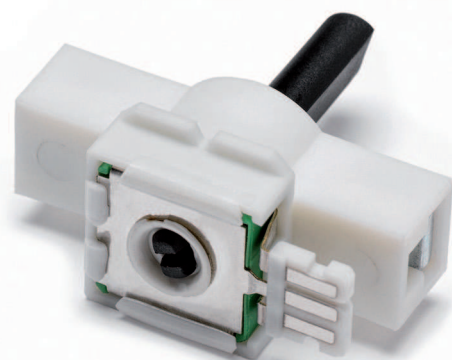


QC16

Control Panel Potentiometer



QC16

The QC16 belongs to the patented ACP Pluggable series. The three pins of the potentiometer are fitted into a 1,55 mm thick plastic part with a pitch of 2,5mm, allowing its connection to the suitable RAST2,5 card edge connector.

The external housing contains two washers for direct panel fixation through M4 screws into the customer device. ACP can also study other options for direct panel fixation.

The standard configuration has 16 detents evenly distributed along its 360° endless rotation, and allows to choose between 4 different detent torque values, from 3 Ncm to 6 Ncm. ACP can offer different number of detents under request.

Extended temperature versions covering a range from -40°C to +120°C are available for applications where the working temperature interval exceeds the standard limits of -25°C to +70°C. Ingress Protection rating type is IP54 and plastic materials can be self-extinguishable according to UL 94V0 whenever required.

The ACP pluggable series is an appealing cost saving option as customer can remove both PCB and soldering process. The electrical signal is directly transmitted from the front panel to the electronics using the suitable RAST2,5 connector.

The QC16 is commonly used as a voltage divider feeding the microcontroller with an accurate voltage level, ensuring non-overlapping between contiguous positions.

Applications:

This Rotary Potentiometer Switch is the ideal alternative to Absolute Encoders and Rotary Switches for control applications like Program Selector Switches in White Goods:

EXAMPLE: QC16RHP-10KA3030 LV15 16DT 5N S PDT1 WT-14315-NE V0

Standard features									Extra features						Assembled accessory			
Series	Rotor	Model	Connector	Value	Taper	Tol.	Life	Detents	Housing	Rotor	Torque	Plates	Oper.T ^a	Delivery Pos.	Accessory	Ref	Color	Flam.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
QC16	R	HP	SI	10K	A	3030	LV15	16DT				S		PDT1	WT	14315	NE	

Standard configuration:	QC16
Dimensions:	36x16mm
Protection:	IP 54
Core potentiometer:	CS14
Packaging:	Bulk
Wiper position:	Detent 1 (PDT1)
Terminals:	Pluggable to RAST 2.5 card edge connector
Marking:	Resistive value marked on external housing. Others on request.

1 - Series

■ QC16

2 - Rotors

R

3 - Model

HP	HPL
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4 - Connector

SI	SF	LI	LF
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5 - Resistance value

100 Ω	200 Ω	220 Ω	250 Ω	470 Ω	500 Ω	1K Ω	10K Ω (standard)...	5M Ω
100	200	220	250	470	500	1K	10K	5M

6 - Taper

Lin - Linear	A
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Others under study. Code will be assigned case by case.

7 - Tolerance

100 Ω ≤ Rn ≤ 100KΩ:	100 KΩ < Rn ≤ 1MΩ:	1 MΩ < Rn ≤ 5MΩ:
±30%	±30%	+50%,-30%
3030	3030	5030

Special tolerances under request. Please check availability.

8 - Operating Life (Turns)

Standard (10.000 turns) (others on request). LV10

Long life: LV + number of turns. (please inquire availability) LVXXX: ex: LV20

9 - Number of Detents

Standard: 16 detents	16DT
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Other configurations under study

10 - Housing

Color: For colors other than standard: -See color chart below- CJ-color, ex., red: CJ-RO

11 - Rotor

Color: For colors other than standard: -See color chart below- RT-color; ex., blue: RT-RO

