



# Maestro Heritage HER030 Add-on box with 6 digital inputs and 6 digital outputs

## **USER MANUAL**

Rev. 01



## REVISION HISTORY

Rev.	Date	Details	Originated by
00	06/03/2008	First release	Frank Tang
01	08/04/2008	Second release	M. Boulanger

This manual is written without any warranty.

**Maestro Wireless Solutions Ltd.** reserves the right to modify or improve the product and its accessories which can also be withdrawn without prior notice.

Besides, our company stresses the fact that the performance of the product as well as accessories depends not only on the proper conditions of use, but also on the environment around the places of use.

**Maestro Wireless Solutions Ltd.** assumes no liability for damage incurred directly or indirectly from errors, omissions or discrepancies between the modem and the manual.

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## **SAFETY PRECAUTIONS**

### ***General***

- The user must operate the product according to the specifications described in this User Manual.
- Make sure the ratings and performance characteristics of the product are sufficient for the systems, machines and equipment.

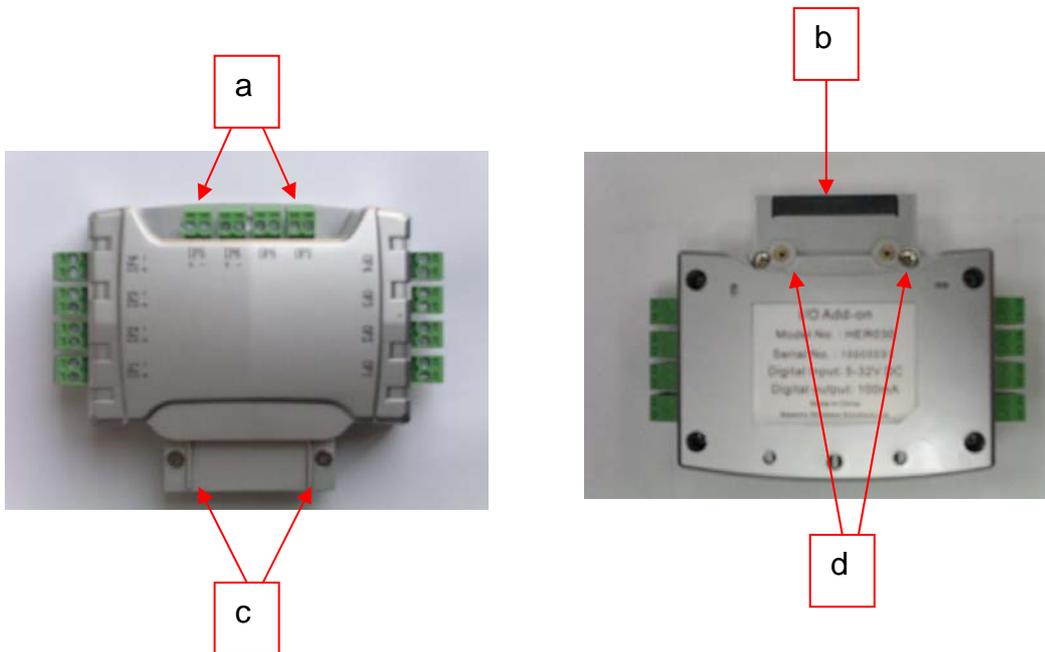
### ***Warnings***

- Do not attempt to unplug the product from the Main Unit when the latter is being supplied power.
- Do not attempt to disassemble, modify or repair the product. Any attempt to do so may result in malfunction or fire.
- Provide safety measures in external circuit to ensure safety in the system in case of abnormality occurs due to malfunction of the product or another external factor affecting the product's operation. Safety measures include but not limited to Emergency stop circuits, interlock circuits and limit circuits.
- The digital outputs may remain ON or OFF in case the OptoRelay is damaged. As a counter-measure for such problem, external safety measures must be provided to make sure safety in the system.
- Construct a control circuit so that the power supply for the I/O circuits does not come ON before power supply for the Heritage Main Unit.
- If there is risk of high voltage surge appearing on I/O circuits, then use a different power supply for the I/O circuits from the one for the Heritage Main Unit. The 2 power supplies will need to be isolated.

## CHAPTER 1: Introduction

HER030 is an optional add-on box for the Maestro Heritage Main Unit (ordering code HER010). The functions of which are then extended by adding 6 digital inputs and 6 digital outputs to the system.

