# Thermal Temperature Monitoring Solution

March 2020

97.8°F

95.9°F

99.4°F

97.8°F
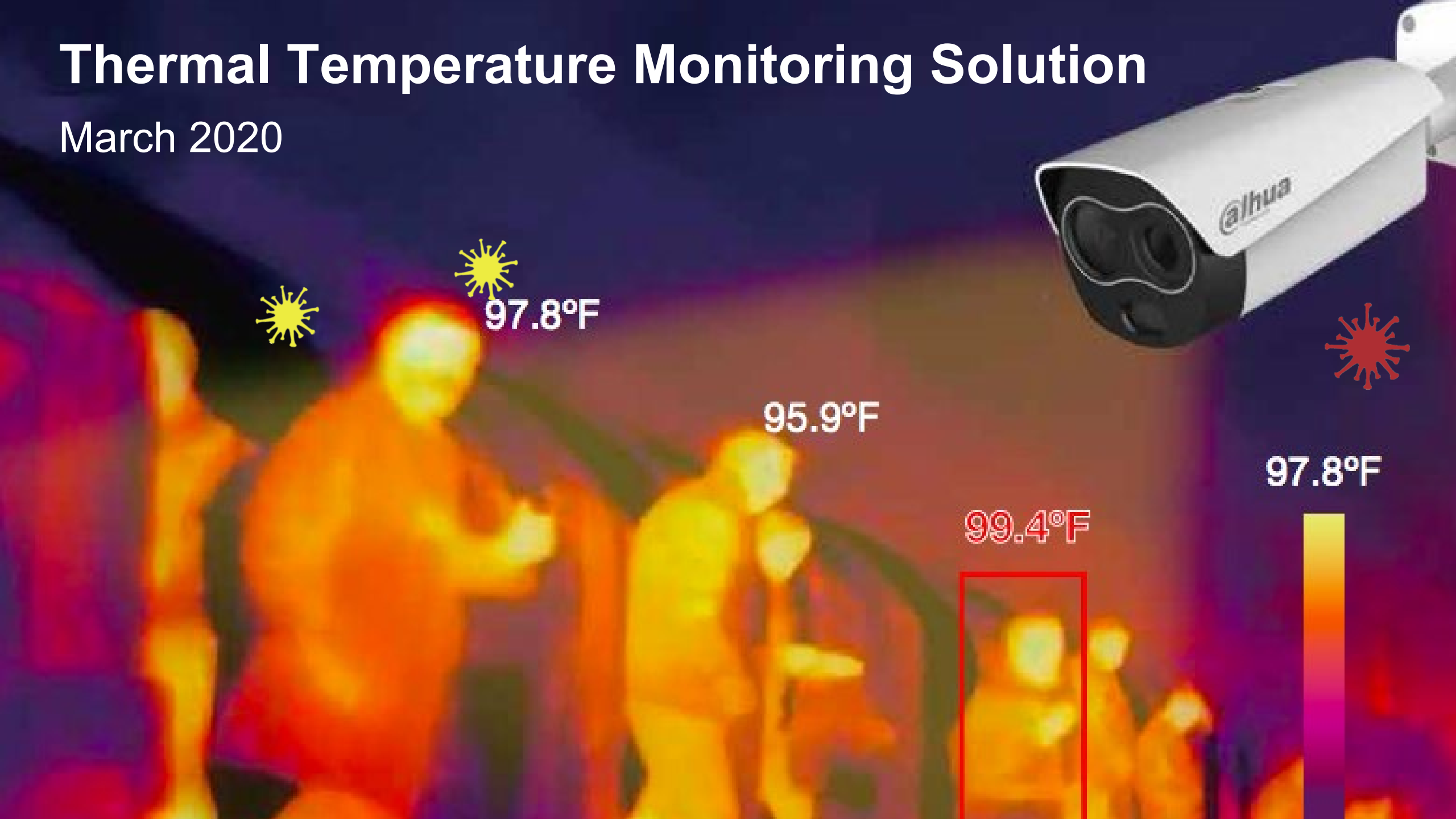
# COVID-19 Symptoms

- Fever
- Cough
- Upper Respiratory Problems



## Stop the Spread

Airport passengers are screened with hand-held thermometers to look for individuals who may have the virus.

