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Multi-channel radio frequency connectors – **ITEN STANDARD PREVIEW**
Part 2: Sectional specification for MQ4 series circular connectors
(standards.iteh.ai)

Connecteurs radiofréquences multicanaux – [IEC 63138-2-2020](https://standards.iteh.ai/catalog/standards/issu3a19c9bd-686f-4708-a778-4c9957794632/iec-63138-2-2020)
Partie 2: Spécification intermédiaire pour les connecteurs circulaires
de série MQ4





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Multi-channel radiofrequency connectors - STANDARD PREVIEW
Part 2: Sectional specification for MQ4 series circular connectors
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Connecteurs radiofréquences multicanaux –
Partie 2: Spécification intermédiaire pour les connecteurs circulaires
de série MQ4

IEC 63138-2:2020

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The text of this International Standard is based on the following documents:

FDIS	Report on voting
46F/524/FDIS	46F/533/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 63138 series, published under the general title *Multi-channel radio-frequency connectors*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

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MULTI-CHANNEL RADIO-FREQUENCY CONNECTORS –

Part 2: Sectional specification for MQ4 series circular connectors

1 Scope

This part of IEC 63138, which is a sectional specification (SS), provides information and rules for the preparation of detail specifications (DS) for MQ4 series circular connectors with four RF channels, as well as a detailed specification of the blank format.

An MQ4 series circular connector with 50Ω nominal impedance has four RF channels which can be engaged and disengaged at the same time. There are two versions of plug connectors, one is a quick-lock version, and the other is a threaded version. The socket connector provides two coupling mechanisms, a quick-lock and a threaded coupling.

MQ4 series circular connectors can be used in mobile communication systems and in other communication equipment.

This document also specifies the mating face dimensions and gauging information of MQ4 series circular connectors, and tests selected from IEC 63138-1, applicable to all detail specifications relating to MQ4 series circular connectors.

2 Normative references

[IEC 63138-2:2020](#)

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 63138-1:2019, *Multi-channel radio frequency connectors – Part 1: Generic specification – General requirements and test methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 63138-1 apply.

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- IEC Electropedia: available at <http://www.electropedia.org/>
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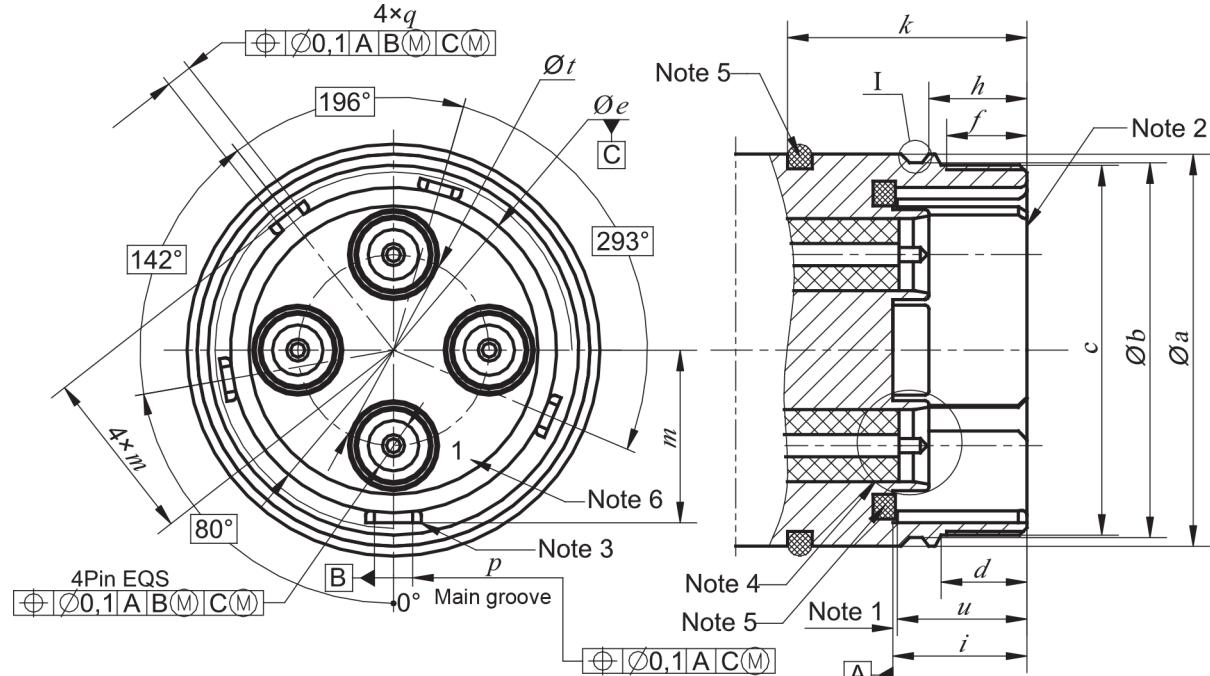
4 Mating face and gauge information