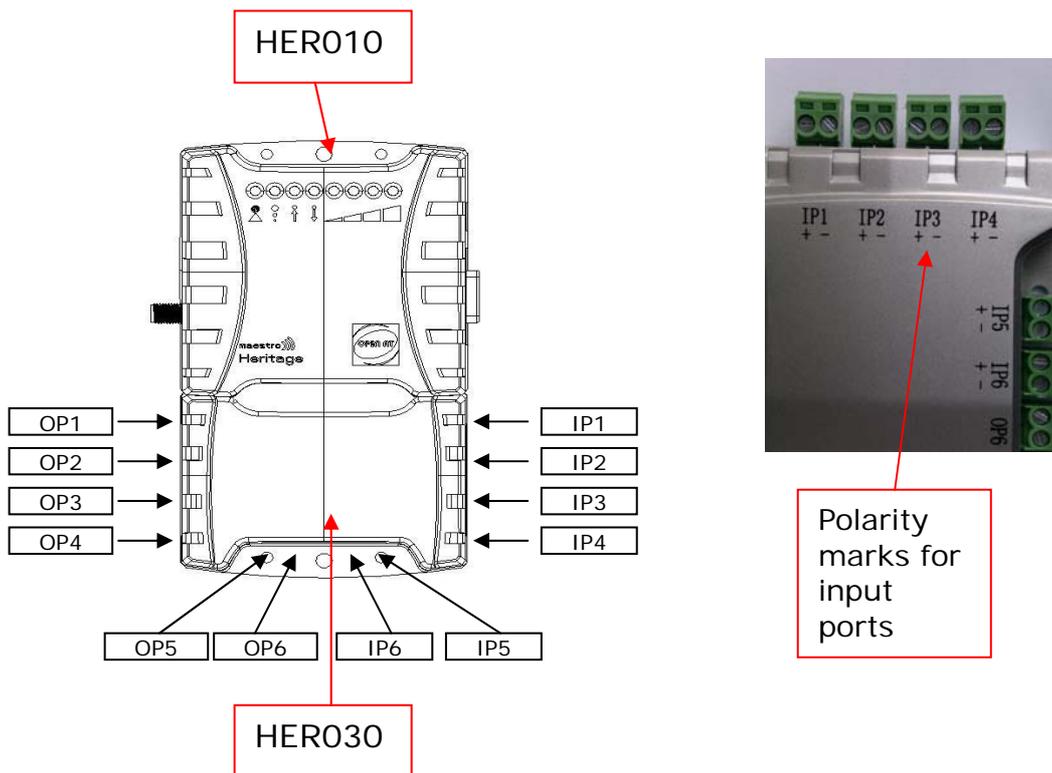
### 1. Overview of HER030



- a. Detachable Screw Terminal Blocks (I/O ports)
- b. Extension connector
- c. Ribs
- d. Nuts for locking

## 2. I/O Characteristics

Name	Type	Electrical	Note
IP1	Opto-Coupler Input	ON voltage = 5 to 32V DC	Polarity
IP2	Opto-Coupler Input	ON voltage = 5 to 32V DC	Polarity
IP3	Opto-Coupler Input	ON voltage = 5 to 32V DC	Polarity
IP4	Opto-Coupler Input	ON voltage = 5 to 32V DC	Polarity
IP5	Opto-Coupler Input	ON voltage = 5 to 32V DC	Polarity
IP6	Opto-Coupler Input	ON voltage = 5 to 32V DC	Polarity
OP1	Opto-relay Output	100mA max. 60V max.	No polarity
OP2	Opto-relay Output	100mA max. 60V max.	No polarity
OP3	Opto-relay Output	100mA max. 60V max.	No polarity
OP4	Opto-relay Output	100mA max. 60V max.	No polarity
OP5	Opto-relay Output	100mA max. 60V max.	No polarity
OP6	Opto-relay Output	100mA max. 60V max.	No polarity



## CHAPTER 2: Specifications

Item		
Enclosure		PC/ABS plastic UL-94V0 flammability
Input port	Type	Opto-Coupler x 6
	ON voltage	5Vdc min 32Vdc max
	OFF voltage	0Vdc min 1.0Vdc max
Output port	Type	Opto-Relay x6, no polarity
	Breakdown voltage	60V max
	Current carrying capacity (continuous)	100mA max
Dielectric Strength	Between inputs & Heritage Main Unit	1500Vrms max 2000Vdc max
	Between outputs & Heritage Main Unit	1500Vrms max 2000Vdc max
	Between ports	1500Vrms max 2000Vdc max
Operating Temperature		-40 to +85 deg C
Storage Temperature		-40 to +85 deg C
Weight		75g
Overall Dimension		100(L)x75(W)x28(H)mm

## CHAPTER 3: Install HER030 on the Main Unit

### 1. Remove the dust cover on Main Unit (HER010)

This will expose the mounting slot and the connector pins can be seen inside the slot.



