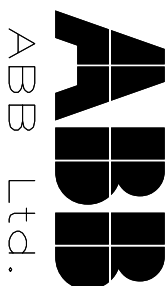


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FOR APPROVAL



PROJECT NAME APR E-HOUSE PROJECT

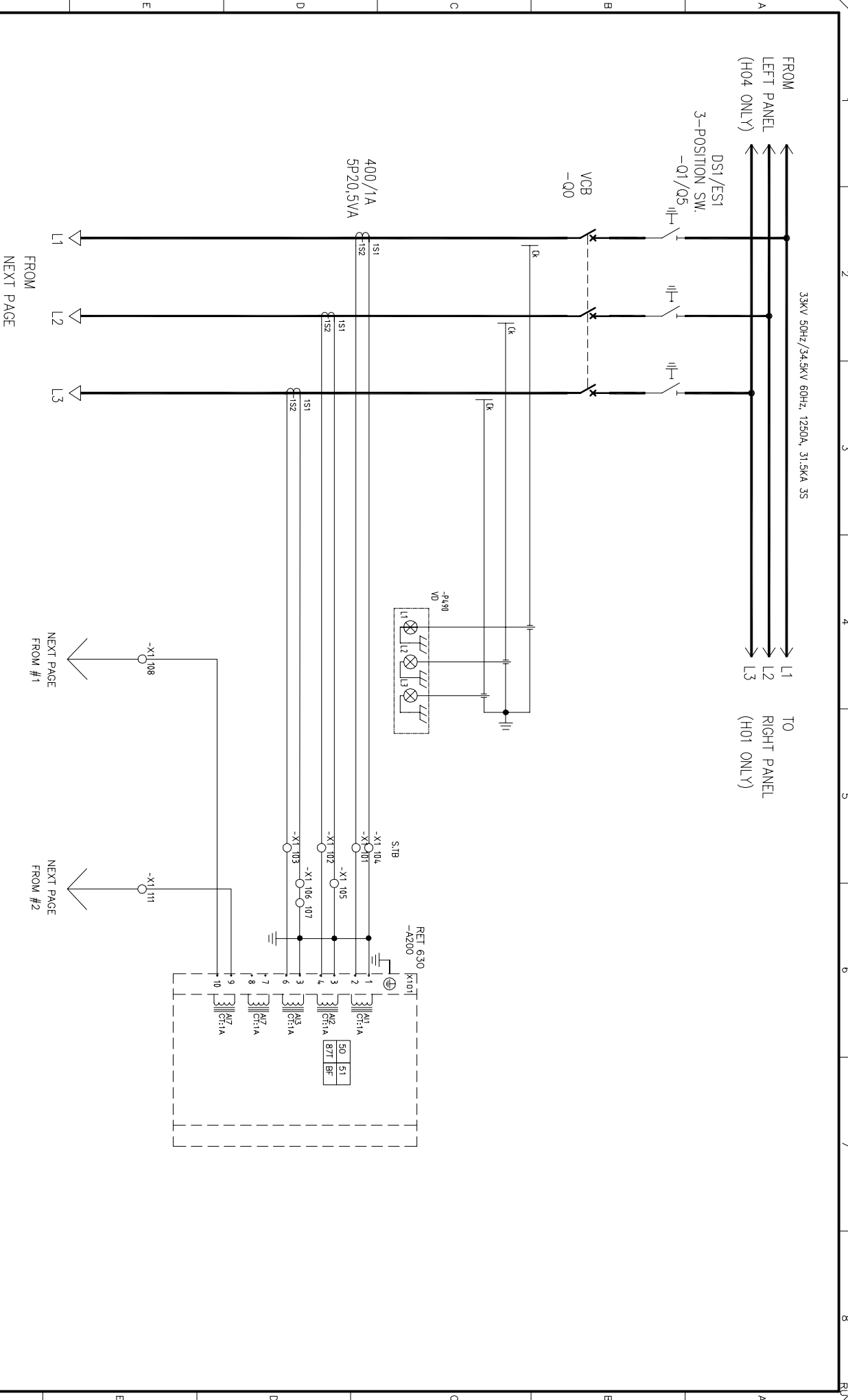
CLIENT'S NAME APR Senegal Project

JOB NO. 70043

DESCRIPTION SCHEMATIC DIAGRAM FOR 630A INCOMING
 PANEL NO. H01 & H04

1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		ABB Ltd.		APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE INCOMER	CUSTOMER DWG NO.	=
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE		PPMV			34.5kV SYSTEM	ABB DRAWING NO.	+
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD							SHEET 1 OF 22
1			2									8

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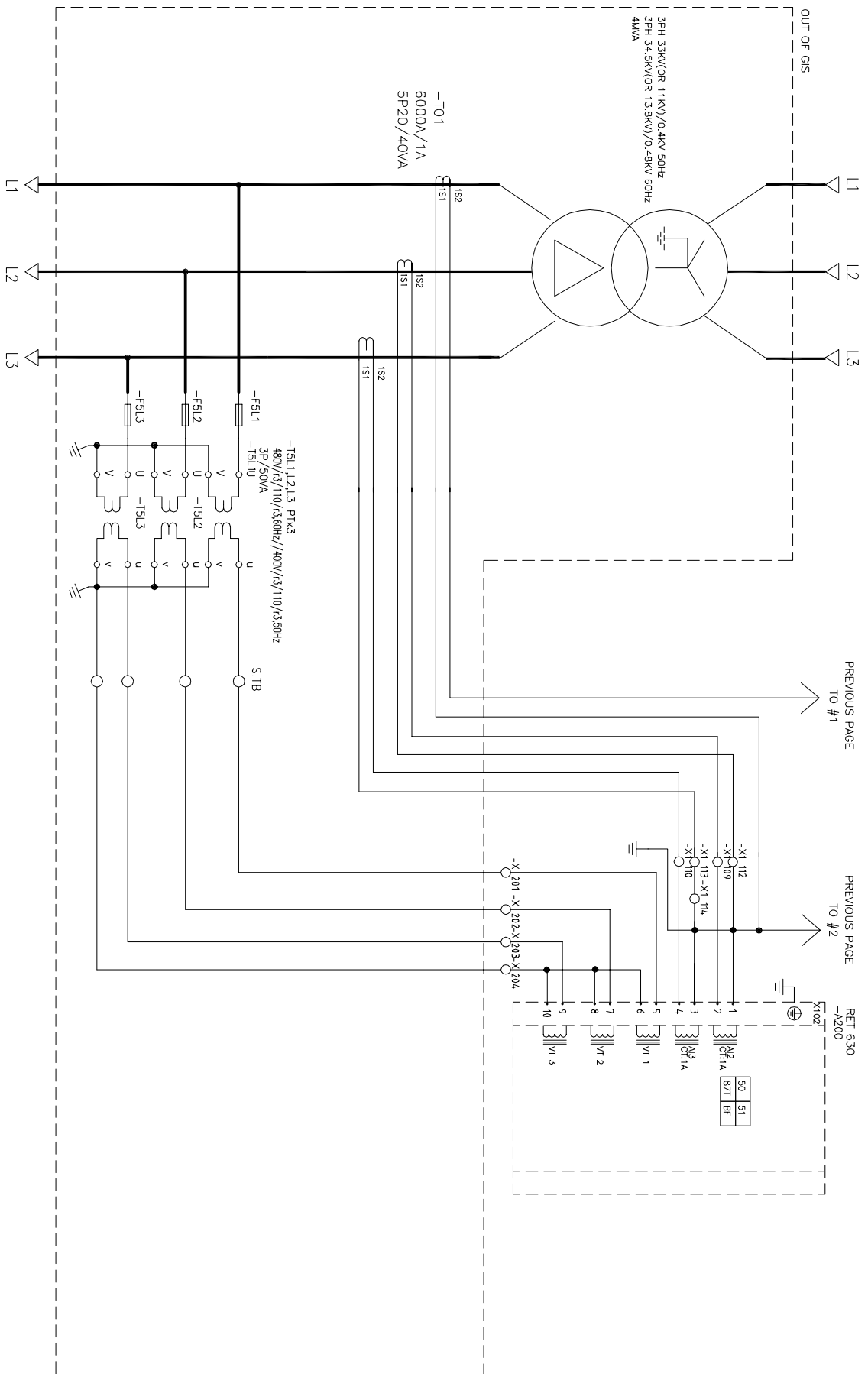
FROM
NEXT PAGE

NEXT PAGE
FROM #1

NEXT PAGE
FROM #2

REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE INCOMER 34.5kV SYSTEM	CUSTOMER DWG NO. ABB DRAWING NO. 70043-INC-H01	SHEET 2 OF 22
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		ABB	APR Energy				
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE							

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FROM
NEXT PAGE

PREVIOUS PAGE
TO #1

PREVIOUS PAGE
TO #2

RET 630
-A200

3PH 33KV(OR 11KV)/0.4KV 50HZ
3PH 34.5KV(OR 13.8KV)/0.48KV 60HZ
4MVA

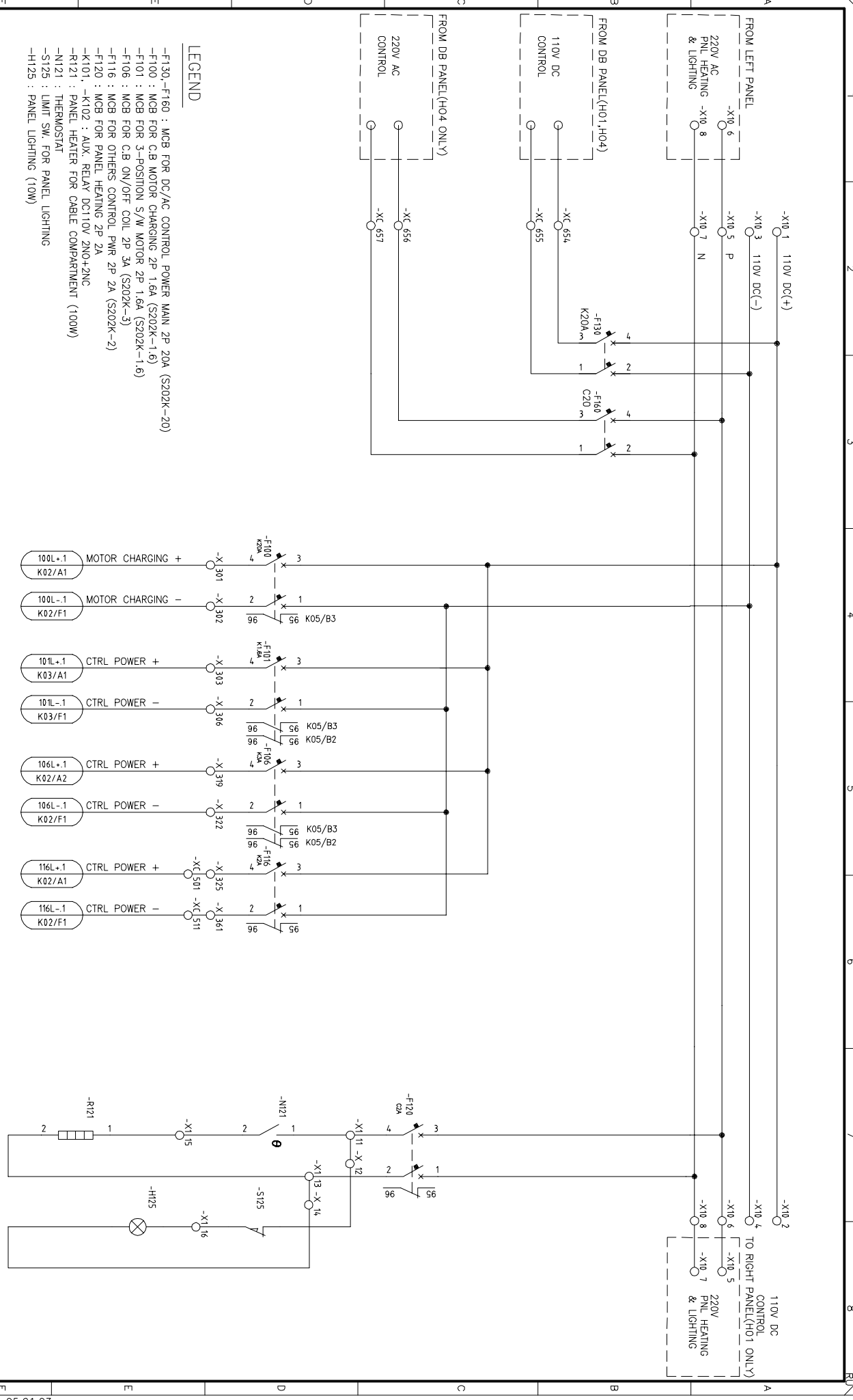
-T01
60000A/1A
5P20/40VA

-TSL1,2,3 PT%3
480V/53/110/3.50Hz/400V/3/110/3.50Hz
3P/50VA

S.TB

REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV	ABB Ltd.	APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE INCOMER 34.5KV SYSTEM	CUSTOMER DWG NO. ABB DRAWING NO. 70043-INC-H02	SHEET 3 OF 22
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		APR				
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE						

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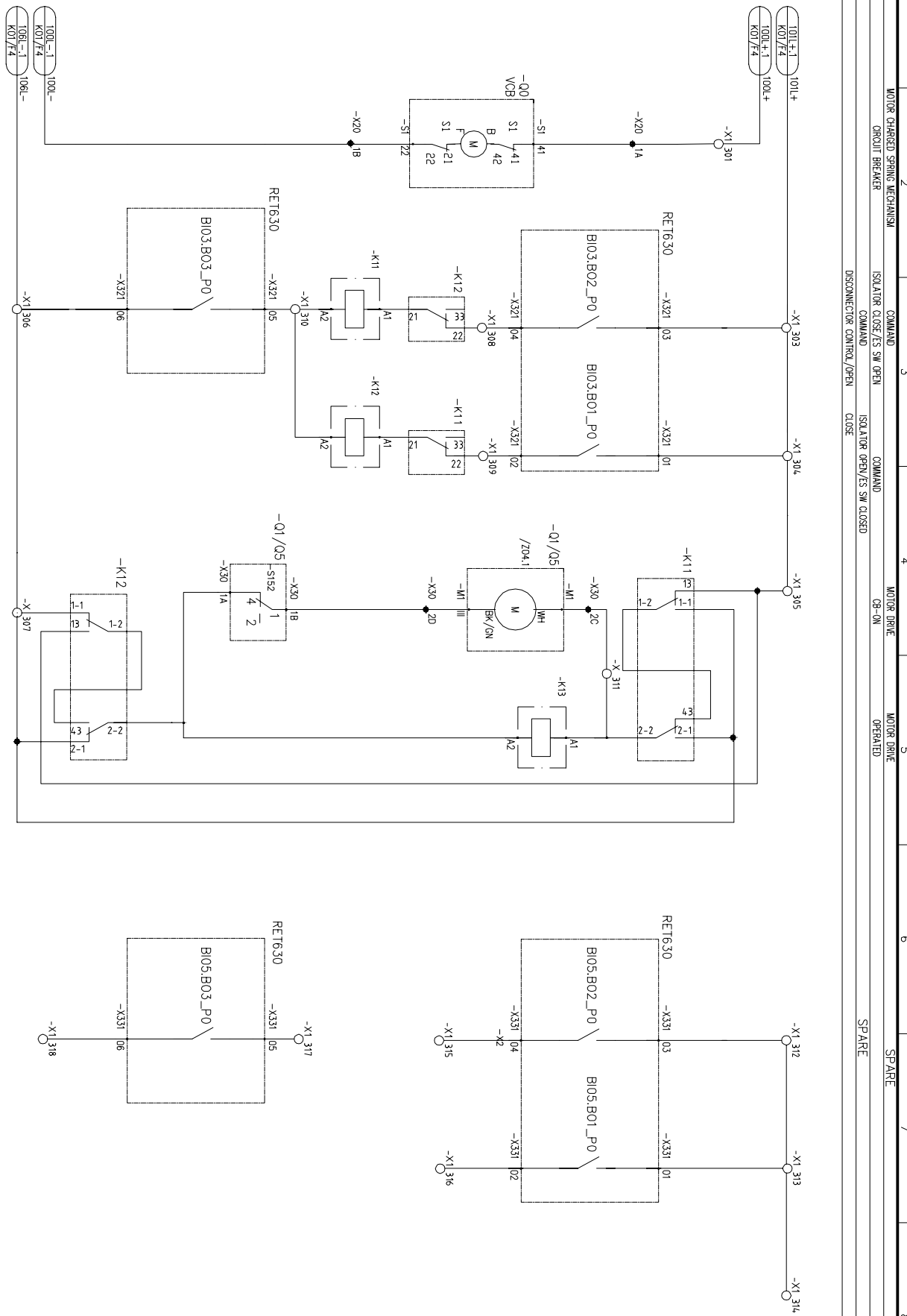


LEGEND

- F130 -F160 : MCB FOR DC/AC CONTROL POWER MAIN 2P 20A (S202K-20)
- F100 : MCB FOR C.B MOTOR CHARGING 2P 1.6A (S202K-1.6)
- F101 : MCB FOR 3-POSITION S/W MOTOR 2P 1.6A (S202K-1.6)
- F106 : MCB FOR C.B ON/OFF COIL 2P 3A (S202K-3)
- F116 : MCB FOR OTHERS CONTROL PWR 2P 2A (S202K-2)
- F120 : MCB FOR PANEL HEATING 2P 2A (S202K-2)
- K101, -K102 : AUX. RELAY DC110V 2NO+2NC
- R121 : PANEL HEATER FOR CABLE COMPARTMENT (100W)
- N121 : THERMOSTAT
- S125 : LIMIT SW. FOR PANEL LIGHTING
- H125 : PANEL LIGHTING (10W)

1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE			APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE INCOMER	CUSTOMER DING NO. ABB DRAWING NO. 70043-INC-K01	= + SHEET 3 OF 22
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE						
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV					

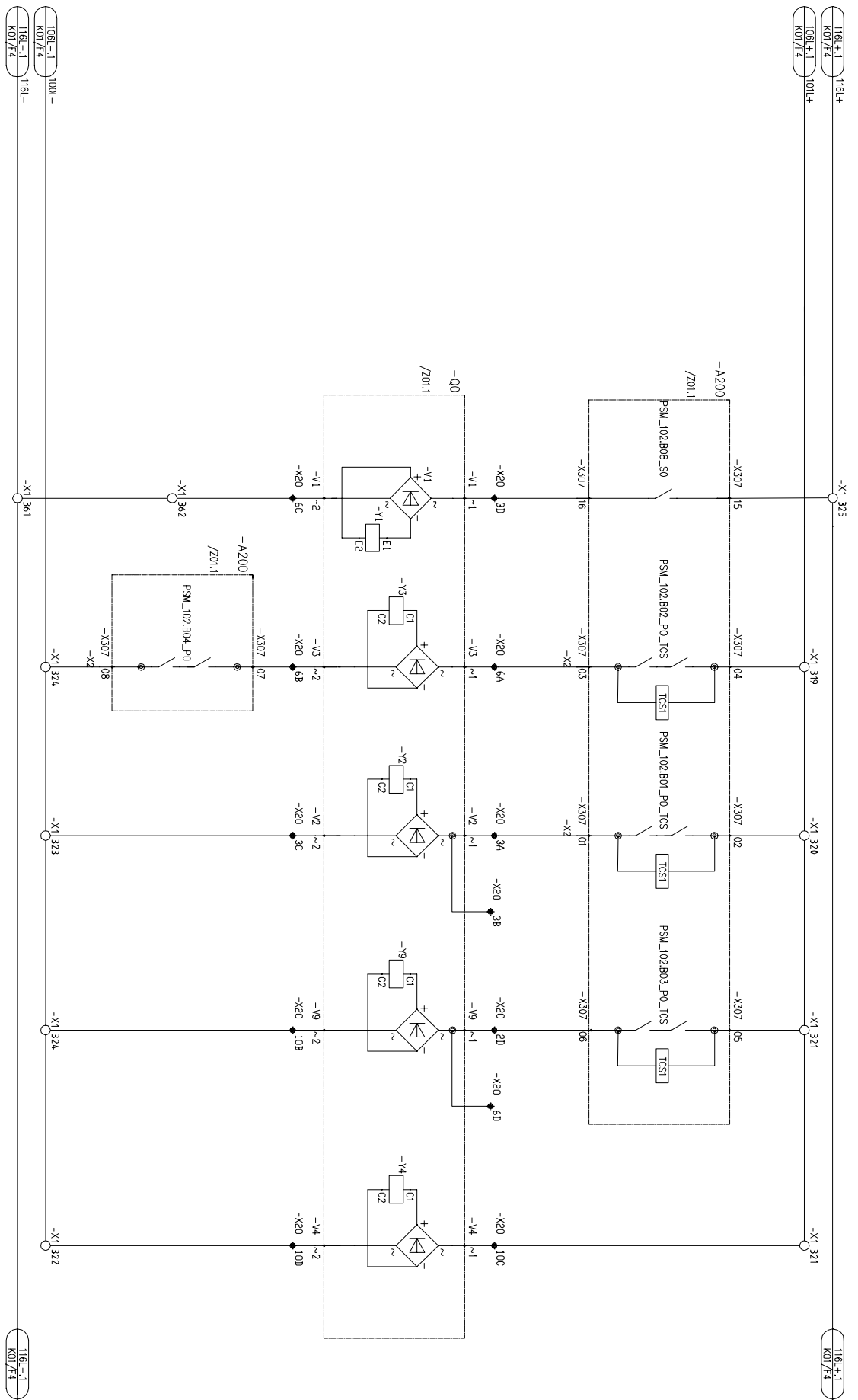
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1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE	ABB	ABB Ltd.				TITLE SCHEMATIC DIAGRAM FOR	CUSTOMER DWG NO.	=
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE						TYPE INCOMER	ABB DRAWING NO.	+
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD						34.5kV SYSTEM	70043-INC-K02	4 OF 22
1			2					4	5	6			8

