

baltrad



BALTRAD tailored ender-user product: BALTRAD+LAWR Quick Guide

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BALTRAD Document: BALTRAD+ WP4-BALTRAD+LAWR (Quick Guide)



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1. Motivation and introduction

The BALTRAD+LAWR converter has been developed in the frame of BALTRAD+ Project as a part of work carried out in Work Package 4: “Pilot investment and real-world use”. The overall purpose of the converter is to make the LAWR data available within the BALTRAD radar data exchange and processing framework.

The BALTRAD+LAWR converter is considered as an end-user product dedicated to LAWR radar owners. The LAWR system uses its own output data format which is not compatible with BALTRAD. Thus, the converter is a vital tool for the LAWR owners to get their data into the BALTRAD network.

This report contains a Quick Guide on how BALTRAD+LAWR can be deployed. Moreover, a data description of the LAWR ODIM_H5 files is provided in the BALTRAD document: *BALTRAD+ WP4-BALTRAD+LAWR (Data description)* entitled: *LAWR ODIM_H5 file description*

2. BALTRAD+LAWR Quick Guide

The BALTRAD+LAWR converter is developed as a stand-alone application for converting the native LAWR radar data format into the BALTRAD compatible ODIM_H5 data format. The converter only converts the LAWR data into an injectable file, whereas the data injection into the BALTRAD Node is not included as a part of BALTRAD+LAWR. However, when the data is converted the ‘OdimH5’ or ‘n2b’ injector can be used for the injection.

BALTRAD+LAWR is designed to be deployed on the LAWR system machine itself. This approach has been chosen because most of the LAWR metadata is not available in the native LAWR files. Hence, several files need to be transferred from different locations on the LAWR machine if the conversion is performed remotely. Therefore, it is considered more efficient to collect all the data and metadata and build the LAWR ODIM_H5 file at the radar site, before transferring the data to the BALTRAD node for the injection.

LAWR radars are mostly owned and operated by water utility companies, thus the LAWR radar are not registered in the World Meteorological Organization (WMO) or indexed in the OPERA database. Therefore, additional source definitions of the LAWR radars were required in order to integrate LAWR into BALTRAD. The definitions are presented in table 1 and are implemented into the odim_sources.xml file which is distributed in current and future releases of the BALTRAD node software. As a result of these achievements, adding LAWR radars and configuring data exchange within the BALTRAD network do not differs from adding and configuring conventional meteorological weather radars.

Table 1: what/source definitions

	Node NOD:	Place PLC:	OPERA index RAD:	WMO number WMO:	Comment CMT:
Aalborg LAWR	dkaal	aalborg	DN99	00000	AABO
Aarhus LAWR	dkaar	aarhus	DN98	00000	AROS
Hvidovre LAWR	dkhvi	hvidovre	DN97	00000	HVID
Vejle LAWR	dkvej	vejle	DN96	00000	VERA
Virring LAWR	dkvix	virring	DN95	00000	VIRA
Odense LAWR	dkode	odense	DN94	00000	EKOD
Egedal LAWR	dkege	egedal	DN93	00000	EGDA
Horsholm LAWR	dkhor	horsholm	DN92	00000	HOXX

2.1 BALTRAD+LAWR installation and requirements

Currently the BALTRAD+LAWR converter is designed to the LAWR system, which runs on a Windows XP 32-bit machine. Therefore, the compiled version of the converter complies with this setup. However, the BALTRAD+LAWR converter will be adapted to future requirements as they develop.

The BALTRAD+LAWR converter package ('BALTRADplusLAWR_pkg.exe') consists of four files when extracted:

- MCRInstaller.exe MATLAB Compiler Runtime (MCR) installation
- Readme.txt Deployments notes regarding MCR
- BALTRADplusLAWR.exe Baltrad+LAWR converter
- H5RadarConfig.txt Baltrad+LAWR configuration file

The package is self-extracting, so by double clicking on the 'BALTRADplusLAWR_pkg.exe' will extract files and starts the MATLAB Compiler Runtime (MCR) installation. The MCR installation is required for using the BALTRAD+LAWR converter; however this only needs to be done once. After installing MCR a restart of the machine might be needed. If unexpectedly the MCR installation does not start automatically, the installation can be done manually by running 'MCRInstaller.exe'.

