PVDM
PRO & Consumer Audio

Quick Reference Guide to Studer A810:

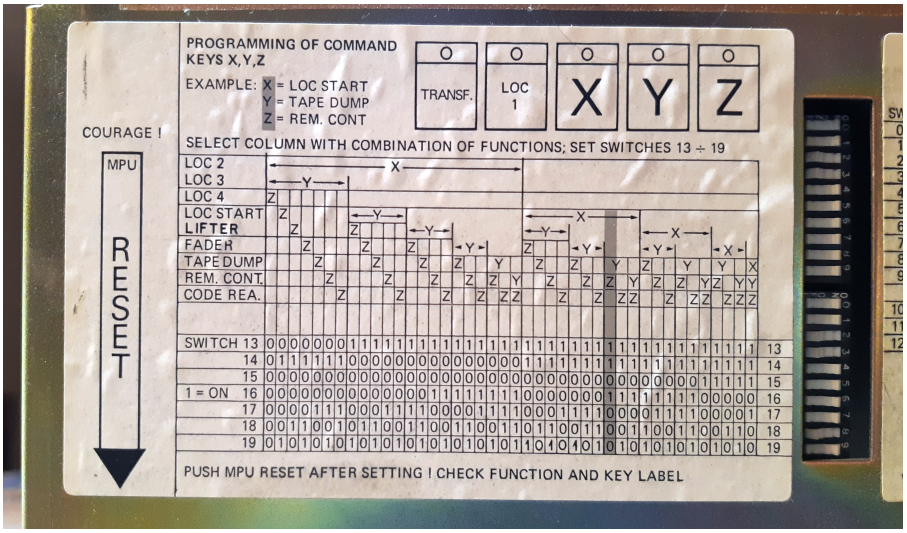
Page:

Layout of the internal tray cards

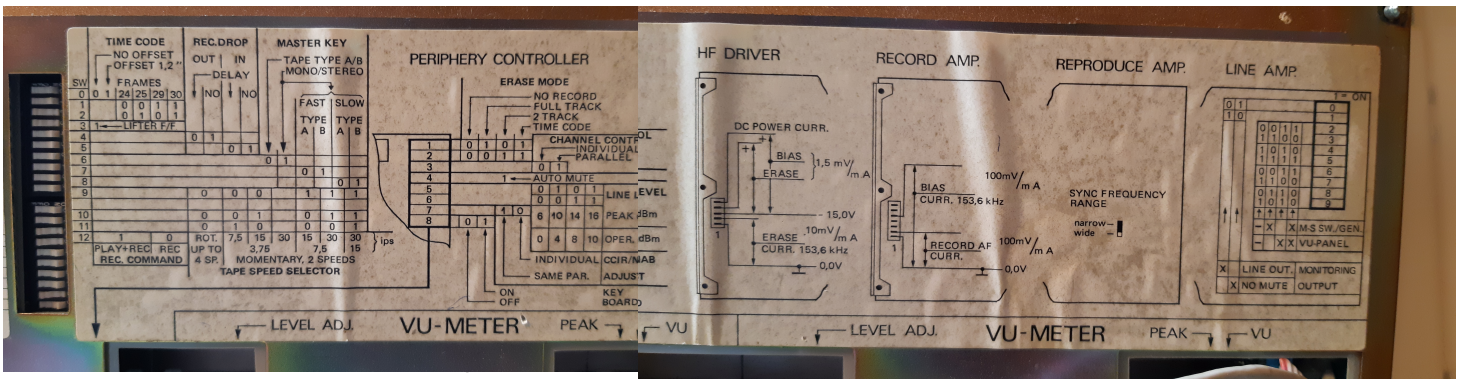
MPU Unit	1.820.780.82
Tape Deck Controller	1.810.750.81
Periphery Controller	1.810.753.00
Ch. 1:	
HF Driver	1.820.713.00
Record Amplifier	1.820.712.81
Reproduce Amplifier	1.820.710.83
Line Amplifier	1.820.714.83
Ch. 2:	
HF Driver	1.820.713.00
Record Amplifier	1.820.712.81
Reproduce Amplifier	1.820.710.83
Line Amplifier	1.820.714.83

Cards could have different revision numbers !

