

XP20D - XP20DS - XP20R

Portable test bench for axle mounted generators

Instruction handbook



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English translation of the original Instruction Handbook

Applies to

This document applies to:

XP20D
XP20DS
XP20R

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¹: The pages specified in this table always refer to the preceding document.

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1 General

1.1 About these instructions

General notes on how to use these instructions

- Read these instructions carefully before starting up the XP20D, XP20DS, XP20R for the first time.
- Comply with the warning and safety notes.
- Keep these instructions ready to hand and close to the XP20D, XP20DS, XP20R.
- Make sure that every user of the XP20D, XP20DS, XP20R has read this manual thoroughly.
- Explanations and definitions to terms and abbreviations are found in the Glossary.

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1.2 Contact for enquiries

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Suggestions for improvement

Please let us know about your suggestions on how to improve the content and layout of this document. We are constantly striving to improve the quality of our customer documentation.

Phone +49 (0) 2202 958-198

Personal assistance

If you need personal assistance in using this product, please contact our Support directly.

Product	Support number
Multi-functional terminals and displays	+49 (0) 2202 958-106
Recorder and evaluation software	+49 (0) 2202 958-124 +49 (0) 2202 958-173
Sensor technology	+49 (0) 2202 958-129
Video technology, indicator and IconTrust technology	+49 (0) 2202 958-169
or	support@deuta.de

1.3 Utilised fonts, signs and symbols

Symbols and fonts

Presentation	Usage
Sign #	Used as placeholder for device variants. Example: MFT_L11##o could be: ▪ MFT_L11byo ▪ MFT_L11dyo
Angle brackets <>	Indicates buttons to be actuated. Examples: <F1> <Shift> + <F1>
Font Courier	Indicates ▪ Screen messages for devices having a display unit or a service PC. ▪ File name ▪ Directories Example C:\Programs
"Quotation marks "	Menu commands and names of dialog windows mentioned in the text are put in quotation marks (example: "File", "Edit", dialog window "Data export").
Arrows →	Arrows signify the individual steps of navigation paths or operating steps. (example: "File → Open").
italics and underlined	Refers to: ▪ Link to the <u>Glossary</u> ▪ Entry and explanation in the <u>Glossary</u>

Highlights

Symbols have been used to specifically highlight the following information:

Symbol	Meaning
	Important Indicates technical requirements that are important for the product to function smoothly. Non-compliance can lead to disruptions, but not to damage to persons or objects.
	Info Indicates - additional important information. - Practical tips to simplify your work with the product.

Warning and safety notes

You will find information about this topic at: [Presentation of warning and safety notes \[→ Page 18\]](#)

1.4 Overview of standards and issue statuses

You will find the issue statuses of the standards used in this document in the [Glossary](#).

1.5 Further documents and drawings

You will also find important information in the following documents.

General information

- CE Declarations of Conformity XP20D, XP20DS, XP20R

Project-specific documents

none

Manuals

none

Reference documents

none

1.6 Application of EU Directives

- Our products are designed for installation in rail vehicles, ships or in industrial large-scale plants/machines and may only be mounted, installed, dismantled and disposed of by expert personnel.
- Intended use is only possible in an installed condition in conjunction with other equipment.
- 2004/108/EC **EMC**
These products can cause radio interference in residential areas. In this case, the operator can be requested to implement appropriate measures.
- 2011/65/EC **RoHS**
Due to the application, these products do not fall within the scope of the 2011/65/EC directive (RoHS). But they can contain materials for which there are restrictions. If technically possible, we constantly strive to avoid or reduce the stated materials.
- 2006/95/EC **NSR**
Due to the application, these products do not fall within the scope of the 2006/95/EC directive (NSR). Voltages with a nominal voltage of > 50 VAC or >75 VDC may not be supplied to the product in the industrial environment.
- If these products are to comply with the requirements of a directive that is not listed in the CE Declaration of Conformity, then this must be clarified by contract before use.

2 Safety

2.1 Intended use

The XP20D, XP20DS is used to drive axle mounted generators and must only be operated with mounted axle mounted generators. The XP20D can be operated as an individual device and the XP20DS together with the remote operation terminal (MBT) XP20R.

A computer with the corresponding operating software can be used to operate the XP20D and the XP20DS. This is then operated via a network connection.

You can network and synchronously operate up to nine XP20D and XP20DS devices.

The XP20D or XP20DS may only be operated in a standing position. The XP20D and XP20DS are designed for mobile use in the workshop or laboratory area.

The use of the XP20R is only permitted with XP20D, XP20DS or XP20M (radar test bench).

Any other use is not permitted without prior consultation with DEUTA.

2.2 General warning and safety notes



DANGER

Electric shock when operating without protective conductor

In the event of faults or damage at the XP20D/DS, connection to or operation in power systems **without** protective conductor can cause electric shock with the respective injuries.

The XP20D/DS must only be operated in power systems with protective conductor.

1. The XP20D/DS must only be operated in power systems with protective conductor.
2. It is only permitted to use localised supply cables with protective conductor and the DEUTA powerCON plug connection.



WARNING

Crush injuries due to rotating drive

The rotating drive can cause crush injuries to limbs.

1. Switch on the XP20D/DS first and start the test only when the axle mounted generator is correctly mounted and no rotating parts are freely accessible.



CAUTION

Pulling in of clothing due to rotating drive

The rotating drive can catch and pull in clothing, for example, which would cause injuries as a result.

1. Switch on the XP20D/DS first and start the test only when the axle mounted generator is correctly mounted and no rotating parts are freely accessible.
Do not wear loose clothing and wear a hairnet if you have long hair.

**⚠ CAUTION****Danger of injuries due to unsafe location**

An unstable condition poses the risk of injury caused by, e.g., falling over of the XP20D/DS.

1. Ensure that the XP20D/DS is set up in a standing position on solid ground.
2. For heavy generators, an assembly board must be mounted as protection against tipping (see Accessories) [→ Page 33]
3. Wear safety shoes with steel tips when working with the XP20D/DS.

**NOTICE****Jamming due to rotating drive**

The rotating drive can cause objects to be jammed resulting in damage to the XP20, accessories, the axle mounted generator, etc.

1. Switch on the XP20D/DS first and start the test only when the axle mounted generator is correctly mounted and no rotating parts are freely accessible.

**⚠ CAUTION****Blocking of the drive**

A blocked drive can cause injuries or damage.

1. Always ensure that the drive of the XP20D/DS cannot be blocked!

2.3 Personnel requirements and operator duties

Prior knowledge and qualification

- These operating instructions are written solely for technically or electronically skilled and trained personnel (specialists). Basic knowledge about the installation, EMC measures and safe conduct are presumed.
- It is presumed that only qualified personnel (specialists) will be deployed for the installation, commissioning, operation, maintenance, troubleshooting and repairs of the existing components. Damages due to non-compliance are not included in the guarantee!
- Definition of specialists: see EN50110, DIN VDE 0105, IEC 60364.
Qualified specialists in the meaning of these principal safety notes are persons who are familiar with the assembly, installation, commissioning, operation, etc., of the product and possess the qualifications according to their activities.

Operator duties

The operator is obliged

- to choose reliable and knowledgeable personnel (specialists) to operate the devices
- to provide training and on-going instruction on how to use the devices to personnel who are entrusted with operating the devices
- to ensure that special activities requiring special knowledge are carried out by suitably knowledgeable and specifically trained specialist personnel (specialists); if necessary, specialists from outside should be brought in
- to ensure the devices are sufficiently maintained, repaired and tested

2.4 Accident prevention regulations

The locally applicable accident prevention regulations must be obeyed.

2.5 Presentation of warning and safety notes

Warning and safety notes are indicated by symbols and a signal word. The signal word indicates the severity of the imminent danger.

Danger classes

Symbol	Signal word
	Danger There is a direct danger for the life and health of people. Non-compliance with these notes will have serious health-related consequences and may even result in death.
	Warning There is a possible imminent danger for the life and health of people. Non-compliance with these notes can have serious health-related consequences and may even result in death.
	Caution There is a possibly dangerous situation. Non-compliance with these notes can result in slight injuries or cause material damage.
	Note There is a possibility of material damage or malfunctions. Non-compliance with these notes can result in material damage or malfunctions, but will not cause harm to people.

Additional symbols

Symbol	Explanation
	Note Combined with the signal word Note , warns of material damage or malfunctions.
	General danger Combined with a signal word, warns of dangers that could result in injuries or even death.

Symbol	Explanation
	High voltage Combined with a signal word, warns of occurring dangerous electrical voltages that could result in injuries or even death.
	Hot surfaces Combined with a signal word, warns of hot surfaces that could result in burns.
	<u>ESD</u> protection Combined with a signal word, warns of damage to components at risk of electrostatic discharge.

2.6 Fire protection requirements

The device meets the requirements of fire protection in accordance with DIN

5510-2

2.7 Environmental details on materials

All materials are halogen-free, asbestos-free and rustproof.

Environmentally hazardous or harmful materials or PCB-bearing capacitors and materials are not used.

2.8 Information REACH Regulation EC1907/2006

required inform in accordance with Art. 33 of the REACH Regulation (EC1907/2006)

How does DEUTA-WERKE fulfill its obligations to their customers:

- We ensure that the substances that we use are registered.
- We instruct our suppliers to always provide us with up-to-date safety data sheets.
- Our suppliers of raw materials have been obligated to inform us immediately as soon as they become aware of the presence of a substance of very high concern (SVHC) above a mass per unit volume of 0.1 % in the raw materials delivered to us.
- Even the EU suppliers of manufactured items that are processed in our products in a
- relevant amount have also been obligated to inform us without further request if the products delivered by them contain an SVHC with over 0.1 % by mass.
- We will immediately inform our customers in detail if we become aware of the presence of an SVHC in one of our processed preliminary products.
- Our register of hazardous substances was expanded with the point "REACH". The candidate list of the European Chemicals Agency (ECHA) is included in the register.
- The procurement, handling and disposal of hazardous substances are clearly regulated in our integrated management system.

Based on the data currently available to us, we can confirm that none of the 30 substances of very high concern found on the candidate list at present are contained in our products in concentrations higher than 0.1 %.

3 Product description

3.1 XP20D, XP20DS, XP20R

The portable test bench XP20D / XP20DS is used to drive axle mounted generators. At the rear of the device is a drive to which all current generator types can be mounted.

A range of accessory kits is available for this. In the appendix you will find an overview of the different generator types and the necessary accessory parts.

The XP20D has an integrated touch operation terminal which the XP20DS does not have.

The XP20DS is primarily intended for use with a networked central control, e.g. over another XP20D.

The XP20R (remote operation terminal) can also be used to operate the XP20D or XP20DS devices. The advantage of this is that the devices need not be operated exclusively on site but from a more remote position, depending on the length of the data line.



Fig. 3/1: XP20D, XP20DS, XP20R

Up to nine XP20D / XP20DS can be simultaneously networked and operated, and all can be controlled centrally (see [Networking several XP20 devices \[→](#)

Page 25]).

Possible operating modes:

1. Stand-alone
single test bench - operation using installed operation terminal
2. Stand-alone
remote single test bench - operation using remote operation terminal (XP20R)
3. Synchronous operation
several networked test benches - operation using installed operation terminal
4. Synchronous operation remote
several networked test benches - operation using remote operation terminal (XP20R) or using a PC with corresponding operating software (software package 3)

Settings, such as the wheel diameter, are set individually for each drive unit. The required rotational speed or speed is entered via the integrated touch operation terminal in the XP20D or the remote operation terminal XP20R. The current speed is displayed on the operation terminal. The direction of rotation can be changed over at any time.

In the "Travel profile" mode, previously recorded train runs can be simulated, or own "train runs" (CSV files) can be simulated (not possible in standard version, see Accessories: Software packages 1 or 3 [→ Page 33]).

3.2 Block diagram

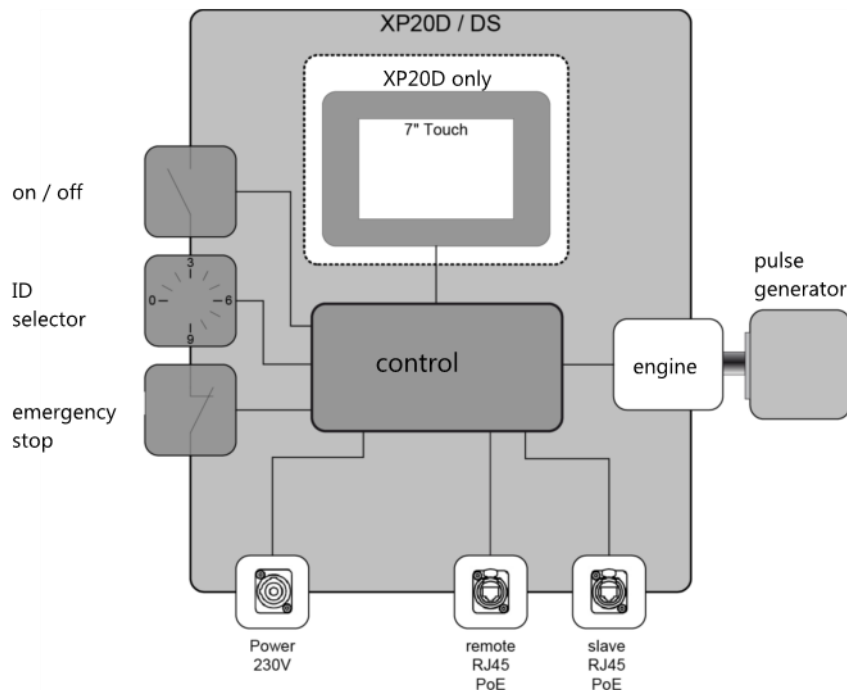


Fig. 3/2: XP20D/DS block diagram

3.3 Features

XP20D test bench

- Simulation of real routes and speed profiles for axle mounted generators and pick-up sensors
- Operational area for laboratory environments, maintenance workshops and for mobile use at the vehicle
- Networking of up to 9 XP20D or XP20DS test benches to one simulation environment
- Operation via integrated 7" touch operation terminal
- Operation via network connection with XP20R or PC with corresponding software (Software package 3)
- Rotational speed setting range 0 ... 4000 rpm or 0 ... 400 km/h
- Wheel diameter adjustable from 450 - 2000 mm
- Direction left and right switchable
- Operating voltage 220 - 240 V 50/60 Hz over powerCON socket

- Rated supply voltage: 230 VAC (50-60 Hz)
- Supply voltage range: 110 VAC ... 240 VAC (50-60 Hz)
- Power consumption max. 500 W
- Weight approx. 11.5 kg
- Dimensions (HxWxD) 330 x 215 x 280 mm

XP20DS test bench service

- Specification same as for XP 20D but without operation terminal
- Weight 10.5 kg
- Dimensions (HxWxD) 330 x 215 x 280 mm

XP20R (remote operation terminal), *see Accessories [→ Page 33]*

- remote operation terminal with 7" touch display to operate the XP20D/DS
- Connection to XP20D/DS via DEUTA data cable RJ45/RJ45 (*see Accessories*)

[→ Page 33]

- Power supply via PoE (Power over Ethernet, via data cable RJ45/RJ45)
- Weight 2.5 kg
- Dimensions (HxWxD) 254 x 276 x 64 mm

3.3.1 Networking several XP20 devices

The Ethernet interfaces "remote" and "slave" (etherCON sockets) serve as connection to a remote operation terminal XP20R (remote interface) and/or additional devices for synchronous operation at the slave interface.

Up to 9 XP20 devices can be interconnected over the Ethernet interfaces to a test and simulation environment. An XP20D (with display) or a central operating unit (XP20R or PC with operating software) can then be used to control the XP20 devices.

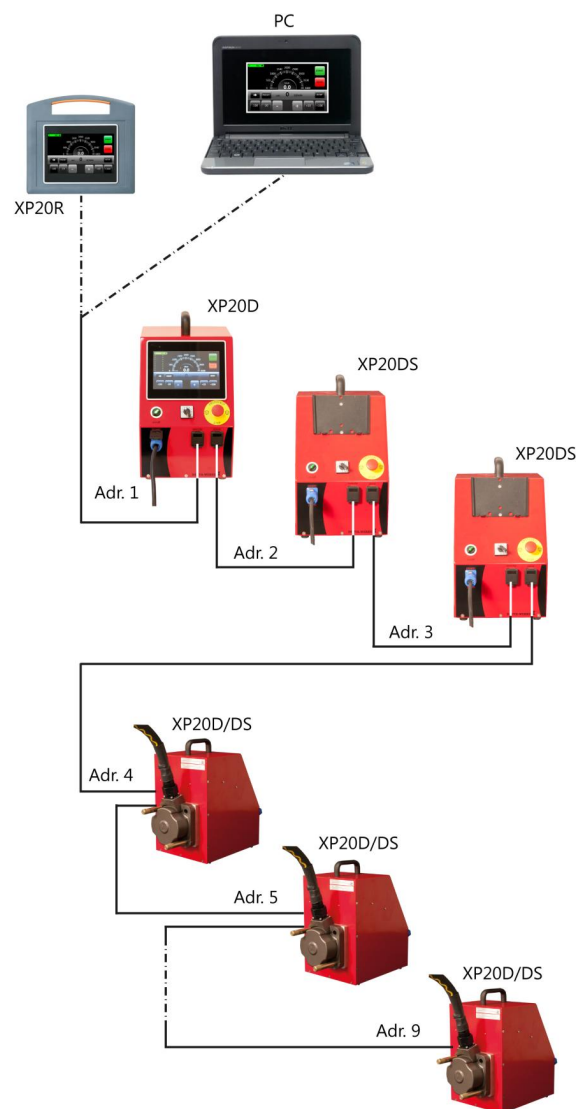


Fig. 3/3: XP20 network (example)

3.4 Hardware

3.4.1 Structure

The complete XP20D or XP20DS test stand (control and drive) is integrated in a sturdy portable housing. The integrated operation terminal (only XP20D) is operated on the front, the axle mounted generator is connected at the rear using appropriate connection adapters where necessary. On switch with illumination, address selector switch, emergency-stop switch, mains connection socket and Ethernet interfaces are also accessed at the front. The XP20DS has no integrated operation terminal, but in its place is a holder for the remote operation terminal XP20R.

3.4.2 Front elements

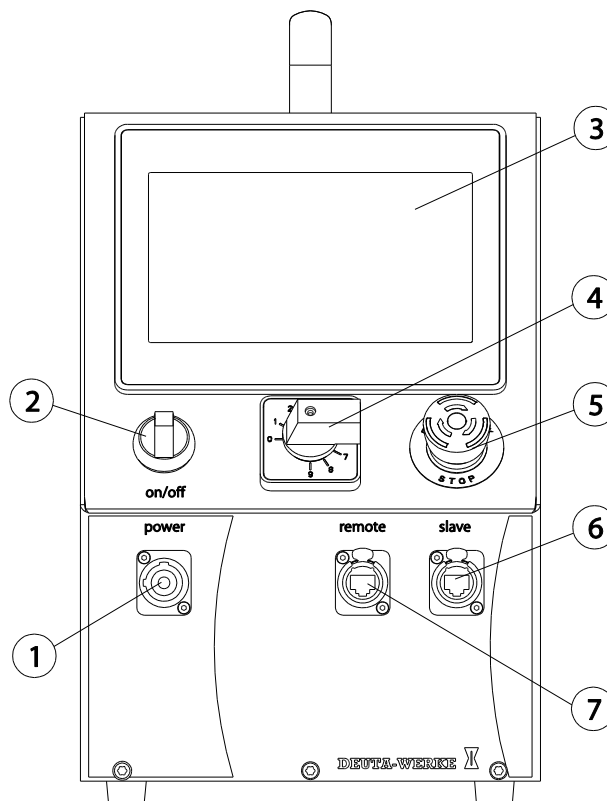


Fig. 3/4: XP20D front elements

1	Power supply via PowerCon plug connection	5	Emergency-stop switch
2	On switch with illumination	6	"slave" Ethernet plug connection
3	7" touch operation terminal	7	"remote" Ethernet plug connection
4	Address selector switch		

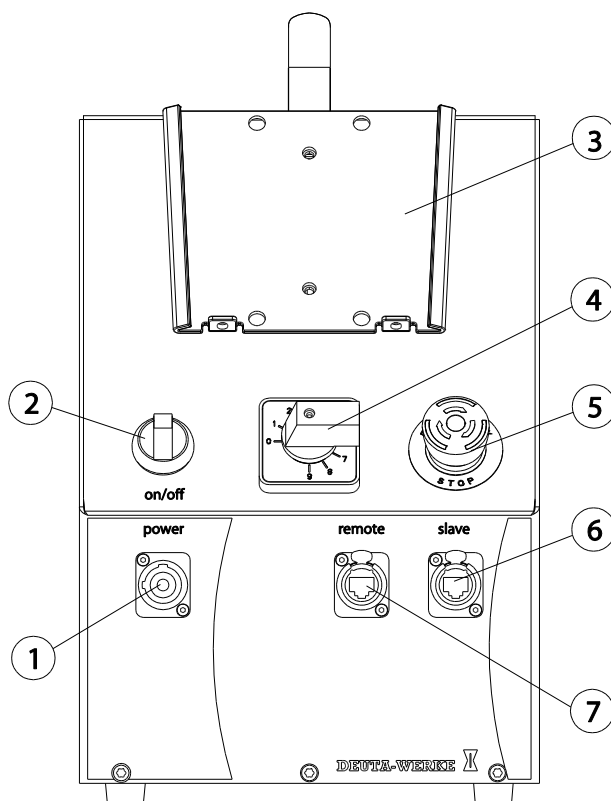


Fig. 3/5: XP20DS front elements

1	Power supply via PowerCon plug connection	5	Emergency-stop switch
2	On switch with illumination	6	"slave" Ethernet plug connection
3	Holder for remote operation terminal XP20R	7	"remote" Ethernet plug connection
4	Address selector switch		



Fig. 3/6: XP20R front with 7" touch display

3.4.3 Connection rear axle mounted generator

The axle mounted generator is connected at the rear using the appropriate accessories (intermediate flange with two M10 mounting bolts, adapter, fastening screws) for the respective generators [\[see Scope of Delivery \[→](#)

[Page 32\]](#).

You will find more information on mounting the axle mounted generators in the [chapter "Installation" \[→ Page 70\]](#).



Fig. 3/7: XP20 with intermediate flange



Fig. 3/8: Accessories XP20D/DS (standard)

3.5 Software

3.5.1 System software

The software installed in the XP20D/DS (visualisation and control) can be reinstalled as needed, e.g., for an update. You will need the corresponding CD-ROM which is available as accessory. You will find instructions to the system software update in the [chapter "Software update" \[→ Page 94\]](#).



Fig. 3/9: CD-ROM with software package PC (example illustration)

Software packages

Software package XP20SW1

(User interface to control the XP20D/DS using travel profiles .CSV)

- Readme.txt
contains information about the contents and use of the CD-ROM
- Directory "Visu",
with the operating software for the XP20D
- Directory "Control",
with the XP20D/DS control software
- Directory "CSV example files", contains:
 - CSV example files
 - File "Passwort.txt", text file with code for activating the CSV mode
- Directory "Instruction Handbook",
contains the instruction handbook in the available languages

Software package XP20SW2

(User interface to control the XP20D/DS)

- Readme.txt
contains information about the contents and use of the CD-ROM
- Directory "Visu",
with the operating software for the XP20D
- Directory "Control",
with the XP20D/DS control software
- Directory "Instruction Handbook",
contains the instruction handbook in the available languages

Software package XP20SW3

(User interface to control the XP20D/DS by PC using travel profiles .CSV)

- Readme.txt
contains information about the contents and use of the CD-ROM
- File "autorun.inf"
contains information on the autostart when inserting the CD-ROM.
- Directory "XP20R-PC"
contains the PC software to operate the XP20D and XP20DS
- Directory "CSV example files", contains:
 - CSV example files
 - File "Passwort.txt", text file with code for activating the CSV mode
- Directory "Instruction Handbook",
contains the instruction handbook in the available languages

3.6 Additional DEUTA products

- XP20M (test bench for Deuta radar sensors)

3.7 Ordering code

The following versions are available:

XP20	☐
with integrated operation terminal	D
without integrated operation terminal	DS
remote operation terminal	R

3.8 Type plate



View XP20 type plate (example: XP20DS)

Warning notice on XP20D/DS:



Achtung Verletzungsgefahr!
Gerät darf nur mit montiertem
Radimpulsgeber betrieben werden!

