SHANGHAI JIANGNAN CHANGXING
HEAVY INDUSTRY CO., LTD

Hull No.：H2431/2432/2433

5100TEU CONTAINER VESSEL

MAIN SWITCHBOARD

DESIGNED BY	Bu Huazhang	DRAWING NO.	TC06M101
COMPARED BY	Li Wenwei	REVISION	A
CHECKED BY	Bu Huazhang	CLASS	GL
APPROVED BY	Chen Haijiao	DATE	2007-9-28
TERASAKI *Ensuring Service, Maintaining Quality*		TERASAKI (CHINA) ELECTRIC CO., LTD	

VOL.1

(PAGE: 1-1～1-49)

	FLAG OF SHIP	MARSHALL / LIBERIA	KIND OF SHIP	5100TEU CONTAINER VESSEL	REF SHEET No.
GENERAL	RULE AND REGULATION	☐ ABS ☐ BV ☐ DNV ■ GL ☐ JG ☐ LRS ☐ NK ☐ CCS SPECIAL NOTATION ■ AUT ■ AUT-0			
	STANDARD	☐ JIS ☐ JEM ■ IEC PUB.92 ■ GB ☐ EN			
	DRAWING AND DOCUMENT	LANGUAGE: ■ ENGLISH ☐ CHINESE UNIT: ■ METRIC			
	SWITCHBOARD RATING	MAIN POWER SOURCE: ■ AC450V 60Hz 3Φ 3W ■ AC230V 60Hz 3Φ 3W MAIN BUS CAPACITY 6000A		CONTROL CIRCUIT: ■ AC220V 60Hz ■ DC24V	
	ENCLOSURE TYPE	■ IP22			
MECHANICAL CONSTRUCTION AND INSTALLATION	LOCATION	■ INDOOR(ENG CONT. RM) ☐ EMERGENCY GENERATOR ROOM ☐ OUTSIDE CONTROL ROOM			
	INSTALLATION	■ FLOOR MOUNTING AND SELF-STANDING ☐ WALL MOUNTING			
	ACCESSIBILITY	■ FRONT ■ REAR ☐ SIDE			
	ENCLOSURE	FRONT ■ DOOR SIDE ■ FIXED PLATE REAR ☐ DOOR ■ COVER REMOVABLE BOTTOM ■ OPEN			
	PARTITION PLATE	■ PROVIDED ☐ NOT PROVIDED BETWEEN ■ GEN PANEL-GEN PANEL ■ FEED PANEL-GSP ■ GEN PANEL-FEED PANEL ■ FEED PANEL-FEED PANEL			
	HAND RAIL	FRONT ■ HORIZONTAL REAR ■ HORIZONTAL ☐ VERTICAL			
	FOUNDATION BASE	■ PROVIDED ■ C5.3×100×48（H=100） ☐ NOT PROVIDED			
	PAINT COLOR	OUTSIDE: ■ 7.5BG7/2 ☐ 2.5PB9/2 ■ ROUGH-POLISHED INSIDE: ☐ 7.5BG7/2 ☐ 2.5PB9/2 ☐ ROUGH-POLISHED ■ MAKER STANDARD			
ELECTRICAL CONSTRUCTION	BUS BAR	MATERIAL: ■ COPPER CONTACT SURFACE: ☐ SILVER PLATED ■ TIN PLATED			
	BUSBAR COLOR CODING	■ WITH COLOR LABEL AC PHASE(R)(U): ■ GREEN ☐ RED DC POLE(P): ■ RED AC PHASE(S)(V): ■ YELLOW ☐ WHITE AC PHASE(T)(W): ■ BROWN ☐ BLUE DC POLE(N): ■ BLUE			
	BUSBAR PHASE ARRANGEMENT	VIEWING FROM FRONT PHASE(R) (U) POLE(P) PHASE(S) (V) PHASE(T) (W) POLE(N) LEFT → RIGHT TOP → BOTTOM FRONT → BACK			
	BUS DUCT	☐ PROVIDED ☐ AIR INSULATION ☐ INSULATION ■ NOT PROVIDED			
	CABLE ENTRANCE	☐ TOP（FEEDER PANEL） ☐ WITH CABLE GLAND ☐ REAR UPPER ☐ WITH CABLE COAMING ■ BOTTOM ■ OPEN			
	INTERNAL WIRING MATERIAL	TYPE / CIRCUT	0.6/1KV CBYJR（85℃）		
		POWER CIRCUIT	■ MIN2.5mm²		
		CONTROL CIRCUIT	■ MIN0.75mm²		

ELECTRICAL CONSTRUCTION AND PARTS	TERMINAL LUG FOR OUTGOING CABLE	■ ONLY PROVIDED CONNECTION SCREW AND NUT(8.8G CLASS) FOR GENERATOR AND BOW THRUSTER □ NOT PROVIDED	REF SHEET No.
	SHORT CIRCUIT FAULT LEVEL	AC 450 V BUS 88.369 KA SYM.RMS. 241.316 KA ASYM.PEAK AC 230 V BUS 9.156 KA SYM.RMS. 22.030 KA ASYM.PEAK	
	CIRCUIT BREAKER	■ REFER TO THE ACB、MCCB BREAKING CAPACITY LIST	
	FUSE	■ REFER TO THE FUSE BREAKING CAPACITY LIST	
	METER	■ DEIF ■ 96×96 90° BEZEL COLOR: ■ BLACK □ YOKOGAWA PRECISION CLASS: 1.5 □ OTHER	
	INSULATION RESISTANCE MONITOR	■ DEIF □ NOT PROVIDED BEZEL COLOR: ■ BLACK ■ 96×96 90° PRECISION CLASS: 1.5	
	WATTHOUR METER	■ PROVIDED □ NOT PROVIDED	
	INDICATING LAMP & PUSH BUTTON	■ IDEC □ OTHER	
	SELECT SWITCH	■ IDEC ■ K&N	
	RUNNING HOUR METER	■ PROVIDED ■ WITHOUT RESET BEZEL COLOR: ■ BLACK □ NOT PROVIDED □ WITH RESET	
	CONTACTOR & THERMAL RELAY	■ ABB □ OTHER	
	TRANSFORMERS	■ HONGQI □ OTHER	
	CURRENT TRANSFORMERS	■ BH □ OTHER	
	VOLTAGE TRANSFORMERS	■ JIANGYIN □ OTHER	
	CONTROL TERMINAL BLOCK	■ PHOENIX □ OTHER	
	NAMEPLATE	MATERIAL: ■ ACRYLIC RESIN LANGUAGE: ■ ENGLISH □ ENGLISH & CHINESE (CAUTION) GROUND: ■ WHITE □ BLACK □ OTHER LETTER COLOUR: ■ GENERAL:BLACK ■ WARNING:RED □ OTHER TYPE: ■ REVERSE ENGRAVED □ ENGRAVED	
	GENERATOR AUTOMATIC CONTROL	DEVICE: ■ GAC-21 □ NOT SUPPLIED FUNCTION: ■ GAC-UMS(UNATTENDED MACHINARY SPACES) ■ GAC-PMS(POWER MANAGEMENT)	
	SPARE PARTS	■ SUPPLIED □ NOT SUPPLIED □ CCS ■ GL ■ WITH STEEL BOX □ WITHOUT STEEL BOX ■ MAKER STANDARD BOX COLOR（MUNSELL CODE）: ■ 7.5BG7/2	
OTHERS			

ABBR.	DESCRIPTION	ABBR.	DESCRIPTION	ABBR.	DESCRIPTION
A	AMMETER	FSS	FLICKER STOP SWITCH	RPRY	REVERSE POWER RELAY
AC	ALTERNATING CURRENT	GCS	GOVERNOR MOTOR CONTROL SWITCH	SCR	SILICON CONTROLLED RECTIFIER
ACB	AIR CIRCUIT BREAKER	GL	GREEN LIGHT	SEC	SECOND
AG	AUXILIARY GENERATOR	GSP	GROUP STARTER PANEL	SG	SHAFT GENERATOR
AS	AMMETER SWITCH	H	HEATER/HOUR	SHS	SPACE HEATER SWITCH
ASS	AUTO SYNCHRO SWITCH	HM	RUNNING HOUR METER	SHT	SHUNT TRIP
ASCS	AUTO SYNCHRO & LOAD SHIFT SWITCH	IL	INCANDESCENT LAMP	ST	STARTER
ATR	ACB RESET SWITCH	ILS	INCANDESCENT LAMP SWITCH	STD	SHORT TIME DELAY
AUS	AUXILIARY SWITCH	INST	INSTANTANEOUS	STR	SHORT CIRCUIT TROUBLE RESET
AUTO	AUTOMATIC	INV	INVERTER	SY	SYNCHROSCOPE
AUX	AUXILIARY	IRM	INSULATION RESISTANCE MONITOR	SYS	SYNCHROSCOPE SWITCH
AVR	AUTOMATIC VOLTAGE REGULATOR	KS	KNIFE SWITCH	STT	ENG START SWITCH
AST	FULL AUTO START	KSDT	KNIFE SWITCH DOUBLE THROW	STP	ENG STOP SWITCH
ASP	FULL AUTO STOP	KSTT	KNIFE SWITCH TRIPLE THROW	SL	STANDBY LIGHT
BCS	BREAKER CONTROL SWITCH	LSS	AUTO LOAD SHIFT SWITCH	SP	STOP
BL	BELL	LTD	LONG TIME DELAY	T	TEMPERATURE METER/THERMOMETER
BL	BLUE LIGHT	LTS	LAMP TEST SWITCH	TB	TERMINAL BLOCK
BS	BUZZER STOP	MANU	MANUAL	TCS	TRANSFORMER CONNECTING LINK
BZ	BUZZER	MC	MAGNETIC CONTACTOR	TG	TURBO GENERATOR
BM	EXCITATION SWITCH	MCCB	MOLDED CASE CIRCUIT BREAKER	TL	TRANSPARENT LIGHT
CCC	CROSS CURRENT COMPENSATOR	MG	MOTOR GENERATOR/MAIN GENERATOR	TMS	TEMPERATURE METER SWITCH THERMOMETER SWITCH
COS	CHANGE OVER SWITCH	MIN	MINUTE	TPB	TRIP PUSH BUTTON
CS	CONTROL SWITCH	M/S	MACHINE SIDE	TT	TEST TERMINAL
DC	DIRECT CURRENT	MSB	MAIN SWITCHBOARD	TS	EG SEQUENCE TEST SWITCH
DG	DIESEL GENERATOR	MV	MAGNETIC VALVE	UVRY	UNDERVOLTAGE RELAY
DM	DIMMER	NP	NAMEPLATE	UVT	UNDERVOLTAGE TRIP
DS	DISCONNECTING SWITCH	OCRY	OVERCURRENT RELAY	V	VOLTMETER
ECS	ENGINE CONTROL SWITCH	OL	ORANGE LIGHT	VAR	VARMETER
EG	EMERGENCY GENERATOR	OVRY	OVERVOLTAGE RELAY	VR	VOLTAGE REGULATOR
ELS	EARTH LAMP SWITCH	PBS	PUSH BUTTON SWITCH	VS	VOLTMETER SWITCH
EIL	EMERGENCY LIGHT	PF	POWER FACTOR METER	W	WATTMETER
ESB	EMERGENCY SWITCHBOARD	PLC	PROGRAMMABLE CONTROLLER	WH	WATT HOUR METER
ETR	ENG RESET SWITCH	PSI	PHASE SEQUENCE INDICATOR	WL	WHITE LIGHT
F	FREQUENCY METER	PSL	PHASE SEQUENCE INDICATING LAMP	WIL	WORKING LIGHT
FL	FLUORESCENT LAMP	PSC	PHASE SEQUENCE CHECK SWITCH	YL	YELLOW LIGHT
FLS	FLUORESCENT LAMP SWITCH	RA	REACTOR		
FS	FREQUENCY METER SWITCH	RL	RED LIGHT		

AIR CIRCUIT BREAKERS(MANUFACTURER: TERASAKI)

TYPE		MAXIMUM CURRENT RATING (A)	RATED VOLTAGE (V)	AC BREAKERS		DC BREAKERS	USED
				RATED BREAKING CURRENT (kA) Sym.RMS	RATED MAKING CURRENT (kA) Asym.Peak	RATED BREAKING CURRENT (kA)	
AME B SERIES	AME3B	250	460	① 16 ③ 4	① 34.8 ③ 6.87	—	
	AME4B	400	460	① 16 ③ 6	① 34.8 ③ 10.2	—	
Tem Power "AT"SERIES	AT06	630	480	① 35 ③ 35	① 77.2 ③ 77.2	—	
	AT12	1250	480	① 65 ③ 50	① 145 ③ 111	—	
	AT16	1600	480	① 65 ③ 50	① 145 ③ 111	—	
	AT20	2000	480	① 65 ③ 50	① 145 ③ 111	—	
Tem Power2 "AR" SERIES	AR208S	800	690	①② 50	①② 115	—	
			500	①② 65	①② 153	—	
	AR212S	1250	690	①② 50	①② 115	—	
			500	①② 65	①② 153	—	
	AR216S	1600	690	①② 50	①② 115	—	
			500	①② 65	①② 153	—	
	AR220S	2000	690	①② 50	①② 115	—	
			500	①② 65	①② 153	—	
	AR325S	2500	690	①② 65	①② 153	—	
			500	①② 85	①② 201	—	
	AR332S	3200	690	①② 65	①② 153	—	
			500	①② 85	①② 201	—	○
	AR440S	4000	690	①② 75	①② 179	—	
			500	①② 100	①② 245	—	○

○---USED

NOTE:

①---WITH SHORT TIME DELAY TRIP AND INSTANTANEOUS TRIP

②---WITH SHORT TIME DELAY TRIP AND MCR

③---WITH SHORT TIME DELAY TRIP

MCR---MAKING CURRENT RELEASE

MOLDED CASE CIRCUIT BREAKERS (MANUFACTURER:TERASAKI)

TYPE		MAXIMUM CURRENT RATING (A)	AC450V		AC240V		AC125V		DC250V	USED
			RATED BREAKING CURRENT (kA) Sym.RMS	RATED MAKING CURRENT (kA) Asym.peak	RATED BREAKING CURRENT (kA) Sym.RMS	RATED MAKING CURRENT (kA) Asym.peak	RATED BREAKING CURRENT (kA) Sym.RMS	RATED MAKING CURRENT (kA) Asym.peak	RATED BREAKING CURRENT (kA)	
XE	XE100NS	100	10	18.5	25	52.5	42*2	95.6*2	7.5	○
XS	XS50NB	50	10	18.5	25	52.5	42*2	95.6*2	7.5	
	XS100NB	100	25	52.5	50	105			15	
	XS225NS	225	25	52.5	50	105			40	
	XS400CS	400	30	63	50	105				
	XS400NS	400	42	88.2	85	187				
	XS400NE	400	42	88.2	85	187				
	XS600CS	600	30	63	50	105				○
	XS600NS	600	50	105	85	187				
	XS600NE	600	50	105	85	187				
	XS800CS	800	30	63	50	105				
	XS800NS	800	50	105	85	187				
	XS800NE	800	50	105	85	187				
	XS1200NE	1200	65	143	100	220				
	XS1600NE	1600	85	187						
	XS2000NE	2000	85	187						
XH	XH50NS	50	42	88.2	85	187				
	XH100NS	100	42	88.2	85	187				
	XH225NS	225	42	88.2	85	187				
	XH225NE	225	42	88.2	85	187				
	XH800PS	800	85	187						
TL	TL-100F	100	120	288						
	TL-225F	225	120	288					40	
	TL-400E	400	120	288					40	
	TL-600NE	600	125	298					40	
	TL-800NE	800	125	298						
	TL-100C	100	180	415						○
	TL-225B	225	180	415						○
	TL-400	400	180	415						○
	TL-600	600	180	415						○
	TL-800	800	180	415						○
	TL-1000NE	1000	125	298						
	TL-1200NE	1200	125	298						
TB	TB-5D	10			2.5*3	4.1*3	43.5*1	101.6*1		
	TB-5P	15-50			5*3	8*3	43.5*1	101.6*1		

○---USED

NOTE: *1 - - - AT AC 110V
*2 - - - AT AC 120V
*3 - - - AT AC 220V

① - - -WITH INSTANTANEOUS TRIP
② - - -WITHOUT INSTANTANEOUS TRIP

FUSES						
MANU-FACTURER	TYPE	RATED CURRENT（A）	RATED VOLTAGE（V）	RATED BREAKING CURRENT Sym.RMS		USED
				AC（KA）	DC（KA）	
LEGRAND	10X38HRC	2A Up to 25A	500	100		○

○ ---- USED

CIRCUIT					301,401,701,801		
AIR CIRCUIT BREAKER	TYPE(Tem Power "AR"SERIES)				AR332S		
	NUMBER OF POLE				3P		
	VOLTAGE				AC450V		
	FREQUENCY				60HZ		
	AMPERE FRAME				3200A		
	BASE CURRENT In / POWER Pn				2887A / 1800KW		
	OVERCURRENT TRIP	TYPE			AGR-22BS-PR		
		LONG TIME DELAY TRIP (LTD)	PICK UP CURRENT I_R=In×RANGE	RANGE	0.8-1.0-1.05-1.1-1.15-NON		
				SET/AMP	1.1	3176A	
			OPERATING TIME	RANGE	15-20-25-30-40-50-60(S)		
				SET	20SEC(I_R×120%)		
		SHORT TIME DELAY TRIP (STD)	PICK UP CURRENT Isd=In×RANGE	RANGE	2.0-2.5-2.7-3.0-3.5-4.0-4.5-5.0-NON		
				SET/AMP	2.5	7218A	
			OPERATING TIME	RANGE	0.1-0.2-0.3-0.4-0.6-0.8		
				SET	0.4 SEC		
			SHORT TIME I^2t		OFF		
		PREFEREN-TIAL TRIP (PTA)	PICK UP CURRENT I_{P1}=In×RANGE	RANGE	0.75-0.8-0.85-0.9-0.95-1.0-1.05		
				SET/AMP	0.95	2743A	
			OPERATING TIME (t_{P1})	RANGE	10-15-20-25-30		
				SET	10SEC AT(I_{P1}×120%)		
		REVERSE POWER TRIP (RPT)	PICK UP POWER P_R=Pn×RANGE	RANGE	0.04-0.05-0.06-0.07-0.08-0.09-0.1-NON		SET: □ NOR ○ REV
				SET/AMP	0.1	180KW	
			OPERATING TIME	RANGE	2.5-5-7.5-10-12.5-15-17.5-20		
				SET	5SEC(P_R×100%)		
		INST TRIP OR MCR	PICK UP CURRENT Ii=In×RANGE	RANGE	2-4-6-8-10-12-14-16-NON		
				SET/AMP	12	34644A	

THE UVT FUNCTION TRIPS THE ACB WHEN THE UVT CONTROL VOLTAGE DROPS BELOW THE OPENING VOLTAGE (35%~70% OF RATED VOLTAGE) FOR AT LEAST 500ms. THE ACB CAN BE CLOSED WHEN THE CONTROL VOLTAGE IS RESTORED TO THE PICK-UP VOLTAGE(85% OF THE RATED VOLTAGE)

NOTE:

1. ACB TYPE DESIGNATION

AR325S - M R D

(1) - (2) (3) (4)

(1) ACB TYPE

(2) CLOSING MECHANISM

M---STORED ENERGY (MOTOR & MANUAL CHARGE)

H---STORED ENERGY (MANUAL CHARGE)

(3) OVER CURRENT TRIP DEVICE

R (AOR) ---SOLID STATE TYPE LTD, STD & INST TRIP

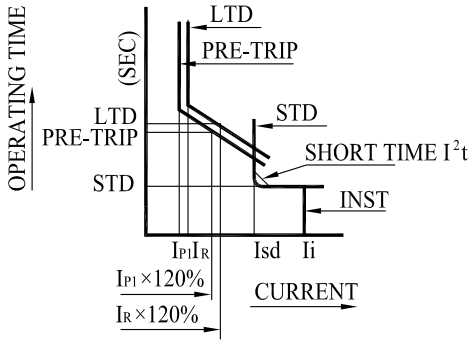
(4) MOUNTING

F---FIXED TYPE

D---WITHDRAWABLE TYPE

3. MCR MEANS MAKING CURRENT RELEASE WHICH IS OPERABLE ONLY WHEN THE ACB IS BEING CLOSED

2. DEFINITION OF EACH CURRENT AND OPERATING TIME



CIRCUIT					601	
AIR CIRCUIT BREAKER	TYPE(Tem Power "AR"SERIES)				AR440S	
	NUMBER OF POLE				3P	
	VOLTAGE				AC450V	
	FREQUENCY				60HZ	
	AMPERE FRAME				4000A	
	BASE CURRENT I_{CT}				4000A	
	OVERCURRENT TRIP	TYPE			AGR-11BL-AL	
		LONG TIME DELAY TRIP (LTD)	PICK UP CURRENT (I_1)	RANGE	0.8-0.85-0.9-1.0-NON	
				SET/AMP	0.85	3400A
			OPERATING TIME	RANGE	0.5-1.25-2.5-5-10-15-20-30(S)	
				SET	10SEC(I_1×600%)	
		SHORT TIME DELAY TRIP (STD)	PICK UP CURRENT $I_2=I_1$×RANGE	RANGE	1-1.5-2-2.5-3-4-6-8-10-NON	
				SET/AMP	3	10200A
			OPERATING TIME	RANGE	0.05-0.1-0.2-0.4-0.6-0.8	
				SET	0.2 SEC	
			SHORT TIME I^2t		OFF	
		PREFERENTIAL TRIP (PTA)	PICK UP CURRENT $I_P=I_1$×RANGE	RANGE		
				SET/AMP		
			OPERATING TIME	RANGE		
				SET		
		INST TRIP OR MCR	PICK UP CURRENT $I_3=I_1$×RANGE	RANGE	2-4-6-8-10-12-14-16-NON	
				SET/AMP	10	34000A

NOTE:

1. ACB TYPE DESIGNATION

AR325S - M R D

(1) - (2) (3) (4)

(1) ACB TYPE

(2) CLOSING MECHANISM

M---STORED ENERGY (MOTOR & MANUAL CHARGE)

H---STORED ENERGY (MANUAL CHARGE)

(3) OVER CURRENT TRIP DEVICE

R (AOR) ---SOLID STATE TYPE LTD, STD & INST TRIP

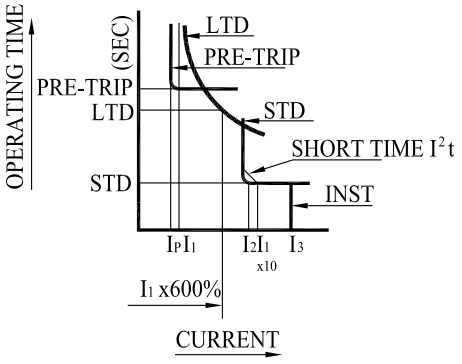
(4) MOUNTING

F---FIXED TYPE

D---WITHDRAWABLE TYPE

3. MCR MEANS MAKING CURRENT RELEASE WHICH IS OPERABLE ONLY WHEN THE ACB IS BEING CLOSED

2. DEFINITION OF EACH CURRENT AND OPERATING TIME



I. DESCRIPTION

FIG.11

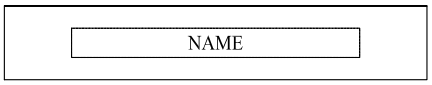


FIG.12

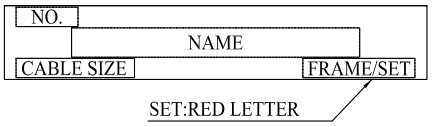


FIG.13

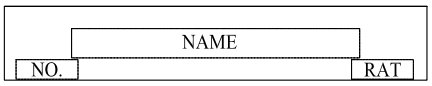


FIG.14

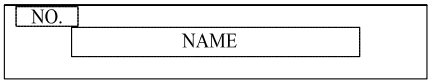


FIG.15

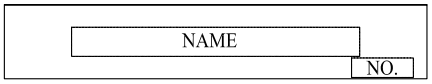


FIG.16

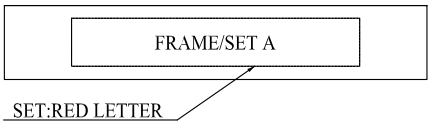
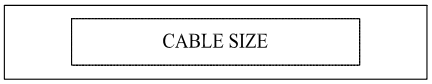


FIG.17



II. LANGUAGE

FIG.21

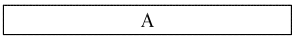


FIG.22

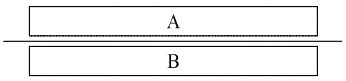
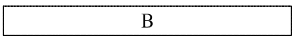


FIG.23



A: CHINESE
B: ENGLISH

III. DIMENSION

FIG.31

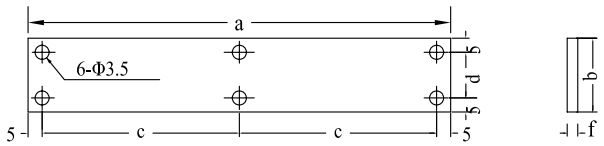


FIG.32

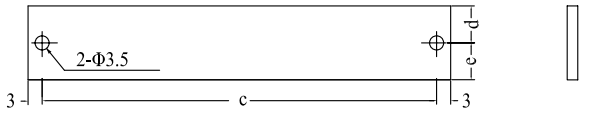


FIG.33

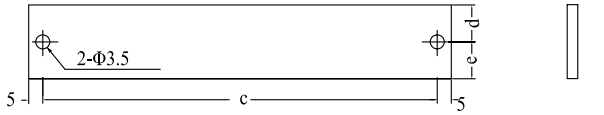
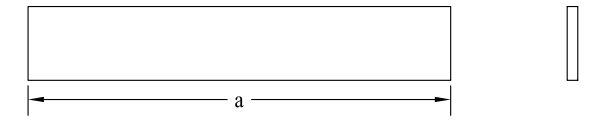


FIG.34



I FIG.	II FIG.	III FIG.	TYPE	a	b	c	d	e	f	REMARKS
11		31	U1	315	63	152.5	5.3	-	3	
11	23	31	U2	200	40	95	30	-	2	
11		34	U5S	63	25	-	-	-	2	
11	23	33	U6	63	16	53	8	8	2	
11	23	34	U7	50	12.5	-	-	-	2	
11		33	U7S	50	12.5	40	6.25	6.25	2	
11	23	33	U9	100	40	90	20	20	2	
11	23	33	U10	100	25	90	12.5	12.5	2	
12		32	U13	40	25	34	12.5	12.5	2	
13	23	34	U14	63	12.5	-	-	-	2	
12	23	33	U15	90	50	80	25	25	2	
12	23	33	U16	90	35	80	17.5	17.5	2	
12		33	U17	90	70	80	52.5	17.5	2	
13	23	34	U20	29	25	-	-	-	2	
16		34	U51	25	8	-	-	-	1	
17		34	U52	25	8	-	-	-	1	
12	23	33	U53	80	40	70	20	20	2	
11		33	U54	63	40	53	20	20	2	
11		33	U55	66	12.5	56.	6.25	6.25	2	
11	23	33	U56	100	50	90	25	25	2	
15	23	34	LN13	22	22	-	-	-	1	
15		34	LN12	36	30	-	-	-	1	
12	23	33	LN21	75	35	65	17.5	17.5	2	
12	23	33	LN22	50	35	40	17.5	17.5	2	
14	23	33	LN23	63	16	53	8	8	2	

NOTE:
GENERAL PLATE
MATERIAL --- ACRYLIC RESIN
LETTER --- GENERAL: BLACK;WARNING:RED(REVERSE ENGRAVED)
GROUND --- WHITE

NAME-		CIR. NO.	CIRCUIT NAME	BREAKER		CABLE		REMARK
TYPE	QT.			TYPE	SET OR RATE (A)	SIZE	ENTRAN-CE	
U15	1	301	NO.1 DIESEL GENERATOR	AR332S(3200AF)	2887	15 (3 × 120)	L	
U15	1	401	NO.2 DIESEL GENERATOR	AR332S(3200AF)	2887	15 (3 × 120)	L	
U15	1	701	NO.3 DIESEL GENERATOR	AR332S(3200AF)	2887	15 (3 × 120)	L	
U15	1	801	NO.4 DIESEL GENERATOR	AR332S(3200AF)	2887	15 (3 × 120)	L	
			NO.1 440V FEEDER PANEL(A)					
U16	1	201	NO.401 POWER DIS.BOX	TL225B 3P PM	225	3 × 120	L	※2, ※12
U16	1	202	NO.1 MAIN AIR COMPRESSOR	TL225B 3P PM	150	3 × 70	L	
U16	1	203	NO.3 MAIN AIR COMPRESSOR	TL225B 3P PM	150	3 × 70	L	
U16	1	204	CONTROL BOX FOR JACKT F. W. PREHEATING UNIT	TL225B 3P PM	125	3 × 50	L	
U16	1	205	NO.405 POWER DIS.BOX	TL225B 3P PM	150	3 × 70	L	
U16	1	206	SPARE	TL225B 3P PM	200	——	L	
U16	1	207	NO.403 POWER DIS.BOX	TL100C 3P PM	15	3 × 2.5	L	※2,※12
U16	1	208	PROVISION REFRIGATING PLANT	TL100C 3P PM	40	3 × 10	L	
U16	1	209	M/E DIGITAL GOVERNOR TRANSFORMER	TL100C 3P PM	20	3 × 2.5	L	
U16	1	210	SPARE	TL100C 3P PM	100	——	L	
U16	1	211	NO.409 POWER DIS.BOX	TL100C 3P PM	60	3 × 16	L	※2,※13
U16	1	212	SPARE	TL100C 3P PM	100	——	L	※2,※14
U16	1	213	AIR CONDITIONER FOR ECR	TL100C 3P PM	30	3 × 6	L	※2,※11, ※21
U16	1	214	NO1.WINDLASS/MOORING WINCH	TL225B 3P PM	225	3 × 70	L	
U16	1	215	NO.1 MOORING WINCH (FORWARD)	TL225B 3P PM	225	3 × 70	L	
U16	1	216	NO.3 MOORING WINCH (AFTER)	TL225B 3P PM	225	3 × 70	L	
U16	1	217	NO.5 MOORINGWINCH(AFTER)	TL225B 3P PM	225	3 × 70	L	
U16	1	218	NO.411 POWER DIST. BOX	TL225B 3P PM	125	3 × 50	L	※2
U16	1	219	NO.407 POWER DIS.BOX	TL225B 3P PM	150	3 × 70	L	※2, ※16, ※21

NOTE

*1 □ □
- WITH UVT
- C: UVT CONTROLLER ON MCCB
- S: UVT CONTROLLER INDEPENDENT
- T: (100ms) UVT CONTROLLER WITH TIME DELAY (100ms)

*2 - WITH SHT
*3 - WITH AUS
*4 - WITH MOTOR OPERATE
*5 - WITH ASSOCIATED OVERCURRENT RELAY
*6 - INST TRIP
*11 - EMERGENCY STOP 1
*12 - EMERGENCY STOP 2
*13 - EMERGENCY STOP 3
*14 - EMERGENCY STOP 4
*15 - EMERGENCY STOP 5
*16 - EMERGENCY STOP 6
*21- PREFERENTIAL TRIP 1ST
*22- PREFERENTIAL TRIP 2ND
*30- WITH HANDLE LOCK
U- CABLE ENTRANCE UPPER
L- CABLE ENTRANCE LOWER
T- TERMINAL BOARD
TB- TERMINAL BLOCK

NAME-		CIR. NO.	CIRCUIT NAME	BREAKER		CABLE		REMARK
TYPE	QT.			TYPE	SET OR RATE (A)	SIZE	ENTRAN-CE	
U16	1	220	NO1.REEFER CONTAINER FEED PANEL	TL400 3P PM	350	2(3 × 95)	L	※2,※22 ※30
U16	1	221	NO.9 REEFER CONTAINER FEED PANEL	TL400 3P PM	350	2(3 × 95)	L	※2,※22 ※30
U16	1	222	NO.1 STEERING GEAR	TL400 3P PM	INST4000	2(3 × 70)	L	※6
U16	1	223	TO NO.1 MAIN TRANSFORMER PRIMARY CIRCUIT	TL400 3P PM	INST4000	2(3 × 70)	L	※2,※6
			NO.1 440V FEEDER PANEL(B)					
U16	1	224	NO.3 REEFER CONTAINER FEED PANEL	TL800 3P PM	700	4(3 × 95)	L	※2,※22 ※30
U16	1	225	NO.5 REEFER CONTAINER FEED PANEL	TL800 3P PM	700	4(3 × 95)	L	※2,※22 ※30
U16	1	226	NO.7 REEFER CONTAINER FEED PANEL	TL800 3P PM	700	4(3 × 95)	L	※2,※22 ※30
U16	1	227	NO.1 CARGO HOLD FAN GROUP START PANEL	TL100C 3P PM	75	3 × 25	L	※2,※14
U16	1	228	SPARE	TL100C 3P PM	15	——	L	
U16	1	229	NO.1 M/E LUBRICATOR PUMP	TL100C 3P PM	15	3 × 2.5	L	※2,※12
U16	1	230	NO.1 CH. & DISH. PANEL	TL100C 3P PM	20	3 × 4	L	
U16	1	231	NO.16 LIGHTING DIS.BOX	TL100C 3P PM	INST940	3 × 6	L	※2, ※6
U16	1	232	OIL FIRED AUX. BOILER	TL100C 3P PM	75	3 × 25	L	※2,※11, ※12
U16	1	233	NO.2 REEFER CONTAINER FEED PANEL	TL800 3P PM	700	4(3 × 95)	L	※2,※22 ※30
U16	1	234	NO.4 REEFER CONTAINER FEED PANEL	TL800 3P PM	700	4(3 × 95)	L	※2,※22 ※30
U16	1	235	NO.1 M/E AUXILIARY BLOWER	TL600 3P PM	600	2(3 × 95)	L	※2,※11
			SYN PANEL					
U16	1	501	EMERGENCY SWITCHBOARD	TL600 3P PM	500	3(3 × 95)	L	
			BOW THRUSTER PANEL					
U15	1	601	BOW THRUSTER STARTER	AR440S(4000AF)	3400	11 (3 × 120)	L	※1C,※22
U16	1	602	BOW THRUSTER STARTER CONTROL SOURCE	TL100C 3P PM	15	3 × 2.5	L	

NOTE

*1 □ □

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*2 - WITH SHT
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*5 - WITH ASSOCIATED OVERCURRENT RELAY
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*12 - EMERGENCY STOP 2
*13 - EMERGENCY STOP 3
*14 - EMERGENCY STOP 4
*15 - EMERGENCY STOP 5
*16 - EMERGENCY STOP 6
*21- PREFERENTIAL TRIP 1ST
*22- PREFERENTIAL TRIP 2ND
*30- WITH HANDLE LOCK
U- CABLE ENTRANCE UPPER
L- CABLE ENTRANCE LOWER
T- TERMINAL BOARD
TB- TERMINAL BLOCK

NAME-		CIR. NO.	CIRCUIT NAME	BREAKER		CABLE		REMARK
TYPE	QT.			TYPE	SET OR RATE (A)	SIZE	ENTRAN-CE	
U16	1	603	BOW THRUSTER STARTER FOR HYD.OIL PUMP	TL100C 3P PM	15	3 × 2.5	L	
U16	1	604	HIGH PRESSURE PUMP UNIT FOR E/R WATER MIST SYSTEM	TL100C 3P PM	60	3 × 16	L	
U16	1	605	SPARE	TL100C 3P PM	30	——	L	※2
U16	1	606	SPARE	TL100C 3P PM	75	——	L	※2
			NO.2 440V FEEDER PANEL(A)					
U16	1	901	NO.6 REEFER CONTAINER FEED PANEL	TL800 3P PM	700	4(3 × 95)	L	※2,※22 ※30
U16	1	902	NO.8 REEFER CONTAINER FEED PANEL	TL800 3P PM	700	4(3 × 95)	L	※2,※22 ※30
U16	1	903	SPARE	TL800 3P PM	700	4(3 × 95)	L	※2
U16	1	904	NO.404 POWER DIS.BOX	TL100C 3P PM	60	3 × 16	L	※2,※21
U16	1	905	NO.406 POWER DIS.BOX	TL100C 3P PM	75	3 × 25	L	
U16	1	906	SERVICE AIR COMPRESSOR	TL100C 3P PM	50	3 × 10	L	
U16	1	907	OIL FIRED AUX. BOILER	TL100C 3P PM	75	3 × 25	L	※2,※11, ※12
U16	1	908	NO.410 POWER DIS.BOX	TL100C 3P PM	60	3 × 16	L	※2,※11
U16	1	909	NO.2 M/E LUBRICATOR PUMP	TL100C 3P PM	15	3 × 2.5	L	※2,※12
U16	1	910	NO.2 M/E AUXILIARY BLOWER	TL600 3P PM	600	2(3 × 95)	L	※2,※11
U16	1	911	NO.10 REEFER CONTAINER FEED PANEL	TL600 3P PM	500	3(3 × 95)	L	※2,※22 ※30
U16	1	912	SPARE	TL600 3P PM	500	——	L	※2
			NO.2 440V FEEDER PANEL(B)					
U16	1	913	NO.2 WINDLASS/MOORING WINCH	TL225B 3P PM	225	3 × 70	L	
U16	1	914	NO.2 MOORING WINCH (FORWARD)	TL225B 3P PM	150	3 × 70	L	
U16	1	915	NO.4 MOORING WINCH (AFTER)	TL225B 3P PM	225	3 × 70	L	
U16	1	916	NO.6 MOORING WINCH(AFTER)	TL225B 3P PM	225	3 × 70	L	
U16	1	917	SHORE CONNECTION BOX	XS600CS 3P PM	600	3(3 × 120)	L	※1C

NOTE

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*14 - EMERGENCY STOP 4
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*16 - EMERGENCY STOP 6
*21- PREFERENTIAL TRIP 1ST
*22- PREFERENTIAL TRIP 2ND
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U- CABLE ENTRANCE UPPER
L- CABLE ENTRANCE LOWER
T- TERMINAL BOARD
TB- TERMINAL BLOCK

NAME-		CIR. NO.	CIRCUIT NAME	BREAKER		CABLE		REMARK
TYPE	QT.			TYPE	SET OR RATE (A)	SIZE	ENTRAN-CE	
U16	1	918	NO.16 LIGHTING DIS. BOX	TL100C 3P PM	INST940	3 × 6	L	※2, ※6
U16	1	919	NO.2 CARGO HOLD FAN GROUP START PANEL	TL100C 3P PM	75	3 × 25	L	※2,※14
U16	1	920	NO.2 CH. & DISH. PANEL	TL100C 3P PM	20	3 × 4	L	
U16	1	921	INCINERATOR	TL100C 3P PM	100	3 × 35	L	※2,※11, ※12,※21
U16	1	922	HOT WATER CALORIFIER	TL100C 3P PM	60	3 × 16	L	※2,※21
U16	1	923	SPARE	TL100C 3P PM	15	——	L	
U16	1	924	NO.403 POWER DIS.BOX	TL100C 3P PM	20	3 × 2.5	L	※2,※12
U16	1	925	NO.2 MAIN AIR COMPRESSOR	TL225B 3P PM	150	3 × 70	L	
U16	1	926	SPARE	TL225B 3P PM	150	——	L	
U16	1	927	SPARE	TL225B 3P PM	125	——	L	※2
U16	1	928	NO.402 POWER DIS.BOX	TL225B 3P PM	225	2(3 × 50)	L	※2, ※12
U16	1	929	HEELING PUMP	TL225B 3P PM	200	3 × 95	L	
U16	1	930	NO.408 POWER DIS.BOX	TL225B 3P PM	150	3 × 70	L	
U16	1	931	AIR CONDITION UNIT	TL400 3P PM	250	2(3 × 50)	L	※2, ※13, ※21
U16	1	932	SPRINKLING W. PUMP	TL400 3P PM	300	2(3 × 70)	L	
U16	1	933	SPARE	TL400 3P PM	250	——	L	
U16	1	934	TO NO.2 MAIN TRANSFORMER PRIMARY CIRCUIT	TL400 3P PM	INST4000	2(3 × 70)	L	※2, ※6
			220VAC FEEDER PANEL					
LN21	1	1101	OUTSIDE FLOODLIGHT(01L)	XE100NS 3P PM	100	3 × 35	L	
LN21	1	1102	OUTSIDE LIGHT(02L)	XE100NS 3P PM	30	3 × 6	L	
LN21	1	1103	NAV. & F DECK LIGHTING(03L)	XE100NS 3P PM	30	3 × 6	L	
LN21	1	1104	E DECK LIGHTING(04L)	XE100NS 3P PM	30	3 × 6	L	
LN21	1	1105	D DECK LIGHTING(05L)	XE100NS 3P PM	30	3 × 6	L	
LN21	1	1106	C DECK LIGHTING(06L)	XE100NS 3P PM	30	3 × 6	L	

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U- CABLE ENTRANCE UPPER
L- CABLE ENTRANCE LOWER
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NAME-		CIR. NO.	CIRCUIT NAME	BREAKER		CABLE		REMARK
TYPE	QT.			TYPE	SET OR RATE (A)	SIZE	ENTRAN-CE	
LN21	1	1107	B DECK LIGHTING(07L)	XE100NS 3P PM	30	3 × 6	L	
LN21	1	1108	A DECK LIGHTING(08L)	XE100NS 3P PM	30	3 × 6	L	
LN21	1	1109	COAMING DECK LIGHTING(09L)	XE100NS 3P PM	30	3 × 6	L	
LN21	1	1110	CARGO HOLD LIGHT(10L)	XE100NS 3P PM	100	3 × 35	L	
LN21	1	1111	SPARE	XE100NS 3P PM	30	——	L	
LN21	1	1112	E/R UPPER PLAT LIGHTING(12L)	XE100NS 3P PM	40	3 × 10	L	
LN21	1	1113	E/R MIDDLE PLAT LIGHTING(13L)	XE100NS 3P PM	30	3 × 6	L	
LN21	1	1114	E/R LOWER PLAT LIGHTING(14L)	XE100NS 3P PM	20	3 × 4	L	
LN21	1	1115	E/R FLOOR LIGHTING(15L)	XE100NS 3P PM	20	3 × 4	L	
LN21	1	1116	NO.201 POWER DIS. BOX (NAVIGATION)(201P)	XE100NS 3P PM	60	3 × 16	L	
LN21	1	1117	NAV. LIGHTS DIS. PANEL(NLP)	XE100NS 3P PM	20	2 × 2.5+E	L	
LN21	1	1118	SIGNAL LIGHTS DIS. PANEL(SLP)	XE100NS 3P PM	20	2 × 4+E	L	
LN21	1	1119	RADIO DISTRIBUTION BOX	XE100NS 3P PM	30	3 × 6	L	
LN21	1	1120	NO.202 POWER DIS. BOX(202P)	XE100NS 3P PM	40	3 × 10	L	
LN21	1	1121	E/R EQUIPMENT(203P)	XE100NS 3P PM	30	3 × 6	L	
LN21	1	1122	GALLEY EQUIPMENT(204P)	XE100NS 3P PM	75	3 × 25	L	※2, ※16, ※21
LN21	1	1123	LAUNDRY EQUIPMENT(205P)	XE100NS 3P PM	75	3 × 25	L	※2,※21
LN21	1	1124	CABIN FANS(206P)	XE100NS 3P PM	20	3 × 2.5	L	※2,※13, ※21
LN21	1	1125	ENTERTAINMENT SYSTEM SOCKET	XE100NS 3P PM	30	3 × 6	L	※2, ※15, ※21
LN21	1	1126	W. C. UNIT HEATER	XE100NS 3P PM	75	3 × 25	L	※2,※13, ※21
LN21	1	1127	SMOKE DETECTING ALARM PANEL FOR CARGO HOLD	XE100NS 3P PM	15	3 × 1.5	L	
LN21	1	1128	FIRE CENTRAL UNIT	XE100NS 3P PM	15	2 × 1.5	L	
LN21	1	1129	E/R AUTOMATION SYS. POWER SUPPLY BOX	XE100NS 3P PM	15	2 × 2.5	L	
LN21	1	1130	CONTROL BOX FOR NO.2 C/H F.O.PIPE ELEC.TRACING	XE100NS 3P PM	40	3 × 10	L	
LN21	1	1131	VALVE CONTROL RELAY BOX	XE100NS 3P PM	75	——	L	

NOTE

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- WITH UVT
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*2 - WITH SHT
*3 - WITH AUS
*4 - WITH MOTOR OPERATE
*5 - WITH ASSOCIATED OVERCURRENT RELAY
*6 - INST TRIP
*11 - EMERGENCY STOP 1
*12 - EMERGENCY STOP 2
*13 - EMERGENCY STOP 3
*14 - EMERGENCY STOP 4
*15 - EMERGENCY STOP 5
*16 - EMERGENCY STOP 6
*21- PREFERENTIAL TRIP 1ST
*22- PREFERENTIAL TRIP 2ND
*30- WITH HANDLE LOCK
U- CABLE ENTRANCE UPPER
L- CABLE ENTRANCE LOWER
T- TERMINAL BOARD
TB- TERMINAL BLOCK

NAME-		CIR. NO.	CIRCUIT NAME	BREAKER		CABLE		REMARK
TYPE	QT.			TYPE	SET OR RATE (A)	SIZE	ENTRAN-CE	
LN21	1	1132	SPARE	XE100NS 3P PM	100	——	L	
LN21	1	1133	FROM NO.1 TRANSFORMER SECONDARY CIRCUIT	XS600NN 3P PM	----	3(3 × 120)	L	
LN21	1	1134	FROM NO.2 TRANSFORMER SECONDARY CIRCUIT	XS600NN 3P PM	----	3(3 × 120)	L	

NOTE

*1 □ □

- WITH UVT
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U- CABLE ENTRANCE UPPER
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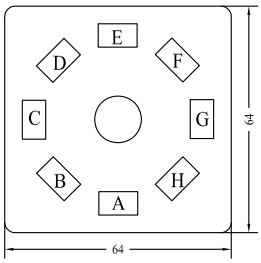
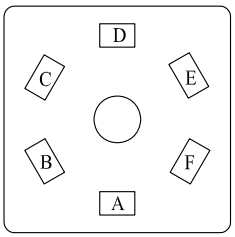
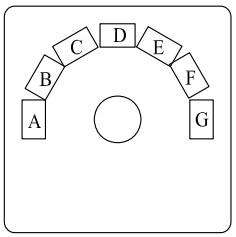
NAMEPLATE		NO.	NAME	USE	TYPE	REMARKS
TYPE	QT.					
U2	1	200A	NO.1 AC440V FEEDER PANEL(A)			
U2	1	200B	NO.1 AC440V FEEDER PANEL(B)			
U2	1	300	NO.1 GENERATOR PANEL (AC450V 3Φ60Hz 1800KW 2887A)			
U2	1	400	NO.2 GENERATOR PANEL (AC450V 3Φ60Hz 1800KW 2887A)			
U2	1	500	SYN PANEL			
U2	1	600	BOW THRUSTER PANEL			
U2	1	700	NO.3 GENERATOR PANEL (AC450V 3Φ60Hz 1800KW 2887A)			
U2	1	800	NO.4 GENERATOR PANEL (AC450V 3Φ60Hz 1800KW 2887A)			
U2	1	900A	NO.2 AC440V FEEDER PANEL(A)			
U2	1	900B	NO.2 AC440V FEEDER PANEL(B)			
U2	1	1100	AC220V FEEDER PANEL			
U6	1	M1	BUSBAR FREQUENCY			
U6	1	M2	GENERATOR FREQUENCY			
U6	1	M3	BUSBAR VOLTAGE			
U6	1	M4	GENERATOR VOLTAGE			
U6	1	M5	NO.1 GENERATOR POWER			
U6	1	M6	NO.2 GENERATOR POWER			
U6	1	M7	NO.3 GENERATOR POWER			
U6	1	M8	NO.4 GENERATOR POWER			
U6	1	M9	SYNCHRO. LAMP			
U6	1	M10	EARTH LAMP(AC440V) (R) (S) (T)			
U6	1	M11	AC440V BUS INSULATION MONITOR			
U6	1	M12	SHORE POWER KWH			
U6	1	M13	EARTH LAMP(AC220V) (R) (S) (T)			
U6	1	M14	AC220V BUS INSULATION MONITOR			

NAMEPLATE		NO.	NAME	USE	TYPE	REMARKS
TYPE	QT.					
LN13	4	1	GEN RUNNING	WL	HW2P-1Q0LSED-2PW	
LN13	4	2	ACB OPEN	RL	HW2P-1Q0 LSED-2R	
LN13	4	3	ACB CLOSED	GL	HW2P-1Q0 LSED-2G	
LN13	4	4	ACB ABNOR.TRIP	RL	HW2P-1Q0R+LS-3	
LN13	4	5	ACB NON.CLOSE	RL	HW2P-1Q0R+LS-3	
LN13	4	6	ACB REVERSE POWER TRIP	RL	HW2P-1Q0R+LS-3	
LN13	4	7	DG START FAIL	RL	HW2P-1Q0R+LS-3	
LN13	4	8	DIFFERENTIAL ALARM	RL	HW2P-1Q0R+LS-3	
LN13	4	9	DIFFERENTIAL CONTROL SOURCE FAIL	RL	HW2P-1Q0R+LS-3	
LN13	4	27	ENGINE SOURCE	WL	HW2P-1Q0W+LS-3	
LN13	4	28	L．O．PRIMING PUMP RUNNING	GL	HW2P-1Q0G+LS-3	
LN13	4	29	L．O．PRIMING PUMP TROUBLE	RL	HW2P-1Q0R+LS-3	
LN13	1	10	DC24V POWER SOURCE	WL	HW2P-1Q0W+LS-3	
LN13	1	11	EM’CY STOP & PRE-TRIP SOURCE	WL	HW2P-1Q0W+LS-3	
LN13	1	12	EM’CY GEN STANDBY	YL	HW2P-1Q0Y+LS-3	
LN13	1	13	EM’CY GEN RUNNING	WL	HW2P-1Q0W+LS-3	
LN13	1	14	EM’CY STOP & PRE-TRIP SOURCE FAIL	RL	HW2P-1Q0R+LS-3	
LN13	1	15	PRE-TRIP 1ST	RL	HW2P-1Q0R+LS-3	
LN13	1	16	PRE-TRIP 2ND	RL	HW2P-1Q0R+LS-3	
LN13	1	17	BUSBAR VOLT. HIGH ALARM	RL	HW2P-1Q0R+LS-3	
LN13	1	18	BUSBAR VOLT. LOW ALARM	RL	HW2P-1Q0R+LS-3	
LN13	1	19	BUSBAR FREQ. HIGH ALARM	RL	HW2P-1Q0R+LS-3	
LN13	1	20	BUSBAR FREQ. LOW ALARM	RL	HW2P-1Q0R+LS-3	
LN13	1	21	MSB AC440V LOW INSUL.	RL	HW2P-1Q0R+LS-3	
LN13	1	22	MSB AC220V LOW INSUL.	RL	HW2P-1Q0R+LS-3	
LN13	1	23	AUTO SYNCHRO FAIL	RL	HW2P-1Q0R+LS-3	
LN13	1	24	ESB COMMON ALARM	RL	HW2P-1Q0R+LS-3	
LN13	1	25	MSB LINE FAULT DETECTOR ALARM	RL	HW2P-1Q0R+LS-3	
LN13	1	26	SYNCHRONIZER FAIL	RL	HW2P-1Q0R+LS-3	

"A" "B" "C"



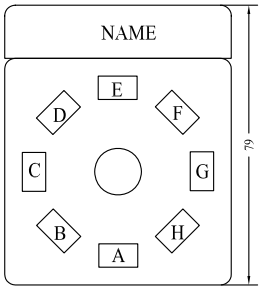


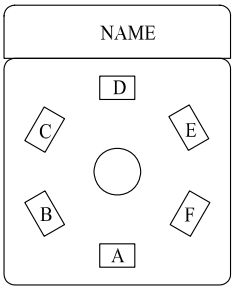


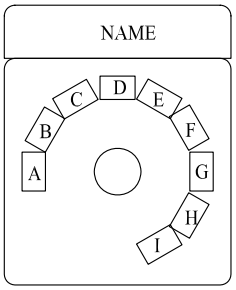
OPERATION

N MAINTAINED AT EACH POSITION
RSF PULL TO TURN AND SPRING RETURN TO [ ] POSITION
R SPRING RETURN TO CENTER

"D" "E" "F"

