



1261PK - Wireless Push Button Switch Pack

Revision: 0 | DS072

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Introduction

Thank you for purchasing the Wireless Push Button Switch Pack. We pride ourselves on producing high quality products that meet with the demands of the busy classroom environment.

If you have any problems using this sensor, please read this documentation in full before contacting the Data Harvest support team.



Overview

The Wireless Push Button Switch Pack is designed to allow studies involving: marking of time points, counting, single or twin time event logging and comparative timing studies for two observers.

Data can be recorded by one or two Push Button switches, used independently or in combination with each other. This, therefore, provides a flexible method to log a range of experimental demands based on user interaction.

Pack Contents

This product is supplied with the following items:

- [1 x Push Button Wireless Adaptor](#)
- [2 x Push Button Switch](#)
- 1 x USB Connecting Lead
- 2 x Connecting Cables

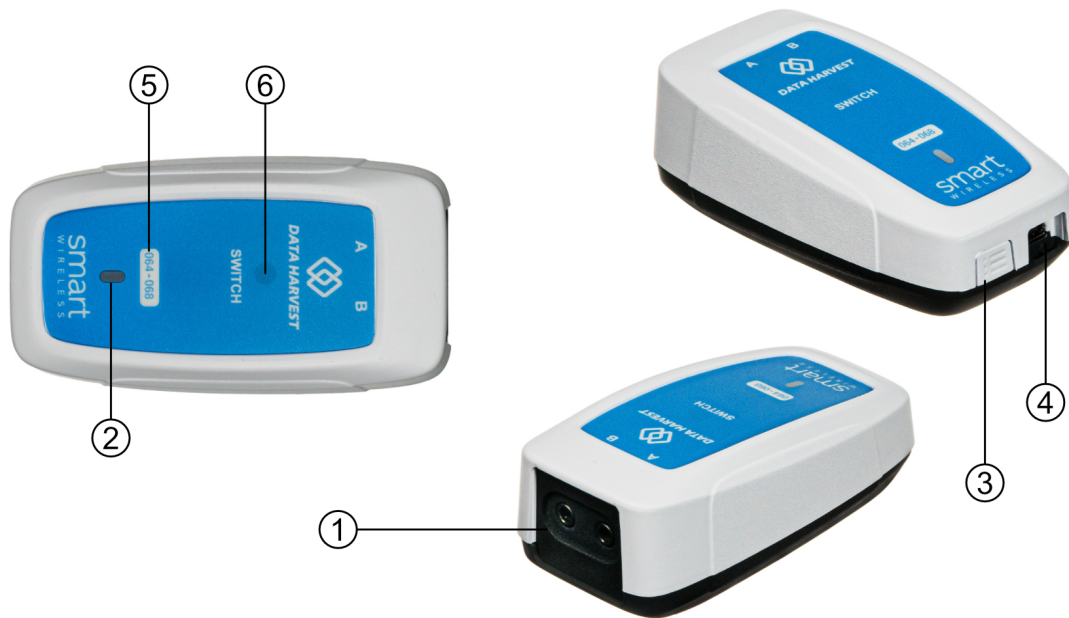
Additional Accessories

To get the most from your Wireless Push Button Switch Pack, the following items should be considered:

[Data Harvest - Wireless Timing Mats \(data-harvest.co.uk\)](http://data-harvest.co.uk)

Operational Overview

The diagram below shows the specific parts of the Wireless Switch Sensor. Read further to explore the functionality of each part.



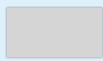

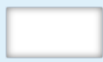
1. Sensor End Connector
2. Status Indicator
3. On/Off Switch
4. USB Port
5. Unique ID Number
6. Switch State Indicator






Sensor End Connector (1)

Most Smart Wireless Sensors feature an end cap that is specific to the requirements of the device's internal sensor. The sensor's end connector is the direct interface between the device's internal sensor and your experiment.

