



Test Equipment

Load Banks

Test Benches

Battery Discharge Testers



Hardware Reference

Document 1101028 - Edition May 2010

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1 General Presentation

» Different types of load banks and benches

Load banks are constructed of switched loads, used for electrically loading electric equipments for testing. When the loads are fixed loads, they are considered simple resistor assemblies, in open frame constructions or in resistor enclosures; examples of these assemblies are provided in the documentation on the different types of resistors (wirewound resistors, edgewound resistors and woven resistors).

Depending on their use, benches are split into 4 categories :

- **battery discharge testers** are used to test batteries by discharging them in a specified mode: given resistive load, fixed discharge current, etc.
- **load banks for laboratory and teaching equipment** are used to provide electrical loads to test electrical devices and systems,
- **load banks for aerospace** are more specifically designed to test aerospace generators and equipment: they are designed for DC voltages of 28 V or for 3-phase 400 Hz AC voltages,
- the other **load banks** are generally used to test DC or AC generators: power supplies, UPS, welding power sources, etc. They can also be used to generate electrical conditions for testing a specific type of electrical equipment: electromechanical relay, breaker, etc. In that case, they become a production or troubleshooting **test bench** or part of it.

» Load bank description

The benches are constructed with:

- a set of loads which will absorb the energy taken from the source, the resistive loads being made with internally manufactured Coudoint components: wirewound, edgewound, woven resistors, optionally linear or rotary, manually driven or motorized rheostats
- a cooling system, by natural-air cooling or by forced-air cooling with cooling fans
- load switches: either manual switches, electromechanical relays or electronic power switches (IGBT, etc.)
- a control device to select the load value.

» Load value selection

Depending on the type of load bank, this selection can be made in different ways:

- **manual selection**: by using different terminals to connect to the source or by toggle or rotary switches
- **remote selection**: by sending signals via a parallel or serial link from a PC, an external electronic controller or a remote control panel (RS232, industrial bus: profibus, etc.) ;,
- **electronic control**: by a command given to the built-in electronic controller.
In this case, the unit can operate a specific regulation (current, power) according to preset values or laws; it can measure and record voltage and current values as well as other useful values (temperature, etc.) and has communication ports for interfacing with other controllers, printers, etc.
Commands and parameters are given to the controller via a local or remote control panel with keyboard and display, or via a serial link.
The data recorded by the unit can be stored on a PC via a serial link by using the **Coudial** (in Windows) interface software to analyze them with other software tools.
These features can be used to design a complete **test bench** for laboratory, production or troubleshooting.

» Reliability – Lifetime

The way we design and size our load banks, especially concerning the power, current and voltage, as well as the choice of the components and the alloys for the resistance wire, makes them highly reliable. They have an extremely long lifetime, as can be seen by the number of load banks that are still in use by our customers.

» Standard models and custom designs

We supply load banks for use with DC or AC generators, single and 3-phase, up to 800 Hz.

We can supply our **standard model** as well as **adaptations** of these models or of models already produced, or we can provide **custom designs** using our proven technologies and components to meet your specific needs.

This document presents our standard series and models and some examples of custom designs. These examples have been selected to show our broad experience in designing “tailor-made” load banks.

We would be pleased to help you choose the best solution, from both technical and cost points of view, to fulfill your needs/requirements : Please contact us.

2 Battery Discharge Testers

Standard models of battery discharge testers can be chosen in 5 series, each series corresponding to a given power range.

A few examples of special designs show the variety of the solutions we provide, from hand-transportable units with manual selection to multiple electronically controlled units in a master/slave configuration.

