2.54mm Board to Cable Connectors

Series LPV IEC 60603-13

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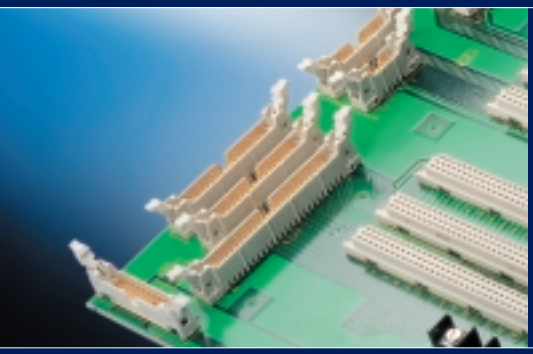
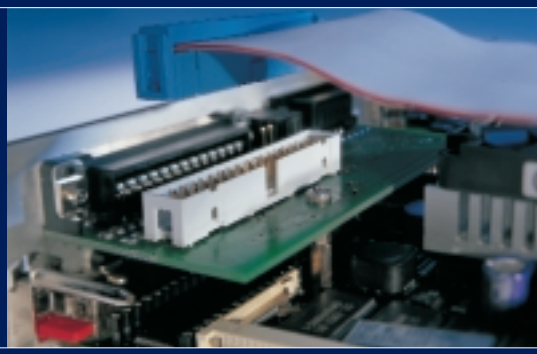
| Catalog E 074546 | 05/05 | Edition 1 |





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Board to Cable Connectors Series LPV

According to IEC 603-13 and DIN 41 651

General

ERNI LPV connectors according to IEC 603-13 (DIN 41651) are well known to our customers worldwide. To connect PC motherboards and HDDs (hard disk drive) high volume of connectors were used over the last 10 years. Due to space saving issues low profile versions, used especially on embedded boards or test computers with small form factor like PC 104 -, PC 104 plus-Standard are becoming more and more important. The international standard describes a solder male header which is used on pcbs. Other terminations have established themselves as well. The female version is intended to connect a flat cable via IDC technology. IDC technology has been tested and is very reliable , due to gastight and corrosion resistant contacts, which guarantee a life long low resistance. An integrated coding key in the middle of the connector housing avoids mismating and damaging contacts.

Optional locking latches hold female connectors back in their mating position during vibration or shock loads. Latches help eject the female connector and protect it against damaging while disconnecting.
Male connectors are available for pressfit, solder and THR processes.

Main features

- Number of contacts 10, 14, 16, 20, 26, 34, 40, 50, 60 and 64.
- Plug connectors with and without interlocking latches
- Simultaneous contacting of all conductors in one process
- IDC displacement connections
- Suitable for all commonly available ribbon technology for female cables with pitch of 1.27mm.
- With the strain release clamps supplied in the product package, an outgoing cable can be fed at an angle of 90° and 180° to the plug connection.
- Center Coding
- 2 form factors: Standard and Low Profile

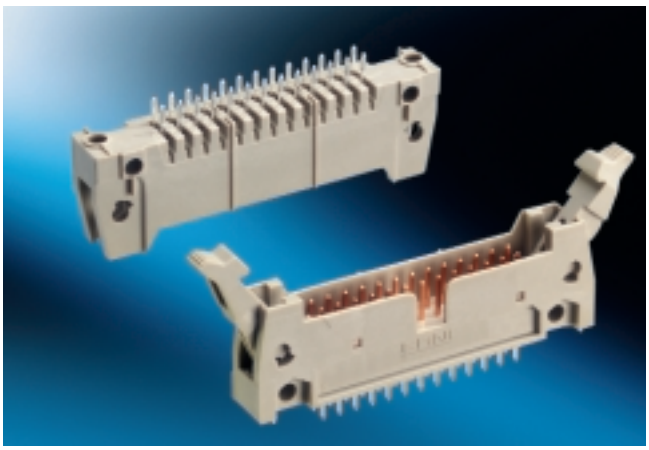
Electrical and Mechanical Characteristics

	Standard	Solder and pressfit male IDC female	THR male
Number of Pins		10, 14, 16, 20, 26, 34, 40, 50, 60 and 64	10, 14, 16, 20, 26, 34, 40, 50, 60 and 64
Technical data			
Climate category	DIN EN 60068-1 test b	-55/125/56	-55/125/56
Bearing and operating temperature area		-55/125°C	-55/125°C
Current rating	IEC60512 test 5b	by ambient temperature: 20°C 1.5A 70°C 1.0A 100°C 0.7A	by ambient temperature: 20°C 1.5A 70°C 1.0A 100°C 0.7A
Air- and creepage distance		> 0.7mm	> 0.7mm
Comperative figure of voltage	IEC 112	CTI 175	CTI 250
Voltage rating	IEC 60664	Has to be determined according to client-specific using case (degree of environmental pollution) according to IEC 60664.	Has to be determined according to client-specific using case (degree of environmental pollution) according to IEC 60664.
Dielectric strength	IEC 60512 test 4a	contact - contact $1000V_{eff}$	contact - contact $1000V_{eff}$
Contact resistance	IEC 60512 test 2a	< 20mΩ	< 20mΩ
Insulation resistance	IEC 60512 test 3a	> $5x10^3$MΩ	> $5x10^3$MΩ
Vibration sine	IEC 60512 test 6d	10 – 500Hz 5g	10 – 500Hz 5g
Contact disturbance (while vibration sine)	IEC 60512 test 2e	< 1µs	< 1µs
Shock halfsine	IEC 60512 test 6c	50g 11ms	50g 11ms
Contact disturbance (while shock halhsine)	IEC 60512 test 2e	< 1µs	< 1µs
Mechanical operation (mating cycles)	IEC 60512 test 9a	> 250 mating cycles	> 250 mating cycles
Insertion and withdrawal force	IEC 60512 test 13b	10 cont.: 20N 14 cont.: 28N 16 cont.: 32N 20 cont.: 40N 26 cont.: 52N 34 cont.: 68N 40 cont.: 80N 50 cont.: 100N 60 cont.: 120N 64 cont.: 128N	10 cont.: 20N 14 cont.: 28N 16 cont.: 32N 20 cont.: 40N 26 cont.: 52N 34 cont.: 68N 40 cont.: 80N 50 cont.: 100N 60 cont.: 120N 64 cont.: 128N
Gauge retention force	IEC 60512 test 16e	> 0.15N	> 0.15N

