

Style modification

In the INI file, enter a numeric value from 0 to 4, for example Style=1

```
ChronoEXE.ini
Plik  Edytuj  Wyświetl

[Settings]
Style=1
TXT=0
Multiplier=1
CheckBoxScroll=1
ComPort=
CheckBoxAuto=0
CheckBoxAuto50=0
MU=10
```

CHRONO-LMBR

Port COM:

OPEN

SAVE

LOAD

CLEAR

Mix

Units

00,0 m/s

VAVG 00,0

VMAX 00,0

VMIN 00,0

dV 00,0

SV 00,0

CHRONO-LMBR

Port COM:

OPEN

SAVE

LOAD

CLEAR

Mix

Units

00,0 m/s

VAVG 00,0

VMAX 00,0

VMIN 00,0

dV 00,0

SV 00,0

CHRONO-LMBR

Port COM:

OPEN

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Mix

Units

00,0 m/s

VAVG 00,0

VMAX 00,0

VMIN 00,0

dV 00,0

SV 00,0

CHRONO-LMBR

Port COM:

OPEN

SAVE

LOAD

CLEAR

Mix

Units

00,0 m/s

VAVG 00,0

VMAX 00,0

VMIN 00,0

dV 00,0

SV 00,0

CHRONO-LMBR

Port COM:

OPEN

SAVE

LOAD

CLEAR

Mix

Units

Chart

Auto

Auto50

00,0 m/s

0,00 J

VAVG 00,0

VMAX 00,0

VMIN 00,0

dV 00,0

SV 00,0

NR 0

EAVG 00,0

g

VELOCITY

0

0 SHOTS

Style=0

Style=1

Style=2

Style=3

Style=4

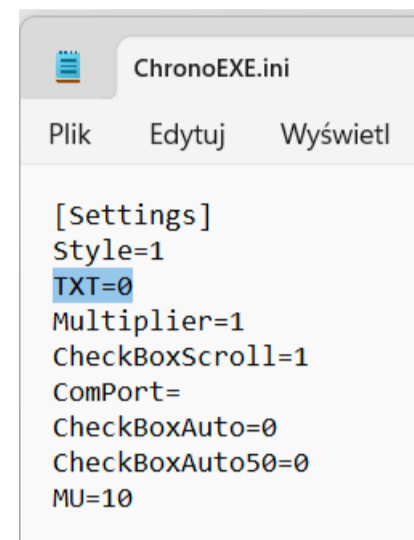
File format for data storage and retrieval

In the INI file, enter a numeric value from 0 to 1, for example:

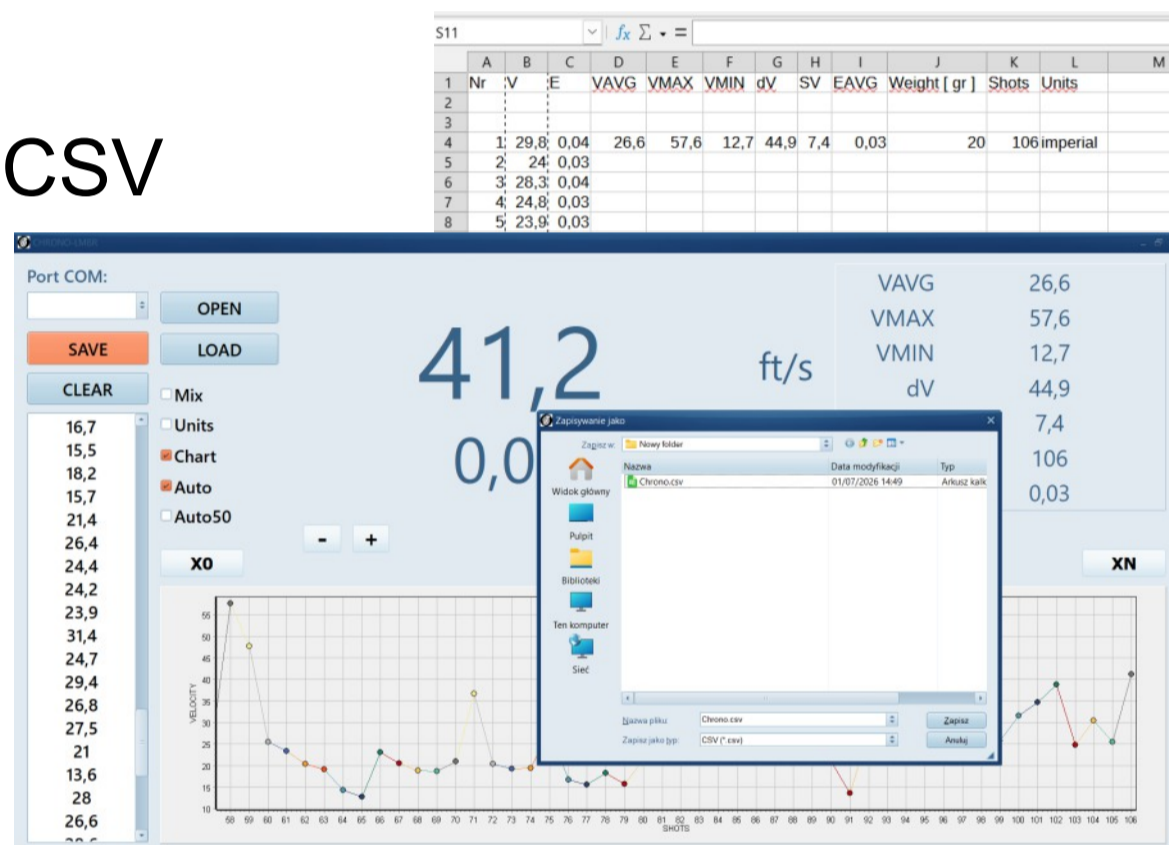
TXT=1 (saved in txt format)

TXT=0 (saved in csv format)

The csv (tsv) file can be opened with a text editor or spreadsheet.