2.1 Standard Series

2.1.1 Product Selection Guide



Manual selection		Electronically controlled		
6	12	16	45	150 (kW)
DVIM	DVTM	DXVA	DXLA	DCLA
DVIM-12 <ul style="list-style-type: none"> • 12 V / 250 A 	DVTM-48 <ul style="list-style-type: none"> • 48 V / 250 A 	DVXA-48 <ul style="list-style-type: none"> • 12 - 26 V / 100 A • 26 - 48 V / 300 A 	DXLA-60 <ul style="list-style-type: none"> • 40 - 50 V / 750 A • 50 - 60 V / 500 A 	DCLA-230 <ul style="list-style-type: none"> • 24 - 128 V / 250 A • 128 - 240 V / 125 A
DVIM-28 <ul style="list-style-type: none"> • 28 V / 200 A 	DVTM-128 <ul style="list-style-type: none"> • 128 V / 100 A 	DVXA-128 <ul style="list-style-type: none"> • 24 - 128 V / 75 A 	DXLA-96 <ul style="list-style-type: none"> • 24 - 96 V / 300 A 	DCLA-240 <ul style="list-style-type: none"> • 24 V / 90 A • 48 V / 160 A • 128 V / 270 A • 240 V / 450 A
DVIM-48 <ul style="list-style-type: none"> • 48 V / 120 A 		DVXA-240 <ul style="list-style-type: none"> • 96 - 240 V / 60 A 	DXLA-240 <ul style="list-style-type: none"> • 24 - 96 V / 150 A • 96 - 240 V / 75 A 	

2.1.2 DVIM Series

Load banks in the DVIM series:

- have **manual load step selection**
- are **hand transportable** (~ 13 kg, small size)
- dissipate **up to 6 kW**
- are **forced-air cooled** (built-in fan)

Standard models are :

- DVIM-12 : 12 V/250 A max.
- DVIM-28 : 28 V/200 A max.
- DVIM-48 : 48 V/120 A max.

❖ Mechanical features

- overall dimensions (W)313 x (D)508 x (H)356 mm
- lightweight aluminum case - ingress protection IP20
- weight : approximately 13 kg depending on the model
- one carrying handle
- forced-air cooling (built-in fan)
- maximum noise level approximately 54 dB(A)

❖ Temperature range

- ambient temperature - 30°C to + 40°C

❖ Electrical features

- resistive load constructed of Coudoint **woven resistances** in **low temperature coefficient alloy**
- load step switches, rotary type
- cooling fans and audible alarm powered by the test load itself

❖ Safety features

- reverse-voltage detection (audible alarm)
- cooling air-flow failure detection (audible alarm)

❖ Variants

- labels in French [F] or in English [E]

❖ Standard options

- special marking (other language, .etc.) [I]
- painted steel case [P]
- analogue Voltmeter and analogue Ammeter [D]
- 2 test sockets on front panel for current measurement by an external voltmeter (1mV for 1.5A) [A]
- connecting cables (except for DVIM-48) [C]
- only DVIM-48 : connecting cables fitted with 300 Amps spring-clips [S]



*Standard DVIM housing
with Voltmeter and Ammeter (option)*

❖ Specific features by model

- Model **DVIM-12** :
 - 9V/185 Amps up to 14 V/290 Amps
 - 5 load step rotary switches
 - 1-Amp steps (under 12 V)
 - 2-pin power connector (cable connector provided)
- Model **DVIM-28** :
 - 24 V / 170 Amps up to 28 V / 200 Amps
 - 4 load step rotary switches
 - 1-Amp steps (under 28 V)
 - 2-pin power connector (cable connector provided)
- Model **DVIM-48** :
 - 39 V / 95 Amps up to 53 V / 130 Amps
 - 3 load step rotary switches
 - 1-Amp steps (under 48 V)
 - connection by 2 x 25 mm² / 3.5 m (supplied) cables
 - power connections by M8 cable lugs
 - built-in cable storage box

2.1.3 DVTM Series

Load banks in the DVTM series:

- have **manual load step selection**
- are **hand carried portables** (~ 28 kg)
- dissipate **up to 12 kW**
- are **forced-air cooled** (built-in fans)

One standard model :

- DVTM-48 : 48 V/250 Amps max.
- DVTM-128 : 128 V/100 Amps max.

❖ Mechanical features

- overall dimensions (W)317 x (D)495 x (H)543 mm
- lightweight aluminum case - ingress protection IP20
- weight : approximately 28 kg
- one carrying handle
- 2 cooling fans
- maximum noise level approximately 54 dB(A)

❖ Temperature range

- ambient temperature - 10°C to + 40°C

❖ Electrical features

- resistive load constructed of Coudoint **woven resistances** in **low temperature coefficient alloy**
- 2 test sockets on the front panel for current measurement by an external voltmeter
- cooling fans and audible alarm powered from an external source

❖ Safety features

- reverse-voltage detection (audible alarm)
- cooling air-flow failure detection (audible alarm)

❖ Variants

- labels in French [F] or in English [E]

