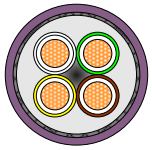
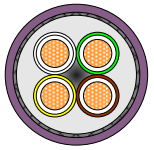
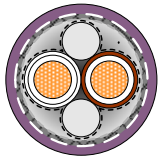
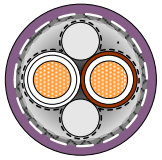
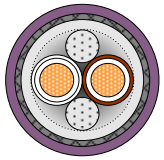
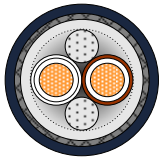
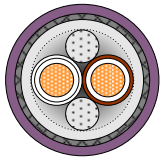
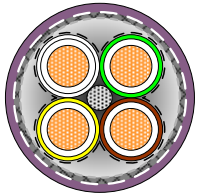
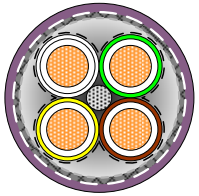
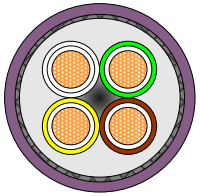
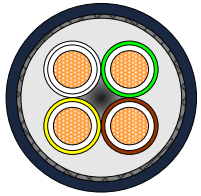
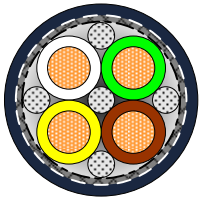
CAN-Bus cable

CAN-Bus cable ‖ Can-Bus / Field-Bus cable for medium to maximum load requirements.

Overview

Stranding \ Cable type	CFBUS.PVC (e-chain® cable)	CFBUS.PUR (e-chain® cable)	CFBUS (e-chain® cable)	CF11.LC (e-chain® cable)	CF11.LC.D (e-chain® cable)	CFROBOT8 (3D - e-chain® cable)
(4x0,25)C			 CFBUS.020		 CF11.02.02.02.LC.D	
(2x0,5)C	 CFBUS.PVC.021	 CFBUS.PUR.021	 CFBUS.021	 CF11.05.01.02.LC	 CF11.05.01.02.LC.D	
(4x0,5)C	 CFBUS.PVC.022	 CFBUS.PUR.022	 CFBUS.022	 CF11.05.02.02.LC		 CFROBOT8.022

Date	Author
14 Dec. 2013	D. Borsberg

CAN-Bus cable

CAN-Bus cable ‖ Can-Bus / Field-Bus cable for medium to maximum load requirements.

Core design:

Design part \ Cable type	CFBUS.PVC (e-chain® cable)	CFBUS.PUR (e-chain® cable)	CFBUS (e-chain® cable)	CF11.LC (e-chain® cable)	CF11.LC.D (e-chain® cable)	CFROBOT8 (3D - e-chain® cable)
Conductor	Fine-wire strand in especially bending-stable version consisting of **bare copper** wires (following DIN EN 60228)	Fine-wire strand in especially bending-stable version consisting of **bare copper** wires (following DIN EN 60228)	Fine-wire strand in especially bending-stable version consisting of **bare copper** wires (following DIN EN 60228)	Fine-wire strand in especially bending-stable version consisting of **bare copper** wires (following DIN EN 60228)	Fine-wire strand in especially bending-stable version consisting of **bare copper** wires (following DIN EN 60228)	Fine-wire strand in especially bending-stable version consisting of **bare copper** wires (following DIN EN 60228)
Core insulation	Mechanically high-quality TPE mixture	Mechanically high-quality TPE mixture	Mechanically high-quality TPE mixture	Mechanically high-quality TPE mixture	Mechanically high-quality TPE mixture	Mechanically high-quality TPE mixture

Core identification:

2 data cores		4 data cores*	
No.	**Colour**	**No.**	**Colour**
01	white	01	white
02	brown	02	brown
		03	green
		04	yellow

* *Star quad design ⇒ Core identification (clockwise): white, green, brown, yellow.*

Shield design:

Design part \ Cable type	CFBUS.PVC (e-chain® cable)	CFBUS.PUR (e-chain® cable)	CFBUS (e-chain® cable)	CF11.LC (e-chain® cable)	CF11.LC.D (e-chain® cable)	CFROBOT8 (3D - e-chain® cable)
Material	Bending-stable braid made of **tinned copper** wires	Bending-stable braid made of **tinned copper** wires	Extremely bending-stable braid made of **tinned copper** wires	Extremely bending-stable braid made of **tinned copper** wires	Extremely bending-stable braid made of **tinned copper** wires	Torsion-stable braid made of **tinned copper** wires
Shield coverage	Linear: approx. 50 % Optical: approx. 80 %	Linear: approx. 50 % Optical: approx. 80 %	Linear: approx. 70 % Optical: approx. 90 %	Linear: approx. 70 % Optical: approx. 90 %	Linear: approx. 70 % Optical: approx. 90 %	Linear: approx. 65 % Optical: approx. 85 %

