



TCM-Series Temperature Controller Serial Communications

Released by Electron Dynamics Ltd
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 Version 1.08

Command packet structure

	SOH (0x01)	Command	Data Length	Data	Checksum
Data type		ASCII	ASCII BCD	ASCII	ASCII Hex
Data length	1 byte	1 byte	2 bytes	Variable	2 bytes

Note The SOH character is a hex value of 01 represented by (0x01) in this document the checksum is a calculated by 8 bit addition of all characters from SOH until the end of the data any addition overflow is ignored so result is 8 bits and 2 hex characters

Example

Packet

(0x01)f102;0;1;0;C;

= 1 +102 +49 +48 +59 +48 +59 +49 +59 +48 +59 +67 +59 = 757
 (0x01) f 1 0 2 ; 0 ; 1 ; 0 ; C ;
 calculation 757 && 0xFF = 245 = F5 Checksum

Commands

Set Control Parameters

Command	Control Type	Prop Term	Int Term	D Term	Derivative	Dead Band	Power-up State
a	1 - On /Off 2 - P 3 - PI 4 - PID	value;	value;	value;	Filter 0 to 1	value;	0 - Off 1 - On 2 - Same as set previously

Example Values	PID	100	0.8	0.2	1	0	1
Packet	(0x01)a204;100;0.8;0.2;1;0;1;DE						

Request Control Parameters

Command	
b	

Packet	(0x01)b00C3						
	Control Type	Prop Term	Int Term	D Term	Derivative	Dead Band	Power-up State
Example Response	PID	100	0.8	0.2	1	0	1
Packet	(0x01)b204;100;0.8;0.2;1;0;1;DF						

Set Alarm Parameters

Command	Alarm Type	Alarm Min	Alarm Max	Temp OK	Temp OK	Operational Temp Limits	
c	0 - None; 1 - Min 2 - Max 3 - Both	value;	value;	Min value	Max	Min	Max

Example Values	Both	5	50	-0.5	0.5	0	70
Packet	(0x01)c213;5;50;-0.5;0.5;0;70;1B						

Request Alarm Parameters

Command	
d	

Packet	(0x01)d00C5						
	Alarm type	Alarm min	Alarm max	Temp Ok	Temp OK	Operational temp limits	
Example Response	Both	5	50	-0.5	0.5	0	70
Packet	(0x01)d213;5;50;-0.5;0.5;0;70;1C						

Set Sensor Parameters

Command	Sensor type;	X2 coeff	X coeff	C coeff	Unit	Averaging	
e	0 - None 1 - PT100 2 - LM35 3 - LM50 4 - LM60 5 - LM61 6 - NTC Therm 7 - Other	value; Beta	value; R at 25	value;	C F K	0 - None 1 - On	RL see TCM spec.
Example Values	1	0	1	0	C	0	
Packet	(0x01)e121;0;1;0;C;0;60						

Request Sensor Parameters

Command	f						
Packet	(0x01)f00C7						
	Sensor type	X2 Coeff	X Coeff	C Coeff	Unit	Averaging	
Example Response	LM35	0	1	0	C	0	
Packet	(0x01)f102;0;1;0;C;F5						

Set Output Parameters

Command	Output Pol.	Output min	Output max	Output
g	0 - negative 1 - positive	value; "-100 to 100	value; "-100 to 100	frequency 20 to 1000

Example Values	1	-50	50	70
Packet	(0x01)g121;-50;50;70;46			

Request Output Parameters

Command	
h	

Packet	(0x01)h00C9			
	Output pol.	Output min	Output max	Output
Example Response	Positive	-50	50	70
Packet	(0x01)h2100;-50;50;70;46			

Set Output Drive

Command	Test Mode Control	Output value
m	0 - Off 1 - On	value;

Example Values	1	0
Packet	(0x01)m041;0;A9	

Set Setpoint Parameters

Command	Setpoint Type	Setpoint Val	Pot Range	Pot Offset
I	0 - pot 1 - comms	value ;	value ;	value ;
Example Values	1	55	100	0
Packet	(0x01)i111;55;100;0;14			

Request Status

Command										
j										
Packet	(0x01)j00CB									
	Setpoint	Actual Temp	Control	Output	Alarm Status	Faults	Temp	Supply V	Version	Test Cycle
	value;	value;	0 - Off 1 - On	value;	0 - None 1 - Min 2 - Max 3 - Both	0 - None bit 0 ADC bit 1 ADCR bit 2 VDC limit bit 3 Temp limit bit 4 Inhibited	OK status 0 Not OK 1 OK			value:
Example Response	23.533	24.03	1	0	0	0	0	6.581	1.01a	10
Packet	(0x01)j3923.533;24.030;1;00.0;0;0;0;6.581;1.01a;E1									

Set Test Parameters

Command	Test mode
k	0 - Off 1 - Normal 2 - Temp. cycle 3 - Temp ramp 4 - Auto cal 1
	Cycle max value; 100 Cycle max Test time sec Start Temp. T1 value ; Start Temp. T1 Set point End Temp T1 value ; End Temp T1 peak test Rate R1 value; Rate R1 Calc PID Rate R2 value; Rate R2 Run PID 0 Time T1 Undo PID 0 Time T2 Auto Cal

		value;	value;	value; 0 - off, 1 -	value; 0 - off, 1 - R	value; 0 - off, 1 - Run	value;	on reset 0 - off, 1 - on
Example Values	2	100	23	1	1	1	0	0
Packet	(0x01)k192;100;23;1;1;1;0;0;C9							

Request Test Parameters

Command	

Packet	(0x01)l00CB									
Example Response	Test mode	Completed	Cycle max	Cycle count	Start Temp.	End Temp T2	Rate R1	Rate R2		
	0 - Off 1 - Normal 2 - Temp. cycle 3 - Temp ramp 4 - Auto cal 1	1 - completed	value; 100	value; 45	value ; 20	value ; 30	value; 1000	value; -1000	0	0
		Completed	Cycle max	Cycle count	Start Temp.	End Temp T2	Rate R1	Rate R2	Time T1	Time T2
		Completed	Cycle max	Cycle count	Set point	peak amp.	peak perio	0	0	0

Test Mode
completed
0 not corr
1 - compl
1