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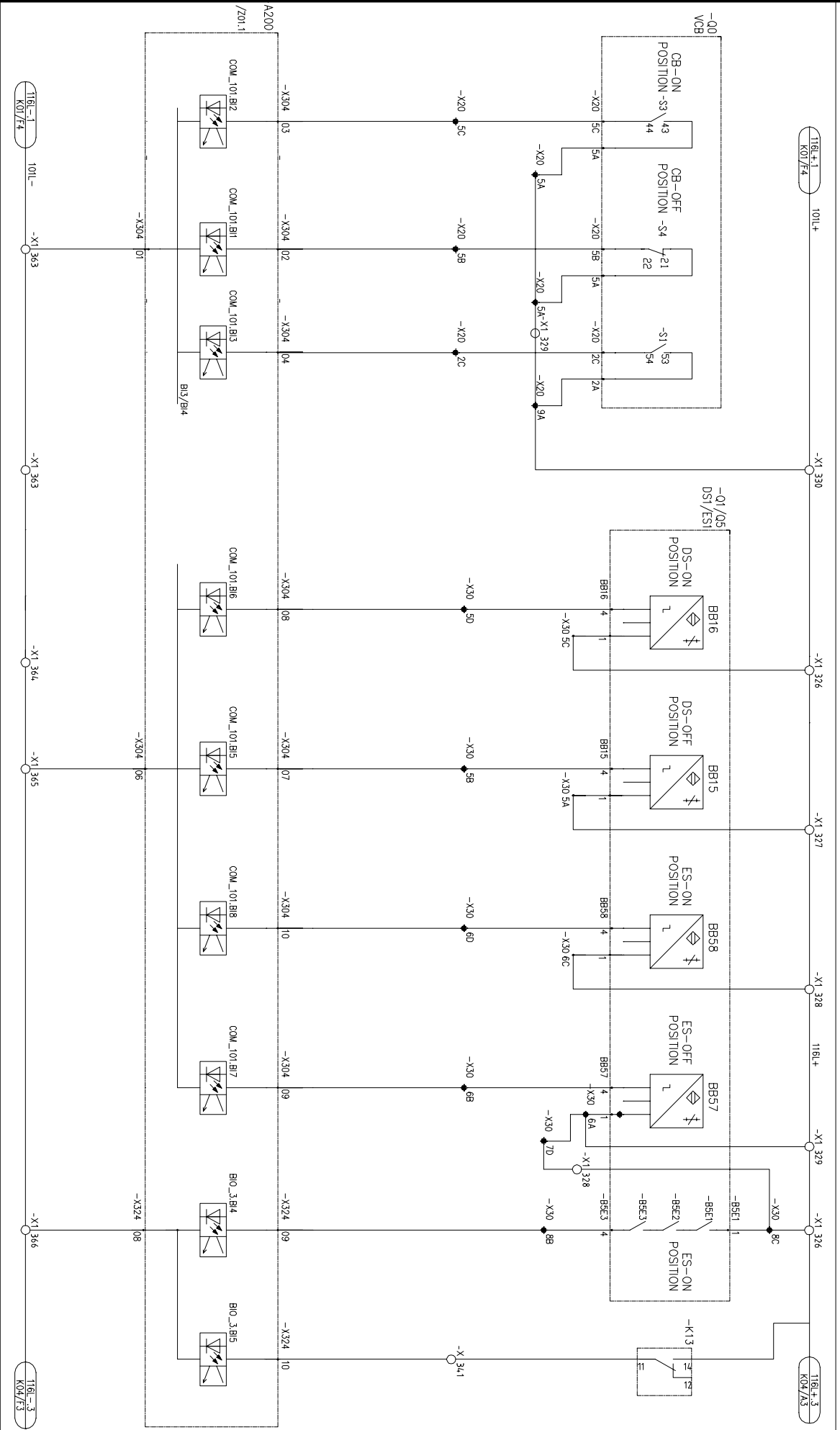
1	2	3	4	5	6	7	8
CIRCUIT BREAKERS		COMMAND		COMMAND		COMMAND	
CLOSING BLOCK, MAGNET		CB-ON		CB-OFF		UNDERVOLTAGE TRIPPING	
		PROTECTION TRIPPING		ZND			



REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE INCOMER 34.5kV SYSTEM	CUSTOMER DWG NO. ABB DRAWING NO. 70043-INC-K03	SHEET 5 OF 22
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0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE							

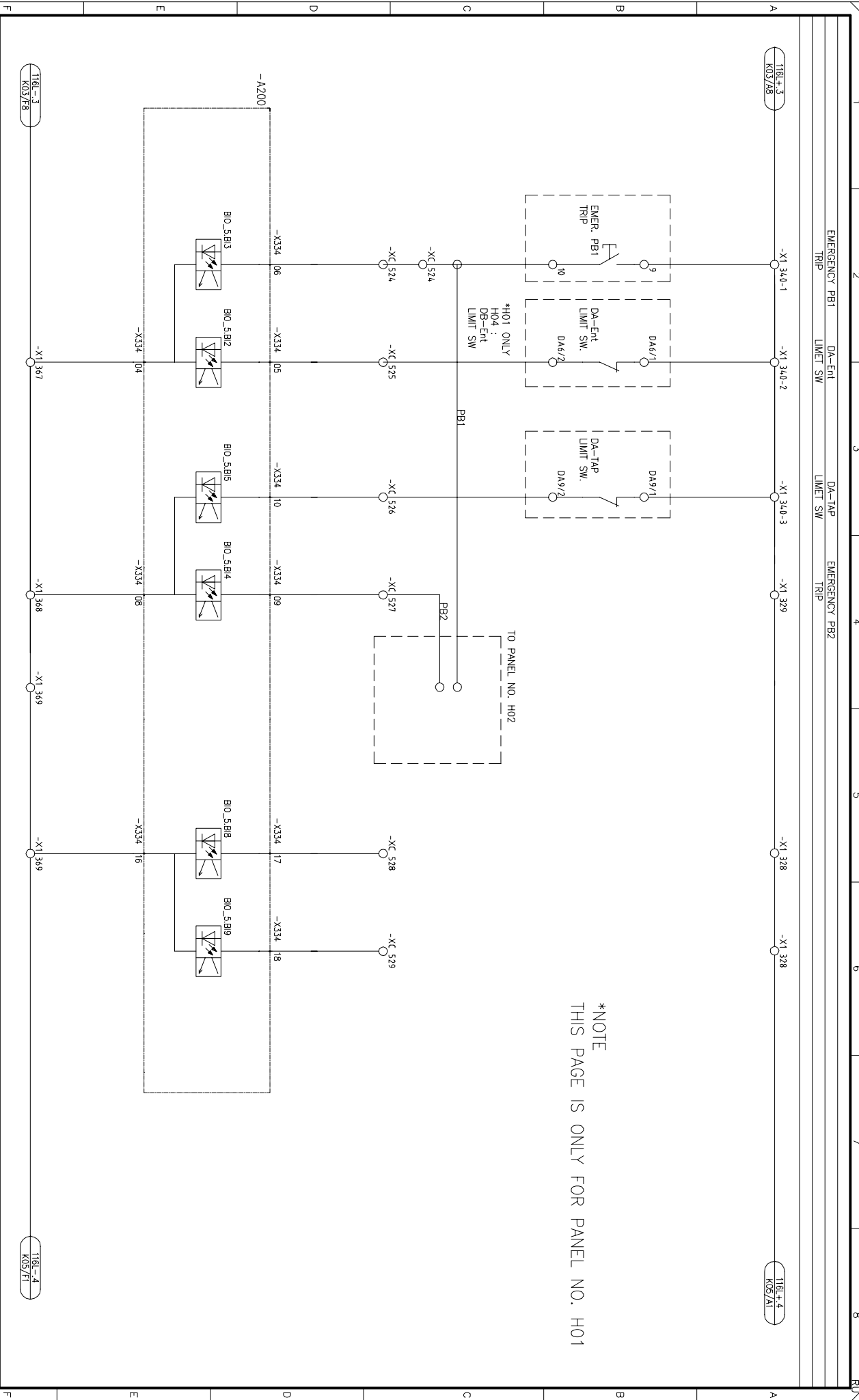
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1	POSITION INDICATION CB-ON	2	POSITION INDICATION CB-OFF	3	POSITION INDICATION SPRING MECHANISM CHARGED	4	POSITION INDICATION DSI CLOSED	5	POSITION INDICATION DSI OPENED	6	POSITION INDICATION ESI CLOSED	7	POSITION INDICATION ESI OPENED	8	REDONNACS ESI CLOSED	8	POSITION INDICATION MOTOR DRIVE OPERATED ISOLATOR BBI
---	------------------------------	---	-------------------------------	---	---	---	-----------------------------------	---	-----------------------------------	---	-----------------------------------	---	-----------------------------------	---	-------------------------	---	---



1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE			APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE INCOMER 34.5kV SYSTEM	CUSTOMER DWG NO. ABB DRAWING NO. 70043-INC-K04	=	SHEET 6 OF 22
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE							
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV						

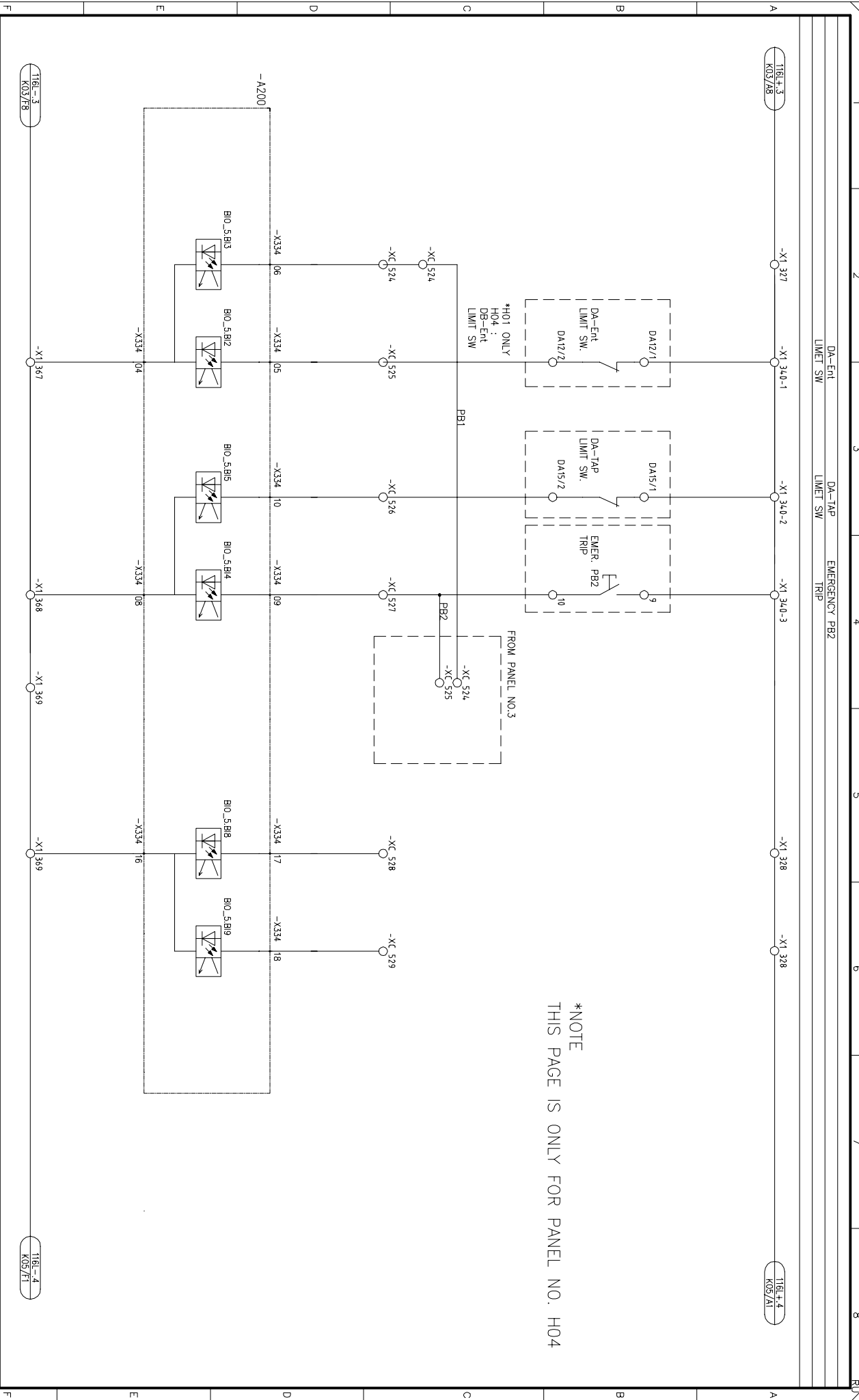
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*NOTE
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REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	APP	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE	SCHMATIC DIAGRAM FOR	CUSTOMER DWG NO.	SHEET
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE	YSLEE	APP	PPMV		TYPE INCOMER		ABB DRAWING NO.	+
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE	YSLEE				34.5KV SYSTEM		70043-INC-K05	7 OF 22

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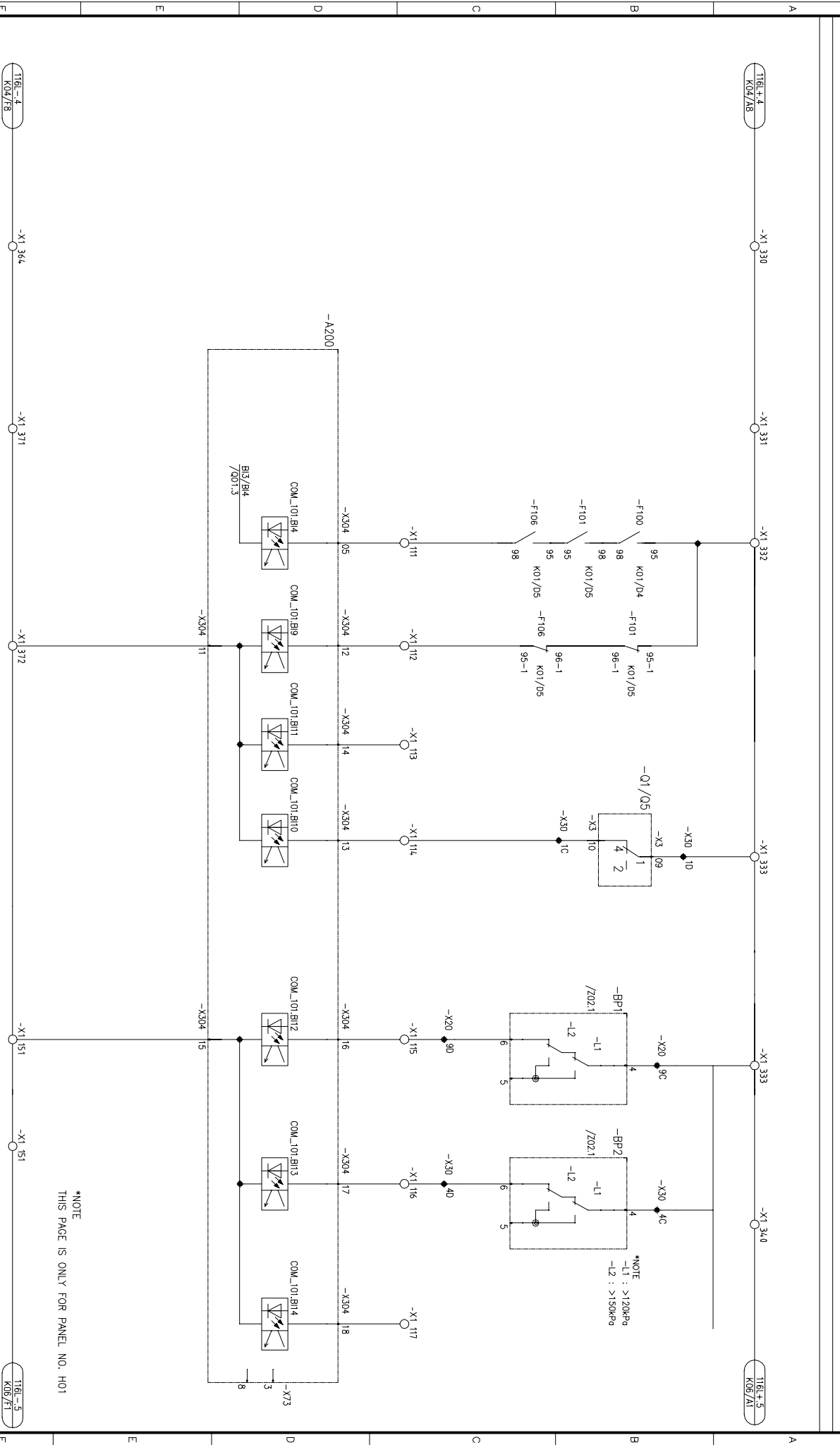


*NOTE
THIS PAGE IS ONLY FOR PANEL NO. H04

REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	APP	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE	SCHMATIC DIAGRAM FOR TYPE INCOMER	CUSTOMER DWG NO.	ABB DRAWING NO.	SHEET
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE	YSLEE	ABB	APR Energy	APR EHOUSE PROJECT				70043-INC-K05-1	8 OF 22
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE	YSLEE	ABB	APR Energy	APR EHOUSE PROJECT				70043-INC-K05-1	8 OF 22

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UGB TRIPFD DC UGB DIRECT VOLTAGE MECHANICAL BLOCKING ISOLATOR/ES SW BR /BB II GAS PRESSURE OK OR CIRCULAR BB COMPARTMENT I

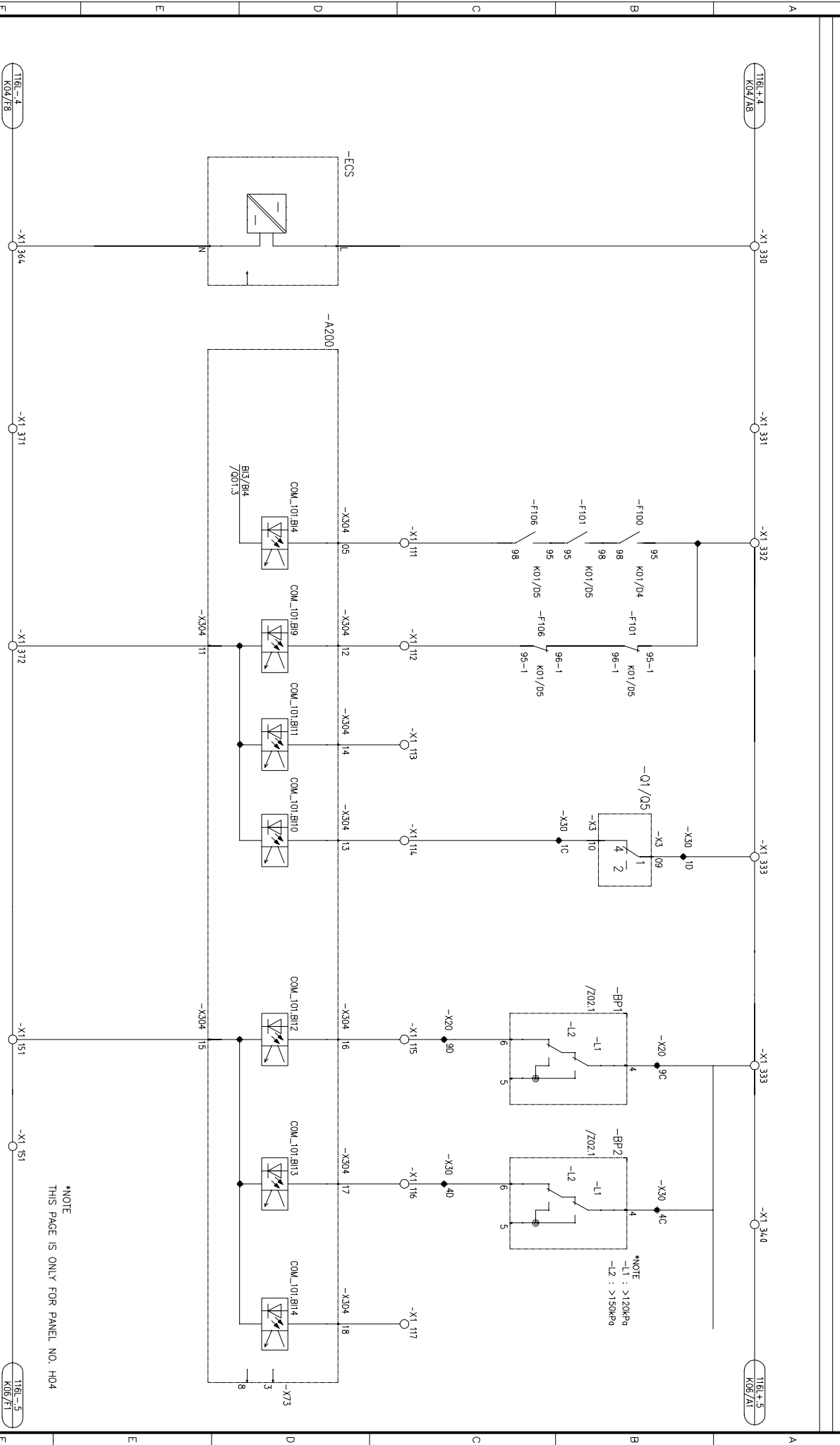


*NOTE
THIS PAGE IS ONLY FOR PANEL NO. H01

REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	ABB Ltd.	APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE INCOMER	CUSTOMER DWG NO.	ABB DRAWING NO.	SHEET
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE	ABB				70043-INC-K06	9 OF 22
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE	ABB					
1	2012.01.18	FOR APPROVAL	JHKIM	SHHAN	YSLEE	ABB					

