



# THEORY +

# PRACTICE

in automotive mechanics,  
electrics and electronics

## Newsletter

Current automotive teaching equipment for the best training in car-related professions



## New product lines: ecoline and proline - The choice is up to you!



### The maximum!

# proline

You can go into depth with our **proline** series THEPRA educational appliances - more opportunities with the latest technology in modern educational appliances - high tech for your entire range of requirements. The proline series devices are among the leaders in training for car-related professions.

# ecoline

### didactically ahead!

The sophisticated sister models of the proline series offer all functions and options required in the respective field of learning. **ecoline** - modern technology in attractive educational appliances - designed with educational usefulness in mind. The ecoline series devices are setting new standards in training for car-related professions.



## Seminars - car multiplication



THEPRA regularly offers advanced training seminars on current topics. These are held either in the schools themselves or on our premises.

Are you interested in participating or would you like to organize an event in your region? Get in touch with us - we would be happy to hear from you.

### Adapter bridge



#### THEPRA PIN-BOX system

The adapter bridge enables a universal adapter cable to be connected in the vehicle. The bridge can be used to replace the interrupter or error box

Order No. 38 200 055

### Consumer unit



#### Generator battery technology

Up to 10 glow plugs can be connected to the new consumer unit as consumers.

Order No. 15 013 110

### Hall generator



#### THEPRA plug-in module system

The newly reworked hall generator plug-in module allows for many practical circuits. Available in the student and teacher version.

Order No. 16 151 067

## DC power supply unit TS20 with function generator

The THEPRA power supply unit TS20 can be specially used in many ways in car electronics. Along with the variable 0 - 15 VDC voltage output and the constant 5 VDC voltage output, this laboratory power supply offers the option of controlling components with pulse width modulation up to 2 A. In addition to this, a flexible function generator is available with signal output.



Order No. 12 050 020

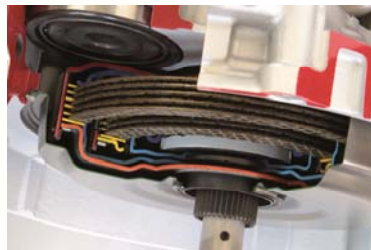
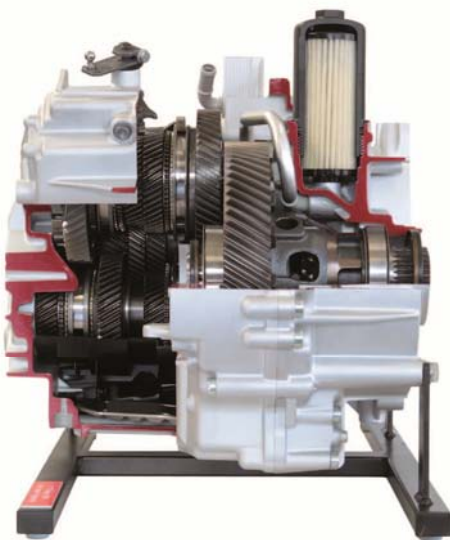
### Outputs

- Signal (Sine, triangle, sawtooth, rectangle)
- PWM Pull-Down
- 5 VDC (constant)
- 0 - 15 VDC
- PWM Pull-Up

### Variable/Parameter

- Voltage
- Frequency
- Gain
- Offset
- Duty cycle (for PWM signal)

## New cut-away models 2012



### Seven-speed direct transmission with wet clutch

- The following are cut away: Wet clutch, control housing, gearbox, oil cooler, oil filter, parking lock
- The transmission can be easily rotated and the gears switched manually or by pressurised air. The lockout is functional. The clutch function can be demonstrated by pressing the fins together. The transmission is mounted on a table stand. A self-study program from VW is included in the scope of supply

