

Error-proofing for cordless assembly tools: Build it better with Bluetooth EXACT.

The Bluetooth EXACT Cordless Screwdriving system thinks for itself. The BT-EXACT tool takes its commands from the EXAConnect controller, which stores the work in progress in real time. The system can talk to and take commands from external devices like a PLC, bar code scanner or host network if desired. Improve your assembly process and never miss another fastener.

Wireless OK/NOK (joint ok or not ok) signals are sent from the BT-EXACT Screwdriver to the EXAConnect controller, which also sends commands back to the tool. A class 2 Bluetooth module guarantees data transfer without compromise using 56-bit encryption and level 3 security in Bluetooth standard 1.2. The tools and controller communicate only with each other. The software can be configured to actively block Bosch Bluetooth signals from disturbing a wireless LAN, preventing data loss in other wireless networks in an assembly plant. An adjustable antenna power output function allows the system to limit electromagnetic “pollution” to virtually nothing. One EXAConnect controller can run seven tools simultaneously, making the system very cost-effective.

Bar code scanners, PLC’s, stack lights and host network systems can be easily connected to the EXAConnect via a combination of built-in I/O ports, RS 422 ports and Ethernet connections. The system can also run as a stand-alone without additional hardware. An anti-theft system prevents the tool from operating out of range of the EXAConnect.

The system is unique compared to other products; it does not require 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 system is completely self-diagnostic.

The Bosch Bluetooth system: Quality control redefined.

The EXAConnect can control a BT-EXACT tool by workpiece, fastener and batch count. The OK/NOK signal can be enhanced (if desired) using run time and other parameters to accurately determine cross-threading of fasteners or missing assembly parts; it can detect and limit direction of rotation to prevent fastener removal. Over 50 different counting and work/rework strategies can be programmed.

The system can be set to count a batch of fasteners per job, or report single fastener data. It can control the assembly line to insure that a worker correctly tightens the right fastener on the right part at the right time. Three LED lights on the BT-EXACT tool tell the worker battery status, if the fastener was properly tightened, and if the tool is locked, unlocked or out of range of the EXAConnect. The system collects and reports all this data to insure that your assembly process is always perfect.





Seven screwdrivers at a single glance: Powerful tool management 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 tools, the EXAConnect controller and your assembly line from anywhere.

The system runs in a web browser without the need for expensive user interface software. It can be password-protected to insure process security. Take control of data going to and from the screwdrivers, the controller and your network in a whole new way.

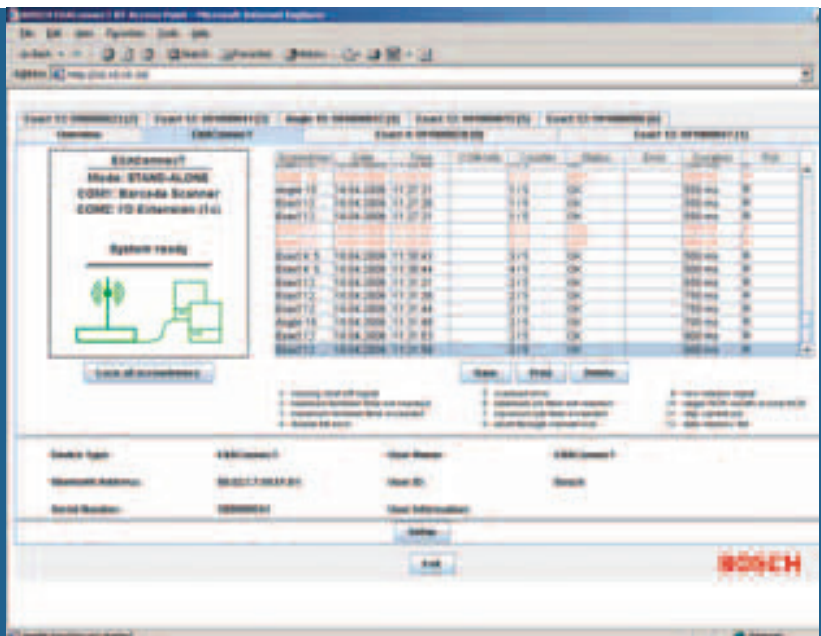
Clicking on the overview tab lets you view & control up to seven BT-EXACT drivers running on one EXAConnect controller. Each tool displays antenna signal strength, battery status, screw count, batch status and joint condition (OK/NOK shown in green or red).

