# NL CAMERA

## Quick overview of the most critical problems early on

- Detects problems in power grid components before they start to heat up
- No direct line of sight is required

## Saves money and improves energy efficiency

- Pinpoints tiny leaks and shows leak size and cost estimate
- More accurate and faster than other leak detectors and methods

## Speeds up audits & requires minimal training

- Light, hand-held, automatically displays the detected PDs' locations on its intuitive user interface
- Scans large areas quickly

## Machine learning-powered NL Analytics

- Locates and distinguishes PDs from other sounds
- Classifies PD type and severity
- Suggests further corrective actions
- Easy reporting tool for sharing repair and maintenance needs
- ISO5001-compatible reports for air leaks

The industry-leading NL Camera is an intelligent device for detecting and localizing air leaks in compressed air systems and partial discharges in high voltage and medium voltage systems. The lightweight, easy-to-use NL Camera automatically locates problems by the often inaudible, ultrasonic, sound that they emit, even in loud industrial environments.

The 124 state-of-the-art microphones of the NL Camera allow leak detection in a wide field of view and from an extended range. Finding leaks is up to 10 times faster than with traditional methods. The camera shows real-time leak size and cost estimate clearly on the screen.

The NL Camera locates 50/60 Hz partial discharges automatically in the power grid from more than 130 meters away. It also shows the PRPD pattern on the device.

The NL Camera analyzes findings in real time. Users can also upload the data to the included NL Cloud service for deeper analysis and reporting. For partial discharges, this includes partial discharge type classification, severity assessment, and recommended actions. The NL Camera Viewer and NL Camera Viewer Pro offline software are available for those who cannot use WiFi.

Datasheet version 211007
Compatible with SW version 21H2

# Technical Specifications

## Acoustic Specifications

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|---|---|
| Acoustic measurement | 124 low-noise MEMS microphones, real-time sound visualization |
| Dynamic range, low limit | Below -15 dB (frequency-dependent) |
| Dynamic range, high limit | 120 dB (frequency-dependent) |
| Bandwidth | 2–65 kHz |
| Distance | From 0.3 m (1.0 ft) up to and above 130 m (430 ft) |
| Leak rate | In typical industrial environment:<br>>0.032 l/min @ 3 bar from 3 m (9.8 ft)<br>>0.05 l/min @ 3 bar from 10 m (32.8 ft)<br>Absolute minimum detection in a quiet environment: 0.016 l/min @ 1.2 bar from 0.3 m (1.0 ft) |

## User Interface

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|---|---|
| Display | 5 in, 800 × 480 resistive touchscreen |
| Brightness | 1000 cd/m2 (adjustable) |
| Snapshot resolution | 800 x 480 |
| Frame rate | 25 fps (optical image) / 30 fps (acoustic image) |
| Zoom | 2x digital zoom |

## Communication and Data Storage

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|---|---|
| Wireless data transfer | IEEE 802.11.b/g/n/ac |
| Storage, internal | 32 GB/999 snapshots |
| Storage, external | 8 GB USB mass storage, 500 snapshots (typical) |

## Environmental

| | |
|---|---|
| Operating temperature | -10°C – +50°C (14°F – 122°F) |
| Storage temperature | -20 °C – +70 °C ( -4 °F – 158 °F) |
| Charging temperature | 0°C – +40°C (32°F – 104°F) |
| Humidity | Recommended 0–90% |
| Ingress Protection | IP51 |

## Physical data

| | |
|---|---|
| Camera size & weight | 273 × 170 × 125 mm (10.7 × 6.7 × 4.9 in)<br>980 g (2.2 lb) |
| Total weight with Tracer battery | 1.9 kg (4.3 lb) |
| Total weight with RRC2040 battery | 1.2 kg (2.7 lb) |

## NL Analytics & Features

| | |
|---|---|
| Discharge localization & recognition | Automatic detection 50/60 Hz without direct line of sight |
| Discharge classification & analysis | PRPD pattern<br>In the NL Cloud and NL Camera Viewer Pro: negative & positive corona, floating discharge, surface or internal discharge |
| Severity assessment | In the NL Cloud and NL Camera Viewer Pro software: recommends actions to fix the issue |
| Leak detection & localization | Automatic, real-time leak recognition |
| Leak size & cost estimate | Automatic, real-time, on-device |
| ISO5001-compatible reporting | In the NL Cloud and NL Camera Viewer Pro software |
| Video recording | Up to 5 minutes |
| Audio recording | Up to 5 minutes |
| Video resolution | 1640 x 1232 |
| Video frame rate | 15 fps |

## Power Specifications

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|---|---|
| Camera power input | Nominal input voltage: 12 $V_{DC}$<br>Max input: 15 $V_{DC}$, 2.5 A |
| Internal battery | Li-Ion 6 Wh (only for backup purposes) |

## Battery Option RRC2040

| | |
|---|---|
| External battery | Li-ion 36.2 Wh, 10.8 $V_{DC}$<br>Use time over 2 h<br>Max output: 12.6 V, 4.0 A |
| Battery charger | Input: 100–240 $V_{AC}$ ± 10% ~ 50/60 Hz 1.70 A @ 100 $V_{AC}$<br>Max output: 19 $V_{DC}$ ± 5%, 3.40 A |
| Battery size & weight | 87 × 65 × 129 mm (3.42 × 2.55 × 5.07 in)<br>250 g (0.55 lb) |

## Battery Option Tracer

| | |
|---|---|
| External battery | LiFePO$_4$ 84 Wh, 12 $V_{DC}$<br>Use time up to 7 h, charge time 4–6 h<br>Max output: 13.8 V, 4.0 A |
| Battery charger | Input: 100–240 $V_{AC}$ ~ 50/60 Hz 1.3-1.5 A<br>Max output: 13.8-14.6 $V_{DC}$, 4 A (depends on the charger provided) |
| Battery size & weight | 90 × 145 × 65 mm (3.5 × 5.7 × 2.6 in)<br>985 g (2.2 lbs) |

## Supported Languages

Czech, Danish, Dutch, English, Estonian, Finnish, French, German, Greek, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Simplified Chinese, Spanish, Swedish, Thai, Traditional Chinese, Turkish, Vietnamese