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CUSTOMER MANUAL
50911951
CDPOWERCELL LV

TO ENSURE OPERATOR SAFETY AND TROUBLE-FREE OPERATION OF YOUR CD POWER EQUIPMENT, PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY BEFORE USE.

Revision History					
Revision	Date	Description	Revised	Checked	Approved
5	12/06/2025	Clarification on temperatures	JW	DW	JW
4	10/6/2025	Clarification on storage temperatures	JW	DW	JW
3	21/5/2025	Inc Racking	JW	DW	JW
0	22/09/2024	FIRST RELEASE	LB	DW	TM

Table of Contents

1 Product Description 3
1.1 LV Battery Overview 3
1.1.1 Product Information 4
1.1.2 LV Communication Combiner Product Information 5
1.2 BMS (Battery Management System) 6
1.2.1 BMS Front Interface 6
1.2.2 LV Communication Combiner Front Interface 7
1.2.3 Communication Port Definitions 8
1.2.4 CD-CTL-LV Communication Combiner 8
2 Safety and General Precautions 9
2.1 Observe Safety Instructions 9
2.2 General Safety 9
2.3 Symbols 10
2.4 Personal Protective Equipment (PPE) 10
2.5 Damaged Battery 11
2.6 Fire 11
2.7 Safety Data Sheet (SDS) 11
2.8 Installer 12
2.8.1 General Reminder to Installers 12
2.8.2 Installation Precautions 12
3 Handling 13
3.1 General Handling 13
3.2 Transportation 13
3.3 Storage 14
3.4 Packaging Information 14
4 Installation 15
4.1 Safety Guidelines 15
4.2 Parts List 15
4.3 Location 16
4.4 Mounting 16
4.5 Earthing 17
4.6 Battery Connections 17
4.7 Battery to Inverter Communication 18
4.8 Pre-connection Checks 18
4.9 Connection to Inverter 19
4.9.1 Single Cluster Battery Module Connection to Inverter 19
4.9.2 Multi-Cluster Battery Module Connection to Inverter 21
5 Operation 24
5.1 Battery Module Startup and Shutdown 24
5.1.1 Single Cluster System Startup 24
5.1.2 Single Cluster System Shut Down 26
5.1.3 Multi-Cluster System Startup 27
5.1.4 Multi-Cluster System Shutdown 29
5.2 Startup Button Status Indicators 30
6 Maintenance 31
7 Trouble Shooting 32
Appendix A 33

1 Product Description

This manual details the installation, operation, and maintenance of CDPowercell LV batteries. CDPowercell LV batteries are Lithium Iron Phosphate (LFP) batteries intended for use in stationary energy storage applications. This manual should be read carefully prior to installing, operating or maintaining CDPowercell LV batteries.

1.1 LV Battery Overview

The Low Voltage Battery Module is used as an energy storage component for off-grid and grid-connected energy storage systems. It is recommended that this equipment is not used for purposes other than those described in this guide. Connection with different battery models, random replacement and change of parts is not recommended and will void the product warranty.

Battery Model	Specification
CD-LP51100	51.2V/5.12KWh
CD-CTL-LV	CANbus

See 1.1.1 Product Data Sheet for detailed data.

CD-LP51100 LV Battery Module Product Dimensions

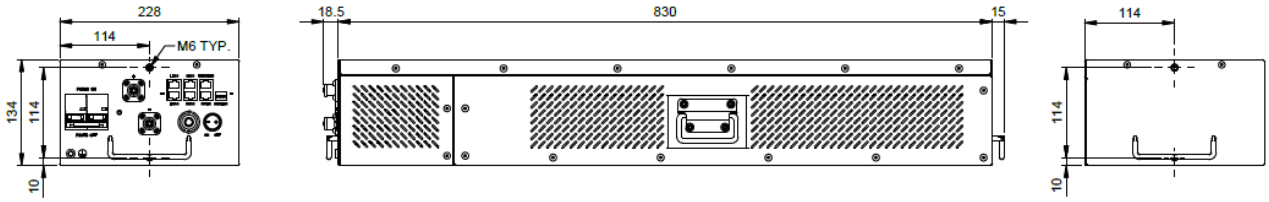


Figure 1 - CDPowercell LV dimensions.

CD-CTL-LV Communication Combiner Product Dimensions

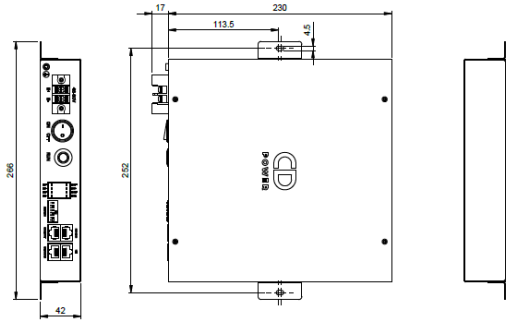


Figure 2 - CD-CTL-LV Communication Combiner dimensions

1.1.1 Product Information

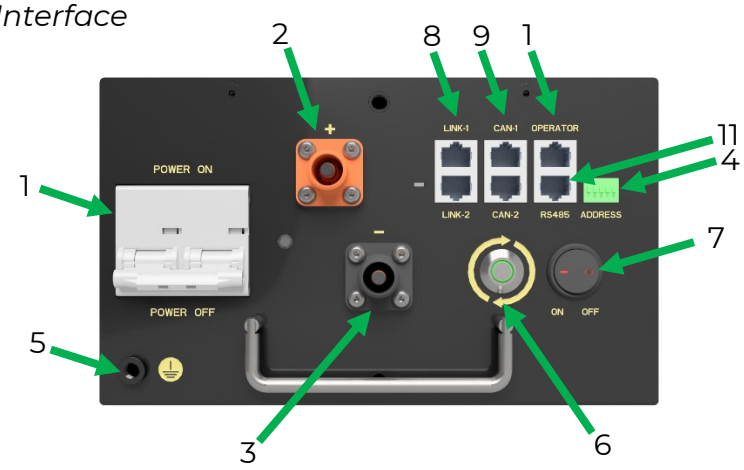
Model Name	CD POWERCELL LV
Model Number	50911500
Manufacturer	CD Power Pty Ltd
Rated Voltage	51.2V
Voltage Range	44.8-58.4
Float voltage	53.6V
Number of cells	1P16S
Rated Capacity	5.12kWh
Cell Type	Lithium Iron Phosphate (LFP)
Operating life (Cycles)	5000 @0.5C, 90% DOD & 25°C
Standard Charge/Discharge Current	50A
Max Charge/Discharge Current	100A
Communication Port	CAN bus
Size(W*H*D)	228*134*858.5mm
Weight	43kg
Operation Temperature Range	-10° – +45°C Discharge, 0° – +45°C charge
Storage Temperature Range	-20° – +55°C See Section 3.3 for full details.
IP Class	IP20

1.1.2 LV Communication Combiner Product Information

Model Name	CD POWERCELL LV Communication Combiner
Model Number	CD-CTL-LV
Manufacturer	CD Power Pty Ltd
Operation Voltage	46 – 60VDC
Consumption Power	10W
Operating temperature range	-10°C to +55°C
Max number of CANbus input devices	Up to 16 LV Boxes
Inverter communication port	CAN bus
LV Module communication port	CAN bus
PC monitoring communication port	RS232
Dimensions (W*H*D)	230*42*230 mm
Weight	1.4 kg
Protection class	IP20

