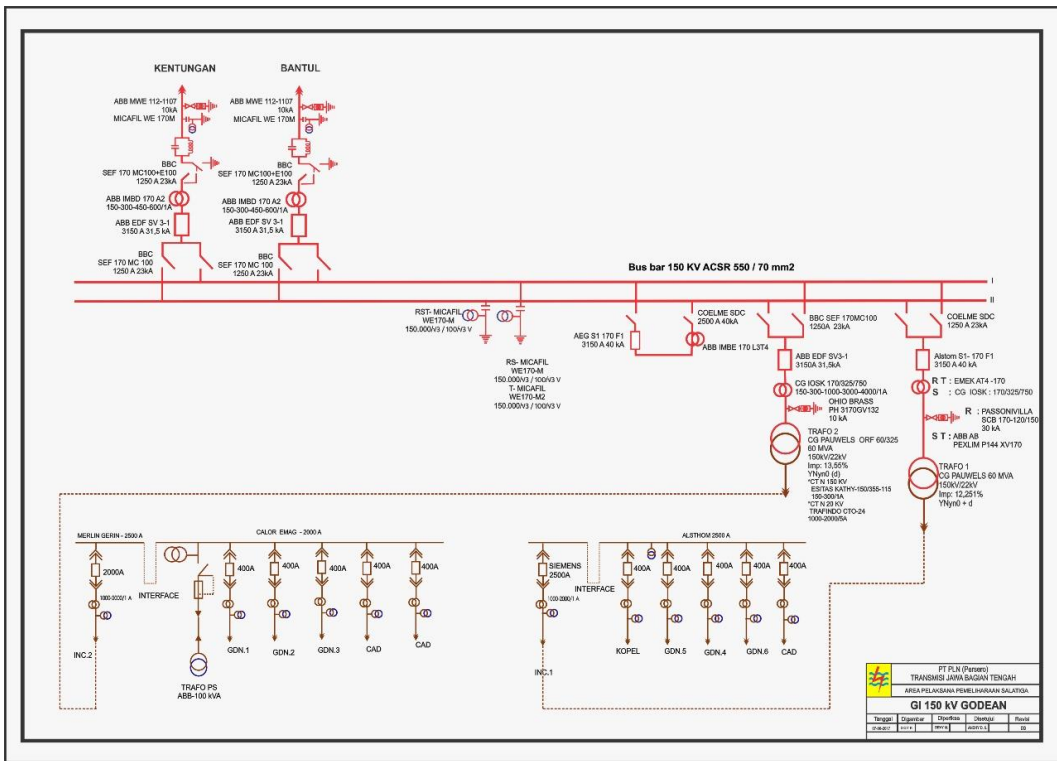


## **LAMPIRAN**



Single Line Diagram Saluran Distribusi Gardu Induk Godean Tahun 2018

**PAWELS TRAF0**  
**POWER TRANSFORMER**

SERIAL NUMBER: 301160  
 YEAR OF MANUFACTURE: 2017  
 STANDARD: IEC 60076  
 RATED POWER: 36/60 MVA  
 EMERGENCY RATING @ 120°C HOT SPOT: 90 MVA  
 COOLING: ONAN/DNAF  
 MAXIMUM SEISMIC DISTURBANCE: 0.25 g  
 FREQUENCY: 50 Hz  
 PHASES: 3

SHORT CIRCUIT CURRENT CAPACITY (2 Second): HV: 40 kA, LV: 25 kA, TV: 16 kA  
 NO LOAD LOSS @100% Ur: 27.75 kW  
 LOAD LOSS @TAP 9, 75°C: 111.45 kW  
 AMBIENT TEMP. REFERENCE: 30°C  
 TEMP. RISE BELOW 1000m ALTITUDE: TDP OIL: 50 K, AVERAGE WIND: 5.5 K  
 VACUUM WITHSTAND: 0.133 kPa  
 TANK CONSERVATOR RADIATOR: 0.133 kPa

TYPE OF OIL: NYNAS NYTRO LIBRA (UNINHIBITED)  
 TOTAL OIL: 105000 kg  
 UNTANKING MASS: 66000 kg  
 CORE MASS: 32600 kg  
 WINDINGS MASS: 24000 kg