DIP switch settings left side

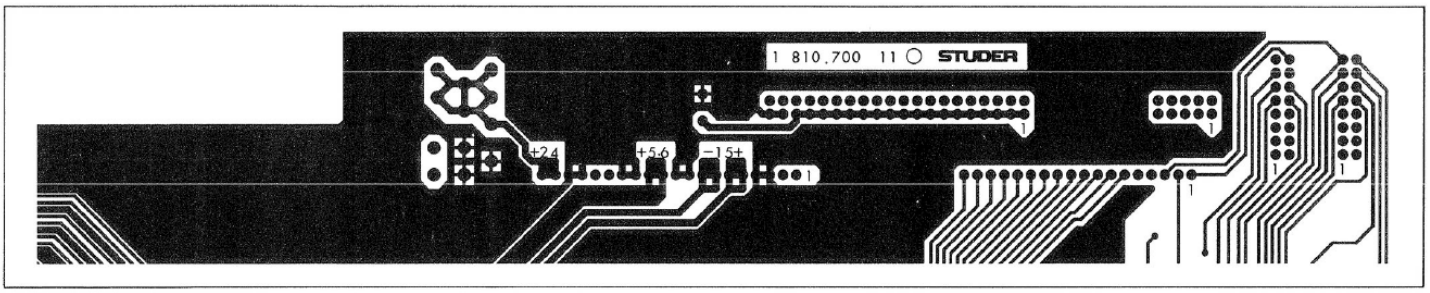


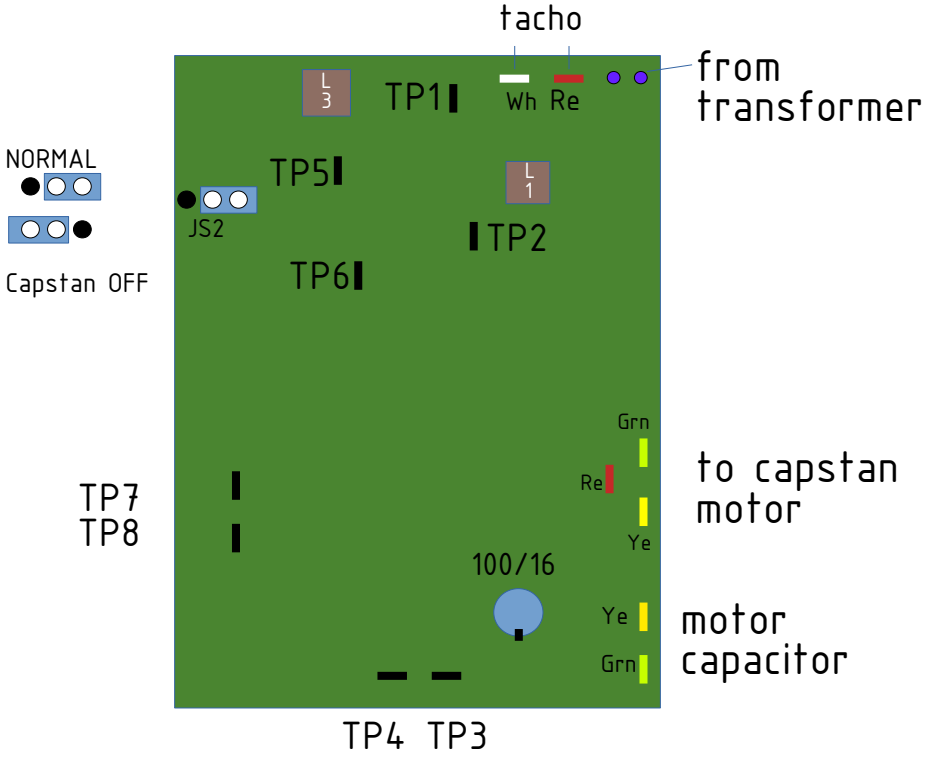
DIP switch settings right side



Check supply voltages

- Remove upper rear panel (3.2.1).
- Four test points are marked on the basis board: +24 V, +15 V, -15 V, +5.6 V. The maximum deviation is ±100 mV for each.
- The +5.6 V can be adjusted with the trimmer potentiometer that is accessible from the rear on the stabilizer board.





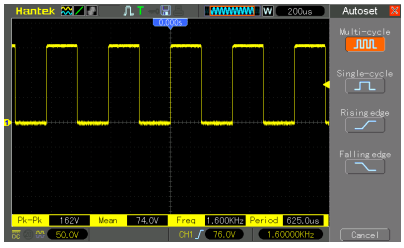
test points, connections and capacitor.

