

The continuous scalability by an even number of contacts, i.e. from 6 to 100, of the HARTING's har-flex® mezzanine connector series is a special feature forming an ideal basis for customized applications. The advantage is clearly evident considering that the connector is always optimized to suit specific applications on the device PCB, while also covering the medium- and small-scale volume range that is typical for the production of industrial devices.

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
Cable termination			PCB termination			Application standard				
Han-Quick Lock®	IDC	Crimp	THT	SMC	SMT	SCSI				
Screw	Cage clamp	Axial screw	Press-in	Housing integration						
				Separate housing	Integrated housing					



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*har-flex*

*harflex*<sup>®</sup> tooling see chapter 20

### *har-flex*® CONNECTORS

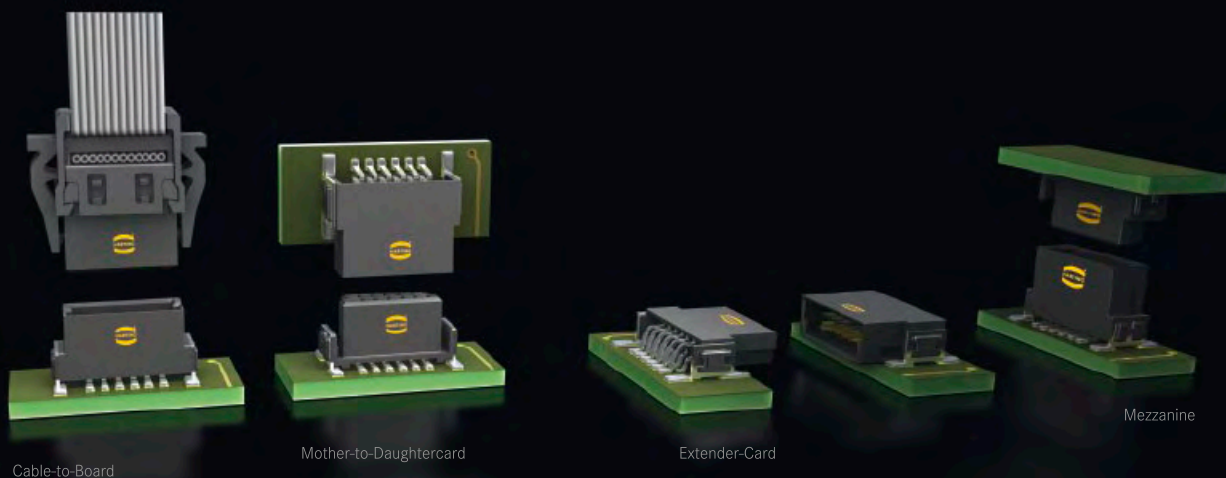
With *har-flex*®, HARTING has developed a general-purpose PCB connector series for internal and external Device Connectivity. The continuous scalability by an even number of contacts, i.e. from 6 to 100, of the HARTING's *har-flex*® mezzanine connector series is a special feature forming an ideal basis for customized applications. The advantage is clearly evident considering that the connector is always optimized to suit specific applications on the device PCB, while also covering the medium- and small-scale volume range that is typical for the production of industrial devices.

This flexibility is new – HARTING turns an individual design into a standard component. No special tooling changes are needed for

customer-specific solutions, thus HARTING can realize a short delivery time.

### PRODUCT DIVERSITY

The *har-flex*® product range with SMT termination technology is based on a 1.27 mm grid. With its diverse variants, HARTING provides connectivity solutions for many different board-to-board and cable-to-board applications. For example, two straight connectors are used for the mezzanine application, two angled connectors for PCBs on one level, and a combination allows the well-known pairing of mother and daughter cards. By using the IDC cable connector, two PCBs with large space between can be connected with a flat ribbon cable.



Cable-to-Board

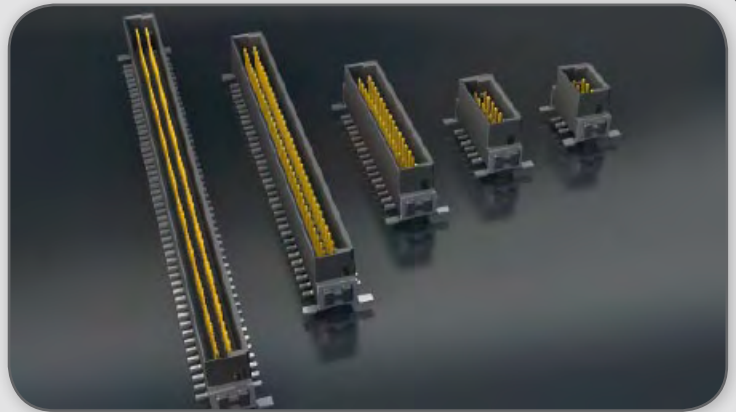
Mother-to-Daughtercard

Extender-Card

Mezzanine

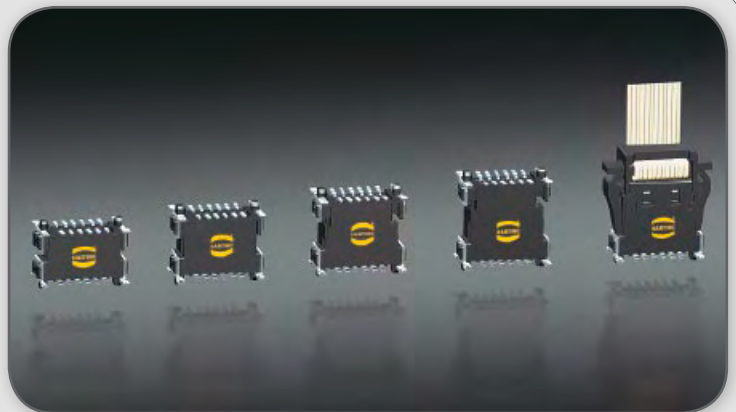
## Many pin count options

HARTING has developed a modular tooling concept which offers a broad choice of configurations between 6 and 100 poles in even numbered positions. This flexibility in the choice of number of contacts, combined with high density contact spacing, allow the designer to maximize the use of PCB real estate, thereby achieving overall space savings and cost efficiencies.



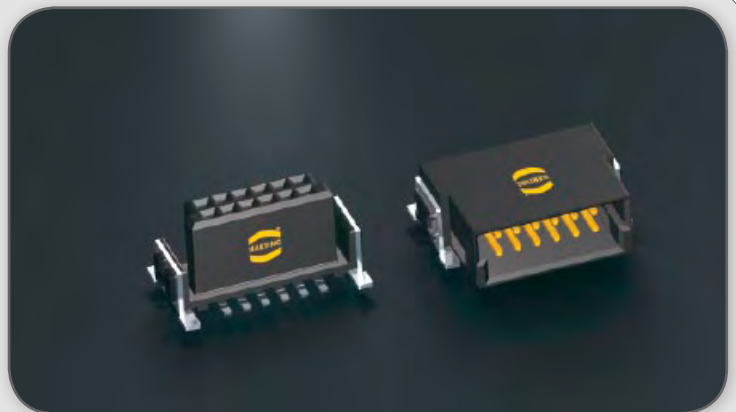
## Flexible board-to-board distances

HARTING covers mezzanine applications with a range of straight versions for four different stacking heights that can be used to interconnect PCBs arranged in parallel stacks with spacing between 8.0 mm and 13.8 mm. Additional stacking heights are in development. For applications requiring larger spacing between boards HARTING offers compatible cable-to-board connectors with insulation displacement technology.



## Robust design

The special SMT fixing ensures a robust and enduring connection to the PCB and helps to absorb mechanical stress on the solder contacts resulting from insertion and removal forces.



## Automated processing features

The *har-flex*® SMT connectors meet the highest demands in terms of their processing capabilities. Special blister packaging provides protection during shipping and handling, while the "pick and place" pads enable automated assembly of the PCBs. The temperature resistant materials of the insulating body, in combination with consistent testing of the coplanarity of contacts, ensure reliable soldering capabilities of the connectors in the reflow process.



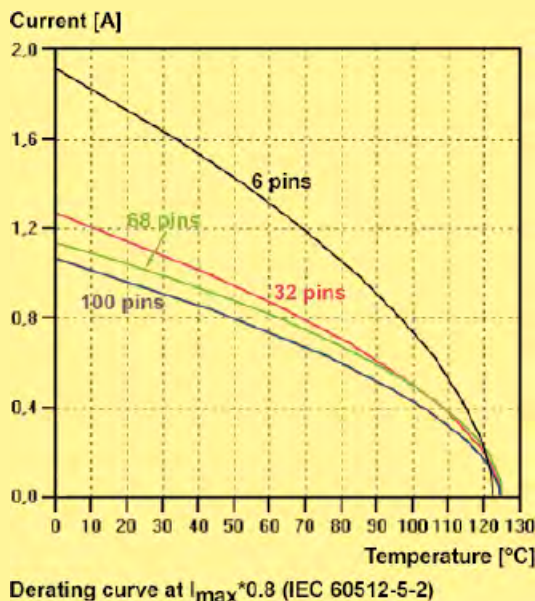
Number of contacts	6, 8, 10 ... 96, 98, 100
Connector pitch	1.27 mm x 1.27 mm [0.050" x 0.050"]
Clearance and creepage distance	
Board connectors (SMT)	min. 0.4 mm
Cable connectors (IDC)	
AWG 30/1 (solid)	min. 0.35 mm
AWG 30/7 (stranded)	min. 0.4 mm
Test voltage $U_{r.m.s.}$	500 V
Contact resistance	< 25 mΩ
Insulation resistance	> 10 GΩ
Insertion and withdrawal force	approx. 0.5 N / contact
Working temperature range	- 55 °C ... + 125 °C
The higher temperature limit includes the local ambient and heating effects of the contacts under load	
Temperature during reflow soldering (acc. to ECA/IPC/JEDEC J-STD-075 Level PSL R0)	min. 150 s > 217 °C min. 30 s > 240 °C
Electrical termination	
Board connectors	SMT (Surface Mount Technology)
Cable connectors	IDC (Insulation Displacement Connection)
Materials	
Moulding material	LCP
UL approval	UL 94-V0
CTI value (Comparative Tracking Index)	175
Contacts base material	Copper alloy
Contact surface	
Mating side	
Board connectors	Au over PdNi (acc. performance level)
Cable connectors	Au over PdNi (acc. performance level)
Termination side	
Board connectors (SMT)	Sn
Cable connectors (IDC)	Sn
Flat cable requirements for IDC connectors	
PVC flat cables:	AWG 30/1 (solid) AWG 30/7 (stranded)
PTFE flat cables:	AWG 30/1 (solid)
Insulation diameter:	min. 0.55 mm - max. 0.75 mm
Working current acc. to IEC 60512	
70 °C ambient temperature @ 80 % derating	
6 pins	1.2 A
32 pins	0.8 A
68 pins	0.75 A
100 pins	0.7 A

