

"NMEA data parser"

1		1
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3	<b>NMEA data parser</b>	<b>2</b>
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(NMEA)

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( ) ( NMEA 0183 talkers ( ) listeners

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: . NMEA 0183

GPS

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GPS NMEA

(sentence),

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GPS GP,

NMEA

(proprietary sentences) P,

3 ,

PGRM Magellan - Garmin

PMGN.

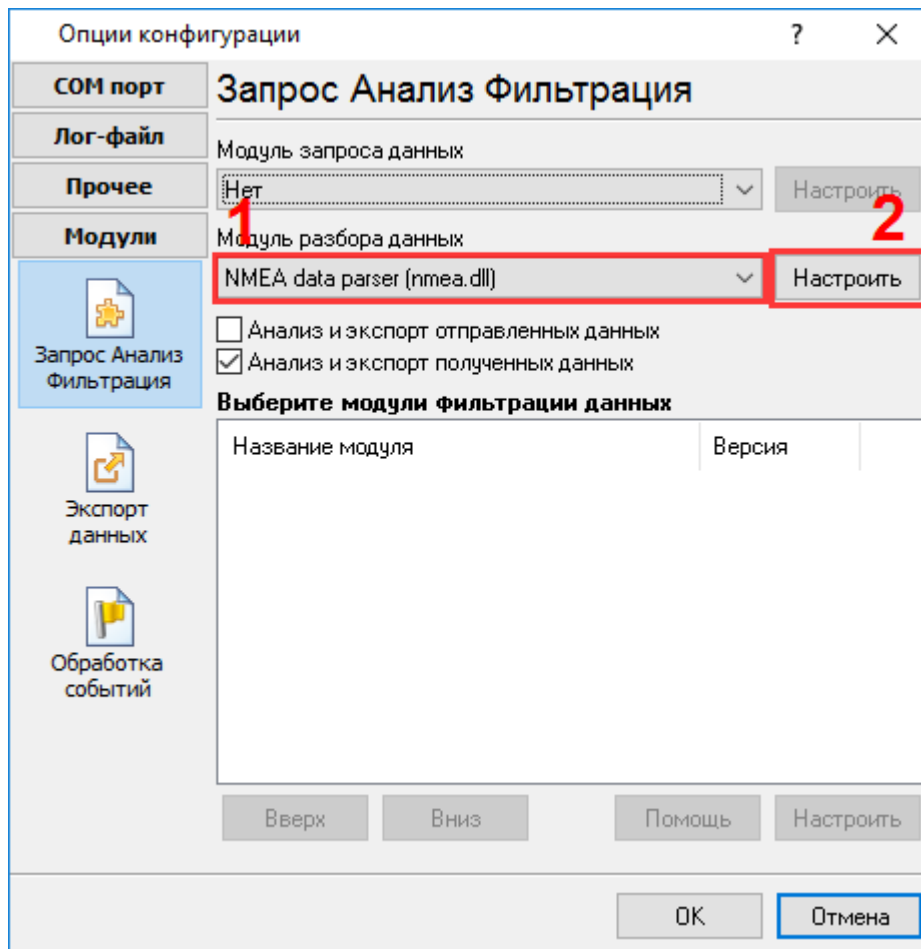
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## 4

### Plug-in -

Advanced Serial Data Logger

**5****5.1****(talkers)**

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**AG** - Autopilot - General  
**AP** - Autopilot - Magnetic  
**CD** - Communications – Digital Selective Calling (DSC)  
**CR** - Communications – Receiver / Beacon Receiver  
**CS** - Communications – Satellite  
**CT** - Communications – Radio-Telephone (MF/HF)  
**CV** - Communications – Radio-Telephone (VHF)  
**CX** - Communications – Scanning Receiver  
**DF** - Direction Finder  
**EC** - Electronic Chart Display & Information System (ECDIS)  
**EP** - Emergency Position Indicating Beacon (EPIRB)  
**ER** - Engine Room Monitoring Systems  
**GP** - Global Positioning System (GPS)  
**HC** - Heading – Magnetic Compass  
**HE** - Heading – North Seeking Gyro  
**HN** - Heading – Non North Seeking Gyro  
**II** - Integrated Instrumentation  
**IN** - Integrated Navigation  
**LC** - Loran C  
**P** - Proprietary Code  
**RA** - RADAR and/or ARPA  
**SD** - Sounder, Depth  
**SN** - Electronic Positioning System, other/general  
**SS** - Sounder, Scanning  
**TI** - Turn Rate Indicator  
**VD** - Velocity Sensor, Doppler, other/general  
**DM** - Velocity Sensor, Speed Log, Water, Magnetic  
**VW** - Velocity Sensor, Speed Log, Water, Mechanical  
**WI** - Weather Instruments  
**YX** - Transducer  
**ZA** - Timekeeper – Atomic Clock  
**ZC** - Timekeeper – Chronometer  
**ZQ** - Timekeeper – Quartz  
**ZV** - Timekeeper – Radio Update, WWV or WWVH

