

# RFID Specifications

Bulletin Numbers 56RF, 57RF

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## Summary of Changes

This manual contains new and updated information as indicated in the following table.

<b>Topic</b>	<b>Page</b>
Added 56RF-TG-12MOM specifications to Tags table	19
Added 56RF-TG-12MOM approximate dimensions drawing	23

## High-Frequency EtherNet/IP Interface Block (Catalog Numbers 56RF-IN-IPS12/-IPD22/-IPD22A)

### Specifications

#### EtherNet/IP Interface Block Input – 56RF-IN-IPS12, 56RF-IN-IPD22, and 56RF-IN-IPD22A

Attribute	56RF-IN-IPS12, 56RF-IN-IPD22, and 56RF-IN-IPD22A
Number of Transceiver Inputs	2 – 56RF-IN-IPD22 and 56RF-IN-IPD22A 1 – 56RF-IN-IPS12
Number of Standard Inputs	2 – 56RF-IN-IPD22A 1 – 56RF-IN-IPD22 and 56RF-IN-IPS12
Standard Input Type	Sink, 24V DC
Voltage, Off-state Input, max.	5V DC
Voltage, On-state Input, max.	30V DC
Voltage, On-state Input, nom	24V DC
Voltage, On-state Input, min.	11V DC
Current, Off-state Input, max.	1.5 mA @ 5V DC
Current, On-state Input, max.	5 mA @ 30V DC
Voltage, Sensor Source, max.	30V DC
Voltage, Sensor Source, min.	10V DC
Input Delay Time ON to OFF OFF to ON	0...16000 $\mu$ s
Isolation Voltage	50V (continuous), basic insulation type, Inputs and sensor power to network No isolation between individual inputs or between network channels Type tested at 707V DC for 60 s

#### EtherNet/IP Interface Block Output – 56RF-IN-IPS12 and 56RF-IN-IPD22

Attribute	56RF-IN-IPS12 and 56RF-IN-IPD22
Number of Standard Outputs	1
Standard Output Type	Source, 24V DC
Voltage Drop, On-state Output, max.	0.5V DC
Voltage Off-peak Blocking, min.	30V DC
Voltage, On-state Output, max.	30V DC
Voltage, On-state Output, min.	11V DC
Voltage, On-state Output, nom	24V DC
Current On-state Output, max.	0.5 A
Leakage Current, Off-state Output, max.	50 $\mu$ A
Surge Current per Output, max.	1.2 A for 10 ms, repeatable every 2 s
Isolation Voltage	50V (continuous), basic insulation type, outputs, and output power to network No isolation between individual outputs or between outputs and output power or between network channels Type tested at 707V DC for 60 s

**EtherNet/IP Interface Block RFID – 56RF-IN-IPS12 and 56RF-IN-IPD22**

Attribute	56RF-IN-IPS12 and 56RF-IN-IPD22
Voltage	24V DC (-20...+10%)
Output Current per RFID Port, max.	100 mA @ 24V DC

**General Specifications**

Attribute	Interface Blocks
Voltage, Auxiliary Power <sup>(1)</sup>	24V DC (-20...+10%)
Auxiliary Current per Module, max. <sup>(2)</sup>	4 A
Output Current per RFID Transceiver Port, max.	100 mA @ 24V DC
Current for Output Device Power per I/O Port, max.	0.5 A @ 30V
Current for Input Device Power per I/O Port, max.	5 mA @ 30V
Communication Rate	EtherNet/IP 10/100 Mbps Full or half-duplex 100 meter per segment
Status Indicators	Module Status - red/green Network Status - red/green Link Status - green/yellow Auxiliary Power - green I/O Status Indicator - yellow
Dimensions (HxWxD), approx.	179 x 37 x 43.25 mm (7.05 x 1.46 x 1.7 in.)
Weight, approx.	0.2 kg (0.45 lb)
Enclosure Type Rating	IP67 and IP69K
Wiring Category <sup>(3)</sup>	1 - on signal ports 1 - on power ports 1 - on communication ports

(1) Intended for limited voltage power, limited current supply.

(2) A Listed or Recognized 4 A fuse must be installed on the line side of the device.

(3) Use this Conductor Category information for planning conductor routing. See publication [1770-4.1](#), Industrial Automation Wiring and Grounding Guidelines.

## Environmental Specifications

Attribute	Interface Blocks
Temperature, Operating	IEC60068-2-1/2, Test Ad/Bd Cold: -20 °C (-4 °F) Dry Heat: 60 °C (140 °F) Gradient: 1 °C (33.8 °F)/min Duration: 33.6 hr with insulation tests
Temperature, Storage	IEC60068-2-1/2, Test Ad/Bd Cold: -40 °C (-40 °F) Dry Heat: 85 °C (185 °F) Gradient: 1 °C (33.8 °F)/min Duration: 33.6 hr with insulation tests
Relative Humidity	IEC60068-2-30, Test Db Temperature Cycle Range: 20-60-20 °C (68-140-68 °F) Humidity Cycle Range: 80 . . . 95% noncondensing
Vibration	IEC60068-2-6 Frequency Range: 10 . . . 500 Hz Acceleration: 5 g Displacement: 0.030 in. (p-p) Duration: One octave per minute sweep rate No. of sweeps: 10 Vertical mounting
Shock, Operating	IEC60068-2-27 Acceleration: 30 g, 11 ms Vertical mounting
Shock, Nonoperating	IEC60068-2-32, Test Ea Acceleration: 50g, 11 ms Vertical mounting
Emissions	IEC61000-6-4 (CISPR11) Class A
ESD Susceptibility (Performance Criteria B)	IEC61000-4-2 Indirect (Coupling Plate): +/-6 kV contact discharge Direct (to "Points of Initial Contact"): +/-6 kV contact discharge; +/-8 kV air discharge
Radiated RF Immunity (Performance Criteria A)	IEC61000-4-3, ENV50204 80 . . . 1000 MHz: 10V/m, with 1 kHz sine-wave 80% AM 1 . . . 2 GHz: 10V/m, with 1 kHz sine-wave 80% AM 900 MHz Pulse: 10V/m, with 200 Hz 50% pulse 100% AM 1.89 GHz Pulse: 10V/m with 200 Hz 50% pulse 100% AM 2 . . . 2.7 GHz: 1V/m, with 1 KHz sine-wave 80% AM
EFT/B Immunity (Performance Criteria B)	IEC61000-4-4 DLR Ports: +/-3 kV clamp inject at 5 kHz for 5 min Module and Output Power: +/-3 kV clamp inject at 5 kHz for 5 min Digital I/O: +/-3 kV clamp inject at 5 kHz for 5 min Analog I/O: +/-3 kV clamp inject at 5 kHz for 5 min Earth Ground: +/-3 kV clamp inject at 5 kHz for 5 min
Surge Immunity (Performance Criteria B)	IEC61000-4-5 DLR Ports: +/-2 kV common mode @ 2 ohms Module and Output Power: +/-2 kV common mode @ 12 ohms; +/-2 kV differential mode @ 2 ohms Shielded Digital I/O: +/-2 kV common mode @ 2 ohms Shielded Analog I/O: +/-2 kV common mode @ 2 ohms
Conducted Radiated Immunity (Performance Criteria A)	DLR Ports, Module Power, Output Power, Digital I/O, and Analog I/O 150 kHz . . . 80 MHz, CDN inject 10V, with 1 kHz sine-wave 80% AM

### Compliance

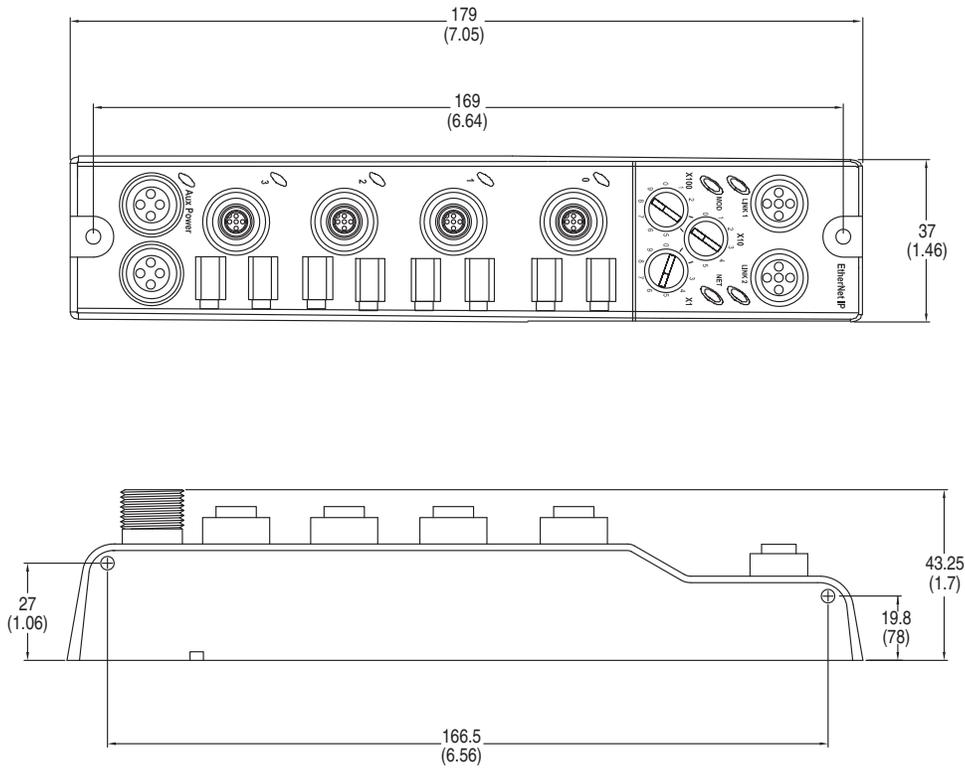
Compliance (when product is marked) <sup>(1)</sup>	Value
CE	European Union 2004/108/EC EMC Directive, compliant with: EN 61326-1; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions EN 61131-2; Programmable Controllers (Clause 8, Zone A & B)
EtherNet/IP	ODVA conformance tested to EtherNet/IP specifications.

(1) See the Product Certification link at <http://www.ab.com> for Declarations of Conformity, Certificates, and other certification details.

### Approximate Dimensions

Dimensions are shown in mm (in.). Not intended to be used for installation purposes.

