

SalCo ARES Digital Data Messaging

Kenwood TS-480SAT set up and configuration

With or without full rig control of the TS-480SAT

February 2019

V 1.1

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The Kenwood TS-480SAT does not have a built in sound card unlike a few of the newly released radios out there. Since there is not internal soundcard, an external one must be used. The Signalink TNC is a relatively inexpensive unit that can be used with many different radios by reconfiguring the jumper wires and procuring the appropriate connection cables. The TNC will not, however, provide the appropriate commands for rig control. A separate USB to serial (RS2322) cable must be used for rig control. You can use the Signalink TNC by itself by manually tuning the radio to the appropriate frequencies as needed.

Signalink



You can purchase a Signalink USB interface from many different sources for around \$129.00 (February 2019) including the appropriate cable to connect to your specific radio. (For Kenwood TS-480SAT and TM-V71A, the same cable may be used which is an RJ45 to a 6 pin Mini DIN connector) The Signalink is powered by the USB port from your computer.

Ensure you look at the configuration of the jumper wires for your specific radio (Also available at many sources).

SIGNALINK JUMPER SETTINGS Same for both TS-480SAT. 6-pin Mini-DIN Data Port (use part # SLUSB6PM, SL1+6PM, or SLCAB6PM)

JP-1	Pin-out	Radio Models	Notes
G 0 0 8 G 0 0 7 G 0 6 0 5 PWR 0 6 5 PWR 0 4 PTT 0 3 2 SPKR 0 1	Pin 1 – Data In Pin 2 – Ground Pin 3 – PTT Pin 4 – 9600 Out Pin 5 – 1200 Out Pin 6 – Squelch	DR-735T/E	

Ensure you radio is powered off. Connect the 6 pin Mini Din connector to the DATA port on the back of the radio. Connect that cable to the RJ45 port on the back of the Signalink. Connect the USB cable (USB A to USB B just like the cable to connect to a printer) to any USB port on your computer, then plug the USB connector into the USB B port on the back of the Signalink. (In Windows 7 and above, the computer already has the appropriate drivers and will install them automatically.)

The TS-480 requires a serial cable (plugged into the RS232 port on the front of the transceiver unit) for computer control of the radio.

USB to Serial (F) FTDI cable

Installation of the serial cable is fairly straight forward: connect to the RS232 port on the front of the transceiver, turn the radio on then connect to the computer. Drivers will install automatically. After driver installation is complete, you will need to check to see what COM port number was assigned. This is done by clicking on [Computer] [System Properties] [Device Manager] [Ports (COM & LPT]. Make note of the newly assigned "Silicon Labs CP210x USB to UART Bridge COM port number" – this will be required for configuration of the software.

Winlink Express Installation

Download Winlink Express Software

Download RMS Express from <u>https://winlink.org/ClientSoftware</u>; Winlink Express (right side of page), then scroll to bottom of page for download (do not install yet).

Install the RMS (Winlink) Express software using the default location for file storage and location. When you start Winlink Express for the first time, you will see: (fill in the items circled in red)

Winlink Express Properties	and a	X
Call Signs	Contact Information (Optional)	
My Callsign: Calleion at ffix (retirent) () Led for a second to be a second to	Name:	
Callsign sumx (optional): (Used for country code)	Street address 1:	07
Password recovery e-mail:	Street address 2:	
(Non-Winlink e-mail address where lost password will be sent when requested)	City:	
Remove Callsign Request password be sent to recovery e-mail	State/Province:	
	Country:	
Auxiliary Callsigns and Tactical Addresses	Postal code:	
Add Entry	Web Site URL (optional):	
Remove Entry	Phone number:	1390
Edit Entry	Non-Winlink e-mail:	Book .
	Additional information (optional):	
My Grid Square: Lat/Lon to Grid Square Winlink Express registration key:		*
Path to propagation forecast program: C:\itshfbc\	Recalculate HF path quality if SFI changes more than	: 30
Service Codes	Keep logs for 1 🚔 weeks. Keep deleted	messages for 30 days.
PUBLIC	Display list of pending incoming messages prior to	download
(Use PUBLIC for ham call signs. Separate multiple service codes by spaces.)	Wam about connections to stations holding messa	ages
If you change service codes, you must update the list of channels.	Automaticaly install field test (beta) versions of Wir	nik Development Team nink Express
Update Cancel		-

NOTE: a Winlink registration key is not required! (However if you decide to donate to further the research and development of Winlink, the registration fee is currently \$24.00)

Finally, click "Update" to save the changes you made, then click "Close" to close this window.

