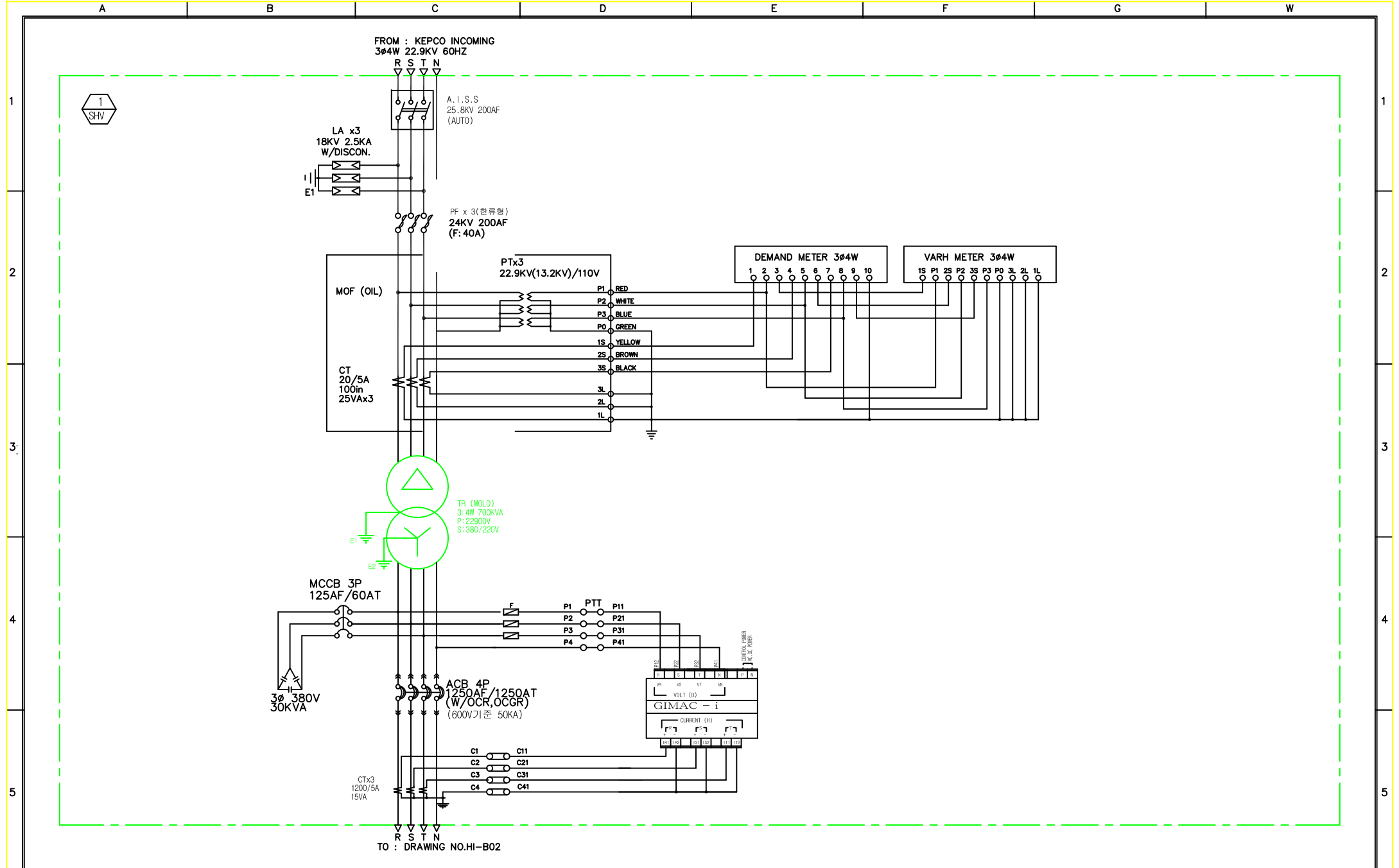