3.2 Configuration of BALTRAD+LAWR

Once the installation is completed the conversion of the native LAWR radar data to ODIM_H5 is simply done by running BALTRADplusLAWR.exe. However, it is important that the BALTRAD+LAWR converter is configured correctly. All configurations are set by the configuration text file 'H5RadarConfig.txt'. This configuration file is read every time BALTRAD+LAWR runs, and contains multiple configuration settings and parameters.

Table 2 presents the configuration parameters with short description, possible inputs and default value. Parameters highlighted with red background are the most crucial parameters and are parameters of which the default value need to be altered. The default value of the rest of the parameters values should be useful in most cases. However, it is of course recommended to check all the configuration parameters.

Table 2: Configuration parameters in H5RadarConfig.txt

Name	Description	Possible inputs	Default value
InitTimeDelay	Specifies a time delay (sec). This delay can be used to synchronise the script to the radar if you experience interference problems.	≥ 0	0.1
DataDelay	Specifies the data delay (min). This delay can be used if the LAWR data is delivered with delay.	≥ 0	0
BltMode	Select converter mode. Running in BALTRAD mode (true) insures BALTRAD capability.	true, false	true
RadarType	Type of radar	string	DHI_LAWR_FR1525
RadarDatFolder	Specifies the LAWR Radar dat folder	path	c:\radardat
StoreH5inArchive	Enables/disables local H5-archive	true, false	True
H5ArchiveFolder	Archive directory	path	c:\LAWRArchiveH5
LiveFolder	Directory for the live folder	path	c:\LiveH5
RadarTimeZone	Time zone of the radar	DK,UTC	DK
RadarPrefix	LAWR radar prefix. The prefix must correspond to the last column in table 1 (Titled: 'Comment')	See last column in table 1.	LAWR
RadarDt	Temporal resolution of the radar	1, 5	5
AddCartData	If BALTRAD mode is disabled (BltMode false) it is possible to include the Cartesian data products simply by typing the products prefixes separated by space. NOTE: this will make the output incompatible with BALTRAD. If BALTRAD mode is enabled (BltMode true) this will exclude Cartesian data.	Example 1: AROS ARO1 ARO2 Example 2: None	None
AddGroundClutterMap	Selects whether or not ground clutter data is included	True, False	True
RadarName	Name of the radar according to Table 1	See first column in Table 1	LAWR name
RadarLocationName	Description of the radar location	string	LAWR location
LocationHeight	Elevation of the radar in meters relative to sea level.	$\pm \infty$	1
LocationLon	Longitude position	$\pm \infty$	10.00000
LocationLat	Latitude position	$\pm \infty$	56.00000
LocationUTM_E	Eastern utm coordinate	$\pm \infty$	560000
LocationUTM_N	Northern utm coordinate	$\pm \infty$	6220000
UTM_Zone	Utm zone definition	string	32v
BeamwH	Horizontal beamwidth in degrees	$\pm \infty$	0.95
BeamwV	Vertical beamwidth in degrees	$\pm \infty$	20
Wavelength	Wavelength in cm	$\pm \infty$	3.2
rpm	Rotational antenna speed	$\pm \infty$	24
Pulsewidth	Pulse width in μ s	$\pm \infty$	1.2
BltNOD	NOD identifier according to table 1	See Table 1	NOD
BltPLC	PLC according to table 1	See Table 1	PLC
BltRAD	RAD according to table 1	See Table 1	RAD
BltWMO	WMO according to table 1	See Table 1	00000
BltCMT	CMT according to table 1	See Table 1	LAWR
BltNodeName	Name of the baltrad node used for injection	string	Node.name
Gain	The gain factor for mapping the data to 8-bit	> 0	0.5
Offset	The offset factor for mapping the data to 8-bit	$\pm \infty$	0
AddRadarConfig	Selects whether or not the radar configuration is included. If BALTRAD mode is enabled (BltMode true) the configuration will always be included	true, false	true

The final step in setting up the BALTRAD+LAWR for data conversion is to schedule the runs of the 'BALTRADplusLAWR.exe'. For this purpose several free software options are available e.g.

Windows Systems Scheduler. After each scheduled run the h5 file in the directory specified by the 'LiveFolder' parameter will be updated and ready for transfer and injection into the BALTRAD network via a BALTRAD node. If selected by the 'StoreH5inArchive' parameter the archive located in the directory specified by the 'H5ArchiveFolder' parameter will also automatically be updated with the new data set.

