ZEFA®

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LINEAR PROGRAMMABLE DC POWER SUPPLIES







ZEFATEK CO., LTD.

ML Series



MLQ Series



MLQ Series (~90W)	
10V	6A
20V	4A
30V	3A
60V	1.5A

MLH Series



MLH Series (150W ~ 300W)			
15V	10A	15V	20A
30V	5A	30V	10A
60V	2.5A	60V	5A
100V	1.5A	100V	3A
200V	0.8A	200V	1.5A
300V	0.5A	300V	1A

MLF Series



MLF Series (500W)	
20V	25A
30V	17A
60V	8A
100V	5A
200V	2.5A
300V	1.5A

ML Series

The ML Series of programmable DC Power supplies is designed to provide continuously variable output voltage and current for a range of 60W to 500W. Their chassis are 3U(132mm) high and quarter, half and full rack wide. The front panel makes the ML Series easy to use. Voltage and current can be set from individual 10-turn potentiometer knobs. For Open Connectivity three interface ports (GPIB, USB, Ethernet) are provided as standard.

Features



- GPIB, LAN and USB interfaces are provided as standard.
- Included software;
  - Zefa IO Lib 1.0 (DLL)
  - IO Configuration Program
  - IVI Drivers for LabView and VEE



- NI VISA 3.6, Agilent IO Lib 14.2 compatible
- Compliant to IEEE 488.1, IEEE 488.2 Specification
- Compliant to USBTMC USB 488 Specification
- Compliant to VXI-11 Specification
- SCPI compatible



- Chassis : 3U(132mm) high; quarter, half and full rack wide
- Simple design and simple operation



- Preview Pushbutton
- Local/Remote Key
- Easy Setting by 10-turn potentiometer knob.

Applications

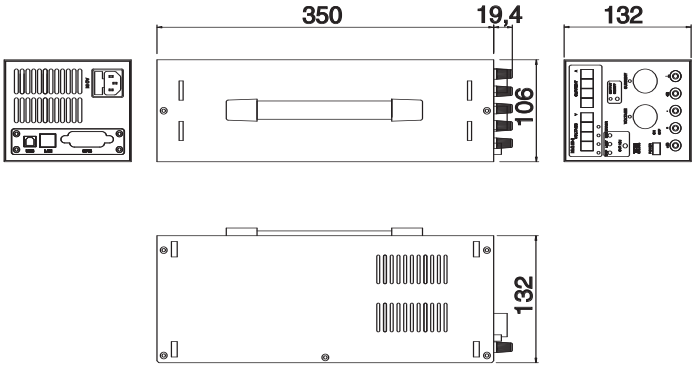
- DUT power supply
- Laboratory Bench Top Power Supply
- Mobile phone, LCD and PDA Testing
- System power supply for Automation systems.
- ATE power supply

MLQ Series



Specifications (at 0°C to 55°C unless otherwise specified)		MLQ 10-6	MLQ 20-4	MLQ 30-3	MLQ 60-1.5
Number of outputs		1	1	1	1
DC outputs	Voltage	0 to 10 V	0 to 20 V	0 to 30 V	0 to 60 V
	Current	0 to 6 A	0 to 4 A	0 to 3 A	0 to 1.5 A
Power (max)		60 W	80 W	90 W	90 W
GPIB / LAN / USB		Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes
Load and line regulation Voltage / Current		<0.01% + 2 mV <0.01% + 250 µA	<0.01% + 2 mV <0.01% + 250 µA	<0.01% + 2 mV <0.01% + 250 µA	<0.01% + 2 mV <0.01% + 250 µA
Ripple and noise from 20 Hz to 20 MHz Voltage / Current		<500µVrms 4mVpp <2mArms	<500µVrms 4mVpp <2mArms	<500µVrms 4mVpp <2mArms	<500µVrms 4mVpp <2mArms
Programming accuracy at 25˚C ±5˚C Voltage / Current		<0.05% + 10 mV <0.2% + 10 mA	<0.05% + 10 mV <0.2% + 10 mA	<0.05% + 10 mV <0.2% + 10 mA	<0.05% + 10 mV <0.2% + 10 mA
Readback accuracy at 25˚C ±5˚C Voltage / Current		<0.05% + 5 mV <0.15% + 5 mA	<0.05% + 5 mV <0.15% + 5 mA	<0.05% + 5 mV <0.15% + 5 mA	<0.05% + 5 mV <0.15% + 5 mA
Program resolution Voltage / Current		1 mV 1 mA	1 mV 1 mA	1 mV 1 mA	1 mV 1 mA
Readback resolution Voltage / Current		0.5 mV 0.2 mA	1 mV 0.1 mA	1.5 mV 0.1 mA	3 mV 0.05 mA
Meter resolution Voltage / Current		10 mV 10 mA	10 mV 10 mA	10 mV 10 mA	10 mV 10 mA
Stability, constant output 8 hrs Voltage / Current		<0.02% + 3 mV <0.1% + 1 mA	<0.02% + 3 mV <0.1% + 1 mA	<0.02% + 3 mV <0.1% + 1 mA	<0.02% + 3 mV <0.1% + 1 mA
Output response time	Up	30 ms	30 ms	40 ms	40 ms
	Down	100 ms	120 ms	150 ms	150 ms
Transient response		<50 µsec for output to recover to within 15 mV following a change in output current from full load to half load or vice versa.			

