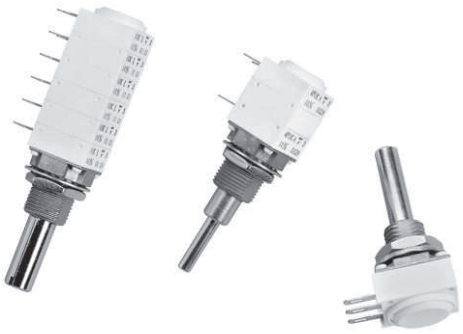
12.5 mm Modular Panel Potentiometer
Cermet (P11S) or Conductive Plastic Elements (P11A)



FEATURES

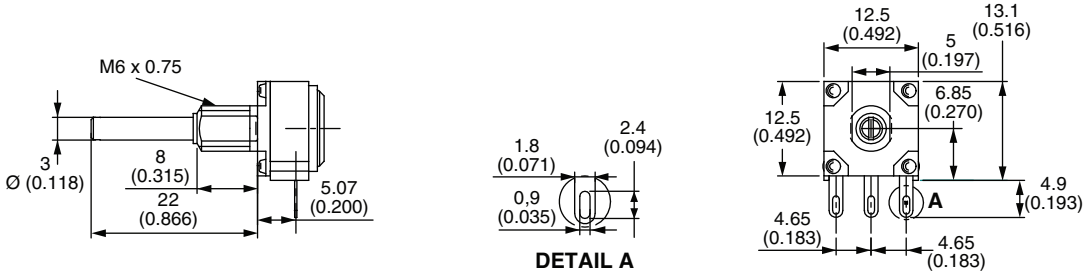
- 12.5 mm square single turn panel control
- Five shaft diameters and 29 terminal styles
- Multiple assemblies - up to seven modules
- Tests according to CECC 41000 or IEC 60393-1
- GAM T1
- P11S version for industrial, military and aeronautics applications
- P11A version for professional audio applications
- Low current compatibility
- Shaft and panel sealed version
- Up to twenty-one indent positions
- Rotary and push/push switch options
- Concentric shafts
- Custom designs on request
- Trimmer version T11 (see document no. 51021)
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

VERSATILE	MODULAR	COMPACT	ROBUST

CONFIGURATION EXAMPLE - Dimensions in millimeters (inches) ± 0.5 mm (± 0.02")

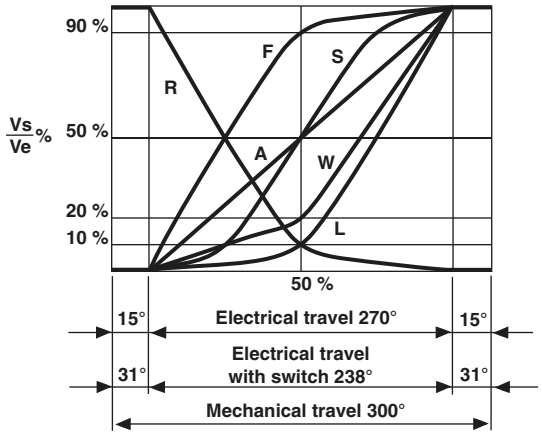
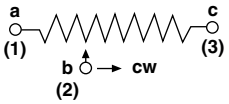
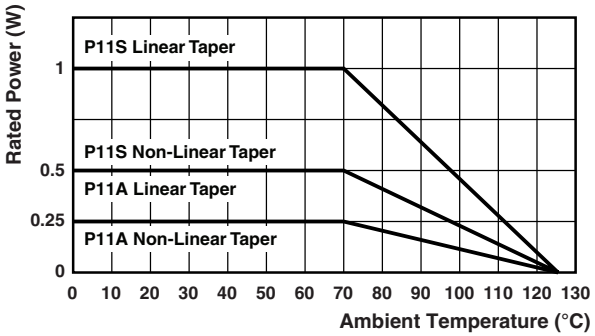
Single module, single shaft, solder lugs, metric bushing and shaft



Single module, single shaft, vertical mounting, PC pins with support plate, metric bushing and shaft

Dual modules, single shaft, PC pins with front support plates, imperial bushing and shaft

GENERAL SPECIFICATIONS

ELECTRICAL (initial)			
		P11A	**P11S**
Resistive Element		Conductive plastic	Cermet
Electrical Travel		270° ± 10°	270° ± 10°
Resistance Range (1)	**Linear Taper**	1 kΩ to 1 MΩ	20 Ω to 10 MΩ
	Non Linear Taper	470 Ω to 500 kΩ	100 Ω to 2.2 MΩ
Tolerance	**Standard**	± 20 %	± 20 %
	On Request	-	± 5 % or ± 10 %
Taper			
Circuit Diagram			
Power Rating at 70 °C	**Linear Taper**	0.5 W at + 70 °C	1 W at + 70 °C
	Non-Linear Taper	0.25 W at + 70 °C	0.5 W at + 70 °C
	Multiple Assemblies	0.25 W at + 70 °C per module	0.5 W at + 70 °C per module
			
