

Delta-Q Technologies ICL Series

900W-1500W Battery Charger for Lithium Battery Chemistries

The ICL Series is Delta-Q Technologies' lithium-specific line of battery chargers for industrial and motive applications. Designed to optimally charge lithium battery systems with any chemistry (e.g. LCO, NCA, NMC, LMO, LFP, LTO). CAN bus communication, with the battery management system (BMS), ensures seamless machine integration to grant original equipment manufacturers (OEMs) wide flexibility in their design and deployment.



Available Models



OEM Features

- CAN bus communication for machine BMS/telematic integration with CANopen and J1939 protocols
- Charge cycle data logging for insight into usage and troubleshooting
- OEM customizable, field replaceable cable design
- Optional multi-colored remote or charger mounted LED indicator for battery charging status, error and fault indication
- Interlock prevents vehicle from moving while charging

Charger Features



High Reliability

IP66-rated, rugged, sealed aluminum die-cast enclosure protects against vibration, shock, dirt, chemicals, and fluids. Automotive reliability and tested to an 8-year service life.



Charge Quality

Charge algorithms to precisely charge lithium batteries while balancing charge time, battery life and application requirements.



Lithium Safety

Custom lithium algorithms providing the first line of safety for lithium battery charging; state-of-the-art battery labs and experts for testing and validating of battery packs and BMS.



Global + Efficient

Wide AC input voltage range capable of operating on any single-phase grid worldwide. 93% efficient and meets energy efficiency standards, such as CEC.



OEM System Integration

CAN bus enables OEMs to update the software of the charger, algorithms, and extract charger status, charger history, fault and error logs.



Global Standard Compliance

Compliance with North American, UNECE R10 and European touch-safe voltage regulations allows for easy integration into electric vehicles.