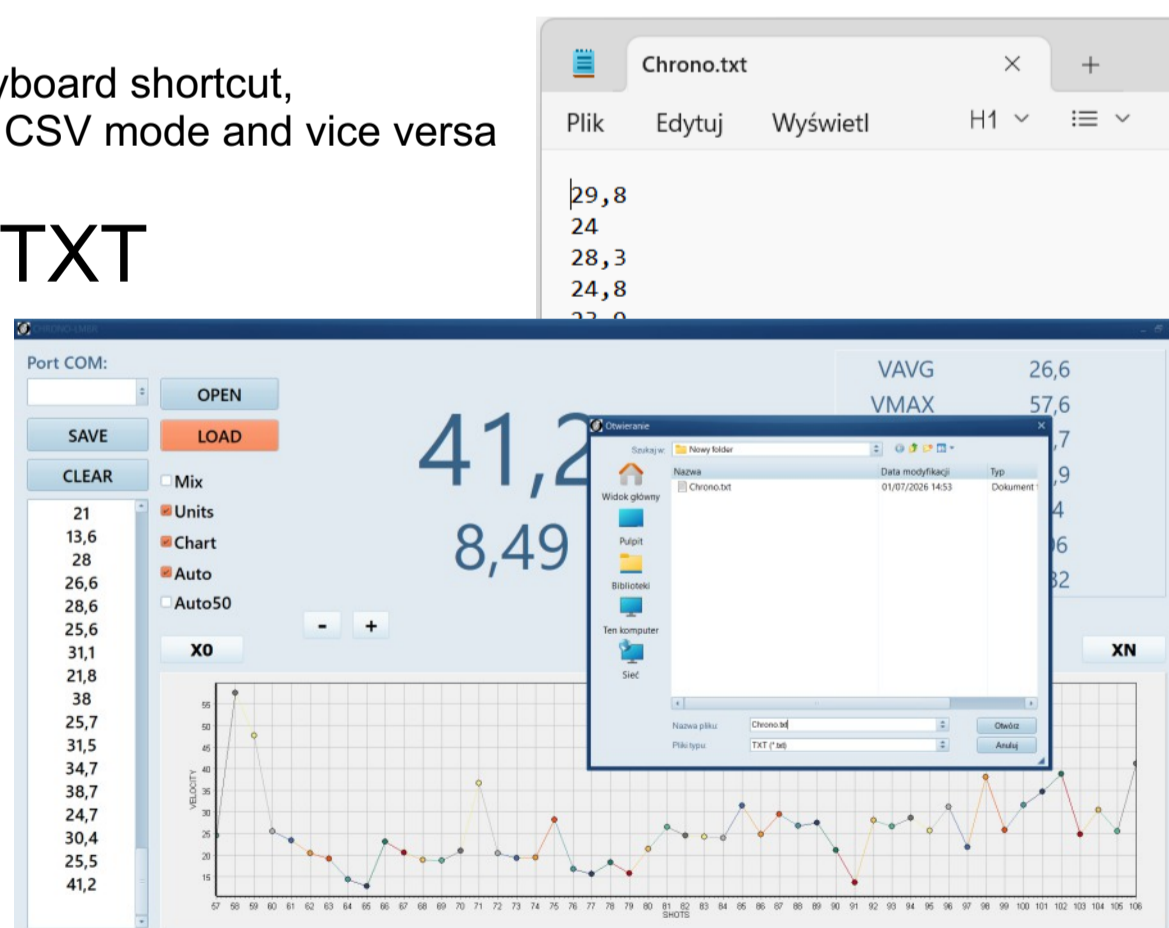


CSV



CTRL+T, the keyboard shortcut, switches TXT to CSV mode and vice versa

TXT

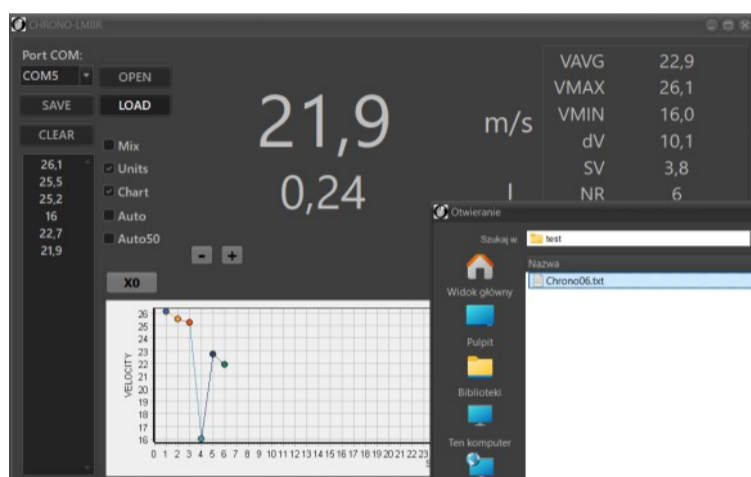


Calculations for N-series of measurements

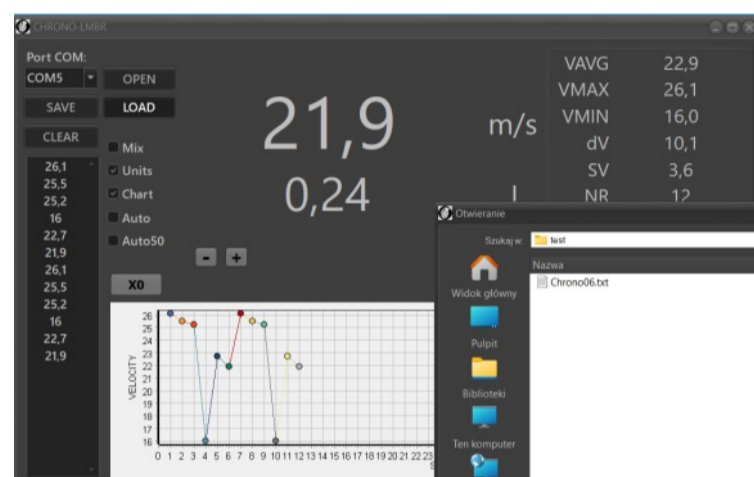
Importing N-series using the LOAD button adds a series, automatically calculates statistics, and plots the points on the graph.

