MICROMOBILITY APPLICATIONS

Product Catalogue

BY HIRSCHMANN AUTOMOTIVE

Index

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About us

WE CREATE THE MOBILITY OF TOMORROW

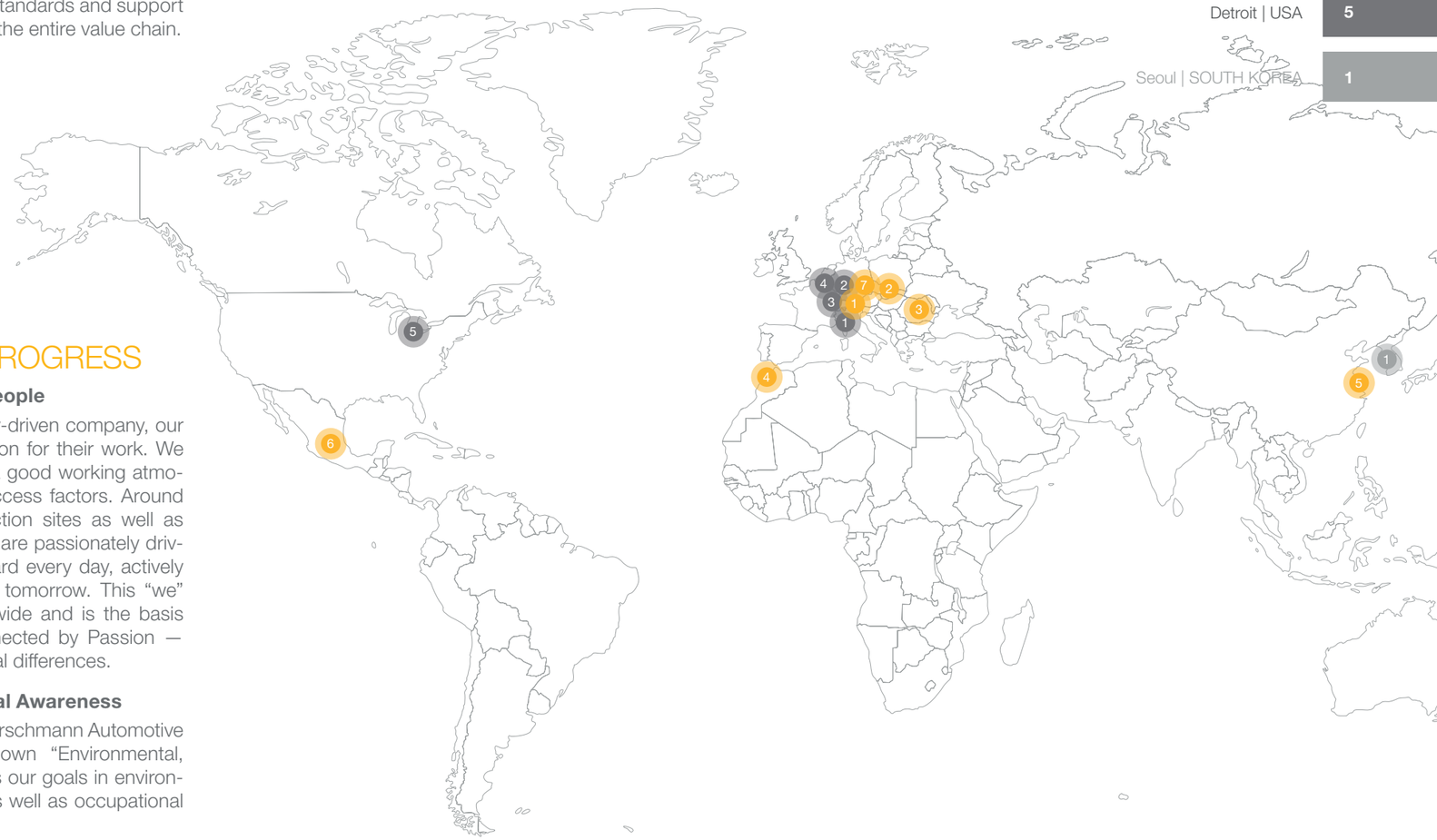
For more than 60 years we have been driving progress in the automotive industry as a development and production partner for electromechanical assemblies and components. Our speciality? Connectors, cable assemblies, sensors, and application-specific connectivity solutions.

