



# **FIRE ALARM CABLES**

for highest safety requirements

TRADITION ♦ INNOVATION ♦ PASSION



# DATWYLER


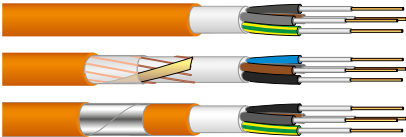
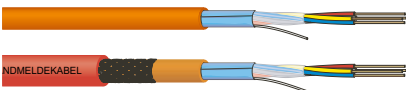


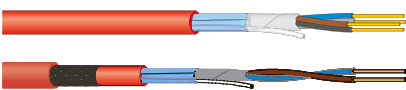


Datwyler Cabling Solutions is an internationally operating company with its headquarters in Switzerland and affiliates in Europe, the Middle East and Asia. Datwyler supplies premium quality products, system solutions and services for electrical and communications infrastructures in public and commercial buildings and data centres as well as for FTTx networks. Being a well-established, reliable company with a 100-year tradition, Datwyler leads the way in innovation for applications such as ICT networks, fire safety and elevators/escalators.

## MILESTONES

1915	Adolf Dätwyler founded the company and began producing electrical conductors using aluminium.	2008	Datwyler introduced pre-assembled multiple cables (trunks) and high-density systems that specifically address the demand for efficient data centre cabling.
1926	The production of telephone cables began.	2009	Datwyler offered complete solutions for FTTx networks.
1944	The production of high-frequency cables began.	2010	Datwyler became full service main contractor for several FTTx projects in Switzerland. Introduction of FTTH special cables and wall outlets.
1973	Kaved Ltd. was acquired. The value chain was extended by adding cable harnessing. Datwyler produced the first flat cable for lifts with up to 400 metre shaft height.	2011	Datwyler opened a branch in Dubai.
1986	The production of fibre optic cables began.	2012	Introduction of the 100G-tested "Datwyler Data Centre Solution". Renaming to "Datwyler Cabling Solutions AG" in Switzerland (1 Nov 2012).
1987	Uninet® data cable (today: "Datwyler CU" data cable) and the future-proof concept for structured building / premises cabling were introduced.	2013	Acquisition by Pema Holding AG. The "CU 8203 4P" became the world's first Category 8 copper data cable.
1991	Datwyler safety cable became the first fire safety cable in the world to successfully pass E90 circuit integrity testing as per DIN 4102-12.	2015	Datwyler presents the "FO Outdoor wbKT Micro Combi", the world's first mini hybrid cable for NGN and NGA networks.
1998	International expansion: Datwyler entered the Chinese market.	2016	Datwyler developed the "CU 7000 4P Home" Cat.7 data cable with only 5.8 mm outer diameter. Introduction of the "FO Outdoor wbKT S-Micro" with 288 fibres and only 10.4 mm outer diameter.
2002	Optofil® Safety (today: "Datwyler FO Universal ... Safety") became the first metal-free fibre optic cable with E30 circuit integrity as per DIN 4102-12.		
2005	Datwyler significantly expanded its international distribution network, e.g. in Eastern and Southern Europe and the Middle East.		

# CABLE TECHNOLOGY FOR HIGHEST SAFETY REQUIREMENTS

Datwyler offer electrical cable systems for all safety needs. Our product line includes halogen-free, low smoke emission and flame retardant fire safety cables, support systems, mounting components and accessories. For more information please see [www.cabling.datwyler.com](http://www.cabling.datwyler.com)