Electrical and Mechanical Characteristics

	Standard	Solder and pressfit male IDC female	THR male
Number of Pins		10, 14, 16, 20, 26, 34, 40, 50, 60 and 64	10, 14, 16, 20, 26, 34, 40, 50, 60 and 64
Process-conditions			
Soldering temperature max.	IEC 68-2-20		
Hand soldering temperature max.		3.5s at 350°C	3.5s at 350°C Lead-free compatible
Dip soldering temperature max.		10s at 260°C	10s at 260°C Lead-free compatible
Reflow soldering temperature max.			10s at 260°C Lead-free compatible
Warning		Soldering of pressfit connectors not to be recommended.	
Materials			
Housing: plastic material (symbol)		PBT	PA
CTI value	IEC 112	CTI 175	CTI 250
UL flame rating		UL 94 V-0	UL 94 V-0
UL file		E47960	E47960
Contact			
Base material		Cu alloy	Cu alloy
Plating		Gold plated	Gold plated
Termination area		Sn	Sn
Environment compatibility			
Recycling		No flame-retardent additives, no toxic additives allow easy recycling.	
Attention			
The electrical and thermal variables may be influenced by whichever cable is used.			

Solder Male Connectors with Locking Feature



ERNI LPV with PBT insulation is designed for wave soldering processes.
Both, tin lead and leadfree solder can be used. For leadfree reflow processes please use high temperature material version.

For versions with pre-mounted latches please ask our responsible regional sales person.

Ordering Information

LPV-M Termination: Solder

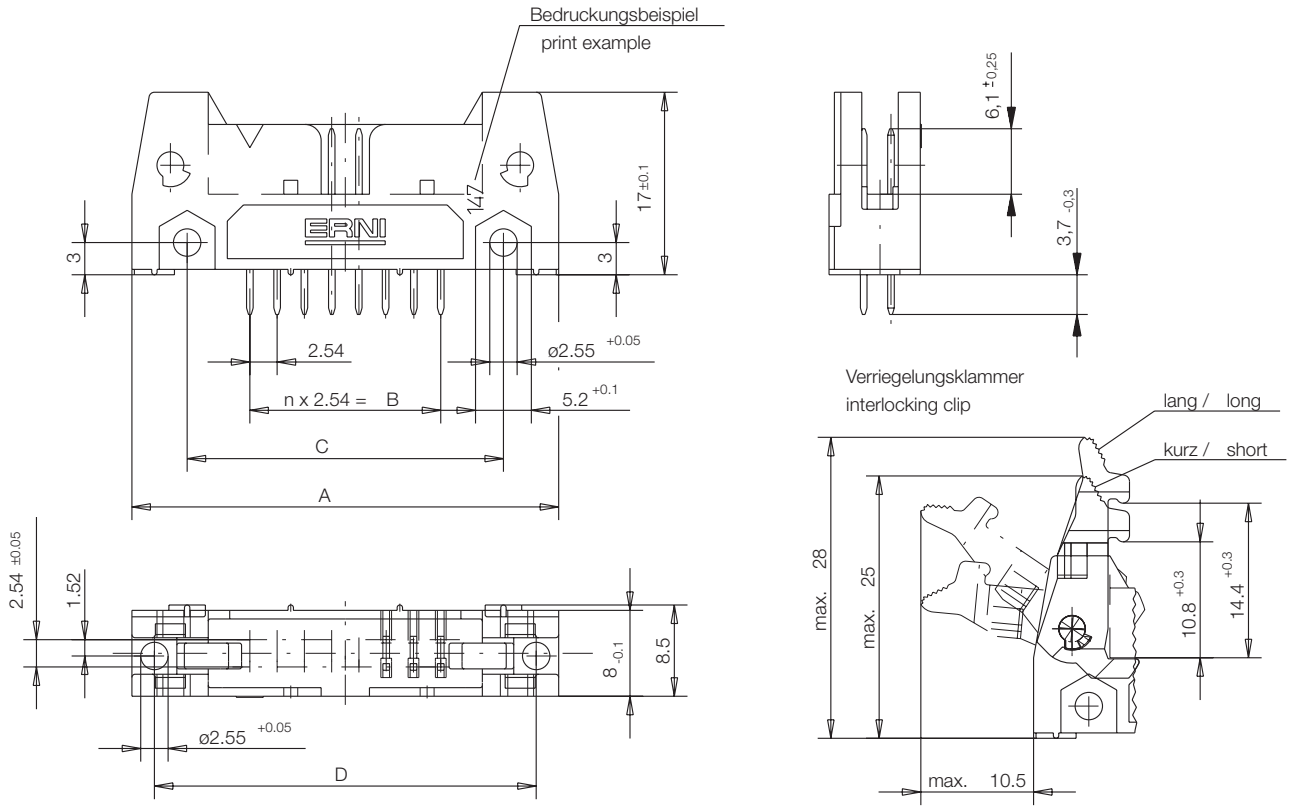
No. of pins	Part number
10	**073031**
14	**073032**
16	**073033**
20	**073034**
26	**073035**
34	**073036**
40	**073037**
50	**073038**
60	**073039**
64	**073220**

