

## **Nutrunner Control SMX30**

**H 1.6.4**

### **Single-Channel**

#### ■ **General Information**

##### **High-end control in compact design**

The SMX30 is the natural advancement to our successful SMXP high-end nutrunner control. By using a PC in 3.5" format, the size of the control is significantly reduced in size – while maintaining the same range of functions! The SMX30 nutrunner control is available in two configurations: 'narrow' for all applications with limited available width and 'long' for applications with limited available depth.

##### **Flexibility through integrated PC**

An integrated PC expands SMX30 functionality considerably, when compared to conventional controls. For example, it allows you to establish a direct connection to your host computer.

The operating system, programs, and system data are stored on a write-protect Compact-Flash card, with temporary data stored on a second Compact-Flash card. The operating system, Windows XP Embedded, is condensed to provide only the necessary functions, while offering maximum protection against network virus attacks.

##### **Programming complex nutrunning processes**

The SMX30 offers programming capabilities for complex nutrunning processes. All torque and angle-based algorithms are available as base modules. These modules, along with additional commands for process control, can be linked with a user-friendly parameter software to create complex nutrunning processes. Conditional program statements can be based on rundown results, which enable, for example, loosening operations with or without repeated nutrunning. In addition, the control offers advanced nutrunning and monitoring processes, such as yield control, retrospective nutrunning monitor, and friction measurement.

##### **Quality assurance documentation**

Rundown results and graphs can be stored locally or uploaded to a host computer.

##### **Automatic tool identification**

Handheld tools from AMT are equipped with data storage, in which all tool-specific parameters are stored. When the tool is connected to the SMX30 control, this data is read and compared with the archived data stored on the control.

If these data do not agree, then the tool is not accepted by the control, and a fault message is issued. If the operator acknowledges the situation manually, the new data can be transferred.

##### **Fastening case analysis**

A user-friendly operator interface is available for analyzing fastening cases. Up to 999 fastening curves can be displayed and stored for later evaluation. This display is activated by date and time, as well as a value for the number of fastening curves requested. The displayed curves can be scanned and zoomed, as needed. For further analysis, up to 99 curves can be overlaid so that the intersection of each curve can be placed on the swell torque.

##### **Operation, configuration and display**

A 6.5" touch-screen display facilitates the operation, configuration and graphic interface.

##### **Programming and parameterization**

With user-friendly network programming software.



**Narrow**  
330x180x379  
(HxBxT) in mm

**Long**  
330x379x180  
(HxBxT) in mm

## Nutrunner Controls

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#### ■ General Information

##### Nutrunner Data Management

The SMX30 stores nutrunner data on the local Compact-Flash card to monitor the quality of the nutrunning process. If desired, the data can be stored for up to 12 months on the hard drive.

##### 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 SMX30 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!

##### Local nutrunning network configurations

It is possible to create a local, cost-effective nutrunning network with the SMX30. Up to nine SMX10 nutrunner controls can be linked via Ethernet to an SMX30. The SMX30 also functions in this case as a master control, communicating with customer systems, e.g., conveyor control system or host computer, and coordinates all connected SMX10 slaves.

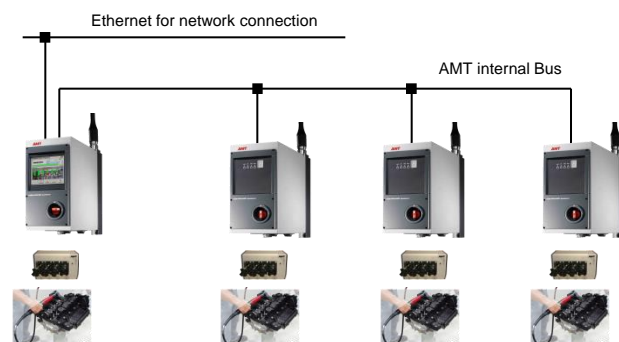
##### Integrated task management

When a single work station requires several nutrunning operations to be executed, the SMX30 offers the possibility to define up to 31 different nutrunning programs in one task plan. These can be carried out automatically or with guidance. The SMX30 counts and monitors whether all processes have been completed and creates a total quality assessment at the end. Task plans are stored either locally or uploaded from the SMX30 to your host computer.



