

प्रतिभूति कागज कारखाना, नर्मदापुरम-461005 (म.प्र.)

(भारत प्रतिभूति मुद्रण तथा मुद्रा निर्माण निगम लिमिटेड की इकाई)

भारत सरकार के पूर्ण स्वामित्वाधीन

मिनीरल श्रेणी - 1 सीपीएसई एवं आई.एस.ओ. 9001 : 2015, 14001:2015, 45001:2018, 50001:2018 एवं आईईसी 17025:2017 प्रमाणित

SECURITY PAPER MILL, NARMADAPURAM - 461005 (M.P.)

(A Unit of Security Printing & Minting Corporation of India limited)

Wholly Owned by Government of India

Miniratna Category - I CPSE & ISO 9001 : 2015, 14001:2015, 45001:2018, 50001:2018 & IEC 17025:2017 Certified

CIN : U22213DL2006GOI144763, GSTIN : 23AAJCS6111J3ZE



Tel. No. 07574-255259, Fax No. : 07574-255170, E-mail : gm.spm@spmcl.com, Website : <http://spmshohangabad.spmcl.com>

No. EOI/ VFD & Soft starter/ 2210

Dated: 15.03.2022

EXPRESSION OF INTEREST (EOI)

For

Development of Variable Frequency Drives (VFD) and Soft starters of Danfoss make

Security Paper Mill, Narmadapuram, a unit of SPMCIL wholly owned by Govt. of India, Ministry of Finance. SPM invites Expression of Interest (EOI) from the reputed firms for development of variable frequency drives (VFD) and Soft starters of Danfoss make for Security Paper Mill .

(1) Scope of Work	<p>New Pulp Plant (NPP) is engaged in production of pulp required for making Bank Notes and Security papers in PM5 and old plant. This plant has been running for about 10 years after successful commissioning. NPP consists of various AC/DC motors, drives, soft starters etc. for running the various equipment/machinery required to complete the process. Most of the motors in NPP are driven by Danfoss make VFD and Soft starters. Since commissioning the required spares drives and soft starters of Danfoss make were procured on PAC basis due to space and adaptability constraints.</p> <p>In order to minimize the variety of spares in NPP and PM5 it is required to find some alternative make drives and soft starter which can exactly replace in terms of fitment and service as provided by installed Danfoss make equipment. To develop this alternative solution which can exactly fulfil the requirement.</p> <p>The complete technical, dimensional and control terminal drawing of required 18 kinds of Danfoss make item containing VFD and soft starters are attached in Annexure-B1 to B-18.</p>
(2) Interested firm may submit the following credentials.	<p>Interested firm may be asked to submit the following credentials during EOI</p> <ol style="list-style-type: none">1. Letter of interest.2. Company profile and catalogues.3. Firm should provide reference list of similar kind of development programme during past 03 years.4. All the technical details i.e. dimensional drawing for fitment, control diagram and power supply diagram related to similar development are to be provided.5. Audited annual reports for the last three financial years.
(3) Last date and time of receipt information.	<p>The firm may visit SPM, if desired, and submit their EOI to "Chief The General Manager, Security Paper Mill, Narmadapuram" up to 15.04.2022, 11.00 AM.</p>
(4) Opening date and time of EOI	<p>15.04.2022, 3.00 PM</p>


(Vikas Kumar)

Manager (Material)

For – Chief General Manager

Annexure-B1

Technical Description:

Model/Part No. FC-301PK37T4E20H2XNXXXXSXXXXAXBXXXXDX/131B0886

0.37 KW(400V)/0.50HP (400V)

IN 3×380-480V 50/60 HZ,

OUT-3×0-Vin 0-1000HZ,1.3/1.2A,

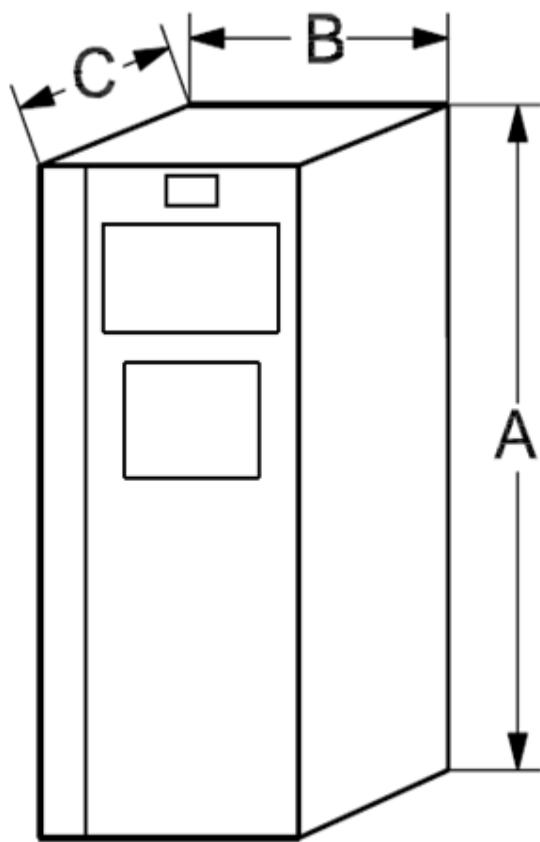
IP 20/21,Temp. 50 degree Celsius/122 degree farad

Installed Qty:-07

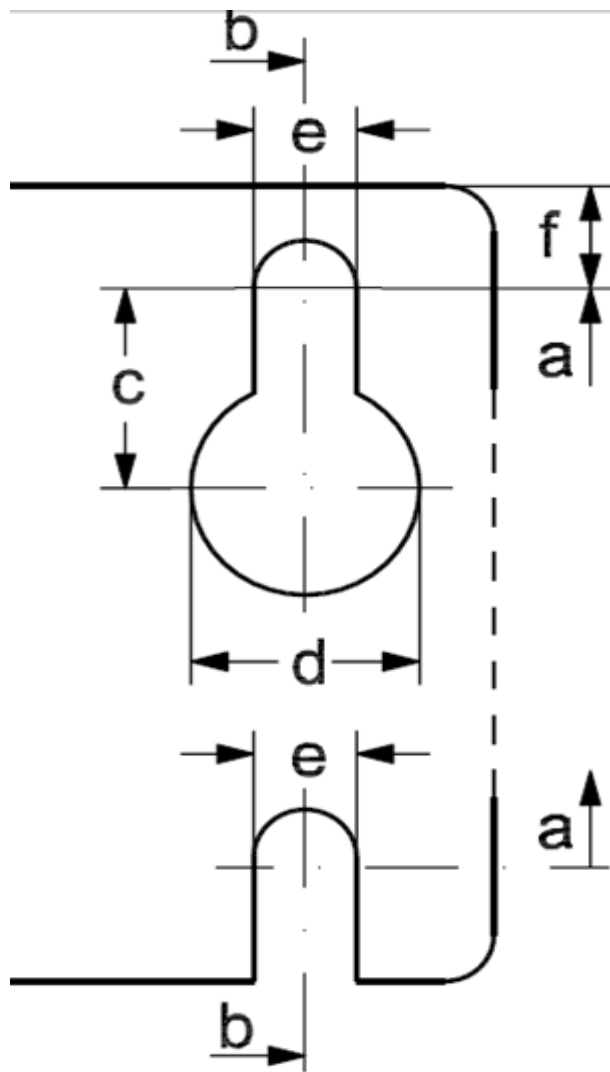
3 D View



General Arrangement & Dimensional Drawing



Dimensional details



Base Plate (Mounting)

Frame Size	Rated Power [kW]	IP NE MA	Height(mm)			Width(mm)				Depth(mm)		Screw holes(mm)				Max weight(kg)
			Height of back plate(A)	Height with decoupling plate(A)	Distance between mounting Holes	Width of back plate	Width of back plate with one C Option	Width of back plate with two C options	Distance between mounting holes	Depth without option A/B	With option A/B	c	d	e	f	
A2	380-480/500 V	20 Chassis														4.9
	0.37-4.0 KW		A	A	a	B	B	B	b	C	C					
			268	374	257	90	130	150	70	205	220	8.0	ø11	ø5.5	9	

Control and terminal wiring Diagram

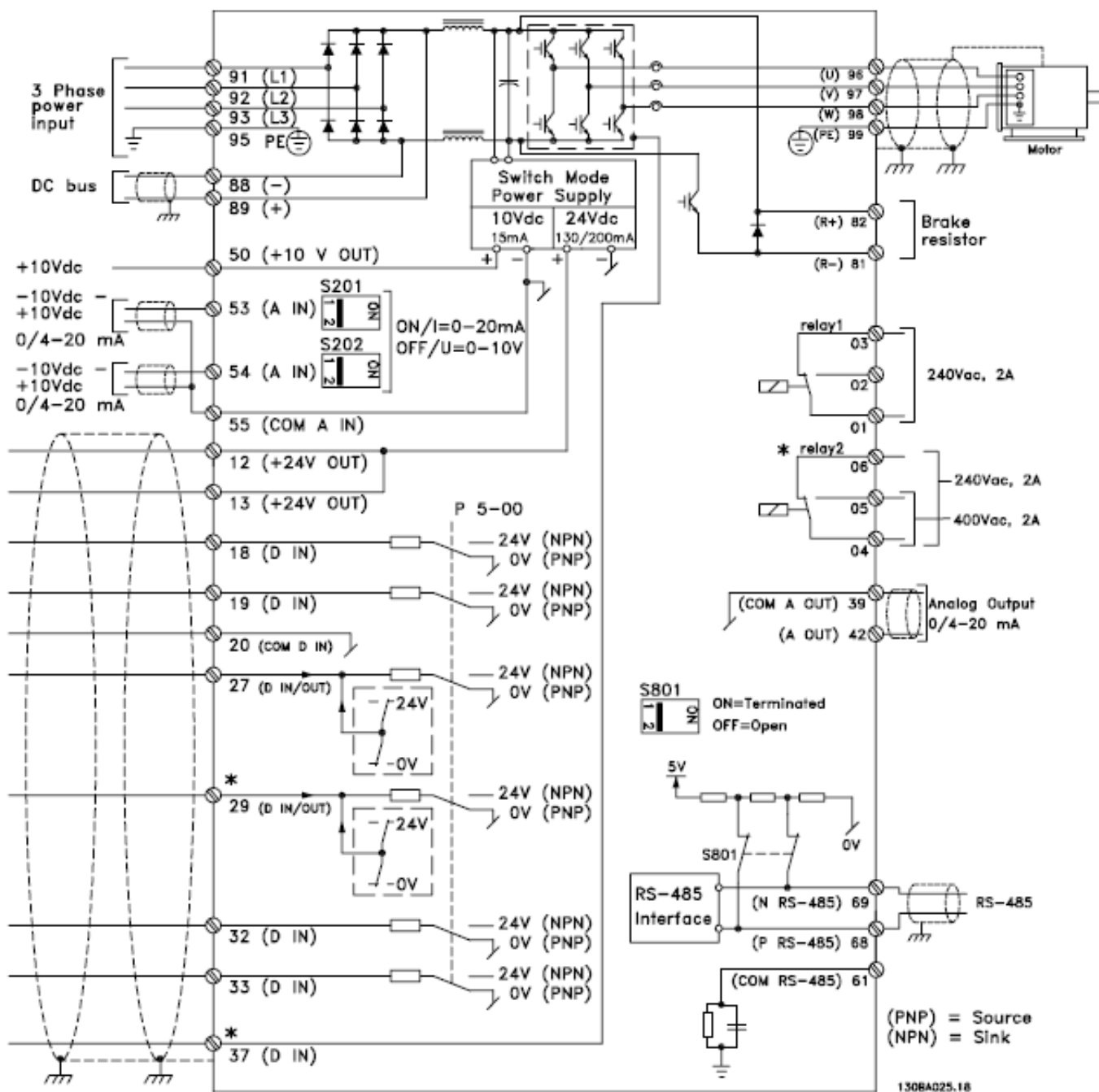


Illustration 3.20: Diagram showing all electrical terminals without options.

A = analog, D = digital

Terminal 37 is used for Safe Stop. For instructions on Safe Stop installation please refer to the section Safe Stop Installation of the Design

Guide.

× Terminal 37 is not included in FC 301 (Except FC 301 A1, which includes Safe Stop).

Relay 2 and Terminal 29, have no function in FC 301.

Annexure-B2

FC-301PK55T4E20H2XNXXXXSXXXXAXBXCXXXXDX/131B1262

0.55 KW(400V)/.75HP (400V)

IN 3×380-480V 50/60 HZ,1.6/1.4 A,

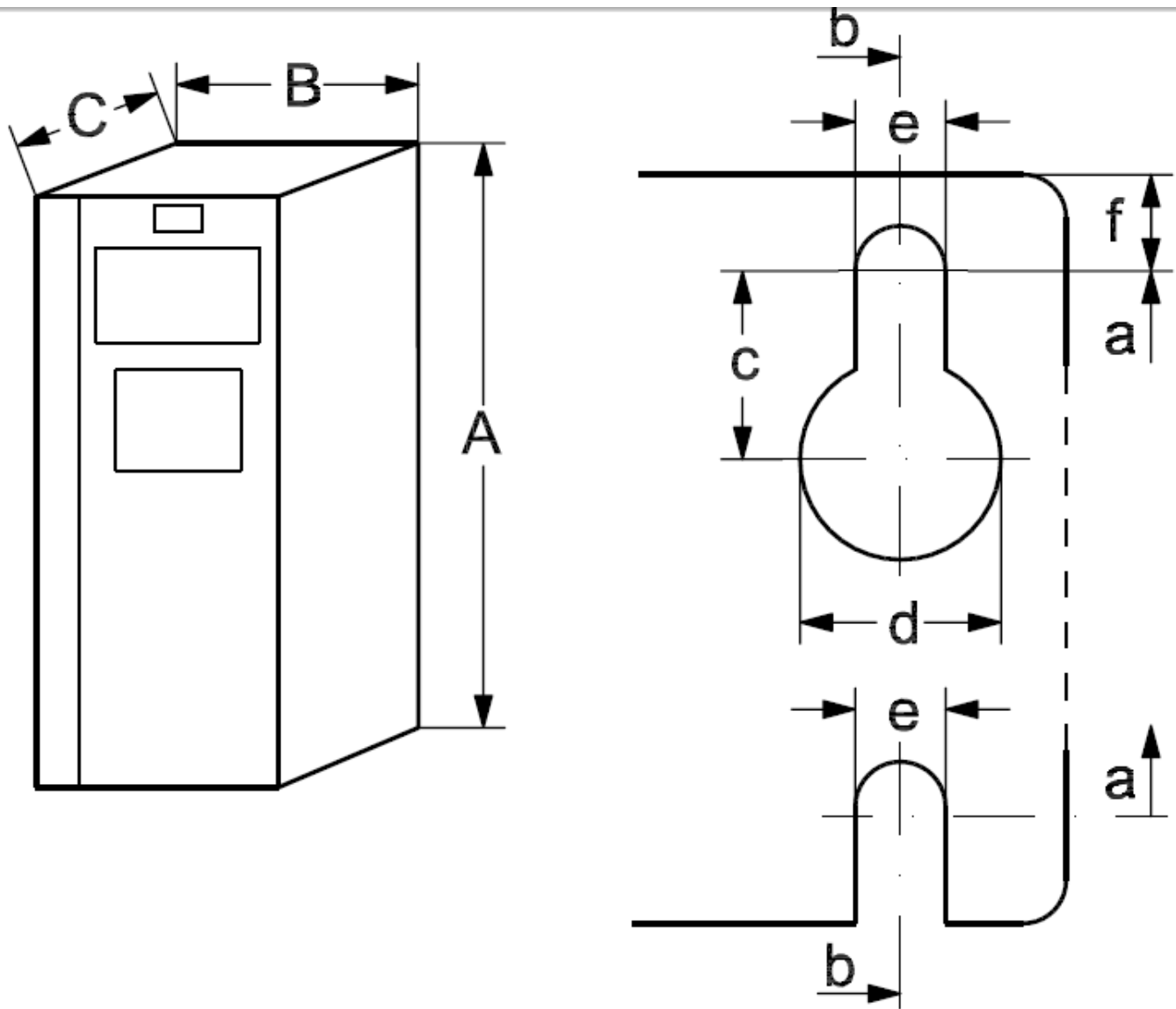
OUT- 0-1000HZ,1.8/1.6A,

IP 20/21,Temp. 50 degree Celsius/122 degree farad

Total install Qty:-02



Drawing diagram



130BA648.11

Frame Size	Rated Power [kW]	IP NEMA	Height(mm)			Width(mm)				Depth(mm)		Screw holes(mm)				Max weight (kg)
			Height of back plate(A)	Height with de-coupling plate(A)	Distance between mounting Holes	Width of back plate	Width of back plate with one C Option	Width of back plate with two C options	Distance between mounting holes	Depth without option A/B	With option A/B	c	d	e	f	
A2	380-480/500 V	20 Class														
	0.37-4.0 KW		A	A	a	B	B	B	b	C	C					
			268	374	257	90	130	150	70	205	220	8.0	ø11	ø5.5	9	4.9