Interlocking Latches (Order 2 per male connector)

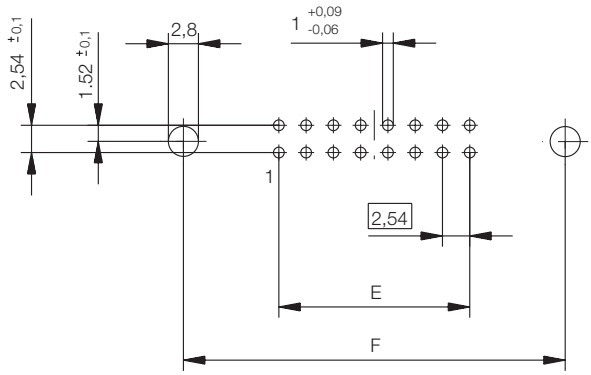
	Part number
Interlocking Latch short	**073091**
Interlocking Latch long	**154931**

Solder Male Connectors with Locking Feature

Dimensional drawings



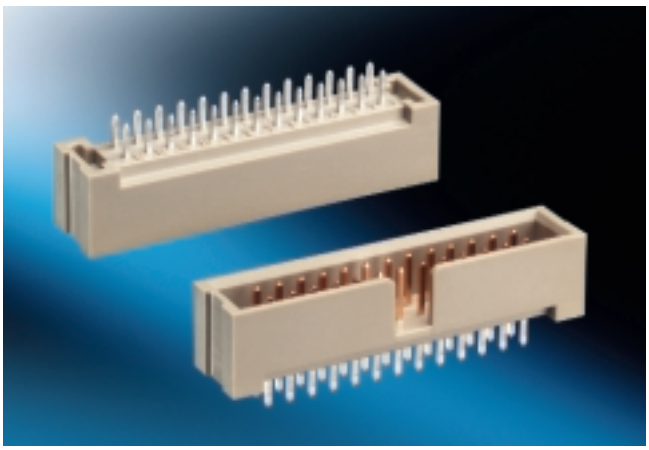
PCB Layout



Polzahl No. of contacts	A ±0.1	B	C ±0.1	D ±0.1	E±0.05	F±0.1
64	100.71	78.74	90.42	96.52	78.74	96.52
60	95.63	73.66	85.34	91.44	73.66	91.44
50	82.93	60.96	72.64	78.74	60.96	78.74
40	70.23	48.26	59.94	66.04	48.26	66.04
34	62.61	40.64	52.32	58.42	40.64	58.42
26	52.45	30.48	42.16	48.26	30.48	48.26
20	44.83	22.86	34.54	40.64	22.86	40.64
16	39.75	17.78	29.46	35.56	17.78	35.56
14	37.21	15.24	26.92	33.02	15.24	33.02
10	32.13	10.16	21.84	27.94	10.6	27.94

