RMS INSTRUMENTS
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RELEASE NOTES

(D)AARC5XX Support Software – Jan/2022

Documentation & Compatibility –

The Support Software is fully documented in the User's Guide for each instrument, in the Appendix indicated below.

		Full Compatibility	Partial Compatibility	Documentation
Front End FW:		≥ RMS1877-05-A	≥ RMS1877-03-E	
Host FW –	*DAARC500 Gen-2:*	≥ RMS11030-04-C	≥ RMS11030-01-A	*Appendix E*
	AARC510:	≥ RMS11031-03-C	≥ RMS11031-01-B	*Appendix G*
	AARC51:	≥ RMS11093-02-C	≥ RMS11093-01-B	*Appendix G*
	AARC52:	≥ RMS11122-03-C	≥ RMS11122-01-F	*Appendix G*
	DAS52:	≥ RMS11164-01-A		*Appendix G*
	AARC500 Gen-2:	- - - - - - - -	≥ RMS11029-03-E	*Appendix G*
	DAS500:	- - - - - - - -	≥ RMS11035-03-D	*Appendix E*
	AARC500 Gen-1:	- - - - - - - -	≥ RMS1878-02-F	*Appendix G*
	DAARC500 Gen-1:	- - - - - - - -	≥ RMS1936-02-F	*Appendix E*

ExportDAARC (Windows-Based Data Exporting):

v3.6	Jan/2022	– *ExportSerial*: Support new protocols/interpretations customized for LTI 200-series laser altimeters, FreeFlight RA-4000/RA-4500 series radar altimeters, and Novatel INSPVA (INS position, velocity and attitude) packets.
		– *Export & Merge*: File checking ignores NAV file if Embedded-GPS option is enabled. For consistency with FW, auxiliary-file designations 't1' and 't2' changed to 't' and 'rsvd'.
		– *Merge*: Controls for selection of NAV file not shown if Embedded-GPS option is enabled. Auxiliary files now searched for at the same location as the 'root' (MAG) file. Character '*' now recognized as token separator – a number of devices use it before a terminating checksum.
		– *ExportSerial* and *ExportEth*: Blocks without valid Fiducial and Events Tag ('*' in flat-ASCII output) now generate Geosoft GBN channels with the Fiducial set to Geosoft's 'dummy' and the Event Tag set to 0's.
		– *ExportSerial* and *ExportAnalog*: The Time-Tag option, which has always been limited to 'msec-after-midnight', is now disabled.
		– *ExportMag*: Saturate output for embedded sensors (barometric pressure & temperature) if out of range.
v3.5	Oct/2021	– *Merge* page: Provide some feedback as the merge process progresses.
		– *ExportEth* page: Support new protocols/interpretations customized for the following: a. LTI 200-series laser altimeters b. FreeFlight RA-4000/RA-4500 series radar altimeters c. Novatel INSPVA (INS position, velocity and attitude) packets
		– *ExportMag* page: An initial header line is output for flat-ASCII files when the 'Test Format' option is enabled. The header identifies each field (column) in the output.

