Advanced NMEA Data Logger

1

1.1 Advanced NMEA Data Logger

Advanced NMEA Data Logger   NMEA   GPS   ,
                    NMEA   , Excel, Access,
                    Windows. Advanced NMEA Data Logger
                                                            NMEA.

Advanced NMEA Data Logger
            ,   ,
                                            ,
Windows -   ,   DDE (Dynamic Data
Exchange), ODBC, OLE.

                    Advanced NMEA Data Logger:

- ·   .
          ;
- ·   (talkers)   (GPS,   . .);
- ·   (sentences) NMEA
      Garmin, SiRF   StarLink;
- ·   ;
- ·   ;
- ·   ;
- ·   -   ;
- ·   ,   ;
- ·   MS Excel;
- ·   ODBC-   (MS SQL, Oracle, MS Access,
      dBase   );
- Advanced NMEA Data Logger   DDE   OPC
                ;
- Advanced NMEA Data Logger can use direct connection (use OLE) to Microsoft Excel and write
      data directly to rows or columns;
- ·   ;
- ·   ;
- ·   ,
              ;
- ·   Windows 2000+,   x86   x64.

Advanced NMEA Data Logger   ,
                    .   ,
                    .
          ,   !

          Advanced NMEA Data Logger   Windows 2000+,
                              ,
                    .
                    ,
          .

Advanced NMEA Data Logger
NMEA   .

- ;
- ;
- .

: http://www.aggsoft.ru/
: http://www.aggsoft.ru/nmea-data-logger.htm

1.2

ASCII -   .   ASCII -
,
.   Windows
ASCII.   ASCII   * .TXT (,
README.TXT).

Binary File -   ,   ,
ASCII   (0   255).

Bytes (   ) -   ,   ,   .

Bit (   ) -   .   : 0   1.   8
8   (   )   .

Baud Rate -   .   BPS (
),   .
,   ,   ),   ,
600   .

Cable (   ) -   .   ,
.

COM port -   .

,   IBM   IBM-
4   COM1, COM2, COM3   COM4.
.

Client/Server (/   ) -   ,
                      (,   ,   . .)
                      (   ).

Data bits -   (   ),   .
            ,   .

DNS (Domain Name System) - DNS
                    (TCP/IP)   .   DNS
                    (   )   IP   .   www.aggsoft.com
            198.63.211.24.

**Flow control** -   ,   .

"   "   .
                                                    ,   .
                                    ,   .
                    (   )
                            ;   .

Handshaking -
                    .

Internet (   ) -   ,   TCP/IP
                    .
                                                                                    .

IP, Internet Protocol (   ) - Internet Protocol,
                              TCP/IP,
                            .   IP   IP   ,
'xx.xx.xx.xx'.

IP   (Internet Protocol) -   ,   TCP/IP.
                                                            IP   .
            IP   ,   ,   . IP
                            ,   .   : 198.63.211.24.

LAN (Local Area Network) -   .

NIC, Network Interface Card (   ) -   ,
                                    .   ,
                                                                                    (PCI, turbochannel,
nuBus,   .)   (, 10baseFL).

PC (   ) -   Personal Computer (   ).

Ports (   ) -   .

Protocol (   ) -
                    .

RS232, RS423, RS422   RS485 -   Electronics Industry Association (EIA)
RS232, RS423, RS422,   RS485,   .
EIA   "RS"   ,   ,
(recommended standard).
"EIA".

Stop bits (   ) -
.   1   2.

TCP/IP, Transport Control Protocol / Internet Protocol - TCP   IP   ,
.

TCP/IP   ,
Internet.

(Log file) -   ,   ,   (. log) —
.

2   ,

2.1

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.

1.   Advanced NMEA Data Logger   -
.

2.
.

3.   Advanced NMEA Data Logger   ,
.

4.   ,
,
.

5.   Advanced NMEA Data Logger
.   sales@aggsoft.ru

6. Advanced NMEA Data Logger   ,   ,
.
Advanced NMEA Data Logger   .

7. **Advanced NMEA Data Logger**   **"AS IS".**

                                              .

                            ,

                 .

8.   ,   ,   ,   ,

               ,   ,   ,   ,   ,

                  ,

            ,   ,   .

                            .

          ,   ,   .

9.   Advanced NMEA Data Logger   ,

                               .

10.   -   ,

       ,   ,

    Advanced NMEA Data Logger

                Advanced NMEA Data Logger.

2.2

                       shareware-   .   ,

                                  .

            <u>   </u> 5 .

                           :

-                  21   .
              ;
-                          .
          ,   ;

2.3

                      shareware-   .   ,

                                  .

                            ,

         ,   ,   ,   .

            , <u>   </u> 4 .

Internet,   .
                                                                                  ,
                            .
                    .   .
                                                    .

_____
                ,   ,   .

                            .
                .

2.4

Advanced NMEA Data Logger	support@aggsoft.ru
	support@aggsoft.ru
	sales@aggsoft.ru

3

3.1

                                                                          :

- Windows 2000 SP 4 - Windows 10 (x86   x64,
).

                                                                                              .
            ,   ,   COM-   ,
            (,   ),   ,   .
                                            (   )   .

3.2

   -   ,   .

                                            Advanced NMEA Data Logger.

                        .

, Advanced NMEA Data Logger   "\Programs
Files\Advanced NMEA Data Logger"   ,   .

Advanced NMEA Data Logger
,   .

4

4.1

Advanced NMEA Data Logger
.
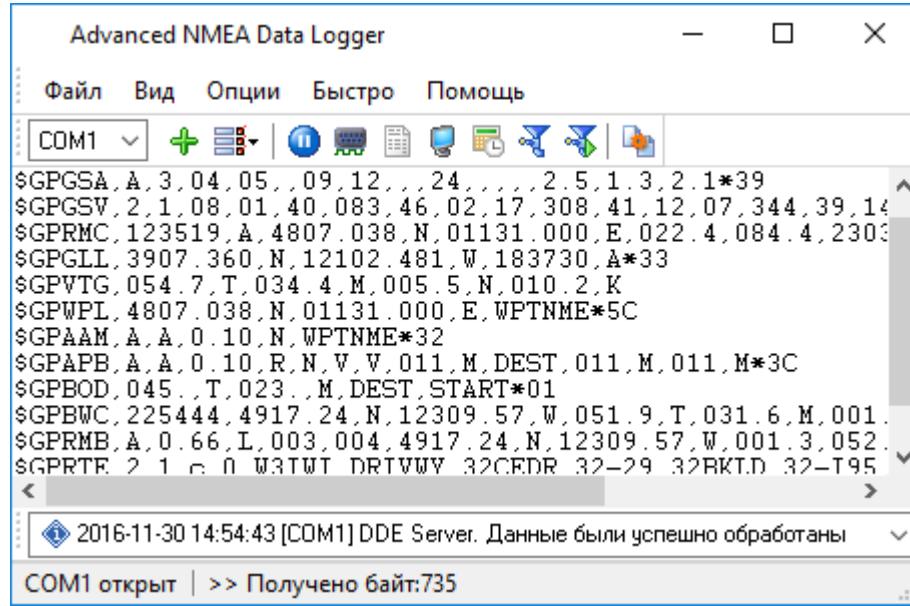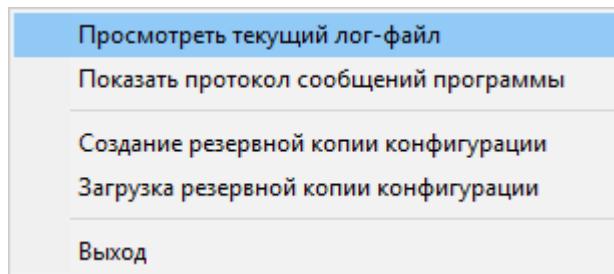
Advanced NMEA Data Logger   "   ".

(. 1.1.1),

-                              ,   ,
.
.   ,
.
,   ,

.
┌─────┐ ("   -   ..."),   "   " (.
9│
1.1.2)   -   .

. 1.1.1.

. 1.1.2. " "

, , -
C:\. ,
9 .

1-2-3-4

1. . :

" "
13 . " COM "
.

2. ( ).

" " .
(
).

3. , 36 .

" "
, , ,
, . .
, .

4. Advanced NMEA Data Logger ,
.

Advanced NMEA Data Logger , ,
.

4.2

,   .

.

:

- RS-232   (
  RS-485   );
- "
  " (-   ),   ,
                                                        ;
-
                                                        ;
- COM -   ,   ,   ,   ,
                              .

"_____
____ 13 ".

(NIC).
:

- (NIC),
  Advanced NMEA Data Logger   IP
                                                    .   IP
            ,   .   ,   Advanced NMEA Data Logger
                              ,   ;   IP
- Advanced NMEA Data Logger   IP
                              DHCP,
                                                                    IP   .
-
                                                    ,   IP   0.0.0.0.
                                                                                              .

"_____ TCP/IP 18 ".

-                          -   ,
                                  .
_____ - 30
                                          .   -   ,   _____
_____ 33   -   .

(____ . 1.1.1 7).
                                          .   ,

"_____ 25 ",
Advanced NMEA Data Logger   ____ 66 .

.

-

Advanced NMEA Data Logger.

Advanced NMEA Data Logger   _____ 36 (plug-ins),

.

.

" _____ 36 ".

                                                              (___ . 1.1.1 7)   ____

_____ 69 (   ),

.

4.3

.

.1.2.1.

:

![green] - ( ).

![blue] - ( ).

, .

, .

, .
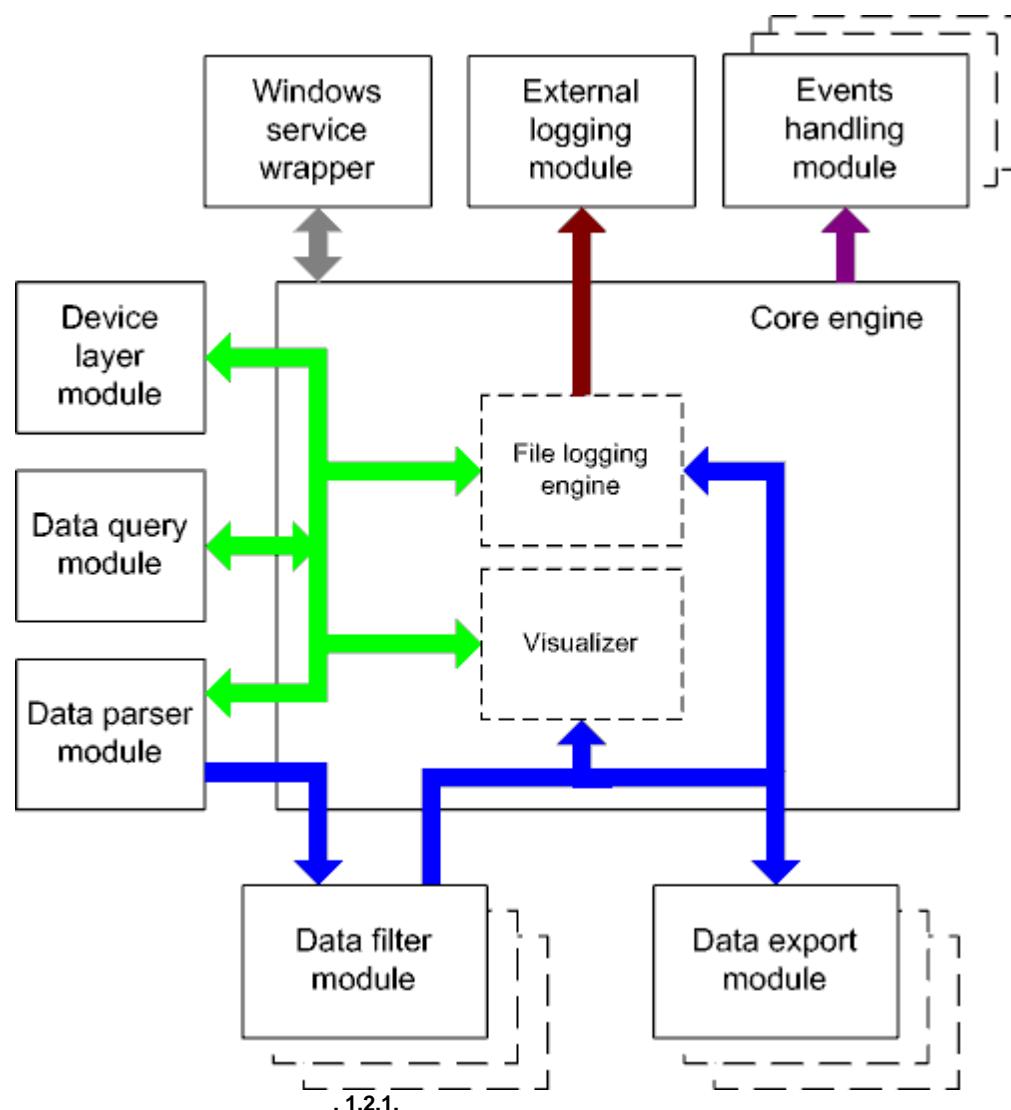
- Core engine -   ,

- Device layer module -
- Data query module -
- Data parser module -
- Data filter module -
- Data export module -
- Visualizer -
- File logging engine -   -
- Windows service wrapper -
- External logging module -
- Events handling module -

4.4

Windows.   /   COM-
                                              .

4.5

1.   -
                                   .

2.   .

                                                                              :

   1.   .
            "   ".   ,
                  "   ".
   2.   Windows.
     regedit.exe   :

     Windows x64
HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\AGG Software\Advanced NMEA Data
Logger

     Windows x32
HKEY_LOCAL_MACHINE\SOFTWARE\AGG Software\Advanced NMEA Data Logger

                                     .

3.   "   "
        :
   Ctrl+S -   "   /   "   ;
   Ctrl+D -   "   /   ";
   Ctrl+P -   ;

Ctrl+L - log- ;
Ctrl+R - ;
Ctrl+E - Windows;
Ctrl+M - , .

4. ,
 . .: -

5. INI .
.
" ".

6. 10 ,
: - .

5

5.1

5.1.1 (COM)

(. 1.1.1 [7]) " ". ,
, (. 2.1.2).
. " COM " .

. ,
. " " (. 2.1.1).

. 2.1.1.

COM-
. COM-
COM- .

