

0			1			2			3			4			5			6			7			8			9		
SHEET SUMMARY & CURRENT REVISIONS						CHANGE RECORDS																							
SHEET	TITLE					REV	SHEET	REV	DESIGNED	DRAWN	APPROVED	DATE	DETAILS																
1	BATTERY CONNECTIONS - BATTERY LINKS					B	ALL	A	PH	DRL	PH	19/08/19	FIRST ISSUE																
2	BATTERY CONNECTIONS - BATTERY BALANCER					B	ALL	B	PH	DRL	PH	07/11/19	VARIOUS NOTES/ UPDATES ADDED																



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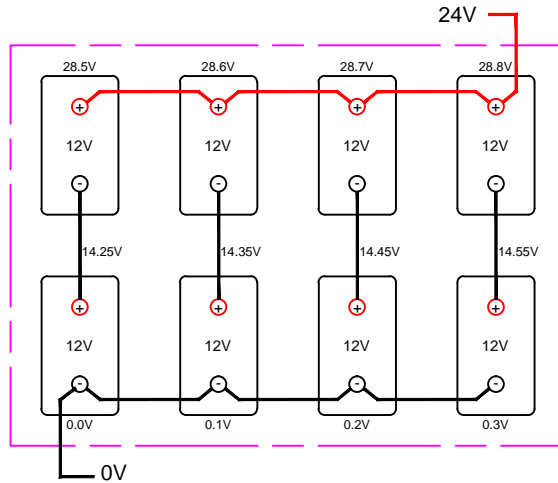
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DESIGNED PH	TITLE BATTERY CONNECTIONS SUMMARY AND CHANGE SHEET				
DRAWN DRL	CLIENT/PROJECT BATTERY LAYOUTS				
APPROVED PH	PART NO. N/A				
DATE 07/11/19	DRG NO. P291-12	SCALE NTS	REV B	SHT 0	OF 2

FILENAME > P291-12 BATTERY CONNECTIONS WITH BATTERY BALANCER.DWG IF IN DOUBT ASK ALL DIMS IN MM UNLESS OTHERWISE STATED

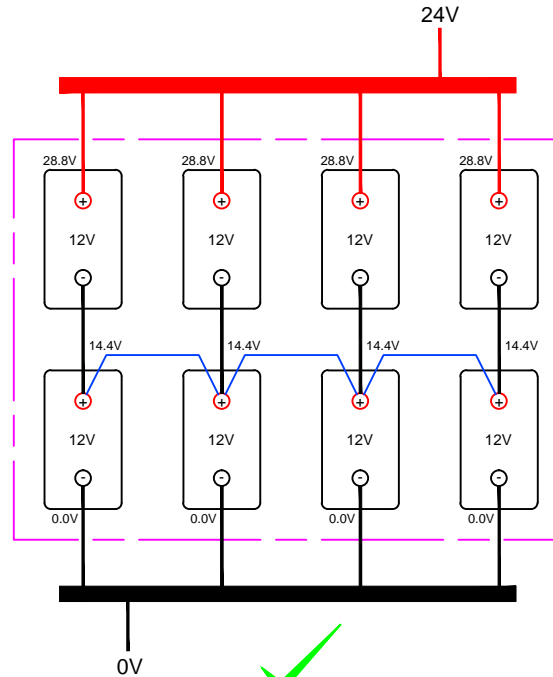
SAMPLE DRAWING TO ILLUSTRATE IMPORTANCE OF CORRECT BATTERY LINK CABLING AND TAKE OFFS