Lithium final charging voltage 36-57 VDC 55-85 VDC 80-120 VDC 36-55 Lithium cells in series 9 to 16 14 to 24 21 to 34 9 to Max DC cutput voltage 57 VDC 85 VDC 120 VDC 57 VDC 35 VDC 120	55-85 VDC 80-120 VDC 36-57 VDC 14 to 24 21 to 34 9 to 16 85 VDC 120 VDC 57 VDC		DC Output			
Lithium cells in series 9 to 16 14 to 24 21 to 34 9 to Max DC output voltage 57 VDC 85 VDC 120 VDC 57 Max DC output voltage 57 VDC 85 VDC 120 VDC 57 Max DC output current. Vm > 200 27.0 A 20.0 A 15.0 A 33. Max DC output put power. Vm > 200 900 W 1200 W 1200 W 1200 W (Vm > 50V) (Vm > 60V) (Vm > 6	14 to 24 21 to 34 9 to 16 85 VDC 120 VDC 57 VDC	36-57 VDC				
Max DC output voltage 57 VDC 85 VDC 120 VDC 37 Max DC output current. V _{IN} > 200 27.0 A 20.0 A 15.0 A 33 Max DC output power. V _{IN} > 200 900 W 1200 W 1200 W 170 W	85 VDC 120 VDC 57 VDC		Lithium final charging voltage			
Max DC output current. V=> 200 27.0 h 20.0 h 15.0 h 33. Max DC output power, V=> 200 900 W 1200 W 1200 W (Vest > 80Y) (Vest		9 to16	Lithium cells in series			
Max DC output power. Vm > 200	20.0 A 15.0 A 33.3 A	57 VDC	Max DC output voltage			
(Vest > 36V)		27.0 A	Max DC output current. Vin > 200			
Max DC output power. V _{Im} < 200 (Year > 36V) (Year > 60V) (Intition or for fection with auto-reset Electronic protection with auto-reset Electronic protection with auto-reset Illimit (CL1200 85V		Max DC output power. V _{in} > 200				
Dry contact interlock current rating Reverse polarity Poka-Yoke DC terminals and electronic protection with auto-reset Electronic current limit AC Input ICL1900 57V ICL1200 885 Romanial AC input voltage range Romanial AC input turrent Romanial AC input current Romanial AC input freedency Romanial A	18.2 A 12.5 A 33.3 A	27.0 A 18.2 A 12.5 A 33.3 A				
Reverse polarity Poka-Yoke DC terminals and electronic protection with auto-reset Short circuit Clayou 57V ICL1200 85V ICL1200 120V ICL1 AC input voltage range S5-270 VAC Nominal AC input voltage range 100-240 VAC Nominal AC input urgent 10.5 A 11.5			Max DC output power. V _{in} < 200			
Short circuit AC Input ICL1900 57V ICL1200 85V ICL1200 120V ICL1 AC Input voltage range R5-270 VAC Nominal AC input voltage range Nominal AC input voltage range Nominal AC input turrent 10.5 A 11.5 A 11.5 A 11.5 A 11.5 A 11.5 A 11.1 A @ 4.4 A @ 230 VAC 9.3 A @ 120 VAC 9.3 A @ 120 VAC 9.3 A @ 120 VAC 11.1 A @ 4.4 A @ 230 VAC 5.7 A @ 230 VAC 5.7 A @ 230 VAC 5.7 A @ 230 VAC 8.8 A @ 120 VAC 9.9 @ 120 VAC, >0.98 @ 230 VAC 9.9 @ 120 VAC, >0.98 @ 230 VAC 9.9 @ 120 VAC, >0.98 @ 230 VAC 9.9 Weight 3.65 kg (8.0 lbs) AC input connector Poka-Yoke threaded fasteners for ring terminals. Negative: M6; Positive: M8 Mounting holes Cooling Natural convection Forced comvariable Regulatory All Models Efficiency 93% peak efficiency; Natural Resources of Canada (INRCAN), California Energy Commission (CEC), and De Energy (DoE) compliant ICL900 57V and ICL1200 57V: Voltage Class & (less than 60 VDC) Emissions FCC Part 15 / ICES 003 Class B, EN 61000-3-2, EN 61000-6-3, CISPR 14.1, UNECE Immunity CISPR 14.2, EN 61000-6-2, UNECE R10 Entryronmental Enclosure IP66 (NEMA4) Thermal fatigue/ Shock/ Vibration	0.3 A					
AC Input Voltage range Nominal AC input tourrent Nominal AC input current Nomi	OC terminals and electronic protection with auto-reset					
AC input voltage range Nominal AC input voltage range Nominal AC input trequency Nominal AC input frequency So/60 Hz Max AC input current 10.5 A 11.5 A 11.5 A 11.5 A 11.6 Nominal AC input current 8.4 A @ 120 VAC 9.3 A @ 1	Electronic current limit	Short circuit				
Nominal AC input roltage range Nominal AC input frequency Nominal AC input frequency Nominal AC input current 10.5 A 11.5 A 11.5 A 11.5 A 11.5 A 11.6 A 11.6 A 11.6 A 11.6 A 11.7 A 11.7 A 11.7 A 11.7 A 11.8 A 11.8 A 11.9 A 11.9 A 11.9 A 11.9 A 11.9 A 11.1 A 11.9 A 11.1	ICL1200 85V ICL1200 120V ICL1200 57V	ICL900 57V	AC Input			
Nominal AC input frequency Max AC input current 10.5 A 11.5 A 11.5 A 11.5 A 11.5 A 11.6 A 11.5 A 11.6 A 11.6 A 11.6 A 11.6 A 11.6 A 11.7 A 11.6 A 11.7 A 11.7 A 11.8 A 12.8 B 12.9 V 10.8 B 10.8 J 10.8	85-270 VAC		AC input voltage range			
Max AC input current 10.5 A 11.5 A 11.1 A @ 5.7 A @ 230 VAC 5.7 A @ 250 V	100-240 VAC		Nominal AC input voltage range			
Nominal AC input current 8.4 A @ 120 VAC 9.3 A @ 120 VAC 5.7 A @ 230 VAC 5.7	50/60 Hz		Nominal AC input frequency			
A.4 A @ 230 VAC S.7 B A S.7 B S	11.5 A 11.5 A 14.0 A	10.5 A	Max AC input current			
