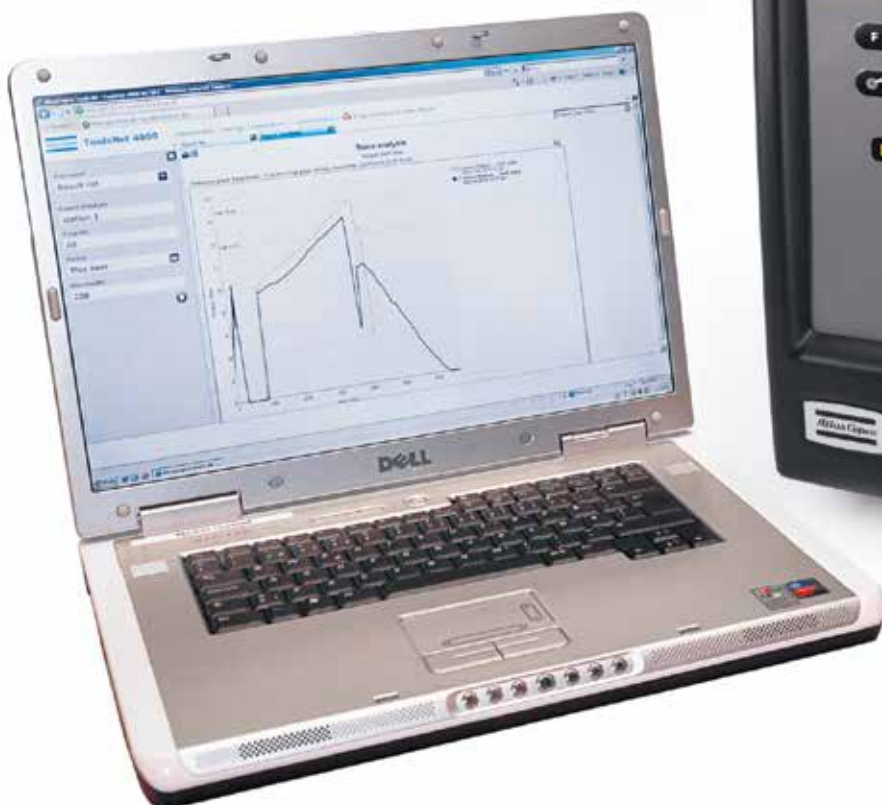


CONTROLLERS AND SOFTWARE

Atlas Copco



Introduction – Controllers and Software

Error-proofing through intuitive control of the assembly process

Atlas Copco advanced controllers and software provide intuitive monitoring and control of tightening operations performed using Atlas Copco electric assembly tools. Assembly process control and quality assurance is made easy by advanced control functions. The system guides the operator through the assembly process, avoiding mistakes that can result in costly quality problems.

POWER FOCUS 4000

The Power Focus range controls tools from the Tensor DS, ST, SR, STR, STB and ETX families. With its built-in functions, it also participates in controlling the station or line segment. The Power Focus and associated software packages provide easy-to-understand information for everyone, from operators to plant managers.

The Power Focus is based on standard hardware and software components which, when combined, will fulfill all demands, from the most basic stand-alone installation to full integration into the factory network. The modules fit together using the “plug-and-play” concept.

Assembly process control and quality assurance is made easy by advanced control functions. On receipt of assembly information, the Power Focus automatically selects the correct tightening sequence and parameters. The operator is guided through the process, avoiding mistakes that can result in costly quality problems.

PROGRAMMING SOFTWARE TOOLS-TALK PF

ToolsTalk PF is the user-friendly tool that enables you to communicate with your Power Focus tool controller. It makes programming and process analysis of a tightening station simple.

POWER FOCUS 600

The Power Focus 600 is compatible with the Tensor ES tools and is the perfect choice for quality critical assembly. It comes in one single hardware version regardless of which tool model or functionality level is used. Its powerful industrial design gives a reliable process that will speed up your tightening operations.

