



Automatic Passenger Counting

IRMA 6

Component Catalog

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1 General

1.1 Document information

Document title:	M12 components for IRMA 6
Revision:	1.3
Edition (MM-YYYY):	06-2020
Document type:	Customer documentation catalog (KDKG)
Status:	released

1.2 Validity

IRMA 6 sensors covered in this document:

Product	Product name	Description
IRMA 6 Ethernet with door contact	IRMA6-SENSOR-HD-00-ETH-IO-00-R ¹	Ethernet variant with door contact; Railway application
IRMA 6 Ethernet	IRMA6-SENSOR-HD-00-ETH-00-R	Ethernet variant without door contact; Railway application


¹ "R" = Railway application


IRMA 6 PoE with door contact	IRMA6-SENSOR-HD-00-POE-IO-00-R	PoE ² variant with door contact; Railway application
IRMA 6 PoE	IRMA6-SENSOR-HD-00-POE-00-R	PoE variant without door contact; Railway application
IRMA 6 Switch with door contact	IRMA6-SENSOR-HD-00-SWITCH-IO-00-R	Switch variant with door contact; Railway application
IRMA 6 Switch	IRMA6-SENSOR-HD-00-SWITCH-00-R	Switch variant without door contact; Railway application


1.3 About this document


The M12 components described in this catalog realize the connection of IRMA 6 sensors to Ethernet communication, power supply and external signal sources. The catalog contains in a clearly arranged form the technical data of the necessary M12 components. To carry out the installation in the vehicle, the IRMA 6 installation manual and the IRMA 6 data sheets of the corresponding IRMA 6 sensor (on request from your iris project engineer) should be consulted.


1.4 Used symbols

 Please note!

 Reference to another document.

 Caution - can cause defects!

 Railway application.

 Bus and car application.

² "PoE" = Power-over-Ethernet

2 Application areas bus/car and railway vehicles

The items mentioned in this M12 component catalog are divided into bus/car and railway application areas.

If none of the following icons is shown, the respective cable does not meet any special requirements with regard to fire protection. These items are primarily intended as service cables and are not intended for permanent installation.

2.1 Application area bus/car



All items that are marked with the bus icon in the following tables comply with the fire protection regulation ECE-R 118 and are therefore intended for use in buses.

The ECE-R 118 regulation does not have specific requirements for the cable materials, which is why in individual cases the sheathing material may contain PVC. This information can be requested in detail.

2.2 Application area railway vehicles



All items that are marked with the rail icon in the following tables comply with at least one of the following fire safety regulations and are therefore intended for use in railway vehicles:

- EN 45545-2
- EN 50306
- EN 50264

The above-mentioned fire protection regulations for railway vehicles all include halogen-free tests, which mean that the halogen-free nature of these cable materials can be guaranteed.



3 M12 Ethernet cables

3.1 Technical data

The offered range of M12 connectors meets all specifications of IEC 61076-2-101.

All Ethernet items offered below have a 360° shield connection, which ensures secure data transmission according to Cat5 specifications.

The technical data given are minimum requirements and may be exceeded in individual cases. Further information can be requested.








D-coded 4-poles	
Connector (m)	Connector (f)
	
Pin assignment	Signal
Housing:	Shielding
Pin 1:	TD+
Pin 2:	RD+
Pin 3:	TD-
Pin 4:	RD-



Cable properties



Sheath material/ color:	PUR/ green	electron beam crosslinked elastomer/ black
Temperature range:	-20 °C to +70° C (-4 °F to +158 °F)	-40 °C to +80 °C (-40 °F to +176 °F)
Dielectric strength:	1,5 kV	2 kV
Nominal voltage:	300V	
Characteristic impedance (impedance):	100 Ω ± 5 Ω (100 Ω (at 100 MHz))	
Protection class:	IP65, IP67	
Cable construction/wire cross section Cu:	4 × 0,34 mm ² (AWG22)/ Shielding braid	
Outer diameter:	approx. 6,7 mm	
Wire colors:	white, yellow, orange, blue	
Minimum bending radius:	8*D	
Line resistance	≤ 55 Ω/km	

