

## PRODUCT SUMMARY

### Complete Protocol Stack for Control Devices

#### For Nordic Semiconductor ultra low power 2.4GHz transceivers

The Wireless Desktop Protocol is complete protocol stack for Nordic Semiconductors range of ultra low power 2.4GHz transceivers. It proved complete solution for implementing high-performance and robust wireless connectivity. The protocol is optimized for PC peripheral application like wireless mouse, keyboard and remote controls, but can also be used in a wide range of other applications.

### Ultra low power consumption

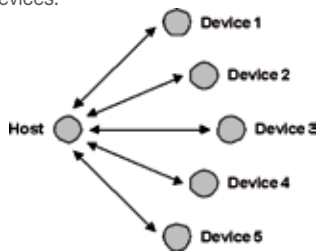
#### Where it matters

The protocol is optimized for ultra low power consumption at the device side, as the host typically can accept somewhat higher power consumption. This enables battery powered devices with very long battery lifetime. As the protocol is fully asynchronous a device only sends data when it has data to send, and there is no power consumption penalty for link maintenance or re-synchronization issues.

### Networking

#### One host multiple control devices

The protocol provides native support for up to 5 control devices with data links to one host in a star network topology. It is easy extendible support more that 5 devices.



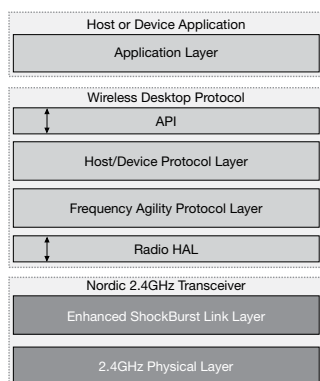
### High-performance reliable communication

#### Bidirectional data links and co-existence performance

The protocol handles all aspects of data link management:

- Configurable bidirectional or unidirectional links
- The frequency agility protocol layers ensures excellent co-existence performance while offering very low latency and high data throughput
- ReverseBurst™ provides a high data rate link from the host to the device. A very important feature for applications like media center remotes
- Recovery from out of range conditions

### Block Diagram



RF Silicon

Software

Reference Design

Development Tools

## PRODUCT BRIEF

# Wireless Desktop Protocol

## nRF2601

## KEY FEATURES

- Complete RF protocol stack optimized for wireless 2.4GHz control devices
- Works with all Nordic Semiconductors 2.4GHz transceivers with Enhanced ShockBurst™ hardware link layer
- Ultra low power on device side for battery powered application with long battery life
- Excellent co-existence performance
- Very low latency
- Supports bidirectional and unidirectional communication
- Supports up to 5 devices for one dongle with bi-directional data links
- ReverseBurst™ provides high data throughput from host to device
- Smart Pairing, supports both static and dynamic pairing
- Highly configurable enabling easy optimization for specific applications
- Modular ANSI C code implementation
- Flexible API for the application layer
- Implemented for low cost 8-bit microcontrollers
- Easy portable to different microcontroller architectures
- Product includes source code for protocol and example applications as well as comprehensive documentation

## APPLICATIONS

- Wireless PC Peripherals
- Mouse, keyboards and remotes
- 3-in-one desktop bundles
- Advanced Media center remote controls
- Game controllers
- RF remote controls
- Toys

## SUMMARY OF BENEFITS

- Very little RF knowledge required to implement high performance robust wireless connectivity
- Highly configurable solution that can be optimized to a specific application without rewriting the protocol.
- Ultra low power consumption for battery powered devices
- Reduces development cycles and risk

## Portable Modular Implementation

### For low cost 8-bit microcontroller

The protocol stack is implemented in ANSI-C for simple low cost 8-bit microcontrollers. Its modular design makes the code easy portable to different 8-bit microcontroller architectures. The protocol stack is built on top of the Enhanced ShockBurst™ link layer featured in Nordics range of ultra low power 2.4GHz transceivers.