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Image exemplary

Jacket design:

Design part \ Cable type	CFBUS.PVC (e-chain® cable)	CFBUS.PUR (e-chain® cable)	CFBUS (e-chain® cable)	CF11.LC (e-chain® cable)	CF11.LC.D (e-chain® cable)	CFROBOT8 (3D - e-chain® cable)
Inner jacket	None	None	**TPE** mixture adapted to suit the requirements in **e-chains®**	**TPE** mixture adapted to suit the requirements in **e-chains®**	**TPE** mixture adapted to suit the requirements in **e-chains®**	None
Outer jacket	Low-adhesion mixture on the basis of **PVC** (following DIN VDE 0281-5), abrasion- and bending-stable, adapted to suit the requirements in **e-chains®**	Low-adhesion mixture on the basis of **PUR** (following DIN VDE 0281-10), highly abrasion- and bending-stable, adapted to suit the requirements in **e-chains®**	Low-adhesion mixture on the basis of **TPE**, especially abrasion-stable and highly bending-stable, adapted to suit the requirements in **e-chains®**	Low-adhesion mixture on the basis of **TPE**, especially abrasion-stable and highly bending-stable, adapted to suit the requirements in **e-chains®**	Low-adhesion mixture on the basis of **TPE**, especially abrasion-stable and highly bending-stable, adapted to suit the requirements in **e-chains®**	Low-adhesion mixture on the basis of **TPE**, especially abrasion-stable and highly bending-stable, adapted to suit the requirements in **3D - e-chains®**

Characteristics of the outer jacket:

Characteristics \ Cable type	CFBUS.PVC (e-chain® cable)	CFBUS.PUR (e-chain® cable)	CFBUS (e-chain® cable)	CF11.LC (e-chain® cable)	CF11.LC.D (e-chain® cable)	CFROBOT8 (3D - e-chain® cable)
oil-resistant	DIN EN 50363-4-1	DIN EN 50363-10-2	DIN EN 60811-2-1	DIN EN 60811-2-1	DIN EN 60811-2-1	DIN EN 50363-10-2
biooil -resistant	-	-	VDMA 24568 with Plantocut 8 S-MB tested by DEA	VDMA 24568 with Plantocut 8 S-MB tested by DEA	VDMA 24568 with Plantocut 8 S-MB tested by DEA	-
PVC- / halogen-free	-	√ / √	√ / -	√ / √	√ / √	√ / -
hydrolysis- / microbe-resistant	-	√ / √	√ / √	√ / √	√ / √	√ / √
MUD-resistant	-	NEK 606 - status 2009	-	-	-	NEK 606 - status 2009
flame-retardant	IEC 60332-1-2, CEI 20-35, FT-1 & VW-1	IEC 60332-1-2, CEI 20-35, FT-1 & VW-1	IEC 60332-1-2, CEI 20-35, FT-1 & VW-1	IEC 60332-1-2, CEI 20-35, FT-1 & VW-1	IEC 60332-1-2, CEI 20-35, FT-1 & VW-1	IEC 60332-1-2, CEI 20-35, FT-1 & VW-1
clean room (DIN ISO 14644-1)	Class 1	Class 1	Class 1	Class 1	Class 1	Class 1
silicon-free	√	√	√	√	√	√
lead-free	2011/65/EU (RoHS-II)	2011/65/EU (RoHS-II)	2011/65/EU (RoHS-II)	2011/65/EU (RoHS-II)	2011/65/EU (RoHS-II)	2011/65/EU (RoHS-II)
UV-resistant	Medium	Medium	Medium	High	Medium	High

Cable marking:

Design part \ Cable type	CFBUS.PVC (e-chain® cable)	CFBUS.PUR (e-chain® cable)	CFBUS (e-chain® cable)	CF11.LC (e-chain® cable)	CF11.LC.D (e-chain® cable)	CFROBOT8 (3D - e-chain® cable)
Colour outer jacket	Red lilac (similar to RAL 4001)	Red lilac (similar to RAL 4001)	Red lilac (similar to RAL 4001)	Steel blue (similar to RAL 5011)	Red lilac (similar to RAL 4001)	Steel blue (similar to RAL 5011)
Colour of the cable marking	Black	Black	Black	White	Black	White
DESINA	-	√	√	-	√	-

Subject to misprints and errors.
Technical modifications are possible at any time.
Please refer regarding the availability of the items also the information in the latest chainflex® catalogue.