The serial number and name of each tool is also displayed. The name of each tool can be customized for specific applications or locations within the assembly process.



Clicking on the EXAConnect tab shows the detailed data for up to seven tools in real time. The system can display data such as driver name, date, time of event, screw run time, direction of rotation, error messages, screw count, batch count and additional input data (like bar code scans or sequence numbers).

The system also displays the status of the EXAConnect controller and lists the devices that are connected. System error messages are displayed here, along with detailed information about the configuration.



EXAConnect wireless 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 IP 54 (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 LED's and a 2-digit display that can be seen through the clear cover alert you of connection status or system errors.



The EXAConnect controller forms the link between your process control network and the Bluetooth equipped BT-EXACT cordless tool. Information about the screwdriving process can be exchanged bidirectionally in real time to insure that each BT-EXACT cordless tool knows exactly what it has to do and when to do it. One EXAConnect controller can run seven tools simultaneously, making it very cost-effective compared to other error proofing systems.

The EXAConnect controller can easily output data from up to 7 tools via the Ethernet connection, and up to 4 tools to a PLC via the 24 volt I/O switches. When controlling 7 tools via a PLC, an accessory digital I/O module is required. Refer to page 29 for details.

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

	Order number	Power supply	24 V power supply (output)	Standard interfaces
EXAConnect Bluetooth Wireless Controller	0 602 491 001	100 – 240 V, 50/60 Hz	max 4.8 W	Ethernet (TCP/IP) 2 x RS 422 4 x 24 V inputs 4 x 24 V outputs

System Software Requirements:
 Operating system: MS Win 98 SE, 2000, NT, XP
 Browser: Internet Explorer, Netscape Navigator, Mozilla Firefox
 Plugin needed (Freeware): Java Runtime Environment 1.4.2 or higher

Bluetooth digital I/O module

Extend the reach of 7 tools to a PLC

The digital I/O box is used with the EXAConnect controller. It allows 24 volt I/O signals from up to seven tools to be sent to a PLC. The box is IP 54 (NEMA 12) rated for dust and moisture resistance.



The digital I/O module takes its power from the EXAConnect controller and receives its tool data from the controller RS 422 port. The box has 16 switched input/output connections for communicating with a PLC. Configuration is done via the EXAConnect software (in a web browser).

The EXAConnect controller is capable of supporting up to 4 tools (via a PLC) with limited I/O data transmission. The digital I/O module is needed when 2 to 7 tools must 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.

	Order number	Power requirement	Standard interfaces
Bluetooth digital I/O module	0 602 491 002	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 exceeds ISO tolerance of ±10%
- ▶ Lightweight
- ▶ Broad torque range
- ▶ Trigger repeat protection
- ▶ LED/audible battery charge indicators disable tool when voltage drops below threshold; tool stays “in-process” regardless of battery condition
- ▶ LED/audible shut-off indicator provides operator feedback for clutch signal to confirm good/bad joint status (sent via Bluetooth to controller)
- ▶ Bright LED light for work area illumination
- ▶ All models feature trigger hand forward/reverse control
- ▶ Tools share many common parts
- ▶ Color rings are used to identify joint types on the assembly line
- ▶ Protective rubber cover available for quick-change bit holder
- ▶ Tool holding fixtures available
- ▶ All models can be hung from balancer using accessory hook)
- ▶ All models require wireless EXAConnect controller

