

# LD 200N

## LOAD DUMP GENERATOR WITH CLIPPING-MODULE



### FOR TESTS ACCORDING TO ...

- › BMW - (Airbag ECU)
- › BMW 600 13.0 (Part 1)
- › BMW 600 13.0 (Part 2)
- › BMW GS 95002 (1999)
- › BMW GS 95003-2
- › Case New Holland ENS0310
- › Chrysler CS-11979
- › Chrysler PF-9326
- › Claas CN 05 0215
- › Cummins 14269 (982022-026)
- › DaimlerChrysler DC-10842
- › DaimlerChrysler PF-10540
- › EN 300329
- › EN 300340
- › EN 300342-1
- › EN 301489-1
- › EN 301489-17
- › FAW Diesel ECU MY06.0 (Rev.7)
- › Fiat 9.90110
- › Ford EMC-CS-2009.1
- › Ford ES-XW7T-1A278-AB
- › ...

### LD 200N - COMPACT HIGH-ENERGY LOAD DUMP GENERATOR

Load Dump pulses simulate a sudden battery disconnection (e.g. by corrosion) from the alternator. Cause the lost of the battery load the alternator generates an overvoltage impulse. Such Load Dump pulses are high energy pulses with a high potential of destruction. The LD 200N simulates these high energy pulses having a duration time in the range of hundreds of milliseconds. The LD 200N generates the Load Dump pulses as per ISO 7637, ISO 16750-2, SAE J1113, SAE J1455, JASO and many more manufacturer specification, e.g. Ford, Chrysler, Renault, PSA, NISSAN etc. By means of a built-in clipping circuit the LD 200N also generates clipped load dump pulses as per international standards as well as manufacturer requirements.

### HIGHLIGHTS

- › Load Dump generator according to ISO 7637, ISO 16750-2, SAE J1113, SAE J1455, JASO, Nissan and most car manufacturer requirements
- › Generates Clipped Load Dump pulses
- › Built-in 0.5 - 38 Ohm source impedance, selectable in 0.1 Ohm steps
- › Pulse duration up to 1,200ms

### APPLICATION AREAS

-  AUTOMOTIVE
-  TELECOM

## TECHNICAL DETAILS

## LOAD DUMP GENERATOR

## PULSE SPECIFICATION

Voltage (o.c.)	20V - 200V ± 10%
----------------	------------------

## ISO PULSE 5 AND 7

Rise time	5ms - 10ms (10 - 90%)
Pulse duration	40 - 400ms (10 - 10%)
Int. resistor	0.5ohm - 38ohm, selectable in steps of 0.1ohm
Repetition rate	Min. 30s

## ISO 16750-2, 12V SYSTEM

Voltage (o.c.)	+79V to 101V ± 10%
Rise time	10ms (+0/-5ms)
Pulse duration	40 - 400ms ± 10% (10 - 10%)
Int. resistor	0.5ohm - 4ohm

## ISO 16750-2, 24V SYSTEM

Voltage (o.c.)	+151 V to 202 V ± 10 %
Rise time	10ms (+0/-5ms)
Pulse duration	100 - 350ms ± 10% (10 - 10%)
Int. resistor	1ohm - 8ohm

## ISO 7637-2:2004, 12V SYSTEM

Voltage (o.c.)	+65V to 87V ± 10%
Rise time	10ms (+0/-5ms)
Pulse duration	40 - 400ms ± 10% (10 - 10%)
Int. resistor	0.5ohm - 4ohm

## ISO 7637-2:2004, 24V SYSTEM

Voltage (o.c.)	+123V to 174V ± 10%
Rise time	10ms (+0/-5ms)
Pulse duration	100 - 350ms ± 10% (10 - 10%)
Int. resistor	1ohm - 8ohm

## LOAD DUMP GENERATOR

## SAE J1455 FOR 12V BATTERY SUPPLY

Voltage (o.c.)	+86V ± 10%
Rise time	100us (10% - 90%)
Pulse duration	400ms ± 10% (10 - 10%)
Int. resistor	0.4ohm

## SAE J1455 FOR 24V BATTERY SUPPLY

Voltage (o.c.)	+122V ± 10%
Rise time	100us
Pulse duration	400ms ± 10% (10 - 10%)
Int. resistor	0.8ohm

## JASO PULSE A1

Voltage (o.c.)	+70V ± 10%
Rise time	1us (10% - 90%)
Pulse duration	200ms ± 10% (measured at tau)
Int. resistor	0.8ohm
Capacitor	110mF

## JASO PULSE B1 (FIELD DECAY)

Voltage (o.c.)	-80V ± 10%
Rise time	1us (10% - 90%)
Pulse duration	60ms (measured at tau)
Int. resistor	8ohm
Capacitor	3mF

