PM1 ,PM2 ,PMH
MW1,M ,MWH ,MW2

7611
7612
7613

7621
7622
7623

TMS/LU

M6595
M6596
MN241

CIIR1/1
CIIR2/1

IVCK1   IVCK2

ACR4/3 → ALL PM CARS
ACR4/2 → ALL M CARS

7601
7602
7603

18   BATTERY POSITIVE

CIB1   CIB2

1901   1902

ACR4/1 CIIR1/1   CIIR2/1 ACR4/2

1903   1904

CIC1   CIC2

16   CONTROL NEGATIVE

ABBREVIATION

ACR4   AUXILIARY CONTROL RELAY
CIIR   C/I ISOLATE RELAY
CIC   C/I CONTROLLER (MELCO)

$USRF$
PLOT DRV:$PLTDRVL$
PRINTED BY:$USER$
FILENAME: $FILE$

$DATE$ $TIME$

| REV | DATE | BY | SUB | APP | DESCRIPTION |

DESIGNED BY	NIL
DRAWN BY	SRD
CHECKED BY	K.Y.CHEUNG
IN CHARGE	C.C.HON
DATE	26JAN2007

26JAN07 SRD K.Y. C.C. FIRST ISSUE

KCR 九廣鐵路
運輸部
Transport Division

TITLE
SP1900 ELECTRIC MULTIPLE UNITS
ELECTRICAL SCHEMATIC
C/I ENERGY SAVING CONTROL CIRCUIT

SCALE	NTS @ A1		
ORIGINATOR	ORIGINATOR REFERENCE	ORG REF REV	
KS	2-UB03226	a	
DRAWING NUMBER		REV	
SP1900AB/XG/RR/D5015		0	
RAILWAY	LOCATION	STAGE	SHEET NO
ER	HTL	Z	1

FULL SIZE A1

AC25KV 50Hz

(PM car)

(M car)

MTr

CI1

CI2

(M car)

NOTE1)

East Rail 12 Carset

To Hung Hom (South) No.1 End | DT1 | PM1 | M | TWH | TCH | TH2 | MWH | PMH | TFH | MW2 | PM2 | DT2 | To Lo Wu (North) No.2 End

West Rail 7 Carset

To Nam Cheong (South) No.1 End | DT1 | PM1 | MHW | TCH | MW2 | PM2 | DT2 | To Tuen Mun (North) No.2 End

West Rail 8 Carset

To Nam Cheong (South) No.1 End | DT1 | PM1 | MW1 | TH1 | TCH | MW2 | PM2 | DT2 | To Tuen Mun (North) No.2 End

West Rail 9 Carset

To Nam Cheong (South) No.1 End | DT1 | PM1 | MW1 | T | TH1 | TCH | MW2 | PM2 | DT2 | To Tuen Mun (North) No.2 End

In case of forward at DT1 car, rotary direction for PM1, M, MHW, MW1 car is shown below. (Drawing saw from the roof)

In case of forward at DT1 car, rotary direction for MWH, PMH, MW2, PM2 car is shown below. (Drawing saw from the roof)

To Hung Hom or Nam Cheong (South) | To Lo Wu or Tuen Num (North)

To Hung Hom or Nam Cheong (South) | To Lo Wu or Tuen Mun (North)

Destination (PM,M,MHW,MW1)	Destination (MWH,PMH,MW2,PM2)	Command	Phase Rotation of Inverter output	IM11,13,21,23	IM12,14,22,24
Hung Hom Nam Cheong	Lo Wu Tuen Mun	5 Forward	U→V→W	A PG pulse / B U→V→W B Phase 90° Advance	A PG pulse / B U→W→V A Phase 90° Advance
Lo Wu Tuen Mun	Hung Hom Nam Cheong	6 Reverse	U→W→V	A PG pulse / B U→W→V A Phase 90° Advance	A PG pulse / B U→V→W B Phase 90° Advance

IM11 IM12 IM13 IM14

IM21 IM22 IM23 IM24

To Auxiliary Circuit

To Auxiliary Circuit

To CI1 charging circuit

To CI2 charging circuit

To Control Circuit

To Tertiary Windings

To 1000

GB11 GB12 GB13 GB14

GB21 GB22 GB23 GB24

(body)

NOTE2: Symbols are terminals to confirm discharge of filter capacitor.

