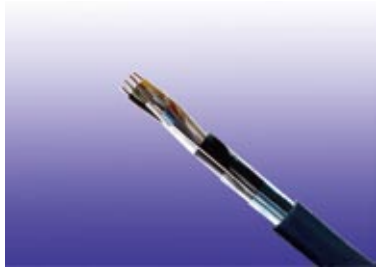
SR Insulated & LSZH Sheathed Fire Resistant Cables to DIN VDE 0815

JE-H(St)H…Bd FE180 E30 JE-H(St)H…Bd FE180 E30 BMK

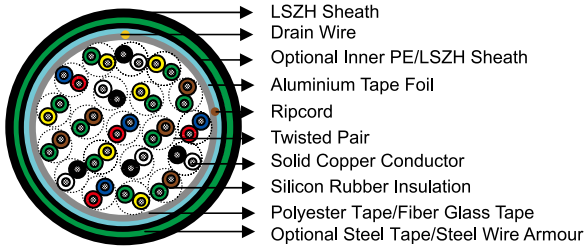
APPLICATION

The cables are similar in design and application to CW 1600, but with Silicon Rubber Insulation. They are used for the internal wiring of building when the circuit integrity during fire is paramount. The cables are intended for use in fire fighting plants with special ceramized silicon insulation, with and without aluminium foil and LSZH outer sheath .



STANDARDS

- EN 50200:2000-02
- EN 50266
- EN 50267
- EN 50268
- BS 6387
- IEC 60331
- DIN VDE 0472-814



CONSTRUCTION

- **Conductors:** Solid annealed bare or tinned copper sized 0.6/0.8/0.9mm as per class 1 of VDE 0295/IEC 60228.
- **Insulation:** Silicon Rubber compound as per DIN VDE 0266.
- **Twisted Pairs:** Insulated conductors are twisted into pairs with varying lay length to minimize crosstalk.
- **Cabling Element:** Twisted Pairs.
- **Cable Core Assembly:** The twisted pairs are stranded to the core in layers.
- **Core Wrapping:** One or more non hygroscopic polyester tapes are helically or longitudinally laid with an overlap prior to sheathing.
- **Screen:** A laminated Aluminium/Polyester tape is placed in contact with solid copper 0.6mm or 0.8mm drain wire.
- **Inner bedding (for armoured cables):** PE or LSZH compound.
- **Armourwz (for armoured cables):** Either corrugated steel tape armour or galvanized steel wire is applied over an inner polyethylene sheath. For steel tape armour, the 0.15mm thick steel tape is coated with a copolymer and applied with an overlap. For steel wire armour, single layer of galvanized steel wire armour is applied.
- **Sheath:** LSZH compound HM2 as per VDE 0207-24.
- **Ripcord:** Nylon ripcord may be placed parallel to the cores to facilitate sheath removal.
- **Drain Wire:** A solid tinned earth/continuity wire shall be laid longitudinally for screened cables.

TYPE CODES

JE-	Fire Alarm Cable	H	Halogen Free & Zero Halogen
Bd	Unit stranding.	(St)	Static Shield of aluminium tape
FE180	Insulation Integrity (950°C 180 minutes)	E30	30 minutes Circuit Integrity

ELECTRICAL PROPERTIES

Conductor Diameter	mm	0.6	0.8	0.9
Conductor Size	mm^2	0.283	0.5	0.312
Maximum Conductor Resistance @20°C	Ω/km	63	34.6	28.0
Maximum Loop Resistance @20°C	Ω/km	130	73.2	60
Minimum Insulation Resistance @500V DC @20°C	MΩ·km	100	100	100
Maximum Average Attenuation @0.8KHz	dB/km	1.7	1.2	0.74
Nominal Mutual Capacitance @0.8KHz	nF/km	120	120	120
Maximum Capacitance Unbalance K1 @0.8KHz pair-to-pair	pF/100m	200	200	200
Working Voltage	V	225	225	225
Nominal Insulation Thickness	mm	0.3	0.4	0.45
Nominal Insulated Conductor Diameter	mm	1.2	1.6	1.7

MECHANICAL AND THERMAL PROPERTIES

Temperature range during operation (fixed state): -30°C – +70°C
Temperature range during installation (mobile state): -20°C – +50°C
Minimum bending radius: 7.5 x Overall Diameter (unarmoured cable);15 x Overall Diameter (armoured cables)

FIRE HAZARD PERFORMANCE

1) Minimum Smoke Emission — IEC 61034, EN 50268 (New: EN 61034), VDE 0482-268 (New: VDE 0482-1034)
These standards specify a method to measure the generation of smoke from cables during fire. The result is expressed as percentage of light transmitted. Usually, the smoke density shall not be less than 60%.

2) Halogen Free — IEC 60754-1, EN 50267-2-1
These standards specify a method for determination of the amount of halogen acid gas, evolved during combustion of compound. The hydrochloric acid yield should be less than 0.5%.

