Smart Track & Trace Solutions

Industrial RFID & Barcode

A·B QUALITY **Allen-Bradley**
by **ROCKWELL AUTOMATION**

Most manufacturing companies use some type of traceability system, also known as Track and Trace, to comply with customer and market mandates and to have product genealogy for service, safety, and process improvement purposes. With our smart track and trace products including RFID and Code Readers we can build a traceability solution to deliver data enterprise-wide.

What is driving Track & Trace and Serialization?

REGULATION

IMPROVED INTERNAL PROCESSES

- Help achieve regulatory compliance
- Manage recalls & understand shelf-life
- Get control of supply chain events
- Reduce waste
- Access consumption data
- Manage customer interaction and support

Life Sciences and Food & Beverage have regulations for serialization. It's a competitive advantage to serialize and trace product throughout the supply chain.

ESG (Energy/Sustainability)

BETTER DECISIONS THROUGH INSIGHTS

- If collecting energy data, aggregate that data alongside serialized data to allow calculations of total carbon footprint of this case of diaper utilized x amount of energy—use this for internal ESG improvements and/or share with consumers
- Reduce waste and scrap pinpointing exact areas for recalls
- Provide incentives to the consumer for recycling

BRAND

ENHANCED CONSUMER EXPERIENCE

- Protect against counterfeits while maintaining quality and customer satisfaction
- Better visibility to the origin of ingredients/product components
- Customized consumer experience, gather product feedback and understand consumer trends

COMPLIANT, SECURED, AND TRANSPARENT SUPPLY CHAIN

Consumers will spend more on premium products with traceable ingredients

Companies that aggressively digitize their supply chains can expect to boost annual growth of earnings by **3.2%**

73% of consumers would change purchases based on environmental impact
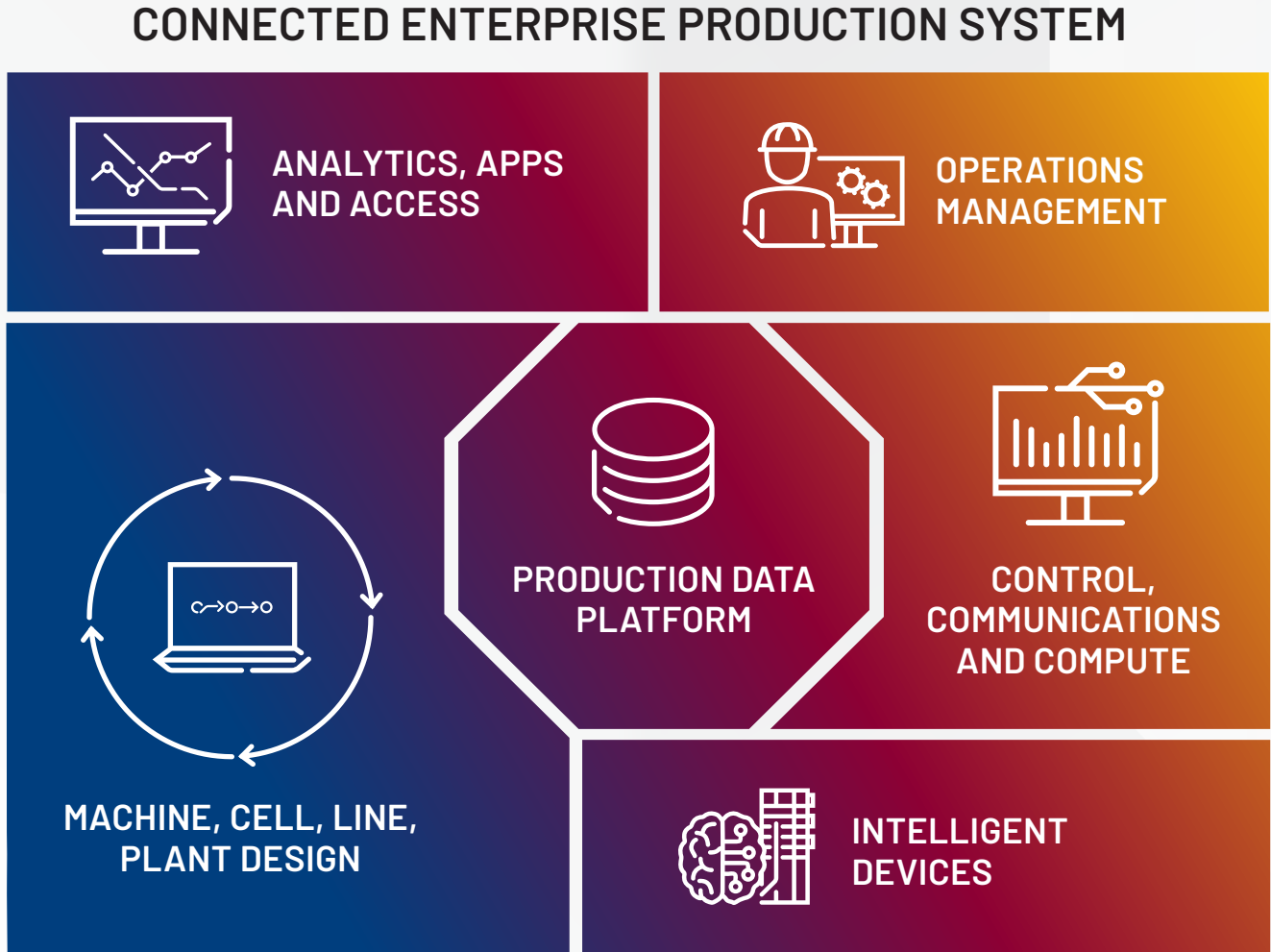
$1.9 trillion is annual estimate for federal regulatory compliance

