

User Guide

STa 6000

Atlas Copco Industrial Technique AB

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Edition 3.1



Revision history

<i>Edition</i>	<i>Date</i>	<i>Author</i>	<i>Description</i>	<i>Reference Minimum Software version (ToolsTalk BLM)</i>	<i>Reference Firmware version</i>
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2.2	04 February 2015	M. Grippa	RBU AA added, Statistics and reports updated, Test execution window updated, Pset programming updated (par. 7.1), Settings updated (par. 16), EAP-TLS security type added (par. 21), transducer management updated, MRTT-C firmware update added	8.3.x	2.0x
2.3	21 May 2015	M. Grippa	FCC Certification added (par. 1.5), Power Focus Calibration updated (par. 10.1), PowerMACS Calibration updated (par. 10.2), Other Controller Calibration updated (par. 10.3), Text Execution updated (par. 17.2), Execute the Pset (par. 7.2.1), STa 6000 text editing added (par. 3.3), Only angle strategy added (par. 8.2.2)	8.4.x	2.1x
2.4	21 July 2015	C. Pacente	Main parameters and control strategy updated (par. 7.1.1), Batch parameters updated (par. 7.1.5), Cm/Cmk (ISO - CNOMO) statistics updated (par. 14.1.2), Cm/Cmk (ISO - CNOMO) report updated (par. 14.2.2), Real time statistics on the STa 6000 display updated (par. 14.4.1), CNOMO standard E41.32.110N added (par. 14.4.2), Controller Configuration updated (par. 16.1)	8.5.x	2.2x

<i>Edition</i>	<i>Date</i>	<i>Author</i>	<i>Description</i>	<i>Reference Minimum Software version (ToolsTalk BLM)</i>	<i>Reference Firmware version</i>
2.5	11 November 2015	C. Pacente	EC Declaration of Conformity updated (par.1.4), MET Certification added (par. 1.5), Battery Charger updated (par. 2.3.5.1), Mini USB Port updated (par. 3.6), Main parameters and control strategy updated (par. 7.1.1), Torque parameters updated (par. 7.1.2), Angle parameters updated (par. 7.1.3), Time updated (par. 7.1.4), Pulse parameters updated (par. 7.1.5), Options updated (par. 7.1.6), Subgroup parameters added (par. 7.1.7), Results Notes option updated (par. 7.2.2), Results Viewer updated (par. 12), Cm/Cmk (ISO - CNOMO) report updated (par. 14.1.2), Cm/Cmk (Shifting samples) added (par. 14.4.2.2), Offline Programming updated (par. 15), Controller configuration updated (par. 16.1), Test execution window customization updated (par. 16.9)	8.6.x	2.3x
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<i>Edition</i>	<i>Date</i>	<i>Author</i>	<i>Description</i>	<i>Reference Minimum Software version (ToolsTalk BLM)</i>	<i>Reference Firmware version</i>
			Scanning barcodes with STa 6000 updated (par. 11.4), View one trace updated (par. 13.1), Traces comparison updated (par. 13.2), Copy, Print and Export traces updated (par. 13.3), STa 6000 settings updated (par. 16), Controller configuration updated (par. 16.1), Information updated (par. 16.2), IRC-C added (par. 16.4), SPC Rules updated (par. 16.6), Memory updated (par. 16.7), Working with IRC-Connect (<i>and relative sub-paragraphs</i>) added (par. 18), Troubleshooting Guide updated (par. 23)		
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NOTE: This manual may be altered without further notice.

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NOTE: The programming software (ToolsTalk BLM) may be updated with no changes about the STa 6000 functionalities. The minimum software version indicated here is required for the reference firmware version.



NOTE: In the event of conflicts between translations of this User Guide, always refer to the official English version.

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SAFETY INFORMATION



WARNING: PLEASE CAREFULLY READ THE STa 6000 SAFETY INFORMATION (No. 9836 5229 00) PRIOR TO USE THE PRODUCT AND PAY ATTENTION TO THE SAFETY INSTRUCTIONS PROVIDED.

BATTERY INFORMATION according to European regulation 2006/66/EC

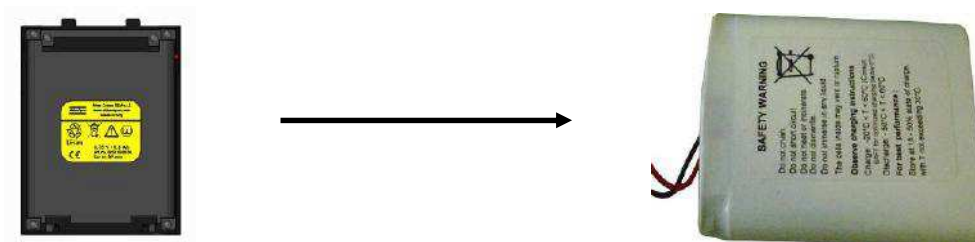
BATTERY PACK SPECIFICATION

P/N: 8059 0955 61

TYPE: Lithium-ion, 3.75V 6.8Ah

WEIGHT: 155g

The cells are installed inside the battery shell:



NOTE: Once removed, the wasted batteries must be dismissed according to local regulations.



NOTE: Refer to the paragraph “*Battery*” for further details.

1 INTRODUCTION

1.1 About this Document

This document is a User Guide for the STa 6000 and it is divided into the main following parts:

Part	Name	Description
Chapter 1	Introduction	This chapter introduces this user guide and provides the STa 6000 technical specifications.
Chapter 2	System Overview	This chapter introduces the STa 6000 with its models and accessories.
Chapter 3	User Interfaces	This chapter provides an overview of the user interfaces available on the STa 6000 (display, keyboard, ports, etc).
Chapter 4	Working with ToolsTalk BLM	This chapter introduces the operations of the STa 6000 management software.
Chapter 5	Transducers	This chapter describes which type of transducer can be connected to the STa 6000.
Chapter 6	Getting Started with STa 6000	This chapter explains to the operator how to use the STa 6000 in the Quick Programming mode.
Chapter 7	Pset	This chapter explains how to create, configure and execute a test program.
Chapter 8	Tool Testing	This chapter details how to set the parameters to test click-wrenches, slip-wrenches, power and impulse tools.
Chapter 9	Joint Testing	This chapter details how to set the parameters to test a joint using the various residual torque strategies, and the joint analysis function.
Chapter 10	Power Focus / PowerMACS Calibration	This chapter explains how to calibrate the torque of the tools/spindles of Power Focus and PowerMACS, using the STa 6000 with a reference transducer.
Chapter 11	Identifier	This chapter describes the use of barcode readings with the STa 6000.

Part	Name	Description
Chapter 12	Results Viewer	This chapter explains how to retrieve the test results from the instrument.
Chapter 13	Trace Viewer	This chapter explains how to retrieve the test traces from the instrument.
Chapter 14	Statistics	This chapter shows the SPC and Cm-Cmk statistics produced by the STa 6000 and ToolsTalk BLM.
Chapter 15	Offline Programming	This chapter explains how to define tightening programs and STa 6000 configuration offline, to transfer then the file to one or more STa 6000.
Chapter 16	STa 6000 Settings	This chapter explains how to setup the STa 6000 and its accessories.
Chapter 17	Working with Torque Supervisor	This chapter explains the use of the STa 6000 with Torque Supervisor.
Chapter 18	Working with IRC-Connect	This chapter explains the use of the STa 6000 with IRC-Connect.
Chapter 19	Maintenance	This chapter describes the required maintenance for the STa 6000.
Chapter 20	Torque / Angle Coefficient Calculation for MRTT-C Extension	This chapter shows the operator how to calculate the correction coefficients when an extension is used with the MRTT-C.
Chapter 21	STa 6000 Factory Settings	This chapter shows the STa 6000 factory settings.
Chapter 22	Appendix A – EAP-TLS security type	This chapter described how to configure the IRC-W module for EAP-TLS security type.
Chapter 23	Troubleshooting Guide	This chapter provides a guide to solve the most common problems with the STa 6000.
Chapter 24	Abbreviations	Table of abbreviations used in this user guide.
Chapter 25	Index	Index used in this user guide.

