OPERATING INSTRUCTIONS

Cat. No. ETRD-P45MF2

Please retain these instructions and review them prior to using the unit:

⚠ WARNING :

1. This unit is panel mounted type with its output terminals getting connected to the host equipment. Such equipment shall also comply with basic EMI / EMC and safety requirements like BS EN 61326-1 and BS EN 61010 respectively.
2. To avoid electric shock, power supply of the unit should be kept off while wiring. Wiring should be done strictly as per the terminal layout, given in the manual.
3. Use lugged terminals to accept M3.5 (No. 6) screws.
4. The unit does not have a built-in fuse. External fuse with a rating of 275V AC/1A is recommended.

⚠ CAUTION :

1. This unit is not intended for outdoor use.
2. The power connection cable must have a cross section of at least 18 AWG (1mm^2) and insulation capacity of at least 1.5kV.
3. The output connections must not be loaded beyond the specified values/range.
4. Avoid inflow of dust and contact of conductive material with the internal circuitry of the unit.
5. The unit must not operate in presence of heating sources, caustic vapors, oil, steam, vibration or impact etc.
6. Clean the equipment with a clean, soft cloth. Do not use any organic cleaning agent.

FRENCH

Veuillez passer en revue les instructions ci-dessous avant d'utiliser le produit et les conserver pour consultation ultérieure.

⚠ AVERTISSEMENT :

1. Ce produit est monté en façade et ses broches de sortie sont connectées à l'équipement. Cet équipement doit être conforme aux exigences CEM de la norme BS EN 61326-1 et aux exigences de sécurité BS EN 61010.
2. Pour éviter un choc électrique, le câblage de l'appareil doit se faire avec son électrique hors tension.
   Le câblage sera fait conformément au schéma de branchement joint.
3. Utilisez des cosses à œillets compatible avec des vis M3.5 4.L'appareil ne dispose pas d'un fusible intégré. Un fusible externe 1A/275V AC est recommandé.

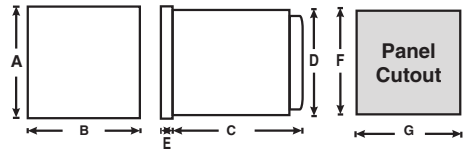
⚠ ATTENTION :

1. Cet appareil n'est pas destiné à une utilisation en extérieur.
2. Le câble de raccordement électrique doit avoir une section minimale de 1 mm² (18 AWG) et une classe d'isolement d'au moins 1,5 kV.
3. Ne pas dépasser les valeurs de pouvoir de coupure spécifiées pour la gamme considérée.
4. Les parties internes électriques de l'appareil ne doivent pas être en contact avec des matériaux conducteurs et de poussière
5. L'appareil ne doit pas fonctionner en présence de sources de chaleur, vapeurs chimiques, huile, vapeur d'eau, vibrations, choc…
6. Nettoyez l'appareil avec un chiffon doux et propre. Ne pas utiliser d'agent de nettoyage organique.

SPECIFICATIONS

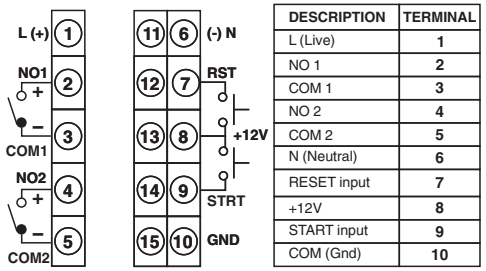
1	Supply Voltage	85 to 270V AC/DC (AC: 50/60 Hz), 24V DC
2	Display	Dual 4 digit 7 segment LED. Upper Display (current value) : 10mm height, red color Lower display (selectable) : 7mm height, green color.
3	Operating modes	**Timer : Relay1** : ON Delay, Interval, Cyclic ON first, Cyclic OFF first, Instantaneous + Delayed at start pulse, Instantaneous + Delayed at power ON, Motor reverse.
		Timer : Relay 2 : ON Delay, Interval, Cyclic ON first, Cyclic OFF first, Batch, NC.
4	Time Ranges	**Timer :** 99.99/999.9/9999sec, 99:59min:sec, 999.9/9999min, 99:59hr:min, 999.9/9999hr.
5	Direction	Up / Down.
6	LED Indications	Relay 1 status, Relay 2 status, sec, min, hr.
7	Set points	Dual.
8	Start input	Pulse start, Gate start.
9	Sensor Supply	12V DC, 30mA (Short circuit protected).
10	Reset	On power interruption, Front panel reset, Terminal reset.
11	Output	2 SPST (NO)
12	Relay rating	5A@250V AC/24V DC, Resistive.
13	Power Consumption	5VA max.
14	Memory retention	10 years.
15	Accuracy	**Timer :** ± 0.05% of setting or 50msec whichever is greater.
16	Mounting	Panel mounting.
17	Temperature	Operating : 0 to +50°C (32 to 122°F). Storage : -20 to +75°C (-4 to 167° F).
18	Humidity	95% RH. Non-condensing
19	Housing	Flame retardant engineering plastic.
20	Weight	175g (6.2 oz.)