3) Non corrosive gases — IEC 60754-2, EN 50267-2-2, VDE 0482-267
These standards specify a method for determination of acidity of gas evolved during combustion of cables by measuring PH and conductivity. The specimen is deemed to pass the standard if the pH value is less than 4.3 when related to 1 litre of water and conductivity is less than 10 μs/min.

4) Reduced Fire Propagation — IEC 60332-3C, EN 50266-2-4, VDE 0482-266-2-4
These standards specify a method for flame propagation test for bunched cables

5) Flame Retardancy — IEC 60332-1, VDE 0482-265-2-1
These standards specify a method for flame propagation test for single core cables.

6) Insulation Integrity FE 180 — DIN VDE 0472-814, IEC 60331,EN 50200, VDE 0482-1
These standards specify the performance requirements for cables required to maintain insulation integrity under fire conditions.

7) Circuit Integrity E30 — DIN 4102-12
These standards specify the performance requirements for cables required to maintain circuit integrity under fire conditions.

COLOUR CODE

Quad colour in each bundle:

Pair 1: Blue-Red Pair 2: Grey-Yellow Pair 3: Green-Brown Pair 4: White-Black

The individual bundles are identified by a numbered helix.

DIMENSIONS AND WEIGHT

VDE CODE: JE-H(St)H…x2x0.8 Bd FE180 E30

Cable Code	Number of Pairs	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
0.8mm Conductor, 1.6mm Insulated Wire					
TP815JE-H(St)H-Bd-FE180-E30-1P08	1	0.4	1.0	6.0	46
TP815JE-H(St)H-Bd-FE180-E30-2P08	2	0.4	1.0	6.6	61
TP815JE-H(St)H-Bd-FE180-E30-4P08	4	0.4	1.0	8.8	104
TP815JE-H(St)H-Bd-FE180-E30-6P08	6	0.4	1.0	10.8	160
TP815JE-H(St)H-Bd-FE180-E30-8P08	8	0.4	1.0	12.8	218
TP815JE-H(St)H-Bd-FE180-E30-10P08	10	0.4	1.2	13.1	220
TP815JE-H(St)H-Bd-FE180-E30-12P08	12	0.4	1.2	13.5	235
TP815JE-H(St)H-Bd-FE180-E30-16P08	16	0.4	1.2	14.7	297
TP815JE-H(St)H-Bd-FE180-E30-20P08	20	0.4	1.2	16.1	367
TP815JE-H(St)H-Bd-FE180-E30-24P08	24	0.4	1.4	18.1	440
TP815JE-H(St)H-Bd-FE180-E30-30P08	30	0.4	1.4	20.1	645
TP815JE-H(St)H-Bd-FE180-E30-32P08	32	0.4	1.4	20.6	645
TP815JE-H(St)H-Bd-FE180-E30-40P08	40	0.4	1.4	22.5	656
TP815JE-H(St)H-Bd-FE180-E30-50P08	50	0.4	1.6	24.3	840

VDE CODE: JE-H(St)H(SWA)H…x2x0.6/0.8/0.9 Bd FE180 E30

Cable Code	Number of Pairs	Nominal Insulation Thickness mm	Nominal Bedding/ Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
0.6mm Conductor,1.2mm Insulated Wire					
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-2P06	2	0.3	1.0/1.8	12.1	305
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-3P06	3	0.3	1.0/1.8	12.6	325
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-6P06	6	0.3	1.0/1.8	13.2	380
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-8P06	8	0.3	1.0/1.8	14.6	415
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-10P06	10	0.3	1.0/1.8	16.5	450
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-12P06	12	0.3	1.0/1.8	17.0	500
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-20P06	20	0.3	1.0/1.8	20.5	580
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-25P06	25	0.3	1.0/1.8	21.5	940
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-30P06	30	0.3	1.0/1.8	22.5	1300
0.8mm Conductor, 1.6mm Insulated Wire					
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-2P08	2	0.4	1.0/1.8	14.0	415
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-3P08	3	0.4	1.0/1.8	14.0	425
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-6P08	6	0.4	1.0/1.8	15.0	485
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-8P08	8	0.4	1.0/1.8	17.5	520
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-10P08	10	0.4	1.2/1.8	19.0	540
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-12P08	12	0.4	1.2/1.8	20.5	600
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-20P08	20	0.4	1.4/1.8	24.5	1050
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-25P08	25	0.4	1.4/1.8	27.0	1250
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-30P08	30	0.4	1.4/1.8	28.5	1450
0.9mm Conductor, 1.7mm Insulated Wire					
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-10P09	10	0.45	1.2/1.8	19.7	600
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-15P09	15	0.45	1.2/1.8	23.0	1020
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-20P09	20	0.45	1.4/1.8	25.3	1160
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-25P09	25	0.45	1.4/1.8	27.3	1330
TP815JE-H(St)H(SWA)H-Bd-FE180-E30-30P09	30	0.45	1.4/1.8	29.3	1520