

**MANUAL
TIMING & IDENTIFICATION DECODER
WITH THE
THE EP-30 OR BP-60
TIMING TRANSPONDER**

PRELIMINARY MANUAL
VERSION : 0.0

Notice:

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This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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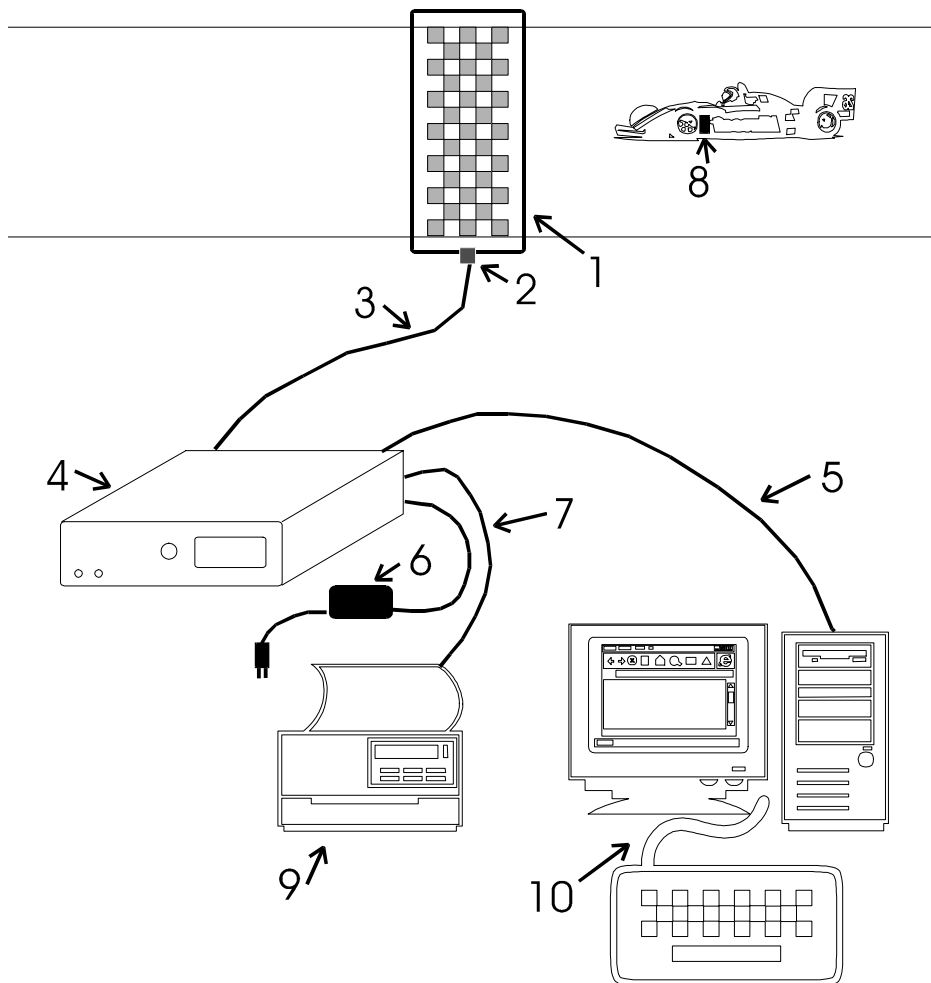
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1 Introduction

The timing and identification decoder is specially developed for precise and reliable lap & section timing for go-karts. An detection antenna mounted in the circuit on the start/finish line , reads the numbers of the transponders above the antenna, and forwards it through a coax cable to the timing and identification decoder. In the timing and identification decoder the passing transponder numbers are linked to the pass time, and transmitted by the RS-232 in a special record format to the time management computer.

