# HF RFID SYSTEM
# READ/WRITE MODULES (RWM)
# RLS-1303-020

| HOUSING | READ/WRITE DISTANCE |
|---------|---------------------|
| **M30** | **60 mm*** |

- ✓ M30 Metal threaded housing
- ✓ Sensing face of PBTP
- ✓ Insensitive to dirt
- ✓ ISO15693 compatible
- ✓ Networkable RWM using ContriNET protocol
- ✓ Cost optimized solution



CE    IO-Link

HF
ISO 15693
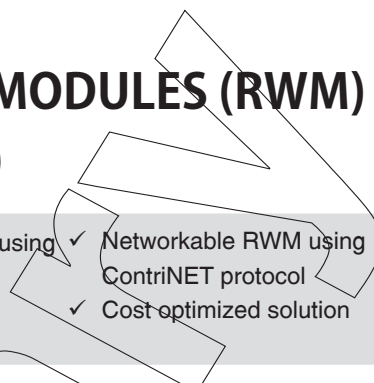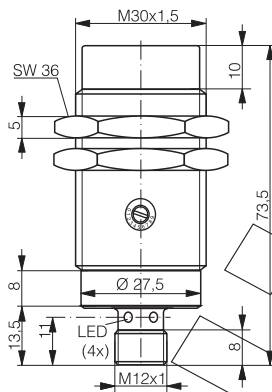
* Please refer to table page 5

## GENERAL DATA

| | |
|---|---|
| Carrier frequency | 13.56 MHz |
| Compatible standard | ISO 15693 |
| Maximum transmission speed | 26.5 kbit/s |
| Read-write distance max. | 60 mm with RTP-0501-020 |
| | |
| | |
| | |

## INTERFACE

| **RS-485 configuration** | |
|---|---|
| Data transfer rate (default in bold) | **115 200** / 38 400 / 19 200 baud |
| Number of bits 7 / stop bits / parity | 8 / 1 / None |
| **RWM configuration** | |
| LED yellow on | RWM live |
| LED yellow blinking | Transponder detected |
| ContriNET protocol | ✓ |

## ELECTRICAL DATA

| | |
|---|---|
| Supply voltage range (Ub) | 14...32 VDC |
| No-load supply current (field off) | 20 mA |
| Max. current consumption (no load) | 60 mA |
| Polling current | 30 mA |
| Short-circuit protection | ✓ |
| Voltage reversal protection | ✓ |
| Max. output current | |

## MECHANICAL DATA

| | |
|---|---|
| Protection degree | IP67 |
| Ambient temperature range TA** | -25...+80 °C |
| Storage temperature range TS*** | -25...+80 °C |
| Sensing face material | PBTP |
| Housing material | Stainless steel |
| Connector type | M12 4-pin |
| Weight (incl. nuts) | 95 g |

** Read/write operations possible
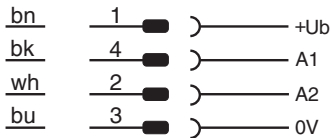*** Data retention and mechanical stability limit

## MOUNTING RECOMMENDATIONS

### CLEARANCE

Read/write modules must not mutually influence each other. For this reason, a minimum distance of 2 x D between the devices must be observed.
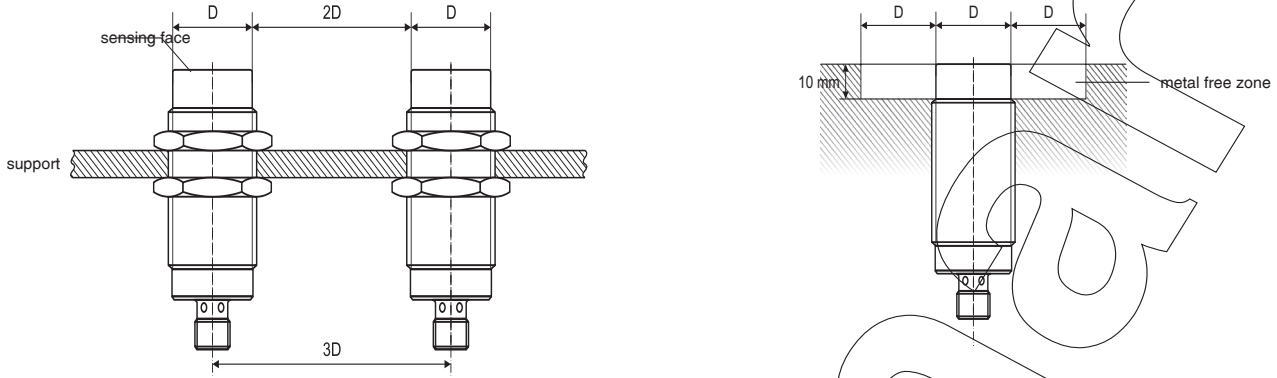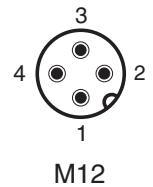
## WIRING DIAGRAM

