

Miniature D connectors are a must in various cable-to-board applications where space saving and high data transfer rates are required. For the purposes of miniaturization and speed, HARTING offers a wide range of miniature D connectors with 14 to 100-poles. Available in two contact styles (pin & socket and bellows), these connectors in 1.27 mm contact pitch allow data transfer rates up to 600 MHz. The *har-mik*[®] connectors comply with various standards such as SCSI, IPI, HIPPI, IEEE 1284.

Application profile:

CONNECTION TYPE		ENVIRONMENT		APPLICATION						
Board to Board	Cable/Wire to Board	IP 20	IP 65 / IP 67	Data	Signal	Power	high performance			
							Data transfer rate	Shielding	Number of contacts, contact density	Voltage, working current
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cable termination			PCB termination			Application standard				
<i>Han-Quick Lock</i> [®]	IDC	Crimp	THT	SMC	SMT					
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>					
Screw	Cage clamp	Axial screw	Press-in	Housing integration Separate housing <input type="checkbox"/> Integrated housing <input type="checkbox"/>						
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>							

CONTENTS	PAGE
<i>har-mik</i> ® connector system – introduction	06.02
<i>I/O connectors</i>	06.04
Pin and socket	
Technical characteristics	06.06
Connectors with straight pins	06.07
Connectors with right angled solder pins	06.09
Connectors with IDC flat cable termination	06.11
Connectors with IDC discrete wire termination	06.12
Bellows	
Technical characteristics	06.13
Connectors with straight solder pins	06.14
Connectors with right angled pins	06.15
Connectors with IDC discrete wire termination	06.16
Hoods	
Technical characteristics	06.17
Hoods for pin and socket male connectors	06.18
Hoods for bellows male connectors	06.20
Accessories	06.22
<i>Intra cabinet connectors</i>	06.23
Pin and socket	
Technical characteristics	06.24
Connectors with straight pins	06.25
Connectors with IDC flat cable termination	06.26
<i>Cables and cable assemblies</i>	06.27

Tooling see chapter 20

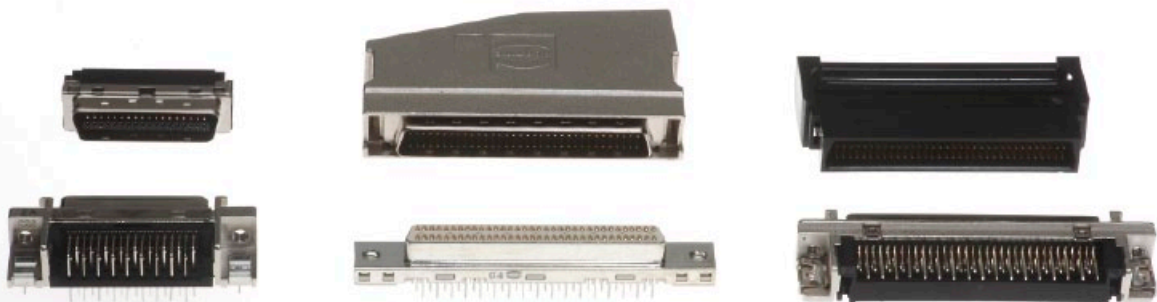
har-mik® interface connectors in 1.27 mm pitch

Miniature D connectors are a must in various cable-to-board applications where space saving and high data transfer rates are required. For the purposes of miniaturization and speed, HARTING offers a wide range of miniature D connectors with 14 to 100-poles.

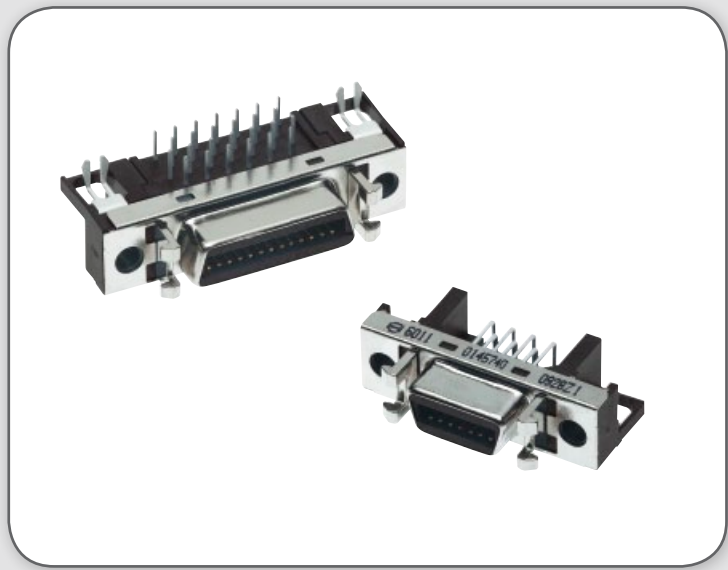
Available in two contact styles (pin & socket and bellows), these connectors in 1.27 mm contact pitch allow data transfer rates up to 600 MHz. The *har-mik*® connectors comply with various standards such as SCSI, IPI, HIPPI, IEEE 1284.

There are the following components available in this range:

- Straight or right angled shielded and unshielded board connectors with latch or screw fixing for standard wave soldering. The *har-mik*® connectors are suitable for press-in and SMC and are designed for pick and place assembly.
- IDC cable connectors for round discrete wire cables and flat cables.
- Metal and plastic hoods with top and side cable entry (also for cables with large diameter) for all *har-mik*® sizes.
- Flat and round cables for harnesses and screw locks for panel mounting.
- All necessary tooling for insulation displacement termination.

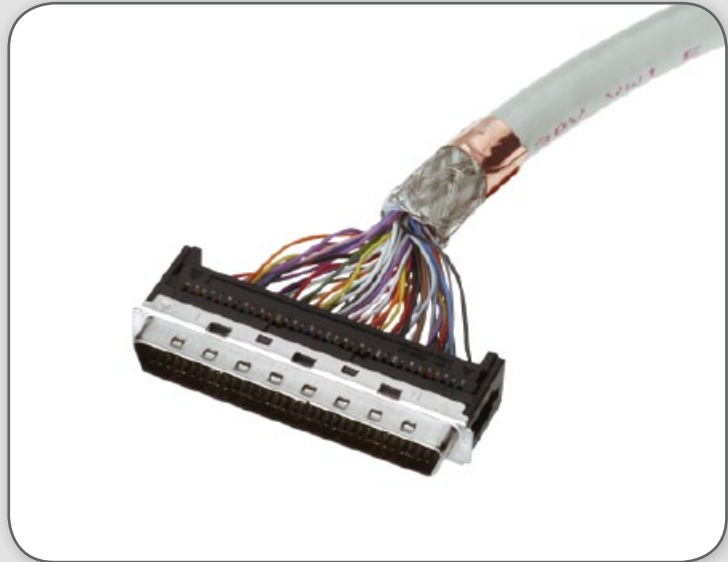


Space saving connectors in 1.27 mm pitch



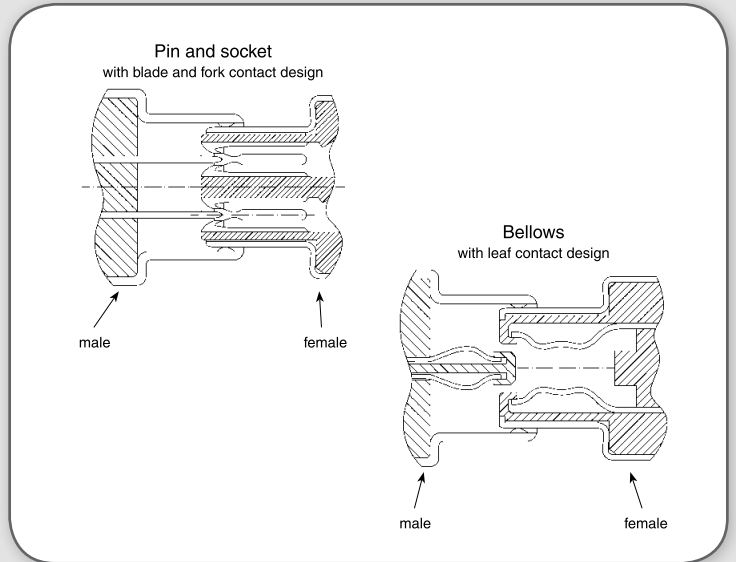
har-mik

IDC cable connectors for round discrete wire cables and flat cables



Two contact styles

- Pin and socket
- Bellows



for economical and reliable connections

A comprehensive range of high density interface connectors based on two mating design concepts:

- Blade and fork contact in the Pin/Socket range.
- Leaf contact in the Bellows range.

Available in a various number of contacts with options for secure locking of mated connectors in accordance with the following international standards:

harmik

- Small Computer System Interface
SCSI-2
SCSI-2 wide
SCSI-3
- Intelligent Peripheral Interface
IPI
- High Performance Peripheral Interface
HIPPI
- High Speed Serial Interface
HSSI
- Media Independent Interface
MII
- Bi-directional Parallel Interface
IEEE – 1284-C
- EIA – TIA
232-E
- IEC
61 076-3-100
for bellows connectors
- IEC
61 076-3-101
for pin and socket connectors

UL recognised

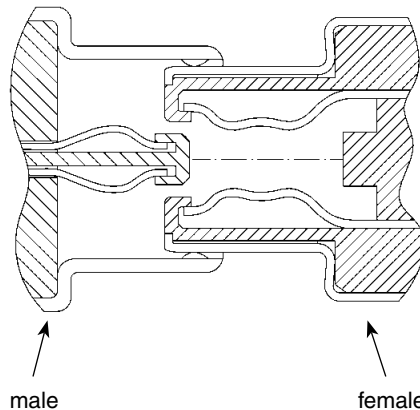
For customer specific applications we can design and manufacture solutions to match your requirement.