Electrical Installation, Control Cables with Drawing diagram

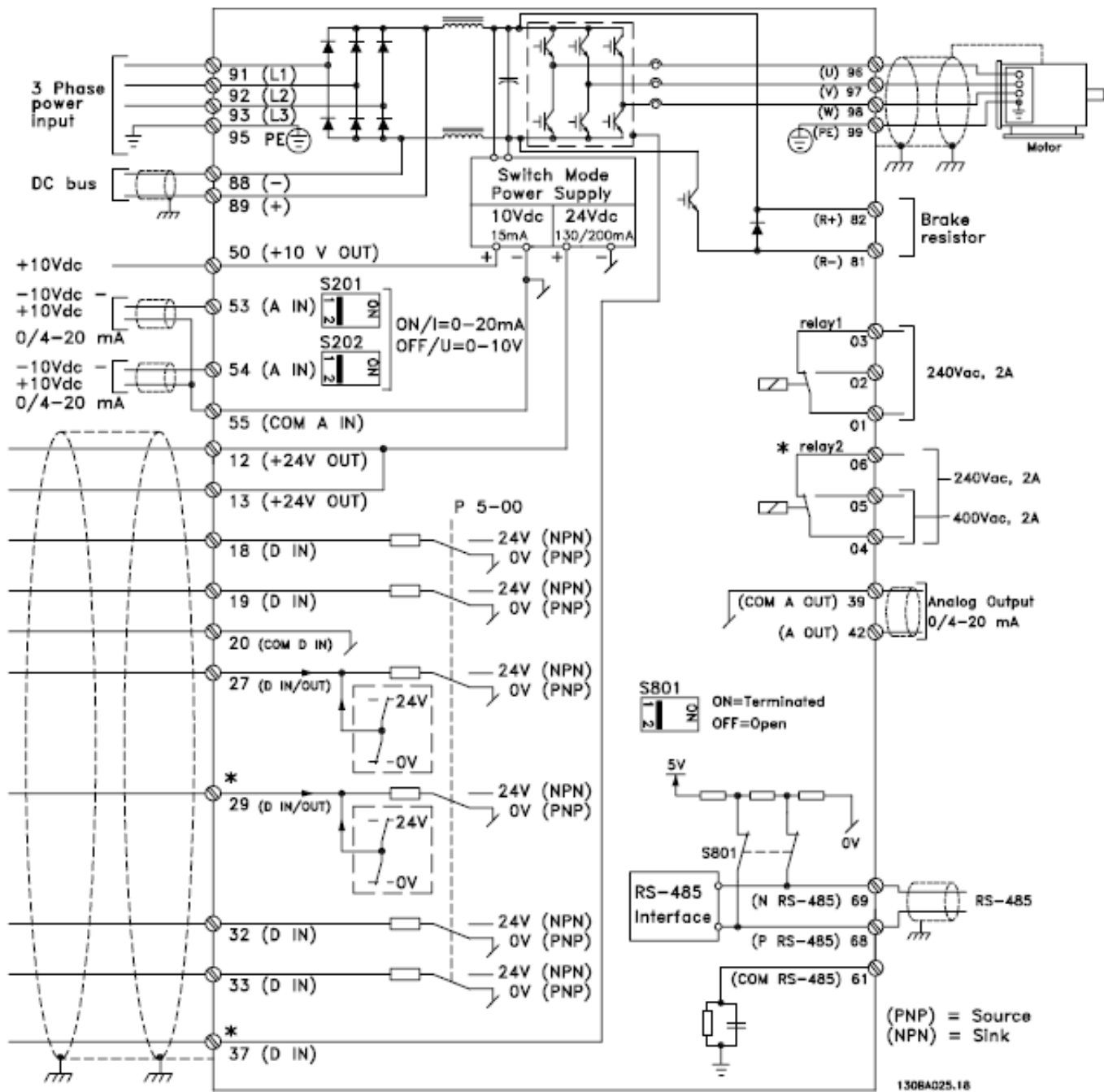


Illustration 3.20: Diagram showing all electrical terminals without options.

A = analog, D = digital

Terminal 37 is used for Safe Stop. For instructions on Safe Stop installation please refer to the section Safe Stop Installation of the Design Guide.

× Terminal 37 is not included in FC 301 (Except FC 301 A1, which includes Safe Stop).

Relay 2 and Terminal 29, have no function in FC 301.

Annexure-B3

3. FC-301PK75T4E20H2XNXXXXSXXXXAXBXCXXXXDX/131B1263

0.75 KW(400V)/1.0HP (400V)
IN 3×380-480V 50/60 HZ,
OUT-3×0- Vin 0-1000HZ,2.4/2.1A,
IP 20/21,Temp. 50 degree Celsius/122 degree farad

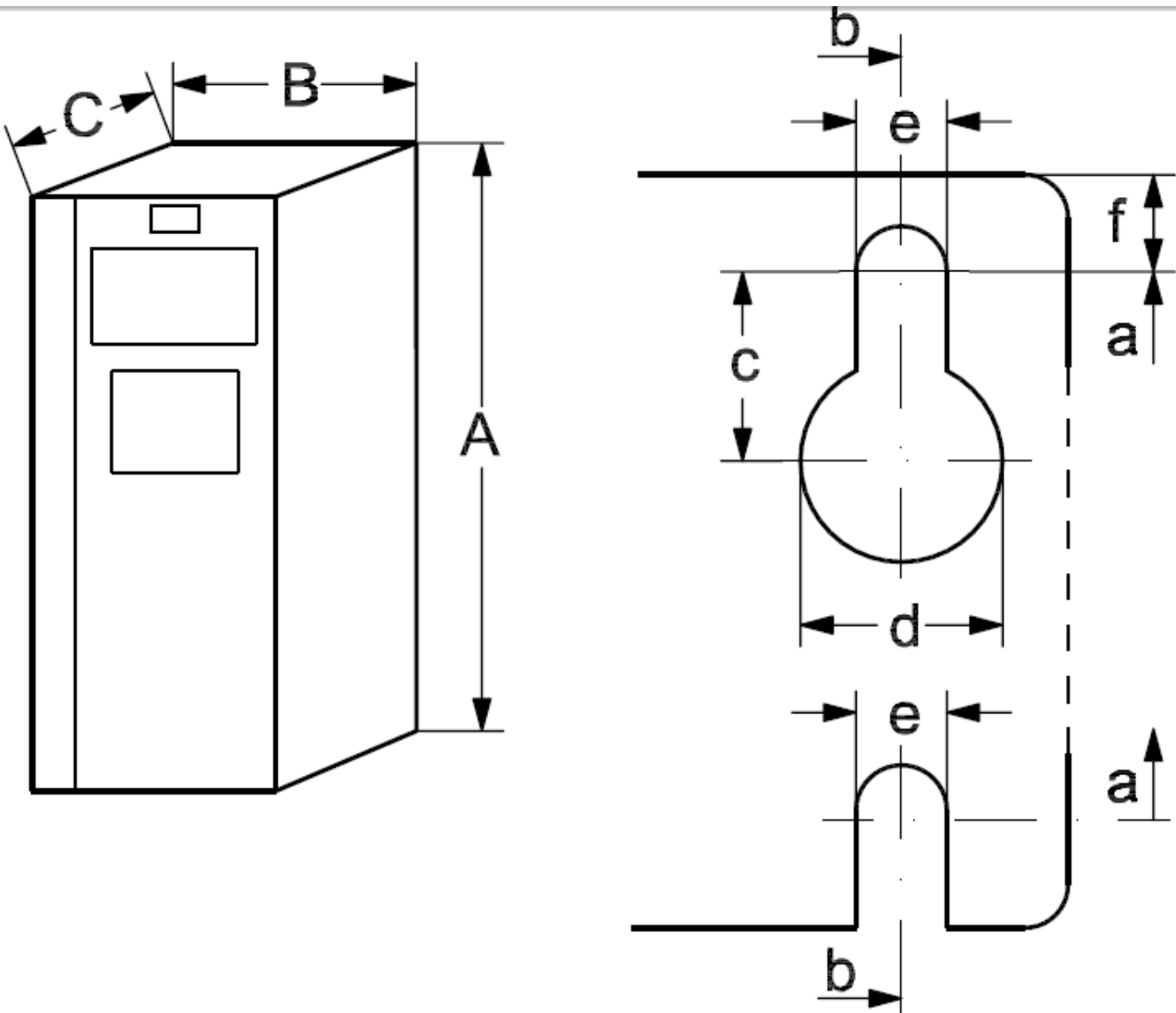
Total install Qty:-03

A2



IP20/21

Drawing diagram



130BA648.11

Frame Size	Rated Power [kW]	IP NE MA	Height(mm)			Width(mm)				Depth(mm)		Screw holes(mm)				Max weight (kg)
			Height of back plate(A)	Height with de-coupling plate(A)	Distance between mounting Holes	Width of back plate	Width of back plate with one C Option	Width of back plate with two C options	Distance between mounting holes	Depth without option A/B	With option A/B	c	d	e	f	
A2	380-480/500 V	20 Chassis	A	A	a	B	B	B	b	C	C	8.0	ø11	ø5.5	9	4.9
	0.37-4.0 KW		268	374	257	90	130	150	70	205	220					

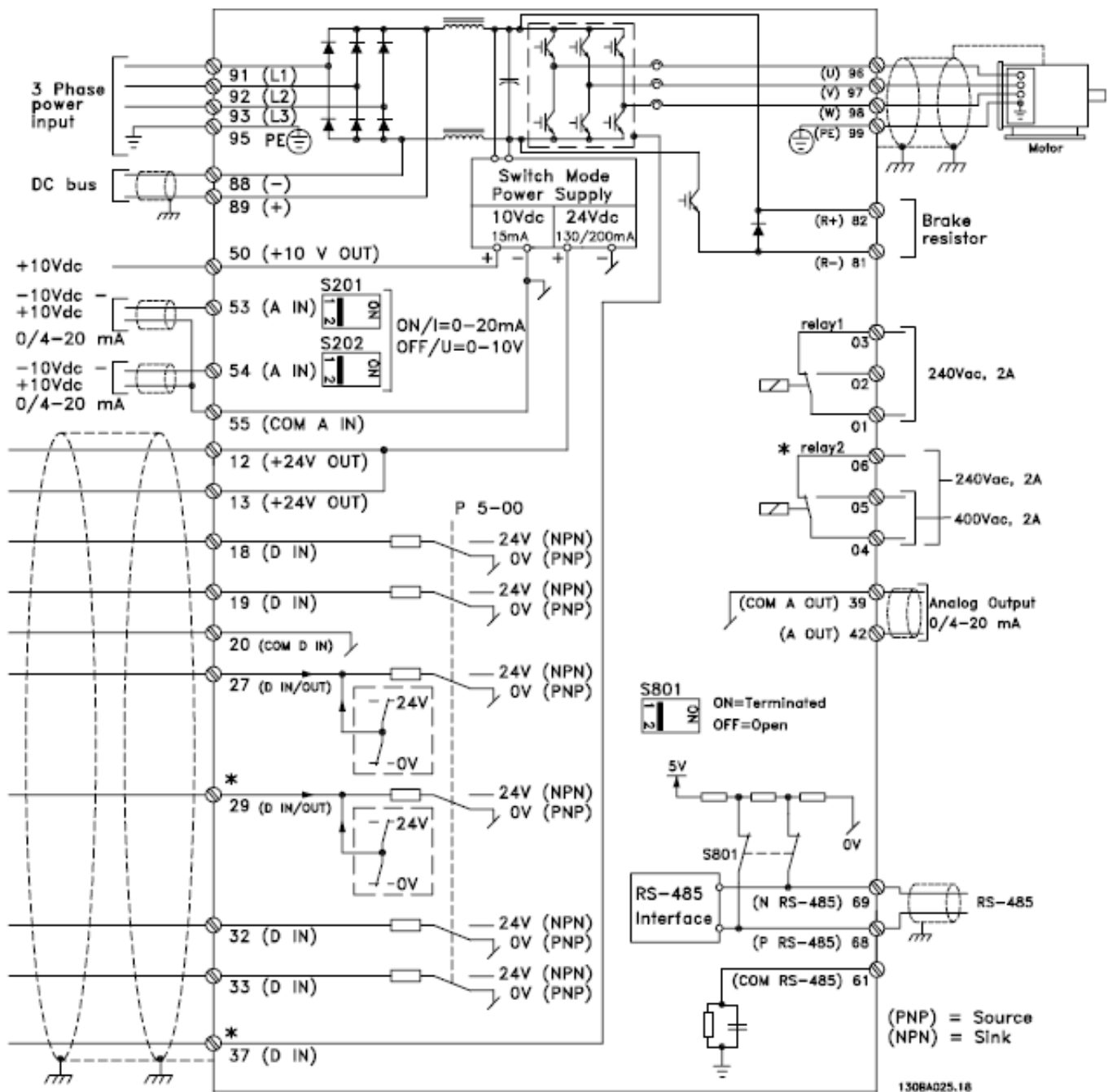


Illustration 3.20: Diagram showing all electrical terminals without options.
A = analog, D = digital
Terminal 37 is used for Safe Stop. For instructions on Safe Stop installation please refer to the section Safe Stop Installation of the Design Guide.
× Terminal 37 is not included in FC 301 (Except FC 301 A1, which includes Safe Stop).
Relay 2 and Terminal 29, have no function in FC 301.

