

## Faults and Error Codes - IC/RC/ICL Series

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This document lists all possible fault (Fxxx) and error (Exxx) codes possible on these chargers. Most of these will be reported over CAN and logged. Not all will be displayed on chargers with a user interface. If a unit is not functioning and nothing is indicated or logged, check and cycle both AC and DC. If this condition persists, replace the charger.

Faults		
Fault Code	Description	Troubleshooting and/or Recommended Actions
F001	DC-DC failure - LLC Excessive Leakage Fault	Internal charger fault. Remove AC and battery for minimum 30 seconds and retry charger. If it fails again, do not continue to use the charger - replace the unit.
F002	PFC failure - PFC Excessive Leakage Fault	
F003	PFC has taken too long to boost	
F004	The charger has been unable to calibrate the current offset	
F005	The output relay voltage too high when relay is closed.	
F006	DC-DC current/battery current difference too high	
F007	DCDC stuck on, can not be turned off	
F008	Not Used	
F009	CHG ENGINE seeing exception	

Alarms		
Error Code	Description	Troubleshooting and/or Recommended Actions
E001	High Battery Voltage Error	Battery Voltage is too high to charge. Check the battery voltage and cable connections. Check battery size and condition. This error will automatically clear once the condition has been corrected.
E002	Low Battery Voltage Error detected prior to starting a charge cycle	Battery Voltage is too low to charge. Check the battery voltage and cable connections. Check battery size and condition. This error will automatically clear once the condition has been corrected.
E003	Charge Timeout	Charge Timeout caused by battery pack not reaching required voltage within safe time limit. Possible causes: Charger output reduced due to high temperatures. Poor battery health. Very deeply discharged battery. Poorly connected battery. Extra loads. Possible solutions: Operate at lower ambient temperature. Replace battery pack. Check DC connections. This error will automatically clear once the charger is reset by cycling DC.
E004	Battery defective	Battery could not be trickle charged up to the minimum voltage. Check for shorted or damaged cells. Replace battery pack. Check DC connections. This error will automatically clear once the charger is reset by cycling DC.
E005	Not Used	
E006	Battery temperature sensor is required by algorithm and settings but it is shorted to ground.	Check external wiring then restart the charger.
E007	Ah Limit Exceeded	Safety limit exceeded. Possible causes: Poor battery health. Very deeply discharged battery. Poorly connected battery. High parasitic loads on battery while charging. Possible solutions: Replace battery pack. Check DC connections. Disconnect parasitic loads. This error will automatically clear once the charger is reset by cycling DC.
E008	Battery Temperature Out of Range	Possible battery temperature sensor error. Check temperature sensor and connections. Reset charger. This error will automatically clear once the condition has been corrected.
E009	Suspicious Battery Temp change rate or Dynamic computed Correction R.	Check loose/corrotion on output cable or bad configuration if the battery temperature sensor is used for charge control.