4.1 Mating face dimensions

4.1.1 MQ4 socket connector

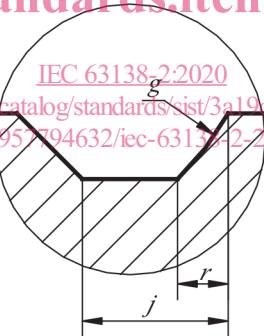
The mating face of MQ4 socket connectors is shown in Figure 1 and its dimensions are shown in Table 1.

NOTE Metric dimensions are original dimensions. All undimensioned pictorial configurations are for reference purpose only.



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NOTE 1 Mechanical reference plane.

NOTE 2 Chamfer of the four supplementary grooves is optional.

NOTE 3 Chamfer of the main groove is optional.

NOTE 4 The mating face of the RF channel with pin contact is shown in Figure 4a) and its dimensions are shown in Table 4.

NOTE 5 The shape of seal ring is optional.

NOTE 6 The initial position number of the RF channel with pin contact and the other positions numbered clockwise.

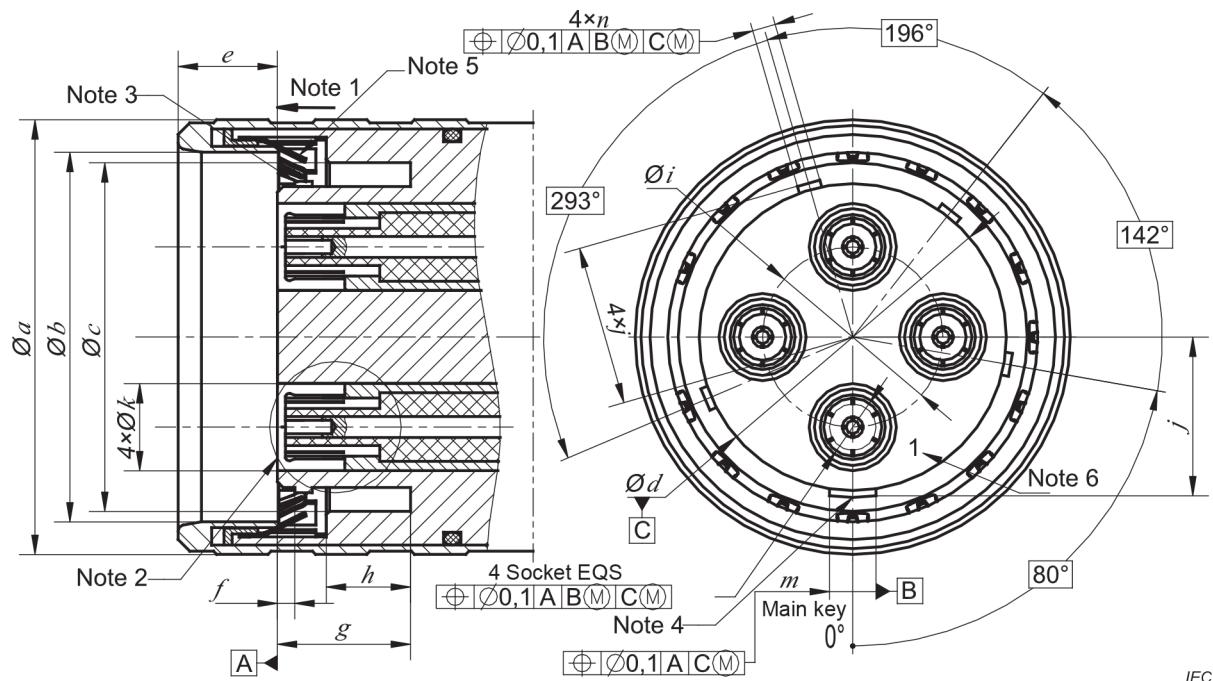
Figure 1 – MQ4 socket connector

Table 1 – Dimensions of MQ4 socket connector

Ref.	mm	
	Min.	Max.
a	31,75	31,80
b	30,35	30,40
c	M30 × 1 tolerance 6 g	
d	6,80	7,00
e	26,42	26,48
f	6,00	--
g	R3,0 nom.	
h	7,95	8,05
i	10,95	11,00
j	1,50	1,80
k	19,30	19,45
m	13,90	14,00
p	3,20	3,35
q	1,60	1,75
r	0,50	0,60
t	15,48	15,52
u	10,30	10,90

