

EvoRail™ 6PzV330



*VRLA GEL Battery Technology
for Rolling Stock Applications*



High cycle performance

Very good deep discharge recovery

Maintenance free

V-0 flame retardant



Keeping you on track

Hawker® EvoRail™ 6PzV330

Technical specifications

Part number: 1881506V0CP

Electrical Data

Nominal voltage	2 V
Number of cells	1 (VRLA, tubular GEL Technology)
Rated capacity C ₁₀ to 1.80 Vpc at 20 °C	324 Ah
Rated capacity C ₅ to 1.70 Vpc at 30 °C	330 Ah
Current/Power for 0.25 h back-up time 1.60 Vpc 20 °C	467.1 A / 766 W
Current/Power for 0.5 h back-up time 1.60 Vpc 20 °C	332.3 A / 564 W
Current/Power for 1.0 h back-up time 1.60 Vpc 20 °C	212.3 A / 373 W
Current/Power for 3.0 h back-up time 1.70 Vpc 20 °C	90.5 A / 167 W
Current/Power for 5.0 h back-up time 1.75 Vpc 20 °C	59.0 A / 111 W
Current/Power for 8.0 h back-up time 1.75 Vpc 20 °C	40.6 A / 77 W
Current/Power for 10.0 h back-up time 1.80 Vpc 20 °C	32.4 A / 62 W
Current/Power for 24.0 h back-up time 1.80 Vpc 20 °C	15.8 A / 31 W
Conversion to capacity at 25 °C	102% of Current/Power at 20°C
Internal resistance to IEC/EN 60896-21	0.62 mΩ
Short circuit current to IEC/EN 60896-21	3.30 kA
Self discharge at 20 °C to IEC/EN 60896-21	max. 3% / Month
Heat loss during float service at 20°C	≈ 0.45 W

Mechanical Data

Weight	23.7 kg ±2%
Height of cell / over terminal cover	340 mm / 370 mm
Width	198 mm
Depth	119 mm
Number of terminals	1 + / 1 -
Dimension of terminal screw hole	M10 x 22 deep, female thread
Torque terminal screw	25 Nm ±2
Terminal insulation class according to IEC/EN 60529	IP 20
Diameter of diagnostic hole for voltage probe	2 mm
Maximum cable cross-section	95 mm ²
Connector and terminal connection	use flexible EVO or PerfectPlus - connectors
Connector (copper, tin-coated and insulated)	For Rolling Stock flexible connectors are recommended
Shock + Vibration rating (according)	Category 1, Class B (IEC 61373:2011)

Environmental Data

Installation	vertically
Cell assembly distance	not required; for higher loads 5-10 mm recommended for cooling
Material of case/cover; Flame retardancy rating (according to)	PP - FR or PP (on request) V-0 (UL94); I2 / F1 (NF F 16-101) or HB (UL94)
Flame barriers at vents	Yes
Rail service life expected at 15 °C	6 years (max. 30% DOD / day)
Cycle Endurance (DB Test : 30% DOD/8h)	> 80% C _{nom} after 1'300 cycles
Design life (Eurobat classification)	12+ Long Life
Shipping name	Batteries, wet, non spillable

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Operating specifications

Figure 1



Figure 2

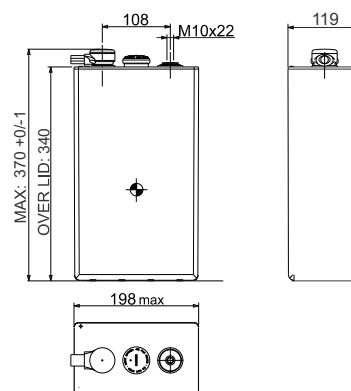
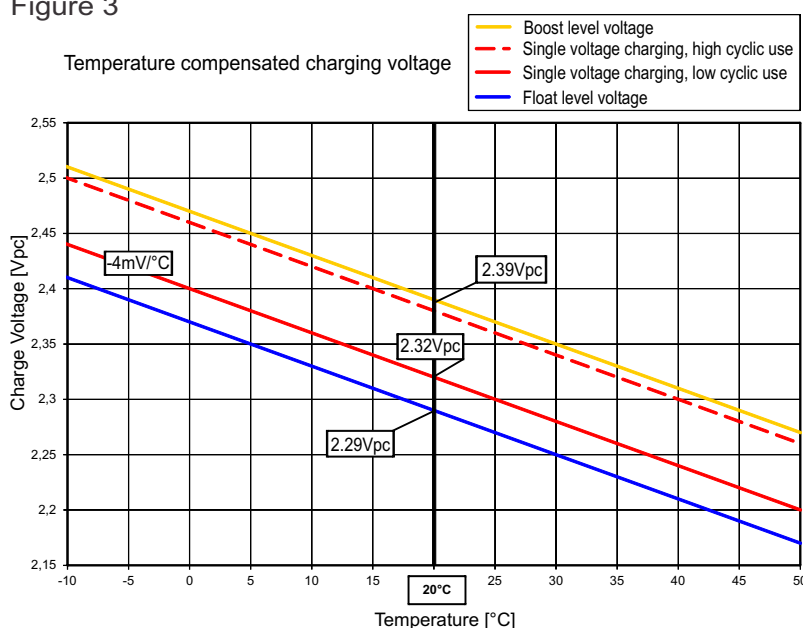