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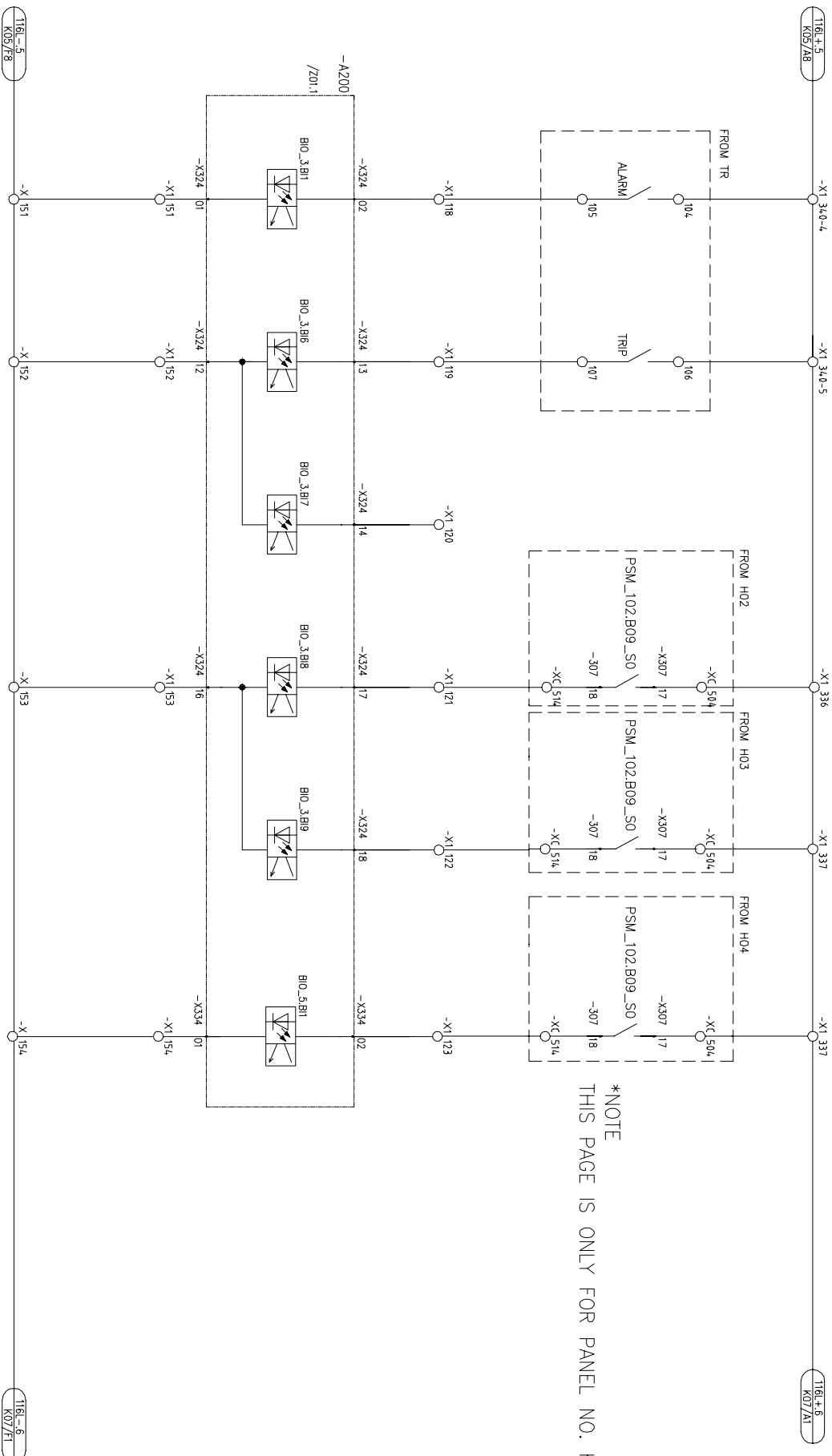
ETHERNET SW
 AUX VOLTAGE
 DC VCB
 DIRECT VOLTAGE
 MECHANICAL BLOCKING
 SOLA10P/ES SW BB I/BB II
 GAS PRESSURE OK
 GB CIRCUIT
 GAS PRESSURE OK
 BB COMPARTMENT I



*NOTE
 THIS PAGE IS ONLY FOR PANEL NO. H04

REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	ABB Ltd.	APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE INCOMER	CUSTOMER DWG NO.	ABB DRAWING NO.	SHEET
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE	ABB					
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE						
1	2012.01.18		JHKIM	SHHAN	YSLEE	ABB	APR EHOUSE PROJECT				
0	2011.09.07		JHKIM	SHHAN	YSLEE						
1	2012.01.18		JHKIM	SHHAN	YSLEE	ABB	APR EHOUSE PROJECT				
0	2011.09.07		JHKIM	SHHAN	YSLEE						
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0	2011.09.07		JHKIM	SHHAN	YSLEE						

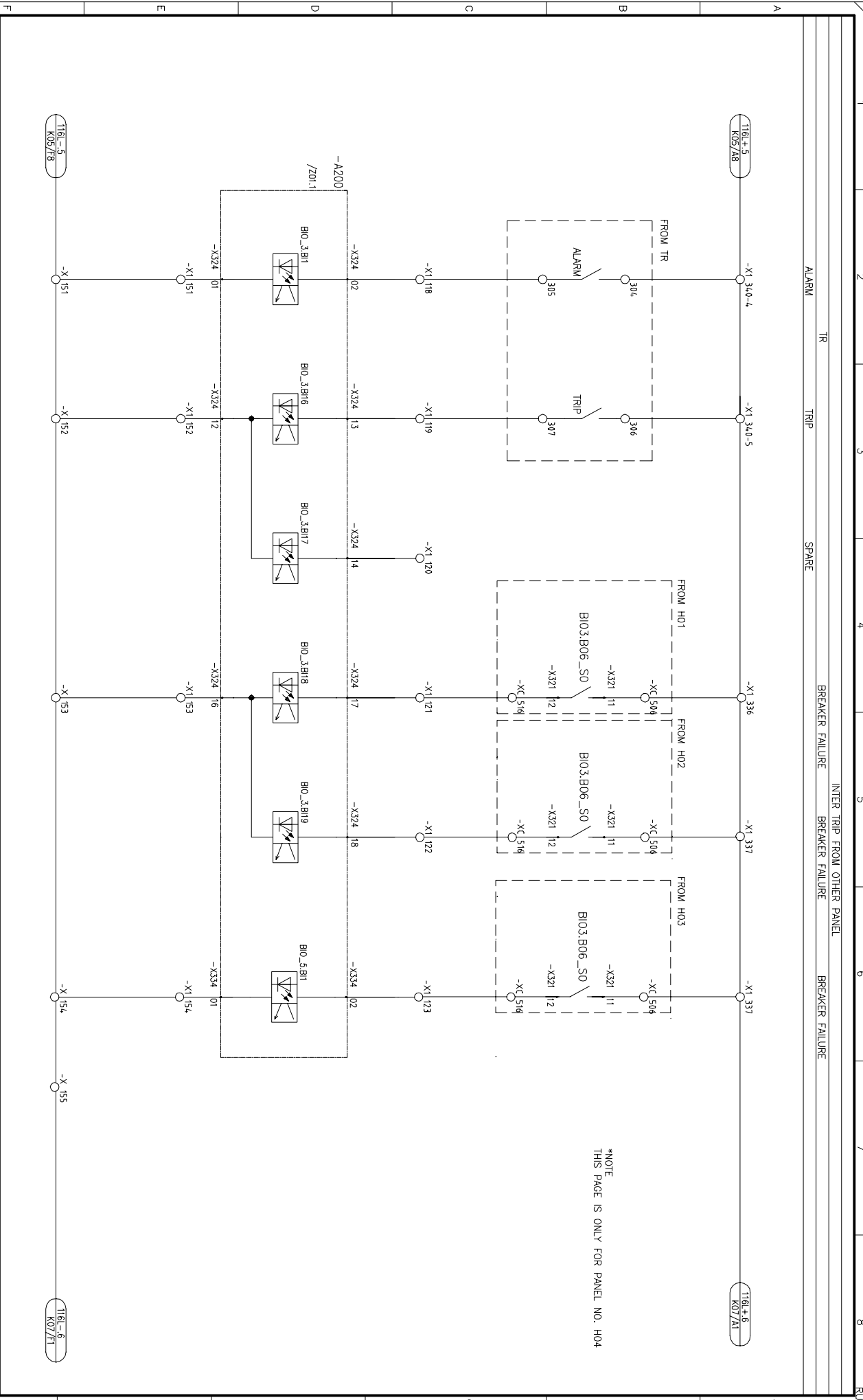
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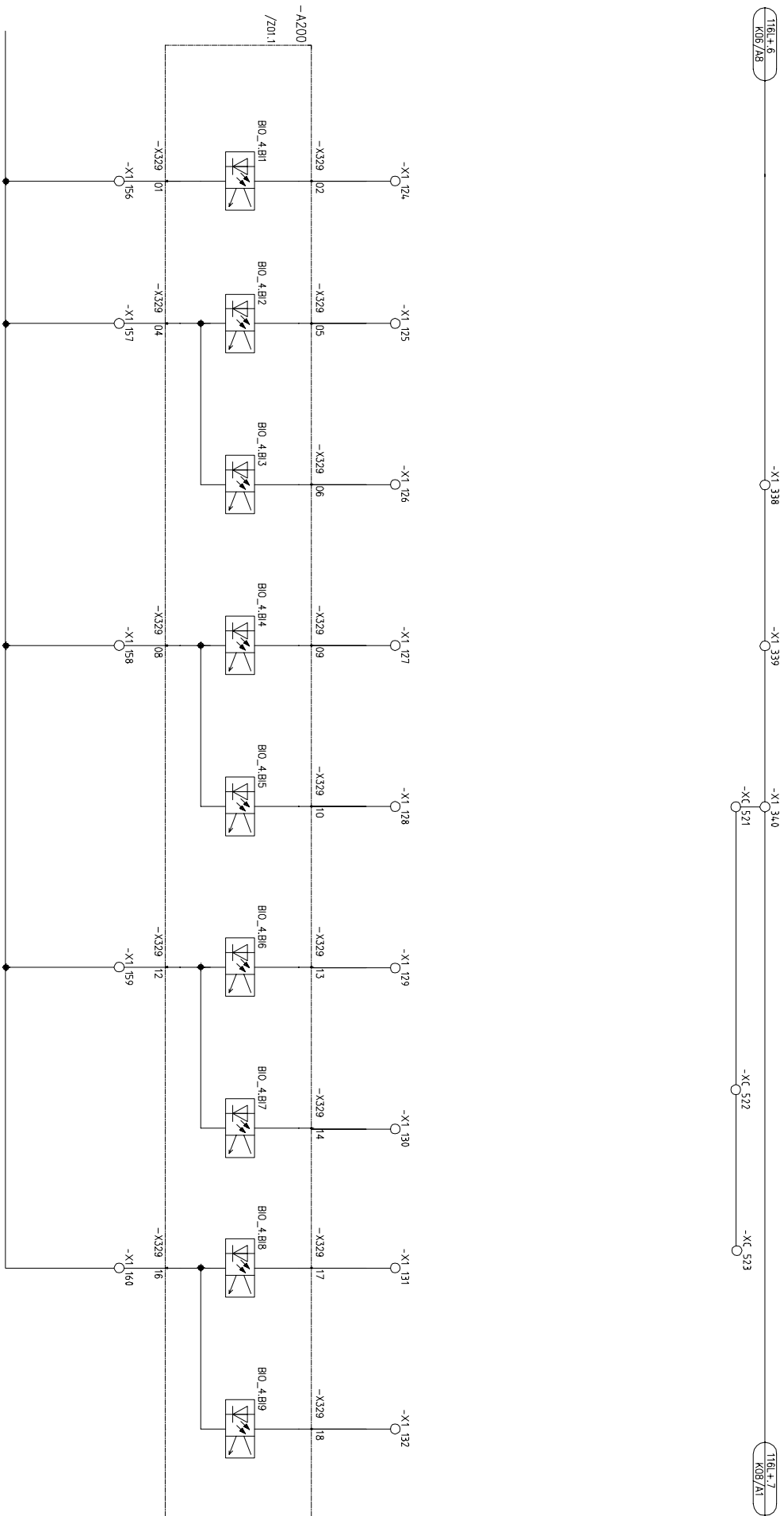
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE	CUSTOMER DWG NO.
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		ABB			SCHEMATIC DIAGRAM FOR	
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE					TYPE INCOMER	ABB DRAWING NO.
											70043-INC-K07
											SHEET
											11 OF 22

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REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE	CUSTOMER DWG NO.
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		ABB			SCHEMATIC DIAGRAM FOR	=
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE					TYPE INCOMER	ABB DRAWING NO.
										34.5kV SYSTEM	70043-INC-K07A
											SHEET
											12 OF 22

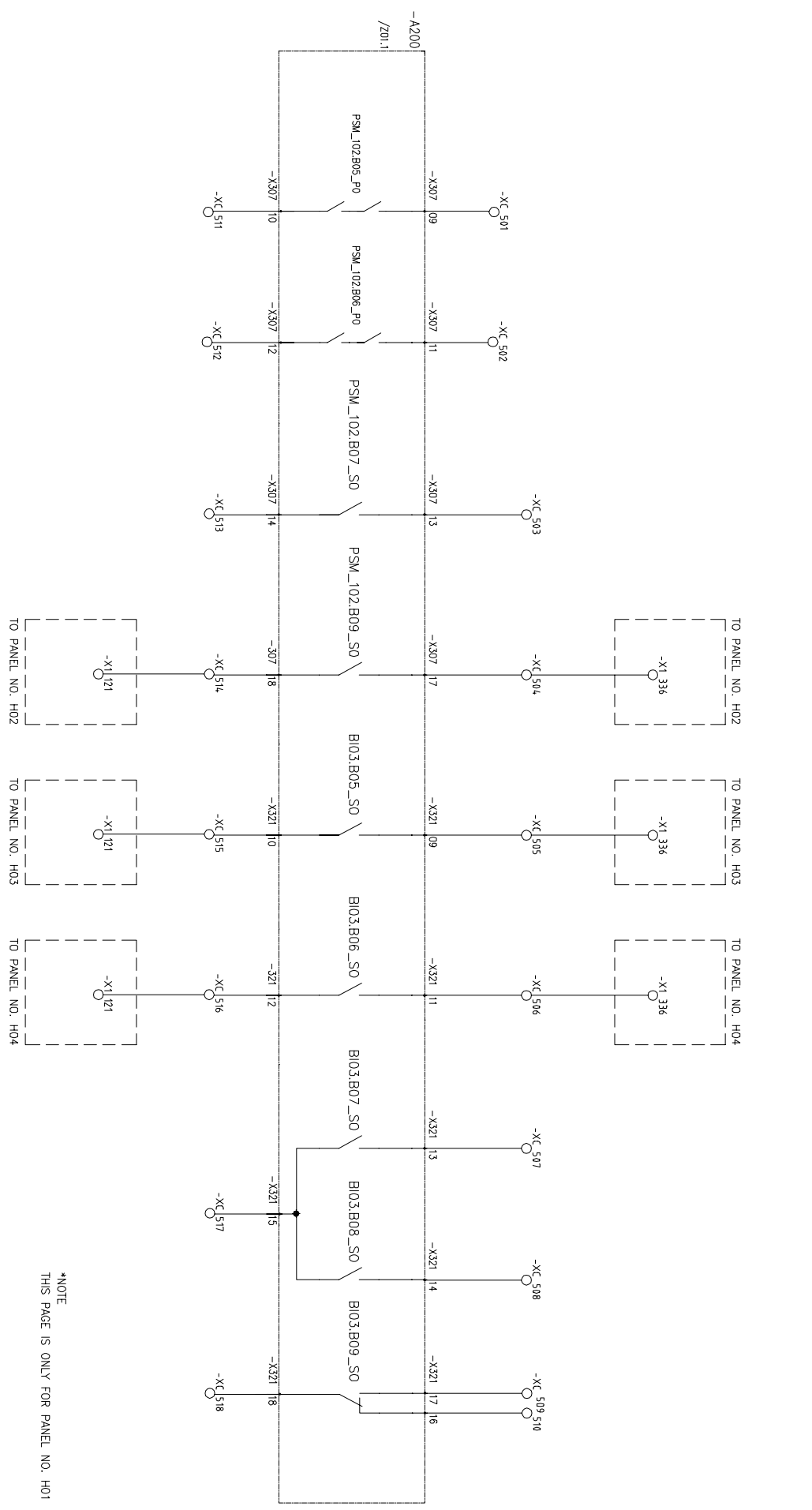
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1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE			APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE INCOMER 34.5kV SYSTEM	CUSTOMER DWG NO. =
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE					
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD					
	1		2			3	4	5	6	7

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SPARE BREAKER FAILURE INTER TRIP TO OTHER PANEL BREAKER FAILURE SPARE BREAKER FAILURE SPARE SPARE



*NOTE
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REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE	CUSTOMER DWG NO.	SHEET
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE					SCHEMATIC DIAGRAM FOR		
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE					TYPE INCOMER	ABB DRAWING NO.	
										34.5KV SYSTEM	70043-INC-K09	14 OF 22

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SPARE

SPARE

BREAKER FAILURE

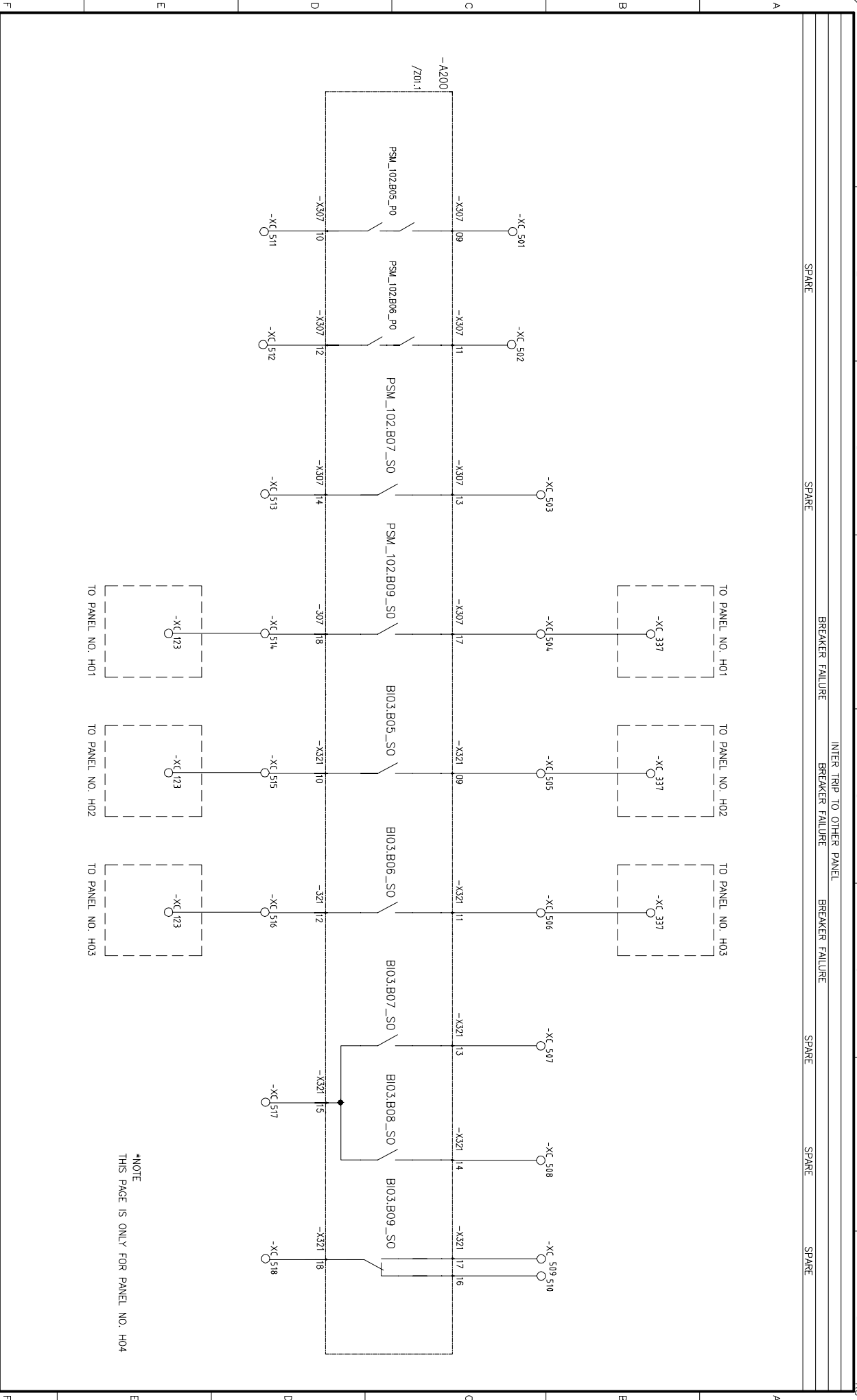
INTER TRIP TO OTHER PANEL
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BREAKER FAILURE

