

Products: AMIQ, SMIQ

# AMIQ-K2

## Program for Transferring Various-Format I/Q Data to AMIQ

The software AMIQ-K2 enables you to read, convert, and transfer various-format I/Q data files to AMIQ format.

AMIQ-K2 also provides you with remote control for AMIQ.



## Contents

1	Overview .....	2
2	Hardware and Software Requirements .....	3
	Hardware Requirements .....	3
	Software Requirements .....	3
3	Installation and Setup .....	4
	Downloading and Installing the Software .....	4
	Connecting the Computer and AMIQ .....	4
	Configuration .....	4
4	Principles of Operation .....	5
5	Selecting the Source FormatType .....	6
6	Selecting the Source Data Files .....	7
7	Adjusting the Dynamic Range .....	8
8	Transferring Data to AMIQ .....	9
9	Additional Features of the Source Panel .....	10
	AMIQ Clock Presetting .....	10
	Adding a Guard Period for the DAB-K1 Format .....	10
	Saving and Appending Source Files .....	10
10	Marker Setting .....	11
11	AMIQ Remote Controlling.....	12
12	AMIQ Hardware Setting.....	13
13	AMIQ Test and Adjustment .....	14
14	Ordering information.....	14

## 1 Overview

The I/Q-Modulation Generator AMIQ provides high precision I/Q analog output for data calculated by the software WinIQSIM.

Additionally, the software AMIQ-K2 enables you to read, convert, and transfer existing data files from various other programs to AMIQ format.

Input formats supported by AMIQ-K2 are:

- The propriety R&S programs IQSIM and DAB-K1.
- Mathematic calculation programs like Matlab and Mathcad.
- AWG202, COSSAP and ADS data files.

AMIQ-K2 also provides you with remote control for AMIQ.

For hardware and software requirements see section 2.

AMIQ-K2 transfers data to AMIQ using either

- GPIB
- RS232.

An extensive manual is supplied to help you use AMIQ-K2.

## **2 Hardware and Software Requirements**

### **Hardware Requirements**

he program will run on any IBM AT compatible computer with

- CPU: 486, Pentium or better; clock rate >100 MHz
- RAM: > 32 MByte (for Windows NT > 48 MByte)
- Monitor: VGA color monitor minimum 800x600  
recommended 1024x768
- GPIB: GPIB (IEEE) -bus card Rohde & Schwarz: IEEE 488.2 Bus  
Interface PS-B4, 1006.6207.04 or National Instruments AT-  
GPIB / TNT

### **Software Requirements**

- Windows 95 or Windows NT (version 4.0 or later)
- GPIB (IEC) bus driver (as appropriate to the operating system)

## **3 Installation and Setup**

### **Downloading and Installing the Software**

AMIQ-K2 is supplied as a packed file. In an empty directory of your choice:

1. Download 32amiqk2.exe
2. Run the downloaded exe-file.

The following files are created in the chosen directory:

setup.exe	(installation program)
AMIQ1MAA.001	(compressed program)
AMIQ1MAA.002	(compressed program)
circle.i	(example file)
circle.q	(example file)
dab_m3.sym	(example file)

To install AMIQ-K2: run setup.exe

#### Creating Installation Disks

You will need two disks:

1. Copy setup.exe and AMIQ1MAA.001 to disk 1.
2. Copy AMIQ1MAA.002 to disk 2.

To install AMIQ-K2 from the disks:

1. Insert disk 1 in the disk drive.
2. Run setup.exe.
3. Insert disk 2 in the disk drive when requested by the setup program.

### **Connecting the Computer and AMIQ**

For the RS-232 interface connect the devices using a null modem cable (see AMIQ manual section 5).

For GPIB control connect the devices using a GPIB standard cable.

### **Configuration**

The default setting for AMIQ-K2 software are:

- Connected using GPIB.
- AMIQ-GPIB-Address = 6.
- Automatically retry previous interface.
- Automatically load and start waveform after transmission.

Modify these interface and transmission parameters - if necessary - as described in section 3.2 of the AMIQ-K2 manual when you first operate the program.

