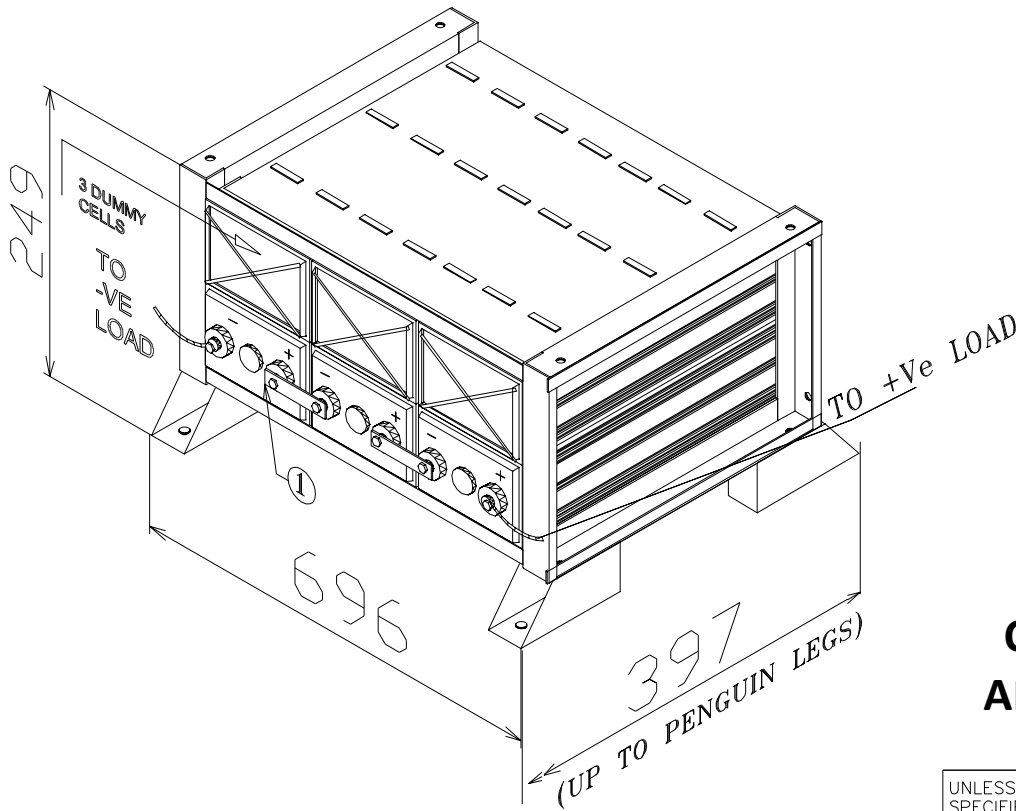


NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTANCE TESTS
2. FOR EPC CONTRACTS ONLY

NOTES:

- a. Batteries are located inside the trays of MS HRCA sheet painted with RAL7040(Window grey)colour.Trays are mounted on Penguin legs.
- b. All cell connectors are made of lead coated copper busbar.
- c. No separate foundation is required for installation of battery bank.
- d. No special ventilation is required.Normal ventilation is sufficient.
- e. All the connectors are designed for 114 A current.
- f. Floor area required for battery bank is 696X397 sq mm.
- g. 0.5 to 1 mts aisle space on all sides should be provided to permit initial installation service and surveillance.
- h. For any correspondence quote DRG.NO:
- *** FLOOR LOAD :170Kg/sq.m.
- *** All the Connectors are designed for 1Hrs discharge rate.
- *** Manufacturer's Model No : IP6009.



