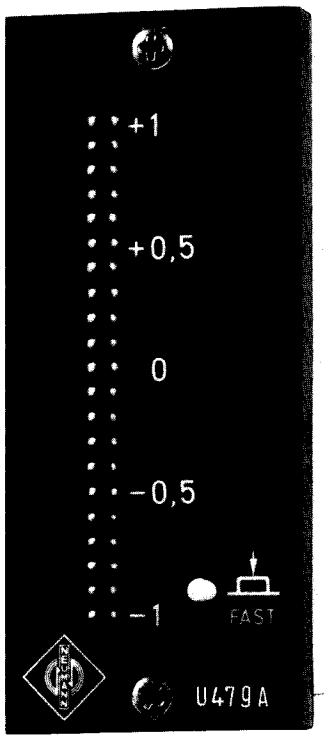
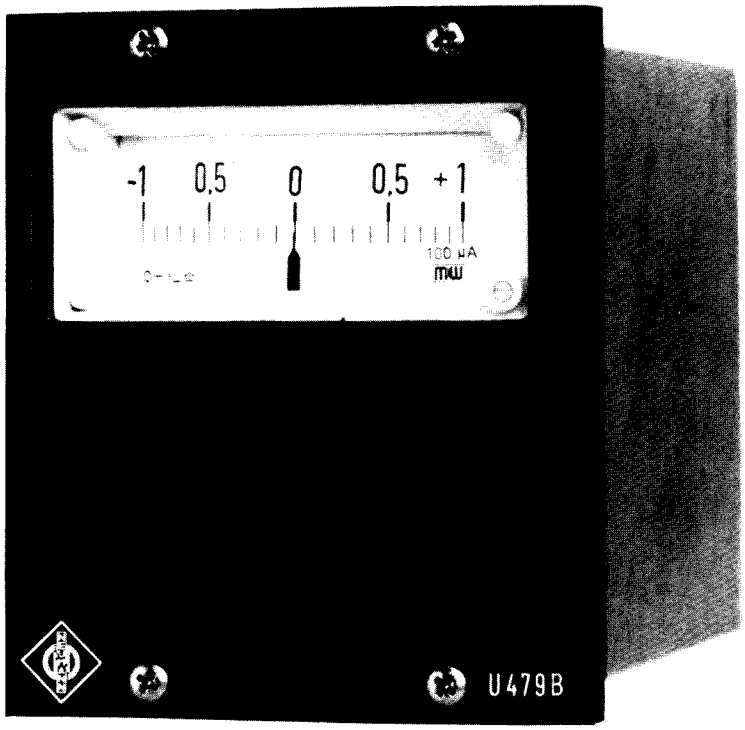
Georg Neumann GmbH | Berlin

# U 479 Correlation Coefficient Meter

11446 80301.5




U 479 A




U 479 B

Studio recording always involves the use of several microphones. Their individual signal portions are combined and subsequently processed in the console. Upon monitoring such composite signals, distortion is frequently audible. In addition, a mono signal produced by adding left/right stereo signal portions may be unsatisfactory from an aesthetic standpoint due to the partial cancellation caused by signal portions in phase opposition.

The U479 Correlation Coefficient Meter provides the studio engineer with a device for monitoring the phase relationship of stereo signals in a special way.

By contrast to an ordinary phase meter, the indication on the U479 remains uninfluenced by differences in level between the two input channels. This is the result of severe compression of each of the two signals before being processed for indication. Many so-called "compatibility meters" on the market fail to include this important step. The U479 is not a compatibility meter in that sense. While a negative indication is to be understood as requiring corrective action, a positive indication, regardless of how positive, does not inform about degrees of "compatibility". A full-scale indication, of course, shows that an identical signal appears at each input.

The correlation coefficient "r" is indicated as follows:

| | |
|---|---|
| No signal at either input | r = 0 |
| Signal at only one input | r = 0 |
| No correlation between the signals at both inputs | r = 0 |
| Signals in phase at both inputs | r = +1 |
| Signals out of phase at both inputs | r = −1 |

Due to some cross-talk between the two stereo channels, correlation may be indicated even though one signal is missing. To avoid this, the sensitivity of the U479 Correlation Coefficient Meter may be set to −30 dB, −20 dB or −10 dB, as required.

