

**keyless**<sup>®</sup>  
Engine Encoder

# Tech Handbook



## Introduction and statement of conditions

Despite the attentive and careful realization, update and integration of the contents and integrations in this handbook, these contents and information may contain typing mistakes, inaccuracies or inconsistencies for whom Keyless® does not provide any guarantee - neither explicit nor implicit - not even by way of reliability or expectation. In particular, we do not guarantee completeness, exhaustiveness and compliance with the current organization, company structure or typology, characteristics, marketability and fitness for purpose of the products, services and activities of Keyless®, who is available to provide any relevant information. Keyless® reserves the right to make adjustments and changes to the information contained in the handbook without prior notice, as well as to vary and to change the products, the services and the activities described herein, without it rising any kind of rights for a third-party. In order to reduce paper consumption, we decided to minimise the description inherent to the use and installation in this manual, whilst maintaining the greatest clarity. It is important to keep this handbook to be able to consult it at any time. In case of sale, disposal or removal of the product, make sure that the handbook is given to the new owner, to inform him about the functioning and the related warnings. Read the instructions carefully: they contain important information about installation, use and security. In the interest of improving the internal design, the operational functionality and/or the reliability, Keyless® reserves the right to make adjustments and changes to the products described in this handbook without prior notice nor notification in written or electronic form. Keyless® accepts no responsibility during the use or the implementation of the products or the circuit diagram described herein.

## Rules and guarantees

All Keyless® products have a 24 months warranty from the date of purchase over the whole European territory.

The warranty is valid for products found to have structural manufacturing or functional defects. Under no circumstances should the warranty be understood as onsite, but offsite. The detecting of defects, the dismantling, the shipment of the damaged product to Keyless® headquarters, as well as the delivery charges regarding the intervention, have to be carried out by the installer. Keyless® guarantees the product and its functioning only if the product is correctly installed without adjustments for its only purpose of use; using the product not as intended invalidates the warranty.

Keyless® is not responsible for damages caused to things or people, for the inappropriate use or installation of the product, nor for damages resulting from non-use due to damages or defects, loss of earning, inactivity or non usability. It is up to the installer to communicate a possible defect as soon as possible via e-mail to the address [assistenza@keyless.it](mailto:assistenza@keyless.it).

After a brief evaluation following the handbooks recommended by Keyless®, the defected or malfunctioning product can be returned to be repaired or replaced. The new or repaired product will not have a new 24 months warranty, but it will be covered by the official warranty given at the time of purchase.

All products damaged by power surges, thunderstorms and adverse weather conditions, earthquakes, floodings or break-in attempts performed through mechanical manipulation, erroneous connections or reversed polarity are not covered by warranty.

**All legal disputes are reserved to the jurisdiction of the Foro of Treviso (Italy).**

## Guidebook for the installation

All Keyless® products are certified and under warranty only if **installed by qualified personnel**.

Before you begin the installation, make sure that the system is highly compatible with your power circuit. Under no circumstance is Keyless® and its retailers responsible for erroneous purchase, incompatibility of the products sold and/or installed by unqualified personnel, loss of earnings or money due to malfunctioning of Keyless systems.

THE INSTALLATION AND THE CONNECTION OF THE PRODUCTS MUST BE CARRIED OUT WITHOUT A/C POWER.

Cut the power from the electrical panel or the counter; it is good to install a thermal magnetic circuit breaker with 6A at least to maintain the system, it also has to conform to the local standards in force.

EARTHING THE POWER SUPPLY IS REQUIRED BY LAW.

Keyless® accepts no responsibility for possible damages suffered by people, things, pets or property, due to non-compliance with the rules described herein. The system downstream of the power supply is low voltage (12V) and it does not constitute a danger for people.

## Encoder

Keyless engines determine their position through the Hall effect encoder integrated in the engine itself, as specified in the attached datasheet.

The software logic provides that, during the mechanical rotation of the cylinder (with knob or key, or burst without electrical or electronic controls), generates rotational pulses, beyond which (250) a "mechanical rotation warning message Lock "is sent to the administrator (s).

Such alerts (SMS) may arise spontaneously, even in the event of voltage fluctuations on the electricity grid due to weather (weather, weather events), tram lines, factories, railway lines and all variable power installations.

To reduce the spontaneous sending of SMS, set the minimum threshold of 250 (factory) pulses to a higher threshold (by incrementing by typing directly into the keyboard up to a maximum of 1200) by keyboard (using function 620).