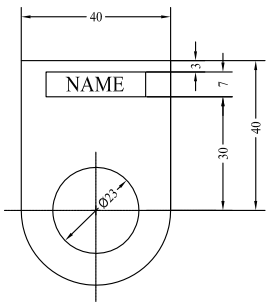




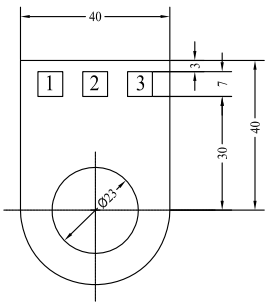


NAMEPLATE		SYMBOL	WORD OF NAMEPLATE										TYPE	NOTE
TYPE	Qt.		NAME	A	B	C	D	E	F	G	H	I		
D	4	AS-1	AMMETER	I_S		I_T		OFF		I_R			CA10 A021-600	N
D	4	FVS-1	VOLTMETER & FREQUENCY			OFF	U_{RS}	U_{ST}	U_{TR}				CA10 A011-600	N
F	1	FVS-2	VOLTMETER & FREQUENCY	OFF	DG4	DG3	DG2	DG1					CA10 A262-600	N
D	1	AS-2	AMMETER	I_S		I_T		OFF		I_R			CA10 A021-600	N
D	1	VS-2	VOLTMETER			OFF	U_{RS}	U_{ST}	U_{TR}				CA10 A011-600	N
D	1	AS-3	BOW THRUSTER AMMETER	I_S		I_T		OFF		I_R			CA10 A021-600	N
D	1	SYS	SYNCHRO.SELECT			DG4	DG3	OFF	DG2	DG1			CA10 RKZ063EG	N
D	1	GCS1	DG1 GOVERNOR SPEED				LOWER	OFF	RAISE				CA10 RKZ026EG	R
D	1	GCS2	DG2 GOVERNOR SPEED				LOWER	OFF	RAISE				CA10 RKZ026EG	R
D	1	GCS3	DG3 GOVERNOR SPEED				LOWER	OFF	RAISE				CA10 RKZ026EG	R
D	1	GCS4	DG4 GOVERNOR SPEED				LOWER	OFF	RAISE				CA10 RKZ026EG	R
F	1	BCS1	DG1 ACB CONTROL			OPEN		CLOSE					CA10B A715-A-V110	RSF RED
F	1	BCS2	DG2 ACB CONTROL			OPEN		CLOSE					CA10B A715-A-V110	RSF RED
F	1	BCS3	DG3 ACB CONTROL			OPEN		CLOSE					CA10B A715-A-V110	RSF RED
F	1	BCS4	DG4 ACB CONTROL			OPEN		CLOSE					CA10B A715-A-V110	RSF RED
D	1	COS-B	BUSBAR SELECT				B BUSBAR		A BUSBAR				CA10 A222-600	N
F	1	COS-C	PRIORITY SELECT	DG4		DG3		DG2		DG1		OFF	CA10 A232-600	N

TYPE "CS1"



TYPE "CS2"



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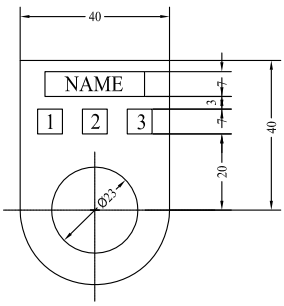

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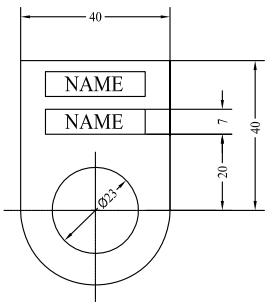


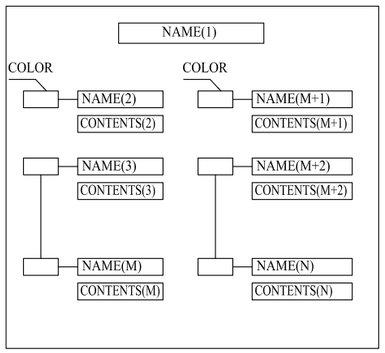
NOTE:

MATERIAL	ACRYLIC RESIN(2)
LETTER	BLACK(REVERSE ENGRAVED)
GROUND	WHITE

NAMEPLATE			NAME				SWITCH TYPE	REMARKS
TY.	QT.	SYMBOL	NAME	1	2	3		
CS1	2	ELS	EARTH TEST	——	——	——	YW1B-M1E11B	
CS1	1	BS	BZ STOP	——	——	——	YW1B-M1E11B	
CS1	1	FS	FLICK STOP	——	——	——	YW1B-M1E11B	
CS1	1	TS	LAMP TEST	——	——	——	YW1B-M1E20B	
CS1	1	STB	BOW THRUSTER ACB CLOSE	——	——	——	YW1L-MF2E20Q7G	WITH LAMP AND COVER
CS1	1	SPB	BOW THRUSTER ACB OPEN	——	——	——	YW1L-MF2E20Q7R	WITH LAMP AND COVER
CS1	4	PBL	PRE-EXCITATION	——	——	——	YW1L-MF2E20Q7W	WITH LAMP
CS1	4	RPB	DG DIFFERENTIAL ALARM RESET	——	——	——	YW1B-M1E20R	
CS1	4	DSL	DG DIFFERENTIAL SOURCE	——	——	——	YW1P-1BEQ7W	
CS1	4	ESP	ENG. STOP	——	——	——	YW1B-M1E20R	WITH COVER
CS1	4	EST	ENG. START	——	——	——	YW1B-M1E20G	WITH COVER
CS1	1	SCC	SHORE CLOSED	——	——	——	YW1P-1BEQ7G	
CS1	1	SCO	SHORE OPEN	——	——	——	YW1P-1BEQ7R	
CS1	1	SC	SHORE POWER	——	——	——	YW1P-1BEQ7W	
CS3	1	ALS	AUTO LIGHT LOAD SHIFT	OFF	——	AVAIL	YW1S-2E10	
—	3	TL1	——	——	——	——	APW246EC	
—	3	TL2	——	——	——	——	APW246EC	
—	3	TL3	——	——	——	——	APW226EC	

NP NO.180 QT. 1

Ⅰ. DESCRIPTION



Ⅱ. LANGUAGE

Fig.1 A A: ENGLISH

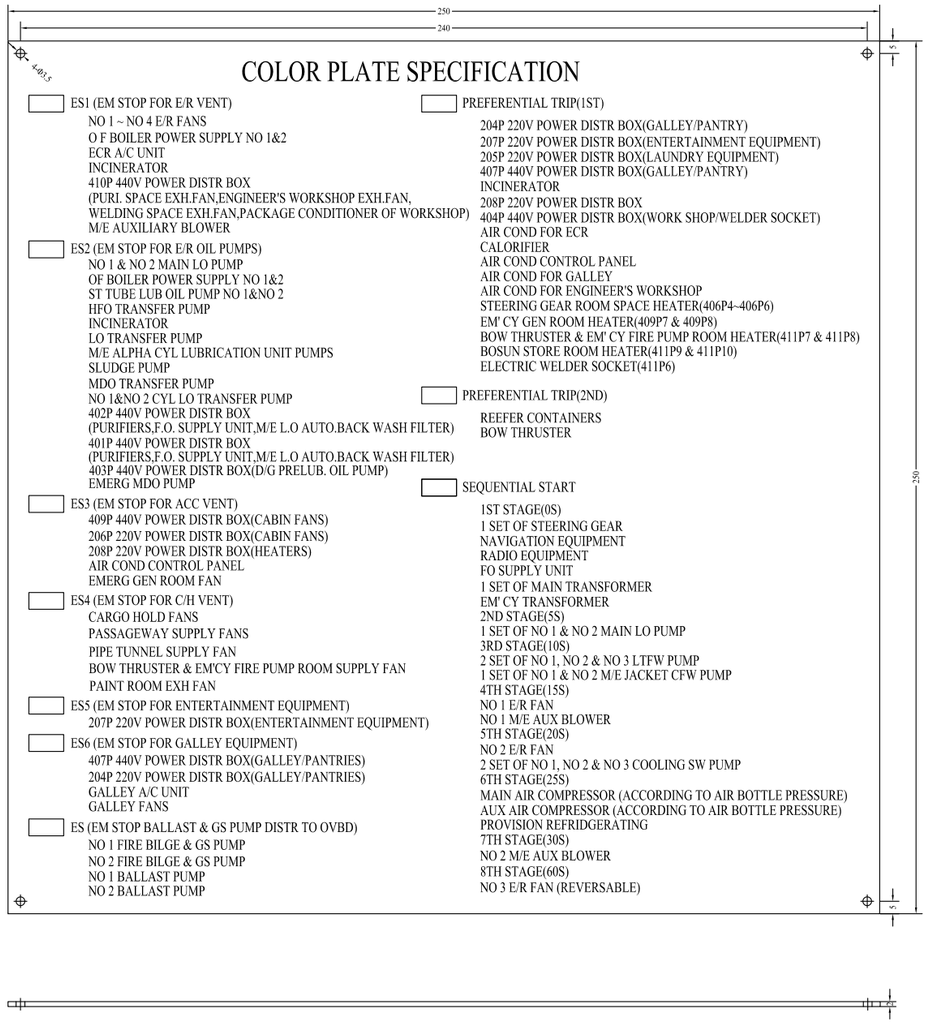
Fig.2 A / B B:

Ⅲ. NOTE

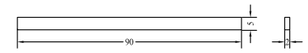
1.MATERIAL ACRYLIC
LETTER BLACK(REVERSE ENGRAVED)
GROUND WHITE

2.GROUP
PRE TRIP NAMEPLATE
(CIRCUIT BREAKER)
OR SPECIFICATION LIST

Ⅰ COLOR	POSITION	NAME	GROUP (SEE NOTE:2)	CONTENTS
	(1)	COLOR PLATE SPECIFICATION		
RED	(2)	ES1 (EM. STOP FOR E/R VENT)	*11(ES1)	SEE RIGHT FIGUER
ORANGE	(3)	ES2 (EM. STOP FOR E/R OIL PUMPS)	*12(ES2)	
PINK	(4)	ES3 (EM. STOP FOR ACC. VENT)	*13(ES3)	
VIOLET	(5)	ES4 (EM. STOP FOR C/H VENT)	*14(ES4)	
BROWN	(6)	ES5 (EM. STOP FOR ENTERTAINMENT EQUIPMENT)	*15(ES5)	
GOLDEN	(7)	ES6 (EM. STOP FOR GALLEY EQUIPMENT)	*16(ES6)	
BLACK	(8)	ES (EM. STOP BALLAST & G. S. PUMP DISTR TO OVBD)	*17(ES)	
YELLOW	(9)	PREFERENTIAL TRIP(1ST)	*21(P1)	
BLUE	(10)	PREFERENTIAL TRIP(2ND)	*22(P2)	
GREEN	(11)	SEQUENTIAL STARTING		



COLOR TIE
DIMENSION



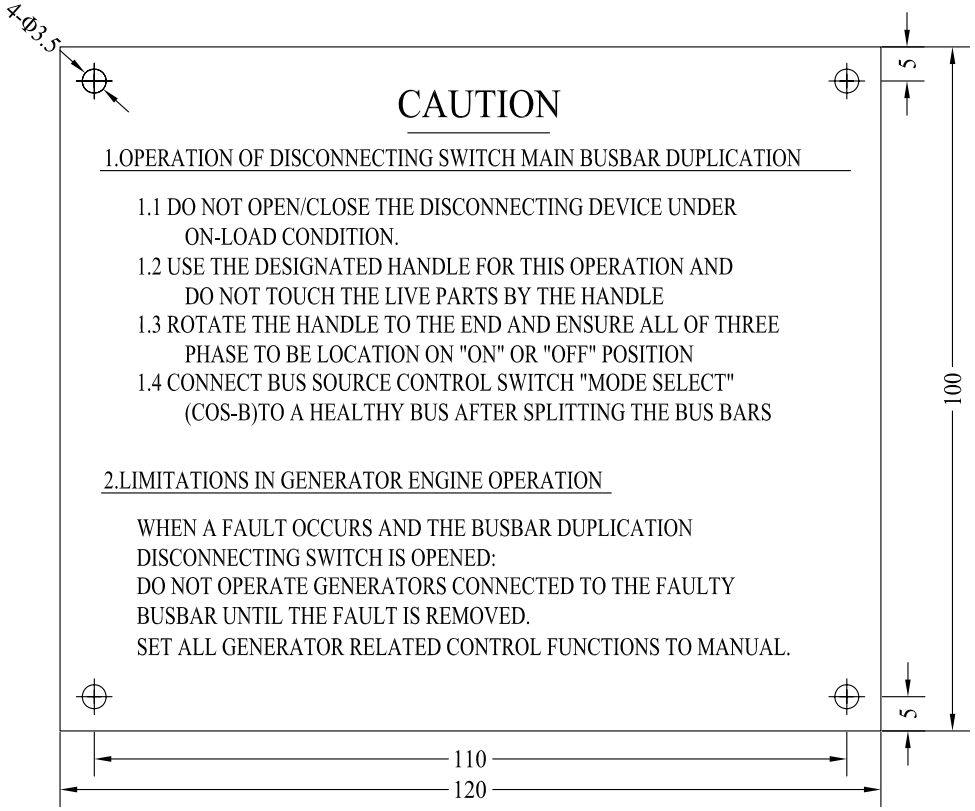
CODE	COLOR	QT	NOTE
ES1	RED	7	
ES2	ORANGE	9	
ES3	PINK	2	
ES4	VIOLET	3	
ES5	BROWN		
ES6	GOLDEN	1	
P1	YELLOW	5	
P2	BLUE	10	

COLOR TIE
DIMENSION

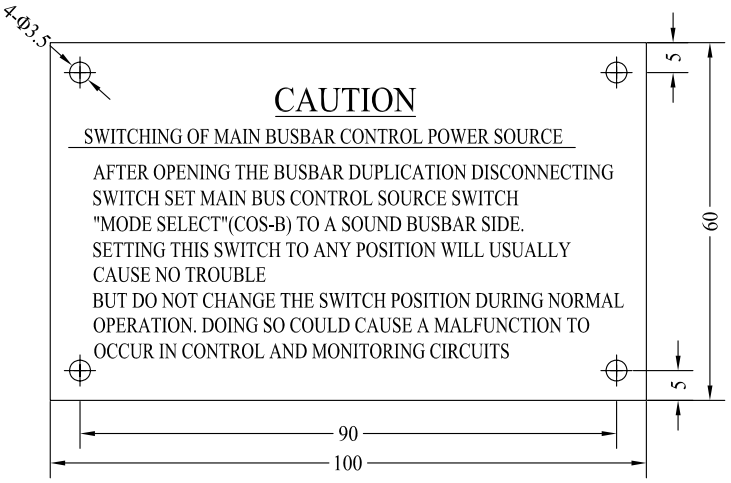
CODE	COLOR	QT	NOTE
ES1	RED		
ES2	ORANGE		
ES3	PINK	2	
ES4	VIOLET		
ES5	BROWN	1	
ES6	GOLDEN	1	
P1	YELLOW	5	
P2	BLUE		

INSTALLATION MODE:

COLOR TIE
NAME PLATE



NP No.:196
QT. :1
USE FOR DS(INSIDE THE PANEL)
LETTER:RED



NP No.:197
QT. :1
USE FOR COS-B
LETTER:RED

THE DISCONNECTING SWITCH FOR MAIN BUSBAR DUPLICATION AND "MAIN BUS CONTROL SOURCE" SWITCH (COS-B) ARE PROVIDED INSIDE THIS PANEL

NP No.:198
QT. :1
TYPE:U9
USE FOR DS,COS-B
LETTER:BLACK

SYNCHRONIZATION LAMP

WHEN S-PHASE LAMP IS DARK ,R- AND T-PHASE LAMPS ARE LIGHT,LED OF SYNCHRONIZATION METER INDICATES THE POSITION OF "▼",PLEASE PULL SWITCH "BCS" TO "CLOSE" TO CONNECT THE GENERATOR TO BUSBAR AND PARALLEL RUNNING.

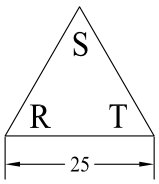
NP No.:605
QT. :1
TYPE:U56
USE FOR SYNCHRO. LAMP
LETTER:BLACK

WHEN DC24V SOURCE FAILS IT IS POSSIBLE TO START AND STOP THE ENGINE MANUALLY BY PUSH BUTTONS "EST" & "ESP" PROVIDED ON THIS PANEL

NP No.:195
QT. :4
TYPE:U9
USE FOR "EST" & "ESP"
LETTER:BLACK

THE BOW THRUSTER ACB CAN BE CLOSED WHEN MINIMAL TWO GENERATORS ARE ON LINE

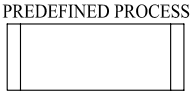
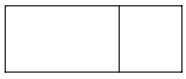
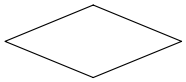
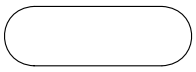
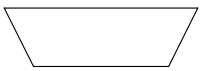
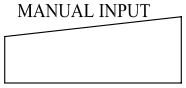
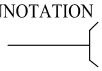
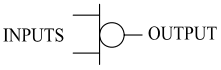
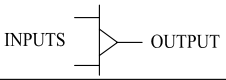
NP No.:199
QT. :1
TYPE:U9
USE FOR BOW THRUSTER ACB
LETTER:BLACK

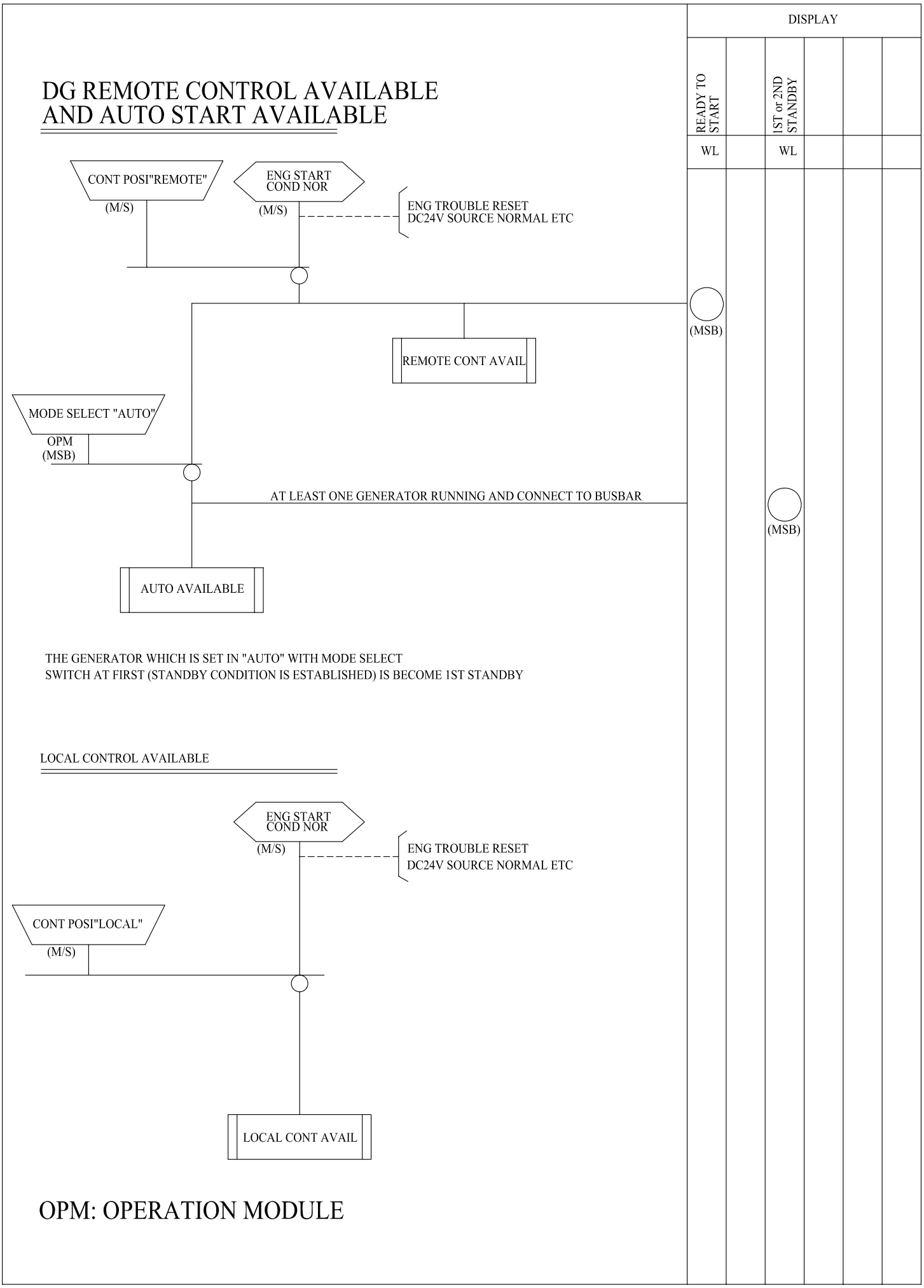


NP No.:604
QT. :1
USE FOR SYNCHRO LAMPS
LETTER:BLACK

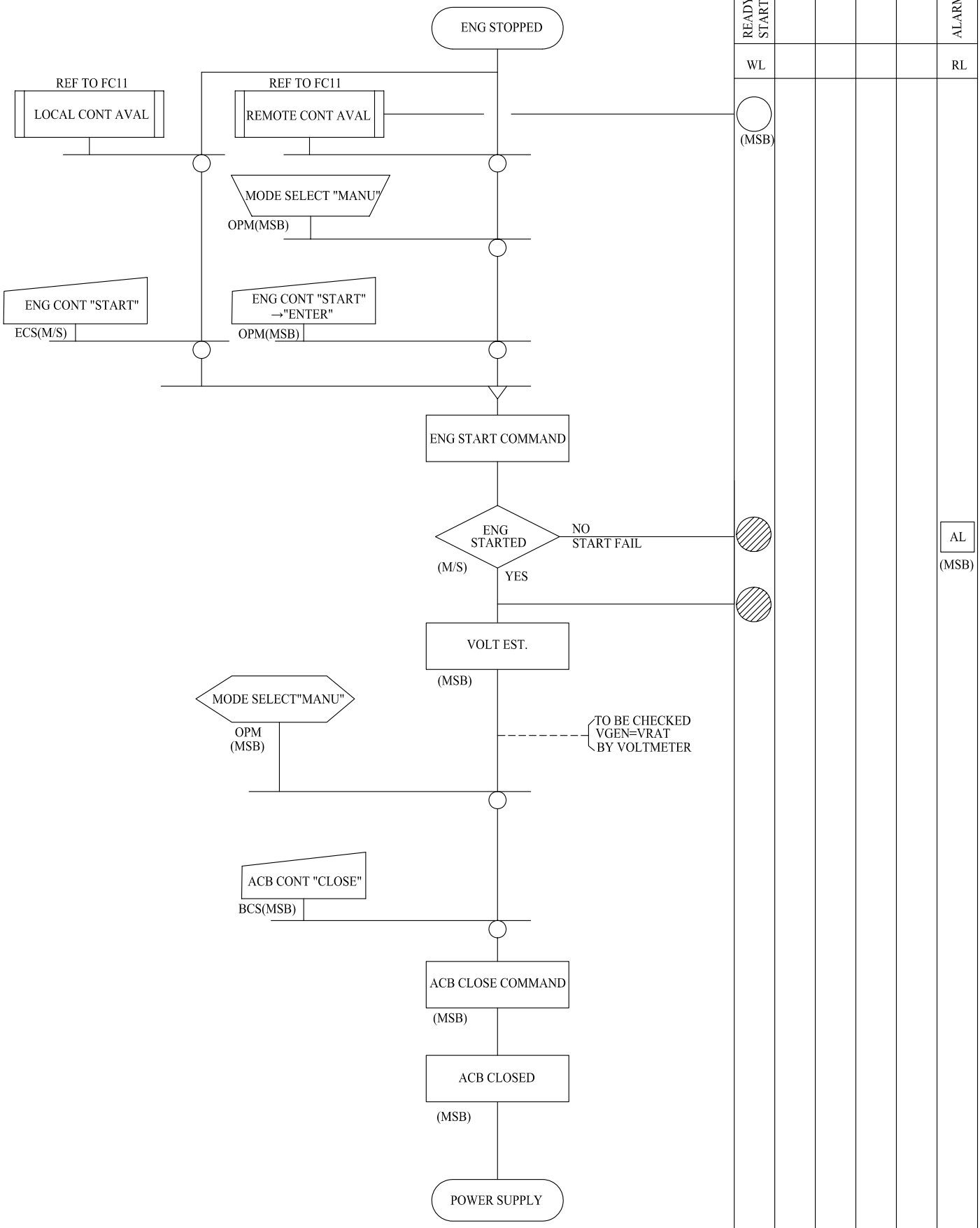
FLOWCHART SYMBOLS

NOTE: THESE SYMBOLS ARE SHOWN IN ACCORDANCE WITH JIS C-6270

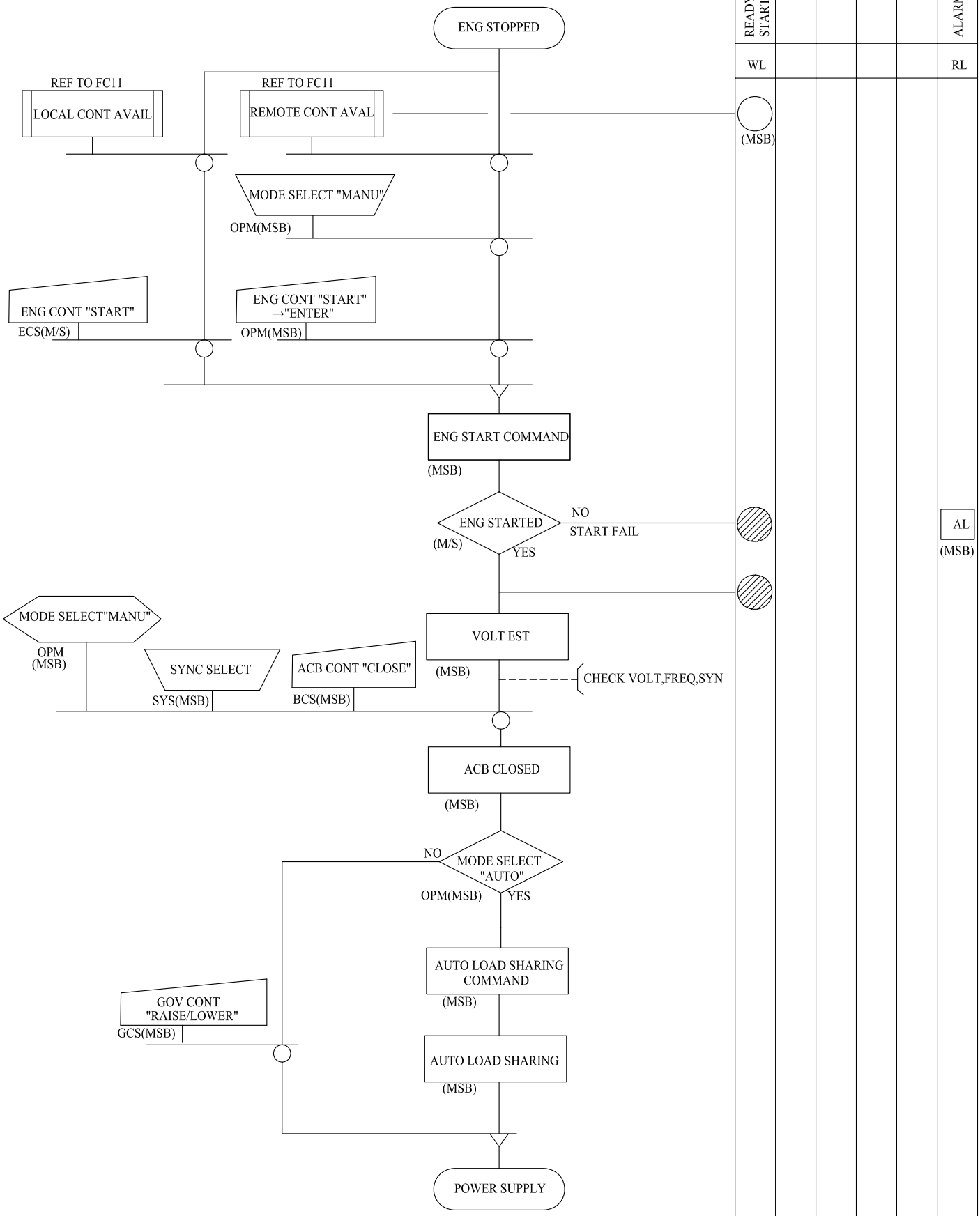
SYMBOL	DESCRIPTION
PROCESS 	USED TO INDICATE ANY FORM OF INTERNAL PROCESSING MANIPULATION OTHER THAN DECISIONS. AN IDENITIFYING LEGEND APPEARS IN THE BOX.
PREDEFINED PROCESS 	USED TO INDICATE THE PREDEFINED COMMAND GROUP SUCH LIKE SUBROUTINE IN ANOTHER PROGRAM OR ORDERED PROCESS STEPS CONSIST OF SOME OPERATIONS.
CAUSE 	USED TO INDICATE CONDITIONS. AN IDENTIFYING LEGEND AND A SET VALUE OF VALUES APPEAR IN THE LEFTHAND AND RIGHTHAND COLUMNS OF THE BOX, RESPECTIVELY.
DECISION 	USED TO INDICATE DECISION-TYPE OPERATIONS THAT DETERMINE WHICH OF A NUMBER OF ALTERNATE PATHS IS TO BE FOLLOWED. AN IDENTIFYING LEGEND APPEARS IN THE BOX.
PREPARATION 	USED TO INDICATE ANY PRESET CONDITION REQUIRED. AN IDENTIFYING LEGEND APPEARS IN THE BOX.
TERMINAL 	USED TO INDICATE THE STARTING, STOPPING, AND ENDING POINTS OF THE PROCESS STEPS. AN IDENTIFYING LEGEND APPEARS IN THE BOX
MANUAL OPERATION 	USED TO INDICATE POINTS IN A FLOWCHART WHERE HUMAN INTERVENTION IS REQUIRED. AN IDENTIFYING LEGEND APPEARS IN THE BOX
MANUAL INPUT 	USED TO INPUT A SIGNAL PRODUCED BY MANUAL OPRATION. AN IDENTIFYING LEGEND APPEARS IN THE BOX.
ANNOTATION 	USED FOR ADDITION OF DESCRIPTIVE COMMENTS OR EXPLANATORY NOTES.
"AND"OPERATION 	USED TO INDICATE "AND" OPERATIONS;THE OUPUT IS PRESENT IF ALL INPUTS ARE PRESENT, OTHERWISE THERE IS NO OUTPUT.
"OR" OPERATION 	USED TO INDICATE "OR" OPERATIONS;THE OUTPUT IS PRESENT IF ONE OR MORE INPUTS ARE PRESENT.
FLOW LINE	USED TO CONNECT EACH BOX AND SYMBOL IN A FLOWCHART.
CONNECTOR 	USED TO INDICATE CONNECTION OF FLOWCHART TO OR FROM ELSEWHERE WITH SAME NUMBER.(*:NUMBER 1,2,---N.)
ALARM 	USED TO INDICATE LIGHTING OR FLASHING OF ALARM LAMP WHICH MAY OR MAY NOT BE ASSOCIATED WITH SOUNDING OF THE AUDIBLE ALARM. AN IDENTIFYING LEGEND APPEARS IN THE FLOWCHART.
INDICATOR LAMP 	 INDICATES THE LAMP IS ALIGHT.  INDICATES THE LAMP IS DARK. AN IDENTIFYING LEGEND APPEARS AT THE TOP OF THE COLUMN.
 (*)	*: EXPLANATORY NOTE AFFIXED TO EACH SYMBOL INDICATES DEVICE AND LOCATION (IN PARENTHESIS) OF THE CONTROL ETC.


DISPLAY
READY TO START
1ST or 2ND STANDBY
WL
WL
DG REMOTE CONTROL AVAILABLE
AND AUTO START AVAILABLE
CONT POSI"REMOTE"
(M/S)
ENG START COND NOR
(M/S)
ENG TROUBLE RESET
DC24V SOURCE NORMAL ETC
(MSB)
REMOTE CONT AVAIL
MODE SELECT "AUTO"
OPM
(MSB)
AT LEAST ONE GENERATOR RUNNING AND CONNECT TO BUSBAR
(MSB)
AUTO AVAILABLE
THE GENERATOR WHICH IS SET IN "AUTO" WITH MODE SELECT
SWITCH AT FIRST (STANDBY CONDITION IS ESTABLISHED) IS BECOME 1ST STANDBY
LOCAL CONTROL AVAILABLE
ENG START COND NOR
(M/S)
ENG TROUBLE RESET
DC24V SOURCE NORMAL ETC
CONT POSI"LOCAL"
(M/S)
LOCAL CONT AVAIL
OPM: OPERATION MODULE

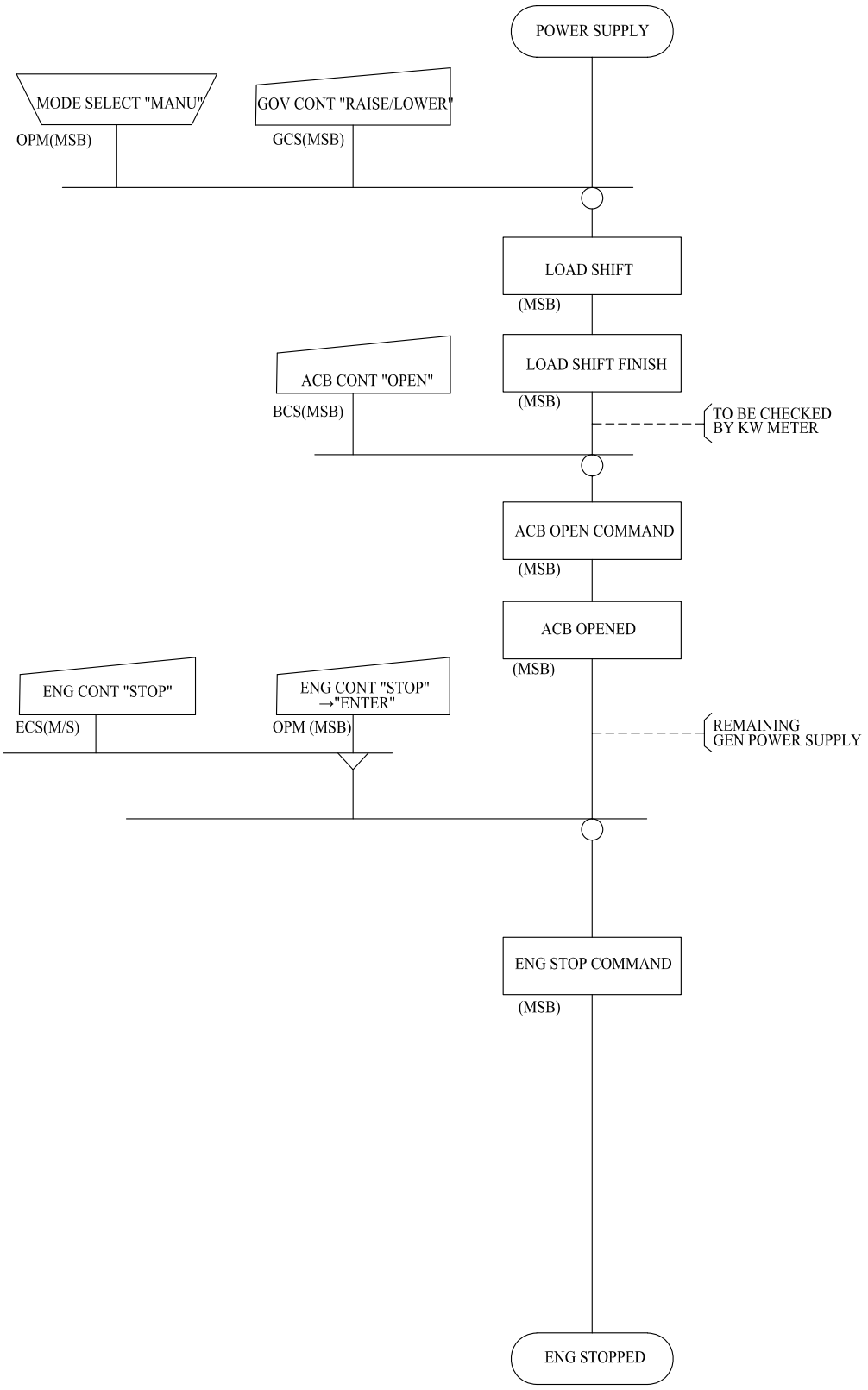
DG MANUAL GENERATOR ENGINE START AND ACB CLOSURE ONTO THE DEAD BUS



DG MANUAL GENERATOR ENGINE START AND PARALLEL RUNNING

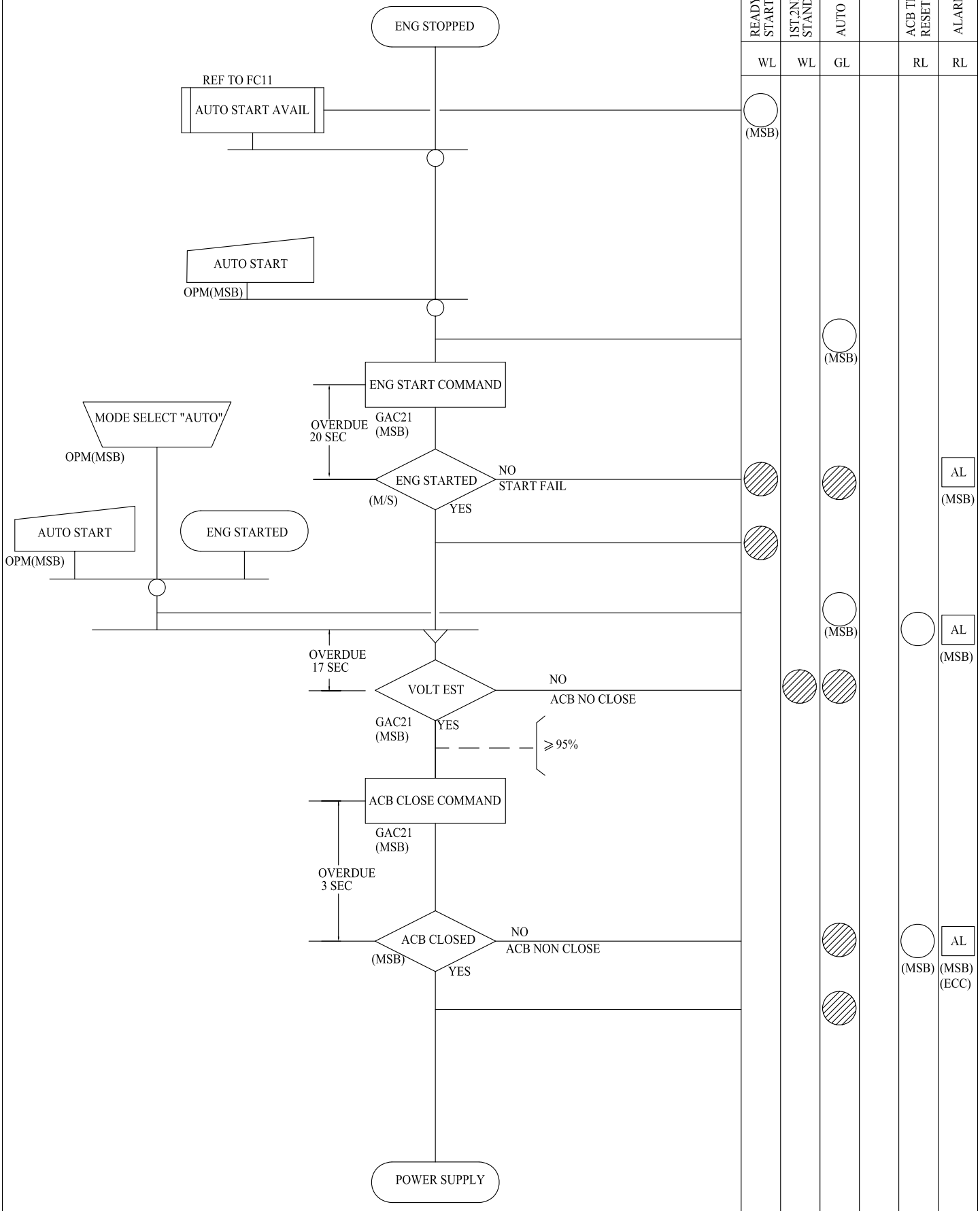


DG MANUAL LOAD SHIFT/ACB DISCONNECTION AND GENERATOR ENGINE STOP

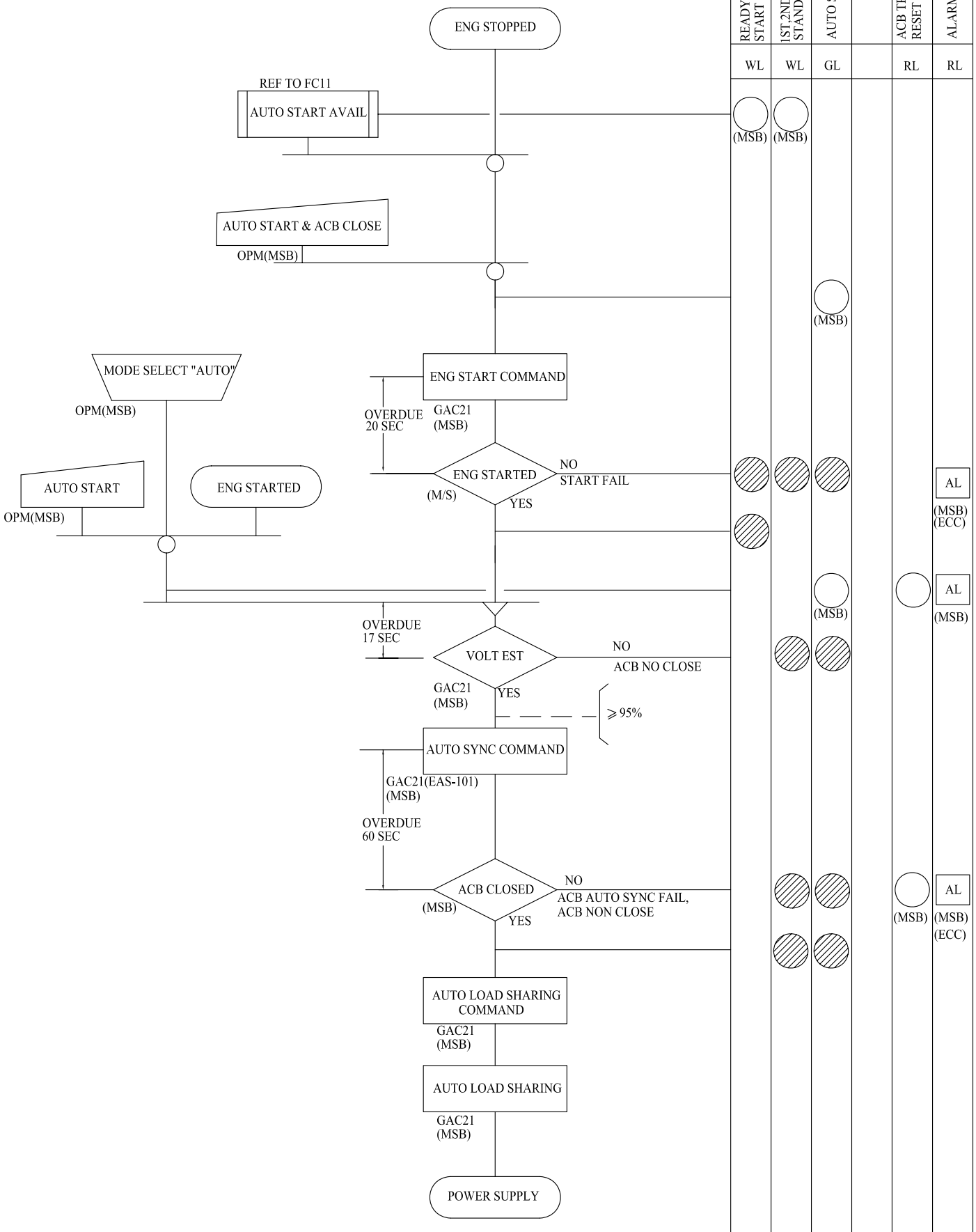


DISPLAY					

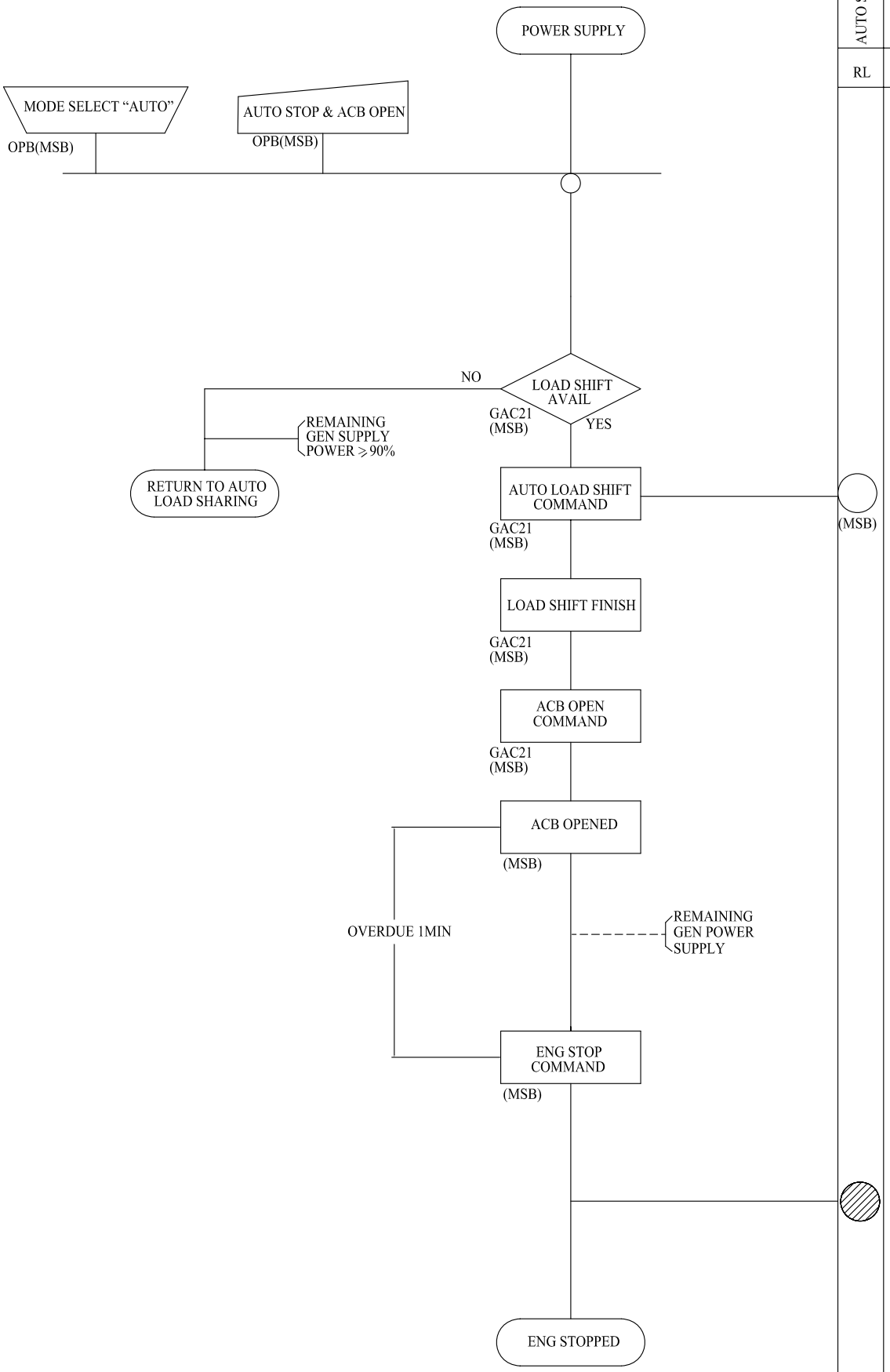
DG AUTOMATIC GENERATOR ENGINE START AND ACB CLOSE TO DEAD BUS



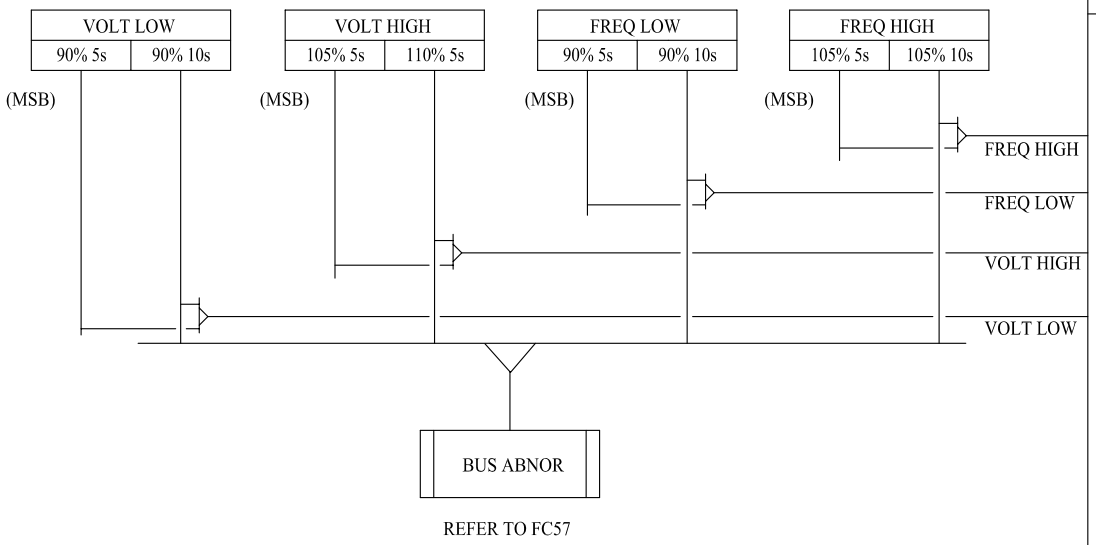
DG AUTOMATIC GENERATOR ENGINE START AND PARALLEL RUNNING



AUTOMATIC LOAD SHIFT/ACB DISCONNECTION AND GENERATOR ENGINE STOP

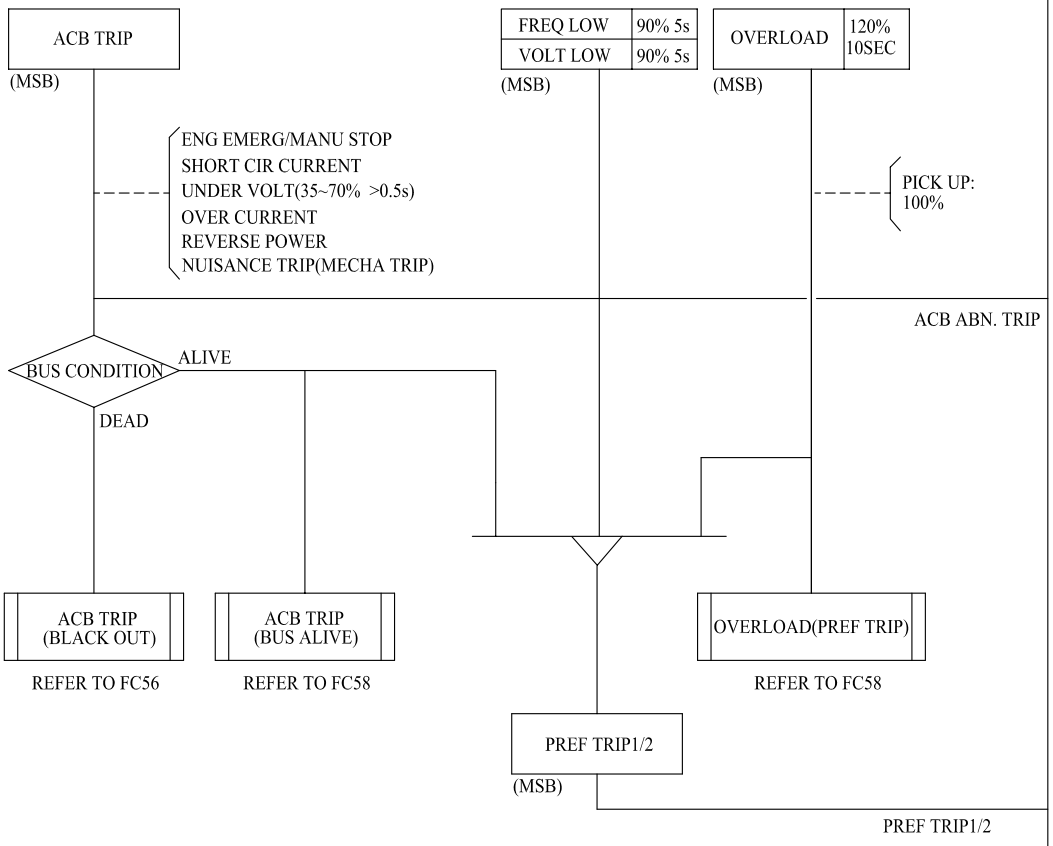


BUS ABNORMAL



REFER TO FC57

ACB TRIP OVERLOAD



REFER TO FC56

REFER TO FC58

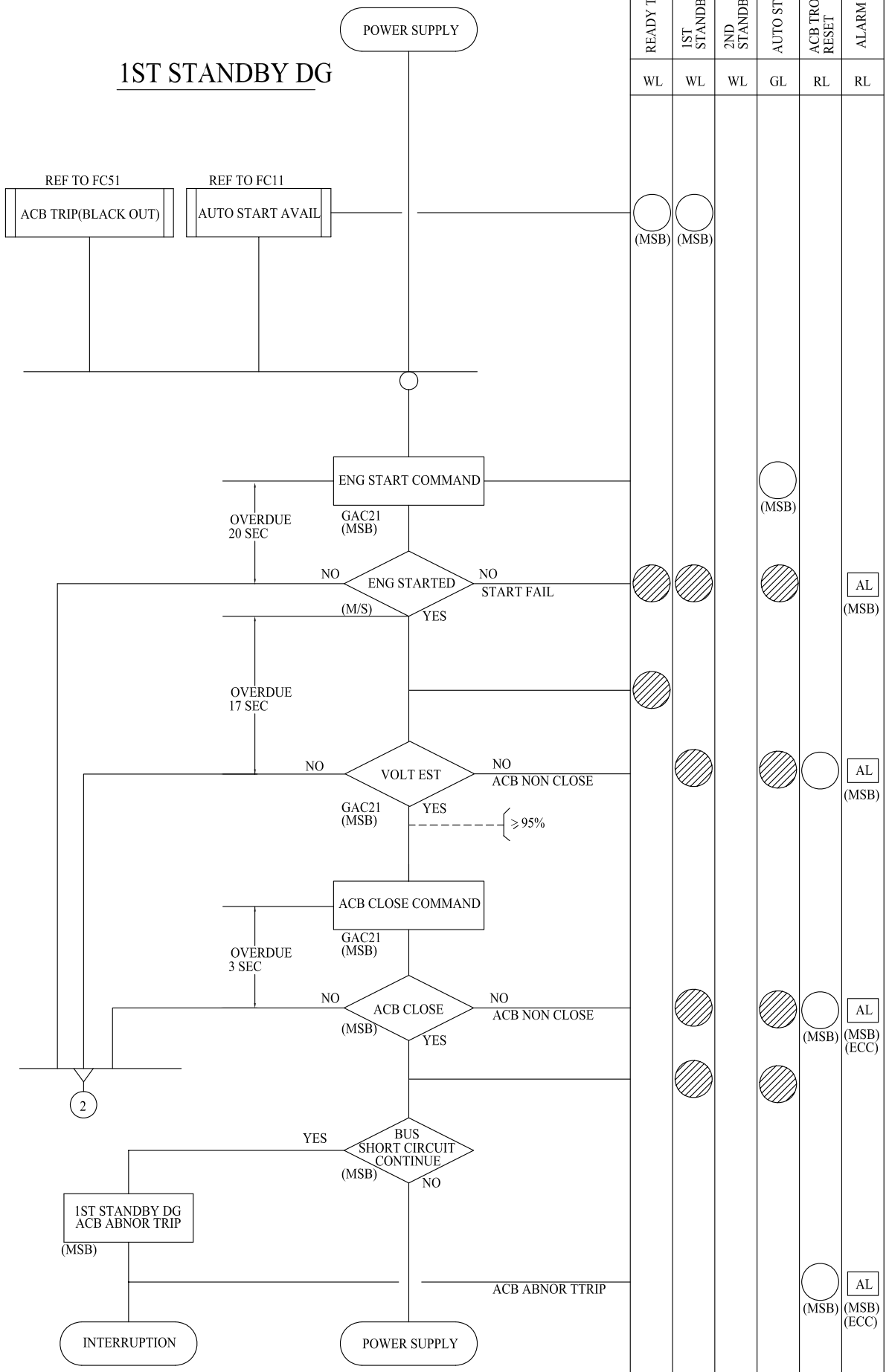
REFER TO FC58

DISPLAY

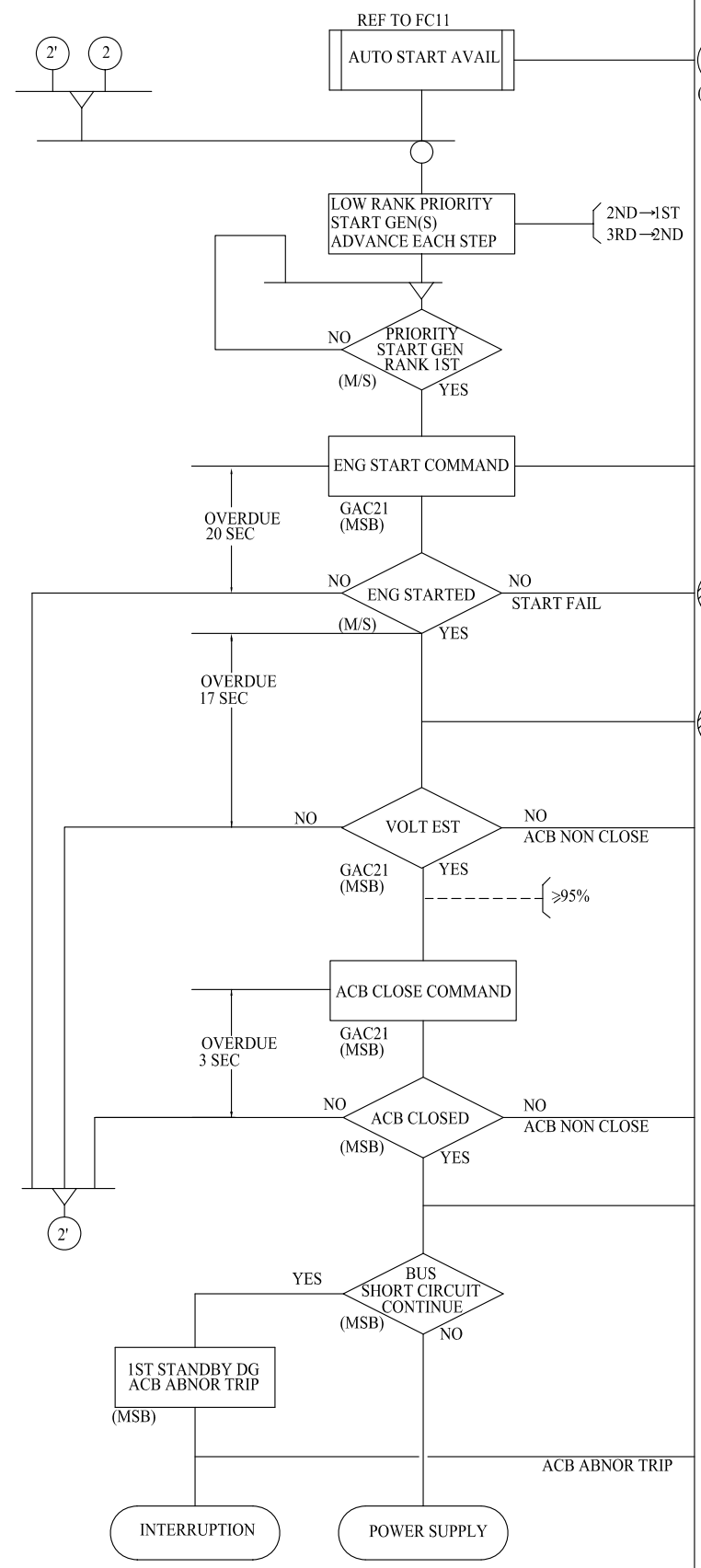
ACB TROUBLE RESET	ALARM
RL	RL
	AL (MSB)(ECC)
	AL (MSB)(ECC)
	AL (MSB)(ECC)
	AL (MSB)(ECC)
(MSB)	AL (MSB) (ECC)
	AL (MSB) (ECC)

