Wireless Identification & Sensor solutions for Building Industry

RFID and wireless sensors optimize construction with real-time data to determine the location of materials and tools. They also enable long-term identification and sensory monitoring of critical components, thus enabling predictive maintenance and increasing efficiency and transparency on construction sites.

Application information

RF technology key benefits
Wireless ID & sensors for Construction
Electronic tags & sensors for Buildings
Wireless ID & sensors for Infrastructure

Key benefits

1. Real-Time Monitoring

Continuous, real-time data on various parameters like temperature, humidity, and structural health

2. Cost Efficiency

Reduction of manual inspections and maintenance, lowering operational costs and extending the life of infrastructure

3. Enhanced Safety

Detection of early signs of wear and tear, structural weaknesses or environmental hazards

4. Improved Decision-Making

Access to detailed and timely data allowing to optimize processes and resource allocation

5. Scalability and Flexibility

Easy installation and scale up, flexibility to adapt to modern construction projects

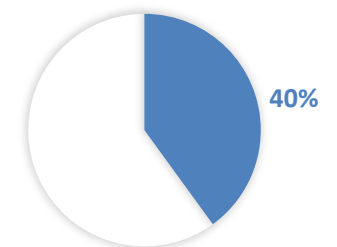**90 % REDUCED INSTALLATION EFFORT DUE TO WIRELESS SIGNAL TRANSMISSION**

10%
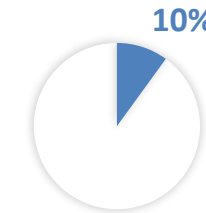
Extreme robustness due to none line of sight readout and robust packaging

REDUCED machine DOWN TIME

60 % REDUCED MAINTENANCE COST

40%

Wireless ID & sensors for Construction

RFID and sensors play an important role in the modern construction industry. RFID tags enable precise tracking of materials and equipment on construction sites, which optimizes the logistics process. Integrated sensors continuously monitor parameters such as temperature, humidity or structural integrity during construction process and the later building lifetime.

Combined, they provide an efficient way for quality control, maintenance planning, and early detection of potential problems, resulting in cost-saving and safe construction projects.

Identification of components or probes
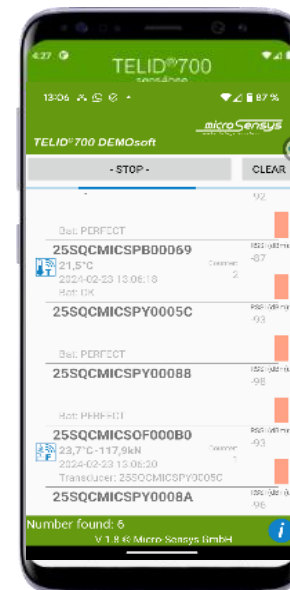
- Identify building components along logistic process

- Identify probes of concrete or other materials using electronic tags

- provide extended material information embedded in or attached to the object – with extreme robustness

- Improve the process quality by unique identification and improved traceability using standard smart devices

Monitoring of construction processes

- Integration of wireless sensors during construction process

- Monitoring of process quality and increased clearance

- Integrate battery-powered sensors for monitoring of composite processes

- Use fixed gateways for permanent data provision

Monitoring of construction processes

- Integration of wireless sensors during construction process

- Monitoring of process quality and increased clearance

- Integrate battery-less sensors for temperature, moisture and structural health sensing

- Use standard smart mobile devices or equipment fixed readers for data capture

Electronic tags & sensors for Buildings

Building Information Modeling (BIM) enables the digital planning and management of buildings. In combination with sensors integrated into buildings, real-time data on factors such as temperature, humidity or structural health can be collected. This data improves building management, optimises energy use and enables early fault detection and rectification.

RFID is the perfect technology to realize invisible, long-lasting identification and batteryless, integrated material health monitoring of components.