We are not only positioning ourselves as an ambitious development partner for our customers in the automotive industry. We are equally committed to all electrically powered vehicles in the field of micromobility. Therefore, we established our agile and flexible business unit E-JOYN.

Whether standard products or individual customer solutions – we develop systems that set new standards and support you in making the most of your idea. To fully exploit all potential, we are digitizing and optimizing the entire value chain.

COMPANY KEY FIGURES

Number of Employees worldwide	7,500
Production Sites	7
Sales and R&D Offices	5
Founding Year	1959



MOTION AND RELIABILITY: THAT IS OUR DEFINITION OF PROGRESS

A Competent Partner in Every Regard

As an agile development and production partner, we are pushing the development of innovative mobility concepts. Our electronic components and systems are future-oriented and suitable for all electrically powered vehicles in the field of micromobility. These include eBikes, Pedelecs, eScooters and generally LEVs (Light Electric Vehicles). With professional tools and special machine construction, we create the best conditions for the efficient implementation of new products and special parts.

Quality Comes First

The central measuring and testing laboratory is the guarantor for fully tested components, from the design and construction phase through to series production. With vibration tests, metallography, microscopy, x-rays, tightness, infrared thermal analysis, or environmental impact analyses, you can be ensured that mature and flawless products leave our premises. Laboratory tests complete the extensive and indispensable quality process.

Good Connections Start with People

While we are an entirely technology-driven company, our true core is people and their passion for their work. We believe that good employees and a good working atmosphere are the most important success factors. Around 7,500 employees at seven production sites as well as 5 sales and R&D offices worldwide are passionately driving the major industry trends forward every day, actively shaping the mobility of today and tomorrow. This “we” concept connects the sites worldwide and is the basis of our corporate philosophy: Connected by Passion — across borders, oceans, and cultural differences.

Sustainability and Environmental Awareness

The same standard applies to the Hirschmann Automotive Group worldwide, following our own “Environmental, Health & Safety Policy”. It describes our goals in environmental and energy management as well as occupational health and safety.

Overview

1. Micro Connectors and Harnesses
2. Charging Interfaces for Battery or in Frame
3. Power-Data Connectors and Harnesses for Battery, Motor, and Charger
4. Motor Interfaces
5. ABS and Speed Sensors

Power-Data Battery Interfaces

CONNECTION FOR MOTOR AND CHARGER

For data communication and power transmission between the battery, motor and charger, we developed our Power-Data Battery Interface Family.

With this application, you have the advantage that the power supply between the battery and the motor, as well as the connection to the charger, is established with only one interface.

When the battery is inserted, the interface connects the battery to the motor. In this state, the battery can be charged directly through the built-in interface in the frame. When the battery is removed, the built-in socket in the battery can be connected to the charging cable, allowing the battery to be charged in any location the rider desires.

The interfaces are suitable for various versions of swing-in in-tube batteries and non-swing-in frame batteries. Our patented, sophisticated connecting system convinces through an extremely compact design and a large number of mating cycles. Reliable data and power transmission even under extreme conditions such as wetness, vibrations, or shocks is a matter of course.

Various pole numbers are possible, as well as harnesses that can be individualized and adapted to the customer´s needs.

In close cooperation with our customers, we realize product requirements for optimal system integration.

Our interfaces allow charging directly on the eBike or with the battery removed.

2+3 WAY POWER-DATA BATTERY INTERFACES
WITH TOUCH PROTECTION

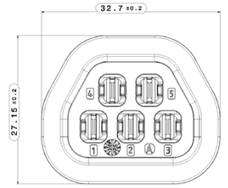
developed for eBikes, Pedelecs and applicable for various Light Electric Vehivcles (LEVs).