## 5.2

## (sentences)

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NMEA. ,

**AAM** - Waypoint arrival alarm

**AAM\_ARIV\_ENT** - Arrival circle entered  
**AAM\_PERP\_PASS** - Perpendicular passed  
**AAM\_CIRCLE\_RAD** - Circle radius  
**AAM\_CIRCLE\_RAD\_UNIT** - Circle radius units  
**AAM\_WPTNAME** - Waypoint name

**ALM** - GPS Almanac data

**ALM\_SENT\_NUM** - Number of sentences  
**ALM\_SENT\_CNT** - Sentence count  
**ALM\_PRN\_ID** - Satellite PRN number  
**ALM\_WEEK\_NO** - GPS week number  
**ALM\_SV\_HEALTH** - SV health  
**ALM\_ECCENTRICITY** - Eccentricity  
**ALM\_REF\_TIME** - Almanac reference time  
**ALM\_INC\_ANGLE** - Inclination angle  
**ALM\_RA\_RATE** - Rate of right ascension  
**ALM\_AXIS\_ROOT** - Root of semi-major axis  
**ALM\_PEREGREE\_ARG** - Argument of perigee  
**ALM\_NODE\_LONG** - Longitude of ascension node  
**ALM\_MEAN\_ANN** - Mean anomaly  
**ALM\_F0\_CLOCK** - F0 clock parameter  
**ALM\_F1\_CLOCK** - F1 clock parameter

**APA** - Auto pilot A sentence

**APA\_STATUS1** - Loran-C blink/SNR warning, general warning  
**APA\_STATUS2** - Loran-C cycle warning  
**APA\_CROSS\_TRACK\_RAD** - Cross-track error distance  
**APA\_STEER** - Steer to correct  
**APA\_CROSS\_TRACK\_RAD\_UNIT** - Cross-track error units  
**APA\_ARIV\_ALRM\_C** - Arrival alarm - circle  
**APA\_ARIV\_ALRM\_P** - Arrival alarm - perpendicular  
**APA\_MAG\_BEAR\_OD** - Magnetic bearing, origin to destination  
**APA\_MAG\_BEAR\_OD\_UNIT** - Magnetic bearing unit  
**APA\_DEST\_WPTID** - Destination waypoint ID

**APB** - Auto pilot B sentence

**APB\_STATUS1** - Loran-C blink/SNR warning, general warning  
**APB\_STATUS2** - Loran-C cycle warning  
**APB\_CROSS\_TRACK\_RAD** - Cross-track error distance  
**APB\_STEER** - Steer to correct  
**APB\_CROSS\_TRACK\_RAD\_UNIT** - Cross-track error units  
**APB\_ARIV\_ALRM\_C** - Arrival alarm - circle  
**APB\_ARIV\_ALRM\_P** - Arrival alarm - perpendicular  
**APB\_MAG\_BEAR\_OD** - Magnetic bearing, origin to destination  
**APB\_MAG\_BEAR\_OD\_UNIT** - Magnetic bearing unit  
**APB\_DEST\_WPTID** - Destination waypoint ID  
**APB\_MAG\_BEAR\_PD** - Magnetic bearing, present position to destination  
**APB\_MAG\_BEAR\_PD\_UNIT** - Magnetic bearing unit  
**APB\_MAG\_BEAR\_HS** - Magnetic heading to steer