Building component logistics and material health monitoring

- Identify building components invisible and long life according to BIM

- Improve the logistic process during construction time

- Integrate battery-less sensors for humidity, moisture and structural health sensing

- Improve the maintenance process quality using
- standard smart mobile devices
- Fixed gateways supporting automated material flow control

Tracking of moving construction equipment

- Identify building components or moving equipment tools

- Integrate or fasten electronic tags containing ISO/GS1 compliant serial numbers according to GIAI or SGTIN encoding schemes

- Improve the process quality by unique identification and improved traceability using

- standard smart mobile devices

- Fixed gateways supporting automated material flow control

Wireless ID & sensors for Infrastructure

RFID (Radio Frequency Identification) is increasingly being used to identify and monitor infrastructure.
By attaching RFID tags to important components, they can be robustly clearly identified. This allows for accurate inventory, easy maintenance planning, and faster repairs. In combination with sensors, the service life of infrastructure can be extended by detecting problems such as wear and tear or damage at an early stage and taking timely action based on this.

Observing of screw connections

- Improve the safeness of trails with monitoring of fixation of screws

- Long term monitoring of screw connections for **rails, rail switches and sound barrier walls** based on passive RFID sensor transponders TELID® 260

- Intelligent nut allows preload forces on screw connections to be measured contactless and in real time without changing the connection in any way

Sensor readout

Monitoring of vibration and material structure

Crack

- On demand measurement or permanent monitoring of moisture, vibration or cracks using sensor beacons

- Long term monitoring for predictive maintenance support

- Instant LTE data transmission using iID® gateway

- iID®cloud based data collection and evaluation

Monitoring of construction vibration
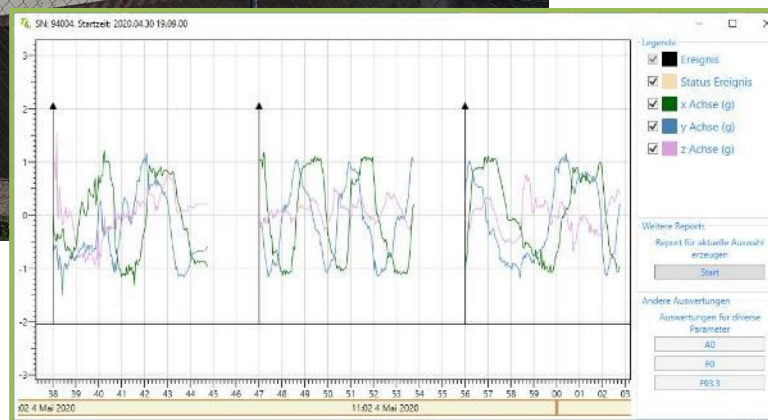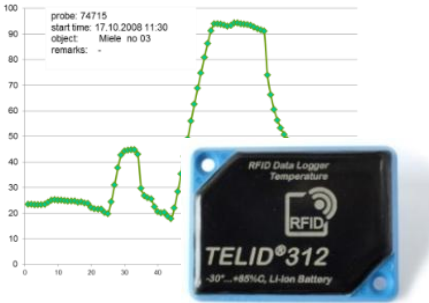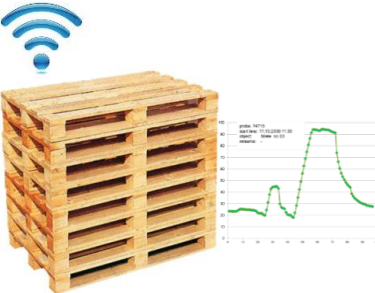
- Implement on demand vibration monitoring for critical tracks

