

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

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CUSTOMER:



TELANGANA STATE POWER GENERATION CORPORATION LTD
TELANGANA STATE
INDIA

PROJECT:

1x800 MW KOTHAGUDAM THERMAL POWER STATION
STAGE-VII, UNIT#12
PALONCHA

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It must not be used directly or indirectly in any way detrimental to the interest of the company

DRG. NO. EP-4-CS-048-009

Sl No	SWITCHBOARD DESCRIPTION	DESIGN	RATING
1	415V UNIT EMERGENCY MCC	TDG	3000A

CUSTOMER CONSULTANT:

DEVELOPMENT CONSULTANTS PVT LTD
KOLKATA

INVENTORY NO.	REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-009	NO. OF SHEETS	REV.
4													10	00
3						DESIGNED	JAGADISH		16.06.16				01	
2						DRAWN								
1						CHECKED	JAGADISH		16.06.16					

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPROTECTIANS DIVISION BANGALORE

TITLE :
POWER & CONTROL SCHEME
NORMAL INCOMER-A TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMIS



DRG. NO. EP-4-CS-048-009

** - AS PER RATING
OF THE SWITCHBOARD

CT21-23
RATIO : **/1A
BURDEN:15VA
CLASS:0.5

03:1A

03:1A

03:1A

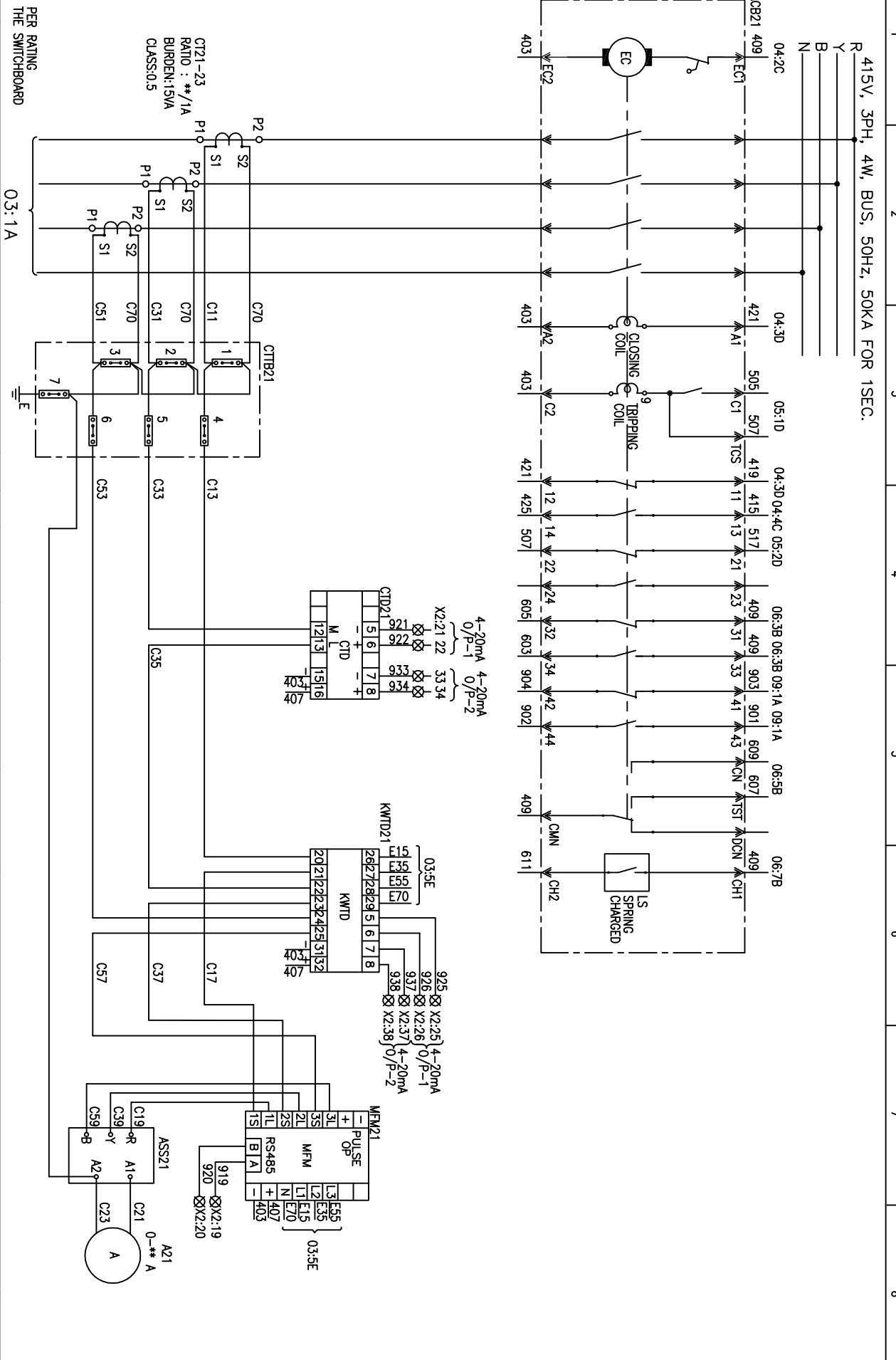
03:1A

03:1A

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03:1A

03:1A



FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	KSB	SCALE	JOB NO.	DRG. NO.	NO. OF SHEETS	SHEET NO.	REV.
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2												
3												
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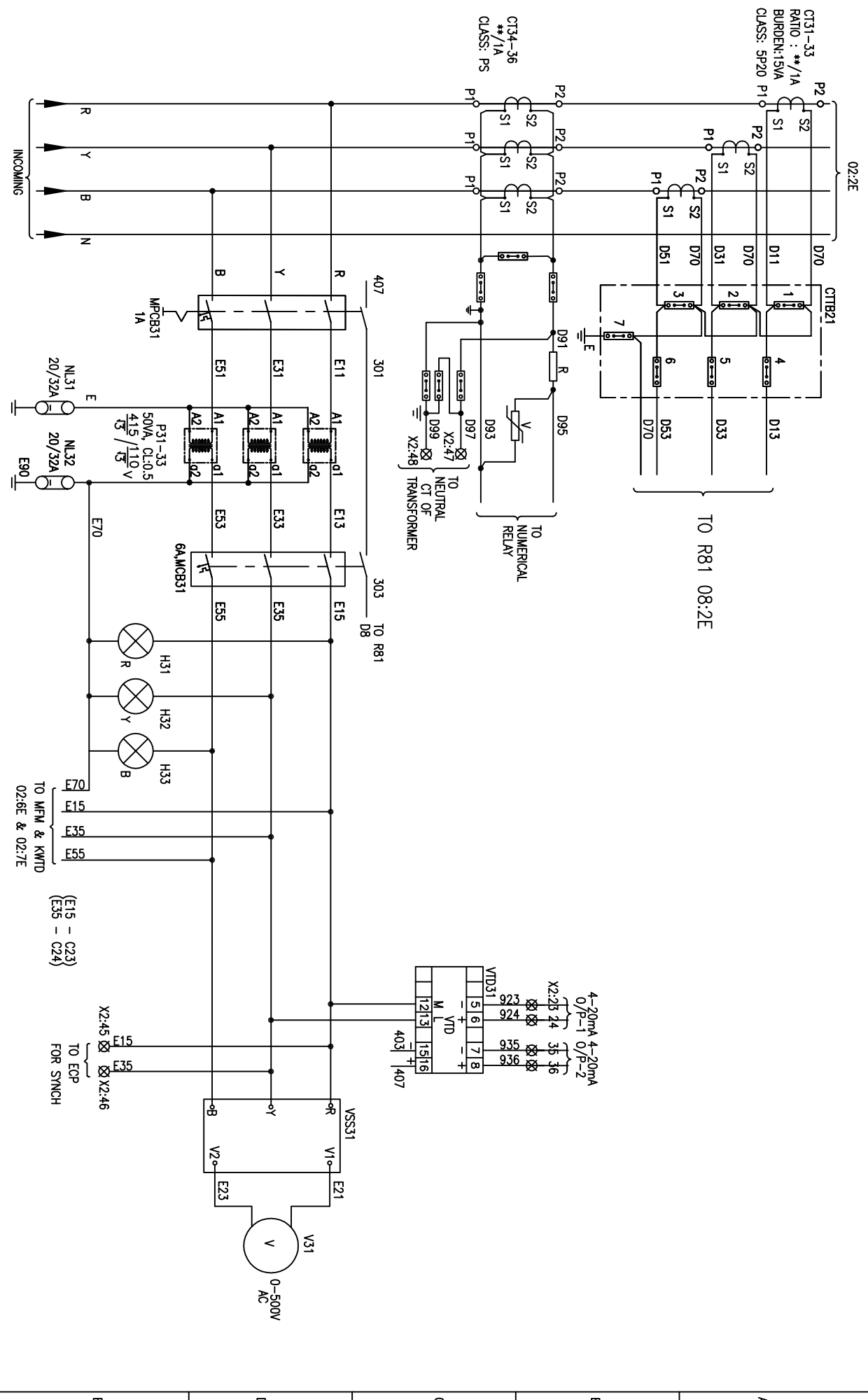
BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWER DIVISION BANGALORE

NO. OF SHEETS: 10
SHEET NO.: 02



TITLE: POWER & CONTROL SCHEME
NORMAL INCOMER-A TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMS

DRG. NO. EP-4-CS-048-009

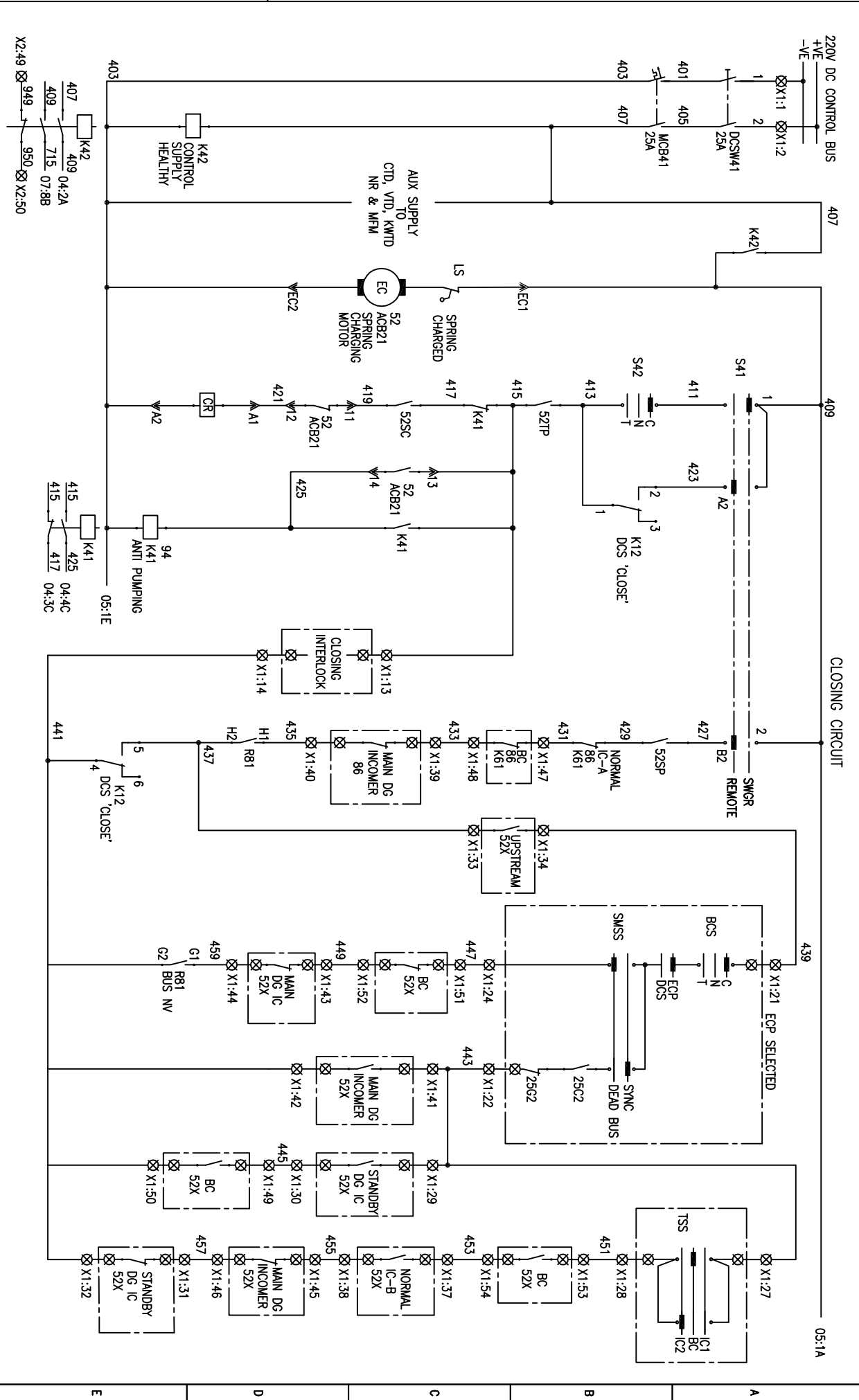


1 2 3 4 5 6 7 8

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

INVENTORY NO.	4	NAME	JAGADISH	SIGN.	DATE	16.06.16
REV. NO.	1	DESCRIPTION	CHECKED	JAGADISH	16.06.16	
DATE		BY	APPD.	APPROVED	KSB	16.06.16
<p>BHARAT HEAVY ELECTRICALS LIMITED ELECTRONORCELEANS DIVISION BANGALORE</p> <p>TITLE : POWER & CONTROL SCHEME NORMAL INCOMER-A TO EMERGENCY MCC CONTROLLED FROM ECP & DDGMS</p>						
<p>JOB NO. CP-14-048</p> <p>DRG. NO. EP-4-CS-048-009</p>						
<p>NO. OF SHEETS: 10 SHEET: 03</p>						
<p>REV. NO. 00</p>						



FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	KSB
1						
2						
3						
4						

NAME	SIGNL.	DATE
JAGADISH		16.06.16
JAGADISH		16.06.16

SCALE	NA
-------	----

JOB NO.	CP-14-048	DRG. NO.	EP-4-CS-048-009
---------	-----------	----------	-----------------

TITLE	POWER & CONTROL SCHEME
NORMAL INCOMER-A TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMS	

NO. OF SHEETS	10
SHEET NO.	04
REV.	00

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPROTECTIANS DIVISION BANGALORE

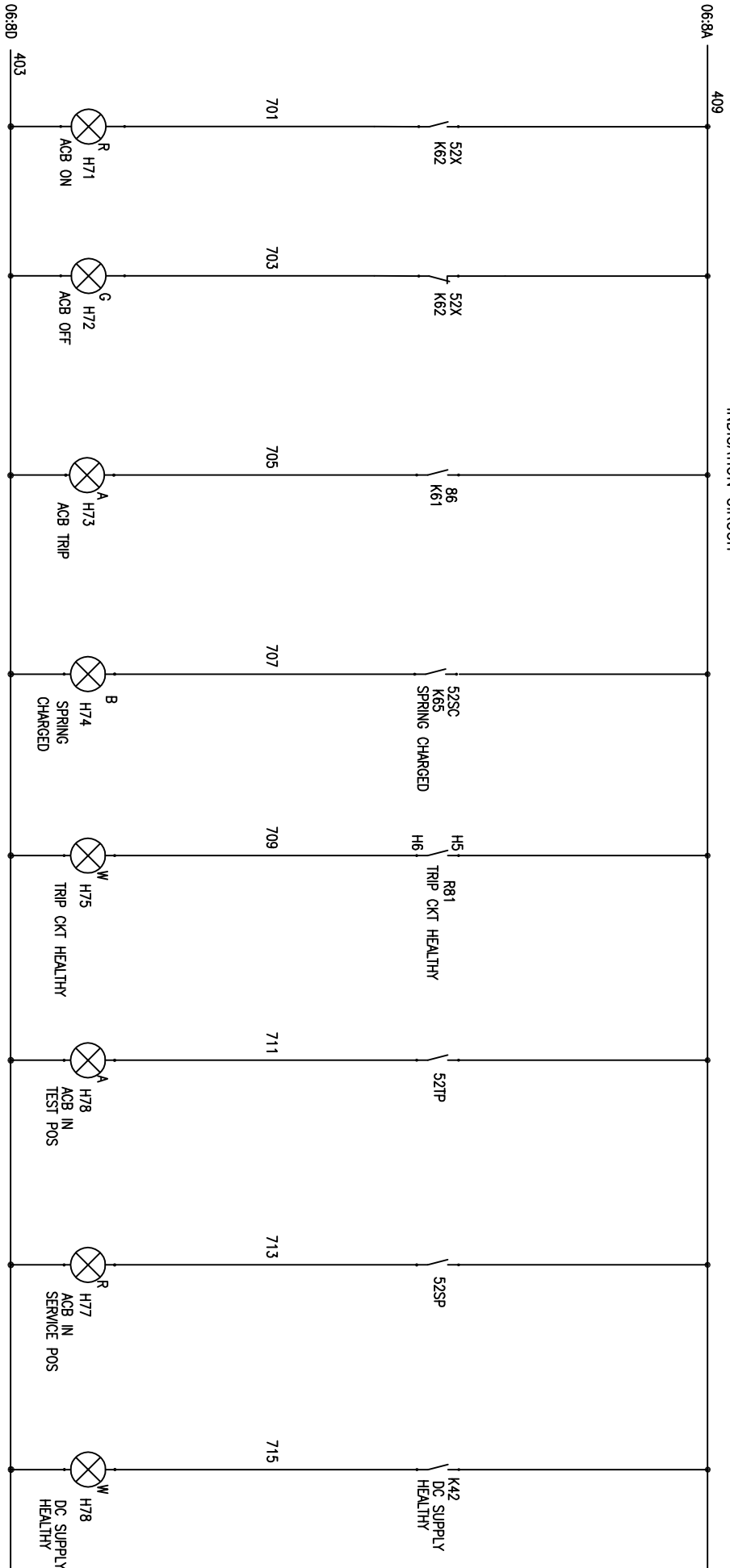


DRG. NO. EP-4-CS-048-009

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

INDICATION CIRCUIT



REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	KSB	SCALE: NA
1					CHECKED	JAGADISH	16.06.16
2					DRAWN		16.06.16
3					DESIGNED	JAGADISH	16.06.16
4							

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWERCELLS DIVISION BANGALORE

POWER & CONTROL SCHEME


TITLE :
NORMAL INCOMER-A TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMS

JOB NO. CP-14-048 DRG. NO. EP-4-CS-048-009

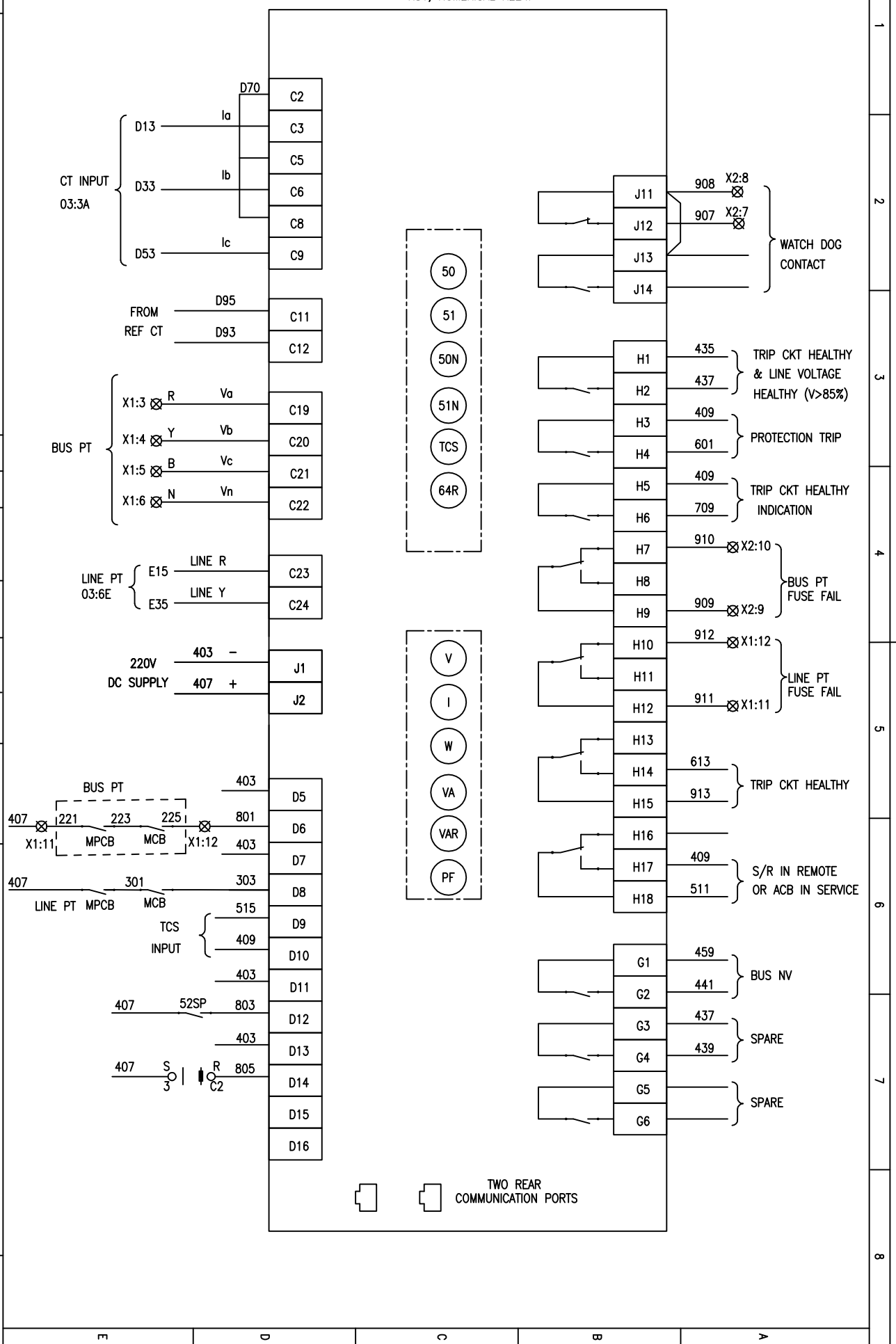
NO. OF SHEETS: 10
SHEET NO.: 07

REV. NO.: 00

INVENTORY NO. DRG. NO. EP-4-CS-048-009

REV. NO.	1	2	3	4
DATE				
DESCRIPTION				
BY				
APPD.				
APPROVED	CHECKED	DRAWN	DESIGNED	
KSB	JAGADISH		JAGADISH	
	16.06.16	16.06.16	16.06.16	
SCALE: NA				
JOB NO. CP-14-048	TITLE: POWER & CONTROL SCHEME NORMAL INCOMER-A TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMS			
DRG. NO. EP-4-CS-048-009	NO. OF SHEETS: 10 SHEET NO.: 08 REV. NO.: 00			

R81, NUMERICAL RELAY



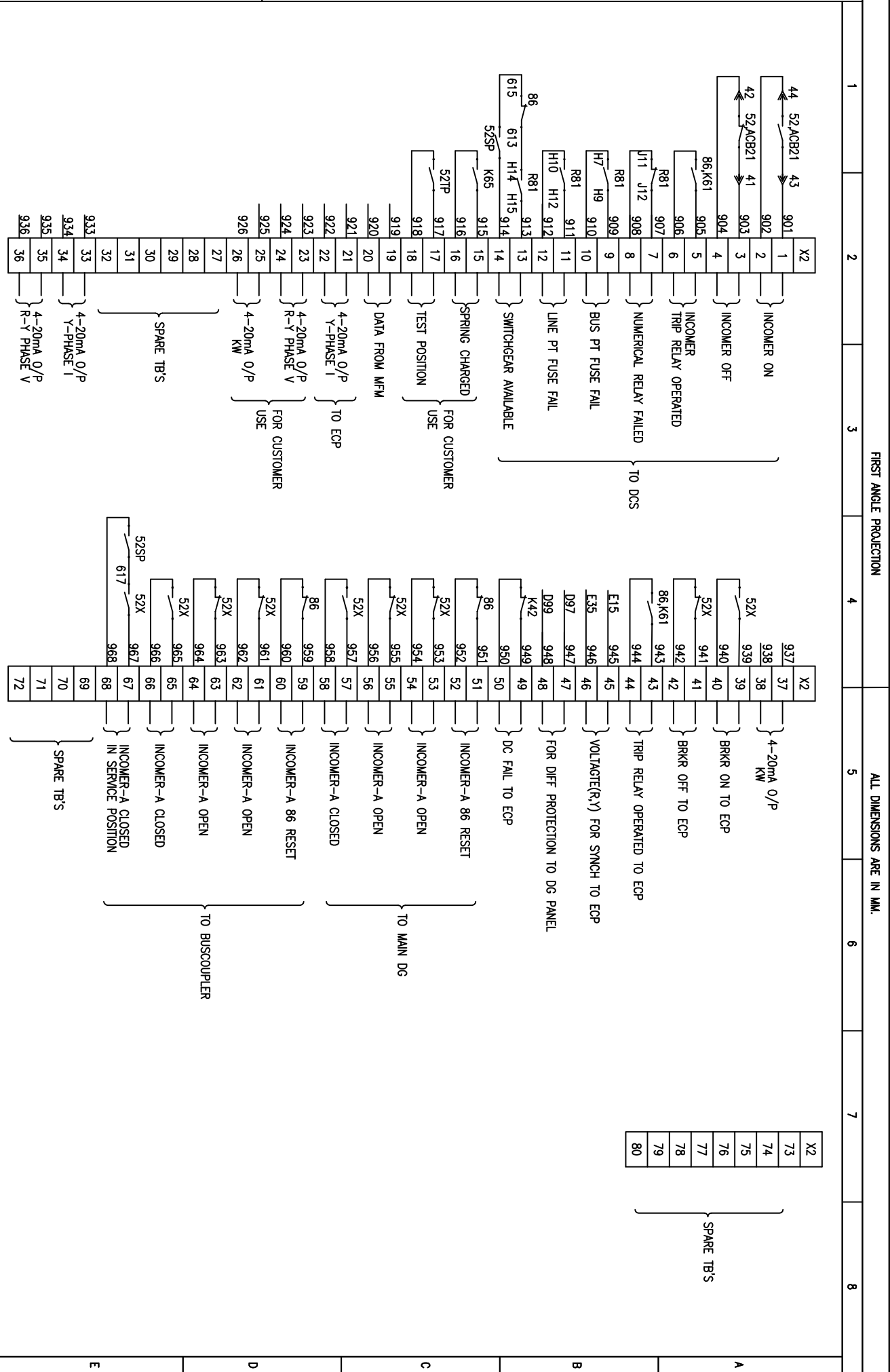
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FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

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DRG. NO. EP-4-CS-048-009



INVENTORY NO.	REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	KSB	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-009
4	1									
3	2									
2	3									
1	4									

FORM 66-271 A3

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPROTECTIANS DIVISION BANGALORE

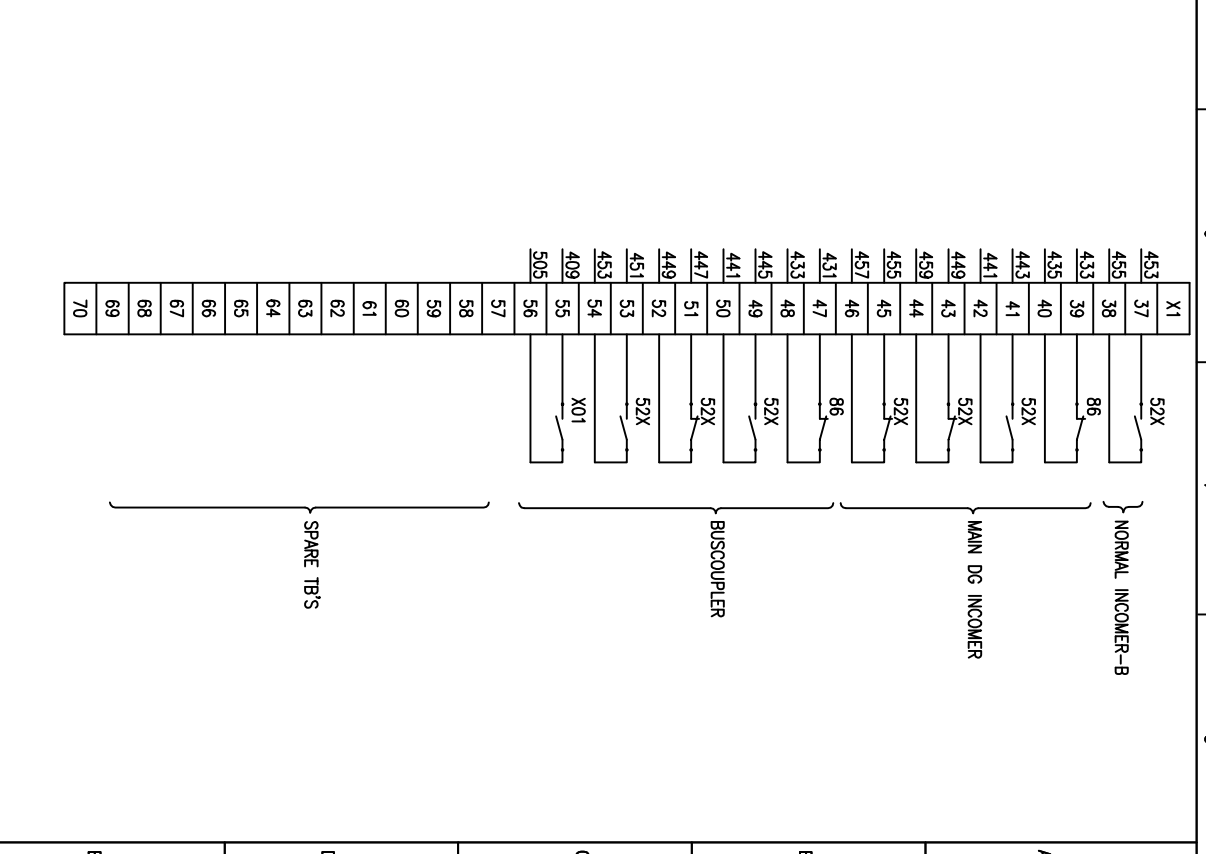
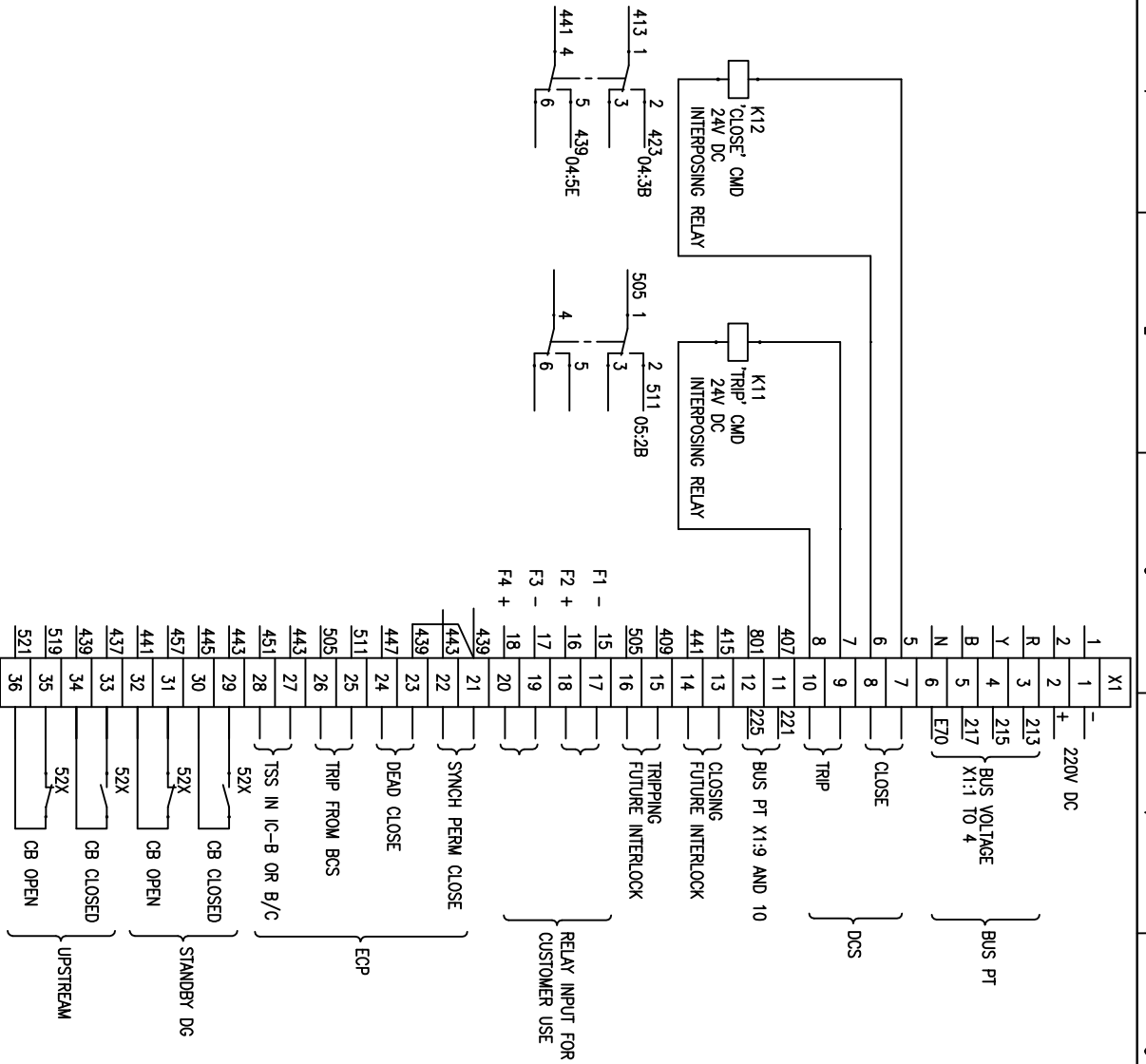
TITLE :
POWER & CONTROL SCHEME
NORMAL INCOMER-A TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMIS

NO. OF SHEETS: 10
SHEET NO.: 09



REV. NO.: 00

DRG. NO. EP-4-CS-048-009



REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE	JOB NO.	DRG. NO.	NO. OF SHEETS	SHEET NO.	REV.
1					CHECKED	JAGADISH		16.06.16	NA	CP-14-048	EP-4-CS-048-009	10	10	00
2					DRAWN	JAGADISH		16.06.16						
3					DESIGNED	JAGADISH		16.06.16						
4														

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPROTECTIANS DIVISION BANGALORE

TITLE : **POWER & CONTROL SCHEME**
NORMAL INCOMER-A TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMIS



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DRG. NO. EP-4-CS-048-010

FIRST ANGLE PROJECTION
ALL DIMENSIONS ARE IN MM.



CUSTOMER:




TELANGANA STATE POWER GENERATION CORPORATION LTD
TELANGANA STATE
INDIA

PROJECT:
1x800 MW KOTHAGUDAM THERMAL POWER STATION
STAGE-VII, UNIT#12
PALONCHA

CUSTOMER CONSULTANT:

DEVELOPMENT CONSULTANTS PVT LTD
KOLKATA

Sl No	SWITCHBOARD DESCRIPTION	DESIGN	RATING
1	415V UNIT EMERGENCY MCC	TDG	3000A

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-010	NO. OF SHEETS	REV.
1					CHECKED	JAGADISH		16.06.16		NORMAL INCOMER-B TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMIS		10	01
2					DRAWN								
3					DESIGNED	JAGADISH		16.06.16					
4													

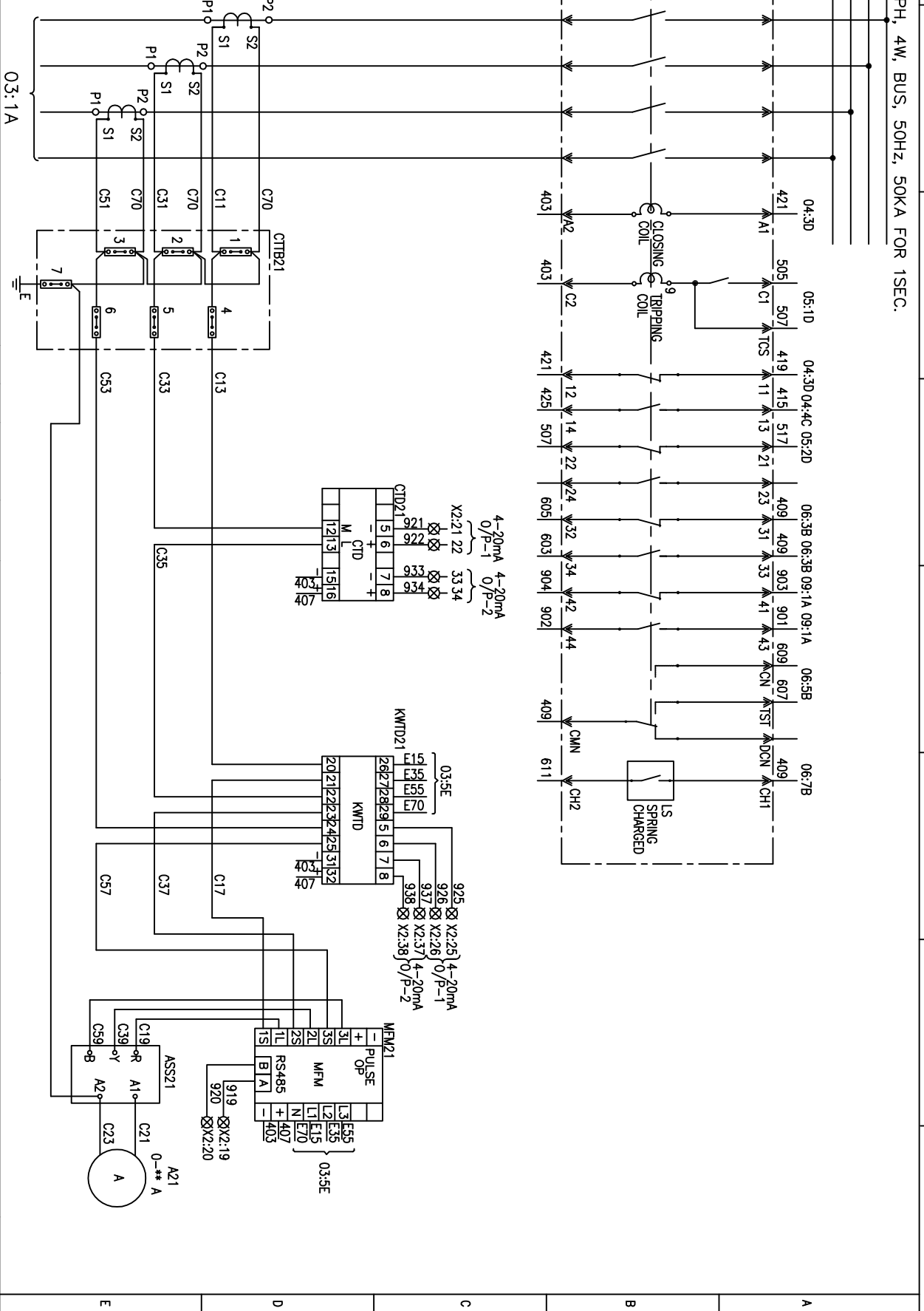
DRG. NO. EP-4-CS-048-010

415V, 3PH, 4W, BUS, 50HZ, SOKA FOR 1SEC.

