17 mm Rotary Potentiometer with Push-Pull Switch





P161 Series

Features:

- Resistance range 1 k Ω to 1 M Ω
- Temperature range -10°C to +70°C
- Rotational cycles of 15,000 minimum
- Switch option
- Vertical and horizontal mount versions
- RoHS compliant

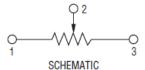


Description:

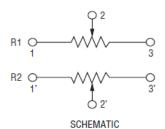
17mm rotary dual gang potentiometer with push-pull switch. Options include metal shaft; audio and linear tapers; metal bushing; knurled or plain shaft types.

Applications:

- Electric guitars
- Amplifiers
- Mixers
- Drum machines
- Synthesizers



Single Gang



Dual Gang

Electrical Characteristics

T_A = 25°C unless otherwise noted

Resistance Range	1 k Ω to 1 M Ω
Standard Resistance Tolerance	500 Ω <r<1 20%<="" m="" td="" ±="" ω=""></r<1>
	R≤500 Ω or R≥1 M Ω ± 30%
Residual Resistance	Term. 1~2: Less than 20 Ω
	Term: 2~3: Less than 20 Ω
Resistance Taper	A, B, C, D
Maximum Operating Voltage	Linear Taper B: 200 Vac
	Other Tapers: 150 Vac
Rated Power	Linear Taper B: 0.2 W
	Audio: 0.1 W
Dielectric Strength	1 minute at 500 Vac
Rotational Noise	Less than 100 mV
Insulation Resistance	More than 100 $M\Omega$ at 500 Vdc
Gang Error (Dual Unit)	-40 dB~0 dB ± 3 dB

General Note

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P161 Series



Switch Characteristics

T_A = 25°C unless otherwise noted

Switch Circuit	SPST
Contact Resistance	Less than 50 mΩ
Rated Power	Single Unit: 1.0 A at 12 Vac/dc
Push/Pull Travel	4 mm
Push/Pull Strength	70~250 gf.cm.
Switch Life	15,000 cycles minimum

Mechanical Characteristics

T_A = 25°C unless otherwise noted

Mechanical Travel	300 ° ± 5 °
Rotational Torque	20 gf.cm~200 gf.cm
Rotational Stop Strength	6 kgf.cm minimum
Shaft Pull Strength	6 kgf minimum for 60 seconds
Detent Torque	100~300 gf.cm
Nut Tightening Strength	8 kgf.cm minimum
Rotational Life	15,000 cycles minimum

Environmental Characteristics

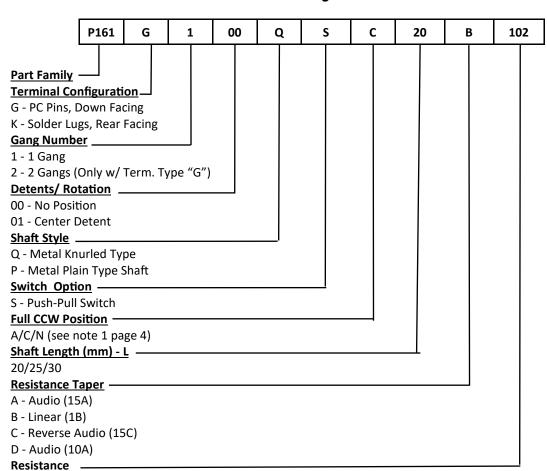
T_A = 25°C unless otherwise noted

Operating Temperature	-10 °C to +70 °C
IP Rating	IP 40
Soldering Condition	Wave Soldering 260 °C maximum for 1-3 seconds Hand Soldering 300 °C maximum for 3 seconds
RoHS	Please refer to TT Electronics website
REACH	Please refer to TT Electronics website

P161 Series



Ordering Information



See Resistance Table

Resistance Table	
Resistance (Ohms)	Code
1,000	102
2,000	202
5,000	502
10,000	103
20,000	203
50,000	503
100,000	104
200,000	204
500,000	504
1,000,000	105

General Note

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P161 Series



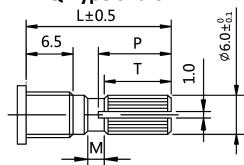
Outline Drawings

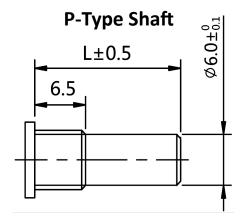
Shaft Style & Length

Q Type—With Switch Option			
L	20	25	30
	P - 12	P - 14	P - 14
	T - 10	T - 12	T - 12
	M - 2	M - 2	M - 4

Р Туре			
L	20	25	30

Q-Type Shaft

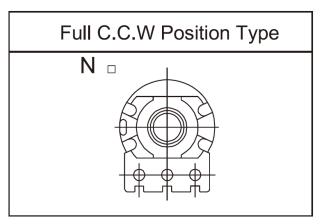




Note 1: Full CCW Position

Q-Type Shaft

P-Type Shaft



General Note

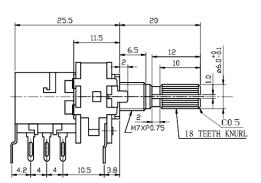
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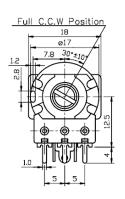
P161 Series

