Embedded Generator Single Line Diagram templates

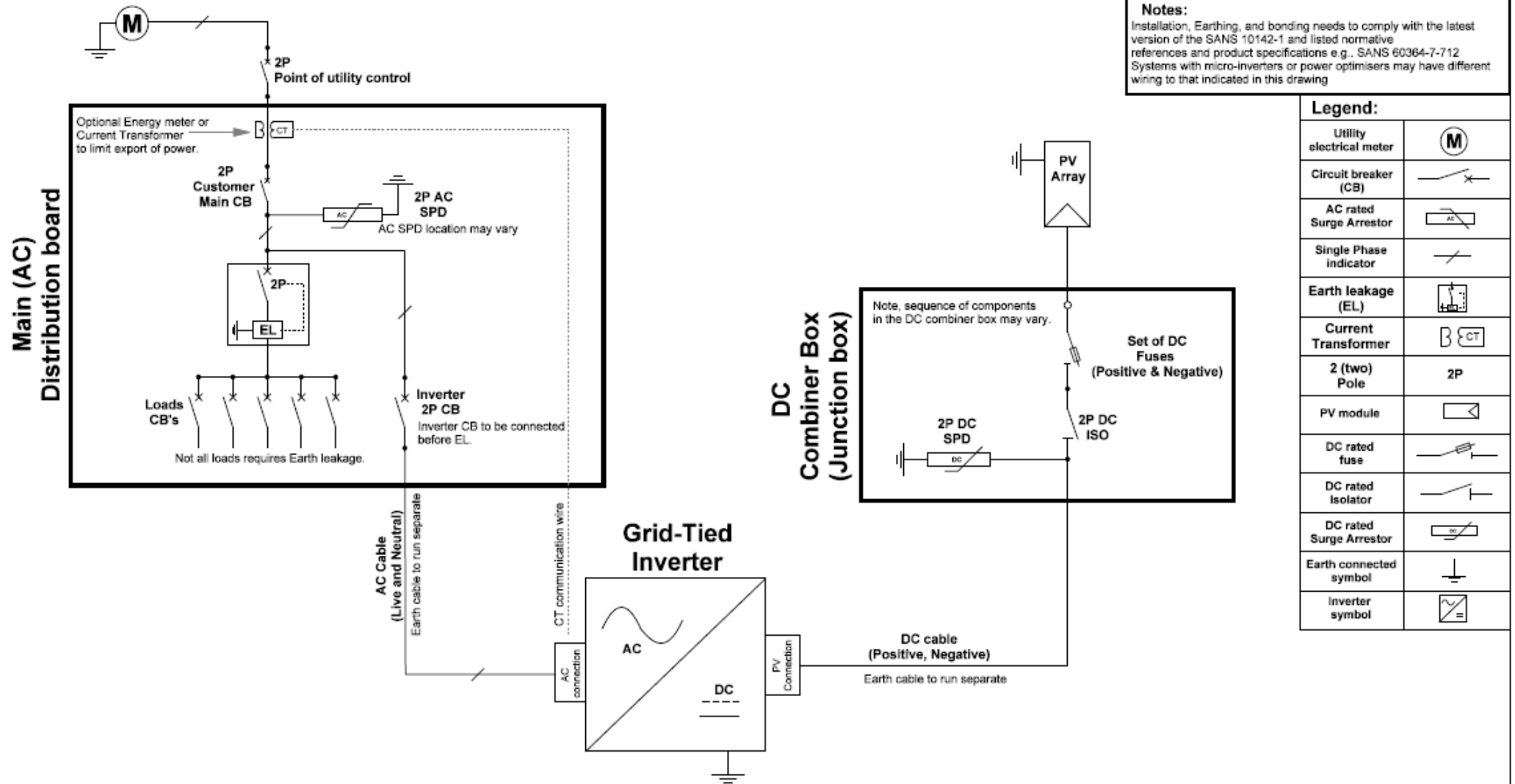
These template diagrams show typical acceptable layouts for a range of embedded generator sizes and configurations, and off-grid and UPS/backup systems.

CONTENTS:

- EG Drawing 1 PV no storage Single phase up to 20kW
- EG Drawing 2 PV Storage All loads Single phase up to 20kW
- EG Drawing 3 PV Storage Split loads Single phase up to 20kW
- EG Drawing 4 13.8kVA to 1MW 3 phase
- EG Drawing 5 1MW to 20MW 3 phase
- EG Drawing 6 LV to MV for MV Customers
- EG Drawing 7 Off grid Hybrid System Single phase
- EG Drawing 8 Back-up No PV or UPS Single phase
- EG Drawing 9 Solar with back-up generators Single phase

Developed by the Municipal Embedded GenerationSupport Program

1



Notes:

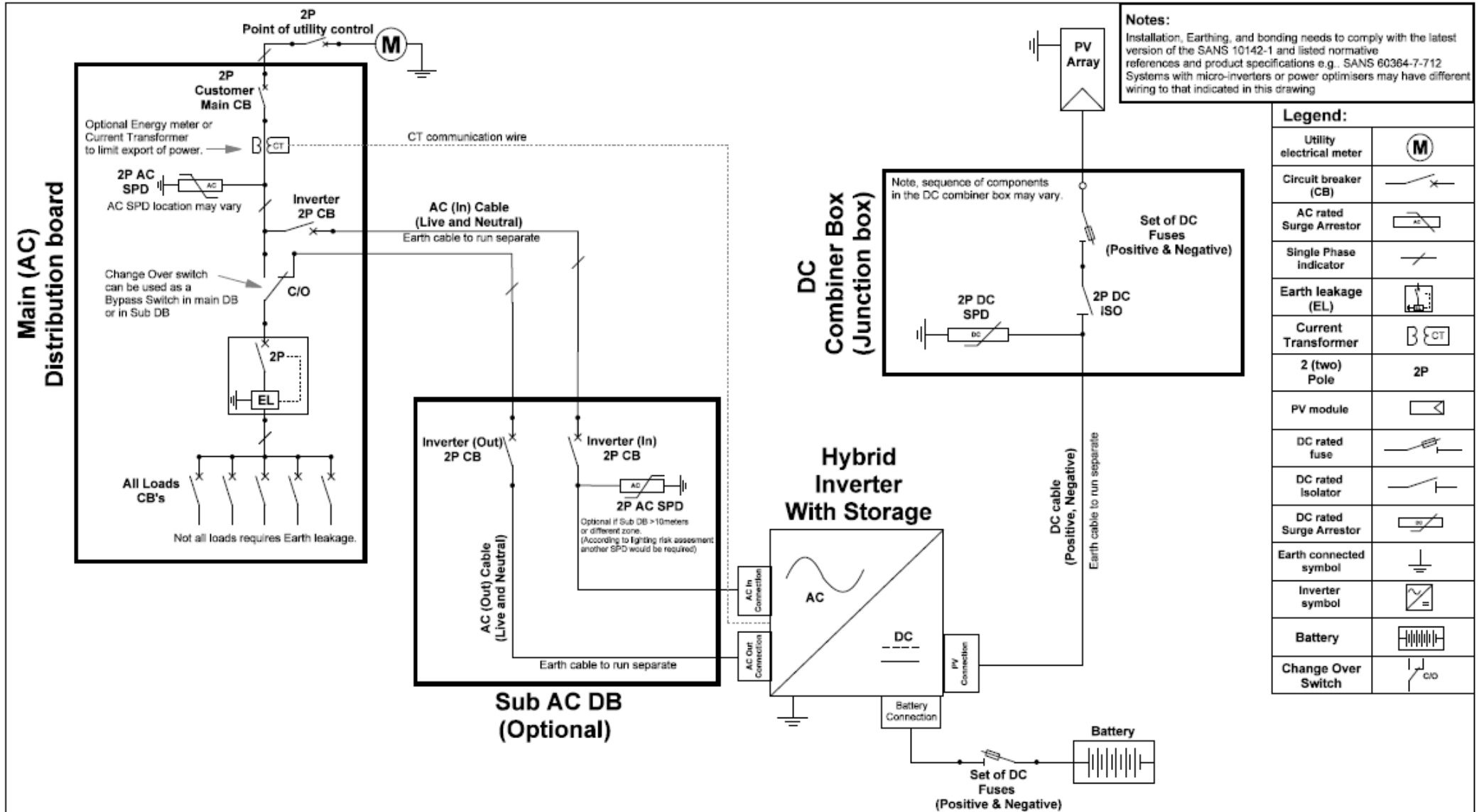
Installation, Earthing, and bonding needs to comply with the latest version of the SANS 10142-1 and listed normative references and product specifications e.g., SANS 60364-7-712
Systems with micro-inverters or power optimisers may have different wiring to that indicated in this drawing

Legend:

Utility electrical meter	M
Circuit breaker (CB)	
AC rated Surge Arrestor	AC
Single Phase indicator	
Earth leakage (EL)	
Current Transformer	CT
2 (two) Pole	2P
PV module	
DC rated fuse	
DC rated Isolator	
DC rated Surge Arrestor	DC
Earth connected symbol	
Inverter symbol	