CONNECTION SYMBOL: YNyn0+d  
 MAXIMUM ALTITUDE: 1000 m  
 TAP CHANGER: MR VV III 400Y-76kV-10193WR + ED100

Notice: Overload capability at max. hot spot temp 120°C, ambient 30°C  
 60 MVA 90 MVA 60 MVA  
 0 : hour

Manufactured by PT CG Power Systems Indonesia

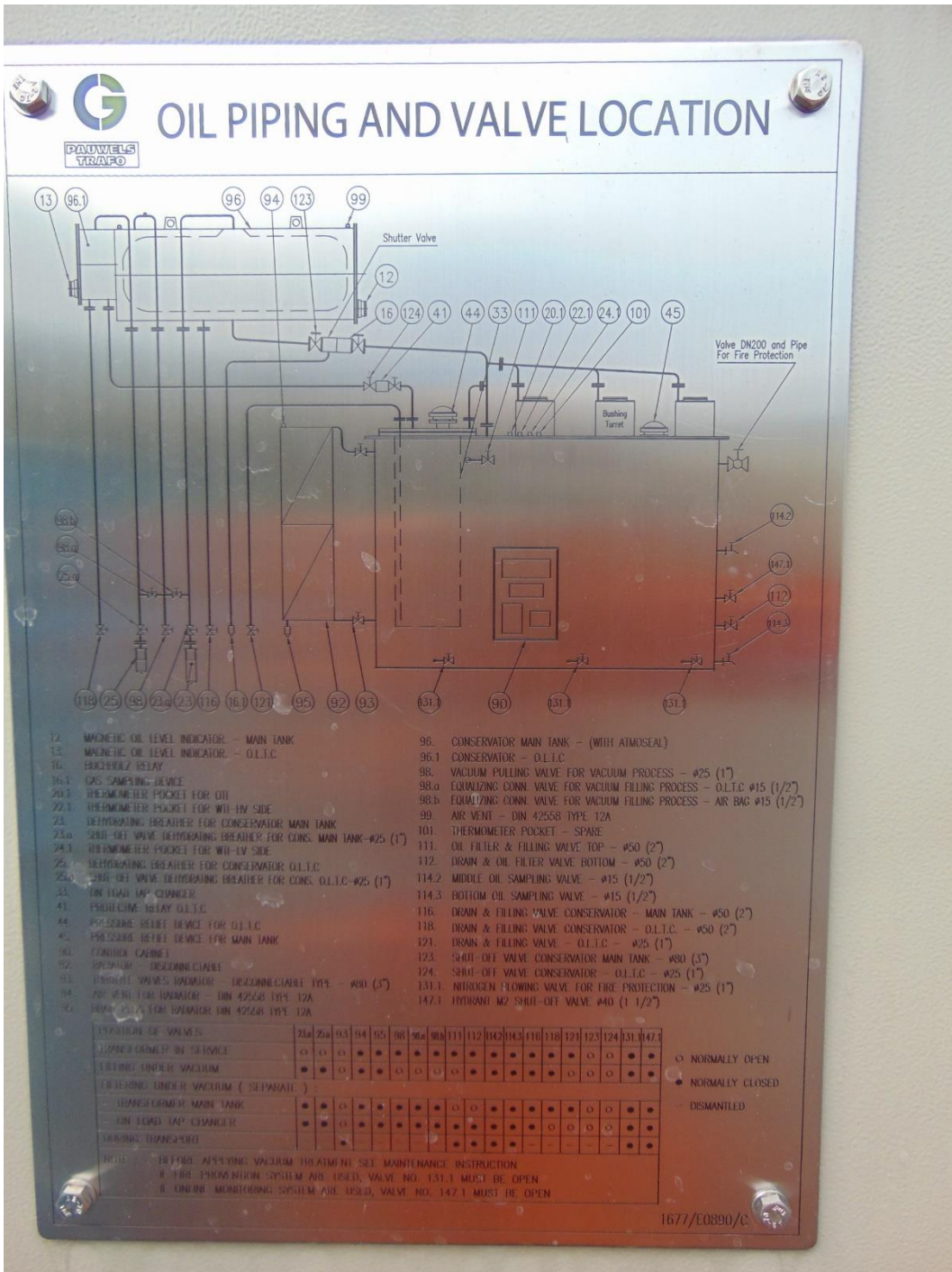
HIGH VOLTAGE-TERMINALS : IN-1U-1V-1W			
TAP	VOLT	AMPERE	MVA
1	165000	209.9	60
2	163125	212.4	60
3	161250	214.8	60
4	159375	217.4	60
5	157500	219.9	60
6	155625	222.6	60
7	153750	225.3	60
8	151875	228.1	60
9A	150000	230.9	60
9B	150000	230.9	60
10	148125	233.9	60
11	146250	236.9	60
12	144375	239.9	60
13	142500	243.1	60
14	140625	246.3	60
15	138750	249.7	60
16	136875	253.1	60
17	135000	256.6	60

