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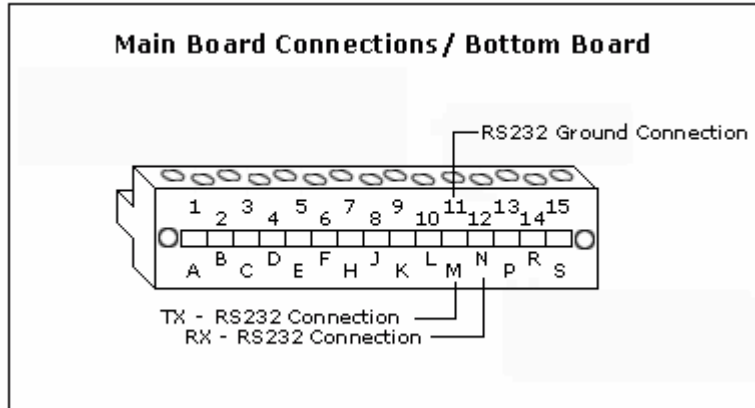
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RS232 CONNECTIONS

The picture to the right shows the connections for the RS232 communications cord. This RS232 connections (9600 Baud, no parity, 8 Data, 1 Stop Bit) is used to connect with a computer. This connection will allow the meter to be controlled by the computer for custom operations.



Commands

The commands for the D520 series of meters are listed in the following tables. Each table represents a different function of the D520 meter. Programming this meter can be done through any computer language however the commands will stay the same. By incorporating the various tables it will be possible to create commands for any number of meter functions. The structure of these commands is highlighted below.

Every command starts with a recognition character, '*' or '?'. '*' lets the computer know that you are writing information to the meter and '?' begins every command where information is being read from the meter.

Following the '*' or '?' is a four character code. These codes are displayed in the attached tables. In order to read values from the meter it is necessary to start with the ? character and follow it with the four digit code. However to write values to the meter it is necessary to start the command with the * followed by the four digit code and then followed by either the value you wish to enter or the command option for the setting you are choosing. Below are some examples of simple commands for this meter series. All of the examples refer to the attached tables.

EXAMPLES

Example 1:

'*DEC1 2'

where: * - Writing recognition character

DEC - Command Mode for Decimal Point Selection (Table 1)

1 - The channel that the Command Function refers to

2 - The Command Option, 2 refers to the number of decimal places you are telling the meter to

display.

Thus, this command will tell the meter to display two decimal points on channel 1.

Example 2:

'*FNC1 4'

where:

* - Writing recognition character

FNC - Command Mode for F-Keys (Table 8)

1 - The F-key you are writing to

4 - Command Code for Tare 1 (Tare 9)

Thus, this command will tell the meter to set key F1 as a Tare.

Example 3:

`*A1SP 5'

where:

- * - Writing recognition character
- A - Command Mode for Alarm menu (Table 2)
- 1 - Alarm number
- SP - Command Code for set point (Table 3)
- 5 - Value you are setting for your setpoint

Thus, this command will tell the meter to set the setpoint in alarm 1 to 5.

Example 4:

`?ANHI'

where:

- ? - Reading recognition character
- AN - Analog Command Menu (Table 18)
- HI - Command Code for the high display value that corresponds to the high analog output (Table 19)

Thus, this command reads the value that is stored as the display high for the analog output.

Example 5:

`?TAR1'

where:

- ? - Reading recognition character
- TAR - Tare Command Menu (Table 17)
- 1 - Tare number (corresponds to channel number)

Thus, this command requests the tare value at TARE1

The tables on the following pages highlight the programming commands necessary to interface software with the D520 series of meters. The tables are used in the same manor as illustrated above. Find the table that represents the menu for your specific function, decided on the necessary information from that given in the table and create your commands.

