

# INDUSTRIAL MOTIVE

Smart, efficient and safe batteries  
for industrial motive applications

Voltage	Model	Capacity	Energy	Dimensions	Warranty
26 V	P20	206 Ah	5.4 kWh	191 mm (W) x 479 mm (L) x 325 mm (H)	16 000 kWh
	P16	277 Ah	7.2 kWh	191 mm (W) x 619 mm (L) x 325 mm (H)	21 000 kWh
39 V	P21	206 Ah	8.0 kWh	371 mm (W) x 373 mm (L) x 325 mm (H)	23 000 kWh
	P22	206 Ah	10.7 kWh	371 mm (W) x 479 mm (L) x 325 mm (H)	31 000 kWh
52 V	P38	206 Ah	10.7 kWh	260 mm (W) x 728 mm (L) x 325 mm (H)	31 000 kWh
	P15	277 Ah	14.4 kWh	371 mm (W) x 621 mm (L) x 325 mm (H)	42 000 kWh
52 V	P28	277 Ah	14.4 kWh	193 mm (W) x 1198 mm (L) x 325 mm (H)	42 000 kWh
	P23	412 Ah	21.4 kWh	477 mm (W) x 726 mm (L) x 325 mm (H)	61 000 kWh
81 V	P29	412 Ah	21.4 kWh	371 mm (W) x 916 mm (L) x 325 mm (H)	61 000 kWh
	P08	554 Ah	28.8 kWh	621 mm (W) x 728 mm (L) x 325 mm (H)	83 000 kWh
81 V	P14	554 Ah	28.8 kWh	371 mm (W) x 1198 mm (L) x 325 mm (H)	83 000 kWh
	P19	277 Ah	22.4 kWh	404 mm (W) x 907 mm (L) x 325 mm (H)	64 000 kWh
81 V	P24	412 Ah	33.4 kWh	586 mm (W) x 907 mm (L) x 325 mm (H)	96 000 kWh
	P25	554 Ah	44.9 kWh	765 mm (W) x 907 mm (L) x 325 mm (H)	128 000 kWh

Note: Add up to a maximum of 17.5 mm on either or both sides of the battery box dimensions to accommodate the handle bolt, handle universal, or small handle.



Balancell's smart batteries give businesses more control over how they store, use and optimise energy in their operations.

# TECHNICAL DATA SHEET

Battery Voltage	26V	39V	52V	81V
Cell Quantity	8	12	16	25
End of Charge Voltage	28.16V	42.24V	56.32V	88V
Balance Charge Voltage	28.40V	42.60V	56.80V	88.75V
Charger Voltage Min	21.60V	32.40V	43.20V	67.50V
Charger Voltage Max	28.40V	42.60V	56.80V	88.75V
Battery over voltage cutout	28.40V	42.60V	56.80V	88.75V
Cell over voltage cutout	3.60V per Cell	3.60V per Cell	3.60V per Cell	3.60V per Cell
Peak transient charger voltage	76V	89V	102V	131V
Battery under voltage cutout	23.30V	34.80V	46.40V	72.50V
Cell under voltage cutout	2.70V per Cell	2.70V per Cell	2.70V per Cell	2.70V per Cell
BMS under voltage lockout	21.20V	31.80V	42.40V	66.25V

Battery Capacity in Ah	206Ah	277Ah	412Ah	554Ah
Max continuous charging current	154.50Ah	207.75Ah	309Ah	415.50Ah
Recommended cont. charging current	144.20Ah	193.90Ah	288.40Ah	387.80Ah
Balance charging current	0.50Ah	0.50Ah	0.50Ah	0.50Ah
Cont. discharge current	206Ah	277Ah	412Ah	554Ah
Surge discharge current (for 2min) <b>Note 1*</b>	412Ah	554Ah	824Ah	1108Ah
Surge discharge current (for 10secs) <b>Note 1*</b>	618Ah	831Ah	1236Ah	1662Ah
Electronic current trip	750-800Ah	750-800Ah	1000-1200Ah	1000-1200Ah
Fuse	300	400	500	500

**Note 1\*:** Unless limited by a fuse rating

## Energy platform with live remote monitoring, analytics and alerts

Standard on Batteries with the BDI ( Battery Display Interface)

### Monitoring

- LTE (2G, 4G) Global sim with lifetime connectivity (15yrs)
- Wifi (2.4GHz bands)
- Shows voltage , current, power, SOC

BDI isolated up to 1000V from battery. Up to 1W at 5V available on CAN port CAN interface supports:

### Integration

- CANOpen standard,
- Inverter CAN protocol,
- Custom protocols for OEM's comms on request