- APB\_MAG\_BEAR\_HS\_UNIT** - Magnetic heading unit
- BEC** - Bearing and distance to waypoint – dead reckoning
  - BEC.UTC** - UTC time of fix
  - BEC.WPT\_LAT** - Latitude of waypoint
  - BEC.WPT\_LAT\_H** - Latitude hemisphere
  - BEC.WPT\_LONG** - Longitude of waypoint
  - BEC.WPT\_LONG\_H** - Longitude hemisphere
  - BEC.BEARING** - Bearing to waypoint
  - BEC.BEAR\_TYPE** - Bearing to waypoint type
  - BEC.DIST** - Distance to waypoint
  - BEC.DIST\_UNIT** - Distance to waypoint units
  - BEC.WPTID** - Waypoint ID
- BOD** - Bearing origin to destination
  - BOD.BEARING** - Bearing from START to DEST, degrees
  - BOD.BEAR\_TYPE** - Bearing from START to DEST type
  - BOD.DEST\_WPTID** - Destination waypoint ID
  - BOD.ORIG\_WPTID** - Origin waypoint ID
- BWC** - Bearing using great circle route
  - BWC.DEPTH** - Depth
  - BWC.DEPTH\_UNIT** - Depth unit
- DBS** - Depth below surface
  - DBS.DEPTH** - Depth, meters
  - DBS.OFFSET** - Offset from transducer
- FSI** - Frequency set information
  - FSI.TX\_FREQ** - Transmitting frequency
  - FSI.RX\_FREQ** - Receiving frequency
  - FSI.COMM\_MODE** - Communications mode
  - FSI.POWER\_LEVEL** - Power Level
- GGA** - GPS fix data
  - GGA.TAKEN\_AT** - Fix taken at
  - GGA.LATITUDE\_DEG** - Latitude
  - GGA.LATITUDE\_DEG\_H** - Latitude hemisphere
  - GGA.LONGITUDE\_DEG** - Longitude
  - GGA.LONGITUDE\_DEG\_H** - Longitude hemisphere
  - GGA.QUALITY** - Fix quality
  - GGA.SAT\_NUM** - Number of satellites being tracked
  - GGA.HOR\_DIL** - Horizontal dilution of position
  - GGA.ALTITUDE** - Altitude above mean sea level
  - GGA.ALTITUDE\_UNIT** - Altitude units
  - GGA.HEIGHT\_OF\_GEOID** - Height of geoid (mean sea level) above WGS84 ellipsoid
  - GGA.HEIGHT\_OF\_GEOID\_UNIT** - Height of geoid units
  - GGA.TIME\_SNC\_DGPS** - Time in seconds since last DGPS update
  - GGA.DGPS\_ID** - DGPS station ID number
- GLC** - Geographic position, Loran-C
  - GLC.GRI\_MS** - GRI Microseconds
  - GLC.TOA\_MS** - Master TOA microseconds
  - GLC.TOA\_STATUS** - Master TOA signal status
  - GLC.TIME\_DIFF\_MS** - Time difference in microseconds
  - GLC.TIME\_DIFF\_STATUS** - Time difference signal status
- GLL** - Geographic position, lat/lon data
  - GLL.LATITUDE\_DEG** - Latitude
  - GLL.LATITUDE\_DEG\_H** - Latitude hemisphere

**GLL\_LONGITUDE\_DEG** - Longitude  
**GLL\_LONGITUDE\_DEG\_H** - Longitude hemisphere  
**GLL\_TAKEN\_AT** - Fix taken at  
**GLL\_STATUS** - Status

**GSA** - Overall satellite data  
**GSA\_AUTO\_SEL** - Auto selection of 2D or 3D fix  
**GSA\_3D\_FIX** - 3D fix  
**GSA\_SAT\_PRN** - Sat used for fix  
**GSA\_PDOP** - Dilution of precision  
**GSA\_HDOP** - Horizontal dilution of precision  
**GSA\_VDOP** - Vertical dilution of precision

**GSV** - Detailed satellite data  
**GSV\_SENT\_NUM** - Number of sentences  
**GSV\_SENT\_CNT** - Sentence count  
**GSV\_SAT\_IN\_VIEW** - Number of satellites in view  
**GSV\_SAT\_PRN** - Satellite PRN number  
**GSV\_ELEVATION** - Elevation, degrees  
**GSV\_AZIMUTH** - Azimuth, degrees  
**GSV\_SNR** - SNR - higher is better

**GTD** - Geographic location in time differences  
**GTD\_TIME\_DIFF** - Time difference

**HDG** - Heading, deviation and variation  
**HDG\_MAG\_HEAD** - Magnetic sensor heading in degrees  
**HDG\_MAG\_DEV** - Magnetic deviation in degrees  
**HDG\_MAG\_DEV\_DIR** - Magnetic deviation direction  
**HDG\_MAG\_VAR** - Magnetic variation in degrees  
**HDG\_MAG\_VAR\_DIR** - Magnetic variation direction

**HDM** - Heading, magnetic  
**HDM\_HEADING** - Heading in degrees  
**HDM\_HEADING\_UNIT** - Heading unit

**HDT** - Heading, true  
**HDT\_HEADING** - Heading in degrees  
**HDT\_HEADING\_UNIT** - Heading unit

**LCD** - Loran-C signal data  
**LCD\_GRI\_MS** - GRI Microseconds  
**LCD\_MR\_SNR** - Master relative SNR  
**LCD\_MR\_ECD** - Master relative ECD  
**LCD\_TIME\_DIFF\_MS** - Time difference in microseconds  
**LCD\_TIME\_DIFF\_STATUS** - Time difference signal status