Thanks to the intuitive interface and the fact that it's so easy to use you can set up and run a new system from the box in minutes. External computer software is no longer required since you can browse in using a web HMI. The intuitive interface and color screen provide clear operator feedback.

Smart software management will guarantee highest possible uptime. Upgrade your controller in a few seconds using only a USB stick.

POWER FOCUS 6000

The Power Focus 6000 is compatible with STR, ST, STB, SR and ES and is the perfect choice for safety critical assembly. It comes in one single hardware version regardless of which tool model or functionality level is used. Its powerful industrial design gives a reliable process that will speed up your tightening operations.

The Power Focus 6000 is easy to use to use due to its 7 inch touch screen and

intuitive software. The web HMI enables you to configure and monitor the controller from any device with a web browser. Smart software management will guarantee highest possible uptime. Upgrade your controller in a few seconds using only a USB stick.

TENSOR DS/DL DRIVES

Tensor DS nutrunners and DL screwdrivers have been developed to give you the benefits of controlled tightening and advanced electric systems throughout your assembly operations.

Their simplicity, reliability, outstanding flexibility and accuracy, can significantly reduce your assembly costs and improve overall productivity.

A suitable choice for quality critical applications, the Tensor DS and DL series have a proven track record in many industries, including aerospace, automotive, construction, white goods and electronics.

POWER FOCUS 600

The Power Focus 600 controller takes quality critical assembly to the next level. Setting up and using an electric system has never been easier. And, by switching from pneumatic tools, you can reduce your energy consumption by up to 85%. Unbelievable but true – we call it easy transformation!

EASY

Set up and run a new system from the box in minutes. Computer software is no longer required. Intuitive interfaces enable real-time analysis and fast reaction if needed.

EFFICIENT

Same controller hardware regardless of tool model. Powerful industrial design gives a reliable process to maximize uptime and speed up your tightening operations.

ERGONOMIC

Both hardware and software is intuitive, giving clear operator feedback on the screen.



Power Focus 600

| Model | Ordering No. |
|-----------------------------------|--------------|
| Drive unit | |
| Power Focus 600 with remote start | 8436 3700 01 |
| IAM | |
| IAM Joint Control | 8436 0900 01 |
| IAM Station Control | 8436 0900 05 |

FUNCTIONALITY OVERVIEW

| | IAM Joint Control | IAM Station Control |
|---|----------------------|------------------------|
| Functionality | | |
| Number of Psets | 1 | 16 |
| Batch sequence | 1 | 16 |
| Lock on reject | x | x |
| Strategies and options | | |
| Torque control | x | x |
| Torque control and angle monitoring | x | x |
| Configurable limits for torque and angle | x | x |
| Rotate spindle forward/reverse | x | x |
| TurboTight | - | x |
| Two Step | x | x |
| Quick Step | x | x |
| Three Step | x | x |
| CW / CCW operation | x | x |
| Complete re-hit detection | x | x |
| Self tap | x | x |
| Process information and service | | |
| Tightening data storage (Torque, Status OK/NOK, NOK reason) | 30 | 1000 |
| Torque-time trace | x | x |
| Event log | 1000 | 1000 |
| Hardware and connectivity | | |
| Web-browser client programming | x | x |
| Read and write programming via remote Ethernet | - | x |
| Tightening data via local USB | x | x |
| Tightening data via remote Ethernet | - | x |
| Controller SW upgrade via local USB | x | x |
| Controller SW upgrade via remote Ethernet | - | x |
| 1D/2D Barcode reader for selection | - | x |
| Remote start | x | x |
| Configurable I/O | x | x |
| Stacklight | x | x |
| Socket selector | x | x |
| Operator panel | x | x |

POWER FOCUS 6000

This all new fastening solution from Atlas Copco takes productivity, ergonomics, quality and environmental impact to entirely new levels. And all this with the most user-friendly experience ever.