See 3.4.6 Adjustments:

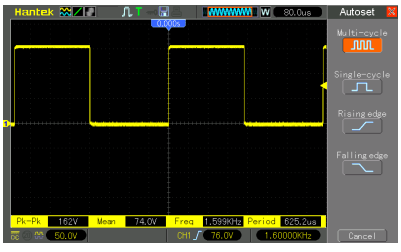
- jumper JS2 so capstan switches **OFF**; bring both tension sensors into their neutral position.
- oscilloscope to **TP1**, adjust L1 to 5.5 MHz ± 500 kHz.
- jumper JS2 so capstan switches **ON** or move tape sensors up
- oscilloscope to **TP5**, adjust audio signal (1600Hz @ 38 cm/s) with L3 for maximum amplitude (400 mV_{pp})

Checks with scope:

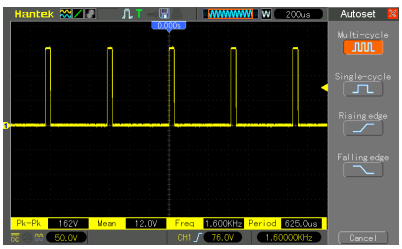
- **TP1**: adjust L1 to 5.5 MHz ± 500 kHz.
- **TP2**: measure DC signal 7 .. 8 VDC when motor runs without load.
- **TP4**: output of phase comparator; duty approx. 50% when motor without load.



- **TP5:** 1600hz max amplitude 400 mV_{pp}
- **TP7**: square wave signal, duty factor 50%

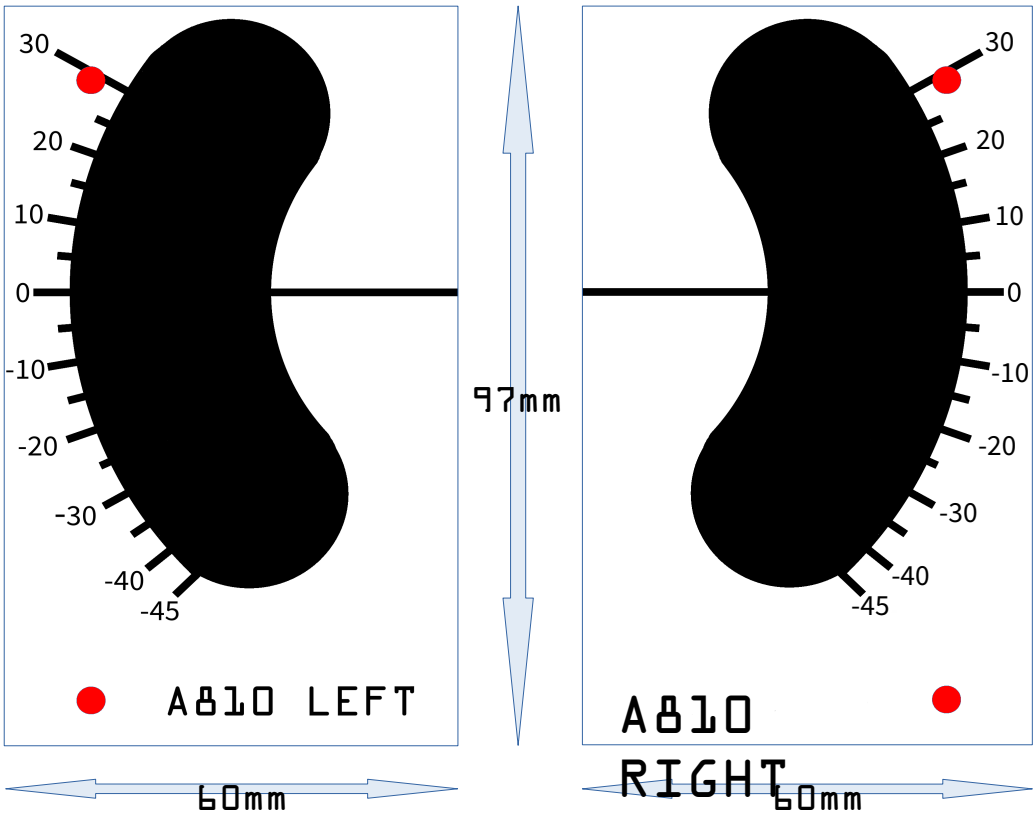


- **TP8**: is reference signal from µP; short positive pulses when motor runs



Tension gauges

- print on A4 paper and dimensions should be correct.
- check with the measurements in the drawing!
- cut out the black beany shaped section
- install into A810 using the red screw points
- see the service manual section 3.4 for adjustment instructions



Calibration instructions

Studer A810 Calibration Quick Reference

The complete instructions are in the Service Manual section 4.2

important definitions

reference level = (magnetic) TAPE level 185, 250, 320, … nWb/m
operating level = voltage level on the INPUT/OUTPUT studio: +4 dBu = 1,228 V = 0 VU aka linelevel
a tape recorded with reference level should produce operating level in the output in play mode (!)

the procedure

The calibrating steps should always be performed in the following order, and each section repeated for ch. 2.