SPARE

SPARE

SPARE

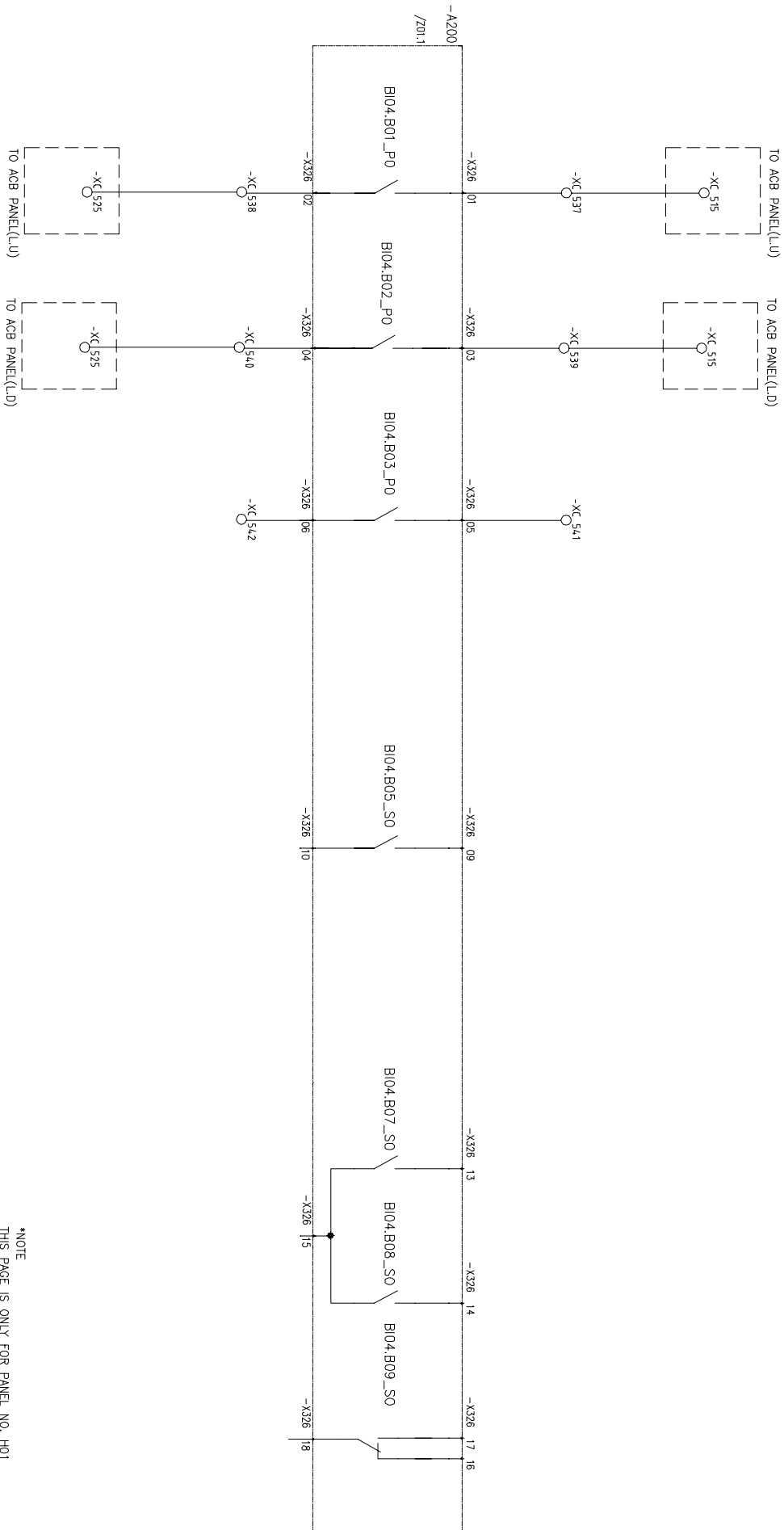


*NOTE
THIS PAGE IS ONLY FOR PANEL NO. H04

REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE	CUSTOMER DWG NO.	SHEET
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		ABB			SCHEMATIC DIAGRAM FOR		
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE					TYPE INCOMER	ABB DRAWING NO.	
										34.5KV SYSTEM	70043-INC-K09A	15 OF 22

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BREAKER FAILURE BREAKER FAILURE SPARE SPARE SPARE SPARE SPARE SPARE

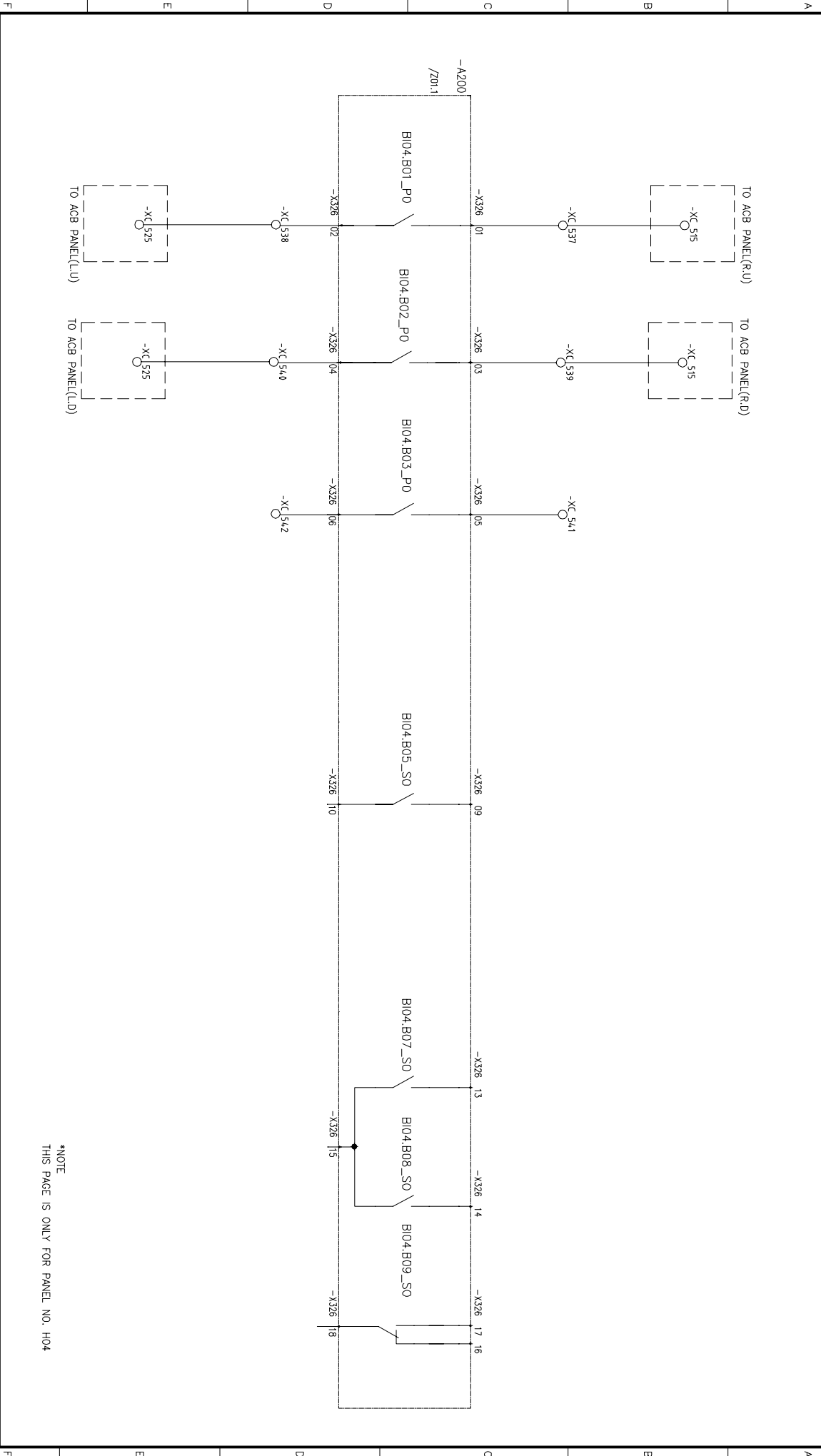


*NOTE
THIS PAGE IS ONLY FOR PANEL NO. H01

REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE INCOMER 34.5kV SYSTEM	CUSTOMER DWG NO. ABB DRAWING NO. 70043-INC-K10	SHEET 16 OF 22
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		ABB					
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE							

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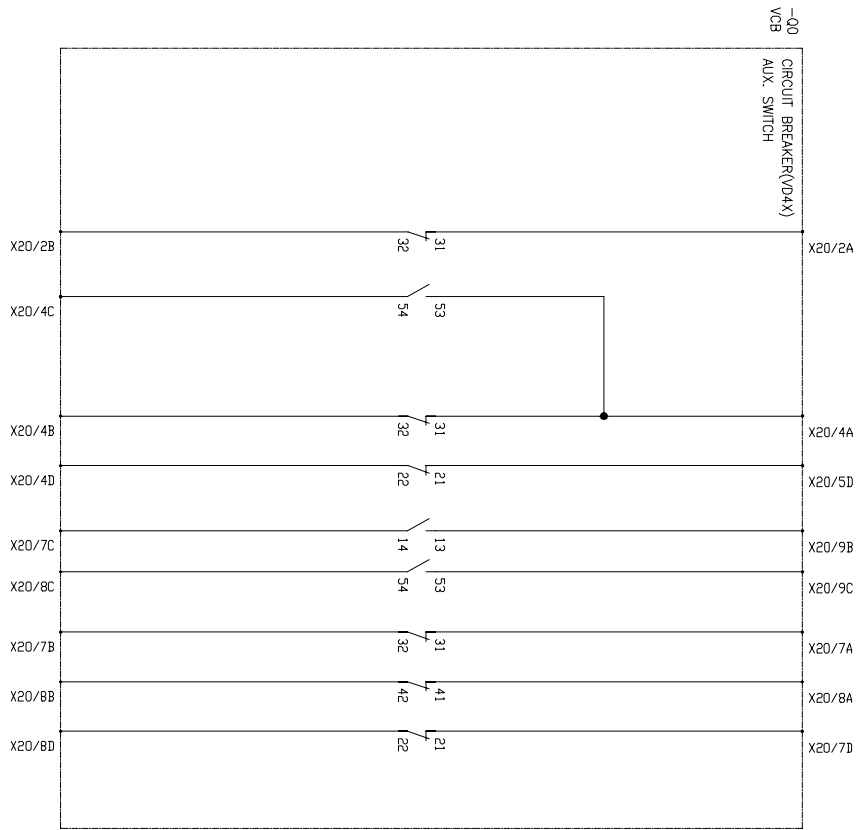
BREAKER FAILURE BREAKER FAILURE SPARE SPARE SPARE SPARE SPARE SPARE



*NOTE
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REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	APB	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE INCOMER 34.5kV SYSTEM	CUSTOMER DWG NO. ABB DRAWING NO. 70043-INC-K10-1	SHEET 17 OF 22
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE	APB	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE INCOMER 34.5kV SYSTEM	CUSTOMER DWG NO. ABB DRAWING NO. 70043-INC-K10-1	SHEET 17 OF 22
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE	APB	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE INCOMER 34.5kV SYSTEM	CUSTOMER DWG NO. ABB DRAWING NO. 70043-INC-K10-1	SHEET 17 OF 22

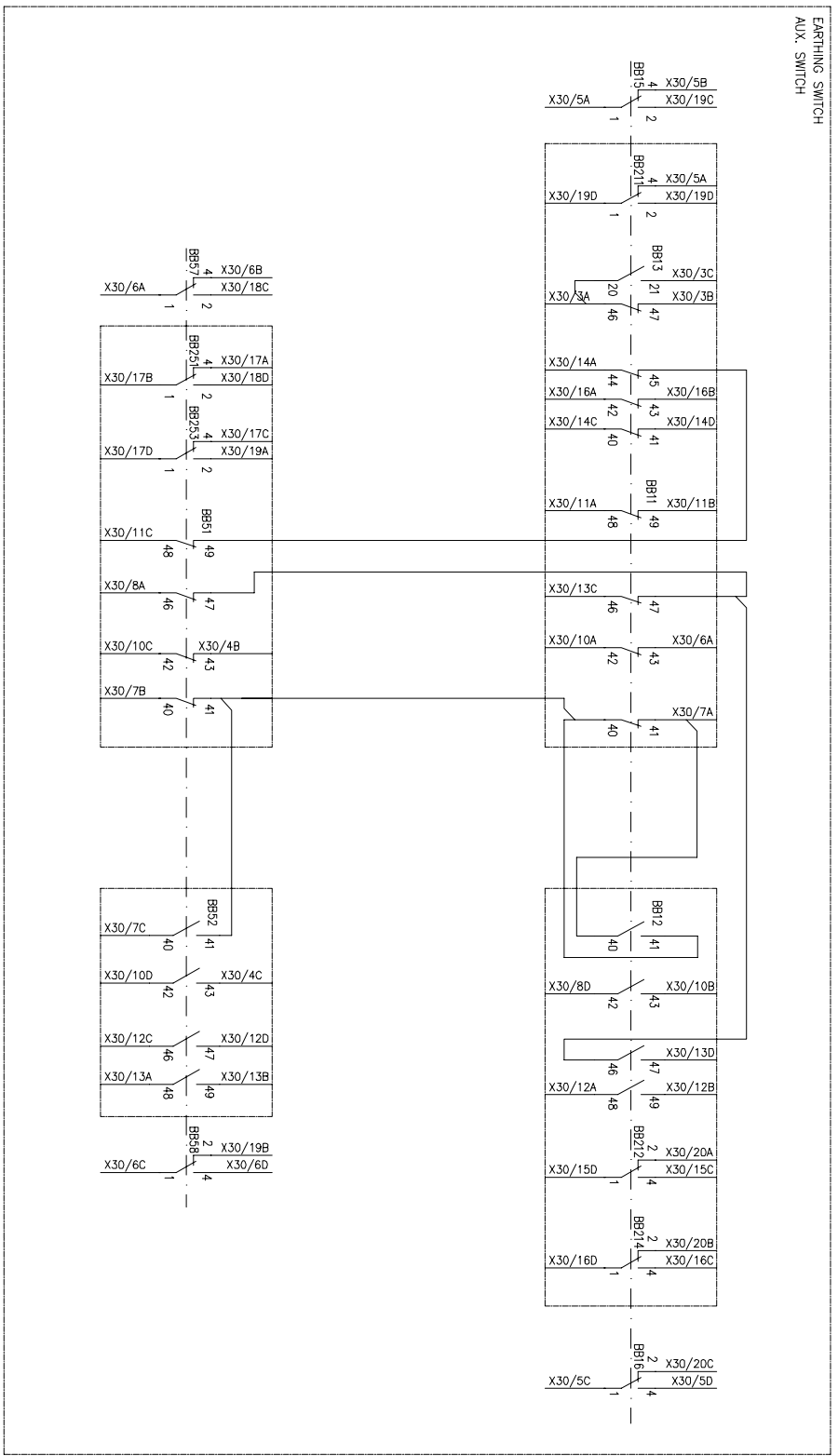
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1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE	ABB Ltd. 	APR EHOUSE PROJECT TITLE SCHEMATIC DIAGRAM FOR TYPE INCOMER 34.5kV SYSTEM	CUSTOMER DWG NO. ABB DRAWING NO. 70043-INC-K11	= + SHEET 18 OF 22
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE				
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV			
	1		2				4	5	6
							7		8

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-01/05
DS1/ES1
EARTHING SWITCH
AUX. SWITCH

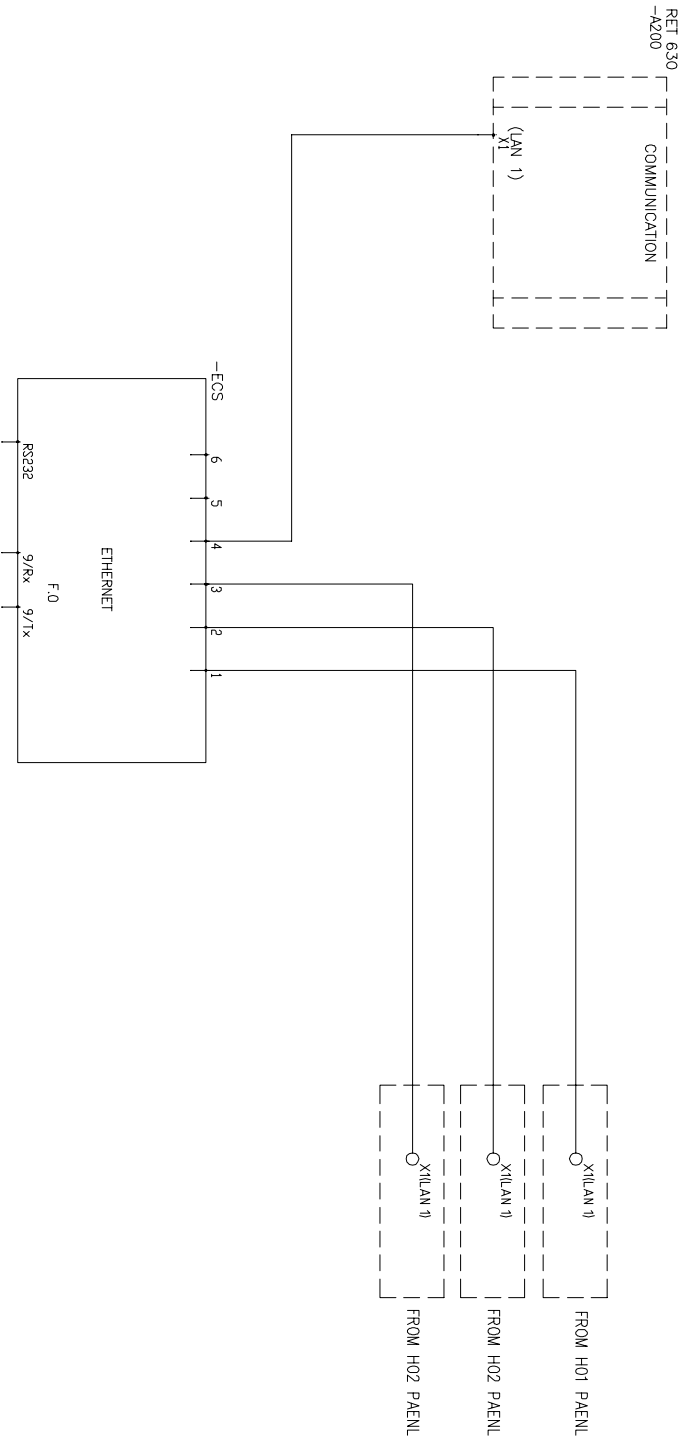


REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV	4	5	6	7	8
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0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE						
TITLE SCHEMATIC DIAGRAM FOR						APR EHOUSE PROJECT		CUSTOMER DWG NO.		=	
TYPE INCOMER						34.5kV SYSTEM		ABB DRAWING NO.		+	
								70043-INC-K12		SHEET	
										19 OF 22	

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RET 630
COMMUNICATION

ETHERNET SWITCH



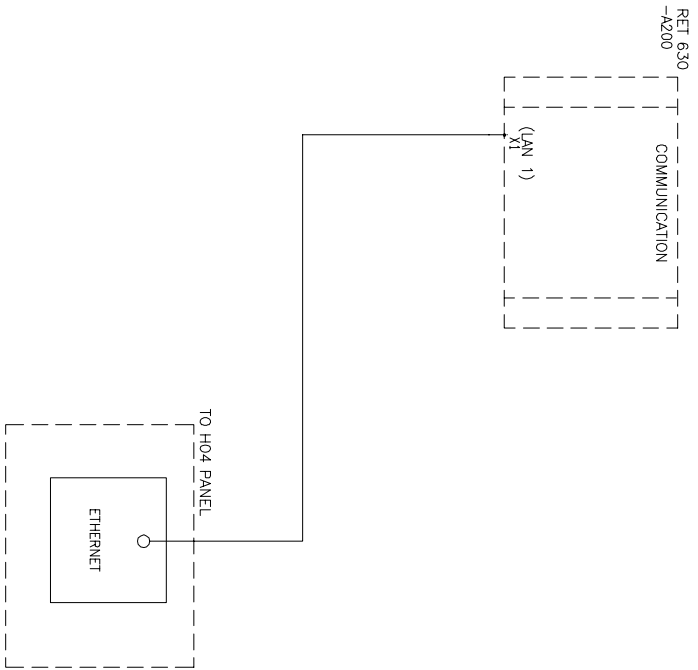
*NOTE
THIS PAGE IS ONLY FOR PANEL NO. H04

1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE	ABB Ltd. 	APR EHOUSE PROJECT TITLE SCHEMATIC DIAGRAM FOR TYPE INCOMER 34.5kV SYSTEM	CUSTOMER DWG NO. ABB DRAWING NO. 70043-INC-K13	= + SHEET 20 OF 22
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE				
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV			

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8

RET 630
COMMUNICATION

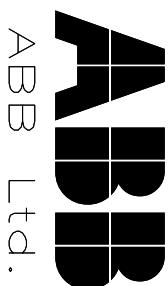


*NOTE
THIS PAGE IS ONLY FOR PANEL NO. H04



1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE	ABB	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE INCOMER	CUSTOMER DWG NO. =	SHEET +
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE	APR	PPMV			34.5kV SYSTEM	ABB DRAWING NO. 70043-INC-K14	21 OF 22
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD							
1			2									

