



Target cooler

Goals

- Install the New Horizons Demo EMS logger in a fridge so that it can collect semi-realistic data (temperatures, door openings, power availability, and cooling operation).
- Have a platform ready for test labs and partners to use.
- Use a fridge that is easily shippable.
 - Thermoelectric cooler (TEC)-based system removes complexities with compressor-based refrigeration, especially flammable refrigerants like R600a.
 - Small size simplifies shipping and takes less space on a test bench than a full-size fridge.

Chosen device

- Cooluli I10L2B TEC Mini-Fridge

DEMO EMS LOGGER MINI-FRIDGE INTEGRATION



ORIGINAL

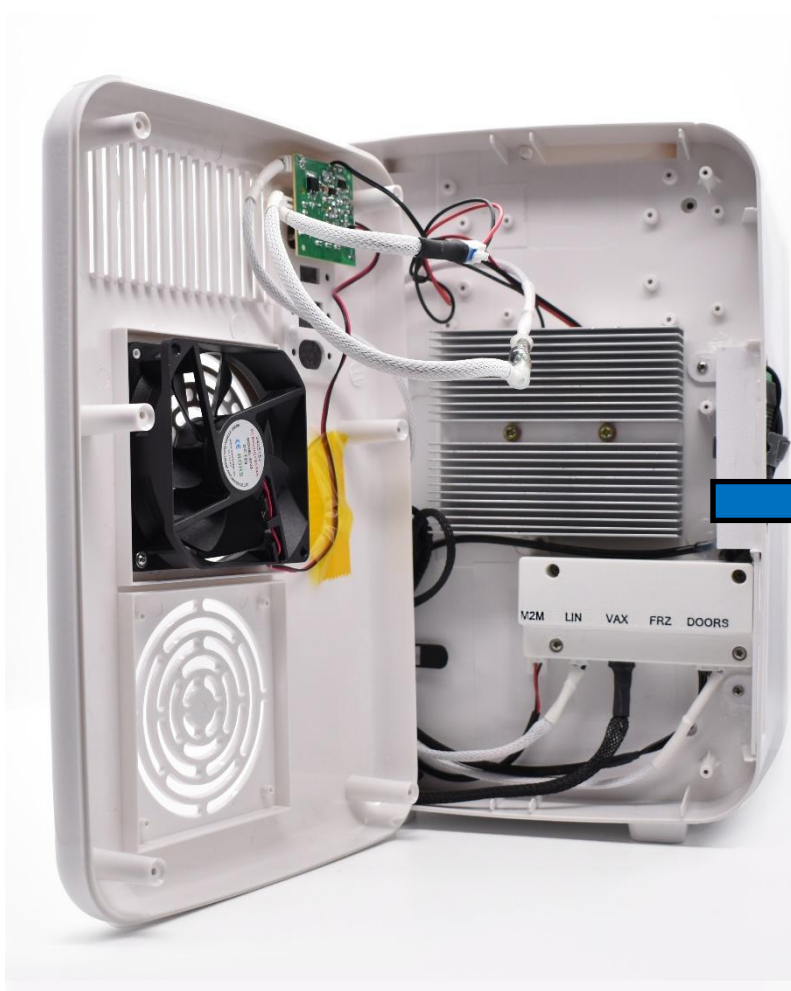


MODIFIED

The logger is integrated into the electronics compartment of the fridge using harnesses that plug into existing connectors.