Dimensions

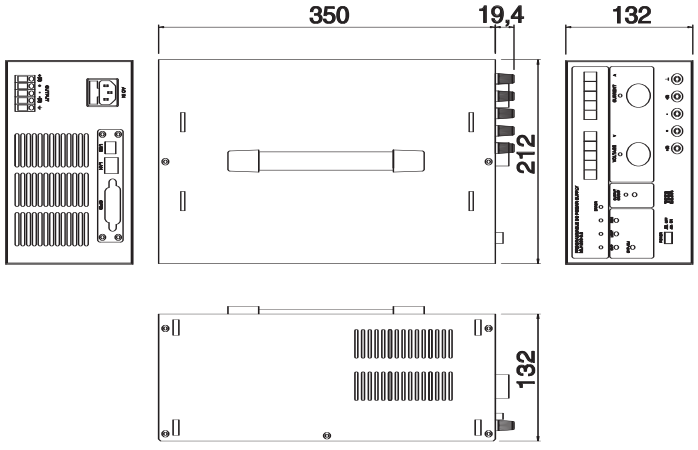


MLH Series



Specifications (at 0°C to 55°C unless otherwise specified)		MLH 15-10	MLH 30-5	MLH 60-2.5	MLH 100-1.5	MLH 200-0.8	MLH 300-0.5
Number of outputs		1	1	1	1	1	1
DC outputs	Voltage	0 to 15V	0 to 30 V	0 to 60 V	0 to 100 V	0 to 200 V	0 to 300 V
	Current	0 to 10 A	0 to 5 A	0 to 2.5 A	0 to 1.5 A	0 to 0.8 A	0 to 0.5 A
Power (max)		150 W	150 W	150 W	150 W	160 W	150 W
GPIB / LAN / USB		Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes
Load and line regulation Voltage / Current		<0.01% + 2 mV <0.01% + 250 µA	<0.01% + 2 mV <0.01% + 250 µA	<0.01% + 2 mV <0.01% + 250 µA	<0.01% + 2 mV <0.01% + 250 µA	<0.01% + 2 mV <0.01% + 250 µA	<0.01% + 2 mV <0.01% + 250 µA
Ripple and noise from 20 Hz to 20 MHz Voltage / Current		<500µVrms 4mVpp <2mArms	<500µVrms 4mVpp <2mArms	<500µVrms 4mVpp <2mArms	<500µVrms 4mVpp <2mArms	<500µVrms 4mVpp <2mArms	<500µVrms 4mVpp <2mArms
Programming accuracy at 25°C ±5°C Voltage / Current		<0.05% + 10 mV <0.2% + 10 mA	<0.05% + 10 mV <0.2% + 10 mA	<0.05% + 10 mV <0.2% + 10 mA	<0.05% + 10 mV <0.2% + 10 mA	<0.05% + 10 mV <0.2% + 10 mA	<0.05% + 10 mV <0.2% + 10 mA
Readback accuracy at 25°C ±5°C Voltage / Current		<0.05% + 5 mV <0.15% + 5 mA	<0.05% + 5 mV <0.15% + 5 mA	<0.05% + 5 mV <0.15% + 5 mA	<0.05% + 5 mV <0.15% + 5 mA	<0.05% + 5 mV <0.15% + 5 mA	<0.05% + 5 mV <0.15% + 5 mA
Program resolution Voltage / Current		1 mV 1 mA	1 mV 1 mA	1 mV 1 mA	10 mV 1 mA	10 mV 1 mA	10 mV 1 mA
Readback resolution Voltage / Current		0.5 mV 0.3 mA	1.5 mV 0.2 mA	3 mV 0.1 mA	5 mV 0.05 mA	10 mV 0.02 mA	15 mV 0.02 mA
Meter resolution Voltage / Current		1 mV 1 mA	1 mV 1 mA	1 mV 1 mA	10 mV 1 mA	10 mV 1 mA	10 mV 1 mA
Stability, constant output 8 hrs Voltage / Current		<0.02% + 3 mV <0.1% + 1 mA	<0.02% + 3 mV <0.1% + 1 mA	<0.02% + 3 mV <0.1% + 1 mA	<0.02% + 3 mV <0.1% + 1 mA	<0.02% + 3 mV <0.1% + 1 mA	<0.02% + 3 mV <0.1% + 1 mA
Output response time	Up	40 ms	40 ms	40 ms	50 ms	50 ms	50 ms
	Down	100 ms	100 ms	100 ms	100 ms	100 ms	100 ms
Transient response		<50 µsec for output to recover to within 15 mV following a change in output current from full load to half load or vice versa.					