Global pharma loses ~ **$75 billion** annually to counterfeits

Product serialization significantly reduces recalls and counterfeit costs

The Connected Enterprise Production System

Smart manufacturing is the gateway to digital transformation. Connected smart devices open new windows of visibility into processes. Data and analytics enable better and faster decision-making. Seamless connectivity spurs new collaboration. The Connected Enterprise® makes all this possible. It converges plant-level and enterprise networks, and securely connects people, processes, and technologies.

CONNECTED ENTERPRISE PRODUCTION SYSTEM

ANALYTICS, APPS AND ACCESS

OPERATIONS MANAGEMENT

PRODUCTION DATA PLATFORM

CONTROL, COMMUNICATIONS AND COMPUTE

MACHINE, CELL, LINE, PLANT DESIGN

INTELLIGENT DEVICES

Digital Transformation: Better data and digitized processes can revolutionize your business.

New insights that are revealed through better data access can help you reduce bottlenecks, implement demand-based decisions, and improve maintenance. Greater digitization can help you reduce downtime and improve profitability. Digital twins, for example, can be used to optimize machine designs or test production changes before you implement them. Connected products or services can create entirely new revenue streams.

The Digital Transformation of your entire value chain—from components to systems and from suppliers to customers— is the key to hidden value, which can make a significant contribution to the productivity, quality, compliance, and profitability of your enterprise.

