168981
S811+R10P3S

Overview
Specifications
Resources

DELIVERY PROGRAM

Description
With internal bypass contacts

Function
Soft starter for three-phase loads, with control unit and pump algorithm

Mains supply voltage (50/60 Hz) [U_{LN}]
200 - 600 V AC

Supply voltage [U_S]
24 V DC

Control voltage [U_C]
24 V DC

Assigned motor rating (Standard connection, In-Line)

at 400 V, 50 Hz [P]
55 kW

at 460 V, 60 Hz [P]
75 HP

Rated operational current

AC-53 [I_e]
105 A

AC-53, In-Delta [I_e]
182 A

Startup class
CLASS 10 (star-delta replacement)
CLASS 20 (heavy starting duty 3 x I_e for 45 s)
CLASS 30 (6 x I_e for 30 s)

Rated operational voltage [U_e]
200 V
230 V
400 V
480 V
600 V

Connection to SmartWire-DT
no

Frame size
R

TECHNICAL DATA

General

Standards
IEC/EN 60947-4-2
UL 508
CSA22.2-14-1995
GB14048

Approvals
CE

Approvals

UL
CSA
C-Tick
CCC

Climatic proofing
Damp heat, constant, to IEC 60068-2-3
Damp heat, cyclic, to IEC 60068-2-10

Ambient temperature
Operation [ϑ]
-30 - +50 °C

Ambient temperature
Storage [ϑ]
-50 - +70 °C

Altitude
0 - 2000 m, above that each 100 m 0.5% Derating
m

Mounting position
As required

Degree of protection
Degree of Protection
IP20 (terminals IP00)

Degree of protection
Integrated
Protection type IP40 can be achieved on all sides
with covers SS-IP20-N.

Protection against direct contact
Finger- and back-of-hand proof

Overvoltage category/pollution degree
II/3

Shock resistance
15 g

Radio interference level (IEC/EN 55011)
A

Static heat dissipation, non-current-dependent [P_{vs}]
47 W

Weight
4.8 kg

Main conducting paths

Rated operating voltage [U_e]
200 - 600 V AC

Supply frequency [f_{LN}]
50/60 Hz

Rated operational current [I_e]
AC-53, In-Delta [I_e]
182 A

Rated operational current [I_e]
AC-53 [I_e]
105 A

Assigned motor rating (Standard connection, In-Line)
at 230 V, 50 Hz [P]
30 kW

Assigned motor rating (Standard connection, In-Line)
at 400 V, 50 Hz [P]
55 kW

Assigned motor rating (Standard connection, In-Line)
at 500 V, 50 Hz [P]
55 kW

Assigned motor rating (Standard connection, In-Line)
at 200 V, 60 Hz [P]
30 HP

Assigned motor rating (Standard connection, In-Line)
at 230 V, 60 Hz [P]
40 HP

Assigned motor rating (Standard connection, In-Line)

at 460 V, 60 Hz [P]
75 HP

Assigned motor rating (Standard connection, In-Line)
at 600 V, 60 Hz [P]
100 HP

Assigned motor rating (delta connection)
at 230 V, 50 Hz [P]
55 kW

Assigned motor rating (delta connection)
at 400 V, 50 Hz [P]
90 kW

Assigned motor rating (delta connection)
at 500 V, 50 Hz [P]
110 kW

Assigned motor rating (delta connection)
at 230 V, 60 Hz
60 HP

Assigned motor rating (delta connection)
at 480 V, 60 Hz
150 HP

Assigned motor rating (delta connection)
at 600 V, 60 Hz [P]
150 HP

Overload cycle to IEC/EN 60947-4-2
AC-53a
105 A: AC-53a: 4.0 - 32: 99 - 3

Overload cycle to IEC/EN 60947-4-2
Internal bypass contacts
☐

Short-circuit rating
Type “1” coordination
NZMN2-S125

Terminal capacities

Cable lengths

Solid
1 x (2.5 - 95) mm²

Cable lengths
Flexible with ferrule
1 x (2.5 - 95) mm²

Cable lengths
Stranded
1 x (2.5 - 95) mm²

Cable lengths
Solid or stranded
1 x (14 - 4/0) AWG

Cable lengths
Tightening torque
11.3 Nm

Cable lengths
Screwdriver (PZ: Pozidriv)
4 mm Innensechskant mm

Control cables
Solid
1 x (2.5 - 4)
2 x (1.0 - 2.5) mm²

Control cables
Flexible with ferrule
1 x (2.5 - 4)
2 x (1.0 - 2.5) mm²

Control cables
Stranded
1 x (2.5 - 4)
2 x (1.0 - 2.5) mm²

Control cables
Solid or stranded
6 x (12 - 14)
2 x (12 - 14) AWG

Control cables
Tightening torque
0.4 Nm

Control cables
Screwdriver

0,6 x 3,5 mm

Control circuit

Digital inputs
Control voltage
DC-operated
24 V DC +10 %/- 10 % V DC

Digital inputs
Current consumption 24 V
External 24 V
150 mA

Digital inputs
Current consumption 24 V
External 24 V (no-load)
100 mA

Digital inputs
Pick-up voltage
DC-operated
21.6 - 26.4 V DC

Digital inputs
Drop-out voltage [x U_s]
DC operated
Drop-out voltage, DC-operated, max.
3 V DC

Digital inputs
Pick-up time
DC operated
100 ms

Digital inputs
Drop-out time
DC operated
100 ms

Regulator supply
Voltage [U_s]
24 V DC +10 %/- 10 % V

Regulator supply
Current consumption [I_e]
1000 mA

Regulator supply
Current consumption at peak performance (close bypass) at 24 V DC [I_{Peak}]
10/150 A/ms