Figure 3



Temperature in °C	Percent of the rated capacity (C ₅)
40	107.0
35	105.8
30	104.0
25	102.0
20	100.0
15	97.8
10	94.5
5	91.0
0	86.0
-5	80.0
-10	72.5
-15	64.0
-20	47.0
-25	31.0
-30	14.0

*Estimated Values
Should be verified with actual load profile*

Battery installation and operation

Recommended charging for rolling stock applications (standby parallel operation)	IU0U - charging : 2 level charging (acc. DIN 41773) with current limitation and temperature compensation
Boost level voltage setting at 20°C	2.39 Vpc (Volt per cell)
Lower level or constant voltage setting at 20°C	2.32 ... 2.38 Vpc (low ... high cyclic use)
Charge current for IU or IU0U-charging (DIN 41773)	60 ... 90 A (minimum for cyclic use: 75 A)
Voltage compensation in function of temperature	- 4 mV/K per cell
Float level voltage setting at 20°C (± 1%)	2.29 Vpc (valid for long term trickle charging at workshop and storage)
Air exchange	As a VRLA battery according to EN 50272-2 : 2001 $Q = 0.05 * N_{cells} * I_{gas} * C_{AhC10} * 10^{-3} [m^3/h]$ $I_{gas} = 1$ (at 2.29 Vpc) ; $I_{gas} = 8$ (at 2.39 Vpc)
Preferred operating temperature range	Between 15°C - 25°C
Maximum long term operating temperature	+40°C with ventilation assured (reduced service life)
Maximum short term operating temperature (< 3h)	+50°C with ventilation assured (reduced service life)
Minimum operating and storage temperature	- 40°C (in charged condition)

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Discharge data per cell

Constant current performance [Ampere] to the defined end of discharge voltage

Voltage [Vpc]	Temp	Discharge time [h:min]																		
		0:01	0:05	0:10	0:15	0:20	0:25	0:30	0:40	0:50	1:00	1:30	2:00	3:00	4:00	5:00	8:00	10:00	12:00	24:00
1.90	20°C	237.2	223.2	206.1	189.9	176.7	165.7	155.3	139.5	126.5	116.2	93.6	79.0	60.9	49.9	42.5	30.0	25.2	21.8	13.2
	25°C	237.9	224.1	208.6	193.2	180.1	169.3	159.2	143.3	130.4	119.8	96.8	81.7	63.2	51.7	44.0	31.0	26.0	22.5	13.6
1.85	20°C	315.3	300.0	272.2	249.8	231.3	214.7	200.7	178.1	160.1	146.0	115.6	96.5	73.5	59.8	50.7	35.4	29.7	25.7	14.8
	25°C	316.0	302.1	276.3	254.6	236.3	220.3	206.5	183.9	165.8	151.3	120.1	100.4	76.4	62.2	52.6	36.6	30.7	26.5	15.2
1.80	20°C	396.6	372.0	333.8	304.0	278.9	257.8	240.1	210.3	187.4	169.5	132.5	109.5	82.1	66.4	55.9	38.8	32.4	28.0	15.8
	25°C	396.6	375.6	339.4	310.8	286.4	265.6	247.7	218.3	194.9	176.6	138.3	114.2	85.7	69.2	58.2	40.2	33.6	29.0	16.3
1.75	20°C	480.5	441.2	391.0	352.4	320.9	294.8	272.0	236.0	208.3	186.8	143.6	117.6	87.4	70.2	59.0	40.6	33.9	29.2	16.2
	25°C	480.5	446.5	398.7	361.2	330.5	304.5	282.1	245.8	217.6	195.4	150.4	123.2	91.4	73.3	61.5	42.1	35.2	30.2	16.8
1.70	20°C	564.4	506.6	443.9	396.1	357.0	324.6	297.5	255.0	223.2	198.6	150.8	122.5	90.5	72.4	60.5	41.2	34.3	29.5	16.3
	25°C	564.4	513.5	454.0	407.6	369.4	337.0	309.9	266.6	234.0	208.5	158.4	128.6	94.7	75.6	63.2	42.8	35.6	30.5	16.8
1.65	20°C	648.3	569.8	493.1	434.4	387.2	348.9	317.4	268.8	233.4	206.7	155.4	125.5	91.3	72.5	60.5	41.2	34.3	29.5	16.3
	25°C	648.3	578.5	505.4	448.7	402.2	363.9	332.1	282.3	245.6	217.5	163.6	132.1	95.8	75.9	63.2	42.8	35.6	30.5	16.8
1.60	20°C	732.2	630.1	537.5	467.1	412.2	368.0	332.3	278.8	240.8	212.3	156.5	125.5	91.3	72.5	60.5	41.2	34.3	29.5	16.3
	25°C	732.2	641.3	552.8	484.3	429.9	385.7	349.1	293.7	253.9	224.0	165.2	132.1	95.8	75.9	63.2	42.8	35.6	30.5	16.8