Enjoy the benefits of a system providing a unique operator experience, with superior quality control and the most flexible integration. The Power Focus 6000 and Tensor STR is the perfect option for your safety critical assembly processes!

MULTITOOL CONTROLLER

The Power Focus 6000 increases your flexibility in rebalancing assembly lines. Now you are able to connect up to 6 tools to the same controller. Giving you a simpler installation with less cables, hardware components and network drops. Add to that the lower power consumption, less floor space utilization and a much lower environmental footprint, the benefits are obvious.

COMMON CONTROLLER

One platform for handheld and fixtured tools. The Power Focus 6000 reduces your inventory costs and training requirements.

Easy to connect and configure back up tools, using the same programming interface. More compatible solutions will continuously be deployed. And the Power Focus 6000 will be your common controller for all tools and needs.

IAM – INTELLIGENT APPLICATION MODULE

Intelligence in the palm of your hand. Software, tightening data and configuration – carry all important information with you in a future proof portable module. Easy to upgrade and stable with a rapid back-up function. Two software areas allow for smart software management. Allowing a much safer upgrade process, always giving the possibility to switch between two software versions.



Power Focus 6000

| Model | Ordering No. |
|---------------------------------------|--------------|
| Drive unit Power Focus 6000 | 8436 1800 02 |

Controllers - DS/DL, Power Focus 4000 Functionality Overview

| General Functionality Level / RBU Runs Tool Types | DS / DL | | | Power Focus 4000 | | | | |
|---|-----------|------------------|---------------------|------------------|---------------------|---------------------|-------------------|----------|
| | Box DS | Basic DS / DL | Advanced DS / DL | DS DS | Bronze ST/SR/STR | Silver ST/SR/STR | Gold ST/SR/STR | X ETX |
| Tensor controllers | | | | | | | | |
| Compact hardware | x | x | x | x | x | x | x | x |
| LED display | | x | x | x | x | x | x | x |
| 6 button keyboard | | x | x | x | x | x | x | x |
| Graph hardware | | | | | | x | x | x |
| LCD display | | | | | | x | x | x |
| Full keyboard | | | | | | x | x | x |
| Functionality | | | | | | | | |
| Number of tools | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Number of Psets | 1 | 1 | 10 | 64 | 64 | 250 | 250 | 250 |
| Batch count | x | x | x | x | x | x | x | x |
| Open end spanner | x | DS only | DS only | x | x | x | x | x |
| Quick programming | x | x | x | x | x | x | x | x |
| Cross thread / Rehit detection | x | x | x | x | x | x | x | x |
| Tool service indicator | x | x | x | x | x | x | x | x |
| Autoset | x | x | x | x | x | x | x | x |
| Lock on reject | x | x | x | x | x | x | x | x |
| Line control | | | x | x | | x | x | x |
| Transducer torque traceability | | | | | x | x | x | x |
| Tightening status storage (default) | | | | 5 000 | 5 000 | 5 000 | 5 000 | 5 000 |
| Tightening data storage (default) | | | | | 5 000 | 5 000 | 5 000 | 5 000 |
| MultiStages | | | | 8 | | 8 | 8 | 8 |
| Trace storage | | | | | 8 | 8 | 8 | 8 |
| Real time statistics | | | | | x | x | x | x |
| SPC | | | | | x | x | x | x |
| RBU | | | | x | x | x | x | x |
| Bar code reading | | | | x | | x | x | x |
| ID input to select Pset | | | | x | | x | x | x |
| Job function | | | | x | | x | x | x |
| Number of jobs (default) | | | | 32 | | 99 | 99 | 99 |
| ID input to select job | | | | x | | x | x | x |
| Logic Configurator (4000 only) | | | | x | | x | x | x |
| Cell programming | | | | x | | x | x | x |
| Label printer (via Open protocol) | | | | x | | x | x | x |
| Cell Job | | | | | | | x | x |
| Strategies and options | | | | | | | | |
| Two stage/Quick step/Ergoramp | x | x | x | x | x | x | x | x |
| Torque control and angle monitoring | x | x | x | x | x | x | x | x |
| DS control | x | x | x | x | | x | x | x |
| Auto zoom step | x | x | x | x | x | x | x | x |
| CW / CCW operation | x | x | x | x | x | x | x | x |
| Rundown angle monitoring | x | x | x | x | x | x | x | x |
| Self tap / PVT monitoring | x | x | x | x | x | x | x | x |
| Reverse angle | x | x | x | x | x | x | x | x |
| Rotate spindle | x | x | x | x | x | x | x | x |
| Click wrench input | | | | | x | x | x | x |
| Torque and angle control | | | | | x | x | x | x |
| Angle control and torque monitoring | | | | | x | x | x | x |
| Current monitoring | | | | | x | x | x | x |
| Post view torque | | | | | | x | x | x |
| Yield control (PF 4000 and ETX combination only) | | | | | | | x | x |
| StepSync, SynchroTork (PF 4000 only) | | | | | | | x | x |
| Home position | | | | | | | x | x |
| Snug gradient | | | | | | | x | x |
| I/O | | | | | | | | |
| RS232 programming port | x | x | x | x | x | x | x | x |
| USB port (PF 4000 only) | | | | x | x | x | x | x |
| Discrete I/O | x | x | x | x | x | x | x | x |
| Remote start | x | x | x | x | x | x | x | x |
| Socket selector (optional) | | | x | x | x | x | x | x |
| RE Alarm (optional) | | | x | x | x | x | x | x |
| Parallel printer port | | | | x | x | x | x | x |
| I/O Expander (optional) | | | | x | x | x | x | x |
| Expandable I/O (up to 124 in / 124 out) | | | | x | x | x | x | x |
| Operator ID card input | | | | x | | x | x | x |
| Fieldbus card | | | | Optional | | Optional | Optional | Optional |
| RS232 bar code reader port | | | | x | | x | x | x |
| Easily programmed fieldbus protocol | | | | x | | x | x | x |
| Ethernet port for remote prog | | | | x | | x | x | x |
| Ethernet port for data collection | | | | OK-NOK | | x | x | x |
| Protocols | | | | | | | | |
| Open protocol serial | | | | x | x | x | x | x |
| Open protocol Siemens 3964R serial | | | | x | x | x | x | x |
| Open protocol Ethernet | | | | x | | x | x | x |

