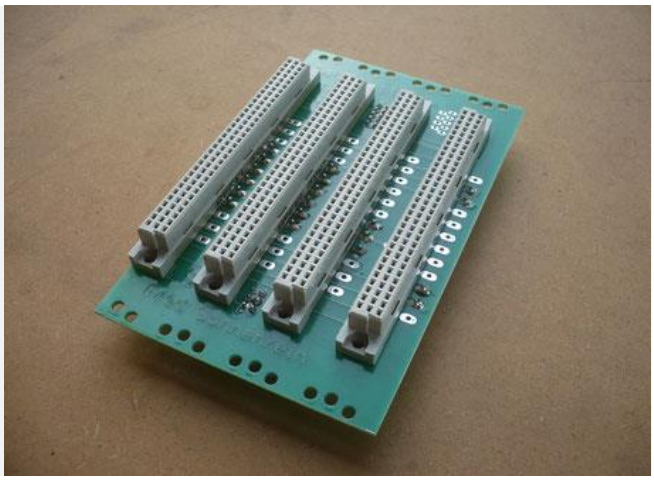
i-Telex Installation Notes for North America Using a Western Union Telex Machine

1. Assembling the i-Telex Modules & Designing an Enclosure

It is up to you to decide how to build and to install the i-Telex system, but always remember that these are live parts. Locate the i-Telex system so that children and pets cannot accidentally come into contact with it.

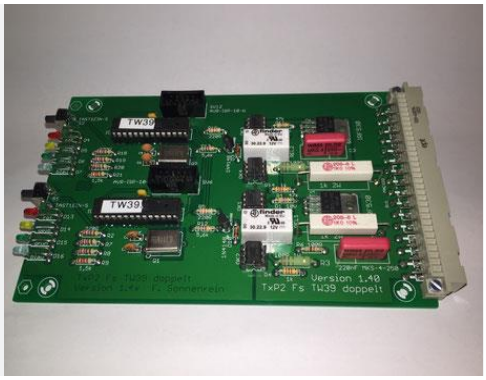
In order for the various modules to communicate with each other, they must be connected via the back panel. The cards are placed in a specific arrangement on the back panel and are then ready for use.



Orient the back panel so that the words, "TxP2 - Busplatine V1.00" are at the bottom.

Orient the power supply module so that the five LEDs are at the top with the components facing right and place the power supply module into the first slot on the right.

Orient the i-Telex module so that the RJ45 jack is at the bottom with the components facing right and place the i-Telex module into the second slot, counting from the right.



Orient the TW39 module so that the components facing right and **SKIP A SLOT** and place the TW39 module in the fourth slot counting from the right.

At the back of the panel, screw terminals for the cable connections are already installed in the right places.

It will be up to you to decide how to house your i-Telex modules. Follow this link to see a few pictures from other users:

https://www.i-telex.net/aufbaubeispiele/

2. Power for the power supply module

The power supply module requires a dual 15 VAC input. The first power supply module input creates the low voltages for the IC's and the second power supply module input is used in a voltage quadrupler that generates the loop voltage.

One solution is the Block FLD 4/15 isolation transformer that is available from a few sources including Newark element14 for about $15.00:

http://www.newark.com/block/fld-4-15/transformer-iso-30vac-4va/dp/53X8531

It's a 3-inch square blue cube with a dual 115 VAC primary winding. It has two 15VAC secondary windings that power the board. Of course, if your junk box has anything similar, it would work.

At the rear of the of the back panel, use the screw terminals directly behind the power supply module to connect the 15VAC power. Be sure to connect both primary windings to a fused 115VAC supply.

3. Internet Settings

Connect the i-Telex module to your router via a standard Ethernet cable from the router to the i-Telex module. You will need to access and identify the i-Telex device among the active devices on your Internet Gateway / Router. There are many ways to access your gateway, since this varies from carrier to carrier. One common way is to use your computer browser and enter the address http://10.0.0.1/ or http://192.168.1.0/ If you are unsure, contact your Internet Service Provider (ISP).