For illustration purpose only



Standard DVTM housing

❖ Specific features by model

- Model **DVTM-48** :
 - 39 V/200 Amps up to 53 V/275 Amps
 - 5 load step rotary switches
 - 1-Amp steps (under 48 V)
 - on test sockets : 1 mV for 2.5 Amps
- Model **DVTM-128** :
 - 120 V / 93 Amps up to 135 V / 105 Amps
 - 4 load step rotary switches
 - 1-Amp steps (under 128 V)
 - on test sockets : 1 mV for 1 Amp

❖ Connections

- power connections by ØM8 screw terminals
- auxiliary supply requirements 230 V_{AC} 1 phase, 50 Hz ($I_{AUX} \approx 0,8$ A) by C14 plug with cable (2 m) supplied

❖ Standard options

- special marking (other language, etc.) [I]
- painted steel case [P]
- 115 V 60 Hz 1-phase auxiliary supply [A]
- analogue Voltmeter and Ammeter [D]
- connecting cables [C]

2.1.4 DXVA Series

Load banks in the DXVA series:

- are **electronically controlled**
- are **portable** (~ 35 kg)
- dissipate **up to 16 kW**
- are **forced-air cooled** (built-in fans)

Standard models are:

- DXVA-48 : 9 to 26 V/100 Amps max.
26 to 53 V/300 Amps max.
- DXVA-128 : 19 to 136 V/75 Amps max.
- DXVA-240 : 96 to 240 V/60 Amps max.



Standard DXVA housing

⚡ Electrical features

- loads constructed with Coudoint resistors with low temperature coefficient resistance wire on ceramic insulators
- electronic power switches
- built-in digital controller
- control panel with 4 push buttons and 24-digit display
- simultaneous display of voltage, current, power and elapse time values
- automatic load voltage detection
- automatic load regulation to maintain current, voltage or power at preset value, or to limit the duration time.
- several units can be used in parallel

⚡ Mechanical features

- overall dimensions (W)403 x (D)500 x (H)753 mm
- aluminum case - ingress protection IP20
- weight: approximately 35 kg
- 2 braked omni-directional casters & 2 fixed casters, 3 carrying handles
- 3 built-in cooling fans powered from an external source
- maximum noise level approximately 54 dB(A)

⚡ Temperature range

- ambient temperature - 10°C to + 40°C

⚡ Safety features

- master ON/OFF switch
- reverse-voltage protection
- over-voltage protection
- load removed in case of cooling air flow failure
- fuse protection of auxiliary source lines

⚡ Variants

- labels in French [F] or in English [E]

⚡ Specific features by model

- Model **DXVA-48**:
 - 9 to 26 V/0 to 100 Amps
 - 26 to 53 V/0 to 300 Amps
 - steps of 0.2 Amp
 - 3 Ø M12 power screw terminals
- Model **DXVA-128**:
 - 19 to 136 V/0 to 75 Amps
 - steps of 0.6 Amp
 - 3 Ø M6 power screw terminals
- Model **DXVA-240**:
 - 96 to 240 V/0 to 60 Amps
 - steps of 0.1 Amp
 - 3 Ø M6 power screw terminals

⚡ Connections

- power connection: see for each model
- auxiliary supply requirements 230 V_{AC} single phase, 50 Hz ($I_{AUX} \approx 0,8$ A) by C14 plug with cable (2 m) supplied

⚡ Standard options

- RS232 output and **COUDIAL** data capture software on PC/Windows [S]
- remote control panel [T]
- special marking (other language, etc.) [I]
- painted steel case [P]
- 115 V 60 Hz 1-phase auxiliary supply [A]
- emergency stop [U]
- connecting cables [C]

2.1.5 DXLA Series

Load banks of the DXLA series:

- are **electronically controlled**
- are **portable**, with a compact footprint
- dissipate **up to 45 kW**
- are **forced-air cooled**

Standard models are :

- DXLA-60 : 40 to 60 V / 750 A max.
- DXLA-96 : 24 to 96 V / 300 A max.
- DXLA-240 : 24 to 240 V / 150 A max.