**MSK** - Send control for a beacon receiver  
**MSK\_FREQ** - Frequency  
**MSK\_FREQ\_MODE** - Frequency mode  
**MSK\_BITRATE** - Bitrate  
**MSK\_BITRATE\_MODE** - Bitrate mode  
**MSK\_FREQ\_STATUS** - Frequency for MSS message status

**MSS** - Beacon receiver status information  
**MSS\_SIGNAL\_S** - Signal strength in dB  
**MSS\_SIGNAL\_N** - Signal to noise ratio in dB  
**MSS\_BEACON\_FREQ** - Beacon frequency in KHz  
**MSS\_BEACON\_BITRATE** - Beacon bitrate in bps

**MTW** - Water temperature  
**MTW\_DEGREES** - Degrees

- MTW\_DEGREES\_UNIT** - Unit of measurement
- MWV** - Wind speed and angle
  - MWV\_ANGLE** - Wind angle
  - MWV\_REF** - Reference
  - MWV\_SPEED** - Wind speed
  - MWV\_SPEED\_UNIT** - Wind speed unit
  - MWV\_STATUS** - Status
- OSD** - Own ship data
  - OSD\_HEADING** - Heading true, degrees
  - OSD\_STATUS** - Status
  - OSD\_VESSEL** - Vessel course true, degrees
  - OSD\_VESSEL\_REF** - Course reference
  - OSD\_VESSEL\_SPEED** - Vessel speed
  - OSD\_SPEED\_REF** - Speed reference
  - OSD\_VESSEL\_SET** - Vessel set true, degrees
  - OSD\_VESSEL\_DRIFT** - Vessel drift true, degrees
  - OSD\_VESSEL\_DRIFT\_UNIT** - Vessel drift unit
- ROO** - Waypoints in active route
  - ROO\_WPT\_ID** - Waypoint identifier
- RMA** - Recommended minimum navigation information
  - RMA\_STATUS** - Status
  - RMA\_LATITUDE\_DEG** - Latitude
  - RMA\_LATITUDE\_DEG\_H** - Latitude hemisphere
  - RMA\_LONGITUDE\_DEG** - Longitude
  - RMA\_LONGITUDE\_DEG\_H** - Longitude hemisphere
  - RMA\_TIME\_DIFF\_A** - Time difference A
  - RMA\_TIME\_DIFF\_B** - Time difference B
  - RMA\_SPEED** - Speed over the ground in knots
  - RMA\_TRACK\_ANGLE** - Track angle in degrees
  - RMA\_MAGN\_VAR** - Magnetic variation
  - RMA\_MAGN\_VAR\_H** - Magnetic variation hemisphere
- RMB** - Recommended minimum navigation information
  - RMB\_STATUS** - Status
  - RMB\_CROSS\_TRACK\_ERR** - Cross-track error
  - RMB\_CROSS\_TRACK\_ERR\_DIR** - Cross-track error steer
  - RMB\_ORIG\_WPTID** - Origin waypoint ID
  - RMB\_DEST\_WPTID** - Destination waypoint ID
  - RMB\_WPT\_LAT** - Latitude of destination waypoint
  - RMB\_WPT\_LAT\_H** - Latitude hemisphere
  - RMB\_WPT\_LONG** - Longitude of destination waypoint
  - RMB\_WPT\_LONG\_H** - Longitude hemisphere
  - RMB\_RANGE** - Range to destination, nautical miles
  - RMB\_BEAR** - True bearing to destination
  - RMB\_VELOCITY** - Velocity towards destination, knots
  - RMB\_ARIV\_ALARM** - Arrival alarm
- RMC** - Recommended minimum navigation information
  - RMC\_TAKEN\_AT** - Fix taken at
  - RMC\_STATUS** - Status
  - RMC\_LATITUDE\_DEG** - Latitude
  - RMC\_LATITUDE\_DEG\_H** - Latitude hemisphere
  - RMC\_LONGITUDE\_DEG** - Longitude
  - RMC\_LONGITUDE\_DEG\_H** - Longitude hemisphere

**RMC\_SPEED** - Speed over the ground in knots  
**RMC\_TRACK\_ANGLE** - Track angle in degrees  
**RMC\_DATE** - Date  
**RMC\_MAGN\_VAR** - Magnetic variation  
**RMC\_MAGN\_VAR\_H** - Magnetic variation hemisphere

**ROT** - Rate of turn  
**ROT\_RATE\_OF\_TURN** - Rate of turn, degrees per minute  
**ROT\_STATUS** - Status

**RPM** - Revolutions  
**RPM\_SOURCE** - Source  
**RPM\_NUM** - Engine or shaft number  
**RPM\_SPEED** - Speed, revolutions per minute  
**RPM\_PITCH** - Propeller pitch, % of maximum  
**RPM\_STATUS** - Status