Status Indicators (2)

The sensor features a single status indicator that changes colour and flashes. See the table below for further information.

| Status Light | | Indicates |
|----------------|---|--|
| No light |  | Sensor is Off. Short press the On/Off switch |
| Blue flashing |  | Sensor is On and Bluetooth advertising |
| White flashing |  | Charging via USB mains charger or USB port, Sensor is On and Bluetooth advertising |

| | | |
|---------------------------|---|---|
| Red, Green, Blue Flashing |  | Charging via USB mains charger or USB port, Sensor is Off |
| Green flashing |  | Communication with the EasySense2 app (via USB or Bluetooth) has been established |
| Solid Green |  | Fully charged |
| Orange flashing |  | Recording Data |
| Red flashing |  | Battery is low |

On/Off Switch (3)

The sensor's on/off switch allows you to turn the sensor on, off or perform a hard reset.

To switch the sensor off

- Press and hold down the On/Off switch until the white light shows, then release.
- If not communicating with the EasySense2 app, the sensor will turn off after a period of one hour of inactivity.

Hard resetting the sensor

- If necessary, attach the sensor to power.
- Press and hold down the On/Off button for at least 8 seconds until the status LED gives a flash of blue light, then release.
- If the sensor fails to respond, contact Product Support at Data Harvest. Please provide details of:
 - The computer platform it is being used with and the EasySense2 app's version number.
 - A description of the problem being encountered.

USB Port (4)

Use to connect to a computer or a charging unit.

For specific USB or Bluetooth connectivity instructions, please see the 'Connectivity' section of this documentation.

For instructions on charging your device, see the section on 'Charging the Sensor'.

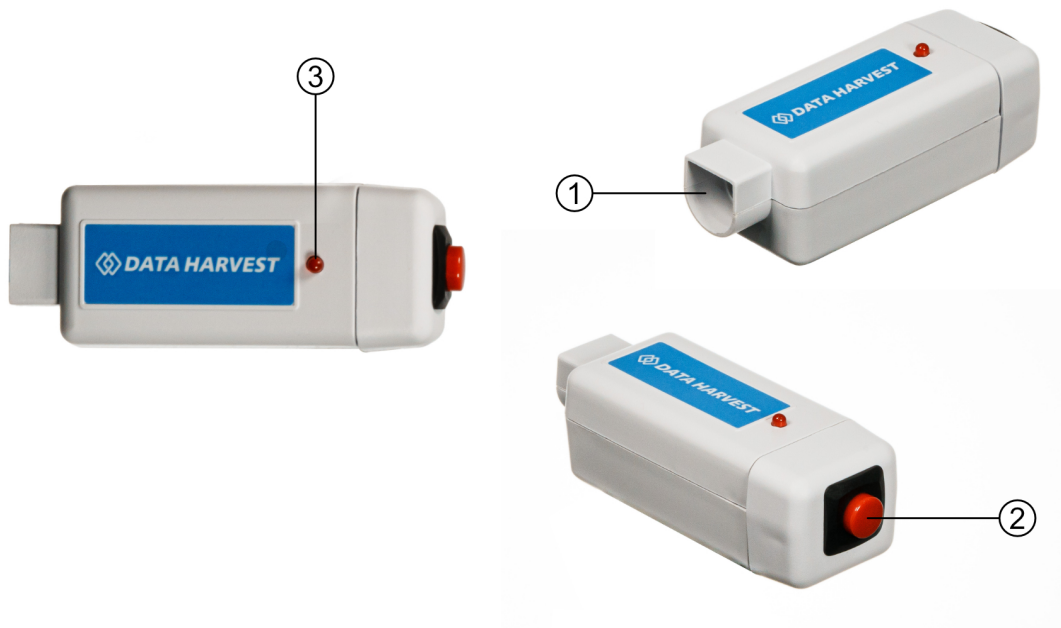
Unique ID Number (5)

All Smart Wireless Sensors are labelled with a unique ID number. This number is used in the EasySense2 app, so that you can identify each sensor when making a connection wirelessly.

Switch State Indicator (6)

This provided confirmation that a switch has been pressed.

The Push Button Switch



Switch End Connector (1)

This provides a connection port, that will be connected to the Sensor End Connector (above).

Push Button (2)

The manual button to initiate an event.

Red LED Action Indicator (3)

Provides visual confirmation that a the Push Button has been pressed.

Mini DIN to 3.5mm Jack Connecting Cable



Connection for the Switch Sensor (mini DIN) (1)

Connect this end to the switch sensor's jack input.

Connection for the Push Button (2)

Connect this end to the push button mini Din switch end input (above).