BEST PRACTICE INSTALLATION WITH NO MID-POINT LINKS



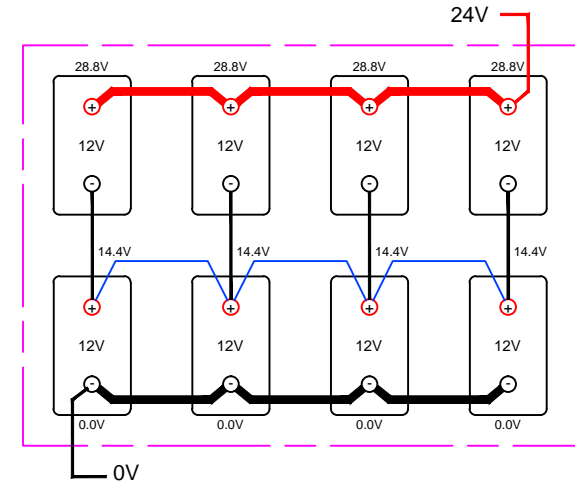
VOLT DROP UNDER LOAD IN LINK CABLES CAUSES MID-POINT VOLTAGES TO BE DIFFERENT IN EACH STRING PREVENTING SUCCESSFUL MID-POINT LINKING

BEST PRACTICE INSTALLATION WITH MID-POINT LINKS AND BUSBAR CONNECTIONS FOR POSITIVE AND NEGATIVE TAKEOFF



BUSBAR AVOIDS VOLT DROP UNDER LOAD ON 0V AND 28V WHICH MEANS MID-POINT VOLTAGES ARE THE SAME IN EACH STRING ALLOWING FOR SUCCESSFUL MID-POINT LINKING

BEST PRACTICE INSTALLATION WITH MID-POINT LINKS AND LARGE CROSS SECTION LINK CABLES FOR POSITIVE AND NEGATIVE COMMONING



ALTERNATIVELY HEAVY LINK CABLES CAN BE SPECIFIED TO ACHIEVE A SIMILAR RESULT TO BUSBARS

THESE ILLUSTRATIONS ASSUME PERFECTLY BALANCED BATTERIES

NOTES



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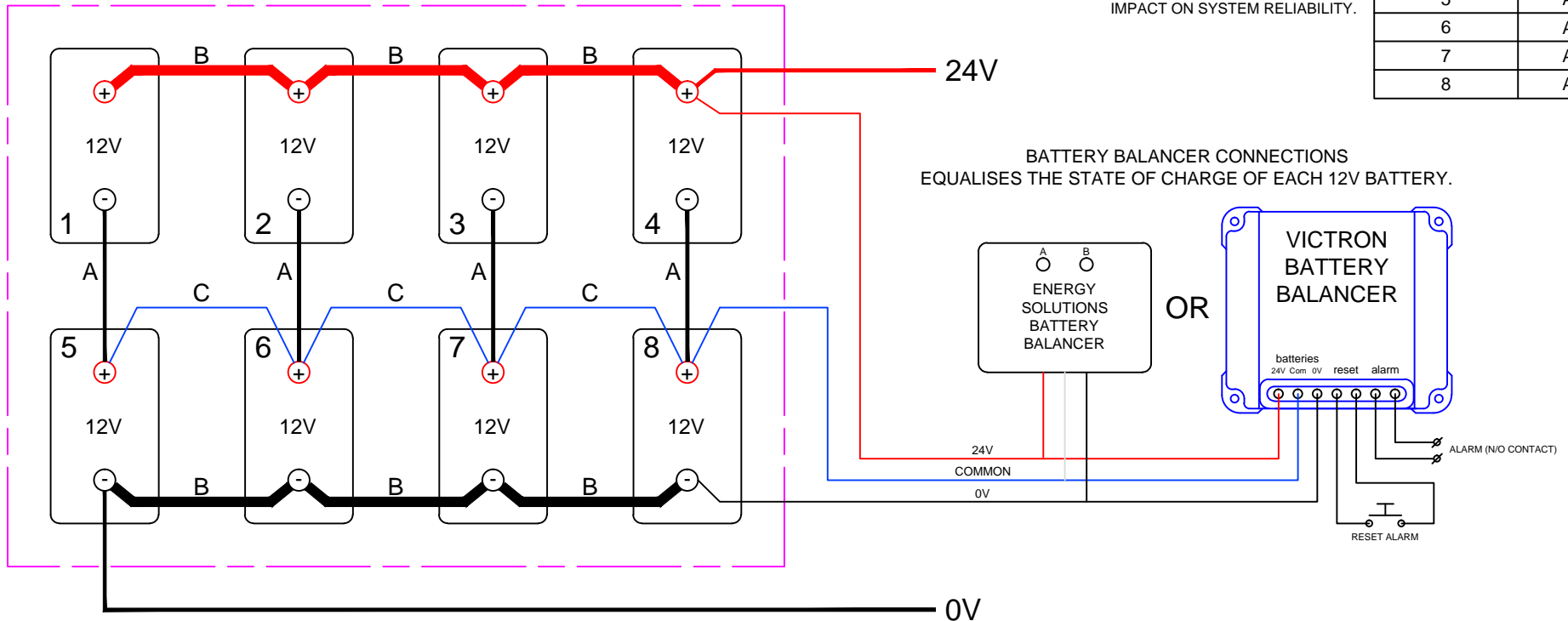
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DESIGNED	PH
DRAWN	DRL
APPROVED	PH
DATE	07/11/19

