

revos FLEX COMPACT 1M the housing system for revos FLEX modules

Optimal protection.









revosFLEX COMPACT 1M applications:

- Control cabinet and motor connection
- Wind turbines
- Mechanical engineering and plant construction
- Construction machinery
- Shipbuilding
- Food industry













revos FLEX COMPACT 1M – indestructible housings for flexible use

Efficiency and safety

Wieland Electric's **revos** FLEX COMPACT 1M is a flexible solution for connecting electrical signals.

For example, the pluggable connector system is used as an electrical interface in control cabinets, as a pluggable connector for motor drives or simply as a pluggable extension. The housing components of the *revos*FLEX COMPACT 1M series are highly flexible. All *revos*FLEX module inserts with a module width of 1 can be used. The module inserts can be quickly fitted without any tools whatsoever.

The optimized fitting reduces electrical installation time compared with standard housings by up to 30%.

The **revos**FLEX COMPACT 1M series housings are robust and virtually indestructible. They are corrosion-protected to DIN EN ISO 9227 (720hrs). They are protected by internal seals against UV radiation that accelerates aging. They are protected against dust ingress, spray water and prolonged immersion and comply with protection ratings **IP65**, **IP68** and **IP69k**. An EMC attenuation of > 70 dB in the frequency range to 100 MHz keeps interference away from sensitive downstream electronics.

Features:

- Compact and robust housing.
 Stainless steel locking lever.
- Corrosion protection: 720 hrs NSS according to DIN EN ISO 9227
- EMC protection: coupling resistance < 10 m Ω to 30 MHz, attenuation
 - > 70 dB to 100 MHz
- Highly flexible due to modular design
- IP65, IP68 (3 m / 10 hrs) and IP69k
- \bullet Easy and quick to fit time-saving of 30 %



Wieland Electric GmbH was awarded the TOP 100 innovation prize of German medium-sized companies for the sixth time

Design of the **revos** FLEX COMPACT 1M housing system

UPPER SHELL

- Cable outlet: side or top
- Cable connection: with M20 or M25 thread





MODULE CARRIER WITHOUT LOCKING LEVER

- Module positions 1
- Clamping area PE: 0.34 10 mm²



MODULE CARRIER WITH LOCKING LEVER

- Module positions 1
- Clamping area PE: 0.34 10 mm²



Variants: **revos**flex compact 1M

Combination for control cabinet feedthrough, machine or motor



Combination for flying connection



Technical benefits:

- Very high corrosion protection: 720hrs salt spray test according to DIN EN ISO 9227
- EMC protection: Coupling resistance
 10mΩ to 30 MHz, attenuation > 70 dB
 to 100 MHz, thereby reliably diverting away interference voltages
- Compact dimensions

Fitting benefits:

- Mechanical and electrical assembly takes place at different times (thereby enabling cable sets to be fitted subsequently)
- No special tools required
- Module inserts can be fitted from the inside face of the devices/control cabinet bulkhead
- Captive fastening screws cannot be lost

Assembling a connector (control cabinet feedthrough)

e.g. 4-pole + PE, 14 A, 400 V









Insert stripped cable

Connect PE conductor

Engage module insert



Click!



Screw on upper shell



Affix base to the control cabinet



Connect PE



Snap in module insert from inside



Click!





Click!



Ready!





If required, detach the contact insert with a screwdriver

revos FLEX COMPACT 1M – in use on the control cabinet



Advantages:

- Simple pre-fitting of the module carrier on the control cabinet (by locking the modules in place on the rear panel)
- Fast and faultless wiring and installation (by means of modules that can be pre-fitted in the factory)
- Modules simply fitted on-site
- No special tools required (exception: crimp connection)

Customer benefits

- Optimized module installation cuts fitting time by 30 %
- Cable looms can be pre-manufactured (100 % factory inspection possible)
- Protection against mismating



The electromagnetic compatibility (EMC) of the **revos** FLEX COMPACT 1M housing system



EMC

Because of their design characteristics **revos** FLEX COMPACT pluggable connectors possess outstanding EMC characteristics. The coupling resistance and shielding attenuation values were determined in accordance with standard IEC60603-7-3.