** - AS PER RATING OF THE SWITCHBOARD

CT21-23
RATIO : **/1A
BURDEN:15VA
CLASS:0.5

03:1A



FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM

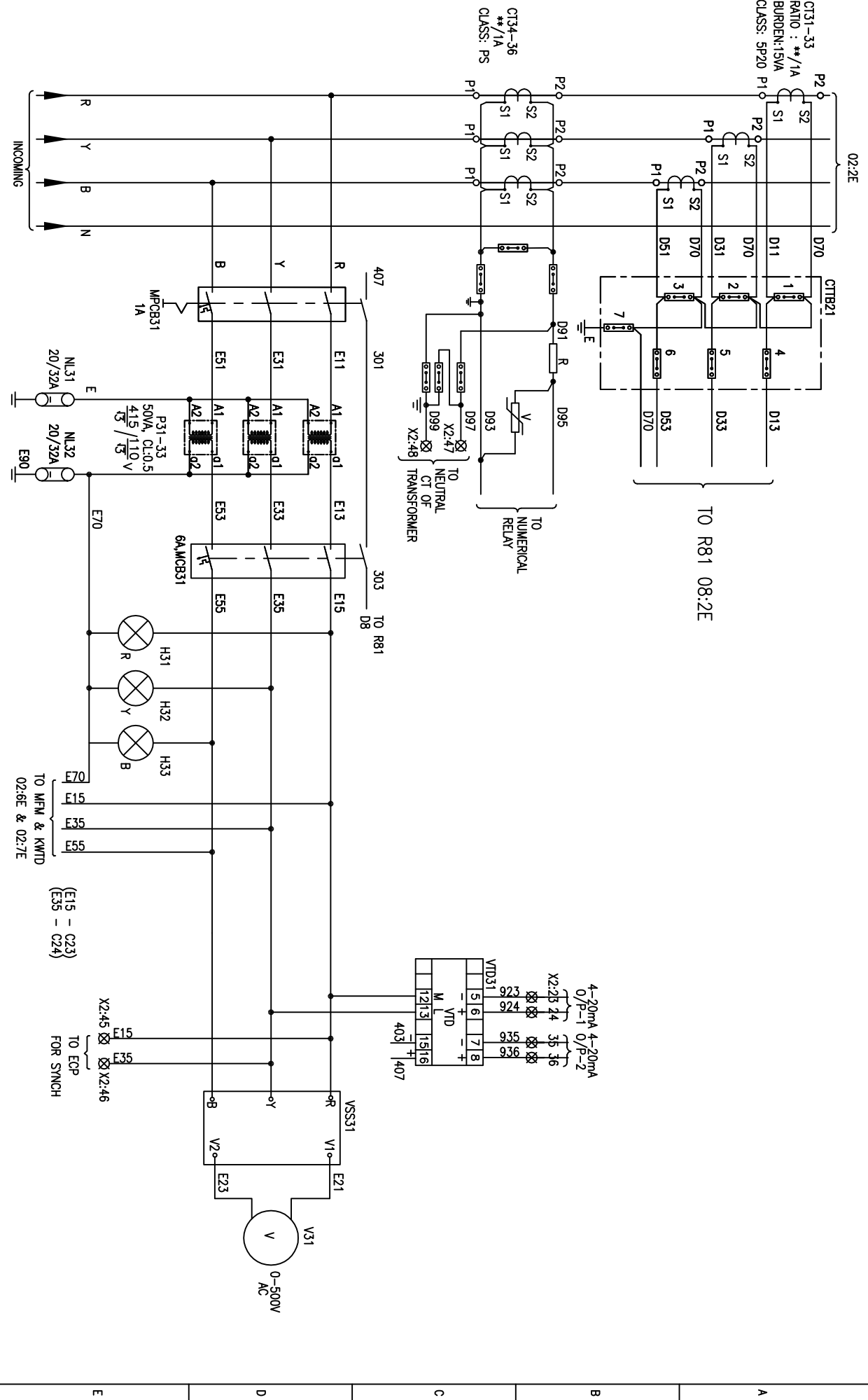
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1					CHECKED	JAGADISH	16.06.16	CP-14-048	EP-4-CS-048-010	10	02	00
2					DRAWN							
3					DESIGNED	JAGADISH	16.06.16					
4												

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWERCELLS DIVISION BANGALORE



TITLE :
POWER & CONTROL SCHEME
NORMAL INCOMER-B TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMIS

DRG. NO. EP-4-CS-048-010



1 2 3 4 5 6 7 8

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE	JOB NO.	DRG. NO.	NO. OF SHEETS	SHEET NO.	REV.
1						JAGADISH		16.06.16	NA	CP-14-048	EP-4-CS-048-010	10	03	00
2						JAGADISH		16.06.16						
3						JAGADISH		16.06.16						
4						JAGADISH		16.06.16						

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPROTECTIANS DIVISION BANGALORE



TITLE :
POWER & CONTROL SCHEME

NORMAL INCOMER-B TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMS

NO. OF SHEETS : 10

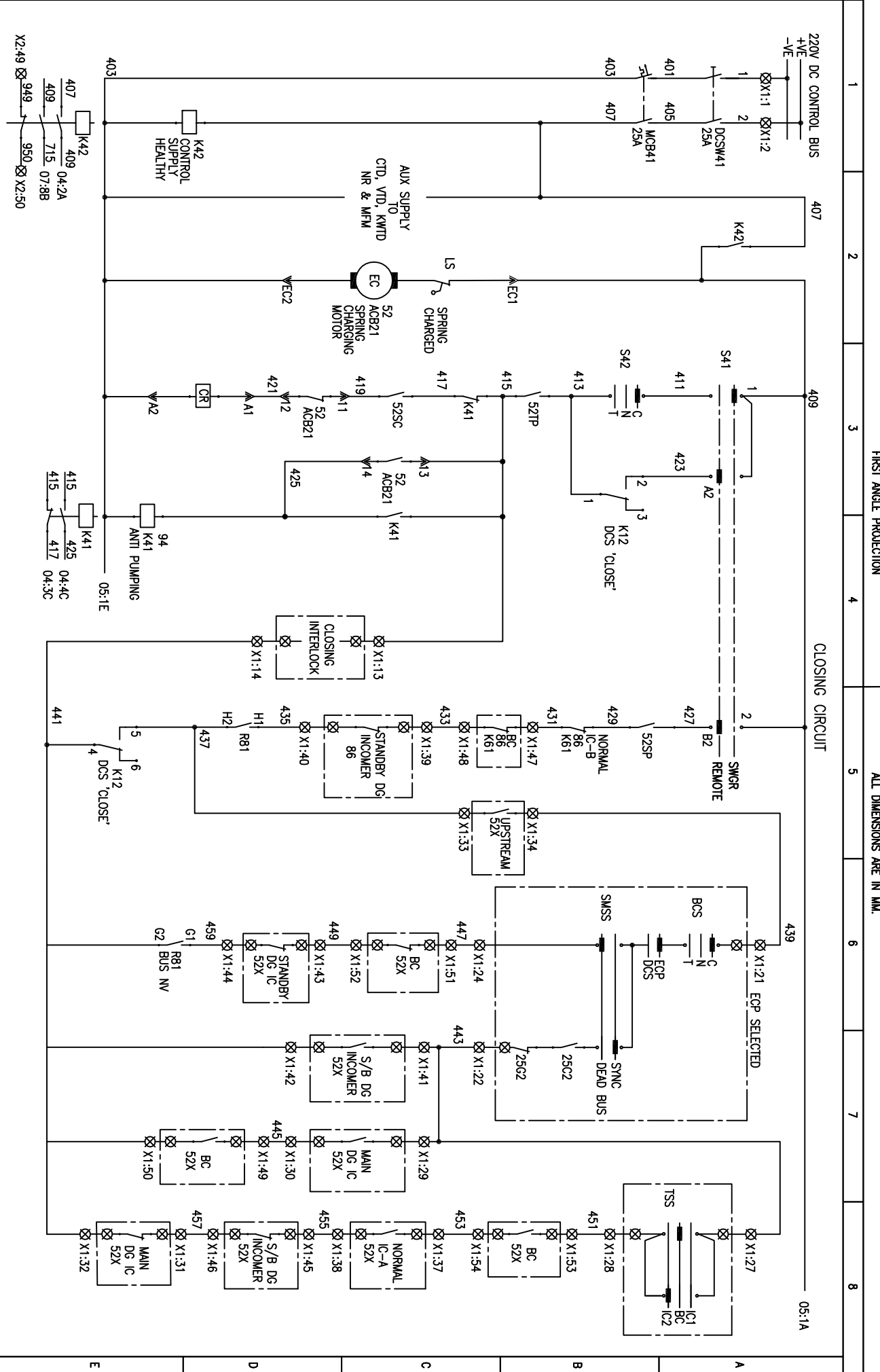
SHEET : 03

REV. : 00

DRG. NO. EP-4-CS-048-010

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.



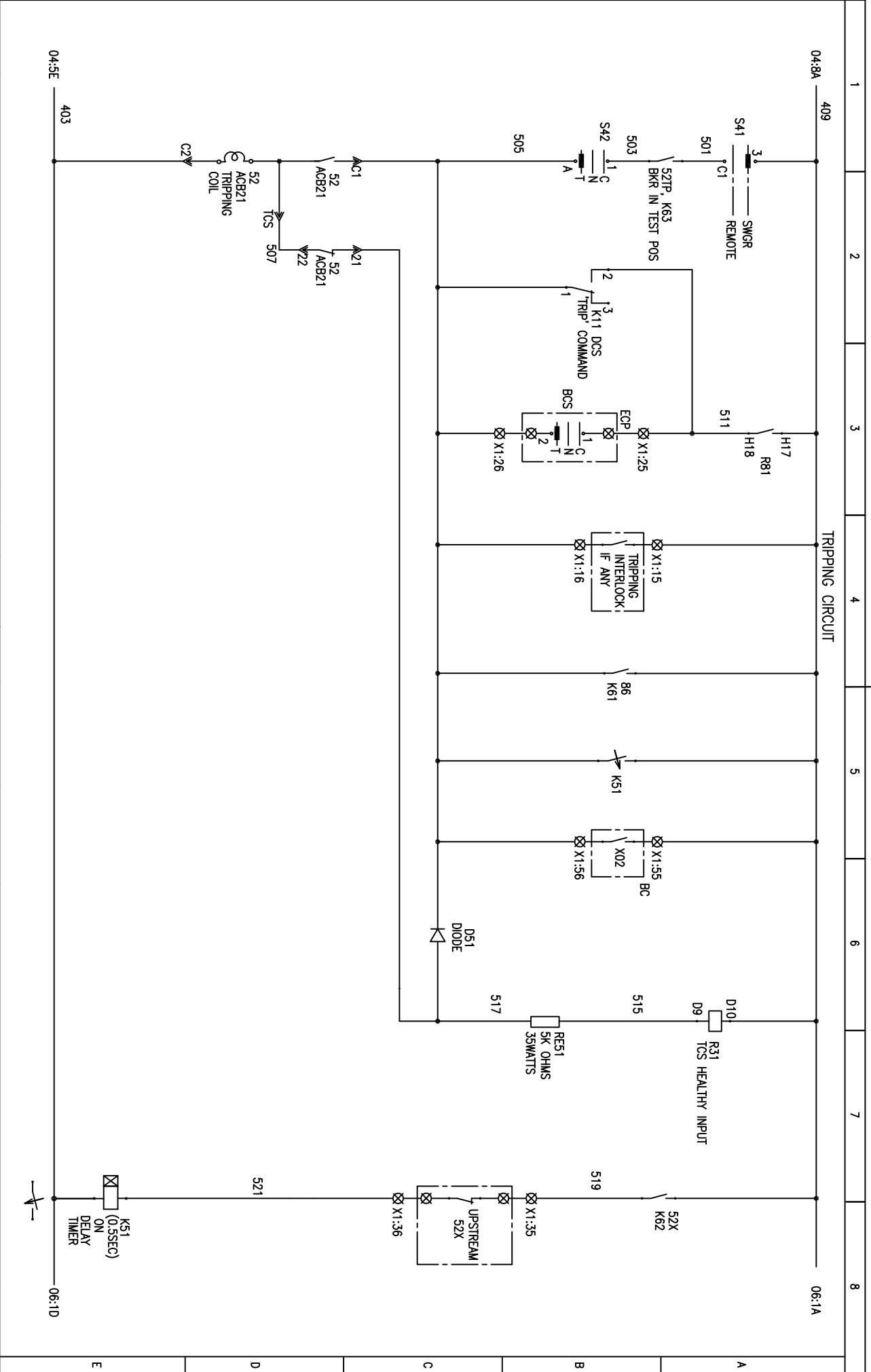
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2					DRAWN							
3					DESIGNED	JAGADISH	16.06.16					
4												

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPROTECTIANS DIVISION BANGALORE



TITLE :
POWER & CONTROL SCHEME
NORMAL INCOMER-B TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMS

DRG. NO. EP-4-CS-048-010

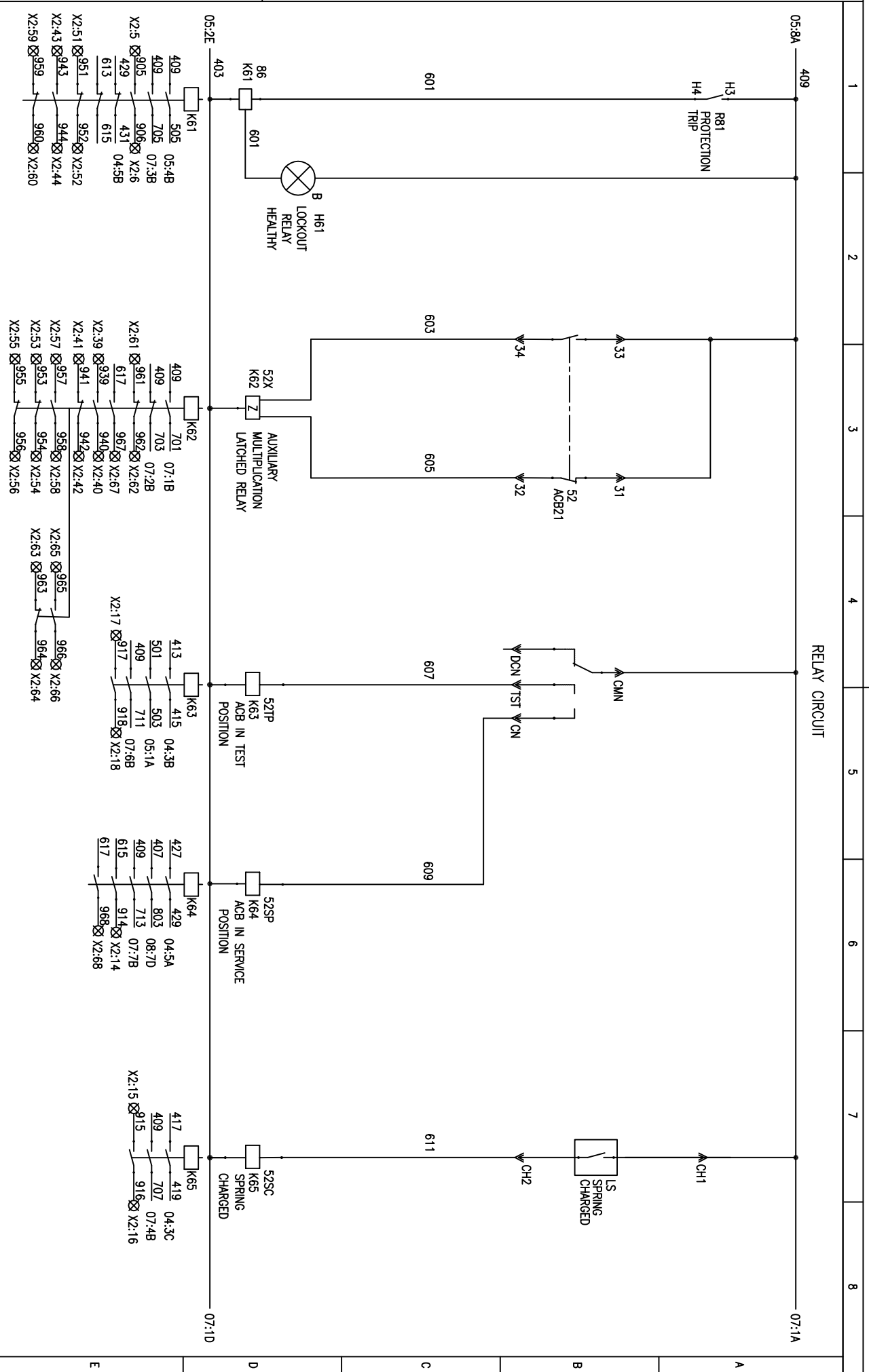


FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

INVENTORY NO.	4	3	2	1
REV. NO.				
DATE				
DESCRIPTION				
BY				
APPD.				
APPROVED				
NAME		JAGADISH	JAGADISH	JAGADISH
SIGN.				
DATE		16.06.16	16.06.16	16.06.16
SCALE	NA			
JOB NO.	CP-14-048			
DRG. NO.	EP-4-CS-048-010			
TITLE	BHARAT HEAVY ELECTRICALS LIMITED ELECTROPROTECTIANS DIVISION BANGALORE			
TITLE	POWER & CONTROL SCHEME NORMAL INCOMER-B TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMIS			
NO. OF SHEETS	10			
SHEET NO.	05			
REV.	00			

DRG. NO. EP-4-CS-048-010



FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM

RELAY CIRCUIT

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	KSB	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-010	NO. OF SHEETS	SHEET NO.	REV.
1					CHECKED	JAGADISH				10	06	00
2					DRAWN							
3					DESIGNED	JAGADISH						
4												

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWERELAINS DIVISION BANGALORE



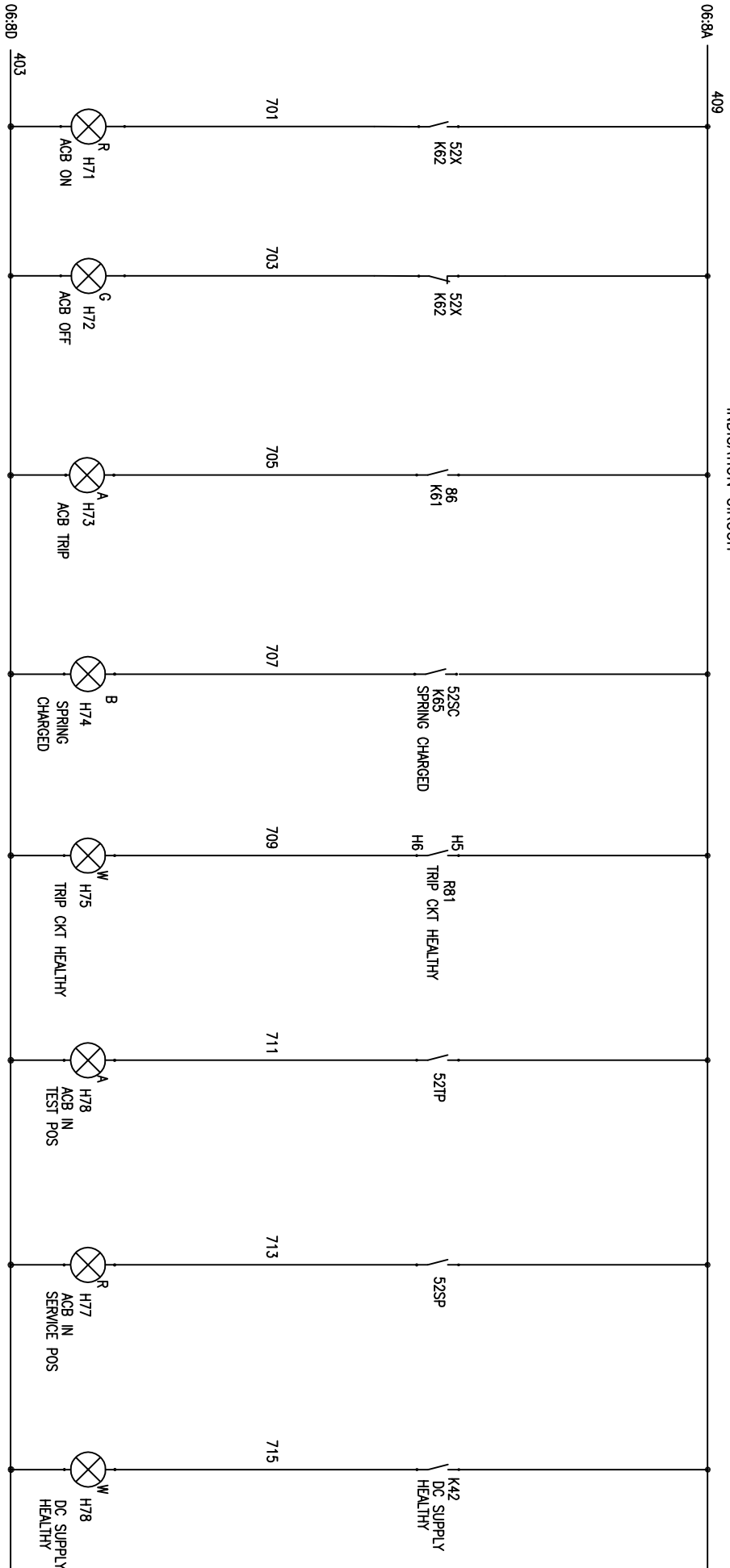
TITLE: POWER & CONTROL SCHEME
NORMAL INCOMER-B TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMS

DRG. NO. EP-4-CS-048-010

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM

INDICATION CIRCUIT



REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-010	NO. OF SHEETS	SHEET NO.	REV.
1					CHECKED	JAGADISH		16.06.16				10	07	00
2					DRAWN									
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4														

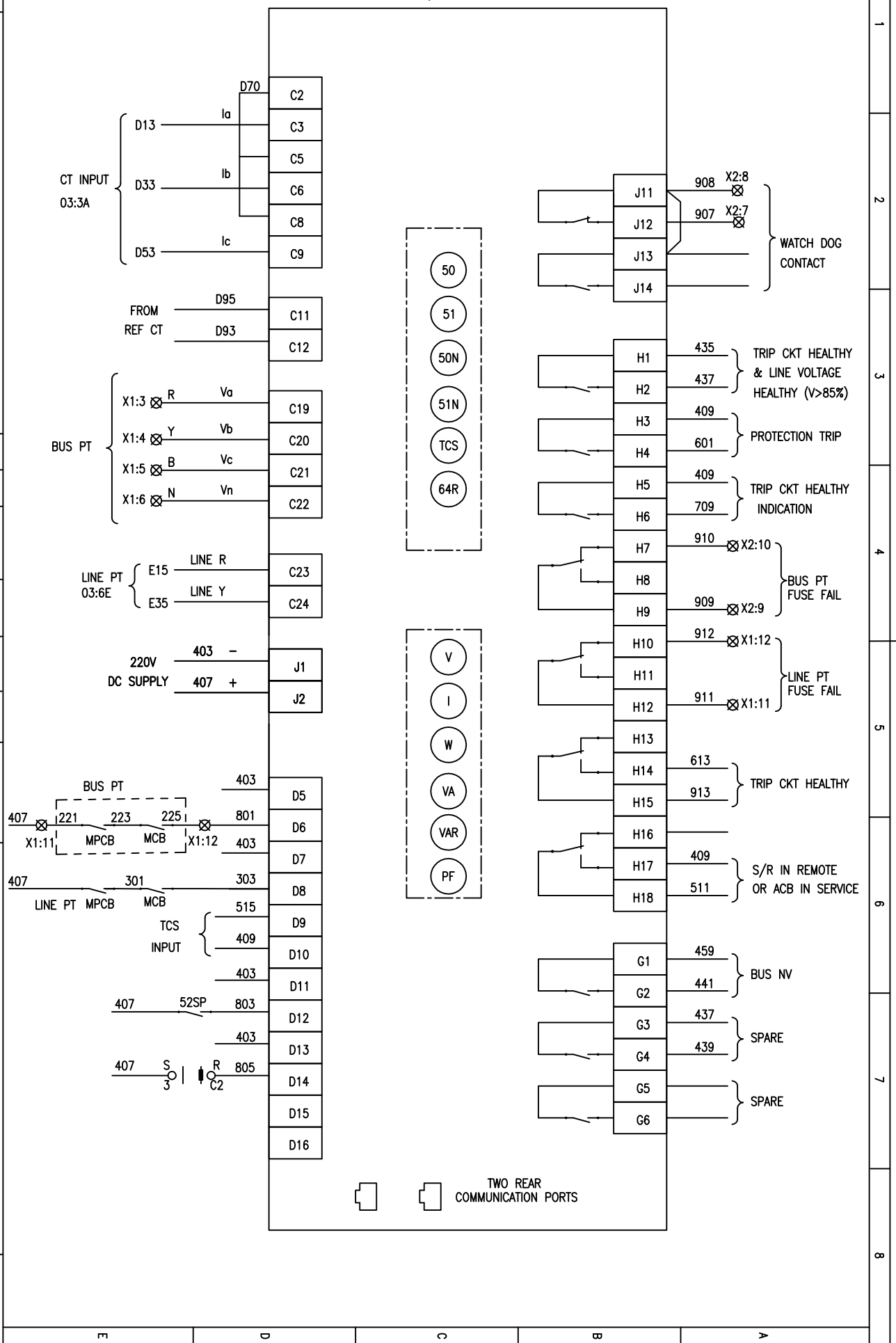


BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWERCELLS DIVISION BANGALORE

TITLE : **POWER & CONTROL SCHEME**
NORMAL INCOMER-B TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMS

INVENTORY NO.				DRG. NO. EP-4-CS-048-010			
REV. NO.	1	2	3	4	DATE	DESCRIPTION	BY
DATE							
BY							
APPD.							
APPROVED	CHECKED	DRAWN	DESIGNED				
KSB	JAGADISH		JAGADISH				
16.06.16	16.06.16		16.06.16				
SCALE: NA	BHARAT HEAVY ELECTRICALS LIMITED ELECTROPROTECTIANS DIVISION BANGALORE						
JOB NO. CP-14-048	TITLE: POWER & CONTROL SCHEME NORMAL INCOMER-B TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMS						
DRG. NO. EP-4-CS-048-010							
NO. OF SHEETS: 10							
SHEET NO.: 08							
REV. NO.: 00							

R81, NUMERICAL RELAY



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FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

FIRST ANGLE PROJECTION ALL DIMENSIONS ARE IN MM.

TELANGANA STATE POWER GENERATION CORPORATION LTD
 TELANGANA STATE
 INDIA



CUSTOMER:

PROJECT:
 1x800 MW KOTHAGUDAM THERMAL POWER STATION
 STAGE-VII, UNIT#12
 PALONCHA



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DRG. NO. EP-4-CS-048-011

Sl No	SWITCHBOARD DESCRIPTION	DESIGN	RATING
1	415V UNIT EMERGENCY MCC	TDG	3000A

CUSTOMER CONSULTANT:

 DEVELOPMENT CONSULTANTS PVT LTD
 KOLKATA

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-011	NO. OF SHEETS	REV.
1					CHECKED	JAGADISH		16.06.16				11	01
2					DRAWN								
3					DESIGNED	JAGADISH		16.06.16					
4													



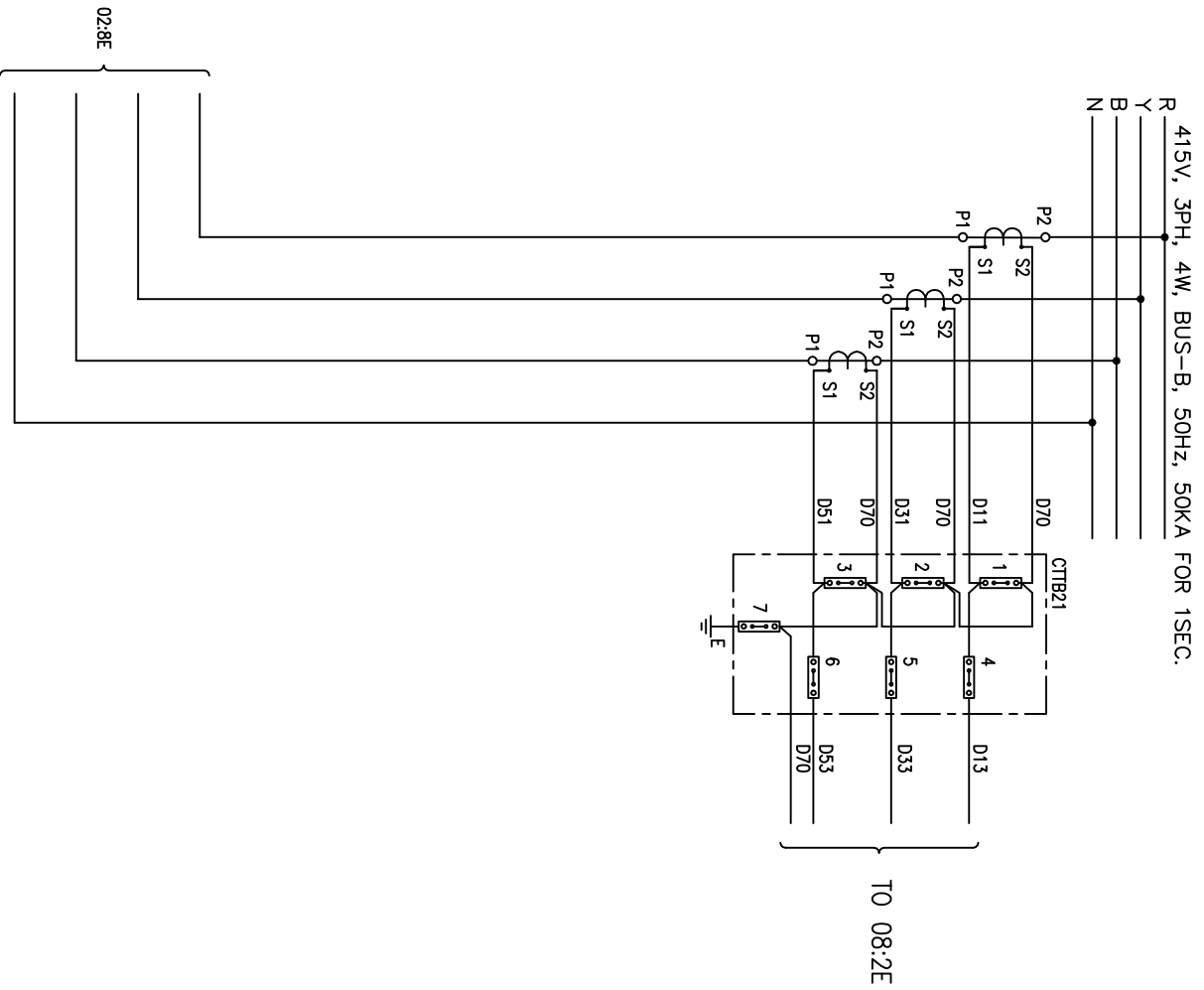
BHARAT HEAVY ELECTRICALS LIMITED
 ELECTROPROTECTANS DIVISION BANGALORE

TITLE :
 POWER & CONTROL SCHEME
 BUSCOUPLER OF EMERGENCY MCC CONTROLLED FROM EGP & DCOMS

DRG. NO. EP-4-CS-048-011

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.



REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE
1					CHECKED	JAGADISH		16.06.16
2					DRAWN	JAGADISH		16.06.16
3					DESIGNED	JAGADISH		16.06.16
4								



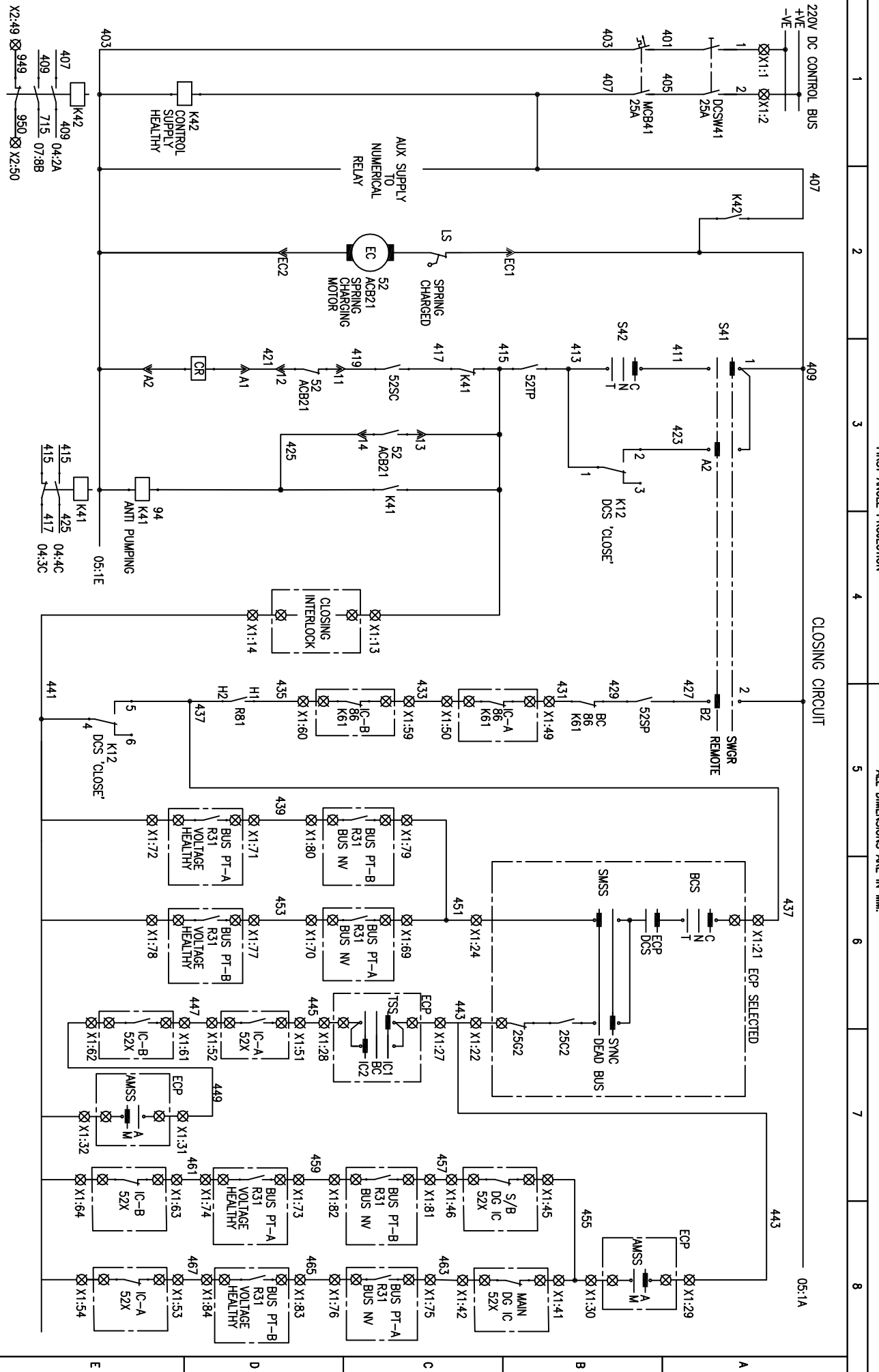
BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPROTECTANS DIVISION BANGALORE

TITLE :
POWER & CONTROL SCHEME
BUSCOUPLER OF EMERGENCY MCC CONTROLLED FROM EGP & DCOMIS

JOB NO. CP-14-048
DRG. NO. EP-4-CS-048-011

NO. OF SHEETS: 11
SHEET NO.: 03

DRG. NO. EP-4-CS-048-011



FIRST ANGLE PROJECTION

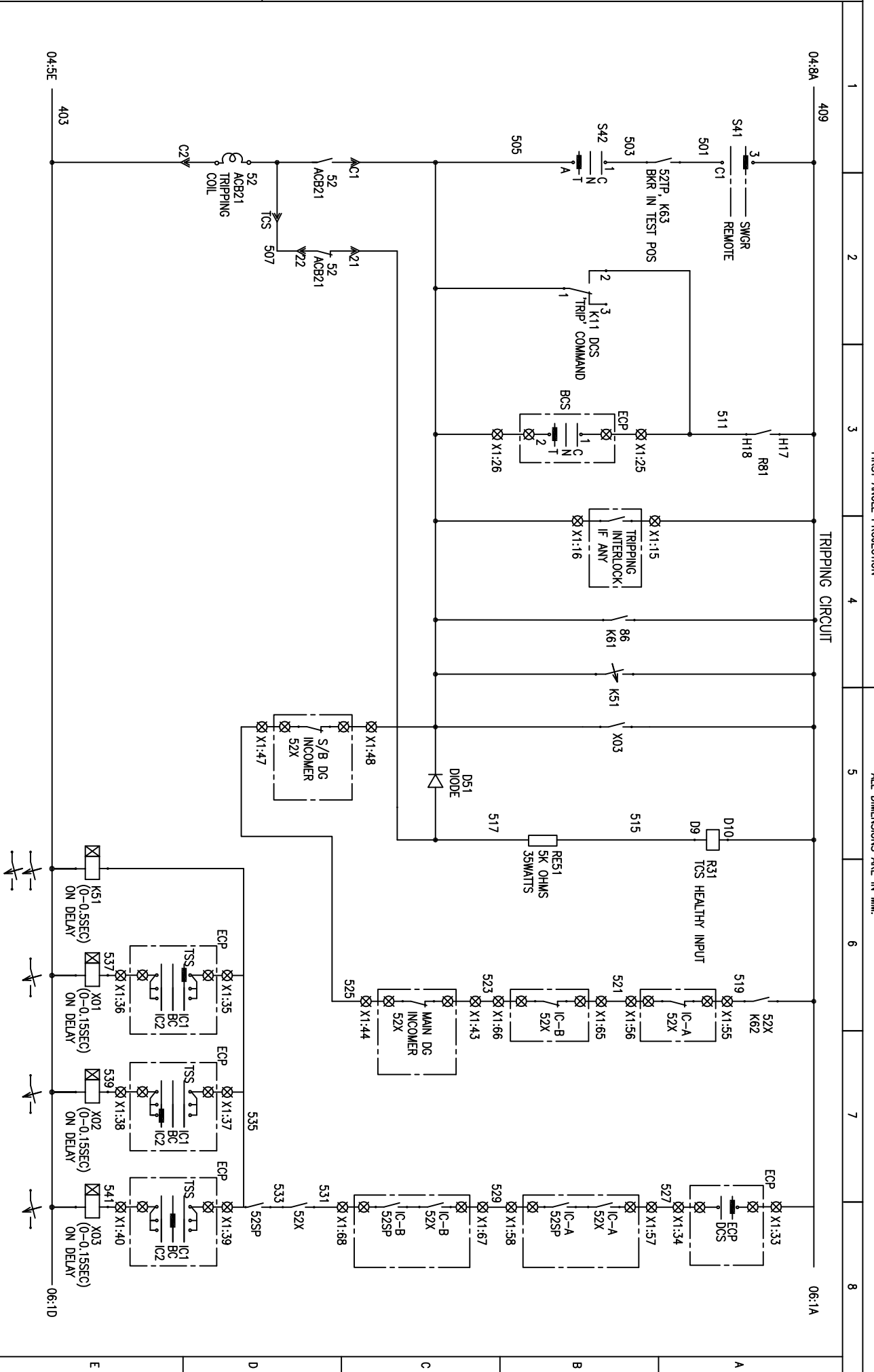
ALL DIMENSIONS ARE IN MM.