All dimensions in mm

Solder Male Connectors without Locking Feature



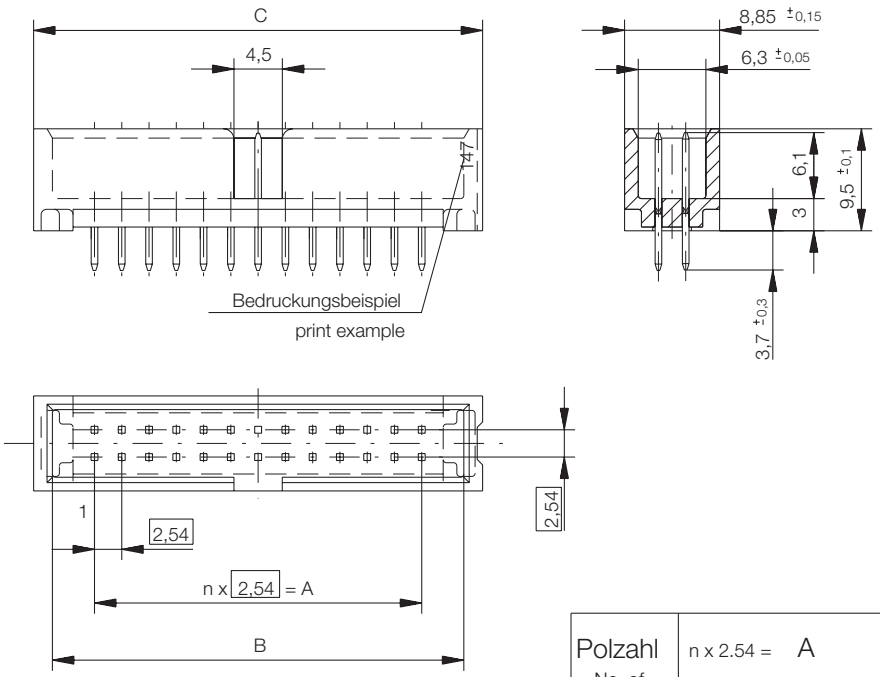
Ordering information

LPV-M Termination: Solder

No. of pins	Part number
10	**073222**
14	**073223**
16	**073224**
20	**073225**
26	**073226**
34	**073227**
40	**073228**
50	**073229**

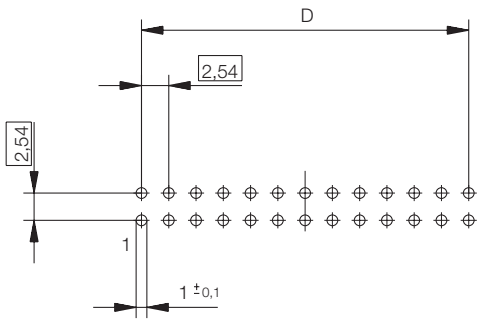
Solder Male Connectors without Locking Feature

Dimensional drawings



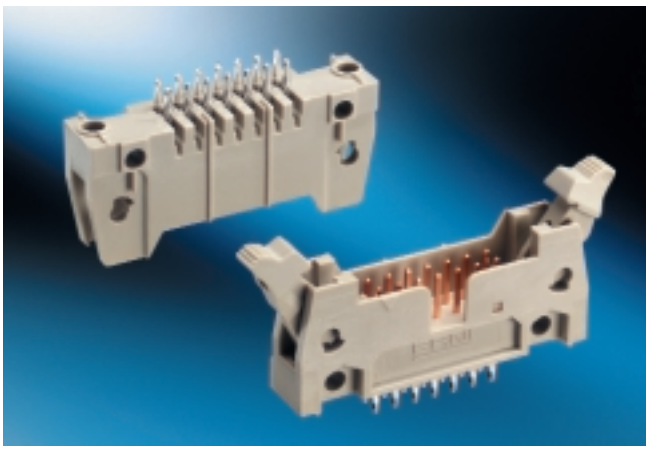
Polzahl No. of contacts	n x 2.54 = A	B ±0.1	C ±0.2	D ±0.1
50	24 x 2.54 = 60.96	68.8	72.3	60.96
40	19 x 2.54 = 48.26	56.1	59.6	48.26
34	16 x 2.54 = 40.64	48.48	51.98	40.64
26	12 x 2.54 = 30.48	38.32	41.82	30.48
20	9 x 2.54 = 22.86	30.7	34.2	22.86
16	7 x 2.54 = 17.78	25.62	29.12	17.78
14	6 x 2.54 = 15.24	23.08	26.58	15.24
10	4 x 2.54 = 10.16	18.0	21.5	10.16

PCB Layout



All dimensions in mm

Pressfit Male Connectors with Locking Feature



ERNI LPV connectors with pressfit zone can be used in applications where a soldering process is not possible or a second process not required, i.e. with backplanes. Therefore ERNIs pressfit EE zone for 1mm holes is our customers' preferred solution. More than 20 years of experience in this area makes ERNI one of the most competent partners in the world. Additionally our customers can benefit from approvals of several automotive suppliers.

Ordering Information

LPV-M Termination: Pressfit

No. of pins	Part number
10	**063582**
14	**063583**
16	**063584**
20	**063585**
26	**063586**
34	**063587**
40	**063588**
50	**063589**
60	**063590**
64	**063591**

