

## SmartMux UHF RFID ANTENNA MULTIPLEXER

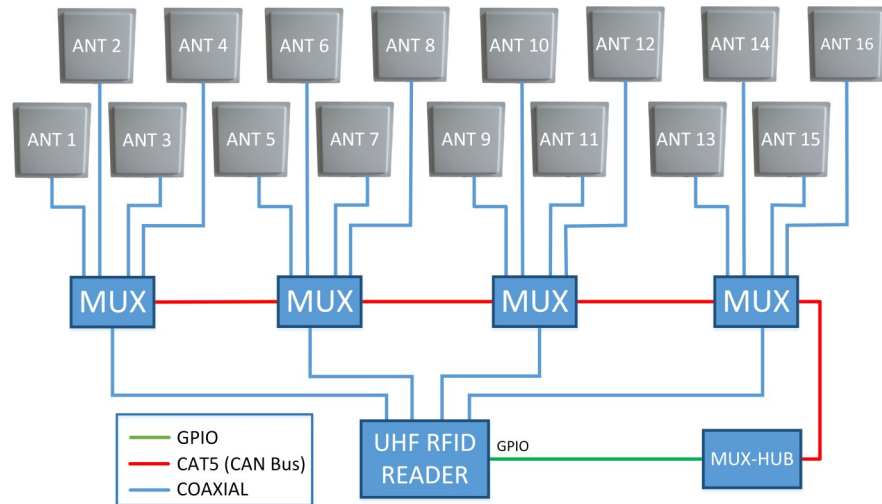


RFtek SmartMux is an antenna multiplexer for UHF RFID applications at 860 – 960 MHz operating frequency with an RF input power of up to 33 dBm (2 Watts). It provides operation up to four antennas with a single antenna input. Especially for multiple antenna applications, it reduces system implementation cost by saving additional readers.

SmartMux can be used with all of the readers from various manufacturers and controlled conveniently via any operator device sending simple commands (PLCs, I/Os of readers etc.). It provides safe and fast communication between connected devices even in noisy environments.

The device has the capability to be used in a cascaded structure to create a multiplexer network to extend the reading zone with multiple antennas. The network is commanded by a Mux-Hub for a proper operation. The Mux-Hub converts I/O signals to CAN (Controller Area Network) messages for communication through multiplexer network.

# SmartMux UHF RFID ANTENNA MULTIPLEXER

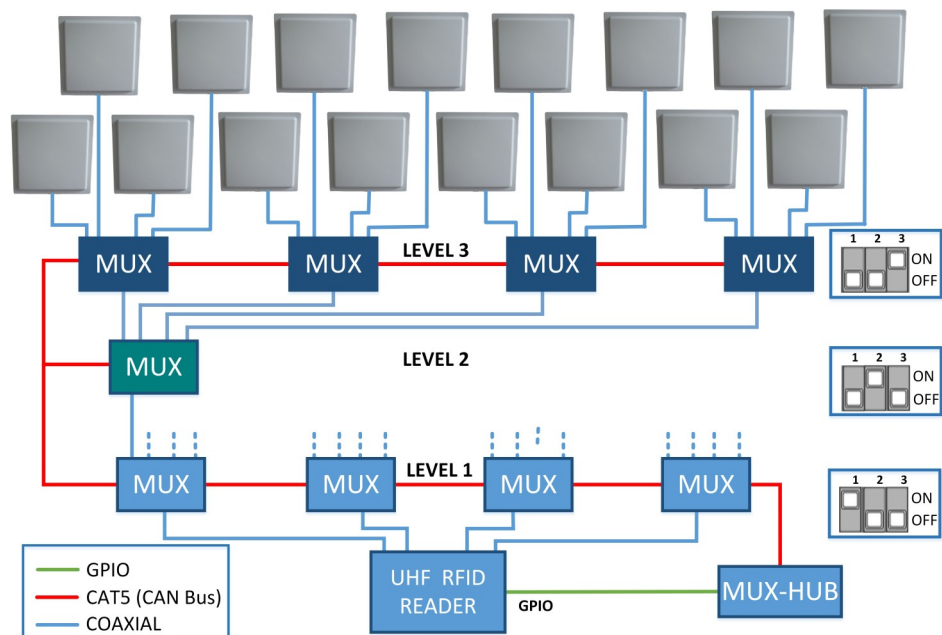


## APPLICATION AREAS

- MULTI ANTENNA APPLICATIONS
- SMART SHELVES
- SPECIALIZED GATE APPLICATIONS
- LOCATION TRACKING
- SMART CABINETS
- INVENTORY MANAGEMENT

