Calibration manual

Peakmeter E-/ER-series (DIN scale)

RTW
RADIO-TECHNISCHE WERKSTÄTTEN GmbH & Co.KG
INSTRUMENTS FOR STUDIO APPLICATIONS

CE

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Calibration



Important: This description is not intended to be used as a service manual. These are guidelines for an expierenced service engineer to proceed a basic calibration of our meter. However, we strongly recommend repair of faulty meters in our factory.



Please refer to the safety instruction in the instruments operating manual before continuing!

The peakmeter of the E-/ER-series maintain a constant accuracy. The zero setting, integration time and fall back characteristics will remain the same for years. If a readjustment is necessary, the following procedures have to be carried out.



1. **Open the upper meter cover. Store screws and metal plate.**
2. **Supply power and signal to the unit.**
3. **0 dB adjustment:**

   Apply a 1 kHz sine wave at the desired reference level (usually 1.55 V/ +6 dBu) and adjust the potentiometers **P3** and **P4** so that both display columns show 0 dB.

4. **Zero setting:**

   With no signal applied and the input terminated adjust potentiometers **P1** and **P2** so that the first three segments light up. Major adjustments in the zero setting may mean that the 0 dB adjustment will have to be repeated (repeat „3“).

5. **Checking scale graduation:**

   For checking scale calibration apply the reference level to the input via an attenuator working in 10 dB steps. Scale calibration in the entire measuring range is determined by the data contained in the EPROMS. Readjust or correction of this calibration is not intended. Adjustment between -40 dB and -50 dB can be made by changing the zero setting (**P1**, **P2**). Step „3“ should be repeated. To check the „RAMP“-voltage apply an oscilloscope to pin 1 of IC 305. The displayed voltage should amount to 2.5 Vpp.

6. **Fall back adjustment:**

   After removing a level of 1 kHz/0 dB the display reading should drop to -20 dB within 1.5 seconds. Adjust potentiometer **P5** and **P6** if necessary. Reading should drop from 0 dB to -40 dB within 2.5 seconds. Use potentiometers **P7** and **P8**. These adjustments should be carried out alternately until the above times have been met exactly. Repeat 0 dB calibration as described in „3“.



7. Response time:

Checking of the response time will only be necessary if components have been replaced which determine time constants. This only applies to the IC 103 (IC 203) / IC 104 (IC 204) and the R-C circuits C 113, R 119 / R 121 / C 114 or C 219, R 219 / R 221 / C 214. For checking or matching these R-C circuits an appropriate pulse generator is required.

7.1. Rules for measuring the response characteristic given in IRT specification 3/6 dated 1.77.

7.1.1. Full-wave level 3.5 dB above reference level of peak meter
7.1.2. Frequency 5 kHz
7.1.3. Pulse duration 3 ms
7.1.4. Pulse spacing 2 s
7.1.5. Pattern pos. or neg. half-waves
(half-wave rejection min. 50:1)
7.1.6 Meter reading -3.0 dB
(mean value from readings taken for both polarities as per 1.7.)
7.1.7. Polarity error smaller 0.6 dB
(according 1.6. readings for both polarities should be between -2.7 dB and -3.3 dB)

Several pulses of positive and negative half-waves must be applied to obtain accurate measurements.