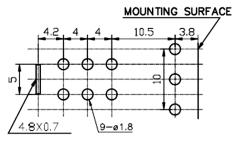




G - PC Pins, Down Facing, Single Gang with Push-Pull Switch



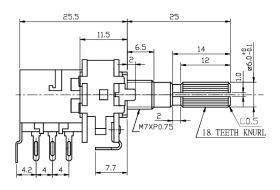


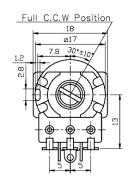


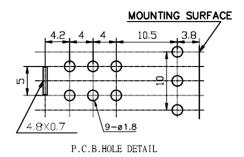
P.C.B.HOLE DETAIL



K - Solder Lugs, Rear Facing, Single Gang with Push-Pull Switch







General Note

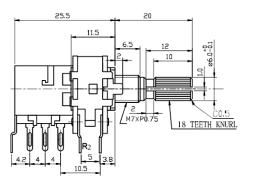
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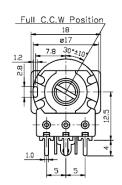
P161 Series

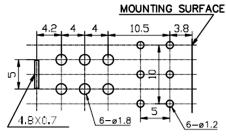




G - PC Pins, Down Facing, Dual Gang with Push-Pull Switch







P.C.B.HOLE DETAIL

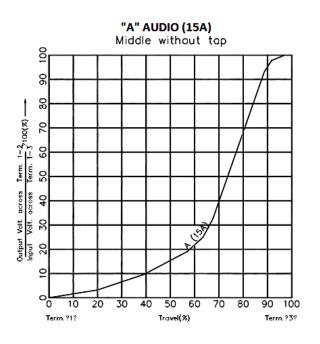
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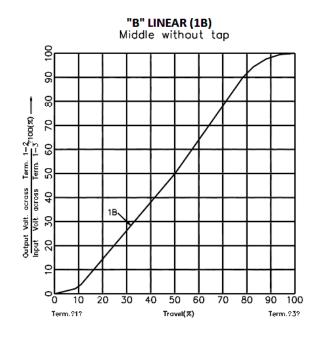
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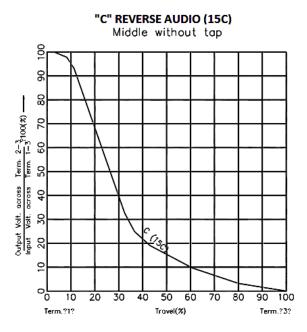
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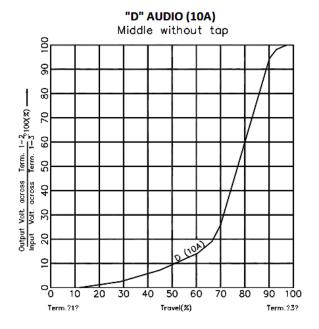


Standard Tapers









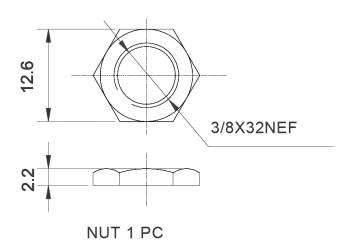
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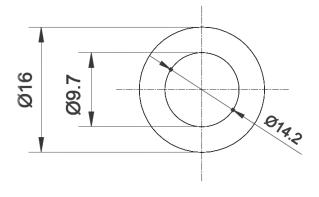
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P161 Series



Screw & Washer Dimensions





WASHER 1 PC t=0.4

Packaging Information

Standard Packaging	Plastic Trays
Hardware	Two flat washers and mounting nut





P162 Series

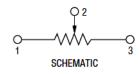
Features:

- Resistance range 1 k Ω to 1 M Ω
- Temperature range -10°C to +70°C
- Rotational cycles of 15,000 minimum
- Switch option
- Vertical only mount versions
- RoHS compliant



Description:

17mm rotary single gang potentiometer with rotary switch. Options include metal shaft; audio and linear tapers; metal bushing; knurled or plain shaft types.



Single Gang

3D Model

To view 3D model:

- 1) Enable 3D content
- 2) Click and drag below



If unable to view 3D content, download and save this PDF to your computer and open it in Adobe Acrobat Reader.

Applications:

- Electric guitars
- Amplifiers
- Mixers
- Drum machines
- Synthesizers

Electrical Characteristics

T_A = 25°C unless otherwise noted

Resistance Range	1 kΩ to 1 MΩ
Standard Resistance Tolerance	500 Ω <r<1 0%<="" mω="" td="" ±2=""></r<1>
	R≤500 Ω or R≥1 MΩ ± 30%
Residual Resistance	Term. 1~2: Less than 20 Ω
	Term: 2~3: Less than 20 Ω
Resistance Taper	A, B, C, D
Maximum Operating Voltage	Linear Taper B: 200 Vac
	Other Tapers: 150 Vac
Rated Power	Linear Taper B: 0.2 W
	Audio: 0.1 W
Dielectric Strength	1 minute at 500 Vac
Rotational Noise	Less than 100 mV
Insulation Resistance	More than 100 MΩ at 500 Vdc
Gang Error (Dual Unit)	N/A

General Note

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Document No.:: _____



P162 Series

Switch Characteristics

T_A = 25°C unless otherwise noted

Switch Circuit	SPST
Contact Resistance	Less than 50 mΩ
Rated Power	Single Unit: 1.0 A at 12V ac/dc
Rotational Angle	35 ° ± 10 °
Rotational Strength	70~250 gf.cm.
Switch Life	15,000 cycles