1.2 BMS (Battery Management System)

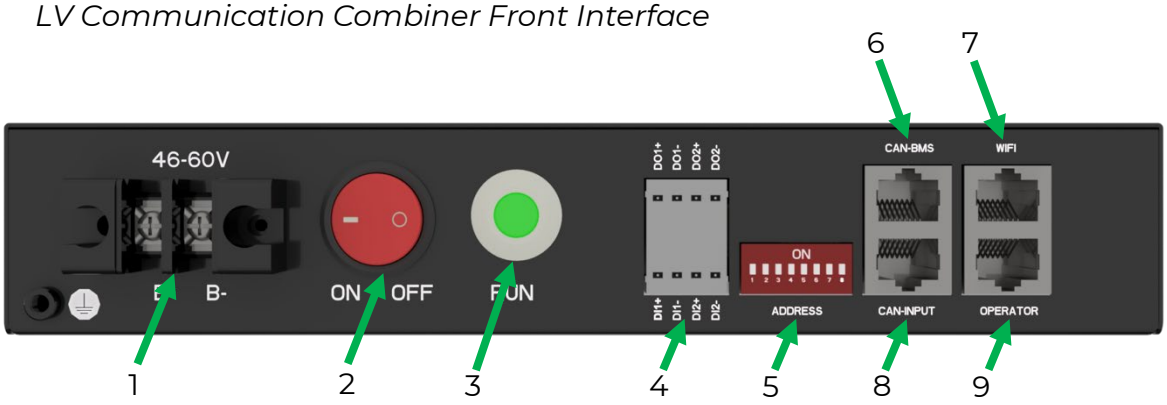
1.2.1 BMS Front Interface



BMS Interface Descriptions		
Item	**Name**	**Functionality**
1	Circuit breaker	**On:** Battery terminals are live if the BMS has been started up and indicator light is solid. **Off:** Both positive and negative battery terminals are not live.
2	Positive Terminal	Positive power connection Amphenol SurLok panel mount receptacles with 5.7mm post. Refer to Section 4.5 for mating connector part numbers.
3	Negative Terminal	Negative power connection Amphenol SurLok panel mount receptacles with 5.7mm post. Refer to Section 4.5 for mating connector part numbers.
4	DIP Switches	DIP 1/2/3/4 – For setting parallel cluster address sequences when connecting to communications hub. DIP 5 – CAN terminal resistor.
5	Earthing Point	M6 nut for connection of earth bond to battery case.
6	Startup Button	**Hold for 5s:** If BMS power switch is on BMS will start-up, light will flash until start-up is complete and battery is ready for use. Start-up generally takes 2 minutes. **Hold for 5s:** This will shut down the BMS if it is already started up. **Light continues flashing longer than 3 mins:** Alarm is present, depending on the level of the alarm the BMS may not allow the battery to operate. Check alarm status on the connected inverter. Contact CD Power for support.
7	BMS Power Switch	**On:** Ready to turn on. **Off:** Power to BMS off. Battery will not operate whilst BMS is off. Recommended for storage and shipping for low power consumption.

8	Link 1 and Link 2	Communication between batteries that are connected in parallel.
9	CAN 1 and CAN 2	Communication to power inverter of communication combiner/hub via CAN bus.
10	Operator Port	Connection to PC.
11	RS485	Communication interface between battery and other peripherals via RS485.

1.2.2 LV Communication Combiner Front Interface



LV COMMUNICATION COMBINER TERMINAL LAYOUT		
Item	**Name**	**Functionality**
1	46-60V DC INPUT	Power input.
2	Power switch	**On:** Ready for CAN bus communication. **Off:** Power off (Required before disconnection).
3	Run Indicator Light	**Illuminates solid** when communication combiner has booted up and is ready to operate. **Blinks** during startup or if alarm active.
4	Digital input/output terminals	Unused on this model.
5	Dip Switches	Unused on this model.
6	CAN-BMS	Communication to power inverter via CAN bus.
7	Wi-Fi Port	Unused on this model.
8	CAN-INPUT	Communication to parallel LV Modules, via CAN bus.
4	Operator Port	Connection to PC.

1.2.3 *Communication Port Definitions*

Communication Port Definitions					
RJ45 PIN	**LINK-1**	**LINK-2**	**CAN-1/CAN-2**	**OPERATOR**	**RS485**
1				TXD	A
2			GND	RXD	B
3				VSS	
4	CAN H	CAN H	CAN H	VCC	
5	CAN L	CAN L	CAN L		
6					GND
7	WIN+	WDO+			
8	WIN-	WDO-			

1.2.4 *CD-CTL-LV Communication Combiner*

LV COMMUNICATION COMBINER PORT DEFINITION			
RJ45 PIN	**CAN-INPUT**	**CAN-BMS**	**RS232/PC**
1	CANH	CANH	TXD
2	CANL	CANL	RXD
3			VSS
4			VCC
5			
6			
7			
8			

2 Safety and General Precautions

2.1 Observe Safety Instructions

- Users must familiarize themselves with this manual prior to installation or operation. This manual provides comprehensive instructions on proper installation, operation, and maintenance procedures for CDPowercell LV Batteries.
- Ensuring general safety requires strict adherence to the procedures listed in this manual.

2.2 General Safety

- Adequate ventilation or climate control must be maintained to dissipate heat effectively.
- Recommendations regarding physical placement and clearances should be followed unless a written exemption is obtained from CD Power.
- Users must also pay close attention to the recommended charging and discharging parameters outlined in the manual to prevent overcharging, over-discharging, or any other conditions that may compromise the battery's safety and longevity.
- Regular inspections and monitoring are recommended for the early detection of potential issues.
- DO NOT modify or attempt to repair CDPowercell LV batteries, if your battery is faulty, please contact CD Power to arrange a repair.
- Battery module casings must remain sealed, removal of casing will expose battery cells which could pose a safety risk.
- In case of any uncertainties or concerns, consult CD Power.

2.3 Symbols

The following symbols will be utilised throughout this manual.

Sign	Meaning
⚠ WARNING	Possibility of personal injury.
⚠ CAUTION	Possibility of damage to equipment.
NOTICE	Additional information.
	Arc flash hazard, appropriate PPE should be worn.

2.4 Personal Protective Equipment (PPE)

- Always wear PPE as required by your Standard Operating Procedures and as required by local regulations.
- When handling LFP batteries as a minimum CD Power recommends the following PPE are worn:
  - Safety glasses.
  - Long length fire retardant clothing.
  - Safety steel capped footwear.
  - Any other PPE as required by standard site procedures.

- When making electrical connections to batteries there is a risk of arc flash as a result of incorrect connections. It is recommended that the following additional PPE is worn whilst making any electrical connections to batteries or upon the first-time closing battery or system breakers on a newly wired system.
  - Arc-rated gloves.
  - Arc-rated face shield.
  - Arc-rated long sleeve.
  - Arc-rated pants.
  - Hearing protection.

⚠ WARNING

Arc Flash protection rating of PPE should be determined based on the parameters of the system being installed.

- Depending on the nature and environment of the work being completed additional PPE may be required.

2.5 Damaged Battery

- If a battery module is physically damaged or an alarm is raised it should not be operated unless the issue is rectified or resolved.
- The alarm light on the front of the battery module will continue to flash if a battery alarm is raised.
- Damaged batteries should be returned to CD Power immediately or disposed of responsibly at a suitable facility. Contact CD Power prior to return.
- Leaking electrolyte can cause skin irritation and chemical burns. As such, avoid contact. The following first aid measures should be followed if electrolyte or gasses are contacted, inhaled or ingested, then immediately contact emergency medical services.