## 4 Principles of Operation

The user interface uses a Windows-like design with buttons and fields. Navigate round the interface using the mouse, or with the tab and hot keys.

To run, double click on the AMIQ-K2 icon. The program displays the **Source Panel**:

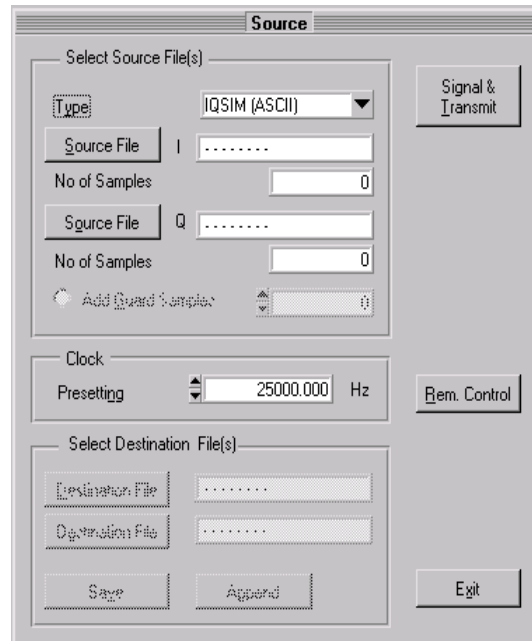


Fig. 1: Source Panel

1. Use the **Type** field to select the source format type.
2. Use the **Source File** buttons to select the source data files.
3. Use the **Signal & Transmit** button to adjust the input values of the dynamic range and to start transferring the source data to the AMIQ.
4. Use the **Clock Presetting** field to enter the clock presetting.
5. Use the **Rem. Control** button to open the AMIQ Remote Control panel.
6. Use the **Exit** button to leave the program.

## 5 Selecting the Source FormatType

Open the format type list by clicking the down arrow in the **Select Source File** field.

The following source data formats are supported:

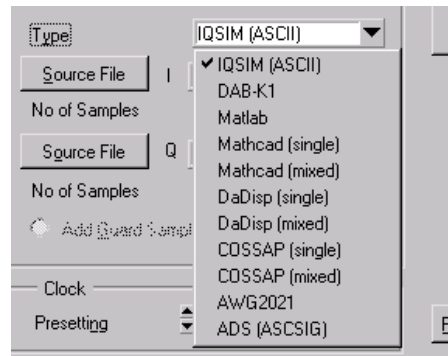


Fig. 2: Format Types

IQSIM and DAB-K1: output from the corresponding R&S software packages.

Matlab, Mathcad and Dadisp: output from the corresponding mathematic calculation programs.

COSSAP,AWG2021, ADS: output in the corresponding manufacturers' format.

For some of these formats, the I and Q data are mixed in one file, for others they are separated into two files. For Mathcad, DaDisp and COSSAP both one and two file formats are provided.

## 6 Selecting the Source Data Files

1. Click the first (upper) **Source File** button in the source panel.
2. Select one source file in the Open File Menu.

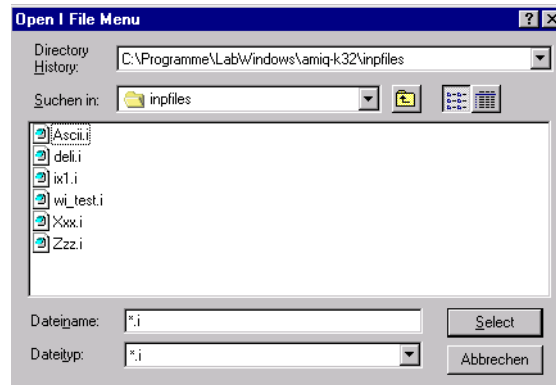


Fig. 3: Open File Menu

For I/Q data in separate files:

1. Activate the second **Source File** button.
2. Select the second source file.

The source files are analysed by the software, and the number of samples is calculated and displayed at the source panel.

If you specify only the I or the Q data file (if I and Q are separated) the software automatically sets the unknown values to zero during transmission.

## 7 Adjusting the Dynamic Range

Click the **Signal & Transmit** button in the source panel.