◆ Load control

- loads constructed with Coudoint resistors with low temperature coefficient resistance wire on ceramic insulators
- electronic power switches
- built-in digital controller
- control panel with 4 push buttons and 24-digit display
- simultaneous display of voltage, current, power and elapse time values
- automatic load voltage detection
- automatic load regulation to maintain current, voltage or power at preset value, or to limit the duration time.
- several units can be used in parallel

◆ Mechanical features

- overall dimensions (W)552 x (D)552 x (H)1406 mm
- portable aluminum enclosure
- 2 braked omni-directional casters & 2 fixed casters, 2 carrying handles
- forced-air cooling: built-in blower powered from an external source
- weight: approximately 200 kg, ingress protection IP20
- maximum noise level approximately 66 dB(A)

◆ Temperature range

- ambient temperature - 10°C to + 40°C

◆ Connections

- power connections: see for each model
- auxiliary supply requirements 230 V_{AC} single phase, 50 Hz (I_{AUX} ≈ 0.8 A) with 2 meter line cord provided

◆ Safety features

- master ON/OFF switch
- reverse-voltage protection
- over-voltage protection
- load removed in case of cooling air-flow failure
- fuse protection of auxiliary source lines

◆ Variants

- labels in French [F] or in English [E]



For illustration purpose only

*Standard DXLA housing
(here with remote control panel)*

◆ Specific features by model

- Model **DXLA-60**
 - 40 to 50 V/0 to 750 Amps - 4 Amp steps
 - 50 to 60 V/0 to 500 Amps - 5 Amp steps
 - 3 Ø M12 screw power terminals
- Model **DXLA-96**
 - 19 to 96 V/0 to 300 Amps - 0.5 Amp steps
 - 3 Ø M12 screw power terminals
- Model **DXLA-240**
 - 19 to 100 V/0 to 150 Amps - 0.25 Amp steps
 - 100 to 240 V/0 to 75 Amps - 0.5 Amp steps
 - 3 Ø M8 screw power terminals

◆ Standard options

- RS232 output and **COUDIAL** data capture software on PC/Windows [S]
- remote control panel [T]
- special marking (other language, etc.) [I]
- painted steel panels [P]
- 460 V 60 Hz 3-phase auxiliary supply [A]
- emergency stop [U]
- connecting cables [C]
- top-mounted lifting eyes [I 1]

2.1.6 DCLA Series

Load banks of the DCLA series:

- are **electronically controlled**
- are **portable**
- dissipate **up to 150 kW**
- are **forced-air cooled**

Standard models are :

- DCLA-230 : 24 to 240 V / 250 A max.
- DCLA-240 : 24 to 240 V / 450 A max.

Other needs: please contact us

♦ Load control

- loads constructed with Coudoint resistors with low temperature coefficient resistance wire on ceramic insulators
- electronic power switches
- built-in digital controller
- control panel with 4 push buttons and 24-digit display
- simultaneous display of voltage, current, power and elapse time values
- automatic load voltage detection
- automatic load regulation to maintain current, voltage or power at the preset value, or to limit the discharge time.
- several units can be used in parallel

♦ Mechanical features

- portable aluminum housing
- forced-air cooling: built-in fan powered from an external source
- overall dimensions (W)802 x (D)965 x (H)1977 mm
- 2 braked caster wheels & 2 fixed wheels, 2 carrying handles
- weight : approximately 300 kg, ingress protection IP20
- maximum noise level approximately 86 dB(A)

♦ Temperature range

- ambient temperature - 10°C to + 40°C

♦ Connections

- power connections by 3 M12 terminal blocks
- auxiliary supply requirements 230 V_{AC} single phase, 50 Hz (I_{AUX} ≈ 0.8 A) with IEC60309 socket – 2 m. line cord with plug provided

♦ Safety features

- master ON/OFF switch
- reverse-voltage protection
- over-voltage protection
- load removed in case of cooling air-flow failure
- fuse protection of auxiliary source lines

♦ Variants

- labels in French [F] or in English [E]

For illustration purpose only



Standard DCLA housing

♦ Specific features by model

- Model **DCLA-230**
 - 19 to 128 V/0 to 250 Amps by 0.5 Amp steps
 - 128 to 240 V/0 to 125 Amps by 0.9 Amp steps
- Model **DCLA-240**
 - 20 to 35 V/0 to 90 Amps by 0.1 Amp steps
 - 39 to 60 V/0 to 160 Amps by 0.2 Amp steps
 - 100 to 155 V/0 to 270 Amps by 0.4 Amp steps
 - 186 to 260 V/0 to 450 Amps by 0.7 Amp steps