PANEL DIMENSIONS



MODELS \ DIM	A	B	C	D	E	F	G
ETRD-P45	48mm (1-57/64")	48mm (1-57/64")	100mm (3-15/16")	45mm (1-49/64")	11mm (27/64")	46mm (1-13/16")	46mm (1-13/16")

TERMINAL CONNECTIONS

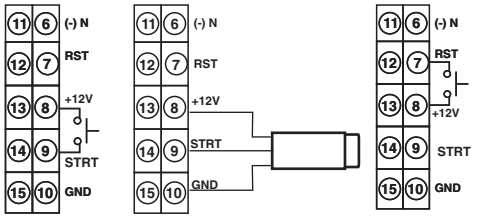


DESCRIPTION	TERMINAL
L (Live)	1
NO 1	2
COM 1	3
NO 2	4
COM 2	5
N (Neutral)	6
RESET input	7
+12V	8
START input	9
COM (Gnd)	10

JUMPER SELECTION FOR START INPUT THROUGH PROXIMITY SWITCH :

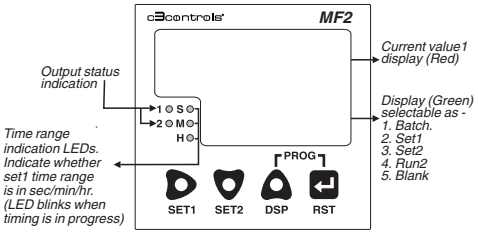
INPUT SENSOR	JUMPER SELECTION Top view of jumpers with housing removed and display on the right side
PNP	
NPN	

INPUT CONNECTIONS



Note : Color codes for proximity sensors- Brown / Red --> +12V, Black / Green --> CNT, Blue / Black --> GND.

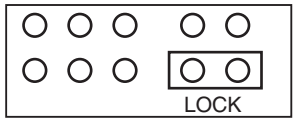
FRONT PANEL IDENTIFICATION



KEYS	FUNCTIONS
D + ↵	Enter / Exit configuration mode
D	1. Selects the digit to be altered. Selected digit blinks. With every press of D key, next digit towards the right starts blinking. 2. Programming for Set 1.
▼	1. Decrements value of blinking digit. 2. Scrolls down to previous option for config. parameter. 3. Programming for Set 2.
▲	1. Increments value of blinking digit. 2. Scrolls up to next option for config. parameter. 3. Programming lower display options 4. Display Batch value.
↵	1. Scrolls to next config. parameter and stores for previous parameter setting. 2. Front panel RST.

JUMPER SELECTION TO DISABLE LOCK

In case, the lock password is forgotten or Lock function is not required, connect jumpers as shown in fig. Below to disable lock.



(Top view of jumpers with housing removed and display on the right side.)

CONFIGURATION SCHEME :

NOTE : Press ↵ after every programming change for EEPROM storage. If no key is pressed for 1min, the unit will auto exit from configuration.