Mechanical Characteristics

T_A = 25°C unless otherwise noted

Mechanical Travel	300° ± 5°
Rotational Torque	20 gf.cm~100 gf.cm
Rotational Stop Strength	7 kgf.cm minimum
Shaft Torque Strength	8 kgf minimum
Detent Torque	100~300 gf.cm
Nut Tightening Strength	8 kgf.cm minimum
Rotational Life	100,000 cycles minimum

Environmental Characteristics

T_A = 25°C unless otherwise noted

Operating Temperature	-10 °C to +70 °C
IP Rating	IP 40
Soldering Condition	Wave Soldering 260 °C maximum for 1-3 seconds
	Hand Soldering 300 °C maximum for 3 seconds
RoHS	Please refer to TT Electronics website
REACH	Please refer to TT Electronics website

General Note TT Electronics reserves the right to make changes in product specification without

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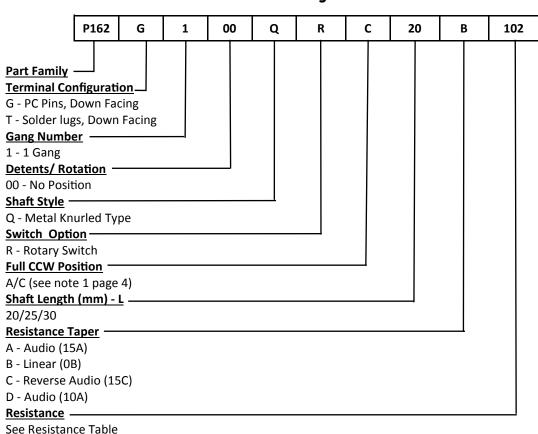
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P162 Series

Ordering Information



Resistance Code (Ohms) 1,000 102 2,000 202 5,000 502 10,000 103 20,000 203 50,000 503 100,000 104 200,000 204

500,000

1,000,000

Resistance Table

General Note

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504

105

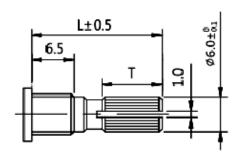


P162 Series

Outline Drawings

Shaft Style & Length

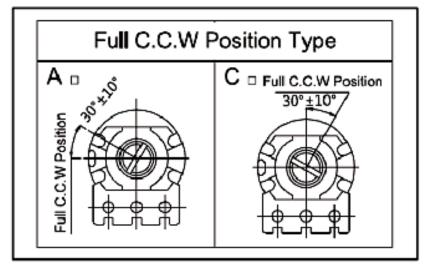
Q - Type (Switch Option)



Q Type			
L	20	25	30
	T - 10	T - 12	T - 12

Note 1: Full CCW Position

Q-type shaft



General Note

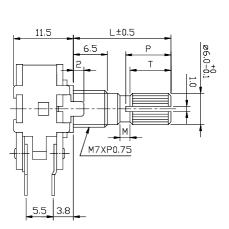
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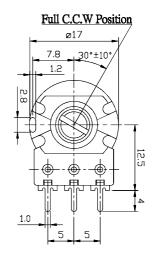


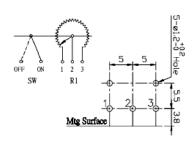
P162 Series



G - PC Pins, Down Facing, Single Gang, Rotary Switch

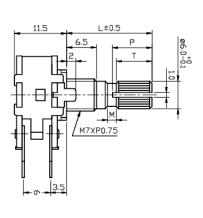


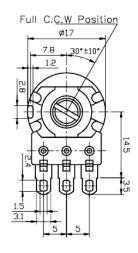


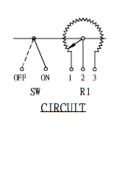


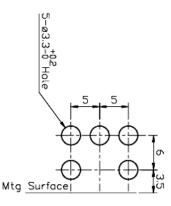


T - Solder lugs, Down Facing, Single Gang, Rotary Switch









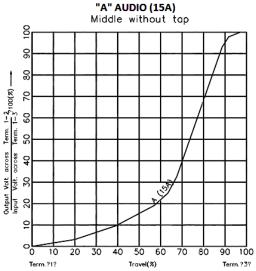
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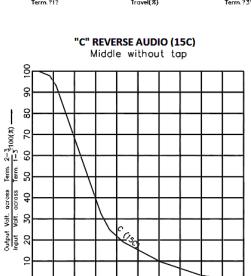
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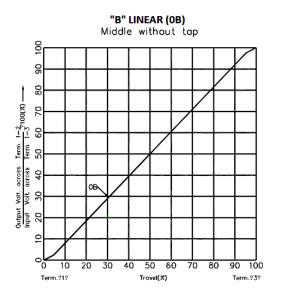


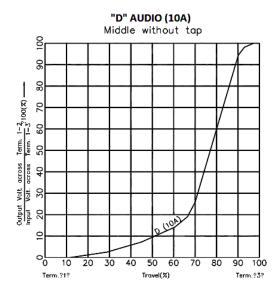


Standard Tapers









General Note

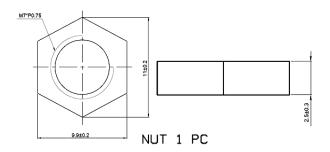
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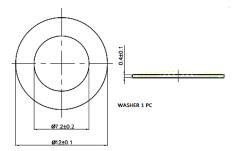
20 30 40



P162 Series

Screw & Washer Dimensions





Packaging

Standard Packaging	Plastic Trays
Hardware	Two flat washers and mounting nut

17 mm Rotary Potentiometer with Push-Pull Switch

P163 Series

TT Electronics





Features:

- Resistance range 1 kΩ to 1 MΩ
- Temperature range -10°C to +70°C
- Rotational cycles of 15,000 minimum
- Switch option
- Vertical and horizontal mount versions
- RoHS compliant

Description:

17mm guitar potentiometer, with push-pull switch. Options include single or dual gangs, metal shaft; audio and linear tapers; metal bushing; knurled or plain shaft types.

