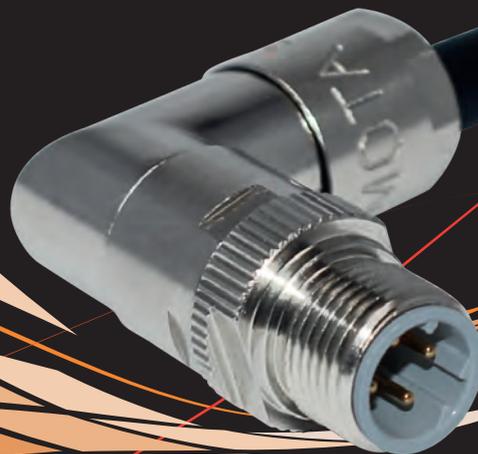


# GIMOTA AG

## Product Catalogue

### GTM12 Series

2015



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This product Catalogue replaces all previous catalogue editions, data- and information sheets .  
Product data are provided without guarantee and are for information only. All data are subjected to alteration.

Valid from 08.2015

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# 1 General information

## 1.1 GIMOTA AG

GIMOTA situated near Zurich Switzerland was founded in 1961 by Otto Schoch. The company has been amongst others specialized in supplying connectors for the use in railway applications. These are for example CIRCULAR CONNECTORS for power and data signal transmission or DATA CONNECTORS.

Continuing in-house developments concentrated on the same field of activities, particularly with regard to connectors for high-current and data transmission circuits for example the GIMOTA TRAC-Series, and EMI shielded connectors.

GIMOTA connectors are used worldwide in various railway vehicles for lots of different applications. For example with conventional and electronic control systems, with measuring devices of all kinds and within jumper cable applications.

GIMOTA supplies its products to most of the world's leading railway manufacturers and railway operators worldwide.

GIMOTA is known for its high flexibility. The company develops and manufactures connectors for specialized applications according to customer specifications and needs.

Even small batches are welcome to be realized.



GIMOTA takes all possible efforts to provide appropriate logistics solution, such as «just-in-time» deliveries based on an order contracts and forecasts, or maintaining minimum inventory levels specified with the customer.

GIMOTA is today one of the leading providers of industrial traction connectors, and is continuously expanding its market share due to solutions with close focus on customers demand.

# 2 GTM12 Series

## 2.1 Introduction

The industrially approved M12 connecting solutions are more and more considered on devices for the railway industry.

An often mentioned handicap is the contact application to the wires and strands. Usually soldering or Insulation-displacement connections (IDC) for field assembling is provided and used.

According to long term experiences crimped contact applications offer best possible performances regarding endurance under vibrations.

The weight factor of components is a further criterion which is more and more assessed for application engineering solutions and finally for the application decision.

As humidity and moisture have to be considered for inside applications the ingress protection (IP rating) of electrical and electronic devices is a major concern of the product evaluation.

Gimota AG consistently adjusted the common industrial M12 connector solution according to EN 61076-2-101 to the needs and demand of railway applications and tested according EN 50155.

The GTM12 connector series by Gimota AG offers a variety of M12 cable plugs/receptacles and bulkheads which are also suitable for field assembling.



### 3 General technical data

#### 3.1 Electrical properties

All electric data are valid on sea level with an environment temperature of 20 °C. The mentioned temperature values are considered as limit temperatures.

		A-coded 8 pole	D-coded
Service voltage	[V] DC	30	250
Operation current	[A]	2	4
Surge voltage	[kV]	0.8	2.5
Resistance	[mΩ]	< 10	< 10
Pollution degree <sup>1</sup>		3	3
Potential drop across contacts	[kV]	0.65	1.4
Potential drop between contacts and housing	[kV]	0.65	1.4
Data transfer speed	[Mbits/s]	(1000/Cat5e)	10/100

Requirements acc.: IEC 60512, Test 4a at standard climate and mated plugs

<sup>1</sup> Only if mated and tightened with counter-plug/-receptacle

#### 3.2 Thermal properties

	Strain relieve <sup>1</sup> / Contact support <sup>1</sup> / Contact carrier <sup>1</sup>
Material	Latamid 6H-V0
Service temperature	-40°C to 85°C
Fire resistance class UL94	V0
Fire characteristic NF F 16-101/102	I2/F2
Fire characteristic DIN EN 4545-2	NLP; R22/R23: HL1/HL2/HL3
Fire characteristic DIN 5510	S4/SR2/ST2

