

EvoRail™ 5PzV275



*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

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	270 Ah
Rated capacity C ₅ to 1.70 Vpc at 30 °C	275 Ah
Current/Power for 0.25 h back-up time 1.60 Vpc 20 °C	389.2 A / 638 W
Current/Power for 0.5 h back-up time 1.60 Vpc 20 °C	277.0 A / 470 W
Current/Power for 1.0 h back-up time 1.60 Vpc 20 °C	176.9 A / 311 W
Current/Power for 3.0 h back-up time 1.70 Vpc 20 °C	75.4 A / 140 W
Current/Power for 5.0 h back-up time 1.75 Vpc 20 °C	49.1 A / 93 W
Current/Power for 8.0 h back-up time 1.75 Vpc 20 °C	33.8 A / 64 W
Current/Power for 10.0 h back-up time 1.80 Vpc 20 °C	27.0 A / 52 W
Current/Power for 24.0 h back-up time 1.80 Vpc 20 °C	13.2 A / 25 W
Conversion to capacity at 25 °C	102% of Current/Power at 20°C
Internal resistance to IEC/EN 60896-21	0.74 mΩ
Short circuit current to IEC/EN 60896-21	2.75 kA
Self discharge at 20 °C to IEC/EN 60896-21	max. 3% / Month
Heat loss during float service at 20°C	≈0.38 W

Mechanical Data

Weight	20 kg ±2%
Height of cell / over terminal cover	340 mm / 370 mm
Width	198 mm
Depth	101 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

Hawker® EvoRail™ 5PzV275

Operating specifications

Figure 1



Figure 2

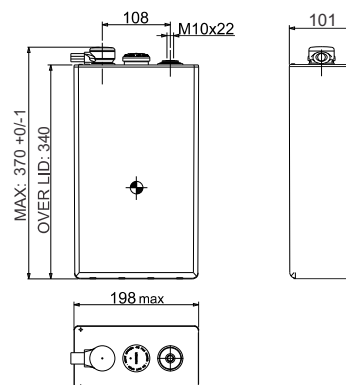
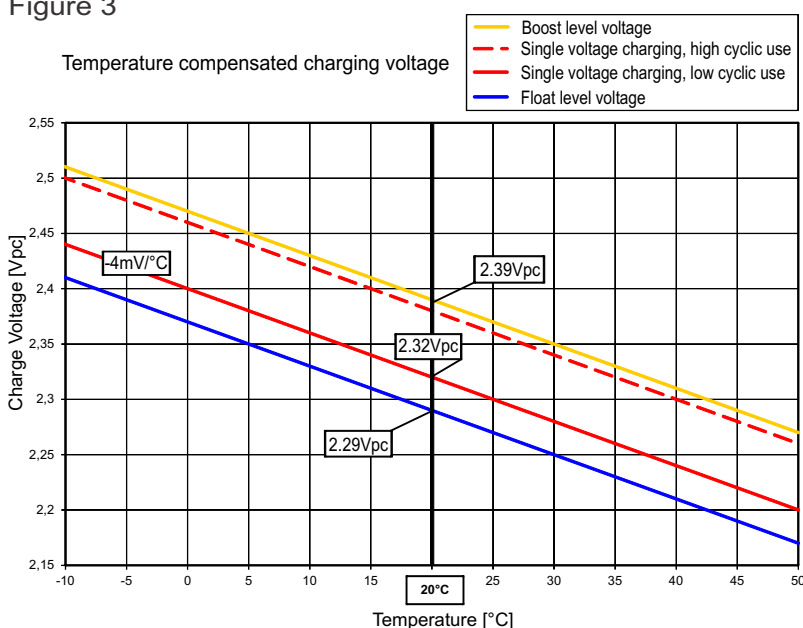


