The alarm-specific pop-up notification will be shown in the following sections. Depending on the severity and the expected operator reaction, some alarms can be acknowledged.

5.4.1   Active Alarm list

Touch **OK** on the MFD to acknowledge the alarm; this hides the alarm and stops the sound, but it will be kept in the Active Alarms List until its condition(s) are not filled anymore. Each specific alarm will be shown in the following sections.
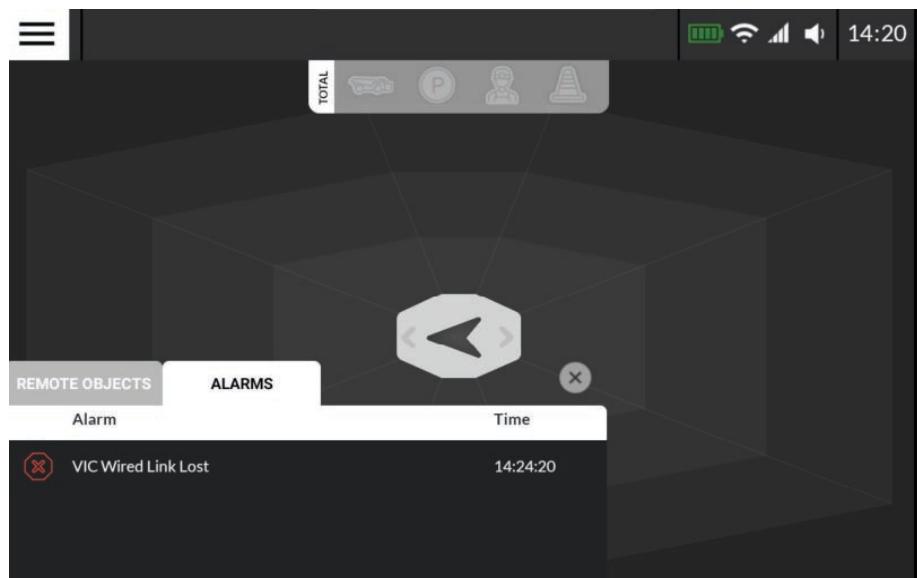
5.4.2   Alarm Icons Header

Press the check mark button on the Newtrax Vehicle Device (NVD) to hide the alarm and stop the sound, but it will be available on the Multi-Function Display (MFD) in the Alarm Icons Header until its condition(s) are not filled anymore. Each specific alarm will be shown in the following sections. Refer to the image below for an example.
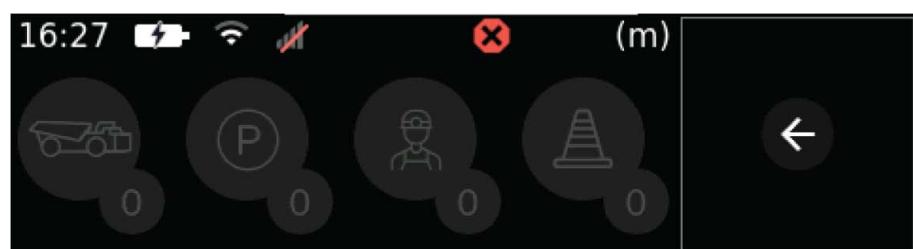
5.4.3   Distress Alarm

| ⚠ **WARNING** |
|---|
| **RISK OF COLLISION!**

Proper reception of distress alarms is required to be aware of distress situations and to avoid collisions that could lead to death or severe injury.

Distress alarm notifications can only be received by devices that are within the range of MineProx® technology and if the MineProx® antenna is in working condition. |

Personnel in the mine, in a dangerous situation, can trigger a Distress alarm on their MineProx®-enabled cap lamps. For example, on the L3Z, it is triggered by pressing the 2 lateral buttons on the lamp assembly. The alarm will be sent instantly over MineProx®, and the main light of the Cap Lamp will start to blink.

It can also be triggered by an operator by holding the check mark button on the Newtrax Vehicle Device (NVD), then a **distress** message will appear in the Alarm Icons Header of the NVD. To disable it, hold the check mark button, and the **distress** message will be cleared.