Controllers

DS/DL Drive

DRIVE FUNCTIONALITY OVERVIEW

Used to control and monitor tools, the DS and DL drives provide a high degree of functionality with minimal setup and configuration. The DS drive runs with the Tensor DS nutrunners and the DL drive is used together with Tensor DL screwdrivers.

TENSOR DS AND DL REDUCE COSTS

The Tensor DS and DL systems reduce costs by offering three major benefits:

ELIMINATION OF ASSEMBLY PROBLEMS

Through its control and monitoring functionality, Tensor DS/DL will bring you closer to zero-fault production. By alerting the operator to the most common errors before they continue down the line, the system ensures high-quality end products, and saves you a fortune in re-working costs.

ONETOOL FOR SEVERAL APPLICATIONS

The Tensor DS/DL can be set with up to 10 different torque settings making it possible to use the same tool for several applications. This reduces operating costs and allows a cleaner design of the work area.

TENSOR DS/DL IMPROVES PRODUCTIVITY

Tensor DS/DL tools shorten the cycle times through high speed and power. The controller calculates and monitors torque through the highly accurate DigiTork algorithm. The tools are equipped with angle encoders monitoring the rundown angle as well as the tightening angle. Combining torque and angle monitoring you will detect if something is wrong with the joint, guaranteeing quality.