INVENTORY NO.	4	NAME		DATE		SCALE	VA	TITLE		NO. OF SHEETS	11
REV. NO.	1	BY		CHECKED	JAGADISH	16.06.16		BUSCOUPLER OF EMERGENCY MCC CONTROLLED FROM ECP & DCOMIS		SHEET	04
DATE		APPD.		APPROVED	KSB	16.06.16		JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-011	REV.	00
DESCRIPTION	BHARAT HEAVY ELECTRICALS LIMITED ELECTROPROTECTIANS DIVISION BANGALORE										

DRG. NO. EP-4-CS-048-011

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.



INVENTORY NO.	4	NAME		SIGN.		DATE		SCALE	NA	JOB NO.	CP-14-048	DRG. NO.	EP-4-CS-048-011	NO. OF SHEETS	11
REV. NO.	1	DESCRIPTION		BY		APPD.		CHECKED	JAGADISH	16.06.16				SHEET	05
DATE															REV.
															00

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPROTECTANS DIVISION BANGALORE

TITLE :
POWER & CONTROL SCHEME

BUSCOUPLER OF EMERGENCY MCC CONTROLLED FROM ECP & DCOMIS



NO. OF SHEETS: 11

SHEET: 05

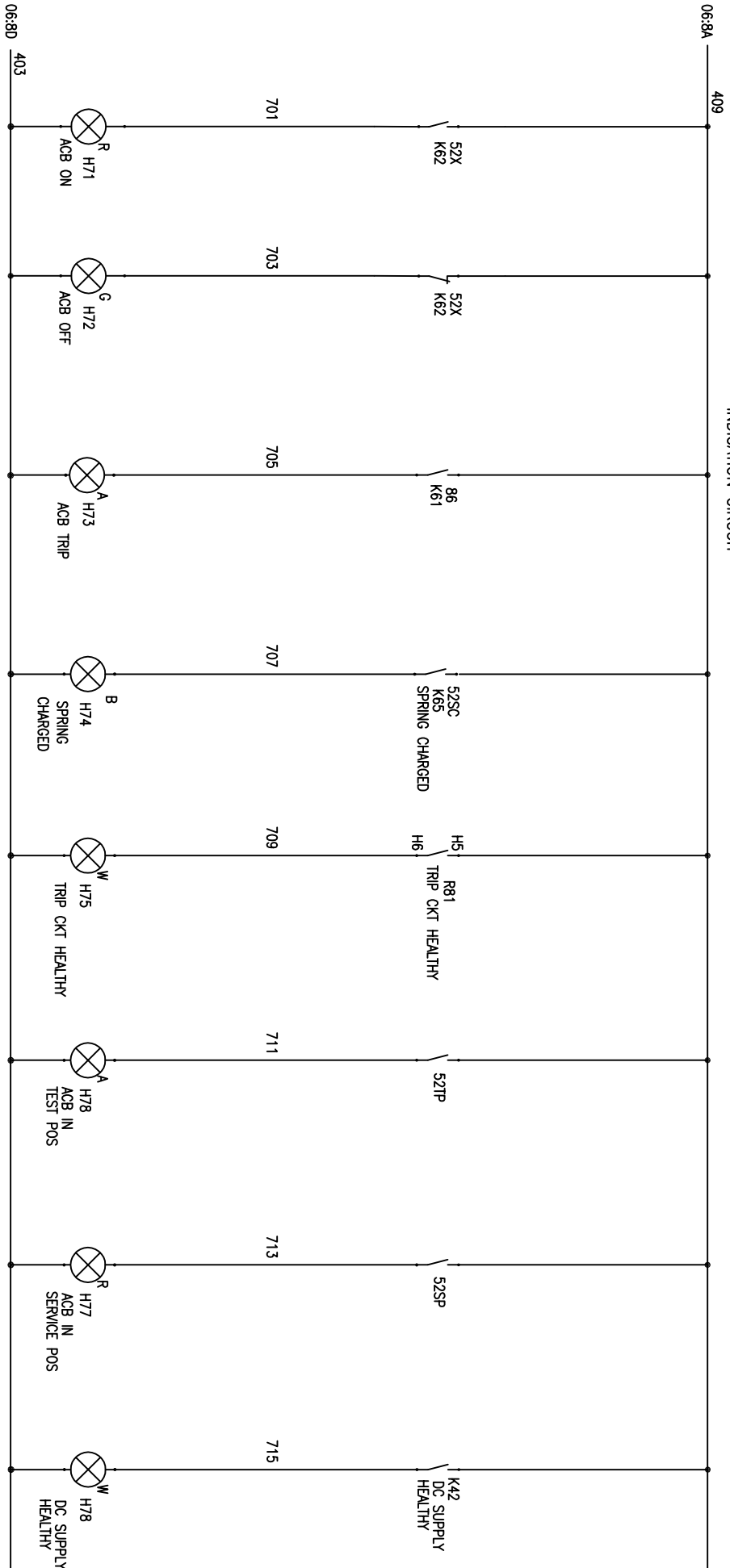
REV: 00

DRG. NO. EP-4-CS-048-011

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

INDICATION CIRCUIT



REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-011	NO. OF SHEETS	SHEET NO.	REV.
1					CHECKED	JAGADISH		16.06.16				11	07	00
2					DRAWN	JAGADISH		16.06.16						
3					DESIGNED	JAGADISH		16.06.16						
4														

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWERCELLS DIVISION BANGALORE



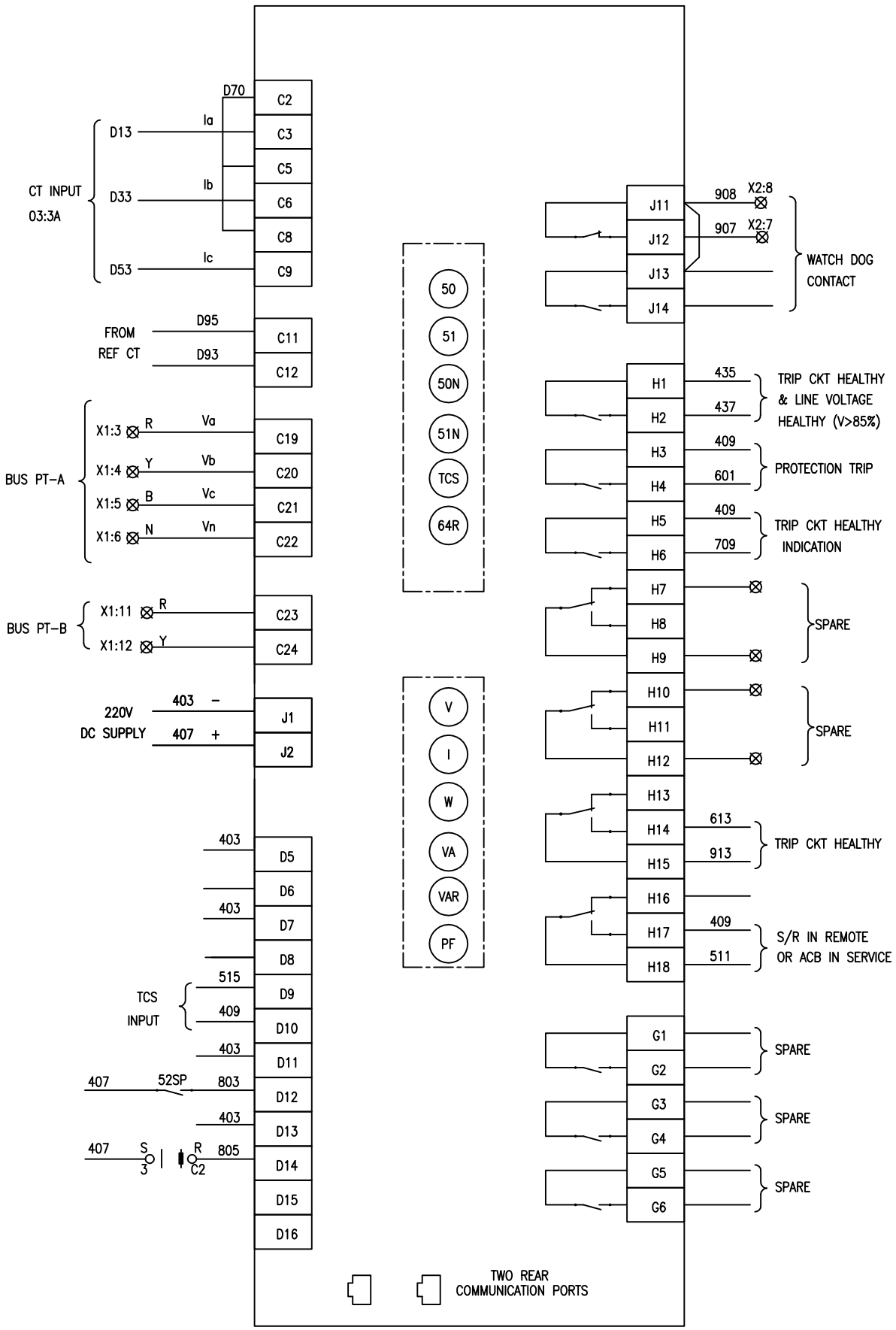
TITLE :
POWER & CONTROL SCHEME
BUSCOUPLER OF EMERGENCY MCC CONTROLLED FROM EGP & DCOMS

INVENTORY NO.

DRG. NO. EP-4-CS-048-011

REV. NO.	1	2	3	4
DATE				
DESCRIPTION				
BY				
APPD.				
APPROVED	CHECKED	DRAWN	DESIGNED	
KSB	JAGADISH	JAGADISH	JAGADISH	
DATE	16.06.16	16.06.16	16.06.16	
SCALE	NA			
JOB NO.	CP-14-048			
DRG. NO.	EP-4-CS-048-011			
NO. OF SHEETS	11			
SHEET NO.	08			
REV.	00			

R81, NUMERICAL RELAY



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FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPROTECTION DIVISION BANGALORE

TITLE :
POWER & CONTROL SCHEME
BUSCOUPLER OF EMERGENCY MCC CONTROLLED FROM ECP & DCOMS

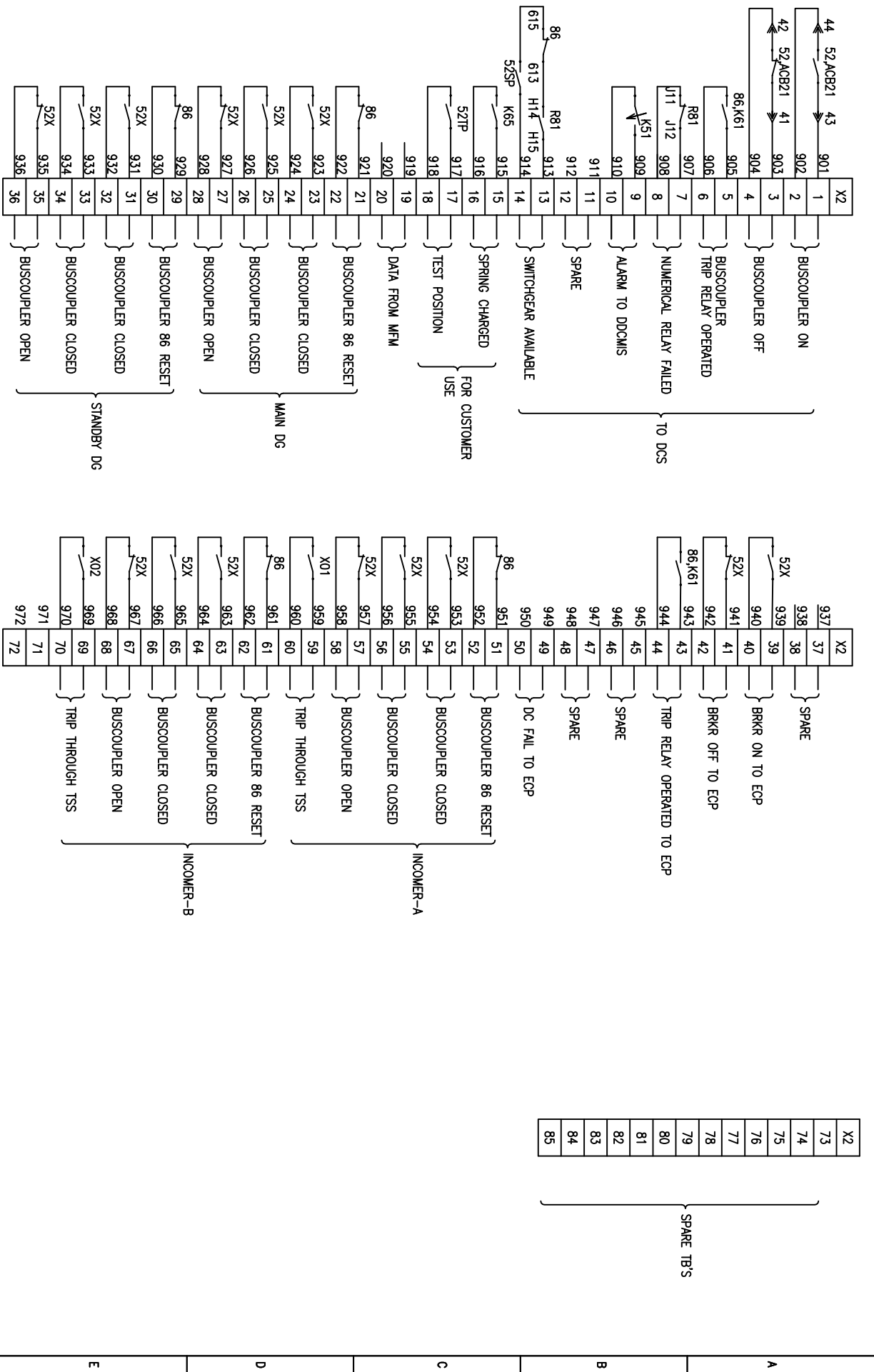


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DRG. NO. EP-4-CS-048-011

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM



REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-011	NO. OF SHEETS	SHEET NO.	REV.
1					CHECKED	JAGADISH		16.06.16				11	09	00
2					DRAWN									
3					DESIGNED	JAGADISH		16.06.16						
4														



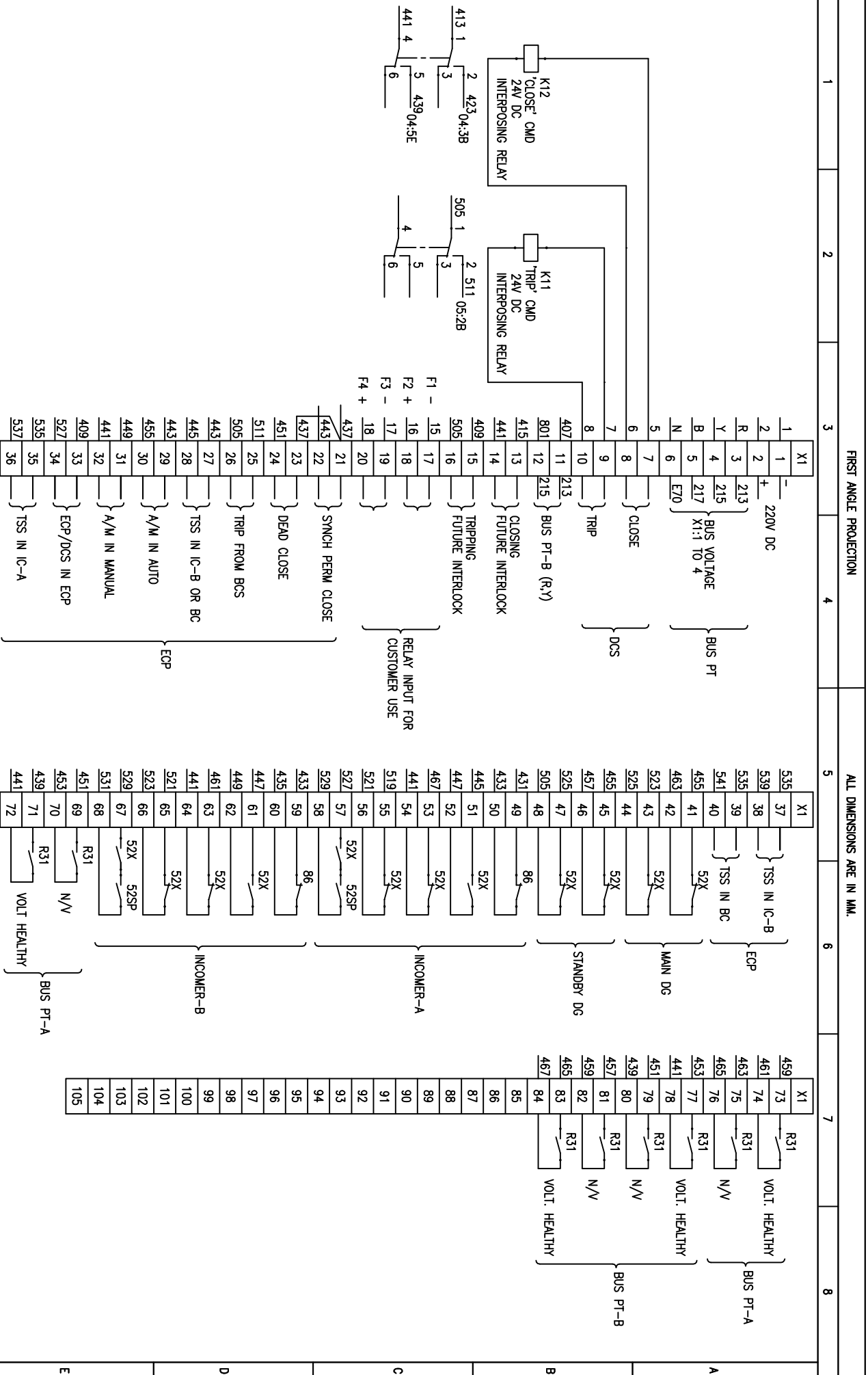
BHARAT HEAVY ELECTRICALS LIMITED
 ELECTROPROTECTIANS DIVISION BANGALORE

TITLE :
POWER & CONTROL SCHEME
 BUSCOUPLER OF EMERGENCY MCC CONTROLLED FROM ECP & DDCMIS



NO. OF SHEETS: 11
 SHEET NO.: 09

DRG. NO. EP-4-CS-048-011



INVENTORY NO.	REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-011	NO. OF SHEETS	NO. OF SHEETS	REV.
4	1						JAGADISH		16.06.16				11	10	00
3	2						JAGADISH		16.06.16						
2	3						JAGADISH		16.06.16						
1	4						JAGADISH		16.06.16						

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPROTECTANS DIVISION BANGALORE

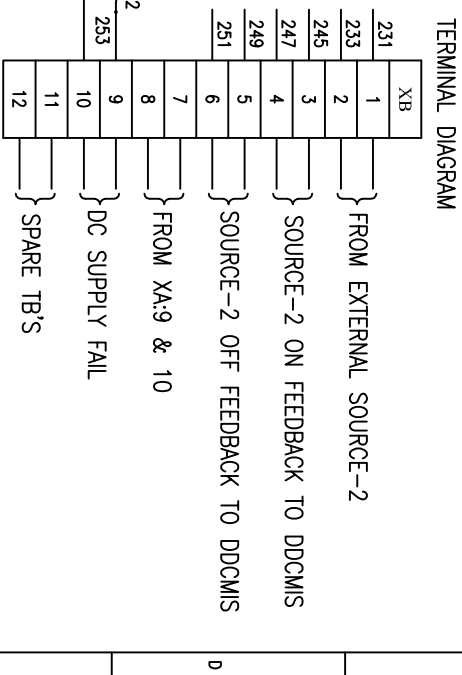
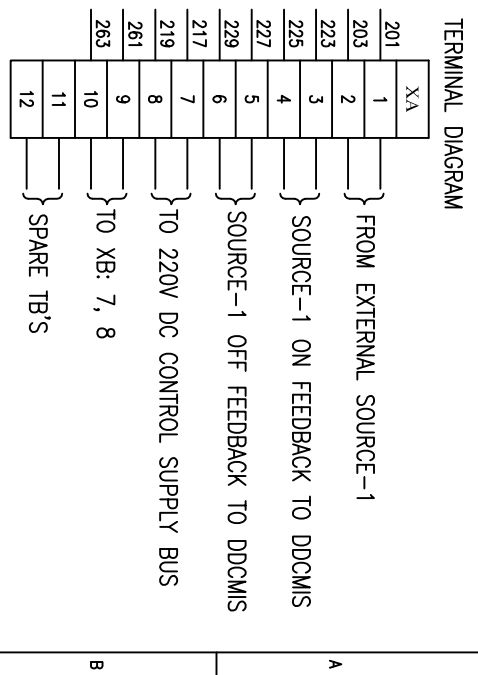
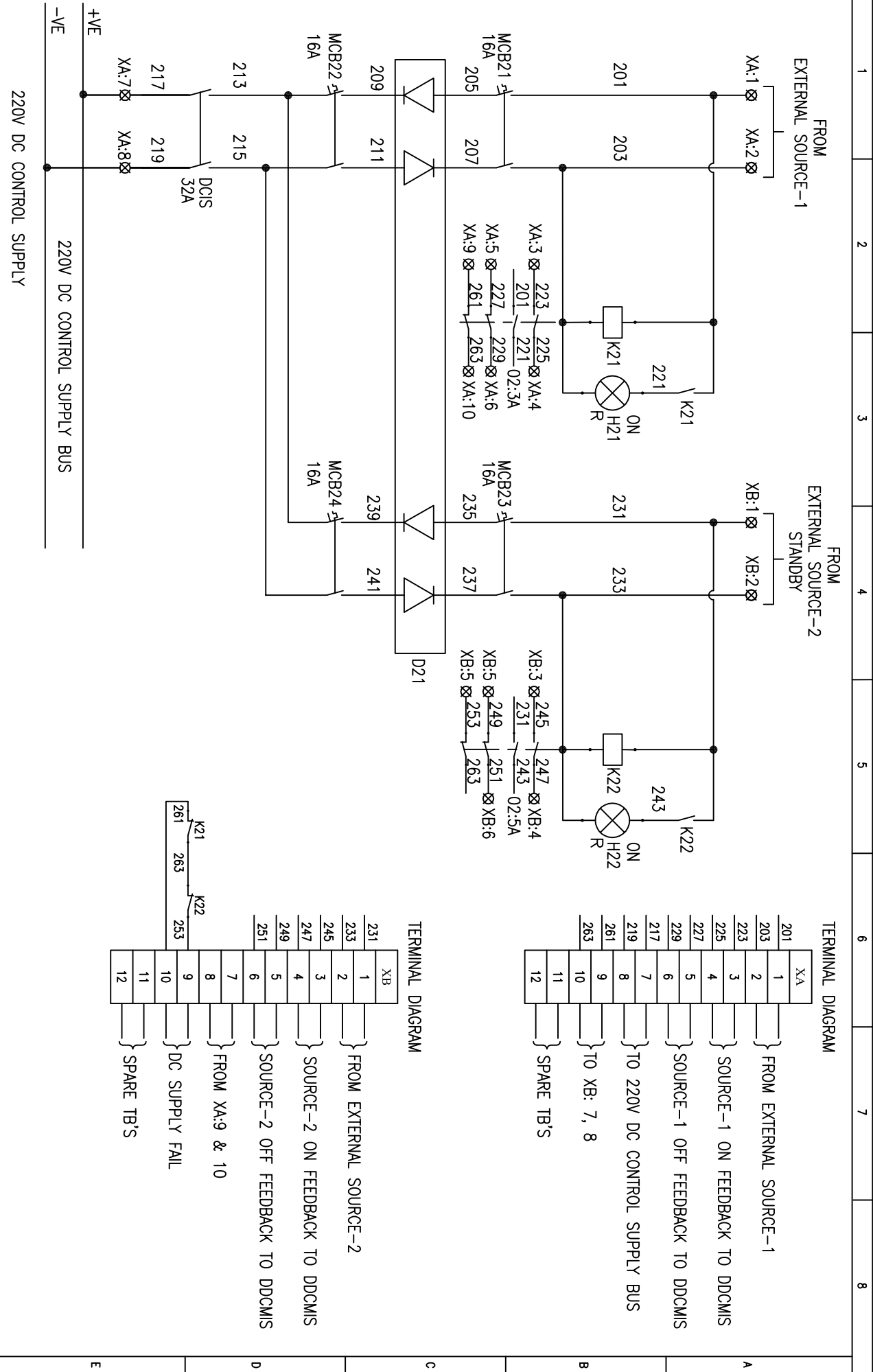


TITLE :
POWER & CONTROL SCHEME
BUSCOUPLER OF EMERGENCY MCC CONTROLLED FROM ECP & DCOMIS



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DRG. NO. EP-4-CS-048-011



INVENTORY NO.		NAME		SIGN.		DATE	
1		JAGADISH		13.04.16			
2		JAGADISH		13.04.16			
3		JAGADISH		13.04.16			
4		JAGADISH		13.04.16			
REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	KSB	SCALE: NA
1							
JOB NO. CP-14-048		TITLE: POWER & CONTROL SCHEME		DRG. NO. EP-4-CS-048-011		NO. OF SHEETS: 11	
		BUSCOUPLER OF EMERGENCY MCC CONTROLLED FROM EGP & DDCMIS				SHEET NO.: 11	
		BHARAT HEAVY ELECTRICALS LIMITED				REV. 00	
		ELECTROPROTECTIANS DIVISION BANGALORE					

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

1

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CUSTOMER:



TELANGANA STATE POWER GENERATION CORPORATION LTD
TELANGANA STATE
INDIA

PROJECT:

1x800 MW KOTHAGUDAM THERMAL POWER STATION
STAGE-VII, UNIT#12
PALONCHA

CUSTOMER CONSULTANT:

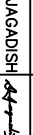
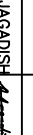
DEVELOPMENT CONSULTANTS PVT LTD
KOLKATA

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DRG. NO. EP-4-CS-048-012

INVENTORY NO.

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-012	NO. OF SHEETS	REV.
4												09	00
3					DESIGNED	JAGADISH		15.06.16				01	
2					DRAWN								
1					CHECKED	JAGADISH		15.06.16					



BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPROTECTANS DIVISION BANGALORE

TITLE :
POWER & CONTROL SCHEME
TIE TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMIS

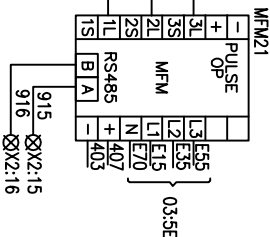
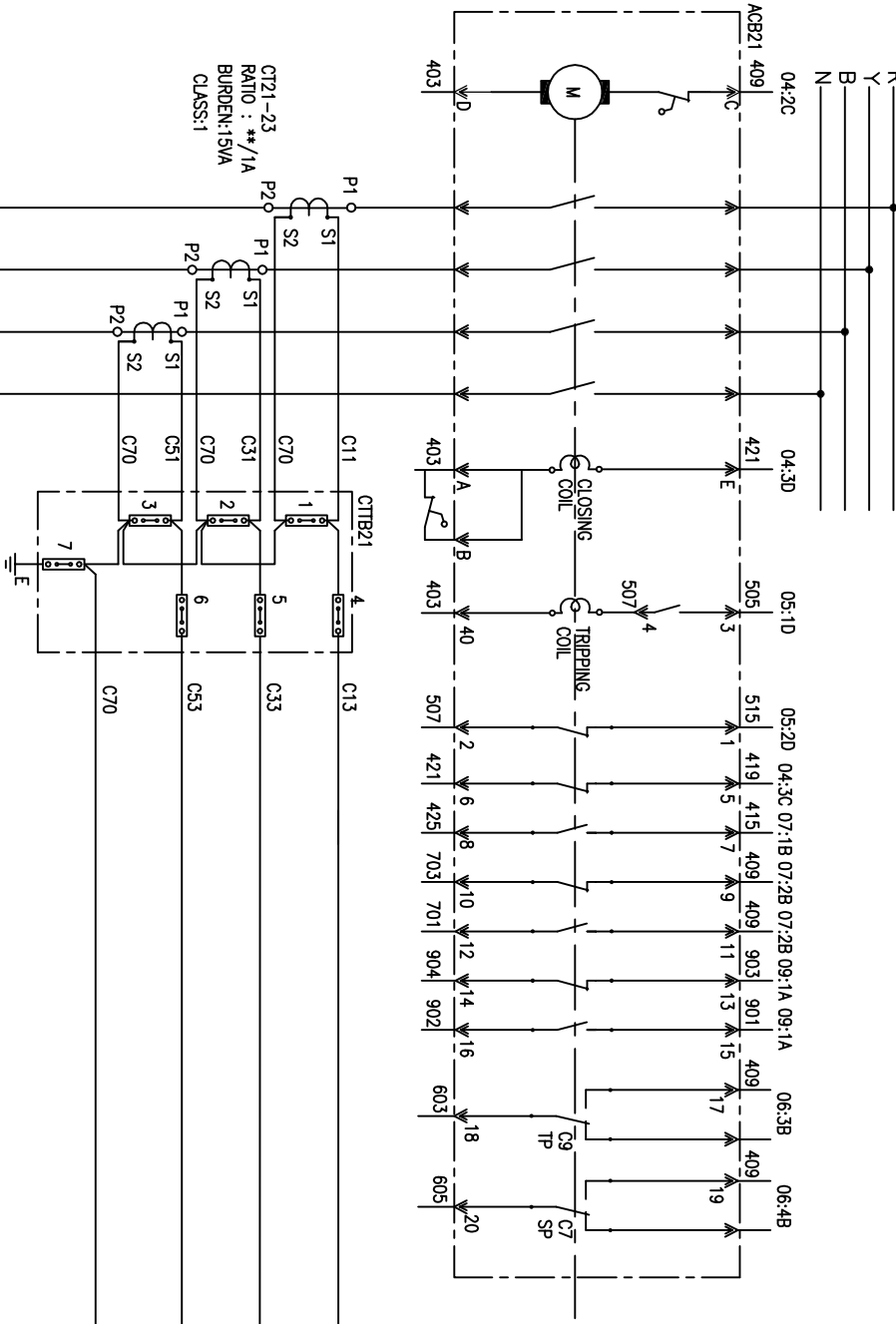


DRG. NO. EP-4-CS-048-012

** - AS PER RATING
OF THE SWITCHBOARD

03:1A

415V, 3PH, 4W, BUS, 50HZ, SOKA FOR 1SEC.



FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE
1						JAGADISH		15.06.16
2						JAGADISH		15.06.16
3						JAGADISH		15.06.16
4						JAGADISH		15.06.16

FORM 66-271 A3

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWERCELLS DIVISION BANGALORE

TITLE :
POWER & CONTROL SCHEME
TIE TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMS

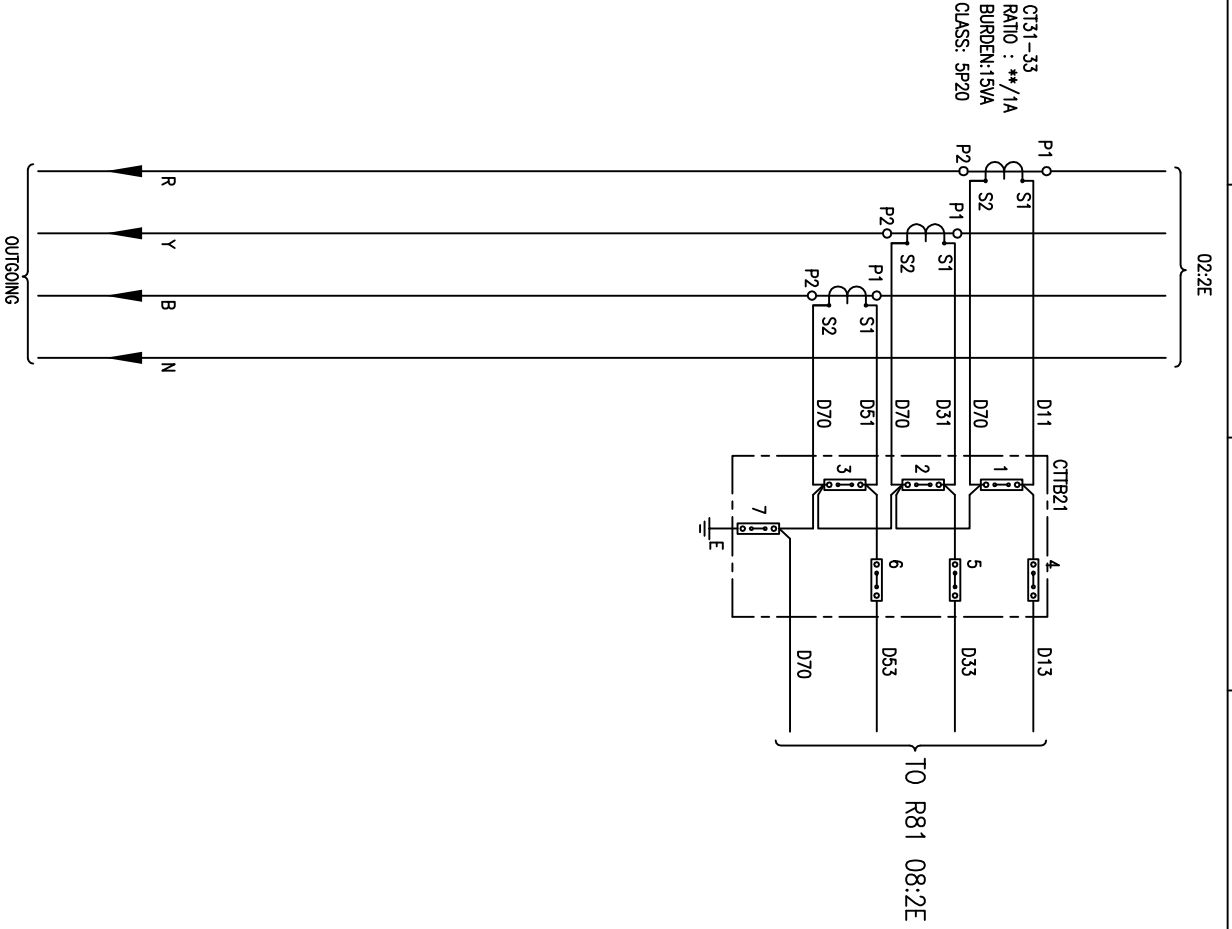
JOB NO. CP-14-048
DRG. NO. EP-4-CS-048-012

NO. OF SHEETS: 09
SHEET NO.: 02



REV. NO. 00

DRG. NO. EP-4-CS-048-012



FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-012	NO. OF SHEETS	SHEET NO.	REV.
1					CHECKED	JAGADISH		15.06.16				09	03	00
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3					DESIGNED	JAGADISH		15.06.16						
4														



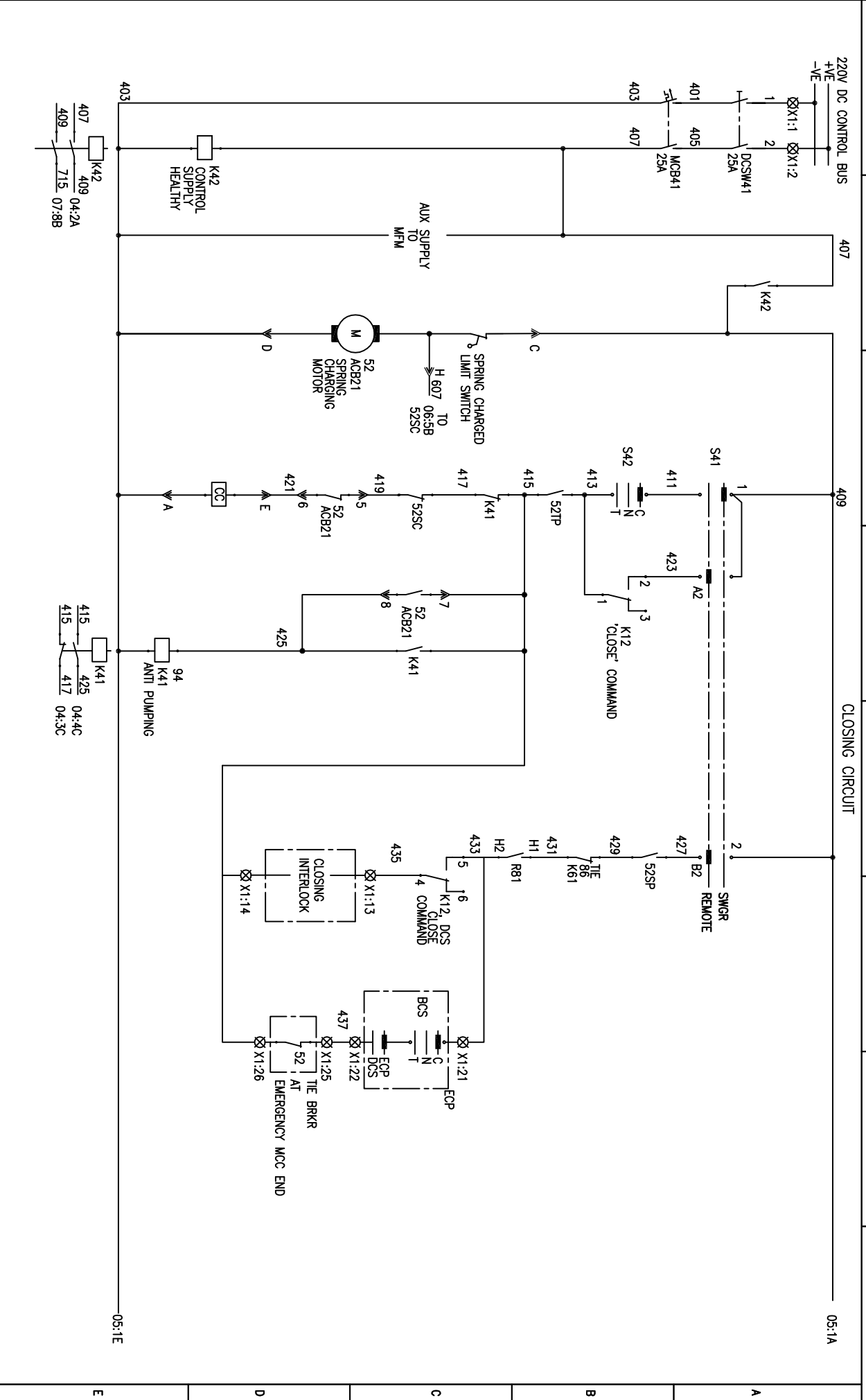
BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWERELANS DIVISION BANGALORE

