K531

ISO/IEC 14443 OEM CONTACTLESS READ/WRITE MODULE

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

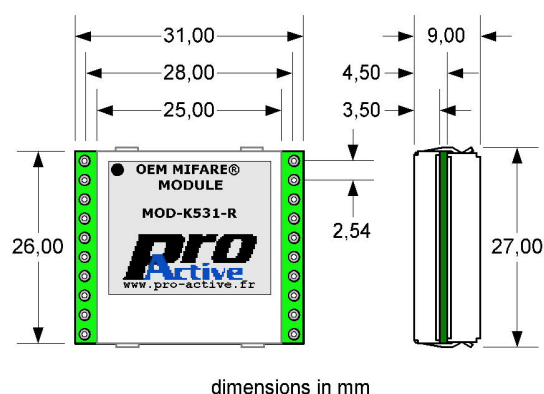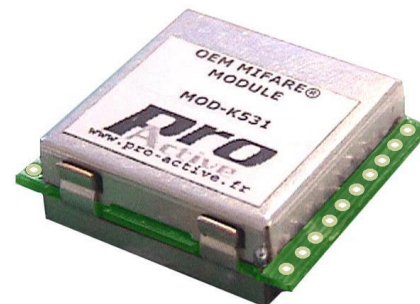**K531** reads and writes popular Philips MIFARE cards, as well as memory proximity tags from other manufacturers.
As a versatile T=CL reader, **K531** is also suitable for use with any ISO/IEC 14443 layer 4 smartcards, including Philips DESFIRE cards.

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 us for specific requirements.

dimensions in mm

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 card supports (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-directionnal 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

TECHNICAL DATASHEET

ISO/IEC 14443 OEM CONTACTLESS READ/WRITE MODULE
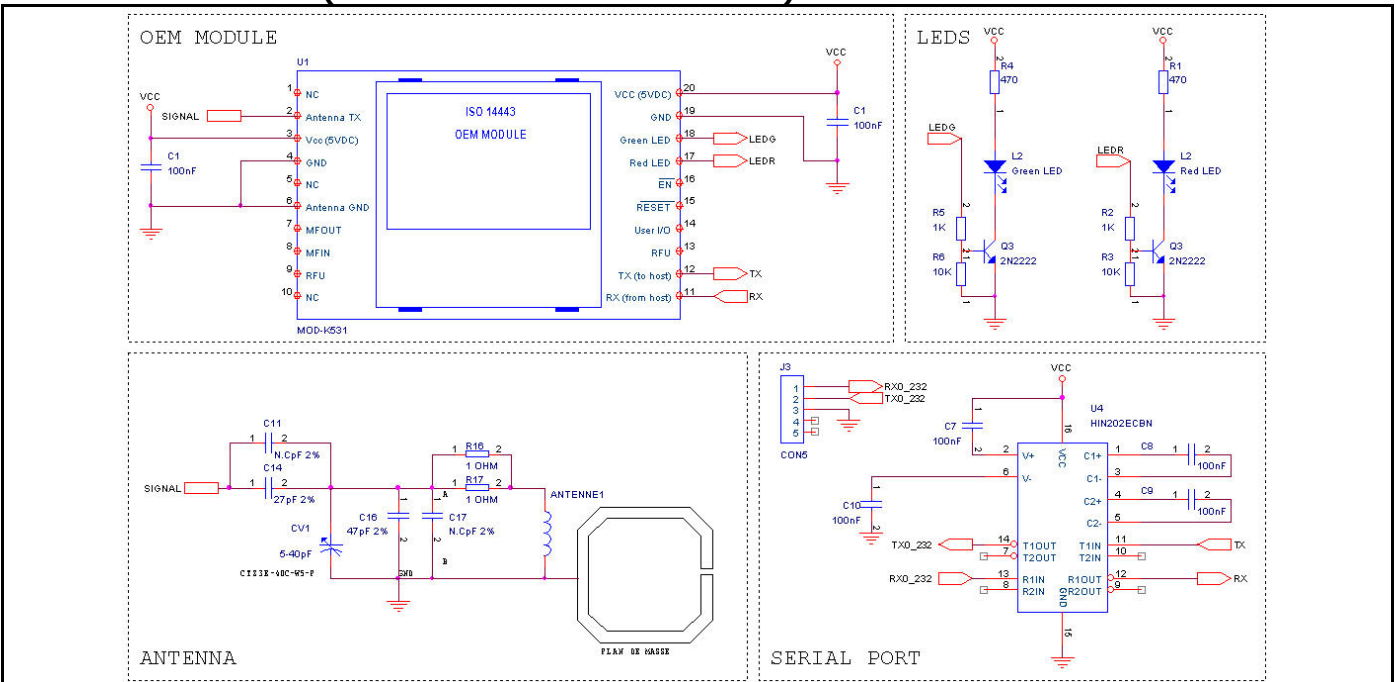
SPECIFICATIONS

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

PINOUT

NC : 1	20 : Vcc (5V DC)
Antenna TX : 2	19 : Gnd
Vcc (5V DC) : 3	18 : Green LED
Gnd : 4	17 : Red LED
NC : 5	16 : /EN
Antenna Gnd : 6	15 : /RESET
MFOUT : 7	14 : User I/O
MFIN : 8	13 : RFU
RFU : 9	12 : TX (to host) (0/+5V)
DO NOT USE :10 (flash operation only)	11 : RX (from host) (0/+5V)

● OEM MIFARE® MODULE
MOD-K531-R
www.pro-active.fr

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)

TECHNICAL DATASHEET