<sup>1</sup>) non-halogen, flame retarded

#### 3.3 Mechanical properties

		A-coded	D-coded
Number of contacts		8	4
Strand/wire adaptation		Crimp version	
Wire section	mm <sup>2</sup>	8 x 0.20 (AWG 24) - 8 x 0.34 (AWG 22)	4 x 0.34 (AWG 22) - 4 x 0.50 (AWG 20)
Connecting life cycle of contacts (gold) <sup>1</sup>	mating cycles	> 200	
Mating force <sup>2</sup>	[N]	max. 10	
Separating force <sup>2</sup>	[N]	max. 15	
Insulating resistance	[Ω]	≥ 10 <sup>8</sup>	
Contact material		0,5 μm Au over Cu-alloy	

<sup>1</sup> Requirements acc. IEC 60512, Test 9a

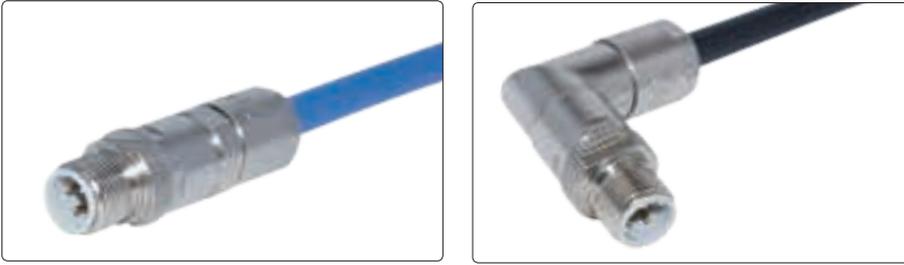
<sup>2</sup> Requirements acc. IEC 60512, Test 13b

#### 3.4 Mechanical properties - Housing

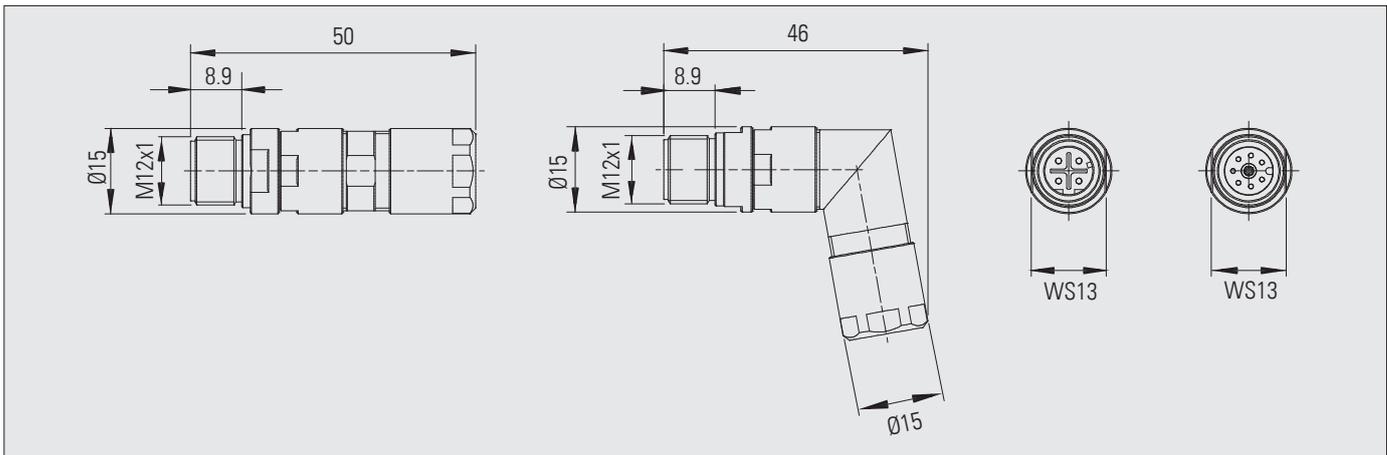
	A- / D-coded
Housing	brass, nickel plated
Cable strain relief	Cable gland
EMI screening at 360°	Shield spring
Cable diameter	5.0 - 9.0 mm
Ingress protection (IEC EN 60529) closed	up to IP67