DEMO EMS LOGGER MINI-FRIDGE INTEGRATION

NEW
HORIZONS



USB and POWER ACCESS



DOOR and TEMP. SENSOR

DEMO EMS LOGGER MINI-FRIDGE INFO

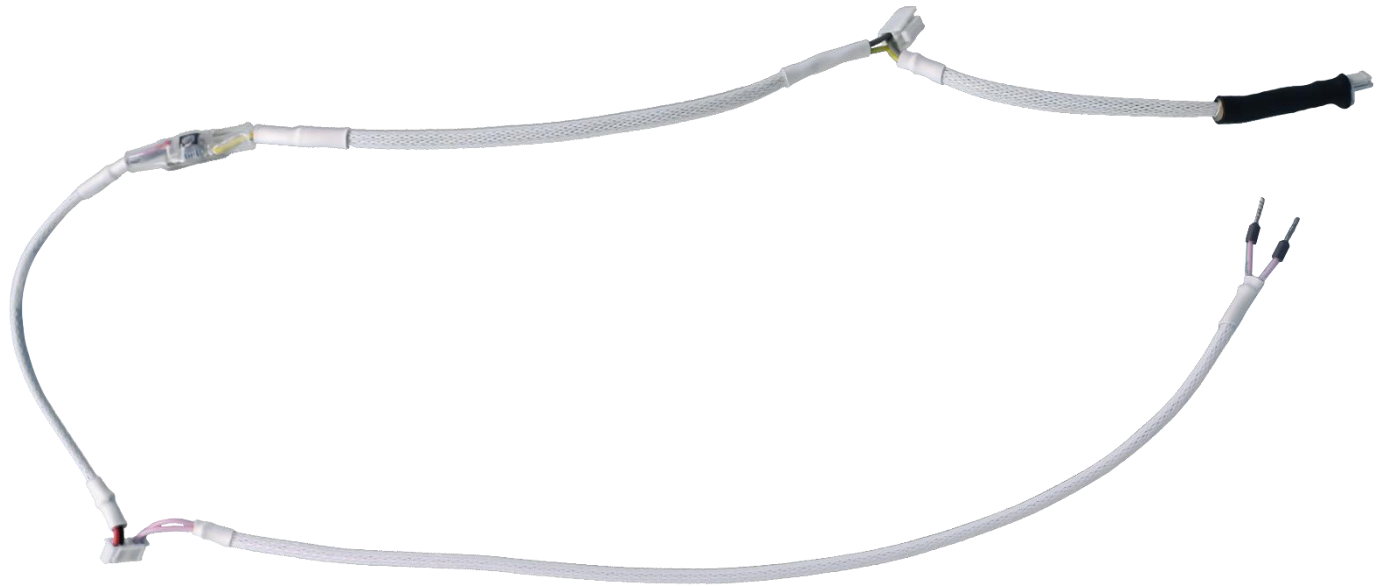


Specification	Logger	Cooler
Manufacturer	New Horizons, a division of Global Health Labs	Cooluli
Model	Demo EMS Logger	Infinity-10L
Country of Origin	USA	China
Conformity Assessment Marking	None	CE
Rated Input Voltage	6-24 VDC (sourced from fridge internal power supply) 5 VDC (sourced from USB-C M2M port)	12 VDC 100 – 240 VAC with supplied adapter
Rated Power	250 mW (USB access)	50 W (cooling)
Battery	CR123A 3.0V primary cell	
Timekeeping	Crystal-controlled real-time clock, relative timekeeping	
Data recording and storage	Recorded on a 15-minute interval, non-volatile storage for > 1 year	
Temperature sensors	Integrated ambient, external vaccine temperature sensor Both are AMS AS6212 digital temperature sensors: Operating range: -40°C to +125°C Accuracy: 0.2°C between -10°C and +65°C 0.3°C -40°C to -10°C and +65°C to +85°C 0.5°C over the rest of the operating range Resolution: 16 bits (0.0078°C) Response time: T90 within 3 minutes	
Door sensor	Magnetic reed switch, open circuit when door is closed.	
Power monitoring	AC availability and cooler runtime sensed via contact closure.	
M2M Data port	USB-C receptacle, data access as USB mass storage	
M2M Power Output	5 V, 1.1 A on M2M port captive cord and barrel plug 2.1 mm ID, 5.5 mm OD barrel plug, center positive.	
Dimensions	130 x 50 x 28 mm (but inside the cooler)	250 x 290 x 340 mm
Weight	100 g	3590 g