AUTOMATIC GENERATOR ENGINE START AND ACB CLOSURE ONTO THE DEAD BUS DUE TO BLACK OUT(eg ACB ABNOR TRIP)

1ST STANDBY DG



OTHER PRIORITY GEN(S)

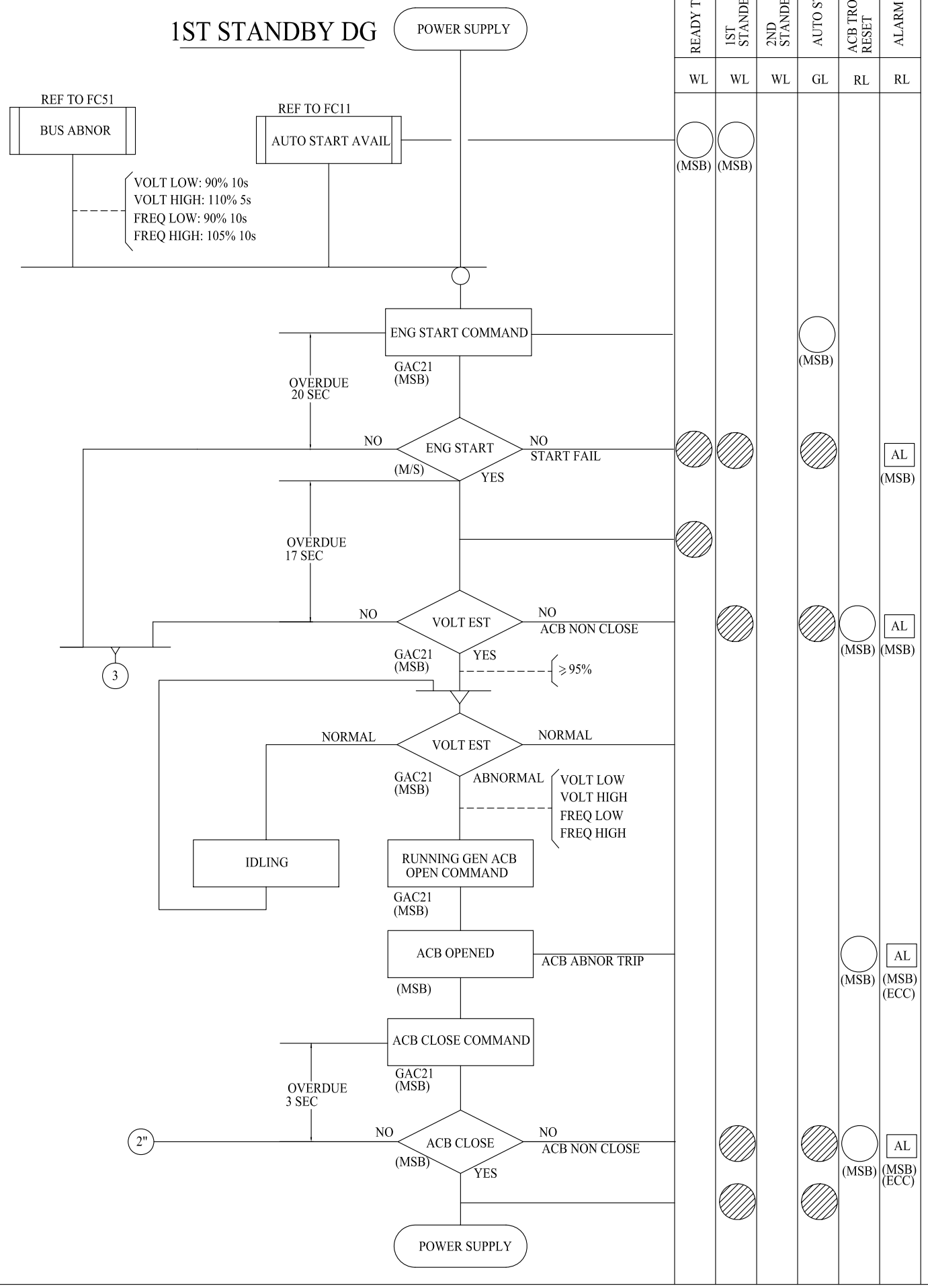


DISPLAY	READY TO START	1ST STANDBY	2ND STANDBY	AUTO START	ACB TROUBLE RESET	ALARM
	WL	WL	WL	GL	RL	RL
1ST STANDBY DG	(MSB)	(MSB)		(MSB)		AL (MSB)
						AL (MSB)
						AL (MSB) (ECC)
						AL (MSB)
						AL (MSB) (ECC)

DISPLAY	READY TO START	1ST STANDBY	2ND STANDBY	AUTO START	ACB TROUBLE RESET	ALARM
	WL	WL	WL	GL	RL	RL
OTHER PRIORITY GEN(S)	(MSB)		(MSB)	(MSB)		AL (MSB)
						AL (MSB)
						AL (MSB) (ECC)
						AL (MSB)
						AL (MSB) (ECC)

AUTOMATIC GENERATOR ENGINE START AND ACB CLOSURE ONTO THE DEAD BUS VIA BLACK OUT(DUE TO BUS ABNORMAL)

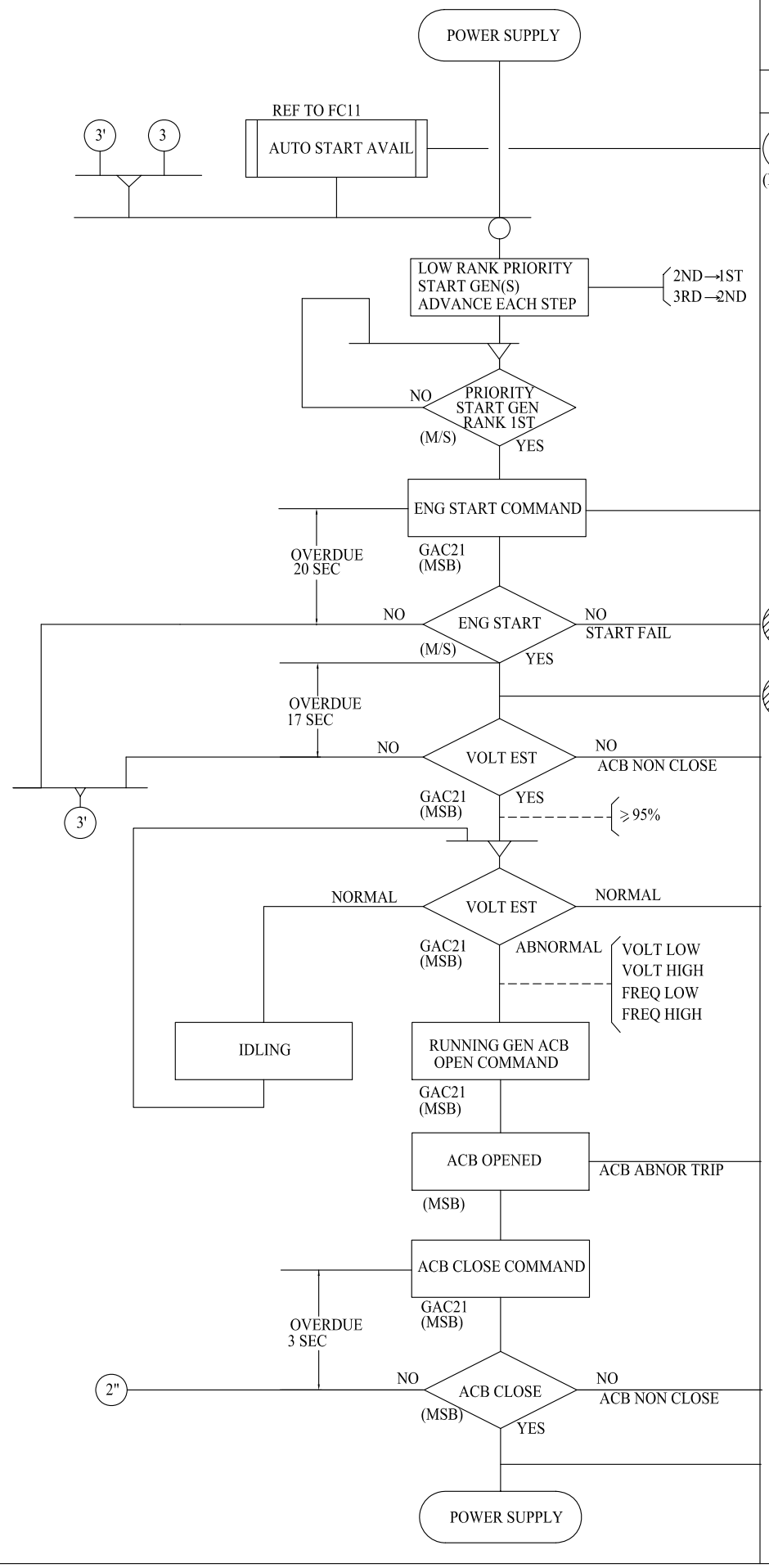
1ST STANDBY DG



DISPLAY

READY TO START	1ST STANDBY	2ND STANDBY	AUTO START	ACB TROUBLE RESET	ALARM
WL	WL	WL	GL	RL	RL
(MSB)	(MSB)				
			(MSB)		
					AL (MSB)
				(MSB)	AL (MSB)
				(MSB)	AL (MSB) (ECC)
				(MSB)	AL (MSB) (ECC)

OTHER PRIORITY GEN(S)

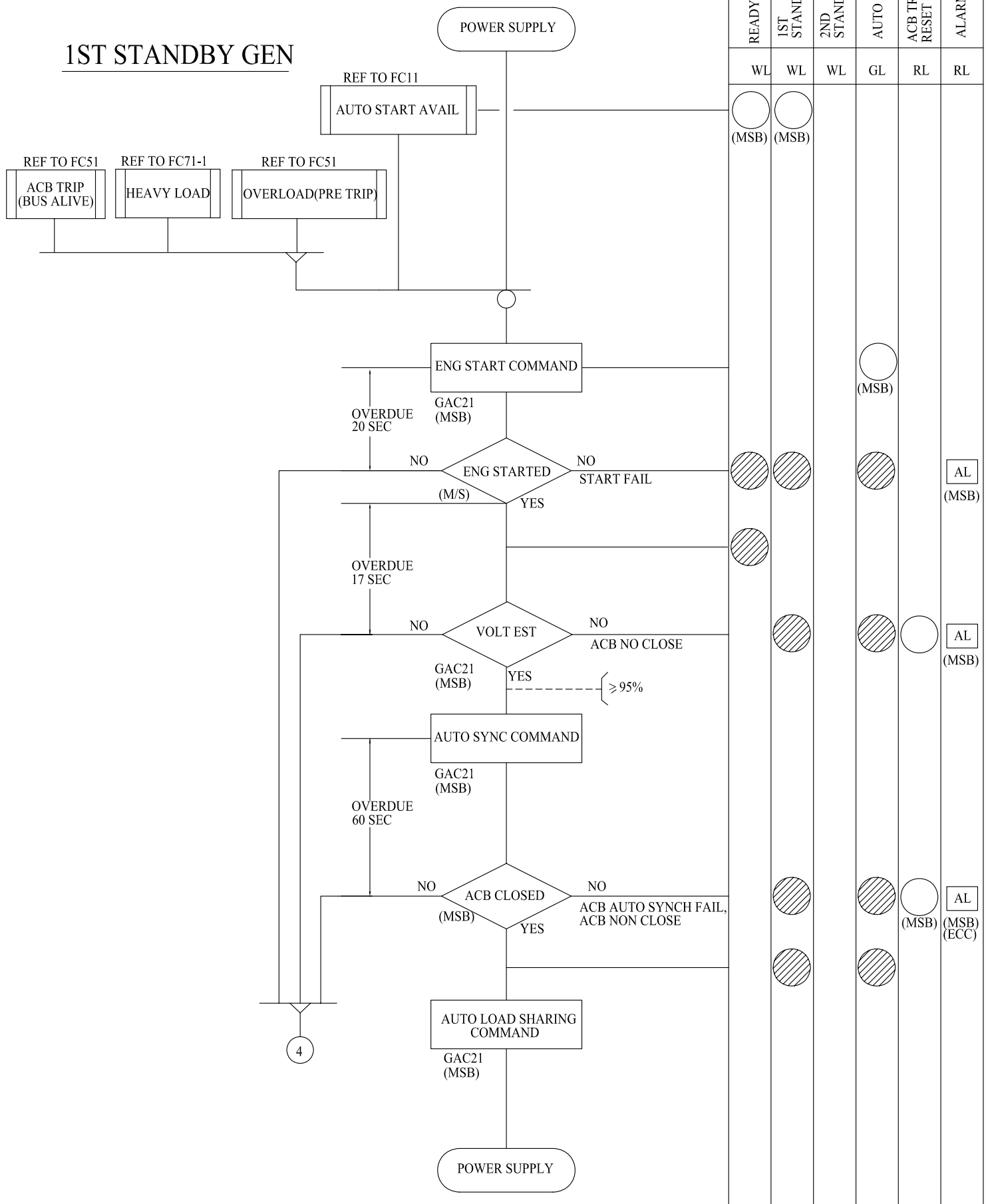


DISPLAY

READY TO START	1ST STANDBY	2ND STANDBY	AUTO START	ACB TROUBLE RESET	ALARM
WL	WL	WL	GL	RL	RL
(MSB)		(MSB)			
			(MSB)		
					AL (MSB)
				(MSB)	AL (MSB)
				(MSB)	AL (MSB) (ECC)
				(MSB)	AL (MSB) (ECC)

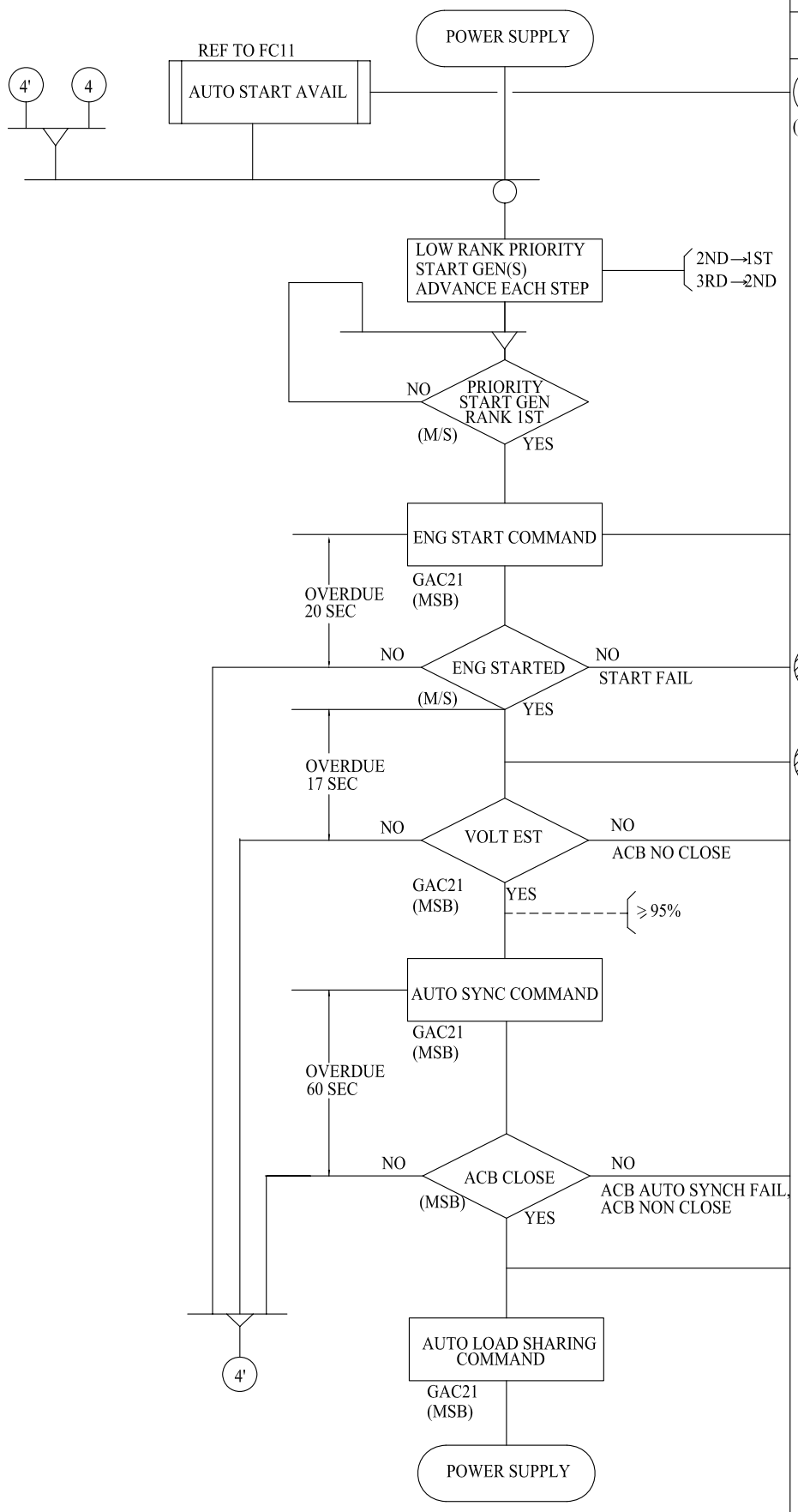
AUTOMATIC GENERATOR ENGINE START AND SYNCHRONIZATION DUE TO OVERLOAD (PREFERENTIAL TRIP)

1ST STANDBY GEN



	DISPLAY					
READY TO START	1ST STANDBY	2ND STANDBY	AUTO START	ACB TROUBLE RESET	ALARM
WL	WL	WL	GL	RL	RL
(MSB)	(MSB)		(MSB)		AL (MSB)
					AL (MSB)
					AL (MSB) (ECC)

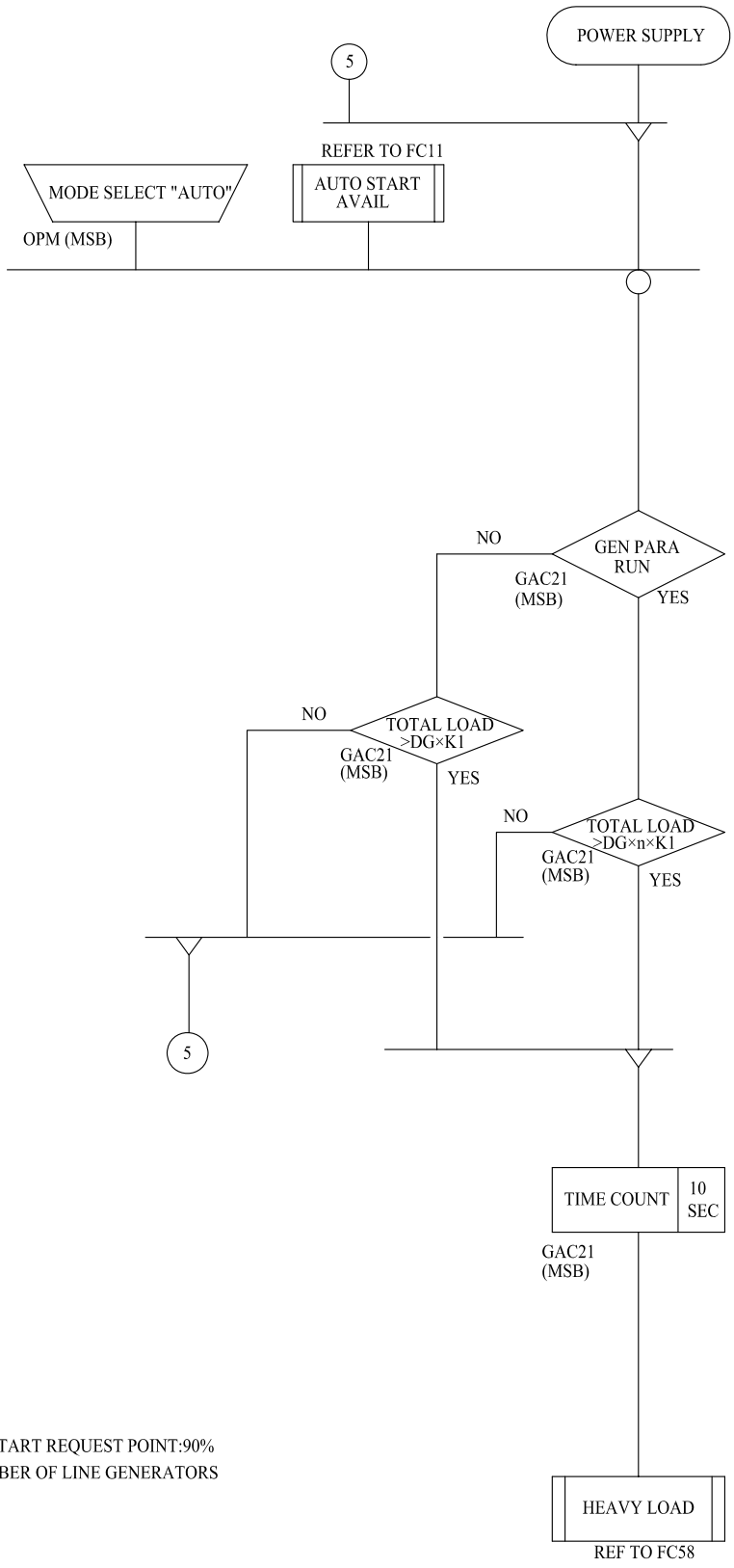
OTHER PRIORITY GEN(S)



	DISPLAY					
READY TO START	1ST STANDBY	2ND STANDBY	AUTO START	ACB TROUBLE RESET	ALARM
WL	WL	WL	GL	RL	RL
(MSB)		(MSB)			
			(MSB)		
					AL (MSB)
					AL (MSB)
			(MSB)		AL (MSB) (ECC)

AUTOMATIC GENERATOR ENGINE START AND SYNCHRO DUE TO HEAVY LOAD (POWER MANAGEMENT)

DISPLAY

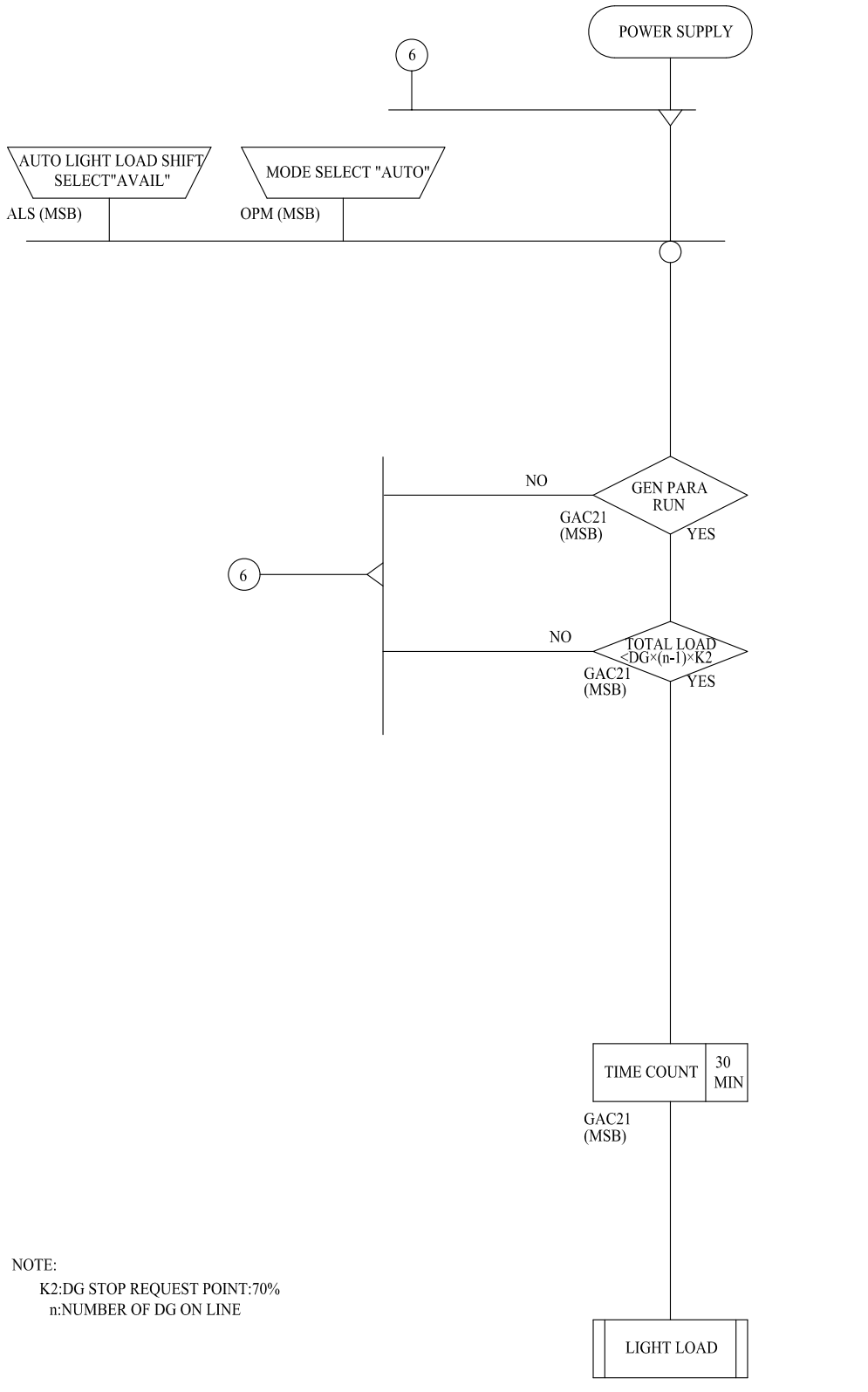


NOTE:

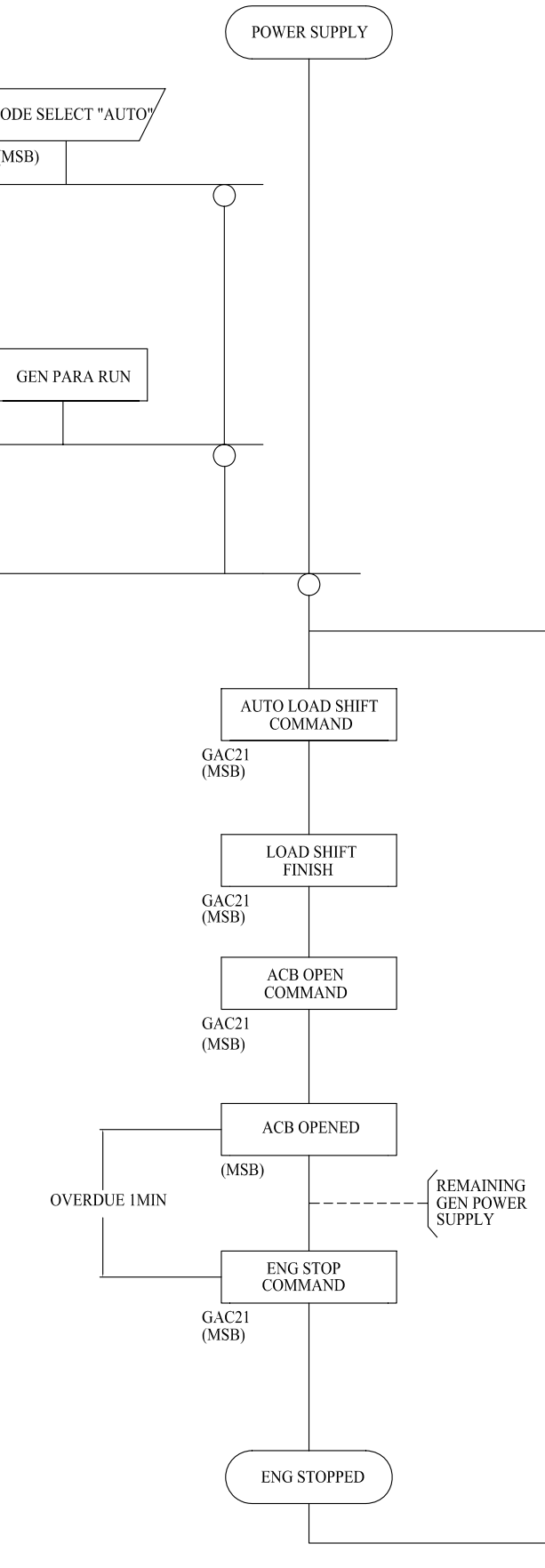
K1:DG START REQUEST POINT:90%

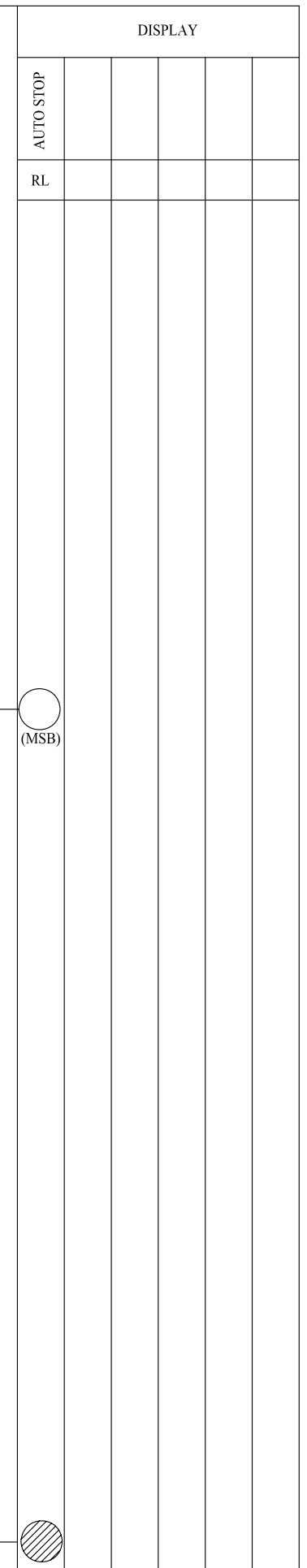
n:NUMBER OF LINE GENERATORS

AUTOMATIC LOAD SHIFT AND ACB DISCONNECTION DUE TO LIGHT LOAD

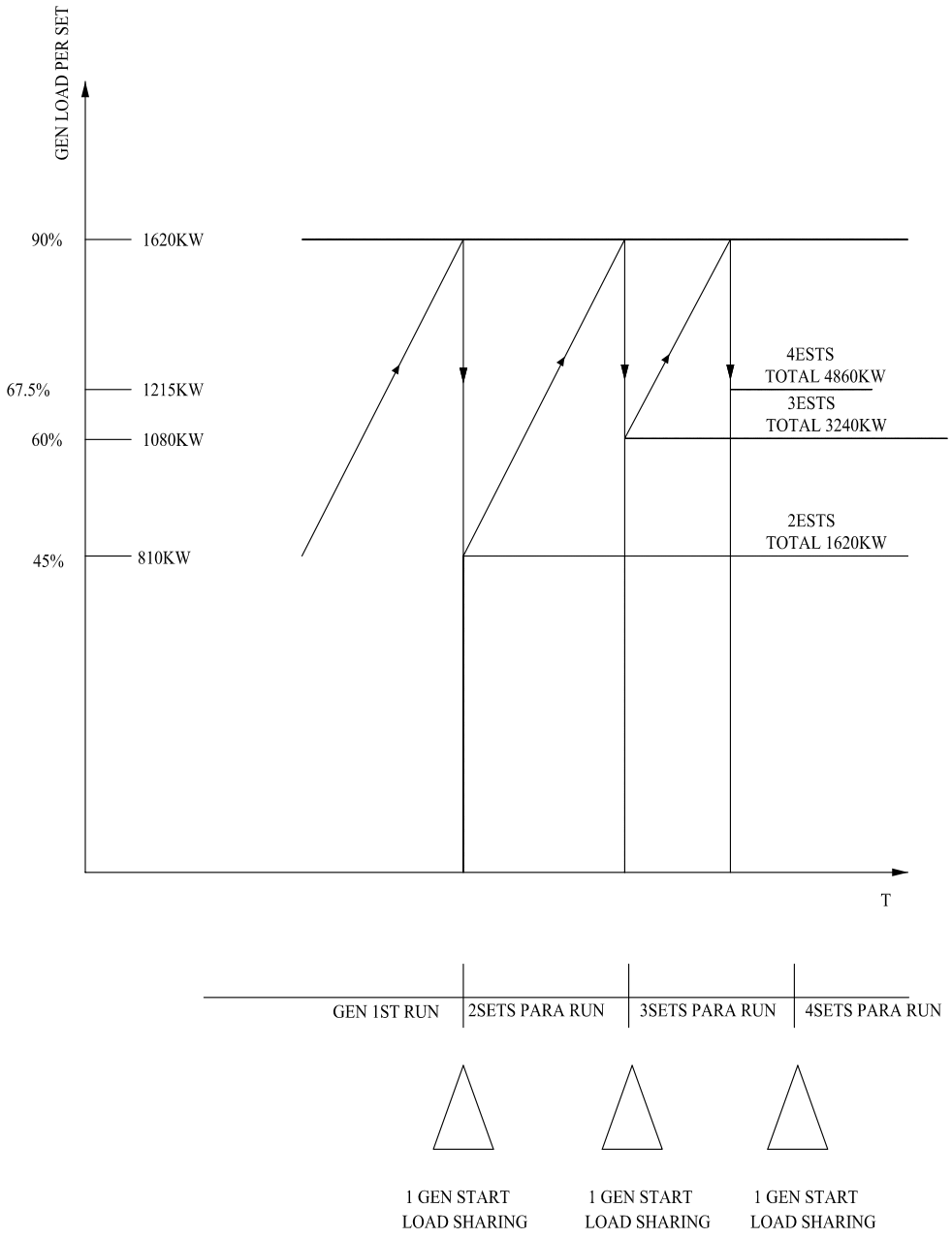


NOTE:
K2:DG STOP REQUEST POINT:70%
n:NUMBER OF DG ON LINE



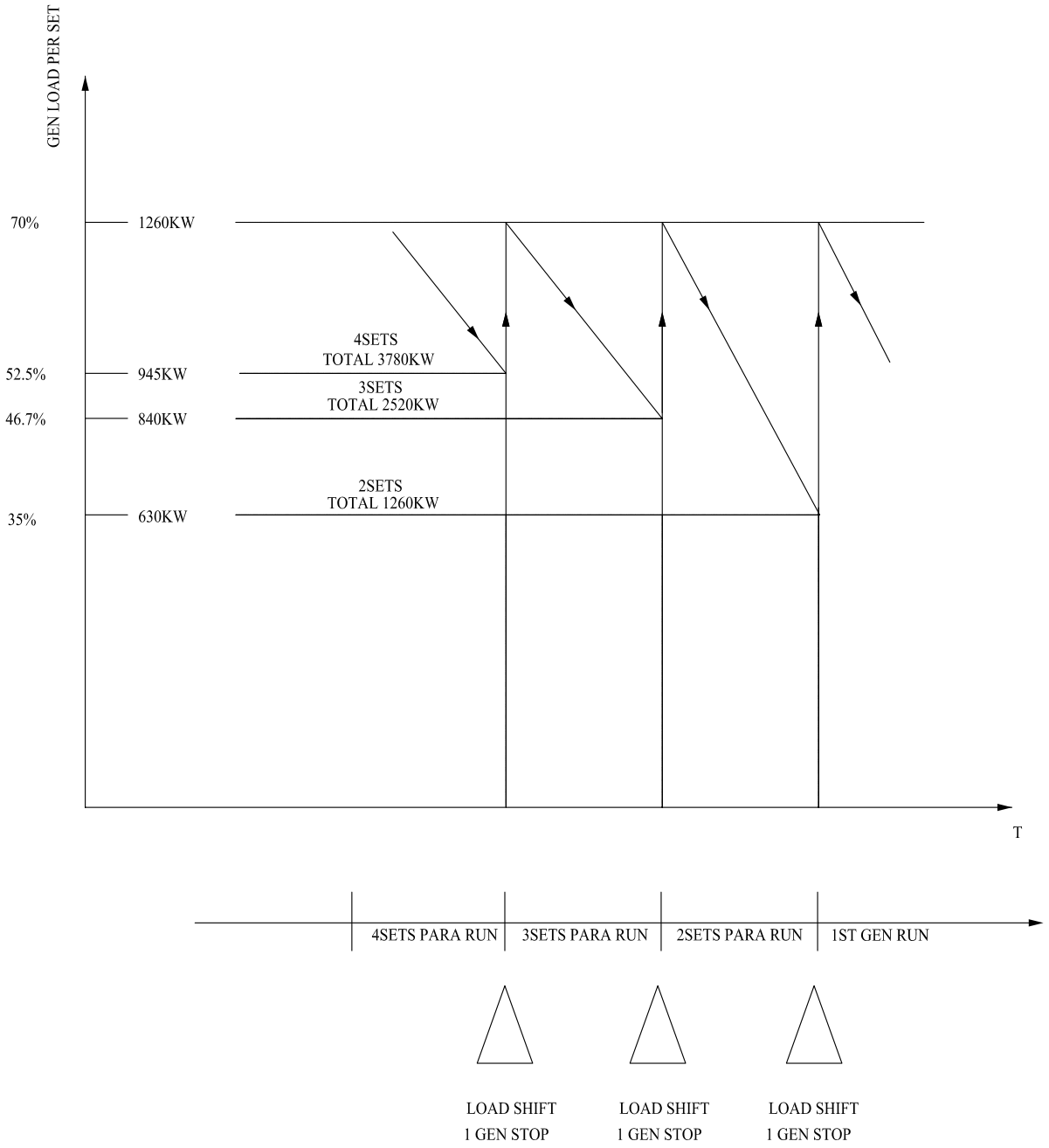


GEN PARA RUN



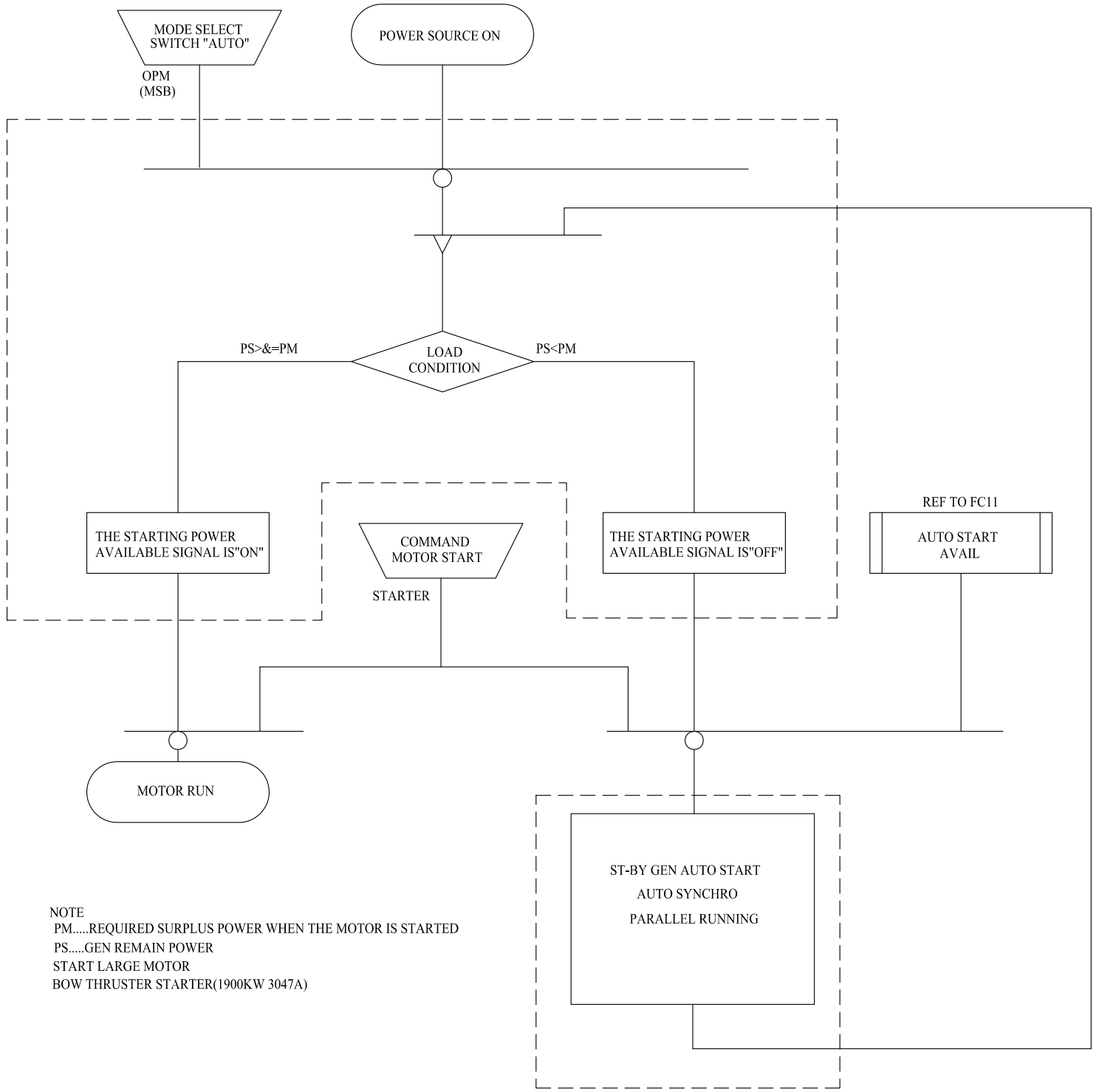
DG START REQUEST POINT:90%
DUE HEAVY LOAD

GEN PARA RUN



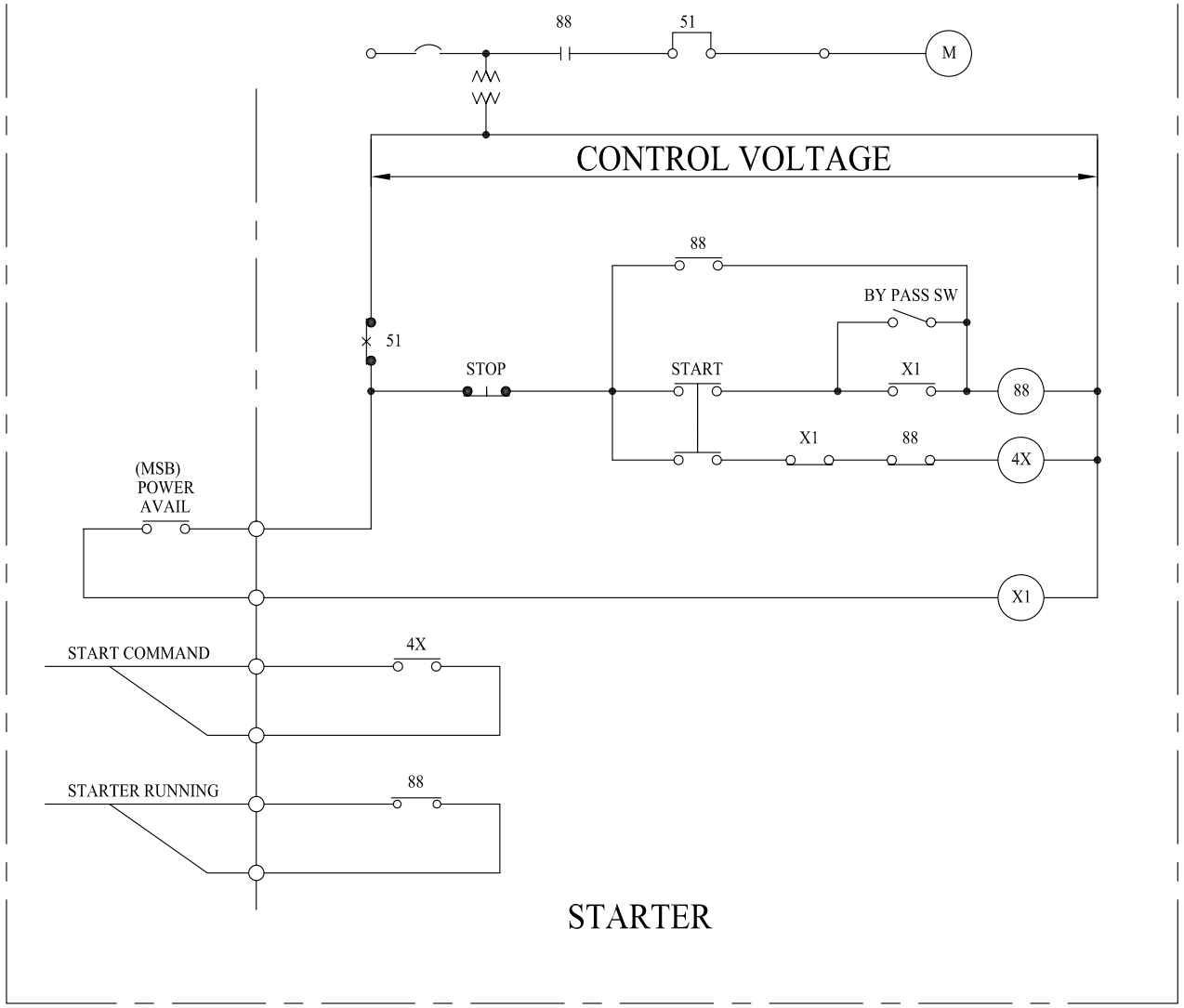
DG STOP REQUST POINT:70%
DUE LIGHT LOAD

LARGE MOTOR START BLOCKING CONTROL



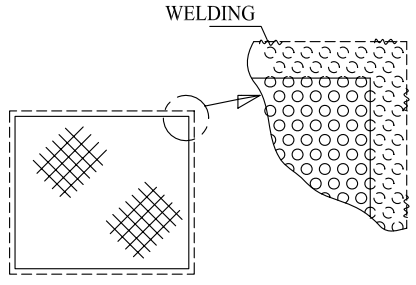
NOTE
PM.....REQUIRED SURPLUS POWER WHEN THE MOTOR IS STARTED
PS.....GEN REMAIN POWER
START LARGE MOTOR
BOW THRUSTER STARTER(1900KW 3047A)