4.1.2 MQ4 plug connector[IEC 63138-2:2020](#)<https://standards.iteh.ai/catalog/standards/sist/3a19c96d-686f-4708-a778->**4.1.2.1 MQ4 quick-lock plug connector**[IEC 63138-2:2020](#)

The mating face of the MQ4 connector with quick-lock type is shown in Figure 2 and its dimensions are shown in Table 2.



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NOTE 1 Mechanical reference plane.

NOTE 2 The mating face of the RF channel with socket contact is shown in Figure 4b) and its dimensions are shown in Table 4.

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NOTE 3 The shape of the four supplementary keys is optional.

NOTE 4 The shape of the main key is optional.

NOTE 5 The shape of the spring finger is optional.

NOTE 6 The initial position number of the RF channel with the socket contact and other positions numbered anticlockwise.

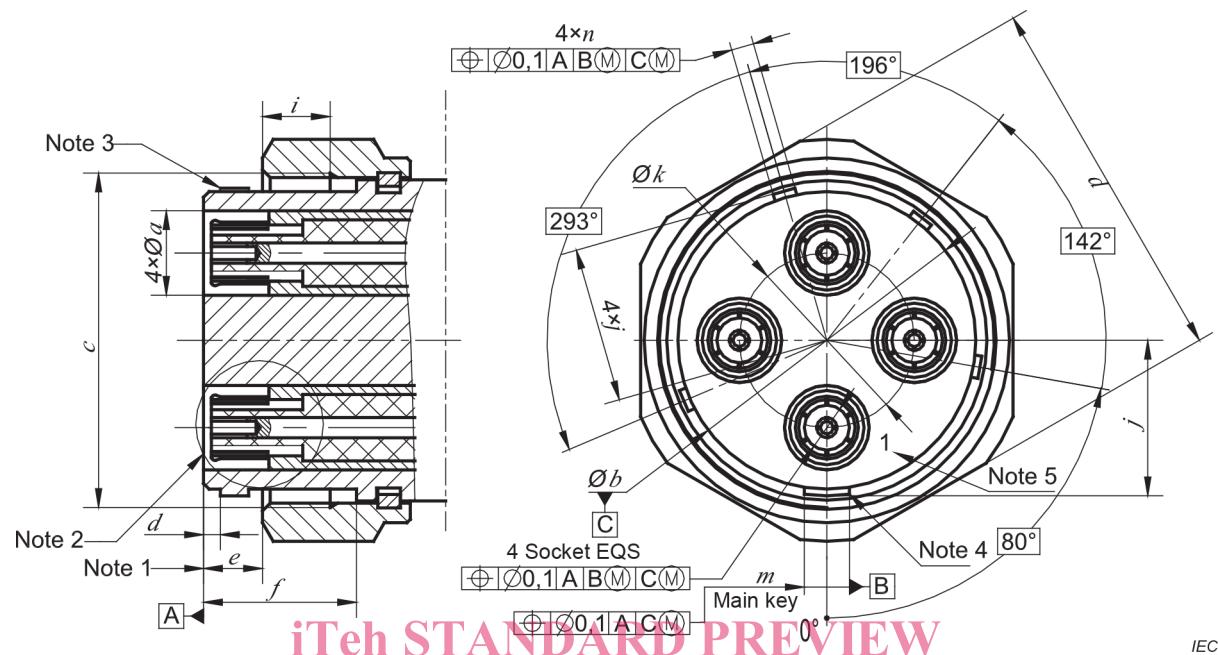
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Figure 2 – MQ4 quick-lock plug connector**Table 2 – Dimensions of MQ4 quick-lock plug connector**

Ref.	mm	
	Min.	Max.
a	--	42,00
b	31,80	31,90
c	30,05	30,15
d	26,30	26,40
e	8,40	8,60
f	1,20	1,50
g	11,00	11,10
h	6,60	6,80
i	15,48	15,52
j	13,70	13,80
k	7,52	7,58
m	3,00	3,15
n	1,40	1,55

4.1.2.2 MQ4 threaded plug connector

The mating face of the MQ4 threaded plug connector is shown in Figure 3 and its dimensions are shown in Table 3.