**Chief Engineer/Projects
APTRANSCO/Vs/Vijayawada.**

Drawing approval subject to valid vendor registration

ITEM NO	DESCRIPTION	DIMENSIONS	QTY/CON	QTY/SYS
1	Inter cell connector(H)	110X20X2	1	02

CONNECTOR DETAILS

SYSTEM DETAILS	
Type of cell	2V-200Ah
Total no.of cells	03
Volts per cell	2V
No.of modules	01
Total system weight (Approx)	47Kgs

UNLESS OTHERWISE SPECIFIED TOLERANCES ON		TITLE:		AMARARAJA Gotta be a better way Amara Raja Energy & Mobility Limited (Formerly Known as Amara Raja Batteries Limited) Registered office&works Karakambadi-517520,TPT,(A.P) INDIA. Ph.(0877)2265000,FAX:(0877)2285600.	
LINEAR	ANGULAR	6V-200Ah SYSTEM INSTALLATION&CONNECTION DIAGRAM			
X ± 10.0	AS SPECIFIED	DRN.	SIGN.	DATE	SCALE: N.T.S
.X ±	IN THE	CHD.	SPO	07.11.23	
.XX ±	DRAWING	RECHD.	ASHOK	07.11.23	
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN MILLIMETRES		APPD.	KMSN	07.11.23	
WEIGHT TOLERANCE: ± 5%		SHEET SIZE		PROPRIETARY MATERIAL OF M/s AMARARAJA GROUP OF COMPANIES,TIRUPATI ALL RIGHTS ARE RESERVED.NO COPYING PERMITTED UNAUTHORISED USE PROHIBITED.	
		A3 (297 x 420)		DRG. NO. <h2 style="text-align: center;">23 501 500 A</h2> SHEET 1 OF: 1	

8367707/2024/EEMRT-ENE51 NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTANCE TESTS
2. FOR EPC CONTRACTS ONLY



Guaranteed Technical Particulars

DOCREF: IAE/ GTP - PS/ 2023-2024; Rev : 00

Battery Particulars

- Battery Type : Maintenance Free Valve Regulated Lead Acid (MF-VRLA)
- Battery Rating : 6 V - 200 AH to 1.75 ECV @ C10 at 27°C
- Manufacturers Cell Designation : IP6009
- No. of cells : 3 No.s
- Cell dimensions : (198.4 x 318 x 76.8) mm Approx.
- Single cell weight : 11.5 kg. Approx
- Battery bank dimensions : (696 x 397 x 249) mm Approx.
- Battery bank weight : 47 Kg. Approx.

Charge Regime

- Float Charging Voltage : Batteries shall be charged in constant potential mode with Current Limit.
- Boost charging voltage : 2.23 - 2.25 Volts per Cell @ 27°C
- Current Limit : 20 Amps minimum to 40 Amps maximum.
- Recommended Voltage Compensation : For every 1°C rise in temperature reduce the float voltage by 0.003VPC & Vice versa, ensure the extension of temperature sensor upto battery.