♦ Standard options

- RS232 output and **COUDIAL** data capture software on PC/Windows [S]
- remote control panel [T]
- special marking (other language, etc.) [I]
- painted steel panels [P]
- 460 V 60 Hz 3-phase auxiliary supply [A]
- emergency stop [U]
- top-mounted lifting eyes [L]
- connecting cables [C]
- cable storage box [B]

2.2 Examples of Special Designs

Hand transportable 3 kW; 48 V_{CC} / 60 Amps & 127 V_{CC} / 40 Amps

- manual load current selection by rotary switches, 1 Amp steps
- forced-air cooling powered from external 220-volt single-phase source
- power connections by 3-pins power sockets, 2-meter cable with power plugs at both ends provided
- 6 test sockets on the front panel for voltage and current measurement by an external multimeter
- cooling fan low speed detection (audible alarm)
- fuse for circuit protection
- dimensions : W315 x D508 x H395 mm
- weight 15 kg, ingress protection IP20



Model ET1464

Hand transportable 48 V_{CC} / 10 to 110 Amps; 5.3 kW

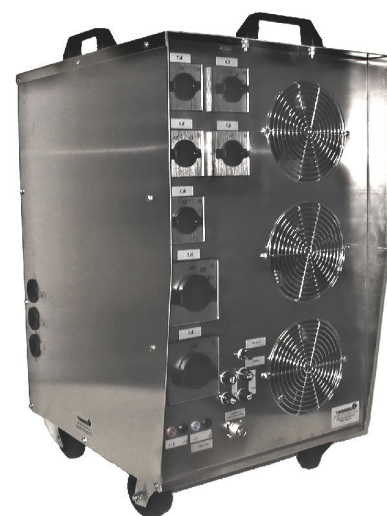
- manual load current selection by 2 rotary switches by 10 Amps steps
- natural-air cooling
- connections by 2x3,5m/25mm² cables, fitted with insulated spring clips
- built-in cable storage box
- dimensions : L304 x P623 x H320 mm
- weight 14 kg, ingress protection IP20
- hand transportable; rotating carrying handle



Model ET1500

Load bank 14 V / 300 Amps up to 20 V / 430 Amps; 8.6 kW

- nominal operating conditions 14 V: 300 Amps; 4.2 kW
- maximum operating conditions 20 V: 430 Amps; 8.6 kW
- 12 load steps, selectable by rotary switches, providing a 1-Amp resolution under nominal operating voltage
- forced-air cooling by 3 fans powered from external 230V single phase source
- power connections by copper bar terminals with bolts and nuts, through a cable entry trap door
- hand transportable with 3 carrying handles, 2 fixed casters and 2 omnidirectional braked casters
- dimensions: W403 x D500 x H753 mm
- weight 35 kg, ingress protection IP 20



Model ET1555

**Load bank 250 V/420 Amps; 105 kW
with remote control panel**

- adaptation of the DCLA-240 standard model
- programmable discharge current up to:
 - 180 Amps from 20 to 48 V, 280 Amps from 48 to 63 V,
 - 200 Amps from 125 to 135 V, 420 Amps from 230 to 250 V
- forced-air cooling (bottom intake, top exhaust) by a built-in blower powered from an external 380 V 3-phase source
- built-in digital controller with display/keyboard local control panel
- remote control panel with 20-meter cable, with:
 - discharge current adjustment potentiometer
 - emergency stop button
- load removed in case of over-current failure
- power connections by copper bar terminals with bolts and nuts
- 4 x Ø4 mm test sockets for voltage and current measurement by using an external multimeter
- cable storage box (cables provided)
- side-mounted fixing eyes
- portable housing with 2 fixed wheels and 4 omni-directional braked wheels
- dimensions: P500 x L935 x H1938 mm
- weight 300 kg, ingress protection IP 20

*Model ET1529*

3 Laboratory Load Banks

We supply custom load banks for laboratory equipment-, as shown the following example, for specific needs.

