Ident system RFI 32 — Transponder reader

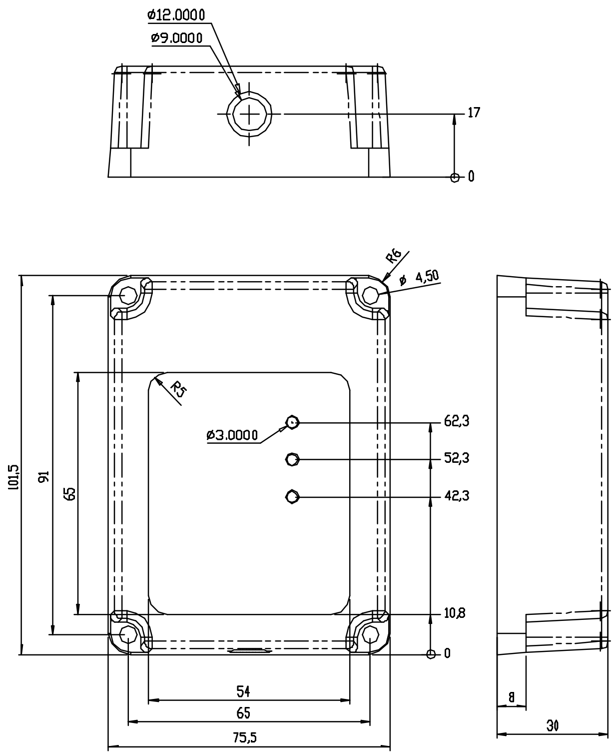
Part No. 501 05011

RFID

ISO 9001

- Compact reading unit for operating ranges up to 80 mm
- Fixcode (protocol EM4002)
- Suitable for industrial usage
- High data transfer rate
- RS 232 interface
- Prepared for connection to MA 2 / MA 21 100.2 / MA 42

Dimensioned drawing



Accessories:

(available separately)

- **Fixcode transponder** - see Order guide and separate transponder data sheet

Electrical connection

Pin assignment

Colour	Connection
grey	+12 … 30 VDC (supply)
white	0 VDC (GND, supply)
green	RS 232 TxD
yellow	RS 232 RxD
brown	RS 232 GND
violet	trigger +8 … 24 VDC
white-black	switching output

Specifications

Characteristic values

Working frequency	125kHz
Reading range 1)	max. 80mm (transponder Ø 50mm)
Data carrier speed 1)	max. 0.6m/s

Electrical data

Operating voltage U_B	12 … 30VDC
Power consumption	approx. 0.5W
Data interface	RS 232
Baud rate	9600
Protocol	8 data bits, 1 stop bit, 1 start bit, no parity
Data frame	STX **DATA** CRLF
Prefix 1	02h = STX
Postfix 1	0Dh = CR
Postfix 1	0Ah = LF

Mechanical data

Housing	ABS plastic, black
Weight (1m cable/10m cable)	280g/500g
Dimensions	101.5 x 75.5 x 30mm

Environmental data

Ambient temp. (operation/storage)	-25°C … +70°C/-40°C … +80°C
Relative air humidity	5 … 90% (non-condensing)
Standards and directives	R&TTE 1999/5/EG, EN 301489-3, EN 300330-2, EN 60950
Protection class	IP 65 acc. to EN 60529

1) Depends on transponder, reading type and reading distance used

Function

Unit for the reading of suitable transponders in an industrial environment. Device can be accessed directly by commands via the Leuze RF-Config terminal program (for commands see Section "commands and messages").

Diagrams

see
transponder data sheet

Order guide

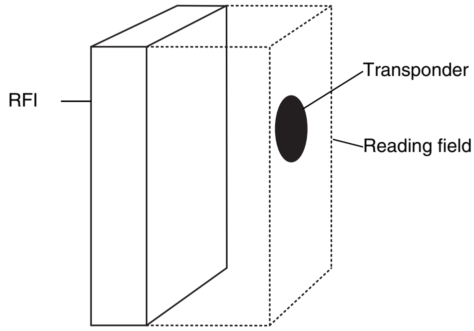
	Designation	Part No.
Read unit		
Protocols as per Fixcode EM4002, cable length: 1m	RFI 32 L 120	500 40500
Protocols as per Fixcode EM4002, cable length: 10m	RFI 32 L 120 L10	501 08915
Connector units		
Installation box for standalone operation	MA 2	500 31256
Network, multinet slave	MA 21 100.2	501 03125
Profibus connection	MA 42 DP-K	500 35298
Interbus connection	MA 42 IS	500 32853
Ethernet connection	IM 58631	501 01845
Disc transponder		
Ø 30 x 2.1mm, 32 Bit fixcode	TFM 03 1101.120	500 32394
Ø 50 x 2.1mm, 32 Bit fixcode	TFM 05 1101.120	500 32393
High temperature disc transponder		
Ø 30 x 2mm, 32 Bit fixcode	TFM 03 1601.120	500 39070
Ø 50 x 2mm, 32 Bit fixcode	TFM 05 1601.120	500 39069
Spacer for disc transponder		
Ø 30mm for TFM 03 11…	Spacer 30 HT	501 07102
Ø 50mm for TFM 05 11…	Spacer 50 HT	501 07103

Remarks

Range of Application

The reader RFI 32 L 120… supports the fixcode protocol EM 4002. The EM4002 code is highly suitable for applications with high ambient temperature and / or identification applications.