Applications:

- Electric guitars
- Amplifiers
- Mixers
- Drum machines
- Synthesizers

2 1 SCHEMATIC

Single Gang

SCHEMATIC

Dual Gang

Electrical Characteristics

T_A = 25°C unless otherwise noted

Resistance Range	1 kΩ to 1 MΩ
Standard Resistance Tolerance	500 Ω <r<1 20%<="" mω="" td="" ±=""></r<1>
	R≤500 Ω or R≥1 MΩ ± 30%
Residual Resistance	Term. 1~2: Less than 20 Ω
	Term: 2~3: Less than 20 Ω
Resistance Taper	A, B, C, D
Maximum Operating Voltage	Linear Taper B: 200 Vac
	Other Tapers: 150 Vac
Rated Power	Linear Taper B: 0.2 W
	Audio: 0.1 W
Dielectric Strength	1 minute at 500 Vac
Rotational Noise	Less than 100 mV
Insulation Resistance	More than 100 MΩ at 500 Vdc
Gang Error (Dual Unit)	-40 dB~0 dB ± 3 dB

General Note

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P163 Series



Switch Characteristics

T_A = 25°C unless otherwise noted

Switch Circuit	SPST
Contact Resistance	Less than 50 m Ω
Rated Power	Single Unit: 1.0 A at 12 Vac/dc
Push/Pull Travel	4 mm
Push/Pull Strength	70~250 gf.cm.
Switch Life	15,000 cycles

Mechanical Characteristics

T_A = 25°C unless otherwise noted

Mechanical Travel	300° ±5°
Rotational Torque	20 gf.cm~100 gf.cm
Rotational Stop Strength	6 kgf.cm minimum
Shaft Pull Strength	6 kgf minimum for 60 sec
Detent Torque	100~300 gf.cm
Nut Tightening Strength	8 kgf.cm minimum
Rotational Life	15,000 cycles minimum

Environmental Characteristics

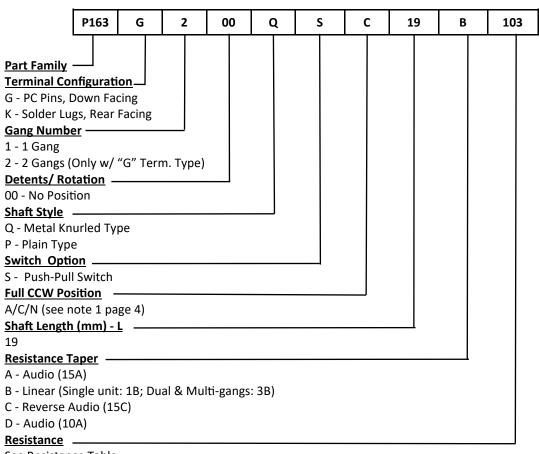
T_A = 25°C unless otherwise noted

Operating Temperature	-10 °C to +70 °C
IP Rating	IP 40
Soldering Condition	Wave Soldering 260 °C maximum for 1-3 seconds Hand Soldering 300 °C maximum for 3 seconds
RoHS	Please refer to TT Electronics website
REACH	Please refer to TT Electronics website





Ordering Information



See Resistance Table

Resistance Table	
Resistance (Ohms)	Code
10,000	103
25,000	253
50,000	503
100,000	104
250,000	254
300,000	304
500,000	504
1,000,000	105

P163 Series



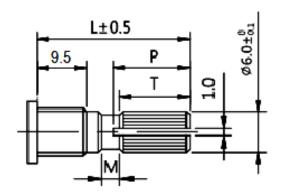
Outline Drawings

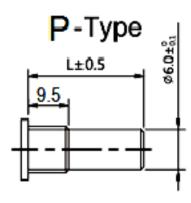
Shaft Style & Length

Q Type—With Switch Option	
L	19
	P - 7
	T - 6.5
	M - 1.5

Р Туре	
L	19

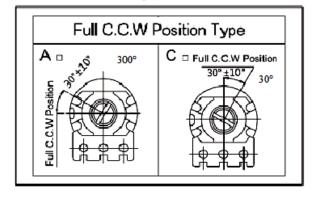
Q - Type (Switch Option)



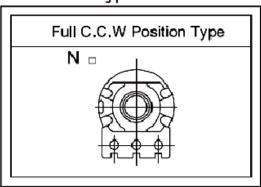


Note 1: Full CCW Position

Q-type shaft



P-type shaft



General Note

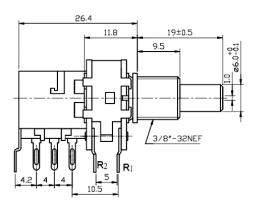
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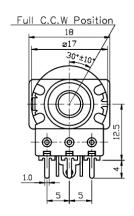
P163 Series

