Caller-Hamme INRP, IRRB, IRPP, I		•N _			l serie			TYPES			۲ – F	Power Volt		
Cutler-Hammer INSTRUCTION SHEET 120:0:12V DC Final this instruction sheet to make sub of correct operation before starting. 120:0:12V DC 120:0:12V DC And Dia Selector 0:10:0:120:0:		T	TRNP, T	'RNB, TI	RFP,	TRFE	3 Timers	TRNP2	<u>40AC</u>					
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matalation, operation, maintenance, and inspection of the TR sense times. The and user block keep this instruction sheet of hubbre references. The ANACE Determined by Time Range Selector (h: hours) 0 100 - 100 - 00 - 00 - 00 - 00 - 00 -	ead this in:	nstruction st	sheet to mak	ke sure of c	correct o	operatio	n before starting	Operation N	lode l			Cor	inection type	9
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and Dial Selector(m: hours) $\frac{Dial}{Ango Dial}$ 0-100-300-60 $\frac{Ango Dial}{Ango Dial}$ 0-110-300-60 $\frac{Ango Dial}{Ango Dial}$ 0-120-100-10 $\frac{Ango Dial}{Ango Dial}$ 0-120-100-10 $\frac{1}{12ma-10n}$ $\frac{1}{2ma-10n}$ $\frac{1}{2ma-10n}$ $\frac{1}{2ma-10n}$ <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>elerence.</td> <td></td> <td></td> <td></td> <td></td> <td>2 .</td> <td>Diade</td> <td></td>							elerence.					2 .	Diade	
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GENERAL SPECIFICATIONS Pleastern 10A 240V AC, 30V Operation System Solid-state CMOS circuit Increment System 10A 240V AC, 30V Operation System Solid-state CMOS circuit Increment System 10A 240V AC, 30V Order voltage category If (E60664-1) Increment System 500,000 op. minimu Over voltage category If (E60664-1) Increment System 500,000 op. minimu Notes Person 240A C. 100-240V AC (S000Hz)21 F-26.4 V DC 120C 10A -240 VAC (S000Hz)21 F-26.4 V DC 120D 120 C 10A -240 VAC (S000Hz)21 F-26.4 V DC 120D 10A -13 XV DC S00,000 op. minimu Ambient Strange and 30 to 75C (Without freezing) S0 to 85% (Without freezing) Mounting A Strange and XV Co Ambient Temperature 30 to 75C (Without freezing) Strange and XV Co											requency			
Operation System Solid-state CMOS circuit Operation System Solid-state CMOS circuit Postulation Degree 0.1 set to 50000 co.m.minu Postulation Degree 2 (#50660-1) Over voltage category 10 (#5000000 co.m.minu Voltage Tolerance 2 (#50660-1) Voltage Tolerance 2 (#50600012)/24V DC Voltage Tolerance 2 (#5060012)/24V DC Voltage Tolerance 2 (#5060012)/24V DC Voltage Tolerance 2 (#5000012)/24V DC Nambient Operating Temperature Pated Voltage * 10% minimum Ambient Operating Temperature 2 (#50% GPC + 2) Repeat Time 10 0msec maximum Repeat Time 10 0msec maximum Repeat Time 10 0msec maximum Solting Error 10 20% ± 20msec' Voltage Tori 10 20% ± 20msec' Solting Error 10 05% maximum Insulation Resistance 10 00 5% any 100% for 3 ames Defension 110% maximum Solting Error 120.5% 12 minutus (50 different poles: 2000V AC; 1 minute Broweer Action 10 as asse Solting Error 10 0.5% 12 ampBilude 0.5mm Sonot Degree of Protection			A					Rated Load	·)
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Institution resistance Town 2 minimum (sour DC) Dielectric Strength Between power and output terminals: 2000V AC, 1 minute Between contacts of different poles: 2000V AC, 1 minute Between contacts of different poles: 2000V AC, 1 minute Jibration Resistance 10 to 55Hz amplitude 0.5mm 2 hours in each of 3 axes Shock Operating extremes 98m/sec² (10G) 3 times in each of 3 axes Shock Operating extremes 98m/sec² (10G) 3 times in each of 3 axes Shock Operating extremes 98m/sec² (10G) 3 times in each of 3 axes Segree of Protection IP40 (enclosure), IP20 (socket) (IEC60529) Power Consum- Z40AC [120V AC/60Hz 6.5VA 240AC [120V AC/60Hz 6.5VA 240AC [120V AC/60Hz 1.6VA Approx.) TRNP, TRFP Very 2 1.6W Mounting Position Free Dimensions TRNP, TRFP Very 3 89g For the value of the error against a preset time, whichever value is larger should be applied. Mather with the Electronic Timer for an emergency stop circuit interlocking circuit. If the Electronic Timer for an emergency stop circuit interlocking circuit. If the Electronic Timer for an emergency stop circuit interlocking circuit. If the Electronic Timer for an emergency stop circuit interlocking circuit. If the Elec						001/201						timer on	eration ma	av cause