Hand-held thermometers can be unreliable due to skin temperature being colder than internal body temperature.

## Current Challenges

- Handheld solutions require the operator to be in close proximity of the subject, violating safe distance recommendations

- Manual recording is inefficient

- Personnel information collection is difficult

- Low efficiency of thermometer and infrared detection gun

- Manual temperature measurement workload, high risk

- Risk of cross contamination

## A Faster Alternative….

# Thermal Temperature Monitoring Solution

- Thermal imaging technology was also used during the SARS outbreak, which also saw high fevers.

- **Non-contact** automatic temperature monitoring. Operators do not have to be near people being screened for **higher social distancing**.

- **Accurate**, **multi-person monitoring**. A **faster**, **more sanitary way** to identify a person in a large group with an elevated temperature.

- **Records abnormal temperature** information automatically.

- Captures person's identity automatically with **facial recognition** system feature.

# Thermal Dual-lens

Detects the heat from multiple places on the body.

- **300x400 VOx** uncooled thermal sensor technology
- Athermalized Lens (thermal camera), Focus-free
- Visible: 1/2.8" 2MP progressive scan Sony CMOS
- Dual-lens:
  - Thermal 13mm / Visible 8mm
- Support Motion Detection, Color Palettes
- Support measure body temperature
- High Accuracy: Max (±0.3°C, with black-body/ ±1℃, without blackbody)
- Built-in 2/2 alarm in/out
- SD Card Slot up to 256GB
- IP67

**DH-TPC-BF5421-T**
**MSRP: $13,799.99**

H.265  PoE  IP67  WDR 120dB  SD Slot  ICR D/N

Visible Lens →

Thermal Lens

IR Light →    ← LED Light

# Reference Temperature Module

This unit provides a constant stable and accurate temperature surface for continuous calibration of the sensor. It can only be used with one thermal camera.

- Working Temperature: 40ºC (environment temperature: +5.0ºC - 50ºC)

- Temperature Resolution: 0.1ºC

- Temperature accuracy: ±0.2℃（Single point）

- Temperature stability: ±( 0.1~0.2 )℃/30min

- Effective emissivity: 0.97±0.02

- Power: 110V AC–220V AC

- Ambient temperature and humidity: 0~40℃/ ≤80%RH

**JQ-D70Z**
**MSRP: $6001.99**
**Blackbody**

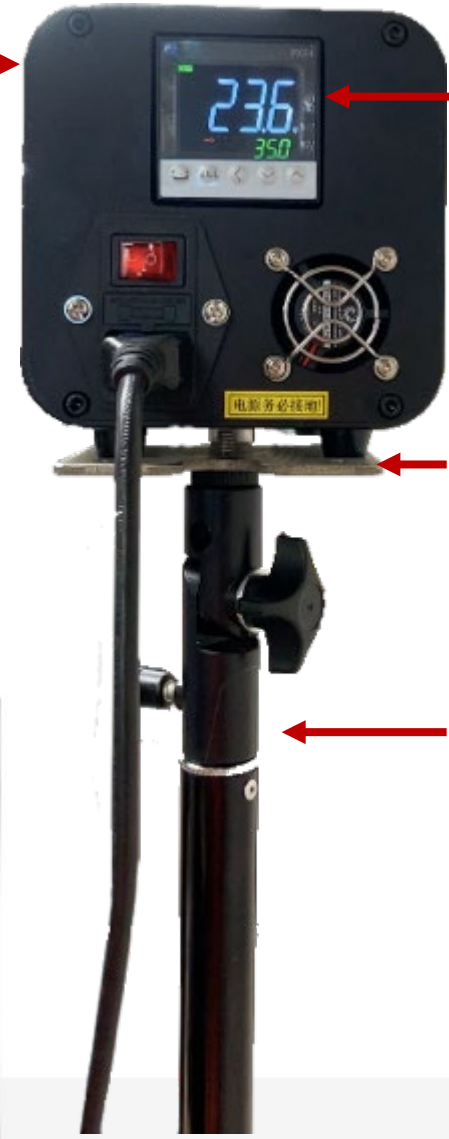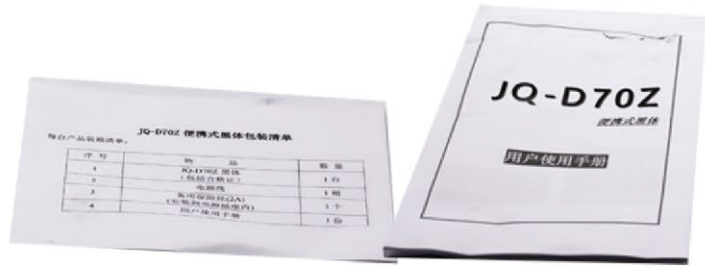# Tripod / Plate Installation