REFERENCE CONDITION DIAGRAM



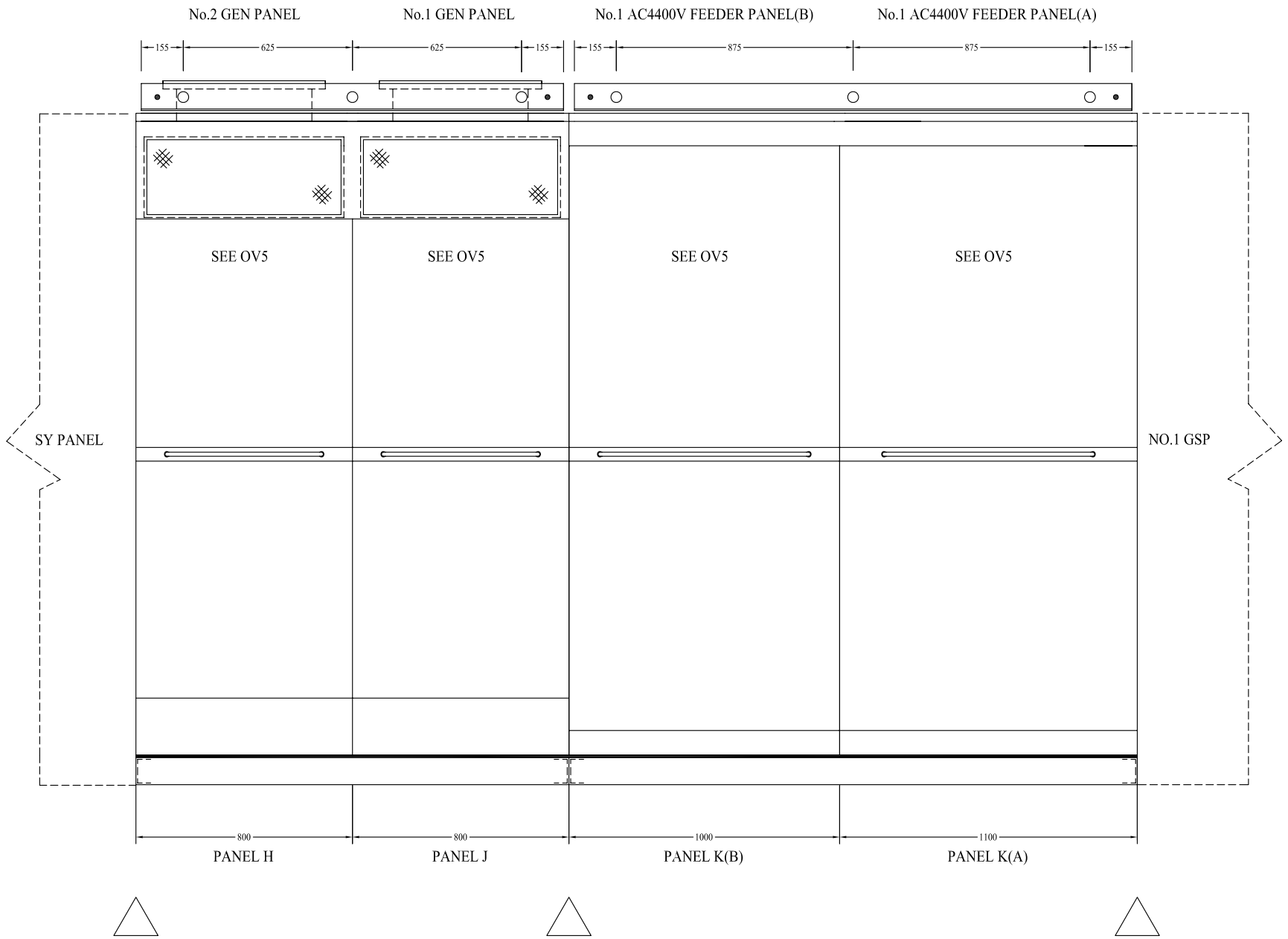
STARTER

FRONT VIEW

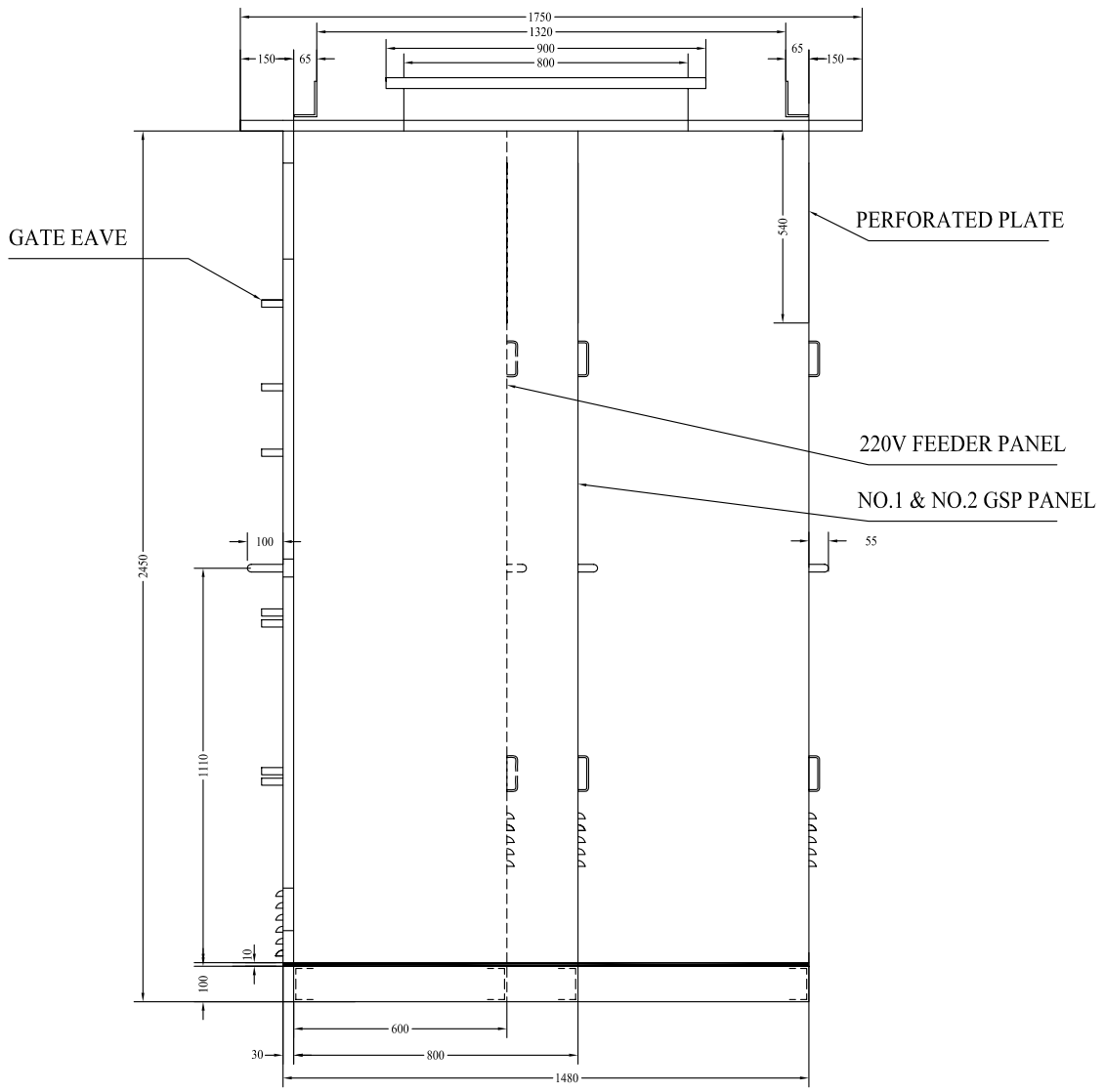


NOTE:
(1) △ SHOW THE PARTITION POINT FOR TRANSPORTATION
(2) No.1/No.2GSP:D=830mm,AC220V FEEDER PANEL:D=630mm
(3) DETAIL OF PANEL B/L:REFER TO DRAWING <<GROUP STARTER PANEL>>
(4) INDEX OF PROTECTION:IP22(ADD GATE EAVE FOR EACH MCCB)
(5) THE PLASTIC PLATE SHOULD BE INTSTALLED TO PREVENT TOUGHING ALIVE BUS WHEN REMOVE THE REAR COVER OF SWITCHBOARD

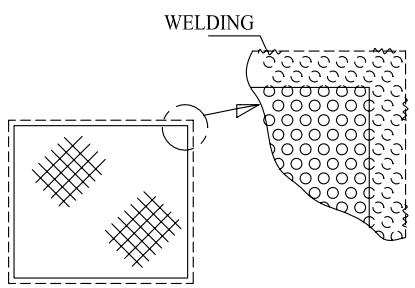
A	B	C	D	E	F	G	H	I	TERASAKI	OUTLINE VIEW	OV1
											1–40



FRONT VIEW

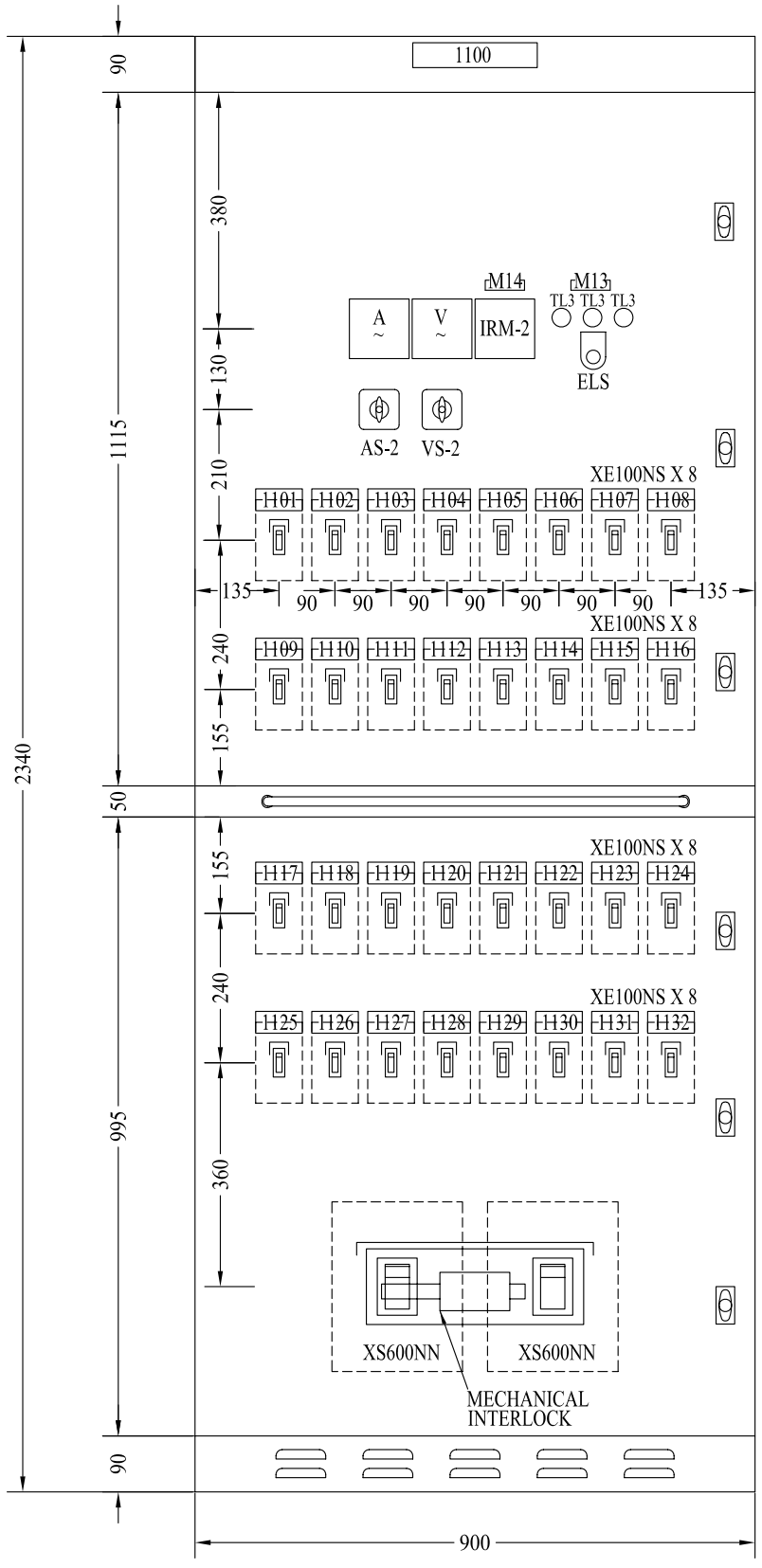


LEFT VIEW



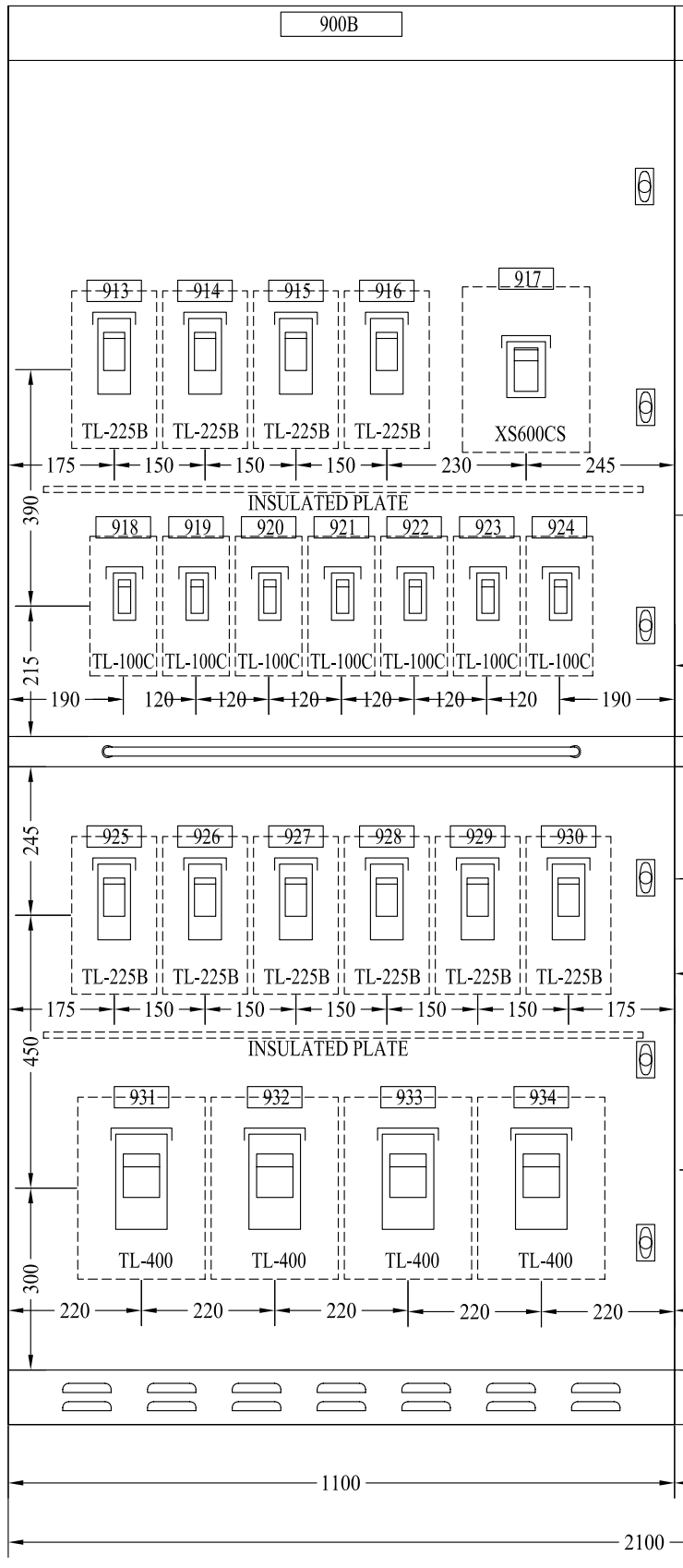
NOTE:
(1) △ SHOW THE PARTITION POINT FOR TRANSPORTATION
(2) No.1/No.2GSP:D=830mm,AC220V FEEDER PANEL:D=630mm
(3) DETAIL OF PANEL B/L:REFER TO DRAWING <<GROUP STARTER PANEL>>
(4) INDEX OF PROTECTION:IP22(ADD GATE EAVE FOR EACH MCCB)
(5) THE PLASTIC PLATE SHOULD BE INTSTALLED TO PREVENT TOUGHING ALIVE BUS WHEN REMOVE THE REAR COVER OF SWITCHBOARD

AC220V FEEDER PANEL



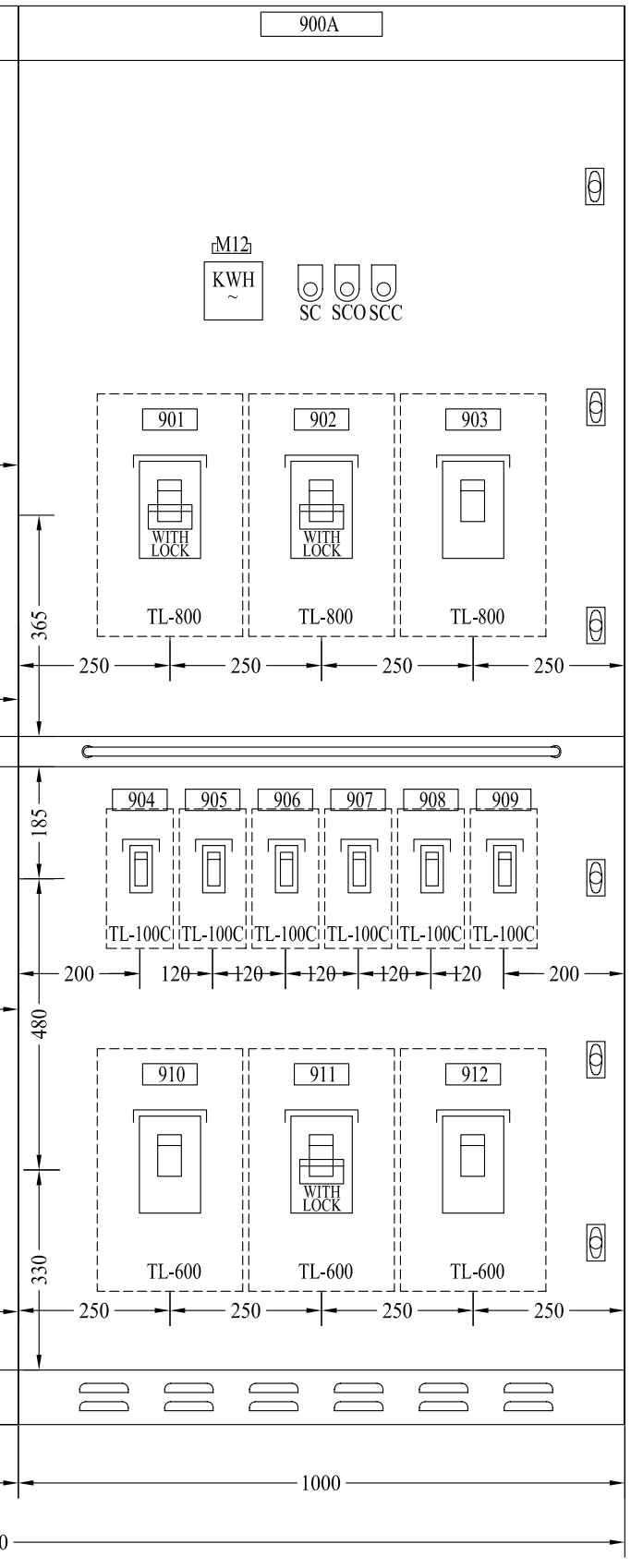
PANEL A

No.2 AC440V FEEDER PANEL(B)



PANEL C(A)

No.2 AC440V FEEDER PANEL(A)



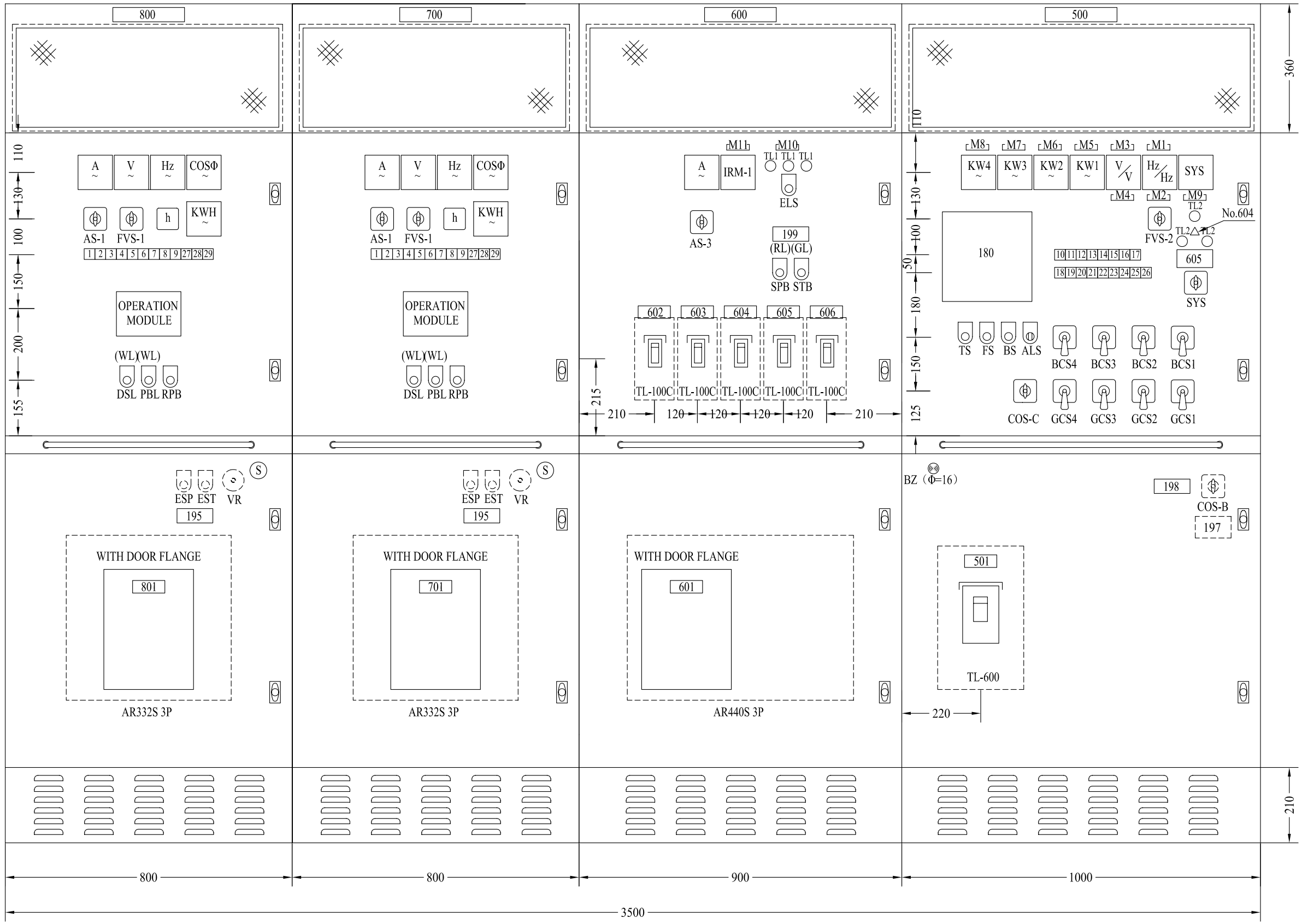
PANEL C(B)

NOTE:

Ⓢ SHIPYARD SUPPLIED

NP.196 USED FOR DS (INSIDE RAER OF SYN PANEL)

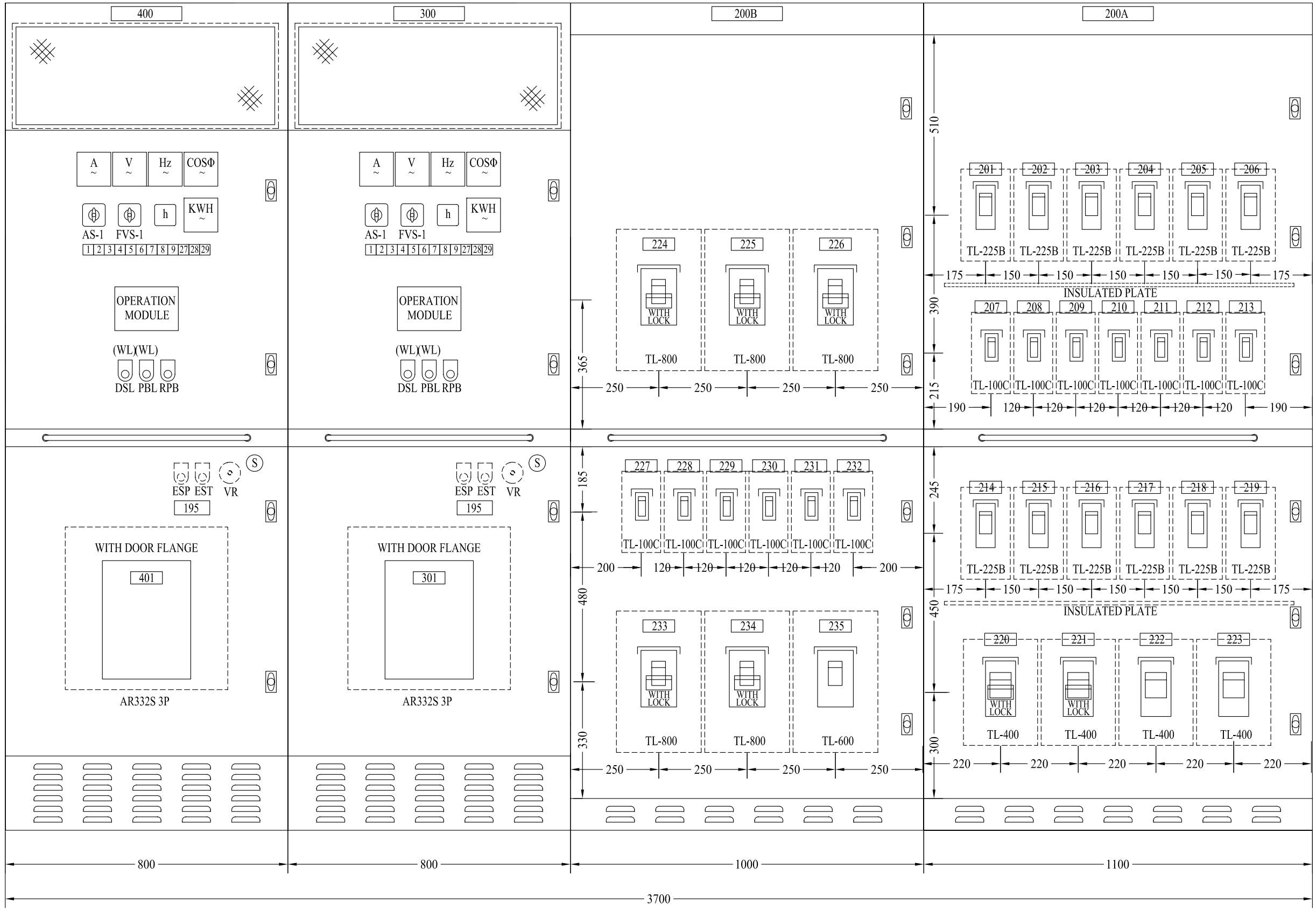
No.4 GEN PANEL | No.3 GEN PANEL | BOW THRUSTER PANEL | SYN PANEL



PANEL D | PANEL E | PANEL F | PANEL G

NOTE:
Ⓢ SHIPYARD SUPPLIED
NP.196 USED FOR DS (INSIDE RAER OF SYN PANEL)

No.2 GEN PANEL | No.1 GEN PANEL | No.1 AC4400V FEEDER PANEL(B) | No.1 AC4400V FEEDER PANEL(A)



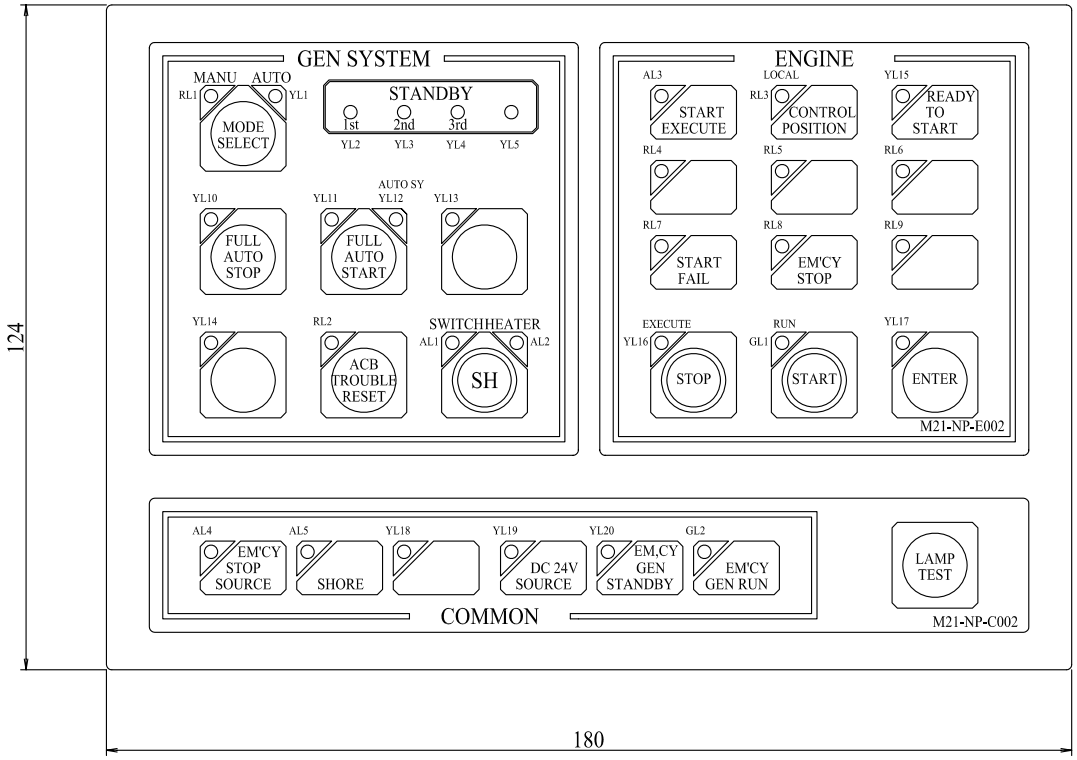
PANEL H | PANEL J | PANEL K(B) | PANEL K(A)

NOTE:

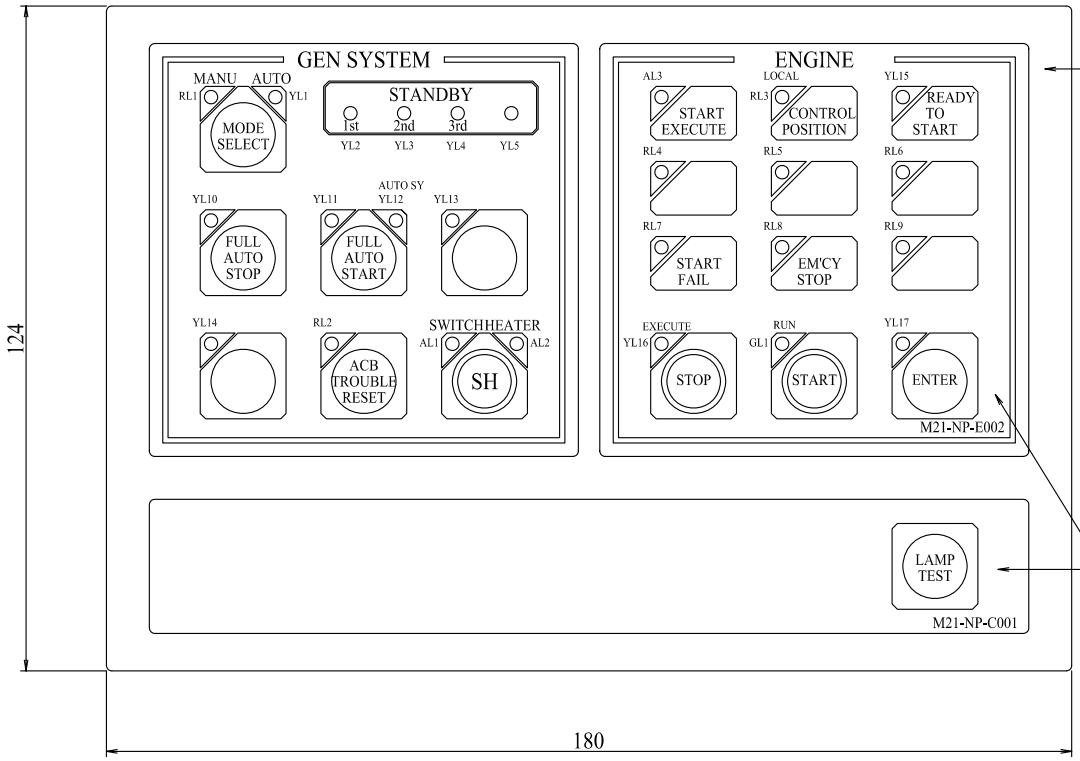
Ⓢ SHIPYARD SUPPLIED

NP.196 USED FOR DS (INSIDE RAER OF SYN PANEL)

OPERATION MODULE



QT : 0



FRAME

QT : 4
USE FOR
G1/G2/G3/G4

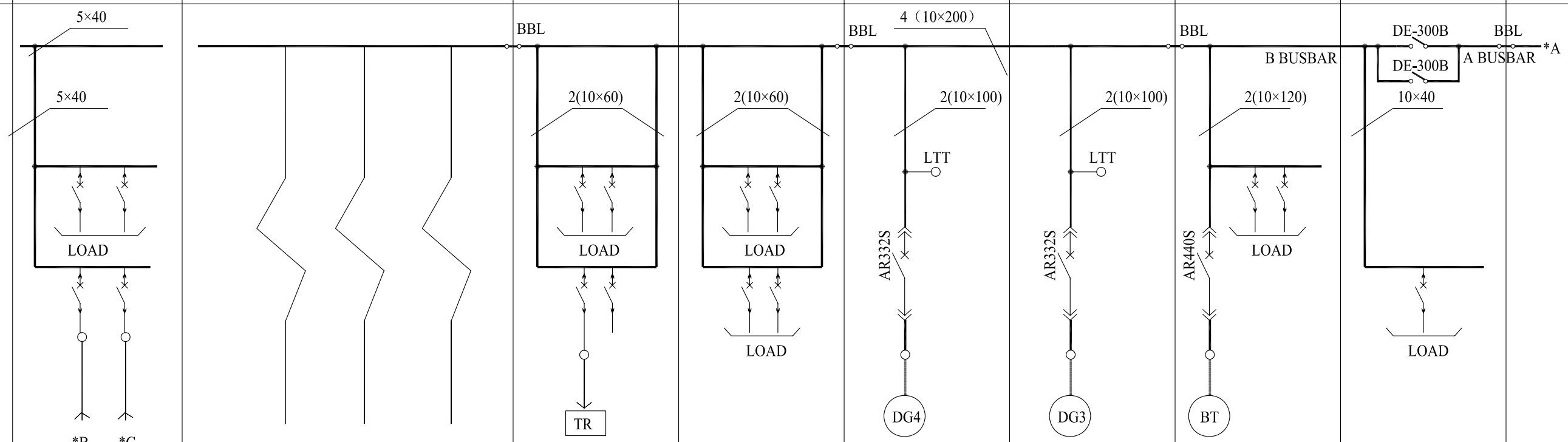
SHEET TYPE
NAMEPLATE
(POLYESTER RESIN)

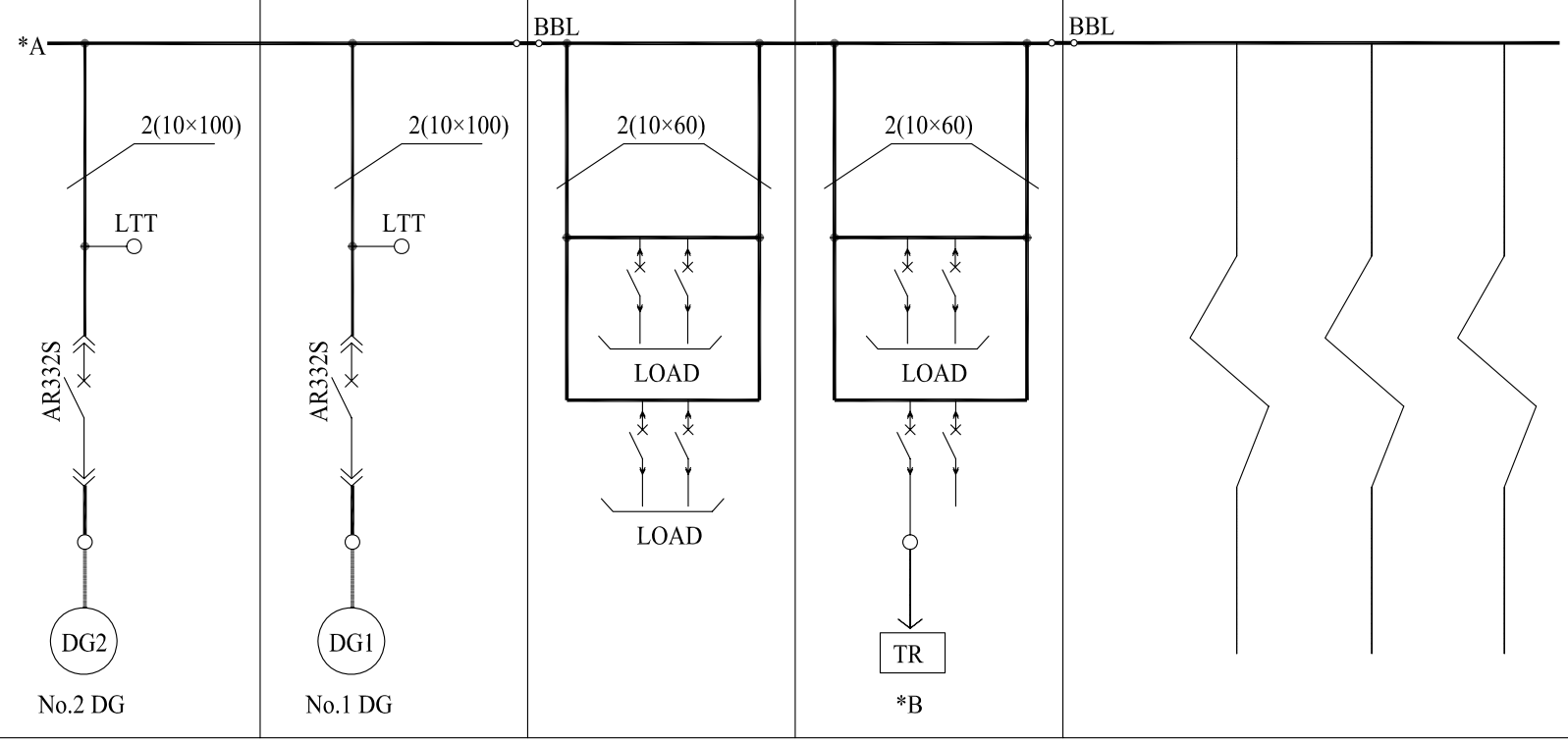
ENGINE START(STOP) METHOD

1. PRESS THE START(STOP) PUSH BUTTON SWITCH.
2. CONFIRM THE LIGHTING OF THE YL17 LAMP(ENTER LAMP)
3. PRESS THE ENTER PUSH BUTTON SWITCH WITHIN 3 SECONDS.
4. YL17 LAMP(ENTER LAMP) TURN OFF AND YL16 LAMP(STOP LAMP) TURN ON.
5. YL16 LAMP(STOP LAMP) TURN OFF AFTER THE ENGINE STOP.
6. GL1 LAMP(START LAMP) TURN ON AFTER THE SPEED PICK UP
   AND GL1 LAMP(START LAMP) TURN OFF AFTER THE SPEED BELOW RATED RPM.

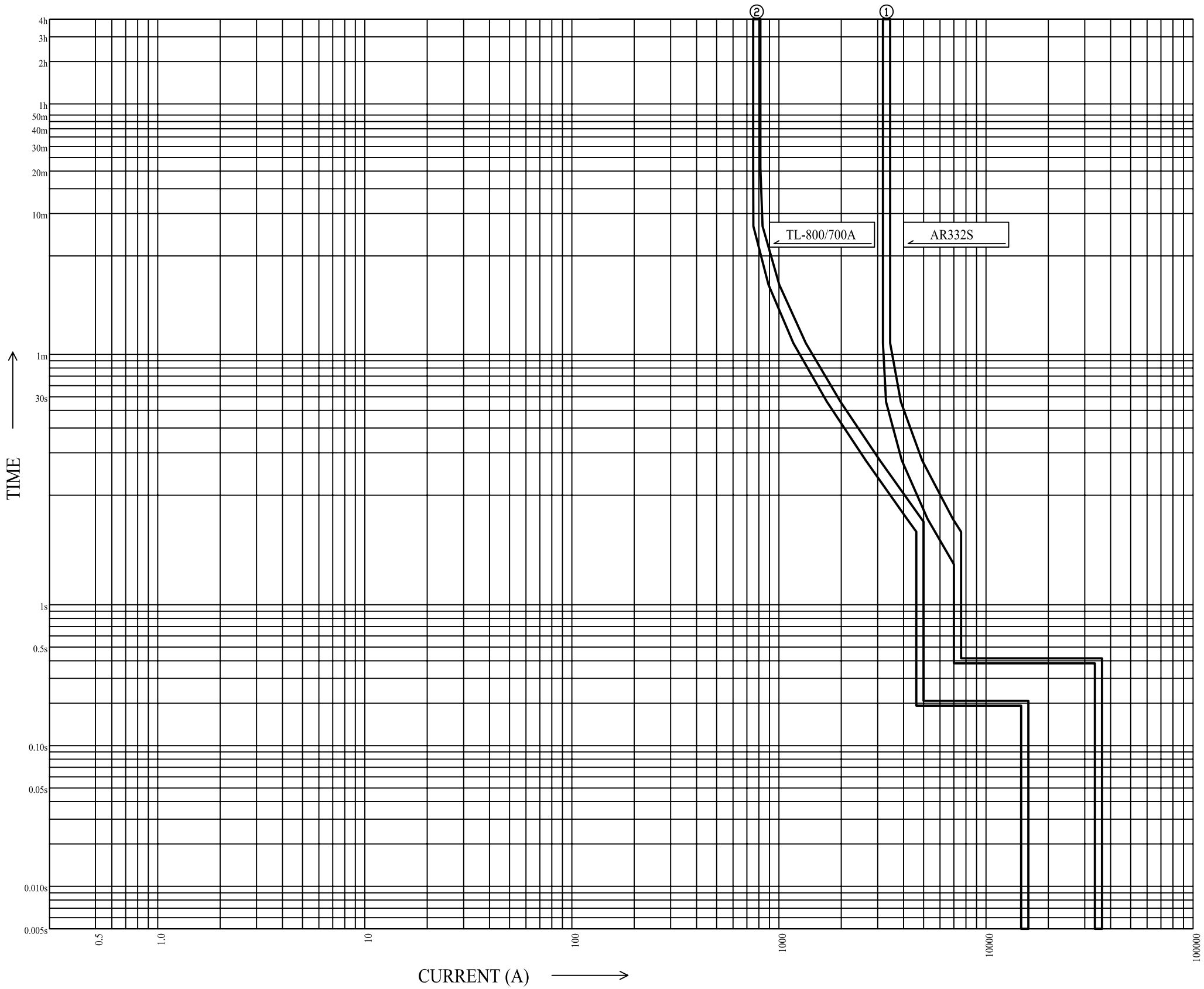
NOTE)

1. YL1,RL1,ETC. ARE NOT PRINTED ON THE SHEET.
2. YL--YELLOW, RL--RED, AL--AMBER, GL--GREEN

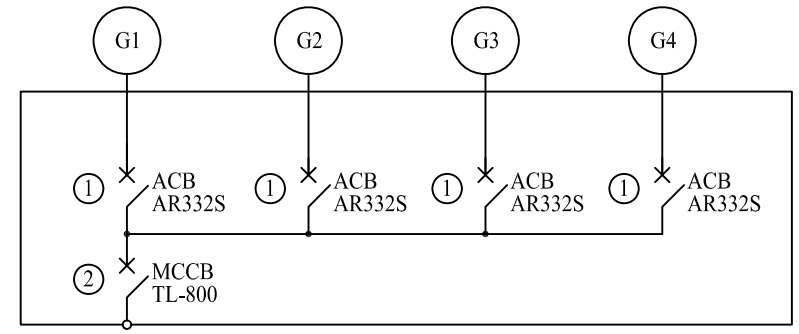
ARTICLE	MSB	GSP	MSB						
PANEL No.	A	B	C	C	D	E	F	G	
PANEL NAME	AC220V FEEDER PANEL	No.2 GSP	No.2 AC440V FEEDER PANEL（B）	No.2 AC440V FEEDER PANEL（A）	No.4 GEN PANEL	No.3 GEN PANEL	BOW THRUSTER PANEL	SYN PANEL	
CAPACITY	3Φ3W 150KVA 450/230V				AC450V 3Φ 60HZ 1800KW 2887A	AC450V 3Φ 60HZ 1800KW 2887A			
BUS SYSTEM DIAGRAM									

ARTICLE	MSB				GSP				
PANEL No.	H	J	K	K	L				
PANEL NAME	No.2 GEN PANEL	No.1 GEN PANEL	No.1 AC440V FEEDER PANEL（B）	No.1 AC440V FEEDER PANEL（A）	No.1 GSP				
CAPACITY	AC450V 3Φ 60HZ 1800KW 2887A	AC450V 3Φ 60HZ 1800KW 2887A							
BUS SYSTEM DIAGRAM									

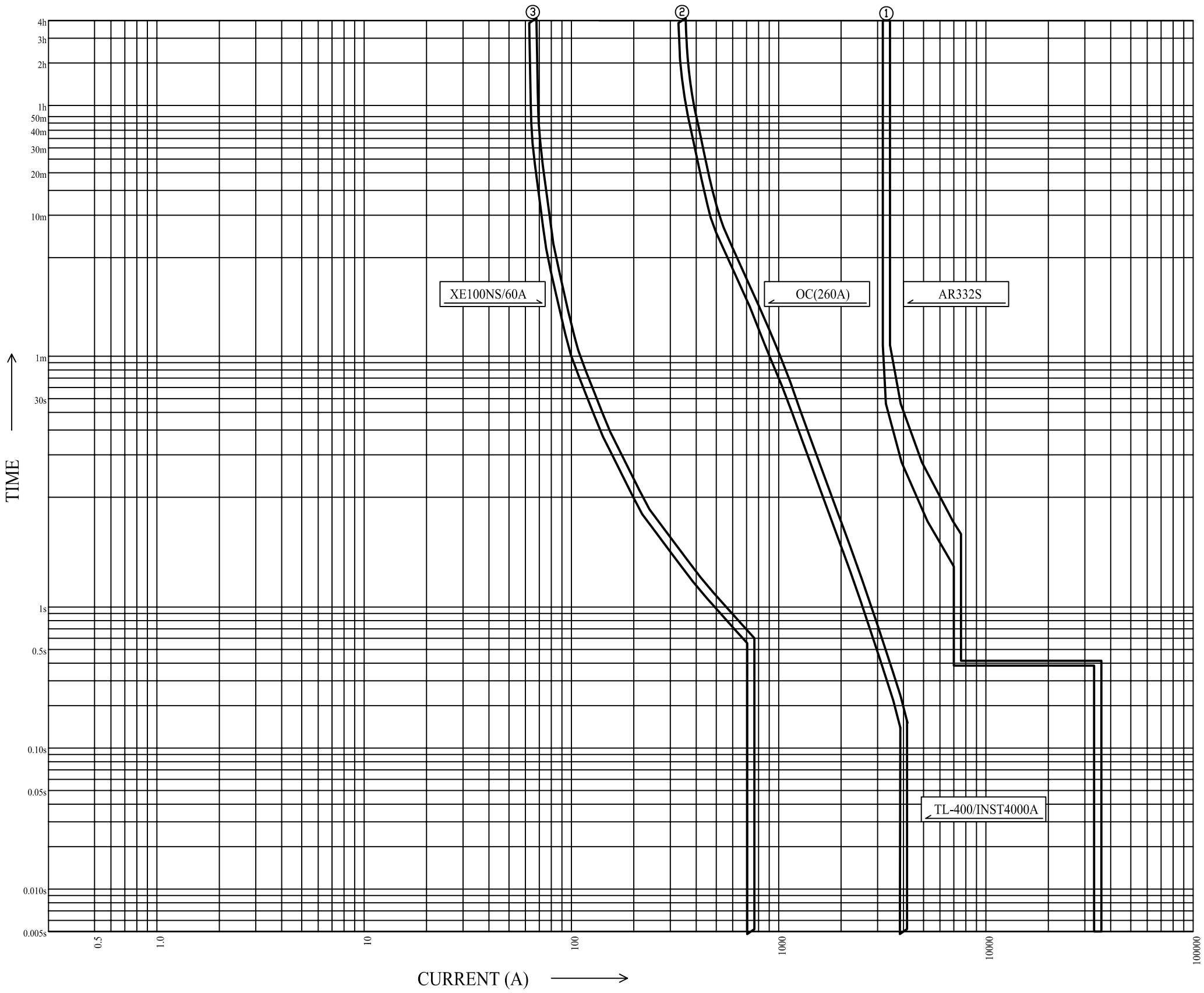
NOTE:
BBL: BOLTED BUS LINK
LTT: LOAD TEST TERMINAL



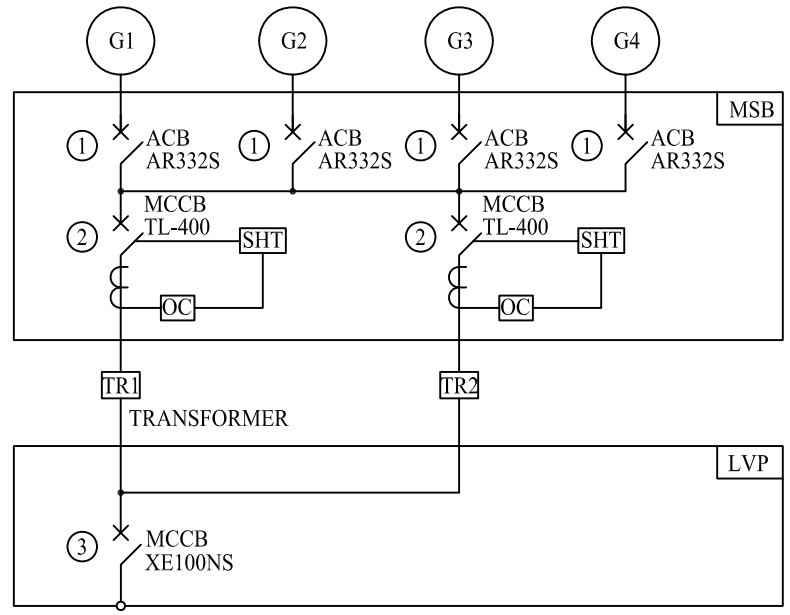
MAIN GEN. ACB vs
MSB & GSP MCCB



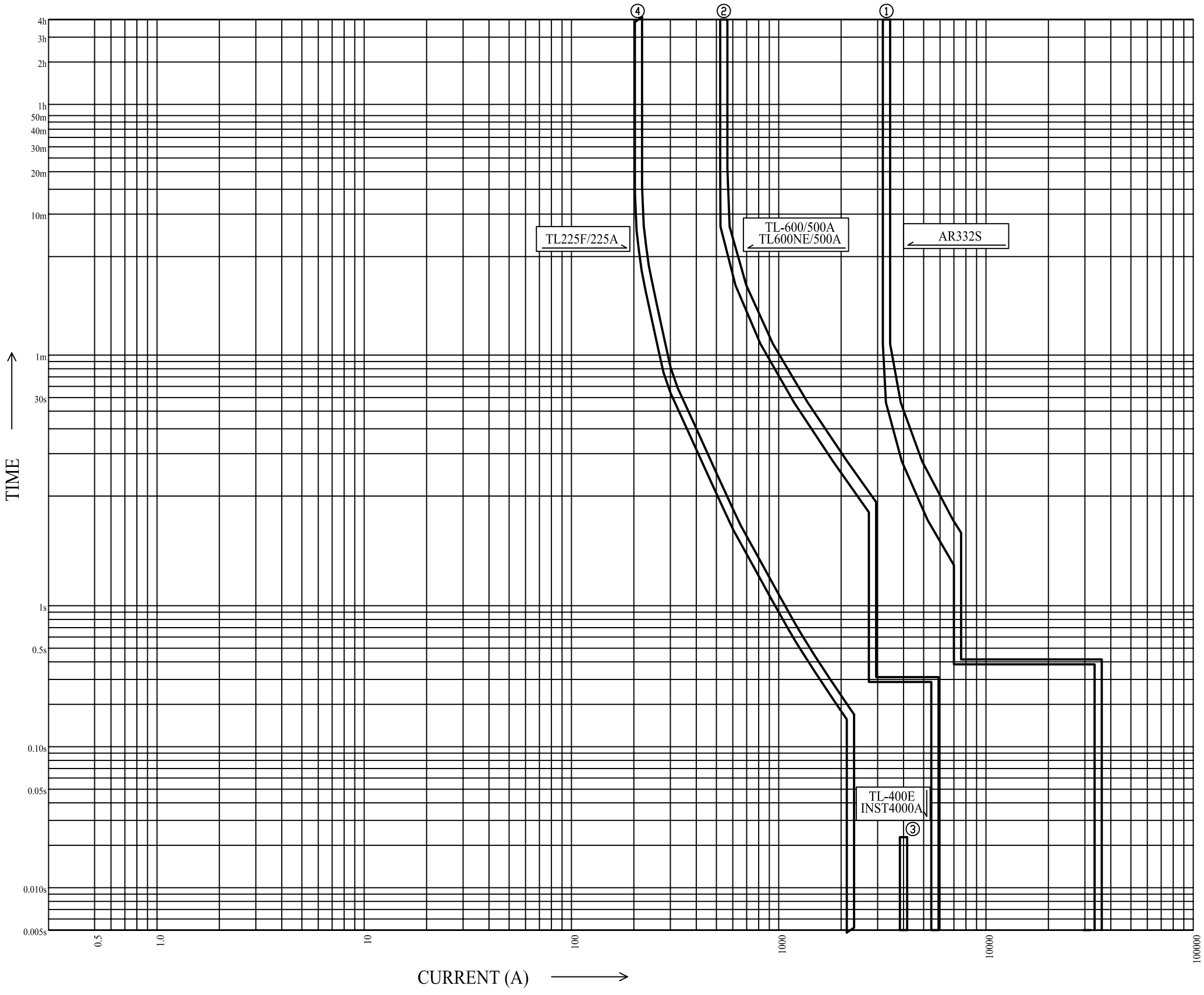
NO.	CIR. NO.	MCCB NAME	RAT. (A)	LONG TIME		SHORT TIME		INST.
				P.U.SET(A)	TIME(S)	P.U.SET(A)	TIME(S)	
①	301 401 701 801	AR332S	2887	2887X1.1 =3178	20S AT P.U.X1.2	2887X2.5 =7218	0.4S	34644
②	224 901 etc;	TL-800	700	SEE CURVE				



