

## LAMPIRAN

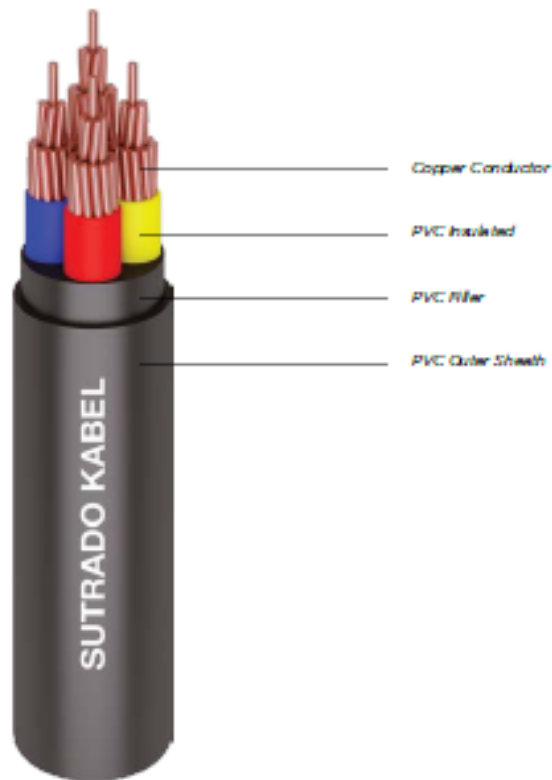
### Lampiran 1. Sutrado Kabel

## 0.6/1 kV, NYY (Cu / PVC / PVC)

(Copper Conductor, PVC Insulated, PVC Sheathed)

Standard Specification : SPLN 43 - 1, SNI IEC 60502 - 1

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#### Application

Power cable : Indoors, cable trunking, outdoors and buried in the ground, for power stations, industry and switchgear as well as for urban supply networks, if mechanical damage is unlikely.

#### Special Features on Request

- Fire Resistance
- Oil Resistance
- UV Resistance
- Flame Retardant : Cat. A, B, C
- Flame Retardant : Non Category
- Heat Resistance
- Anti Termite
- Anti Rodent
- Low Smoke Zero Halogen

#### Note : Conductor Shape

- 1.5 - 10 sqmm supplied in solid (r) or non compacted circular stranded (rm) conductor shape
- 16 sqmm supplied in non compacted circular stranded (rm) conductor shape
- 25 - 500 sqmm supplied in non compacted circular stranded (rm) or compacted circular stranded (cm) conductor shape

#### Standard Packing

- 1.5 - 10 sqmm supplied in coil @ 100 meters
- 16 - 300 sqmm supplied in wooden drum @ 1000 meters
- 400 - 500 sqmm supplied in wooden drum on available length
- Length Tolerance per drum  $\pm 2\%$

