



DEUTA XP 20 -Travel Simulation with real Travel Data

Wheel Pulse Generator Actuator

XP 20Drive - Drive unit for Wheel Pulse Generator
Simulation of the rotating vehicle axle

DEUTA AMERICA Corp.
5547 A1A South · Suite 111 · Saint Augustine · FL 32080
Phone: + 1 904-429-7910
info@deuta-america.com
www.deuta-america.com · info@deuta-america.com

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Holistic Sensor Simulation

DEUTA XP 20 Test Benches offer advanced possibilities in sensor testing for rail operators, system integrators and workshops:

Travel Simulation with real Driving Data

With the XP 20 Test Benches speed and route information systems which have been installed on the vehicle can be tested. The traction operations are adjusted through direct simulation of the sensor input parameters. The XP 20 Test Benches allow „system testing of traction operations“ without the vehicle actually moving on the track. The sensors remain in the vehicle wiring and are „driven“ via the XP 20 Test Benches with real speed profiles. Calibration test runs are therefore unnecessary. DEUTA takes an holistic view of 'sensor simulation'. The XP 20 product family consists of test benches which stimulate axle generators, pick-up sensors or Doppler radar sensors.



XP 20 Drive - Simulation of the rotating vehicle axle

Pulse generators capture the speed via the rotating vehicle axle (axle mounted generator) or via a rotating gear wheel on the gear box of the vehicle drive (pick-up sensor).



XP 20 Move - Simulation of the moving ground

Doppler radar sensors are mounted on the under side of the vehicle and detect the speed based on the moving ground. Objects in the track bed and the timing of the positional changes of these in relation to each other form the basis for the speed capture. The XP 20 Move test device for Doppler radar sensors simulates the Doppler signal of the objects in the track bed.

Possible Operating Modes:

XP 20D (Drive)

The stand-alone test bench which drives the pulse generator is operated using the integrated touch terminal.



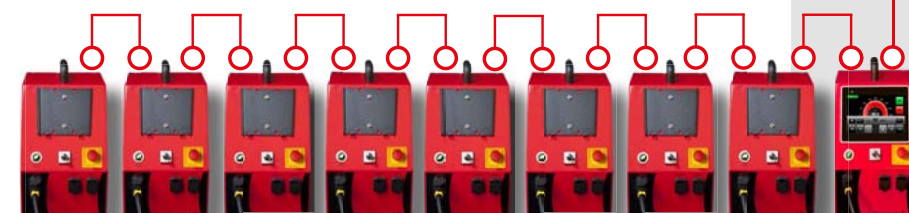
XP 20DS (Drive Service) + XP 20R (Remote)

The service test bench which drives the pulse generator is operated using the mobile operation terminal XP 20R or a PC with software emulation of the XP 20 user interface.



Synchronous operation

Up to nine XP 20 test benches are networked and operated using the integrated touch terminal of an XP 20D, the mobile operation terminal XP 20R or a PC with software emulation of the XP 20 user interface.



The advantages of the XP 20 Test Benches at a glance:

Real Travel Simulations

- System testing without costly and time-consuming calibration runs
- no reservation of test routes
- maximum reproducibility
- identical boundary conditions
- no environmental influences

Operating terminal

- comfortable & ergonomic
- memory function and operational profile mode
- optional software for operation terminal simulation
- a variety of possibilities for application with mobile operation terminal
- synchronous control of up to nine XP 20 drivers

Time and Money Savings

- shorter development and project processing times during system integration
- reduced need for personnel during system tests following maintenance and commissioning



Sample Applications



System calibration in the depot and on track

The XP 20 actuators emulate real and fictitious test runs within a signal chain. They are not subject to changes in weather and are free from external influences. Commissioning tests and annual safety inspections are carried out directly on the vehicle using the XP 20. The costly investment in time and staff for separate test drives can be dispensed with. The XP 20s are protected for tough on-site use with robust, portable casing. The XP 20DS service devices can be operated via a data link from the vehicle using the mobile operation terminal XP 20R.

System testing in the Laboratory

The XP 20 drivers save time and money. Up to nine XP 20DS drivers can be coupled to a test and simulation environment and centrally operated via Ethernet interface. In this way, the XP 20 drivers cover the growing demand for system and integration testing resulting from shorter development times for newer vehicles and train safety systems, multiple uses of vehicles in cross-border traffic as well project-specific applications.