## Other applications

### What the protocol is suitable for and not

While the Wireless Desktop Protocol is optimized for control devices such as mouse, keyboards, remote controls, presenters it is very suitable for a range of other applications including:

- Game controllers and accessories
- Sensor applications
- Industrial control and monitoring including AMR
- Home automation

### The Wireless Desktop Protocol is not a suitable solution for:

- Real time streaming applications like audio and video. The protocol included in the Nordic nRD24V1 provides a perfect solution for this.
- Application with very stringent power requirements for all nodes with complex network topologies. The Nordic nRF24AP1 provides a perfect solution for this.
- Applications requiring very long range. A different protocol is required to support a system with PA.

## For more information

Please contact your local Nordic sales representative

## About Nordic Semiconductor ASA

### Ultra low power RF silicon solutions

Nordic Semiconductor is fabless semiconductor company specializing in ultra low power short-range wireless communication. Nordic is a public company listed on the Norwegian stock exchange.

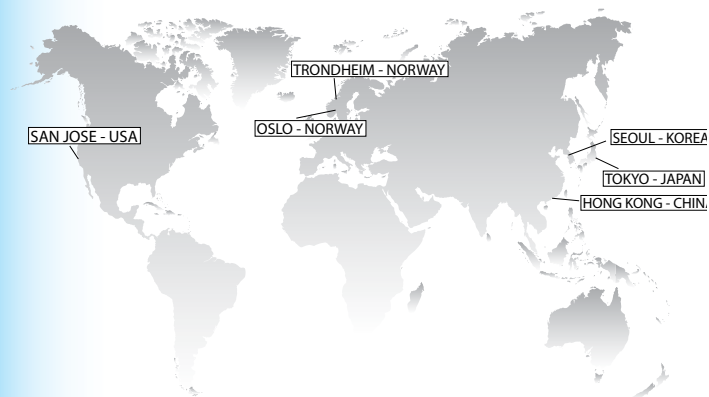
### Nordic provides RF Silicon solutions including:

- Highly integrated RF silicon
- Sophisticated and flexible development tools
- Application specific communication software
- Complete reference designs

## Worldwide office locations

### Headquarter

Trondheim, Norway  
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## Smart Pairing

### Static and dynamic pairing

The protocol has built in support for two different pairing options:

- Static pairing. The host and the devices are paired at assembly, meaning that from a user perspective no pairing actions are required.
- Dynamic pairing. The user can pair different host and devices

## Highly configurable solution

### Optimize the protocol for you application

The protocol highly configurable, meaning that it is possible to optimize the protocol for a specific application without having to rewrite the protocol.

Important configurations and trade-offs are

- Packet report rate and payload length
- Bidirectional or unidirectional communication
- Number of devices for one host
- Pairing technique – static or dynamic
- Minimum latency vs. power consumption

## Product content

The Wireless Desktop Protocol includes everything needed for application development:

- ANSI C source code for the protocol
- Example application layers for mouse and keyboard
- Software Developer Guide including porting guidelines

## SPECIFICATIONS

Programming language	ANSI-C
Supported hardware architectures	8-bit microcontrollers
Transmission technique	Packet based Asynchronous Frequency Agility
Quality of Service technique	Packet acknowledgment and retransmission
Supported pairing schemes	Static and dynamic
Link layer dependency	Enhanced ShockBurst™
Networking support	Start topology One host – multiple devices
Packet payload	Configurable 1 to 31 bytes
Max report rate	2ms
Typical latency	< 1.5ms
Minimum report rate	None
ReverseBurst™ maximum data rate	400 kbps

## Related Products

nRF24L01	Ultra low power 2.4GHz transceiver
nRF24AP1	Ultra low power 2.4GHz transceiver with embedded ANT™ protocol
nRD24V1	Wireless VoIP headset reference design
nRD24H1	RF remote control reference design
nRF24LU1	Singel chip 2.4GHz tranzeiver with USB, microcontroller and flash memory

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