E010	DC Short Circuit	Battery terminals in contact with each other while charging. Check if battery terminals are shorted.
E011	Charger is disabled by external command	Charger has been disabled by an external controller over the CANbus network. This error is logged in the data log and the charger sends out an emergency frame to indicate the event.
E012	Reverse Polarity	Battery is connected incorrectly. Check the battery connections. This error will automatically clear once the condition has been corrected.
E013	Battery Does not take current	Battery voltage is detected but the charger is unable to charge the battery. This can be due to a electrical device connected between the charger and the battery, which passes through voltage but not current. Or if an algorithm is installed that does not require battery voltage then the charger can try to charge, but if it can not supply current then this fault would be seen (Lithium application with a BMS perhaps). Ensure the charger is properly connected to approved equipment. This error will automatically clear once the charger is reset by cycling DC or AC.
E014	Number Of Cells calculated or being set from platform is suspicious	not used?
E015	Platform has its target voltage set, but Algo (no EOC voltage in header) does not support voltage scaling	not used?
E016	Software upgrade failed	Retry by removing and re-inserting the USB drive. Ensure the USB Flash Drive is properly formatted (FAT recommended) and retry. Try a different USB drive. If error persists, contact Delta-Q Customer Support.
E017	USB mount or unmount error	
E018	Slot CRC Error	
E019	HW Build does not support SW version	The charger hardware does not support the software version being programmed. Existing SW is left running. Contact Delta-Q Customer Support.
E020	No active algo selected	Select a charge profile using the button or reflash the charger via USB.
E021	High Battery Voltage Error detected while charging	Battery Voltage is too high as detected by the algorithm. Check the battery voltage and cable connections. This error will automatically clear once the condition has been corrected.
E022	Low Battery Voltage Error detected while charging	Battery Voltage is too low as detected by the algorithm. Check the battery voltage and cable connections. This error will automatically clear once the condition has been corrected.
E023	High AC Voltage Error, >270VAC	AC voltage is too high. Connect charger to an AC source that provides stable AC between 85 - 270 VAC / 45-65 Hz. This error will automatically clear once the condition has been corrected.
E024	Failure to initialize	The charger has failed to turn on properly. Disconnect AC and battery for 30 seconds before retrying. If Error persists, contact Delta-Q Customer Support.
E025	Low AC Voltage Oscillation Error	AC source is unstable. Could be caused by undersized generator and/or severely undersized input cables. Connect charger to an AC source that provides stable AC between 85 - 270 VAC / 45-65 Hz. This error will automatically clear once the condition has been corrected.
E026	USB Script Failure	Retry by removing and re-inserting the USB drive. Ensure the USB Flash Drive is properly formatted (FAT recommended) and retry. Try a different USB drive. If error persists, contact Delta-Q Customer Support.
E027	USB Over Current Fault	
E028	Incompatible Algorithm	The selected charging profile is incompatible with the charger software. Update charger software or select a different charging profile.
E029	CAN Bus error	CANbus network error. Check the physical CAN connector, electrical bus conditions and other CAN modules for correct functioning. For example, check termination resistance is approx 60ohms.
E030	Battery Module error	CANbus battery module error. Check the CANbus battery module for correct functioning and expected messages.
E031	The Vref for the ADC measurements has triggered an alarm	Internal charger error. Remove AC and battery for minimum 30 seconds and retry charger. If the problem persists contact Delta-Q.
E032	CAN Heartbeat Lost	CANbus heartbeat error. Check the networked CANbus device(s) for correct functioning and messages.