The **Signal Panel** opens:

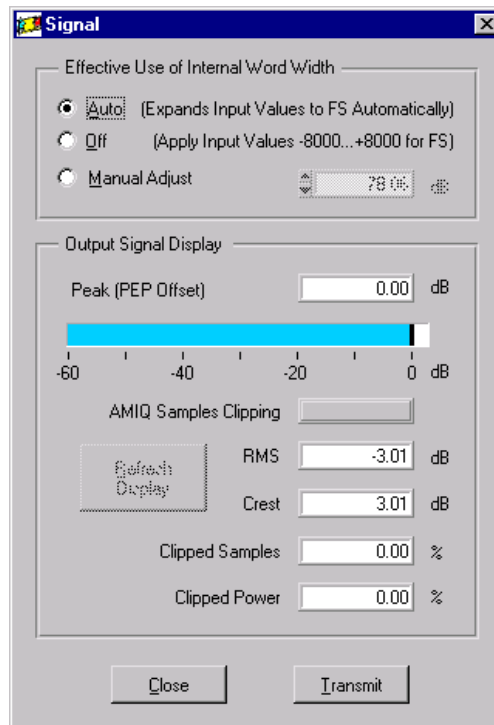


Fig. 4: Signal Panel

1. Click **Auto**, if the input data shall be normalised to use the maximum dynamic range of the AMIQ (the default)
2. Click **Off**, if the input data shall be used as AMIQ data words without any normalising (full scale is obtained at input values of -8000 and 8000)
3. Click **Manual Adjust**, if you want to adjust manually.

The peak vector length will be shown as a value and a blue bar. 0 dB corresponds to the unit circle.

Clipping will be shown by a red indicator. The display values are shaded then and remain unchanged.

Click **Refresh Display** to update the display values.



## 8 Transferring Data to AMIQ

1. Click the **Transmit** button in the signal panel.

The source data is read in, converted and stored in an internal buffer. A progress bar lets you monitor the conversion. Once the conversion is complete, the **Store Converted Data** panel opens:

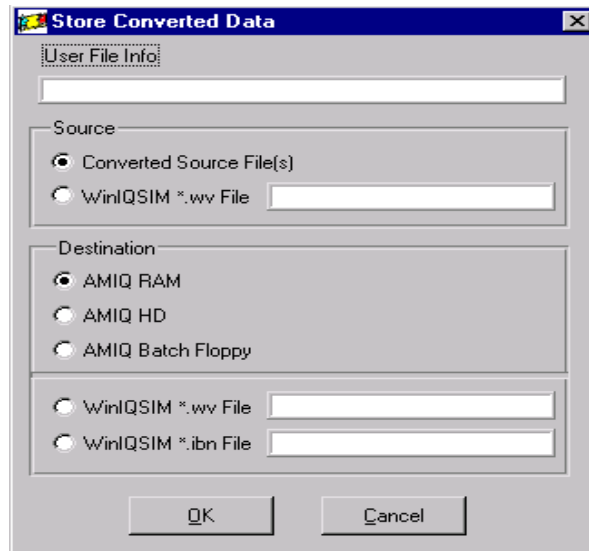


Fig. 5: Store Converted Data Panel

2. Check and modify - if necessary - the switches for source or destination.
3. Click **OK**.

The data is transferred from the internal buffer to AMIQ. A progress bar lets you monitor the transfer.

AMIQ-K2 also supports precompiled **WV formatted** files (from WinIQSIM software) and can store source data as WV formatted files on the host or (from revision 1.4) as ibn-files for adding signals to WinIQSIM.

For creating an **AMIQ Batch Floppy** see section 5.27 in the WinIQSIM manual.

If AMIQ is configured to **Automatically load and start waveform after transmission** (see section 2.3) it immediately starts outputting I and Q signals.

You can start and stop the output manually in the **Remote Control Panel** (see section 9).

## 9 Additional Features of the Source Panel

### AMIQ Clock Presetting

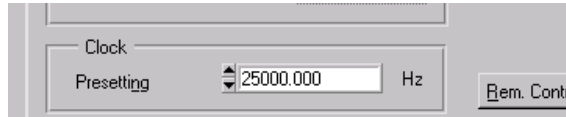


Fig. 6: Clock Presetting

**Note:** Enter a value between 100 Hz and 1000 MHz

This will first change the AMIQ clock after the next transmission.