(, . .)
" " (. 2.1.1).
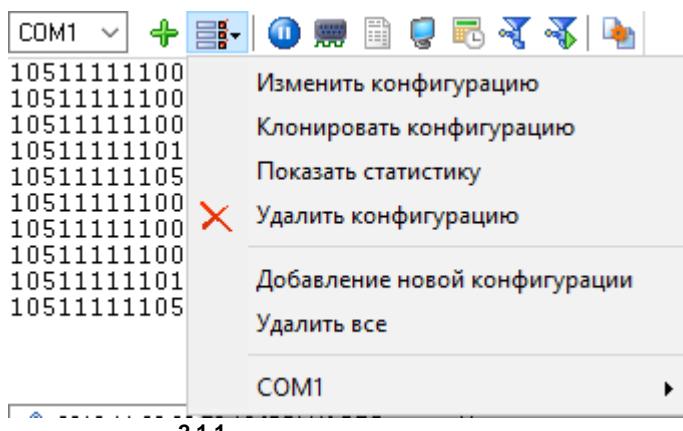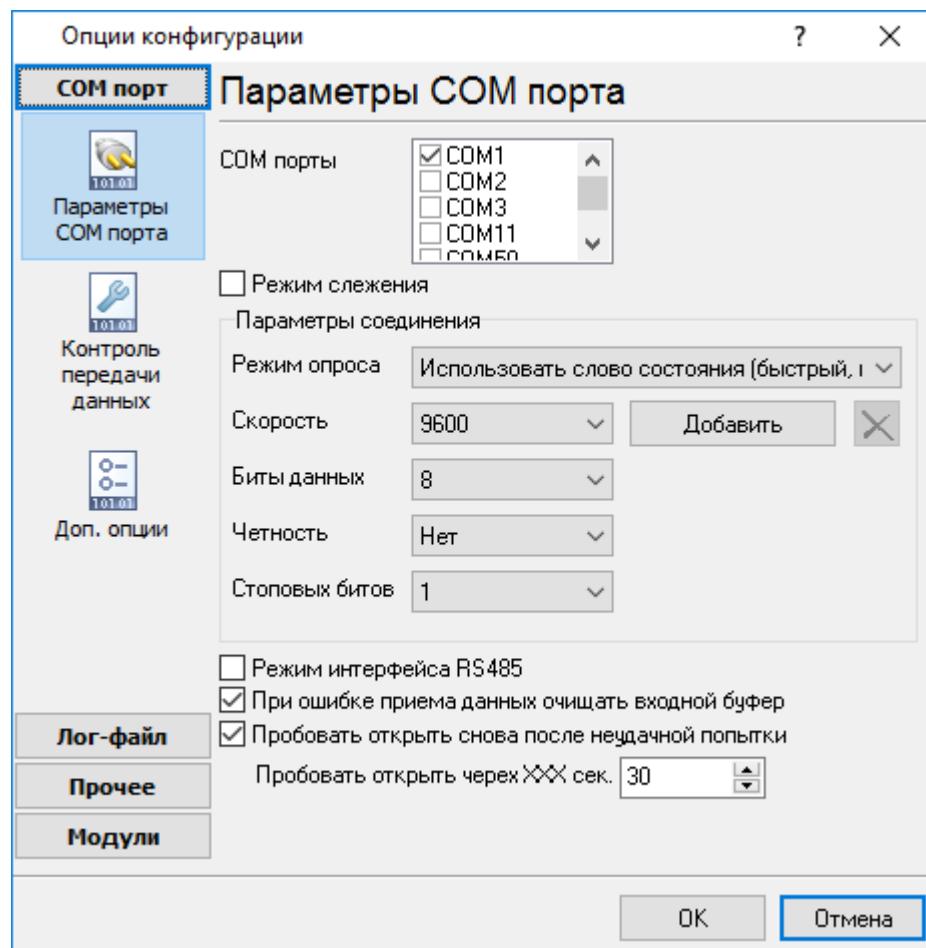
. 2.1.2. COM-

RS-485 ,
, . RTS- ,
. ,
(,). ,
, ,
.

API- Windows
/ : API- .
Windows.
/ , .
, - .
API,
/ .

Windows   API   ,
,   ,   API -   . Advanced NMEA
Data Logger
                                           .   ,   ,   ,
(WRPI.DRV   ),   ,   ,
                                    .
             ,   Advanced NMEA Data Logger   .

       /   (. 2.1.3).
                                                                                                           .
                                                  ,
             .

                                                                            ,
           ,   .
                                              .

"   "   ,
                         ."   "   ,
                                                                              .

                                                       "   RTS"   /   "
DTR"   .   ,
                          (RTS   /   DTR)   ,
                   90%   .
                                          ,   .

                                              ,
       10%   .
             .
                   .

                                                       "   CTS"   /   "
DSR"   .
         Windows   ,
                                          (CTS   /   DSR).
                                          ,
             .

                              ,   RTS   CTS
                   ,   DTR   DSR.

                              ,   ,   .

"   "
   ."   "   ,
                                                    .

                                    "   "   " "   "   ".
             ,   Xoff   ,
      10 %   .
                                             .

       10%   .   Xon.
                                                                .

                                    "   "   " "   "   ".
   10%   90%   .   ,
                                 ,   Xoff.
             ,   Xon
      "   '.

                                                                                ,
                               ,   ,
             ,   "   ".
)   ,   (-
                                                                        0x11
          .   COM-   ,
   0x13 -   .
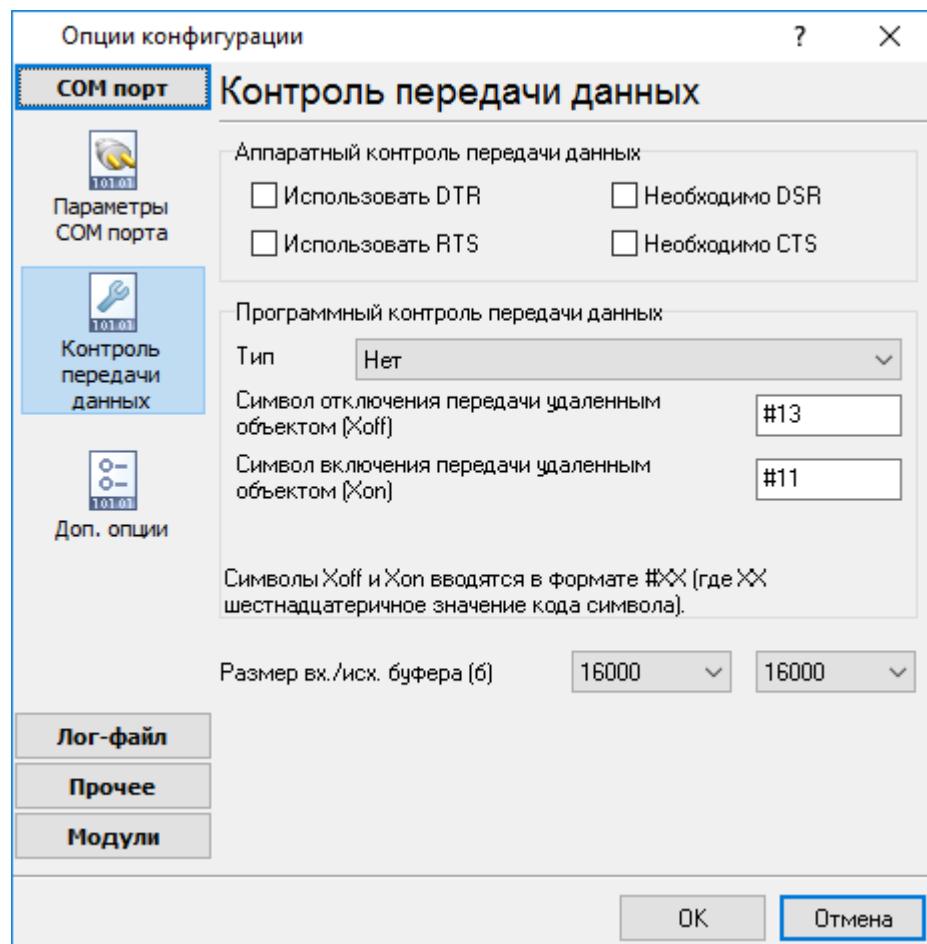
. 2.1.3

./   .   -   .
                    COM   .
   .

                                    Advanced NMEA Data Logger
   ,   ,   .
                                                                                            COM-
                          .   COM-   ,
   -
          "   ".

                                    Advanced NMEA Data Logger,
                                    COM-   .

                                          ,   ,
Advanced NMEA Data Logger.

,

.

UART (UART receiver parity error) -   ,
;

UART (UART receiver overrun),
UART (UART receiver framing error) -   ,
;

CTS (transmit timeout waiting for CTS),
DSR (transmit timeout waiting for DSR),
RLSD (transmit timeout waiting for RLSD) -   ,

;

(transmit queue is full) -   ,   Advanced NMEA Data Logger
;

break (break condition received)

.   Windows NT
.   ,
"   ->   "   13 .

5.2

5.2.1   TCP/IP

UDP   TCP

TCP (Transport Control Protocol)   UDP
(User Datagram Protocol). TCP   ,
,   ,   IP.   TCP   ,
,
.   TCP
, TCP
.   , UDP
,   -   ,
.
UDP
.

UDP   ,   .
TCP, UDP   IP   .   TCP, UDP
.
,
.

-

UDP   Instant
Messaging,   IP.

Advanced NMEA Data Logger

.

TCP/IP   ,   .

(TCP/IP)   Advanced NMEA Data Logger
:

1.   .   IP   ,
      TCP/IP,   . IP   ,
    Advanced NMEA Data Logger   ,
    (www.yourserver.com)   .   ,
      "Plant1",
      "Plant1"   IP   ,   IP   .
     ,   Advanced NMEA Data Logger   IP
      .
   IP   ;
2.   .   IP   ,
    ,   ,   .
      ,   Advanced NMEA Data Logger
     IP   (NIC),
      IP
    ,   .   ,   Advanced NMEA Data Logger
      ,   ,
    IP   . Microsoft Windows,   TCP/
    IP   .   IP
     IP   .
     ,   ,   "OK"   ,
    Advanced NMEA Data Logger   TCP/IP.
      ,
    IP   . '   ,   Advanced NMEA
Data Logger   .
    ,   ,
    .

      ,   Advanced NMEA Data Logger
    .   ,
      (___. 1.1.1⌐ 7⌐).

    ,   .

     (___. 1.1.1⌐ 7⌐) '   " ".   ,
   ,   (. 2.2.2).
    .   "   IP"   .

TCP/IP

" " (. 2.2.1).

. 2.2.1.

" IP"
TCP/IP: IP .   IP
,   " ".
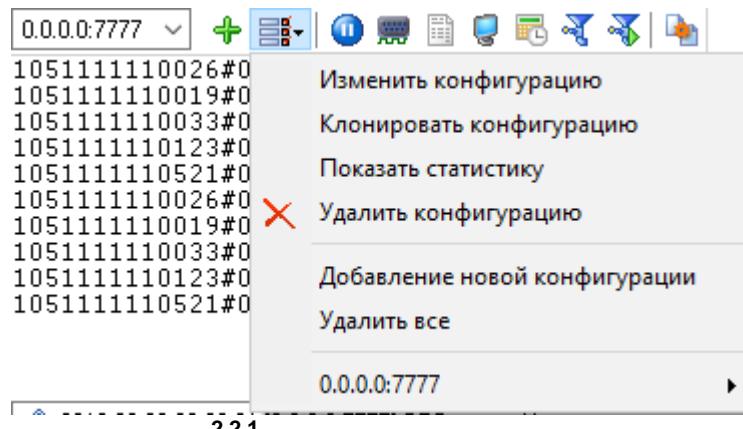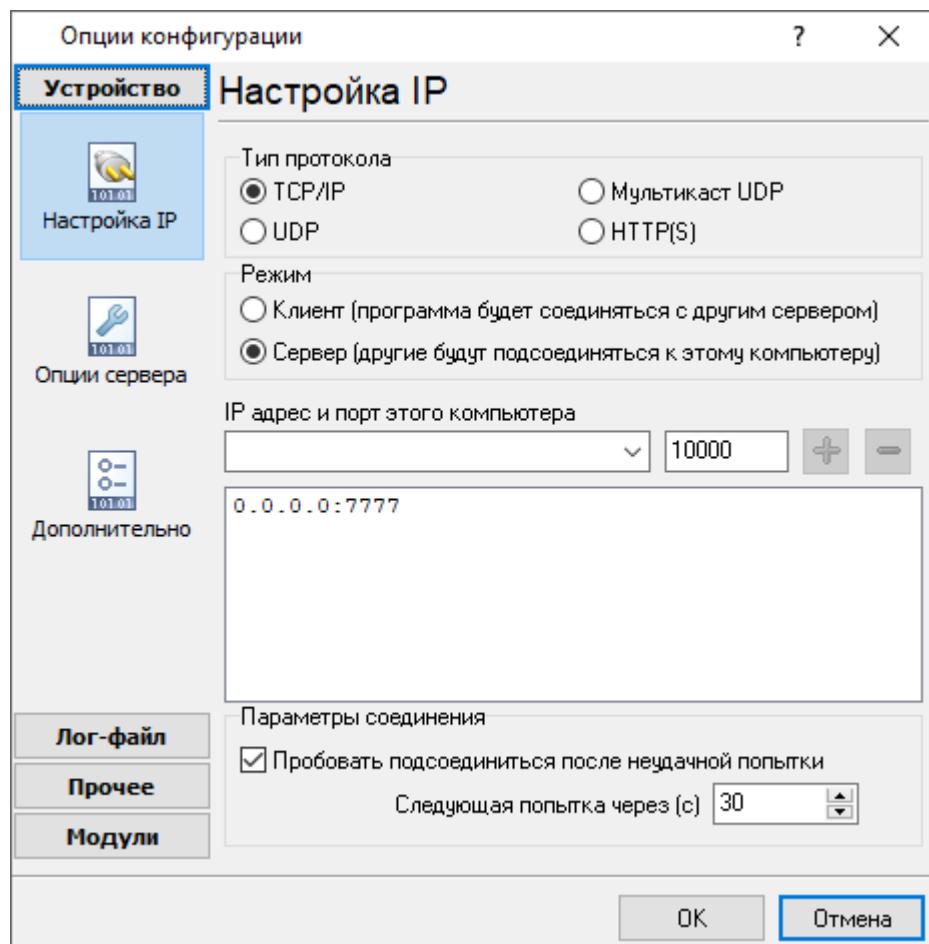
. 2.2.2. TCP/IP

IP   ,   ,   .
                          ,
              .   .   ,   ,
                                    SMTP - 25,   the telnet - 23,   NNTP -
119,   . .   ,
SERVICES,   Windows (Windows NT
WINNT\SYSTEM32\DRIVERS\ETC).   SERVICES -   ,
              Advanced NMEA Data Logger
(,   )
              (,   ).
                                                                                                      .
                                    ,
                                                      .
                            ,   ,
                                          .
              ,   .