CABLES	APPLICATIONS	PRODUCT RANGE / STANDARDS
<b>Safety cables with intrinsic fire resistance</b>		
<b>Low voltage cables up to 0.6 / 1 kV</b> <b>E30-E90; FE180; BS 6387 CWZ; PH30-120, Rf-1 1½</b>  with mechanical protection	Safety cables with circuit integrity, intrinsic fire resistance and System Circuit Integrity to maintain power supplies to sprinkler systems, emergency lighting, smoke and heat extraction systems, emergency lift supplies and fire fighting lifts.	Single core cables from 1.5 to 630 mm <sup>2</sup> , multi-core cables from 1.5 to 300 mm <sup>2</sup> , also available with mechanical protection  <b>Standards / Approvals</b> IEC, EN, CENELEC, BS, DIN VDE, SEV, NBN, VKF/AEAI, VdS, GOST-R, Ukraine
<b>Wiring and fire alarm cables up to 225 V</b> <b>E30-E90; FE180; BS 6387 CWZ; PH30-120, Rf-1 1½</b>  with mechanical protection	Safety cables with circuit integrity, intrinsic fire resistance and System Circuit Integrity to maintain power supplies and data transmission to fire alarm systems, public address and voice alarm systems.	Single pair or multi-pair cables, individually or collectively screened, also available as fire alarm cables and with mechanical protection.  <b>Standards / Approvals</b> IEC, EN, CENELEC, DIN VDE, SEV, NBN, GOST-R
<b>Fibre-optic cables</b> <b>with reference to DIN 4102-12, 30 minutes (E30); IEC 60331-25</b>  with rodent protection	FO Universal Safety cables for indoor and outdoor applications.	Loose tube construction with up to 60 single-mode or multimode fibres, with non-metallic rodent protection.  <b>Standards / Approvals</b> IEC, EN, CENELEC, DIN VDE
<b>Safety cables with circuit integrity</b>		
<b>Fire alarm cables 300 / 500 V</b> <b>BS 6387 CWZ; FE180; BS 8434-2, EN 50200 (PH 30-120) and Annex E</b>  with mechanical protection	Safety cables with circuit integrity to maintain power supplies and data transmission to fire alarm systems, emergency lighting, public address and voice alarm systems.	Screened multi-core cables from 1.0 to 4 mm <sup>2</sup> , also available with mechanical protection.  <b>Standards / Approvals</b> BS, EN, CENELEC, GOST-R, BASEC, LPCB, VKF/AEAI
<b>Safety cables with improved characteristics in case of fire</b>		
<b>Low voltage cables up to 0.6 / 1 kV</b> 	Safety cables with improved characteristics in case of fire – an alternative to traditional PVC cables, where no circuit integrity is required.	Single core cables from 1.5 to 630 mm <sup>2</sup> , multi-core cables from 1.5 to 300 mm <sup>2</sup> , also available with mechanical protection and as flexible, oil resistant version.  <b>Standards / Approvals</b> IEC, EN, CENELEC, DIN VDE, SEV, GOST-R

# THE MOST IMPORTANT TEST PROCEDURES AND THEIR FUNCTIONS



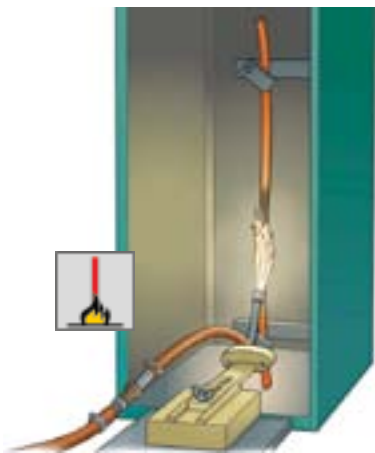
## Test on gases evolved during combustion

This test procedure provides information if the insulation material of the cable sheath creates corrosive gases in the event of fire.

Halogen parts or other material in small quantities can be easily identified with this test due to the strong change of pH and conductivity.  
The conductivity is  $< 10 \text{ mS/mm}$

### Standards

- IEC 60754-1 and IEC 60754-2



## Test for vertical flame propagation (single insulated wire or cable)

This test method tests a cable sample (length: 60 cm) for burning behaviour.

The flame must extinguish itself, and the burn damage must not reach the upper end of the cable sample.

### Standards

- IEC 60332-1-2  
- EN 60332-1-2  
- VDE 0482-332-1-2



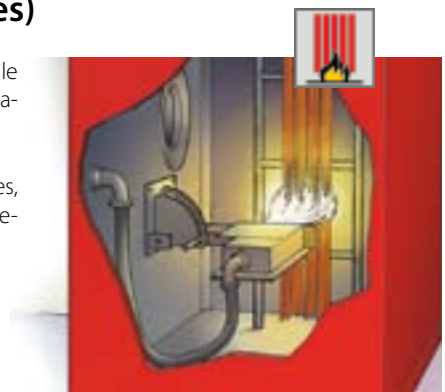
## Test for vertical flame spread (bunched wires or cables)

This test method tests a cable bundle (length: 360 cm) with regard to fire propagation.

The flames must extinguish themselves, and burn damage must not exceed a defined height.

### Standards

- IEC 60332-3-22 up to 25 Cat. A-D  
- EN 60332-3-22 up to 25 Cat. A-D  
- VDE 0482-332-3-22 up to 25 Cat. A-D



## Measurement of smoke density

This test checks smoke development when burning the cable or the impairment of the visibility by burning cables.

The reduction in light transparency is measured in a standard chamber.

### Standards

- IEC 61034-1 and IEC 61034-2  
- EN 61034-1 and EN 61034-2  
- VDE 0482-1034 part 1 and 2

## Test of circuit integrity (FE/PH)

This test establishes whether a single cable can maintain circuit integrity during and after exposure to a fire for a time period of at least 180 minutes. Cables which fulfil the requirements of this test are marked with "FE180" after their type designation.

There is no obligation to test the cable for functional integrity beyond the designated period.