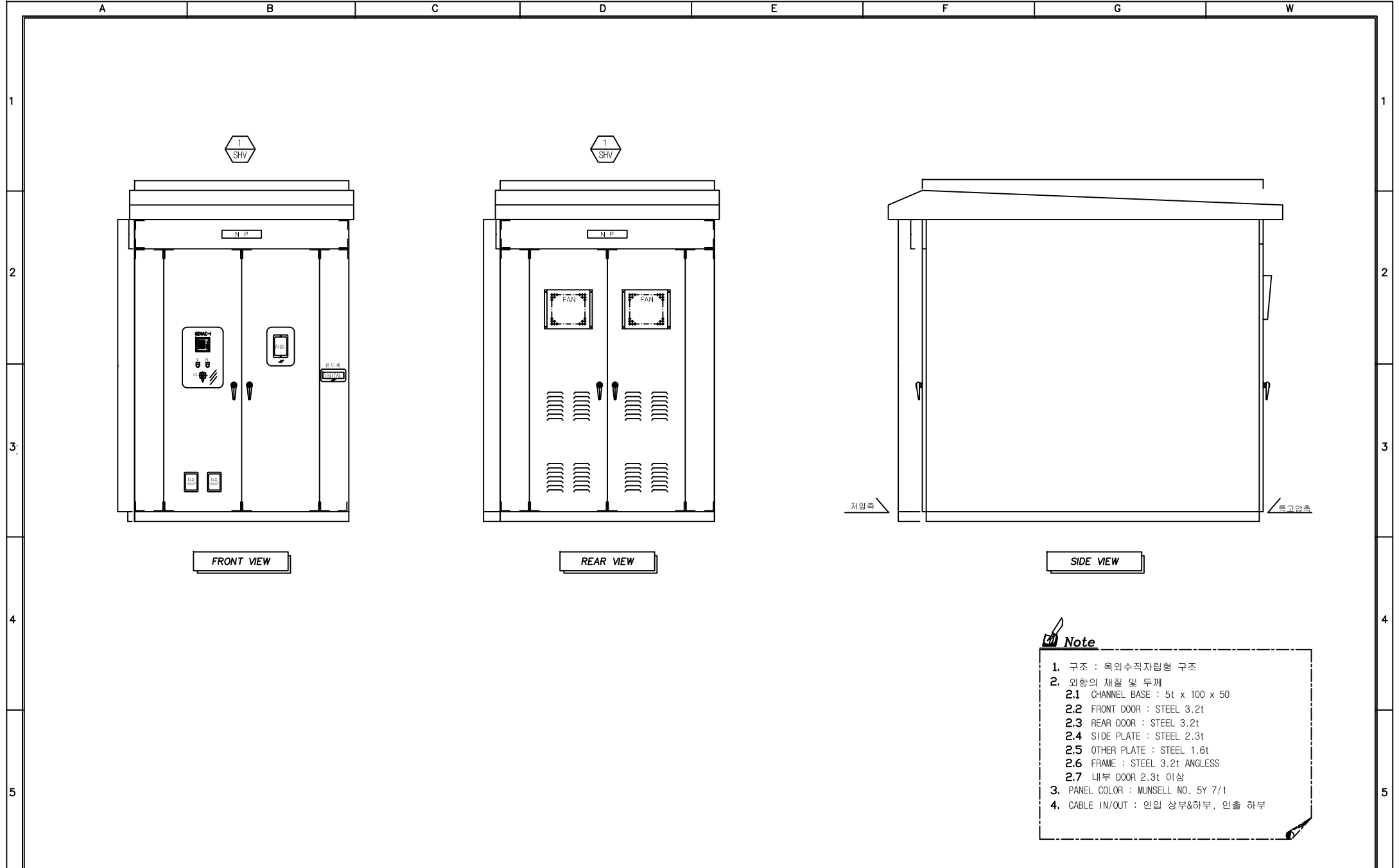