### Current carrying capacity

The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals.

The current capacity-curve is valid for continuous, not interrupted current-loaded contacts of connectors when simultaneous power on all contacts is given, without exceeding the maximum temperature.

Control and test procedures according to DIN IEC 60512.



### Durability

#### Performance level 1 (recommended for majority of applications)

Initial 250 mating cycles, 10 days gas test (25 °C/75 % r.h.) using H<sub>2</sub>S 10 ppb, NO<sub>2</sub> 200 ppb, CL<sub>2</sub> 10 ppb, SO<sub>2</sub> 200 ppb. Measurement of contact resistance. The remaining 250 mating cycles are subject to measurement of contact resistance and visual inspection. Visual inspection. No abrasion of the contact finish through to the base material. No functional impairment.

Part number definition: 15 .. ... 2... ...

#### Performance level 2

Initial 125 mating cycles, 4 days gas test (25 °C/75% r.h.) using H<sub>2</sub>S 10 ppb, NO<sub>2</sub> 200 ppb, CL<sub>2</sub> 10 ppb, SO<sub>2</sub> 200 ppb. Measurement of contact resistance. The remaining 125 mating cycles are subject to measurement of contact resistance and visual inspection. Visual inspection. No abrasion of the contact finish through to the base material. No functional impairment.

Part number definition: 15 .. ... 6... ...

#### Performance level S4

Defined contact surface of min. 0.06 μm Au over 0.7+0.2 μm PdNi.

Part number definition: 15 .. ... 5... ...

### Betriebsspannung nach IEC 60664-1

Die Betriebsspannung ist von benutzerspezifischen Betriebsbedingungen abhängig. In Abhängigkeit von der Überspannungskategorie, dem Verschmutzungsgrad und der gesamten elektrischen Umgebung kann die Betriebsspannung ebenfalls variieren. In der IEC 60664-1 wird der generelle, minimale Isolationsabstand für Komponenten definiert, kann allerdings auch herangezogen werden um die maximal zulässige Betriebsspannung unter gegebenen Bedingungen zu ermitteln.

Die nachfolgende Tabelle zeigt die gebräuchlichsten Bedingungen für har-flex® Steckverbinder und exemplarisch die Berechnung der Betriebsspannung. Für Überspannungskategorien, Verschmutzungsgrade und anderen Bedingungen die nicht in der Tabelle gezeigt werden, beziehen wir uns auf die IEC 60664-1.

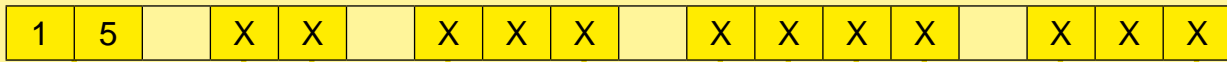
Luft- und Kriechstrecke	0,4 mm			
CTI-Wert	< 400			
Isolationsgruppen	III a/b			
Art des elektrischen Feldes	Fall A (Inhomogenes Feld)		Fall B (Homogenes Feld)	
Überspannungskategorie	I	II	I	II
Verschmutzungsgrad	1	1	1	1
<b>Betriebsspannung max.</b>	<b>150 V</b>	<b>100 V</b>	<b>150 V</b>	<b>150 V</b>

### Erklärung:

- CTI-Wert und Isolationsgruppe sind feste Größen der har-flex® Steckverbinderbaureihe.
- Überspannungskategorie I: Betriebsmittel, bestimmt zur Anwendung in Geräten oder Teilen von Anlagen, in denen keine Überspannungen auftreten können. Die Betriebsmittel dieser Überspannungskategorie werden vorwiegend mit Kleinspannung betrieben.
- Überspannungskategorie II: Betriebsmittel, bestimmt zur Anwendung in Anlagen oder Teilen von diesen, in denen Blitzüberspannungen nicht berücksichtigt werden müssen, jedoch Überspannungen durch Schaltvorgänge auftreten.
- Verschmutzungsgrad 1: Es tritt keine oder nur trockene, nichtleitfähige Verschmutzung auf. Die Verschmutzung hat keinen Einfluss.
- Verschmutzungsgrad 2: Es tritt nur nichtleitfähige Verschmutzung auf. Gelegentlich muss mit vorübergehender Leitfähigkeit durch Betauung gerechnet werden.

### Definition der Bestell-Nummer

Die har-flex® Bestell-Nummern haben 14 Stellen und unterliegen folgendem Schema:



15 har-flex® Familie

#### Steckverbinderart

- 11 Messerleiste gerade  
1,75 mm Stapelhöhe
- 12 Messerleiste gerade  
3,25 mm Stapelhöhe
- 15 Messerleiste gewinkelt
- 21 Federleiste gerade  
6,25 mm Stapelhöhe
- 22 Federleiste gerade  
9,05 mm Stapelhöhe
- 25 Federleiste gewinkelt
- 29 IDC Kabelsteckverbinder / Zubehör

#### Kontaktzahlen

#### Steckzyklen

- 2 Anforderungsstufe 1
- 5 Anforderungsstufe S4
- 6 Anforderungsstufe 2

#### Anschluss

- 5 IDC
- 6 SMT

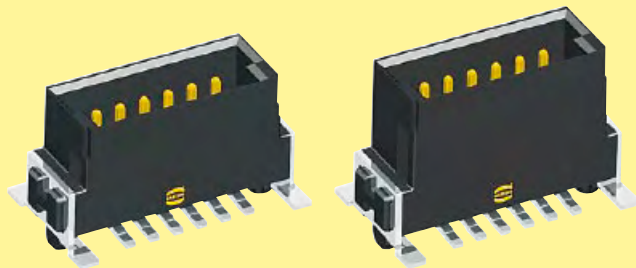
#### Zählnummer

#### Verpackung

- 000 Tape & Reel Verpackung  
Tray Verpackung für  
IDC Kabel-Steckverbinder
- 333 Muster

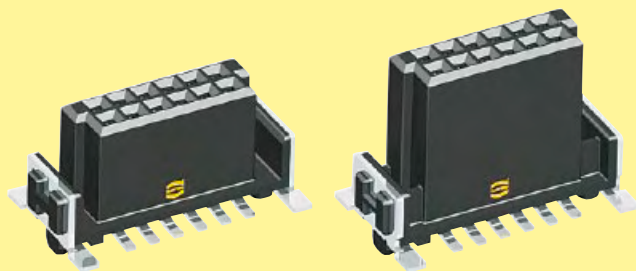
### Stacking heights of straight connector versions

The har-flex® connectors cover mezzanine applications with a range of straight versions for four different stacking heights that can be used to interconnect PCBs arranged in parallel stacks with spacing between 8.0 mm and 13.8 mm.



Male 1.75 mm

Male 3.25 mm



Female 6.25 mm

Female 9.05 mm

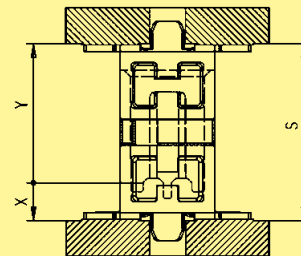
Due to the wiping lengths of 1.5 mm, these four connectors cover the distance of 8 mm to 13.8 mm continuously.

14 mm				
13 mm				
12 mm				
11 mm				
10 mm				
9 mm				
8 mm				
stacking heights	male 1.75 mm female 6.25 mm	male 3.25 mm female 6.25 mm	male 1.75 mm female 9.05 mm	male 3.25 mm female 9.05 mm
PCB distance	8 mm - 9.5 mm	9.5 mm - 11 mm	10.8 mm - 12.3 mm	12.3 mm - 13.8 mm
part numbers	15 11 ... 15 21 ...	15 12 ... 15 21 ...	15 11 ... 15 22 ...	15 12 ... 15 22 ...

