

ProgramaCube® NHPU Series Power Timing Module

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US Patent 6708135



- High Load Currents up to 20 A, 200 A Inrush
- Factory Programmed
- Choose 1 of 14 Standard Functions
- Special Time Ranges and Functions Available
- Microcontroller Circuitry, +/-0.1% Repeat Accuracy
- Accurate Switch Adjustment
- 24 ... 240 V AC
- Delays from 100 ms...1023 h in 6 Ranges
- Counts to 1023 in 3 Ranges

Approvals:

Accessories



Female quick connect P/Ns:
P1015-13 (AWG 10/12)
P1015-64 (AWG 14/16)
P1015-14 (AWG 18/22)



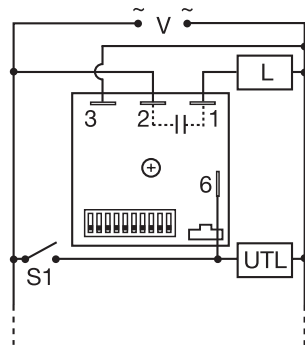
Quick connect to screw adaptor P/N: P1015-18

See accessory pages for specifications.

Description

The NHPU Series is a factory programmed module available in any 1 of 14 standard functions. The NHPU offers a single adjustable timer or counter function. 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. Switch adjustment allows accurate selection of the time delay or number of counts, the first time and every time. The NHPU 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 NHPU Series is a cost effective approach for OEM applications that require small size, solid state reliability, and accurate switch adjustment. Special time ranges and functions are available; contact Technical Assistance (see below) for more information.

Connection



V = Voltage L = Load
UTL = Untimed Load S1 = Initiate Switch

The untimed load is optional. S1 is not used for some functions. Dashed lines are internal connections.

Switch Adjustment

Adjustment Switch Operation			
TIME DELAY		COUNTER	
0.1...102.3	1...1023	1...165	1...63
OFF ▶ ON	OFF ▶ ON	OFF ▶ ON	OFF ▶ ON
<ul style="list-style-type: none"> 0.10.20.40.81.63.26.412.825.651.2 	<ul style="list-style-type: none"> 1248163264128256512 	<ul style="list-style-type: none"> 123451020304050 	<ul style="list-style-type: none"> 12481632M124
6.3	544	57 counts	44 s Delay 2 counts to Start

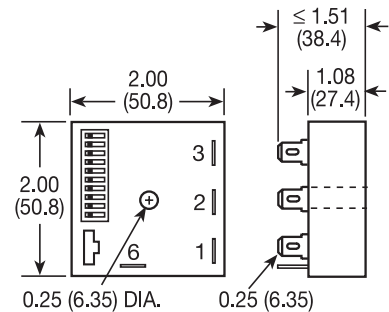
One or more switches must be ON for proper operation.

Ordering Table

NHPU Series	X Output/Rating	X Input	X Time Delay/Counts	X Function**
	A - 6 A	A - 24 ... 240 V AC	-1 - 0.1 ... 102.3 s	Specify Function (Refer to Function Chart for Code)
	B - 10 A		-2 - 1 ... 1023 s	
	C - 20 A		-3 - 0.1 ... 102.3 m	
			-4 - 1 ... 1023 m	
			-5 - 0.1 ... 102.3 h	
			-6 - 1 ... 1023 h	
			-7 - 1 ... 165 counts (straight) w/pulsed output	
			-8 - 1 ... 1023 counts (binary) w/pulsed output	
			-9 - 1 ... 7 counts to start 1 ... 63 s or m interval time	

Example P/N: **NHPUBA3TS, NHPUCA7C**

Mechanical View



Inches (Millimeters)

**Function Chart

Function	Code
Delay on Make	M
Delay on Break	B
Recycle (ON Time First, Equal Times)	RE
Recycle (OFF Time First, Equal Times)	RD
Single Shot	S, SD
Interval	I
Trailing Edge Single Shot	TS
Inverted Single Shot	US
Inverted Delay on Break	UB
Accumulative Delay on Make	AM
Motion Detector/Retriggerable Single Shot	PSD
Counter/Pulsed Output	C
Counter/Interval Output	CI