Annexure-B4

4. FC-301P3K0T4E20H2XNXXXXSXXXXAXBXCXXXXDX/131B1281

3 KW(400V)/4 HP (400V)

IN 3×380-480V 50/60 HZ 6.5/5.7 A,

OUT-3×0- Vin 0-1000HZ,7.2/6.3A,

IP 20/21,Temp. 50 degree Celsius/122 degree farad

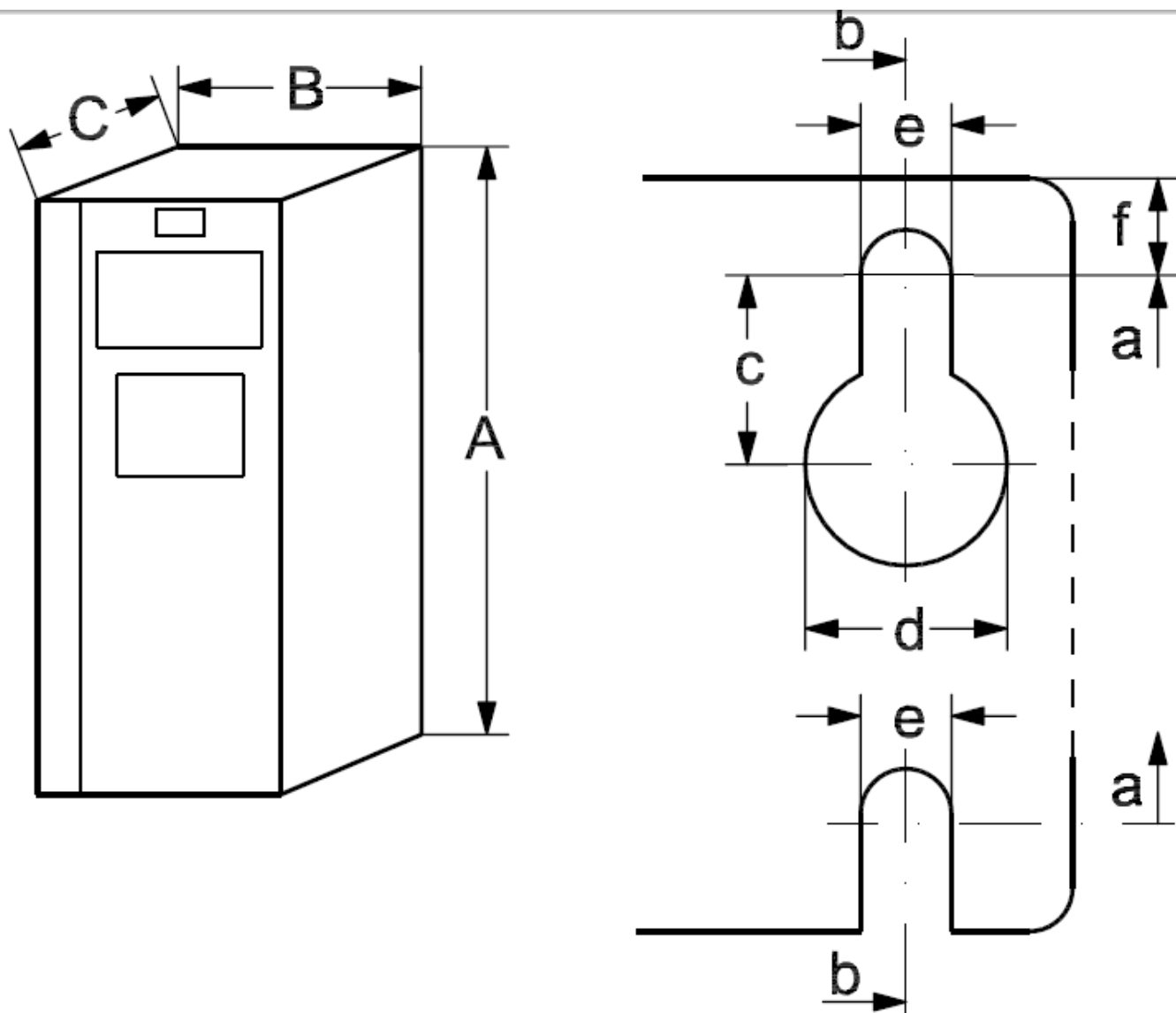
Total install Qty:-01

A2



IP20/21

Drawing diagram



130BA648.11

Frame Size	Rated Power [kW]	IP NE MA	Height(mm)			Width(mm)				Depth(mm)		Screw holes(mm)				Max weight (kg)
			Height of back plate(A)	Height with decoupling plate(A)	Distance between mounting Holes	Width of back plate	Width of back plate with one C Option	Width of back plate with two C options	Distance between mounting holes	Depth without option A/B	With option A/B	c	d	e	f	
A2	380-480/500 V	20 Chassis	A	A	a	B	B	B	b	C	C	c	d	e	f	
	0.37-4.0 KW		268	374	257	90	130	150	70	205	220	8.0	ø11	ø5.5	9	4.9

Electrical Installation, Control Cables with Drawing diagram

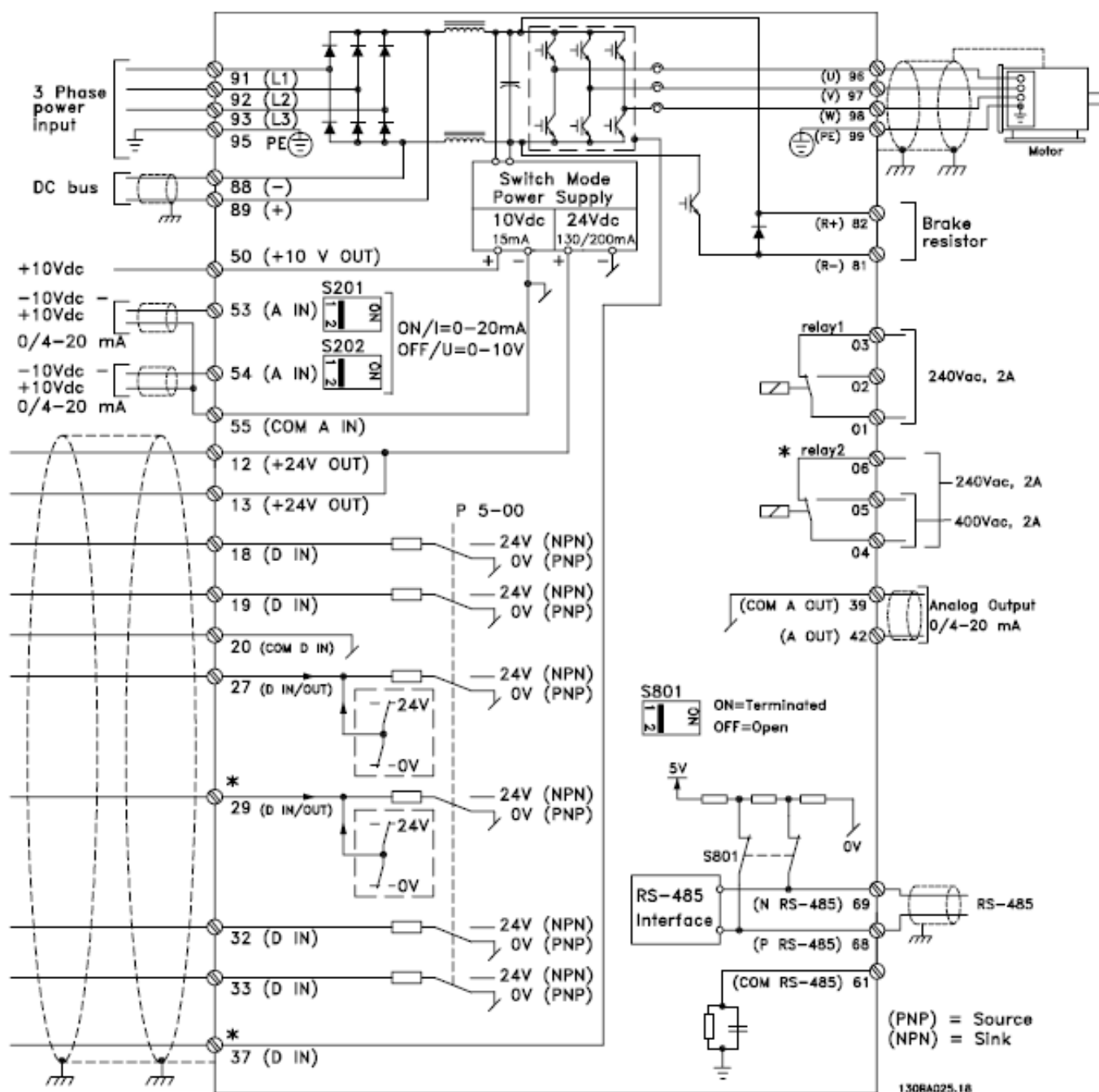


Illustration 3.20: Diagram showing all electrical terminals without options.

A = analog, D = digital

Terminal 37 is used for Safe Stop. For instructions on Safe Stop installation please refer to the section Safe Stop Installation of the Design

Guide.

× Terminal 37 is not included in FC 301 (Except FC 301 A1, which includes Safe Stop).

Relay 2 and Terminal 29, have no function in FC 301.

Annexure-B5

5. FC-301P4K0T4E20H2XNXXXXSXXXXAXBXCXXXXDX/131B1283

4 KW(400V)/5 HP (400V)

IN 3×380-480V 50/60 HZ 9/7.4 A,

OUT-3×0- Vin 0-1000HZ,10/8.2 A,

IP 20/21,Temp. 50 degree Celsius/122 degree farad

Total install Qty:-03

A2



IP20/21

The image displays a technical drawing of a mechanical component, consisting of an isometric view on the left and an orthographic view on the right.

Isometric View (Left): Shows a rectangular block with a slanted top surface. Dimensions are labeled as follows:

- A:** Overall height of the block.
- B:** Overall width of the block.
- C:** Depth of the block.

Orthographic View (Right): Shows the front view of the component, which has a complex shape with a central circular feature. Dimensions are labeled as follows:

- a:** Vertical distance from the top horizontal edge to the center of the circular feature.
- b:** Horizontal distance from the left vertical edge to the center of the circular feature.
- c:** Vertical distance from the center of the circular feature to the bottom horizontal edge.
- d:** Horizontal distance from the left vertical edge to the right vertical edge of the circular feature.
- e:** Horizontal distance from the left vertical edge to the center of the circular feature.
- f:** Vertical distance from the top horizontal edge to the top of the circular feature.

[illegible]

Electrical Installation, Control Cables with Drawing diagram

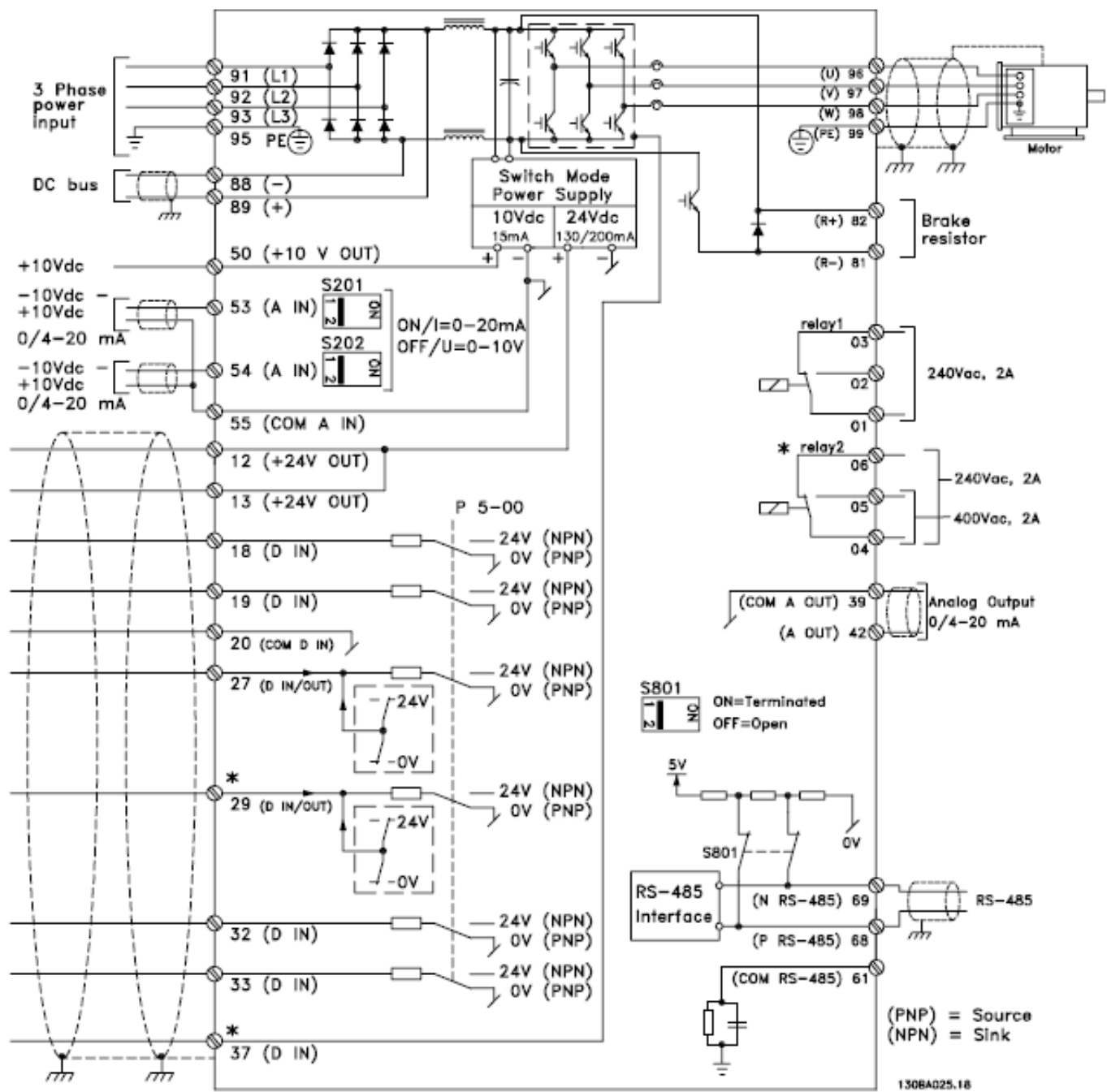


Illustration 3.20: Diagram showing all electrical terminals without options.

A = analog, D = digital

Terminal 37 is used for Safe Stop. For instructions on Safe Stop installation please refer to the section Safe Stop Installation of the Design Guide.

× Terminal 37 is not included in FC 301 (Except FC 301 A1, which includes Safe Stop).

Relay 2 and Terminal 29, have no function in FC 301.

Annexure-B6

6. FC-301P5K5T4E20H2XNXXXXSXXXXAXBXCXXXXDX/131B1285

5.5 KW(400V)/7.5 HP (400V)
IN 3×380-480V 50/60 HZ 11.7/9.8 A,
OUT-3×0VIN 0-590 HZ,13/11A,
IP 20/21,Temp. 50 degree Celsius/122 degree farad

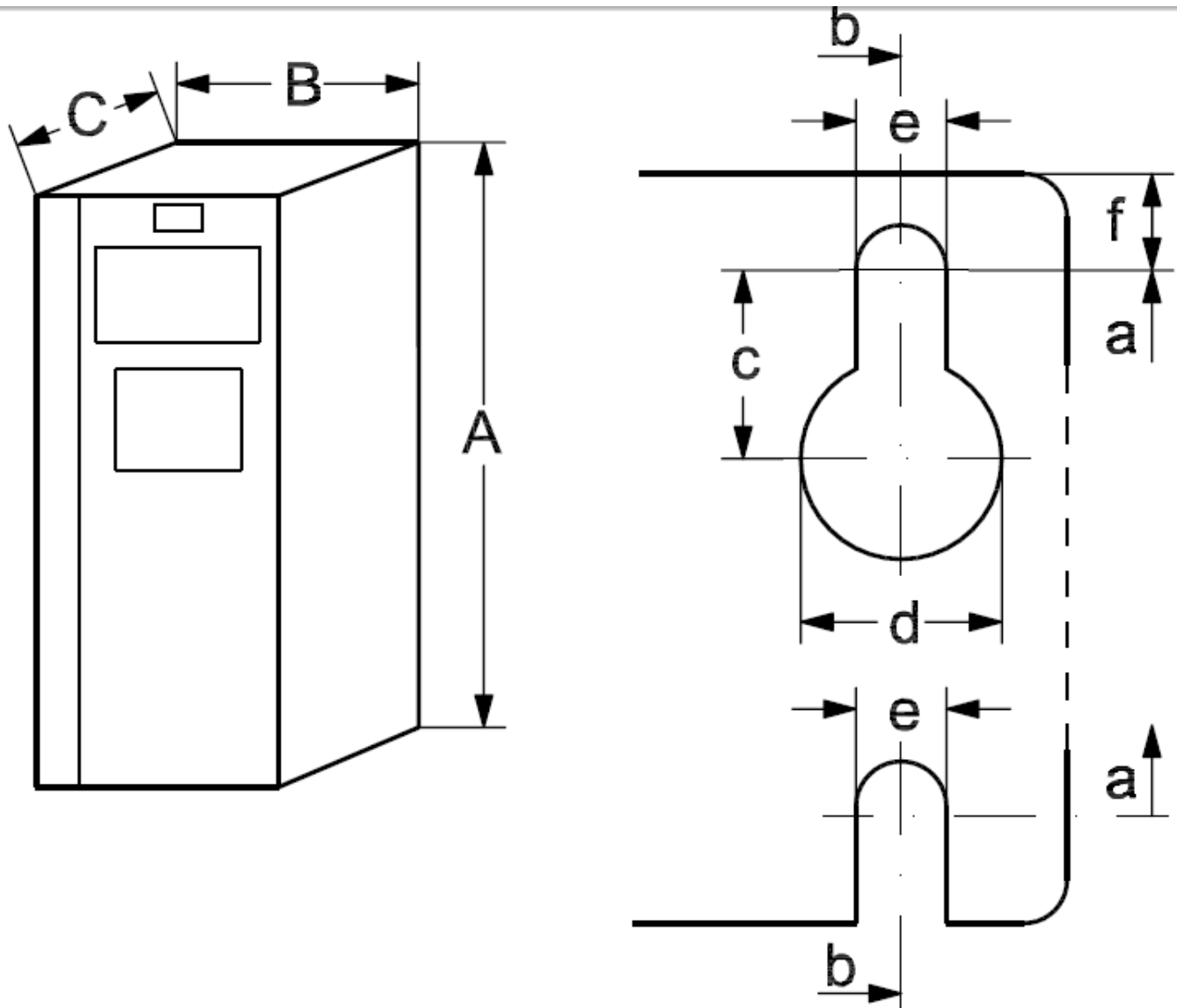
Total install Qty:-01

A3



IP20/21

Drawing diagram



130BA648.11

[illegible]