**Thermal Camera:** detects heat

**Blackbody:** provides the thermal camera a temperature reference to compare with a human's body temperature

*Requires calibration prior to use*
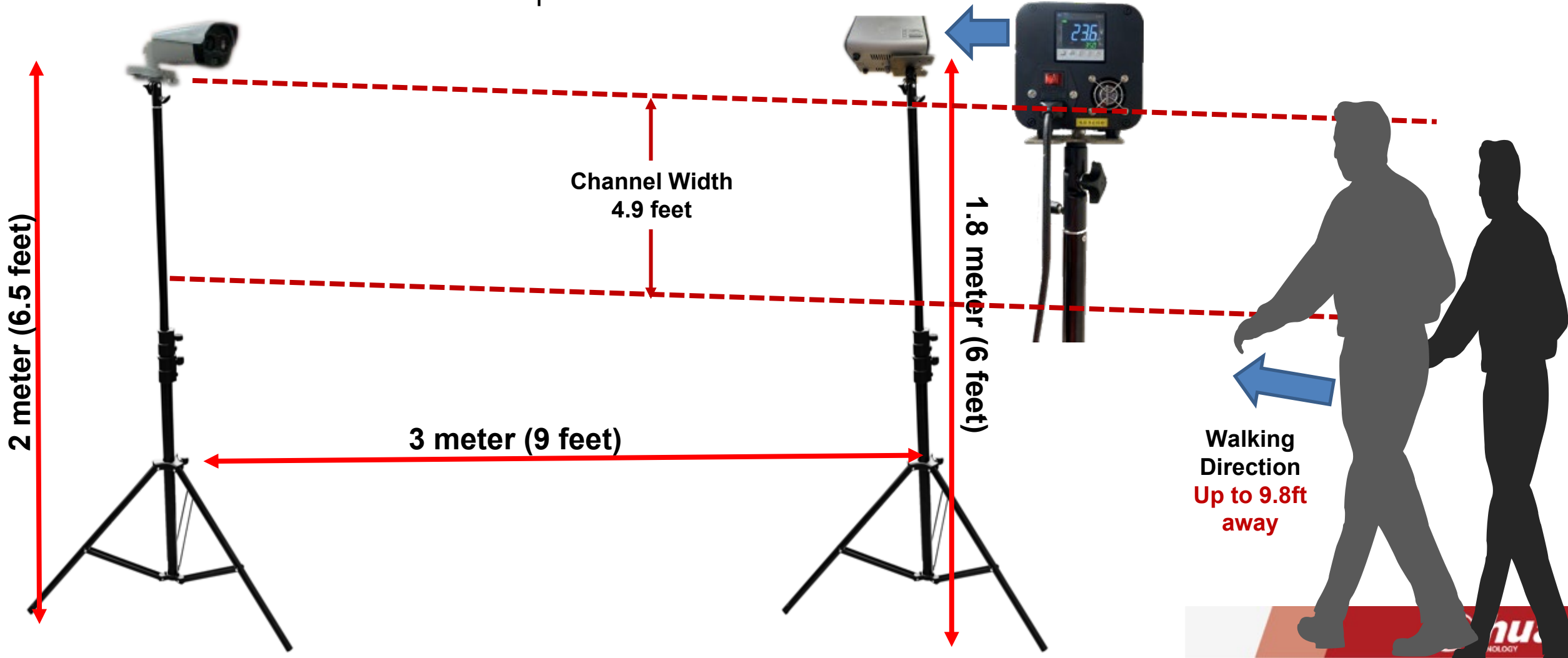
**JQ-D70Z**