## JASO PULSE D1

Voltage (o.c.)	+110V ± 10%
Rise time	1us (10% - 90%)
Pulse duration	400ms (measured at tau)
Int. resistor	1.5ohm
Capacitor	73mF

## TECHNICAL DETAILS

## LOAD DUMP GENERATOR

## CHRYSLER PF 9326 PULSE 5

Voltage (o.c.)	+91.5V ± 10%
Rise time	5 - 10ms (10% - 90%)
Pulse duration	300ms td (10 - 10%)
Loaded pulse	+45.75V ± 10% into a 0.5ohm load
Pulse duration	> 95ms (10 - 10%)
Int. resistor	0.5ohm
Repetition rate	120s

## FORD ES-XW7T CI 240 (AB-VERSION)

Voltage (o.c.)	60V ± 10%
Rise time	1 - 10ms (10% - 90%)
Pulse duration	300ms (10% - 10%)
Voltage (loaded)	30V ± 10% into a 0.7ohm load
Pulse duration	150ms ± 10% (10 - 10%)
Int. resistor	0.5ohm
Repetition rate	3 pulses every 30s

## FORD ES-XW7T CI 220G (AC-VERSION)

Voltage (o.c.)	60V ± 10%
Rise time	1 - 10ms (10% - 90%)
Pulse duration	300ms (10% - 10%)
Voltage (loaded)	30V ± 10% into a 0.5ohm load
Pulse duration	150ms ± 10% (10 - 10%)
Int. resistor	0.5ohm
Repetition rate	3 pulses every 30s

## LOAD DUMP GENERATOR

## FORD EMC-CS-2009.1, PULSE G1

Voltage (o.c.)	60V ± 10%
Rise time	10ms (-5/+0ms)
Pulse duration	300ms ± 20%
Voltage (loaded)	30V ± 10% into a 0.5ohm load
Pulse duration	150ms ± 20%
Int. resistor	0.5ohm

## FORD EMC-CS-2009.1, PULSE G2

Voltage (loaded)	30V ± 10% into a 0.5ohm load
Voltage (suppressed)	21.5V (-1/+0V)
Rise time	10ms (-5/+0ms)
Pulse duration	150ms ± 20%
Int. resistor	0.5ohm

## FORD FMC1278, CI222 PULSE 5A

Voltage (o.c.)	60V ± 10%
Rise time	10ms (-5/+0ms)
Pulse duration	300ms ± 20%
Voltage (loaded)	30V ± 10% into a 0.5ohm loadv
Pulse duration	150ms ± 20%
Int. resistor	0.5ohm

## FORD FMC1278, CI222 PULSE 5B

Voltage (loaded)	30V ± 10% into a 0.5ohm load
Voltage (suppressed)	21.5V (-1/+0V)
Rise time	10ms (-5/+0ms)
Pulse duration	150ms ± 20%
Int. resistor	0.5ohm

## TECHNICAL DETAILS

## LOAD DUMP GENERATOR

## MERCEDES BENZ MBN 10 284 PART 2

Voltage (o.c.)	100V ± 10% (Pulse 5a for 12V)
Rise time	< 0.1ms (10% - 90%)
Pulse duration	400ms (10 - 10%)
Int. resistor	2ohm
Voltage (o.c.)	200V ± 10% (Pulse 5a for 24V)
Rise time	< 0.1ms (10% - 90%)
Pulse duration	500ms (10 - 10%)
Int. resistor	2ohm
Voltage (o.c.)	100V ± 10% (Pulse 5a for 42V)
Rise time	< 0.1ms (10% - 90%)
Pulse duration	400ms (10 - 10%)
Int. resistor	2ohm
Repetition rate	120s

## SCANIA TB1400

Voltage (o.c.)	+90V ± 10% for trucks
Rise time	1 - 10ms (10% - 90%)
Pulse duration	300ms (10 - 10%)
Voltage (o.c.)	+125V ± 10% for buses
Rise time	1 - 10ms (10% - 90%)
Pulse duration	480ms (10 - 10%)
Int. resistor	1.5ohm

## SCANIA TB1700

Voltage (o.c.)	+125V ± 10%
Rise time	1 - 10ms (10% - 90%)
Pulse duration	480ms (10 - 10%)
Int. resistor	1.5ohm

## LOAD DUMP GENERATOR

## NISSAN PULSE A1

Voltage (o.c.)	+60V ± 10%
Rise time	1ms ± 50% (10% - 90%)
Int. resistor R1	18ohm
Int. resistor R2	0.66ohm
Capacitor	15mF

## NISSAN PULSE A2

Voltage (o.c.)	+60V ± 10%
Rise time	1ms ± 50% (10% - 90%)
Int. resistor R1	11ohm
Int. resistor R2	0.8ohm
Capacitor	1mF

