

Nutrunner Control SMXP
Single-Channel / Multi-Channel

H 1.6.5

■ **General Information**

High-End Nutrunner Control

The SMXP is our high-end nutrunner control that can take on other tasks in addition to the nutrunning process. For this purpose, the SMXP uses an efficient, industrial PC, including an operator panel with color monitor.

Programming Complex Nutrunning Sequences

The SMXP offers, as opposed to traditional nutrunner controls, the possibility of programming complex nutrunning sequences. All standard nutrunning processes that are based on torque and angle-based are available as program modules. These basic modules, as well as additional commands for process control, can be combined, with the aid of a user-friendly, parameter-driven interface, to form complex nutrunning sequences. Program branches can be written that are executed as a result of quality information, that, for example, allow loosening operations with or without repeated nutrunning.

Nutrunning Case Analyses

A user-friendly graphic interface is available for conducting nutrunning case analyses. Up to 999 nutrunning curves can be drawn and stored for evaluation at a later time. Graph activation occurs by date and time, as well as by inputting the number of desired nutrunning curves. The resulting nutrunning curve can be panned and zoomed in, as needed. For further analysis, it is possible to overlay up to 99 nutrunning curves, where the intersection of each curve can be positioned on the threshold torque.

Automatic Tool ID

Handheld nutrunners from AMT are equipped with a data storage feature, in which all tool-related parameters can be stored. When a tool is connected to the SMXP, these parameters are automatically retrieved and can be compared with nominal data stored in the control. If the data do not match, then the tool will not be accepted by the control and a fault message will be generated. Acceptance of new data and start of operation can only occur in this case if the data is confirmed by manual intervention.

Integrated work plan management for multiple nutrunner channels (nutrunner controls)

For multiple fastening operations with different tools at a single work station, the SMXP offers the ability to define up to 31 different fastening programs per tool in a work plan. These can then be executed in free-style or guided operation. The SMXP counts and monitors whether all fastening operations have been completed and creates a total quality evaluation on the end of the process. Work plans are either stored locally or transferred from a customer-provided host computer.



SMXP
Single-channel



SMXP twin
Multi-channel



SMXP Multi-channel
1-10 channel

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■ General Information

Nutrunner Data Management

The SMXP stores nutrunner data on the local hard drive to monitor the quality of the nutrunning process. Integrated statistical functions allow evaluation of the stored torque and angle values with specification of the actual cm- and cmk-values. If desired, the data can be stored for up to 12 months on the hard drive. The data can also be exported into an Excel spreadsheet file.

Access Restriction by User Groups

A key factor in securing the nutrunning process is the protection of the nutrunner control from unauthorized access. Frequently, only a limited number of employees are allowed to modify the nutrunning parameters. The SMXP is capable of managing an access hierarchy with up to 5 user groups. Authorization is password-protected.

Enhanced Process Control

The SMXP is often used for quality-critical nutrunning applications, where the fastening process is accompanied by additional process control measures. One example for this would be the recognition of nutrunning locations by ultrasonic triangulation.

It is possible with this process to have an automatic correlation between the tightening parameters and the actual values for each fastener. The software required for this is simply installed on the integrated PC.

Ask us about more process control possibilities!

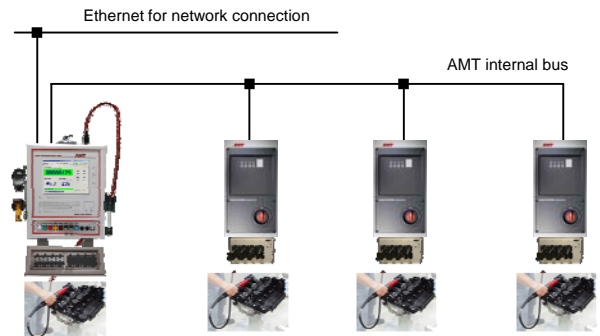
Multi-Channel Configuration

The capabilities of the SMXP allow the configuration of multi-channel controls in a master/slave environment. Up to 9 additional nutrunner controls can be connected to an SMXP, which serves as the master control.