<table border="1"> <tr><td>4</td></tr> <tr><td>3</td></tr> <tr><td>2</td></tr> <tr><td>1</td></tr> </table>	4	3	2	1	PROJECT					APPROVED BY	CHECKED BY	TITLE			
	4														
	3														
	2														
1															
					DESIGNED BY & DRAWN BY			22.9kV SINGLE LINE							
REV.	DATA	CONTENTS	REV'D BY	CHK'D BY	APP'D BY	DATE	SCALE	UNIT	WORK NO.	2013-12-A001	DRAWING NO.	HI-A001	WHEET NO.		

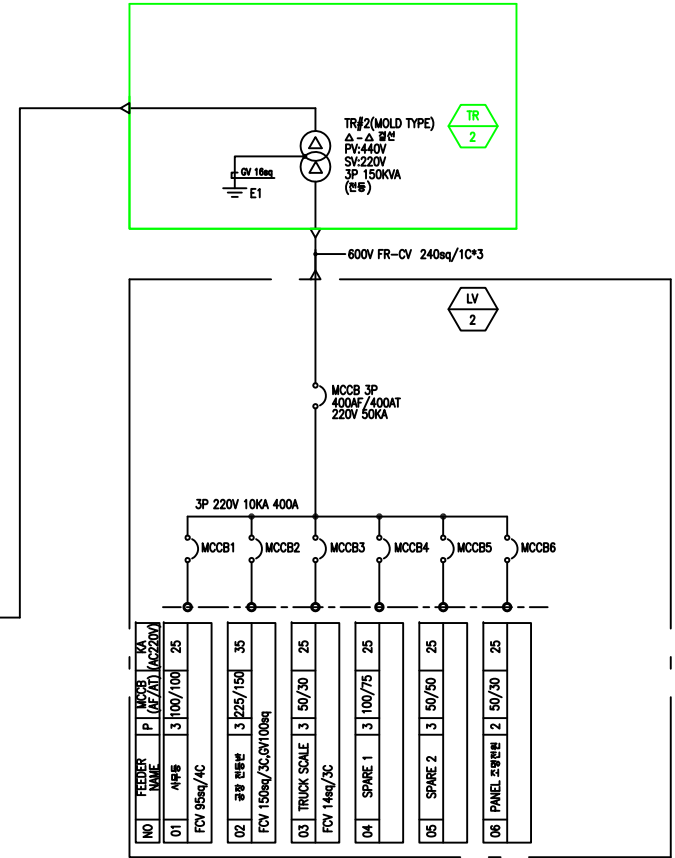
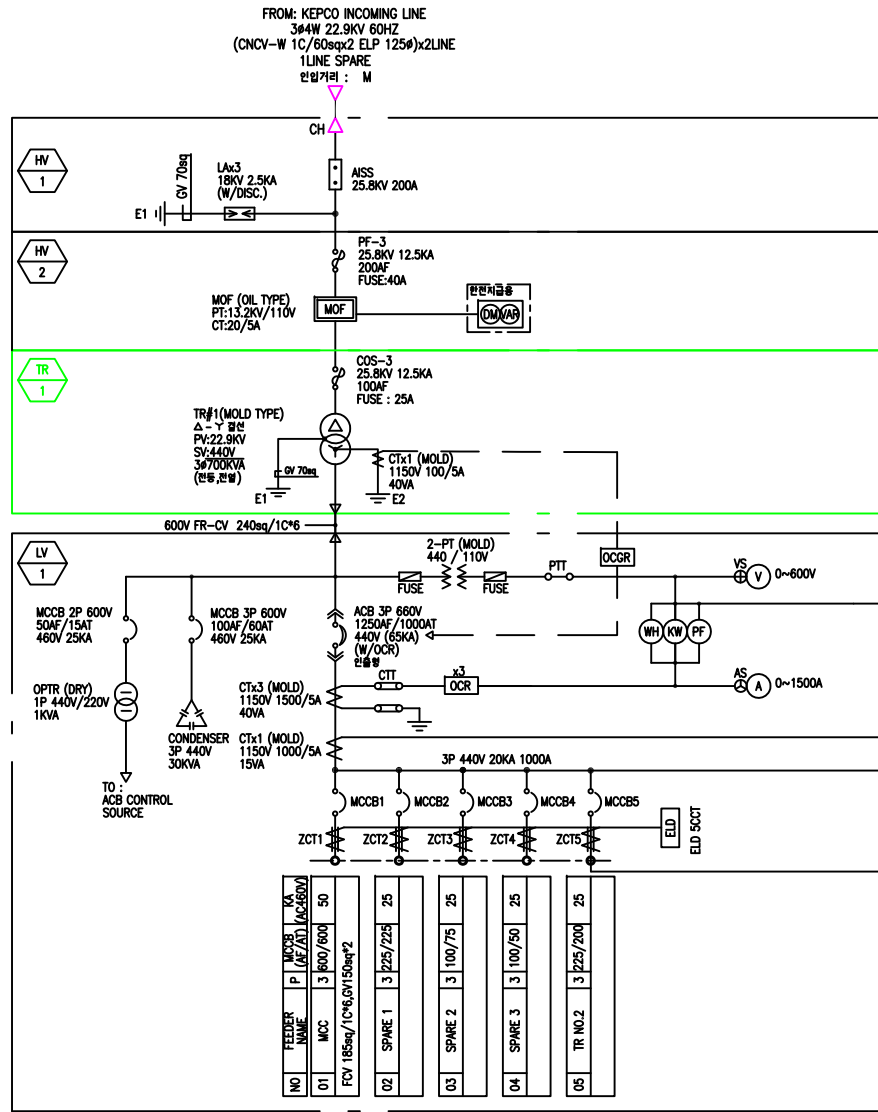


<table border="1"> <tr><td>4</td></tr> <tr><td>3</td></tr> <tr><td>2</td></tr> <tr><td>1</td></tr> </table>	4	3	2	1	PROJECT					APPROVED BY	CHECKED BY	TITLE			
	4														
	3														
	2														
1															
					DESIGNED BY & DRAWN BY		THREE LINE DRAWING								
REV.	DATA	CONTENTS	REV'D BY	CHK'D BY	APP'D BY	DATE	SCALE	UNIT	WORK NO.	2013-12-A001	DRAWING NO.	HI-B01	WHEET NO.		
[주]호원아이엔씨 HOWON Instrument & control Co., Ltd.															



- Note**
1. 구조 : 옥외수직자립형 구조
 2. 외함의 재질 및 두께
 - 2.1 CHANNEL BASE : 5t x 100 x 50
 - 2.2 FRONT DOOR : STEEL 3.2t
 - 2.3 REAR DOOR : STEEL 3.2t
 - 2.4 SIDE PLATE : STEEL 2.3t
 - 2.5 OTHER PLATE : STEEL 1.6t
 - 2.6 FRAME : STEEL 3.2t ANGLESS
 - 2.7 내부 DOOR 2.3t 이상
 3. PANEL COLOR : MUNSELL NO. 5Y 7/1
 4. CABLE IN/OUT : 인입 상부&하부, 인출 하부

4						PROJECT	APPROVED BY	CHECKED BY	TITLE				
3						(주)호원아이엔씨 <small>HOWON HOWON Instrument & control Co., Ltd.</small>	DESIGNED BY & DRAWN BY		22.9kV 수변전설비 외형도				
2							DATE	SCALE	UNIT	WORK NO.	2013-12-A001	DRAWING NO.	HI-A002
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REV.	DATA	CONTENTS	REV'D BY	CHK'D BY	APP'D BY								