              IP   (socket).
                                                                .

,   .   ,
,   ,   ,   .
.   ,
,   ,   IP   ,
.
.   ,
"   "   .
IP
(   ).
,   .

(   )   (
)   ,   "
",   Advanced NMEA Data Logger
.
N   ,   "
(c)".

IP

,
.   IP   ,
,   .
.
-   .   ,
Advanced NMEA Data Logger   IP   .
"   ".

(firewall)

Microsoft Windows XP SP2   ,   Advanced NMEA
Data Logger   . Windows Firewall,   ,
,
.   Windows Firewall   ,
,   ,   (Security Alert).
:

. 2.2.3.

:
- ;
- ;
- ,   .

,
.

:   ,   ,
,   ,
.

"   "   TCP/IP   (.
2.2.4).

-
.

.

"TCP/IP   ":

-

.

.

( ) -   ,
                                                                         ,
.   "-1",
.

Опции конфигурации   ?   ×

Устройство   **Дополнительно**

Настройка IP
Лимит одновременных подключений   255

Отсоединять неактивных клиентов через (с)   -1

Режим "keep alive" TCP   Свой

Опции сервера
Интервал/Таймаут (с)   60   1

Простая эмуляция терминала   Отключено

☐ Оптимизировать для малых пакетов данных и быстрых ответов

Дополнительно

Лог-файл

Прочее

Модули

                                            ОК   Отмена

. 2.2.4.

                                                        TCP/IP

:

keep-alive TCP (   ) -
                    ,   ,   .
                                                                         ,
                          ,   ,
                          .   "   "   keep-alive,
                                                                         ,
Windows.

:   .

       keep-alive   .

(TCP

UDP):

            -              ,

        .

     ,   .

5.3

5.3.1

                 .

       .   ,

      .

     .

                 (.1.1.1 7)   2   (. 3.1.1):

1.   .

       ,   .

2.   .

     .   .
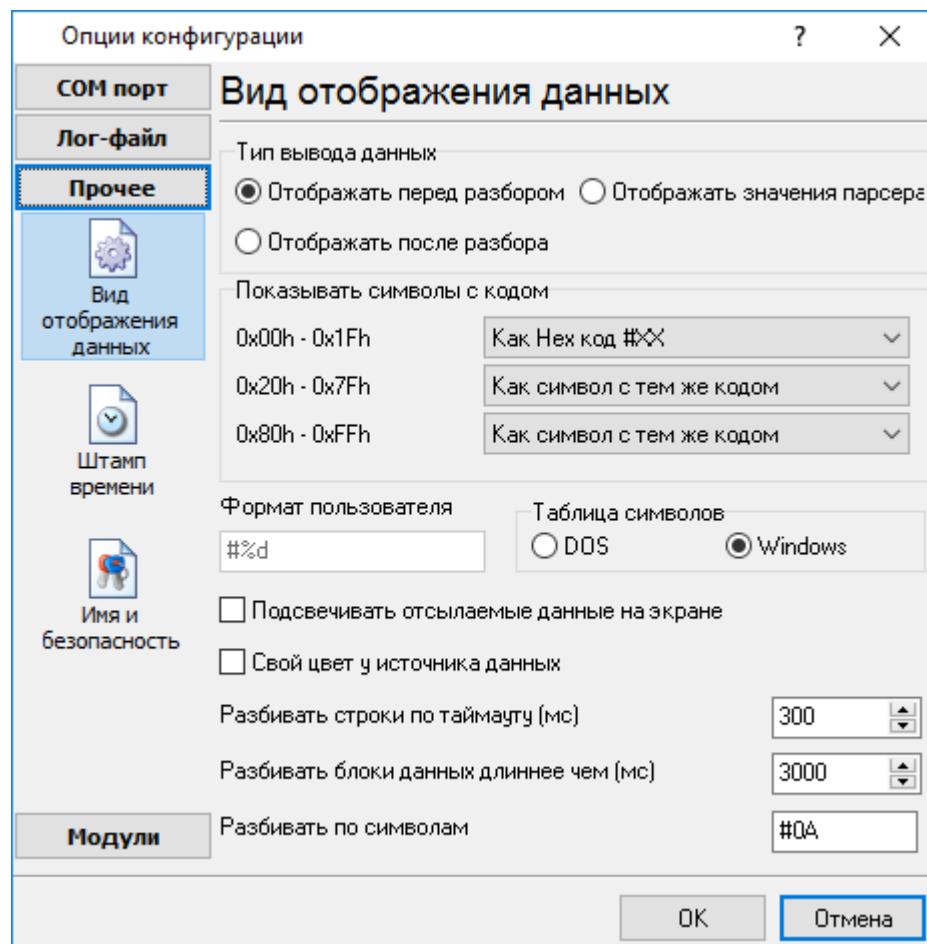
. 3.1.1.

" - " (. 3.1.1)
, :

- .
.
. ,
,

Hex- .

- .
%d , %x - .
.

- .

- : Windows DOS
(OEM).

\-   ,

.

\-   .

,   ,   0,   .

\-

.

.   0,   .

\-

.   ,

,   .

,   .   . 3.1.1

,

5.3.2

(. 3.2.1)   (   )

.

68 .
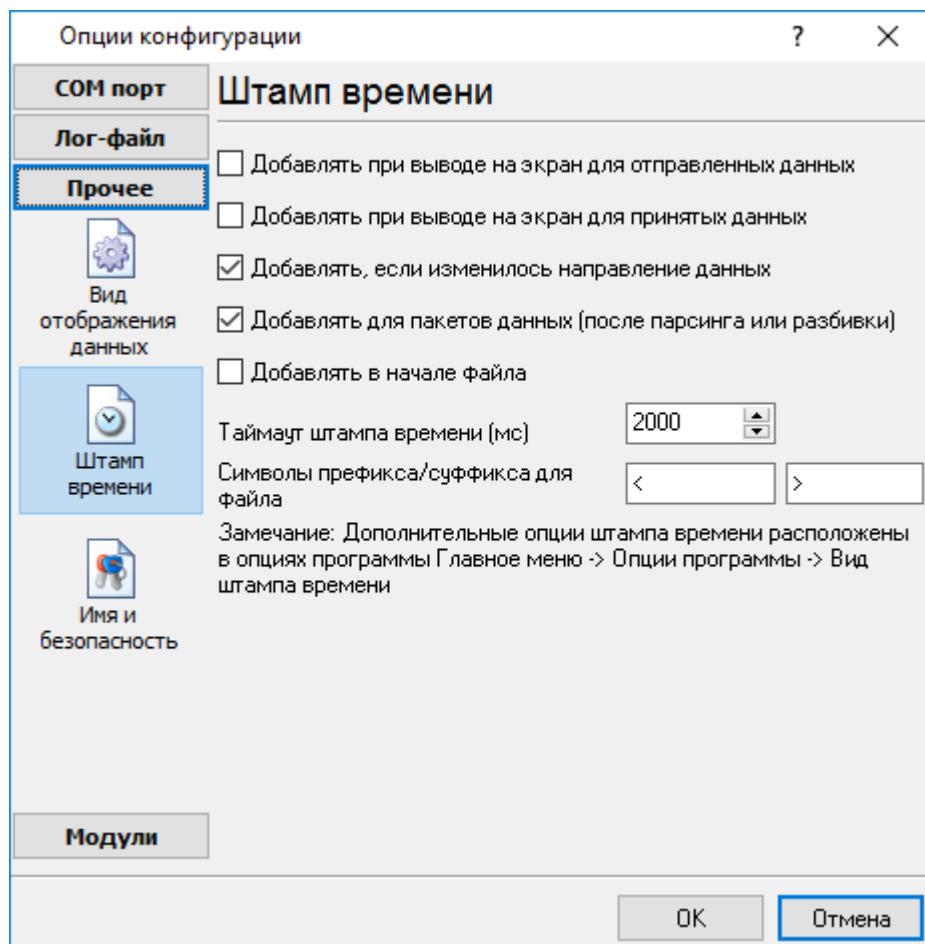
. 3.2.1.

.   : >#0D#0A

5.3.3

(. 3.3.1)   :

                    -

                                                                                        .

                    .

                                    -   ,

                                                    .

                "   "

                                    .   ,

        ,   [74] .

                                                            -                           ,

                "   /   "   .

                                            -   ,

                                        .
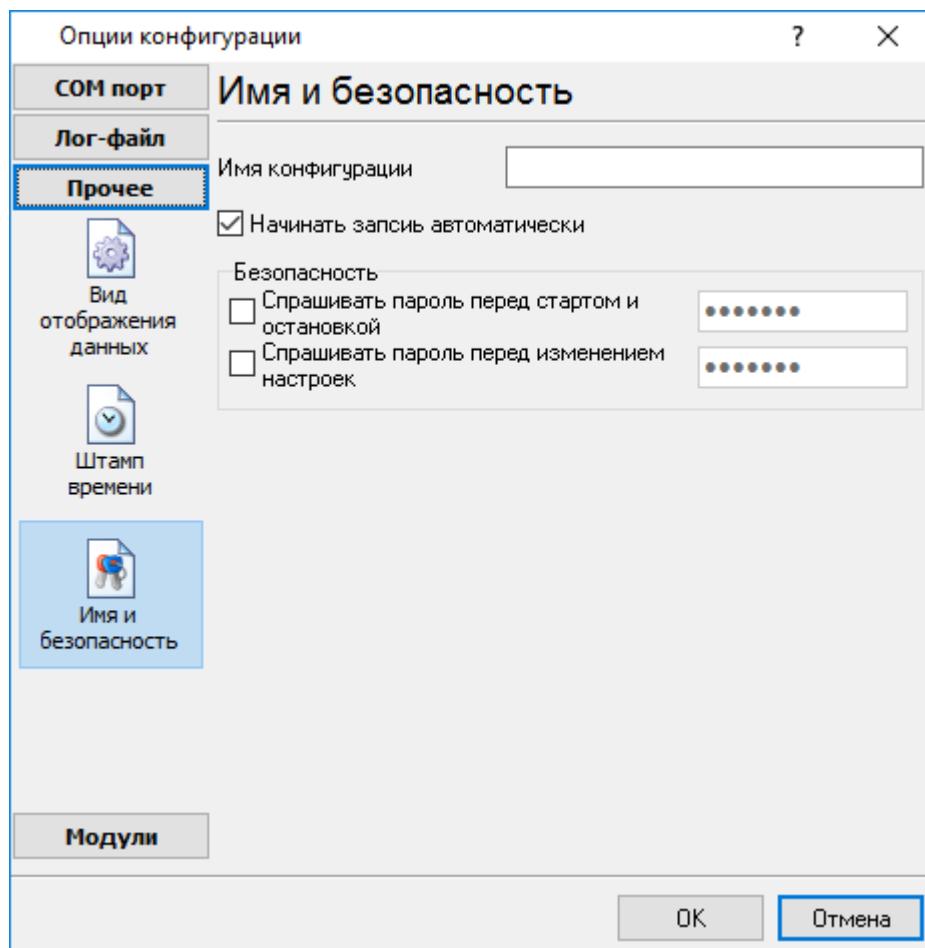
. 3.3.1.

5.4 -

5.4.1 -

-         - .
(. 4.1.1).
- (   ).
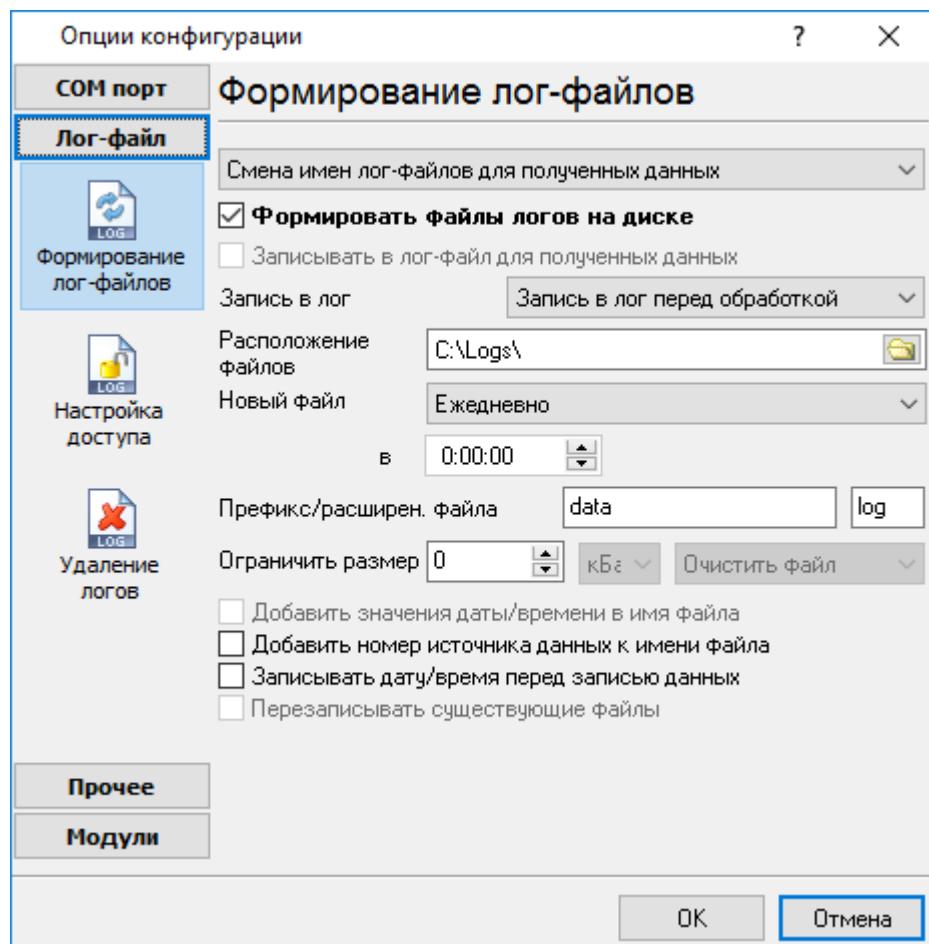
. 4.1.1. -

, - , :
. "
",
.