PHYSICAL PROPERTIES				ELECTRICAL PROPERTIES							
Nom Cross Section Area		Approx. Overall Diameter	Approx. Cable Weight	Conductor		Min. Insulation Resistance at 20 °C	Inductance	Max. Current - Carrying Capacity at 30 °C*		Max. Short Circuit current at 1 second	
				Max. DC Resistance at 20 °C	Max. AC Resistance at 70 °C			in air	in ground		
mm <sup>2</sup>		mm	kg/km	ohm/km	ohm/km	Mohm.km	mH/km	A	A	kA	
1	x	1.5	6.0	54	12.100	14.478	50	0.459	26	33	0.17
1	x	2.5	6.5	68	7.410	8.866	50	0.423	35	45	0.29
1	x	4	7.5	95	4.610	5.516	50	0.404	46	58	0.46
1	x	6	8.0	120	3.080	3.685	50	0.380	58	74	0.70
1	x	10	8.9	170	1.830	2.190	50	0.350	80	98	1.16
1	x	16	10.0	225	1.150	1.376	40	0.327	105	129	1.86
1	x	25	11.7	335	0.727	0.870	40	0.312	140	169	2.91
1	x	35	12.9	435	0.524	0.627	40	0.299	175	210	4.07
1	x	50	14.9	570	0.387	0.464	30	0.290	215	250	5.81
1	x	70	16.6	775	0.268	0.321	30	0.278	270	310	8.14
1	x	95	19.0	1,035	0.193	0.232	30	0.274	335	375	11.05
1	x	120	20.6	1,300	0.153	0.184	30	0.267	390	425	13.95
1	x	150	22.7	1,592	0.124	0.150	20	0.266	445	480	17.44
1	x	185	25.2	1,900	0.099	0.121	20	0.264	510	550	21.51
1	x	240	28.5	2,573	0.075	0.093	20	0.261	620	640	27.91
1	x	300	31.5	3,190	0.060	0.075	20	0.258	710	730	34.88
1	x	400	35.5	4,030	0.047	0.061	20	0.256	850	855	46.51
1	x	500	38.9	5,090	0.037	0.049	20	0.252	1,000	990	58.14
2	x	1.5	11.7	220	12.100	14.478	50	0.328	21	27	0.17
2	x	2.5	12.5	265	7.410	8.866	50	0.304	29	36	0.29
2	x	4	14.3	353	4.610	5.516	50	0.303	38	47	0.46
2	x	6	15.3	426	3.080	3.685	50	0.288	48	59	0.70
2	x	10	17.9	560	1.830	2.190	50	0.269	66	78	1.16
2	x	16	20.1	732	1.150	1.376	40	0.255	90	102	1.86
2	x	25	23.5	1,048	0.727	0.870	40	0.255	120	134	2.91
2	x	35	25.8	1,310	0.524	0.627	40	0.246	150	160	4.07
2	x	50	29.8	1,701	0.387	0.464	30	0.247	180	187	5.81
2	x	70	33.4	2,265	0.268	0.321	30	0.238	230	230	8.14
2	x	95	38.3	3,021	0.193	0.232	30	0.238	275	280	11.05
2	x	120	41.7	3,668	0.153	0.184	30	0.233	320	320	13.95
