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A TSC Company BLUEBIRD

Fixed RFID Reader

FR901



Meet Bluebird's FR901 — Bluebird FR901 presents a meticulously engineered integrated solution, combining optimal dimensions of 253 x 160 x 58.5mm and a robust yet manageable weight of 1.3kg. FR901 design ensures exceptional durability, passing stringent MIL-STD-810G shock and vibration tests for reliable operation in demanding environments.

Use case — Retail

FR901 revolutionizes the customer experience and enhances inventory visibility by enabling seamless self-checkout, loss prevention, and in-store location tracking.

Use case — Warehouse & DC Center

FR901 streamlines inbound/outbound logistics by automating box reading in dock doors, portals, and tunnels for faster and more accurate inventory checks.

Use case — Hospital(Healthcare)

FR901 optimizes healthcare asset management and patient safety through location tracking, loss prevention, and warning systems.

Use case — Logistics

FR901 enhances transparency and efficiency throughout the transportation process by supporting automated truck loading, asset management, and inventory management.

Antennas









Product Name	ANS961	AN970	AN971	ANS981
Concept	Circular Polarized Mid Range Antenna	High Performance& General Purpose	High Performance& Large Area	Circular Polarized Fan Beam Antenna
Used For	- Self-checkout - POS - Inventory management - Portals - Outdoor gates	- Portals - Outdoor gates - Transition - POS - Retail Back-room - Inventory Management	- Portals, Outdoor gates - Inventory management - Backroom - POS - Hallway	- Self-checkout - Backroom - Outdoor gates - Inventory management

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Key Features

UNRIVALED RFID PERFORMANCE

Superior Reading Accuracy

Bluebird FR901 achieves exceptional accuracy in recognizing RFID tags, even in metal or liquid environments, through Dense Reader Mode.

Flexible Reading Range

Bluebird FR901 Supports high power output up to 33dBm, allowing for optimal reading range configuration tailored to various work environments.

Global Standard Compliance

Bluebird FR901 ensures reliability by fully complying with the EPC Class 1 Gen 2V2, and support Gen2X.

ROBUST DESIGN AND EASY DEPLOYMENT

Wide Operating Temperature

Bluebird FR901 operates stably across a broad temperature range from -40°C to +65°C.

Simplified Installation

Bluebird FR901 supports PoE+ power supply, streamlining power and network cabling and maximizing installation flexibility.

Extreme Environment Durability

Bluebird FR901's IP53-rated sealing design guarantees stable operation even in dusty environments.

FLEXIBLE INTEGRATION AND SCALABILITY

Linux-based OS

Equipped with a Linux-based OS (Android (Optional)), Bluebird FR901 offers significantly easier and more flexible integration with other terminals and existing systems.

Multi-Antenna Support

A single FR901 reader can connect up to 8 RFID antennas and 2 Wi-Fi antennas, enabling the construction of cost-effective modular solutions.

Powerful Processor

Bluebird FR901 features a Qualcomm QCM 6490 processor and flash memory for smooth operation of various applications.

EXTENSIVE APPLICATION SUPPORT

Real-time Tracking

Bluebird FR901 enhances operational transparency through personnel tracking, real-time inventory management, and asset tracking.

Security and Management

Bluebird FR901 meets diverse industry-specific requirements such as anti-theft sensing, drug management, and patient monitoring.

Wide Industry Application

Bluebird FR901 Optimizes data collection and management in a broad range of sectors including retail, logistics, transportation, and fleet management.

Specifications

PHYSICAL CHARACTERISTICS	
Dimensions (L x W x D)	253 x 160 x 58.5mm
Weight	1.3kg
Visual Status Indicators	Power, Activity, Status, Connect

RFID CHARACTERISTICS	
Max Receive Sensitivity	-103dBm monostatic
Return Loss (minimum)	10dB
Air Protocols	ISO 18000-63 (EPC Class 1 Gen 2v2), Gen2X
Max Tag Read	1300+ Tags / Sec
Engine (RFID Chip)	E910
Frequency (UHF Band)	US: 902–928 MHz; EU: 865–868 MHz; 916.3, 917.5, and 918.7 MHz
Transmit Power Output	1. Power Adapter US: 902–928MHz; 5–30dBm EU: 865–868MHz; 5–33dBm 916.3, 917.5, and 918.7MHz; 5–33dBm Japan: 916–921MHz (w LBT), 5–30 dBm 2. POE Adapter US: 902–928MHz; 5–30dBm EU: 865–868MHz; 5–31.5dBm 916.3, 917.5, and 918.7MHz; 5–31.5dBm Japan: 916–921MHz (w LBT), 5–30dBm

CONNECTIVITY	
Communications	10/100 BaseT Ethernet; USB Host & Client (Type A&C) DB9 1ea, RJ-45 1ea, HW Reset Button
General Purpose I/O	4 inputs, 4 outputs optically isolated (Terminal Block)
Power Supply	POE+ + 24V DC Universal Power Supply
Antenna Ports	8 monostatic Ports (Reverse Polarity TNC) 2 Ports for Wifi (SMA) (Optional)

ENVIRONMENTAL	
Operating Temp.	-40° to +65°C / -40° to +149° F
Storage Temp.	-40° to +70°C / -40° to +158°F
Humidity	5-95% non-condensing
Shock/Vibration	MIL-STD-810G
Sealing	IP53