Figure 3



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)	50 ... 75 A (minimum for cyclic use: 63 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	197.7	186.0	171.8	158.3	147.2	138.1	129.4	116.2	105.4	96.8	78.0	65.8	50.8	41.6	35.4	25.0	21.0	18.2	11.0
	25°C	198.2	186.8	173.8	161.0	150.1	141.0	132.7	119.4	108.7	99.9	80.6	68.1	52.7	43.1	36.7	25.8	21.7	18.8	11.3
1.85	20°C	262.7	250.0	226.9	208.2	192.7	178.9	167.3	148.4	133.4	121.7	96.3	80.4	61.2	49.8	42.2	29.5	24.7	21.4	12.4
	25°C	263.3	251.7	230.2	212.1	196.9	183.6	172.1	153.3	138.2	126.1	100.1	83.7	63.7	51.8	43.9	30.5	25.6	22.1	12.7
1.80	20°C	330.5	310.0	278.2	253.3	232.4	214.8	200.1	175.3	156.1	141.2	110.4	91.2	68.4	55.3	46.6	32.3	27.0	23.3	13.2
	25°C	330.5	313.0	282.8	259.0	238.7	221.4	206.4	181.9	162.4	147.2	115.3	95.2	71.4	57.6	48.5	33.5	28.0	24.1	13.6
1.75	20°C	400.4	367.6	325.9	293.7	267.5	245.7	226.6	196.7	173.6	155.6	119.7	98.0	72.8	58.5	49.1	33.8	28.2	24.3	13.5
	25°C	400.4	372.0	332.2	301.0	275.4	253.8	235.1	204.8	181.3	162.8	125.3	102.6	76.1	61.1	51.2	35.1	29.3	25.2	14.0
1.70	20°C	470.4	422.2	369.9	330.1	297.5	270.5	247.9	212.5	186.0	165.5	125.6	102.1	75.4	60.3	50.4	34.3	28.6	24.6	13.5
	25°C	470.4	427.9	378.3	339.6	307.8	280.9	258.2	222.2	195.0	173.7	132.0	107.1	78.9	63.0	52.7	35.7	29.7	25.4	14.0
1.65	20°C	540.3	474.8	410.9	362.0	322.6	290.7	264.5	224.0	194.5	172.2	129.5	104.6	76.1	60.5	50.4	34.3	28.6	24.6	13.5
	25°C	540.3	482.1	421.1	373.9	335.2	303.3	276.7	235.2	204.6	181.3	136.3	110.1	79.8	63.2	52.7	35.7	29.7	25.4	14.0
1.60	20°C	610.1	525.1	447.9	389.2	343.5	306.7	277.0	232.3	200.7	176.9	130.4	104.6	76.1	60.5	50.4	34.3	28.6	24.6	13.5
	25°C	610.1	534.4	460.7	403.6	358.3	321.4	290.9	244.7	211.6	186.7	137.7	110.1	79.8	63.2	52.7	35.7	29.7	25.4	14.0

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	375.6	354.0	326.4	301.7	280.6	263.0	247.2	222.3	202.4	186.2	150.6	127.7	98.8	81.6	69.5	49.1	41.3	35.7	21.6
	25°C	376.2	354.5	330.4	306.7	285.9	268.9	253.4	228.0	208.4	192.1	155.4	132.2	102.2	84.4	72.0	50.7	42.7	36.9	22.2
1.85	20°C	485.3	462.4	420.0	386.4	358.6	333.5	312.3	277.8	250.8	228.7	182.9	153.0	117.4	95.9	81.8	56.9	48.0	41.6	24.0
	25°C	486.7	466.1	426.0	394.0	366.8	342.1	321.1	286.9	259.3	237.0	190.0	159.1	122.0	99.5	84.8	59.0	49.7	43.0	24.7
1.80	20°C	594.9	558.1	501.9	458.3	422.0	391.2	365.0	321.9	288.0	260.9	205.5	171.1	129.6	105.0	89.1	61.9	51.8	44.9	25.4
	25°C	594.9	563.6	510.3	468.2	432.8	402.2	376.1	333.3	299.1	271.7	214.3	178.4	135.0	109.4	92.6	64.3	53.7	46.4	26.2
1.75	20°C	694.4	641.1	573.1	518.1	473.9	436.6	405.0	353.8	314.7	283.7	220.1	181.7	136.2	110.0	92.8	64.4	53.6	46.4	26.1
	25°C	694.5	648.0	584.0	530.7	487.4	451.1	419.4	367.8	328.0	296.1	230.3	190.0	142.1	114.9	96.5	67.0	55.7	48.1	26.9
1.70	20°C	793.4	714.5	631.4	568.0	515.4	471.4	434.5	376.1	331.8	297.7	228.5	187.3	139.6	112.7	94.6	65.3	54.2	46.8	26.1
	25°C	793.5	723.6	644.0	583.2	531.8	488.4	451.6	392.4	347.1	311.6	239.6	196.1	146.0	117.7	98.7	67.9	56.3	48.5	26.9
1.65	20°C	890.5	782.4	681.7	607.3	547.0	497.4	455.8	390.8	342.8	306.0	233.3	190.4	140.7	113.0	94.6	65.3	54.2	46.8	26.1
	25°C	890.6	794.3	697.5	625.6	566.3	517.1	475.4	409.1	359.7	321.1	245.1	199.9	147.5	118.2	98.8	67.9	56.3	48.5	26.9
1.60	20°C	971.6	844.4	725.2	638.3	570.7	515.5	470.4	400.1	349.7	311.0	234.8	190.5	140.7	113.0	94.6	65.3	54.2	46.8	26.1
	25°C	971.6	858.2	744.3	659.6	592.9	537.9	492.0	420.3	367.5	327.2	247.6	200.4	147.5	118.2	98.8	67.9	56.3	48.5	26.9

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



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