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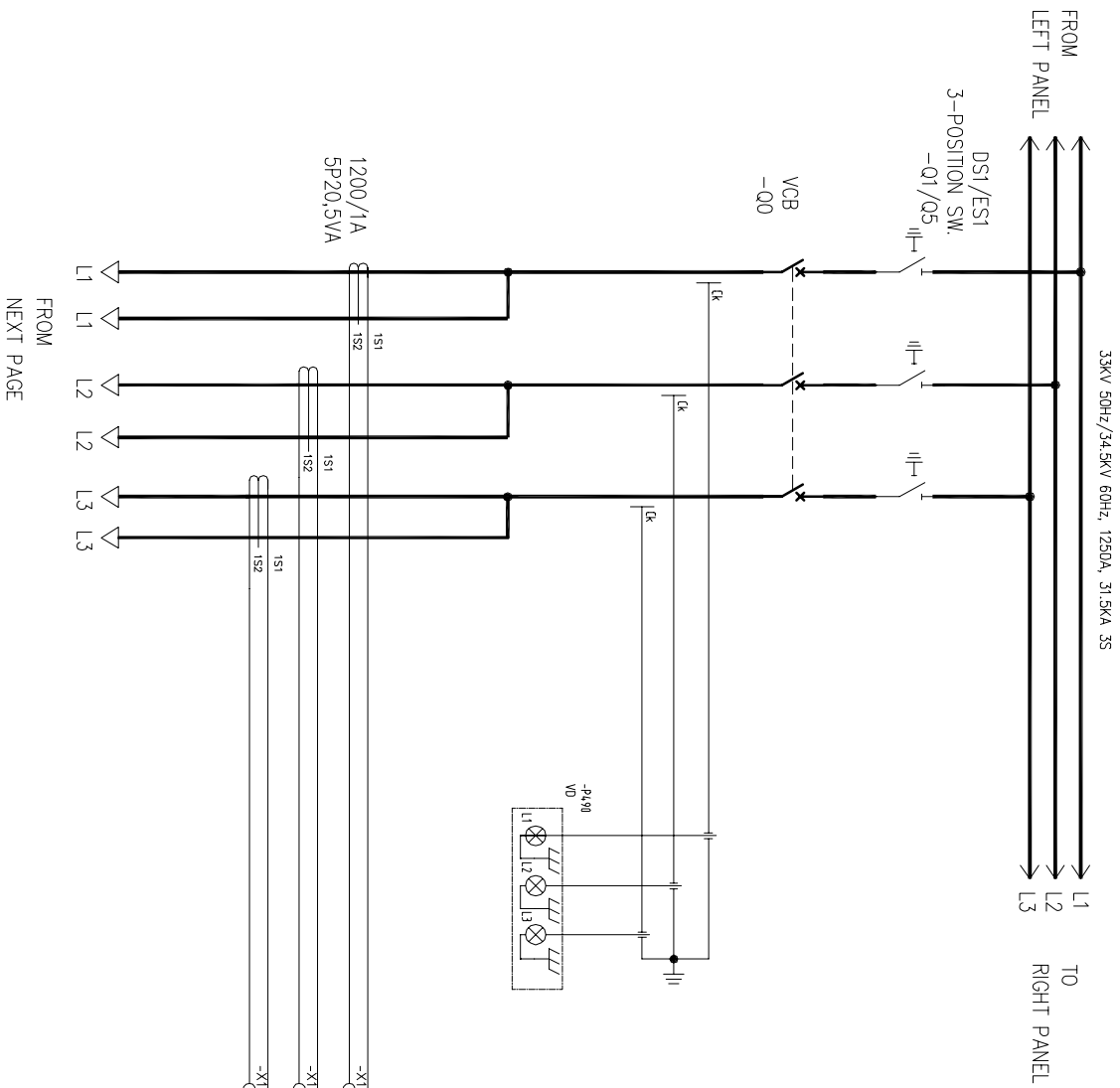
FOR APPROVAL



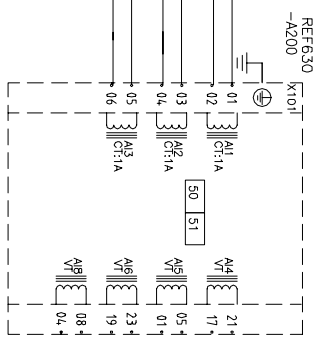
PROJECT NAME APR E-HOUSE PROJECT
 CLIENT'S NAME APR Senegal Project
 JOB NO. 70043
 DESCRIPTION SCHEMATIC DIAGRAM FOR 1250A OUTGOING
 PANEL NO. H02 & H03

1 2012.01.18 0 2011.09.07 REV. DATE	AS BUILT FOR APPROVAL DESCRIPTION	JHKIM JHKIM DRN	SHHAN SHHAN CHKD	YSLEE YSLEE APPD	 ABB Ltd. PPMV		APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE OUTGOING 34.5kV SYSTEM	CUSTOMER DWG NO. ABB DRAWING NO. 70043-OUT-A01	= + SHEET 1 OF 18
---	---	-----------------------	------------------------	------------------------	--	--	--------------------	---	--	----------------------------

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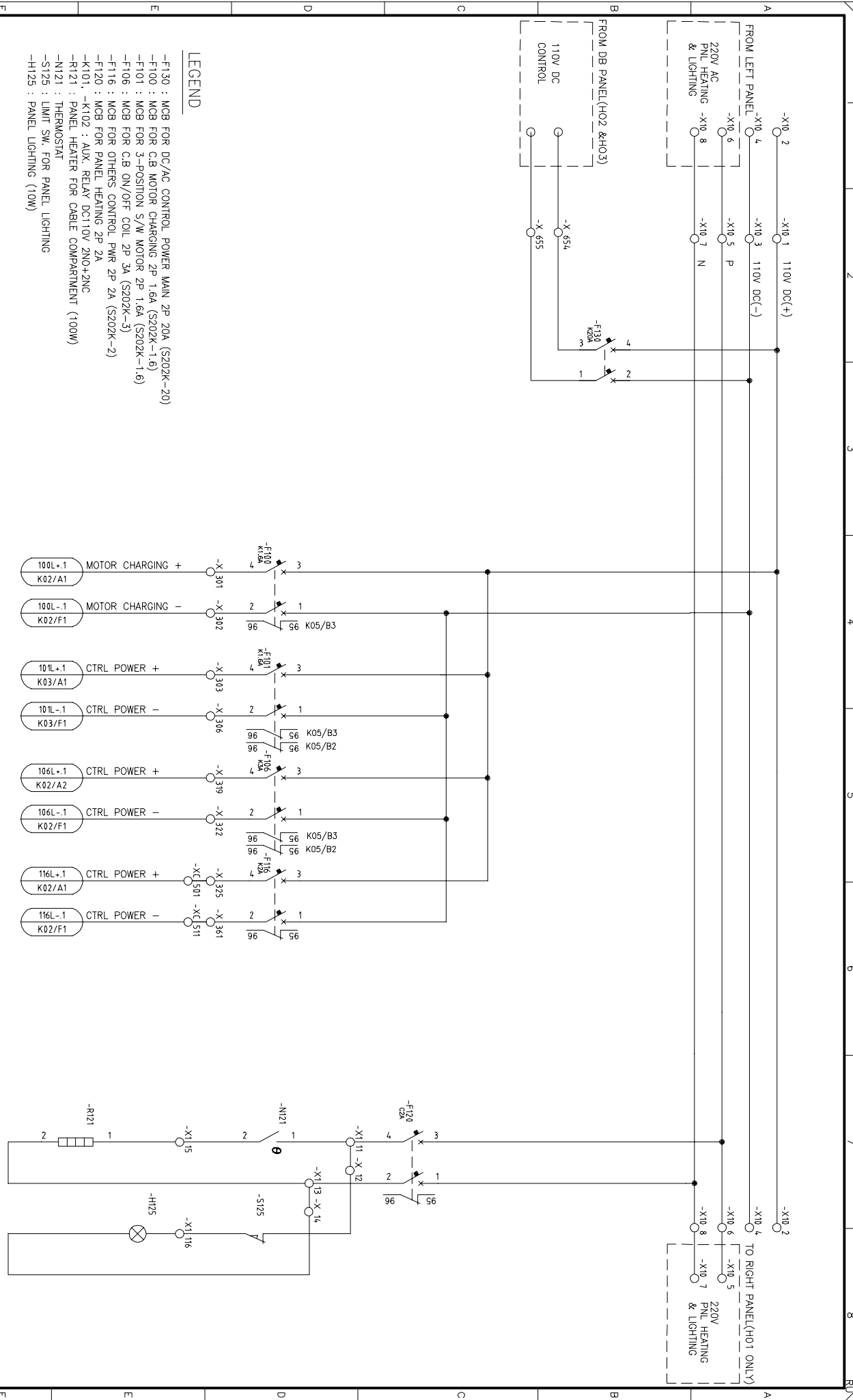


FROM
NEXT PAGE



REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV	ABB Ltd.	APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE OUTGOING 34.5kV SYSTEM	CUSTOMER DWG NO. ABB DRAWING NO. 70043-OUT-H01	SHEET 2 OF 18
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		ABB				
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE		APR Energy				

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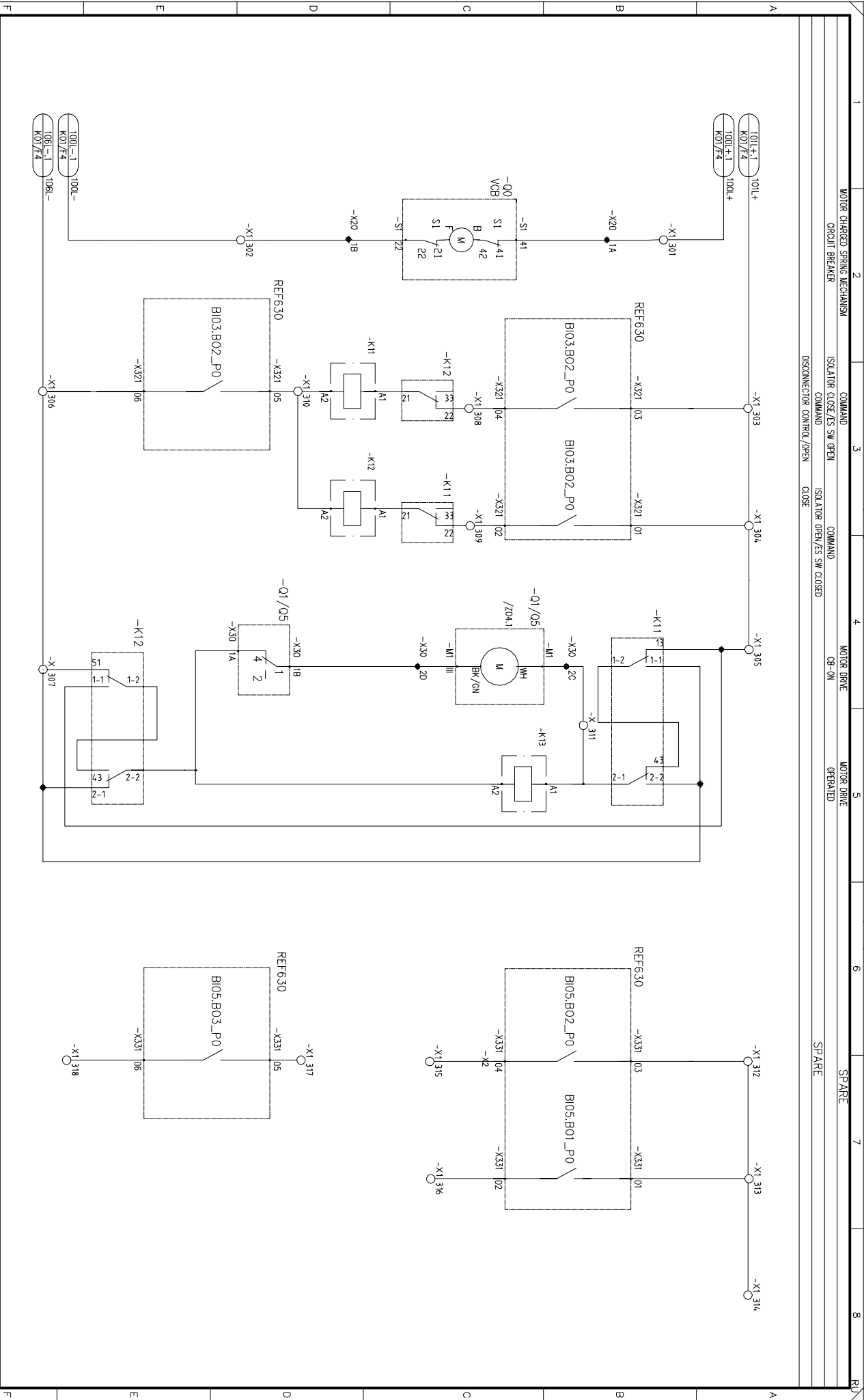


LEGEND

- F130 : MCB FOR DC CONTROL POWER MAIN 2P 20A (S202K-20)
- F100 : MCB FOR C.B MOTOR CHARGING 2P 1.6A (S202K-1.6)
- F101 : MCB FOR 3-POSITION S/W MOTOR 2P 1.6A (S202K-1.6)
- F106 : MCB FOR C.B ON/OFF COIL 2P 3A (S202K-3)
- F116 : MCB FOR OTHERS CONTROL PWR 2P 2A (S202K-2)
- F120 : MCB FOR PANEL HEATING 2P 2A (S202K-2)
- K101, -K102 : AUX. RELAY DC110V 2NO+2NC
- R121 : PANEL HEATER FOR CABLE COMPARTMENT (100W)
- N121 : THERMOSTAT
- S125 : LIMIT SW. FOR PANEL LIGHTING
- H125 : PANEL LIGHTING (10W)

REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMVV	ABB Ltd.	APR EHOUSE PROJECT	TITLE	CUSTOMER DING NO.
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		APR Energy		SCHEMATIC DIAGRAM FOR	ABB DRAWING NO.
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE			TYPE FEEDER-11		70043-OUT-K01
								34.5kV SYSTEM		3 OF 18

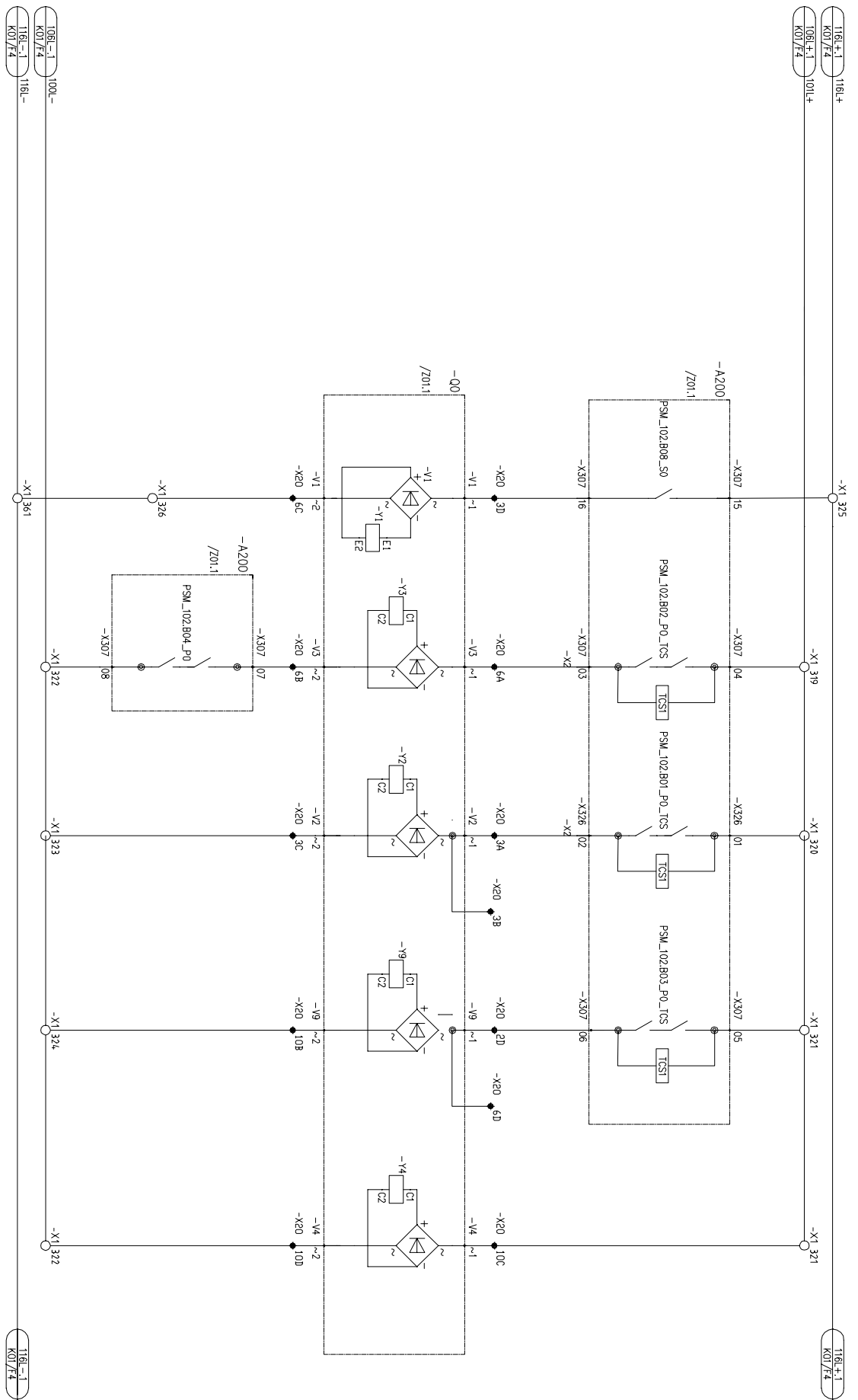
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1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE	ABB	ABB Ltd.	APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE FEEDER-11 34.5KV SYSTEM	CUSTOMER DWG NO. ABB DRAWING NO. 70043-OUT-K02	=
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE	APR Energy					
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV					
1			2					6			
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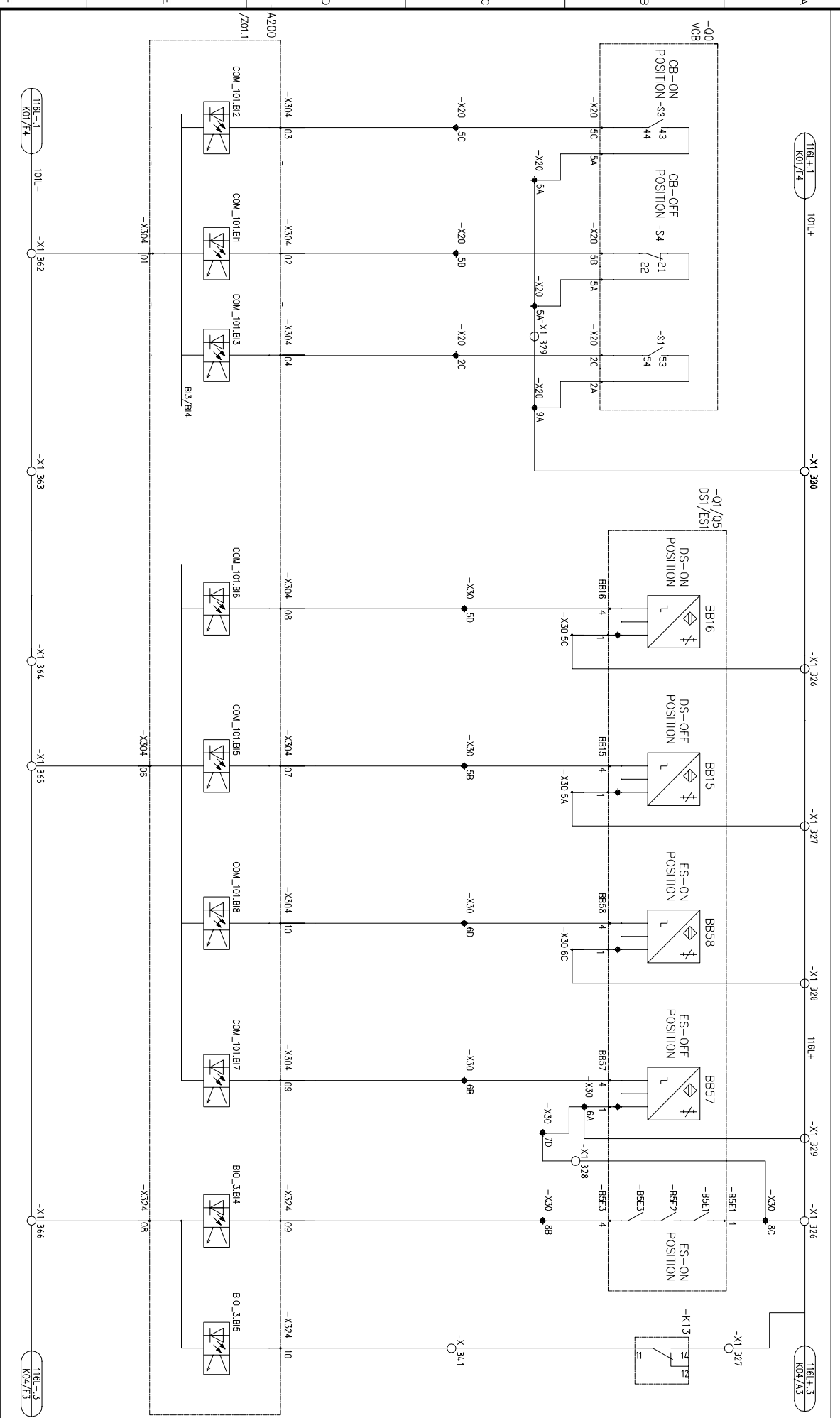
1	2	3	4	5	6	7	8
CIRCUIT BREAKERS		COMMAND		COMMAND		COMMAND	
CLOSING BLOCK, MAGNET		CB-ON		CB-OFF		CB-OFF	
		PROTECTION TRIPPING		ZND		UNDERVOLTAGE TRIPPING	



REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE FEEDER-11	CUSTOMER DWG NO.	SHEET
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		ABB					5 OF 18
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE							