### Mating options

#### Mezzanine connection

straight female



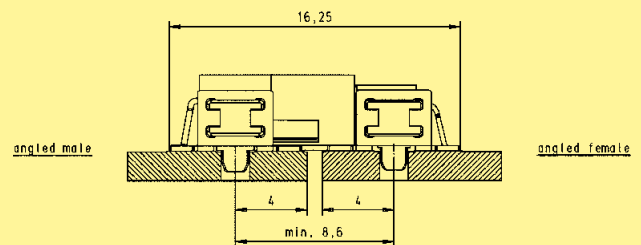
straight male

3.25	9.05	12.3	13.8
1.75	9.05	10.8	12.3
3.25	6.25	9.5	11
1.75	6.25	8	9.5
X	Y	Smin	* Smax

\* Smax = Smin + 1.5 wiping length with additional contact overlap security

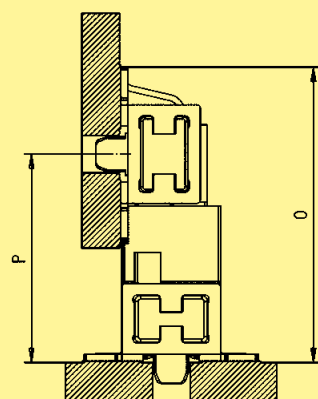
#### Extender Card connection

EXTENDER CARD CONFIGURATION

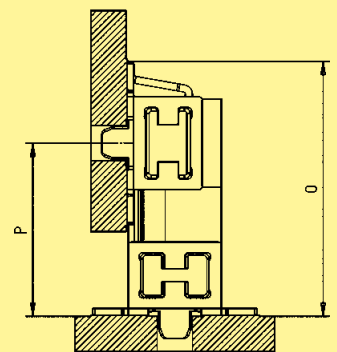


#### Mother-to-Daughtercard connection

angled female



angled male



straight male

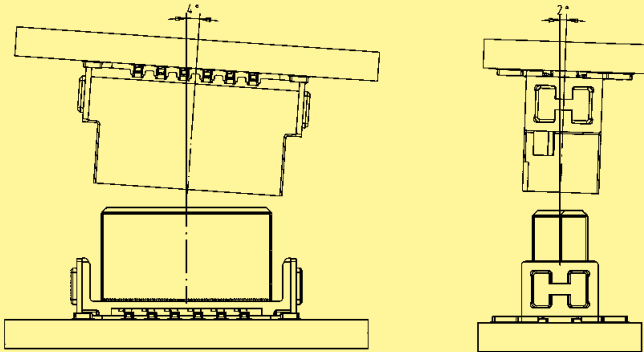
3.25	10.25	14.08
1.75	8.75	12.58
X	P min.	O

straight female

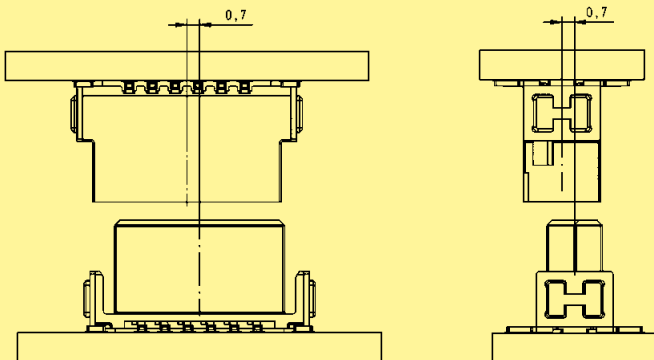
9.05	10.5	14.33
6.25	7.7	11.53
Y	P min.	O

Mating conditions

Inclination



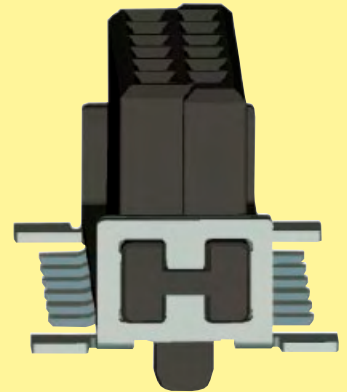
Mismatching



SMT processing notes

The har-flex® SMT connectors meet the highest demands in terms of their processing capabilities.

The connectors are delivered in a tape and reel packaging optimized for automatic assembly machines. A vacuum cover enables the automatic assembly with a vacuum nozzle.



The insulation body material is high temperature resistant, and due to the black colour a secure camera recognition is ensured.

For a reliable SMT solder process, the termination pins are 100 % checked for coplanarity.

Process / Moisture Sensitivity

During the reflow solder process, the connector has to resist extreme variations in temperature. Connectors consist in general of both plastic and metal parts, which have a different behaviour during the solder process. The Process Sensivity and also the Moisture Sensivity are tested according the ECA/IPC/JEDEC J-STD-075 specification.

Process Sensivity:

**PSL** means Process Sensivity Level. PSL is a rating used to identify a component that is solder process sensitive. Damages of the connector after three times soldering are not permitted (e.g. melted edges).

Moisture Sensivity:

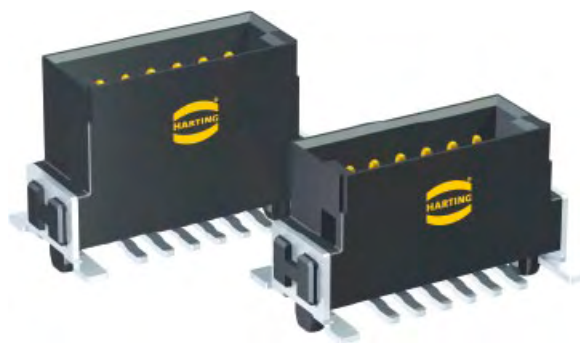
**MSL** means Moisture Sensivity Level. MSL is a rating indicating a component's susceptibility to damage due to absorbed moisture during storage. Damages of the connector after storage in damp heat and three times soldering are not permitted (e.g. blisters).

The har-flex® connectors are rated with **PSL R0** and **MSL 1**. This is the maximum possible rating in both categories. The har-flex® connector resists three times soldering at the following conditions without damages:

- min. 150 s beyond 217 °C (liquidus temperature, the melting point of the solder paste)
- min. 30 s beyond classification temperature (240 °C / 245 °C for har-flex®)
- Temperature solder profile according to ECA/IPC/JEDEC J-STD-075
- For MSL test, a storage of 168 hours at 85 °C and 85 % rel. humidity was carried out

As the result, the har-flex® connectors are not process sensitive and not moisture sensitive according to ECA/IPC/JEDEC J-STD-075.





Male connectors, straight

Identification      Number of contacts      Part No.      Dimensions in mm

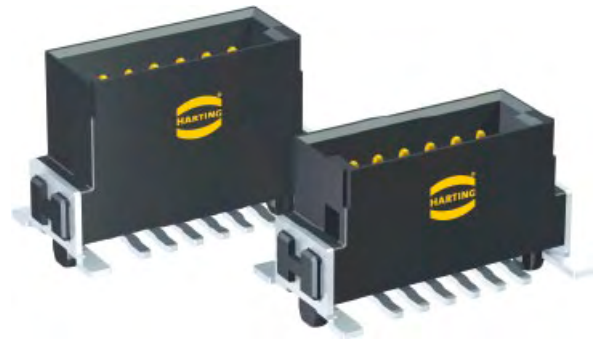
Male connector, straight,  
stacking heights  
1.75 / 3.25 mm

6	15 1 . 006 . 601 . . .
8	15 1 . 008 . 601 . . .
10	15 1 . 010 . 601 . . .
12	15 1 . 012 . 601 . . .
14	15 1 . 014 . 601 . . .
16	15 1 . 016 . 601 . . .
18	15 1 . 018 . 601 . . .
20	15 1 . 020 . 601 . . .
22	15 1 . 022 . 601 . . .
24	15 1 . 024 . 601 . . .
26	15 1 . 026 . 601 . . .
28	15 1 . 028 . 601 . . .
30	15 1 . 030 . 601 . . .
32	15 1 . 032 . 601 . . .
34	15 1 . 034 . 601 . . .
36	15 1 . 036 . 601 . . .
38	15 1 . 038 . 601 . . .
40	15 1 . 040 . 601 . . .
42	15 1 . 042 . 601 . . .
44	15 1 . 044 . 601 . . .
46	15 1 . 046 . 601 . . .
48	15 1 . 048 . 601 . . .
50	15 1 . 050 . 601 . . .
52	15 1 . 052 . 601 . . .
54	15 1 . 054 . 601 . . .
56	15 1 . 056 . 601 . . .
58	15 1 . 058 . 601 . . .
60	15 1 . 060 . 601 . . .
62	15 1 . 062 . 601 . . .
64	15 1 . 064 . 601 . . .
66	15 1 . 066 . 601 . . .
68	15 1 . 068 . 601 . . .
70	15 1 . 070 . 601 . . .
72	15 1 . 072 . 601 . . .
74	15 1 . 074 . 601 . . .
76	15 1 . 076 . 601 . . .
78	15 1 . 078 . 601 . . .
80	15 1 . 080 . 601 . . .
82	15 1 . 082 . 601 . . .
84	15 1 . 084 . 601 . . .
86	15 1 . 086 . 601 . . .
88	15 1 . 088 . 601 . . .
90	15 1 . 090 . 601 . . .
92	15 1 . 092 . 601 . . .
94	15 1 . 094 . 601 . . .
96	15 1 . 096 . 601 . . .
98	15 1 . 098 . 601 . . .
100	15 1 . 100 . 601 . . .

