ICOM Voice Recorder Protokol

Supported device types and versions

The ICOM Voice Recorder protocol is intended for recording digital audio communication of ICOM repeaters (in AMBE2+ format). From the ICOM side, recording is supported for repeaters UC-FR5300 in multisite trunking mode, with firmware *Revision 1.50 (NXDN)Beta.*

In the configuration of the system master repeater in the settings in the "Recording" section, it is necessary to configure "Recording Server IP Address" to the address of the computer with the D2000 KOM process and "Recording Server Port" to the UDP port number where the D2000 KOM process will listen. Subsequently, all repeaters will start sending copies of UDP packets with sound to the specified address and port.

Audio data received from the repeater is sorted and stored in individual files - one file for each call. At the start of a call, the D2000 KOM process publishes information to the input I/O tags (if they exist). After the end of the call, it will publish information about the closed recording to the I/O tag with the address FILE_READY, without waiting for confirmation from the ESL script, therefore it is advisable to implement handling with by a Server Event using the ON CHANGE action, or by a trigger event with a configured request queue, or with multiple execution enabled script (ENABLE action) so that values are handled even when there is a large number of changes.

The file (.dat) can then be converted to a standard audio file (.wav) using the conversion utility (dat2wav.exe) by Ipesoft. It can work with the hardware AMBE2+ codec (CT-24 module from ICOM) or with the software AMBE2+ codec (with lower sound quality).

If GPS data (radio transmitter positions) are detected in UDP packets, these are published in I/O tags with *GPS_** addresses upon detection of the end of the GPS sentence.

Communication line configuration

Category of communication line:

- [TCP/IP-UDP](#)
  Set the *Host* parameter to the IP address entered in the UC-FR5300 repeater configuration, or you can enter the address *ALL* or *** if the D2000 KOM process should listen on all available network interfaces.
  Set the *Port* parameter to the UDP port number specified in the repeater configuration.
  Backup server parameters are not used.
  Note: if the computer with the D2000 KOM process contains an active firewall, it is necessary to allow incoming UDP packets to the configured IP address and port

Communication station configuration

- Communication protocol *ICOM Voice Recorder.*
- The station address is not configured.

Station protocol parameters

The following station protocol parameters can be specified:

Full Name	Description	Unit	Default value
Work Path	The working directory in which recordings are made. A symbolic constant **#APPDIR#** can be used to specify the application directory, e.g. *#APPDIR#/my_work*	-	*#APPDIR#*/icom /work
Done Audio Path	Directory to which closed audio recordings are moved. A symbolic constant **#APPDIR#** can be used to specify the application directory, e.g. *#APPDIR#/my_done*	-	*#APPDIR#*/icom /done_audio
Done Data Path	Directory to which closed data recordings (e.g. with GPS data) are moved. A symbolic constant **#APPDIR#** can be used to specify the application directory, e.g. *#APPDIR#/my_done*	-	*#APPDIR#*/icom /done_data
Recording Timeout	Waiting for the recording to close. If this timeout expires and no more recording data has been received during it, the recording file is closed and moved to the Done Path directory.	sec. mss	3.000
Full Debug	Enabling detailed debugs about receiving and analyzing data.	YES /NO	NO

I/O tag configuration

Possible value types of I/O tag: **TxtI, Ci**.

The I/O tags can be configured on the station according to the following table:

Value type	I/O tag address	New value	Description
TxtI	IP_ADDR	New recording	The IP address of the sending repeater
Ci	SRC_SYSCODE	New recording	Stores the System Code of the sender (1-16382)
Ci	SRC_SITECODE	New recording	Stores the transmitters' Site Code (1-250)
Ci	SRC_PREFIXID	New recording	Stores the Prefix ID of the transmitter (1-30)
Ci	SRC_UNIT_ID	New recording	Stores the Unit ID of the transmitter (1-2000)
Ci	SRC_RPTR_NO	New recording	Stores the transmitter's Repeater No. (1-30)
Ci	DST_SYSCODE	New recording	Stores the System Code of the destination (1-16382)
Ci	DST_SITECODE	New recording	Stores the Site Code of the destination (1-250)
Ci	DST_PREFIXID	New recording	Stores the Prefix ID of the destination (1-30)
Ci	DST_UNIT_ID	New recording	Stores the Unit/Group ID of the destination (1-2000,2047)
Ci	CALL_TYPE	New recording	Call type (1-group call, 4-individual call)
TxtI	FILE_READY	End of recording	The name of the closed file in the Done Audio Path directory

TxtI	ERROR	Error occurrence	Fatal error processing UDP packet, the packet is dropped
TxtI	WARNING	Warning occurrence	Minor error while processing UDP packet, processing continues
GPS data processing			
Ci	GPS_PREFIXID	GPS data	Stores the Prefix ID of the transmitter (1-30)
Ci	GPS_UNIT_ID	GPS data	Stores the Unit ID of the transmitter (1-2000)
Ci	GPS_DATA	GPS data	Parsed GPS sentence (without ending <CR><LF>)
TxtI	GPS_FILE	GPS data	The name of the closed file with raw GPS data in the Done Data Path directory (the file can be deleted since the parsed GPS data is in the I/O tag with the address *GPS_DATA*).
Processing of unknown type of data (neither audio nor GPS)			
TxtI	UNKNOWN_FILE	Unknown data	The name of the closed file with raw data in the Done Data Path directory

The format of the file name published in the I/O tags with the addresses *FILE_READY, GPS_FILE and UNKNOWN_FILE* is as follows:

yyyy-dd-mm-hh-mi-ss_Host_SrcSysCode_SrcSiteCode_SrcPrefixId_SrcUnitId_SrcRptrNo_DstSysCode_DstSiteCode_DstPrefixId_DstUnitId_CallType.dat

where *yyyy-dd-mm-hh-mi-ss* is the timestamp of the start of the call, *Host* is the IP address of the repeater, and the other parts of the name (*SrcSysCode*, *SrcSiteCode*, *SrcPrefixId*, etc.) are obvious from the table of addresses of the I/O tags.

Examples of names (odd parts of the name are highlighted):

- **2022-20-10-10-01-00**_10.136.183.35_**00001**_008_**001**_00464_**002**_00001_**008**_001_**01000**_004.dat
- **2022-20-10-08-22-33**_10.134.163.35_**00001**_014_**001**_00591_**002**_00001_**014**_001_**01000**_004.dat

Literature

Changes and modifications

Document revisions

- Ver. 1.0 - September 9th, 2022 - Document creation
- Ver. 1.1 - January 9, 2023 - Support for GPS data parsing
- Ver. 1.2 - January 12, 2023 - Separation of directories for GPS and audio data, implementation of I/O tag for unknown data

ⓘ **Related pages:**

Communication protocols