DL Drive

DS Drive

| Model | Ordering No. |
|-------------------|--------------|
| DL Drive | |
| D303-DL Basic | 8433 4850 48 |
| D313-DL Advanced | 8433 4850 33 |
| DS Drive | |
| D312-DS4 Advanced | 8433 0820 33 |
| D312-DS7 Advanced | 8433 0822 33 |
| D312-DS9 Advanced | 8433 0824 33 |

Controllers

Power Focus 4000 series

ADVANCED PROCESS CONTROL AND MONITORING FUNCTIONS

Power Focus is a modular range of controllers, with full flexibility, designed for applications ranging from single spindle hand-held operations to fixtured multiple nutrunning systems. Advanced process control and monitoring functions make it easy to view and collect data using the Internet infrastructure.

- Choose your controller – either Graph or Compact.
- Choose your RBU software key to run a tool.
- Choose from various ways to use the controller, as a stand-alone or in a network.
- Run many different kinds of tool, standard, FS, crowfoot or open tools.
- Realtime statistics analysis.
- Error-proofing solution.
- Advanced tightening control and/or monitoring method.
- Trace view.
- Logic configurator.
- Can handle different level of communication.

The Power Focus 4000 is available in two versions, Compact and Graph. The difference between them is the user interface, where the Graph features the color display and a full keyboard.

COMPACT

This version offers full functionality at a lower cost, but requires a PC with the ToolsTalk PF software for process set-up.

GRAPH

With the Graph hardware, you have full stand-alone programming possibilities. When networked, the Graph can function as a programming terminal for other Power Focus units.

RBU CUTS DOWNTIME

Atlas Copco's patented Rapid Backup Unit (RBU) concept transfers functionality to a non-configured hardware unit, ensuring that hardware can easily be upgraded should functionality requirements change. The RBU also acts as back-up for programming and configuration. If a change of hardware is required, just fit the RBU to the new hardware, switch on the unit and you're ready. All programming and network configurations are transferred in seconds. The RBU cuts downtime to a minimum.



Compact



Graph

POWER FOCUS 4000 FOR TENSOR DS, ST, SR, STR, STB AND ETX

| Model | Ordering No. |
|------------------------------|--------------|
| Power Focus 4000 W 10 | |
| PF 4000-G-HW | 8433 7100 00 |
| PF 4000-C-HW | 8433 7100 05 |
| PF 4000-G-DN- HW | 8433 7140 00 |
| PF 4000-C-DN-HW | 8433 7140 05 |
| PF 4000-G-PB-HW | 8433 7142 00 |
| PF 4000-C-PB-HW | 8433 7142 05 |
| PF 4000-G-CC-HW | 8433 7143 00 |
| PF 4000-C-CC-HW | 8433 7143 05 |
| PF 4000-G-PN-HW | 8433 7148 00 |
| PF 4000-C-PN-HW | 8433 7148 05 |
| PF 4000-G-EIP-HW | 8433 7149 00 |
| PF 4000-C-EIP-HW | 8433 7149 05 |

POWER FOCUS 4002 FOR TENSOR SL

| Model | Ordering No. |
|------------------------------|--------------|
| Power Focus 4002 W 10 | |
| PF 4002-G-HW | 8433 3100 00 |
| PF 4002-C-HW | 8433 3100 05 |
| PF 4002-G-DN-HW | 8433 3140 00 |
| PF 4002-C-DN-HW | 8433 3140 05 |
| PF 4002-G-PB-HW | 8433 3142 00 |
| PF 4002-C-PB-HW | 8433 3142 05 |
| PF 4002-G-PN-HW | 8433 3148 00 |
| PF 4002-C-PN-HW | 8433 3148 05 |
| PF 4002-G-EIP-HW | 8433 3149 00 |
| PF 4002-C-EIP-HW | 8433 3149 05 |