## NISSAN PULSE B1

Voltage (o.c.)	+80V ± 10%
Rise time	1ms ± 50% (10% - 90%)
Int. resistor R1	20ohm
Int. resistor R2	20ohm
Capacitor	1mF

## TEST ROUTINES

ISO 7637-2	Load Dump & Field Decay
PF-9326	Pulse 5a and 5b
Ford	ES-XW7T, AB & AC versions EMC-CS-2009.1
MBN 10284	Pulse 5a, 5b and 5c
SCANIA	Pulse 5 & 5b (TB1400 and TB1700)
JASO	Pulse A1, B1, D1
NISSAN	Pulse A1, A2, B1
Service	Service, setup, self test

## TECHNICAL DETAILS

## FREESTYLE MODE LOAD DUMP

## PULSE PROGRAMMING MODE

Rise time	<1us 10us - 90us with 10us steps 100us - 900us with 100us steps 1ms - 10ms with 1ms steps
Pulse duration	10ms - 1,200ms
Int. resistor	0.5ohm - 38ohm, in steps of 0.1ohm

## MODULE CLIPPED LOAD DUMP

## TEST ROUTINES

Standard Test routines	pre-programmed and controlled via iso.control
ISO 7637-2	Pulse 5b for 12V and 24V
ISO/WD 16750	Pulse 5b
SAE J1113-11	Pulse 5b
EMC-CS-2009.1	(Ford) Pulse G2
FIAT 9.90110	Pulse 5a
PSA B21 7110	Pulse 5b for 12V
Volvo	Pulse 5a and 5c
GS 95003-2	Pulse 5b
Porsche EMV	Pulse 5
GMW 3097	Pulse 5b
36.00.808	Pulse 5b
TSC 7034G	Pulse 5b
Iveco	Pulse 5b
Scania TB1400	Pulse 5b
Scania TB1700	Pulse 5b
ES 96100-02	Pulse 5b

## PULSE PROGRAMMING MODE

Clipped Voltage	15V - 99.5V, in steps of 0.5V
Rise time	100us - 10ms
Pulse duration	10ms - 1,200ms
Int. resistor	0.5ohm - 38ohm, in steps of 0.1ohm

## GENERAL DATA

## DIMENSIONS AND WEIGHT

Dimensions	19"/6HU, 500mm x 450mm x 290mm
Weight	approx. 25kg
Supply voltage	115V/230V +10%/-15%
Fuses	2x T2AT (230V) or 2x T4AT (115V)

## OUTPUT

+/- output	Safety laboratory connectors
Coupling	To the battery +line
Decoupling	Via diode
DUT supply	Max. 80V/30A

## INTERFACE

Serial interface	USB
Parallel interface	IEEE 488, addresses 1 - 30
CN interface	To control external CN - UCS 200N

## ENVIRONMENT

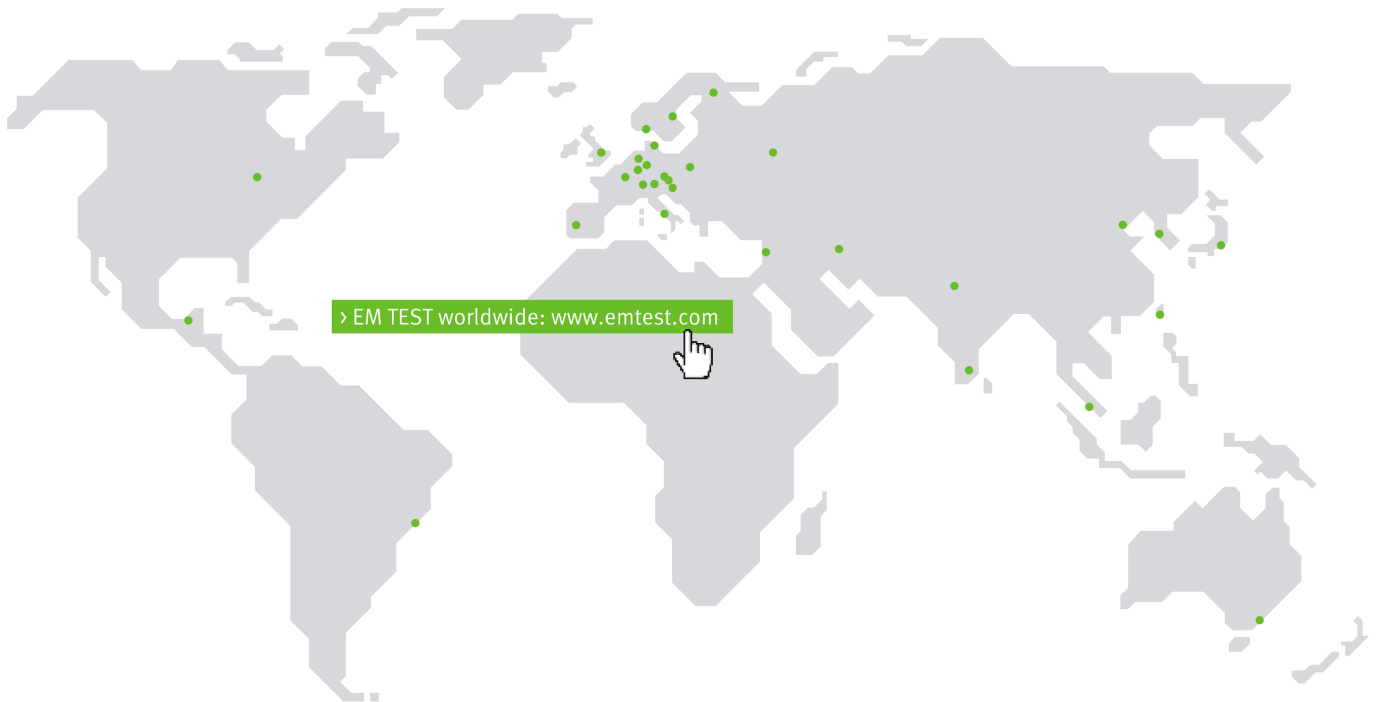
Temperature	10 °C to 35 °C
Humidity	30 % to 75 %, non condensing
Atmospheric pressure	86 kPa (860 mbar) to 106 kPa (1,060 mbar)

