

**HPS-200**  
**HandyPort-Serial**  
*Data Sheet*

**2007. 03. 22**  
**SYD-2200-1E**  
**Version 1.0**  
**Production Information**



## Copyright

### **Status Information**

The status of this data sheet is Pre-Production Information.

HandyWave products data sheets progress according to the following format:

### **Advance Information**

Information for designers concerning HandyWave product in development. All values specified are the target values of the design. Minimum and maximum values specified are only given as guidance to the final specification limits and must not be considered as the final values.

All detailed specifications including pin-outs and electrical specifications may be changed by HandyWave without notice.

### **Pre-Production Information**

Pin-out and mechanical dimension specifications finalized. All values specified are the target values of the design. Minimum and maximum values specified are only given as guidance to the final specification limits and must not be considered as the final values.

All electrical specifications may be changed by HandyWave without notice.

### **Production Information**

Final Data Sheet including the guaranteed minimum and maximum limits for the electrical specifications.

Production Data Sheets supersede all previous document versions.

### **Life Support Policy and Use in Safety-Critical Applications**

HandyWave's products are not authorized for use in life-support or safety-critical applications. Use in such applications is done at the sole discretion of the customer. HandyWave will not warrant the use of its devices in such applications.

### **RoHS Compliance**

HandyPort devices meet the requirements of Directive 2002/95/EC of the European Parliament and of the Council on the Restriction of Hazardous Substance (RoHS).

HandyWave Co., Ltd.

202-4 Yatap-dong, Bundang-gu, Seongnam City, Gyunggi Province, 463-070, Republic of Korea

Tel: 82-31-709-8900, Fax: 82-31-708-9455, <http://www.handywave.com/index3.htm>

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## 1. Introduction

### 1.1. General Descriptions

The HPS from HandyWave is a ready-to-use short-range wireless connectivity solution for industrial. It provides the most economic and powerful way of cable replacement for the serial communication systems including RS-232, RS-422, and RS-485.

### 1.2. Key Features

- Supports DIN-RAIL and Wall Mount
- Supports Bluetooth Serial Port Profile and Generic Access Profile
- No need of external host and software
- Easy of installation and use
- Supports configuration of the local device
- Supports configuration of the remote device via Over-the-Air
- Easy of maintenance
- Supports up to 100 meter (Line of Sight)
- Supports RS-232, RS-422, and RS-485
- Supports Point-to-Point and Point-to-Multipoint Topology

### 1.3. Key Specifications

- Standard: Bluetooth Specification Version 1.2 and/or above
- Operation Frequency: 2.4GHz ISM Band
- Transmitted Power: Max 20 / Typical 16dBm (Class 1)
- Received Sensitivity: More than -80dBm
- Power Supply: DC +5 ~ +30V
- Current Consumption: Up to 200mA at DC 5V
- Operation Temperature: -20 ~ 60 °C
- Dimension: 52.5mm (W) x 86.0mm (D) x 58.0mm (H)
- Baud Rate: 1.2, 2.4, 4.8, 9.6, 19.2, 38.4, 57.6, and 115.2Kbps
- Antenna Interface: SMA Female
- Signal Interface: 14 Terminals and screws

## 1.4. Record of changes

**Table 1-1 Record of changes**

Revision	Date	Reason for change
0.9	2007. 01. 16	Original publication of Pre-Production Information Data Sheet (HandyWave reference SYD-2200-1E)
1.0	2007. 03. 22	Production Information Data Sheet

## 1.5. Acronyms and Definitions

**Table 1-2 Acronyms and Definitions**

Acronym	Definition
ANT	Antenna
CTS	Clear to Send
dBm	Decibels relative to 1mW
DC	Direct Current
DSR	Data Set Ready
DTR	Data Terminal Ready
HPS	HandyPort-Serial
ISM	Industrial, Scientific and Medical
LNK	Link
OPR	Operation
RST	Reset
RTS	Request To Send
RxD	Received Data
TxD	Transmitted Data