Caution: risk of injury!
Testbench should be operated only with
mounted pulse generator!

3.9 Scope of delivery

XP20D (EDP No.: 0 812 000 3)

- XP20D
- Connection accessories (standard)
 - Intermediate flange XP20DA5 including M10 mounting bolts (assembled)
 - Adapter XP20DA7
 - Fastening screws XP20DA2
- XP20 PowerCon power cable DE (XP20GA1)
- Instruction Handbook XP20D-XP20DS-XP20R (4AB1269)

XP20DS (EDP No. 0 812 000 4)

- XP20DS
- Connection accessories (standard)
 - Intermediate flange XP20DA5 including M10 mounting bolts (assembled)
 - Adapter XP20DA7
 - Fastening screws XP20DA2
- XP20 PowerCon power cable DE (XP20GA1)
- Instruction Handbook XP20D-XP20DS-XP20R (4AB1269)

XP20R (EDP No.: 0 812 000 5)

- XP20R
 - To operate the XP20R requires a data cable RJ45/RJ45.
 - The data cable RJ45/RJ45 is not included in the delivery.
 - It must be ordered separately (see Accessories).

3.10 Accessories

Designation	Drawing no.	EDP no.
XP20D/DS PowerCon power cable		
XP20 PowerCon power cable DE (included in delivery)	XP20GA1	2 812 003 3
XP20 PowerCon power cable UK	XP20GA2	2 812 003 4
Data line		
Data cable RJ45/RJ45 2 m	XP20GA3	2 812 003 7
Data cable RJ45/RJ45 5 m	XP20GA4	2 812 003 8
Data cable RJ45/RJ45 10 m	XP20GA5	2 812 003 9
Data cable RJ45/RJ45 20 m	XP20GA6	2 812 001 0
other lengths upon request		
XP20D/DS Software packages		
Software package XP20SW1 CD-ROM with - Software user interface XP20D/DS - Control software XP20D/DS - CSV example files - CSV password file - Instruction Handbook	XP20SW1	2 812 004 1
Software package XP20SW2 CD-ROM with - Software user interface XP20D/DS - Control software XP20D/DS - Instruction Handbook	XP20SW2	2 812 004 2
Software package XP20SW3 CD-ROM with - PC operating software XP20D/DS - CSV example files - CSV password file - Instruction Handbook	XP20SW3	2 812 004 3

XP20R (remote operation terminal)

XP20R e.g. for XP20DS operation	XP20R	2 812 000 5
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Intermediate flange

Intermediate flange-1 for generator with centring diameter: - 48 mm - 110 mm Mounting pitch circle: - 90 mm for M10 and M12 generator mounting - 130 mm for M12 generator mounting incl. 2 pcs. M10 mounting bolts (included in delivery)	XP20DA5	2 812 004 8
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Intermediate flange-2 for generator with centring diameter: - 115 mm Mounting pitch circle: - 134 mm for M10 generator mounting incl. 2 pcs. M10 mounting bolts	XP20DA6	2 812 004 9
---	---------	-------------

Adapters

Adapter-1 with stop bolts (included in delivery)	XP20DA7	2 812 005 0
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Fastening screws

Fastening screw-1 2 pieces M12 Flange thickness up to 15 mm (e.g. for EF generators) (included in delivery)	XP20DA2	2 812 004 5
Fastening screw-2 2 pieces M12 Flange thickness up to 22 mm (e.g. for DF16 with square flange)	XP20DA3	2 812 004 6
Fastening screw-3 2 pieces M10 Flange thickness up to 15 mm (e.g. for DF16 with round flange)	XP20DA4	2 812 004 7

Assembly board

Assembly board XP20D/DS Tilting protection for large or heavy generators (e.g. EFI generators)	XP20DA1	2 812 004 4
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INFO

Special connection accessories

Special connection accessories can be constructed and manufactured upon request.

Further information: see the chapter Mechanical Drawings!

4 Mechanical drawings

4.1 Front view XP20D

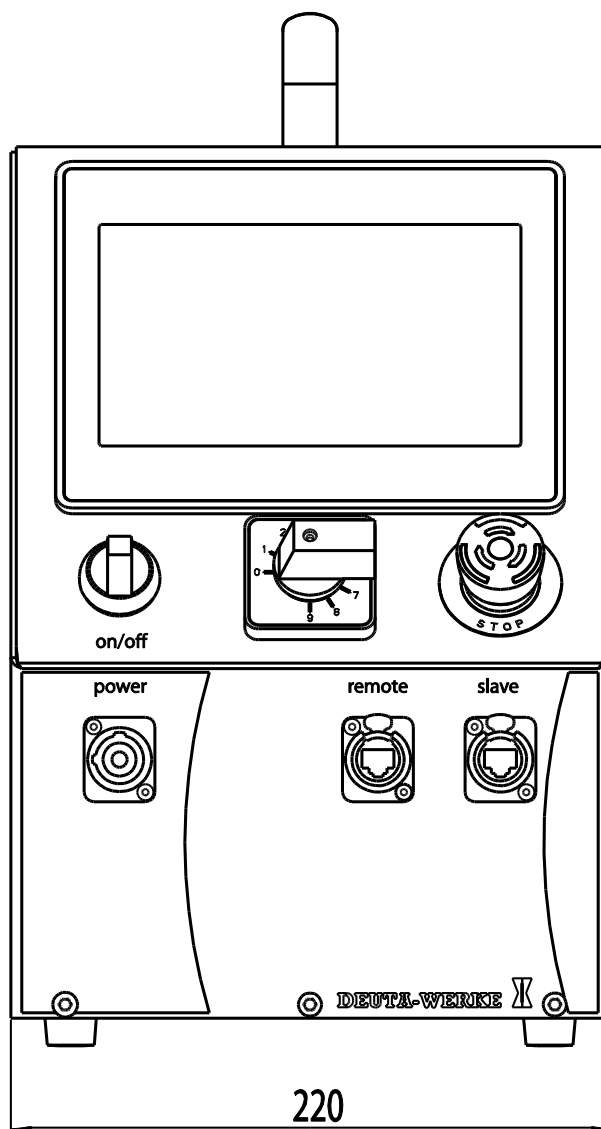


Fig. 4/1: XP20D front view

4.2 Front view XP20DS

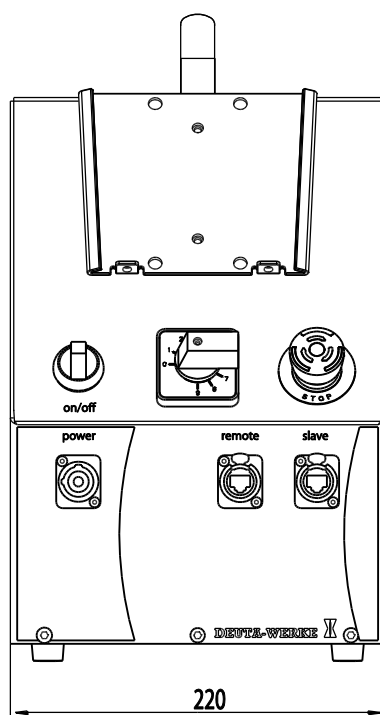


Fig. 4/2: XP20DS front view

4.3 Side view XP20D

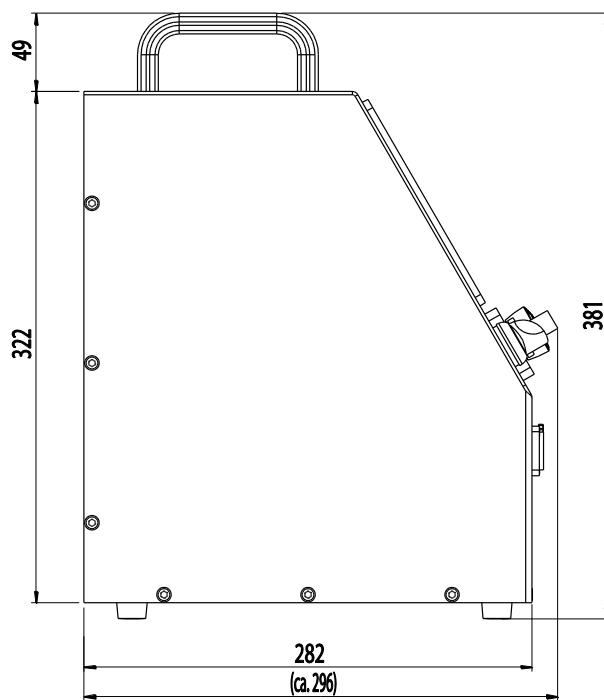


Fig. 4/3: XP20D side view

4.4 Side view XP20DS

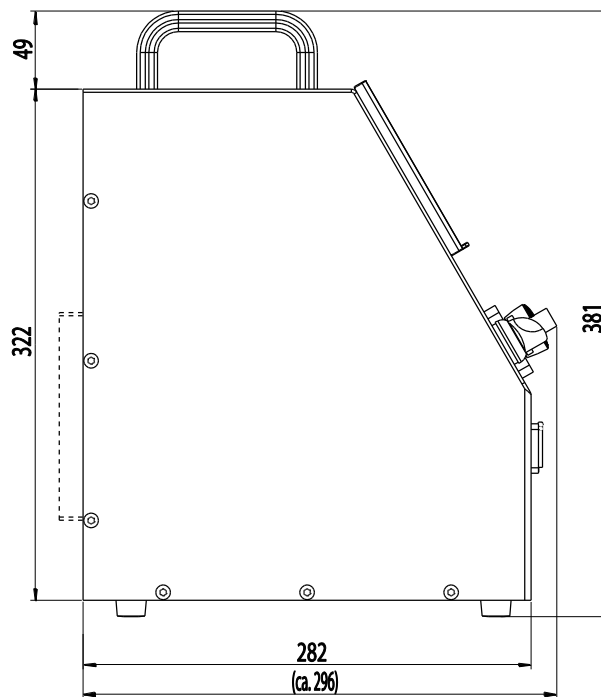
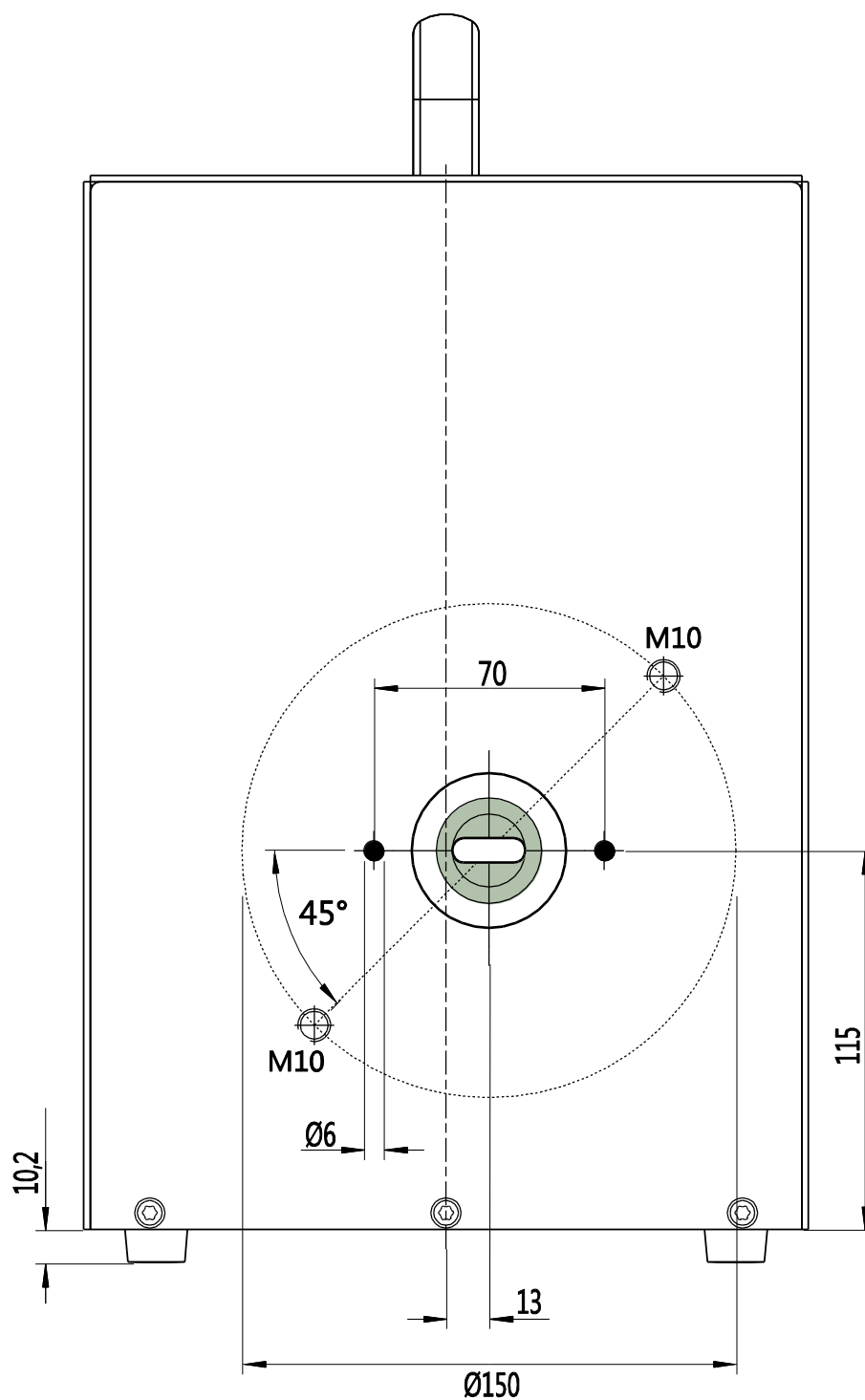


Fig. 4/4: XP20DS side view

4.5 XP20D/DS Rear view without adapter set*Fig. 4/5: XP20D/DS rear view*

4.6 View of standard accessories (included in delivery)

Intermediate flange-1 (standard)

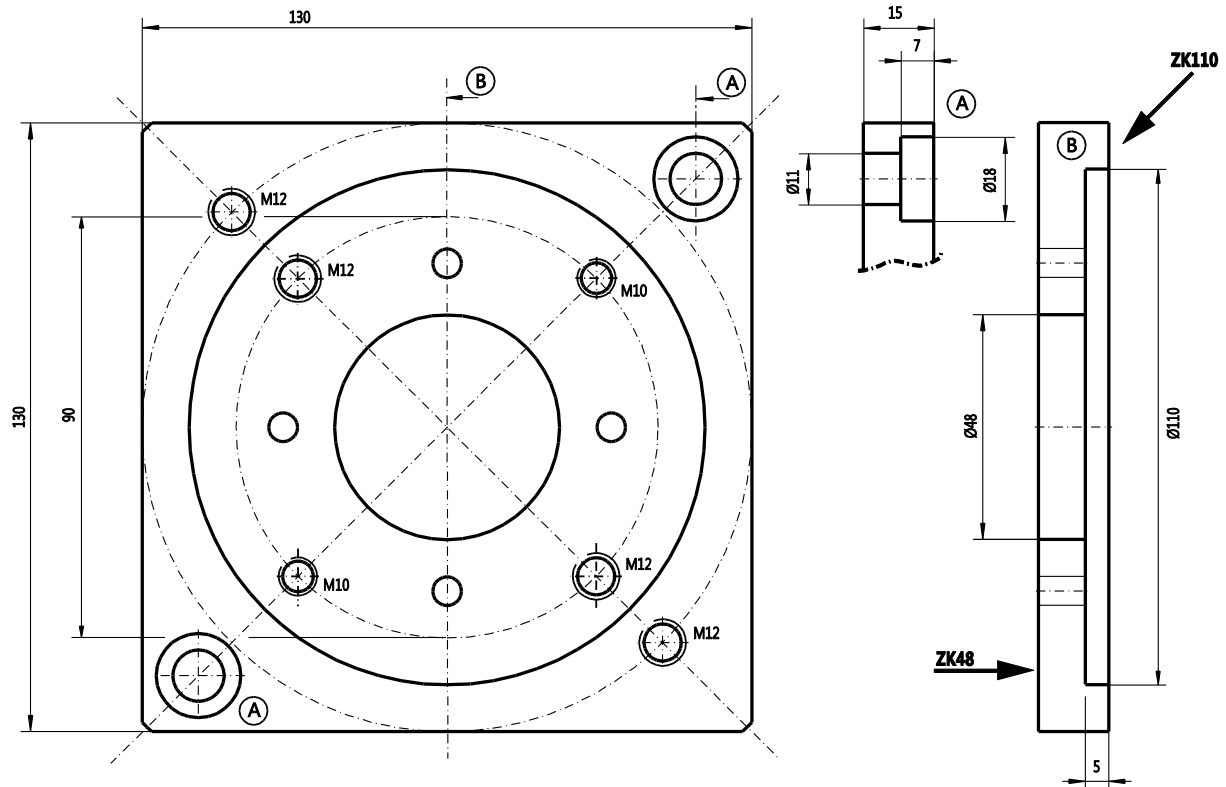


Fig. 4/6: Intermediate flange-1

for generators with

Centring diameter: - 48 mm
 - 110 mm

Mounting pitch circle:

- 90 mm for M10 and M12 generator mounting
- 130 mm for M12 generator mounting

Included with the intermediate flange-1:

- 2 pieces cylinder head screws M10 with hexagon socket, spanner size 7 (M10x25DIN7984).

Order designation: XP20DA5 (see Accessories) [→ Page 33]

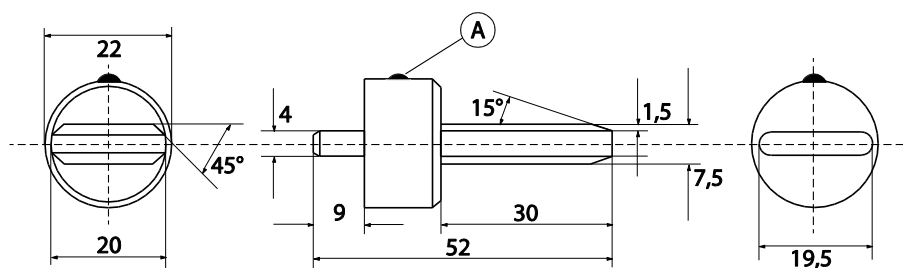
Adapter-1 (standard)


Fig. 4/7: Adapter-1

A	Stop bolt, used to secure the adapter in the XP20D/DS		-
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Order designation: XP20DA7 (see Accessories) [→ Page 33]

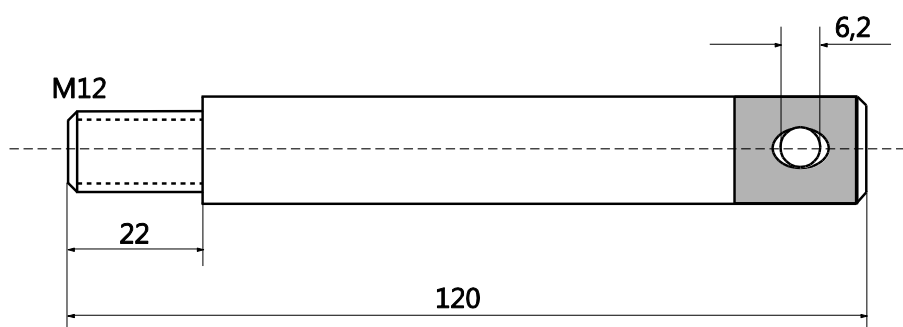
Fastening screw-1 (standard)


Fig. 4/8: Fastening screw-1

 Set with 2 pieces
 for generators with

 M12, flange thickness up to 15 mm
 (e.g. for EF generators)

Order designation: XP20DA2 (see Accessories) [→ Page 33]

4.7 View additional accessories

Intermediate flange-2

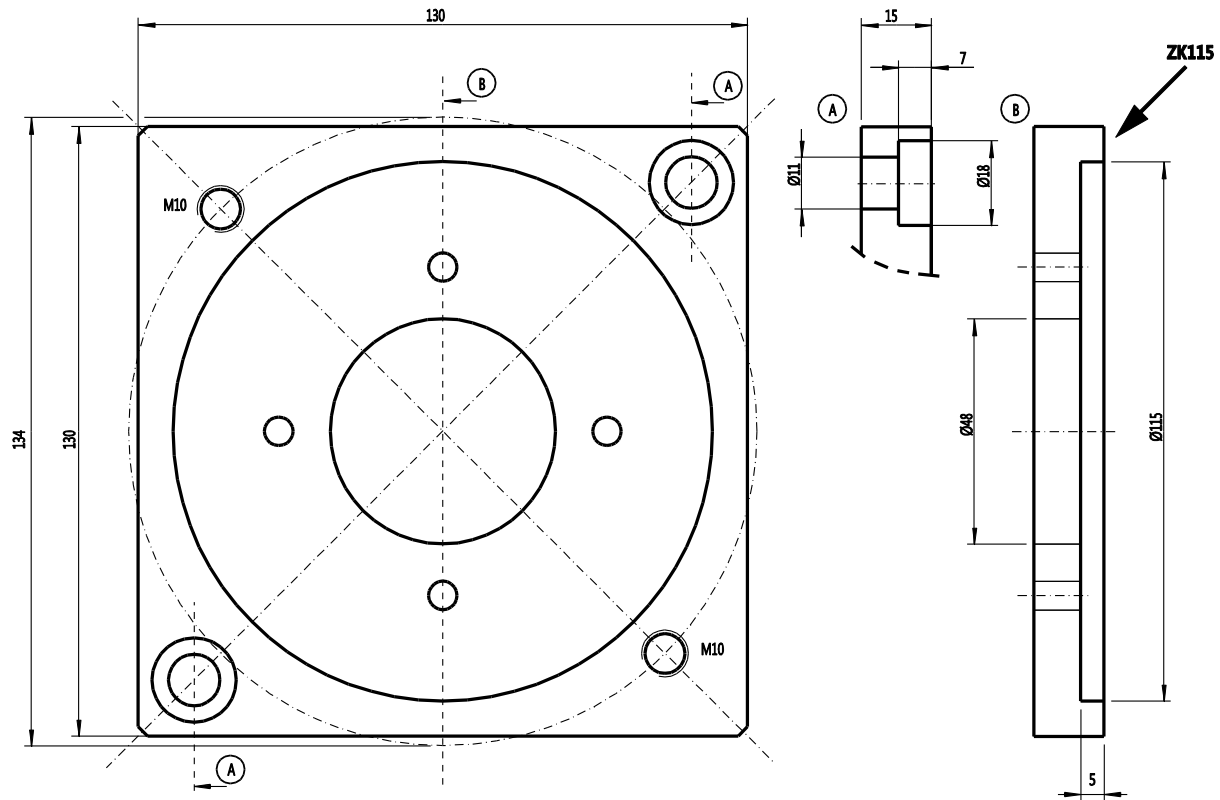


Fig. 4/9: Intermediate flange-2

for generators with

Centring diameter: - 115 mm

Mounting pitch circle: - 134 mm for M10 generator mounting

Included with the intermediate flange-2:

- 2 pieces cylinder head screws M10 with hexagon socket, spanner size 7 (M10x25DIN7984).