**Narrow**  
330x180x379  
(HxBxT) in mm

**Long**  
330x379x180  
(HxBxT) in mm



## **Nutrunner Control SMX30 Narrow Single-Channel**

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### ■ **Special Features – Technical Data**

#### **Assembly**

- Four assembly mounting holes in wall console
- IP54 protection

#### **Display and Operator Controls**

- 6.5" touch-screen display

#### **Programming und Parameter Definition**

- User-friendly programming software 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

#### **Interfaces**

- 2 x Ethernet
- RS232, RS485
- USB
- Field bus systems available with expansion cards (optional)

#### **Peripheral Equipment**

- Operator console
- Socket tray
- Signalers  
(e.g., stacklight, alarm horn, etc.)
- I/O modules (parallel)
- Barcode reader, read/write devices (e.g., Moby E)

#### **Number of Programs**

- Max. 31

#### **Spindle Types**

- 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



#### **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, iTeleskop)
- 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

## Nutrunner Controls

### Nutrunner Control SMX30 Narrow Single-Channel

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#### ■ Overview Nutrunner Controls SMX30

#### Designation code:

#### SMX30 40ASH 02 EA

SMX = Designation nutrunner control generation

30 = Nutrunner control type

40A = Power class of output stage

SH = Internal designation

02 = Version number

EA = Parallel I/O interface

IBS = Interbus Slave interface

IBM = Interbus Master interface

PBS = Profibus Slave interface

DNS = Device Net Slave interface

WLAN = Integrated WLAN card

Further interfaces on request



| Type                   | Dimensions control<br>(HxWxD) in mm | Dimensions wall console<br>(HxWxD) in mm | Total dimensions<br>(HxWxD) in mm | Weight<br>in kg | Ident-No. |
|------------------------|-------------------------------------|--|-----------------------------------|-----------------|-----------|
| SMX30 40ASH 02         | 330x180x316                         | 330x180x63                               | 330x180x379                       | approx. 12,5    | 700 9939  |
| SMX30 40ASH 02 EA      | 330x180x316                         | 330x180x63                               | 330x180x379                       | approx. 12,5    | 700 9955  |
| SMX30 40ASH 02 IBS     | 330x180x316                         | 330x180x63                               | 330x180x379                       | approx. 12,5    | 700 9956  |
| SMX30 40ASH 02 IBM     | 330x180x316                         | 330x180x63                               | 330x180x379                       | approx. 12,5    | 700 9957  |
| SMX30 40ASH 02 PBS     | 330x180x316                         | 330x180x63                               | 330x180x379                       | approx. 12,5    | 700 9958  |
| SMX30 40ASH 02 DNS     | 330x180x316                         | 330x180x63                               | 330x180x379                       | approx. 12,5    | 700 9959  |
| SMX30 40ASH 02 WLAN    | 330x180x316                         | 330x180x63                               | 330x180x379                       | approx. 12,5    | 700 11606 |
| SMX30 40ASH 02 EA WLAN | 330x180x316                         | 330x180x63                               | 330x180x379                       | approx. 12,5    | 700 11607 |

## **Nutrunner Control SMX30 Long Single-Channel**

**H 1.6.4**

### ■ **Special Features – Technical Data**

#### **General Information**

The SMX30 cross configuration was designed especially for applications where there is limited installation depth available. This is, for example, typical of the automotive industry. The SMX30 cross configuration has a depth of only 180 mm and can, therefore, be easily integrated into your production line. Frequently, controls of this type are integrated in a traveling unit. This has the distinct advantage that the operator always has his nutrunner control in the vicinity.