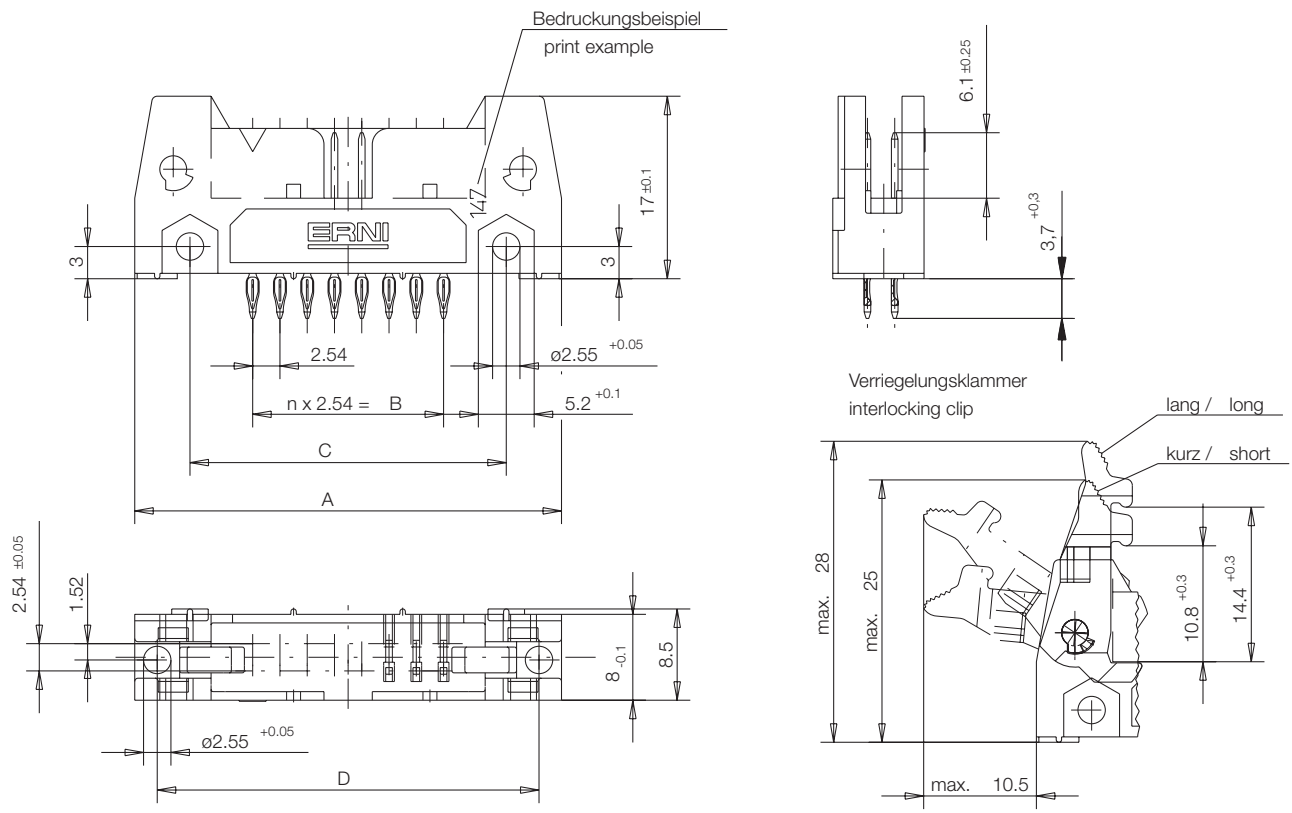
Interlocking Latches (Order 2 per male connector)

	Part number
Interlocking Latch long	**154931**
Interlocking Latch short	**073091**

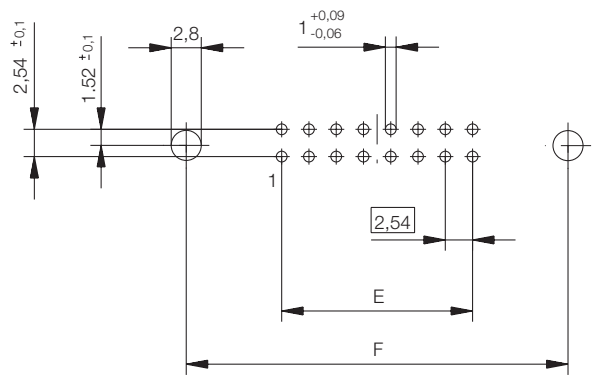
Pressing-in without interlocking latches.
The latches are mounted subsequently.

Pressfit Male Connectors with Locking Feature

Dimensional drawings



PCB Layout



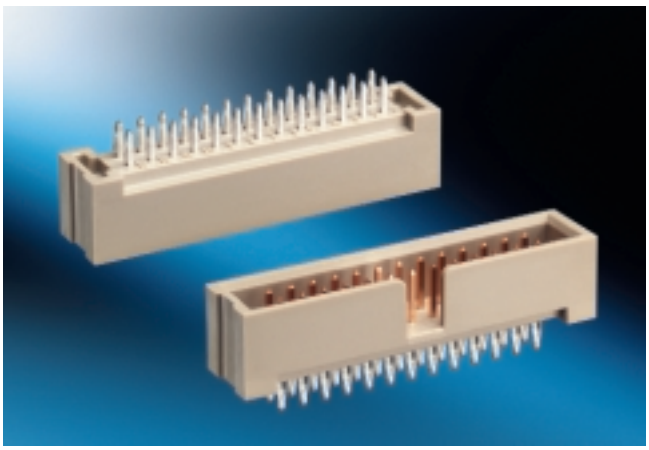
Lochaufbau siehe ERNI-Spezifikation 164062

hole design see ERNI-specification 164062

Polzahl No. of contacts	A ±0.1	B	C ±0.1	D ±0.1	E ±0.05	F ±0.1
64	100.71	78.74	90.42	96.52	78.74	96.52
60	95.63	73.66	85.34	91.44	73.66	91.44
50	82.93	60.96	72.64	78.74	60.96	78.74
40	70.23	48.26	59.94	66.04	48.26	66.04
34	62.61	40.64	52.32	58.42	40.64	58.42
26	52.45	30.48	42.16	48.26	30.48	48.26
20	44.83	22.86	34.54	40.64	22.86	40.64
16	39.75	17.78	29.46	35.56	17.78	35.56
14	37.21	15.24	26.92	33.02	15.24	33.02
10	32.13	10.16	21.84	27.94	10.6	27.94

