METER ERROR LIST

ERROR CONDITION	ERROR CODE	FAILURE DESCRIPTION	ACTION
ERR_UNPROGRAMMED	001	Meter is not programmed or it is in a factory default state.	Program meter.
ERR_CONFIG	002	Configuration not correct or meter not configured.	Verify meter configuration, or send new configuration to the meter.
ERR_SELFCHK	003	Meter tried to recover reading data from backup memory after power was up and did not found any good records.	Reset the meter.
ERR_RAMFAILURE	004	RAM memory failed.	Reset the meter. If failure continues, replace meter.
ERR_ROMFAILURE	005	ROM memory failed.	Reset the meter. If failure continues, replace meter.
ERR_NONVOLMEMFAILURE	006	Meter tried to save reading data in the EEPROM memory unsuccessfully.	If error code persists longer than 5 minutes, contact Vision Metering.
ERR_CLOCK	007	Meter could not determine internal clock state.	Reset the meter. If failure continues, replace meter.
ERR_MEASUREMENT	008	Meter could not determine a measurement element or condition.	Reset the meter. Verify meter configuration and programming. If failure continues, replace meter.
ERR_LOWBATTERY	009	Battery no longer holds charge.	Replace battery.
ERR_LOWLOSSPOTENTIAL	010	Meter detected a device potential below a predetermined value.	Verify meter connection to the network. Verify meter form-factor settings in 20/20 matches meter label.
ERR_DEMANDOVERLOAD	011	Demand threshold overload was detected.	Utility user was consuming more energy than the preset limit. If error persists, temporarily replace meter to verify energy consumption. If consumption is within limits, verify meter configuration.
ERR_POWERFAILURE	012	Meter detected a power failure or the power consumption register is corrupt.	Reset meter. If failure continues replace meter and contact Vision.
ERR_REVERSEROTATION	013	A reverse rotation condition was detected.	Reset the meter. If failure continues correct socket wiring or replace meter.
ERR_RADIO	101	Radio is not configured or is not present in the meter.	Verify if meter has radio. If so, verify radio configuration. Reset meter. If failure continues, replace meter and contact Vision.
ERR_POWERSWITCH	102	Utility disconnect switch has malfunctioned.	Replace switch board and/or power switch.
ERR_NOTCALIBRATED	103	Meter is uncalibrated.	Calibrate meter.
EMERGENCY_DISCONNECTED	104	Remote disconnect switch was opened. Measured current exceeded limit.	Reduce current load.
ERR_TILT_SENSOR	105	An attempt to displace meter from the socket. Meter must be equipped with a tilt sensor.	Manually reset the tamper flag.

LoRa ERROR LIST

Dev-Nonce:

The Dev-Nonce error tells us that there has been a duplicate Dev-Nonce number being used by the join process. Chirpstack keeps track of this number to make sure it is not used again to prevent replay attacks. If a device is within the range of 2 or more gateways, you will always get a Dev-Nonce error because you are getting duplicate packets coming from different gateways going to the same Chirpstack network. This is not an error but a feature of the design to prevent duplication and to prevent using an old Dev-Nonce for retransmission. The problem is when the Dev-Nonce history is full and no new Dev-Nonce can be issued because no new join sessions can be created. The main issue is the drift in the timing for the meter to accept the Join Accept token from Chirpstack. So that is why it takes some time for the meter to join during the join process. This drift in timing can be caused by the internal clock of the lora module, the delay in signal propagation, the internal drift on the gateway timing, or delay in processing.

Invalid-MIC:

An Invalid-MIC (Invalid Message Integrity Check) error means that either the App key or the network session keys are wrong or missing. If it is the former than the meter will never join the network and will continue to send requests until the correct key is given to the meter. In the case of the later the meter has joined the network before but either the gateway or the meter lost the keys, the primary course of action is to delete the meters current session to force it to rejoin the network and re-acquire its session keys.

Frame-counter did not Increment:

The frame counter is a counter that is incremented by the value 1 with each transmission. The current value is stored both in the end device and on the LoRaWAN server. The uplink frame counter counts those packets that are sent from the node to the LoRaWAN network. The downlink frame counter counts those packets that are sent from the LoRaWAN network to the node. In principle, it is not possible to decrypt a data packet if you do not know the app session key. Nevertheless, it is possible to record a data packet with a receiver binary (via the modulation) and send it again. The LoRaWAN network cannot determine whether the data packet comes from the same sender or was copied from a different system and sent again. The Frame Counter prevents this. The frame counter is calculated directly into the encryption, which means that physically every data packet looks different. It is therefore not possible that a recorded data packet cannot be sent again.

Join-Server-Returned-Error:

This means that the meter in question could not join the network due to a Dev-Nonce error, MIC error, or both simultaneously. However if this error is being displayed it is most likely both.