Product Details

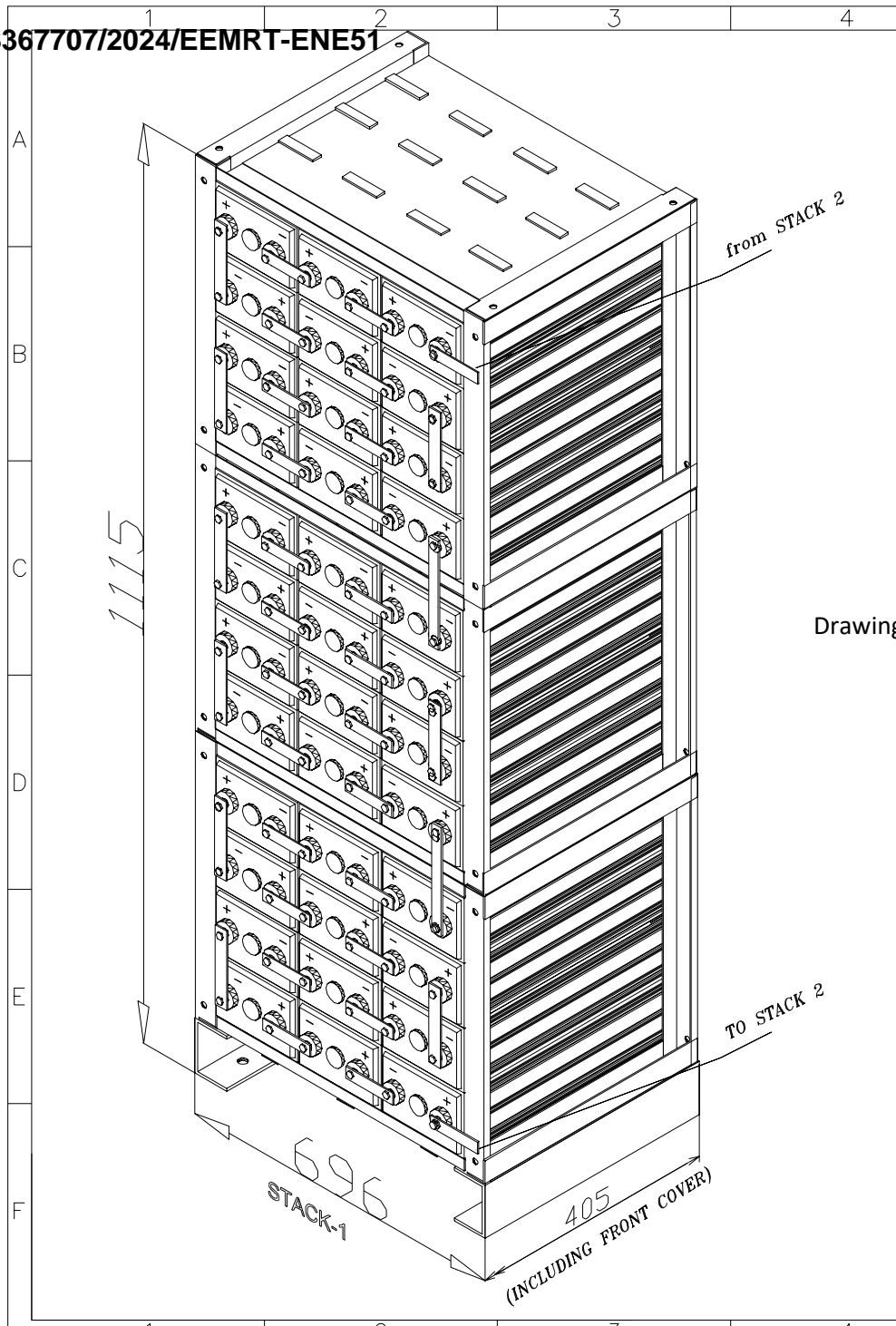
- AH efficiency : Above 95%
- WH efficiency : Above 85%
- Self Discharge/Week @ 27°C : < 1% of rated capacity
- Max. allowable Ambient Temp. at which cell can safely operate : 60°C continuous and 70°C short time.
- Recommended Max Period of Storage : 6 months from the date of dispatch before first use and battery should be stored in a covered area at 27°C.
- Material of Container : Polypropylene co-polymer.
- Type of separator : Highly absorbent Micro porous spun glass matrix.(AGM)
- Type of +ve & -ve plates : Flat pasted
- Material of tray & color : Mild steel coated with acid resistant powder coating.
- Method of connection between cells : Bolted
- Voltage ripple allowable : <2% of the RMS. Value
- Type of connectors : Lead coated Heavy duty copper strips
- Cycle Life of battery at 27°C : 4000 cycles at 20% Depth of Discharge(DOD) (or) 2000 cycles at 50% DOD (or) 1200 cycles at 80% DOD
- Time required for Boost charge at 2.30 VPC @ 20%CL at 27°C : 8 Hrs from 0-90% State of Charge (SOC)(or) 16 Hrs from 0-100% State of Charge
- Manufacturing Serial Number : Providing stickers

Applicable Standards

- Batteries generally conforms to
 - (i) IS15549:2005
 - (ii) IEEE1188 & 1189
 - (iii) BS-6290, PART-IV.
 - (iv) IEC 60896-21&22:2004, PART-II.