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Weight (Approx.) TRNP TRFP TRNB, TRFB For the value of the error against a preset time, whichever value is larger should be applied. • Turn power off to the Electronic timer before starting installating wiring, maintenance, and inspection on the Electronic Timer for an emergency stop circuit interlocking circuit. If the Electronic Timer should fail, a maching the toturn, or accident may occur. APPLICABLE STANDARDS UL508, CSA C22.2 No.14, IEC61812-1, EN61812-1 EMC EC61000-4-2 Electrostatic Ievel 3 Contract + 6 Ok/L Air + 8 Ok/L IEC61000-4-2	nensions							importance to	-			d to a		
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For the value of the error against a preset time, whichever value is larger should be applied. wiring, maintenance, and inspection on the Electronic Time for an emergency stop circuit interlocking circuit. If the Electronic Timer should fail, a machine breakdown, or accident may occur. VPPLICABLE STANDARDS UL508, CSA C22.2 No.14, IEC61812-1, EN61812-1 EMC EMC Electrostatic Ievel 3 Contract to Contrac	igin (Appro	UA.)							f to the E	lectronic ti	mer befo	re starting	installation,	removal,
should be applied. NPPLICABLE STANDARDS UL508, CSA C22.2 No.14, IEC61812-1, EN61812-1 EMC Iectrostatic Iectro	or the value	e of the erro						wiring, mainte	enance,	and inspe	ection or	the Elect	tronic Timer	r. Í
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EMC Caution notices are used where inattention personal injury or damage to equipment. Caution administration Caution notices are used where inattention personal injury or damage to equipment.								interlocking ci	rcuit. If th	e Electron	ic Timer			disorder,
lectrostatic level 3 [EC61000-4-2]	JL508, CSA	A C22.2 No	io.14, IEC618	812-1, EN61	1812-1			۵				where ins	attention mic	tht cause
$V_{instanton}$ Contact + 6 0k// Air + 8 0k// ENG1000 4.2						T	IEC61000-4-2	Caution						, n cause
The Electronic Time is designed for installation in equip	MC	Co	Contact±6.0k	kV, Air±8.0k	ĸV		EN61000-4-2							ent.
lectromagnetic level 3 [EC61000-4-3] Do not install the Electronic Timer outside equipment.	MC ctrostatic charge			30% 80M-10	000MH-		IEC61000-4-3	Do not install	I the Ele	ctronic Ti	mer outs	side equip	ment.	
Field 10V/m, AM 80%, 80M-1000MHz EN61000-4-3 Install the Electronic Timer in environments described in this sheet and the catalog. If the Electronic Timer is used in place Fast Transient/Burst level 3 IEC61000-4-4 sheet and the catalog. If the Electronic Timer is used in place	MC ctrostatic charge ctromagnet			55 /0, 00IVI- I (50011112			sheet and the	catalog.	If the Elec	tronic Ti	mer is use	d in places v	where the
Power Supply: ±2.0kV EN61000-4-4 Electronic Timer is subjected to high-temperature, high	MC ctrostatic charge ctromagnel ld		vel 3											umidity,
Surge 240AC level 3 Power Supply: Line to Line +1 0kV ENG1000-4-5 Bower Supply: Line to Line +1 0kV ENG1000-4-5	MC ctrostatic charge ctromagnel ld	nt/Burst leve		y: ±2.0kV			EN61000-4-4							
Line to Ground +2 0kV Environment + 10000 + 10000 + 10000 + 10000 + 10000 + 10000 + 10000 + 10000 + 10000 +	MC ctrostatic charge ctromagnet Id st Transient	nt/Burst leve Po 240AC leve	Power Supply vel 3			1	IEC61000-4-5	condensation	n, corros	ive gases	, excess	ive vibrat	ions, and ex	cessive
24AD level 2 ADD Power Supply: Line to Line ±0.5kV output line outside the Electronic Timer. Do not disassemble, repair, or modify the Electronic Tim	MC ctrostatic charge ctromagnet Id st Transient	nt/Burst leve Po 240AC leve	Power Supply vel 3	y: Line to Lin	ne ± round ±	1.0kV		condensation shocks, then • Use an IEC60	n, corros electrica 0127-apr	ive gases al shocks, proved fus	, excess fire haz e and cir	ive vibrat ard, or ma cuit break	ions, and ex alfunction wi	cessive