Note!   *The NVD Distress feature must be enabled in the configuration.*

Note!   *This feature is not supported on the MFD.*
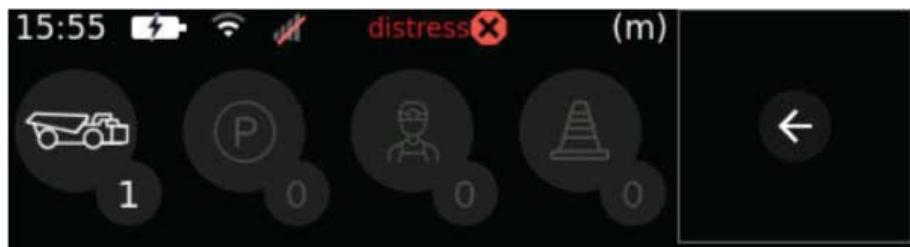
When Distress is triggered by a Remote Object, the MFD will display a **Distress** notification, and an audio alert is played every 2 seconds interval if the notification is not acknowledged or as long as the problem is not addressed.
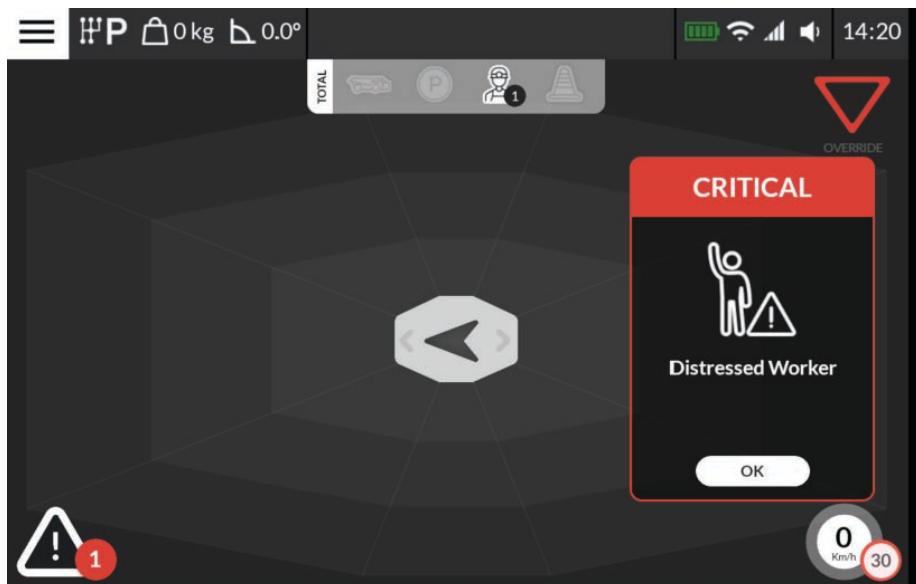
On the NVD, there will be an overlay in front of the MineProx® assets screen, and a repeated audio alert will be played.
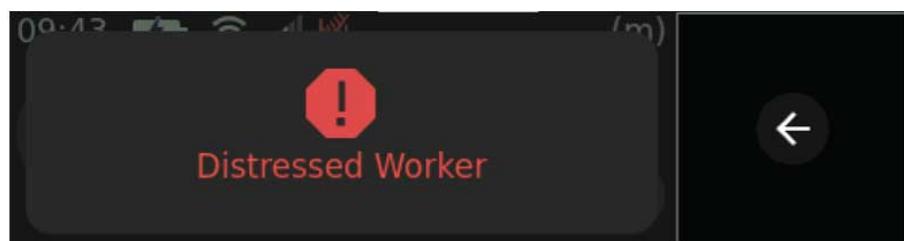
When acknowledged on the tablet, the notification disappears, the sound stops, and the event is stored on the MFDs Active Alarms List. On the NVD, the notification is silenced for 1 minute, after which it will restart.

A signal is sent over MineHop® to the surface when in range of a MineHop® node via the Newtrax monitoring application.

Note!   *MineHop® messaging requires separate hardware and licensing to be functional.*

For more information on the Distress function of the NPD or the NVD, refer to the corresponding Operation manual.

5.4.4 Fallen Worker Alarm

⚠ WARNING	
⚠	**RISK OF COLLISION!**
	Proper reception of fallen worker alarms is required to be aware of distress situations and to avoid collisions that could lead to death or severe injury.
	Fallen worker alarm notifications can only be received by devices that are within the range of MineProx® technology and if the MineProx® antenna is in working condition.

The fall detection is activated when the Personal Device is ON and remains immobile for more than 90 seconds. An alert will be visible on NVDs and/or their MFD if it is in the MineProx® range, and the alert can be sent to the surface server via MineHop® (to alert the Safety team).

After 60 seconds of inactivity, the lamp begins to blink to warn the bearer that a Fallen Worker notification is about to be triggered. Any movement of the cap lamp while it is blinking will reset the detection timer and the lamp stops blinking.