TITLE :
POWER & CONTROL SCHEME
TIE TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMS



DRG. NO. EP-4-CS-048-012

FORM 66-271 A3



FIRST ANGLE PROJECTION
ALL DIMENSIONS ARE IN MM
05:1A

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	KSB	SCALE	JOB NO.	DRG. NO.	NO. OF SHEETS	SHEET NO.	REV.
1					CHECKED	JAGADISH	15.06.16	CP-14-048	EP-4-CS-048-012	09	04	00
2					DRAWN							
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4												

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPROTECTIANS DIVISION BANGALORE

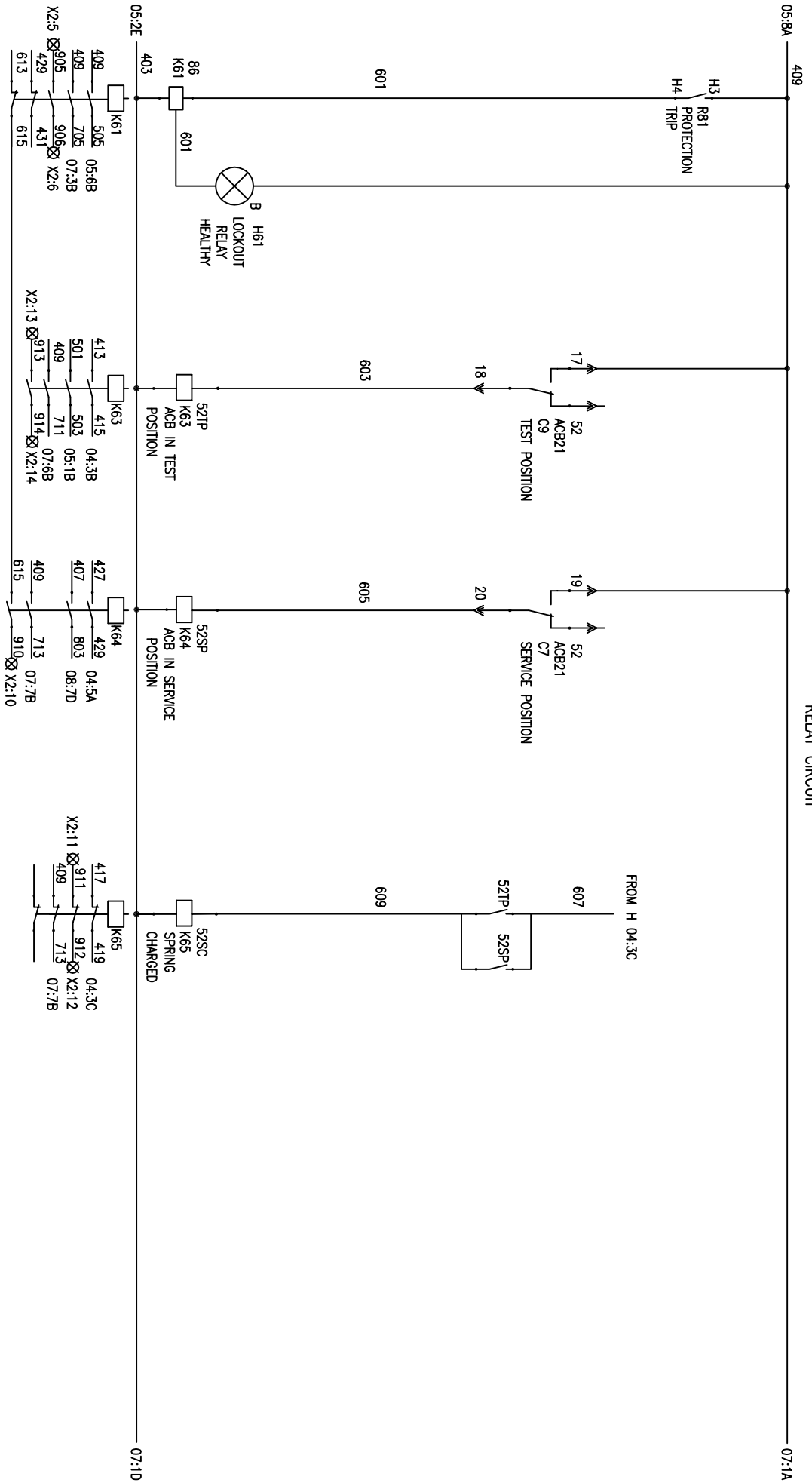
TITLE :
POWER & CONTROL SCHEME
TIE TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMS

NO. OF SHEETS: 09
SHEET: 04
REV: 00

DRG. NO. EP-4-CS-048-012

FIRST ANGLE PROJECTION
RELAY CIRCUIT

ALL DIMENSIONS ARE IN MM



REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE	JOB NO.	DRG. NO.	NO. OF SHEETS	NO. OF SHEETS	REV.
1					CHECKED	JAGADISH	<i>[Signature]</i>	15.06.16	NA	CP-14-048	EP-4-CS-048-012	09	06	00
2					DRAWN	JAGADISH	<i>[Signature]</i>	15.06.16						
3					DESIGNED	JAGADISH	<i>[Signature]</i>	15.06.16						
4														



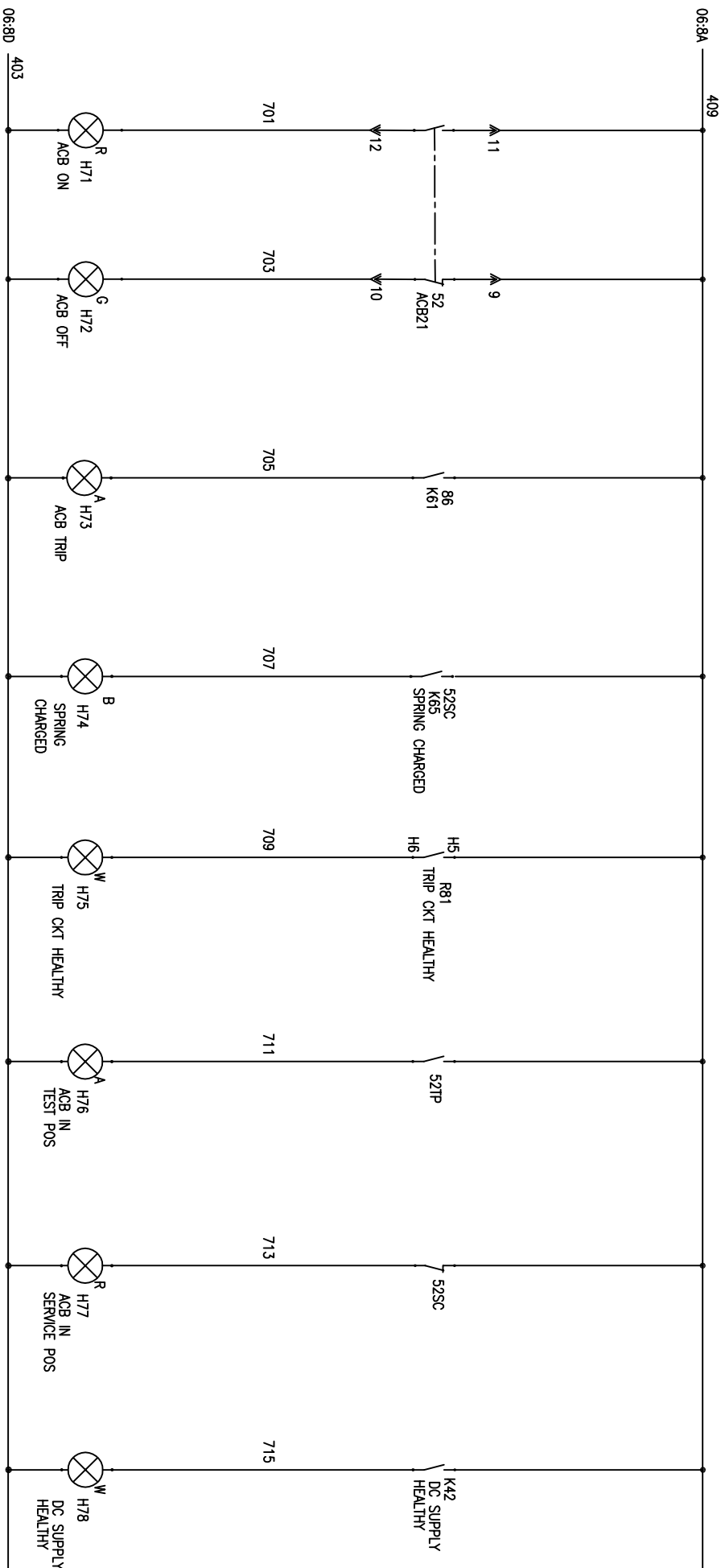
BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWER DIVISION BANGALORE

TITLE :
POWER & CONTROL SCHEME
TIE TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMS

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

INDICATION CIRCUIT



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DRG. NO. EP-4-CS-048-012

INVENTORY NO.


REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-012	NO. OF SHEETS	SHEET NO.	REV.
1					CHECKED	JAGADISH		15.06.16				09	07	00
2					DRAWN									
3					DESIGNED	JAGADISH		15.06.16						
4														

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWERCELLS DIVISION BANGALORE

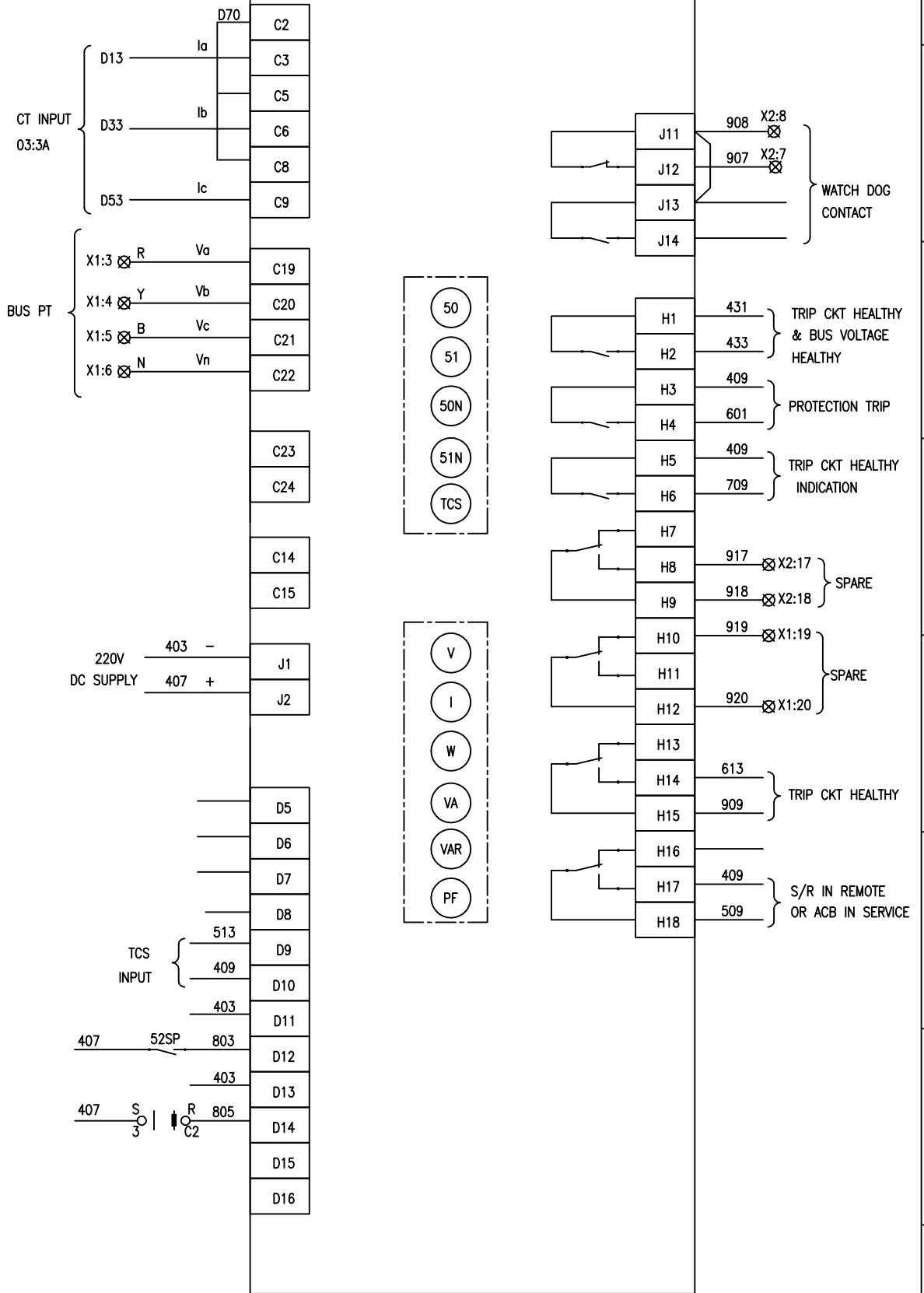
TITLE :
POWER & CONTROL SCHEME
TIE TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMS



INVENTORY NO. DRG. NO. EP-4-CS-048-012

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE	TITLE	JOB NO.	DRG. NO.	NO. OF SHEETS	NO. OF SHEETS	REV.	
1					CHECKED	JAGADISH		15.06.16	MA	 <p>BHARAT HEAVY ELECTRICALS LIMITED ELECTROPROTECTION DIVISION BANGALORE</p>	CP-14-048	EP-4-CS-048-012	09	08	00	
2					DRAWN	JAGADISH		15.06.16			POWER & CONTROL SCHEME					
3					DESIGNED	JAGADISH		15.06.16			TIE TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMS					
4																

R81, NUMERICAL RELAY



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FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

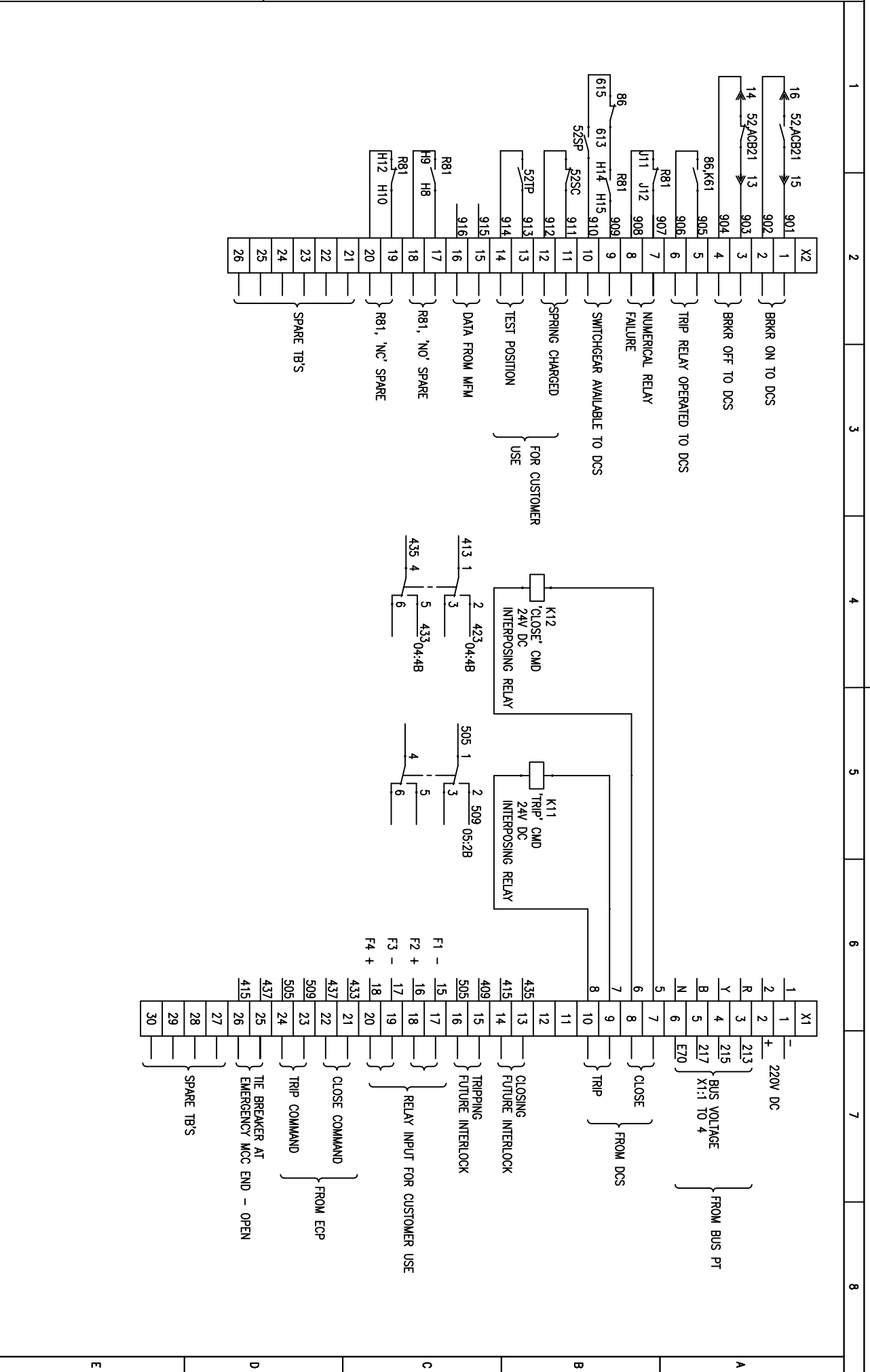
E D C B A

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DRG. NO. EP-4-CS-048-012

INVENTORY NO.

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-012	NO. OF SHEETS	NO. OF SHEETS	REV.
1					CHECKED	JAGADISH		15.06.16				09	09	00
2					DRAWN	JAGADISH		15.06.16						
3					DESIGNED	JAGADISH		15.06.16						
4														



FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

BHARAT HEAVY ELECTRICALS LIMITED
ELECTRONORCELEANS DIVISION BANGALORE

TITLE :
POWER & CONTROL SCHEME
TIE TO EMERGENCY MCC CONTROLLED FROM ECP & DDCMS



NO. OF SHEETS: 09
SHEET: 09

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

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CUSTOMER:



TELANGANA STATE POWER GENERATION CORPORATION LTD
TELANGANA STATE
INDIA

PROJECT:

1x800 MW KOTHAGUDAM THERMAL POWER STATION
STAGE-VII, UNIT#12
PALONCHA

CUSTOMER CONSULTANT:

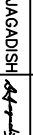
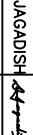
DEVELOPMENT CONSULTANTS PVT LTD
KOLKATA

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DRG. NO. EP-4-CS-048-013

INVENTORY NO.

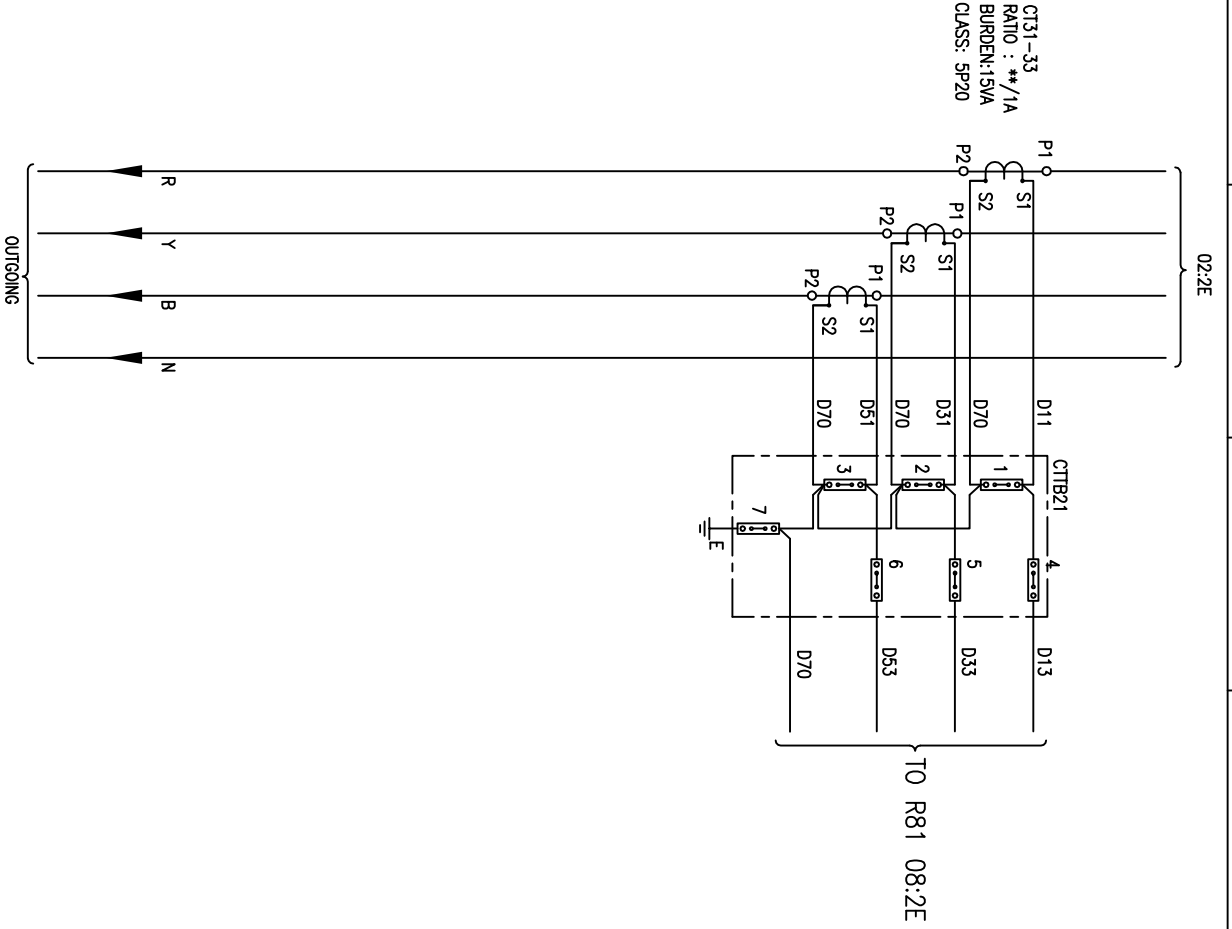
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4												09	00
3					DESIGNED	JAGADISH		13.04.16				09	
2					DRAWN								
1					CHECKED	JAGADISH		13.04.16				01	

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROFORCELANS DIVISION BANGALORE

TITLE :
POWER & CONTROL SCHEME
OUTGOING ACB FEEDER FROM PMCC/PCC CONTROLLED FROM DDCMS ONLY



DRG. NO. EP-4-CS-048-013



FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-013	NO. OF SHEETS	NO. OF SHEETS	REV.
4												09	09	00
3						JAGADISH		13.04.16				03	03	00
2						JAGADISH		13.04.16				03	03	00
1						JAGADISH		13.04.16				03	03	00

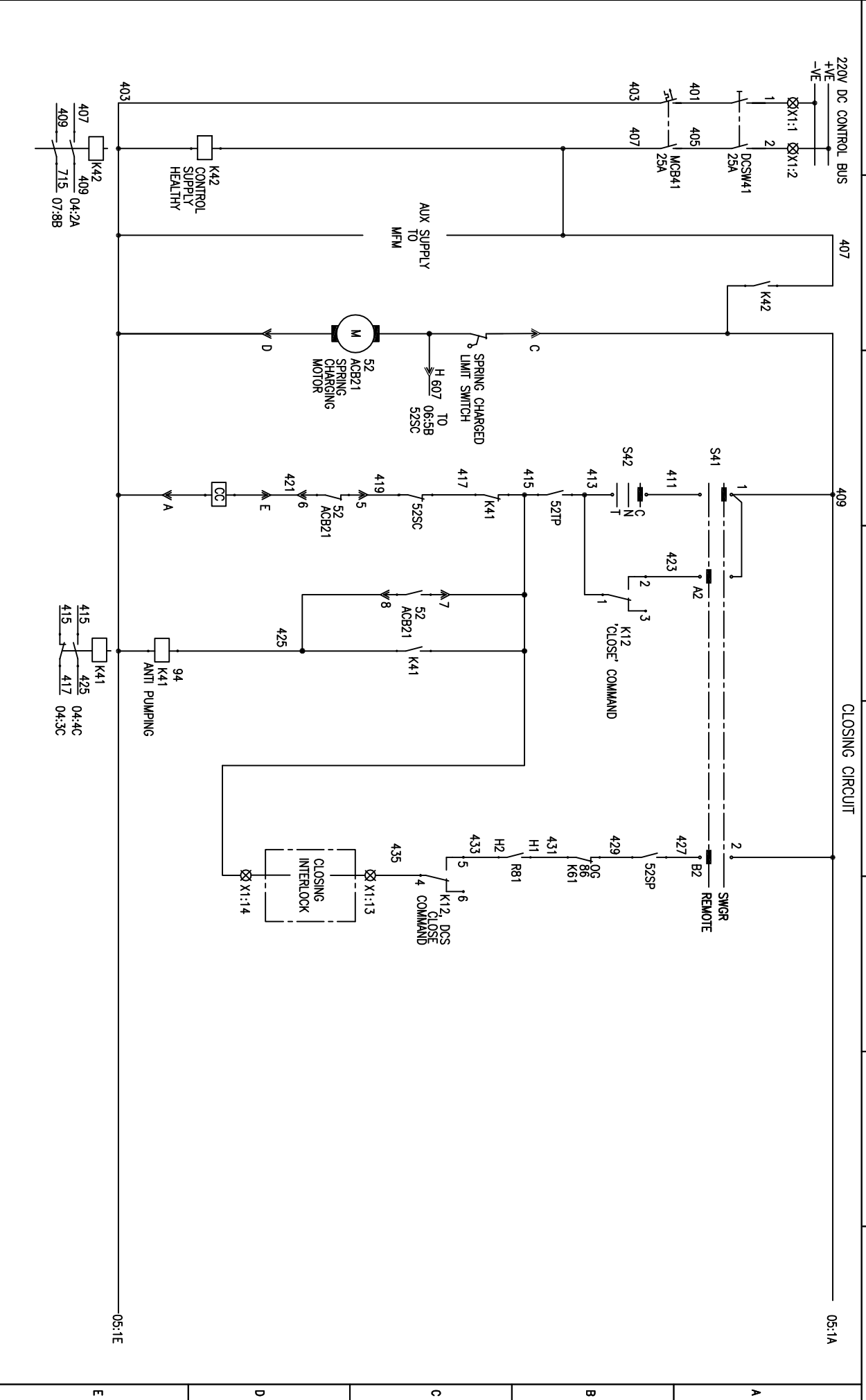


BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWERCELLS DIVISION BANGALORE

TITLE :
POWER & CONTROL SCHEME
OUTGOING ACB FEEDER FROM PMCC/PCC CONTROLLED FROM DDCMS ONLY

DRG. NO. EP-4-CS-048-013

FORM 66-271 A3



FIRST ANGLE PROJECTION
ALL DIMENSIONS ARE IN MM.
CLOSING CIRCUIT
05:1A

INVENTORY NO.	REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE	JOB NO.	DRG. NO.	NO. OF SHEETS	NO. OF SHEETS	REV.
4											CP-14-048	EP-4-CS-048-013	09	04	00
3							JAGADISH		13.04.16						
2							JAGADISH		13.04.16						
1							JAGADISH		13.04.16						

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWERCELLS DIVISION BANGALORE






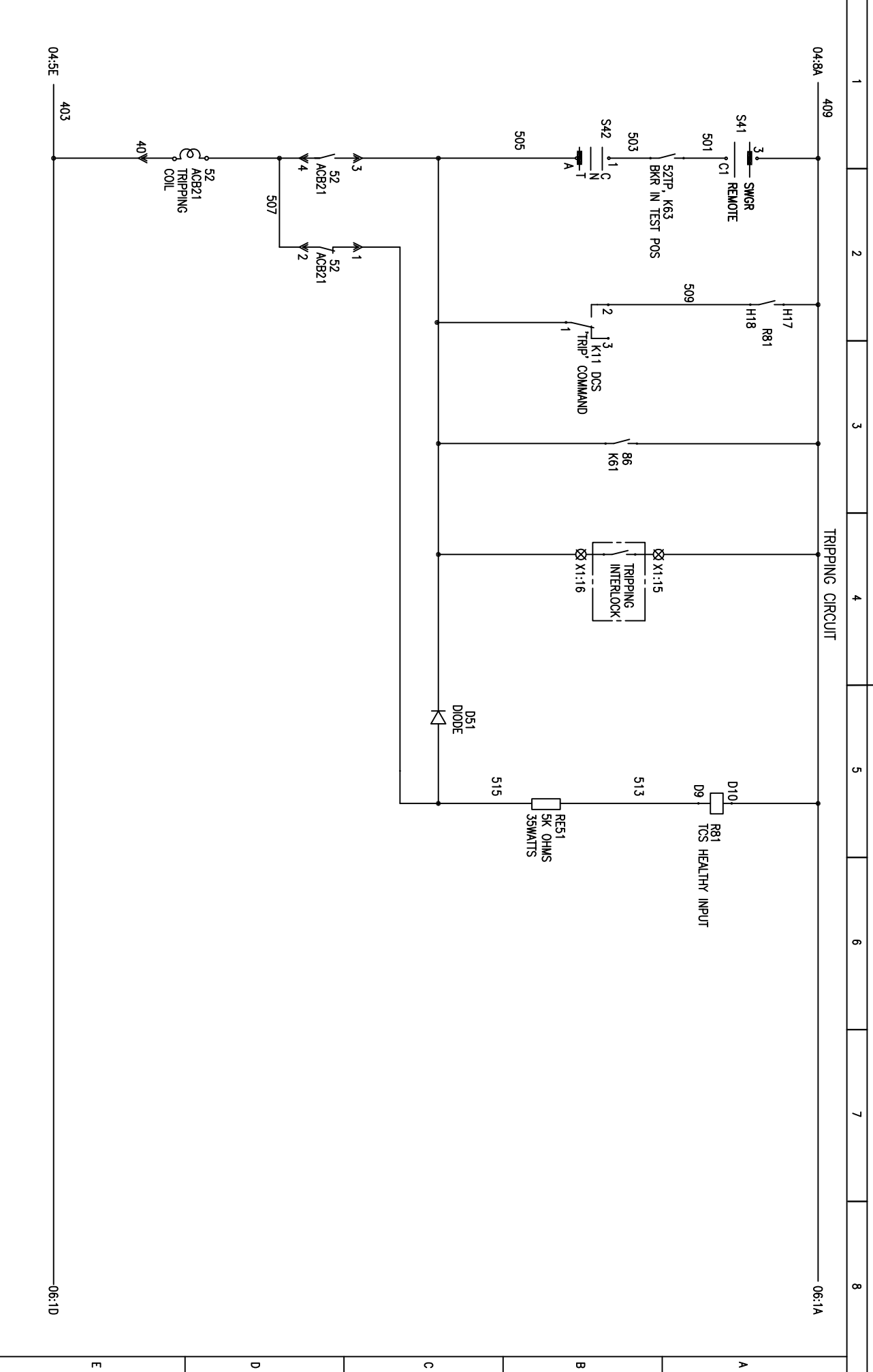
TITLE :
POWER & CONTROL SCHEME
OUTGOING ACB FEEDER FROM PMCC/PCC CONTROLLED FROM DDCMS ONLY

05:1E

DRG. NO. EP-4-CS-048-013

INVENTORY NO.

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-013	NO. OF SHEETS	NO. OF SHEETS	REV.
1					CHECKED	JAGADISH		13.04.16				09	05	00
2					DRAWN	JAGADISH		13.04.16						
3					DESIGNED	JAGADISH		13.04.16						
4														



FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

04:8A 409 04:5E 403 06:1A 06:1D

TRIPPING CIRCUIT

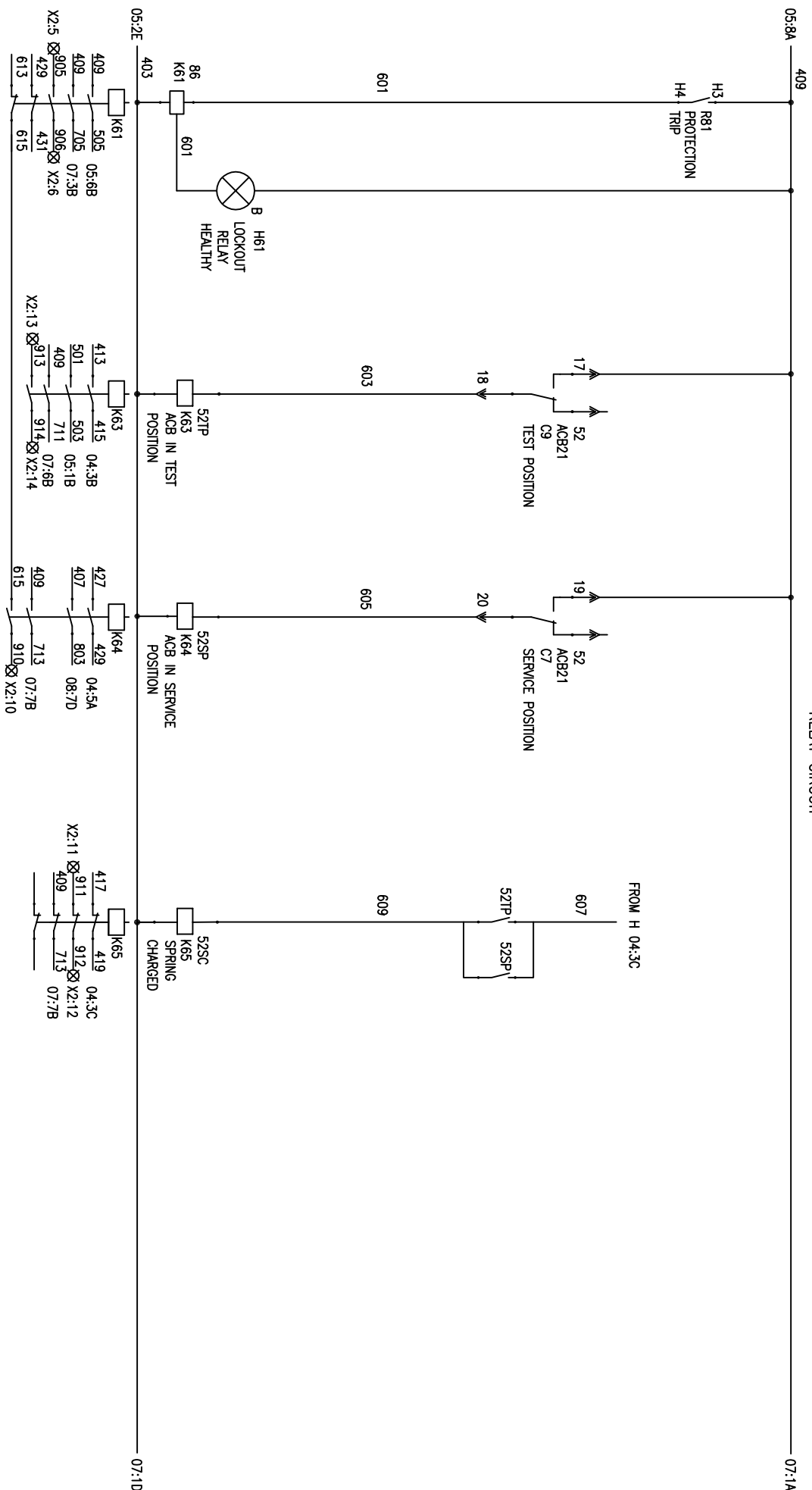
E D C B A

DRG. NO. EP-4-CS-048-013

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM

RELAY CIRCUIT



INVENTORY NO.	REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE	JOB NO.	DRG. NO.	NO. OF SHEETS	NO. OF SHEETS	REV.
4											CP-14-048	EP-4-CS-048-013	09	06	00
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1							JAGADISH		13.04.16						



