DataSheet VistaZ

Overview

The VistaZ by CoolR is a state-of-the-art smart camera to enable continuous and reliable taking of shelf images and their automatic transmission. The VistaZ forms part of CoolR's connectivity ecosystem enabling our clients to generate always-on insights and actions such as workflow automation or order automation. The key features of VistaZ are:

- Zero energy: Harvesting energy from in-store light sources to self-recharge it's battery for reliable, continuous operation and minimal expense & effort for clients.
- Consumer safe: The unit is designed to be tamper-proof and equally pose the least possible risk to consumer by choice of materials & design (assuming clients take reasonable & expected care in handling).
- Unibody: A single case holds all elements which means no cables or power plugs are needed.
- Optimal field of vision: The lens types and arrangements are specially designed for a wide variety of refrigerators and freezers for simple planning and installation routines.
- Peel and stick: The unibody VistaZ gets installed simply by peeling the industrial-strength adhesive and sticking the VistaZ on the inside of the glass-door. The installation is done quickly & easily by anyone.
- Wide operating environment: The VistaZ is designed to work in freezers, fridges or on ambient shelves.

Notes

- After several years of operations, the rechargeable battery might need replacement – depending on operating conditions as specified in the table below. The battery replacement must be done by authorized personnel but is a simple and fast process.
- Battery life considerations
  - As stated in the table below, the time till full discharge is based on 1 picture + 1 extra ping per day.
  - Note that complete discharge is not equal to end of battery life even though full discharges do shorten useable battery life.
  - Note that with LTE CAT-M1 on good connectivity levels it can support up to 2 images per day with similar battery life.
  - Overall battery life is influenced by cellular connectivity quality (low connection rate is detrimental as it translates into higher power draw from the battery).
  - The number of door opens per day will impact time of battery discharge. The assumption made for that is 20 door-openings/day on LTE mode.
- Image quality considerations
  - The device is designed to cover a large range of scenarios (coolers, freezers, ambient shelves). However, there are ambient circumstances that will impair the ability of the device to capture clear images:
    - Very bright light shining directly into the lens
    - Too dark ambient environment
    - Frequent fogging
- Impact of off-season / downtime / no-light-conditions
  - If the device was put into sleep mode before off-season starts (assuming this equals no light irradiation) and was at good charge levels at that point, it will take 3-5 days for the device to recharge itself once out of sleep mode.
  - If, however, the device was not put into sleep mode at the beginning of the off-season, then it will require approx. 30days after that off-season to be recharged sufficiently.
- Safe handling considerations
  - The battery or unit should not be dropped, immersed in water or punctured.
  - The solar panels should not be punctured.

Features

Physical/ Environmental

Power Supply	Rechargeable 18650 LT Li-ion 2500 mAH (Secondary)
Size (LxWxH)	159mm x 55mm x 35.4mm
Temperature Range	Operating: -20°C to +50°C Storage:-20°C to +70°C
Data Storage	32-Mbit Flash
LED	(internal only for diagnostics)
Weight	178gm

Wireless Connectivity

Bluetooth

Module	Nordic nRF52840
Type	Bluetooth Low Energy 5.4
Sensitivity	-95 dBm
Max Power Output	+8 dBm
Antenna Type	onboard
Frequency	2400Mhz to 2483Mhz
Data Rate	2Mbps Max

Cellular/ GPS

Module	Quectel BG-95 M3
Connectivity	LTE CAT-M1/ NB-IoT/ GPRS
CAT M1 Bands	B1, B2, B3, B4, B5, B8, B12 B13, B18, B19, B20, B25, B26 B27, B28, B66, B85
CAT NB-IoT	B1, B2, B3, B4, B5, B8, B12 B13, B18, B19, B20, B25, B28 B66, B71, B85
GPRS	GSM 850/ EGSM 900/ DCS1800/ PCS1900
LTE Band Power Class	Class 5 (21 dBm)
GNSS	GPS, Glonass, BDS, Galileo, QZS
Antenna	Internal U.FL antenna
SIM	4FF (Nano sim)

WiFi

Module	ESP8266EX
Protocols	802.11b/g/n(HT20)
Wifi Max power Output	802.11 b:+20dBm
Antenna Type	onboard
Frequency Support	2400Mhz to 2483.5 Mhz
Wifi Data Rate	11 Mbps ECOPACK® RoHS and "green" compliant
WPA2/WPA3 support	WPA2 supports 2.4GHz Customization available Separately

Ambient Sensors

Temperature	Accuracy dependent on install location @ -40 to +85 °C

Movement

Accelerometer	±2g/±4g/±8g/±16g dynamically selectable
Gyroscope	Selectable full scale of ± 15.6/31.2/62.5/125/250/500/1000/2000 dps sensitivity change vs. temperature ±5

Camera

Sensor Type	OV5640
Size	Up to 5.0 Megapixel (2592 x 1944)
Temperature range	-20°C to 50°C
Camera count	1
Lens material	Glass
FoV (default)	210° diagonal

Ambient Energy Harvesting

Type	Indoor light energy harvester
Protection	Laminated cells

Processors

Primary	ARM® Cortex® -M4 32-bit processor
Co-Processor	FPGA

Expected Time for Battery Discharge in Horizontal cooler (1 image & ping daily)

Connectivity	Lux	Life (months)
LTE CAT-M1	500+	36+
LTE CAT-M1	250-500	24+
LTE-CAT-M1	<250	12+
GSM	500	24+
GSM	250	18+
GSM	<250	9+

Assumption: 12+ hours of light and good network connectivity

Expected Time for Battery Discharge in Vertical cooler

Connectivity	Lux	Life (months)	Daily Door Opening Count
LTE CAT-M1	500+	36+	20
LTE CAT-M1	500+	35+	40
LTE-CAT-M1	500+	24+	80
LTE CAT-M1	400	18+	20
LTE CAT-M1	400	16+	40
LTE CAT-M1	400	14+	80
LTE CAT-M1	250-400	12+	20
LTE CAT-M1	250-400	11+	40
LTE CAT-M1	250-400	9+	80
LTE CAT-M1	<250	8+	20
LTE CAT-M1	<250	7+	40
LTE CAT-M1	<250	7+	80
GSM	500+	12+	20
GSM	500+	12+	40
GSM	500+	11+	80
GSM	400	10+	20
GSM	400	9+	40
GSM	400	8+	80
GSM	250-400	7+	20
GSM	250-400	7+	40
GSM	250-400	7+	80
GSM	<250	6+	20
GSM	<250	5+	40
GSM	<250	5+	80

Assumption: 12+ hours of light and good network connectivity

Certifications

Regulatory

FCC, CE-RED, UKCA, RoHS
Bluetooth/ Cellular modules pre-certified
MSDS, IEC 62311:2020, UN38.3

Enclosure

IP67