All dimensions in mm

Pressfit Male Connectors without Locking Feature



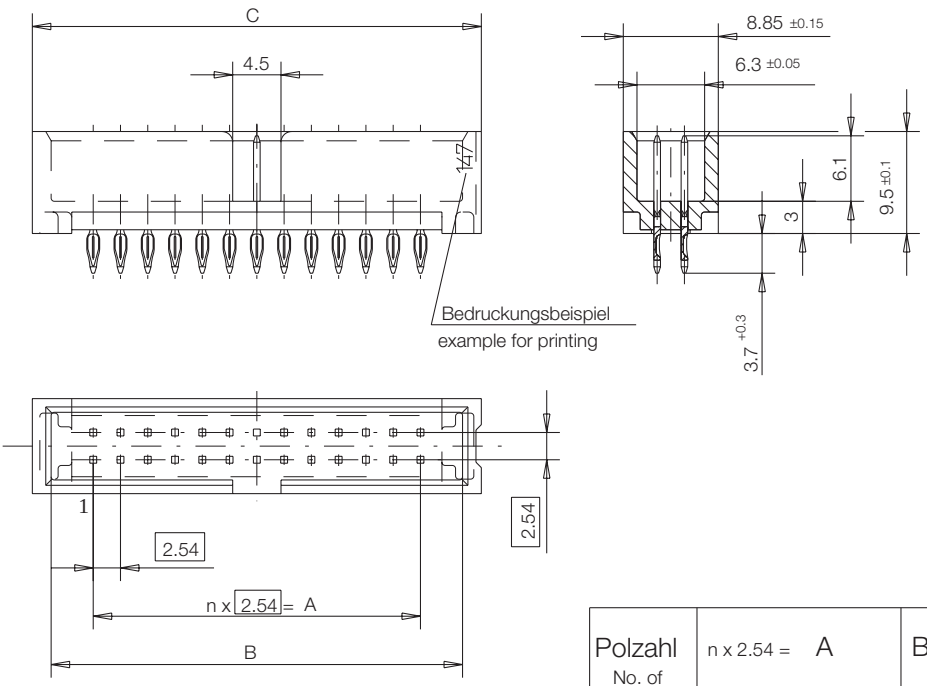
Ordering information

LPV-M Termination: Pressfit

No. of pins	Part number
10	**073231**
14	**073232**
16	**073233**
20	**073234**
26	**073235**
34	**073236**
40	**073237**
50	**073238**

Pressfit Male Connectors without Locking Feature

Dimensional drawings



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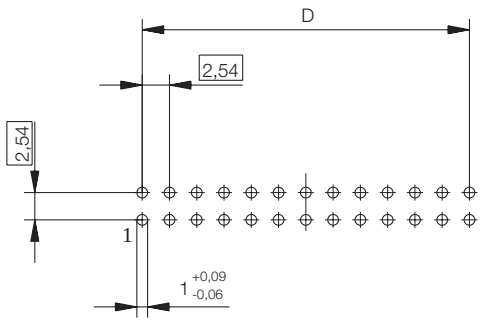
34	16 x 2.54 = 40.64	48.48	51.98	40.64
26	12 x 2.54 = 30.48	38.32	41.82	30.48
20	9 x 2.54 = 22.86	30.7	34.2	22.86
16	7 x 2.54 = 17.78	25.62	29.12	17.78
14	6 x 2.54 = 15.24	23.08	26.58	15.24
10	4 x 2.54 = 10.16	18.0	21.5	10.16

PCB Layout

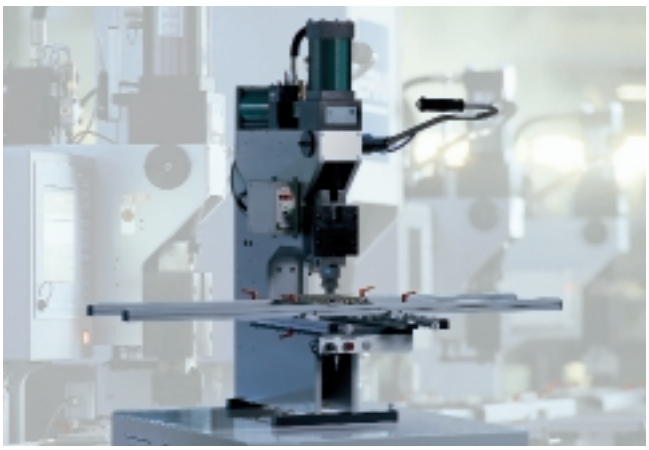


Lochaufbau siehe ERNI-Spezifikation 164062

hole design see ERNI-specification 164062

All dimensions in mm

Press-in Tools for Male Connectors



On request ERNI can supply you with presses in a variety of design versions.

