

Datacolor Weigh 1.0

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# Mettler Communication protocols

## Overview.

General info on Mettler communication protocols

How to test a scale in Hyperterminal

## Mettler PM or Mettler SICS?

- All recent scales of Mettler Toledo are using the MT-SICS protocol to communicate with a pc. These are scales of type (PB,PG,Viper, SG, etc)
- Scales of the PM-Family are using a different protocol. I name it the PM-protocol. Hence you will find **different types of scaledrivers in Datacolor Weigh** depending on the protocol that the scale is using

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### REMARK

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- **Scales that are originally built with the SICS-interface can be reprogrammed to PM-scales. Therefore Mettler needs to change a chip inside the scale. This means that a 'new' scale could have the behaviour of an 'old'-scale.**
  - **There are 4 different levels of MT-SICS (0,1,2,3). See further.**
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# MT-Sics levels description

## Commands MT-SICS level 0

<b>I0</b>	Inquiry of all implemented MT-SICS commands
<b>I1</b>	Inquiry of MT-SICS level and MT-SICS versions
<b>I2</b>	Inquiry of balance data
<b>I3</b>	Inquiry of balance SW version and type definition number
<b>I4</b>	Inquiry of serial number
<b>I5</b>	SW-Identification number
<b>S</b>	Send stable weight value
<b>SI</b>	Send weight value immediately
<b>SIR</b>	Send weight value immediately and repeat
<b>Z</b>	Zero
<b>ZI</b>	Zero immediately
<b>@</b>	Reset

## Commands MT-SICS level 1

<b>D</b>	Balance display
<b>DW</b>	Weight display (Display show Weight)
<b>K</b>	Key control
<b>SR</b>	Send weight value on weight change (Send and Repeat)
<b>T</b>	Tare
<b>TA</b>	Inquiry/setting of tare weight value
<b>TAC</b>	Clear tare value
<b>TI</b>	Tare Immediately

## Commands MT-SICS level 2

<b>C0</b>	Inquiry/setting of calibration setting
<b>C1</b>	Initiate calibration according to current setting
<b>C2</b>	Initiate calibration with external weight
<b>C3</b>	Initiate calibration with internal weight
<b>COM</b>	Inquiry/Setting the communication parameters
<b>COPT</b>	Command to configure interface options
<b>DAT</b>	Date
<b>I10</b>	Balance ID – Inquiry of balance identification
<b>I11</b>	Balance type
<b>I14</b>	Inquiry of balance info
<b>M01</b>	Inquiry/setting of weighing mode
<b>M02</b>	Inquiry/setting of environment
<b>M03</b>	Inquiry/setting of AutoZero
<b>M04</b>	Inquiry/setting of SmartSens functions
<b>M05</b>	Inquiry of user list/method
<b>M06</b>	Inquiry/setting of current user/method number
<b>M08</b>	Inquiry/setting of display brightness
<b>M09</b>	Inquiry/setting of display contrast
<b>M11</b>	Inquiry/setting of beeper volume
<b>M12</b>	Creating beeper tone
<b>M13</b>	Inquiry/setting of Touch function
<b>M14</b>	Inquiry of available languages
<b>M15</b>	Inquiry/setting of language
<b>M16</b>	Inquiry/setting of standby mode
<b>M17</b>	Inquiry/setting of ProFACT time criteria
<b>M18</b>	Inquiry/setting of ProFACT/FACT temperature criterion
<b>M19</b>	Inquiry/setting of adjustment weight
<b>M20</b>	Inquiry/setting of test weight

<b>M21</b>	Inquiry/setting of unit
<b>M22</b>	Inquiry/setting of custom unit definitions
<b>M23</b>	Inquiry/setting of readability, 1d/xd
<b>M24</b>	Inquiry/setting of print key function
<b>M25</b>	Inquiry/setting of application selection
<b>M26</b>	Inquiry/setting of current application
<b>M27</b>	Inquiry of adjustment history
<b>M28</b>	Inquiry of temperature probe
<b>M29</b>	Inquiry/setting of value release
<b>P100</b>	Print out text on the printer
<b>P101</b>	Send stable weight value to printer channel
<b>P102</b>	Send weight value to printer channel immediately
<b>P120</b>	Reset SmartTrac according to application
<b>P121</b>	Set SmartTrac as +/- display
<b>P122</b>	Activate individual pointers of SmartTrac
<b>P123</b>	Activate SmartTrac by segments
<b>P124</b>	Switch off SmartTrac
<b>PWR</b>	Power on/off
<b>SIRU</b>	Send weight value with currently displayed unit immediately and repeat
<b>SIU</b>	Send weight value with currently displayed unit immediately
<b>SNR</b>	Send stable weight value and repeat after each deflection
<b>SNRU</b>	Send stable weight value with currently displayed unit and repeat after each deflection
<b>SRU</b>	Send stable weight value with currently displayed unit after deflection
<b>ST</b>	Send stable weight value after pressing F (transfer) key
<b>SU</b>	Send stable weight value with currently displayed unit
<b>TIM</b>	Time
<b>TST0</b>	Inquiry/setting of the test function
<b>TST1</b>	Initiate test function in the current setting
<b>TST2</b>	Initiate test function with external weight
<b>TST3</b>	Initiate test function with internal weight
<b>UPD</b>	Inquiry/setting of the update rate of the host interface