Eye Contact	Flush eyes with water for least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Skin Contact	Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.
Inhalation	Remove from exposure and move to fresh air immediately. Use oxygen if available. Get medical aid.
Ingestion	Call the Poisons Information Line on 13 11 26 (24 hours a day from anywhere in Australia) or seek medical aid. Refer https://www.healthdirect.gov.au/swallowed-substances

2.6 Fire

- In the event that a battery module catches on **fire evacuate the area and call emergency services.**
- Refer emergency services to the battery modules safety data sheet (SDS) available on CD Powers website or upon request.
- LFP batteries may vent hazardous gasses during combustion therefore self-contained breathing apparatus must be worn during firefighting. **In all cases call emergency services.**

2.7 Safety Data Sheet (SDS)

Up to date SDS documents are available for CDPowercell batteries on CD Power PTY LTD's website https://www.cdpower.com.au or via direct email request addressed to inquiries@cdpower.com.au

NOTICE

The instructions in this document are provided as a guide, it is the responsibility of the installer to ensure that appropriate standards and local regulations are complied to.

2.8 Installer

2.8.1 General Reminder to Installers

- All tasks outlined in this manual must be performed by an installer with adequate qualifications and skills.
- Installers should hold all locally required qualifications to perform such work and have an extensive understanding of the dangers and hazards associated with installing and maintaining LFP batteries.
- Installers should follow all recommendations outlined in this manual to ensure personal safety.
- Installers should not wear watches or any other metal objects during installation operations to avoid short circuits and personal injury.
- All installation shall follow local regulatory requirements. In Australia, this includes AS/NZS 3000, AS/NZS 3008 & AS/NZS 5139.

2.8.2 Installation Precautions

- Before installation, check the battery open circuit voltage.
- Batteries with different capacity, different P/N or different manufactures must not be connected.
- Before installing the battery module, check the positive and negative poles of the battery module to ensure correct installation/connection.
- The CDPowercell LV has an IP Rating of IP20 and is for indoor installations only.

3 Handling

3.1 General Handling

- Due to the heavy weight of the battery module, use caution when handling.
- CDPowercell LV batteries require a minimum two-person lift. Refer to your local workplace health and safety legislation of guidance on safe manual handling procedures.
- Do not handle batteries if there are signs of leaking electrolyte.

⚠ WARNING

Do not attempt single person lift, dropping of batteries may result in irreversible damage. Avoid handling of damaged batteries.

3.2 Transportation

- It is recommended that batteries are transported only in their original packaging.
- Lithium Iron Phosphate (LFP) batteries are classed as Class 9 UN3480 Dangerous Goods (DG) and must only be transported in accordance with the appropriate safety codes.
- The batteries must only be shipped in a partially discharged state in protective (preferably original) packaging.
- The terminals must be protected to prevent the possibility of a short circuit or damage.
- Battery modules must be switched OFF during transport and models with a circuit breaker must have the circuit breaker switched OFF.
- No more than seven batteries should be stacked during transport in their original packaging.
- Appropriate packaging measures must be put in place to prevent battery stacks from toppling during transport.

3.3 Storage

During periods of non-use, the following instructions must be adhered to:

- Batteries must be stored in a dry, clean and well-ventilated environment.
- Storage temperatures must not exceed -10 °C to +45°C for a period of greater than 1 month. For extended periods, temperatures shall not exceed 0–30°C.
- The absolute maximum range is -20 °C to +55 °C for periods less than 1 month.
- Before storage battery modules should be charged/discharged to 30 – 50% SOC.
- During storage, if the temperature range is -10 °C to +35 °C then a max 6 months re-charge cycle is required (3 months recommended) If the storage temperature is between +35 °C to +55 °C for a 24hr period, then a monthly recharge cycle should be conducted.
    - The BMS automatically logs maximum temperatures and usage data for warranty purposes. Logs can only be downloaded by CD Power authorised personnel.
- The BMS switch and circuit breaker should both be off prior to storage to reduce self-discharge.

3.4 Packaging Information

- CDPowercell LV batteries are supplied in cardboard boxes with labelling as per Figure 3.
- Package dimensions are: 948x306x220 ± 5mm

Figure 3 - Packaging diagram

4 Installation

4.1 Safety Guidelines

- Avoid short circuits between the positive and negative terminals.
- All electrical connection work on the LV Battery Module must be performed by a qualified professional.
- When operated in accordance with the intended design, the LV Battery Module will function as a safe and reliable power source.
- In the absence of proper operating conditions, damage, misuse and/or abuse, battery modules may overheat or emit electrolyte fumes resulting in a safety hazard. Users must observe the safety precautions and warnings described in this Section.
- The Safety Section may not cover all regulations in your area. When using low voltage battery modules, review applicable local laws, regulations and industry standards for the product.
- If safety precautions or warnings are not understood, please contact CD Power for further clarification.

⚠ WARNING

Avoid short circuits between the positive and negative terminals.

4.2 Parts List

Each CDPowercell LV battery comes packaged with the pre-terminated cables to assist installation. CD Power can supply alternative length cables separately upon request, alternatively custom length cables can be made by a qualified technician using the connectors detailed in Section 4.6.

Item	Description	Quantity
1	CD-LP51100 Battery Module	1
2	Negative Power Cable with Amphenol Surlok Connectors	1
3	Positive Power Cable with Amphenol Surlok Connectors	1
4	Earthing cable with M6 ring terminals	1
5	Link communication cable with RJ45 connectors	1
6	Inverter CAN bus communication cable with RJ45 connectors	1

4.3 Location

The installation location of CDPowercell LV battery/batteries should meet the following requirements.

- The installation location must be suitable for the batteries IP protection rating.
- The installation location must not be exposed to direct sunlight.
- Ensure there are no explosive or combustible materials nearby (refer to AS/NZS 5139 and the CEC Best Practise guide https://batterysafetyguide.com.au/).
- The installation location must not be in a Hazardous area.
- A minimum clearance of 5mm is required above batteries mounted in a rack.
- The ambient temperature range must be within -10 – 55°C. Battery performance will be severely limited if the installation environment reaches these temperatures. Keeping the temperature around 25°C is recommended for optimal performance and longevity. Temperatures above 35°C will degrade battery life.
- Exposure to water or excessive dust is not allowed.
- If batteries are stored outdoors, they should be in a minimum IP54 climate-controlled enclosure.
- The installation location should be vermin proof.
- The battery location should comply to all standards relevant to the specific installation.

⚠ CAUTION

Failure to comply with installation location requirements may result in premature failure and void warranty.

4.4 Mounting

The battery is intended for mounting in the following orientation.

- Batteries must not be stacked directly on top of one another.
- A minimum clearance of 5mm is required surrounding the battery. Additional spacing may be required to ensure the operating temperature is kept within the required specification. Variance in battery module ambient temperature shall be less than 5°C between any 2x modules in a string.
- Battery installation location should be away from sources of heat and sparks. The minimum safe distance is 0.5m.
- Ensure no explosive or combustible materials are nearby or installation in hazardous areas as per AS/NZS 3000.
- Battery modules shall not be installed next to a heat source that raises ambient temperature by more than a 5 °c variance from the average temperature,

- Each battery has four M6 mounting holes two at the front and two at the back. It is recommended that they are secured by a minimum of one hole at both the front and rear.
- The mounting structure shall be designed to support the weight of the batteries and be designed in accordance with AS/NZS 1170 or Appendix A. A racking system is available from CD Power Part No: CD-CTL-RACK
- The PowerCell battery does not vent any gas under normal operation. Refer to PowerCell SDS and AS/NZS 5139 for additional requires for installation.
- CDPowercell LV Batteries must be supported on either a flat rigid surface or by support rails that run down either side of the battery. Support rails should contact a minimum of 30% of the batteries base surface area for adequate support.