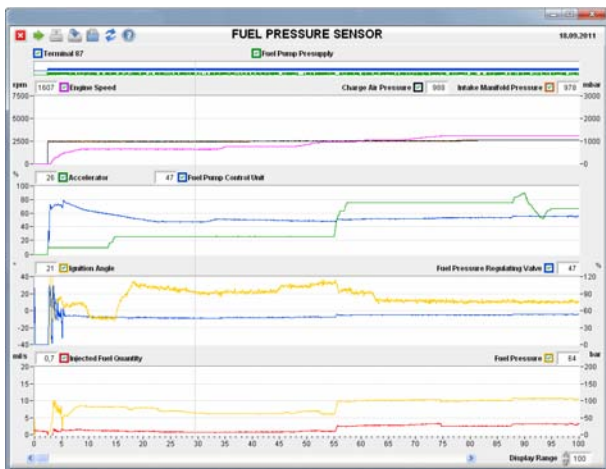
Order No. 79 001 335

### Additional cut-out model innovations

- 79 001 336 Dual mass flywheel with centrifugal pendulum-type absorber
- 79 001 337 High pressure pump (direct petrol injection)
- 79 001 338 Common Rail injection pump from DELPHI
- 79 001 339 Cylinder head with piezo injector
- 79 001 340 Starter Generator (Micro-Hybrid)
- 79 001 341 Demand-driven oil pump without suction level (V6)
- 79 001 342 Demand-driven oil pump with suction level (V8)



## THEPRA Software PC measuring data recording - Version 2012



Example: Line chart

For all electronically controlled THEPRA educational appliances and various functional motors, the corresponding PC measuring value recording programmes are available as well. Use of this software increases the lesson options and increases lesson efficiency. The measuring values and signals are summarised in pedagogically sensible subjects and presented via charts and in the circuit diagram.

Now even more options with the new revised user interface.

Order No. e.g. CDI

17 036 030

## Direct Fuel Injection - EFI (Toyota) *ecoline*

With this teaching and functional stand, all features, conditions, errors and measuring values can be illustrated and examined as they are in the original engine. The test stand for injection technology petrol engines, which can be moved on lab cart 100, includes integrated error switches and a measuring box.



### Features

- EFI injection technology, original components
- Original injection pressures
- Design and symbolic representation in screen print fields on aluminium front panel
- 4 large color displays
- Measuring box with 20 sockets for taking measurements in accordance with the original circuit diagram
- Compact unit design, can be moved for lab and workshop practice
- Compatible to THERPA student-circuit-diagram-measuring desks. Up to 20 uncoupled desks possible
- 20 switchable errors behind a lockable cover
- Can be diagnosed via OBD interface
- Detailed accompanying documents / manual and CD
- Optional: THEPRA PC measuring data recording - combines the measuring values and signals in educationally meaningful subjects. Represented in charts and the circuit diagram

Order No.

38 040 500



## Direct Fuel Injection - TSI (VW) *proline* and *ecoline*

The teaching and function stand is equipped with original components of a FSI direct fuel injection and best suited for experiments in lab and practical lessons. All features, conditions, errors and measuring values can be shown and examined as they are in the original engine.



TSI Direct Fuel Injection

Order No. proline 38 072 000

### Features

- TSI system, original VW components
- Original injection pressures
- Structure and symbolic presentation in screen print fields on aluminium front panel
- IPO principle
- Large colour displays
- 4 mm measuring sockets on front panel to measure according to original circuit diagram
- Compact unit design, can be moved for lab and workshop practice
- 20 switchable errors, under lockable cover (ecoline only)
- Optionally: THEPRA PC measuring data recording - combines the measuring values and signals in pedagogically sensible subjects. Represented in charts and the circuit diagram
- Up to 20 uncoupled student-circuit-diagram-measuring desks with error switchgear
- Numerous experiments with teacher/student work documents
- Can be diagnosed via OBD interface
- Detailed accompanying documents / manual and CD



Fig.: ecoline measuring box

Order No. ecoline 38 072 500

### Teaching Content

- Identifying components of the entire engine management system
- Explaining component interaction
- Determining connection pins on components and control unit according to problem
- Determining target values depending on operating situation
- Using OBD diagnostic tools common for the workshop
- Measuring and assessing sensor signals and actuator control voltages,
- Recording CAN-bus signals with oscilloscope and assessing signal levels

- Making screen-shots of all signals, all control voltages and the CAN data-bus with a digital oscilloscope and storing them for customer-specific documentation

### Experimental and Demonstration Possibilities

- Monitoring of the power supply side
- Monitoring of the sensors
- Monitoring of the actuators
- Determining the influence of various sensors on the various actuators
- Recording and evaluating the control of the actuators corresponding to the input information

- Representation of the stratified charge operation
- Representation of the homogenous operation
- Representation of the pressure conditions in relation to the sensor signals and engine speed
- Recording and evaluation of the speed-dependent injection time and the regulation of the amount injected in relation to the preselected sensor signals.
- Representation, recording and evaluation of errors based on practice
- Self-diagnosis by original tester

## PANDA car electrics - New system panels

The modular system for practice-oriented and student-compliant presentation of the required lesson contents can now be expanded to include many new system panels.