## OPTIONS

## OPTIONS

iso.control	Software to control the test, including standard library, test report facility and data conversion generator
CA ISO	Pulse verification set for micropulse and load dump pulse verification

# COMPETENCE WHEREVER YOU ARE



## CONTACT EM TEST DIRECTLY

### Switzerland

AMETEK CTS GmbH › Sternenhofstraße 15 › 4153 Reinach › Switzerland  
Phone +41 (0)61 204 41 11 › Fax +41 (0)61 204 41 00  
Internet: [www.ametek-cts.com](http://www.ametek-cts.com) › E-mail: [sales.conducted.cts@ametek.com](mailto:sales.conducted.cts@ametek.com)

### Germany

AMETEK CTS Europe GmbH › Customer Care Center EMEA › Lünener Straße 211  
› 59174 Kamen › Germany  
Phone +49 (0) 2307 26070-0 › Fax +49 (0) 2307 17050  
Internet: [www.ametek-cts.com](http://www.ametek-cts.com) › E-mail: [info.cts.de@ametek.com](mailto:info.cts.de@ametek.com)

### Poland

AMETEK CTS Europe GmbH › Biuro w Polsce › ul. Twarda 44 › 00-831 Warsaw › Poland  
Phone +48 (0) 518 643 12  
Internet: [www.ametek-cts.com](http://www.ametek-cts.com) › E-mail: [Infopolska.cts@ametek.com](mailto:Infopolska.cts@ametek.com)

### USA / Canada

AMETEK CTS US › 52 Mayfield Ave › Edison › NJ 08837 › USA  
Phone +1 732 417 0501  
Internet: [www.ametek-cts.com](http://www.ametek-cts.com) › E-mail: [usasales.cts@ametek.com](mailto:usasales.cts@ametek.com)

### P.R. China

AMETEK Commercial Enterprise (Shanghai) Co. Ltd. › Beijing Branch › Western Section, 2nd floor › Jing Dong Fang Building (B10) › Chaoyang District › Beijing, China, 100015  
Phone +86 10 8526 2111 › Fax +86 (0)10 82 67 62 38  
Internet: [www.ametek-cts.com](http://www.ametek-cts.com) › E-mail: [chinasales@ametek.com](mailto:chinasales@ametek.com)

### Republic of Korea

EM TEST Korea Limited › #405 › WooYeon Plaza › #986-8 › YoungDeok-dong › Giheung-gu › Yongin-si › Gyeonggi-do › Korea  
Phone +82 (31) 216 8616 › Fax +82 (31) 216 8616  
Internet: [www.emtest.co.kr](http://www.emtest.co.kr) › E-mail: [sales@emtest.co.kr](mailto:sales@emtest.co.kr)

### Singapore

AMETEK Singapore Pte. Ltd › No. 43 Changi South Avenue 2 › 04-01 Singapore 48164  
Internet: [www.ametek-cts.com](http://www.ametek-cts.com) › E-mail: [singaporesales.cts@ametek.com](mailto:singaporesales.cts@ametek.com)

### Great Britain

AMETEK GB › 5 Ashville Way › Molly Millars Lane › Wokingham › Berkshire RG41 2 PL › Great Britain  
Phone +44 845 074 0660  
Internet: [www.ametek-cts.com](http://www.ametek-cts.com)

Information about scope of delivery, visual design and technical data correspond with the state of development at time of release. Subject to change without further notice.