Sales department
HARTING components

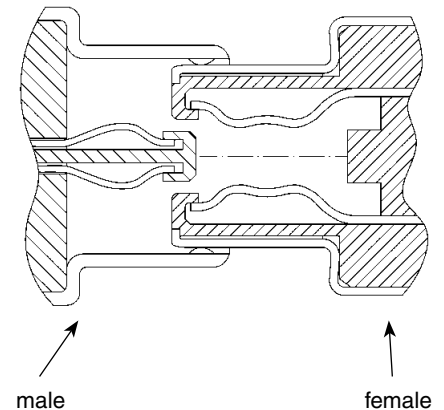


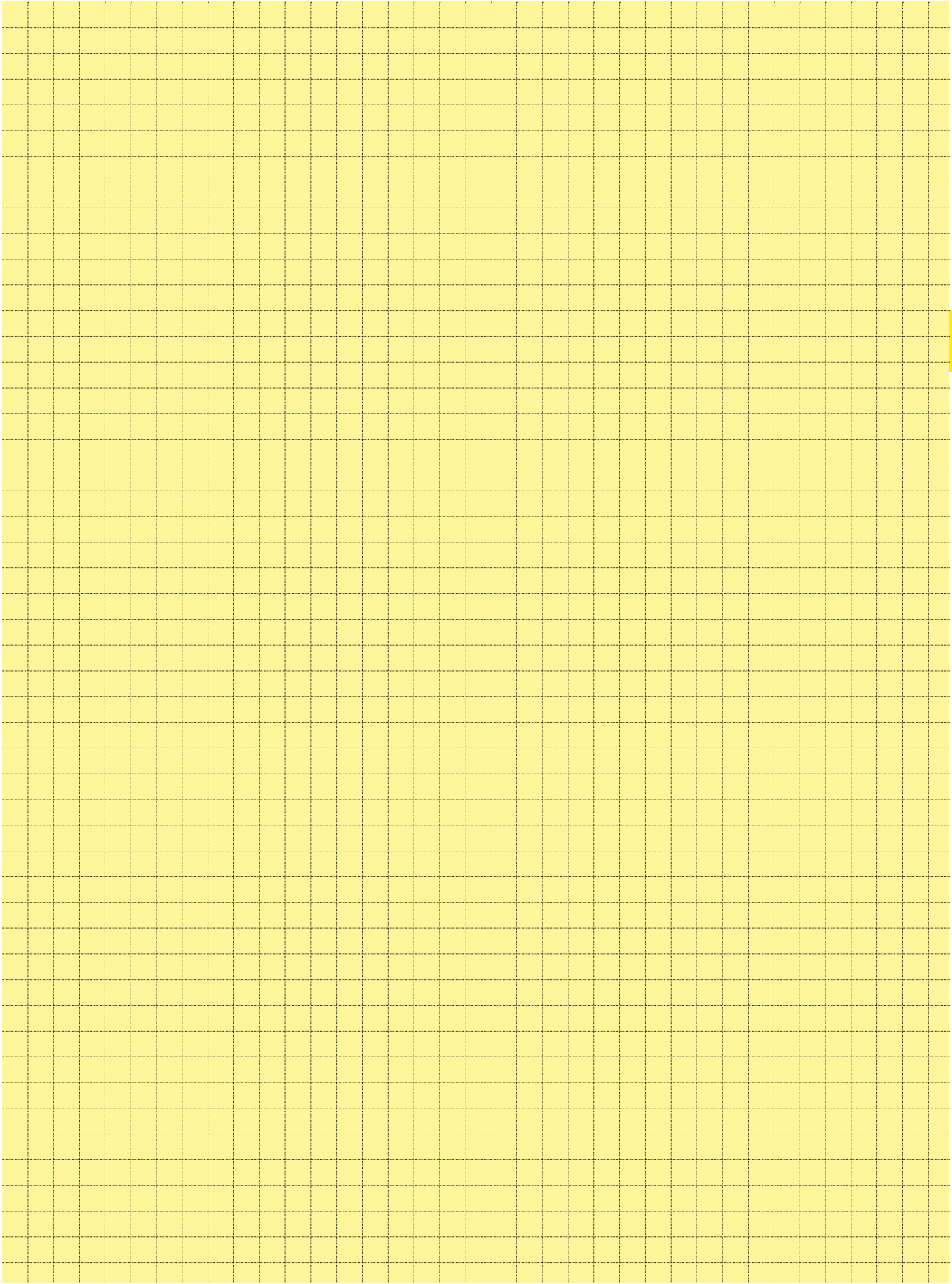
Certified according to EN ISO 9001
in design/development, production,
installation and servicing

Bellows
with leaf contact design



Pin and socket
with blade and fork contact design



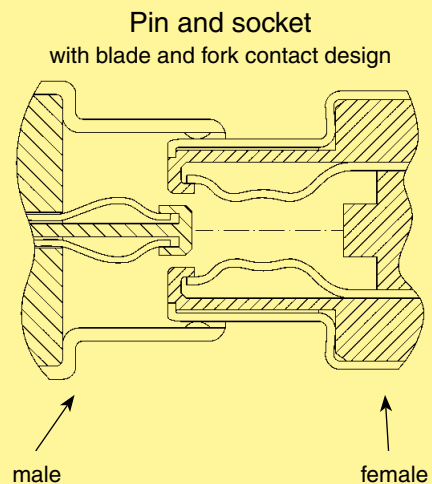


I/O connectors

Number of contacts	20, 26, 50, 68, 100
Pitch	1.27 mm
Working current	1 A
Working voltage	240 V ~
Test voltage $U_{r.m.s.}$	750 V
Contact resistance	$\leq 30 \text{ m}\Omega$
Insulation resistance	$\geq 10^3 \text{ M}\Omega$
Temperature range	-55 °C ... +105 °C
during SMC reflow soldering	max. 240 °C for 60 s (only for SMC compatible connectors)
Terminations	
Solder pins	Straight for pcb holes min. $\varnothing 0.74 \text{ mm}$ Angled 90° for pcb holes min. $\varnothing 0.74 \text{ mm}$
Insulation displacement	Discrete wire AWG 28 to AWG 30 max. section: 0.089 mm ² min. section: 0.050 mm ² Insulation \varnothing min. 0.50 mm \varnothing max. 0.90 mm Flat cable AWG 30 pitch 0.635 mm
Materials	
Moulding	Thermoplastic resin glass-fibre filled UL 94-V0
Contacts	Copper alloy
Contact surface	
Contact zone	S4 = 0.76 μm (30 μinch) Au or PdNi equivalent
Metal shell	Die cast zamac or stamped steel, nickel-plated

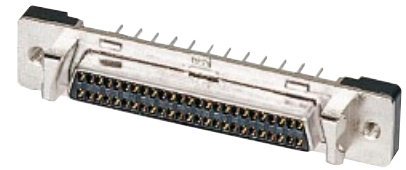
Press-in versions

Insertion process	Flat rock
Maximum press-in force per contact	100 N
Minimum push out force per contact	15 N
Number of repairs	2
Diameter of pcb plated through holes	$\varnothing 0.6^{+0.07}_{-0.05} \text{ mm}$
Recommended pcb holes for press-in process	Hole : $\varnothing 0.71 - 0.74 \text{ mm}$ Cu : 30 – 60 μm Sn : 5 – 20 μm
Pcb thickness	1.6 – 3.2 mm



Number of contacts

20-68

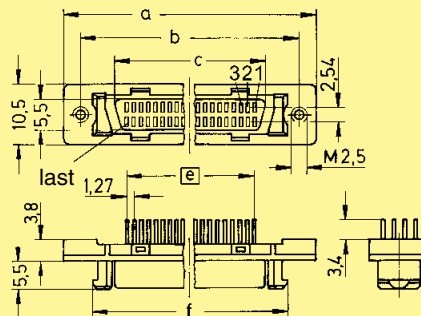


Female connectors, straight

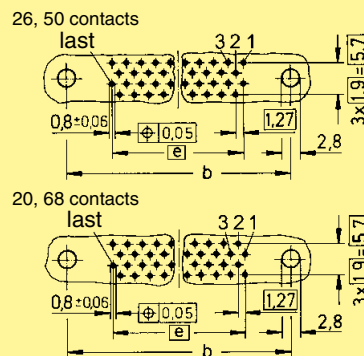
Identification	No. of contacts	Part No.
Female connectors with straight solder pins	20	60 01 020 5102
	26	60 01 026 5102
	50	60 01 050 5102
	68	60 01 068 5102

Dimensions

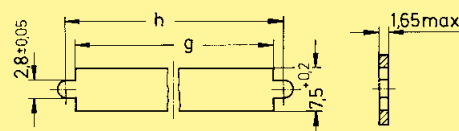
	a	b _{±0.1}	c	e	f	g	h
20	33.40	27.43	15.60	9 x 1.27 = 11.43	23.24	23.70	27.45
26	37.21	31.24	19.41	12 x 1.27 = 15.24	27.05	27.50	31.25
50	52.45	46.48	34.65	24 x 1.27 = 30.48	42.29	42.80	46.50
68	63.88	57.91	46.08	33 x 1.27 = 41.91	53.72	54.20	57.90



Board drillings



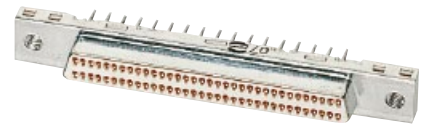
Panel cut out



Dimensions in mm

Number of contacts

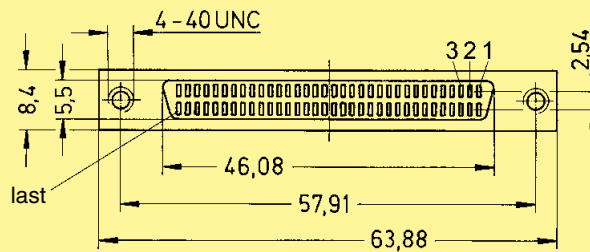
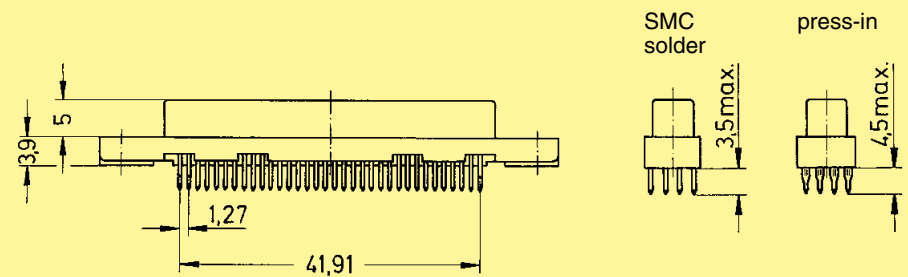
68