Command Tables

| Menu | # | Selection Number | |
|------|---------------------------------|------------------|--|
| | | X | 0- XXXXX 1-XXXX.X 2-XXX.XX 3-XX.XXX 4-X.XXXX 5-.XXXXX |
| | 1, 2, or 3 | = Channel number | |
| DEC | = Display decimal point command | | |

Table 1: Decimal Point Commands

| Menu | # | Command Code | Command Option | |
|------|-----------------|----------------|----------------|--------------------------|
| | | | X | = Command Option |
| | | XX | | = Command Code (Table 3) |
| | 1, 2, 3, or 4 | = Alarm number | | |
| A | = Alarm Command | | | |

| Command Code | Command Function | Command Options |
|--------------|-------------------|--|
| CH | Channel Selection | 1-Channel1 2-Channel2 3-Channel3 |
| SP | Setpoint | Desired Value |
| HY | Hysteresis | Desired Value |
| FS | Fail Safe | 0-No 1-Yes |
| TY | Alarm Type | 0-High 1-Low |
| RL | Relay number | 1-Relay1 2-Relay2 3-Relay3 4-Relay4 |
| LT | Latched Alarm | 0-No 1-Yes |
| FL | Flash | 0-No 1-Yes |

Table 2 and 3: Alarm Commands and Command Codes

| Menu | # | Command Code | Command Value | |
|------|---------------------------|------------------|---------------|--------------------------|
| | | | X | = Command Value |
| | | XX | | = Command Code (Table 5) |
| | 1, 2, or 3 | = Channel number | | |
| U | =User Calibration Command | | | |

| Command Code | Command Function | Command Value |
|--------------|--------------------|----------------------------|
| IL | Low Signal Input | Default 0.0 |
| IH | High Signal Input | Default: Rated Output (mV) |
| DL | Low Display Value | Default: 0.0 |
| DH | High Display Value | Default: Max Capacity |

Table 4 and 5: Calibration Commands and Command Codes

| Menu | # | |
|------|------------|---------------------------|
| DISP | 1, 2, or 3 | = Channel number |
| | | = Display channel command |

Table 6: Display Commands

| Menu | # | |
|------|---------------|--------------------------------------|
| UPDT | 1, 2, 3, or 4 | = 1-1/Sec, 2-3/Sec, 3-10/Sec, 4-ASAP |
| | | = Display Update Command |

Table 7: Update Commands

| Menu | # | Command Code | |
|------|---------------|--------------|--------------------------|
| FNC | | XX | = Command Code (Table 9) |
| | 1, 2, 3, or 4 | | =F-key number |
| | | | =F1-F4 Key Setup Command |

| Command Code | Command Function |
|--------------|------------------|
| 0 | ALARM 1 |
| 1 | ALARM 2 |
| 2 | ALARM 3 |
| 3 | ALARM 4 |
| 4 | TARE 1 |
| 5 | TARE 2 |
| 6 | TARE 3 |
| 7 | CHAN 1 |
| 8 | CHAN 2 |
| 9 | CHAN 3 |
| 10 | ALARM RESET |
| 11 | SCALE 2 |
| 12 | NET |
| 13 | SHUNT |
| 14 | PEAK 1 |
| 15 | PEAK 2 |

Table 8 and 9: Function Key Commands and Command Codes

| Menu | # | Command Code (S) | Command Option | |
|------|------------|------------------|----------------|---|
| FN | 1, 2, or 3 | S | 0 or 1 | =0-display 20 updates w/ shunt relay on 1- complete shunt CAL function |
| | | | | = Shunt Command |
| | | | | =Channel number |
| | | | | = Shunt Function |

Table 10: Shunt Commands

| Menu | # | Command Code | Command Option | |
|------|--------|--------------|----------------|--|
| FP | 1 or 2 | X | X | =0-display 20 updates w/ shunt relay on complete shunt CAL function 1- |
| | | | X | = Command Code (Table 12) |
| | | | | =Peak number |
| | | | | = Peak Function |

| Command Code | Command Function | Command Options |
|--------------|----------------------|--|
| N | On/Off Selection | 0-Normal mode 1-Peak mode |
| H | Hi/Lo Peak Selection | 0-Valley 1-Peak |
| C | Channel Selection | 1-Channel1 2-Channel2 3-Channel3 |
| G | Gross/Net Selection | 0-Net 1-Gross |

Table 11 and 12: Peak Commands and Command Codes

| RMT | # | Command Code | |
|-----|---------------|--------------|--------------------------|
| RMT | 1, 2, 3, or 4 | XX | = Command Code (Table14) |
| | | | =Remote number |
| | | | =Remote Setup Command |

| Command Code | Command Function |
|--------------|------------------|
| 0 | RESET |
| 1 | TARE |
| 2 | HOLD |
| 3 | SCALE 2 |
| 4 | LOCK |
| 5 | PEAK 1 |
| 6 | PEAK 2 |
| 7 | ALARM |
| 8 | DEC PT |
| 9 | CHANNEL |
| 10 | GROSS |
| 11 | PEAK RESET |