#### Interface Block Dimensions



## 18 mm Cylindrical Transceiver (Catalog Number 56RF-TR-M18)

### Specifications

#### General

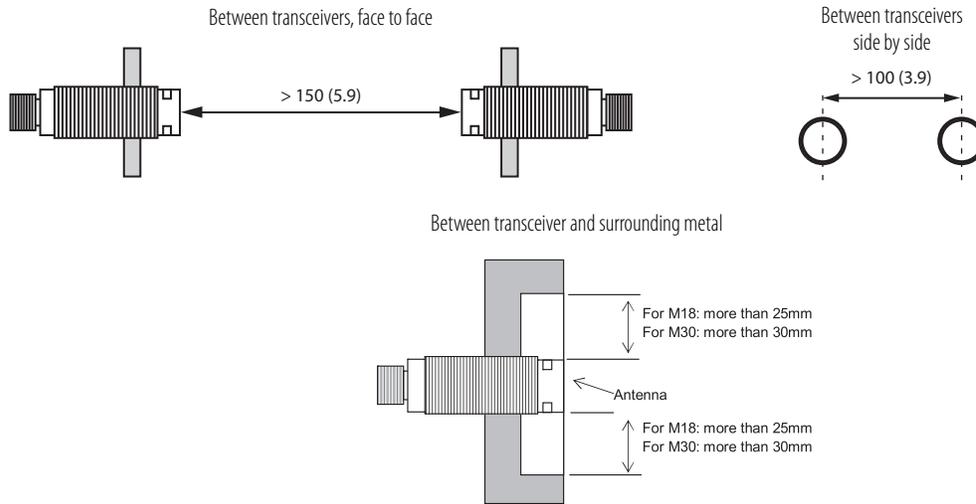
Attribute	56RF-TR-M18
Supply Voltage	24V DC
Max. Current Consumption	100 mA
Tag Compatibility	ICODE tags SL1, SL2, SLIX ISO 15693/ISO 18000-3 M1
Connector	M12, 4-pin male
Communication Systems	Half-duplex communication system (RS-485)
Baud Rate (Host)	9600, 19200, 38400, and 115200 bps
Frequency	13.56 MHz
Baud Rate (Tag)	26.48 Kbps
Data Length	8 bit
Operating Temperature	-25...+70 °C (-13...+158 °F)
Storage Temperature	-40...+85 °C (-40...+185 °F)
Operating Humidity (Noncondensing)	35...95% RH
Storage Humidity (Noncondensing)	25...85% RH
Vibration	10 g at 10...500 Hz
Shock Resistance	50 g
Enclosure Rating	IP67
Material	PBT and nickel-plated steel
Recommended Sensing Distance <sup>(1)</sup> [mm (in.)]	30 (1.18)
Max. Sensing Distance <sup>(1)</sup> [mm (in.)]	55 (2.16)
Max. Distance from Interface Module [m (ft)]	91.4 (300)
Compliance	CE

(1) Range reference for a 50 mm diameter tag

## Minimum Distances

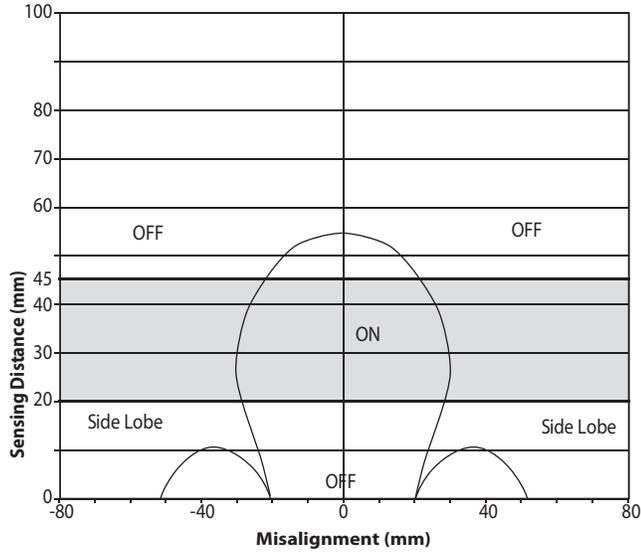
Dimensions are shown in mm (in.). Not intended to be used for installation purposes.

### Minimum Distance Dimensions



## Scanning Area

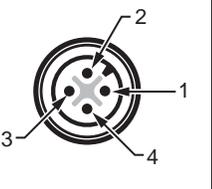
### 18 mm Cylindrical Transceiver Scanning Area



**Note:** Ideal tag distance for maximum performance is 20...45 mm (0.79...1.77).  
 Referenced to 50 mm disc tag.

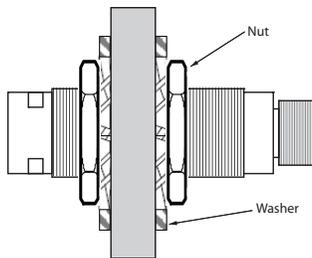
## Connector Pinout

### Pinout

	Pin	Signal
	1	24V DC
	2	Data +
	3	GND
	4	Data -

## Tightening Torque

### 18 mm Cylindrical Transceiver Tightening Torque

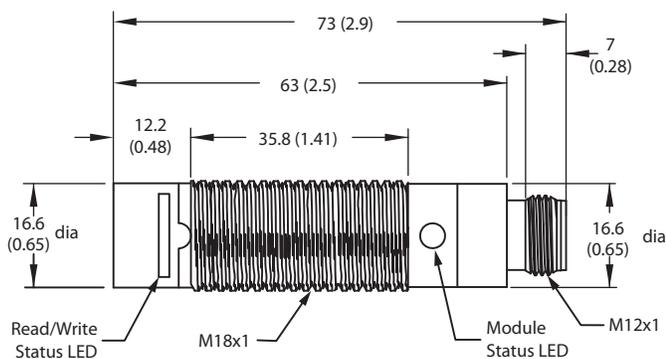


Torque mounting nuts to 19.8 N•m (14.6 ft•lb).  
Nuts and washers included.

## Approximate Dimensions

Dimensions are shown in mm (in.). Not intended to be used for installation purposes.

### 18 mm Cylindrical Transceiver Dimensions



# 30 mm Cylindrical Transceiver (Catalog Number 56RF-TR-M30)

## Specifications

### General

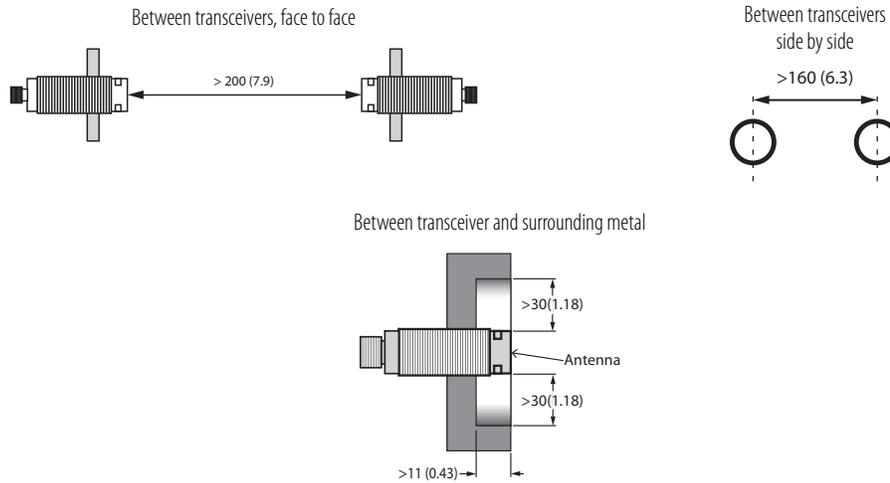
Attribute	56RF-TR-M30
Supply Voltage	24V DC
Max. Current Consumption	100 mA
Tag Compatibility	ICODE tags SL1, SL2 ISO 15693/ ISO 18000-3 M1
Connector	M12 4-Pin Male
Communication Systems	Half-duplex communication system (RS-485)
Baud Rate (Host)	9600, 19200, 38400, and 115200 bps
Frequency	13.56 MHz
Baud Rate (Tag)	26.48 Kbps
Data Length	8 bit
Operating Temperature	-25...+70 °C (-13...+158 °F)
Storage Temperature	-40...+85 °C (-40...+185 °F)
Operating Humidity (Noncondensing)	35...95% RH
Storage Humidity (Noncondensing)	25...85% RH
Vibration	10 g at 10...500 Hz
Shock Resistance	50 g
Enclosure Rating	IP67
Material	PBT and nickel-plated steel
Recommended Sensing Distance <sup>(1)</sup> [mm (in.)]	45 (1.77)
Max. Sensing Distance <sup>(1)</sup> [mm (in.)]	75 (3)
Max. Distance from Interface Module [m (ft)]	91.4 (300)
Compliance	CE

(1) Range reference for a 50 mm diameter tag

## Minimum Distances

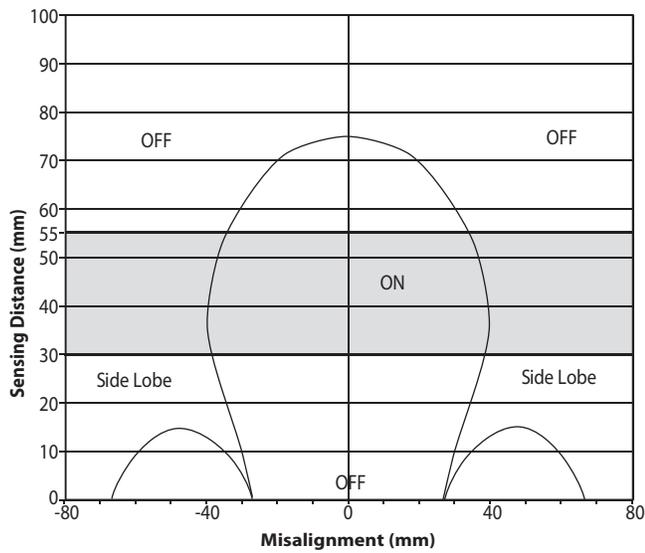
Dimensions are shown in mm (in.). Not intended to be used for installation purposes.

### Minimum Distance Dimensions



## Scanning Area

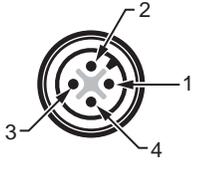
### 30 mm Cylindrical Transceiver Scanning Area



**Note:** Ideal tag distance for maximum performance is 30...55 mm (1.2...2.2 in.). Referenced for a 50 mm disc tag.

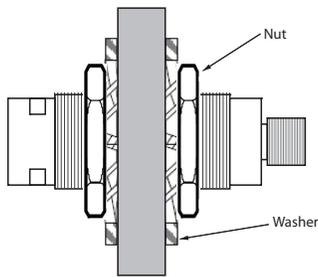
## Connector Pinout

### Pinout

	Pin	Signal
	1	24V DC
	2	Data +
	3	GND
	4	Data -

## Tightening Torque

### 30 mm Cylindrical Transceiver Tightening Torque

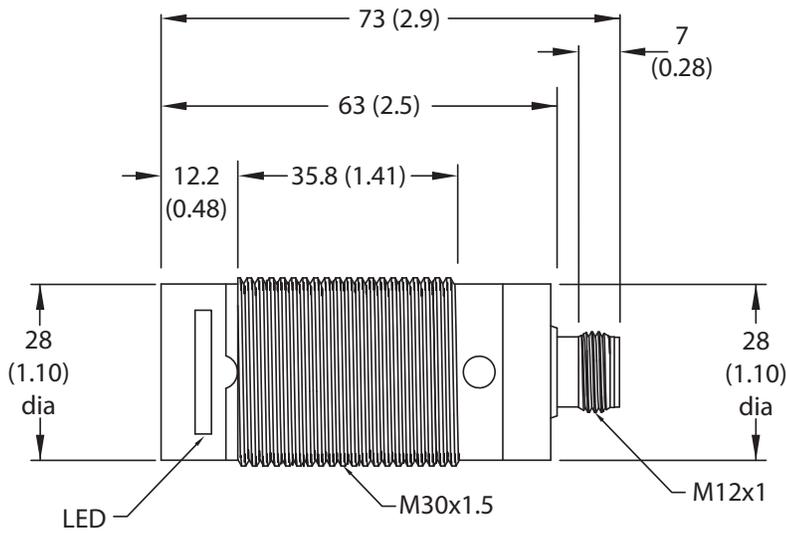


Torque mounting nuts to 33.9 N•m (25 ft•lb).  
Nuts and washers included

## Approximate Dimensions

Dimensions are shown in mm (in.). Not intended to be used for installation purposes.