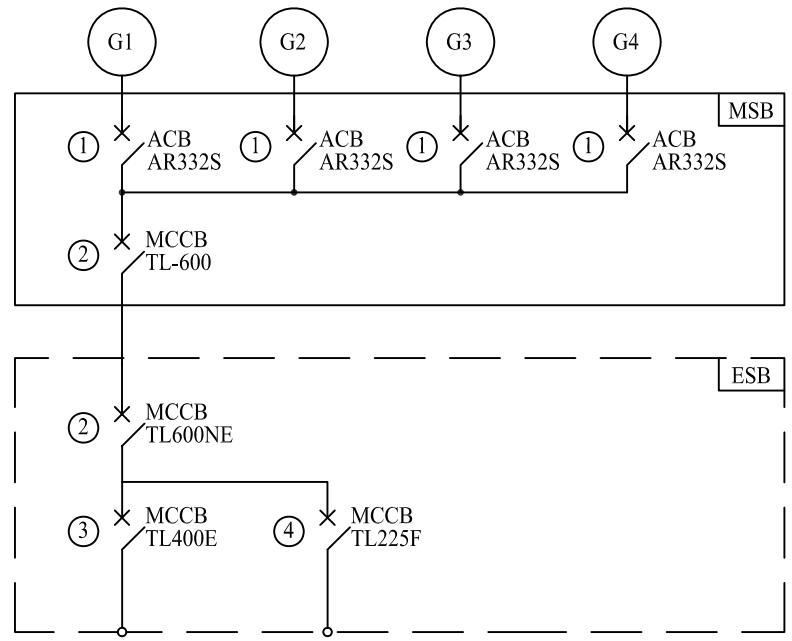
MAIN GEN. ACB vs
GENERAL SERVICE TRANS. MCCB



NO.	CIR. NO.	MCCB NAME	RAT. (A)	LONG TIME		SHORT TIME		INST.
				P.U.SET(A)	TIME(S)	P.U.SET(A)	TIME(S)	
①	301 401 701 801	AR332S	2887	2887X1.1 =3178	20S AT P.U.X1.2	2887X2.5 =7218	0.4S	34644
②	223 934	TL-400	--	OC(260A)	SEE CURVE	--	--	4000
②	1101	XE100NS	60	SEE CURVE				



MAIN GEN. ACB vs
BUS TIE & ESB MCCB



NO.	CIR. NO.	MCCB NAME	RAT. (A)	LONG TIME		SHORT TIME		INST.
				P.U.SET(A)	TIME(S)	P.U.SET(A)	TIME(S)	
①	301 401 701 801	AR332S	2887	2887X1.1 =3178	20S AT P.U.X1.2	2887X2.5 =7218	0.4S	34644
②	501 E102	TL-600 TL600NE	500	SEE CURVE				
③	E214	TL400E	--	--	--	--	--	4000
④	E212	TL225F	225	SEE CURVE				

VOL.2

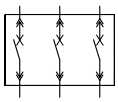
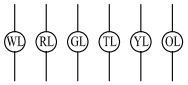
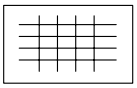
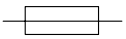
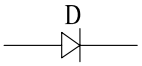
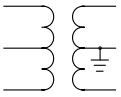
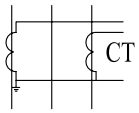
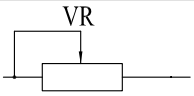
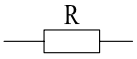
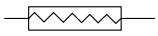
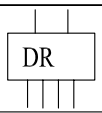
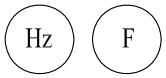
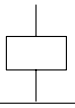
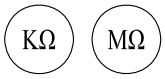
(PAGE: 2-1～2-44)

NAME PLATE		NO.	NAME	FUSE			RE-MARKS
TYPE	QT.			TYPE	RAT(A)	QT.	
U20	4	F100,F200,F300,F400	METER AND OTHERS (PRIMARY SIDE)	Legrand	2	12	
U20	4	F101,F201,F301,F401	ACB RPT/UVT POWER	Legrand	2	12	
U20	4	F102,F202,F302,F402	ACB CONTROL(PRIMARY SIDE)	Legrand	2	8	
U20	4	F103,F203,F303,F403	GEN SOURCE	Legrand	25	12	
U20	4	F104,F204,F304,F404	AVR POWER	Legrand	2	8	
U20	4	F105,F205,F305,F405	DIFFERENTIAL CIRCUIT SOURCE	Legrand	2	8	
U20	4	F106,F206,F306,F406	PRE-EXCITATION	Legrand	2	8	
U20	4	F107,F207,F307,F407	SPACE HEATER	Legrand	4	8	
U20	4	F108,F208,F308,F408	GOV POWER	Legrand	2	8	
U20	4	F109,F209,F309,F409	METER AND OTHERS (SECONDARY SIDE)	Legrand	2	12	
U20	4	F110,F210,F310,F410	ACB CONTROL(SECONDARY SIDE)	Legrand	4	8	
U20	1	F500	B BUSBAR CONTROL CIRCUIT	Legrand	25	3	
U20	1	F501	A BUSBAR CONTROL CIRCUIT	Legrand	25	3	
U20	1	F502	AUTO SYNC. CIRCUIT	Legrand	4	2	
U20	1	F503	SYNCHRO.LAMP CIRCUIT	Legrand	2	3	
U20	1	F504	BUSBAR LIVE	Legrand	2	2	
U20	1	F505	SWITCH POWER SOURCE	Legrand	16	3	
U20	1	F506	AC440V INSULATION MEASURE	Legrand	2	3	
U20	1	F507	GAC21 CIRCUIT	Legrand	6	2	
U20	1	F508	DC24V CONTROL CIRCUIT	Legrand	2	2	
U20	1	F509	NO.1 GSP DC24V SOURCE	Legrand	6	2	
U20	1	F510	NO.2 GSP DC24V SOURCE	Legrand	6	2	
U20	1	F511	ENG. CONTROL CIRCUIT(NO.1 GEN)	Legrand	2	2	
U20	1	F513	ENG. CONTROL CIRCUIT(NO.2 GEN)	Legrand	2	2	
U20	1	F515	ENG. CONTROL CIRCUIT(NO.3 GEN)	Legrand	2	2	
U20	1	F517	ENG. CONTROL CIRCUIT(NO.4 GEN)	Legrand	2	2	
U20	1	F512	RELAY BD CIRCUIT(NO.1 GEN)	Legrand	2	2	
U20	1	F514	RELAY BD CIRCUIT(NO.2 GEN)	Legrand	2	2	
U20	1	F516	RELAY BD CIRCUIT(NO.3 GEN)	Legrand	2	2	
U20	1	F518	RELAY BD CIRCUIT(NO.4 GEN)	Legrand	2	2	
U20	1	F519	DIFFERENTIAL & PRE-EXCITE SOURCE(NO.1 GEN)	Legrand	2	2	
U20	1	F520	DIFFERENTIAL & PRE-EXCITE SOURCE(NO.2 GEN)	Legrand	2	2	
U20	1	F521	DIFFERENTIAL & PRE-EXCITE SOURCE(NO.3 GEN)	Legrand	2	2	
U20	1	F522	DIFFERENTIAL & PRE-EXCITE SOURCE(NO.4 GEN)	Legrand	2	2	
U20	1	F523	B BUSBAR PRE-TRIP & EMERG. STOP CIRCUIT SOURCE(PRIMARY SIDE)	Legrand	20	2	
U20	1	F524	A BUSBAR PRE-TRIP & EMERG. STOP CIRCUIT SOURCE(PRIMARY SIDE)	Legrand	20	2	
U20	1	F525	A BUSBAR PRE-TRIP & EMERG. STOP CIRCUIT SOURCE (SECONDARY SIDE)	Legrand	2	2	

NAME PLATE		NO.	NAME	FUSE			RE-MARKS
TYPE	QT.			TYPE	RAT(A)	QT.	
U20	1	F526	B BUSBAR PRE-TRIP & EMERG. STOP CIRCUIT SOURCE (SECONDARY SIDE)	Legrand	2	2	
U20	1	F600	SHORE BREAKER CONTROL SOURCE(PRIMARY SIDE)	Legrand	2	2	
U20	1	F601	SHORE KWH MERSURE	Legrand	2	3	
U20	1	F602	SHORE BREAKER INDICATION	Legrand	2	1	
U20	1	F603	SHORE BREAKER CONTROL SOURCE(SECONDARY SIDE)	Legrand	2	2	
U20	1	F604	BOW THRUSTER ACB CONTROL (PRIMARY SIDE)	Legrand	2	2	
U20	1	F606	BOW THRUSTER ACB CONTROL (SECONDARY SIDE)	Legrand	2	2	
U20	1	F700	AC220V BUSBAR SOURCE	Legrand	25	3	
U20	1	F701	AC220V VOLTAGE MEASURE	Legrand	2	3	
U20	1	F702	SPACE HEATER SOURCE	Legrand	16	2	
U20	1	F703	GSP SPACE HEATER SOURCE	Legrand	20	2	
U20	1	F704	AC220V INSULATION MEASURE	Legrand	2	3	
U20	1	F705	AC220V BUSBAR PRE-TRIP & EMERG. STOP CIRCUIT SOURCE	Legrand	6	2	

DEVICE NUMBER	NAME	TYPE	OPERATION VOLTAGE	QT.	MANU-FACTURE	REF. SHEET No.
B27X,B27XA	RELAY	SH-4 (4a4b)	AC440V	2	FUJI	S11
65R×4,65L×4,88H×4,51XA, 51XB,52XA,52XB,53XA,53XB, 53XC,54XA,54XB,55XC,56XA, 56XC,61XA,61XB,61XC,62XA, 62XB	RELAY	SH-4 (4a4b)	AC220V	29	FUJI	G11,G21, G31,G41, S15,S16, 2F12
8X1,8X2, 8X3, 8X4,152SX, 252SX,352SX,452SX,LTX,1PX,2 PX,BZX,DCRXA,DCRXB, DCRXC,DCRXD,DSXA,DSXB, DSXC,DSXD, SF1,SF2,SF3,SF4 (43RX,30RX,5EX,14X,5S, 48X,84X,6SX,5SX) ×4	RELAY	RU4S-D-D24	DC24V	60	IDEC	S11,S14-1, S14-4, G11,G21, G31,G41, G14,G24, G34,G44
B52EX,B53EX,52SX,E1A,E2A, E3A,E4A,E1B,E2B,E3B,E4B, E3C,ETX1,ETX2,ETX3,52TXA, 52TXB,52TXC,52TXD, BTXC, B54EX	RELAY	RU4S-A220	AC220V	21	IDEC	S14-5,SC, S15,S16, G11,G21, G31,G41
EC1,EC2,EC3,EC4,EC5,EC6, EC7,EC8,EC9,EC10,EC11,EC12, EC13,EC14,EC15,EC16,EC17, EC18,EC19,EC20,EC21,EC22, EC23,EC24,EC25,EC26,EC27, EC28,EC29,EC30,EC31,EC32, EC33,EC34,EC35,EC36,EC37, EC38,BTX,BTXA,BTXB,BTXD, BPX,BTXE	RELAY	RJ1S-CLD-D24	DC24V	44	IDEC	S14-3, S14-4
D1,D2,D3,D4	DIODE	5A	DC24V	4	CHINA	G11,G21, G31,G41
D5	DIODE	40A	DC24V	1	CHINA	S11
H	HOUR METER	HK-4631	AC220V	4	LINE	G11,G21, G31,G41
SWP1	SWITCH POWER	QUINT-PS-3 X 400-500AC/ DC24V 40	AC440V	1	PHOENIX	S11
XA,XB,XC,XD	RELAY	SH-4 (4a4b)	DC24V	4	FUJI	G11,G21, G31,G41

GRAPHIC CODE

LEGEND	NAME	LEGEND	NAME	LEGEND	NAME
	ACB、MCCB		INDICATING LAMP		PUSH BUTTON OPEN CONTACT
	CHANGEOVER SWITCH		FLUORESCENT LAMP		PUSH BUTTON CLOSE CONTACT
	FUSE		DIODE		EARTH CONNECTION
	TRANSFORMER		GENERATOR		CHANGEOVER SWITCH OPEN CONTACT
	VOLTAGE TRANSFORMER		GOVERNOR MOTOR		POWER OFF TIMER RELAY OPEN CONTACT
	CURRENT TRANSFORMER		VARIABLE RESISTOR		NORMALLY OPEN CONTACT
	TIMER RELAY		RESISTOR		NORMALLY CLOSE CONTACT
	THERMAL		SHUNT		TIMER RELAY NORMALLY OPEN CONTACT
	PHASE SEQUENCE RELAY		SYNCHROSCOPE		TIMER RELAY NORMALLY CLOSE CONTACT
	POWER OFF TIMER RELAY		VOLTMETER		CHANGEOVER SWITCH CLOSE CONTACT
	REVERSE POWER RELAY		AMMETER		POWER OFF TIMER RELAY CLOSE CONTACT
	STATOR WINDING MONITOR		FREQUENCY METER		BZ
	CONTACTOR & RELAY		POWER FACTOR METER		
	POWER TRANSDUCER		INSULATION RESISTANCE METER		
	RUNNING HOUR METER		KILOWATT METER		
	UNDER VOLTAGE TRIP		KILOWATT HOUR METER		
	SHUNT TRIP				

AC450V 60Hz A BUSBAR
R
S
T
CT1×2
4000/5A
S2
S1
TO G21
X- X+
1 2 3 4 GND T
MEASURE AND PROTECTION CIRCUIT
SPT-M
S11
DC24V
DB 01
N
P
S14-1
4~20mA
1W
SHIELD WIRE
TRANSDUCER
(IN :0~2400KW)
OUT:4~20mA)
MT-2-1
PFQ96
0.5~1~0.5
COSΦ
3(5A)
WQR96
KWH
WQ96
-240~2400KW
RED LINE:1800KW
KW1
PANEL G
EQ96
0~4000A
RED LINE:2887A
AS-1
OFF R S T
EQ96
0~600V
RED LINE:450V
FQ96
55~65Hz
RED LINE:60HZ
P11
S12
(AC220V)
OFF
Uss
Usr
Ust
FVS-1
P12
S14-5
(AC220V)
ACB AUX CONTACT
G12
S72
G11
SC
AGR-22BS-PR
OCR CONTROLLER
LTD
STD/INST
SYSTEM
ABNOR
PTA
RPT
G12
AR332S 3P
ACB1
F100
F101
F102
F103
F104
F105
F106
F107
F108
F109
F110
PT1
450/220V
60VA×2
CPT1
450/220V
500VA
ACB CLOSE & OPEN
ESM-1102(G12)
52CX
43AX
52TX
86AY
B52EX
(SC)
DCRXA
152SX
(S14-5)
"CLOSE"
BCS1
"No.1 GEN"
SYS
(S12)
B27X
(S11)
"OPEN"
5EX
(G14)
5S
(G14)
52TXA
RPT
UVT
ACB CLOSE
ACB OPEN
OCR CONTROLLER
GOVERNOR MOTOR CONTROL CIRCUIT
GCS1
RAISE
OFF
LOWER
65R
65L
ESM-1102(G12)
NOISE
KILLER
HK4631
1V
S14-1
4~20mA
SHIELD WIRE
MT-1-VA
XDCR-V
DB 15
G12
(DC24V)
TRANSDUCER
(IN :0~300V
OUT:4~20mA)
XA
TB1
AVR1
S
ACB1
312
311
A
G21
D
G41
VR
CCT
3000/5
DCT×3
3000/5A
DCR1
DCR PRESET VALUE:
DIFF.CURRENT:10%
TIME:5S
No.1 GENERATOR
G1
NOTE:
SHIPYARD SUPPLIED
DSL
DSXA
S14-3
PBL
D15A
PRE-EXCITATION
BCS1
GCS1
PANEL G
2F11
(AC220V)
ELS
ESM-1102(G12)
88HX
88H
SPACE
HEATER
8272-582
P
N
GM
PANEL J
NO.1 GENERATOR CONTROL CIRCUIT
G11
2-4
TERASAKI
A B C D E F G H I

RELAY BOARD
MODULE ESM-1102

S11 (DC24V) DB 14 P N — 1A1 1B1
G11 (DC24V) DB 15 P N — DB15P DB15N — 1A2 1B2

CN3: 1 (A1)

GAC21 OUTPUT UNIT(REFER TO S14-2)

DG1 START	DG1 STOP	ACB1 CLOSE	ACB1 OPEN	GOV. RAISE	GOV. LOWER	DG1 RUNNING	ACB1 TRBL RESET	DG1 1ST STBY	DG1 2ND STBY	DG1 AUTO	STOP	SPARE	AUTO SY	SPARE	DG1 AUTO START	DG1 3RD STBY	I/O NP1W3206T (G1)
(A10)	(A9)	(A8)	(A7)	(A6)	(A5)	(A14)	(A19)	(A18)	(A17)	(A12)	(A13)	(A20)	(A16)	(A15)	(A12)	(A11)	(3)
10	9	8	7	6	5	14	19	18	17	13		20	16	15	12	11	(A2) 2

6X · 5X · 52CX · 52TX · 65R · 65L · 84X · 86AY

LTX 5 9 (S14-4)

A110 — 1B5 — 88H 54 53 (G11) — 1A5 — A111 — 86AY

1B6 G1 ACB1(G11) 111 114 112 111 — 84X

A112 A113 A114 — A116 — LTX

1B3 ACB CLOSE · 1A4 ACB OPEN · 1B4 GEN RUN
a GL b 3 · a RL b 2 · a WL b 1
1A3 A115

N · P

DB 1A G12 (DC24V)

1A1~1A10 1B1~1B10 ---- CNP1
2A1~2A8 2B1~1B8 ---- CNP2
3A1~3A6 3B1~3B6 ---- CNP3

LT X — 1A9 — 10 — 11,12

CN1: 1,2 — 3 4 5 1B7 6 1A8 7 1B8 8 9

A100

A120

CN1: 1,2 — 3 4 5 6 7 8 9 10 11,12

LT — LAMP TEST

DB 1B G12 (DC24V)

N · P

YL2 1ST STBY · YL3 2ND STBY · YL10 DG1 AUTO STOP · YL12 AUTO SY · YL11 DG1 AUTO START · RL2 ACB1 TROUBLE RESET · AL2 SPACE HEATER

OPERATION MODULE ESM-1101+ESM1103

G1 ACB1 (G11)

614 ACB CLOSE · 611 PTA · 06 · 05 · STD/INST · 25 · LTD · 15 · SYSTEM ABNOR · 26 · RPT · 16

A101 A102 A103 A104 A105 A106

TB-C11 — A120 A121 A122 A123 A124 A125 A126 A109 A107 A108

30RX (G14) · 43RX (G14) · 14X (G14) · 5EX (G14) · 5S (G14) · 48X (G14) · "OPEN" 6 5 BCS1(G11)

TB-C11 — 0 4 6 1 7 5 3

2A1 2B1 2A2 2B2 2A3 2B8 — 20 16 14 19 13 15 17 — 2A4 2B4 2B3

CN4:

N · CN2: 20 — 17 19 18 9 — LTX 14 — 43AX 13 12 11 10 — 8 16

B20 B17 B19 B18 B9 B14 B13 B12 B11 B10 B8 B16

GAC21 INPUT UNIT "NP1W3206T"
(REFER T0 S14-2)

(3) I/O (G1)

B1 B7 B6 B15 B5 — 1 7 8 15 5

84R BX

P

88HX 13 · 43AX 14 — 15 16 17

84RBX — 1A10 B10 — S14-1

CN2: 17 — 1 2 3 4 5 6 7 8 9

LT

G12 (DC24V) DB 1B

SH · AL1 SPACE HEATER SWITCH · RL1 MANU · MANU · AUTO · YL1 AUTO · ACB TROUBLE RESET · DG1 AUTO STOP · DG1 AUTO START · (SP2) · (SP1)

N · P

YL4 3RD STBY · YL5 (SP) · YL13 (SP1) · YL14 (SP2)

MODE SELECT

OPERATION MODULE ESM-1101+ESM1103

TO ACB CONT CIR(G11) — 3A2 3B3 3B2 3A1 3B1 — 86AY · 52CX · 43AX · 52TX · 52CX

GOV CONT CIR (G11) — 3A4 3B4 3B5 — 65L · 65R

SH CIR (G11) — 3A6 3B6 — 88HX

TB-C1 — 20 19 18 17

S14-1

PANEL J

NO.1 GENERATOR CONTROL CIRCUIT

G12
2-5

A B C D E F G H I

TERASAKI

START EXECUTE
EM'CY STOP
GEN RUN
READY TO START
COS-L LOCAL
STOP EXECUTE
ENTER
START FAIL

AL3 RL8 GL1 YL15 RL3 YL16 YL17 RL9 RL4 RL6 RL7 RL5

ENTER
LAMP TEST
MODE SELECT MANU
ENG START
ENG STOP

CN1: 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38

OPERATION MODULE ESM-1101+ESM1103

43RY 14Y 6X E6X 5X E5X 5X1 14Y E6X E5X 6X1 5X1 R C

CN4: 1,2 8 7 4 5 6 3 11 12

P

2A5 2B5 2A6 2B6 2A7 2B7 2A8

2A9

14Y 2A10 2B10

RELAY BD MODULE ESM-1102

19,18 12 13 16 15 14 17 9 8

TB-C11

A154 A159 A155 A160 A161 A162 A163

30RX 6SX 43RX SF1 (S14-4) 6SX 5SX SF1 (S14-4)

A150 A151 A152 A153 A156 A157 A158

5S 14X 5EX

S11 (DC24V)

DB 12

6SX 5EX 43RX 14X

N

TB1

REMOTE & AUTO CONTROL
READY TO START
GEN SAFETY SHUTDOWN
ENGINE RUN
ENG STOP EXECUTE
START FAIL

A164 A165 A166 A167 A168 A169

43RX 30RX 5EX 14X 5S 48X 84X

G14 S70 G14 G12 G11 S14-1

A	B	C	D	E	F	G	H	I

TERASAKI

PANEL J

NO.1 GENERATOR CONTROL CIRCUIT

G14

2-6

AC450V 60Hz A BUSBAR
R
S
T
CT2×2
4000/5A
S2
S1
FROM G11 TO G31
X- X+
1 2 3 4 GND
MEASURE AND PROTECTION CIRCUIT
B1
B2
B3
B90
B91
B92
S11
DC24V
DB
01
N
P
A2
A1
SPT-M
8 9 10
S14-1
4~20mA
2W
SHIELD WIRE
TRANSDUCER
(IN :0~2400KW
OUT:4~20mA
1S
3S
1L
3L
G
MT-2-1
P1 P2 P3
B4
B5
PFQ96
0.5~1~0.5
COSΦ
3(5A)
B6
WQR96
KWH
B87
B88
WQ96
-240~2400KW
RED LINE:1800KW
KW2
PANEL G
B7
B8
B10
B9
OFF R S T
AS-1
EQ96
0~4000A
RED LINE:2887A
A
EQ96
0~600V
RED LINE:450V
V
FQ96
55~65Hz
RED LINE:60HZ
Hz
R
S
T
P21
S12
(AC220V)
OFF
Uas
Ucs
Uts
FVS-1
B21
B22
ACB AUX CONTACT
a b
G22 114 111 112 G22
214 211 212 G21
314 311 312 G21
414 411 412 SC
S13-2 514 511 512
G22 614 611 612
714 711 712
F200
F209
B15 B16 B17
B18 B19 B20
B21 B22 B23
B80 B81 B82
PT2
450/220V
60VA×2
R
S
P22
S14-5
(AC220V)
F201
B24 B25 B26
F202
F210
B27
B29
B83
ACB CLOSE & OPEN
B34
B36
B35
B33
B85
B38
ESM-1102(G22)
3B1
52CX
43AX
52TX
86AY
3A1 3A2 3B3 3B2
B31
B32
B52EX
(SC)
DCRXB
252SX
(S14-5)
"CLOSE"
BCS2
"No.2 GEN"
SYS
(S12)
B27X
(S11)
"OPEN"
5EX
(G24)
5S
(G24)
52TXB
CPT2
450/220V
500VA
01 02
13 23 04
09 18
12 03
24 30
RPT
UVT
ACB CLOSE
ACB OPEN
OCR CONTROLLER
AGR-22BS-PR
OCR CONTROLLER
LTD
STD/INST
SYSTEM
ABNOR
PTA
RPT
15
25
26
06
16
05
G22
AR332S 3P
ACB2
F203
B28
B30
B84
21 22
3 4
B86
14
52TXB
h
1
2
13
HK4631
GOVERNOR MOTOR CONTROL CIRCUIT
GCS2
4
RAISE
GCS2
6
OFF
GCS2
2
LOWER
B41
3B5
65R
65L
B39
B42
3B4
3A4
ESM-1102(G22)
65L
22
21
65R
22
21
B40
A1
65R
A2
NOISE
KILLER
B43
A1
65L
A2
NOISE
KILLER
a b
G21
G21 G21
G21 G21
F204
B70
B71
B72
B73
AVR2
Ⓢ
E4
E0
K
L
6
7
K2
L2
ACB2
312
311
B76
B
A
G31
G11
2.5mm²
B77
B78
VR
Ⓢ
TB2
XB
B74
B75
A
B
7
8
CCT Ⓢ
3000/5
L
K
OPEN
CLOSE
BCS2
G21
G21
G22
PANEL G
LOWER
OFF
RAISE
GCS2
G21
G21
G21
PANEL G
F205
B61
B62
P
N
DB
04
S11
(DC24V)
DCT×3 Ⓢ
3000/5A
DCR2
B54
B55
B56
B57
B58
B59
23
26
29
30
27
24
1
3
6
7
8
DCRXB
12
B60
RPB
A2
B63
A1
14
DCRXB
13
DCR PRESET VALUE:
DIFF.CURRENT:10%
TIME:5S
F206
B65
B66
A4
A3
B4
B3
PBL
WL
PBL
B67
B68
B69
D2.5A
DSL
DSXB
14
13
S14-3
a b
G21
G21
S14-3
G21
TB2
5
6
PRE-EXCITATION
F207
R
B48
S
B49
ACB2
212
211
B50
3A6
ESM-1102(G22)
3B6
B51
88HX
A1
A2
G21
G21
G22
2F11
(AC220V)
ELS
B52
9
H1
H2
10
B53
TB2
SPACE
HEATER
13 88H 14
43 88H 44
F208
P
N
B44
B45
13 69L 14
43 69L 44
13 65R 14
43 65R 44
TB2
B46
B47
11
12
GM
8272-582
Ⓢ
3(+)
4(-)
2V
S14-1
4~20mA
SHIELD WIRE
MT-1-VA
G
P1 P2 P3 S+
XDCR-V
N P
DB
25
G22
(DC24V)
TRANSDUCER
(IN :0~300V
OUT:4~20mA
No.2 GENERATOR
G2
U V W
1 2 3 4
TB2
NOTE:
Ⓢ SHIPYARD SUPPLIED
A B C D E F G H I
TERASAKI
PANEL H
NO.2 GENERATOR CONTROL CIRCUIT
G21
2-7

RELAY BOARD
MODULE ESM-1102

S11 (DC24V) DB 24 P N — 1A1 1B1
G21 (DC24V) DB 25 P N — DB15P DB15N — 1A2 1B2

CN3: 1 (A1)

GAC21 OUTPUT UNIT(REFER TO S14-2)

DG2 START (A10)	DG2 STOP (A9)	ACB2 CLOSE (A8)	ACB2 OPEN (A7)	GOV. RAISE (A6)	GOV. LOWER (A5)	DG2 RUNNING (A14)	ACB2 TRBL RESET (A19)	DG2 1ST STBY (A18)	DG2 2ND STBY (A17)	DG2 AUTO STOP (A13)	SPARE (A20)	AUTO SY (A16)	SPARE (A15)	DG2 AUTO START (A12)	DG2 3RD STBY (A11)	(4) I/O NP1W3206T (G2)
10	9	8	7	6	5	14	19	18	17	13	20	16	15	12	11	(A2) 2

6 X — 5 X — 52 CX — 52 TX — 65 R — 65 L — 84 X — 86 AY

LTX 6 10 (S14-4)

B110 — 1B5 — 88H 54 53 (G21) — 1A5 — B111

1B6 G2 ACB2(G21) 111 114 112 111 — 84X — LTX

B112 B113 B114 — B116

1B3 ACB CLOSE — 1A4 ACB OPEN — 1B4 GEN RUN
a GL b 3 — a RL b 2 — a WL b 1
1A3 — B115

N — DB 1A G22 (DC24V)
P

1A1~1A10 1B1~1B10 ---- CNP1
2A1~2A8 2B1~1B8 ---- CNP2
3A1~3A6 3B1~3B6 ---- CNP3

LT X — 1A9 — 10 — 11,12

CN1: 1,2 — 3 4 5 — 1B7 — 6 — 1A8 — 7 — 1B8 — 8 9

B100

B120

CN1: 1,2 — 3 4 5 6 7 — 8 9 — 10 — 11,12

LT — LAMP TEST — DB 1B G22 (DC24V)
N
P

YL2 1ST STBY — YL3 2ND STBY — YL10 DG2 AUTO STOP — YL12 AUTO SY — YL11 DG2 AUTO START — RL2 ACB2 TROUBLE RESET — AL2 SPACE HEATER

OPERATION MODULE ESM-1101+ESM1103

G2 ACB2 (G21)

611 614 ACB CLOSE — PTA 06 — 05 STD/INST — 25 LTD — 15 SYSTEM ABNOR — 26 RPT — 16

B101 B102 B103 B104 B105 B106

TB-C12 0 4 6 1 7 5 3

B120 B121 B122 B123 B124 B125 B126 B109 B107 B108

30RX (G24) 10 6 — 43RX (G24) 11 7 — 14X (G24) 11 7 — 5EX (G24) 11 7 — 5S (G24) 11 7 — 48X (G24) 11 7 — "OPEN" 6 5 BCS2(G21)

TO ACB CONT CIR(G21) — GOV CONT CIR (G21) — SH CIR (G21)

2A1 2B1 2A2 2B2 2A3 2B8 — 20 16 14 19 13 15 17 — 2A4 2B4 2B3

3A2 3B3 3B2 3A1 3B1 — 3A4 3B4 3B5 — 3A6 3B6

N

CN4:

CN2: 20 — 17 19 18 9 — LTX 14 — 43AX 13 12 11 10 — 8 — 16

86AY — 52CX — 43AX — 52TX — 52CX — 65L — 65R — 88HX

B20 B17 B19 B18 B9 B14 B13 B12 B11 B10 B8 B16

G22 (DC24V) DB 1A

GAC21 INPUT UNIT "NP1W3206T"
(REFER T0 S14-2)

(4) I/O (G2)

B1 B7 B6 B15 B5 — 1 7 8 15 5

84R BX

TB-C2 20 19 18 17

P

88HX 13 — 43AX 14 — 15 16 17

84RBX — 1A10 B10 — S14-1

LT

G22 (DC24V) DB 1B

SH — AL1 — RL1 — MANU — AUTO — YL1 — ACB TROUBLE RESET — DG2 AUTO STOP — DG2 AUTO START — (SP2) — (SP1)

CN2: 17 — 1 2 3 4 5 6 7 8 9

YL4 — YL5 — YL13 — YL14

N
P

SPACE HEATER SWITCH — MANU — AUTO — MODE SELECT — 3RD STBY — (SP) — (SP1) — (SP2)

OPERATION MODULE ESM-1101+ESM1103

TERASAKI

A	B	C	D	E	F	G	H	I

PANEL H

NO.2 GENERATOR CONTROL CIRCUIT

G22
2-8

START EXECUTE
EM'CY STOP
GEN RUN
READY TO START
COS-L LOCAL
STOP EXECUTE
ENTER
START FAIL

AL3 RL8 GL1 YL15 RL3 YL16 YL17 RL9 RL4 RL6 RL7 RL5

ENTER
LAMP TEST
MODE SELECT MANU
ENG START
ENG STOP

CN1: 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38

OPERATION MODULE ESM-1101+ESM1103

CN1: 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38

43RY 43RY 6X E6X 5X E5X 5X1 14Y E6X E5X 6X1 5X1 R R C C

43RY 14Y 6X1 5X1 E6X E5X

P

2A9

14Y 2A10 2B10

CN4: 1,2 8 7 4 5 6 3 11 12

2A5 2B5 2A6 2B6 2A7 2B7 2A8

RELAY BD MODULE ESM-1102

B162 9 5 SF2 (S144) B163

19,18 12 13 16 15 14 17 9 8 TB-C12

B154 B155 B159 B160 B161

5 9 30RX 7 11 6SX 6 10 43RX 13 6SX 13 5SX 14 14

SF2 (S14-4) 2 10

B150 B151 B152 B153 B156 B157 B158

5S 14X 5EX 2 10

P

a b G24 S70 G24 a b S70

S11 (DC24V) DB 22

5 9 6SX 5 9 5EX 5 9 43RX 5 9 14X 5EX 2 10

N

TB2

22 24 26 28 30 32

REMOTE & AUTO CONTROL
READY TO START
GEN SAFETY SHUTDOWN
ENGINE RUN
ENG STOP EXECUTE
START FAIL

21 23 25 27 29 31

B164 B165 B166 B167 B168 B169

14 43RX 13 14 30RX 13 14 5EX 13 14 14X 13 14 5S 13 14 48X 13 14 84X 13

a b G24 G24 G22 a b G24 G22 a b G24 G24 G22 G21 a b G24 G24 G22 a b G24 G22 G21 a b G24 G22 a b S14-1

TERASAKI

A B C D E F G H I

PANEL H

NO.2 GENERATOR CONTROL CIRCUIT

G24

2-9

AC450V 60Hz B BUSBAR
R
S
T
CT3×2
4000/5A
S2
S1
FROM G21 TO G41
X- X+ X- X+
1 2 3 4 GND
MEASURE AND PROTECTION CIRCUIT
C1 C90 C2 C91 C3 C92
SPT-M
S11
DC24V
DB 01
N
P
A2
A1
8 9 10
S14-1
4~20mA
3W
SHIELD WIRE
TRANSDUCER
(IN :0~2400KW
OUT:4~20mA)
MT-2-1
1S 3S - + 1L 3L G
P1 P2 P3
C4 C5
PFQ96
0.5~1~0.5
COSΦ
3(5A) 1 2 8
C6
WQR96
KWH
C87 C88
WQ96
-240~2400KW
RED LINE:1800KW
KW3
PANEL G
C7 C8
C10
OFF R S T
AS-1
C9
EQ96
0~4000A
RED LINE:2887A
A
R
S
T
P31
S12
(AC220V)
EQ96
0~600V
RED LINE:450V
V
FQ96
55~65Hz
RED LINE:60HZ
Hz
OFF Uas Ust Utk
FVS-1
C11
C12
ACB AUX CONTACT
a b
G32 114 111 112 G32
214 211 212 G31
314 311 312 G31
414 411 412 SC
S13-2 514 511 512
G32 614 611 612
714 711 712
F300
F309
C15 C16 C17
C18 C19 C20
C21 C22 C23
C80 C81 C82
PT3
450/220V
60VA×2
F301
C24 C25 C26
R
S
P32
S14-5
(AC220V)
F302
F310
C27
C29
C83
ACB CLOSE & OPEN
GOVERNOR MOTOR CONTROL CIRCUIT
C34
AGR-22BS-PR
OCR CONTROLLER
LTD
STD/INST
SYSTEM
ABNOR
PTA
RPT
15
25
26
06
16
05
G32
AR332S 3P
ACB3
CPT3
450/220V
500VA
B52EX
(SC)
352SX
(S14-5)
C36
ESM-1102(G32)
3B1
52CX
43AX
52TX
86AY
3A1 3A2 3A3 3B3 3B2
"CLOSE"
BCS3
C35
"No.3 GEN"
SYS
(S12)
B27X
(S11)
DCRXC
C31
C32
"OPEN"
BCS3
5EX
(G34)
5S
(G34)
52TXC
C85
C38
01 02 13 23 04 09 18 12 03 24 30
RPT
UVT
ACB CLOSE
ACB OPEN
OCR CONTROLLER
21 22
C30 C28 C84
GCS3
RAISE
GCS3
OFF
GCS3
LOWER
C41
3B5
65R
65L
3B4 3A4
ESM-1102(G32)
C39 C42
65L 22 21
65R 22 21
C40 A1 65R A2
NOISE
KILLER
C43 A1 65L A2
NOISE
KILLER
52TXC 14 13
h 1 2
HK4631
a b G31
a b G31 G31
a b G31 G31
3V
S14-1
4~20mA
SHIELD WIRE
MT-1-VA
G
P1 P2 S- S+
XDCR-V
N P
DB 35
G32
(DC24V)
TRANSDUCER
(IN :0~300V
OUT:4~20mA)
F303
F304
C70 C71 C72 C73
2.5mm²
AVR3
S
E4 E0 K L 6 7 L2 K2
ACB3
311 312
C76
C
G41
B
G21
C74 C75
XC
TB3
A B
C77 C78
VR
S
CCT
3000/5
L
K
DCT×3
3000/5A
C54 C55 C56 C57 C58 C59
DCR3
23 26 29 30 27 24
1 3 6 7 8
C61 C62
F305
P
N
DB 05
S11
(DC24V)
DCR PRESET VALUE:
DIFF.CURRENT:10%
TIME:5S
RPB
DCRXC
C60
C63
A2 A1
14 13
DCRXC
C64
XC
A1 A2
F306
C65 C66
A4 B4
A3 B3
PBL
WL
PBL
D3 5A
C67 C68 C69
5 6
TB3
PRE-EXCITATION
WL
DSL
DSXC
14 13
S14-3
a b G31
S14-3 G31
U V W
1 2 3 4
No.3 GENERATOR
G3
NOTE:
S SHIPYARD SUPPLIED
F307
R 1 2 C48
ACB3
212 211
C50
3A6
88HX
3B6
C51
88H A1 A2
a b G31 G31 G32
S 3 4 C49
C52
H1 H2
TB3
SPACE
HEATER
10
88H 14 13
88H 44 43
C53
2F11
(AC220V)
ELS
F308
C44 C45
13 65L 14
43 65L 44
13 65R 14
43 65R 44
C46 C47
TB3 11 12
GM
OPEN CLOSE
BCS3
G31 G31 G32
PANEL G
LOWER OFF RAISE
GCS3
G31 G31 G31
PANEL G
8272-582
S
1 2
3(+) 4(-)
P N
F
PANEL E
NO.3 GENERATOR CONTROL CIRCUIT
G31
2-10
TERASAKI
A B C D E F G H I

RELAY BOARD
MODULE ESM-1102

S11 (DC24V) DB 34 P N — 1A1 1B1
G31 (DC24V) DB 35 P N — DB15P DB15N — 1A2 1B2

CN3: 1 (A1)

GAC21 OUTPUT UNIT(REFER TO S14-2)

DG3 START	DG3 STOP	ACB3 CLOSE	ACB3 OPEN	GOV. RAISE	GOV. LOWER	DG3 RUNNING	ACB3 TRBL RESET	DG3 1ST STBY	DG3 2ND STBY	DG3 AUTO STOP	SPARE	AUTO SY	SPARE	DG3 AUTO START	DG3 3RD STBY	I/O NP1W3206T (G3)
(A10)	(A9)	(A8)	(A7)	(A6)	(A5)	(A14)	(A19)	(A18)	(A17)	(A13)	(A20)	(A16)	(A15)	(A12)	(A11)	(5)
10	9	8	7	6	5	14	19	18	17	13	20	16	15	12	11	(A2) 2

6X · 5X · 52CX · 52TX · 65R · 65L · 84X · 86AY

LTX 7 11 (S14-4)

C110 — 1B5 — 88H 54 53 (G31) — 1A5 — C111

1B6 G3 ACB3(G31) 111 114 112 111

86AY — 84X — LTX

C112 C113 C114 — C116

1B3 ACB CLOSE · 1A4 ACB OPEN · 1B4 GEN RUN
a GL b 3 · a RL b 2 · a WL b 1
1A3 — C115

N — DB 1A G32 (DC24V) — P

1A1~1A10 1B1~1B10 ---- CNP1
2A1~2A8 2B1~1B8 ---- CNP2
3A1~3A6 3B1~3B6 ---- CNP3

LT X — 1A9 10 11,12

CN1: 1,2 — 3 4 5 1B7 6 1A8 7 1B8 8 9

C100

C120

CN1: 1,2 — 3 4 5 6 7 8 9 10 11,12

LT — LAMP TEST — DB 1B G32 (DC24V) — N P

YL2 1ST STBY · YL3 2ND STBY · YL10 DG3 AUTO STOP · YL12 AUTO SY · YL11 DG3 AUTO START · RL2 ACB3 TROUBLE RESET · AL2 SPACE HEATER

OPERATION MODULE ESM-1101+ESM1103

G3 ACB3 (G31)

614 611 ACB CLOSE PTA 06 · STD/INST 05 25 · LTD 15 · SYSTEM ABNOR 26 · RPT 16

C101 C102 C103 C104 C105 C106

TB-C13 — C120 C121 C122 C123 C124 C125 C126 C109 C107 C108

30RX (G34) 10 6 · 43RX (G34) 11 7 · 14X (G34) 11 7 · 5EX (G34) 11 7 · 5S (G34) 11 7 · 48X (G34) 11 7 · "OPEN" 6 5 BCS3(G31)

TB-C13 0 4 6 1 7 5 3

2A1 2B1 2A2 2B2 2A3 2B8 — 20 16 14 19 13 15 17 — 2A4 2B4 2B3

N — CN4: — CN2: 20 17 19 18 9 14 13 12 11 10 8 16

LTX 14 · 43AX 13

B20 B17 B19 B18 B9 B14 B13 B12 B11 B10 B8 B16

GAC21 INPUT UNIT "NP1W3206T"
(REFER T0 S14-2)

(5) I/O (G3)

B1 B7 B6 B15 B5 — 1 7 8 15 5

84R BX

P

88HX 13 · 43AX 14 — 15 16 17

84RBX 1A10 B10 — S14-1

TO ACB CONT CIR(G31) — 3A2 3B3 3B2 3A1 3B1 — 86AY · 43AX · 52TX · 52CX · 52CX

GOV CONT CIR (G31) — 3A4 3B4 3B5 — 65L · 65R

SH CIR (G31) — 3A6 3B6 — 88HX

TB-C3 — 20 19 18 17

13 14 15 16 17 — CN2: 17 — 1 2 3 4 5 6 7 8 9

LT — G32 (DC24V) DB 1B — N P

SH · AL1 · RL1 · MANU · AUTO · YL1 · ACB TROUBLE RESET · DG3 AUTO STOP · DG3 AUTO START · (SP2) · (SP1) · YL4 · YL5 · YL13 · YL14

SPACE HEATER SWITCH · MANU · AUTO — MODE SELECT · 3RD STBY · (SP) · (SP1) · (SP2)

OPERATION MODULE ESM-1101+ESM1103

TERASAKI

PANEL E

NO.3 GENERATOR CONTROL CIRCUIT

G32
2–11

START EXECUTE
EM'CY STOP
GEN RUN
READY TO START
COS-L LOCAL
STOP EXECUTE
ENTER
START FAIL

AL3 RL8 GL1 YL15 RL3 YL16 YL17 RL9 RL4 RL6 RL7 RL5

ENTER
LAMP TEST
MODE SELECT MANU
ENG START
ENG STOP

CN1: 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38

OPERATION MODULE ESM-1101+ESM1103

CN1: 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38

43RY 43RY 6X E6X 5X E5X 5X1 14Y E6X E5X 6X1 5X1 R R C C

43RY 14Y 6X1 5X1 E6X E5X

P

CN4: 1,2 8 7 4 5 6 3 11 12

2A9

14Y 2A10 2B10

2A5 2B5 2A6 2B6 2A7 2B7 2A8

RELAY BD MODULE ESM-1102

C162 9 5 SF3 (S144) C163

19,18 12 13 16 15 14 17 9 8 TB-C13

C154 C155 C159 C160 C161

5 9 30RX 7 11 6SX 6 10 43RX

SF3 (S14-4) 2 10

6SX 13 14 5SX 13 14

C150 C151 C152 C153 C156 C157 C158

5S 14X 5EX

S11 (DC24V) DB 32

P

N

a b G34 S70 G44 a b S70

TB3

22 24 26 28 30 32

REMOTE & AUTO CONTROL
READY TO START
GEN SAFETY SHUTDOWN
ENGINE RUN
ENG STOP EXECUTE
START FAIL

21 23 25 27 29 31

C164 C165 C166 C167 C168 C169

14 43RX 13 14 30RX 13 14 5EX 13 14 14X 13 14 5S 13 14 48X 13 14 84X 13

a b G34 G34 G32 a b G34 G32 a b G34 G34 G32 G32 a b G34 G34 G32 G32 a b G34 G32 a b S14-1

AC450V 60Hz A BUSBAR
R
S
T
CT4×2
4000/5A
S2
S1
FROM G31 TO S13-2
X- X+ X- X+
1 2 3 4 GND
MEASURE AND PROTECTION CIRCUIT
D1 D90
D2 D91
D3 D92
S11
DC24V
DB 01
N
P
A2
A1
SPT-M
8 9 10
S14-1
4~20mA
4W
SHIELD WIRE
TRANSDUCER
IN :0~2400KW
OUT:4~20mA
MT-2-1
1S
3S
1L
3L
G
P1 P2 P3
D4
D5
PFQ96
0.5~1~0.5
COSΦ
3(5A)
D6
WQR96
KWH
WQ96
-240~2400KW
RED LINE:1800KW
D87
D88
KW4
PANEL G
D7
D8
D10
D9
OFF R S T
AS-1
EQ96
0~4000A
RED LINE:2887A
A
R
S
T
P41
S12
(AC220V)
OFF U$S U$T U$R
FVS-1
D11
D12
EQ96
0~600V
RED LINE:450V
V
FQ96
55~65Hz
RED LINE:60HZ
Hz
ACB AUX CONTACT
a b
G42 114 111 112 G42
214 211 212 G41
314 311 312 G41
414 411 412 SC
S13-2 514 511 512
G42 614 611 612
714 711 712
F400
F409
D15 D18 D21 D80
D16 D19 D22 D81
D17 D20 D23 D82
PT4
450/220V
60VA×2
F401
D24 D25 D26
R
S
P42
S14-5
(AC220V)
4V
S14-1
4~20mA
SHIELD WIRE
MT-1-VA
G
P1 P2 S- S+
XDCR-V
N P
DB 45
G42
(DC24V)
TRANSDUCER
IN :0~300V
OUT:4~20mA
AGR-22BS-PR
OCR CONTROLLER
LTD 15
STD/INST 25
SYSTEM ABNOR 26
PTA 06
RPT 16
05
G42
AR332S 3P
ACB4
F402
F410
D27
D29
D83
ACB CLOSE & OPEN
D34
ESM-1102(G42)
3B1
52CX
43AX
52TX
86AY
3A1 3A2 3B3 3B2
B52EX
(SC)
452SX
(S14-5)
"CLOSE"
BCS4
D36
D35
"No.4 GEN"
SYS
(S12)
B27X
(S11)
DCRXD
D31
D32
D85
"OPEN"
5EX
(G24)
5S
(G24)
52TXD
D38
CPT4
450/220V
500VA
01 02 13 23 04 09 18 12 03 24 30
RPT UVT ACB CLOSE ACB OPEN
OCR CONTROLLER
21 22
D30 D28
D84
D86 14
52TXD
h
1 2
13
HK4631
GOVERNOR MOTOR CONTROL CIRCUIT
GCS4
RAISE
GCS4
OFF
GCS4
LOWER
D41
3B5
65R
65L
3B4 3A4
ESM-1102(G42)
D39 D42
65L 22 21
65R 22 21
D40 A1
65R
A2
NOISE
KILLER
D43 A1
65L
A2
NOISE
KILLER
a b
G41
G41 G41
G41 G41
G41 G41
F403
F404
XD
TB4
D74 D75
A B
AVR4
D70 E4
D71 E0
K2 L2
K L 6 7
ACB4
312
311
D76
D
C
G11
G31
2.5mm²
D72
D73
D77 D78
VR
CCT
3000/5
DCT×3
3000/5A
DCR4
D54 D55 D56 D57 D58 D59
23 26 29 30 27 24
1 3 6 7 8
DCRXD
D60
RPB
D63
A2 A1
14 13
DCR PRESET VALUE:
DIFF.CURRENT:10%
TIME:5S
U V W
1 2 3 4
TB4
No.4 GENERATOR
G4
NOTE:
Ⓢ SHIPYARD SUPPLIED
S14-3
G41
G41
F405
D61
D62
P
N
DB 06
S11
(DC24V)
F406
D65 D66
A4 B4
A3 B3
PBL
WL
PBL
D67
D4 5A
D68 D69
5
6
TB4
PRE-EXCITATION
WL
DSL
DSXD
14 13
DCRXD
D64
XD
A1
A2
OPEN CLOSE
BCS4
G41 G41
G41 G42
PANEL G
LOWER OFF RAISE
GCS4
G41 G41
G41 G41
PANEL G
F407
R
S
D48
D49
ACB4
212
211
D50
ESM-1102(G42)
3A6
88HX
3B6
D51
88H
A1
A2
G41
G41
G42
D52
88H 14
H1
H2
88H 44
D53
TB4
SPACE
HEATER
2F11
(AC220V)
ELS
8272-582
Ⓢ
1 2
3(+) 4(-)
P N
F408
D44 D45
65L 14
65L 44
65R 14
65R 44
D46 D47
TB4 11 12
GM

A	B	C	D	E	F	G	H	I	TERASAKI	PANEL D
										NO.4 GENERATOR CONTROL CIRCUIT
										G41
										2–13

RELAY BOARD
MODULE ESM-1102

S11 (DC24V) DB 44 P N — 1A1 1B1
G41 (DC24V) DB 45 P N — DB15P DB15N — 1A2 1B2

CN3: 1 (A1)

GAC21 OUTPUT UNIT(REFER TO S14-2)

DG4 START	DG4 STOP	ACB4 CLOSE	ACB4 OPEN	GOV. RAISE	GOV. LOWER	DG4 RUNNING	ACB4 TRBL RESET	DG4 1ST STBY	DG4 2ND STBY	DG4 AUTO STOP	SPARE	AUTO SY	SPARE	DG4 AUTO START	DG4 3RD STBY	I/O NP1W3206T (G4)
(A10)	(A9)	(A8)	(A7)	(A6)	(A5)	(A14)	(A19)	(A18)	(A17)	(A13)	(A20)	(A16)	(A15)	(A12)	(A11)	(6)
10	9	8	7	6	5	14	19	18	17	13	20	16	15	12	11	(A2) 2

6X · 5X · 52CX · 52TX · 65R · 65L · 84X · 86AY

LTX 8 12 (S14-4)

D110 — 1B5 — 88H 54 53 (G41) — 1A5 — D111

1B6 — G4 ACB4(G41) — 111 111 114 112 — 1A6 1A7 — D112 D113 D114 — D116

86AY — 84X — LTX

1B3 ACB CLOSE — 1A4 ACB OPEN — 1B4 GEN RUN
a GL b 3 — a RL b 2 — a WL b 1
1A3 — D115

N — DB 1A G42 (DC24V) — P

1A1~1A10 1B1~1B10 ---- CNP1
2A1~2A8 2B1~1B8 ---- CNP2
3A1~3A6 3B1~3B6 ---- CNP3

LT X — 1A9 — 10 — 11,12

CN1: 1,2 — 3 4 5 1B7 6 1A8 7 1B8 8 9

D100

A120

CN1: 1,2 — 3 4 5 6 7 8 9 10 11,12

YL2 1ST STBY · YL3 2ND STBY · YL10 DG4 AUTO STOP · YL12 AUTO SY · YL11 DG4 AUTO START · RL2 ACB4 TROUBLE RESET · AL2 SPACE HEATER

LAMP TEST — LT — DB 1B G42 (DC24V) — N P

OPERATION MODULE ESM-1101+ESM1103

G4 ACB4 (G41)

