

DAFTAR LAMPIRAN

Lampiran 1 Data Impedansi SUTT Gambir Lama - Pulomas

No.	Description	Requirement
1.	NAME	TACSR (THERMAL RESISTANCE ALLOY CONDUCTOR STEEL REINFORCED)
2.	DIMENSIONAL & ELECTRICAL CHARACTERISTIC	
a.	Nominal Cross Sectional Area	520 mm ²
b.	No./Dia of Wire	-TAL Wire 54/3.50 pcs/mm -Steel 7/3.50 pcs/mm
c.	Actual Cross Sectional Area	TAL Wire 519,54 mm ² -Steel 67,35 mm ² Total 586,89 mm ²
d.	Approximately	Overall Dia 31.50 mm Weight of Conductor 1969 kg/km
e.	Min Calculated Breaking load	≥ 15.000 kgf ≥ 150.000 N
f.	Max DC resistance at 20 ⁰ C	0.0567 Ω/km
g.	Current Carrying Capacity	≥ 1600 Amp
h.	Standard Length per Reel	≥ 1500 mm
i.	Standard Specification	JEC 197
3.	Positive sequence impedance	0.0755 + j0.337 Ω/km
	Negative sequence impedance	0.3716 + j2.2335 Ω/km

Lampiran 2 Data impedansi SUTT 150 kV

DATA KONSTANTA KONDUKTOR (PER KM)

No.	Kawat Konduktor		KONSTANTA (Ohm/ Km)							Keterangan
	JENIS	JENIS	MM ²	JML	R	X	B	TAND	CCC	
1.	SKTT	CU240	240	1	0.0440	0.0580	3.285	0.000	1.100	
2.	SKTT	CU240	240	2	0.0870	0.1320	73.000	0.000	550	
3.	SKTT	CU300	300	-	0.0826	0.1270	80.000	0.000	435	
4.	SKTT	AL630	630	2	0.0565	0.1125	100.000	0.000	580	
5.	SKTT	AL800	800	2	0.0503	0.1063	113.180	0.000	730	
6.	SKTT	CU800	800	2	0.0338	0.1097	116.800	0.000	920	
7.	SUTT	KOPEL	-	2	0.0387	0.2807	4.023	0.000	1.620	
8.	SUTT	REAKT	-	1	0.0000	4.8000	0.000	0.000	1.600	
9.	SUTT	CU50	50	-	0.3570	0.4156	2.744	0.000	300	
10.	SUTT	RAVEN	62.38	-	0.6128	0.3582	3.064	0.000	230	
11.	SUTT	CU70b	70	2	0.2925	0.4025	2.837	0.000	330	
12.	SUTT	PGEON	99.22	-	0.3866	0.3584	3.202	0.000	310	99.2 mm ²
13.	SUTT	PARTR	152.70	-	0.2136	0.4080	2.766	0.000	400	
14.	SUTT	ACSRa	176.71	1	0.2723	0.3972	2.877	0.000	380	176.71 mm ² - Standar
15.	SUTT	OSTRI	176.71	-	0.2175	0.3871	2.956	0.000	440	176.71 mm ² - Modif.
16.	SUTT	PIPER	187.48	-	0.2180	0.3859	2.956	0.000	440	187.5 mm ²

