

## Aircraft Connectors



Manufactured by **Cavotec Fladung**

# Aircraft Connectors

## Who we are

Cavotec is a multi-national group of companies serving the following industries: mining and tunnelling, ports and maritime, steel and aluminium, energy and offshore, airports, general industry and automation. In the early 1960's our main focus was the design and production of motorised cable reels primarily for manufacturers of tower cranes, harbour cranes and mining equipment. Today, Cavotec is connecting mobile equipment around the world in many diverse applications.

## Where we are

The Cavotec Group consists of 7 manufacturing "Centres of Excellence" located in Canada, France, Germany, Italy, New Zealand, Norway and Sweden, and by 5 local manufacturing units located in Australia, China, Germany and the USA. For the distribution of products and providing support to customers Cavotec has 27 sales companies which, together with a network of distributors, serve more than 30 countries in five continents. The ultimate objective is to be perceived as "local everywhere".

## How we work

Our aim is to work closely with our customers in order to build long-term partnerships. To achieve this aim we have created a working environment that attracts the best people, encourages them to stay and brings out their best qualities. By producing totally reliable systems and backing them with efficient service, we strive to create true customer satisfaction.



## Cavotec Fladung

Established in 1968, the Fladung company has grown into a leader in the field of innovative ground support systems. Starting with the supply of 400Hz technology to airports, the company soon started to expand their range of systems for the airport industry.

In 2003 the company became a member of the Cavotec Group, and started operating as Cavotec Fladung GmbH. Today, the company is seen as one of the leading ground support equipment manufacturers in the world. With an extensive range of underground and above ground supply systems, coupled with innovations like the Power and PCA Caddys, Cavotec Fladung has become a natural choice for airport operators around the world.

# Cavotec Group Organisation

As shown here the Cavotec Group is organised to support its customers around the world through its manufacturing units and sales companies.

Each Cavotec manufacturing company, no matter where it is located, aims at being a market leader in its field by providing innovative and reliable products to Group customers.

Each Cavotec sales company, in the 27 countries where they operate, aims at better serving its local market following the Group philosophy "to be local everywhere".

## Manufacturing network

### Centres of Excellence

#### France

##### Cavotec RMS

Spring Driven Reels

#### Germany

##### Cavotec Alfo

Spring Driven Reels

Slipring Columns

##### Cavotec Fladung

Aircraft Support Systems

Security Systems

#### Italy

##### Cavotec Specimas

Motorized Cable Reels

Panzerbelt Cable Protection

Slipring Columns

#### Norway

##### Cavotec Micro-control

Radio Remote Controls

#### Sweden

##### Cavotec Connectors

Electrical Plugs & Sockets

#### New Zealand

##### Cavotec MoorMaster

Automated Mooring Systems

### Local Manufacturing

#### Australia

##### Cavotec Australia

Motorized Cable Reels

#### China

##### Cavotec China

Product Assembly

#### Germany

##### Cavotec Micro-control

Radio Remote Controls

#### Sweden

##### Cavotec Sweden

Product Assembly

#### USA

##### Cavotec USA

Product Assembly

### Group Partners

#### Belgium

##### Gantry

Crane Rail Systems

#### Italy

##### Brevetti Stendalto

Cable Chains

##### Prysmian (Pirelli)

Flexible Cables

##### Tratos Cavi

Flexible Cables

## Sales network

### Cavotec Sales Companies

Cavotec Australia

Cavotec Belgium\*

Cavotec BeNeLux

Cavotec Brazil\*

Cavotec Canada

Cavotec Chile

Cavotec China

Cavotec Denmark

Cavotec Finland

Cavotec France

Cavotec Germany

Cavotec Hong Kong

Cavotec India

Cavotec Italy

Cavotec Korea

Cavotec Latin America

Cavotec Mexico

Cavotec Middle East

Cavotec Norway

Cavotec Russia\*

Cavotec Singapore

Cavotec South Africa

Cavotec Sweden

Cavotec Turkey

Cavotec UK & Ireland

Cavotec USA

\* Branch Office

## General Information

Cavotec Fladung has always designed and developed high quality ground support equipment, aimed at servicing the aircraft as fast and safe as possible. This uncompromising stance on safety reliability and innovation has made Cavotec Fladung the preferred partner of industry operators around the world.

