

## Reader R11

*Scirocco AB provides infrared-based ID systems with directional, ultra-compact readers and tags without a battery. Powered by LEDs in the reader or by a separate energizer, the tags can be read at large distance. The zone is well defined, without blind areas and unaffected by metal structures, electromagnetic interference and adjacent readers.*

The 'Mezzo' reader R11 is used to energize, read and write infrared powered tags at large distance.

With a T22 tag for example, the reading range in dim light is about 2 m, depending on tag settings and use. Writing the tag can be done at up to 1 m. If used with an energizer, reading and writing can be done at up to about 3 m and 2 m distance respectively.

R11 is communicated via TCP/IP or RS232/RS485.

The reader is designed to read and write tags in almost any environment and in a solid, directional zone, even in the presence of complex metal structures and rough EMI conditions. Thanks to its small size and precise beam, R11 is excellent for applications with strict installation space requirements, such as factory flow-lines.

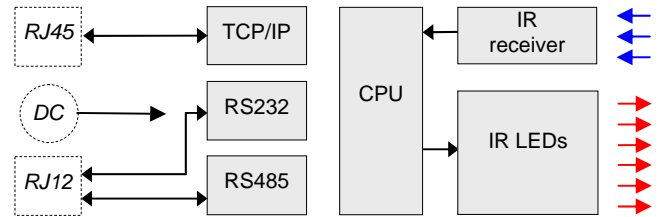
Cables and sealings for dusty and moist installation sites are optionally available, as well as a smart mounting bracket for wall or table-top mounting. Power- and connectivity LEDs and a built-in buzzer make system set-up and test easy.



- 2 or 3 m reading
- 1 or 2 m writing
- 2 m powering
- TCP/IP
- RS232/485
- 10 – 30 Vdc
- Directed zone
- Ultra compact
- Metal/EMI-safe

## Function

R11 comprises a processor board with a CPU, power supply and communication circuits. The processor board connects to a separate LED board for ID tag powering and writing.

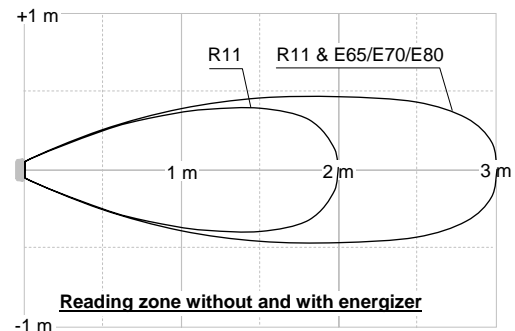


When an ID code and/or user data from a tag reaches the receiver, it is automatically checked and loaded into a buffer in the CPU. The tag information is then made available to a host computer via TCP/IP-, RS485-, and RS232 interfaces.

All tags in the Scirocco system are factory programmed with a permanent ID code. User data and/or settings for R/W tags, such as T22, can be sent to the tag by modulation of the LEDs. R11 can be set for repeated or single reporting of a tag that stays in the zone, and a timeout function further defines in-zone tag handling.

## Performance

The performance of R11 is related to the tag type that it is used with, and the set-up and use of this tag. The diagrams show the approximate reading zones with reader-powered tags in dim light, as well as with tags that are powered by a complementary energizer.



Daylight-powered tags can typically be read at about 3 m.

A R/O tag, such as T12, may transmit its ID frames about 10 times per second to ensure safe identification of moving objects. A R/W tag, such as T22, that has been set to High Speed (HS) mode may transmit its ID frames more than 20 times per second, however at the expense of a slightly shorter reading distance.

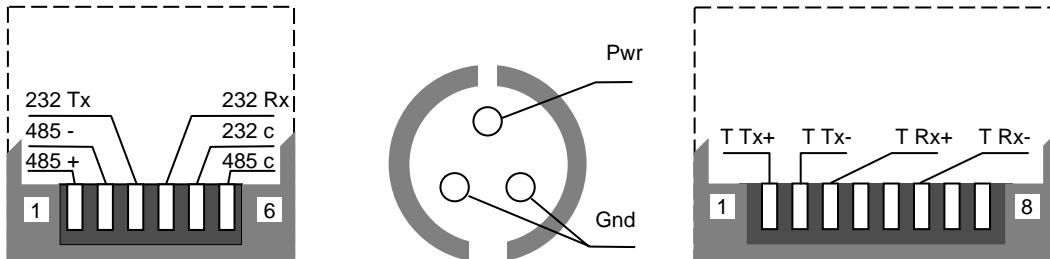
R/W tags, such as Data tag T22, typically have a 128 Byte memory comprising eight 16-Byte blocks. The user can decide which blocks to use and select tag settings according to the application needs. Each ID frame comprises a 32-bit ID code and a 32-bit checksum (CRC), ensuring a substitution error rate of less than one in  $10^{-9}$  reads.

R11 is designed for simultaneous reading of more than one R/O tag at a time in the reading zone, has facilities to lock a tag against reprogramming and to encrypt user data that is to be stored in the tag.

The maximum passage speed during a read operation is a function of the data amount to transfer and the distance between tag and reader. Details about the reading/writing distance, passage speed, tag orientation and more are found in the Technical Manual.

## Connectivity

RS232/485 and TCP/IP are connected via RJ12/RJ45 plugs, while a mini connector is used for the power input. R11 accepts voltages in the range 10 – 30 Vdc and consumes about 6 Watt when searching for tags and about 18 Watt while reading the tag.