Lab load bank 120 V_{CC}, 127 V_{AC} 1- and 3-phase; 4 kW

- 7 steps of 2.5 % P_{MAX}
(2.5 %/2.5 %/5 %/10%/20 %/20%/40 %)
- natural-air cooling with protection grid
- operating voltage selectable by insulated jumpers on the front panel :
 - 240 V single phase AC or DC
 - 240 /400 V 3 phase star coupling
 - 130 /240 V 3 phase delta coupling
- power connections by 5 x 4 mm safety sockets
- yellow/green 4 mm ground safety socket
- dimensions : W652 x D740 x H651 mm
- weight 43 kg, ingress protection IP 20
- portable with two carrying handles, 2 fixed casters and 2 omni-directional braked casters

*Model ET1519*

4 Load Banks for Aerospace

We design custom load banks for the aerospace industry according to need descriptions or specifications. The examples presented here show the variety of our designs.

4.1 Bancs 28 V_{CC} – Examples of special designs

Hand transportable load bank 126 Amps ; 4 kW

- 11 sections: 1, 1, 2, 5, 10, 15, 15, 15, 15, 15, 15 Amps
- voltage operating range: from 28 V (nominal) up to 32 V
- maximum current 126 Amps under 32 V
- manual setting of the load value by rotary switches
- natural-air cooling
- power and ground connections by M6 terminal blocks
- dimensions : W352 x D719 x H353 mm
- weight 24 kg, ingress protection IP 20
- 4 rubber feet, 2 carrying handles



Model ET1506

19" Rack mountable load bank 25 A; 8.4 kW

- 12 steps of 1.12 Ω / 700 W
- resistive loads constructed of woven resistors
- master load on/off switch
- power on/off switch with light indicator
- fans powered from external 28 V_{CC} source with air cooling failure detection
- power connections by M12 terminal blocks
- load connections on the front and on the rear panel by safety sockets
- dimensions : W480 x D460 x H310 mm
- 19-inch 7U rack mount configuration



Model ET1426

Remote driven load bank 511 A; 14.3 kW

- 9 load steps rated as follows: 1, 2, 4, 8, 16, 32, 64, 128, 256 Amps under the nominal operating voltage
- nominal operating voltage 28 V_{CC}
- maximum current 511 Amps
- natural air cooling
- electronic power switches
- load step selection by 9 parallel signals from an external controller
- galvanic insulation provided between load circuit and control signals
- power connections by copper bar terminals with bolts and nuts
- 2 carrying handles, 2 fixed casters and 2 omni-directional braked casters
- dimensions : L653 x P842 x H782 mm
- weight 65 kg, ingress protection IP20



Model ET1513

Profibus-driven load bank 28 V_{DC} / 1430 Amps; 40 kW

- 7 load sections, providing a resolution of 1 kW
- remote step selection through a **Profibus** interface
- forced-air cooling by built-in blower
- Power connections by copper bar terminals with bolts and nuts
- Profibus connection by 9-pin Sub-D connector
- 2 x Ø4 mm sockets allowing load current measurement by an external multimeter
- external power supplies required for the Profibus interface (24 V_{CC}) and for the blower (380 V 50 Hz 3-phase)
- portable with 2 fixed wheels and 2 omni-directional braked wheels
- dimensions : W550 x D691 x H1626 mm
- weight 140 kg , ingress protection IP 20

*Model ET1546*

4.2 400 Hz Load banks – Examples of special designs

Load bank 115-200 V_{AC} 3-phase 400 Hz/41 Amps; 16 kW

- main load for continuous duty 8 kW/40 Amps + 2 loads for intermittent duty 17 kW/45 Amps and 16 kW /39 Amps
- electronic power switches driven by external 0 - 10 V signals
- 4 x Ø4 mm test sockets for voltage and current measurement using an external multimeter
- forced-air cooling: 2 fans powered from an external 230 V 50 Hz 1-phase source with breaker protection
- load removed in case of cooling air-flow failure
- power connection socket on the front panel
- hand transportable with one carrying handle, 2 fixed wheels and 2 omnidirectional braked casters
- dimensions : W320 x D500 x H670 mm
- weight 25 kg , ingress protection IP 20