Nominal AC power factor Soly 20 120 VAC, Soly 230 VAC Mechanical ICL900 57V ICL1200 85V ICL1200 120V ICL1200 Dimensions 300 x 179 x 80 mm (11.8 x 7.0 x 3.2") Weight 3.65 kg (8.0 lbs) 3.55 kg (7.8 lbs) AC input connector IEC320/C14 with Delta-Q country-specific AC cord DC output connector Poka-Yoke threaded fasteners for ring terminals. Negative: M6; Positive: M8 Mounting holes M6 diameter slots M6 diameter slots M6 diameter slots Forced convariable Regulatory All Models Efficiency 93% peak efficiency; Natural Resources of Canada (NRCAN), California Energy Commission (CEC), and De Energy (DoE) compliant Safety All Models: UL1564, EN 60335-2-29, AZ/NZ560335 (RCM) ICL900 57V and ICL1200 57V: Voltage Class A (less than 60 VDC) Emissions FCC Part 15 / ICES 003 Class B, EN 61000-3-2, EN 61000-6-3, CISPR 14.1, UNECE IS Immunity CISPR 14.2, EN 61000-6-2, UNECE R10 Environmental All Models Inclosure IP66 (NEMA4) Internal fatigue/ Shock/ Vibration GMW 3172	9.3 A @ 120 VAC 9.3 A @ 120 VAC 11.1 A @ 120 VAC	8.4 A @ 120 VAC	Nominal AC input current			
Mechanical ICL900 57V ICL1200 85V ICL1200 120V ICL120 Dimensions 300 x 179 x 80 mm (11.8 x 7.0 x 3.2") Weight 3.65 kg (8.0 lbs) 3.55 kg (7.8 lbs) AC input connector IEC320/C14 with Delta-Q country-specific AC cord DC output connector Poka-Yoke threaded fasteners for ring terminals. Negative: M6; Positive: M8 Mounting holes M6 diameter slots Cooling Natural convection Forced convariable Regulatory All Models Efficiency 93% peak efficiency; Natural Resources of Canada (NRCAN), California Energy Commission (CEC), and De Energy (DoE) compliant Safety All Models: UL1564, EN 60335-2-29, AZ/NZ560335 (RCM) ICL900 57V and ICL1200 57V: Voltage Class A (less than 60 VDC) Emissions FCC Part 15 / ICES 003 Class B, EN 61000-3-2, EN 61000-6-3, CISPR 14.1, UNECE ICLD MINUTED (ISPR 14.2, EN 61000-6-2, UNECE R10 Environmental All Models Enclosure IP66 (NEMA4) Intermal fatigue/ Shock/ Vibration	5.7 A @ 230 VAC 5.7 A @ 230 VAC 5.7 A @ 230 VAC	4.4 A @ 230 VAC				
Dimensions 300 x 179 x 80 mm (11.8 x 7.0 x 3.2") Weight 3.65 kg (8.0 lbs) 3.55 kg (7.8 lbs) AC input connector IEC320/C14 with Delta-Q country-specific AC cord DC output connector Poka-Yoke threaded fasteners for ring terminals. Negative: M6; Positive: M8 Mounting holes M6 diameter slots Cooling Natural convection Forced convexible Regulatory All Models Efficiency 93% peak efficiency; Natural Resources of Canada (NRCAN), California Energy Commission (CEC), and De Energy (DoE) compliant Safety All Models: UL1564, EN 60335-2-29, AZ/NZ560335 (RCM) ICL900 57V and ICL1200 57V: Voltage Class A (less than 60 VDC) Emissions FCC Part 15 / ICES 003 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-3, CISPR 14.1, UNECE IMmunity CISPR 14.2, EN 61000-6-2, UNECE R10 Enterior Memorital All Models Enclosure IP66 (NEMA4) Thermal fatigue/ Shock/ Vibration GMW 3172	>0.99 @ 120 VAC, >0.98 @ 230 VAC		Nominal AC power factor			
Weight 3.65 kg (8.0 lbs) 3.55 kg (7.8 lbs) AC input connector IEC320/C14 with Delta-Q country-specific AC cord DC output connector Poka-Yoke threaded fasteners for ring terminals. Negative: M6; Positive: M8 Mounting holes M6 diameter slots Cooling Natural convection Forced convariable Regulatory All Models Efficiency 93% peak efficiency; Natural Resources of Canada (NRCAN), California Energy Commission (CEC), and De Energy (DoE) compliant Safety All Models: UL1564, EN 60335-2-29, AZ/NZ560335 (RCM) ICL900 57V and ICL1200 57V: Voltage Class A (less than 60 VDC) Emissions FCC Part 15 / ICES 003 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-3, CISPR 14.1, UNECE IN CISPR 14.2, EN 61000-6-2, UNECE R10 Environmental All Models Enclosure IP66 (NEMA4) Thermal fatigue/ Shock/ Vibration	ICL1200 85V ICL1200 120V ICL1200 57V	ICL900 57V	Mechanical			
AC input connector DC output connector DC output connector Poka-Yoke threaded fasteners for ring terminals. Negative: M6; Positive: M8 Mounting holes M6 diameter slots Cooling Natural convection Forced conversible Regulatory All Models Efficiency 93% peak efficiency; Natural Resources of Canada (NRCAN), California Energy Commission (CEC), and De Energy (DoE) compliant Safety All Models: UL1564, EN 60335-2-29, AZ/NZS60335 (RCM) ICL900 57V and ICL1200 57V: Voltage Class A (less than 60 VDC) Emissions FCC Part 15 / ICES 003 Class B, EN 61000-3-2, EN 61000-6-3, CISPR 14.1, UNECE IN CISPR 14.2, EN 61000-6-2, UNECE R10 Environmental All Models Enclosure IP66 (NEMA4) Thermal fatigue/ Shock/ Vibration	300 x 179 x 80 mm (11.8 x 7.0 x 3.2")	Dimensions				
