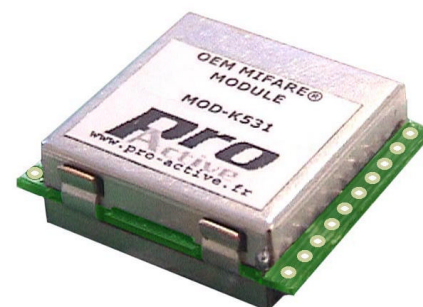


ISO/IEC 14443 OEM CONTACTLESS READ/WRITE MODULE

Pro-Active **K531** is an ISO/IEC 14443 contactless reader/writer module for OEM integration.

K531 reads and writes popular Philips MIFARE cards, as well as memory proximity tags from other manufacturers.

As a versatile T=CL reader, **K531** is also suitable for use with any ISO/IEC 14443 layer 4 smartcards, including Philips DESFIRE cards.

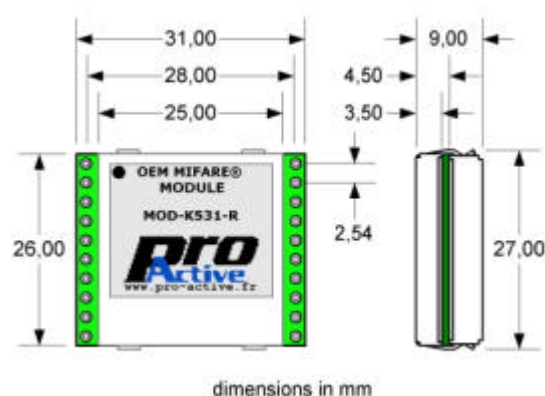


Thanks to its asynchronous serial communication interface, **K531** is really easy to operate from any microcontroller or host computer.

The **K531** OEM module needs an external antenna to operate. The antenna has to be designed depending on your own application (size requirements, expected operating distance).

Pro-Active also offers a basic antenna suitable for most uses, with various serial interface options.

Don't hesitate to contact use for specific requirements.



Contactless interface

- Compliance : ISO/IEC 14443 A/B (1, 2, 3 and 4),
- T=CL protocol embedded in coupler's firmware (256-byte frames, multi-activation with CID),
- Work with any ISO/IEC 14443 A or B smartcard (Philips DESFire, ProX, SmartMX, Infineon SLE66, STMicroelectronics ST19, ...),
- Read / write Philips MIFARE Classic and UltraLight cards or tags ; CRYPTO1 cipher unit with secure key storage (MfRC531 chipset),
- Other cards support (Calypso, Jewel, SR176, ...) on request,
- 13.56MHz RFID transmission, 106kpbs to 424kbps baudrate.

Electronics

- Small footprint module : 26mm x 31mm x 9mm, 20 pins,
- 2 software-controlled LED outputs (CMOS/TTL),
- 1 software-controlled bi-directional user pin (CMOS/TTL),
- RX/TX pins (CMOS/TTL) for asynchronous serial communication,
- Both MFIN and MFOUT pins available on the module pinout for advanced MfRC531 operation,
- Power supply : 5V DC, 90mA typical,
- Extended temperature range (-20 to +80 °C),
- RoHS compliant, FCC approved.

RELATED PRODUCTS

K531-TTL	ISO/IEC 14443 OEM module with antenna
K531-232	ISO/IEC 14443 OEM module with antenna, RS-232 serial communication interface
K531-485	ISO/IEC 14443 OEM module with antenna, RS-485 serial communication interface
SRK-K531	K531 Starter Kit for developers and integrators

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TECHNICAL DATASHEET

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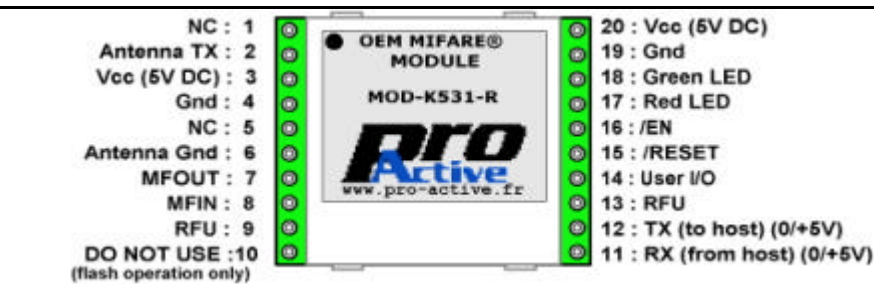
S.A.S. capital of 227 000 €
R.C.S. EVRY B 429 665 485
A.P.E. 722 Z
VAT # : FR 27 429 665 482 00015

