HF RFID SYSTEM
TRANSPONDER
RTH-D26RV-EC0

HOUSING	MEMORY SIZE	MOUNTING
Ø26 mm	**128 Bytes**	**Embeddable**

- ✓ Very high temperature HF transponder
- ✓ Housing with hole for fixing screw
- ✓ Insensitive to dirt
- ✓ User memory
- ✓ OTP protection blocks
- ✓ EEPROM technology

CE   IP 68 69K   +180°

HF ISO 15693

Ø5
Ø11
Ø26
6.0
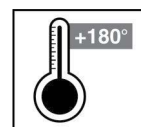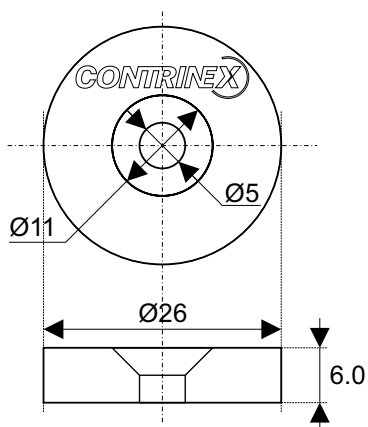
GENERAL DATA

Type of integrated circuit	NXP ICODE SLI-X
Carrier frequency	13.56 MHz
Compatible standard	ISO 15693
Maximum transmission speed	53 kbit/s if fast custom commands are used, 26.5 kbit/s otherwise
Memory type	EEPROM
Memory size	128 Bytes

MEMORY INFORMATION

Organization	32 blocks x 8 Bytes
User memory (R/W)	28 blocks, 112 Bytes
Configuration memory	4 blocks, 16 Bytes
Unique identifier	8 Bytes
Data retention period (< 55 °C)	> 50 years
Number of "write" cycles	10^5
Number of "read" cycles	unlimited

* Read/write operations possible

** Data retention and mechanical stability limit
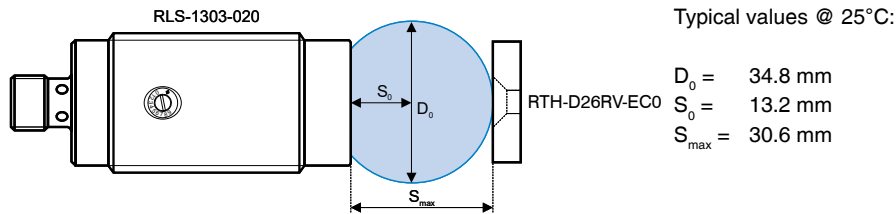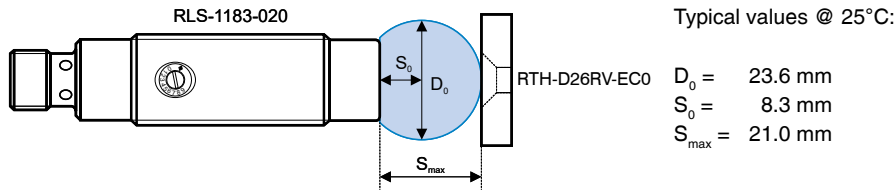
MECHANICAL DATA

Protection degree	IP68 & IP69K
Ambient temperature range TA*	-25...+180 °C
Storage temperature range TS**	-40...+180 °C
Thermal cycling reliability @ 180 °C	1000 cycles / 1000 hours
Housing material	PPS (Polyphenylene Sulfide)
Weight	3.3 g
Tightening torque	max. 1 Nm

CONTRINEX AG Industrial Electronics

route du Pâqui 3 - P.O. Box - CH 1720 Corminboeuf - Switzerland - **Tel:** +41 26 460 46 46 - **Fax:** +41 26 460 46 40 - **Internet:** www.contrinex.com - **E-mail:** info@contrinex.com

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OPERATING ZONE

The operating area is highly dependent on the environment.

RLS-1183-020

RTH-D26RV-EC0

Typical values @ 25°C:

D_0 = 23.6 mm
S_0 = 8.3 mm
S_{max} = 21.0 mm

RLS-1303-020

RTH-D26RV-EC0

Typical values @ 25°C:

D_0 = 34.8 mm
S_0 = 13.2 mm
S_{max} = 30.6 mm

THE OPERATING AREA WHEN EMBEDDED IN METAL

The operating area is highly dependent on the environment.

