

General

The DL-X.0 series active load is a microprocessor-controlled device designed to meet the requirements of modern laboratories, industry, and workshops. Developed by ATEC Robotics and Innova Robotics, it provides high-precision characterization of current, voltage, and power. The dissipative method has been selected for its superior stability and reliable accuracy in voltage and current measurements. Its design has been optimized for both fully assembled battery packs and single cells, with peak dissipation capabilities of up to 12 kW in certain models.



The base model, DL1.0, can dissipate up to 0.9 kW peak and is cooled through controlled airflow. The intermediate models, DL2.0 and DL3.0, are rated for peak power dissipation of 1.1 kW and 1.3 kW respectively, and also employ airflow cooling. Models from DL3.1 up to DL10.0 are equipped with water cooling systems and support peak power dissipation ranging from 1.8 kW up to 12 kW.

The Graphical User Interface (GUI) allows users to configure tests for virtually any type of cell. The main software automatically sets the cut-off voltage to prevent over-discharge, adapting the parameters to the specific cell chemistry (Pb, NiCd, Lithium, LiFePO4, LiPo, etc.). All operations are controlled by an embedded processor, which communicates with an external PC via a USB port.

The GUI, compatible with Windows (32/64-bit), maintains a continuous connection with the ATEC Robotics data center, enabling real-time monitoring of device status and predictive maintenance. The main PC software autonomously generates test certificates, as shown in the accompanying figures. Furthermore, a dedicated Android application allows users to remotely track test progress.

Models and Peak Power Dissipation

Model	Peak Power Dissipation	Cooling System
DL1.0	0.9 kW (peak)	Controlled Airflow
DL2.0	1.1 kW (peak)	Controlled Airflow
DL3.0	1.3 kW (peak)	Controlled Airflow
DL3.1	1.8 kW (peak)	Water Cooling
DL5.0	5.0 kW (peak)	Water Cooling
DL10.0	12.0 kW (peak)	Water Cooling

Graphical User Interface (GUI)

- Allows configuration of tests for virtually any cell type.
- Automatic cut-off voltage detection to prevent over-discharge, with parameters adapted to the specific cell chemistry (Pb, NiCd, Lithium, LiFePO4, LiPo, etc.).
- Managed by an embedded processor communicating with an external PC via USB.

Software & Connectivity

- GUI compatible with Windows (32/64-bit).
- Constant connection with ATEC Robotics Data Center for device monitoring and predictive maintenance.
- Automatic generation of test certificates on the PC.
- Dedicated Android application for remote test monitoring.

Operation Modes

The loads support the typical operation modes: Constant Current (CC, static or dynamic), Constant Power (CP), and Constant Voltage (CV). Mode selection is managed through the Graphical User Interface (GUI). Additional protective settings are available to safeguard the test equipment. For example, a constant current test can be limited by a maximum power value, while constant voltage, constant power, or constant resistance modes can be limited by a maximum current value. These limits are automatically determined by the software and proposed to the user for approval.

Static and Dynamic Operations

In static operation, a single value is set via the GUI. In dynamic operation, the user can define a sequence of values to create step profiles on any of the four physical quantities: voltage (U), current (I), power (P), or resistance (R).

Battery Test Mode

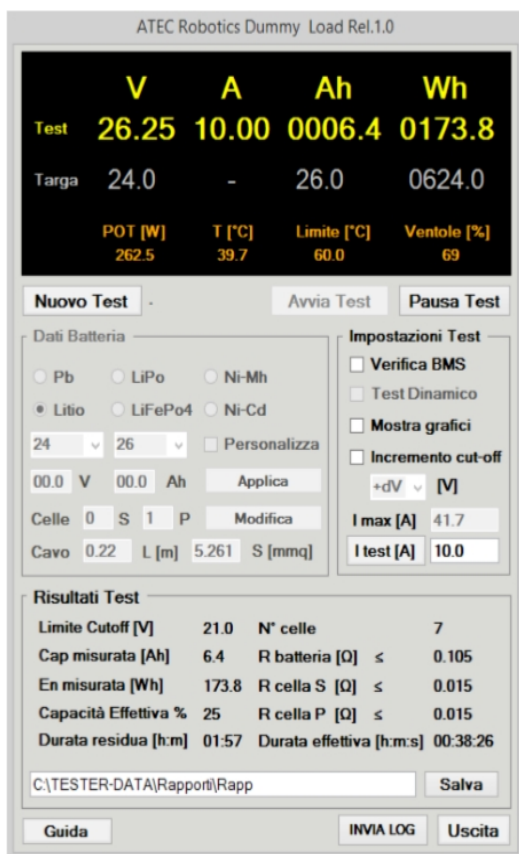
In battery test mode, the load can discharge a battery with constant or variable current until the battery voltage reaches a threshold defined by the cell chemistry (Pb, NiCd, Lithium, LiFePO4, LiPo, etc.). Once the threshold is reached, the test stops automatically. A certificate with graphs is then generated, and the discharge time along with the dissipated charge (Ah) is measured, displayed, and printed.

