# I-87211W

# Quick Start Guide

*Date: May.2010*

## ● Introduction:

This manual introduces the basic instructions for installing and using the I-87211W in a quick and easy way. For more detailed information, please refer to the I-87211W user manual located on the ICP DAS CD-ROM, or download it from the ICP DAS web site: http://www.icpdas.com/products/Remote_IO/i-87k/i-87211w.htm

## ● Package Checklist



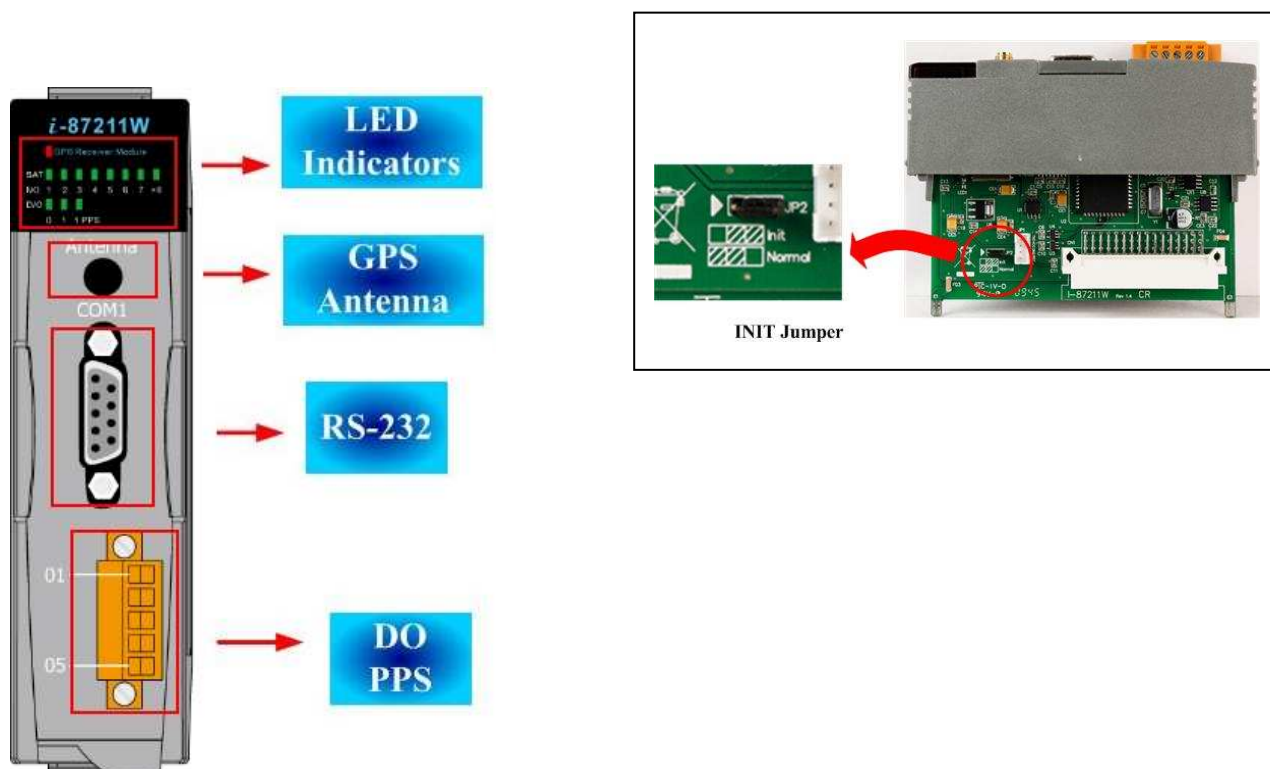**One I-87211W Module**



**Software Utility CD**



**Quick Start Guide**



**RS-232 Cable**

| Item | Quantity |
|------|----------|
| I-87211W | 1 |
| External GPS antenna (ANT-115-03, Length: 5m) | 1 |
| RS-232 Cable (CA-0915) | 1 |
| Product CD | 1 |
| Quick Start Guide | 1 |