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

ProgramaCube® NHPU Series Power Timing Module

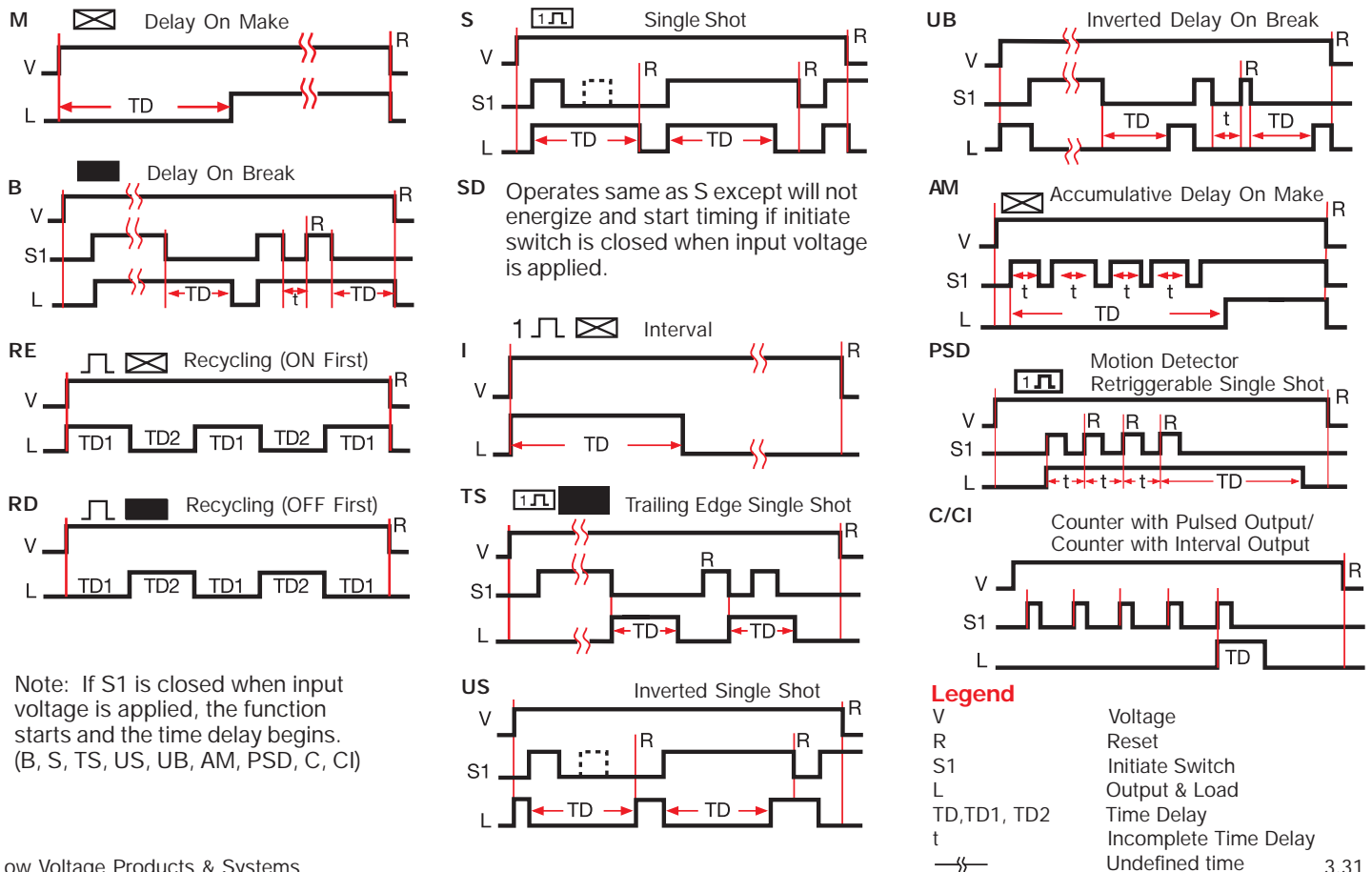
Technical Data

Time Delay Type Range Repeat Accuracy Setting Accuracy Reset Time Initiate Time Time Delay vs. Temp. & Voltage Count Range Count Rate	Microcontroller circuitry 0.1 ... 102.3 s, m or h in 0.1 s, m or h increments 1 ... 1023 s, m or h in 1 s, m or h increments 1 ... 63 s or m in 1 s or m increments +/-0.1% or 20 ms, whichever is greater ≤ +/-1% or 20 ms, whichever is greater ≤ 150 ms ≤ 20 ms ≤ +/-2% 1 ... 1023 in 3 ranges ≤ 25 counts per second	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 Minimum Load Current Voltage Drop OFF State Leakage Current Counter Output (P/N Variable 7 & 8)	Solid state <table border="1"> <thead> <tr> <th>Output</th> <th>Steady State</th> <th>Inrush***</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>6 A</td> <td>60 A</td> </tr> <tr> <td>B</td> <td>10 A</td> <td>100 A</td> </tr> <tr> <td>C</td> <td>20 A</td> <td>200 A</td> </tr> </tbody> </table> 100 mA ≅ 2.5 V at 1 A ≅ 5 mA at 230 V AC Pulse width: 300 ms +/-20%	Output	Steady State	Inrush***	A	6 A	60 A	B	10 A	100 A	C	20 A	200 A	Environmental Operating Temp. Storage Temp. Humidity Weight	-40°C ... +60°C -40°C ... +85°C 95% relative, non-condensing ≅ 3.9 oz (111 g)
Output	Steady State	Inrush***													
A	6 A	60 A													
B	10 A	100 A													
C	20 A	200 A													

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Function Diagrams

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



NHPUGen 06.15.05