### Remark:

**This test is not equivalent to the test for extended functional integrity (System Circuit Integrity) in accordance with DIN 4102-12**

### Test of circuit integrity (fire and water)

- BS 6387 (cat. W) (650°C, 3A)
- VdS 3423 (>830°C, 3A)
- EN 50200 Annex E (>830°C, 2A)



### Test of circuit integrity (fire only)

- IEC 60331-11/-21/-23/-25 (>750°C)
- BS 6387 (cat. C) (950°C)
- VDE 0472-814 (>750°C)

### Test of circuit integrity (fire and mechanical shock)

- IEC 60331-1/-2 (>830°C, 2A)
- EN 50200 (PH) (>830°C, 2A)
- EN 50362 (> 830°C, 2A)
- BS 6387 (cat. Z) (950°C, 3A)

## Test of System Circuit Integrity of electrical cable installations

This standard describes the requirements and the actions to achieve enhanced circuit integrity of the complete electrical cable installation in the event of fire.

While the circuit integrity test (FE/PH) is only for single cables, in this test cables are tested together and in connection with practical fixing systems.

It is important to note that there is no connection between the two standards, circuit integrity (FE/PH) and enhanced or System Circuit Integrity (E).

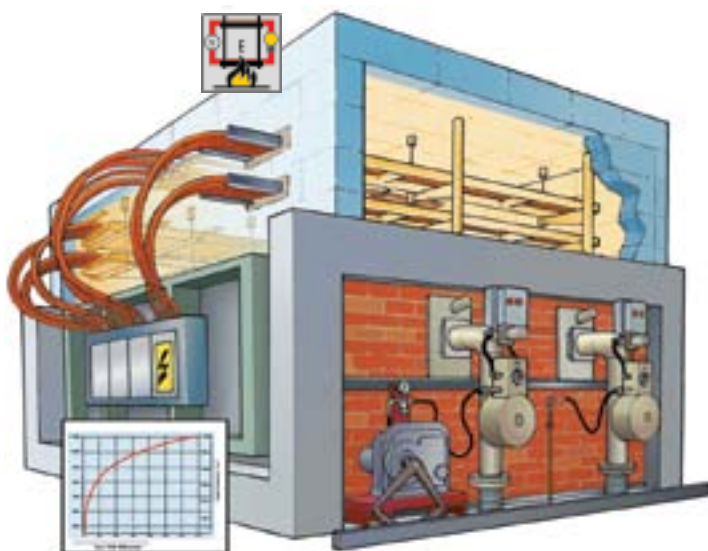
The test is carried out and certified from state recognised institutes.

### Standards

- DIN 4102 part 12 (E30-E90)
- NBN 713-020 (Rf1, Rf1½)

### Better than any other standard!

This test (E30-E90) is the only worldwide standard for guaranteeing the functional integrity of the complete electrical cable installation, including the fixing components, under normal operating conditions.



## PRODUCT FEATURES

The following pictograms show the essential features of our products and give an easy reference.

They are allocated to the articles on the data sheets and provide you with a quick overview



**Zero halogen,  
non corrosive gases**

These Datwyler cables are halogen-free and reduce possible damage to health or material to a minimum.

IEC 60754-1 and IEC 60754-2



**Flame propagation**

These Datwyler cables use a high-performance, flame retardant material that is self-extinguishing.

IEC 60332-1-2,  
EN 60332-1-2,



**Flame spread**

These Datwyler cables are flame resistant and prevent the propagation of a fire from one location to another

IEC 60332-3-22 to 25 cat. A-D,  
EN 60332-3-22 bis 25 cat. A-D



**Smoke density**

These Datwyler cables emit minimum smoke in the event of fire. Exit routes and fire brigade access are not restricted.

IEC 61034-1 and IEC 61034-2,  
EN 61034-1 and EN 61034-2,



**Circuit integrity  
(FE/PH)**

These Datwyler cables with circuit integrity guarantee the function of a single cable for a defined duration. (FE = flame time and influence time)

IEC 60331-1, IEC 60331-2 and part 21,23, 25,  
EN 50200 with Annex E,  
BS 8434-2, BS 6387 (cat. C/W/Z)



**System Circuit  
Integrity  
(E30-E90)**

These Datwyler cables together with certified Datwyler fixing systems guarantee enhanced circuit integrity of the complete electrical cable installation for a defined time.  
E30=30 minutes, E60=60 minutes,  
E90=90 minutes.

DIN 4102 part 12 (E30-E90)

# ROHS – WEEE – REACH

## Statement from Datwyler:

As an environmentally conscious manufacturer and supplier of cabling solutions it is our concern not to use any environmentally harmful substances in our products.

Based on current information, the hereinmentioned guidelines / regulations for banned substances are fully complied with. Exceptions are noted as such on the relevant data sheet.