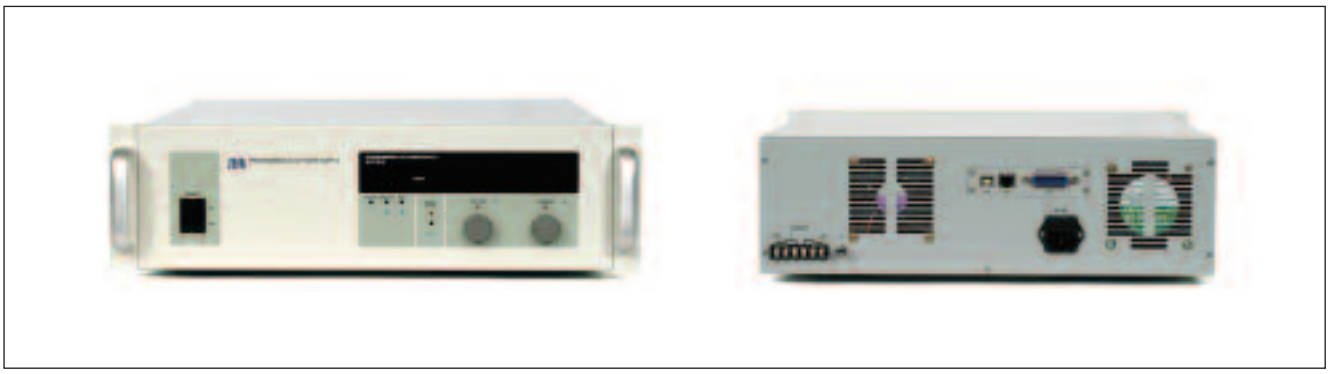
Dimensions



MLH Series

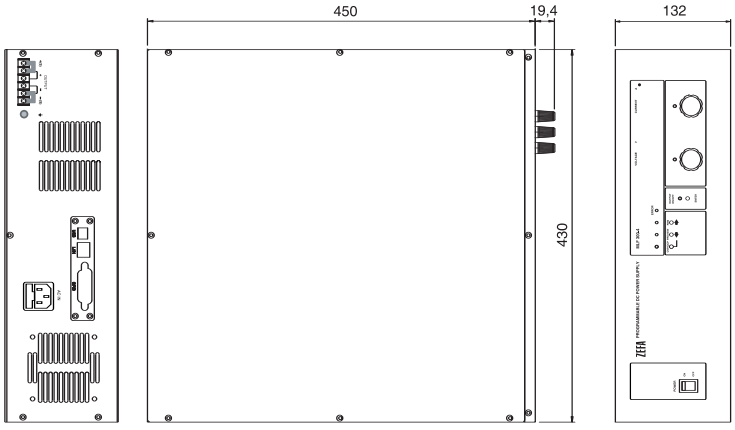
Specifications (at 0°C to 55°C unless otherwise specified)		MLH 15-20	MLH 30-10	MLH 60-5	MLH 100-3	MLH 200-1.5	MLH 300-1
Number of outputs		1	1	1	1	1	1
DC outputs	Voltage	0 to 15V	0 to 30 V	0 to 60 V	0 to 100 V	0 to 200 V	0 to 300 V
	Current	0 to 12 A	0 to 10 A	0 to 5 A	0 to 3 A	0 to 1.5 A	0 to 1 A
Power (max)		300 W	300 W	300 W	300 W	300 W	300 W
GPIB / LAN / USB		Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes
Load and line regulation		<0.01% + 2 mV	<0.01% + 2 mV	<0.01% + 2 mV	<0.01% + 2 mV	<0.01% + 2 mV	<0.01% + 2 mV
Voltage / Current		<0.01% + 250 µA	<0.01% + 250 µA	<0.01% + 250 µA	<0.01% + 250 µA	<0.01% + 250 µA	<0.01% + 250 µA
Ripple and noise from 20 Hz to 20 MHz		<500µVrms 4mVpp	<500µVrms 4mVpp	<500µVrms 4mVpp	<500µVrms 4mVpp	<500µVrms 4mVpp	<500µVrms 4mVpp
Voltage / Current		<2mArms	<2mArms	<2mArms	<2mArms	<2mArms	<2mArms
Programming accuracy at 25°C ±5°C		<0.05% + 10 mV	<0.05% + 10 mV	<0.05% + 10 mV	<0.05% + 10 mV	<0.05% + 10 mV	<0.05% + 10 mV
Voltage / Current		<0.2% + 10 mA	<0.2% + 10 mA	<0.2% + 10 mA	<0.2% + 10 mA	<0.2% + 10 mA	<0.2% + 10 mA
Readback accuracy at 25°C ±5°C		<0.05% + 5 mV	<0.05% + 5 mV	<0.05% + 5 mV	<0.05% + 5 mV	<0.05% + 5 mV	<0.05% + 5 mV
Voltage / Current		<0.15% + 5 mA	<0.15% + 5 mA	<0.15% + 5 mA	<0.15% + 5 mA	<0.15% + 5 mA	<0.15% + 5 mA
Program resolution		1 mV	1 mV	1 mV	10 mV	10 mV	10 mV
Voltage / Current		1 mA	1 mA	1 mA	1 mA	1 mA	1 mA
Readback resolution		0.5 mV	1.5 mV	3 mV	5 mV	10 mV	15 mV
Voltage / Current		0.6 mA	0.3 mA	0.2 mA	0.1 mA	0.05 mA	0.05 mA
Meter resolution		1mV	1 mV	1 mV	10 mV	10 mV	10 mV
Voltage / Current		10 mA	10 mA	10 mA	10 mA	10 mA	10 mA
Stability, constant output 8 hrs		<0.02% + 3 mV	<0.02% + 3 mV	<0.02% + 3 mV	<0.02% + 3 mV	<0.02% + 3 mV	<0.02% + 3 mV
Voltage / Current		<0.1% + 1 mA	<0.1% + 1 mA	<0.1% + 1 mA	<0.1% + 1 mA	<0.1% + 1 mA	<0.1% + 1 mA
Output response time	Up	60 ms	60 ms	60 ms	60 ms	60 ms	60 ms
	Down	150 ms	150 ms	150 ms	150 ms	150 ms	150 ms
Transient response		<50 µsec for output to recover to within 15 mV following a change in output current from full load to half load or vice versa.					