12 - Detent Torque

3Ncm	3N
5Ncm	5N

Others under request. Please check availability

13 - Plates

with plates	S
withOUT plates	N

14 - Operating T^a

-25...+7 C (standard)	(leave blank)
-25...+85°C	T ^a D
-25...+105°C	T ^a B

Others under request. Please check availability

15 - Delivery Position

Standard position at detent 1	PDT1
Position at detent. XX=(position number)	PDTXX

16 - Assembled Accesories (shafts)

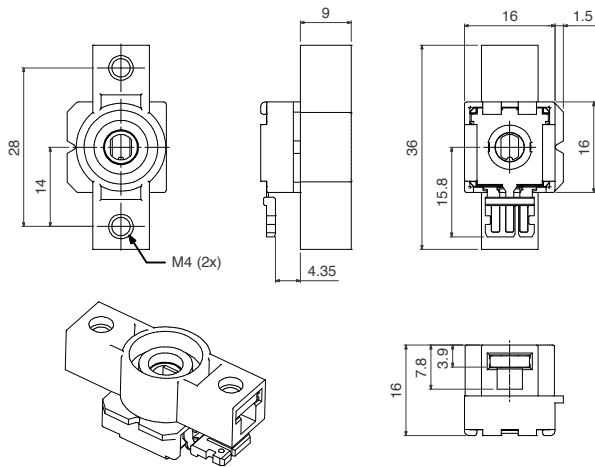
Assembled from terminal side	WT
Accessory Reference	-XXXXX Example: 14117
See list of shafts and thumbwheels available	
Color of shaft or thumbwheel	-YY Example, white: BA
Non self-extinguishable.	(leave blank)
Self-extinguishable according to standard UL 94	-V0
(-V0 in box 20 modifies only the accessory, please, note.)	

Color chart for rotor, housing and accessories

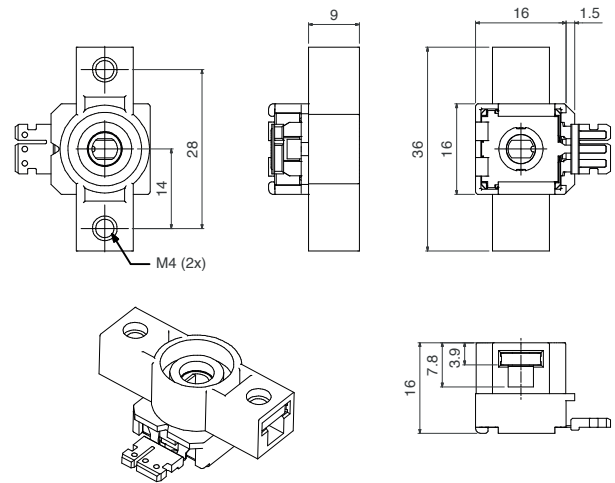
Black ⁽¹⁾	White	Neutral	Transp.	Red	Green	Yellow	Blue	Grey	Brown
NE	BA	IN	TA	RO	VE	AM	AZ	GS	MR