Ordering information

No. of pins	Lower Tool Part Number	Upper Tool Part Number
10	**220433**	**473283**
14	**471911**	**473284**
16	**471911**	**473285**
20	**220538**	**473286**
26	**220278**	**473287**
34	**220435**	**473288**
40	**220571**	**473289**
50	**220540**	**473290**
60	**471765**	**473291**
64	**471765**	**471821**

THR Male Connectors with Locking Feature

General

The pin headers in accordance with IEC 603-13 represent a very popular standard for the connection of printed boards or between interfaces. This is why THR (Thru Hole Reflow) pin headers were developed for today's modules with SMT assemblies.
In order to promote fully automatic feeding into the assembly automat, the new THR pin headers are supplied in tape and reel packaging on request. The black insulating body provides for easy camera detection, while the special shape of the connection tip ensures problem-free assembly on the printed circuit board.
The high temperature-resistant thermoplastic of the insulating body allows all conventional SMT soldering processes (e.g. reflow or Vapor phase) to be used.

Ordering information

LPV-M Termination THR

No. of pins	Part number
10	**154890**
14	**154891**
16	**154892**
20	**154893**
26	**154894**
34	**154895**
40	**154896**
50	**154897**
60	**154898**
64	**154899**

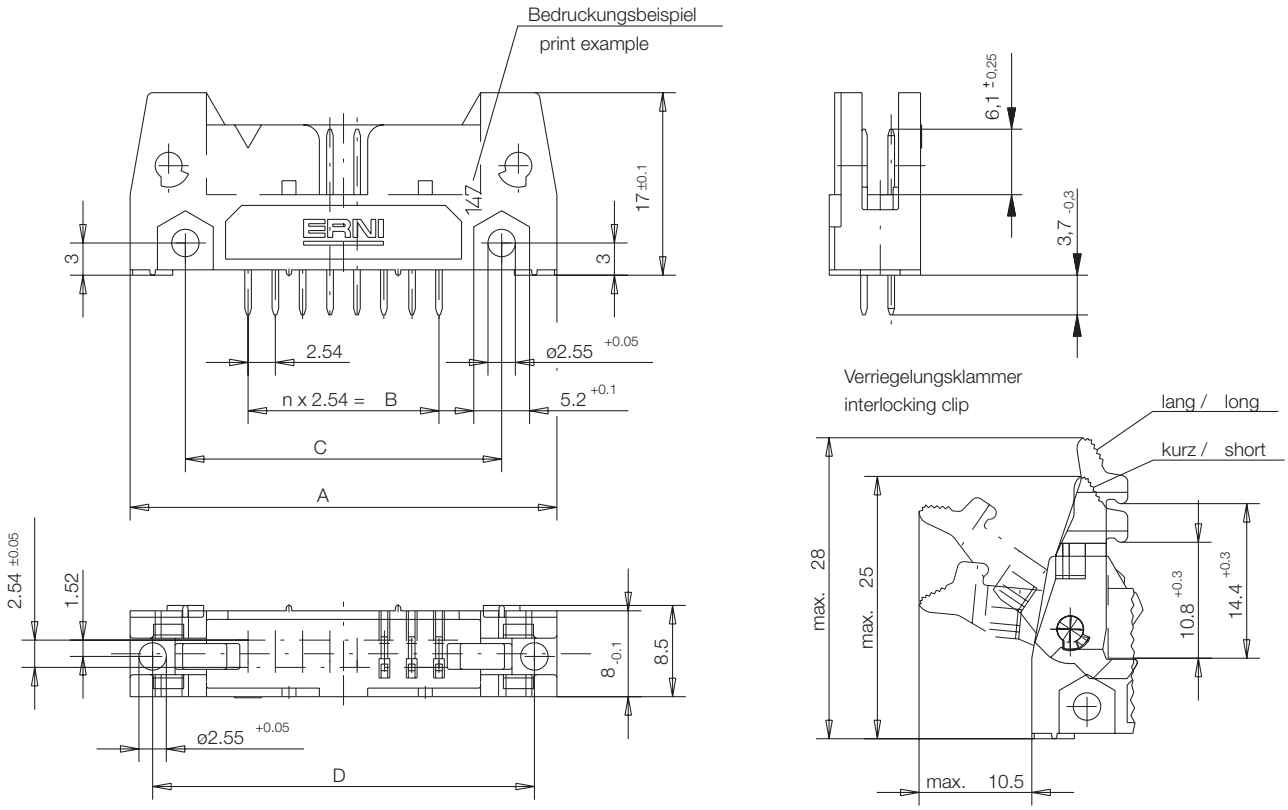
Interlocking Latches *(Order 2 per male connector)*

	Part number
Interlocking Latch long	**154997**
Interlocking Latch short	**154999**

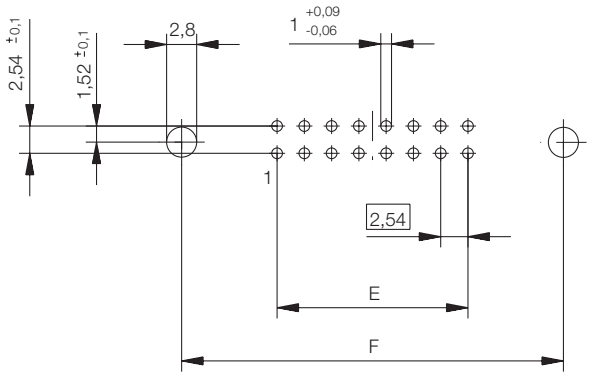
Tape and reel packaged connectors with pick and place cover on request.