1.2 Reference Documents

The following is a list of important documents useful for a complete view of the product in all its applications:

- STa 6000 Safety Information (*No. 9836 5229 01*): Multilanguage safety instructions and declaration of conformity
- ToolsTalk BLM registration procedure: How to register the software on the Atlas Copco website
- STa 6000 calibration procedure: Procedure to calibrate the STa 6000 (only for use of authorized calibration centers)
- Installation guides for STa 6000 modules: Detailed installation instructions, delivered with each part
- IRTT-B, SRTT-B, MRTT-B and MRTT-C User Guides
- IRC-Connect User Guide (*No. 9836 6340 01*)
- Torque Supervisor User Guide (*No. 9836 2866 01*)

1.3 Specifications

TECHNICAL

- Torque range: The torque range is defined by the transducer connected to the STa 6000.
- Maximum accuracy error: $\pm 0.1\%$.
- Maximum linearity error: $\pm 0.015\%$.
- Angle measurement
- Results memory capacity: 50000 test results
- Traces memory capacity: 50000 traces (average duration: 30 s)
- Pset memory capacity: 1000 Psets (1 for STa 6000 Basic)
- Tools memory capacity: 1000 Tools (1 for STa 6000 Basic)
- Number representation for torque values:

<i>Nominal Torque (T)</i>	<i>Measured torque shown on display</i>	
T < 5	Measured torque ≥ 1	→ <i>three digits after decimal point</i>
	Measured torque < 1	→ <i>four digits after decimal point</i>
5 < T ≤ 50	Measured torque ≥ 10	→ <i>two digits after decimal point</i>
	Measured torque < 10	→ <i>three digits after decimal point</i>
50 < T ≤ 500	Measured torque ≥ 100	→ <i>one digits after decimal point</i>
	Measured torque < 100	→ <i>two digits after decimal point</i>

<i>Nominal Torque (T)</i>	<i>Measured torque shown on display</i>
500 < T ≤ 5000	Measured torque ≥ 1000 → <i>no digits after decimal point</i>
	Measured torque < 1000 → <i>one digits after decimal point</i>
T > 5000	<i>no digits after decimal point</i>



NOTE: In the above table, the Unit of Measurement of the torque can be set according to the following available options: N·m, kgf·m, kgf·cm, lbf·ft, lbf·in, ozf·ft, ozf·in, kp·m, dN·m, kN

- Sampling frequency:
 - Click-wrench test: 2 kHz
 - Power tool test: 5 kHz
 - Peak test: 1 kHz
 - Pulse tool and ACTA pulse tool test: 10 kHz
- Maximum number of identifier strings: 1000
- Units of Measurement supported: N·m, kgf·m, kgf·cm, lbf·ft, lbf·in, ozf·ft, ozf·in, kp·m, dN·m, kN

EXTERNAL POWER SUPPLY

- Input power: 100 ÷ 240 VAC, 50 ÷ 60 Hz
- AC Power Consumption: 21 W maximum
- Output: 6VDC, max 3.0A

BATTERY PACK

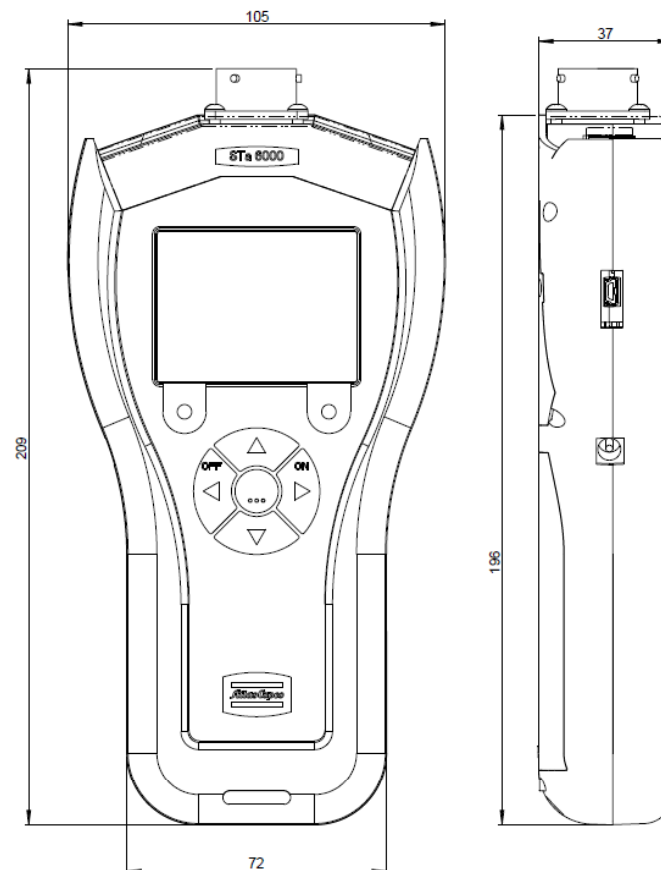
- Battery power supply: 3.75 V, 6.8 Ah
- Battery type: Lithium-ion (Li-ion)
- Endurance: 8 hours in normal usage, 6 hours in continuous operation (1 test every 30 seconds)
- Recharging max. 8 hours

BATTERY CHARGER

- Input power: 100 ÷ 230 VAC
- AC Power Consumption: 70 W maximum
- Output: 4.2 VDC 13 W maximum
- Overvoltage category: II

SRTT-L

- Torque measurement range: 0.1 ÷ 30 Nm
- Torque static accuracy (from 20% to 100% of the transducer capacity): $\pm 0.25\%$ of rated max. transducer capacity
- Overload capacity: 125% of rated max. transducer capacity
- Temperature stability: 0.1% of capacity/10°C
- Bridge resistance: 350 ohm
- Operation humidity: 10-75% non-condensing
- Operating temperature: 5 to 40°C

DIMENSIONS AND WEIGHT

Dimensions are in mm.

Max Weight (with battery): 500 g

INTERFACES

- MiniUSB 2.0 port
- Transducer connector: 19 poles military connector for:
 - IRTT-B and IRTT
 - SRTT-B and SRTT
 - MRTT-B and MRTT
 - MRTT-C
 - SRTT-L
 - mV/V torque transducers (0.4 mV/V to 2.5 mV/V, bridge resistance 350 to 1000 Ohm)
- Barcode reader module (optional):
 - Visible laser diode 650 nm
 - Output power: 1 mW maximum
 - Scan rate: 104 ± 12 scans/second (bi-directional)
 - Scan angle: $47^\circ \pm 3^\circ$
 - Scan patterns: Linear
 - Minimum Print contrast: Minimum 20% absolute dark/light reflectance measured at 650 nm
 - Ambient light:
 - Sunlight: 10000 ft candles (107640 Lux)
 - Artificial: 450 ft candles (4484 Lux)
 - EMI/RFI: FCC Part 15 Class B, EN 55024/CISPR 22, AS 3548, VCCI
 - Laser Safety: IEC 60825 class 2
- IRC-W dual band radio module (optional):
 - Minimum IRC-W module firmware version: 2.14
 - Type: 802.11a/b/g/n
 - Frequencies:

CHANNEL	CENTER FREQUENCY (MHz)	EU	USA	Max. E.I.R.P. (mW)
<i>1</i>	2412	YES	YES	0.9
<i>2</i>	2417	YES	YES	
<i>3</i>	2422	YES	YES	
<i>4</i>	2427	YES	YES	
<i>5</i>	2432	YES	YES	
<i>6</i>	2437	YES	YES	0.79
<i>7</i>	2442	YES	YES	
<i>8</i>	2447	YES	YES	
<i>9</i>	2452	YES	YES	
<i>10</i>	2457	YES	YES	

CHANNEL	CENTER FREQUENCY (MHz)	EU	USA	Max. E.I.R.P. (mW)
<i>11</i>	2462	YES	YES	0.58
<i>12</i>	2467	YES	N/A	
<i>13</i>	2472	YES	N/A	
<i>14</i>	2484	N/A	N/A	

CHANNEL	CENTER FREQUENCY (MHz)	FCC U-NII Band(s)	EU	USA	Max. E.I.R.P. (mW)
<i>36</i>	5180	<u><i>U-NII-1</i></u>	YES	YES	0.41
<i>40</i>	5200	<u><i>U-NII-1</i></u>	YES	YES	
<i>44</i>	5220	<u><i>U-NII-1</i></u>	YES	YES	
<i>48</i>	5240	<u><i>U-NII-1</i></u>	YES	YES	
<i>52</i>	5260	<u><i>U-NII-2A</i></u>	YES	YES	0.52
<i>56</i>	5280	<u><i>U-NII-2A</i></u>	YES	YES	
<i>60</i>	5300	<u><i>U-NII-2A</i></u>	YES	YES	
<i>64</i>	5320	<u><i>U-NII-2A</i></u>	YES	YES	0.64
<i>100</i>	5500	<u><i>U-NII-2C</i></u>	YES	YES	2.11
<i>104</i>	5520	<u><i>U-NII-2C</i></u>	YES	YES	
<i>108</i>	5540	<u><i>U-NII-2C</i></u>	YES	YES	
<i>112</i>	5560	<u><i>U-NII-2C</i></u>	YES	YES	
<i>116</i>	5580	<u><i>U-NII-2C</i></u>	YES	YES	1.67
<i>132</i>	5660	<u><i>U-NII-2C</i></u>	YES	YES	
<i>136</i>	5680	<u><i>U-NII-2C</i></u>	YES	YES	
<i>140</i>	5700	<u><i>U-NII-2C</i></u>	YES	YES	1.3
<i>149</i>	5745	<u><i>U-NII-3</i></u>	YES	YES	
<i>153</i>	5765	<u><i>U-NII-3</i></u>	YES	YES	
<i>157</i>	5785	<u><i>U-NII-3</i></u>	YES	YES	
<i>161</i>	5805	<u><i>U-NII-3</i></u>	YES	YES	
<i>165</i>	5825	<u><i>U-NII-3</i></u>	YES	YES	

- IRC-B radio module (optional):
 - Bluetooth: v4.0 (Bluetooth low energy and Classic Bluetooth)
 - Frequencies:

FREQUENCY RANGE (MHz)	EU	USA
<i>2402 ÷ 2480</i>	YES	YES

<i>CENTER FREQUENCY (MHz)</i>	Max. E.I.R.P. (mW)
<i>2402</i>	0.37
<i>2441</i>	0.39
<i>2480</i>	0.47

- Throughput: 1.3 Mbps (Classic Bluetooth)
- Microprocessor capacity: 72 MHz, ARM 32-bit Cortex M3 processor with 64kB RAM and 384kB flash

ENVIRONMENTAL

The following conditions must be observed during operation:

- Internal Use only
- Environmental Class: II
- IP Index according to EN IEC 60529: IP40
- Room Temperature: 5 to 40°C
- Atmospheric humidity: 95%, non-condensing
- Altitude: Up to 2000m

SYSTEM REQUIREMENTS

The following are the PC minimum requirements for installation of STa 6000 Management Software (ToolsTalk BLM):

- Processor: 400 MHz (800 MHz or above recommended)
- Memory: 256 Mb or above
- Hard disk space: 610 Mb (1 Gb or above recommended)
- Display: 800 x 600, 256 colors (1024 x 768, High Color (16-bit) recommended)
- Operating Systems: Windows XP Service Pack 2 (SP2), Windows 7, Windows 8.1, Windows 10
- Internet Explorer 5.01 or later (required for installation of the .NET Framework)
- Windows Installer 3.1

- Microsoft Excel 2007 or later (required to view the exported file with the tightening results)



NOTE: A system should meet these or the minimum requirements for the operating system, whichever is higher.

CALIBRATION CERTIFICATE

STa 6000 is provided with an Atlas Copco BLM factory calibration certificate.

1.4 EC Declaration of Conformity

The STa 6000 is in conformity with the requirements of the council Directives on 06/22/1998 on the approximation of the laws of the Member States relating:

- 2004/108/EC EMC Directive – Electromagnetic Compatibility
- 2011/65/EC ROHS Directive – Risk Of Hazardous Substances
- 1999/05/EC R&TTE Directive – Radio and Telecommunications Terminal Equipment

Safety complies with the following regulations:

STa 6000

- EN 61010-1:2010 Safety requirements for electrical equipment for measurement, control and laboratory use. General requirements

Battery charger

- IEC 60950-1:2005 + A1:2009 + A2:2013 Safety of electronic equipment within the field of audio/video, information technology and communication technology. General requirements

The STa 6000 is marked with the following symbol:



The STa 6000 may be operated in the following countries:

<i>Country</i>	<i>ISO 3166 2 letter code</i>	<i>Country</i>	<i>ISO 3166 2 letter code</i>	<i>Country</i>	<i>ISO 3166 2 letter code</i>	<i>Country</i>	<i>ISO 3166 2 letter code</i>
Austria	AT	Germany	DE	Malta	MT	United Kingdom	GB
Belgium	BE	Greece	GR	Netherlands	NL	Iceland	IS
Cyprus	CY	Hungary	HU	Poland	PL	Liechtenstein	LI
Czech Republic	CZ	Ireland	IE	Portugal	PT	Norway	NO
Denmark	DK	Italy	IT	Slovakia	SK	Switzerland	CH
Estonia	EE	Latvia	LV	Slovenia	SI	Bulgaria	BG
Finland	FI	Lithuania	LT	Spain	ES	Romania	RO
France	FR	Luxembourg	LU	Sweden	SE	Turkey	TR

1.5 FCC Rules

The STa 6000 complies with part 15 of the FCC Rules.

STATEMENT FCC 15.19

Operation is subject to the following two conditions:

- (1) The STa 6000 may not cause harmful interference.
- (2) The STa 6000 **MUST** accept any interference received, including interference that may cause undesired operation.

STATEMENT FCC 15.21

Changes or modifications made to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The FCC ID of the STa 6000 is as follows:

- **FCC ID: 2AEWDSTA6K**

This device contains:

- *FCC ID: PVH0941*
- *FCC ID: PVH0946*

2 SYSTEM OVERVIEW



The STa 6000 is a modular instrument designed for optimal operations in:

- **Tool testing:** The STa 6000 (QC and AA versions) offers a set of tests for evaluating click-wrenches, slip-wrenches, power tools and pulse tools, measuring the torque/angle values and producing results with statistical parameters. This makes possible to keep the quality of the tightening operations on a production line under control. The test results can be retrieved by the STa 6000 management software (ToolsTalk BLM), or exported into Microsoft Excel.
- **Quality tests:** The STa 6000 (QC and AA versions) offers a set of strategies to perform residual torque tests and joint analysis. With this instrument it is possible to keep under control the quality of the tightenings on the assembly line and to perform analysis of the joints characteristics.
- **Tightening operations:** Not available in this software version.