After 90 seconds of inactivity, the lamp continues to blink and starts broadcasting a Fallen Worker Alarm signal to the vehicles equipped with a Newtrax Vehicle Device and in MineProx® range, triggering an alarm on the vehicle NVD. A signal is sent over MineHop® to the surface when in range of a MineHop® node, via the Newtrax monitoring application.
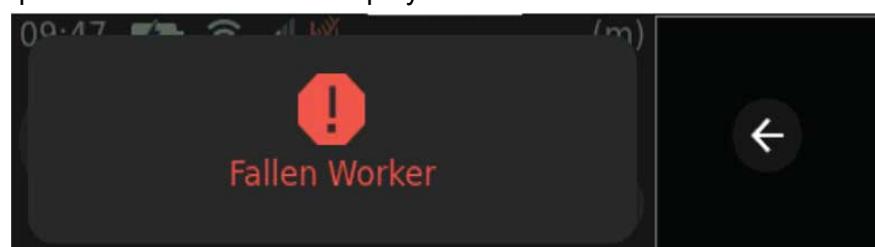
Note!   ***MineHop® messaging requires separate hardware and licensing to be functional.***

Once in this state, movement alone will not cancel the alarm; instead, the miner must cycle the lamp to an Off state to clear it (the same method as for clearing a Distress alarm).
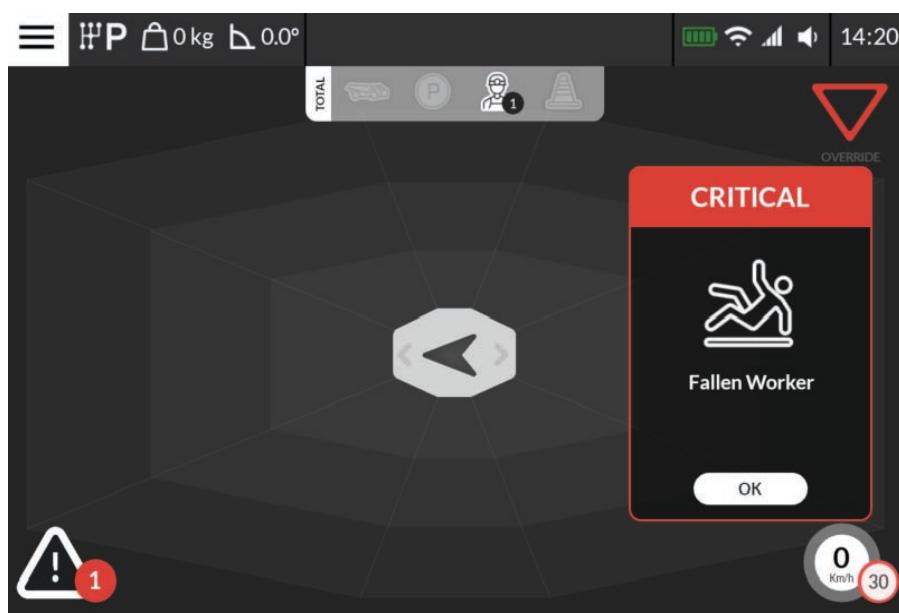
On the NVD, an overlay in front of the MineProx® ROs screen and a repeated audio alerts will be played.

When acknowledged on the tablet, the notification is reduced, the sound stops, and the event is stored on the MFDs Active Alarms List. On the NVD, the notification is silenced for 1 minute, after which it will restart.

For more information on the Fallen Worker function of the NPD, refer to NPD User Manual.

5.4.5 Vehicle Intervention Controller (VIC) Wired Link Lost

| ⚠ **WARNING**	
⚠	**RISK OF COLLISION!** **Failure to correct the malfunctions could lead to a collision that could result in death or severe injury. When the Vehicle Intervention Controller (VIC) link is lost, the Collision Avoidance System (CAS) will operate as a Collision Warning System (CWS).** **The operator must slow down or stop and must not rely on the system for Collision Warning or Collision Avoidance. Mine safety working procedures must be followed.**