Certifications	Cell Certifications	GB	Certified to – GB31484, GB31485, GB31486, UL1973, UN38.3
	Cell Manufacturing	ISO	Certified to – ISO9001, ISO14001, TS16949
	Battery Manufacturing	ISO	In process – ISO9001, ISO14001, ISO45001 certification
	Battery Electromagnetic Compatibility	CE	Certified to – EN 301 489-1: V2.2.3, EN 301 489-52: V1.1.0, EN / IEC 61326-1
	Battery Standards	IEC	Designed to meet – IEC 62485-6, IEC 63056, IEC 62660-2 Certified to – IEC 62619, IEC 62620
	Battery Standards	UL	Designed to meet – UL 2580

Discharge Limits (Voltage & Current)		Notes
Minimum avg cell voltage for operation.	2.90V per cell	
Minimum individual cell voltage for operation	2.70V per cell	The battery will cut out here, regardless of indicated SOC
Extreme discharge protection	2.65V per cell	Internal electronics will power off below this level! Please see battery protection <b>Note 3*</b>
Discharge current limit	2C	Average over 120 sec <b>Note 2*</b>
Discharge limit when tripped under voltage	0.25A	Average over 120 sec <b>Note 2*</b>

**Note 2\*:** Unless limited by a fuse rating.

**Note 3\*:** When the internal electronics are disabled, the battery enters a dormant state. In this state the battery will be inactive, not connected and not available for normal recharge or use. It can be recharged but it MUST be recharged with a constant current that must not exceed 0.50A (0.45A preferred) and voltage less than 60V above battery terminal voltage (e.g. Balancell hockey PUK charger). If left for more than 6 months in this dormant state, then it should NOT be recharged and the battery needs to be returned for a service and cell integrity check.

Charge Limits and Charger Settings		Notes
Maximum Continuous Charging Current	0.75C as per battery capacity	Preferred range is up to 0.70C
End of Charge Voltage	3.52V per cell	3.55V per cell average is the recommended maximum voltage for end of charge.
Balancing Charge Voltage or Current	3.55V per cell/ 0.50A	3.55V per cell average, OR charge at constant current (CC) of 0.50A
Charger Voltage Range in Volts per cell average	2.70V to 3.55V	*Refer to Battery Voltage table
Battery Over Voltage Self Cut Out (Max individual cell Voltage)	3.55V per cell (3.60V)	Battery will cutout, preventing further charging. If the battery self cuts out from over voltage it will still be available for discharge through a diode.
Peak Transient Charger Voltage	Battery Voltage + 50V	Peak transient voltage after battery self disconnects *Refer to Battery Voltage table
Charger Lead Inductive Energy	7.50J	This is the maximum charger lead Inductive energy battery cutout can absorb. Typical 2m length lead installations are within this specification.
Operating SOC and Temperature		Notes
Usable SOC Range	0%	100% Discharge limit active below 2% Discharge limit is reset above 5%
Recommended SOC Range	10%	100% Preferred good practice to prevent cut out while in use
Storage SOC	20%	100% Battery should be fully charged before Storage
SOC Accuracy	-0.10%	+ 0.10% Typical accuracy in normal daily use
SOC Daily Drift	-0.24Ah	+0.24Ah Daily Drift while not in use. Will reset at Top or bottom of charge
Charging Temperature	5°C	55°C Battery cuts out beyond these. Preferred range 10°C - 45°C <b>Note 4&amp;5*</b>
Discharging Temperature	-10°C	55°C Battery cuts out beyond these. Preferred range 10°C - 45°C <b>Note 4&amp;5*</b>
Storage Temperature	0°C	35°C Preferred for optimum lifetime is 5-10°C

**Note 4\*:** When a battery cuts out from going below -10°C, it has to be heated up to -5°C or warmer for it to resume operation.

**Note 5\*:** When a battery cuts out from going above 55°C, it has to be cooled down to 50°C or colder for it to resume operation.

Protection	Individual Cell	Battery Level
Over Voltage	Yes	Analogue and Secondary Digital cutout
Over Discharge	Yes	Digital SOC and Digital under voltage
Deep Over Discharge		Analogue cut out of internal electronics to prevent further discharge. Refer to Note 3*
Over Temperature	Yes	Digital and Secondary Analogue
Under Temperature	Yes	Digital
Charge Rate		Digital
Short Circuit 1	Analogue electronic protection, 40ns response time, with automatic hiccup retry after 30s	
Short Circuit 2	Fuse is always installed on all batteries	

## Mechanical Design

Cell Insulation – Standard with Additional PET 300 micron cover added to all cells for safety and vibration tolerance

Cell Compression – ~3000N | G-shock tolerance – > 5 times IEC 61485 | Environmental – IP61

Interlinks, Cell to Cell, Cell to Terminal: Flexible laminated copper

# BALANCELL

UNLOCKING CUSTOMERS' FULL  
POTENTIAL FOR BUSINESS

info@balance.ll  
+27 21 551 1883

1 Oude Molen road, Ndabeni,  
Cape Town, 7405