### 30 mm Cylindrical Transceiver



# Square 40 x 40 mm Transceiver (Catalog Number 56RF-TR-4040)

## Specifications

### General

Attribute	56RF-TR-4040
Enclosure Rating	IP67
Operating Temperature	-25...+60 °C (-13...+140 °F)
Storage Temperature	-40...+85 °C (-40...+185 °F)
Operating Humidity (Noncondensing)	35...95% RH
Storage Humidity (Noncondensing)	25...85% RH
Vibration	10 g at 10...500 Hz
Shock Resistance	50 g
Recommended Sensing Distance <sup>(1)</sup>	2 in. (50 mm)
Max. Sensing Distance <sup>(1)</sup>	3.3 in. (85 mm)
Max. Distance from Interface Module	300 ft (91.4 m)
Compliance	CE, cULus, C-Tick
Type of Equipment	Industrial control

(1) Range reference for a 50 mm diameter tag

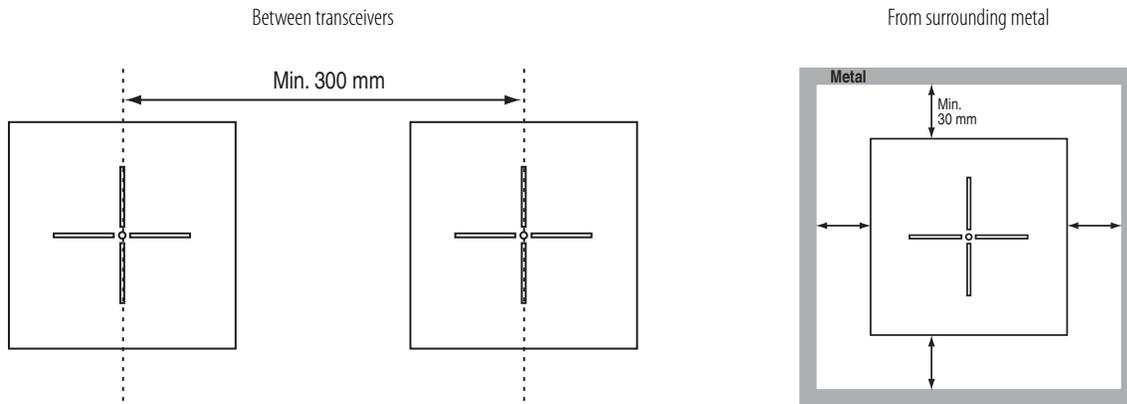
### Electrical

Attribute	56RF-TR-4040
Supply Voltage	24V DC (-20...+10%)
Max. Current Consumption	100 mA
Tag Compatibility	ICODE tags SL1, SL2 ISO 15693 / ISO 18000-3 M1
Connector	M12 4-pin male
Communication Systems	Half-duplex communication system (RS-485)
Baud Rate (Host)	9600 / 19200 / 38400 / 115200 bps
Frequency	13.56 MHz
Baud Rate (Tag)	26.48 kbit/s
Data Length	8 bit

## Minimum Distances

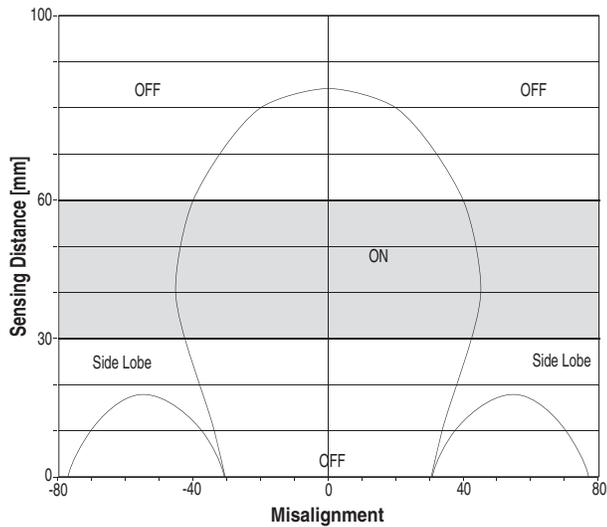
Dimensions are shown in mm (in.). Not intended to be used for installation purposes.

### Minimum Distance Dimensions



## Scanning Area

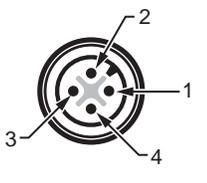
### Square 40 x 40 mm Transceiver Scanning Area



**Note:** Ideal tag distance for maximum performance is 30 . . . 60 mm.  
Referenced for a 50 mm disc tag.

## Connector Pinout

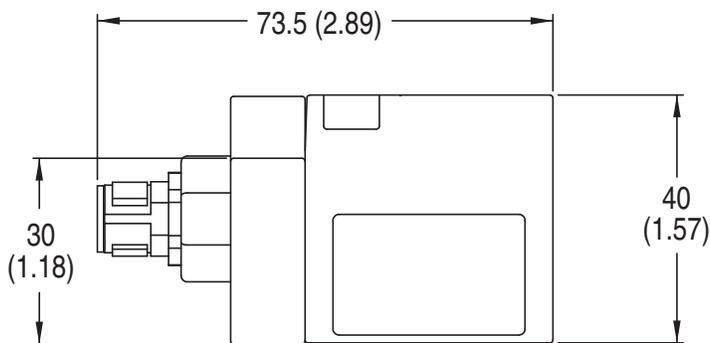
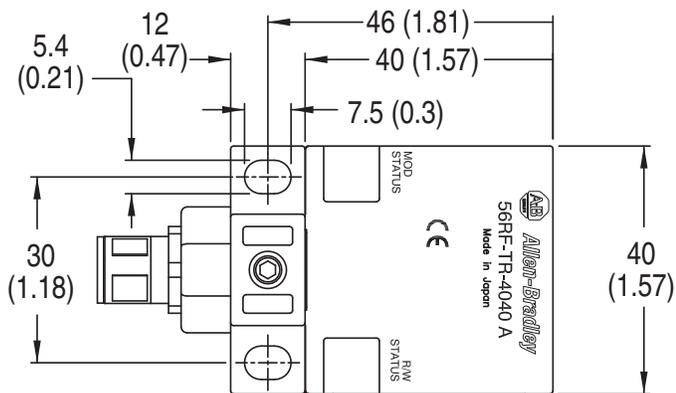
### Pinout

	Pin	Signal
	1	24V DC
	2	Data +
	3	GND
	4	Data -

## Approximate Dimensions

Dimensions are shown in mm (in.). Not intended to be used for installation purposes.

### Square 40 x 40 mm Transceiver Dimensions



# Rectangular 80 x 90 mm Transceiver (Catalog Number 56RF-TR-8090)

## Specifications

### General

Attribute	56RF-TR-8090
Enclosure Rating	IP67
Operating Temperature	-25...+70 °C (-13...+158 °F)
Storage Temperature	-40...+85 °C (-40...+185 °F)
Operating Humidity (Noncondensing)	35...95% RH
Storage Humidity (Noncondensing)	25...85% RH
Vibration	10 g at 10...500 Hz
Shock Resistance	50 g
Recommended Sensing Distance <sup>(1)</sup>	4 in. (102 mm)
Max. Sensing Distance <sup>(1)</sup>	6.6 in. (168 mm)
Max. Distance from Interface Module	300 ft (91.4 m)
Compliance	CE, cULus, C-Tick
Type of Equipment	Industrial control

(1) Range reference for a 50 mm diameter tag

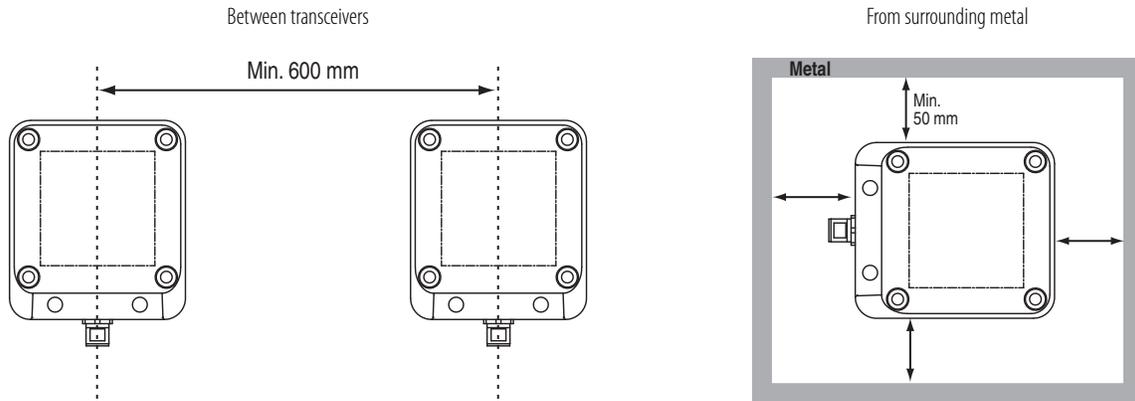
### Electrical

Attribute	56RF-TR-8090
Supply Voltage	24V DC (-20...+10%)
Max. Current Consumption	100 mA
Tag Compatibility	ICODE tags SL1, SL2 ISO 15693 / ISO 18000-3 M1
Connector	M12 4-pin male
Communication Systems	Half-duplex communication system (RS-485)
Baud Rate (Host)	9600 / 19200 / 38400 / 115200 bps
Frequency	13.56 MHz
Baud Rate (Tag)	26.48 kbit/s
Data Length	8 bit

## Minimum Distances

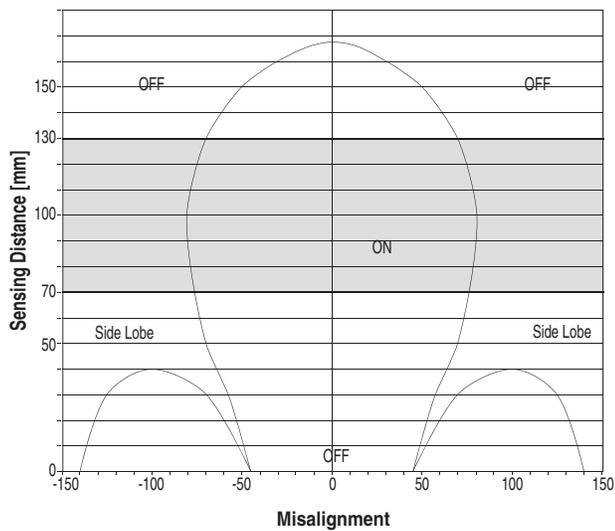
Dimensions are shown in mm (in.). Not intended to be used for installation purposes.