DC output connector Poka-Yoke threaded fasteners for ring terminals. Negative: M6; Positive: M8 Mounting holes M6 diameter slots Cooling Natural convection Forced conversable Regulatory All Models Efficiency 93% peak efficiency; Natural Resources of Canada (NRCAN), California Energy Commission (CEC), and De Energy (DoE) compliant Safety All Models: UL1564, EN 60335-2-29, AZ/NZ560335 (RCM) ICL900 57V and ICL1200 57V: Voltage Class A (less than 60 VDC) Emissions FCC Part 15 / ICES 003 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-3, CISPR 14.1, UNECE IN CISPR 14.2, EN 61000-6-2, UNECE R10 Environmental All Models Enclosure IP66 (NEMA4) Thermal fatigue/ Shock/ Vibration	3.55 kg (7.8 lbs)	3.65 kg (8.0 lbs)	Weight			
Mounting holes Mounting holes Natural convection Natural convection Natural convection Forced convection Regulatory All Models Efficiency 93% peak efficiency; Natural Resources of Canada (NRCAN), California Energy Commission (CEC), and De Energy (DoE) compliant All Models: UL1564, EN 60335-2-29, AZ/NZS60335 (RCM) ICL900 57V and ICL1200 57V: Voltage Class A (less than 60 VDC) Emissions FCC Part 15 / ICES 003 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-3, CISPR 14.1, UNECE Immunity CISPR 14.2, EN 61000-6-2, UNECE R10 Environmental Enclosure IP66 (NEMA4) Thermal fatigue/ Shock/ Vibration	320/C14 with Delta-Q country-specific AC cord	AC input connector				
Regulatory Safety All Models Energy (DoE) compliant Safety All Models: UL1564, EN 60335-2-29, AZ/NZS60335 (RCM) ICL900 57V and ICL1200 57V: Voltage Class A (less than 60 VDC) Emissions FCC Part 15 / ICES 003 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-3, CISPR 14.1, UNECE IMmunity CISPR 14.2, EN 61000-6-2, UNECE R10 Environmental All Models Enclosure IP66 (NEMA4) Thermal fatigue/ Shock/ Vibration	ded fasteners for ring terminals. Negative: M6; Positive: M8					
Regulatory All Models Efficiency 93% peak efficiency; Natural Resources of Canada (NRCAN), California Energy Commission (CEC), and De Energy (DoE) compliant Safety All Models: UL1564, EN 60335-2-29, AZ/NZS60335 (RCM) ICL900 57V and ICL1200 57V: Voltage Class A (less than 60 VDC) Emissions FCC Part 15 / ICES 003 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-3, CISPR 14.1, UNECE IN CISPR 14.2, EN 61000-6-2, UNECE R10 Environmental Enclosure IP66 (NEMA4) Thermal fatigue/ Shock/ Vibration	M6 diameter slots	Mounting holes				
93% peak efficiency; Natural Resources of Canada (NRCAN), California Energy Commission (CEC), and De Energy (DoE) compliant Safety All Models: UL1564, EN 60335-2-29, AZ/NZS60335 (RCM) ICL900 57V and ICL1200 57V: Voltage Class A (less than 60 VDC) Emissions FCC Part 15 / ICES 003 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-3, CISPR 14.1, UNECE IN 61000-6-2, UNECE R10 Environmental All Models Enclosure IP66 (NEMA4) Thermal fatigue/ Shock/ Vibration	tural convection Forced convection wit variable speed fan	Cooling				
Energy (DoE) compliant All Models: UL1564, EN 60335-2-29, AZ/NZS60335 (RCM) ICL900 57V and ICL1200 57V: Voltage Class A (less than 60 VDC) Emissions FCC Part 15 / ICES 003 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-3, CISPR 14.1, UNECE I Immunity CISPR 14.2, EN 61000-6-2, UNECE R10 Environmental All Models Enclosure IP66 (NEMA4) Thermal fatigue/ Shock/ Vibration GMW 3172	All Models	Regulatory				
ICL900 57V and ICL1200 57V: Voltage Class A (less than 60 VDC) Emissions FCC Part 15 / ICES 003 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-3, CISPR 14.1, UNECE I Immunity CISPR 14.2, EN 61000-6-2, UNECE R10 Environmental All Models Enclosure IP66 (NEMA4) Thermal fatigue/ Shock/ Vibration GMW 3172		Efficiency				
Environmental Environmental Enclosure IP66 (NEMA4) Thermal fatigue/ Shock/ Vibration CISPR 14.2, EN 61000-6-2, UNECE R10 All Models GMW 3172		Safety				
Environmental All Models Enclosure IP66 (NEMA4) Thermal fatigue/ Shock/ Vibration GMW 3172	B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-3, CISPR 14.1, UNECE R10	Emissions				
Enclosure IP66 (NEMA4) Thermal fatigue/ Shock/ Vibration GMW 3172	CISPR 14.2, EN 61000-6-2, UNECE R10	mmunity				
Thermal fatigue/ Shock/ Vibration GMW 3172	All Models		Environmental			
	IP66 (NEMA4)		Enclosure			
400f to 1/507 (400F to 1/405)	GMW 3172	Thermal fatigue/ Shock/ Vibration				
Full nominal output power -35°Cto $+40$ °C(-31°F to 104°F)	-40°C to +65°C (-40°F to 149°F) ninal output power -35°Cto +40°C(-31°F to 104°F)	Operating temperature				
Storage temperature $-40^{\circ}\text{C to } +85^{\circ}\text{C } (-40^{\circ}\text{F to } 185^{\circ}\text{F})$	-40°C to +85°C (-40°F to 185°F)	Storage temperature				
Regulatory All Models	All Models	Regulatory				