Temperature Coefficient (Typical)		± 500 ppm	± 150 ppm
Limiting Element Voltage		350 V	350 V
End Resistance (Typical)		2 Ω	2 Ω
Contact Resistance Variation (Typical)	**Linear Taper**	1 %	2 % or 3 Ω
Independent Linearity (Typical)	**Linear Taper**	± 5 %	± 5 %
Insulation Resistance		10^6 MΩ min.	10^6 MΩ min.
Dielectric Strength		1500 V_{RMS} min.	1500 V_{RMS} min.
Attenuation		90 dB max./0.05 dB min.	-
Mechanical Endurance		50 000 cycles	50 000 cycles

Note

(1) Consult Vishay Sfernice for other ohmic values

MECHANICAL (initial)	
Mechanical Travel	300° ± 5°
Operating Torque (Typical)	
Single and Dual Assemblies	0.4 Ncm to 1.8 Ncm max. (0.57 oz.-inch to 2.55 oz.-inch max.)
Three to Seven Modules (Per Module)	0.2 Ncm to 0.3 Ncm max. (0.28 oz.-inch to 0.42 oz.-inch max.)
End Stop Torque (All Bushing Except G and Concentric Shaft Configuration)	
3 mm, 4 mm, and 1/8" Dia. Shafts	35 Ncm max. (2.9 lb-inch max.)
6 mm and 1/4" Dia. Shafts	80 Ncm max. (6.8 lb-inch max.)
End Stop Torque for Bushing G	
All Shafts Dia.	40 Ncm max. (3.4 lb-inch max.)
End Stop Torque for Concentric Shaft Configuration	
3 mm and 1/8" Dia. Shafts	25 Ncm max. (2.1 lb-inch max.)
6 mm and 1/4" Dia. Shafts	80 Ncm max. (6.8 lb-inch max.)
Tightening Torque	
6 mm, 7 mm, and 1/4" Dia. Bushings	150 Ncm max. (13 lb-inch max.)
10 mm and 3/8" Dia. Bushings	250 Ncm max. (21 lb-inch max.)
Weight	7 g to 9 g per module (0.25 oz. to 0.32 oz.)

ENVIRONMENTAL	P11A	P11S
Operating Temperature Range	- 55 °C to + 125 °C	- 55 °C to + 125 °C
Climatic Category	55/125/21	55/125/56
Sealing	IP64	IP64

MARKING

- **Potentiometer Module**
  Vishay logo, nominal ohmic value (Ω, kΩ, MΩ), two stars identify P11A version, tolerance in % - variation law, manufacturing date (four digits), “3” for the lead 3
- **Switch Module**
  Version, manufacturing date (four digits), “c” for common lead
- **Indent Module**
  Version, manufacturing date (four digits)

PACKAGING

- Box

PERFORMANCES

TESTS	CONDITIONS	TYPICAL VALUE AND DRIFTS		
			P11S	P11A
Electrical Endurance	1000 h at rated power 90’/30’ - ambient temp. 70 °C	$\Delta R_T/R_T$ Contact resistance variation	± 2 % ± 4 %	± 10 % ± 5 %
Change of Temperature	- 55 °C to + 125 °C, 5 cycles	$\Delta R_T/R_T$	± 0.2 %	± 0.5 %
Damp Heat, Steady State	+ 40 °C, 93 % relative humidity P11S: 56 days, P11A: 21 days	$\Delta R_T/R_T$ Insulation resistance	± 2 % > 1000 MΩ	± 5 % > 10 MΩ
Mechanical Endurance	50 000 cycles	$\Delta R_T/R_T$ Contact resistance variation	± 5 % ± 5 %	± 6 % ± 4 %
Climatic Sequence	Dry heat at + 125 °C/damp heat cold - 55 °C/damp heat, 5 cycles	$\Delta R_T/R_T$	± 1 %	-
Shock	50 *g*’s, 11 ms 3 shocks - 3 directions	$\Delta R_T/R_T$ $\Delta R_{1-2}/R_{1-2}$	± 0.2 % ± 0.5 %	± 0.2 % ± 0.5 %
Vibration	10 Hz to 55 Hz 0.75 mm or 10 *g*’s, 6 h	$\Delta R_T/R_T$ $\Delta V_{1-2}/V_{1-3}$	± 0.2 % ± 0.5 %	± 0.2 % ± 0.5 %

ORDERING INFORMATION (Part Number)

P	1	1	S	2	Q	0	E	A	S	Y	0	0	1	0	3	M	A

MODEL	STYLE	NUMBER OF MODULES	BUSHING	LOCATING PEG	SHAFT	SHAFT STYLE	LEADS	RESISTANCE CODE/ TOLERANCE/ TAPER OR SPECIAL
P11	S = CERMET ELEMENT A = CONDUCTIVE PLASTIC (AUDIO)	1 2 3 4 5 6 7						