**RSA** - Rudder sensor angle  
**RSA\_SR\_SENSOR** - Starboard (or single) rudder sensor  
**RSA\_STATUS** - Starboard rudder sensor status  
**RSA\_PR\_SENSOR** - Port rudder sensor  
**RSA\_STATUS** - Port rudder sensor status

**RSD** - Radar system data  
**RSD\_CURSOR\_RANGE** - Cursor range from own ship  
**RSD\_CURSOR\_BEARING** - Cursor bearing CW from zero, degrees  
**RSD\_RANGE\_SCALE** - Range scale  
**RSD\_RANGE\_UNIT** - Range units

**RTE** - Route message  
**RTE\_SENT\_NUM** - Number of sentences  
**RTE\_SENT\_CNT** - Sentence count  
**RTE\_TYPE** - Type  
**RTE\_TYPE\_NAME** - Type name  
**RTE\_ID** - Route identifier  
**RTE\_WPT\_ID** - Waypoint identifier

**SFI** - Scanning frequency information  
**SFI\_SENT\_NUM** - Number of sentences  
**SFI\_SENT\_CNT** - Sentence count  
**SFI\_FREQ** - Frequency  
**SFI\_MODE** - Mode

**STN** - Multiple data ID  
**STN\_ID** - Talker ID number

**TTM** - Tracked target message  
**TTM\_TARGET\_NUM** - Target number  
**TTM\_TARGET\_DIST** - Target distance  
**TTM\_BEARING** - Bearing from own ship  
**TTM\_BEAR\_TYPE** - Bearing units  
**TTM\_TARGET\_SPEED** - Target speed  
**TTM\_TARGET\_COURSE** - Target course  
**TTM\_COURSE\_UNIT** - Course units  
**TTM\_DIST\_CPA** - Distance of closest-point-of-approach  
**TTM\_TIME\_CPA** - Time until closest-point-of-approach '!' means increasing  
**TTM\_SIGN** - '!' means increasing  
**TTM\_TARGET\_NAME** - Target name  
**TTM\_TARGET\_STATUS** - Target status  
**TTM\_REF\_TARGET** - Reference target

**VBW** - Dual ground/water speed  
    **VBW\_WATER\_LONG\_SPEED** - Longitudinal water speed  
    **VBW\_WATER\_TRAV\_SPEED** - Transverse water speed  
    **VBW\_WATER\_STATUS** - Water speed status  
    **VBW\_GROUND\_LONG\_SPEED** - Longitudinal ground speed  
    **VBW\_GROUND\_TRAV\_SPEED** - Transverse ground speed  
    **VBW\_GROUND\_STATUS** - Ground speed status

**VDR** - Set and drift  
    **VDR\_DEGRESS** - Degress  
    **VDR\_DEGRESS\_TYPE** - Degress type  
    **VDR\_SPEED** - Speed  
    **VDR\_SPEED\_UNIT** - Speed units

**VHW** - Water speed and heading  
    **VHW\_DEGRESS** - Degress  
    **VHW\_DEGRESS\_TYPE** - Degress type  
    **VHW\_SPEED** - Speed  
    **VHW\_SPEED\_UNIT** - Speed units

**VLW** - Distance traveled through water  
    **VLW\_TOTAL** - Total cumulative distance  
    **VLW\_TOTAL\_UNIT** - Total cumulative distance unit  
    **VLW\_RESET** - Distance since Reset  
    **VLW\_RESET\_UNIT** - Distance since Reset unit

**VPW** - Speed, measured parallel to wind  
    **VPW\_SPEED** - Speed  
    **VPW\_SPEED\_UNIT** - Speed units

**VTG** - Vector track an speed over the ground  
    **VTG\_MAG\_TRACK** - Track made  
    **VTG\_MAG\_TRACK\_TYPE** - Track made type  
    **VTG\_SPEED** - Ground speed  
    **VTG\_SPEED\_UNIT** - Ground speed units

**VWR** - Relative wind speed and angle  
    **VWR\_WIND\_DIR** - Wind direction magnitude in degrees  
    **VWR\_WIND\_DIR\_TYPE** - Wind direction type  
    **VWR\_SPEED** - Speed  
    **VWR\_SPEED\_UNIT** - Speed units

**WCV** - Waypoint closure velocity  
    **WCV\_VELOCITY** - Velocity  
    **WCV\_VELOCITY\_UNIT** - Velocity units  
    **WCV\_WPT\_ID** - Waypoint identifier