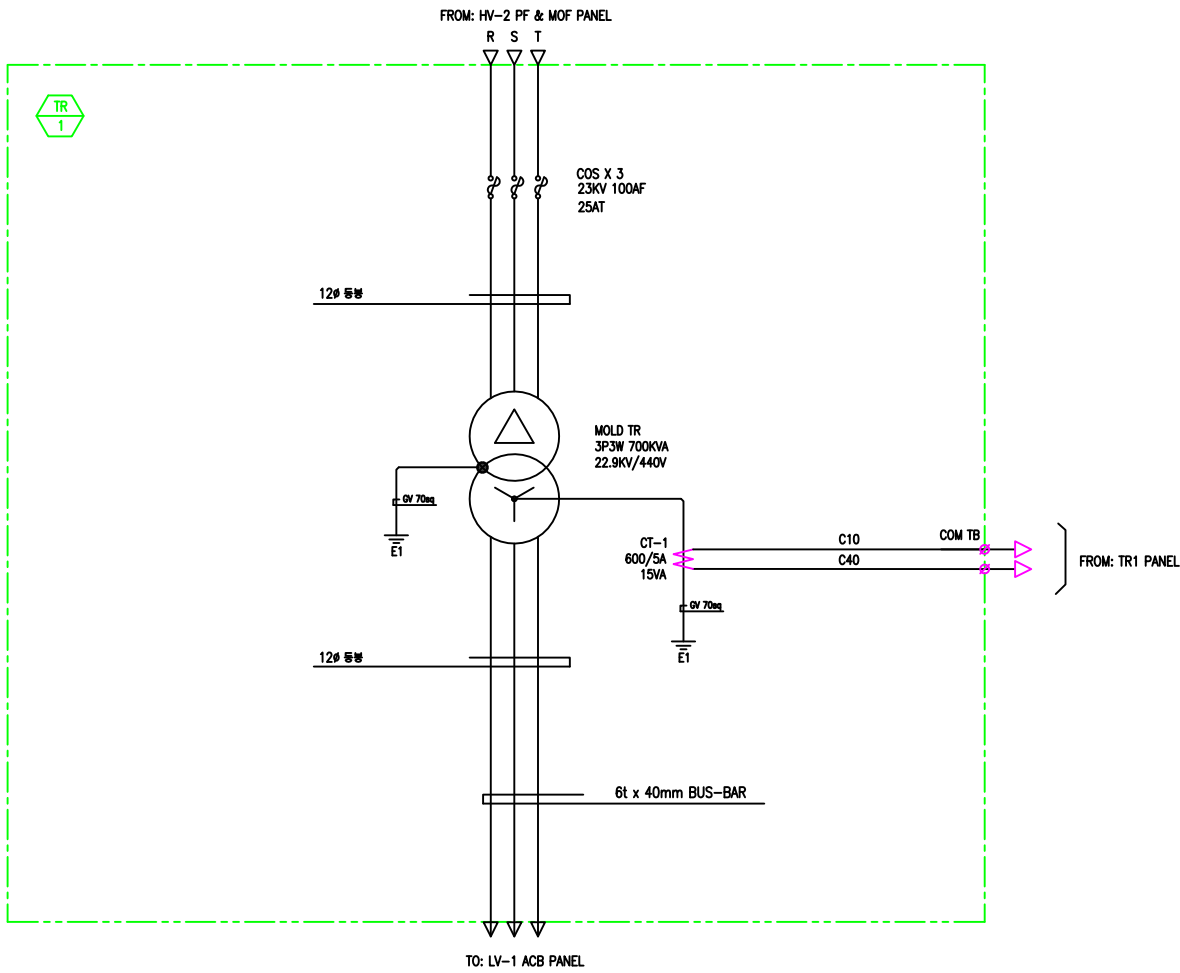


수변전설비 SINGLE LINE DIAGRAM
 SCALE : NONE

NO.	DATE	REVISIONS	PREPARER	CHECKER	REVIEWER	APPROVER
1						
2						
3						


CUSTOMER	
PROJECT	

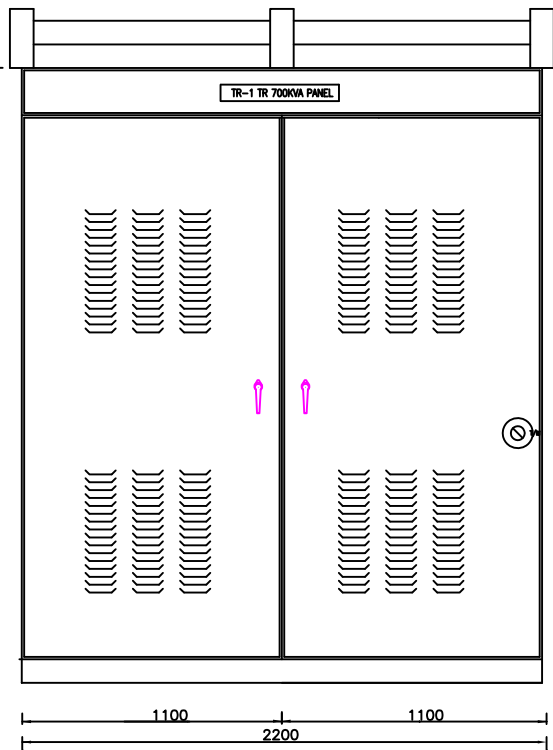
TITLE	SINGLE LINE DIAGRAM-1		SCALE	NONE
DWG No.	HW-HIL-03	SHEET No.	03	DATE '08. 04.
				CONT.No. 04
 (주)호원아이엔씨 H.WON Instrument & Control Co., Ltd.				



