

Factsheet: On-Farm Connectivity



On-Farm Connectivity: Farm Management Equipment Factsheet

Effective farm management is increasingly reliant on connected technologies. Below, we explore various use cases for on-farm connectivity in relation to farm management equipment, detailing their functions and the connectivity requirements for optimal operation.

Cameras

Use Case Overview: On-farm cameras serve multiple purposes, from security surveillance to monitoring livestock and crops. They can provide real-time visual feedback and recordings.

Connectivity Requirement:

- Type: High bandwidth connections like Wi-Fi or broadband data for live video streaming.
- Reason: Ensure seamless video transmission and remote access to feeds.

Key Benefits:

- Enhances farm security.
- Enables remote monitoring of livestock and equipment.

Asset Trackers

Use Case Overview: Asset trackers use GPS or RFID technology to keep tabs on the location and movement of farm equipment, vehicles, and even livestock.

Connectivity Requirement:

- Type: GPS for location tracking; broadband, RFID, or LoRa for communication.
- Reason: Accurate, real-time tracking and reporting of asset positions.

Key Benefits:

- Prevents theft and loss.
- Improves utilisation and planning of asset use.

Battery Monitors

Use Case Overview: Battery monitors are critical for managing the power supply of various farm equipment, ensuring that all battery-powered devices are charged and functional.

Connectivity Requirement:

- Type: Wi-Fi or Bluetooth for local monitoring; broadband for wide-range reporting.
- Reason: Provides timely alerts on battery status to prevent equipment downtime.



Key Benefits:

- Prevents unexpected equipment failure due to battery drain.
- Optimises battery recharging cycles and maintenance schedules.

Staff Safety Monitors

Use Case Overview: These devices ensure the safety of farm workers by monitoring their location and vital signs, and by providing an emergency distress signal capability.

Connectivity Requirement:

- Type: Wi-Fi, broadband, or satellite in remote areas.
- Reason: Ensures continuous monitoring and immediate emergency response.

Key Benefits:

- Enhances worker safety, especially in isolated areas.
- Provides peace of mind for staff and farm management.

Fence Monitors

Use Case Overview: Fence monitors detect and alert farmers to breaches or faults in electric fences, which are often used to contain livestock.

Connectivity Requirement:

- Type: LoRa or broadband, depending on the location and scale of fencing.
- Reason: Immediate notification of fence integrity issues to prevent livestock escape.

Key Benefits:

- Maintains livestock security and safety.
- Saves time on physical fence inspections.

Silo and Storage Monitors

Use Case Overview: Monitoring systems for silos and storage facilities measure variables such as temperature, humidity, and fill levels to manage stored feed and grain quality.

Connectivity Requirement:

- Type: Wi-Fi for local silo networks; broadband for remote locations.
- Reason: Continuous data collection for optimal storage conditions.

Key Benefits:

- Prevents spoilage and waste of stored goods.
- Informs inventory management and replenishment.



Liquid Level Monitors

Use Case Overview: Liquid level monitors are used to track the volume of liquids in tanks, such as water, fertilisers, or fuel, which is essential for inventory and supply chain management.

Connectivity Requirement:

- Type: Ultrasonic sensors with Wi-Fi or broadband connectivity.
- Reason: Real-time monitoring and alerts to maintain liquid inventory levels.

Key Benefits:

- Ensures availability of critical liquids for farm operations.
- Aids in planning for resupply and avoiding shortages.

Livestock Monitoring Systems

Use Case Overview: These systems include a range of technologies that monitor the health, location, and well-being of livestock, utilising data analytics to optimise herd management.

Connectivity Requirement:

- Type: RFID for identification; Wi-Fi, broadband, or satellite for data communication.
- Reason: Collection of comprehensive data for health and productivity analysis.

Key Benefits:

- Enhances animal welfare with proactive health management.
- Improves breeding outcomes and tracks growth rates.

Valve and Irrigation Controllers

Use Case Overview: These devices automate the opening and closing of valves in irrigation systems, ensuring that water is distributed when and where it is needed without manual intervention.

Connectivity Requirement:

- Type: LoRa, Wi-Fi, or broadband networks for larger farms.
- Reason: Reliable communication for timely and precise control, even over long distances.

Key Benefits:

- Saves water by optimising irrigation schedules.
- Reduces labour costs associated with manual valve operation.





Pump Controllers

Use Case Overview: Pump controllers automate the operation of water, nutrient, and chemical pumps, providing precise management of flow rates and operational times.

Connectivity Requirement:

- Type: Broadband or Wi-Fi, depending on the location of the pumps.
- Reason: Ensures pumps can be remotely controlled and monitored, adjusting to changing conditions as needed.

Key Benefits:

- Prevents overuse of resources by automating and regulating pump use.
- Enables remote troubleshooting and reduces downtime.

Aeration Controllers

Use Case Overview: Aeration controllers manage the operation of aeration systems in dams or silos, which are critical for maintaining the quality of water for aquaculture or the condition of grain in storage.

Connectivity Requirement:

- Type: Wi-Fi for systems close to central control units; broadband or satellite for more remote operations.
- Reason: Continuous monitoring and control to adjust oxygen levels as required by environmental conditions.

Key Benefits:

- Maintains optimal conditions for fish health in aquaculture.
- Preserves grain quality by preventing moisture accumulation.

Connectivity Technologies Summary:

- **Wi-Fi:** Ideal for high-bandwidth requirements and local networks. Offers high data rates necessary for systems that require quick response times and are within a shorter range.
- **Broadband:** Offers extensive coverage, beneficial for remote monitoring and alerts.
- **RFID/LoRa:** Best for asset and livestock tracking over extended areas with low power consumption.
- **Satellite:** Ensures connectivity in remote or geographically challenging environments.





- **LoRa:** Suitable for sending small amounts of data over long distances, ideal for valve control in extensive irrigation systems.
- **Broadband:** Provides extensive coverage and more bandwidth than LoRa, suitable for complex control systems with high data usage.

For detailed setup guides, troubleshooting tips, or to schedule an on-site consultation, please contact our technical support team at Regional Tech Hub on 1300 081 029 or visit our website at www.regionaltechhub.org.au.

About the Regional Tech Hub

The Regional Tech Hub (RTH) is an Australian Government initiative run by the National Farmers' Federation. Since late 2020, we have helped more than 160,000 people across rural, regional and remote Australia to get connected and stay connected to internet and voice services.

The RTH is proud to work alongside the Australian Government to offer free and independent advice to farmers, fishers and foresters, on their connectivity options as part of the Government's new On-Farm Connectivity Program.