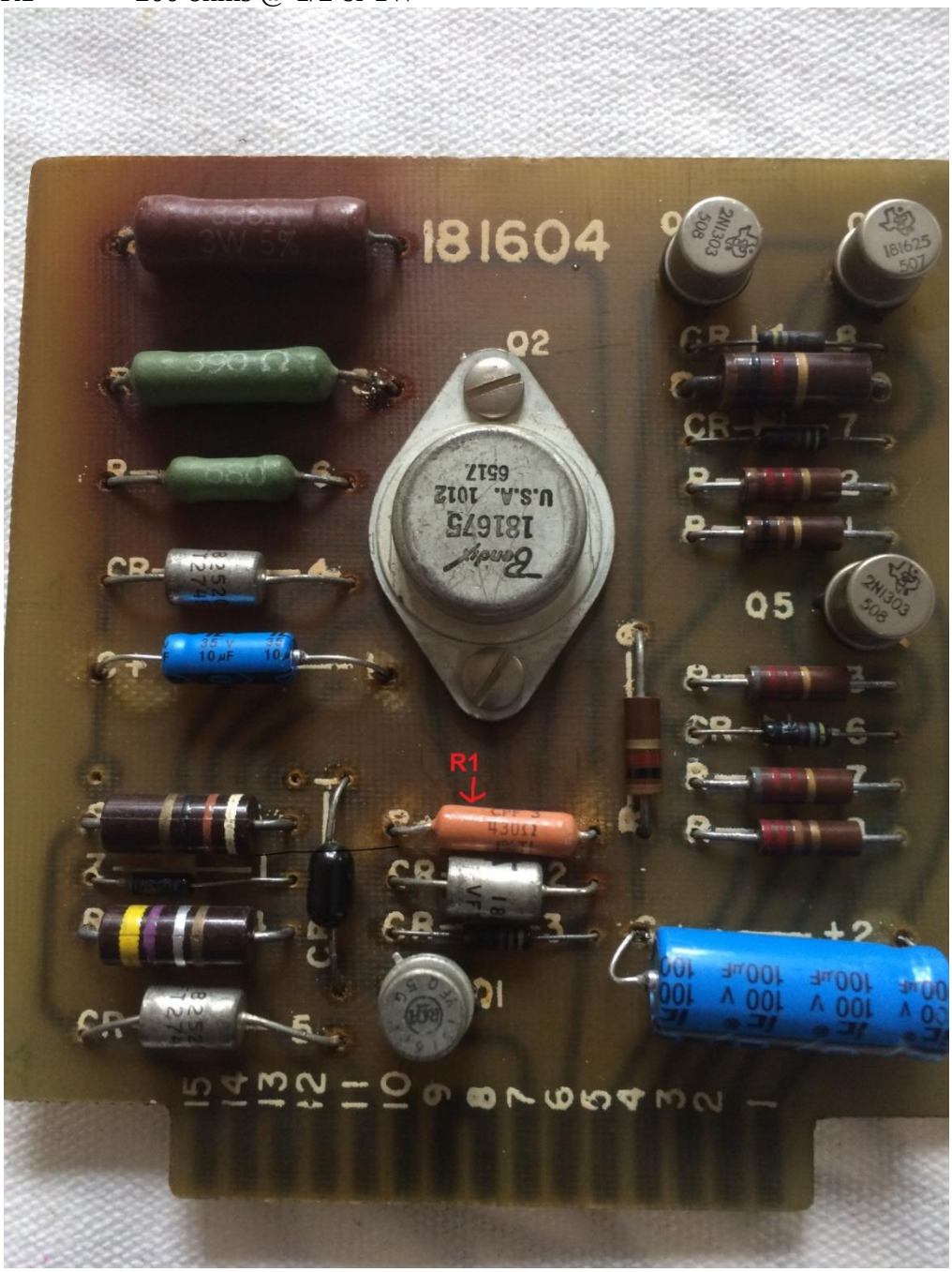
Identify the device associated with the i-Telex system and configure this device for a static IP address and port forward for port 134 (TCP). Record the static IP address as you will need this IP address a little later.