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1	POSITION INDICATION CB-ON	2	POSITION INDICATION CB-OFF	3	POSITION INDICATION SPRING MECHANISM CHARGED	4	POSITION INDICATION DS1 CLOSED	5	POSITION INDICATION DS1 OPENED	6	POSITION INDICATION ES1 CLOSED	7	POSITION INDICATION ES1 OPENED	8	POSITION INDICATION MOTOR DRIVE OPERATED ISOLATOR BBI
---	------------------------------	---	-------------------------------	---	---	---	-----------------------------------	---	-----------------------------------	---	-----------------------------------	---	-----------------------------------	---	---

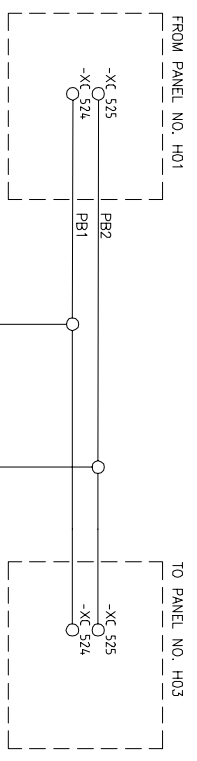


1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		ABB Ltd.		APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE FEEDER-11	CUSTOMER DWG NO. ABB DRAWING NO. 70043-OUT-K04	=	SHEET 6 OF 18
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE								
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV							

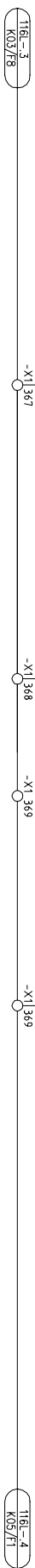
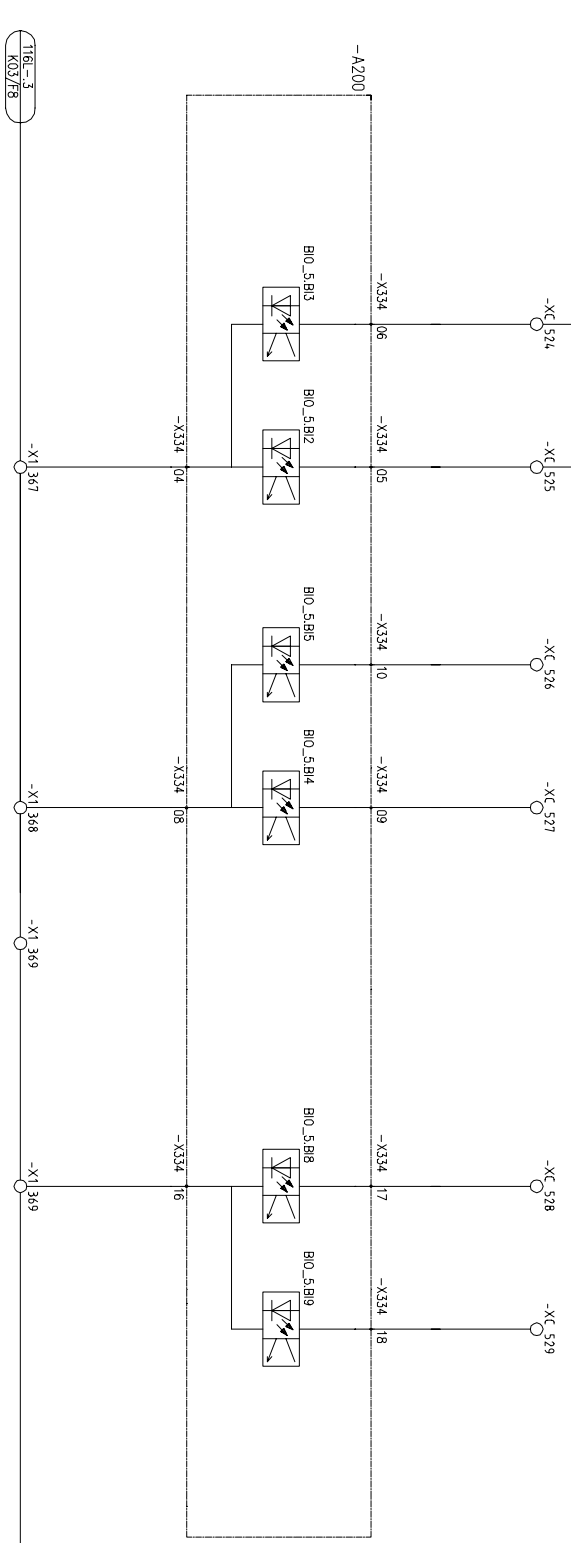
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EMERGENCY PB1 TRIP
EMERGENCY PB2 TRIP
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SPARE



*NOTE
THIS PAGE IS ONLY FOR PANEL NO. H02

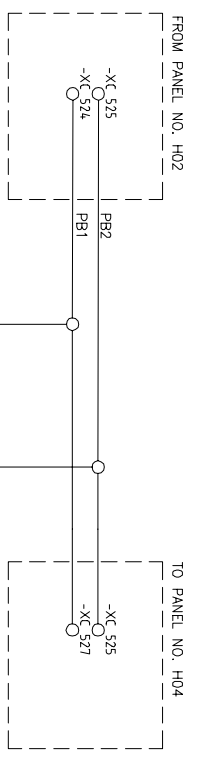


REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE FEEDER-11	CUSTOMER DWG NO. ABB DRAWING NO. 70043-0UT-K05	SHEET 7 OF 18
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		ABB					
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE							

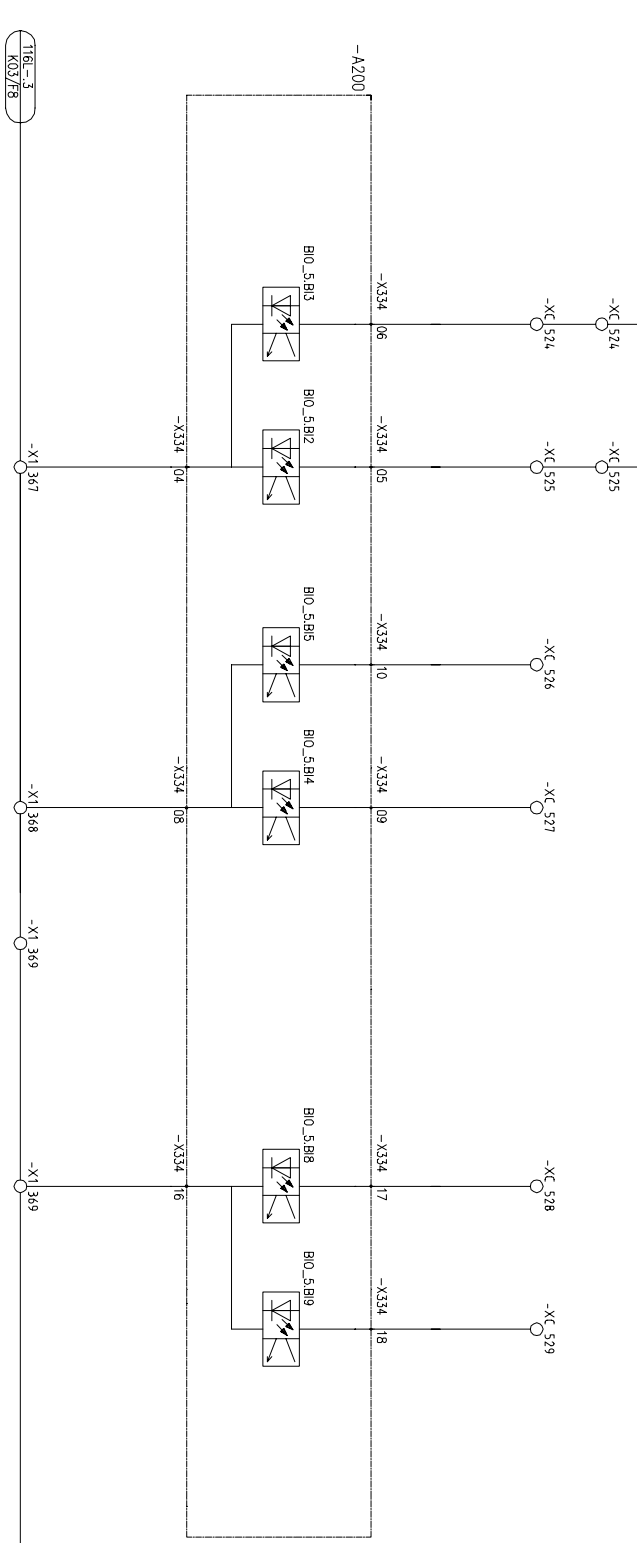
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EMERGENCY PB1 TRIP
EMERGENCY PB2 TRIP
SPARE
SPARE



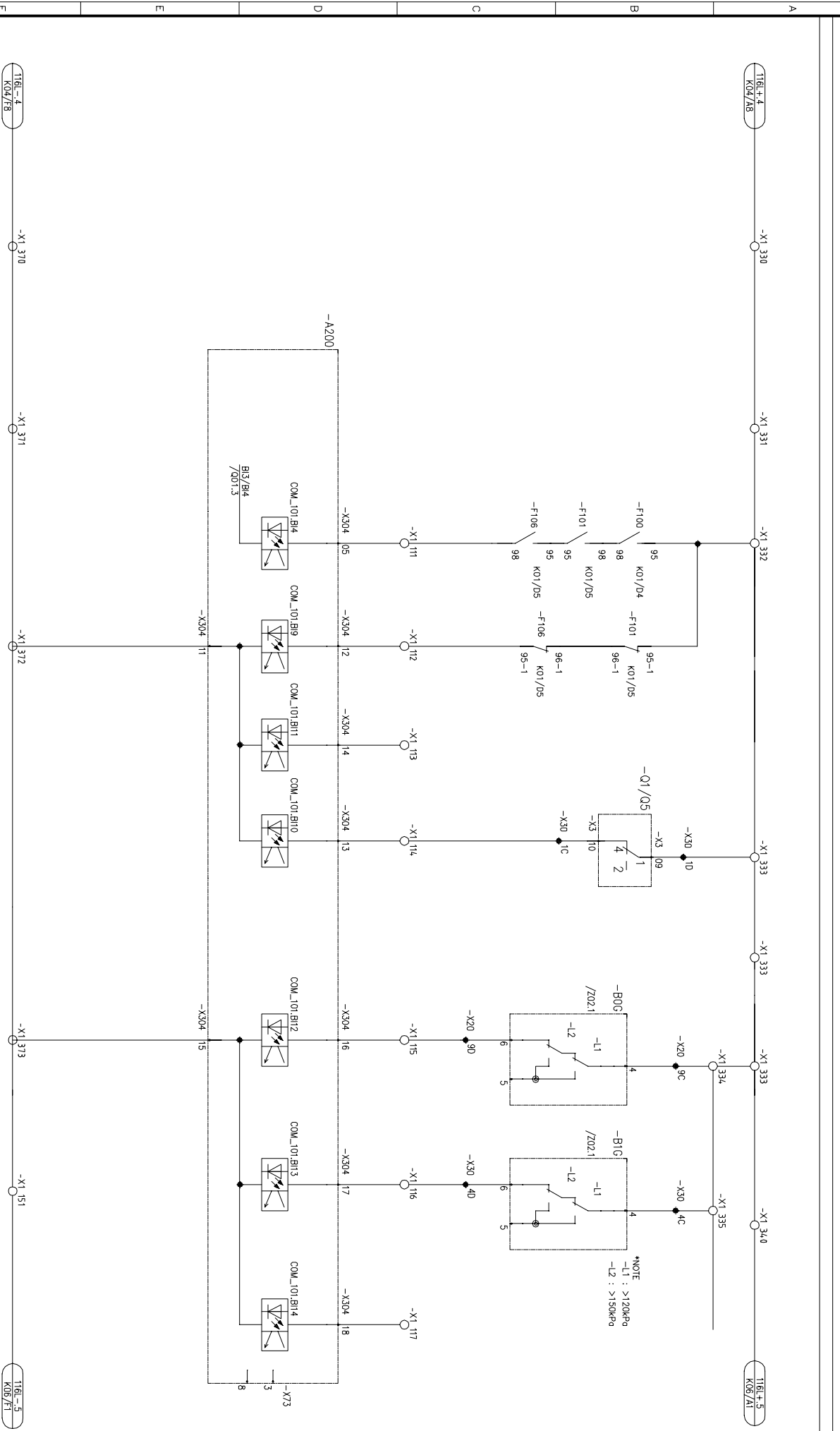
*NOTE
THIS PAGE IS ONLY FOR PANEL NO. H03



REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE FEEDER-11	CUSTOMER DWG NO.	SHEET
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		ABB					
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE							
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		ABB					
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE							
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		ABB					
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE							

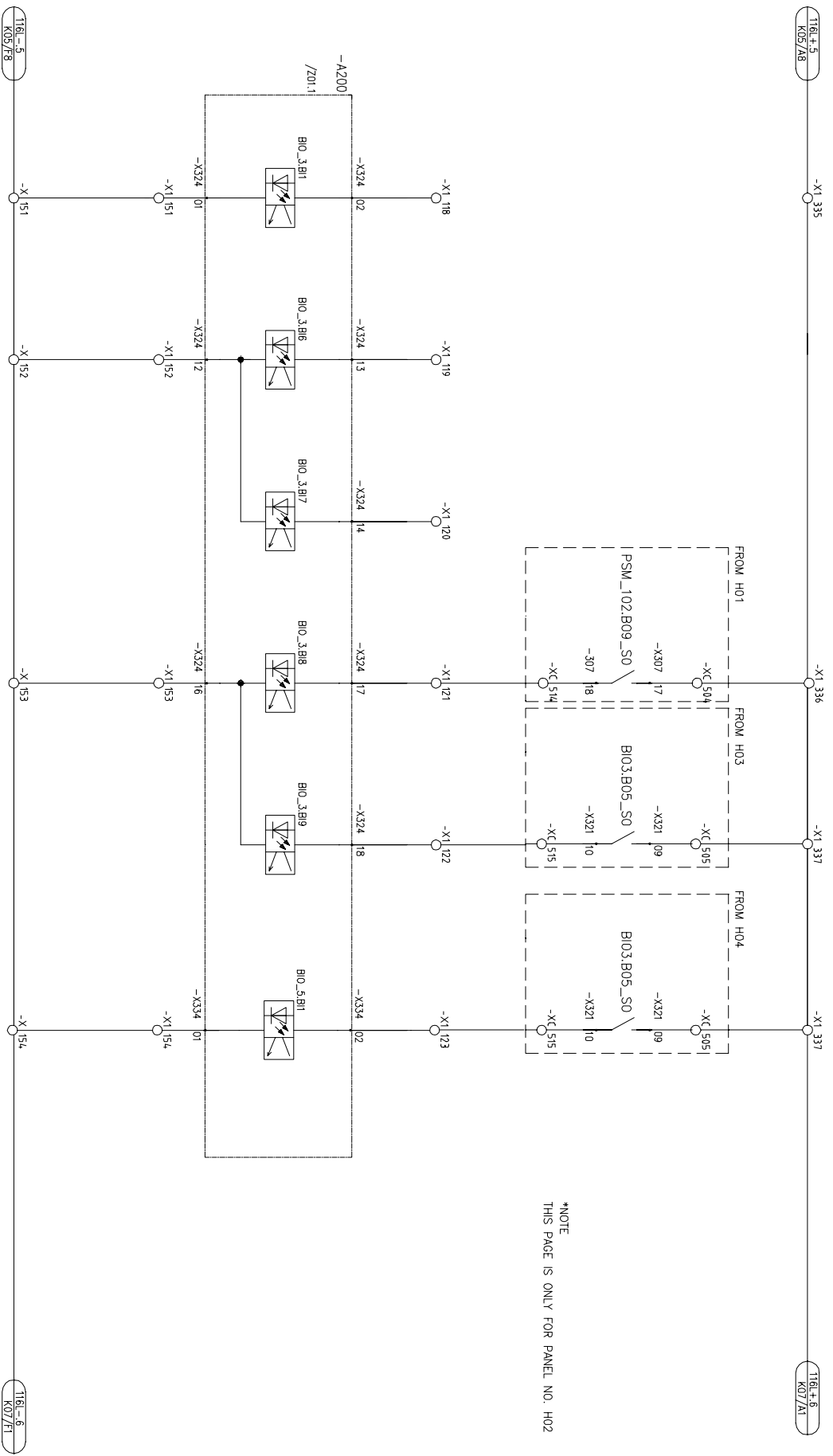
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VOLTAGE SUPPLY 3 U08 TRIPPED DC U08 DIRECT VOLTAGE 4 MECHANICAL BLOCKING ISOLATOR/ES SW BR /BB II GAS PRESSURE OK OR CIRCULE BB COMPARTMENT I



REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	AS BUILT	JHKIM	SHHAN	YSLEE	ABB Ltd.	APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE FEEDER-11	CUSTOMER DWG NO.	ABB DRAWING NO.	SHEET
1	2012.01.18														
0	2011.09.07														
1	2012.01.18														

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*NOTE
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SPARE BREAKER FAILURE INTER TRIP FROM OTHER PANEL BREAKER FAILURE BREAKER FAILURE

REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE FEEDER-11	CUSTOMER DWG NO.	SHEET
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		ABB					10 OF 18
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE							

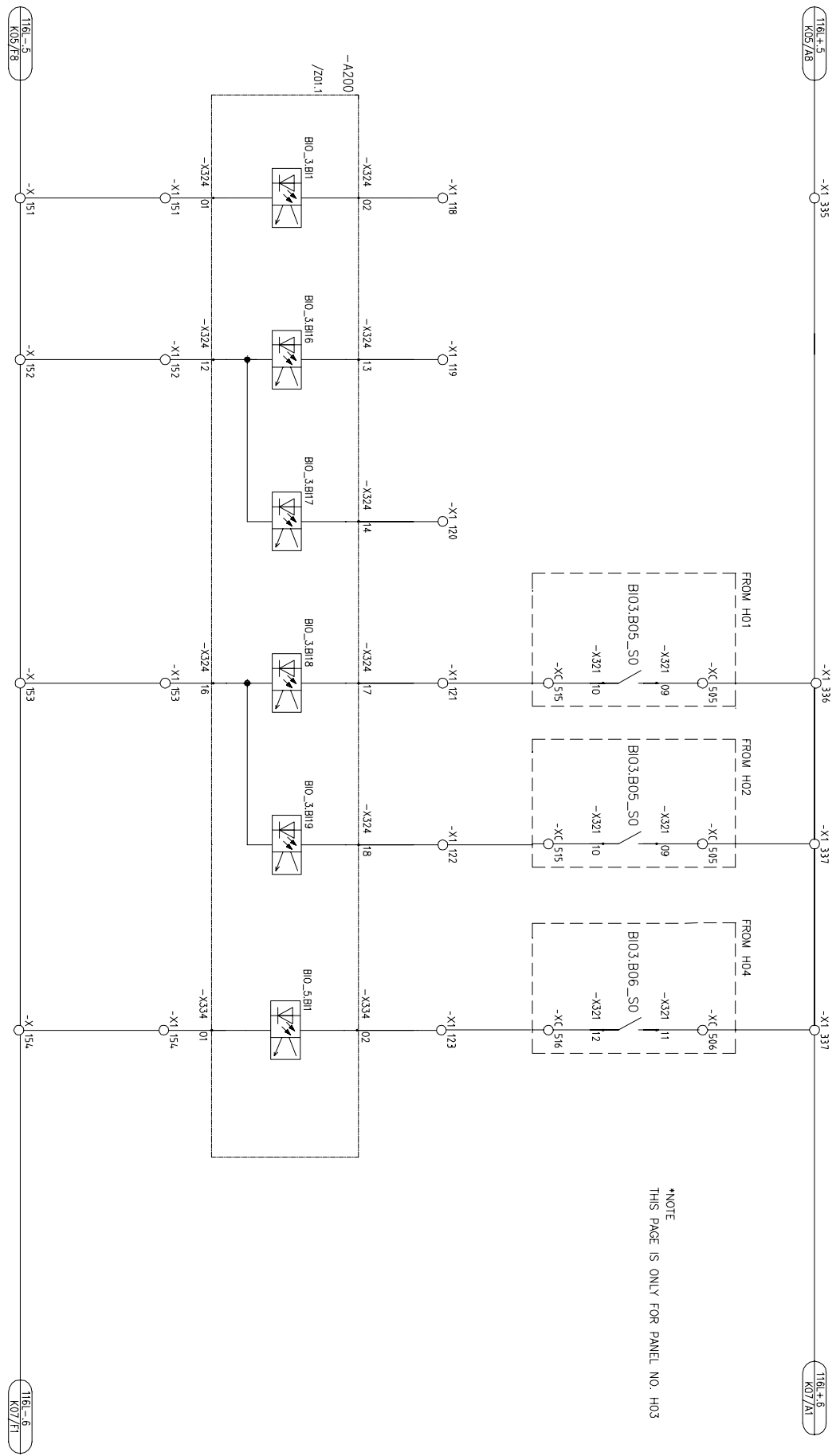
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1 2 3 4 5 6 7 8