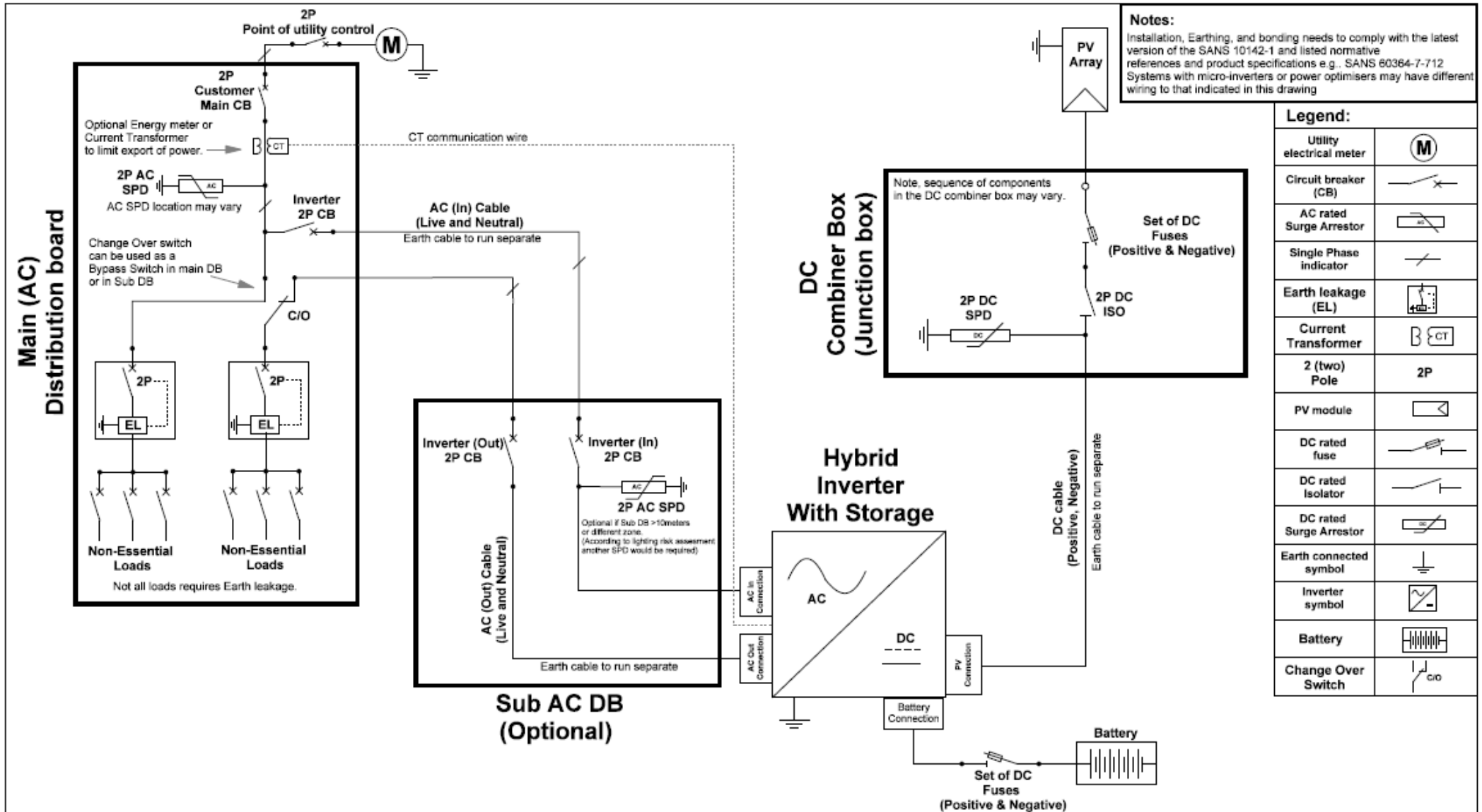
REVISION:	**Version 01**	**DATE:**		**PROJECT NAME:**	**SHEET**
Municipal Embedded Generation Support Program Template A set of drawings showing acceptable layouts for a range of different systems www.sseg.org.za		**EDITOR:**		**Small Scale Embedded Generator** **PV No Storage**	**1**
		INSTALLER:			
		SIGNOFF:		**Description:** **Grid Tied system** **Single phase up to 20kW**	**SCALE** **N/A**
		PRINT NAME:			**OF** **1**

2



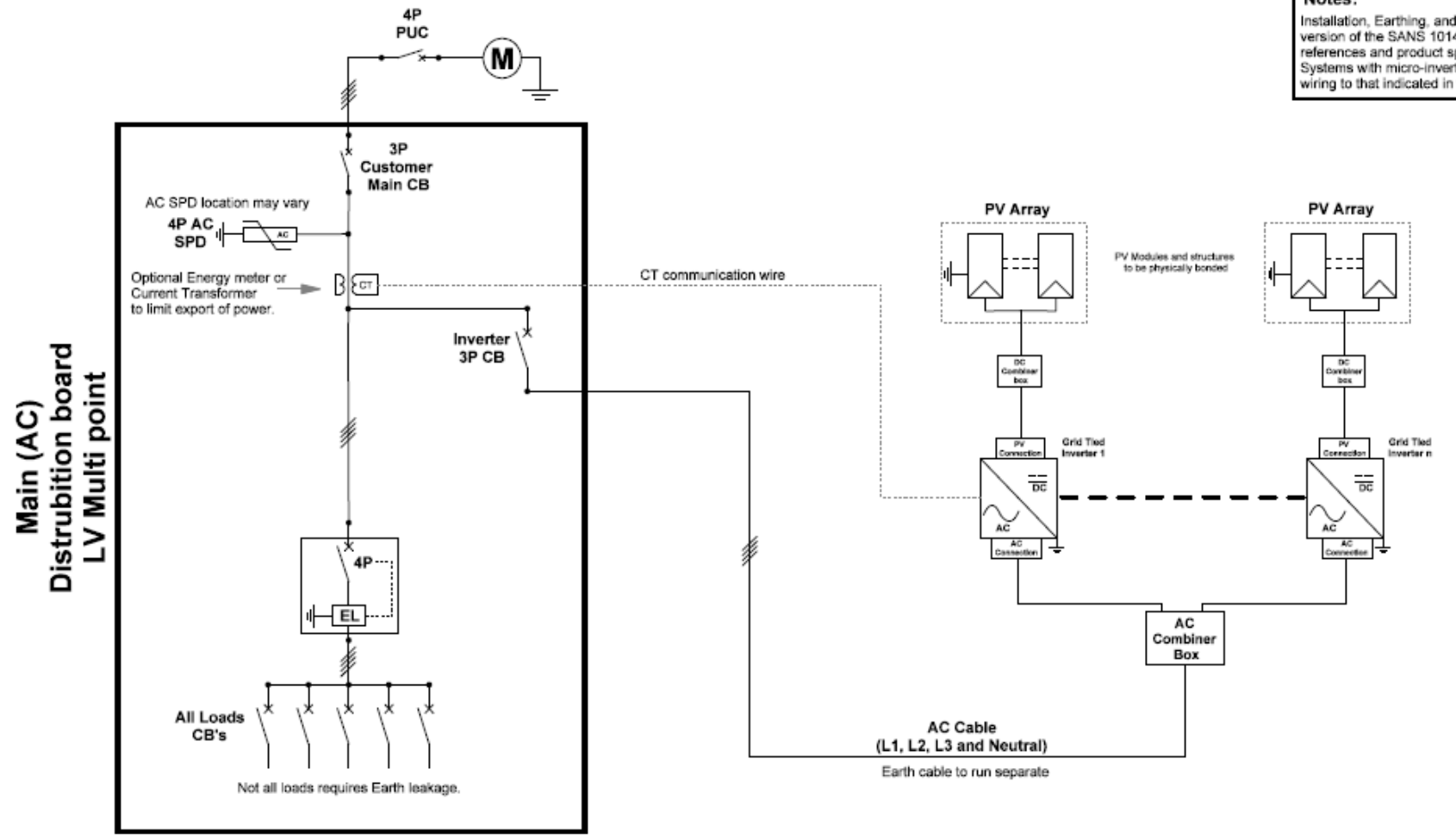
REVISION:	**Version 01**	**DATE:**		**PROJECT NAME:**	**SHEET**
Municipal Embedded Generation Support Program Template A set of drawings showing acceptable layouts for a range of different systems www.sseg.org.za		**EDITOR:**		**Small Scale Embedded Generator PV With Storage**	**1**
		INSTALLER:			
		SIGNOFF:		**Description:** **Hybrid system - All loads Single phase up to 20kW**	**SCALE** **N/A** / **OF** **1**
		PRINT NAME:			