STANDARD RESISTANCE ELEMENT DATA

STANDARD RESISTANCE VALUES	P11S CERMET						P11A CONDUCTIVE PLASTIC					
	LINEAR TAPER			NON LINEAR TAPER			LINEAR TAPER			NON LINEAR TAPER		
	MAX. POWER AT 70 °C	MAX. WORKING VOLTAGE	MAX. CUR. THROUGH WIPER	MAX. POWER AT 70 °C	MAX. WORKING VOLTAGE	MAX. CUR. THROUGH WIPER	MAX. POWER AT 70 °C	MAX. WORKING VOLTAGE	MAX. CUR. THROUGH WIPER	MAX. POWER AT 70 °C	MAX. WORKING VOLTAGE	MAX. CUR. THROUGH WIPER
Ω	W	V	mA	W	V	mA	W	V	mA	W	V	mA
22	1	4.69	213									
47	1	6.86	146									
50	1	7.07	141									
100	1	10.0	100	0.5	7.07	70.7						
220	1	14.8	67.4	0.5	10.5	47.7						
470	1	21.7	46.1	0.5	15.3	32.6						
500	1	22.4	44.7	0.5	15.8	31.6				0.25	11.2	22.4
1K	1	31.6	31.6	0.5	22.4	22.4	0.5	22.4	22.4	0.25	15.8	15.8
2.2K	1	46.9	21.3	0.5	33.2	15.1	0.5	33.2	15.1	0.25	23.5	10.7
4.7K	1	63.6	14.5	0.5	48.5	10.3	0.5	48.5	10.3	0.25	34.3	7.29
5K	1	70.7	14.1	0.5	50.0	10.0	0.5	50.0	10.0	0.25	35.4	7.07
10K	1	100	10.0	0.5	70.7	7.07	0.5	70.7	7.07	0.25	50.0	5.00
22K	1	148	6.74	0.5	105	4.77	0.5	105	4.77	0.25	74.2	3.37
47K	1	217	4.61	0.5	153	3.26	0.5	153	3.26	0.25	108	2.31
50K	1	224	4.47	0.5	158	3.16	0.5	158	3.16	0.25	112	2.24
100K	1	316	3.16	0.5	224	2.24	0.5	224	2.24	0.25	158	1.58
220K	0.56	350	1.59	0.5	332	1.51	0.5	332	1.51	0.25	235	1.07
470K	0.26	350	0.75	0.26	349	0.74	0.26	350	0.74	0.25	343	0.73
500K	0.25	350	0.70	0.25	350	0.70	0.25	350	0.70	0.25	350	0.70
1M	0.12	350	0.35	0.12	350	0.35	0.12	350	0.35			
2.2M	0.56	350	0.16	0.056	350	0.16						
4.7M	0.26	350	0.074									
5M	0.25	350	0.070									
10M	0.12	350	0.035									

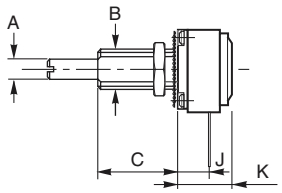
ORDERING INFORMATION (Part Number)

P	1	1	S	2	Q	0	E	A	S	Y	0	0	1	0	3	M	A

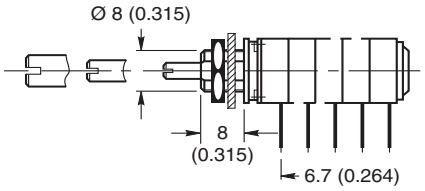
MODEL	STYLE	NUMBER OF MODULES	BUSHING	LOCATING PEG	SHAFT	SHAFT STYLE	LEADS	RESISTANCE CODE/ TOLERANCE/ TAPER OR SPECIAL
P11								

	Ø	L	Old Codes
A	1/4"	1/4"	7, 77, 77-3
B	1/4"	3/8"	71
C	1/4"	1/2"	72
D	1/4"	3/8"	71H
E	1/4"	1/2"	72H
F	3/8"	3/8"	2, 03, 0-
G	8	8	TP, QP, VP, 2P, 7P
Q	7	8	Q
T	6	8	T
V	10	9.5	V, CC, CC-3