SPARE BREAKER FAILURE SPARE BREAKER FAILURE SPARE BREAKER FAILURE

INTER TRIP FROM OTHER PANEL

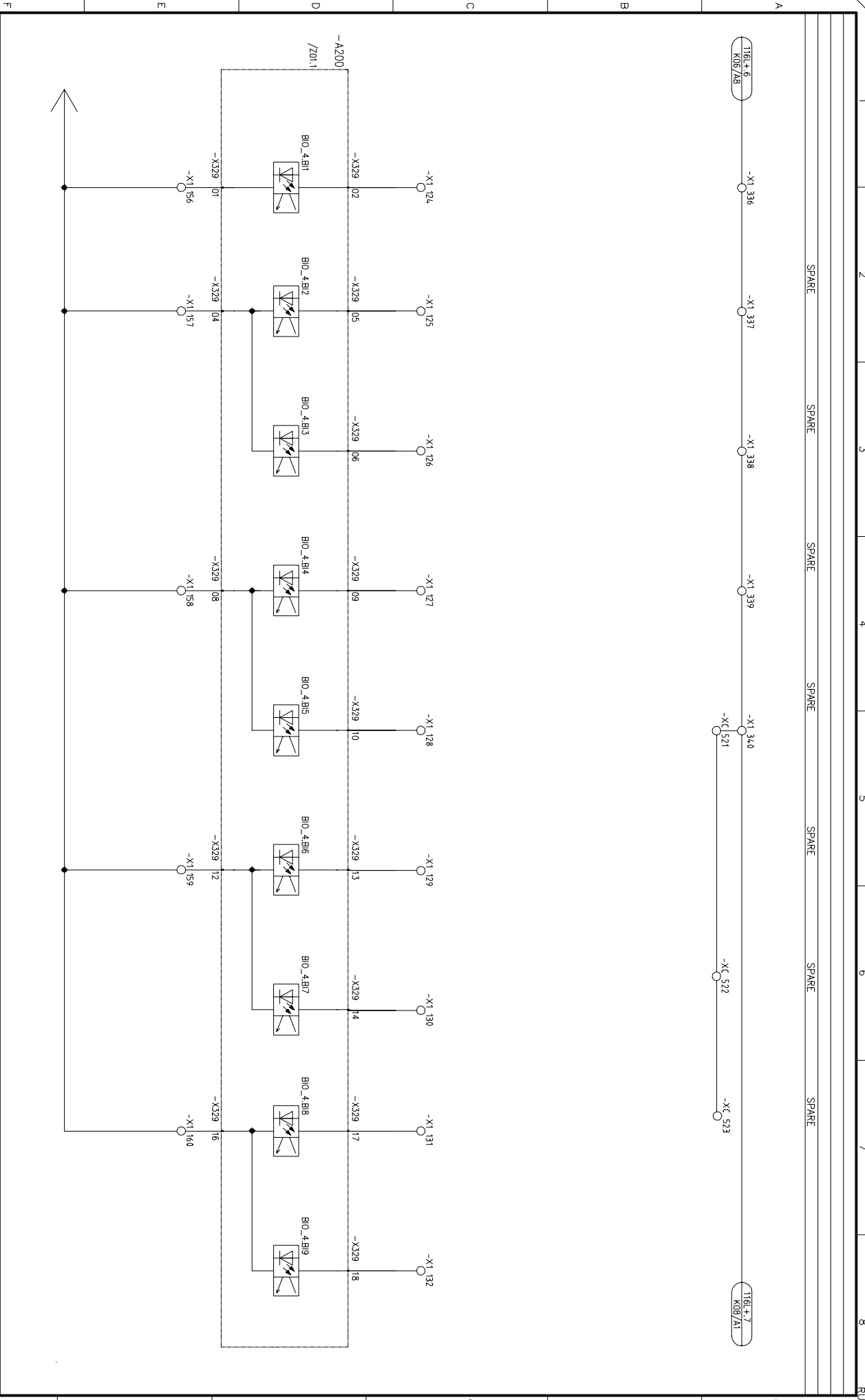
SPARE BREAKER FAILURE SPARE BREAKER FAILURE



NOTE
THIS PAGE IS ONLY FOR PANEL NO. H03

REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV	TITLE	CUSTOMER DWG NO.
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE	ABB	TYPE FEEDER-11	34.5kV SYSTEM
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE	ABB Ltd.		
							APR EHOUSE PROJECT	ABB DRAWING NO.
								70043-OUT-K07A
								SHEET
								11 OF 18

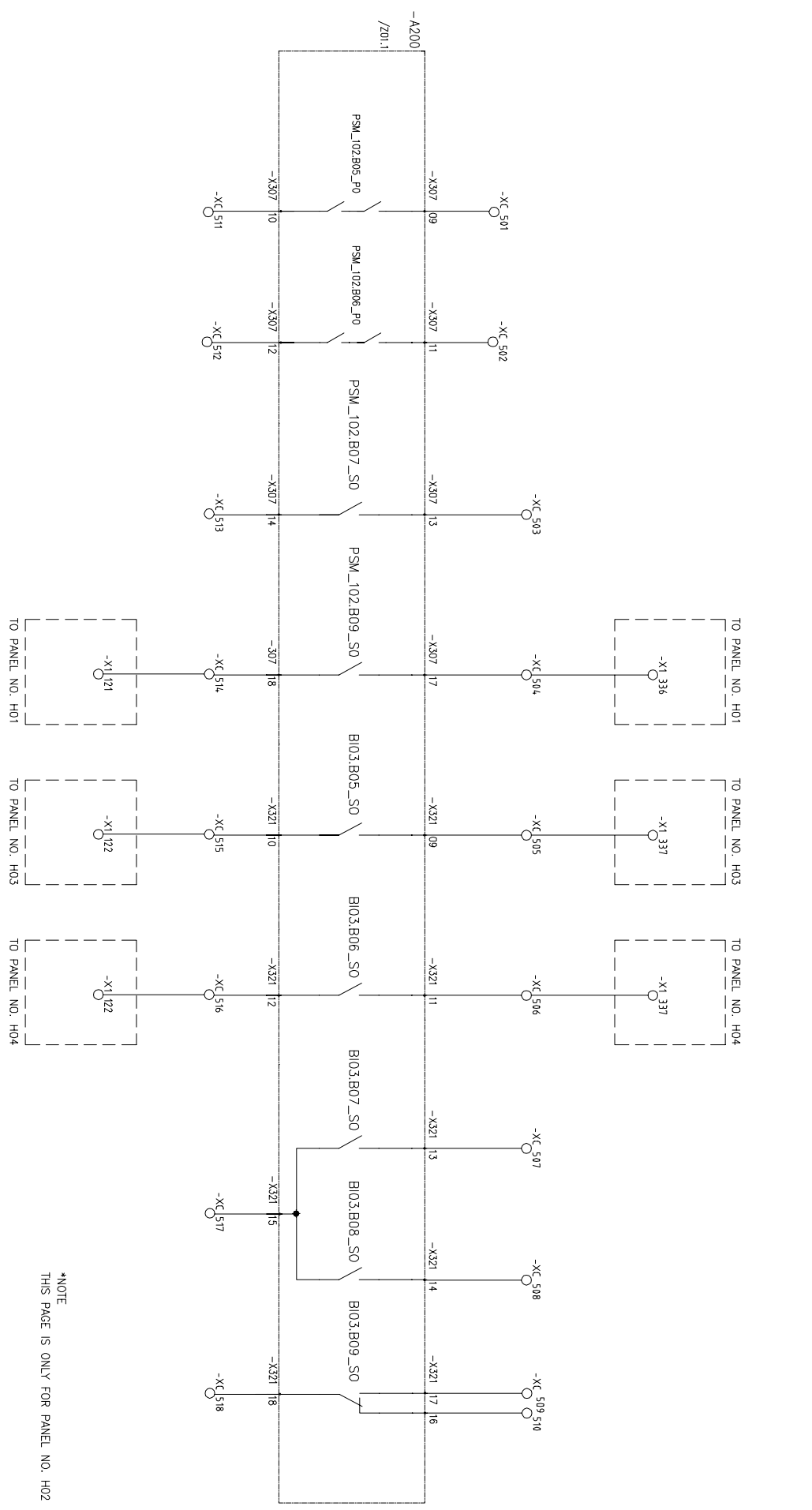
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1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE			APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE FEEDER-11 34.5KV SYSTEM	CUSTOMER DWG NO. =
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE					
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD					
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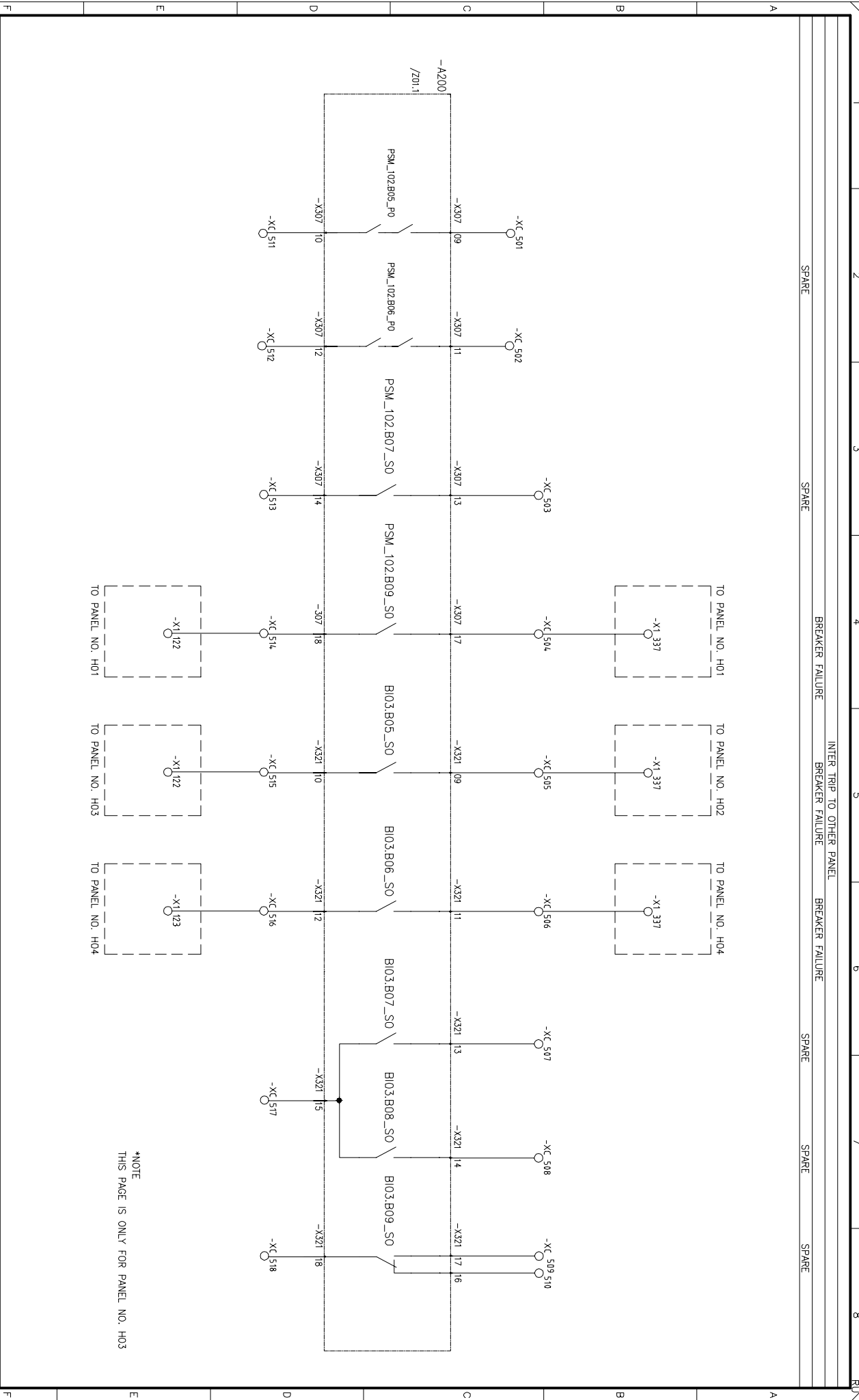
SPARE BREAKER FAILURE INTER TRIP TO OTHER PANEL BREAKER FAILURE SPARE BREAKER FAILURE SPARE SPARE SPARE



*NOTE
THIS PAGE IS ONLY FOR PANEL NO. H02

REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE	CUSTOMER DWG NO.	SHEET
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		ABB			SCHEMATIC DIAGRAM FOR		
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE					TYPE FEEDER-11	70043-OUT-K09	13 OF 18
1										34.5KV SYSTEM		

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*NOTE
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1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		ABB Ltd.		APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE FEEDER-11	CUSTOMER DWG NO. ABB DRAWING NO. 70043-OUT-K09A	=
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE		PPMV					
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD							
	1		2			3		4	5	6	7	8

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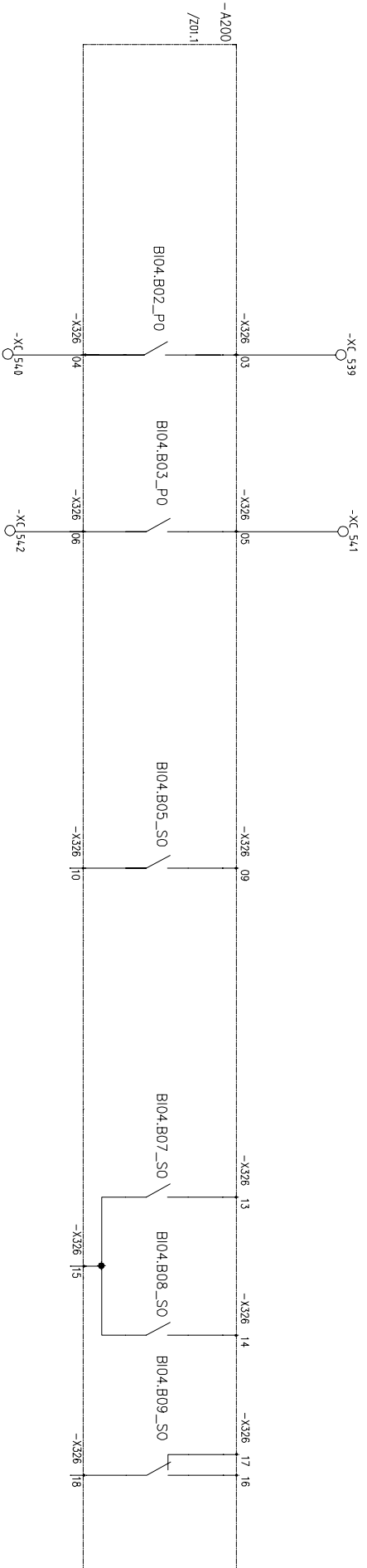
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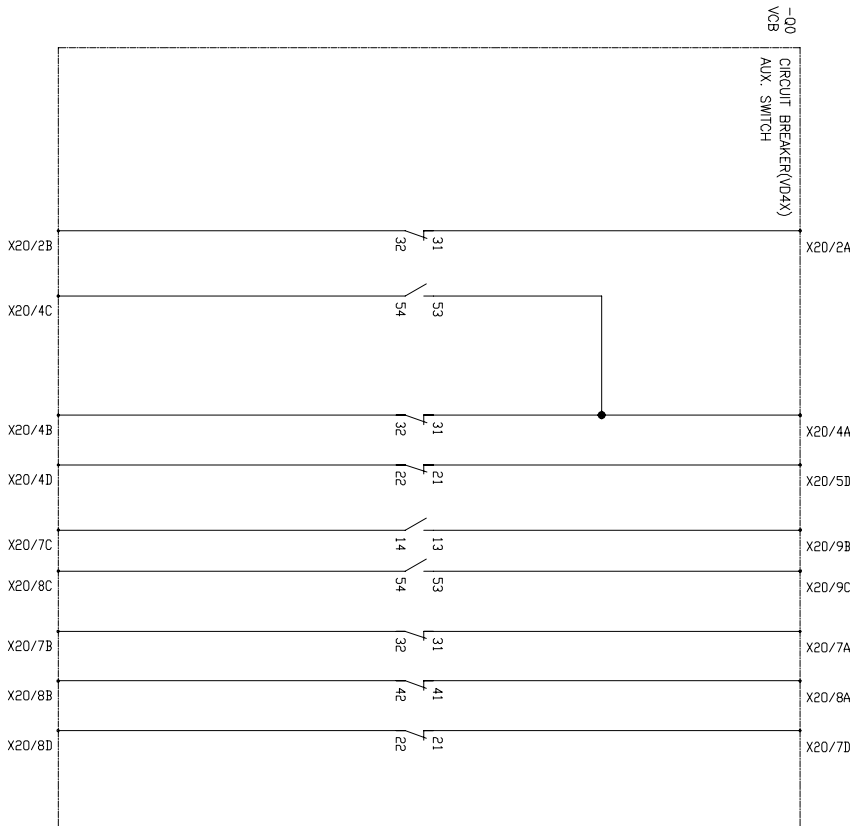
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REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE	CUSTOMER DWG NO.	SHEET
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE	ABP	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	SCHEMATIC DIAGRAM FOR	70043-OUT-K10	15 OF 18
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE	PPMV				TYPE FEEDER-11		
										34.5kV SYSTEM		

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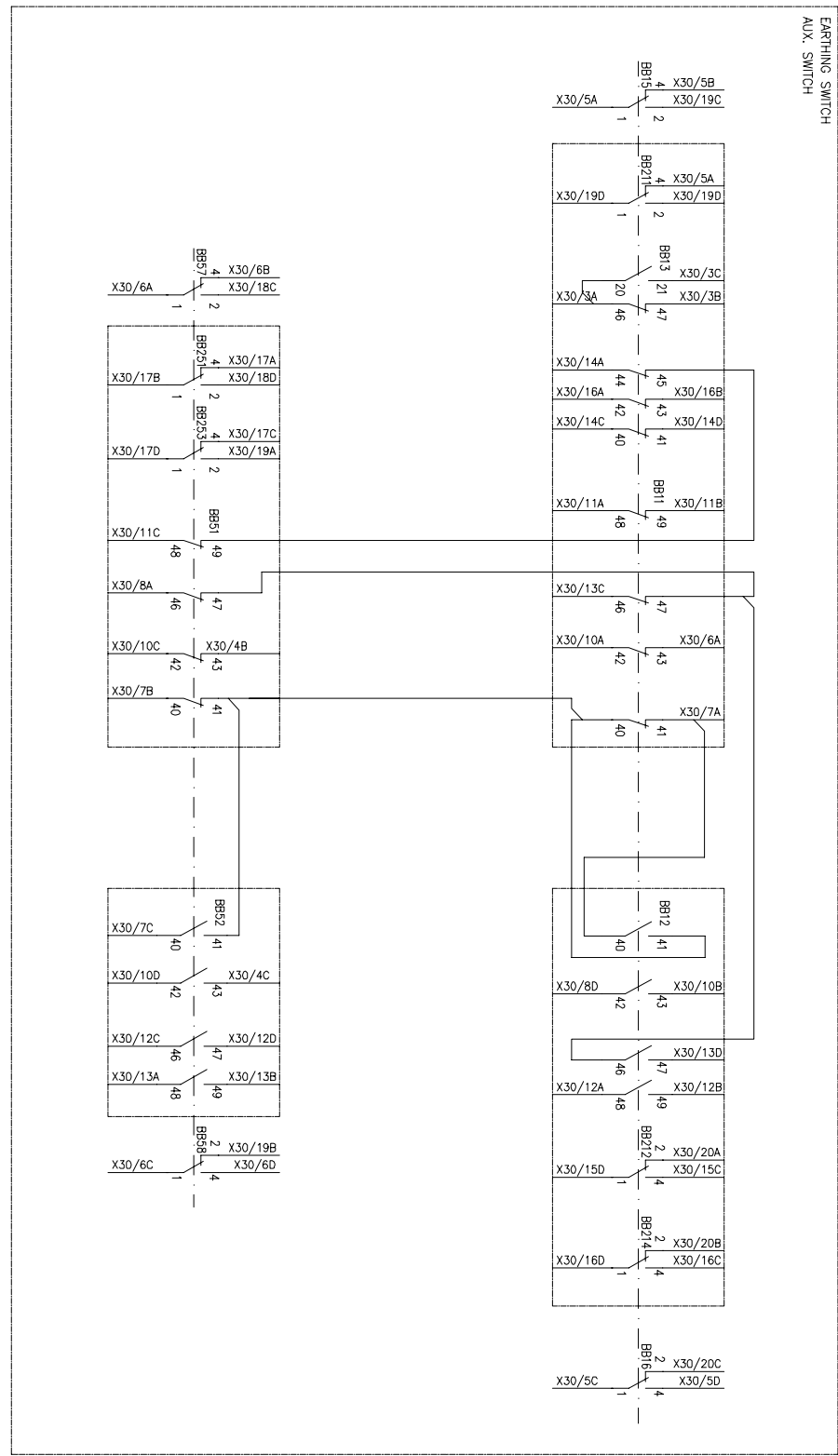


1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE FEEDER-11 34.5kV SYSTEM	CUSTOMER DWG NO. ABB DRAWING NO. 70043-OUT-K11	=
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE						
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV					
1			2				4	5	6	7	8

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-01/05
DS1/ES1

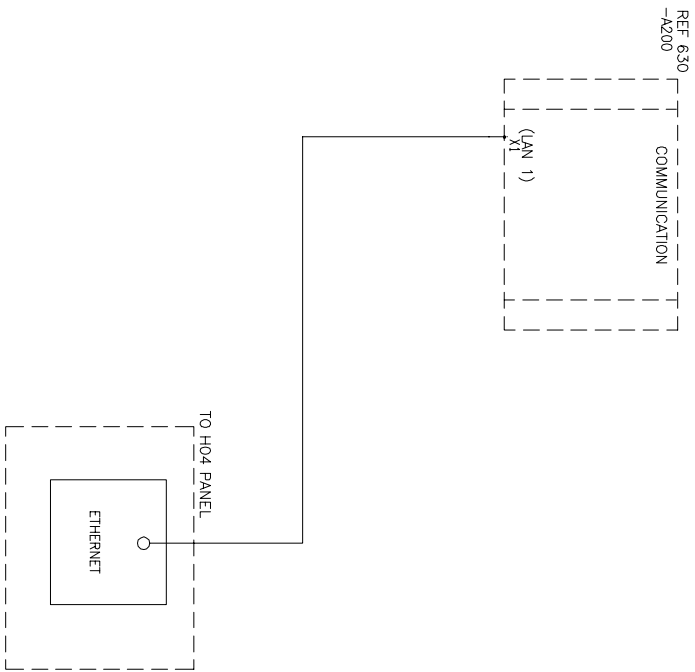
EARTHING SWITCH
AUX. SWITCH



REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV	4	5	6	7	8
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE	ABB Ltd.					
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE						
TITLE SCHEMATIC DIAGRAM FOR						CUSTOMER DWG NO.					
TYPE FEEDER-11						=					
APR EHOUSE PROJECT						ABB DRAWING NO.					
34.5kV SYSTEM						70043-OUT-K12					
						SHEET					
						17 OF 18					