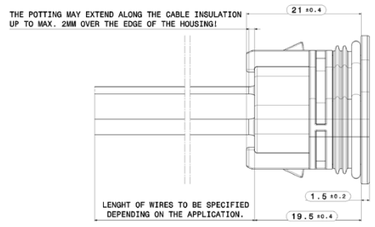
Our Power-Data Battery Interfaces are used for data communication and power transmission between battery and motor or battery and charger. Our system includes a built-in connector (female) for mounting on the battery, a wiring harness (male) for mapping the connection to the motor and various consumers (ABS, lights, etc.), and a wiring harness (male) for mapping the connection to the charger when plugged in and out. It is suitable for swing-in in-tube batteries as well as non-swing-in frame batteries. For variants above 42 V, we offer touch protection.

KEY FEATURES

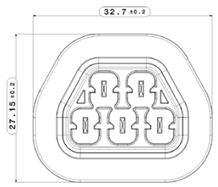
CONTACT SYSTEM POWER PINS	2 x contact 2.8 x 0.8 mm (pre-mating)
CONTACT SYSTEM SIGNAL PINS	3 x contact 2.8 x 0.8 mm
RATED VOLTAGE POWER PINS	0 to 59 V DC
RATED VOLTAGE SIGNAL PINS	0 to 59 V DC
MAXIMUM CURRENT LOAD POWER PINS	22 A, 28 A peak
MAXIMUM CURRENT LOAD SIGNAL PINS	3 A
PROTECTION CLASS NOT MATED	IP67
PROTECTION CLASS MATED	IP54
MINIMUM OPERATING TEMPERATURE	-20° C
MAXIMUM OPERATING TEMPERATURE	+100° C
MATING CYCLE FREQUENCY	≥ 1000
MATING FORCE	ca. 22 N
CONNECTOR LOCKING	by force, no mechanical locking
CODINGS	only polarisation
TWIST PROTECTION	yes
POWER PIN WIRE CROSS SECTION	2.5 mm^2
SIGNAL PIN WIRE CROSS SECTION	0.35 mm^2
OVERVOLTAGE CATEGORIE	DIN EN 60664-1/II
POLLUTION DEGREE	DIN EN 60664-1/3
IP-DEGREE OF PROTECTION	IPXXB, for variants > 42 V
MATERIAL CONTACT CARRIERS	PA66+PA6 GF25
MATERIAL POTTING	PU
MATERIAL OVERMOULDING	TPU Shore A85
PULL RELIEF	yes, overmolding or potting
MINIMUM STORAGE TEMPERATURE	-20° C
MAXIMUM STORAGE TEMPERATURE	+60° C
STANDARDS	DIN EN 61984 DIN EN 50604-1 IEC 62133 partly UN 38.8 DIN EN 60335-1 DIN EN 60335-29 DIN SPEC 79009 cULus (upon request)

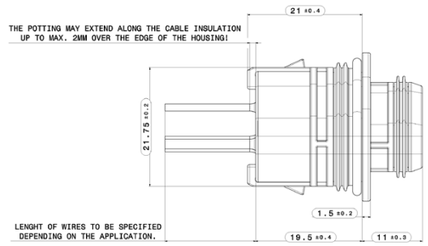
BUILT-IN CONNECTOR



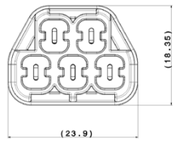


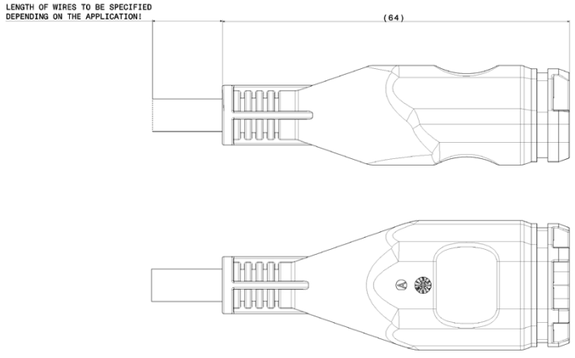
MOTOR HARNESS





CHARGING HARNESS





2+6 WAY POWER-DATA BATTERY INTERFACES

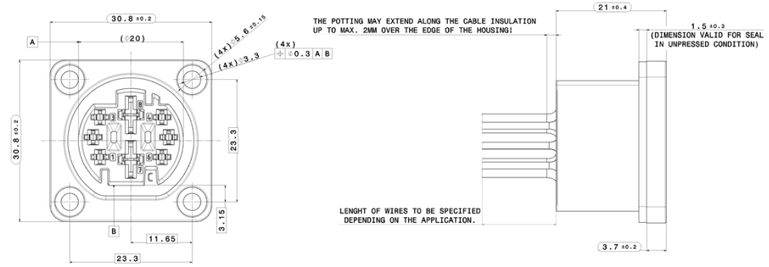
developed for eBikes, Pedelecs and applicable for various Light Electric Vehivcles (LEVs).