Integrating and analyzing enterprise data

Sharing outcomes across the value chain

Ensuring connectivity with production assets

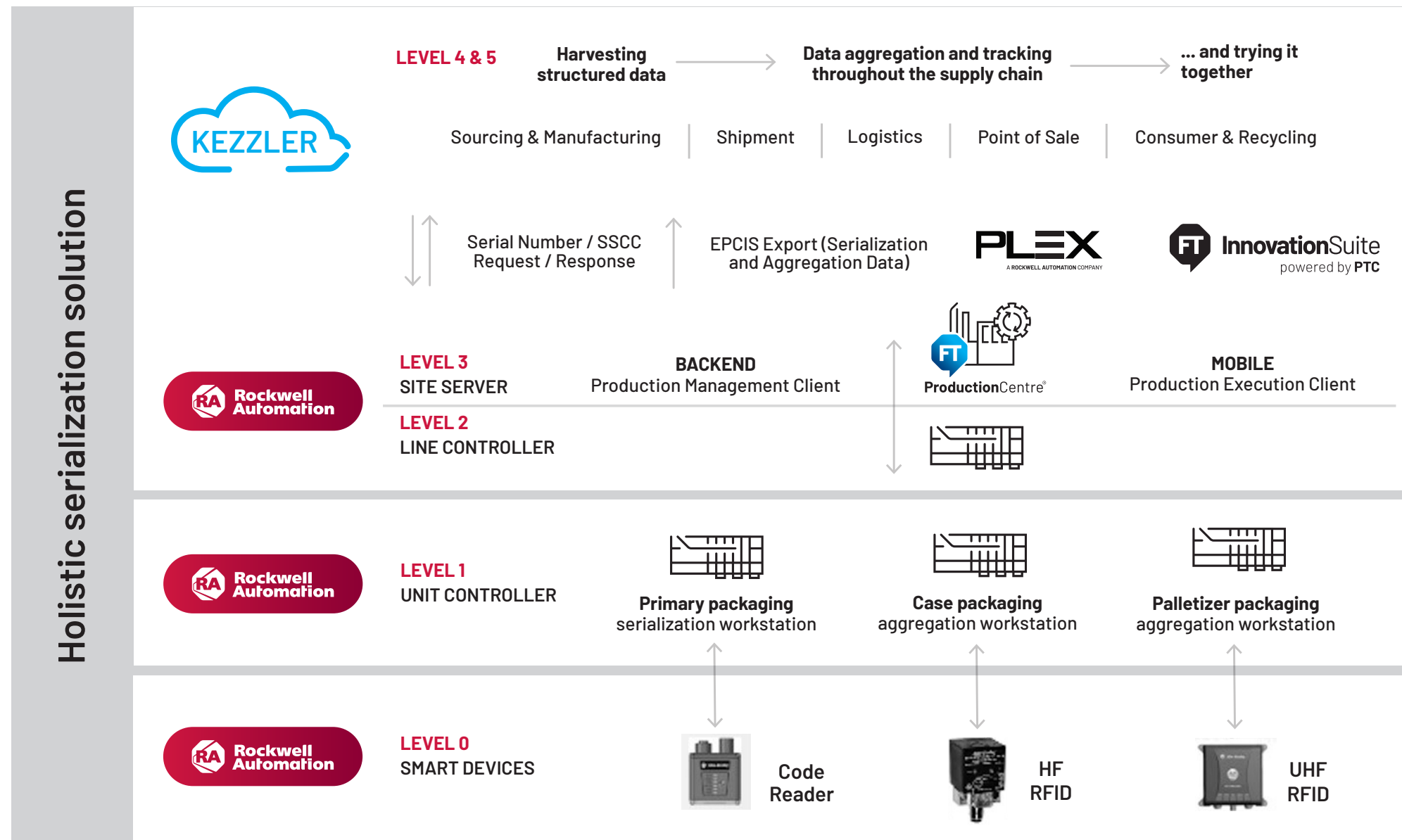Optimizing or redesigning classic production systems

Make Your Machines and Equipment Smarter

A truly connected enterprise has real-time control and information available across platforms, and smart devices within the organization. When it comes to linking end-point devices on the plant floor to The Connected Enterprise, our Integrated Architecture® system leverages smart devices to deliver information, advanced functionality and flexibility, increasing efficiency machine - and plant-wide.

- Minimize downtime with continuous process and diagnostic data
- Enable faster production change-overs
- Speed-up machine commissioning
- Enable smarter machines for use in The Connected Enterprise

Our Full Traceability Solution

Rockwell Automation delivers and supports the complete solution: hardware, software and services.