Order designation: XP20DA6 (see Accessories) [→ Page 33]

Fastening screw-2

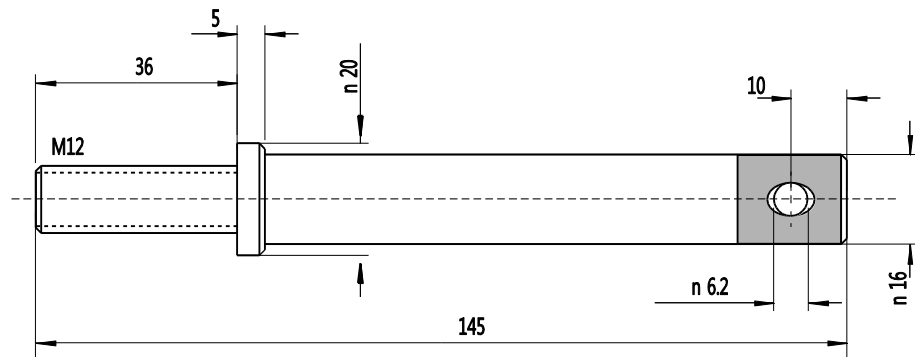


Fig. 4/10: Fastening screw-2

Set for 2 pieces
for generators with

M12, flange thickness up to 22 mm
(e.g. for DF16 generator with round flange)

Order designation: XP20DA3 (see Accessories) [→ Page 33]

Fastening screw-3

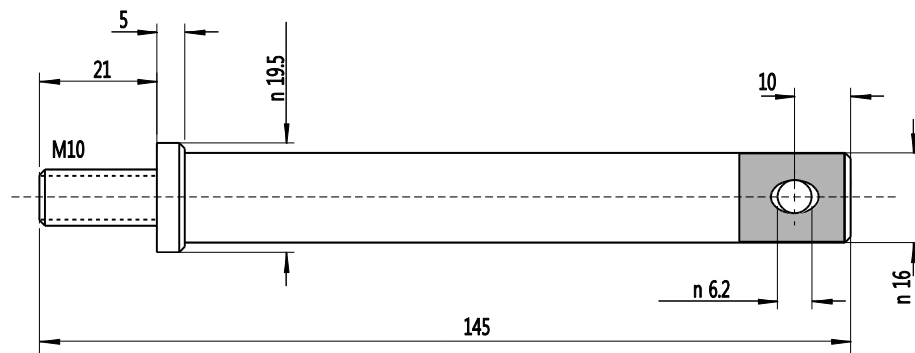


Fig. 4/11: Fastening screw-3

Set for 2 pieces
for generators with

M10, flange thickness up to 15 mm
(e.g. for DF16 generator with square flange)

Order designation: XP20DA4 (see Accessories) [→ Page 33]

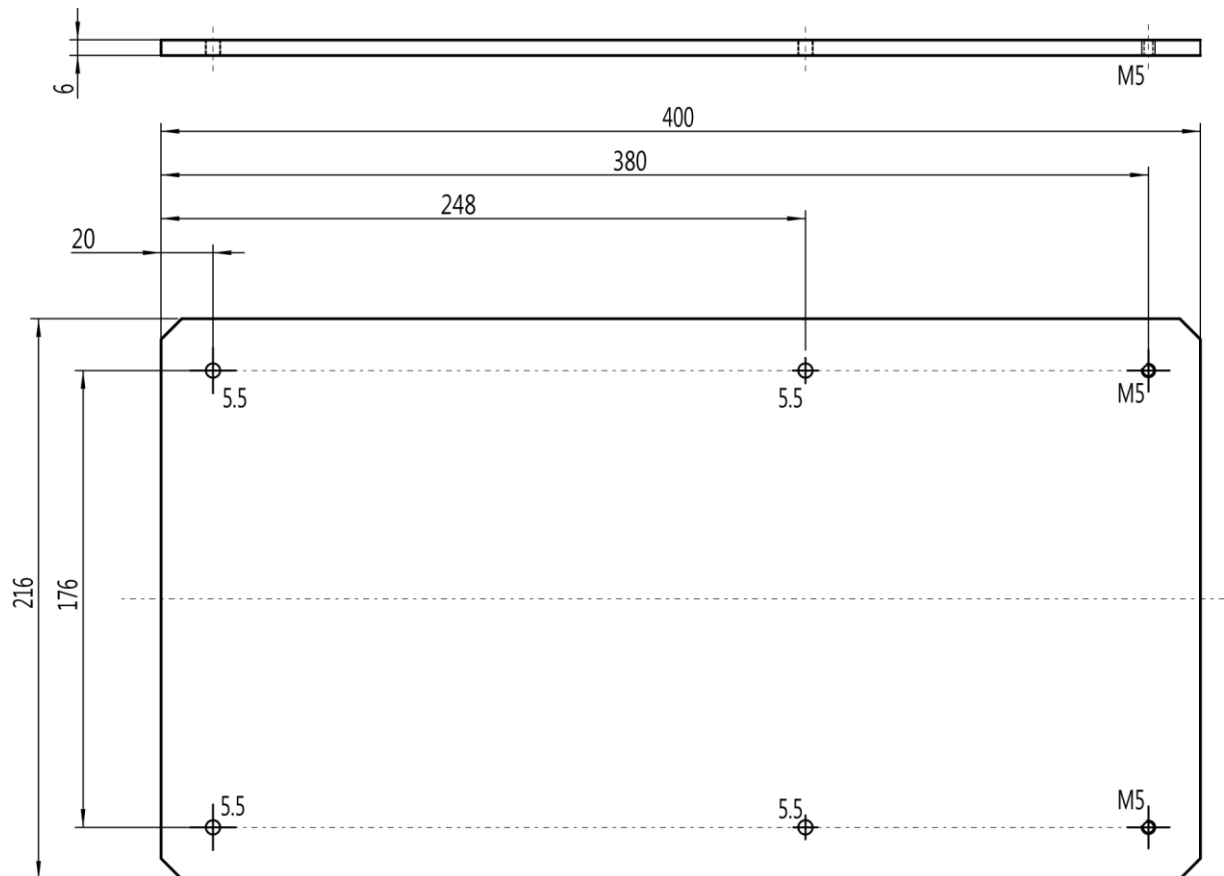
Assembly board XP20D/DS


Fig. 4/12: XP20D/DS Assembly board [XP20D-DS]

Included with the assembly board:

- 2 pcs. cylinder head screws M5*10 with hexagon socket
- 4 pcs. cylinder head screws M5*25 with hexagon socket
- 2 pcs. device bases
- 6 pcs. M5 washers

Order designation: XP20DA1 (see Accessories) [→ Page 33]

4.8 XP20R Dimensions

XP20R front view

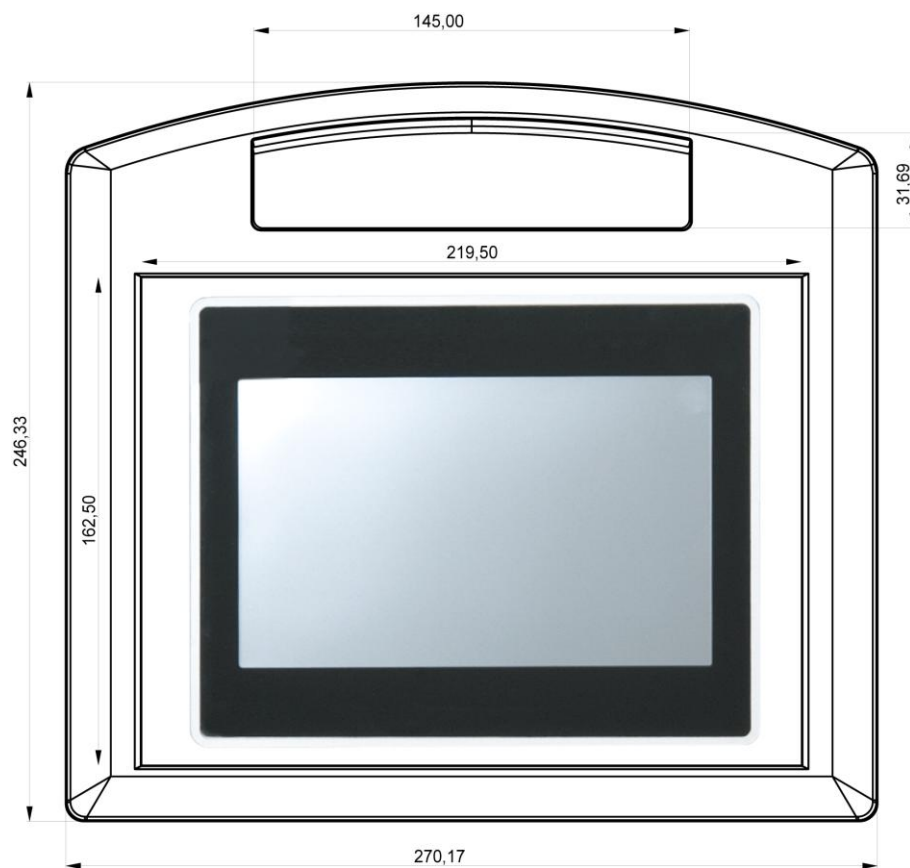


Fig. 4/13: XP20R_Front view

XP20R top view

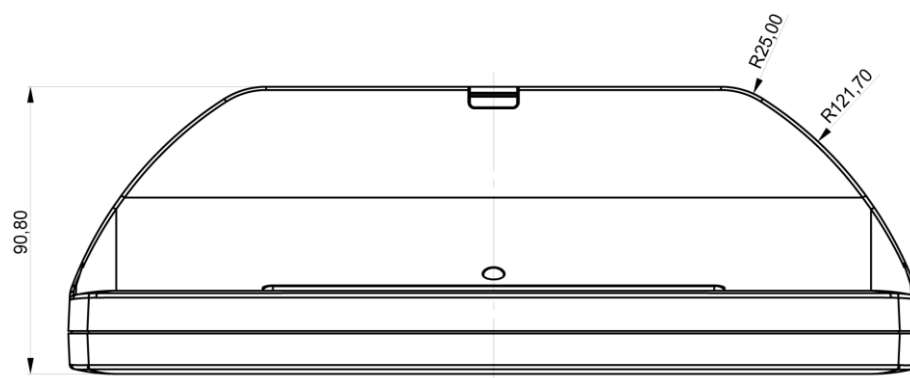


Fig. 4/14: XP20R_Top view

XP20R rear view

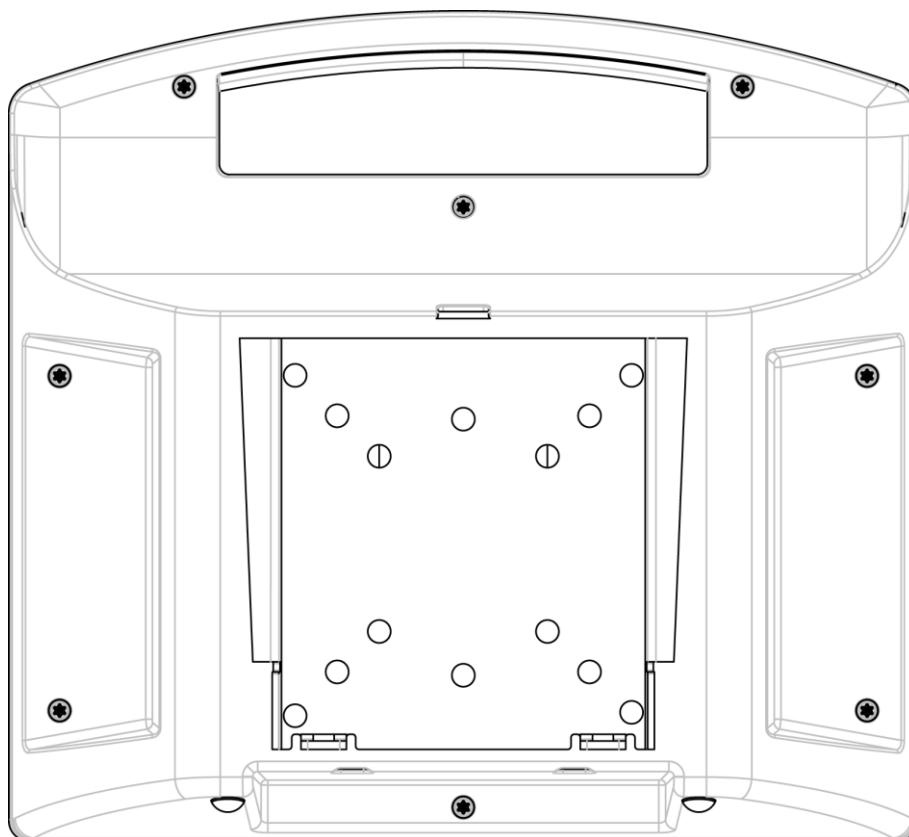


Fig. 4/15: XP20R_Rear view

XP20R View from bottom

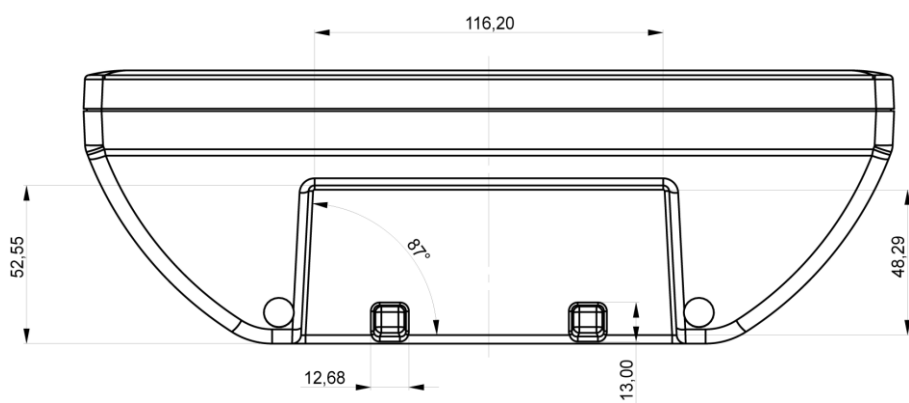
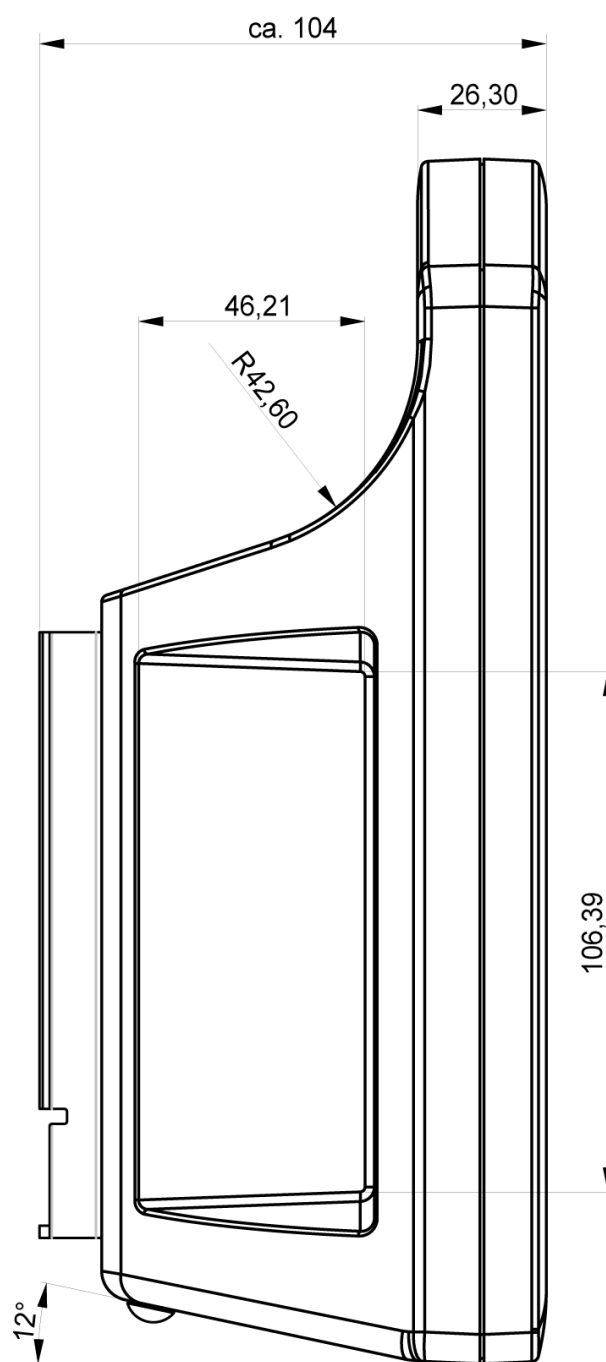


Fig. 4/16: XP20R_View_from bottom

XP20R side view left*Fig. 4/17: XP20R_Side view_left*

XP20R side view right

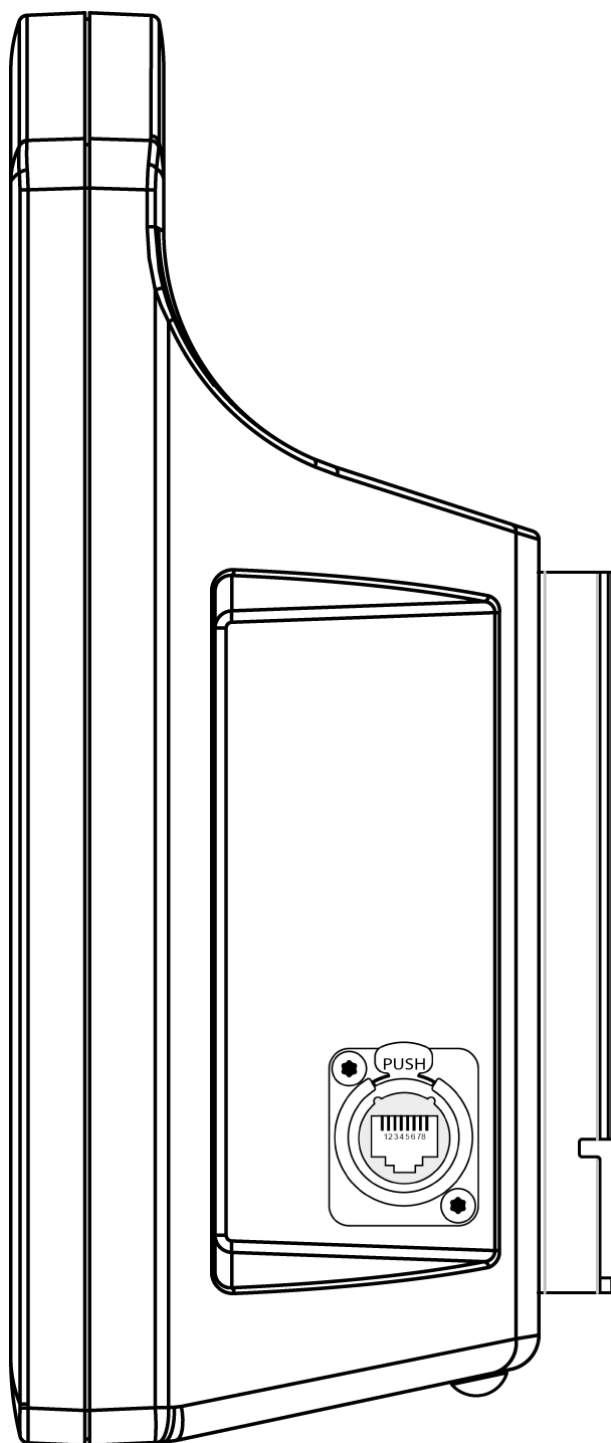


Fig. 4/18: XP20R_Side view_right

XP20R identification plate

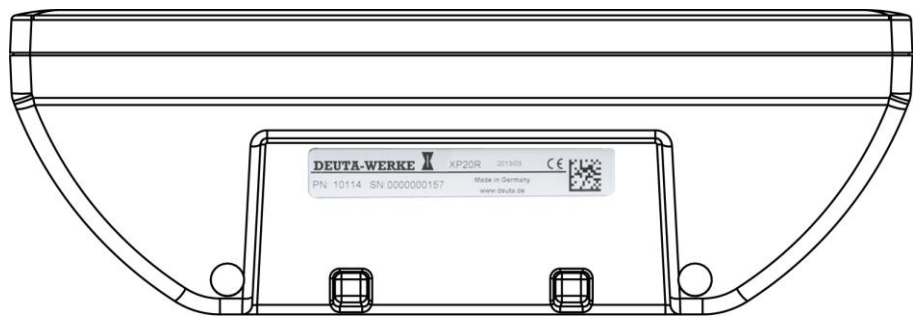


Fig. 4/19: XP20R_View_Identification plate

5 Technical data

5.1 Basic standard XP20D/DS

DIN EN ISO 12100	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN ISO 13849-1	Safety of machinery - Safety-related parts of controls - Part 1: General principles for design
EN ISO 13849-2	Safety of machinery – Safety-related parts of controls – Part 2: Validation
EN 61800-3	Variable speed electric drives - Part 3: EMC requirements including special test procedures
EN 61800-5-1	Electrical power drive systems with adjustable speed - Part 5-1: Safety requirements - Electrical, thermal and energy requirements

5.2 Climate and environmental conditions

5.2.1 Operating temperature

<i>Operating temperature range</i>

 0 °C...+40 °C

5.2.2 Storage temperature

<i>Storage temperature</i>

 -20 °C...+55 °C

5.2.3 Humidity

Humidity	annual average: 20 to 85% relative humidity
----------	---

5.2.4 Elevation (air pressure)

Elevation (Air pressure)

acc. to EN 50125-1:Class AX: up to 2,000 m
(with reference to sea level)

5.2.5 Shock/vibration

Shock/Vibration

acc. to EN 61373 category 1, class B

5.2.6 Fire protection

Fire protection

acc. to DIN 5510-2

5.3 Mechanical data

5.3.1 Dimensions

Width	220 mm
Height	381 mm
Depth	282 mm

5.3.2 Material

Housing material	Aluminium
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5.3.3 Weight

Weight	XP20D: approx. 11.5 kg XP20DS: approx. 11.0 kg
--------	---

5.3.4 Protection category

Housing :	IP42
-----------	------

5.3.5 Colour

Housing: painted RAL 3002 (carmine),

5.4 Product characteristics

5.4.1 Touch operation terminal

Size:	7"
Resolution:	800 x 480 pixel
Touch:	Analogue resistive
Brightness:	typ. 300 cd/m ²
Colours:	64k
Dimmable:	Yes

5.4.2 Rotational speed of generator drive, gear wheel if applicable

Rotational speed range	0 to 4000 rpm
Accuracy min. (at 4000 rpm)	±1 %

Synchronism (Drive speed tolerances)

The XP20D/DS is equipped with a dynamic control of the drive motor. Compared with the preceding product XP10, less speed deviations are achieved here particularly during restricted-speed running. The dynamic control is optimised for maintaining a constant rotational speed or speed (acceleration = 0) for the typical test rotational speeds or vehicle speeds.

pre-set rotational speed	[rpm]	25	75	150	300	600	1200
corresponds to typical vehicle speed	[km/h]	4	12	25	50	100	200
relative rotational speed deviation 1.)	[%]	4,5	3,5	2,0	1,0	0,5	0,3

1.) Bandwidth of minimum and maximum values referring to the pre-set rotational speed measured with the DF16/1 which supplies 200 pulses per revolution.

If specific acceleration profiles result in higher requirements, a special configuration of the control can be created upon request.