### Commands MT-SICS level 3

<b>PW</b>	Inquiry/setting of the piece weight (piece counting application)
<b>A01</b>	Inquiry/setting of reference in % (percent weighing application)

## Datacolor Weigh requirements

- When the scale support **MT-SICS level 1** then Smartweigh will be completely compatible.
- Under certain conditions the **MT-SICS level 0** could also be sufficient because the Tare-function **T** has moved to the level 1 since **SICS version 2.2**  
This means that scales using a protocol version older than 2.2 can work with Datacolor Weigh wil MT-SICS level 0 as this tare function was then still included in level 0.  
For newer scales, level 1 is at least required.

# Checking scale in Hyperterminal.

You can access Hyperterminal from the start menu – accessoires – communications.

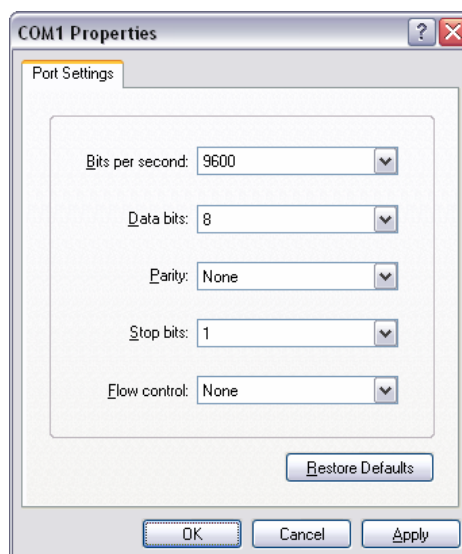
In this program you can send commands to the scale and check what the scale replies.

## How to connect?

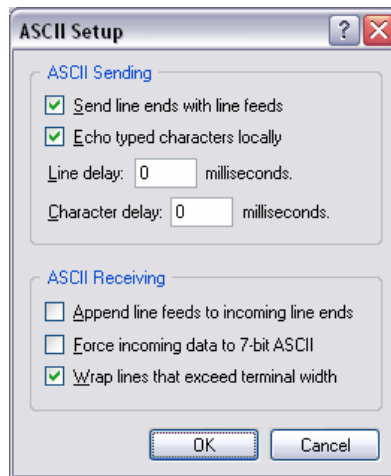
- Open hyperterminal
- Give a name to the session. E.g Scale
- Choose the correct serial port.



- Connect with the communication parameters set correctly (baudrate, databits, parity, handshake). These parameters have to be the same as on the scale. This picture is only an example.



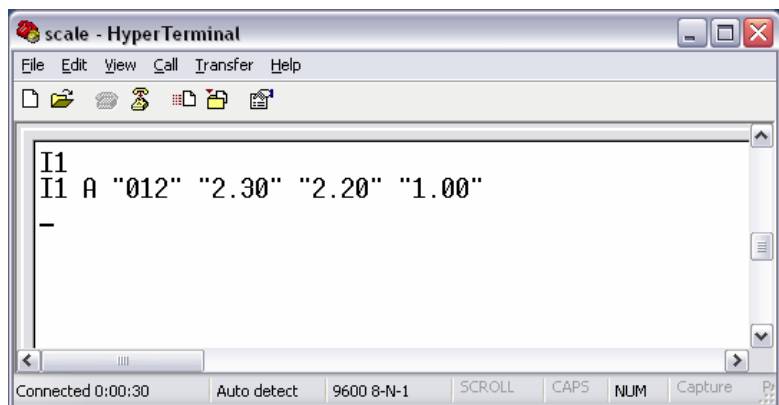
- Open the properties of the connection when connected and activate 'echo typed characters locally' and 'send line ends with line feeds'.



- Now you should be connected to the scale.

### How to test the scale?

- If you have a scale that support any MT-SICS level protocol, you can send **I1** to the scale. The scale will give you information about the SICS levels that are installed with the corresponding version of the driver.



In this example the scale has following protocols installed

MT-SICS Level 0 – version 2.30  
 MT-SICS Level 1 – version 2.20  
 MT-SICS Level 2 – version 1.00

### Identifying Mettler PM or Mettler SICS

- If a TARE command '**T**' is sent to a PM scale, the scale will reply with **ZA**
- A SICS-scale will reply with **T S 0 g**