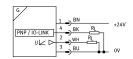
Position transmitter SDAT-MHS-M125-1L-SV-E-0.3-M8

Part number: 8115397







Data sheet

Feature	Value
Design	For T-slot
Approval	RCM trademark c UL us listed (OL)
CE mark (see declaration of conformity)	To EU EMC Directive
CE marking (see declaration of conformity)	To UK instructions for EMC
Note on materials	RoHS-compliant Free of halogen
Instructions on use	https://www.festo.com/Drive-Sensor-Overview
Measured variable	Position
Measuring principle	Magnetic Hall
Sensing range	0 mm125 mm
Ambient temperature	-25 °C70 °C
Typical sampling interval	1 ms
Max. travel speed	3 m/s
Displacement resolution	0.05 mm
Repetition accuracy	0.1 mm
Switching output	PNP
Switching element function	N/C or N/O contact, switchable
Switch-on time	2 ms
Switch-off time	2 ms
Max. switching frequency	1 kHz
Max. output current	100 mA
Max. switching capacity DC	2.7 W
Voltage drop	2.5 V
Analogue output	0 - 10 V
Sensitivity	0.072 V/mm
Typical linearity error	±0.25 mm
Min. load resistance voltage output	20 kOhm
Short circuit current rating	yes
Overload protection	Available
Protocol	I-Port IO-Link®

O-Link, Function classes Simart sensor profile Binary data channed (BDC) Processe data variable (PDV) Disprisor (Communication mode COM3 (29.6. kBaud) CoLink, Communication mode COM3 (29.6. kBaud) COLink, Communication mode COM3 (29.6. kBaud) COLink, Color Color, Color Color Color, Color Col	Feature	Value
Binary data channet (BPC) Process data variable (PDV) Identification Binary data channet (BPC) Process data variable (PDV) Identification Binary data channet (BPC) Process data variable (PDV) Identification Binary data channet (BPC) Process data variable (PDV) Identification Binary data channet BPC (BPC) BPC	IO-Link, Protocol version	Device V 1.1
Process data variable (PDV) Identification Diagnostics Teach channel IO-Link, Communication mode COM3 (230.4 kBaud) IO-Link, Prorease data length IN O-Link, Prorease data length IN O-Link, Process data content IN 12 bit PDV (measured position value) 4 bit DOC (position monitoring) O-Link, Min. cycle time 1 ms O-Link, Process data content IN 12 bit PDV (measured position value) 4 bit DOC (position monitoring) O-Link, Min. cycle time 1 ms O-Link, Min. cycle time 1 psease plantify protection For all electrical connections Electrical connection I, connection type Electrical connection I, connection type Electrical connection I, connection type Electrical connection I, connection system Electrical connection	IO-Link, Profile	Smart sensor profile
OLInik, FOO Mode support Ves	IO-Link, Function classes	Process data variable (PDV) Identification Diagnostics
IO-Link, Protess data length IN 2 bytes	IO-Link, communication mode	COM3 (230.4 kBaud)
10-Link, Process data length IN 2 bytes	IO-Link, SIO-Mode support	Yes
10 Link, Process data content IN 4 bit BDC (position monitoring) O-Link, Min. cycle time 1 ms Operational voltage range DC 15 V30 V Residual ripple 10 % Reverse polarity protection Electrical connection 1, connector system Electrical connection 1, connector system Electrical connection 1, unmen of connections/cores 4 Electrical connection 1, unmen of connections/cores 4 Electrical connection 1, uppe of mounting Connection outlet orientation In-line Residual ripple Residual ripple Connection 1, type of mounting Connection outlet orientation In-line Bending strength: to Festo standard Torsional resistance: 300,000 cycles, 270°/0.1 m Energy chains: 95 million cycles, bending radius 28 mm O.3 m Cable length O.3 m Cable characteristic Sultable for energy chains/robot applications Cables sheath colour grey Material cable sheath TPE-U(PUR) Type of mounting Material housing Product weight 30 g Brass, nickel plated PA-rainforced Polyester High-alloy stainless steel Material foil Polyester High-alloy stainless steel Material foil Polyester High-alloy stainless steel Material foil Polyester High-alloy stainless steel Material foil Polyester High-alloy stainless steel Material foil Polyester High-alloy stainless steel Material foil Polyester High-alloy stainless steel Material foil Polyester High-alloy stainless steel Material foil Polyester High-alloy stainless steel Material foil Polyester High-alloy stainless steel Material foil Polyester High-alloy stainless steel Material foil Polyester High-alloy stainless steel Material foil Polyester High-alloy stainless steel Material foil Polyester High-alloy stainless steel Material foil Polyester High-alloy stainless steel Material foil Polyester High-alloy stainless steel Material foil Polyester High-alloy stainless steel Material foil Polyester High-alloy stainless steel Material foil Polyester High-alloy stainless steel Material foil Polyester High-alloy stainless steel Material foi	IO-Link, Port class	А