### Features

- Original components set up on one device board each by subject
- Original circuit symbols in Eloxal screen print method on the aluminium device board
- Car component cables according to circuit diagram
- Mobile with board carrier for 4 device boards each on the front and back
- Subframe with insertion option for device board storage
- For demonstration lessons and group work
- 2 - 4 student workplaces
- Many subject areas or learning sessions
- Detailed accompanying documents
- Three different designs available

Order No. 11 010 010

### System panel - front lighting



#### Features

- Now with LED daytime running light
- Modern headlights in a clear glass design

Order No. 11 011 010

### System panel - rear lighting



#### Features

- Now with LED tail lights and third brake light
- Also available with CAN-Bus trailer control device

Order No. with CAN-Bus 11 013 500

### System panel - windshield wiper LIN-Bus



#### Features

- With original rain/brightness sensor and washing pump

Order No. 11 020 500

### Even more new system panels ...

#### PANDA innovations

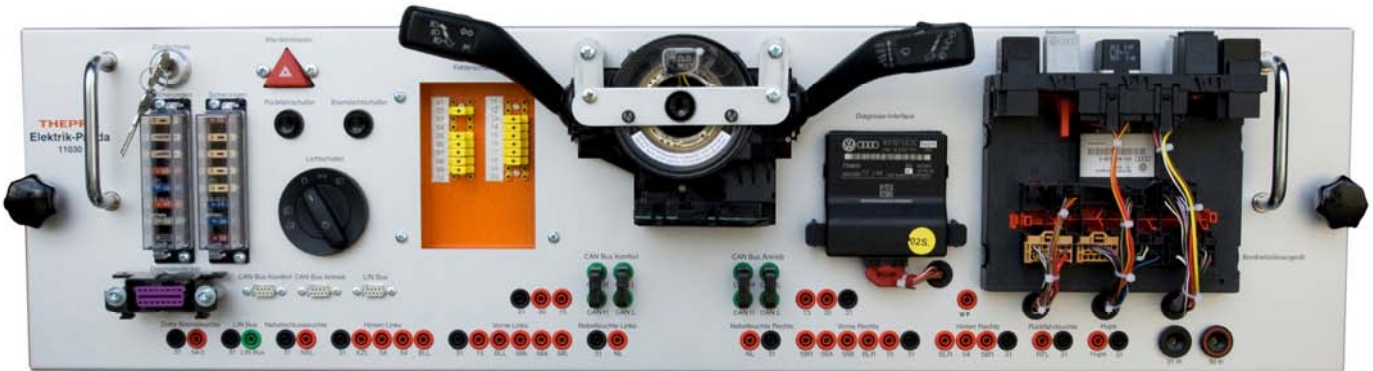
- 11 012 010 System panel - Controls
- 11 012 500 System panel - CAN-Bus controls
- 11 023 000 System panel for park distance control
- 11 040 400 System panel basic principles for bus systems
- 11 027 000 System panel - trailer
- 11 025 500 System panel for CAN-Bus door module
- 11 070 002 System panel - agricultural engineering control s

## System panel - controls with CAN-Bus - the most powerful PANDA expansion

The system panel for car controls with CAN-Bus is equipped with original components from the car. All components are wired in accordance with the original circuit diagrams and fully functional. This makes it possible to represent the function of the CAN-Bus and the LIN-Bus in an impressive manner. The options for individual error design in the training process are immense due to the vast number of combination options in both the conventional wiring and in the bus systems. Connections for diagnostic device and computer.

### Features

- Compatible with your former PANDA system panels
- Very extensive error switchgear
- Additional CAN-Bus modification panels are available



Order No. 11 012 500

## Lambda probe trainer with discrete level probes and broadband probe



### Features

- Operation of 3 lambda probes at the same time: 1 x discrete level probe, 1 x heated discrete level probe, 1 x broadband probe
- Stainless steel design with protective device
- Comparative temperature sensor
- All test points for voltage and current measurements are connected to 4 mm safety sockets
- Finely adjustable oxygen supply for mixed regulation of fat or lean
- USB connection integrated
- The supplied PC software enables monitoring and recording in bar, line and lambda curve charts. This allows every probe to be considered individually or simultaneously in connection with the others.
- All voltage, current, lambda number and temperature values are provided
- Detailed documentation

Order No. 56 012 000

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