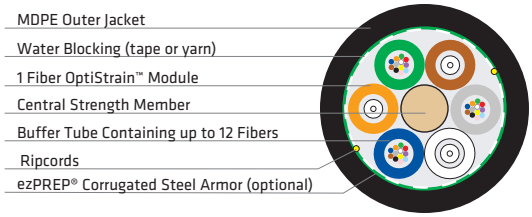
Prysmian Group

PRYSMIAN Draka

DFS™ Pipeline Cable with OptiStrain™ Modules

Temperature, Strain, & Acoustic Sensing



A versatile, multi-purpose fiber cable designed for temperature and strain sensing in one unique cable.

Overview

Prysmian's pipeline sensing cable is part of our DFS™ cable family. It is buried alongside pipelines to provide leak detection via temperature sensing, ground movement via strain sensing, and intrusion via acoustic sensing. Optical fibers can also be used for telecommunications and data applications. Prysmian's OptiStrain™ modules are used for strain and acoustic sensing, and loose tube units are available for temperature sensing or data/communications.

Product Snapshot

Applications	Direct buried pipeline leak, groundmovement, and intrusion detection
Constructions	Single armor/single jacket or all-dielectric
Count	2 to 4 strain sensing fibers, up to 60 fibers for telecommunications or leak detection
Fiber Types	ITU G652.D single-mode fiber
Options	Gel-filled or dry buffer tubes & Optistrain modules, armored or all-dielectric
Performance	Loose tube units per GR20 & ICEA 640, simplex units per GR-409 & ICEA 596
Registered Supplier	ISO 9001, ISO 14001, TL 9000, and OHSAS 18001

CE RoHS Compliant

Dimensions

		6 Core Elements			7 Core Elements		
Number of Loose Tube Fibers		≤ 48	≤ 36	≤ 24	60	48	≤ 36
Number of Strain Sensing Fibers		2	3	4	2	3	4
Armored	Outer Diameter	0.48 inches (12.3 mm)			0.52 inches (13.3 mm)		
	Weight	101 lb/kft (151 kg/km)			120 lb/kft (180 kg/km)		
All-Dielectric	Outer Diameter	0.41 inches (10.3 mm)			0.44 inches (11.1 mm)		
	Weight	55 lb/kft (81 kg/km)			61 lb/kft (91 kg/km)		

Features and Benefits

Pipeline Sensing Cable

- Temperature sensing provides fast leak detection in pipelines
- Strain sensing detects and locates ground/pipeline movement
- Acoustic sensing identifies intrusion such as digging or excavating near the pipe
- Extra fibers can be used for data or telecommunications

Flexbile Polypropylene Buffer Tube

- Ideal for temperature sensing and data/telecommunications fibers
- Available with gel or dry buffer tubes
- Gel tubes have a faster leak detection response time
- Zero fiber strain up to the residual load provides optimum SBS sensing
- Inceased flexibility and superior kink resistance
- Facilitates easy route management in closures, eliminates needs for closure transportation tubes

OptiStrain™ modules for Strain and/or Acoustic Sensing

- Provides high sensitivity and accuracy without high attenuation
- Allows monitoring of ground or pipeline movement

Dry Water Blocking Technology

- Dry buffer tubes recommended for natural gas pipeline leak detection
- Drycore design permits rapid cable preparation and termination
- Dry water blocking materials are easily removed

ezPrep Corrugated Armor

- Provides additional mechanical protection needed for buried environments
- Special coating reduces time and effort to remove jacket

Prysmian Group
700 Industrial Drive | Lexington, SC 29072
+1-800-879-9862 | +1-800-669-0808 | website: na.prysmiangroup.com/telecom

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Main mechanical and environmental properties

Cable is tested per Telcordia GR-20 and ICEA 640 per the below tables. Loose tube units are tested to the acceptance criterial for GR-20 and simplex units are tested to the GR-409 acceptance criteria.

Test	Standard	Specified Value	Acceptance Criteria
Temperature cycling			
Loose tube units	Telcordia GR-20	-40°C to +70°C	GR-20: R6-69
Simplex units	Telcordia GR409	-40°C to +70°C	GR-409: R6-78
Mechanical Tests			
Loose tube units	Telcordia GR-20	Cable tested to GR20 test methods	GR-20
Simplex units	Telcordia GR409		GR-409
Water Penetration			
	Telcordia GR-20	Sample=1m, water=1m, 24h	GR-20 : R6-75

Temperature Range

- Transportation, Storage: -40° F to +167° F (-40° C to +75° C)
- Installation: +14° F to +140° F (-10° C to +60° C)
- Operation: -40° F to +158° F (-40° C to +70° C)

Mechanical Properties

- Minimum Bending Radius: under tension 20 x cable diameter; no tension 10 x cable diameter
- Installation Tensile Load: 600 lbf (2700 N)
- Long Term Tensile Load: 180 lbf (800 N)

Ordering Guide

The Prysmian Group part number incorporates several significant attributes involving cable design and optical performance. The appropriate part number can be configured using the process described in the example.

Example: **Gel-Free, Armored: F-EDS1A1J-MX-##XXYYLT/#XXYYBO or Gel-Filled, Armored: F-ETS1A1J-MX-##XXYYLT/#XXYYBO**

	1 LENGTH MARKINGS		2 PRODUCT FAMILY		3 CONSTRUCTION		4 FIBER GROUPING		5 LOOSE TUBE & BREAKOUT
Gel Free Draka ESM fiber	F	–	EDS		1A1J	–	MX	–	##EPE3LT/#EPEABO
Gel Free SMF28e fiber	F	–	EDS		1A1J	–	MX	–	##CEE3LT/#CEEABO
Gel-Filled Buffer Tube Draka ESM fiber	F	–	ETS		1A1J	–	MX	–	##EPE3LT/#EPEABO
Gel-Filled Buffer Tube SMF28e fiber	F	–	ETS		1A1J	–	MX	–	##CEE3LT/#CEEABO

PART NUMBER CONSTRUCTION

1 LENGTH MARKINGS

F = Feet or M = Meters

2 PRODUCT FAMILY

EDS = Sensing Cable (Gel Free)

ETS = Sensing Cable (Gel-Filled)

3 CONSTRUCTION

1A1J = Single Armor, Single Jacket

1JKT = Single Jacket

4 FIBER GROUPING

MX = 12f fiber LT

FIBER INFORMATION

5 LOOSE TUBE AND BREAKOUT

or # = Number of Fibers
2 - 1f simplex units, ≤ 60f LT
3 - 1f simplex units, ≤ 48f LT
4 - 1f simplex units, ≤ 36f LT

XX/YY = Fiber type/maximum attenuation

Temperature Sensing/Data/Telecom Applications (loose tube units): ##XXYYLT

EP/E3: Draka ESM with 0.35/0.35/0.25 dB/km @ 1310/1383/1550nm

CE/E3: SMF28e+ with 0.35/0.35/0.25 dB/km @ 1310/1383/1550nm

Strain & Acoustic Sensing Applications (Breakout Simplex Units): #XXZZBO

EP/EA: Draka ESM with 0.5/0.5/0.5 dB/km @ 1310/1383/1550nm

CE/EA: SMF28e+ with 0.5/0.5/0.5 dB/km @ 1310/1383/1550nm

Other cable constructions and fiber performance grades available on request.

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