BUSHING DIMENSIONS

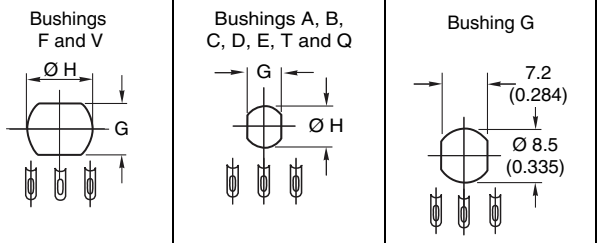


PANEL AND SHAFT SEALED: BUSHING G

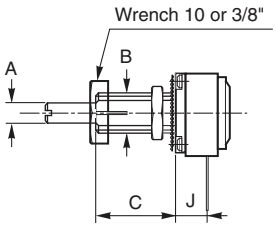


All models have the same bushing Dia. 8 mm - L 8 mm

PANEL CUT OUT



BUSHING D AND E WITH LOCKING NUT



BUSHINGS			G	T	Q	V	A	B	C	D	E	F
			DIMENSIONS mm (± 0.5)				DIMENSIONS INCHES (± 0.02)					
A	Shafts	Ø	All Dia.	3	4	6	1/8"	1/8"	1/8"	1/8"	1/8"	1/4"
B	Bushing	Ø	8	6	7	10	1/4"	1/4"	1/4"	1/4"	1/4"	3/8"
C		L	8	8	8	9.5	1/4"	3/8"	1/2"	3/8"	1/2"	3/8"
J	Lead versions X.. Y..		6.7	5	5	7	0.200	0.200	0.200	0.200	0.200	0.278
	K		10.4	9.1	9.1	11.1	0.357	0.357	0.357	0.357	0.357	0.436
G	Panel		7.2	5.2	6.2	8.2	0.197	0.197	0.197	0.197	0.197	0.323
H	Cutout	Ø	8.5	6.5	7.5	10.5	0.268	0.268	0.268	0.268	0.268	0.394
	Thread		0.75				32 threads/inch					
	Wrench nut		12	8	10	12	0.313	0.313	0.313	0.313	0.313	0.500
	Style									Slotted	Slotted	

Notes

- Hardware supplied in separate bags
- Slotted bushing for locking nut option

ORDERING INFORMATION (Part Number)

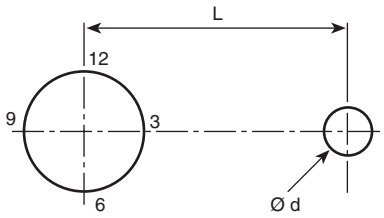
P	1	1	S	2	Q	0	E	A	S	Y	0	0	1	0	3	M	A
MODEL	STYLE	NUMBER OF MODULES		BUSHING		**LOCATING PEG**		SHAFT			SHAFT STYLE		LEADS		RESISTANCE CODE/ TOLERANCE/ TAPER OR SPECIAL		

Old Codes	
A =	B24
B =	B30
C =	B53
0 =	Without peg

LOCATING PEGS (Anti-Rotation Lug)

The locating peg is provided by a plate mounted on the bushing and positioned by the module sides. Four set positions are available, clock face orientation: 12, 3, 6, 9.

All P11 bushings have a double flat. When panel mounting holes have been punched accordingly, an anti-rotation lug is not necessary.



CODE	VERSION	BUSHING A, B, C, D, E, T, Q	BUSHING F, V	EFFECTIVE HIGH PEG
A	Ø d mm	2	2	0.7
	L mm	6.2	6.2	
B	Ø d mm	2	2	0.7
	L mm	7.75	7.75	
C	Ø d mm	-	3.5	1.1
	L mm	-	13.5	

Locating pegs are supplied in separate bags with nuts and washers

ORDERING INFORMATION (Part Number)

P	1	1	S	2	Q	0	E	A	S	Y	0	0	1	0	3	M	A
MODEL	STYLE	NUMBER OF MODULES		BUSHING		LOCATING PEG		SHAFT						LEADS	RESISTANCE CODE/ TOLERANCE/ TAPER OR SPECIAL		

SHAFT

	Ø	L	Old Codes
AA	3	9.5	K
AB	3	12.5	M
AJ	3	22	R
AP = Custom shaft			
BA	1/8"	3/8"	CK
BB	1/8"	1/2"	CM
BG	1/8"	5/8"	CDM
BG	1/8"	5/8"	CD
BH	1/8"	3/4"	CH
BJ	1/8"	7/8"	CR
CC = Concentric shaft			
EA	4	9.5	E
EB	4	12.5	F
EJ	4	22	G
FG	6	16	D
FH	6	19	I
FL	6	25	N
FR	6	50	S
GG	1/4"	5/8"	VD
GH	1/4"	3/4"	VHM, VH
GJ	1/4"	7/8"	VR
GL	1/4"	1"	VN
GO	1/4"	1.5"	VL

SHAFT STYLE

S =	Slotted
R =	Round
F =	Flatted
K =	Knurled/ splined
D =	Custom

SHAFTS in millimeters ± 0.5

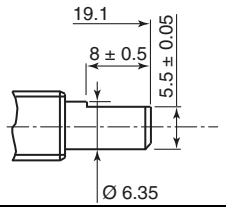
The shaft length is always measured from the mounting face.

Standard shafts are designed by a 3 letters code (3 digits). Shafts slots are aligned to ± 10° of the wiper position.

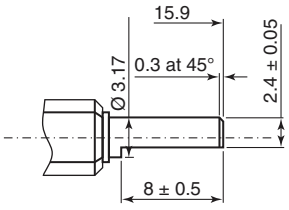
All standard shafts are slotted except flatted and splined, see exeptions for bushing.

FLATTED SHAFT

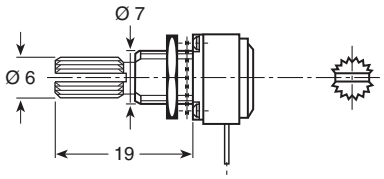
Bushing: F
Shaft: GHF



Bushing: A
Shaft: BGF



BUSHING: Q
SPLINED SHAFT: FHK



CUSTOM SHAFTS

When special shafts are required - flat, threated ends, special shaft lengths, etc. a drawing is required.