## 4 GTM12 - / GTB12 - series, for field assembling

### 4.1 GTM12 Cable plug



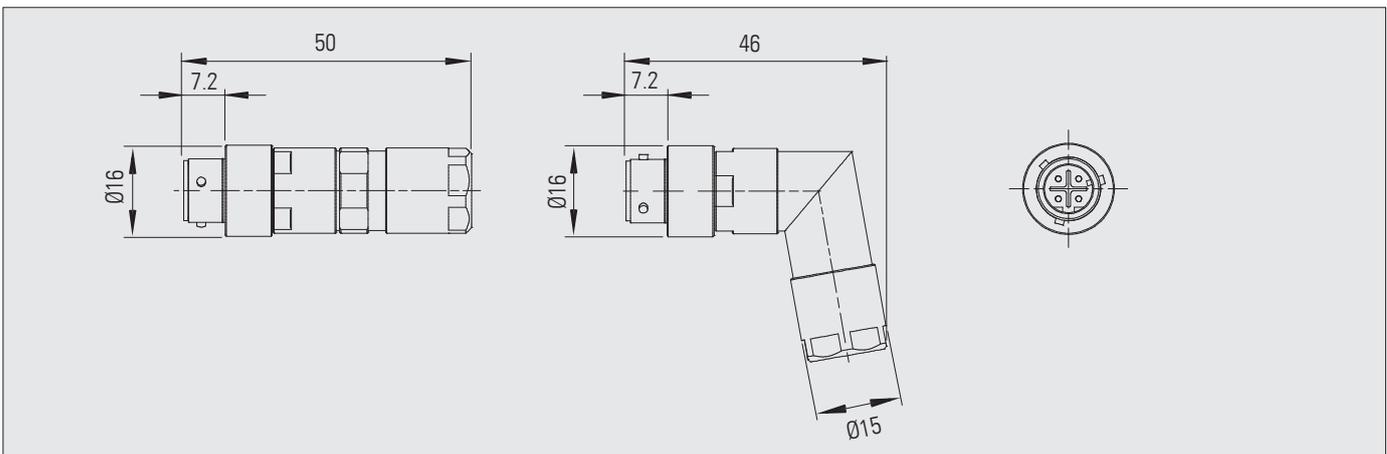
M12 A/D coded, Cable plug



### 4.2 GTB12 Cable plug



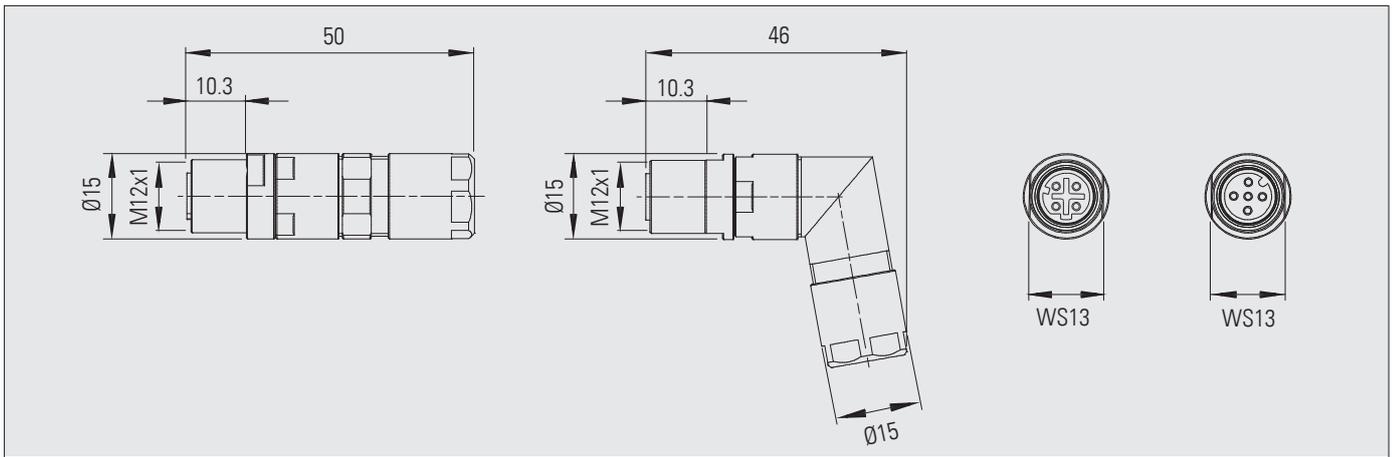
B12 D coded, bayonet , Cable plug



### 4.3 GTM12 Cable receptacle



M12 D coded, Cable receptacle

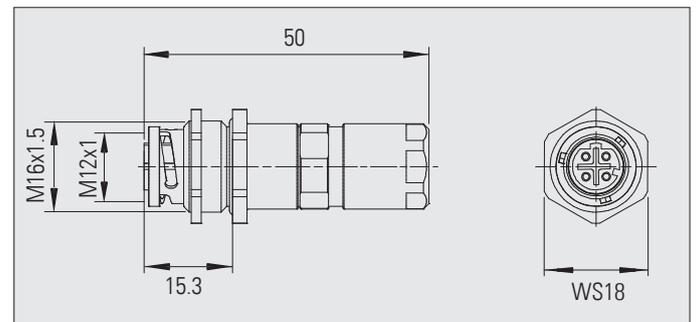
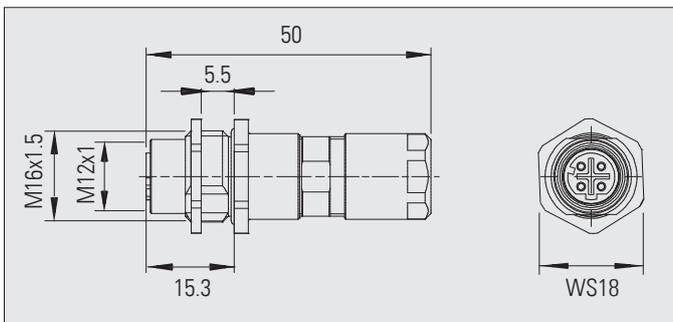


### 4.4 GTM12 / GTB12 Bulkhead receptacle



M12 D coded, Bulkhead receptacle

B12 D coded, Bulkhead receptacle



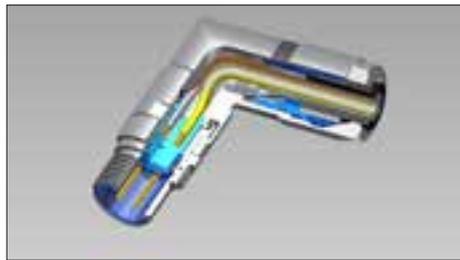
The GTB12 D Bulkhead receptacle has an M12-thread and a bayonet-ramp. He can be used for GTM12-connectors as well as for GTB12-connectors.

Item number	Connector type	Coding	no. poles	Contact type	Cable Ø mm	Wire section