5.4.3 Direction of rotation

Direction: Switchable (Left, Right)

5.4.4 Setting range of speed

Speed range: 0 to 400 km/h

5.4.5 Setting range of wheel diameter

Wheel diameter: 450 to 2000 mm

5.4.6 Connection of axle mounted generator

Connection of axle mounted generator: Occurs at the rear via appropriate adapters

5.5 Electrical data

5.5.1 Supply

Number:	1
Function:	Power supply XP20D/DS
Plug connection:	Neutrik powerCON TRUE1, NAC3MPX Mating connector: Neutrik powerCON TRUE1,NAC3FX
Signal names:	N,L,PE
Type:	Wideband power supply unit
Rated supply voltage:	230 VAC (50-60 Hz)
Supply voltage range:	110 VAC ... 240 VAC (50-60 Hz)
Power consumption:	max. 500 W
Current consumption:	max. 2.3 A
Polarity reversal protection:	Polarity reversal due to plug connection not possible
Potential isolation:	Yes
Insulation voltage:	500 VAC

5.5.2 Interfaces

5.5.2.1 Ethernet interface "remote"

Number:	1
Function:	Remote connection
Plug connection:	Neutrik etherCON, RJ45
Signal names:	RJ45: 1-TX+, 3-RX+, 2-TX-, 6-RX-,
Type:	Ethernet in accordance with IEEE 802.3af 10 BaseT and 100 BaseTX
Bit rate:	10/100 Mbit/s
Connection:	Auto Cross-over

PoE:	Yes, PSE (48 VDC protected), Midspan, Class3
Insulation voltage:	500 VAC
IP address:	192.168.1.10 Only permissible for device address "1" (selection switch=1)

5.5.2.2 Ethernet interface "slave"

Number:	1
Function:	Slave connection
Plug connection:	Neutrik etherCON, RJ45
Signal names:	RJ45: 1-TX+, 3-RX+, 2-TX-, 6-RX-,
Type:	Ethernet in accordance with IEEE 802.3af 10 BaseT and 100 BaseTX
Bit rate:	10/100 Mbit/s
Connection:	Auto Cross-over
PoE:	Yes, PSE (48 VDC protected), Midspan, Class3
Insulation voltage:	500 VAC
IP address:	192.168.1.10 Only permissible for device address "1" (selection switch=1)

5.6 XP20R Technical data

5.6.1 Basic standard XP20R

DIN EN ISO 12100	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN ISO 13849-1	Safety of machinery - Safety-related parts of controls - Part 1: General principles for design
EN ISO 13849-2	Safety of machinery – Safety-related parts of controls – Part 2: Validation
EN 61800-3	Variable speed electric drives - Part 3: EMC requirements including special test procedures
EN 61800-5-1	Electrical power drive systems with adjustable speed - Part 5-1: Safety requirements - Electrical, thermal and energy requirements

5.6.2 Climate and environmental conditions

5.6.2.1 Operating temperature

<i>Operating temperature range</i>

 0 °C...+50 °C

5.6.2.2 Storage temperature

<i>Storage temperature</i>

 -20 °C...+70 °C

5.6.2.3 Humidity

Humidity	annual average: 20 to 85% relative humidity
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5.6.2.4 Elevation (air pressure)

Elevation (Air pressure)	acc. to <u>EN 50125-1</u> : Class AX: up to 2,000 m (with reference to sea level)
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5.6.2.5 Shock/vibration

Shock/Vibration	acc. to <u>EN 61373</u> category 1, class B
-----------------	---

5.6.2.6 Fire protection

Fire protection	acc. to <u>DIN 5510-2</u>
-----------------	---------------------------

5.6.3 Mechanical data

5.6.3.1 Dimensions

Width	approx. 270 mm
Height	approx. 247 mm
Depth	approx. 104 mm

5.6.3.2 Material

Housing material	ASA+PC (UL 94 V0)
------------------	-------------------

5.6.3.3 Weight

Weight	approx. 2.5 kg
--------	----------------

5.6.3.4 Protection category

Housing :	IP54
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5.6.3.5 Colour

Housing:	Colour: lava
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5.6.4 Product characteristics

5.6.4.1 Touch display

Size:	7"
Resolution:	800 x 480 pixel
Touch:	Analogue resistive
Brightness:	typ. 300 cd/m ²
Colours:	64k
Dimmable:	Yes

5.6.5 Electrical data

5.6.5.1 Supply

Number:	1
Function:	Power supply over XP20D/DS over PoE
Plug connection:	Neutrik etherCON, RJ45
Signal names:	RJ45: 4-DC+, 5-DC+, 7-DC-, 8-DC-
Type:	Ethernet in accordance with IEEE 802.3af
PoE	Yes, PD (48 VDC protected), Midspan, Class3
Insulation voltage:	500 VAC

5.6.5.2 Ethernet interface

Number:	1
Function:	Communication connection with XP20 devices
Plug connection:	Neutrik etherCON, RJ45
Signal names:	RJ45: 1-TX+, 3-RX+, 2-TX-, 6-RX-,
Type:	Ethernet in accordance with IEEE 802.3af 10 BaseT and 100 BaseTX
Bit rate:	10/100 Mbit/s

Connection:	Auto Cross-over
PoE:	Yes, PD (48 VDC protected), Midspan, Class3
Insulation voltage:	500 VAC
IP address:	192.168.1.120

6 Certificates

CE Declaration of conformity XP20D page 1

CE

EC Certificate of Conformity
in accordance with the directives

2006/42/EC (Machinery Directive)
2004/108/EC (electromagnetic compatibility)
2006/95/EC (low voltage directive)

We DEUTA-WERKE GmbH
PAFFRATHER STRASSE 140, D-51465 BERGISCH GLADBACH
hereby confirm on our sole responsibility that the product

Portable test block for axle mounted generator XP20D
(see reverse for variants)

complies with the essential safety requirements as prescribed by the Council Directive on harmonisation of legal requirements of the member states in respect of the here listed directives. The following standards are applied:

- EN ISO 12100:2010 Safety of machinery – General principles for design – Risk assessment and risk reduction
- EN ISO 13849-1:2008 Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design
- EN ISO 13849-2:2012 Safety of machinery – Safety-related parts of control systems – Part 2: Validation
- EN 61800-3:2004 Adjustable speed electrical power drive systems – Part 3: EMC requirements and specific test methods
- EN 61800-5-1:2007 Adjustable speed electrical power drive systems – Part 5-1: Safety requirements – Electrical, thermal and energy

This certificate applies to all products manufactured after the date specified in the following and becomes void if the unit(s) are modified without our approval or inappropriately repaired by the user.
Valid for products as from: **08.05.2013**

It is essential that the following operating and environmental conditions are respected:

- Please refer to the instruction handbook XP20D – XP20DS – XP20R Portable test block for axle mounted generator, DEUTA-documentation 4AB1269.

The following person is authorized to compile the technical documentation: Ralf Meuser, Product Qualification Department, DEUTA-WERKE GmbH, Paffrather Str. 140, 51465 Bergisch Gladbach, Germany

This certificate is issued on behalf of the manufacturer by:

Bergisch Gladbach,

28.05.2013
Date


Name / Signature

R. Meuser
Name / Signature

Fig. 6/1: XP20D CE Declaration of conformity page 1



INFO

If necessary, you can request a more current version of the Declaration of Conformity from DEUTA.

CE Declaration of conformity XP20D page 2

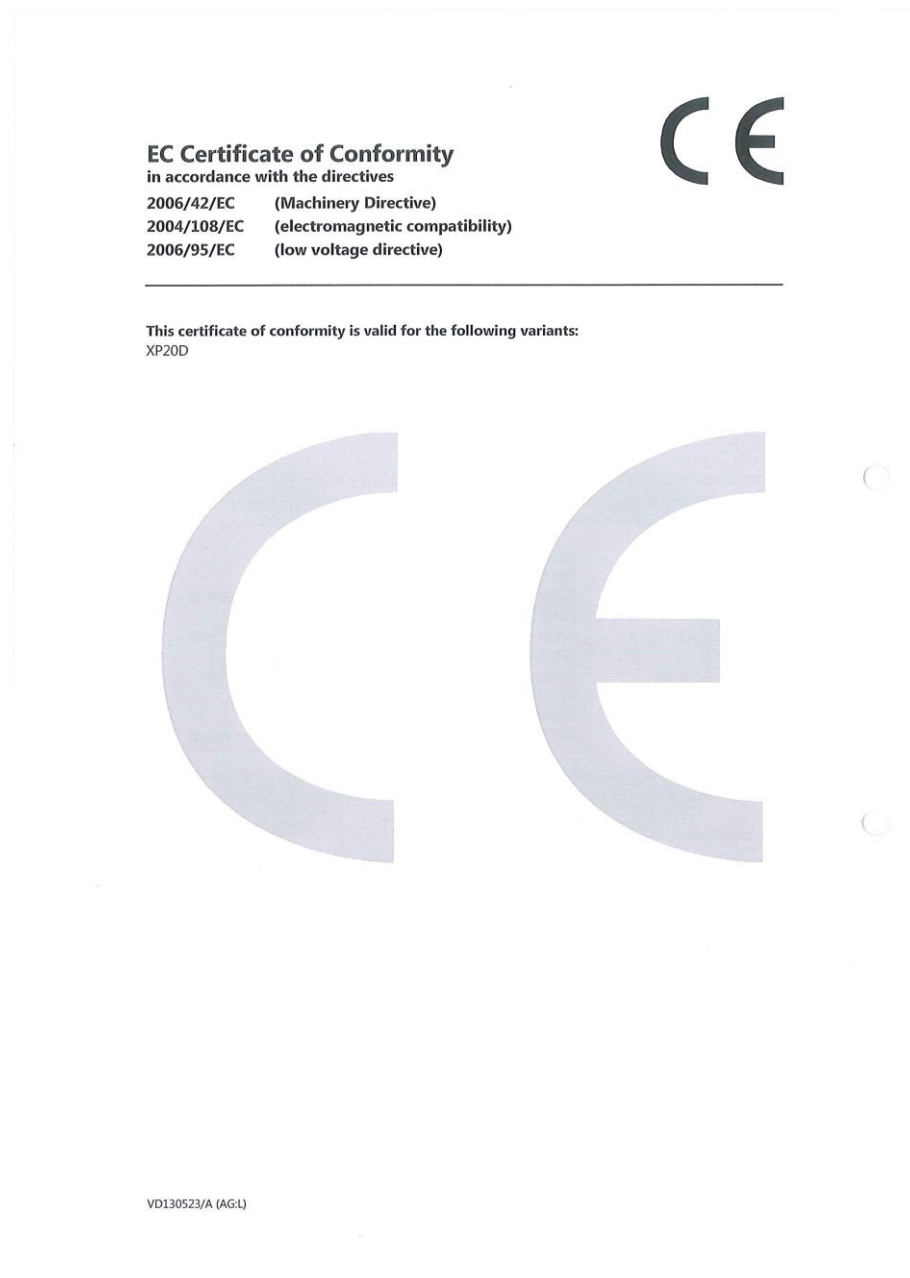


Fig. 6/2: XP20D CE Declaration of conformity page 2



INFO

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CE Declaration of conformity XP20DS page 1

CE

EC Certificate of Conformity
in accordance with the directives
2006/42/EC (Machinery Directive)
2004/108/EC (electromagnetic compatibility)
2006/95/EC (low voltage directive)

We DEUTA-WERKE GmbH
PAFFRATHER STRASSE 140, D-51465 BERGISCH GLADBACH
hereby confirm on our sole responsibility that the product

Portable test block for axle mounted generator XP20DS
(see reverse for variants)

complies with the essential safety requirements as prescribed by the Council Directive on harmonisation of legal requirements of the member states in respect of the here listed directives. The following standards are applied:

- EN ISO 12100:2010 Safety of machinery – General principles for design – Risk assessment and risk reduction
- EN ISO 13849-1:2008 Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design
- EN ISO 13849-2:2012 Safety of machinery – Safety-related parts of control systems – Part 2: Validation
- EN 61800-3:2004 Adjustable speed electrical power drive systems – Part 3: EMC requirements and specific test methods
- EN 61800-5-1:2007 Adjustable speed electrical power drive systems – Part 5-1: Safety requirements – Electrical, thermal and energy

This certificate applies to all products manufactured after the date specified in the following and becomes void if the unit(s) are modified without our approval or inappropriately repaired by the user.
Valid for products as from: **08.05.2013**

It is essential that the following operating and environmental conditions are respected:

- Please refer to the instruction handbook XP20D – XP20DS – XP20R Portable test block for axle mounted generator, DEUTA-documentation 4AB1269.

The following person is authorized to compile the technical documentation: Ralf Meuser, Product Qualification Department, DEUTA-WERKE GmbH, Paffrather Str. 140, 51465 Bergisch Gladbach, Germany

This certificate is issued on behalf of the manufacturer by:

Bergisch Gladbach,

Date 28.05.2013


Name / Signature


Name / Signature

Fig. 6/3: XP20DS CE Declaration of conformity page 1



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CE Declaration of conformity XP20DS page 2

EC Certificate of Conformity in accordance with the directives 2006/42/EC (Machinery Directive) 2004/108/EC (electromagnetic compatibility) 2006/95/EC (low voltage directive) This certificate of conformity is valid for the following variants: XP20DS	
	
VD130523/A (AG:L)	

Fig. 6/4: XP20DS CE Declaration of conformity page 2



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CE Declaration of conformity XP20R page 1

CE

EC Certificate of Conformity
in accordance with the directives

2006/42/EC (Machinery Directive)
2004/108/EC (electromagnetic compatibility)
2006/95/EC (low voltage directive)

We DEUTA-WERKE GmbH
PAFFRATHER STRASSE 140, D-51465 BERGISCH GLADBACH
hereby confirm on our sole responsibility that the product

Mobile operating terminal XP20R
(see reverse for variants)

complies with the essential safety requirements as prescribed by the Council Directive on harmonisation of legal requirements of the member states in respect of the here listed directives. The following standards are applied:

- EN ISO 12100:2010 Safety of machinery – General principles for design – Risk assessment and risk reduction
- EN ISO 13849-1:2008 Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design
- EN ISO 13849-2:2012 Safety of machinery – Safety-related parts of control systems – Part 2: Validation
- EN 61800-3:2004 Adjustable speed electrical power drive systems – Part 3: EMC requirements and specific test methods
- EN 61800-5-1:2007 Adjustable speed electrical power drive systems – Part 5-1: Safety requirements – Electrical, thermal and energy

This certificate applies to all products manufactured after the date specified in the following and becomes void if the unit(s) are modified without our approval or inappropriately repaired by the user.
Valid for products as from: **08.05.2013**

It is essential that the following operating and environmental conditions are respected:

- Please refer to the instruction handbook XP20D – XP20DS – XP20R Portable test block for axle mounted generator, DEUTA-documentation 4AB1269.

The following person is authorized to compile the technical documentation: Ralf Meuser, Product Qualification Department, DEUTA-WERKE GmbH, Paffrather Str. 140, 51465 Bergisch Gladbach, Germany

This certificate is issued on behalf of the manufacturer by:

Bergisch Gladbach,

Date 08.05.2013



Name / Signature



Name / Signature

Fig. 6/5: XP20R CE Declaration of conformity page 1



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CE Declaration of conformity XP20R page 2

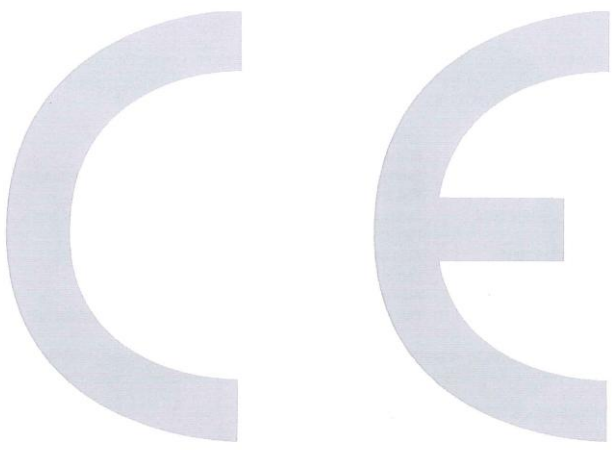
EC Certificate of Conformity in accordance with the directives 2006/42/EC (Machinery Directive) 2004/108/EC (electromagnetic compatibility) 2006/95/EC (low voltage directive) This certificate of conformity is valid for the following variants: XP20R	
	
VD130523/A (AG:L)	

Fig. 6/6: XP20R CE Declaration of conformity page 2



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If necessary, you can request a more current version of the Declaration of Conformity from DEUTA.

7 Important utilisation notes

7.1 Important notes

Check for complete delivery

Step	Description
1	Carefully unpack the device.
2	Check for completeness, correct type, correct connections as well as for possible signs of transport damage.
3	We recommend you keep some of the original packaging in the event of returns.
4	Only dispose of the packaging after you have completed these steps, if you do not intend to store the device.

7.2 Transportation

- **Transportation**

The device should only be transported in the originally supplied or similar packaging.

- **Returning**

When returning the device, sufficient protective measures must be taken to avoid damaging the device.

7.3 Storage

<u>Storage temperature</u>	-20 °C...+55 °C
Humidity	annual average: 20 to 85% relative humidity
Elevation (Air pressure)	acc. to <u>EN 50125-1</u> : Class AX: up to 2,000 m (with reference to sea level)
Packaging	The device should only be stored in the originally supplied or similar packaging.

7.4 Handling the touch surfaces



NOTICE

Incorrect storage and cleaning

Device damage!

1. For devices with touch surfaces, comply with the following notes.

- Do not operate with pointed or sharp-edged devices.
- Do not actuate continuously or weight down.
- Do not store the device with the touch surface laid face down.
- The touch surface must be especially protected from damage.
- Use only cleaning agents approved by DEUTA.
You can obtain a list of compatible chemicals from DEUTA.
- Do not use strong detergents.
- Do not permit contact with caustic chemicals.

8 Installation requirements



NOTICE

To avoid disturbances and damage:

1. Comply with all instructions given in this chapter.

8.1 XP20D/DS installation requirements

8.1.1 Installation instructions

Designated operational location

The operating resource has been designed for industrial use.

Installation conditions

Ensure that the XP20D/DS is set up in a standing position on solid ground.

Wiring and signal requirements

Only DEUTA cables (power cable, data cable RJ45/RJ45) or cables approved by DEUTA may be used.

Evaluation and peripheral device requirements

All connected devices must comply with the technical specifications given in the instruction handbook and have sufficient interference immunity for the corresponding ambient conditions to guarantee correct function.

Restricted operating behaviour caused by electromagnetic interferences

This resource is suitable for the electromagnetic ambient conditions as designated in the test basics. A deviating behaviour from the data in the evaluation criteria is not expected.

Scope and frequency of EMC relevant maintenance procedures

(Note in acc. with § 4, EMC Law)

EMC relevant maintenance measures (maintenance of EMC protective components, definition of the term "maintenance" see DIN 31051 IEC

60050-191) shall not be performed. If operating behaviour occurs which deviates from the evaluation criteria of the relevant product norm, the device must be tested at DEUTA and repaired if necessary.

General notes

To guarantee the operating quality, basic EMC measures to avoid unnecessary interference coupling mechanisms are assumed and are therefore not mentioned in more detail.

Account being taken of the above-mentioned installation conditions, the compliance with the indicated standards is guaranteed. Deviations from the installation conditions can only be carried out at one's own responsibility.

8.2 XP20R installation requirements

8.2.1 Installation instructions

Designated operational location

The operating resource has been designed for industrial use.

Installation conditions

The XP20R can be used as a handheld device or can be mounted on the portable test bench for the axle mounted generator XP20DS.

Wiring and signal requirements

Only the DEUTA data cable RJ45/RJ45 or data cables RJ45/RJ45 approved by DEUTA may be used.

Evaluation and peripheral device requirements

All connected devices must comply with the technical specifications given in the instruction handbook and have sufficient interference immunity for the corresponding ambient conditions to guarantee correct function.

Restricted operating behaviour caused by electromagnetic interferences

This resource is suitable for the electromagnetic ambient conditions as designated in the test basics. A deviating behaviour from the data in the evaluation criteria is not expected.

Scope and frequency of EMC relevant maintenance procedures

(Note in acc. with § 4, EMC Law)

EMC relevant maintenance measures (maintenance of EMC protective components, definition of the term "maintenance" see DIN 31051, IEC

60050-191) shall not be performed. If operating behaviour occurs which deviates from the evaluation criteria of the relevant product norm, the device must be tested at DEUTA and repaired if necessary.

General notes

To guarantee the operating quality, basic EMC measures to avoid unnecessary interference coupling mechanisms are assumed and are therefore not mentioned in more detail.

Account being taken of the above-mentioned installation conditions, the compliance with the indicated standards is guaranteed. Deviations from the installation conditions can only be carried out at one's own responsibility.

9 Installation

9.1 Important notice



IMPORTANT

Unused equipment connectors

Unused equipment connectors must always be provided with suitable covers as protection against contamination, contact, damage and fault.

9.2 Structure



CAUTION

Danger of injuries due to unsafe location

An unstable condition poses the risk of injury caused by, e.g., falling over of the XP20D/DS.

1. Ensure that the XP20D/DS is set up in a standing position on solid ground.
2. For heavy generators, an assembly board must be mounted as protection against tipping [\(see Accessories\) \[→ Page 33\]](#)
3. Wear safety shoes with steel tips when working with the XP20D/DS.

9.2.1 Assembly and connection XP20R

Assembly XP20R

The XP20R can be used either as a handheld device or can be inserted into a special holder on an XP20DS.

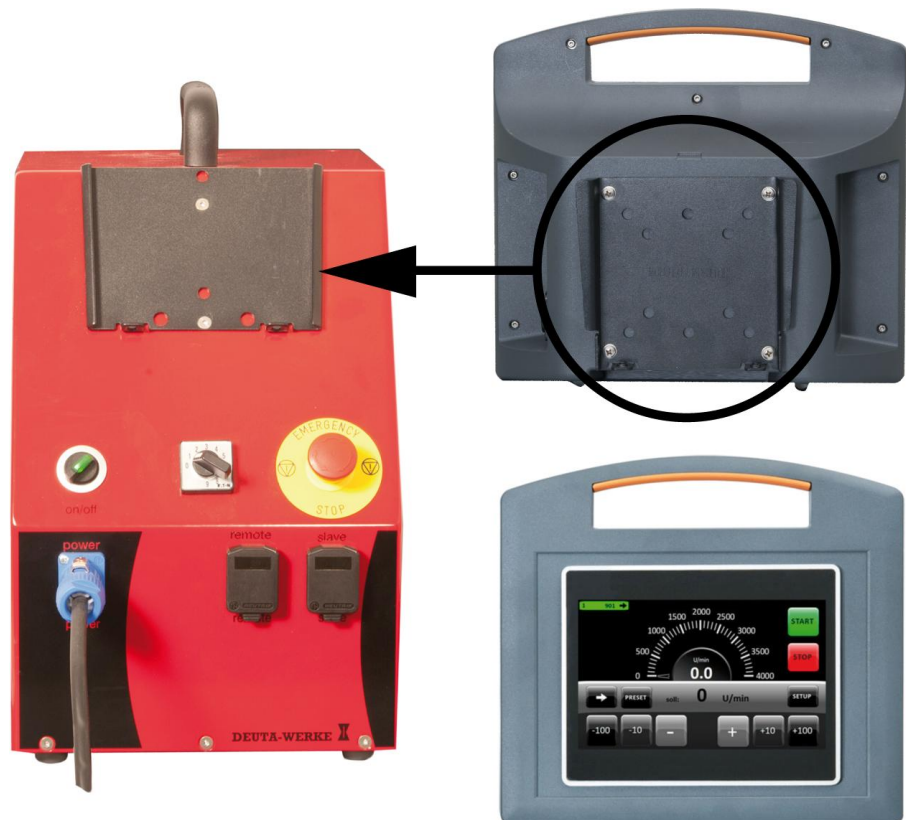


Fig. 9/1: XP20R fastening to XP20DS

Connection XP20R

The XP20R is connected to XP20D/DS devices exclusively via DEUTA data cable RJ45/RJ45 [\[see Accessories\] \[→ Page 33\]](#) between the "remote" connection at the XP20D/DS and the side plug connection at the XP20R. The power is supplied to the XP20R through this data cable RJ45/RJ45 (PoE).

Switching On/Off

Switching on or off is done with the ON-OFF switch on the XP20D/DS.



Fig. 9/2: XP20R_Connection-to-XP20DS

The connection may only be plugged or disconnected when voltage-free.

9.3 Wiring and earthing concept

9.3.1 Earthing regulation



DANGER

Electric shock when operating without protective conductor

In the event of faults or damage at the XP20D/DS, connection to or operation in power systems **without** protective conductor can cause electric shock with the respective injuries.

The XP20D/DS must only be operated in power systems with protective conductor.

1. The XP20D/DS must only be operated in power systems with protective conductor.
2. It is only permitted to use localised supply cables with protective conductor and the DEUTA powerCON plug connection.

9.3.2 Wiring regulation



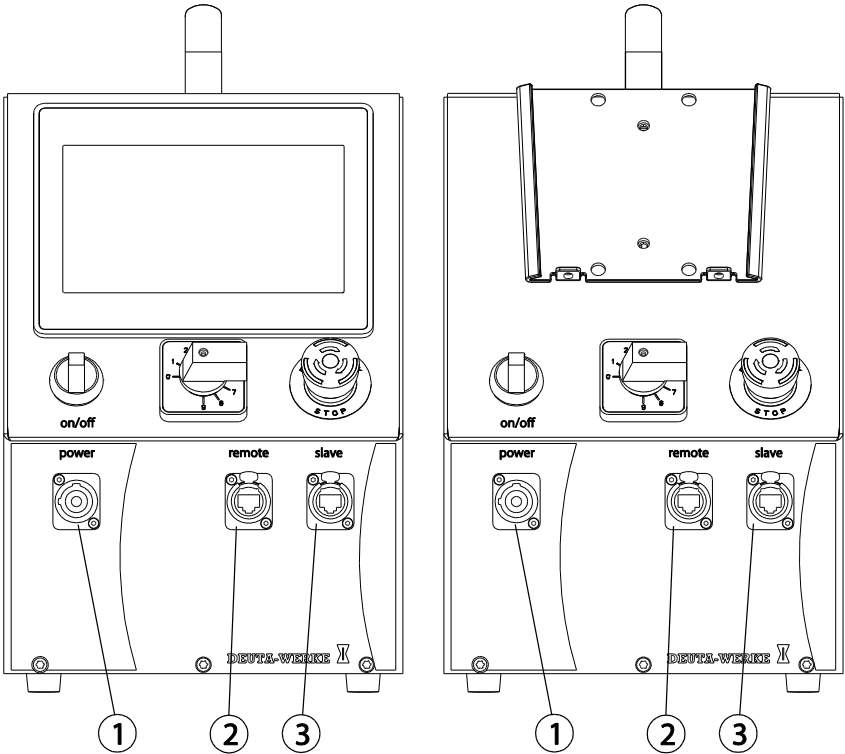
IMPORTANT

Supply cable

It is only permitted to use localised supply cables with protective conductor and the DEUTA powerCON plug connection [see Accessories] [→ Page 33].

