



Hyperdrive GEN2 (52.5V, 3.5kWh) Lithium-Ion Modular Pack

GENERAL	
Part Number	HYP-00-1481, HYP-00-2456, HYP-00-2778
Voltage Nominal	52.5V
Voltage Range Min/Max	43.4V/58.1V
Charge Current	132A maximum, de-rated by BMS depending on cell voltage/temperature
Continuous Discharge Current	130A
Maximum Capacity	3.48kWh/66.2Ah
Maximum Energy Density	104Wh/kg
Useable capacity	Limited to 90% by BMS to improve cell life
Dimensions	243 x 298 x 352mm
Weight	33kg
Mounting Fixtures	Threaded mounting points for easy, secure connection
CELLS	
Cell Specification	7 x GEN2 AESC Modules (each Module Contains 2S2P cells)
Chemistry	Manganese Laminated Li-ion (LMNC)
Pack Arrangement	7 series modules = 14S2P Cells
ENVIRONMENTAL	
Enclosure	Fully sealed plastic case (IP55)
Operating Temp Range	Charge: -25°C to +45°C Discharge: -25°C to +60°C
Storage Conditions	Temperature: -40°C to +70°C Humidity: Below 75%
BATTERY MANAGEMENT SYSTEM (BMS)	
Communication Protocol	CAN bus @ 1000, 500, 250, 125, 50 kbit/s (J1939 compatible option available)
Reported Information	Cell Temperatures and Voltages, Pack Current, State of Charge and Faults
Pack Protection Mechanism	Interlock to control external protection device e.g. contactor
Balancing Method	Actively controlled dissipative balancing
Multi-Pack Behaviour	BMS implements a single master and multi-slave system
Compatible Chargers as standard	Bassi (CAN-Enabled), Zivan, Victron, Delta-Q
Charger Control	Current control based on cell voltage/temperature CAN bus data to allow other chargers to be implemented by user
Auxiliary Connectors	Binder 720-Series 8-way
Power connectors	Amphenol SurLok Plus
SYSTEM CONFIGURATION	
Max Number of Series Packs	6
Max Number of Parallel Packs	127
External System Requirements	<ul style="list-style-type: none"> External Protection Device (eg. Contactor) controlled by BMS Interlock One External Fuse per series string, max 150A Rating BMS Enable signal (12-24V)
STANDARDS	
EMC	Designed to meet: EN61000-6-2:2005 and EN61000-6-3:2007 + A1:2011
Transport	UN38.3 rev 6 including impact and vibration testing
Other	RoHS directive and WEEE directive
LIMITED WARRANTY	<p>>85% capacity for minimum 2000 cycles when cycled to 100% DOD at 50A at a cell temperature of 25°C. Deviation from these conditions will be assessed on a case by case basis</p> <p>Only to be used in Hyperdrive approved applications</p>



Hyperdrive GEN4 12-Cell (44V_{nom}) Lithium-Ion Modular Pack

GENERAL		
Part Number	HYP-00-2536, HYP-00-2776	
Voltage Nominal	44.4V	
Voltage Range Min/Max	37.2V/49.8V	
Charge Current	132A maximum, de-rated by BMS depending on cell voltage/temperature	
Continuous Discharge Current	130A	
Maximum Capacity	4.94kWh/111.4Ah	
Maximum Energy Density	152Wh/kg	
Useable Capacity	Limited to 90% by BMS to improve cell life	
Dimensions	W: 243 x L: 352 x H: 265mm	
Weight	32kg	
Mounting Fixtures	Threaded mounting points for easy, secure connection	
CELLS		
Cell Specification	3 x GEN4 AESC Modules (each Module Contains 4S2P cells)	
Chemistry	Manganese Laminated Li-ion (LMNC)	
Pack Arrangement	3 series modules = 12S2P Cells	
ENVIRONMENTAL		
Enclosure	Fully sealed plastic case (IP55)	
Operating Temp Range	Charge: -25°C to +45°C/+60°C *	Discharge: -25°C to +60°C
Storage Conditions	Temperature: -40°C to +70°C	Humidity: Below 75%
BATTERY MANAGEMENT SYSTEM (BMS)		
Communication Protocol	CAN bus @ 1000, 500, 250, 125, 50 kbit/s (J1939 compatible option available)	
Reported Information	Cell Temperatures and Voltages, Pack Current, State of Charge and Faults	
Pack Protection Mechanism	Interlock to control external protection device e.g. contactor	
Balancing Method	Actively controlled dissipative balancing	
Multi-Pack Behaviour	BMS implements a single master and multi-slave system	
Compatible Chargers as Standard	Bassi (CAN-Enabled), Zivan, Victron, Delta-Q, TC-Charger **	
Charger Control	Current control based on cell voltage/temperature CAN bus data to allow other chargers to be implemented by user	
Auxiliary Connectors	Binder 720-Series 8-way	
Power Connectors	Amphenol SurLok Plus	
SYSTEM CONFIGURATION		
Max Number of Series Packs	12 – (NB: Isolation monitor is required for 2 or more series battery packs)	
Max Number of Parallel Packs	127	
External System Requirements	<ul style="list-style-type: none"> External Protection Device (eg. Contactor) controlled by BMS Interlock One External Fuse per series string, max 150A Rating BMS Enable signal (12-24V) 	
STANDARDS		
EMC	Designed to meet: EN61000-6-2:2005 and EN61000-6-3:2007 + A1:2011	
Transport	UN38.3 rev 6 including impact and vibration testing	
Other	RoHS directive and WEEE directive	
LIMITED WARRANTY	>85% capacity for minimum 2000 cycles when cycled to 100% DoD at 50A at a cell temperature of 25°C. Deviation from these conditions will be assessed on a case by case basis Only to be used in Hyperdrive approved applications	
Note *	Temperature limit is firmware dependent	
Note **	See Application Notes for specific charger models	