RLS-1183-020

RTH-D26RV-EC0

Typical values @ 25°C:

D_0 = 14.0 mm
S_0 = 1.3 mm
S_{max} = 8.3 mm

RLS-1303-020

RTH-D26RV-EC0

Typical values @ 25°C:

D_0 = 20.3 mm
S_0 = 3.7 mm
S_{max} = 13.8 mm
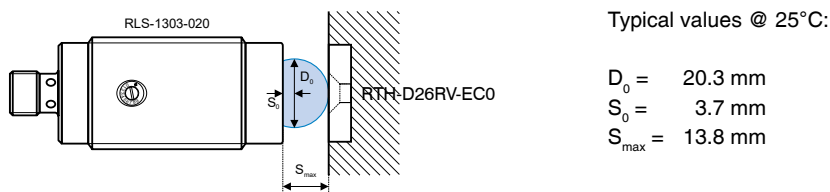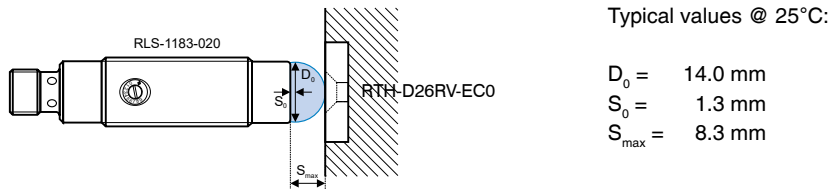
MEMORY OF TRANSPONDERS

The EEPROM has a memory capacity of 1024 bits and is divided in two areas. One user area of 28 blocks and one system area of 4 blocks, that means a total of 32 blocks of 4 bytes each. The block is the smallest unit used to read and write the EEPROM memory.

EEPROM memory configuration

Area	Block No.	Details	Read Access	Write Access
User memory (112 bytes)	00_h to $1B_h$	User memory	✓	✓
System memory (16 bytes)	N/A	UID (64 bits), Access Control Info. Passwords (AFI, EAS) Write protection	Inv. Cmd Get System Info Cmd EAS Cmd Get Multiple Block Security Status Cmd	Write AFI Cmd Write DSFID Cmd Write EAS Cmd Lock Block Cmd Lock AFI Cmd Lock DSFID Cmd Set / Reset / Lock EAS Cmds Password protect EAS/AFI Cmd

User memory Direct read access to blocks of this memory is always possible. Direct write access to blocks of this memory is possible depending on the value of its corresponding block security status bit.

Sytem memory Direct read or write access to blocks of this memory area is not possible
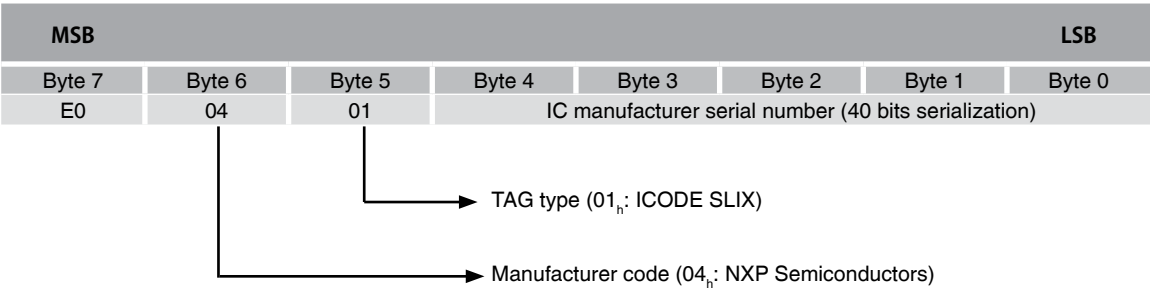
Structure of a single user memory block

MSB			LSB
Byte 3	Byte 2	Byte 1	Byte 0

UNIQUE IDENTIFICATION NUMBER (UID)

The 64-bits unique identification number (UID) is programmed during the production process according to ISO/IEC 15693-3 and cannot be changed afterwards. The type of TAG and manufacturer code are part of the UID: bytes 5 and 6 respectively.