NOTE: The STa 6000 can also work in conjunction with Torque Supervisor, which sends the route of tests and retrieve the results.

2.1 STa 6000 Versions

This chapter provides an overview of the STa 6000 versions. The STa 6000 version is defined by the Rapid Backup Unit (RBU) installed:

	Basic (no RBU)	QC	AA RBU
HARDWARE CAPABILITY			
Number of Channel	1	1	1
Torque	Yes	Yes	Yes
Angle (Encoder or Gyroscope)	Yes	Yes	Yes
MRTT-C connection for joint checks	Yes	Yes	Yes
Size in mm	110x200x45	110x200x45	110x200x45
Weight [grams]	≤ 500	≤ 500	≤ 500
Color Display	Yes	Yes	Yes
Keyboard	Yes	Yes	Yes
Result Storage	50000	50000	50000
Traces Storage	50000	50000	50000
RBU – Rapid Backup Unit	No	Yes	Yes
Direct power Supply (slow charger 6H)	Yes	Yes	Yes
RJ45 (Ethernet)	Yes	Yes	Yes
USB	Yes	Yes	Yes
Non Atlas Copco analog transducer connection	Yes	Yes	Yes
SOFTWARE CAPABILITY - ONBOARD			
Languages	Yes	Yes	Yes
Multi-units	Yes	Yes	Yes
Pset	1 (not saved)	1000	1000
Batch Count	Yes	Yes	Yes
CW/CCW	Yes	Yes	Yes
Database - Tool	No	1000	1000
Quick Programming	Yes	Yes	Yes
Power Focus and PowerMACS calibration	No	Yes	Yes
Traces on display	No	Yes	Yes
Advanced analysis graphs on display	No	No	Yes
Custom measurement screen	No	Yes	Yes
Wi-Fi print	Yes (with IRC-W module)	Yes (with IRC-W module)	Yes (with IRC-W module)
Ethernet print	Yes	Yes	Yes
SOFTWARE FUNCTIONALTIES - ONBOARD			
Tool Check			
Wrench testing	Yes	Yes	Yes
Power tool testing	Yes	Yes	Yes
Pulse Tool testing	Yes	Yes	Yes
Min, Max, Med, Sigma statistics	Yes	Yes	Yes
Cm/Cmk	No	Yes	Yes

SPC	No	Yes	Yes
Joint Check			
Yield Point	Yes	Yes	Yes
Residual Torque/Time	Yes	Yes	Yes
Residual Torque/Angle	Yes	Yes	Yes
Residual Torque/Peak	Yes	Yes	Yes
Loose and Tight	Yes	Yes	Yes
SOFTWARE CAPABILITY - CONNECTIVITY			
ToolsTalk BLM to view/export results and traces via Wi-Fi (with IRC-W), USB/RJ45	Yes	Yes	Yes
ToolsTalk BLM to program test strategies via Wi-Fi (with IRC-W), USB/RJ45	No	Yes	Yes
Torque Supervisor via Wi-Fi (with IRC-W), USB/RJ45	No	Yes	Yes
API via Wi-Fi (with IRC-W), USB/RJ45	No	Yes (with API RBU)	Yes (with API RBU)

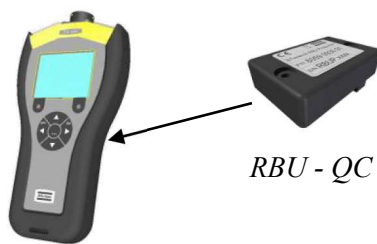
2.1.1 Basic



The STa 6000 without a RBU installed works as STa Basic. It provides the Quick Programming mode with tools testing menu (Click-wrench, Power Tool, Peak Wrench and Pulse Tool). One Pset and one Tool can be defined directly on the STa 6000 menu (not by ToolsTalk BLM), but they are not saved in the STa 6000 Basic memory.

The results are stored in the STa 6000 memory and can be retrieved (and possibly printed) by the management software (ToolsTalk BLM), but they cannot be transferred to any remote devices; they can be exported to Excel.

2.1.2 QC (Quality Control)



RBU - QC

The STa 6000 QC provides tool test and quality test functions. This includes tests of tightening tools (Click-wrench, Power Tool, Peak Wrench and Pulse Tool), and tests of joints to evaluate the residual torque. Free test function is also available.

It provides Pset definition, transducers database, real time statistics on the display. This instrument provides also Power Focus / PowerMACS calibration function.

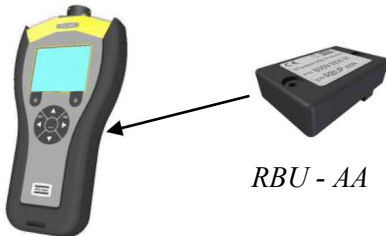
The results are stored in the STa 6000 memory and can be retrieved (and possibly printed) by the management software (ToolsTalk BLM), or exported to Excel.

This version can also work in conjunction with Torque Supervisor.



NOTE: Refer to the paragraph “Working with Torque Supervisor” for further details.

2.1.3 AA (Advanced Analysis)

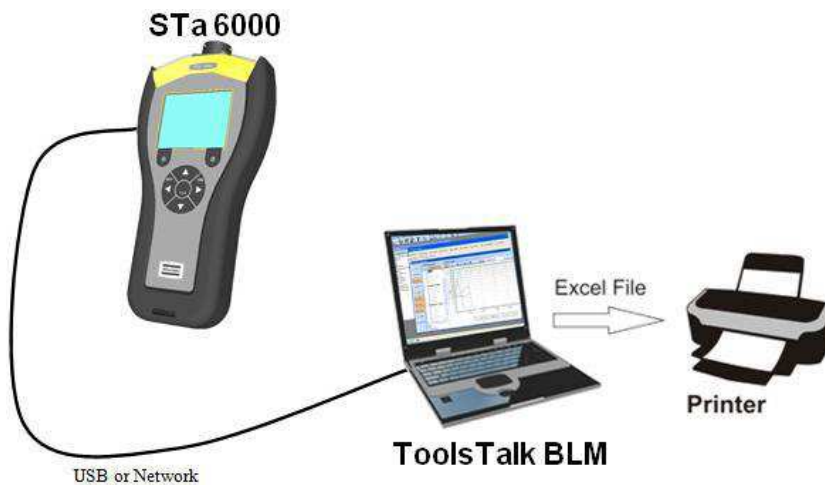


The STa 6000 AA provides the same function of the QC version, plus the Cm-Cmk histogram and SPC X/R Charts available on the STa 6000 display.

2.2 STa 6000 Typical Applications Scenario

This chapter provides a quick overview of the main applications of the STa 6000.

2.2.1 Stand-alone STa 6000



The STa 6000 can work as a stand-alone instrument, programmed by its management software (ToolsTalk BLM), which can display the traces, retrieve tightening results, to be exported in a Microsoft Excel file, and possibly printed, if required.



NOTE: Refer to the paragraph “*Working with ToolsTalk BLM*” for further details.

2.2.2 STa 6000 connected to Torque Supervisor



The STa 6000 QC and AA versions can work in conjunction with Torque Supervisor. The communication is performed through USB, network cable or IRC-W.

In this application Torque Supervisor generates and sends to the STa 6000 the list of tests to be done (the “route”). After having executed the tests, Torque Supervisor downloads the results and stores them in the tool statistics.







The ToolsTalk BLM is necessary only for settings of the STa 6000; for basic operation of the STa 6000 with Torque Supervisor, it can be not necessary. In the typical application the Torque Supervisor is installed in one or more dedicated PC, and ToolsTalk BLM on another one. However, they can run on the same PC.