### 2. Plug in the add-on

Align the connector end of HER030 and slide it into the mounting slot. The ribs on the connector end guide the sliding action. Push until the connector goes all the way in. The action is normally very smooth.



### 3. Fasten screws

Use the 2 screws sized M2x6 and 2 spring washers, supplied together with HER030, to secure the two units in position.



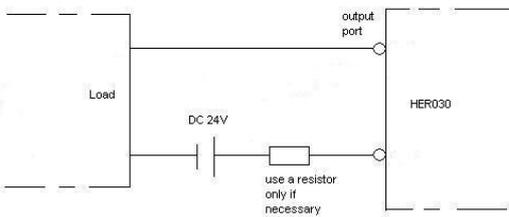
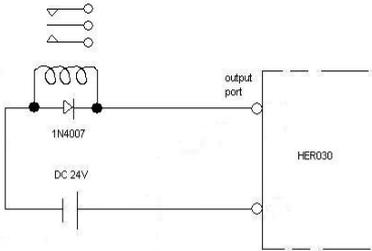
### 4. Fasten screws (when using DIN Rail Clip)

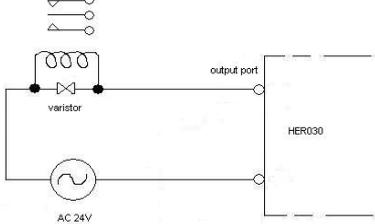
Use the 2 screws sized M2x10 and 2 spring washers, supplied together with DIN Rail Clip, to secure the two units in position. The screw threads are to go through 2 mounting holes on the Clip before fastening the two units.



## CHAPTER 4: APPLICATION NOTES

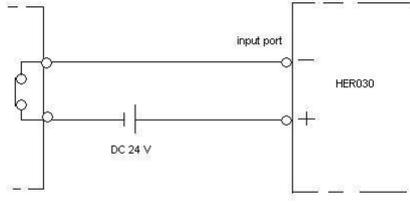
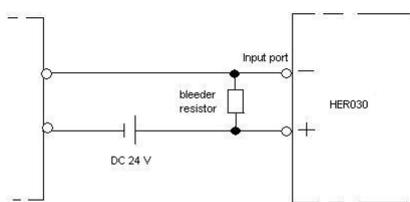
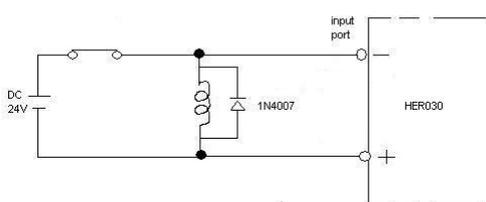
### 1. Output Wiring

Case	Circuit examples	Characteristics	Caution
1		<p>Direct connection to load.</p> <p>Low voltage level switching.</p> <p>The load must not be inductive.</p>	<p>The load must not draw &gt; 100mA current. If necessary put a current limiting resistor in series to protect the output port in case the load is short-circuit.</p> <p>Make sure voltage across the output port do not exceed 60V at any time.</p>
2		<p>Use DC type mechanical relay to extend the output circuit for driving heavier load.</p>	<p>Relay is inductive. To suppress the flyback voltage a diode (e.g. 1N4007) must be put, in the direction as indicated, across the relay coil. Fail to do so will damage the output ports.</p>

3		<p>Use AC type mechanical relay to extend the output circuit for driving heavier load.</p>	<p>Relay is inductive. To suppress the flyback voltage a varistor with the right clamping voltage must be put across the relay coil.</p>
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**Warning: in Case (2) & Case (3), the output ports can be damaged by flyback voltage if a diode or a varistor respectively is not put correctly.**

## 2. Input Wiring

Case	Circuit examples	Characteristics	Caution
1		The input port is switched ON when a DC voltage between 5V to 32V is applied.	<p>Voltage driving the input ports must be DC.</p> <p>Make sure the polarity is correct and voltage does not exceed 32V.</p>
2		A leakage current can cause false ON inputs. This could happen when using sensors that have a small leakage in OFF state.	To prevent a false ON input, insert a bleeder resistor in the circuit to reduce the input impedance.
3		When connecting an inductive load to an input.	Connect a diode (e.g. 1N4007) in parallel with the load as shown to prevent flyback voltage from damaging the input port.