LOW VOLTAGE-TERMINALS : 2N-2U-2V-2W			
VOLT	AMPERE	MVA	CONNECTION TAP CHANGER
22000	1574.6	50	3 - 12
TERTIARY-TERMINALS : 3U1-3V2			
VOLT	AMPERE	MVA	
10040	666.7/3	20	

SHORT CIRCUIT IMPEDANCE (%)			
TAP	VOLT	MVA	
1	165000	22000	7.3
9	150000	22000	7.2
17	135000	22000	7.1

CT FOR VTI  
 38.a 350/2A, CL. 1 20 VA  
 38.b 2100/2A, CL. 1 20 VA

Spesifikasi Trafo Unit I Gardu Induk Godean



Guide Trafo Unit I Gardu Induk Godean



**DATA SETTING RELAY GI GODEAN  
TRAFO I (CG POWER) YNyn0+d 60 MVA 150/22 kV XT 12,251 %**

JENIS RELAY	TYPE RELAY		Setting Relay Baru
OCR dan GFR sisi 150 kV	<b>AREVA MICOM P141</b> <b>OCR</b> Range I> : 0,100 In – 25,00 In Step I> : 0,010 In Range TMS : 0,025 – 1,500 Step TMS : 0,001 Range I>> : 0,500 In – 40,00 In Step I>> : 0,010 In t1>> : 0,00 s – 150,00 s Step t1>> : 0,01 s  <b>GFR</b> Range Ie> : 0,100 Ien – 2,00 Ien Step Ie> : 0,001 Ien Range TMS : 0,025 – 1,500 Step TMS : 0,001 Range Ie>> : 0,010 Ien – 8,00 Ien Step Ie>> : 0,001 Ien t1e>> : 0,00 s – 150,00 s Step t1e>> : 0,01 s	<i>Rasio CT = 300/1 In Ry = 1 A</i> <b>OCR</b> Function I> : Yes I> : 0.92 In Delay Type : IDMT Idmt : SI (IEC) Tms : 0.36 t Reset : 0.10 s Function I>> : Yes I>> : 7.6 In Delay Type : DMT t1>> : 0.00 s  <b>GFR</b> Function Ie> : Yes Ie> : 0.31 Ien Delay Type : IDMT Idmt : SI (IEC) Tms : 0.65 t Reset : 0.10 s Function Ie>> : No Ie>> : - Delay Type : - t1e>> : -	<i>Rasio CT = 300/1 In Ry = 1 A</i> <b>OCR</b> Function I> : Yes I> : 0.92 In Delay Type : IDMT Idmt : SI (IEC) Tms : 0.36 t Reset : 0.10 s Function I>> : Yes I>> : 9 In Delay Type : DMT t1>> : 0.00 s  <b>GFR</b> Function Ie> : Yes Ie> : 0.38 Ien Delay Type : IDMT Idmt : SI (IEC) Tms : 0.69 t Reset : 0.10 s Function Ie>> : No Ie>> : - Delay Type : - t1e>> : -
	<b>SCHNEIDER MICOM P141</b> <b>OCR</b> Range I> : 0,100 In – 25,00 In Step I> : 0,010 In Range TMS : 0,025 – 1,500 Step TMS : 0,001 Range I>> : 0,500 In – 40,00 In Step I>> : 0,010 In t1>> : 0,00 s – 150,00 s Step t1>> : 0,01 s  <b>GFR</b> Range Ie> : 0,100 Ien – 2,00 Ien Step Ie> : 0,001 Ien Range TMS : 0,025 – 1,500 Step TMS : 0,001 Range Ie>> : 0,010 Ien – 8,00 Ien Step Ie>> : 0,001 Ien t1e>> : 0,00 s – 150,00 s Step t1e>> : 0,01 s	<i>Rasio CT = 2000/5 In Ry = 5 A</i> <b>OCR</b> Function I> : Yes I> : 1.04 In Delay Type : IDMT Idmt : SI (IEC) Tms : 0.17 t Reset : 0.10 s Function I>> : Yes I>> : 3.46 In Delay Type : DMT t1>> : 0.700 s  Function I>>> : Yes I>>> : 5.2 In Delay Type : DMT t1>>> : 0.400 s  <b>GFR</b> Function Ie> : Yes Ie> : 0.346 Ien Delay Type : IDMT Idmt : SI (IEC) Tms : 0.44 t Reset : 0.10 s Function Ie>> : Yes Ie>> : 2.36 Ien	<i>Rasio CT = 2000/5 In Ry = 5A</i> <b>OCR</b> Function I> : Yes I> : 1.04 In Delay Type : IDMT Idmt : SI (IEC) Tms : 0.23 t Reset : 0.10 s Function I>> : Yes I>> : 3.5 In Delay Type : DMT t1>> : 0.600 s  Function I>>> : Yes I>>> : 4.3 In Delay Type : DMT t1>>> : 0.400 s  <b>GFR</b> Function Ie> : Yes Ie> : 0.35 Ien Delay Type : IDMT Idmt : SI (IEC) Tms : 0.43 t Reset : 0.10 s Function Ie>> : Yes Ie>> : 2.6 Ien