IRC FOCUS FOR STWRENCH AND TENSOR STB

| Model | Ordering No. |
|-----------------------|--------------|
| IRC Focus W 10 | |
| IRC FOCUS-B-G-HW | 8433 6500 00 |
| IRC FOCUS-B-C-HW | 8433 6500 02 |
| IRC FOCUS-B-G-DN-HW | 8433 6500 04 |
| IRC FOCUS-B-C-DN-HW | 8433 6500 06 |
| IRC FOCUS-B-G-PB-HW | 8433 6500 12 |
| IRC FOCUS-B-C-PB-HW | 8433 6500 14 |
| IRC FOCUS-B-G-PN-HW | 8433 6500 24 |
| IRC FOCUS-B-C-PN-HW | 8433 6500 26 |
| IRC FOCUS-B-G-EIP-HW | 8433 6500 28 |
| IRC FOCUS-B-C-EIP-HW | 8433 6500 30 |

CONTROLLER FUNCTIONALITY

| Hardware key | Ordering No. |
|--------------|--------------|
| RBU-Bronze | 8433 0010 10 |
| RBU-Silver | 8433 0015 20 |
| RBU-Gold | 8433 0020 20 |
| RBU-DS | 8433 0005 10 |
| RBU-X | 8433 0080 20 |



RBU

Controllers

Power Focus 4000 series

SPINDLE SYNCHRONIZATION

All Atlas Copco tightening spindles are easily fixtured using our standard range of Express mechanics. The StepSync and SynchroTork tightening strategies give various levels of spindle synchronization during clamp force build-up. Communication between the controllers in the cell or group takes place via the I/O bus. Depending on user-interface preferences and budget, the SyncMaster may be a Compact or Graph hardware unit.

MULTISTAGE FUNCTIONALITY REDUCES RELAXATION

The inherent "MultiStage" functionality permits the combination of up to eight different parameter sets in a linear sequence. The entire process is activated with just one press of the tool trigger. For joint conditioning, fasteners can be run down to a pre-torque value, backed off by a configurable number of degrees and then re-tightened to the desired final torque. This advanced functionality is ideal for reducing relaxation in a joint.

CELL NETWORKING GIVES PROCESS SECURITY

The Cell concept allows for Ethernet networking without a PC, and offers overall station process control at a lower cost.

INTEGRATED WAYS TO COMMUNICATE

CONTROLLER LEVEL

Realtime communication over I/O bus independent of the factory net.

FIELD BUS LEVEL

The common industry field buses are supported, for example Profibus, Ethernet IP and FL-Net.

CELL LEVEL

The cell is a key concept in the system design. It is a cluster of max. 20 controllers networked together via built-in Ethernet TCP/IP. No need for use of a PC.

FACTORY LEVEL

Power Focus can be integrated with the factory Ethernet network which enables easy access and reporting anywhere in the plant.

INTERNET LEVEL

Worldwide communication is a matter of giving access through a factory network gateway to Power Focus.