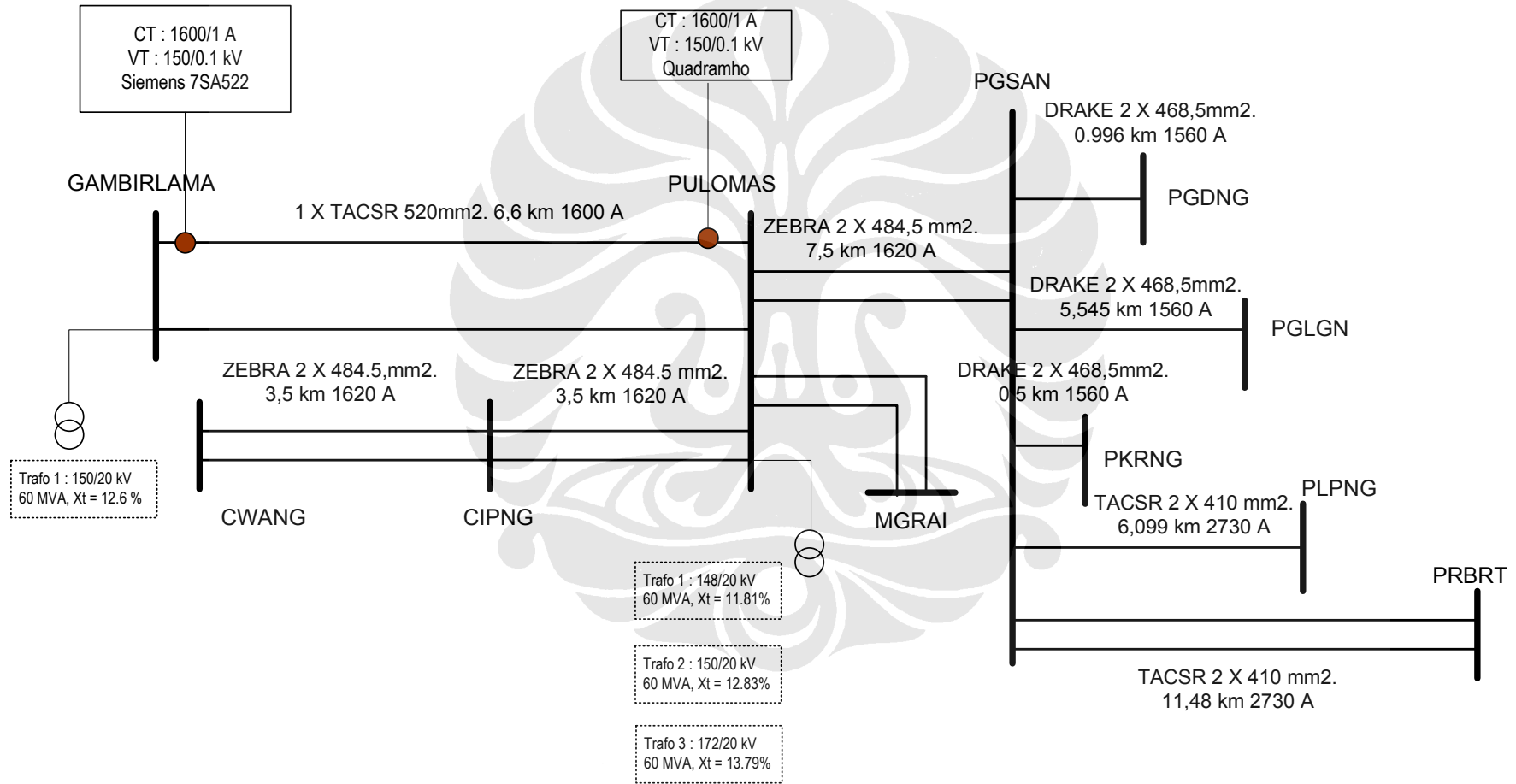
17.	SUTT	ORIOI	210.26	2	0.1694	0.3814	3.002	0.000	470	170/40 mm ²
18.	SUTT	TA221	240	2	0.1370	0.3966	2.880	0.000	800	
19.	SUTT	TA222	240	2	0.0633	0.2581	4.386	0.000	2.730	
20.	SUTT	HA221	281.10	-	0.1370	0.3966	2.880	0.000	580	1x281.1 mm ²
21.	SUTT	HA222	281.10	-	0.0685	0.2045	2.788	0.000	1.200	2x281.1 mm ²
22.	SUTT	HE211	298.07	-	0.1373	0.4127	2.763	0.000	580	298.07 mm ²
23.	SUTT	HEN22	298.07	2	0.1575	0.3700	3.098	0.000	1160	
24.	SUTT	DO124	327.94	2	0.0293	0.2815	4.032	0.000	2.500	
25.	SUTT	DO221	327.94	-	0.1172	0.4003	2.853	0.000	600	
26.	SUTT	DO222	327.94	2	0.0586	0.2773	4.074	0.000	1.200	
27.	SUTT	GA124	392.84	2	0.0251	0.2808	4.049	0.000	2.400	
28.	SUTT	DR221	468.45	1	0.0823	0.4063	2.809	0.000	780	
29.	SUTT	DR222	468.45	1	0.0411	0.2812	4.016	0.000	1.560	2x468.5 mm ²
30.	SUTT	ZE221	484.50	2	0.0773	0.4013	2.846	0.000	810	484.5 mm ²
31.	SUTT	ZE222	484.50	-	0.0387	0.2807	4.023	0.000	1.620	2x484.5 mm ²
32.	SUTT	ZE224	484.50	2	0.0199	0.2290	5.024	0.000	2.730	4x484.5 mm ²
33.	SUTT	TACSR	160	1	0.214	0.408			440	
34.	SUTT	ACSR21	330	2	0.137	0.397	2.880	0.000	740	
35.	SUTT	ACSR22	330	2	0.0633	0.2581	4.386	0.000	1480	
36.	SUTT	ACSR24	330	1	0.0199	0.2290	5.024	0.000	2960	