A coupling resistance of < 10 m Ω in the lower DC frequency range to 30 MHz and a shielding attenuation > 70 dB in a frequency range of 30 MHz to 100 MHz ensures that transient interference phenomena can be reliably diverted away via the outer protective shield. Induced current and voltage caused by indirect lightning strikes are thus minimized on the components to be protected.

EMC-optimized housing characteristics:

- Large overlap of housing components
- All-round, large area contact between connector housings



Proven product characteristics of **revos** FLEX COMPACT **1M**

Proven safety

Heavy duty connectors are employed all year round in many outdoor applications. They must withstand constant shocks and resist high thermal and mechanical stresses, such as stone impact, dust, water, heat and cold. Occasionally they are misused as a climbing aid.

But in this digital and process-controlled era the new standard housings must perform convincingly not just in terms of their mechanical attributes but of the increasingly important protection against electro-magnetic interference. The robust and intelligently designed construction of the *revos* FLEX COMPACT connection system enables energy, signal or bus cables to be reliably and safely connected and protected against environmental influences.

Corrosion testing according to DIN EN ISO 9227

In applications such as construction machinery, commercial vehicles, the food industry, etc, heavy-duty pluggable connectors are exposed to aggressive chemical substances such as acids, alkalis, oils or salts which can result in severe corrosion within a short space of time.

The **revos**FLEX COMPACT 1M pluggable connector can withstand this extreme pollution as well.

Corrosion testing in an artificial atmosphere

DIN EN ISO 9227 salt spray testing

Test parameters:

Chamber temperature: 30 °C + 2 °C
NaCl concentration: 50 g/l + 5
Ph value: 6.5 to 7.2
test duration: 30 days

Result:

After 720 hrs NSS in accordance with DIN EN ISO 9227 the *revos* FLEX COMPACT 1M exhibited no signs of corrosion.



revos FLEX COMPACT 1M pluggable connectors undergoing testing



IP 6X IEC 60529 | dust

Protection of contact inserts against dust ingress.

Test parameters:

Negative pressure: 20 mbarTest duration: 8 hrs

Result:

The **revos**FLEX COMPACT 1M met the IP 6X protection rating requirements. There was no visible ingress of dust into the pluggable connector.



IP X5 IEC 60529 | spray water

Protection against harm as a result of spray water ingress.

Test parameters:

Spray nozzle: 6.3 mmWater flow rate: 12.5 l/min

• Test duration: at least 3 minutes

IP X8 IEC 60529 | immersion

Protection against prolonged immersion in water.

Test parameters:

Water column: 3 mTest duration: 10 hrs

Result:

The **revos**FLEX COMPACT 1M met the IP X5/X8 protection rating requirements. There was no water ingress into the pluggable connector.



IP X9k IEC 60529 | high pressure /steam jets

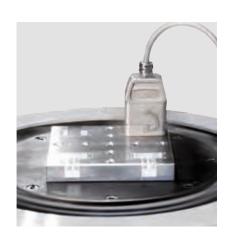
Water protection during high pressure and steam jet testing.

Test parameters:

Water pressure: 80 to 100 bar
Water temperature: +80 °C ± 5 °C
Water flow: 14 to 16 l/min

Result:

The **revos**FLEX COMPACT 1M met the IP 69k protection rating requirement and is therefore ideally suited for outdoor use.



Shock and vibration testing

Pluggable connectors used in railway technology are exposed to especially extreme vibrations.

Result:

The **revos**FLEX COMPACT 1M pluggable connector meets the requirements of DIN EN 50155 category1, class B and is thus suitable for use in railway vehicle bodies.



Impact resistance testing IK 08

The IK impact resistance rating is an index indicating a housing's resistance to impact. No damage may be incurred during testing that could impair the functioning or safety of the housing.

Result:

The **revos**FLEX COMPACT 1M pluggable connector meets IK 08 requirements.



Roll-over test

In industrial environments, heavy loads are routinely moved by floor conveyors such as fork lift trucks. Further evidence of the ruggedness of the *revos* FLEX COMPACT 1M pluggable connector is provided by the roll-over test modeled on DIN EN 62196-1.

Result

The **revos**FLEX COMPACT 1M pluggable connector also withstands this extreme stress unscathed.