v3.4	Apr/2021	– *ExportEth* page: Under the '*Block Data*' protocol, the options available for interpretation of spectrometer data now include *GR820-ROI*, *GR820-ROI-256-DN*, *GR820-ROI-256-DN-UP*, *GR820-ROI-512-DN*, and *GR820-ROI-512-DN-UP* (in addition to *RSI*). The program checks that the packet size conforms to the interpretation requested and, if it does, the GBN output will include the appropriate arrays for down- and up-looking spectra.
		– *ExportEth* page: For the '*Block Data*' protocol, it is no longer necessary to specify an *offset* for any of the spectrometer interpretations; this is implicitly assumed to be '1' for RSI interpretation, and '2' for GR820-type interpretations.
		– *ExportEth, ExportSerial* pages: The fields *spec-dwn* and *spec-up* in GR820-format GBN output files were reversed. This has been corrected.
		– *ExportSerial* page (<u>DAARC500, DAS500 only</u>): For the ASCII/BIN protocol, interpretations *SPEC* and *SPEC-CHK* have changed to *GR820-256* and *GR820-512*. The former handles 256-channel *ROI-DN* and *ROI-DN-UP* formats, and the latter 512-channel *ROI-DN* and *ROI-DN-UP* formats. Checksum checking is used in all cases.
v3.3	Oct/2020	– *ExportMag* page: Support line number.
		– *ExportMag*, *ExportSerial*, *ExportAnalog*, *ExportEth* pages: Ensure that Event #0 to #3 fields in GBN files are treated as unsigned values.
		– *ExportSerial* page (<u>DAARC500, DAS500 only</u>): The name of '.gbn' output files must always be based on the name of the input file. (Re-naming, per '.txt' output, does not apply to '.gbn' files.)
		– *Merge* and *Export&Merge* pages: Handle gracefully non-numeric tokens in auxiliary files; identify with '–9.999999999e+009'.
		Header information for '.xyz' output now in generic form.
		– *ExportEth* page: In time-aligned raw output mode, when scanning was at a rate slower than the incoming data block rate, the program can now automatically generate fiducial values for the intermediate blocks (based on a user-defined 'delta-FID' parameter). Event tags for such intermediate blocks are derived from the last valid tag read.
		Any leading input preceding the first pre-amble is now eliminated from the output (in time-aligned raw output mode).
		– General: Changed the ordering and initial focus of tabs.
v3.2	Apr/2020	– *ExportLog* page: Support options to export data files transmitted by (D)AARC5XX system in *fixed-length binary* format.
		ExportSerial page (<u>DAARC500, DAS500 only</u>): Support RAW-TS (Raw, Time Stamped) output mode.
v3.1	Sep/2018	– *ExportMag* page: Support option to export baro-pressure and temperature in units of 'mbar' and '°C', respectively. Intended for systems that include the embedded sensors option.
		Protect against potential issue when exporting auxiliary GPS fields for '.gbn' data files.
v3.0	Jan/2017	– *ExportMag* and *ExportLog* pages: The software supports data recorded in systems with GPS output set to <u>'On-Full'</u> mode. This mode was introduced in systems with firmware per the 'full compatibility' section under 'Documentation & Compatibility' (above). In this mode auxiliary GPS data (QI, # of satellites, HDOP, age-of-differential, and undulation) are multiplexed. With the GPS output set to <u>'On-Basic'</u> (which corresponds to the setting 'Enabled' in earlier firmware revisions) the only auxiliary variable recorded is the QI.
		The program will automatically split multiplexed variables into separate fields in output files (flat-ASCII and '.gbn'). When working on files recorded in 'On-Basic' mode, the program will correctly identify the QI as the only auxiliary field encoded in packets; all other auxiliary fields will be output as 0's in flat-ASCII files, and Geosoft's place-holders ('*') in '.gbn' files.
		– *Merge* and *Export&Merge* pages: For output to '.xyz' files, the header accounts properly for optional FE-analog data and the new multiplexed auxiliary GPS data (see above).
		When merging with the GPS option, one may set 'Line Number = 0' so that a single line (Line 0) is assumed for the complete file. (Without the GPS option, 'Line Number = 0' is used to select the last field in the NAV data as the line number.)

v2.6	Aug/2016	–	*ExportMag* page: Corrected problem when exporting in *conventional* units, whereby Lat values between 0° and 1° South, or Long values between 0° and 1° West, would be displayed with '+' instead of '–' prefix. The problem did not affect output using *native* units, nor the '.gbn' output file.
v2.5	Sep/2015	–	*ExportLog* page: Extended support of 'Raw *n* Mag' format to any number of mag channels (*n*), in the range 1–8. In the past, only 4- or 8-channel formats were supported.
v2.4	Sep/2014	–	Direct output to Geosoft '.gbn' binary format now supported in *ExportMag*, *ExportSerial*, *ExportAnalog* and *ExportEth* pages.
v2.3	Jan/2014	–	*Merge* and *Export&Merge* pages: The header in the output file generated when using 'xyz' format, now displays the units of variables taking into account the setting of the 'use conventional units' option in ExportMag. (In the past, *native* units were always shown.)
		–	*ExportMag* page: When exporting with the 'test format' option enabled, event tags are now output as four 3-digit decimal numbers (instead of one 8-digit hexadecimal number). This simplifies importing into some analysis software packages. For the same purpose, the time field is in the format 'hh mm ss.sss' (instead of 'hh:mm:sss.sss').
v2.2	Aug/2013	–	*ExportMag* page: Extended support to up to 8 TF channels and 3 gradients (from the original 4 TF channels and 3 gradients).
v2.1	Jan/2013	–	*ExportMag* page: The program handles cleanly total-field values that are out-of-range.
		–	*ExportSerial* page (<u>DAARC500, DAS500 only</u>): Supports a new Raw-Logs protocol, which generates separate log files for a channel that recorded multiple GPS logs (for post-flight corrections) in raw form.
v2.0	Sep/2012	–	*ExportMag* page: With embedded GPS data in the 'd' file, the option to include in the output the GPS quality indicator (QI) has been replaced with an option to use for output 'conventional' units instead of the 'default' units native to the system. While default units are more efficient, conventional units facilitate interpretation.
			The QI is now always included in the output. (In past versions, this was optional to allow compatibility with now outdated versions of firmware.)
			Note that the default (disabled) setting of past versions ('do not include QI'), corresponds to output using the default units that have always been employed in the past.
			The option 'include time field in output' has been re-labeled, 'use test format (includes time field)'.
		–	*Merge* and *Export&Merge* pages: The merge process for 'embedded GPS option' takes into account the type of output units selected for ExportMag; i.e., if conventional units are selected, this will be reflected in the output of the merge.
v1.9	Sep/2012	Baseline.