Note!   *Only Newtrax approved personnel must restore the connection between NVD and VIC.*
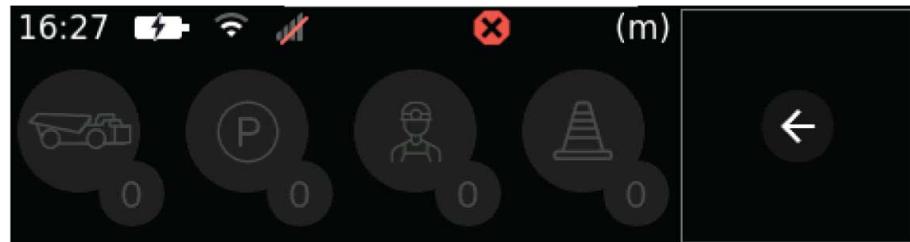
When the communication between the VIC and the NVD is broken, a **VIC Wired Link lost** notification and an audio alert will be played every 2 seconds interval if the notification is not acknowledged or as long as the problem is not addressed.
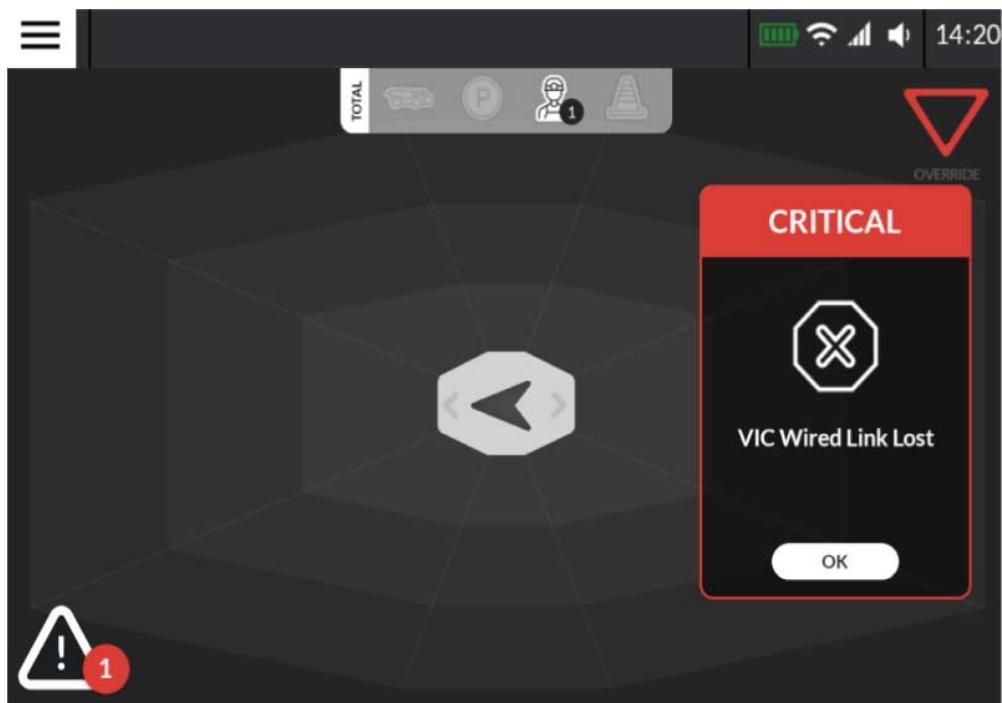
On the NVD, there will be an overlay in front of the MineProx® ROs screen, and a repeated audio alert will be emitted.
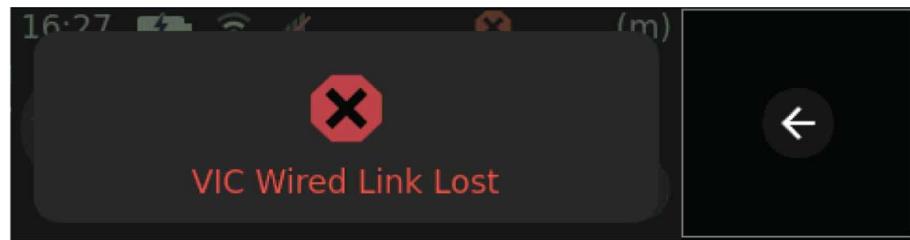
When acknowledged, the notification is reduced, the sound stops, and the event is stored on the Active Alarms List. On the NVD, it will remain on the UI as an **X** icon in the top bar.

If the VIC is used as Telemetry Input, the parameters previously provided disappear since the communication between the NVD and the VIC is broken.
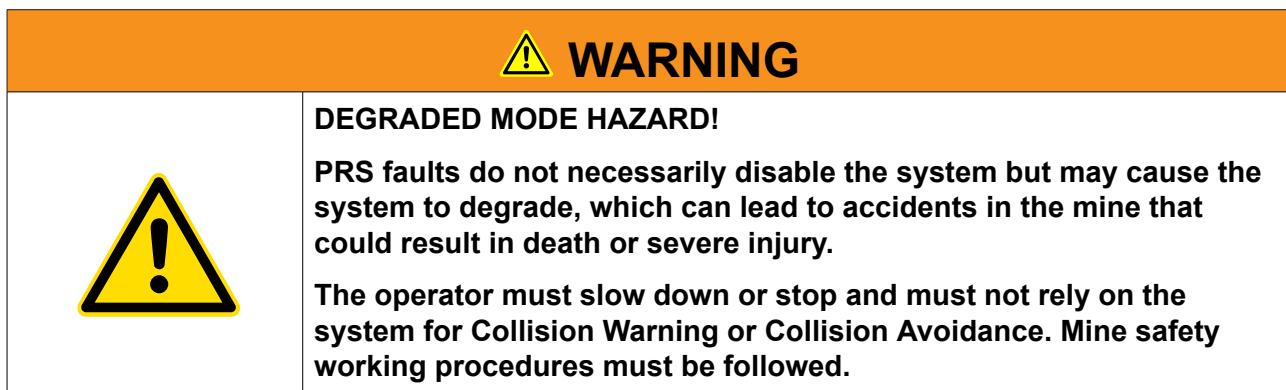
Note!   *If the VIC is used as the sole telemetry input for the dynamic zones, the system will revert to static zones. For more information refer to* *Dynamic Zone (Page 51)*

Refer to *System Troubleshooting (Page 89)* section for more details on how to re-establish the link with these modules.