Module Carrier and Upper Shell

Module Carrier and Upper Shell *revos* FLEX COMPACT 1M

Module Carrier

with locking lever without locking lever



Upper Shell Lateral cable entry



Upper Shell Top cable entry

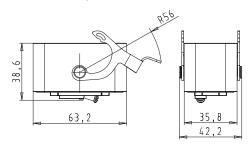


Description	Туре	М	Part No.	P.U.	
Module Carrier					
with locking lever	RFC MC L 1 M A20		78.320.0134.0	1	
without locking lever	RFC MC 1 M A20		78.330.0134.0		
•					
Upper Shell Lateral cable entry M20					
with threaded collar	RFC TS 1M M20S A21	20	78.352.0134.1	1	
with threaded collar with cable gland, IP68, ⊶IØI⊷ 8 – 13 mm	RFC TS 1M M20S A21		78.352.0134.1		
	NFC 13 TW WIZUS AZS	20	70.302.0134.0	1	
Lateral cable entry M25					
with threaded collar	RFC TS 1M M25S A21		78.353.0134.1		
with cable gland, IP68, ⊶IØI⊷ 11 – 18 mm	RFC TS 1M M25S A25	25	78.353.0134.5	1	
Top cable entry M20					
with threaded collar	RFC TS 1M M20T A21		78.362.0134.1		
with cable gland, IP68, →IØI← 8 – 13 mm	RFC TS 1M M20T A25	20	78.362.0134.5	1	
Top cable entry M25					
with threaded collar	RFC TS 1M M20T A21	25	78.363.0134.1	1	
with cable gland, IP68, →IØI- 11 - 18 mm	RFC TS 1M M20T A25	25	78.363.0134.5	1	
•					
Technical data					
Material	aluminum				
Surface		stainless steel			
Locking levers	NBR				
Gasket PE connection	0.34 – 10 mm ²				
Corrosion protection	720 hrs (ISO 9227)				
Mating cycles	500 (EN 61984)				
Vibration	Class B – Category 1 (DIN EN 50155)				
Degree of protection	Class B = Category 1 (DIN LIV	5010	33)		
with appropriate cable glands	IP65 & IP68 (3 m / 10 hrs) & IF	69k	(DIN EN 60529)		
Temperature range	-40 °C - +120 °C				
EMC	10 0 1120 0				
EMC coupling resistance acc. to IEC60603-7-3	< 10 mOhm DC to 10 MHz				
EMC shielding attenuation	> 70dB 10 MHz to 100 MHz				
Expanded measuring span (in connection with					
suitable EMC cable screw gland)					
Approval					
NEMA-Degree of protection	UL Type 4x				
Applicable modules	all modules with module width 1				
''					
Description	Туре	М	Part No.	P.U.	
Accessories					
Cable gland IP68, nickel-plated brass	Connection range 8 – 13mm	20	Z5.507.1321.0	10	
Cable gland IP68, nickel-plated brass	Connection range 11 – 18mm				
Cable gland IP68 EMC, nickel-plated brass	Connection range 8 - 13 mm		Z5.507.4821.0		
Coble gland ID60 EMC nickel plated bross	Connection range 11 19 mm				