3.2 Items

Item description	Application area	Item name	Weight [kg] ± 5%	Item no.
Connection cable		K-M12CAT5-03-1m	0.10	0215_15
Cable end 1: M12 connector (m)		K-M12CAT5-03-2m	0.16	0215_18
Cable end 2: M12 connector (m)		K-M12CAT5-03-5m	0.36	0215_21
		K-M12CAT5-03-10m	0.69	0215_16
		K-M12CAT5-03-15m	1.00	0215_22
		K-M12CAT5-03-20m	1.32	0215_17
		K-M12CAT5-03-25m	1.58	0215_23
		K-M12CAT5-03-30m	1.98	0215_24
Connection cable		K-M12.CAT5-S9-S-G-03-5m	0.34	0244_61
Cable end 1: M12 connector (m), 90° angled Cable end 2: M12 connector (m)		K-M12.CAT5-S9-S-G-03-10m	0.70	0244_62
Connection cable	 	K-M12CAT5-04-1m	0.13	0244_20
Cable end 1: M12 connector (m)		K-M12CAT5-04-2m	0.20	0244_21
Cable end 2: M12 connector (m)		K-M12CAT5-04-5m	0.42	0244_22
		K-M12CAT5-04-10m	0.79	0244_23
		K-M12CAT5-04-25m	1.90	0244_24
Connection cable	 	K-M12.CAT5-S9-S-G-04-5m	n.c.	0244_59
Cable end 1: M12 connector (m), 90° angled Cable end 2: M12 connector (m)		K-M12.CAT5-S9-S-G-04-10m	n.c.	0244_60
Connection cable		K-M12CAT5-S-03-5m	0.34	0215_26
Cable end 1: M12 connector (m)		K-M12CAT5-S-03-10m	0.70	0215_27
Cable end 2: open end		K-M12CAT5-S-03-15m	1.00	0215_28

Cross-over connection cable		-	K-M12CAT5-S-S-co-04-150cm	0.16	0215_45
Cable end 1: M12 connector (m)					
Cable end 2: M12 connector (m)					
Extension cable		-	K-M12CAT5-S-B-G-03-3m	0.22	0215_41
Cable end 1: M12 connector (m)			K-M12CAT5-S-B-G-03-4m	0.24	0215_42
Cable end 2: M12 connector (f)			K-M12CAT5-S-B-G-03-6m	0.42	0215_38
			K-M12CAT5-S-B-G-03-8m	0.50	0215_43
			K-M12CAT5-S-B-G-03-10m	0.68	0215_37
			K-M12CAT5-S-B-G-03-12m	0.76	0215_44


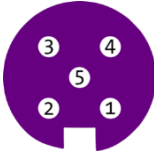
4 M12 power supply cables

4.1 Technical data

The offered range of M12 connectors meets all specifications of IEC 61076-2-101.

All power supply items offered in the following have a 360° shield connection, which ensures secure data transmission.

The technical data given are minimum requirements and may be exceeded in individual cases. Further information can be requested.



A-coded 5-poles	
Connector (m)	Connector (f)
	
Pin assignment	Signal
Housing:	Shielding
Pin 1:	Not connected or shield
Pin 2:	VCC
Pin 3:	GND
Pin 4:	Not connected

Cable properties



Sheath material/ color:	electron beam crosslinked elastomer/ black
Temperature range:	-40° C to +105° C (-40 °F to + 316,4 °F)
Minimum bending radius:	5*D (≥ 6 × outer diameter)
Line resistance	≤ 20 Ω/km
Dielectric strength:	2 kV (AC)
Nominal voltage:	300 V
Protection class:	IP65, IP67
Cable construction/ shield:	2x1mm ² , Shielding braid
Wire colors:	White single wires, black numbered
Outer diameter:	5,2 to 6,6 mm ± 0,3mm

4.2 Items

Item description	Application area	Item name	Weight [kg] ± 5%	Item no.
Connection cable Cable end 1: M12 connector (f) Cable end 2: open end	 	K-M12POW-B-oE-04-2m	0.121	0215_36

5 M12 IO cables

5.1 Technical data

The offered range of M12 connectors meets all specifications of IEC 61076-2-101.