A	B	C	D	E	F
2.54	6.96	8.89	5.76	4.76	6.56
3.81	8.23	10.16	7.03	6.03	7.83
5.08	9.50	11.43	8.30	7.30	9.10
6.35	10.77	12.70	9.57	8.57	10.37
7.62	12.04	13.97	10.84	9.84	11.64
8.89	13.31	15.24	12.11	11.11	12.91
10.16	14.58	16.51	13.38	12.38	14.18
11.43	15.85	17.78	14.65	13.65	15.45
12.70	17.12	19.05	15.92	14.92	16.72
13.97	18.39	20.32	17.19	16.19	17.99
15.24	19.66	21.59	18.46	17.46	19.26
16.51	20.93	22.86	19.73	18.73	20.53
17.78	22.20	24.13	21.00	20.00	21.80
19.05	23.47	25.40	22.27	21.27	23.07
20.32	24.74	26.67	23.54	22.54	24.34
21.59	26.01	27.94	24.81	23.81	25.61
22.86	27.28	29.21	26.08	25.08	26.88
24.13	28.55	30.48	27.35	26.35	28.15
25.40	29.82	31.75	28.62	27.62	29.42
26.67	31.09	33.02	29.89	28.89	30.69
27.94	32.36	34.29	31.16	30.16	31.96
29.21	33.63	35.56	32.43	31.43	33.23
30.48	34.90	36.83	33.70	32.70	34.50
31.75	36.17	38.10	34.97	33.97	35.77
33.02	37.44	39.37	36.24	35.24	37.04
34.29	38.71	40.64	37.51	36.51	38.31
35.56	39.98	41.91	38.78	37.78	39.58
36.83	41.25	43.18	40.05	39.05	40.85
38.10	42.52	44.45	41.32	40.32	42.12
39.37	43.79	45.72	42.59	41.59	43.39
40.64	45.06	46.99	43.86	42.86	44.66
41.91	46.33	48.26	45.13	44.13	45.93
43.18	47.60	49.53	46.40	45.40	47.20
44.45	48.87	50.80	47.67	46.67	48.47
45.72	50.14	52.07	48.94	47.94	49.74
46.99	51.41	53.34	50.21	49.21	51.01
48.26	52.68	54.61	51.48	50.48	52.28
49.53	53.95	55.88	52.75	51.75	53.55
50.80	55.22	57.15	54.02	53.02	54.82
52.07	56.49	58.42	55.29	54.29	56.09
53.34	57.76	59.69	56.56	55.56	57.36
54.61	59.03	60.96	57.83	56.83	58.63
55.88	60.30	62.23	59.10	58.10	59.90
57.15	61.57	63.50	60.37	59.37	61.17
58.42	62.84	64.77	61.64	60.64	62.44
59.69	64.11	66.04	62.91	61.91	63.71
60.96	65.38	67.31	64.18	63.18	64.98
62.23	66.65	68.58	65.45	64.45	66.25

Please insert digit  
for stacking height

1.75 mm ▶ 1  
3.25 mm ▶ 2



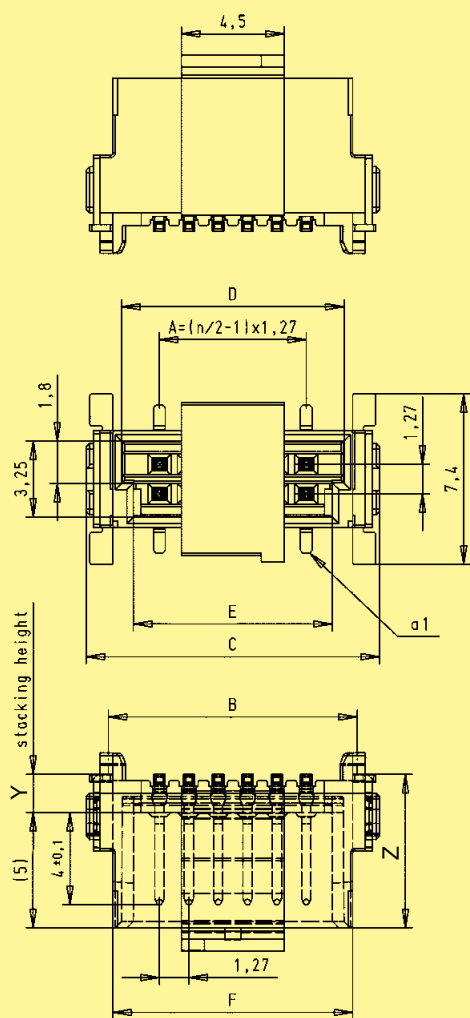
Male connectors, straight

Identification

Drawing

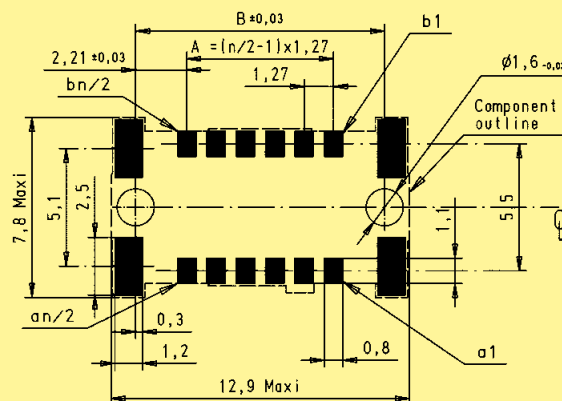
Dimensions in mm

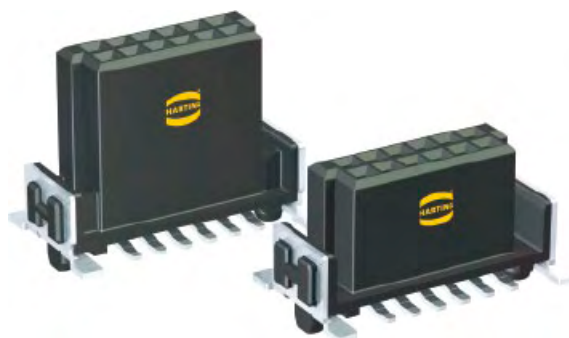
Dimensions



stacking height Y	X	Z
1.75	7.6	6.6
3.25	9.1	8.1

PCB layout





Female connectors, straight

Identification                      Number of contacts                      Part No.                      Dimensions in mm

Female connector, straight, stacking heights 6.25 / 9.05 mm

6	15 2 . 006 . 601 . . .
8	15 2 . 008 . 601 . . .
10	15 2 . 010 . 601 . . .
12	15 2 . 012 . 601 . . .
14	15 2 . 014 . 601 . . .
16	15 2 . 016 . 601 . . .
18	15 2 . 018 . 601 . . .
20	15 2 . 020 . 601 . . .
22	15 2 . 022 . 601 . . .
24	15 2 . 024 . 601 . . .
26	15 2 . 026 . 601 . . .
28	15 2 . 028 . 601 . . .
30	15 2 . 030 . 601 . . .
32	15 2 . 032 . 601 . . .
34	15 2 . 034 . 601 . . .
36	15 2 . 036 . 601 . . .
38	15 2 . 038 . 601 . . .
40	15 2 . 040 . 601 . . .
42	15 2 . 042 . 601 . . .
44	15 2 . 044 . 601 . . .
46	15 2 . 046 . 601 . . .
48	15 2 . 048 . 601 . . .
50	15 2 . 050 . 601 . . .
52	15 2 . 052 . 601 . . .
54	15 2 . 054 . 601 . . .
56	15 2 . 056 . 601 . . .
58	15 2 . 058 . 601 . . .
60	15 2 . 060 . 601 . . .
62	15 2 . 062 . 601 . . .
64	15 2 . 064 . 601 . . .
66	15 2 . 066 . 601 . . .
68	15 2 . 068 . 601 . . .
70	15 2 . 070 . 601 . . .
72	15 2 . 072 . 601 . . .
74	15 2 . 074 . 601 . . .
76	15 2 . 076 . 601 . . .
78	15 2 . 078 . 601 . . .
80	15 2 . 080 . 601 . . .
82	15 2 . 082 . 601 . . .
84	15 2 . 084 . 601 . . .
86	15 2 . 086 . 601 . . .
88	15 2 . 088 . 601 . . .
90	15 2 . 090 . 601 . . .
92	15 2 . 092 . 601 . . .
94	15 2 . 094 . 601 . . .
96	15 2 . 096 . 601 . . .
98	15 2 . 098 . 601 . . .
100	15 2 . 100 . 601 . . .