GTM12-A-8-MP	Cable plug M12	A	8	Pin	5.0 - 9.0	0.20 (AWG 24) - 0.34 (AWG 22)
GTM12-A-8-MP-100	Cable plug M12, 100°	A	8	Pin	5.0 - 9.0	0.20 (AWG 24) - 0.34 (AWG 22)
GTM12-D-4-MP	Cable plug M12	D	4	Pin	5.0 - 9.0	0.34 (AWG22) *
GTM12-D-4-MP-100	Cable plug M12, 100°	D	4	Pin	5.0 - 9.0	0.34 (AWG22) *
GTM12-D-4-FS	Cable receptacle M12	D	4	Socket	5.0 - 9.0	0.34 (AWG22) *
GTM12-D-4-FS-100	Cable receptacle M12, 100°	D	4	Socket	5.0 - 9.0	0.34 (AWG22) *
GTM12-D-4-FS-BR	Bulkhead receptacle M12	D	4	Socket	5.0 - 9.0	0.34 (AWG22) *
GTB12-D-4-MP	Cable plug B12, bayonet	D	4	Pin	5.0 - 9.0	0.34 (AWG22) *
GTB12-D-4-MP-100	Cable plug B12, bayonet, 100°	D	4	Pin	5.0 - 9.0	0.34 (AWG22) *
GTB12-D-4-FS-BR	Bulkhead receptacle B12, bayonet	D	4	Socket	5.0 - 9.0	0.34 (AWG22) *