DEMO EMS LOGGER MINI-FRIDGE INTEGRATION



TEMP SENSOR



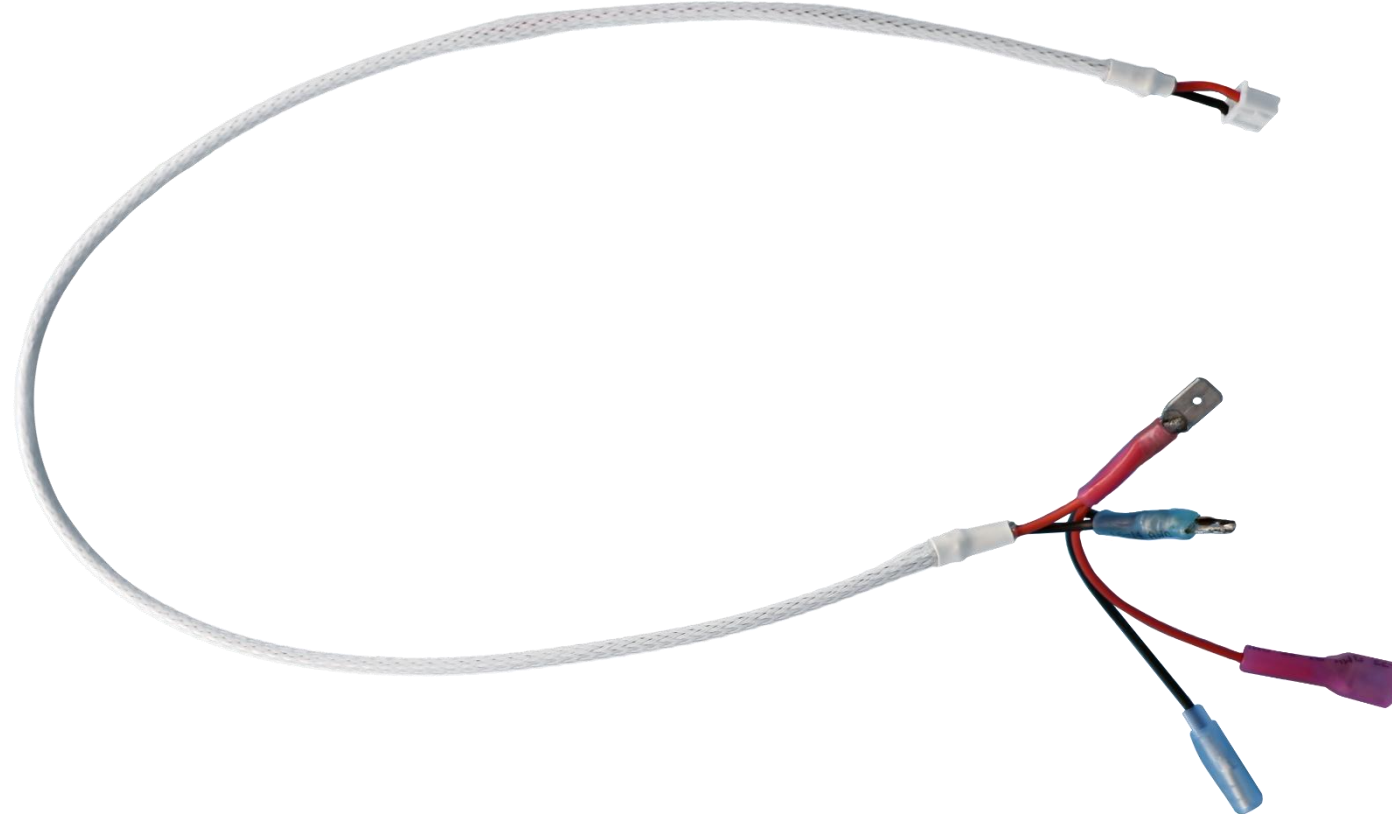
DOOR SENSOR and TEC HARNESS



DEMO EMS LOGGER MINI-FRIDGE INTEGRATION



LIN HARNESS



M2M HARNESS