level 2 Power Supply: Line to Line ±0.5kV Line to Ground ±1.0kV

CISPR 11 EN55011

24AD 12DC

Radiated Emission Group 1 Class A

condensation, corrosive gases, excessive vibrations, and excessive shocks, then electrical shocks, fire hazard, or malfunction will result.
Use an IEC60127-approved fuse and circuit breaker on the power and output line outside the Electronic Timer.
Do not disassemble, repair, or modify the Electronic Timer.
When disposing of the Electronic Timer, do so as an industrial waste.

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ET-N Cutler-Hammer http://www.cutler-hammer.eaton.com Instruction Sheet B-804-2 Mar 2004

OPERATION CHART

TRNP, TRNB

A: ON-Delay 1 (power start) Set timer for desired delay, apply power to coil. Contacts transfer after preset time has elapsed, and remain in transferred position until timer is reset. Reset occurs with removal of power.

ltem	Terminal No.	Operation	
Power	(1)2-7 (2)A-B		
Delayed	(1)1-4,5-8 (2)1-7,3-9 (NC)		
Contact	(1)1-3,6-8 (2)4-7,6-9 (NO)		
	PWR		
Indicator	ουτ		
Set Time		т	

C: Cycle 1 (power start, OFF first)

Set time for desired delay, apply power to coil. First transfer of contacts occurs after preset delay has elapsed, after the next elapse of preset delay contacts return to original position. The timer now cycles between on and off as long as power is applied.(duty ratio 1:1).

ltem	Terminal No.			Opera	tion		
Power	(1)2-7 (2)A-B						1
Delayed	(1)1-4,5-8 (2)1-7,3-9 (NC)		1		1		
Contact	(1)1-3,6-8 (2)4-7,6-9 (NO)						
Indicator	PWR						
Indicator	ουτ						
Set Time		T	• _ •				

A: ON-Delay 2 (signal start)

When a preset time has elapsed after the start input turned on while power is on, the NO output contact goes on.

item	Terminal No.		Ope	ration			
Power	(A)2-10 (B)A-B						1
Start	(A)5-6 (B)2-5						
Delayed	(A)1-4,8-11 (B)1-7,3-9 (NC)				1		
Contact	(A)1-3,9-11 (B)4-7,6-9 (NO)						
	PWR						
Indicator	ουτ						
Set Time			- T		ļ	Ta	1

C: Cycle 4 (signal start, ON first)

When the start input turns on while power is on, the NO contact goes on. The output oscillates at a preset cycle (duty ratio 1:1).

ltem	Terminal No.			Oper	ration						
Power	(A)2-10 (B)A-B										
Start	(A)5-6 (B)2-5										
Delayed	(A)1-4,8-11 (B)1-7,3-9 (NC)			I		1		1		1	
Contact	(A)1-3,9-11 (B)4-7,6-9 (NO)										
	PWR										
Indicator	ουτ										
Set Time			T	T	T	T	T	T	T	Ta	