Example operation for N=2

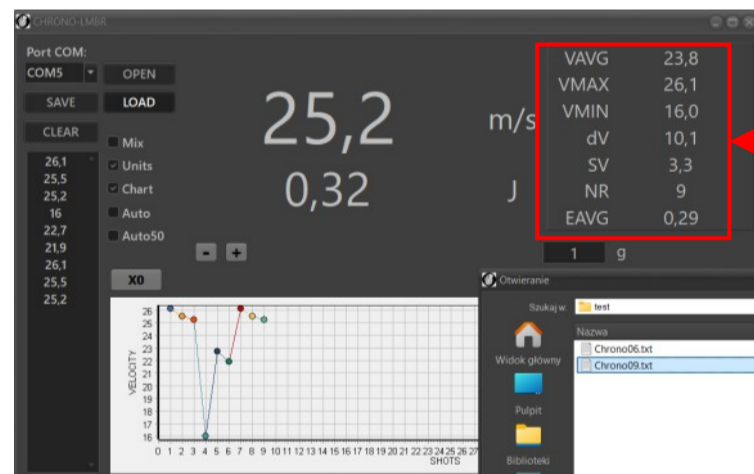
LOAD from file: first series



LOAD from file: second series



26,1
25,5
25,2
16
22,7
21,9



Editing Data

Click on a point on the chart:
The value will be highlighted in the left pane.
Change its value, delete it, or add a new one.
Use the keyboard shortcut: CTRL+R
The data will be updated.

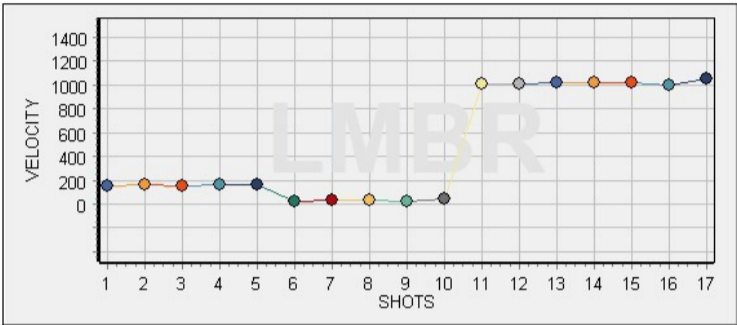
Calculations for 2 series and editing
The final results

Statistics in JPG format

IM button

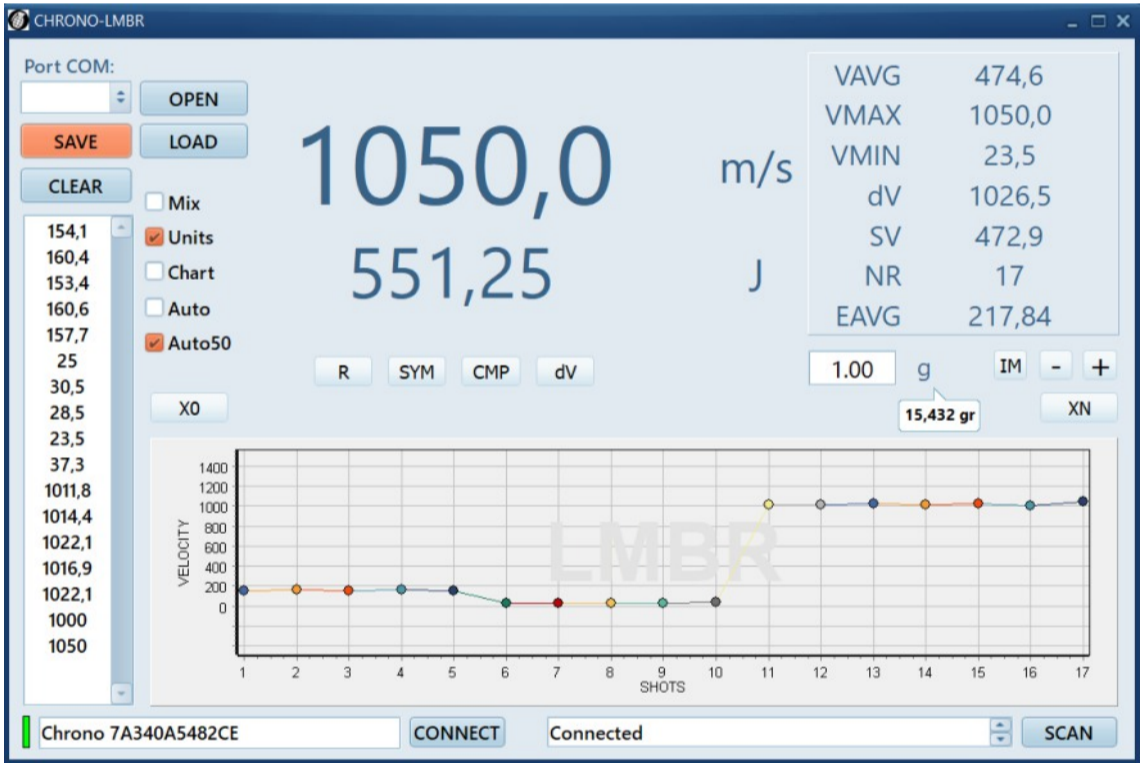
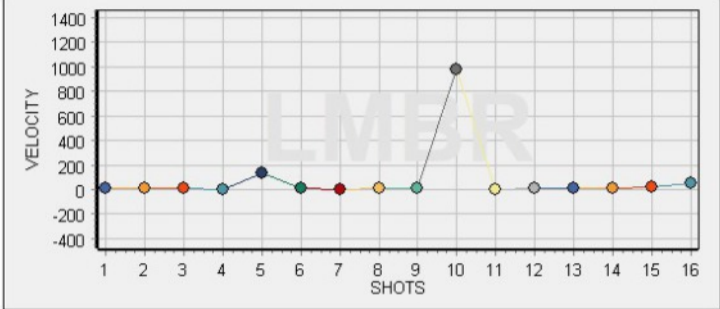
STAT [m/s] [J]