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Image exemplary

Cable marking (Black or White): „00000 m“** igus chainflex CF--.--.--① -----② ----------③ CE -----④ -----⑤ CAN-Bus conform RoHS-II conform www.igus.de +++ chainflex cable works +++

** ***Length printing:*** *Not calibrated. Only intended as an orientation aid.*
① / ②: Cable identification according to part no. (see technical table for details).
③: Printing of the UL-Style (only if UL-certifying exists).
④: Printing: Low Capacitance (only CF11.LC & CF11.LC.D).
⑤: Printing: DESINA (only if DESINA-standard fulfilled).

Ex.: CFBUS.020:
„00000 m“** igus chainflex CFBUS.020 (4x0,25)C E310776 cRUus AWM Style 21371 VW-1 AWM I/II A/B 80°C 30 V FT-1 CE DESINA CAN-Bus conform RoHS-II conform www.igus.de +++ chainflex cable works +++

Ex.: CF11.05.01.02.LC:
„00000 m“** igus chainflex CF11.05.01.02.LC (2x0,5)C CE Low Capacitance CAN-Bus conform RoHS-II conform www.igus.de +++ chainflex cable works +++

General mechanical values:
(For individual details see technical table and/or the own data sheet belonging to the cable type)

Characteristics \ Cable type	CFBUS.PVC (e-chain® cable)	CFBUS.PUR (e-chain® cable)	CFBUS (e-chain® cable)	CF11.LC (e-chain® cable)	CF11.LC.D (e-chain® cable)	CFROBOT8 (3D - e-chain® cable)
Minimum bending within the application	12,5 x d	12,5 x d	10 x d	10 x d	10 x d	10 x d
Temperature range moved	-5 °C to +70 °C (+23 °F to +158 °F)	-20 °C to +70 °C (-4 °F to +158 °F)	-35 °C to +70 °C (-31 °F to +158 °F)	-35 °C to +70 °C (-31 °F to +158 °F)	-35 °C to +70 °C (-31 °F to +158 °F)	-25 °C to +70 °C (-13 °F to +194 °F)
Torsion (at 1 m cable length)	±30 °	±30 °	±30 °	±30 °	±30 °	±180 °

General electrical values:
(For individual details see technical table and/or the own data sheet belonging to the cable type)

Characteristics \ Cable type	CFBUS.PVC (e-chain® cable)	CFBUS.PUR (e-chain® cable)	CFBUS (e-chain® cable)	CF11.LC (e-chain® cable)	CF11.LC.D (e-chain® cable)	CFROBOT8 (3D - e-chain® cable)
Nominal voltage	50 V	50 V	50 V	50 V	50 V	50 V
Certifications	cRUus (E310776: Style 1598 & 2571, 30 V / 80 °C)	cRUus (E310776: Style 1598 & 20236, 30 V / 80 °C)	cRUus (E310776: Style 1589 & 21371, 30 V / 80 °C)	-	-	cRUus (E310776: Style 1589 & 20236, 30 V / 80 °C)
Guidelines	CE, NFPA, EAC & TR (CTP)	CE, DESINA, NFPA, EAC & TR (CTP)	CE, DESINA, NFPA, EAC & TR (CTP)	CE, EAC	CE, DESINA, EAC	CE, NFPA, EAC

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CAN-Bus cable

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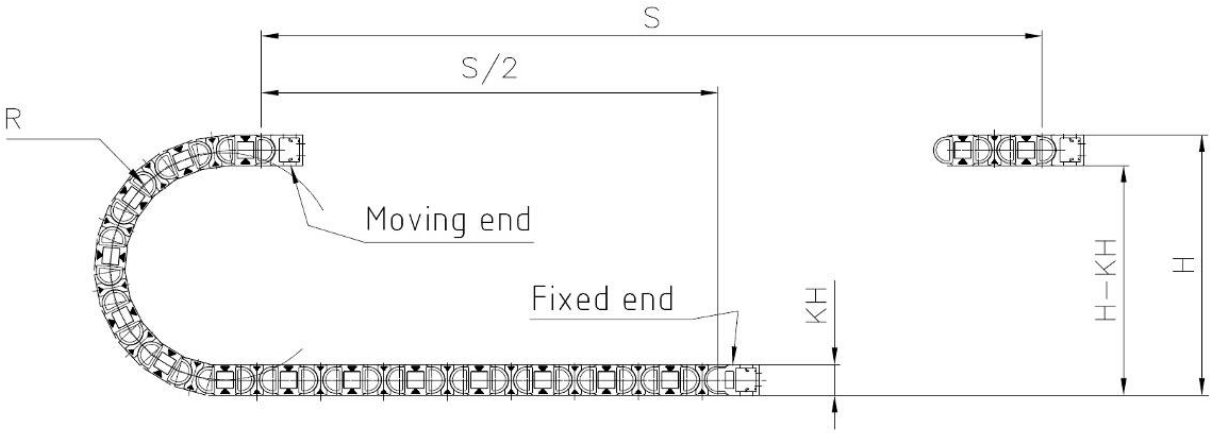
Dynamic values:

Characteristics \ Cable type		CFBUS.PVC (e-chain® cable)	CFBUS.PUR (e-chain® cable)	CFBUS (e-chain® cable)	CF11.LC (e-chain® cable)	CF11.LC.D (e-chain® cable)	CFROBOT8 (3D - e-chain® cable)
Max. speed for e-chain® use:***	Unsupported	v = 3 m / s	v = 3 m / s	v = 10 m / s	v = 10 m / s	v = 10 m / s	v = 10 m / s
	Gliding	v = 2 m / s	v = 2 m / s	v = 6 m / s	v = 6 m / s	v = 6 m / s	v = 2 m / s
Max. speed within the application:***		-	-	-	-	-	v = 10 m / s
Max. acceleration within the application:***		a = 30 m / s^2	a = 30 m / s^2	a = 100 m / s^2	a = 100 m / s^2	a = 100 m / s^2	a = 10 m / s^2

Typical lab test setup for the e-chain® cable groups:

Characteristics \ Cable type	CFBUS.PVC (e-chain® cable)	CFBUS.PUR (e-chain® cable)	CFBUS (e-chain® cable)	CF11.LC (e-chain® cable)	CF11.LC.D (e-chain® cable)
Test bending radius R	approx. 100 mm	approx. 100 mm	approx. 63 - 75 mm	approx. 75 mm	approx. 63 - 75 mm
Test travel S	approx. 1 - 15 m	approx. 1 - 15 m	approx. 1 - 15 m	approx. 1 - 15 m	approx. 1 - 15 m
Test period	min. 2 - 4 million double strokes	min. 2 - 4 million double strokes	min. 2 - 4 million double strokes	min. 2 - 4 million double strokes	min. 2 - 4 million double strokes
Test speed	approx. 0,5 - 2 m / s	approx. 0,5 - 2 m / s	approx. 0,5 - 2 m / s	approx. 0,5 - 2 m / s	approx. 0,5 - 2 m / s
Test acceleration	approx. 0,5 - 1,5 m / s^2	approx. 0,5 - 1,5 m / s^2	approx. 0,5 - 1,5 m / s^2	approx. 0,5 - 1,5 m / s^2	approx. 0,5 - 1,5 m / s^2



*** *These values are based on specific applications or tests.*
They do not represent the limit of what is technically feasible.

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Image exemplary

Technical tables:

Mechanical values:

① Part no.	② Number of cores & nominal cross section [mm²]	External diameter (d)**** [max. mm]	Copper index [kg / km]	Weight [kg / km]
CFBUS.PVC.021	(2x0,5)C	8,5	33	87
CFBUS.PVC.022	(4x0,5)C*****	8,5	46	97
CFBUS.PUR.021	(2x0,5)C	8,5	33	83
CFBUS.PUR.022	(4x0,5)C*****	8,5	46	93
CFBUS.020	(4x0,25)C*****	6,5	40	77
CFBUS.021	(2x0,5)C	8,0	41	88
CFBUS.022	(4x0,5)C*****	8,0	46	90
CF11.05.01.02.LC	(2x0,5)C	8,0	41	82
CF11.05.02.02.LC	(4x0,5)C*****	8,5	46	87
CF11.02.02.02.LC.D	(4x0,25)C*****	6,5	40	54
CF11.05.01.02.LC.D	(2x0,5)C	8,0	41	82
CFROBOT8.022	(4x0,5)C*****	7,0	43	72

**** *External diameters are maximum values and may tend toward lower tolerance limits.*
***** *Star quad design*

Electrical values:

Nominal cross section [mm²]	Conductor resistance [approx. Ω / km] at 20 °C	Max. current rating [A] at 30 °C♦
(following)	DIN IEC 60344	DIN VDE 0298-4
0,25	79	5
0,5	39	10

♦ *The max. current rating depends on factors such as the individual environmental conditions and the type of installation.*