# ● Appearance





**INIT Jumper**

# ● LED Indicators

| LED | status | Description |
|---|---|---|
| GPS (red) | ON | Module is operating / functioning correctly. |
| | OFF | There is an error with the module. The module has encountered an error. |
| SAT (green) | ON | Indicates how many GPS satellites are in View. |
| | OFF | |
| DO0 (green) | ON | Digital Output 0 is active. |
| | OFF | Digital Output 0 is off. |
| DO1 (green) | ON | Digital Output 1 is active. |
| | OFF | Digital Output 1 is off. |
| 1 PPS (green) | ON | The PPS is on. |
| | OFF | The PPS is off. |

# Block Diagram & Pin Assignments
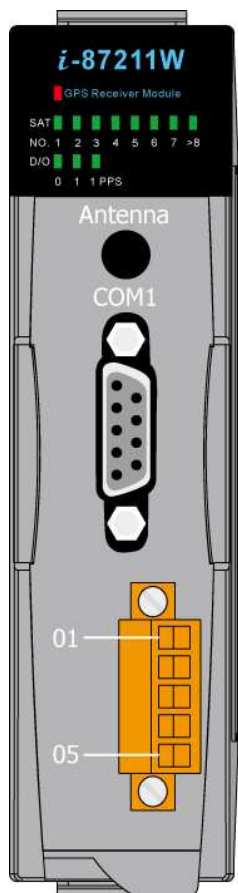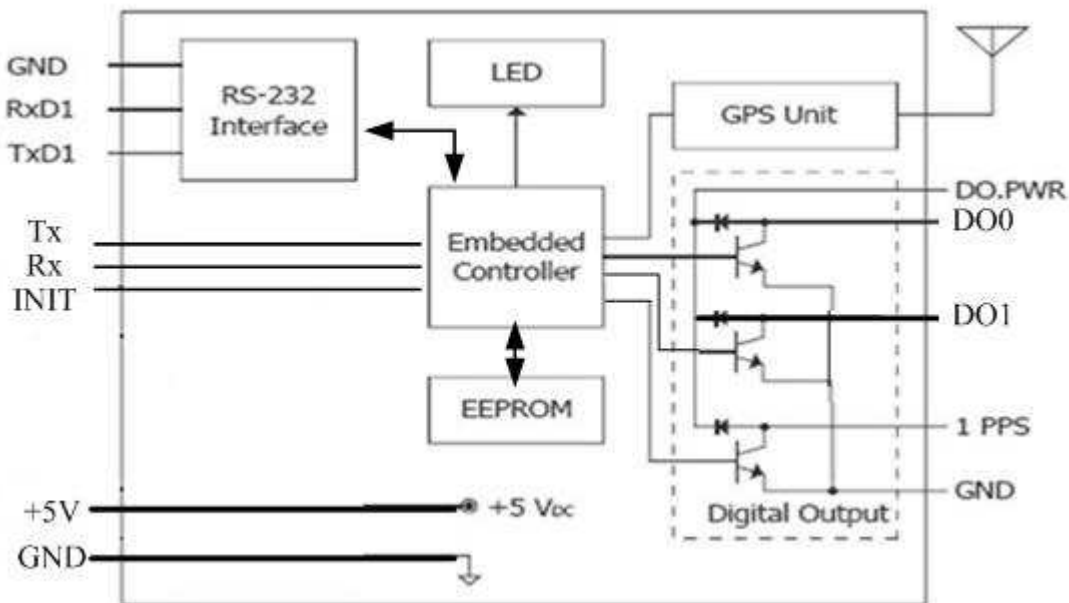


| Pin Assignment | Terminal | No. | Pin Assignment |
|---|---|---|---|
| - | 01 | | |
| GPS_TxD | 02 | 06 | - |
| GPS_RxD | 03 | 07 | - |
| - | 04 | 08 | - |
| GND | 05 | 09 | - |
| COM1 | | 9-Pin Female D-Sub Connector | |

| Terminal No. | Pin Assignment |
|---|---|
| 01 | DO.PWR |
| 02 | DO_0 |
| 03 | DO_1 |
| 04 | 1 PPS |
| 05 | GND |

# Wiring

## DO wiring

| Output Type | ON State LED ON Readback as 1 | OFF State LED OFF Readback as 0 |
|---|---|---|
| | Relay ON | Relay Off |
| Drive Relay | DO.PWR / DOx / DO.GND | DO.PWR / DOx / DO.GND |
| Resistance Load | DO.PWR / DOx / DO.GND | DO.PWR / DOx / DO.GND |