E033	Target Voltage set is higher than the hardware can support	Configuration issue, the charger configuration is asking for more than the charger can deliver, make sure the target voltage set in platform or ALG is not too low. Recovery possible via USB script to reset the voltage scaling.
E034	Battery Capacity is set on platform, but ALG does not support current scale.	Configuration issue, charger platform is configured to run algo with capacity scaling but algo installed does not support this feature, make sure ALG supports current scale based on battery capacity or reset platform configuration using a USB script.
E035	Target Voltage set is too low for the hardware	Configuration issue, the charger configuration is asking for less than 20% the charger nominal (ie. below 9.6V on 48V charger), ensure the target voltage set in platform or ALG is not too low. Recovery possible via USB script to reset the voltage scaling.
E036	Battery Temperature sensor is required by algorithm and settings but it is not installed.	Check if sensor is connected correctly. Install a temperature sensor. Change to an algorithm that does not require a temperature sensor.
E037	CANOpen reprogramming failed	Re-try CANOpen download or re-program using the USB
E038	Fan either has a locked rotor or open circuit	Inspect fan to make sure the power wires are connected and the fan blades are not obstructed by debris.
E039	The button is stuck down	Inspect for damage for objects on or near the button.
E040	The fan power supply outputs voltage lower than expected	Ensure that the fan is not stuck, drawing excess current, and that the correct fan part is installed.
E041	Software internal error	??
E042	CAN configuration error	??
E043	CANopen PDO CRC error	??
E044	CANopen PDO sequence count error	??
E045	Battery not connected before charging	Charger did not see enough battery voltage. Connect the battery in order to start charging.
E046	Invalid PDO Length	Ensure all PDOs are valid length
E047	Charger overvoltage alarm	A battery or some other source has been connected to the charger that exceeds the hardware's design limits.
E048	Charger parallel charging found multiple master on the same bus.	Check the wiring harness to ensure only one charger is configured to be parallel charging master.
E049	Insufficient resources - typically due to their being more slaves on the bus than the master expects or can cope with.	Make sure the right number of chargers on the bus. Reset chargers to check if this alarm persists.
E050	A parallel charging disabled unit has received Parallel charging specific CAN messages	Check the configuration of all chargers that are sharing this bus.
E051	A Parallel charging enabled slave unit has not detected a Master device on the CAN bus	Master device may be disconnected or powered down. Check wiring harness. Check configuration of devices.
E052	A Parallel charging enabled master has not detected the expected number of slaves on the CAN bus	Slaves may be disconnected or powered down. Check the wiring and power to the slave chargers. The alarm will automatically clear when the missing slaves come back online.
E053	A Parallel charging slave has stopped communicating with the master	Check wiring harness and power to slaves. Check to see if slaves are issuing faults of their own.
E054	A Slave has reported reverse polarity to the Master	Check the DC connections of all chargers and the battery.
E055	There is an excessive voltage reading difference between Master and Slave.	Either they are disconnected from each other or there is an excessive series resistance which may result in cable overheating. Check DC output wiring of the entire stack. The problem might be due to loose or corroded connections in the cabling.
E056	A Parallel charging slave has unexpectedly stopped charging but is still in communication with the master	Check for other Alarms and faults reported by the slave.
E057	BMS did not respond to charger	Check CAN cabling. Ensure BMS/Battery is active.
E058	Network Management (NM) Down Event; There was an NM messaging error/timeout	Check CAN cabling
E059	Another J1939 device detected with the same address and that device does not comply with the address claim procedures	Investigate and disconnect non-compliant device from the bus. Alternatively change the charger's configuration to exclude the conflicted address from its allowed range of addresses.

E060	An expected message (i.e., with a receive timeout; e.g., RPDO or PGN) has not been received from the BMS yet, but the charger is ready to start	Check CAN cabling. Ensure BMS configured to send expected messages
E061	BMS sensed current differ from charger sensed current	The charger compares the BMS written current with its output current. Check that the right current is being sent to the charger. Check if the output cable has a parallel branch.
E062	BMS sensed voltage differ from charger sensed voltage	The charger compares the BMS written voltage with its output voltage. Check that the correct voltage is being sent to the charger. Check that the output cable resistance matches the charger setting. Check for other sources of voltage drop.
E063	Platform parallel charging: The master has detected an incompatible slave on the bus.	Query the master to identify which slave has the bad configuration or interface version.
E064	The device cannot claim, or has lost its J1939 address.	The most likely cause of this problem is that two or more chargers, configured for the same fixed address, have been connected to the same bus in error. Alternatively there could be a configuration issue and the addresses available to the charger are already being used by other customer devices on the bus.
E065	Another device on the bus cannot claim, or has lost its J1939 address.	Read SPN 611 from the charger(s) that has raised this alarm. This will contain the 64-bit J1939 "Name" of the device that could not claim its address (see J1939-81 Network Management, Feb 2016, Section 4.2.1 ). If this device is another Delta-Q charger (manufacturer code 800, function Id 141) and this is a parallel charging system then possible causes include: i) Incorrectly configured chargers - all chargers in a parallel system must be programmed for parallel charging and have compatible configurations. ii ) Address conflicts exist between the charger and other devices on the bus iii ) Wiring fault. The sole master charger must be fitted with a temperature sensor ( or a temperature sensor shorted to ground ) All slaves must have open circuit temperature sensors. The alarm will be cleared on charger reset - but may immediately trigger if the address conflict persists.
E066	Sensed voltage higher than expected	Check if the charger is connected to the right battery, or the max voltage configured was too low.
E067	CAN Bus error	CANbus network error. Check the physical CAN connector, electrical bus conditions and other CAN modules for correct functioning. For example check termination resistance is approx 60ohms.
E068	Network Message Lost	CANbus heartbeat error. Check the networked CANbus device(s) for correct function and messages.