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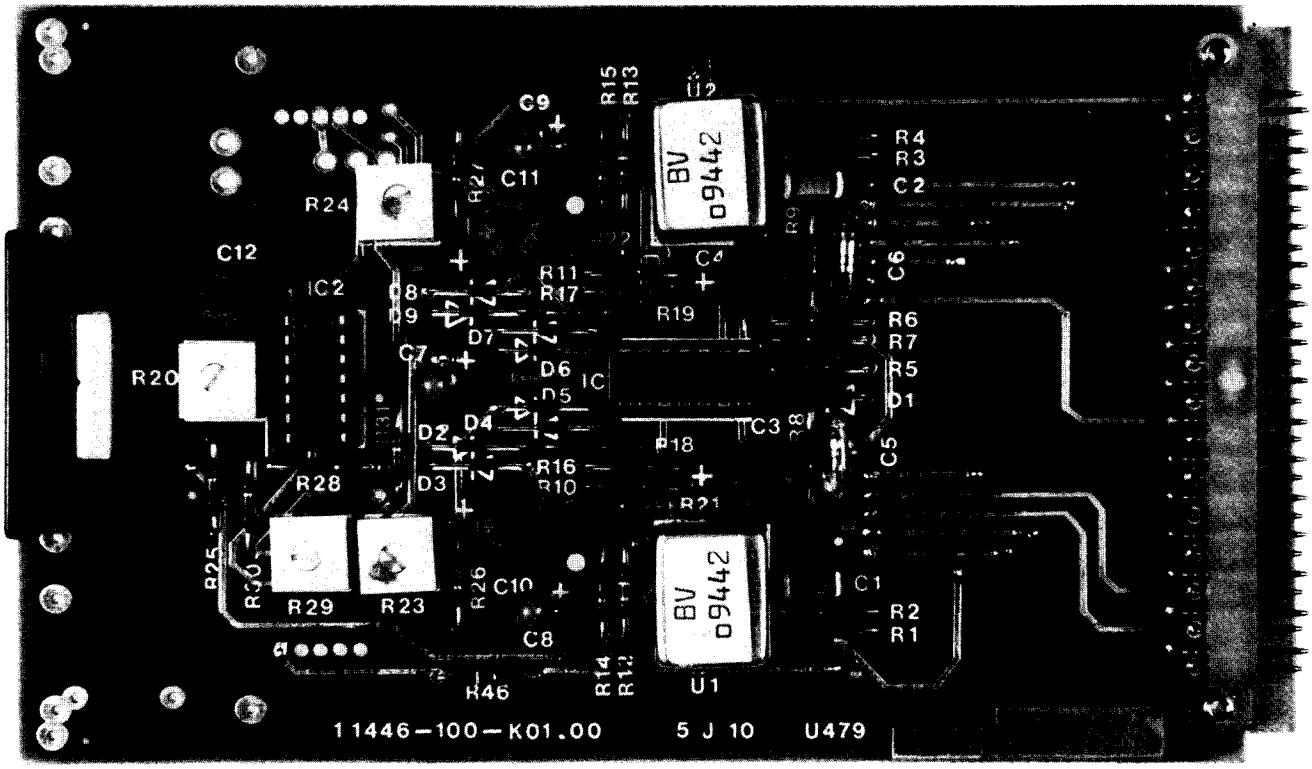



U 479 C

There are four versions of the U 479 Correlation Coefficient Meter available:

**U 479,** order no. 11446007. Portable metal cabinet with pointer instrument. For ac mains power 117/220 V, 50/60 Hz.

**U 479 A,** order no. 11446001. B 1 plug-in module with LED indication for console mounting. Operating voltage: + 24 V dc.

**U 479 B,** order no. 11446013. B 2 plug-in module with panel meter for console mounting. Operating voltage: + 24 V dc.

**U 479 C,** order no. 11446011. Plug-in PC board. Operating voltage: + 24 V dc. Requires a separate ±50 μA center-zero panel meter.

The U 479 A (order no. 11446001) indicates the correlation coefficient by means of 21 LED's. With in-phase signals applied to both inputs, the indicating LED's light in the green range. If the phases of both input signals differ by more than 90°, the respective correlation coefficient is shown in the red LED range. A yellow LED in the middle lights up when power is switched on, and also indicates uncorrelated signals (r = 0). Integration time may be shortened by pressing the FAST button.