A	B	C	D	E
2.54	6.96	8.89	5.56	4.56
3.81	8.23	10.16	6.83	5.83
5.08	9.50	11.43	8.10	7.10
6.35	10.77	12.70	9.37	8.37
7.62	12.04	13.97	10.64	9.64
8.89	13.31	15.24	11.91	10.91
10.16	14.58	16.51	13.18	12.18
11.43	15.85	17.78	14.45	13.45
12.70	17.12	19.05	15.72	14.72
13.97	18.39	20.32	16.99	15.99
15.24	19.66	21.59	18.26	17.26
16.51	20.93	22.86	19.53	18.53
17.78	22.20	24.13	20.80	19.80
19.05	23.47	25.40	22.07	21.07
20.32	24.74	26.67	23.34	22.34
21.59	26.01	27.94	24.61	23.61
22.86	27.28	29.21	25.88	24.88
24.13	28.55	30.48	27.15	26.15
25.40	29.82	31.75	28.42	27.42
26.67	31.09	33.02	29.69	28.69
27.94	32.36	34.29	30.96	29.96
29.21	33.63	35.56	32.23	31.23
30.48	34.90	36.83	33.50	32.50
31.75	36.17	38.10	34.77	33.77
33.02	37.44	39.37	36.04	35.04
34.29	38.71	40.64	37.31	36.31
35.56	39.98	41.91	38.58	37.58
36.83	41.25	43.18	39.85	38.85
38.10	42.52	44.45	41.12	40.12
39.37	43.79	45.72	42.39	41.39
40.64	45.06	46.99	43.66	42.66
41.91	46.33	48.26	44.93	43.93
43.18	47.60	49.53	46.20	45.20
44.45	48.87	50.80	47.47	46.47
45.72	50.14	52.07	48.74	47.74
46.99	51.41	53.34	50.01	49.01
48.26	52.68	54.61	51.28	50.28
49.53	53.95	55.88	52.55	51.55
50.80	55.22	57.15	53.82	52.82
52.07	56.49	58.42	55.09	54.09
53.34	57.76	59.69	56.36	55.36
54.61	59.03	60.96	57.63	56.63
55.88	60.30	62.23	58.90	57.90
57.15	61.57	63.50	60.17	59.17
58.42	62.84	64.77	61.44	60.44
59.69	64.11	66.04	62.71	61.71
60.96	65.38	67.31	63.98	62.98
62.23	66.65	68.58	65.25	64.25

Please insert digit for stacking height

6.25 mm ▶ 1  
9.05 mm ▶ 2



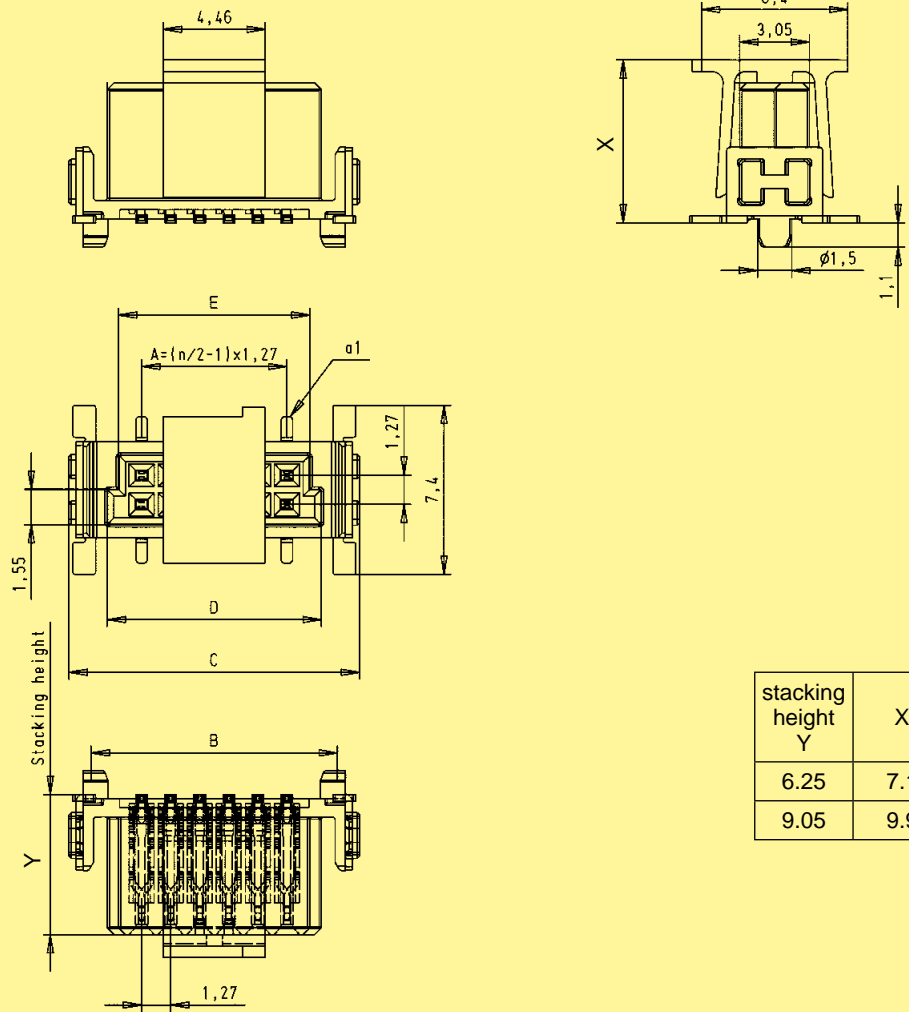
Female connectors, straight

Identification

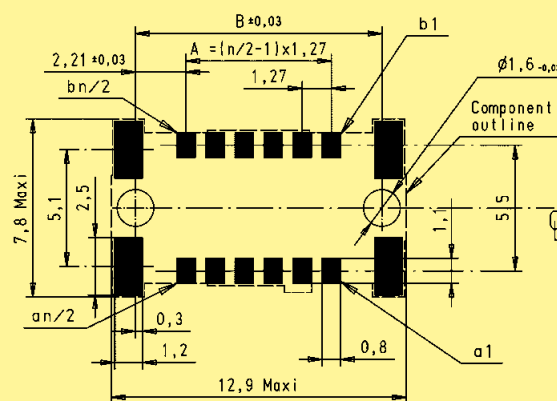
Drawing

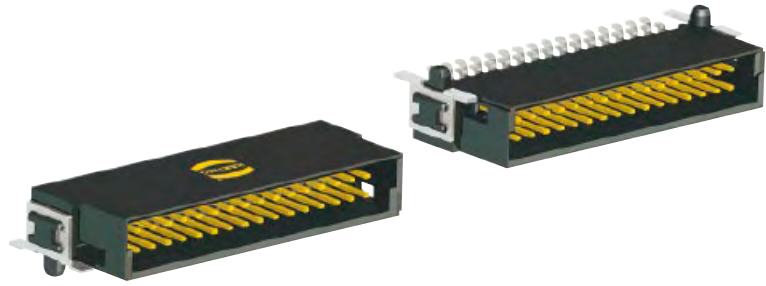
Dimensions in mm

Dimensions



PCB layout





Male connectors, angled

Identification      Number of contacts      Part No.      Dimensions in mm

Male connector, angled

6	15 15 006 . 601 . . .
8	15 15 008 . 601 . . .
10	15 15 010 . 601 . . .
12	15 15 012 . 601 . . .
14	15 15 014 . 601 . . .
16	15 15 016 . 601 . . .
18	15 15 018 . 601 . . .
20	15 15 020 . 601 . . .
22	15 15 022 . 601 . . .
24	15 15 024 . 601 . . .
26	15 15 026 . 601 . . .
28	15 15 028 . 601 . . .
30	15 15 030 . 601 . . .
32	15 15 032 . 601 . . .
34	15 15 034 . 601 . . .
36	15 15 036 . 601 . . .
38	15 15 038 . 601 . . .
40	15 15 040 . 601 . . .
42	15 15 042 . 601 . . .
44	15 15 044 . 601 . . .
46	15 15 046 . 601 . . .
48	15 15 048 . 601 . . .
50	15 15 050 . 601 . . .
52	15 15 052 . 601 . . .
54	15 15 054 . 601 . . .
56	15 15 056 . 601 . . .
58	15 15 058 . 601 . . .
60	15 15 060 . 601 . . .
62	15 15 062 . 601 . . .
64	15 15 064 . 601 . . .
66	15 15 066 . 601 . . .
68	15 15 068 . 601 . . .
70	15 15 070 . 601 . . .
72	15 15 072 . 601 . . .
74	15 15 074 . 601 . . .
76	15 15 076 . 601 . . .
78	15 15 078 . 601 . . .
80	15 15 080 . 601 . . .
82	15 15 082 . 601 . . .
84	15 15 084 . 601 . . .
86	15 15 086 . 601 . . .
88	15 15 088 . 601 . . .
90	15 15 090 . 601 . . .
92	15 15 092 . 601 . . .
94	15 15 094 . 601 . . .
96	15 15 096 . 601 . . .
98	15 15 098 . 601 . . .
100	15 15 100 . 601 . . .

A	B	C	D	E
2.54	6.96	8.89	5.76	4.76
3.81	8.23	10.16	7.03	6.03
5.08	9.50	11.43	8.30	7.30
6.35	10.77	12.70	9.57	8.57
7.62	12.04	13.97	10.84	9.84
8.89	13.31	15.24	12.11	11.11
10.16	14.58	16.51	13.38	12.38
11.43	15.85	17.78	14.65	13.65
12.70	17.12	19.05	15.92	14.92
13.97	18.39	20.32	17.19	16.19
15.24	19.66	21.59	18.46	17.46
16.51	20.93	22.86	19.73	18.73
17.78	22.20	24.13	21.00	20.00
19.05	23.47	25.40	22.27	21.27
20.32	24.74	26.67	23.54	22.54
21.59	26.01	27.94	24.81	23.81
22.86	27.28	29.21	26.08	25.08
24.13	28.55	30.48	27.35	26.35
25.40	29.82	31.75	28.62	27.62
26.67	31.09	33.02	29.89	28.89
27.94	32.36	34.29	31.16	30.16
29.21	33.63	35.56	32.43	31.43
30.48	34.90	36.83	33.70	32.70
31.75	36.17	38.10	34.97	33.97
33.02	37.44	39.37	36.24	35.24
34.29	38.71	40.64	37.51	36.51
35.56	39.98	41.91	38.78	37.78
36.83	41.25	43.18	40.05	39.05
38.10	42.52	44.45	41.32	40.32
39.37	43.79	45.72	42.59	41.59
40.64	45.06	46.99	43.86	42.86
41.91	46.33	48.26	45.13	44.13
43.18	47.60	49.53	46.40	45.40
44.45	48.87	50.80	47.67	46.67
45.72	50.14	52.07	48.94	47.94
46.99	51.41	53.34	50.21	49.21
48.26	52.68	54.61	51.48	50.48
49.53	53.95	55.88	52.75	51.75
50.80	55.22	57.15	54.02	53.02
52.07	56.49	58.42	55.29	54.29
53.34	57.76	59.69	56.56	55.56
54.61	59.03	60.96	57.83	56.83
55.88	60.30	62.23	59.10	58.10
57.15	61.57	63.50	60.37	59.37
58.42	62.84	64.77	61.64	60.64
59.69	64.11	66.04	62.91	61.91
60.96	65.38	67.31	64.18	63.18
62.23	66.65	68.58	65.45	64.45