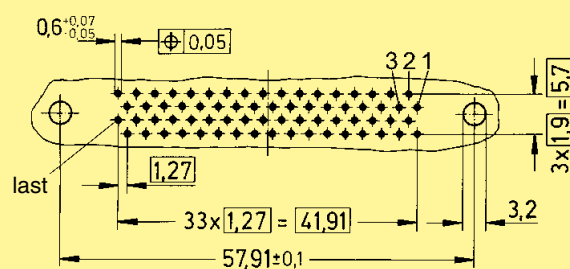
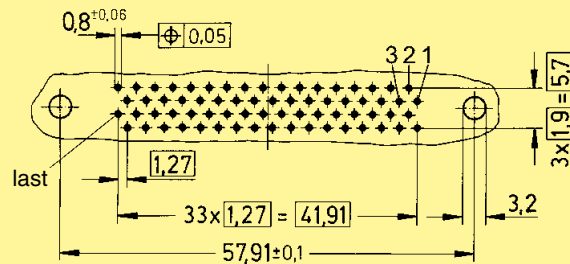
Female connectors, straight

Identification	No. of contacts	Part No.
SMC female connector with straight solder pins	68	60 02 068 5120
Female connector with straight press-in pins	68	60 02 068 5322

Dimensions



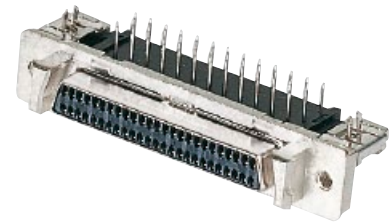
Board drillings
(Components side)



Dimensions in mm

Number of contacts

20–68

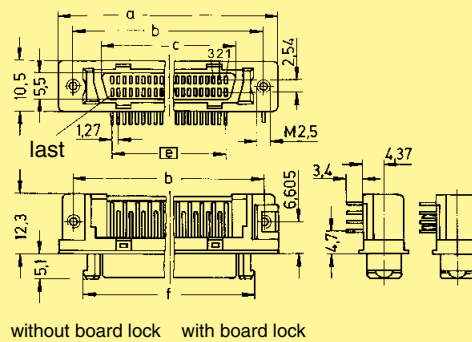


Female connectors, angled

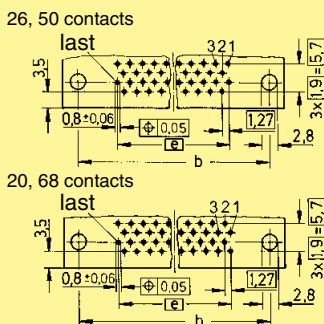
Identification	No. of contacts	Part No.									
Female connectors with angled solder pins	20	60 01 020 51 ...									
	26	60 01 026 51 ...									
	50	60 01 050 51 ...									
	68	60 01 068 51 ...									
<table border="1"> <tr> <td>Panel fixing</td> <td>Board fixing</td> <td></td> </tr> <tr> <td>M 2.5</td> <td>M 2.5</td> <td>32</td> </tr> <tr> <td>M 2.5</td> <td>Board lock</td> <td>40</td> </tr> </table>	Panel fixing	Board fixing		M 2.5	M 2.5	32	M 2.5	Board lock	40		
Panel fixing	Board fixing										
M 2.5	M 2.5	32									
M 2.5	Board lock	40									

Dimensions

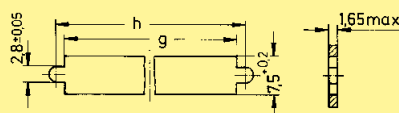
	a	b _{±0.1}	c	e	f	g	h
20	33.40	27.40	15.60	9 x 1.27 = 11.43	23.24	23.70	27.45
26	37.21	31.24	19.41	12 x 1.27 = 15.24	27.05	27.50	31.25
50	52.45	46.45	34.65	24 x 1.27 = 30.48	42.29	42.80	46.50
68	63.88	57.88	46.08	33 x 1.27 = 41.91	53.72	54.20	57.90



Board drillings



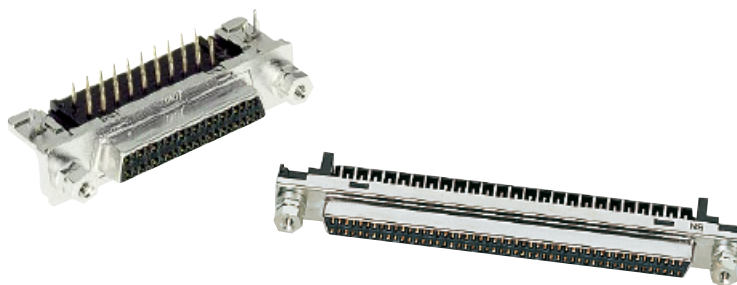
Panel cut out



Dimensions in mm

Number of contacts

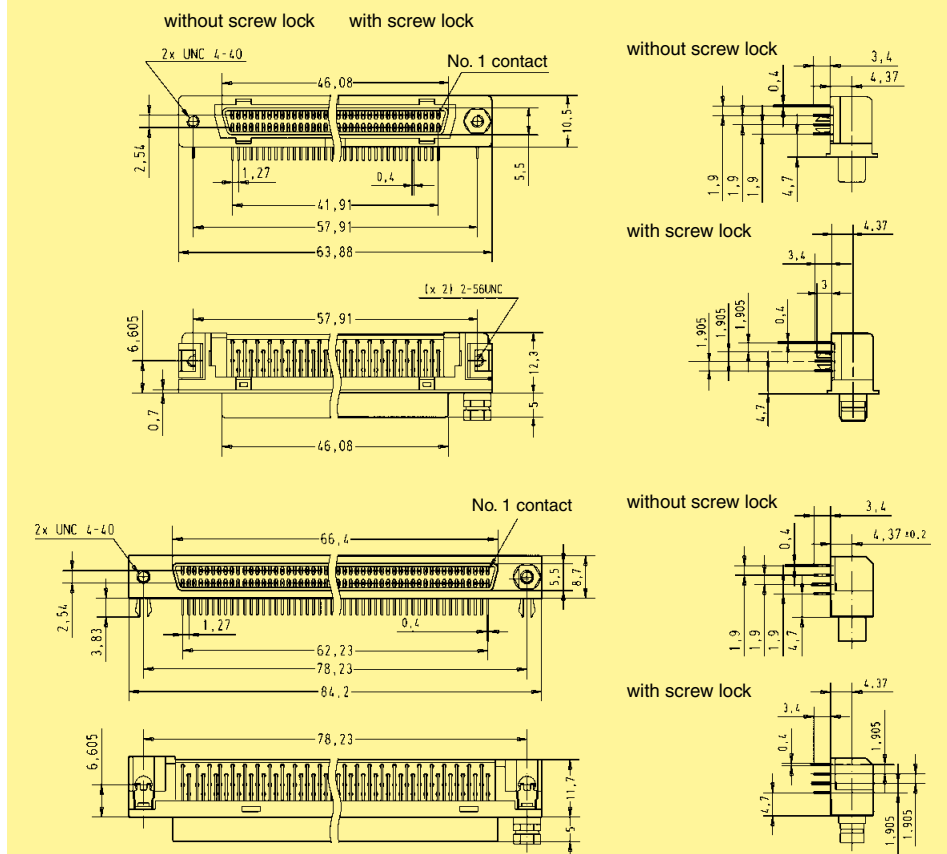
68-100



Female connectors, angled

Identification	No. of contacts	Part No.
Female connectors with angled solder pins	68	60 02 068 51 ...
	100	60 02 100 51 ...
With female screw lock	41	
Without female screw lock	50	

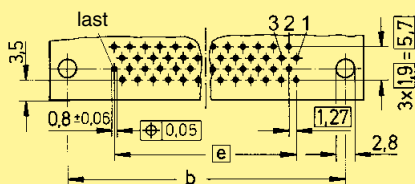
Dimensions



Board drillings

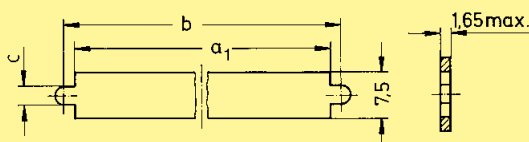
(Components side)

68 contacts, 100 contacts



	a ₁	b	c	e
68	54.22	57.91	4.4	33 x 1.27 = 41.91
100	74.53	78.23	2.8	49 x 1.27 = 62.23

Panel cut out



Dimensions in mm

Number of contacts

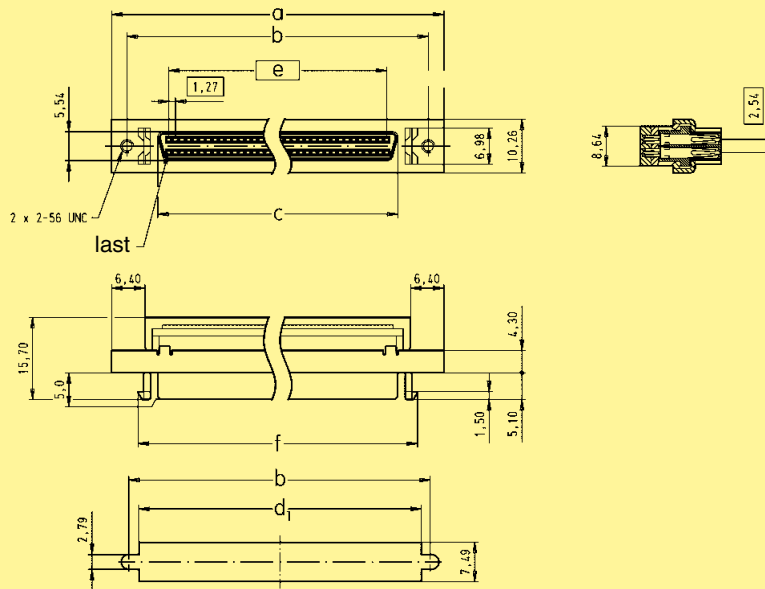
50-68



Female connectors for IDC flat cable, straight

Identification	No. of contacts	Part No.	
		with latch system	with screw lock system
Female panel connectors with insulation displacement termination for IDC flat cable pitch 0.635 mm AWG 30	50	60 04 050 5343	60 04 050 5344
	68	60 04 068 5343	60 04 068 5344