## PIN ASSIGNMENT

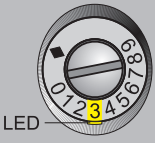| Pin | Signal | Function |
|-----|--------|----------|
| 1 | Ub | +24 V |
| 2 | A2 | RS-485 - A |
| 3 | GND | 0V |
| 4 | A1 | RS-485 - B |

M12
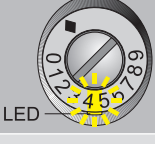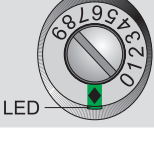
## COMMUNICATION SETTINGS

| RS-485 characteristics | Value for RLS-1183-020 |
|------------------------|------------------------|
| Data transfer rate (default in bold) | **115 200** / 38 400 / 19 200 baud |
| Number of bits | 8 |
| Number of stop bits | 1 |
| Parity | No |

## MEMORY STRUCTURE OF THE READ/WRITE MODULE

The Read/Write Module has a user memory of 3200 bits organized in 200 blocks of 16 bits. Each block is addressable separately by means of the commands Write RWM and Read RWM.

**CONTRINEX AG** Industrial Electronics

route du Pâqui 5 - 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
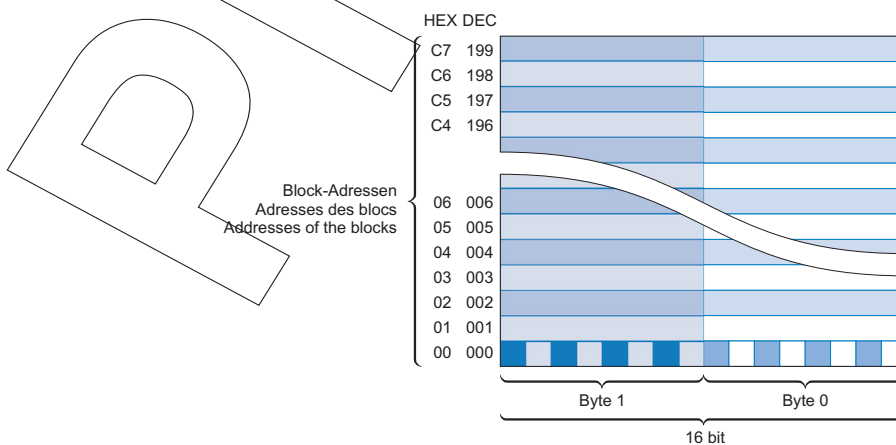
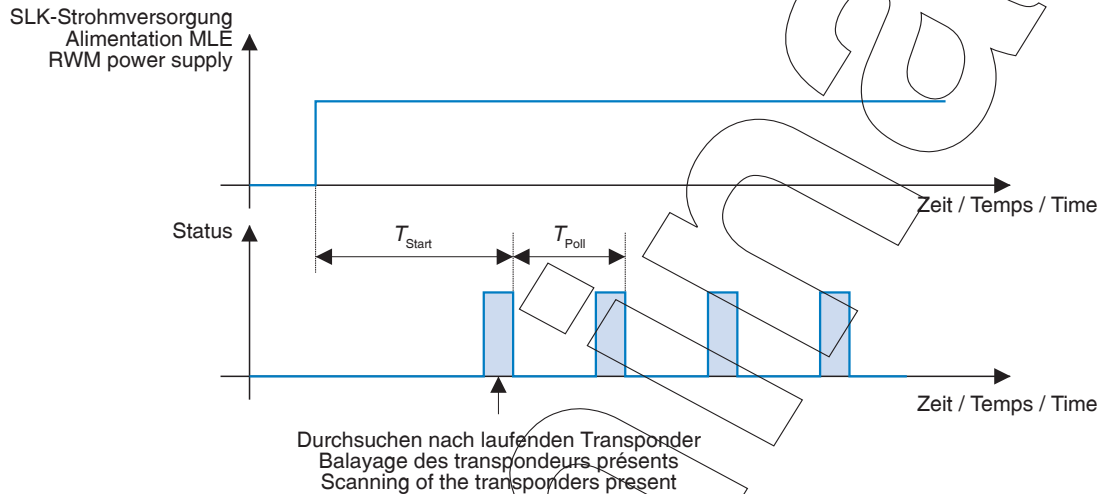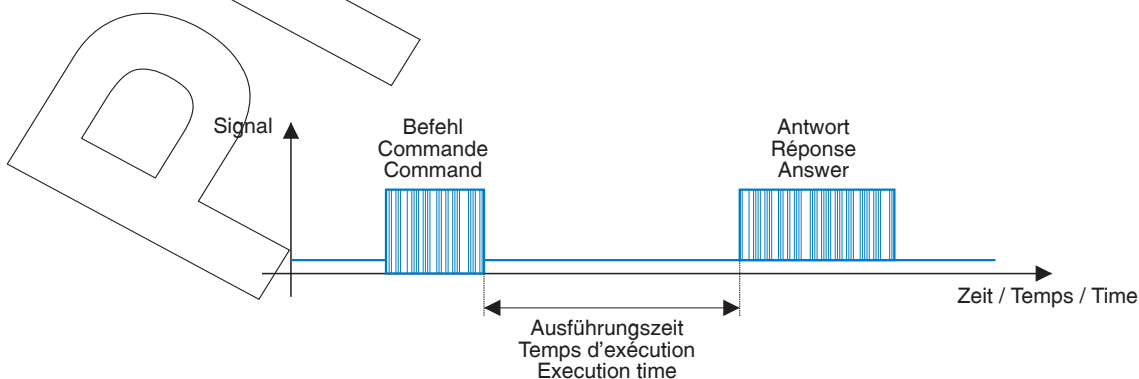| | Value for RLS-1183-020 |
|---|---|
| LED | Yellow LED on mode: physical addressing physical address recognized |
| LED | LED off Mode: physical addressing physical address not recognized |
| LED | Yellow LED blinks mode: logical addressing Logical address recognized |
| LED | Green LED on mode: bootload loading the firmware of the RWM. All the other functions are deactivated |

## TYPICAL TIMES

| Time name | Description | Value |
|---|---|---|