MLF Series



Specifications (at 0°C to 55°C unless otherwise specified)		MLF 20-25	MLF 30-17	MLF 60-8	MLF 100-5	MLF 200-2.5	MLF 300-1.5
Number of outputs		1	1	1	1	1	1
DC outputs	Voltage	0 to 20V	0 to 30 V	0 to 60 V	0 to 100 V	0 to 200 V	0 to 300 V
	Current	0 to 25 A	0 to 17 A	0 to 8 A	0 to 5 A	0 to 2.5 A	0 to 1.5 A
Power (max)		500 W	500 W	500 W	500 W	500 W	500 W
GPIB / LAN / USB		Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes
Load and line regulation Voltage / Current		<0.01% + 2 mV <0.01% + 250 µA	<0.01% + 2 mV <0.01% + 250 µA	<0.01% + 2 mV <0.01% + 250 µA	<0.01% + 2 mV <0.01% + 250 µA	<0.01% + 2 mV <0.01% + 250 µA	<0.01% + 2 mV <0.01% + 250 µA
Ripple and noise from 20 Hz to 20 MHz Voltage / Current		<500µVrms 4mVpp <2mArms	<500µVrms 4mVpp <2mArms	<500µVrms 4mVpp <2mArms	<500µVrms 4mVpp <2mArms	<500µVrms 4mVpp <2mArms	<500µVrms 4mVpp <2mArms
Programming accuracy at 25°C ±5°C Voltage / Current		<0.05% + 10 mV <0.2% + 10 mA	<0.05% + 10 mV <0.2% + 10 mA	<0.05% + 10 mV <0.2% + 10 mA	<0.05% + 10 mV <0.2% + 10 mA	<0.05% + 10 mV <0.2% + 10 mA	<0.05% + 10 mV <0.2% + 10 mA
Readback accuracy at 25°C ±5°C Voltage / Current		<0.05% + 5 mV <0.15% + 5 mA	<0.05% + 5 mV <0.15% + 5 mA	<0.05% + 5 mV <0.15% + 5 mA	<0.05% + 5 mV <0.15% + 5 mA	<0.05% + 5 mV <0.15% + 5 mA	<0.05% + 5 mV <0.15% + 5 mA
Program resolution Voltage / Current		1 mV 1 mA	1 mV 1 mA	1 mV 1 mA	10 mV 1 mA	10 mV 1 mA	10 mV 1 mA
Readback resolution Voltage / Current		0.5 mV 1 mA	1.5 mV 0.6 mA	3 mV 0.3 mA	5 mV 0.2 mA	10 mV 0.1 mA	15 mV 0.05 mA
Meter resolution Voltage / Current		10 mV 10 mA	10 mV 10 mA	10 mV 1 mA	10 mV 1 mA	100 mV 1 mA	100 mV 1 mA
Stability, constant output 8 hrs Voltage / Current		<0.02% + 3 mV <0.1% + 1 mA	<0.02% + 3 mV <0.1% + 1 mA	<0.02% + 3 mV <0.1% + 1 mA	<0.02% + 3 mV <0.1% + 1 mA	<0.02% + 3 mV <0.1% + 1 mA	<0.02% + 3 mV <0.1% + 1 mA
Output response time	Up	80 ms	80 ms	80 ms	80 ms	80 ms	80 ms
	Down	180 ms	180 ms	180 ms	180 ms	180 ms	180 ms
Transient response		<50 µsec for output to recover to within 15 mV following a change in output current from full load to half load or vice versa.					

Dimensions



DL Series



DLQ Series



DLQ Series (~90W)	
10V	6A
20V	4A
30V	3A
60V	1.5A

DLH Series



DLH Series (150W ~ 300W)			
15V	10A	15V	20A
30V	5A	30V	10A
60V	2.5A	60V	5A
100V	1.5A	100V	3A
200V	0.8A	200V	1.5A
300V	0.5A	300V	1A

DL Series

The DL Series of programmable DC Power supplies is designed to provide continuously variable output voltage and current for a range of 60W to 500W. Their chassis are 3U(132mm) high and quarter, half and full rack wide. By using the front panel keys voltage and current can be set precisely and IO setting values can be saved and recalled as needed. For Open Connectivity three interface ports (GPIB, USB, Ethernet) are provided as standard.