HPL and HP are the standard models. For others, please, inquire

HPL

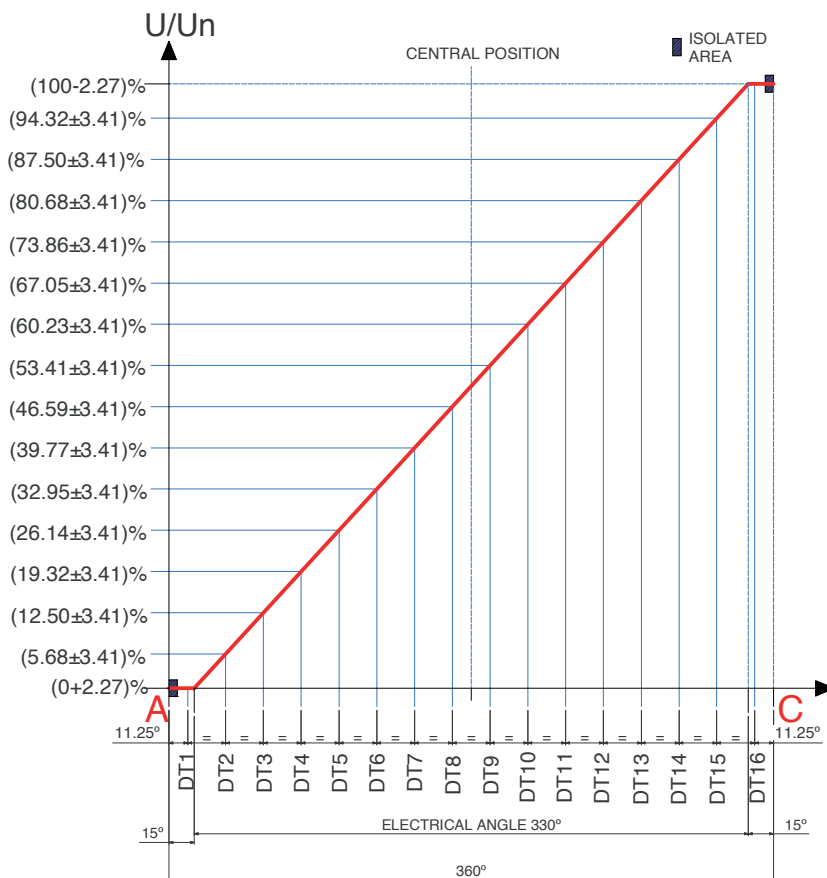


HP

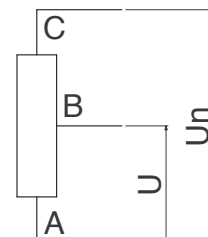


Tapers

The QC16 core potentiometer has a linear taper that provides the voltage ratios indicated at each detent shown in the graph. Non overlapping voltage between contiguous positions is guaranteed.



DETENT	VALUE
1	(0+2.27)% U_n
2	(5.68±3.41)% U_n
3	(12.50±3.41)% U_n
4	(19.32±3.41)% U_n
5	(26.14±3.41)% U_n
6	(32.95±3.41)% U_n
7	(39.77±3.41)% U_n
8	(46.59±3.41)% U_n
9	(53.41±3.41)% U_n
10	(60.23±3.41)% U_n
11	(67.05±3.41)% U_n
12	(73.86±3.41)% U_n
13	(80.68±3.41)% U_n
14	(87.50±3.41)% U_n
15	(94.32±3.41)% U_n
16	(100-2.27)% U_n

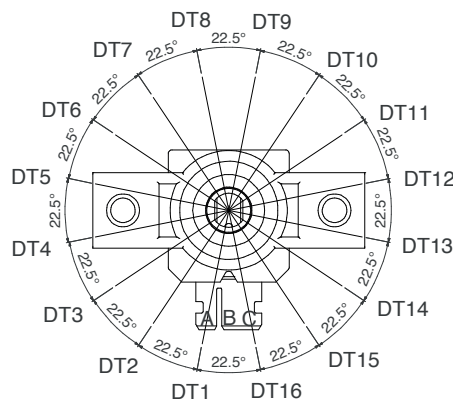
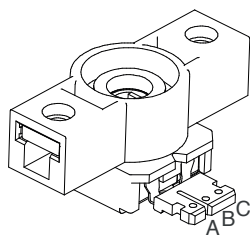


Detents/ Torque

Conceived specifically for control applications where robust click feeling is required along the full circumference. The QC16 incorporates an ACP patented design that provides 4 possible different torque levels: 3Ncm, 4Ncm, 5Ncm or 6Ncm, upon customer's choice, with a mechanical life of at least 10.000 turns.

The standard number of detents is 16, all of them evenly spread along the 360° mechanical travel, an ideal configuration for 16 function selection in White Goods.

Tailor made configurations with different number of detents, preferably even numbers equally spread along the 360°, can be studied on request. Other mechanical life requirements are also possible upon study.



Delivery Position

Unless otherwise specified, the Q1C6 is delivered with the wiper on position 1 (PDT1).

Connector

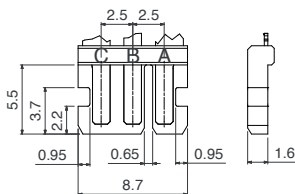
ACP offers the possibility to turn one QC16 standard into a pluggable version. Thanks to an external RAST 2,5 card edge connector in which terminals are embedded, customer can transmit the output signal from the potentiometer to the electronic module. The three pins of the potentiometer (the collector and the two terminals) are fitted into a 1,55 mm thick plastic part with a pitch of 2,5mm.