Holistic serialization solution

LEVEL 4 & 5 — Harvesting structured data → Data aggregation and tracking throughout the supply chain → ... and trying it together

KEZZLER

Sourcing & Manufacturing | Shipment | Logistics | Point of Sale | Consumer & Recycling

Serial Number / SSCC Request / Response | EPCIS Export (Serialization and Aggregation Data) | PLEX A Rockwell Automation Company | FT InnovationSuite powered by PTC

LEVEL 3 SITE SERVER — BACKEND Production Management Client — FT ProductionCentre® — MOBILE Production Execution Client

LEVEL 2 LINE CONTROLLER

LEVEL 1 UNIT CONTROLLER — Primary packaging serialization workstation | Case packaging aggregation workstation | Palletizer packaging aggregation workstation

LEVEL 0 SMART DEVICES — Code Reader | HF RFID | UHF RFID

Smart manufacturing and digital transformation means connectivity from device, to machine, to system, to enterprise. It also means evolving risk management considerations. It means protecting your customer information, intellectual property, assets, workers, and environment.

Our expertise, along with our partners in IT, provide us with a unique understanding of the IT/OT convergence to be successful in both digital transformation and the requirements of building a smarter, safer, more secure infrastructure.

KEZZLER

The Rockwell Automation track and trace solutions, combined with the end-to-end traceability capabilities of our partner Kezzler, provide supply chain visibility and management capabilities that drive easier regulatory compliance and improvements in product quality, safety, and sustainability.

Application Areas

Traceability involves monitoring all processes in a production environment to bring transparency to the process, its framework, and the use of the raw materials. That means internal traceability within the production environment and traceability of the supply chains with the help of technologies such as RFID and barcode readers.

