

# INSIDE THE CPX-900

## TECHNOLOGY VS. VALUE



Conductance Profiling Technology



Connectivity



Ease-of-use



Image: CPX-900

## INTRODUCTION OF A HANDS-ON BATTERY AND SYSTEM ANALYZER

### Why the CPX-900?

The CPX, the Conductance Profiling™ Battery and System Analyzer, services modern vehicle and battery technology with for example reserve capacity (RC) problems.

### Technology VS value

The new CPX-900 offers:

- A. Conductance Profiling™ (CP)
- B. Connectivity
- C. Ease-of-use

### CONDUCTANCE PROFILING™

#### Where did the need come from?

Batteries are no longer just used to start the car. Therefore, the CPX does not just diagnose the capability to start the vehicle using the conductance technology, it also has CP to approach the RC supporting vehicle loads. Did you know that modern vehicles have over 50 ECUs, where in times of starter batteries they had two!

#### What is Conductance Profiling™?

We want to see if the battery is still capable of supporting vehicle loads. This is measured in Ah and called reserve capacity (RC).

RC measurements give an indication of the time a vehicle with

a normal electrical load will run with a broken alternator or fan belt. There is no reliable correlation between conductance results and RC results. The relevance to support loads in modern cars has increased as well as the likelihood to failures to support the vehicle loads.

The traditional conductance measurement is expanded by a small load for 60 seconds. The response of the battery to this load is compared to profiles of batteries with RC issues. This is the Conductance Profiling (CP) technology.



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## Why is it important for me?

### 1. RELIABILITY

Due to CP this is the most reliable way of diagnosing modern vehicle and battery technology serving your customer. You build customer trust and increase service and satisfaction.

In fact, with the former technology you are no longer able to give a reliable result. You can tell your customer he is good to go based on being able to start the car. Recent service field test data showed that the old technology had a 17% REPLACE decision rate, where adding all reserve capacity problems diagnosing with the CP technology increase to 30%!

Reliability is the first and last reason why we service vehicles in our workshops. Reliability helps building customer trust and satisfaction. Without CP it is impossible to know whether your advice is trustworthy.

### 2. DECISIVENESS

That same field test data showed an increase in decisiveness: from 13% CHARGE&RETEST decisions to less than 7%. This 50% decrease of indecisive results matters a great deal as this non-final result doesn't allow you to move on or give an advice. CP allowed us to improve decisiveness, to increase sales, save costly time on charging bad batteries, and again, building customer trust.

## CONNECTIVITY

Manufacturers of all types of diagnostic equipment provide technology build with connectivity. Workshops are connected and expected to be.

Having connected battery management equipment – testers, chargers, information systems – supports using pieces of equipment as part of a program to gain a certain level of management and control over achieving warranty, quality or service goals. A connected tester receives vehicle data and sends test data, all of which in its turn is received by a connected diagnostic charger and is sent to a cloud (as illustrated below).

Such an integration of systems not only helps to reduce faulty input, false warranty claims, unreliable results and thus vehicle breakdowns, it also helps to improve process compliance. VIN capture for automated input is possible either using 2D integrated barcode scanner

or CVG. The service experience improves with a complete vehicle service history at hand and the ability to share diagnostic results via email.



State of Health	SoH
Cold Cranking Amps	CCA
Amp Hours	Ah / RC
Charge Acceptance	CA

THEN	NOW
<p>2 ECUs Lead-Acid battery Normal internal resistance</p>	<p>50 ECUs EFB / AGM battery Lower internal resistance Engine off - Consumers on</p>
<p>SOH</p> <p>MDX and EXP series</p>	<p>SOH</p> <p>Tester platforms with CP      Charging DCA-8000</p>

# INSIDE THE CPX-900

## EASE-OF-USE

We covered automated input as we discussed connectivity and system integration and automated input helps in terms of ease-of-use.

The 3.5" colour screen displays more information and graphical elements improving the service experience. The CPX has a simple look and feel consistent to other Midtronics platforms such as the DSS, MCC and DCA Series.

## THIS ANALYZER GIVES



**Increased accuracy**



**Faster and greater decisiveness**



**Improved user experience and other functional benefits**

## OTHER

- Improved temperature accuracy and cold battery detection
- Internal diagnostics provide the user with proactive warnings for replacement parts like cables and internal batteries.
- Loaded and unloaded voltage system test
- Optional printer

## Why is it important for me?

### 3. RETURN ON INVESTMENT

These three bullets explain the tables below and explain the investment in the CPX with the capability to diagnose reserve capacity issues:

- Without comparing this technology to anything else, you earn the investment in this tester in less than 10 months
- Comparing CP technology and current technology, shows that a workshop earns over 1000 EUR more on a yearly base by testing 7 cars per day
- Decisiveness has increased as Charge&Retest decisions have decreased by 50%