9.4 Plug-pin assignments

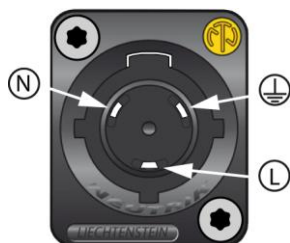
9.4.1 Connection overview



XP20D/DS connection overview

1	Power supply powerCON	2	Ethernet PoE "remote"
3	Ethernet PoE "slave"		

9.4.2 Supply "power"



Plug connection: Neutrik powerCON True 1



IMPORTANT

Type and source of danger

The powerCON plug connection may not be connected or disconnected while under load or under voltage.



WARNING

Dangerous voltage

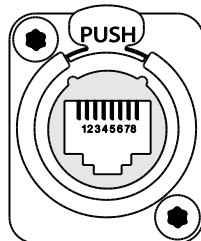
Electric shock due to dangerous voltage

➤ These contacts may carry voltages of 240 VAC.

1. Disconnect the voltage from the device and the power cables when working on the device or connectors!

9.4.3 Ethernet "remote"

Neutrik etherCON RJ45

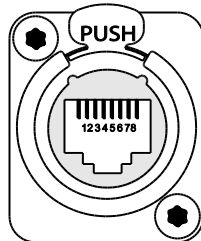


PIN	Signal-designation	Function
1	TX+	
2	TX-	
3	RX+	
4	DC+	PoE supply +
5	DC+	PoE supply +
6	RX-	
7	DC-	PoE supply -
8	DC-	PoE supply -

Connections with Auto Cross-over function!

9.4.4 Ethernet "slave"

Neutrik etherCON RJ45



PIN	Signal-designation	Function
1	TX+	
2	TX-	
3	RX+	
4	DC+	PoE supply +
5	DC+	PoE supply +
6	RX-	
7	DC-	PoE supply -
8	DC-	PoE supply -

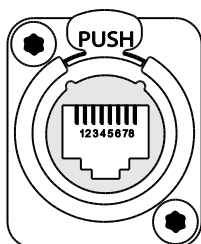
Connections with Auto Cross-over function!

9.4.5 XP20R connecting plug



Fig. 9/5: XP20R connecting plug

Neutrik etherCON RJ45



PIN	Signal-designation	Function
1	TX+	
2	TX-	
3	RX+	
4	DC+	PoE supply +
5	DC+	PoE supply +
6	RX-	
7	DC-	PoE supply -
8	DC-	PoE supply -

Connections with Auto Cross-over function!

9.5 Networking several XP20D/DS devices

Up to 9 XP20D/DS devices can be interconnected over the Ethernet interfaces to a test and simulation environment.



INFO

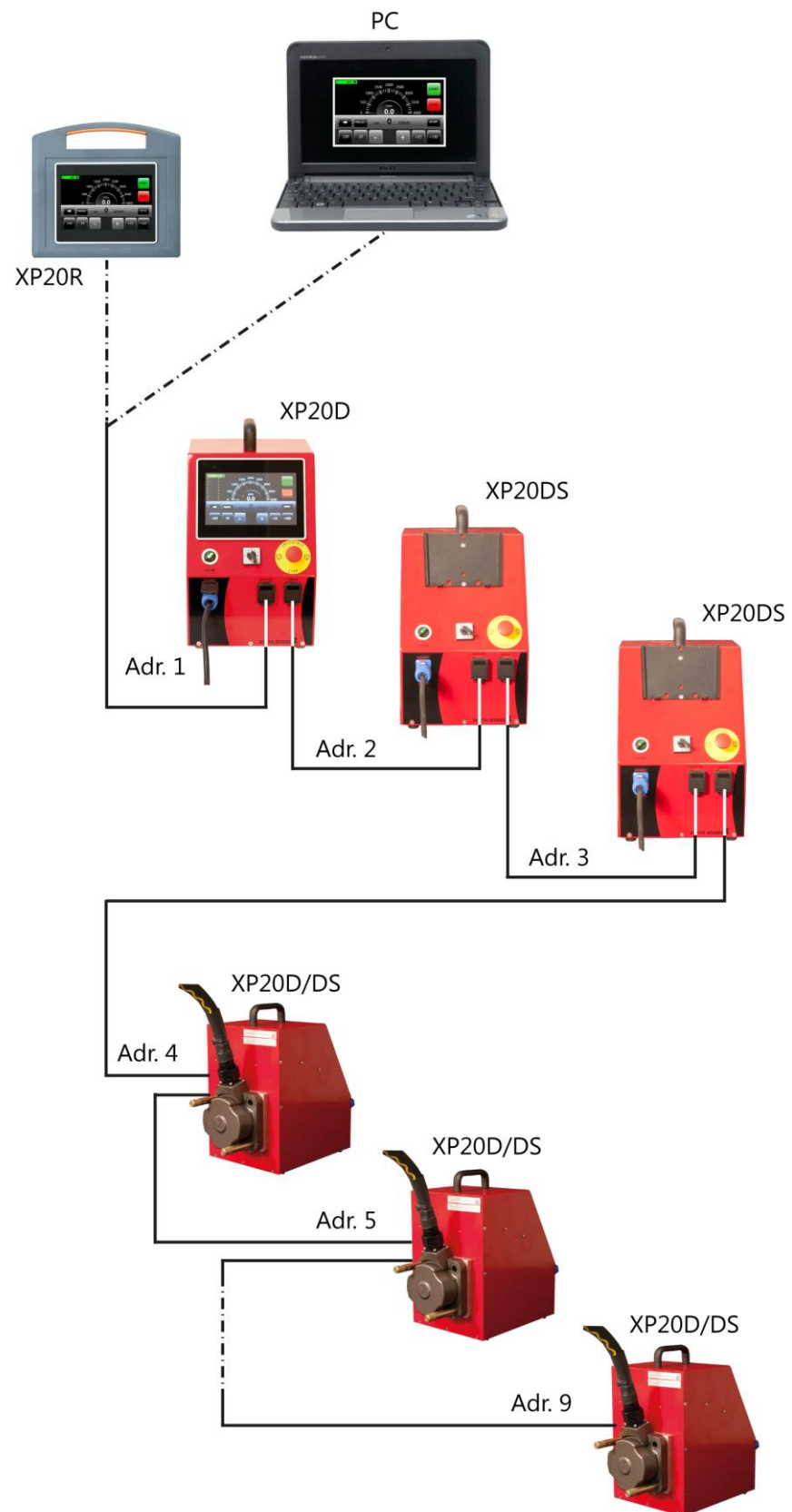
Connection XP20R (remote operation terminal)

Only one remote operation terminal XP20R must be connected!

Network connection

The Ethernet interfaces "remote" and "slave" (front side etherCON sockets) are used to interconnect the XP20D/DS devices. It is only permitted to use the data cable RJ45/RJ45 from the accessories list [\(see Accessories\) \[→ Page 33\]](#) in order to interconnect the devices!

The cables may not be extended. The spatial expansion results from the utilised data cable RJ45/RJ45.

*Fig. 9/6: XP20D/DS network*

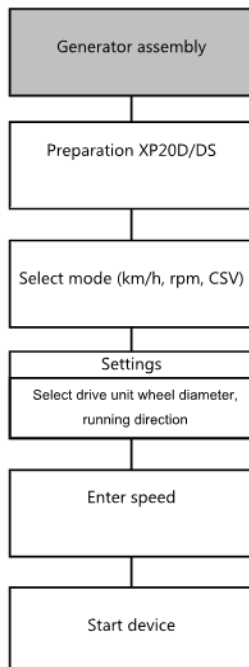
Addressing in system operation

In system operation, each connected XP20D/DS must be assigned a unique device address (Address 1 - 9) over the address selector switch. It must be definitely ensured that no device addresses are set twice. The setting must be checked before the start.

Operation in system operation

In system operation with two or more XP20D/DS, operation can occur via a connected remote operation terminal (XP20R) or via the **internal operation terminal at the device with Address 1**. Settings, such as the wheel diameter, are set individually for each connected XP20 device.

9.6 Mounting of axle mounted generator



Basic generator mounting:

Ensure that the appropriate flange is mounted.

The flange must be engaged in the guide pins at the rear and be firmly connected to the XP20D/DS with both M10 screws.

Insert the adapter appropriate to the attachment model (e.g. XP20DA7).

Set the generator on the flange and fasten it with the 2 fastening screws (e.g. XP20DA2).



Fig. 9/7: Rear with assembled axle mounted generator

INFO

Soiling of rotating parts

Soiling can cause faults.

To prevent faults, that is, to ensure smooth operation, prevent soiling of all rotating parts of the XP20D/DS. When assembling the axle mounted generator you should immediately remove soiling where necessary.





WARNING

Danger due to moving parts

Assembling the axle mounted generator in an activated state can cause injuries (e.g. crush injuries).

➤ **Make certain** that work on the XP20D/DS is **only** done in a switched off and secured state.

1. The XP20D/DS is to be secured against unauthorized activation!
2. Only when the axle mounted generator has been assembled correctly may the XP20D/DS be connected to the power supply!
3. Comply with the warning notes in the chapter *General warning and safety notes* [→ Page 15].

9.6.1 XP20D/DS Rear view with mounted intermediate flange

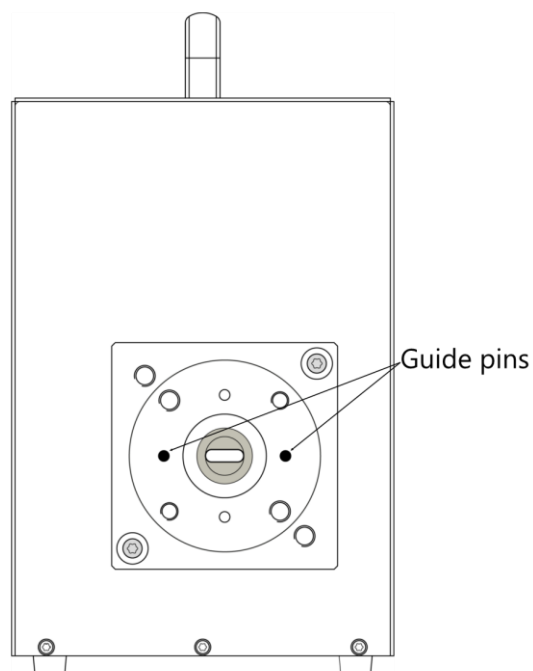


Fig. 9/8: Rear with intermediate flange

The intermediate flange must be mounted exactly to fit on the guide pins at the rear of the XP20DS.

9.6.2 Selection criteria attachment accessories

When assembling the axle mounted generator to the XP20D/DS, comply with the following selection criteria for the attachment accessories:

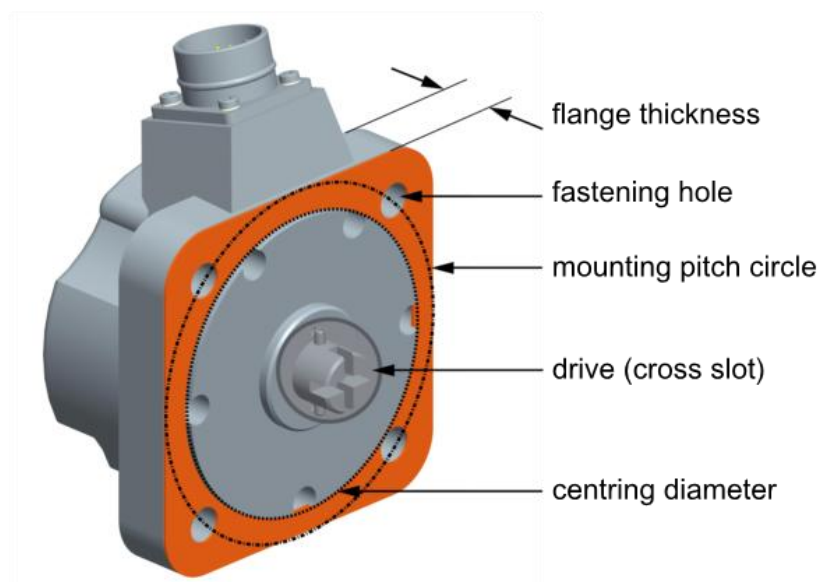


Fig. 9/9: Axle mounted generator features

Size of centring diameter

Determine the size of the centring diameter at the axle mounted generator, check the mounting pitch circle, then select from the table the required intermediate flange.

The intermediate flange is mounted using 2 hexagon socket screws (SS7).

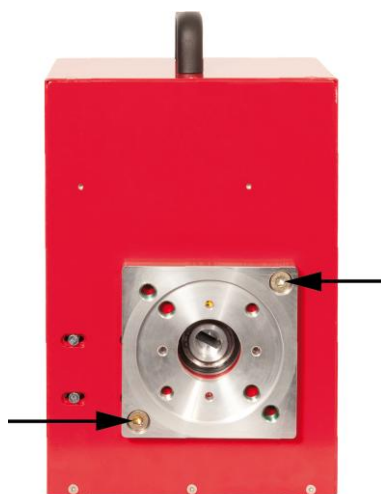


Fig. 9/10: Fastening intermediate flange

Centring diameter [mm]	Mounting pitch circle [mm]	Required intermediate flange:	Axle mounted generator flange side:
48	90	XP20DA5 [→ Page 40]	ZK48
110	130	XP20DA5 [→ Page 40]	ZK110
115	134	XP20DA6 [→ Page 40]	ZK115

Generator drive

The XP20D/DS is intended for split switches. The generator is driven either by the switch tongue which is fastened directly at the generator, or by the adapter [XP20DA7 \[\[→ Page 40\]\(#\)\]](#) which is inserted at the back of or on the driving axle of the XP20D/DS.

Notes to the drive models:

1. The XP20DA7 adapter is designated for the drive of axle mounted generators with cross slot. Size of the drive tongue: 19.5 mm x 4 mm, Length: 9 mm
2. For generators with mounted drive elements, such as a slotted disc, the drive element must be disassembled before assembly to the XP20D/DS so that the drive can be mounted via the available cross slot (as in Point 1).
3. For axle mounted generators with mounted drive tongue (cross section max. 20 mm x 7.5 mm), the generator can be mounted directly. It is to be ensured that the adapter in the XP20 was removed beforehand. The maximum permissible length of the drive tongue is 180 mm.

Installation and removal of the adapter XP20DA7

- The adapter is inserted with the long side straight into the XP20D/DS on the rear of the driving axle. Ensure that it engages correctly. It is secured only by this locking.

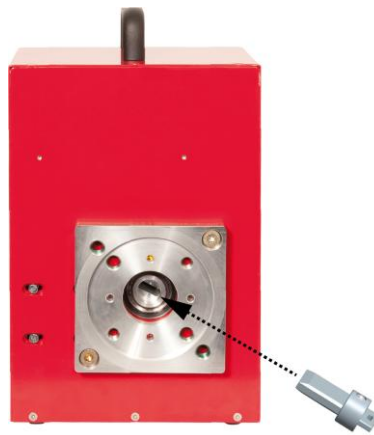


Fig. 9/11: Fastening the adapter

- The adapter is removed by pulling it straight from the axle.



CAUTION

Adapter (drive tongue) flies out of XP20D/DS

An adapter that possibly flies out poses a risk of injuries.

1. Ensure the secure insertion of the adapter which is correctly and firmly engaged!

Fastening screws

1. When selecting the fastening screws, the fastening hole at the axle mounted generator (M10 or M12) determines which thread type will be used.
2. The second criterion is the flange thickness (see table). This depends on the axle-mounted sensor flange.

Thread	Flange thickness to	Required fastening screw	Typical generator e.g.
M10	15 mm	XP20DA4 [→ Page 40]	DF16 electronic pulse generator with round flange
M12	15 mm	XP20DA2 [→ Page 40]	EF generator
M12	22 mm	XP20DA3 [→ Page 40]	DF16 electronic pulse generator with square flange

**INFO****Fastening of axle-mounted generator**

For the secure fastening and adjustment to the generator flange thickness, it may be necessary to use appropriate washers (not included in the delivery)!

Assembly board (tilting protection)

The assembly board is used as tilting protection for particularly heavy axle mounted generators.

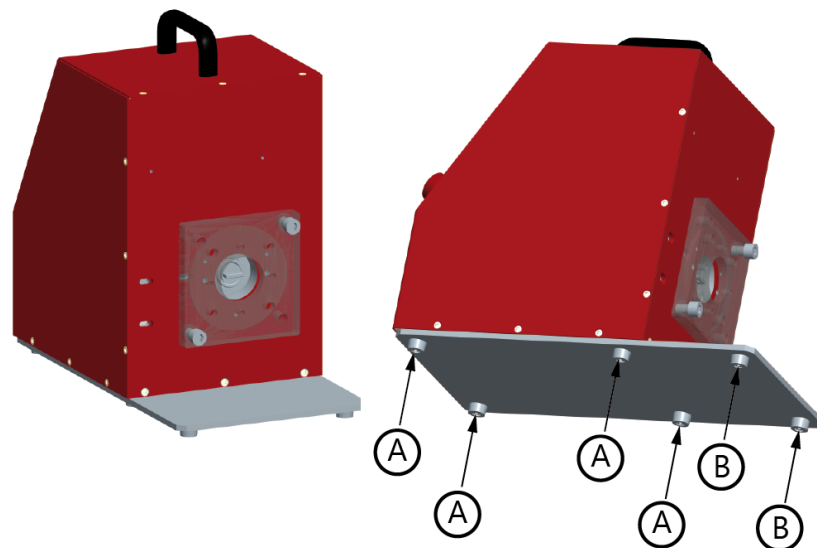


Fig. 9/12: XP20D/DS assembly board

Mounting the assembly board

1. Dismount the existing device bases (4).
2. Re-fasten the available device bases (A) and the assembly board using the cylinder head screws (M5*25) and the washers included with the delivery of the assembly board.
3. Fasten two new device bases (B) with the 2 cylinder head screws (M5*10) and the washers to the assembly board (included in the delivery of the assembly board).

Specific adaptations upon request!

Upon request, specific adaptations can be supplied.

9.6.3 Assembly examples

Assembly example 1

For testing:	Speed sensor with cross slot and square flange	
Centring diameter:	110 mm	
Pitch circle:	130 mm	
Generator drive:	Cross-slotted	
Fastening holes:	M12	
Generator flange thickness:	21.5 mm	
Required accessories:	Adapter	XP20DA7
	Intermediate flange-1 including 2x cylinder head screws M10	XP20DA5
	Flange side: ZK110	
	2x fastening screws M12, up to 22 mm	XP20DA3
Applicable for:	DF16 electronic pulse generator with square flange	

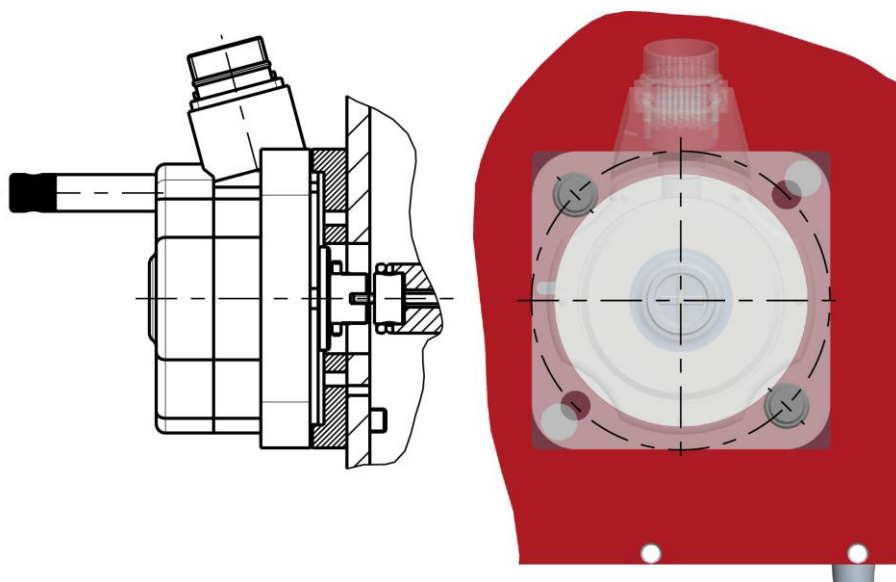


Fig. 9/13: Assembly Example 1a

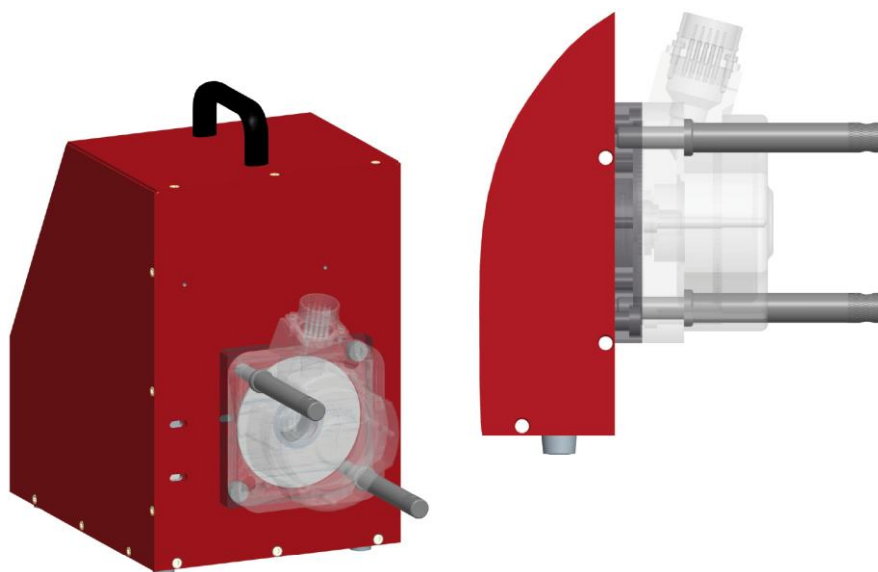


Fig. 9/14: Assembly Example 1b

Assembly example 2

For testing:	Speed sensor with cross slot and square flange
Centring diameter:	48 mm
Pitch circle:	90 mm
Generator drive:	Cross-slotted
Fastening holes:	M10
Generator flange thickness:	21.5 mm

Required accessories:	Adapter	XP20DA7
	Intermediate flange-1 including 2x cylinder head screws M10 Flange side: ZK48	XP20DA5

Generator-specific fastening screws

Applicable for:	EF&DF generator (small design) with square flange
-----------------	---

