

DC-TEMP-1 Data Protocol

The DC-TEMP-1 has 3 wires useful to connect serial hardware to it as follows:

3.3/5V (Red Wire)	the positive power supply voltage and control
Data Out (White Wire)	the serial data output
GND (Black Wire)	the power supply ground

The DC-TEMP-1 does not contain any level shifter, isolation or RS-232 interface IC. The DC-TEMP-1 can operate on +3.3 Volts DC or +5 Volts DC with respect to the supplied ground. **Incorrect voltages may damage the DC-TEMP-1.** Connected hardware must accommodate data sent according to the following criteria:

- 1) Communication line: TTL (CMOS); logic high(1) is the supplied voltage; logic low(0) is ground
- 2) Communication parameters: 9600 baud, 8 bits, 1 stop-bit, no parity-bit (8N1)

The first temperature value will be sent within the first second. Subsequent values will be sent once per second $\pm 2\%$. Temperature is sampled approximately every 104 milliseconds. In order to remove jitter, the transmitted temperature value is an average of the most recent samples. Each second, the temperature will be transmitted in Celsius and Fahrenheit in two strings of exactly 8 bytes as explained in **Table 1**. Custom protocol is available.

Table 1

Byte Position	1	2	3	4	5	6	7	8
Byte Definition	Degrees	Scale	Sign	Hundreds	Tens	Units	Tenths	Hundredths
Value Range	68	67 or 70	43 or 45	48-57	48-57	48-57	48-57	48-57
ASCII Code Text	D	C or F	+ or -	Numeral	Numeral	Numeral	Numeral	Numeral

Several examples and their ASCII, Decimal, Binary and Hexadecimal equivalent are shown in **Table 2**.

Table 2

Temperature	ASCII	Decimal	Binary	Hexadecimal
-40.00°C	DC-04000	68 67 45 48 52 48 48 48	01000100 01000011 00101101 00110000 00110100 00110000 00110000 00110000	0x44 0x43 0x2d 0x30 0x34 0x30 0x30 0x30
-40.00°F	DF-04000	68 70 45 48 52 48 48 48	01000100 01000110 00101101 00110000 00110100 00110000 00110000 00110000	0x44 0x46 0x2d 0x30 0x34 0x30 0x30 0x30
23.45°C	DC+02345	68 67 43 48 50 51 52 53	01000100 01000011 00101011 00110000 00110010 00110011 00110100 00110101	0x44 0x43 0x2b 0x30 0x32 0x33 0x34 0x35
74.21°F	DF+07421	68 70 43 48 55 52 50 49	01000100 01000110 00101011 00110000 00110111 00110100 00110010 00110001	0x44 0x46 0x2b 0x30 0x37 0x34 0x32 0x31