NOTE: Refer to the paragraph “*Working with Torque Supervisor*” for further details.

2.3 Presentation

The STa 6000 is modular. The following items are delivered with the STa 6000 package:

	<p style="text-align: center;">STa 6000 Controller (STa 6000 → 8059 0956 60) (STa 6000 PLUS → 8059 0956 61)</p> <p style="text-align: center;">The main module of the STa 6000, which contains all the hardware and firmware. Controller is provided without battery.</p>
	<p style="text-align: center;">External Power Supply (P/N 4612 0300 21) <i>(delivered with the STa 6000 package)</i></p> <p style="text-align: center;">Power supply. If battery and battery charger are used, the external power supply is not strictly necessary.</p>
	<p style="text-align: center;">Battery cover <i>(delivered with the STa 6000 package)</i></p> <p style="text-align: center;">This battery cover must be installed in the STa 6000 when the battery is not used (STa 6000 powered by the external power supply).</p>
	<div style="display: flex; align-items: center;">  <div> <p style="text-align: center;">Nylon Strap <i>(delivered with the STa 6000 package)</i></p> <p style="text-align: center;">The nylon strap can be attached to the STa 6000 for easy portability. It is allowed to tie the Nylon Strap on the own belt.</p> </div> </div> <div style="border: 1px solid black; background-color: yellow; padding: 5px; margin-top: 10px; width: fit-content;"> <p style="text-align: center;">Attach here the nylon strap</p> </div>
	<p style="text-align: center;">Torx wrench <i>(delivered with the STa 6000 package)</i></p> <p style="text-align: center;">This wrench is used to remove the STa 6000 back cover to install the RBU or IRC-W module or Barcode module.</p>

The following are additional modules for the STa 6000:

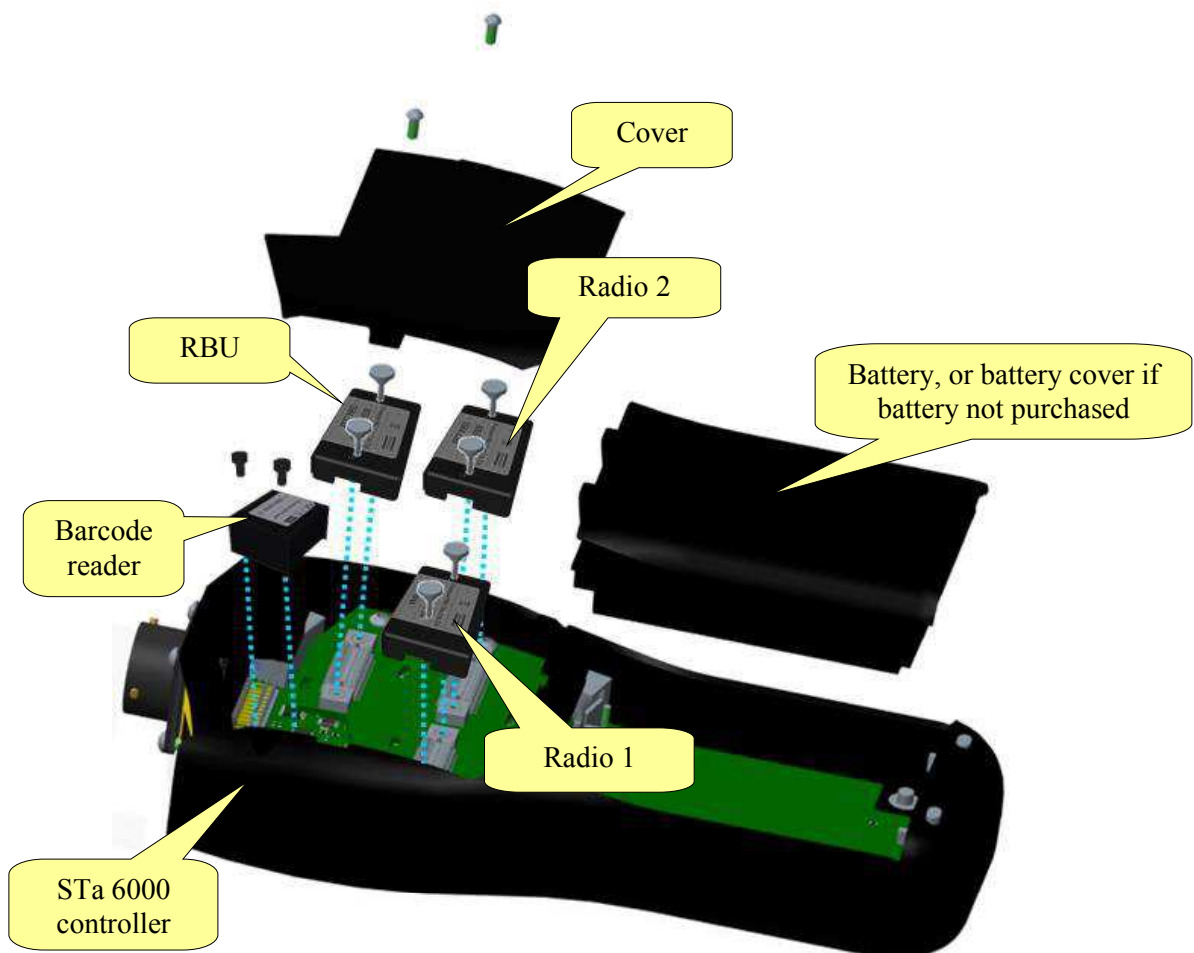
	<p>STa 6000 RBU (Rapid Backup Unit) (RBU QC → P/N 8059 0956 62) (RBU AA → P/N 8059 0956 63)</p> <p>Module to be installed in the STa 6000. It defines the STa 6000 type and stores test programs, tools and transducers archives, STa 6000 configuration.</p> <p>If not used, the STa 6000 works as <i>STa 6000 Basic</i>.</p>
	<p>ToolsTalk BLM (P/N 8059 0981 10)</p> <p>The STa 6000 management software. It features STa 6000 programming, STa 6000 configuration, retrieving results and traces from the STa 6000.</p>
	<p>STa 6000 Battery (P/N 8059 0955 61)</p> <p>Power supply.</p> <p>NOTE: Battery is optional. The STa 6000 can be powered also by the external power supply.</p>
	<p>Battery charger adapter (P/N 8059 0955 75)</p> <p>The STa 6000 battery can be recharged when installed in the unit by the external power supply, or on the specific battery charger.</p> <p>The battery charger is the same of the STwrench; it requires the adapter to recharge the STa 6000 battery.</p>
	<p>QAT Barcode module (P/N 8059 0920 12)</p> <p>Module for scanning barcode labels on assembly components for easy traceability.</p> <p>It cannot be installed on the STa 6000 Basic.</p>

	<p style="text-align: center;">QAT IRC-B radio module (P/N 8059 0920 10)</p> <p>Radio module for interfacing the STa 6000 with printer, Torque Supervisor and ToolsTalk BLM. It is possible to install one or two radio modules in the STa 6000.</p>
	<p style="text-align: center;">QAT IRC-W dual band radio module (P/N 8059 0920 15)</p> <p>Radio module for interfacing the STa 6000 with printer, Torque Supervisor and ToolsTalk BLM. It is possible to install one or two radio modules in the STa 6000.</p>
	<p style="text-align: center;">SRTT-L main plate (P/N 8059 0955 85)</p> <p>Torque transducer to be installed on the STa 6000 to create a single unit with the transducer and the measurement system. Mechanical joint simulators are also available to test power an impulse tools on the SRTT-L.</p>
	<p style="text-align: center;">USB / Serial Adapter (P/N 8059 0956 74)</p> <p>This box is used to connect the STa 6000 to the Power Focus and PowerMACS for calibration.</p>
	<p style="text-align: center;">STa 6000 Stand (P/N 8059 0956 73)</p> <p>This stand MUST be installed on the back of the STa 6000. It is not allowed to insert the <i>STa 6000 Stand</i> into the own belt. It may get an easy reading once it is leaned on a desk.</p> 

2.3.1 STa 6000 assembly

The STa 6000 is delivered in separated packages for each module; in order to start working with the instrument, put all the pieces together:

1. Remove the cover from the controller.
2. If purchased, insert the RBU and IRC-W / IRC-B radio module(s) inside the controller. Tighten the screws (to the torque applied by the fingers. Do not use pliers).
3. If purchased, insert the QAT Barcode Reader module and tighten the two mounting screws.
4. Mount the cover (tighten the two screws).
5. Insert battery, or connect the external power supply.