Our Power-Data Battery Interfaces are used for data communication and power transmission between battery and motor or battery and charger. Our system includes a built-in connector (female) for mounting on the battery, a wiring harness (male) for mapping the connection to the motor and various consumers (ABS, lights, etc.), and a wiring harness (male) for mapping the connection to the charger when plugged in and out. It is suitable for swing-in in-tube batteries as well as non-swing-in frame batteries.

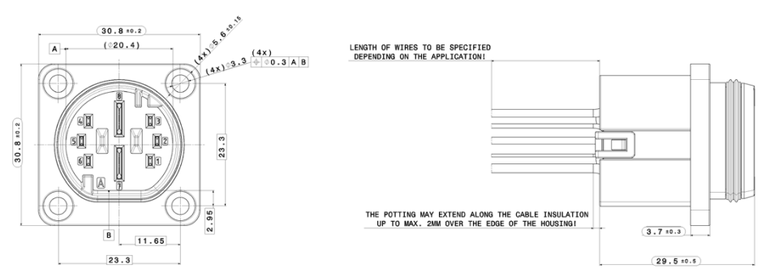
KEY FEATURES

CONTACT SYSTEM POWER PINS	2 x contact 5.8 x 0.8 mm (pre-mating)
CONTACT SYSTEM SIGNAL PINS	6 x contact 1.6 x 0.6 mm
RATED VOLTAGE POWER PINS	0 to 60 V DC
RATED VOLTAGE SIGNAL PINS	0 to 60 V DC
MAXIMUM CURRENT LOAD POWER PINS	30 A
MAXIMUM CURRENT LOAD SIGNAL PINS	8 A
PROTECTION CLASS NOT MATED	IP67
PROTECTION CLASS MATED	IP67
MINIMUM OPERATING TEMPERATURE	-25° C
MAXIMUM OPERATING TEMPERATURE	+85° C
MATING CYCLE FREQUENCY	≥ 1000
MATING FORCE	ca. 22 N
CONNECTOR LOCKING	by force, no mechanical locking
CODINGS	G, H
TWIST PROTECTION	yes
POWER PIN WIRE CROSS SECTION	1, 2.5, 4 mm^2
SIGNAL PIN WIRE CROSS SECTION	0.25, 0.35, 0.5, 0.75 mm^2
OVERVOLTAGE CATEGORIE	DIN EN 60664-1/II
POLLUTION DEGREE	DIN EN 60664-1/3
MATERIAL CONTACT CARRIERS	PA66+PA6 GF25
MATERIAL POTTING	Fermadur B5
MOUNTING SCREW DISTANCE	23.3 x 23.3 mm
MOUNTING TORQUE SCREWS (PLASTICS)	1.1 Nm
MOUNTING TORQUE SCREWS (ALUMINIUM)	1.3 Nm
MINIMUM STORAGE TEMPERATURE	-20° C
MAXIMUM STORAGE TEMPERATURE	+60° C
STANDARDS	DIN EN 61984 DIN EN 50604-1 IEC 62133 partly UN 38.8 DIN EN 60335-1 DIN EN 60335-29 cULus (upon request)