Electrical Installation, Control Cables with Drawing diagram

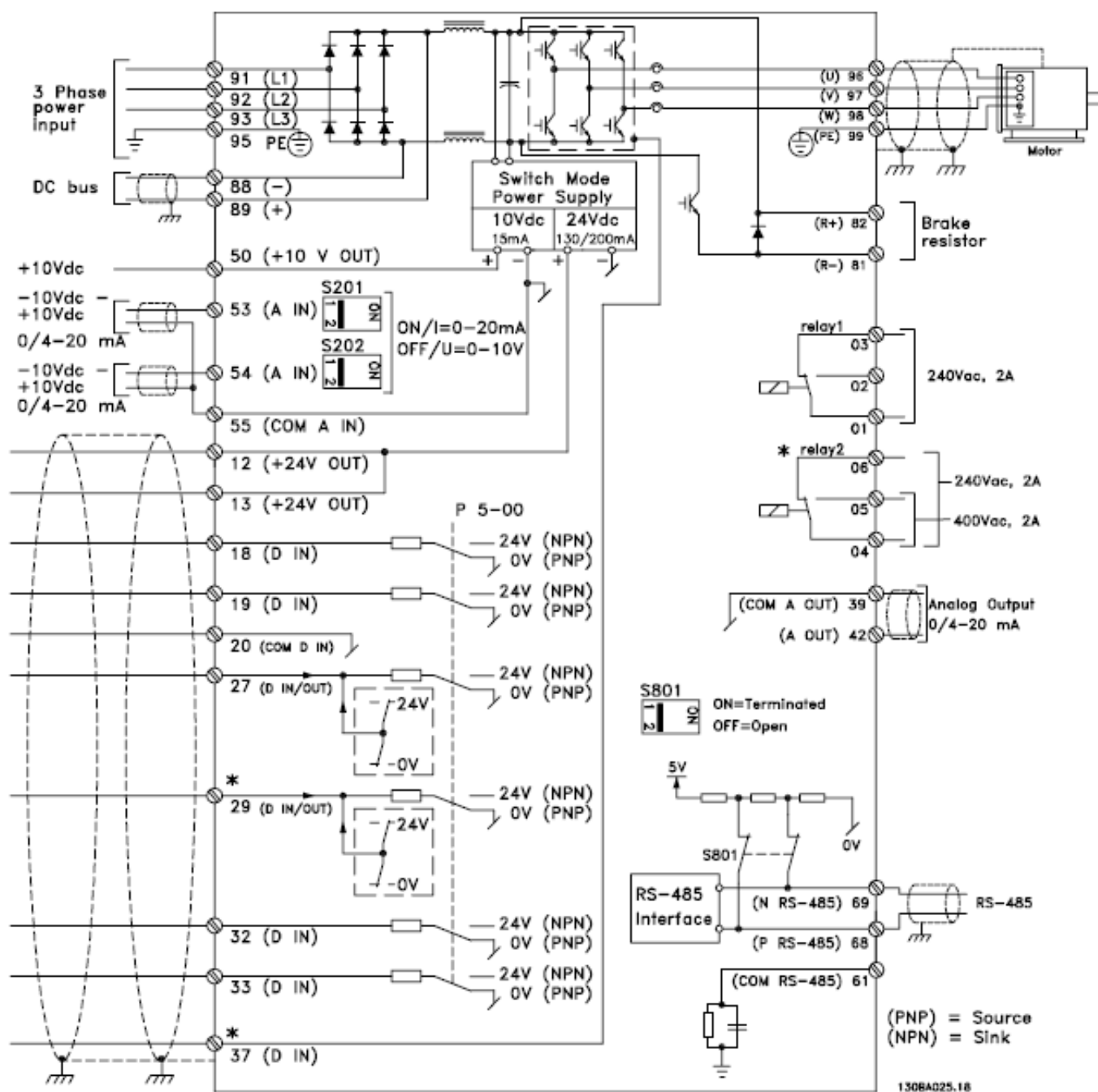


Illustration 3.20: Diagram showing all electrical terminals without options.

A = analog, D = digital

Terminal 37 is used for Safe Stop. For instructions on Safe Stop installation please refer to the section Safe Stop Installation of the Design

Guide.

× Terminal 37 is not included in FC 301 (Except FC 301 A1, which includes Safe Stop).

Relay 2 and Terminal 29, have no function in FC 301.

Annexure-B7

7. FC-301P7K5T4E20H2XNXXXXSXXXXAXBXCXXXXDX/131B1287or 131B1020

7.5 KW(400V)/10 HP (400V)

IN 3×380-480V 50/60 HZ 14.4/13 A,

OUT-3×0VIN 0-1000 HZ,16/14.5A,

IP 20/21,Temp. 50 degree Celsius/122 degree farad

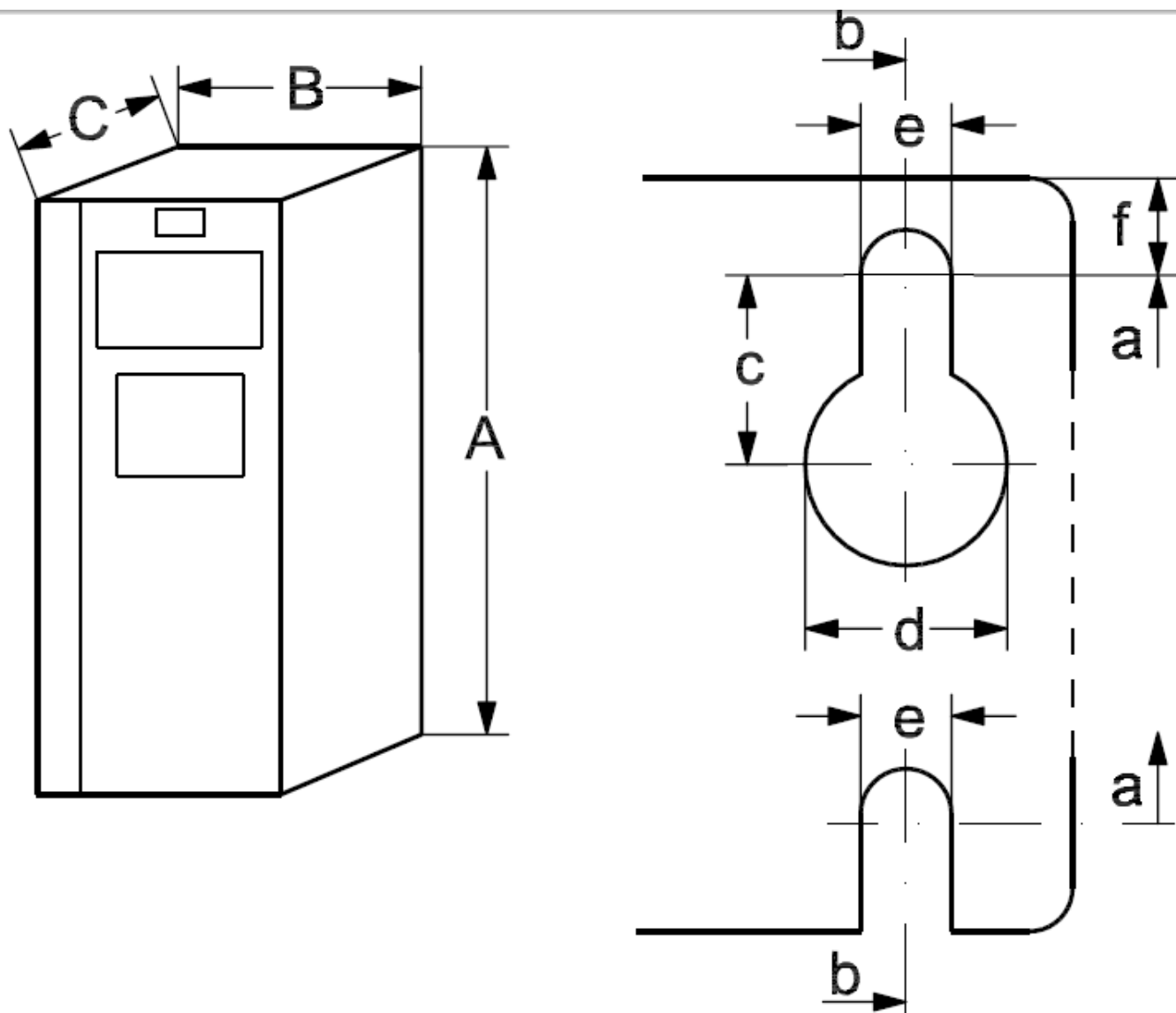
Total install Qty:-04

A3



IP20/21

Drawing diagram



130BA648.11

[illegible]

Electrical Installation, Control Cables with Drawing diagram

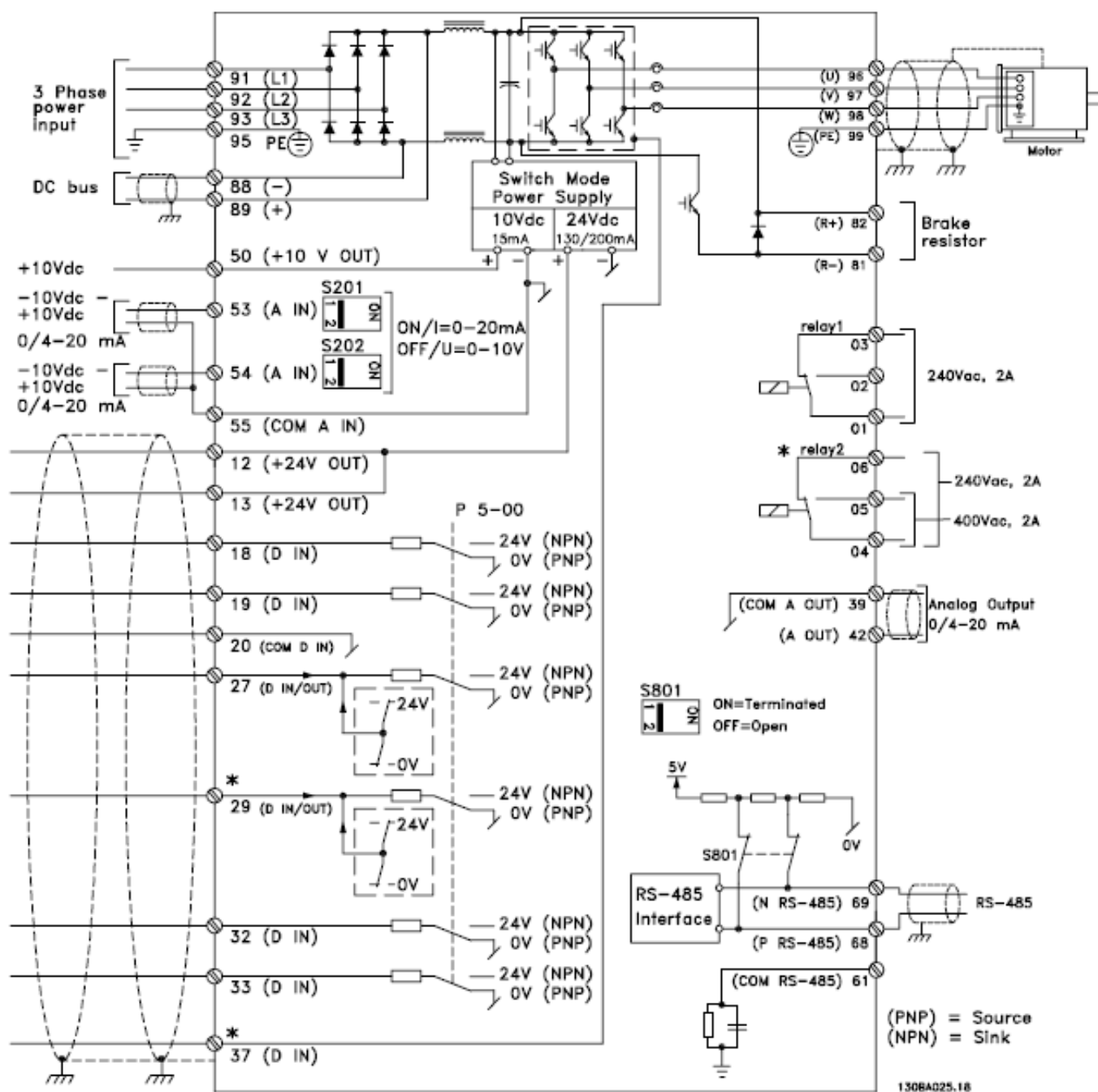


Illustration 3.20: Diagram showing all electrical terminals without options.

A = analog, D = digital

Terminal 37 is used for Safe Stop. For instructions on Safe Stop installation please refer to the section Safe Stop Installation of the Design

Guide.

× Terminal 37 is not included in FC 301 (Except FC 301 A1, which includes Safe Stop).

Relay 2 and Terminal 29, have no function in FC 301.

Annexure-B8

8. FC-301P11KT4E20H2XNXXXXSXXXXAXBXCXXXXDX/131H0089

11 KW(400V)/15 HP (400V)
IN 3×380-480V 50/60 HZ 22/19 A,
OUT-3×0VIN 0-1000HZ,24/21A,
IP 20,Temp. 50 degree Celsius/122 degree farad

Total install Qty:-05

B3



IP 20

The image displays a technical drawing of a mechanical component, consisting of an isometric view on the left and an orthographic view on the right.

Isometric View (Left): Shows a rectangular block with a slanted top surface. Dimensions are labeled as follows:

- A:** Overall height of the block.
- B:** Overall width of the block.
- C:** Depth of the block.

Orthographic View (Right): Shows the front view of the component, which has a complex shape with a central circular feature. Dimensions are labeled as follows:

- a:** Vertical distance from the bottom edge to the center of the circular feature.
- b:** Horizontal distance from the left edge to the center of the circular feature.
- c:** Vertical distance from the top edge to the center of the circular feature.
- d:** Horizontal distance from the center of the circular feature to the right edge.
- e:** Horizontal distance from the left edge to the center of the circular feature (labeled at both top and bottom).
- f:** Vertical distance from the top edge to the top of the circular feature.