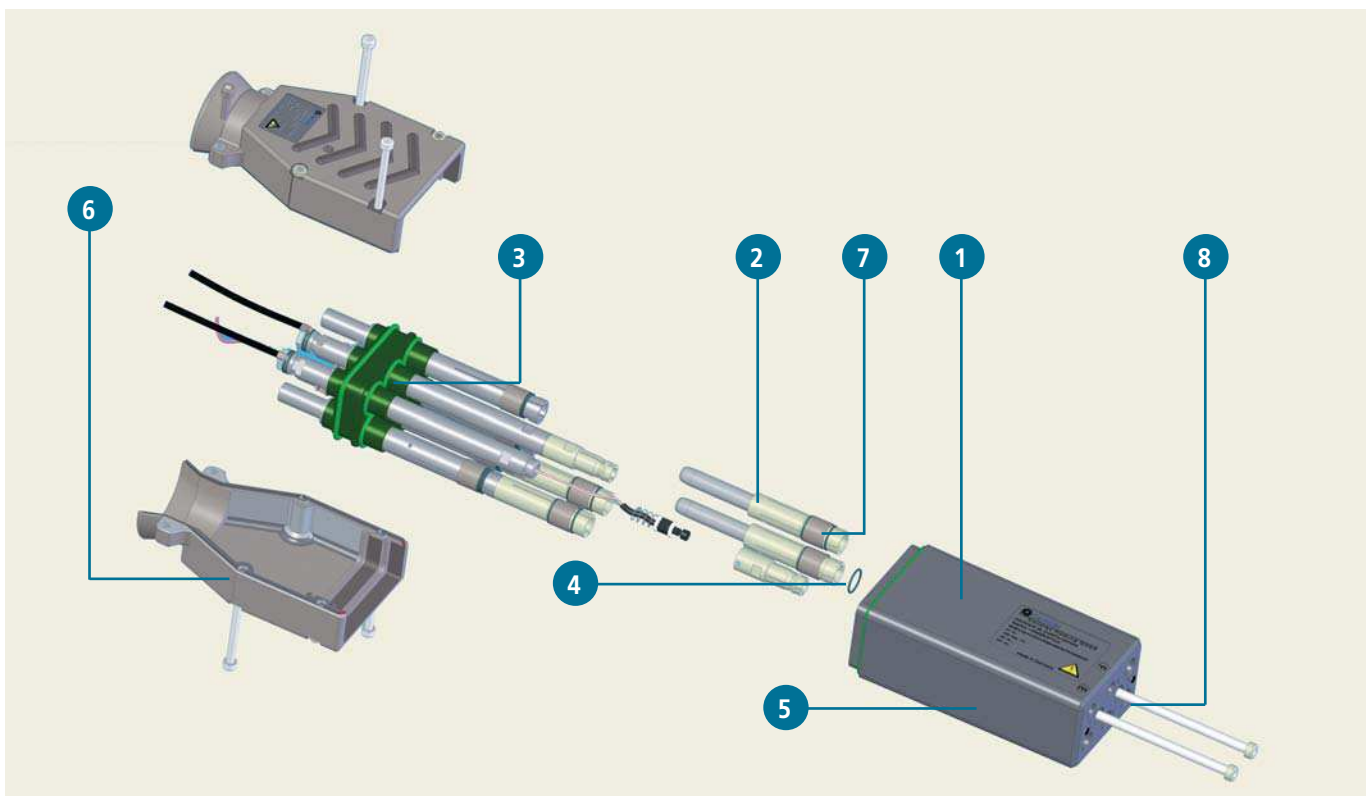
To meet ever increasing demands of the aircraft industry, Cavotec Fladung has designed and developed a new series of the well-known 400Hz connector. Based on the previous successful 400Hz connector range and by closely cooperating with major industry operators, the all new 400Hz connector is currently the most advanced product in the whole Cavotec Fladung range.

Many significant changes have been made to the overall strength of the connector. These modifications will substantially increase the operating lifetime of the connector, even in the most extreme working conditions. Examples are the redesigned nose and connector housing which are now made from stronger and more abrasion resistant material.

Another important development is the increased temperature range of this new 400Hz connector. It can now operate between temperatures of -65°C and 125°C through the implementation of new superior production processes.

