5 BT-EXACT
Bluetooth cordless screwdrivers

Who says there are
no screws loose here?

The Bluetooth EXACT cordless screwdriver system thinks for itself. The BT-EXACT screwdrivers take their commands from the EXAConnecT controller, which stores the work progress in real time. The system can talk to and take commands from external devices like a PLC, barcode scanner or host network if desired. Improve your assembly process and never forget to drive a screw again.

Higher production quality due to Bluetooth EXACT

Quality control with cordless screwdrivers: Higher production quality due to Bluetooth EXACT

The BT-EXACT screwdriver sends radio signals (screw joint OK or not OK) to the EXAConnecT controller, which also sends commands back to the BT-EXACT screwdriver. An EXAConnecT can control seven screwdrivers simultaneously, making the system very cost-effective. A class 2 Bluetooth module ensures uncompromising data transfer with a 56-Bit encryption and security mode 3 in accordance with Bluetooth Standard 1.2. Screwdrivers and controllers use proprietary communication only. The software can be configured to prevent Bluetooth from disturbing other wireless systems to ensure interference-free communication. An adjustable antenna power output function allows the system to limit its electromagnetic emissions to virtually zero.

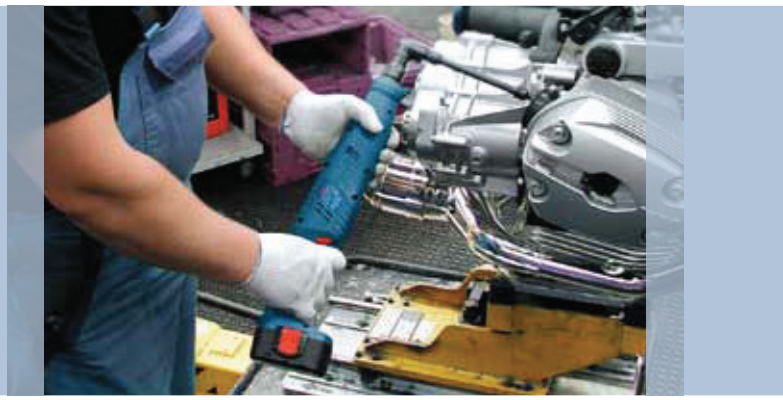
Barcode scanners, PLCs, stack lights and host network systems can be easily connected to the EXAConnecT via the built-in I/O ports, RS 422 interfaces and the network connection. The system can also run as a stand-alone without additional hardware. The screwdriver is prevented from operating outside of the range of the EXAConnecT.

The system is unique compared to other products; it does not require additional software to communicate with a network or computer. All information in the EXAConnecT controller is accessed by using a web browser. All software and firmware is stored within the EXAConnecT controller.

The Bosch Bluetooth system: Quality control redefined

The EXAConnecT can control a BT-EXACT screwdriver by workpiece, screw and number of screwdriving applications. The OK/NOK monitoring can be enhanced if desired using runtime and other parameters to accurately determine cross-threading of screws or missing screws, and it can detect the direction of rotation to detect screw removal.

The system can be programmed to count and report only individual screwdriving applications or the entire screwdriving task. Three LED lights on the BT-EXACT screwdriver tell the worker the battery status and show whether the screw was properly tightened and whether the tool is locked, unlocked or out of range of the EXAConnecT. The system collects and reports all this data to ensure that your assembly process always runs perfectly.




BOSCH
BT-EXACT 12
BOSCH

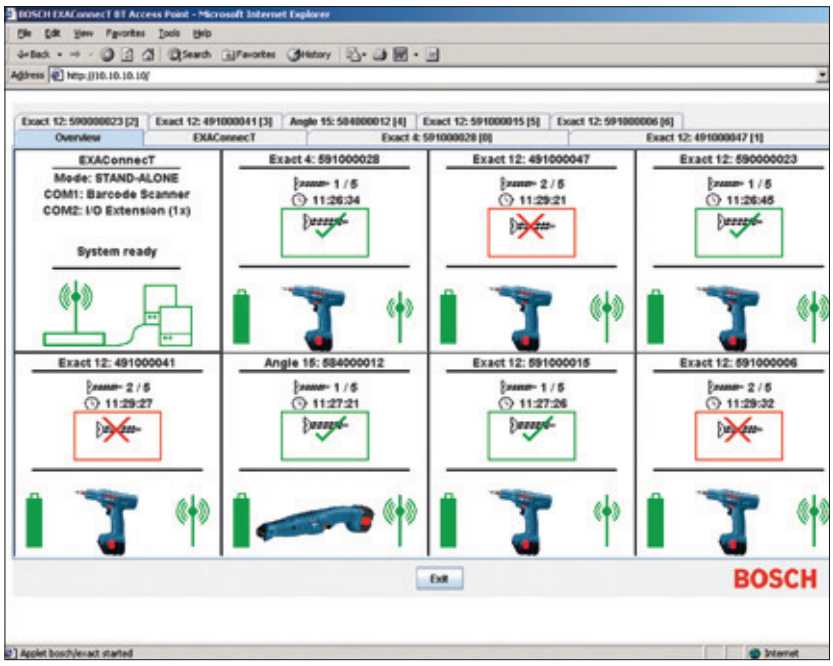
Seven screwdrivers at a single glance: Powerful system software