ICL1500 Specifications					
DC Output	ICL1500 58V ICL1500 85V ICL1500 120V				
ithium final charging voltage	36-58 VDC	55-85 VDC	80-120 VDC		
ithium cells in series	9 to 16	14 to 24	21 to 34		
Max DC output voltage	58.1 VDC	85 VDC	120 VDC		
Max DC output current. Vin > 200	33.3 A	25.0 A	18.7 A		
Max DC output power. V _{in} > 200	1500 W				
Max DC output current. Vin < 200	33.3 A 20.8 A 15.6 A				
Max DC output power. Vin < 200	1200 W (Vout > 36V)	1200 W (V _{out} > 60V)	1200 W (Vout > 80V)		
Ory contact interlock current rating	0.3 A	0.3 A	0.3 A		
Reverse polarity	Poka-Yoke DC	terminals and electronic protection	with auto-reset		
hort circuit	Electronic current limit				
AC Input	ICL1500 58V ICL1500 85V ICL1500 120V				
AC input voltage range		85-270 VAC			
lominal AC input voltage range		100-240 VAC			
lominal AC input frequency	50/60 Hz				
Max AC input current	14.0 A	13.0 A	13.0 A		
lominal AC input current	11.1 A @ 120 VAC	11.1 A @ 120 VAC	11.1 A @ 120 VAC		
	7.2 A @ 230 VAC	7.2 A @ 230 VAC	7.2 A @ 230 VAC		
lominal AC power factor	7.12 N @ 230 THC	>0.99 @ 120 VAC, >0.98 @ 230 VAC			
Mechanical	ICL1500 58V	ICL1500 85V	ICL1500 120V		
Dimensions		300 x 179 x 80 mm (11.8 x 7.0 x 3.2)			
Veight		3.55 kg (7.8 lbs)	1		
C input connector	IEC32	0/C14 with Delta-Q country-specific	AC cord		
C output connector		d fasteners for ring terminals. Negati			
Nounting holes	roka-toke tilleade	M6 diameter slots	ive. Mo, rositive. Mo		
Cooling					
cooling	Forced convection with variable speed fan				
Regulatory		All Models			
Efficiency	93% peak efficiency; Natural Resources of Canada (NRCAN), California Energy Commission (CEC), and Department o Energy (DoE) compliant				
Safety	All Models: UL1564, EN 60335-2-29, AZ/NZS60335 (RCM) ICL1500 58V: Voltage Class A (less than 60 VDC)				
missions	FCC Part 15 / ICES 003 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-3, CISPR 14.1, UNECE R10				
mmunity	CISPR 14.2, EN 61000-6-2, UNECE R10				
nvironmental		All Models			
nclosure	IP66 (NEMA4)				
hermal fatigue/Shock/Vibration	GMW 3172				
perating temperature	-40°C to +65°C (-40°F to 149°F) Full nominal output power -35°Cto +40°C(-31°F to 104°F)				
	-40°C to +85°C (-40°F to 185°F)				
Storage temperature		10 0 0 1 0 3 0 (10 1 0 1 0 5 1)			
Storage temperature Regulatory		All Models			

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