### Main features for new 400Hz (400 XP) connector

1. New material with improved shock and temperature resistance
2. Silver plated pins and contacts
3. Stronger contact isolator holder
4. Added insulation gasket
5. Easy-to-change connector nose
6. Easy-to-change connector housing
7. High strength, anti-widening sleeve
8. Easily accessible fastening screw









# Aircraft Connectors

The new Cavotec Fladung 400Hz connector has been designed to comply with all major international standards, including the very stringent German VDE certification.

Some important new design features of the 400Hz connector are the arch-free nose with shock-resistant studs and new E/F indications mounted on the outside of the connector. The connector nose itself has also been improved by fitting a new gasket and 4000V resistant insulation. The actual housing of the new 400Hz connector has been totally redesigned to meet the present and future demands of the aircraft industry with redesigned contact holders, arch-free sleeves and an improved resistance to water and shock. Furthermore, thanks to the new materials and manufacturing process, the new 400Hz connector has an improved operating temperature range of -65°C to 125°C.

Beneath the housing a lot has changed too. The improved connector contacts are now fully silver plated and are fitted with leak-proof O-rings, secure rings for the new E/F indications and replaceable bushings and springs for the A>B>C>N contacts.

Besides the standard features such as IP/X5 rated, Micro-switch, LED pilot lights and replaceable contacts and nose, the new 400Hz connector can also be fitted with advanced temperature sensors and operating buttons.



Connector Type	Standard cable configuration				
	4x50m <sup>2</sup>	4x70m <sup>2</sup>	7x35m <sup>2</sup>	2x70m <sup>2</sup>	2x120m <sup>2</sup>
400Hz (400 XP)	x	x	x	–	–
280VDC (28 XP)	–	–	x	x	x

Connector Version	Control buttons					Replaceable parts		Nose configuration	
	on/off	in/out	Microswitch	Led	Temp. sensor	Contact pins	Nose & housing	Long	Short
400 XP-0			1 or 2	optional	optional	yes	yes	X	
400 XP-2	X		1 or 2	yes	optional	yes	yes	X	
400 XP-4	X	X	1 or 2	yes	optional	yes	yes	X	
400 XPS-0			1 or 2	optional	optional	no**	yes		X**
400 XPV*			2	no	optional	yes	yes	X	
28 XP-0			1 or 2	optional	optional	yes	yes	X	
28 XP-2	X		1 or 2	yes	optional	yes	yes	X	
28 XP-4	X	X	1 or 2	yes	optional	yes	yes	X	

\* A specially designed 400Hz connector for the German military, meeting VDE-standard test criteria

\*\* If converting to the long connector housing, replaceable longer contact pins are required. Note that conversion is only possible from short to long, not from long to short.

## Technical data valid for all 400Hz XP connector series



### 400 Hz Connector XP-O Technical and Safety features

- Robust design
- Interchangeable contacts
- Interchangeable front part
- Interchangeable connector housing
- Extra feature with pilot contact to ensure more than 80% connection to aircraft
- LED to show secure connection
- Optional temperature sensor in A,B,C contacts to prevent overheating



### 400 Hz Connector XPS

- Robustes Design
- Interchangeable front part
- Interchangeable connector housing
- Extra feature with micro switch, inside E&F contacts, to prevent power on when connector is not connected to the aircraft, ensures more than 80% connection before power on.



### 400 Hz Connector XPS Upgrade Kit

- Long plug nose
- Changeable contacts for A, B, C & N
- Adapter for E & F Pin
- (Only possible when contacts are still in good condition)



### 400 Hz Connector XPV

- VDE approved version
- Robust design
- Changeable silver plated contacts
- Interchangeable front part
- Interchangeable connector housing
- 2 micro switches, inside E&F contacts, to prevent power on when connector is not connected to the aircraft, ensures more than 80% connection before power on

## Range



### 400 Hz Connector XP4/ XP2

#### Technical Data

Robust design

Interchangeable contacts

Interchangeable front part

Interchangeable connector housing

Extra feature with pilot contact to ensure more than 80% connection to aircraft

LED to show secure connection

Optional temperature sensor in A,B,C contacts to prevent overheating

The 400Hz connector can be fitted with optional IP66- rated control buttons for power on/off and cable in/out.



### 28V/ DC Connector (XP-2)

#### Technical Data

Robust design

Interchangeable contacts

Interchangeable front part

Interchangeable connector housing

Micro switch in the pilot contact enables the 400Hz transmission as soon as the connector has been plugged in 80%.