1.1 System configuration

The total system consists of the next parts :



1. Detection antenna in the circuit
2. Connection box
3. Coax cable
4. Timing and identification decoder
5. Serial cable
6. Adapter
7. Printer cable
8. Timing transponder

- 9. Printer
- 10. PC

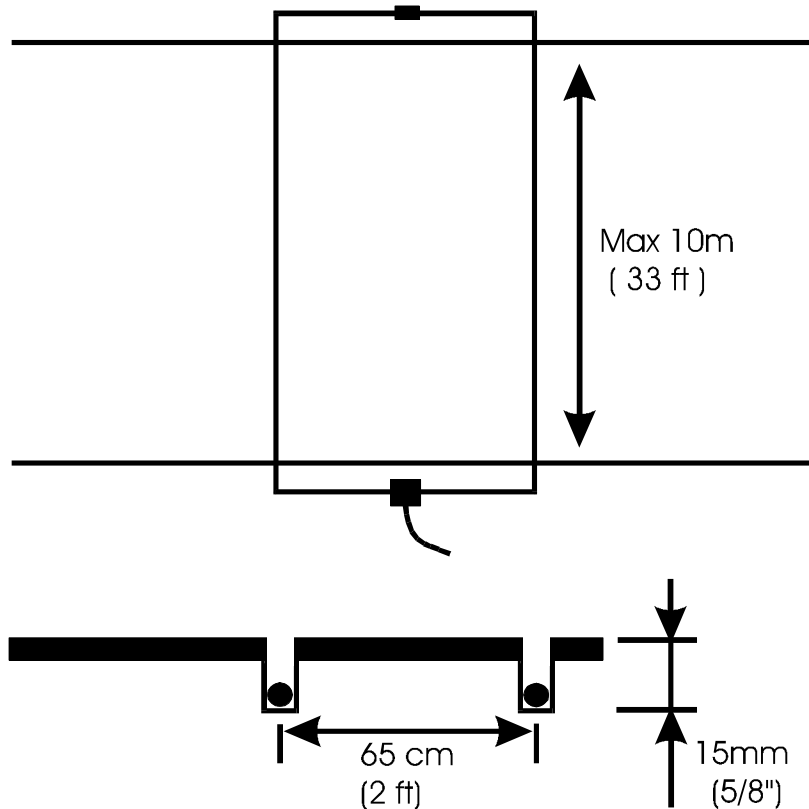
2 Installation

2.1 Detection antenna mounting

Every time when a go-kart is right above the detection antenna, the detection antenna picks up the signal of the passing transponder. This signal is fed into the coax cable, which connects the detection antenna to the timing and identification decoder.

2.2 Mounting of detection antenna in the circuit

The detection antenna is placed inside a groove in the surface of the track and positioned in such a way that the timing transponder is in the middle above the detection antenna when the front of the go-kart is above the finish line.



For the mounting of the detection antenna, it is necessary to make 2 grooves, 65cm / 2 ft apart, over the full width of the track (maximum 10m / 33 ft). The cutting depth of the groove must be 15mm - 5/8" and 3mm – 1/8" width. The detection antenna is placed in the rectangle shaped groove and filled with silicon.

Be sure that the sharp groove corners do not cut the detection antenna wire.

The wire ends of the detection antenna are connected to the connection box.

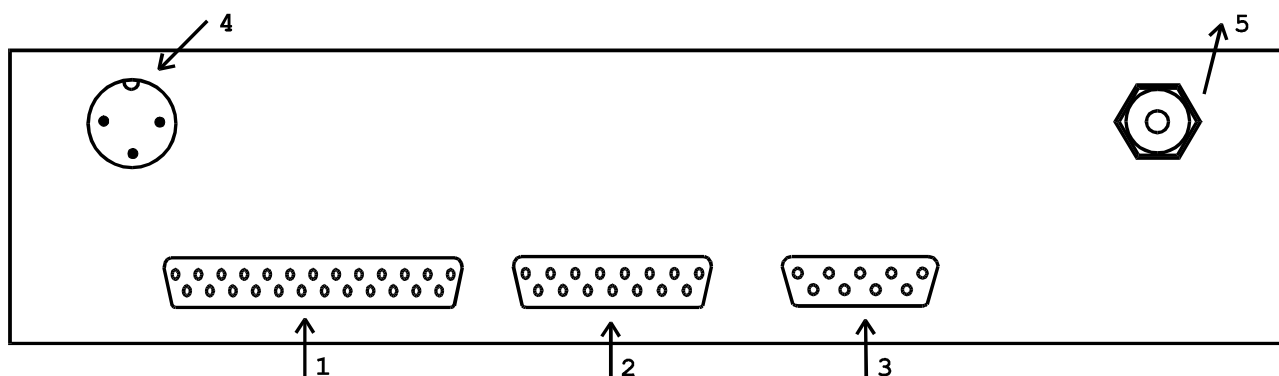
Because the detection antenna is sensitive to interference, which can for example be radiated from any nearby electrical cables, it is necessary (if possible) to keep away 5m - 15 ft the antenna from these cables. Also try to keep away as far as possible the coax cable from other electrical cables.

