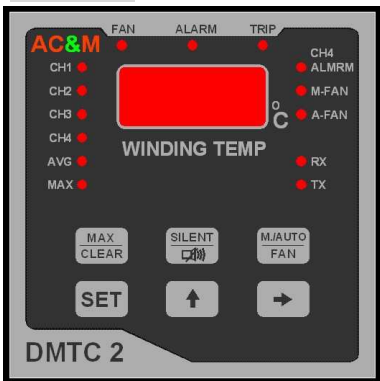


1. Panel



**Features :**  
 Display Range: RTD 0-400°C  
 3 Phase winding / Average / Maximum temperature.  
 Page-turning: Auto/Manual mode  
 Over temperature protection: Alarm /Fan /Trip  
 Auto fan operation / Manual fan operation  
 Drive 2 industrial fans directly.  
 Protection for broken-sensor, preventing wrong action  
 Built-in high decibel buzzer.  
 RS-485 Modbus RTU  
 Analog DC 4-20mA output.  
 With one additional input, relay is controlled independently

1-1 Keys

Key	Function	Instruction
SET	Setting	Press 2 second to enter setting mode
↑	Change number	Change number (increase) / Turn page (up)
→	Change position	Change number (decrease) / Turn page(down)
SILENT	Silent	In alarm mode: stop the alarm (ON/OFF).
M./AUTO FAN	Manual / Auto fan operation	Press 2 second to select Manual or Auto fan operation.
MAX CLEAR	Clear	Press 2 second to clear the max.temperature record.

1-2 Indicators

Name	Instruction	Name	Instruction
Fan	Fan is activated	Ch2	2 <sup>nd</sup> winding temperature
Alarm	Alarm is activated	Ch3	3 <sup>rd</sup> winding temperature
Trip	Trip is activated	Ch4	4 <sup>th</sup> winding temperature(optional)
M-Fan	Manual fan operation is activated	Avg	Average temperature of 3 phase
Ch4-Alm	The 4 <sup>th</sup> relay is activated	Max	Max. temperature of 3 phase
Ch1	1 <sup>st</sup> winding temperature	RXD/TXD	RS-485 indicator

2. Parameter setting

2-1 Unlock key

Press ↑ and ↓ to unlock. (Display F66)  
 Not operating for 1 Min , keys will be locked (DisplayF22).

2-2 Setting mode

(Press ↑ and ↓ for 3 seconds to unlock key.)

In F66 mode, press SET to enter setting mode. Press “↑” and “↓” to set parameters.

Setting Procedure	Function	Instruction
PressS 150	Trip start temperature	Press “↑” “↓” and “Shift” to set trip temperature (1-250°C). Press SET to enter next setting.
PressS 130	Alarm start temperature	Press “↑” “↓” and “Shift” to set alarm temperature(1-250°C) Press SET to enter next setting.
PressS 100	Fan start temperature	Press “↑” “↓” and “Shift” to set fan start temperature (1-250°C) Press SET to enter next setting.
PressS 90	Fan stop temperature	Press “↑” “↓” and “Shift” to set fan stop temperature (1-250°C) Press SET to enter next setting.
PressS 70	CH4 relay start	Press “↑” “↓” to set temperature for CH4 alarm ON(1-250°C) Press SET to enter next setting. (RTD 3units / K_Type without this setting)
PressS 65	CH4 relay stop	Press “↑” “↓” to set temperature for CH4 alarm OFF(1-250°C) Press SET to enter next setting. (RTD 3units / K_Type without this setting)
PressS 30	Fan operation (Duration:1-99M)	Press “↑” “↓” and “Shift” to set fan operation duration. Press SET to enter next setting. (30 = 30minutes )
PressS d 12	Fan operation (Cycle:1-99H)	Press “↑” “↓” and “Shift” to set fan operation cycle. Press SET to enter next setting. (d 12 =fan operates every 12 hours)
PressS A01	Address	Press “↑” “↓” and “Shift” to set address : (1-99) Press SET to enter next setting.
PressS 96	Baudrate	Press “↑” “↓” to set baudrate; (1200-2400-4800-9600-19200-38400-57600) Press SET to enter next setting.
PressS 8n1	Communication Form	Press “↑” “↓” to set 8n1-8n2-8E1-8o1 Press SET to enter next setting.
PressS OP6	O/P corresponding signal	Press “↑” “↓” and “Shift” to select O/P corresponding signal Press SET to enter next setting. (Please refer to the table 2-3)
PressS 200	O/P corresponding temperature OP_HI	Press “↑” “↓” and “Shift” to set the maximum temperature. Press SET to enter next setting.
PressS 0	O/P corresponding temperature OP_LO	Press “↑” “↓” and “Shift” to set the minimum temperature. Press SET to enter next setting.
PressS SAu	Save	Press SET to select YES / no to confirm setting.