Air Cooled Hyperdrive GEN4 (44.4V, 5.0kWh) Lithium-Ion Modular Pack

GENERAL		
Part Number	HYP-00-2844	
Voltage Nominal	44.4V	
Voltage Range Min/Max	37.2V/49.8V	
Charge Current	160A maximum, de-rated by BMS depending on cell voltage/temperature	
Continuous Discharge Current	130A	
Maximum Capacity	4.94kWh/111.4Ah	
Maximum Energy Density	154Wh/kg	
Useable capacity	Limited to 90% by BMS to improve cell life	
Dimensions	243 x 265 x 387mm	
Weight	32kg	
Mounting Fixtures	Threaded mounting points for easy, secure connection	
CELLS		
Cell Specification	3 x GEN4 AESC Modules (each Module Contains 4S2P cells)	
Chemistry	Manganese Laminated Li-ion (LMNC)	
Pack Arrangement	3 series modules = 12S2P Cells	
ENVIRONMENTAL		
Enclosure	Plastic case designed for IP20	
Operating Temp Range	Charge: -25°C to +60°C	Discharge: -25°C to +60°C
Storage Conditions	Temperature: -40°C to +70°C	Humidity: Below 75%
BATTERY MANAGEMENT SYSTEM (BMS)		
Communication Protocol	CAN bus @ 500 kbit/s	
Reported Information	Cell Temperatures and Voltages, Pack Current, State of Charge and Faults	
Pack Protection Mechanism	Interlock to control external protection device e.g. contactor	
Balancing Method	Actively controlled dissipative balancing	
Compatible Chargers as standard	Bassi (CAN-Enabled)	
Charger Control	Current control based on cell voltage/temperature	
Auxiliary Connectors	Binder 720-Series 8-way	
Power connectors	Amphenol SurLok Plus	
SYSTEM CONFIGURATION		
Max no of packs in series	8	
Max Number of Parallel Packs	127	
External System Requirements	<ul style="list-style-type: none"> • External Protection Device (eg. Contactor) controlled by BMS Interlock • External Fuse max 175A Rating • BMS Enable signal (12-24V) 	
STANDARDS		
EMC	Designed to meet: EN61000-6-2:2005 and EN61000-6-3:2007 + A1:2011	
Transport	UN38.3 rev 6 planned for Q1 2019 (not currently tested)	
Other	RoHS directive and WEEE directive	
LIMITED WARRANTY	>85% capacity for minimum 2000 cycles when cycled to 100% DOD at 50A at a cell temperature of 25°C.	



Hyperdrive GEN4 14-Cell (52V_{nom}) Lithium-Ion Modular Pack

GENERAL		
Part Number	HYP-00-2890	
Voltage Nominal	51.8V	
Voltage Range Min/Max	43.4V/58.1V	
Charge Current	132A maximum, de-rated by BMS depending on cell voltage/temperature	
Continuous Discharge Current	130A	
Maximum Capacity	5.76kWh/111.4Ah	
Maximum Energy Density	164Wh/kg	
Useable capacity	Limited to 90% by BMS to improve cell life	
Dimensions	W: 243 x L: 352 x H: 300.5mm	
Weight	35kg	
Mounting Fixtures	Threaded mounting points for easy, secure connection	
CELLS		
Cell Specification	3 full modules and 1 half module GEN4 AESC (module contains 4S2P cells)	
Chemistry	Manganese Laminated Li-ion (LMNC)	
Pack Arrangement	3.5 series modules = 14S2P Cells	
ENVIRONMENTAL		
Enclosure	Fully sealed plastic case (IP55)	
Operating Temp Range	Charge: -25°C to +45°C/+60°C *	Discharge: -25°C to +60°C
Storage Conditions	Temperature: -40°C to +70°C	Humidity: Below 75%
BATTERY MANAGEMENT SYSTEM (BMS)		
Communication Protocol	CAN bus @ 1000, 500, 250, 125, 50 kbit/s (J1939 compatible option available)	
Reported Information	Cell Temperatures and Voltages, Pack Current, State of Charge and Faults	
Pack Protection Mechanism	Interlock to control external protection device e.g. contactor	
Balancing Method	Actively controlled dissipative balancing	
Multi-Pack Behaviour	BMS implements a single master and multi-slave system	
Compatible Chargers as standard	Bassi (CAN-Enabled), Zivan, Victron, Delta-Q, TC-Charger **	
Charger Control	Current control based on cell voltage/temperature CAN bus data to allow other chargers to be implemented by user	
Auxiliary Connectors	Binder 720-Series 8-way	
Power connectors	Amphenol SurLok Plus	
SYSTEM CONFIGURATION		
Max no of packs in series	10	
Max Number of Parallel Packs	127	
External System Requirements	<ul style="list-style-type: none"> External Protection Device (eg. Contactor) controlled by BMS Interlock One External Fuse per series string, max 150A Rating BMS Enable signal (12-24V) 	
STANDARDS		
EMC	Designed to meet: EN61000-6-2:2005 and EN61000-6-3:2007 + A1:2011	
Transport	UN38.3 rev 6 including impact and vibration testing	
Other	RoHS directive and WEEE directive	
LIMITED WARRANTY	>85% capacity for minimum 2000 cycles when cycled to 100% DoD at 50A at a cell temperature of 25°C. Deviation from these conditions will be assessed on a case by case basis Only to be used in Hyperdrive approved applications	
Note *	Temperature limit is firmware dependent	
Note **	See Application Notes for specific charger models	