5.4.6 PRS Wired Link Lost

| ⚠️ WARNING	
⚠️	**DEGRADED MODE HAZARD!** **PRS faults do not necessarily disable the system but may cause the system to degrade, which can lead to accidents in the mine that could result in death or severe injury.** **The operator must slow down or stop and must not rely on the system for Collision Warning or Collision Avoidance. Mine safety working procedures must be followed.**

*Note!*   *Only Newtrax approved personnel must restore the connection between the NVD and the PRS.*

When the communication between at least one of the PRS and the NVD is broken, the MFD and the NVD will display a **PRS Wired Link lost** notification, and an audio alert is played at every 2 seconds interval if the notification is not acknowledged or as long as the problem is not addressed.

On the NVD, there will be an overlay in front of the MineProx® ROs screen, and a repeated audio alert will be played.
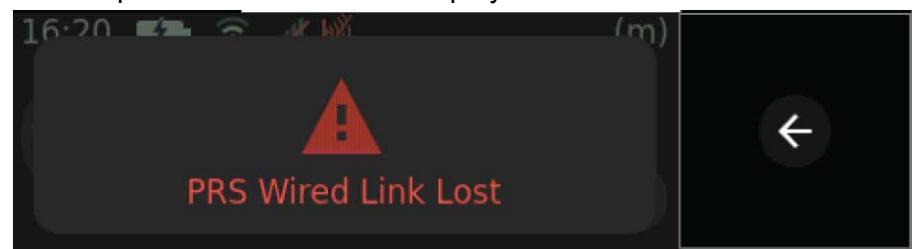
When acknowledged, the notification is reduced, the audio alert stops, and the event is stored on the MFDs Active Alarms List. On the NVD, it will remain on the User Interface (UI) as a Sensor icon in the top bar.
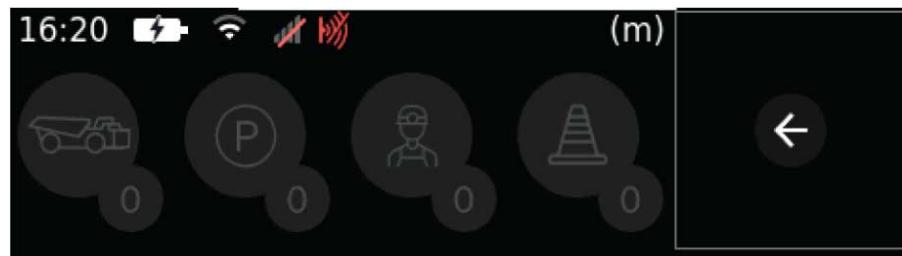
Refer to *System Troubleshooting (Page 89)* section for more details on how to re-establish the link with these modules.

5.4.7   System Faults

⚠ WARNING

	DEGRADED MODE HAZARD!
⚠	**System faults indicate the failure of a critical application of the system, which can lead to accidents in the mine that could result in death or severe injury.**
	These system faults must be reported to Newtrax for further investigation. The operator must slow down or stop and must not rely on the system for Collision Warning or Collision Avoidance. Mine safety working procedures must be followed.
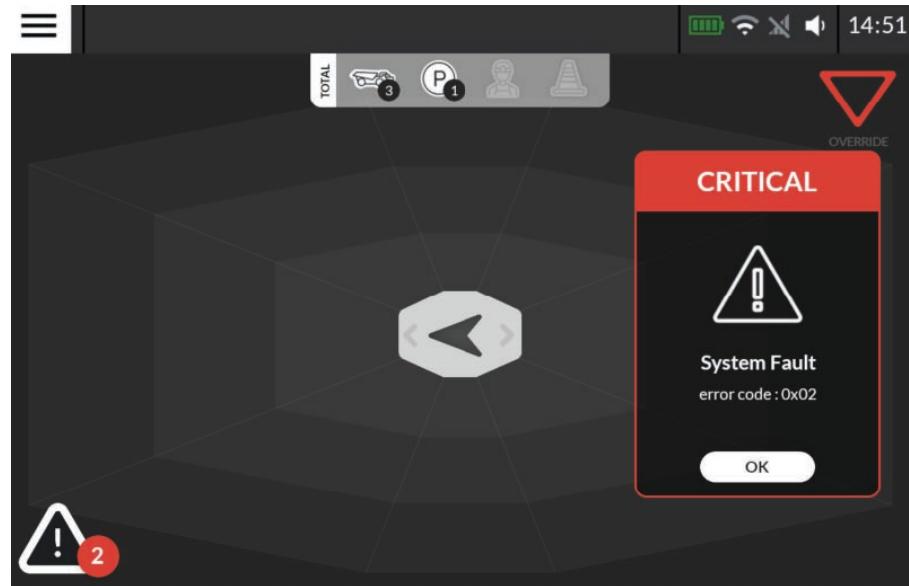
The critical notification occurs when the critical module of the application has failed. MFDs Error Code definitions are:

- MineProx® out of service: 0x01

- CxS Application Stopped/Crashed: 0x02

- MineProx® Out of service & CxS Application Stopped/Crashed: 0x03

- MineProx® Disabled: 0x04

- MineProx® Disabled & CxS Application Stopped/Crashed: 0x06.

5.4.7.1 *CxS Application Stopped/Crashed*

⚠ WARNING
DEGRADED MODE HAZARD! **Using the system while it is compromised or degraded could lead to an accident that could result in death or severe injury. The CxS Bullseye will not display any RO type, Section and Zone activation, or any Advisory Notification. Remote Objects could still be within the Caution, Alarm, or Danger zone. The RO List table will be empty, and the display will not notify the operator of any wired link loss with any of the key components during this time.** **These system faults must be reported to Newtrax for further investigation. Mine safety working procedures must be followed.**

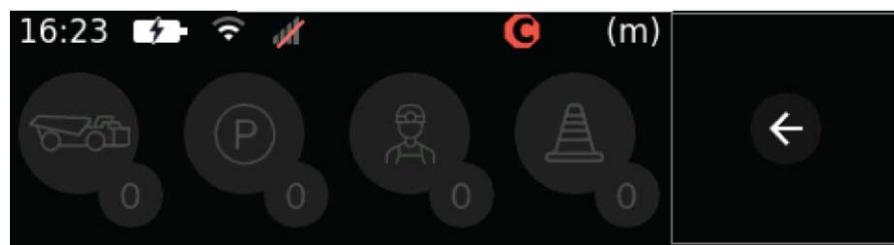| ⚠ WARNING |
|---|
| **RISK OF COLLISION!**

If the CxS Application is Stopped/Crashed, a Collision Avoidance System (CAS) will not be able to send instructions to the Vehicle Intervention Controller (VIC), which could lead to a collision that could result in death or severe injury.

The operator must slow down or stop and must not rely on the system for vehicle intervention. Mine safety working procedures must be followed. |

When the CxS Application service is not functional, a **System Fault, error code: 0x02** (or 0x03/0x06) notification and an audio alert will be played every 2 second interval if the notification is not acknowledged or as long as the problem is not addressed.
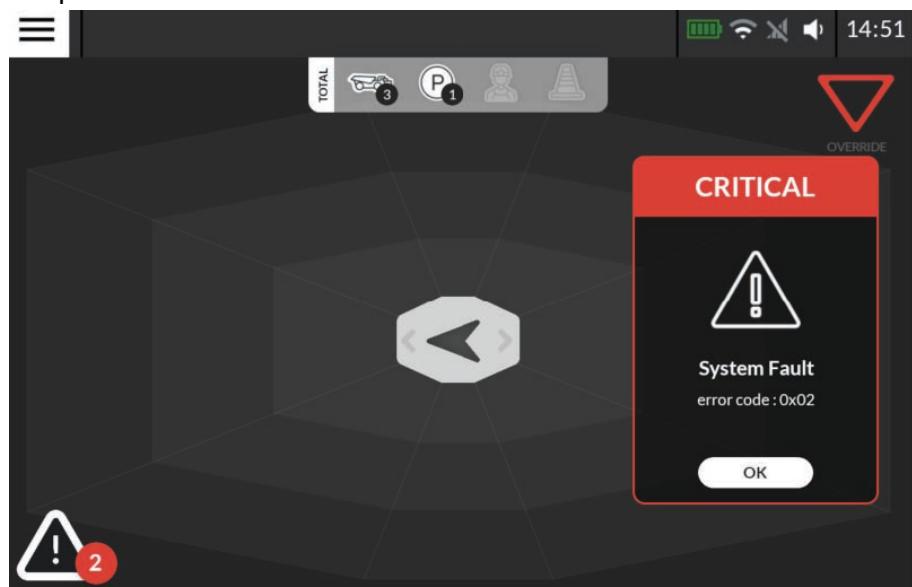
On the NVD, the overlay on the MineProx® ROs screen warns the operator about the CxS Application fault, and an audio alert is played.
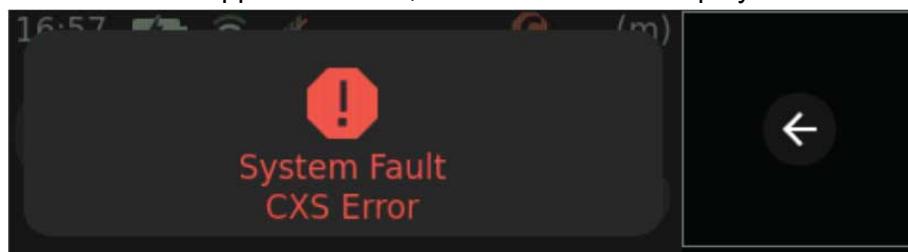
When acknowledged, the notification is reduced, the sound stops, and the event is stored on the Active Alarms List. On the NVD, it will remain on the UI as a **C** icon in the Alarm Icons Header.