Upper display	Lower display	Description
Press ▲ + ↵ keys to enter configuration		
Note: Valid only if lock is enabled in configuration.		
Configuration Lock		*Default : 0000.*
LOCY	0000 * ***NOTE :*** The selected digit blinks.	Enter a valid lock ID to enter configuration. Press ▶ to select the digit and ▲ / ▼ to change value of the selected digit
Press ↵ key to enter programming for Relay1 operating mode		
Relay1 operating mode.		*Default : ON Delay*
rLI.n	ON → INt → CY.On → CY.OF → Id-S → Id-P → nn	**Relay1 operating mode :** ON Delay / Interval / Cyclic ON first / Cyclic OFF first / Instantaneous + delayed at start pulse / Instantaneous + delayed at power on / Motor reverse. ***NOTE :*** Refer waveforms for details.
Press ↵ key to enter programming for Start Time range.		
Note : Start time not valid for motor reverse mode.		
Time range for Start time.		*Default : 999.9 sec*
St-S → St-n → St-H	99.99 → 999.9 → 9999 → 99.59 → 999.9 → 9999	**Time ranges :** 99.99sec, 999.9sec, 9999sec / 99:59min:sec , 999.9min, 9999min, / 99:59hr:min, 999.9hr, 9999hr.

Upper display	Lower display	Description
Press ↵ key to enter programming for Pause Time range.		
Note : Pause time range valid only for motor reverse mode.		
Time range for Pause time		*Default : 999.9 sec*
PS-S → PS-n → PS-H	99.99 → 999.9 → 9999 → 99.59 → 999.9 → 9999	**Time ranges :** 99.99sec, 999.9sec, 9999sec, / 99:59min:sec , 999.9min, 9999min, / 99:59hr:min, 999.9hr, 9999hr.
Press ↵ key to enter programming for ON Time range.		
Time range for ON time		*Default : 999.9sec*
On-S → On-n → On-H	99.99 → 999.9 → 9999 → 99.59 → 999.9 → 9999	**Time ranges:** 99.99sec, 999.9sec, 9999sec, / 99:59min:sec , 999.9min, 9999min, / 99:59hr:min, 999.9hr, 9999hr.

Upper display	Lower display	Description
Press ↵ key to enter programming for OFF Time range.		
NOTE : Off time range valid only for Cyclic modes.		
Time range for OFF time		*Default : 999.9 sec*
OF-S → OF-n → OF-H	99.99 → 999.9 → 9999 → 99.59 → 999.9 → 9999	**Time ranges:** 99.99sec, 999.9sec, 9999sec, / 99:59min:sec , 999.9min, 9999min, / 99:59hr:min, 999.9hr, 9999hr.
Press ↵ key to enter programming for No. of cycles.		
Note: Valid only for Cyclic modes.		
No. of cycles		*Default : 0000.*
CYCL	0000 *	**No. of cycles :** 0000 to 9999. Set the no. of On-Off operations in cyclic mode. Press ▶ to select the digit and ▲ / ▼ to change value of the selected digit
Press ↵ key to enter programming for Relay 2 function.		
NOTE : Not valid for Instantaneous + delayed & motor reverse modes		
Relay 2 function		*Default : Timer 2.*
rL2	tmr2 → nC → btCH	**Relay 2 function :** Relay 2 will function as: Timer / NC contact for relay1 / Batch. *NOTE :* When using relay2 as NC short COM1 and COM2.
Press ↵ key to enter programming for Relay 2 mode		
NOTE : Valid only if relay 2 is functioning as Timer.		
Relay 2 mode		*Default : On delay.*
rL2.n	ON → INt → CY.On → CY.OF	**Relay 2 operating mode :** On delay / Interval / Cyclic On first / Cyclic Off first.

Upper display	Lower display	Description
Press ↵ key to enter programming for Start Time range.		
Time range for Start time.		*Default : 999.9sec.*
St-S → St-n → St-H	99.99 → 999.9 → 9999 → 99.59 → 999.9 → 9999	**Time ranges:** 99.99sec, 999.9sec, 9999sec, / 99:59min:sec , 999.9min, 9999min, / 99:59hr:min, 999.9hr, 9999hr.
Press ↵ key to enter programming for ON Time range.		
Time range for ON time		*Default : 999.9sec.*
On-S → On-n → On-H	99.99 → 999.9 → 9999 → 99.59 → 999.9 → 9999	**Time ranges :** 99.99sec, 999.9sec, 9999sec, / 99:59min:sec , 999.9min, 9999min, / 99:59hr:min, 999.9hr, 9999hr.