Extended temperature versions covering a range from -40°C to +120°C are available for applications where the working temperature interval exceeds the standard limits of -25°C to +70°C. The self-extinguishable version of the plastic parts, V0, can be supplied under request.

A typical application would be as feedback position sensor of the cooking style selector for kitchen ovens. ACP is able to supply different kind of connectors:

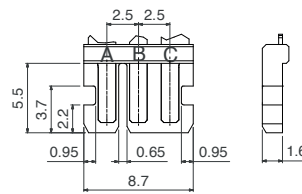
SI

SHORT latching shape and groove at INITIAL terminal side.



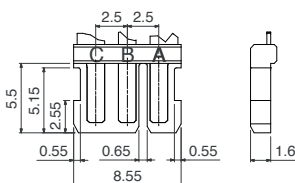
SF*

SHORT latching shape and groove at FINAL terminal side.



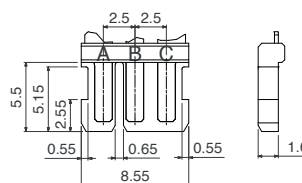
LI*

LONG latching shape and groove at INITIAL terminal side.



LF*

LONG latching shape and groove at FINAL terminal side.



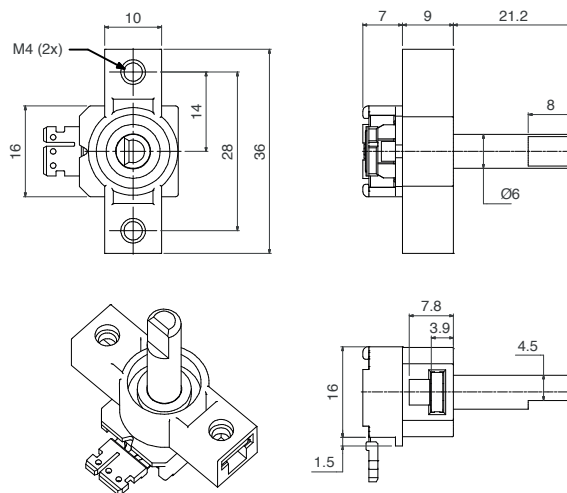
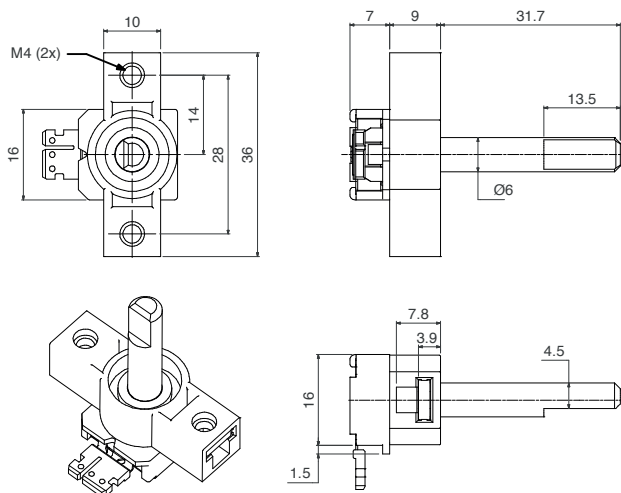
*Please, inquiry.

Shafts are available in different colors (color chart in “how to order” section) and with self-extinguishable property, according to UL 94 V-0, under request. ACP can study special shaft designs.

Shafts can be sold separately or already mounted on the potentiometer.