## ROHS

**DIRECTIVE 2011/65/EU**  
OF THE EUROPEAN PARLIAMENT  
AND OF THE COUNCIL  
of 8 June 2011  
on the restriction of  
the use of certain hazardous substances  
in electrical and electronic equipment  
(recast)

## WEEE

**DIRECTIVE 2012/19/EU**  
OF THE EUROPEAN PARLIAMENT  
AND OF THE COUNCIL  
of 4 July 2012  
on waste electrical and  
electronic equipment (WEEE)  
(recast)

## REACH

**REGULATION (EC) No 1907/2006**  
OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL  
of 18 December 2006  
concerning the Registration, Evaluation, Authorisation  
and Restriction of Chemicals (REACH), establishing  
a European Chemicals Agency, amending Directive  
1999/45/EC and repealing Council Regulation (EEC)  
No 793/93 and Commission Regulation (EC) No  
1488/94 as well as Council Directive 76/769/EEC Com-  
mission Directives 91/155/EEC, 93/67/EEC, 93/105/EC  
and 200/21/EC

and

**COMMISSION REGULATION (EU) No 143/2011**  
of 17 February 2011  
amending Annex XIV to Regulation (EC) No 1907/2006  
of the European Parliament and of the Council on the  
Registration, Evaluation, Authorisation and Restriction  
of Chemicals

# HALOGEN-FREE FIRE SAFETY CABLES

FE180 / BS 7629-1 / BS 5839-1



## STANDARD FIRE SAFETY CABLE

### Fire alarm cable 300 / 500V

halogen-free, with improved fire characteristics,  
BS 7629-1 and BS 5839-1



#### APPLICATION

Cable for fire alarm systems and emergency lighting,  
for permanent installation in buildings.  
Permitted operating temperature at conductor: +90°C.

#### CONSTRUCTION

Conductor: Bare copper, solid, IEC 60228  
and EN 60228  
Insulation: Special compound, BS EN 50363-5  
Core colours: 2 cores + earth: blue, brown  
3 cores + earth: brown, black, grey  
4 cores + earth: blue, brown,  
black, grey  
Inner covering: Glass fibre tape  
Shielding: Al-laminated tape and tinned  
copper drain wire  
IEC 60228, EN 60228  
Separator: Plastic tape  
Sheath: Polyolefin compound, BS 7655, "LTS3"  
Sheath colour: Red, white (other colours on request)

#### ELECTRICAL PROPERTIES

Nominal voltage: 300 / 500V  
Test voltage: 2000V, 50Hz

#### GENERAL PROPERTIES

Minimum bending radius during and permanent installation:  
6 x D (D = outer diameter)  
Operating temperature permanent installation:  
-15°C to +90°C  
during installation:  
-5°C to +50°C



Zero halogen,  
non corrosive gases

IEC 60754-1, EN 60754-1



Flame propagation

IEC 60332-1-2, EN 60332-1-2



Flame spread

IEC 60332-3-22/-24 Cat. A/C,  
EN 60332-3-22/-24 Cat. A/C



Smoke density

IEC 61034-1/-2, EN 61034-1/-2



Circuit integrity (FE/PH)

BS EN 50200 Annex E  
(30 minutes), BS EN 50200 (PH120),  
BS 6387 (cat. CWZ)

Article No.	Colour	No. of cores x cross section n x mm <sup>2</sup>	Cu content kg/km	Total weight approx. kg/km	Outer diameter approx. mm	Fire load kWh/m
187204	red	2 x 1.0	29	78	7.7	0.17
187205	white	2 x 1.0	29	78	7.7	0.17
187209	red	2 x 1.5	43	98	8.3	0.19
187161	white	2 x 1.5	43	98	8.3	0.19
187214	red	2 x 2.5	72	141	9.7	0.26
187162	white	2 x 2.5	72	141	9.7	0.26
187210	red	3 x 1.5	58	120	8.7	0.23
187211	white	3 x 1.5	58	120	8.7	0.23
187215	red	3 x 2.5	96	181	10.3	0.31
187216	white	3 x 2.5	96	181	10.3	0.31
187212	red	4 x 1.5	72	150	9.7	0.28
187213	white	4 x 1.5	72	150	9.7	0.28
187217	red	4 x 2.5	120	224	11.4	0.39
188155	white	4 x 2.5	120	224	11.4	0.39
188317	red	7 x 1.5	115	230	11.6	0.42

\* selected sizes.

Additional dimensions available on request.

# HALOGEN-FREE FIRE SAFETY CABLES

FE180 / BS 7629-1 / BS 5839-1

## STANDARD FIRE SAFETY CABLE FLEX

**Fire alarm cable, 300 / 500V, flex**  
halogen-free, with improved fire characteristics,  
BS 7629-1 and BS 5839-1



### APPLICATION







Cable for fire alarm systems and emergency lighting for permanent installation in buildings.  
Permitted operating temperature at conductor: +90°C.