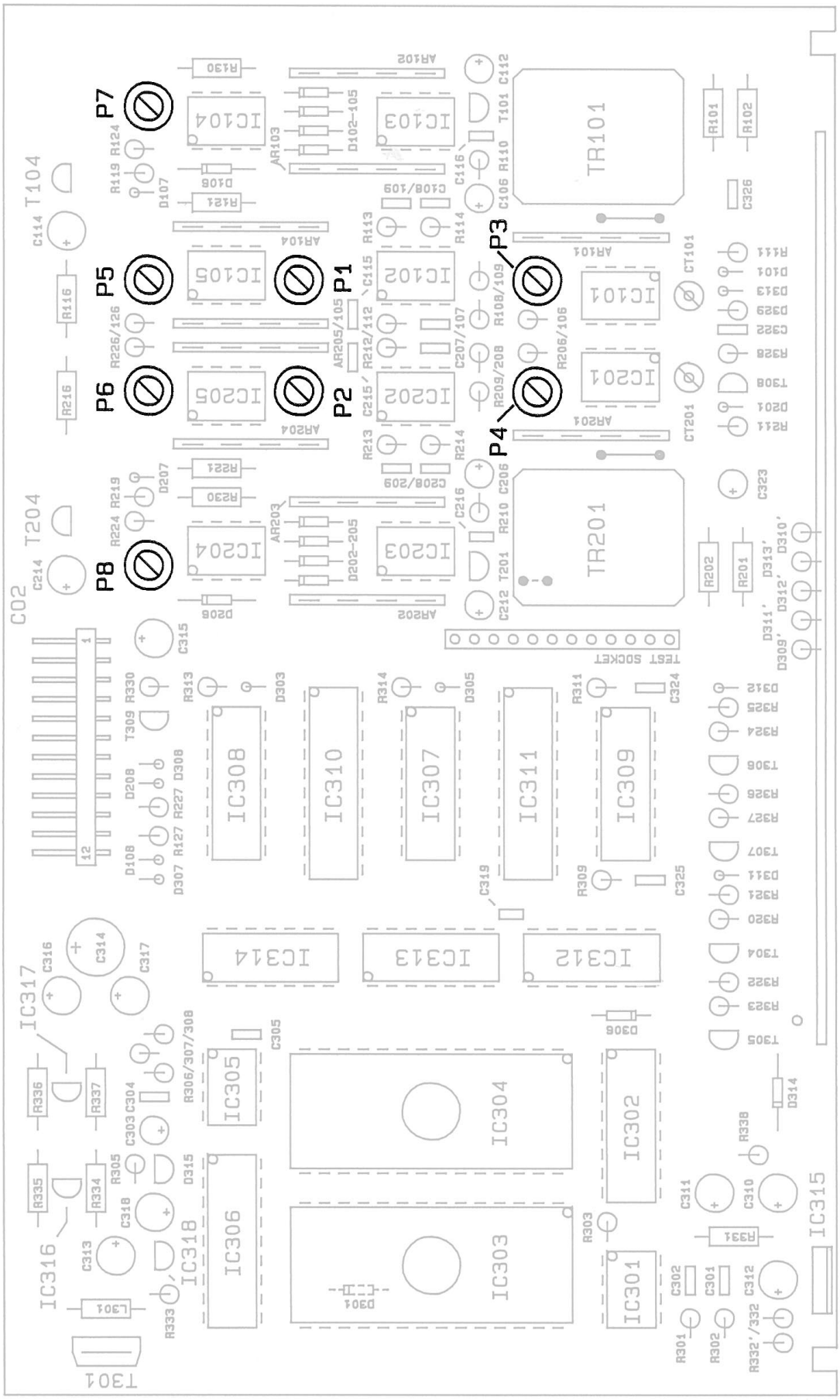
7.2. Pulses for measuring response characteristic as per DIN 45406 and IEC 268-10

7.2.1. Full-wave level 0 dB
7.2.2. Frequency 5 kHz
7.2.3. Pulse duration 10 ms, 5 ms, 3 ms, 0.4 ms
7.2.4. Pulse spacing 2.5 s
7.2.5. Pulse duration

Pulse duration	Rated value	Tolerance
10 ms	- 1 dB	± 0.5 dB
5 ms	-2 dB	± 1 dB
3 ms	-4 dB	± 1 dB
0.4 ms	-15 dB	±4 dB



If readings higher than those permitted by the tolerance range are displayed then the charging resistor determining the time constant of the R-C circuit has to be increased (e.g. to 30 Ω). If the readings obtained are less than those permitted, then the resistance should be reduced (e.g. down to 24 Ω). Use only metal film resistors.


P1
P2
P3
P4
P5
P6
P7
P8
TR101
TR201
IC101
IC102
IC103
IC104
IC201
IC202
IC203
IC204
IC205
IC301
IC302
IC303
IC304
IC305
IC306
IC307
IC308
IC309
IC310
IC311
IC312
IC313
IC314
IC315
IC316
IC317
IC318
T104
T204
T301
C02
TEST SOCKET