#### **Assembly**

- Four assembly mounting holes in wall console
- IP54 protection

#### **Display and Operator Controls**

- 6.5" touch-screen display

#### **Programming und Parameter Definition**

- User-friendly programming software 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

#### **Interfaces**

- 2 x Ethernet
- RS232, RS485
- USB
- Field bus systems available with expansion cards (optional)

#### **Peripheral Equipment**

- Operator console
- Socket tray
- Signalers  
(e.g., stacklight, alarm horn, etc.)
- I/O modules (parallel)
- Barcode reader, read/write devices (e.g., Moby E)



#### **Number of Programs**

- Max. 31 per tool

#### **Spindle Types**

- 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

#### **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, iTeleskop)
- 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

## Nutrunner Controls

### Nutrunner Control SMX30 Long Single-Channel

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#### ■ Overview Nutrunner Controls SMX30

#### Designation code:

#### SMX30 40ALH 02 EA

SMX = Designation nutrunner control generation

30 = Nutrunner control type

40A = Power class of output stage

LH = Internal designation

02 = Version number

EA = Parallel I/O interface

IBS = Interbus Slave interface

IBM = Interbus Master interface

PBS = Profibus Slave interface

DNS = Device Net Slave interface

WLAN = Integrated WLAN card

Further interfaces on request



| Type                   | Dimensions control<br>(HxWxD) in mm | Dimensions wall console<br>(HxWxD) in mm | Total dimensions<br>(HxWxD) in mm | Weight<br>in kg | Ident-No. |
|------------------------|-------------------------------------|--|-----------------------------------|-----------------|-----------|
| SMX30 40ALH 02         | 330x316x180                         | 330x63x180                               | 330x379x180                       | approx. 12,5    | 700 11608 |
| SMX30 40ALH 02 EA      | 330x316x180                         | 330x63x180                               | 330x379x180                       | approx. 12,5    | 700 11609 |
| SMX30 40ALH 02 IBS     | 330x316x180                         | 330x63x180                               | 330x379x180                       | approx. 12,5    | 700 11610 |
| SMX30 40ALH 02 IBM     | 330x316x180                         | 330x63x180                               | 330x379x180                       | approx. 12,5    | 700 11611 |
| SMX30 40ALH 02 PBS     | 330x316x180                         | 330x63x180                               | 330x379x180                       | approx. 12,5    | 700 11612 |
| SMX30 40ALH 02 DNS     | 330x316x180                         | 330x63x180                               | 330x379x180                       | approx. 12,5    | 700 11613 |
| SMX30 40ALH 02 WLAN    | 330x316x180                         | 330x63x180                               | 330x379x180                       | approx. 12,5    | 700 11614 |
| SMX30 40ALH 02 EA WLAN | 330x316x180                         | 330x63x180                               | 330x379x180                       | approx. 12,5    | 700 11615 |



## **Nutrunner Control SMX30**

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### **Single-Channel**

#### ■ **Options**

##### **For your information:**

The following options are already included in the nutrunner control part number.

##### **Parallel I/O board**

PC104 slot

- Part No. 701 6617

The PC104 DIGIO16/16 is a digital I/O module. The 16 inputs and 16 outputs are designed for 24V operation and are isolated by an opto-electronic coupler (3kV). The digital outputs can be switched 24V/500mA (high-side) and are protected against overload and/or overheating.

##### **Interbus board Slave**

PC104 slot

- Part No. 701 7664

The slave communications interface in the InterBus network independently transfers data between the bus subscribers and the nutrunner control. The process image is held in dual-port memory and is, therefore, directly available to the application.

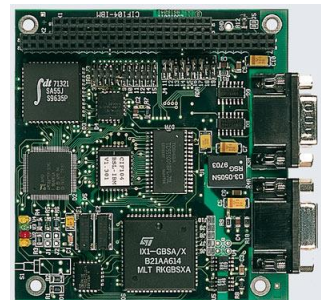


##### **Interbus board Master**

PC104 slot

- Part No. 701 7665

The master communications interface in the InterBus network independently transfers data between the bus subscribers and the nutrunner control. The process image is held in dual-port memory and is, therefore, directly available to the application.



# Nutrunner Controls

## Nutrunner Control SMX30

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#### ■ Options

##### For your information:

The following options are already included in the nutrunner control part number.