Upper display	Lower display	Description
Press ↵ key to enter programming for OFF Time range.		
NOTE : Valid only for Cyclic modes.		
Time range for OFF time		*Default : 999.9 sec.*
OF-S OF-n OF-H	99.99 → 999.9 → 9999 → 99.59 → 999.9 → 9999 → 99.59 → 999.9 → 9999	**Time ranges:** 99.99sec, 999.9sec, 9999sec, 99:59min:sec , 999.9min, 9999min, 99:59hr:min, 999.9hr, 9999hr.
Press ↵ key to enter programming for No. of cycles.		
No. of cycles		*Default : 0000.*
NOTE : Valid only for Cyclic modes.		
CYCL	0000 *	**No. of cycles :** 0000 to 9999. To set the no. of On-Off operations in cyclic mode. Press ▷ to select the digit and ▲/▼ to change value of the selected digit
Press ↵ key to enter programming for Direction		
Counting Direction		*Default : Down*
dIRN	doWN ↔ UP	**Direction :** Up and Down **Up :** Counting starts from 0 and proceeds towards set point. **Down :** Counting starts from set point and proceeds down to 0.
Press ↵ key to enter programming for Start.		
Start		*Default : Pulse*
StRt	PULS ↔ GATE	**Start :** Pulse / Gate. **Pulse :** Timing starts on momentary closure of switch connected between terminals 8 & 9 **Gate :** Timing starts at power on. When the switch between terminals 8 & 9 is closed, the timing freezes and resumes only after the switch is released.

Upper display	Lower display	Description
Press ↵ key to enter programming for front panel batch reset		
Front panel batch reset.		*Default : Yes*
FPbR	YES ↔ NO	**Front panel batch reset :** Yes / No. **Yes:** Batch value can be reset from front panel. **No:** Batch value cannot be reset from front panel
Press ↵ key to enter programming for Batch reset		
Batch reset		*Default : No*
NOTE : Prompted only if Front panel batch reset is No.		
bRSt	YES ↔ NO	**Batch reset :** Yes / No. **Yes :** Batch value is reset immediately. **No :** Batch value is not reset.
Press ↵ key to enter programming for Front panel reset		
Front panel reset.		*Default : Yes*
FPn	YES ↔ NO	**Front panel reset :** Yes / No. **Yes :** Unit can be reset from the front panel. **No :** Unit cannot be reset from the front panel.
Press ↵ key to enter programming for Power on reset		
Power on reset.		*Default : No*
POn	NO ↔ YES	**Power on reset ranges :** Yes / No. **Yes :** Unit is reset on power interruption. **No :** Unit is not reset on power interruption.
Press ↵ key to enter programming for Lock		
Lock		*Default : No*
LOCK	YES ↔ NO	**Configuration lock :** Yes / No. **Yes :** Configuration lock is enabled. **No :** Configuration lock is disabled.
Press ↵ key to enter programming for Lock ID		
NOTE : Valid only if Lock = Yes.		
Lock ID		*Default : 0000.*
Id	0000 *	**Lock ID :** 0000 to 9999. Press ▷ to select the digit and ▲/▼ to change value of the selected digit
Press ↵ key to enter programming for Reset all.		
Reset all parameters to default		*Default : No*
dFLt	YES ↔ NO	**Reset all parameters to default :**Yes / No **Yes :** All parameters are set to factory set values. All set points are set to 0.

PROGRAMMING - TIMER

[ ] → **Temporary display :** Lower display shows parameter name for 1sec and then its value.

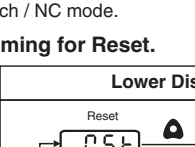
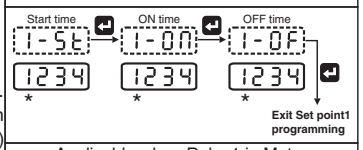
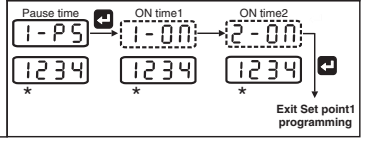
Enter programming as per the given procedure.

To program set points: Press ▷ to select the digit. The selected digit blinks. Press ▲/▼ key to change its value. Press ↵ key to go to the next parameter (if applicable). If the edited parameter is the last parameter, the unit will quit programming.

To select lower display options: Press ▲/▼ key to select particular option and then press ↵ key to quit programming.

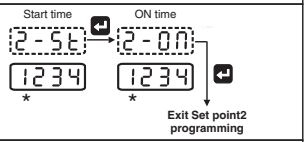
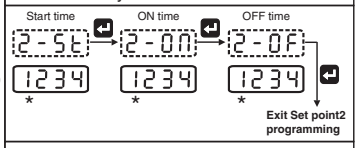
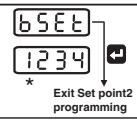
To select reset option: Press ▲/▼ key to select particular option and then press ↵ key for 1.5 sec to quit programming.