| Starting times | Time between the powering of the RWM and the end of the first scanning of the transponders present | 300 ms |
| Polling time | Time for actualization of the list of the transponders present. This time depends on the number of collisions. | 70* ms |
| Execution time of the commands | The execution time is defined as the time between the end of the sending of the command and the beginning of the answer | Command dependent |

*Polling time for 16 transponders without collision



SLK-Strohmversorgung
Alimentation MLE
RWM power supply

Zeit / Temps / Time

Status

$T_{Start}$   $T_{Poll}$

Zeit / Temps / Time

Durchsuchen nach laufenden Transponder
Balayage des transpondeurs présents
Scanning of the transponders present

## TYPICAL EXECUTION TIMES BY COMMAND TYPE

| Command type | Description | | Value |
|---|---|---|---|
| Commands related to RWM | Typical execution time | | 1.5 ms |
| Commands related to Transponder depending on number of blocks | Typical read duration: $T_R = T_0 + N \cdot T_{R0}$ Typical write duration: $T_W = T_0 + N \cdot T_{W0}$ | Duration for decoding the command - $T_0$ | 12.0 ms |
| | | Read duration for one block (32 bits) - $T_{R0}$ | 8.0 ms |
| | | Write duration for one block (32 bits) - $T_{W0}$ | 12.0 ms |
| | | Number of blocks concerned - $N$ | |
| Commands related to Transponder not related to a number of blocks | Typical execution time (e.g. Get System Info, Write AFI, Lock AFI, Write DSFID, Lock DSFID, and so on) | | 30 ms |



