INTEGRAL LOAD BOX [LBX]

System Datasheet

ICS Model Number LBX-0001

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www.IntegralControls.com
Info@IntegralControls.com

INTEGRAL
CONTROL SYSTEMS LTD.

Integral Load Box: Model LBX-0001

The LBX-0001 is a mobile trailer-based locomotive load test box, capable of configurable load testing from 1000 to 4300 HP, we well as for low power / high current DC main generator ‘air cure’ requirements.

Key Features

- Configurable load resistance for flexible power range
- Easy to use gauges for current and voltage readings
- Lightweight trailer compatible with ½ ton pickup trucks for towing
- Integrated secure high voltage cable storage locker

Figure 1: Integral LBX-0001 Mobile Load Box

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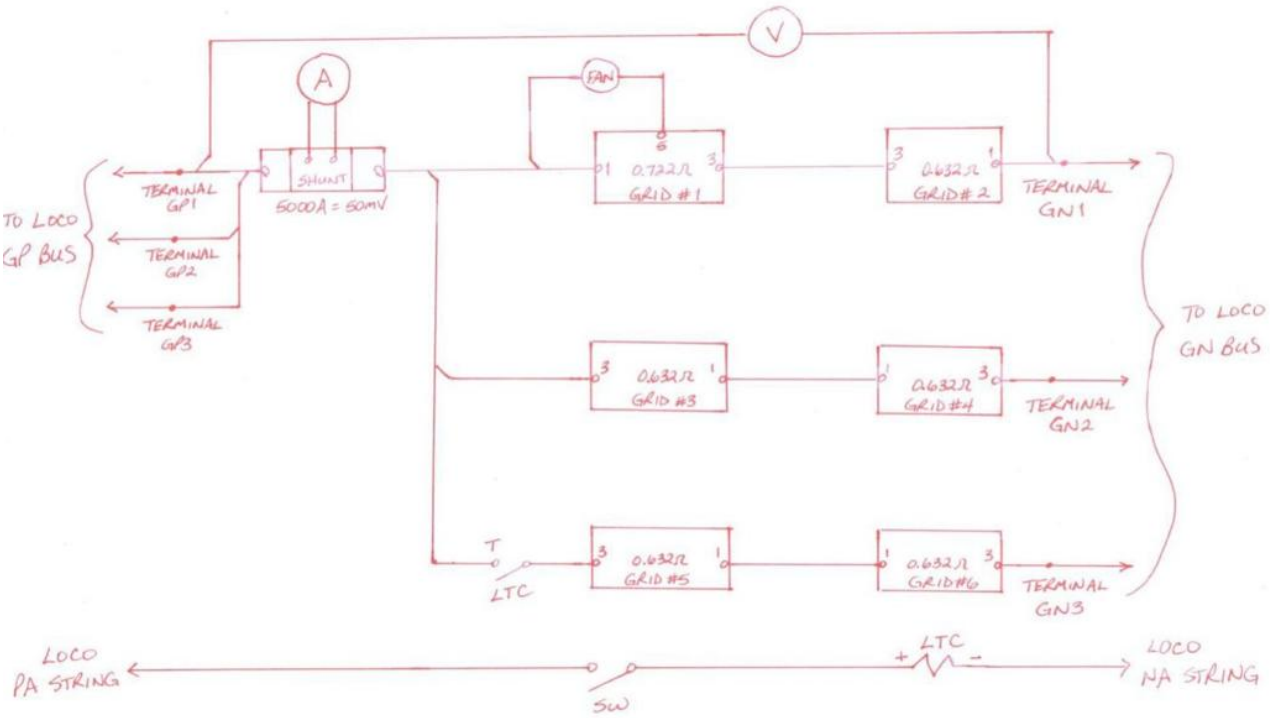
Specifications

High Voltage Ratings

Parameter	Value	Units	Note
Maximum power	4300	HP	
Minimum power	1000	HP	
Maximum voltage	1400	VDC	
Maximum current	2835	ADC	Using 3x 0.632ohm grid sections in series-parallel
Number of Cooling fans	1	-	
Number of grid sections	6	-	
Resistance per grid	0.632	ohms	Fan tap grid resistance is 0.766 ohms
Maximum current per grid	945	ADC	

High Voltage Schematic



74Vdc Low Voltage Control Power Connection and Control

- 74Vdc control power connectivity is provided into the instrumentation compartment of the load box as shown below:

Figure 2: 74Vdc Connection / Instrumentation Compartment

- 74Vdc power supply is intended to run to the locomotive – under -test (LUT) battery knife switch 74V system
- 74Vdc power is required to operate the load connect control power contactor within the load box when selecting HIGH POWER / HIGH CURRENT / LOW RESISTANCE mode of operation
- Current draw from the 74Vdc connection is 1.5Adc or less

⚠	**CAUTION**: **Do *NOT*** touch the high voltage cables or operate the SELECTOR SWITCH during load test operation, doing so may result in damage to the load box and/or the locomotive under test and result in personal injury or death

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Operation and Setup 1000 to 3000 HP Range
LOW POWER / 0.632 OHMS RESISTANCE