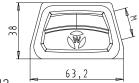
Dimensions

Module Carrier

with locking lever



Upper Shell Lateral cable entry



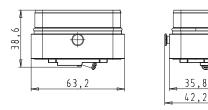


without locking lever

Cable gland IP68 EMC, nickel-plated brass

Cable gland IP69k nickel-plated brass

Cable gland IP69k nickel-plated brass

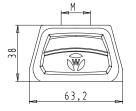


Connection range 11 - 18 mm | 25 | Z5.507.5021.0 | 10

Connection range 6 - 12 mm 20 Z5.505.7121.0 10

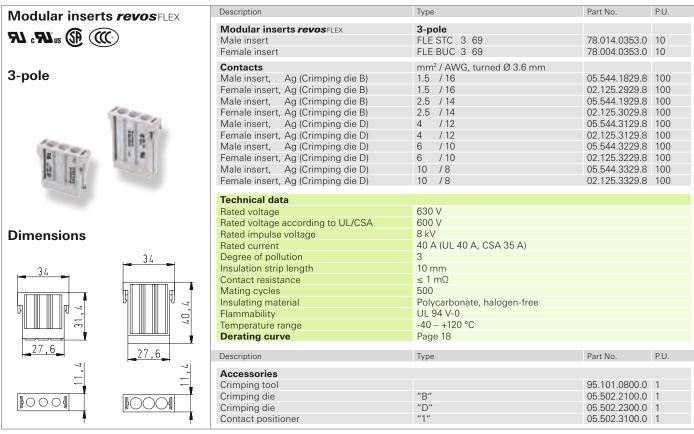
Connection range 11 - 17 mm 25 Z5.505.7221.0 10

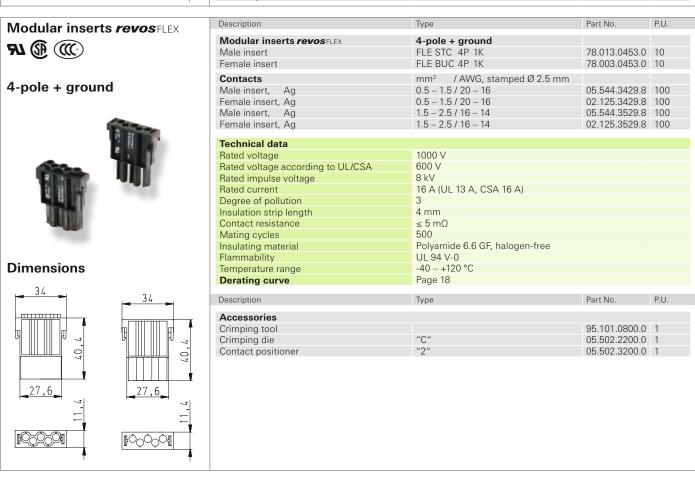
Upper Shell Top cable entry



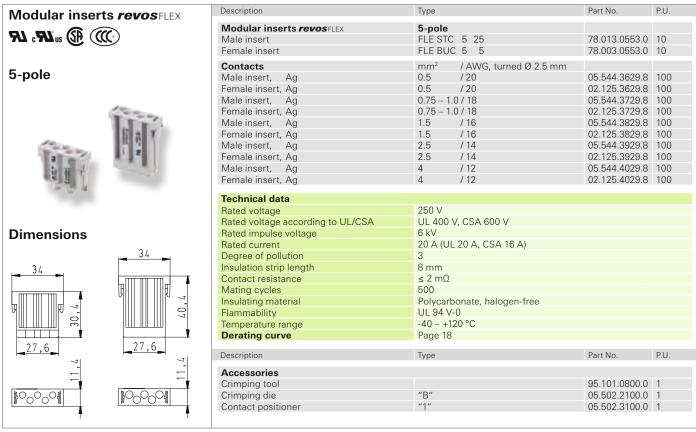


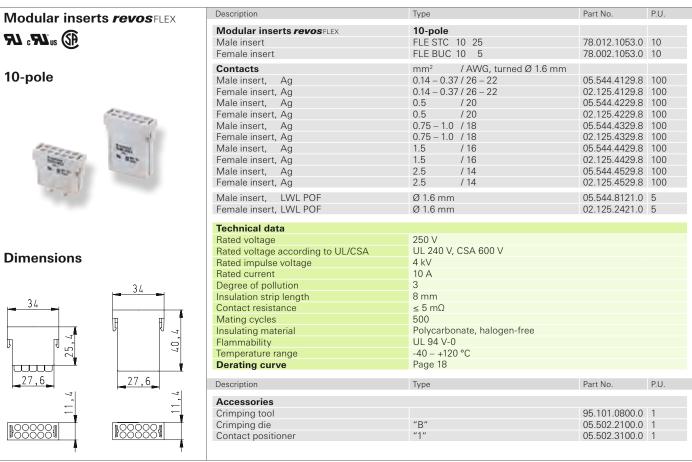
Modular connector system 3-pole, 4-pole + ground