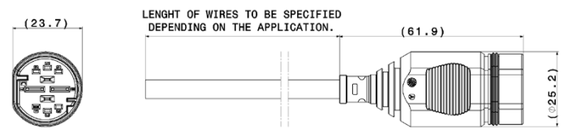
BUILT-IN CONNECTOR



MOTOR HARNESS



CHARGING HARNESS



Charging Interfaces

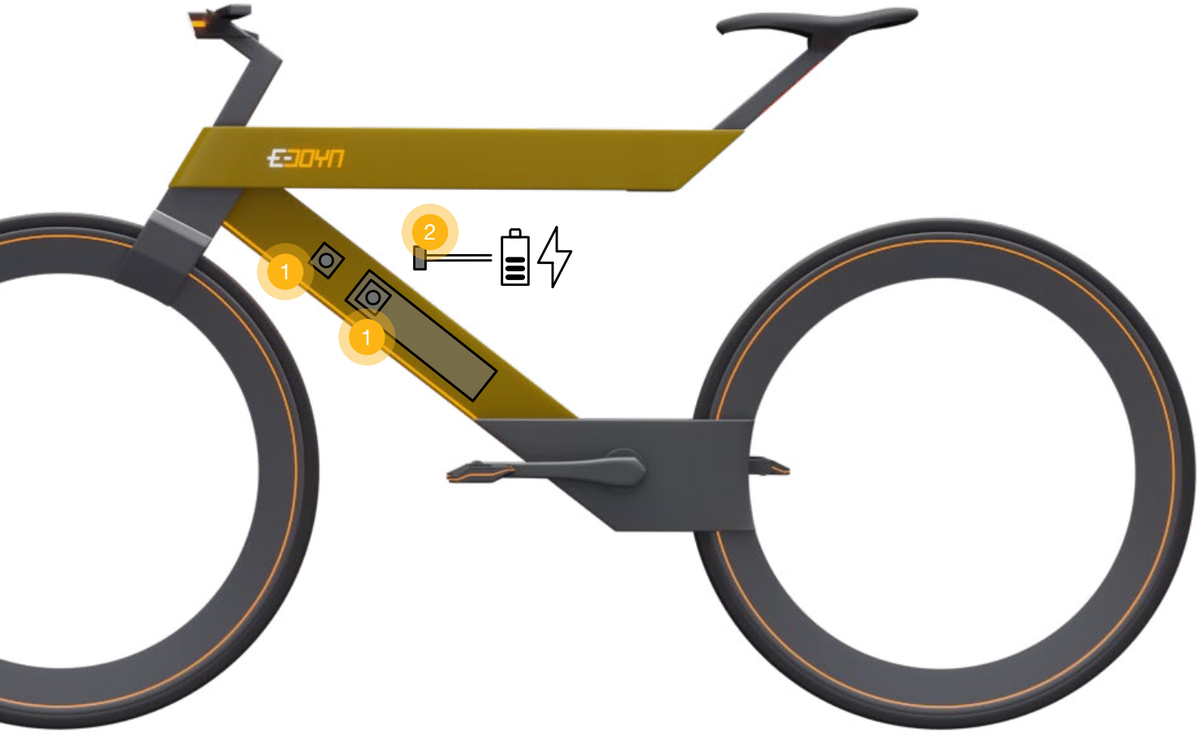
FOR SAFE AND RELIABLE CHARGING

Our Charging Interfaces with up to six pins enable the connection between charger and battery. The built-in socket is used for both, the installation in the frame and directly in the rechargeable battery housing. The sealed charger harness is also suitable to charge in wet areas such as public charging stations. The interfaces convince through high IP protection classes as well as a high mating cycle capability that can be used for fast chargers up to 14 amperes. For variants above 42 V, we offer touch protection.

In close cooperation with our customers, we realize product requirements for optimal system integration.

1 **Built-in Connectors**

2 **Charging Harnesses**



2+4 WAY CHARGING INTERFACES
WITH AND WITHOUT TOUCH PROTECTION

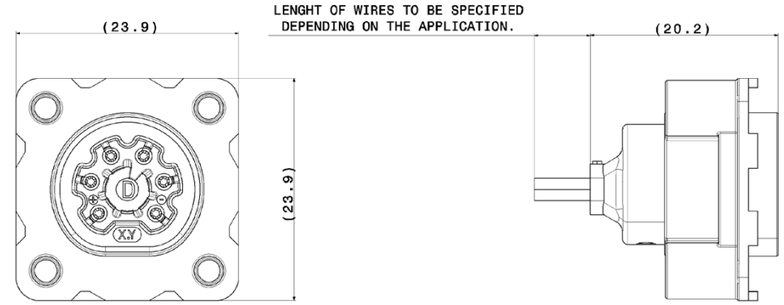
developed for eBikes, Pedelecs and applicable for various Light Electric Vehivcles (LEVs).