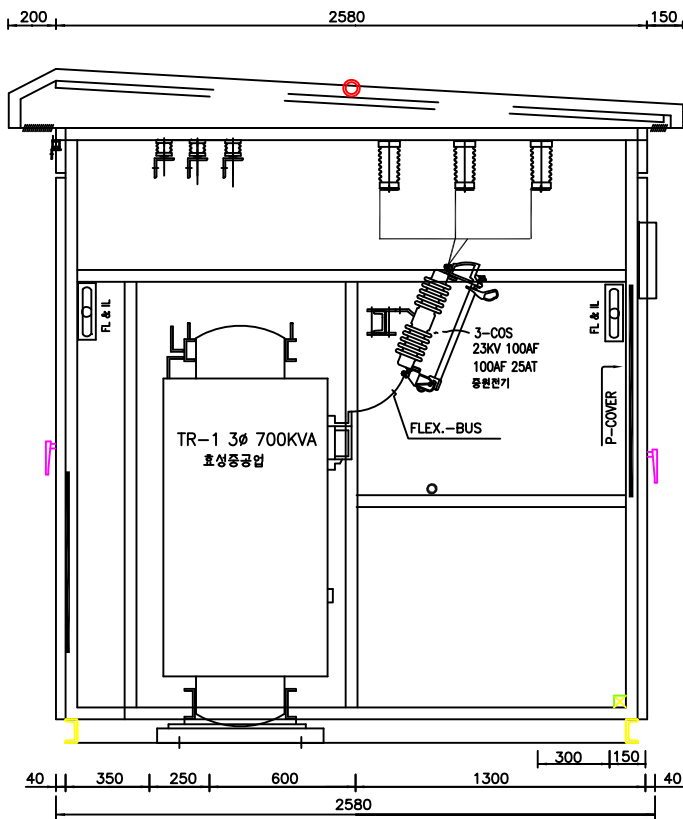
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CUSTOMER	
PROJECT	

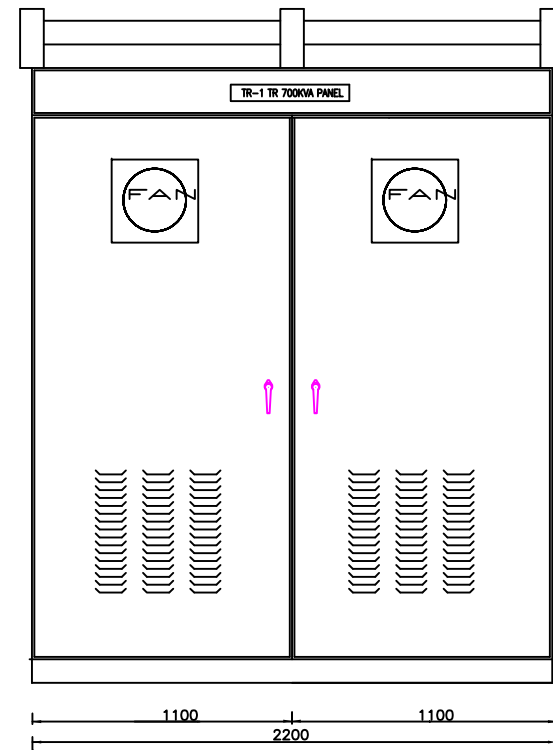
TITLE		THREE LINE DRAWING FOR HV-2 P.F & MOF PANEL	SCALE	NONE	
			DATE	'08.04.	
DWG No.	HW-HIL-07	SHEET No.	07	CONT.No.	08
 [주]호원아이엔씨 <small>HOWON Instrument & control Co., Ltd.</small>					