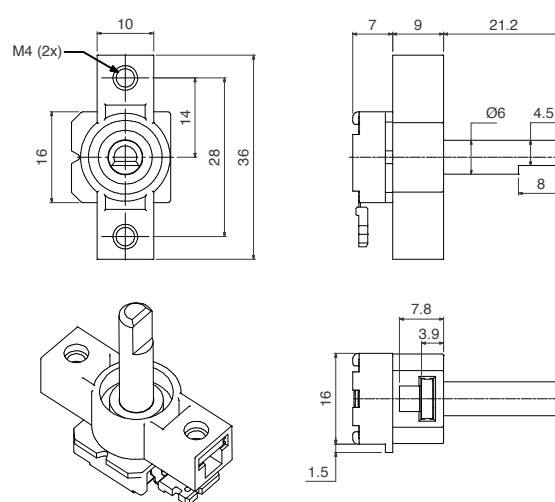
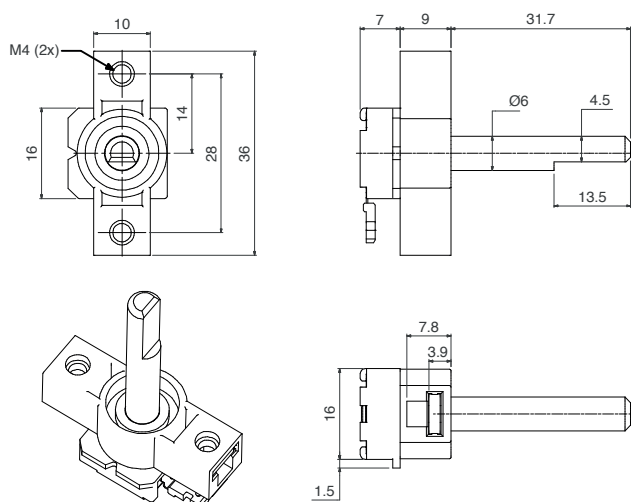
HP... WT-14301

HP... WT-14315



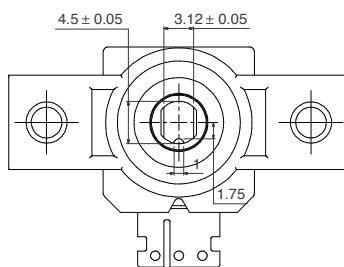
HPL... WT-14301

HPL... WT-14315



Rotor inner dimensions

This drawing shows the rotor at 50% position in order to better depict the dimensions and tolerances.



Packaging

Bulk packaging:

Pieces per box (250 x 150 x 70)

**QC16 model
without shaft**

90

Electric Specifications

These are standard features; other specifications and out of range values can be studied on request.

QC16

Range of resistance values* Lin (A)	Standard: 10KΩ Others: 1KΩ ≤ Rn ≤ 5MΩ, on request
Tolerance*	±30%
Variation laws	Lin (A). Other tapers available on request
CRV - Contact Resistance Variation (dynamic)	Lin (A) Electrical Angle 330°±20° ≤ 3%Rn. Other tapers, please inquire
CRV - Contact Resistance Variation (static)	Lin (A) Electrical Angle 330°±20° ≤ 5%Rn. Other tapers, please inquire
Maximum power dissipation** Lin (A)	at 50°C, 0.15W
Maximum voltage Lin (A)	250VDC
Operating temperature	standard: -25°C ... +70°C T ^a D: -25°C ... +85°C T ^a B: -25°C ... +105°C (+120°C, on request)
Temperature coefficient 1K ≤ Rn ≤ 10KΩ 10KΩ < Rn ≤ 5MΩ	+200/ -300 ppm +200/ -500 ppm

* Out of range ohm values and tolerances are available on request, please, inquire.

** Dissipation of special tapers will vary, please, inquire.

Mechanical Specifications

QC16

Resistive element	Carbon technology
Angle of rotation (mechanical)	360°
Angle of rotation (electrical)	330° ± 20°
Wiper standard delivery position	50% ± 15°
Max. push/pull on rotor	50 N
Detent Torque	Standard: 3Ncm and 5Ncm Others, under request
Mechanical life	Standard: 10.000 turns. Others, under request

Test results

The following typical test results (with 95% confidence) are given at 23°C ±2°C and 50% ±25% RH.

QC16

	Test conditions	Typical variation of Rn
Damp heat	500 h. at 40°C and 95% RH	±20%
Temperature Coefficient	16 h at 85°C, plus 2 h at -25°C	±20%
Load life	1.000 h. at 50°C	±20%
Mechanical life	10.000 turns at 10 c.p.m. and at 23°C ± 2°C	±20%
Storage (3 years)	3 years at 23°C ± 2°C	±3%