Signal

Befehl
Commande
Command

Antwort
Réponse
Answer

Zeit / Temps / Time

Ausführungszeit
Temps d'exécution
Execution time

## POSSIBLE COMBINATION AND TYPICAL DISTANCE - RLS-1303-020

| Transponder type | $S_{max}$ [mm] | $S_0$ [mm] | $D_0$ [mm] | $V_{Rmax}$ [cm/s]* | $V_{Wmax}$ [cm/s]* |
|---|---|---|---|---|---|
| Ø 9   RTP-0090-020 | 14 | 3 | 22 | 110 | 91.7 |
| Ø 16  RTP-0160-020 | 30 | | | | |
| Ø 20  RTP-0201-020 | 25 | 10 | 30 | 150 | 125 |
| Ø 26  RTP-0263-020 | 31 | 13 | 36 | 180 | 150 |
| Ø 30  RTP-0301-020 | 45 | 21 | 48 | 240 | 200 |
| Ø 50  RTP-0501-020 | 60 | 27 | 66 | 330 | 275 |
| Ø 50  RTP-0502-022 | 50 | 22 | 56 | 280 | 233 |
| Ø 50  RTP-0502-062 | 44.5 | 17.5 | 54 | 270 | 225 |
| Ø 50  RTP-0502-082 | 42.5 | 17 | 51 | 255 | 212.5 |

*speed values for a distance between RWM and transponder set to S0 and a 32 bits Read or Write operation

$$v_{Rmax} = \begin{cases} \dfrac{D_0}{T_R} = \dfrac{2 \cdot (S_{max} - S_0)}{T_0 + N \cdot T_{R0}} & \text{ob / si / if } S_0 > 0 \\[3mm] \dfrac{D_C}{T_R} = \dfrac{2 \cdot S_{max} \cdot \sqrt{1 - 2 \cdot S_0/S_{max}}}{T_0 + N \cdot T_{R0}} & \text{ob / si / if } S_0 \leq 0 \end{cases}$$

$$v_{Wmax} = \begin{cases} \dfrac{D_0}{T_W} = \dfrac{2 \cdot (S_{max} - S_0)}{T_0 + N \cdot T_{W0}} & \text{ob / si / if } S_0 > 0 \\[3mm] \dfrac{D_C}{T_w} = \dfrac{2 \cdot S_{max} \cdot \sqrt{1 - 2 \cdot S_0/S_{max}}}{T_0 + N \cdot T_{W0}} & \text{ob / si / if } S_0 \leq 0 \end{cases}$$
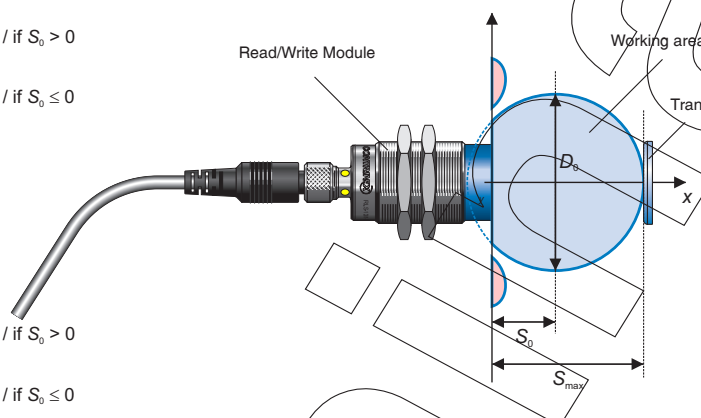


## AVAILABLE TYPES

| Part number | Part reference | Ø | Mounting | Connection |
|---|---|---|---|---|
| 720 100 105 | RLS-1303-020 | M30 | Non-embeddable | M12 4-pin |

## DISCLAIMERS

### FCC information

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note:This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### IC information

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) This device may not cause interference, and

(2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d`Industrie Canada applicables aux appareils radio exempts de licence. L`exploitation est autorisée aux deux conditions suivantes :

(1) L`appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l`appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d`en compromettre le fonctionnement.

### Contrinex information

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