The detection range (reading field) of the reader is similar to a cuboid positioned above the reader. Particularly good values for operating range and speed are obtained in the geometric centre of the reading field's upper margin. Usually, there is hardly any reduction in the operating range up to an angle of ±10° to the parallel surface. At higher angles, the range is considerably reduced - although there is no fixed rule. One must take into consideration that metal surfaces in the immediate environment may further influence the properties of the device. The entire front side of the device (black) is active and must not be in close range of metal (metal-free area: min. 50mm in front of device).



To simplify the installation, the RFI's cable is fitted with connectors for the connector units MA …. Apart from a simplified connection, the MA … connector units also offer an additional service interface for the configuration of the reader via a null modem cable.

Commands and Messages

The factory setting permits immediate operation once the supply voltage is present. The following settings are activated by the factory settings:

- **Single shot:** This function reads a the serial number of a transponder once while it is in the field. The information that has been read is output via the interface
- **Data:** The read activation (trigger) outputs the serial number of the transponder.
- **Trigger:** The device reads after a trigger signal has been supplied, or after a software trigger ('+')
- **Switching output:** If the read is successful, the device supplies a 300ms high pulse at the output

The following commands can be used to carry out direct actions:

- **Command ´+´** activates a read process
  Command syntax STX ´+´CRLF
  Response STX ´@´´0´´02´SNRCRLF

- **Command ´-´** terminates the read process without a response
  If no transponder was read, a NO READ (18h) is output

- **Command ´V´** returns the software version of the reader
  Command syntax STX´V´CRLF
  Response STXy1y0m1m0d1d0t3t2t1t0´name´CRLF
  With y=year(2);m=month(2);d=day (2);t=tag number (4)
  and name =type of device

- **Command ´R´** carries out a restart and resets the device to factory settings
  Command syntax STX´R´CRLF
  Response STX´Q2´CRLF
  STX´S´CRLF
  Notice: Data is always coded as ASCII hexidecimal numbers.

With the help of the Leuze configuration software RF-Config, further options may be used and set. A complete description of the command structure and configuration can be requested separately or may be downloaded from the Internet under www.leuze.de.

The following messages inform you about the state of the device:

- **'S'** After the voltage has been switched on, the device reports that is ready for operation
- **'Q0'** Command could not be carried out
- **'Q2'** Action carried out
- **'^'** No transponder in the field or not readable
- **'E01'** Invalid command
- **'E10'** Contradictory configuration selected (e.g., trigger and permanent reading)

Safety Notices and Conformity

Safety Notices

The RFI 32 read systems for radio frequency identification (RFID) and the optional connector units MA… have been developed, manufactured and tested according to the applicable European safety standards (EN 60950). They correspond to the state of the art. Access or changes to the devices, except where expressly described in this operating manual, are not authorised.

Intended use and operation

Attention! The protection of personnel and the device cannot be guaranteed if the device is operated in a manner not corresponding to its intended use.

Read systems of type RFI 32… based on radio frequency identification are electronic devices for inductive data transmission. They are intended to be used for automatic object recognition and material flow control in association with suitable code and data carriers known as transponders. The aforementioned MA… connector units simplify the connection of the type RFI read systems and permit adaptation to various interfaces.

In particular, unauthorised uses include:
- rooms with explosive atmospheres
- operation for medical purposes

Typical areas of application

The RFI 32 read systems with the optional MA… connector units are designed in particular for the following areas of application:
- object recognition in handling and warehousing systems
- commissioning systems in dispatch centres

Declaration of Conformity

The devices have been developed in accordance with the CE directive 1999/5/EC (R&TTE) and comply with the radio frequency permits acc. to EN 300 330-2, as well as with the EMC criteria of EN 301 489-3 and the safety standard of EN 60950-1.

The RFI 32 read system and the connector units MA… are developed and manufactured under observation of the applicable European standards and directives.

A corresponding declaration of conformity can be downloaded from the Internet at www.leuze.de. The manufacturer of the products, Leuze electronic GmbH + Co. KG in D-73277 Owen/Teck, is in possession of a certified quality assurance system in accordance with ISO 9001.