## 2. Specifications

### 2.1. Package Information

Table 2-1 Package Information

Items	Description			Figure
ANT	Antenna Port			
OPR/LNK	LED Display			
RS-232	Serial Selection Switch for			
RS-422	RS-232,			
RS-485	RS-422, or RS-485			
RST	Configuration Button			
Pin #	Signal	Direction	Descriptions	
1	TxD	O <sup>1</sup>	TxD for RS-232	
2	RxD	I <sup>2</sup>	RxD for RS-232	
3	RTS/DTR	O	RTS/DTR for RS-232	
4	CTS/DSR	I	CTS/DSR for RS-232	
5	GND	Common	Signal Ground	
6	GND	Common	Power Ground	
7	Power	I	Power Supply	
8	TX+/TRX+	I/O	TX+: RS-422 TRX+: RS-485	
9	TX-/TRX-	I/O	TX-: RS-422 TRX-: RS-485	
10	RX+	I	RX+: RS-422	
11	RX-	I	RX-: RS-422	
12	GND	Common	Signal Ground	
13	EoR+	O	End of Resistor <sup>3</sup> +	RS-485 Only
14	EoR-	I	End of Resistor –	RS-485 Only

<sup>1</sup> O: Output

<sup>2</sup> I: Input

<sup>3</sup> End of Resistor: If the HandyPort is required an end of resistor, you can make a loop between EoR+ and EoR-. It is only for RS-485.

## 2.2. Electrical Characteristics

**Table 2-2 Electrical Characteristics**

<b>Absolute Maximum Ratings</b>		
Rating	Min	Max
Storage Temperature	-40°C	+100°C
Operating Temperature Range	-40°C	+60°C
Supply Voltage: Power	+3.3V	+30V
<b>Recommended Operating Conditions</b>		
Operating Condition	Min	Max
Operating Temperature Range	-20°C	+60°C
Supply Voltage: Power	+5V	+30V

## 2.3. Enclosure

**Table 2-3 Enclosure**

<b>Top Part</b>	
Material	Lexan 940
Color	Grey (RAL 7035)
Max. Temperature	100°C
Self-extinguishing	Acc. to UL94-V0
<b>Base Part</b>	
Material	Noryl Vo 1550
Color	Black (RAL 7021)
Max. Temperature	100°C
Max. Wire Diameter	2 x 2.5 mm <sup>2</sup>
Max. Load	16A
Terminals	14
Mounting	DIN-rail (EN50022) or Wall Mount (Optional)
Self-extinguishing	Acc. to UL94-V0

## 2.4. Radio Characteristics

**Table 2-4 Transmitter Performance**

Transmitter Performance					
Parameter	Condition	Min	Typ	Max	Unit
Output Power	Normal/Extreme Test	-	18	-	dBm
Power Density	Normal/Extreme Test	-	-	20	dBm
Power Control	Normal/Extreme Test	2dB ≤ Step Size ≥ 8dB			
Frequency Range	Normal/Extreme Test	2400	-	2483.5	MHz
20dB Bandwidth	Normal/Extreme Test	-	850	1000	KHz
Adjacent Characteristics	±2Mz	-	-	-20	dBm
	±3Mz	-	-	-40	dBm
	±4Mz	-	-	-40	dBm
Modulation Characteristics	$\Delta F_{1_{avg}}$	140		175	KHz
	$\Delta F_{2_{max}}$	115			KHz
	$\Delta F_{2_{avg}} / \Delta F_{1_{max}}$			80	%
Initial Carrier Frequency Tolerance		-75		75	KHz
Carrier Frequency Drift	One slot packet (DH1)	-25		25	KHz
	Three slot packet (DH3)	-40		40	KHz
	Five slot packet (DH5)	-40		40	KHz

**Table 2-5 Transceiver Performance**

Transceiver Performance					
Parameter	Condition	Min	Typ	Max	Unit
Out-of-Band Spurious Emissions	30MHz ~ 1MHz	-	-	-36	dBm
	1GHz ~ 12.75GHz	-	-	-30	dBm
	1.8GHz ~ 5.3GHz	-	-	-47	dBm
	5.1GHz ~ 5.3GHz	-	-	-47	dBm