Analysis of critical results in the laboratory

The areas of applications of the XP 20 actuators range from analysis of critical results within safety relevant assessments, to post-processing and analysis of incidents right up to accident assessment.

Component testing in the Workshop

The XP 20 drive units are an important part of quality assurance. Testing of functions during and following maintenance and servicing measures ensure the correct function of the signal chain: Sensor—Recorder—Indicator.

Operators of large fleets of vehicles stockpile large numbers of spare components. In order to guarantee the correct functioning of these, even after many years in storage, the operators carry out a test of components with the XP 20 drive unit prior to installation in the vehicle or during an inventory.



Simple Operation

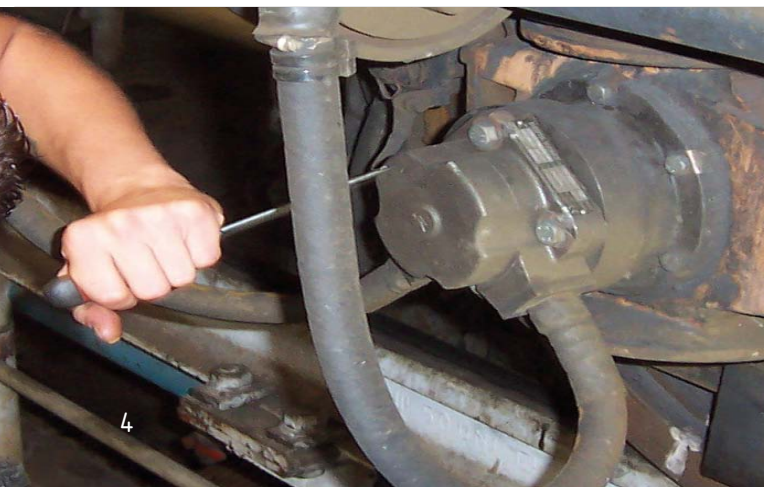
Operation of the software controlled XP 20 drive unit is via a 7" touch display. The operation terminal can be optionally integrated into the XP 20 or placed in separate housing. The software emulation of the operation terminal is also separately available for the user PCs.

Signal Evaluation

The speed signal of the XP 20 drive units is used for system components such as indicators, DEUTA REDBOX® Multifunctional Recorders and train safety systems. For detailed investigations of the pulse generator signals, the XP 20 is combined with evaluation software using an oscilloscope or a measuring board.

A variety of accessory kits

With the appropriate accessory parts, the XP 20 actuators can be combined with all sensors: from heavyweight alternating current generators and electronic incremental generators to pick-up sensors.



XP 20 actuators for System Manufacturers:

System integration, Implementation, Analysis

- Integration tests in the laboratory
- Integration tests in the vehicle
- Investigation into critical incidents within safety relevant assessments in the laboratory
- Analysis of breakdowns and accident assessment in the laboratory

XP 20 actuators for Railway operators:

Maintenance Service Repair

- annual system safety inspections on the vehicle (e.g. PZB - intermittent automatic train control)
- cyclical testing and calibration of components (e.g. indicators) in the workshop
- operation and implementation tests following maintenance and servicing measures on the vehicle
- system testing of replacement component parts on the vehicle
- function testing of replacement components prior to installation in the vehicle
- testing of components which have been in storage (incoming and outgoing goods)
- error diagnosis of components in the workshop



XP 20 D, DS, R



The XP 20D and XP 20DS drive units for axle mounted generators and pick-up sensors are an integral part of the simulation environment for system testing of speed sensors within train protection. The compact housing facilitates testing directly on the vehicle.

In the XP 20D the operation terminal is integrated in the housing. The XP 20DS variant serves as a remotely controlled service device for testing on the vehicle. It is supplied without its own operation terminal. Activation of the service device XP 20DS is effected via the mobile operation terminal XP 20R, the software emulation of the XP 20 operator interface or indirectly in synchronous operation through an XP 20D. With the operation terminal up to nine XP 20 Test Benches are simultaneously activated. Variable settings, e.g. wheel diameter, are set separately for each driver.