## Communication protocol

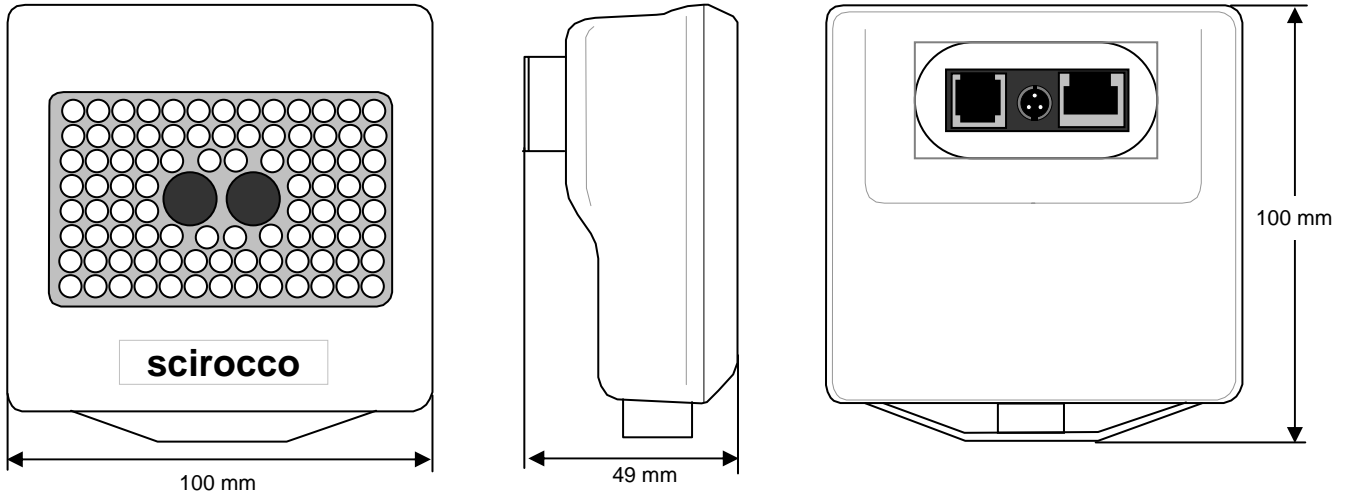
The software in R11 is operated via the “ST protocol”, a single-master, half-duplex protocol for communication between one master and several slaves. It supports point-to-point connection via RS232/RS485, multi-drop via RS485, TCP/IP via router and can be used in Binary Mode or ASCII mode.

In Binary Mode, R11 can be used under RS232 as a single slave, while multiple slaves are supported on a 2-wire RS485 line or via TCP/IP. The ASCII Mode is intended for test and demonstrations, where commands e.g. are sent from a terminal program (e.g. HyperTerminal). Multi-drop is not supported in the ASCII mode.

The ST protocol includes a variety of commands, such as setting of baud rates and addresses, getting the reader software version and its serial communication settings, and commands for reset and system debug. A selection of ST protocol commands is given in the table below.


Command name	Abbr.	ASCII Mode	Description
Read tag memory	RTM	'm'	Start reading tags and store in reader buffer
Write user data	WUD	'w'	Write buffer data to tag memory (from 0 to 128 bytes)
Lock Memory	LMM	NA	Lock tag against further reprogramming (with Password)
Unlock Memory	UMM	NA	Inhibit locking of tag (with Password)
Format Memory	FMM	'f'	Clears all data slots in tag memory
Set Tag Parameters	STP	NA	Set tag in HS- or LR mode
Get Buffer Load	GBL	'b'	Get number of tags records stored in the reader's buffer
Get Buffer Contents	GBC	'g'	Request tags records currently stored in the buffer
Clear Buffer Contents	CLR	'c'	Request to clear tag records stored in the buffer
Set Tag Communication	STC	NA	Set the parameters used for the communications of the IR interface: DES key and timeout
Set Operation Mode	SOM	's'	Set the reader operation mode, e.g. buzzer, output mode, protocol etc.

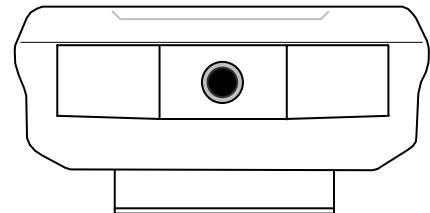
## Dimensions



## Mechanical data

Type code and software with version number, regulatory information and serial number is marked at the back of the

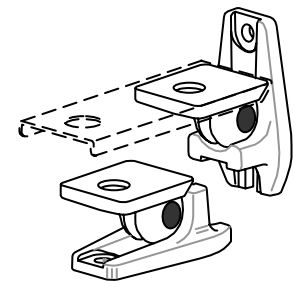
**Scirocco AB**  
 IRID Reader R11 01  
 TridentR-M 1.0   
 S/N: YYMM1NNNN



cover. The housing is made in light grey UV-resistant polycarbonate, and the weight is 180 g. An M8 thread is applied under the unit for screw mounting to various objects, such as mounting bracket A80.

## Environmental data

Temperature	-20 to +50 °C	(operating)
Temperature	-40 to +85 °C	(storage)
Humidity, non-condensing	95 %	
Protection (IEC 529)	IP 54	
Solar rad. (IEC68-2-5 Sa C)	56 days	1120 W/m <sup>2</sup>
Vibration (IEC 68-2-29)	0.01 g <sup>2</sup> /Hz,	0.5 h x 3 dir, 10-2000 Hz
Immunity	EN 61000-6-2:2001	10/3 V/m, 4/8 kV ESD, 1kV transient
Emission	EN 61000-6-3:2001	30/37 dBuV/m @ 10m



## Ordering codes

Reader 'Mezzo'	R11	
Power cable	A11	5 metres
RS232/485 cable	A12	3 metres
TCP/IP cable	A13	3 metres
Sealing	A19	Rubber sleeve
Mounting bracket	A80	With extension plate



DSR11H

In a continuing effort to improve our products, Scirocco AB reserves the right to change specifications and features without prior notice.