The following configurations are possible:

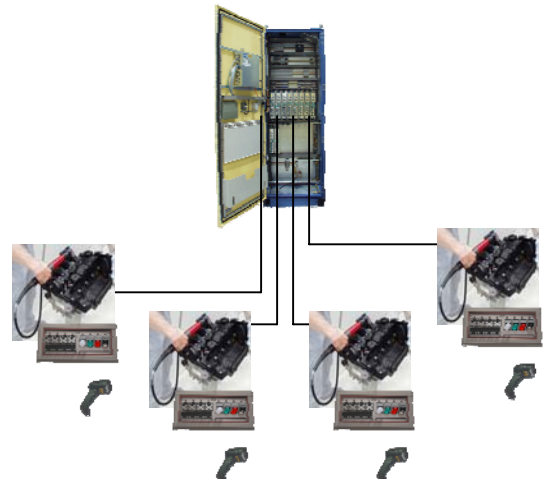
Decentralized Configuration

The SMX10 controls required for this, consisting of a housing with integrated nutrunner module, are connected to the SMXP master via data bus and installed directly at each workstation.



Centralized Configuration

Master PC and graphic display unit, as well as up to 10 nutrunner modules, are installed in a control cabinet. As required, the control cabinet can then be either positioned near the workstation area or on a control cabinet platform.



Nutrunner Control SMXP
Single-Channel

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■ **Special Features – Technical Data**

General

- Pentium processor
- Operating system: Windows XP Professional
- 8 GB hard drive and 3.5"/1.44 MB floppy disk drives
- 10/100 Mbit Ethernet interface, RJ45 network connector (e.g. for programming, nutrunner data transfer, etc.)
- Serial interface (e.g. for ID system, barcode reader, label printer, etc.)
- LPT1 printer interface
- USB printer interface
- USB interface for data backup



Assembly / Dimensions

- Mounting: bracket for wall / ceiling or mounting on support element
- Dimensions: 630mm x 510mm x 260mm (HxWxD)
- Protection: IP54

Display and Operator Controls

- TFT 15" color monitor
- Full keyboard with mouse

Programming and Parameterization

- Integrated operator and parameter interface
- Via network

Nutrunning Processes

- Torque-controlled tightening
- Torque-controlled with angle monitor
- Angle-controlled with torque monitor
- Yield-controlled tightening
- Angle-controlled and torque-controlled loosening
- Shutdown based on digital signal with torque and angle control
- Friction measurement
- Retrospective nutrunning monitor
- Redundant motor current control
- Nutrunning time monitor

Periphery

- Operator control
- Socket box
- Indicators (e.g. lights, horn, sector division, etc.)
- Signal exchange with SPS:
 - I/O modules (parallel)
 - Field bus (e.g. Profibus, Interbus, DeviceNet, etc.)
- Barcode reader, data media (e.g. Moby E)

Number of Programs

- Max. 31 per tool (depends on the selection)

Enhanced Functions

- Part-based OK / fault information using counter function (available for multiple programs)
- Interface to part-based nominal data defaults from host computer
- Tightening data transfer to higher level systems
- Tightening location recognition (e.g. by ultrasound triangulation)
- Load-dependent maintenance management for carrying out preventive maintenance on handheld tools
- Integration in our RailNet system for wireless power supply and positioning of nutrunner control on assembly line
- Centralized parameter management

Power Supply

- SMXP single-channel housing: 230V / 50Hz

Compatible Nutrunner Models

- Hand tools from HCR, HCRK, PCR, HCX and PCX series with reaction torque sensors or action torque sensors
- Built-in tools from ECR1 and ECR2 series with reaction torque sensors or action torque sensors, as long as emergency stop is not required

Type	Dimensions (HxWxD) in mm	Weight in kg	Ident-No.
Nutrunner control SMXP	630x510x260	approx. 40	on request

Nutrunner Control SMXP Multi-Channel

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■ Special Features – Technical Data

General

- Pentium processor
- Operating system: Windows XP Professional
- 8 GB hard drive and 3.5"/1.44 MB floppy disk drives
- 10/100 Mbit Ethernet interface, RJ45 network connector (e.g. for programming, nutrunner data transfer, etc.)
- Serial interface (e.g. for ID system, barcode reader, label printer, etc.)
- LPT1 printer interface
- USB printer interface
- USB interface for data backup

Assembly / Dimensions

- Mounting: bracket for wall / ceiling or mounting on support element
- Dimensions: 630mm x 510mm x 415mm (HxWxD)
- Protection: IP54