A bit BDC (position monitoring)	IO-Link, Process data length IN	2 bytes
Operational voltage range DC Residual ripple 10 % Reverse polarity protection Electrical connection 1, connection type Cable with plug Electrical connection 1, connector system M8x1, A-coded, to EN 61076-2-104 Electrical connection 1, tymber of connections/cores Electrical connection 1, tymber of connections/cores Electrical connection 1, type of mounting Connection outlet orientation Material electrical contact Copper alloy Bending strength: to Festo standard Torsional resistance: 300,000 cycles, ±270°/0.1 m Energy chains: 5 million cycles, bending radius 28 mm Cable length 0.3 m Cable characteristic Suitable for energy chains/robot applications Cable sheath colour grey Material cable sheath TPE-U(PUR) Type of mounting Type of mounting Screw-clamped Insertable in the slot from above Mounting position Optional Product weight 30 g Material housing Brass, nickel-plated PA-reinforced Polyester High-alloy stainless steel Material foil Ready status indication Status indication Setting options Polyester Ready status indication Setting options Mounting transport of the polyester Ready status indication Setting options Mounting indication Setting options Polyester Polyes	IO-Link, Process data content IN	
Reverse polarity protection Electrical connection 1, connector type Electrical connection 1, connector type Electrical connection 1, connector system Max1, A-coded, to EN 61076-2-104 Electrical connection 1, number of connections/cores 4 Electrical connection 1, number of connections/cores 4 Electrical connection 1, pup of mounting Screw-type lock Connection outlet orientation In-line Material electrical contact Gopper alloy Bronze Electrical contact Bending strength: to Festo standard Torsional resistance: 300,000 cycles, 2270/0.1 m Energy chain: > 5 million cycles, bending radius 28 mm Cable length O,3 m Cable characteristic Sultable for energy chains/robot applications Cable sheath colour grey Material aleb sheath TPE-U(PUR) Type of mounting Screw-clamped In shearable in the slot from above Mounting position optional Product weight 30 g Material Inousing Product weight Brass, nickel-plated PA-reinforced Polyester High-alloy stanless steel Material foil Polyester Ready status indication Setting options Vellow LED Status indication Red LED Setting options Product weight moving cable Polyester Publish ElD Setting options Product weight moving cable Polyester Publish ElD Setting options Publish ElD Setting options Polyester Publish ElD Setting options Publish From than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are n	IO-Link, Min. cycle time	1 ms
Reverse polarity protection For all electrical connections Cable with plug Electrical connection 1, connection system M8x1, A-coded, to EN 61076-2-104 Electrical connection 1, number of connections/cores 4 Electrical connection 1, type of mounting Screw-type lock Connection outlet orientation In-line Material electrical contact Copper alloy Bronze Bending strength: to Festo standard Torsional resistance: 3 300,000 cycles, ± 270°/0.1 m Energy chain: > 5 million cycles, bending radius 28 mm Cable length Cable characteristic Suitable for energy chains/robot applications Cable sheath colour grey Material cable sheath TPE-U(PUR) Type of mounting Screw-clamped Insertable in the slot from above Mounting position Optional Product weight Anderial housing Brass, nickel-plated PA-reinforced Polyester High-alloy staniless steel Material union nut Material foil Ready status indication Red LED Setting options Polyester High-alloy staniless steel Material time status indication Red LED Setting options Pushbutton Ambient temperature with moving cable Degree of protection Pie65 Pie68 LABS (PWIS) conformity Motals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and colis	Operational voltage range DC	15 V30 V
Electrical connection 1, connection type Electrical connection 1, connector system M8x1, A-coded, to EN 61076-2-104 Electrical connection 1, type of mounting Screw-type lock Connection outlet orientation Material electrical contact Copper alloy Bending strength: to Festo standard Torsional resistance: 300,000 cycles, ± 270°/0.1 m Energy chain: 5 million cycles, bending radius 28 mm Cable length O.3 m Cable elength O.3. m Cable shearth colour grey Material cable sheath TPE-U(PUR) Type of mounting Screw-clamped Insertable in the slot from above Mounting position Product weight 30 g Brass, nicket-plated PA-reinforced PA-reinforced PA-reinforced Polyester High-alloy stainless steel Material foil Ready status indication Setting of protection Setting position Pellok Wellow LED Status indication Red LED Setting options UDLink® Pushbutton Ambient temperature with moving cable Degree of protection LABS (PWIS) conformity WDMA24364-B2-L Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated Suitability for the production of Li-ion batteries Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and colls Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and colls	Residual ripple	10 %