- Improve the safeness of trails and noise protection barriers

- Install vibration sensor data loggers for independent vibration measurement

- Read out sensors in place after a period

Technicals

Transponder and sensor classification
System setups (may vary depending on environmental requirements and RF technology)

iID® TAG and TELID® sensor classification

	iID®contactless RFID-Transponder	Passive TELID®200 and TELID®400 RFID-Sensor-TAGs	Semi-Passive TELID®300 and TELID®500 Datalogger	Active radio - TELID®700 beacons
Function	identification, Data storage	identification, data storage, sensing	identification, data storage, sensor monitoring	identification, sensing
Technology	HF, UHF	HF, NFC, UHF	HF, UHF	BLE
Operation	battery less	battery less, sensor measurement while scanning	battery assisted, continuous or event-based measurement	battery support for sensor measurement and data transmission
Properties	maintenance free	maintenance free, short range or medium range	long life, battery assisted measurement, short range passive data transmission	medium lifetime, long range communication
Example				

Mobile data capture
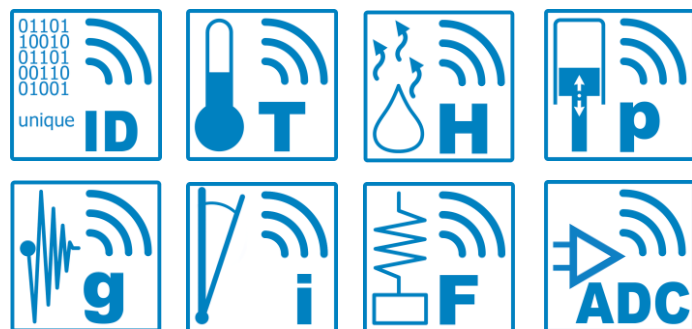
Requirements:
- TELID®7 DEMOsoft
- Smartphone

Features:
- Supporting TELID®7 simple sensors data capture
- Free download
- Visualization as table and graph
- TELID configuration free of charge
- Cloud connection optional

Local data logging

Optional sftp
file upload

TELID®sensor
protocol

WiFi
connection

TELID®710
TELID®714
TELID®714.3Temp
TELID®730
TELID®740
TELID®760.pos
TELID®780.i
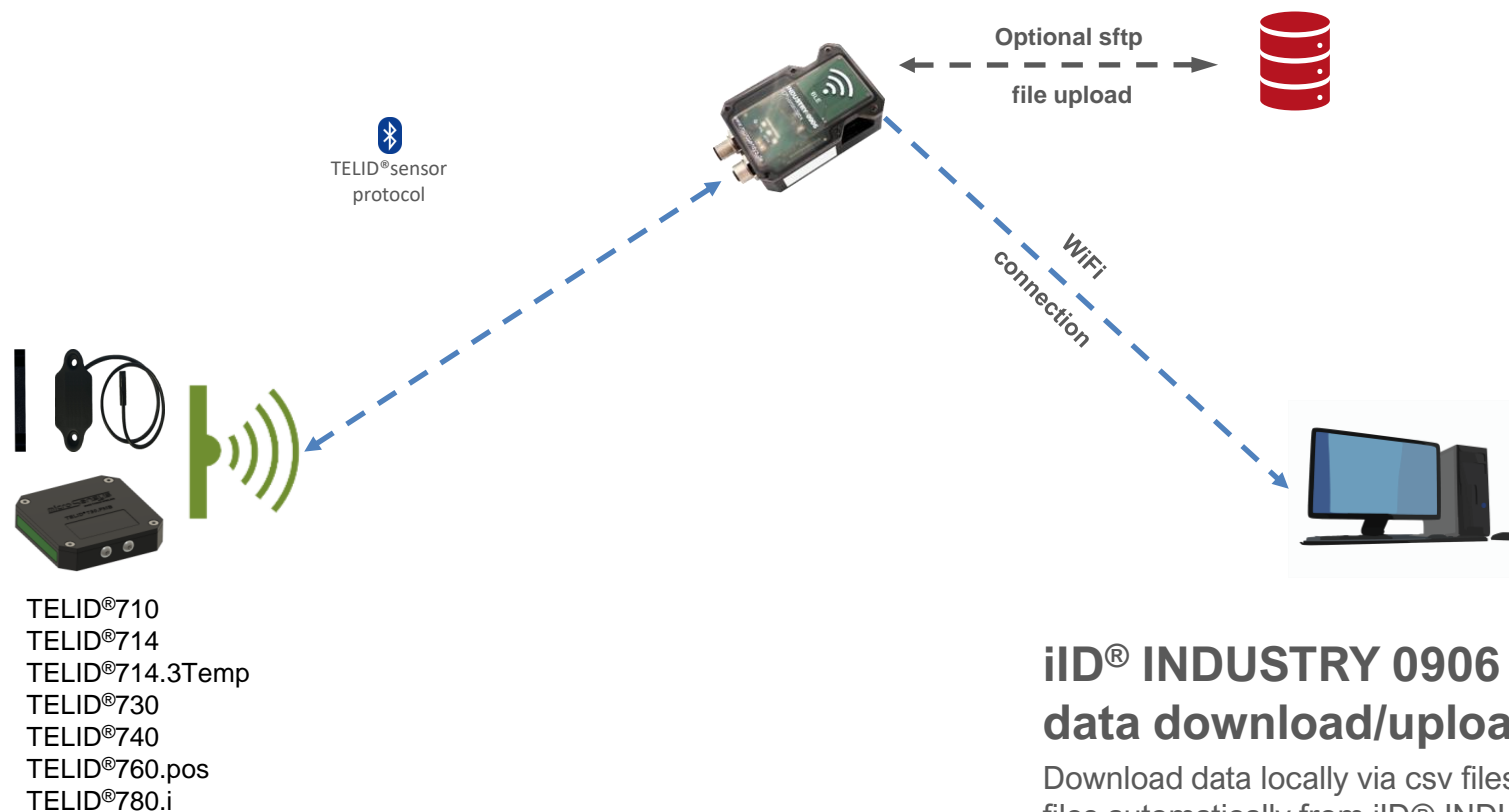
**iID® INDUSTRY 0906 BLE
data download/upload**