Connectivity

The sensor is both USB and Bluetooth compatible. Install the EasySense2 app, if it is not already on your device. For details of how to operate the EasySense2 app, please refer to the EasySense2 documentation.

USB Connectivity

Quick Steps

1. Connect the sensor to the computer's USB port using the USB cable supplied.
2. The computer will automatically detect a new device and depending on your operating system, will install any applicable device drivers.
3. Start EasySense 2 app.
4. Within the EasySense2 app, the Devices icon will change to green to show that the sensor is connected, and the status light on the sensor will also turn green.
5. Begin your practical investigations.

Bluetooth Connectivity

Using Bluetooth, the sensor can wirelessly connect to mobile devices such tablets and mobile phones, as well as desktop or laptop computers, giving students the ability to run experiments independently without being tethered to a device.

See the EasySense2 app user manual system requirements for further details.

Quick Notes on Bluetooth Connectivity

Only use with the EasySense2 app, you do not need to pair the device. If paired, the sensor will not be available to the EasySense2 app.

Computers or devices will need to support Bluetooth Low Energy (BLE). For further information refer to the instructions provided for the EasySense2 app.

Quick Steps

1. Short press the on/off switch to turn the sensor on, blue LED will flash.
 2. Open the EasySense2 app.
 3. Select the Devices icon.
 4. Select your sensor from the list of available sensors to connect to the device. Your sensor is identified by its unique ID in the list.
 5. Click on connect at the side of your sensor in the list.
 6. The Devices icon will change to green and the status light on the sensor will flash green to indicate a connection has been established.
 7. Begin your practical investigations.
-

Charging the Sensor

The Smart Wireless sensors are fitted with a rechargeable lithium-ion battery and can be charged via the USB port. Use the supplied USB lead to connect the sensor either directly to a USB port on your computer, a powered USB hub or a USB mains charger that outputs 5 V at 500 mA or more.

A full charge can take up to 4 hours.

Additional Information

Whenever the sensor is connected to the USB port on the computer or to a USB mains charger (output 5 V at 500 mA or more), it will automatically recharge the battery (LED status flashing white).

When connected to a computer, the computer should be turned on and not in sleep or standby mode, as the battery may drain instead of charge.

The sensor will stay awake for 5 minutes when Bluetooth advertising (LED status flashing blue).

Lithium-ion batteries are 'memory-free' and prefer a partial rather than a full discharge. Constant partial discharges with frequent recharges will not cause any harm. Frequent full discharges should be avoided whenever possible. Ideally the sensor should be stored at about 40% or more charge.

The speed at which a lithium-ion battery will age is governed by both its storage temperature (preferably less than 40 C) and state-of-charge.

Firmware Updates

Occasionally Data Harvest may release updated firmware which will contain improvements or new features.

Updates will take place when you connect your sensor to the EasySense2 app. You will be given the option to decline an update.

Updates can be performed over USB or Bluetooth and will typically take less than one minute. Updating firmware over USB will be quicker than Bluetooth.

Do not disconnect the sensor, or power off during the update.

If you have a wireless connection to the EasySense2 app, the sensor will have to be reconnected after performing the update.

Usage Information

The Push Button Switches can be used independently, or in pairs, to provide timing and event information.

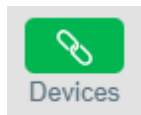
Each Push Button Switch has two states, ON (closed) and OFF (open). They connect using the "mini DIN" sensor lead for use with the Push Button Wireless Adaptor. The Push Button Switches are equipped with a red LED Action Indicator, to give a "flag" as to the switch state - this is located close to the housing's button.

To use this equipment, install the EasySense2 software (version 1.033 or later) to provide a convenient and very useful platform for recording data. It is available from the Data Harvest website.

Using the sensor and switches

Connect the Push Button Switches into the Wireless Smart Switch Adaptor. Turn on the adapter.