STANDARD COMBINATION OF SHAFT STYLES AND BUSHINGS

SHAFT DIA.	BUSHING CODE	SHAFT LENGTH AND STYLE AVAILABLE IN STANDARD (Others on request)					
3	T	AAS	ABS	AJS			
3.17	A	BAS	BBS	BGS	BGF	BHS	BJS
3.17	B	BBS	BGS	BHS	BJS		
3.17	C	BGS	BHS	BJS			
4	Q	EAS	EBS	EJS	FHK		
6	V	FGS	FLS	FRS			
6.35	F	GGS	GHS	GJS	GLS	GOS	GHF

ORDERING INFORMATION (Part Number)

P	1	1	S	2	Q	0	E	A	S	Y	0	0	1	0	3	M	A
MODEL	STYLE	NUMBER OF MODULES		BUSHING		LOCATING PEG		SHAFT	SHAFT STYLE	LEADS					RESISTANCE CODE/ TOLERANCE/ TAPER OR SPECIAL		

LEADS

Available leads

A00	W00	X00	Y00	Z00
A10	W10	X03	Y03	Z03
A13	W20	X04	Y04	Z04
A14		X10		Z10
A20		X13		Z13
A23		X14		Z14
A24		X20		Z20
		X23		Z23
		X24		Z24

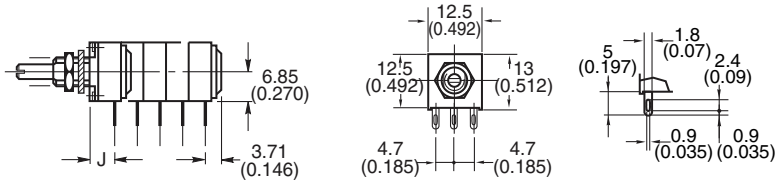
FIRST DIGIT	
Y	Soldering lugs
X	PCB pins
Z	PCB pins with front support plate
A	PCB pins with front and back support plates
W	PCB pins - vertical mounting with 2 extra pins - 1 module only

SECOND DIGIT	
0	Y = 4.65 (0.183") A, X, Z, W = 5.08 (0.200") pin spacing pins section 0.9 x 0.3 (0.035" x 0.012")
1	2.54 (0.100") pin spacing pin section 0.6 x 0.3 (0.024" x 0.012")
2	5.08 (0.200") pin spacing pins section 0.6 x 0.3 (0.024" x 0.012")

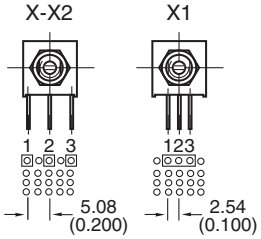
THIRD DIGIT	
0	5.08 (0.200") space between modules
3	7.62 (0.300") space between modules
4	10.16 (0.400") space between modules

DIMENSIONS in millimeters (inches) ± 0.5 mm (± 0.02")

SOLDER LUGS Y

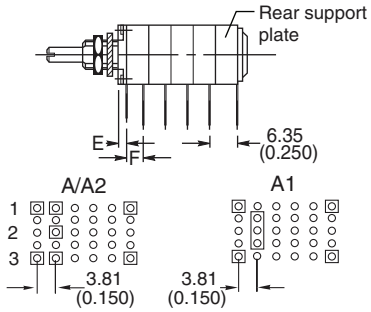


PCB PIN OUT

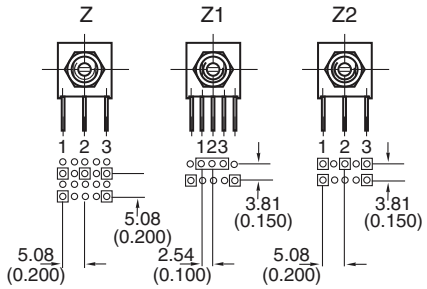


HORIZONTAL MOUNTING

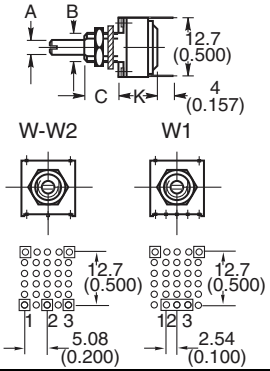
FRONT AND REAR SUPPORT PLATES



FRONT SUPPORT PLATE



VERTICAL MOUNTING



THE POSITION OF EACH MODULE IS FREE

BUSHINGS		G	T	Q	V	A	B	C	D	E	F
		DIMENSIONS mm (± 0.5)				DIMENSIONS INCHES (± 0.02)					
E	Leads Z00	3.15	1.85	1.85	3.85	0.071	0.071	0.071	0.071	0.071	0.150
E	Leads Z1. Z2. A..	2.8	1.6	1.6	3.6	0.063	0.063	0.063	0.063	0.063	0.140
F		Leads Z0.: 5.08 (0.200")				Leads A.. Z1. Z2.: 3.81 (0.150")					
J	Leads X.. Y..	6.7	5	5	7	0.200	0.200	0.200	0.200	0.200	0.278
E	Leads Z0. with Rotary Switch	1.45	0.15	0.15	2.15	0.006	0.006	0.006	0.006	0.006	0.0846