3



REVISION:	Version 01	DATE:		PROJECT NAME:	SHEET
Municipal Embedded Generation Support Program Template A set of drawings showing acceptable layouts for a range of different systems www.sseg.org.za		EDITOR:		Small Scale Embedded Generator PV With Storage	1
		INSTALLER:			
		SIGNOFF:		Description: Hybrid system - Split loads Single phase up to 20kW	SCALE N/A
		PRINT NAME:			OF 1

4



Notes:

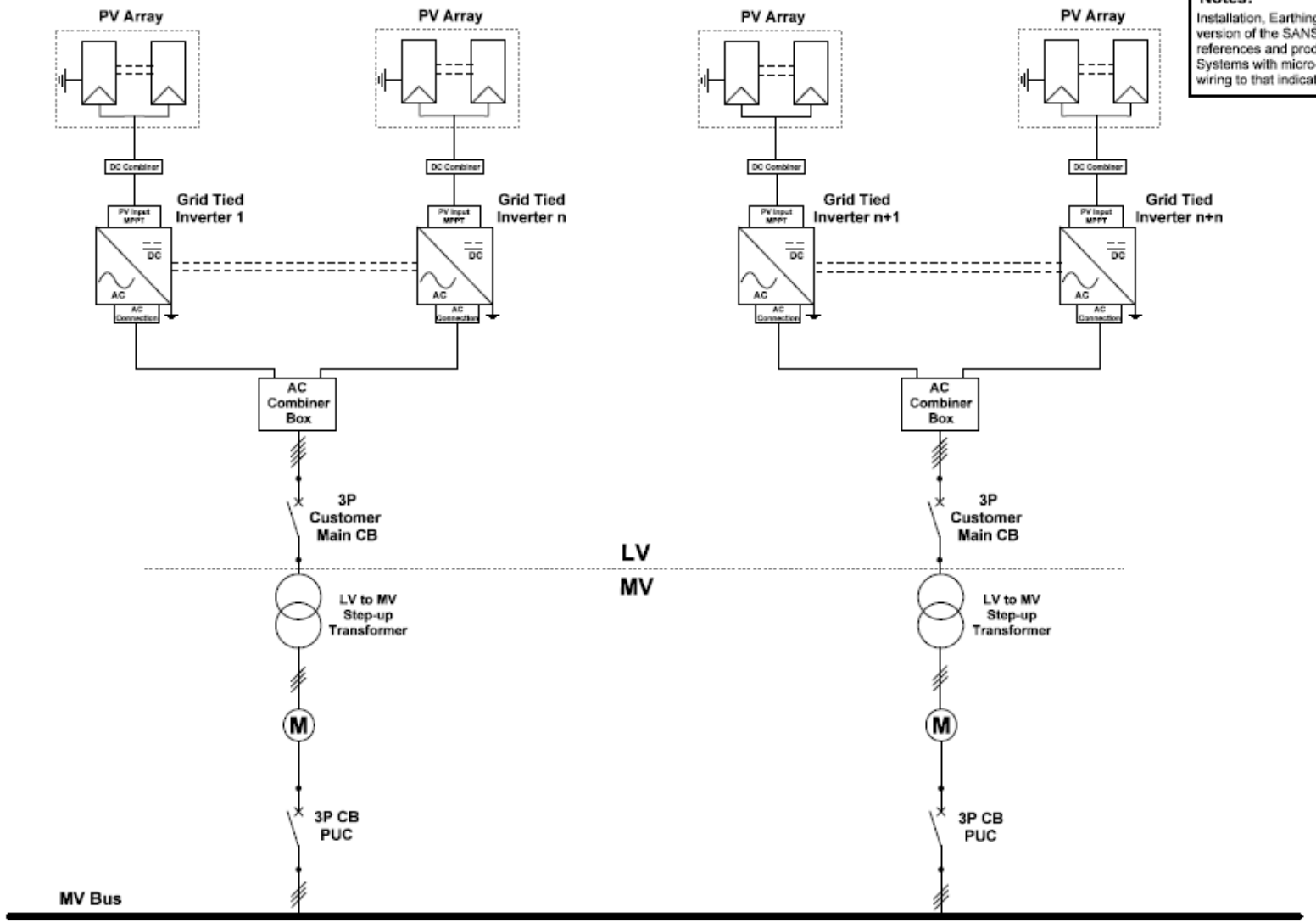
Installation, Earthing, and bonding needs to comply with the latest version of the SANS 10142-1 and listed normative references and product specifications e.g.. SANS 60364-7-712
Systems with micro-inverters or power optimisers may have different wiring to that indicated in this drawing