$$B \text{ (Ohm/km)} * 10^{-6} * L * (KV)^2 = B \text{ (p.u.)}$$

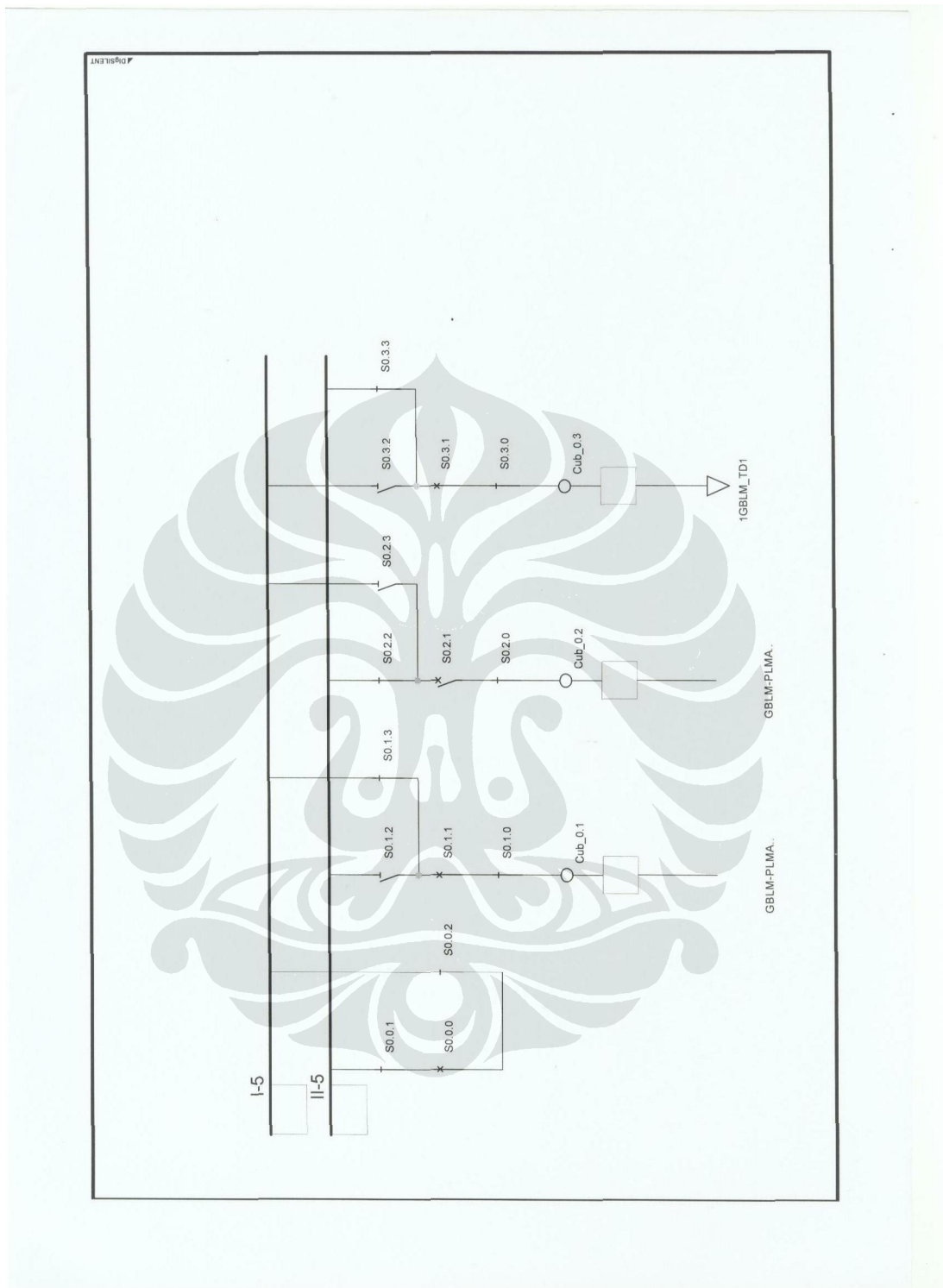
DATA KONSTANTA KONDUKTOR (PER KM)