ORDERING INFORMATION (Part Number)

P	1	1	S	2	Q	0	E	A	S	Y	0	0	1	0	3	M	A
MODEL	STYLE	NUMBER OF MODULES		BUSHING	LOCATING PEG		SHAFT		SHAFT STYLE		LEADS		RESISTANCE CODE/ TOLERANCE/ TAPER OR SPECIAL				

RESISTANCE CODE/ TOLERANCE/ TAPER OR SPECIAL

From 20 Ω to 10 MΩ
see instructions on
electrical specifications

Resistance code:
200 = 20 Ω to
106 = 10 MΩ

Tolerance code:
Standard:
M = ± 20 %
On request:
K = ± 10 %,
J = ± 5 % (cermet only)

Taper: A, L, W, F, S, R
or
special code
given by Vishay

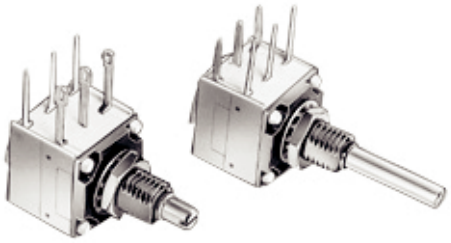
SPECIAL CODES GIVEN BY VISHAY

Option available:

- Custom shaft
- Custom design on request
- Specific linearity
- Specific interlinearity
- Specific taper
- Multiple assemblies with various modules

12.5 mm Modular Panel Potentiometer
Cermet (P11S) or Conductive Plastic Elements (P11A)

P11 OPTION: ROTARY SWITCH MODULES



- Rotary switchs
- Current up to 2 A
- Actuation CW or CCW position
- Sealing IP60

MODULES: RS ON/OFF SWITCH
RSI CHANGEOVER SWITCH

The position of each module is free.
RS and RSI rotary switches are housed in a standard P11 module size 12.7 mm x 12.7 mm x 5.08 mm (0.5" x 0.5" x 0.2"). They have the same terminal styles as the assembled electrical modules.

An assembly can comprise 1 or more switch modules.

Switch actuation is described as seen from the shaft end.
D:means actuation in maximum CCW position
F:means actuation in maximum CW position

The switch actuation travel is 25° with a total mechanical travel of 300° ± 5° and electrical travel of electrical modules is 238° ± 10°.

Leads finish: Gold plated.

RDS SINGLE POLE SWITCH, NORMALLY OPEN

In full CCW position, the contact between 1 and 3 is open. It is made at the beginning of the travel in CW direction.

RSF SINGLE POLE SWITCH, NORMALLY OPEN

In full CW position, the contact between 1 and 3 is open. It is made at the beginning of the travel in CCW direction.

RSID SINGLE POLE CHANGEOVER

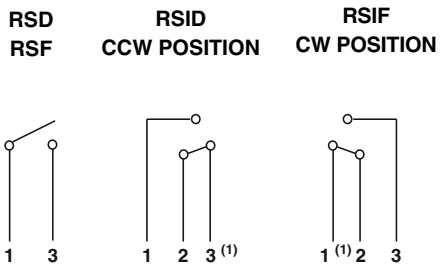
In full CCW position, the contact is made between 3 and 2 and open between 3 and 1. Switch actuation (CW direction) reverses these positions.

RSIF SINGLE POLE CHANGEOVER

In full CW position, the contact is made between 1 and 2 and open between 1 and 3. Switch actuation (CCW direction) reverses these positions.

SWITCH SPECIFICATIONS		
Switching Power Maximum		62.5 VA ν 15 VA =
Switching Current Maximum		0.25 A 250 V ν 0.5 A 30 V =
Maximum Current Through Element		2 A
Contact Resistance		100 mΩ
Dielectric Strength	Terminal to Terminal	1000 V_{RMS}
	Terminal to Bushing	2000 V_{RMS}
Maximum Voltage Operation		250 V ν 30 V =
Insulation Resistance Between Contacts		10^6 MΩ
Life at $P_{max.}$		10 000 actuations
Minimal Travel		25°
Operating Temperature		- 40 °C to + 85 °C

ELECTRICAL DIAGRAM



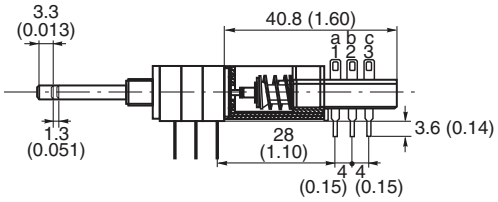
Note
(1) Common

ORDERING INFORMATION (First order only)

RSID

RSD	SPST: Single pole, open switch in CCW position - 2 pins
RSF	SPST: Single pole, open switch in CW position - 2 pins
RSID	SPDT: Single pole, changeover switch in CCW position - 3 pins
RSIF	SPDT: Single pole, changeover switch in CW position - 3 pins

P11 OPTION: PUSH/PUSH OR MOMENTARY/PUSH SWITCH MODULES



- Push/push or momentary push
- Current up to 2 A
- Sealing IP60

MODULES: PUSH/PUSH SWITCH RSPP
MOMENTARY/PUSH SWITCH RSMP

They have to be the last element of potentiometer

Options:

2 reversing switches F2 — 4 reversing switches F4

6 reversing switches F6 — 8 reversing switches F8

Not available with panel sealed option.
Number of modules before the switch limited to 3 modules.
Length of shaft (FMF) 25 mm maximum.