614 ACB CLOSE — PTA — 06 05 — STD/INST — 25 15 — LTD — SYSTEM ABNOR — 26 16 — RPT

D101 D102 D103 D104 D105 D106

TB-C14 — D120 D121 D122 D123 D124 D125 D126 D109 D107 D108

30RX (G44)	43RX (G44)	14X (G44)	5EX (G44)	5S (G44)	48X (G44)	"OPEN" 6 5 BCS4(G41)
10 6	11 7	11 7	11 7	11 7	11 7	

TB-C14: 0 4 6 1 7 5 3

2A1 2B1 2A2 2B2 2A3 2B8 — CN4: 20 16 14 19 13 15 17 — 2A4 2B4 2B3

N — CN2: 20 — 17 19 18 9 — LTX 14 — 43AX 13 12 11 10 — 8 16

B20 B17 B19 B18 B9 B14 B13 B12 B11 B10 B8 B16

GAC21 INPUT UNIT "NP1W3206T"
(REFER T0 S14-2)

(6) I/O (G4)

B1 B7 B6 B15 B5 — 1 7 8 15 5

84R BX

P

TO ACB CONT CIR(G41) — 3A2 3B3 3B2 3A1 3B1 — 86AY 43AX 52TX 52CX 52CX
GOV CONT CIR (G41) — 3A4 3B4 3B5 — 65L 65R
SH CIR (G41) — 3A6 3B6 — 88HX

84RBX — 1A10 1B10 — S14-1

TB-C4: 20 19 18 17

88HX 13 — 43AX 14 — 15 16 17 — CN2: 17 — 1 2 3 4 5 6 7 8 9

LT

G42 (DC24V) DB 1B

SH — AL1 — SPACE HEATER SWITCH
RL1 — MANU
MANU — AUTO — YL1 — AUTO
MODE SELECT

ACB TROUBLE RESET — DG4 AUTO STOP — DG4 AUTO START — (SP2) — (SP1)

YL4 3RD STBY · YL5 (SP) · YL13 (SP1) · YL14 (SP2)

N P

OPERATION MODULE ESM-1101+ESM1103

A	B	C	D	E	F	G	H	I

TERASAKI

PANEL D

NO.4 GENERATOR CONTROL CIRCUIT

G42
2–14

START EXECUTE
EM'CY STOP
GEN RUN
READY TO START
COS-L LOCAL
STOP EXECUTE
ENTER
START FAIL

AL3 RL8 GL1 YL15 RL3 YL16 YL17 RL9 RL4 RL6 RL7 RL5

ENTER
LAMP TEST
MODE SELECT MANU
ENG START
ENG STOP

CN1: 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38

OPERATION MODULE ESM-1101+ESM1103

CN1: 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38

43RY 43RY 6X E6X 5X E5X E6X E5X 5X1 14Y 6X1 5X1 R R C C

43RY 14Y 6X1 5X1 E6X E5X P

2A9

14Y 2A10 2B10

CN4: 1,2 8 7 4 5 6 3 11 12

2A5 2B5 2A6 2B6 2A7 2B7 2A8

RELAY BD MODULE ESM-1102

D162 D163 SF4 (S14-4) 9 5

19,18 12 13 16 15 14 17 9 8 TB-C14

D154 D155 D156 D157 D158 D159 D160 D161

30RX 6SX 43RX SF4 (S14-4) 6SX 5SX

D150 D151 D152 D153

P N

S11 (DC24V) DB 42

5 9 6SX 5EX 43RX 14X 5EX

5S 14X

a b G44 S70 G44 S70

TB4

22 24 26 28 30 32

REMOTE & AUTO CONTROL
READY TO START
GEN SAFETY SHUTDOWN
ENGINE RUN
ENG STOP EXECUTE
START FAIL

21 23 25 27 29 31

D164 D165 D166 D167 D168 D169

43RX 30RX 5EX 14X 5S 48X 84X

a b G44 G44 G42 G44 G42 G44 G44 G42 G44 G42 G44 G42 G41 G42 S14-1

PANEL D

NO.4 GENERATOR CONTROL CIRCUIT

G44

2–15

A B C D E F G H I

TERASAKI

NO.4 & NO.3 GEN.AC440V
B BUSBAR
A BUSBAR
NO.2 & NO.1 GEN.AC440V
R
S
T
DE-300B 3P
DE-300B 3P
F500
F501
CPT5
450/220V
100VA
CPT6
450/220V
100VA
F523
F524
S31
S32
S33
S34
S35
S36
S37
S38
BP3
BP6
BP4
BP7
S16
B BUSBAR PRE-TRIP &
EMERG. STOP CIRCUIT
S15
A BUSBAR PRE-TRIP &
EMERG. STOP CIRCUIT
COS-B
S01
S02
S03
S04
S05
S06
B BUSBAR
A BUSBAR
COS-B
PT5
450/220V
60VA
F502
S10
S11
S12
S13
S07
S08
S09
BP2
S14-5 S12
AUTO SYNC. CIRCUIT
MT-1-FA
XDCR-F
TRANSDUCER
(IN :50~70Hz
OUT:4~20mA)
SHIELD WIRE
BF
S14-1
4-20mA
DB
01
S11
DC24V
CPT7
450/220V
60VA×2
F503
S14
S15
S16
S17
S18
S19
BP1
S12
SCHRO.LAMP CIRCUIT
MT-1-VA
XDCR-V
TRANSDUCER
(IN :0~300V
OUT:4~20mA)
SHIELD WIRE
BV
S14-1
4-20mA
F504
S20
B27X
B27XA
S72 G11
G21
G31
G41
S14-3
OUTPUT SETING:
DC25V 40A
F505
S22
S23
S24
F506
S25
S26
S27
SWP1
L1
L2
L3
L+
M
S29
MI0
EARTH LAMP
X1
X3
P
IRM-1
PE
S28
S30
S14-3
IRM-1
ALARM SETTING:1MΩ
PANEL F (BOW THRUSTER PANEL)
S11
DC24V
DB
02
8X2
S14-1
NO.1 GENERATOR
TS
BZ
(S14-4)
BZX
(S14-1)
8X1
(S15)
ETX1
(S16)
ETX2
(2F12)
ETX3
8X3
8X4
TB1
(SC)
B54EX
(SC)
B53EX
(SC)
B53EX
S40
S41
S42
S43
S44
S45
S46
S47
S48
S49
S60
S61
S62
10
11
12
13
27
28
29
SC
SCC
SCO
PANEL J
PANEL C(B)
NO.2 GENERATOR
NO.3 GENERATOR
NO.4 GENERATOR
TB2
TB3
TB4
TB6
(1F13)
ACB5
(1F13)
ACB5
S50
S51
S52
S53
S54
S55
S56
S57
S58
S63
S64
8X3
8X4
S11
S13-2
STB
SPB
PANEL H
PANEL E
PANEL D
PANEL F
G14
ENG CONTROL
CIRCUIT
DB
12
G12
RELAY BD
CIRCUIT
DB
14
G34
ENG CONTROL
CIRCUIT
DB
32
G32
RELAY BD
CIRCUIT
DB
34
G11
DIFFERENTIAL &
PRE-EXCITE CIRCUIT
DB
03
G21
DIFFERENTIAL &
PRE-EXCITE CIRCUIT
DB
04
G31
DIFFERENTIAL &
PRE-EXCITE CIRCUIT
DB
05
G41
DIFFERENTIAL &
PRE-EXCITE CIRCUIT
DB
06
DB12P
DB12N
DB14P
DB14N
DB32P
DB32N
DB34P
DB34N
DB03P
DB03N
DB04P
DB04N
DB05P
DB05N
DB06P
DB06N
F511
F512
F515
F516
F519
F520
F521
F522
F513
F514
F517
F518
F507
F508
F509
F510
DB22P
DB22N
DB24P
DB24N
DB42P
DB42N
DB44P
DB44N
DB01P
DB01N
DB02P
DB02N
DB07P
DB07N
DB08P
DB08N
DB
22
G24
ENG CONTROL
CIRCUIT
DB
24
G22
RELAY BD
CIRCUIT
DB
42
G42
ENG CONTROL
CIRCUIT
DB
44
G44
RELAY BD
CIRCUIT
DB
01
S13-1 S13-2 S11
S14-1 S14-3 S14-4
G11 G21 G31 G41
GAC-21 CIRCUIT
DB
02
S11
INDICATE LAMP
SOURCE
DB
07
S72
NO. 1 GSP DC24V
SOURCE
DB
08
S72
NO. 2 GSP DC24V
SOURCE
D5 40A
P1
TB8
P
N
DC24V SOURCE

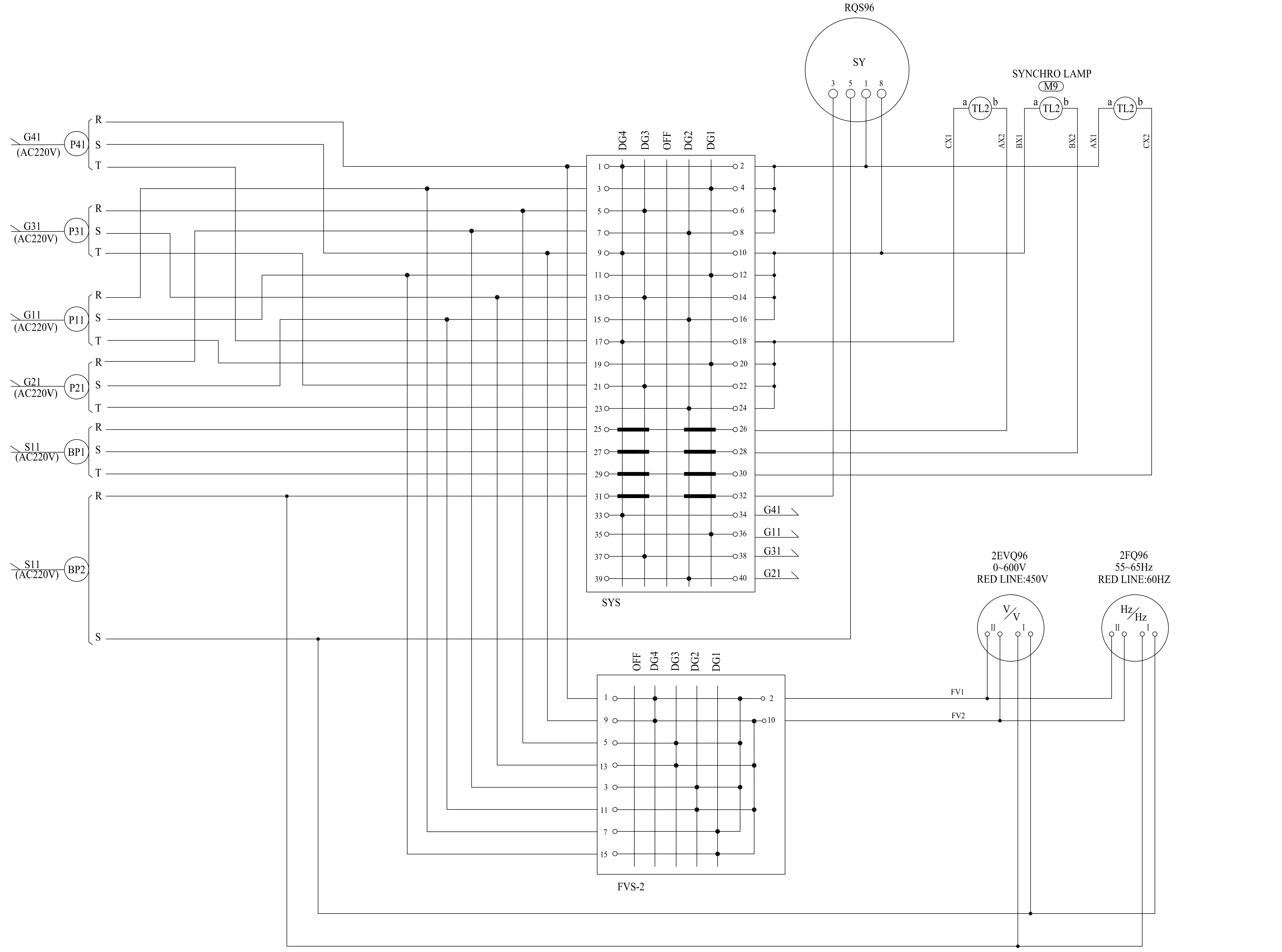
TERASAKI

PANEL G

SOURCE CIRCUIT

S11

2–16



A	B	C	D	E	F	G	H	I

TERASAKI

PANEL G

SYNCHRO. CIRCUIT

S12

2-17

"GAC21"GENERATOR AUTOMATIC CONTROL SYSTEM

(254)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
POWER NP1S-42	CPU NP1PH-16	ANALOG NP1AX08I -MR SEE S14-1	ANALOG NP1AX08I -MR SEE S14-1	I/O NP1W3206T (G1) SEE S14-2	I/O NP1W3206T (G2) SEE S14-2	I/O NP1W3206T (G3) SEE S14-2	I/O NP1W3206T (G4) SEE S14-2	FOR SETTING I/O NP1W3206T	I/O NP1X3206-W (COMMON) SEE S14-3	I/O NP1Y64T09P1 (COMMON) SEE S14-4	I/O NP1Y32T09P1 (COMMON) SEE S14-3
		SCREW	SCREW	CONNECTOR	CONNECTOR	CONNECTOR	CONNECTOR		CONNECTOR	CONNECTOR	CONNECTOR
		IN:8	IN:8	IN:16	IN:16	IN:16	IN:16	IN:16	IN:32		
				OUT:16	OUT:16	OUT:16	OUT:16	OUT:16		OUT:64	OUT:32

+ - FG

P N DB 09 S13-2 DC24V

3 4 1 E 2 (LINE FILTER)

S11 DC24V DB 01 P N

CABLE TYPE: AUX011-401

SETTING DEVICE (HANDY TYPE)

1 2 CNP-A

P N DB 01 S11 DC24V

IN OUT IN OUT IN OUT IN OUT

G1 SECTION (PANEL J)

GAC21 INPUT SIG & OTHER

GAC21 OUTPUT SIG & OTHER

IN OUT

CN2:20P CN3:20P CNP1:20P CNP2:16P

RELAY BD. ESM-1102 (G12)

CN1:40P CNP3:12P CN4:20P

40C

CN1:40P

CN2:20P OPERATION MODULE ESM-1101

ACB CONT GOVERNOR CONT AND SPACE HEATER CIRCUIT

TB-C11

TB-C1 (COMMON)

G2 SECTION (PANEL H)

GAC21 INPUT SIG & OTHER

GAC21 OUTPUT SIG & OTHER

IN OUT

CN2:20P CN3:20P CNP1:20P CNP2:16P

RELAY BD. ESM-1102 (G22)

CN1:40P CNP3:12P CN4:20P

40C

CN1:40P

CN2:20P OPERATION MODULE ESM-1101

ACB CONT GOVERNOR CONT AND SPACE HEATER CIRCUIT

TB-C12

TB-C2 (COMMON)

G3 SECTION (PANEL E)

GAC21 INPUT SIG & OTHER

GAC21 OUTPUT SIG & OTHER

IN OUT

CN2:20P CN3:20P CNP1:20P CNP2:16P

RELAY BD. ESM-1102 (G32)

CN1:40P CNP3:12P CN4:20P

40C

CN1:40P

CN2:20P OPERATION MODULE ESM-1101

ACB CONT GOVERNOR CONT AND SPACE HEATER CIRCUIT

TB-C13

TB-C3 (COMMON)

G4 SECTION (PANEL D)

GAC21 INPUT SIG & OTHER

GAC21 OUTPUT SIG & OTHER

IN OUT

CN2:20P CN3:20P CNP1:20P CNP2:16P

RELAY BD. ESM-1102 (G42)

CN1:40P CNP3:12P CN4:20P

40C

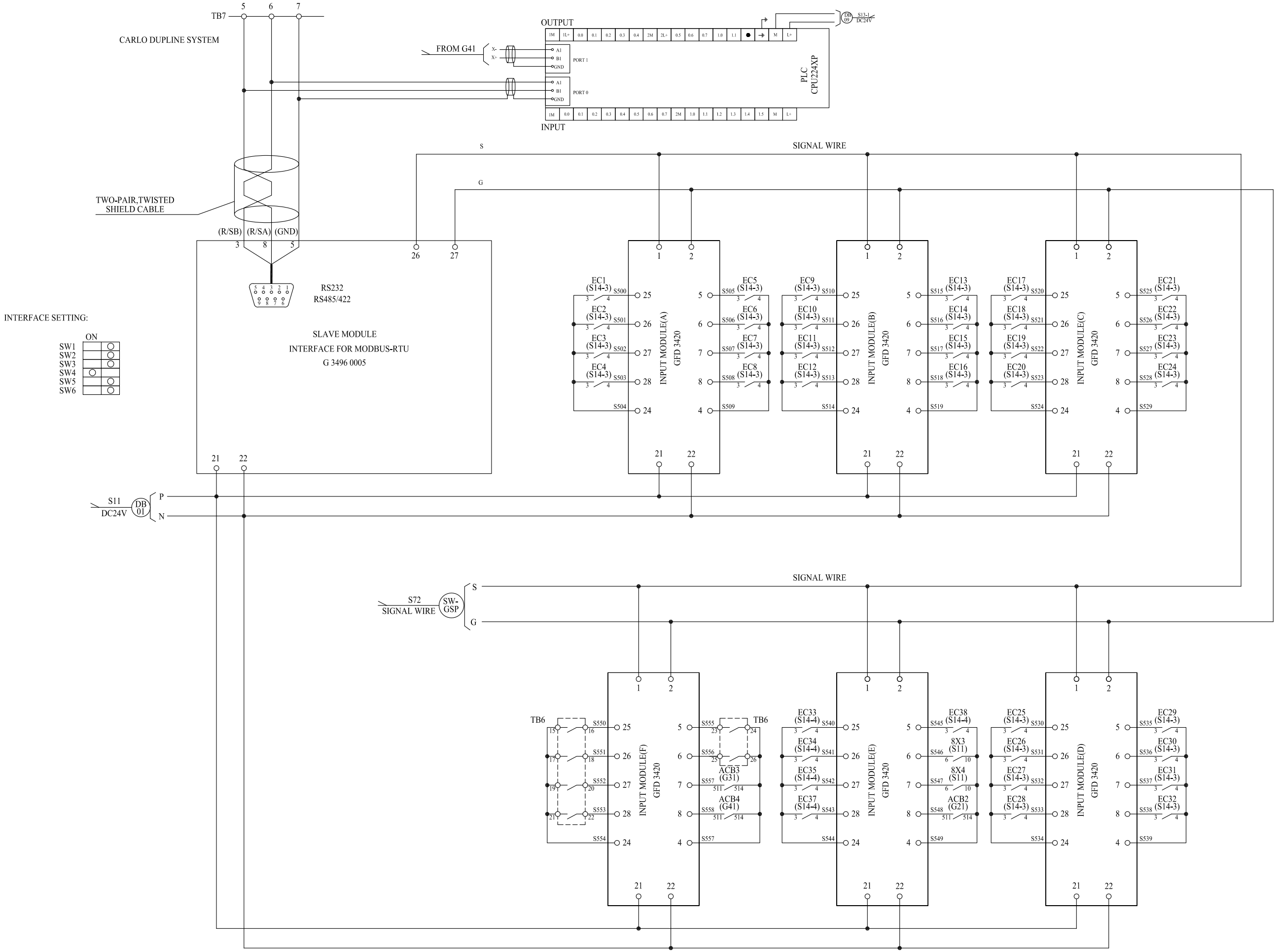
CN1:40P

CN2:20P OPERATION MODULE ESM-1101

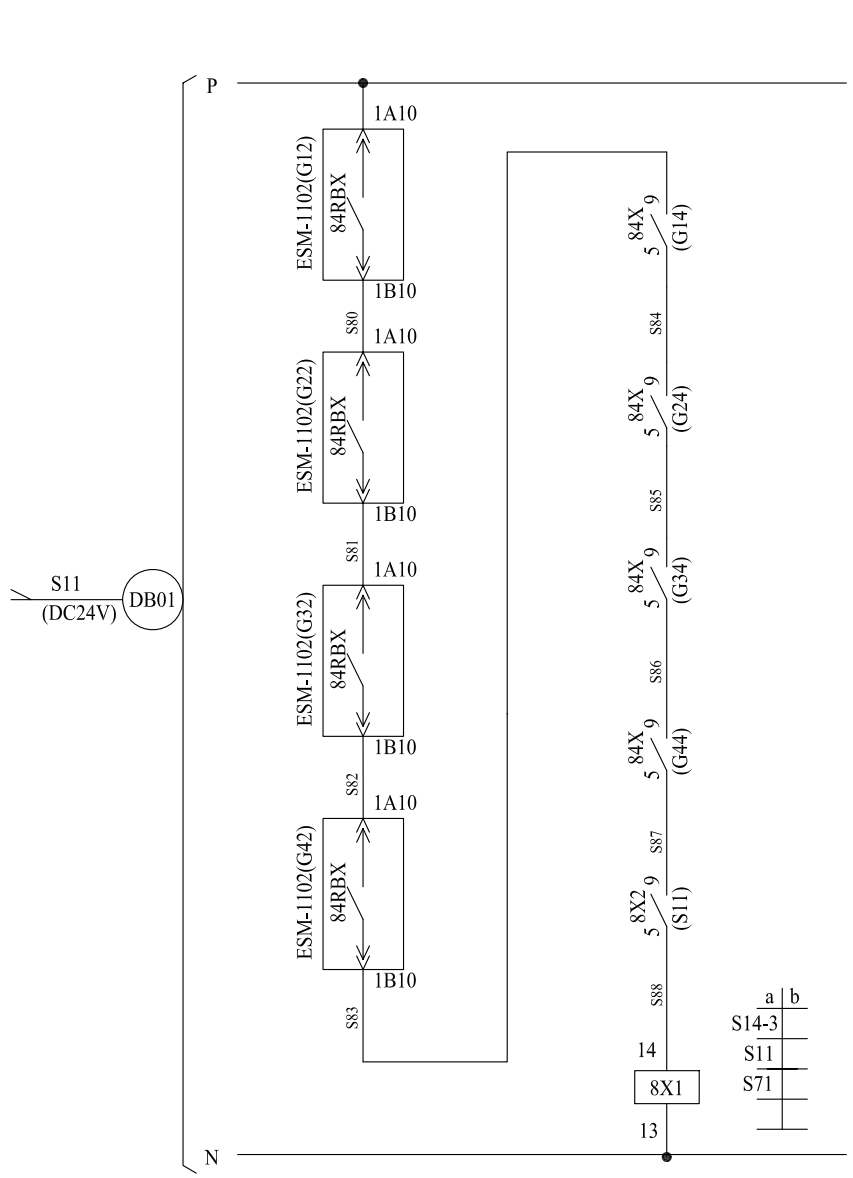
ACB CONT GOVERNOR CONT AND SPACE HEATER CIRCUIT

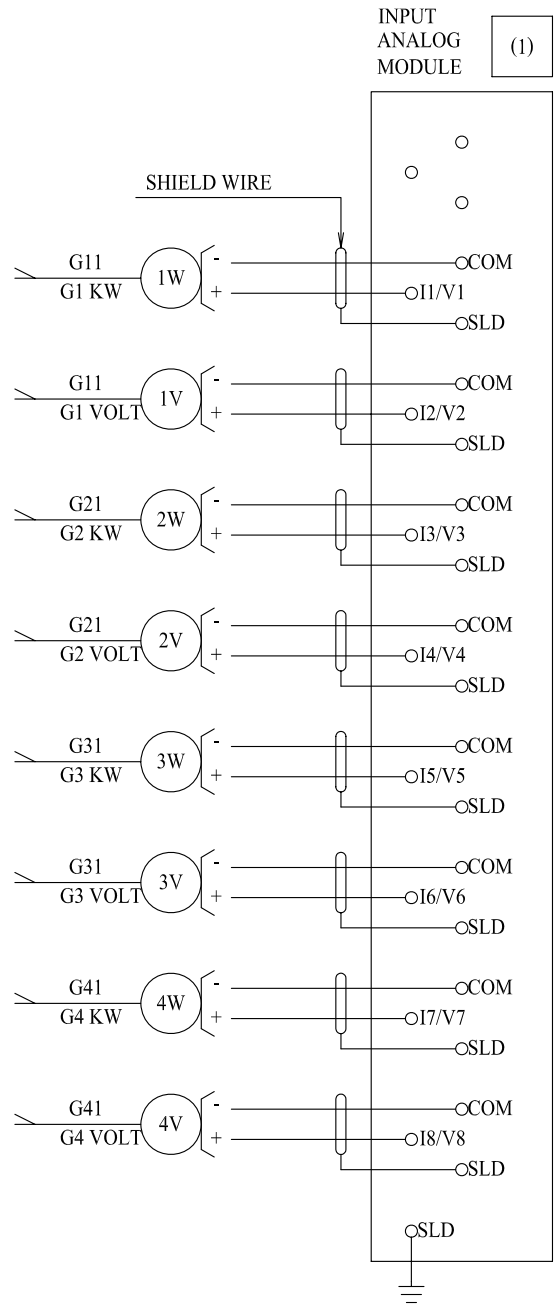
TB-C14

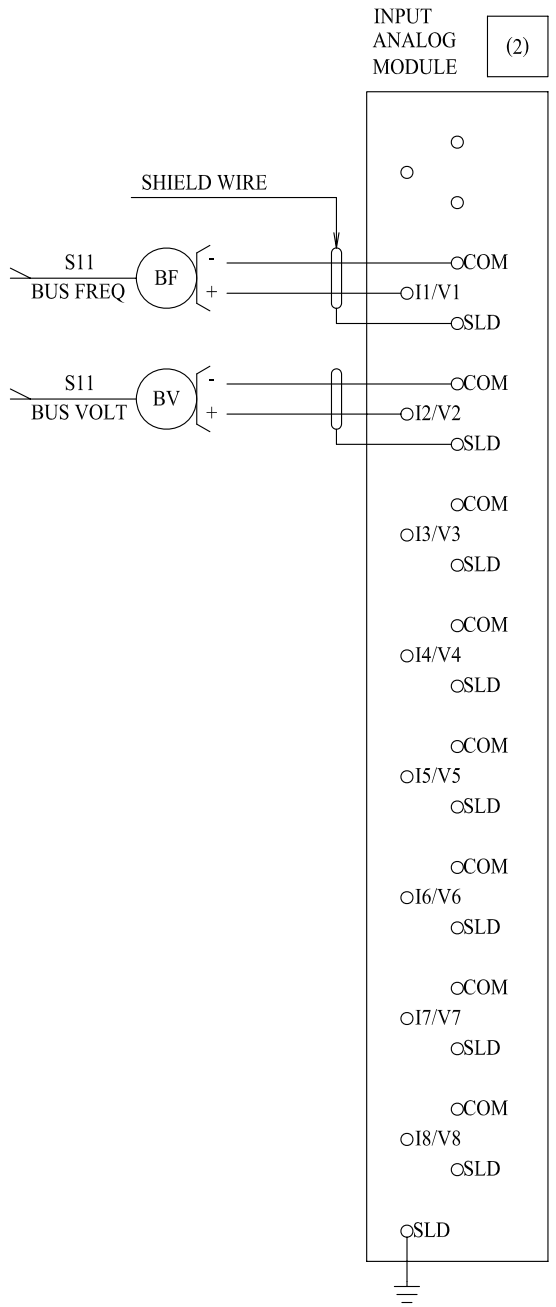
TB-C4 (COMMON)



A	B	C	D	E	F	G	H	I	TERASAKI	PANEL G		
										GAC21 CIRCUIT	S13–2	2–19


P
1A10
ESM-1102(G12)
84RBX
1B10
S80
1A10
ESM-1102(G22)
84RBX
1B10
S81
1A10
ESM-1102(G32)
84RBX
1B10
S82
1A10
ESM-1102(G42)
84RBX
1B10
S83
S11
(DC24V)
DB01
84X 5 9 (G14)
S84
84X 5 9 (G24)
S85
84X 5 9 (G34)
S86
84X 5 9 (G44)
S87
8X2 5 9 (S11)
S88
a b
S14-3
S11
S71
14
8X1
13
N


INPUT
ANALOG
MODULE
(1)
SHIELD WIRE
G11
G1 KW
1W
G11
G1 VOLT
1V
G21
G2 KW
2W
G21
G2 VOLT
2V
G31
G3 KW
3W
G31
G3 VOLT
3V
G41
G4 KW
4W
G41
G4 VOLT
4V
COM
I1/V1
I2/V2
I3/V3
I4/V4
I5/V5
I6/V6
I7/V7
I8/V8
SLD


INPUT
ANALOG
MODULE
(2)
SHIELD WIRE
S11
BUS FREQ
BF
S11
BUS VOLT
BV
COM
I1/V1
I2/V2
I3/V3
I4/V4
I5/V5
I6/V6
I7/V7
I8/V8
SLD

I/O (G1)	BIT No.	CONNECT PIN No. GAC21		BIT No.	(3)
USE(IN)		I/O(G1)			USE(OUT)
ACB1 CLOSE	0	B20	A20	0	SPARE
ACB1 STD/INST/LTD	1	B19	A19	1	ACB1 TRBL RESET
ACB1 SYS ABNOR	2	B18	A18	2	DG1 1ST STANDBY
ACB1 PREF TRIP	3	B17	A17	3	DG1 2ND STANDBY
ACB1 MANU OPEN	4	B16	A16	4	AUTO SY
DG1 AUTO START	5	B15	A15	5	SPARE
LAMP TEST	6	B14	A14	6	DG1 RUNNING
DG1 "AUTO" MODE	7	B13	A13	7	DG1 AUTO STOP
DG1 READY TO START	8	B12	A12	8	DG1 AUTO START
DG1 CONT. REMOTE	9	B11	A11	9	DG1 3RD STANDBY
DG1 RUN	10	B10	A10	10	DG1 START
ACB1 REVERSE POWER TRIP	11	B9	A9	11	DG1 STOP
ENG.1 STOP EXECUTE	12	B8	A8	12	ACB1 CLOSE
DG1 ACB TRBL RESET	13	B7	A7	13	ACB1 OPEN
DG1 AUTO STOP	14	B6	A6	14	GOV.RAISE
DG1 START FAIL	15	B5	A5	15	GOV. LOWER
EMPTY	-	B4	A4	-	EMPTY
EMPTY	-	B3	A3	-	EMPTY
EMPTY	-	B2	A2	-	SOURCE(P)
SOURCE(P)	-	B1	A1	-	SOURCE(N)

DETAILED CONNECTION FIGURE BE TO REFER TO G12

I/O (G2)	BIT No.	CONNECT PIN No. GAC21		BIT No.	(4)
USE(IN)		I/O(G2)			USE(OUT)
ACB2 CLOSE	0	B20	A20	0	SPARE
ACB2 STD/INST/LTD	1	B19	A19	1	ACB2 TRBL RESET
ACB2 SYS ABNOR	2	B18	A18	2	DG2 1ST STANDBY
ACB2 PREF TRIP	3	B17	A17	3	DG2 2ND STANDBY
ACB2 MANU OPEN	4	B16	A16	4	AUTO SY
DG2 AUTO START	5	B15	A15	5	SPARE
LAMP TEST	6	B14	A14	6	DG2 RUNNING
DG2 "AUTO" MODE	7	B13	A13	7	DG2 AUTO STOP
DG2 READY TO START	8	B12	A12	8	DG2 AUTO START
DG2 CONT. REMOTE	9	B11	A11	9	DG2 3RD STANDBY
DG2 RUN	10	B10	A10	10	DG2 START
ACB2 REVERSE POWER TRIP	11	B9	A9	11	DG2 STOP
ENG.2 STOP EXECUTE	12	B8	A8	12	ACB2 CLOSE
DG2 ACB TRBL RESET	13	B7	A7	13	ACB2 OPEN
DG2 AUTO STOP	14	B6	A6	14	GOV.RAISE
DG2 START FAIL	15	B5	A5	15	GOV. LOWER
EMPTY	-	B4	A4	-	EMPTY
EMPTY	-	B3	A3	-	EMPTY
EMPTY	-	B2	A2	-	SOURCE(P)
SOURCE(P)	-	B1	A1	-	SOURCE(N)

DETAILED CONNECTION FIGURE BE TO REFER TO G22

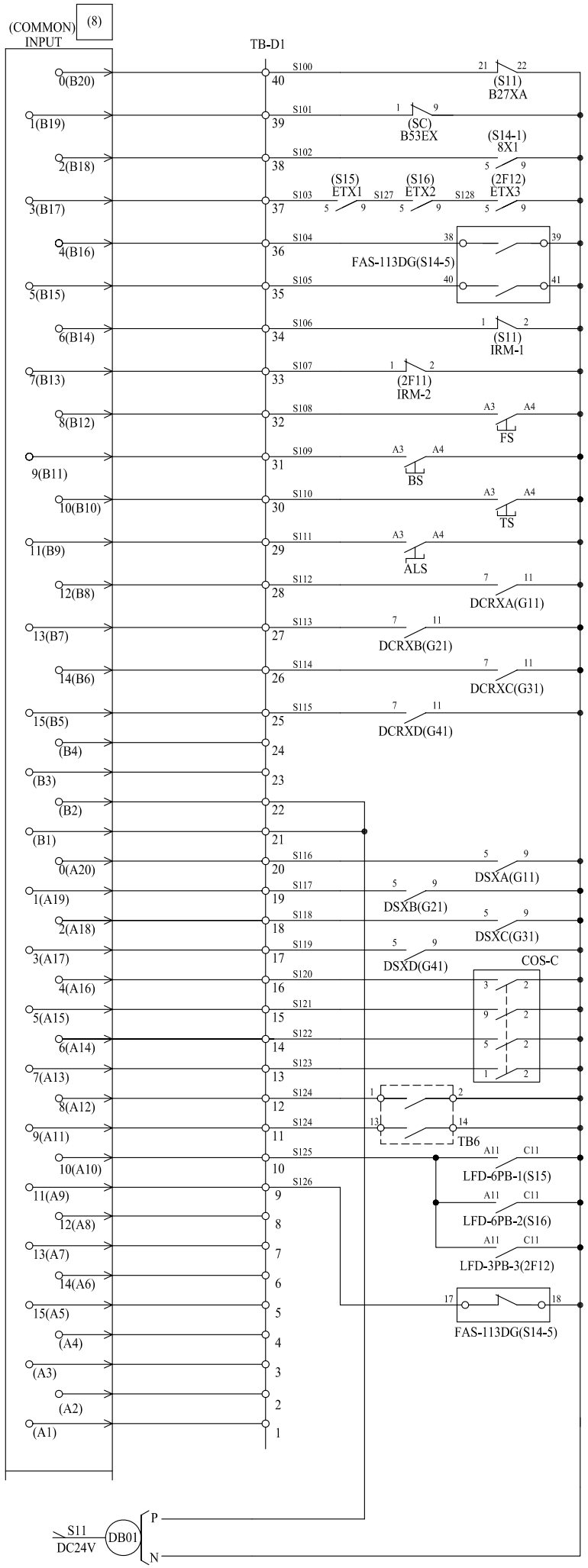
I/O (G3)	BIT No.	CONNECT PIN No. GAC21		BIT No.	(5)
USE(IN)		I/O(G3)			USE(OUT)
ACB3 CLOSE	0	B20	A20	0	SPARE
ACB3 STD/INST/LTD	1	B19	A19	1	ACB3 TRBL RESET
ACB3 SYS ABNOR	2	B18	A18	2	DG3 1ST STANDBY
ACB3 PREF TRIP	3	B17	A17	3	DG3 2ND STANDBY
ACB3 MANU OPEN	4	B16	A16	4	AUTO SY
DG3 AUTO START	5	B15	A15	5	SPARE
LAMP TEST	6	B14	A14	6	DG3 RUNNING
DG3 "AUTO" MODE	7	B13	A13	7	DG3 AUTO STOP
DG3 READY TO START	8	B12	A12	8	DG3 AUTO START
DG3 CONT. REMOTE	9	B11	A11	9	DG3 3RD STANDBY
DG3 RUN	10	B10	A10	10	DG3 START
ACB3 REVERSE POWER TRIP	11	B9	A9	11	DG3 STOP
ENG.3 STOP EXECUTE	12	B8	A8	12	ACB3 CLOSE
DG3 ACB TRBL RESET	13	B7	A7	13	ACB3 OPEN
DG3 AUTO STOP	14	B6	A6	14	GOV.RAISE
DG3 START FAIL	15	B5	A5	15	GOV. LOWER
EMPTY	-	B4	A4	-	EMPTY
EMPTY	-	B3	A3	-	EMPTY
EMPTY	-	B2	A2	-	SOURCE(P)
SOURCE(P)	-	B1	A1	-	SOURCE(N)

DETAILED CONNECTION FIGURE BE TO REFER TO G32

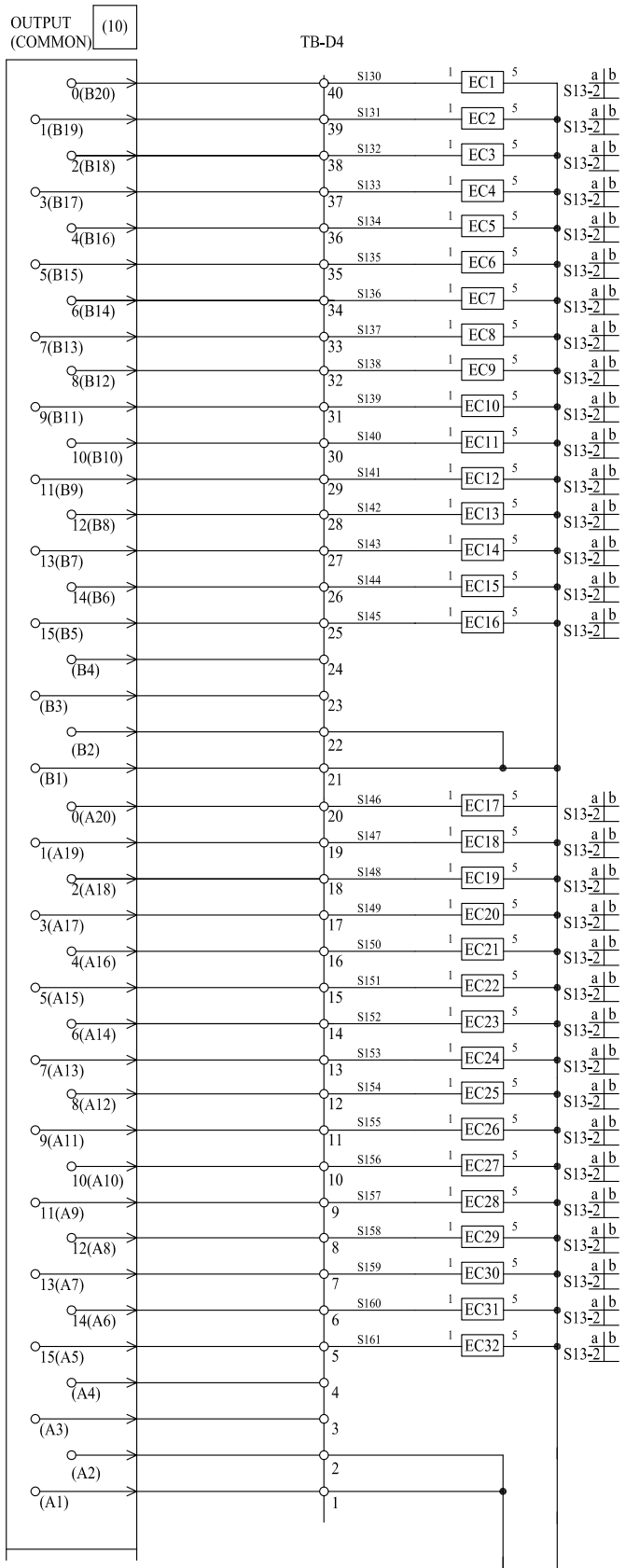
I/O (G4)	BIT No.	CONNECT PIN No. GAC21		BIT No.	(6)
USE(IN)		I/O(G4)			USE(OUT)
ACB4 CLOSE	0	B20	A20	0	SPARE
ACB4 STD/INST/LTD	1	B19	A19	1	ACB4 TRBL RESET
ACB4 SYS ABNOR	2	B18	A18	2	DG4 1ST STANDBY
ACB4 PREF TRIP	3	B17	A17	3	DG4 2ND STANDBY
ACB4 MANU OPEN	4	B16	A16	4	AUTO SY
DG4 AUTO START	5	B15	A15	5	SPARE
LAMP TEST	6	B14	A14	6	DG4 RUNNING
DG4 "AUTO" MODE	7	B13	A13	7	DG4 AUTO STOP
DG4 READY TO START	8	B12	A12	8	DG4 AUTO START
DG4 CONT. REMOTE	9	B11	A11	9	DG4 3RD STANDBY
DG4 RUN	10	B10	A10	10	DG4 START
ACB4 REVERSE POWER TRIP	11	B9	A9	11	DG4 STOP
ENG.4 STOP EXECUTE	12	B8	A8	12	ACB4 CLOSE
DG4 ACB TRBL RESET	13	B7	A7	13	ACB4 OPEN
DG4 AUTO STOP	14	B6	A6	14	GOV.RAISE
DG4 START FAIL	15	B5	A5	15	GOV. LOWER
EMPTY	-	B4	A4	-	EMPTY
EMPTY	-	B3	A3	-	EMPTY
EMPTY	-	B2	A2	-	SOURCE(P)
SOURCE(P)	-	B1	A1	-	SOURCE(N)

DETAILED CONNECTION FIGURE BE TO REFER TO G42

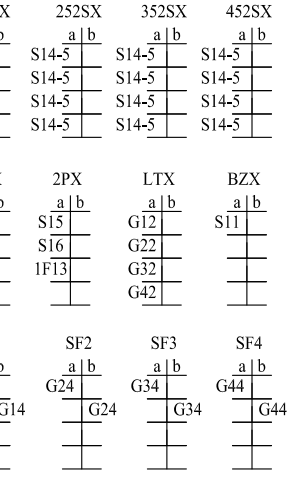
I/O (COMMON)	BIT No.	CONNECT PIN No. GAC21		BIT No.	(8)
BUS ALIVE	0	B20	A20	0	DG1 DIFFERENTIAL CONTROL SOURCE FAIL
SHORE MCCB CLOSE	1	B19	A19	1	DG2 DIFFERENTIAL CONTROL SOURCE FAIL
DC24V SOURCE NOR	2	B18	A18	2	DG3 DIFFERENTIAL CONTROL SOURCE FAIL
EM'CY STOP & PRE-TRIP SOURCE	3	B17	A17	3	DG4 DIFFERENTIAL CONTROL SOURCE FAIL
GOV RAISE SIGNAL	4	B16	A16	4	GEN STANDBY SELECT-"DG1"
GOV LOW SIGNAL	5	B15	A15	5	GEN STANDBY SELECT-"DG2"
MSB AC440V LOW INSUL.	6	B14	A14	6	GEN STANDBY SELECT-"DG3"
MSB AC220V LOW INSUL.	7	B13	A13	7	GEN STANDBY SELECT-"DG4"
FLICK STOP	8	B12	A12	8	BOW THRUSTER START REQUEST
BUZZER STOP	9	B11	A11	9	ESB COMMON ALARM
LAMP TEST	10	B10	A10	10	MSB LINE FAULT DETECTOR ALARM
AUTO LIGHT LOAD SHIFT	11	B9	A9	11	SYNCHRONIZER FAIL
DG1 DIFFERENTIAL ALARM	12	B8	A8	12	SPARE
DG2 DIFFERENTIAL ALARM	13	B7	A7	13	SPARE
DG3 DIFFERENTIAL ALARM	14	B6	A6	14	SPARE
DG4 DIFFERENTIAL ALARM	15	B5	A5	15	SPARE
EMPTY	-	B4	A4	-	EMPTY
EMPTY	-	B3	A3	-	EMPTY
SOURCE(C0)	-	B2	A2	-	EMPTY
SOURCE(C0)	-	B1	A1	-	EMPTY

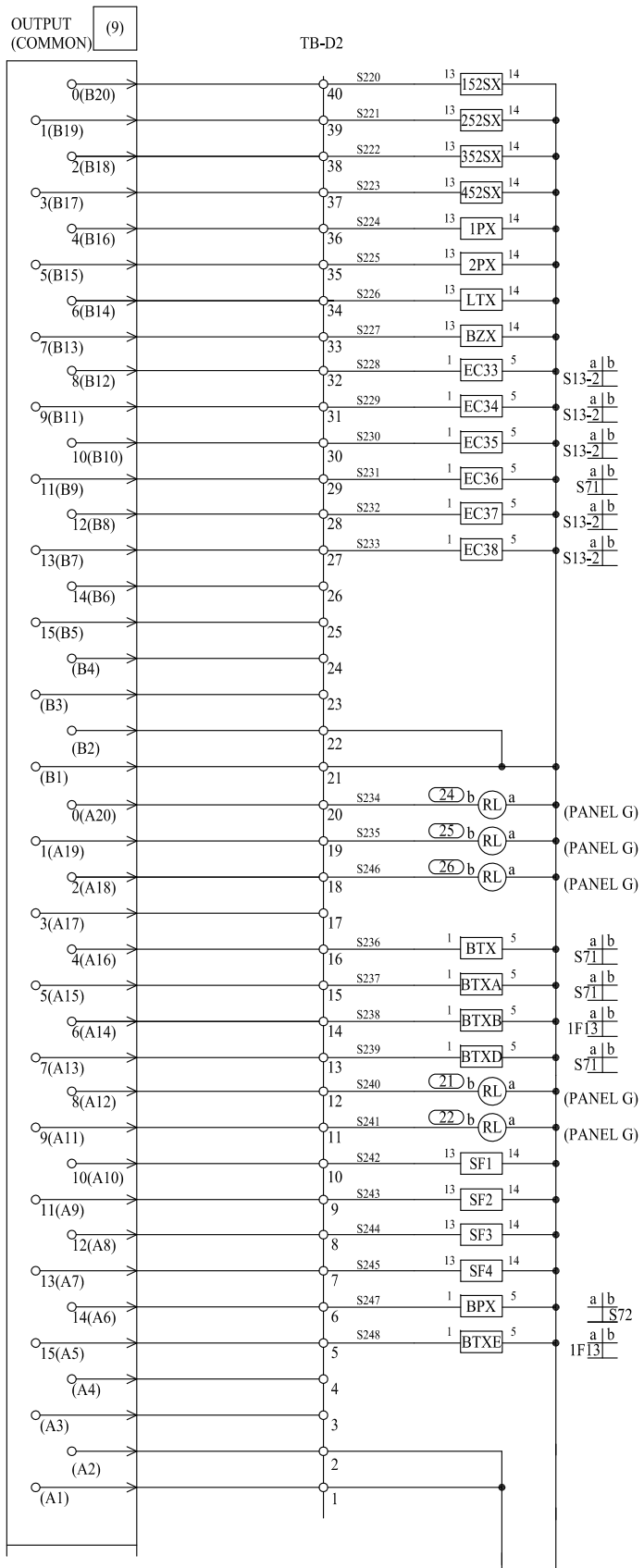


I/O (COMMON)	BIT No.	CONNECT PIN No. GAC21		BIT No.	(10)
ACB1 ABNOR. TRIP	0	B20	A20	0	DG3 DIFFERENTIAL ALARM
ACB1 NON CLOSE	1	B19	A19	1	DG3 DIFFERENTIAL CONTROL SOURCE FAIL
ACB1 REVERSE POWER TRIP	2	B18	A18	2	ACB4 ABNOR. TRIP
DG1 START FAIL	3	B17	A17	3	ACB4 NON CLOSE
DG1 DIFFERENTIAL ALARM	4	B16	A16	4	ACB4 REVERSE POWER TRIP
DG1 DIFFERENTIAL CONTROL SOURCE FAIL	5	B15	A15	5	DG4 START FAIL
ACB2 ABNOR. TRIP	6	B14	A14	6	DG4 DIFFERENTIAL ALARM
ACB2 NON CLOSE	7	B13	A13	7	DG4 DIFFERENTIAL CONTROL SOURCE FAIL
ACB2 REVERSE POWER TRIP	8	B12	A12	8	EM'CY STOP & PRE-TRIP SOURCE FAIL
DG2 START FAIL	9	B11	A11	9	PRE-TRIP 1ST
DG2 DIFFERENTIAL ALARM	10	B10	A10	10	PRE-TRIP 2ND
DG2 DIFFERENTIAL CONTROL SOURCE FAIL	11	B9	A9	11	BUSBAR VOLT.HIGH ALARM
ACB3 ABNOR. TRIP	12	B8	A8	12	BUSBAR VOLT.LOW ALARM
ACB3 NON CLOSE	13	B7	A7	13	BUSBAR FREQ.HIGH ALARM
ACB3 REVERSE POWER TRIP	14	B6	A6	14	BUSBAR FREQ.LOW ALARM
DG3 START FAIL	15	B5	A5	15	AUTO SYNCHRO FAIL
EMPTY	-	B4	A4	-	EMPTY
EMPTY	-	B3	A3	-	EMPTY
SOURCE(P0)	-	B2	A2	-	SOURCE(M0)
SOURCE(P0)	-	B1	A1	-	SOURCE(M0)

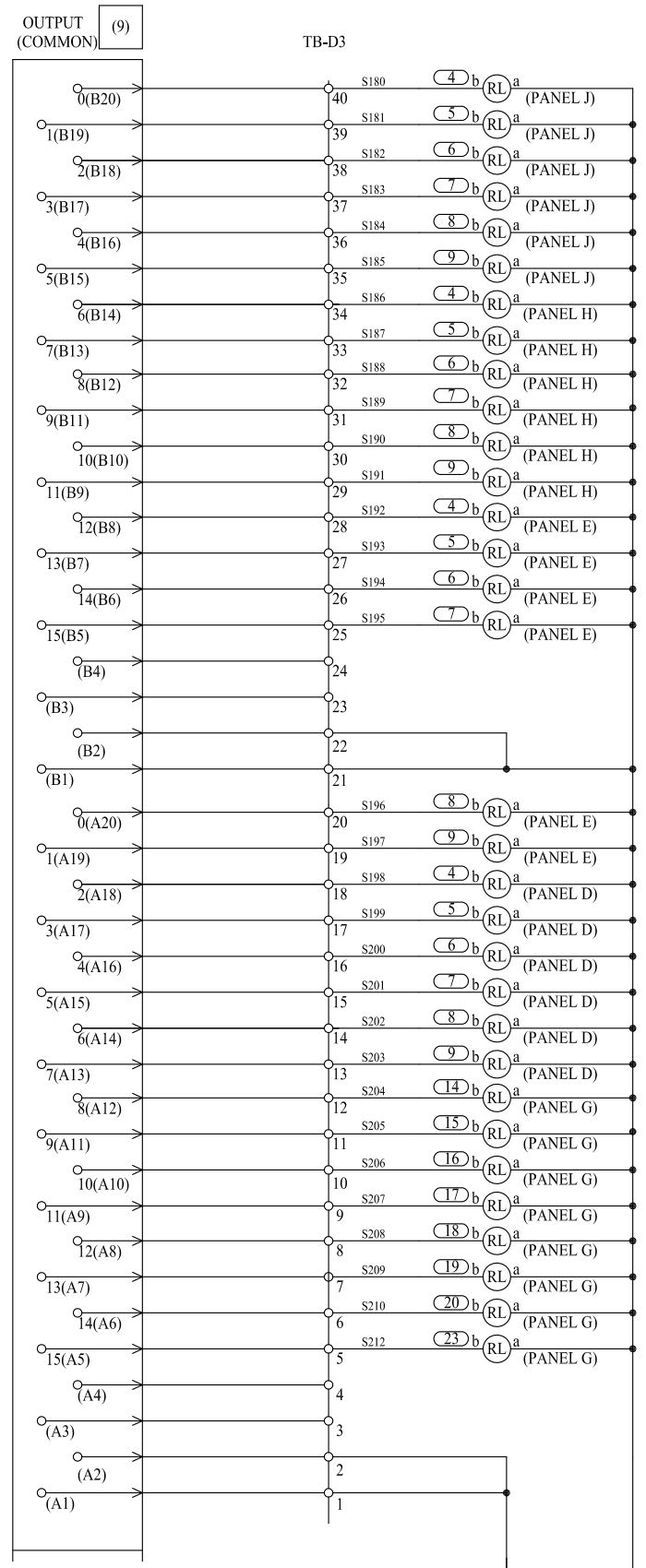


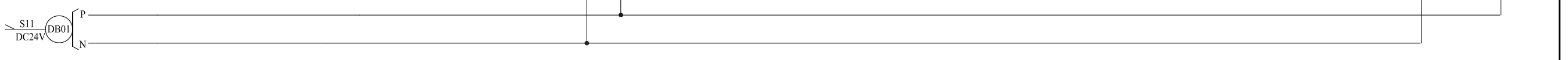
I/O (COMMON)	BIT No.	CONNECT PIN No. GAC21		BIT No.	(9)
G1 AUTO SY START	0	1B20	1A20	0	ESB COMMON ALARM
G2 AUTO SY START	1	1B19	1A19	1	MSB LINE FAULT DETECTOR ALARM
G3 AUTO SY START	2	1B18	1A18	2	SYNCHRONIZER FAIL
G4 AUTO SY START	3	1B17	1A17	3	SPARE
PRE TRIP 1ST	4	1B16	1A16	4	BOW THRUSTER START ALLOW
PRE TRIP 2ND	5	1B15	1A15	5	BOW THRUSTER REQUEST STANDBY GEN. START
LAMP TEST	6	1B14	1A14	6	BOW THRUSTER START INTERLOCK
BUZZER	7	1B13	1A13	7	BT TRANS. SYSTEM START
MSB AC440V LOW INSUL.	8	1B12	1A12	8	MSB AC440V LOW INSUL.
MSB AC220V LOW INSUL.	9	1B11	1A11	9	MSB AC220V LOW INSUL.
GAC21 BATT. LOW	10	1B10	1A10	10	DG1 START FAIL
GAC21 SYSTEM ABNOR.	11	1B9	1A9	11	DG2 START FAIL
ESB COMMON ALARM	12	1B8	1A8	12	DG3 START FAIL
MSB LINE FAULT DETECTOR ALARM	13	1B7	1A7	13	DG4 START FAIL
SPARE	14	1B6	1A6	14	BUSBAR POWER ALIVE
SPARE	15	1B5	1A5	15	BT ACB CLOSE
EMPTY	-	1B4	1A4	-	EMPTY
EMPTY	-	1B3	1A3	-	EMPTY
SOURCE(P0)	-	1B2	1A2	-	SOURCE(M0)
SOURCE(P0)	-	1B1	1A1	-	SOURCE(M0)