### Minimum Distance Dimensions



## Scanning Area

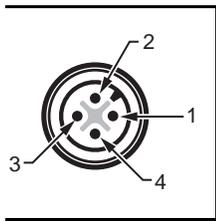
### Rectangular 80 x 90 mm Transceiver Scanning Area



**Note:** Ideal tag distance for maximum performance is 70 . . . 130 mm.  
Referenced for a 50 mm disc tag.

## Connector Pinout

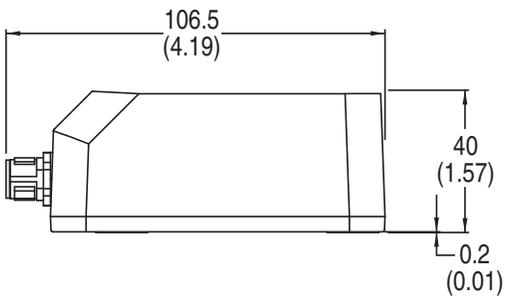
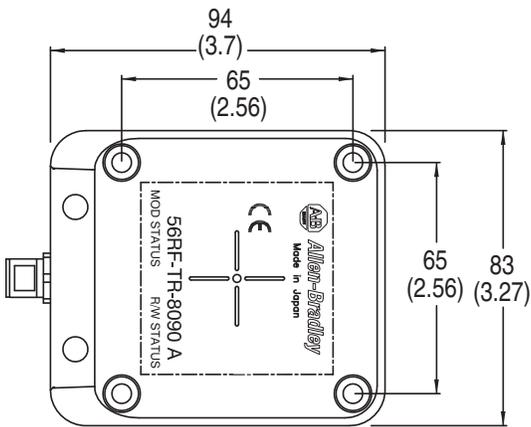
### Pinout

	Pin	Signal
	1	24V DC
	2	Data +
	3	GND
	4	Data -

## Approximate Dimensions

Dimensions are shown in mm (in.). Not intended to be used for installation purposes.

### Rectangular 80 x 90 mm Transceiver Dimensions



## Disc Tag — ICODE SLI, SLIx, and SL2 Memory

### Specifications

#### General

	8 mm (Cat. No. 56RF-TG-8)	10 mm (Cat. No. 56RF-TG-10)	12 mm (Cat. No. 56RF-TG-12MOM)	16 mm (Cat. No. 56RF-TG-16)
<b>Features</b>	<ul style="list-style-type: none"> <li>1024 bits memory size (32 blocks of 4 bytes)</li> <li>896 user bits</li> </ul>	<ul style="list-style-type: none"> <li>1024 bits memory size (32 blocks of 4 bytes)</li> <li>896 user bits</li> </ul>	<ul style="list-style-type: none"> <li>1024 bits memory size (32 blocks of 4 bytes)</li> <li>896 user bits</li> </ul>	<ul style="list-style-type: none"> <li>1024 bits memory size (32 blocks of 4 bytes)</li> <li>896 user bits</li> </ul>
<b>Chip Type</b>	SLI	SLI	SLIx	SLI
<b>Typical Operating Frequency</b>	13.56 MHz	13.56 MHz	13.56 MHz	13.56 MHz
<b>External Diameter</b>	7.5 ± 0.2 mm	9.5 ± 0.3 mm	12.4 ± 0.25 mm	16.0 ± 0.2 mm
<b>Thickness</b>	1.0 ± 0.3 mm	1.0 ± 0.3 mm	2.15 ± 0.50 mm	3.0 ± 0.2 mm
<b>Weight</b>	110 ± 20 mg	110 ± 20 mg	0.6 ± 0.12 g	1.0 ± 0.15 g
<b>Material</b>	Epoxy	Epoxy	PPS (housing) and epoxy (potting)	FORTRON 6165A6 (PPS)
<b>Color</b>	Yellowish	Yellowish	Black	White (natural)
<b>Package Quantity</b>	25 units (plastic bag)	25 units (plastic bag)	25 units (plastic bag)	25 units (plastic bag)
<b>Mechanical</b>	<ul style="list-style-type: none"> <li>Shock (IEC 68-2-29)</li> <li>Vibration (IEC 68-2-6)</li> </ul>	<ul style="list-style-type: none"> <li>Shock (IEC 68-2-29)</li> <li>Vibration (IEC 68-2-6)</li> </ul>	<ul style="list-style-type: none"> <li>Shock (IEC 68-2-29)</li> <li>Vibration (IEC 68-2-6)</li> </ul>	—
<b>Chemical/ Environmental</b>	Water IP67 (1 m/24 hr)	Water IP67 (1 m/24 hr)	<ul style="list-style-type: none"> <li>Water IP68 (1 m/24 hr)</li> <li>100 hrs, 20 °C (68 °F): Salt mist, fuel B, petroleum, and mineral/vegetable oils</li> </ul>	<ul style="list-style-type: none"> <li>100 hrs, 20 °C (68 °F): HCl (10%), bleach (5%), caustic soda (pH 11), Perchloroethylene (100%), and neutralizing agent</li> <li>100 hrs, 70 °C (158 °F): Industrial laundry detergent (pH 10...11) and hydrogen peroxide (5%)</li> </ul>
<b>Compliance</b>	Compliant with ISO/IEC 15693 and 18000-3 Mode 1	Compliant with ISO/IEC 15693 and 18000-3 Mode 1	Compliant with ISO/IEC 15693 and 18000-3 Mode 1	Compliant with ISO/IEC 15693 and 18000-3 Mode 1
<b>Storage Temperature</b>	-40...85 °C (-40...185 °F) 1000 hr	-40...85 °C (-40...185 °F) 1000 hr	-40...90 °C (-40...194 °F) 1000 h	-25...85 °C (-13...185 °F) 1000 hr
<b>Peak Temperature</b>	100 °C (212 °F) 1 hr	100 °C (212 °F) 1 hr	120 °C (248 °F) 100 hr	120 °C (248 °F) 100 hr
<b>Operating Temperature</b>	-25...85 °C (-13...185 °F)	-25...85 °C (-13...185 °F)	-40...85 °C (-40...185 °F)	-25...85 °C (-13...185 °F)
<b>Shock/Fatigue Temperature</b>	-40...85 °C (-40...185 °F) 50 cycles (soaking time 5 min, transition time 30 s)	-40...85 °C (-40...185 °F) 50 cycles (soaking time 5 min, transition time 30 s)	-40...90 °C (-40...194 °F) 100 cycles (soaking time 5 min, transition time 30 s)	20...160 °C (68...320 °F) 100 cycles (soaking time 5 min, transition time 30 s)

## Specifications, continued

### General

	20 mm (Cat. No. 56RF-TG-20)	30 mm (Cat. No. 56F-TG-30)	35 mm High Impact Resistant (Cat. No. 56RF-TG-35HIR)	50 mm (Cat. No. 56RF-TG-50)
<b>Features</b>	<ul style="list-style-type: none"> <li>1024 bits memory size (32 blocks of 4 bytes)</li> <li>896 user bits</li> </ul>	<ul style="list-style-type: none"> <li>1024 bits memory size (32 blocks of 4 bytes)</li> <li>896 user bits</li> </ul>	<ul style="list-style-type: none"> <li>1024 bits memory size (32 blocks of 4 bytes)</li> <li>896 user bits</li> </ul>	<ul style="list-style-type: none"> <li>1024 bits memory size (32 blocks of 4 bytes)</li> <li>896 user bits</li> </ul>
<b>Chip Type</b>	SLI	SLI	SLI	SLI
<b>Typical Operating Frequency</b>	13.56 MHz	13.56 MHz	13.56 MHz	13.56 MHz
<b>External Diameter</b>	20.0 ± 0.5 mm	30.0 ± 0.5 mm	34.0 ± 0.3 mm	50.0 ± 0.5 mm
<b>Central Hole Diameter</b>	—	5.2 ± 0.3 mm	5.6 ± 0.3 mm	5.2 ± 0.3 mm
<b>Thickness</b>	3.0 ± 0.5 mm	3.0 ± 0.5 mm	8.0 ± 0.3 mm	3.5 ± 0.5 mm
<b>Weight</b>	1.3 ± 0.3 g	3.0 ± 0.6 g	7.8 ± 0.6 g	9.5 ± 2.0 g
<b>Material</b>	PA6	PA6	PA6 High Impact	PA6
<b>Color</b>	Black 9205	Black 9205	Black 9205	Black 9205
<b>Package Quantity</b>	25 units (plastic bag)			
<b>Mechanical</b>	<ul style="list-style-type: none"> <li>Shock (IEC 68-2-29)</li> <li>Vibration (IEC 68-2-6)</li> </ul>	<ul style="list-style-type: none"> <li>Shock (IEC 68-2-29)</li> <li>Vibration (IEC 68-2-6)</li> </ul>	<ul style="list-style-type: none"> <li>Shock (IEC 68-2-29)</li> <li>Vibration (IEC 68-2-6)</li> </ul>	<ul style="list-style-type: none"> <li>Shock (IEC 68-2-29)</li> <li>Vibration (IEC 68-2-6)</li> </ul>
<b>Chemical/Environmental</b>	Water IP69K (2 m/24 hr)	Water IP69K (2m/24 hr)	Water IP69K (2m/24 hr)	Water IP69K (2m/24 hr)
<b>Compliance</b>	Compliant with ISO/IEC 15693 and 18000-3 Mode 1	Compliant with ISO/IEC 15693 and 18000-3 Mode 1	Compliant with ISO/IEC 15693 and 18000-3 Mode 1	Compliant with ISO/IEC 15693 and 18000-3 Mode 1
<b>Storage Temperature</b>	-40...+90 °C (-40...+194 °F) 1000 h			
<b>Peak Temperature</b>	140 °C (284 °F) 100 h	140 °C (284 °F) 100 hr	100 °C (212 °F) 100 hr	140 °C (284 °F) 100 hr
<b>Operating Temperature</b>	-20...+85 °C (-4...+185 °F)	-20...+85 °C (-4...+185 °F)	-25...+85 °C (-13...+185 °F)	-20...+85 °C (-4...+185 °F)
<b>Shock/Fatigue Temperature</b>	-20...+85 °C (-4...+185 °F) 50 cycles (soaking time 5 min, transition time 30 s)	-20...+85 °C (-4...+185 °F) 50 cycles (soaking time 5 min, transition time 30 s)	-30...+90 °C (-22...+194 °F) 50 cycles (soaking time 10 min, transition time 30 s)	-20...+85 °C (-4...+185 °F) 50 cycles (soaking time 5 min, transition time 30 s)