5.4.7.2   MineProx® Stopped/Failed

⚠ WARNING
DEGRADED MODE HAZARD! **Using the system while it is compromised or degraded may lead to an accident that could result in death or severe injury. The UI will not prompt any Distress and/or Fallen Worker notifications. The pedestrian could be in distress regardless of the state of alarm.** **Mine safety working procedures must be followed.**

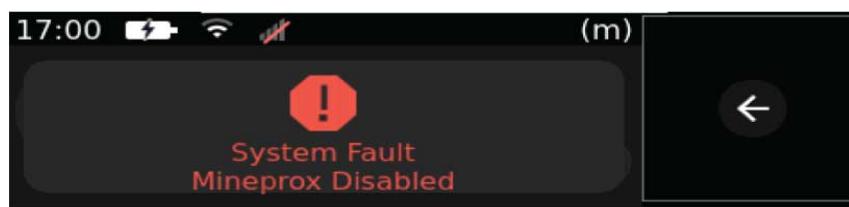| ⚠ WARNING |
|---|
| **DEGRADED MODE HAZARD!**

Using the system while it is compromised or degraded may lead to an accident that could result in death or severe injury. The Parked Vehicle Indicator would not be functional. The parked vehicle could still be in the vicinity regardless of the state of the indicator.

Mine safety working procedures must be followed. |

When the MineProx® service is not functional, the MFD displays a **System Fault, error code: 0xXX** notification, and an audio alert will be played every 2 second interval if the notification is not acknowledged or as long as the problem is not addressed.
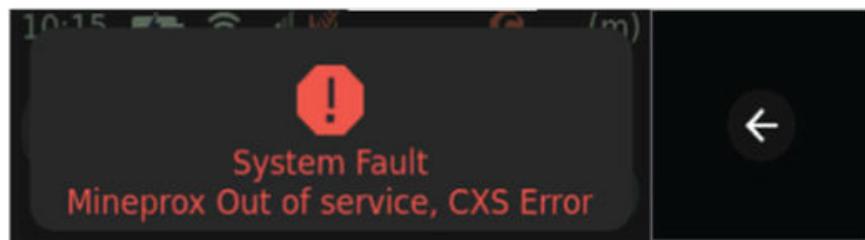
The overlay on the MineProx® ROs screen indicates the issue lies with MineProx®, whether it is disabled or failed, a repeated audio alert will be played.
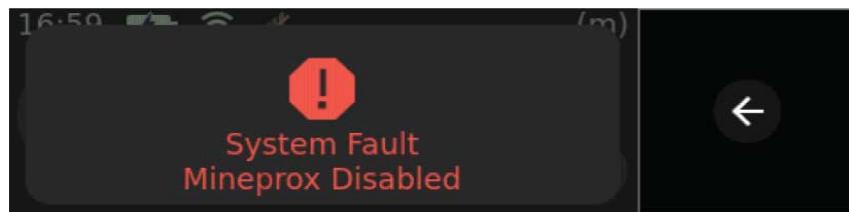
On the NVD, when acknowledged, it decreases the size of the notification to hide the MineProx® ROs icons and show only the status bar.

5.4.8   NVD MFD Signal Lost Alarms

⚠ WARNING	
⚠	**DEGRADED MODE HAZARD!** **NVD MFD signal lost errors can limit the information displayed to the operator, which can lead to accidents in the mine that could result in death or severe injury.** **These system faults must be reported to Newtrax for further investigation. The operator must slow down or stop and must not rely on the system for Collision Warning or Collision Avoidance. Mine safety working procedures must be followed.**

Note!   *Only a Newtrax approved technician must install and/or replace the USB cable to prevent any damage.*

There are two types of alarms that explain a broken communication between the NVD and the MFD. The error codes are:

- Network
- USB
- Heartbeat

Refer to *System Troubleshooting (Page 89)* for more details on how to address these errors.