WLAN	
Radio	WiFi 802.11 a/b/g/n/ac/ax 2x2 MIMO (Optional)
Data Rate	5GHz PHY data rates up to 1.2Gbps; 2.4GHz PHY data rates up to 286.8Mbps
Operating Channel	Channel 1–13: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 Channel 36–165: 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140, 144, 149, 153, 157, 161, 165 Channel Bandwidth: 20, 40, 80 MHz,160MHz
Security and encryption	WEP (40 or 104 bit); Enhanced Open (OWE); WPA/ WPA2 Personal (TKIP, and AES); WPA3 Personal (SAE); WPA/WPA2 Enterprise (TKIP and AES); WPA3 Enterprise (AES) - EAP-TTLS (PAP, MSCHAP, MSCHAPv2), EAP-TLS, PEAPv0-MSCHAPv2, PEAPv1-EAP-GTC, LEAP, EAP-PWD; WPA3 Enterprise 192-bit mode (GCMP256) - EAP-TLS;

Hardware, OS and Firmware Management	
Processor	QCM 6490
Operating System	Linux Android (Optional)

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Specifications

Hardware, OS and Firmware Management	
Management Protocols	Bluebird Shell (SSH / USB)
Network Services	DHCP, HTTP, HTTPS, FTP, SSH, NTP, MQTT
Network Stack	IPv4 and IPv6
Security	Transport Layer Security Ver 1.2, FIPS-140 SSL/SSH-based security
Host Interface	EPCglobal Low Level Reader Protocol (LLRP)
API Support	.NET
Software Support (Bluebird)	BFRMS (Bluebird Fixed Reader Middleware Solution) - MQTT / SOCKET / HTTP / USB CDC / RS-232

REGULATORY COMPIANCE	
Safety	UL 62368-1, IEC 62368-1, EN 62368-1
RF/EMI/ EMC	Part 15B , Part 15.247, Part 15.249 , Part 15.407 ICES-003 , RSS-247 Issue , RSS 248 Issue EN 300 440, EN 300 328, EN 301 893, EN303 687, EN 302 208, EN 55032, EN55035, EN 301 489 1/3/17
SAR/MPE	FCC 47 CFR2: OET Bulletin 65, EN 50566, EN50663, EN 50364
Other	RoHS, WEEE

WARRANTY
One year

ACCESSORIES	
Accessories	- 24V/4A Power Adapter - Country-Specific AC Power Cords : Korea, Taiwan, Switzerland, Japan, China, Europe, Australia, North America, Untied Kingdom - Cradles for FR901 : 'N' Type, 3M/7M/10M - Sensor for FR901 : IR(Infrared) Sensor - Antennas : ANS961, ANS981, AN970, AN971 - WIFI Antenna : 24V/4A Power Adapter

*** Specifications are subject to change without notice and some features may vary by**



The Bluebird Dock Door solution, featuring the FR901 Fixed RFID Reader combined with AN971 antennas, is engineered to revolutionize your inbound logistics. This powerful duo ensures fast and accurate inventory checks as goods move from outside into your warehouse, providing immediate visibility and preventing errors at critical transition points.

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Specifications






Product Name	ANS981	AN970	AN971	ANS961
Physical				
Dimensions (L x W x D)	280 x 140 x 3.2mm	260 x 260 x 30mm	575 x 260 x 33.5mm	255 x 255 x 12mm
Connectors	RC TNC_M to RPSMA_M	RC TNC_M to RP TNC_F	RC TNC_M to Type 'N'	RC TNC_M to RPSMA_M
Mounting Bracket	-	VESA support	VESA support	-
Weight	230g	1.1kg	1.9kg	200g
Casing	-	Aluminum with white plastic cover	UV Stable ASA, White	-
Operational				
Frequency Range	865 ~ 868MHz / 902 ~ 928MHz	865MHz ~ 868MHz / 902 ~ 928MHz	865MHz ~ 868MHz / 902 ~ 928MHz	865 ~ 868 MHz / 902 ~ 928MHz
Gain	EU : 6dBiC US: 6.5dBiC	9dBic	9dBic	EU : 8dBiC US : 8.5dBiC
VSWR (Return Loss)	1.4 : 1	1.4:1	1.4:1	1.4 : 1
Front to Back Ratio	20dB	20dB	20dB	15dB
Polarization	LHCP	LHCP	LHCP or RHCP	LHCP
3db Beam Width	60˚ / 90˚	70˚ / 60˚	70˚	70˚
Max Input Power	-	10W	10W	-
Axial Ratio	EU : 0.6dB Typical US : 1.6dB Typical	1dB typical	1dB typical	1dB typical
Environmental				
Operating Temperatures	-20°C to +80°C / -4°F to +176°F	-25°C to +60°C / -13°F to +140°F	-25°C to +70°C / -13°F to +158°F	-20°C to +60°C / -4°F to +140°F
Sealing	IP68	IP67	IP67	IP67
Storage Temperatures	-	-	-40°C to +80°C / -40°F to +176°F	-
Vibration	-	-	IEC-68-2-6	-
Humidity	-	-	MIL-Std 810G, METHOD507.5, Procedure II - Aggravated	-

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