If you prefer to have distances indicated in miles instead of kilometers, "click" on Settings > Preferences

Near the bottom of the new window, you will see radio buttons for kilometers and miles. Click on the button next to miles, then click Update.

Message	Reading Options
Viewin	g seconds before marking message read: 2
Autom	atically move read items to Read items folder 📃
Message	acknowledgement options
Defa	uit to requesting message read acknowledgements
V Auto	matically send message read acknowledgements without prompti
📃 Ignor	re read acknowledgement requests on incoming messages
Message :	sending options
📃 Auto	matically add contact entry for each destination address
Add 🔽	"//WL2K" to the subject of messages
Line wrap;	ping
V Wrap	print lines after this many characters: 72
Distance I	Units
🔘 km	Miles
	Undate Cancel

To verify the program was installed correctly (and to complete the installation), On the pull-down menu near the top of the window, select "Telnet Winlink" from the options:

Winlink Express 1.5.11.0 - KG5DI	NF			100	fan I				
KG5DNF - Settings	Message Attach	ments Move To:	Saved Items	▼ D	elete Open	Session: Telnet W	inlink	Logs	Help
	눈 📙 🎒 »	- 0							
No active session									
System Folders	Date/Time	 Message I 	D Size	Source	Sender	Recipient	Subject		
Inbox (0 unread) Read Items (0) Outbox (0) Sent Items (0) Saved Items (0) Deleted Items (0) Drafts (0)									
Personal Folders									
Global Folders									
Contacts									

Then "click" on the "Open Session" text (it actually is a button).

Winlink Express 1.5.11.0 - KG5DN	IF	Stee (F)	Sinte		
KG5DNF - Settings	Message Attachments	Move To: Saved Items	Delete Open Set	ssion: Telnet Winlink	 Logs Help
	≿ 🛃 🚔 ≫ 📀			_	
No active session					
System Folders	Date/Time 🔻	Message ID Size	Source Sender	Recipient Subject	
Inbox (0 unread)					
Qutbox (0)					
Sent Items (0)					
Saved Items (0)					
Deleted Items (0)					
Personal Folders					A
1					
Global Folders					
1					
Contacts					
					*

On the window that opens up, press "Start" to begin the session You will then connect to one of the RMS (Radio Message Servers) via your internet connection.



(NOTE: You may receive a pop-up notification that your password was changed) After Winlink completes its connection press either Exit or the Red "X" to exit the session. Your call sign (Winlink User Name) has now been registered! Close this window (click the red "X").

Winlink Winmor Set-up

On the pull-down menu for type connection, select Winmor Winlink:



Then "click on the "open session" button:

Two new windows will appear: 1) The TNC Soundcard status window and the Winmor Status Window. In the Winmor Status Window, Select "Settings"

WINMOR Sound Card TNC Ver:1.5.10.0 Port	:8500	
Help Hide Send ID		
Connection State DISCONNECTED TCP Capture OK	Receive Rcv Level: Busy Detector Remote Station Offset: 0 Hz Rcv Frame: Squelch: 5 -	
Transmit 0 Avg ACK Percentage 100	 Waterfall Spectrum Disable 500 Waterfall 2KHz 2500 Constellation 	
Winmor Winlink Session - KG5DNF	and the second second	
Exit Settings Switch to Peer-to-Peer C	hannel Selection Forecast Best chan. Next chan. Hide TNC Start Stop Abort	
Center Freq. (kHz):	0.000 Dial Freq. (kHz): Bearing: Quality:	
Eavorites: KB5LZK @ 3595.000 (99)	Select Add to favorites Remove from favorites	
Chappel Busy In: 0/0 Out: 0/0 BPM: 0/0 Di		
	sconnected	
•••• Using Kenwood Amateur, NONE, 9600 baud ••• Ready		4

Select "Winmor TNC Setup". Fill in the appropriate spaces with the values indicated.