All items offered in the following have a 360° shield connection, which ensures secure data transmission.

The technical data given are minimum requirements and may be exceeded in individual cases. Further information can be requested.

Cable properties








Temperature range:	-40 °C to +90 °C (-40 °F to +194 °F)
Wire colors	White single wires, black numbered
Minimum bending radius:	≥ 6 x outer diameter
Protection class:	IP65, IP67
Outer sheath color:	Black

B-coded 5-poles

Connector (m)	Connector (f)
Pin assignment	Signal
Housing:	Shielding
Pin 1:	GPI+
Pin 2:	GPI-
Pin 3:	GPO+
Pin 4:	GPO-
Pin 5:	Not connected

5.2 Items



Item description	Application area	Item name	Weight [kg] ± 5%	Item no.
Connection cable Cable end 1: M12 connector (m) Cable end 2: open end (4 wires)	 	K-M12.DAT-S.5.B-oE-G.00410-05-2m	0.180	0215_71
Connection cable Cable end 1: M12 connector (m), 90° angled Cable end 2: open end (4 wires)		K-M12.DAT-S9.5.B-oE-G.00410-05-2m	n.c.	0215_72
Connection cable Cable end 1: M12 connector (m) Cable end 2: open end (2 wires)		K-M12.DAT-S.5.B-oE-G.00210-05-2m	n.c.	0215_75
Connection cable Cable end 1: M12 connector (m), 90° angled Cable end 2: open end (2 wires)		K-M12.DAT-S9.5.B-oE-G.00210-05-2m	n.c.	0215_76

6 M12/RJ45 adapter cable for service

6.1 Technical data

The offered range of M12 connectors meets all specifications of IEC 61076-2-101.

All Ethernet items offered below have a 360° shield connection, which ensures secure data transmission according to Cat5 specifications. The technical data given are minimum requirements and may be exceeded in individual cases. Further information can be requested.

D-coded 4-poles/ RJ45		
Connector (m)	RJ45	
		
Pin assignment	Signal	Pin assignment
Housing:	Shielding	Housing:
Pin 1:	TD+	Pin 1:
Pin 2:	RD+	Pin 3:
Pin 3:	TD-	Pin 2:
Pin 4:	RD-	Pin 6:





Cable properties



Service

Outer sheath color:	Green
Temperature range:	-25° to + 70° C (-13 °F to 158 °F)
Wire colors:	white, yellow, orange, blue
Impedance:	100 Ω (at 100 MHz)
Protection class:	IP65, IP67
Cable construction:	4 × 0,34 mm (AWG22)

6.2 Items

Item description	Application area	Item name	Weight [kg] ± 5%	Item no.
Adapter cable (for service purposes)	 	KQ-M12CAT5-RJ45-01-2m	0.12	0244_31
Cable end 1: M12 connector (m)		KQ-M12CAT5-RJ45-01-5m	0.26	0244_32
Cable end 2: RJ45 connector		KQ-M12CAT5-RJ45-01-10m	0.45	0244_33
		KQ-M12CAT5-RJ45-01-20m	0.96	0244_34
Adapter cable (for service purposes)	 	KQ-M12.CAT5-S9-RJ45-S-G-03-5m	n.c.	0244_63
Cable end 1: M12 connector (m), 90° angled		KQ-M12.CAT5-S9-RJ45-S-G-03-15m	n.c.	0244_64
Cable end 2: RJ45 connector		KQ-M12.CAT5-S9-RJ45-S-G-04-2m	0.174	0244_65

7 M12/ RJ45 connectors

The following connector designs and values may vary depending on the supplier.

