Automating Reefer Monitoring in Terminals

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Agenda

• Introduction & Agenda
• Monitoring Process on Terminals Today
• Benefits of an Automated Monitoring Solution
• How can Emerson support your monitoring needs
• Q&A
  – Please submit questions in the chat box in the lower right of your screen

Lets Get Started!
Monitoring Process on Terminals Today
“Manual monitoring of reefer is our only option”

Managing a mixture of interfaces to get information

- ISO 10368 standard only covers ≈20% of the global reefer fleet

- No local monitoring standards for built in cellular modems

- Time consuming manual monitoring only viable option for sites to insure their responsibilities for the assets and its cargo

- Once/Twice daily rounds; cargo risk exposure should critical alarm occur between monitoring rounds
Benefits of an Automated Monitoring Solution

Crew:
• Focus on exception handling with improved reaction time on alarms
• Less movement around the terminal lowering, risk of accidents, and exposure to harsh weather conditions

Terminal Management:
• Improve efficiency of the team
• Removing cargo claims where alarms were overlooked
• Offering premium service to shippers and offer sharing of reefer data

Customer:
• Confidence & security that the asset and cargo is reliably monitored 24/7
How can Emerson support your monitoring needs

Original Powerline ISO10368 monitoring solution
• No terminal solution for full site coverage

Stable and Proven Reefer Monitoring Solution
How can Emerson support your monitoring needs

**REFCON Portable Modem enabling full site coverage**
- Modem stays onsite and connects to the any reefer directly
- REFCON Wireless Hub added to stacks for automatic monitoring 24/7
- REFCON Mobile used to shorten monitoring time in areas not covered by Hubs

Flexible Monitoring Solution with Full Site Coverage
REFCON Portable Modem

- Connects to all reefers in the market
- No battery
- Small and light weight
- Designed for direct connection to reefer or installed on stack
- Wireless range up to 100 meters
- Newest Bluetooth Low Energy 5 wireless technology
REFCON Wireless Hub

- Collecting data continuously
- One Wireless Hub per stack
- Wireless range up to 100 meters
- External Bluetooth antenna
- Connecting up to 300 devices per Wireless Hub
- Connects to existing TCP/IP infrastructure
REFCON Mobile

- Collecting current data during reefer inspections
- Range pending hardware (approx. 30 to 50 meters)
- Easy to use interface
- View collected data and alarms
- Enter data manually (RDC+)
- View all nearby reefers
- Export data to REFCON through USB connection
# Installation Options and Accessories

<table>
<thead>
<tr>
<th>Magnet</th>
<th>Wall bracket</th>
<th>Breakaway Clip</th>
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</thead>
<tbody>
<tr>
<td>Fixing modem between use or when extension cables are needed</td>
<td>Installing modem on stack with extension cable to reefer</td>
<td>Used together with spiral wire for optimal usability</td>
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<tr>
<th>Dust cover</th>
<th>Cables</th>
<th>Spiral Wire</th>
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<tr>
<td>Ensuring IP66 when Modem is not connected</td>
<td>Convertor and Extension cables for connectivity in any situation</td>
<td>Connecting stack and modem minimizing loss of modems</td>
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Bluetooth Interface & Security

Header

Data
- Device ID
- Container ID
- Supply Air
- Return Air
- Setpoint
- O2
- CO2
- USDA
- Alarms
- Mode

Connection

Command*
- Set Mode
- Set Temp.
- Set O2
- Reset alarm
- SW update

*Supported by Wireless Hub

Encryption

Private

Public

Key Vault

- PIN protected connection with PIN hidden in app.
- Protection when connected using std. Bluetooth 5 communication security.
- All commands protected by public/private keys

REFCON Portable Modem

PIN protected connection
- Protection when connected using std. Bluetooth 5 communication security.
- All commands protected by public/private keys
Advantage by Using REFON Portable Modem

**Improve cargo quality**
Alerts you of problems before potential cargo damage

**Improve documentation**
Records reefer container data and generated reports automatically

**Reduce Operational cost**
Optimizing operational productivity with reduced manual labor and maintenance due to battery less design

**Reduce human errors**
Verifies planning parameters and alerts you of mismatch

**Improve personnel safety**
Minimize time spent in reefer areas or bays
Global Contact Persons

For more information and pricing please contact your regional sales representative

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Thank You for Your Attention