Display and Operator Controls

- TFT 15" color monitor
- Full keyboard with mouse

Programming and Parameterization

- Integrated operator and parameter interface
- Via network

Nutrunning Processes

- Torque-controlled tightening
- Torque-controlled with angle monitor
- Angle-controlled with torque monitor
- Yield-controlled tightening
- Angle-controlled and torque-controlled loosening
- Shutdown based on digital signal with torque and angle control
- Friction measurement
- Retrospective nutrunning monitor
- Redundant motor current control
- Nutrunning time monitor

Periphery

- Operator control
- Socket box
- Indicators (e.g. lights, horn, sector division, etc.)
- Signal exchange with SPS:
 - I/O modules (parallel)
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- Barcode reader, data media (e.g. Moby E)



Number of Programs

- Max. 31 per tool (depends on the selection)

Enhanced Functions

- Part-based OK / fault information using counter function (available for multiple programs)
- Interface to part-based nominal data defaults from host computer
- Tightening data transfer to higher level systems
- Tightening location recognition (e.g. by ultrasound triangulation)
- Load-dependent maintenance management for carrying out preventive maintenance on handheld tools
- Integration in our RailNet system for wireless power supply and positioning of nutrunner control on assembly line
- Centralized parameter management

Power Supply

- SMXP multi-channel housing: 230V / 50Hz

Compatible Nutrunner Models

- Hand tools from HCR, HCRK, PCR, HCX and PCX series with reaction torque sensors or action torque sensors
- Built-in tools from ECR1 and ECR2 series with reaction torque sensors or action torque sensors, as long as emergency stop is not required

Type	Dimensions (HxWxD) in mm	Weight in kg	Ident-No.
Nutrunner control SMXP twin	630x510x415	approx. 60	on request

Nutrunner Control SMXP Multi-Channel

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1-10 channel

■ Special Features – Technical Data

General

- Pentium processor
- Operating system: Windows XP Professional
- 8 GB hard drive and 3.5"/1.44 MB floppy disk drives
- 10/100 Mbit Ethernet interface, RJ45 network connector (e.g. for programming, nutrunner data transfer, etc.)
- Serial interface (e.g. for ID system, barcode reader, label printer, etc.)
- LPT1 printer interface
- USB printer interface
- USB interface for data backup

Assembly / Dimensions

- Dimensions : 2200mm x 800mm x 600mm (HxWxD)
- Protection: IP54

Display and Operator Controls

- TFT 15" color monitor
- Full keyboard with mouse

Programming and Parameterization

- Integrated operator and parameter interface
- Via network

Nutrunning Processes

- Torque-controlled tightening
- Torque-controlled with angle monitor
- Angle-controlled with torque monitor
- Yield-controlled tightening
- Angle-controlled and torque-controlled loosening
- Shutdown based on digital signal with torque and angle control
- Friction measurement
- Retrospective nutrunning monitor
- Redundant motor current control
- Nutrunning time monitor

Periphery

- Operator control
- Socket box
- Indicators (e.g. lights, horn, sector division, etc.)
- Signal exchange with SPS:
 - I/O modules (parallel)
 - Field bus (e.g. Profibus, Interbus, DeviceNet, etc.)
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Number of Programs

- Max. 31 per tool (depends on the selection)

Enhanced Functions

- Part-based OK / fault information using counter function (available for multiple programs)
- Interface to part-based nominal data defaults from host computer
- Tightening data transfer to higher level systems
- Tightening location recognition (e.g. by ultrasound triangulation)
- Load-dependent maintenance management for carrying out preventive maintenance on handheld tools
- Centralized parameter management

Power Supply

- Control cabinet SMXP multi-channel: 400V / 50 Hz; 3-Phases, N, PE

Compatible Nutrunner Models

- Hand tools from HCR, HCRK, PCR, HCX and PCX series with reaction torque sensors or action torque sensors
- Built-in tools from ECR1 and ECR2 series with reaction torque sensors or action torque sensors

Type	Dimensions (HxWxD) in mm	Weight in kg	Ident-No.
Nutrunner control SMXP multi-channel	2200x800x600	depending of the amount of channels	on request