VAVG	474,6	SV	472,9
VMAX	1050,0	EAVG	217,84
VMIN	23,5	NR	17
dV	1026,5	V	1050,0
Weight	1.00 g	E	551,25



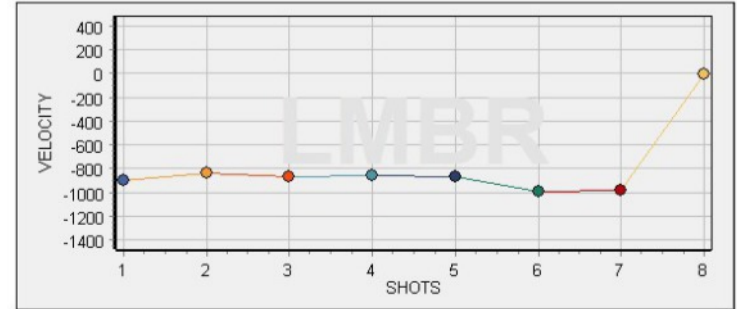
dV [m/s] [J]

VAVG	78,1	SV	241,3
VMAX	974,5	EAVG	30,34
VMIN	2,0	NR	16
dV	972,5	V	50,0
Weight	1.00 g	E	1,25



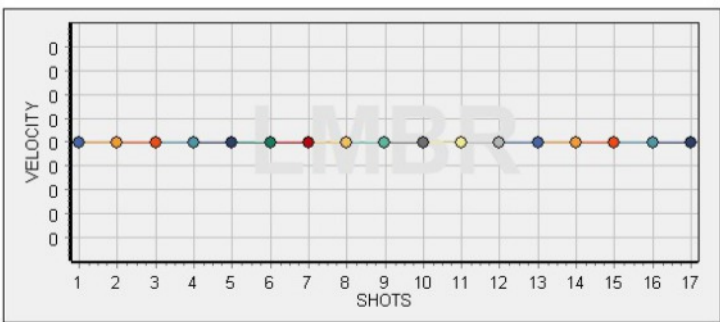
SYM [m/s] [J]

VAVG	-788,1	SV	319,9
VMAX	-8,8	EAVG	355,29
VMIN	-989,4	NR	8
dV	980,6	V	-8,8
Weight	1.00 g	E	0,04



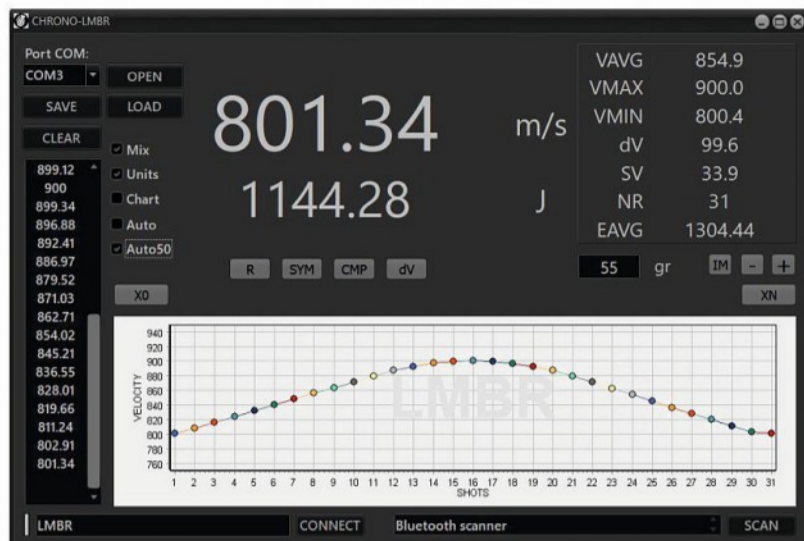
CMP [m/s] [J]

VAVG	0,0	SV	0,0
VMAX	0,0	EAVG	0,00
VMIN	0,0	NR	17
dV	0,0	V	0,0
Weight	1.00 g	E	0,00