1. Programming for Set point1:

Press Key	Lower Display
▷ for 1.5sec. to Enter Set1 programming. (Auto program out after 1min)	Applicable when Relay1 is in On delay / Interval / I + D modes.  Applicable when Relay1 is in Cyclic mode.  Applicable when Relay1 in Motor reverse mode. 

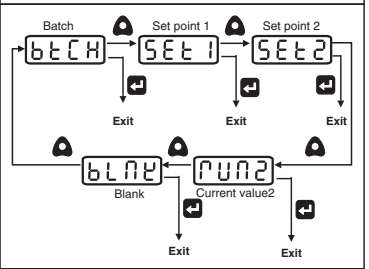
2. Programming for Set point 2 :

Note : Not valid when relay 2 is functioning as NC.

Press Key	Lower Display
▼ for 1.5 sec to Enter Set2 programming. (Auto program out after 1min)	Applicable when Relay2 is working as Timer2 in On delay / Interval mode.  Applicable when Relay2 is working as timer2 in Cyclic mode.  Applicable when Relay2 is in Batch mode. 

NOTE : * sign indicates that the digit blinks.

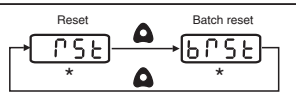
3. Programming for Lower display options :

Press Key	Lower Display
▷ for 1.5sec. to Enter programming for Lower display option (Auto program out after 1min)	

Note 1: * sign indicates that the display blinks.

Note 2: Set 1 and Run 2 not displayed when relay 1 is in Instantaneous + Delayed / Motor reverse mode or when relay2 is in Batch / NC mode.

4. Programming for Reset.

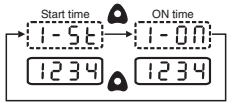
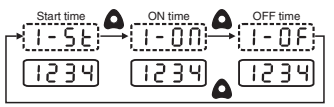
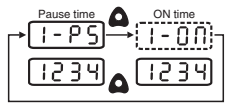
Press Key	Lower Display
↵ for 1.5 sec to Enter / Exit programming for reset.	

NOTE : * sign indicates that the display blinks.

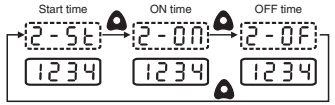
Read Function

[ ] → **Temporary display:** Lower display shows parameter name for 1sec and then its value

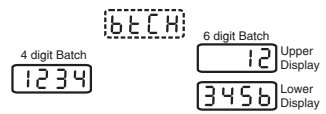
1. Reading of Set 1 parameters :

Press Key	Lower Display
▷ for 1.5sec. to Enter Set1 programming. (Auto program out after 1min)	Applicable when Relay1 is in On delay / Interval / I + D modes.  Applicable when Relay1 is in Cyclic mode.  Applicable when Relay1 in Motor reverse mode. 

2. Reading of Set 2 parameters :

Press Key	Lower Display
for 1.5 sec to Enter Set2 programming. (Auto program out after 1min)	Applicable when Relay2 is working as Timer2 in On delay / Interval mode.
	
	Applicable when Relay2 is working as timer2 in Cyclic mode.
	
	Applicable when Relay2 is in Batch mode.
	

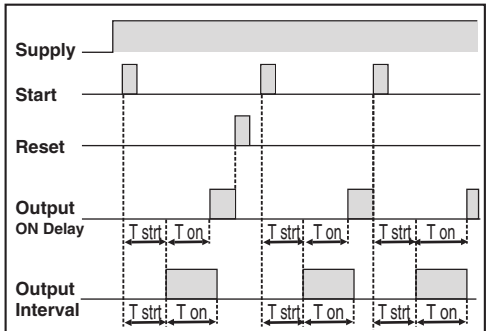
3. Reading Batch.

Press Key	Lower Display
momentarily to read batch value. Auto exit from Read function if key is not pressed within 3 sec.	 6 digit batch can be read with 2MSDs on the upper display.