## Specifications, continued

### General

	50 mm Mount on Metal (Cat. No. 56RF-TG-50MOM)	51 mm High-temperature (Cat. No. 56RF-TG-50HT)
<b>Features</b>	<ul style="list-style-type: none"> <li>• 1024 bits memory size (32 blocks of 4 bytes)</li> <li>• 896 user bits</li> </ul>	<ul style="list-style-type: none"> <li>• 1024 bits memory size (32 blocks of 4 bytes)</li> <li>• 896 user bits</li> </ul>
<b>Chip Type</b>	SLI	SL2
<b>Typical Operating Frequency</b>	13.56 MHz	13.56 MHz
<b>External Diameter</b>	55 mm ± 0.25	51.0 x 51.0 ± 0.5 mm (2.01 x 2.01 ± 0.02 in.)
<b>Thickness</b>	5.5 mm ± 0.1	6.5 ± 0.5 mm (0.26 ± 0.02 in.)
<b>Central Hole Diameter</b>	13 mm	5.5 ± 0.5 mm (0.217 ± 0.02 in.) Counterbore 10.5 mm (0.413 in.)
<b>Weight</b>	30 ± 6 g	30 g (1.06 oz) typical
<b>Material</b>	Acc. to ISO 1874: PA6T/6I-GF50 Acc. to ASTM: PPA, Polyphthalamide CAS number 25750-23-6	PPS plastics
<b>Color</b>	Black	Black
<b>Package Quantity</b>	10 units (plastic bag)	25 units (plastic bag)
<b>Mechanical</b>	<ul style="list-style-type: none"> <li>• Shock (IEC 68-2-29)</li> <li>• Vibration (IEC 68-2-6)</li> </ul>	<ul style="list-style-type: none"> <li>• Shock (IEC 68-2-29)</li> <li>• Vibration (IEC 68-2-6)</li> </ul>
<b>Chemical/Environmental</b>	Water IP69K (2m/24 hr)	IP68
<b>Compliance</b>	Compliant with ISO/IEC 15693 and 18000-3 Mode 1	Compliant with ISO/IEC 15693
<b>Storage Temperature</b>	-40...+90 °C (-40...+194 °F) 1000 h	-55...185 °C (-67...365 °F) (cumulative time more than 1500 h)
<b>Peak Temperature</b>	140 °C (284 °F) 100 hr	<ul style="list-style-type: none"> <li>• 200 °C (392 °F)/60 min</li> <li>• 220 °C (428 °F)/45 min</li> <li>• 240 °C (464 °F)/30 min</li> </ul>
<b>Operating Temperature</b>	-25...+85 °C (-13...+185 °F)	-25...85 °C (-13...185 °F)

**Note:** For information regarding high-temperature tag testing, see [Appendix A](#).

## Memory Organization

The memory contains 1024 bit, organized in 32 blocks of 4 bytes each.

### Memory Organization

	Byte 0	Byte 1	Byte 2	Byte 3	
<b>Block -4</b>	UID0	UID1	UID2	UID3	Unique Identifier (lower bytes)
<b>Block -3</b>	UID4	UID5	UID6	UID7	Unique Identifier (higher bytes)
<b>Block -2</b>	Internally used	EAS	AFI	DSFID	EAS, AFI, DSFID
<b>Block -1</b>	00	00	00	00	Write Access Conditions
<b>Block 0</b>	x	x	x	x	User Data
<b>Block 1</b>	x	x	x	x	
<b>Block 2</b>	x	x	x	x	
<b>Block 3</b>	x	x	x	x	
<b>Block 4</b>	x	x	x	x	
<b>Block 5</b>	x	x	x	x	
<b>Block 6</b>	x	x	x	x	
<b>Block 7</b>	x	x	x	x	
<b>Block 8</b>	x	x	x	x	
<b>Block 9</b>	x	x	x	x	
<b>Block 10</b>	x	x	x	x	
<b>Block 11</b>	x	x	x	x	
<b>Block 12</b>	x	x	x	x	
<b>Block 13</b>	x	x	x	x	
<b>Block 14</b>	x	x	x	x	
<b>Block 15</b>	x	x	x	x	
<b>Block 16</b>	x	x	x	x	
<b>Block 17</b>	x	x	x	x	
<b>Block 18</b>	x	x	x	x	
<b>Block 19</b>	x	x	x	x	
<b>Block 20</b>	x	x	x	x	
<b>Block 21</b>	x	x	x	x	
<b>Block 22</b>	x	x	x	x	
<b>Block 23</b>	x	x	x	x	
<b>Block 24</b>	x	x	x	x	
<b>Block 25</b>	x	x	x	x	
<b>Block 26</b>	x	x	x	x	
<b>Block 27</b>	x	x	x	x	

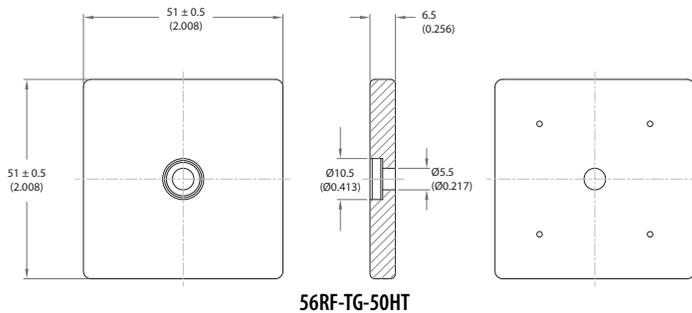
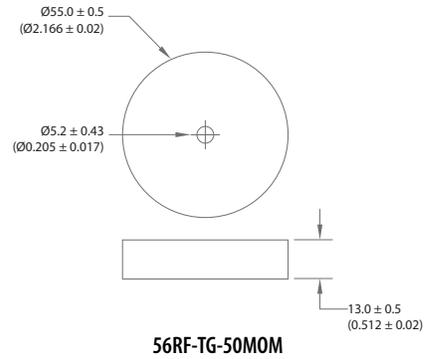
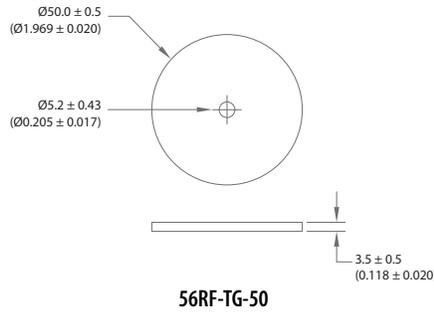
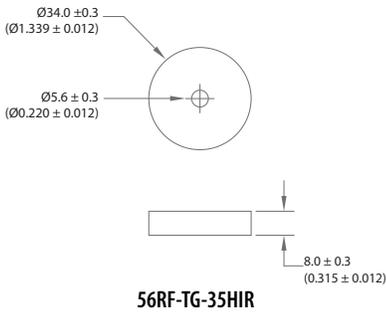
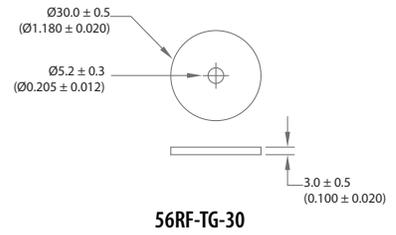
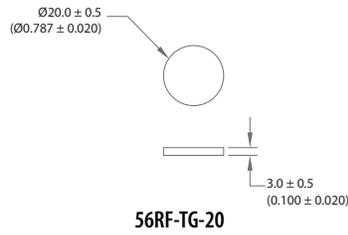
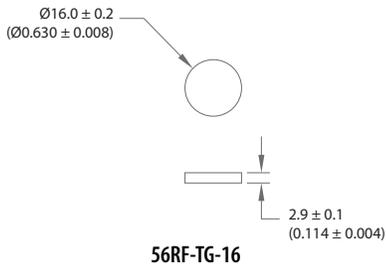
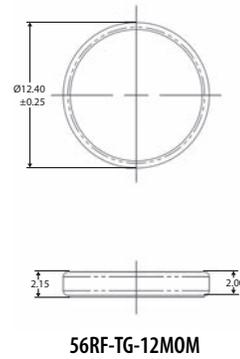
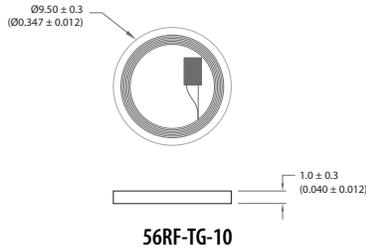
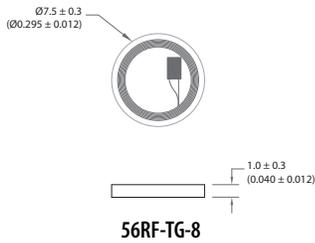
The values (in hexadecimal notation) shown in the previous are stored in the EEPROM after the wafer production process. The contents of blocks that are marked with an "x" in the preceding table are not defined at delivery.

With read and write commands only blocks 0...27 can be addressed.

# Approximate Dimensions

Dimensions are shown in mm (in.). Not intended to be used for installation purposes.

## Tag Dimensions



# Disc Tag — ICODE FRAM Memory

## Specifications

### General

	20 mm (Cat. No. 56RF-TG-20-2KB)	30 mm (Cat. No. 56RF-TG-30-2KB)	50 mm (Cat. No. 56RF-TG-50-2KB)	50 mm Mount on Metal (Cat. No. 56RF-TG-50-2KBMOM)
<b>Features</b>	<ul style="list-style-type: none"> <li>16 kbits FRAM® memory that is organized in 256 blocks of 8 bytes</li> <li>High endurance memory: 10<sup>10</sup> writings</li> <li>Data retention &gt;10 years (at ≤55° C)</li> </ul>	<ul style="list-style-type: none"> <li>16 kbits FRAM memory that is organized in 256 blocks of 8 bytes</li> <li>High endurance memory: 10<sup>10</sup> writings</li> <li>Data retention &gt;10 years (at ≤55° C)</li> </ul>	<ul style="list-style-type: none"> <li>16 kbits FRAM memory that is organized in 256 blocks of 8 bytes</li> <li>High endurance memory: 10<sup>10</sup> writings</li> <li>Data retention &gt;10 years (at ≤55° C)</li> </ul>	<ul style="list-style-type: none"> <li>2 kbytes FRAM memory (including 2000 bytes of user area) that is organized in 256 blocks of 8 bytes</li> <li>High endurance memory: 10<sup>10</sup> writings</li> <li>Data retention 10 years (at 70° C)</li> </ul>
<b>Typical Operating Frequency</b>	13.56 MHz	13.56 MHz	13.56 MHz	13.56 MHz
<b>External Diameter</b>	20.0 ± 0.5 mm	30.0 ± 0.5 mm	50.0 ± 0.5 mm	55.0 ± 0.5 mm
<b>Central Hole Diameter</b>	—	5.2 ± 0.3 mm	5.2 ± 0.3 mm	5.2 ± 0.3 mm
<b>Thickness</b>	3.0 ± 0.5 mm	3.0 ± 0.5 mm	3.5 ± 0.5 mm	13.0 ± 0.5 mm
<b>Weight</b>	1.3 ± 0.3 g	3.0 ± 0.6 g	9.5 ± 2.0 g	9.5 ± 2.0 g
<b>Material</b>	PA6	PA6	PA6	PA6 modified - SOK001
<b>Color</b>	Black 9205	Black 9205	Black 9205	Black
<b>Package Quantity</b>	25 units (plastic bag)	25 units (plastic bag)	25 units (plastic bag)	10 units (plastic bag)
<b>Mechanical</b>	<ul style="list-style-type: none"> <li>Shock (IEC 68-2-29)</li> <li>Vibration (IEC 68-2-6)</li> </ul>	<ul style="list-style-type: none"> <li>Shock (IEC 68-2-29)</li> <li>Vibration (IEC 68-2-6)</li> </ul>	<ul style="list-style-type: none"> <li>Shock (IEC 68-2-29)</li> <li>Vibration (IEC 68-2-6)</li> </ul>	<ul style="list-style-type: none"> <li>Shock (IEC 68-2-29)</li> <li>Vibration (IEC 68-2-6)</li> </ul>
<b>Chemical/Environmental</b>	Water IP69K (2m/24 hr)	Water IP69K (2m/24 hr)	Water IP69K (2m/24 hr)	Water IP69K (2m/24 hr)
<b>Compliance</b>	Compliant with ISO/IEC 15693 and 18000-3 Mode 1	Compliant with ISO/IEC 15693 and 18000-3 Mode 1	Compliant with ISO/IEC 15693 and 18000-3 Mode 1	Compliant with ISO/IEC 15693 and 18000-3 Mode 1
<b>Storage Temperature</b>	-40...+90 °C (-40...+194 °F) 1000 h	-40...+90 °C (-40...+194 °F) 1000 h	-40...+90 °C (-40...+194 °F) 1000 h	-40...+90 °C (-40...+194 °F) 1000 h
<b>Peak Temperature</b>	140 °C (284 °F) 100 hr	140 °C (284 °F) 100 hr	140 °C (284 °F) 100 hr	140 °C (284 °F) 100 hr
<b>Operating Temperature</b>	-20...+85 °C (-4...+185 °F)	-20...+85 °C (-4...+185 °F)	-20...+85 °C (-4...+185 °F)	-20...+85 °C (-4...+185 °F)
<b>Shock/Fatigue Temperature</b>	-20...+85 °C (-4...+185 °F) 50 cycles (soaking time 5 min, transition time 30 s)	-20...+85 °C (-4...+185 °F) 50 cycles (soaking time 5 min, transition time 30 s)	-20...+85 °C (-4...+185 °F) 50 cycles (soaking time 5 min, transition time 30 s)	-20...+85 °C (-4...+185 °F) 50 cycles (soaking time 5 min, transition time 30 s)