Blackbody

**Temperature Measuring**

**Connector Plate** RQW026-00
**Sold separate**

**Tripod** VCT-999
**Sold separate**

**Or any standard tripod**

# Tripod Setup

| Distance between camera and blackbody | Distance between the human forehead and the camera | Channel Width |
|:---:|:---:|:---:|
| 9.8ft (3m) | 9.8ft (3m) | 4.9ft (1.5m) |

- System components are portable for easy relocation if the system needs to be moved.
- Monitors multiple people from a distance of 9.8 feet away and 4.9 feet wide.
- Enables a fast assessment without personal contact.



**Channel Width 4.9 feet**

**2 meter (6.5 feet)**

**1.8 meter (6 feet)**

**3 meter (9 feet)**

**Walking Direction**
**Up to 9.8ft away**

# 16-Channel 1U 16PoE AI Network Video Recorder

- Industry embedded micro-controller

- 320Mbps (160Mbps when AI function enabled)

- 16-channel IP video access

- Up to 16-channel perimeter protection

- Up to 4-channel face recognition with normal IPC or visible light stream from dual head thermal camera

- 1-8 PoE Ports support ePoE & EoC

- Up to 20 face databases with 100,000 face pictures in total

- 1 HDMI / 1 VGA video output

- Alarm output capability allows for external system to alarm when over-temp is detected

ePoE

**DHI-NVR5216-16P-I 4TB**
**MSRP: $1499.99**

| FACE Recognition | FACE Capture | Human Capture | ANPR | Meta Data | Image Search | Blk List Alarm | People Counting | False Alarm |

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**DHI-NVR5216-16P-I**

# Full Solution Components

## Temperature Measurement

**New**

JQ-D70Z
MSRP: $6001.99
Includes PSU cable

**New**

DH-TPC-BF5421-T
MSRP: $13,799.99
PSU sold separate

## Accessories

Camera Power Supply
DH-PFM320D-US: DC12V 2A
MSRP: $21.99
Or
DH-PFM321D-US: DC12V1A
MSRP: $15.99

**New**

1x Tripod
VCT-999
MSRP: $241.99
*2 units required*

**New**

1x Connector
RQW026-00
MSRP: $109.99
*2 units required*

A set of temperature measuring devices require two tripods and two connectors, one for the camera and one for the Blackbody device.