Today's Technology		Conductance Profiling™	
Daily battery test total	5	Daily battery test total	5
Days open per week	5	Days open per week	5
Current Replace % in service environment	17%	Current Replace % in service environment	30%
Likelihood to sell a battery (close rate %)	16%	Likelihood to sell a battery (close rate %)	16%
Average Profit € per Battery	€ 35	Average Profit € per Battery	€ 35
Average CPX Price	€ 900	Average CPX Price	€ 900
Number of locations	1	Number of locations	1

	Today's Technology	Conductance Profiling™	Delta
<b>Tests</b>			
Daily	7	7	
Weekly	35	35	
Monthly (4 week/month)	140	140	
Yearly	1680	1680	
<b>Batteries Needing Replaced</b>			
Daily	1,19	2	1
Weekly	6	11	5
Monthly	24	42	18
Yearly	286	504	218
<b>No-Start Situations Prevented</b>			
Daily	0	0	0
Weekly	1	2	1
Monthly	4	7	3
Yearly	46	81	35
<b>Profit</b>			
Daily	€ 6,66	€ 11,76	€ 5,1
Weekly	€ 33,32	€ 58,80	€ 25,48
Monthly	€ 133,28	€ 235,20	€ 101,92
Yearly	€ 1599,36	€ 2822,40	€ 1223,04
Yearly total	€ 1599	€ 2822	€ 1223

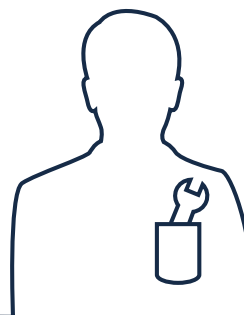
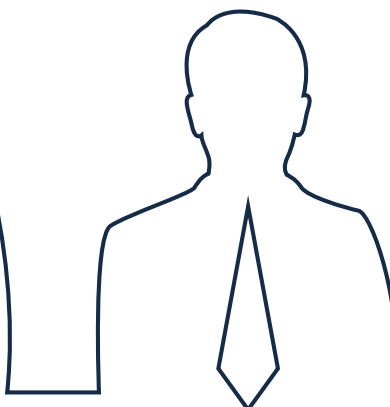
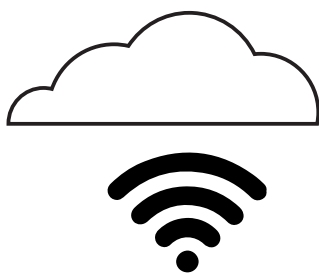
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## CONNECTIVITY

### Information System

A basic level of information system, program maintenance, supports software version control providing automated updates.

There are many ways to look at value of an information system though. Therefore, we offer the below example of an orientation to OEM stakeholders as inspiration:



### Engineering

- Reduce “detection to remediation” cycle time via effective early warning signals and associated quality improvements
- Protect brand image through proactive management of quality issues
- Big data to recognize trends per make/model for continuous development.

### Field Service

- Automated warranty claim process as test codes are easily uploaded to the system for corporate users
- Build customer trust, satisfaction and increase sales through a means to preventive maintenance
- Improve Customer Satisfaction (perfect delivery of vehicle)

### Parts Marketing

- Real-time evaluation of preventive maintenance effectiveness
- Maximize battery selling opportunities by closely monitoring close rates

### Tools & Equipment

- Proactive support for software updates
- Full equipment traceability, active use, and software version
- Identify opportunity for continuous improvement
- Equipment self-diagnosing

### Dealers

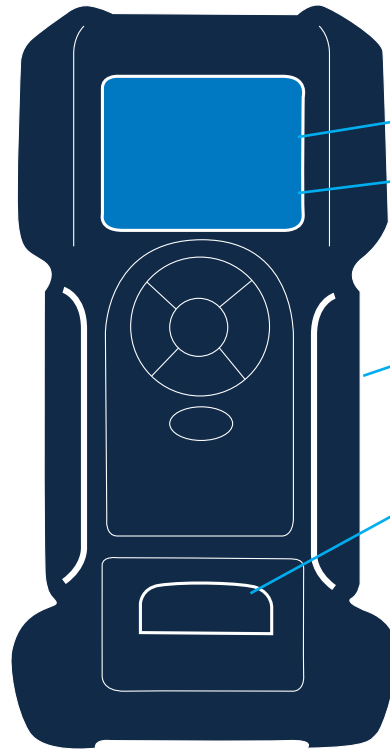
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### Warranty

- Reduce warranty costs due to faulty claims
- Big data for improved battery management and warranty program design
- VIN based overview of test data