### Adding a Guard Period for the DAB-K1 Format

The **Guard Samples** are only enabled if the DAB-K1 format is selected.

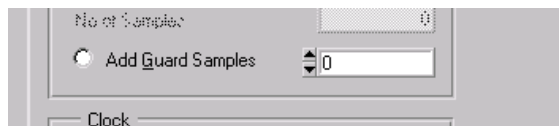


Fig. 7: Adding Guard Samples

1. Enter the number of samples you want to add.
2. Activate the **Add Guard Samples** switch.

The Guard samples are added during transmission.

### Saving and Appending Source Files

IQSIM and DAB-K1 source files can be copied and appended to other files.

1. Select at least one **Source File** as described in section 5.
2. Use the **Destination** buttons to specify the target (the Open File Menu appears)
3. Click either the **Save** or the **Append** button

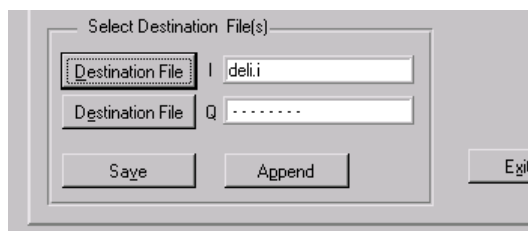


Fig. 8: Saving and appending source files

If the **Add Guard Samples** switch is activated and a number is entered, the destination file will be enlarged by these samples.

### 10 Marker Setting

The AMIQ supports up to 4 independent markers to provide trigger and control signals during a running output sequence.

Open the **Marker Setting** panel using the menu bar (**AMIQ:Marker Settings...**)

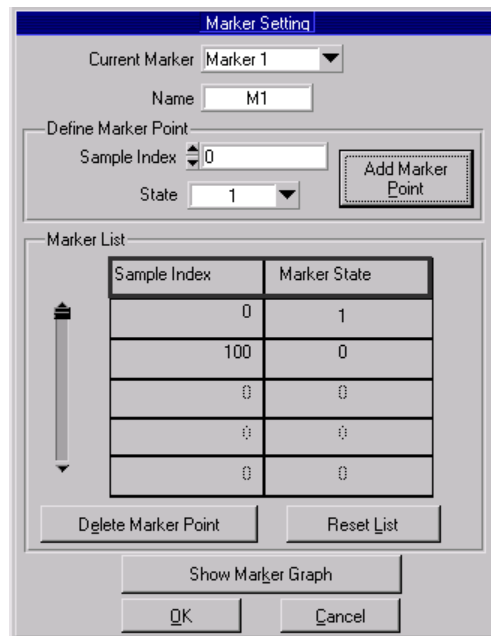


Fig. 9: Marker Settings

1. Select the **Current Marker**.
2. Modify the **Name** of your marker if needed.
3. Enter the **Sample Index** beginning from which the marker state should change.
4. Enter the new **Marker State**.
5. Copy the complete setting the **Add Marker Point** button to the **Marker List**.

You can:

- Delete single entries with **Delete Marker List**.
- Delete all entries with **Reset List**.
- Check the marker timing with **Show Marker Graph**.

**Note:** The markers appear after the next transmission.

## 11 AMIQ Remote Controlling

Open the Remote Control panel by clicking the **Rem. Control** button in the Source panel.