*Model ET1326*

Load bank 115-200 V_{AC} 3-phase 400 Hz/41 Amps; 16 kW

- adjustable current from 0.1 to 41 Amps by steps of 0.1 Amp
- star coupling with neutral connection
- 12 fixed steps selected by toggle switches
- 1 adjustable step from 1 to 3 Amps by rotary switch
- forced-air cooling : 2 built-in fans powered from an external 230 V 50 Hz single phase source protected by a magneto-thermal breaker
- air-flow fault protection, with audible alarm
- power and ground connections by M8 terminal blocks located behind an access door
- hand transportable with one carrying handle, 2 fixed casters and 2 omni-directional braked casters
- cable storage box on the top
- dimensions : W310 x D496 x H646 mm
- weight 35 kg , ingress protection IP 20

*Model ET1335***Profibus-driven load bank 115-200 V_{AC} 3-phase 400 Hz
350 Amps; 120 kW**

- 15 load steps, providing a resolution of 1 kW
- remote step selection through a **Profibus** interface
- forced-air cooling by a built-in blower
- power connections by M16 terminal blocks
- Profibus connection by 9-pin Sub-D connector
- 2 x Ø4 mm sockets allowing load current measurement (through transformer)
- external power supplies required for the Profibus interface (24 V_{CC}) and for the cooling fans (380 V 50 Hz 3-phase)
- portable with 2 fixed wheels and 2 omni-directional braked wheels
- dimensions : W802 x D962 x H1756 mm
- weight 256 kg , ingress protection IP 20

*Model ET1547*

5 Load Banks

We supply DC and AC single-phase and three-phase load banks from basic natural-air cooling configurations to sophisticated electronically controlled systems used for leveling the power consumption of a generator, testing electrical products for production or troubleshooting. The examples presented here show the variety of the designs we supply.

5.1 DC Load Banks

Load bank 12 V_{CC} 40 Amps; 480 W

- currents from 5 to 40 Amps by 1-Amp steps
- 2 load steps 5-position rotary switches on the front panel
- natural-air cooling
- power connections by M6 terminal blocks
- fuse protection
- one carrying handle
- 4 rubber feet
- dimensions: W264 x D500 x H200 mm
- ingress protection IP20



Model ET1445

Load bank 270 V_{CC} 8 x 27 A; 7 kW in intermittent duty

- 8 circuits of 80 Ω , each circuit fitted with a serial diode
- sized for pour 3 types of cyclic duties
- maximum current 27 Amp per section
- resistive load constructed of woven resistors
- cooling fan powered from external 28 V_{CC} source
- low speed fan detection
- power connections by M6 terminal blocks
- dimensions: W264 x D500 x H200 mm



Model ET1416

Rack mount configuration 256 V_{CC} 15,5 Amps; 5.2 kW

- operating voltage up to 300 V_{CC}, I_{MAX} 17 Amps , P_{MAX} 5.25 kW
- 6 load steps: 32.7 Ω to 524 Ω , with a tolerance of $\pm 1\%$
- load step selection either by toggle switches or remote selection by control signals
- power on/off switch with light indicator
- forced air cooling by one built-in fan powered from an external 230V_{AC} single phase 50 Hz source
- power connections by M6 terminal blocks
- remote control signals received on a 12-pin connector on the rear panel
- dimensions: W483 x D436 x H221 mm (excluding handles)



Model ET1355

Welding power load bank 25 V_{DC} / 400 Amps; 10 kW

- designed to test welding power sources
- capacity to withstand the harshest waveforms generated by welding power sources
- range of operating voltage 18 to 40 V_{DC}
- selectable load ohmic value from 0.062 Ω up to 0.6 Ω by 6 rotary switches
- forced-air cooling by 2 fans powered from the test load
- power connections by unipolar plugs
- hand transportable, with 3 carrying handles
- dimensions: W353 x D441 x H647 mm
- weight 22 kg , ingress protection IP 20

*Model ET1485***Remote driven load bank 375 V/800 Amps; 300 kW**

- main load with a capacity of sinking 800 Amps under 375 V_{CC} (with 530 V_{CC} peak voltages) by steps of less than 1 Amp
- fixed secondary 4 kW load
- forced-air cooling
- main load electronically controlled – constant current or ohmic value – by a specific built-in controller
- 3 load step selection modes :
 - local by control panel
 - by remote control panel
 - remote control by RS485 serial link
- secondary load remote controlled via the electronic controller
- voltage, current and power values displayed on the control panel and sent via the serial link
- 2 braked omni-directional wheels & 2 fixed wheels, 4 top-mounted lifting eyes
- dimensions: W1180 x D2107 x H2000 mm
- ingress protection IP20