1 GENERAL PREPARATORY STEPS: 4.2.1.6

Clean the tape path. Set all switches on the PERIPHERY CONTROLLER to the correct setting 4.2.9.2

check the output level

- feed ch. 1 line input with 1kHz @ operating level
- connect mV-meter line to the output of ch. 1 and load with 600Ω
- press INP and **release** UNCAL
- adjust ouput level to operating level with the line amplifier trimmer accessible from the front.

check the VU-meter

- VU indication: Operating level should result in a reading of 0 VU
- PPM indication: Operating level should result in a reading of -6 (0 for reference level).
- correct the VU-meter reading with the trimmer potentiometer located on the back of the VU-meter amplifier.

2 REPRODUCE ADJUSTMENTS: 4.2.2

set code switch 8 on: JS 8 = 1 to enable programming

preparatory steps 4.2.2.1

- set tape type, equalization and tape speed as desired
- connect mV-meter line to the output of ch. 1 and load with 600Ω
- press SAFE and REP, **release** UNCAL
- spool reference tape to '*reference level*' section *(0 dB)*

reproduce level adjustment 4.2.2.2

- press CH 1 and **LEVEL** REPRO
- start recorder in PLAY
- read out reproduce level on the mV-meter
- adjust to desired line level by pressing UP or DOWN and press STORE

azimuth alignment of the reproduce head 4.2.2.3

- spool reference tape to 'azimuth alignment section' *(-10 dB)*
- always adjust to maximum level first and then to minimum phase difference! See SM
- rewind tape to 'reference level section', check level and repeat reproduce level adjustment if necessary!

frequency response adjustment 4.2.2.4

- spool to 'frequency section' of the tape *(-20 dB)*
- select the corresponding tone:
  16 kHz@30 ips, 14 kHz@15 ips, 12.5 kHz@7.5 ips, 8 kHz@3.75 IPS, all at -20 dB
- press CH 1 and **TREBLE** REPRO
- start the recorder in PLAY mode
- adjust to optimum frequency response by pressing UP or DOWN and press STORE
- rewind calibration tape to the 63 Hz tone *(-20 dB)*
- press CH 1 and **BASS** REPRO
- start the recorder in PLAY mode
- adjust for optimum frequency response by pressing UP or DOWN and press STORE

3 RECORDING ADJUSTMENT: 4.2.3

tape speed 7.5 or 15 ips (or preferred studio speed). Use new (or practically new) unrecorded tape

preparatory steps 4.2.3.1

- connect 1 kHz at line level to input and mV-meter to output
- press READY and REP, **release** UNCAL

record level adjustment 4.2.3.2

- press CH1 and **LEVEL RECORD** on input keyboard
- *put recorder in record mode (PvdM addition)*
- read output level on mV-meter and press UP or DOWN key for adjusting to line level.
- press STORE

azimuth alignment of the record head 4.2.3.3

- set generator to 10 kHz and decrease level by 20 dB. Connect millivoltmeter to line output channel
- start machine in **RECORD** mode
- correct azimuth by turning screw. If severe adjustment was necessary, repeat preparatory steps

bias adjustment 4.2.3.4

- set generator to 10 kHz and level to **20** dB **below** line level. Connect millivoltmeter to line output
- press CH 1 and **BIAS** on input keyboard
- start machine in **RECORD** mode
- press DOWN until MIN light flashes
- search maximum output voltage with UP and write down this value
- continue with UP key until delta dB is reached. See table at page 4/56 (pg. 187 PDF). Press STORE

record level adjustments 4.2.3.6

- set generator to 1 kHz and operating level. Connect millivoltmeter to line output.
- press CH1 and **LEVEL RECORD** on input keyboard
- start machine in **RECORD** mode
- adjust to line level by pressing UP or DOWN and press STORE

frequency response adjustment 4.2.3.7

- set generator to **line level -20 dB.** Connect mV-meter to line output
- press CH1 and **TREBLE RECORD** on input keyboard
- start machine in **RECORD** mode
- adjust to optimum frequency response (upward of 1 kHz) by pressing UP or DOWN. Press STORE
- press **BASS REPRO** (PvdM verified)
- adjust to optimum frequency response (up to 1 kHz) by pressing UP or DOWN. Press STORE

Cross-talk adjustment 4.2.3.8 (!)

