math></b>                          | Internal 24 V DC                              | Scaling                            | Fixed at $1.2 \times I_e$        |
| <b>Starting capacity at <math>I_e</math></b>                                   | $4 \times I_e$ for 10 sec.                    | <b>Control circuit</b>             |                                  |
| <b>Number of starts per hour</b>                                               | 10 <sup>1)</sup>                              | Number of inputs                   | 3 (start, stop, reset of faults) |
| <b>Overload capability,</b><br>Overload Class                                  | 10                                            | <b>Signal indication LED's</b>     |                                  |
| <b>Ambient temperature</b>                                                     |                                               | On / Ready                         | Green flashing / steady          |
| During operation                                                               | -25 ... +60 °C <sup>2)</sup>                  | Run / TOR                          | Green flashing / steady          |
| During storage                                                                 | -40 ... +70 °C                                | Protection                         | Yellow                           |
| <b>Maximum Altitude</b>                                                        | 4000 m <sup>3)</sup>                          | Fault                              | Red                              |
| <b>Degree of protection</b>                                                    |                                               | <b>Protections</b>                 |                                  |
| Main circuit                                                                   | IP00                                          | Electronic overload                | Yes (Class 10A, 10, 20, 30)      |
| Supply and Control circuit                                                     | IP20                                          | Locked rotor protection            | Yes                              |
| <b>Main circuit</b>                                                            |                                               | Underload protection               | Yes                              |
| Built-in By-pass                                                               | Yes                                           | <b>Field bus connection</b>        |                                  |
| Cooling system - Fan cooled<br>(thermostat controlled)                         | Yes                                           | Connection for<br>ABB FieldBusPlug | Yes (option)                     |
| <b>HMI for settings</b>                                                        |                                               | <b>External keypad</b>             |                                  |
| Display                                                                        | 4 7-segments and icons. Illuminated           | Display LCD type                   |                                  |
| Keypad                                                                         | 2 selection keys and 2 navigation keys        | Ambient temperature                |                                  |
| <b>Main settings</b>                                                           |                                               | during operation                   | -25 ... +60 °C                   |
| Setting current                                                                | Size dependent                                | during storage                     | -40 ... +70 °C                   |
| Ramp time during start                                                         | 1-30 sec                                      | Degree of protection               | IP66                             |
| Ramp time during stop                                                          | 0-30 sec                                      |                                    |                                  |
| Initial / end voltage                                                          | 30-70%                                        |                                    |                                  |
| Current limit                                                                  | $1.5-7 \times I_e$                            |                                    |                                  |
| Torque control for start                                                       | Yes / No                                      |                                    |                                  |
| Torque control for stop                                                        | Yes / No                                      |                                    |                                  |
| Kick start                                                                     | Off, 30-100%                                  |                                    |                                  |
| <b>Signal relays</b>                                                           |                                               |                                    |                                  |
| Number of signal relays                                                        | 3                                             |                                    |                                  |
| K2                                                                             | Run signal                                    |                                    |                                  |
| K3                                                                             | TOR (By-pass) signal                          |                                    |                                  |
| K1                                                                             | Event signal                                  |                                    |                                  |
| <b>Rated operational voltage <math>U_e</math></b>                              | 250 V AC / 24 V DC <sup>4)</sup>              |                                    |                                  |
| <b>Rated thermal current <math>I_{th}</math></b>                               | 3 A                                           |                                    |                                  |
| <b>Rated operational current <math>I_e</math></b><br>at AC-15 ( $U_e = 250$ V) | 1.5 A                                         |                                    |                                  |



<sup>1)</sup> Valid for 50 % on time and 50 % off time, with  $3.5 \times I_e$  for 7 seconds. If other data is required, please contact your sales office

<sup>2)</sup> Above 40 °C up to max. 60 °C reduce the rated current with 0.6 % per °C.

<sup>3)</sup> When used at high altitudes above 1000 meters up to 4000 meters you need to derate the rated current using the following formula.

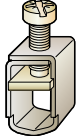
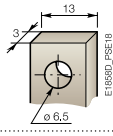
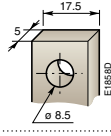
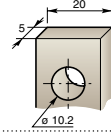
[ % of  $I_e = 100 - \frac{x - 1000}{150} ]$  x = actual altitude for the softstarter

<sup>4)</sup> A common voltage needs to be used for all 3 signal relays

# PSE – The efficient range

## Technical data

### Cross section of connection cables

|                                   |                     | Type of softstarter<br>PSE18 ... PSE105                                           |  | PSE142 ... PSE170                                                                 | PSE210 ... PSE370                                                                   |
|-----------------------------------|---------------------|-----------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Main circuit</b>               |                     |                                                                                   |  |                                                                                   |                                                                                     |
| Connection clamp                  |                     |  |  |                                                                                   |                                                                                     |
| Solid/stranded                    | 1 x mm <sup>2</sup> | 2.5 – 70                                                                          |  | See accessories                                                                   |                                                                                     |
| Solid/stranded                    | 2 x mm <sup>2</sup> | 2.5 – 70                                                                          |  | See accessories                                                                   |                                                                                     |
| Tightening torque (recommended)   | Nm                  | 9                                                                                 |  | See accessories                                                                   |                                                                                     |
| Connection bar                    |                     |  |  |  |  |
| Width and thickness               | mm                  |                                                                                   |  |                                                                                   |                                                                                     |
| Hole diameter                     | mm                  |                                                                                   |  |                                                                                   |                                                                                     |
| Tightening torque (recommended)   | Nm                  | 9                                                                                 |  | 18                                                                                | 28                                                                                  |
| <b>Supply and control circuit</b> |                     |                                                                                   |  |                                                                                   |                                                                                     |
| Connection clamp                  |                     |                                                                                   |  |                                                                                   |                                                                                     |
| Solid/stranded                    | 1 x mm <sup>2</sup> | 2.5                                                                               |  | 2.5                                                                               | 2.5                                                                                 |
| Solid/stranded                    | 2 x mm <sup>2</sup> | 1.5                                                                               |  | 1.5                                                                               | 1.5                                                                                 |
| Tightening torque (recommended)   | Nm                  | 0.5                                                                               |  | 0.5                                                                               | 0.5                                                                                 |

