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# DES 410 and DES 411 Power Supplies

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## FEATURES

- For use with Magtrol WB Eddy-Current and PB Powder Brake Dynamometers
- Controlled current supply, with overvoltage factor > 5
- Analog input for current set-point
- Selection of nominal current
- Control by digital inputs/outputs
- General alarm provided by relay
- 2 alarm outputs (temperature and electrical circuit)
- Available in either 115 or 230 VAC

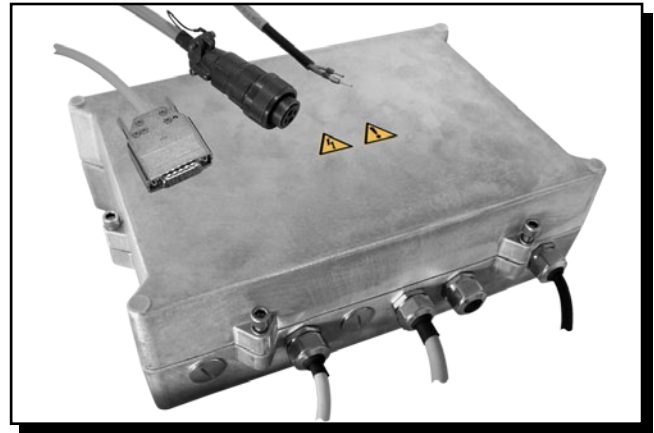
## DESCRIPTION

DES 410 and DES 411 Power Supplies are specially designed for the full range of Magtrol's Eddy-current and Powder brake dynamometers with the design goal providing the best response time. The DES 410 / DES 411 supplies are packaged in an industrial housing made of cast aluminum. This offers superior protection against radiated emissions in order to avoid any disruption of the surrounding electronics modules. This housing must be installed directly on the test bench, next to the brake, as close as possible.

The DES 410 / DES 411 supplies can be controlled by digital signals and analog set point coming from peripheral electronics. The DSP7000 Dynamometer Controller has been designed to work with the DES 41x.

### Control

The Power supply can be switched ON by remote control. The Stand-by signal enables the output current to be delivered. This excitation current is controlled by a set-point in the 0-10VDC range. The nominal value of the excitation current is set by internal resistors. There are two discrete outputs for alarms (open collector). The first is the "Temperature Alarm". It will



indicate if the cooling water of the Dynamometer or the inner temperature of the DES 41x are out of limits. The second is the "Electrical Alarm". It occurs when an over current or a short circuit is detected. The output current is immediately turned OFF and latched while the General Alarm Relay is set under its Alarm position. A low state for 200 ms of the Stand-by signal resets the latch.

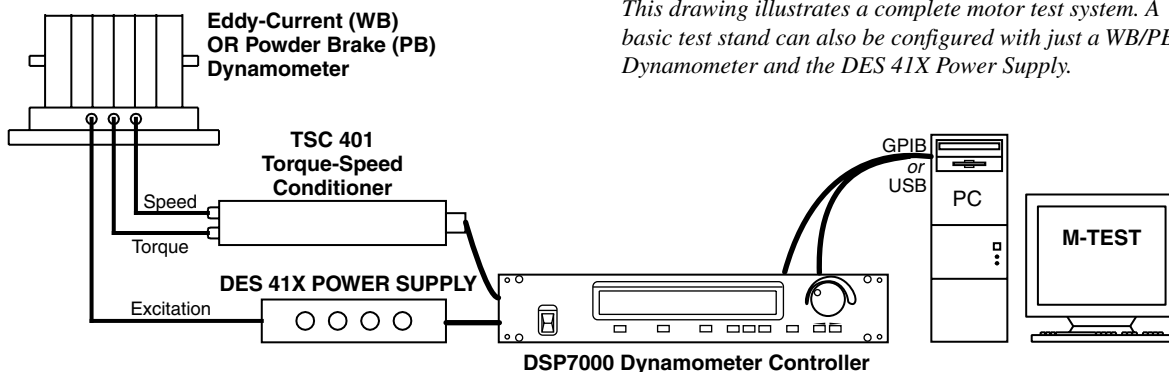
For applications with tandem dynamometers, the DES 410/DES 411 units also control the power supply of the electromagnetic clutch.

### Supply Voltage

The main supply voltage of the DES 410/DES 411 is in the 115/230VAC/50/60Hz range. No selection is required. The DES 410 power supply features a galvanic insulation between the main circuit and the dynamometer power.


The DES 411 does not have galvanic separation. For safety reasons, the DES 41x case has to be grounded and the use of a ground fault current circuit breaker is recommended.