4. Telex Machine Remote Control Unit Modifications

Western Union supplied two variations of Telex machine, known as local loop and polar. The local loop option is used by the i-Telex TW39 module. Further, a modifications for 40 ma loop operation is necessary for proper operation.

The WU Selector Magnet Driver (SMD) board which sits upright, where the WU 11506-C signaling board end, requires one resistor change for proper i-Telex operation:

R1 - 200 ohms @ 1/2 or 1W



The WU 11506-C signaling board, which is the long board that sits behind the Telex dial, requires up to five resistor changes to operate correctly with the TW39 module.

These changes are:

R1	-	22k @ 5W
R3	-	2.2K @ 2W*
R12	-	47K @ 1W
R13	-	47K @ 1W
R23	-	430 ohms @ 3W

* On your board, R3 may already be 2.2K, if so, leave it installed!

Resistors R12 and R13 may be difficult to locate on the signaling board. Look for C2, a large yellow CDE .47mmd @ 200VDC capacitor, resistors R12 & R13 are on buried on each side of C2 and very hard to see.

Use caution when removing / desoldering the resistors as these older boards are constructed from a fiberglass type of laminate material, and the solder pads are easily detached from the board surface when exposed to too much heat.

If you would like to download a copy of the schematic for the Western Union Remote Control Unit (RCU) for a Teletype Model 32ASR that includes the two boards above, please see:

https://telexforum.de/download/file.php?id=2074

5. Setup and Testing

a. Wiring the Connections from the Teletype to the TW39 Module

Connect the two-wire cable from the Western Union Telex machine to the screw terminals that are labeled as A14 and A18. Polarity is important and you will not know if this is correct until everything is powered up.

b. Testing the Connection from the Teletype to the TW39 Module

Power up the i-Telex modules and you should see four green lights on the power supply module.

Power up the Telex machine. You should see the machine go to idle or the dial light will be on or the machine will run "open". If the Telex machine goes to an idle state or the dial light comes on, the two-wire cable connection to the TW39 module is correct. If the Telex machine runs open, power it down and reverse the connection of the wires at A14 and A18. Power up the Telex machine and you should have an idle Telex machine or one with the dial light lighted. If the dial light is on, press the Disconnect button to extinguish the dial light.

c. Configuration Settings for the TW39 Module

Press the top black button on the TW39 module and the Telex machine should start to print. Here you will be asked to confirm the TW39 module settings. The correct dialogue is as follows where your correct response is in **BOLD**:

KONFIG. TW39 VER 313 / MAR 10 2017

DURCHWAHL AKTUELL: NEU: **11** (Note: you can use any two digit extension that you like. This extension is used internally to contact this machine. If you have multiple i-Telex machines in your house, give each one a different extension).

PRUEFE 11 OK.

WAEHLSCHEIBE VORHANDEN **J** OK

LAENGE WAHLAUFF-IMP. (AKT. 30/100 SEK)? **30** OK

KOMMENDE ANRUFE SPERREN MIT: (AKT. 03) NEU (0 ; AUS): **.** OK (your reply is a period)

The above should get you going, but for the more curious, here is what it all means:

KONFIG. TW39 VER 313 / MAR 10 2017: This is the firmware version of your i-Telex system

DURCHWAHL AKTUELL: NEU: This is the extension of your local machine. Note: once you configure it, the prompt might look like: DURCHWAHL AKTUELL: 11 NEU: **11** . What this is telling you is the current extension is 11. At this point, you can type 11 a second time to keep it at all, you can type a period (.) to keep it at its current value, or you can type a two digit number to change it to a different extension number.

PRUEFE 11 OK This is simply telling you that 11 is available and not used for another machine internally.

WAEHLSCHEIBE VORHANDEN **J**: This is asking if you have a rotary dial. J means Ja, which is yes in German

LAENGE WAHLAUFF-IMP. (AKT. 30/100 SEK)? This is asking you how slow/fast the dial is. For our purposes, .3 seconds (30/100) is appropriate. If this prompt does not say 30/100, you type in 30 rather than a period to set it correctly. A period simply means keep the currently displayed value.