EXACT	Order number	Torque on hard joint per ISO 5393 (Nm)	Torque on soft joint per ISO 5393 (Nm)
BT-EXACT 2 Bluetooth enabled 	0 602 491 433	0.6 – 2 (0.4 – 1.5 ft.-lbs.)	0.6 – 2 (0.4 – 1.5 ft.-lbs.)
	0 602 491 434	0.6 – 2 (0.4 – 1.5 ft.-lbs.)	0.6 – 2 (0.4 – 1.5 ft.-lbs.)
BT-EXACT 4 Bluetooth enabled 	0 602 491 437	1 – 4 (0.7 – 3 ft.-lbs.)	1 – 4 (0.7 – 3 ft.-lbs.)
	0 602 491 438	1 – 4 (0.7 – 3 ft.-lbs.)	1 – 4 (0.7 – 3 ft.-lbs.)
BT-EXACT 6 Bluetooth enabled 	0 602 491 431	1 – 6 (0.7 – 4.4 ft.-lbs.)	1 – 6 (0.7 – 4.4 ft.-lbs.)
	0 602 491 432	1 – 6 (0.7 – 4.4 ft.-lbs.)	1 – 6 (0.7 – 4.4 ft.-lbs.)
BT-EXACT 7 Bluetooth enabled 	0 602 491 439	1.5 – 7 (1.1 – 5.2 ft.-lbs.)	1.5 – 7 (1.1 – 5.2 ft.-lbs.)
	0 602 491 440	1.5 – 7 (1.1 – 5.2 ft.-lbs.)	1.5 – 7 (1.1 – 5.2 ft.-lbs.)
BT-EXACT 8 Bluetooth enabled 	0 602 491 443	1.5 – 8 (1.1 – 5.9 ft.-lbs.)	1.5 – 8 (1.1 – 5.9 ft.-lbs.)
	0 602 491 444	1.5 – 8 (1.1 – 5.9 ft.-lbs.)	1.5 – 8 (1.1 – 5.9 ft.-lbs.)
BT-EXACT 9 Bluetooth enabled 	0 602 491 435	1.5 – 9 (1.1 – 6.7 ft.-lbs.)	1.5 – 9 (1.1 – 6.7 ft.-lbs.)
	0 602 491 436	1.5 – 9 (1.1 – 6.7 ft.-lbs.)	1.5 – 9 (1.1 – 6.7 ft.-lbs.)
BT-EXACT 12 Bluetooth enabled 	0 602 491 441	1.5 – 12 (1.1 – 9 ft.-lbs.)	1.5 – 12 (1.1 – 9 ft.-lbs.)
	0 602 491 442	1.5 – 12 (1.1 – 9 ft.-lbs.)	1.5 – 12 (1.1 – 9 ft.-lbs.)











C-EXACT	EXACT	BT-EXACT	SEC-EXACT	ACCESSORIES
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No-load speed (min ⁻¹)	Bit holder	Battery specifications	Direction of rotation	Weight (kg / lbs)	Features	Included accessories
600	¼"		R/L	0.8 / 1.76	Class 2 Blue-tooth module	Torque adjustment tool light green color ring
600	¼"	9.6 V / 1.7 Ah	R/L	1.2 / 2.6	Class 2 Blue-tooth module	
900	¼"		R/L	0.8 / 1.76	Class 2 Blue-tooth module	Torque adjustment tool grey color ring
900	¼"	9.6 V / 1.7 Ah	R/L	1.2 / 2.6	Class 2 Blue-tooth module	
600	¼"		R/L	0.8 / 1.76	Class 2 Blue-tooth module	Torque adjustment tool black color ring
600	¼"	9.6 V / 1.7 Ah	R/L	1.2 / 2.6	Class 2 Blue-tooth module	
150	¼"		R/L	0.8 / 1.76	Class 2 Blue-tooth module	Torque adjustment tool white color ring
150	¼"	9.6 V / 1.7 Ah	R/L	1.2 / 2.6	Class 2 Blue-tooth module	
650	¼"		R/L	0.9 / 2.0	Class 2 Blue-tooth module	Torque adjustment tool orange color ring
650	¼"	12 V / 2.4 Ah	R/L	1.6 / 3.5	Class 2 Blue-tooth module	
350	¼"		R/L	0.8 / 1.76	Class 2 Blue-tooth module	Torque adjustment tool light blue color ring
350	¼"	9.6 V / 1.7 Ah	R/L	1.2 / 2.6	Class 2 Blue-tooth module	
400	¼"		R/L	0.9 / 2.0	Class 2 Blue-tooth module	Torque adjustment tool red color ring
400	¼"	12 V / 2.4 Ah	R/L	1.6 / 3.5	Class 2 Blue-tooth module	

BT-ANGLE EXACT

Cordless nutrunners

- ▶ Precision Shut-off clutch exceeds ISO tolerance of $\pm 10\%$
- ▶ Lightweight
- ▶ Broad torque range
- ▶ Trigger repeat protection
- ▶ LED/audible battery charge indicator; same as T-grip
- ▶ LED/audible shut-off indicator; same as T-grip (sent via Bluetooth to controller)
- ▶ Bright LED light for work area illumination
- ▶ All models feature trigger hand forward/reverse control
- ▶ Tools share many common parts
- ▶ Color rings are used to identify joint types on the assembly line
- ▶ Protective rubber cover available for angle heads
- ▶ Uses same batteries/chargers as T-Grip models
- ▶ All models can be hung from balancer using suspension hook
- ▶ All Bluetooth models require wireless EXAConnect controller
- ▶ Tool weight with angle head and battery is 1.6kg/3.5 lbs (BT-ANGLE EXACT 17, 23, 30: 2.6kg/5.7 lbs)

