



**Lifetime  
Connectivity**

# **Complete Connectivity Solutions for Warehouse**

OVERCOME  
COMMUNICATIONS  
CHALLENGES FOR  
SITEWIDE COVERAGE



# Introduction

The number of warehouses above 4650 m<sup>2</sup> is expected to grow to 214,000 globally by 2027. That's over 994 million square meters, not even taking into account smaller warehouses. The size of the industry is huge, and demand is continuing to grow for greener and smarter warehouses.

Sustainability is the remit of warehouse construction companies, but warehouse operators are hitting a stumbling block when it comes to delivering the connectivity to underpin smart operations. Environmentally friendly building materials and densely packed rack spaces are often, unfortunately, "wireless unfriendly", making it difficult to meet communications requirements. So, how do they overcome this?



## Connecting a Warehouse

**RFS has the expertise to address the "wireless unfriendly" challenges of warehouses and give the complete coverage needed for both essential mission-critical services and to enable future applications. The below scheme demonstrates how we approach every area of a warehouse for comprehensive, reliable connectivity.**

### Complete coverage

Warehouses are most commonly a combination of large open spaces for loading and unloading and densely packed spaces for storage of goods. There isn't a one-size-fits-all coverage

option, as each environment needs a different approach to deliver comprehensive coverage.

### Open Spaces

For inbound and outbound loading bays, RFS uses a Distributed Antenna System (DAS) solution. This works by installing relatively small repeater antennas across a site's open spaces connecting to a single central controller. This delivers coverage in multiple spaces, and can work around challenging building materials that block RF, such as insulated plasterboard and low-emissivity glass, offering an efficient way to flood open areas with coverage.

This type of system can be used to cover multiple frequencies, from 50MHz for mission-critical Private Mobile Radio (PMR) through to 5G (6GHz) for more advanced but increasingly prevalent applications like robotics.

It can also be configured to support standards including UHF, TETRA, WiFi/WLAN, RFID, and Zwave coverage to meet the connectivity needs of virtually any warehouse application.

This setup uses minimal active equipment for maximum reliability with minimum cost and power consumption.

# Warehouse Storage



Although the connectivity requirements remain consistent as we move into warehouse storage areas, the communication infrastructure needed is different to ensure complete coverage.

Storage areas have increased physical barriers, like metal racking, that make RF

propagation difficult with a DAS system.

Instead, RFS can deploy **RADIAFLEX radiating cable** to provide contoured coverage down each aisle for complete and reliable connectivity. RFS's industry-leading RADIAFLEX provides coverage across the entire length of the cable.

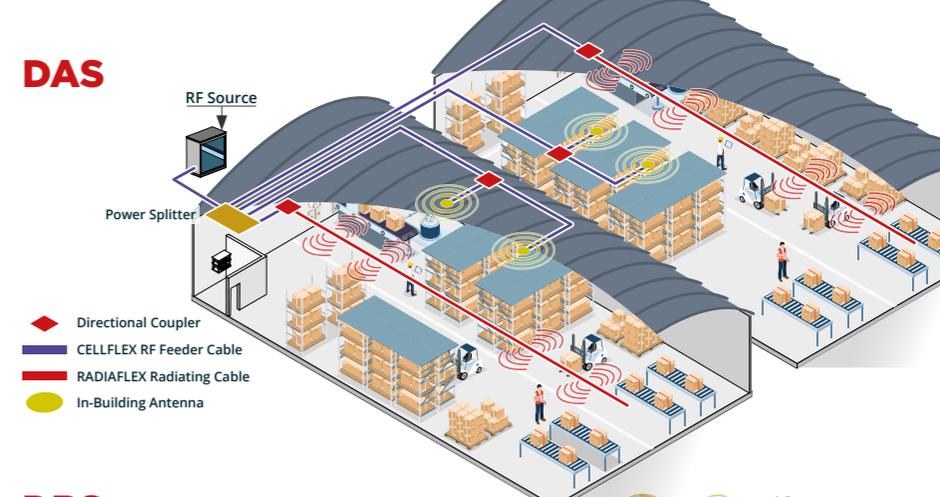
This allows the customer to overcome the challenges of signal propagation and ensure the reliability needed for mission-critical and standard coverage.

RFS also uses **HYBRIFLEX hybrid cables**, which have been developed for **Distributed Radio Systems (DRS)**.

