PAYNE ENGINEERING
Rt. 29 ● Scott Depot WV ● 25560-0070
www.payneng.com

Model 18D-N
SCR Power Controls

APPLICATION ASSISTANCE - 304/757-7354
24 HOUR FAX - 304/757-7305

MODEL 18D-N

- **Description:** Phase-Angle SCR Power Controls
- **Product Range:** 120 to 480 VAC, Single Phase, 50, 80, 120amps
- **Application:** Constant Resistance Loads

FEATURES

- All Solid State Construction
- ***Exclusive*** "2 Millisecond" Fuses for Short-Circuit Protection
- ***Exclusive*** "V_{bo} Clamping" Transient Voltage Protection
- ***Exclusive*** Full Rated Operation in 50° C(122° F)
- ***Exclusive*** Proprietary Heatsinks
- Silent, Arc-Free Switching
- Infinitely Variable Voltage Control
- Open-Chassis or Enclosed

TYPICAL APPLICATIONS

- Replace Variable Transformers
- Electric Furnaces and Ovens
- Heat Sealing and Packaging
- Ink Drying
- Foam Cutting
- Plastic Extruding and Molding
- Process Heating
- Food Processing Ovens
- Autoclaves

Model 18D-N SCR controls provide infinitely variable control of single-phase AC voltages to resistive heating elements. These units are solid state replacements for variable transformers, saturable core reactors, electromechanical contactors, and mercury relays. Power semiconductors replace contacts and brushes to switch electric power without moving parts, and, when operated within stated ratings for current, voltage, and temperature, have no known MTBF or life expectancy rating.

INNOVATIVE ADVANCED TECHNOLOGY: Three Pillars Of Protection

18D-N SCR controls incorporate ***exclusive*** design features to protect the power semiconductor components against damage:

1> Unique "V_{bo} Clamping" provides unmatched protection for power semiconductors against transient voltage spikes common on industrial power mains.

2> "2 Millisecond" fuses protect semiconductors against short-circuit faults. Payne Engineering SCR controls are the only power controls in the industry equipped with factory tested and approved fuses coordinated with power semiconductors.

3> Proprietary heatsinks are engineered in-house coordinating finite element analysis (FEA) with on-site lab tests. Payne Engineering SCR controls operate at 50° C (122° F) ambient temperatures with no derating.

APPLICATION FLEXIBILITY

Standard configuration on all 18D-N controls is for manual control via a 270° turn potentiometer(included). Standard options allow for open- or closed-loop automatic control in response to an analog control signal from a temperature controller, PLC I/O module, or other external source.

SPECIFICATIONS

Power Circuit: Inverse-parallel semiconductors selected for V_{bo} Clamping transient protection, with parallel R-C circuit for dv/dt protection.

Control Circuit: Optically isolated circuit triggers semiconductor gates.

Mains Frequency: 50, 60Hz standard. Other frequencies available as special order(consult factory).

Output Voltage: 4% to nominal input voltage, infinitely variable.

Overall Efficiency: 98.5 to 99.5%.

Proof Voltage: (isolation between power circuit, control circuit and ground) Greater than 2 kV.

Control Input: Manual control via 75k Ohm, 2 watt potentiometer with integral On/Off switch and indication dial plate standard, or optically isolated milliamp circuit permits use in open- or closed-loop control schemes. Voltage output from power control is proportional to analog signal input. Multi-turn SPAN and GAIN trimmers provided for field calibration/adjustment of signal response range(standard range of 4-20mA, 560 Ohm).

Control Power: 5 watts maximum. Derived from 12 VA isolation control transformer.

Fuse Protection: 2 millisecond I^2T fuses are factory tested and coordinated with all power semiconductors, considering:

a. fuse element melt time t_{melt};
b. peak element current I_{melt};
c. arc quench time t_{arc};
d. peak current arc I_{arc};

Transient Voltage Protection: Voltage breakover (V_{bo}) protection with R-C filters for dv/dt protection.