The 28V/DC connector can be fitted with optional IP66- rated control buttons for power on/off and cable in/out.



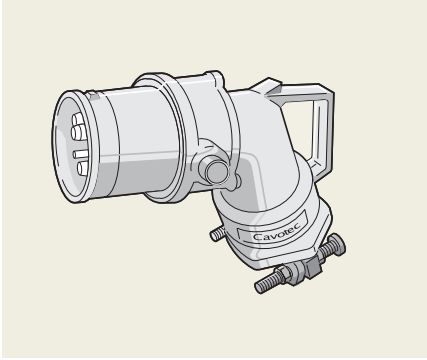
### Temperature Sensor

Heat sensor for example like PTC

Activated by 125°C

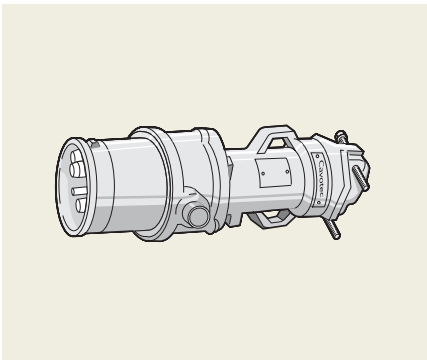
At customers option signal processing can be supplied





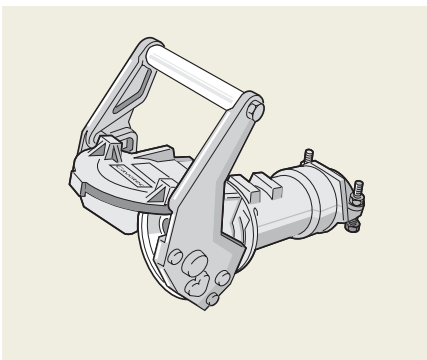
### Plug/inverted plug, bent push & pull

Type size:	4
Number of pins:	4 + 13
Maximum current (Amp):	250
Weight kg:	1,9
Cross section mm <sup>2</sup> :	70
Plug Male pins - product code:	PC4-SX17-0700 - PC4-SX17-0700I
Inverted plug Female - product code:	PC4-TX17-0700 - PC4-SX17-0700I



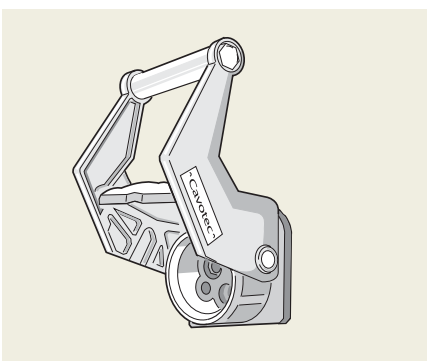
### Plug/inverted plug, straight push & pull

Type size:	4
Number of pins:	4 + 13
Maximum current (Amp):	250
Weight kg:	1,8
Cross section mm <sup>2</sup> :	70
Plug Male pins - product code:	PC4-SX17-0700 - PC4-SX17-0700R
Inverted plug Female - product code:	PC4-TX17-0700 - PC4-SX17-0700R



### Connector, straight push & pull

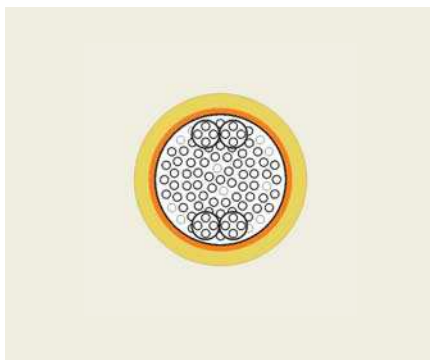
Type size:	4
Number of pins:	4 + 10
Maximum current (Amp):	250
Weight kg:	4,8
Cross section mm <sup>2</sup> :	70
Connector Female - product code:	PC4-RX17-0700



### Socket/inverted socket, push & pull

Type size:	4
Number of pins:	4 + 13
Maximum current (Amp):	250
Weight kg:	3,5
Cross section mm <sup>2</sup> :	70
Socket Female - product code:	PC4-VX17-0700
Inverted Socket male pins - product code:	PC4-WX17-0700

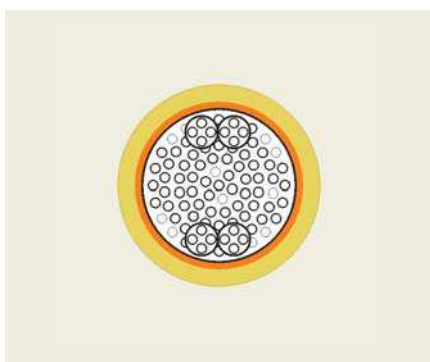
## Special cables



### 1x50 + 4x1 mm<sup>2</sup>

4 control wire cores, twisted with power conductor. Double insulation of outer sheath made from high abrasion resistant, flame retardant, halogen free polyurethane.