[illegible]

Electrical Installation, Control Cables with Drawing diagram

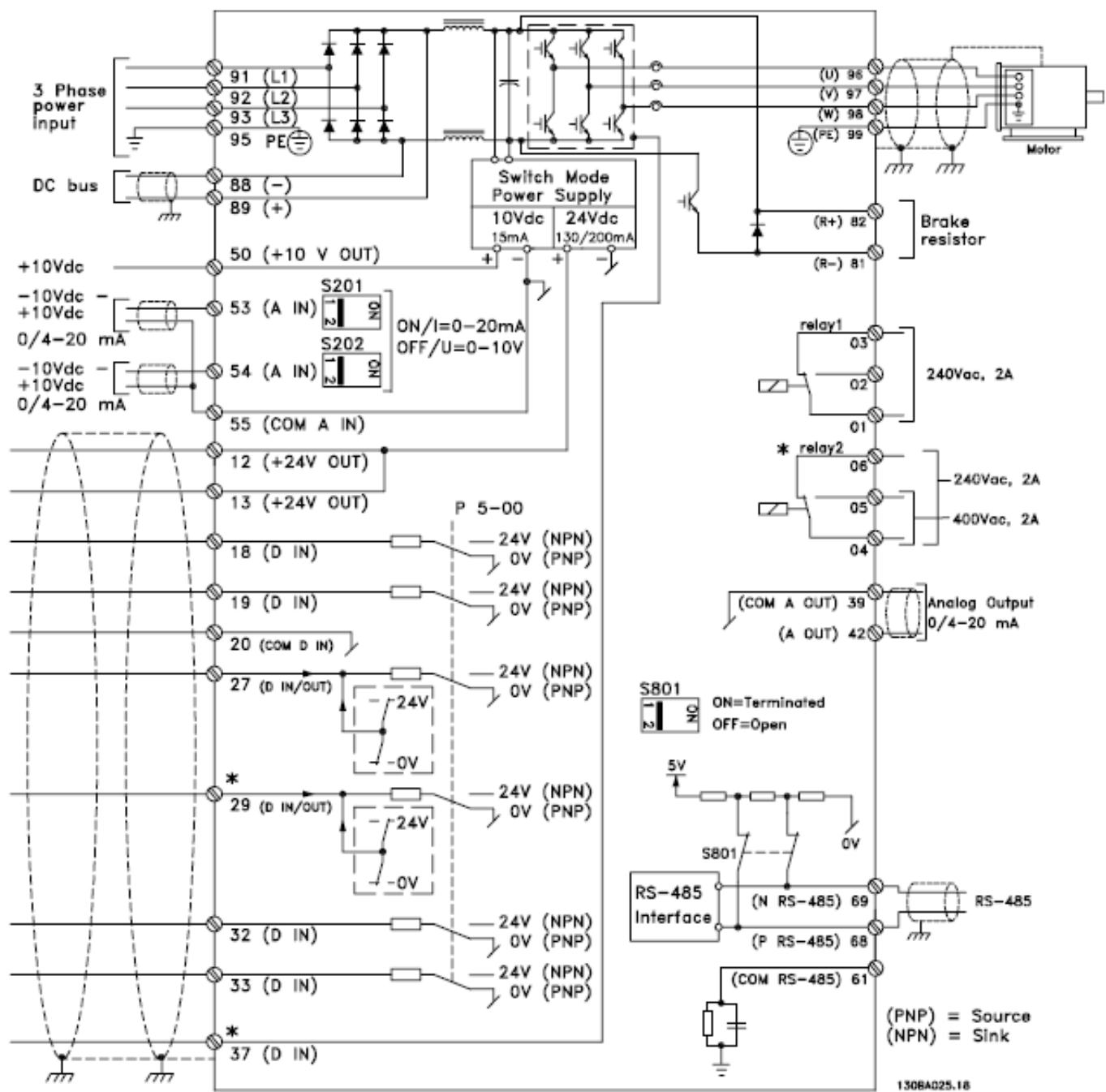


Illustration 3.20: Diagram showing all electrical terminals without options.

A = analog, D = digital

Terminal 37 is used for Safe Stop. For instructions on Safe Stop installation please refer to the section Safe Stop Installation of the Design Guide.

× Terminal 37 is not included in FC 301 (Except FC 301 A1, which includes Safe Stop).

Relay 2 and Terminal 29, have no function in FC 301.

Annexure-B9

FC-301P11KT4E20H2XNXXXXSXXXXAXBXCXXXXDX/131H0090

15 KW(400V)/20 HP (400V)
IN 3×380-480V 50/60 HZ 29/25 A,
OUT-3×0VIN 0-1000HZ,32/27A,
IP 20,Temp. 50 degree Celsius/122 degree farad

Total install Qty:-04

B3



IP 20

The image displays a technical drawing of a mechanical component, consisting of a perspective view on the left and a cross-sectional view on the right.

Perspective View (Left):

- The component is a rectangular block with a slanted top surface.
- Dimensions are labeled: A for the total height, B for the top width, and C for the slant angle.
- The front face features a small rectangular slot at the top, a larger rectangular opening in the middle, and another rectangular opening at the bottom.

Cross-sectional View (Right):

- This view shows the internal profile of the component, which is symmetrical about a vertical centerline.
- Dimensions are labeled: a for the total height, b for the top width, c for the height of the upper section, d for the width of the central circular hole, e for the width of the lower section, and f for the height of the lower section.
- The profile includes a central circular hole and a semi-circular top edge.

[illegible]

Electrical Installation, Control Cables with Drawing diagram

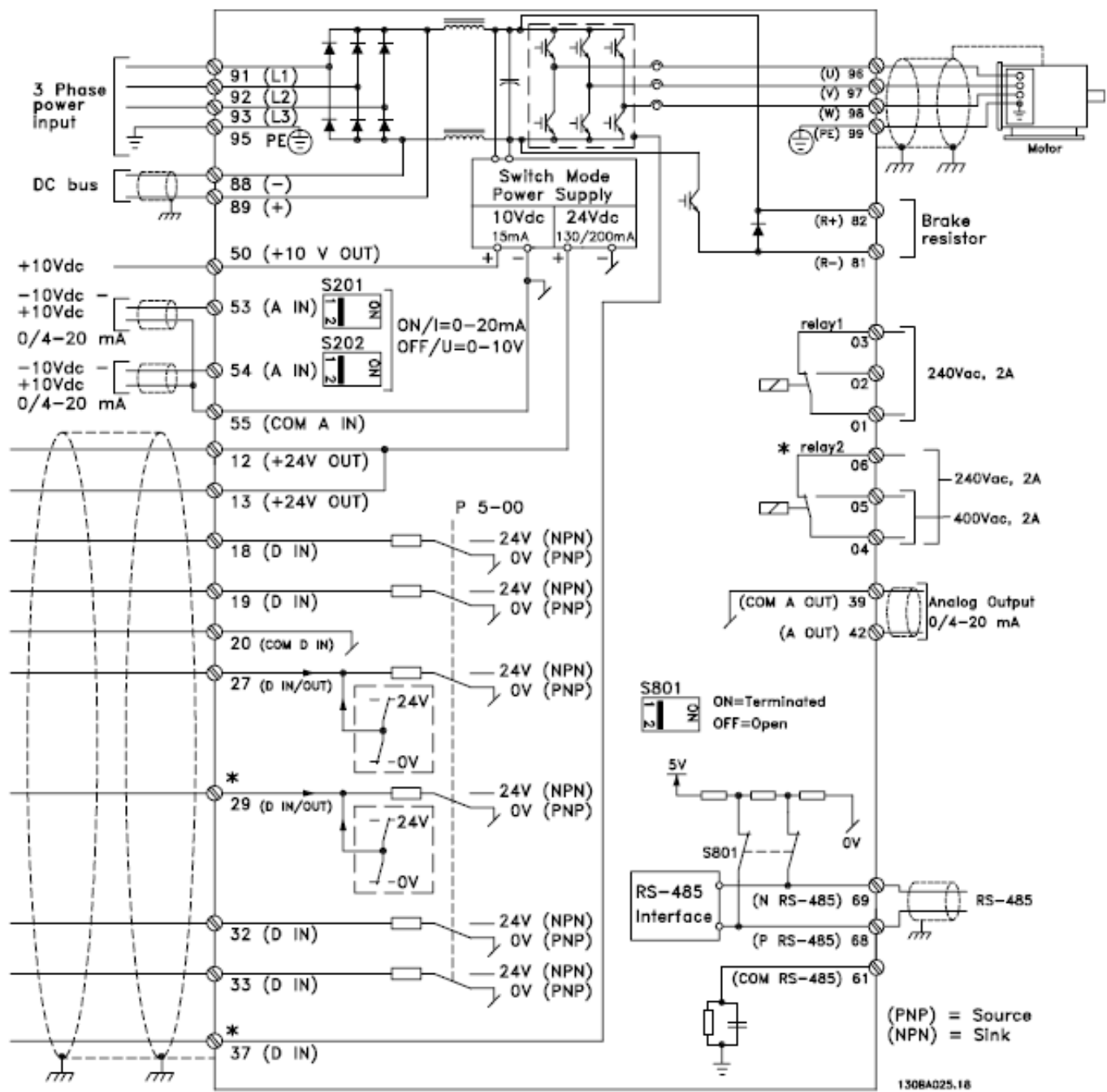


Illustration 3.20: Diagram showing all electrical terminals without options.
A = analog, D = digital
Terminal 37 is used for Safe Stop. For instructions on Safe Stop installation please refer to the section Safe Stop Installation of the Design Guide.
× Terminal 37 is not included in FC 301 (Except FC 301 A1, which includes Safe Stop).
Relay 2 and Terminal 29, have no function in FC 301.

Annexure-B10

FC-301P18K5T4E20H2XNXXXXSXXXXAXBXCXXXXDX/131B1290

18.5 KW(400V)/25 HP (400V)

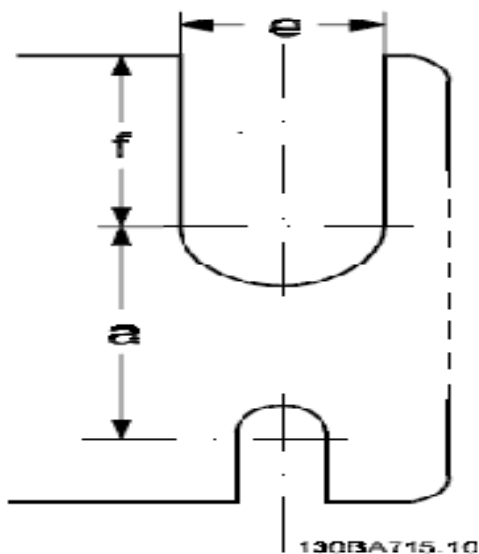
IN 3×380-480V 50/60 HZ 34.5/31.5 A,

OUT-3×0VIN 0-1000HZ,37.5/32.5 A,

IP 20,Temp. 50 degree Celsius/122 degree farad

Total install Qty:-01

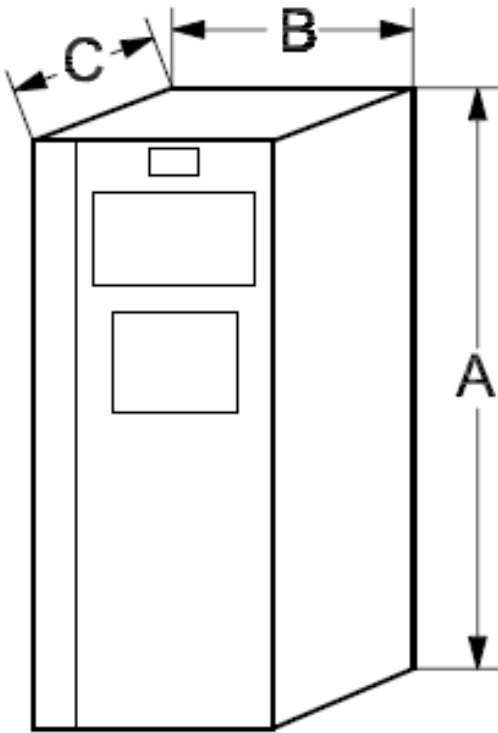
B4



IP 20

Top and bottom mounting holes (B4, C3 and C4 only)

Drawing diagram

[illegible]

Electrical Installation, Control Cables with Drawing diagram

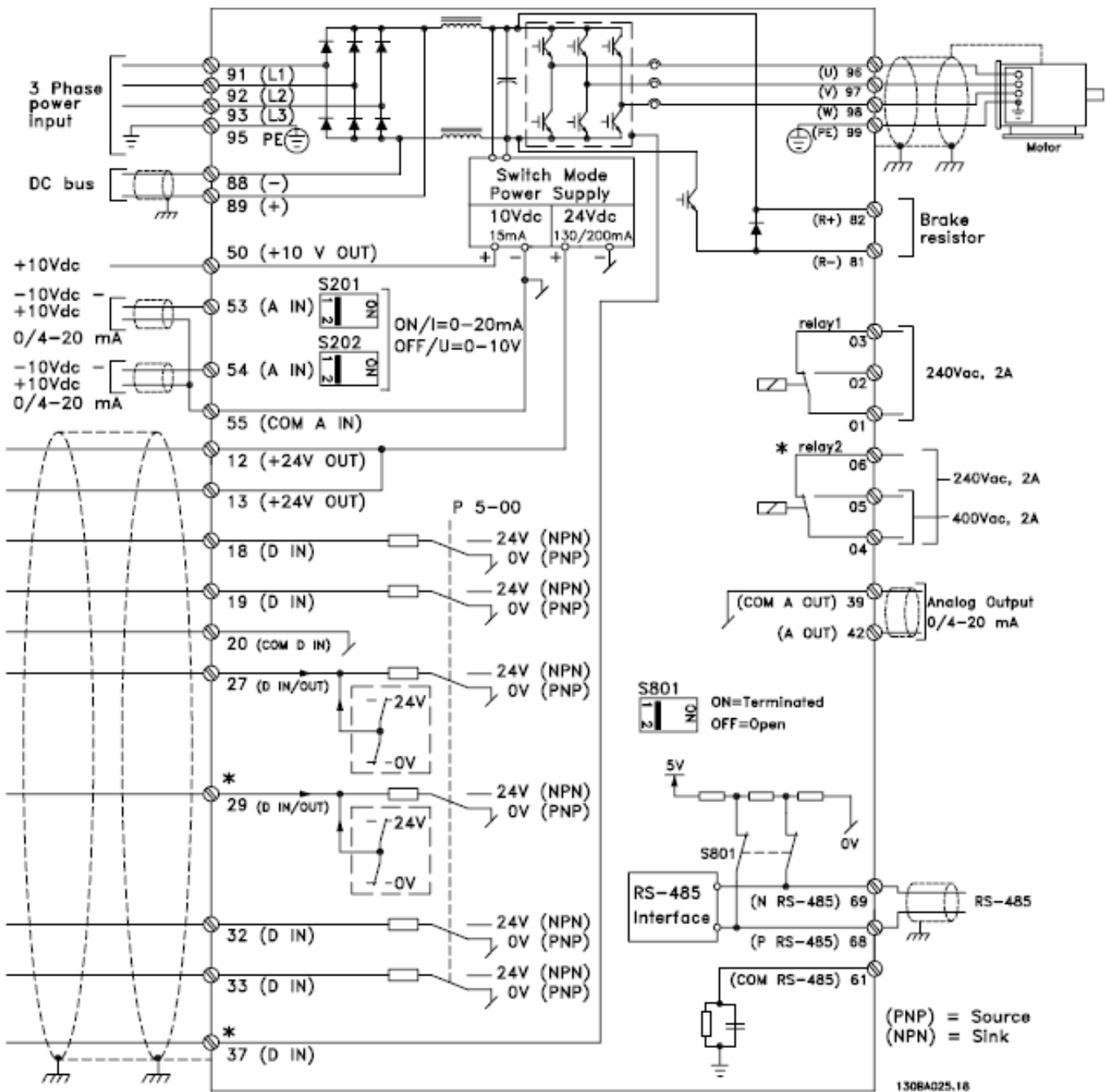


Illustration 3.20: Diagram showing all electrical terminals without options.