Legend:

Utility electrical meter	M
Circuit breaker (CB)	
AC rated Surge Arrestor	AC
Single Phase indicator	
Earth leakage (EL)	
Current Transformer	CT
3 (Three) Pole	3P
4 (Four) Pole	4P
PV module	
DC rated fuse	
DC rated Isolator	
DC rated Surge Arrestor	DC
Earth connected symbol	
Inverter symbol	
Battery	
3 Phase Indicator	

REVISION:	Version 01	DATE:		PROJECT NAME:	SHEET
Municipal Embedded Generation Support Program Template A set of drawings showing acceptable layouts for a range of different systems www.sseg.org.za		EDITOR:		Small Scale Embedded Generator PV 13.8kVa to 1MW (Scalable)	1
		INSTALLER:			
		SIGNOFF:		Description: Grid Tied system 3 Phase- 1MW	SCALE N/A / OF 1
		PRINT NAME:			

5



Notes:

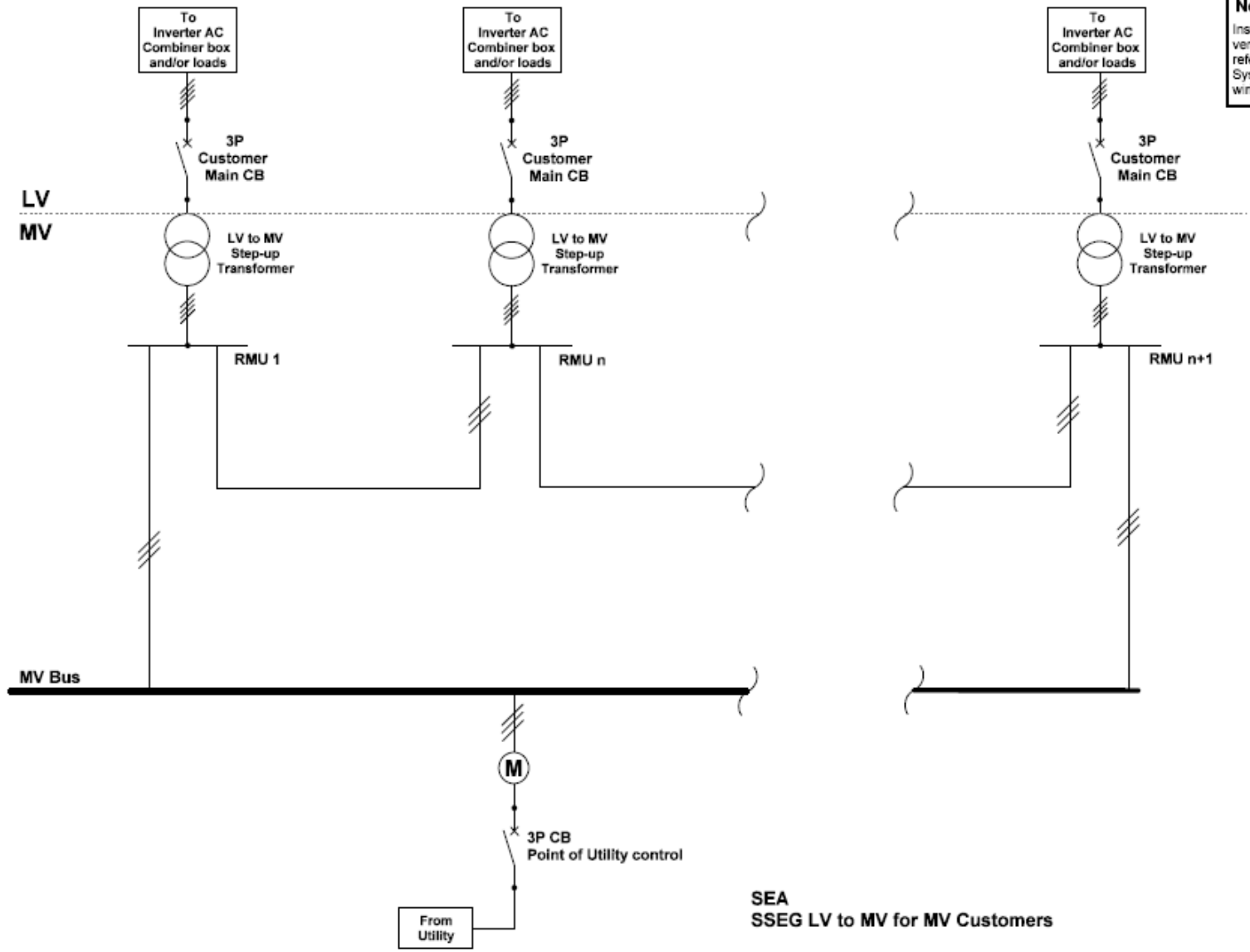
Installation, Earthing, and bonding needs to comply with the latest version of the SANS 10142-1 and listed normative references and product specifications e.g.. SANS 60364-7-712 Systems with micro-inverters or power optimisers may have different wiring to that indicated in this drawing

