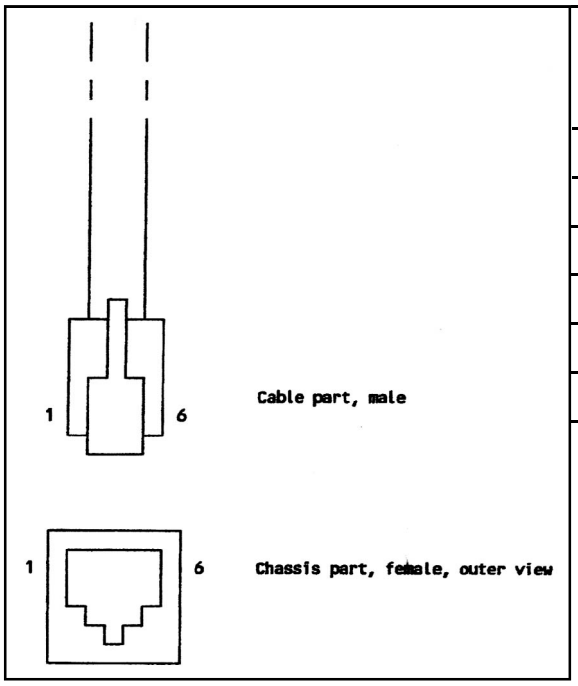
# Summary

## Interface to PM5639 Colour Sensors

### PM5639 Connector Terminals

#### 1. FCC-68 Based Devices




| Pin no.<br>6-pole FCC-68, female, chassis part | PM5639/80<br>Display Unit | PM5639/90<br>CRT Sensor |
|---|---|---|
| 1 | +5V | GND (0V) |
| 2 | +5V | GND (0V) |
| 3 | TXD | TXD |
| 4 | RXD | RXD |
| 5 | GND (0V) | +5V |
| 6 | GND (0V) | +5V |

#### 2. D-Sub based PM5639 devices

| Pin no.<br>9 poled D-Sub female chassis part | PM5639/94<br>Sensor |
|---|---|
| 1 | NC |
| 2 | RXD |
| 3 | TXD |
| 4 | NC |
| 5 | GND (0V) |
| 6 | NC |
| 7 | NC |
| 8 | NC |
| 9 | +5V |

#### 3. PC RS 232 Connections, 9 and 25 poled D-Sub

| Signal name | Pin no.<br>9 poled D-Sub male chassis part | 25 poled D-Sub male chassis part pin no's |
|---|---|---|
| TXD | 3 | 2 |
| RXD | 2 | 3 |
| GND (0V) | 5 | 7 |

**Survey of useful commands**

| Command discription | Syntax | Remarks |
|---|---|---|
| Take measurement | TM | Transmit one set of measurement data:<br><br>Return format in **XY-mode**:<br><br>X,Y,Z<CR><br><br>where X, Y and Z are CIE 1931 XYZ-values.<br><br>Return format in **MB-mode**:<br><br>RGB*XX.XX*YY.YY*ZZ.ZZ*<CR><LF><br>or<br>RBG* XXXX* YYYY* ZZZZ*<CR><LF><br>or<br>RGB* 0* 0* 0*<CR><LF><br><br>where X, Y and Z are CIE 1931 XYZ-values.<br><br>Return format in **MX-mode**:<br><br>nX,nY,nZ, NT_TIME<CR><br><br>where nX, nY and nZ are measured values directly from the sensors, (compensated for errors in DC-offset etc.).<br>INT_TIME is a value between 2.5 and 25.0 and specifies the integration time in units of 2.0ms, (this integration time can also be obtained by issuing the command „F?“). |
| Measure continuously | MC | Transmit data continuously in present measuring mode. See command „TM“ above for return format. |
| Measure stop | MS | Stops transmission of data immediately. |
| Select CIE XYZ mode | XY | Selects transmission of CIE 1931 XYZ-values. |
| Select CIE XYZ mode* | MB | Selects transmission of CIE 1931 XYZ-values in Barco/Thoma output format. |
| Select sensor mode | MX | Selects transmission of unmodified sensor output. |
| Set integration time | SI n | SI n specifies the number of measurements the Colour Sensor handles per second. The parameter n is expressed in units of 0.2ms where n = 250 gives app. 3 measurements/second, while n = 25 gives app. 10 measurements/second, (25≤n≤250).<br><br>Default value is 250, ie. app. 3 measurements/second.<br><br>To calculate the number of measurements/second the equation below can be used as a guideline:<br><br>measurements/second = 1000/(1.2*n+60)) |
| Get integration time | F? | Get integration time.<br><br>Return format:<br><br>n<CR><br><br>Get integration time gets the actual integration time in the Colour Sensor. The integration time is a value between 2.5 and 25.0, ie. the return value is specified in units of 2.0ms.<br>(Note that this time is 10 times smaller than the value used to set the integration time with, see above). |

| | | |
|---|---|---|
| Identity request | I? | The ID-string of the sensor:<br><br>Return format:<br><br>CP,NO,KU,SW<CR><br><br>where<br><br>CP is the company,<br>NO is the type number,<br>KU is the serial number and<br>SW is the software revision.<br><br>eg.<br><br>“PTV,400810979300,KU030001,02.1” |
| Memory address | MA n | Select address for read/write of serial E²PROM data. |
| Read memory | RM | Read E²PROM data, where address is specified by command MA. Address is auto incremented. |
| Read binary numbers | RN n | Reads n+1 bytes from E²PROM, in binary form, where address is specified by MA. Address is auto incremented by n. The command is ended by sending a checksum-byte, (low byte of addition of n bytes). For n: 0≤n≤255. |
| Fix gain | FG n | Select gain, ie. one of 6 gain-areas to be used to “amplify” the signal from the sensors, (n:0≤n≤5).<br>Setting n to 255 will release a fixed gain area. |
| Measure DC-offset | MO | Measure DC-offset in CRT Colour Sensor. Values will always be calculated when this command is issued. The result however will only be stored if WRITE-protection is off. The 6 DC-offset values will also be transmitted to the software controlling the sensor. |
| Show DC-offset | SO | Shows the DC-offset count to be subtracted in present gain.<br>To get back in normal mode use “NR”. |
| Show true sensor count | ST | Shows the direct count from the A/D-converter.<br>To get back in normal mode use “NR”. |
| Normal mode | NR | Force the CRT Colour Sensor in normal ode ie. MX-mode. |
| Calculate Checksum | CS | Calculate the program checksum |
| Set Baudrate | SB n | Change baudrate to n: 48, (4800baud), 96, (9600baud) or 192, 19200baud).<br>**NOTE**: this command does not apply to all available sensors. |