Functions dV, SYM, CMP

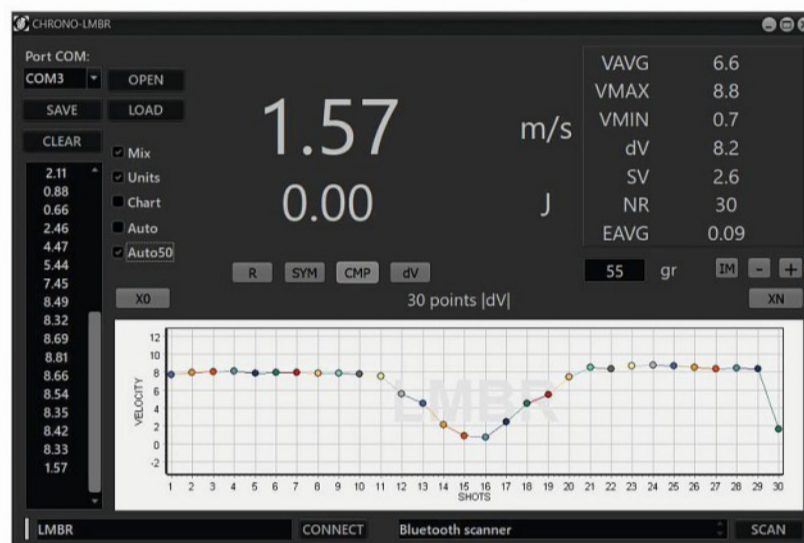
Shooting string A



Shooting string B



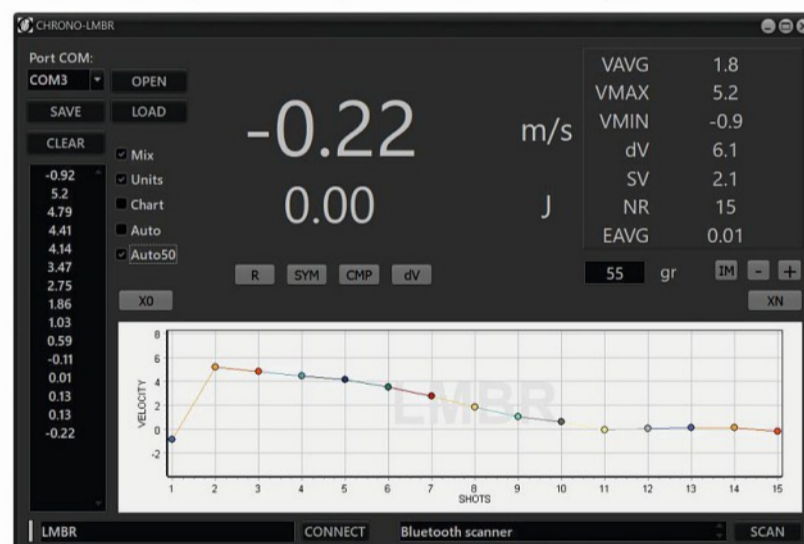
Absolute Delta-V



Absolute Delta-V



Symmetry – Shot string A



Symmetry – Shot string B



Difference A - B



Difference B - A



Hybrid Data Filtration System (Velocity & Shots)

The application features an advanced filtration system that allows for data selection based on both velocity and shot numbers. Configuration is done in the .ini file within the [FILTER] section.

1. **Filter Activation (Filter Parameter)**

In the [FILTER] section of the INI file:

- * **Filter=1**: The filter is globally enabled (works for both COM port data and loaded files).
- * **Filter=0**: The filter is inactive for automatic reading, but it can always be forced manually via the CTRL+F shortcut on loaded data.

2. **Defining filters**

Filters are defined using the **Velocity** (for velocity) and **Shots** (for shot numbers) keys. Format: `Prefix(A~B)`

- * **Prefix**: **V** for velocity, **S** for shots.
- * **Value Separator**: The tilde **~** separates the lower (A) and upper (B) bounds.
- * **Decimal Separator**: Within the filter, always use a dot **.**, regardless of system settings.
- * **COM Option (+)**: Adding a **+** at the end (e.g., `V(...)+`) activates the filter specifically for the COM port.

3. **Range definition (brackets)**

The type of bracket determines whether the boundary is strict (greater than/less than) or inclusive (greater-than-or-equal-to/less-than-or-equal-to):

- * `(` – Value greater than A ($>A$)
- * `<` – Value greater than or equal to A ($\geq A$)
- * `)` – Value less than B ($<B$)
- * `>` – Value less than or equal to B ($\leq B$)

4. **Operating modes (A and B Logic)**

The system automatically detects the operating mode based on the relation between numbers A and B:

A. Internal (standard) Filter: when **A < B**

The value must be between A and B.

- * **Example**: `V<200~300>` → Velocity from 200 to 300, inclusive.
- * **Use case**: Displaying only the correct measurement range.

B. External (Excluding) Filter: when **A > B**

The value must be *outside* the range B..A (i.e., greater than A OR less than B).

- * **Example**: `V(1000~50)` → Velocity greater than 1000 OR less than 50.
- * **Use case**: Rejecting the middle range (e.g., ignoring typical velocities, searching only for extreme errors).

C. One-Sided Filter: One of the values can be omitted by leaving an empty space around the tilde.

- * **Example**: `V<320~)` → Only values 320 and higher.
- * **Example**: `S(~10>` → Only the first 10 shots.

D. Equality (A = B)

- * For strict brackets (`~`): Empty set (nothing passes).
- * For inclusive brackets (`< ~ >`): Only the value exactly equal to A.

E. Disable (Bypass)

The notation `V(~)` or the absence of an entry means the filter allows everything to pass.

Example filter configurations in the INI File

Range from 300 to 400 m/s (inclusive). Works only on data displayed in the form.
Activated using the CTRL+F shortcut.

```
[FILTER]
Filter=0
Velocity=V<300~400>
Shots=S(~)
```

Range from 800 to 900 m/s. The filter works for both COM port data and data loaded from a file.

```
[FILTER]
F=1
Velocity=V(800~900)+
```

Range from 800 to 900. The filter works for data loaded from a file.

```
[FILTER]
F=1
Velocity=V(800~900)
```

Shots greater than 5 (i.e., from 6 upwards).

```
[FILTER]
Shots=S(5~)
Velocity=V(~)
```

Range from 1000 upwards, inclusive of 1000.

```
[FILTER]
Velocity=V<1000~)
```

Range for numbers greater than 450 OR less than 250 (excluding 250 and 450).

```
[FILTER]
Velocity=V(450~250)
```

Range from 100 to 2000 (inclusive of 100 and 2000). The '+' sign activates the filter for the COM

```
[FILTER]
Filter=1
Velocity=V<100~2000>+
```

Shots from number 51 upwards and velocities from 850 to 950.

```
[FILTER]
Shots=S(50~)
Velocity=V<850~950>
```

Filter disabled for both COM port and files (everything passes through).

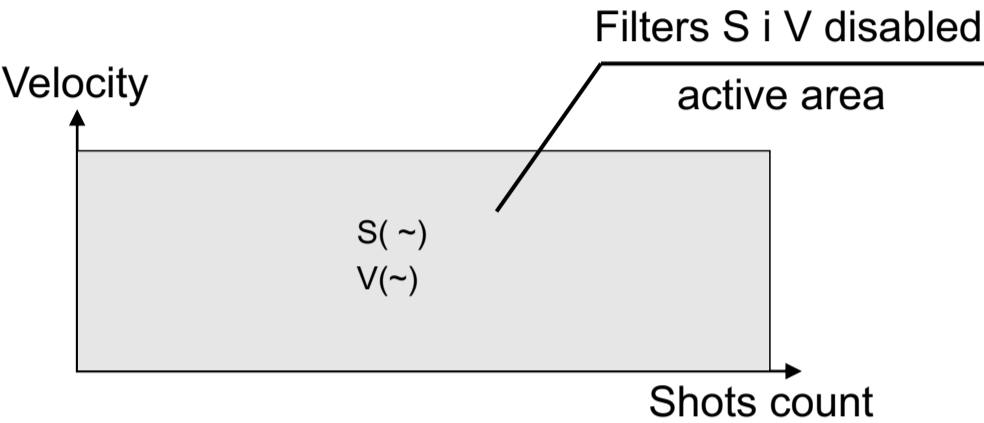
```
[FILTER]
Velocity=V(~)
Shots=S(~)
```