## Memory Organization

The memory has 2000 bytes for use as user area and 48 bytes for use as system area. The total area consists of 256 blocks (250 blocks of user area and 6 blocks of system area). Each block can store 64 bits (8 bytes) of data. The block is the unit that is used for data writing and reading.

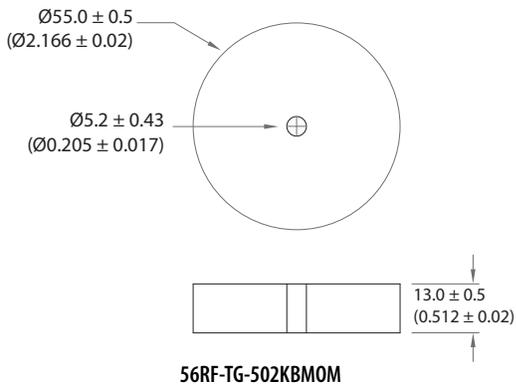
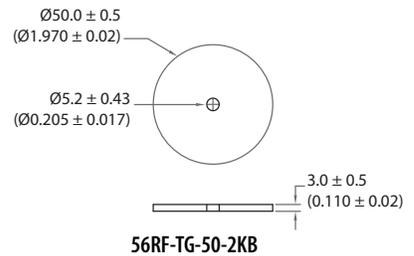
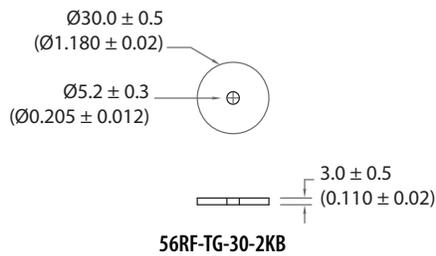
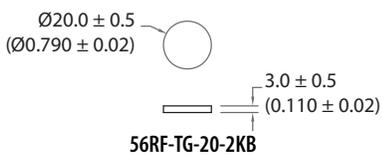
### Memory Organization

Area	Block #	
User	00 <sub>H</sub>	
	01 <sub>H</sub>	
	02 <sub>H</sub>	
	...	
	...	
	F8 <sub>H</sub>	
	F9 <sub>H</sub>	
System	FA <sub>H</sub>	UID
	FB <sub>H</sub>	EAS, AFI, DSFID, lock status
	FC <sub>H</sub>	Write Access Status
	FD <sub>H</sub>	Write Access Status
	FE <sub>H</sub>	Write Access Status
	FF <sub>H</sub>	Write Access Status

## Approximate Dimensions

Dimensions are shown in mm (in.). Not intended to be used for installation purposes.

### Tag Dimensions



# Disc Tag — ICODE Large FRAM Memory

## Specifications

### General

	<b>30 mm 8 Kb (Cat. No. 56RF-TG-30-8KB)</b>
<b>Features</b>	<ul style="list-style-type: none"> <li>• Memory capacity of 9 kBytes FRAM (including 8192 bytes of user area)</li> <li>• 32-byte/block configuration, 256 blocks</li> <li>• Endurance: <math>10^{12}</math> writes and reads to memory</li> <li>• Data Retention: 10 years (85 °C [185 °F])</li> </ul>
<b>Typical Operating Frequency</b>	13.56 MHz
<b>External Diameter</b>	$30 \pm 0.5$ mm
<b>Central Hole Diameter</b>	$5.2 \pm 0.3$ mm
<b>Thickness</b>	$3.0 \pm 0.5$ mm
<b>Weight</b>	3.0 g
<b>Material</b>	Acc. to ISO 1874: PA6T/6I-GF50 Acc. to ASTM: PPA, Polyphthalamide CAS number 25750-23-6
<b>Color</b>	Black
<b>Package Quantity</b>	10 units (plastic bag)
<b>Mechanical</b>	<ul style="list-style-type: none"> <li>• Shock (IEC 68-2-29)</li> <li>• Vibration (IEC 68-2-6)</li> </ul>
<b>Chemical/Environmental</b>	Water IP69K (2m/24 hr)
<b>Compliance</b>	Compliant with ISO/IEC 15693 and 18000-3 Mode 1
<b>Storage Temperature</b>	-40...+90 °C (-40...+194 °F) 1000 h
<b>Peak Temperature</b>	140 °C (284 °F) 100 hr
<b>Operating Temperature</b>	-20...+85 °C (-4...+185 °F)
<b>Shock/Fatigue Temperature</b>	-40...+90 °C (-40...+194 °F) 50 cycles (soaking time 5 min, transition time 30 s)

## Memory Organization

The FRAM has 8192 bytes for use as a user area and 1024 bytes designated as the system area. The user areas consist of 256 blocks. Each block can store 256 bits (32 bytes) of data. The block is the unit that is used for the writing and reading of FRAM data.

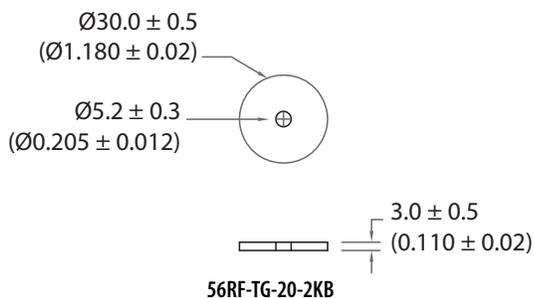
### Memory Organization

Area	Block Number (RF)	Logical Address (SPI)	Details	Access	
				RF Communication	SPI Communication
User area (8192 bytes)	000 <sub>H</sub> ...0FF <sub>H</sub> (1 block = 256 bit)	0000 <sub>H</sub> ...0FFF <sub>H</sub> (1 address = 16 bit)	User area	Read/write	Read/write
System area (1024 bytes)	100 <sub>H</sub>	1000 <sub>H</sub> ...100F <sub>H</sub>	BSS (Block Security Status)	Read	Read
	101 <sub>H</sub>	1010 <sub>H</sub> ...101F <sub>H</sub>	RLS (Read Lock Status)	Read	Read
	102 <sub>H</sub>	1020 <sub>H</sub> ...102F <sub>H</sub>	SRL (SPI Read Lock)	Read	Read
	103 <sub>H</sub>	1030 <sub>H</sub> ...103F <sub>H</sub>	SWL (SPI Write Lock)	Read	Read
	11E <sub>H</sub>	11E0 <sub>H</sub> ...11EE <sub>H</sub>	AFI, DSFID UID	Read Read	Read Read

## Approximate Dimensions

Dimensions are shown in mm (in.). Not intended to be used for installation purposes.

### Tag Dimensions



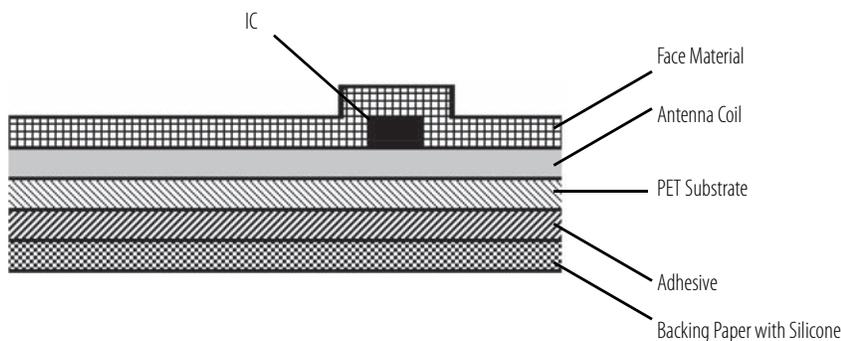
# Paper Tag — ICODE SLIx and SLI Memory

## Specifications

### General

	50 x 50 mm (Cat. No. 56RF-TG-5050)	54 x 86 mm (Cat. No. 56RF-TG-5486)
Chip Type	ICODE SLIx	NXP ICODE SLI
Typical Operating Frequency	13.56 MHz	13.56 MHz
Bending Diameter	>50 mm, tension less than 10 N	>50 mm, tension less than 10 N
Material		
Face	Opaque Matt Paper 79	Opaque Matt Paper 79
Backing	Siliconized Paper 56	Siliconized Paper 56
Antenna	Aluminum, crimped coil	Aluminum
Adhesive	RA-2	RA-2
Temperature		
Operating	Electronic parts: -40...+85 °C (-40...+185 °F)	Electronic parts: -25...+85 °C (-13...+185 °F)
Labeling	5 °C (41 °F), min.	5 °C (41 °F), min.
Usage	-10...+120 °C (14...248 °F)	-10...+120 °C (14...248 °F)
Peel	8 N / 25 mm (FTM 2), min.	8 N / 25 mm (FTM 2), min.
Printability	Flexography and TTR with selected ribbons. Do not print over IC area.	Flexography and TTR with selected ribbons. Do not print over IC area.
Compliance	Compliant with ISO/IEC 15693 and 18000-3 Mode 1	Compliant with ISO/IEC 15693 and 18000-3 Mode 1

### Structure

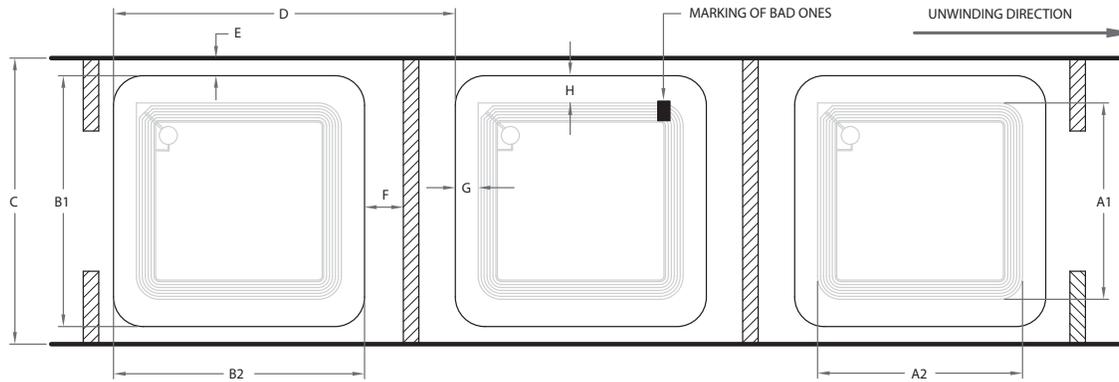


## Approximate Dimensions

Dimensions are shown in mm (in.). Not intended to be used for installation purposes.