The Charging Interfaces are responsible for the connection between the battery and the charger. They include a built-in connector (female) for mounting on the device to be charged and a wiring harness (male) for mapping the connection to the charger.

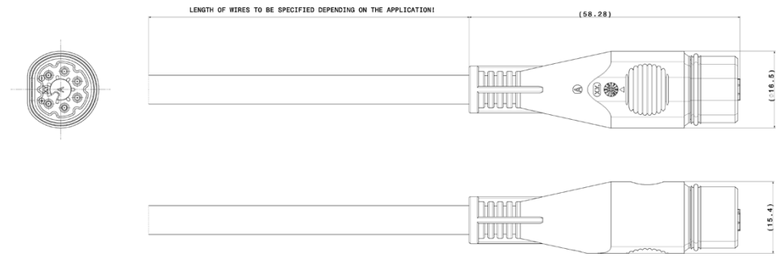
KEY FEATURES

CONTACT SYSTEM POWER PINS	2x Ø1 mm round contact
CONTACT SYSTEM SIGNAL PINS	4x Ø1 mm round contact
RATED VOLTAGE POWER PINS	25, 36, 48, 50 V DC
RATED VOLTAGE SIGNAL PINS	12 V DC
MAXIMUM CURRENT LOAD POWER PINS	5, 7, 10, 14 A
MAXIMUM CURRENT LOAD SIGNAL PINS	2 A
PROTECTION CLASS NOT MATED	IP67
PROTECTION CLASS MATED	IPX5
MINIMUM OPERATING TEMPERATURE	-40° C
MAXIMUM OPERATING TEMPERATURE	+85° C
MATING CYCLE FREQUENCY	≥ 1000
MATING FORCE	ca. 22 N
CONNECTOR LOCKING	by force, no mechanical locking
CODINGS	A, B, C, D, E, F
TWIST PROTECTION	yes
POWER PIN WIRE CROSS SECTION	0.5, 0.75, 1 mm^2
SIGNAL PIN WIRE CROSS SECTION	0.35 mm^2
OVERVOLTAGE CATEGORIE	DIN EN 60664-1/II
POLLUTION DEGREE	DIN EN 60664-1/3
IP-DEGREE OF PROTECTION	IPXXB, for variants > 42 V
MATERIAL CONTACT CARRIERS	PA66+PA6 GF25
MATERIAL OVERMOULDING	TPU Shore A85
PULL RELIEF	yes, overmolding
MOUNTING SCREW DISTANCE	17.5 mm x 17.5 mm
MOUNTING TORQUE SCREWS (BUILT-IN CONNECTOR)	1.1 Nm
STANDARDS	DIN EN 61984 DIN EN 50604-1 IEC 62133 partly UN 38.8 DIN EN 60335-1 DIN EN 60335-29 cULus (upon request)

BUILT-IN CONNECTOR



CHARGING HARNESS



Motor Interfaces and System Wirings

CONNECTION BETWEEN MOTOR ELECTRONICS AND ALL PERIPHERAL MODULES

We developed a secure and efficient connection from the motor to all peripheral modules of your eBike, Pedelec, or any other LEV. Our system includes all interfaces and wirings for the battery, lights, HMI, brake switches, speed sensors, etc. A direct connection to the internal motor control board is possible. The interfaces are fully sealed and impress with their micro design. Thanks to an integrated Bluetooth module, wireless communication via an app control system is possible.

In close cooperation with our customers, we realize product requirements for optimal system integration.