Start the EasySense2 software. The software icons that you will need are shown below:



devices

Allows control, connection, and calibration of the available

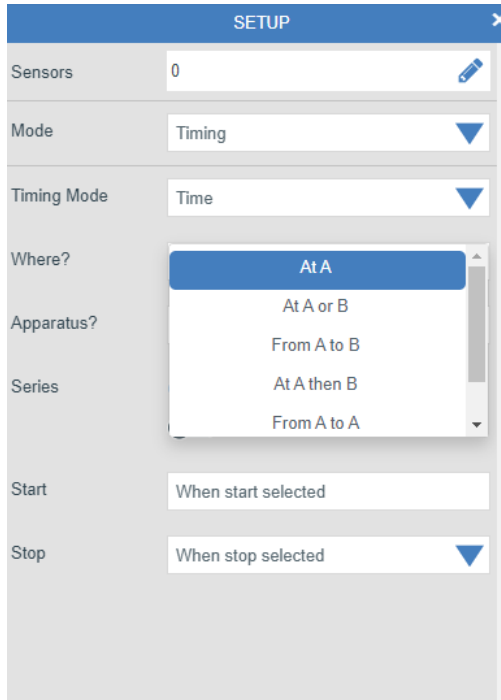


Defines how an experiment is run

Choose "Timing" from the "What type of experiment do you want to run?" if prompted.

Select the Devices icon and connect to the Wireless Smart Switch Adaptor. The Devices icon will change to green to show that the sensor is connected, and the status light on the sensor will also turn green. Close this dialogue.

Bring up the EasySense2 software's Setup using the Setup icon. This will produce the following:



In the Mode combo box, make sure Timing is used.

For Timing Mode selector, choose Time.

The Where? selection will present several options:

At A: Using the Push Button Switch as a "stopwatch". Timing will start when the push-button switch is pressed (ON) and will continue until the switch is released (OFF).

At A or B: With both Push Buttons connected, closing then opening the A and B switches (as above), will report the "observer reaction times" for both switch events being reported.

From A to B: Timing will start when the push-button switch (input A) is closed then rapidly opened and stop when the switch (input B) is finally released (open).

At A then B: Measures the closed then open times of each switch, in sequence.

Make the selection that you require from the above, then close this dialogue.

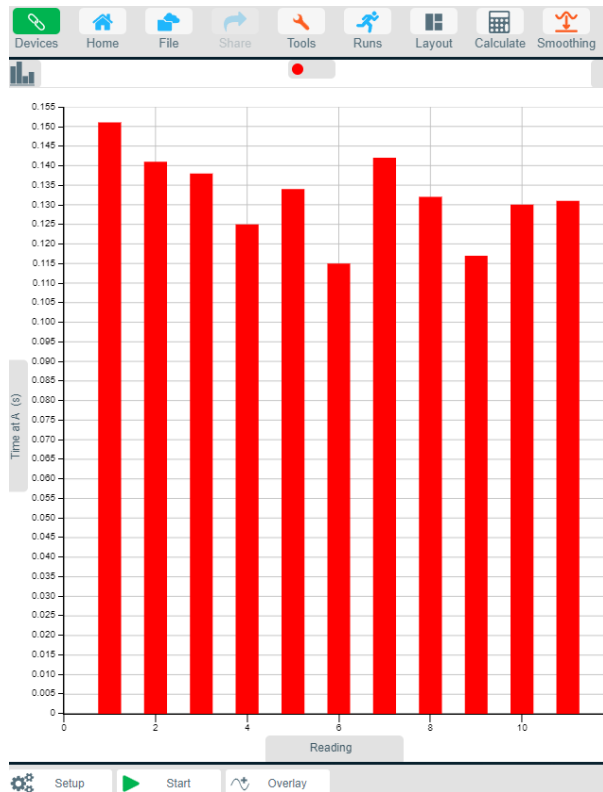
Click Start to initiate collection, Stop to complete (see below).

Example 1: Individual's Reaction Times

If you selected "**At A**" in the Setup (above), press the Start icon.

Use the Push Button Switch A to record data.

An example of the data that can be produced is shown below. Notice the chart option, just below devices for altering the data display.



The display format for the data can be altered using the chart option (shown in the above plot, beneath devices).

Example 2: Recording Observer's Reaction ResponseTimes

Connect a Push Button Switch to input A and the other into input B, of the Push Button Wireless Adaptor.

Select "Timing" from the "What type of experiment do you want to run?" if prompted.

Connect to the Wireless Switch Adaptor to the EasySense2 software, using the Devices icon.

From the Setup button in EasySense2, select **Timing** From **A to B** . Close this selection when complete.

Give the switch that is connected to **input A** to the tester and the other to the test subject.