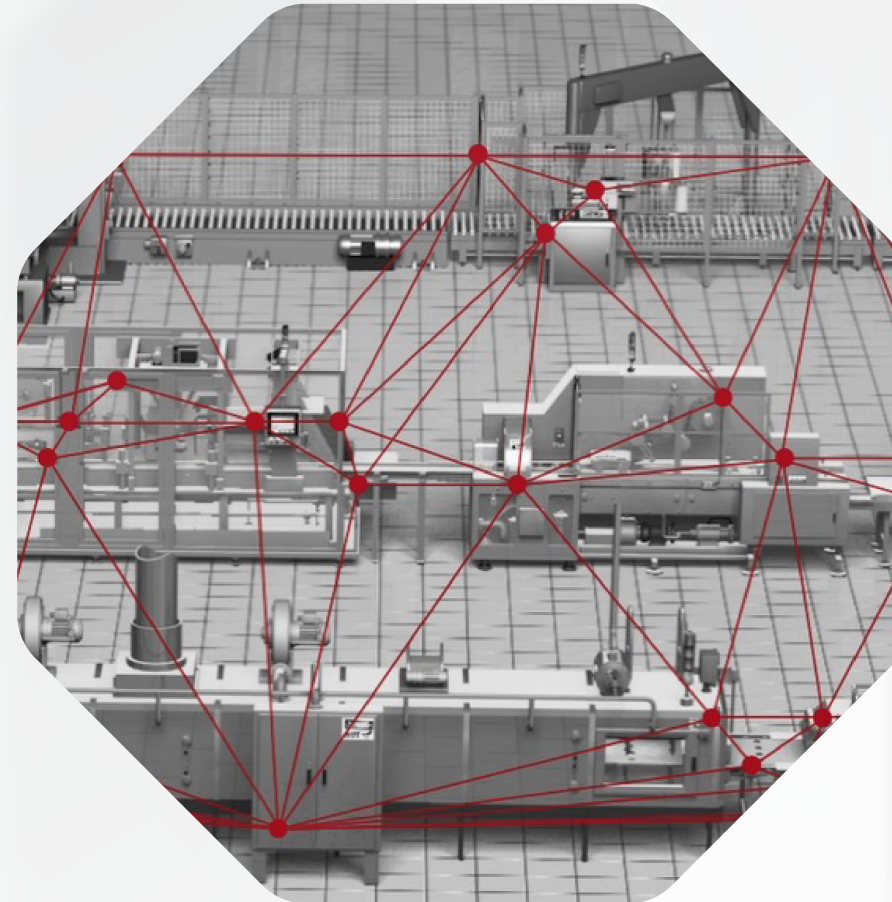## GETTING MORE VISIBILITY INTO MANUFACTURING AND SUPPLY CHAIN

RAW MATERIAL FLOW

- Supplier batch / lot
- Vendor A,B,C
- Quality status

ASSEMBLY

- Work instruction
- Assembly status
- Quality status

PACKAGING LINE

- Item level
- Box level
- Case level
- Palletizing level

ASSETS

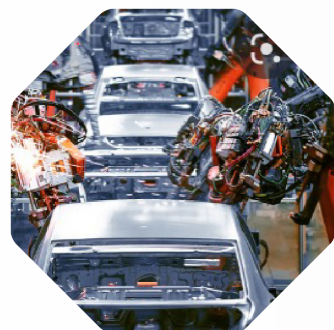- Location of assets
- Quality of assets
- Maintenance cycle

TOOLING

- Tool ID
- Hours of use
- Quality status
- Maintenance cycle

MATERIAL HANDLING / LOGISTICS

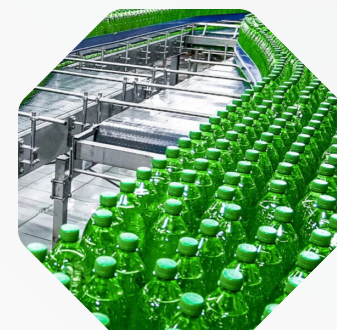- Order status
- Lot / batch sizes
- Time / event

TARGET INDUSTRIES

Automotive & Tire
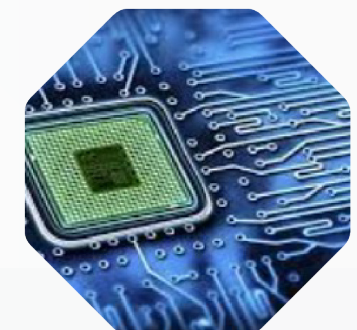
CPG Packaging

Food & Beverage

EV Batteries

Material Handling Logistic

Pharma & Life Science

Semiconductor

Identification Product Portfolio

Product traceability and anti-counterfeiting solutions require reliable and scalable identification products. Rockwell Automation offers the three core technologies, which are HF, UHF, and Code Readers to tackle all coding applications.

Allen-Bradley® High Frequency Industrial Radio Frequency Identification (RFID) systems provide a rugged and reliable solution for tracking and documenting products as they move through the manufacturing process.

Designed to withstand harsh environments, Industrial RFID systems feature a range of read/write transceivers and reusable read/write tags that allow for optimal flexibility with information and applications. In addition to our 56RF EtherNet/IP-enabled RFID system, our new 59RF family of IO-Link high frequency (13.56 MHz, per ISO 15693) read/write transceivers have been designed for easy, cost-effective, seamless integration into The Connected Enterprise, delivering data from the plant floor directly into a control system to help minimize downtime and increase productivity. With simplified plug and play installation, these high frequency RFID systems reduce installation costs in a wide range of industries.

SMART TRACK & TRACE DEVICES

56RF HF RFID	59RF HF RFID	58UHF Long Range RFID	48CR 1D & 2D Code Reader
EtherNet/IP	IO-Link	EtherNet/IP	EtherNet/IP
HF RFID up to 168 mm read range	**HF RFID up to 85 mm read range**	**UHF RFID up to 5 m read range**	**1D,2D Code Reader up to 400 mm**
13,56 MHZ RFID Transceivers **ISO 15693 ICODE**	**13,56 MHZ RFID Transceivers** **ISO 15693 ICODE**	**UHF Gen2 Transceivers**	**Code Reader Camera**
• EtherNet/IP interface with 1 or 2 channels and 2 DIO ports	• Connectivity to IO-Link master with 4 or 8 channels	• EtherNet/IP with DLR • 1.5 m & 5 m Compact Transceivers	• EtherNet/IP enabled • Fixed and Autofocus • Resolution 0,3 to 1,2 MP