, " ". " ",
.

"OK".
, ,
.

Advanced NMEA Data Logger - - , -
.

- :

- • - , ;
- • .
" " . , "sample",
"log ", " ",

"sampleYYYYMMDD.log". 21-
2003 - "sample20030321.log".

- ( ).

,   ,
,   .

"   "   :

1.   -   ,   .

DDMMYYYY,   DD -   , MM -
YYYY -   ;
2.   -   .
MMYYYY;
3.   -
,   YYYYMMDD;
4.   -
.   :

sample00000001.log.   -
;
5.   -   ;
6.   -   .
WWYYYY,   WW -
,   YYYY -
;
7.   -   ,
;
8.   -   .
HHDDMMYYYY;
9.   -   -
.   ,   -
,   .

:

d   -   ,   (1 - 31);
dd   -   ,   (01 - 31);
ddd   -   (-   )   ,
;
dddd   -   (-   )
,   ;
m   -   ,   (1 - 12);
mm   -   ,   (01 - 12);
mmm   -   (-   )   ,
;
mmmm -   (-   )   ,
;
yy   -   (00 - 99);
yyyy   -   (0000 - 9999);

h   -   ,   (0 - 23);
hh   -   ,   (00 - 23);
n   -   ,   (0 - 59);
nn   -   ,   (00 - 59);
s   -   ,   (0 - 59);
ss   -   ,   (00-59).

:   -   .   ,
                    "sample_log",   "txt".

        :   = sample_log_,   = txt (!).
                        HHDDMMYYYY.   .
                ,   ,   .

                                                                -
                        4   7   /
                .

                                                        -   ,
                                                        .   , COM1-
sample20030321.log.

                /   -   ,
                                                                                                        .

                                                        -
                4   7.   ,
                                                                .

                                                        -           ,
"   ".   ,
                .   -   :

1.   -
                .   **!**
2.   -
                                                                        .
3.   **(   )** -   .
                                                        .
4.   **(   ).**   ,
                                                                                .
                                                        .
                                        .   ,
                        .

5.4.2   -

                                                                                ,
                    -           , . .   ,
                .   ,   Microsoft
            Office (, Microsoft Word),   Advanced
            NMEA Data Logger   .
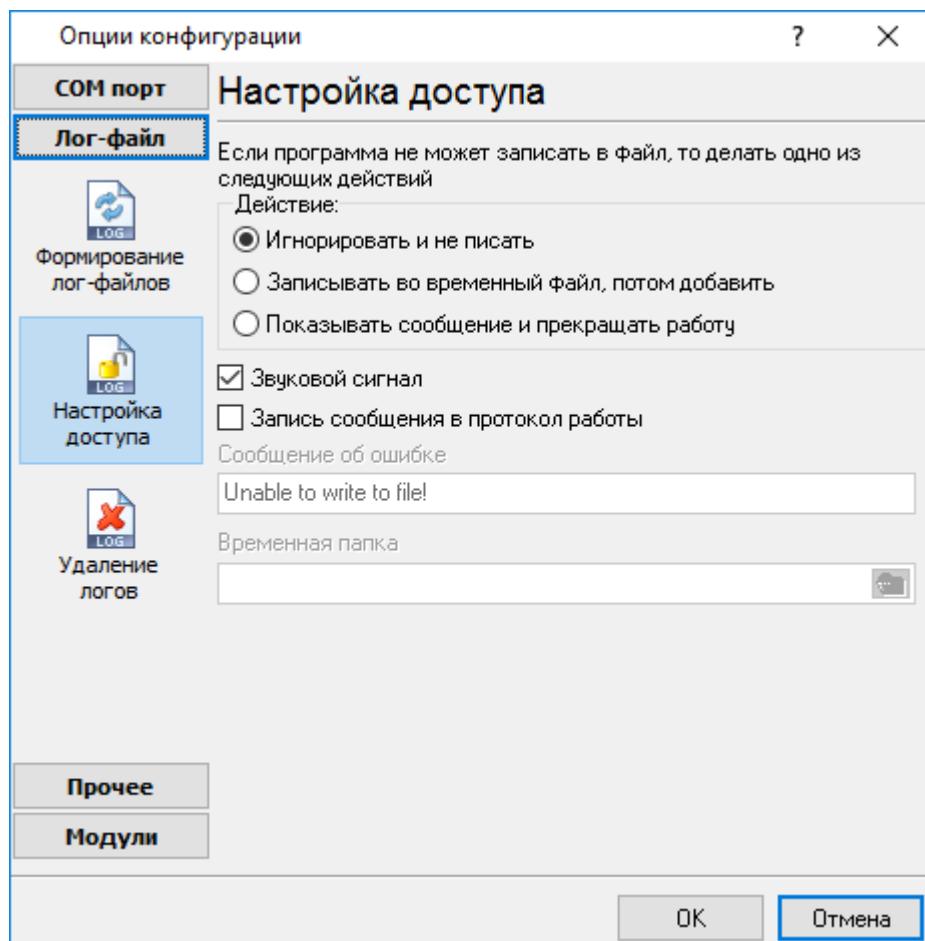
. 4.2.1.

Advanced NMEA Data Logger
(. 4.2.1),   :

-
                                        ;
-
                    ,   .
                                      ;
-
                      .
.

.

5.4.3

'   ,
'   '   (. 4.3.1).

                                                                    ,
      ,   .

                               ,   '
                                                     .

                                       .   ,
                             .

. 4.3.1.

5.5

5.5.1

,   ,
.
(,
),   ,
.

"   " (.   .   ).

Advanced NMEA Data Logger   :

- -

  ;
- **(,   ,   )** -   (   )
  ,   .
  ;
- -

  ;
- -
  ,   , Excel   ;
- (. 5.1.3) -   ,
  Advanced NMEA Data Logger.   , "   -   " "
  ".
  .   ,   ,   . .
  .
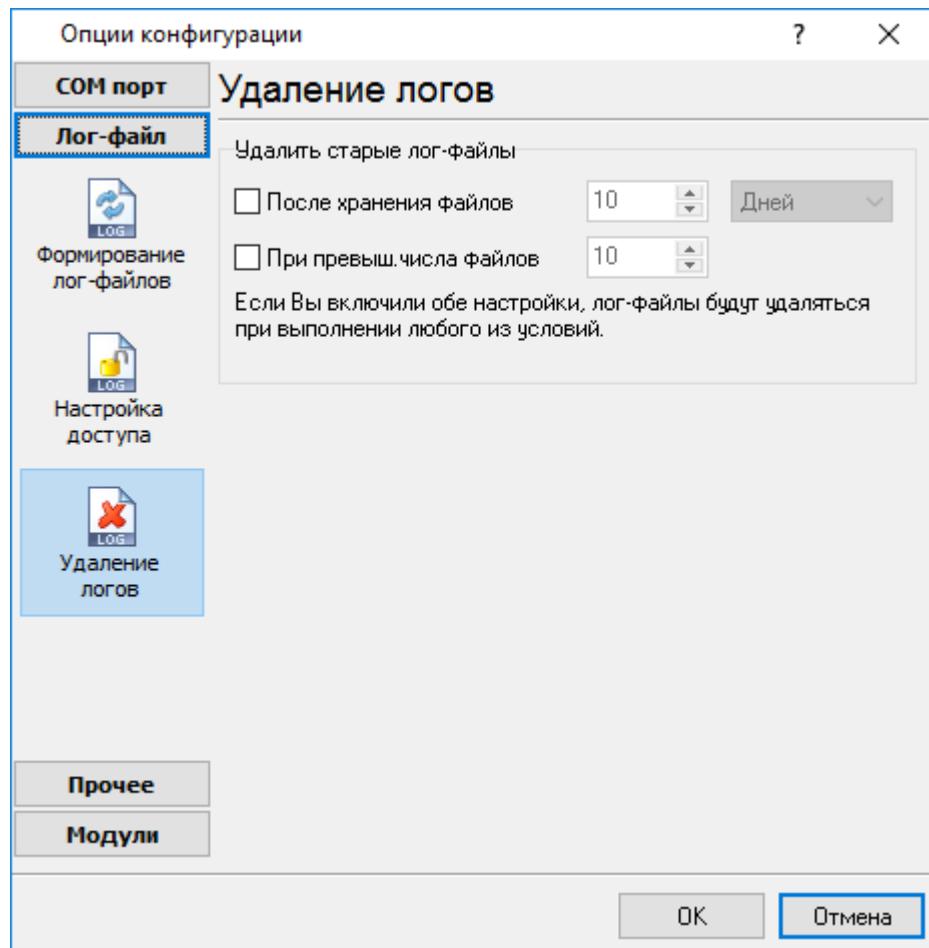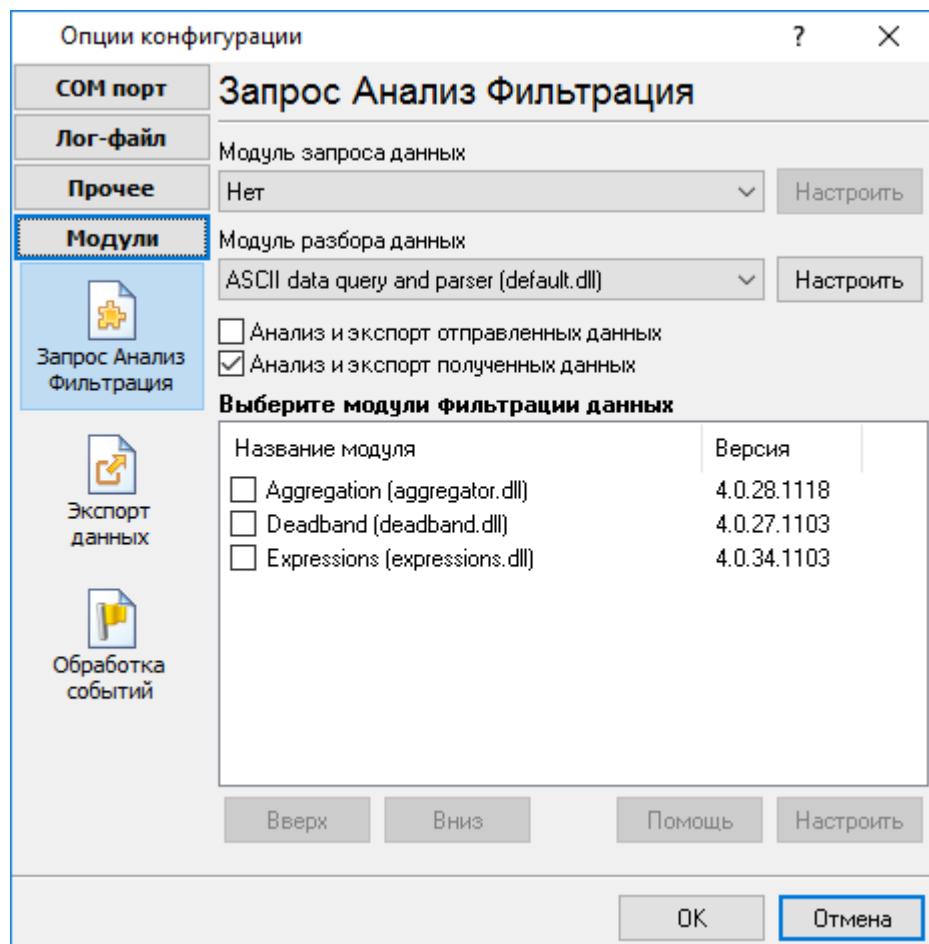
. 5.1.1.
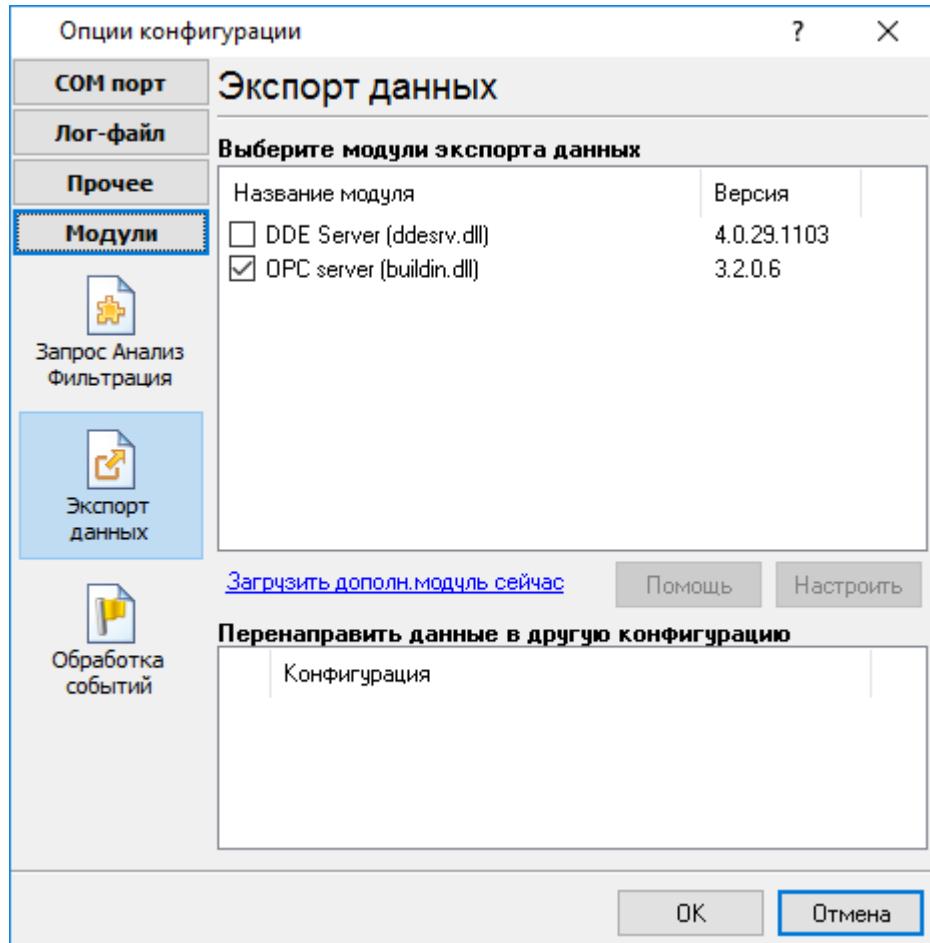
. 5.1.2.
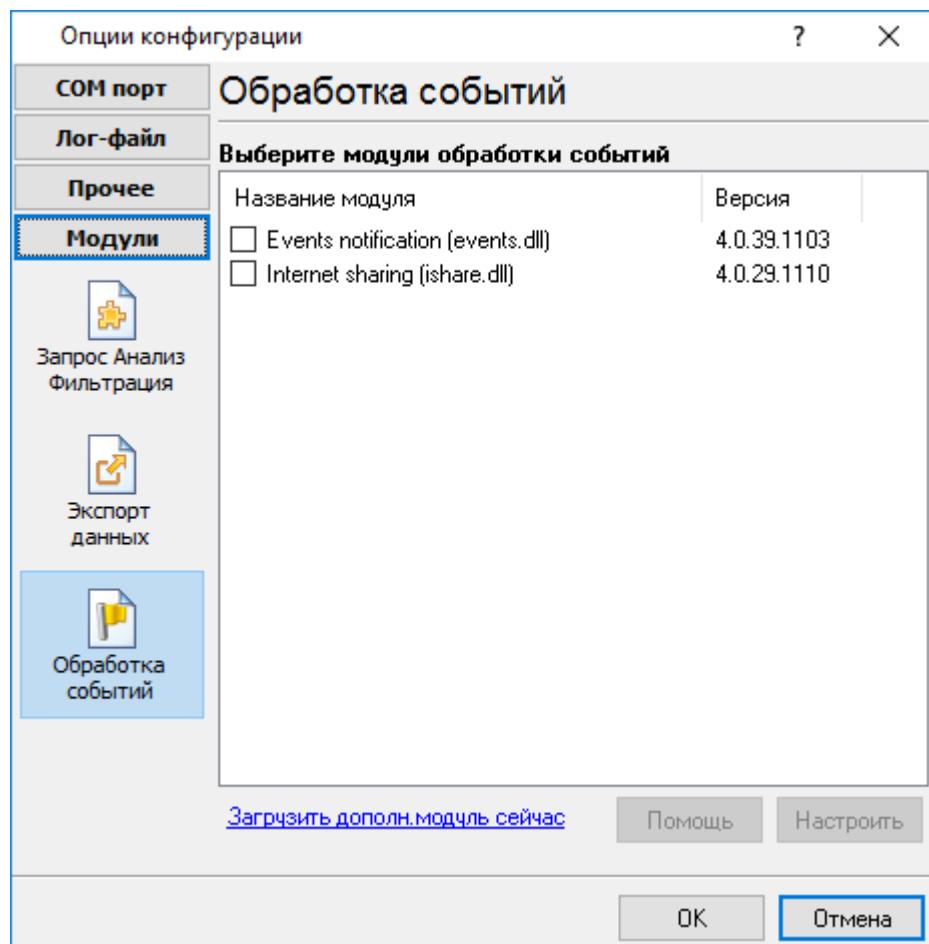
. 5.1.3.