2	x	150	45.9	4,466	0.124	0.150	20	0.233	375	335	17.44
2	x	185	51.0	5,820	0.099	0.121	20	0.233	430	409	21.51
2	x	240	57.5	7,520	0.075	0.093	20	0.232	510	472	27.91
2	x	300	63.5	9,276	0.060	0.075	20	0.231	590	525	34.88
3	x	1.5	12.2	247	12.100	14.478	50	0.328	18	24	0.17
3	x	2.5	13.1	301	7.410	8.866	50	0.304	25	32	0.29
3	x	4	15.0	408	4.610	5.516	50	0.303	34	41	0.46
3	x	6	16.1	502	3.080	3.685	50	0.288	44	52	0.70
3	x	10	18.8	675	1.830	2.190	50	0.269	60	69	1.16
3	x	16	21.2	901	1.150	1.376	40	0.255	80	89	1.86
3	x	25	24.9	1,301	0.727	0.870	40	0.255	105	116	2.91
3	x	35	27.3	1,658	0.524	0.627	40	0.246	130	138	4.07
3	x	50	31.6	1,850	0.387	0.464	30	0.247	160	165	5.81
3	x	70	36.1	2,525	0.268	0.321	30	0.238	200	205	8.14
3	x	95	41.0	3,405	0.193	0.232	30	0.238	245	250	11.05
3	x	120	44.7	4,161	0.153	0.184	30	0.233	285	290	13.95
3	x	150	49.5	5,081	0.124	0.150	20	0.233	325	315	17.44
3	x	185	54.5	7,500	0.099	0.121	20	0.233	370	365	21.51
3	x	240	62.0	9,785	0.075	0.093	20	0.232	435	415	27.91
3	x	300	69.0	12,200	0.060	0.075	20	0.231	500	465	34.88
3	x	400	76.5	15,415	0.047	0.060	20	0.229	600	535	46.51
4	x	1.5	13.0	282	12.100	14.478	50	0.328	18	24	0.17
4	x	2.5	13.9	348	7.410	8.866	50	0.304	25	32	0.29
4	x	4	16.1	479	4.610	5.516	50	0.303	34	41	0.46
4	x	6	17.3	596	3.080	3.685	50	0.288	44	52	0.70
4	x	10	20.4	815	1.830	2.190	50	0.269	60	69	1.16
4	x	16	23.1	1,099	1.150	1.376	40	0.255	80	89	1.86
4	x	25	27.2	1,605	0.727	0.870	40	0.255	105	116	2.91
4	x	35	29.9	2,060	0.524	0.627	40	0.246	130	138	4.07
4	x	50	35.4	2,475	0.387	0.464	30	0.247	160	165	5.81
4	x	70	35.9	3,375	0.268	0.321	30	0.238	200	205	8.14
4	x	95	41.5	4,530	0.193	0.232	30	0.238	245	250	11.05
4	x	120	44.7	5,551	0.153	0.184	30	0.233	285	290	13.95
4	x	150	50.0	6,925	0.124	0.150	20	0.233	325	315	17.44
4	x	185	56.0	8,575	0.099	0.121	20	0.233	370	365	21.51
4	x	240	62.5	11,048	0.075	0.093	20	0.232	435	415	27.91
4	x	300	68.5	13,705	0.060	0.075	20	0.231	500	465	34.88
4	x	400	76.0	17,570	0.047	0.060	20	0.229	600	535	46.51