**WNC** - Distance, waypoint to waypoint  
    **WNC\_DISTANCE** - Distance  
    **WNC\_DISTANCE\_UNIT** - Distance units  
    **WNC\_DEST\_WPTID** - Destination waypoint ID  
    **WNC\_ORIG\_WPTID** - Origin waypoint ID

**WPL** - Waypoint information  
    **WPL\_LATITUDE\_DEG** - Latitude  
    **WPL\_LATITUDE\_DEG\_H** - Latitude hemisphere  
    **WPL\_LONGITUDE\_DEG** - Longitude  
    **WPL\_LONGITUDE\_DEG\_H** - Longitude hemisphere  
    **WPL\_WPTNAME** - Waypoint name

**XDR** - Multiple cross rack error, dead reckoning  
    **XDR\_TRANS\_TYPE** - Transducer type

**XDR\_MEASURE\_DATA** - Measurement data  
**XDR\_MEASURE\_UNIT** - Measurement data units  
**XDR\_TRANS\_NAME** - Name of transducer

**XTE** - Measured cross track error  
**XTE\_GEN\_WARN** - General warning flag  
**XTE\_LORAN\_LOCK** - Loran-C cycle lock flag  
**XTE\_CROSS\_TRACK\_DIST** - Cross track error distance  
**XTE\_STEER** - Steer  
**XTE\_DIST\_UNIT** - Distance units

**XTR** - Cross track error, dead reckoning  
**XTR\_TRANS\_TYPE** - Transducer type  
**XTR\_MEASURE\_DATA** - Measurement data  
**XTR\_MEASURE\_UNIT** - Measurement data units  
**XTR\_TRANS\_NAME** - Name of transducer

**ZDA** - Date and Time  
**ZDA\_TIME** - Time  
**ZDA\_DAY** - Day  
**ZDA\_MONTH** - Month  
**ZDA\_YEAR** - Year  
**ZDA\_ZONE\_HOUR** - Local zone hours  
**ZDA\_ZONE\_MIN** - Local zone minutes

**ZFO** - UTC and time to destination waypoint  
**ZFO\_TIME** - Time  
**ZFO\_TIME\_REMAIN** - Time remaining  
**ZFO\_WPT\_ID** - Waypoint identifier

**GRMC** - Sensor configuration information  
**GRMC\_MODE** - Fix mode  
**GRMC\_ALT** - Altitude above/below mean sea level  
**GRMC\_DATUM\_INDEX** - Earth datum index  
**GRMC\_DATUM\_AXIS** - User earth datum semi-major axis  
**GRMC\_DATUM\_FACTOR** - User earth datum inverse flattening factor  
**GRMC\_DATUM\_DELTA\_X** - User earth datum delta x earth centered coordinate  
**GRMC\_DATUM\_DELTA\_Y** - User earth datum delta y earth centered coordinate  
**GRMC\_DATUM\_DELTA\_Z** - User earth datum delta z earth centered coordinate  
**GRMC\_DIFF\_MODE** - Differential mode  
**GRMC\_BAUD\_RATE** - NMEA Baud rate  
**GRMC\_FILTER\_MODE** - Filter mode  
**GRMC\_PPS\_MODE** - PPS mode

**GRME** - Estimated position error  
**GRME\_HPE** - Estimated horizontal position error (HPE)  
**GRME\_HPE\_UNIT** - HPE units  
**GRME\_VPE** - Estimated vertical error (VPE)  
**GRME\_VPE\_UNIT** - VPE units  
**GRME\_OSEPE** - Overall spherical equivalent position error (OSEPE)  
**GRME\_OSEPE\_UNIT** - SEPE units

**GRMF** - Position fix sentence  
**GRMF\_WEEK\_NO** - GPS week number  
**GRMF\_SEC\_NUM** - GPS seconds  
**GRMF.UTC\_DATE** - UTC date of position fix  
**GRMF.UTC\_TIME** - UTC time of position fix  
**GRMF\_LEAP\_SEC\_NUM** - GPS leap second count  
**GRMF\_LATITUDE\_DEG** - Latitude