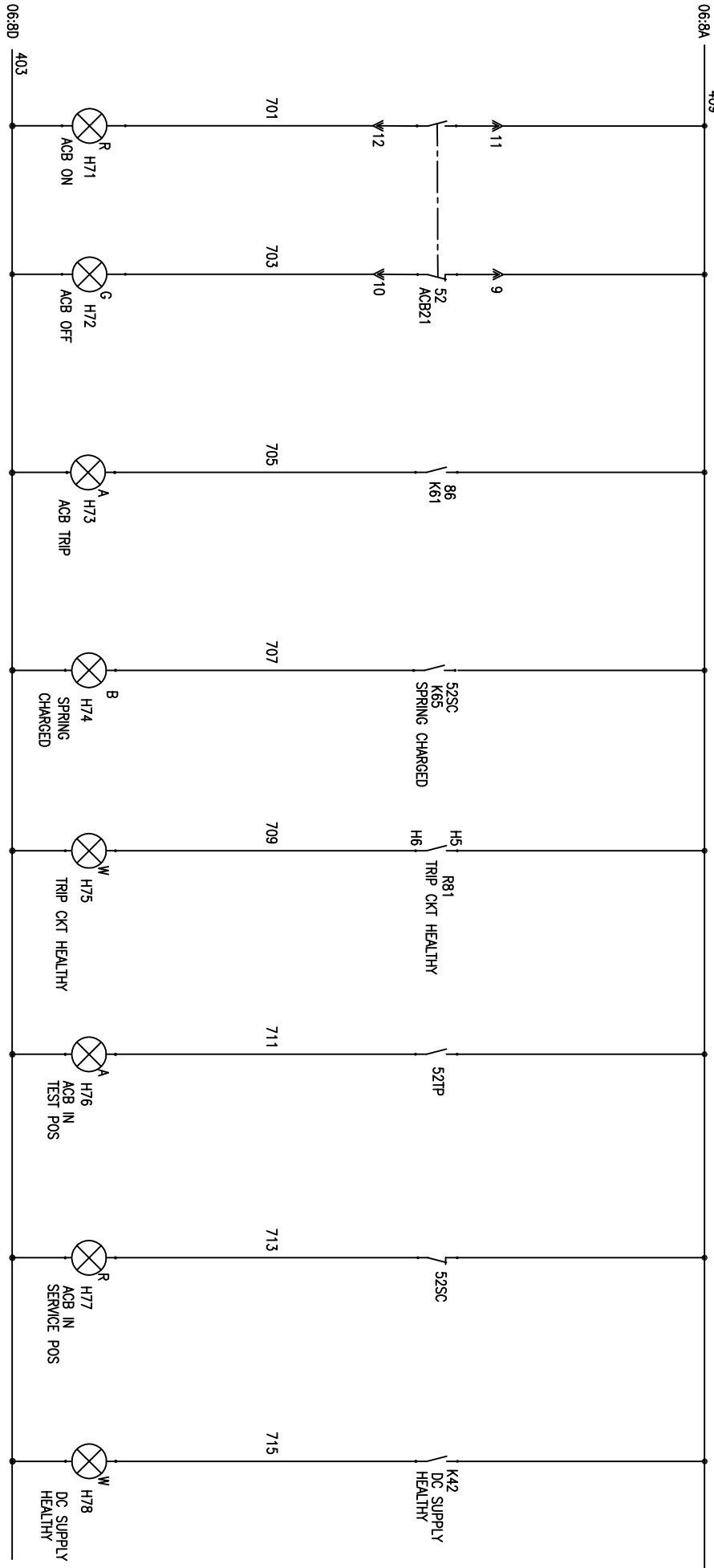
BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWER DIVISION BANGALORE

TITLE :
POWER & CONTROL SCHEME
OUTGOING ACB FEEDER FROM PMCC/PCC CONTROLLED FROM DDCMS ONLY

NO. OF SHEETS : 09
SHEET NO. : 06

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

INDICATION CIRCUIT



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DRG. NO. EP-4-CS-048-013

INVENTORY NO.		NAME		SIGN.		DATE		SCALE: NA		JOB NO. CP-14-048		DRG. NO. EP-4-CS-048-013		NO. OF SHEETS: 09	
4															
3		DESIGNED	JAGADISH			13.04.16									
2		DRAWN													
1		CHECKED	JAGADISH			13.04.16									
REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	KSB									REV. NO.
															07
															00


BHARAT HEAVY ELECTRICALS LIMITED
 ELECTROPOWERCELLS DIVISION BANGALORE



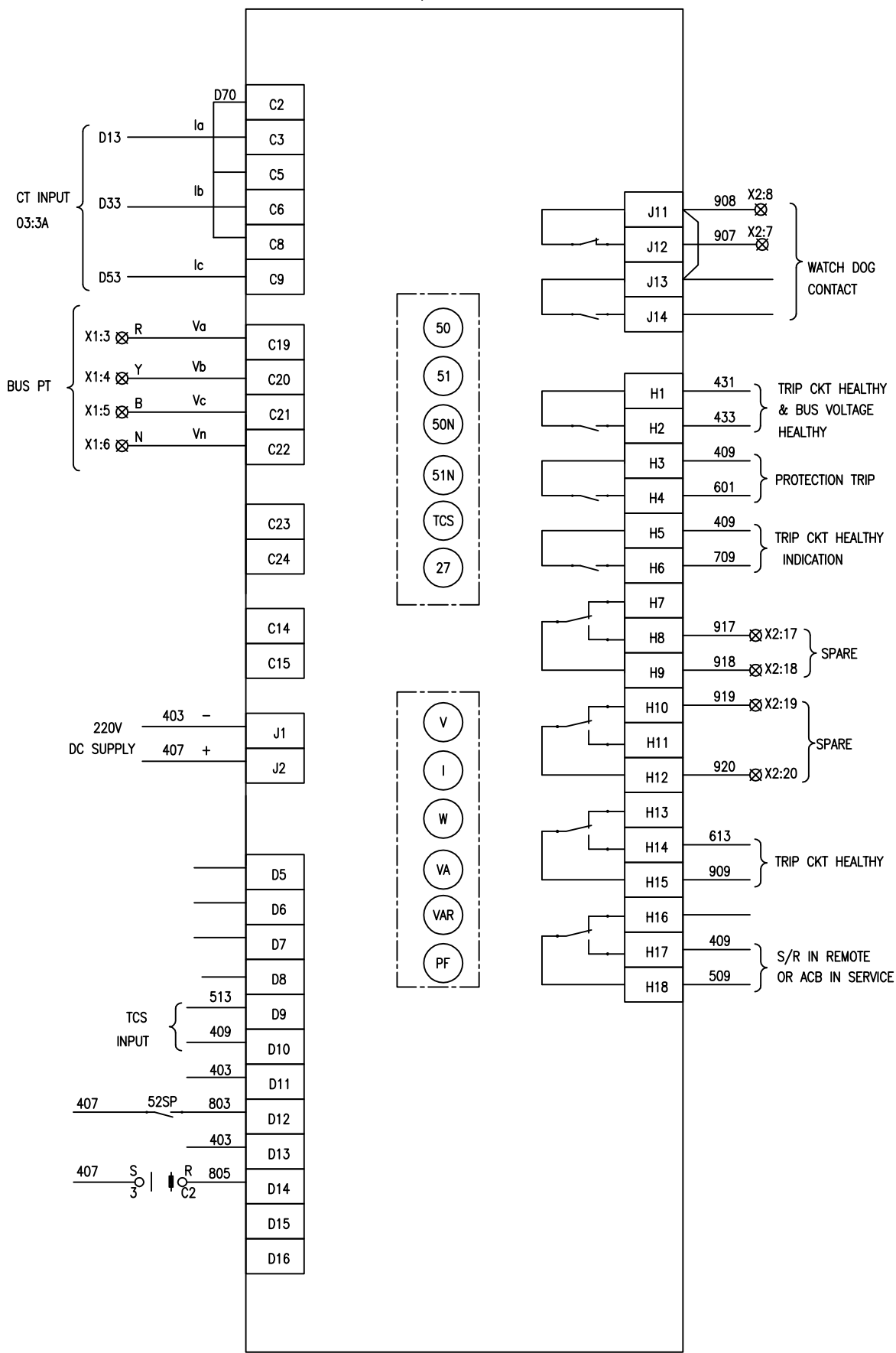
TITLE :
 POWER & CONTROL SCHEME
 OUTGOING ACB FEEDER FROM PMCC/PCC CONTROLLED FROM DDCMS ONLY



INVENTORY NO. DRG. NO. EP-4-CS-048-013

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE	TITLE	JOB NO.	DRG. NO.	NO. OF SHEETS	SHEET NO.	REV.
1					CHECKED	JAGADISH		13.04.16	MA	 <p>BHARAT HEAVY ELECTRICALS LIMITED ELECTROPROTECTION DIVISION BANGALORE</p>	CP-14-048	EP-4-CS-048-013	09	08	00
2				DRAWN	JAGADISH		13.04.16								
3				DESIGNED	JAGADISH		13.04.16								
4															

R81, NUMERICAL RELAY

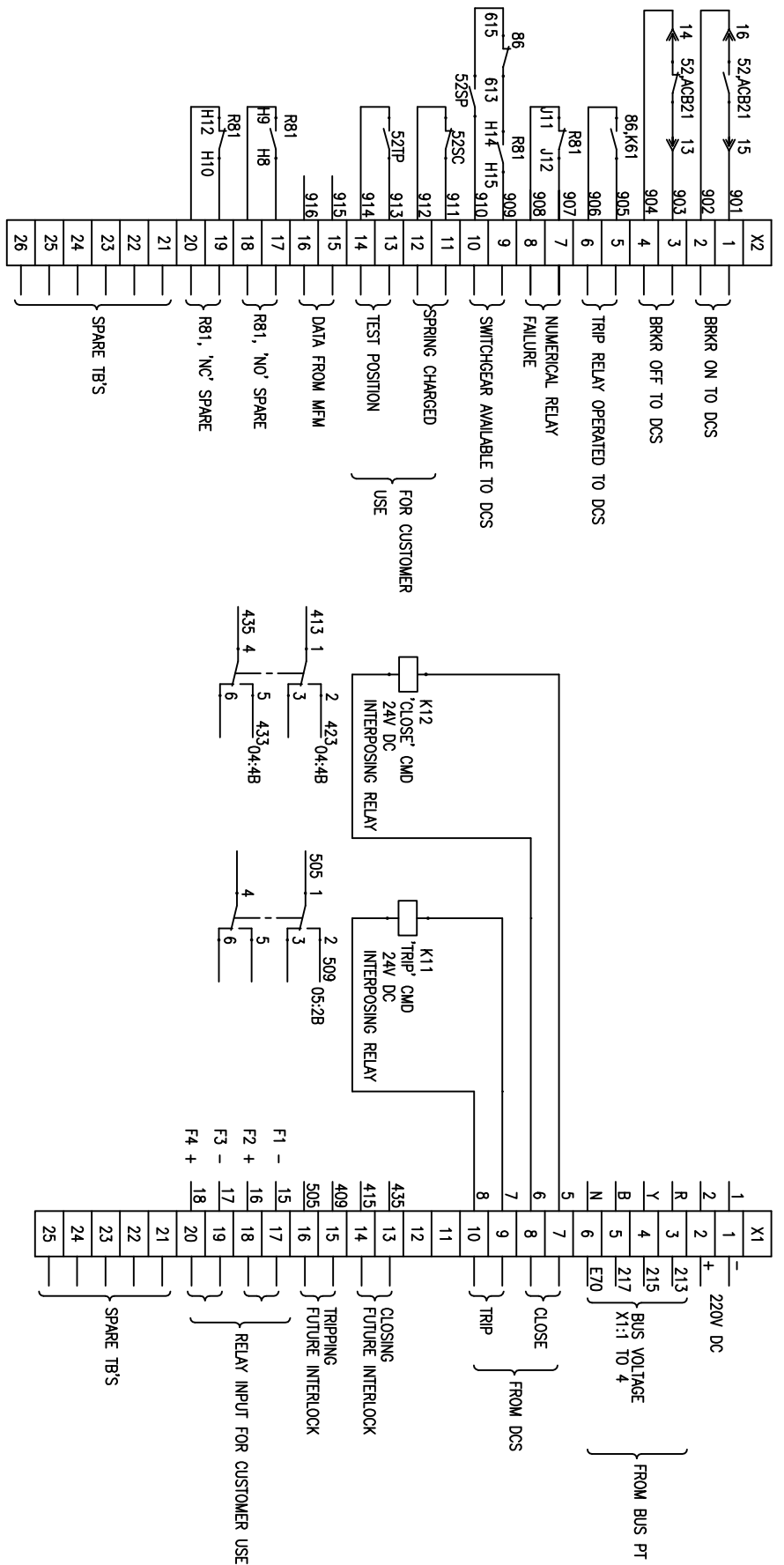


E D C B A

DRG. NO. EP-4-CS-048-013

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.



INVENTORY NO.	4	3	2	1	REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-013	NO. OF SHEETS	NO. OF SHEETS	REV.
											JAGADISH	[Signature]	13.04.16				09	09	00
<p style="text-align: center;">BHARAT HEAVY ELECTRICALS LIMITED ELECTRONORCELEANS DIVISION BANGALORE</p> <p style="text-align: center;">POWER & CONTROL SCHEME</p> <p style="text-align: center;">TITLE : OUTGOING ACB FEEDER FROM PMCC/PCC CONTROLLED FROM DDCMS ONLY</p>																			

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

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CUSTOMER:



TELANGANA STATE POWER GENERATION CORPORATION LTD
TELANGANA STATE
INDIA

PROJECT:

1x800 MW KOTHAGUDAM THERMAL POWER STATION
STAGE-VII, UNIT#12
PALONCHA

CUSTOMER CONSULTANT:

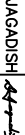

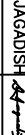
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KOLKATA

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DRG. NO. EP-4-CS-048-014

INVENTORY NO.

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-014	NO. OF SHEETS	REV.
4												09	00
3					DESIGNED	JAGADISH		09.07.16				09	
2					DRAWN							01	
1					CHECKED	JAGADISH		09.07.16				01	

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROFORCELANS DIVISION BANGALORE

TITLE :
POWER & CONTROL SCHEME
BREAKER OPERATED LT MOTOR FEEDERS CONTROLLED FROM DDCMS ONLY

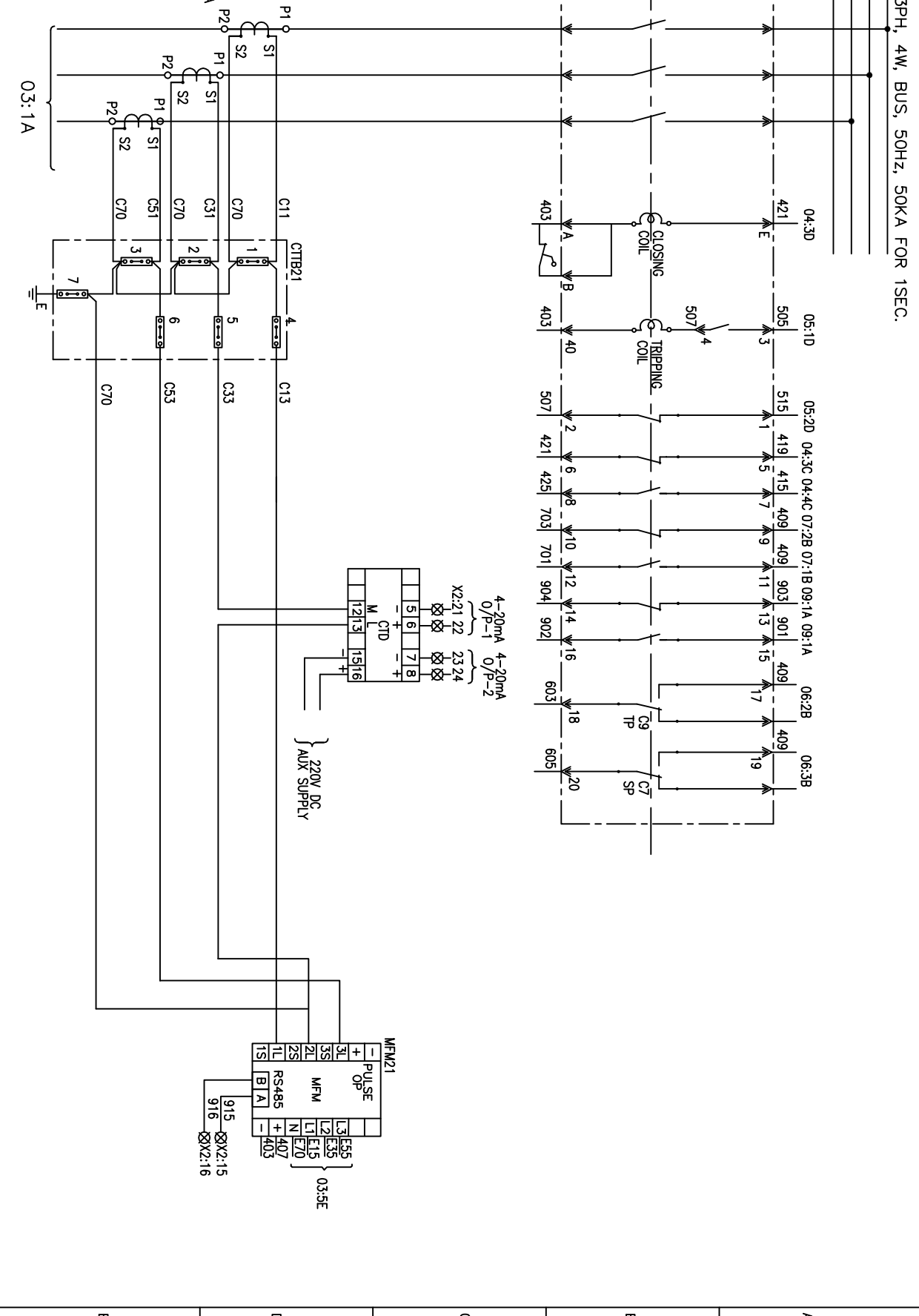


NO. OF SHEETS

SHEET NO.

DRG. NO. EP-4-CS-048-014

** - AS PER RATING
OF THE SWITCHBOARD



1 2 3 4 5 6 7 8

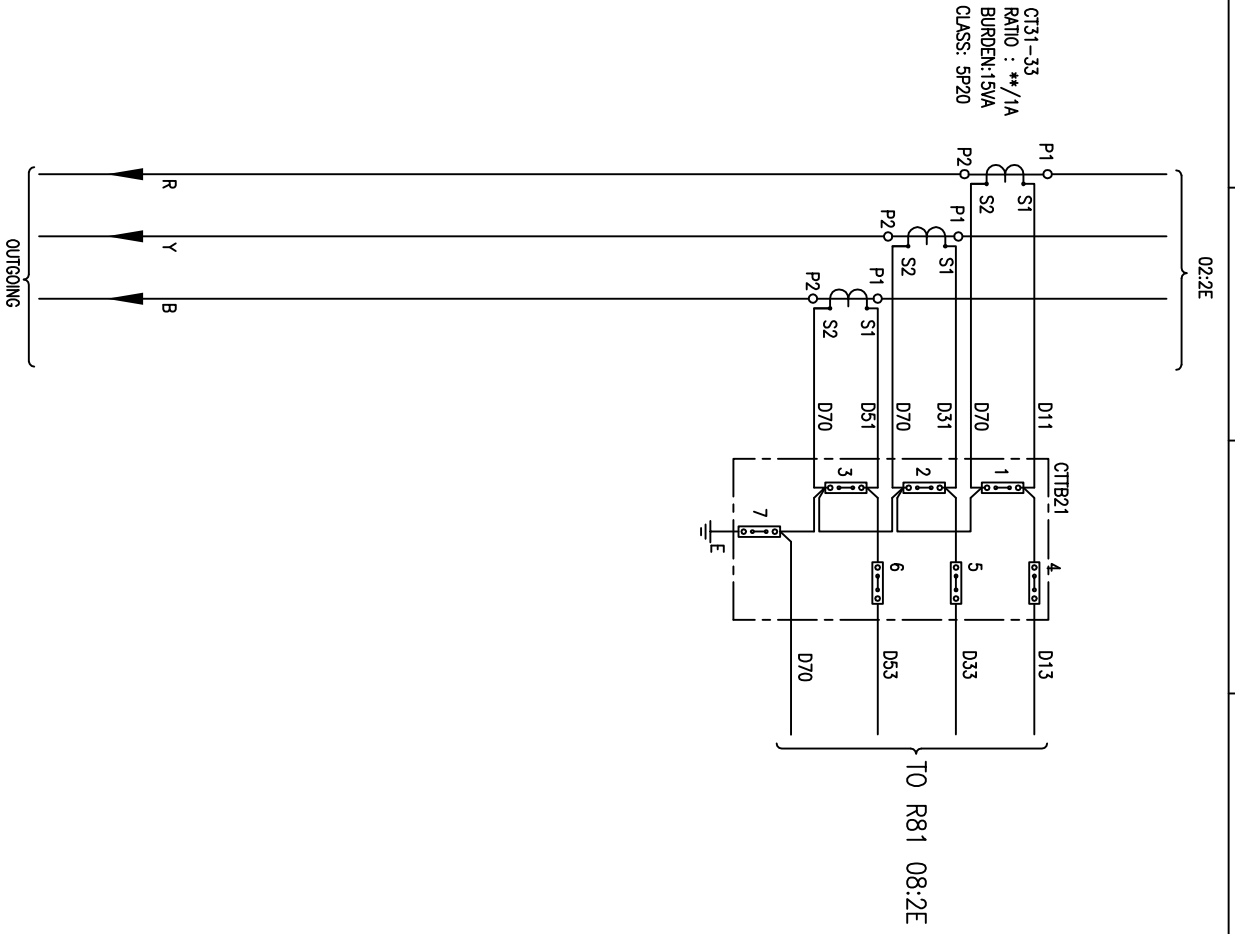
FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM

INVENTORY NO.	4	3	2	1
REV. NO.				
DATE				
DESCRIPTION				
BY				
APPD.				
APPROVED				
KSB				
DATE	09.07.16	09.07.16	09.07.16	09.07.16
NAME	JAGADISH	JAGADISH	JAGADISH	JAGADISH
SIGN.				
DATE	09.07.16	09.07.16	09.07.16	09.07.16
SCALE	NA			
TITLE	BHARAT HEAVY ELECTRICALS LIMITED ELECTROPOWERCELLS DIVISION BANGALORE			
JOB NO.	CP-14-048			
DRG. NO.	EP-4-CS-048-014			
NO. OF SHEETS	09			
SHEET NO.	02			
REV.	00			

DRG. NO. EP-4-CS-048-014

FIRST ANGLE PROJECTION
ALL DIMENSIONS ARE IN MM.



REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-014	NO. OF SHEETS	NO. OF SHEETS	REV.
4												09	09	00
3						JAGADISH		09.07.16				03	03	
2						JAGADISH		09.07.16						
1						JAGADISH		09.07.16						



BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWER DIVISION BANGALORE

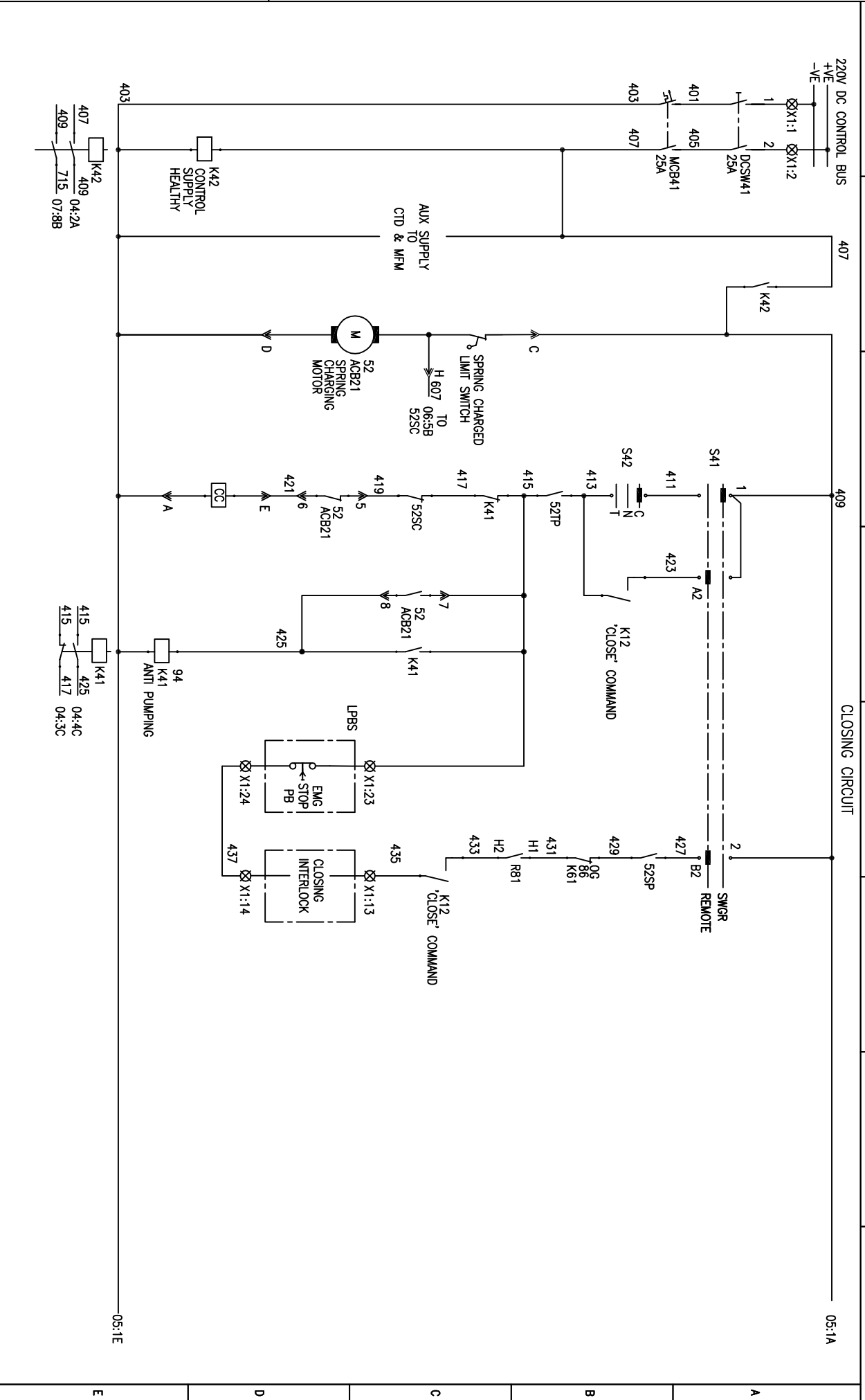
TITLE :
POWER & CONTROL SCHEME
BREAKER OPERATED LT MOTOR FEEDERS CONTROLLED FROM DDCMIS ONLY



NO. OF SHEETS: 09
SHEET NO.: 03

DRG. NO. EP-4-CS-048-014

FORM 66-271 A3



FIRST ANGLE PROJECTION
ALL DIMENSIONS ARE IN MM.
05:1A
05:1E

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	KSB	SCALE	JOB NO.	DRG. NO.	NO. OF SHEETS	SHEET NO.	REV.
1					CHECKED	JAGADISH	09.07.16	CP-14-048	EP-4-CS-048-014	09	04	00
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4												

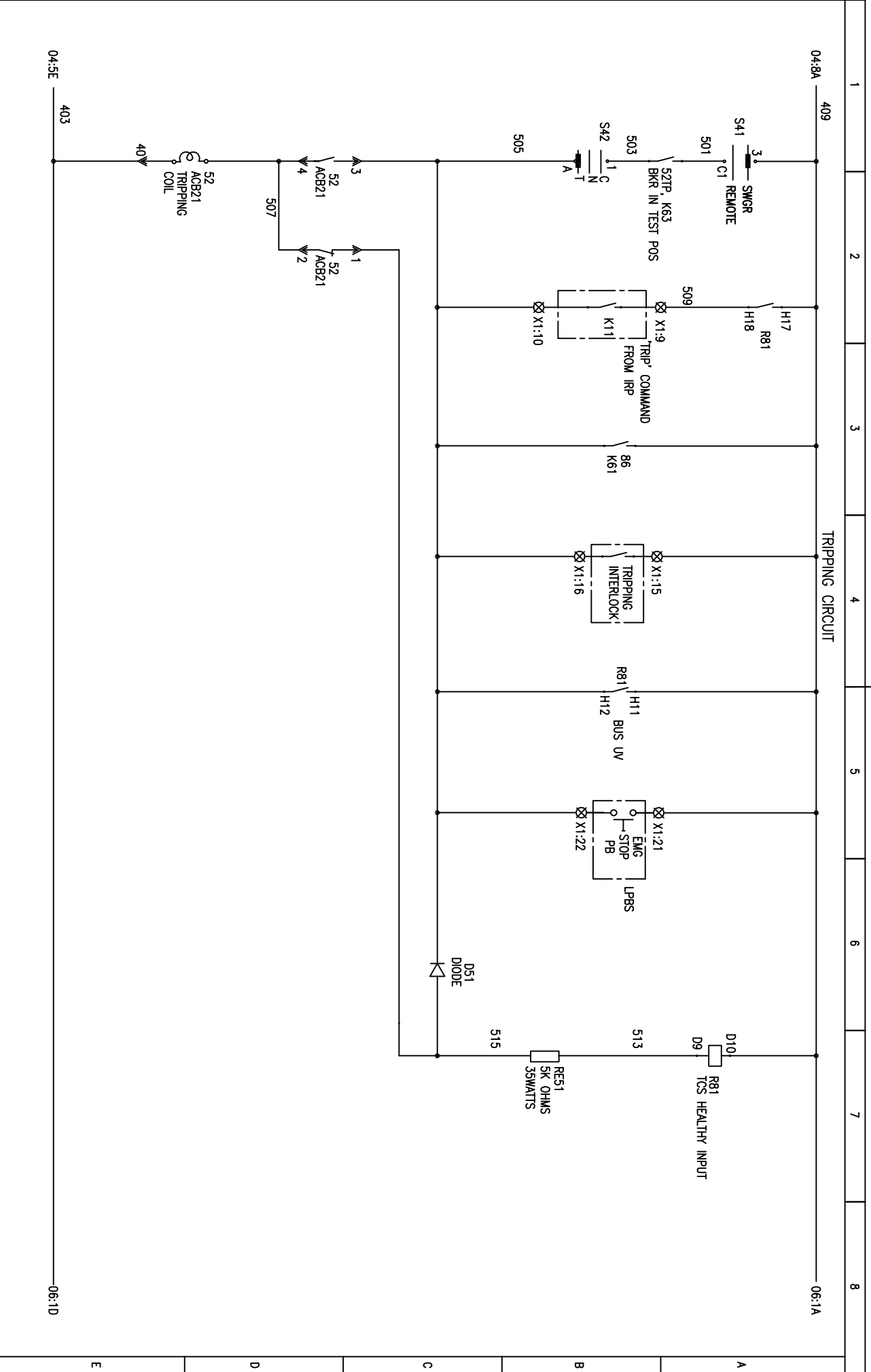
BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWERELANS DIVISION BANGALORE

TITLE :
POWER & CONTROL SCHEME
BREAKER OPERATED LT MOTOR FEEDERS CONTROLLED FROM DDCOMIS ONLY

09.07.16
09.07.16
09.07.16

DRG. NO. EP-4-CS-048-014

FORM 66-271 A3



FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-014	NO. OF SHEETS	SHEET NO.	REV.
1					CHECKED	JAGADISH		09.07.16				09	05	00
2					DRAWN	JAGADISH		09.07.16						
3					DESIGNED	JAGADISH		09.07.16						
4														

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWERCELLS DIVISION BANGALORE

TITLE :
POWER & CONTROL SCHEME
BREAKER OPERATED LT MOTOR FEEDERS CONTROLLED FROM DDCMS ONLY



NO. OF SHEETS: 09
SHEET NO.: 05

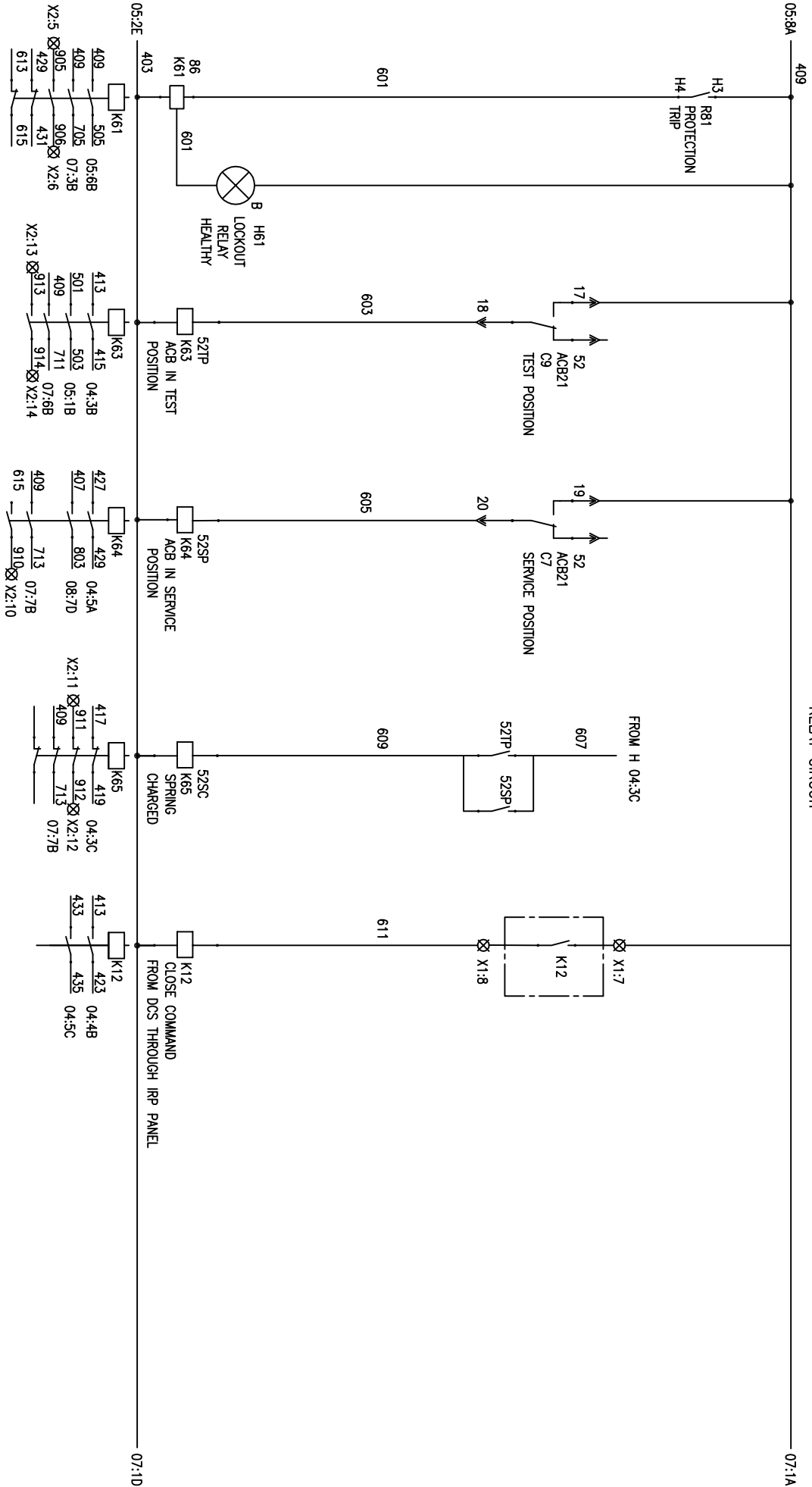
REV. NO.: 00

DRG. NO. EP-4-CS-048-014

FIRST ANGLE PROJECTION

RELAY CIRCUIT

ALL DIMENSIONS ARE IN MM.