Electrical connection 1, connector system M8x1, A-coded, to EN 61076-2-104 Electrical connection 1, number of connections/cores 4 Electrical connection 1, type of mounting Screw-type lock Conper alloy Bronze Test conditions cable Test conditions cable Bending strength: to Festo standard Torsional resistance: > 300,000 cycles, ± 270°/0.1 m Energy chain: > 5 million cycles, bending radius 28 mm Cable length O.3 m Cable characteristic Suitable for energy chains/robot applications Cable sheath colour Brey-U/UR) TPE-U/UR) TPE-U/UR) Material cable sheath TPE-U/UR) Mounting position Mounting position Product weight 30 g Material housing Brass, nickel-plated PA-reinforced Polyester High-alloy stainless steel Material union nut Material stoil Material foil Polyester High-alloy stainless steel Material foil Polyester Seatus indication Red LED Setting options Ambient temperature with moving cable Degree of protection PP65 IP65 IP65 IP65 IP65 IP65 IP65 IP6	Reverse polarity protection	For all electrical connections
Electrical connection 1, number of connections/cores Electrical connection 1, type of mounting Screw-type lock In-line Material electrical contact Copper alloy Bronze Bending strength: to Festo standard Torsional resistance: > 300,000 cycles, a 270°/0.1 m Energy chain: > 5 million cycles, bending radius 28 mm O.3 m Cable length O.3 m Cable sheath colour grey Material cable sheath TPE-U(PUR) Screw-clamped Insertable in the slot from above Mounting position Product weight Material housing Brass, nickel-plated PA-reinforced Polyester High-alloy stainless steel Material foil Ready status indication Switching status indication Switching status indication Setting options Ambient temperature with moving cable Degree of protection IP65 IP68 LABS (PWIS) conformity Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated from use. Exceptions are nickel in steel, chemically nickel-plated from use. Exceptions are nickel in steel, chemically nickel-plated from use. Exceptions are nickel in steel, chemically nickel-plated from use. Exceptions are nickel in steel, chemically nickel-plated from use. Exceptions are nickel in steel, chemically nickel-plated from use. Exceptions are nickel in steel, chemically nickel-plated from use. Exceptions are nickel in steel, chemically nickel-plated from use. Exceptions are nickel in steel, chemically nickel-plated from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Electrical connection 1, connection type	Cable with plug
Electrical connection 1, type of mounting Connection outlet orientation In-line Material electrical contact Bending strength: to Festo standard Torsional resistance: > 300,000 cycles, ± 270°/0.1 m Energy chain: > 7 million cycles, bending radius 28 mm Cable length O.3 m Cable elngth O.3 m Suitable for energy chains/robot applications Cable sheath TPE-U(PUR) Type of mounting Screw-clamped Insertable in the slot from above Mounting position Optional Product weight ON Material lousing Brass, nickel-plated Pr-reinforced Polyester High-alloy stainless steel Material foil Ready status indication Switching status indication Setting options Pollution Setting options Optional Descriptions Optional Description Descriptio	Electrical connection 1, connector system	M8x1, A-coded, to EN 61076-2-104
In-line	Electrical connection 1, number of connections/cores	4
Material electrical contact Copper alloy Bronze Bending strength: to Festo standard Torsional resistance: > 300,000 cycles, ± 270°/0.1 m Energy chain: > 5 million cycles, bending radius 28 mm Cable length O.3 m Cable length Suitable for energy chains/robot applications Cable sheath colour Brey Material cable sheath TPE-U(PUR) Type of mounting Screw-clamped Insertable in the slot from above Mounting position Optional Product weight Og Brass, nickel-plated PA-reinforced Polyester High-alloy stainless steel Material union nut Material union nut Mickel-plated brass Material foil Ready status indication Status indication Status indication Status indication Red LED Setting options Ambient temperature with moving cable Degree of protection IP65 IP68 LABS (PWIS) conformity VDMA24364-B2-L Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated from use. Exceptions and coils	Electrical connection 1, type of mounting	Screw-type lock