Nutrunner Control SMXP Configuration Examples

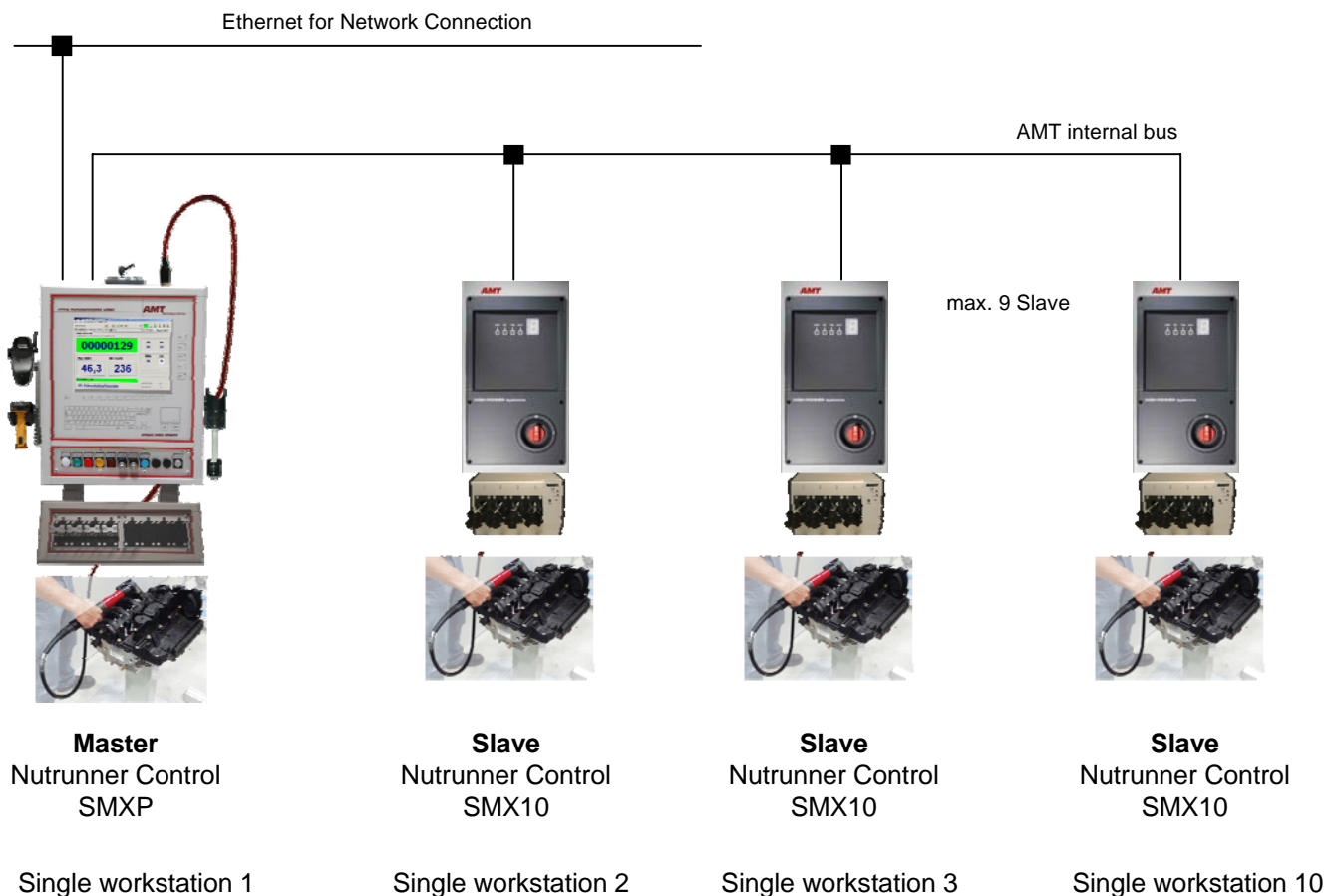
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■ Master - Slave Configuration

Decentralized Configuration

The SMXP nutrunner control assumes the master function, i.e. it coordinates the SMX10 nutrunner control systems and provides the external interface.

Parameterization and graphic display take place in the SMXP nutrunner control or via the network.