Features



- GPIB, LAN and USB interfaces are provided as standard.
- Included software;
  - Zefa IO Lib 1.0(DLL)
  - IO Configuration Program
  - IVI Drivers for LabView and VEE



- NI VISA 3.6, Agilent IO Lib 14.2 compatible
- Compliant to IEEE 488.1, IEEE 488.2 Specification
- Compliant to USBTMC USB 488 Specification
- Compliant to VXI-11 Specification
- SCPI compatible



- Chassis : 3U(132mm) high; quarter, half and full rack wide
- Simple design and simple operation



- Precise Voltage and Current Setting
- Save, Recall Function
- Local/Remote Key

Applications

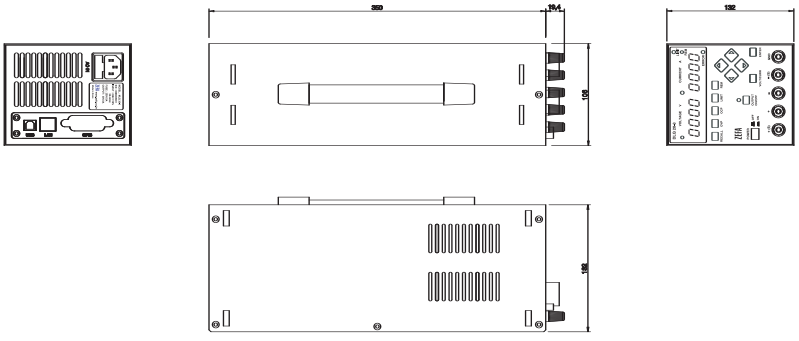
- DUT power supply
- Laboratory Bench Top Power Supply
- Mobile phone, LCD and PDA Testing
- System power supply for Automation systems.
- ATE power supply

DLQ Series



Specifications (at 0 °C to 55 °C unless otherwise specified)		DLQ 10-6	DLQ 20-4	DLQ 30-3	DLQ 60-1.5
Number of outputs		1	1	1	1
DC outputs	Voltage	0 to 10 V	0 to 20 V	0 to 30 V	0 to 60 V
	Current	0 to 6 A	0 to 4 A	0 to 3 A	0 to 1.5 A
Power (max)		60 W	80 W	90 W	90 W
GPIB / LAN / USB		Yes / Yes / Yes	Yes / Yes / Yes	Yes / Yes / Yes	Yes / Yes / Yes
Load and line regulation		<0.01% + 2 mV	<0.01% + 2 mV	<0.01% + 2 mV	<0.01% + 2 mV
Voltage / Current		<0.01% + 250 µA	<0.01% + 250 µA	<0.01% + 250 µA	<0.01% + 250 µA
Ripple and noise from 20 Hz to 20 MHz		<500µVrms 4mVpp	<500µVrms 4mVpp	<500µVrms 4mVpp	<500µVrms 4mVpp
Voltage / Current		<2mArms	<2mArms	<2mArms	<2mArms
Programming accuracy at 25 °C ±5 °C		<0.05% + 10 mV	<0.05% + 10 mV	<0.05% + 10 mV	<0.05% + 10 mV
Voltage / Current		<0.2% + 10 mA	<0.2% + 10 mA	<0.2% + 10 mA	<0.2% + 10 mA
Readback accuracy at 25 °C ±5 °C		<0.05% + 5 mV	<0.05% + 5 mV	<0.05% + 5 mV	<0.05% + 5 mV
Voltage / Current		<0.15% + 5 mA	<0.15% + 5 mA	<0.15% + 5 mA	<0.15% + 5 mA
Program resolution		1 mV	1 mV	1 mV	1 mV
Voltage / Current		1 mA	1 mA	1 mA	1 mA
Readback resolution		0.5 mV	1 mV	1.5 mV	3 mV
Voltage / Current		0.2 mA	0.1 mA	0.1 mA	0.05 mA
Meter resolution		1 mV	1 mV	1 mV	1 mV
Voltage / Current		1 mA	1 mA	1 mA	1 mA
Stability, constant output 8 hrs		<0.02% + 3 mV	<0.02% + 3 mV	<0.02% + 3 mV	<0.02% + 3 mV
Voltage / Current		<0.1% + 1 mA	<0.1% + 1 mA	<0.1% + 1 mA	<0.1% + 1 mA
Output response time	Up	30 ms	30 ms	40 ms	40 ms
	Down	100 ms	120 ms	150 ms	150 ms
Transient response		<50 µsec for output to recover to within 15 mV following a change in output current from full load to half load or vice versa.			