Regulator supply
Notes
External supply voltage

Analog inputs
Number of current inputs
1

Analog inputs
Current input
4 - 20 mA

Relay outputs
Number
2

Relay outputs
of which programmable
2

Relay outputs
Voltage range
120 V AC/DC V AC

Relay outputs
AC-11 current range
3 A, AC-11 A

Soft start function

Ramp times
Acceleration
Ramp time, max.
360 s

Ramp times
Deceleration
0 - 120 s

Start voltage (= turn-off voltage)
Start voltage, max.
85 %

Start pedestal
Start voltage, max.
85 %

Kickstart
Voltage
Kickstart voltage, max.
100 %

Kickstart
Duration
50 Hz
Kickstart Duration 50 Hz max.
2000 ms

Kickstart
Duration
60 Hz
Kickstart Duration 60 Hz max.
2000 ms

Fields of application
Fields of application
Soft starting of three-phase asynchronous motors

Fields of application
3-phase motors
☐

Functions

Fast switching (semiconductor contactor)
- (minimum ramp time 1s)

Soft start function
☐

Reversing starter
External solution required (reversing contactor)

Suppression of closing transients
☐

Current limitation
☐

Overload monitoring
□

Underload monitoring
□

Fault memory
10 Faults

Suppression of DC components for motors
□

Potential isolation between power and control sections
□

Communication Interfaces
Modbus RTU

DESIGN VERIFICATION AS PER IEC/EN 61439

Technical data for design verification

Rated operational current for specified heat dissipation [I_n]
105 A

Heat dissipation per pole, current-dependent [P_{vid}]
0 W

Equipment heat dissipation, current-dependent [P_{vid}]
47 W

Static heat dissipation, non-current-dependent [P_{vs}]
47 W

Heat dissipation capacity [P_{diss}]
0 W

Operating ambient temperature min.
-30 °C

Operating ambient temperature max.
+50 °C

IEC/EN 61439 design verification

10.2 Strength of materials and parts
10.2.2 Corrosion resistance
Meets the product standard's requirements.

10.2 Strength of materials and parts
10.2.3.1 Verification of thermal stability of enclosures
Meets the product standard's requirements.

10.2 Strength of materials and parts
10.2.3.2 Verification of resistance of insulating materials to normal heat
Meets the product standard's requirements.

10.2 Strength of materials and parts
10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects
Meets the product standard's requirements.

10.2 Strength of materials and parts
10.2.4 Resistance to ultra-violet (UV) radiation
Meets the product standard's requirements.

10.2 Strength of materials and parts
10.2.5 Lifting
Does not apply, since the entire switchgear needs to be evaluated.

10.2 Strength of materials and parts
10.2.6 Mechanical impact
Does not apply, since the entire switchgear needs to be evaluated.

10.2 Strength of materials and parts
10.2.7 Inscriptions
Meets the product standard's requirements.

10.3 Degree of protection of ASSEMBLIES
Does not apply, since the entire switchgear needs to be evaluated.

10.4 Clearances and creepage distances
Meets the product standard's requirements.

10.5 Protection against electric shock
Does not apply, since the entire switchgear needs to be evaluated.

10.6 Incorporation of switching devices and components
Does not apply, since the entire switchgear needs to be evaluated.

10.7 Internal electrical circuits and connections
Is the panel builder's responsibility.

10.8 Connections for external conductors
Is the panel builder's responsibility.

10.9 Insulation properties
10.9.2 Power-frequency electric strength
Is the panel builder's responsibility.

10.9 Insulation properties
10.9.3 Impulse withstand voltage
Is the panel builder's responsibility.

10.9 Insulation properties
10.9.4 Testing of enclosures made of insulating material
Is the panel builder's responsibility.

10.10 Temperature rise
The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.

10.11 Short-circuit rating
Is the panel builder's responsibility. The specifications for the switchgear must be observed.

10.12 Electromagnetic compatibility
Is the panel builder's responsibility. The specifications for the switchgear must be observed.

10.13 Mechanical function
The device meets the requirements, provided the information in the instruction leaflet (IL) is

observed.

TECHNICAL DATA ETIM 7.0

Low-voltage industrial components (EG000017) / Soft starter (EC000640)

Electric engineering, automation, process control engineering / Low-voltage switch technology / Load breakout, motor breakout / Semiconductor motor controller or soft starter (ecl@ss10.0.1-27-37-09-07 [ACO300011])

Rated operation current Ie at 40 °C Tu
105 A

Rated operating voltage Ue
200 - 600 V

Rated power three-phase motor, inline, at 230 V
30 kW

Rated power three-phase motor, inline, at 400 V
55 kW

Rated power three-phase motor, inside delta, at 230 V
55 kW

Rated power three-phase motor, inside delta, at 400 V
90 kW

Function
Single direction

Internal bypass
Yes

With display
Yes

Torque control
No

Rated surrounding temperature without derating
50 °C

Rated control supply voltage Us at AC 50HZ
0 - 0 V

Rated control supply voltage Us at AC 60HZ
0 - 0 V

Rated control supply voltage Us at DC
24 - 24 V

Voltage type for actuating
DC

Integrated motor overload protection
Yes

Release class
Adjustable

Degree of protection (IP)
IP00

Degree of protection (NEMA)
Other

APPROVALS

Product Standards
IEC/EN 60947-4-2; UL 508; CSA C22.2 No. 14; CE marking

UL File No.
E202571

UL Category Control No.
NMFT

CSA File No.
LR 353

CSA Class No.
3211-06, 2411-01

North America Certification
UL listed, CSA certified

Suitable for
Branch Circuits, not as BCPD

Max. Voltage Rating
600 Vac

Degree of Protection
IP20 with kit

DIMENSIONS