WINMOR Setup	23
Identify with Morse Code 📝	
WINMOR Capture Device: Microphone (3- USB Audio CODEC)-d3	•
WINMOR Playback Device: Speakers (3- USB Audio CODEC)-1f	-
Virtual TNC host address/name: 127.0.0.1	
Virtual TNC Command Port: 8500 Data Port: 8501	
Inbound Session Bandwidth (Hz) : 1600 Drive Level: 95	* *
Update Cancel	

Please ensure you select the "USB Audio CODEC" (the number may be different based on the number of TNC soundcards you have AND if you use a different USB port on your computer) for both the Microphone and Speaker Device.

Then click "Update", then "Close"

Once again, select "Settings" then Radio Setup:

8 Winmor Winlink Settings	23
Radio Selection	
Select Radio Model Kenwood Amateur Antenna Selection Default	•
Icom Address 00 USB 🖲 USB Digital 🔿 FM 💮 Use Internal Tuner 🕅	
Radio Control Port Serial Port to Use COM5 Baud 9600 Enable RTS Enable DTR TL	
PTT Port (Optional) Serial Port to Use External Baud 19200 Enable RTS Enable DTR	1
Update Close	

Set the values indicated to match those in the picture, then click "Update", then "Close" (NOTE: If you do not want to use RIG control, instead of selecting the COM Port number, leave it as "None"

The next step is to click on "Channel Selection":

🗱 Winmor Winlink Session - KG5DNF	
Exit Settings Switch to Peer-to-Peer Channel Selection Forecast Best chan. Next chan. Hide TNC Start Stop Abort Center Freq. (kHz): 0.000 Dial Freq. (kHz): Bearing: Quality:	
*** Using Kenwood Amateur, NONE, 9600 baud *** Ready	~

A new window will appear. Select (click) on "Update Table Via Internet":

HF Chan	nel Selector	- Long	- Tradient		land here	- 1000	-	ten in	Σ	3
Exit Sele	ct Update T	able Via Internet	Vpdate Tab	le Via Ra	dio Forecas	t SFI All	RMS		-	
			1	1	1			Dath	Dath	.
Callsign	Frequency (kHz)	Mode	Grid Square	Hours	Group	Distance (km)	Bearing (Degrees)	Reliability	Quality Estimate	
AD5E0	3590.000	1600	EM34QN	00-23	PUBLIC	8	270	99	99	
KB5LZK	3598.500	1600	EM34UT	00-23	PUBLIC	36	039	99	99	
AD5E0	7103.000	1600	EM34QN	00-23	PUBLIC	8	270	96	96	
KB5LZK	7101.200	1600	EM34UT	00-23	PUBLIC	36	039	96	96	
KD7UHR	3588.500	1600	EM58BQ	00-23	PUBLIC	516	027	89	55	
KOSI	3586.500	1600	EM39UA	00-23	PUBLIC	496	002	89	56	
KC5GOI	3598.000	1600	EM13KG	00-23	PUBLIC	447	253	89	54	
W9FE	3597.000	1600	EM59AA	00-23	PUBLIC	546	024	89	55	
K5LAM-10	3587.500	1600	EM52AF	00-23	PUBLIC	352	137	88	54	
N4JGW	3597.000	1600	EM74LR	00-23	PUBLIC	686	086	87	53	
NSOA	3510.000	500	EN41WK	00-23	PUBLIC	793	015	86	53	
KG5KS-10	3595.000	1600	EM45JP	00-23	PUBLIC	171	045	86	56	
NF9D	3595.000	1600	EN51TW	00-23	PUBLIC	896	023	85	52	
WX4PCA-10	3591.000	1600	EM73NU	00-23	PUBLIC	708	094	85	51	
WW4M5K	3592.500	1600	EM74UW	00-23	PUBLIC	754	084	85	52	
KF5FNP	3583.500	1600	EM30WI	00-23	PUBLIC	469	175	85	50	
W6IDS	3577.500	500	EM79NV	00-11	PUBLIC	900	047	84	52	Ŧ

Just a few words on this. This part of the program uses the new software to project the propagation for the various RMS stations. (Your table may not look like the picture until it has completed updating.) Once the table has been updated you select which station you wish to connect to by double clicking on the call sign. (Our EOC has the call sign AD5EO.) Please note that considerable information is provided here: The frequency used by the RMS station, where it is located, distance from your location, bearing (in degrees) from your location and the path reliability and quality projected at the current time.