High Frequency RFID 56RF/59RF

- One-and two-channel EtherNet/IP and up to 8-channel IO-Link interfaces available

- Production efficiency—detailed tracking of who, when, where, and what was done to build product(s)

- Rugged IP67 (M18 and M30) and IP68 and IP69K (4040) design to withstand harsh industrial applications (59RF only)

- Pre-programmed batches—tags identify which recipe to load automatically, reducing errors

- Reusable read/write tags with Unique ID (UID) numbers for optimal traceability

- Premier integration into Logix /Studio5000 software

Transceivers

therNet/IP
IO-Link

Tags

Interface Blocks

Track and Trace Materials Through Your Process

Industrial Radio Frequency Identification (RFID) systems are a rugged and reliable way to track and document products as they move through the manufacturing process.
Unlike the bar code systems used for similar, less demanding applications, industrial RFID systems are designed to withstand harsh environments. Plus, reusable read/write tags allow for flexibility in information and application.

Product Selection
High Frequency 13.56 MHz ICODE with EtherNet/IP and IO-Link Interface Transceivers

Dimensions [mm (in.)]	Recommended Sensing Distance [mm (in.)]	Max. Sensing Distance [mm (in.)]	Cat. No.
Rectangular 80 x 90 (3.15 x 3.54)	102 (4)	168 (6.61)	56RF-TR-8090
Square 40 x 40 (1.57 x 1.57)	50 (1.97)	85 (3.35)	56RF-TR-4040
Cylindrical M30	45 (1.77)	75 (3)	56RF-TR-M30
Cylindrical M18	30 (1.18)	30 (1.18)	56RF-TR-M18
Cylindrical M18	10 (0.39)	34 (1.34)	59RF-TR-M18 ⊗
Cylindrical M30	23 (.91)	50 (1.97)	59RF-TR-M30 ⊗
Square 40 x 40 (1.57 x 1.57)	41 (1.61)	78 (3.07)	59RF-TR-4040 ⊗

Tags

Description	Type	Memory Size	Dimensions [mm (in.)]	Cat. No.
Disc	SLI	128 Bytes	16...50 (0.63...1.97)	56RF-TG-⊗
Disc - Mount on Metal	SLI	128 Bytes	50 (1.97)	56RF-TG-50MOM
Disc - FRAM	FRAM	2K Bytes	20...50 (0.79...1.97)	56RF-TG-ø-2KB
Square - Hi Temp (340 °C (464 °F) max.)	SLI	128 Bytes	50 x 50 (1.97 x 1.97)	56RF-TG-50HT

* Time spent in temperature range varies. See technical data for more information.

EtherNet/IP and IO-Link Interface Blocks

RFID Ports	Inputs	Outputs	Cat. No.
2	1	1	56RF-IN-IPD22
2	2	–	56RF-IN-IPD22A
1	1	1	56RF-IN-IPS12

IO-Link	Inputs	Outputs	Cat. No.
ArmorBlock	8	8	1732E-8IOLM12R ⊗
POINT IO	four channels that can be individually configured		1734-4IOL ⊗
ArmorBlock 5000	16 configurable digital channels		5032-8IOLM12DR

⊗ IO-Link enabled ⊗ Replace with diameter in millimeters (16, 30 or 50) Ø Replace with diameter in millimeters (20, 30 or 50).
* Insert DR for 10A mini 4-pin power connection, P5DR for 10A mini 5-pin power connection or M12LDR for 16A L-coded micro power connection.