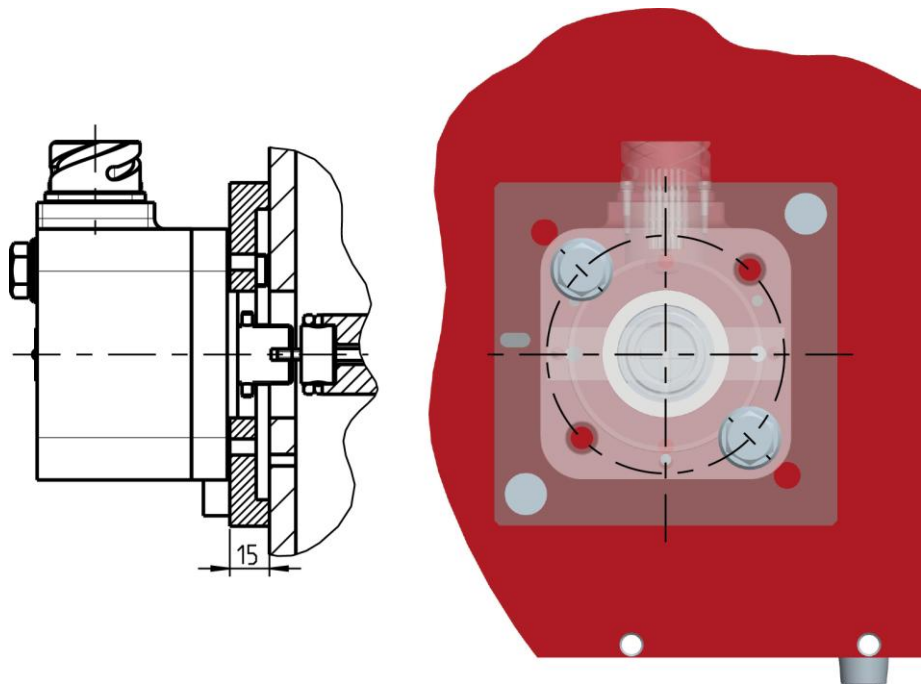


Fig. 9/15: Assembly Example 2a

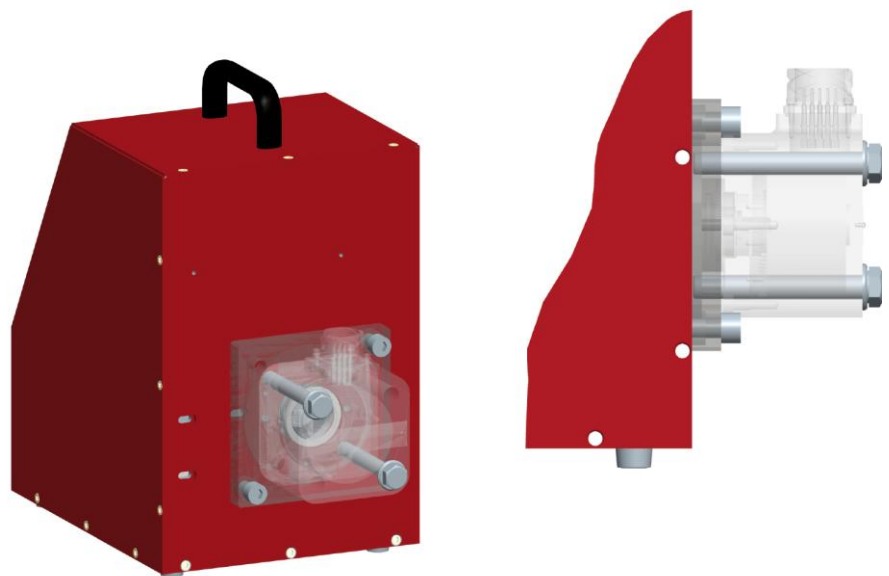


Fig. 9/16: Assembly Example 2b

Assembly example 3

For testing:	Speed sensor with drive tongue and round flange
Centring diameter:	115 mm
Pitch circle:	134 mm
Generator drive:	mounted generator tongue max. 180 mm
Fastening holes:	M10
Generator flange thickness:	7.5 mm

Required accessories:**No adapter**

Intermediate flange-2
including 2x cylinder head screws M10

XP20DA6

Flange side: ZK115

2x fastening screws M10, up to 15 mm

XP20DA4

Applicable for: DF16 generator with round flange

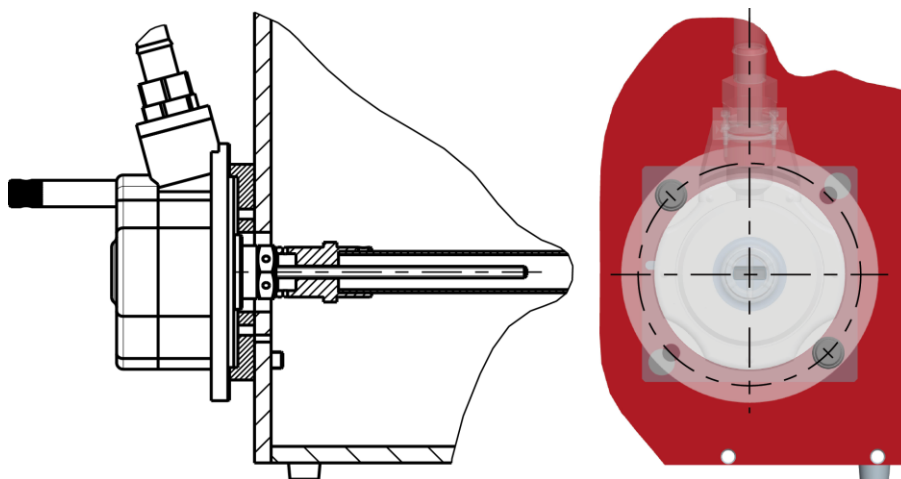


Fig. 9/17: Assembly Example 3a

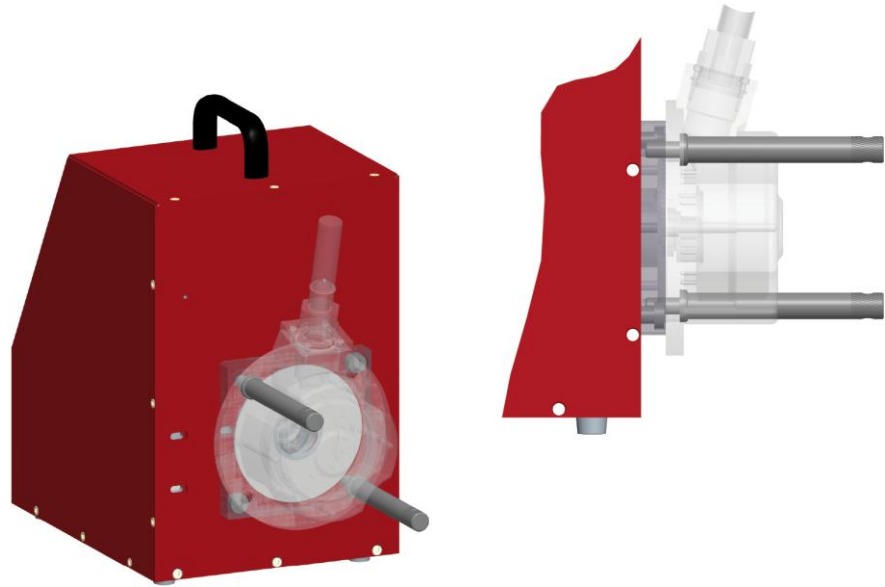


Fig. 9/18: Assembly Example 3a

9.7 Assembly of Pick-up sensor

The testing of pick-up sensors is not implemented at present.

10 Commissioning and system parameters

10.1 Device addressing

When networking XP20D/DS devices, the settings apply which are made in the XP20D/DS with the device address "1". These are used during synchronous operation. The same applies with respect to CSV files in the "travel profile" mode.

If data are to be transferred from a PC (CSV files) to an XP20D/DS, only the device with device address "1" will be addressed [\[see "Loading a CSV file" \[→](#)

[Page 117\]\]](#).



IMPORTANT

Set the device address correctly!

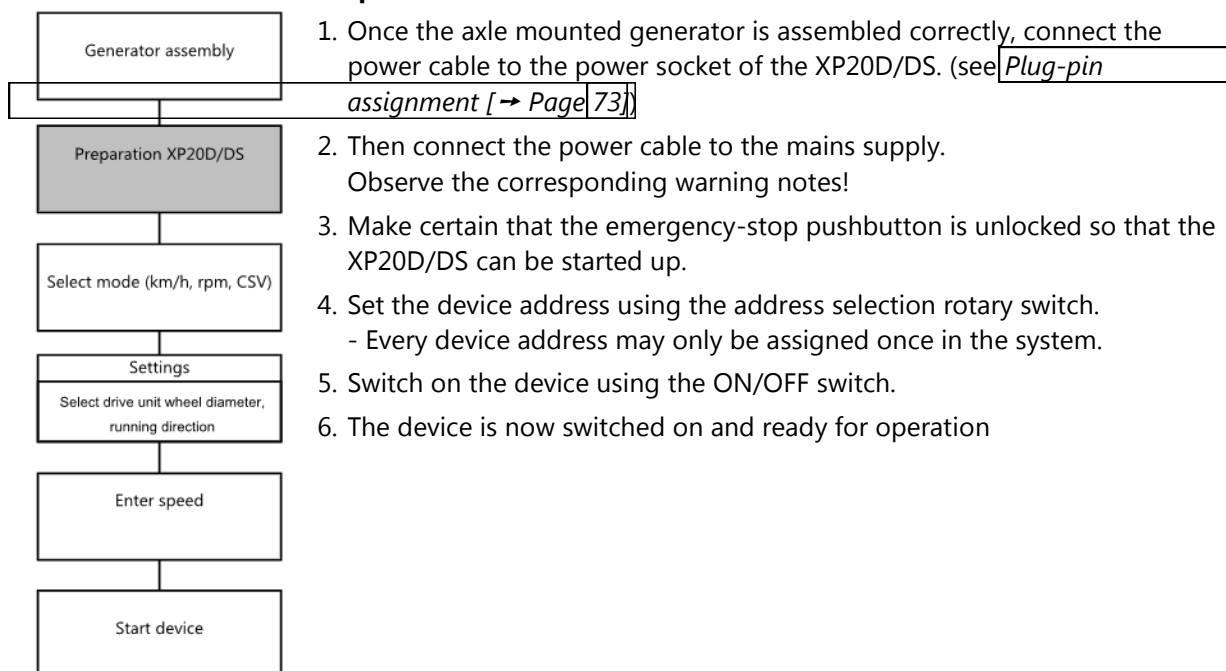
In mains operation, it must be definitely ensured that no device addresses are set twice.

In stand-alone operation, the device address must always be "1" (address selector switch = 1.

The setting must be checked before the start.

10.2 Commissioning

Preparation XP20D / DS





Achtung Verletzungsgefahr!
Gerät darf nur mit montiertem
Radimpulsgeber betrieben werden!

Caution: risk of injury!
Testbench should be operated only with
mounted pulse generator!

Fig. 10/1: XP20D/DS warning label

You will find additional parameterization information in the chapter
"Setup" [[→ Page 102](#)].

10.3 Calibration

The XP20D/DS can be calibrated by DEUTA.

10.4 Language setting

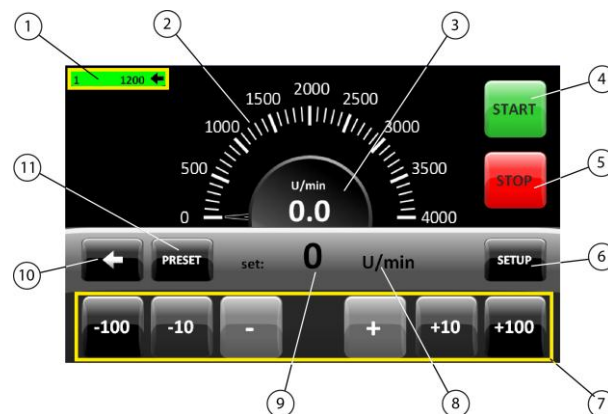


Fig. 10/2: Select SETUP

In the main menu "SETUP" select ("**6**").

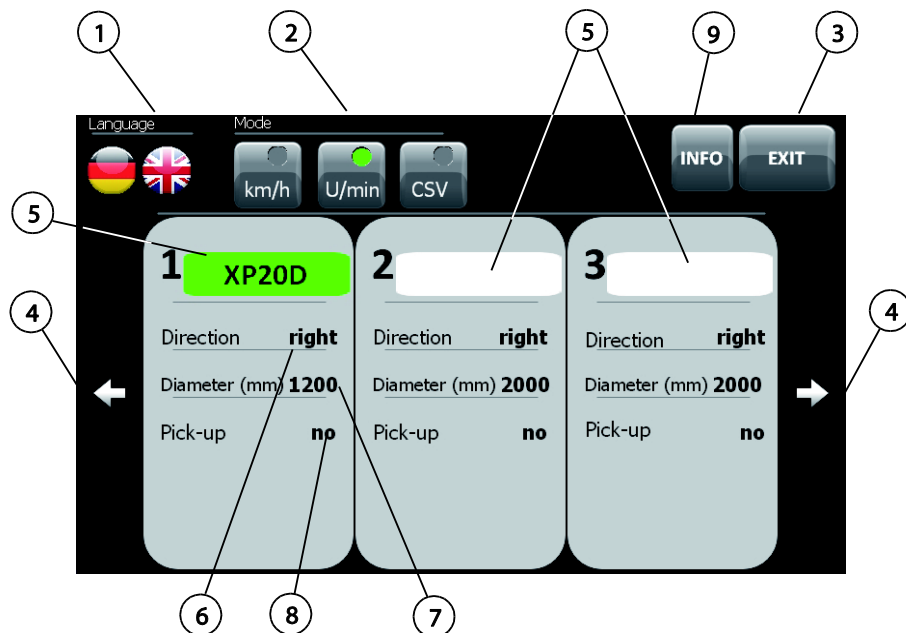


Fig. 10/3: Language setting ("1")

The operating dialog of the XP20D/DS can be in either German or English. The selection is made via button ("1").

10.5 Software update



IMPORTANT

Requirements for implementing a software update

The requirement to implement a software update is to be sufficiently familiar with networks as well as the local network environment. If necessary, ask the network or system administrator.

The software update must be implemented separately with every XP20D/DS and XP20R.

For all devices which you wish to network for synchronous operation, ensure they all have the same software status. Only the control and operating software which has been approved or supplied by DEUTA in this combination may be operated together.

Our recommendation: Ensure that all operated devices have a current software status.

10.5.1 Updating the operating software at the XP20D

To perform a software update, you must establish an FTP connection with your computer to the XP20D.



Fig. 10/4: PC connection software update XP20D/DS

1. At your XP20D, set the address selector switch to "1"
2. Establish a network connection between the PC and your XP20D. Use one of the two RJ45 sockets (remote or slave).
3. The XP20D (operating software) has the following configuration:
IP: **192.168.1.110**
User name: admin
Password: admin
4. From the "Visu" directory on the CD-ROM, copy all files and subfolders to the Root directory of the XP20D. Overwrite all files and folders of the same name.
5. Once all the files and folders have been transferred successfully, the network connection must be disconnected.
6. Restart the XP20D by switching the XP20D/DS off and back on.

10.5.2 Updating the operating software at the XP20R

To perform a software update, you must establish an FTP connection with your computer via an XP20D /DS to the XP20R.

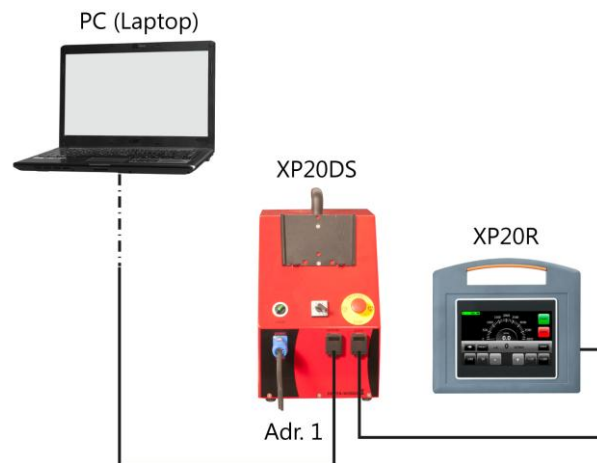


Fig. 10/5: PC connection software update XP20R

1. Connect the XP20R to an XP20D/DS via a DEUTA data cable RJ45/RJ45 to the "remote" Ethernet socket and the power supply of the XP20R via the data cable RJ45/RJ45 (PoE).
2. At your XP20D, set the address selector switch to "1".
3. Establish a network connection between the PC and your XP20D, that is, the XP20R. Use the RJ45 socket (slave) for this.
4. The XP20R (operating software) has the following configuration:
IP: **192.168.1.120**
User name: admin
Password: admin
5. From the "Visu" folder on the CD-ROM, copy all files and subfolders to the Root directory of the XP20R. Overwrite all files and folders of the same name.
6. Once all the files and folders have been transferred successfully, the network connection must be disconnected.
7. Restart the XP20R by switching the XP20D/DS off and back on.

10.5.3 Updating the control software at the XP20D/DS

To perform a software update, you must establish an FTP connection with your computer to the XP20D.



Fig. 10/6: PC connection software update XP20D/DS

1. At your XP20D/DS, set the address selector switch to "1"
2. Establish a network connection between the PC and your XP20D/DS. Use one of the two RJ45 sockets (remote or slave).
3. The XP20D/DS (control software) has the following configuration:
IP: **192.168.1.10**
User name: admin
Password: deuta
4. From the "Control" directory on the CD-ROM, copy the file "radachstester.es3" to the directory: "app/radachstester/" of the XP20D/DS. Overwrite the file of the same name.
5. Once all the files and folders have been transferred successfully, the network connection must be disconnected.
6. Restart the XP20D/DS by switching the XP20D/DS off and back on.

11 Operation

11.1 Operating instructions



WARNING

Risk of injuries when switching on

When switching on the XP20D/DS devices, injuries may occur when simultaneously working on the axle mounted generator or during the assembly.

1. Before you switch on the XP20D/DS devices, ensure that all work has been ended at all devices!



CAUTION

Blocking of the drive

A blocked drive can cause injuries or damage.

1. Always ensure that the drive of the XP20D/DS cannot be blocked!

Warning notice on the XP20D/DS:



Achtung Verletzungsgefahr!
Gerät darf nur mit montiertem
Radimpulsgeber betrieben werden!

Caution: risk of injury!
Testbench should be operated only with
mounted pulse generator!

Fig. 11/1: XP20D/DS warning label

11.2 Function and operating principles

11.2.1 Description of functions

The power of the XP20D/DS is supplied by a special power cable (see [Accessories](#)) [→ [Page 33](#)] which is inserted on the front side of the device. In the XP20D/DS, two switched-mode power supplies provide the power supply:

- 24 V for the display electronics
- 48 V for the servo amplifier and the drive motor

At the rear, the axle mounted generator to be tested is assembled via an appropriate adapter.

A touch display in the internal operation terminal specifies the reference speed in rpm or km/h. In rpm mode, the current motor speed is measured continuously and output in the display with a resolution of 0.1 rpm. The control electronics analyses the reference/setpoint difference and readjusts the motor speed. The direction of rotation can be changed over at any time. In the km/h mode, the speed is displayed in analogue and digital with a resolution of 0.1 km/h.

A remote operation terminal XP20R can be connected over an Ethernet connection cable to the "remote" interface of the XP20D/DS for external operation. The XP20R is supplied with power (PoE) through this connection.

In synchronous operation with two or more XP20D/DS, operation can occur via a connected remote operation terminal (XP20R) or via the internal operation terminal in one of the devices with Address 1. Up to nine XP20D/DS can be operated synchronously in system operation.

Settings, such as the wheel diameter, are set individually for each drive unit.

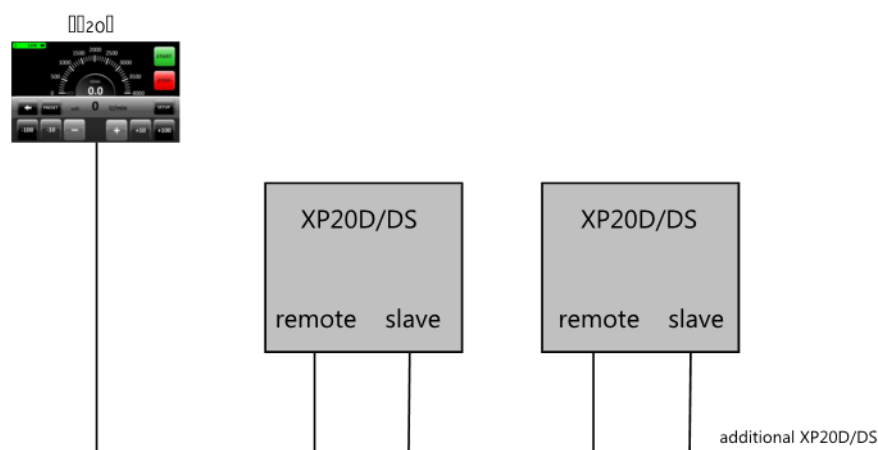


Fig. 11/2: XP20R and XP20D/DS in system operation



IMPORTANT

Cable connections

To avoid disturbances, the connection of the XP20D/DS to an XP20R or other XP20D/DS devices may only occur with DEUTA data cables RJ45/RJ45 (see Accessories) [[→ Page 33](#)]

11.2.2 Function: Interfaces

Remote interface

- Interface for connection with the remote operation terminal XP20R via Ethernet connecting cable (via DEUTA data cable RJ45/RJ45).
- In system operation, the **preceding** drive unit (XP20D/DS) is to be connected here (via DEUTA data cable RJ45/RJ45).
- Interface for connection with the PC, e.g., to load CSV files (see "Loading a CSV file") [[→ Page 117](#)].

Slave interface

- In system operation, the **subsequent** drive unit (XP20D/DS) is to be connected here (via DEUTA data cable RJ45/RJ45).

11.3 Status displays

Signal lamp

In the On switch of the XP20D/DS is a green signal lamp which indicates whether the device is switched on. Switched on does not mean started. Started means that the generator is driven and this occurs via the corresponding buttons on the display.

Status display in the display

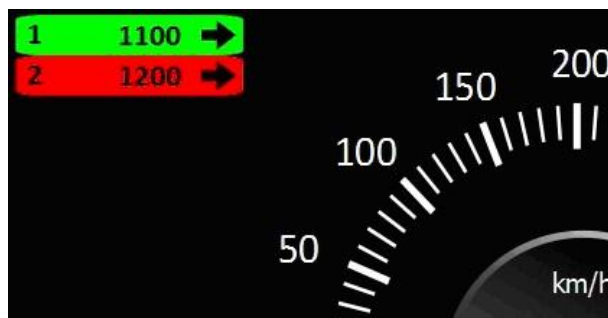


Fig. 11/3: Status display

The status display shows the number of the drive unit (1 to 9), the wheel diameter in mm and the selected running direction.

Meaning of colour in the status display:

GREEN	selected XP20D / DS and communication possible
RED	selected XP20D / DS but communication not possible

11.4 Display

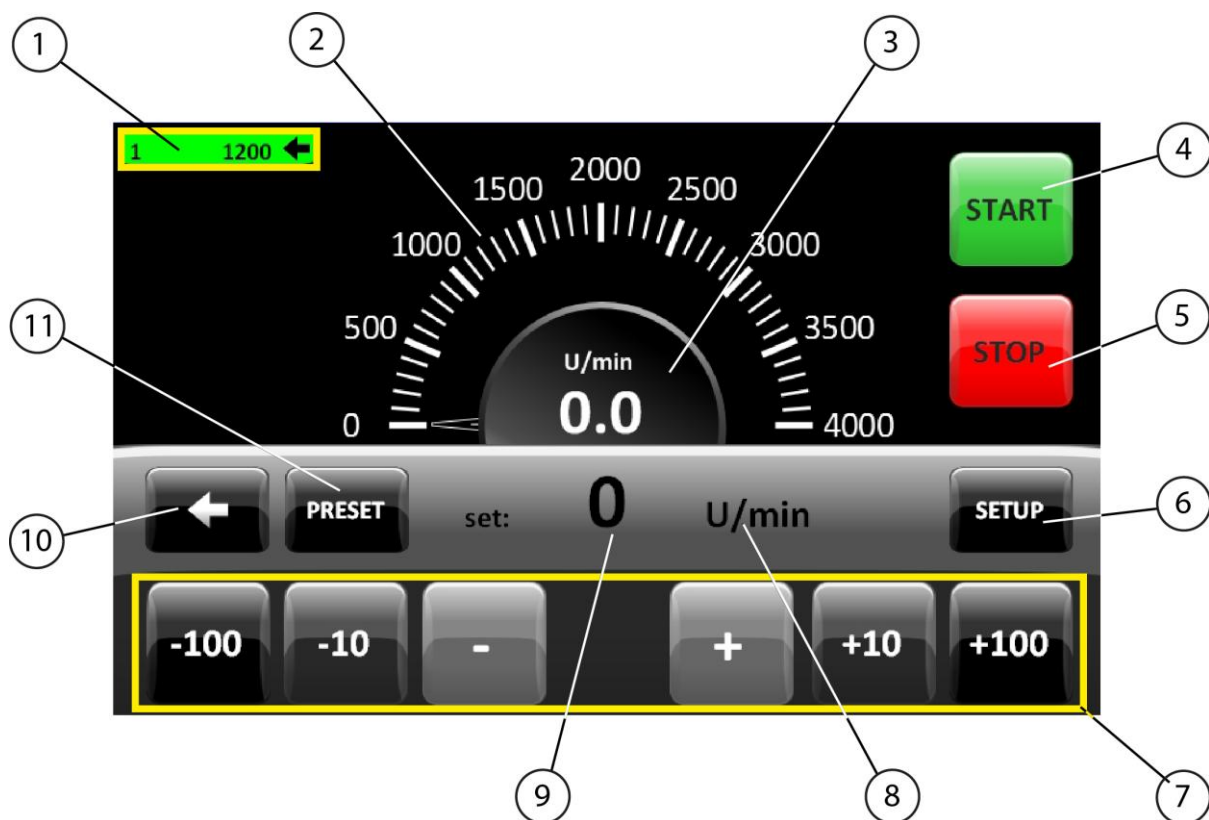


Fig. 11/4: Display and control elements "Start screen"

1	Status XP20D/DS (drive number, wheel diameter, running direction) for max. 9 devices	7	Progressive set value setting
2	Analogue real speed indicator	8	Mode (km/h, rpm)
3	Digital real speed indicator	9	Set value display
4	START button	10	Reverse driving direction (toggle)
5	STOP button	11	PRESET button
6	SETUP button		

11.5 Setup

The setup interface is accessed via the setup button. You can make all necessary settings for the XP20D/DS here.