All Keyless Engine, detect the position point through the analysis of the relative placement Encoder rules, like the datasheet on side.

The software engineering, detect the manual rotation(keys, burglar, etc..) through the Hall Encoder, during every single rotation pulse. Beyond 250 pulse of Encoder, a SMS("Warning! Lock manual rotation, pay attention. ") will send from system to Admin/s.

Sometimes, storms, electrical surge or bounce, generate false pulse and false SMS.

To weaken this false pulse, setup through Keypad menu(function 620) a superior edge of pulse alarm up to 1200 pulse.

motoriduttori con encoder  
ad effetto Hall bifase a 90°

gear-motors with two-phase  
Hall-effect 90° encoder

#### MAGNETE A SEI POLI:

#### TRE IMPULSI OGNI GIRO MOTORE

La successione delle fasi A-B si ottiene collegando il motore secondo le polarità stampigliate sul fondello.

#### INTERRUTTORE AD EFFETTO HALL

Questi interruttori ad effetto Hall, sono sensori altamente stabili termicamente e resistenti alle sollecitazioni meccaniche, sono maggiormente utilizzati in applicazioni dove il campo magnetico varia rapidamente il valore di campo residuo è basso. Ciascun dispositivo include un regolatore di tensione, un generatore di Hall, un circuito stabilizzatore di temperatura, un amplificatore di segnale stabilizzato a chopper, un comparatore di Schmitt ed un mosfet a drain aperto, compresi su un solo "chip" di silicio. Il regolatore di tensione permette di alimentare il dispositivo con tensione compresa tra 3,5 e 24V. Il mosfet di uscita può sopportare correnti di 20mA massimo. Con opportuno valore di resistenza di carico in uscita può essere agevolmente interfacciato con logiche bipolari o MOS.

#### SIX POLES MAGNET:

#### THREE PULSES FOR MOTOR TURN

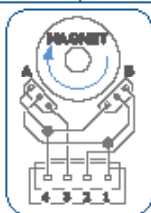
The sequence of the phases A-B is obtained connecting the motor with the polarities printed on the black bottom cover.

#### HALL-EFFECT SWITCHES

These Hall-effect switches are highly temperature stable and stress-resistant sensors best utilized in applications that provide steep magnetic slopes and low residual levels of magnetic flux density. Each device includes a voltage regulator, quadratic Hall voltage generator, temperature stability circuit, signal chopper stabilized amplifier, Schmitt trigger and an open drain mosfet on a single silicon chip. The on-board regulator permits operation with supply voltages of 3,5 to 24V. The output mosfet can sink up to 20 mA with suitable output pull up, they can be used directly with bipolar or MOS logic circuits.

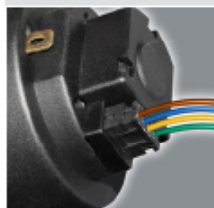
#### collegamenti

- 1 Verde: GND
- 2 Giallo: O.C. B NPN
- 3 Blu: O.C. A NPN
- 4 Marrone: Vcc (Hall)



#### connections

- 1 Green: GROUND
- 2 Yellow: O.C. B NPN
- 3 Blue: O.C. A NPN
- 4 Brown: Vcc (Hall)



#### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNITS
Supply Voltage	VDD	28	V
Supply Current	IDD	50	mA
Output Voltage	VOUT	28	V
Output Current	IOUT	50	mA
Storage Temperature Range	TS	-50 to 150	°C
Maximum Junction Temperature	TJ	165	°C

Exceeding the absolute maximum ratings may cause permanent damage. Exposure to all absolute-maximum-rated conditions for extended periods may affect device reliability.



#### GENERAL ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYPE	MAX	UNITS
Supply Voltage	VDD	Operating	3,5	-	24	V
Supply Current	IDD	B<BRP	-	-	5	mA
Output Saturation Voltage	VDSat	IOUT=20mA, B>BOP	-	-	0,5	V
Output Leakage Current	IOFF	IB<BRP, VOUT=24V	-	0,3	10	µA
Output Rise Time	tr	RL=1kΩ, CL=20pF	-	0,25	-	µs
Output Fall Time	tr	RL=1kΩ, CL=20pF	-	0,25	-	µs

OC Operating Parameters TA = 25 °C, VDD = 3,5V to 24V (unless otherwise specified)