Note:

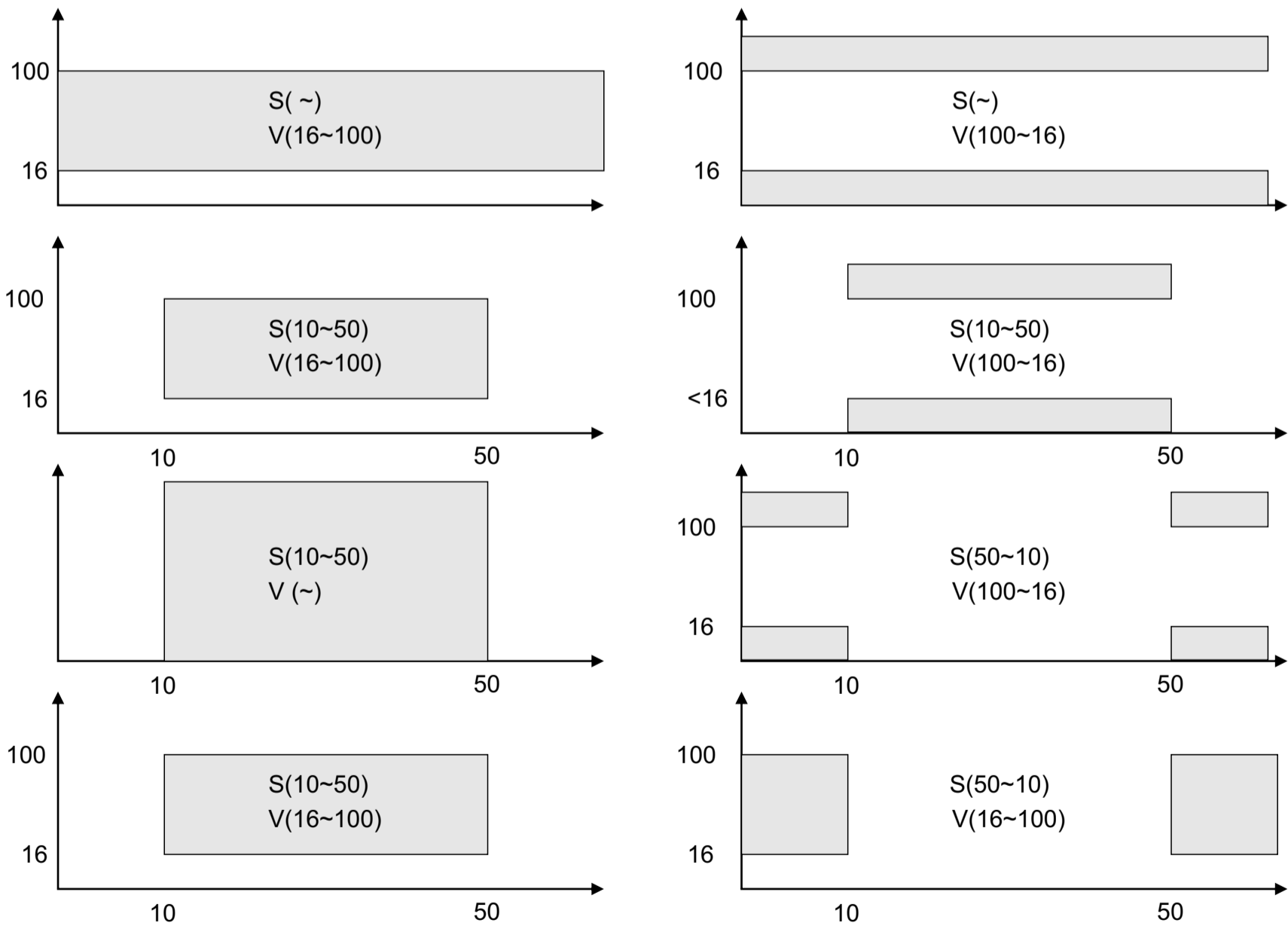
The keyboard shortcut CTRL+F activates the filter in the form, performs calculations and draws a graph on the screen data.

Filtering V and S

The following diagrams and rules define the active areas where data is allowed to pass through the filter.
Data points falling outside these defined areas are automatically rejected