harflex

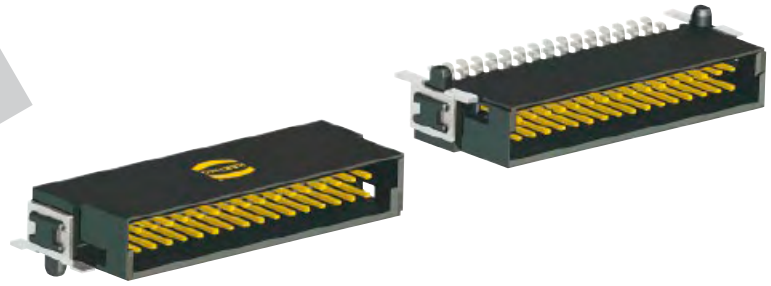
for performance level 1  
for performance level S4  
for performance level 2

2  
5  
6

333  
000

for samples  
for 560 pieces on reel

available  
Q1/2012



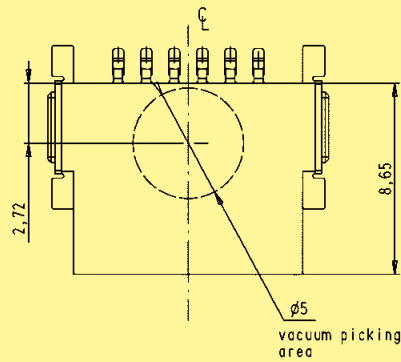
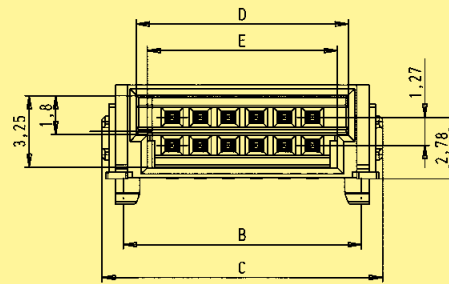
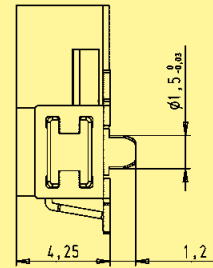
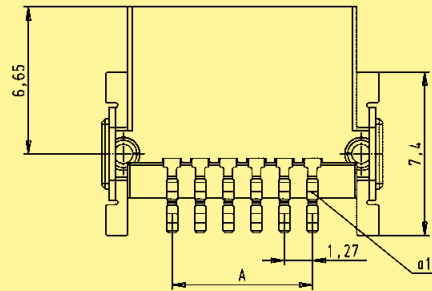
Male connectors, angled

Identification

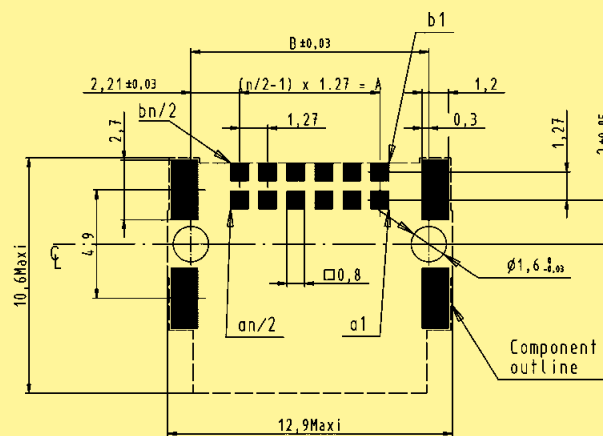
Drawing

Dimensions in mm

Dimensions



PCB layout





Female connectors, angled

Identification      Number of contacts      Part No.      Dimensions in mm

Female connector, angled

Number of contacts	Part No.
6	15 25 006 . 601 ...
8	15 25 008 . 601 ...
10	15 25 010 . 601 ...
12	15 25 012 . 601 ...
14	15 25 014 . 601 ...
16	15 25 016 . 601 ...
18	15 25 018 . 601 ...
20	15 25 020 . 601 ...
22	15 25 022 . 601 ...
24	15 25 024 . 601 ...
26	15 25 026 . 601 ...
28	15 25 028 . 601 ...
30	15 25 030 . 601 ...
32	15 25 032 . 601 ...
34	15 25 034 . 601 ...
36	15 25 036 . 601 ...
38	15 25 038 . 601 ...
40	15 25 040 . 601 ...
42	15 25 042 . 601 ...
44	15 25 044 . 601 ...
46	15 25 046 . 601 ...
48	15 25 048 . 601 ...
50	15 25 050 . 601 ...
52	15 25 052 . 601 ...
54	15 25 054 . 601 ...
56	15 25 056 . 601 ...
58	15 25 058 . 601 ...
60	15 25 060 . 601 ...
62	15 25 062 . 601 ...
64	15 25 064 . 601 ...
66	15 25 066 . 601 ...
68	15 25 068 . 601 ...
70	15 25 070 . 601 ...
72	15 25 072 . 601 ...
74	15 25 074 . 601 ...
76	15 25 076 . 601 ...
78	15 25 078 . 601 ...
80	15 25 080 . 601 ...
82	15 25 082 . 601 ...
84	15 25 084 . 601 ...
86	15 25 086 . 601 ...
88	15 25 088 . 601 ...
90	15 25 090 . 601 ...
92	15 25 092 . 601 ...
94	15 25 094 . 601 ...
96	15 25 096 . 601 ...
98	15 25 098 . 601 ...
100	15 25 100 . 601 ...

A	B	C	D	E
2.54	6.96	8.89	5.56	4.56
3.81	8.23	10.16	6.83	5.83
5.08	9.50	11.43	8.10	7.10
6.35	10.77	12.70	9.37	8.37
7.62	12.04	13.97	10.64	9.64
8.89	13.31	15.24	11.91	10.91
10.16	14.58	16.51	13.18	12.18
11.43	15.85	17.78	14.45	13.45
12.70	17.12	19.05	15.72	14.72
13.97	18.39	20.32	16.99	15.99
15.24	19.66	21.59	18.26	17.26
16.51	20.93	22.86	19.53	18.53
17.78	22.20	24.13	20.80	19.80
19.05	23.47	25.40	22.07	21.07
20.32	24.74	26.67	23.34	22.34
21.59	26.01	27.94	24.61	23.61
22.86	27.28	29.21	25.88	24.88
24.13	28.55	30.48	27.15	26.15
25.40	29.82	31.75	28.42	27.42
26.67	31.09	33.02	29.69	28.69
27.94	32.36	34.29	30.96	29.96
29.21	33.63	35.56	32.23	31.23
30.48	34.90	36.83	33.50	32.50
31.75	36.17	38.10	34.77	33.77
33.02	37.44	39.37	36.04	35.04
34.29	38.71	40.64	37.31	36.31
35.56	39.98	41.91	38.58	37.58
36.83	41.25	43.18	39.85	38.85
38.10	42.52	44.45	41.12	40.12
39.37	43.79	45.72	42.39	41.39
40.64	45.06	46.99	43.66	42.66
41.91	46.33	48.26	44.93	43.93
43.18	47.60	49.53	46.20	45.20
44.45	48.87	50.80	47.47	46.47
45.72	50.14	52.07	48.74	47.74
46.99	51.41	53.34	50.01	49.01
48.26	52.68	54.61	51.28	50.28
49.53	53.95	55.88	52.55	51.55
50.80	55.22	57.15	53.82	52.82
52.07	56.49	58.42	55.09	54.09
53.34	57.76	59.69	56.36	55.36
54.61	59.03	60.96	57.63	56.63
55.88	60.30	62.23	58.90	57.90
57.15	61.57	63.50	60.17	59.17
58.42	62.84	64.77	61.44	60.44
59.69	64.11	66.04	62.71	61.71
60.96	65.38	67.31	63.98	62.98
62.23	66.65	68.58	65.25	64.25

harflex

for performance level 1  
for performance level S4  
for performance level 2

2  
5  
6

333  
000

for samples  
for 560 pieces on reel

available  
Q2/2012



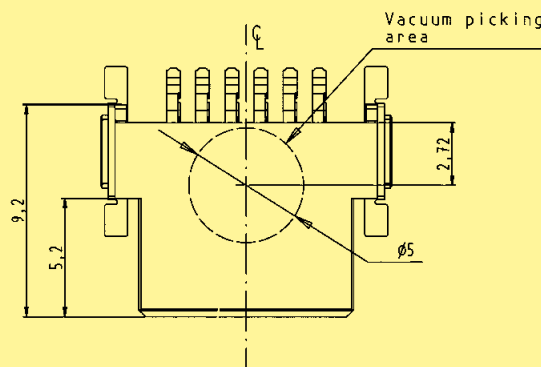
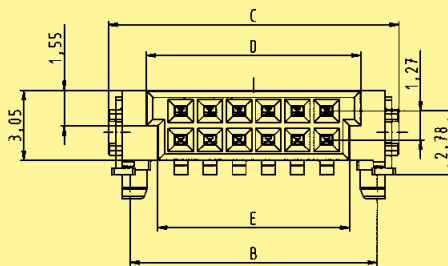
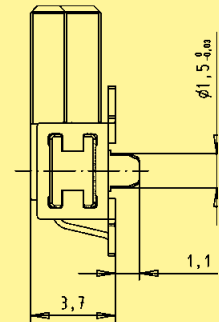
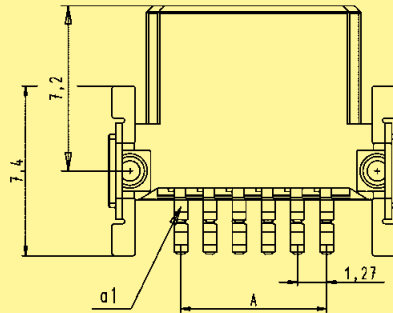
Female connectors, angled