**PROTEKSI APP SALATIGA**

Hal.	Pengaman Trafol, 150/22 kV 60 MVA GI GODEAN	Dibuat : DECA	Diperiksa: LKD	Disetujui: DMT	Disetujui APD:	10-04-2018
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**DATA SETTING RELAY GI GODEAN  
TRAFO I (CG POWER) YNyn0+d 60 MVA 150/22 kV XT 12,251 %**

JENIS RELAY	TYPE RELAY		Setting Relay Baru
		Delay Type : DMT tle>> : 0.700 s  Function Ie>>> : Yes Ie>>> : 3.8 Ien Delay Type : DMT tle>>> : 0.400 s	Delay Type : DMT tle>> : 0.600 s  Function Ie>>> : Yes Ie>>> : 3.5 Ien Delay Type : DMT tle>>> : 0.400 s
<b>OCR/GFR Penyulang</b>		<i>Rasio CT = 600/5 In Ry = 5 A</i>  <b>OCR</b> Is = 4 A Tap = 0.8 x In TMS = 0.16 ( SI ) Highset OCR 1 I >> = 5 In t >> = 0.3 detik Highset OCR 2 I >> = 14 In t >> = Instant  <b>GFR</b> Is = 2 A Tap = 0.4 x In TMS = 0.36 ( SI ) Highset GFR 1 I >> = 4 In t >> = 0.3 detik Highset GFR 2 I >> = 10 In t >> = Instant	<i>Rasio CT = 400/1 In Ry = 1 A</i>  <b>OCR</b> Is = 1.2 A Tap = 1.2 x In TMS = 0.26 ( SI ) Highset OCR 1 I >> = 7.87 In t >> = 0.3 detik Highset OCR 2 I >> = 18.9 In t >> = Instant  <b>GFR</b> Is = 0.6 A Tap = 0.6 x In TMS = 0.29 ( SI ) Highset GFR 1 I >> = 5.9 In t >> = 0.3 detik Highset GFR 2 I >>> = 13 In t >>> = Instant