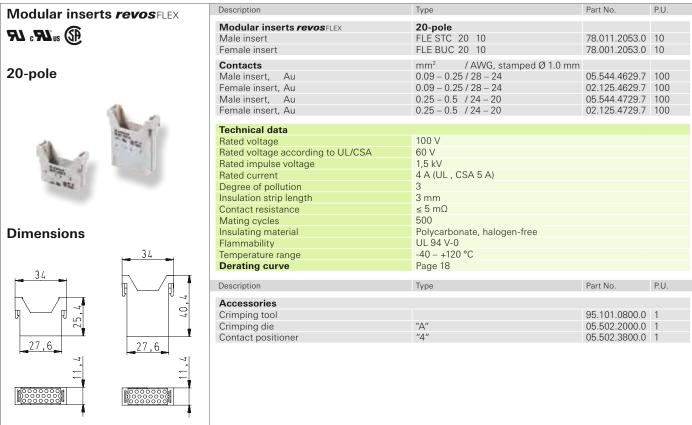


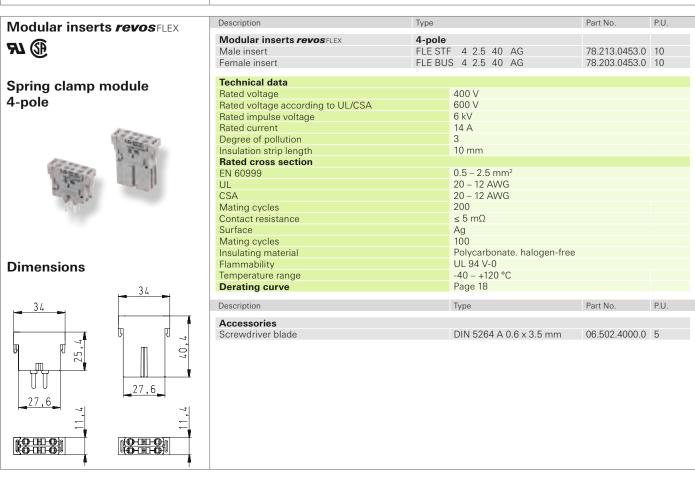
Modular connector system 5-pole, 10-pole