Download data locally via csv files, upload
files automatically from iID® INDUSTRY
0906 BLE via sftp (*on demand)

Requirements:
- iID® INDUSTRY 0906 BLE

Features:
- Supporting TELID®7
  simple sensors data
  collection
- TELID® 7 OS integrated
  into iID® INDUSTRY 0906
  BLE
- iID® INDUSTRY integrated
  website for sensor
  configuration, sensor
  status control, sensor Csv
  data download

Online data transfer
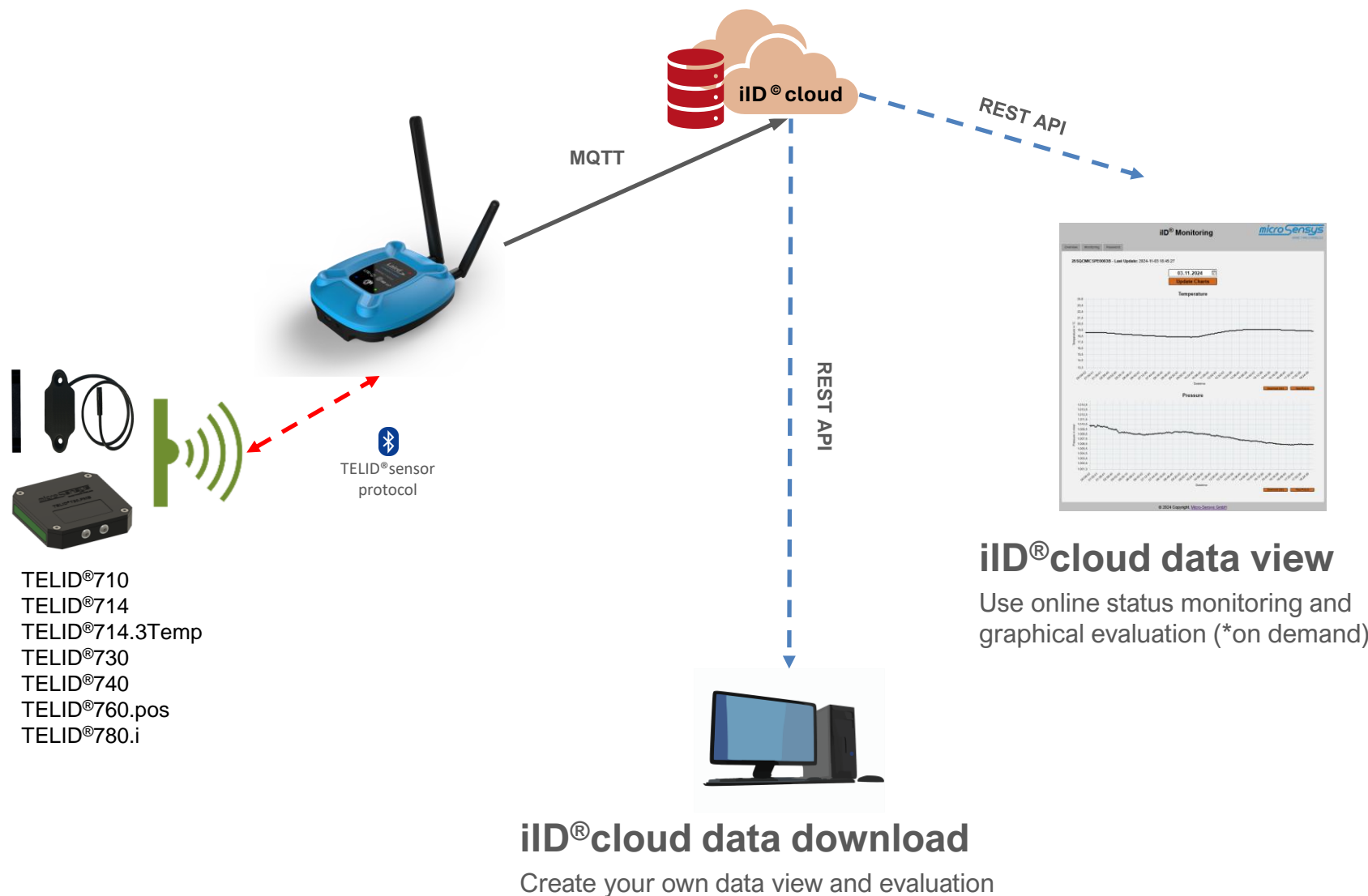
iID®cloud data view

Use online status monitoring and graphical evaluation (*on demand)

iID®cloud data download

Create your own data view and evaluation

TELID®710
TELID®714
TELID®714.3Temp
TELID®730
TELID®740
TELID®760.pos
TELID®780.i

Requirements:
- iID® INDUSTRY 0906 BLE

Features:
- Supporting TELID®7 simple sensors data collection
- TELID® 7 OS integrated into iID® INDUSTRY 0906 BLE
- iID® INDUSTRY integrated website for sensor configuration, sensor status control, sensor Csv data download

Ordering information

Passive sensor transponders

Active sensor beacons

Reader & gateways

RFID transponders (not included in this presentation)

Please as for bundles and starter kits for easy evaluation and integration!

TELID®400 batteryless sensors

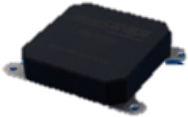| TELID® Type	Picture	Product code	Technicals	Remarks
TELID®412.Q72 Passive RFID Temperature Sensor TAG		**16.412.303.00**	Design Q72, dimension: 70x18x4mm Temperature range: -30°C...+65°C	For medium temperature application, moving objects, short measurement time
TELID®412.03 Passive RFID Temperature Sensor TAG		**16.412.303.03**	Design Q72, dimension: 70x18x4mm Temperature range: -40°C...+150°C	For high temperature application, measurement time up to 500 msec
TELID®454.moisture-pin95 Passive RFID moisture sensor TAG		**15.454.303.00**		
TELID®432.Q10100 Humidity Sensor TAG		**-**	Design Q10100, dimension: 10x100x3mm humidity: 0 ... 100% RH, Working temperature: -25°C...+85°C	On inquiry depending on chip availability