Quality control should be easy, not complicated. Our software combines powerful control, great flexibility and easy-to-use programming to give you the capability to control the BT-EXACT screwdrivers, the EXAConnecT controller and your assembly line from anywhere.

The system runs in a web browser without the need for additional user interface software. It is password protected to ensure data security of the system.

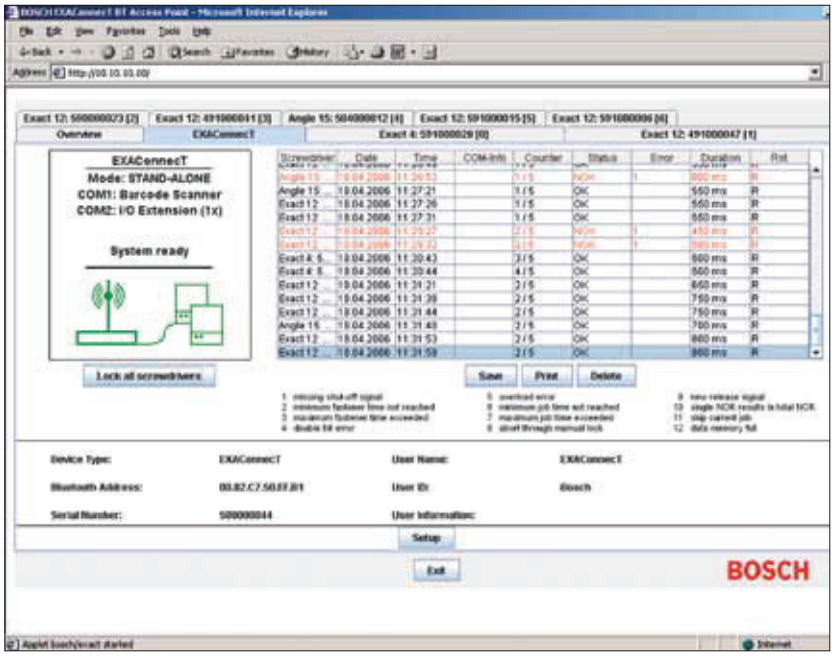
Clicking on the “Overview” tab lets you view and control up to seven BT-EXACT screwdrivers running on one EXAConnecT controller.
Each BT-EXACT screwdriver displays antenna signal strength, battery status, work progress and joint condition (OK/NOK shown in green or red).

The serial number and name of each BT-EXACT screwdriver are also displayed. The name of each BT-EXACT screwdriver can be customised for specific applications or locations within the assembly process.



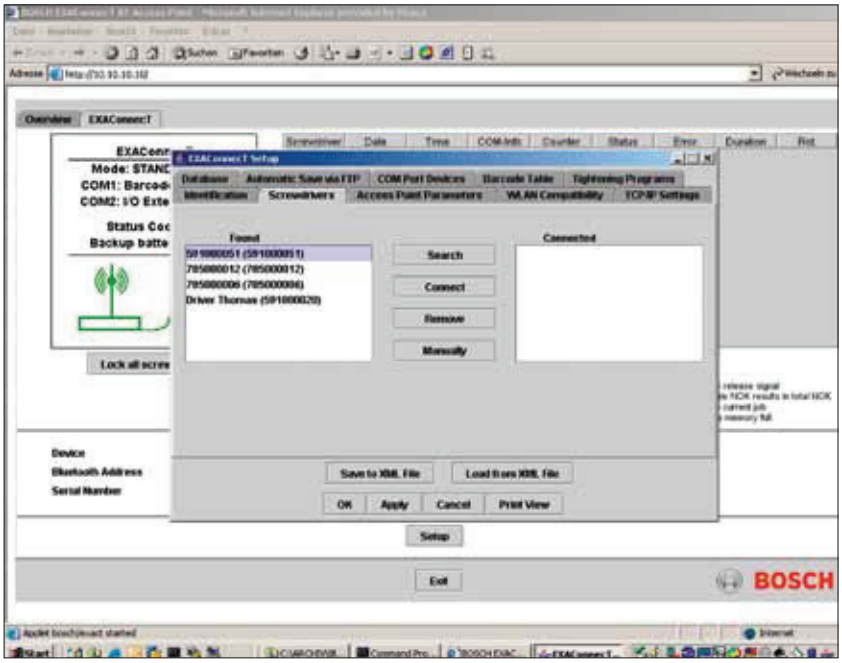
Clicking on the ‘EXAConnecT’ tab shows the detailed data for up to seven BT-EXACT screwdrivers in real time. The system can display extensive data such as BT-EXACT screwdriver name, date, time of event, screw runtime, direction of rotation, error messages, work progress and additional input data (such as barcode scans or sequence numbers).