MANUFACTURER	MANUFACTURER'S DRAWING No.
MITSUBISHI ELECTRIC CORPORATION	H1H4865F

TITLE: SP1900 ELECTRIC MULTIPLE UNITS ELECTRICAL SCHEMATIC — SCHEMATIC DIAGRAM OF POWER CIRCUIT

KCR 運輸部 Transport Division

SCALE	NTS @ A1		
ORIGINATOR MITSUBISHI	ORIGINATOR REFERENCE H1H4865F	DWG REF REV	0
DRAWING NUMBER SP1900AB/XG/RR/D5000		REV	0

RAILWAY	LOCATION	STAGE	SHEET NO
ER	HTL	Z	1

DESIGNED BY: NIL
DRAWN BY: SRD
CHECKED BY: K.Y.CHEUNG
IN CHARGE: C.C.HON
DATE: 26JAN2007

REV | DATE | BY | SUB | APP | DESCRIPTION
0 | 26JAN07 | SRD | K.Y. | C.C. | FIRST ISSUE

FULL SIZE A1

(M-Car) (PM-Car)

PAN
Bus Bar
(U1) PT (V) 1000 (body)
(body) 1000 9901 Bus Bar
Bus Bar VCB 1000 (body)
Bus Bar Arr 1000 (body)
ES Box High Voltage Equipment Box
Cable Head
9901a
CT1
9902 25kV High Tension Cable

NOTE2

930A
480A

CI2

9611 U
9612 V
9613 W
1000 E

9611 U
9612 V
9613 W
1000 E

9631 U
9632 V
9633 W
1000 E

9631 U
9632 V
9633 W
1000 E

9802 9806 (U3)
9801 9805 (V3)
NOTE1
9804 9808 (U4)
9803 9807 (V4)

MTr

(U)

NOTE4

(U1) 9802
(V1) 9801

(U2) 9804
(V2) 9803

(b1) (a1) (b2) (a2)   (V)

9711 9712 CHB1
9761 9762
9721 9722 CHB2
9771 9772

9701 9711 CHB1
9751 9761
9701 9721 CHB2
9751 9771

250A
120A

CI1

9611 U
9612 V
9613 W
1000 E

9611 U
9612 V
9613 W
1000 E

9631 U
9632 V
9633 W
1000 E

9631 U
9632 V
9633 W
1000 E

9701
9751
9702
9752

To Aux. Circuit
To Tertiary Wiring
1000 (body)
To CI1
NOTE5

To Insulated Terminal Block
NOTE9
(body)   (body)

Insulated Terminal Block
Insulated Terminal Block
To CI1
NOTE7

1000 9613 9612 9611
1000 9613 9632 9631
1000 9633 9632 9631
1000 9633 9632 9631

(body) (body) (body)

1000 (body)   1000 (body)

IM Junction Box

IM21 IM22 IM23 IM24

Insulated Terminal Block
Insulated Terminal Block
Insulated Terminal Block
Insulated Terminal Block
NOTE3

IM11 IM12 IM13 IM14

GB21 GB22 GB23 GB24

GB11 GB12 GB13 GB14

WIRE SIZE

SYMBOL	WIRE SIZE
——	ZHPCG-185SQ
—○—	ZHPCG-50SQ
—∞—	ZHPCG-35SQ
—△—	ZHPCG-25SQ
—△△—	ZHPCG-16SQ
—□—	ZHPCG-10SQ
—●—	ZHPCF-50SQ
—●●—	ZHPCF-35SQ

[A]:Maximum current
[A]:Rated current

NOTE1:Input wire number of CI2 should be read in a different number because converter-inverter box CI1,CI2 are symmetrical.
   For those wires , "double ring mark"numbering should be applied.
NOTE2:Car wiring of wire No. 511,512,513 and 500 between CI box and IM junction box should be wired in parallel
   with one another. (wire No. 531,532,533 and 500 is same way.)
   Those four wires should be in a pipe or a duct. (pipe or duct thickness : 3mm more than)
NOTE3:Between IM lead cable should be wired together with three cables.
NOTE4:Car wiring between CI box and MTr should be in a pipe or a duct per winding.
NOTE5:Car wiring between MTr and insulated terminal block , between CI and insulated terminal block,
   and between insulated terminal blocks should be in a pipe or a duct.
NOTE6:All pipes and ducts should be connected to the car body.
NOTE7:Car wiring between insulated terminal blocks or between insulated terminal block and GB should be same length.
NOTE8:Car wiring for power circuit and control circuit(PG signal etc) should be wired separately each other.
NOTE9:CI box should be connected to body at different two points.