No	Kawat Konduktor		KONSTANTA (Ohm/ Km)							Keterangan
	JENIS	JENIS	MM ²	JM L	R	X	B	TAND	CCC	
37.	SUTT	AW 221	330	2	0.1172	0.4003	2.853	0.000	600	
38.	SUTT	AW 222	330	2	0.0586	0.2815	4.074	0.000	1.200	
39.	SUTT	AW 124	327.94	1	0.0293	0.2773	4.032	0.000	2.500	
40.	SUTT	ACSR21	330	2	0.137	0.397	2.880	0.000	740	
41.	SUTT	ACSR22	330	2	0.0633	0.2581	4.386	0.000	1480	
42.	SUTT	ACSR24	330	1	0.0199	0.2290	5.024	0.000	2960	

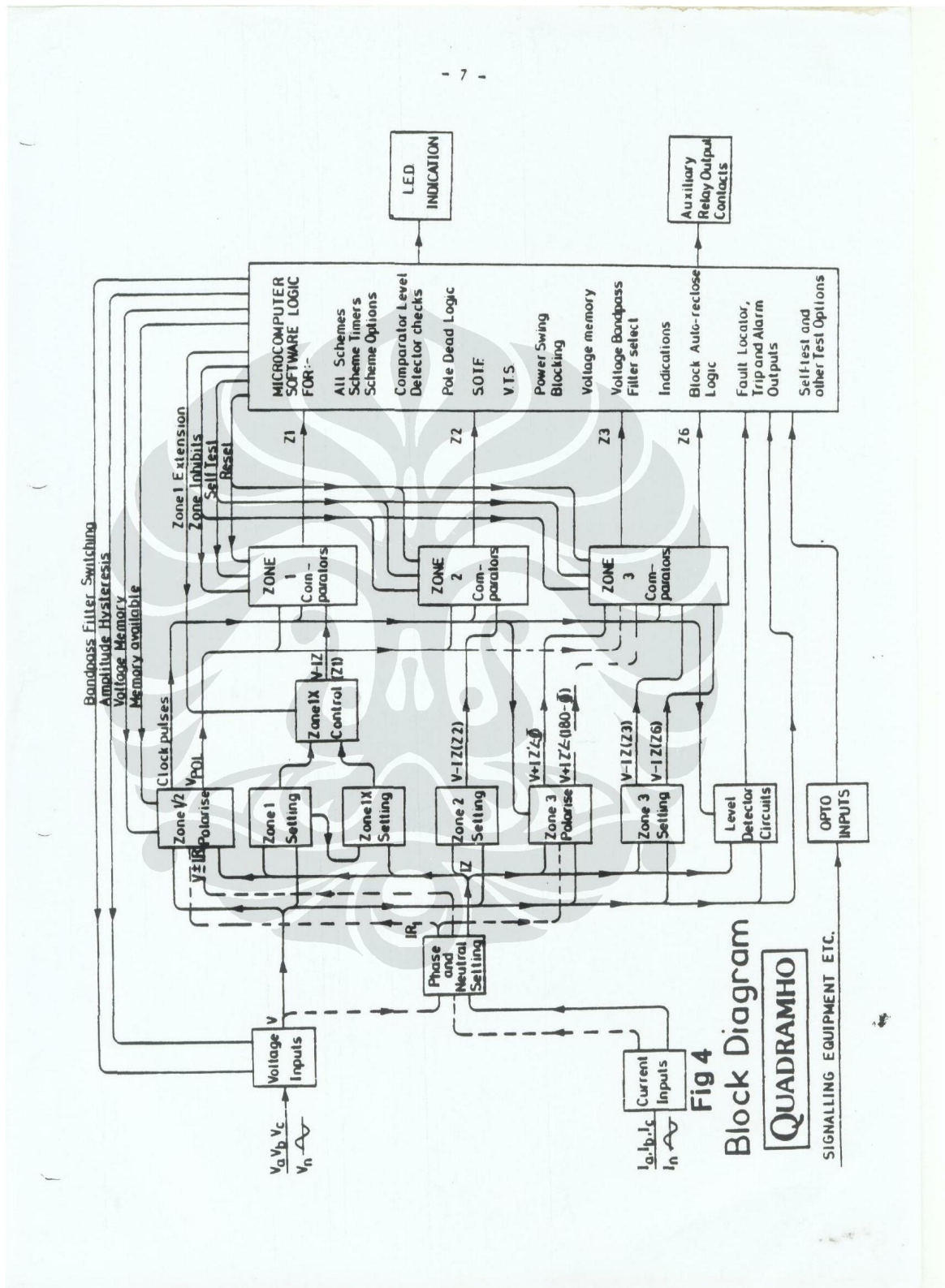
Lampiran 3 Diagram Satu Garis GI Gambir Lama – Pulomas