## Technical Specifications:

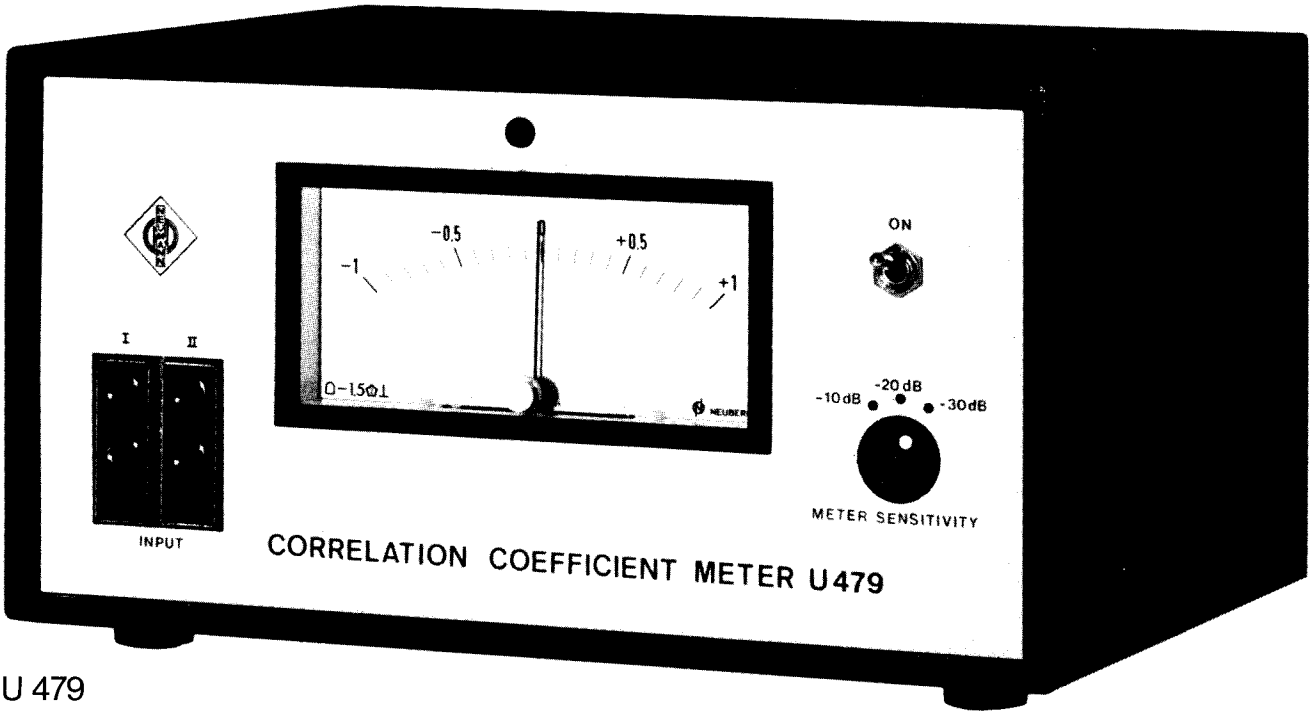
0.775 V ≙ 0 dB

reference frequency = 1 kHz

| | |
|---|---|
| Frequency range | 40 Hz...15 kHz |
| Indicating range | r = −1...0...+1 |
| Indication resolution | r = 0.1 |
| Attack time for 90% indication: | |
| Version with pointer instrument | approx. 500 ms |
| Version with LED indication | approx. 500 ms |
| with FAST button pressed | approx. 50 ms |

**Input Specifications:**

| | |
|---|---|
| Inputs | 2, balanced and floating |
| The input transformers are statically shielded | |
| Common mode rejection at 15 kHz | ≧ 60 dB |
| Input impedance (40 Hz...15 kHz) | ≧ 50 kohms |
| Minimum input level required | − 30 dB |
| Maximum input level | + 22 dB |
| Indicating sensitivity | − 30, − 20, − 10 dB switchable |