*Model ET1433*

5.2 AC and AC/DC Load Banks

Load bank 220 V_{AC} 55 Amps; 12 kW with continuously adjustable load step

- 4 fixed load steps (3 x 3 kW / 1 x 2 kW), selected by rotary switches on the front panel
- 1 continuously adjustable load step from 100 W up to 1 kW by a rotary knob on the front panel
- forced-air cooling : 2 fans powered from external 230 V_{AC} 1-phase source or from the load itself
- power and ground connections by M6 terminal blocks located behind an access door
- hand transportable with 3 carrying handles, 2 fixed wheels and 2 omni-directional braked wheels
- dimensions : W500 x D408 x H753 mm
- weight 35 kg , protection degree IP 20



Model ET1543

Multi-voltage load bank 28 V_{CC}, 230 V_{AC}, 380 V_{AC}

- operating voltages :
 - 28 V_{CC} 50 A ; 1400 W
 - 230 V 1 phase 50 Hz 45 A by steps of 9900 W
 - 230 V 3 phase 50 Hz 20 A; 7600 W
 - 380 V 3 phase 50 Hz 25 A; 16500 W
- voltage selection by rotary switch and validation push button
- load step selection by switches on the front panel with 1 Amp steps
- display of current and voltage values by 2 digital wattmeters (AC), one digital voltmeter and one digital ammeter (DC)
- emergency stop button
- forced-air cooling : fans powered from external 230 V / 50 Hz single phase source
- power connections by Ø6 mm plugs on the rear panel
- 4mm meter test sockets on the front panel for voltage measurement by an external multimeter
- portable, with 2 fixed wheels and 2 omni-directional braked wheels
- dimensions: W703 x D850 x H1704 mm
- weight 190 kg , ingress protection IP 20



Model ET1441

Test bench 24 V_{AC} 650 Amps single phase; 15.6 kW
[test of electric products in single or 3-phase]

- built-in transformer with a capacity to generate a test current from 1 to 650 A under 24 V_{AC} 50 Hz single phase with a resolution of ± 1 Amp up to 100 Amps, and ± 1 % above
- powered from an external 230 V_{AC} 50 Hz 1-phase source
- forced-air cooling by a built-in blower powered from external 230 V_{AC} 50 Hz single phase supply
- electronic control by a built-in micro-controller unit
- remote control panel, provided with 8-meter cable, with display and keyboard, 2 light indicators and emergency stop button
- continuous display of voltage and current values on the control panel
- input power connections by M8 terminal blocks
- output power connections to the tested product by copper bar terminals with bolts and nuts
- portable with 2 fixed wheels and 2 omnidirectional braked wheels
- dimensions : W552 x D692 x H1606 mm
- weight 190 kg , ingress protection IP 20

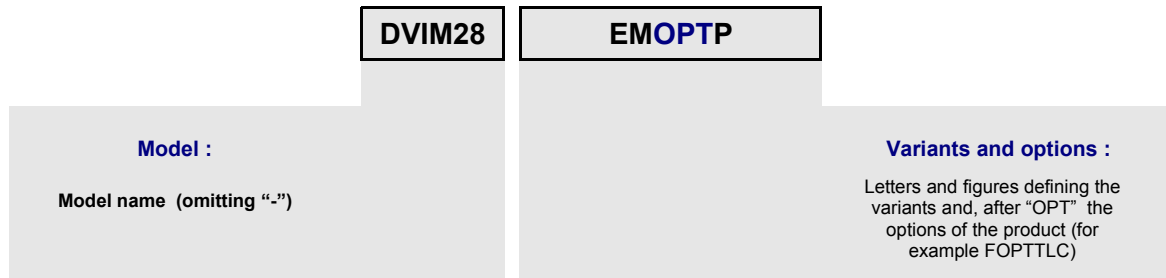
*Model ET1524***Test bench 24 V_{AC} 650 Amps 3-phase; 15.6 kW x 3**

- by a "master-slave" coupling of 3 single phase benches

*3-phase test bench with 3 x ET1524 models in "master – slave" configuration*

6 Product Identification Code

The identification code for standard models follows the following pattern. Special designs are designated by a special code, followed by a specific “production engineering number”, which is the number used in this document to designate each presented model (ET1546 for example).

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