\*Further information about rating factor for certain cable arrangement can be found on supplementary technical information

## Lampiran 2. Schneider Katalog

### Characteristics and performance ComPact NSX circuit breakers from 400 to 630 A up to 690 V



ComPact NSX400E30



ComPact NSX630 R



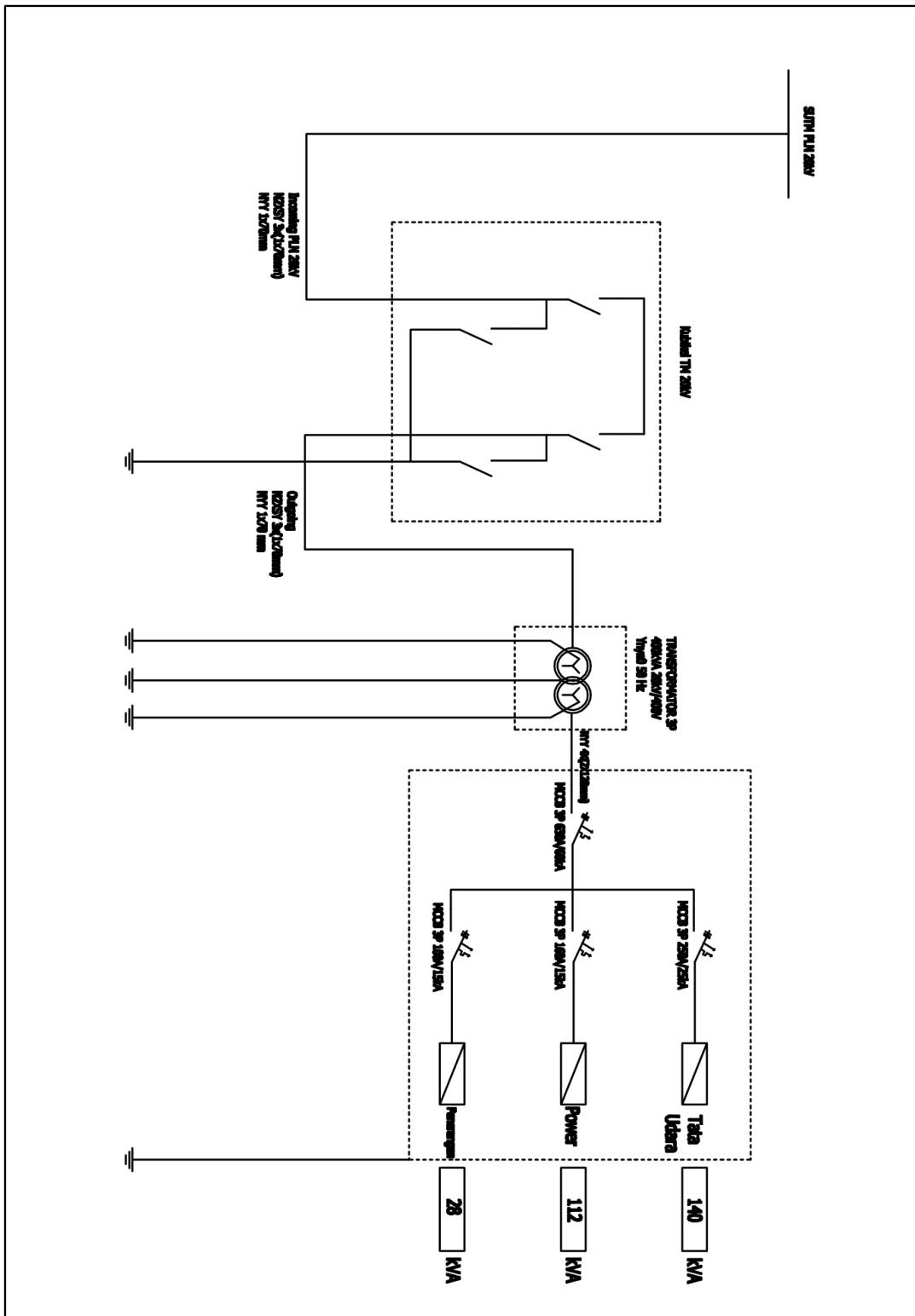
ComPact NSX630 HB2

[1] OBN: Over Sized Neutral protection for neutrals carrying high currents (e.g. 3rd harmonics).  
[2] ZSI: Zone Selective Interlocking using pilot wires.