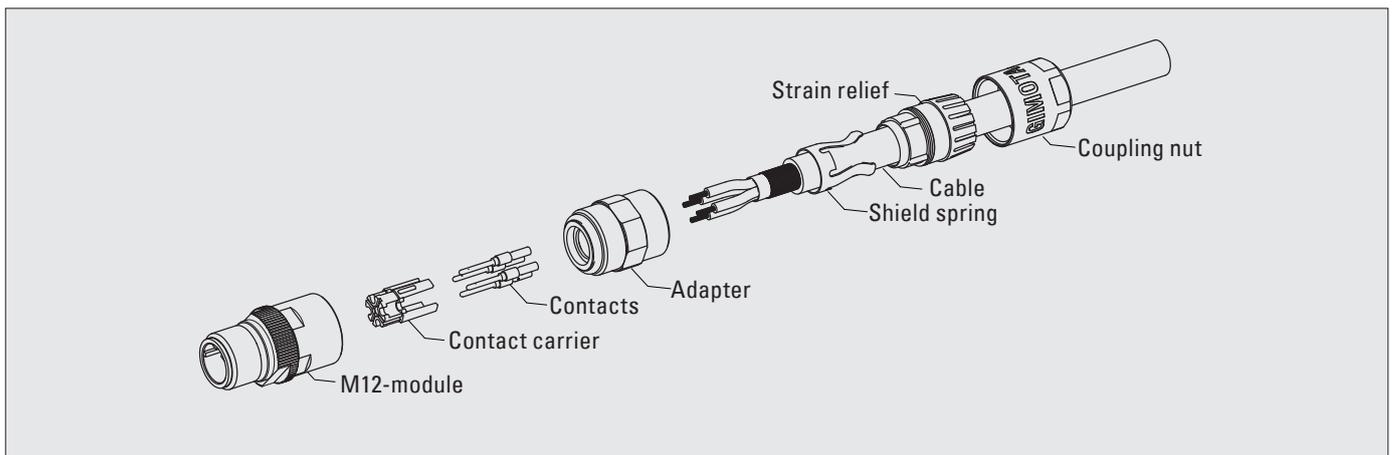
\* other wire sections on request

## 5 GTM12 - / GTB12 - Connector

### 5.1 Construction GTM12/ GTB12

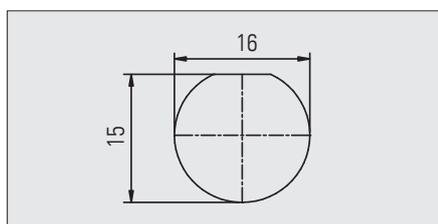


#### Assembly GTM12

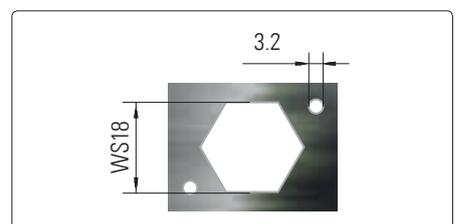


### 5.2 Panel cut-out for rear panel bulkhead receptacle

For round bore holes a guard plate like GTM12-VSB1-1 for positioning and fixation is required. This plate can selectively be screwed, riveted or glued to the panel.



Panel cut-out



GTM12-VSB1-1

## 6 Accessories

### 6.1 Contacts- crimpable, machined pin and socket contacts

GTM12 series connectors are supplied with adequate contacts.  
Additional loose contacts are available as following:

Material: Cu-alloy  
Surface: 0,5 µm gold



Item number	Contact type	for connector coding	Wire section [mm <sup>2</sup> ]	PU [pcs]
GTM12PC24AU.20	Pin	A	0.20 (AWG24)	20
GTM12PC24AU.100	Pin	A	0.20 (AWG24)	100
GTM12PC22AU.20	Pin	D	0.34 (AWG22)	20
GTM12PC22AU.100	Pin	D	0.34 (AWG22)	100
GTM12PC20AU.20	Pin	D	0.50 (AWG20)	20
GTM12PC20AU.100	Pin	D	0.50 (AWG20)	100
GTM12SC22AU.20	Socket	D	0.34 (AWG22)	20
GTM12SC22AU.100	Socket	D	0.34 (AWG22)	100
GTM12SC20AU.20	Socket	D	0.50 (AWG20)	20
GTM12SC20AU.100	Socket	D	0.50 (AWG20)	100

### 6.2 Bayonet shell

With the bayonet shell GTB12-FS-HO-S14 standard PCB M12 socket housing can be used and installed. Thereby it is important to comply with the panel thickness given by GIMOTA. From an order quantity of approximately 1000 pieces individual bayonet shells can be developed. For more information please contact GIMOTA.