### CONSTRUCTION

Conductor: Bare copper, stranded, IEC 60228 and EN 60228  
Insulation: Special compound, BS EN 50363-5  
Core colours: 2 cores + earth: blue, brown  
3 cores + earth: brown, black, grey  
4 cores + earth: blue, brown, black, grey  
Inner covering: Glass fibre tape  
Shielding: Al-laminated tape and tinned copper drain wire  
IEC 60228, EN 60228  
Separator: Plastic tape  
Sheath: Polyolefin compound, BS 7655, "LTS3"  
Sheath colour: Red (white or black on request)

### GENERAL PROPERTIES

Minimum bending radius during and permanent installation:  $6 \times D$  (D = outer diameter)  
Operating temperature permanent installation: -15°C to +90°C  
during installation: -5°C to +50°C

 Zero halogen, IEC 60754-1  
 non corrosive gases  
 Flame propagation IEC 60332-1-2, EN 60332-1-2  
 Flame spread IEC 60332-3-22/-24 Cat. A/C, EN 60332-3-22/-24 Cat. A/C  
 Smoke density IEC 61034-2, EN 61034-2  
 Circuit integrity (FE/PH) BS EN 50200 Annex E (30 minutes), BS EN 50200 (PH60), BS 6387 (cat. CWZ)

### ELECTRICAL PROPERTIES

Nominal voltage: 300 / 500V  
Test voltage: 2000V, 50Hz

Article No.	Colour	No. of cores x cross section n x mm <sup>2</sup>	Cu content kg/km	Total weight approx. kg/km	Outer diameter approx. mm	Fire load kWh/m
190438	red	2 x 1.0	29	83	8.0	0.20
190427	red	2 x 1.5	43	103	8.9	0.23
190429	red	2 x 2.5	72	152	10.4	0.30
190439	red	3 x 1.5	58	130	9.4	0.27
	red	3 x 2.5	96	190	11.0	0.35
	red	4 x 1.5	72	161	10.4	0.31
190440	red	4 x 2.5	120	235	12.2	0.44

Additional colours / dimensions available on request.

# HALOGEN-FREE FIRE SAFETY CABLES

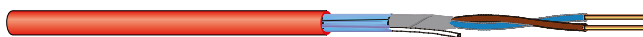
FE180 / BS 7629-1 / BS 5839-1



## ENHANCED FIRE SAFETY CABLE

### Fire alarm cable 300 / 500V

halogen-free, with improved fire characteristics,  
BS 7629-1 and BS 5839-1



#### APPLICATION

Cable for fire alarm systems and emergency lighting  
for permanent installation in buildings.  
Permitted operating temperature at conductor: +90°C.

#### CONSTRUCTION

Conductor: Bare copper, solid, IEC 60228  
and EN 60228  
Insulation: Special compound, BS EN 50363-5  
Core colours: 2 cores + earth: blue, brown  
Inner covering: Glass fibre tape  
Shielding: Al-laminated tape and  
tinned copper drain wire  
IEC 60228, EN 60228  
Separator: Plastic tape  
Sheath: Polyolefin compound, BS 7655, "LTS3"  
Sheath colour: Red (white or black on request)

#### ELECTRICAL PROPERTIES

Nominal voltage: 300 / 500V  
Test voltage: 2000V, 50Hz

#### GENERAL PROPERTIES

Minimum bending radius during and permanent installation:  
6 x D (D = outer diameter)  
Operating temperature permanent installation:  
-15°C to +90°C  
during installation:  
-5°C to +50°C



Zero halogen,  
non corrosive gases

IEC 60754-1, EN 60754-1



Flame propagation

IEC 60332-1-2, EN 60332-1-2



Flame spread

IEC 60332-3-22/-24 Cat. A/C,  
EN 60332-3-22/-24 Cat. A/C



Smoke density

IEC 61034-2, EN 61034-2



Circuit integrity (FE/PH)

BS 8434-2 (120 minutes),  
BS EN 50200 (PH120),  
BS 6387 (cat. CWZ)

Article No.	Colour	No. of cores x cross section n x mm <sup>2</sup>	Cu content kg/km	Total weight approx. kg/km	Outer diameter approx. mm	Fire load kWh/m
188368	red	2 x 1.5	43	98	8.3	0.19
188369	white	2 x 1.5	43	98	8.3	0.19
188370	red	2 x 2.5	72	141	9.7	0.26
188371	white	2 x 2.5	72	141	9.7	0.26
191679	red	4 x 1.5	72	150	9.7	0.28

\* selected sizes

Stranded versions and additional dimensions available on request.

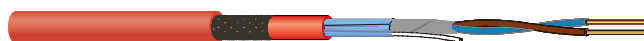
# HALOGEN-FREE FIRE SAFETY CABLES

FE 180 (BS 7629-1)

## ARMoured STANDARD FIRE SAFETY CABLE

### Fire alarm cable with steel wire braiding 300 / 500V

halogen-free, with improved fire characteristics,  
with reference to BS 7629-1



#### APPLICATION

Armoured cable for fire alarm systems and emergency lighting for permanent installation in buildings.  
Permitted operating temperature at conductor: +90°C.