A = analog, D = digital

Terminal 37 is used for Safe Stop. For instructions on Safe Stop installation please refer to the section Safe Stop Installation of the Design Guide.

× Terminal 37 is not included in FC 301 (Except FC 301 A1, which includes Safe Stop).

Relay 2 and Terminal 29, have no function in FC 301.

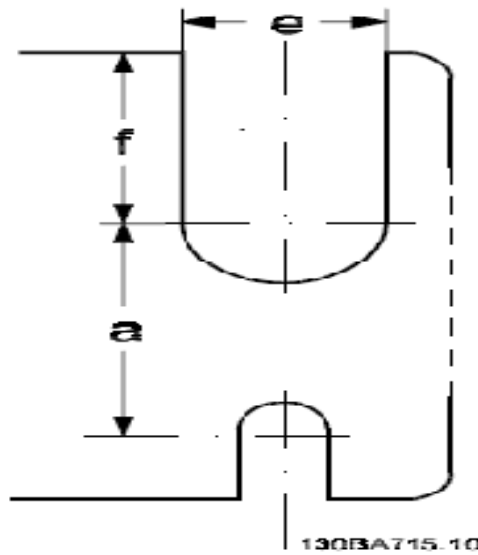
Annexure-B11

FC-301P30KT4E20H2XNXXXXSXXXXAXBXCXXXXDX/131B1290

30 KW(400V)/40 HP (400V)
IN 3×380-480V 50/60 HZ 57/54 A,
OUT-3×0VIN 0-1000HZ,61/59 A,
IP 20,Temp. 50 degree Celsius/122 degree farad

Total install Qty:-01

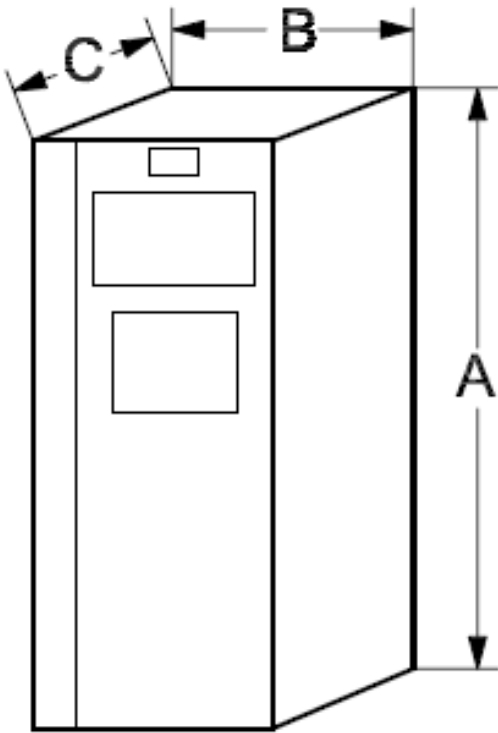
B4



IP 20

Top and bottom mounting holes (B4, C3 and C4 only)

Drawing diagram

[illegible]

Annexure-B12

FC-301P30KT4E20H2XNXXXXSXXXXAXBXCXXXXDX/131H5112

37 KW(400V)/50 HP (400V)

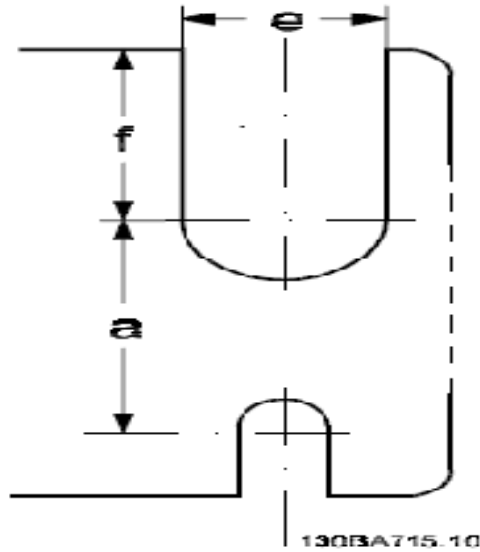
IN 3×380-480V 50/60 HZ 66/59 A,

OUT-3×0VIN 0-1000HZ,73/65 A,

IP 20,Temp. 50 degree Celsius/122 degree farad

Total install Qty:-01

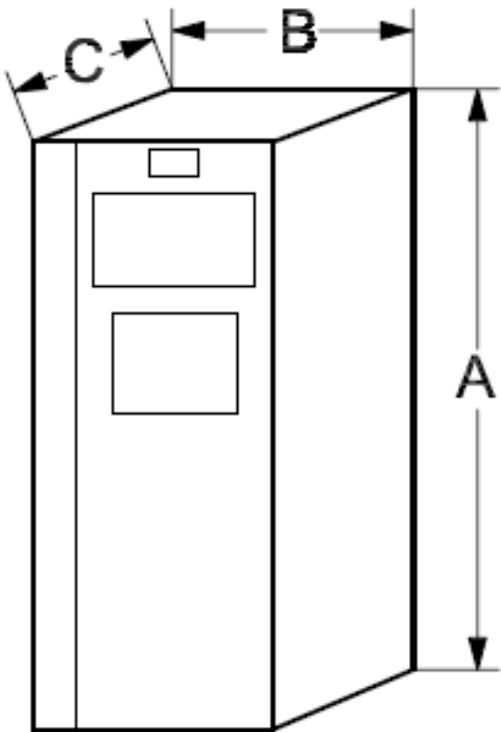
B4



IP 20

Top and bottom mounting holes (B4, C3 and C4 only)

Drawing diagram

[illegible]

Electrical Installation, Control Cables with Drawing diagram

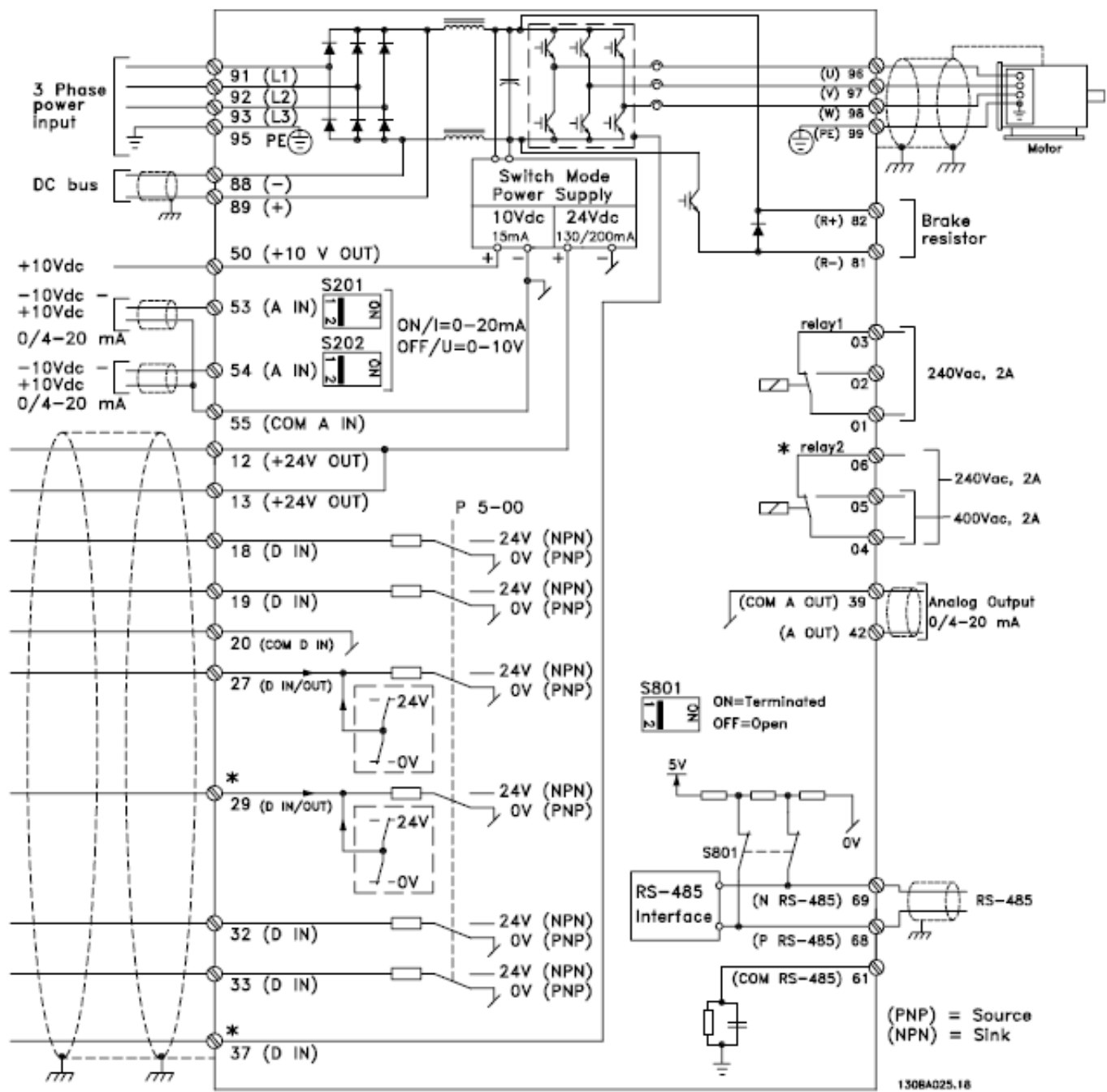


Illustration 3.20: Diagram showing all electrical terminals without options.

A = analog, D = digital

Terminal 37 is used for Safe Stop. For instructions on Safe Stop installation please refer to the section Safe Stop Installation of the Design Guide.

× Terminal 37 is not included in FC 301 (Except FC 301 A1, which includes Safe Stop).

Relay 2 and Terminal 29, have no function in FC 301.

Annexure-B13

13.SOFT STARTER

MCD202-018-T4-CV3/175G5211

INPUT RATING :- 3PHASE,200-440 VAC,45-66 HZ

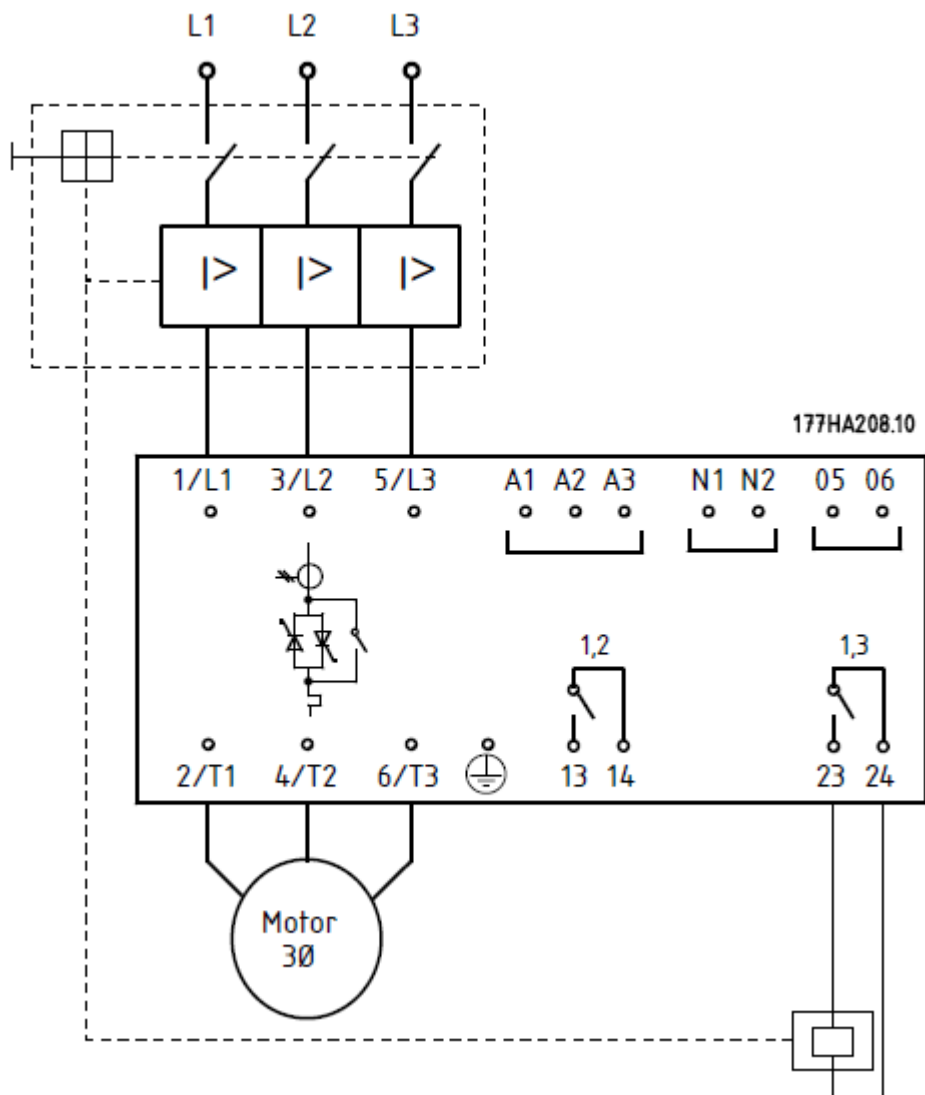
OUTPUT RATING :- 42 A:AC-53b:4-6:354 18 KW@400V

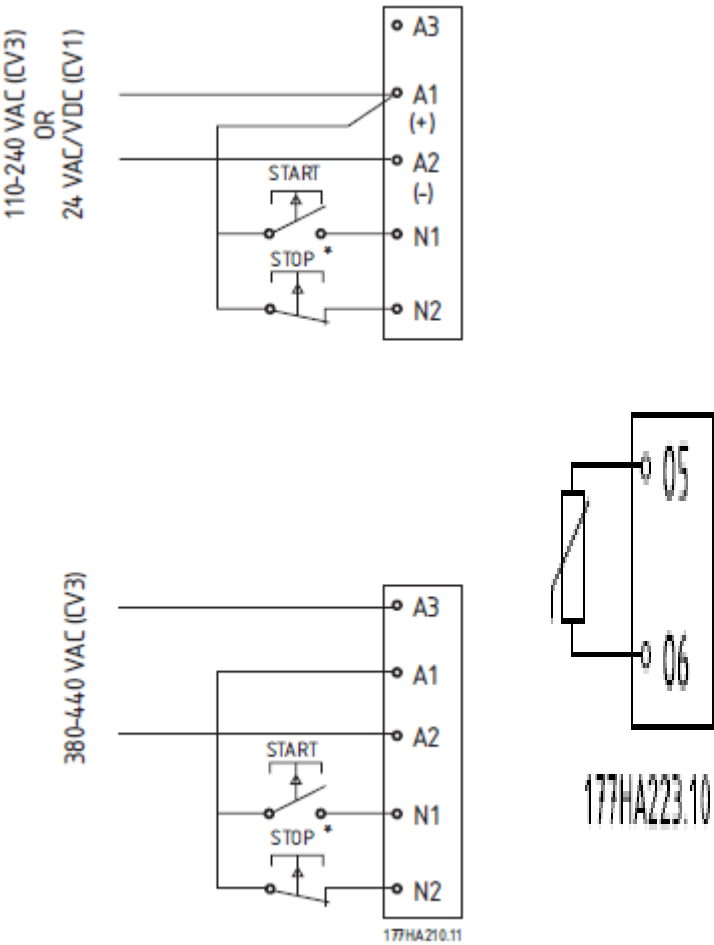
AUXILIARY CONTACTS :- 6A 30V DC resistive/2A 400 VAC ,AC 11