KOMMENDE ANRUFE SPERREN MIT: (AKT. 03) NEU (0 ; AUS): This is asking you what number, when dialed from another local teletype, will lock this teletype. By "lock", we mean prevent it from answering incoming calls. In the case here, the current value is 03 and the system is asking you for a new value. A period means keep 03. You could also type in a different two digit number or 0 to disable this feature.

d. Testing from the I-Telex Module to the Teletype

Locate the I-Telex module that is located next to the power supply module and press and hold the black button for a second. You will hear the Teletype start to print. It should print out the following:

LOCAL IP: this will be the static IP address that you previously set and recorded
DATE: this will be the date and time in day.month.year format along with the local time
RYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRY
RYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRY

The RYRYRY test pattern will continue until you press the black button on the I-Telex module again.

e. Additional Setting and Testing from the Gateway / Router to the Teletype machine

There are a number of setting that you can examine and potentially change via the i-Telex Web Interface. Use a PC based browser on the same LAN as the i-Telex machine and enter the static IP address you noted in step 3. For example, if your static IP address was 10.0.0.199, then enter http://10.0.0.199/

There you will see a screen with the options:

i-Telex (Deutsch) / i-Telex (English). Select the appropriate option and you will see a screen with the options:

back / Send message / **Subscriber directory** / i-Telex settings / debug info / list of modules / SD card

You can send a test message to the Telex machine through the gateway / router. This is a good operational test of the system from the gateway / router to the Telex machine.

You can view the Subscriber Directory, the i-Telex setting, etc.

6. Operating tips

a. Dialing out to another i-Telex Machine

When connecting with another i-Telex subscriber, the proper protocol is to dial the distant subscriber's directory number, prefaced with a "0" and when the connection is established . Think of this as the number you dial to access the outside line.

To dial out, press the CONN button until you see the "Dial Light" come on. Dial "0" and the distant subscriber's directory number. You will see the CONN light come on when the connection is established to the remote Telex machine. Then, you should see the date and time print out.

Use the Telex system's answerback feature to confirm that you have reached the correct Telex machine. Press FIGS D. Once you receive the answerback and confirm that you have reached the proper number, press the HERE IS key on your Telex machine to identify your machine's identity. Now you can type your text to the distant Telex machine.

You can send message using a precut paper tape or you can type on the Telex machine keyboard.

Alternately, if the distant subscriber's Telex machine is already in use and busy you will receive "OCC". You may also receive "NC" is the distant subscriber's Telex machine is not able to connect, powered off, not connected to the i-Telex network.

When you want to disconnect, press the DISC button and your machine will power off.

b. Chatting on I-Telex

If you are chatting on the Telex, you should type "GA" or +? when have stopped typing and you are turning the chat over to the distant Telex user. When you end the chat and you are ready to end the conversation, there is an preferred protocol as follows: Press FIGS D to trigger the remote teletype answerback, then press HERE IS to trigger your answerback. This is like a signature at the end of the message. After that you type ++++ (European standard) or you can type "NNNN" (North American standard) and then hang up the call.

c. Using the Test Generator in the Power Supply "Special" Module

If you purchased the Power Supply "Special" module versus the Power Supply "Normal" module, you have a local test generator with the following functions:

Dial 80 - Bias and Distortion Meter

You can use this function to check the bias and distortion that is being generated from your Telex machine keyboard and paper tape reader.

Dial 81 - Bias and Distortion Generator

You can select from:

? - menu of options
0 - Test pattern without bias and distortion
1 to 5: Various degrees of distorted data bits
6 - Distorted start bits
7 - Distorted stop bits
8 - Different baud rate
9 - Mark / space distortion
E - End the test

Dial 82 - Image Punch

This feature allows you to punch a paper tape in a pattern where letters and numbers appear. This will not work effectively if you are using a chadless paper tape punch.