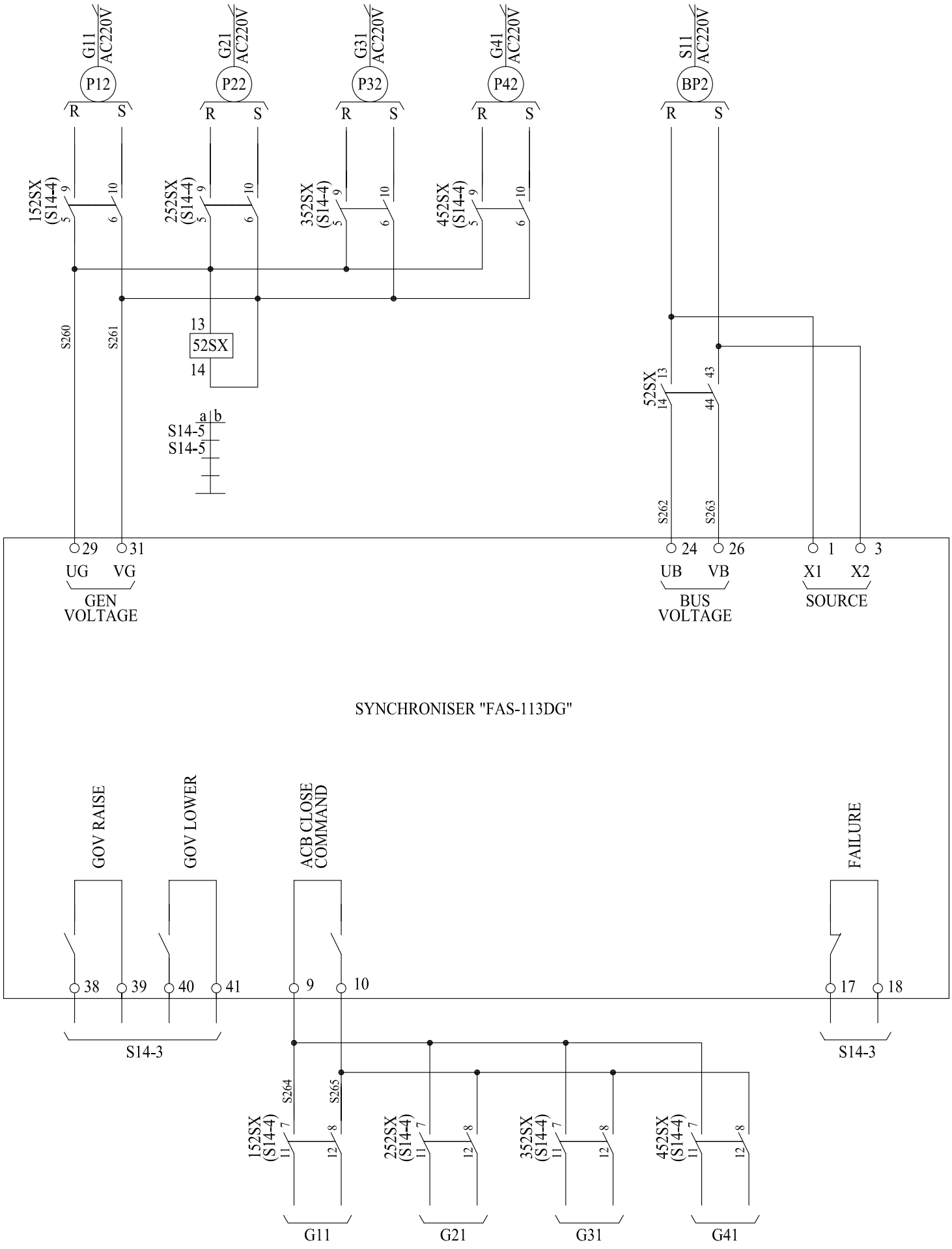


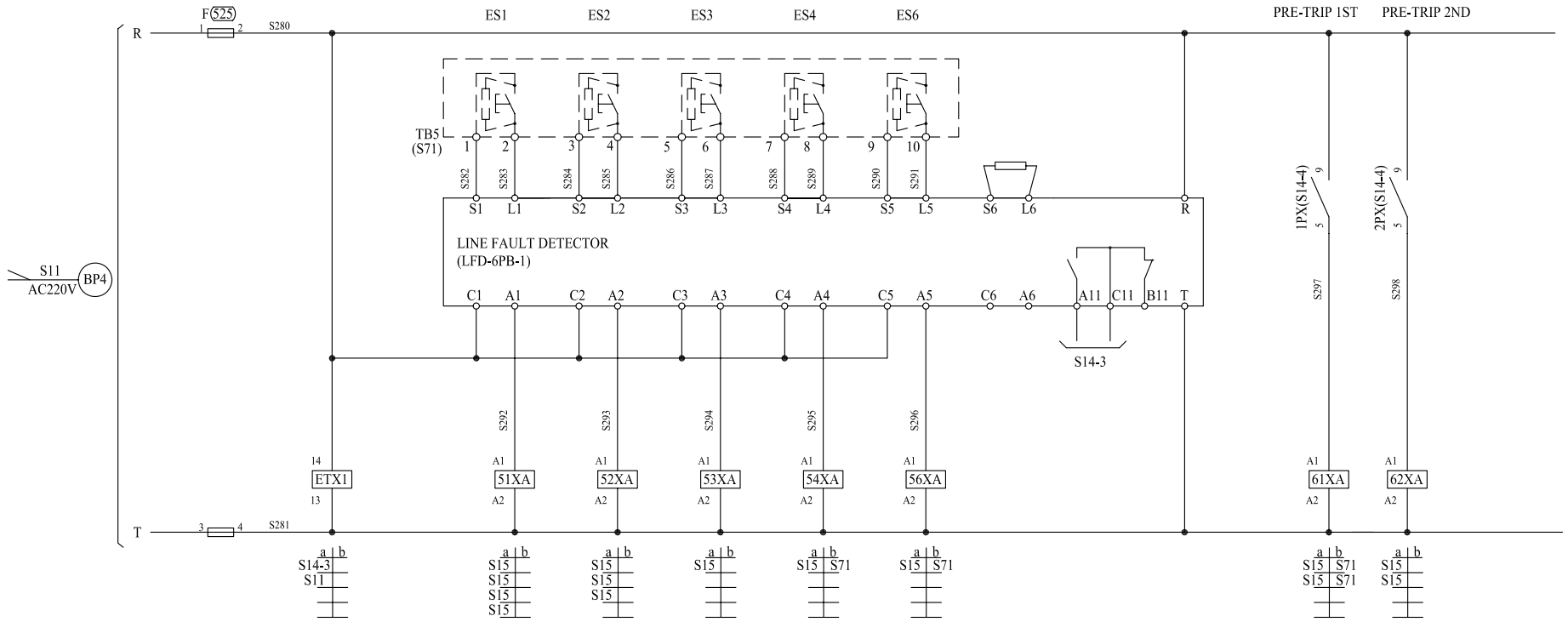
I/O (COMMON)	BIT No.	CONNECT PIN No. GAC21		BIT No.	(9)
ACB1 ABNOR. TRIP	0	2B20	2A20	0	DG3 DIFFERENTIAL ALARM
ACB1 NON CLOSE	1	2B19	2A19	1	DG3 DIFFERENTIAL CONTROL SOURCE FAIL
ACB1 REVERSE POWER TRIP	2	2B18	2A18	2	ACB4 ABNOR. TRIP
DG1 START FAIL	3	2B17	2A17	3	ACB4 NON CLOSE
DG1 DIFFERENTIAL ALARM	4	2B16	2A16	4	ACB4 REVERSE POWER TRIP
DG1 DIFFERENTIAL CONTROL SOURCE FAIL	5	2B15	2A15	5	DG4 START FAIL
ACB2 ABNOR. TRIP	6	2B14	2A14	6	DG4 DIFFERENTIAL ALARM
ACB2 NON CLOSE	7	2B13	2A13	7	DG4 DIFFERENTIAL CONTROL SOURCE FAIL
ACB2 REVERSE POWER TRIP	8	2B12	2A12	8	EM'CY STOP & PRE-TRIP SOURCE FAIL
DG2 START FAIL	9	2B11	2A11	9	PRE-TRIP 1ST
DG2 DIFFERENTIAL ALARM	10	2B10	2A10	10	PRE-TRIP 2ND
DG2 DIFFERENTIAL CONTROL SOURCE FAIL	11	2B9	2A9	11	BUSBAR VOLT.HIGH ALARM
ACB3 ABNOR. TRIP	12	2B8	2A8	12	BUSBAR VOLT.LOW ALARM
ACB3 NON CLOSE	13	2B7	2A7	13	BUSBAR FREQ.HIGH ALARM
ACB3 REVERSE POWER TRIP	14	2B6	2A6	14	BUSBAR FREQ.LOW ALARM
DG3 START FAIL	15	2B5	2A5	15	AUTO SYNCHRO FAIL
EMPTY	-	2B4	2A4	-	EMPTY
EMPTY	-	2B3	2A3	-	EMPTY
SOURCE(P0)	-	2B2	2A2	-	SOURCE(M0)
SOURCE(P0)	-	2B1	2A1	-	SOURCE(M0)

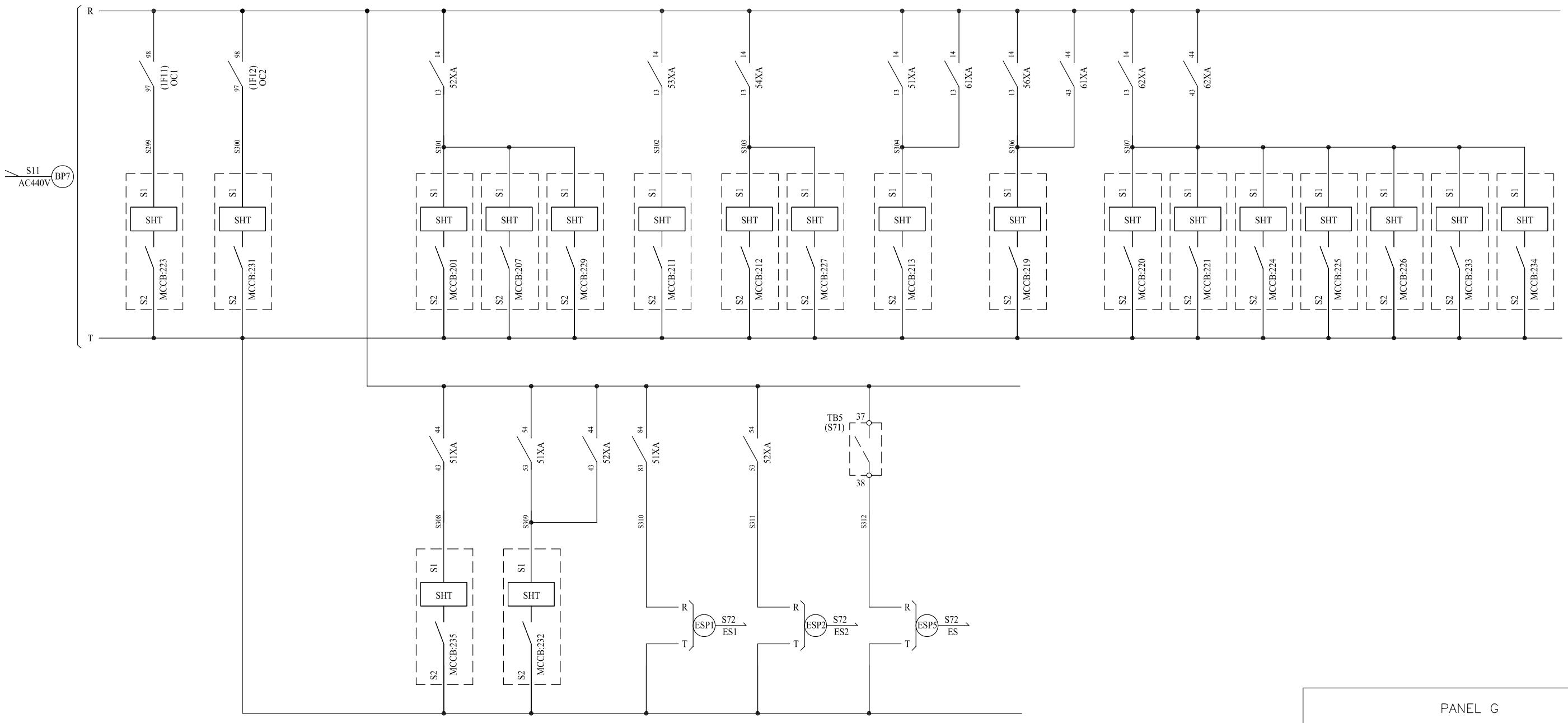




									TERASAKI	PANEL G	
A	B	C	D	E	F	G	H	I		GAC21 CIRCUIT	S14-4 2-23


G11 AC220V
P12
R S
G21 AC220V
P22
R S
G31 AC220V
P32
R S
G41 AC220V
P42
R S
S11 AC220V
BP2
R S
152SX (S14-4)
252SX (S14-4)
352SX (S14-4)
452SX (S14-4)
5 6 9 10
S260
S261
13
52SX
14
a b
S14-5
S14-5
52SX
13 14 43 44
S262
S263
29 31
UG VG
GEN VOLTAGE
24 26
UB VB
BUS VOLTAGE
1 3
X1 X2
SOURCE
SYNCHRONISER "FAS-113DG"
GOV RAISE
GOV LOWER
ACB CLOSE COMMAND
FAILURE
38 39 40 41
9 10
17 18
S14-3
S14-3
S264
S265
152SX (S14-4)
252SX (S14-4)
352SX (S14-4)
452SX (S14-4)
7 8 11 12
G11
G21
G31
G41



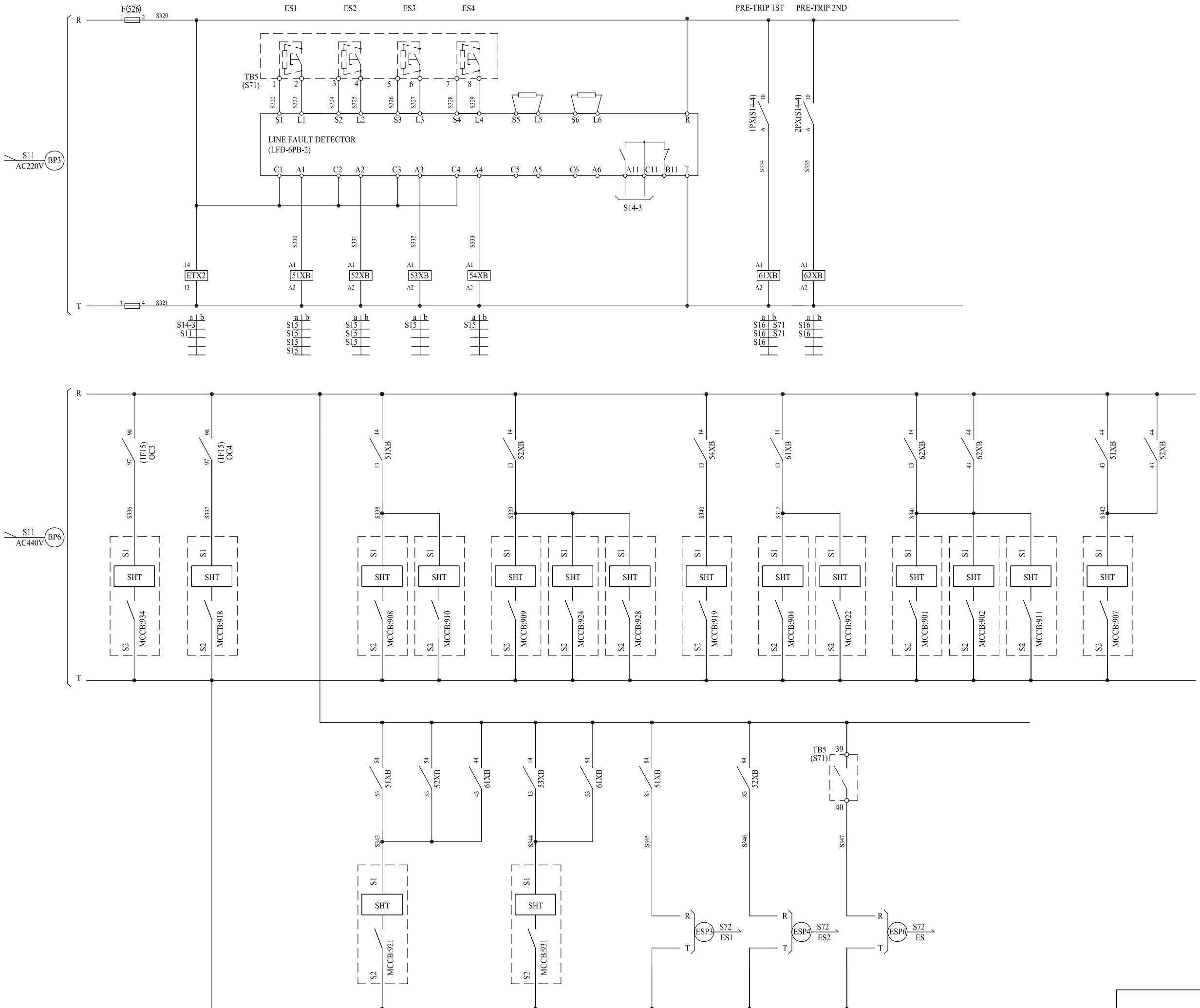


PANEL G

PRE-TRIP & EMERG. STOP CIRCUIT

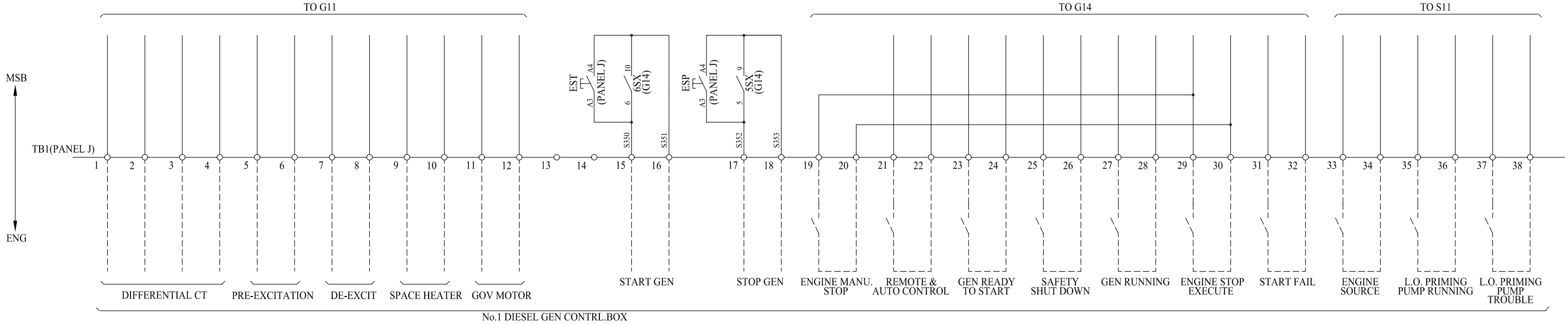
S15

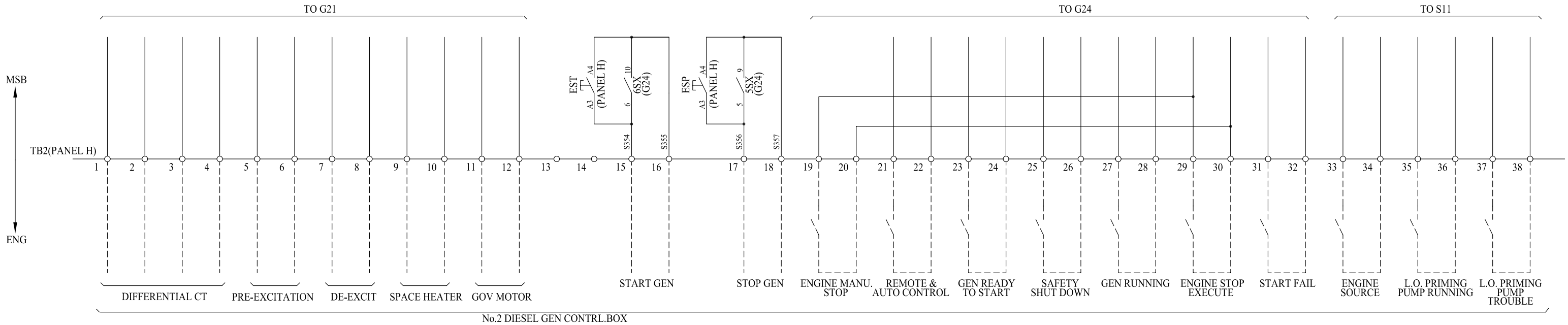
2-25

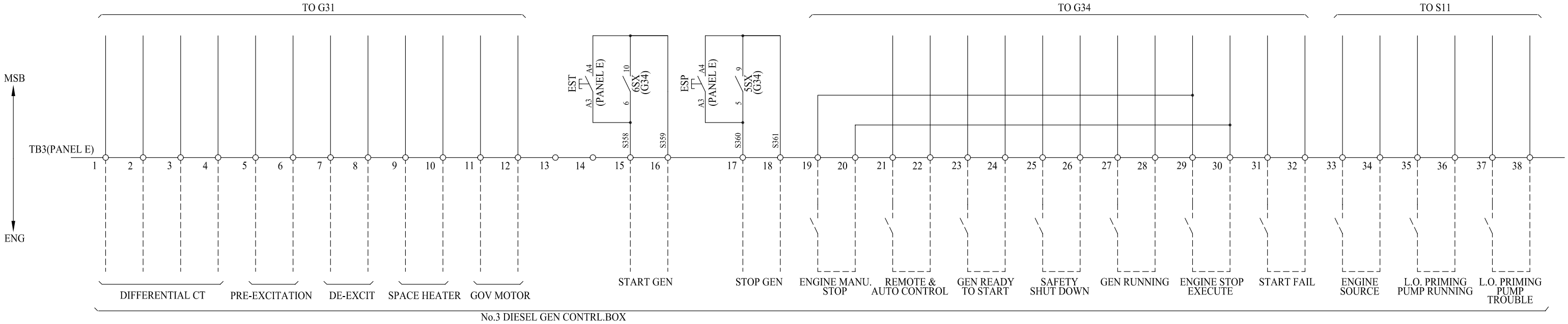


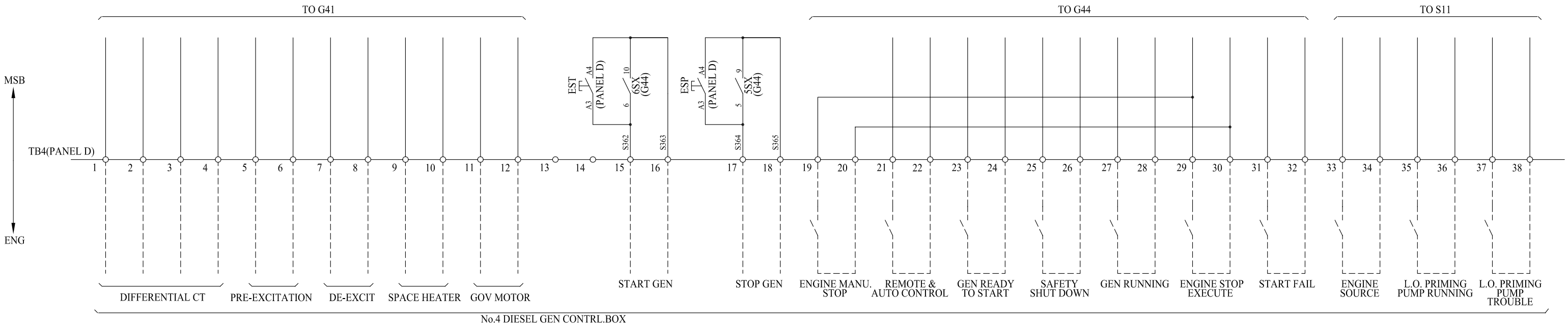
A	B	C	D	E	F	G	H	I	TERASAKI	PANEL G
										PRE–TRIP & EMERG. STOP CIRCUIT

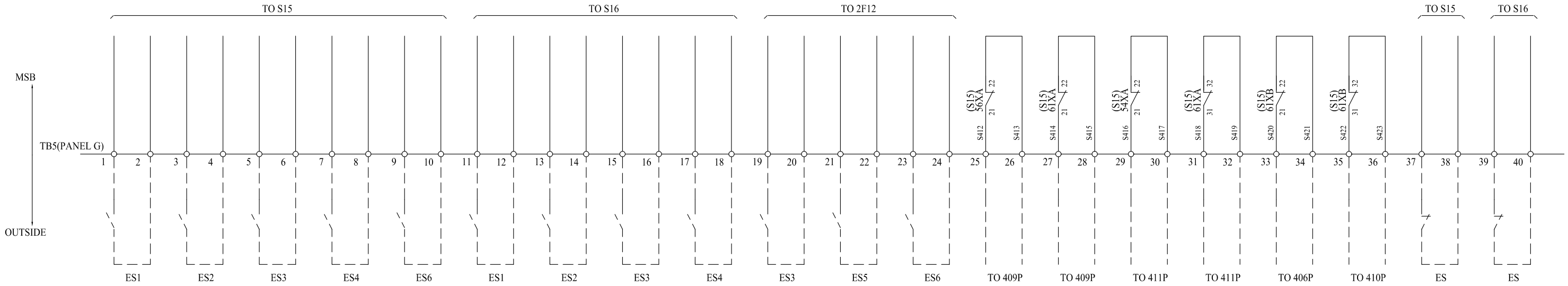
S16
2–26

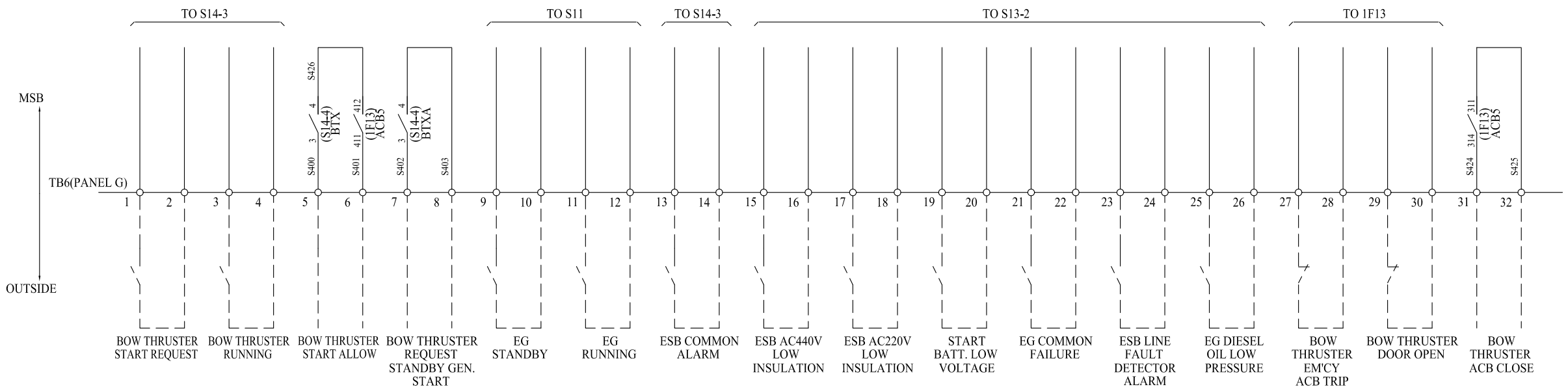

TO G11
TO G14
TO S11
MSB
ENG
TB1(PANEL J)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38
EST
A4
A3
(PANEL J)
10
6
6SX
(G14)
S350
S351
ESP
A4
A3
(PANEL J)
9
5
5SX
(G14)
S352
S353
DIFFERENTIAL CT
PRE-EXCITATION
DE-EXCIT
SPACE HEATER
GOV MOTOR
START GEN
STOP GEN
ENGINE MANU. STOP
REMOTE & AUTO CONTROL
GEN READY TO START
SAFETY SHUT DOWN
GEN RUNNING
ENGINE STOP EXECUTE
START FAIL
ENGINE SOURCE
L.O. PRIMING PUMP RUNNING
L.O. PRIMING PUMP TROUBLE
No.1 DIESEL GEN CONTRL.BOX

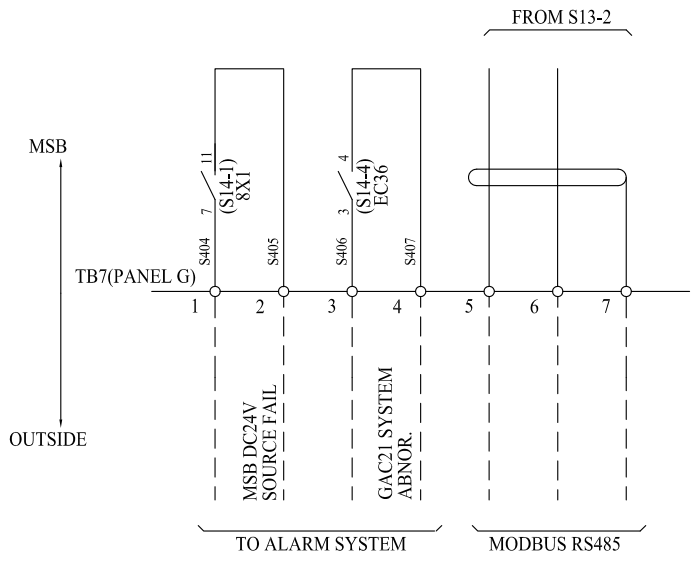

TO G21
TO G24
TO S11
MSB
ENG
TB2(PANEL H)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38
EST
A4
A3
(PANEL H)
10
6
6SX
(G24)
S354
S355
ESP
A4
A3
(PANEL H)
9
5
5SX
(G24)
S356
S357
DIFFERENTIAL CT
PRE-EXCITATION
DE-EXCIT
SPACE HEATER
GOV MOTOR
START GEN
STOP GEN
ENGINE MANU. STOP
REMOTE & AUTO CONTROL
GEN READY TO START
SAFETY SHUT DOWN
GEN RUNNING
ENGINE STOP EXECUTE
START FAIL
ENGINE SOURCE
L.O. PRIMING PUMP RUNNING
L.O. PRIMING PUMP TROUBLE
No.2 DIESEL GEN CONTRL.BOX

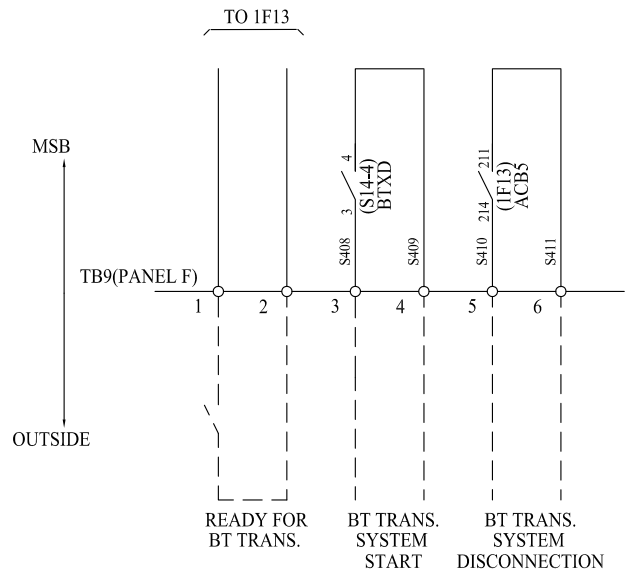

TO G31
TO G34
TO S11
MSB
ENG
TB3(PANEL E)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38
EST
A3
A4
(PANEL E)
6SX
(G34)
10
6
S358
S359
ESP
5SX
9
5
S360
S361
DIFFERENTIAL CT
PRE-EXCITATION
DE-EXCIT
SPACE HEATER
GOV MOTOR
START GEN
STOP GEN
ENGINE MANU. STOP
REMOTE & AUTO CONTROL
GEN READY TO START
SAFETY SHUT DOWN
GEN RUNNING
ENGINE STOP EXECUTE
START FAIL
ENGINE SOURCE
L.O. PRIMING PUMP RUNNING
L.O. PRIMING PUMP TROUBLE
No.3 DIESEL GEN CONTRL.BOX


TO G41
TO G44
TO S11
MSB
ENG
TB4(PANEL D)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38
EST
A3
A4
(PANEL D)
6SX
(G44)
10
6
S362
S363
ESP
5SX
9
5
S364
S365
DIFFERENTIAL CT
PRE-EXCITATION
DE-EXCIT
SPACE HEATER
GOV MOTOR
START GEN
STOP GEN
ENGINE MANU. STOP
REMOTE & AUTO CONTROL
GEN READY TO START
SAFETY SHUT DOWN
GEN RUNNING
ENGINE STOP EXECUTE
START FAIL
ENGINE SOURCE
L.O. PRIMING PUMP RUNNING
L.O. PRIMING PUMP TROUBLE
No.4 DIESEL GEN CONTRL.BOX









PANEL G

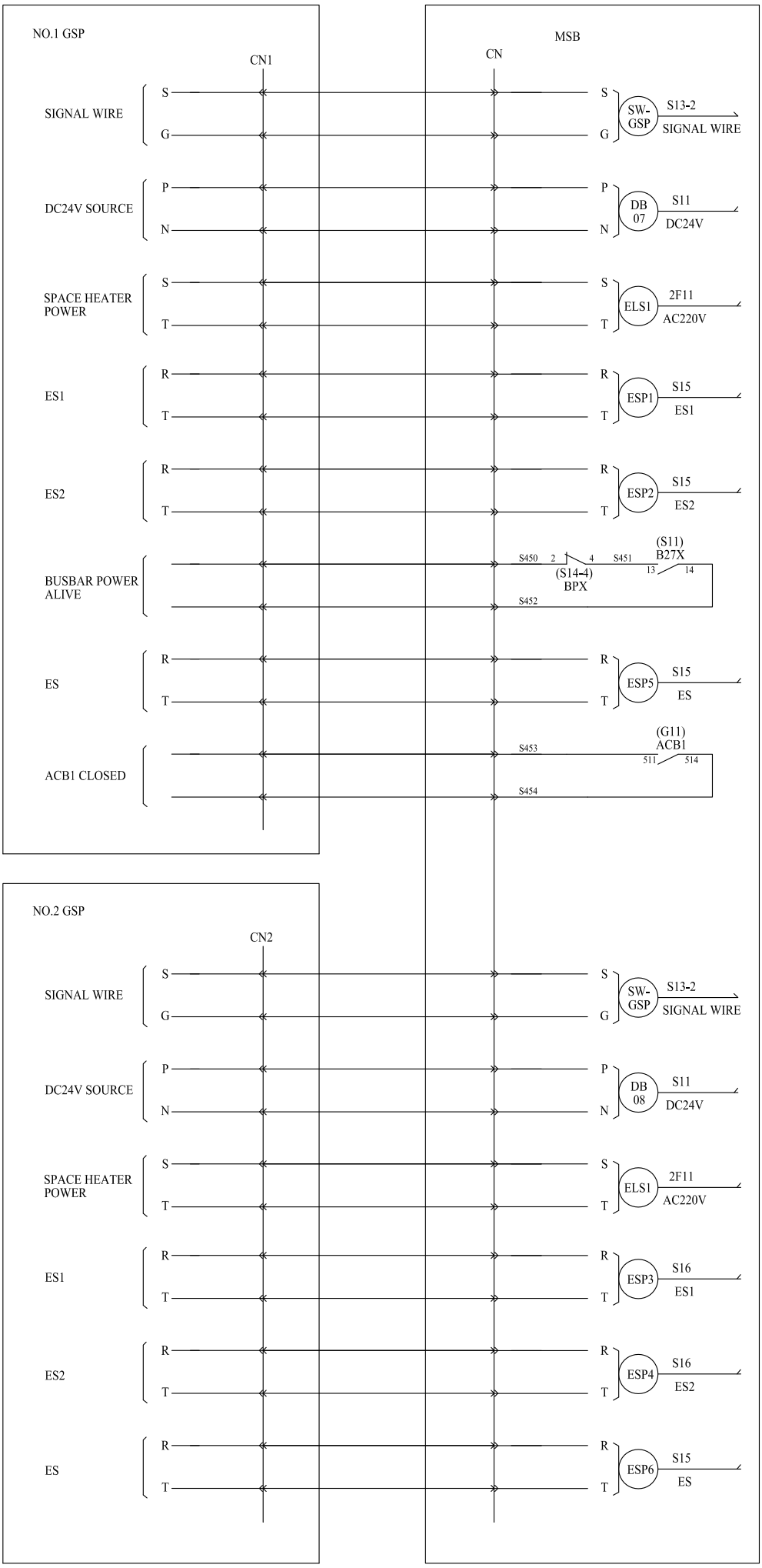
A B C D E F G H I

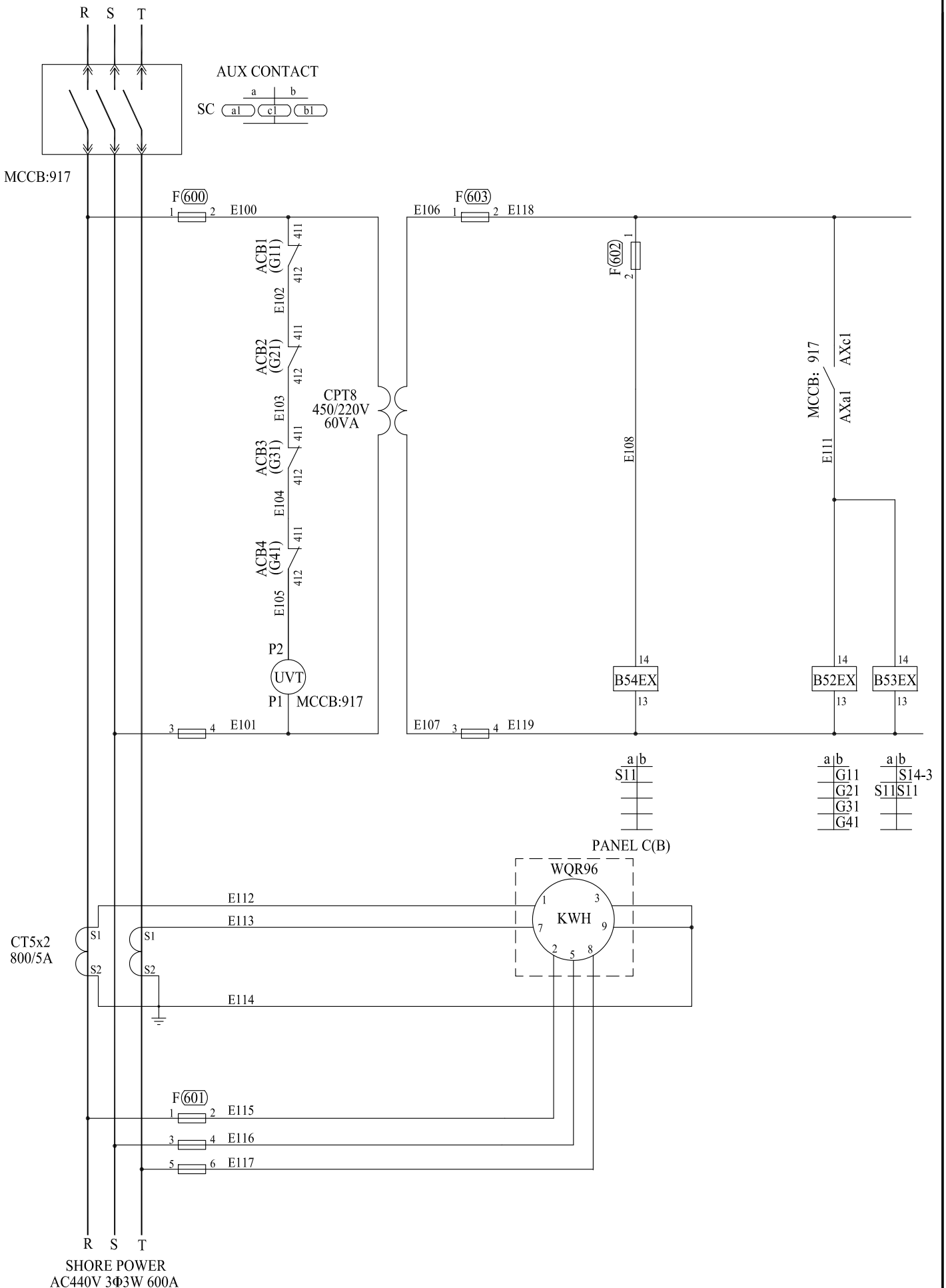
TERASAKI

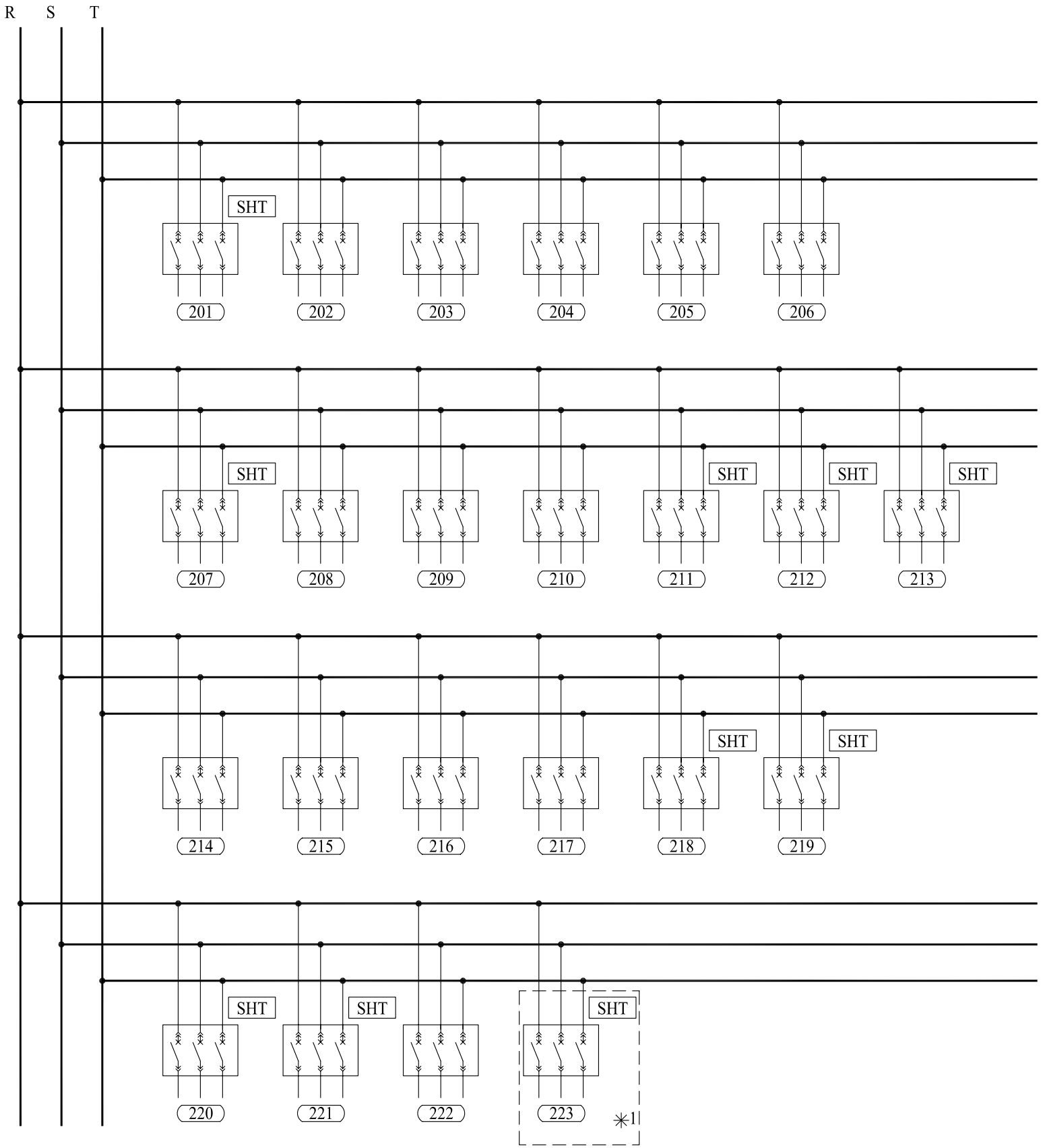
MSB EXTERNAL DEVICE CONNECT TERMINAL

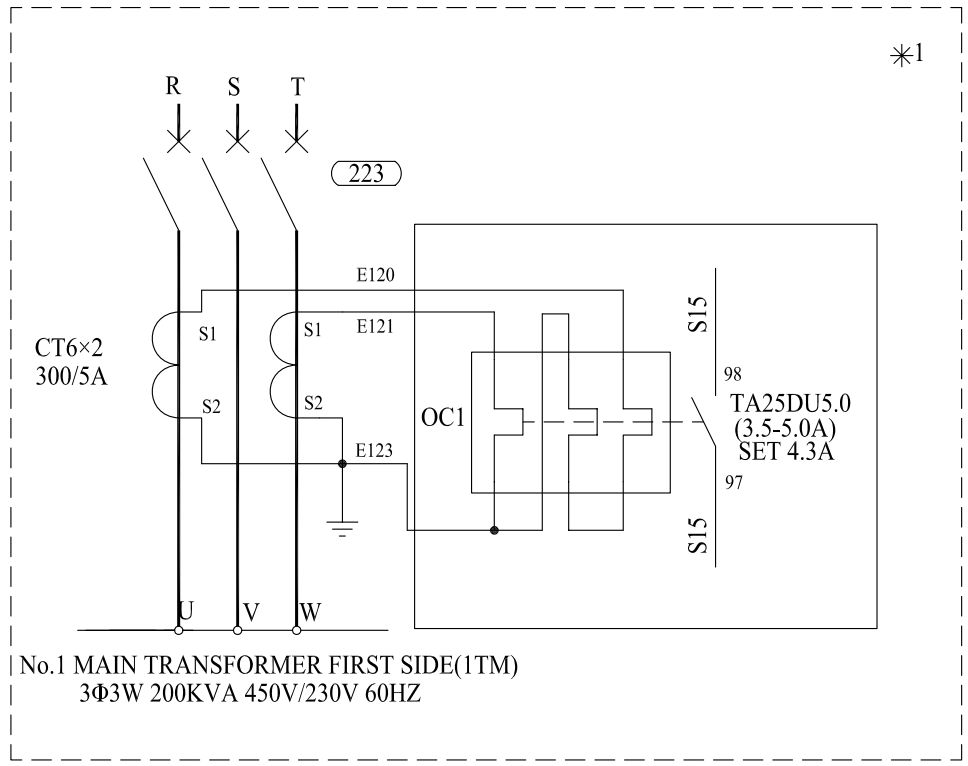
S71

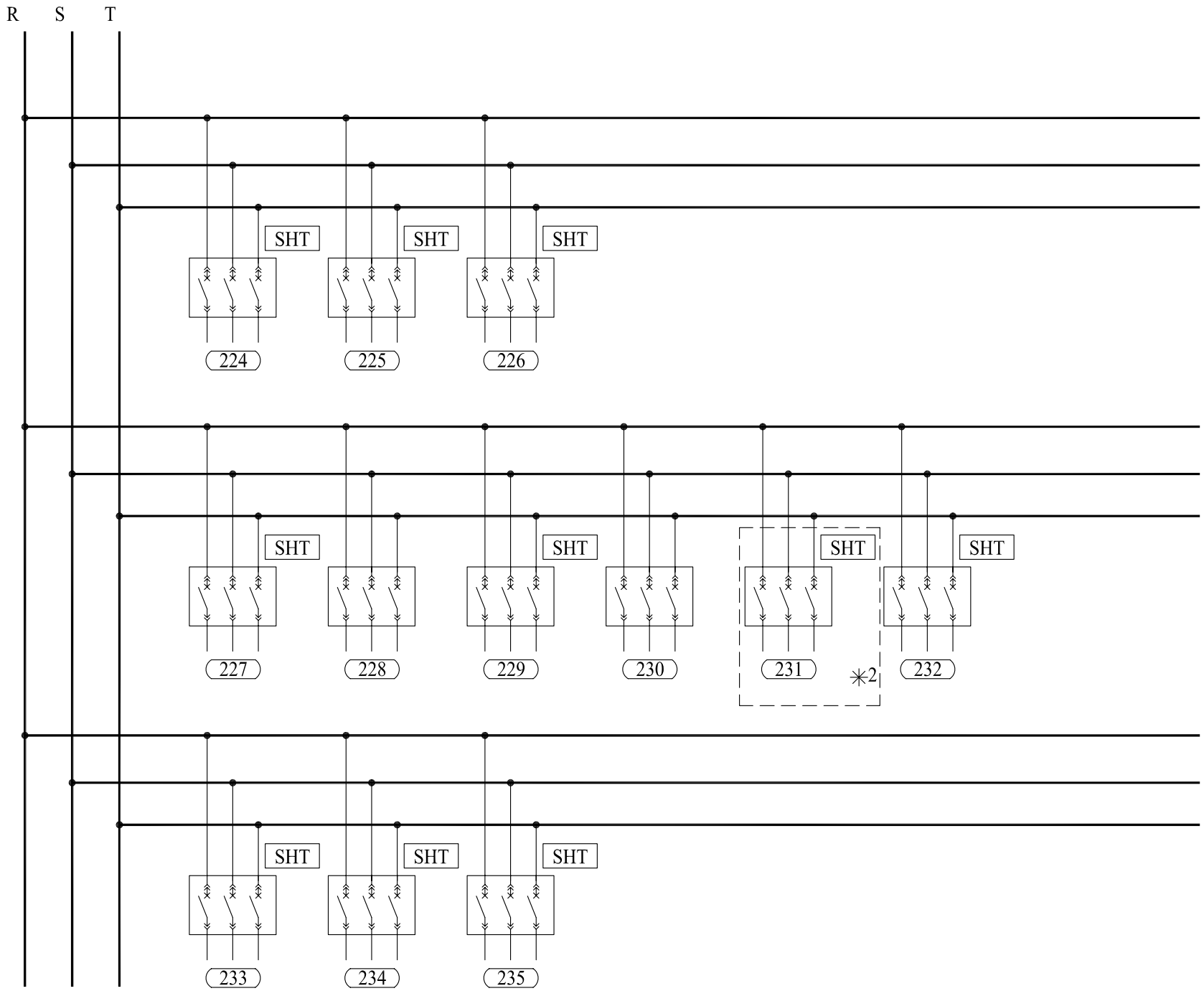
2–29

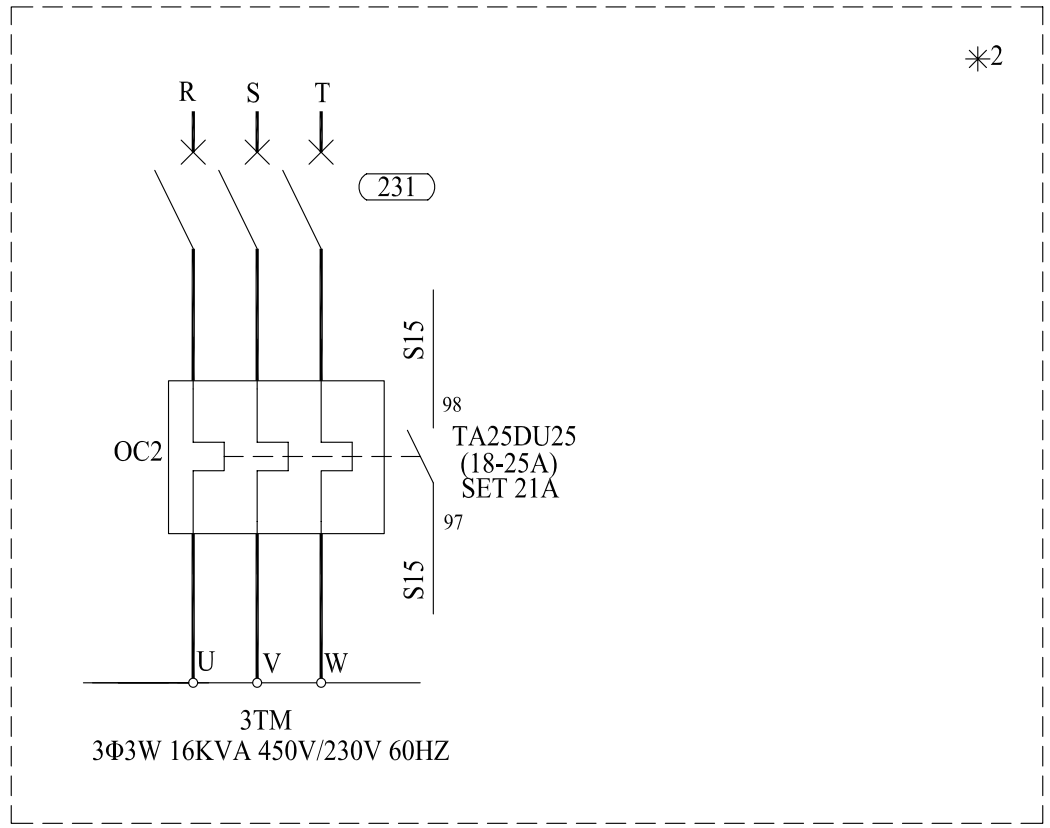

NO.1 GSP
CN1
MSB
CN
SIGNAL WIRE
S
G
SW-GSP
S13-2
SIGNAL WIRE
DC24V SOURCE
P
N
DB 07
S11
DC24V
SPACE HEATER POWER
S
T
ELS1
2F11
AC220V
ES1
R
T
ESP1
S15
ES1
ES2
ESP2
S15
ES2
BUSBAR POWER ALIVE
S450
S451
(S11)
B27X
(S14-4)
BPX
S452
ES
ESP5
S15
ES
ACB1 CLOSED
S453
S454
(G11)
ACB1
NO.2 GSP
CN2
ESP3
S16
ES1
ESP4
S16
ES2
ESP6
S15
ES