	Order number	Torque on hard joint per ISO 5393 (Nm)	Torque on soft joint per ISO 5393 (Nm)
BT-ANGLE EXACT 2 Bluetooth enabled 	0 602 491 647	0.7 – 2 (0.5 – 1.5 ft.-lbs.)	0.7 – 2 (0.5 – 1.5 ft.-lbs.)
BT-ANGLE EXACT 3 Bluetooth enabled 	0 602 491 656	0.7 – 3 (0.5 – 2.2 ft.-lbs.)	0.7 – 3 (0.5 – 2.2 ft.-lbs.)
BT-ANGLE EXACT 6 Bluetooth enabled 	0 602 491 652	1.5 – 6 (1.1 – 4.4 ft.-lbs.)	1.5 – 6 (1.1 – 4.4 ft.-lbs.)
BT-ANGLE EXACT 7 Bluetooth enabled 	0 602 491 669	2 – 7 (1.5 – 5.1 ft.-lbs.)	2 – 7 (1.5 – 5.1 ft.-lbs.)
BT-ANGLE EXACT 8 Bluetooth enabled 	0 602 491 651	2 – 9 (1.5 – 6.7 ft.-lbs.)	2 – 8 (1.5 – 5.9 ft.-lbs.)
BT-ANGLE EXACT 15 Bluetooth enabled 	0 602 491 650	2 – 15 (1.5 – 11 ft.-lbs.)	2 – 15 (1.5 – 11 ft.-lbs.)
BT-ANGLE EXACT 17 Bluetooth enabled 	0 602 491 675	6 – 17 (4.4 – 12.5 ft.-lbs.)	6 – 13 (4.4 – 9.6 ft.-lbs.)
BT-ANGLE EXACT 23 Bluetooth enabled 	0 602 491 673	7 – 23 (5.1 – 17 ft.-lbs.)	7 – 20 (5.1 – 14.8 ft.-lbs.)
BT-ANGLE EXACT 30 Bluetooth enabled 	0 602 491 671	8 – 30 (5.9 – 22.1 ft.-lbs.)	8 – 28 (5.9 – 20.7 ft.-lbs.)

C-EXACT	EXACT	BT-EXACT	SEC-EXACT	ACCESSORIES
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No-load speed (min ⁻¹)	Angle head	Battery specifications	Direction of rotation	Weight (kg / lbs)	Features	Included accessories
110	–	9.6 V (Not included)	R/L	1.0 / 2.2	Class 2 Blue-tooth module	Torque adjustment tool Housing wrench Suspension hook light-green marking ring
420	–	9.6 V (Not included)	R/L	1.0 / 2.2	Class 2 Blue-tooth module	Torque adjustment tool Housing wrench Suspension hook light-green marking ring
650	–	9.6 V (Not included)	R/L	1.0 / 2.2	Class 2 Blue-tooth module	Torque adjustment tool Housing wrench Suspension hook black marking ring
110	–	9.6 V (Not included)	R/L	1.0 / 2.2	Class 2 Blue-tooth module	Torque adjustment tool Housing wrench Suspension hook orange marking ring
420	–	9.6 V (Not included)	R/L	1.0 / 2.2	Class 2 Blue-tooth module	Torque adjustment tool Housing wrench Suspension hook orange marking ring
250	–	9.6 V (Not included)	R/L	1.0 / 2.2	Class 2 Blue-tooth module	Torque adjustment tool Housing wrench Suspension hook red marking ring
560	–	14.4 V (Not included)	R/L	1.5 / 3.3	Class 2 Blue-tooth module	Torque adjustment tool Housing wrench Suspension hook white color ring
320	– requires HD angle head	14.4 V (Not included)	R/L	1.5 / 3.3	Class 2 Blue-tooth module	Torque adjustment tool Housing wrench Suspension hook orange color ring
220	– requires HD angle head	14.4 V (Not included)	R/L	1.5 / 3.3	Class 2 Blue-tooth module	Torque adjustment tool Housing wrench Suspension hook red color ring