Identification

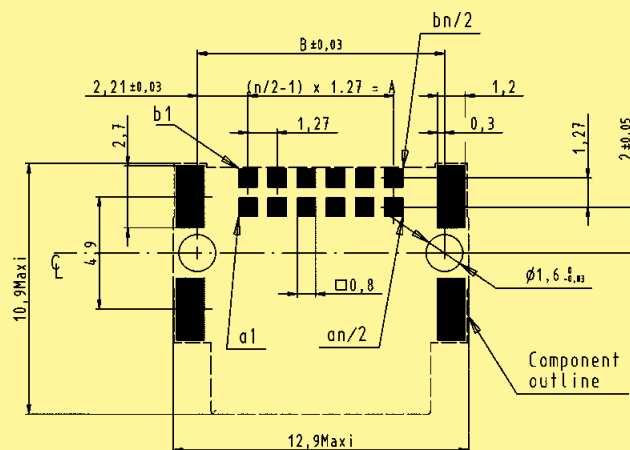
Drawing

Dimensions in mm

Dimensions



PCB layout







Female connectors, IDC

Identification      Number of contacts      Part No.      Dimensions in mm

Female connector, IDC in a tray packaging

6	15 29 006	. 50 . 000
8	15 29 008	. 50 . 000
10	15 29 010	. 50 . 000
12	15 29 012	. 50 . 000
14	15 29 014	. 50 . 000
16	15 29 016	. 50 . 000
18	15 29 018	. 50 . 000
20	15 29 020	. 50 . 000
22	15 29 022	. 50 . 000
24	15 29 024	. 50 . 000
26	15 29 026	. 50 . 000
28	15 29 028	. 50 . 000
30	15 29 030	. 50 . 000
32	15 29 032	. 50 . 000
34	15 29 034	. 50 . 000
36	15 29 036	. 50 . 000
38	15 29 038	. 50 . 000
40	15 29 040	. 50 . 000
42	15 29 042	. 50 . 000
44	15 29 044	. 50 . 000
46	15 29 046	. 50 . 000
48	15 29 048	. 50 . 000
50	15 29 050	. 50 . 000
52	15 29 052	. 50 . 000
54	15 29 054	. 50 . 000
56	15 29 056	. 50 . 000
58	15 29 058	. 50 . 000
60	15 29 060	. 50 . 000
62	15 29 062	. 50 . 000
64	15 29 064	. 50 . 000
66	15 29 066	. 50 . 000
68	15 29 068	. 50 . 000
70	15 29 070	. 50 . 000
72	15 29 072	. 50 . 000
74	15 29 074	. 50 . 000
76	15 29 076	. 50 . 000
78	15 29 078	. 50 . 000
80	15 29 080	. 50 . 000
82	15 29 082	. 50 . 000
84	15 29 084	. 50 . 000
86	15 29 086	. 50 . 000
88	15 29 088	. 50 . 000
90	15 29 090	. 50 . 000
92	15 29 092	. 50 . 000
94	15 29 094	. 50 . 000
96	15 29 096	. 50 . 000
98	15 29 098	. 50 . 000
100	15 29 100	. 50 . 000

A	B	C	D	E
2.54	11.59	5.56	4.56	15.00
3.81	12.86	6.83	5.83	15.00
5.08	14.13	8.10	7.10	15.00
6.35	15.40	9.37	8.37	15.00
7.62	16.67	10.64	9.64	15.00
8.89	17.94	11.91	10.91	15.00
10.16	19.21	13.18	12.18	15.00
11.43	20.48	14.45	13.45	15.00
12.70	21.75	15.72	14.72	15.00
13.97	23.02	16.99	15.99	15.00
15.24	24.29	18.26	17.26	15.00
16.51	25.56	19.53	18.53	15.00
17.78	26.83	20.80	19.80	15.00
19.05	28.10	22.07	21.07	15.00
20.32	29.37	23.34	22.34	15.00
21.59	30.64	24.61	23.61	15.00
22.86	31.91	25.88	24.88	15.00
24.13	33.18	27.15	26.15	15.00
25.40	34.45	28.42	27.42	15.00
26.67	35.72	29.69	28.69	15.00
27.94	36.99	30.96	29.96	15.00
29.21	38.26	32.23	31.23	15.00
30.48	39.53	33.50	32.50	15.00
31.75	40.80	34.77	33.77	15.00
33.02	42.07	36.04	35.04	15.00
34.29	43.34	37.31	36.31	15.00
35.56	44.61	38.58	37.58	15.00
36.83	45.88	39.85	38.85	16.20
38.10	47.15	41.12	40.12	16.20
39.37	48.42	42.39	41.39	16.20
40.64	49.69	43.66	42.66	16.20
41.91	50.96	44.93	43.93	16.20
43.18	52.23	46.20	45.20	16.20
44.45	53.50	47.47	46.47	16.20
45.72	54.77	48.74	47.74	16.20
46.99	56.04	50.01	49.01	16.20
48.26	57.31	51.28	50.28	16.20
49.53	58.58	52.55	51.55	16.20
50.80	59.85	53.82	52.82	16.20
52.07	61.12	55.09	54.09	16.20
53.34	62.39	56.36	55.36	16.20
54.61	63.66	57.63	56.63	16.20
55.88	64.93	58.90	57.90	16.20
57.15	66.20	60.17	59.17	16.20
58.42	67.47	61.44	60.44	16.20
59.69	68.74	62.71	61.71	16.20
60.96	70.01	63.98	62.98	16.20
62.23	71.28	65.25	64.25	16.20

Please insert digit

for performance level 1 ▶ 2  
 for performance level S4 ▶ 5  
 for performance level 2 ▶ 6

without strain relief  
 with strain relief

1  
 2



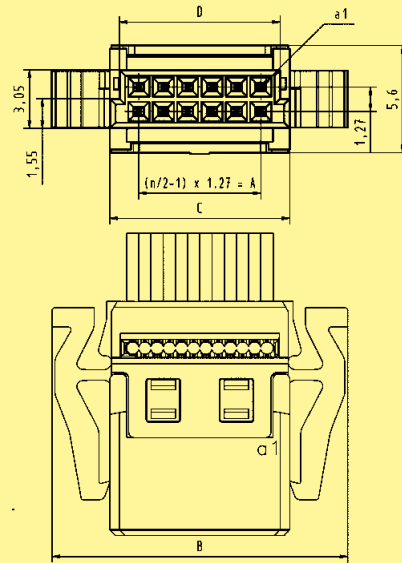
Female connectors, IDC

Identification

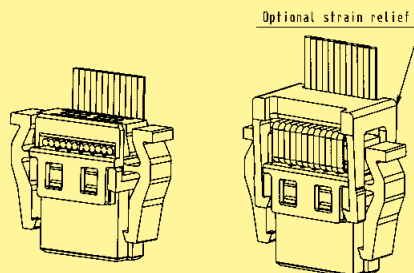
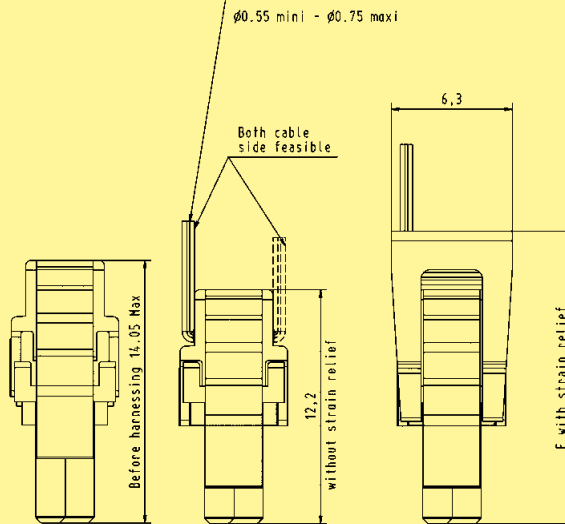
Drawing

Dimensions in mm

Dimensions



PVC FLAT CABLE : AWG 30/1 (solid)  
 AWG 30/7 (stranded)  
 PTFE FLAT CABLE : AWG 30/1 (Solid)  
 ø0.55 mini - ø0.75 maxi