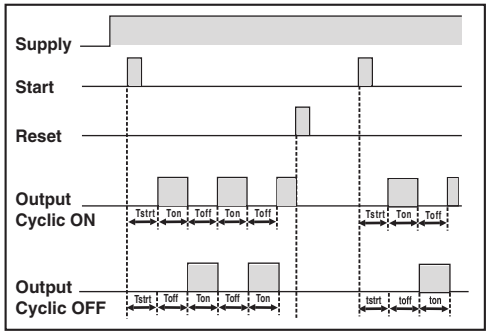
NOTE :
When viewing 6 digit batch value, lower display LSD dp blinks and batch value is displayed for 3 sec. If lower display is selected as batch, and batch value exceeds 4 digits, the lower display LSD dp is on continuously indicating that the batch value has exceeded 4 digits.

MODE OF OPERATION

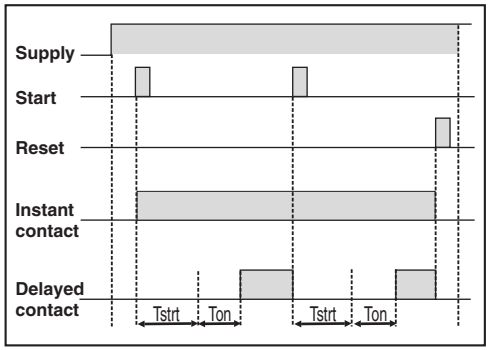
1. On delay, Interval modes:



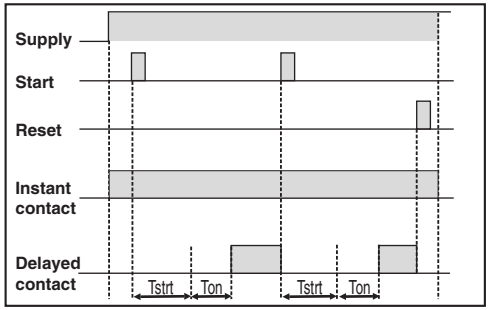
2. Cyclic ON first, Cyclic OFF first modes:



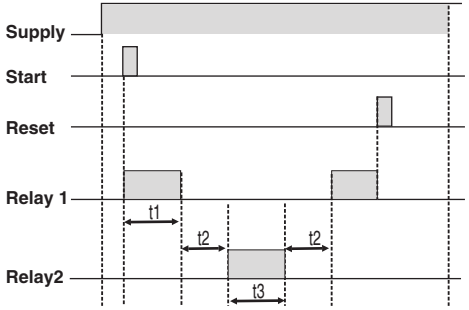
3. Instantaneous + Delayed at start pulse:



4. Instantaneous + Delayed at power on:

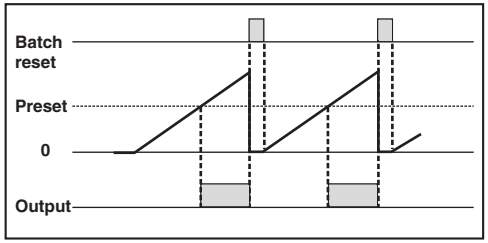


5. Motor reverse mode:

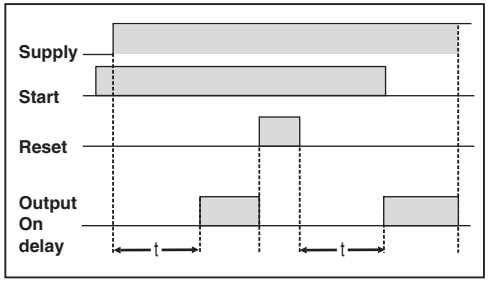


t1 = On time of relay1, t3 = On time of relay2,
t2 = Pause time

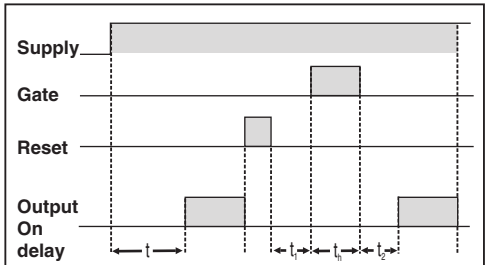
6. Batch mode



Typical application of Continuous start and reset in On delay mode :



Typical application of Gate start in On delay mode :



$t_1 + t_2 = t$ (set time), t_h = hold time.

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NOTE : Specifications subject to change without notice.
Refer to website for product updates.