It is also advisable to minimal 5m – 15ft keep away other parts of the track from the detection antenna, to prevent false transponder readings.

2.3 Timing and identification decoder

On the moment the timing transponder is above the detection antenna, the number will be read. The timing and identification decoder will link the passing time and sends this information in a record to a connected time management computer, by way of a RS232 serial link.

2.4 Backside connection descriptions



NUMBER	FUNCTION
1	Printer port
2	Option port
3	Serial port
4	DC power supply
5	Detection antenna input

2.5 Operating the timing and identification decoder

After the metal plug from the mains powered adapter is connected to the DC power supply input of the decoder, the timing and identification decoder will start-up. First a self-test is performed to check the main functions of the timing and identification decoder. The decoder display shows all performed tests. If the self-test passes, the unit is ready.

From this moment on, the decoder will register all timing transponders passing the detection antenna. From every detected transponder, the display shows :

- Transponder number
- Pass time
- Hits (Number of times the transponder is detected during the passing)
- Signal level (Received signal strength of the transponder)
- Detection antenna number
- Total number of detected transponders

With the function button on the front side of the timing and identification decoder, a selection between the 2 display modes can be made.

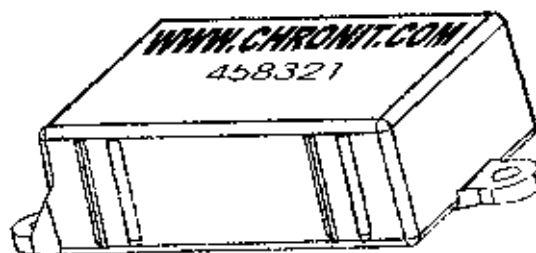
- Passing transponder information (Selected at power-up)
- Detection antenna quality information

Pressing down the function key and releasing it at the moment the display shows the correct information makes the mode selection.

2.6 Transponder mounting on go-karts

Each go-kart becomes its own timing transponder, which can be powered directly from the Honda GX ... (or compatible) engine.

It is very important that the installation of the timing transponder on the go-kart is done according the descriptions below, else a serious degradation of performance can occur.



The 3 most important installation rules are:

1. The maximum distance between the detection antenna and the middle of the timing transponder housing, is 20 cm – 2/3 ft.
2. The bottom and topside of the timing transponder must be free of electrical conductive materials. Also between the transponder and detection antenna, no electrical conductive materials are allowed.
3. The timing transponder mounting direction must be done according the following description :
 - When the timing transponder is assembled on horizontal (for example on a plastic floor plate of the go-kart), the mounting direction is not important.
 - As soon as the timing transponder is vertically mounted (for example on the back of the seat), then the identifier of the transponder must facing forwards or backwards. So for example a transponder mounted on the side-pots of the go-kart, facing to the seat, will perform very badly!

It is advisable to first connect the timing transponder to one go-kart only, then test if it works correctly, and then continue to mount the timing transponders to all other go-karts. The testing is very easy. Drive with the test go-kart a few times across the detection antenna, and every

time check if the signal level of the timing transponder is above 75. This level is displayed on the screen of the timing and identification decoder.

2.7 Fixing of the timing transponder on the go-kart

The timing transponder has 3 fixing holes for 5mm screws. To prevent that vibration loosens the nuts of the screws, use only self-locking nuts.

It is also possible to fix the timing transponder with cable ties. On both sides of the timing transponder are special positioning grooves for cables ties, which prevent that the cable ties can move away. In case cable ties are used, make 100% sure that they can not loosen during karting.

2.8 Power connection of timing transponder

The timing transponder can be powered directly from the popular Honda GX... (or compatible) engine which is very popular for fun go-karts . As soon as the engine is started, the transponder is powered. Make the cable connections of the transponder as follows:

- First turn off the engine
- Fasten the eye terminal of the blue wire under a convenient screw on the metalwork of the engine.
- Pull out the male bullet connector of the existing wire from the engine's on/off switch and push it into the matching female bullet connector attached to the brown wire. Then push the male bullet connector attached to the brown wire onto the engine's on/off switch.
- Make sure the total power cable is fit tightly along the chassis. This protects the power cable and is also necessary for correct functioning of the timing transponder.