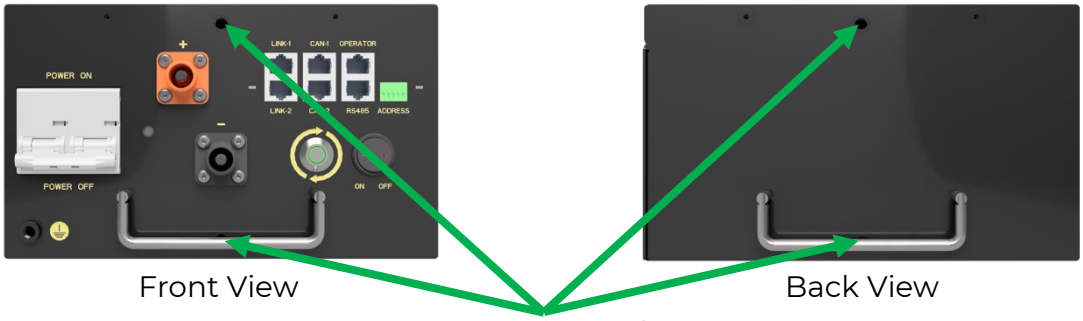


Figure 4 – Mounting holes.

4.5 Earthing

All internal electrical connections are designed to be isolated from the battery case. In most applications battery case earthing is not required however it is recommended. The battery case has an earthing connection on the front which an appropriately sized Earth cable can be connected to with an M6 bolt and serrated washer. The Earth cable should be sized such that the resistance between the battery grounding point to main earth point should be ≤0.1 Ohm. Minimum 6AWG/13mm^2 to be used.

4.6 Battery Connections

If not using the supplied cables, please use the following guidelines.
Amphenol Surlok connectors are used for the main DC power input/output, they allow for quick, safe and secure connections. They are available in both straight and 90° angled connectors that can be crimped onto the end of cable. Cables should be sized according to AS/NZS 3008 & AS/NZS 5139. For the manufacture of cables IPC 620 Requirements and acceptance for cable and wire harness assemblies 2022 and the Amphenol Surlok manual.

Amphenol connectors for power cables		
	Positive	**Negative**
Right angle 90°	SLPPA25BSO	SLPPA25BSB

		
Straight	SLPIPA25BSO 	SLPIPA25BSB 

A straight through ethernet communication cable is required to connect between battery link terminals when multiple batteries are paralleled, the cable must be terminated with RJ45 terminals according to section 1.2.3 & 1.2.4.

Figure 5 - RJ45 terminated communication cable.

4.7 Battery to Inverter Communication

The CDPowercell LV communicates to the connected inverter via CAN bus. Contact CD Power for up-to-date details regarding supported inverters or CAN bus protocols. When more than 16 batteries are connected in parallel, a CD Powercell LV Communication Combiner is required between the inverter and batteries. Batteries are separated into clusters of no more than 16, with one master of each cluster reporting data to the communication combiner.

Battery Data may also be accessed from the Inverter monitoring platform. Refer to the Inverter manufacturers' User Manual for details to how to access their monitoring platform.

4.8 Pre-connection Checks

- Inspect the battery for any visible physical damage. If damaged do not operate, contact CD Power for support.
- Check the battery voltage is within operating parameters (see Section 1.1.1) at the power terminals without any connections as per the following instructions:
  A. Switch the BMS Power Switch to the ON position.
  B. Press and hold the startup button for 5 seconds.

C. Wait until the green light of the start-up button remains solid (if it continues flashing beyond the boot up time (2 minutes) then an internal alarm is present, contact CD Power for support).
D. Switch the circuit breaker to the ON position.
E. Measure the voltage between the positive and negative power terminals using an appropriate voltage measuring device.
F. Turn OFF the battery circuit breaker.
G. Turn OFF the BMS Power Switch.

- Make sure no battery alarms were active when checking terminal voltage.

⚠ CAUTION

Do not attempt to connect or operate batteries if alarms are active or physical damage is observed. Contact CD Power for technical support.

4.9 Connection to Inverter

4.9.1 Single Cluster Battery Module Connection to Inverter

- Refer to Figure 6 as a reference for connections in the following steps.
- No more than 15 batteries can be connected in a single cluster.
- Refer to local standards and regulations for isolation and protection requirements between batteries and inverters.
- CDPowercell LV battery circuit breakers provide protection and isolation on both positive and negative conductors as required by some sections of AS/NZS 5139.

STEPS FOR CONECTING SINGLE BATTERY MODULE CLUSTER TO INVERTER	
STEP 1:	Perform pre-connection checks in Section 4.8.
STEP 2:	Confirm that the total voltage difference of each battery module observed in Step 1 does not exceed 2V.
STEP 3:	When the battery module is not connected to the inverter, verify that the battery module start button, BMS Power Switch and circuit breaker are OFF.
STEP 4:	Connect the inverter communication cable from the *CAN-1* port of the master battery to the battery CAN bus connection of the inverter.
STEP 5:	Connect Link communication cables in a series between each of the batteries. *Link-2* ports must be connected to *Link-1* ports. The master battery must not have any connection to it's *Link-1* port, and the final slave battery must not have any *Link-2* connection.
STEP 6:	Connect positive power cables from each battery to an appropriately sized common positive conductor.
STEP 7:	Connect negative power cables from each battery to an appropriately sized common negative conductor.
STEP 8:	Set DIP switch addresses on all batteries to 0.
STEP 9:	Inspect that all connections have been made correctly.
STEP 10:	Refer to Section 5 for operation.

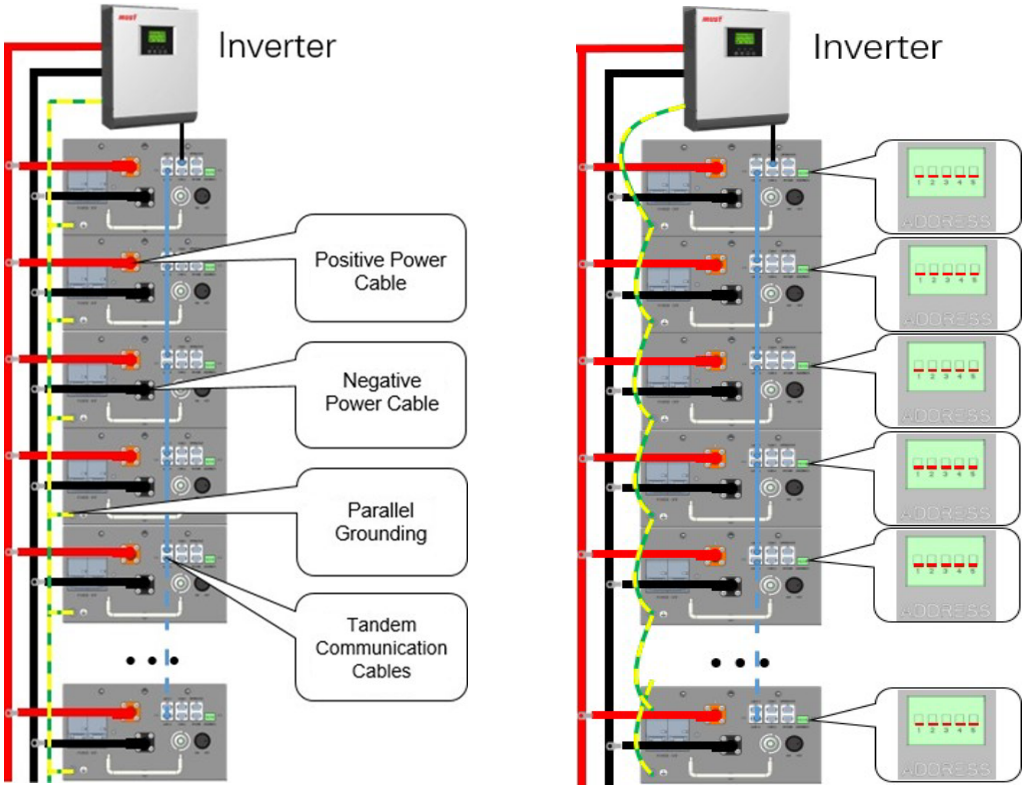


Figure 6 - Single battery cluster cable connections and DIP switch addresses, drawing is for reference only.