Test conditions cable Torsional resistance: > 300,000 cycles, = 270°/0.1 m Energy chain: > 5 million cycles, bending radius 28 mm O.3 m Cable length O.3 m Cable characteristic Suitable for energy chains/robot applications Test U(PUR) Type of mounting Type of mounting Type of mounting Type of mounting Screw-clamped Insertable in the slot from above Mounting position Product weight 30 g Brass, nickel-plated PA-reinforced Polyester High-alloy stainless steel Material housing Material union nut Material foil Polyester Ready status indication Switching status indication Status indication Setting options Ol-Link® Pushbutton Ambient temperature with moving cable -20 °C70 °C Degree of protection IP65 IP68 LABS (PWIS) conformity WOMA24364-B2-L Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Connection outlet orientation	In-line
Torsional resistance: > 300,000 cycles, ± 270°/0.1 m Energy chain: > 5 million cycles, bending radius 28 mm Cable length Cable characteristic Suitable for energy chains/robot applications Gable sheath colour Material cable sheath TPE-U(PUR) Type of mounting Screw-clamped Insertable in the slot from above Mounting position Product weight Material housing Brass, nickel-plated PA-reinforced Polyester High-alloy stainless steel Material union nut Nickel-plated brass Material foil Polyester Ready status indication Switching status indication Settus indication Settus diaction Settus options DO-Link® Pushbutton Ambient temperature with moving cable Degree of protection IP65 IP65 IP65 IP65 Suitability for the production of Li-ion batteries Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Material electrical contact	''
Cable characteristic Cable sheath colour Material cable sheath TPE-U(PUR) Type of mounting Screw-clamped Insertable in the slot from above Mounting position Product weight Material housing Material housing Brass, nickel-plated PA-reinforced Polyester High-alloy stainless steel Material union nut Mickel-plated brass Material foil Polyester Ready status indication Status indication Status indication Setting options Mounting status indication Red LED Setting options Mounting position Polyester Red UED Setting options Mounting position Polyester Red UED Setting options Mounting position Polyester Red UED Setting options Mounting position Mounting position Polyester Red UED Setting options Mounting position Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Test conditions cable	Torsional resistance: > 300,000 cycles, ± 270°/0.1 m
Cable sheath colour Material cable sheath TPE-U(PUR) Screw-clamped Insertable in the slot from above Mounting position Product weight Material housing Material housing Material union nut Mickel-plated PA-reinforced Polyester High-alloy stainless steel Material foil Ready status indication Switching status indication Status indication Setting options Mounting position Polyester Read LED Status indication Red LED Setting options Mounting temperature with moving cable -20 °C70 °C Degree of protection Ple68 LABS (PWIS) conformity VDMA24364-B2-L Suitability for the production of Li-ion batteries Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Cable length	0.3 m
Material cable sheath TPE-U(PUR) Type of mounting Screw-clamped Insertable in the slot from above Mounting position Product weight 30 g Material housing Brass, nickel-plated PA-reinforced Polyester High-alloy stainless steel Material union nut Nickel-plated brass Material foil Polyester Ready status indication Green LED Switching status indication Status indication Red LED Status indication Red LED Status indication Red LED Setting options 10-Link® Pushbutton Ambient temperature with moving cable -20 °C70 °C Degree of protection IP65 IP68 LABS (PWIS) conformity VDMA24364-B2-L Suitability for the production of Li-ion batteries Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Cable characteristic	Suitable for energy chains/robot applications
Screw-clamped Insertable in the slot from above Mounting position optional Product weight 30 g Material housing Pass, nickel-plated PA-reinforced Polyester High-alloy stainless steel Material union nut Nickel-plated brass Material foil Polyester Ready status indication Green LED Switching status indication Yellow LED Status indication Red LED Status indication Red LED Setting options IO-Link® Pushbutton Ambient temperature with moving cable -20 °C70 °C Degree of protection IP65 IP68 LABS (PWIS) conformity VDMA24364-B2-L Suitability for the production of Li-ion batteries Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Cable sheath colour	grey