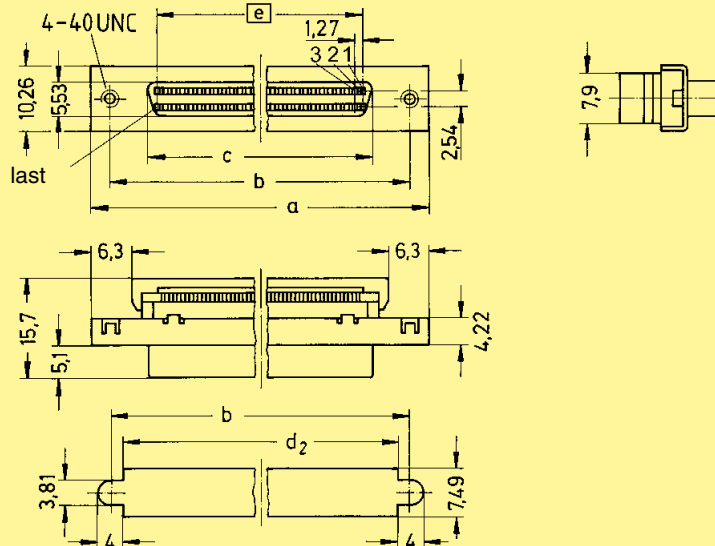
Dimensions for connectors with latch system



	a	b	c	d ₁	d ₂	e	f
50	52.45	46.48	34.70	42.80	42.30	30.48	42.30
68	63.88	57.91	46.13	54.23	53.72	41.91	53.72

Panel cut out

Dimensions for connectors with screw lock system

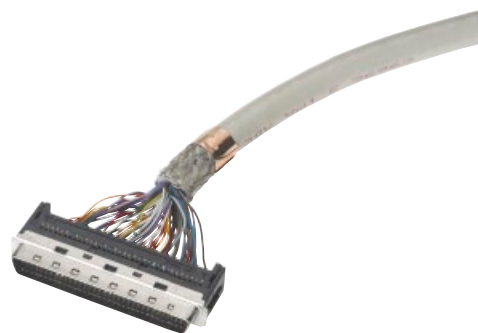


Panel cut out

Dimensions in mm

Number of contacts

20–100



Male connectors for IDC discrete wire, straight

Identification	No. of contacts	Part No.
Male connectors with insulation displacement termination for discrete wire AWG 28/30	20	60 03 020 52 ...
	26	60 03 026 52 ...
	50	60 03 050 52 ...
	68	60 03 068 52 ...
	100	60 03 100 52 ...
Insulation diameter (mm)		
	Ø = 0.50–0.65	00
	Ø = 0.50–0.75	05
	Ø = 0.65–0.80	10
	Ø = 0.75–0.90	15
	Ø = 0.80–0.88	20

A manual for the *har-mik*® connector and cable assembly is available in our online catalogue *HARKIS*® or on demand at your local HARTING representative.

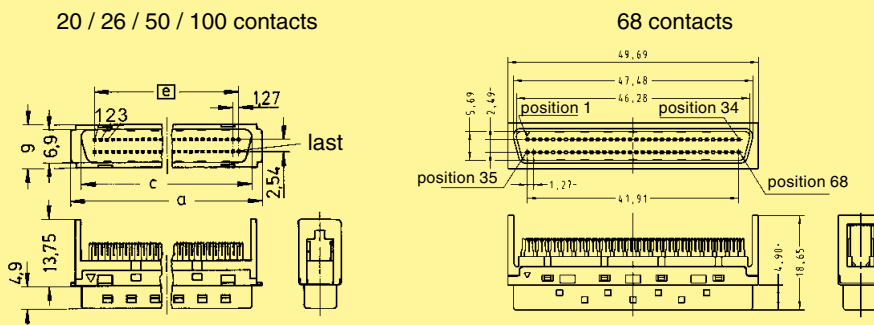


Available sizes

	Part No.	Ø	20	26	50	68	100
Male	60 03 ... 5200	0.50–0.65	●	●	●		
	60 03 ... 5205	0.50–0.75				●	
	60 03 ... 5210	0.65–0.80	●		●		●
	60 03 ... 5215	0.75–0.90				●	
	60 03 ... 5220	0.80–0.88	●	●	●		

● = Available sizes

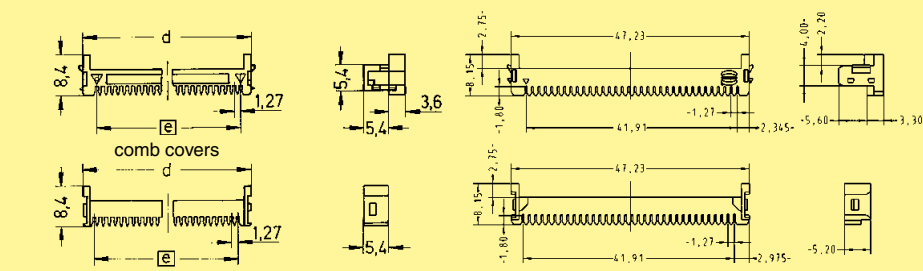
Dimensions



	a	c	d	e
20	21.25	17.00	16.75	11.43
26	25.06	20.81	20.56	15.24
50	40.30	36.05	35.80	30.48
100	72.05	67.80	67.55	62.23

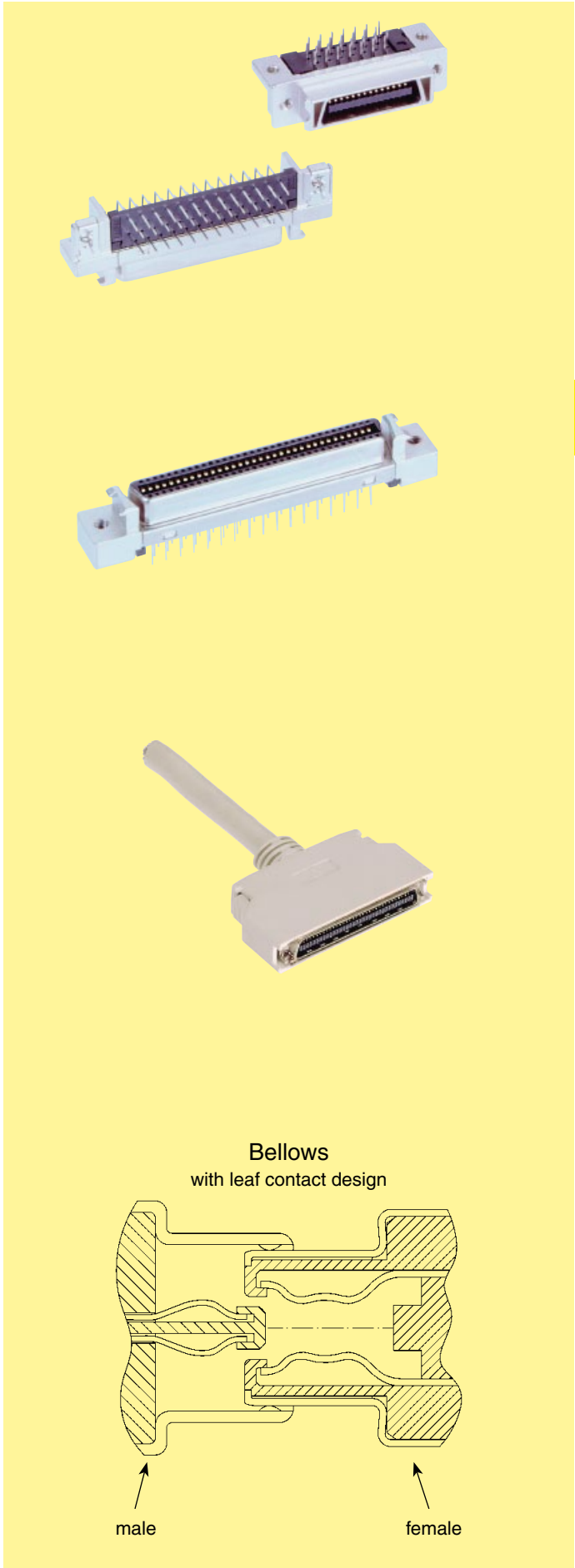
Comb cover

(delivered with connectors)



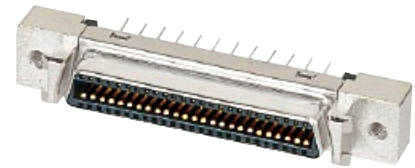
Dimensions in mm

Number of contacts	14, 20, 26, 36, 50, 68
Pitch	1.27 mm
Working current	1 A
Working voltage	240 V ~
Test voltage $U_{r.m.s.}$	750 V (standard) 500 V (SMC)
Contact resistance	$\leq 40 \text{ m}\Omega$ (standard) $\leq 45 \text{ m}\Omega$ (SMC)
Insulation resistance	$\geq 10^3 \text{ M}\Omega$
Temperature range during SMC reflow soldering	-55 °C ... +105 °C max. 240 °C for 60 s
Terminations	
Solder pins	Straight for pcb holes min. $\varnothing 0.74 \text{ mm}$ Angled 90° for pcb holes min. $\varnothing 0.74 \text{ mm}$ (wave soldering) min. $\varnothing 0.62 \text{ mm}$ (SMC)
Insulation displacement	AWG 28 to AWG 30 max. section: 0.089 mm^2 min. section: 0.050 mm^2 Insulation \varnothing min. 0.50 mm \varnothing max. 0.90 mm
Materials	
Moulding	Thermoplastic resin glass-fibre filled UL 94-V0
Contacts	Copper alloy
Contact surface	
Contact zone	S4 = $0.76 \mu\text{m}$ (30 μinch) Au or PdNi equivalent
Metal shell	Die cast zamac or stamped steel, nickel-plated