Table 13 and 14: Remote Commands and Command Codes

| RT | # | Command Code | |
|----|---------------|--------------|--------------------------|
| RT | 1, 2, 3, or 4 | XX | = Command Code (Table16) |
| | | | =Remote number |
| | | | =Remote2 Setup Command |

| Command Code | Command Function | Command Options |
|--------------|-------------------------------|-----------------|
| D | Remote Decimal Point Function | 0- XXXXX |
| | | 1-XXXX.X |
| | | 2-XXX.XX |
| | | 3-XX.XXX |
| | | 4-X.XXXX |
| 5-XXXXX | | |
| C | Remote Channel Function | 1-Channel1 |
| | | 2-Channel2 |
| | | 3-Channel3 |
| G | Remote Gross/Net Function | 0-Net |
| | | 1-Gross |

Table 15 and 16: Remote 2 Commands and Command Codes

| Menu | # | Command Value | |
|------|------------|---------------|-----------------|
| TAR | 1, 2, or 3 | XXXX | = Tare Value |
| | | | =Channel number |
| | | | =Tare Command |

Table 17: Tare Commands

| Menu | Command Code | Command Options | |
|------|--------------|-----------------|--------------------------|
| AN | XX | X | = Command Option |
| | | | =Command Code (Table 19) |
| | | | =Analog Setup Command |

| Command Code | Command Function | Command Options |
|--------------|--|---|
| SR | Analog Channel Source | 1-Channel1 2-Channel2 3-Channel3 4-Display |
| ST | Analog Source Type | 1-Gross, 2- Net, 3- Peak 1 |
| TY | Analog Type | 1-4-20mA, 2- 0-10V, 3-0- 20mA, 4-0- 5V, 5--5- +5V |
| LO | Display Value Corresponding to Analog Lo | Default: Minimum Value |
| HI | Display Value Corresponding to Analog Hi | Default: Maximum Value |

Table 18 and 19: Analog Commands and Command Codes

| Menu | Command Code | Command Options | |
|------|--------------|-----------------|-----------------------------|
| LN | XX | X | = Command Option |
| | | | =Command Code (Table 21) |
| | | | =Linerazation Setup Command |

| Command Code | Command Function | Command Options |
|--------------|----------------------|--|
| CH | Channel Selection | 1-Channel1 2-Channel2, 3-Channel3, |
| ON | On/Off Selection | 0-Off, 1- On |
| PT | Linearization Points | 1-19: Point Values |

Table 20 and 21: Linteraization Commands and Command Codes

| Menu | Point Number | Command Code | Point Value | |
|------|--------------|--------------|-----------------------|--------------------------------------|
| LN | XX | R or D | XX | =Value Corresponding to Point Number |
| | | | = R - Input, D-Output | |
| | | | | =1-20, Linearization Points |
| LN | | | | =Linearization Setup Command |

Table 22: 20pt Linearization Commands

| Menu | Channel Number | Command Code | Command Options | |
|------|----------------|--------------|-----------------|---|
| CH | 1 or 2 | T | X | =1-0-20mA, 2-0-10V, 3-+/-30mV, 4-+/-20mV, 5-+/-2V, 6-+/-100mV |
| | | | | = Input type |
| | | | | =Channel Number |
| CH | | | | =Input Setup Command |

Table 23: Input Signal Commands

| Menu | Command Code | Command Options | |
|------|--------------|-----------------|--------------------------|
| S2 | XX | X | = Command Option |
| | | | =Command Code (Table 25) |
| | | | =Second Scale Command |

| Command Code | Command Function | Command Options |
|--------------|-------------------------|---|
| ON | On/Off Selection | 0- Off, 1- On |
| DP | Decimal Point Selection | 0- XXXXX 1- XXXX.X 2- XXX.XX 3- XX.XXX 4- X.XXXX 5- .XXXXX |
| CH | Channel Selection | 1-Channel1 2-Channel2 3-Channel3 |
| LO | Low Signal Input | Default 0.0 |
| HI | High Signal Input | Default: Rated Output (mV) |
| DL | Low Display Value | Default: 0.0 |
| DH | High Display Value | Default: Max Capacity |

Table 24 and 25: Second Scale Commands and Command Codes