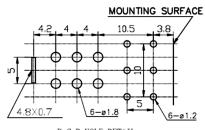




G - PC Pins, Down Facing , Dual Gang with Push-Pull Switch



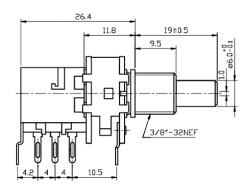


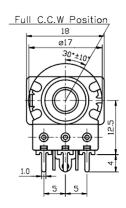


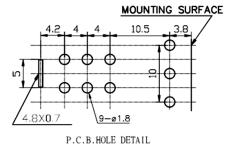
P.C.B.HOLE DETAIL



G - PC Pins, Down Facing, Single Gang with Push-Pull Switch







General Note

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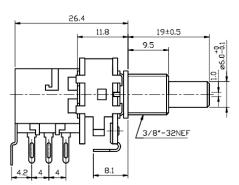
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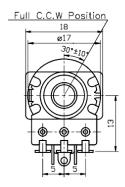


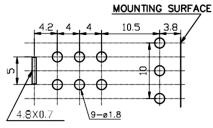




K - Solder Lugs, Rear Facing, Dual Gang with Push-Pull Switch







P.C.B.HOLE DETAIL

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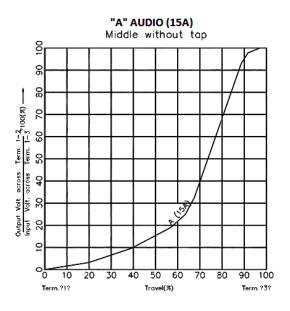
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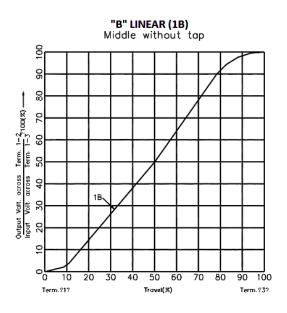
Circulo de la Amistad #102 PIMSA IV Mexicali B.C. Mexico C.P 21210

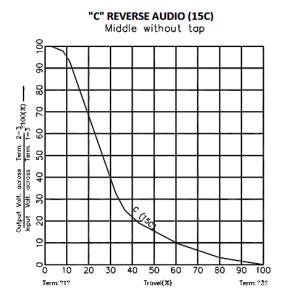
P163 Series

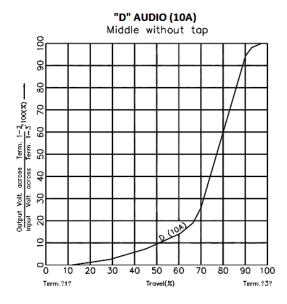


Standard Tapers









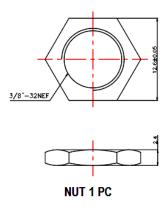
General Note

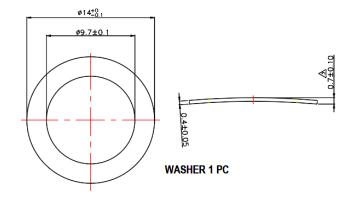
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

P163 Series



Screw & Washer Dimensions





Packaging

Standard Packaging	Plastic Trays
Hardware	Two flat washers and mounting nut

P164 Series







Features:

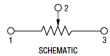
- Resistance range 1 kΩ to 1 MΩ
- Temperature range -10°C to +70°C
- Rotational cycles of 100,000 minimum
- Center and multiple detent options
- Vertical and horizontal mount versions
- RoHS compliant

Description:

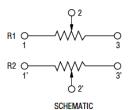
17mm rotary potentiometer. Options include single or dual gangs, metal shaft; audio and linear tapers; metal bushing; various shaft lengths; flat, knurled or plain shaft types.

Applications:

- Electric guitars
- Amplifiers/mixers/drum machines/synthesizers
- PC's/monitors
- Appliances
- Audio/car radio/TV sets



Single Gang



Dual Gang

3D Model

To view 3D model:

- 1) Enable 3D content
- 2) Click and drag below



If unable to view 3D content, download and save this PDF to your computer and open it in Adobe Acrobat Reader.

Electrical Characteristics

T_A = 25°C unless otherwise noted

Resistance Range	$1~\text{k}\Omega$ to $1~\text{M}\Omega$
Standard Resistance Tolerance	500 Ω <r<1 20%<="" mω="" td="" ±=""></r<1>
	R≤500 Ω or R≥1 M Ω ± 30%
Residual Resistance	Term. 1~2: Less than 20 Ω
	Term: 2~3: Less than 20 Ω
Resistance Taper	A, B, C, D
Maximum Operating Voltage	Linear Taper B: 200 Vac
	Other Tapers: 150 Vac
Rated Power	Linear Taper B: 0.2W
	Audio: 0.1W
Dielectric Strength	1 minute at 500 Vac
Rotational Noise	Less than 100 mV
Insulation Resistance	More than 100 MΩ at 500 Vdc
Gang Error (Dual Unit)	-40 dB~0 dB ± 3 dB

General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

P164 Series



Mechanical Characteristics

T_A = 25°C unless otherwise noted

Mechanical Travel	300°±5°
Rotational Torque	20 gf.cm~100 gf.cm
Rotational Stop Strength	7 kgf.cm minimum
Shaft Torque Strength	8 kgf minimum
Detent Torque	100~300gf.cm
Nut Tightening Strength	8 kgf.cm minimum
Rotational Life	100,000 cycles minimum

