DP470 Series with C2 RS-232 Communication Option
Serial Communications Protocol Manual
MANUAL: DP470-PROTOCOL-C2

Considerations

The DP472 series instruments store operating information in Motorola format. PC (Intel) platforms must convert (byte swap) multi-byte data transferred to/from the instrument. Other platforms may be subject to the same data conversion. Check the target systems documentation regarding this consideration.

It is recommended that the front panel buttons on the instrument be locked out while under remote control. This prevents inconsistency of operating parameters between the instrument and the controlling software.

The words instrument and unit refer to the DP472 under control.

Command Set

	Command	Code	Action
1.	Display Lock On	5Ah	Locks out buttons on the unit front panel
2.	Display Lock Off	5Bh	Unlocks buttons of unit front panel
3.	Transmit Display	64h	Commands unit to send value on display
4.	Set Remote Mode	54h	Places unit in remote mode (RMT on display)
5.	Set Local Mode	55h	Places unit in local mode (normal display)
6.	Acknowledge	59h	Commands unit to echo acknowledge byte (59h)
7.	Next Channel	58h	Commands unit to monitor next channel (manual mode only)
8.	Receive Input Data	50h	Commands unit to receive input configuration data
9.	Transmit Input Data	51h	Commands unit to transmit input configuration data
10.	Receive Multi Data	56h	Commands unit to receive multi input configuration data
11.	Transmit Multi Data	57h	Commands unit to transmit multi input configuration data

Command Descriptions

1. Display Lock On (5Ah)

Action: Locks out buttons on unit front panel

Response: None

2. Display Lock Off (5Bh)

Action: Unlocks buttons of unit front panel

Response: None

3. Transmit Display (64h)

Action: Commands unit to send the value that is currently being displayed

Response: ASCII character string (described below)

Example:

01 1 12.31.99 12.59.59P 999.9 F C C@/r/n

Index	Name	Description
Offset 0:	Tag	RS232 Communication ID
Offset 3:	Channel	Multi Input Channel
Offset 5:	Date	day.month.year
Offset 13:	AM/PM	AM or PM
Offset 15:	Time	hour.min.sec
Offset 24:	Temp	Displayed Temperature
Offset 30:	F or C	Fahrenheit or Celsius
Offset 32:	Alarm 1 Status	Alarm 1 State
Offset 34:	Alarm 2 Status	Alarm 2 State
Offset 35:	@	@Symbol
Offset 36:	CR	Carriage Return
Offset 37:	LF	Line Feed

Note: The following fields are not currently functioning. They are reserved for future use.
Tag, Date, AM/PM, Time, Alarm1 Status, Alarm2 Status.

4. Set Remote Mode (54h)

Action: Places unit in remote mode (RMT on display)

Response: None

5. Set Local Mode (55h)

Action: Places unit in local mode (normal display)

Response: None

6. Acknowledge (59h)

Action: Commands unit to echo an acknowledge byte (59h)

Response: (59h)

7. Next Channel (58h)

Action: Commands unit to monitor next channel (manual mode only)

Command is only valid when unit is operating in manual scan mode. The use of this command in automatic mode may cause erratic operation of the instrument.

Response: None

8. Receive Input Data (50h)

Action: Commands unit to receive input configuration data

This command is sent as the first byte of an input configuration data block. This block is as follows:

Offset	Parameter	Size (bytes)	Notes
0	Receive Input Data CD	1	Command Word
1	Sensor Type	1	Thermocouple or RTD type (below)
2	Sensor Configuration	1	Fahrenheit or Celsius, Resolution (below)
3	Option Board Type	1	Option board installed (below)

Sensor Type:

J,	K,	T,	E,	S,	R,	385 RTD,	392 RTD,	Cal
0,	1,	2,	3,	4,	5,	6,	7,	-2

Sensor Configuration:

Bit	Purpose
7	not used
6	not used
5	not used
4	not used
3	not used
2	not used
1	0 = 0.1 degree, 1 = 1.0 degree
0	0 = degrees F, 1 = degrees C

Option Board Type (Read Only):

Note: Writing to this location will cause improper operation of unit. This location should always contain the same data that has been previously read.

Bits 0-7	Option Type
xxx0 01xx	alarm no V or C
xxx0 10xx	alarm with Voltage
xxx0 11xx	alarm with Current
xxx1 00xx	multi input TC
xxx1 01xx	multi input RTD

Response: None

9. Transmit Input Data (51h)

Action: Commands unit to transmit input configuration data

Response: Input configuration data block

The received data will be in the format described in item 8. The actual data received will not be preceded by a command byte. The first byte received will be the Sensor Type.

10. Receive Multi Data (56h)

Action: Commands unit to receive multi input configuration data

This command is sent as the first byte of a Multiple Input Configuration Block. This block is as follows:

Offset	Parameter	Size (bytes)	Notes
0	Multi Input Config Cmd.	1	Multiple Input Configuration Command
1	Setpoint States	1	Holds the On/Off state of channel setpoints (below)
2	Scan Rate	1	Holds the automatic mode scan rate (below)
3	Current Channel	1	Indicates current channel on unit (read only)
4	Multi Input Mode	1	Holds scan mode (automatic/manual)
5	Multi Channel States	1	Holds the On/Off state of channels
6	Setpoint Types	1	Holds the type of setpoints (High/Low)

Setpoint States:

Bits 1 through 6 represent the ON/OFF states of setpoints 1 through 6. A bit state of 0 indicates that setpoint is OFF and a bit state of 1 indicates that the setpoint is ON.

Scan Rate:

The rate in seconds that the unit scans the channels whose Setpoint State is ON. Valid scan rates are values from 5 to 20 seconds. Although other rates can be programmed, it is not recommended.

Current Channel:

Indicates the channel that the unit is currently monitoring. This value is read only.

Multi Input Mode:

Holds the scan mode for multiple channels. A value of 1h indicates automatic scan mode. A value of 2h indicates manual scan mode.

Multi Channel States:

Bits 1 through 6 represent the ON/OFF states of channels 1 through 6. A bit state of 0 indicates that channel is OFF and a bit state of 1 indicates that the channel is ON.

Setpoint Types:

Bits 1 through 6 represent the setpoint type for setpoints 1 through 6. A bit state of 0 indicates a low setpoint type. A bit state of 1 represents a high setpoint type.

11. Transmit Multi Data (57h)

Action: Commands unit to transmit multi input configuration data

Response: Input configuration data block

The received data will be in the format described in item 10. The actual data received will not be preceded by a command byte. The first byte received will be the Setpoints States.