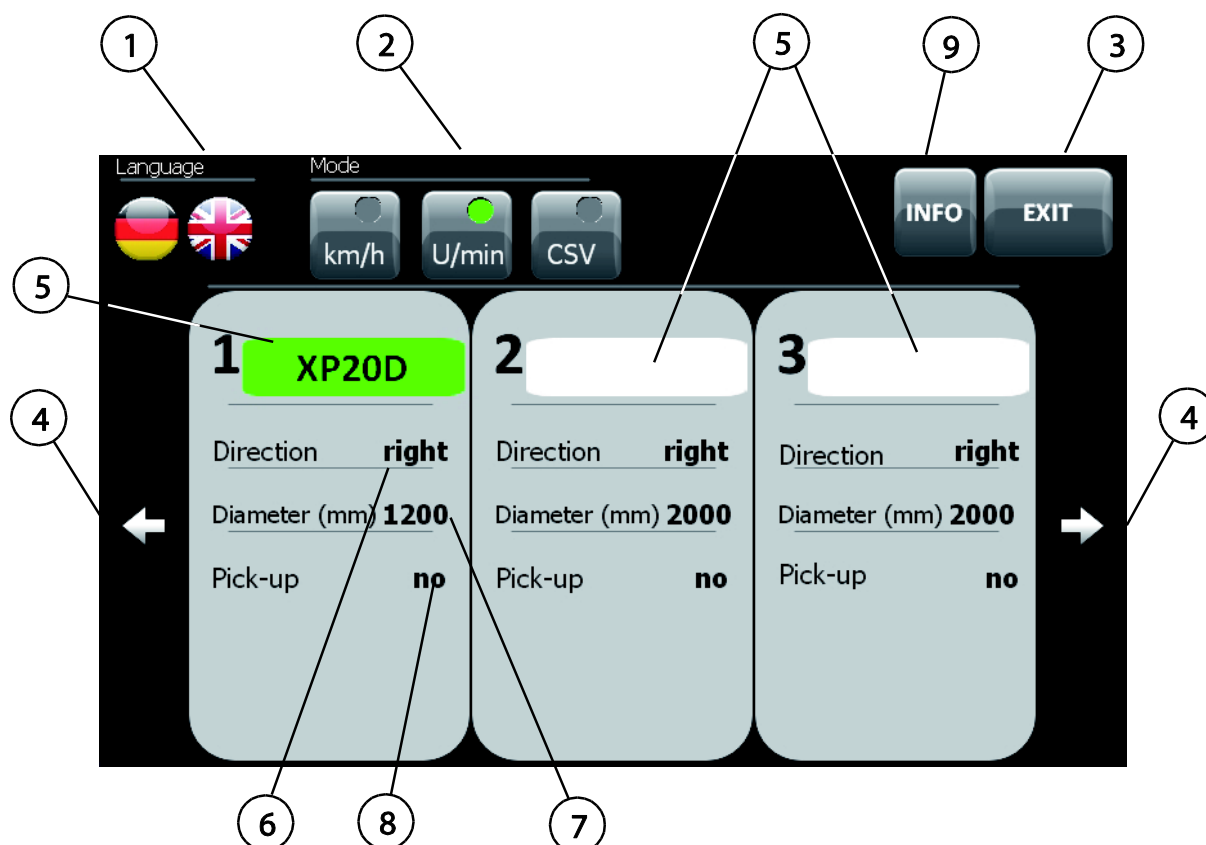


Fig. 11/5: XP20D/DS Setup

1	Language setting	5	Activation XP20 device
2	Select speed or rotational speed mode	6	Setting: Direction of rotation
3	Exit setup	7	Setting: Wheel diameter
4	Selection of additional XP20 devices	8	Setting: Pick-Up sensor *
9	Information menu selection		

* The operation of pick-up sensors is not implemented at present.

The number in the setup menu corresponds with the address number (see address setting) of the existing connected XP20 devices. If there is only one device, the address number of this device will be displayed. The XP20 type is then transmitted over the network and displayed automatically in the display field (see above).



IMPORTANT

Device address setting before switching on

An incorrect address setting prevents proper operation because the settings in the setup cannot be assigned to the required device.

1. Before starting, make certain that all device addresses have been set correctly.



INFO

The settings in the SETUP menu and the selected mode will be retained even after switching off. After switching on, however, a restart needs to be made or new settings can be made.

Consequences

11.5.1 Select mode

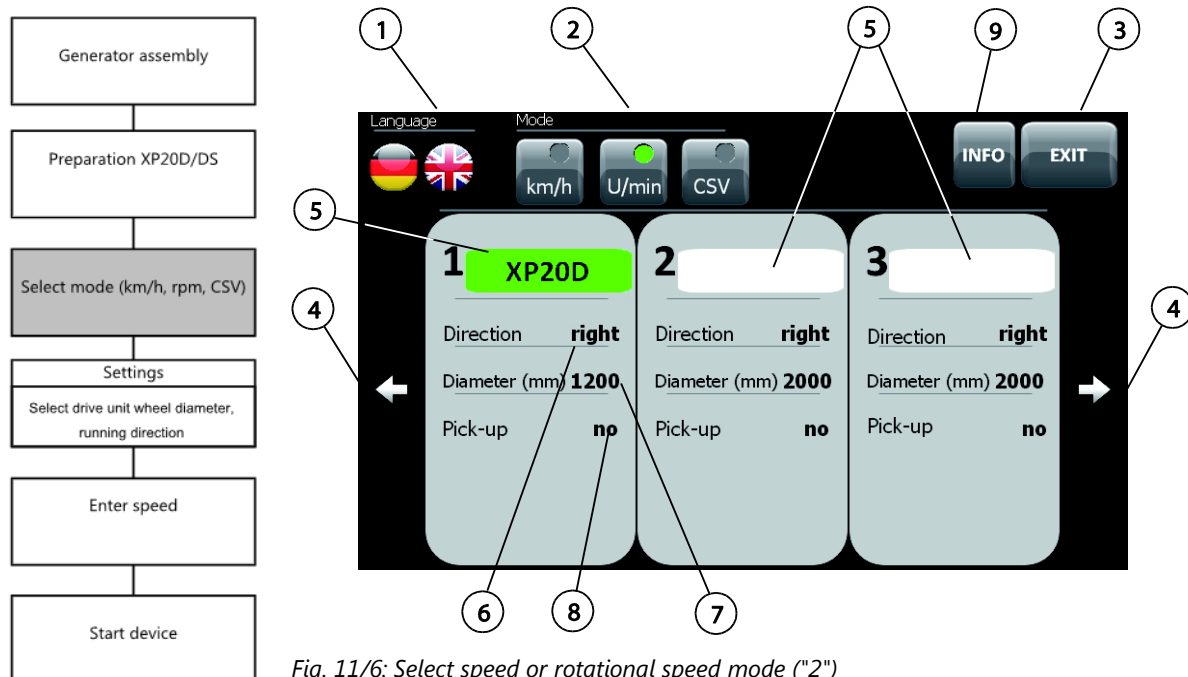


Fig. 11/6: Select speed or rotational speed mode ("2")

Using the three buttons ("**2**") you can select the mode. Available to you are the km/h, the rpm and the CSV mode.



Select mode

Km/h mode

In this mode you can specify a speed in km/h. The necessary rotational speed will be calculated automatically. Important here is that you specify the associated wheel diameter as described further below.

Rpm mode

In this mode you can specify a rotational speed. This mode also displays a speed in km/h which is calculated from the specified wheel diameter.

CSV mode ("travel profile")

In this mode you can simulate a previously recorded train run or play an own created CSV file. You will find further details in the chapter Travel profile.

11.5.2 Select XP20D/DS

Up to nine XP20D / DS can be operated in parallel.

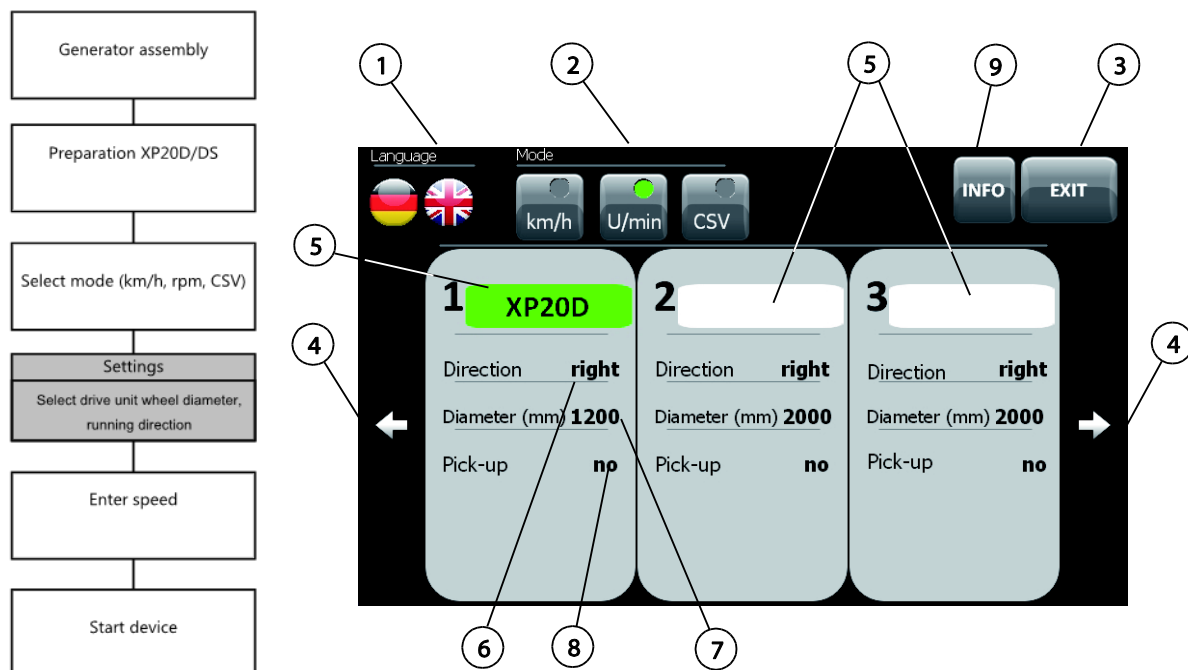


Fig. 11/8: Selection XP20 devices "5"

Pressing the selection fields "5" enables you to select or de-select the individual XP20D/DS devices, i.e., the selected XP20D/DS devices will be switched on or off together.

WHITE	de-selected XP20D / DS
GREEN	selected XP20D / DS and communication possible
RED	selected XP20D / DS but communication not possible

The wheel diameter and the running direction must be specified for every single drive unit. If XP20D/DSs are selected which are not actually connected, then the XP20D/DSs which are connected cannot be started.

11.5.3 Entering the wheel diameter

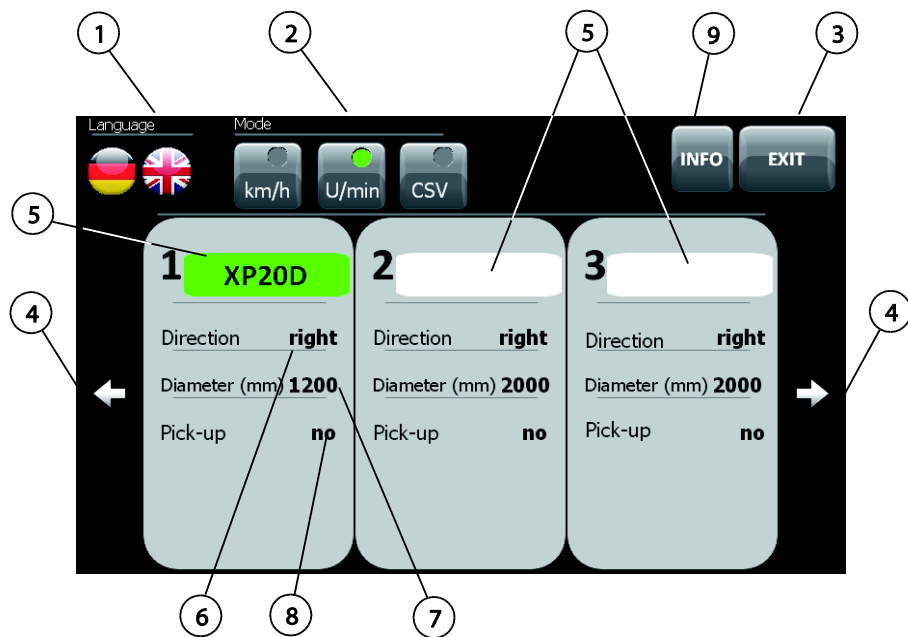


Fig. 11/9: Entry of wheel diameter ("7")

Pressing on the wheel diameter to be set ("**7**") will make the input dialog appear.



Fig. 11/10: Input dialog wheel diameter

The wheel diameter must be entered in mm and then confirmed with "Enter".

11.5.4 Select running direction

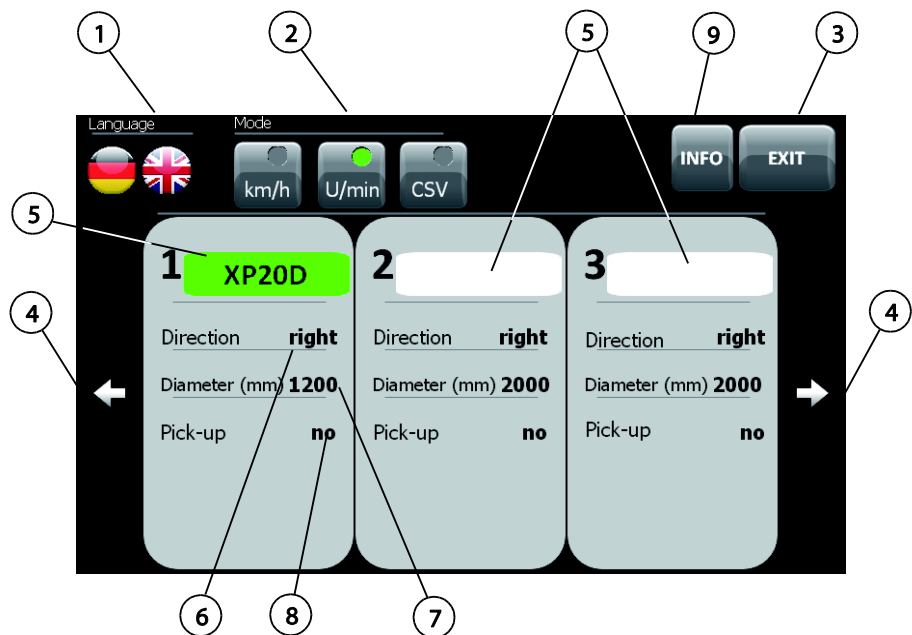


Fig. 11/11: Setting the direction of rotation ("6")

Pressing the field ("6") reverses the running direction for the respective drive unit.

Example: **Direction of rotation "right"**

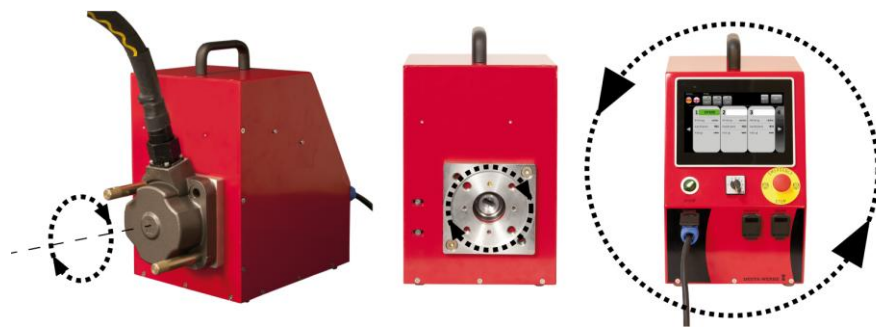


Fig. 11/12: Depiction direction of rotation "right" after Setup setting

The button "Reverse driving direction" ("**10**") on the start screen reverses the direction of rotation that was set in the Setup.

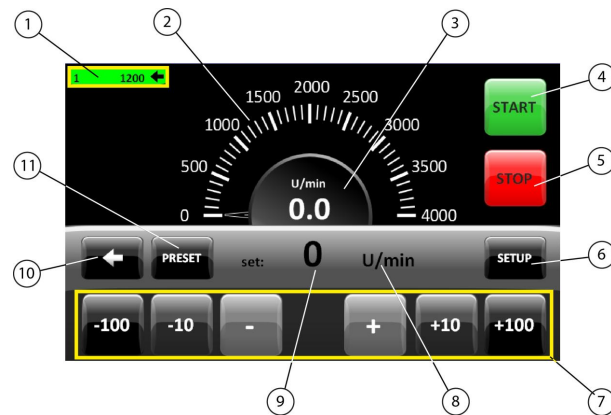


Fig. 11/13: Start screen: Button "Reverse driving direction" ("**10**")



INFO

Pushbutton ("**10**") "Reverse driving direction"

The direction of arrow on the "Button (10)" reverse driving direction **does not clearly** correspond with the direction of rotation of the XP20D/DS.

11.5.5 Pick-Up sensor settings

The operation of pick-up sensors is not implemented at present.

11.5.6 Entry of reference speed/rotational speed

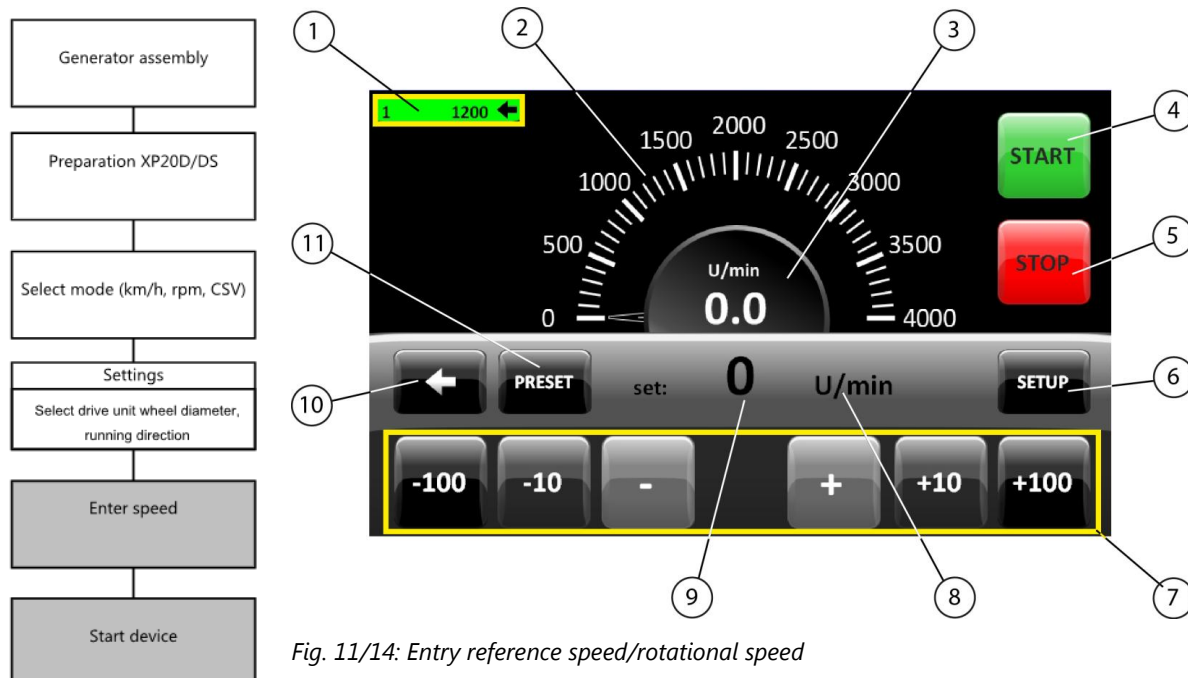


Fig. 11/14: Entry reference speed/rotational speed

11.5.6.1 Direct entry reference speed/rotational speed

By pressing on the set value display ("9"), an input dialog appears where the speed can be entered directly. Confirm your entry with "Enter".



11.5.6.2 Progressive setting of the reference speed/rotational speed

The buttons ("**7**") are used to increase or reduce the speeds in steps of 1, 10 and 100 (-100, -10, -, +, +10, +100).

11.5.6.3 Call up reference speed from the memory (PRESET)

By pressing on the PRESET button ("**11**"), a selection window depending on the set mode (km/h or rpm) appears with 20 preset set values for speed or rotational speed which are selected by pressing on the required value.



Fig. 11/15: Selection set value speed



Fig. 11/16: Selection set value rotational speed

11.5.6.4 Saving the reference speed (PRESET)

If you would like to change the preset speeds, open the PRESET dialog by pressing the PRESET button. Then click on "Setup" to access the SETUP MODE.



Fig. 11/17: Save set value

Now press on the value to be changed. A dialog with numeric keypad appears. Enter the new value and confirm your entry with "Enter".

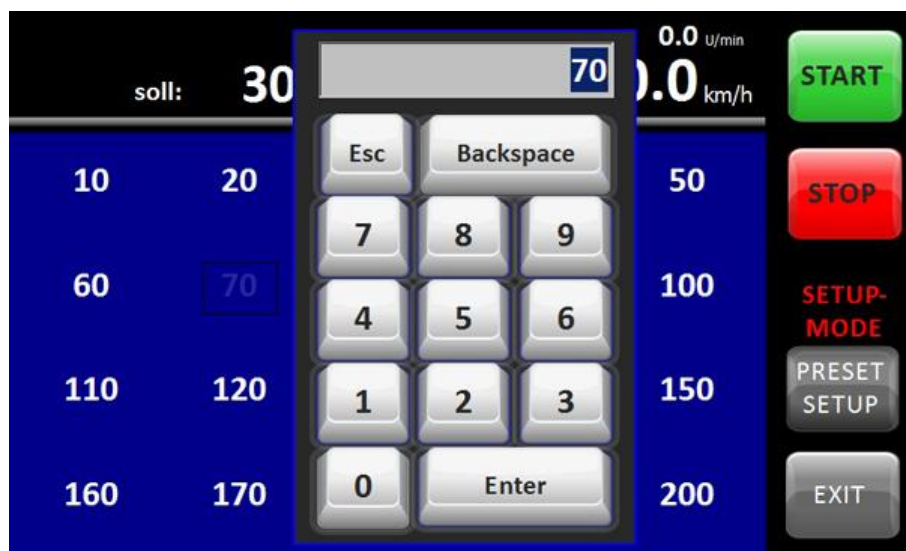


Fig. 11/18: Set value entry

The set value for speed or rotational speed is saved in dependence on the mode set (km/h or rpm).

Close the SETUP MODE by pressing the setup button again.