## SYSTEM CONFIGURATION

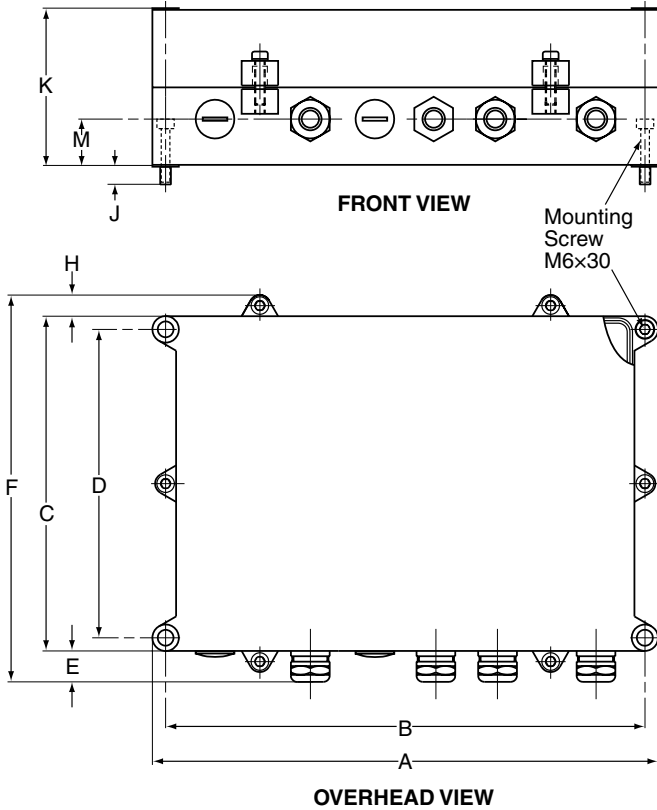


*This drawing illustrates a complete motor test system. A basic test stand can also be configured with just a WB/PB Dynamometer and the DES 41X Power Supply.*

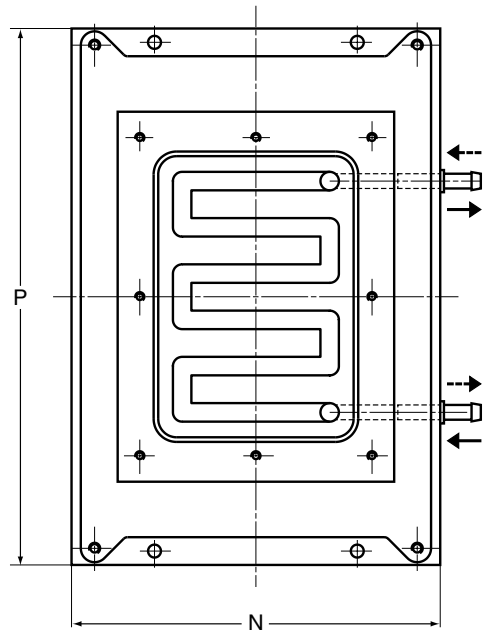
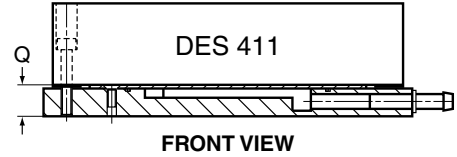
**RATINGS**

	<b>DES 410</b>	<b>DES 411</b>
<b>NETWORK SUPPLY</b>		
Voltage	115 VAC / 230 VAC $\pm$ 15 %	
Frequency	50 Hz / 60 Hz	
Fuse	T1A or T2A depending on the brake(s)/ 115 VAC / 230 VAC	T2A to T12A depending on the brake(s)/ 115 VAC / 230 VAC
Maximum current	1 A + clutch	3 A + clutch / 230 VAC 6 A + clutch / 115 VAC
<b>ELECTROMAGNETIC CLUTCH SUPPLY</b>		
Voltage	115 VAC / 230 VAC	
Current	1 A	
<b>SUPPLY FOR EXTERNAL USE</b>		
Voltage	12 VDC $\pm$ 5 %	
Maximum Current	300 mA	
<b>SELECTION OF NOMINAL CURRENT</b>		
(Selected by resistors)	0.5 A; 1.0 A; 1.5 A; 2.0 A	2.5 A; 4.0 A; 5.0 A; 7.5 A; 10.0 A; 12.0 A
<b>EXCITATION SET-POINT</b>		
Voltage	0 to 10 VDC	
Impedance	> 50 k $\Omega$	
<b>DIGITAL INPUTS (GALVANICALLY INSULATED)</b>		
Remote Control of the Network Input (PSC)	Relay coil +24 VDC / 11 mA	
Control of the Electromagnetic Clutch	Optocoupler activated by +24 VDC / 2.5 mA	
Stand-by (enable)	Optocoupler activated by either +24 VDC or +12VDC / 2.5 mA max	
<b>DIGITAL OUTPUTS (GALVANICALLY INSULATED)</b>		
Temperature Alarms	2 open collector outputs: $U_{max} = 40$ VDC, $I_{max} = 3$ mA	
Electrical Alarm		
<b>GENERAL ALARM</b>		
Relay Contact	2 A / 30 VDC	
<b>ENVIRONMENTAL CHARACTERISTICS</b>		
Operating Temperature	0°C to +50°C	
Storage Temperature	-20°C to +70°C	
Humidity	0 to 90% as per DIN 40040	
Protection Class	IP 66	
Assembly	 The housing must be electrically and thermally coupled to the metal frame of the test bench to allow heat dissipation.	
<b>MECHANICAL CHARACTERISTICS</b>		
Housing	Extruded cast aluminium	
Weight (without cable)	5.2 kg; 11.5 lb	
Weight (with integrated cable)	6.2 kg; 13.7 lb	