TITLE		BATTERY CONNECTIONS BATTERY LINKS			
CLIENT/PROJECT		BATTERY LAYOUTS			
PART NO.		N/A			
DRG NO.		SCALE	REV	SHT	OF
P291-12		NTS	B	1	2

SAMPLE DRAWING TO ILLUSTRATE CONNECTION OF BATTERY BALANCER

**- 8 OFF 12V BATTERIES
SERIES PARALLEL - 24V**



THIS TABLE SHOWS HOW EACH BATTERY IN THE BATTERY BANK HAS THE SAME AMOUNT OF CABLE CONNECTING IT TO THE LOADS. EACH LINK OF CABLE HAS A RESISTANCE SO IT IS IMPORTANT THAT THEY ARE ALL EQUAL TO ENSURE ALL BATTERIES ARE SUBJECT TO THE SAME LOAD AND THEREFORE USED EVENLY. MINIMISING THE LOSSES IN THE 'B' CABLES IS IMPORTANT FOR BATTERY BALANCING AND HAS THE GREATEST IMPACT ON SYSTEM RELIABILITY.

TABLE A - BATTERY LINKS	
12V BATTERY	LINKS FROM BATTERY
1	B B B A
2	B B B A
3	B B B A
4	B B B A
5	A B B B
6	A B B B
7	A B B B
8	A B B B

BATTERY BALANCER CONNECTIONS
EQUALISES THE STATE OF CHARGE OF EACH 12V BATTERY.

- NOTES:
1. ALL BATTERY LINK CABLES 'A' TO BE THE SAME LENGTH.
 2. ALL BATTERY LINK CABLES 'B' TO BE THE SAME LENGTH AND SIZED TO AVOID VOLT DROP BETWEEN PARALLEL STRINGS. IF THIS IS NOT POSSIBLE, USE BUSBAR ARRANGEMENT.
 3. ALL MID POINT CABLE LINKS 'C' TO BE THE SAME LENGTH AND CAPABLE OF TAKING FULL LOAD OR CHARGE CURRENT.
 4. MAIN POS AND NEG CONNECTIONS TO BE TAKEN FROM OPPOSITE ENDS OF BATTERY BANK AS SHOWN (POS = BATTERY 4 & NEG = BATTERY 5).
 5. WIRING AS SHOWN ENSURES EACH BATTERY HAS IDENTICAL CABLE LINKING FOR OPTIMUM CELL BALANCING (SEE TABLE A).

NOTES

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DESIGNED	PH	TITLE	BATTERY CONNECTIONS BATTERY BALANCER				
DRAWN	DRL	CLIENT/PROJECT	BATTERY LAYOUTS				
APPROVED	PH	PART NO.	N/A				
DATE	07/11/19	DRG NO.	P291-12	SCALE	REV	SHT	OF
				NTS	B	2	2