Specifications

Certifications	Interfaces & rectangular transceivers: cULus Listed, C-Tick, CE Marked for all applicable directives Cylindrical transceivers: CE Marked for all applicable directives ISO 15693 classification
Operating Temperature [C (F)]	Interfaces: -20...+60 ° (-4...+140 °) Transceivers, Disc Tags < 20mm: -25...+70 ° (-13...+158 °) Disc Tags ≥ 20mm: -25...+85 ° (-13...+185 °) Hi Temp Tags: -40...+220 ° (-40...+428 °)
Operating Voltage	24V DC
Output Current, max.	100 mA per transceiver
Frequency	13.56 MHz
Tag Memory	Up to 8 KB, SLI, SLIX & FRAM

* See individual product specifications

Required Cordsets and Accessories

Description	Cat. No.
DC Micro (M12) female straight to male straight QD patchcord, 5-pin, 2 m (6.5 ft)	889D-F5FCDM-J2
DC Micro (M12) female straight to male straight QD patchcord, 4-pin, 2 m (6.5 ft)	889D-F4ACDM-2
M12 D-code patchcords	1585D-M4TBDM-2
M12 D-code patchcords, male straight to male straight 4-pin shielded 2 m (6.5 ft)	1585D-M4UBDM-2

* Other cord-sets lengths/connections available

Ultra-High Frequency (UHF) RFID Transceivers

Unlike HF systems used for track-and-trace at close range, UHF RFID technology offers a large working range and enables multi-tagging. Because UHF systems communicate over a range of up to 5 m and can read multiple data carriers simultaneously. In other words: UHF allows bulk reading. This makes UHF technology especially ideal for track-and-trace solutions in supply chain management and logistics. UHF supports the digitalization of production and intralogistics processes.

You can automatically register incoming and outgoing goods or reliably monitor the work progress and material consumption. We offer reliable solutions that we have tailored to your specific requirements. Our wide-ranging solution spectrum with many different combination possibilities of data carriers and antennas makes using our systems highly flexible. Integration via EtherNet/IP into our Rockwell Automation Logix controller platform allows to communicate seamlessly into our higher-level IT systems.

Rounding out our portfolio to meet the needs of current and future customers.

- Offered in NA and EMEA due to individual country frequency regulations

- NA = US designation in the catalog number
  - Canada and USA
  - 902…928 MHz Frequency

- EU = EMEA designation in the catalog number
  - 865…868 MHz Frequency

COMPLIANT, SECURED, AND TRANSPARENT SUPPLY CHAIN

58UHF Short Range Transcievers

- Read Range Max > 5 m
- 200x200 mm
- Global Gen2 (ISO 18000-63) standard for tags
- EtherNet/IP connection
- IP66/67
- Built-in Circular and Linear Antenna
- Custom AOP with embedded configuration software for easy set up
- Can read up to 500 tags/sec max
- User Memory > up to 64KB

58UHF Long Range Transceivers

- Read Range Max > 1.5 m
- 100x100 mm
- Global Gen2 (ISO 18000-63) standard for tags
- EtherNet/IP connection
- IP66/67
- Built-in Circular and Linear Antenna
- Custom AOP with embedded configuration software for easy set up
- Can read up to 150 tags/sec max
- User Memory > up to 64KB

Product Selection

Transceivers

Description	Dimensions [mm (in.)]	Sensing Distance [m (ft.)]	Cat. No.
Short-range	109 X 116 X 54 (4.3 X 4.6 X 2.1)	1.5 (4.92)	58UHF-TR-100-SR15US
Long-range	203 X 212 X 66 (8 X 8.3 X 2.6)	5 (16.4)	58UHF-TR-200-LR50US
Short-range	109 X 116 X 54 (4.3 X 4.6 X 2.1)	1.5 (4.92)	58UHF-TR-100-SR15EU
Long-range	203 X 212 X 66 (8 X 8.3 X 2.6)	5 (16.4)	58UHF-TR-200-LR50EU

Accessories

Type/Style	Connector Type	No.of Pins	Shield	Wire Size [AWG]	Cat. No.[2]
EtherNet/IP™ DC Micro (M12) patchcords	Straight plug	4	-	24	1585D-M4TBJM-X
DC Micro (M12) corset [power]	Straight socket	4	-	22	889D-F4AC-X
DC Micro (M12) corset [power]	Right-angle socket	4	-	22	889D-R4AC-X

(1) The transceiver supports both shielded and unshielded Ethernet cords.
(2) X= 2 (2 m [6.6 ft]), 5(5 m [16.4]), or 10 (10 m [32.8 ft]) for standard cable lengths.