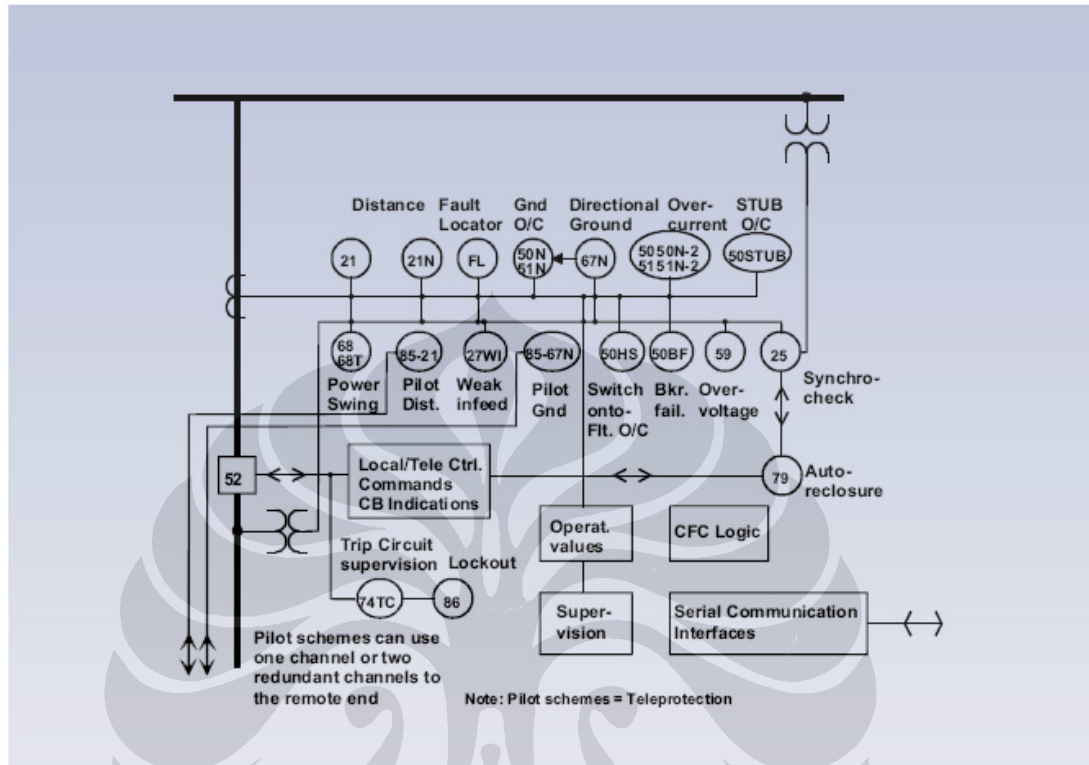
3.1 Gardu Induk Gambir Lama 150 kV



Lampiran 4 Blok Diagram Rele GEC Tipe Quadramho



Lampiran 5 Blok Diagram Rele Siemens 7SA522



Lampiran 6 SWITCH OPTION QUADRAMHO

- SW1 = (LEFT : SOTF tripping initiated by comparators)
(RIGHT : SOTF tripping initiated by level detectors)
- SW2 = (LEFT : SOTF enable time = 110 sec)
(RIGHT : SOTF enable time = 200 msec)
- SW3 = (LEFT : VTS indicates only)
(RIGHT : VTS indicates and blocks relay)
- SW4 = (LEFT : Normal block auto reclose action)
(RIGHT : Block auto reclose for Z1 and AT 3 phase faults)
- SW5 = (LEFT : Self checking feature disabled)
(RIGHT : Self checking feature enabled)
- SW6 = (LEFT : Normal block auto reclose action)
(RIGHT : Block auto reclose also for signalling channel out of service)
- SW7 = (LEFT : Disabled trip by weak Infeed feature)
(RIGHT : Enable trip by weak infeed feature)
- SW8 = (LEFT : POR Weak Infeed feature disabled)
(RIGHT : POR Weak Infeed feature disabled)
- SW9 = (LEFT : Power Swing Blocking function disabled)
(RIGHT : Power Swing Blocking function enabled)