Environmental Characteristics

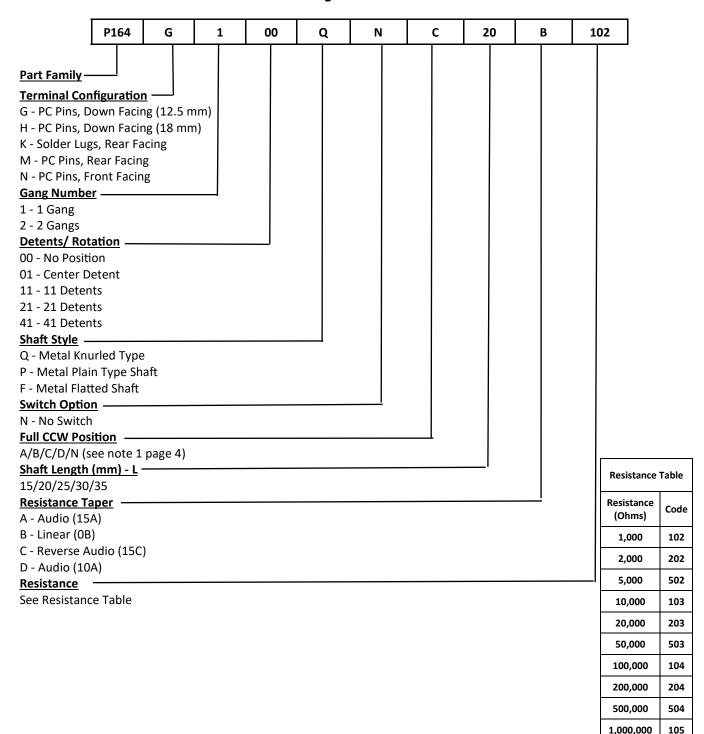
$T_{\Delta} = 25^{\circ}$ C unless otherwise noted

T _A = 25°C unless otherwise noted	
Operating Temperature	-10 °C to +70 °C
IP Rating	IP 40
Soldering Condition	Wave Soldering 260 °C maximum for 1-3 seconds Hand Soldering 300 °C maximum for 3 seconds
RoHS	Please refer to TT Electronics website
REACH	Please refer to TT Electronics website

P164 Series



Ordering Information



General Note

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TT Electronics | BI Technologies Circulo de la Amistad #102 PIMSA IV Mexicali B.C. Mexico C.P 21210 Ph: + 1 (714) 447-2345 www.ttelectronics.com/bi-technologies

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P164 Series



Outline Drawings

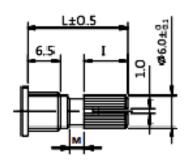
Shaft Style & Length

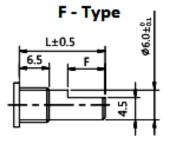
Q Type				
L	15	20	25	30
	M - 2 I - 6	M - 2 I - 10	M - 2 I - 14	M - 2 I - 19

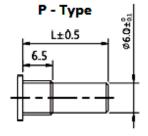
F Type					
L	15	20	25	30	35
	F - 7	F - 12	F - 12	F - 12	F - 12

Р Туре					
L 15 20 25 30 35					35

Q - Type

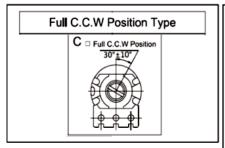




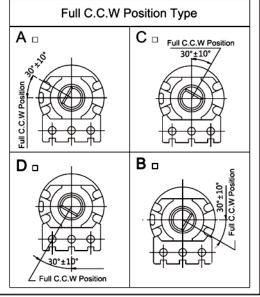


Note 1: Full CCW Position

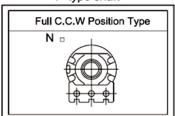
Q-type shaft



F-type shaft



P-type shaft



General Note

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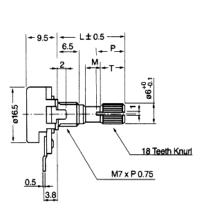
P164 Series

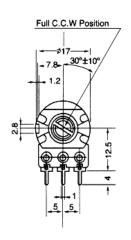


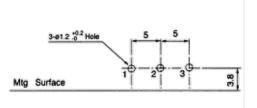
Outline Drawings



G - PC Pins, Down Facing (12.5mm), Single Gang



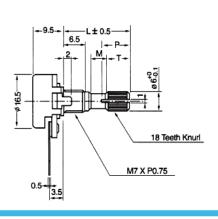


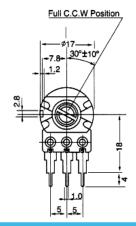


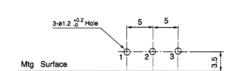




H - PC Pins, Down Facing (18mm), Single Gang









General Note

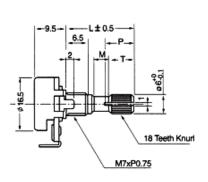
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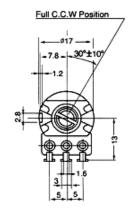
P164 Series

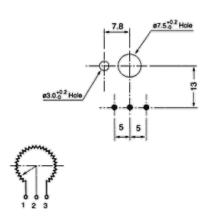




K - Solder Lugs, Rear Facing, Single Gang

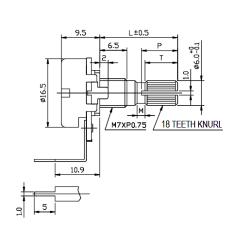


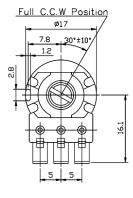


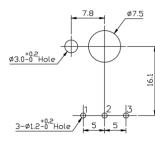




M - PC Pins, Rear Facing, Single Gang









General Note

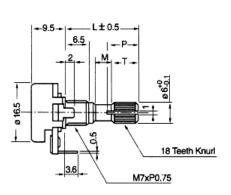
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