**DIMENSIONS**



**DES 411 Water Cooling System**  
(For all 15 series Dynamometers except 1 WB 15 and 1 PB 15)



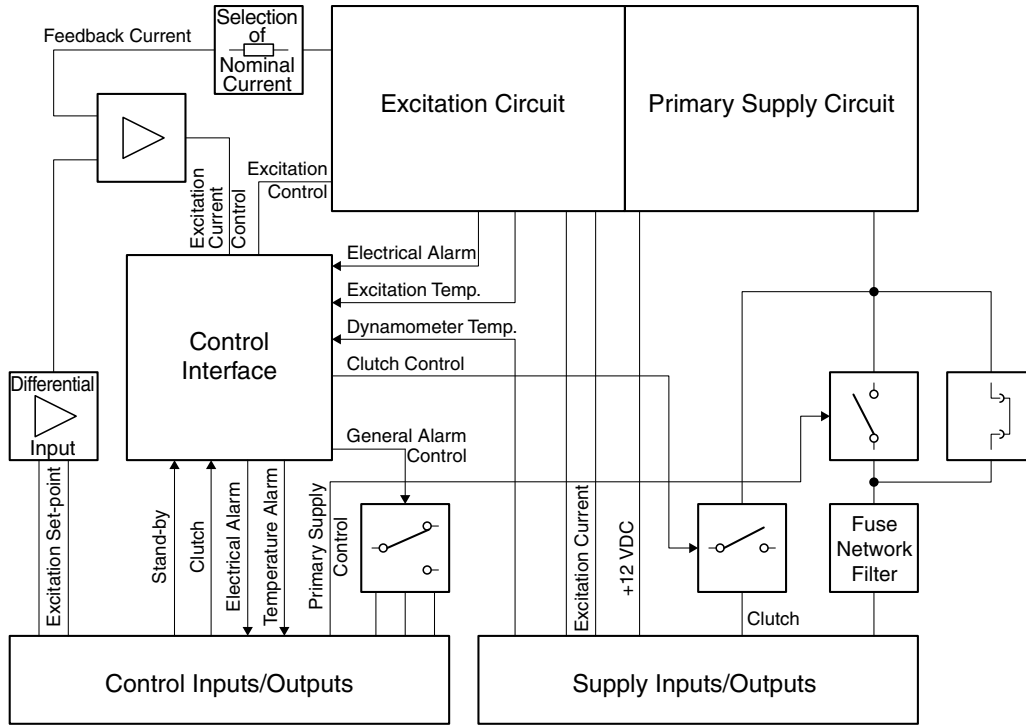
**NOTE:** Original dimensions are in Metric units.  
Dimensions converted to English units have been rounded up to 2 decimal places.

	A	B	C	D	E	F	H	J	K	M
mm	287	272	190	175	≈17	≈219	12	10	90	30
in	11.30	10.71	7.48	6.89	0.63	8.58	0.47	0.39	3.54	1.06

	N	P	Q
mm	200	290	15
in	7.87	11.42	0.59

The DES 410/DES 411 supplies are delivered with integrated cables (including connectors) with a length of 1.5 meters on the dynamometer connection side and 5 meters on the controller side. The DES 410/DES 411 units are to be mounted on a metallic surface in order to allow ample heat dissipation. For safety reasons, the DES 41x case has to be grounded. For 2-3-4 WB 15 and 2-4 PB 15 dynamometers, the DES 411/12x Power Supply with integrated Water Cooling System (see above drawing) should be used.

## BLOCK DIAGRAM



## OPTIONS AND ORDERING INFORMATION

If the DES is ordered separately (from the dynamometer), it is absolutely necessary to specify which model of Eddy-current/powder brake will be used with the DES power supply in order to limit the operating current and prevent possible damage to the dynamometer brake. Mains voltage (115 VAC or 230 VAC) should also be defined when ordering.

DESCRIPTION	MODEL	PART NUMBER
Power Supply for WB/PB 2.7 and 43 Dynamometers	DES 410/11x	234-410-000-11x
Power Supply for WB/PB 65, 115, 1 PB 15 and 1 WB 15 Dynamometers	DES 411/11x	234-411-000-11x
Power Supply with Water Cooling Plate for 2, 3, 4 WB 15 and 4 PB 15 Dynamometers	DES 411/12x	234-411-000-12x

**NOTE:** All DES 41X Power Supplies include the corresponding dynamometer connection cables. The last digit of the part Number refers to the cable length in accordance with the following table.

LAST DIGIT X	CABLE LENGTH DYNAMOMETER SIDE	CABLE LENGTH CONTROLLER SIDE
1	1.5 m	5 m
2	1.5 m	10 m
3	1.5 m	20 m
4	2.5 m	5 m
5	2.5 m	10 m
6	2.5 m	20 m

Due to the continual development of our products, we reserve the right to modify specifications without forewarning.



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