NOTE 1 Mechanical reference plane.

NOTE 2 The mating face of the RF channel with socket contact is shown in Figure 4b) and its dimensions are shown in Table 4. [IEC 63138-2:2020](#)

NOTE 3 The shape of the four supplementary keys is optional. [Iec-63138-2-2020-4-9957794632/iteh#3a19c96d-686f-4708-a778-](#)

NOTE 4 The shape of the main key is optional. [4-9957794632/iec-63138-2-2020](#)

NOTE 5 The initial position number of the RF channel with socket contact and the other positions numbered anti-clockwise.

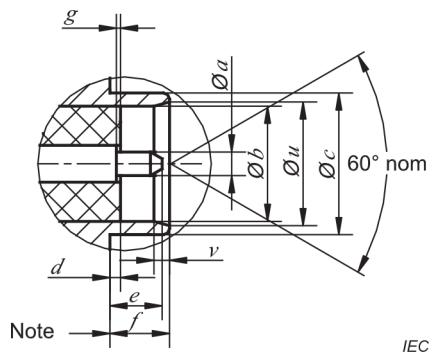
Figure 3 – MQ4 threaded plug connector

Table 3 – Dimensions of MQ4 threaded plug connector

Ref.	mm	
	Min.	Max.
a	7,52	7,58
b	26,35	26,40
c	M30 × 1 tolerance 6 H	
d	1,20	1,50
e	5,20	5,60
f	11,20	--
i	7,00	--
j	13,70	13,80
k	15,48	15,52
m	3,00	3,15
n	1,40	1,55
p	32,0 nom.	

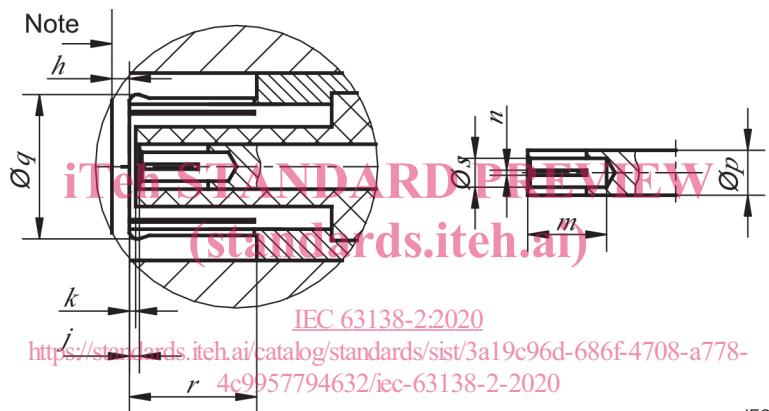
4.1.3 Mating face of RF channel

The mating face of the RF channel with pin contact is shown in Figure 4a), the mating face of the RF channel with socket contact is shown in Figure 4b), and their dimensions are shown in Table 4.



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a) RF channel with pin contact



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b) RF channel with socket contact

NOTE Mechanical reference plane.

Figure 4 – Mating face of RF channel

Table 4 – Dimensions of RF channel

Ref.	mm	
	Min.	Max.
a	1,17	1,23
b	5,90	5,93
c	7,25	7,35
d	0,35	0,65
e	2,60	2,90
f	2,90	3,70
g	0,00	0,25
h	0,75	1,00
j	0,00	0,25
k	0,00	0,20
m	3,00	--
n ^a	--	--

Ref.	mm	
	Min.	Max.
<i>p</i>	1,8 nom.	
<i>q</i> ^b	--	6,45
<i>r</i>	3,80	--
<i>u</i>	6,50	6,70
<i>v</i>	1,55	1,65
<i>s</i> ^a	--	--

^a Slot design is optional when mating with a pin with Ø1,17 mm to Ø1,23 mm. It should meet the requirements of mechanical and electrical performance.

^b Expand to meet the requirements with gauge rings for socket outer contact.