*Nutrunner Control SMXP Multi-Channel
Configuration Examples*

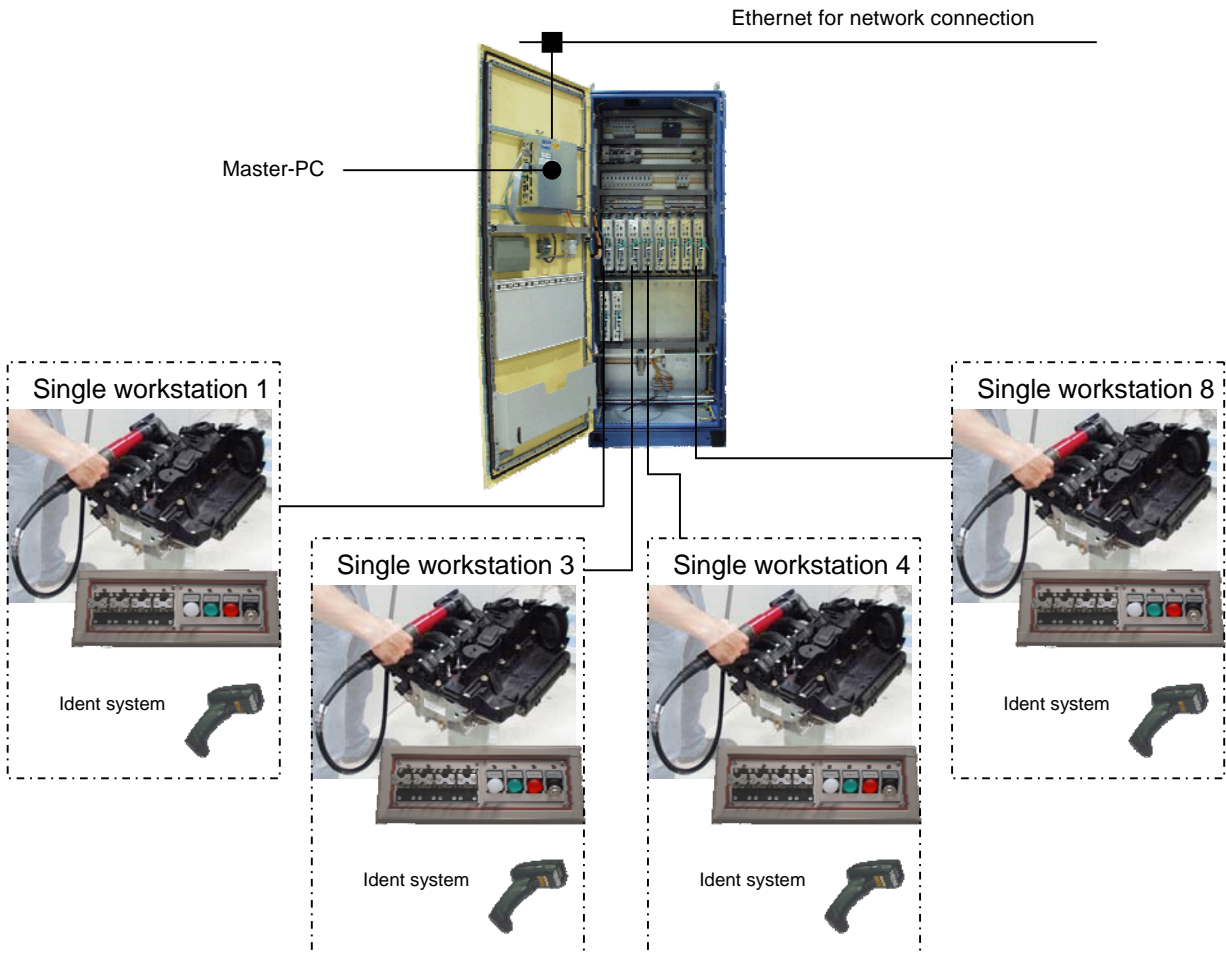
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■ **Master - Slave Configuration in Combined Control Cabinet**

Centralized Configuration

The master PC coordinates individual tightening modules (workstations) and provides the external interface.

Up to 10 individual workstations can be controlled, managed, and receive parameters from one master PC.



Nutrunner Control SMXP Multi-Channel Configuration Examples

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■ Master - Slave Configuration Distributed over 3 Control Cabinets

The master PC coordinates individual tightening modules (workstations) and provides the external interface.

Up to 10 individual workstations can be controlled, managed, and receive parameters from one master PC.