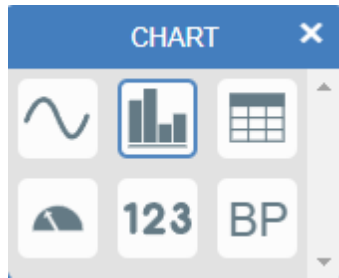
The push-button part of the switch should be hidden from the view of the test subject, so they will not see any movement of the tester's hand or fingers but only the LED.

Note: The switch may be hidden behind a screen, with the LED Action Indicator made visible through the centre hole.

1. Press the Start Icon at the bottom of EasySense2's display screen (shown above).
2. The tester should press their switch, which will make the red LED Action Indicator Light, then release rapidly. The test subject must respond by pressing their switch as soon as they see the LED light.
3. Repeat for at least 10 measurements and stop logging.

The data recorded may be stored as an .es2 file for future review. It may also be exported as an Excel file for more detailed analysis, if required.

The display may be changed using the Chart option (expanded below). Please see the EasySense2 User Manual for many other data presentation options.



Maintenance

If the switches or Push Button Adaptor may need cleaning to remove minor scuffs or marks. Please use a soft cloth and, if required, isopropyl alcohol. Never use acetone or plastic solvents.

Practical Investigations

The Push Button Switches can be used to investigate a number of scientific experiments.

User examples:

- Observer's reaction time
- Counting objects (traffic, people, animals, etc.)
- Measure speed (bicycles, people, etc.)
- Record the differences in time taken to walk, run or hop over the same distance.
- Record the time taken by a vehicle to pass from one point to another.
- Introducing the idea of the computer acting as a stopwatch e.g. starting and stopping timing.
- Introducing the fact that speed can be calculated directly, if the distance between the start and finish line is used. E.g. How many, hops and jumps, speedy bicycles?

Online Videos

Learn how to use data logging in the classroom with our Secondary Science Academy demonstration videos, which will walk you through using the new EasySense2 app and show you how to get hands-on with the latest Bluetooth wireless sensors. The video experiments will show you how to get the best out of your science lessons.

New online content is being continuously uploaded onto our YouTube channel, including practical worksheets as well as videos.

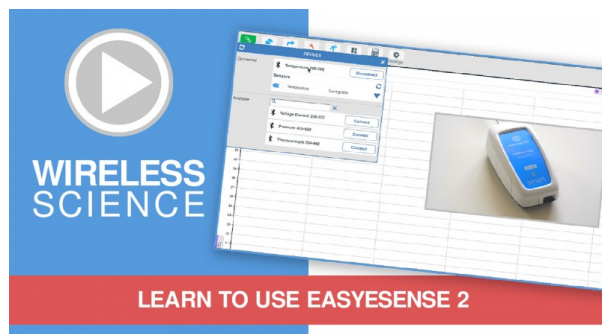
See our website for further information and links.



Explore Bluetooth Sensors

Are you looking to make the jump to our smart wireless sensors? Or have you recently purchased them and want to know more about how they work?

[View video playlist](#)



Explore EasySense2

The core of our science platform is our EasySense2 software. In these videos you will learn everything from the basics of our software to the most in-depth features.

[View video playlist](#)



Explore Science Practicals

See our Smart Wireless Sensors in action with a range of practical experiments. This is the best way to get started with the new Bluetooth sensors!

[View video playlist](#)

Sensor Specifications

Please read the following table for sensor specifications.

| Feature | Detail |
|-------------------------------|--|
| Measurement Ranges | Timing Data, A and B inputs |
| Resolution | 1 ms |
| Connectivity | Wired via USB Wireless via Bluetooth |
| Bluetooth Specifications | Bluetooth 4.2 low energy radio, single mode compliant Transmit (TX) power: 0 dBm Receiver (RX) sensitivity: - 90 dBm Usable transmission range: up to 10 m in open air Frequency Range: 2.402 to 2.480 GHz operation Operating range: 0 - 40 C and 0 to 95% RH (non-condensing) |
| Internal Battery | Rechargeable internal lithium-ion 3.7 V Power specification: 5 V at 500 mA |
| Storage/Operating Temperature | 0 - 40 C |
| Humidity | 0 to 95% RH (non-condensing) |
| Physical Specifications | Weight: approx. 77 g External dimensions: approx. height 33 mm x width 50 mm x length 90 mm Stainless steel rod: 3 mm dia. x 160 mm |

Limited Warranty

For information about the terms of the product warranty, see the Data Harvest website at: <https://data-harvest.co.uk/warranty>

Product Repairs

When returning goods to Data Harvest, please download and complete the repair return [form](#) to ensure you have sent us all the information we require, and send it to us alongside the item to be repaired. The second page of this form includes a return address label.