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8367707/2024/EEMRT-ENE51




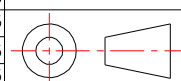
NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTANCE TESTS

NOTES: 2. FOR EPC CONTRACTS ONLY

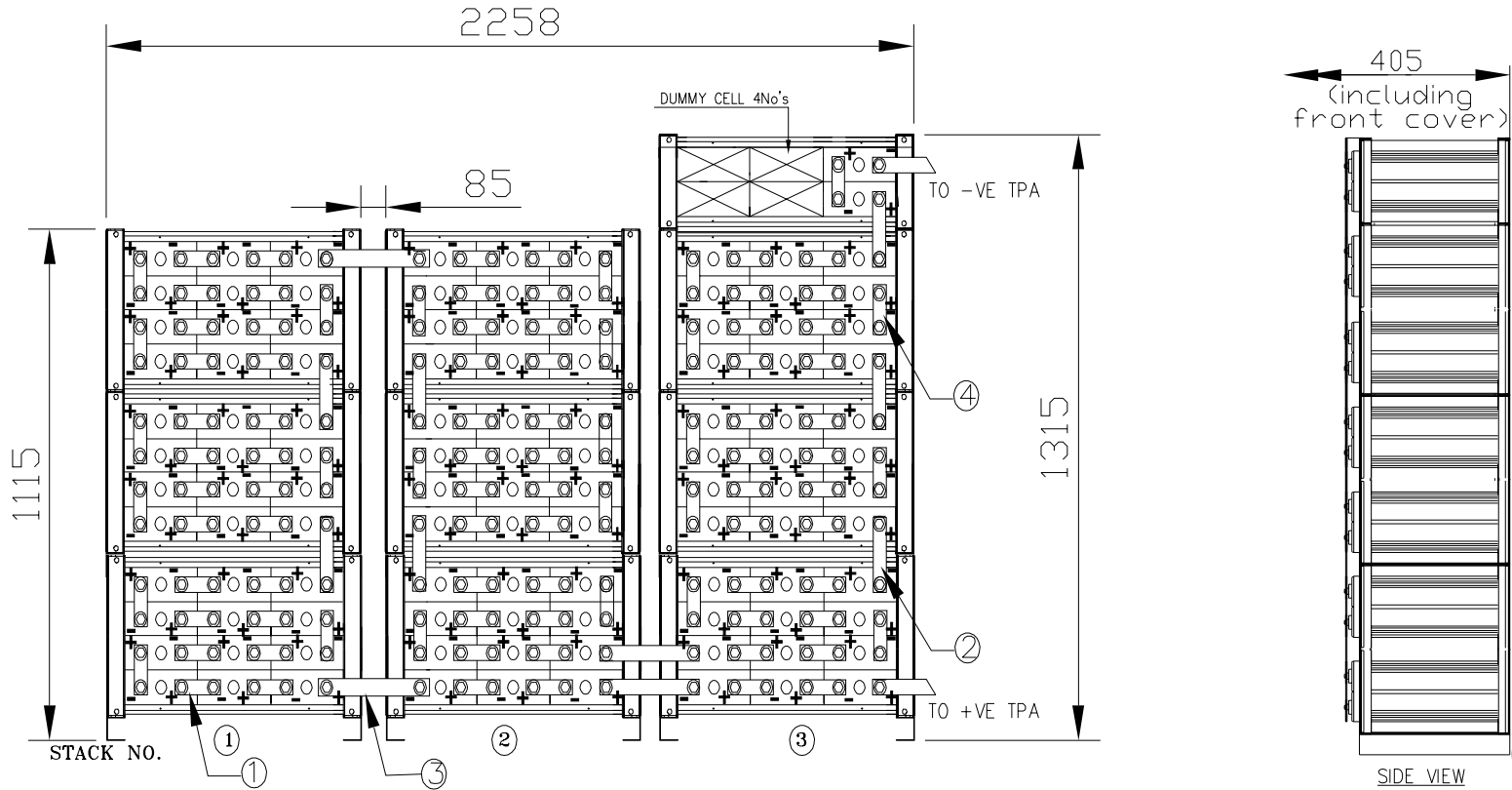
- a. Batteries are located inside the trays of MS HRCA sheet painted with RAL7040(Window grey)colour.Trays are mounted on C-channels.
 - b. All cell connectors are made of lead coated copper busbar.
 - c. No seperate foundation is required for installation of battery bank.
 - d. No special ventilation isrequired.Normal ventilation is sufficient.
 - e. All the connectors are designed for 114 A current.
 - f. Floor area required for battery bank is 2258X405 sq mm
 - g. 0.5 to 1 mts aisle space on all sides should be provided to permit initial installation service and surveillance.
 - h. For any correspondence quote DRG.NO:
- *** FLOOR LOAD : 1533 Kg/sq.m.
 *** All the Connectors are designed for 1Hr discharge rate.
 *** Manufacturer's Model No : IP6009.