Safety warnings

To avoid risk of injury to personnel during the fitting process, the engine must be stopped.

To avoid damage to the transponder during use, it must be fitted to the go-kart bodywork in a position where it will not easily be damaged in a collision, or by a driver getting into or out of the kart.

2.9 The back-up printer

In case when a back-up printer is connected to the timing and identification decoder, every passing of transponder is printed out directly on paper, without a time management computer. This gives an extra level of back-up safety when equipment is used during important races. In case the time management computer fails during the race, the printer will remain functioning because it is directly connected to the timing and identification decoder.

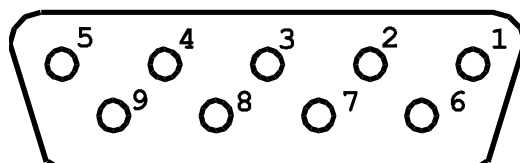
The printed document consists of the following information:

- Transponder number
- Pass-time (Not lap-time)
- Hits
- Signal level
- Detection antenna number.
- Passing number

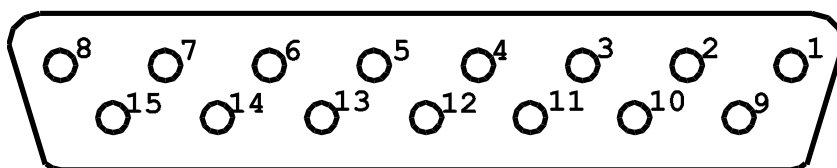
3 Connector configurations

3.1 Serial Port :

PIN NUMBER	FUNCTION	USED BY DECODER
1	DCD	NO
2	RXD	YES
3	TXD	YES
4	DTR	YES
5	GND	YES
6	RI	NO
7	CTS	NO
8	RTS	NO
9	DSR	NO

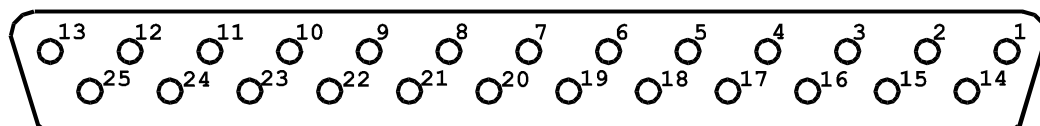


3.2 Option port



PIN NUMBER	DESCRIPTION
1	Optocoupler emitter 1 output
2	Optocoupler collector 3 output
3	Optocoupler emitter 3 output
4	-
5	Optocoupler 2 positive input
6	Optocoupler 1 positive input
7	Positive 12V / 400mA supply output
8	External positive supply input -1
9	Optocoupler collector 2 output
10	Optocoupler emitter 1 output
11	Optocoupler collector 1 output
12	Optocoupler 2 negative input
13	Optocoupler 1 negative input
14	GND
15	External positive supply input -2

3.3 Backup printer:



PIN NUMBER	DESCRIPTION
1	Strobe
2	Data D0
3	Data D1
4	Data D2
5	Data D3
6	Data D4
7	Data D5
8	Data D6
9	Data D7
10	Ack
11	Busy
18...25	GND

4 Declaration of conformity for European Union

We, the manufacture declare that the following equipment:

Product description / Intended use	Timing transponder EP-30 & BP-60
EU /EFTA member-states intended for use	EU: Austria, Belgium, Denmark, Finland, France, Germany Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, United Kingdom EFTA: Switzerland, Iceland, Liechtenstein, Norway
Restrictive use	None

is tested to and conforms with the essential radio test suites included in the following standards:

Standard	Issue date
EN 300 330 ETS 300 683 EN 609060 incl. A1, A2, A3 and A4	EN 60950 (1992), A1 (1993), A2 (1993), A3 (1995), A4 (1997)

and therefore complies with the essential requirements and provisions of the **Directive 1999/5/EC** of the European Parliament and of the Council of 9 March 1999 on Radio equipment and Telecommunications Terminal Equipment and the mutual recognition of their conformity and the requirements of Annex IV (Conformity Assessment procedure referred to in article 10(4)).

For the Conformity Assessment procedure we have consulted NMI Certin BV (Notified Body number 0122)

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