The system also displays the status of the EXAConnecT controller and lists the BT-EXACT screwdrivers that are connected. System error messages are displayed here, along with detailed information about the configuration.



Fine tuning for seven precision instruments: A symphony of data control

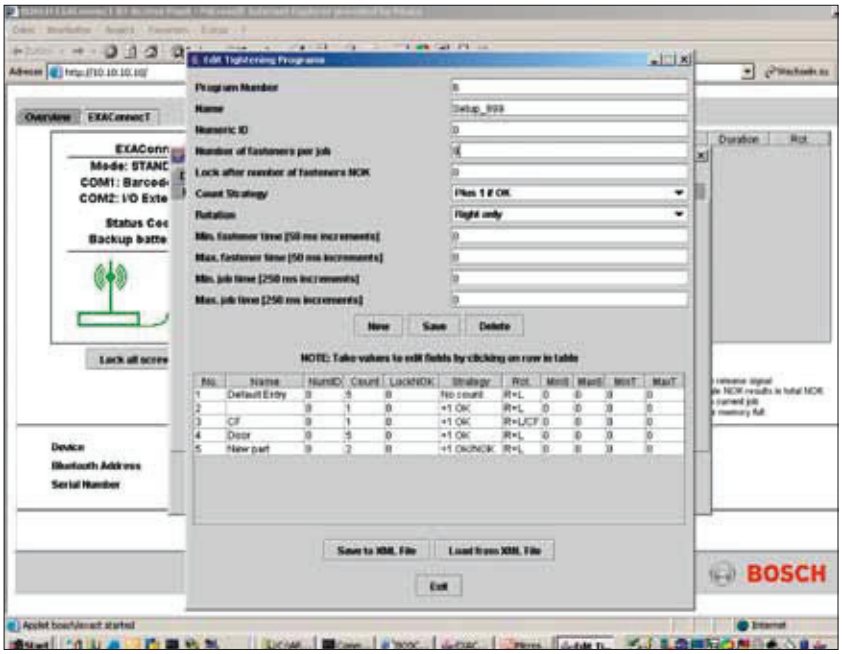
Configuration of the system is easy. All functions of the EXAConnecT controller are programmed from only one user-friendly configuration screen. Standard protocols including Profibus, Ethernet TCP/IP, DeviceNet and FTP, serial interfaces, stack lights and RS 422 ports are managed from there. Each individual BT-EXACT screwdriver can be programmed to send data to different outputs simultaneously. Each BT-EXACT screwdriver can accept data from a variety of inputs. All this capability is managed by only one setup screen for each BT-EXACT screwdriver.



The system has separate configuration windows for the EXAConnecT controller and the BT-EXACT screwdrivers. The configuration screen shows part of the EXAConnecT configuration menu. The system can be password protected to prevent unauthorised use.

Each BT-EXACT screwdriver must be “found” and “connected” by the controller only one time; it will remain “connected” until removed by reprogramming.

Our unique system software can be configured to effectively stop the system from interfering with specific Wi-Fi channels.



The screwdriver configuration menu on the left controls everything from screw count to rework strategy to data output choices. The BT-EXACT screwdriver and the EXAConnecT controller can be configured to send and receive data from a variety of systems, including a host ethernet system, PLC systems, barcode scanners or our digital I/O module.

The system can also monitor screw runtime to accurately determine cross-threading or missing screws.

Rework strategies to evaluate the assembly process can be defined in detail, including customer-specific programming that is created by Bosch.

EXAConnecT – the controller
The core of the quality control system

The EXAConnecT Bluetooth controller packs a lot of firepower in a small, easy to install package. The enclosure is IP54 (NEMA 12) rated for dust and moisture resistance.
The controller has its own processor, flash memory and operating system, so it can run as a stand-alone unit or connect to a variety of controls.
Various status LEDs and a two-digit display that can be seen through the clear cover alert you of connection status or system notifications.