.
, .
. .
. .
, .
. .

" "
" " , ,
.
, .

.
, , "OK".

5.5.2   OPC

Advanced NMEA Data Logger   OPC.   ,
                    ,   OPC   Advanced NMEA
Data Logger   .   ,
                                                         (. 5.2.1).
OPC   OPC Core Components Redistributable
www.opcfoundation.org (   )   ,
            .

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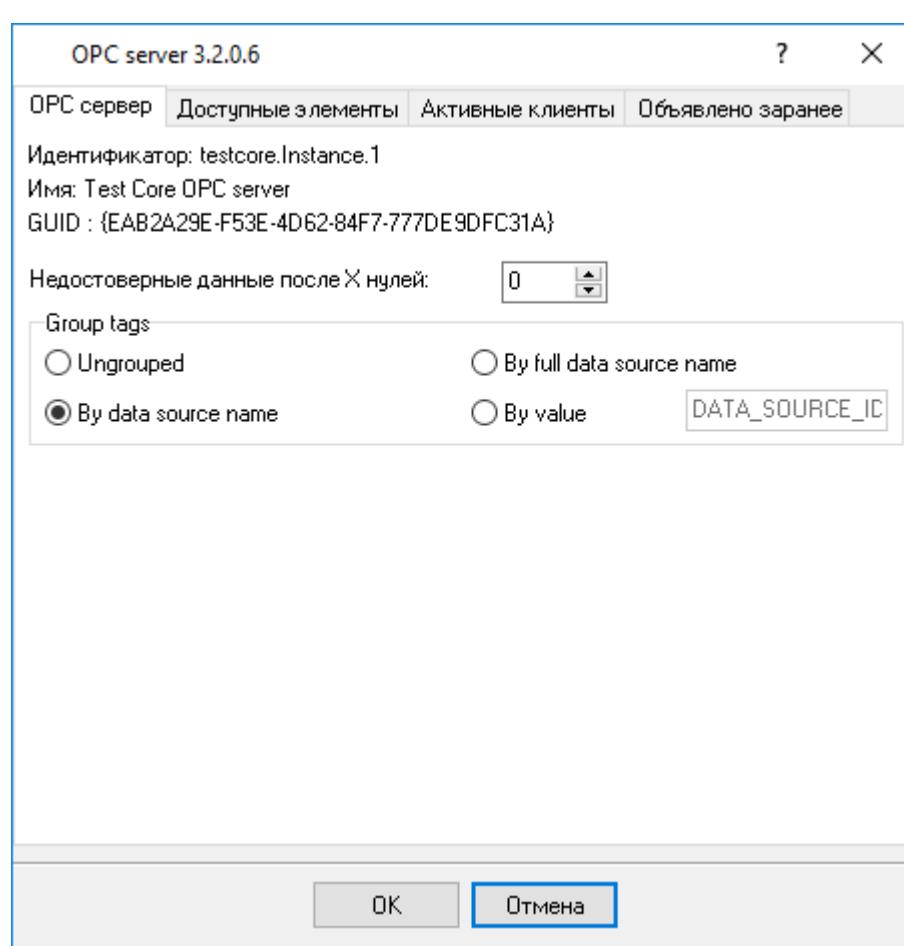
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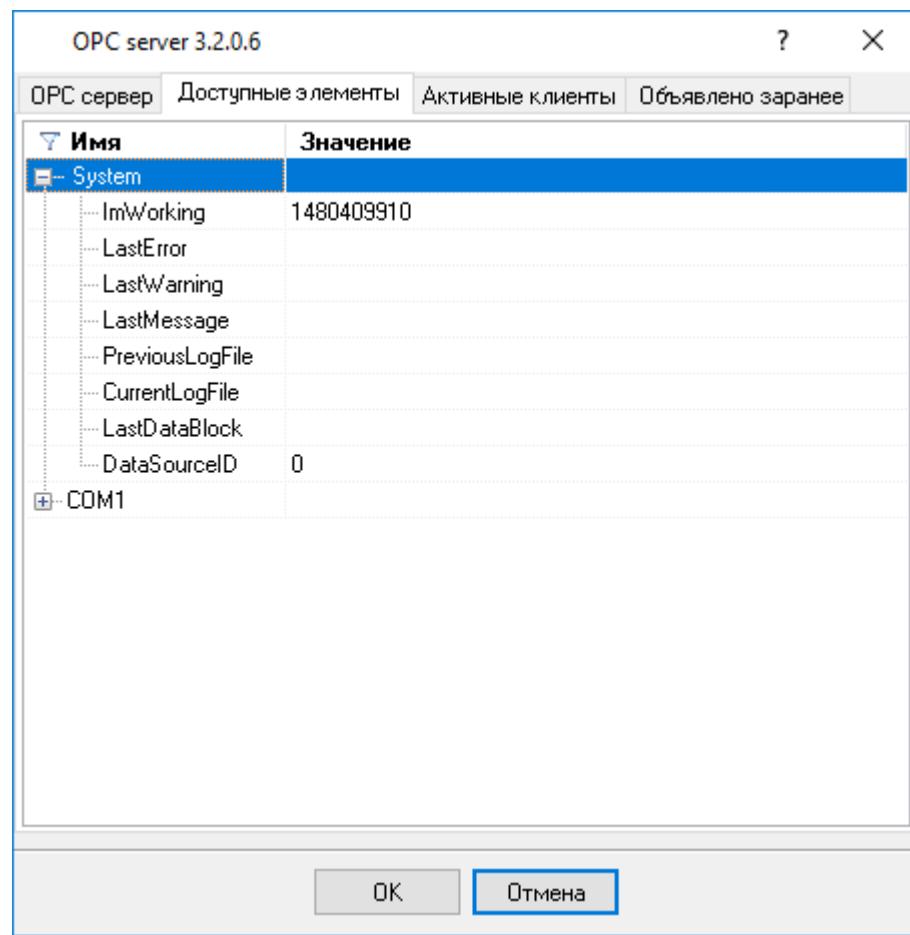
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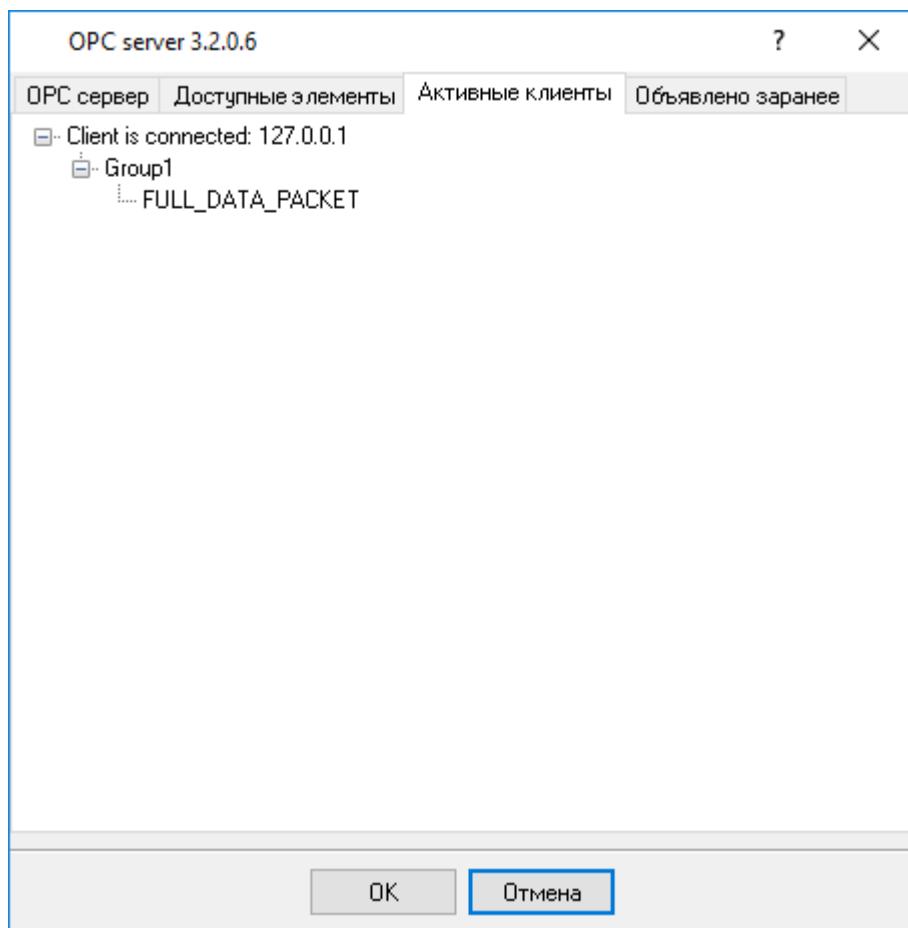
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Advanced NMEA Data Logger   "   ". Advanced NMEA Data Logger
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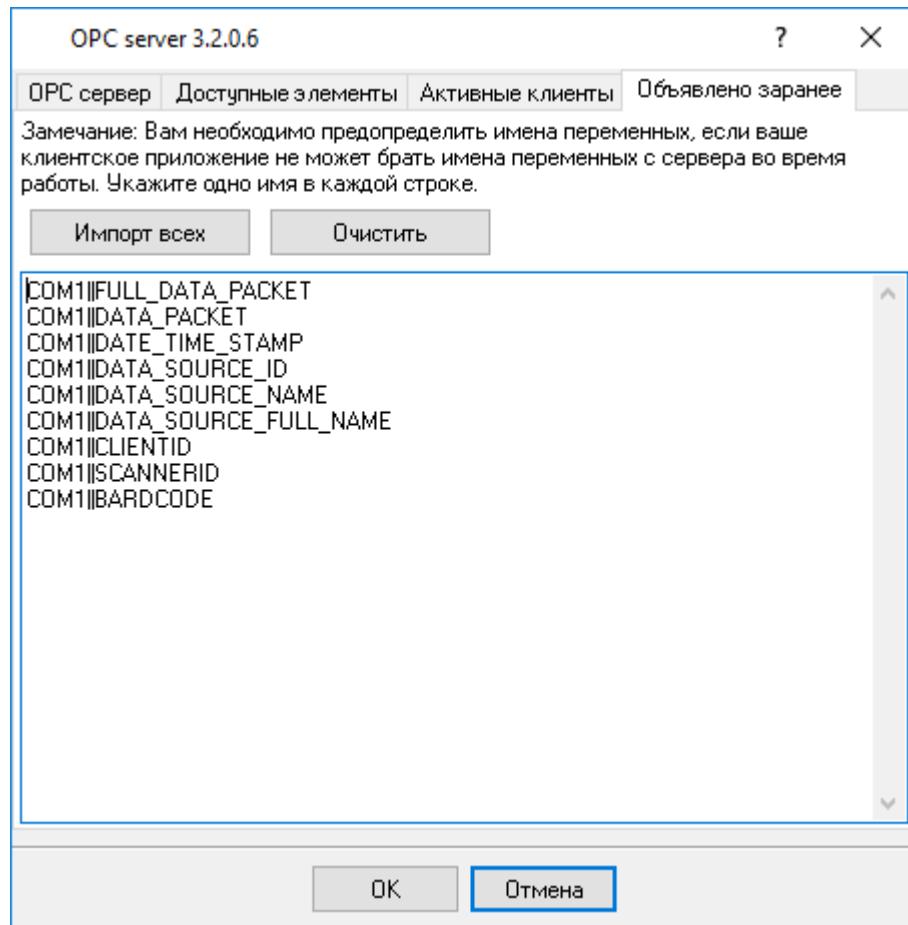
. 5.2.4.