Strain reliefs for female connectors,  
IDC

Identification	Number of contacts	Part No.	Dimensions in mm
Strain reliefs for female connectors, IDC	6	15 29 006 0503 000	A
	8	15 29 008 0503 000	7.31
	10	15 29 010 0503 000	8.58
	12	15 29 012 0503 000	9.85
	14	15 29 014 0503 000	11.12
	16	15 29 016 0503 000	12.39
	18	15 29 018 0503 000	13.66
	20	15 29 020 0503 000	14.93
	22	15 29 022 0503 000	16.20
	24	15 29 024 0503 000	17.47
	26	15 29 026 0503 000	18.74
	28	15 29 028 0503 000	20.01
	30	15 29 030 0503 000	21.28
	32	15 29 032 0503 000	22.55
	34	15 29 034 0503 000	23.82
	36	15 29 036 0503 000	25.09
	38	15 29 038 0503 000	26.36
	40	15 29 040 0503 000	27.63
	42	15 29 042 0503 000	28.90
	44	15 29 044 0503 000	30.17
	46	15 29 046 0503 000	31.44
	48	15 29 048 0503 000	32.71
	50	15 29 050 0503 000	33.98
	52	15 29 052 0503 000	35.25
	54	15 29 054 0503 000	36.52
	56	15 29 056 0503 000	37.79
	58	15 29 058 0503 000	39.06
	60	15 29 060 0503 000	40.33
	62	15 29 062 0503 000	41.60
	64	15 29 064 0503 000	42.87
	66	15 29 066 0503 000	44.14
	68	15 29 068 0503 000	45.41
	70	15 29 070 0503 000	46.68
	72	15 29 072 0503 000	47.95
	74	15 29 074 0503 000	49.22
	76	15 29 076 0503 000	50.49
	78	15 29 078 0503 000	51.76
	80	15 29 080 0503 000	53.03
	82	15 29 082 0503 000	54.30
	84	15 29 084 0503 000	55.57
	86	15 29 086 0503 000	56.84
	88	15 29 088 0503 000	58.11
	90	15 29 090 0503 000	59.38
	92	15 29 092 0503 000	60.65
	94	15 29 094 0503 000	61.92
96	15 29 096 0503 000	63.19	
98	15 29 098 0503 000	64.46	
100	15 29 100 0503 000	65.73	
			67.00



Strain reliefs for female connectors, IDC

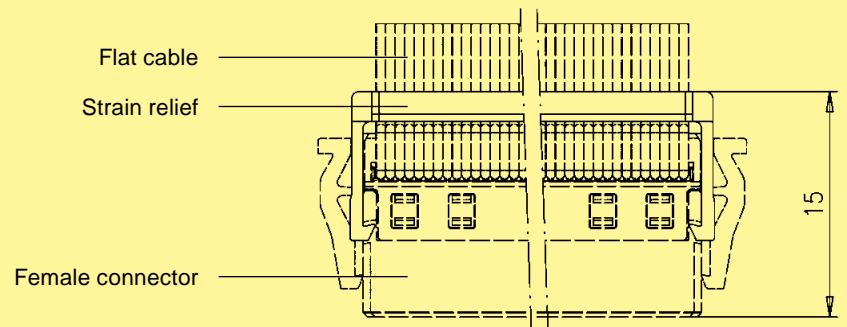
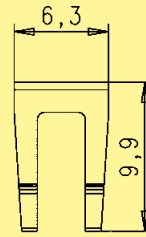
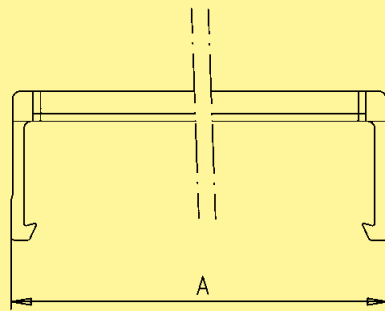
Identification

Drawing

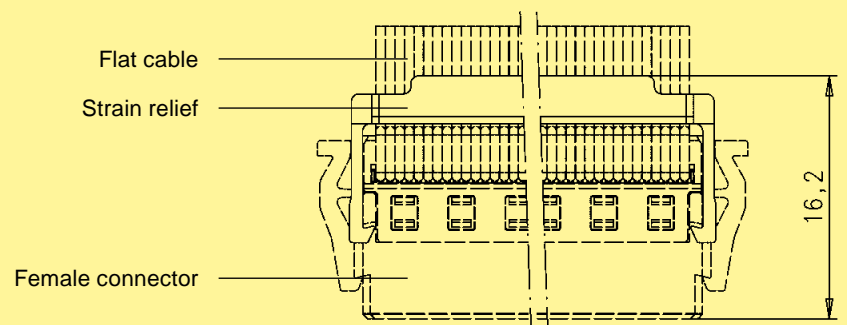
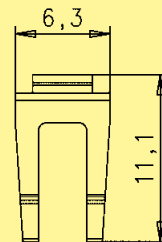
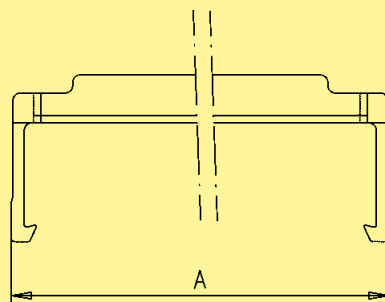
Dimensions in mm

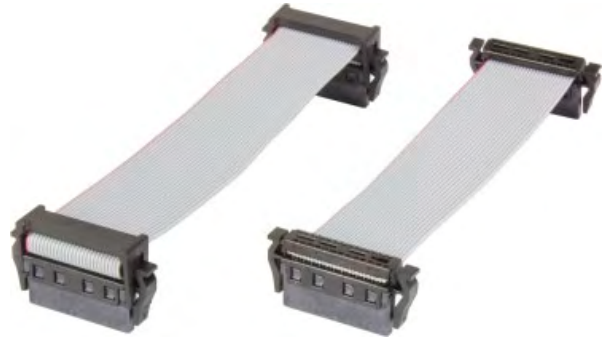
Dimensions

6 – 58 contacts



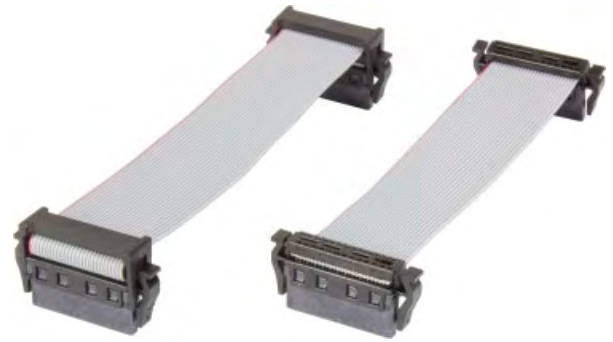
60 – 100 contacts





Cable assemblies

Identification	Part No.	Drawing	Dimensions in mm
<p><b>Cable assembly har:flex® 6 pole</b></p> <p>Cable: Flat cable, 6 wires, AWG 30, 0.635 mm pitch</p> <p>Wiring: 1:1</p> <p>Connectors with strain relief</p> <p>Length: L = 0.1 m L = 0.2 m L = 0.5 m</p>	<p>33 15 243 0100 001 33 15 243 0200 002 33 15 243 0500 003</p>		
<p><b>Cable assembly har:flex® 12 pole</b></p> <p>Cable: Flat cable, 12 wires, AWG 30, 0.635 mm pitch</p> <p>Wiring: 1:1</p> <p>Connectors with strain relief</p> <p>Length: L = 0.1 m L = 0.2 m L = 0.5 m</p>	<p>33 15 243 0100 004 33 15 243 0200 005 33 15 243 0500 006</p>		
<p><b>Cable assembly har:flex® 26 pole</b></p> <p>Cable: Flat cable, 26 wires, AWG 30, 0.635 mm pitch</p> <p>Wiring: 1:1</p> <p>Connectors with strain relief</p> <p>Length: L = 0.1 m L = 0.2 m L = 0.5 m</p>	<p>33 15 243 0100 007 33 15 243 0200 008 33 15 243 0500 009</p>		



### Cable assemblies

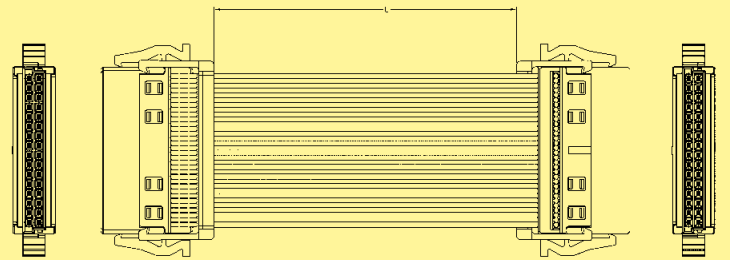
Identification	Part No.	Drawing	Dimensions in mm
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#### Cable assembly *har-flex*<sup>®</sup> 32 pole

Cable: Flat cable,  
32 wires, AWG 30,  
0.635 mm pitch  
Wiring: 1:1  
Connectors with strain relief

Length: L = 0.1 m  
          L = 0.2 m  
          L = 0.5 m

33 15 243 0100 010  
33 15 243 0200 011  
33 15 243 0500 012



#### Cable assembly *har-flex*<sup>®</sup> 50 pole

Cable: Flat cable,  
50 wires, AWG 30,  
0.635 mm pitch  
Wiring: 1:1  
Connectors with strain relief

Length: L = 0.1 m  
          L = 0.2 m  
          L = 0.5 m

33 15 243 0100 013  
33 15 243 0200 014  
33 15 243 0500 015