Number of contacts

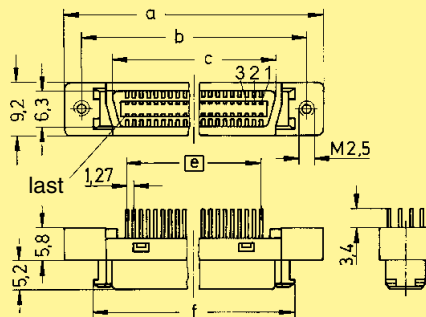
26-68



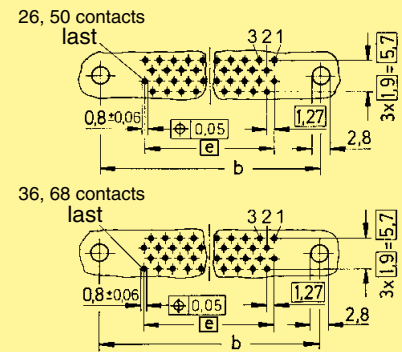
Female connectors, straight

Identification	No. of contacts	Part No.
Female connectors with straight solder pins	26	60 11 026 5102
	36	60 11 036 5102
	50	60 11 050 5102
	68	60 11 068 5102

Dimensions

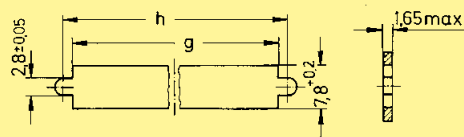


Board drillings



	a	b ± 0.1	c	e	f	g	h
26	37.16	31.26	20.26	12 x 1.27 = 15.24	27.11	27.50	31.25
36	43.51	37.61	26.61	17 x 1.27 = 21.59	33.46	33.90	37.60
50	52.40	46.50	35.50	24 x 1.27 = 30.48	42.35	42.80	46.50
68	63.83	57.93	46.93	33 x 1.27 = 41.91	53.78	54.20	57.90

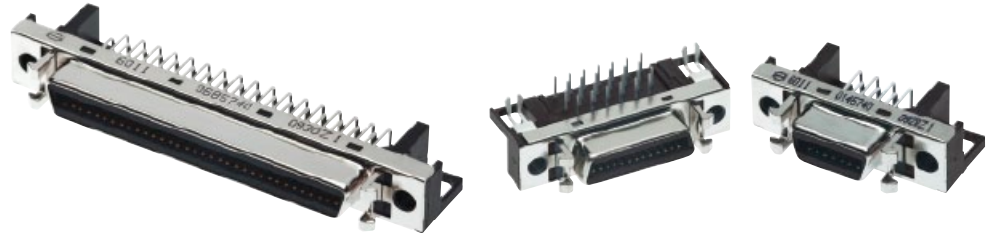
Panel cut out



Dimensions in mm

Number of contacts

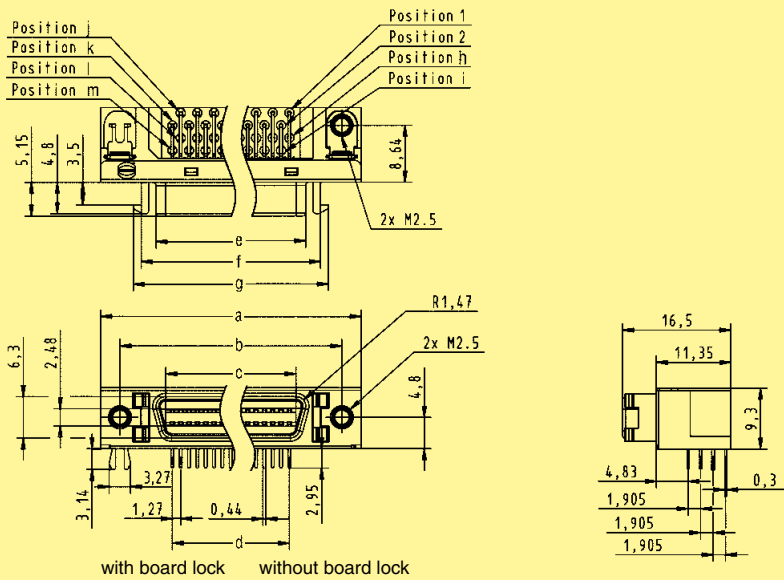
14-68



SMC female connectors, angled

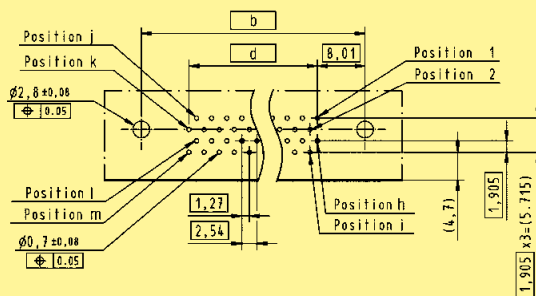
Identification	No. of contacts	for one reel (300 pieces)		Part No.	standard tray packaging
SMC female connectors with angled solder pins	14	60 11 014 57	.. 710	60 11 014 57	..
	20	60 11 020 57	.. 710	60 11 020 57	..
	26	60 11 026 57	.. 710	60 11 026 57	..
	36	60 11 036 57	.. 710	60 11 036 57	..
	50	60 11 050 57	.. 710	60 11 050 57	..
	68	60 11 068 57	.. 710	60 11 068 57	..
Without board lock	32				
With board lock	40				

Dimensions



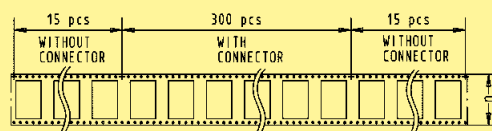
	a	b	c	d	e	f	g	h	i	j	k	l	m	n
14	29.54	23.64	9.62	7.62	12.62	17.14	19.54	8	9	7	6	14	13	44.0
20	33.35	27.45	13.43	11.43	16.43	20.95	23.35	11	12	9	10	19	20	56.5
26	37.16	31.26	17.24	15.24	20.24	24.76	27.16	14	15	13	12	26	25	56.0
36	43.51	37.61	23.59	21.59	26.59	31.11	33.51	19	20	17	18	35	36	56.0
50	52.40	46.50	32.48	30.48	35.48	40.00	42.40	26	27	25	24	50	49	72.5
68	63.83	57.93	43.91	41.91	46.91	51.43	53.83	35	36	33	34	67	68	88.5

Board drillings (Components side)



Packaging

(1 reel = 300 pieces)
Reel diameter = 380 mm



Dimensions in mm

Number of contacts

14-68



Male connectors for IDC discrete wire, straight

Identification	No. of contacts	Part No.
Male connectors with insulation displacement termination for discrete wire AWG 28/30		Male connector
Insulation diameter (mm)		
Ø = 0.50-0.65	00	60 13 014 52 ...
Ø = 0.50-0.75	05	60 13 020 52 ...
Ø = 0.75-0.90	15	60 13 026 52 ...
		60 13 036 52 ...
		60 13 050 52 ...
		60 13 068 52 ...

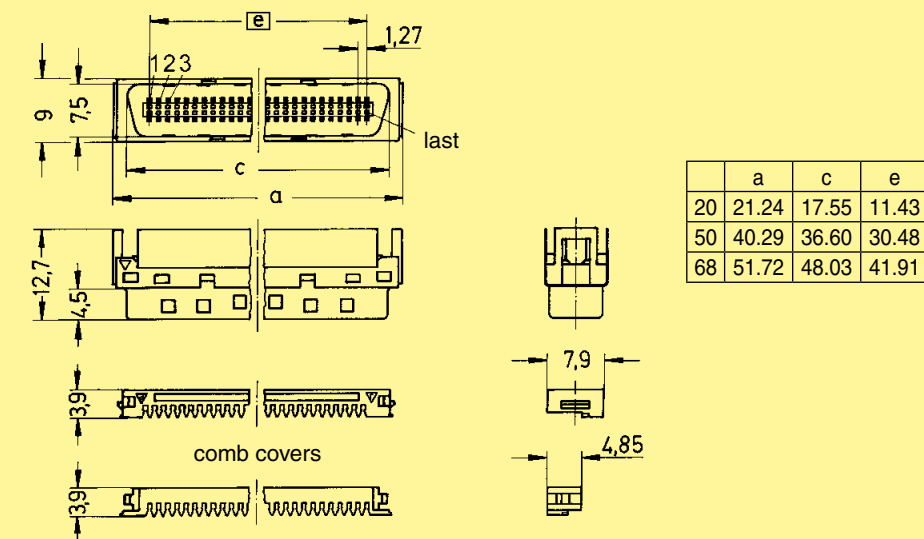
Available sizes

	Part No.	Ø	14	20	26	36	50	68
Male	60 13 ... 5200	0.50-0.65		●			●	●
	60 13 ... 5205	0.50-0.75	●		●	●		
	60 13 ... 5215	0.75-0.90	●		●	●		

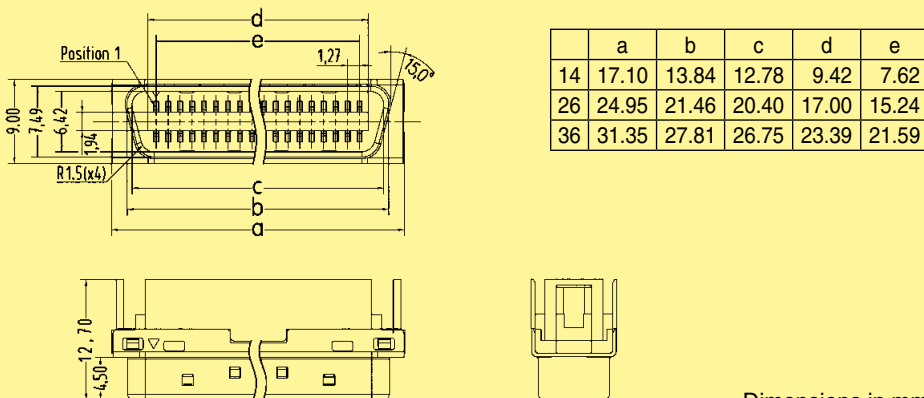
● = Available sizes

Dimensions for male connectors

20 / 50 / 68 poles



14 / 26 / 36 poles



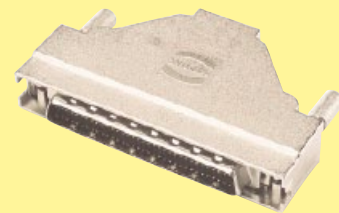
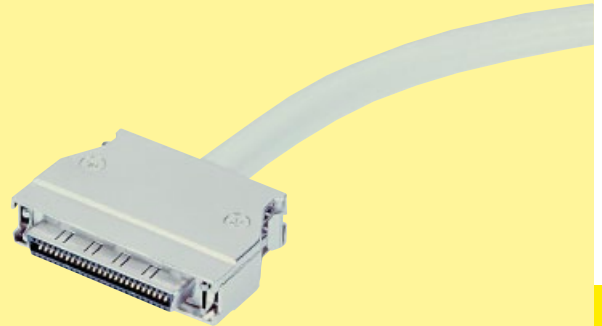
Dimensions in mm



A manual for the har-mik® connector and cable assembly is available in our online catalogue HARKIS® or on demand at your local HARTING representative.