Dimensions

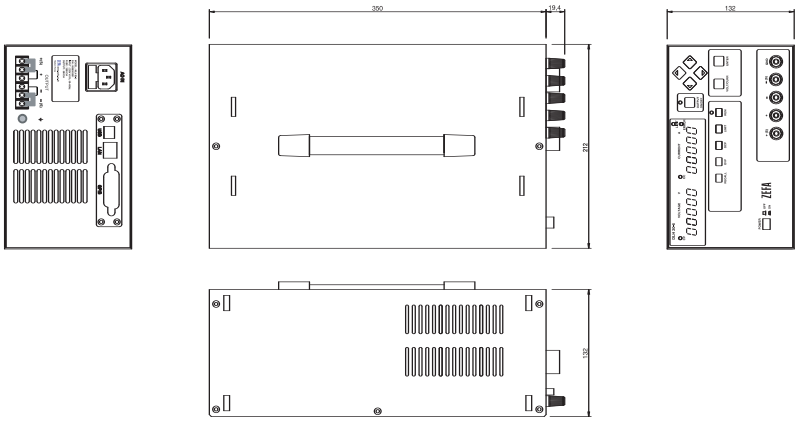


DLH Series



Specifications (at 0°C to 55°C unless otherwise specified)		DLH 15-10	DLH 30-5	DLH 60-2.5	DLH 100-1.5	DLH 200-0.8	DLH 300-0.5
Number of outputs		1	1	1	1	1	1
DC outputs	Voltage	0 to 15V	0 to 30 V	0 to 60 V	0 to 100 V	0 to 200 V	0 to 300 V
	Current	0 to 10 A	0 to 5 A	0 to 2.5 A	0 to 1.5 A	0 to 0.8 A	0 to 0.5 A
Power (max)		150 W	150 W	150 W	150 W	160 W	150 W
GPIB / LAN / USB		Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes
Load and line regulation Voltage / Current		<0.01% + 2 mV <0.01% + 250 µA	<0.01% + 2 mV <0.01% + 250 µA	<0.01% + 2 mV <0.01% + 250 µA	<0.01% + 2 mV <0.01% + 250 µA	<0.01% + 2 mV <0.01% + 250 µA	<0.01% + 2 mV <0.01% + 250 µA
Ripple and noise from 20 Hz to 20 MHz Voltage / Current		<500µVrms 4mVpp <2mArms	<500µVrms 4mVpp <2mArms	<500µVrms 4mVpp <2mArms	<500µVrms 4mVpp <2mArms	<500µVrms 4mVpp <2mArms	<500µVrms 4mVpp <2mArms
Programming accuracy at 25°C ±5°C Voltage / Current		<0.05% + 10 mV <0.2% + 10 mA	<0.05% + 10 mV <0.2% + 10 mA	<0.05% + 10 mV <0.2% + 10 mA	<0.05% + 10 mV <0.2% + 10 mA	<0.05% + 10 mV <0.2% + 10 mA	<0.05% + 10 mV <0.2% + 10 mA
Readback accuracy at 25°C ±5°C Voltage / Current		<0.05% + 5 mV <0.15% + 5 mA	<0.05% + 5 mV <0.15% + 5 mA	<0.05% + 5 mV <0.15% + 5 mA	<0.05% + 5 mV <0.15% + 5 mA	<0.05% + 5 mV <0.15% + 5 mA	<0.05% + 5 mV <0.15% + 5 mA
Program resolution Voltage / Current		1 mV 1 mA	1 mV 1 mA	1 mV 1 mA	10 mV 1 mA	10 mV 1 mA	10 mV 1 mA
Readback resolution Voltage / Current		0.5 mV 0.3 mA	1.5 mV 0.2 mA	3 mV 0.1 mA	5 mV 0.05 mA	10 mV 0.02 mA	15 mV 0.02 mA
Meter resolution Voltage / Current		1 mV 1 mA	1 mV 1 mA	1 mV 1 mA	10 mV 1 mA	10 mV 1 mA	10 mV 1 mA
Stability, constant output 8 hrs Voltage / Current		<0.02% + 3 mV <0.1% + 1 mA	<0.02% + 3 mV <0.1% + 1 mA	<0.02% + 3 mV <0.1% + 1 mA	<0.02% + 3 mV <0.1% + 1 mA	<0.02% + 3 mV <0.1% + 1 mA	<0.02% + 3 mV <0.1% + 1 mA
Output response time	Up	40 ms	40 ms	40 ms	50 ms	50 ms	50 ms
	Down	100 ms	100 ms	100 ms	100 ms	100 ms	100 ms
Transient response		<50 µsec for output to recover to within 15 mV following a change in output current from full load to half load or vice versa.					