FRONT VIEW



INNER SIDE VIEW



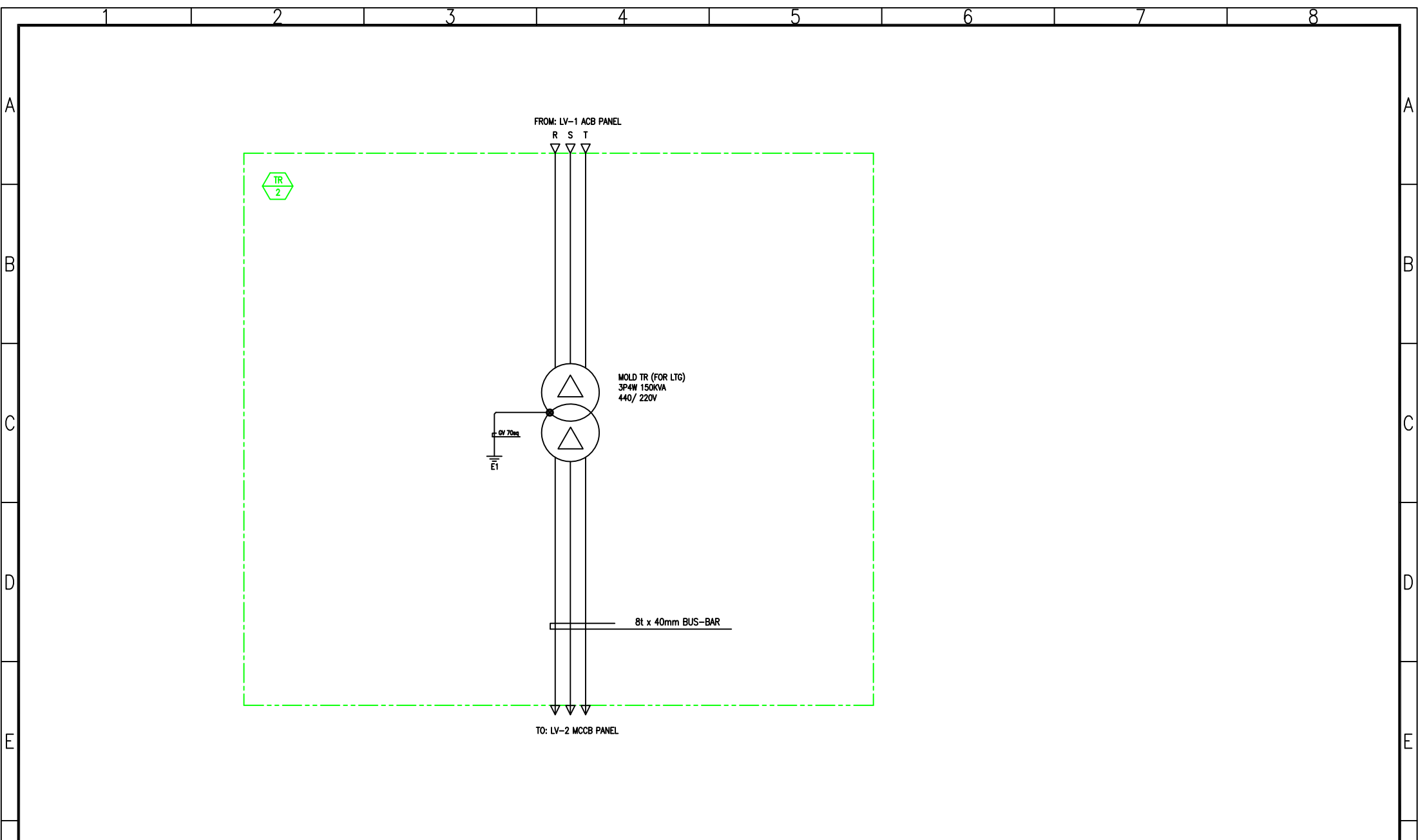
REAR VIEW

NO.	DATE	REVISIONS	PREPARER	CHECKER	REVIEWER	APPROVER
△						
△						
△						

CUSTOMER	
PROJECT	

TITLE	ASSEMBLY DRAWING FOR HV-1 TR 700KVA PANEL	SCALE	NONE
		DATE	'08.04.
DWG No.	HW-HIL-14	SHEET No.	14
		CONT.No.	15

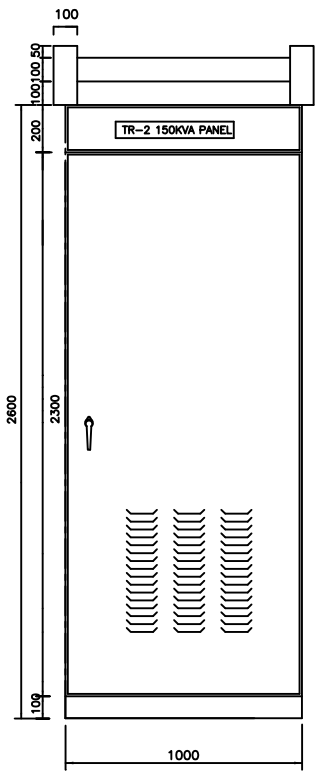
HOWON (주)호원아이엔씨
HOWON Instrument & control Co., Ltd.



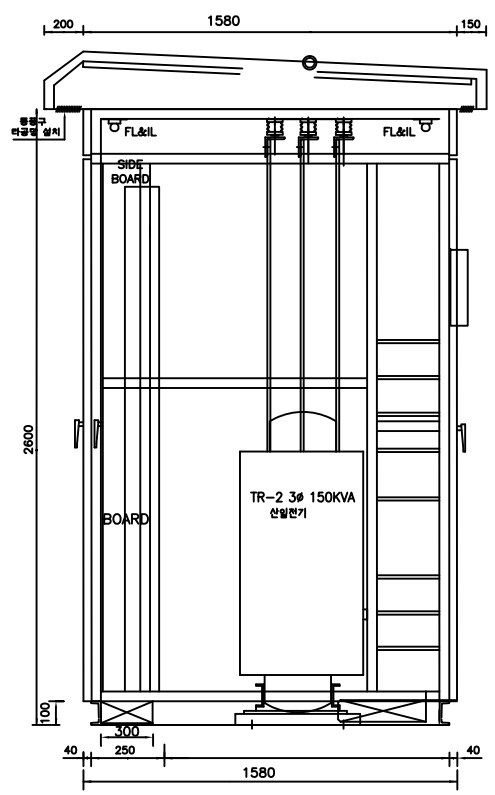
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NO.	DATE	REVISIONS	PREPARER	CHECKER	REVIEWER	APPROVER		