#### CONSTRUCTION






Conductor:	Bare copper, solid or stranded in accordance with IEC 60228 and EN 60228
Insulation:	Special compound, BS EN 50363-5
Core colours:	2 cores + earth: brown, blue 3 cores + earth: brown, black, grey 4 cores + earth: brown, black, grey, blue
Inner covering:	Glass fibre tape
Shielding:	Al-laminated tape and tinned copper drain wire IEC 60228 class 1 or 2, EN 60228
Inner sheath:	Polyolefin compound
Armouring:	GSWB, galvanised steel wire braid
Outer sheath:	Polyolefin compound, BS 7655 "LTS3"
Sheath colour:	Red (white or black on request)

#### ELECTRICAL PROPERTIES

Nominal voltage:	300 / 500V
Test voltage:	2000V, 50Hz

#### GENERAL PROPERTIES

Minimum bending radius	during and permanent installation: 6 x D (D = outer diameter)
Operating temperature	permanent installation: -15°C to +90°C during installation: -5°C to +50°C

 Zero halogen, non corrosive gases	IEC 60754-1, EN 60754-1
 Flame propagation	IEC 60332-1-2, EN 60332-1-2
 Flame spread	IEC 60332-3-22/-24 Cat. A/C, EN 60332-3-22/-24 Cat. A/C
 Smoke density	IEC 61034-1/-2, EN 61034-1/-2
 Circuit integrity (FE/PH)	BS EN 50200 (PH120), BS EN 50200 Annex E (30 minutes), BS 6387 (cat. CWZ)

Article No.	Colour	No. of cores x cross section n x mm <sup>2</sup>	Cu content kg/km	Total weight approx. kg/km	Outer diameter approx. mm	Fire load kWh/m
184580	red	2 x 1.5	43	190	12.0	0.40
	red	2 x 2.5	72	250	13.0	0.50

Stranded versions and additional colours / dimensions available on request.

# HALOGEN-FREE FIRE SAFETY CABLES

## E30 SYSTEM CIRCUIT INTEGRITY

### FIBRE OPTIC CABLES

#### FO Universal ZGGFR Safety / U-DQ(ZN)BH

Safety cable E30 for indoor and outdoor use, up to 12 fibres

metal-free, water resistant, rodent protection,  
in accordance with IEC 60332.1 and IEC 60332.3 C

**30 minutes System Circuit Integrity according to DIN 4102-12\***

#### FEATURES

Non-metallic fibre optic safety cable with one central loose tube, up to 12 fibres.  
The optimal combination of flame retardant fibre coating and flame-inhibiting stabilizing elements ensures enhanced circuit integrity (System Circuit Integrity\*) in case of fire for 30 minutes.

#### APPLICATION

Safety applications in tunnels, underground railways, banks, insurance companies, large scale industry.  
LAN backbones.  
Indoor and outdoor cabling.  
Can be installed in cable platforms, trays, ducts and vertical shafts.  
Can be spliced in FO distributors.

#### OPTICAL CHARACTERISTICS

The cables are available with different types of optical fibre (see Datwyler's fibre data sheets).

#### MECHANICAL CHARACTERISTICS

Temperature range		
storage:	-25 / +70°C	IEC 60794-1-2 F1
during installation:	-10 / +50°C	
in operation:	-25 / +60°C	
Tensile performance:	IEC 60794-1-2 E1	
Crush resistance:	IEC 60794-1-2 E3	
Impact:	IEC 60794-1-2 E4	
Repeated bending:	IEC 60794-1-2 E6	
Torsion:	IEC 60794-1-2 E7	
Bend:	IEC 60794-1-2 E11	
Water penetration:	IEC 60794-1-2 F5	



#### GENERAL PROPERTIES

Imprint:

DATWYLER «cable type» «Datwyler designation» «DIN designation»  
«number of fibres» «fibre type» «additional text» «batch number»  
~ ~ «meter marks» ~ ~



Zero halogen,  
non corrosive gases

IEC 60754-1



Flame propagation

IEC 60332-1-2, EN 60332-1-2



Flame spread

IEC 60332.3 C, EN 50266-2-4



Smoke density

IEC 61034-2, EN 61034-2



Circuit integrity (FE180)

IEC 60331, EN 50200



System Circuit

Integrity E30\*

according to DIN 4102 part 12

U-DQ(ZN)BH 1 x m		Fibres	Article No.	Article No.	Article No.	Article No.	Article No.
Description		number	E9/125 G.652.D	G50/125 OM2	G50/125 OM3	G50/125 OM4	G62,5/125 OM1
ZGGFR Safety	1 x 4	4	187288	186363	190604	193447	186638
ZGGFR Safety	1 x 6	6	191867	186639	191851	193448	190792
ZGGFR Safety	1 x 8	8	on request	190621	on request	193449	on request
ZGGFR Safety	1 x 12	12	190719	187293	191796	193450	187305

\* System Circuit Integrity is dependent on installation method. To realize System Circuit Integrity E30, tested and certified fire safety system components are necessary.  
See [www.cabling.datwyler.com](http://www.cabling.datwyler.com) for certified components.