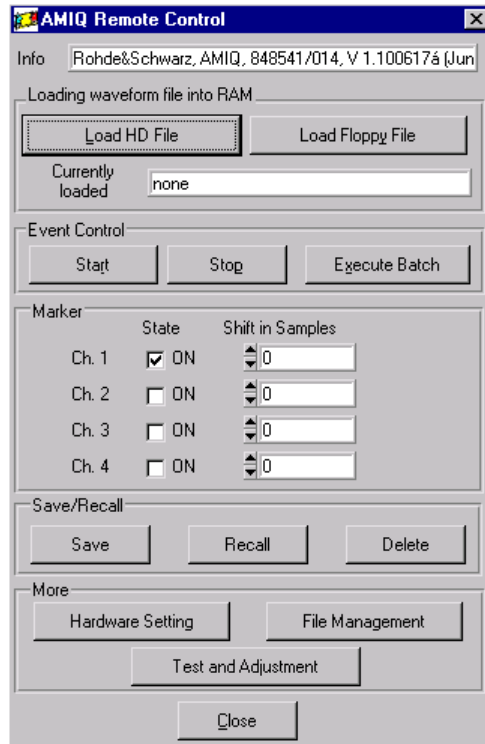


Fig. 10: Remote Control panel

1. **Load** data stored on the AMIQ hard- or floppy- disk to the AMIQ RAM.
2. **Start** or **Stop** the signal output.
3. Execute a **Batch** job (created by WinIQSIM software).
4. Enable **Markers** and shift them if necessary.
5. **Save** or **Recall** or **Delete** AMIQ setup.
6. Use the **File Management** button to copy or delete files or directories at the AMIQ harddisk.

The **Hardware Settings** and **Test and Adjustment** buttons open subpanels described in the next two sections.

## 12 AMIQ Hardware Setting

Open the Hardware Settings panel by clicking the **Hardware Settings** button in the Remote Control panel.

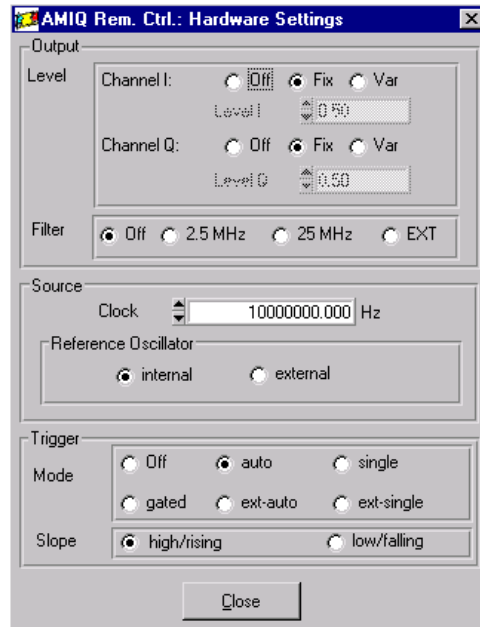


Fig. 11: Hardware Settings panel

The values shown in this panel are read from the AMIQ when the panel is opened.

- Enter your own settings.

Changes are carried out immediately.

## 13 AMIQ Test and Adjustment

Open the Test and Adjustment panel by clicking the **Test and Adjustment** button in the Remote Control panel.

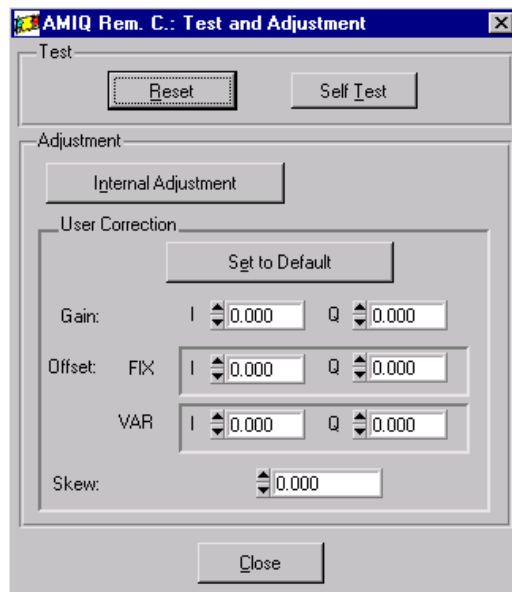


Fig. 12: Test and Adjustment panel

1. Use the **Self Test** button to run the AMIQ self test.
2. Use the **Internal Adjustment** button to start the automatic self adjustment procedure.
3. Use the **User Correction field** to enter compensation values for user level and delay mismatch.

## 14 Ordering information

**Type of instrument**  
AMIQ  
SMIQ03

1110.2003.03  
1125.5555.03



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