When you double click on the station you wish to connect with, this window will close and you will see that the selection has been transferred to the Winmor Winlink control (and if you are using RIG control, the frequency will be set on your radio automatically). If you aren't using rig control, tune your radio to the value indicated by "Dial Frequency" (Center Frequency is for the center of the passband).



For digital modes, it is recommended not to exceed 35 watts RF power! (Digital signals are considerably more compressed and have a much higher duty cycle than phone modes and will travel further with less power.)

When all radio adjustments have been made and verified, click "**Start**" the program will take control of your radio and hopefully make contact with the station you have selected.

IF for some reason, the program/Signalink/Radio aren't working together, please recheck all the previous listed settings.

Winlink ARDOP set-up

The procedure and settings for Winlink ARDOP are identical to the Winmor set-up but must be done!

FLDIGI Files Installation

Download fldigi files from: <u>https://sourceforge.net/projects/fldigi/files/</u> (fldigi-#### setup.exe). Save to your desktop, then move to a convenient location. While you are at sourceforge, also download FLMSG and FLRIG (save to your desktop, then move to a convenient location.)

Name 🗢	Modified 🖨	Size ≑	Downloads/Week 🗘
C flamp	2019-01-31		388 🖵
	2019-01-31		443 🛄
C firms	2019-01-31		2,179 🖿
Childig	2019-01-29		1,786 🖿
Chaladaa taata	2019-01-19		4

Install FLRIG and FLMSG to your computer using the standard installation options. Please opt to have an icon for the shortcut placed on your desktop.

FLRIG Installation

Open FLRIG. Click on [Config] [Setup] [Transceiver]

Configurati	ion		CARGA ST	-	- X
Xcvr Trace	TCPIP PTT Aux Po	ll Ser	nd Cmds Res	tore	Close
Rig:	TS-480SAT		Retries 4	2	
Ser Port	COM5		Retry intvl 🕊	50	
Baud:	9600		Cmds 🕊	5	
✓ 1	2 -StopBits		Poll intvl 🕷	200	
🗌 🗌 Echo			Byte intvl 📢	0	
	CAT RTS/CTS		CI-V adr	Defa	iult
OPTT via	DTR DTR +12 v	U	SB audio		Init

Remember to use the COM Port number assigned to your TS-480SAT, and adjust settings to match those indicated. When finished Click the [Init] button. The program will reinitialize and if all settings are correct you will not receive any error messages. After re-initialization, please close FLRIG by clicking on the red [X]

FLMSG Installation

Open FLMSG, click on [Configuration] [Personal Data]

The filmsg config								
Personal Da	te/Time Files Radiogram ARQ UI							
Call:								
Tel:								
Name:								
Addr:								
City/St/Zip:								
Email addr:								

Fill your information into the indicated areas (Call Sign, First Name (only), and email address are the recommended fields). When finished click the red [X] to close the Config window, then close FLRIG by clicking the red [X].

FLDIGI Installation

Double click on the FLDIGI setup file. Once the program opens, click on [Configure] [UI] [Operator]

Fldigi	confi	guration										23
Operator	UI	Waterfall	Modems	Rig	Audio		Misc We	Autost	tart IC	D PSM		
Sta	tion /	Operator										
		Stat	ion Callsign	\sim			\supset					
		S	tation QTH								\supset	
		Stat	ion Locator	<		\supset	>					
		Opera	tor Callsigr				\supset					
		Ope	rator Name	<				\triangleright				
			Antenna									
Re	estore	e defaults							Save		Close	1

Fill in the indicated areas, Station QTH is the name of your city and State, Station Locator is your maidenhead grid location. Once completed, click [Save].

Next, click on the [Rig] tab

Fldigi configuration										
Operator UI Waterfall Modems Rig Audio ID Misc Web Autostart IO PSM										
firig RigCAT Hamilib XML-RPC Hardware PTT GPIO										
firig is the preferred method of tranceiver control										
firig xmirpc server parameters these controls are mirrored on the IO configuration tab										
Image: Point state Default Reconnect "Disable PTT keys modem if multiple instances of fidigi (client) are connected to a single firig (server). Image: PTT keys modem										
Restore defaults Close										

If you plan on using Rig Control, please ensure the indicated box is checked. If you ARE NOT going to use Rig control, leave the box unchecked.

Next, click on the [Audio] [Devices] Tab.