At the moment HIRSCHMANN provides Switches with GTB-technology. The bayonet receptacle shell has an M12-thread and a bayonet-ramp, this means that conventional M12-connectors can be connected too.



### 6.3 Protection cap



pict. a



pict. b



pict. c

Item number	Connector type	pict.
GTM12-FS-CAP	Protection cap for receptacles	a
GTM12-MP-CAP	Protection cap for plugs	b
GTB12-FS-CAP	Protection cap for receptacles	c
GTB12-MP-CAP	Protection cap for plugs	

## 6.4 CICE/CIC mounting clip - for standard C-rails (EMI/insulated)

Mounting clips type CICE/CIC allow easy fixing of GTM12 cable connections with or without grounding of the shield potential. The clips can be mounted onto standard 35 mm C-rails according to EN 50022 (caprail). To avoid potential drop of the shield to ground the clips are available with insulated clamps.

The mounting clips allow an easy and fast fixation of the GTM12 connectors. For increased mounting safety a standard cable tie can be applied at the brackets end.



Item number	clamping range	EMI contact	suitable with
CICE35-12-16	12-16mm	yes	GTM12
CIC35-12-16	12-16mm	no (insulated)	GTM12

Mounting clip with cable tie: add «K» behind the item number (Set) Example: CICE35-12-16K

### Application:

The CICE/CIC Mounting Clip can be directly clicked onto the mounting C-rail. The data cable connected with the GTM12 connector system can be easily pushed into the mounting clip. For increased fixation safety the brackets can be additionally tightened together with a cable tie.

## 7 Tools

### 7.1 Wire stripper for strands and wires (AWG20-30) GIW-ACK

Easy-to-use wire stripping tool for a quick and proper preparation of strands and wires. The single wires can be applied to a defined length and finally stripped accordingly.

- Stripping length of up to 25 mm is possible
- The wire size can easily be adjusted.
- Specially hardened blades ensure long-life and usage of the stripping device.



Item number	Dimensions [mm]	Weight [g]	Use with	wire sections [mm <sup>2</sup> ]
GIW-ACK	98 x 45 x 21	30	wires / strands	0.05– 0.5 (AWG30 –AWG20)

### 7.2 Crimping tool GIW-AFM8 for machined contacts

Universal 4 point crimping tool, suitable with machined contacts for GIMOTA GTM12 / GTB12 connectors.

The use of the corresponding positioning adaptor GIW-AFM8-SK2-2 allows a correct and easy crimping application of pin and socket contacts (turn-over of the positioning adaptor).



Item number Crimping Tool	Dimensions [mm]	Weight [g]	Use with	Item number Positioning adaptor
GIW-AFM8	175 x 60 x 22	300	GTM12 Contacts	GIW-AFM8-SK2-2

### 7.3 Wrench

High quality, chrome plated spanner, made from special tool steel, reduced material thickness of 2mm.  
Key length of 142 mm, 48g  
Wrench size 13 mm and 14 mm



Item number Tool	Dimensions [mm]	Weight [g]
GIW-DM12-MS14	142 x 38 x 2	48

### 7.4 Tightening tool GIW-DM12 for GTM12 connectors

Tightening tool to ensure the required max. tightening torque for mating the GTM12 connectors. The included torque limiting devices ensure the correct tightening forces of 1 Nm. The slim design of the tool head facilitates the use in connecting areas with limited access space.



Item number	Dimensions [mm]	Weight [g]	Torque	Use with
GIW-DM12	L = 215	90	1 Nm	M12 Connectors

### 7.5 Tool Box GIW-BOX-GTM12 for M12 connector assembling

A Convenient Toolbox for proper storage of the M12 Assembling tools. The tools are not included with the item number.



Item number	Dimensions [mm]	Weight [g]
on request	330 x 260 x 90	550

## 8 Product safety and Sales conditions

### 8.1 Product safety

Information and advice given in the following is applicable in connection with the use of our products and data contained in our data sheets and catalogues. Failure to comply with the advices can put individuals and equipment to severe risk.

#### 1. Materials

Electrical plug-type connectors contain no substances that could be dangerous in normal operation. The connectors consist of conducting and non-conducting materials.