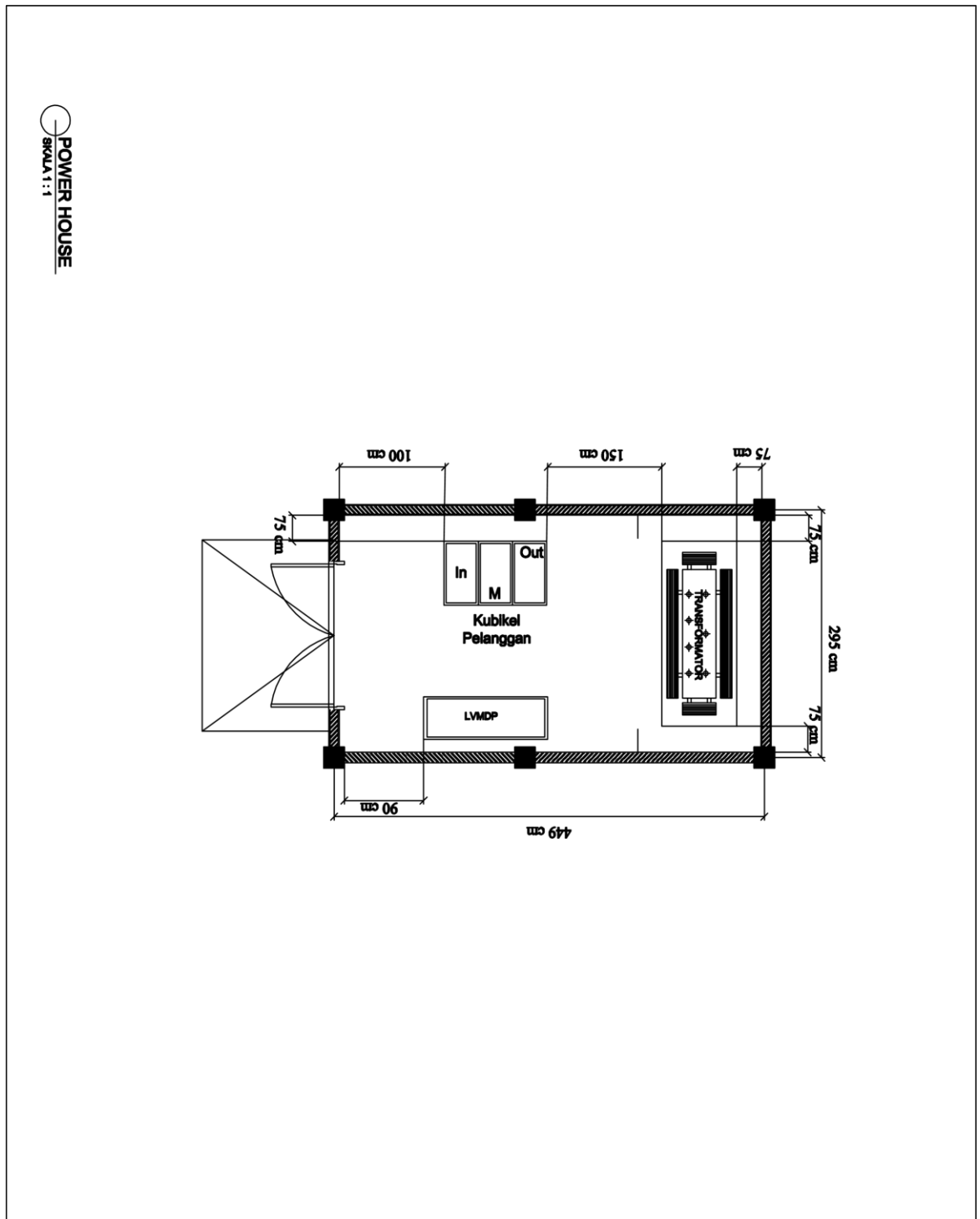
Common characteristics	
Rated voltage (Insulation voltage) U <sub>i</sub>	690
Insulation voltage for ELCSB PE	500
Impulse withstand voltage (kV) U <sub>imp</sub>	8
Operational voltage (V) U <sub>e</sub>	AC 50/60 Hz 690
Operation voltage for ELCSB PE U <sub>e</sub>	AC 50/60 Hz 440
Suitability for isolation	IEC/EN 60947-2 yes
Utilisation category	A
Pollution degree	IEC 60664-1 3