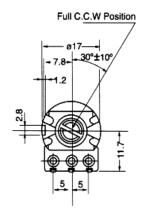
P164 Series

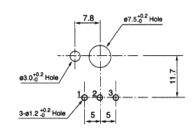




N - PC Pins, Front Facing, Single Gang



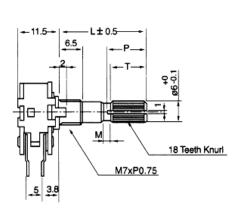


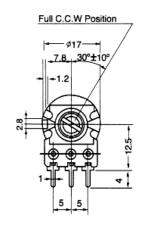


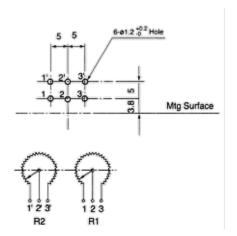




G - PC Pins, Down Facing (12.5mm), Dual Gang







General Note

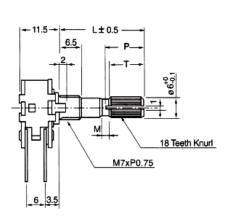
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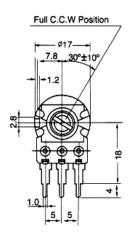
P164 Series

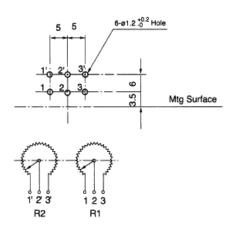




H - PC Pins, Down Facing (18mm) Dual Gang

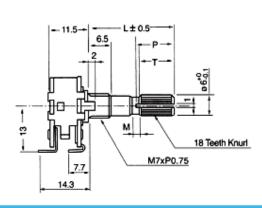


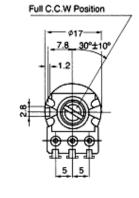


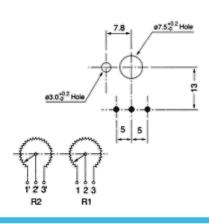




K - Solder Lugs, Rear Facing, Dual Gang







General Note

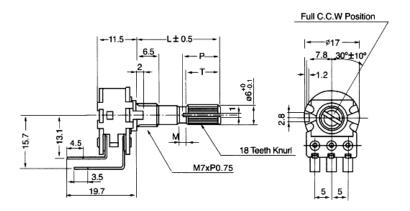
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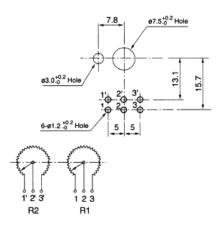
P164 Series



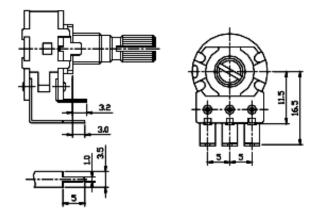


M - PC Pins, Rear Facing, Dual Gang





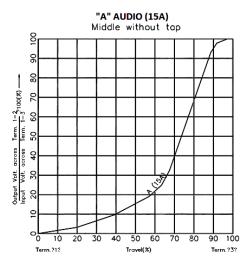
N - PC Pins, Front Facing, Dual

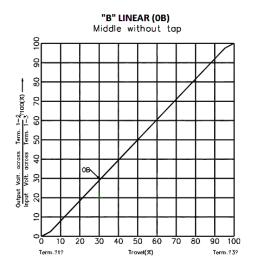


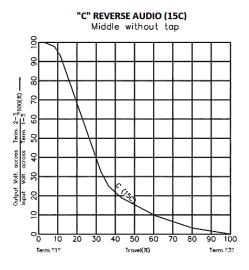
P164 Series

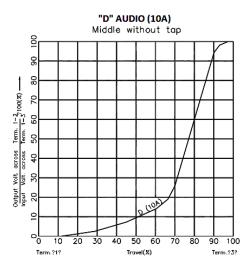


Standard Tapers





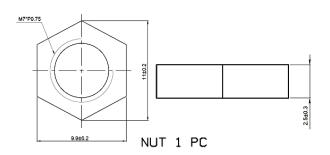


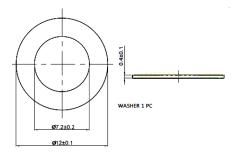


P164 Series



Screw & Washer Dimensions





Packaging

Standard Packaging	Plastic Trays
Hardware	Two flat washers and mounting nut

P165 Series







Features:

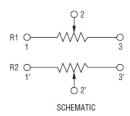
- Resistance range 1 k Ω to 1 M Ω
- Temperature range -10°C to +70°C
- Rotational cycles of 100,000 minimum
- Switch option
- RoHS compliant

Description:

17 mm rotary dual gang potentiometer with MN taper. Options include metal shaft; metal bushing; knurled or plain shaft types.

Applications:

- Electric guitars
- Amplifiers
- Mixers
- Drum machines
- Synthesizers



Dual Gang

3D Model

To view 3D model:

- 1) Enable 3D content
- 2) Click and drag below



If unable to view 3D content, download and save this PDF to your computer and open it in Adobe Acrobat Reader.