Remote Status Check

An Android application is available to remotely monitor the status of ongoing tests.

Water cooling for model up to DL 10.0

The water cooling replaces the standard fan cooling and has some advantages namely no hot air exhaust on the device, significantly lower noise, 100% permanent power.



ATEC Robotics Dummy Load Rel.1.0

	V	A	Ah	Wh	
Test	26.25	10.00	0006.4	0173.8	
Targa	24.0	-	26.0	0624.0	
POT [W]	262.5	T [°C]	39.7	Limite [°C]	60.0
				Ventole [%]	69

Nuovo Test - Avvia Test Pausa Test

Dati Batteria

☐ Pb ☐ LiPo ☐ Ni-Mh
☒ Litio ☐ LiFePO4 ☐ Ni-Cd

24 26 Personalizza

00.0 V 00.0 Ah Applica

Celle 0 S 1 P Modifica

Cavo 0.22 L [m] 5.261 S [mmq]

Impostazioni Test

☐ Verifica BMS
☐ Test Dinamico
☐ Mostra grafici
☐ Incremento cut-off

+dV [V]

I max [A] 41.7

I test [A] 10.0

Risultati Test

Limite Cutoff [V]	21.0	N° celle	7
Cap misurata [Ah]	6.4	R batteria [Ω]	≤ 0.105
En misurata [Wh]	173.8	R cella S [Ω]	≤ 0.015
Capacità Effettiva %	25	R cella P [Ω]	≤ 0.015
Durata residua [h:m]	01:57	Durata effettiva [h:m:s]	00:38:26

C:\TESTER-DATA\Rapporti\Rapp Salva

Guida INVIA LOG Uscita

Power Derating

All units in the series are equipped with thermal derating to limit power and prevent overheating when operating near maximum power levels. Every model integrates this feature. In the base model, cooled by controlled airflow, lower ambient temperatures and improved cooling conditions allow for higher dissipation capability. To ensure continuous operation at maximum power even under extreme conditions, optional water-cooled versions are available.

Recharge Function

The recharge function is available in the model ATR-DL-PRJ-060-R (R = Recharge). This feature automatically verifies the efficiency of the charge/discharge cycle, with the result included in the test report generated by this model.

Remote Status Check

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Water cooling for models up to DL 10.0

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System Bus

The system is equipped with a remote sensing input for ultra-precise measurement of the input voltage, even when voltage drops occur due to connection cables. In addition, a computational method is implemented to accurately compensate for cable-induced voltage losses.

Rapporto Test Batteria/Cella	
DATA TEST: 07-20-2016	
COMMITTENTE: ATEC Robotics	
N° MATRICOLA: Pb-Bosch-S4-N°1	
Rapporto n° 89	
Tipologia Batteria/Cella <i>Battery Cell Type</i>	Pb
Configurazione batteria <i>Battery Specifications</i>	6S1P
Tensione nominale <i>Nominal Voltage</i>	[V] 12.0
Capacità nominale <i>Nominal Capacity</i>	[Ah] 40.0
Corrente di test <i>Test Current</i>	[A] 5.0
Livello di cut-off in scarica <i>Voltage Cut-off discharge</i>	[V] 10.5
Capacità rilevata <i>Capacity</i>	[Ah] 16.5
Energia rilevata <i>Energy</i>	[Wh] 191.8
Resistenza totale (*) <i>Internal Resistance</i>	[Ohm] 0.236
Resistenza media cella S (*) <i>Internal Cell Series Resistance</i>	[Ohm] 0.039
Resistenza media cella P (*) <i>Internal Cell Parallel Resistance</i>	[Ohm] 0.039
Verifica BMS <i>BMS Validation Test</i>	-
Durata del test <i>Test duration</i>	[h:m:s] 03:18:27
Note: Nessuna	
Nome Operatore: Pennampede Giuseppe	Firma
Allegato A: Grafici Test	
(*) Si considera la resistenza dei cavi (Lunghezza = 0.22 m; Area sezione = 5.261 mm²) che connettono la batteria al DUMMY LOAD. La misura della resistenza viene effettuata dopo 30 s dall'inizio del test	
ATEC ROBOTICS - www.atec-robotics.com - Tel. 081.0356096	