The STa 6000 is ready for the use:



NOTE: Once the STa 6000 is assembled with the IRC-W / IRC-B radio module(s), it is not recommended to work by placing it either close to the head or close to the reproductive system.

The next paragraphs describe all the STa 6000 modules and user interfaces in detail.



NOTE: To start working with the STa 6000 immediately, refer to the paragraph “*Getting Started with STa6000*”.

2.3.2 RBU



RBU (Rapid Backup Unit) is a memory chip which defines which functions are activated and provides backup for the test programs. It stores also the specific settings of the own STa 6000 (refer to the paragraph “*STa6000 Factory Settings*” for the default configuration); by installing the RBU in another STa 6000 it is possible to get an exact copy of the original one (except for test results, stored in the STa 6000 memory and not in the RBU).

The following types of RBU are available:

- **RBU QC**: Enables the strategies to evaluate the residual torque and to execute the joint analysis.
- **RBU AA**: Same of RBU QC plus histogram and X/R charts on the STa 6000 display.

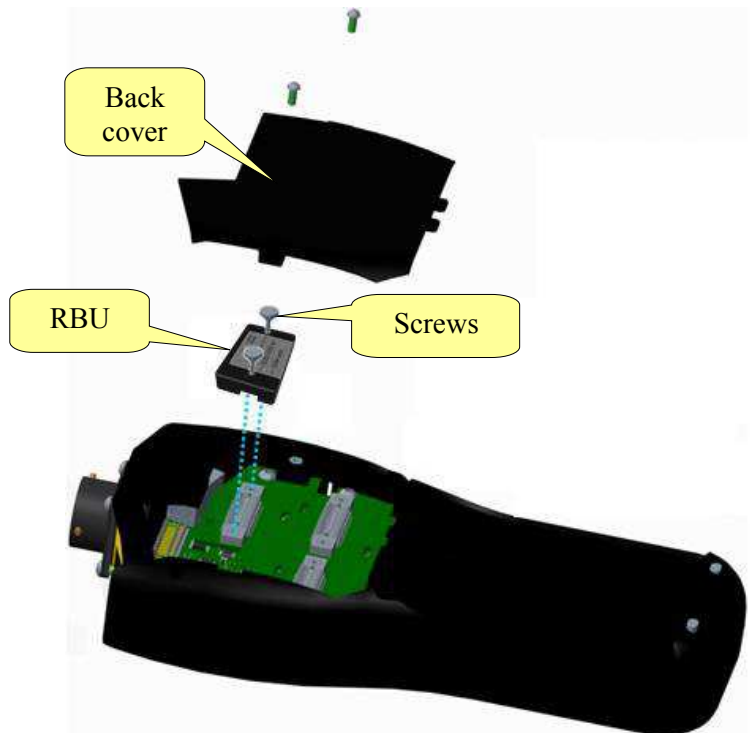
If the RBU is not installed, the STa 6000 works as STa 6000 Basic.



NOTE: RBUs of the STanalyser can be converted into RBU for STa 6000; in that case, once installed on the STa 6000, they cannot be used any longer in the STanalyser.

To insert the RBU in the STa 6000, turn off the STa 6000, remove the back cover, insert the RBU module, and tighten the two nuts by hands (do not use pliers).

The first time of RBU usage, the following message is shown:



Device	The data are loaded from the STa 6000 memory; all the data present in the RBU are overwritten.
RBU	The data (STa 6000 settings and all the test programs) are loaded from the RBU; all the data stored in the STa 6000 memory are overwritten.

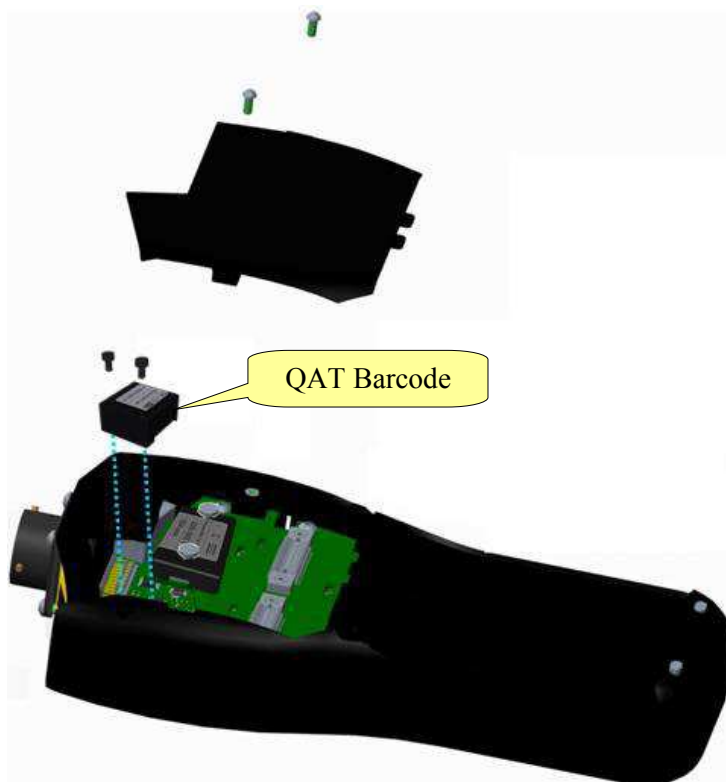
2.3.3 QAT Barcode reader



The QAT Barcode reader is a module to be installed into the STa 6000 to permit scanning of barcodes.

An identifier, or barcode string, may be used to select the tightening program to be executed, identify motor vehicles (VIN) and other work pieces, variants and operators. The tightening result can then be saved together with this information.

To install the barcode reader module, turn off the STa 6000, remove the cover (by removing the two screws) and insert the module (tighten the two screws):



NOTE: Refer to the paragraph “*Identifier*” for further details about the use of the barcode reader.