CUSTOMER	
PROJECT	

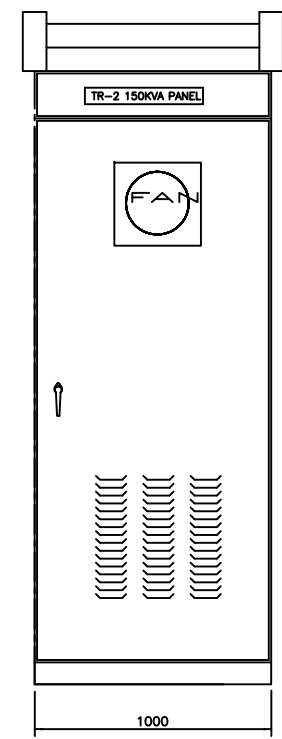
TITLE THREE LINE DRAWING FOR TR-2 PANEL		SCALE NONE	
DATE '08.04.			
DWG No. HW-HIL-09	SHEET No. 09	CONT.No. 10	
(주)호원아이엔씨 <small>HOWON Instrument & control Co., Ltd.</small>			



FRONT VIEW



INNER SIDE VIEW



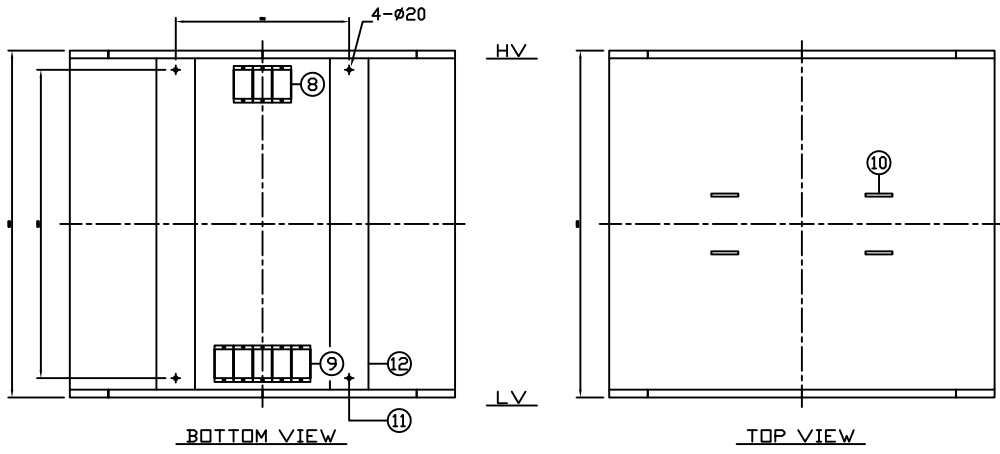
FRONT VIEW

△							
△							
△	'08. 04. 07	FOR APPROVAL	M.R.Seo	K.S.Shon	J.H.Lee	J.M.Lee	
NO.	DATE	REVISIONS	PREPARER	CHECKER	REVIEWER	APPROVER	

