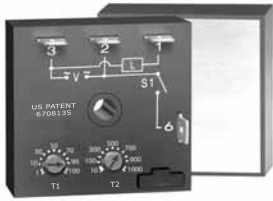


ProgramaCube® NHPD Series Power Timing Module

3



US Patent 6708135



- High Load Currents up to 20 A, 200 A Inrush
- Factory Programmed
- Choose 1 of 12 Standard Dual Functions
- Special Time Ranges and Functions Available
- Microcontroller Circuitry, +/-0.5% Repeat Accuracy
- Onboard or External Adjust, or Fixed Time Delay
- 24 ... 240 V AC
- Delays from 100 ms ... 1000 h in 9 Ranges

Approvals:



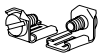
Accessories



External adjust potentiometer
P/Ns:
P1004-95 (fig A)
P1004-95-X (fig B)



Versa-knob
P/N: P0700-7



Quick connect to screw adaptor
P/N: P1015-18



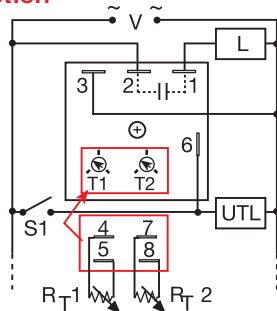
Female quick connect P/Ns:
P1015-64 (AWG 14/16)
P1015-13 (AWG 10/12)

See accessory pages for specifications.

Description

The NHPD Series is a factory programmed module available in any 1 of 12 standard dual functions. The time delays can be factory fixed, externally or onboard adjustable, or a combination of fixed and adjustable. Modules are manufactured without the function assigned. When an order is received, the function software is added, making the modules complete. This approach provides fast delivery on all part numbers. The NHPD includes a high current solid state output. It can switch motors, lamps and heaters directly without the addition of a contactor. It can switch up to 20 A with up to 100 million operations typical. Its microcontroller timing circuit provides excellent repeat accuracy and stability. Encapsulation protects against shock, vibration, and humidity. The NHPD Series is a cost effective approach for OEM applications that require small size and long life. Special time ranges and functions are available; contact Technical Assistance (see below) for more information.

Connection



Terminal Location for External Adjustment

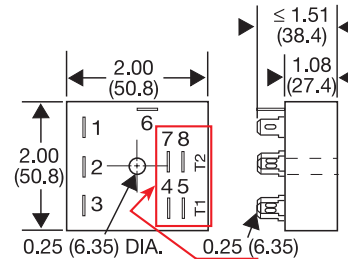
V = Voltage L = Load S1 = Initiate Switch
UTL = Untimed Load T1 & R_{T1} = First Adjustment
T2 & R_{T2} = Second Adjustment

A knob is supplied for adjustable units, or R_T terminals for external adjust. See external adjustment vs time delay chart. The untimed load is optional. S1 is not used for some functions. Dashed lines are internal connections.

External Resistance vs Time Delay

For details on external R_T see the external resistance vs. time delay chart at the beginning of this section.

Mechanical View



Knob Adjust Detail Replaces External Adjust If Ordered.

Inches (Millimeters)

**Function Chart

Delay On Make/Delay on Break	Code
Delay On Make/Recycle (ON Time First, Equal Times)	MB
Delay On Make/Interval	MRE
Delay On Make/Single Shot Interval/Recycle (ON Time First, Equal Times)	MI
Delay On Break/Recycle (ON Time First, Equal Times)	MS
Single Shot/Recycle (ON Time First, Equal Times)	IRE
Recycle (Both Times Adjustable, ON Time First)	BRE
Recycle (Both Times Adjustable, OFF Time First)	RXE
Interval/Delay On Make	IM
Accumulative Delay On Make/Interval	AM
Single Shot/Lockout	SL

For a Complete List of Functions with Descriptions, see Timer Function Section.

Ordering Table

NHPD Series	X Output Rating	X Input	X Adjustment TD1 or R _{T1}	X First Time Delay*	X Adjustment TD2 or R _{T2}	X Second Time Delay*	X Function**
	-A - 6 A	-A - 24 ... 240 V AC	-1 - Fixed	-1 - 0.1 ... 10 s	-1 - Fixed	-1 - 0.1 ... 10 s	Specify Function (Refer to Function Chart for Code)
	-B - 10 A		-2 - Onboard Adjust	-2 - 1 ... 100 s	-2 - Onboard Adjust	-2 - 1 ... 100 s	
	-C - 20 A		-3 - External Adjust	-3 - 10 ... 1000 s	-3 - External Adjust	-3 - 10 ... 1000 s	
				-4 - 0.1 ... 10 m		-4 - 0.1 ... 10 m	
				-5 - 1 ... 100 m		-5 - 1 ... 100 m	
				-6 - 10 ... 1000 m		-6 - 10 ... 1000 m	
				-7 - 0.1 ... 10 h		-7 - 0.1 ... 10 h	
				-8 - 1 ... 100 h		-8 - 1 ... 100 h	
				-9 - 10 ... 1000 h		-9 - 10 ... 1000 h	

Example P/N: **NHPDAA2525MRE** Fixed - **NHPDBA10.5S15SMB**

*If Fixed Delay is selected, insert delay [0.1 ... 999] followed by (S) secs., (M) mins., or (H) hrs.