M12 connectors:

The insulators are generally made of a fiber glass-reinforced plastic. The housings are made of nickel plated brass.

#### 2. Hazards

When plug-type connectors are correctly wired and are used and handled with due regard to the given parameters, there will be generally no risk.

Incorrect wiring or assembly of connectors can lead to electric shock, burns or fire. The same applies to careless handling of metal tools or conductive fluids, as well as to the use of defective parts, e.g. damaged during transport or storage.

Live circuits may not be made or broken by means of plug-in connectors. This can lead to ionization and arcing, causing electric shock, burns or fire. Such manipulations can also cause electronic circuits to be destroyed.

Only contacts in correctly assembled plug-in connectors may be energized.

Abnormal rises in resistance in a plug-in connector can cause it to become overheated. An increase in resistance can be caused by cracked, broken or deformed contacts or by broken wires in the conductor strand, as well as by badly made crimps due to the wrong or defective crimping tool being used, by poor solder joints or by screw connections not being properly tightened. Oxide films and the presence of contamination on the contacts or crimps can also lead to rises in resistance and therefore to local overheating. Overheating can further be caused by the formation of a creeping paths or short circuits in the plug due to:

- water entering through badly assembled connectors or due to the capillary effect along the conductor wires;
- contamination of the insulator or residues left over from processing (e.g. bits of wire) in the connector.

*Exceeding the continuous currents given in our documentation is not permitted, as this can cause overheating of the connector.*

Overheating of a plug-type connector causes the insulator to be destroyed. This can result in spurious signals; also, there is the danger of electric shock or of fire, with toxic gases formed in combination with other materials. Since overheating is not necessarily visually apparent, there is a risk of burns being caused if overheated parts are touched.

#### 3. Handling

Components of electrical plug-type connectors must be carefully handled during transport, storage and use to avoid damage.

Plug-type connectors can be damaged in transit to the customer. Such damage can be a source of danger. These products should therefore be checked before installation or use, and damaged ones removed.

#### 4. Disposal and scrapping of waste

Dangerous or even toxic gases can be formed when certain materials are burned. Such materials must therefore be disposed of in the proper manner.

#### 5. Application

Plug-type connectors with accessible contacts should not be used on the supply side of the electric circuit.

Touching the exposed contacts of an unconnected electrical connector can result in an electric shock. Voltages above 30 V AC or 42.5 V DC are generally dangerous. It must be ensured that such voltages cannot under any circumstances reach the accessible metal parts of the connector housing. Before energizing with voltage, plug-type connectors and the wiring should be checked. It must be ensured that metal parts and insulators are not damaged, and that no soldering jumper, loose wire strands, conductive fluids or other conducting materials can form an electrical bond. The circuit should be checked for insulation resistance and electrical continuity. It is essential that the correct working tools are used, in accordance with our catalogues and data sheets.

*Only qualified personnel should be allowed to wire, assemble or modify electrical connectors.*

The pertinent national regulations should be referred to in order to determine the permitted operating voltage.

#### 6. Important general note

##### 6.1 Product design

GIMOTA AG is committed to a policy of continuous improvement and further development of its products. Because of this, our products may differ from the descriptions, technical data and figures in this catalogue and in the data sheets.

Unless otherwise stated, all dimensions in this catalogue are approximate values in mm.

##### 6.2 Insulation clearances, ambient conditions

The permitted operating voltages depend on the specific application and on the applicable national safety regulations. For this reason, the clearances and creeping distances are given as reference values. Attention should therefore be given to reductions in the clearances and creeping distances due to the circuit board and/or wiring.

All voltage data are valid at sea level and a temperature of 20°C. The given temperatures are temperature limits

##### 6.3 Fabrication instructions

Our detailed assembling instructions should be referred to when processing work is carried out.

##### 6.4 Final Provisions

These Product Safety have been released 2011. This version is a translation. Mandatory is the current German version.

## 8.2 General Sales Conditions

The present General Sales Conditions are binding and exclusively applicable, if no deviating or additional conditions have been mutually agreed between the buyer and Gimota Inc.. Any deviations need to be stipulated accordingly in writing.

### General

The published pictures, dimensions and weights within catalogues and drawings are for information only without obligation regarding the supplied goods. Literal errors excepted.