R S T
AUX CONTACT
a b
SC a1 c1 b1
MCCB:917
F600
1 2 E100
ACB1 (G11)
ACB2 (G21)
ACB3 (G31)
ACB4 (G41)
411
412
E102
E103
E104
E105
CPT8
450/220V
60VA
P2
UVT
P1 MCCB:917
3 4 E101
F603
E106 1 2 E118
F602
E108
E107 3 4 E119
MCCB: 917
AXc1
AXa1
E111
B54EX
B52EX
B53EX
14
13
a b
S11
G11
G21
G31
G41
S14-3
PANEL C(B)
WQR96
KWH
1 3 7 9 2 5 8
E112
E113
E114
CT5x2
800/5A
S1
S2
F601
E115
E116
E117
R S T
SHORE POWER
AC440V 3Φ3W 600A

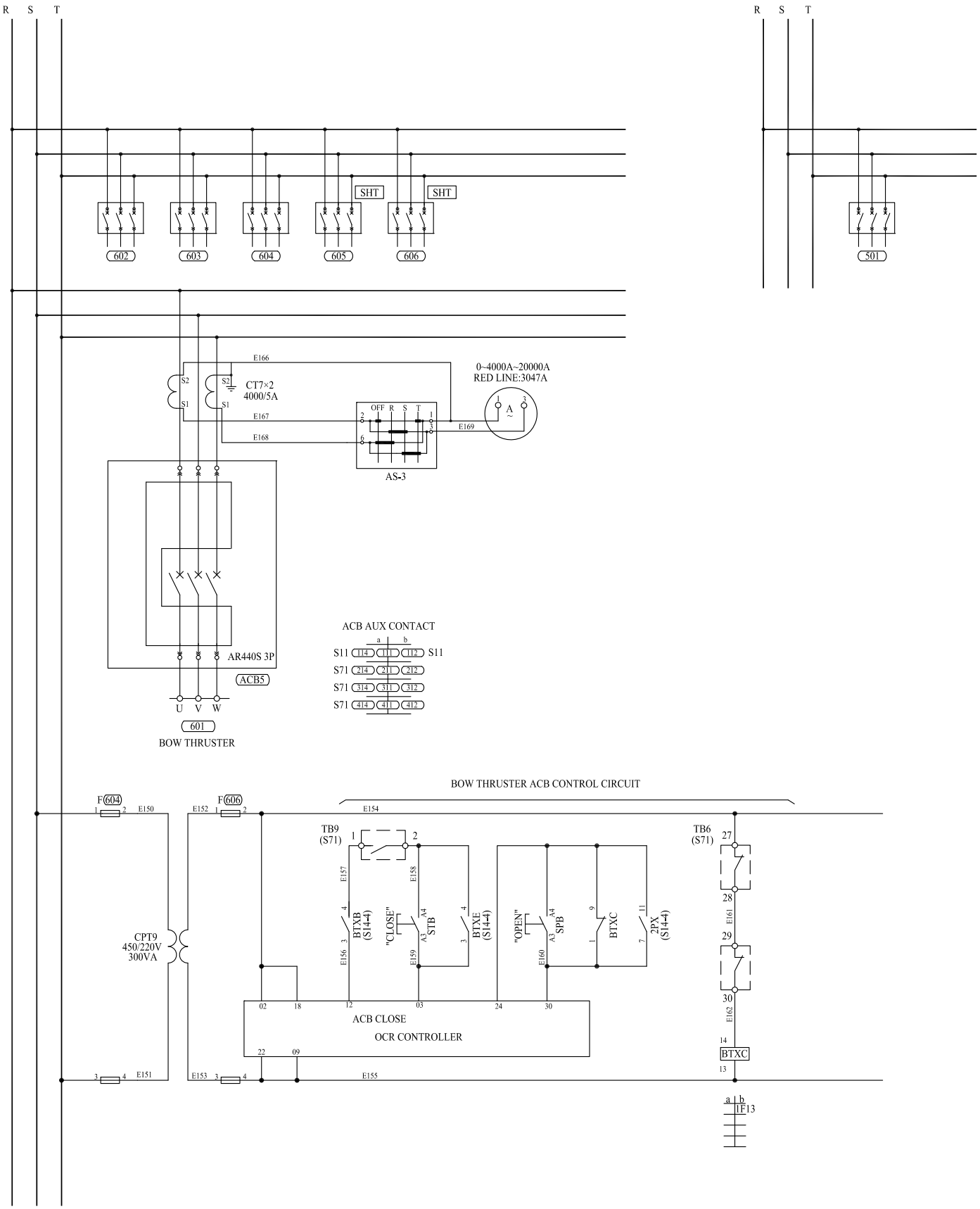

R
S
T
SHT
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
✳1

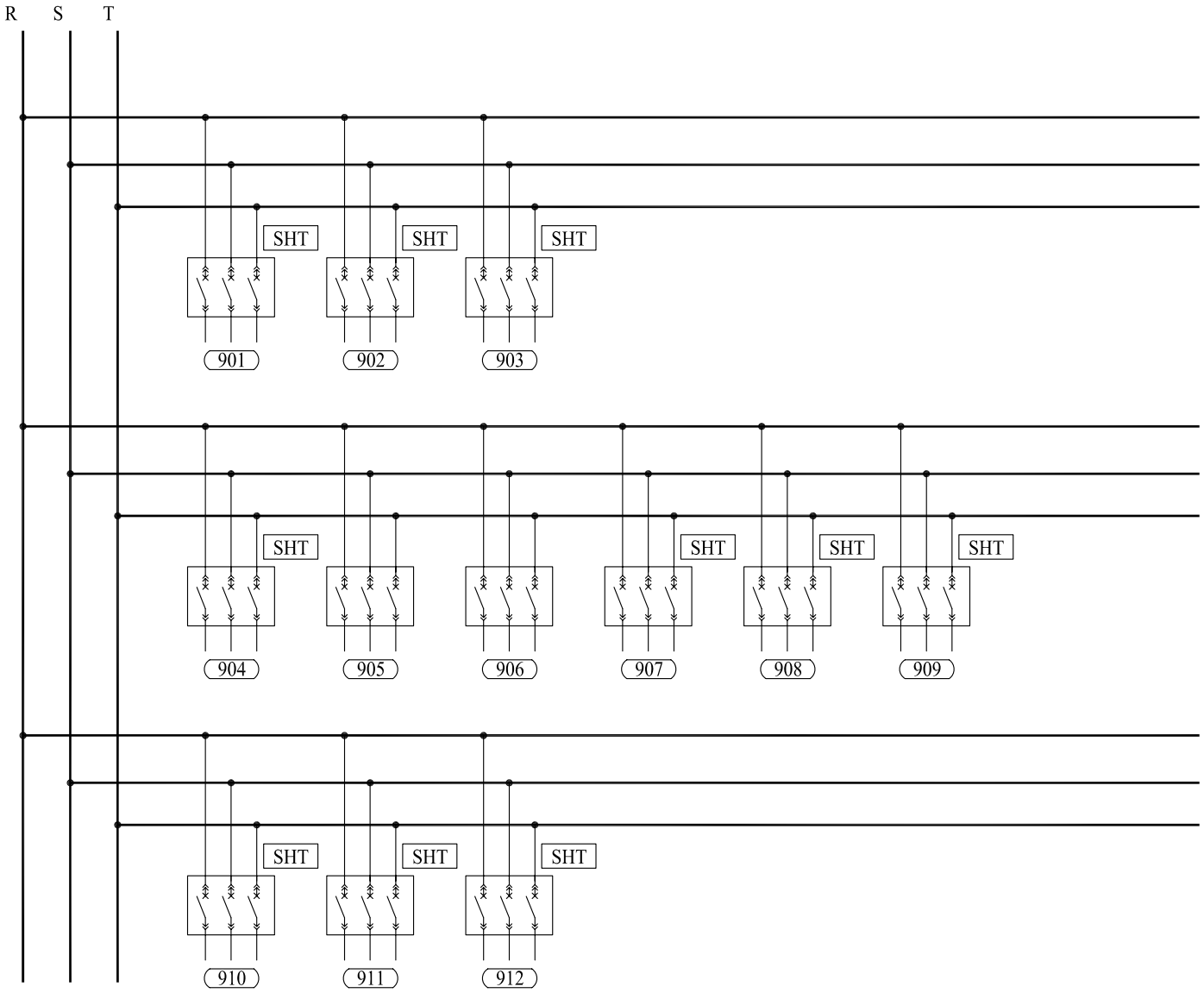

✳1
R
S
T
223
E120
E121
E123
S1
S2
CT6×2
300/5A
OC1
S15
98
97
TA25DU5.0
(3.5-5.0A)
SET 4.3A
U
V
W
No.1 MAIN TRANSFORMER FIRST SIDE(1TM)
3Φ3W 200KVA 450V/230V 60HZ

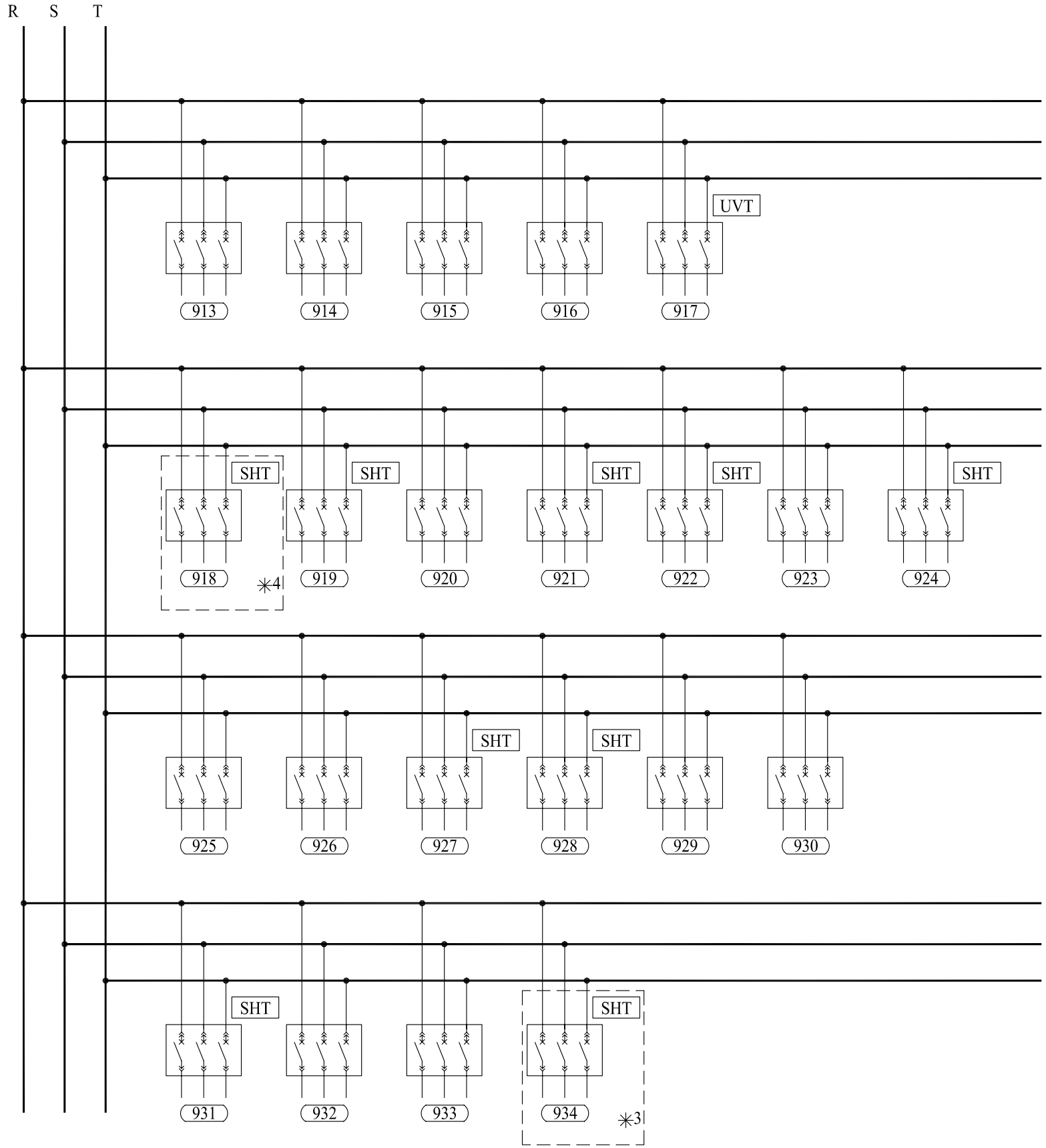


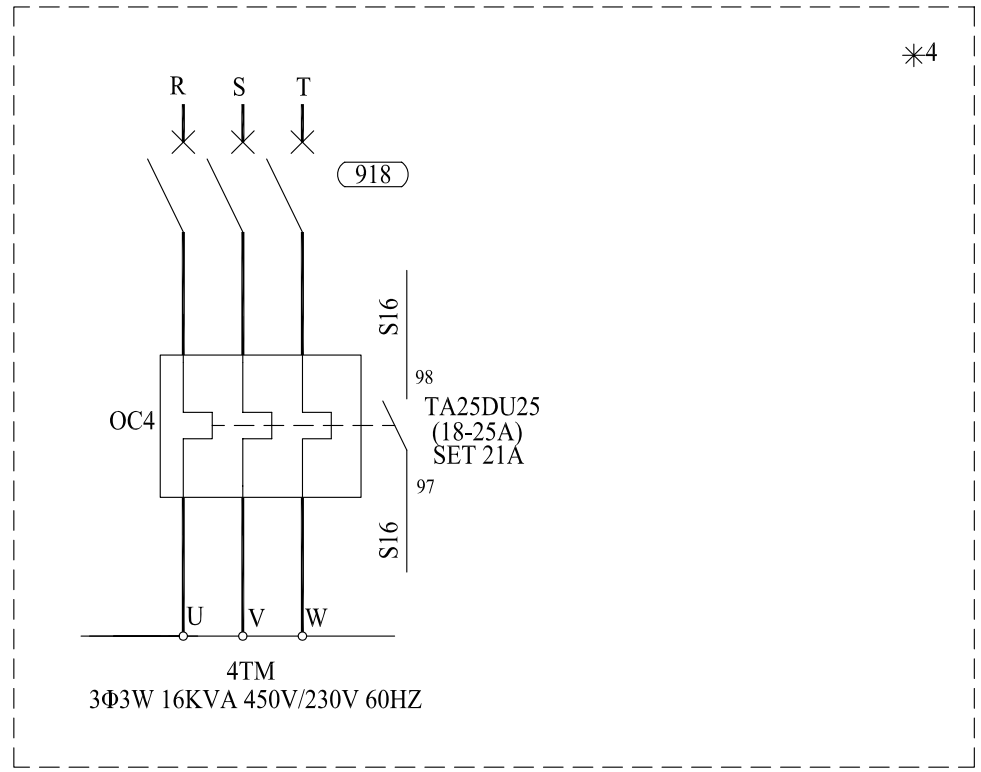


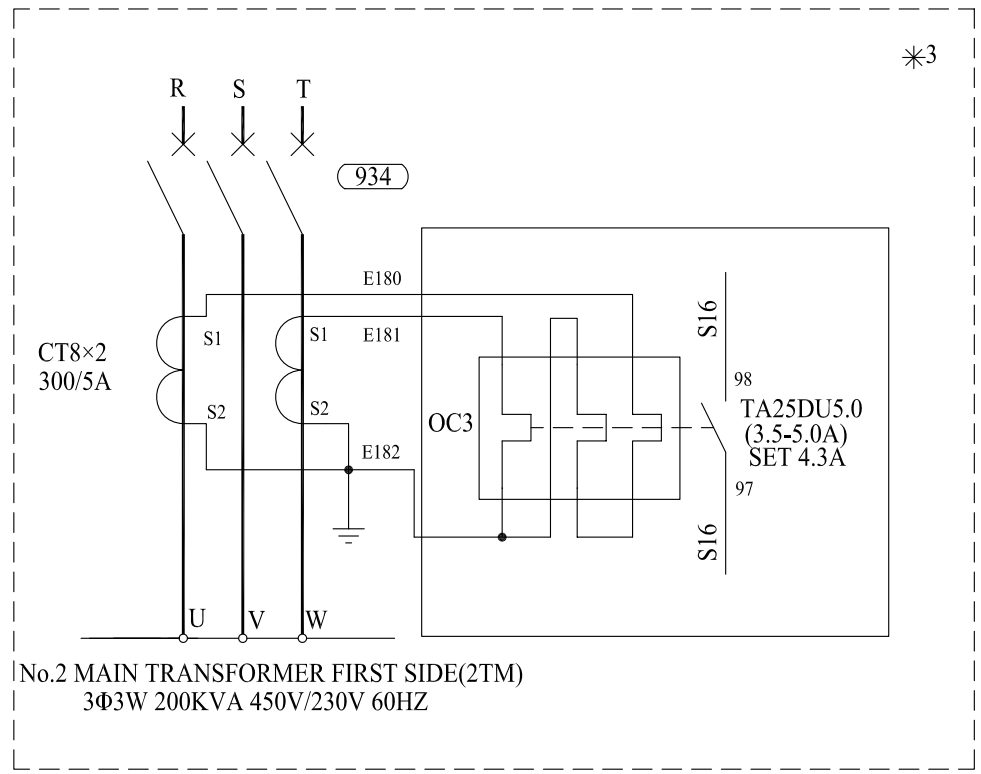
										PANEL K(A)	
A	B	C	D	E	F	G	H	I	TERASAKI	NO.1 AC440V FEEDER PANEL(B)	1F12 2−33


R S T
SHT
SHT
602
603
604
605
606
501
E166
S2
S1
CT7×2
4000/5A
E167
E168
OFF R S T
E169
0~4000A~20000A
RED LINE:3047A
AS-3
AR440S 3P
ACB5
U V W
601
BOW THRUSTER
ACB AUX CONTACT
S11
S71
S71
S71
BOW THRUSTER ACB CONTROL CIRCUIT
F604
F606
E150
E151
E152
E153
E154
E155
CPT9
450/220V
300VA
TB9
(S71)
TB6
(S71)
E156
E157
E158
E159
E160
E161
E162
BTXB
(S14-4)
"CLOSE"
STB
BTXE
(S14-4)
"OPEN"
SPB
BTXC
2PX
(S14-4)
ACB CLOSE
OCR CONTROLLER
1F13


R
S
T
SHT
SHT
SHT
901
902
903
SHT
SHT
SHT
SHT
SHT
904
905
906
907
908
909
SHT
SHT
SHT
910
911
912

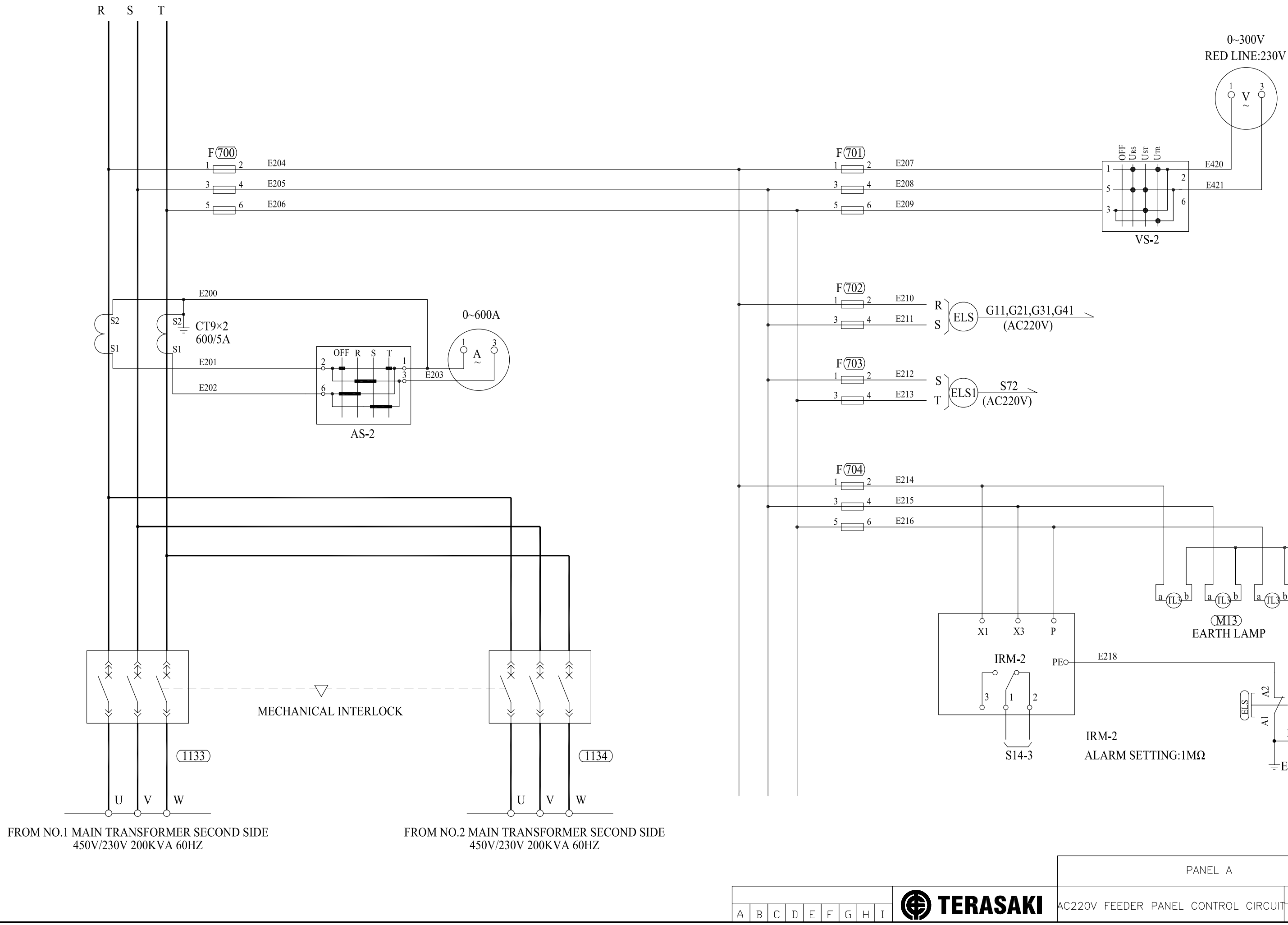






A	B	C	D	E	F	G	H	I	TERASAKI	PANEL C(A)
										NO.2 AC440V FEEDER PANEL(B)

1F15
2–36



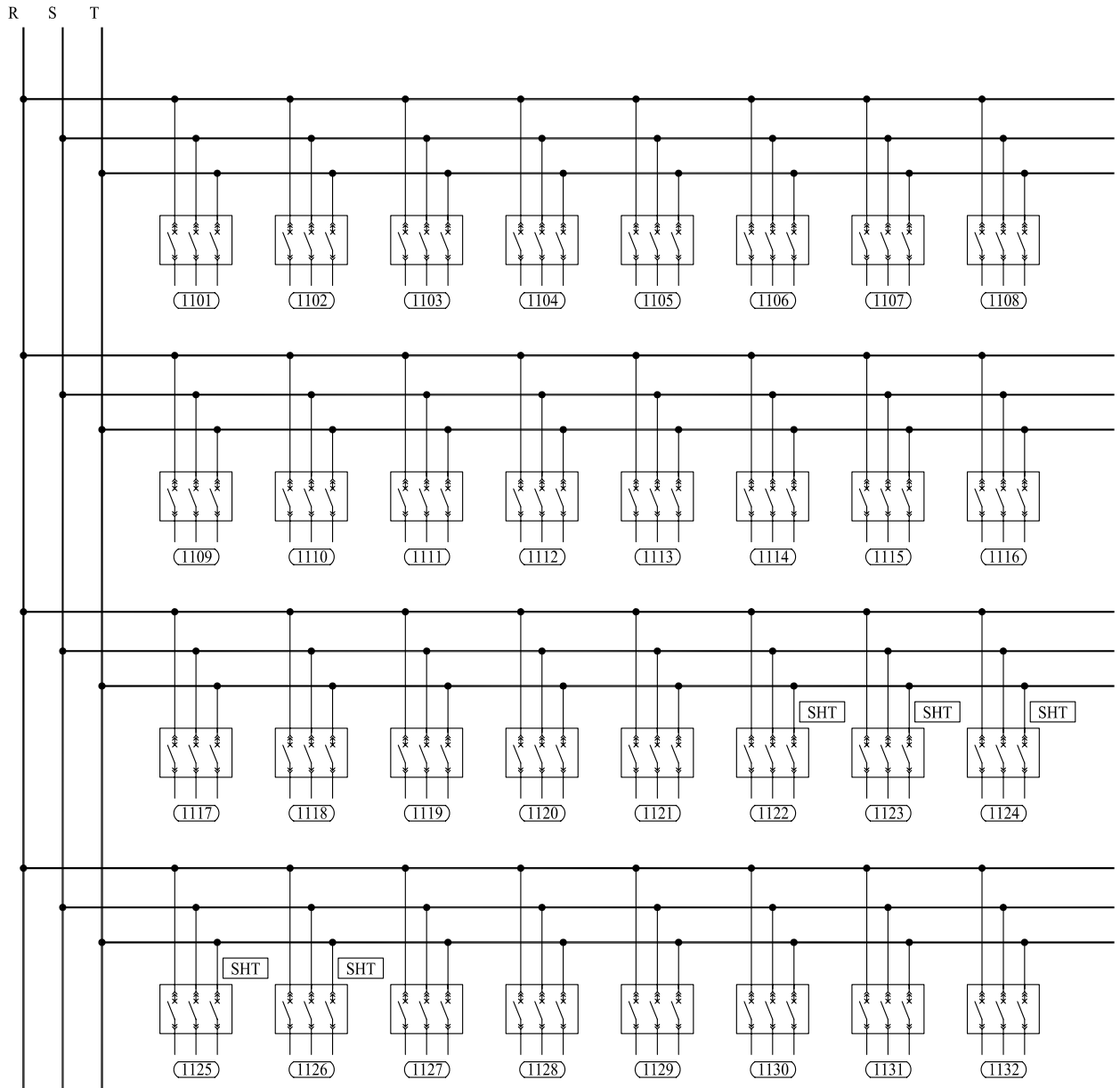
PANEL A

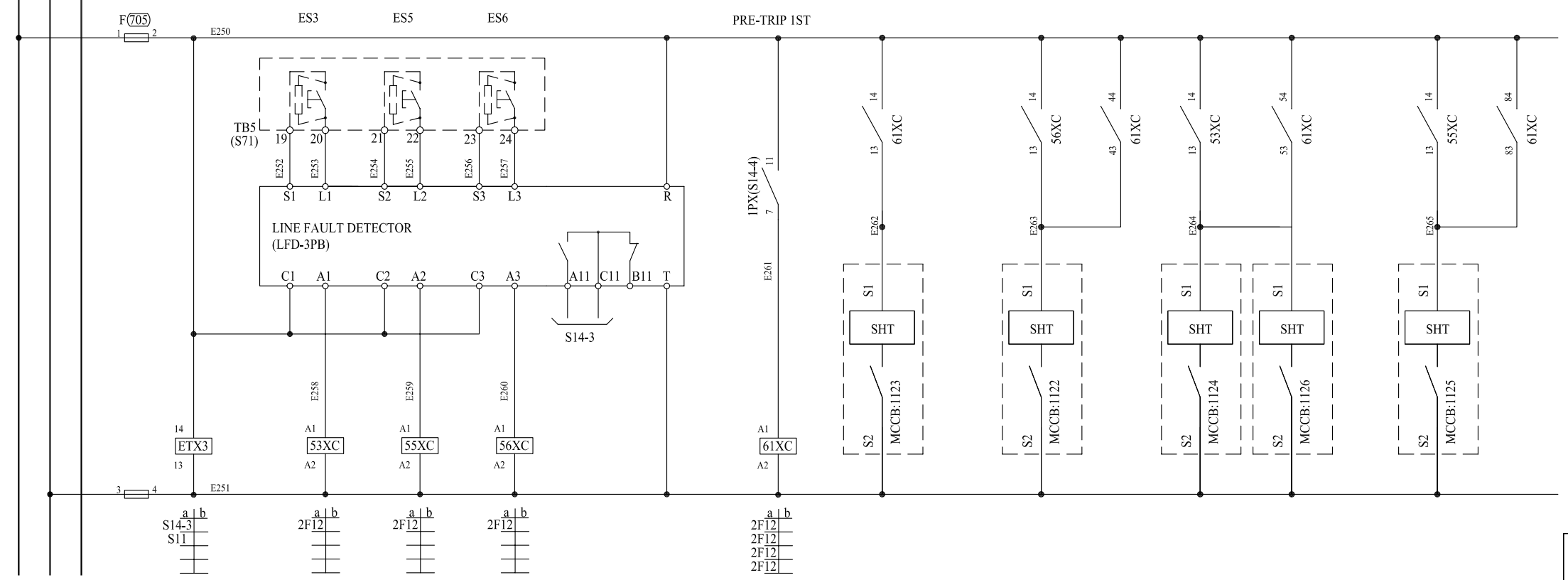
TERASAKI

AC220V FEEDER PANEL CONTROL CIRCUIT

2F11

2-37





A	B	C	D	E	F	G	H	I	TERASAKI	PANEL A	2F12
										AC220V FEEDER PANEL	2-38

ECC:MASTER STATION. MSB:SLAVE STATION.

ECC(MASTER STATION) READ DATAS FROM MSB(SLAVE STATION).

THE FOLLOWING ATTENTION CONTENT IS TRANSMISSION SPECIFICATION AND READ DATA FORMAT FROM MSB.

Item	Specification
Interface	RS485
Transmission mode	Half-duplex
Transmission speed	9600bps
Data flame	RTU
Start bit	1
Data bit	8
Parity bit	-
Stop bit	1
Error detection	CRC
Slave address	1，2 （don’t support broadcast function）
Flow control	None

a. DIGITAL DATA READ HOLING REGISTERS

1, QUERY MESSAGE FORMAT(READ 8 REGISTERS FROM ADDRESS 00H)

Address	Function code	Starting Address		Number of registers		Error check
01H	03H	(H)	(L)	(H)	(L)	xxxx
		00H	00H	00H	08H	

2, RESPONSE MESSAGE FORMAT

Address	Function code	Byte count	Data register no.1		……		Data register no.8		Error check
01H	03H	10H	(H)	(L)			(H)	(L)	xxxx

b. ANALOG DATA READ HOLING REGISTERS

1, QUERY MESSAGE FORMAT(READ 1 REGISTERS FROM ADDRESS 00H)

Address	Function code	Starting Address		Number of registers		Error check
02H	03H	(H)	(L)	(H)	(L)	xxxx
		02H	2CH	00H	01H	

2, RESPONSE MESSAGE FORMAT

Address	Function code	Byte count	Data register no.1		Error check
02H	03H	02H	(H)	(L)	xxxx

SIGNAL MSB TO ECC THROUGH MODBUS

MEASUREMENT TABLE (READ ONLY) (FUNCTION CODE 03H)

ADDRESS	CONTENT		PLC INSIDE DEVICE	ACTIVE	REMARKS
0000H (MSB)	ACB1 ABNOR.TRIP	Bit0		1	Slave address: 01H
	ACB1 NON CLOSE	Bit1		1	
	ACB1 REVERSE POWER TRIP	Bit2		1	
	DG1 START FAIL	Bit3		1	
	DG1 DIFFERENTIAL ALARM	Bit4		1	
	DG1 DIFFERENTIAL CONTROL SOURCE FAIL	Bit5		1	
	ACB2 ABNOR.TRIP	Bit6		1	
	ACB2 NON CLOSE	Bit7		1	
	ACB2 REVERSE POWER TRIP	Bit8		1	
	DG2 START FAIL	Bit9		1	
	DG2 DIFFERENTIAL ALARM	Bit10		1	
	DG2 DIFFERENTIAL CONTROL SOURCE FAIL	Bit11		1	
	ACB3 ABNOR.TRIP	Bit12		1	
	ACB3 NON CLOSE	Bit13		1	
	ACB3 REVERSE POWER TRIP	Bit14		1	
	DG3 START FAIL	Bit15		1	
0001H (MSB)	DG3 DIFFERENTIAL ALARM	Bit0		1	
	DG3 DIFFERENTIAL CONTROL SOURCE FAIL	Bit1		1	
	ACB4 ABNOR.TRIP	Bit2		1	
	ACB4 NON CLOSE	Bit3		1	
	ACB4 REVERSE POWER TRIP	Bit4		1	
	DG4 START FAIL	Bit5		1	
	DG4 DIFFERENTIAL ALARM	Bit6		1	
	DG4 DIFFERENTIAL CONTROL SOURCE FAIL	Bit7		1	
	PRE-TRIP & EM'CY STOP SOURCE FAIL	Bit8		1	
	PRE-TRIP 1ST	Bit9		1	
	PRE-TRIP 2ND	Bit10		1	
	BUSBAR VOLT.HIGH ALARM	Bit11		1	
	BUSBAR VOLT.LOW ALARM	Bit12		1	
	BUSBAR FREQUECY HIGH ALARM	Bit13		1	
	BUSBAR FREQUECY LOW ALARM	Bit14		1	
	AUTO SYNCHRO FAIL	Bit15		1	
0002H (MSB)	MSB AC440V LOW INSULATION	Bit0		1	
	MSB AC220V LOW INSULATION	Bit1		1	
	GAC21 BATT. LOW	Bit2		1	
	ESB COMMON ALARM	Bit3		1	

SIGNAL MSB TO ECC THROUGH MODBUS

MEASUREMENT TABLE (READ ONLY) (FUNCTION CODE 03H)

ADDRESS	CONTENT		PLC INSIDE DEVICE	ACTIVE	REMARKS
	MSB LINE FAULT DETECTOR ALARM	Bit4		1	
	EG STANDBY	Bit5		1	
	EG RUNNING	Bit6		1	
	ACB2 CLOSED	Bit7		1	
	ESB AC440V LOW INSULATION	Bit8		1	
	ESB AC220V LOW INSULATION	Bit9		1	
	EG START BATT. LOW VOLTAGE	Bit10		1	
	EG COMMON FAILURE	Bit11		1	
	ESB LINE FAULT DETECTOR ALARM	Bit12		1	
	EG DIESEL OIL LOW PRESSURE	Bit13		1	
	ACB3 CLOSED	Bit14		1	
	ACB4 CLOSED	Bit15		1	
0003H (GSP)	No.1 E/R VENT. FAN RUNNING	Bit0		1	
	No.1 E/R VENT. FAN ABNORMAL	Bit1		0	
	No.1 L.T. COOLING F.W. PUMP RUNNING	Bit2		1	
	No.1 L.T. COOLING F.W. PUMP ABNORMAL	Bit3		0	
	NO.1 M/E JACKET C.F.W. PUMP RUNNING	Bit4		1	
	NO.1 M/E JACKET C.F.W. PUMP ABNORMAL	Bit5		0	
	NO.1 COOLING S.W. PUMP RUNNING	Bit6		1	
	NO.1 COOLING S.W. PUMP ABNORMAL	Bit7		0	
	NO.3 E/R VENT.FAN SUPPLY RUNNING	Bit8		1	
	NO.3 E/R VENT.FAN EXHAUST RUNNING	Bit9		1	
	NO.3 E/R VENT.FAN ABNORMAL	Bit10		0	
	SPARE	Bit11			
	NO.3 COOLING S.W. PUMP RUNNING	Bit12		1	
	NO.3 COOLING S.W. PUMP ABNORMAL	Bit13		0	
	H.F.O. TRANSFER PUMP ABNORMAL	Bit14		0	
	SPARE	Bit15			
0004H (GSP)	NO.1 MAIN L.O. PUMP RUNNING	Bit0		1	
	NO.1 MAIN L.O. PUMP ABNORMAL	Bit1		0	
	NO.1 BALLAST PUMP RUNNING	Bit2		1	
	NO.1 BALLAST PUMP ABNORMAL	Bit3		0	
	NO.1 FIRE BILGE & G..S. PUMP RUNNING	Bit4		1	
	NO.1 FIRE BILGE & G..S. PUMP ABNORMAL	Bit5		0	
	CYL. L.O. TRANSFER PUMP RUNNING	Bit6		1	
	CYL. L.O. TRANSFER PUMP ABNORMAL	Bit7		0	

SIGNAL MSB TO ECC THROUGH MODBUS

MEASUREMENT TABLE (READ ONLY) (FUNCTION CODE 03H)

ADDRESS	CONTENT		PLC INSIDE DEVICE	ACTIVE	REMARKS
	DAILY BILGE PUMP ABNORMAL	Bit8		0	
	SPARE	Bit9			
	NO.1 STERN TUBE LUB. OIL PUMP RUNNING	Bit10		1	
	NO.1 STERN TUBE LUB. OIL PUMP ABNORMAL	Bit11		0	
	SPARE	Bit12			
	L.O. TRANSFER PUMP ABNORMAL	Bit13		0	
	SPARE	Bit14			
	AIR COOLER CHEMICAL CLEANING PUMP ABNORMAL	Bit15		0	
0005H (GSP)	L.T. COOLING F.W. PUMP AUTO CHANGEOVER	Bit0		1	
	M/E JACKET C.F.W. PUMP AUTO CHANGEOVER	Bit1		1	
	COOLING S.W. PUMP AUTO CHANGEOVER	Bit2		1	
	MAIN L.O. PUMP AUTO CHANGEOVER	Bit3		1	
	STERN TUBE LUB.OIL PUMP CHANGEOVER	Bit4		1	
	ACB1 CLOSED	Bit5		1	
	SPARE	Bit6			
	SPARE	Bit7			
	No.2 E/R VENT. FAN RUNNING	Bit8		1	
	No.2 E/R VENT. FAN ABNORMAL	Bit9		0	
	NO.2 COOLING S.W. PUMP RUNNING	Bit10		1	
	NO.2 COOLING S.W. PUMP ABNORMAL	Bit11		0	
	NO.2 M/E JACKET C.F.W. PUMP RUNNING	Bit12		1	
	NO.2 M/E JACKET C.F.W. PUMP ABNORMAL	Bit13		0	
	No.2 L.T. COOLING F.W. PUMP RUNNING	Bit14		1	
	No.2 L.T. COOLING F.W. PUMP ABNORMAL	Bit15		0	
0006H (GSP)	M/E JACKET W. HEATING PMP ABNORMAL	Bit0		0	
	SPARE	Bit1			
	No.3 L.T. COOLING F.W. PUMP RUNNING	Bit2		1	
	No.3 L.T. COOLING F.W. PUMP ABNORMAL	Bit3		0	
	NO.2 MAIN L.O. PUMP RUNNING	Bit4		1	
	NO.2 MAIN L.O. PUMP ABNORMAL	Bit5		0	
	SPARE	Bit6			
	SPARE	Bit7			
	SLUDGE PUMP ABNORMAL	Bit8		0	
	SPARE	Bit9			
	NO.2 BALLAST PUMP RUNNING	Bit10		1	

SIGNAL MSB TO ECC THROUGH MODBUS

MEASUREMENT TABLE (READ ONLY) (FUNCTION CODE 03H)

ADDRESS	CONTENT		PLC INSIDE DEVICE	ACTIVE	REMARKS
	NO.2 BALLAST PUMP ABNORMAL	Bit11		0	
	NO.2 FIRE BILGE & G..S. PUMP RUNNING	Bit12		1	
	NO.2 FIRE BILGE & G..S. PUMP ABNORMAL	Bit13		0	
	SPARE	Bit14			
	SPARE	Bit15			
0007H (GSP)	NO.2 STERN TUBE LUB. OIL PUMP RUNNING	Bit0		1	
	NO.2 STERN TUBE LUB. OIL PUMP ABNORMAL	Bit1		0	
	SPARE	Bit2			
	D.O. TRANSFER PUMP ABNORMAL	Bit3		0	
	No.4 E/R VENT. FAN SUPPLY RUNNING	Bit4		1	
	No.4 E/R VENT. FAN EXHAUST RUNNING	Bit5		1	
	No.4 E/R VENT. FAN ABNORMAL	Bit6		0	
	EMERGENCE FIRE PUMP ABNORMAL	Bit7		0	
	SPARE	Bit8			
	SPARE	Bit9			
	SPARE	Bit10			
	SPARE	Bit11			
	SPARE	Bit12			
	SPARE	Bit13			
	SPARE	Bit14			
	SPARE	Bit15			
0001H	NO.1 D/G ACTIVE POWER				Slave address: 02H
0007H	NO.2 D/G ACTIVE POWER				
000DH	NO.3 D/G ACTIVE POWER				
0013H	NO.4 D/G ACTIVE POWER				

NOTE：bit VALUE: 1-ALARM (MSB)
RUNNING (GSP PUMP & FAN)
NORMAL (GSP PUMP & FAN);
0-NORMAL (MSB)
STOP (GSP PUMP & FAN)
ABNORMAL (GSP PUMP & FAN);

VOL.3

(PAGE: 3-1～3-4)

No.1 DIESEL GENERATOR
TB1(G11,S70-1) (PANEL J)

TERM.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	DIFFERENTIAL CT				PRE EXCITATION		DE-EXCIT		SPACE HEATER		GOVERNOR MOTOR		SPARE		START GEN.		STOP GEN.		ENGINE MANU. STOP		REMOTE & AUTO CONTROL		GEN READY TO START		SAFETY SHUT DOWN		GEN RUNNING		ENGINE STOP EXECUTE	
CABLE	1G4				1G5		1G3		1G2		1DGJB				1DG-4															

No.1 DIESEL GENERATOR
TB1(G11,S70-1) (PANEL J)

TERM.	31	32	33	34	35	36	37	38	39	40	41	42	43	44
	START FAIL		ENGINE SOURCE		L.O. PRIMING PUMP RUNNING		L.O. PRIMING PUMP TROUBLE		SPARE					
CABLE	1DG-4													

No.2 DIESEL GENERATOR
TB2(G21,S70-1) (PANEL H)

TERM.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	DIFFERENTIAL CT				PRE EXCITATION		DE-EXCIT		SPACE HEATER		GOVERNOR MOTOR		SPARE		START GEN.		STOP GEN.		ENGINE MANU. STOP		REMOTE & AUTO CONTROL		GEN READY TO START		SAFETY SHUT DOWN		GEN RUNNING		ENGINE STOP EXECUTE	
CABLE	2G4				2G5		2G3		2G2		2DGJB				2DG-4															

No.2 DIESEL GENERATOR
TB2(G21,S70-1) (PANEL H)

TERM.	31	32	33	34	35	36	37	38	39	40	41	42	43	44
	START FAIL		ENGINE SOURCE		L.O. PRIMING PUMP RUNNING		L.O. PRIMING PUMP TROUBLE		SPARE					
CABLE	2DG-4													

No.3 DIESEL GENERATOR
TB3(G31,S70-2) (PANEL E)

TERM.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	DIFFERENTIAL CT				PRE EXCITATION		DE-EXCIT		SPACE HEATER		GOVERNOR MOTOR		SPARE		START GEN.		STOP GEN.		ENGINE MANU. STOP		REMOTE & AUTO CONTROL		GEN READY TO START		SAFETY SHUT DOWN		GEN RUNNING		ENGINE STOP EXECUTE	
CABLE	3G4				3G5		3G3		3G2		3DGJB				3DG-4															

No.3 DIESEL GENERATOR
TB3(G31,S70-1) (PANEL E)

TERM.	31	32	33	34	35	36	37	38	39	40	41	42	43	44
	START FAIL		ENGINE SOURCE		L.O. PRIMING PUMP RUNNING		L.O. PRIMING PUMP TROUBLE		SPARE					
CABLE	3DG-4													

No.4 DIESEL GENERATOR
TB4(G41,S70-2) (PANEL D)

TERM.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	DIFFERENTIAL CT				PRE EXCITATION		DE-EXCIT		SPACE HEATER		GOVERNOR MOTOR		SPARE		START GEN.		STOP GEN.		ENGINE MANU. STOP		REMOTE & AUTO CONTROL		GEN READY TO START		SAFETY SHUT DOWN		GEN RUNNING		ENGINE STOP EXECUTE	
CABLE	4G4				4G5		4G3		4G2		4DGJB				4DG-4															

No.4 DIESEL GENERATOR
TB4(G41,S70-2) (PANEL D)

TERM.	31	32	33	34	35	36	37	38	39	40	41	42	43	44
	START FAIL		ENGINE SOURCE		L.O. PRIMING PUMP RUNNING		L.O. PRIMING PUMP TROUBLE		SPARE					
CABLE	4DG-4													

EMERGENCY STOP SIGNAL
TB5(S71)(PANEL G)

TERM.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	ES1		ES2		ES3		ES4		ES6		ES1		ES2		ES3		ES4		ES3		ES5		ES6		ES6 TO 409P		PT1 TO 409P		ES4 TO 411P	
CABLE	ESJB-9																				GAS-MSB		ESJB-9		ES-409				ES4-411	

TB5(S71)(PANEL G)

TERM.	31	32	33	34	35	36	37	38	39	40
	PT1 TO 411P		PT1 TO 406P		PT1 TO 410P		ES		ES	
CABLE	ES4-411		PT-406		PT-410		GSP-ES			

TB6(S71)(PANEL G)

TERM.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	BOW THRUSTER START REQUEST		BOW THRUSTER RUNNING		BOW THRUSTER START ALLOW		BOW THRUSTER REQUEST STANDBY GEN. START		EMERG. ENG STANDBY		EMERG. ENG RUNNING		ESB COMMON ALARM		ESB AC440V LOW INSUL.		ESB AC220V LOW INSUL.		START BATT. LOW VOLTAGE		EG COMMON FAILURE		ESB LINE FAULT DETECTOR ALARM		EG DIESEL OIL LOW PRESSURE		BOW THRUSTER EM'CY ACB TRIP		BOW THRUSTER DOOR OPEN	
CABLE	BT-16								ESB-2																		BT-16			

TB6(S71)(PANEL G)

TERM.	31	32	33	34	35	36	37	38	39	40
	BOW THRUSTER ACB CLOSE		SPARE							
CABLE	BT-16									

ECC ALARM
TB7(S71)(PANEL G)

TERM.	1	2	3	4	5	6	7	8	9	10
	MSB DC24V SOURCE FAIL		GAC21 SYSTEM ABNOR.		MODBUS RS485					
CABLE	MSB-1									

DC24V SOURCE(TYPE TC603)
TB8(S11)(PANEL G)

TERM.	1	2	3
	P	N	
CABLE	2CDP2		

TB9(S71)(PANEL F)

TERM.	1	2	3	4	5	6	7	8	9	10
	READY FOR BT TRANS.		BT TRANS. SYSTEM REMOTE START		BT TRANS. SYSTEM DISCON-NECTION		SPARE			
CABLE	BTTM-C									

O.... MARK IS SETTING THE STANDARD VALUE

-.... MARK IS NOT USED

GENERATOR

SETTING ITEM	SETTING RANGE	STANDARD	USED(SET)				REMARKS
			G1	G2	G3	G4	
SHARING RATIO	10~50	10 x 0.1	o (1001)	o (2001)	o (3001)	o (4001)	
GOV CHARACT	20~160(SEC/10Hz)	80	o (1002)	o (2002)	o (3002)	o (4002)	
LOAD LIMIT	50~100 (%)	95	o (1003)	o (2003)	o (3003)	o (4003)	
ENG IDLING TIME	0~2400 (SEC)	300	o (1105)	o (2105)	o (3105)	o (4105)	
VOLT ESTABLISH	60~100 (%)	95	o (1004)	o (2004)	o (3004)	o (4004)	
VOLT ESTABLISH TIME	0~30 (SEC)	7	o (1101)	o (2101)	o (3101)	o (4101)	
VOLT NON EST TIME	0~30 (SEC)	20	o (1102)	o (2102)	o (3102)	o (4102)	
ACB NON CLOSE TIME	0~10 (SEC)	3	o (1103)	o (2103)	o (3103)	o (4103)	
AUTO SY FAIL TIME	0~240 (SEC)	60	o (1104)	o (2104)	o (3104)	o (4104)	
GEN LIGHT LOAD	0~100 (%)	20	- (1005)	- (2005)	- (3005)	- (4005)	
GEN LIGHT LOAD TIME	0~240 (SEC)	0.0	- (1106)	- (2106)	- (3106)	- (4106)	

( ).... SETTING ADDRESS
(IN THE CASE THE SETTING VALUE IS CHANGED WITH THE SETTING DEVICE THIS ADDRESS No. IS USED)

SYNCHRONIZER (FAS-113DG)

SETTING ITEM	SETTING RANGE	STANDARD	USED(SET)				REMARKS
			G1	G2	G3	G4	
CONTROL PULSE LENGTH(T_N)	25~500 (ms)	200	o	o	o	o	
PROPORTIONAL BAND(X_P)	0.25~2.5 (Hz)	2.5	o	o	o	o	
SLIP FREQUENCY(f_{set})	0.1~0.5 (Hz)	0.3	o	o	o	o	
VOLTAGE DIFFERENCE($\triangle U_{max}$)	2~12 (%)	3	o	o	o	o	
GOVERNOR CHARACTERISTIC(T_{BC})	20~200 (ms)	75	o	o	o	o	

O.... MARK IS SETTING THE STANDARD VALUE

-.... MARK IS NOT USED

BUS MONITOR

	SETTING ITEM		SETTING RANGE	STANDARD	USED(SET)	REMARKS
LIGHT TROUBLE	LOW VOLTAGE	BUS VOLT LIGHT LOW	75~100 (%)	90	o (0001)	
		BUS VOLT LT LOW TIME	0~30 (SEC)	5	o (0101)	
	HIGH VOLTAGE	BUS VOLT LIGHT HIGH	100~125 (%)	105	o (0003)	
		BUS VOLT LT HIGH TIME	0~30 (SEC)	5	o (0103)	
	LOW FREQUENCY	BUS FREQ LIGHT LOW	800~1000 (1/10%)	900	o (0005)	
		BUS FREQ LT LOW TIME	0~30 (SEC)	5	o (0105)	
	HIGH FREQUENCY	BUS FREQ LIGHT HIGH	1000~1200 (1/10%)	1050	o (0007)	
		BUS FREQ LT HIGH TIME	0~30 (SEC)	5	o (0107)	
HEAVY TROUBLE	LOW VOLTAGE	BUS VOLT LOW	75~100 (%)	90	o (0002)	
		BUS VOLT LOW TIME	0~30 (SEC)	10	o (0102)	
	HIGH VOLTAGE	BUS VOLT HIGH	100~125 (%)	110	o (0004)	
		BUS VOLT HIGH TIME	0~30 (SEC)	5	o (0104)	
	LOW FREQUENCY	BUS FREQ LOW	800~1000 (1/10%)	900	o (0006)	
		BUS FREQ LOW TIME	0~30 (SEC)	10	o (0106)	
	HIGH FREQUENCY	BUS FREQ HIGH	1000~1200 (1/10%)	1050	o (0008)	
		BUS FREQ HIGH TIME	0~30 (SEC)	10	o (0108)	

NUMBER DIESEL GENERATOR ON LINE CONTOROL (GAC-PMS-G)

(1)AUTOMATIC START

PRIM MOVER	SETTING ITEM	SETTING RANGE	STANDARD	USED(SET)	REMARKS
D/G LOADING (PDG-H)	START REQUEST	50~100 (%)	90	o (0011)	
	START REQUEST TIME	0~30 (SEC)	10	o (0109)	

(2)AUTOMATIC STOP

	SETTING ITEM	SETTING RANGE	STANDARD	USED(SET)	REMARKS
STOP REQUEST	STOP REQUEST	50~100 (%)	70	o (0012)	
	STOP REQUEST TIME	0~2400 (SEC)	1800	o (0110)	

LAGE MOTOR START BLOCKING CONTROL

(1)START POWER

	SETTING LIMIT	STANDARD	USED(SET)
BOW THRUSTER START	0~2000KW	1900KW	o (0013)
	0~2000KW		o (0014)

(2)MOTOR START INHIBIT TIME

	SETTING LIMIT	STANDARD	USED(SET)
MOTOR INHIBIT TIME	0~60 (SEC)	15	o (0111)
START BLOCKING RESET TIME	0~2400 (SEC)		- (0029)