CUSTOMER	
PROJECT	

TITLE ASSEMBLY DRAWING FOR TR-2 150KVA PANEL		SCALE NONE
DATE '08.04.		
DWG No. HW-HIL-15	SHEET No. 15	CONT.No. 16



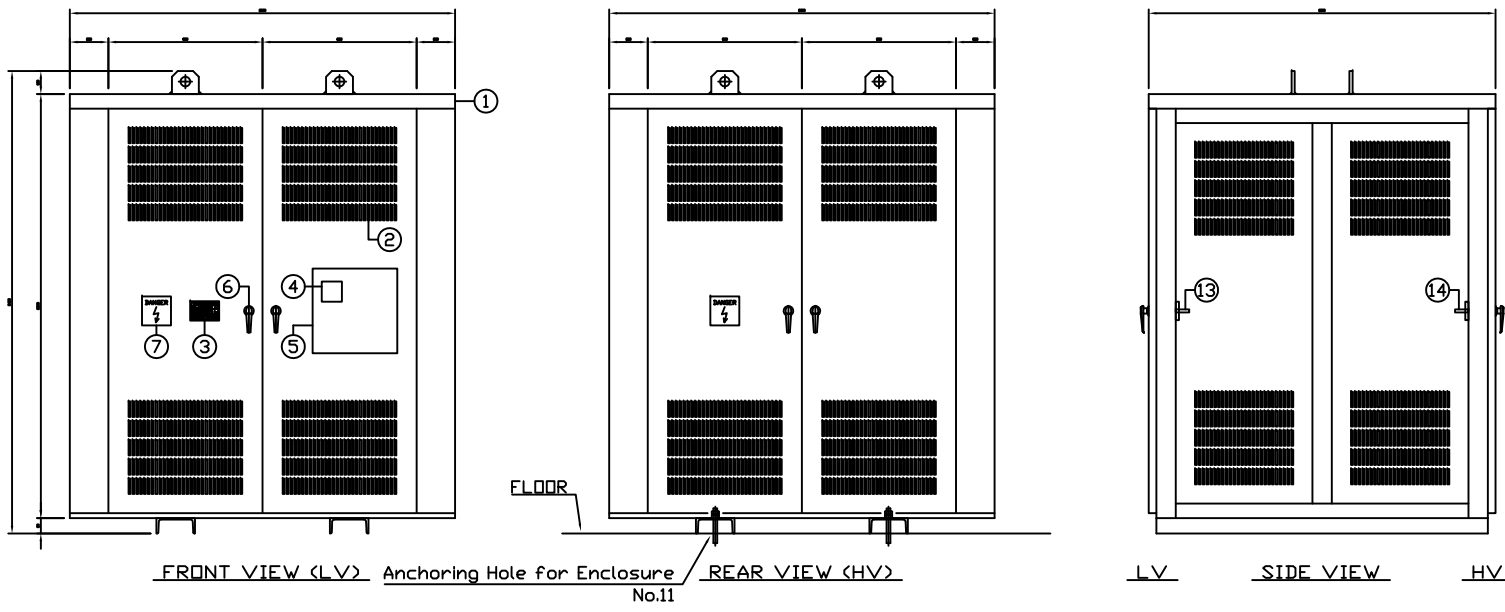


Notes

- 1) The minimum degree of protection IP21
- 2) Enclosure Finish :RAL 7035 with average thickness 60um in powder coating (with no any point minimum 40um)
- 3) Cable Entry (Steel 1.6t Cover)
HV : BOTTOM Cable Entry (150x300)
LV : BOTTOM Cable Entry (150x500)
- 4) The minimum thickness of used sheet steel :
Frame 3.2t / Top & Bottom cover 2.3t
: Side & Front & Rear cover 6t
- 5) Earth Cable : CV 60sq (GREEN)

No	DESCRIPTION
1	Enclosure IP21
2	Ventilation Grill
3	Transformer Name Plate
4	Digital Thermometer
5	Control BOX
6	Handle
7	Danger Mark Plate
8	Cutting for HV Cable Entry
9	Cutting for LV Cable Entry
10	Lifting Angle
11	Anchoring Hole for Enclosure
12	PNL Base(200*80 Channel)
13	LV Cable Support
14	HV Cable Support(Clamp ø30)

Transformer Weight	2500 kg
Enclosure Weight	900 kg
TOTAL Weight	3400 kg



Technical Data

1. Rated Power kVA: 610/305/305kVA
2. Rated Voltage V : 3300/1905-1905V
3. Vector Group : Dd0yn11
4. Protection : IP21
5. Frequency : 60Hz
6. Insulation Class : F
7. BIL (Prim/Sec) : 40/20/20kV
8. Power Frequency Withstand (Prim/Sec) : 10/10/10kV

TOLERANCE	PROJ.	UNIT	SCALE	DATE	APPROVED BY
±5%	⊕	mm	NONE		CHECKED BY
ABB			TYPE	Front & Rear Door	DESIGNED BY
ASEA BROWN BOVERI Ltd.			TITLE:	Enclosure outline for TR	DWG NO
					REF NO

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Asea Brown Boveri Ltd.

REV.	DATE	CONTENTS	CHECKED BY	APPROVED BY



Asea Brown Boveri, Chonan Korea

DATA SHEET (Cast Resin Transformer)

**(주)호원아이엔씨**
HOWON Instrument & Control Co., Ltd.

Customer : HOWONINC 3PH 60Hz 610/305/305kVA ABB Dgn.No : 04510- Dgn. By :	Project No.	Date	Rev
			0

General Specification

Transformer Type	-	Dry Type / Cast Resin
Standard	-	IEC 60726 Dry Type Power Transformers
Quantity	Unit	1
Installation	-	indoor
Phase	-	3
Frequency	Hz	60
Rated Power (HV/LV1/LV2)	kVA	610 /305/305
Rated Primary Voltage	V	3300
Rated Secondary Voltage	V	1905
Off-load tapping on HV	-	F3450 - R3300 - 3150 - 3000 - 2850
Vector group	-	Dd0yn11
Type of cooling	-	AN
Insulation class (HV/LV1/LV2)	-	F/F/F
Average Winding Temp. rise (HV/LV1/LV2)	°C	100/100/100
Conductor Material (HV/LV1/LV2) : C-Copper A-Aluminum	-	A/C/C
Ambient Temp (Max. / Min. / Year / day)	°C	40/-5/20/30

Technical Characteristic at AN, 120°C

No Load Loss	W	2200
Load Loss	W	6600
Total Loss	W	8800
Efficiency at 1.0PF, 100%Load	%	98.58
Impedance	%	4.5
Sound Level at AN	dB(A)	60
No Load Current	%	1.5
Regulation at AN, 100%Load (1.0PF / 0.8PF)	%	1.2 / 3.9
BIL (Basic Impulse Withstand Level) HV/LV1/LV2	kV	40/20/20
Power Frequency withstand Level, HV/LV1/LV2	kV	10/10/10

Overall Dimension TR./ Enclosure(if any) (±5% allowance)

Length	mm	1500	/ 2200
Width	mm	1000	/ 1500
Height	mm	1760	/ 2100
Weight	kg	2500	/ 900

Standard Accessories

Lifting Lug
Rating & Diagram Plate
Dial Type Thermometer
Anti-Vibration Pads

Optional Accessories (O : yes, X : no)

Enclosure	-	O (IP20)
Digital Type Thermometer	-	O (D-31)
RTC type thermal sensor	-	O (pt 100ohm)
Shield Screen	-	O
Four Flat tread Roller	-	X

Notes

- Buzzer, additional relay or another additional equipments are not included.
- Terminators are not included.
- Termination : bottom cable entry for both HV and LV.
- Tests : Routine tests according IEC.