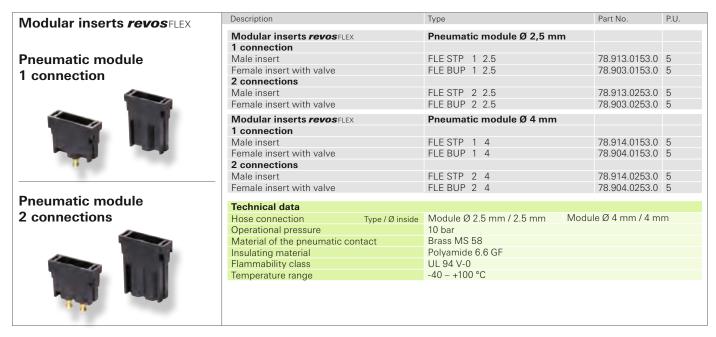


Modular connector system 20-pole, Spring clamp module 4-pole





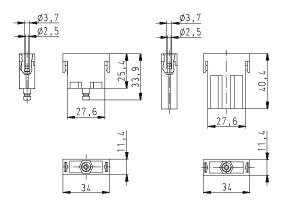
Modular connector system



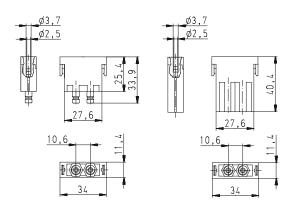
Dimensions

Pneumatic module Ø 2.5 mm

1 connection

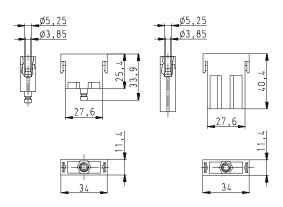


2 connections

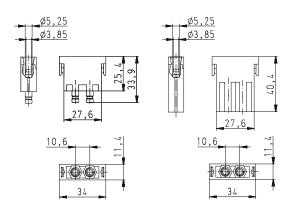


Pneumatic module Ø 4 mm

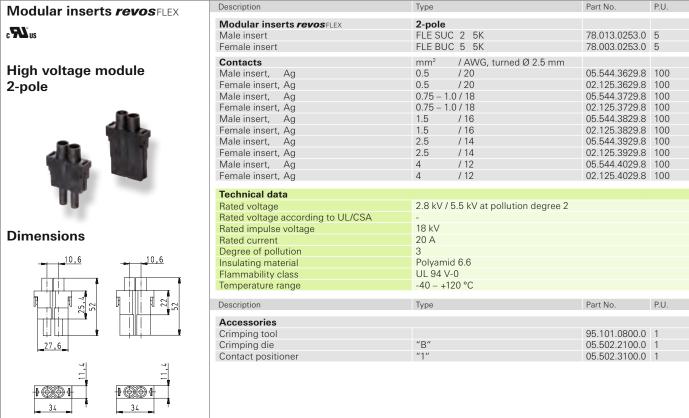
1 connection



2 connections



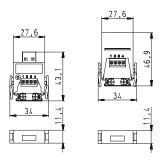
Modular connector system High voltage, USB, Profibus module



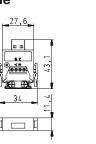
P.U. Description Part No. Modular inserts revos FLEX Modular inserts revos FLEX **USB** module FLE STK 4S 1.5 03 AU 78.111.0453.0 5 Male insert **USB** module FLE BUK 4S 1.5 03 AU 78.101.0453.0 5 Female insert Modular inserts revos FLEX **Profibus module** FLE STD 2S 1.5 03 AU 78.191.0453.0 5 Male insert FLE BUD 2S 1.5 03 AU 78.181.0453.0 5 Female insert **Technical data** Rated voltage 30 V Rated voltage according to UL/CSA **Conductor cross section** 0.8 - 1.5 mm² / 28 - 16 AWG USB module Profibus module according to PROFIBUS DP regulations Rated current 1 A **Profibus module** Number of poles 4+screen USB module Profibus module 2+screen 0.5 Nm / 0.2 Nm Connection torques screen / PCB connector Data transmission rate 12 MBit/s USB module Profibus module 1.5 MBit/s Insulating material Polycarbonate Flammability class of insulating housing UL 94 V-0 Temperature range -20 - +85 °C

Dimensions

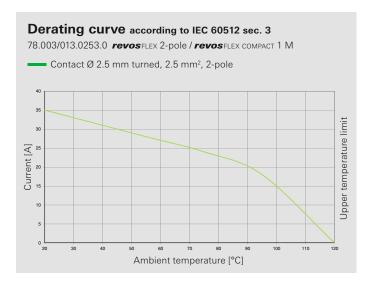
USB module

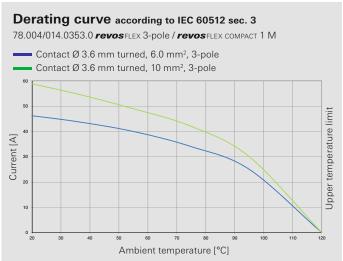


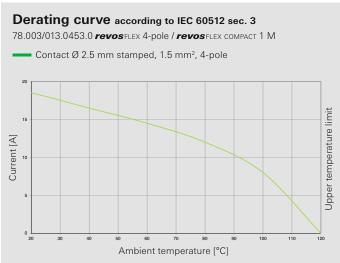
Profibus module

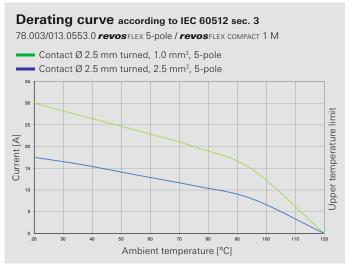


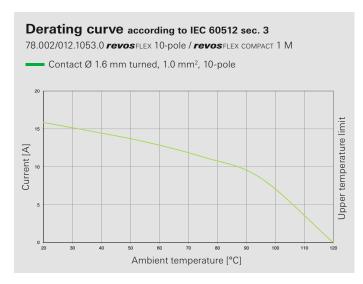
Derating curve

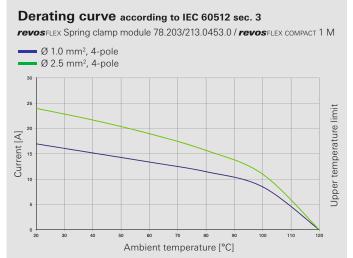












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