Table 2-6 Receiver Performance

Receiver Performance					
Parameter	Condition	Min	Typ	Max	Unit
Sensitivity Level	Single slot packets	-	-90	-	dBm
	Multi slot packets	-	-88	-	dBm
C/I Performance	$C/I$ co-channel	-	-	11	dB
	$C/I$ 1MHz(Adjacent channel selectivity)	-	-	0	dB
	$C/I$ 2MHz(Adjacent channel selectivity)	-	-	-30	dB
	$C/I$ $\geq$ 3MHz(Adjacent channel selectivity)	-	-	-40	dB
Blocking Performance	30MHz ~ 2000MHz	-10			dBm
	2000MHz ~ 2400MHz	-27			dBm
	2500MHz ~ 3000MHz	-27			dBm
	3000MHz ~ 12.75MHz	-10			dBm
Intermodulation Performance	N=5	-39	-		dBm
Maximum Input Level		-20	-10		dBm

## 2.5. Package Dimensions

Unit: mm

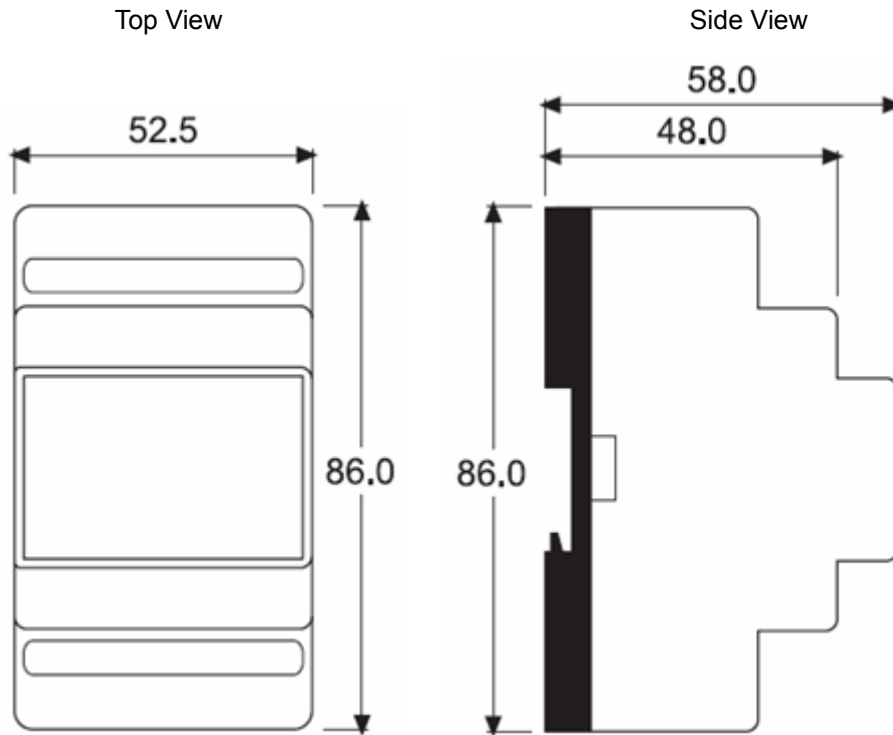


Figure 2-1 Package Dimensions

## 2.6. Ordering Information

**Table 2-7 Ordering Information**

Package		Order Number
Size	Shipment Method	
200mm x 145mm x 70mm	Box	HPS-200

Minimum Order Quantity: 1 Box (A box contains two HPS-200 and antenna.)

## 2.7. Contact Information

HandyWave Co., Ltd.

202-4 Yatap-dong, Bundang-gu, Seongnam City, Gyunggi Province, 463-070, Korea

Tel: 82-31-709-8900

Fax: 82-31-708-9455

e-mail: [blueahn@handywave.com](mailto:blueahn@handywave.com)