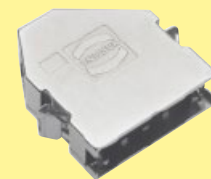
Hoods for pin and socket male connectors

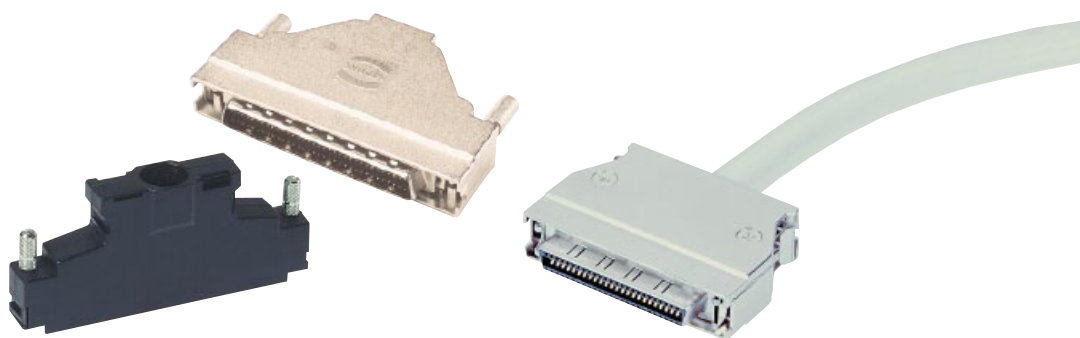
Number of contacts	20, 26, 36, 50, 68, 100
Surface	Die cast zamac, nickel-plated
	Thermoplastic resin, nickel-plated, steel insert



Hoods for bellows male connectors

Number of contacts	14, 20, 26, 36, 50, 68
Surface	Die cast zamac, nickel-plated
	Thermoplastic resin, nickel-plated, steel insert



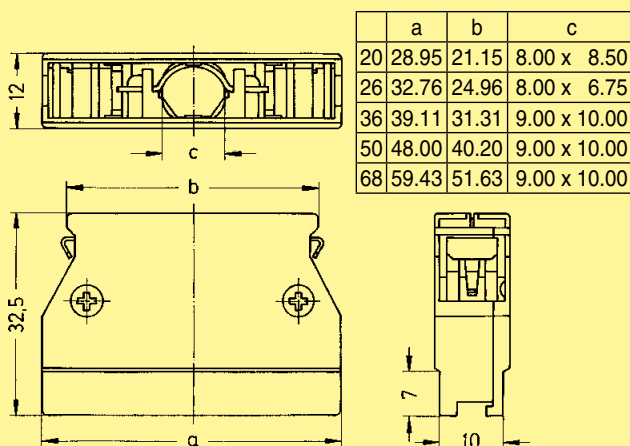


Top entry hoods

Identification No. of contacts Part No. Drawing Dimensions in mm

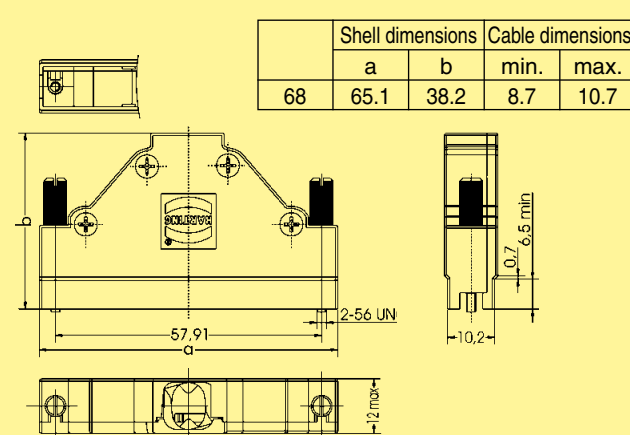
Metal hood
Large cable entry

20	60 03 020 0255
26	60 03 026 0255
36	60 03 036 0255
50	60 03 050 0255
68	60 03 068 0255



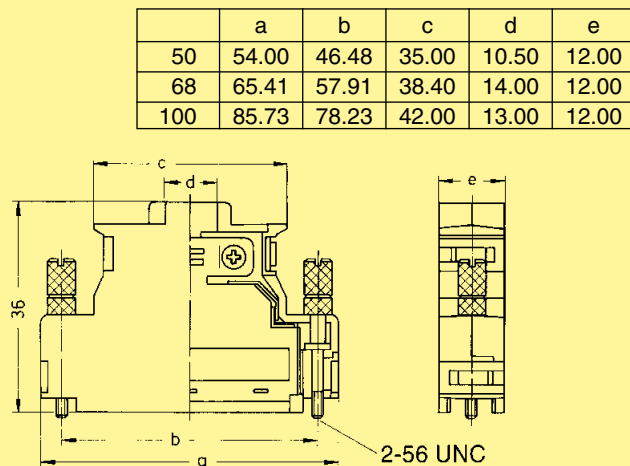
Metal hood
Top cable entry

68	60 03 068 0145
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Plastic hood
with internal screen¹⁾

50	60 03 050 0143
68	60 03 068 0143
100	60 03 100 0143



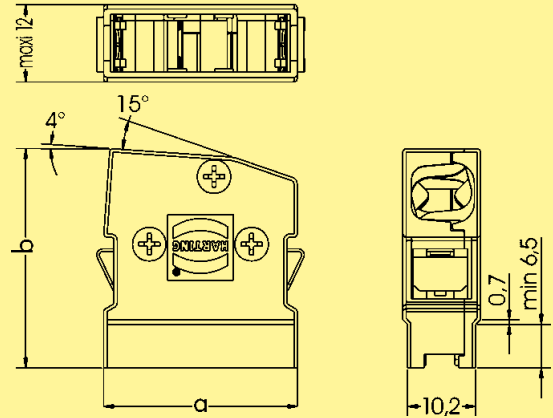


Side entry hoods

Identification No. of contacts Part No. Drawing Dimensions in mm

Metal hood
Cable side entry

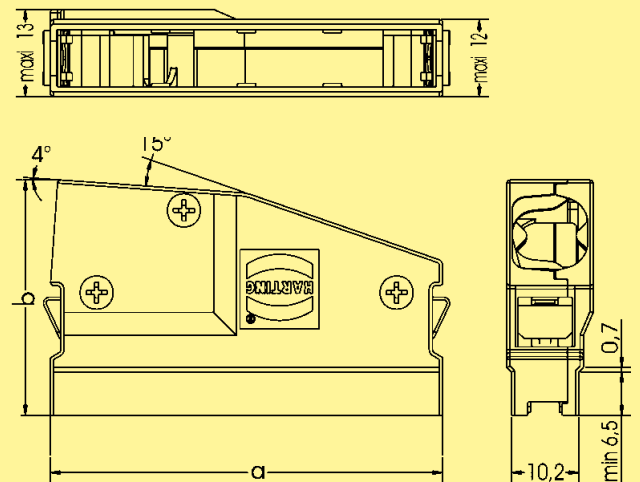
- 20 60 03 020 0555
- 26 60 03 026 0555
- 50 60 03 050 0555
- 68 60 03 068 0555



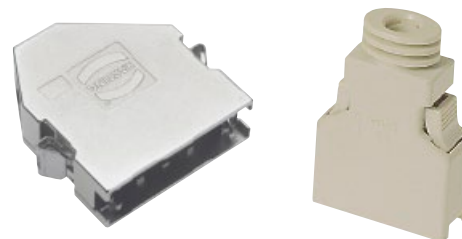
	Shell dimensions		Cable dimensions	
	a	b	min.	max.
20	29.0	32.9	6.2	8.0
26	32.8	32.9	6.5	8.5
50	48.0	35.6	8.3	10.3
68	59.4	35.6	8.7	10.7

Large cable side entry

- 68 60 03 068 0655



	Shell dimensions		Cable dimensions	
	a	b	min.	max.
68	59.4	35.6	10.0	12.0

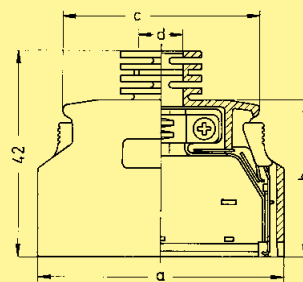


Top or side entry hoods

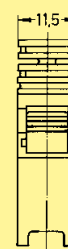
Identification	No. of contacts	Part No.	Drawing	Dimensions in mm
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Plastic hood with internal screen

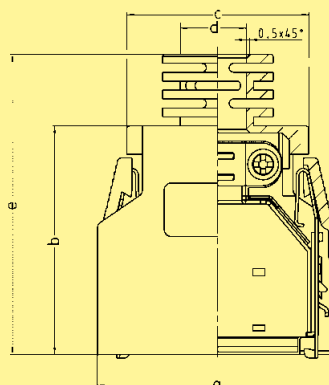
14	60 13 014 0153 351 ¹⁾
20	60 13 020 0153 ²⁾
26	60 13 026 0153 351 ¹⁾
36	60 13 036 0153 351 ¹⁾
50	60 13 050 0153 ²⁾
68	60 13 068 0153 ²⁾