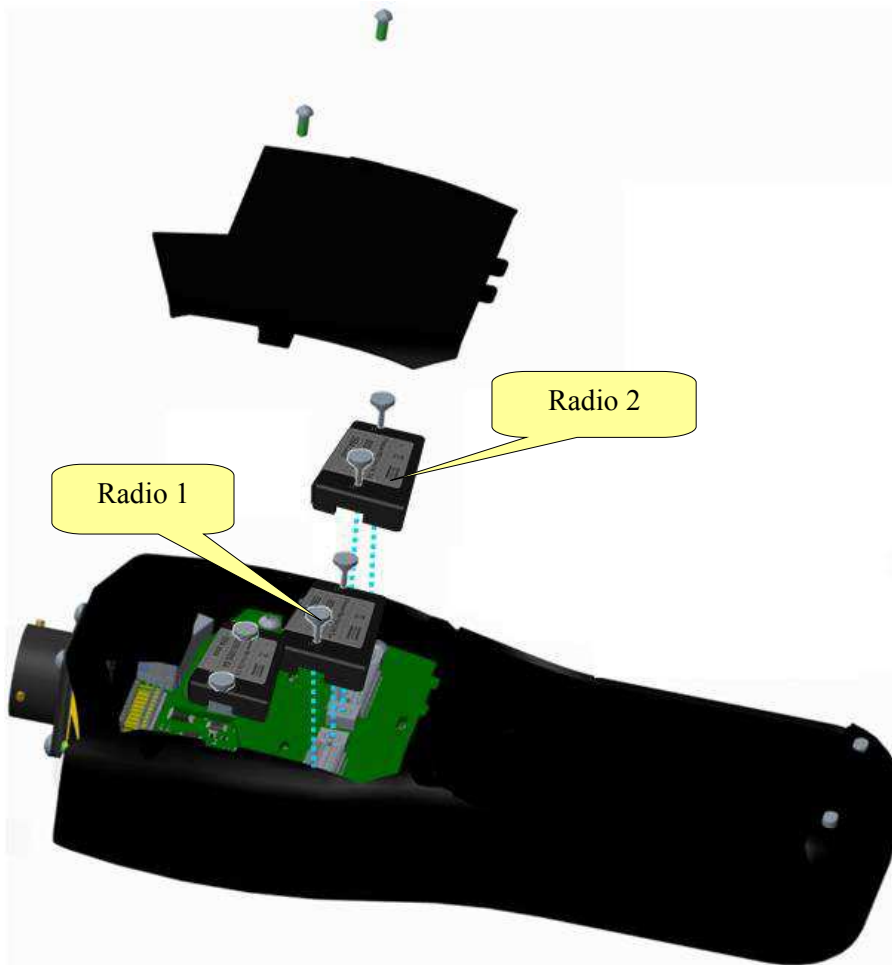
2.3.4 IRC-W / IRC-B radio modules



The IRC-W Dual Band radio module / IRC-B radio module is used to interface the STa 6000 with the Printer, Torque Supervisor and ToolsTalk BLM.

It is possible to install one or two modules.

To install the IRC-W / IRC-B module, turn off the STa 6000, remove the cover and insert the IRC-W / IRC-B module (tighten the two screws with the fingers).



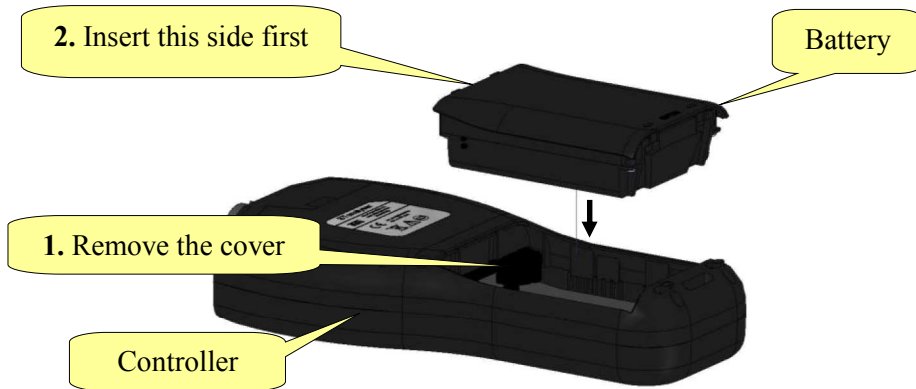
After having installed the module(s) the radio module parameters must be set through ToolsTalk BLM.



NOTE: Talking about Torque Supervisor, refer to the paragraph “*Working with Torque Supervisor*” for further details.

2.3.5 Battery

STa 6000 can operate powered by its battery pack or by the external power supply.



When the battery is not used, install the original cover supplied with the STa 6000. To install the battery, turn off the STa 6000, remove the cover and then install the battery. To replace a battery, switch off the STa 6000, remove the battery and install the new one.



NOTE: Refer to the paragraph “*Maintenance*” for important notes about how to keep battery in a good working order.

2.3.5.1 Battery Charger

The battery can be charged either when installed in the STa 6000 (by the external power supply) or with the specific battery charger. The battery charger is the same used for the STwrench. The specific adapter to connect the STa 6000 battery is required.



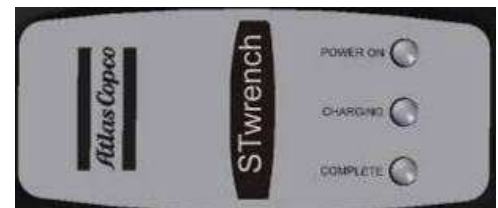


WARNING: The Battery Charger must be installed close to the AC Power (220 V) in order to be easily managed by the user in case of malfunction.
Simply connect the input AC power cable to the battery charger and plug in the battery in the adapter.



The three LEDs on the battery charger indicate the battery charge status:

LED Status	POWER ON	CHARGING	COMPLETE
Power on	●		
Charging in progress	●	●	
Charging complete	●		●
Over temperature	●	Blinking	
Error	●	●	●



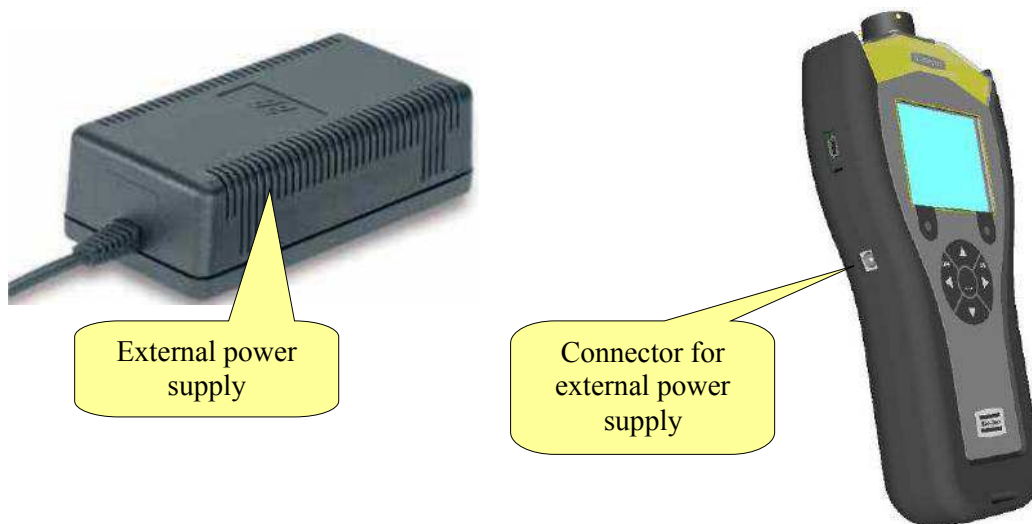
In case of *Over temperature*, disconnect the battery from the battery charger, disconnect charger from AC power, wait few minutes, reconnect the battery charger to AC power and the battery to the charger, and check if the problem gets solved.

In case of *Error*, disconnect and then reconnect the battery to the battery charger and check if the problem gets solved.

2.3.6 External power supply

The external power supply provides power to the instrument, and it also charges the battery when the battery is installed in the STa 6000. The battery is charged even if the STa 6000 is switched off. The battery icon on the STa 6000 shows the recharging process only when the STa 6000 is switched on.