Readout devices and gateways – TELID®400

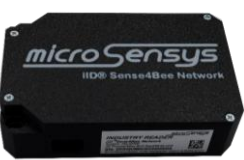| Type	Picture	Product Code	Technicals	Application Field / Remarks
iID® INDUSTRY 0906 UHF – Ethernet or PCAN		**57.23.060.00**	Temperature range: -25°C…+60°C robust, compact form factor industry reader Dimension: 96mm x 66mm x 30mm Sealing: IP67 Interfaces: BLE, Ethernet RJ45 or PCAN, WiFi optional	Supporting TELID®400 series stationary scan or equipment mounting (external antenna required)
iID® POCKETwork UHF midRange		**41.22.820.00 (EU)**		Supporting TELID®400 series mobile measurement and data collection

TELID®700 sensor beacons

TELID® Type	Picture	Product code	Technicals	Remarks
TELID®710-D30P Active Sensor beacon – Temperature		-	Temperature range: -25°C... +60°C Housing: D30 x 15 mm, IP68, PPSU	
TELID®730-D30P Active Sensor beacon – Temperature + Humidity		-	Housing: D30 x 15 mm, IP68, PPSU Humidity: 0 … 100% RH, Working temperature: -25°C…+85°C	
TELID®740-D30P Active Sensor beacon – Temperature + Pressure		-	Temperature range: -25°C... +60°C Housing: D30 x 15 mm, IP68, PPSU Pressure: 0 … 3 bar, Working temperature: -25°C…+85°C	
TELID®714.3-Q3062 Active Sensor beacon – 3 Temperature sensors		-	Housing Q3062P, dimension: 30x62x8.5mm Working temperature: -25°C…+85°C	

TELID®700 sensor beacons

TELID® Type	Picture	Product code	Technicals	Remarks
TELID®780.i-Q7070MP Active Sensor beacon – Inclination		-	Housing: 70x70x15 mm, metal + plastic Sensors: inclination sensor Resolution 0.02°, accuracy +/- 0.2° Working temperature: 0°C … +65°C Integrated battery CR2450, factory replaceable	For inclination measurement of static objects
TELID®760.pos-Q7070MP Active Sensor beacon – Position		-	Housing: 70x70x15 mm, metal + plastic Sensors: linear potentiometer working range: 0..25mm, Resolution 0.2mm Working temperature: 0°C … +65°C Integrated battery CR2450, factory replaceable	For monitoring of short distance object movements
TELID®780.stream-Q3088P Active Sensor beacon – Acceleration		-	Temperature range: -25°C... +60°C Housing: 30x88x8.5mm, PA sensors: 3 axis acceleration, 0..2/2/8g Max sampling frequency: 1600Hz Working temperature: 0°C … +65°C	For snapshot vibration measurements of static objects

Readout devices and gateways - TELID®700

Type	Picture	Product Code	Technicals	Application Field / Remarks
iID® INDUSTRY BLE 0906 – Ethernet or PCAN		**57.23.060.00**	Temperature range: -25°C...+60°C robust, compact form factor industry reader Dimension: 96mm x 66mm x 30mm Sealing: IP67 Interfaces: BLE, Ethernet RJ45 or PCAN, WiFi optional	Supporting: TELID®710/714, TELID®730, TELID®740, TELID®760 TELID®780.activity
iID® gateway Ezurio MG-100		**A5.560.000.01**	Temperature Range: -25°C...+60°C compact form factor LTE-M gateway Dimension: 110.28 mm x 99.16 mm x 35.32 mm Sealing: IP44, optional IP64 Interfaces: BLE, LTE-M/NB-IoT	Supporting: TELID®710/714, TELID®730, TELID®740, TELID®760 TELID®780.activity
iID® INDUSTRY BLE 0906-E Customized				Supporting: TELID®700.stream steaming sensors for vibration and noise

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