5.5.3   NMEA

5.5.3.1

                (NMEA)   ,
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          NMEA 0183   **talkers (**   **)**   **listeners**
(**) (**   ),
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          : .   NMEA 0183
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    GPS   .
   ,   ,   NMEA.   NMEA
           GPS   .   NMEA   ,   ,

(**sentence**),

:
. GPS   GP,   ,
.   ,   NMEA

.   (proprietary sentences)   P,
3   ,   .   ,   Garmin
PGRM   Magellan -   PMGN.

'$'   CRLF (/   ).
ASCII   ,   ,   ,
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5.5.3.2

NMEA data parser   :

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(   ),   Advanced Serial Data Logger.

Microsoft Vista   :

Program Files,
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5.5.3.3 **NMEA data parser**

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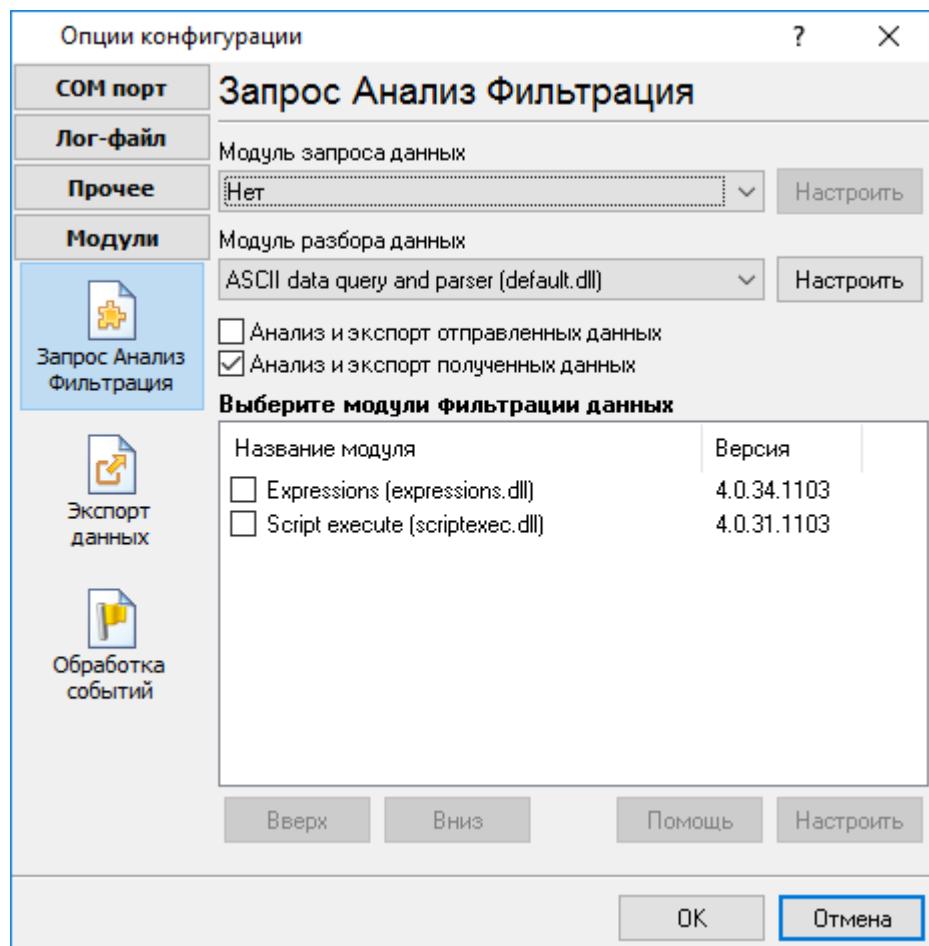
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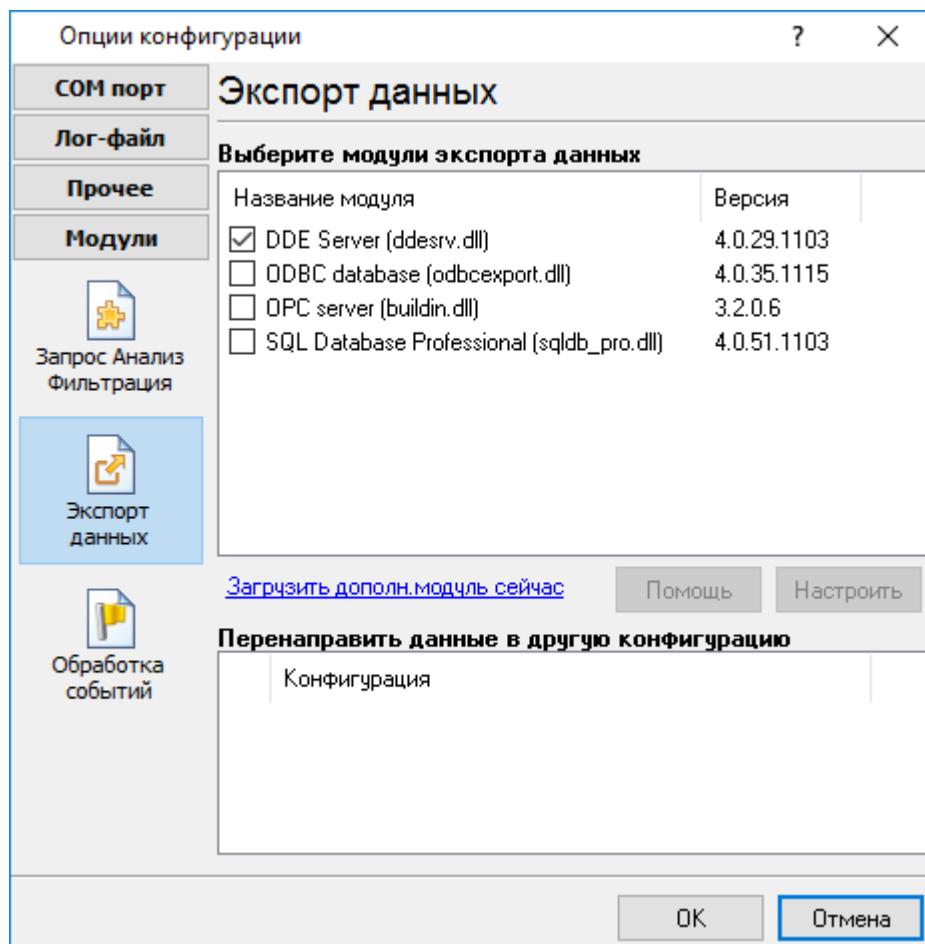
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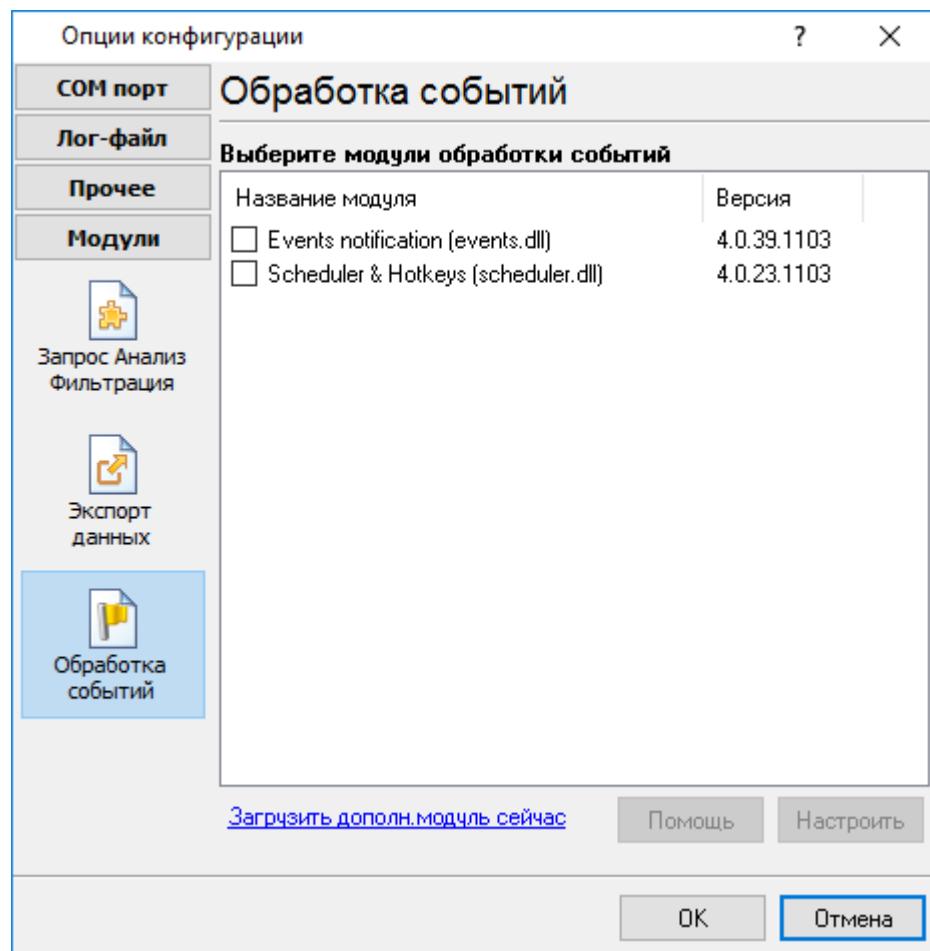
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5.5.3.4

Plug-in -

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Advanced Serial Data Logger

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5.5.3.5

5.5.3.5.1   (talkers)

:   ,
                                                                           .

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

5.5.3.5.2   (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 ourse 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_BEAR - Velocity towards destination, knots
RMB_ARIV_ALRM - 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 rrack 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 rrack 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

5.5.3.5.3

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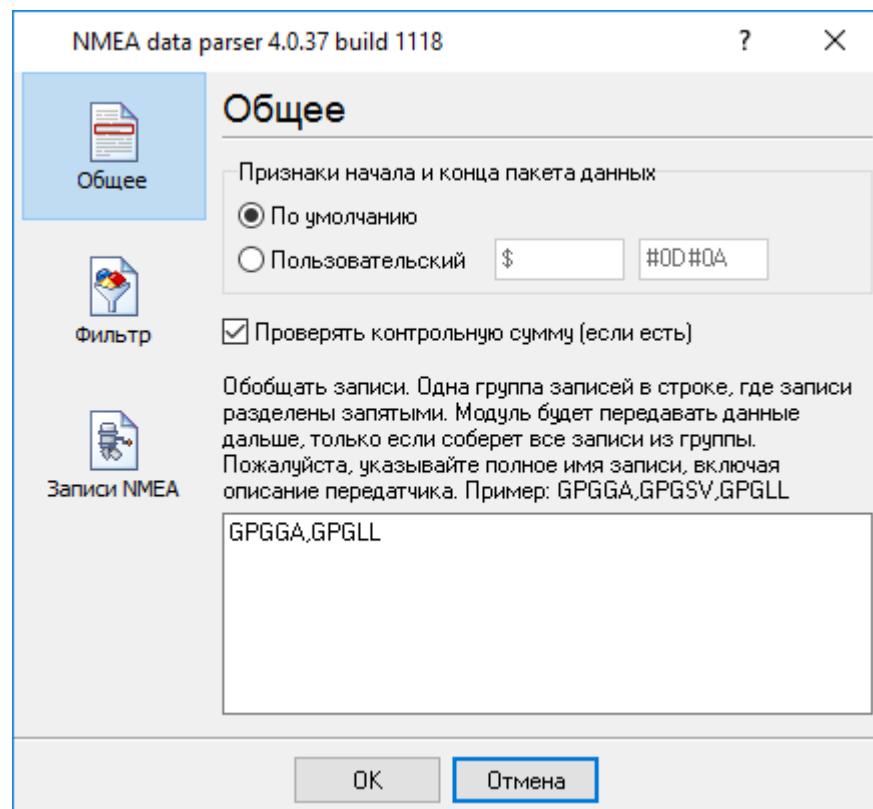
Фильтр

Правила фильтра (на уровне пакетов данных)

Состояние	Тип	Выражение	Действие
Содержит	Текст	Data	Игнориров
Содержит	Текст	data	Игнориров

Минимальный интервал между пакетами (мс) `0`

+ Добавить   − Удалить

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5.5.3.5.5

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Introduction

Regular Expressions are a widely-used method of specifying patterns of text to search for. Special **metacharacters** allow You to specify, for instance, that a particular string You are looking for occurs at the beginning or end of a line, or contains **n** recurrences of a certain character.

Regular expressions look ugly for novices, but really they are very simple, handy and powerful tool.

Let's start our learning trip!

Simple matches

Any single character matches itself, unless it is a **metacharacter** with a special meaning described below.

A series of characters matches that series of characters in the target string, so the pattern "bluh" would match "bluh" in the target string. Quite simple, eh ?

You can cause characters that normally function as **metacharacters** or **escape sequences** to be interpreted literally by 'escaping' them by preceding them with a backslash "\", for instance: metacharacter "^" match beginning of string, but "\^" match character "^", "\\" match "\" and so on.

Examples:

  foobar   *matchs string 'foobar'*
  \^FooBarPtr   *matchs '^FooBarPtr'*

Escape sequences

Characters may be specified using a **escape sequences** syntax much like that used in C and Perl: "\n" matches a newline, "\t" a tab, etc. More generally, \xnn, where nn is a string of hexadecimal digits, matches the character whose ASCII value is nn. If You need wide (Unicode) character code, You can use '\x{nnnn}', where 'nnnn' - one or more hexadecimal digits.

  \xnn   *char with hex code nn*
  \x{nnnn} *char with hex code nnnn (one byte for plain text and two bytes for Unicode)*
  \t   *tab (HT/TAB), same as \x09*
  \n   *newline (NL), same as \x0a*
  \r   *car.return (CR), same as \x0d*
  \f   *form feed (FF), same as \x0c*
  \a   *alarm (bell) (BEL), same as \x07*
  \e   *escape (ESC), same as \x1b*

Examples:

  foo\x20bar   *matchs 'foo bar' (note space in the middle)*

\t foobar   *matchs 'foobar' predefined by tab*

Character classes

You can specify a **character class**, by enclosing a list of characters in [], which will match any **one** character from the list.