### Fuse ratings and power losses

|                    |            | Recommended<br>ABB Overload protection |                                                                    |                                              |          |      | Power<br>requirements<br>supply circuit |
|--------------------|------------|----------------------------------------|--------------------------------------------------------------------|----------------------------------------------|----------|------|-----------------------------------------|
| For<br>Softstarter |            | Current<br>range                       | Max<br>power loss<br>at rated I <sub>e</sub><br>(Internal by-pass) | Max fuse rating - main circuit <sup>1)</sup> |          |      |                                         |
|                    |            |                                        |                                                                    | Bussman Fuses, DIN43 620                     |          |      |                                         |
| Type               | Type       | A                                      | W                                                                  | A                                            | Type     | Size | VA/VA pull in                           |
| PSE                |            |                                        |                                                                    |                                              |          |      |                                         |
| PSE18              | Integrated | 5.4-18                                 | 0.2                                                                | 40                                           | 170M1563 | 000  | 16                                      |
| PSE25              | Integrated | 7.5-25                                 | 0.4                                                                | 50                                           | 170M1564 | 000  | 16                                      |
| PSE30              | Integrated | 9-30                                   | 0.5                                                                | 80                                           | 170M1566 | 000  | 16                                      |
| PSE37              | Integrated | 11.1-37                                | 0.8                                                                | 100                                          | 170M1567 | 000  | 16                                      |
| PSE45              | Integrated | 13.5-45                                | 1.2                                                                | 125                                          | 170M1568 | 000  | 16                                      |
| PSE60              | Integrated | 18-60                                  | 2.2                                                                | 160                                          | 170M1569 | 000  | 16                                      |
| PSE72              | Integrated | 21.6-72                                | 3.1                                                                | 250                                          | 170M1571 | 000  | 16                                      |
| PSE85              | Integrated | 25.5-85                                | 4.3                                                                | 315                                          | 170M1572 | 000  | 16                                      |
| PSE105             | Integrated | 31.8-106                               | 6.6                                                                | 400                                          | 170M3819 | 1*   | 16                                      |
| PSE142             | Integrated | 42.9-143                               | 12.1                                                               | 450                                          | 170M5809 | 2    | 16                                      |
| PSE170             | Integrated | 51.3-171                               | 17.6                                                               | 500                                          | 170M5810 | 2    | 16                                      |
| PSE210             | Integrated | 63-210                                 | 8.8                                                                | 630                                          | 170M5812 | 2    | 23/350                                  |
| PSE250             | Integrated | 75-250                                 | 12.5                                                               | 700                                          | 170M5813 | 2    | 23/350                                  |
| PSE300             | Integrated | 90.6-302                               | 18                                                                 | 800                                          | 170M6812 | 3    | 23/350                                  |
| PSE370             | Integrated | 111-370                                | 27.4                                                               | 900                                          | 170M6813 | 3    | 23/350                                  |

<sup>1)</sup>For the supply circuit 6 A delayed, for MCB use C characteristics.

# PSE – The efficient range

## UL ratings

### 3-phase motor rating – In-Line

| Softstarters |                 | Motor power P (hp) and full load current FLA, (A) |                                     |                                     |                                     |
|--------------|-----------------|---------------------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Type         | Max<br>FLA<br>A | U <sub>e</sub><br>200V / 208V<br>hp               | U <sub>e</sub><br>220V / 240V<br>hp | U <sub>e</sub><br>440V / 480V<br>hp | U <sub>e</sub><br>550V / 600V<br>hp |
| PSE18        | 18              | 5                                                 | 5                                   | 10                                  | 15                                  |
| PSE25        | 25              | 7.5                                               | 7.5                                 | 15                                  | 20                                  |
| PSE30        | 28              | 7.5                                               | 10                                  | 20                                  | 25                                  |
| PSE37        | 34              | 10                                                | 10                                  | 25                                  | 30                                  |
| PSE45        | 42              | 10                                                | 15                                  | 30                                  | 40                                  |
| PSE60        | 60              | 20                                                | 20                                  | 40                                  | 50                                  |
| PSE72        | 68              | 20                                                | 25                                  | 50                                  | 60                                  |
| PSE85        | 80              | 25                                                | 30                                  | 60                                  | 75                                  |
| PSE105       | 104             | 30                                                | 40                                  | 75                                  | 100                                 |
| PSE142       | 130             | 40                                                | 50                                  | 100                                 | 125                                 |
| PSE170       | 169             | 60                                                | 60                                  | 125                                 | 150                                 |
| PSE210       | 192             | 60                                                | 75                                  | 150                                 | 200                                 |
| PSE250       | 248             | 75                                                | 100                                 | 200                                 | 250                                 |
| PSE300       | 302             | 100                                               | 100                                 | 250                                 | 300                                 |
| PSE370       | 361             | 125                                               | 150                                 | 300                                 | 350                                 |