## flexible solution for smart shelves

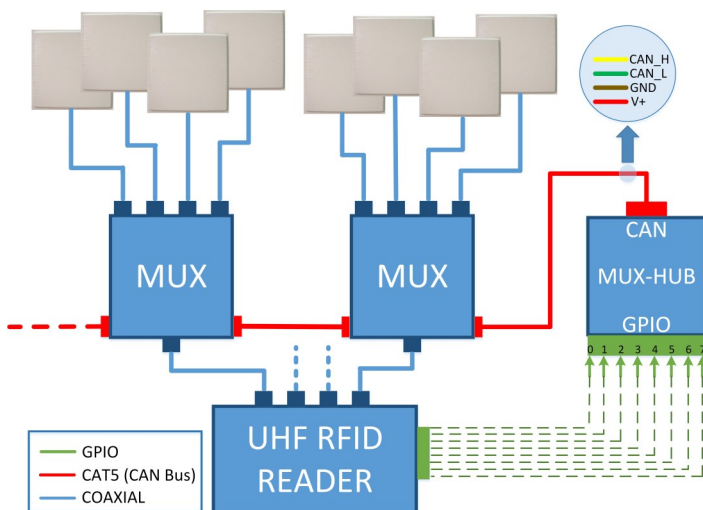
SmartMux provides flexible system installation options for various applications. Based on your needs, the device can be used alone or more than one device can be used to create a multiplexer network. Another option is cascaded structure of multiplexer networks up to 3 stages. For 4 port UHF RFID reader it allows maximum 256 antenna connections in 3 stages. Each stage is addressed via dip switch settings in the cascaded structure.



# smart design

SmartMux is compatible with all commercial UHF RFID readers from various manufacturers. It has no need any driver or configuration for network setup. If any device is physically disconnected from network, the communication does not break down.

Multiplexer networks are controlled via a Mux-Hub device. It converts external control signals (GPIOs of readers, external controllers etc.) to the CAN frames. Standard low cost RJ45 Ethernet cable is used between multiplexers.



## TECHNICAL SPECIFICATIONS

<b>Multiplexing</b>	1 to 4 / device
<b>Operating Frequency</b>	860 - 960 MHz
<b>Max Input Power</b>	2 W (33 dBm)
<b>Antenna Connector</b>	SMA
<b>Operating Voltage</b>	12 - 24 VDC
<b>Insertion Loss</b>	1 dB @ 900 MHz
<b>Control Interface</b>	CAN Bus / GPIO
<b>Switching Period</b>	4 $\mu$ S
<b>Operating Temperature</b>	-40° C - +85° C
<b>Box Dimensions</b>	Aluminum, 104 × 70 × 35 mm
<b>Other Features</b>	Activity & Error LEDs, safe communication protocol, compatible with all readers, can be used in a cascaded structure up to 3 stages



## RF/RFID HARDWARE DESIGN

We provide innovative and flexible solutions for your RFID applications with the design of UHF RFID reader, antenna and antenna multiplexers.

## MODULAR RFID SOLUTIONS

## RFID ANTENNA DESIGN

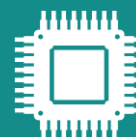


## ELECTRONIC SYSTEM DESIGN

We provide solutions based on electronic system level design projects with schematic & PCB and embedded system design.

## INDUSTRIAL ELECTRONICS

## RFID SMART SHELVES



## EMBEDDED SOFTWARE DESIGN

We provide embedded system design for various microcontroller/processor families in 8-bit, 16-bit and 32-bit architectures.

## R&D DESIGN CONSULTING

### ABOUT US

RFtek Electronics was founded in 2012 with the fund of Ministry of Science, Industry and Technology of Turkey. It is a startup company deals with the R&D processes of RF/RFID hardware design, electronic system level design projects and embedded software programming.

### MISSION

To provide customer-focused products & solutions powered by the cooperation of high technology based design and R&D workouts with a reliable and high quality service of concept.

### VISION

To be a leading technology company in RF/RFID field with responsive technology based solutions to industry's needs and expectations, spirit of R&D and prioritizing customer satisfaction in the first place.

### HANDLED R&D PROJECTS

#### **UHF RFID READER DESIGN**

- ◆ First domestic product (prototype)
- ◆ Funded by the Ministry of Science, Industry and Technology of Turkey

#### **DESIGN & IMPLEMENTATION OF UHF RFID SMART SHELF**

- ◆ Funded by TUBITAK (Scientific & Technological Research Council of Turkey)
- ◆ Funded by KOSGEB (Small and Medium Enterprises Development Organization of Turkey)

#### **MODULAR ROBOT DESIGN**

- ◆ Hardware and software design of a modular robot kit for children

### PUBLICATIONS & PATENTS

Beyond the R&D activities, RFtek has academic papers and issued patent applications related to its own products; UHF RFID reader, antenna multiplexer and smart shelves.

### TEAM MEMBERS

#### **Huseyin U. AYDOGMUS**

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Ph.D. Candidate  
Embedded system design

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