The EXAConnecT controller forms the link between your process control network and the Bluetooth-connected BT-EXACT cordless screwdriver. Information about the screwdriving process can be exchanged bi-directionally in real time to ensure that each BT-EXACT cordless screwdriver knows exactly what it has to do and when to do it. One EXAConnecT controller can run seven BT-EXACT screwdrivers simultaneously, making it very cost-effective compared to other systems.

The EXAConnecT controller can output data from up to seven BT-EXACT screwdrivers via the Ethernet connection (up to four BT-EXACT screwdrivers to a PLC via the 24-volt inputs and outputs). When controlling seven BT-EXACT screwdrivers via a PLC, an additional digital I/O module is required. Refer to page 49 for details.

A wide-range power supply ensures the system works anywhere in the world without the need for additional power transformers. An internal backup memory and real-time clock ensure that critical data is always saved, even in the event of a power loss.

	Part number	Voltage supply	24-V power supply (output)	Standard interfaces
EXAConnecT Bluetooth screwdriver controller	0 602 491 003	100 – 240 V, 50/60 Hz	max. 4.8 W	Ethernet (TCP/IP) 1 x RS-232 2 x RS-422 4 x 24-V inputs 4 x 24-V outputs

Software requirements:
Operating system: Microsoft Windows XP, Windows 7
Browser: Internet Explorer, Netscape Navigator, Mozilla Firefox
Required plugin (freeware): Java Runtime Environment 1.4.2 or higher

Digital I/O module Expansion module for up to 7 BT-EXACT screwdrivers

The digital I/O module is used with the EXAConnecT controller. It allows 24-volt signals from up to seven BT-EXACT screwdrivers to be sent to a PLC. The module is IP54 (NEMA 12) rated for dust and moisture resistance.

The digital I/O module takes its power from the EXAConnecT controller and receives its screwdriving data from the controller's RS 422 interface. The module has 16 inputs and outputs for exchanging data with a PLC. Configuration is done via the EXAConnecT software (in a web browser).

The EXAConnecT controller is capable of supporting up to four BT-EXACT screwdrivers (via a PLC) with limited data transmission. The digital I/O module is needed when 2 to 7 BT-EXACT screwdrivers have to communicate detailed information with a PLC.

The I/O module is not required when using an ethernet connection to a host network. There are different possible PLC configurations for any given situation. Contact your distributor for details.

	Part number	Power input	Standard interfaces
Bluetooth digital I/O module	0 602 491 004	24 V	Ethernet (TCP/IP) 2 x RS-422 16 x 24-V inputs 16 x 24-V outputs

BT-EXACT
Cordless centre grip screwdrivers

- Precision shut-off clutch with Cmk > 1.67
- Low weight
- Large torque range
- Repeat protection
- A visual and audible signal informs the worker about the battery status
- Visual and audible signals inform the worker about the screwdriving result
- Bright LED light for illuminating the work area
- One-handed operation for right-hand/left-hand rotation change
- Modular design with many common parts
- Colour marking rings for easy identification
- Protective cap for quick-release chuck
- Tool holder
- Suspension hook available
- All models require the EXAConnecT wireless controller

EXACT	Part number	Torque, hard as per ISO 5393 (Nm)	Torque, soft as per ISO 5393 (Nm)
BT-EXACT 2 Bluetooth-capable 	0 602 491 433	0.6 – 2	0.6 – 2
BT-EXACT 4 Bluetooth-capable 	0 602 491 437	1 – 4	1 – 4
BT-EXACT 6 Bluetooth-capable 	0 602 491 431	1 – 6	1 – 6
BT-EXACT 7 Bluetooth-capable 	0 602 491 439	1.5 – 7	1.5 – 7
BT-EXACT 8 Bluetooth-capable 	0 602 491 443	1.5 – 8	1.5 – 8
BT-EXACT 9 Bluetooth-capable 	0 602 491 435	1.5 – 9	1.5 – 9
BT-EXACT 12 Bluetooth-capable 	0 602 491 441	1.5 – 12	1.5 – 12