E: Signal OFF-Delay

When power is turned on while the start input is on, the NO output contact goes on. When a preset time has elapsed after the start input turned off, the NO output contact goes off.

ltern	Terminal No.			Op	er	ation				
Power	(A)2-10 (B)A-B									
Start	(A)5-6 (B)2-5		1							
Delayed	(A)1-4,8-11 (B)1-7,3-9 (NC)							Π		
Contact	(A)1-3,9-11 (B)4-7,6-9 (NO)									
	PWR						2 (2 () 2 (2 (
Indicator	OUT									
Set Time			••		1	Ta	• _ •		Ta	

Note : T=Set Time, Ta=Shorter than set time, (1): TRNP, (2): TRNB, (A): TRFP, (B): TRFB



B: Interval (power start) Set timer for desired delay, apply power to coil. Contacts transfer immediately, and return to original position after preset time has elapsed. Reset occurs with removal of power.

ltem	Terminal No.	Operation
Power	(1)2-7 (2)A-B	
Delayed	(1)1-4.5-8 (2)1-7.3-9 (NC)	
Contact	(1)1-3,6-8 (2)4-7,6-9 (NO)	
	PWR	
Indicator	OUT	
Set Time		F T

D: Cycle 3 (power start, ON first)

Functions in same manner as Mode C, with the exception that first transfer of contacts occurs as soon as power is applied. The ratio is 1:1. Time On = Time Off

item	Terminal No.			Operation	า	
Power	(1)2-7 (2)A-B					
Delayed	(1)1-4,5-8 (2)1-7,3-9 (NC)					
Contact	(1)1-3,6-8 (2)4-7,6-9 (NO)					
Indicator	PWR					
Indicator	OUT					
Set Time			• - •			

TRFP. TRFB

B: Cycle 2 (signal start, OFF first)

When the start input turns on while power is on, the output oscillates at a preset cycle (duty ratio 1:1), starting while the NO contact off.

ltern	Terminal No.				Opera	ation						
Power	(A)2-10 (B)A-B											
Start	(A)5-6 (B)2-5											
Delayed	(A)1-4,8-11 (B)1-7,3-9 (NC)		1				1				1	
Contact	(A)1-3,9-11 (B)4-7,6-9 (NO)											
Indicator	PWR											
mulcator	ουτ											
Set Time		T	T	T	T	T	T	T	T	T	Ta	

D: Signal ON/OFF-Delay When the start input turns on while power is on, the NO output contact goes on. When a preset time has elapsed while the start input turns off, the NO contact goes off. goes off. When the start input turns off, the NO contact goes on again. When a preset time has elapsed after the start input turned off, the NO contact goes off.



F: One-Shot (signal start)

When the start input turns on while power is on, the NO output contact goes on. When a preset time has elapsed, the NO output contact goes off.

ltem	Terminal No.		Operation		
Power	(A)2-10 (B)A-B				
Start	(A)5-6 (B)2-5		7		
Delayed	(A)1-4,8-11 (B)1-7,3-9 (NC)				
Contact	(A)1-3,9-11 (B)4-7,6-9 (NO)				
1	PWR				
Indicator	OUT				
Set Time		• _ •		 Ta Ta	

CAUTION: TREP:

TRFB

start

Do not apply voltage to terminals #5, #6 and #7. TRNB, TRFB: Do not apply voltage to terminals #2, #5 and #8. NOTE: UL ratings for Eaton Electrical's sockets to be used with

these timers are "Conductor temperature rating 60°Cmin., use copper conductors only, solid 12AWG max. (3.5mm²max.) Terminal torque 8 to 10lb.- in (0.9 to 1.1 N-m)."

Eaton Electrical's sockets are as follows TRNP: D3PA2 pin type socket. TREP D3PA3-A2 pin type socket TRNB, TRFB: D5PA2 blade type socket. UL Ambient Temperature: 0 to 40°C