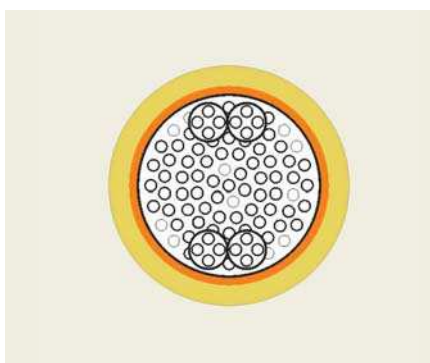
Nominal voltage: U; / U	0,6/1kV max.
Testing voltage:	4 kV
Temperature range:	operating temperature: -40°C - +90°C permissible short term: +120°C
Current rating max.:	207 A
Outer diameter:	ca. 17,8mm
Copper weight:	519 kg/km
Weight:	ca. 626 kg/km



### 1x70 + 4x1 mm<sup>2</sup>

4 control cores twisted with power conductor. Double insulation of the outer sheath high abrasion resistant, flame retardant, halogen free polyurethane

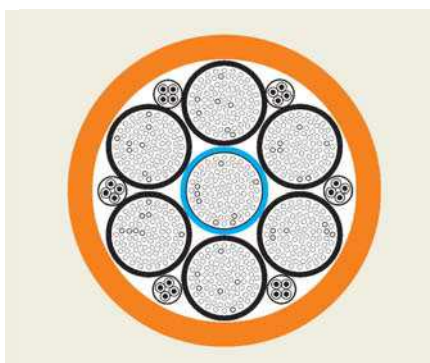
Nominal voltage: U; / U	0,6/1kV max
Testing voltage:	4 kV
Temperature range:	operating temperature: -40°C - +90°C permissible short term: +120°C
Current rating max.:	270 A
Outer diameter:	ca. 20,5 mm
Copper weight:	711 kg/km
Weight:	ca. 800 kg/km



### 1x120 + 4x1 mm<sup>2</sup>

4 control wire cores, twisted with power conductor. Double insulation of outer sheath made from high abrasion resistant, flame retardant, halogen free polyurethane

Nominal voltage: U; / U	0,6/1kV max
Testing voltage:	4 kV
Temperature range:	operating temperature: -40°C - +90°C permissible short term: +120°C
Current rating max.:	383 A
Outer diameter:	ca. 25,0 mm
Copper weight:	1191 kg/km
Weight:	ca. 1379 kg/km



### 7x35 + 6x4x1 mm<sup>2</sup>

Six power cores twisted around neutral core. Outer sheath made from high abrasion resistant and UV resistant halogen free PUR with excellent resistance to oils and hydrolysis.

Nominal voltage: U; / U	0,6/1kV max
Testing voltage:	4 kV
Temperature range:	operating temperature: -40°C - +90°C permissible short term: +120°C
Current rating max.:	270 A
Outer diameter:	ca. 42,5 mm
Copper weight:	2625 kg/km
Weight:	ca. 3443 kg/km

Note: The 1x50 mm<sup>2</sup> and 1x70 mm<sup>2</sup> cables come standard as twisted 4 x 50mm<sup>2</sup> and 4 x 70 mm<sup>2</sup> cables for all 400Hz applications.

## Accessories

In addition its own range of Ground Support Equipment, Cavotec Fladung also supplies products such as spring driven cable and hose reels and power connectors to the airport industry.

Cavotec Fladung is a global leader in the supply of specialised ground support equipment.

A full range of underground and above ground supply systems coupled with innovations such as the Power and PCA Caddy's, make Cavotec Fladung the obvious choice for airport operators around the world.

For more information concerning the range of ground support equipment please contact your local Cavotec company or visit [www.cavotec.com](http://www.cavotec.com).