# HALOGEN-FREE FIRE SAFETY CABLES

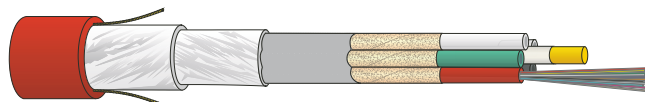
## E30 SYSTEM CIRCUIT INTEGRITY

### FIBRE OPTIC CABLES

#### FO Universal wbGGFR Safety / U-DQ(ZN)BH

Safety cable E30 for indoor and outdoor use, up to 60 fibres

metal-free, water resistant, rodent protection,  
in accordance with IEC 60332.1 and IEC 60332.3 C



**30 minutes System Circuit Integrity according to DIN 4102-12\***

#### FEATURES

Non-metallic fibre optic safety cable with one central loose tube, up to 12 fibres.  
The optimal combination of flame retardant fibre coating and flame-inhibiting stabilizing elements ensures enhanced circuit integrity (System Circuit Integrity\*) in case of fire for 30 minutes.

#### APPLICATION

Safety applications in tunnels, underground railways, banks, insurance companies, large scale industry.  
LAN backbones.  
Indoor and outdoor cabling.  
Can be installed in cable platforms, trays, ducts and vertical shafts.  
Can be spliced in FO distributors.

#### OPTICAL CHARACTERISTICS

The cables are available with different types of optical fibre (see Datwyler's fibre data sheets).

#### MECHANICAL CHARACTERISTICS

Temperature range		
storage:	-25 / +70°C	IEC 60794-1-2 F1
during installation:	-10 / +50°C	
in operation:	-25 / +60°C	
Tensile performance:	IEC 60794-1-2 E1	
Crush resistance:	IEC 60794-1-2 E3	
Impact:	IEC 60794-1-2 E4	
Repeated bending:	IEC 60794-1-2 E6	
Torsion:	IEC 60794-1-2 E7	
Bend:	IEC 60794-1-2 E11	
Water penetration:	IEC 60794-1-2 F5	

#### GENERAL PROPERTIES

Imprint:

DATWYLER «cable type» «Datwyler designation» «DIN designation»  
«number of fibres» «fibre type» «additional text» «batch number»  
~ ~ «meter marks» ~ ~

- Zero halogen, non corrosive gases
- Flame propagation
- Flame spread
- Smoke density
- Circuit integrity (FE180)
- System Circuit Integrity E30\*

IEC 60754-1

IEC 60332-1-2, EN 60332-1-2  
IEC 60332.3 C, EN 50266-2-4  
IEC 61034-2, EN 61034-2  
IEC 60331, EN 50200, EN 50362

according to DIN 4102 part 12

U-DQ(ZN)BH n x m	Fibres	Article No.	Article No.	Article No.	Article No.	Article No.
Description	number	E9/125 G.652.D	G50/125 OM2	G50/125 OM3	G50/125 OM4	G62.5/125 OM1
wbGGFR Safety 2 x 12	24	190223	187294	187360	193454	on request
wbGGFR Safety 3 x 12	36	190224	on request	on request	193455	on request
wbGGFR Safety 4 x 12	48	190225	192119	191191	193456	on request
wbGGFR Safety 5 x 12	60	190226	on request	190605	193457	on request

\* System Circuit Integrity is dependent on installation method. To realize System Circuit Integrity E30, tested and certified fire safety system components are necessary.  
See [www.cabling.datwyler.com](http://www.cabling.datwyler.com) for certified components.