Structure of UID block

MSB							LSB
Byte 7	Byte 6	Byte 5	Byte 4	Byte 3	Byte 2	Byte 1	Byte 0
E0	04	01	IC manufacturer serial number (40 bits serialization)				

TAG type (01_h: ICODE SLIX)

Manufacturer code (04_h: NXP Semiconductors)

SPECIAL FEATURES

Name	Description
EAS*	Electronic Article Surveillance
AFI	Application Family Identifier
DSFID	Data Storage Format Identifier

* feature not available with Contrinex RWMs (RLS-1xxx-x20)

SECURITY AND PROTECTIONS

Description
Unique identifier (UID) for each transponder
Lock mechanism for each user memory block (write protection)
Lock mechanism for DSFID, AFI and EAS*
Password (32-bits) protected EAS/AFI functionality*
Initial state of the EAS / AFI passwords 00000000_h

* features not available with Contrinex RWMs (RLS-1xxx-x2x)

LIST OF COMMANDS

	Command Name	Command Code	Description	RLS-1xxx- x20	RLS-1xxx- 320
Mandatory ISO 15693	Inventory	01$_h$	Execute the anti-collision sequence and return UID	✓	✓
	Stay Quiet	02$_h$	Enter the Quiet state	✓	✗
Optional ISO 15693	Read Single Block	20$_h$	Read the requested 1 block data in the user/system memory	✓	✓
	Write Single Block	21$_h$	Write the requested 1 block data in the user memory	✓	✓
	Lock Block	22$_h$	Lock permanently the requested 1 block in the user memory	✓	✗
	Read Multiple Blocks	23$_h$	Read the requested multiple block data in the user/system memory	✗	✗
	Select	25$_h$	Enter the Select state	✓	✗
	Reset to ready	26$_h$	Enter the Ready state	✓	✗
	Write AFI	27$_h$	Write AFI (Application Family Identifier) value into EEPROM	✓	✗
	Lock AFI	28$_h$	Lock permanently AFI value	✓	✗
	Write DSFID	29$_h$	Write DSFID (Data Storage Format Identifier) value into EEPROM	✓	✗
	Lock DSFID	2A$_h$	Lock permanently DSFID value	✓	✗
	Get System Information	2B$_h$	Read the system information value (UID, DSFID, AFI, number of bytes per block, etc)	✓	✗
	Get Multiple Block Security Status	2C$_h$	Read the block security status stored in system area	✗	✗
	-	2D$_h$ to 9F$_h$	Reserved for future use	-	-
Custom ISO 15693	Inventory Read	A0$_h$	Execute the anti-collision sequence and return the requested n blocks data in the user memory	✗	✗
	Fast Inventory Read	A1$_h$	Fast response Inventory Read command	✗	✗
	Set EAS	A2$_h$	Set EAS bit to "1"	✗	✗
	Reset EAS	A3$_h$	Set EAS bit to "0"	✗	✗
	Lock EAS	A4$_h$	Lock permanently the EAS bit to its current value	✗	✗
	EAS Alarm	A5$_h$	When EAS bit is "1", reply 13 bytes of data (Flags, EAS, IC Mfg. code, UID and CRC16)	✗	✗
	Password Protect EAS/AFI	A6$_h$	EAS/AFI Password has to be transmitted before with a Set Password command	✗	✗
	Get Random Number	B2$_h$	Get a random number calculated in the transponder	✓	✗
	Set Password	B3$_h$	Get access to the different protected functionalities (EAS/AFI) in function of the password identifier used	✓	✗
	Write Password	B4$_h$	Write a new password (EAS/AFI) into the system memory in function of the password identifier used	✓	✗
	Lock Password	B5$_h$	Lock permanently one password (EAS/AFI) in function of the password identifier used	✓	✗

*refer to "13.56MHz ISM Band Class 1 Radio Frequency (RF) Identification Tag Interface Specification" for more details

AVAILABLE TYPES

Part number	Part reference	Ø	Mounting
720-000-156	RTH-D26RV-EC0	26 mm	Embeddable