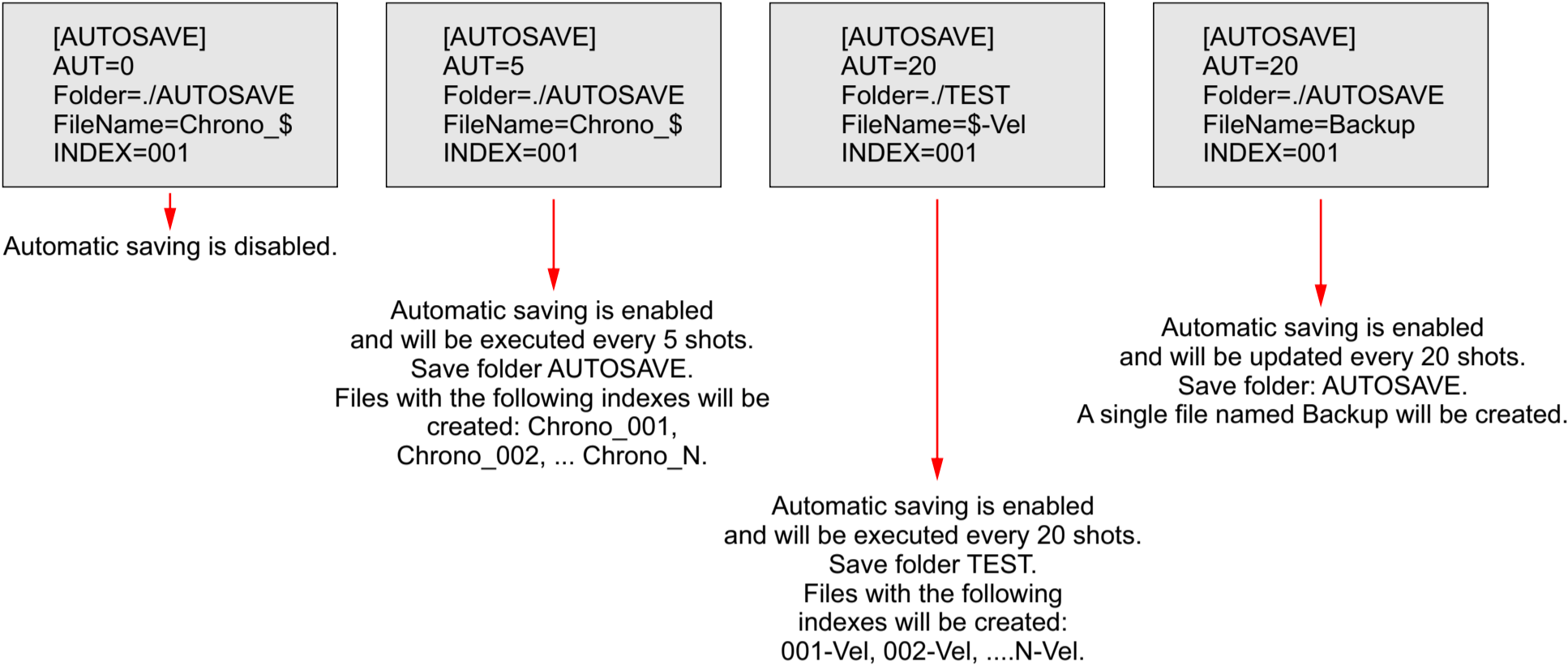
Filtering examples



AUTOSAVE in the INI file

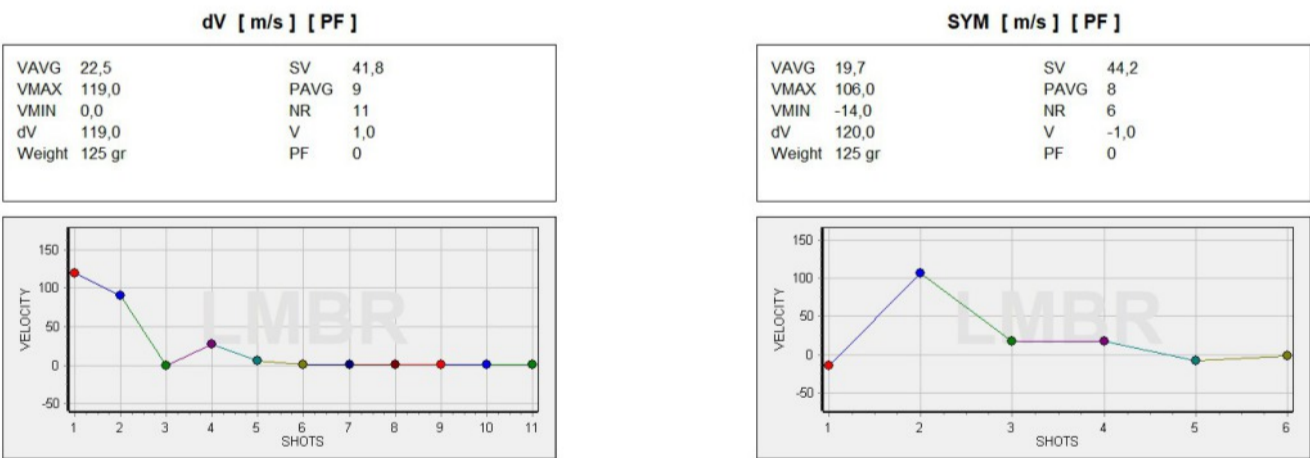
AUTOSAVE enables the automatic saving of measurements to files. If AUT=0, then AUTOSAVE is disabled. Assigning a numerical value to AUT enables the automatic saving of measurements to a file. The file format is "txt" when TXT=1 or "csv" when TXT=0. The user can create custom folder and file names.

Configuration examples



IMG in the INI file

This parameter enables saving statistics to a JPG file (via the IMG button). The directory and file creation mechanism is similar to the one in AUTOSAVE. In the FileName=Stat%_\$ field, the Stat parameter is the default file name, % represents dV, SYM, or CMP, and \$ represents the index. Example: FileName=\$-Test% means indexing and adding an identifier of the function name. When the dV, SYM, and CMP functions are run sequentially, and the IMG button is pressed after each run, the following indexed files will be created: 001-TestdV.jpg, 002-TestSYM.jpg, 003-TestCMP.jpg. Without the \$ parameter, files will not be indexed. Without \$ and %, a single file named -Test.jpg will be created.



TXTCSV in the INI file

This parameter enables saving velocity data to a TXT or CSV file. The directory and file creation mechanism is similar to the one in AUTOSAVE. Removing the \$ parameter from the FileName field will stop indexing and cause the file to be overwritten. Modifying the INDEX field takes place exclusively within the INI file. To toggle between TXT and CSV modes,

```
[TXTCSV]
Folder=./MYSHOTS
FileName=Chrono_$
INDEX=001
```

CNV in the INI file

The CNV parameter enables unit system conversion in the form using the Units and MIX switches, as well as the projectile mass. When CNV=0, only the units in the velocity, energy, and mass fields are changed. When CNV=1, a numerical conversion between systems is performed: metric and imperial.

OpenCOM in the INI file

When OpenCOM=1 and ComPort=COMN has been assigned by the application, COM port number N will be opened immediately after the application is launched.
When OpenCOM=0, the COM port must be manually selected within the application and opened using the OPEN button.

CheckBoxBTAuto in the INI file

When CheckBoxBTAuto=0, the connection to BLE will be initiated manually using the CONNECT button.
When CheckBoxBTAuto=1, the connection to BLE will be initiated automatically after the program is launched.
The parameter is also available in the form. CheckBoxBTAuto in the INI file.