WITHSTAND CURRENT :- 5000 A RMS,575 VAC max

QTY:- 05

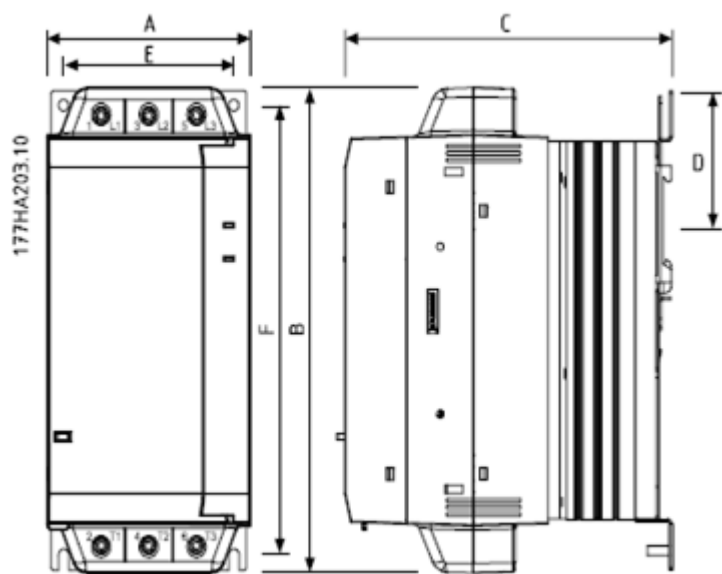
POWER AND CONTROL CIRCUIT DIAGRAM





05-06 Motor Thermistor

Drawing diagram



TYPE	A	B	C	D	E	F
MCD 202-018	98	203	165	55	82	188

Annexure-B14

14.SOFT STARTER

MCD202-030-T4-CV3,C/N 175G5213

INPUT RATING :- 3PHASE,200-440 VAC,45-66 HZ

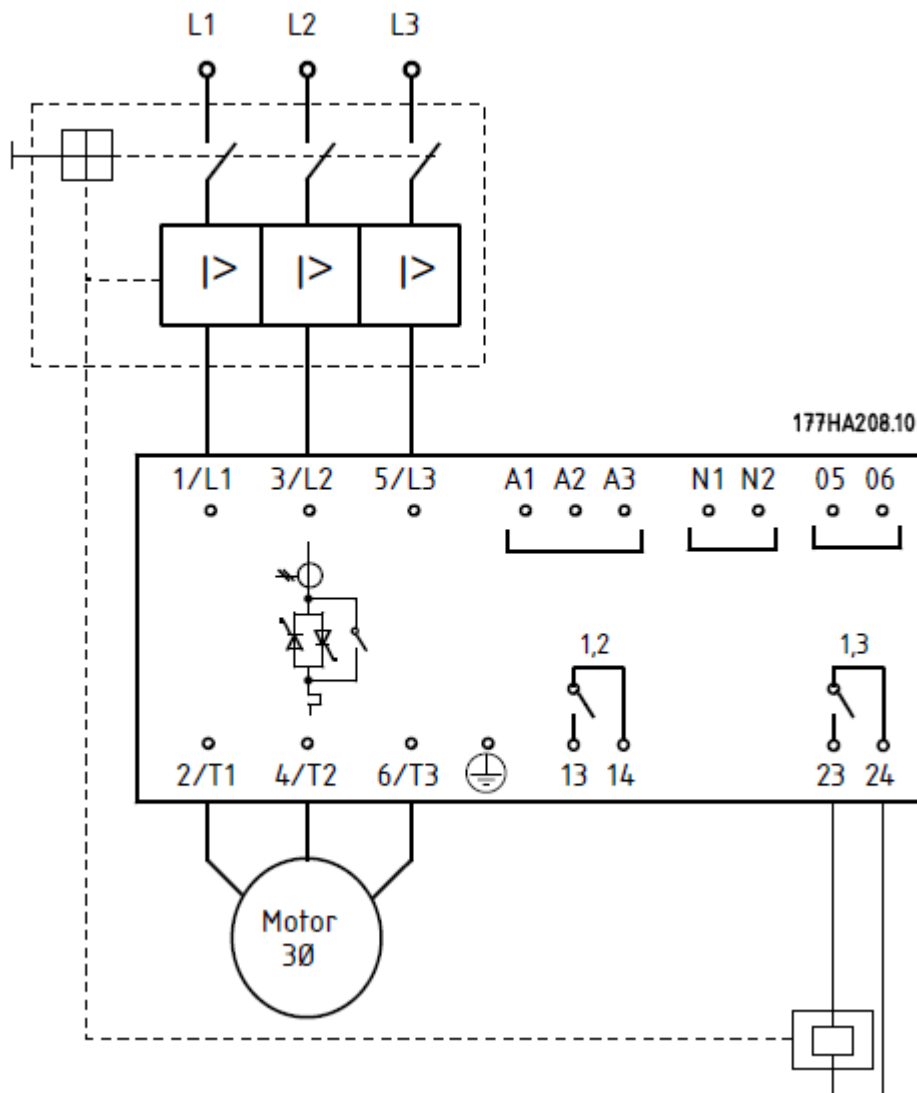
OUTPUT RATING :- 60 A:AC-53b:4-6:354 30KW@400V

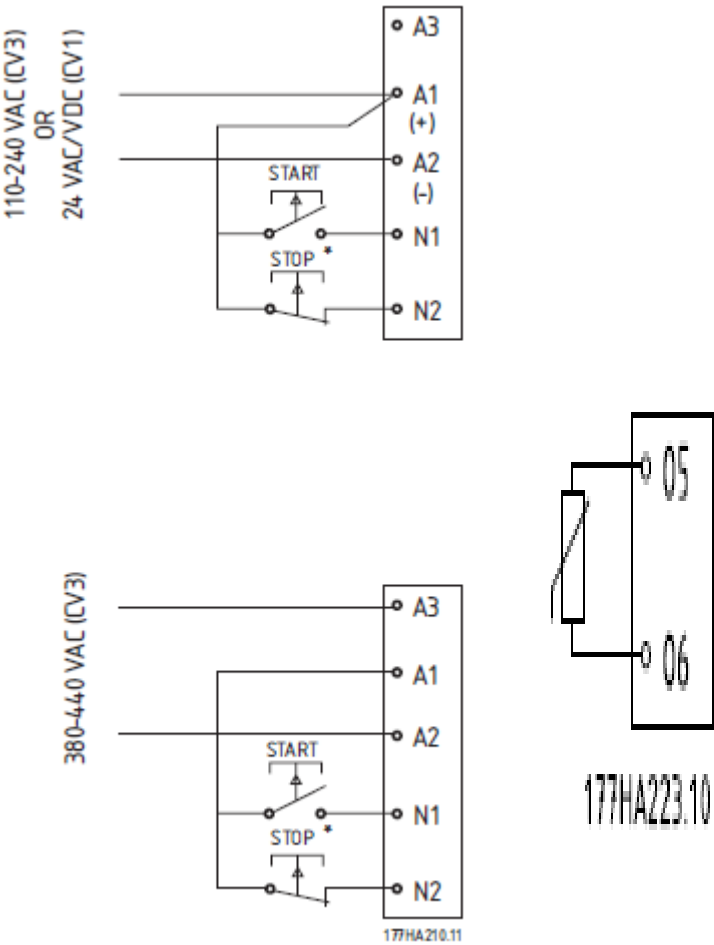
AUXILIARY CONTACTS :- 6A 30V DC resistive/2A 400 VAC ,AC 11

WITHSTAND CURRENT :- 5000 A RMS,575 VAC max

QTY:- 04

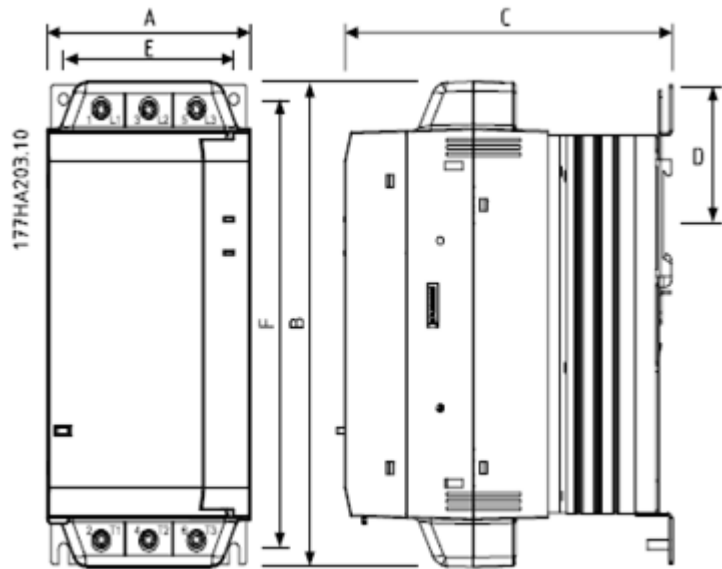
POWER AND CONTROL CIRCUIT DIAGRAM





05-06 Motor Thermistor

Drawing diagram



TYPE	A	B	C	D	E	F
MCD 202-030	98	203	165	55	82	188

Annexure-B15

SOFT STARTER

MCD202-037-T4-CV3/175G5214

INPUT RATING :- 3PHASE,200-440 VAC,45-66 HZ

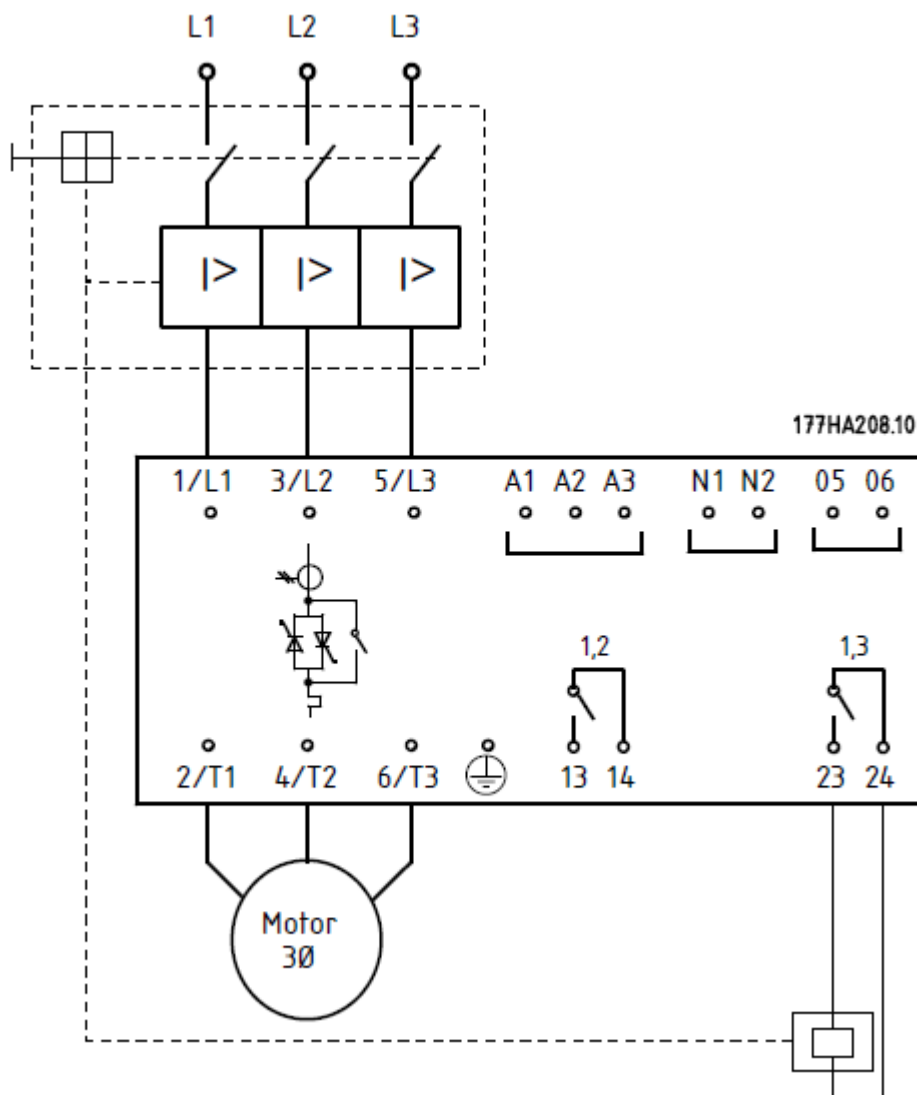
OUTPUT RATING :- 75 A:AC-53b:4-6:354 37KW@400V

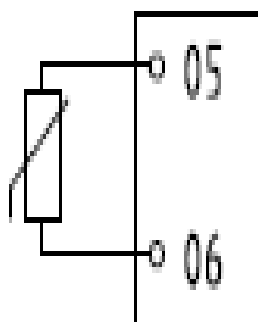
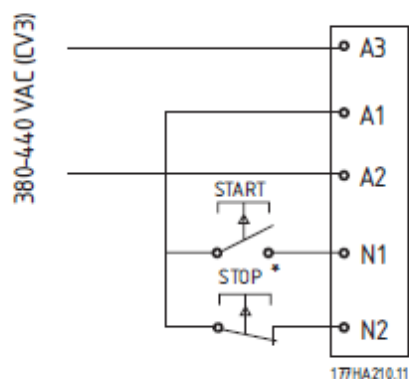
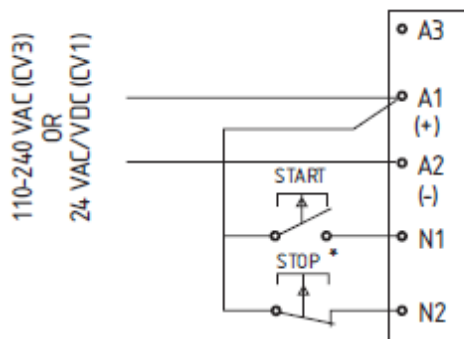
AUXILIARY CONTACTS :- 6A 30V DC resistive/2A 400 VAC ,AC 11