NOTICE

The battery module needs to be rebooted after setting the DIP switches, as the settings will not take effect until after the reboot.

⚠ CAUTION

Connecting more than 15 batteries in a single cluster will result in communication issues and damage hardware protection.

4.9.2 Multi-Cluster Battery Module Connection to Inverter

- Refer to Figure 7 and Figure 8 as a reference for connections in the following steps.
- No more than 15 batteries can be connected in each cluster.
- No more than 7 clusters can be connected in parallel.
- Refer to local standards and regulations for isolation and protection requirements between batteries and inverters.
- CDPowercell LV battery circuit breakers provide protection and solation on both positive and negative conductors as required by some sections of AS/NZS 5139.

STEPS FOR PARALLELING MULTI-CLUSTER BATTERY MODULES AND INVERTER CONNECTION	
STEP 1:	Perform pre-connection checks in Section 4.8.
STEP 2:	Confirm that the total voltage difference of each battery module observed in Step 1 does not exceed 2V.
STEP 3:	When the battery module is not connected to the inverter, verify that the battery module start button, BMS Power Switch and circuit breaker are OFF.
STEP 4:	Connect the combiner communication cable from the *CAN-1* port of the master battery of the master cluster to the *CAN-BMS* port of the LV HUB (comms combiner).
STEP 5:	Connect communication cables from *CAN-1* to *CAN-1* and *CAN-2* to *CAN-2* of each battery clusters master battery, the final battery in the series should have one CAN port unpopulated.
STEP 6:	Connect Link communication cables in series between batteries in each cluster. *Link-2* ports must be connected to *Link-1* ports. The master battery must not have any connection to its *Link-1* port, and the final slave battery must not have any *Link-2* connection.
STEP 7:	Connect positive power cables from each battery to an appropriately sized common positive conductor.
STEP 8:	Connect negative power cables from each battery to an appropriately sized common negative conductor.
STEP 9:	Set DIP switch addresses on all slave batteries to 0.
STEP 10:	Set DIP switch addresses of each master battery of each cluster as per Table 1, address order must be assigned based on the order in which the clusters are connected in series.
STEP 11:	Inspect that all connections have been made correctly.
STEP 13:	Connected power cable to the LV HUB with appropriate protection.
STEP 14:	Connect the inverter communication cable supplied with the LV HUB to the inverter battery CAN bus connection.
STEP 15:	Refer to Section 5 for operation.

NOTICE

When multiple clusters are connected in parallel, communication between cluster master batteries, the LV HUB and the inverter is only via CANbus. Slave batteries within each cluster communicate via LINK.

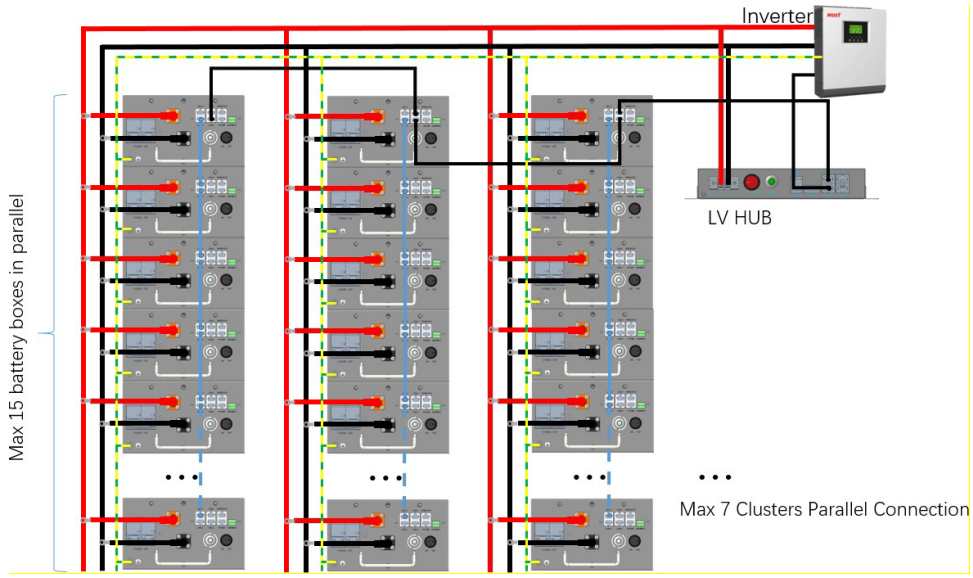


Figure 7 - Multi-Cluster Cable Connection, drawing is for reference only.

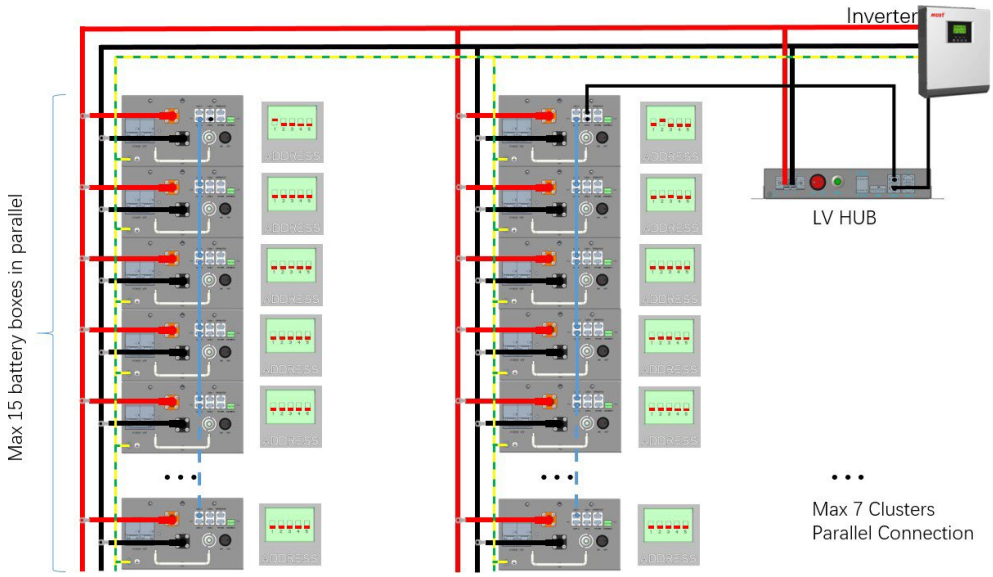


Figure 8 - Multi-Cluster DIP Switch Addresses, drawing is for reference only.

Table 1 - Multi-cluster DIP switch address range is address 1 to address 7.					
DIP Switched					Functionality
1	2	3	4	5	
ON	OFF	OFF	OFF	OFF	Address 1
OFF	ON	OFF	OFF	OFF	Address 2
ON	ON	OFF	OFF	OFF	Address 3
OFF	OFF	ON	OFF	OFF	Address 4
ON	OFF	ON	OFF	OFF	Address 5
OFF	ON	ON	OFF	OFF	Address 6
ON	ON	ON	OFF	OFF	Address 7

5 Operation

5.1 Battery Module Startup and Shutdown

5.1.1 Single Cluster System Startup

⚠ CAUTION

Before operating CDPowercell LV batteries, please read this manual carefully for the proper startup and shutdown procedures for each battery configuration.