The required revolutions or speed are entered into the operation terminal. The current revolutions or speed of the XP 20 driver are displayed on the operation terminal. The rotational direction can be changed at any time.

On the rear side of the XP 20D there is a power unit on which all current generators and pick-up sensors can be installed. A range of accessory kits is available for this.

20 freely programmable memory spaces are available for both speed and revolutions. Real or fictitious train runs can be simulated in the "Operational Profile" mode.



Rear side XP 20D and XP 20DS:

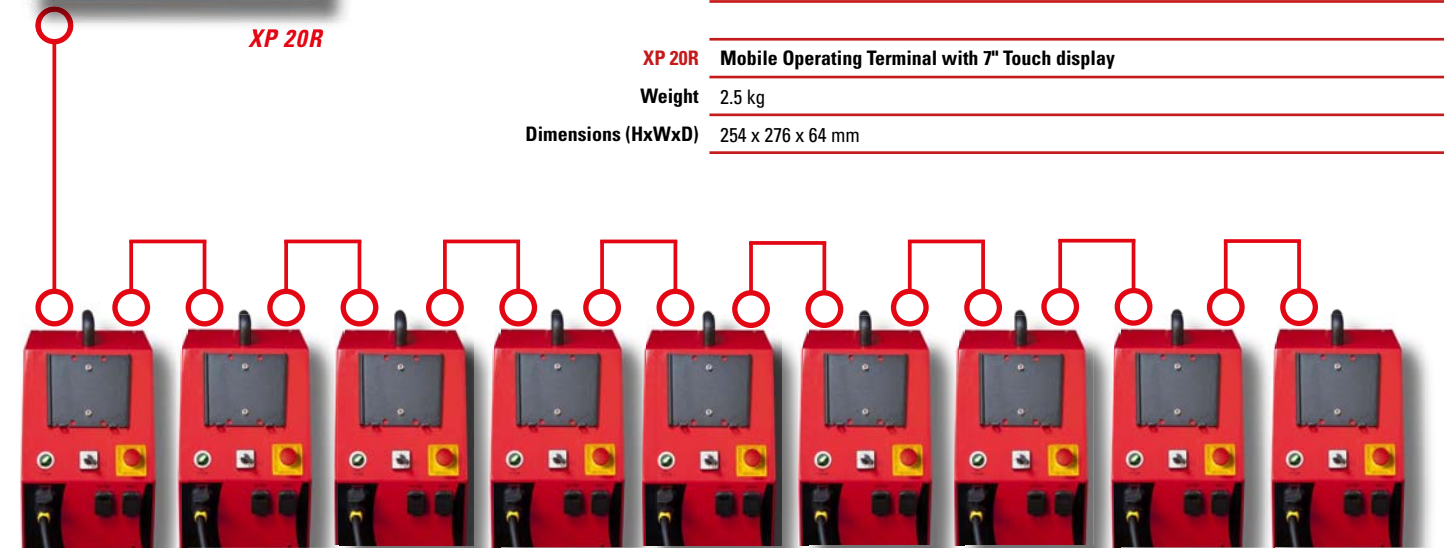
On the XP 20D and XP 20DS the sensors to be tested are installed on the rear side of the drive shaft.

Characteristics/Specifications

XP 20D	Test Bench
Function	Simulation of real drives and speed profiles for axle mounted generators and pick-up sensors
Field of application	For laboratory environments, maintenance workshops and servicing on the vehicle
Operation	7" Touch Operation Terminal
Range of adjustment	0 ... 4.000 U/min or 0 ... 400 km/h
Wheel diameter	Adjustable from 450 - 2,000 mm
Direction	Adjustable left and right
Operating voltage	110 - 240 V 50-60 Hz
Power consumption	max. 500 W
Weight	approx. 11.5 kg
Dimensions (HxWxD)	330 x 215 x 280 mm
XP 20DS	Test bench
	Specifications as for XP 20D without operating terminal
Weight	10.5 kg
(Dimensions (HxWxD))	330 x 215 x 280 mm
XP 20R	Mobile Operating Terminal with 7" Touch display
Weight	2.5 kg
Dimensions (HxWxD)	254 x 276 x 64 mm



XP 20R



XP 20DS