1 **Motor Interfaces**

2 **System Wirings for**

- Brake
- Light
- HMI
- Speed Sensors
- Auxiliaries
- Battery

KEY FEATURES

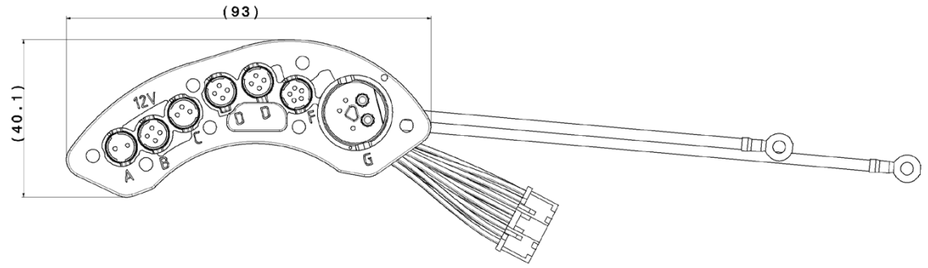
IN 90° VERSION	according UL94 V-0
COUNTER PLUGS	in 90° version
CODINGS	all connectors code separately
MATING CYCLE FREQUENCY	25
IP-DEGREE OF PROTECTION	IP67 and longitudinal water tightness even the conter plugs are not installed

APPLICATION EXAMPLE

PLUG	DESCRIPTION	CONTACT POINTS	MAXIMUM LOAD	VOLTAGE
A	brake	2 way	0.2 A	e.g. 5 V DC
B	front light, rear light, brake light	4 way	2 A	6V, 12 V DC
C	speed sensor	3 way (1 reserve)	0.5 A	5 V DC
D	auxiliaries (external peripherals)	4 way	0.5 A	12 V DC
F	HMI	5 way	1 A	12 V DC
G	battery discharge	2+4 way	20/25 A 5 min	48 V DC
OPTIONS	bluetooth modul	for wireless programming		
	blind plug	for unoccupied interfaces		

blind plug

1 MOTOR INTERFACES



CONNECTOR A BRAKE	PIN
braker switch	2
GND	4

CONNECTOR B LIGHT	PIN
+ 6 V light	1
braking light	2
GND	3
GND	4

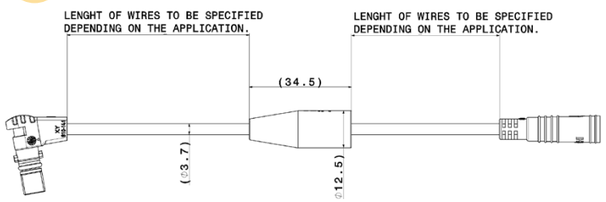
CONNECTOR C SPEED SENSOR	PIN
rear wheel speed out	1
rear wheel speed Vdd	2
reserve	3
GND	4

CONNECTOR D AUXILIARIES	PIN
CAN_L	1
CAN_H	2
+ 12 V	3
GND	4

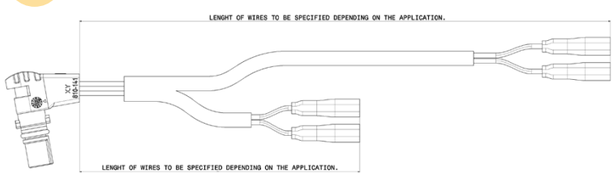
CONNECTOR F HMI	PIN
+ 12 V	1
CAN_L	2
wake up	3
CAN_H	4
GND	5

CONNECTOR G BATTERY DISCHARGE	PIN
CAN_H	1
resere	2
CAN_L	3
wake up	4
VBAT	5
GND	6

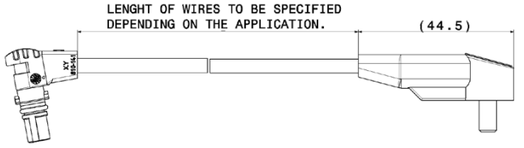
2 BRAKE HARNESS



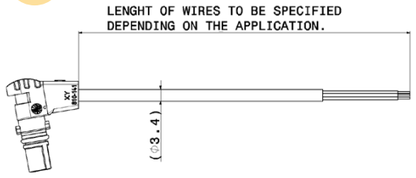
2 LIGHT HARNESS



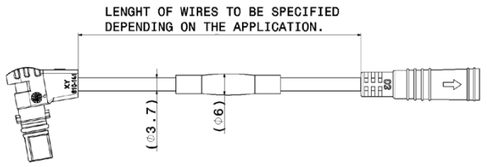
2 SPEED SENSOR HARNESS



2 AUXILIARIES



2 HMI HARNESS



2 BATTERY DISCHARGE HARNESS