4 SYNC REPRODUCTION ADJUSTMENT 4.2.4

not supported for 3.75 IPS; all parameters should be left at 00

preparatory steps 4.2.4.1

- Set jumper on **REPRODUCE AMPLIFIER** to narrow or wide, see 4.2.9.4
- connect mV-meter to line output
- select tape speed, tape type, and equalization
- press SAFE and SYNC buttons, **release** all UNCAL buttons
- mount calibration tape to REFERENCE LEVEL section. *(0 dB)*

sync reproduce level adjustment 4.2.4.2

- press CH1 and **LEVEL REPRO** on input keyboard
- start recorder in **PLAY** mode
- read out sync reproduce level and adjust to the desired line level (UP, DOWN) and press STORE

frequency response adjustments 4.2.4.3

- spool reference tape to the frequency responce section *(-10dB) ← not correct (PvdM)*
- press CH1 and **TREBLE REPRO**
- start recorder in **PLAY** mode
- play tone – 7.5 IPS: 8kHz, 15 IPS & 30 IPS: 12.5 kHz
- adjust for optimum frequency response by pressing UP or DOWN. Press STORE
- rewind reference tape to 63 Hz tone *(-10 dB) ← again not correct (PvdM)*
- press **BASS REPRO** (PvdM verified)
- start recorder in **PLAY** mode
- adjust to optimum frequency response by pressing UP or DOWN. Press STORE

PVDM PRO & Consumer Audio

A810 S/N: _____		tape speed								date:
TAPE: A ☐ / B ☐		30		15		7 ½		3 ¾		
EQ: NAB ☐ / CCIR ☐		ch. 1	ch. 2	ch. 1	ch. 2	ch. 1	ch. 2	ch. 1	ch. 2	remarks:
REPRO	level									
	treble									
	bass									
	eq.									
RECORD	level									
	treble									
	bias									
	eq.									
SYNC *4)*	level									
	treble									
	bass									
	eq.									

table of tape adjustements 2)

	CCIR	NAB
30		AES
tape A		
tape B		
15		
tape A	SM900	
tape B	PER528	
7 ½		
tape A	SM900	
tape B	PER528	
3 ¾		NAB
tape A		
tape B	PER528	

*1) remember to put switch 8 on the Periphery Controller Card to **ON** first, and to return it to **OFF** when done entering data.*

*2) tape EQ is always **AES** (fixed) @ **30 IPS,** and always **NAB** (fixed) @ **3¾ IPS***

3) updated versions of this document can regularly be found at: https://www.reeltoreel.nl/

4) press 'sync' and read repro levels

5) a short document describing the calibration steps is available at https://www.reeltoreel.nl/

220626

Version 2.5

Philip van der Matten

Studer A810 ver 1.0 | www.reeltoreel.nl | Philip van der Matten | 3 sep 2025 | page 8/9

Eprom Firmware Versions

FIRMWARE.

13/83	Initial release?
40/85	This software offers an improved operating comfort. Some shortcomings of the software 13/83 are a1so removed. No hardware modifications on MPU board necessary – just replace the three EPROM's
25/86	The new software became necessary because with software 40/85 the automatic changeover between Tape sort A and Tape sort B of the A810 Special Pilot-Version was not effective anymore when exchanging the headblock. Some shortcomings of the software 40/85 have also been eliminated. For MPU PCB 1.820.780.81 and 1.820.780.82 (Layout 1.820.780.12) - hardware modification necessary (SM page 447. Change cap for CPU reset time). Otherwise just replace the three EPROM's only
01/88	Some minor shortcomings of the software 25/86 are eliminated. S/N 6885 onwards. This is the preferred version! Old boards (MPU PCB 1.810.752.00) with software 07/83: MPU-board needs to be exchanged. Order number for MPU PCB with software 01/88: 1.810.780.22. Otherwise just replace the three EPROM's only. See page 453 SM and onwards
46/90	mainly synchronizer related?
25/91	mainly synchronizer related? checksums: IC10 9744. IC12 FF04. IC14 E88E

You can find the firmware at https://www.reeltoreel.nl/studer/

KEYS:

TRANS + LOC 1..4:	store current location in that key
TRANS + FFW or REW:	archive wind
TRANS + FFW or REW during wind:	decrease wind speed in 3 steps
TRANS + ZERO LOC:	operating hours are displayed
STOP + TAPE A/B:	change tape type (in newer firmware)