Constant power performance [Watt per cell] to the defined end of discharge voltage

Voltage [Vpc]	Temp	Discharge time [h:min]																		
		0:01	0:05	0:10	0:15	0:20	0:25	0:30	0:40	0:50	1:00	1:30	2:00	3:00	4:00	5:00	8:00	10:00	12:00	24:00
1.90	20°C	450.7	424.8	391.7	362.0	336.7	315.7	296.7	266.7	242.9	223.4	180.7	153.3	118.5	97.9	83.4	58.9	49.6	42.9	26.0
	25°C	451.4	425.4	396.4	368.0	343.1	322.7	304.1	273.6	250.1	230.5	186.5	158.6	122.7	101.3	86.4	60.8	51.2	44.3	26.6
1.85	20°C	582.4	554.9	503.9	463.6	430.3	400.2	374.8	333.4	300.9	274.4	219.5	183.5	140.8	115.0	98.1	68.3	57.6	49.9	28.8
	25°C	584.0	559.3	511.2	472.7	440.1	410.5	385.3	344.3	311.2	284.3	228.0	190.9	146.4	119.4	101.8	70.8	59.6	51.6	29.6
1.80	20°C	713.8	669.7	602.3	550.0	506.4	469.4	438.0	386.2	345.6	313.1	246.6	205.3	155.5	125.9	106.9	74.3	62.2	53.9	30.5
	25°C	713.8	676.3	612.3	561.8	519.3	482.7	451.4	400.0	358.9	326.1	257.2	214.1	162.0	131.3	111.1	77.2	64.4	55.7	31.4
1.75	20°C	833.3	769.3	687.7	621.7	568.7	523.9	486.0	424.5	377.6	340.4	264.2	218.1	163.5	132.1	111.3	77.3	64.4	55.7	31.3
	25°C	833.4	777.6	700.8	636.8	584.9	541.3	503.2	441.4	393.5	355.4	276.4	228.0	170.6	137.8	115.8	80.4	66.8	57.7	32.3
1.70	20°C	952.0	857.5	757.6	681.5	618.5	565.7	521.4	451.3	398.2	357.2	274.2	224.8	167.5	135.2	113.5	78.3	65.0	56.1	31.3
	25°C	952.1	868.3	772.8	699.8	638.2	586.1	541.9	470.9	416.5	373.9	287.5	235.3	175.2	141.2	118.5	81.5	67.6	58.2	32.3
1.65	20°C	1068.7	938.9	818.1	728.8	656.4	596.9	547.0	469.0	411.3	367.2	279.9	228.5	168.8	135.6	113.5	78.3	65.0	56.1	31.3
	25°C	1068.7	953.2	837.0	750.7	679.5	620.6	570.5	490.9	431.6	385.3	294.2	239.9	177.0	141.8	118.6	81.5	67.6	58.2	32.3
1.60	20°C	1165.9	1013.3	870.3	765.9	684.9	618.6	564.4	480.2	419.6	373.2	281.8	228.6	168.8	135.6	113.5	78.3	65.0	56.1	31.3
	25°C	1165.9	1029.9	893.2	791.5	711.5	645.5	590.4	504.3	441.0	392.6	297.1	240.5	177.0	141.8	118.6	81.5	67.6	58.2	32.3

Constant discharge values without voltage loss in connectors and cables!
Our technical support offers to calculate the discharge curve for a specific load profile.



Global & Americas
Headquarters
EnerSys
2366 Bernville Road
Reading,
Pennsylvania 19605
USA
Tel. + 1-610-208-1991

EMEA
Headquarters
EH Europe GmbH
Löwenstrasse 32
8001 Zürich
Switzerland
Tel: +41 (0)44 215 74 10
Fax: +41 (0)44 215 74 11

EH Europe GmbH
PDAC EMEA
Hagnastrasse 27
4132 Muttenz
Switzerland
Tel: +41 61 706 36 36
Fax: +41 61 706 36 37