IEC	International Electrotechnical Commission
IEC 60228	Conductors of insulated cables
IEC 60331-1	Tests for electric cables under fire conditions - Circuit integrity - Part 1: Test method for fire with shock at a temperature of at least 830 °C for cables of rated voltage up to and including 0,6/1,0 kV and with an overall diameter exceeding 20 mm
IEC 60331-11	Tests for electric cables under fire conditions - Circuit integrity - Part 11: Apparatus - Fire alone at a flame temperature of at least 750 °C
IEC 60331-2	Tests for electric cables under fire conditions - Circuit integrity - Part 2: Test method for fire with shock at a temperature of at least 830 °C for cables of rated voltage up to and including 0,6/1,0 kV and with an overall diameter not exceeding 20 mm
IEC 60331-21	Tests for electric cables under fire conditions - Circuit integrity - Part 21: Procedures and requirements - Cables of rated voltage up to and including 0,6/1,0 kV
IEC 60331-23	Tests for electric cables under fire conditions - Circuit integrity - Part 23: Procedures and requirements - Electric data cables
IEC 60331-25	Tests for electric cables under fire conditions - Circuit integrity - Part 25: Procedures and requirements - Optical fibre cables
IEC 60332-1-1	Test on electric and optical fibre cables under fire conditions. Part 1-1 Test for vertical flame propagation for a single insulated wire or cable - Apparatus
IEC 60332-1-2	Test on electric and optical fibre cables under fire conditions. Part 1-2 Test for vertical flame propagation for a single insulated wire or cable – Procedure for 1 kW pre-mixed flame
IEC 60332-3-10	Tests on electric cables under fire conditions - Part 3-10: Test for vertical flame spread of vertically-mounted bunched wires or cables - Apparatus
IEC 60332-3-22	Tests on electric and optical fibre cables under fire conditions – Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category A
IEC 60332-3-23	Tests on electric and optical fibre cables under fire conditions - Part 3-23: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category B
IEC 60332-3-24	Tests on electric and optical fibre cables under fire conditions - Part 3-24: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category C
IEC 60332-3-25	Tests on electric and optical fibre cables under fire conditions - Part 3-25: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category D
IEC 60754-1	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the amount of halogen acid gas
IEC 60794-1-2	Optical fibre cables - Part 1-2: Generic specification - Basic optical cable test procedures
IEC 61034-2	Measurement of smoke density of cables burning under defined conditions - Part 2: Test procedure and requirements

<b>EN</b>	<b>European Standard</b>
EN 50200	Method of test for resistance to fire of unprotected small cables for use in emergency circuits
EN 50362	Method of test for resistance to fire of larger unprotected power and control cables for use in emergency circuits
EN 50363-5	Insulating, sheathing and covering materials for low voltage energy cables - Part 5: Halogen-free, cross-linked insulating compounds
EN 60228	Conductors of insulated cables
EN 60332-1-1	Tests on electric and optical fibre cables under fire conditions - Part 1-1: Test for vertical flame propagation for a single insulated wire or cable - Apparatus
EN 60332-1-2	Tests on electric and optical fibre cables under fire conditions - Part 1-2: Test for vertical flame propagation for a single insulated wire or cable - Procedure for 1 kW pre-mixed flame
EN 61034-1	Measurement of smoke density of cables burning under defined conditions. Test apparatus
EN 61034-1	Measurement of smoke density of cables burning under defined conditions. Test apparatus
EN 61034-2	Measurement of smoke density of cables burning under defined conditions. Test procedure and requirements
EN 60754-1	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the amount of halogen acid gas
<b>VDE</b>	<b>Association for Electro-Technics, Electronics &amp; Information Technologies</b>
VDE 0472-814	Testing of cables, wires and flexible cords; continuance of isolation effect under fire conditions
VDE 0482-200	Method of test for resistance to fire of unprotected small cables for use in emergency circuits
VDE 0482-332-1-1	Test on electric and optical fibre cables under fire conditions. Part 1-1 Test for vertical flame propagation for a single insulated wire or cable - Apparatus
VDE 0482-332-1-2	Test on electric and optical fibre cables under fire conditions. Part 1-2 Test for vertical flame propagation for a single insulated wire or cable - Procedure for 1 kW pre-mixed flame
VDE 0482-362	Method of test for resistance to fire of larger unprotected power and control cables for use in emergency circuits
VDE 0482-1034-1	Measurement of smoke density of cables burning under defined conditions - Part 1: Test apparatus
VDE 0482-1034-2	Measurement of smoke density of cables burning under defined conditions - Part 2: Test procedure and requirements
<b>DIN</b>	<b>German Institute for Standardization</b>
DIN 4102-12	Fire behaviour of building materials and building components - Part 12: Circuit integrity maintenance of electric cable systems; requirements and testing
<b>BS</b>	<b>British Standard</b>
BS 5839-1+A2	Fire detection and fire alarm systems for buildings. Code of practice for system design, installation, commissioning and maintenance
BS 6387	Specification for performance requirements for cables required to maintain circuit integrity under fire conditions
BS 7629-1	Electric cables. Specification for 300/500 V fire resistant screened cables having low emission of smoke and corrosive gases when affected by fire. Multicore and multipair cables
BS 7655-0	Specification for insulating and sheathing materials for cables. General introduction
BS EN 60228	Conductors of insulated cables
BS 8434-2 +A2	Test for unprotected small cable for use in emergency circuits BS EN 50200 with a 930°C flame and with water spray
<b>VdS</b>	<b>Inspected. Approved. Safe.</b>
VdS 3423	E90 cable for water extinguishing system with additional circuit integrity against water penetration, requirements and test methods (draft)
<b>NBN</b>	<b>Belgian Standard</b>
NBN 713-020	Fire fighting - Fire performance of building materials and products - Fire resistance of building materials



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