No-load speed (rpm)	Bit holder	Battery specifications (V)	Direction of rotation	Weight as per EPTA (kg)	Features and functions	Included accessories
600	1/4"	9.6 V *	R/L	0.8	Class 2 Bluetooth module	Torque adjustment tool Light green colour ring
900	1/4"	9.6 V *	R/L	0.8	Class 2 Bluetooth module	Torque adjustment tool Grey colour ring
600	1/4"	9.6 V *	R/L	0.8	Class 2 Bluetooth module	Torque adjustment tool Black colour ring
150	1/4"	9.6 V *	R/L	0.8	Class 2 Bluetooth module	Torque adjustment tool White colour ring
650	1/4"	12 V *	R/L	0.9	Class 2 Bluetooth module	Torque adjustment tool Orange colour ring
350	1/4"	9.6 V *	R/L	0.8	Class 2 Bluetooth module	Torque adjustment tool Light blue colour ring
400	1/4"	12 V *	R/L	0.9	Class 2 Bluetooth module	Torque adjustment tool Red colour ring

* Battery not included in scope of delivery

BT-ANGLE EXACT
Cordless angle wrenches

- Precision shut-off clutch with Cmk > 1.67
- Low weight
- Large torque range
- Repeat protection
- Visual and audible signals for the charging state
- Visual and audible signals for the shut-off
- Bright LED light for illuminating the work area
- One-handed operation for right-hand/left-hand rotation change
- Modular design with many common parts
- Colour marking rings for easy identification
- Protective cap available for angle heads
- Angle heads and batteries are not included in scope of delivery
- Use of the same batteries/ chargers as for models with centre grip
- Suspension hook available
- All Bluetooth models require the EXAConnecT wireless controller
- Tool weight with angle head and battery is 1.6 kg (BT-ANGLE EXACT 17, 23, 30: 2.6 kg)

ANGLE EXACT	Part number	Torque, hard as per ISO 5393 (Nm)	Torque, soft as per ISO 5393 (Nm)
BT-ANGLE EXACT 2 Bluetooth-capable 	0 602 491 647	0.7 – 2	0.7 – 2
BT-ANGLE EXACT 3 Bluetooth-capable 	0 602 491 656	0.7 – 3	0.7 – 3
BT-ANGLE EXACT 6 Bluetooth-capable 	0 602 491 652	1.5 – 6	1.5 – 6
BT-ANGLE EXACT 7 Bluetooth-capable 	0 602 491 669	2 – 7	2 – 7
BT-ANGLE EXACT 8 Bluetooth-capable 	0 602 491 651	2 – 9	2 – 8
BT-ANGLE EXACT 15 Bluetooth-capable 	0 602 491 650	2 – 15	2 – 15
BT-ANGLE EXACT 17 Bluetooth-capable 	0 602 491 675	6 – 17	6 – 13
BT-ANGLE EXACT 23 Bluetooth-capable 	0 602 491 673	7 – 23	7 – 20
BT-ANGLE EXACT 30 Bluetooth-capable 	0 602 491 671	8 – 30	8 – 28

No-load speed (rpm)	Angle head	Battery specifications (V)	Direction of rotation	Weight as per EPTA (kg)	Features and functions	Included accessories
110	Flange for angle head *	9.6 V **	R/L	1.0	Class 2 Bluetooth module	Torque adjustment tool Open-ended spanner Suspension hook Light green colour ring
420	Flange for angle head *	9.6 V **	R/L	1.0	Class 2 Bluetooth module	Torque adjustment tool Open-ended spanner Suspension hook Light green colour ring
650	Flange for angle head *	9.6 V **	R/L	1.0	Class 2 Bluetooth module	Torque adjustment tool Open-ended spanner Suspension hook Black colour ring
110	Flange for angle head *	9.6 V **	R/L	1.0	Class 2 Bluetooth module	Torque adjustment tool Open-ended spanner Suspension hook Orange colour ring
420	Flange for angle head *	9.6 V **	R/L	1.0	Class 2 Bluetooth module	Torque adjustment tool Open-ended spanner Suspension hook Orange colour ring
250	Flange for angle head *	9.6 V **	R/L	1.0	Class 2 Bluetooth module	Torque adjustment tool Open-ended spanner Suspension hook Red colour ring
560	Flange for angle head *	14.4 V **	R/L	1.5	Class 2 Bluetooth module	Torque adjustment tool Open-ended spanner Suspension hook White colour ring
320	Flange for angle head *	14.4 V **	R/L	1.5	Class 2 Bluetooth module	Torque adjustment tool Open-ended spanner Suspension hook Orange colour ring
220	Requires HD angle head Flange for HD angle head (HD angle head not included)	14.4 V **	R/L	1.5	Class 2 Bluetooth module	Torque adjustment tool Open-ended spanner Suspension hook Red colour ring

* Angle head not included in scope of delivery

** Battery not included in scope of delivery