Electrical Characteristics

T_A = 25°C unless otherwise noted

Resistance Range	1 kΩ to 1 MΩ
Standard Resistance Tolerance	500 Ω <r<1 20%<="" mω="" td="" ±=""></r<1>
	R≤500 Ω or R≥1 MΩ ± 30%
Residual Resistance	Term. 1~2: Less than 20 Ω
	Term: 2~3: Less than 20 Ω
Resistance Taper	MN
Maximum Operating Voltage	150 Vac
Rated Power	0.1 W
Dielectric Strength	1 minute at 500 Vac
Rotational Noise	Less than 100 mV
Insulation Resistance	More than 100 MΩ at 500 Vdc

Document #: ____





Mechanical Characteristics

T_A = 25°C unless otherwise noted

Mechanical Travel	300° ±5°
Rotational Torque	20 gf.cm~100 gf.cm
Rotational Stop Strength	7 kgf.cm minimum
Shaft Pull Strength	8 kgf minimum
Detent Torque	100~300 gf.cm
Nut Tightening Strength	8 kgf.cm minimum
Rotational Life	100,000 cycles minimum

Environmental Characteristics

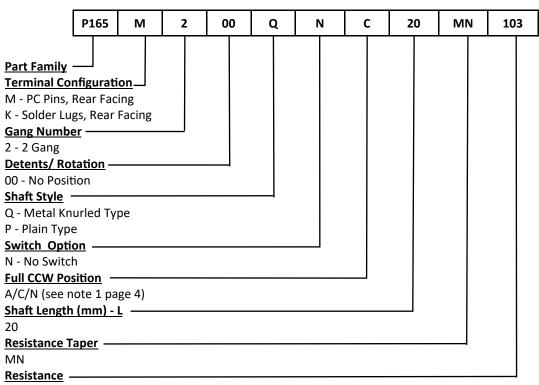
$T_A = 25$ °C unless otherwise noted

TA - 25 C unless otherwise note	ı
Operating Temperature	-10 °C to +70 °C
IP Rating	IP 40
Soldering Condition	Wave Soldering 260 °C maximum for 1-3 seconds
Soldering Condition	Hand Soldering 300 °C maximum for 3 seconds
RoHS	Please refer to TT Electronics website
REACH	Please refer to TT Electronics website





Ordering Information



See Resistance Table

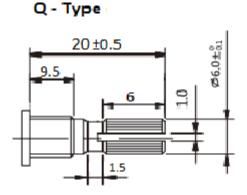
Resistance Table	
Resistance (Ohms)	
10,000	103
25,000	253
50,000	503
100,000	104
250,000	254
300,000	304
500,000	504
1,000,000	105

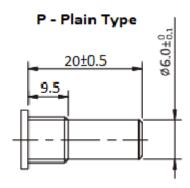
P165 Series



Outline Drawings

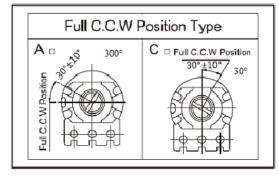
Shaft Style & Length



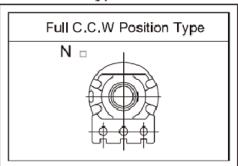


Note 1: Full CCW Position

Q-type shaft



P-type shaft

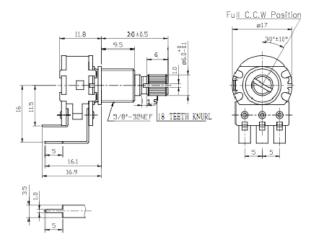


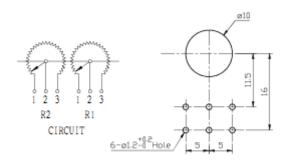




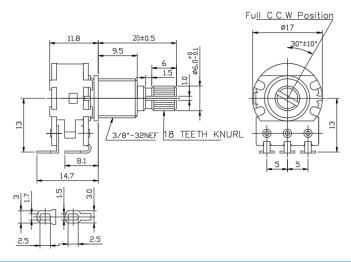


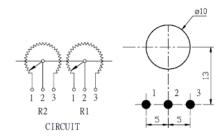
M - PC Pins, Rear Facing, Dual Gang





K - Solder Lugs, Rear Facing, Dual Gang





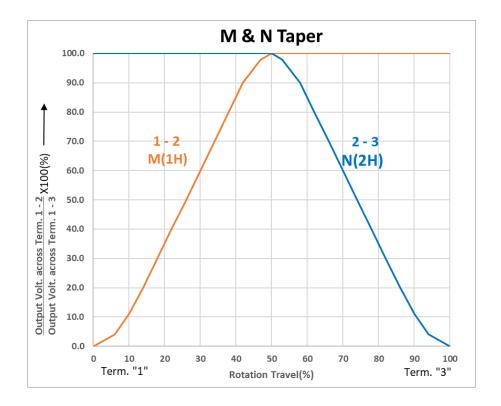
General Note

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P165 Series



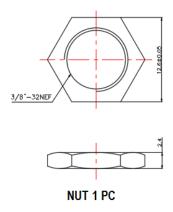
Standard Tapers

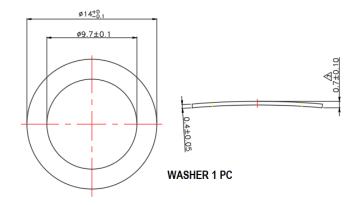






Screw & Washer Dimensions





Packaging

Standard Packaging	Plastic Trays
Hardware	Two flat washers and mounting nut