Ambient Temperature Range: -10 to +50°C (122°F).

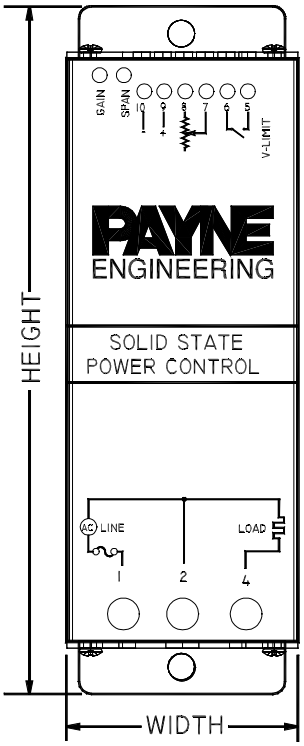
PAYNE ENGINEERING
Rt. 29 ● Scott Depot WV ● 25560-0070

Model 18D-N
SCR Power Controls

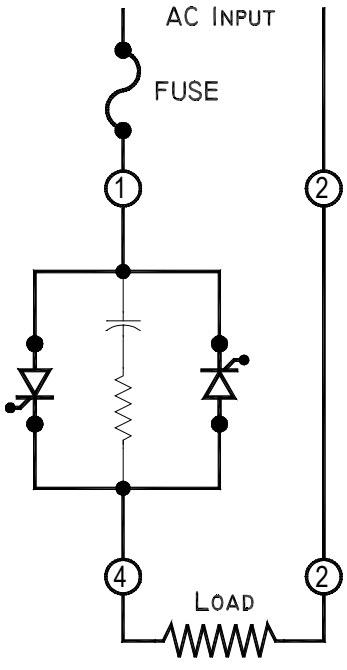
APPLICATION ASSISTANCE - 304/757-7354
24 HOUR FAX - 304/757-7305

Model Number	Amps	Height Inches(mm)	Width Inches(mm)	Depth Inches(mm)	Weight lbs. (kg)	Approved 2 Millisecond I^2t Fuses (not included)	
						GOULD	BUSSMAN
Single-Phase 110/115/120 VAC INPUT, 50/60Hz							
18D-1-50N	50	6(152)	2.18(55)	7.9(201)	3(136)	A50QS50[1]	FWH-50
18D-1-80N	80	9(229)	2.18(55)	7.9(201)	4.7(2.14)	A50QS80[1]	FWH-80
18D-1-120N	120	13.125(334)	2.18(55)	7.9(201)	6.3(2.86)	A50QS120[1]	FWH-120
Single-Phase 208/220/240 VAC INPUT, 50/60Hz							
18D-2-50N	50	6(152)	2.18(55)	7.9(201)	3(136)	A50QS50[1]	FWH-50
18D-2-80N	80	9(229)	2.18(55)	7.9(201)	4.7(2.14)	A50QS80[1]	FWH-80
18D-2-120N	120	13.125(334)	2.18(55)	7.9(201)	6.3(2.86)	A50QS120[1]	FWH-120
Single-Phase 380/415/440/480 VAC INPUT, 50/60Hz							
18D-4-50N	50	6(152)	2.18(55)	7.9(201)	3(136)	A50QS50[1]	FWH-50
18D-4-80N	80	9(229)	2.18(55)	7.9(201)	4.7(2.14)	A50QS80[1]	FWH-80
18D-4-120N	120	13.125(334)	2.18(55)	7.9(201)	6.3(2.86)	A50QS120[1]	FWH-120

Notes:
1. A50Pxx series fuses may be used in place of A50QSxx fuses



18D-N 50-120 AMP



POWER CIRCUIT SCHEMATIC

All dimensions are approximate and are not to be used for construction purposes . Payne Engineering Company Inc. reserves the right to make changes to product design, construction and component parts in the interest of technical advancement without prior notification.