- Ensure the engine is shutdown and the high voltage system is de-energized
- DISCONNECT the 74Vdc control connection from the load box to the locomotive 64Vdc battery knife switch
- Set the SELECTOR SWITCH in the gauge box to the OFF position
- The total load resistance will be set to 0.632 ohms
- Connect all four (4) GP cables to the locomotive main generator GP bus
- Connect all four (4) GN cables to the locomotive main generator GN bus
- Follow your organization's locomotive load box test procedure to initiate the load test

Operation and Setup 1000 to 4400 HP Range
HIGH POWER / 0.422 OHMS RESISTANCE

- Ensure the engine is shut down and the high voltage system is de-energized
- CONNECT the 74Vdc control connection from the load box to the locomotive 64Vdc battery knife switch
- Set the SELECTOR SWITCH in the gauge box to the ON position
- The total load resistance will be set to 0.422 ohms
- Connect all four (4) GP cables to the locomotive main generator GP bus
- Connect all four (4) GN cables to the locomotive main generator GN bus
- Follow your organization's locomotive load box test procedure to initiate the load test

Mechanical

- Dimensions: 14 feet long, 82 inches wide
- GVWR: ~ 7560 lbs.
- Tongue Weight: ~ 500 lbs.

Gauge Indicator Panel

- Developed main generator voltage will be displayed on the voltage gauge with a 1:1 ratio, the voltage gauge reading will equal the generator voltage
- Developed main generator current will be displayed on the current gauge with a 1:100 ratio, the current gauge reading multiplied by 100 will equal generator current
- POWER (watts) = VOLTAGE (volts) x CURRENT (amperes)
- POWER (horsepower) = VOLTAGE (volts) x CURRENT (amperes) / 746

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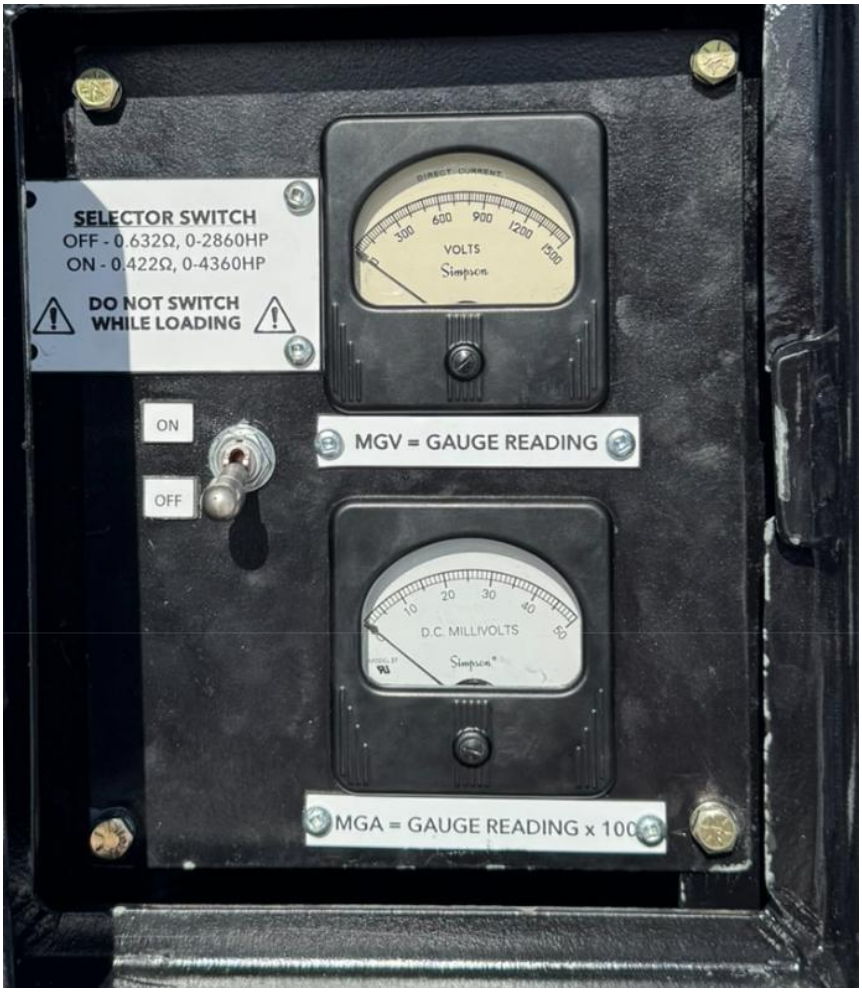

Figure 3: Gauge Indicator Panel

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Why work with Integral Control Systems?

- We are customer driven; your success is our primary mission.
- Decades of locomotive control experience; we are ready to solve your toughest project challenges.
- We are experts in locomotive propulsion and traction control; from conventional EMD and GE alternator fed units to DC link AC and DC traction solutions.
- We are innovative and experienced in empowering disruptive, industry leading railway technology development; from multiengine gensets to battery and battery-hydrogen hybrid locomotives.