Legend:

PV module	
Inverter symbol	
3 phase indicator (L1 , L2, L3, N)	
Earthed/Bonding symbol	
Circuit breaker	
Municipal electrical meter	M
3 (three) Pole	3P
4 (four) Pole	4P
Step up Transformer	
Mega Volt Bus bar	
3 phase indicator (L1 , L2, L3)	

REVISION:	Version 01	DATE:		PROJECT NAME: Small Scale Embedded Generator PV 1MW to 20MW (Scalable)	SHEET 1
Municipal Embedded Generation Support Program Template A set of drawings showing acceptable layouts for a range of different systems www.sseg.org.za		EDITOR:			
		INSTALLER:			
		SIGNOFF:		Description: Grid Tied system 3 Phase- 20MW	SCALE N/A
		PRINT NAME:			OF 1

6



Notes:

Installation, Earthing, and bonding needs to comply with the latest version of the SANS 10142-1 and listed normative references and product specifications e.g.. SANS 60364-7-712 Systems with micro-inverters or power optimisers may have different wiring to that indicated in this drawing

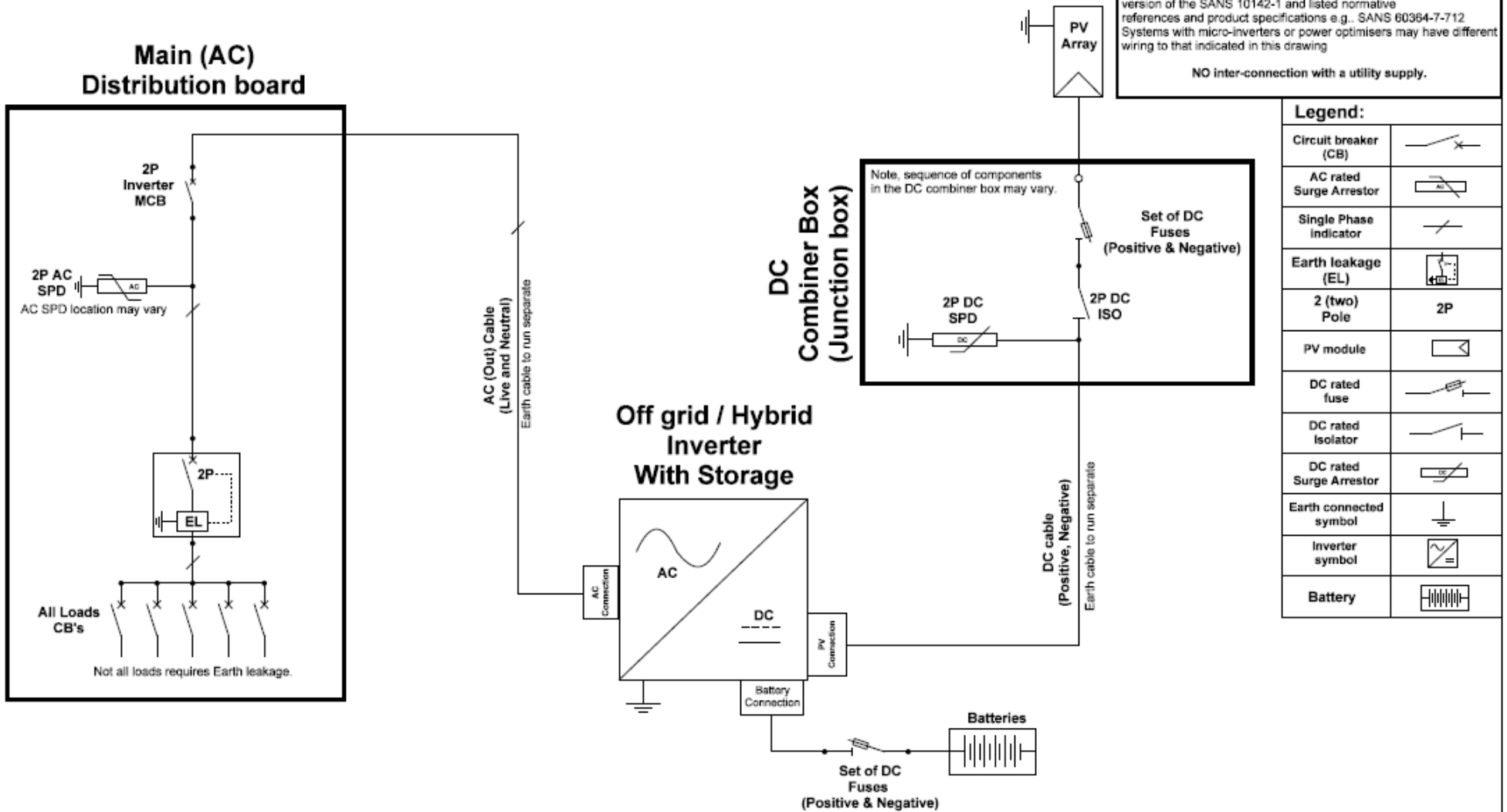
Legend:

Earthed/Bonding symbol	
Circuit breaker	
Municipal electrical meter	M
3 (three) Pole	3P
4 (four) Pole	4P
Step up Transformer	
Mega Volt Bus bar	
Ring Main Unit	RMU
3 phase indicator (L1 , L2, L3)	
3 phase indicator (L1 , L2, L3, N)	

SEA
SSEG LV to MV for MV Customers

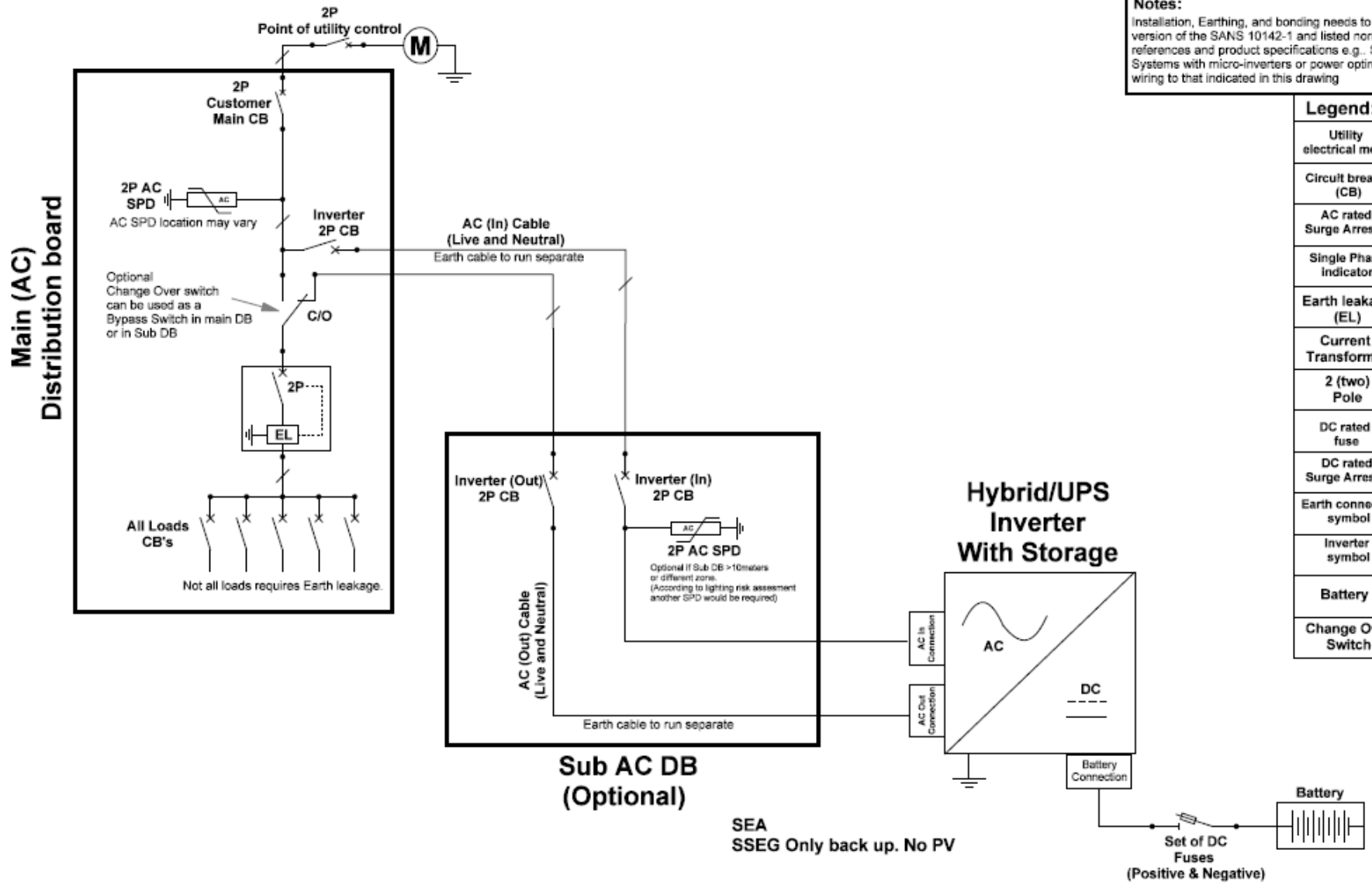
REVISION:	Version 01	DATE:		PROJECT NAME:	SHEET
Municipal Embedded Generation Support Program Template A set of drawings showing acceptable layouts for a range of different systems www.sseg.org.za		EDITOR:		Small Scale Embedded Generator LV to MV for MV Customers	1
		INSTALLER:			
		SIGNOFF:		Description: LV to MV	SCALE N/A / OF 1
		PRINT NAME:			