## PPS wiring

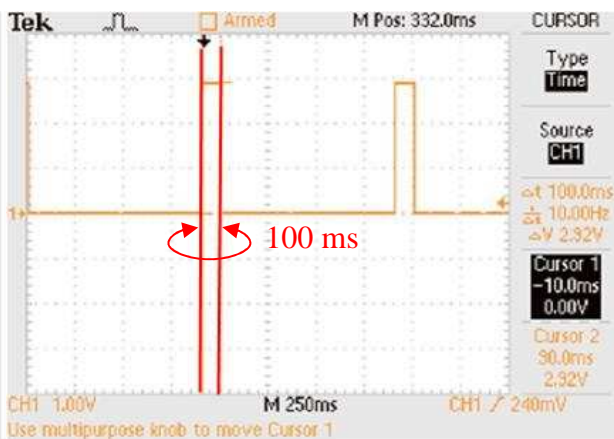| Output Type | ON State | OFF State |
|---|---|---|
| | Relay ON | Relay Off |
| Drive Relay | 1 PPS / DO.PWR / GND | 1 PPS / DO.PWR / GND |
| Resistance Load | 1 PPS / DO.PWR / GND | 1 PPS / DO.PWR / GND |

## ● PPS output

The PPS will output a single 100 ms pulse per second when receiving effective GPS signals. See the figure B below for details.
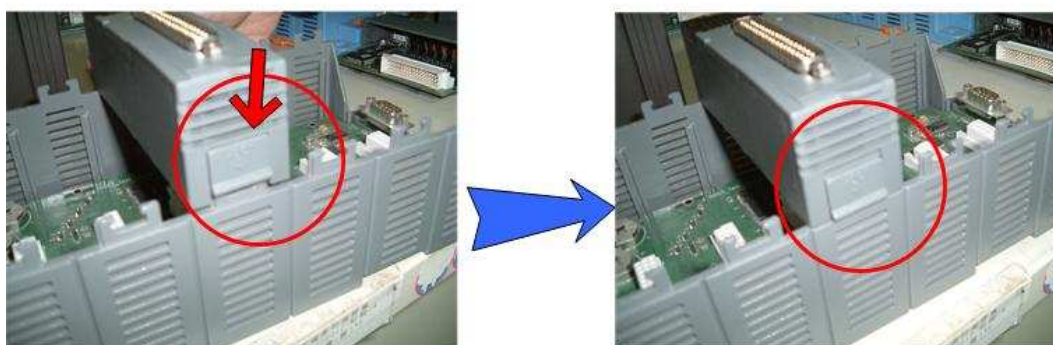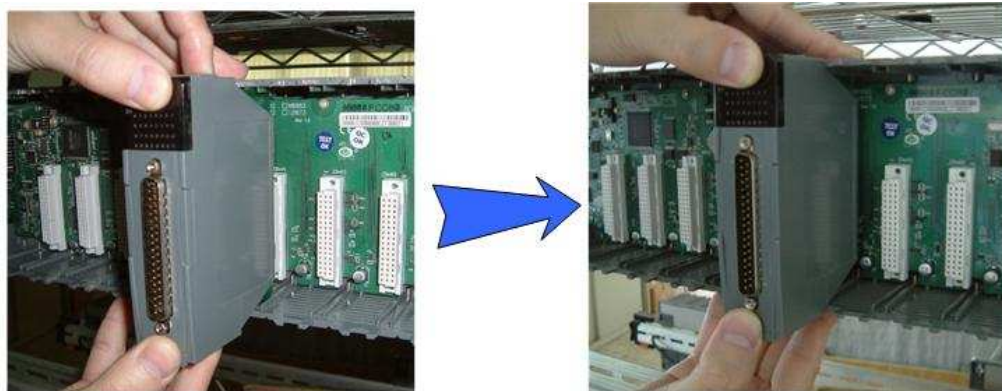
**Figure A.**                                    **Figure B.**

1 second

100 ms

The figure A is represented by outputting a signal in 1 second cycle.

● **Installation**

Use the figures below as a guide to installing your I-87211W in a PAC.