Dimensions



DLH Series

Specifications (at 0°C to 55°C unless otherwise specified)		DLH 15-20	DLH 30-10	DLH 60-5	DLH 100-3	DLH 200-1.5	DLH 300-1
Number of outputs		1	1	1	1	1	1
DC outputs	Voltage	0 to 15V	0 to 30 V	0 to 60 V	0 to 100 V	0 to 200 V	0 to 300 V
	Current	0 to 12 A	0 to 10 A	0 to 5 A	0 to 3 A	0 to 1.5 A	0 to 1 A
Power (max)		300 W	300 W	300 W	300 W	300 W	300 W
GPIB / LAN / USB		Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes	Yes /Yes /Yes
Load and line regulation		<0.01% + 2 mV	<0.01% + 2 mV	<0.01% + 2 mV	<0.01% + 2 mV	<0.01% + 2 mV	<0.01% + 2 mV
Voltage / Current		<0.01% + 250 µA	<0.01% + 250 µA	<0.01% + 250 µA	<0.01% + 250 µA	<0.01% + 250 µA	<0.01% + 250 µA
Ripple and noise from 20 Hz to 20 MHz		<500µVrms 4mVpp	<500µVrms 4mVpp	<500µVrms 4mVpp	<500µVrms 4mVpp	<500µVrms 4mVpp	<500µVrms 4mVpp
Voltage / Current		<2mArms	<2mArms	<2mArms	<2mArms	<2mArms	<2mArms
Programming accuracy at 25°C ±5°C		<0.05% + 10 mV	<0.05% + 10 mV	<0.05% + 10 mV	<0.05% + 10 mV	<0.05% + 10 mV	<0.05% + 10 mV
Voltage / Current		<0.2% + 10 mA	<0.2% + 10 mA	<0.2% + 10 mA	<0.2% + 10 mA	<0.2% + 10 mA	<0.2% + 10 mA
Readback accuracy at 25°C ±5°C		<0.05% + 5 mV	<0.05% + 5 mV	<0.05% + 5 mV	<0.05% + 5 mV	<0.05% + 5 mV	<0.05% + 5 mV
Voltage / Current		<0.15% + 5 mA	<0.15% + 5 mA	<0.15% + 5 mA	<0.15% + 5 mA	<0.15% + 5 mA	<0.15% + 5 mA
Program resolution		1 mV	1 mV	1 mV	10 mV	10 mV	10 mV
Voltage / Current		1 mA	1 mA	1 mA	1 mA	1 mA	1 mA
Readback resolution		0.5 mV	1.5 mV	3 mV	5 mV	10 mV	15 mV
Voltage / Current		0.6 mA	0.3 mA	0.2 mA	0.1 mA	0.05 mA	0.05 mA
Meter resolution		10 mV	10 mV	10 mV	10 mV	10 mV	10 mV
Voltage / Current		10 mA	10 mA	10 mA	10 mA	10 mA	10 mA
Stability, constant output 8 hrs		<0.02% + 3 mV	<0.02% + 3 mV	<0.02% + 3 mV	<0.02% + 3 mV	<0.02% + 3 mV	<0.02% + 3 mV
Voltage / Current		<0.1% + 1 mA	<0.1% + 1 mA	<0.1% + 1 mA	<0.1% + 1 mA	<0.1% + 1 mA	<0.1% + 1 mA
Output response time	Up	60 ms	60 ms	60 ms	60 ms	60 ms	60 ms
	Down	150 ms	150 ms	150 ms	150 ms	150 ms	150 ms
Transient response		<50 µsec for output to recover to within 15 mV following a change in output current from full load to half load or vice versa.					

Interfaces

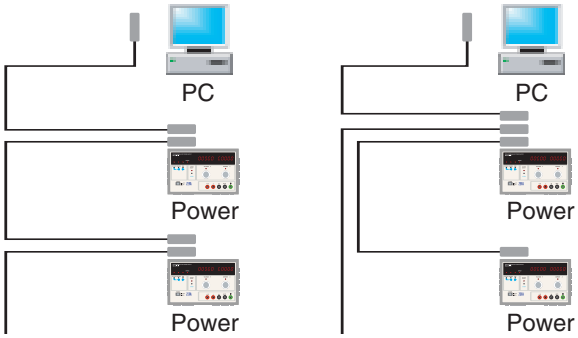


The ML and DL power supplies are eguipped with three interfaces, USB, LAN and GPIB. USB is quick and easy to connect power supplies to PC. LAN is used to connect power suply in a remote place. GPIB is the traditional way of connecting instruments. By choosing one of the interfaces users can easily obtain true Open Connectivity.

GPIB

- IEEE 488.1-1987 compliant
- IEEE 488.2-1992 compliant
- Fully supports IEEE-488.1 subsets
  AH1, SH1, T6, L2, SR1, RL1
  PP0, DC1, DT1 and C0.
- GPIB-32.DLL compatible
- VISA compatible

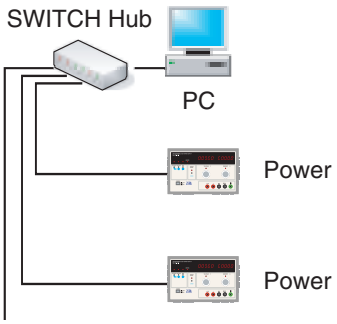
GPIB connection



LAN

- 10/100 base-T
- TCP/IP Protocol
- ICMP
- HTTP
- VXI-11 Comliant
- ONC RPC
- VISA compatible

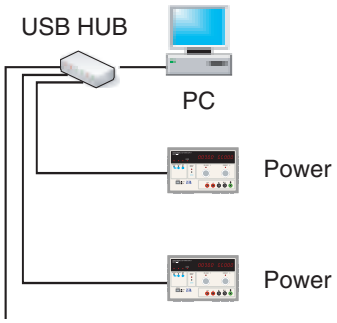
LAN connection



USB

- USB2.0 Full Speed
- USBTMC USB488 Class Compliant
- VISA Compatible
- HID Class is also supported