5.4.8.1 Network Connection Loss

The IP address configured in the Connection panel is not reachable. It is either due to an incorrect IP address or the USB link between the two devices being physically broken.

Note! **If it is the first connection between the NVD and the MFD, it could be due to the service that manages the communication only discovering the MFD at Start-up. In this case, restart the system.**
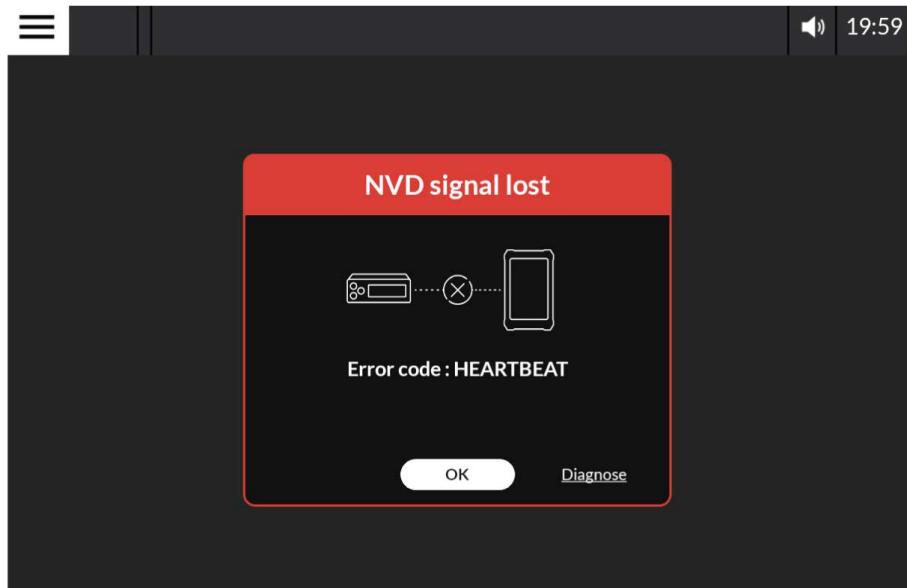

5.4.8.2 USB Connection Failed

When the network is up, but the USB communication cannot be established.
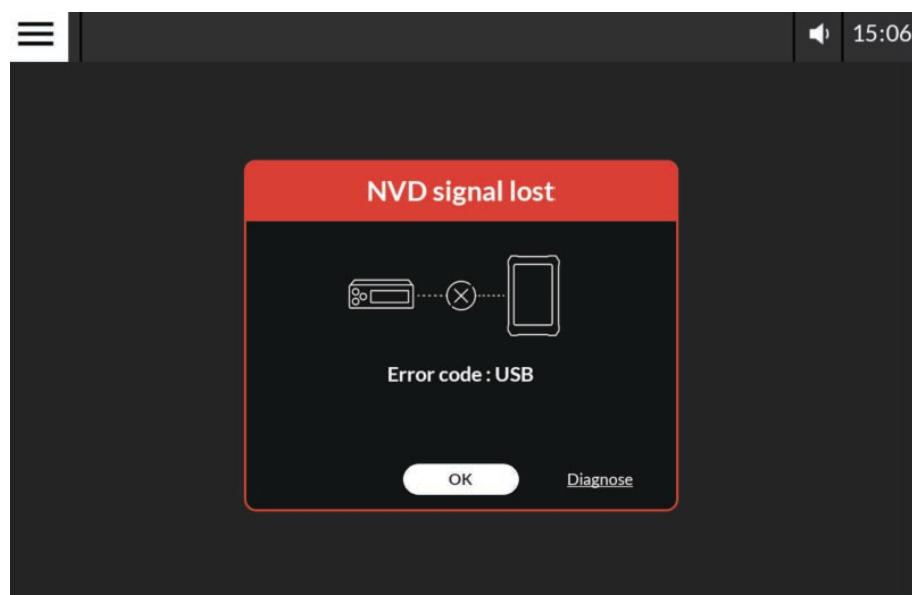
5.4.8.3 *Heartbeat Loss*

When the NVD is communicating with the MFD via USB, the first message it attempts to read is the Heartbeat message, which is a periodic message sent by the NVD to confirm the communication between the NVD and the MFD CxS application is intact.

5.4.9 Congested Area Alarm

⚠ WARNING
DEGRADED MODE HAZARD! **If you use the system while it is compromised or degraded, it can lead to an accident that could result in death or severe injury. The CxS Bullseye may not detect and show certain Remote Objects in the right Sector or Zone. The CxS Application may not have the capacity to detect additional Remote Objects and the CxS Bullseye may not show them even if they breach the Caution, Alarm, or Danger Zone.** **The operator must slow down or stop and must not rely on the system for Collision Warning or Collision Avoidance. Mine safety working procedures must be followed.**