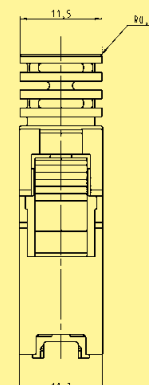
	a	b	c	d
20	29.65	34.50	19.95	6.80
50	48.70	32.00	39.00	8.70
68	60.13	32.00	50.43	9.10



20 / 50 / 68 poles



	a	b	c	d	e
14	26.00	36.00	21.00	7.20	42.50
26	33.70	32.00	25.50	8.00	42.00
36	40.05	32.00	31.80	9.20	42.00



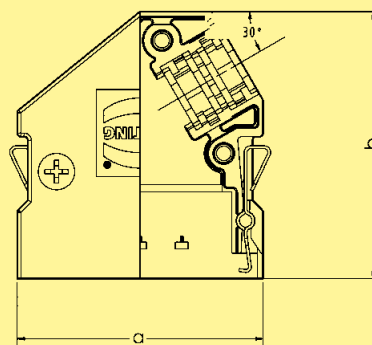
14 / 26 / 36 poles

Metal hood

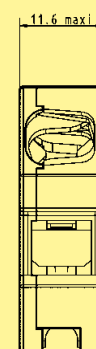
Cable side entry

Only compatible with IDC connector
60 13 026 5200

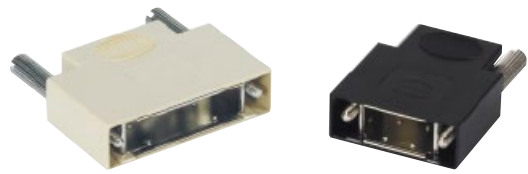
26	60 13 026 0555
----	----------------



	Shell dimensions		Cable dimensions	
	a	b	min.	max.
26	33.8	36.8	6.5	8.5



¹⁾ Temperature range: - 55 °C ... + 85 °C
²⁾ Temperature range: - 55 °C ... + 60 °C



Top entry hoods

Identification No. of contacts Part No. Drawing Dimensions in mm

Plastic hood with internal screen and knurled screws

Colour: Beige

14

60 13 014 0146 351¹⁾

26

60 13 026 0146 351¹⁾

36

60 13 036 0146 351¹⁾

Colour: Black

14

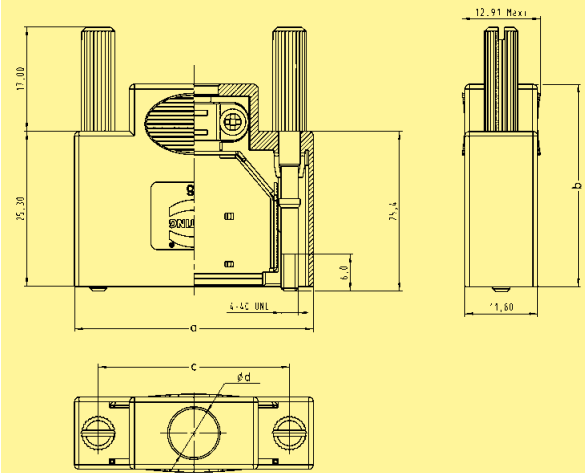
60 13 014 0146 110¹⁾

26

60 13 026 0146 110¹⁾

36

60 13 036 0146 110¹⁾



	a	b	c	d
14	31.40	37.00	23.64	7.2
26	39.00	33.00	31.26	8.0
36	45.40	33.00	37.61	9.2

¹⁾ Temperature range: - 55 °C ... + 85 °C



Female screw lock

Identification	Part No.	Drawing	Dimensions in mm
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<p>Screw lock Thread: M 2.5 / 4-40 UNC Height: 4.6 mm</p>	<p>60 01 000 9030</p>		
--	-----------------------	--	--

<p>Screw lock Thread: M 2.5 / 2-56 UNC Height: 2.9 mm</p>	<p>60 01 000 9013</p>		
--	-----------------------	--	--

<p>Screw lock Thread: 4-40 UNC / 4-40 UNC Height: 3.99 mm</p>	<p>60 01 000 9018</p>		
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<p>Screw lock Thread: 4-40 UNC / 2-56 UNC Height: 3.99 mm</p>	<p>60 01 000 9019</p>		
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<p>Screw lock Thread: 4-40 UNC / 2-56 UNC Height: 5.5 mm</p>	<p>60 01 000 9020</p>		
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<p>Screw lock Thread: 4-40 UNC / 4-40 UNC Height: 5.5 mm</p>	<p>60 01 000 9021</p>		
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harmik

for economical and reliable connections

A comprehensive range of high density intra cabinet connectors based on blade and fork contacts.

Available in a various number of contacts according to the following international standards and applications:

- Small Computer System Interface
SCSI-2
SCSI-2 wide
SCSI-3

- Internal Bus extension through
“Daisy chain” inter-linking via
0.635 mm pitch flat cable.
The 4-point design of the IDC
contact provides accurate and
reliable termination even with
teflon cable.

UL recognised

For customer specific applications we can design and manufacture solutions to match your requirement.

Sales department
HARTING components



Certified according to EN ISO 9001
in design/development, production,
installation and servicing

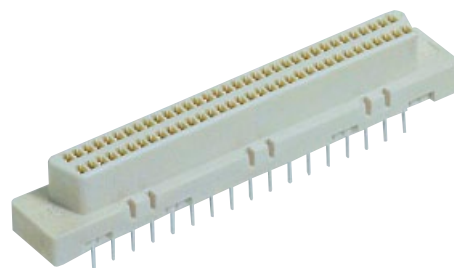
Intra cabinet connectors

Pitch	1.27 mm
Working current	
pcb connector	1 A
Flat cable connector	0.5 A
Working voltage	
pcb connector	240 V ~
Flat cable connector	100 V ~
Test voltage $U_{r.m.s.}$	
pcb connector	750 V
Flat cable connector	500 V
Contact resistance	$\leq 25 \text{ m}\Omega$
Insulation resistance	$\geq 10^3 \text{ M}\Omega$
Temperature range	-55 °C ... +105 °C
during SMC reflow soldering	max. 240 °C for 60 s
Terminations	
Solder pins	Straight for pcb holes min. $\varnothing 0.74 \text{ mm}$
Insulation displacement	Flat cable AWG 30 pitch 0.635 mm
Materials	
Moulding	Thermoplastic resin glass-fibre filled UL 94-V0
Contacts	
pcb connector	Copper alloy
Flat cable connector	Nickel
Contact surface	
Contact zone	S4 = 0.76 μm (30 μinch) Au or PdNi equivalent

Press-in versions	
Insertion process	Flat rock
Maximum press-in force per contact	100 N
Minimum push out force per contact	15 N
Number of repairs	2
Diameter of pcb plated through holes	$\varnothing 0.6^{+0.07}_{-0.05} \text{ mm}$
Recommended pcb holes for press-in process	Hole : $\varnothing 0.71 - 0.74 \text{ mm}$ Cu : 30 – 60 μm Sn : 5 – 20 μm
Pcb thickness	1.6 – 3.2 mm

Number of contacts

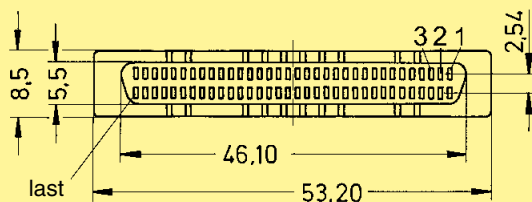
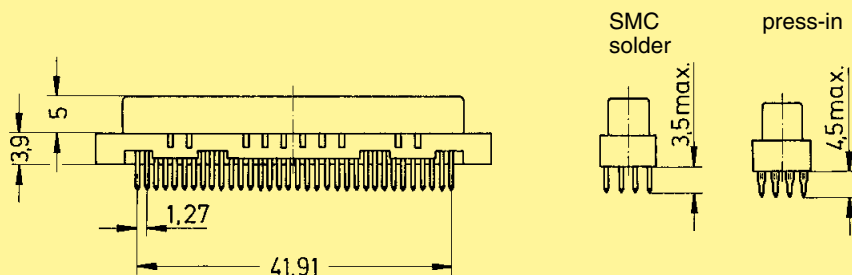
68



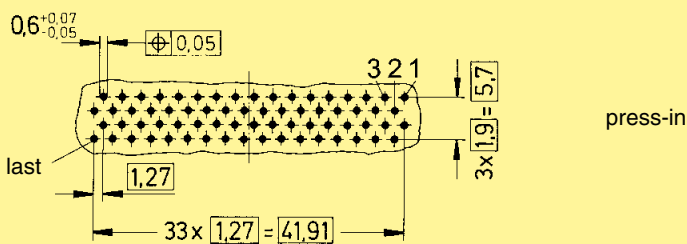
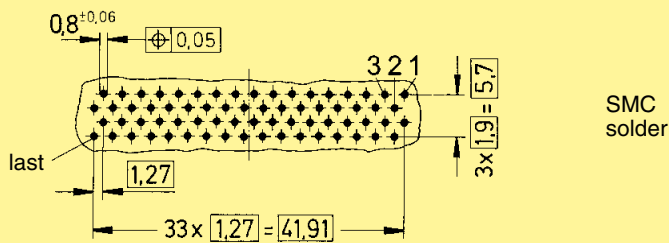
Connectors with straight pins

Identification	No. of contacts	Part No.
SMC female connector with straight solder pins	68	60 05 068 5100
Female connector with straight press-in pins	68	60 05 068 5322

Dimensions



Board drillings (Components side)