● **Operation modes**

The I-87211W has two operation modes (INIT and normal modes) that can be determined using the switch mechanism on the I/O expansion unit.

Note:

1. Users should refer to the manual for the various remote I/O expansion units to understand how to operate the I-87211W in INIT or normal modes.

2. When plugging the I-87211W module into a PAC, the module is always in INIT mode. A description of each mode and a diagram are below.

| Mode | Description |
|------|-------------|
| INIT | After setting the module to "INIT" mode and restarting, users can establish a connection using the default address and communication settings. New parameters for the module can then be set. INIT mode: ● Protocol: DCON ● Module address: 00 |

| | ● Communication Baud Rate: 9600 bps |
| | ● Checksum: Disabled |
| | Note: The DCON command used to configure the address, Baud Rate and checksum of the module is %AANNTTCCFF. Refer to Section 2.1 for details. |
| Normal | In this mode, the module is operating according to the user's settings. |

**Note:**
**If the I-87211W is not able to receive GPS signals, check the position of the antenna or install the GPS antenna in an open environment.**



Intelligent GPS module
I-87211W



Vehicle Application
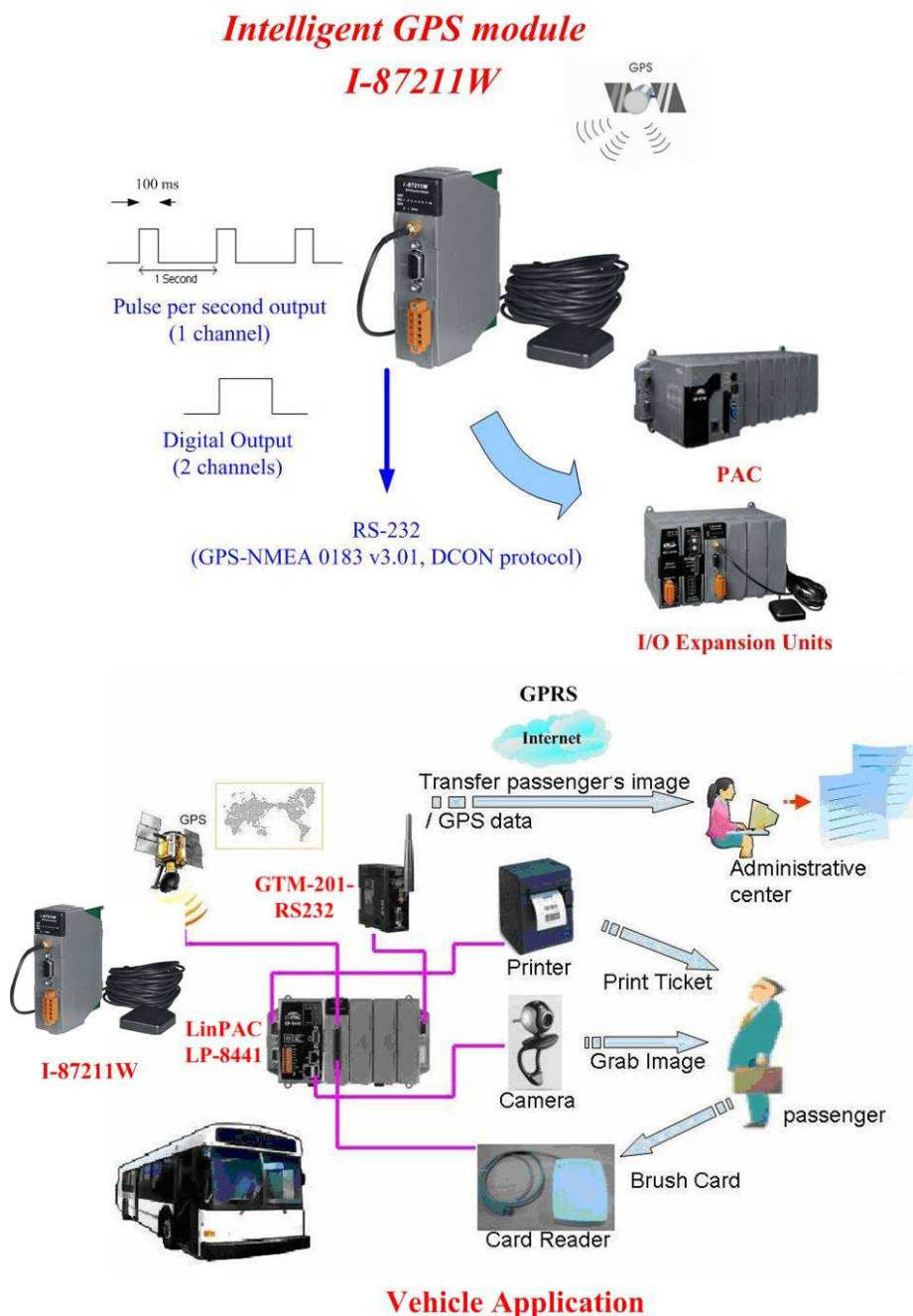
# Default address and communication parameters:
- **Protocol: DCON**
- **Module address: 01 (INIT mode: 00)**
- **Communication Baud Rate: 9600 bps**
- **Checksum: Disabled**