**GRMF\_LATITUDE\_DEG\_H** - Latitude hemisphere  
**GRMF\_LONGITUDE\_DEG** - Longitude  
**GRMF\_LONGITUDE\_DEG\_H** - Longitude hemisphere  
**GRMF\_MODE** - Mode  
**GRMF\_FIX\_TYPE** - Fix type  
**GRMF\_SPEED** - Speed over ground, km/h  
**GRMF\_COURSE** - Course over ground, degrees  
**GRMF\_DIL\_POS** - Position dilution of precision  
**GRMF\_TIME\_DIL\_POS** - Time dilution of precision  
**GRMI** - Sensor initialisation information  
**GRMI\_LATITUDE\_DEG** - Latitude  
**GRMI\_LATITUDE\_DEG\_H** - Latitude hemisphere  
**GRMI\_LONGITUDE\_DEG** - Longitude  
**GRMI\_LONGITUDE\_DEG\_H** - Longitude hemisphere  
**GRMI\_UTC\_DATE** - Current UTC date  
**GRMI\_UTC\_TIME** - Current UTC time  
**GRMM** - Map datum  
**GRMM\_DATUM** - Currently active horizontal datum  
**GRMO** - Output sentence enable/disable  
**GRMO\_NAME** - Target sentence description  
**GRMO\_MODE** - Target sentence mode  
**GRMV** - 3D velocity  
**GRMV\_EAST\_VEL** - True east velocity  
**GRMV\_NORTH\_VEL** - True north velocity  
**GRMV\_UP\_VEL** - Up velocity  
**GRMZ** - Altitude information  
**GRMZ\_ALT** - Altitude  
**GRMZ\_ALT\_UNIT** - Altitude units  
**GRMZ\_POS\_FIX\_DIM** - Position fix dimensions  
**SLIB** - Differential GPS beacon receiver control  
**SLIB\_FREQ** - Frequency  
**SLIB\_BITRATE** - Bit rate  
**SLIB\_REQ\_TYPE** - Request type  
**SRF150** - OK to send  
**SRF150\_STATUS** - Status  
**SRF161** - OK to send  
**SRF161\_ANT\_STATUS** - Antenna status  
**SRF161\_AGC** - AGC

### 5.3

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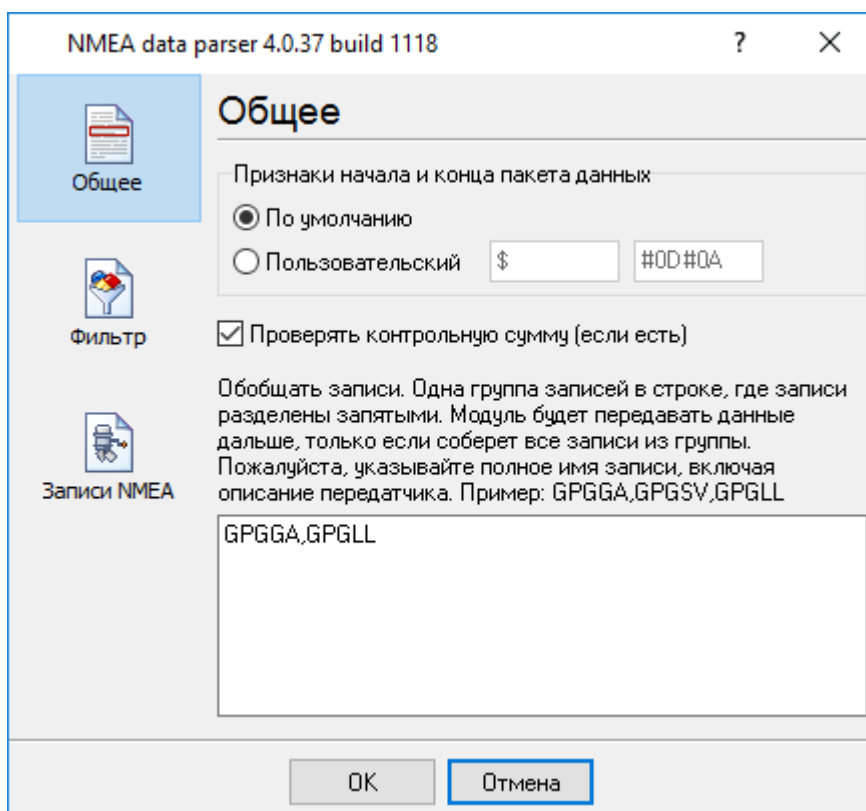
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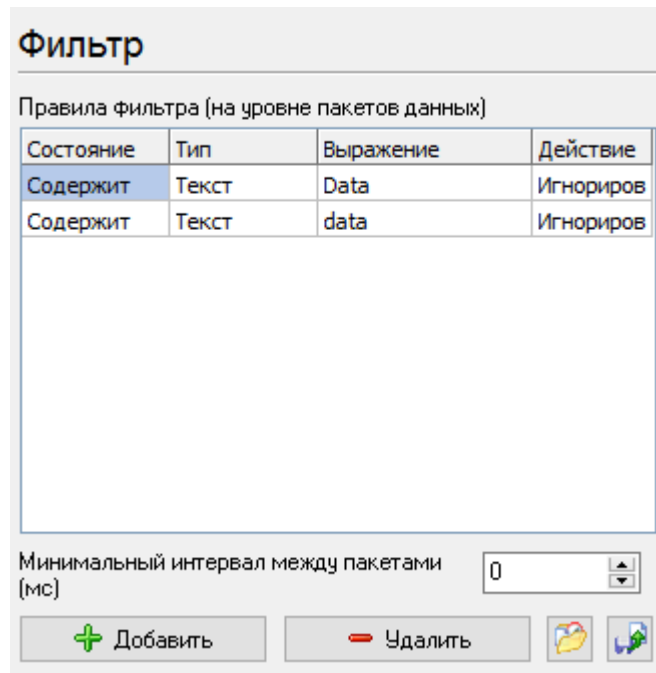
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<a href="helloworld.htm" title=" "> , "> , </a>