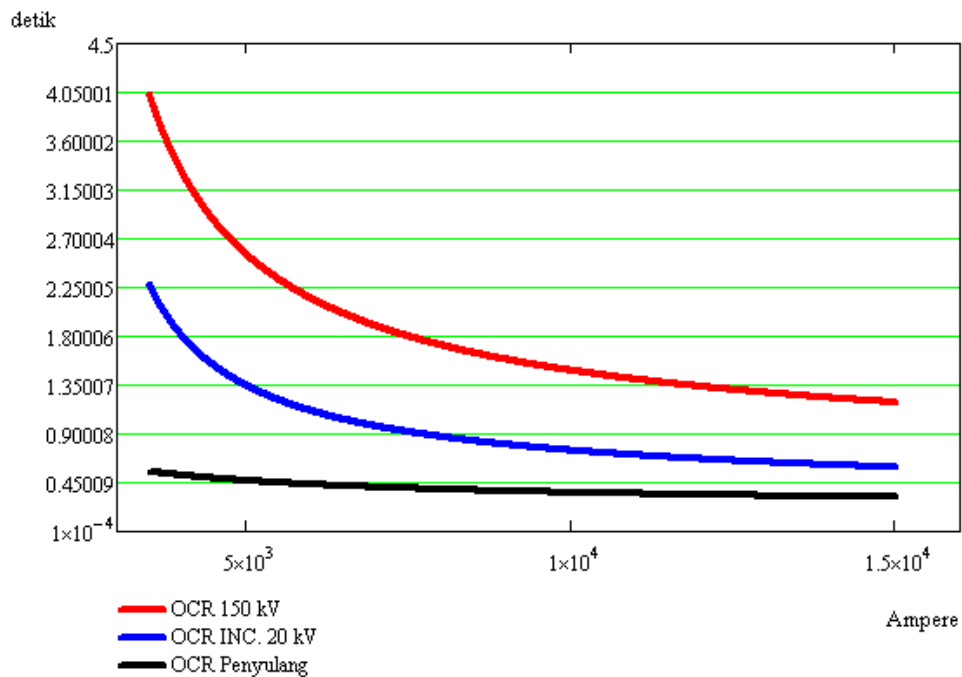
**PROTEKSI APP SALATIGA**

Hal.	Pengaman Trafol, 150/22 kV 60 MVA GI GODEAN	Dibuat :	Diperiksa:	Disetujui:	Disetujui APD:	10-04-2018
		DECA	LKD	DMT		

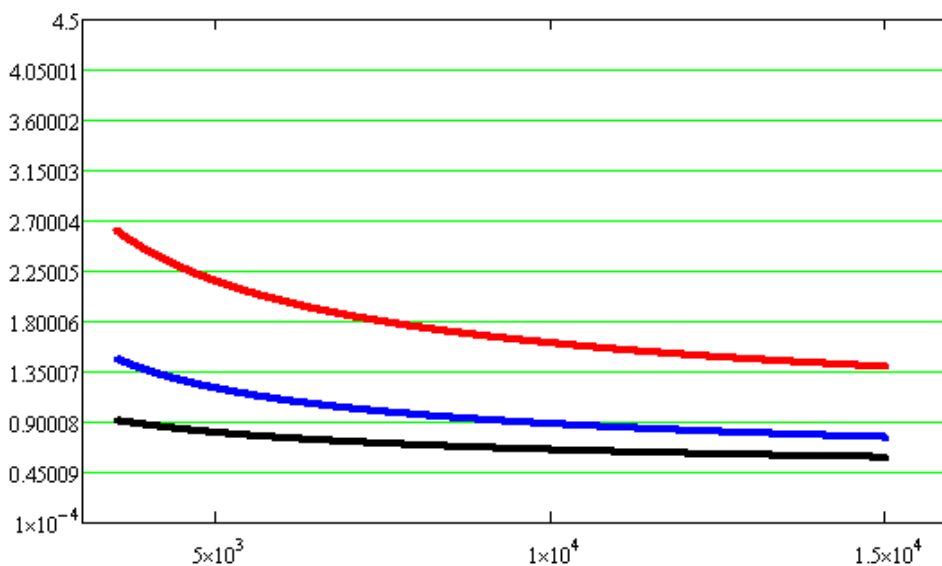


## DATA SETTING RELAY GI SEMANU TRAFO I (UNINDO) YNyn0(d1) 60 MVA 150/20 kV XT 12,2 %

### Grafik Koordinasi Over Current Relay Trafo – Penyulang



### Grafik Koordinasi Ground Fault Relay Trafo – Penyulang



#### PROTEKSI APP SALATIGA

Hal.	Pengaman Trafol, 150/22 kV 60 MVA GI GODEAN	Dibuat : DECA	Diperiksa: LKD	Disetujui: DMT	Disetujui APD:	10-04-2018
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