Configuration Reader:

SeeInDAARC

v2.20	Oct/2021	–	Support larger-size configuration files for TCP/IP address and port information.
		–	Output parameters for third TCP/IP connection (AARC510, AARC52).
		–	Output *offset-to-display* parameter for all TCP/IP connections (AARC510, AARC52).
		–	Rename variables used for data recording counters (AARC510, AARC52).
		–	Output *system-time mode* (synch-to-GPS) parameter (DAARC500, AARC510, AARC51, AARC52).
v2.10	Apr/2021	–	Supports new parameters: Embedded Sensors Enable/Disable (DAARC500, AARC510).
		–	Supports new settings for existing parameters: Remote Control Mode = Line Number (AARC510, AARC52); Auto-Start = ACC Mode (DAARC500).
		–	Labels appropriately new system variables used to monitor recording on various data files.
v2.00	Oct/2020	–	Supports new parameters: Secondary TCP/IP streaming input connection; recording-mode for primary and secondary TCP/IP connections. Remote Control port operating mode: legacy, extended, line number.
v1.50	Apr/2020	–	Supports new parameters (DAARC500): TCP/IP streaming output; fixed-length-binary magnetics data output format; thresholds for calibration-quality measure; auto-reset RLSQ initial conditions option.
v1.40	Jul/2019	–	Supports new parameters: FOM-display options; redundant recording option; remote control status packet mode; gradient geometry parameters, MAD parameters.
v1.31	Sep/2018	–	Outputs 'Mag Monitor Mode' parameter for AARC52 device type.
		–	Corrects an issue with the displaying of the 'TCP/IP Data Recording Status' parameter for AARC52 device type.
v1.30	Apr/2018	–	Supports new device type, AARC52.
		–	For AARC51/52 device types, the *margin* parameter for *altitude-controlled calibrations* has units of 'counts' (*source* = voltage-normal or voltage-reversed), or 'meters' (*source* = GPS altitude).
		–	For DAARC500/DAS500/AARC500/AARC510 device types, the *margin* parameter for *auto-adaptive mode* has units of 'counts' (*source* = voltage-normal or voltage-reversed), or 'meters' (*source* = GPS altitude).
v1.21	Jan/2017	–	Supports three possible settings for the variable that defines the GPS output mode: 'Off', 'On-Basic' and 'On-Full'. The first two correspond to the only two settings supported in the past, 'Disabled' and 'Enabled'.
		–	Includes (preliminary) support for Auto-Adaptive Mode parameters.
v1.20	Jan/2016	–	Full support of AARC51-type devices. In previous versions, configurations from AARC51 units had to be processed under AARC510 type, which left out a few parameters unique to the AARC51.
		–	Corrected a problem whereby in AARC500, AARC510, and AARC51 devices, signal IDs with index numbers ≥ 88 were displayed incorrectly.
		–	The 'device type' menu now includes an entry for DAS500 devices.
		–	Added protection against partially initialized 'xlist' files, which may contain scan rate divider factors set to zero.
		–	Corrected a problem in the display of the TCP/IP output parameter for AARC510 (and AARC51) devices.
v1.12	Sep/2015		Baseline.

Console-Based Data Exporting Programs:

ExportMag

v3.0	Jan/2017	–	The software supports data recorded in systems with GPS output set to 'On-Full' mode. This mode was introduced in systems with firmware per the 'full compatibility' section under 'Documentation & Compatibility' (above). In this mode auxiliary GPS data (QI, # of satellites, HDOP, age-of-differential, and undulation) are multiplexed. With the GPS output set to 'On-Basic' (which corresponds to the setting 'Enabled' in earlier firmware revisions) the only auxiliary variable recorded is the QI.
			The export software will automatically split the multiplexed variables into separate fields in output files. When working on files recorded in 'On-Basic' mode, the program will correctly identify the QI as the only auxiliary field encoded in packets; all other auxiliary fields will be output as 0's.
v2.9	Aug/2016	–	Corrected problem when exporting in *conventional* units, whereby Lat values between 0° and 1° South, or Long values between 0° and 1° West, would be displayed with '+' instead of '–' prefix. The problem did not affect output using *native* units.
v2.8	Jan/2014	–	When exporting with the 'test format' option enabled, event tags are now output as four 3-digit decimal numbers (instead of one 8-digit hexadecimal number). This simplifies importing into some analysis software packages. For the same purpose, the time field is in the format 'hh mm ss.sss' (instead of hh:mm:sss.sss'.
v2.7	Aug/2013	–	Extended support to up to 8 TF channels and 3 gradients (from the original 4 TF channels and 3 gradients). Additional protection against out-of-range input to various prompts.
v2.6	Jan/2013	–	The program handles cleanly total-field values that are out-of-range.
v2.5	Sep/2012	–	The option to include in the output the GPS quality indicator (QI) has been replaced with an option to use for output 'conventional' units instead of the 'default' units native to the system. While default units are more efficient, conventional units facilitate interpretation.
			The QI is now always included in the output. (In past versions, this was optional to allow compatibility with now outdated versions of firmware.)
			Note that the default reply to the prompt per the previous interpretation ('0' = do not include QI), corresponds to output using the default units that have always been employed in the past.
			The option to 'include time field in output' has been re-labeled, 'use test format (includes time field)'.
v2.4	Apr/2011	–	Minor, cosmetic changes.
v2.3	Jan/2011	–	The program supports data packets recorded with DAARC500 systems with the GPS receiver option, that include the *GPS quality indicator*. These are systems with Front End FW ≥ RMS1877-03-D and Host FW ≥ RMS1936-02-F.
v2.2	Sep/2010	–	The program supports data packets from DAARC500 systems that include the *Front-End-sampled analog inputs option*. The program identifies whether analog data are present and, if so, appends the values at the end of magnetics and (if applicable) GPS data in the output file.
v2.1	Jan/2010		Baseline

ExportAnalog

(DAARC500 and DAS500 only)

v1.6	Sep/2008	– The program now supports both, the standard 16-channel (differential) analog interface, and the optional 32-channel (single-ended) interface.
v1.5	Apr/2008	– Fixed problem when input is redirected to a file.
v1.4	Mar/2008	– Output can now be scaled in volts for a ±5-Volt or a ±10-Volt input range.

ExportSerial

(DAARC500 and DAS500 only)

v2.9	Jan/2013	– Supports a new Raw-Logs protocol, which generates separate log files for a channel that recorded multiple GPS logs (for post-flight corrections) in raw form.
v2.8	Mar/2012	– More comprehensive error reporting for the GGA interpretation type (including checksums).
v2.7	Jan/2011	– The program supports several new interpretations for the ASC/Bin protocols. They expect data blocks containing a series of values encoded as follows: <u>INT2L</u> (2-byte signed integers, LSB first), <u>INT2M</u> (2-byte signed integers, MSB first), <u>INT4L</u> (4-byte signed integers, LSB first), <u>INT4M</u> (4-byte signed integers, MSB first), <u>FLOAT4L</u> (4-byte floating-point, LSB first), <u>FLOAT4M</u> (4-byte floating-point, MSB first).
v2.6	Sep/2010	– The program now supports the GGA interpretation for data recorded using the *raw* protocol.
		– With GGA interpretation, any missing values in a packet are output as '0'. See also v2.3.
v2.5	Jan/2010	– When using the *GGA interpretation*, a potential problem when reading the 'age of differential GPS' field is now avoided.
v2.4	Oct/2009	Baseline

ExportEth

v1.0	Feb/2009	– Initial release. Program to export Ethernet (TCP/IP) files, `tDDHHMM`. See Appendix E.4 in the User's Guide.

MergeDAARC

v2.0	Apr/2011	–	When using the *compact* option, for generic fields we now allow up to 12 digits in standard notation, before switching to scientific notation.
v1.9	Oct/2009	–	The format of merged output files has been changed to produce smaller files, while retaining full precision for all fields. The alignment of columns is maintained (except for fields containing place-holder characters).
			The user now also has the option to select a *compact* output format. This results in much smaller files, at the expense of losing column-alignment. This is particularly useful when dealing with very large files, like those containing spectrometer data.
		–	Merged output files in 'xyz' format now include a leading header that identifies individual columns (channels) in the file.
v1.8	May/2009	–	Increased the maximum line length for any input file, to accommodate the (very) large line lengths that result from 't' files when recording RSI 1024-channel data from a spectrometer.
		–	Increased the maximum number of files that can be merged, from 5 to 8.
		–	When using Geosoft's 'xyz' output format, the program now allows the *line number* to be specified by any column (unlike previous versions, in which it was always assumed to be the last column in the NAV file).
		–	The program now also accepts comma-separated AUX files.
v1.7	Feb/2009	Baseline	

ExportLog

v1.3	Sep/2015	–	Extended support to any number of mag channels, in the range 1–8. In the past, only 4- or 8-channel formats were supported.
v1.2	Apr/2008	–	Initial release: data exporting for (D)AARC500 raw.dat files (80-Hz/160-Hz test-mode data, or calibration data), and Front End raw data.