U 479

Correlation coefficient r as a function of frequency (40 Hz...15 kHz)
See graph for typical values

| input level [dB] | r |
|---|---|
| + 20... − 10 | ≧0.9 |
| + 20... − 20 | ≧0.8 |
| + 20... − 30 | ≧0.7 |

Parameter: input level + 20... − 30 dB
Sensitivity set for − 30 dB
Signals in phase at inputs I and II

Deviation of the indication r = 0 due to cross-talk <0.1
Input I (II) + 22 dB, 40 Hz...15 kHz
Input II (I) terminated in 200 ohms

**Power Supply:**

1. U479, portable version
   for ac mains connection 117/220 V ±10% 50-60 Hz
   power consumption approx. 0.9 VA
2. Nominal operating voltage of the module and the plug-in PC board version + 24 V dc
   Permissible operating voltage range + 21...+ 28 V dc
   Current consumption at operating voltage + 24 V:
   a) Version with LED indication ≦125 mA
   b) Version with pointer instrument ≦ 15 mA

Ambient operating temperature 0°...50°C

Weight:

| | |
|---|---|
| U479 | approx. 2.3 kg (5 lbs.) |
| U479A | approx. 0.35 kg (0.77 lbs.) |
| U479B | approx. 0.7 kg (1.54 lbs.) |
| U479C | approx. 0.15 kg (0.33 lbs.) |

Dimensions:

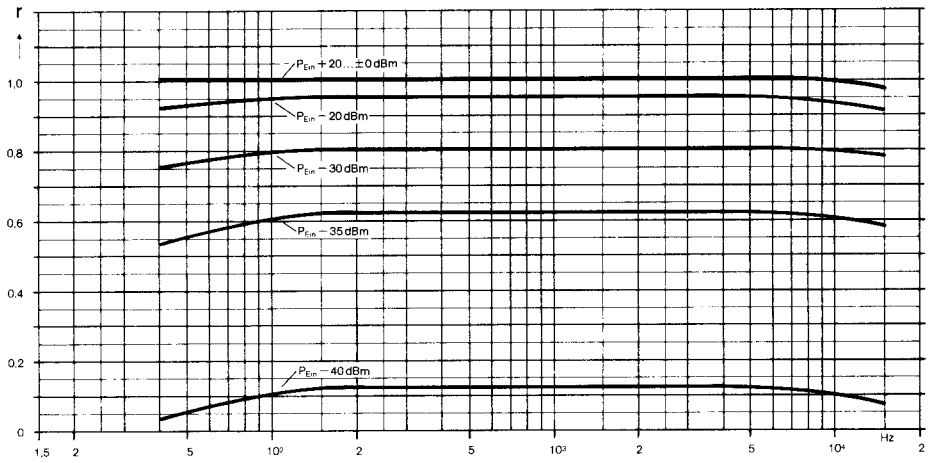
| | |
|---|---|
| U479 | 210 mm (8.3″) wide, 120 mm (4.7″) high, 160 mm (6.3″) deep |
| U479A | B1 plug-in module 40 mm (1.6″) wide, 95 mm (3.7″) high, 109.5 mm (4.3″) deep |
| U479B | B2 plug-in module 80 mm (3.2″) wide, 95 mm (3.7″) high, 109.5 mm (4.3″) deep |
| U479C | plug-in PC board 100 mm (3.9″) wide, 160 mm (6.3″) long, 32 mm (1.25″) deep |

Connectors:

| | |
|---|---|
| U479 | 2 pcs. 43206502 (Kuke) T3085 |
| U479A, U479B | T2700 |
| U479C | 31-pole male S31 DIN 41617 |

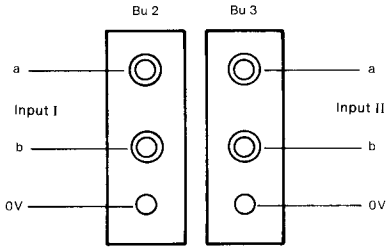
Mating connectors required:

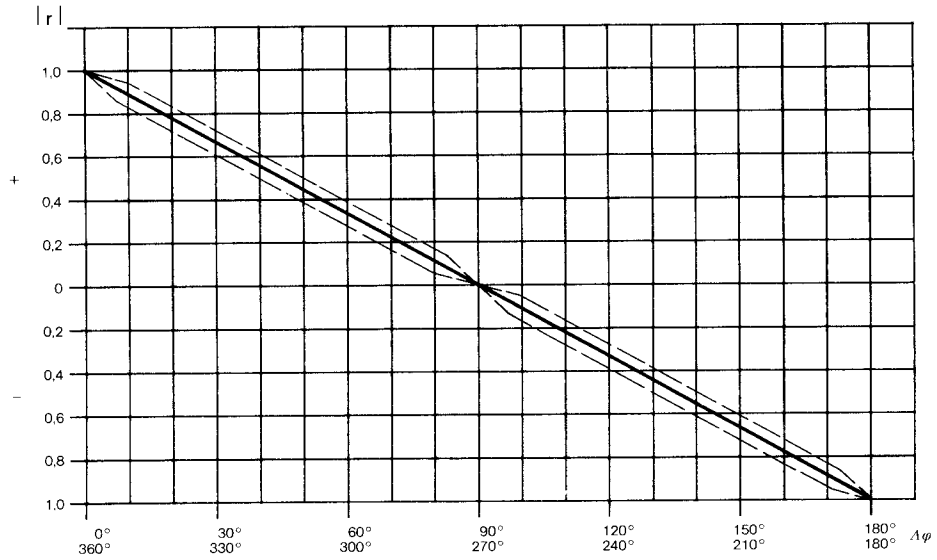
| | |
|---|---|
| U479 | 2 pcs. 41394521 (Kuke) T3084 |
| U479A, U479B | T2701 |
| U479C | 31-pole female FL31 DIN 41617 |



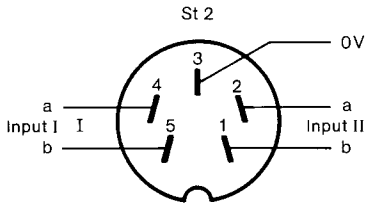

Correlation coefficient r as a function of frequency, signals in phase at input I and input II.
Parameter: input level −40...+20dBm sensitivity control set for −30dB

Connections U 479
(11446007)

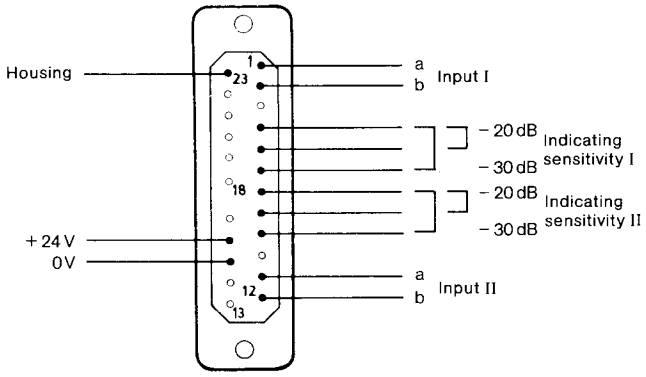


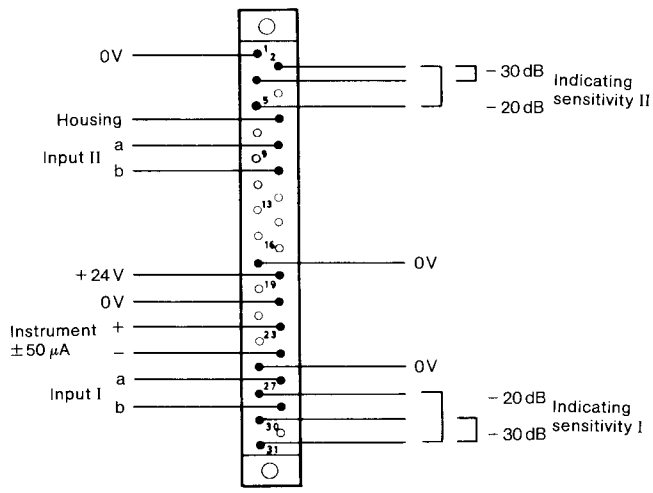

Correlation coefficient r as a function of the phase angle difference $\Delta\varphi$




Connections to
U 479 A (11446001) and
U 479 B (11446013)




Connections to
U 479 C (11446011)




Errors excepted. Specifications subject to change without notice.