USB connection

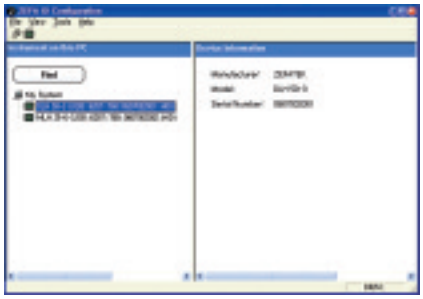


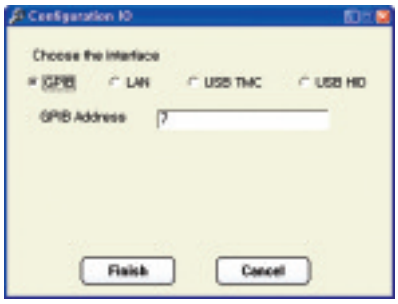
Software

ZEFA IO Configuration Program

ZEFA IO Configuration program helps in selecting and configuring interfaces. Followings are screen shots of the program.



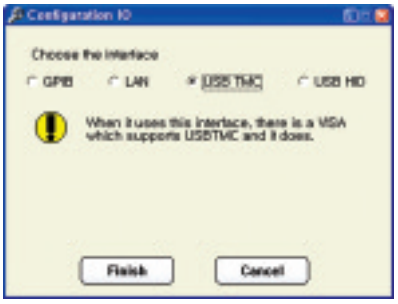




GPIB



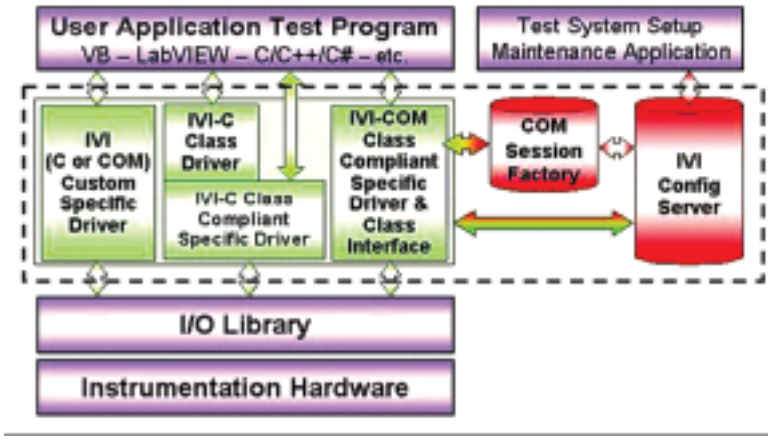
LAN



USB

IVI Driver

IVI Driver for the ML and DL series power supplies is provided as IVI-COM and IVI-C format. It helps in building application programs using LabView, VEE and other high level languages like VC++.



Software

ZEFA IO Library

ZEFA IO Library is a program which is helpful to the users who do not have VISA program. It is VISA-like and has following APIs.

Lifecycle Operations

```
viClose(vi)
```

Event Operations

```
viEnableEvent(vi, eventType, mechanism, context)
viDisableEvent(vi, eventType, mechanism)
viInstallHandler(vi, eventType, handler, userHandle)
viUninstallHandler(vi, eventType, handler, userHandle)
```

Access Functions and Operations

```
viOpenDefaultRM(sesn)
viOpen(sesn, rsrcName, accessMode, timeout, vi)
```

Basic I/O Services

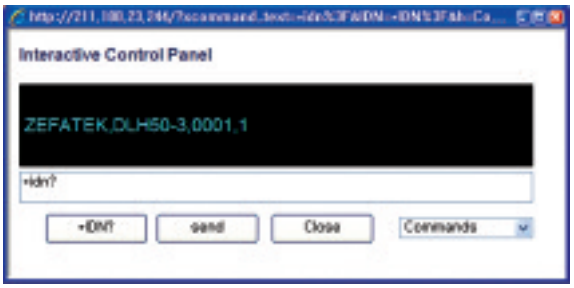
```
viRead(vi, buf, count, retCount)
viWrite(vi, buf, count, retCount)
viReadSTB(vi, status)
viClear(vi)
```

Embedded Web Server

Web server is embedded in the ML and DL series power supplies. By using web browser, you can control the power interactively and can change the configuration parameters.



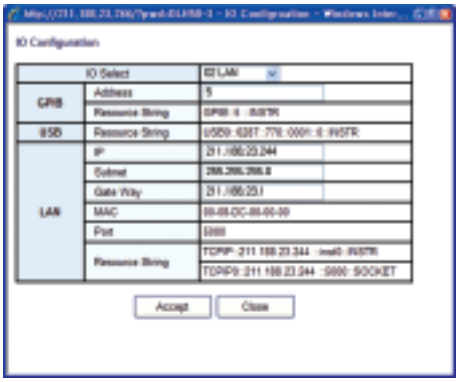
Web server main page



Interactive control panel



Password login



IO configuration

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