### Offers

Our offers are valid for a period of 3 months unless other terms have been stipulated. Extraordinary price changes for raw materials are excepted.

### Prices / Packaging / Conditions of Payment / Surcharges

If nothing else is stipulated our prices are quoted in Swiss francs CHF for delivery ex works (INCOTERMS 2010, EXW Geroldswil) exclusive packaging and value-added tax (VAT) .

Total order values below CHF 100 will incur an order processing charge of CHF 20.

Packing is charged according actual cost.

The general payment terms are 30 days net as of invoice date.

We reserve the right to charge interest of 5% on late payments.

### Transfer of Gain and Risk, Shipment and Insurance

Gain and risk is transferred to the buyer with dispatch of the consignment ex works. Shipment is carried out with invoice and at the consignee's risk. Transport insurance is taken out by us only upon written request of the consignee. The cost of the insurance is borne by the consignee.

### Delivery periods / Delivery date

Delivery periods given in our offers begin with the receipt of the order. The delivery time is deemed as achieved if on its expiry, the consignment is prepared and ready for dispatch from the factory. We make every effort to adhere to delivery dates given in our order confirmations. However, they are non-binding, and overruns cannot be taken as reason for damages claims or for cancellations of concerning orders.

Lack of raw materials, defects on tools, transport/logistic problems and comparable influences could decisively raise cost and reduce the feasibility of the products. If this makes it impossible for us to comply with our delivery commitment we are released from our delivery obligations without any compensation claims.

Recognisable delays will be communicated immediately.

### Documents / Samples

Our catalogues, drawings, sketches, etc. are our intellectual property, and shall not be modified or used for purposes other than intended without our written acceptance.

Samples are provided at a charge.

### Testing and Acceptance of the Consignment

The buyer is requested to inspect/test the consignment on receipt and report any defects that are found in writing within 10 days to Gimota Inc. If no failures or irregularities are reported the consignment is deemed to be approved by the receiver.

If more extensive tests and reports (such as factory- or inspection certificates) are requested by the buyer, it must be agreed on in writing and mentioned within the concerning orders. The costs must be borne by the buyer.

Products assessed as defective are not supposed to be returned without our agreement. Otherwise developing delivery cost will be charged accordingly.

Parts which are found to be unusable due to material defects or production failures will be either replaced or repaired, as we consider appropriate.

### Property Rights

The delivered goods remain our property until the full purchase price has been paid. The buyer assures participation for adequate arrangements in order to protect our property accordingly.

### Cancellation / Returning goods

The cancellation of contracts requires our written agreement.

Cost for pre-processed or finished parts will be charged in any case.

Raw materials specially purchased for a customer will also be charged.

Complaints regarding a consignment do not entitle the purchaser to cancel the remainder of an order. Produced and delivered goods can not be returned to the supplier.

We are authorized to withdraw from delivery obligations if the financial situation of the buyer markedly deteriorate or appears different than originally presented to us.

### Warranty

During the warranty period Gimota Inc. is obligated to replace or repair, all parts that are defective or unusable as a result of material defects or of design/production failures, as we consider necessary, as soon as possible. Warranty claims require a written request from the buyer. The warranty period is 12 months after receipt of the consignment as far as no other legal regulations are effective. Excluded from the warranty are damages due to incorrect storage, natural wear, faulty processing and disregard of regulations, etc.

Modifications or repair of products without our written acceptance as well as not following our operating instruction exculpate us from product warranty.

Our liability is limited on the replacement of defective goods or on reimbursement of the invoiced value.

### Exclusion of other Liabilities

Possible claims by the purchaser are fully covered within these „General Sales Conditions“. All not expressly mentioned claims for damages, reduction, cancellation of or withdrawal from the contract are excluded.

### Jurisdiction

The place of jurisdiction for any direct or indirect differences/disputes is Zurich, Switzerland only. The legal relationship is subjected to substantive Swiss law.

The General Sales Conditions valid at the purchase date are mandatory and considerable.

The current and up-to date sales conditions are explicitly published on [www.gimota.com](http://www.gimota.com)

### Final Provisions

The General Sales Conditions have been update as per **January 1st 2013**. They replace all previous versions and are integrated part of all our offers and order confirmations.

With this edition all previous versions are void. In case of discrepancies between the German text and any other-language version of these General Terms of Business, the German original text shall prevail.

### Geroldswil, December 2012





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