Drawing approval subject to valid vendor registration

**Chief Engineer/Projects
 APTRANSCO/VS/Vijayawada.**

UNLESS OTHERWISE SPECIFIED TOLERANCES ON		TITLE:			 <p>AMARA RAJA Gotta be a better way Amara Raja Energy & Mobility Limited (Formerly Known as Amara Raja Batteries Limited) Registered office&works Karakambadi-517520,TPT.(A.P) INDIA. Ph.(0877)2265000,FAX:(0877)2285600.</p>
LINEAR	ANGULAR	220V-200Ah SYSTEM INSTALLATION DIAGRAM			
X ±10.0 .X ± .XX ±	AS SPECIFIED IN THE DRAWING	DRN.	SIGN.	DATE	SCALE: N.T.S
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN MILLIMETRES		CHD.	NSPR	22.12.23	
		RECHD.	ASHOK	22.12.23	
		APPD.	KMSN	22.12.23	
SHEET SIZE A3 (297 x 420T)		PROPRIETARY MATERIAL OF M/s AMARARAJA GROUP OF COMPANIES,TIRUPATI ALL RIGHTS ARE RESERVED.NO COPYING PERMITTED UNAUTHORISED USE PROHIBITED.			DRG. NO. 23 501 995 A
					SHEET 1 OF: 2

NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTANCE TESTS
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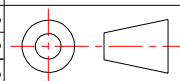
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APTRANSCO/VS/Vijayawa

ITEM NO	DESCRIPTION	DIMENSIONS	QTY/CON	QTY/SYS
4	Inter cell connector(V)	103X20X2	1	26
3	Inter stack connector	280X20X2	1	04
2	Inter module connector	148X20X2	1	07
1	Inter cell connector(H)	110X20X2	1	72

CONNECTOR DETAILS

SYSTEM DETAILS	
Type of cell	2V-200Ah
Total no.of cells	110
Volts per cell	2V
No.of modules	10
Total system weight	1402Kgs (Approx)