## Storage

**New**

DHI-NVR5216-16P-I 4TB
MSRP: $1499.99
ePoE

Switch (optional)
DH-LR2110-8ET-120
MSRP: $301.99

## Display

DHL43-F600 (optional)
MSRP: $631.99

### $22,021 MSRP
*does not include switch or display

# ROI **3x's** Faster vs Manual Readings

## Manual Temperature Monitoring with Forehead Thermometer
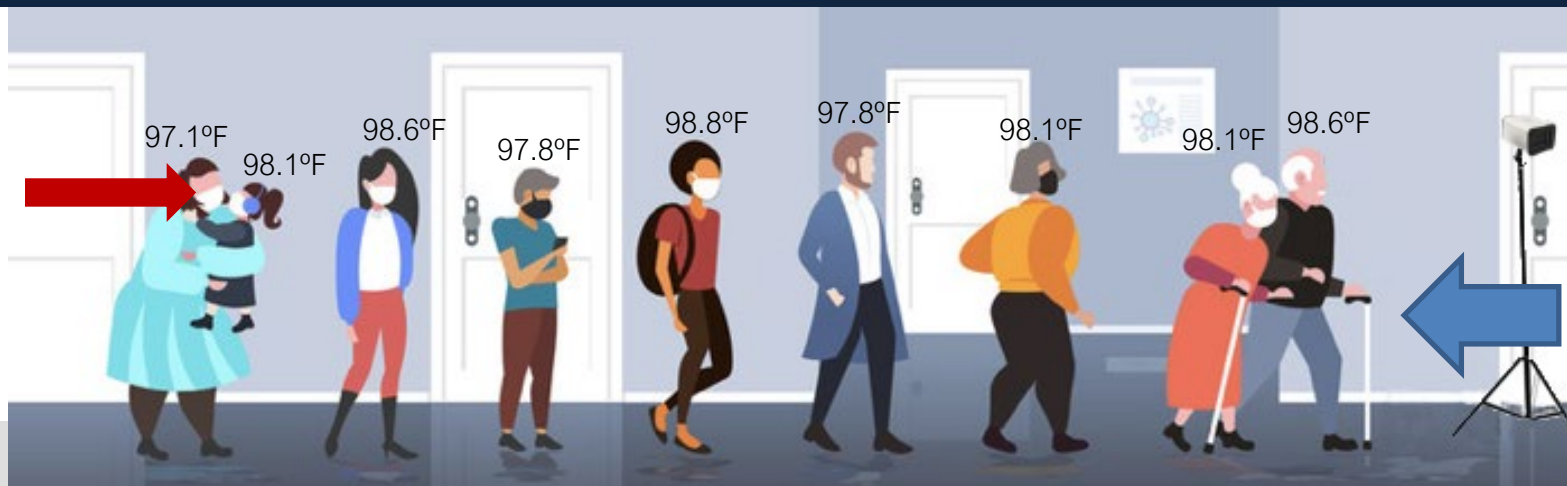


- Long lines increase risk for contamination and less social distancing.

Minimum of **3 seconds per person** to measure.

5,000 people = 4.2 hours

## Dahua Temperature Monitoring with Forehead Thermometer



Ability to detect an accurate temperature even when masks are worn.
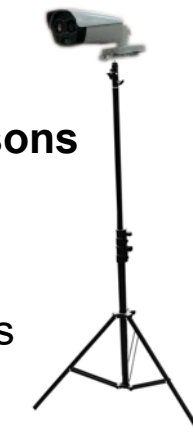
97.1ºF
98.1ºF
98.6ºF
97.8ºF
98.8ºF
97.8ºF
98.1ºF
98.1ºF
98.6ºF

**Measures 3 persons per second**

5,000 people = 30 minutes

Higher accuracy of ±0.3℃

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# ROI 3x's Faster vs Manual Readings

**Thermal Solution Benefits**

## Enhanced Safety

- Reduced risk of cross-infection

## High Efficiency

- Non - contact temperature detection, quick screening
- Long distance, wide coverage and multi – person detection

## Low Cost

- Automatic early warning mechanism, saving manpower

## Dating Back

- Realize the historical data backtracking, data analysis combined with the platform

| *Scenario: Take 5,000 people's temperature* | **Manual Thermometer** | **Thermal Camera Solution** |
|---|---|---|
| **Temperature Solution**: 1x Camera 1x NVR 1x Blackbody 2x Tripod Plates 2x Tripods | N/A | ~$22,021 MSRP |
| Monitor | N/A | $632 |
| Hand-held Thermometer | ~$1.00 per day (pro rated) | N/A |
| Installation | N/A | $100 |
| Human Temperature Taker Hourly Wage | ~5 hours x $15 = $75 | N/A |
| Workers Protective Gear | ~$2 per day (mask/ gown/ gloves) | N/A |
| Total per day over 1 yr: | $78 | $62 |
| Total per year: | $28,470 per year | **$22,753 (1x investment)** |

# System Flexibility

## Off Season

- Blackbody can be stored during the off season so the thermal camera and NVR can be used for standard surveillance.

- **ePoE** Solution for **long distance transmission** and the ability to **deploy over coaxial cable**.

| Virus/Disease | Outbreak Year |
|---------------|---------------|
| SARS | 2004 |
| AVIAN | 2008 |
| SWINE | 2010 |
| MERS | 2012 |
| EBOLA | 2014 |
| ZIKA | 2016 |
| EBOLA | 2018 |
| COVID-19 | 2020 |