4.2 Gauges

4.2.1 Gauge for RF channel

4.2.1.1 Socket centre contact

4.2.1.2 Dimensions of gauge

The gauge for the socket contact of the RF channel is shown in Figure 5 and its dimensions are shown in Table 5.

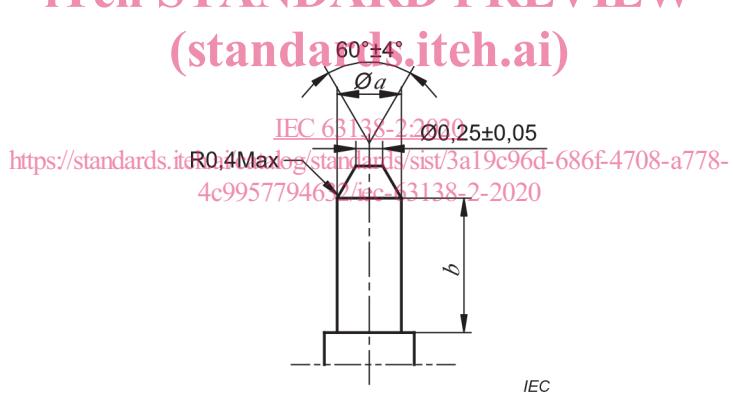


Figure 5 – Gauge for socket contact of RF channel

Table 5 – Dimensions of gauge for socket contact

Ref.	Gauge A (for sizing)		Gauge B (for insertion)		Gauge C (for retention) Mass of gauge: 40 ⁺² ₋₀ g	
	mm		mm		mm	
	Min.	Max.	Min.	Max.	Min.	Max.
<i>a</i>	1,235	1,240	1,230	1,235	1,165	1,170
<i>b</i>	0,70	1,00	0,90	1,20	0,90	1,20

Material: Polished steel, cylindrical surface, roughness of diameter *a*: Ra ≤ 0,4 µm.

4.2.1.3 Test procedure

Test procedure is as follows:

a) Sizing test

Insert gauge A into the centre contact three times, the depth of insertion being not less than 0,7 mm; this is a sizing operation.

b) Insertion test

After the sizing operation, insert gauge B into the centre contact; the insertion force shall not be less than 6 N.

c) Retention test

After the sizing or insertion operation, gauge C shall be inserted into the socket centre contact. The contact shall retain the mass of gauge C in a vertical downward position.

4.2.2 Gauge rings for plug outer contact

4.2.2.1 Dimensions of gauge

The gauge for the plug outer contact of the RF channel is shown in Figure 6 and its dimensions are shown in Table 6.

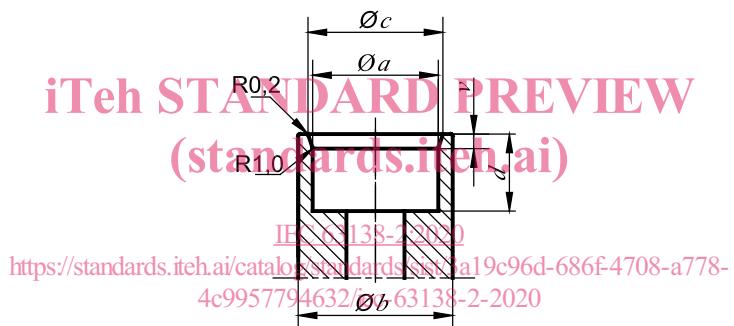


Figure 6 – Gauge for plug outer contact

Table 6 – Dimensions of gauge for plug outer contact

Ref.	Gauge A (for sizing)		Gauge B (for insertion)		Gauge C (for retention) Mass of gauge: 400^{+2}_{-0} g	
	mm		mm		mm	
	Min.	Max.	Min.	Max.	Min.	Max.
a	5,880	5,885	5,895	5,900	5,930	5,935
b	7,25	7,35	7,25	7,35	7,25	7,35
c	6,70	6,80	6,70	6,80	6,70	6,80
d	2,70	3,00	2,70	3,00	2,70	3,00
v	1,55	1,65	1,55	1,65	1,55	1,65

Material: Polished steel, cylindrical surface, roughness of diameter a: $Ra \leq 0,4 \mu\text{m}$.

4.2.2.2 Test procedure

a) Sizing test

Gauge A should be inserted into the outer contact of the RF channel three times, the depth of insertion being not less than 2,7 mm; this is a sizing operation.