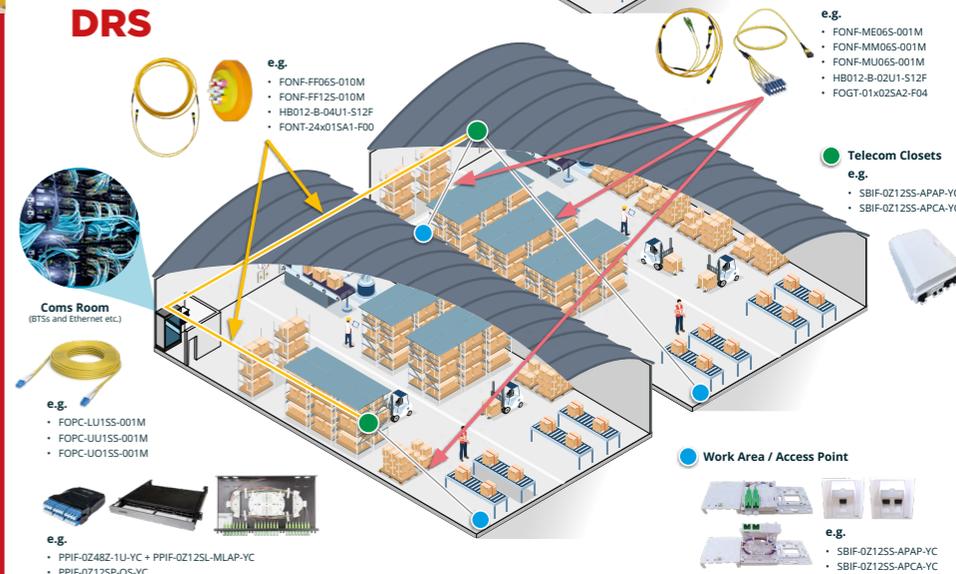
These cables combine fiber connectivity with power to mission-critical devices, like CCTV, to be connected with an uninterruptible power supply (UPS) for resilient connectivity.

RFS is also able to work with warehouses on 'no-drill' fixing solutions for easy and safe installation of its cable solutions.

## DAS



## DRS



# How RFS can help

We have so far looked at the technical components needed to deliver complete coverage in warehouse environments. **But what are the practical benefits for warehouse operators?**

## 1 Site Safety

Mandated by both regulation and a duty of care to employees, sitewide mission-critical systems are essential in a warehouse environment. Finding a way to effectively and reliably ensure coverage across the entire site is crucial for warehouse operators, and RFS provides guidance on how to achieve this in the most efficient and cost-effective way possible with no compromise on performance.

## 2 Powering IoT

Automation, robotics, IoT – this is no longer the warehouse vision of the future, it is the current reality. These applications need a communications

backbone, meaning warehouse operators need to roll out private 5G/LTE to meet the needs of those utilizing their warehouse space. ABI Research estimates revenue from Private Networks in warehousing for automation and IoT devices will reach \$7.6 billion by 2032. Putting in place the connectivity infrastructure from the outset allows businesses to take advantage of emerging technologies that rely on connectivity.

## 3 Connected BMS

An increasing number of Building Management Systems that incorporate technologies such as CCTV for site security now rely on

connectivity to work effectively. Offering mission-critical connectivity with a protected power supply to eradicate downtime allows more effective operations for those responsible for the building.

## 4 Environmentally Friendly Buildings

The materials used to make a warehouse energy efficient are also the materials that are best suited to keeping wireless coverage out. The RFS team is made up of experts with experience working around the wireless challenges to deliver complete coverage without impacting the sustainability of the building.



**Mini Case Study:** Major Distribution Center

**A large warehouse with around 1,000 employees, needed to upgrade its connectivity infrastructure to ensure it was able to deliver the true mission-critical coverage needed to keep the facility and its staff safe.** RFS was able to work with the customer to deliver a two-part solution. **RADIAFLEX radiating cable overcame the challenges the customer faced trying to achieve complete coverage in the storage space** within the warehouse, combined with a DAS system that provided complete coverage in the open loading areas of the site.

**At RFS, we understand the difficulties of delivering connectivity across warehouse sites and can design systems to mitigate the challenges.** Covering multiple applications and environments, RFS is on hand to help warehouse operators achieve future-ready warehousing without compromise.

**Get in touch to discuss how we can help.**



## Complete Coverage, Lifetime Connectivity

Discover how our premium solutions ensure the comprehensive connectivity needed for your warehouse to support any application. Scan the QR code to learn more and connect with our experts.



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