If you have purchased a Data Harvest manufactured product via a different company, please also supply proof of purchase.

Postage Charges

- In the event of a fault developing, the product must be returned in suitable packaging to Data Harvest for repair or replacement at no expense to the user other than postal charges.
- There will be no postal charge for the return of repaired goods to any mainland UK address (for other areas, additional shipping charges may apply).

Out of Warranty Repairs

Please visit <https://data-harvest.co.uk/repairs> for the most up to date charges for out of warranty repairs.

Warranty on Repaired Items

Once an item has been serviced and repaired, the product will have 1 year warranty against further failure of the component repaired.

International Returns

Please contact the authorised Data Harvest representative in your country for assistance in returning equipment for repair.

Compliance

This product complies to the following standards

Waste Electrical and Electronic Equipment Legislation

Data Harvest Group Ltd is fully compliant with WEEE legislation and is pleased to provide a disposal service for any of our products when their life expires. Simply return them to us clearly identified as 'life expired' and we will dispose of them for you.

FCC Details

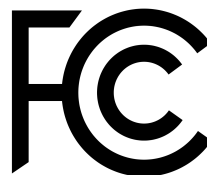
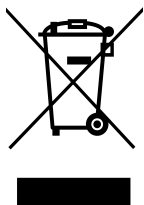
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CE

This product conforms to the CE specification. It has been assessed and deemed to meet EU safety, health and environmental protection requirements as required for products manufactured anywhere in the world that are then marketed within the EU.

UKCA

This product conforms to the UKCA specifications.



Troubleshooting

If you experience any problems with your product, please try the following troubleshooting tips before contacting the Data Harvest support team.

| Feature | Detail |
|--------------------------------|--|
| Loss of Bluetooth Connectivity | <p>If the sensor loses Bluetooth connection and will not reconnect try:</p> <p>Closing and reopening the EasySense 2 app.</p> <p>Switching the sensor Off and then On again.</p> <p>If you are using a Bluetooth Smart USB Adaptor on your computer, unplug the adaptor, plug back in again and try to reconnect.</p> <p>Hard reset the sensor and then try to reconnect.</p> |

Notices

Please read the following notices with regards to using your sensor

1. The sensor is much smarter than traditional Bluetooth sensors and you are not required to pair the device. If paired, the sensor will not be available to the EasySense 2 app.
 2. When the sensor is connected to a computer, the computer should be turned on and not in sleep or standby mode, as the battery may drain instead of charge.
 3. Data Harvest products are designed for educational use and are not intended for use in industrial, medical or commercial applications.
 4. We reserve the right to change the product specifications and documentation at any time without further notice.
 5. The sensor is not waterproof.
 6. Plastic parts may fade or discolour over time if exposed to UV light. This is normal and will not affect the operation of the sensor.
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Contact Information

To contact Data Harvest directly, please use any of the following channels

Traditional Communications

Data Harvest Group Ltd.
1 Eden Court, Eden Way,
Leighton Buzzard,
Bedfordshire,
LU7 4FY
United Kingdom

Tel: +44 (0) 1525 373666

Fax: +44 (0) 1525 851638

Sales email: sales@data-harvest.co.uk

Support email: support@data-harvest.co.uk

Online Communications

We have active social media support channels using the following platforms

- [Facebook](#)
- [Twitter](#)
- [YouTube](#)

Office Opening Hours

Monday to Thursday - 08:30 to 16:45

Friday - 08:30 to 13:30

Saturday & Sunday & UK Bank Holidays - Closed

PDF Translations

The PDF formatted download of this manual is by default provided in the English (United Kingdom) language. If an alternative translation is available, it will be listed here.

We have for your convenience included a webpage translation feature to the online documentation which will allow you to translate and print individual pages of this documentation.
