



DNT24 APP FACTS

Imagine running communications cables in the back forty! Well, not exactly. Control panels in tractor cabs in farms around the world control sophisticated implements via good old fashioned communications cables. Like the rest of the world, farm equipment manufacturers are looking for wireless solutions as cable replacements in farm equipment.

Agriculture: *Flow Control in Farm Equipment*



OTHER TOP DNT24 APPLICATIONS

Applications requiring direct connections and reporting of sensor data

SCADA for monitoring and control

Scoreboards and electronic signs

Industrial remote control

Energy management

APPLICATION OVERVIEW

A major manufacturer of agricultural equipment identified a need for an automatic multi-feed fertilizer spreader. Each individual fertilizer feed needed to be controlled independently – thus allowing the fertilizer to be spread only where needed and at the correct levels. Their current solution was not feasible as the moving parts were wearing out the communications cables which required expensive field retrofits.

A wireless solution replacing cables was deemed to be most suitable. The DNT24 was embedded with the spreader controller in the tractor cab. On the spreader side, DNT24s were embedded with the feed valves at end of the spreader attachment. Each valve was controlled by one of the GPIOs of the DNT24 based on commands sent by the controller in the cab. No other intelligence is needed at the valve – just circuitry to interface the GPIO signal to the valve.

FHSS ensures
reliable RF
communications in
moving
equipment to
overcome multi-
path fading

APPLICABLE PRODUCT FEATURES

The DNT24 Frequency Hopping Spread Spectrum technology (FHSS) provides reliable RF communication in moving equipment with a lot metal thus overcoming multipath fading. The DNT24 Module with multiple I/O provides activation signals for each valve without any other intelligence. The low cost allows multiple feed systems to be economically priced and finally the 2.4 GHz allows world-wide deployment.

HOW IT WORKS



Very small footprint, the DNT24 module is slightly larger than a quarter



SPECIFICATIONS

The DNT90 has the same form factor and pin out as the DNT24, and can be used for this application in the 900 MHz band

Radio Characteristics:	FHSS (Frequency Hopping Spread Spectrum)
Frequency:	2.406 - 2.475 GHz
Transmit Power:	10 or 100 mW
RF Data Rates:	250 kb/s
Receiver Sensitivity:	-100 dBm 10-5 BER
Data Encryptions:	AES-128
Network:	Point-to-Point, Point-to-Multipoint, Peer-to-Peer, Store-&-Forward Repeating
Environmental:	-40 °C to + 85 °C 10 - 90% humidity, non-condensing
Power Supply:	3.3 to 5 VDC
Dimensions:	1.45 X 0.98 inches (36.8 X 24.9 mm) for DNT24C 1.45 X 1.10 inches (36.8 X 27.9 mm) for DNT24P
Mounting Option:	Pinned and Surface Mount Versions
RF Connection:	U.FL Coaxial, Chip Antenna
Input / Outputs:	6 GPIO, 3 ADC and 2 DAC outputs
Interface:	UART, SPI
Certification:	FCC, Canadian IC and ETSI certified

PART NUMBERS

Part Number	Description
DNT24P	DNT24 FHSS Module - Pinned Version
DNT24PA	DNT24 FHSS Module - Pinned Version, Chip Antenna
DNT24C	DNT24 FHSS Module - Surface Mount Version
DNT24CA	DNT24 FHSS Module - Surface Mount Version, Chip Antenna
DNT24DK	DNT24 FHSS Module Developer Kit
DNT24ADK	DNT24 FHSS Module Developer Kit with DNT24PA

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