Related Links Innova



Related Link Atec Robotics



Related link latuabici

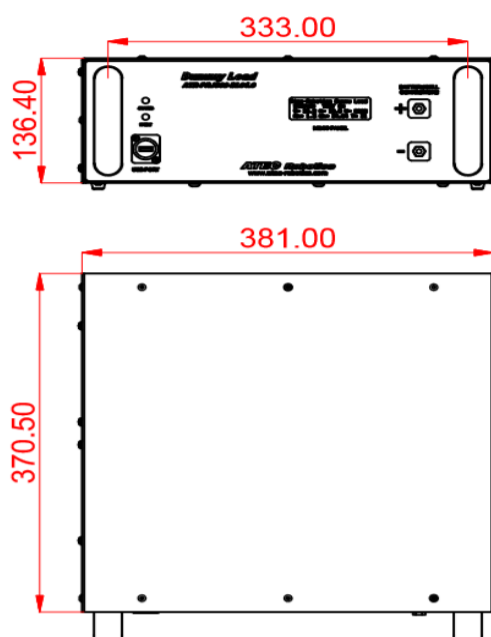


AIR COOLING Models

Mod code / Order Code	Max V	Max A	Continuous Power W	Recommended Continuous Power W	Peak Power (20s) W	Suggested use
DL1.0	60	40	800	600	900	e-bike e-Scooter 
DL2.0	60	48	1000	800	1100	e-bike e-Scooter 
DL3.0	85	55	1200	1000	1300	e-bike e-Scooter 

LIQUID COOLING Models

Mod code / Order Code	Max V	Max A	Continuous Power W	Recommended Continuous Power W	Peak Power (20s) W	Suggested use
DL3.1	100	60	1400	1200	1500	E-Scooter  Storage
DL4.0	120	80	1400	1200	1800	E-Scooter  Storage
DL9.0	240	120	2000	1600	2200	E-Scooter  e-Car Storage
DL10.0	400	200	8000	9000	12000	e-Car Storage



ITEM	Value	DL 1.0	DL 2.0	DL 3.0	DL 3.1	DL 4.0	DL 9.0	DL10.0
PWR input Voltage	90 →264 V ca @ 50/60Hz							
PWR consumption		50W	80W	80W	120W	150W	200W	200W
Mimic panel	4x20 character							
GUI interface	Windows OS 32/64 W10/11							
Batt test - Cutoff	Adjustable all parameters							
Readout	Capacity of discharge							
Typology of battery	Pb Li LiPo LiFePo4 LiMn2O4 Ni-Mh NiCd							
Cooling		F.V.	F.V.	F.V.	L.C.	L.C.	L.C.	L.C.
Alarms	Overvoltage Overcurrent, Overtemperature PWR status							
Terminals	Screws terminal	M6	M6	M6	M6	M8	M8	M10
Dissipation continuous W		600	800	1000	1200	1200	1600	9000
Dissipation peak W		900	1100	1300	1500	1800	2200	12000
Input Voltage V max		60	60	85	100	120	240	400
Test Current Amax		40	48	55	60	80	120	200
Mimic Panel resolution	100 mA							
GUI resolution	10mA							
Accuracy	<= 0.2%							
Simulated resistance	01000 ohm							
GUI Interfacing	USB2.0							
Remote control	Android app							
Maximum operating altitude	2000 m a.s.l.							
Dimensions (WxHxD)	W H D	385 144 402	385 144 402	385 144 402	430 160 402	500 200 402	500 200 402	500 350 402
Weight kg (about)		15	16	18	25	40	52	102

F.V – Forced Ventilation L.C. - Liquid Cooling