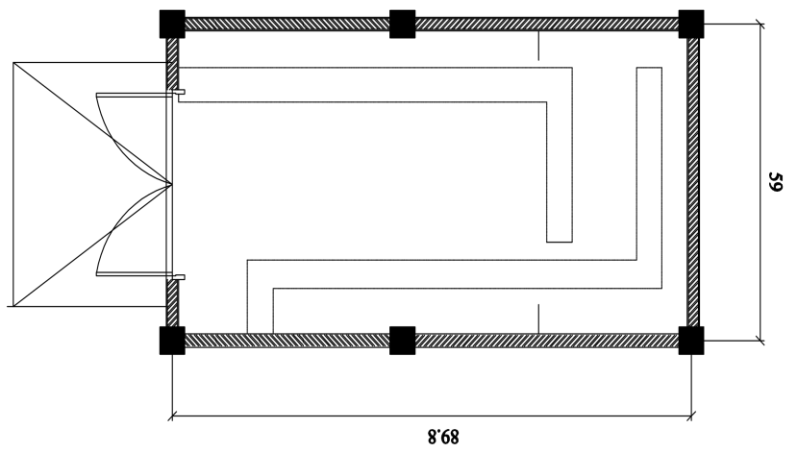
Circuit breakers	NSX400						NSX630									
	F	N	H	S	L	R	HB1	HB2	F	N	H	S	L	R	HB1	HB2
<b>Breaking capacity levels</b>																
<b>Electrical characteristics as per IEC/EN 60947-2</b>																
Rated current (A) I <sub>n</sub>	400						630						I <sub>n</sub> = 225 - 500 A		I <sub>n</sub> = 501 - 630 A	
Number of poles	3, 4						3, 4						3, 4		3, 4	
<b>Breaking capacity (kA rms)</b>																
I <sub>cu</sub> AC 50/60 Hz 220/240 V	40	85	100	120	150	200	-	-	40	85	100	120	150	200	-	-
380/415 V	38	50	70	100	150	200	-	-	38	50	70	100	150	200	-	-
440 V	30	42	65	90	130	200	-	-	30	42	65	90	130	200	-	-
500 V	25	30	50	85	70	80	85	100	25	30	50	85	70	80	85	100
525 V	20	22	35	40	50	65	80	100	20	22	35	40	50	65	80	100
660/690 V	10	10	20	25	35	45	75	100	10	10	20	25	35	45	75	100
<b>Service breaking capacity (kA rms)</b>																
I <sub>cs</sub> AC 50/60 Hz 220/240 V	40	85	100	120	150	200	-	-	40	85	100	120	150	200	-	-
380/415 V	38	50	70	100	150	200	-	-	38	50	70	100	150	200	-	-
440 V	30	42	65	90	130	200	-	-	30	42	65	90	130	200	-	-
500 V	25	30	50	85	70	80	85	100	25	30	50	85	70	80	85	100
525 V	10	11	11	12	12	12	12	12	10	11	11	12	12	12	12	12
660/690 V	10	10	10	12	12	12	12	12	10	10	10	12	12	12	12	12
<b>Durability (C-O cycles)</b>																
Mechanical	15000						15000						15000		15000	
Electrical	12000						12000						8000		8000	
440 V I <sub>n</sub>	8000						8000						4000		4000	
690 V I <sub>n</sub>	8000						8000						8000		8000	
690 V I <sub>n</sub>	3000						3000						2000		2000	
<b>Characteristics as per UL 508</b>																
Breaking capacity (kA rms) AC 50/60 Hz 240 V	85	85	85	-	-	-	-	-	85	85	85	-	-	-	-	-
480 V	135	80	85	-	-	-	-	-	135	80	85	-	-	-	-	-
600 V	20	10	20	-	-	-	-	-	20	20	20	-	-	-	-	-
<b>Protection and measurements</b>																
Short-circuit protection	Magnetic only						Magnetic only						Magnetic only		Magnetic only	
Overload / short-circuit protection	Thermal magnetic						Thermal magnetic						Thermal magnetic		Thermal magnetic	
	Electronic						Electronic						Electronic		Electronic	
	with neutral protection (DR0 5-1-0BN) [1]						with neutral protection (DR0 5-1-0BN) [1]						with neutral protection (DR0 5-1-0BN) [1]		with neutral protection (DR0 5-1-0BN) [1]	
	with ground-fault protection						with ground-fault protection						with ground-fault protection		with ground-fault protection	
	with zone selective interlocking (ZSI) [2]						with zone selective interlocking (ZSI) [2]						with zone selective interlocking (ZSI) [2]		with zone selective interlocking (ZSI) [2]	
Display / I, U, I, P, E, THD measurements / interrupted-current measurement	Yes						Yes						Yes		Yes	
Options	Power Meter display on door						Power Meter display on door						Power Meter display on door		Power Meter display on door	
	Operating assistance						Operating assistance						Operating assistance		Operating assistance	
	Counters						Counters						Counters		Counters	
	Historic and alarms						Historic and alarms						Historic and alarms		Historic and alarms	
	Metering Com						Metering Com						Metering Com		Metering Com	
	Device status/control Com						Device status/control Com						Device status/control Com		Device status/control Com	
Earth-leakage protection	By Vigi add-on [1]						By Vigi add-on [1]						By Vigi add-on [1]		By Vigi add-on [1]	
	By Vigi relay						By Vigi relay						By Vigi relay		By Vigi relay	
<b>Installation / connections</b>																
Dimensions (mm) W x H x D	Fixed, front connections 25P						Fixed, front connections 25P						Fixed, front connections 25P		Fixed, front connections 25P	
Weight (kg)	Fixed, front connections 25P						Fixed, front connections 25P						Fixed, front connections 25P		Fixed, front connections 25P	
Connection terminals	Rich						Rich						Rich		Rich	
Large Cu or Al cables	Cross-section						Cross-section						Cross-section		Cross-section	