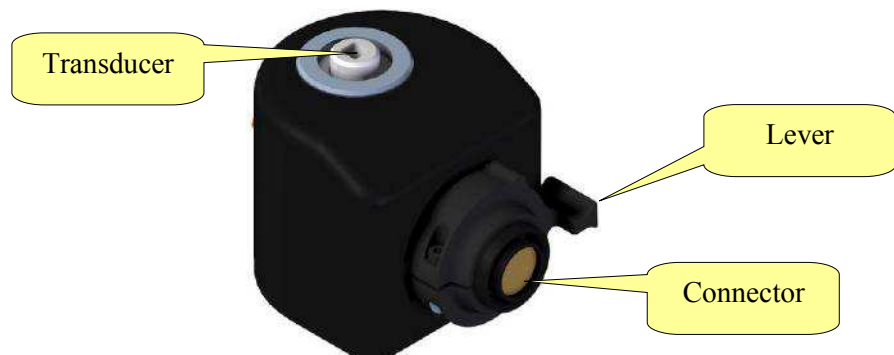
Connect the external power supply to AC power 100 ÷ 230 VAC 50/60 Hz, and plug the connector into the STa 6000.



WARNING: Use only the power supply ordered from Atlas Copco. Warranty does not cover damages to the STa 6000 caused by the use of a different external power supply.

2.3.7 SRTT-L

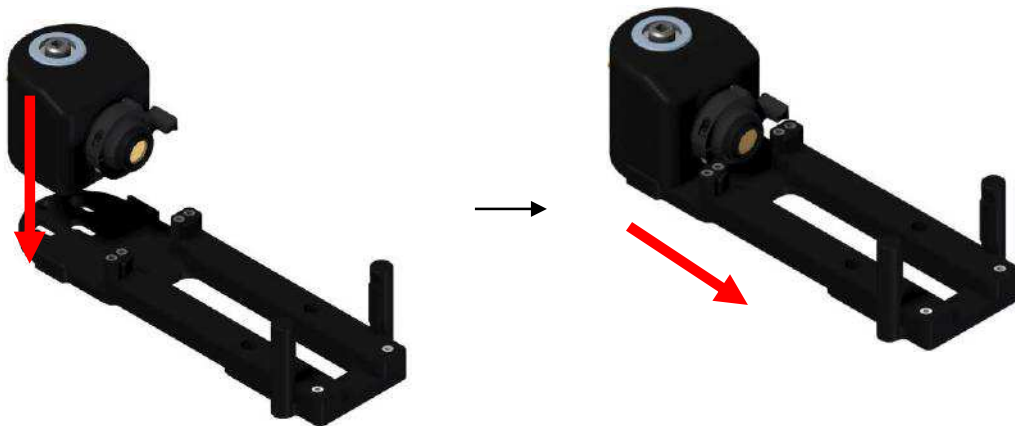
The SRTT-L is a torque transducer to be installed on the STa 6000 to create a single unit with the transducer and the measurement system.



The following models are available:

Code	Description	Capacity
8059 0955 86	SRTT-L 1 Nm	1 Nm
8059 0955 87	SRTT-L 4 Nm	4 Nm
8059 0955 88	SRTT-L 12 Nm	12 Nm
8059 0955 89	SRTT-L 30 Nm	30 Nm
8059 0955 85	SRTT-L main plate	-

To use the SRTT-L, install first the transducer on the main plate:



Then, insert and slide the STa 6000 on the main plate, and finally rotate the SRTT-L lever to connect the SRTT-L to the STa 6000:

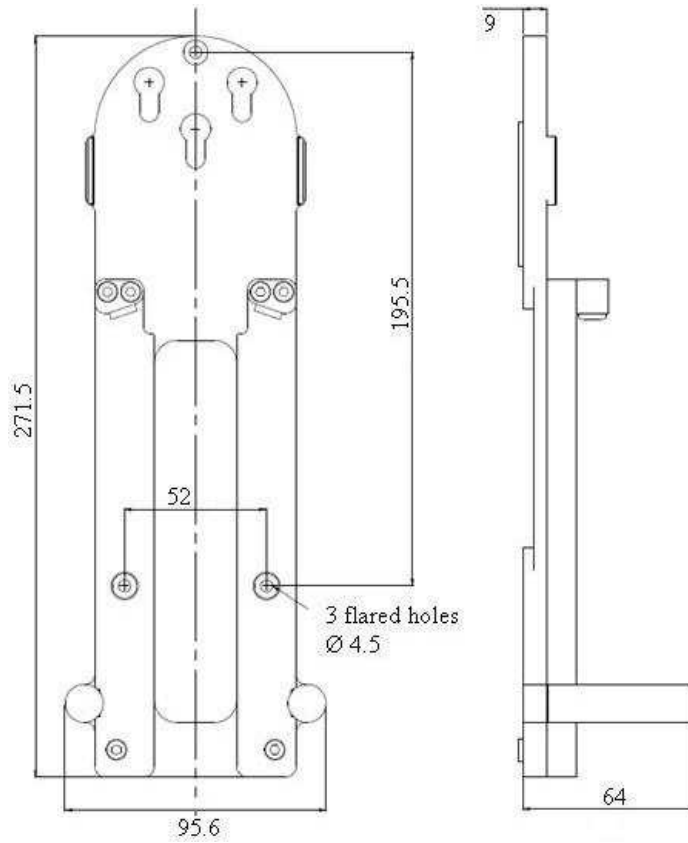


There is no need of any setup. Simply switch on the STa 6000 and the SRTT-L is ready to use.

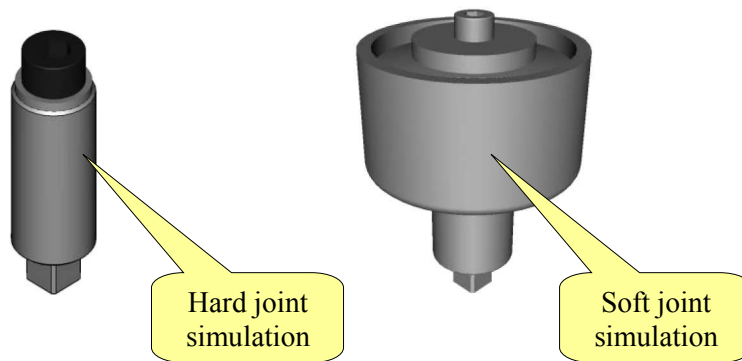


NOTE: The barcode reader feature is not available when the STa6000 is connected with the SRTT-L.

The plate can be attached to a table; refer to the following mechanical drawing for dimensions (dimensions are in millimeters):



A series of mechanical joint simulators are available to test power and impulse tools on the SRTT-L:



The following models are available:

Code	Description	Drive	To be used on
4145098480	Test Joint M4 Soft 1Nm	M4	SRTT-L 1 Nm
4145098483	Test Joint M4 Hard 1Nm	M4	SRTT-L 1 Nm
4145098482	Test Joint M6 Soft 4Nm	M6	SRTT-L 4 Nm
4145098485	Test Joint M6 Hard 4Nm	M6	SRTT-L 4 Nm
4145098580	Test Joint M6 Soft 12Nm	M6	SRTT-L 12 Nm
4145098582	Test Joint M6 Hard 12Nm	M6	SRTT-L 12 Nm
4145098581	Test Joint M8 Soft 12Nm	M8	SRTT-L 12 Nm
4145098583	Test Joint M8 Hard 12Nm	M8	SRTT-L 12 Nm
4145098680	Test Joint M8 Soft 30Nm	M8	SRTT-L 30 Nm
4145098682	Test Joint M8 Hard 30Nm	M8	SRTT-L 30 Nm
4145098681	Test Joint M10 Soft 30Nm	M10	SRTT-L 30 Nm
4145098683	Test Joint M10 Hard 30Nm	M10	SRTT-L 30 Nm