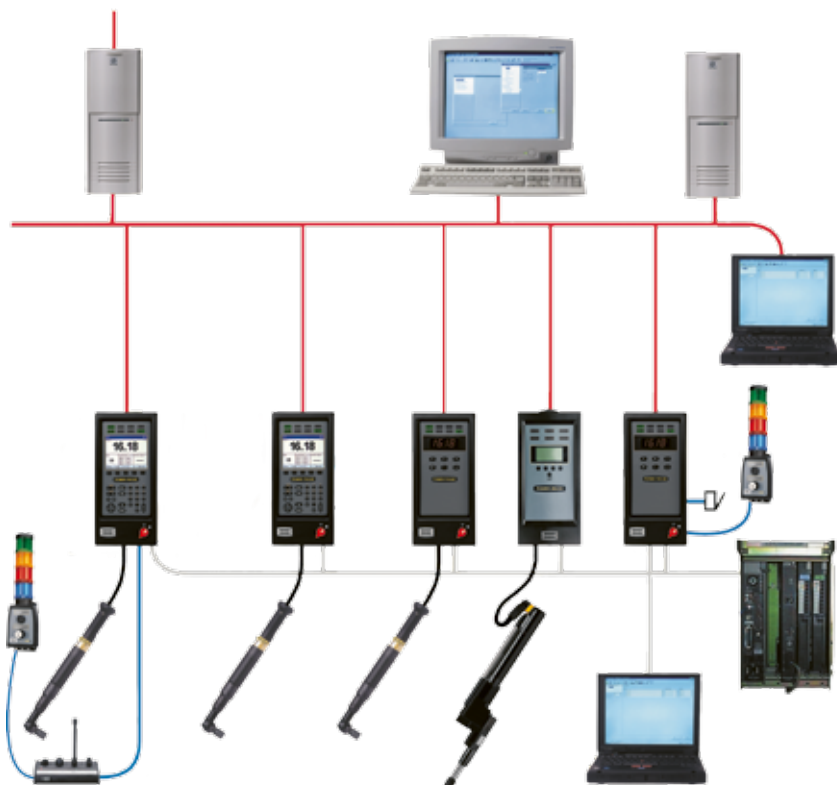
Tensor spindles are easily fixtured using our standard range of Express mechanics. The control strategies StepSync and SynchroTork synchronize Tensor spindles to provide consistent clamp forces over the entire component mating face.

A Cell consists of up to 20 units, where the Master controls the process of all Members in the tightening station, and communicates process data as a single interface point.

ADVANCED STATISTICS FOR BETTER QUALITY CONTROL

Data is continuously collected and analyzed, and can be presented as statistics on, e.g., the Graph color display. Diag-

nostics and statistical alarms such as SPC monitor charts, and capability (Cpk) alarms highlight changes and trends in the assembly process. Effective information and SPC are good motivators, and encourage operators to adopt a proactive approach to monitoring the quality of the assembly process.



Discrete I/O, I/O bus, Fieldbus, Compact, Graph, PC, access router, host database.

TOOLSTALK PF

ToolsTalk PF provides tightening parameter set-up, fieldbus and Logic Configurator set-up, plus customized reporting and presentation of statistics. With a simple click, results can be exported into other commercial file formats.

ToolsTalk communicates with the PowerFocus via Ethernet, USB or serial RS232. If you are networking from your office desk, ToolsTalk PF allows for quickest access to the different control units connected.



TOOLSTALK POWER FOCUS

| Model | Ordering No. |
|--|--------------|
| ToolsTalk W14 | |
| 1-user license | 8092 1191 01 |
| 5-user license | 8092 1191 05 |
| 10-user license | 8092 1191 10 |
| Plant license | 8092 1191 19 |
| ToolsTalk W10 | |
| 1-user license | 8092 1190 01 |
| 5-user license | 8092 1190 05 |
| 10-user license | 8092 1190 10 |
| Plant license | 8092 1190 99 |
| ToolsTalk upgrade to W14 | |
| 1-user license | 8092 1191 11 |
| 5-user license | 8092 1191 15 |
| 10-user license | 8092 1191 20 |
| Plant license | 8092 1191 29 |
| ToolsTalk PF W05 upgrade to W10 | |
| 1-user license | 8092 1190 51 |
| 5-user license | 8092 1190 55 |
| 10-user license | 8092 1190 60 |
| Plant license | 8092 1190 69 |
| ToolsTalk PF W07 upgrade to W10 | |
| 1-user license | 8092 1190 31 |
| 5-user license | 8092 1190 35 |
| 10-user license | 8092 1190 40 |
| Plant license | 8092 1190 49 |

| Model | Ordering No. |
|--|--------------|
| ToolsTalk DS/DL | |
| Swedish | 8092 1138 60 |
| English | 8092 1138 62 |
| German | 8092 1138 64 |
| French | 8092 1138 66 |
| Spanish | 8092 1138 68 |
| Italian | 8092 1138 70 |
| Power Focus controller software | |
| PF World 10 sticker, (12 package) | 4222 0820 25 |