THR Male Connectors with Locking Feature

Dimensional drawings



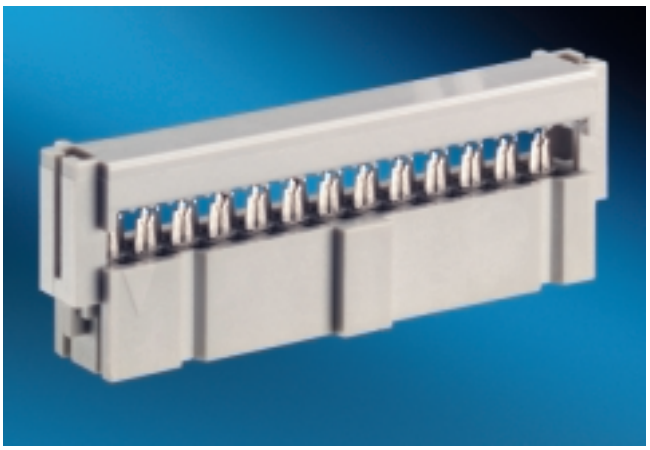
PCB Layout



Polzahl No. of contacts	A ±0.1	B	C ±0.1	D ±0.1	E ±0.05	F ±0.1
64	100.71	78.74	90.42	96.52	78.74	96.52
60	95.63	73.66	85.34	91.44	73.66	91.44
50	82.93	60.96	72.64	78.74	60.96	78.74
40	70.23	48.26	59.94	66.04	48.26	66.04
34	62.61	40.64	52.32	58.42	40.64	58.42
26	52.45	30.48	42.16	48.26	30.48	48.26
20	44.83	22.86	34.54	40.64	22.86	40.64
16	39.75	17.78	29.46	35.56	17.78	35.56
14	37.21	15.24	26.92	33.02	15.24	33.02
10	32.13	10.16	21.84	27.94	10.6	27.94

All dimensions in mm

Female Connectors for Male Connectors with and without interlocking

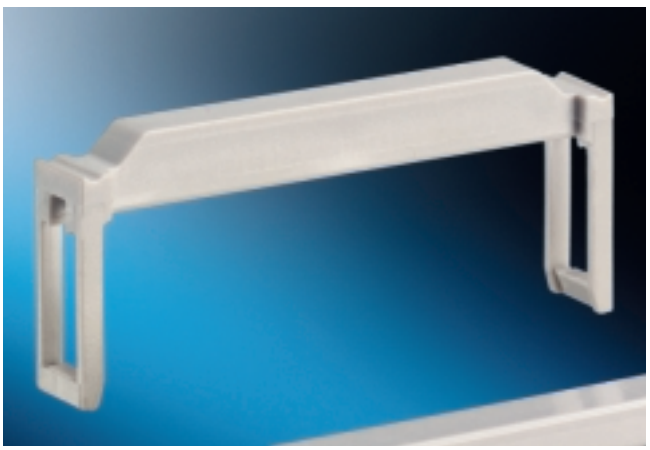


Ordering information

LPV-F, Termination IDC, Cable Type AWG 26/28

No. of pins	Part number
10	074001
14	074002
16	074003
20	074004
26	074005
34	074006
40	043613
50	074008
60	043612
64	074240

Strain relief clamps

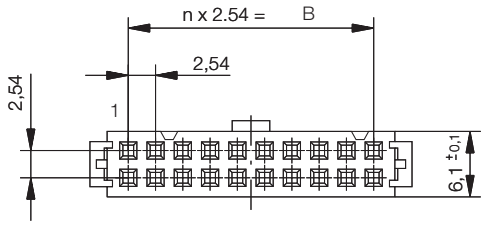


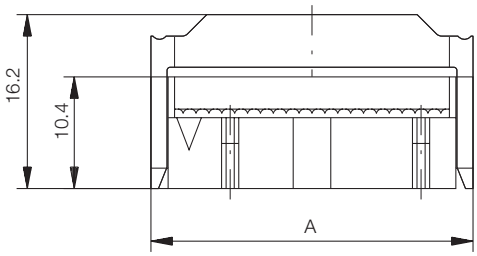
For Female Connectors LPV-F

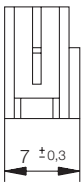
No. of pins	Part number
10	074021
14	074022
16	074023
20	043610
26	074025
34	074026
40	043611
50	074028
60	043609
64	074105

Female Connectors for Male Connectors with and without interlocking

Dimensional drawings

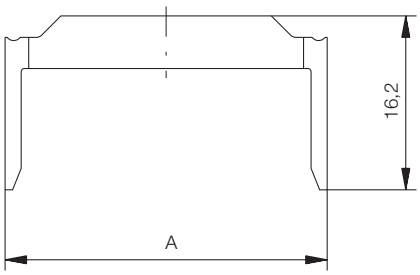


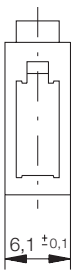




Zugentlastungsbuegel

Strain relief clamp





Polzahl No. of Contacts	A ±0.1	B
64	86.1	78.74
60	81.0	73.66
50	68.2	60.96
40	55.3	48.26
34	47.9	40.64
26	37.6	30.48
20	30.0	22.86
16	24.9	17.78
14	22.3	15.24
10	17.2	10.16

All dimensions in mm

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