Fldigi o	configuration							
Operator	UI Waterfall Modem	Rig Audio ID Misc Web Autostart IO PSM						
Devices	Settings Right channel	Wav Alerts						
	Ooss	Device:						
	PortAudio	Capture: Line (4- USB AUDIO CODEC)	•					
		Playback: Speakers (4- USB AUDIO CODEC)						
		Server string:						
	□File I/O only							
	⊘Device supports full duplex							
Restore defaults Save Close								

Select the appropriate entry associated with the USB Audio CODEC listed on your computer. (The number will probably be different on your computer.) Once completed, click [Save]. While on the Audio tab, click on the sub-tab [Alerts].

Fldigi configuration							
Operator UI Waterfall Modems Rig Audio ID Misc Web Autostart IO PSM							
Devices Settings Right channel Way Alerts							
REGEX detected wav Regex Match in Browser	OEnable						
dinner bell Select dinner bell	t Test						
MVCAL Match is Resumer							
MYCALL detected wav Sound:	□Enable						
dinner_bell Select dinner_bell	🗢 Test						
finso received way							
Sound:	Test						
diesei diesei	- Fest						
fimsg timed out wav Sound:	OEnable						
beeboo Select beeboo	🗢 🖉 Test						
ReID audio alert way RSID detection							
Sound:							
Phone Select Phone							
Restore defaults Save	Close <-						

You can have an alert sounded when FLMSG receives a form. To do so, ensure the checkbox [Enable] is marked. You can also select the sound to be played when a message arrives by using the pull-down list under [sound].

Next, click the [Autostart] tab.

Fildigi	con	figuration	17-			1						x
Operator	UI	Waterfall	Modems	Rig	Audio	ID Misc	Web	Autostart	IO PSM			
	Auto start programs with fidigi											
fin]: [C	Program F	iles (x86)\	rig-1.	3.39\fir	ig.exe			Locate] 🖻	Test	\triangleright
flam							_		Locate	0	Test] [
fine	t								Locate] 0	Test	
flo	; [_	_		_		Locate] 0	Test)
Prog	L: C	Program F	iles (x86)∖f	lmsg-4	1.0.7\fin	nsg.exe			Locate) 🛛	Test	\triangleright
Prog 2	2:								Locate] 0	Test	ן נ
Prog	3:								Locate] 0	Test)
R	estor	e defaults					(Sa	ve		Close	1-1

You can have FLRIG and FLMSG automatically start every time you open FLDIGI. To do so, click on the [Locate] button associated with [flrig] then browse your way th C:\Program Files (x86)\flrig xx.xx (current version number)\flrig.exe then click [OK]. Check the enable box to allow the program to automatically start.

Repeat under [Prog 1] to locate the correct file for FLMSG and repeat the steps.

Once all these actions have been completed, click [Save] then click [Close].

FLDIGI is now fully configured to work with (or without) computerized RIG control.

fldigi ver4.1.00	/ IC-7100 - KG5DNF	
File Op Mode	Configure View Logbook Help	
50	212 000 Preq 50319.500 On	Off 0957 In 599 Out 599 Cnty/Cntry Notes
		Op Az 🔫
USB -	3000 🔻 🔁 💽 🕑 Qth	St Pr L
	Read macros from: C:\Users\John\fldigi.fies\macros\macros.mdf	
	Incoming toxt/transmissions will be	displayed boro
	Incoming text/italismissions will be	
	Keyboard to keyboard text will be	typed here
	Reyboard to Reyboard tox will be	iypou nore
Q		
3.4 Clear		
LQ M ANS	500 1000 1500	2000 2500
المسافية ال المسافية المسافية الم		
PSK500R		4 4 -3.0 ► ★ AFC SQL

Please ensure that both RxID and TxID are checked to allow for automatic mode switching. If using HF or 6 meters, ONLY Upper Side Band is used (6 meter FM can also be used).

NOTE: you will see a red rectangle on your waterfall. This is the center frequency for the passband. It is easy to change by clicking with your mouse (or tapping with your finger), but changing this location will make the difference between being able to decode incoming transmissions/messages and not (conversely, transmitting with the center of the passband changed will make it difficult for other stations to decode your transmission.) The small Lock [Lk] button will lock your center frequency in place.

Once you have either typed a message or pasted text into the blue window for transmitting, then press the indicated transmit [Tx] button.

Receiving is simple – watch the yellow part of the screen.