UNLESS OTHERWISE SPECIFIED TOLERANCES ON		TITLE:		 <p>AMARA RAJA Gotta be a better way Amara Raja Energy & Mobility Limited (Formerly Known as Amara Raja Batteries Limited) Registered office&works Karakambadi-517520,TPT,(A.P) INDIA. Ph.(0877)2265000,FAX:(0877)2285600.</p>	
LINEAR	ANGULAR	220V-200Ah SYSTEM CONNECTION DIAGRAM			
X ±10.0	AS SPECIFIED	DRN.	SIGN.	DATE	SCALE: N.T.S
.X ±	IN THE	CHD.	SPO	22.12.23	
.XX ±	DRAWING	RECHD.	ASHOK	22.12.23	
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN MILLIMETRES		APPD.	KMSN	22.12.23	
WEIGHT TOLERANCE : ± 5%		SHEET SIZE		PROPRIETARY MATERIAL OF M/s AMARARAJA GROUP OF COMPANIES,TIRUPATI	
		A3 (297 x 420)		ALL RIGHTS ARE RESERVED.NO COPYING PERMITTED UNAUTHORISED USE PROHIBITED.	

DRG. NO.
23 501 995 A
SHEET 2 OF: 2



Guaranteed Technical Particulars

DOCREF: IAE/ GTP - PS/ 2023-2024; Rev : 00

Battery Particulars

- Battery Type : Maintenance Free Valve Regulated Lead Acid (MF-VRLA)
- Battery Rating : 220 V - 200 AH to 1.75 ECV @ C10 at 27°C
- Manufacturers Cell Designation : IP6009
- No. of cells : 110 No.s
- Cell dimensions : (198.4 x 318 x 76.8) mm Approx.
- Single cell weight : 11.5 kg. Approx
- Battery bank dimensions : (2258 x 405 x 1315) mm Approx.
- Battery bank weight : 1402 Kg. Approx.

Charge Regime

- Float Charging Voltage : Batteries shall be charged in constant potential mode with Current Limit.
- Boost charging voltage : 2.23 - 2.25 Volts per Cell @ 27°C
- Current Limit : 2.30 - 2.32 Volts per Cell @ 27°C
- Recommended Voltage Compensation : 20 Amps minimum to 40 Amps maximum.
- For every 1°C rise in temperature reduce the float voltage by 0.003VPC & Vice versa, ensure the extension of temperature sensor upto battery.

Product Details

- AH efficiency : Above 95%
- WH efficiency : Above 85%
- Self Discharge/Week @ 27°C : < 1% of rated capacity
- Max. allowable Ambient Temp. at which cell can safely operate : 60°C continuous and 70°C short time.
- Recommended Max Period of Storage : 6 months from the date of dispatch before first use and battery should be stored in a covered area at 27°C.
- Material of Container : Polypropylene co-polymer.
- Type of separator : Highly absorbent Micro porous spun glass matrix.(AGM)
- Type of +ve & -ve plates : Flat pasted
- Material of tray & color : Mild steel coated with acid resistant powder coating.
- Method of connection between cells : Bolted
- Voltage ripple allowable : <2% of the RMS. Value
- Type of connectors : Lead coated Heavy duty copper strips
- Cycle Life of battery at 27°C : 4000 cycles at 20% Depth of Discharge(DOD) (or) 2000 cycles at 50% DOD (or) 1200 cycles at 80% DOD
- Time required for Boost charge at 2.30 VPC @ 20%CL at 27°C : 8 Hrs from 0-90% State of Charge (SOC)(or) 16 Hrs from 0-100% State of Charge
- Manufacturing Serial Number : Providing stickers

Applicable Standards

- Batteries generally conforms to
 - (i) IS15549:2005
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 - (iii) BS-6290, PART-IV.
 - (iv) IEC 60896-21&22:2004, PART-II.

Chief Engineer/Projects
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COM-SFS-00

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APTRANSCO -Applicable standard spares for the VRLA battery bank for 200AH ratings.

VRLA Battery spares for 220V/200AH battery bank

SL No	Description	QTY
1	Inter cell Connector (H)- 110x20x2	14
2	Inter Module Connector - 148x20x2	3
3	Inter Stack Connector -280x20x2	1
4	Inter cell Connector (V)- 103x20x2	9
5	6V/200Ah with accessories (2V - 03 No's)	1
6	Multi meter -meco 603	1
7	Torque wrench with 10mm socket	1

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