ProgramaCube®
NHPD Series
Power Timing Module

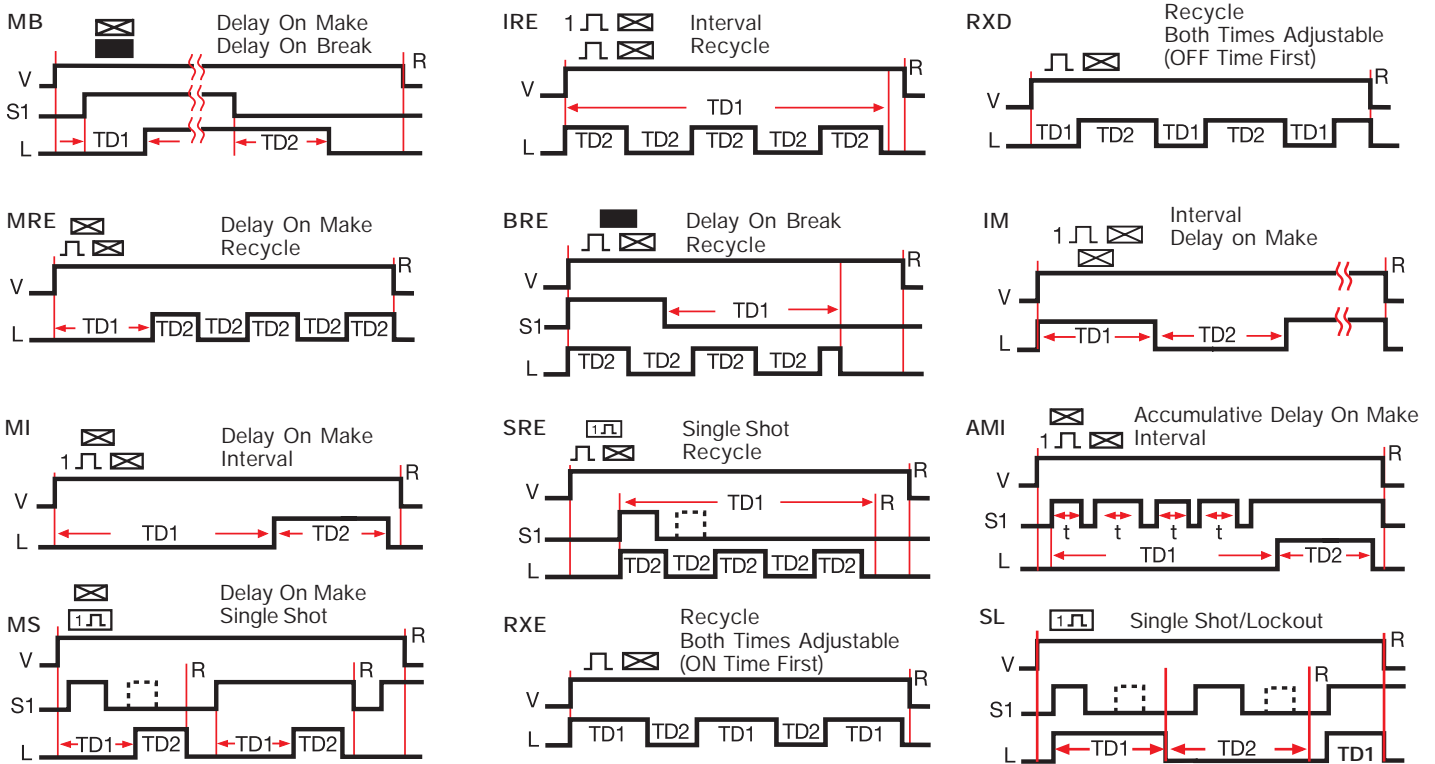
Technical Data

Time Delay Type Range Repeat Accuracy Tolerance (Factory Calibration) Reset Time Initiate Time Time Delay vs Temp. & Voltage		Microcontroller circuitry 0.1 s ... 1000 h in 9 adjustable ranges or fixed (to 999) +/-0.5% or 20 ms, whichever is greater ≤ +/-2% ≤ 150 ms ≤ 20 ms; ≤ 1500 operations per minute ≤ +/-2%		Protection Circuitry Dielectric Breakdown Insulation Resistance		Encapsulated ≥ 2000 V RMS terminals to mounting surface ≥ 100 MΩ	
Input Voltage Tolerance Line Frequency		24 ... 240 V AC ≤ +/-15% 50 ... 60 Hz		Mechanical Mounting *** Package Termination		Surface mt with one #10 (M5 x 0.8) screw 2 x 2 x 1.51 in. (50.8 x 50.8 x 38.4 mm) 0.25 in. (6.35 mm) male quick connects	
Output Type Rating		Solid state Output Steady State Inrush*** A 6 A 60 A B 10 A 100 A C 20 A 200 A		Environmental Operating Temperature Storage Temperature Humidity Weight		-40°C ... +60°C -40°C ... +85°C 95% relative, non-condensing ≅ 3.9 oz (111 g)	
Minimum Load Current Voltage Drop OFF State Leakage Current		100 mA ≅ 2.5 V at rated current ≅ 5 mA at 230 V AC					

***Must be bolted to a metal surface using the included heat sink compound. The maximum mounting surface temperature is 90°C.
 Inrush: Non-repetitive for 16 ms.

Function Diagrams

For a Complete List of Functions with Descriptions, see Timer Function Section.



Note: If S1 is closed when input voltage is applied, the function starts and the time delay begins. (MB, MS, BRE, SRE, AMI, SL)

Legend

- V Voltage
- R Reset
- S1 Initiate Switch
- L Load
- TD1, TD2 Time Delay
- t Incomplete Time Delay
- Undefined time