RSPP F2: PUSH/PUSH SWITCH WITH TWO REVERSING SWITCHES

Idle position: The contact is made between 1 and 2 and a and b. It is open between 2 and 3 and b and c.

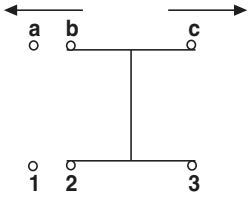
Pushed position: The contact is made between 2 and 3 and b and c. It is open between 1 and 2 and a and b.

SWITCH SPECIFICATIONS		
Switching Power Maximum		50 VA ν
Switching Current Maximum		0.5 A ν
Maximum Current Through Element		2 A
Contact Resistance		100 mΩ
Dielectric Strength	Terminal to Terminal	1500 V_{RMS}
	Terminal to Bushing	2000 V_{RMS}
Maximum Voltage Operation		250 V ν
Insulation Resistance Between Contacts		10^3 MΩ
Life at $P_{max.}$		100 000 actuations
Minimal Travel		3.3 mm to 4.7 mm
Operating Temperature		- 40 °C to + 70 °C

ELECTRICAL DIAGRAM

RSPP F2

IDLE POSITION **PUSHED POSITION**



ORDERING INFORMATION (First order only for special code creation)

RSPP	F2

RSPP: Push/push

RSMP: Momentary/push

F2: 2 reversing switches (standard version)

F4: 4 reversing switches

F6: 6 reversing switches

F8: 8 reversing switches

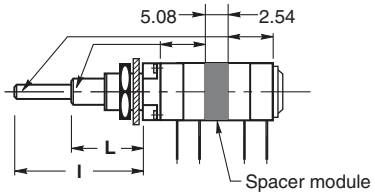
P11 OPTION: CONCENTRIC SHAFTS

The CC concentric shaft versions allies the total flexibility of the P11 modular system to the advantage of having two separate shafts.

The outer 6 mm or 1/4" or 1/8" dia. shaft drives the modules situated immediately behind the panel, before the spacer module.

The inner 3 mm or 1/8" or 0.07" dia. shaft drives the modules situated after the spacer module.

Spacer is available with a choice of two spacer thickness:
5.08 mm designations or 2.54 mm designation. See dimensional drawing



BUSHING CODE	OUTER SHAFT DIAMETER			INNER SHAFT DIAMETER		
	DIAMETER	LENGTH L	SHAFT STYLE	DIAMETER	LENGTH l	SHAFT STYLE
V	6	16	R	3	28.5	R
F	6.35 (1/4")	16	R	3.17 (1/8")	28.5	R
A	3.17 (1/8")	12.7 (1/2")	R	1.8 (0.07")	22.2 (7/8")	R

ORDERING INFORMATION (First order only for special code creation)

5.08

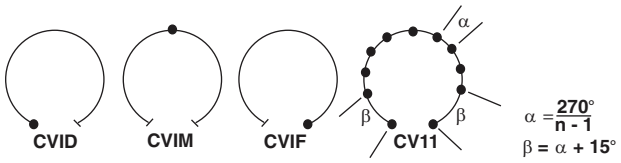
2.54: Mechanical spacer of 2.54 mm
5.08: Mechanical spacer of 5.08 mm

Customer should define witch modules is driven by each shaft (see example of ordering information at the end of the data sheet)

P11 OPTION: DETENT MODULES

The detents mechanism is housed in a standard P11 module.
Up to 21 detent positions available.
Count detents as follows: 1 for CCW position, 1 for full CW position, plus the other positions forming equal resistance increments (linear taper) - not equal angles.
Available: CVID - CVIF - CVIM
CV3 - CV11 - CV21

Mechanical endurance: 10 000 cycles



ORDERING INFORMATION (First order only for special code creation)

CV1M

CV1M	1 detent at half travel
CV1M J84	CV1M with accuracy of center point ± 2 % (all tapers except S)
CV1D	1 detent at CCW position
CV1F	1 detent at CW position
CV3	3 detents
CV11	11 detents
CV21	21 detents

P11 OPTION: NEUTRAL MODULES "EN"

Neutral or screen module is housed in a standard P11 module.
It is used as a screen between two electrical modules.

The leads can be connected to ground.