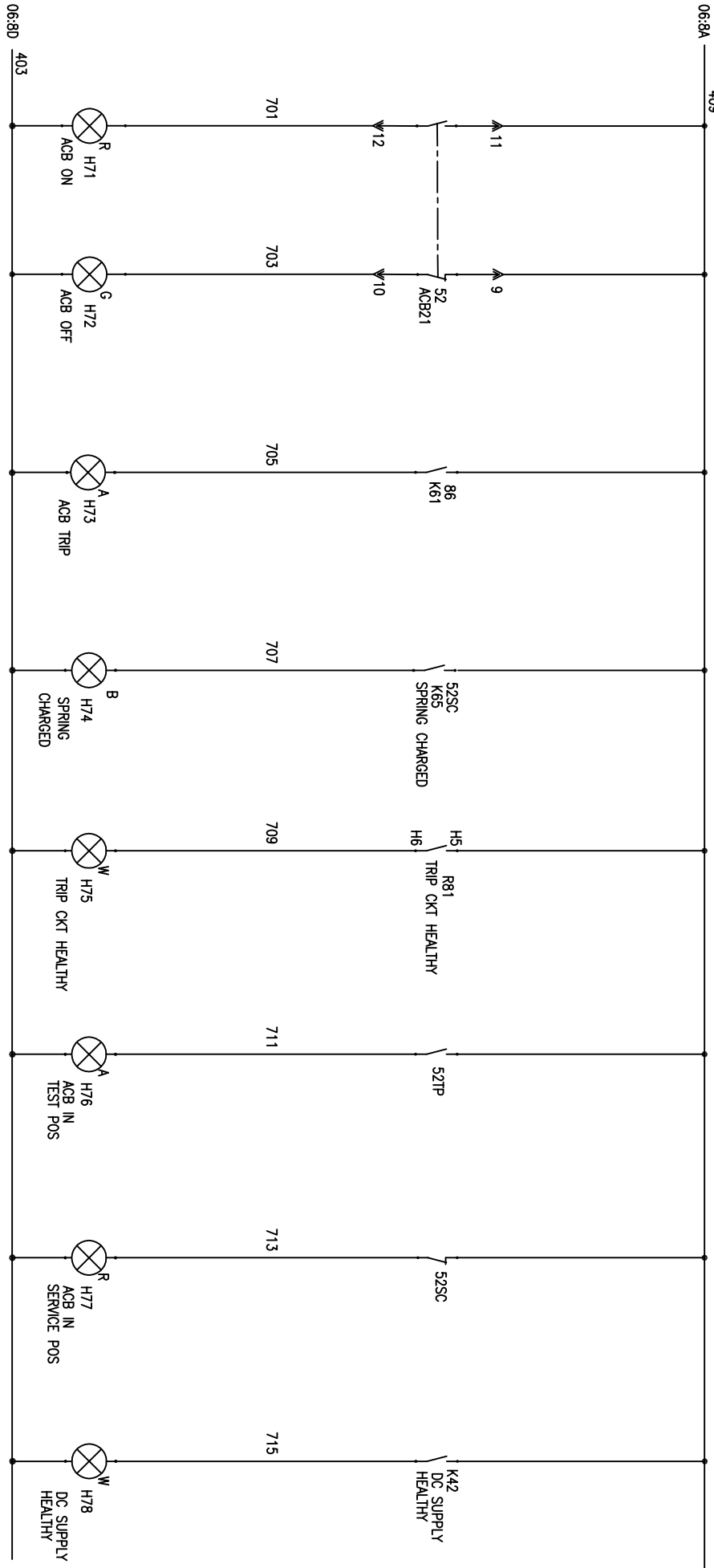
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4	1								09.07.16	MA	CP-14-048	EP-4-CS-048-014	BHARAT HEAVY ELECTRICALS LIMITED ELECTROPROTECTIANS DIVISION BANGALORE	09	06	00
3	2						JAGADISH		09.07.16				POWER & CONTROL SCHEME BREAKER OPERATED LT MOTOR FEEDERS CONTROLLED FROM DDCMS ONLY			
2							JAGADISH		09.07.16							
1							JAGADISH		09.07.16							

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

1 2 3 4 5 6 7 8

INDICATION CIRCUIT



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DRG. NO. EP-4-CS-048-014

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-014	NO. OF SHEETS	SHEET NO.	REV.
1					CHECKED	JAGADISH		09.07.16				09	07	00
2					DRAWN									
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4														


BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWERCELLS DIVISION BANGALORE



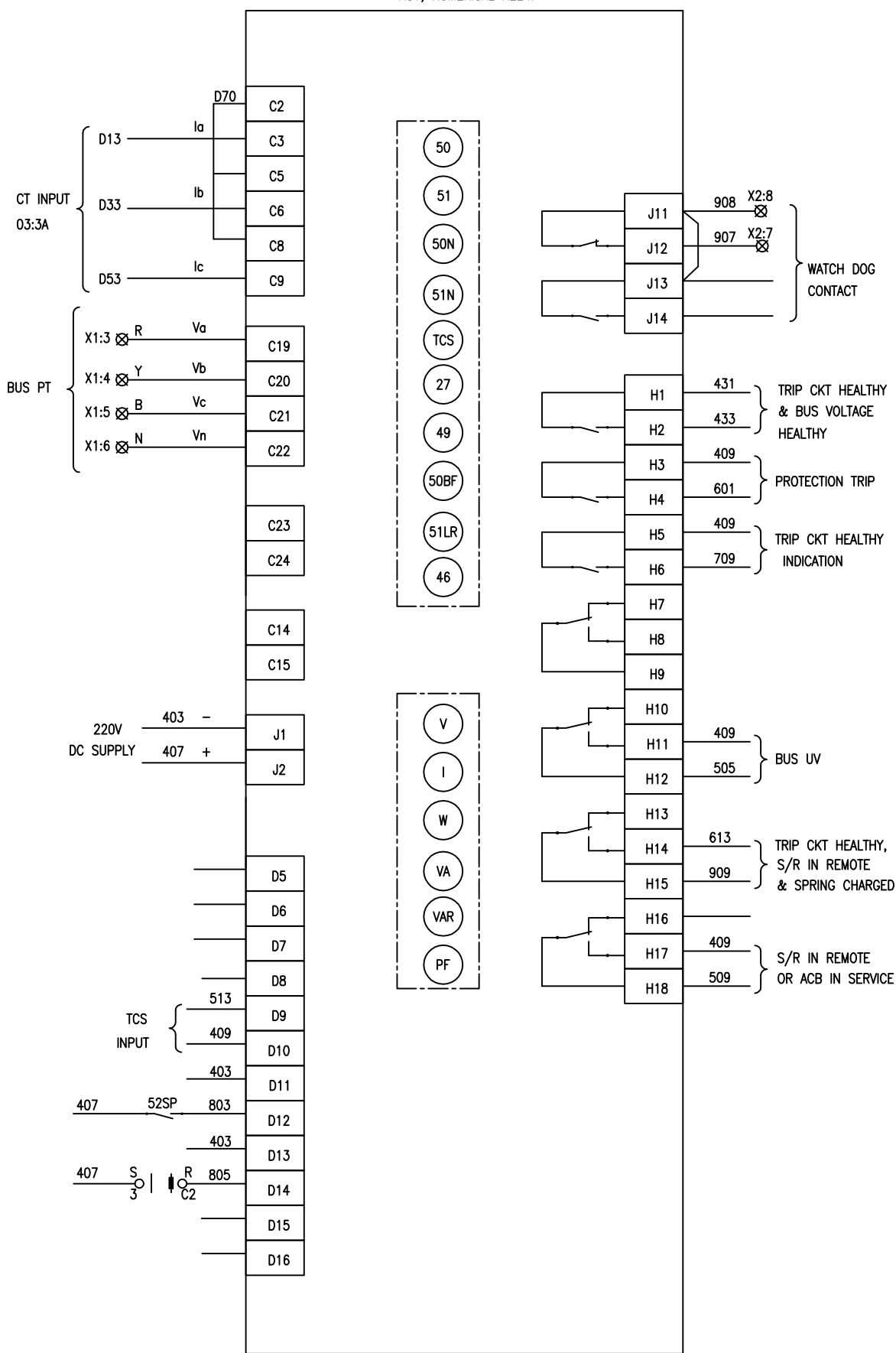
TITLE :
POWER & CONTROL SCHEME
BREAKER OPERATED LT MOTOR FEEDERS CONTROLLED FROM DDCMS ONLY

INVENTORY NO.

DRG. NO. EP-4-CS-048-014

REV. NO.	1	2	3	4
DATE				
DESCRIPTION				
BY				
APPD.				
APPROVED	CHECKED	DRAWN	DESIGNED	
KSB	JAGADISH	JAGADISH	JAGADISH	
09.07.16	09.07.16	09.07.16	09.07.16	
SCALE: NA				
JOB NO. CP-14-048	TITLE : BREAKER OPERATED LT MOTOR FEEDERS CONTROLLED FROM DDCMS ONLY			
DRG. NO. EP-4-CS-048-014	NO. OF SHEETS : 09 SHEET NO. : 08			
REV. NO. 00				

R81, NUMERICAL RELAY



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FIRST ANGLE PROJECTION

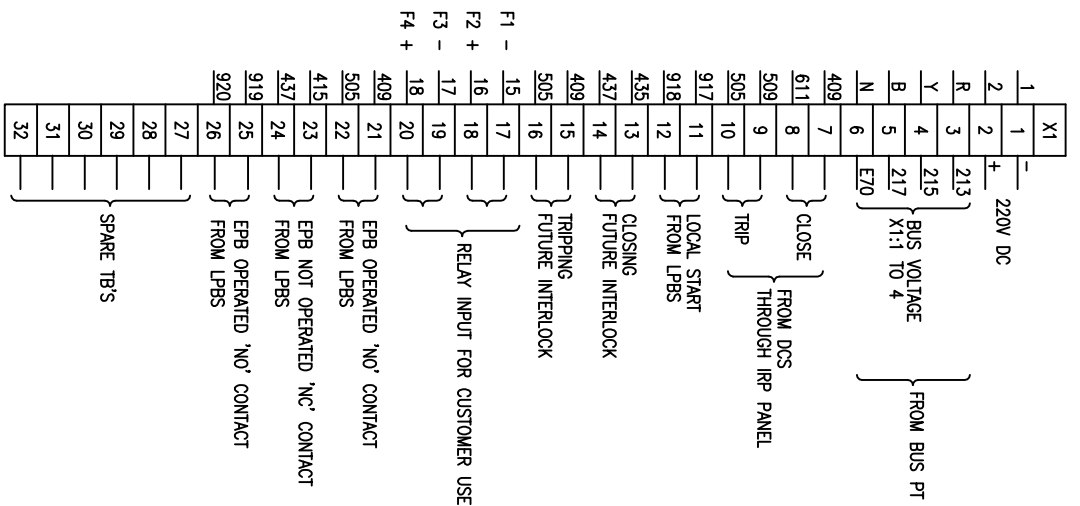
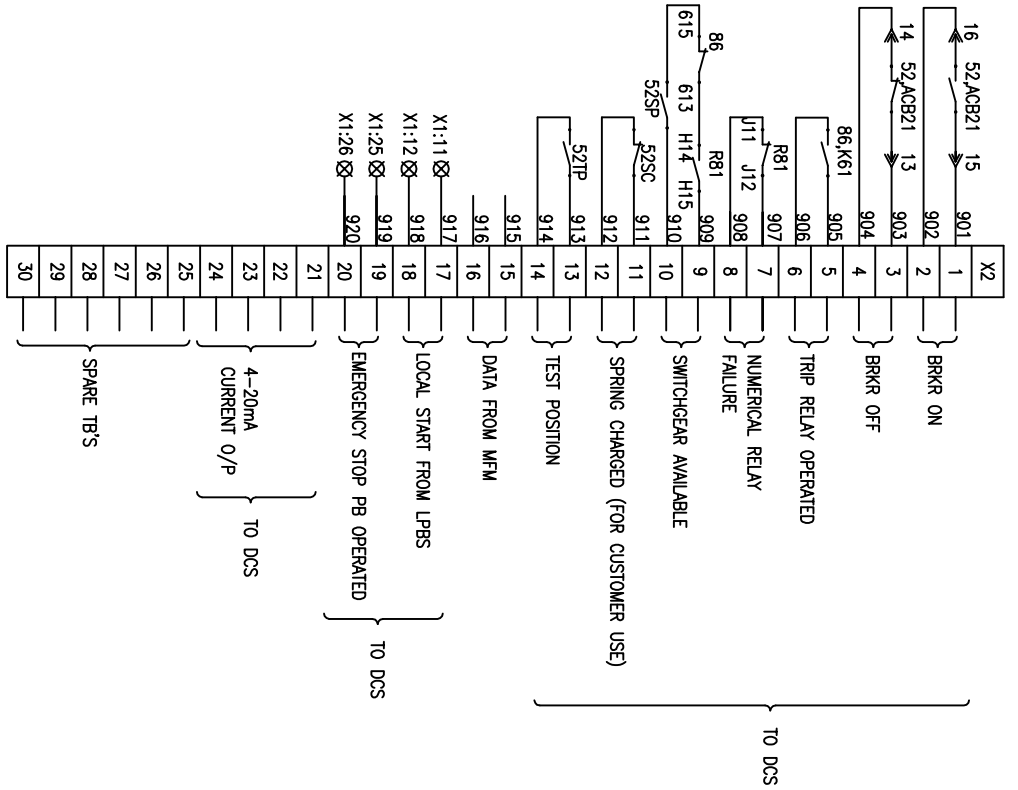
ALL DIMENSIONS ARE IN MM.

E D C B A

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It must not be used directly or indirectly in any way detrimental to the interest of the company

DRG. NO. EP-4-CS-048-014

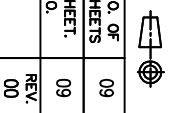
FIRST ANGLE PROJECTION
ALL DIMENSIONS ARE IN MM



INVENTORY NO.	REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-014	NO. OF SHEETS	NO. OF SHEETS	REV.
4													09	09	00
3							JAGADISH		09.07.16				09	09	00
2							JAGADISH		09.07.16				09	09	00
1							JAGADISH		09.07.16				09	09	00

BHARAT HEAVY ELECTRICALS LIMITED
ELECTRONORCELEANS DIVISION BANGALORE

TITLE :
POWER & CONTROL SCHEME
BREAKER OPERATED LT MOTOR FEEDERS CONTROLLED FROM DDCMS ONLY



DRG. NO. EP-4-CS-048-015

FIRST ANGLE PROJECTION
ALL DIMENSIONS ARE IN MM.











CUSTOMER:

TELANGANA STATE POWER GENERATION CORPORATION LTD
TELANGANA STATE
INDIA

PROJECT:
1x800 MW KOTHAGUDAM THERMAL POWER STATION
STAGE-VII, UNIT#12
PALONCHA

CUSTOMER CONSULTANT:

DEVELOPMENT CONSULTANTS PVT LTD
KOLKATA

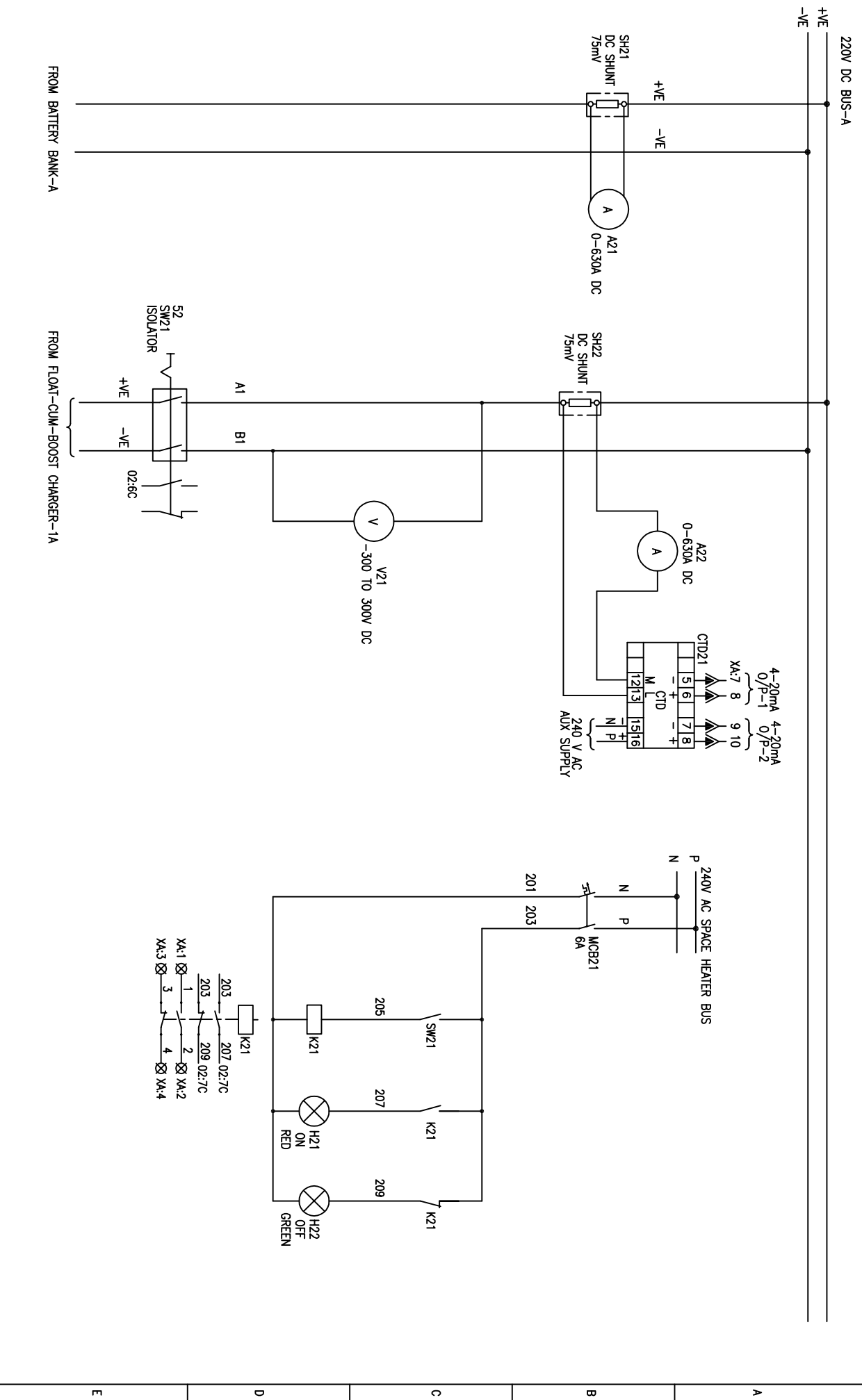
REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-015	NO. OF SHEETS	REV.
4													
3	30.6.16	REVISED AS PER CUSTOMER LETTER NO 1703 DTD 15.6.16			DESIGNED	JAGADISH		17.04.15		BHARAT HEAVY ELECTRICALS LIMITED ELECTROPOWERCELLS DIVISION BANGALORE POWER SCHEME DODB INCOMER FROM BATTERY CHARGER, DC BUSCOUPLER & BATTERY		11	01
2	30.5.16	REVISED AS PER CUSTOMER LETTER NO 0300 DTD 02.06.15			DRAWN								
1	16.5.15	REVISED AS PER CUSTOMER LETTER NO 0203 DTD 11.05.15			CHECKED	JAGADISH	17.04.15						
						KSB	17.04.15						

DRG. NO. EP-4-CS-048-015

FORM 66-271 A4

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.



REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	KSB	DATE
1	16.5.15	REVISED AS PER CUSTOMER LETTER NO 0203 DTD 11.05.15			CHECKED	JAGADISH	17.04.15
2	30.5.16	REVISED AS PER CUSTOMER LETTER NO 0300 DTD 02.06.15			DRAWN		
3	30.6.16	REVISED AS PER CUSTOMER LETTER NO 1703 DTD 15.6.16			DESIGNED	JAGADISH	17.04.15
4							



<p>BHARAT HEAVY ELECTRICALS LIMITED ELECTRONICALS DIVISION BANGALORE</p>	
<p>TITLE : POWER SCHEME DCDB INCOMER FROM BATTERY CHARGER, DC BUSCOUPLER & BATTERY</p>	
JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-015
NO. OF SHEETS 11	SHEET NO. 02
REV. NO. 03	

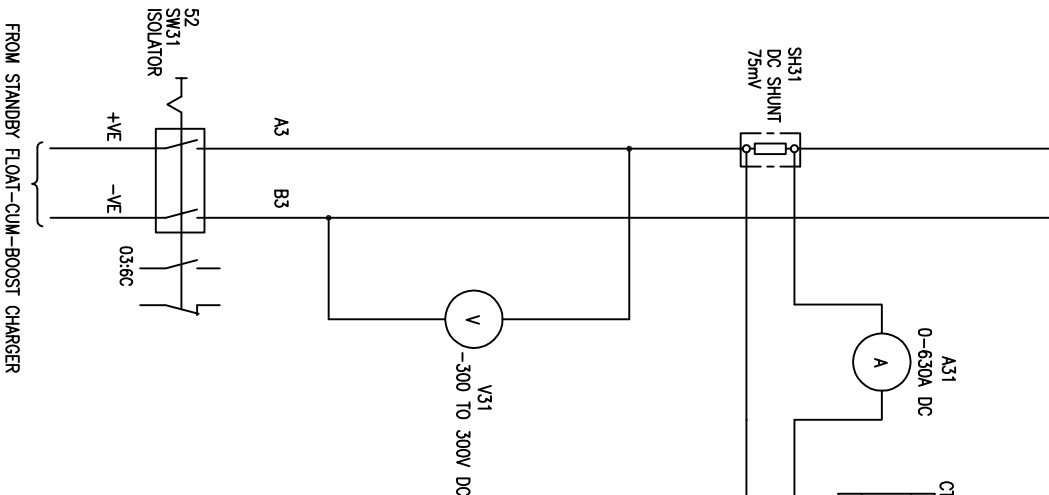
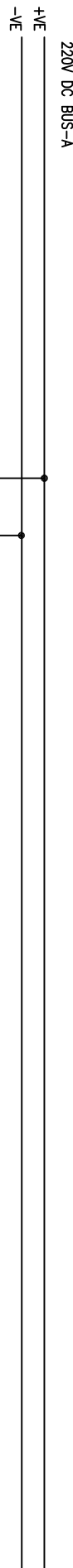
E D C B A

DRG. NO. EP-4-CS-048-015

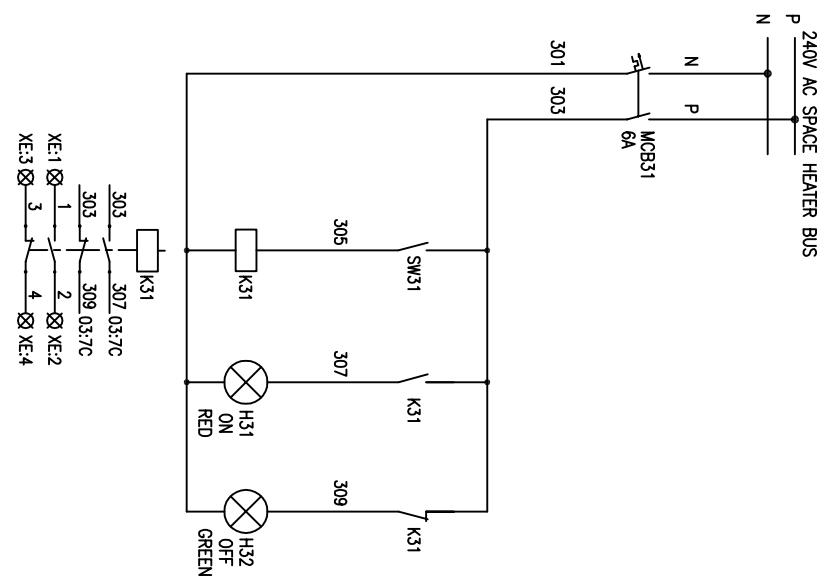
FORM 66-271 A4

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM



FROM STANDBY FLOAT-CUM-BOOST CHARGER



REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	KSB	NAME	SIGN.	DATE
1	16.5.15	REVISED AS PER CUSTOMER LETTER NO 0203 DTD 11.05.15			CHECKED	JAGADISH			17.04.15
2	30.5.16	REVISED AS PER CUSTOMER LETTER NO 0300 DTD 02.06.15			DRAWN				17.04.15
3	30.6.16	REVISED AS PER CUSTOMER LETTER NO 1703 DTD 15.6.16			DESIGNED	JAGADISH			17.04.15
4									

BHARAT HEAVY ELECTRICALS LIMITED
ELECTRONIC RELAYS DIVISION BANGALORE

POWER SCHEME
DCDC INCOMER FROM BATTERY CHARGER,
DC BUSCOUPLER & BATTERY

TITLE :

DRG. NO. EP-4-CS-048-015

NO. OF SHEETS: 11

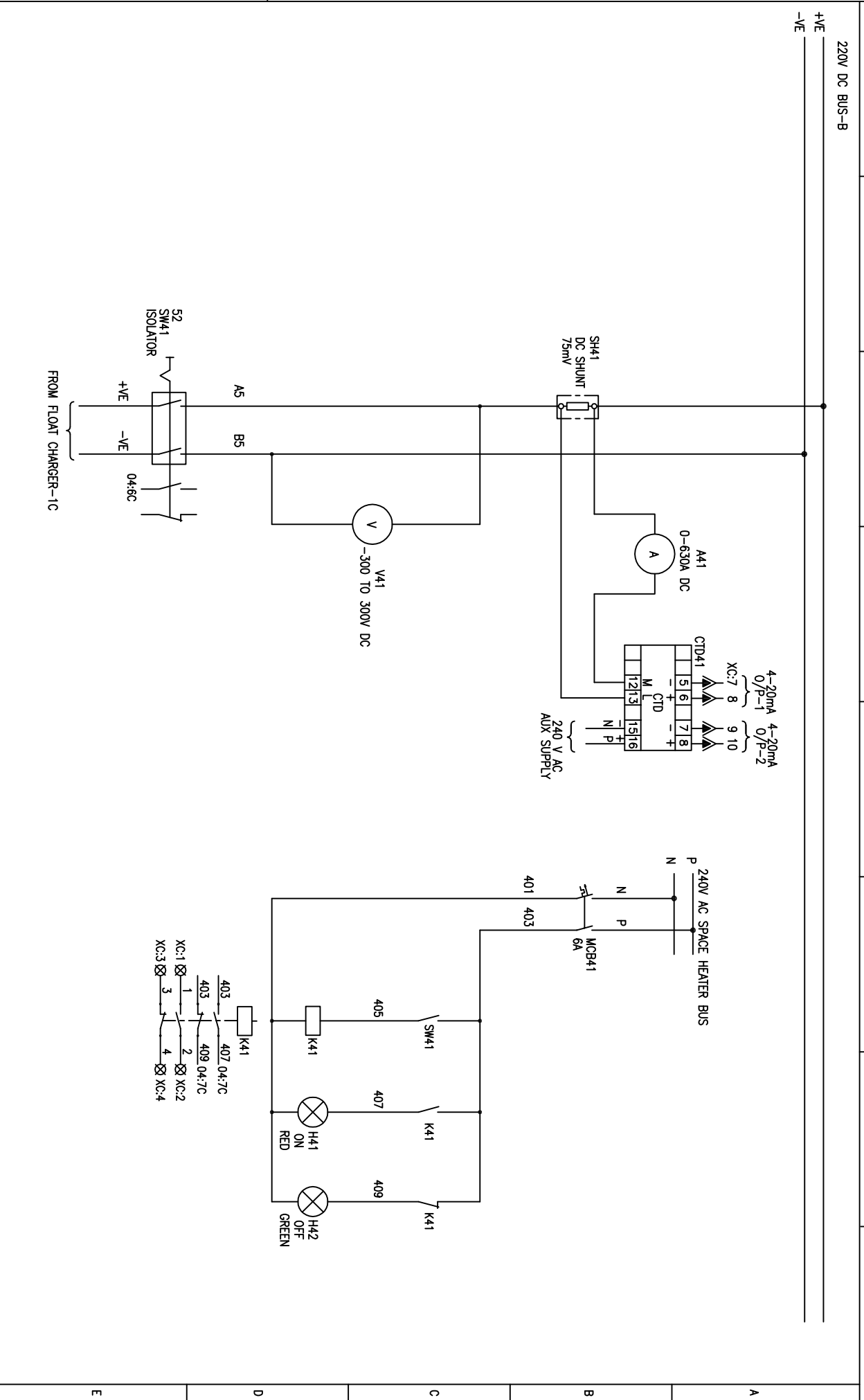
SHEET NO.: 03

REV. NO.: 03

DRG. NO. EP-4-CS-048-015

FORM 66-271 A4

FIRST ANGLE PROJECTION
ALL DIMENSIONS ARE IN MM



REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	KSB	DATE	SCALE	JOB NO.	DRG. NO.	NO. OF SHEETS	SHEET NO.	REV.
1	16.5.15	REVISED AS PER CUSTOMER LETTER NO 0203 DTD 11.05.15			CHECKED	JAGADISH	17.04.15	MA	CP-14-048	EP-4-CS-048-015	11	04	03
2	30.5.16	REVISED AS PER CUSTOMER LETTER NO 0300 DTD 02.06.15			DRAWN								
3	30.6.16	REVISED AS PER CUSTOMER LETTER NO 1703 DTD 15.6.16			DESIGNED	JAGADISH	17.04.15						
4													



BHARAT HEAVY ELECTRICALS LIMITED
ELECTRONS DIVISION BANGALORE

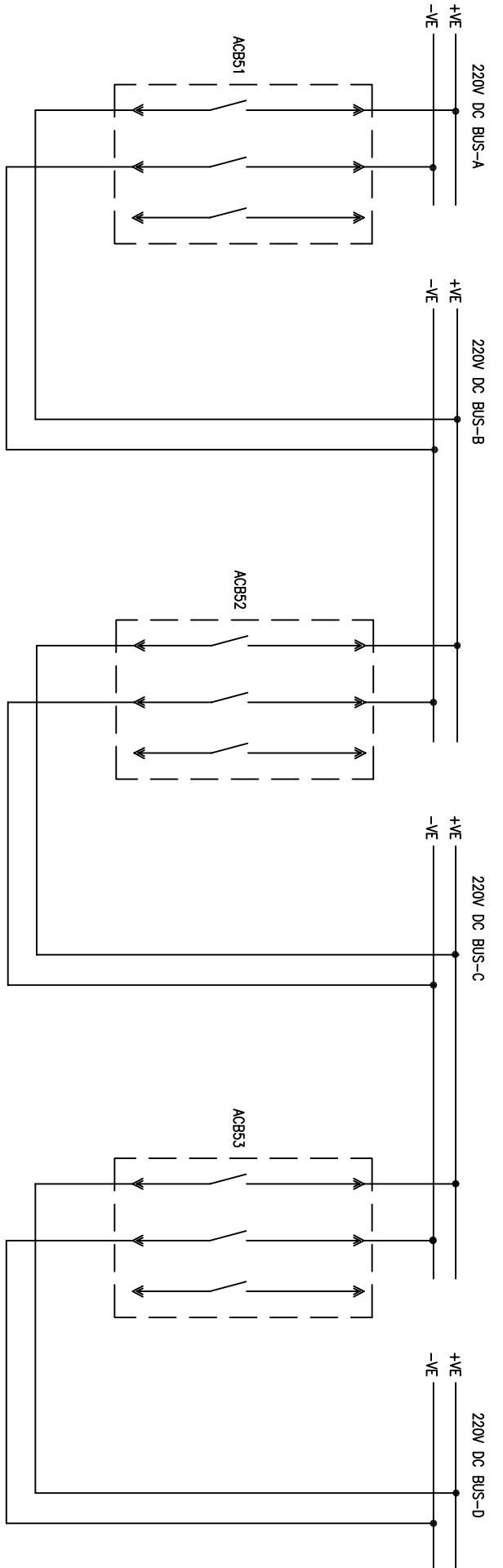
TITLE :
POWER SCHEME
DDBB INCOMER FROM BATTERY CHARGER,
DC BUSCOUPLER & BATTERY

NO. OF SHEETS	11
SHEET NO.	04
REV.	03

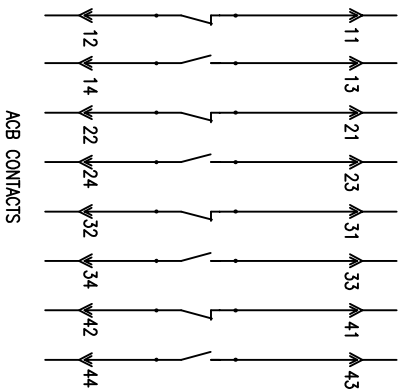
DRG. NO. EP-4-CS-048-015

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.



- NOTE:-
1. CASTLE LOCK & KEY (3LOCKS+3KEYS)ARRANGEMENT WILL BE PROVIDED BETWEEN ACB51, ACB52 & ACB53 TO AVOID PARALALLING
 2. EACH ACB IS PROVIDED WITH 4NO+4NC CONTACTS



REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-015	NO. OF SHEETS	SHEET NO.	REV.
4														
3	30.6.16	REVISED AS PER CUSTOMER LETTER NO 1703 DTD 15.6.16			DESIGNED	JAGADISH		17.04.15				11	05	03
2	30.5.16	REVISED AS PER CUSTOMER LETTER NO 0300 DTD 02.06.15			DRAWN									
1	16.5.15	REVISED AS PER CUSTOMER LETTER NO 0203 DTD 11.05.15			CHECKED	JAGADISH		17.04.15						

BHARAT HEAVY ELECTRICALS LIMITED
ELECTRONICALS DIVISION BANGALORE

TITLE :
POWER SCHEME
DDB INCOMER FROM BATTERY CHARGER,
DC BUSCOUPLER & BATTERY



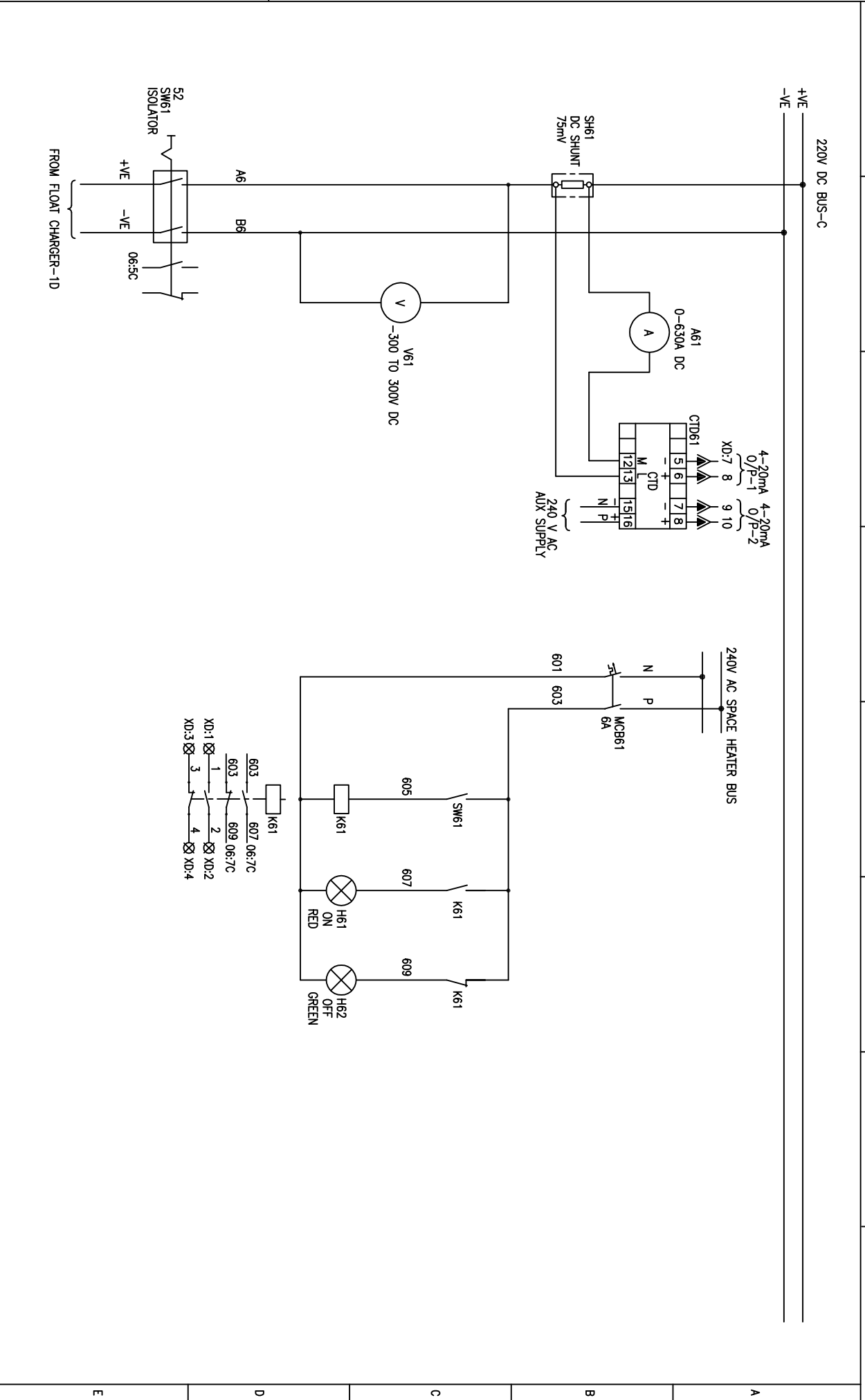
NO. OF SHEETS: 11

SHEET NO.: 05

REV.: 03

DRG. NO. EP-4-CS-048-015

FIRST ANGLE PROJECTION
ALL DIMENSIONS ARE IN MM



REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	KSB	NAME	SIGN.	DATE	SCALE	JOB NO.	DRG. NO.	NO. OF SHEETS	SHEET NO.	REV.
1	16.5.15	REVISED AS PER CUSTOMER LETTER NO 0203 DTD 11.05.15			CHECKED		JAGADISH		17.04.15	NA	CP-14-048	EP-4-CS-048-015	11	06	03
2	30.5.16	REVISED AS PER CUSTOMER LETTER NO 0300 DTD 02.06.15			DRAWN		JAGADISH		17.04.15						
3	30.6.16	REVISED AS PER CUSTOMER LETTER NO 1703 DTD 15.6.16			DESIGNED		JAGADISH		17.04.15						
4															

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWER DIVISION BANGALORE

TITLE :
POWER SCHEME
DCDB INCOMER FROM BATTERY CHARGER,
DC BUSCOUPLER & BATTERY



NO. OF SHEETS: 11

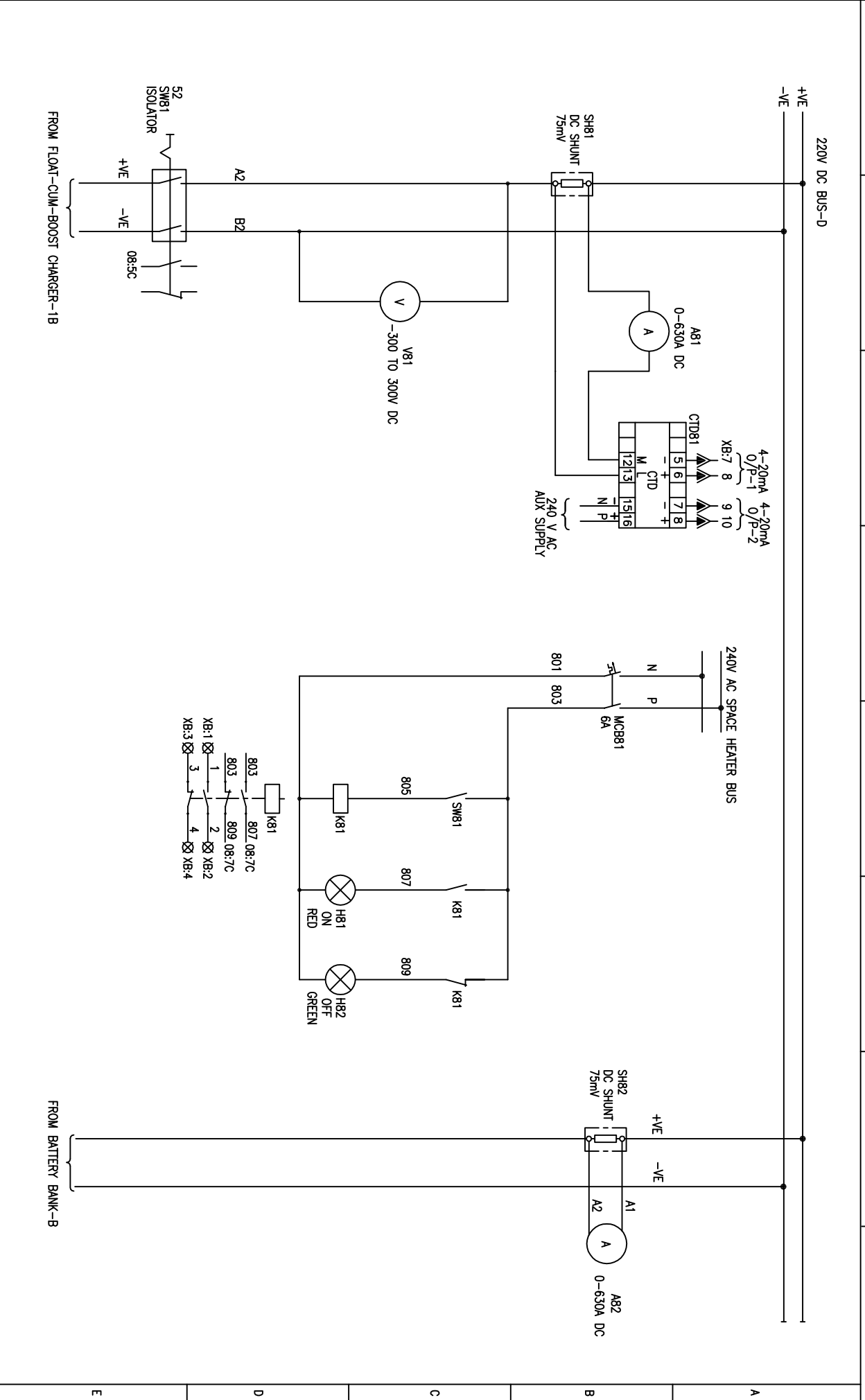
SHEET NO.: 06

REV. NO.: 03

DRG. NO. EP-4-CS-048-015

FORM 66-271 A4

FIRST ANGLE PROJECTION
ALL DIMENSIONS ARE IN MM



REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	KSB	NAME	SIGN.	DATE	SCALE	JOB NO.	DRG. NO.	NO. OF SHEETS	SHEET NO.	REV.
1	16.5.15	REVISED AS PER CUSTOMER LETTER NO 0203 DTD 11.05.15			CHECKED		JAGADISH		17.04.15	MA	CP-14-048	EP-4-CS-048-015	11	08	03
2	30.5.16	REVISED AS PER CUSTOMER LETTER NO 0300 DTD 02.06.15			DRAWN		JAGADISH		17.04.15						
3	30.6.16	REVISED AS PER CUSTOMER LETTER NO 1703 DTD 15.6.16			DESIGNED		JAGADISH		17.04.15						
4															

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWERCELLS DIVISION BANGALORE

TITLE :
POWER SCHEME
DCDB INCOMER FROM BATTERY CHARGER,
DC BUSCOUPLER & BATTERY



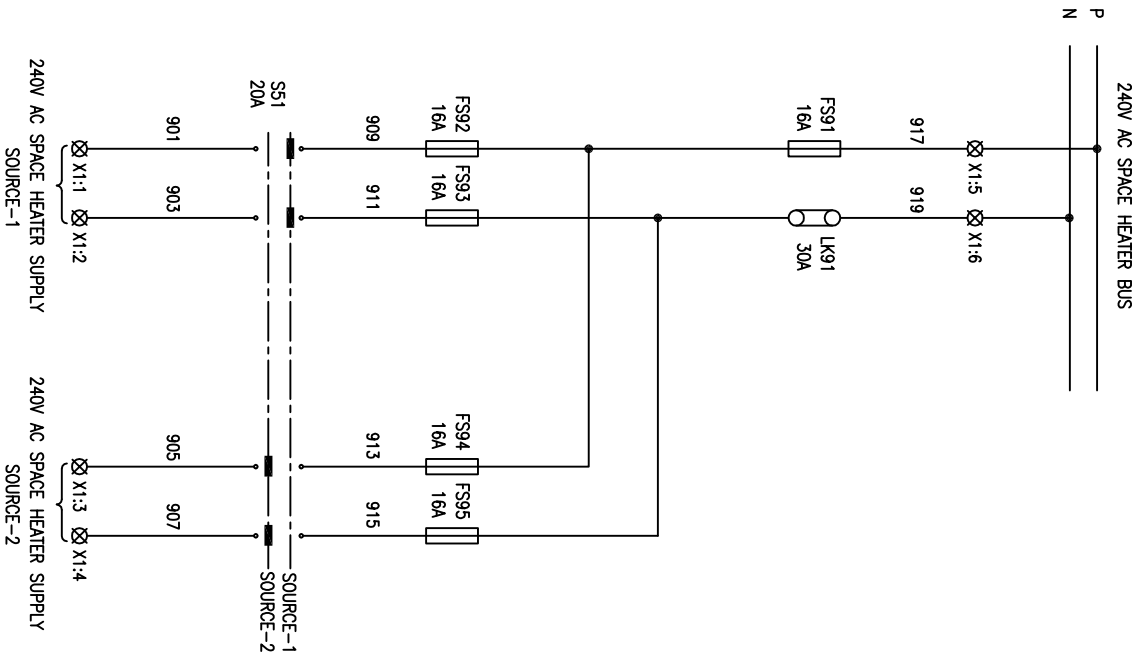
NO. OF SHEETS: 11
SHEET NO.: 08

DRG. NO. EP-4-CS-048-015

1 2 3 4 5 6 7 8

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.



REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE	JOB NO.	DRG. NO.	NO. OF SHEETS	NO. OF SHEET	REV.
1	16.5.15	REVISED AS PER CUSTOMER LETTER NO 0203 DTD 11.05.15			CHECKED	JAGADISH		17.04.15	MA	CP-14-048	EP-4-CS-048-015	11	09	03
2	30.5.16	REVISED AS PER CUSTOMER LETTER NO 0300 DTD 02.06.15			DRAWN	JAGADISH		17.04.15						
3	30.6.16	REVISED AS PER CUSTOMER LETTER NO 1703 DTD 15.6.16			DESIGNED	JAGADISH		17.04.15						
4														



BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWERCELLS DIVISION BANGALORE

TITLE :
POWER SCHEME
DDB INCOMER FROM BATTERY CHARGER,
DC BUSCOUPLER & BATTERY



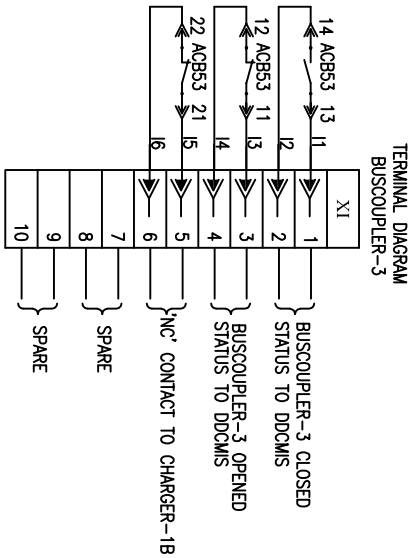
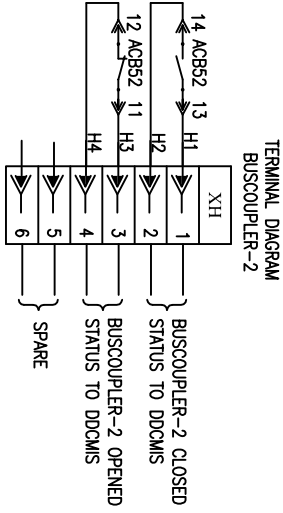
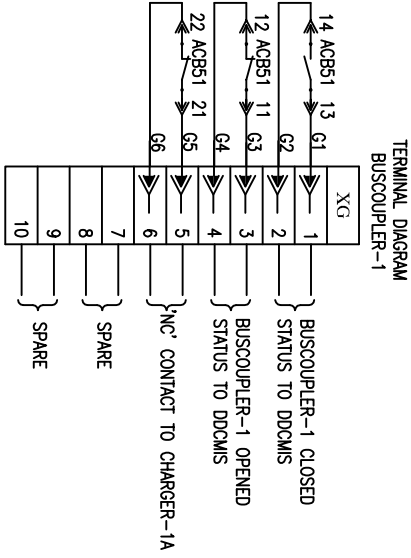
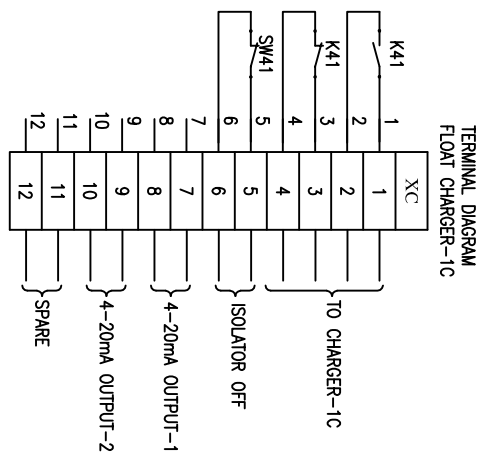
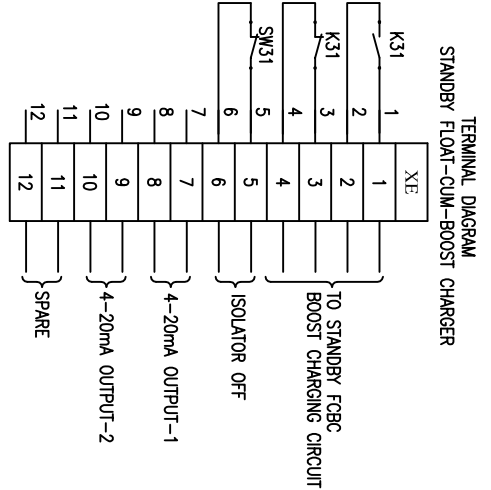
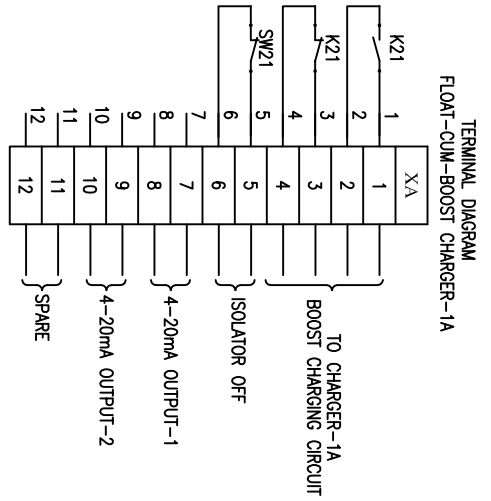
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DRG. NO. EP-4-CS-048-015

FORM 66-271 A4

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.



INVENTORY NO.	REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	KSB	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-015	NO. OF SHEETS	SHEET NO.	REV.
3		30.6.16	REVISED AS PER CUSTOMER LETTER NO 1703 DTD 15.6.16			DESIGNED	JAGADISH	17.04.15			11		
2		30.5.16	REVISED AS PER CUSTOMER LETTER NO 0300 DTD 02.06.15			DRAWN	JAGADISH	17.04.15			10		
1		16.5.15	REVISED AS PER CUSTOMER LETTER NO 0203 DTD 11.05.15			CHECKED	JAGADISH	17.04.15			10		

BHARAT HEAVY ELECTRICALS LIMITED
ELECTRONICCELLS DIVISION BANGALORE

TITLE :
POWER SCHEME
DDBB INCOMER FROM BATTERY CHARGER,
DC BUSCOUPLER & BATTERY



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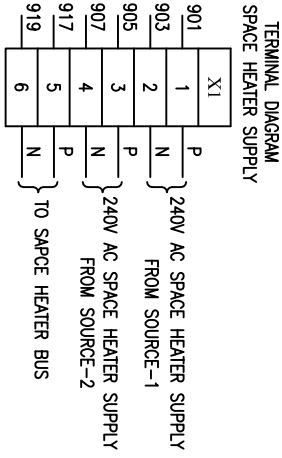
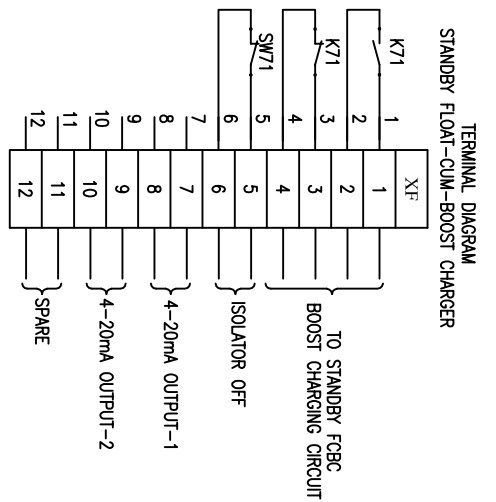
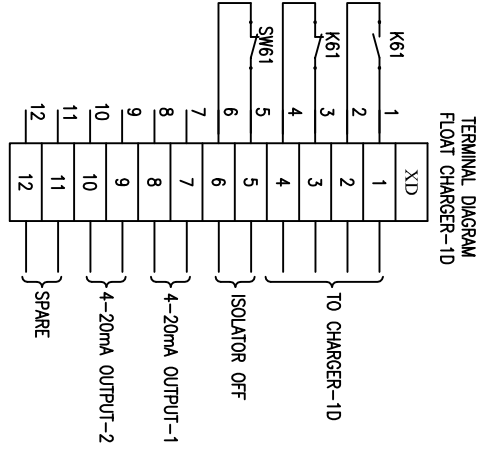
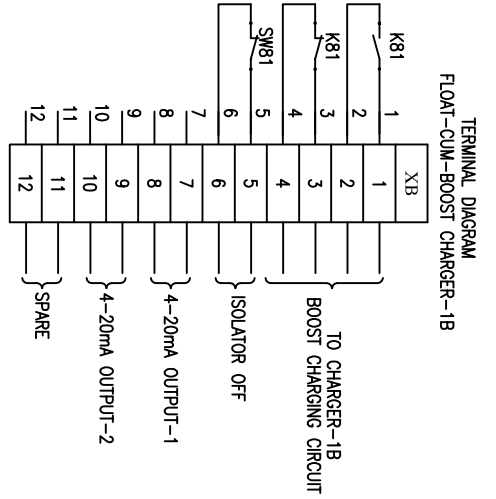
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8

DRG. NO. EP-4-CS-048-015

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.



REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE	JOB NO.	DRG. NO.	NO. OF SHEETS	NO. OF SHEETS	REV.
1	16.5.15	REVISED AS PER CUSTOMER LETTER NO 0203 DTD 11.05.15			CHECKED	JAGADISH		17.04.15	MA	CP-14-048	EP-4-CS-048-015	11	11	03
2	30.5.16	REVISED AS PER CUSTOMER LETTER NO 0300 DTD 02.06.15			DRAWN	JAGADISH		17.04.15						
3	30.6.16	REVISED AS PER CUSTOMER LETTER NO 1703 DTD 15.6.16			DESIGNED	JAGADISH		17.04.15						



BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWER DIVISION BANGALORE

TITLE :
POWER SCHEME
DCDB INCOMER FROM BATTERY CHARGER,
DC BUSCOUPLER & BATTERY



FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

1 2 3 4 5 6 7 8

CUSTOMER:



TELANGANA STATE POWER GENERATION CORPORATION LTD
TELANGANA STATE
INDIA

PROJECT:



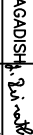


1x800 MW KOTHAGUDAM THERMAL POWER STATION
STAGE-VII, UNIT#12
PALONCHA

CUSTOMER CONSULTANT:

DEVELOPMENT CONSULTANT PVT LTD
KOLKATA

DRG. NO. EP-4-CS-048-016

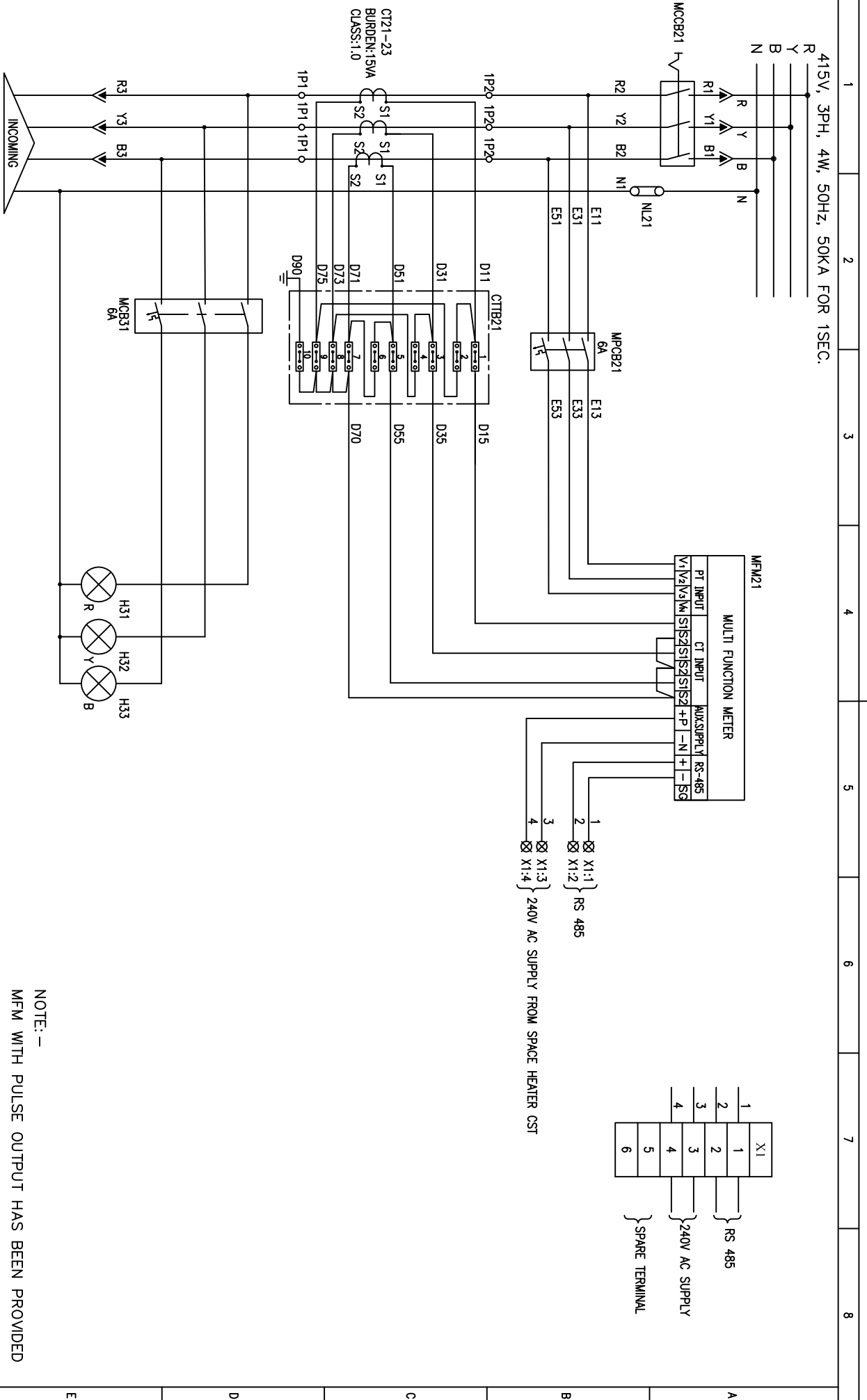
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REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-016	NO. OF SHEETS	SHEET NO.	REV.
1	16.05.15	REVISED AS PER CUSTOMER COMMENTS LETTER NO. 0203, DT11.05.15			CHECKED	JAGADISH KSB		17.04.15				03	01	01
2					DRAWN									
3					DESIGNED	JAGADISH		17.04.15						
4														

DRG. NO. EP-4-CS-048-016

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.



NOTE:-
MFM WITH PULSE OUTPUT HAS BEEN PROVIDED

INVENTORY NO.	4	NAME	SIGN.	DATE	SCALE	JOB NO.	DRG. NO.	NO. OF SHEETS	REV.
REV. NO.	1	DESIGNED		17.04.15	MA	CP-14-048	EP-4-CS-048-016	03	01
DATE	16.05.15	DRAWN		17.04.15					
DESCRIPTION	REVISED AS PER CUSTOMER COMMENTS LETTER NO. 0203. DT11.05.15								
BY		CHECKED	JAGADISH	17.04.15					
APPD.		APPROVED	KSB	17.04.15					
BHARAT HEAVY ELECTRICALS LIMITED ELECTROPROTECTANS DIVISION BANGALORE					TITLE : POWER SCHEME MCCB INCOMER				
NO. OF SHEETS					NO. OF SHEETS				
03					02				

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DRG. NO. EP-4-CS-048-016

THREE LINE DIAGRAM SYMBOLS	SINGLE LINE DIAGRAM SYMBOLS	DESCRIPTION	SINGLE LINE DIAGRAM & CONTROL SCHEME
		MOTOR OPERATED DRAWOUT TYPE AIR CIRCUIT BREAKER	
		MANUALLY OPERATED MOULDED CASE CIRCUIT BREAKER MCCB	
		MANUALLY OPERATED MOTOR PROTECTION CIRCUIT BREAKER MPCB	
		MANUALLY OPERATED DRAWOUT TYPE FUSE SWITCH UNIT FSU	
		POWER CONTACTOR Q	
		MINIATURE CIRCUIT BREAKER	
		OVER LOAD RELAY OLR	
		CURRENT TRANSFORMER CT	
		POTENTIAL TRANSFORMER PT	
		HRC FUSE F	
		NEUTRAL LINK LK	
		BUSDUCT	
		NORMALLY OPEN CONTACT	
		NORMALLY CLOSE CONTACT	
		CHANGE OVER CONTACT	
		THERMAL OVER LOAD RELAY	
		ON DELAY TIMER	
		TIMED CLOSING CONTACT	
		OFF DELAY TIMER	
		INSTANTANEOUS CLOSING CONTACT	
		ON DELAY TIMER	
		INSTANTANEOUS CLOSING CONTACT	
		OFF DELAY TIMER	
		TIMED OPENING CONTACT	
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		ON DELAY TIMER	
		INSTANTANEOUS CLOSING CONTACT	
		OFF DELAY TIMER	
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FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

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CUSTOMER:



TELANGANA STATE POWER GENERATION CORPORATION LTD
TELANGANA STATE
INDIA

PROJECT:

1x800 MW KOTHAGUDAM THERMAL POWER STATION
STAGE-VII, UNIT#12
PALONCHA

CUSTOMER CONSULTANT:







DEVELOPMENT CONSULTANT PVT LTD
KOLKATA

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DRG. NO. EP-4-CS-048-017

INVENTORY NO.

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-017	NO. OF SHEETS	NO. OF SHEETS	REV.
1	16.05.15	REVISED AS PER CUSTOMER COMMENTS LETTER NO. 0203, DT11.05.15			CHECKED	JAGADISH KSB		17.04.15		BHARAT HEAVY ELECTRICALS LIMITED ELECTROFORCELANS DIVISION BANGALORE POWER SCHEME MCOB BUSCOUPLER		03	01	01
2				DRAWN	JAGADISH		17.04.15							
3				DESIGNED	JAGADISH		17.04.15							
4														

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DRG. NO. EP-4-CS-048-017

THREE LINE DIAGRAM SYMBOLS	SINGLE LINE DIAGRAM SYMBOLS	DESCRIPTION	SINGLE LINE DIAGRAM & CONTROL SCHEME
		MOTOR OPERATED DRAWOUT TYPE AIR CIRCUIT BREAKER	
		MANUALLY OPERATED MOULDED CASE CIRCUIT BREAKER	
		MANUALLY OPERATED MOTOR PROTECTION CIRCUIT BREAKER	
		MANUALLY OPERATED DRAWOUT TYPE FUSE SWITCH UNIT	
		POWER CONTACTOR	
		MINIATURE CIRCUIT BREAKER	
		OVER LOAD RELAY	
		CURRENT TRANSFORMER	
		POTENTIAL TRANSFORMER	
		HRC FUSE	
		NEUTRAL LINK	
		BUSDUCT	

LETTER SYMBOL	DESCRIPTION OF ELECTRICAL COMPONENTS
ACB	AIR CIRCUIT BREAKER
MCB	MINIATURE CIRCUIT BREAKER
MCCB	MOULDED CASE CIRCUIT BREAKER
MPCB	MOTOR PROTECTION CB
FSU	FUSE SWITCH UNIT
IS	ISOLATOR
OLR	OVER LOAD RELAY
CT	CURRENT TRANSFORMER
PT	POTENTIAL TRANSFORMER
CTB	CT TESTING BOARD
F	FUSE
NL	NEUTRAL LINK
PS	POWER SOCKET
M	MOTOR
E	EARTHING
CST	CONTROL SUPPLY TRANSFORMER
A	AMMETER
V	VOLTMETER
ASS	AMMETER SELECTOR SWITCH
VSS	VOLTMETER SELECTOR SWITCH
W	WATT METER
WH	WATT HOUR METER
KWH	KILO WATT HOUR METER
PF	POWER FACTOR METER
MFM	MULTI FUNCTION METER
H	INDICATING LAMP
NR	NUMERICAL RELAY
SS	SELECTOR SWITCH
C	POWER CONTACTOR
K	AUXILIARY CONTACTOR
PB	PUSH BUTTON
D	DIODE BRIDGE
CTD	CURRENT TRANSDUCER
VTD	VOLTAGE TRANSDUCER
TH	THERMOSTAT
SH	SPACE HEATER

CODE	PROTECTIVE RELAY DESCRIPTION
25	SYNCHRONISM
27	UNDER VOLTAGE
30A&B	TRIP CIRCUIT ANNUNCIATION
46	NEGATIVE SEQUENCE TIME OVER CURRENT
50	GROUND INSTANTANEOUS OVER CURRENT
50BF	BREAKER FAILURE
50N	NEUTRAL INSTANTANEOUS OVER CURRENT
51	IDMT OVER CURRENT PROTECTION RELAY
51N	INVERSE TIME EARTH FAULT PROTECTION RELAY
52	BREAKER
64R	RESTRICTED EARTH FAULT
74	TRIP CIRCUIT SUPERVISION
86	HAND RESET LOCKOUT RELAY
87	DIFFERENTIAL PROTECTION RELAY
94	ANTI PUMPING RELAY
95	TRIP CIRCUIT SUPERVISION RELAY
97	FUSE MONITORING RELAY
98	COMPOSITE MOTOR PROTECTION RELAY
99	FUSE FAILURE RELAY

INVENTORY NO.	REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE	JOB NO.	DRG. NO.	NO. OF SHEETS	SHEET NO.	REV.
4											CP-14-048	EP-4-CS-048-017	03	03	01
3							JAGADISH		19.05.15						
2															
1	16.05.15		REVISED AS PER CUSTOMER COMMENTS LETTER NO. 0203, DT:11.05.15				JAGADISH		19.05.15						

BHARAT HEAVY ELECTRICALS LIMITED
ELECTRONS/RELAYS DIVISION BANGALORE

TITLE : POWER SCHEME
MCCB BUSCOUPLER



FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

1 2 3 4 5 6 7 8

CUSTOMER:



TELANGANA STATE POWER GENERATION CORPORATION LTD
TELANGANA STATE
INDIA

PROJECT:

1x800 MW KOTHAGUDAM THERMAL POWER STATION
STAGE-VII, UNIT#12
PALONCHA

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DRG. NO. EP-4-CS-048-018

REV. NO.	DATE	DESCRIPTION	BY	APPD.	CHECKED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-018	NO. OF SHEETS	NO. OF SHEETS	REV.
1	16.05.15	LEGEND SHEET NO.5 ADDED	[Signature]	[Signature]	CHECKED	JAGADISH KSB	[Signature]	17.04.15				05	01	01
2					DRAWN	JAGADISH	[Signature]	17.04.15						
3					DESIGNED	JAGADISH	[Signature]	17.04.15						
4														

CUSTOMER CONSULTANT:
DEVELOPMENT CONSULTANT PVT LTD
KOLKATA

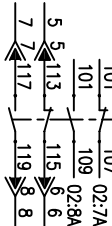
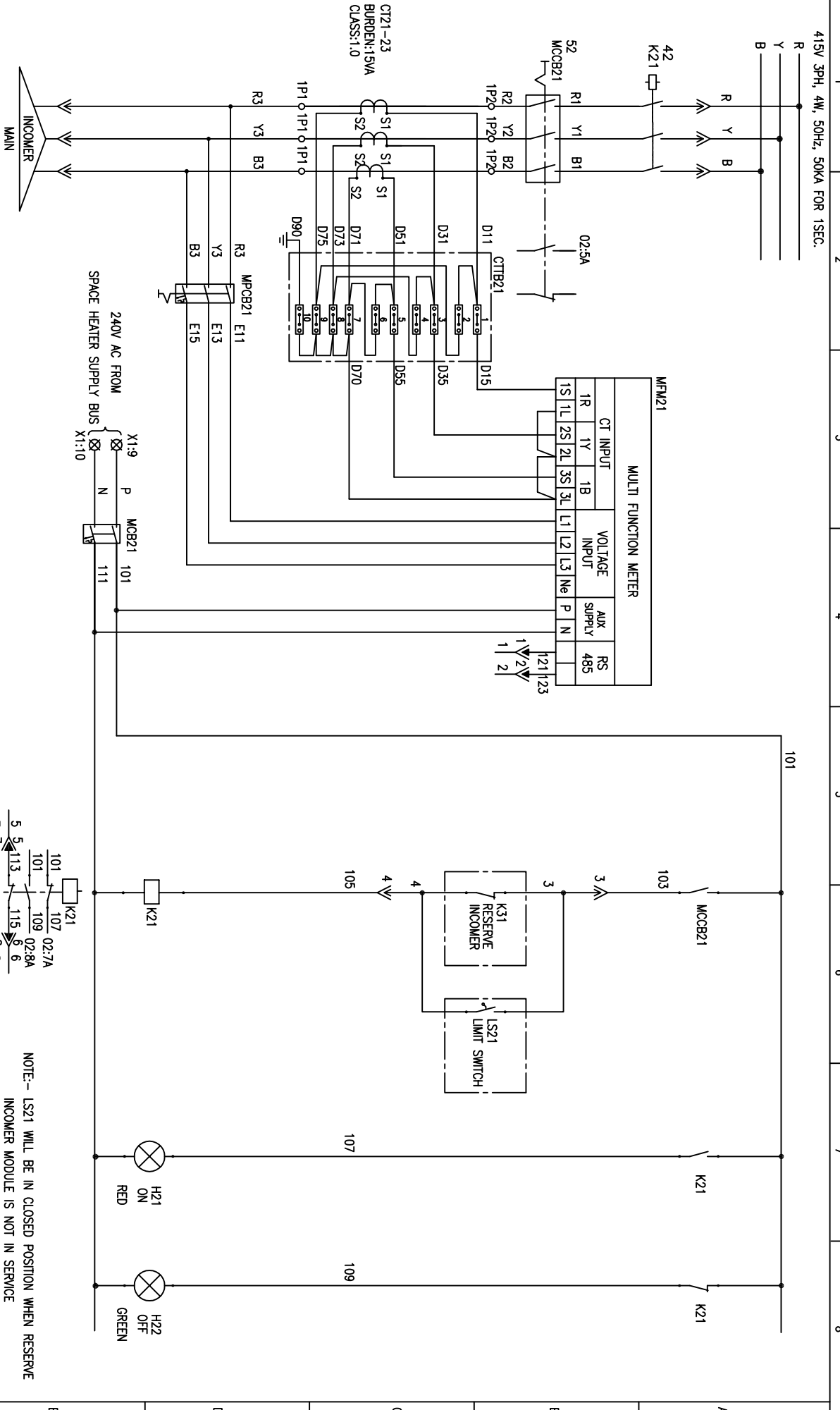


APPROVED
LETTER NO.: 0203
DATE: 10.05.2015

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROFORCELANS DIVISION BANGALORE

TITLE :
POWER & CONTROL SCHEME
CONTACTOR CONTROLLED MCCB INCOMMER
MAIN & RESERVE

DRG. NO. EP-4-CS-048-018



NOTE:- LS21 WILL BE IN CLOSED POSITION WHEN RESERVE INCOMER MODULE IS NOT IN SERVICE

INVENTORY NO.		DRG. NO. EP-4-CS-048-018		FIRST ANGLE PROJECTION		ALL DIMENSIONS ARE IN MM.	
REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	KSB	SCALE: NA
1	16.05.15	LEGEND SHEET NO.5 ADDED			CHECKED	JAGADISH	JOB NO. CP-14-048
2					DRAWN		DRG. NO. EP-4-CS-048-018
3					DESIGNED	JAGADISH	NO. OF SHEETS 05
4							SHEET NO. 02
							REV. NO. 01

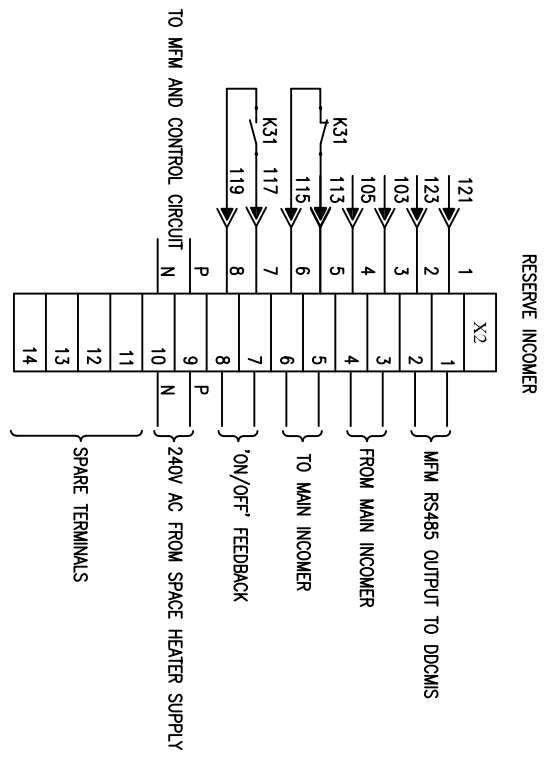
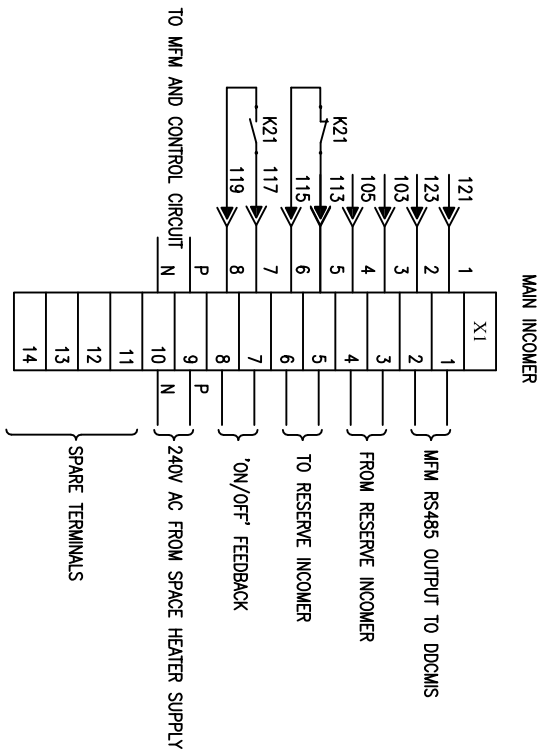


BHARAT HEAVY ELECTRICALS LIMITED
 ELECTROPOWER DIVISION BANGALORE

TITLE :
POWER & CONTROL SCHEME
 CONTACTOR CONTROLLED MCCB INCOMER
 MAIN & RESERVE

DRG. NO. EP-4-CS-048-018

1	2	3	4	5	6	7	8
FIRST ANGLE PROJECTION				ALL DIMENSIONS ARE IN MM.			