STEPS FOR SINGLE CLUSTER SYSTEM STARTUP	
STEP 1:	Inspect that all electrical connections are correct, and batteries are mounted safely.
STEP 2:	Ensure all DIP switches of the single cluster battery modules are OFF as shown in Figure 6.
STEP 3:	Turn all BMS Power Switches ON (Figure 9).
STEP 4:	Press and hold the master battery module startup button for 5 s (Figure 9). The startup button light will begin flashing and wake-up the connected slave batteries. The master battery is the battery connected directly to the inverter. Do not press the start-up button of any of the slave battery modules as the automatic wake-up process will assign slave battery module ID's sequentially.
STEP 5:	When all battery startup button LED's show steady green the batteries have completed booting up and are ready for charge/discharge.
STEP 6:	Wait for battery startup button LED's in all clusters to illuminate a constant green before closing all battery module circuit breakers so they are ON.
STEP 7:	Ensure that all battery modules remain active after the first charge/discharge cycle.

Figure 9 – Single Cluster Battery Startup Steps

⚠ CAUTION

It is important to check the boot process and make sure that the green boot button green LED's all show a steady green colour. During the boot process, all boot button LEDs will blink until the master module receives a feedback signal from the last slave module to enable charging/discharging.

⚠ CAUTION

If one or more of the battery modules do not turn on during this process, or if the LEDs are unstable, check if any alarms are present on the inverter software. The master module must be turned off and all connections between ports LINK-1 and LINK-2 must be checked. Contact CD Power for support.

⚠ CAUTION

If any exception occurs during this process, it is necessary to shut down the entire cluster and repeat the process in step 1 or contact CD Power for support as there may be an issue with the setup.

NOTICE

The startup button's green LED may blink for a few minutes after the circuit opening process, this is a normal process and is required to complete any ongoing process between batteries.

NOTICE

If connecting an LV HUB communication combiner in a single cluster installation, the battery dip switch must be set to OFF.

5.1.2 Single Cluster System Shut Down

STEPS ON SINGLE CLUSTER SYSTEM SHUTDOWN	
STEP 1:	Shutdown the inverter system as per shutdown procedure such that there is no load on the batteries.
STEP 2:	Turn OFF all battery module circuit breakers.
STEP 3:	Press and hold the startup button for 5s to shutdown each battery, repeat this step for each battery module in the system.
STEP 4:	Turn OFF the BMS power switch on each BMS.

NOTICE

When the master module is powered off, the slave module will automatically hibernate after 10 minutes, waiting for the next wakeup.

⚠ CAUTION

To completely shut down the cluster, all battery circuit breakers and BMS power switches must be OFF. It is possible for batteries to reach an undesirably low state of charge if left on for extended periods without being completely shut down.

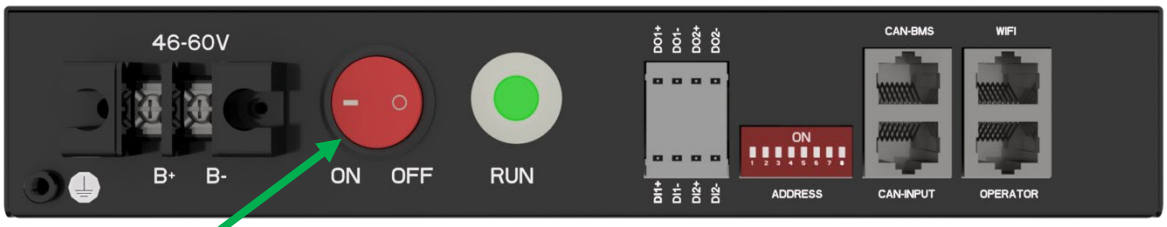
5.1.3 *Multi-Cluster System Startup*

⚠ CAUTION

Before operating CDPowercell LV batteries, please read this manual carefully for the proper startup and shutdown procedures for each battery configuration.

STEPS FOR MULTI CLUSTER SYSTEM STARTUP	
STEP 1:	Ensure all electrical connections are correct, and batteries are mounted securely.
STEP 2:	Ensure all master battery DIP switch address's are set correctly as per Table 1. All other slave battery DIP switch's must be OFF.
STEP 3:	Turn BMS Power Switches ON for all batteries in a single cluster (Figure 10).
STEP 4:	Press and hold the master battery module startup button for 5s (Figure 10). The startup button light will begin flashing and wake-up the connected slave batteries. The master battery is the battery connected directly to parallel clusters. Do not press the start-up button of any of the slave battery modules as the automatic wake-up process will assign slave battery module ID sequentially.
STEP 5:	When all battery startup button LED's in the cluster show steady green the batteries have completed booting up.
STEP 6:	Repeat steps 3 to 5 for all remaining clusters.
STEP 7:	Wait for battery startup button LED's in all clusters to illuminate a constant green before closing all battery module circuit breakers one cluster at a time such that they are ON for all batteries (Figure 10).
STEP 8:	Switch the LV HUB communication combiner power switch ON.
STEP 9:	Ensure that all battery modules remain active after the first charge/discharge cycle.

Figure 10 – Multi-Cluster Battery Startup Steps.



STEP: 8

Figure 11 - Switch LV HUB power ON.

⚠ CAUTION

It is important to check the boot process and make sure that the green boot button green LED's all show a steady green colour. During the boot process, all boot button LEDs will blink until the master module receives a feedback signal from the last slave module to enable charging/discharging.

⚠ CAUTION

If one or more of the battery modules do not turn on during this process, or if the LEDs are unstable, check if any alarms are present on the inverters software. The master module must be turned off and all connections between ports LINK-1 and LINK-2 must be checked. Contact CD Power for support.

⚠ CAUTION

If any exception occurs during this process, it is necessary to shut down all clusters and repeat the process in Step 3 or contact CD Power for support as there may be an issue with the setup.

NOTICE

The startup button's green LED may blink for a few minutes after the circuit opening process, this is a normal process and is required to complete any ongoing process between batteries.

5.1.4 *Multi-Cluster System Shutdown*

STEPS ON MULTI CLUSTER SYSTEM SHUTDOWN	
STEP 1:	Shutdown the inverter system as per its shutdown procedure so that there is no load on the batteries.
STEP 3:	Switch the LV HUB communication combiner power switch OFF.
STEP 4:	Turn OFF all battery module circuit breakers.
STEP 5:	Press and hold the startup button for 5s to shutdown each battery. Repeat this step for each battery module in the system.
STEP 6:	Turn OFF the BMS power switch on each battery.

NOTICE

When the master module is powered off, the slave module will automatically hibernate after 10 minutes, waiting for the next wakeup.

⚠ CAUTION

To completely shut down all clusters, all battery circuit breakers and BMS power switches must be OFF. It is possible for batteries to reach an undesirably low state of charge if left on for extended periods without being completely shut down.

5.2 Startup Button Status Indicators

The Run button provides several status indications as described in the table below:

Figure 12 - Fault indicator LED descriptions

Startup Button Light Sequences	Connotation	Function Or Indicative Status
Permanently illuminated	Activation Button	Press the button battery BMS start. When the battery module is operating normally, the indicator light will change steadily to green.
Green blinking every 3s	Low Power	When the battery is below (<2.8%), the start button will blink green at 3 second intervals. When the battery is in charging mode and reaches 4%, the start button stops flashing and becomes permanently illuminated.
Green blinking every 0.5s	Warning	In the event of a malfunction or alarm, the start button will flash in green at 0.5 second intervals after the event.

