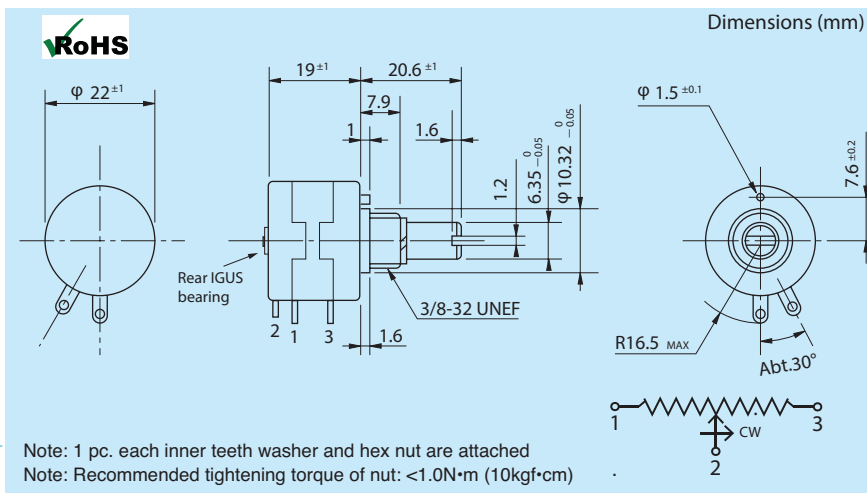


# Multi-Turn Wirewound Potentiometer (Internal Slip Clutch and Rear Bearing)

## Series ALIR17



### Standard Model Nos.

ALIR1705M	(5-turn)
ALIR1710M	(10-turn)

### General Specifications (Note 1)

#### Standard Resistance Range:

100, 200, 500, 1k, 2k, 5k, 10k  $\Omega$

#### Max. Practical Resistance Value:

20k  $\Omega$  (5-turn)  
50k  $\Omega$  (10-turn)

#### Total Resistance Tolerance:

Standard Class  $\pm 5\%$   
Precision Class  $\pm 1\%$

#### Independent Linearity Tolerance:

	5-turn	10-turn
Standard Class	$\pm 0.3\%$	$\pm 0.25\%$
Precision Class	$\pm 0.2\%$	$\pm 0.1\%$
( $< 5\text{k}\Omega$ )	( $\pm 0.25\%$ )	( $\pm 0.15\%$ )

#### Power Rating:

1.0W (5-turn)  
2.0W (10-turn)

#### Noise:

Within 100  $\Omega$  E.N.R.

#### Electrical Travel:

$360^\circ \times n \pm 5^\circ$  (n: No. of turns)

#### Mechanical Travel:

$360^\circ \times n \begin{matrix} +30^\circ \\ -0^\circ \end{matrix}$  (n: No. of turns)

#### Rotational Life:

500,000 (5-turn)

(shaft revolutions)

1,000,000 (10-turn)

#### Protection Grade:

IP40 (IP54 optional)

#### Operating Temp.:

$-55^\circ\text{C} \dots +105^\circ\text{C}$

#### Insulation Resistance:

Over 1000M  $\Omega$  at 500V.D.C.

#### Dielectric Strength:

1 minute at 1000V.A.C.

#### Starting Torque:

Within 10mN $\cdot\text{m}$  (100gf $\cdot\text{cm}$ )

#### Slipping Torque:

20mN $\cdot\text{m} \sim 60\text{mN}\cdot\text{m}$

#### Resist. Temperature Coefficient of Wire:

$\pm 20\text{p.p.m./}^\circ\text{C}$

#### Vibration:

15G / 10Hz to 2,000Hz 12 hours

#### Shock:

50G / 11ms 18 times

#### Mass:

Approx. 20g

### Resolution Chart (%)

Resist. Value ( $\Omega$ )	100	200	500	1k	2k	5k	10k	20k	50k	
ALIR1705M	0.08	0.06	0.05	0.04	0.042	0.031	0.026	0.021	0.018	
ALIR1710M	0.05	0.04	0.03	0.025	0.02	0.02	0.016	0.013	0.01	
Resist. Wire Used	Cu-Ni System					Ni-Cr System				

### Special Specifications Available

3-turn type (ALIR1703M), extra tap (1 tap, 10 turn only), multi-ganged (up to 10 gangs, housing length extended by 19mm per gang), high torque, special shaft machining (flat, pin hole, length, dia., etc.), sealed housing and o-ring shaft seal for IP54 protection grade (torque increases), 1, 2, 4, 6, 7 or 8 turn versions.

Note 1: Customers should test and verify device performance in any given application. General specifications are measured at temperatures of  $+15^\circ\text{C} \sim +35^\circ\text{C}$ . Specifications subject to change without notice.