WITHSTAND CURRENT :- 5000 A RMS,575 VAC max

QTY:- 01

POWER AND CONTROL CIRCUIT DIAGRAM

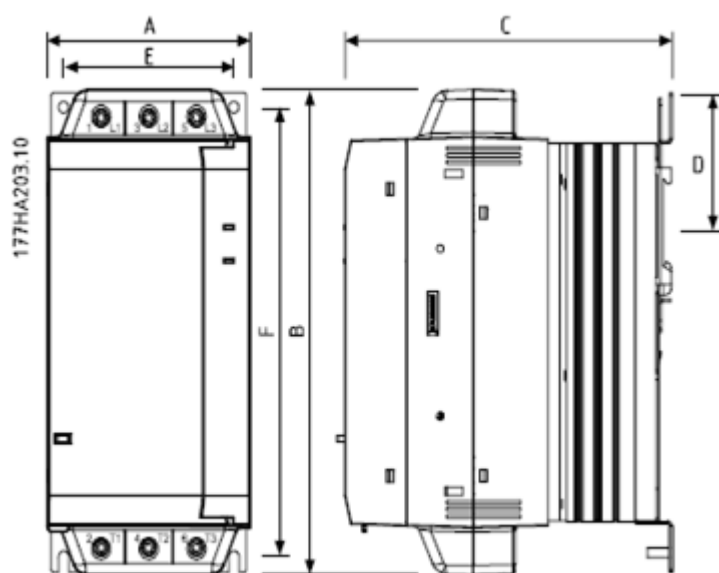




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05-06 Motor Thermistor

Drawing diagram



TYPE	A	B	C	D	E	F
MCD 202-037	98	203	165	55	82	188

Annexure-B16

SOFT STARTER

MCD202-055-T4-CV3/175G5216

INPUT RATING :- 3PHASE,200-440 VAC,45-66 HZ

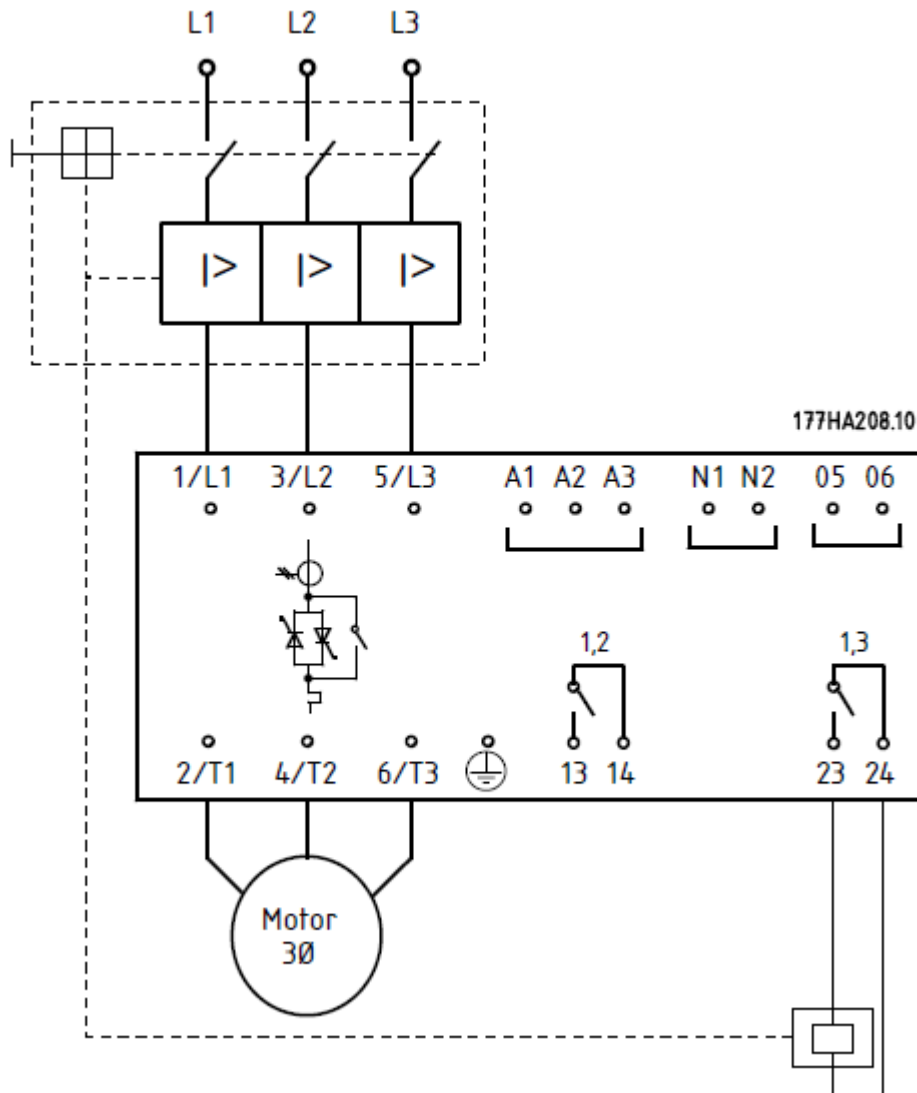
OUTPUT RATING :- 100 A:AC-53b:4-6:594 55KW@400V

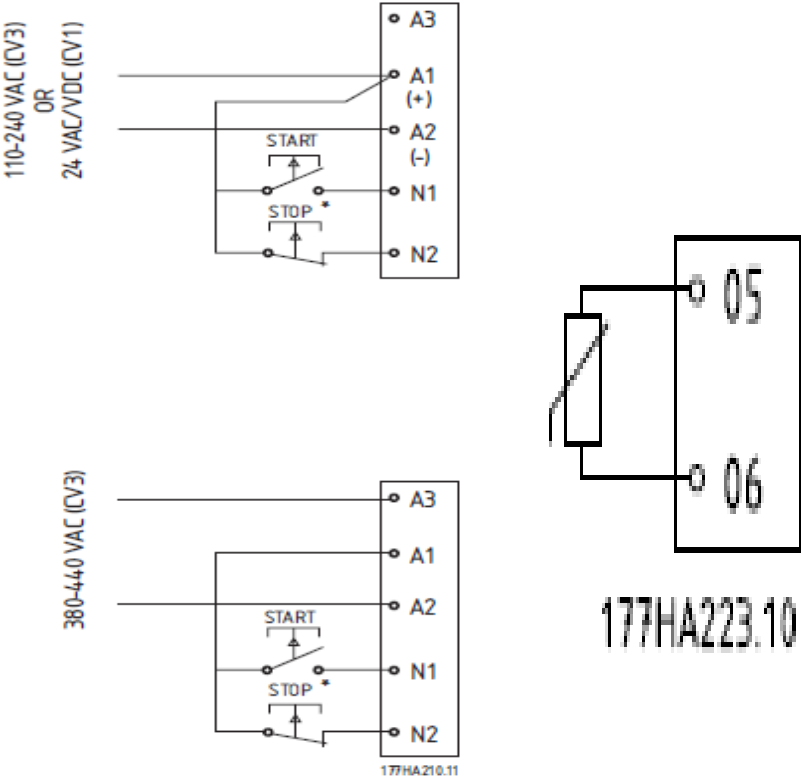
AUXILIARY CONTACTS :- 6A 30V DC resistive/2A 400 VAC ,AC 11

WITHSTAND CURRENT :- 1000 A RMS,575 VAC max

QTY:- 03

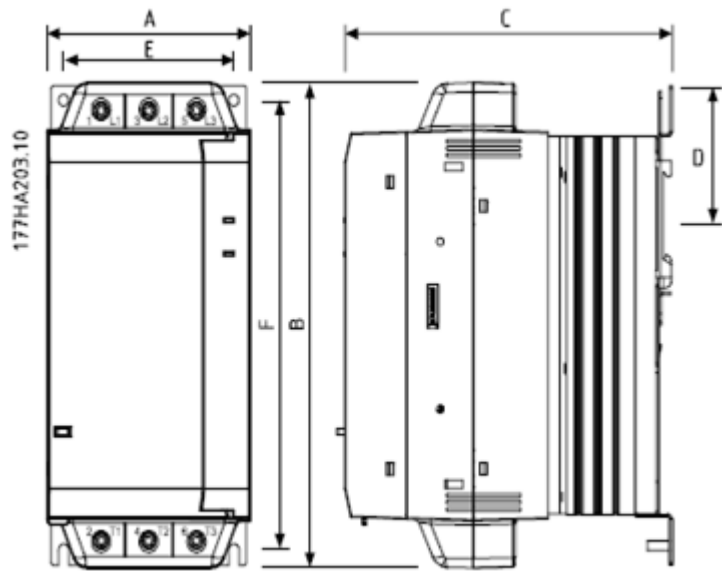
POWER AND CONTROL CIRCUIT DIAGRAM





05-06 Motor Thermistor

Drawing diagram



TYPE	A	B	C	D	E	F
MCD 202-055	145	215	193		124	196

Annexure-B17

SOFT STARTER

MCD5-0428C-T5-G4X-00-CV2 ,C/N 175G5540
3 PHASE 200-525 V AC 50/60 HZ,0428 A
AC-53a:3-30:50-6,220 KW(300HP)400 AC,
S/C Withstand Type 1 coordination,HRC fuse at prospective 65 KA RMS
Enclosure rating IP 00,UL Open Type Pollution degree 3
Aux. terminals 12-30 AWG,1.5 SQ.MM at Torque 0-5 NM
Power Terminals 6-600 AWG,16-400 SQ.MM at Torque 35 NM
Copper Solid or Stranded 60/75 degree Celsius
Motor over load protection Class 10 A

Control voltage

CV2 = 110-120 VAC or 220-240 VAC Both

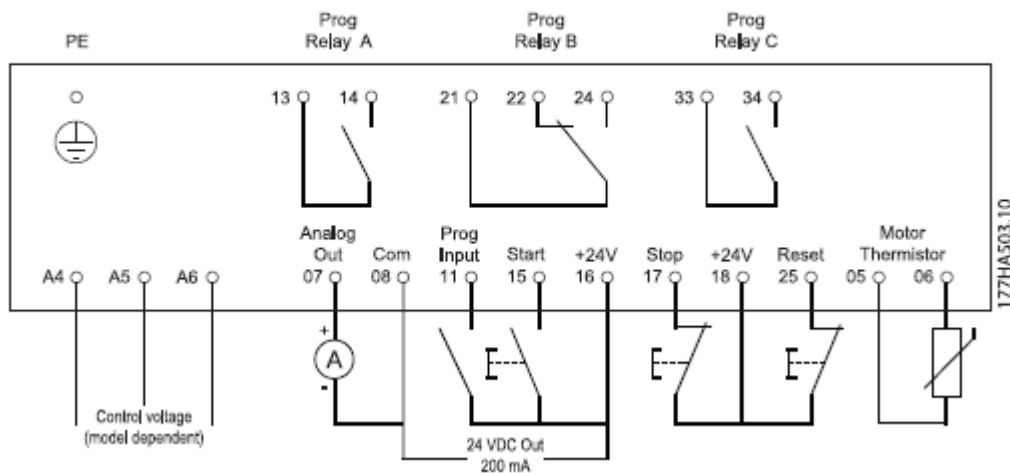
The soft starter can be controlled in three ways

- using the buttons on the LCP
- via remote inputs
- via a serial communication link

QTY:- 02

Control Terminals diagram

CV2 (220 - 240 VAC): A4, A6



Drawing diagram

3.2 Dimensions and Weights

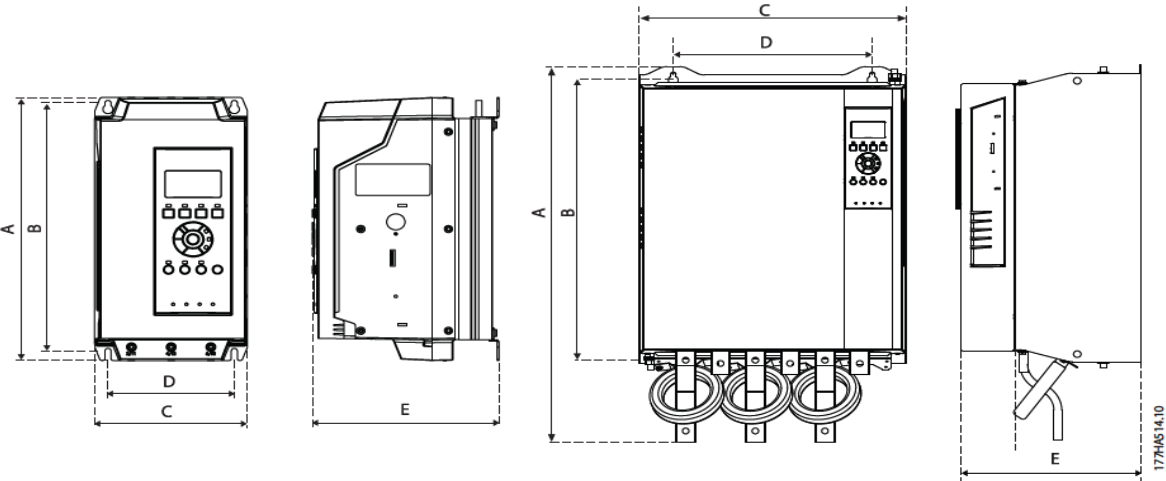


Illustration 3.2

Model /TYPE	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	Weight KG
MCD5-0428C-T5- G4X-00-CV2	689	522	430	320	300.2	35

Annexure-B18

18.SOFT STARTER

MCD5-0595C-T5-G4X-00-CV2 ,C/N 175G5541,S/N 046514-306

3 PHASE 200-525 V AC 50/60 HZ,595 A

AC-53a:3-30:50-6,315 KW(430HP)400 AC,

S/C Withstand Type 1 coordination,HRC fuse at prospective 65 KA RMS

Enclosure rating IP 00,UL Open Type Pollution degree 3

Aux. terminals 12-30 AWG,1.5 SQ.MM at Torque 0-5 NM

Power Terminals 6-600 AWG,16-400 SQ.MM at Torque 35 NM

Copper Solid or Stranded 60/75 degree Celsius

Motor over load protection Class 10 A

Control voltage

CV2 = 110-120 VAC or 220-240 VAC Both

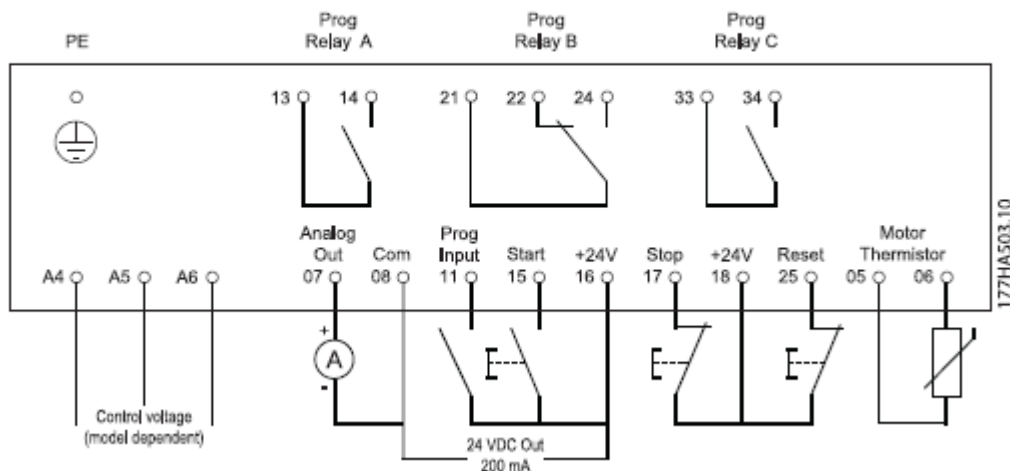
The soft starter can be controlled in three ways

- using the buttons on the LCP
- via remote inputs
- via a serial communication link

QTY:- 03

Control Terminals diagram

CV2 (220 - 240 VAC): A4, A6



Drawing diagram

3.2 Dimensions and Weights

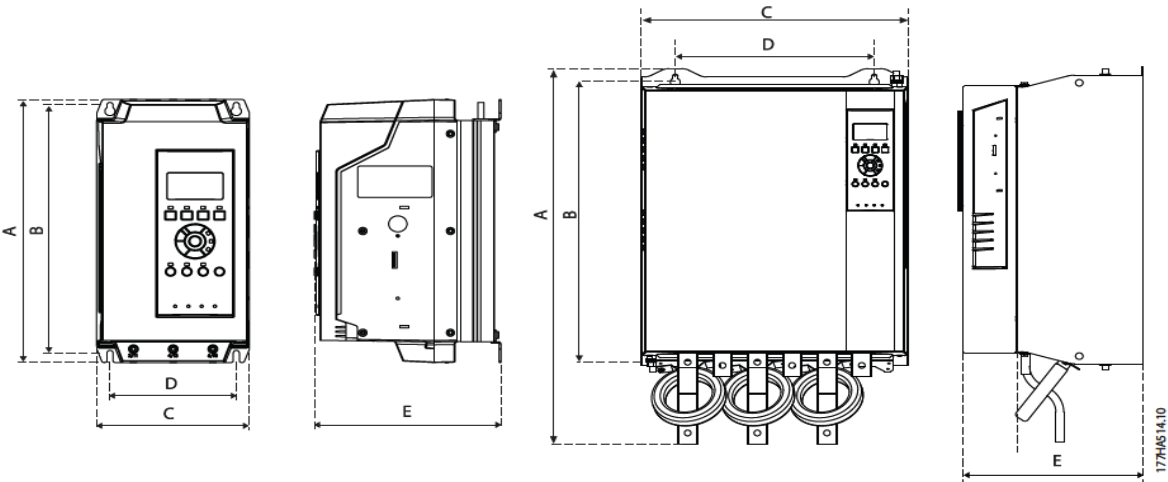


Illustration 3.2

Model /TYPE	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	Weight KG
MCD5-0595C-T5- G4X-00-CV2	689	522	430	320	300.2	35