INVENTORY NO.	4																		
REV. NO.	1	2	3																
DATE	16.05.15																		
DESCRIPTION	LEGEND SHEET NO.5 ADDED																		
BY																			
APPD.																			
APPROVED	CHECKED	DRAWN	DESIGNED																
KSB	JAGADISH	JAGADISH	JAGADISH																
DATE	17.04.15		17.04.15																
SCALE	NA																		
JOB NO.	CP-14-048																		
DRG. NO.	EP-4-CS-048-018																		
TITLE	BHARAT HEAVY ELECTRICALS LIMITED ELECTROPROTECTIANS DIVISION BANGALORE POWER & CONTROL SCHEME CONTACTOR CONTROLLED MCCB INCOMER MAIN & RESERVE																		
NO. OF SHEETS	05																		
SHEET NO.	04																		
REV.	01																		

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DRG. NO. EP-3-CS-048-014

THREE LINE DIAGRAM SYMBOLS	SINGLE LINE DIAGRAM SYMBOLS	DESCRIPTION	SINGLE LINE DIAGRAM & CONTROL SCHEME
		MOTOR OPERATED DRAWOUT TYPE AIR CIRCUIT BREAKER	
		MANUALLY OPERATED MOULDED CASE CIRCUIT BREAKER	
		MANUALLY OPERATED MOTOR PROTECTION CIRCUIT BREAKER	
		MANUALLY OPERATED DRAWOUT TYPE FUSE SWITCH UNIT	
		POWER CONTACTOR	
		MINIATURE CIRCUIT BREAKER	
		OVER LOAD RELAY	
		CURRENT TRANSFORMER	
		POTENTIAL TRANSFORMER	
		HRC FUSE	
		NEUTRAL LINK	
		BUSDUCT	
		NORMALLY OPEN CONTACT	
		NORMALLY CLOSE CONTACT	
		CHANGE OVER CONTACT	
		THERMAL OVER LOAD RELAY	
		ON DELAY TIMER	
		OFF DELAY TIMER	
		INSTANTANEOUS CLOSE DELAYED OPENING CONT.	
		ON DELAY TIMER	
		OFF DELAY TIMER	
		3 PIN SOCKET WITH SWITCH	
		EARTHING	
		TRANSDUCER	
		SELECTOR SWITCH	
		METER/RELAY	
		INDICATING LAMP	
		OFF DELAY TIMER	
		ON DELAY TIMER	
		MULTIPLICATION RELAY	
		LATCHED TYPE RELAY	
		AUXILIARY CONTACTOR	
		POWER CONTACTOR	

LETTER SYMBOL	DESCRIPTION OF ELECTRICAL COMPONENTS
ACB	AIR CIRCUIT BREAKER
MCB	MINIATURE CIRCUIT BREAKER
MCCB	MOULDED CASE CIRCUIT BREAKER
MPCB	MOTOR PROTECTION CB
FSU	FUSE SWITCH UNIT
IS	ISOLATOR
OLR	OVER LOAD RELAY
CT	CURRENT TRANSFORMER
PT	POTENTIAL TRANSFORMER
CTB	CT TESTING BOARD
F	FUSE
NL	NEUTRAL LINK
PS	POWER SOCKET
M	MOTOR
E	EARTHING
CST	CONTROL SUPPLY TRANSFORMER
A	AMMETER
V	VOLTMETER
ASS	AMMETER SELECTOR SWITCH
VSS	VOLTMETER SELECTOR SWITCH
W	WATT METER
WH	WATT HOUR METER
KWH	KILO WATT HOUR METER
PF	POWER FACTOR METER
MFM	MULTI FUNCTION METER
H	INDICATING LAMP
NR	NUMERICAL RELAY
SS	SELECTOR SWITCH
C	POWER CONTACTOR
K	AUXILIARY CONTACTOR
PB	PUSH BUTTON
D	DIODE BRIDGE
CTD	CURRENT TRANSDUCER
VTD	VOLTAGE TRANSDUCER
TH	THERMOSTAT
SH	SPACE HEATER

CODE	PROTECTIVE RELAY DESCRIPTION
25	SYNCHRONISM
27	UNDER VOLTAGE
30&28	TRIP CIRCUIT ANNUNCIATION
46	NEGATIVE SEQUENCE TIME OVER CURRENT
50	GROUND INSTANTANEOUS OVER CURRENT
50BF	BREAKER FAILURE
50N	NEUTRAL INSTANTANEOUS OVER CURRENT
51	IDMT OVER CURRENT PROTECTION RELAY
51N	INVERSE TIME EARTH FAULT PROTECTION RELAY
52	BREAKER
64R	RESTRICTED EARTH FAULT
74	TRIP CIRCUIT SUPERVISION
86	HAND RESET LOCKOUT RELAY
87	DIFFERENTIAL PROTECTION RELAY
94	ANTI PUMPING RELAY
95	TRIP CIRCUIT SUPERVISION RELAY
97	FUSE MONITORING RELAY
98	COMPOSITE MOTOR PROTECTION RELAY
99	FUSE FAILURE RELAY

INVENTORY NO.	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE	JOB NO.	DRG. NO.	NO. OF SHEETS	REV.
1	LEGEND SHEET NO.5 ADDED			CHECKED	JAGADISH		19.05.15	NA	CP-14-048	EP-3-CS-048-014	05	01
2				DRAWN								
3				DESIGNED	JAGADISH		19.05.15					
4												

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPROTECTIVES DIVISION BANGALORE

TITLE :
POWER AND CONTROL SCHEME
UNIDIRECTIONAL MOTOR FEEDER ABOVE 90KW

NO. OF SHEETS : 05
SHEET NO. : 05

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

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CUSTOMER:



TELANGANA STATE POWER GENERATION CORPORATION LTD
TELANGANA STATE
INDIA

PROJECT:

1x800 MW KOTHAGUDAM THERMAL POWER STATION
STAGE-VII, UNIT#12
PALONCHA





CUSTOMER CONSULTANT:

DEVELOPMENT CONSULTANT PVT LTD
KOLKATA

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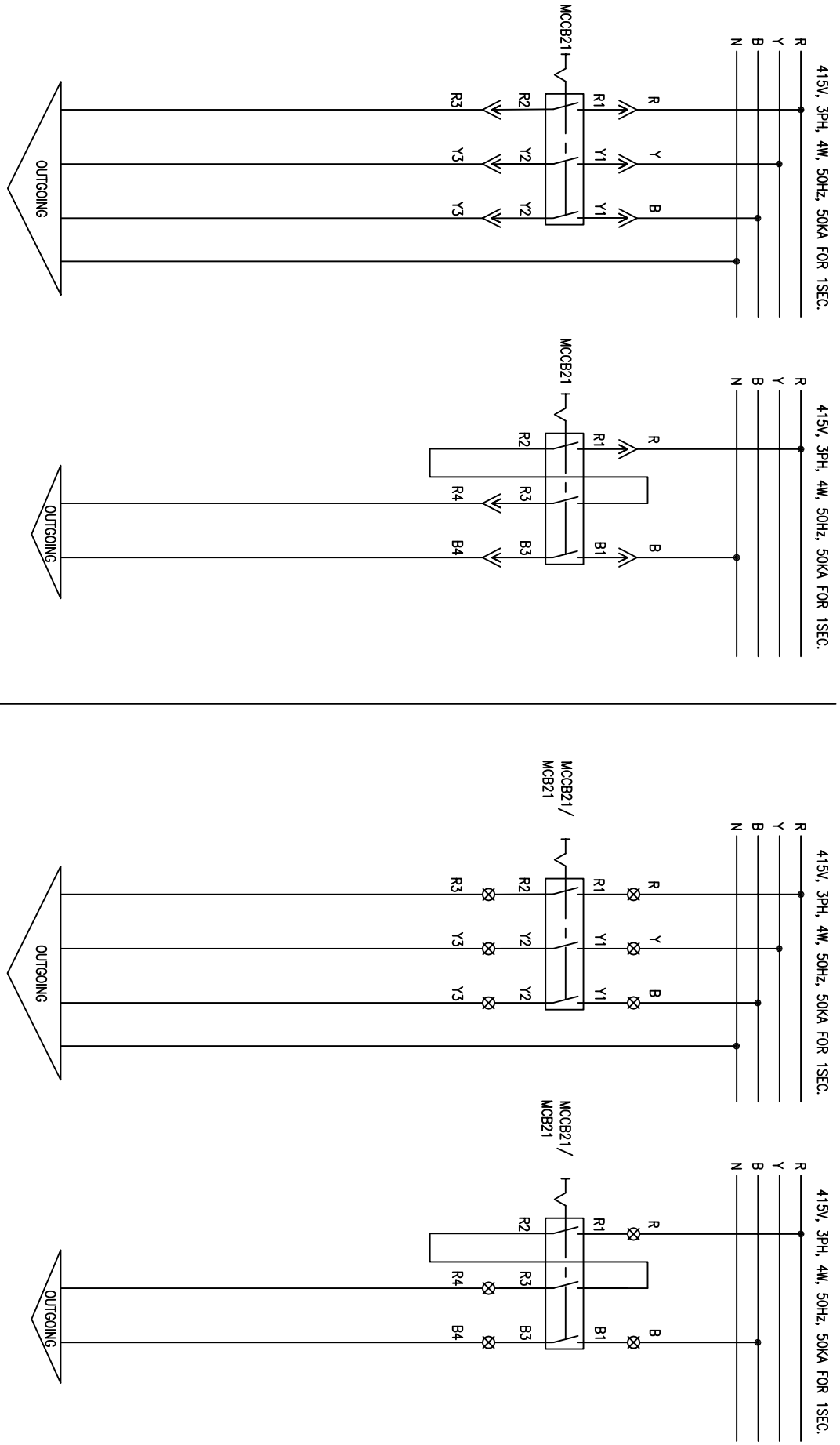
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DRG. NO. EP-4-CS-048-019

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-019	NO. OF SHEETS	REV.
4												02	00
3					DESIGNED	JAGADISH		17.04.15		BHARAT HEAVY ELECTRICALS LIMITED ELECTROFORCELANS DIVISION BANGALORE POWER SCHEME MCCB OUTGOING			
2				DRAWN									
1				CHECKED	JAGADISH		17.04.15						
					KSB		17.04.15						

DRG. NO. EP-4-CS-048-019

1 2 3 4 5 6 7 8
FIRST ANGLE PROJECTION
ALL DIMENSIONS ARE IN MM.



NOTE : THE ABOVE SCHEME APPLICABLE FOR OUTGOINGS - DRAWOUT TYPE
MAKE CONTACT IN SERVICE POSITION ONLY

NOTE 1: MCCB'S ARE APPLICABLE FOR DB'S
NOTE 2: THE ABOVE SCHEME APPLICABLE FOR OUTGOINGS - FIXED TYPE
FIXED TB

INVENTORY NO.	4	3	2	1	REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-4-CS-048-019	NO. OF SHEETS	02	NO. OF SHEETS	02	REV.	00
											JAGADISH		17.04.15									
											JAGADISH		17.04.15									
											JAGADISH		17.04.15									
											JAGADISH		17.04.15									



BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWERCELLS DIVISION BANGALORE

TITLE :
POWER SCHEME
MCCB OUTGOING



FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

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CUSTOMER:



TELANGANA STATE POWER GENERATION CORPORATION LTD
TELANGANA STATE
INDIA

PROJECT:

1x800 MW KOTHAGUDAM THERMAL POWER STATION
STAGE-VII, UNIT#12
PALONCHA



CUSTOMER CONSULTANT:

DEVELOPMENT CONSULTANTS PVT LTD
KOLKATA

DRG. NO. EP-3-CS-048-020

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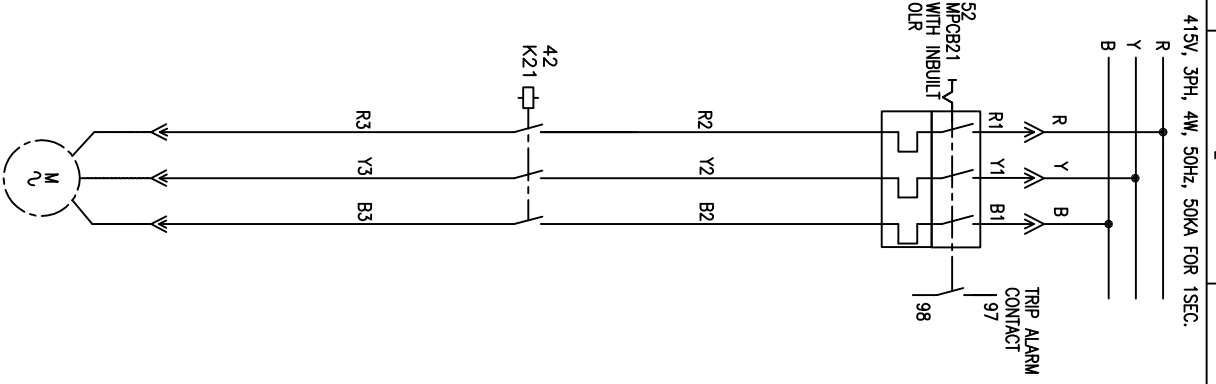
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REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-3-CS-048-020	NO. OF SHEETS	REV.
4												05	00
3					DESIGNED	JAGADISH		19.04.16				01	
2					DRAWN								
1					CHECKED	JAGADISH		19.04.16					



BHARAT HEAVY ELECTRICALS LIMITED
ELECTROFORCELANS DIVISION BANGALORE
POWER AND CONTROL SCHEME
BELOW 30KW UNIDIRECTIONAL MOTOR FEEDER

DRG. NO. EP-3-CS-048-020



FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

- POSITIONS OF DISCONNECTORS
- ▲ MAKE CONTACT IN BOTH SERVICE & TEST POSITION
 - ▲ MAKE CONTACT IN TEST POSITION ONLY
 - ▲ MAKE CONTACT IN SERVICE POSITION ONLY

REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO.	DRG. NO.	NO. OF SHEETS	REV.
4												05	00
3					DESIGNED	JAGADISH	<i>[Signature]</i>	19.04.16					
2					DRAWN								
1					CHECKED	JAGADISH	<i>[Signature]</i>	19.04.16		CP-14-048	EP-3-CS-048-020	02	



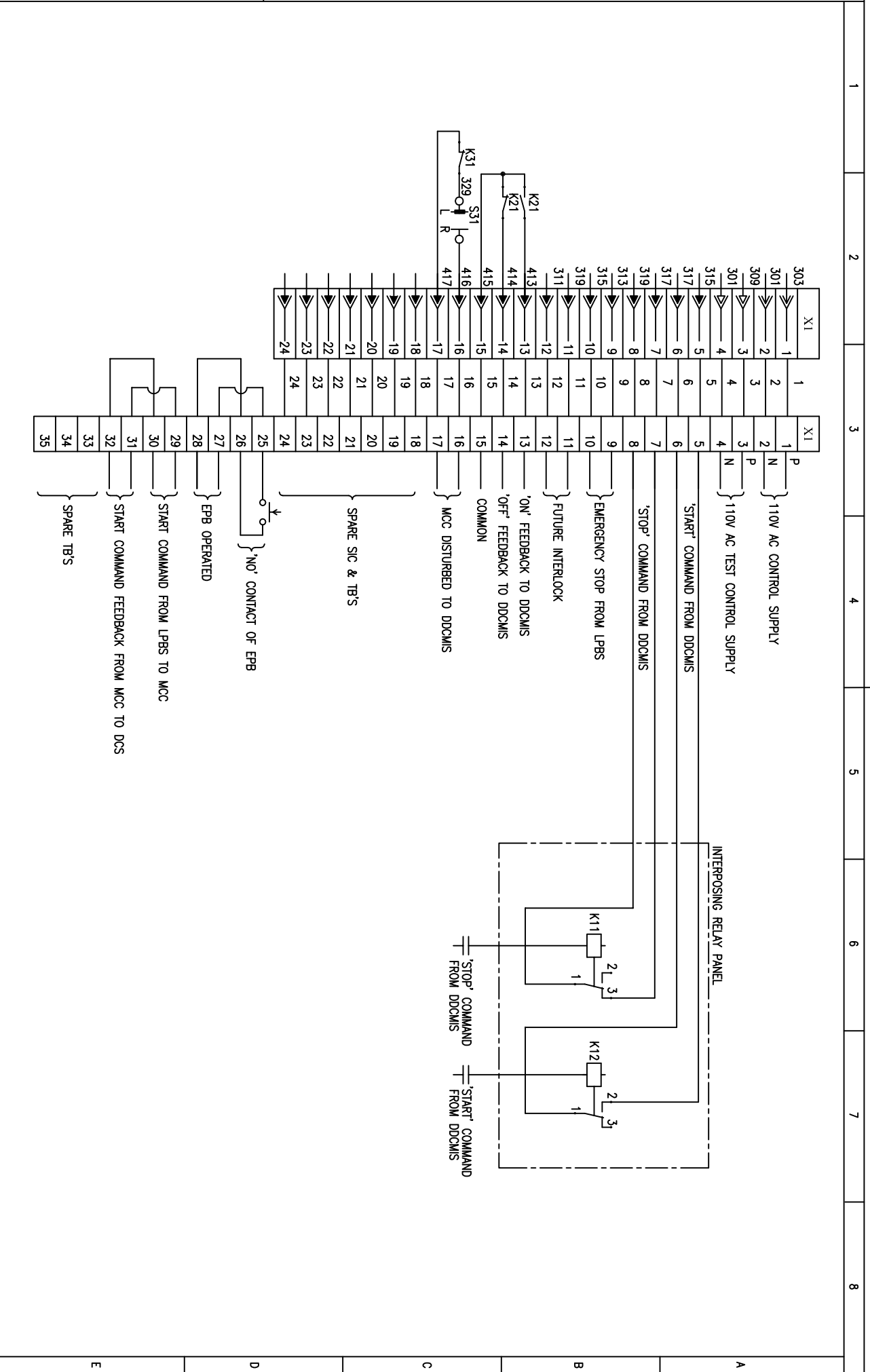
BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPROCELAIN DIVISION BANGALORE

TITLE :
POWER AND CONTROL SCHEME
BELOW 30KW UNIDIRECTIONAL MOTOR FEEDER

DRG. NO. EP-3-CS-048-020

FORM 66-271 A3

INVENTORY NO.	REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO.	DRG. NO.	NO. OF SHEETS	REV.
4											CP-14-048	EP-3-CS-048-020	05	00
3							JAGADISH		19.04.16				04	
2							JAGADISH		19.04.16					
1							JAGADISH		19.04.16					



FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPROCESSING DIVISION BANGALORE

TITLE :
POWER AND CONTROL SCHEME
BELOW 30KW UNIDIRECTIONAL MOTOR FEEDER



NO. OF SHEETS
05

SHEET NO.
04

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DRG. NO. EP-3-CS-048-020

THREE LINE DIAGRAM SYMBOLS	SINGLE LINE DIAGRAM SYMBOLS	DESCRIPTION	SINGLE LINE DIAGRAM & CONTROL SCHEME
		MOTOR OPERATED DRAWOUT TYPE AIR CIRCUIT BREAKER	
		MANUALLY OPERATED MOULDED CASE CIRCUIT BREAKER MCCB	
		MANUALLY OPERATED MOTOR PROTECTION CIRCUIT BREAKER MPCB	
		MANUALLY OPERATED DRAWOUT TYPE FUSE SWITCH UNIT FSU	
		POWER CONTRACTOR Q	
		MINIATURE CIRCUIT BREAKER	
		OVER LOAD RELAY OLR	
		CURRENT TRANSFORMER CT	
		POTENTIAL TRANSFORMER PT	
		HRC FUSE F	
		NEUTRAL LINK LK	
		BUSDUCT	
		NORMALLY OPEN CONTACT	
		NORMALLY CLOSE CONTACT	
		CHANGE OVER CONTACT	
		THERMAL OVER LOAD RELAY	
		ON DELAY TIMER	
		TIMED CLOSING CONTACT	
		OFF DELAY TIMER	
		TIMED OPENING CONTACT	
		ON DELAY TIMER	
		INSTANTANEOUS CLOSE DELAYED OPENING CONT.	
		OFF DELAY TIMER	
		INSTANTANEOUS CLOSING CONT.	
		NORMALLY OPEN BUTTON PB	
		NORMALLY CLOSE BUTTON PB	
		MUSHROOM HEAD EMERGENCY STOP PB	
		SELECTOR SWITCH SS	
		POWER CONTACTOR	
		AUXILIARY CONTACTOR	
		MULTIPLICATION RELAY	
		LATCHED TYPE RELAY	
		ON DELAY TIMER	
		OFF DELAY TIMER	
		INDICATING LAMP	
		METER/RELAY	
		SELECTOR SWITCH	
		TRANSDUCER	
		EARTHING	
		3 PIN SOCKET WITH SWITCH	
		MOTOR	
		HEATER	
		INTERNALLY WIRED TERMINAL	
		OUTGOING TERMINAL	
		DRAWOUT/DISCONNECTOR	
		DIODE	

LETTER SYMBOL	DESCRIPTION OF ELECTRICAL COMPONENTS	CODE	PROTECTIVE RELAY DESCRIPTION
AGB	AIR CIRCUIT BREAKER	25	SYNCHRONISM
MCB	MINIATURE CIRCUIT BREAKER	27	UNDER VOLTAGE
MCCB	MOULDED CASE CIRCUIT BREAKER	30&48	TRIP CIRCUIT ANNUNCIATION
MPCB	MOTOR PROTECTION CB	46	NEGATIVE SEQUENCE TIME OVER CURRENT
FSU	FUSE SWITCH UNIT	50	GROUND INSTANTANEOUS OVER CURRENT
IS	ISOLATOR	50BF	BREAKER FAILURE
OLR	OVER LOAD RELAY	50N	NEUTRAL INSTANTANEOUS OVER CURRENT
CT	CURRENT TRANSFORMER	51	IDMT OVER CURRENT PROTECTION RELAY
PT	POTENTIAL TRANSFORMER	51N	INVERSE TIME EARTH FAULT PROTECTION RELAY
CTB	CT TESTING BOARD	52	BREAKER
F	FUSE	64R	RESTRICTED EARTH FAULT
NL	NEUTRAL LINK	74	TRIP CIRCUIT SUPERVISION
PS	POWER SOCKET	86	HAND RESET LOCKOUT RELAY
M	MOTOR	87	DIFFERENTIAL PROTECTION RELAY
E	EARTHING	94	ANTI PUMPING RELAY
CST	CONTROL SUPPLY TRANSFORMER	95	TRIP CIRCUIT SUPERVISION RELAY
A	AMMETER	97	FUSE MONITORING RELAY
V	VOLTMETER	98	COMPOSITE MOTOR PROTECTION RELAY
ASS	AMMETER SELECTOR SWITCH	99	FUSE FAILURE RELAY
VSS	VOLTMETER SELECTOR SWITCH		
W	WATT METER		
WH	WATT HOUR METER		
KWH	KILO WATT HOUR METER		
PF	POWER FACTOR METER		
MEM	MULTI FUNCTION METER		
H	INDICATING LAMP		
NR	NUMERICAL RELAY		
SS	SELECTOR SWITCH		
C	POWER CONTACTOR		
K	AUXILIARY CONTACTOR		
PB	PUSH BUTTON		
D	DIODE BRIDGE		
CTD	CURRENT TRANSDUCER		
VTD	VOLTAGE TRANSDUCER		
TH	THERMOSTAT		
SH	SPACE HEATER		

INVENTORY NO.	4	NAME	JAGADISH	DATE	19.04.16	SCALE	NA	JOB NO.	CP-14-048	DRG. NO.	EP-3-CS-048-020	
REV. NO.	1	DESCRIPTION	CHECKED	JAGADISH	19.04.16			TITLE :	BHARAT HEAVY ELECTRICALS LIMITED ELECTRONPROCELAN'S DIVISION BANGALORE POWER AND CONTROL SCHEME BELOW 30KW UNIDIRECTIONAL MOTOR FEEDER			
DATE	2	BY	APPD.	APPROVED	KSB	19.04.16		NO. OF SHEETS	05			
	3							SHEET NO.	05			
	4							REV.	00			

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

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CUSTOMER:



TELANGANA STATE POWER GENERATION CORPORATION LTD
TELANGANA STATE
INDIA

PROJECT:

1x800 MW KOTHAGUDAM THERMAL POWER STATION
STAGE-VII, UNIT#12
PALONCHA

CUSTOMER CONSULTANT:



DEVELOPMENT CONSULTANTS PVT LTD
KOLKATA

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DRG. NO. EP-3-CS-048-021

INVENTORY NO.

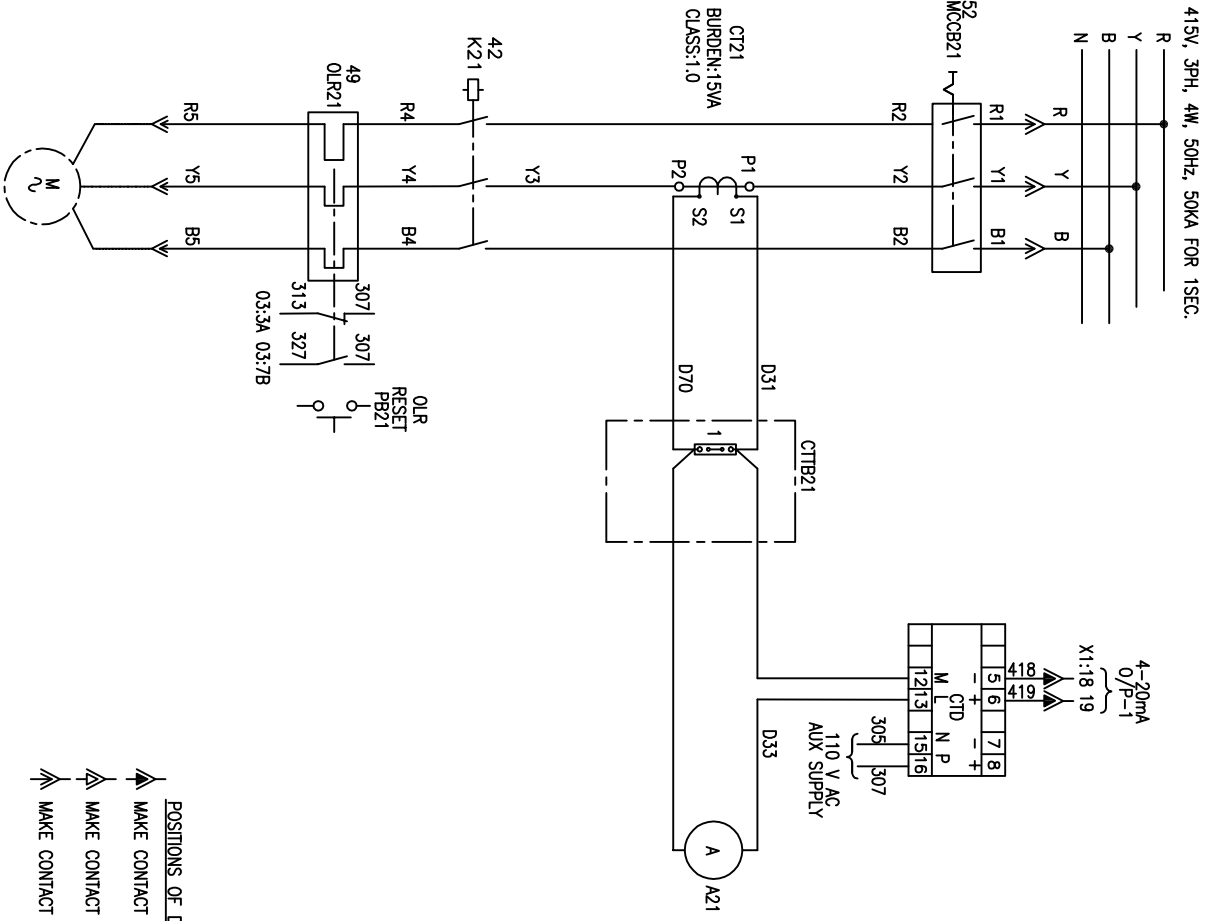
REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE
1					CHECKED	JAGADISH		19.04.16
2					DRAWN			
3					DESIGNED	JAGADISH		19.04.16
4								



BHARAT HEAVY ELECTRICALS LIMITED ELECTROPOWERCELLS DIVISION BANGALORE		NO. OF SHEETS 05
TITLE : POWER AND CONTROL SCHEME ABOVE 30KW & BELOW 110KW UNIDIRECTIONAL MOTOR FEEDER		SHEET NO. 01
JOB NO. CP-14-048	DRG. NO. EP-3-CS-048-021	REV. NO. 00
SCALE: NA		

DRG. NO. EP-3-CS-048-021

FORM 66-271 A3



POSITIONS OF DISCONNECTORS
 ▲ MAKE CONTACT IN BOTH SERVICE & TEST POSITION
 ▲ MAKE CONTACT IN TEST POSITION ONLY
 ▲ MAKE CONTACT IN SERVICE POSITION ONLY

1 2 3 4 5 6 7 8

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

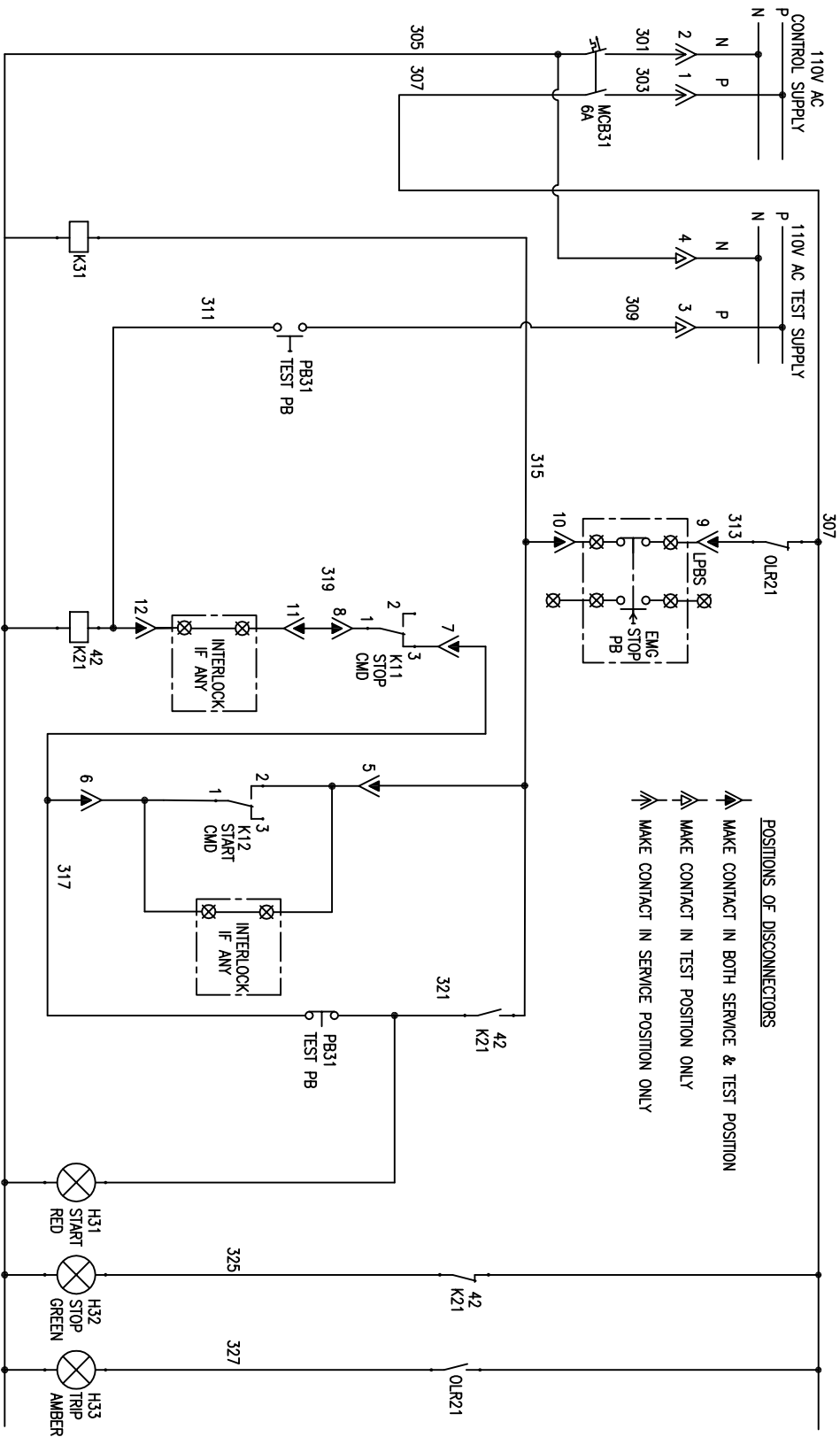
REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	KSB	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-3-CS-048-021	NO. OF SHEETS 05	SHEET NO. 02	REV. NO. 00
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3					DESIGNED	JAGADISH	19.04.16					
2					DRAWN							
1					CHECKED	JAGADISH	19.04.16					



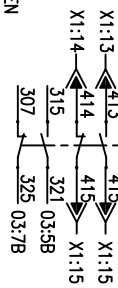
BHARAT HEAVY ELECTRICALS LIMITED
 ELECTROPROCELAIN DIVISION BANGALORE
 POWER AND CONTROL SCHEME
 ABOVE 30KW & BELOW 110KW UNIDIRECTIONAL MOTOR FEEDER



FIRST ANGLE PROJECTION
ALL DIMENSIONS ARE IN MM



NOTE:-
TEST PB WILL BE ACCESSIBLE ONLY WHEN DOOR IS OPEN



REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	KSB	SCALE	JOB NO.	DRG. NO.	NO. OF SHEETS	NO. OF SHEETS	REV.
1					CHECKED	JAGADISH	19.04.16	CP-14-048	EP-3-CS-048-021	05	03	00
2					DRAWN							
3					DESIGNED	JAGADISH	19.04.16					
4												



BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPROCELAIN DIVISION BANGALORE

TITLE :
POWER AND CONTROL SCHEME
ABOVE 30KW & BELOW 110KW UNIDIRECTIONAL MOTOR FEEDER



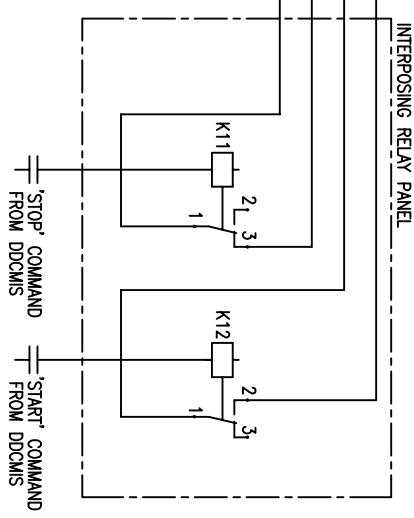
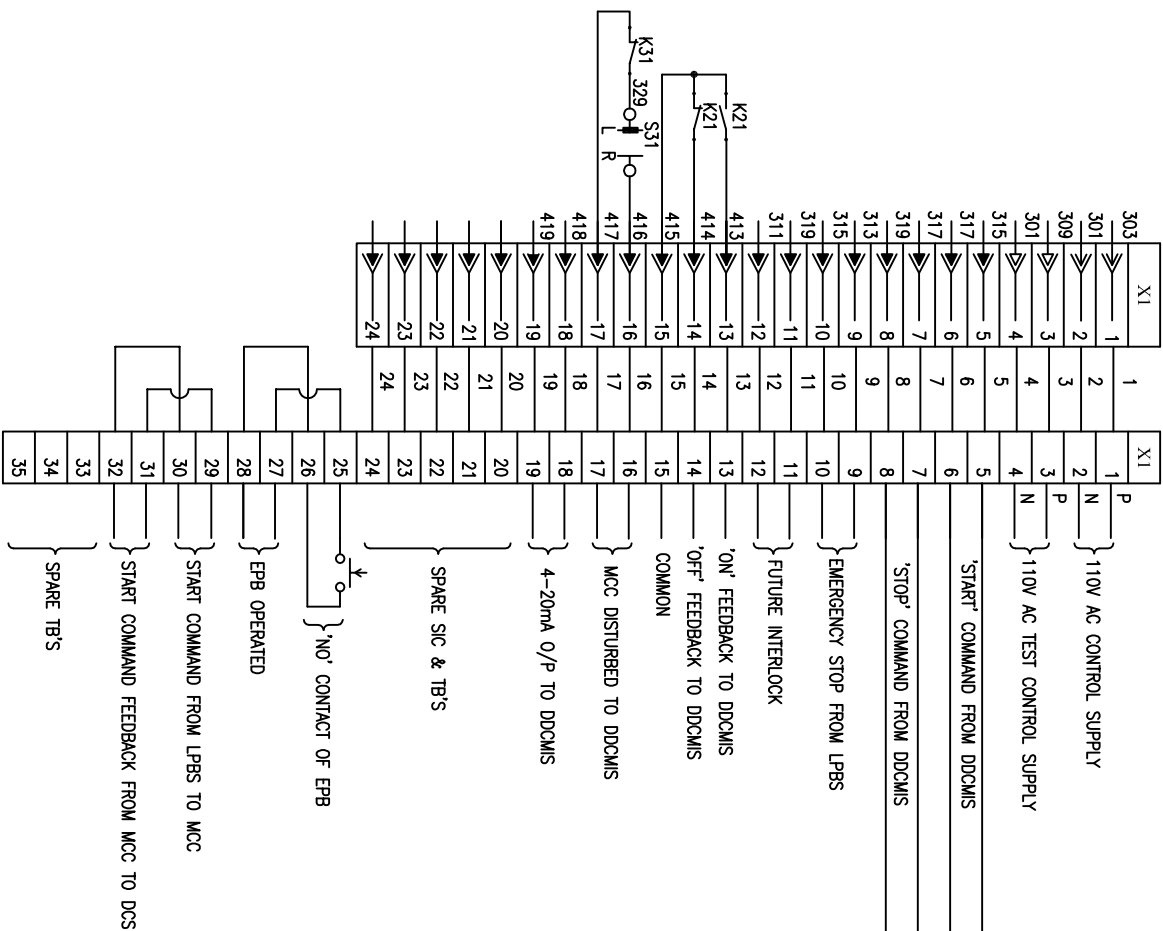
NO. OF SHEETS
05

SHEET NO.
03

REV. NO.
00

DRG. NO. EP-3-CS-048-021

INVENTORY NO.	REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO.	DRG. NO.	NO. OF SHEETS	NO. OF SHEETS	REV.
4															
3															
2															
1															



1 2 3 4 5 6 7 8

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPROCELAIN DIVISION BANGALORE

TITLE :
POWER AND CONTROL SCHEME
ABOVE 30KW & BELOW 110KW UNIDIRECTIONAL MOTOR FEEDER

NO. OF SHEETS	05
SHEET NO.	04
REV.	00

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DRG. NO. EP-3-CS-048-021

THREE LINE DIAGRAM SYMBOLS	SINGLE LINE DIAGRAM SYMBOLS	DESCRIPTION	SINGLE LINE DIAGRAM & CONTROL SCHEME
		MOTOR OPERATED DRAWOUT TYPE AIR CIRCUIT BREAKER	
		MANUALLY OPERATED MOULDED CASE CIRCUIT BREAKER	
		MANUALLY OPERATED MOTOR PROTECTION CIRCUIT BREAKER	
		MANUALLY OPERATED DRAWOUT TYPE FUSE SWITCH UNIT	
		POWER CONTACTOR	
		MINIATURE CIRCUIT BREAKER	
		OVER LOAD RELAY	
		CURRENT TRANSFORMER	
		POTENTIAL TRANSFORMER	
		HRC FUSE	
		NEUTRAL LINK	
		BUSDUCT	
		NORMALLY OPEN CONTACT	
		NORMALLY CLOSE CONTACT	
		CHANGE OVER CONTACT	
		THERMAL OVER LOAD RELAY	
		ON DELAY TIMER	
		TIMED CLOSING CONTACT	
		OFF DELAY TIMER	
		TIMED OPENING CONTACT	
		ON DELAY TIMER INSTANTANEOUS CLOSE DELAYED OPENING CONT.	
		3 PIN SOCKET WITH SWITCH	
		EARTHING	
		TRANSDUCER	
		SELECTOR SWITCH	
		METER/RELAY	
		INDICATING LAMP	
		OFF DELAY TIMER	
		ON DELAY TIMER	
		MULTIPLICATION RELAY LATCHED TYPE RELAY	
		AUXILIARY CONTACTOR	
		POWER CONTACTOR	

LETTER SYMBOL	DESCRIPTION OF ELECTRICAL COMPONENTS	CODE	PROTECTIVE RELAY DESCRIPTION
ACB	AIR CIRCUIT BREAKER	25	SYNCHRONISM
MCB	MINIATURE CIRCUIT BREAKER	27	UNDER VOLTAGE
30A&B	MOULDED CASE CIRCUIT BREAKER	46	NEGATIVE SEQUENCE TIME OVER CURRENT
MPCB	MOTOR PROTECTION CB	50	GROUND INSTANTANEOUS OVER CURRENT
FSU	FUSE SWITCH UNIT	50BF	BREAKER FAILURE
IS	ISOLATOR	50N	NEUTRAL INSTANTANEOUS OVER CURRENT
OLR	OVER LOAD RELAY	51	IDMT OVER CURRENT PROTECTION RELAY
CT	CURRENT TRANSFORMER	51N	INVERSE TIME EARTH FAULT PROTECTION RELAY
PT	POTENTIAL TRANSFORMER	52	BREAKER
CTB	CT TESTING BOARD	64R	RESTRICTED EARTH FAULT
F	FUSE	74	TRIP CIRCUIT SUPERVISION
NL	NEUTRAL LINK	86	HAND RESET LOCKOUT RELAY
PS	POWER SOCKET	87	DIFFERENTIAL PROTECTION RELAY
M	MOTOR	94	ANTI PUMPING RELAY
E	EARTHING	95	TRIP CIRCUIT SUPERVISION RELAY
E	EARTHING	97	FUSE MONITORING RELAY
CST	CONTROL SUPPLY TRANSFORMER	98	COMPOSITE MOTOR PROTECTION RELAY
A	AMMETER	99	FUSE FAILURE RELAY
V	VOLTMETER		
VSS	VOLTMETER SELECTOR SWITCH		
W	WATT METER		
WH	WATT HOUR METER		
KWH	KILO WATT HOUR METER		
PF	POWER FACTOR METER		
MFM	MULTI FUNCTION METER		
H	INDICATING LAMP		
NR	NUMERICAL RELAY		
SS	SELECTOR SWITCH		
C	POWER CONTACTOR		
K	AUXILIARY CONTACTOR		
PB	PUSH BUTTON		
D	DIODE BRIDGE		
CTD	CURRENT TRANSDUCER		
VTD	VOLTAGE TRANSDUCER		
TH	THERMOSTAT		
SH	SPACE HEATER		

INVENTORY NO.	REV. NO.	DATE	DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE: NA	JOB NO. CP-14-048	DRG. NO. EP-3-CS-048-021
1							JAGADISH		19.04.16			
2							JAGADISH		19.04.16			
3							JAGADISH		19.04.16			
4												

BHARAT HEAVY ELECTRICALS LIMITED
 ELECTRONPOWERELANS DIVISION BANGALORE

TITLE : ABOVE 30KW & BELOW 110KW UNIDIRECTIONAL MOTOR FEEDER

NO. OF SHEETS: 05
 SHEET NO.: 05