## Series ALIR17xxM, ALIR19xxM - Multiturn Wirewound Potentiometer

**ALIR17xxM - 6.35 mm shaft diameter**

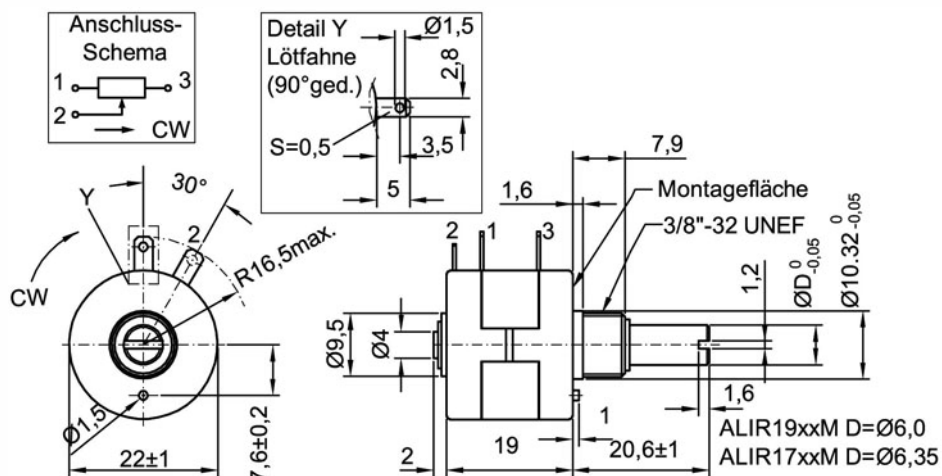
**ALIR19xxM - 6 mm shaft diameter**

- For radial shaft load up to 4N (depends on application)
- With integrated friction clutch
- 22 mm housing with brass bushing
- Linearity tolerance  $\pm 0,25\%$  ( $\pm 0,1\%$ )
- Optional front shaft sealing (IP65)
- Customized adaptations

The series ALIR were designed for applications with radial shaft load. Particularly in case of forces at the shaft end, the bearing at the rear lid takes an important function. We use a precision sleeve bearing. The ALIR has an integrated friction clutch, which protects the potentiometer in case of overwinding the stops. This function is also a cost reduction in the production, because the zero point setting is no longer necessary.



### Drawing



## Series ALIR17xxM, ALIR19xxM - Multiturn Wirewound Potentiometer

Electrical Data	3 turn	5 turn	10 turn
Electrical rotation angle	1080° ± 5°	1800° ± 5°	3600° ± 5°
Resistance values	20 ... 50kOhm	20 ... 50kOhm	20 ... 100kOhm
Resistance tolerance	± 5% (± 1%)		
Linearity tolerance, independent	± 0,25% (± 0,2%)	± 0,25% (± 0,15%)	± 0,25% (± 0,1%)
Noise (ENR)	< 100 Ohm		
Power at +40°C (0W at 125°C)	0,5 W	1 W	2 W
Wiper current	35 mA max./ < 0,02 mA recommended		
Insulation	1000 MOhm at 500 VDC		
Dielectric strength	1000 VAC (1min.)		

Mechanical Data	3 turn	5 turn	10 turn
Mechanical rotation angle	1080° + 10	1800° + 10	3600° + 10
Rotational speed	40 rpm max.		
Life (n x 90% elec. angle)	300.000 rev.	500 000 rev.	1 x 10 <sup>6</sup> rev.
Starting torque	< 1 Ncm		
Slipping torque	≈ 2 ... 7 Ncm		
Torque mounting nut	< 150 Ncm		

Other Data	
Protection class	Standar: IP40 / Optional sealed shaft: IP65
Operating temperature	-55 ... + 105° C
Bearing	Bushing: brass sleeve bearing Rear lid: High performance polymer sleeve bearing
Housing material	glasfaserverstärktes Nylon
Shaft material	stainless steel
Terminals	gold-plated solder lugs for connector AMP-Faston 110, Part-No. 42236-1
Mounting parts	hex-nut, tooth washer
Weight	25 g

# Series ALIR17xxM, ALIR19xxM - Multiturn Wirewound Potentiometer

Windings / Resolution										
Resistance value	100	200	500	1k	2k	5k	10k	20k	50k	100k
ALIR1705/1905 Windings	1240	1560	2000	2510	2400	3200	3900	4800	5500	--
ALIR1705/1905 Resolution % (100% / Anz. Wdg.)	0,081	0,064	0,050	0,039	0,041	0,031	0,026	0,021	0,018	--
ALIR1710/1910 Windings	2100	2480	3300	4000	5020	5000	6400	7800	10100	11000
ALIR1710/1910 Resolution in % (100% / Anz. Wdg.)	0,048	0,040	0,030	0,025	0,020	0,020	0,016	0,013	0,010	0,009

## Order code

Beschreibung	Optionen
3-turn; 6,35 mm shaft; metal bushing (*)	ALIR1703M (*)
3-turn; 6 mm shaft; metal bushing (*)	ALIR1903M (*)
5-turn; 6,35 mm shaft; metal bushing (*)	ALIR1705M (*)
5-turn; 6 mm shaft; metal bushing (*)	ALIR1905M (*)
<b>10-turn; 6,35 mm shaft; metal bushing</b>	<b>ALIR1710M</b>
<b>10-turn; 6 mm shaft; metal bushing</b>	<b>ALIR1910M</b>
Resistance value [Ohm]	R500 (*) R1K R2K (*) R5K R10K R20K (*) R50K (*) R100K (*)
Resistance tolerance	W5% W1% (*)
Independent linearity [± %]	L0,25% L0,1% (*) L0,15% (*) L0,2% (*)
Special shaft length [mm] (*)	A.. (*)
Special shaft diameter [mm] (*)	DM (*)
Sealing ring in the bushing (*)	D (*)

(\*) = on request available for projects

### For higher quantities or on-going demand, additional options are available as described below

For example:

- Other resistance values
- Mounting of cables and connectors
- Multi ganged versions for redundancy
- Special shaft design

**For technical advice, projects, samples, questions about pricing, delivery times and availability please contact us**

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All the specifications and informations in this datasheet can not consider the special demands that are caused by the application. Because of this, they are no general description of the properties of the product.

28.09.2016. All specifications are subject to change without a notice