If the first character after the "[" is "^", the class matches any character **not** in the list.

Examples:
foob[aeiou]r   *finds strings 'foobar', 'foober' etc. but not 'foobbr', 'foobcr' etc.*
foob[^aeiou]r   *find strings 'foobbr', 'foobcr' etc. but not 'foobar', 'foober' etc.*

Within a list, the "-" character is used to specify a **range**, so that a-z represents all characters between "a" and "z", inclusive.

If You want "-" itself to be a member of a class, put it at the start or end of the list, or escape it with a backslash. If You want ']' you may place it at the start of list or escape it with a backslash.

Examples:
[-az]   *matchs 'a', 'z' and '-'*
[az-]   *matchs 'a', 'z' and '-'*
[a\-z]   *matchs 'a', 'z' and '-'*
[a-z]   *matchs all twenty six small characters from 'a' to 'z'*
[\n-\x0D]   *matchs any of #10,#11,#12,#13.*
[\d-t]   *matchs any digit, '-' or 't'.*
[]-a]   *matchs any char from ']'..'a'.*

Metacharacters

Metacharacters are special characters which are the essence of Regular Expressions. There are different types of metacharacters, described below.

Metacharacters - line separators

^   *start of line*
$ *end of line*
\A   *start of text*
\Z   *end of text*
.   *any character in line*

Examples:
^foobar   *matchs string 'foobar' only if it's at the beginning of line*
foobar$ *matchs string 'foobar' only if it's at the end of line*
^foobar$ *matchs string 'foobar' only if it's the only string in line*
foob.r   *matchs strings like 'foobar', 'foobbr', 'foob1r' and so on*

The "^" metacharacter by default is only guaranteed to match at the beginning of the input string/text, the "$" metacharacter only at the end. Embedded line separators will not be matched by "^" or "$".

You may, however, wish to treat a string as a multi-line buffer, such that the "^" will match after any line separator within the string, and "$" will match before any line separator.

The "." metacharacter by default matches any character.

Note that "^.*$" (an empty line pattern) doesnot match the empty string within the sequence \x0D\x0A, but matchs the empty string within the sequence \x0A\x0D.

Metacharacters - predefined classes

\ w	*an alphanumeric character (including "_")*
\ W	*a nonalphanumeric*
\ d	*a numeric character*
\ D	*a non-numeric*
\ s	*any space (same as [\t\n\r\f])*
\ S	*a non space*

You may use \w, \d and \s within custom **character classes**.

Examples:
f oob\ dr   *matchs strings like 'foob1r', "foob6r' and so on but not 'foobar', 'foobbr' and so on*
f oob[\ w\ s] r   *matchs strings like 'foobar', 'foob r', 'foobbr' and so on but not 'foob1r', 'foob=r'*
and so on

Metacharacters - iterators

Any item of a regular expression may be followed by another type of metacharacters - **iterators**. Using this metacharacters You can specify number of occurences of previous character, **metacharacter** or **subexpression**.

*	*zero or more ("greedy"), similar to {0,}*
+	*one or more ("greedy"), similar to {1,}*
?	*zero or one ("greedy"), similar to {0,1}*
{ n}	*exactly n times ("greedy")*
{ n, }	*at least n times ("greedy")*
{ n, m}	*at least n but not more than m times ("greedy")*
* ?	*zero or more ("non-greedy"), similar to {0,}?*
+?	*one or more ("non-greedy"), similar to {1,}?*
??	*zero or one ("non-greedy"), similar to {0,1}?*
{ n} ?	*exactly n times ("non-greedy")*
{ n, } ?	*at least n times ("non-greedy")*
{ n, m} ?	*at least n but not more than m times ("non-greedy")*

So, digits in curly brackets of the form {n,m}, specify the minimum number of times to match the item n and the maximum m. The form {n} is equivalent to {n,n} and matches exactly n times. The form {n,} matches n or more times. There is no limit to the size of n or m, but large numbers will chew up more memory and slow down r.e. execution.

If a curly bracket occurs in any other context, it is treated as a regular character.

Examples:
f oob. * r   *matchs strings like 'foobar', 'foobalkjdflkj9r' and 'foobr'*

f oob. +r	*matchs strings like 'foobar', 'foobalkjdflkj9r' but not 'foobr'*
f oob. ?r	*matchs strings like 'foobar', 'foobbr' and 'foobr' but not 'foobalkj9r'*
f ooba{ 2} r	*matchs the string 'foobaar'*
f ooba{ 2, } r	m*atchs strings like 'foobaar', 'foobaaar', 'foobaaaar' etc.*
f ooba{ 2, 3} r	*matchs strings like 'foobaar', or 'foobaaar' but not 'foobaaaar'*

A little explanation about "greediness". "Greedy" takes as many as possible, "non-greedy" takes as few as possible. For example, 'b+' and 'b*' applied to string 'abbbbc' return 'bbbb', 'b+?' returns 'b', 'b*?' returns empty string, 'b{2,3}?' returns 'bb', 'b{2,3}' returns 'bbb'.

Metacharacters - alternatives

You can specify a series of **alternatives** for a pattern using "|" to separate them, so that fee|fie|foe will match any of "fee", "fie", or "foe" in the target string (as would f(e|i|o)e). The first alternative includes everything from the last pattern delimiter ("(", "[", or the beginning of the pattern) up to the first "|", and the last alternative contains everything from the last "|" to the next pattern delimiter. For this reason, it's common practice to include alternatives in parentheses, to minimize confusion about where they start and end.
Alternatives are tried from left to right, so the first alternative found for which the entire expression matches, is the one that is chosen. This means that alternatives are not necessarily greedy. For example: when matching foo|foot against "barefoot", only the "foo" part will match, as that is the first alternative tried, and it successfully matches the target string. (This might not seem important, but it is important when you are capturing matched text using parentheses.)
Also remember that "|" is interpreted as a literal within square brackets, so if You write [fee|fie|foe] You're really only matching [feio|].

Examples:
f oo(bar | f oo)   *matchs strings 'foobar' or 'foofoo'.*

Metacharacters - subexpressions

The bracketing construct (...) may also be used for define r.e. subexpressions.

Subexpressions are numbered based on the left to right order of their opening parenthesis.
First subexpression has number '1'

Examples:
(f oobar) { 8, 10}   *matchs strings which contain 8, 9 or 10 instances of the 'foobar'*
f oob([0- 9] | a+) r   *matchs 'foob0r', 'foob1r' , 'foobar', 'foobaar', 'foobaar' etc.*

Metacharacters - backreferences

Metacharacters \1 through \9 are interpreted as backreferences. \<n> matches previously matched **subexpression** #<n>.

Examples:
(.) \ 1+   *matchs 'aaaa' and 'cc'.*
(. +) \ 1+   *also match 'abab' and '123123'*
([' "] ?) (| d+) | 1   matchs '"13" (in double quotes), or '4' (in single quotes) or 77 (without quotes)
etc

Modifiers

Modifiers are for changing behaviour of parser.

There are many ways to set up modifiers.
Any of these modifiers may be embedded within the regular expression itself using the (?...) construct.

i

   Do case-insensitive pattern matching (using installed in you system locale settings).

m

   Treat string as multiple lines. That is, change "^" and "$" from matching at only the very start or end of the string to the start or end of any line anywhere within the string.

s

   Treat string as single line. That is, change "." to match any character whatsoever, even a line separators, which it normally would not match.

g

   Non standard modifier. Switching it Off You'll switch all following operators into non-greedy mode (by default this modifier is On). So, if modifier /g is Off then '+' works as '+?', '*' as '*?' and so on

x

   Extend your pattern's legibility by permitting whitespace and comments (see explanation below).

The modifier /x itself needs a little more explanation. It tells the parser to ignore whitespace that is neither backslashed nor within a character class. You can use this to break up your regular expression into (slightly) more readable parts. The # character is also treated as a metacharacter introducing a comment, for example:

```
(
(abc) # comment 1
|   # You can use spaces to format r.e. - parser ignores it
(efg) # comment 2
)
```

This also means that if you want real whitespace or # characters in the pattern (outside a character class, where they are unaffected by /x), that you'll either have to escape them or encode them using octal or hex escapes. Taken together, these features go a long way towards making regular expressions text more readable.

How to change modifiers

(?imsxr-imsxr)
You may use it into r.e. for modifying modifiers by the fly. If this construction inlined into subexpression, then it effects only into this subexpression

Examples:
   (?i)New-York   *matchs 'New-york' and 'New-York'*
   (?i)New-(?-i)York   *matchs 'New-York' but not 'New-york'*
   (?i)(New-)?York   *matchs 'New-york' and 'new-york'*

((?i) New-) ?Yor k   *matchs 'New-York', but not 'new-york*

(?#text)

A comment, the text is ignored. Note that parser closes the comment as soon as it sees a ")", so there is no way to put a literal ")" in the comment.

5.5.3.5.6   NMEA

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          .   "   NMEA" (.1)   (sentences),
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     NMEA,   48.
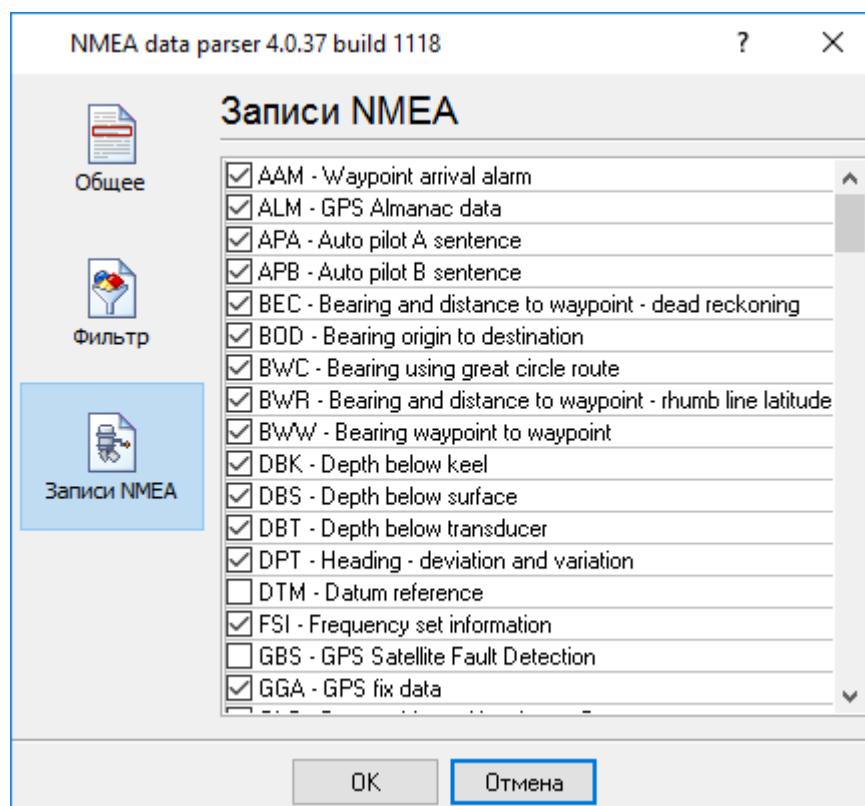
                                                           :
- **String** -   -   1   65535   ;
- **Boolean** -   (True/False) - 0   1;
- **Float** -   -   : -2.9 x 10^39 .. 1.7 x 10^38
- **Integer** -   : -2147483648..2147483647;
- **DateTime** -   .

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5.5.3.6 ?

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5.6

5.6.1
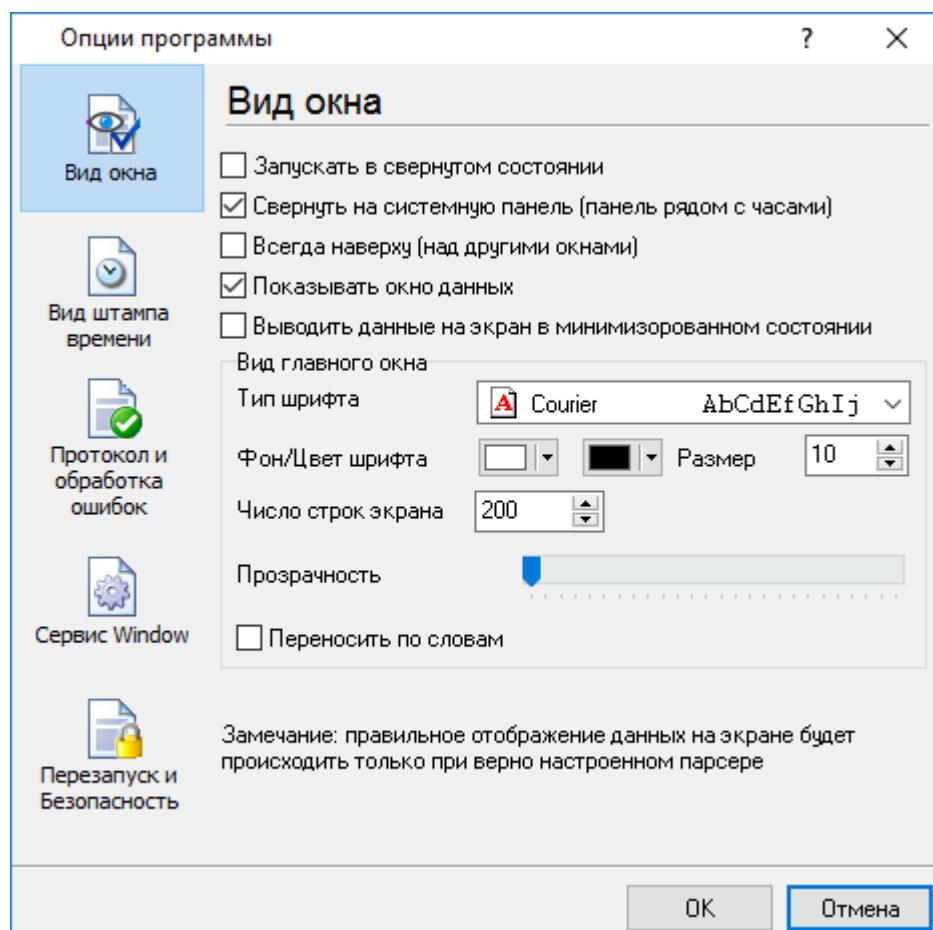
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\- Advanced NMEA Data Logger