### Lampiran 3. Single Line Diagram

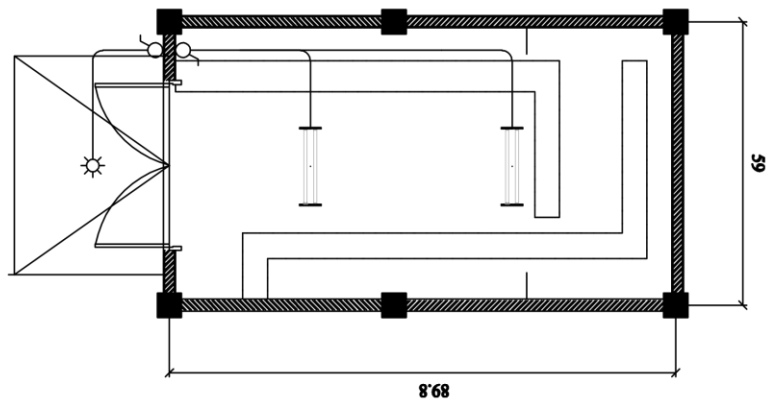


## Lampiran 4. Hasil Desain Keseluruhan

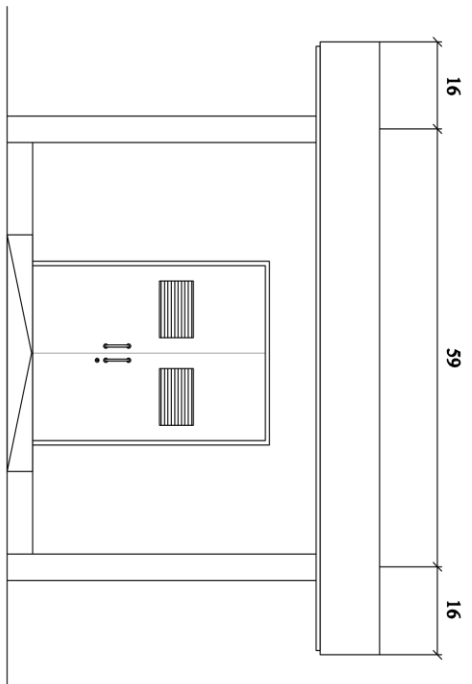




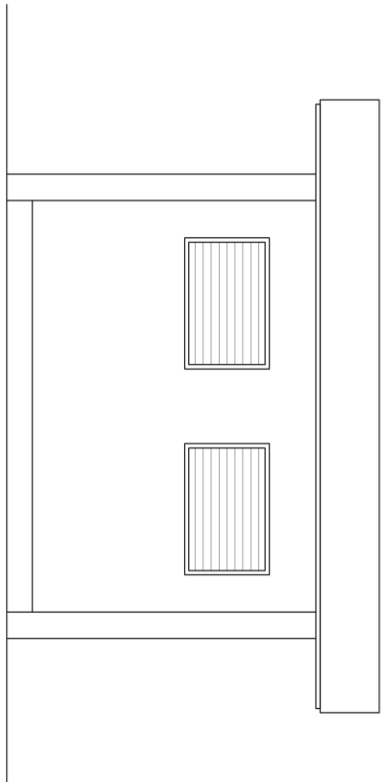
JALUR KABEL TANAH  
SKALA 1 : 50



PENERANGAN  
SKALA 1 : 50

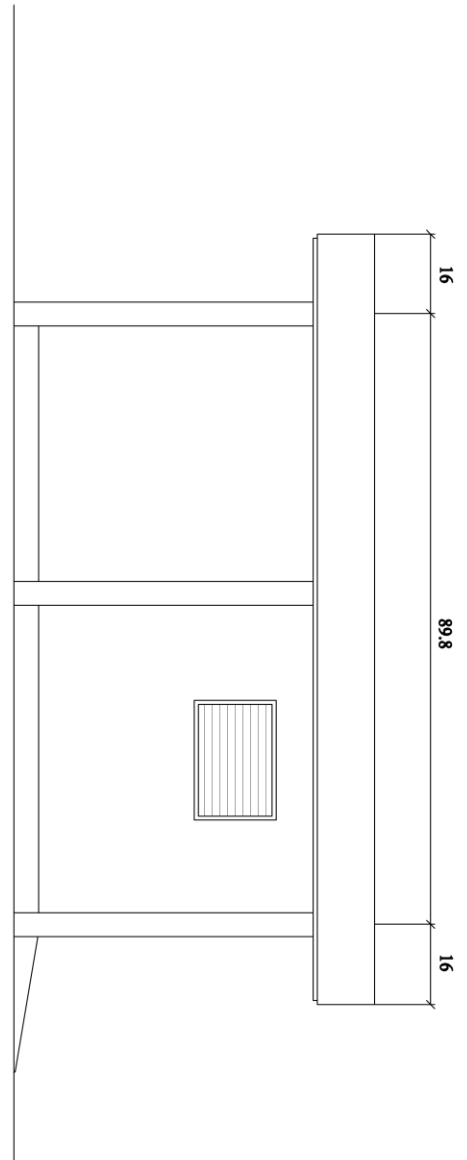


TAMPAK DEPAN  