- **DCON Command Table**
-

| General Command Sets | | | |
|---|---|---|---|
| **Command** | **Response** | **Description** | **Section** |
| %AANNTTCCFF | !AA | Sets the Module Configuration | 2.1 |
| #** | No Response | Synchronized Sampling | 2.2 |
| #AA | !AA(Data) | Reads UTC Time, latitude, longitude, and the number of GPS satellite signals | 2.3 |
| #AAN | !AA(Data) | Reads UTC Time, latitude, longitude, date and the number of GPS satellite signals individually | 2.4 |
| #AA00(Data) | > | Sets the Digital Output | 2.5 |
| #AA0A(Data) | > | Sets the Digital Output | 2.6 |
| #AA1c(Data) | > | Sets the Digital Output | 2.7 |
| #AAAc(Data) | > | Sets the Digital Output | 2.8 |
| $AA2 | !AANNTTCCFF | Reads the Module Configuration | 2.9 |
| $AA4 | !S(Data) | Reads the Synchronized Data | 2.10 |
| $AA5 | !AAS | Reads the Reset Status | 2.11 |
| $AA6 | !AA(Data) | Reads the Digital Output Status | 2.12 |
| $AAC | !AA | Clears the Latched DO Status | 2.13 |
| $AAD | !AA | Save the current date temporarily | 2.14 |
| $AAF | !AA(Data) | Reads the Firmware Version | 2.15 |
| $AAM | !AA(Data) | Reads the Module Name | 2.16 |
| $AALS | !AA(Data) | Reads the Latched DO Status | 2.17 |
| @AA | >(Data) | Reads the Digital I/O Status | 2.18 |
| @AA(Data) | > | Sets the Digital Output Channels | 2.19 |

| ~AAO(Name) | !AA | Sets the Module Name | 2.20 |
|---|---|---|---|
| ~AAD | !AAF | Reads the DI/O active status. | 2.21 |
| ~AADVV | !AA | Sets the DI/O active status. | 2.22 |
| ~AAI | !AA | Sets the soft INIT | 2.23 |
| ~AAM | !AASC | Reads with the RS-232 communication mode of the module is NMEA 0183 or DCON | 2.24 |
| ~AAMN | !AA | Sets the RS-232 communication mode of the module to either NMEA 0183 or DCON | 2.25 |
| ~AATnn | !AA | Sets the soft INIT timeout value | 2.26 |

| Host Watch Dog Command Sets | | | |
|---|---|---|---|
| **Command** | **Response** | **Description** | **Section** |
| ~** | No Response | Host OK (The address in this command is zero and can clear the watch dog counter.) | 2.27 |
| ~AA0 | !AASS | Reads the Status | 2.28 |
| ~AA1 | !AA | Resets the Status | 2.29 |
| ~AA2 | !AAVV | Reads the Timeout Settings | 2.30 |
| ~AA3EVV | !AA | Sets the Timeout Settings | 2.31 |
| ~AA4V | !AA(Data) | Reads the Power On/Safe Value | 2.32 |
| ~AA5V | !AA | Sets the Power On/Safe Value | 2.33 |

**If you encounter any problems while using you I-87211W module, and are unable to find the help in this manual or on our website, please contact ICP DAS Product Support.**

Email: service@icpdas.com
Website: http://www.icpdas.com/sevices/support.htm