### Catalog Number 56RF-TG-5050

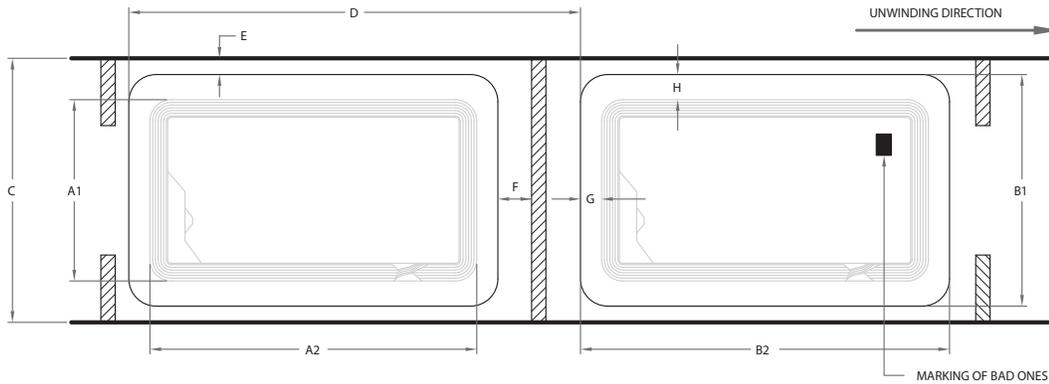
#### Paper Tag Dimensions



	Description	Dimension [mm (in.)]
A1 x A2	Coil size	47 x 47 ± 0.5 (1.850 x 1.850 ± 0.02)
B1 x B2	Die-cut size	50 x 50 ± 0.2 (1.969 x 1.969 ± 0.01)
C	Web width	54 ± 0.5 (2.126 ± 0.02)
D	Pitch, length per piece MD	56 ± 1.5 (2.205 ± 0.06)
E	Die-cut to web edge	2 ± 1.5 (0.079 ± 0.06)
F	Die-cut to register mark	1.5 ± 1.0 (0.059 ± 0.04)
G	Coil to die-cut (MD)	1.5 ± 1.5 (0.059 ± 0.06)
H	Coil to die-cut (CD)	1.5 ± 1.5 (0.059 ± 0.06)
	Thickness of the IC	120 μm ± 15%
	Overall thickness of transponder package (excluding IC and siliconized paper)	208 μm ± 10%
	Thickness of the siliconized paper	56 μm ± 5%

Catalog Number 56RF-TG-5486

Paper Tag Dimensions



	Description	Dimension [mm (in.)]
A1 x A2	Coil size	50 x 82 ± 0.5 (1.969 x 3.228 ± 0.02)
B1 x B2	Die-cut size	54 x 86 ± 0.2 (2.126 x 3.386 ± 0.01)
C	Web width	57 ± 0.5 (2.244 ± 0.02)
D	Pitch, length per piece MD	96 ± 1.5 (3.780 ± 0.06)
E	Die-cut to web edge	1.5 ± 1.5 (0.059 ± 0.06)
F	Die-cut to register mark	3.5 ± 1.0 (0.138 ± 0.04)
G	Coil to die-cut (MD)	2 ± 1.5 (0.079 ± 0.06)
H	Coil to die-cut (CD)	2 ± 1.5 (0.079 ± 0.06)
	Thickness of the IC	150 µm ± 10%
	Overall thickness of transponder package (excluding IC and siliconized paper)	205 µm ± 10%
	Thickness of the siliconized paper	56 µm ± 5%

# Proximity ISO Card — ICODE SLI Memory

## Specifications

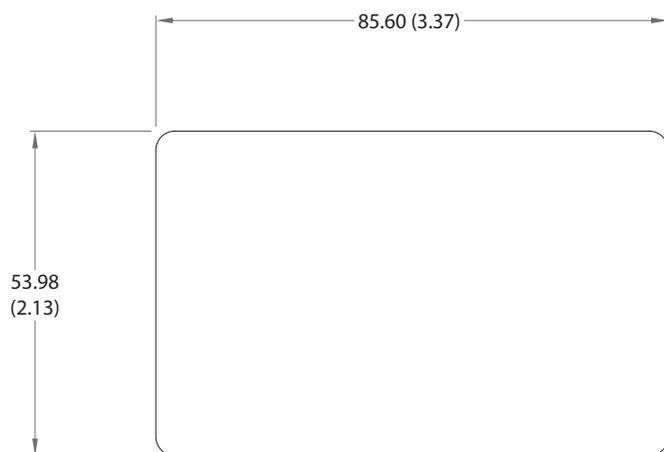
### General

	Cat. No. 56RF-TG-54865C
Card Type	ICODE SLI
Typical Operating Frequency	13.56 MHz
Length	85.6 ± 0.12 mm
Width	53.98 ± 0.05 mm
Thickness	0.76 ± 0.08 mm
Material	PVC, white/white (glossy)
Color	White/white
Operating Temperature	-35...+50 °C (-30...+122 °F)
Printing	Both sides are fully printable with various technologies

## Approximate Dimensions

Dimensions are shown in mm (in.). Not intended to be used for installation purposes.

### Proximity ISO Card Dimensions



Notes:

## Catalog Numbers 57RF-HH-56A and 56RF-HH-56B

### Specifications

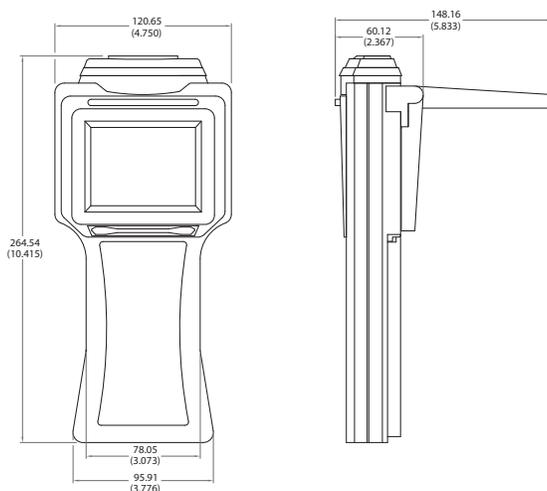
#### General

Attribute	57RF-HH-56A and 56RF-HH-56B
RFID Compatibility	ICODE ISO 15693/ISO 18000-3 M1
RFID Operating Frequency	13.56 MHz RFID
Operating System	Windows® CE 5.0
CPU	624 MHz Intel® PXA270 XScale™ Processor
Memory and Mass Storage	<ul style="list-style-type: none"> <li>• 128 MB (SDRAM)</li> <li>• 512 MB (Internal CompactFlash Memory)</li> </ul>
Power	Rechargeable Nickel Metal Hydride (NiMH) battery (included)
Additional Memory Port	CompactFlash (CF) Type
Display	Liquid Crystal 320 x 240 QVGA-TFT Color with touch screen and LED backlight
Interface Capabilities	<ul style="list-style-type: none"> <li>• 1 - USB Port</li> <li>• 1 - RS-232 Serial Port</li> <li>• Wi-Fi</li> <li>• Bluetooth®</li> </ul>
Keypad	<ul style="list-style-type: none"> <li>• 52-key pad (57RF-HH-56A)</li> <li>• 45-key pad (56RF-HH-56B)</li> </ul>
Range	3.5 in. (90 mm)
Environmental	IP65
Included	<ul style="list-style-type: none"> <li>• RFID handheld</li> <li>• Rechargeable battery pack</li> </ul>

### Approximate Dimensions

Dimensions are shown in mm (in.). Not intended to be used for installation purposes.

#### Handheld Interface Dimensions

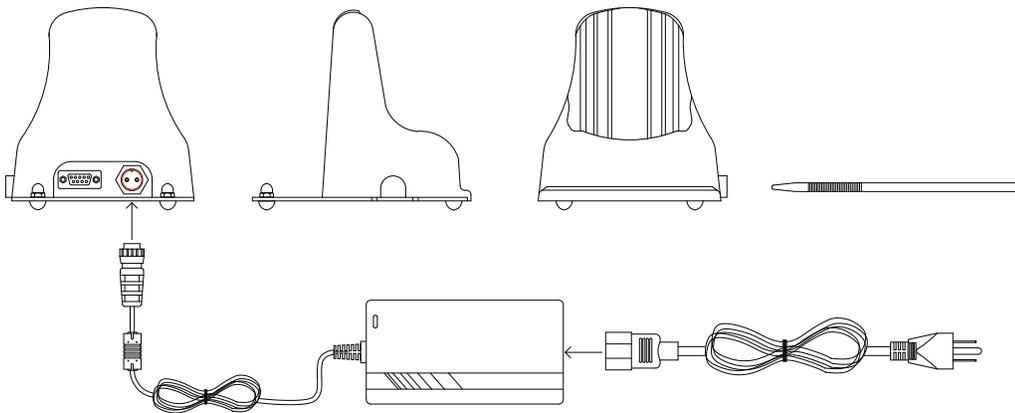


# Accessories

## Charging Cradle

Catalog Number 57RF-HH-56US1

<b>Description</b>	Single position charging cradle with domestic power supply
<b>Included</b>	<ul style="list-style-type: none"> <li>• Charging cradle</li> <li>• Domestic power supply</li> <li>• Stylus</li> <li>• USB cable (not shown)</li> </ul>



## International Power Supply Kit

Catalog Number 57RF-HH-56IN

<b>Description</b>	Wall-mount power supply with international adapters
<b>Included</b>	<ul style="list-style-type: none"> <li>• Power supply</li> <li>• International adapters (not shown)</li> <li>• Stylus</li> <li>• Serial cable</li> <li>• USB cable (not shown)</li> </ul>