Dimensions in mm

har-mik

Number of contacts

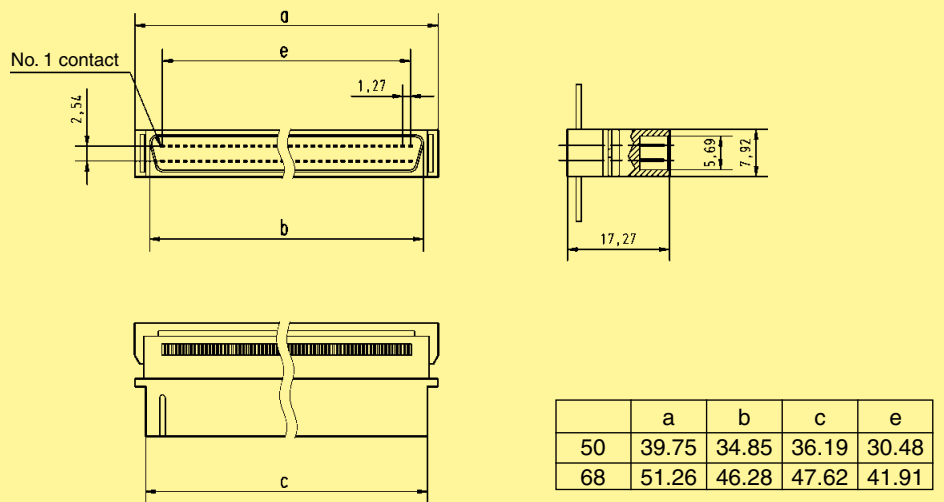
50–68



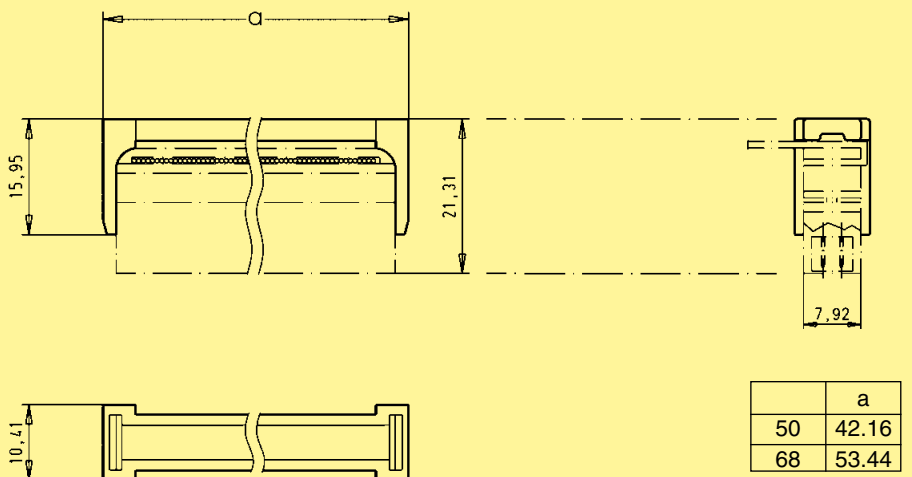
Connectors with IDC termination

Identification	No. of contacts	Part No.	
Male connectors with insulation displacement termination for IDC flat cable pitch 0.635 mm AWG 30 Strain relief order separately		Male connector	Strain relief
	50	60 06 050 5440	60 06 050 9001
	68	60 06 068 5440	60 06 068 9001

Dimensions



Strain relief





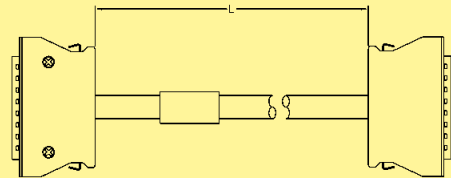
Cable assemblies

Identification	Part No.	Drawing	Dimensions in mm
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Cable assembly *har-mik*®
pin and socket, 68-pole

Hood: metal hood with top entry
Cable: 34 twisted pairs, AWG 28, shielded, PVC
Wiring: 1:1

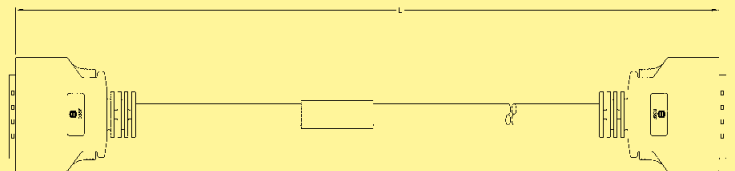
Length: L = 0.5 m	33 60 214 5000 102
L = 1.0 m	33 60 213 1000 103
L = 2.0 m	33 60 213 2000 104
L = 5.0 m	33 60 213 5000 105
L = 10.0 m	33 60 212 1000 106
L = 15.0 m	33 60 212 1500 107
L = 20.0 m	33 60 212 2000 108



Cable assembly *har-mik*®
bellows, 36-pole

Hood: shielded plastic hood with top entry
Cable: 18 twisted pairs, AWG 28, shielded, PVC
Wiring: 1:1

Length: L = 0.5 m	33 60 214 5000 088
L = 1.0 m	33 60 211 0010 089
L = 2.0 m	33 60 211 0020 090
L = 5.0 m	33 60 211 0050 091
L = 10.0 m	33 60 211 0100 092
L = 15.0 m	33 60 211 0150 093
L = 20.0 m	33 60 211 0200 094





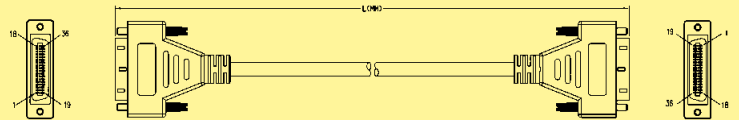
Cable assemblies

Identification	Part No.	Drawing	Dimensions in mm
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Cable assembly *har-mik*® bellows, 36-pole, male

Hood: overmoulded with top entry
 Cable: 18 twisted pairs, AWG 28, shielded, PVC
 Wiring: 1:1

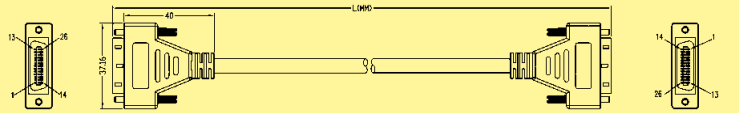
Length: L = 0.5 m	33 60 224 5000 191
L = 1.0 m	33 60 223 1000 192
L = 1.5 m	33 60 223 1500 193
L = 2.0 m	33 60 223 2000 194
L = 5.0 m	33 60 223 5000 195



Cable assembly *har-mik*® bellows, 26-pole, male

Hood: overmoulded with top entry
 Cable: 13 twisted pairs, AWG 28, shielded, PVC
 Wiring: 1:1

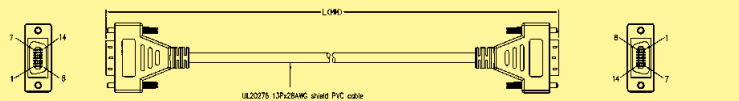
Length: L = 0.5 m	33 60 224 5000 180
L = 1.0 m	33 60 223 1000 181
L = 1.5 m	33 60 223 1500 182
L = 2.0 m	33 60 223 2000 183
L = 5.0 m	33 60 223 5000 184



Cable assembly *har-mik*® bellows, 14-pole, male

Hood: overmoulded with top entry
 Cable: 7 twisted pairs, AWG 28, shielded, PVC
 Wiring: 1:1

Length: L = 0.5 m	33 60 224 5000 186
L = 1.0 m	33 60 223 1000 187
L = 1.5 m	33 60 223 1500 188
L = 2.0 m	33 60 223 2000 189
L = 5.0 m	33 60 223 5000 190



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Cables for insulation displacement termination

Identification	No. of pairs	Standard version	Part No. <i>Halogen free version with screened pairs</i>
Twisted pair cable with braid shield AWG 28 AWG 30 Length per reel: 100 m	5	60 90 005 6010	60 90 005 6009
	10	60 90 010 6010	
	13	60 90 013 6010	
	18	60 90 018 6010	
	25	60 90 025 6010	
	34	60 90 034 6010	
	50	60 90 050 6010	

Drawing

No. of pairs	Outside diameter	
	Nominal	
5	5.4	
10	6.6	
13	6.8	
18	7.5	
25	8.5	
34	8.9	
50	11.1	

No. of pairs	Outside diameter
5	5.5 ± 0.3

Dimensions in mm

Technical characteristics	Standard version	<i>Halogen free version with screened pairs</i>
Number of pairs	5, 10, 13, 18, 25, 34, 50	5
Voltage rating	30 V (style UL 2789)	100 V
Maximum conductor resistance (20 °C)	233 Ω/km	350 Ω/km
Minimum insulation resistance (20 °C)	1 MΩ/km	10 GΩ/km
Nominal differential impedance (TDR)	85 Ω	95 Ω ± 5 Ω
Nominal differential capacitance (1 kHz)	110 pF/m	45 pF/m
Propagation velocity	55 %	
Temperature range	- 20 °C ... +105 °C	- 25 °C ... + 80 °C
Cable materials		
Conductor	7 x 0.13 mm stranded tinned copper	7 x 0.1 mm stranded tinned copper
Insulation (except 50 pairs) (for 50 pairs)	PVC Ø 0.62 mm PVC Ø 0.67 mm	Polypropylene Ø 0.74 mm
Shield	Tinned copper braid, covering ≥ 80 %	Tinned copper braid, covering ≥ 65 %
Jacket	PVC	FRNC
Flammability rating	Flame tested as per UL style 2789	
Sheath marking	AWM 2789 60°C 30V	AWM 21283 80°C 30V VW1

Thin print: Standard version
Italic print: Halogen free version

Cables for insulation displacement termination

Identification	No. of wires	Part No.
Flat cable for IDC connector Pitch 0.635 mm AWG 30		
Length per reel: 100 ft 30.48 m	50 68	60 90 050 6008 60 90 068 6008

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Drawing

Dimensions in mm

	a ± 0.25	b ± 0.05	c ± 0.2	d ± 0.05
50	31.75	0.635	31.12	0.68
68	43.20	0.635	42.55	0.68

The tolerance b is not cumulative

Technical characteristics

Number of wires	50, 68
Voltage rating	150 V
Current rating	1.5 A max. per conductor
Impedance	75 Ω
Nominal differential capacitance (1 kHz)	90 pF/m
Pitch	0.635 mm
UL style	2678
Temperature range	- 30 °C ... +105 °C
Materials	
Conductor	7 x 0.102 mm regular tinning or Z-bonding AWG 30
Insulation	PVC