6 Maintenance

- It is suggested that all electrical, earthing and communication connections are inspected at least once per year. Make sure there are no loose, broken or corroded connections.
- It is recommended that the installation environment is inspected for dust, water, vermin, insects at minimum once per year.
- Refer to

WARNING

It is recommended that the system is powered down before checking connections in case there are any faults.

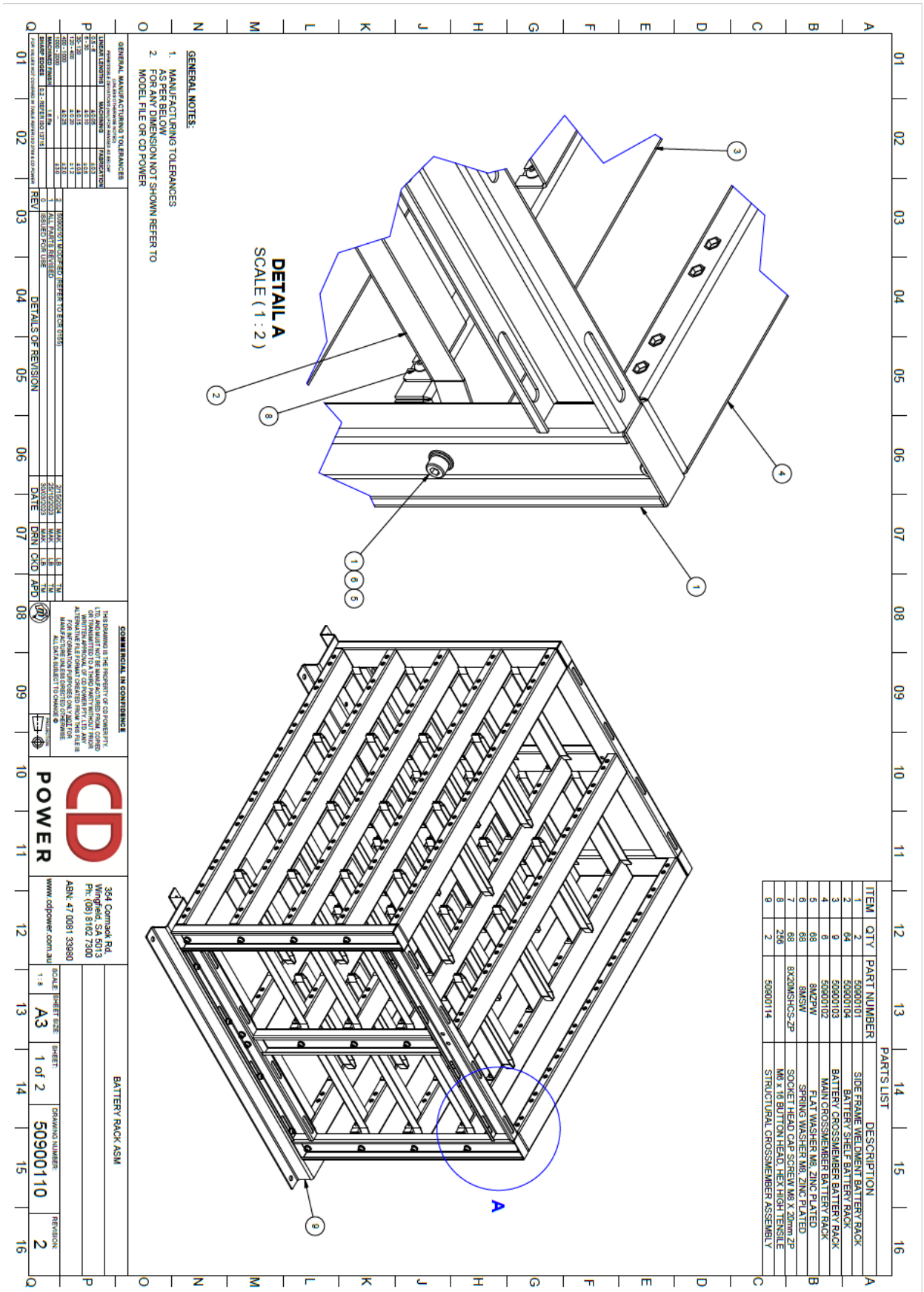
7 Trouble Shooting

For all your Servicing or Troubleshooting requirements please contact:

CD Power Adelaide Division 354 Cormack Road, Wingfield SA 5013 **T:** 08 8162 7300 F: 08 8162 7399 **E:** Service@cdpower.com.au **W:** www.cdpower.com.au	**CD Power Roma Division** Lot 3/73 Beaumont Dr, Roma QLD 4455 **T:** 07 4622 2206 F: 07 4622 2495 **E:** Service-Roma@cdpower.com.au **W:** www.cdpower.com.au

CD power makes every effort to ensure sustainability in their designs.
At the end of life, contact: Service@cdpower.com.au or for battery recycling or disposal within Australia contact a suitable https://www.batteryrecycling.org.au/battery-types.