7



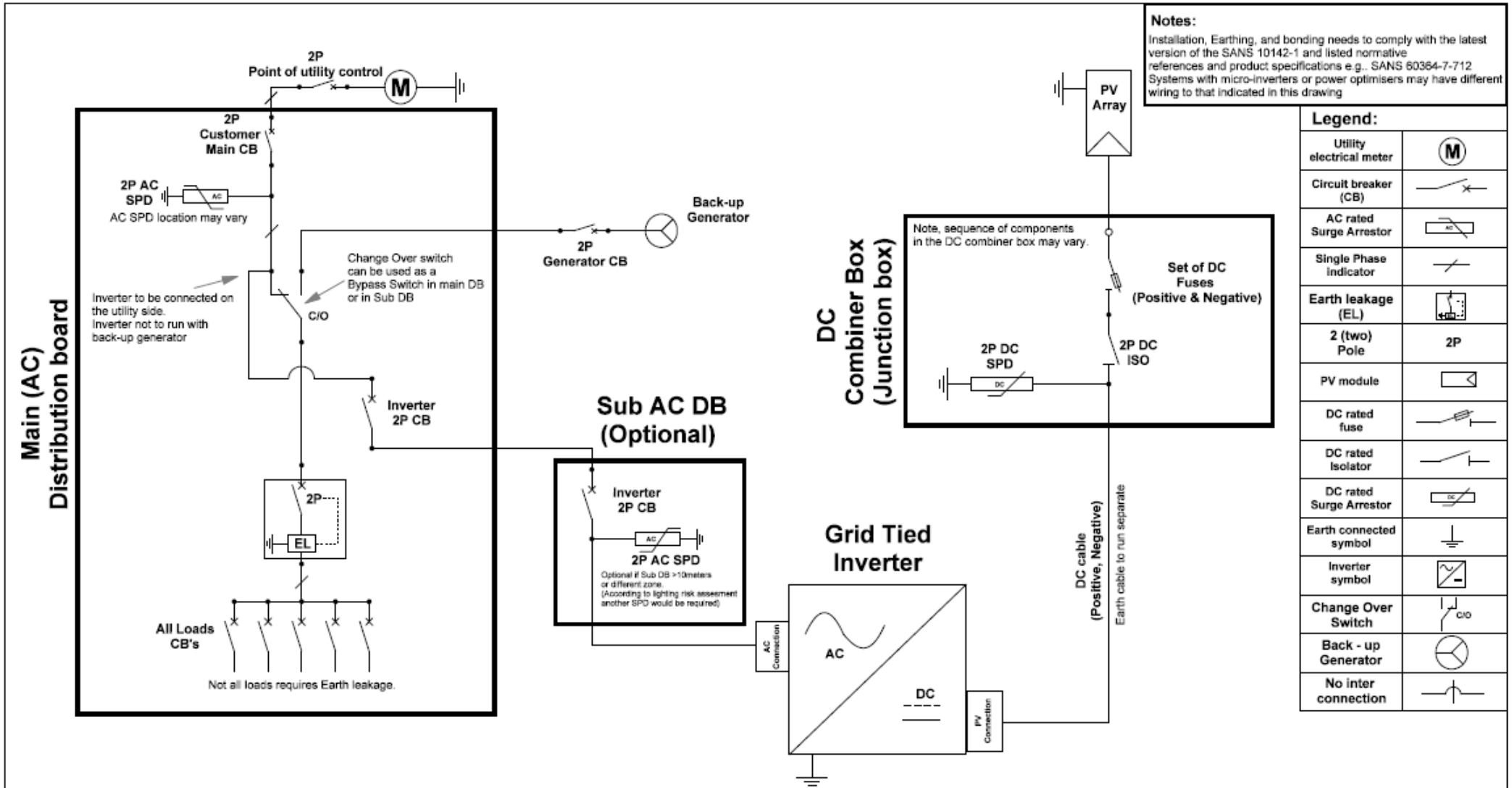
REVISION:	Version 01	DATE:		PROJECT NAME:	SHEET
Municipal Embedded Generation Support Program Template A set of drawings showing acceptable layouts for a range of different systems www.sseg.org.za		EDITOR:		Small Scale Embedded Generator Off grid / Stand alone Inverter	1
		INSTALLER:			
		SIGNOFF:		Description: Hybrid/Off grid system - All loads Single phase - No utility connection	SCALE N/A
		PRINT NAME:			OF 1

8



REVISION:	Version 01	DATE:		PROJECT NAME:	SHEET
Municipal Embedded Generation Support Program Template A set of drawings showing acceptable layouts for a range of different systems www.sseg.org.za		EDITOR:		Small Scale Embedded Generator Back-up or UPS/Standby system	1
		INSTALLER:			
		SIGNOFF:		Description: Hybrid/UPS system - All loads Single phase	SCALE N/A
		PRINT NAME:			OF 1

9



REVISION:	Version 01	DATE:		PROJECT NAME:	SHEET
Municipal Embedded Generation Support Program Template A set of drawings showing acceptable layouts for a range of different systems www.sseg.org.za		EDITOR:		Small Scale Embedded Generator PV and back-up generator	1
		INSTALLER:			
		SIGNOFF:		Description: Grid Tied with back-up Generator - All loads Single phase	SCALE N/A / OF 1
		PRINT NAME:			