Technical data ³	M12 – ETH (D-coded 4-poles)	M12 – POW (A-coded, 5-poles)	M12 – DAT (B-codes, 5-poles)	RJ45 – ETH (8-poles)
				
	(m)	(m)	(f)	
Rated voltage		250 V (AC/ DC)		50 V (AC/ DC)
Current carrying capacity (per pin at +40 °C, +104 °F)		4 A		1 A
Insulation resistance		≥ 100 MΩ		≥ 100 MΩ
Contact resistance		≤ 5 mΩ		≤ 5 mΩ
Operating temperature		-25 to +85 °C, -13 to +185 °F		-40 to +70 °C, -40 to +158 °F
Pollution degree		3		1
Protection class (mounted)		IP65, IP67		IP20
Mechanical endurance		> 100 Mating cycles		> 750 Mating cycles
Material grip body		Plastic, flame resistant, self-extinguishing		
Circuit		shielded		
Standards				
Product requirement M12 circular connector		IEC 61076-2-101		IEC 60603-7-5

³ Connectors may differ slightly in reality from illustrations.

8 Labeling

8.1 Labeling of the cable by imprint

The following imprint variants⁴ are possible:

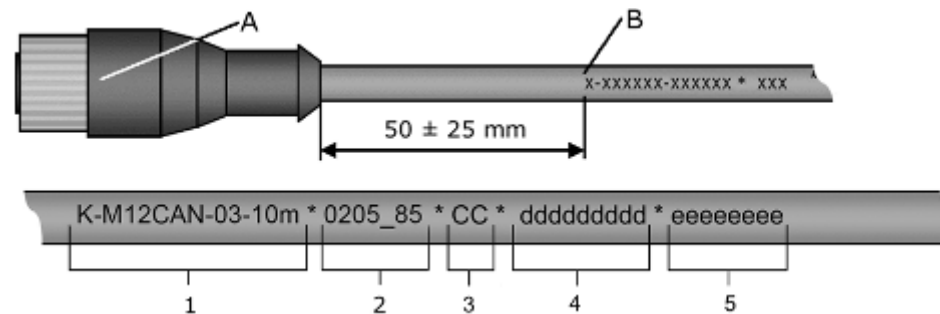


Fig. 1: Labeling the cables by printing - 1st example

A	Connector (m,f) as symbol for the beginning of the cable	B	Beginning of labeling
1	iris item name	4	Batch number manufacturer/supplier
2	iris item no.	5	Optional special field for customer requests
3	Manufacturer code		

⁴ May differ slightly in reality from illustrations.

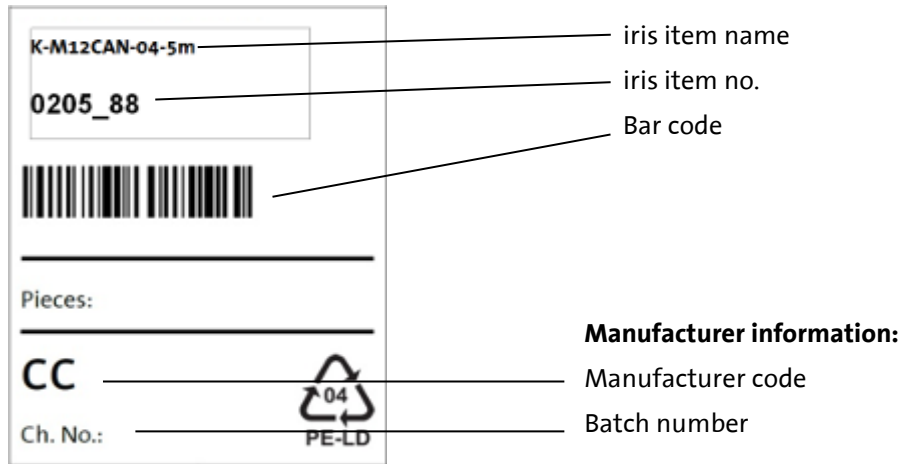


Fig. 2: Label on the package - 2nd example