# Domestic Power Supply

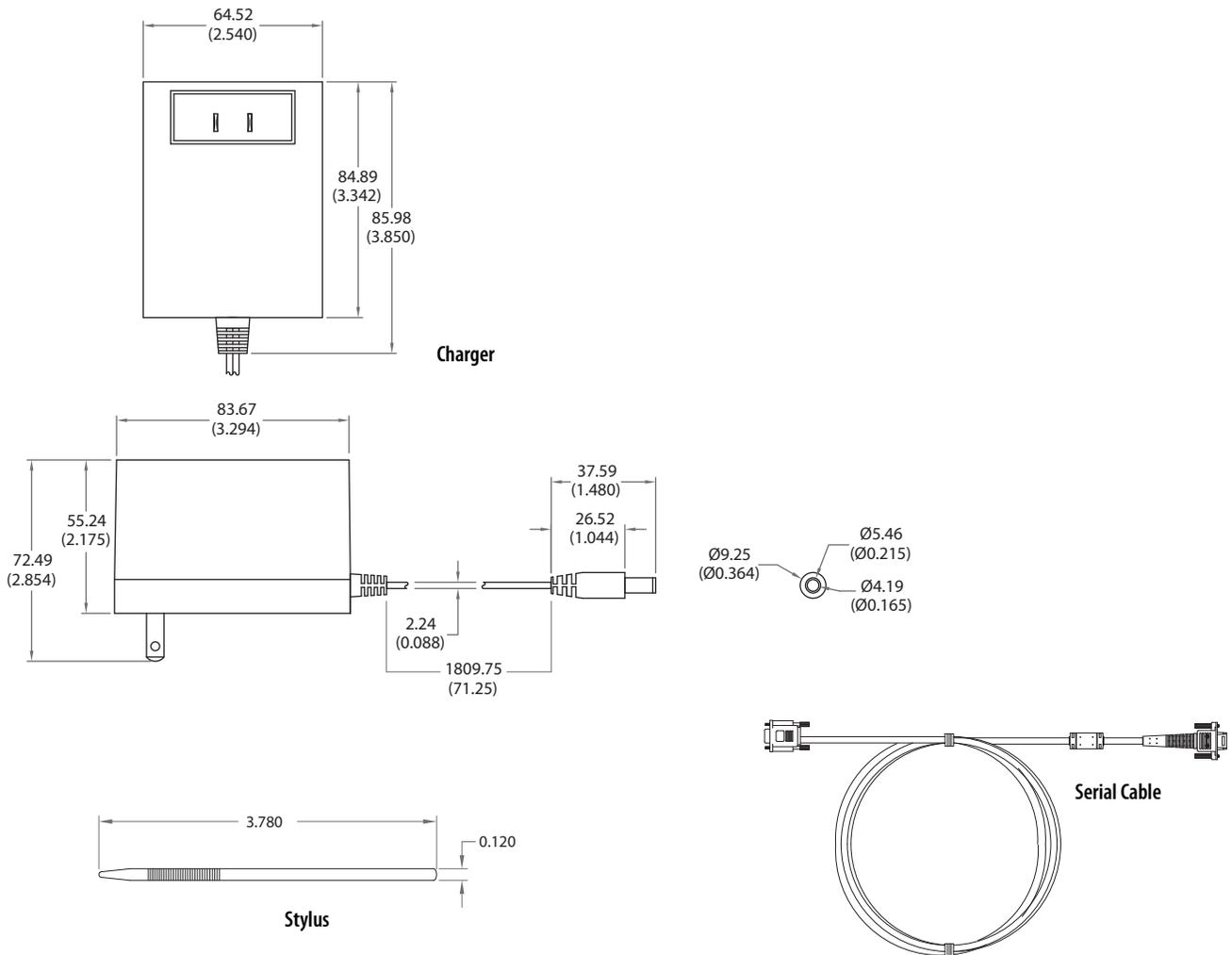
Catalog Number 57RF-HH-US2

<b>Description</b>	Wall-mount power supply with domestic adapters
<b>Included</b>	<ul style="list-style-type: none"> <li>• Power supply</li> <li>• Stylus</li> <li>• Serial cable</li> </ul>

## Approximate Dimensions

Dimensions are shown in mm (in.). Not intended to be used for installation purposes.

### Power Supply Dimensions



## Battery Pack

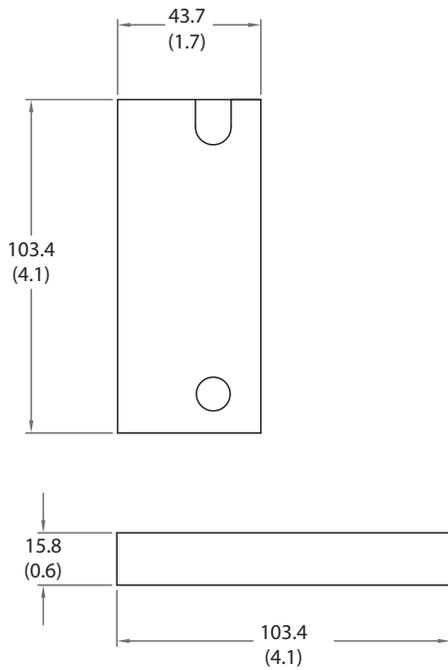
### Catalog Number 57RF-HH-56BAT

<b>Description</b>	Spare rechargeable battery pack
<b>Included</b>	Rechargeable battery pack for Cat. No. 57RF-HH-56A/B (Qty. 1)

### Approximate Dimensions

Dimensions are shown in mm (in.). Not intended to be used for installation purposes.

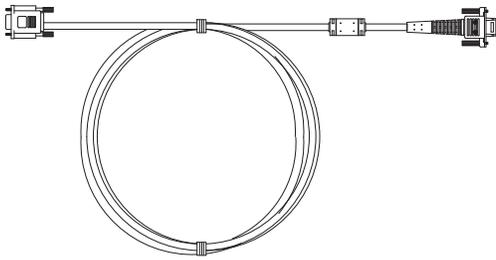
#### Battery Pack Dimensions



## Serial Cable

### Catalog Number 57RF-HH-56CA

<b>Description</b>	Serial cable, 15 ft (4.5 m) length, Straight, 9-pin Female to Male connectors, RS-232
<b>Included</b>	Serial cable (Qty. 1)



## High-Temperature Tag Testing

### Temperature Test Profile (Catalog Number 56RF-TG-50HT)

The Cat. No. 56RF-TG-50HT high temperature tags were tested according to the following profile.

1. Tested at 60 °C (140 °F)
2. Placed in an oven at 185 °C (365 °F) for 30 minutes and then 240 °C (464 °F) for 30 minutes
3. Removed from oven and tested at 60 °C (140 °F)

The cycle was repeated after 20 minutes.

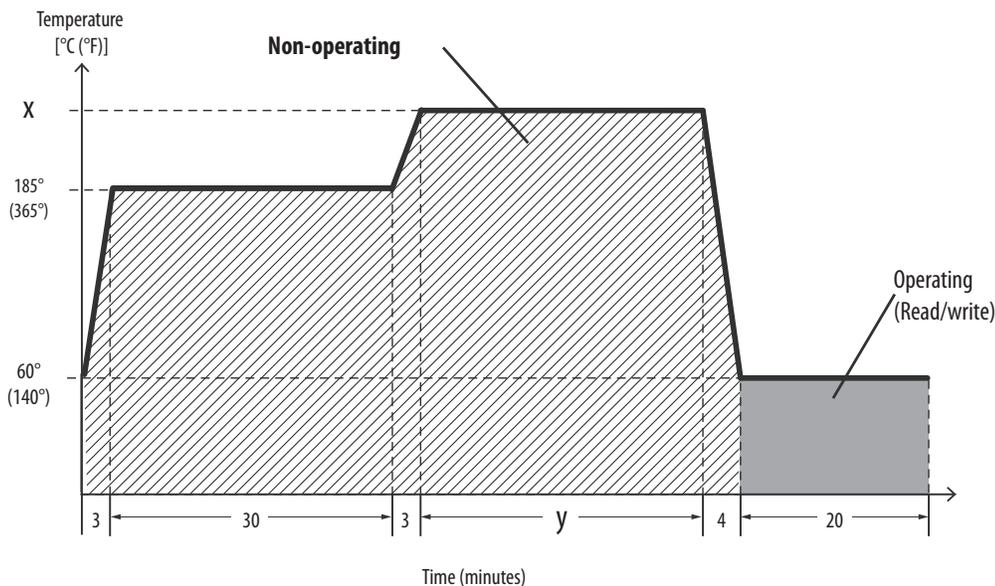
### Time at Elevated Temperature

The length of time the tags can withstand elevated temperature depends on the temperature.

#### Time at Elevated Temperature

Temperature x [C (F)]	Time y [minutes]
200 ° (392 °)	60
220 ° (428 °)	45
240 ° (464 °)	30

#### Elevated Temperature Graph



Notes:

## Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
RFID User Manual, publication <a href="#">56RF-UM001</a>	Provides detailed information on the use of all RFID components.
Industrial Automation Wiring and Grounding Guidelines, publication <a href="#">1770-4.1</a>	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, <a href="http://www.ab.com">http://www.ab.com</a>	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at <http://www.rockwellautomation.com/literature/>. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

# Rockwell Automation Support

Use the following resources to access support information.

<b>Technical Support Center</b>	Knowledgebase Articles, How-to Videos, FAQs, Chat, User Forums, and Product Notification Updates.	<a href="http://www.rockwellautomation.com/knowledgebase">www.rockwellautomation.com/knowledgebase</a>
<b>Local Technical Support Phone Numbers</b>	Locate the phone number for your country.	<a href="http://www.rockwellautomation.com/global/support/get-support-now.page">www.rockwellautomation.com/global/support/get-support-now.page</a>
<b>Direct Dial Codes</b>	Find the Direct Dial Code for your product. Use the code to route your call directly to a technical support engineer.	<a href="http://www.rockwellautomation.com/global/support/direct-dial.page">www.rockwellautomation.com/global/support/direct-dial.page</a>
<b>Literature Library</b>	Installation Instructions, Manuals, Brochures, and Technical Data.	<a href="http://www.rockwellautomation.com/literature">www.rockwellautomation.com/literature</a>
<b>Product Compatibility and Download Center (PCDC)</b>	Get help determining how products interact, check features and capabilities, and find associated firmware.	<a href="http://www.rockwellautomation.com/global/support/pcdc.page">www.rockwellautomation.com/global/support/pcdc.page</a>

## Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete the How Are We Doing? form at [http://literature.rockwellautomation.com/idc/groups/literature/documents/du/ra-du002\\_-en-e.pdf](http://literature.rockwellautomation.com/idc/groups/literature/documents/du/ra-du002_-en-e.pdf).

Rockwell Automation maintains current product environmental information on its website at <http://www.rockwellautomation.com/rockwellautomation/about-us/sustainability-ethics/product-environmental-compliance.page>.

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### Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

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