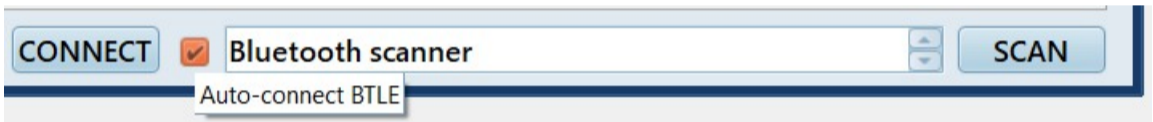
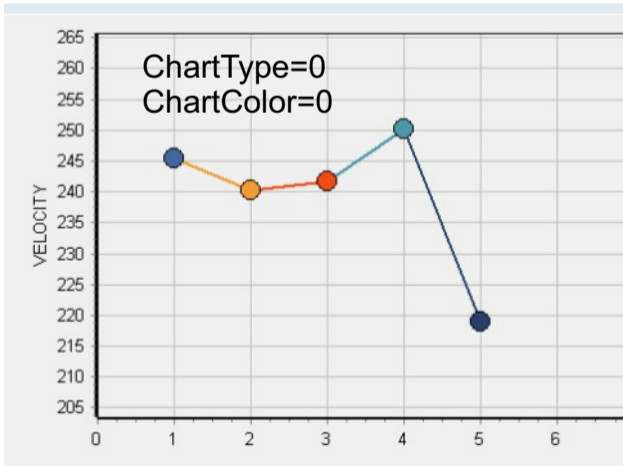


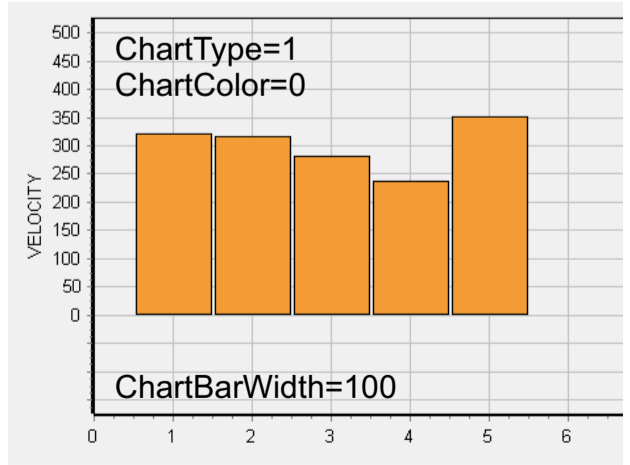
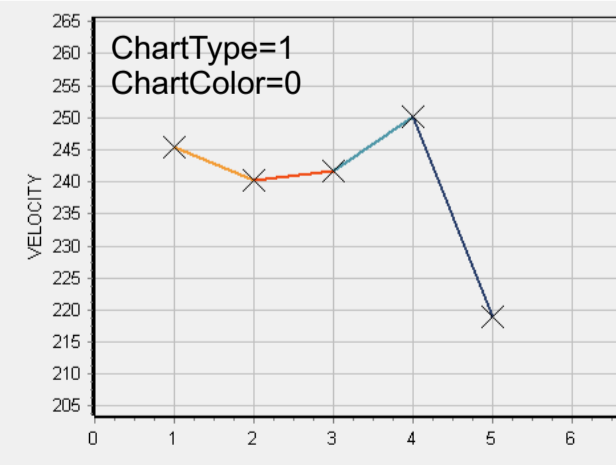
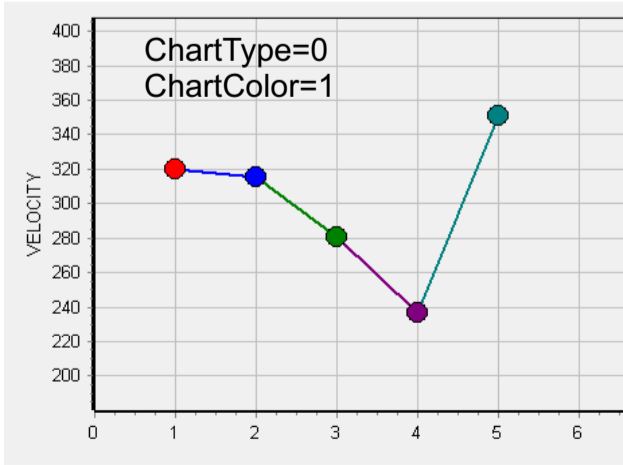
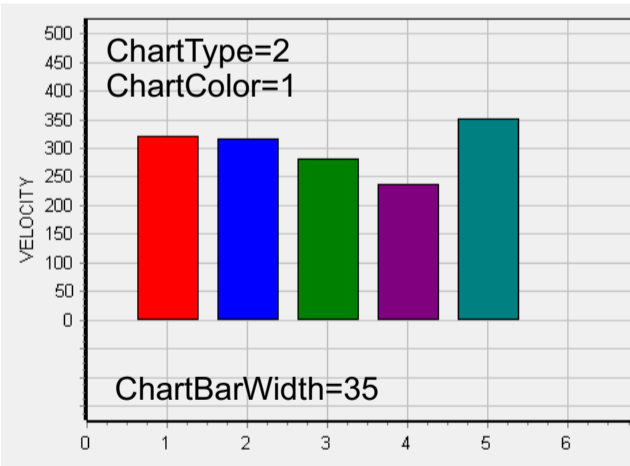
Chart parameters in the INI file

Charts can be displayed in various modes: scatter (points) connected by lines, and bar. Points can have a marker in the form of a dot or a cross. The marker size and line width are designated by the parameters ChartMarkerSize and ChartLineWidth. In the case of a bar chart, the ChartBarWid parameter determines the percentage width of the fill.

Configurations (examples)



ChartType=0
ChartColor=1
ChartLineWidth=1
ChartMarkerSize=5
ChartBarWidth=35



Label2DisplayFormat in the INI file

Label2DisplayFormat – this parameter specifies how decimals are displayed in the speed field.

0 = always displays one decimal digit.

00 = always displays two decimal digits.

0# = always displays the first decimal digit; the second is displayed only if it is non-zero.

0## = always displays the first decimal digit; the second and third digits are optional.

Allowed characters: 0 and # only. The first character must be 0.

Maximum length is 6 characters.

Fallback behavior: Any invalid or empty value defaults to 0##.