2-3 Analog output corresponding signal

OP1	CH1 temperature	OP4	CH4 temperature
OP2	CH2 temperature	OP5	Average temperature
OP3	CH3 temperature	OP6	Auto detects the max. temperature of 3 phase

2-4 Cold-junction compensation

(PT100 RTD TYPE without this function)

Adjustment range: ± 5°C

In F66 mode, press SET for 8 seconds to enter setting mode.

Press “↑” to increase. 1Press/+1°C

Press “↓” to decrease. 1Press/-1°C

### 3.Communication Protocol

MODBUS – RTU MODE

#### Data form

(ID Number) 1Byte	(Function Code) 1Byte	(Data) N Byte	CRC 2 Byte
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#### Function code

03 (03H)	Read several parameters
06 (06H)	Set parameter

#### EX1. Read DMTC CH1 temperature

Master sends message TX : 01 03 00 00 00 01 84 0a				
ID Number 1Byte (01H)	Function Code 1Byte (03H)	Address 2Byte (00 00H)	Data number 2Byte (00 01H)	CRC 2Byte (84 0aH)

If the meter displays 50°C

Meter responses to master RX : 01 03 02 00 32 39 91				
ID Number (01H)	Function Code (03H)	Data Byte (02H)	Data (00 32H)	CRC (39 91H)

#### EX2. Read several parameters of the meter.

Master sends message				
ID Number 1Byte (01H)	Function Code 1Byte (03H)	Address 2Byte (00 01H)	Data number 2Byte (xxH,xxH = N)	CRC 2Byte (xxH,xxH)
Meter responses to master				
ID Number (01H)	Function Code (03H)	Data Byte (XXH = N)	Data (N*2Byte) XxH,xxH.xxH.....	CRC (xxH,xxH)

#### EX3. Set trip temperature as 150°C

Master sends message TX : 01 06 00 0A 00 96 29 A6				
ID Number 1Byte (01H)	Function Code 1Byte (06H)	Address 2Byte (00 0aH)	Data 2Byte (00 96H)	CRC 2Byte (29 a6H)

#### 2-4 Parameter/Address cross reference

	Modbus Address	Name	Length	Range / Explanation	Read/Write
00	40001	CH1	1Word	0-999 Integer	R
01	40002	CH2	1Word	0-999 Integer	
02	40003	CH3	1Word	0-999 Integer	

03	40004	CH4 CJC	1Word	0-999 Integer The 4 <sup>th</sup> RTD / K_Type (CJC)	R
04	40005	Avg.Temp	1Word	0-999 Integer	
05	40006	Max.Temp	1Word	0-999 Integer	
06	40007	MAX Temp	1Word	0-999 Integer MS_Byte 0001 CH1 0010 CH2 0011 CH3 0100 CH4	
07	40008	Fan starts	1Word	0-999 Integer	R/W
08	40009	Fan stops	1Word	0-999 Integer	
09	40010	Alarm starts	1Word	0-999 Integer The 4 <sup>th</sup> RTD / K_Type (CJC) Integer	
10	40011	Trip starts	1Word	0-999 Integer	
11	40012	Fan operation duration.	1Word	0-999 Integer (Minute)	
12	40013	Fan operation cycle.	1Word	0-999 Integer (Hour)	

### 4.Error and troubleshooting

Display	LED indicator	Problem	Check
Err blinks	CH1 on	CH1 input is open or A is broken.	Check the input connection.
-Er blinks	CH1 on	CH1 input B or b is broken.	Check the input connection.
No communication	RXD blinks TXD no blinks	PC sending message, but meter not response.	Check baudrate and address. Check the communication bit of PC.
No display	No display	Not connecting power supply.	Check the power connection.