##### Device Net Slave

Anybus slot

- Part No. 701 7908

The communications module provides optimized connection of our nutrunner control to an automation device. It is typically used where larger amounts of data need to be transferred at high speed. The DeviceNet module supports a bandwidth of max. 256 Byte input and 256 Byte output data, as well as all transfer rates from 125 - 500 Kbit/s. The module offers the complete functional range of a DeviceNet adapter for implicit and explicit messaging and supports UCMM. The DeviceNet interface is completely isolated galvanically. "Polled I/O", "bitstrobed I/O", "change of state" and "cyclic I/O" are all supported. In addition to the standard DeviceNet objects "identity", "message router", "DeviceNet", "assembly", "connection" and "acknowledge handler", the following manufacturer-specific objects are pre-defined: "I/O data input", "I/O data output", "diagnostic", "parameter input", and "parameter output". Two diagnostic LEDs signal the current DeviceNet status and any fault messages. The module is supplied with the mandatory 5-pin DeviceNet threaded terminal clamp.



##### PROFIBUS Slave

Anybus slot

- Part No. 701 7907

PROFIBUS (Process Field Bus) is a universal fieldbus which has broad application in manufacturing and process automation. PROFIBUS enables communication between our nutrunner control and your SPS without the need for special interface adaptation.

PROFIBUS is suitable for fast, time-critical applications, as well as complex communication tasks. The PROFIBUS Slave board contains bus access authorization, i.e. only received messages are acknowledged or, upon request from the Master, messages can be transmitted. The module supports a maximum PROFIBUS bandwidth of 244 Bytes for cyclic I/O data and additional acyclic data and diagnostic messages. The PROFIBUS transfer speed is recognized automatically in the range of 9.6 Kbit/s up to 12 Mbit/s. Two diagnostic LEDs signal the current DeviceNet status and any fault messages. The bus is connected by the mandatory 9-pin D-Sub jack.



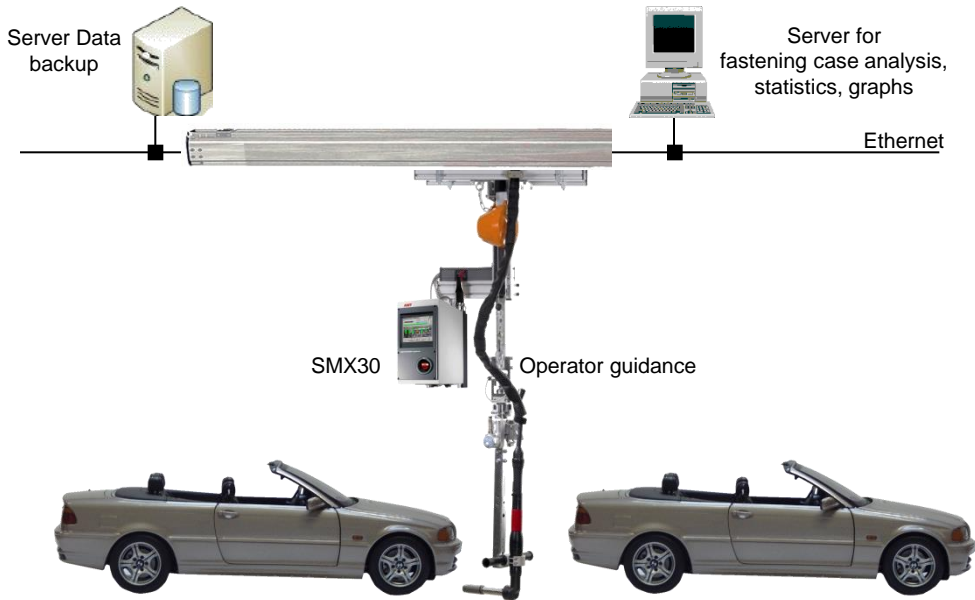


### Nutrunner Control SMX30

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#### Configuration Examples

##### ■ SMX30 connected to a telescope



##### ■ Master- Slave configuration SMX30 / SMX10