Insertable in the slot from above Mounting position Product weight 30 g Material housing Brass, nickel-plated PA-reinforced Polyester High-alloy stainless steel Material union nut Nickel-plated brass Material foil Polyester Ready status indication Switching status indication Status indication Yellow LED Status indication Red LED Setting options 10-Link® Pushbutton Ambient temperature with moving cable Degree of protection 1P65 1P68 LABS (PWIS) conformity VDMA24364-B2-L Suitability for the production of Li-ion batteries Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Material cable sheath	TPE-U(PUR)
Product weight 30 g Material housing Brass, nickel-plated PA-reinforced Polyester High-alloy stainless steel Material union nut Nickel-plated brass Material foil Polyester Ready status indication Switching status indication Yellow LED Status indication Red LED Setting options IO-Link® Pushbutton Ambient temperature with moving cable -20 °C70 °C Degree of protection IP65 IP68 LABS (PWIS) conformity VDMA24364-B2-L Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Type of mounting	
Brass, nickel-plated PA-reinforced Polyester High-alloy stainless steel Material union nut Material foil Ready status indication Switching status indication Status indication Setting options IO-Link® Pushbutton Ambient temperature with moving cable Degree of protection Pef68 LABS (PWIS) conformity Wallaw the production of Li-ion batteries Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Mounting position	optional
PA-reinforced Polyester High-alloy stainless steel Material union nut Mickel-plated brass Material foil Ready status indication Switching status indication Yellow LED Status indication Red LED Setting options IO-Link® Pushbutton Ambient temperature with moving cable -20 °C70 °C Degree of protection IP65 IP68 LABS (PWIS) conformity VDMA24364-B2-L Suitability for the production of Li-ion batteries Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Product weight	30 g
Material foil Polyester Ready status indication Green LED Switching status indication Yellow LED Status indication Red LED Setting options IO-Link® Pushbutton Ambient temperature with moving cable -20 °C70 °C Degree of protection IP65 IP68 LABS (PWIS) conformity VDMA24364-B2-L Suitability for the production of Li-ion batteries Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Material housing	PA-reinforced Polyester
Ready status indication Switching status indication Yellow LED Status indication Red LED Setting options IO-Link® Pushbutton Ambient temperature with moving cable -20 °C70 °C Degree of protection IP65 IP68 LABS (PWIS) conformity VDMA24364-B2-L Suitability for the production of Li-ion batteries Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Material union nut	Nickel-plated brass
Switching status indication Red LED Setting options IO-Link® Pushbutton Ambient temperature with moving cable -20 °C70 °C Degree of protection IP65 IP68 LABS (PWIS) conformity VDMA24364-B2-L Suitability for the production of Li-ion batteries Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Material foil	Polyester
Status indication Red LED Setting options IO-Link® Pushbutton Ambient temperature with moving cable -20 °C70 °C Degree of protection IP65 IP68 LABS (PWIS) conformity VDMA24364-B2-L Suitability for the production of Li-ion batteries Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Ready status indication	Green LED
Setting options IO-Link® Pushbutton Ambient temperature with moving cable -20 °C70 °C Degree of protection IP65 IP68 LABS (PWIS) conformity VDMA24364-B2-L Suitability for the production of Li-ion batteries Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Switching status indication	Yellow LED
Pushbutton -20 °C70 °C Degree of protection IP65 IP68 LABS (PWIS) conformity VDMA24364-B2-L Suitability for the production of Li-ion batteries Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Status indication	Red LED
Degree of protection IP65 IP68 LABS (PWIS) conformity VDMA24364-B2-L Suitability for the production of Li-ion batteries Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Setting options	I I
IP68 LABS (PWIS) conformity VDMA24364-B2-L Suitability for the production of Li-ion batteries Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Ambient temperature with moving cable	-20 °C70 °C
Suitability for the production of Li-ion batteries Metals with more than 1% copper, zinc or nickel by mass are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	Degree of protection	
from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils	LABS (PWIS) conformity	VDMA24364-B2-L
Class & according to ISO 14644-1	Suitability for the production of Li-ion batteries	from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and
Class 4 decoraling to 150 14044-1	Cleanroom class	Class 4 according to ISO 14644-1