# INSIDE THE CPX-900

A BRAND NEW DESIGN



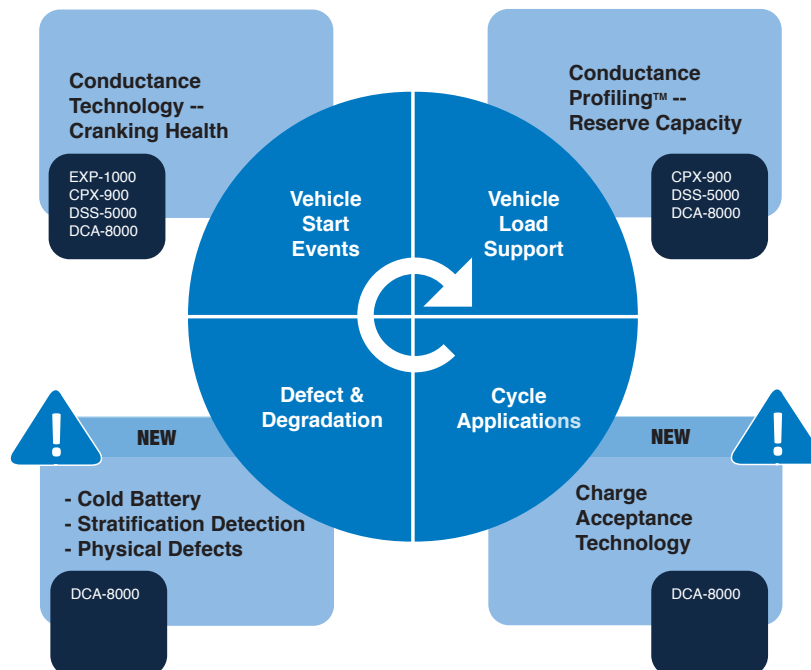
3,5" color screen

New user interface design

Easy grip

Built-in printer (optional)

## TECHNOLOGY COMPARISON



# INSIDE THE CPX-900

## PRODUCT COMPARISON



FEATURE	MDX-300	CPX-900	DSS-5000 (HD)
<b>CONDUCTANCE PROFILING™</b> Diagnose reserve capacity issues and achieve ±50% reduction in CHARGE&RETEST decisions	NO	YES	YES
<b>WI-FI AND BLUETOOTH</b> Supports connectivity to Midtronics Battery Management Information System (BMIS) and our Next-Gen tools. It supports over-the-air updates and data transfer.	NO	B/G/N Wi-Fi, Bluetooth	B/G/N Wi-Fi, Bluetooth
<b>DETACHABLE TABLET CONTROLLER</b> Separates from base: system test can be done by a single technician; and easy to share results on-screen with the customer	NO	NO	YES
<b>BATTERY REGISTRATION</b>	NO	NO	YES
<b>BATTERY LOCATIONS AND RESET INSTRUCTIONS</b>	NO	NO	YES
<b>CVG VIN CAPTURE SUPPORT</b>	NO	Optional	Optional
<b>CAMERA</b> Used for barcode VIN capture. Camera can capture 1D and 2D	NO	Optional barcode scanner	YES
<b>OPERATING SYSTEM</b>	Embedded	Embedded	ANDROID
<b>START-STOP BATTERY TEST</b>	NO	YES	YES
<b>SYSTEM TEST</b>	Voltage only	Loaded and unloaded voltage	YES
<b>HEAVY DUTY TESTING</b>	NO	NO	Optional
<b>CLAMPS</b>	Standard	Power sports	Power sports
<b>FIELD-REPLACEABLE TEST LEADS</b>	YES	YES	YES
<b>TEMPERATURE SENSOR</b>	NO	YES	YES
<b>BUILT IN PRINTER</b>	YES	Optional	Optional
<b>AMP CLAMP SUPPORT</b>	NO	NO	Optional
<b>DMM MODE</b>	NO	NO	YES
<b>RECHARGEABLE BATTERIES</b>	NO	NO	YES
<b>DOCK</b>	NO	Optional, storage only	YES
<b>CHARGE STATION</b>	NO	NO	YES
<b>DISPLAY SIZE &amp; TYPE</b>	2.5"	3.5" FULL COLOUR	5" TOUCH SCREEN, FULL COLOUR
<b>TEST ALL BATTERY REQUIREMENTS: OUR NEW CONDUCTANCE PROFILING™</b> Batteries need to be tested on not only ability to start a vehicle, but also to maintain and support the vehicle in start-stop sequences and overall vehicle behavior. Conductance profiling helps diagnosing reserve capacity issues and achieve ±50% reduction in CHARGE&RETEST decisions.	NO	YES	YES
<b>CONNECTIVITY: WI-FI AND BLUETOOTH</b> Supports connectivity to Midtronics Battery Management Information System (BMIS) and our Next-Gen tools. It supports over-the-air updates and data transfers.	NO	B/G/N Wi-Fi, Bluetooth	B/G/N Wi-Fi, Bluetooth
<b>INTEGRATED SOLUTIONS</b> The ability to integrate our solution in a service program. For instance: can a 'slave'-unit (hardware) be used, with the UI being on a diagnostic tool or laptop.	NO	Optional	Optional
<b>GLOBAL SOFT- AND HARDWARE: EASILY UPDATE TO NEW TECHNOLOGIES</b> Through global updates we can resolve the issue of many different software versions in the field. This will help improve upon central management and control of the use of equipment and software updates.	NO	YES	YES
<b>STANDALONE</b> The tool is also useable as a standalone tool (no requirement for WiFi in workshop).	YES	YES	YES
<b>QUICK STATE OF CHARGE TEST (compound use)</b> Testing the SOC quickly, which is especially beneficial for compounds/ quality checks and inventory control.	YES	YES	YES