SKALA 1 : 50

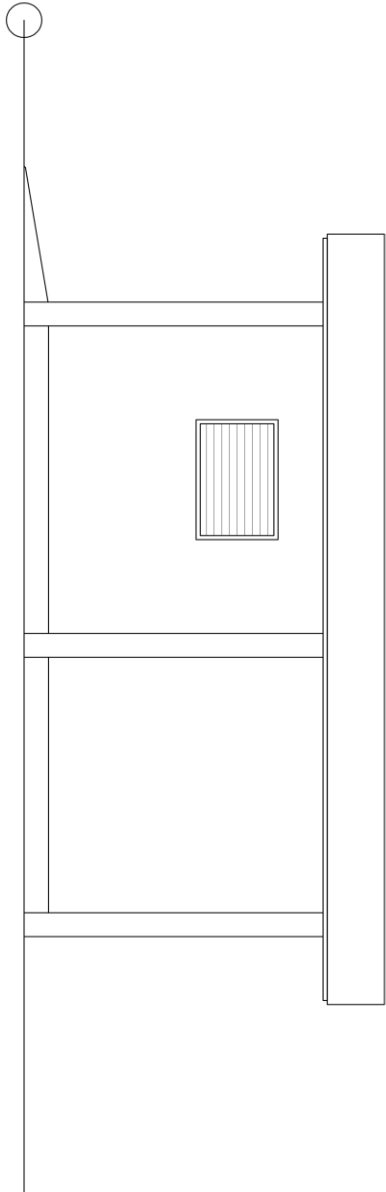


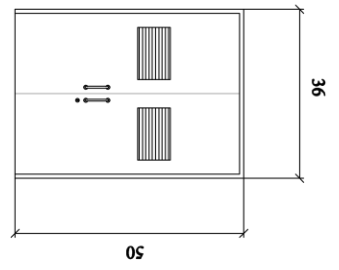
TAMPAK BELAKANG  
SKALA 1 : 50

TAMPAK SAMPIING KANAN  
SKALA 1 : 50

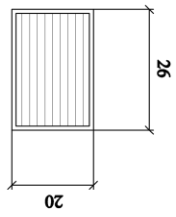


TAMPAK SAMPIING KIRI  
SKALA 1 : 50





DETAIL PINTU  
SKALA 1 : 50



DETAIL VENTILASI  
SKALA 1 : 50