3.3 Command prompt output and log file

Running 'BALTRADplusLAWR.exe' will start up a Windows Command Prompt (cmd) displaying the progress of the conversion to the user. Figure 1 illustrates an example of a successful BALTRAD+LAWR with describing comments to the displayed output. Depending on the scheduler, cmd might be running in hidden or silence mode preventing this displaying. However, this information is also stored in /Command_Window/H5Log.txt. The log only contains the most recent cmd output and is overwritten at every run.

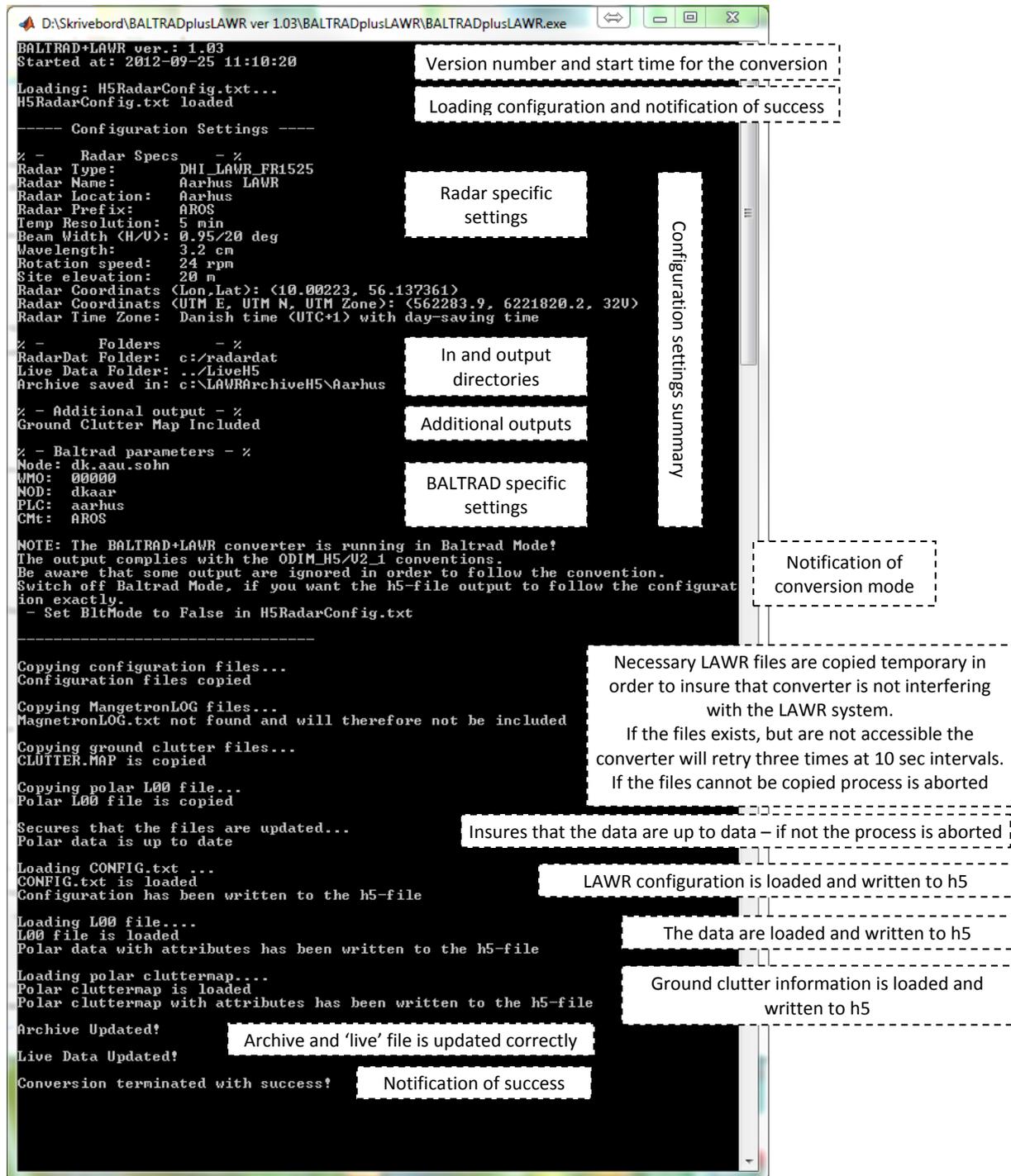


Figure 1: Example of a successful run of BALTRAD+LAWR