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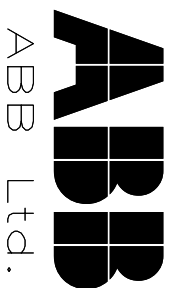
REF 630
COMMUNICATION



1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE	APP	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE SCHEMATIC DIAGRAM FOR TYPE FEEDER-11	CUSTOMER DWG NO. ABB DRAWING NO. 70043-OUT-K13	=
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE	APP	PPMV					+
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD							
1			2									18 OF 18

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FOR APPROVAL





PROJECT NAME APR E-HOUSE PROJECT
 CLIENT'S NAME APR Senegal Project
 JOB NO. 70043
 DESCRIPTION SPECIFICATION & ELECTRICAL DRAWING

1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE	APP	ABB Ltd.				VENDOR PRINT NO.	=
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE	APP	ABB Ltd.		APR EHOUSE PROJECT		ABB DRAWING NO.	+ GENERAL
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV					70043-GS-A01	SHEET 1 OF 5

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SHEET	FILE NAME	DESCRIPTION 1	DESCRIPTION 2	REV/NO
1	70043-GIS-ADI	COVER PAGE	FDR 33KV GIS PANEL	1
2	70043-GIS-B02	DRAWING LIST	FDR 33KV GIS PANEL	1
3	70043-GIS-C03	TECHNICAL SPECIFICATION	TECHNICAL SPECIFICATION	1
4	70043-GIS-F04	LAYOUT	TECHNICAL SPECIFICATION	1
5	70043-GIS-G05	SINGLE LINE DIAGRAM	FDR 0.48KV ACB PANEL	1

1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		ABB Ltd.		APR EHOUSE PROJECT	TITLE	VENDOR PRINT NO.	+
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE							
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV						

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SWITCHGEAR 33 KV

Number of switchgear panels units

units

units

Single – Busbar units

Double – Busbar front to front back to back

Specification IEC 62271-200 or

Switchgear type Metal enclosed Metal clad

SERVICE CONDITION

Paint finish RAL 7035

Exterior degree of protection IP40 IP

Ambient temperature min. temp. -5 C

max. temp. 40 C

Relative humidity higher than 65% %

Site altitude below 1000 m

BUS BAR PHASE IDENTIFICATION

Letter L1,L2,L3,N R,S,T,N

Marking Color L1 or R Yellow

L2 or S Blue

L3 or T Red

N Black

G Green

Phase arrangement Left to Right, Top to Bottom, Front to Back

WIRING

Cable type KIV IV

C.T. circuit 4.0 mm

V.T. circuit 2.5 mm

Control circuit 1.5 mm

1.5 mm

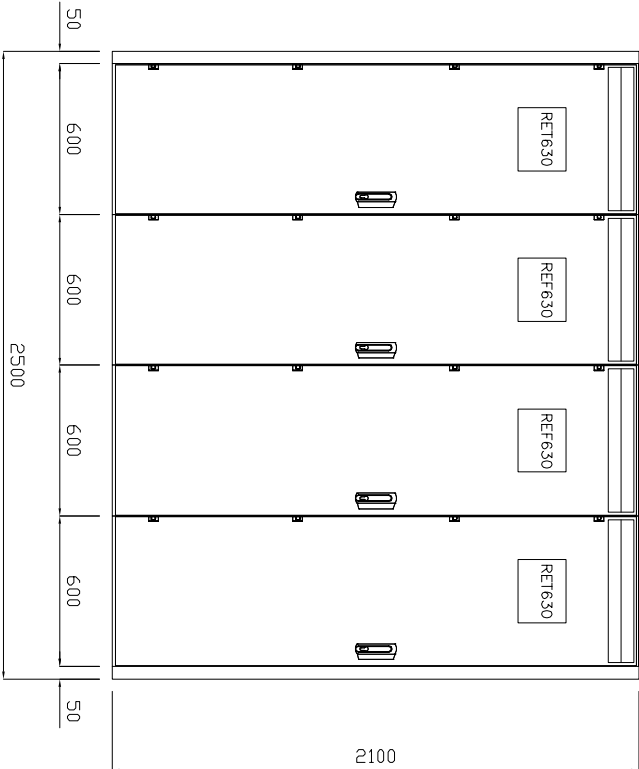
Grounding 4.0 mm

Wire marking use not use

1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE	ABB	ABB Ltd.		APR EHOUSE PROJECT	TITLE	VENDOR PRINT NO.	=
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE	ABB	ABB Ltd.		APR EHOUSE PROJECT	TITLE	ABB DRAWING NO.	+
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV					70043-GS-C03	SHEET
	1		2									3 OF 5

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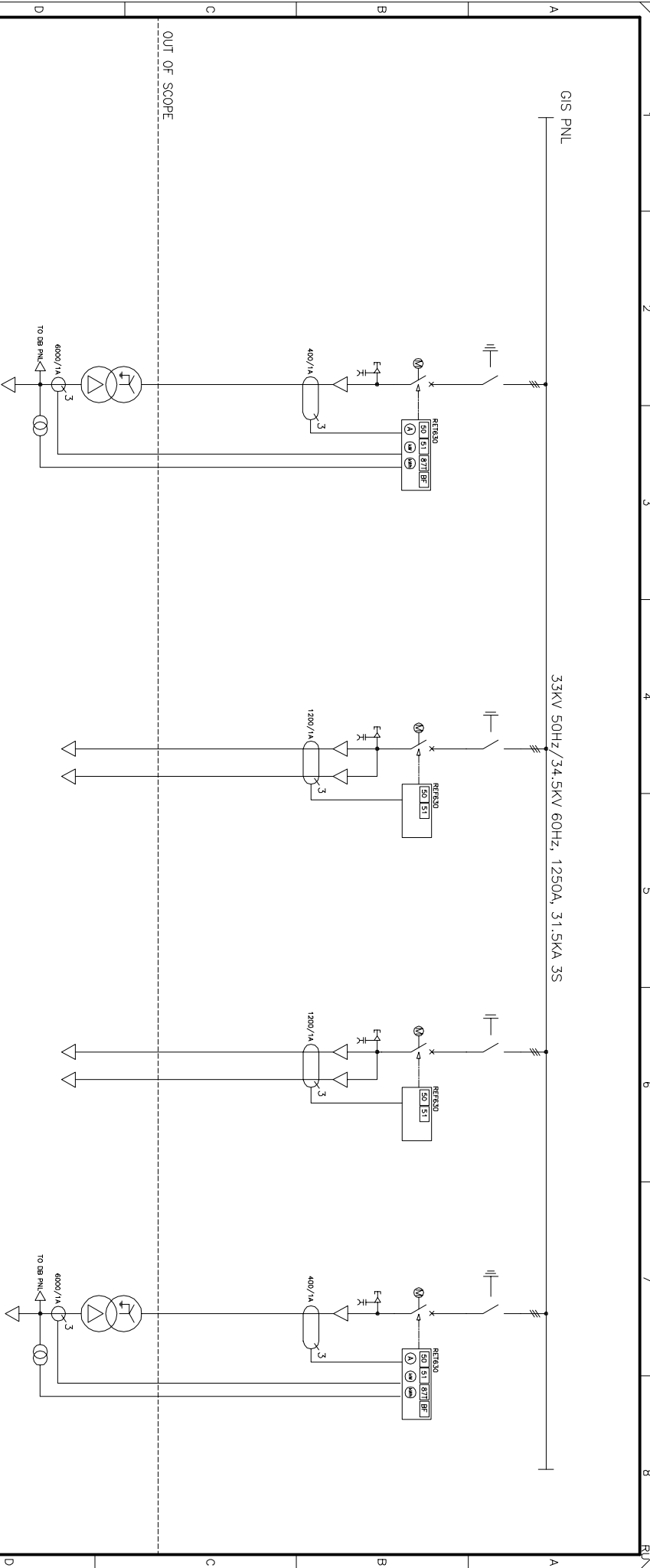
EQ. NO.	H01	H02	H03	H04
DESCRIPTION	INCOMING	OUTGOING	OUTGOING	INCOMING



*NOTE : PANEL DEPTH
 -H01 & H04 : 1225
 -H02 & H03 : 1425

REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV	ABB Ltd.	APR Energy	APR EHOUSE PROJECT	TITLE	VENDOR PRINT NO.	SHEET
1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE	PPMV	ABB Ltd.	APR Energy	APR EHOUSE PROJECT			4 OF 5
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE							

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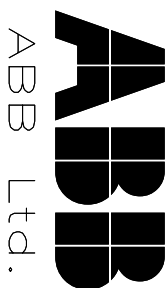


GROUP	GIS PANEL	GIS PANEL	GIS PANEL	GIS PANEL
PANEL NAME	H01	H02	H03	H04
SCHEMATIC TYPE: & DESCRIPTION	INCOMER	OUTGOING	OUTGOING	INCOMER
VOLTAGE	33KV 50Hz/34.5KV 60Hz	33KV 50Hz/34.5KV 60Hz	33KV 50Hz/34.5KV 60Hz	33KV 50Hz/34.5KV 60Hz
RATED POWER	-	-	-	-
F.L.C. (A)	-	-	-	-
CIRCUIT BREAKER (-00)	VD4X, 630A , 31.5KA	VD4X, 1250A , 31.5KA	VD4X, 1250A , 31.5KA	VD4X, 630A , 31.5KA
POWER CABLE SIZE	-	-	-	-
CURRENT TRANSFORMER (-10V/L1,L2,L3)	400/1A, 5P20, 5VA	1200/1A, 5P20, 5VA	1200/1A, 5P20, 5VA	400/1A, 5P20, 5VA
VOLTAGE TRANSFORMER (-105/L1,L2,L3)	-	-	-	-

1	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE			APR EHOUSE PROJECT	TITLE	VENDOR PRINT NO.	=
0	2011.09.07	FOR APPROVAL	JHKIM	SHHAN	YSLEE				ABB DRAWING NO.	70043-GS-005	SHEET
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV					

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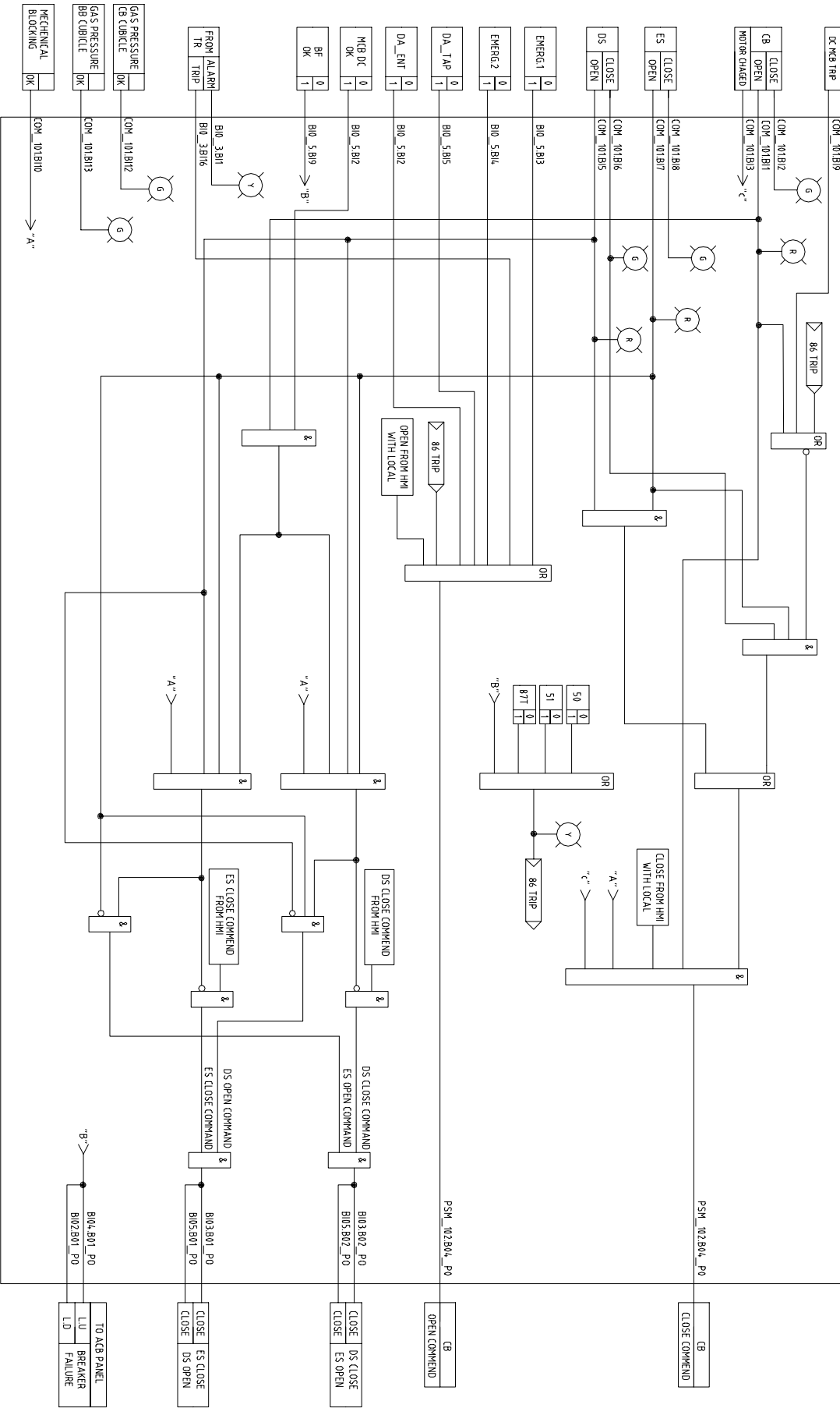


PROJECT NAME APR E-HOUSE PROJECT(PILOT)
 CLIENT'S NAME APR ENERGY
 JOB NO. 70043
 DESCRIPTION LOGIC DIAGRAM

2	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE		ABB Ltd.		APR EHOUSE PROJECT(PILOT)	TITLE LOGIC DIAGRAM	CUSTOMER DWG NO.	=
1	2010.11.19	FOR APPROVAL	JHKIM	SHHAN	YSLEE		ABB Ltd.		APR EHOUSE PROJECT(PILOT)	TITLE LOGIC DIAGRAM	ABB DRAWING NO.	+
0	2010.11.09	FOR APPROVAL	JHKIM	SHHAN	YSLEE		ABB Ltd.		APR EHOUSE PROJECT(PILOT)	TITLE LOGIC DIAGRAM	70043-APR-L00	SHEET
REV.	DATE	DESCRIPTION	DRN	CHKD	APPD	PPMV						1 OF 5

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		1	2010.11.19	FOR APPROVAL	JHKIM	SHHAN	YSLEE	APR			INCOMING		ABB DRAWING NO.	+
		0	2010.11.09	FOR APPROVAL	JHKIM	SHHAN	YSLEE	PPMV					70043-APR-L02	SHEET
		1		DESCRIPTION	DRN	CHKD	APPD							2 OF 5

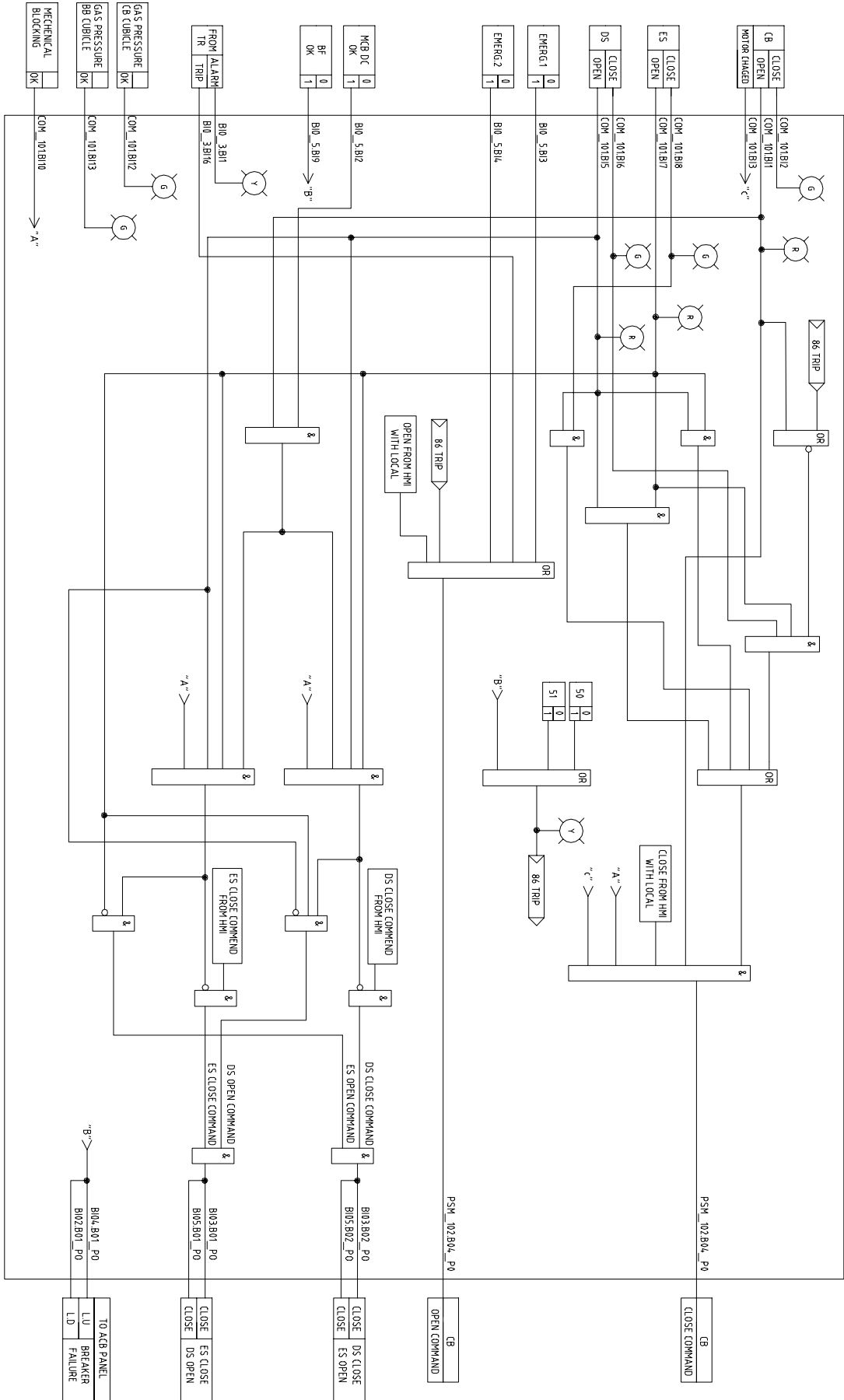
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	2	DS STAUS	DS CLOSED	DS OPENED	
	3	ES STAUS	ES CLOSED	ES OPENED	
	4	PROTECTION TRIP			PROTECTION TRIP
PAGE 1	5	50			50 TRIP
	6	51			51 TRIP
	7	50BF			50BF TRIP
	8	GAS PRESSURE CB CUBICLE	OK		
	9	GAS PRESSURE BB CUBICLE	OK		
	10	3 POSITION SW MOTOR RUNNING	OK		
	11	87T TRIP		TRIP	

2	2012.01.18	AS BUILT	JHKIM	SHHAN	YSLEE	 ABB Ltd.		APR EHOUSE PROJECT(PILOT)	TITLE LAMP PAGE FOR INCOMING	CUSTOMER DWG NO.	=			
1	2010.11.19	FOR APPROVAL	JHKIM	SHHAN	YSLEE							 ABB DRAWING NO. 70043-APR-L03	+	SHEET 3 OF 5
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2	2012.01.18		JHKIM	SHHAN	YSLEE	YSLEE	YSLEE	YSLEE	YSLEE	DRN	CHKD	APPD	PPMV	ABB Ltd.	APR EHOUSE PROJECT(PILOT)	TITLE	LOGIC DIAGRAM FOR FEEDER PANEL	CUSTOMER DWG NO.	ABB DRAWING NO. 70043-APR-LO4	4 OF 5
1	2010.11.19		JHKIM	SHHAN	YSLEE	YSLEE	YSLEE	YSLEE	YSLEE	DRN	CHKD	APPD	PPMV	ABB Ltd.	APR EHOUSE PROJECT(PILOT)	TITLE	LOGIC DIAGRAM FOR FEEDER PANEL	CUSTOMER DWG NO.	ABB DRAWING NO. 70043-APR-LO4	4 OF 5
0	2010.11.09		JHKIM	SHHAN	YSLEE	YSLEE	YSLEE	YSLEE	YSLEE	DRN	CHKD	APPD	PPMV	ABB Ltd.	APR EHOUSE PROJECT(PILOT)	TITLE	LOGIC DIAGRAM FOR FEEDER PANEL	CUSTOMER DWG NO.	ABB DRAWING NO. 70043-APR-LO4	4 OF 5

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