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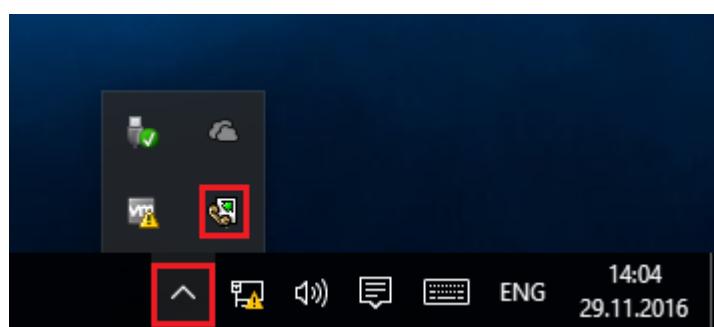
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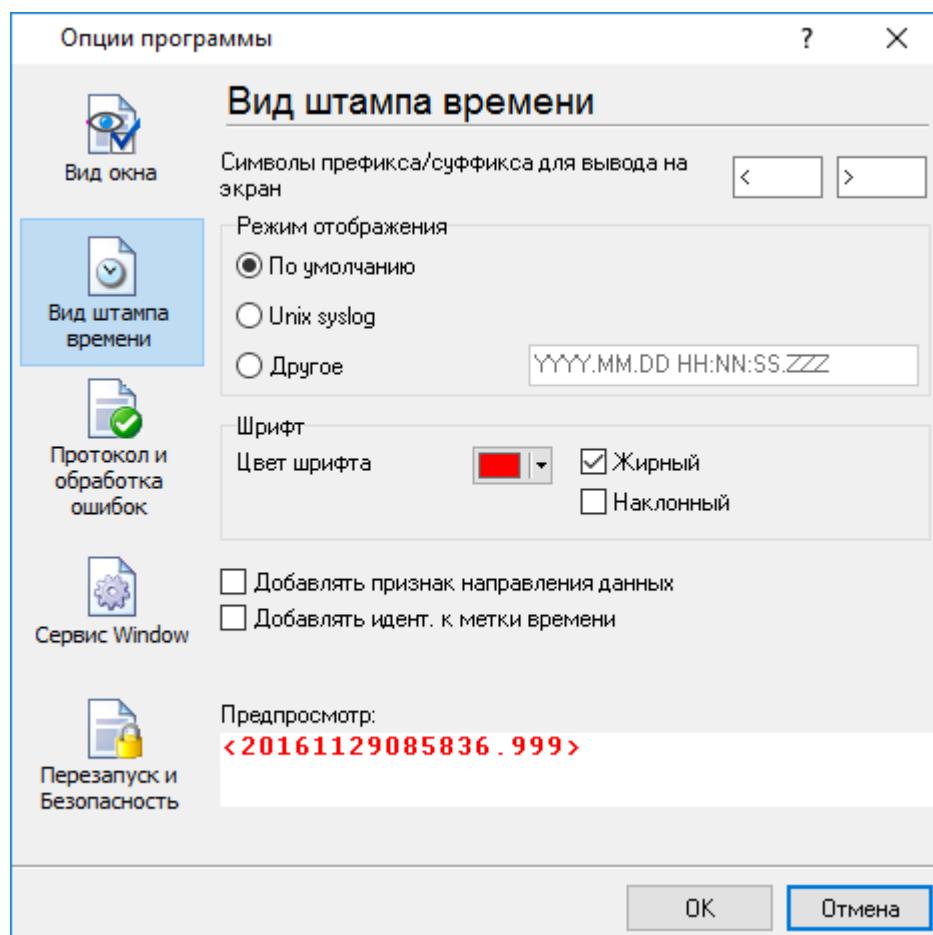
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Advanced NMEA Data Logger   3-   :

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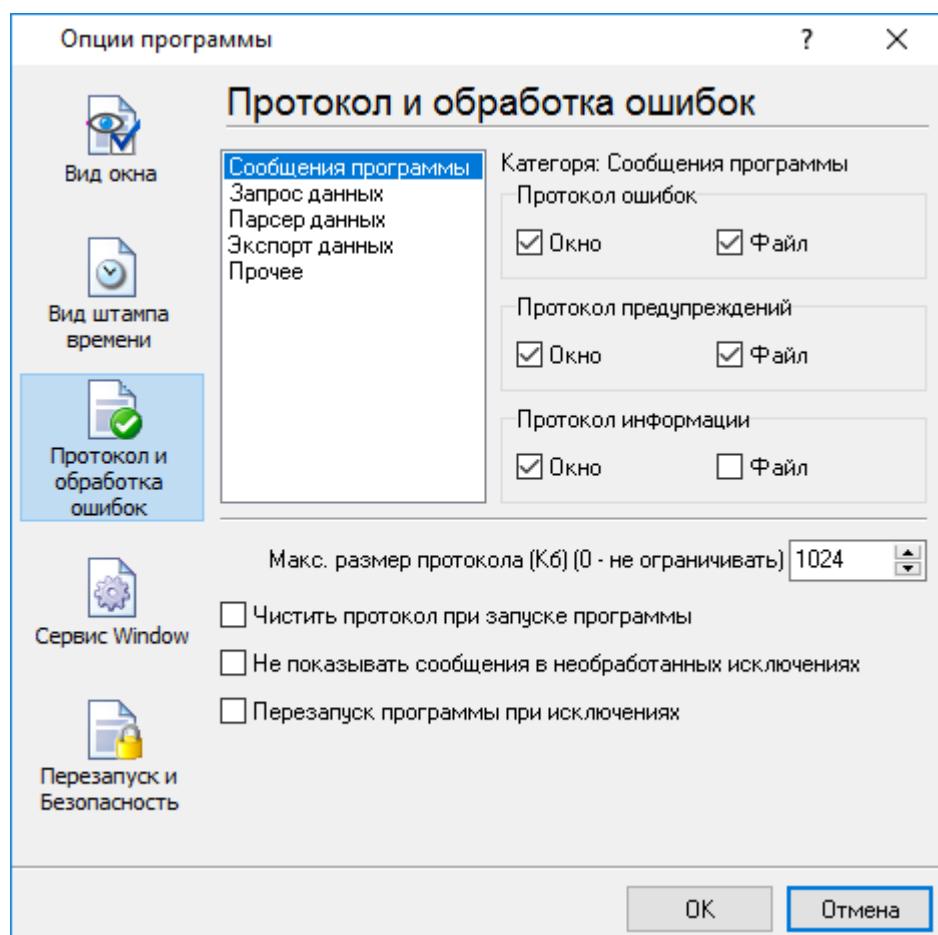
Advanced NMEA Data Logger , .

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5.6.4   Windows 2000
5.6.4.1

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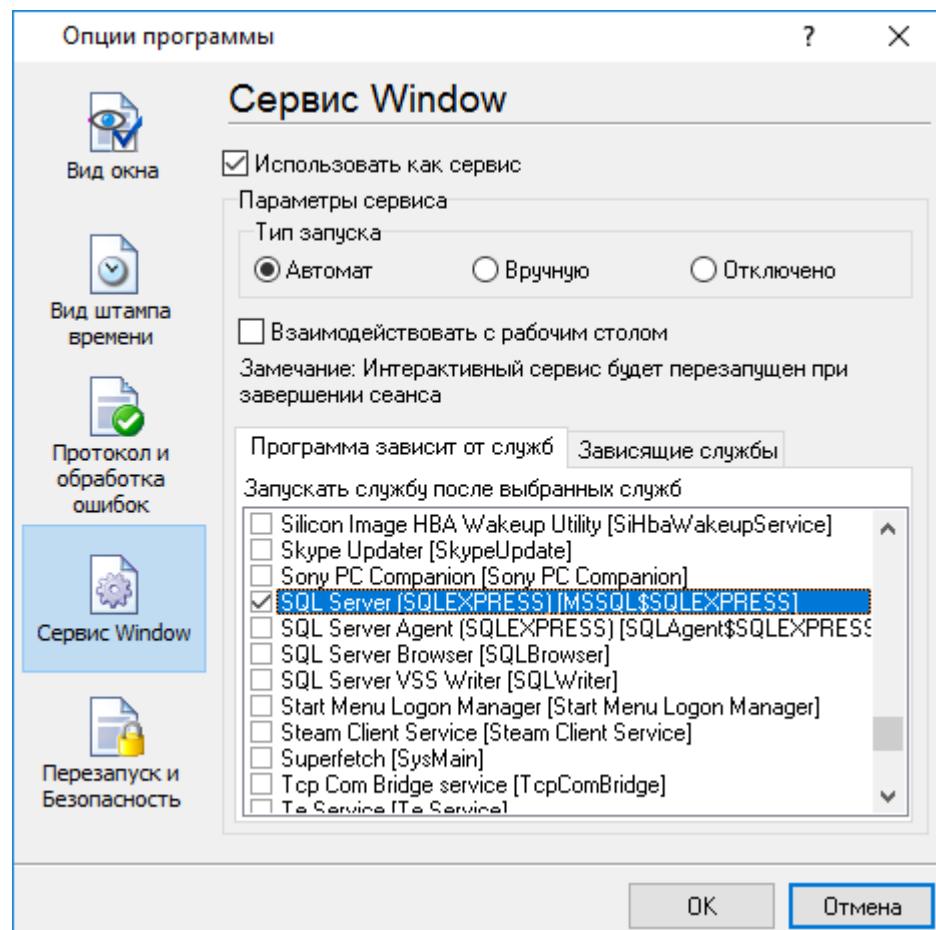
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Advanced NMEA Data Logger,   "   '   " (. 6.4.1)
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            '   "   "   ,   (. 6.4.3).

. 6.4.3.   (Windows 2000)

                                    2   - nmealoggersrv.exe
nmealogger.exe (. 6.4.4).   Advanced NMEA Data Logger
                                          Advanced NMEA Data Logger,
                        .   srvany.exe
                                                            .
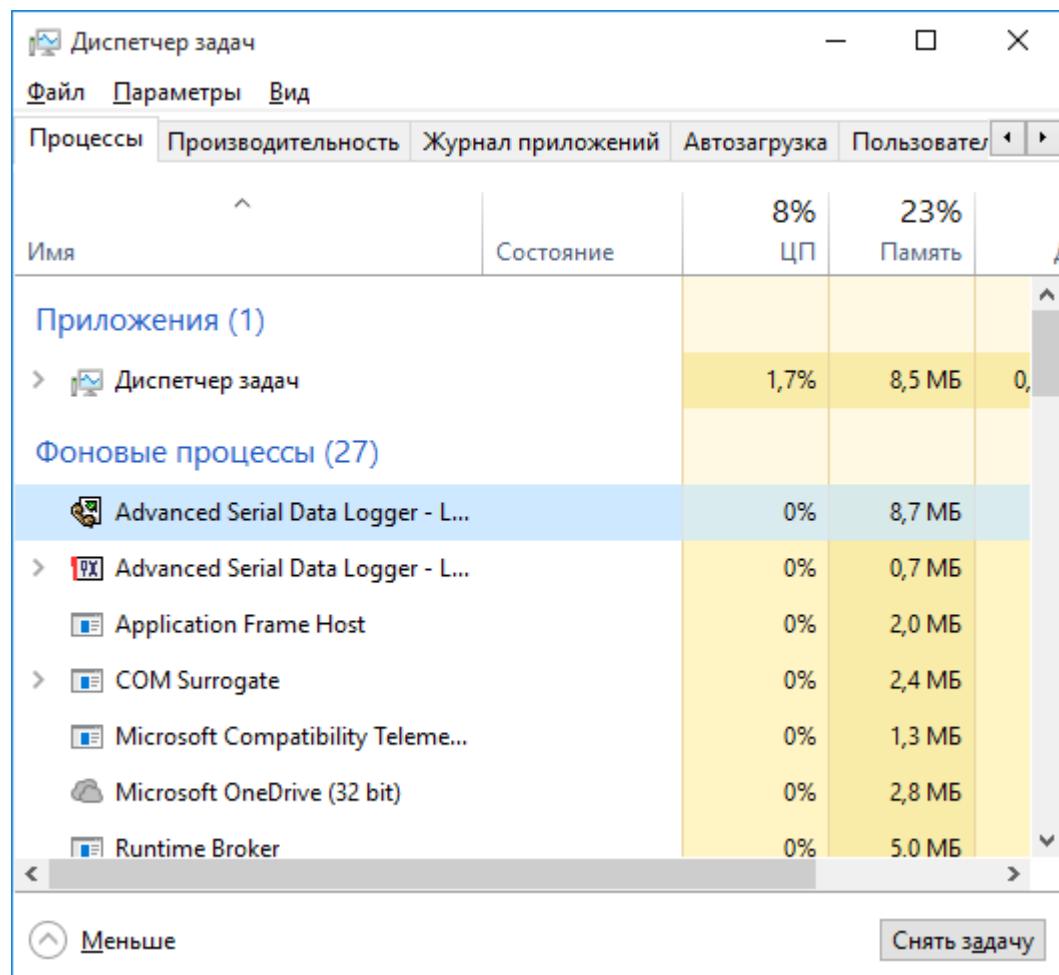
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nmealoggersrv.exe   :

- /? -   ;
- /I -   ;
- /A -   ;
- /D -   ;
- /R -   .

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5.6.4.2   Windows Vista

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- : Interactive Services Detection
- : UI0Detect
- : UI0Detect.exe
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- : %windir%\system32\UI0Detect.exe
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  * Home Basic:
  * Home Premium:
  * Business:
  * Enterprise:
  * Ultimate:

5.6.5

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Опции программы ? ✕

Перезапуск и Безопасность

Вид окна

Вид штампа времени

Протокол и обработка ошибок

Сервис Window

Перезапуск и Безопасность

Автоматический перезапуск
- ● Отключен
- ○ В задан. время   1:00:00

Безопасность
☑ Защитить паролем   •••

Защищенные паролем операции
- ☐ Изменение настроек программы
- ☐ Выход из программы
- ☐ Добавление конфигурации
- ☑ Создание резервной копии
- ☑ Восстановление из резервной копии
- ☐ Переключение источников данных

OK   Отмена

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7.1

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SoftIce
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support@aggsoft.ru.