48CR Code Readers

- Compact IP65/67 housing
- Two models available:
  - Standard: (WVGA, 0.3 MP resolution, fixed focus)
  - Advanced: (SXGA, 1.2 MP resolution, autofocus)
- Read ranges 102...400 mm (4.02...15.75 in.) fixed and adjustable
- Speeds up to 60 frames per second (fps) for fixed focus and 42 fps for autofocus code readers
- 16 LED-integrated illumination
- Automatic setup simplifies Installation
- Provides code quality check (AIM grading) for print & verification processes

Product Selection

48CR Code Reader

Focus	Resolution	Imager	Focal Distance	Cat. No.
Advanced	(Auto focus)	SXGA 1.2MP Resolution	133 mm	48CR-CC50RAF-E8
Advanced	(Auto focus)	SXGA 1.2MP Resolution	190 mm	48CR-CC77RAF-E8
Advanced	(Auto focus)	SXGA 1.2MP Resolution	400 mm	48CR-CC16RAF-E8
Standard	(Fixed focus)	WVGA 0.3 MP Resolution	102 mm	48CR-CB52R102-E8
Standard	(Fixed focus)	WVGA 0.3 MP Resolution	133 mm	48CR-CB80R133-E8
Standard	(Fixed focus)	WVGA 0.3 MP Resolution	190 mm	48CR-CB80R190-E8
Standard	(Fixed focus)	WVGA 0.3 MP Resolution	400 mm	48CR-CB16R400-E8

Compact High Performance Code Reader

Provides clear, high-speed codes on any surface

The rugged 48CR Code Reader decodes 1D/2D and Direct Part Marked (DPM) codes and solves the most challenging readings under most conditions. Featuring the latest decoding algorithms technology, this code reader can successfully read damaged and incomplete symbols despite scenarios with poor prints, scratches or various obstructions. The 48CR supports Ethernet/IP™ and can be configured through either the Studio 5000 Logix Designer® Add-On Profile (AOP) or the embedded WebConnect visual browser.

The 48CR solves difficult barcode reading challenges throughout various applications and industries:

- Automotive
- Material handling
- Pharmaceutical
- Packaging
- Assembly
- Food and Beverage

Able to read any 1D and 2D codes

- 1D/2D and Direct Part Marked (DPM) codes
- Advanced decoding algorithm allows for successful reads of damaged and/or incomplete symbols
- Provides AIM grading for print and verify process

Specifications

	Standard	Advanced
Certifications	FFC, CE, RoHC	
Enclosure Type Rating	Aluminum IP65/67	
Speed	High speed (up to 60 fps)	High speed (up to 42 fps)
Sensor (CMOS)	WYGA (0.34 MP, 752 x 480)	SXGA (1.2 MP, 1280 x 980)
Frames per second	WYGA (60 FPS)	SXGA (42 FPS)
Connectivity	M12 8-pin power, M12 4-pin Ethernet	
Digital I/O	2 opto-isolator inputs, 2 opto-isolator outputs	
Operating Temperature [C (F)]	0...+40 ° (-32...104 °)	
Dimensions	25 x 45 x 45 mm (1 x 1.75 x 1.75 in.)	

Accessories

Description	Cat. No
Diffuser - lens cover kit	48CR-DIFFUSER
Polarizer - lens cover kit	48CR-POLARIZER
Bracket, L-shaped	48CR-LBKT
Adjustable bracket	48CR-ADJBKT
Right-angle mirror	48CR-45MIRROR
T-port	879D-F8D4M

Rockwell Automation

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