ISO/IEC 14443 OEM CONTACTLESS READ/WRITE MODULE

SPECIFICATIONS

ISO compliance	ISO/IEC 14443-A/B 1, 2, 3 & 4	CMOS/TTL I/Os	2 LEDs outputs 1 USER input/output (reserved for output driver control in RS-485 operation)
RFID operating frequency	13.56 MHz	CMOS/TTL serial interface	8 data bits, 1 stop, no flow control 9600, 38400 or 115200bps
Card operating distance	Depends both on antenna and card 5cm typical, min 0cm, max 8cm	Power supply	5 V DC
PCD ↔ PICC baudrate	106, 212 or 424 kbps	Consumption	90mA typical 200mA max during RF operation
Supported cards	Philips MIFARE Classic & UltraLight Philips DESFIRE Philips SmartMX, ProX Infineon SLE66 ... STMicroelectronics ST19 ... Other cards : contact us (Calypso ¹ , Jewel, SR176...)	Temperature range	-20°C → +80°C
¹ Calypso card support is subject to extra license fees Module firmware is upgradeable through serial interface using free flashing utility. Upon request, a dedicated firmware may be developed, giving highest performances to your specific application.		Dimensions L x W x H	26 x 31 x 9 (mm)
		Weight	14g
		CE mark	EN50082 / EN55022 class B
		FCC	Part 15C
		RoHS compliant	Yes

PINOUT

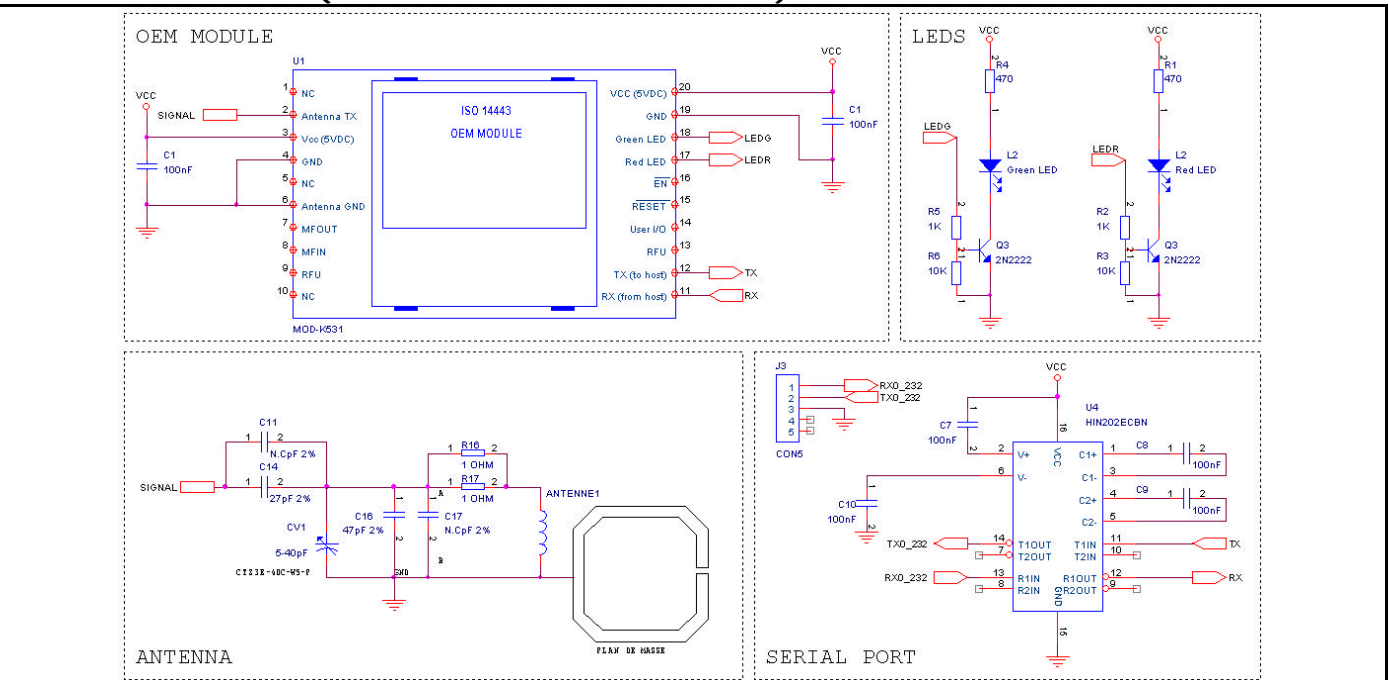


Please follow the application note below for the antenna design.

The antenna is to be wired between pins 2 and 6, according to the application note "Design of MF RC500 Matching Circuits and Antennas" to be downloaded from Philips Semiconductors' web site.

All logical pins at TTL/CMOS level (LEDs, USER, RX & TX) must be protected according to the application note below.

APPLICATION NOTE (50 OHMS MATCHED ANTENNA)



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