LJB

BECU(M CAR)

No.1 CI GATE CONTROL UNIT

No.2 CI GATE CONTROL UNIT

CI BOX

TMS (LOCAL UNIT)

TO VCB CONTROL CIRCUIT

PM Car:1869	M Car:1870
PM Car:1870	M Car:1871
PM Car:1863	M Car:1864
PM Car:1844	M Car:1863

VCB CONTROL CIRCUIT (PM car only)

TO TERTIARY WINDING

CHB1 (50A)
| PM Car:9701 | M Car:9711 |
| M Car:9702 | M Car:9712 |

CHB2 (50A)
| PM Car:9751 | M Car:9761 |
| M Car:9752 | M Car:9762 |

| PM Car:9721 | M Car:9771 |
| M Car:9722 | M Car:9772 |

TO CHARGING CIRCUIT OF FILTER CAPACITOR
(SHEMATIC DIAGRAM OF POWER CIRCUIT:H1H4865)

To PT

PRIMARY VOLTAGE

To No.2 GATE CONTROL UNIT

To No.1 GATE CONTROL UNIT

From PG3,4

From PG1,2

TO TMB2

TO GATE CONTROL UNIT

Note1: Shield wire number 100k, 100m, 100n should be read in a different number. For those number "doubling mark" numbering should be applied.

Note2: Wire 1987,1987,801,801 should be read in a different number between inside and outside of the C/I box.

SYMBOL	DESCRIPTION
CHK1,2	CHARGING AC CONTACTOR
K1,2	AC LINE CONTACTOR
DCK1,2	DC LINE CONTACTOR
VCBAR	VCB AUXILIARY RELAY
CIGRR	CI GROUND FAULT DETECTION RELAY

SYMBOL	DESCRIPTION
KR	AUXILIARY RELAY FOR K1,2
CHKR	AUXILIARY RELAY FOR CHK1,2
CIFR	CI FAULT RELAY (LEVEL1,2 FAULT)
EDFOR	ED FED OUT RELAY
BLR	BLENDING REQUIRED RELAY
WDTR	CI WATCH DOG TIMER DETECTION RELAY

SYMBOL	DESCRIPTION
SQR1~2	SEQUENCE TEST RELAY
VCBTR	VCB TRIP RELAY
EBHAR	EMERGENCY BRAKE HOLD AUXILIARY RELAY

SYMBOL	DESCRIPTION

SYMBOL	DESCRIPTION
CIB1,2	NFB FOR CNV./INV. CONTROL
CHB1,2	NFB FOR AC CHARGING CIRCUIT
ACCT1,2	AC CURRENT TRANSFORMER
CTU1 CTV2	CURRENT TRANSFORMER FOR MOTOR CURRENT
GCT1,2	CURRENT TRANSFORMER FOR GROUND FAILURE DETECTION

SYMBOL	DESCRIPTION
DCPT1,2	DC POTENTIAL TRANSFORMER
PG1~4	PULSE GENERATOR
ACPT	AC POTENTIAL TRANSFORMER
THR11~22	THERMISTOR FOR SEMICONDUCTOR UNIT

MANUFACTURER
MITSUBISHI ELECTRIC CORPORATION

MANUFACTURER'S DRAWING No.
H1J2044E

KCR 運輸部 Transport Division
九廣鐵路

TITLE
SP1900 ELECTRIC MULTIPLE UNITS
ELECTRICAL SCHEMATIC
SCHEMATIC DIAGRAM OF CONTROL

SCALE	NTS @ A1	
ORIGINATOR	ORIGINATOR REFERENCE	DRG REF REV
MITSUBISHI	H1J2044E	0
DRAWING NUMBER		REV
SP1900AB/XG/RR/D5002		0
RAILWAY	LOCATION	STAGE	SHEET NO
ER	HTL	Z	1

DESIGNED BY	NIL
DRAWN BY	SRD
CHECKED BY	K.Y.CHEUNG
IN CHARGE	C.C.HON
DATE	26JAN2007

REV	DATE	BY	SUB	APP	DESCRIPTION
0	26JAN07	SRD	K.Y.	C.C.	FIRST ISSUE

FULL SIZE A1