Appendix A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GENERAL NOTES:
1. MANUFACTURING TOLERANCES AS PER BELOW
2. FOR ANY DIMENSION NOT SHOWN REFER TO MODEL FILE OR CD POWER
PARTS LIST
ITEM QTY PART NUMBER DESCRIPTION
1 2 50900101 SIDE FRAME WELDMENT BATTERY RACK
2 64 50900104 BATTERY SHELF BATTERY RACK
3 9 50900103 BATTERY CROSSMEMBER BATTERY RACK
4 8 50900102 MAIN CROSSMEMBER BATTERY RACK
5 68 8MZPW FLAT WASHER M8, ZINC PLATED
6 68 8MSW SPRING WASHER M8, ZINC PLATED
7 68 8X20MSHCS-ZP SOCKET HEAD CAP SCREW M8 X 20mm ZP
8 256 M6 x 16 BUTTON HEAD, HEX HIGH TENSILE
9 2 50900114 STRUCTURAL CROSSMEMBER ASSEMBLY
DETAILS OF REVISION
REV
0 ISSUED FOR USE
1 ALL PARTS REVISED
2 50900101 MODIFIED REFER TO ECR 0156
COMMERCIAL IN CONFIDENCE
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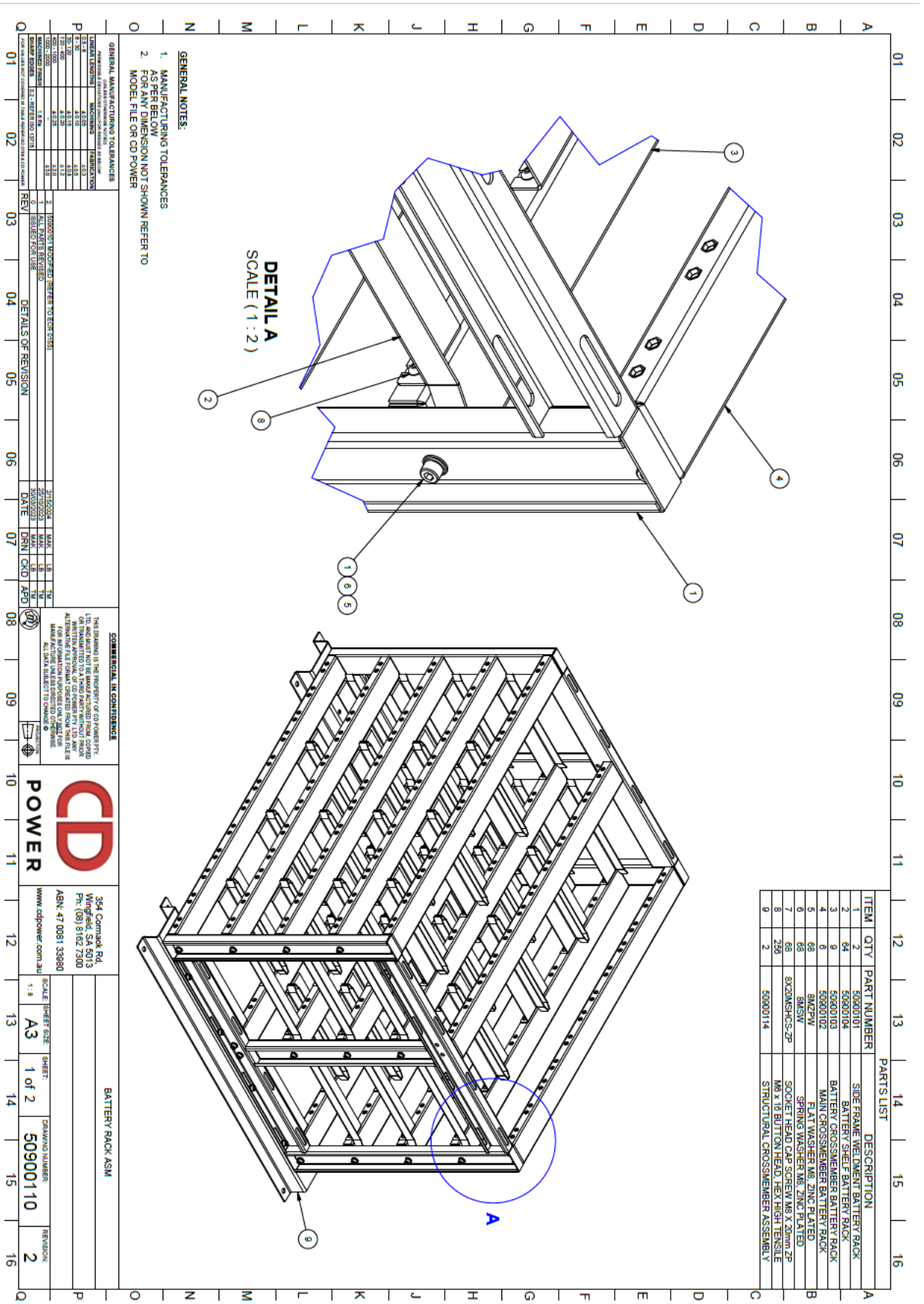
Ph: (08) 8162 7300
ABN: 47 008 133 980
www.cdpower.com.au
BATTERY RACK ASM
SCALE 1 : 8
SHEET SIZE A3
SHEET 1 of 2
DRAWING NUMBER 50900110
REVISION 2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8 256 M8 x 16 BUTTON HEAD, HEX HIGH TENSILE
9 2 50900114 STRUCTURAL CROSSMEMBER ASSEMBLY
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2 50900101 MODIFIED (REFER TO ECR 0755) 21/05/2024 MAK LB TM
1 ALL PARTS REVISED 30/10/2023 MAK LB TM
0 ISSUED FOR USE 30/10/2023 MAK LB TM
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LINEAR DIMENSIONS MACHINING FABRICATION
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6 - 30 ±0.1 ±0.2 ±0.5
30 - 120 ±0.15 ±0.3 ±0.5
120 - 400 ±0.2 ±0.5 ±1
400 - 1000 ±0.3 ±0.8 ±1.5
1000 - 2000 ±0.5 ±1.2 ±2
SHARP EDGES ISO - 13715 - E
MACHINED FINISH 1.6 Ra
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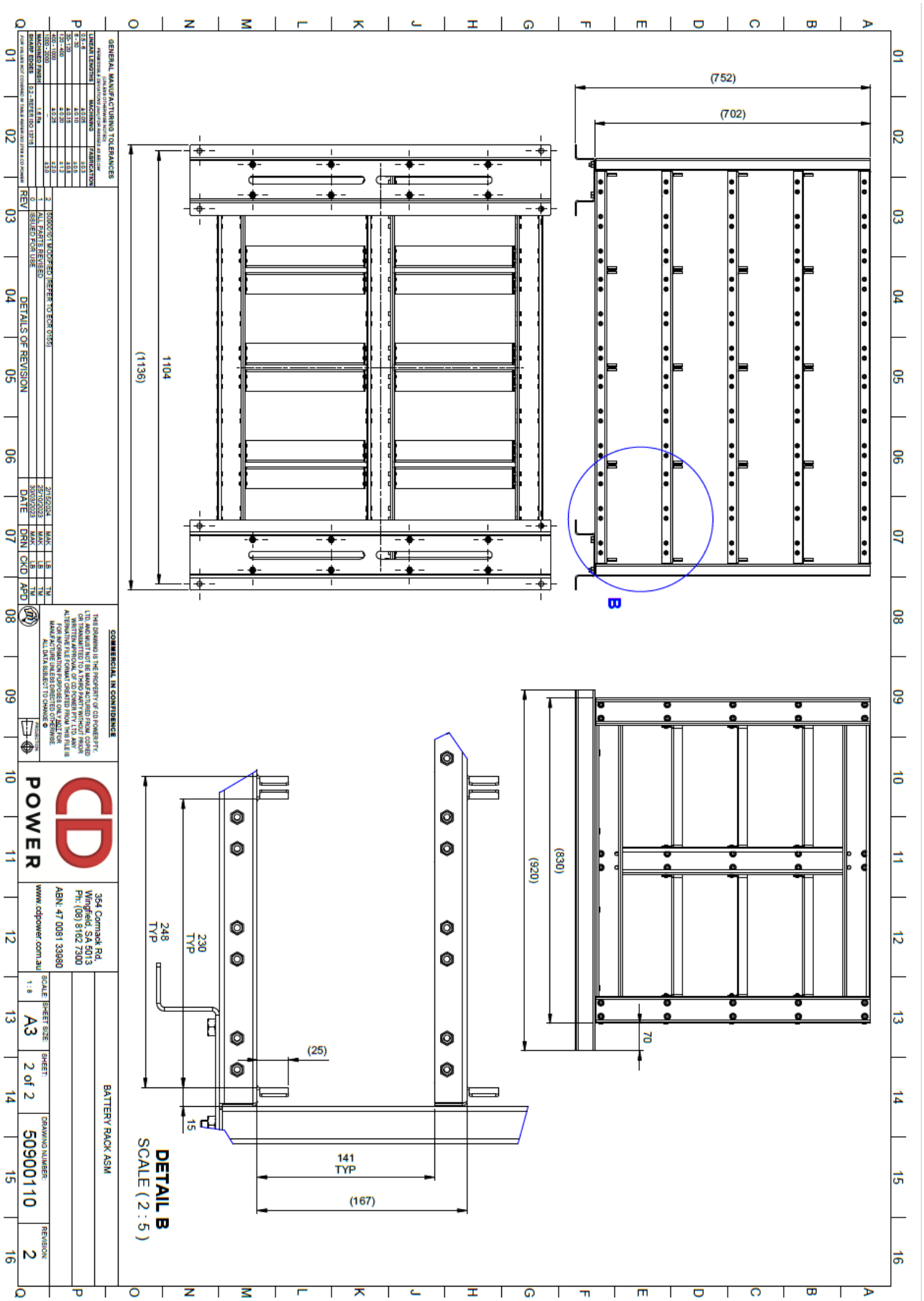
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SHEET
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