11.6 Information menu

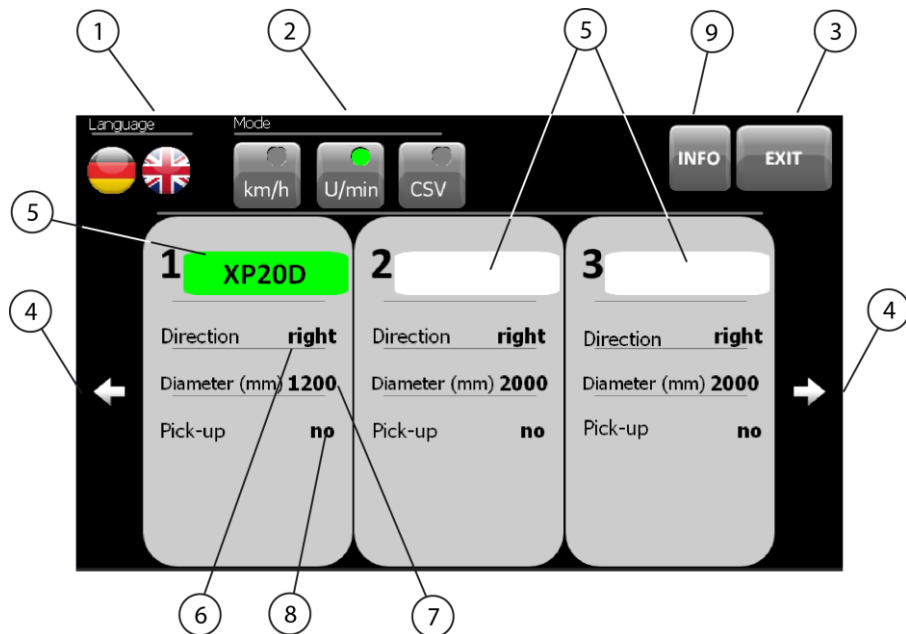


Fig. 11/19: Select speed or rotational speed mode ("2")

Using the "Information" button ("9") you can select the information menu.

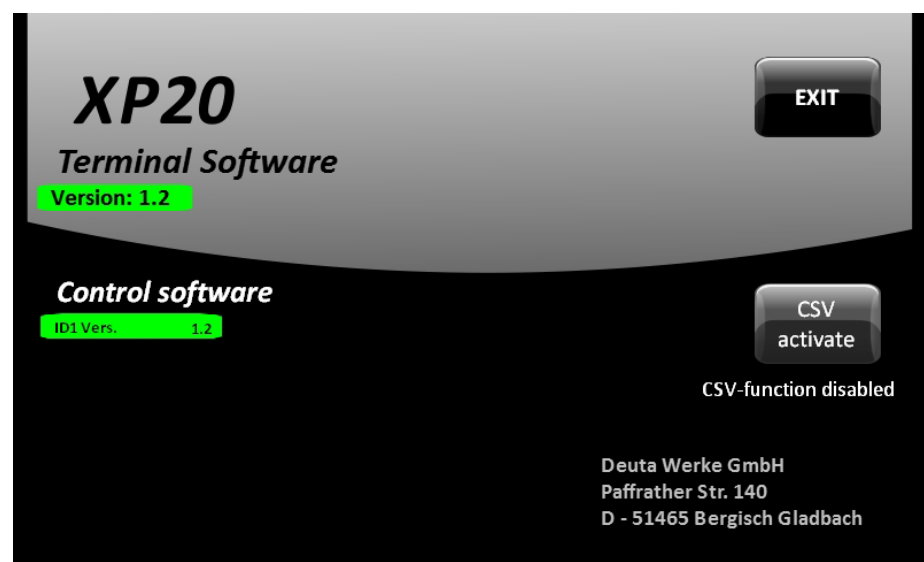


Fig. 11/20: Information menu

The information menu shows you the installed software status for the operating software (Terminal Software) and the control software. If several XP20D/DS devices are connected, all software statuses (control software such as ID1) will be listed vertically. The software status of the operating software is always that of the utilised display.

Moreover, you can use the button "Activate CSV" to enter the code to release the CSV mode (see ["Travel profile" \[→ Page 116\]](#)). The entered code is retained in the connected device. It is only deleted when the code is entered incorrectly and in order for it to be used further it must be entered correctly again. I.e., an incorrect entry can be used to delete the code.

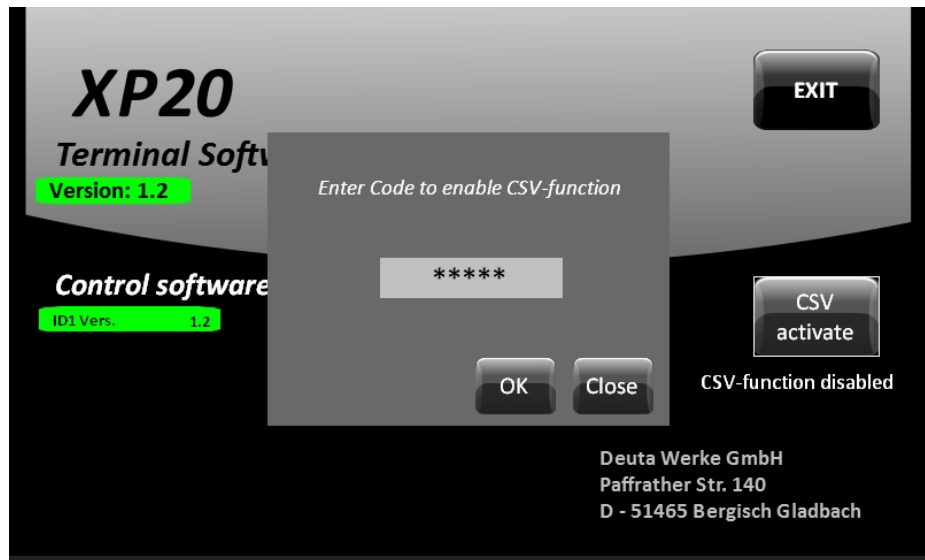


Fig. 11/21: Information menu with CSV code entry

11.7 Operation

11.7.1 Starting/stopping the XP20D/DS

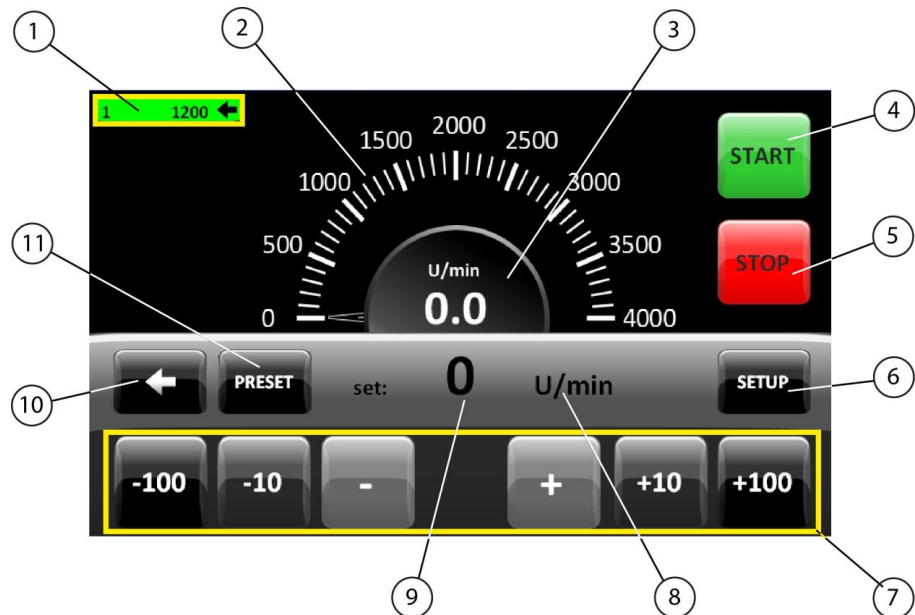


Fig. 11/22: Starting ("4") / stopping ("5") the XP20D/DS

Pressing the START button ("4") starts the XP20D/DS and the STOP button ("5") stops it.

IMPORTANT



Device address setting before switching on

An incorrect address setting prevents proper operation because the settings in the setup cannot be assigned to the required device.

1. Before starting, make certain that all device addresses have been set correctly.



CAUTION

Risk of injuries when working on a running XP20D/DS

Working on a running device can result in injuries, such as crush injuries to fingers.

1. Before starting, ensure that no work is being performed on the connected generators or XP20D/DS devices.

In the "**km/h**" **mode**, the rotational speed is displayed in addition to the speed.



Fig. 11/23: Mode_ "km/h"

11.7.2 Emergency stop

The emergency stop pushbutton is intended for emergencies in order to switch the XP20D/DS voltage-free directly by hand. When pressed, it disconnects the power supply. It can be unlocked through rotation.

11.7.3 Red scale



Fig. 11/24: Red scale in the main menu

A started drive (stand-alone operation) or started drives in system operation is indicated by the **red colour of the speed indicator and the message "DRIVE ACTIVE"**.

11.7.4 Operation via XP20R



Fig. 11/25: XP20R

- The remote operation terminal XP20R is connected over an Ethernet connection of the XP20R to the "remote" connection of the XP20D/DS.
- Operation corresponds exactly to that of the integrated touch display (as described in this document).
- The power for the XP20R is supplied over the Ethernet interface of the XP20D/DS by means of "Power over Ethernet" so that no further connection is necessary.
- The connection must be made using the DEUTA data cable RJ45/RJ45 (see Accessories) [→ Page 33] There are 4 lengths available (2 m, 5 m, 10 m, 20 m, and special lengths upon request).

XP20R dimensions: see the chapter "XP20R Dimensions" [→ Page 45]

Technical data XP20R: see the chapter "XP20R Technical data" [→ Page 56]

11.8 Travel profile (CSV mode)

Another method of setting the speed is the travel profile using a CSV file. In this file, speeds are defined for specific time segments which then synchronously control the speed of the XP20D/DS.

A **maximum of 50 different CSV files** can be transferred to the XP20D/DS.

11.8.1 Loading a CSV file

This chapter assumes the following knowledge:

- Knowledge of IP networks
- Knowledge of CSV files

Ask your system administrator!

To load a CSV file, you must establish an FTP connection with your computer to the XP20D / DS.

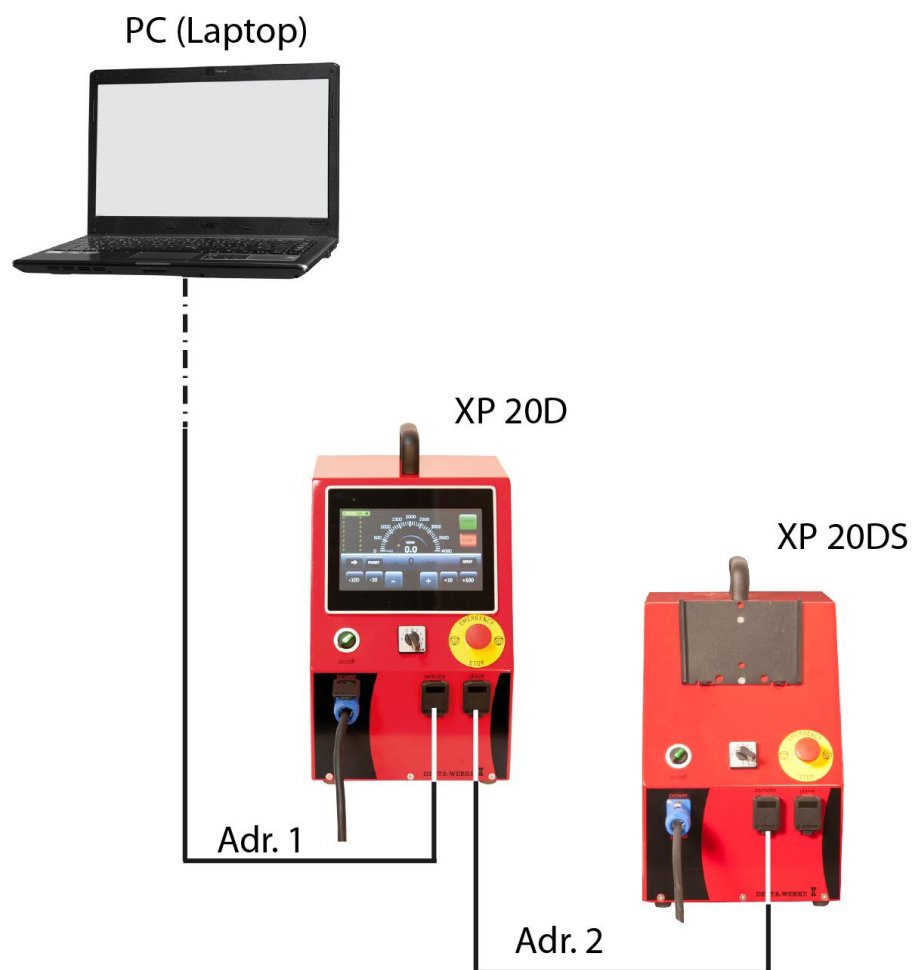


Fig. 11/26: Connect PC to XP20D/DS

1. At your XP20D/DS, set the selector switch to "1"
The CSV files will only be stored to the XP20D/DS with Address 1.
2. Establish a network connection with your XP20D/DS. Use one of the two RJ45 sockets (remote or slave).
3. The XP20D/DS has the following configuration:
IP: 192.168.1.10
User name: sim
password: sim
4. Save the **CSV file of the name simX.csv (X = number of CSV file)** to the available "SIM" subdirectory.
5. Once the CSV file(s) has/have been saved, the network connection must be disconnected.



INFO

1. Please ensure the correct spelling of the file name, e.g., "sim1.csv"!
 2. A maximum of 50 CSV files can be saved.
- Consequences

Example CSV file (excerpt):

```
#,relativeWay,Time,speed1,Dir1,speed2,Dir2,speed3,Dir3,speed4,Dir4,speed5,
Dir5,speed6,Dir6,
speed7,Dir7,speed8,Dir8,speed9,Dir9
254,0.02,2012-01-06 12:10:27.280,18,0,17,0,17,0,17,1,18,0,17,1,17,0,17,0
255,0.025,2012-01-06 12:10:28.280,18,0,17,0,17,0,17,0,17,1,17,0,17,1,17,0,18,0
256,0.03,2012-01-06 12:10:29.260,19,0,18,0,17,0,17,0,18,1,17,0,18,1,17,0,17,0
257,0.035,2012-01-06 12:10:30.260,18,0,17,0,18,0,17,0,17,1,17,0,17,1,17,0,18,0
258,0.04,2012-01-06 12:10:31.260,17,0,17,0,17,0,18,0,17,1,17,0,17,1,18,0,17,0
259,0.045,2012-01-06 12:10:32.230,17,0,17,0,17,0,17,0,17,1,17,0,17,1,18,0,18,0
```

Description: (values are separated by comma)

- 1. Line is not considered (comment)
#,relativeWay,Time,speed1,Dir1,speed2,Dir2,speed3,Dir3,speed4,Dir4,speed5,Dir5,speed6,Dir6,speed7,Dir7,speed8,Dir8,speed9,Dir9
- Value 1: consecutive no. (will not be considered)
255,0.025,2012-01-06 12:10:28.280,
18,0,17,0,17,0,17,0,17,1,17,0,17,1,17,0,18,0
- Value 2: distance [m] (will not be considered)
255,**0.025**,2012-01-06 12:10:28.280,
18,0,17,0,17,0,17,0,17,1,17,0,17,1,17,0,18,0

- Value 3: date and time (given in seconds with **.1/1000 s**)
255,0.025,**2012-01-06 12:10:28.280**,
18,0,17,0,17,0,17,0,17,1,17,0,17,1,17,0,18,0
- Value 4: speed [km/h] for **Drive 1**
255,0.025,2012-01-06 12:10:28.280,
18,0,17,0,17,0,17,0,17,1,17,0,17,1,17,0,18,0
- Value 5: direction for **Drive 1**
(0 = right-hand rotation, 1 = left-hand rotation, see "Selecting running direction" [→ Page 106])
255,0.025,2012-01-06 12:10:28.280,
18,0,17,0,17,0,17,0,17,1,17,0,17,1,17,0,18,0
-
-
- Value 20: speed [km/h] for **Drive 9**
255,0.025,2012-01-06 12:10:28.280,
18,0,17,0,17,0,17,0,17,1,17,0,17,1,17,0,18,0
- Value 21: direction for **Drive 9**
(0 = right-hand rotation, 1 = left-hand rotation, see "Selecting the running direction" [→ Page 106])
255,0.025,2012-01-06 12:10:28.280,
18,0,17,0,17,0,17,0,17,1,17,0,17,1,17,0,18,0
-



INFO

Specifying values in the CSV file

You must always specify values for 9 drives (XP20D/DS devices) even when drives are not available.

11.8.2 Selecting a CSV file

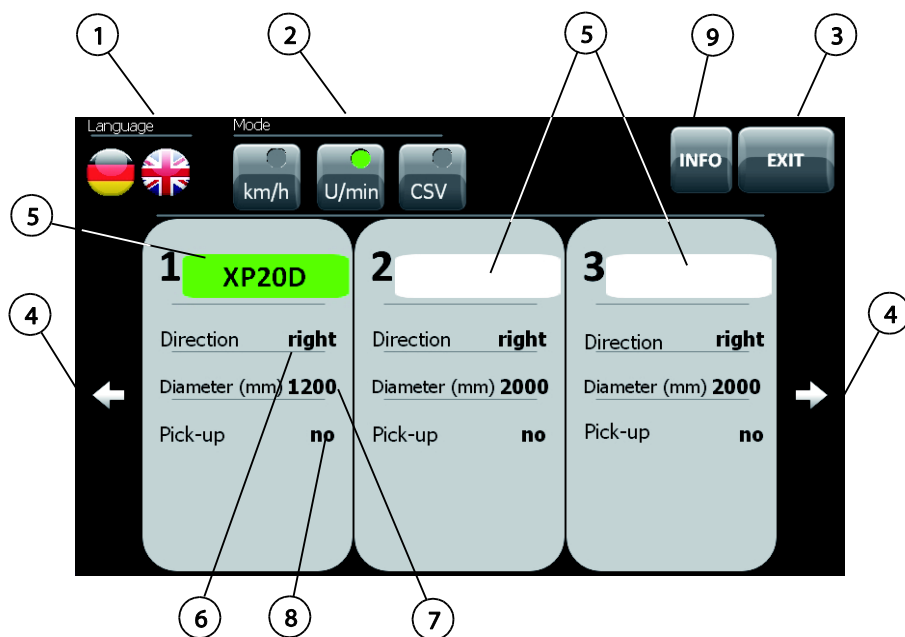


Fig. 11/27: Setup

If you wish to simulate a train run, select the **CSV mode ("2")** in the setup window.

A new display appears in the setup window:



Fig. 11/28: Setup CSV

Select the required CSV file using the + and - buttons. This file, as described previously, must have been loaded in the XP20D/DS beforehand.

11.8.3 Playing a CSV file

After selecting the CSV file, you can start the travel profile with the START button.

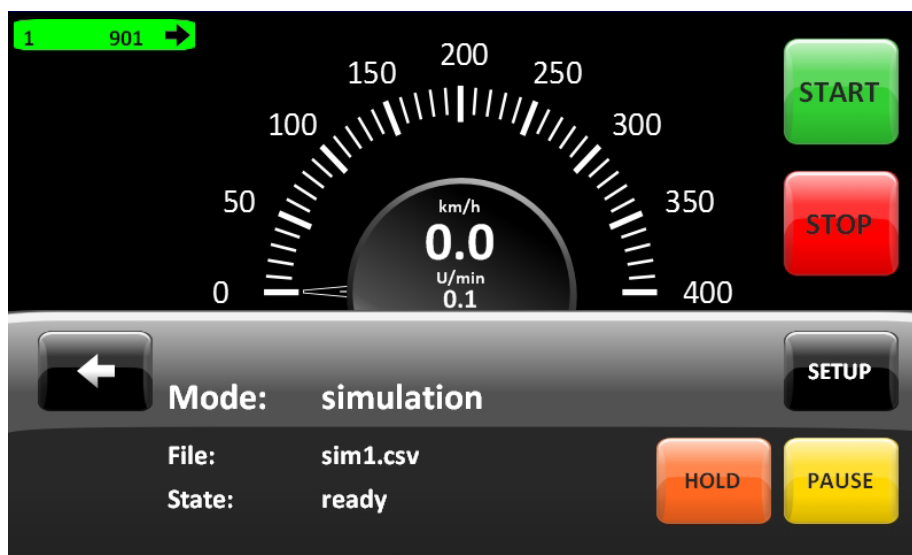


Fig. 11/29: Travel profile is selected via CSV file

HOLD - Processing of the CSV file stops, current speed is held.

PAUSE - Processing of the CSV file stops, motor is paused

Pressing again continues the CSV file.

HOLD	Processing of the CSV file stops, current speed is held.
PAUSE	Processing of the CSV file stops, motor is paused
HOLD PAUSE	Pressing again continues the CSV file.

12 Diagnostics and service functions

12.1 Wrong address setting



IMPORTANT

Device addresses

To ensure that no incorrect device addresses are set, the address setting must be checked at the XP20D/DS devices before each start.

12.2 Error messages

A line for error messages is reserved for each possibly involved station. When an error occurs, the line of the station concerned appears with the error message. So the figure in the first line shows the error message for the 1st station. For example, an error occurring with the 5th station would trigger an error message for A5 in the 5th line.

Motor fault

The message "Drive error" occurs when the motor is blocked or sluggish.



Fig. 12/1: XP20D/DS error message: "Drive error"

Please eliminate the blockage and acknowledge the error by pressing on "Delete error". Pressing "Start" again will continue the operation.

Restarting the device will also delete the error.

Bus error

The message "Bus error" occurs when the internal bus connection is interrupted.



Fig. 12/2: XP20D/DS error message: "Bus error"

If the error cannot be deleted and appears even after a restart, the device must be sent to DEUTA.

13 Maintenance

13.1 Smallest exchangeable unit

The entire XP20D/DS is the smallest replaceable unit.

13.2 Preventive maintenance

The entire XP20D/DS is essentially maintenance free.

To safeguard the calibration made by the factory, the XP20D/DS should be inspected regularly (**yearly**) and recalibration done by DEUTA, as necessary.

13.2.1 Inspection

Before commissioning, a visual inspection must be carried out. Check the XP20 for signs of external damage.

13.2.2 Inspecting the functions

To ensure operational readiness, inspect the XP20 devices for function at regular intervals.

13.2.3 Inspecting the display lighting

The visual inspection also includes checking the display.

13.2.4 Cleaning notes

see Chapter: "*Handling the touch surfaces*" [→ Page 67]

All rotating parts must be inspected particularly for soiling and cleaned as necessary.

13.3 Corrective maintenance

The XP20D/DS does not contain any exchangeable parts from the customer. Repairs can only be done at DEUTA.

14 Shutting down

14.1 Disassembling the axle mounted generator

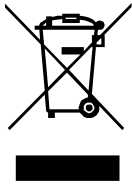
1. Switch off the device using the ON/OFF switch.
2. Disconnect the power cable from the power supply and then from the power socket at the XP20D/DS.
3. Release the two fastening screws and remove the generator.
4. Secure the fastening screws and remove the adapter from the XP20D/DS to ensure it is not lost.

14.2 Disassembly of pick-up sensor

The operation of pick-up sensors is not implemented at present.

15 Disposal

15.1 Instructions for disposal



Disposal of old devices should be carried out in accordance with Directive 2002/96/EC of the European Parliament and Council of 27.1.2003, concerning electrical and electronic equipment.

The complete devices are delivered to a certified disposal plant that breaks the devices down into their constituent materials and disposes of them.

In case the user disposes of the devices himself, the devices must be disassembled and also disposed of according to their materials (for example metals, plastics, electronics waste and glass). This must be done in accordance with the Directive 2002/96/EC mentioned above.

For example,

- Metals may be handed over to a scrap metal dealer.
- Plastics and glass can be recycled.

The electronic junk must be delivered to a certified disposal plant. In this context, the respective applicable national laws and regulations must be observed each time material is disposed of. The units may also be disposed of by returning them to **DEUTA** in connection with a corresponding agreement.

16 Appendix

n/a

Glossary

DIN 31051

DIN 31051 issue status: 2003

may be stored. Important: Device is voltage-free!

DIN 5510-2

DIN 5510-2 issue status: 2009

DIN VDE 0105

DIN VDE 0105 issue status: 2005

EMC

Electromagnetic compatibility

EN 50110

EN 50110 issue status: 2005

EN 50125-1

EN 50125-1 issue status: 1999+Cor:2010

EN 61373

EN 61373 issue status: 2010

ESD

Immunity to electrostatic discharge

Glossary

Explanation and definition of terms and abbreviations used

IEC 60050-191

IEC 60050-191 issue status: 2002

IEC 60364

IEC 60364 issue status: 2005

NSR

Low voltage directive

Operating temperature

Air temperature (in max. and min. limits) in the immediate vicinity of the device at which the device may be operated.

RAL

Colour identification system from RAL Institute

RoHS

Restriction of certain Hazardous Substances, EU directive 2011/95/EC for restricting the use of certain hazardous substances in electrical and electronic devices

Storage temperature

Air temperature (in max. and min. limits) in the vicinity of the device at which the device

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