ORDERING INFORMATION (First order only for special code creation)

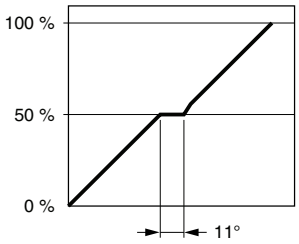
EN

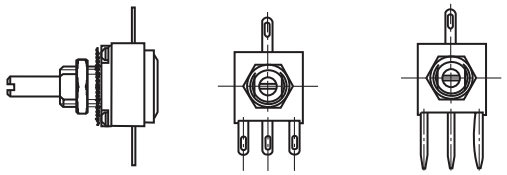
EN	Neutral module

P11 OPTION: CENTER CURRENT TAP "J"

The extra terminal is a solder lug connected at 50 % of electrical travel and siluated in the potentiometer module opposite the terminals.

Center tap presents a short circuit of 11° of travel.





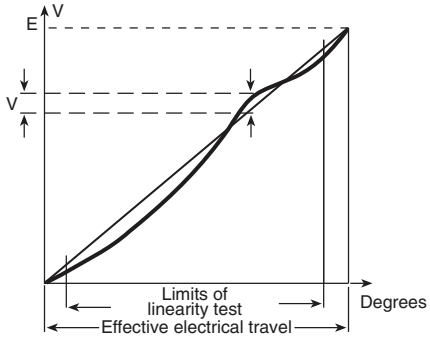
- Sealing IP60

ORDERING INFORMATION (First order only)

J

J Center tap

P11 OPTION: SPECIAL LINEARITY - CONFORMITY



The independent linearity (conformity for the non linear laws) is the maximum gap ΔV between the actual variation curve and the theorical variation curve the nearest to it. The linearity and the conformity are expressed in percentage of the total applied voltage E

$$\text{linearity conformity} = \frac{\pm \Delta V_{max.}}{E}$$

They are measured over 90 % of actual electrical travel (centered).
On request linearity can be guaranteed in linear taper.

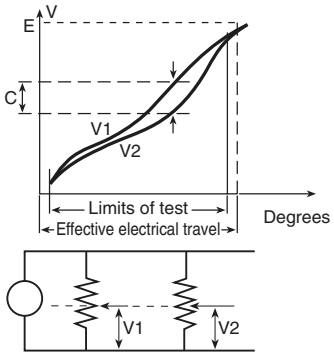
ORDERING INFORMATION (First order only)

J123

J123 Independent linearity ± 3 % (linear law)
J145 Independent linearity ± 2 % (linear law)

For other request, contact us.

P11 OPTION: SPECIAL INTERLINEARITY - INTERCONFORMITY



It is the maximum deviation between the actual voltage outputs of 2 or more pot modules in the same assembly. It is expressed as a percentage of the total applied voltage, or in dB attenuation.

Interlinearity is measured between 2 pot modules, over 20 to 90 % of the attenuation.

The interlinearity or interconformity is expressed as a percentage of the total applied voltage:

$$I\ \% = \frac{|C|}{E}$$

Or in decibels by comparison between outputs V1 and V2

$$I\ dB = 20 \log \frac{V_1}{V_2}$$

ORDERING INFORMATION (First order only)

J44

J44 Interlinearity ± 2 % (linear taper)

For other request, contact us.

EXAMPLES OF FIRST ORDER INFORMATION

FIRST EXAMPLE: Triple module (switch is counted as a module)

P	1	1	S	3	Q	0	A	P	S	Y	0	0					
MODEL P11	STYLE S	3 MODULES		BUSHING Q (Ø 7: L8)		WITHOUT LOCATING PEG		CUSTOM SHAFT SLOTTED		SOLDER LUGS			SPECIAL TO BE DEFINED BY VISHAY				

ORDERING INFORMATION:

PART NUMBER	**P11S3Q0APSY00.....**	
SHAFT AND BUSHING	**See drawing of special shaft attached**	
MODULE NO. 1	**RSID**	
MODULE NO. 2	**103 M A**	**J123**
MODULE NO. 3	**503 M A**	**J**

SECOND EXAMPLE: Concentric shaft with 2 modules on each shaft

P	1	1	S	5	V	0	C	C	R	Y	0	0					
MODEL P11	STYLE S	5 MODULES		BUSHING V (Ø 10: L9.5)		WITHOUT LOCATING PEG		STANDARD CONCENTRIC SHAFT CCR		SOLDER LUGS			SPECIAL TO BE DEFINED BY VISHAY				

ORDERING INFORMATION:

PART NUMBER	**P11S5V0CCRY00.....**		
SHAFT AND BUSHING			
MODULE NO. 1	**CV1M**		Driven by outer shaft
MODULE NO. 2	**502 K A**		Driven by outer shaft
MODULE NO. 3	**5.08**		Mechanical spacer 5.08 mm
MODULE NO. 4	**103 K A**	**J44**	Driven by inner shaft
MODULE NO. 5	**103 K A**	**J44**	Driven by inner shaft

PART NUMBER DESCRIPTION (used on some Vishay document or label, for information only)

P11S	2	Q	0	EA	S	Y00	10K	20 %	A			e3
MODEL	MODULES	BUSHING	LOCATING PEG	SHAFT	SHAFT STYLE	LEADS	VALUE	TOL.	TAPER	SPECIAL	SPECIAL	LEAD (Pb)-FREE

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