"helloworld.htm" title=" " , "

".\*?"

( ?)

"helloworld.htm" " , "

" .. -  
" ..  
" ..

```

(" - .).
:
\
.
,
'
!$()*+.<>?[\\^{}
\Q
\E
\Q
-
( 0 9 A F),
:
[A-Fa-f0-9]
,
0 9 A F:
[^A-Fa-f0-9]
" .
:
"ab. "bc.:
(ab|bc)
\n, \n
"aaa. "bbb., \1.
,
:
(aaa|bbb)[0-9]+\1
"aaa. "bbb.,
([0-9]+), \1.

```

aaa123bbb.  
"aaa.  
\1

Perl.  
i

Perl  
("/.),

(?i)pattern

-

,  
:  
:

\(  
(

\#[a-fA-F][0-9]{3, 6}

0x00-0xFF

0x[a-fA-F0-9]{2}

0.0000

([0-9]+(\.[0-9]{2})?)

JSON "name": "1234"

"name":\s\*"([\^"]+)

XML HTML name="1234"

name=([\^"]+)

value : 1234

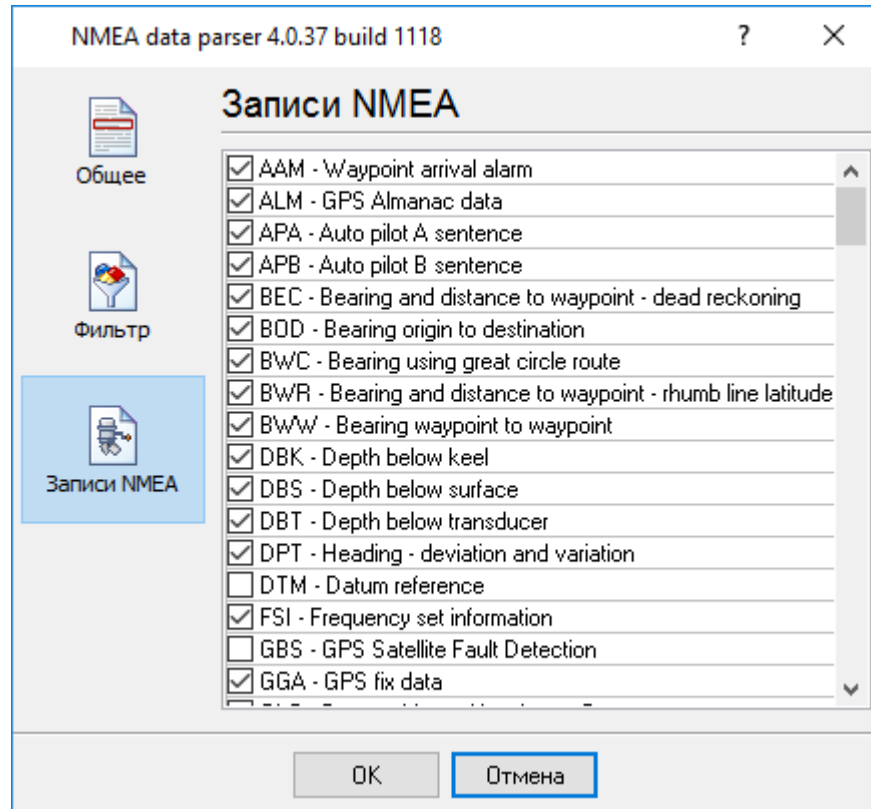
value\s\*:\s\*(\d+)

## 5.6

## NMEA

" NMEA" ( .1)

(sentences),



.1. NMEA.

NMEA,

- **String** -
- **Boolean** - (True/False) - 0 1;
- **Float** - : -2.9 x 10<sup>-39</sup> .. 1.7 x 10<sup>38</sup>
- **Integer** - : -2147483648..2147483647;
- **DateTime** -

DateTime.

