

## Concentric Core Loose Tube Micro Cable - The Viper Series

GNHL-U-CDGNRV (GNHLDV) Dielectric 12-432 Fibers G657A1

HEXATRONIC

VIPER



### Features

- Up to 432 fibers
- Super slim design
- Excellent installation performance
- Unique design with robust inner tubes that does not kink
- Temperature range from -45 to +70°C
- Excellent bend performance,  $\geq 70$  mm
- Easy to prepare and identify fibers

### Application

The Hexatronic Viper series of micro cables are characterized by state of the art installation performance when installed by blowing into microducts. Particularly, installations in access networks with difficult routes, which are facilitated by the enhanced performance of the Viper cables.

All parameters such as cable diameter, sheath friction, cable stiffness etc are optimized for best installation performance without compromising mechanical or environmental properties.

The micro cables are based on a slim loose tube design with up to twelve tubes per cable. The design facilitates fiber preparation and mid-span access. The cables are suitable for long-distance, air blown installation in microducts, with an inner diameter of as little as 8 to 12 mm.

The cables have excellent bend performance and an extremely wide operational temperature range.

### Design

The Micro Cables are designed with one, two or three layers of inner protective tubes made of a unique Polyamide compound. The Polyamide gives a special strength to the product, while increasing the bending properties as well as other benefits such as extreme temperature resistance. Each tube contains 12 or 24 fibers.

As a result, The Viper Micro Cables are more durable during the installation process as they are able to withstand rough handling. The unique cable design with an extended operational temperature range of -45 to +70°C can be used in many environments, on all continents where heat and cold are often a major concern.



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## Typical Data

### Temperature range

Operation .....-45 to +70°C  
 Storage .....-45 to +70°C  
 Handling .....-15 to +50°C

### Bending radius

#### Cable bend radius, permanent, multiple turns

12-72 fiber .....75 mm  
 96 fiber .....80 mm  
 144 fiber T24.....70 mm  
 144 fiber T12.....70 mm  
 192 fiber T24.....80 mm  
 192 fiber T12.....80 mm  
 288 fiber.....80 mm  
 432 fiber.....175 mm

### Tensile force

#### During installation/ operation

12-72 fiber .....1200/50 N  
 96 fiber .....1200/20 N  
 144 fiber T24.....1600/75 N  
 144 fiber T12.....1000/100 N  
 192 fiber T24.....2500/170 N  
 192 fiber T12.....2500/170 N  
 288 fiber.....3000/100 N  
 432 fiber.....1800/250 N

### Crush resistance ( $\Delta\alpha \leq 0.05$ dB after test, no damage)

12-72 fiber .....2000 N/100 mm  
 96 fiber .....1000 N/100 mm  
 144 fiber T24.....2200N/100 mm  
 144 fiber T12.....2000 N/100 mm  
 192 fiber T24.....5000 N/100 mm  
 192 fiber T12.....2000 N/100 mm  
 288 fiber.....2000 N/100 mm  
 432 fiber.....2000 N/100 mm

### Impact resistance

12-72 fiber .....2 J  
 96 fiber .....3 J  
 144 fiber T24.....5 J  
 144 fiber T12.....3 J  
 192 fiber T24.....3 J  
 192 fiber T12.....3 J  
 288 fiber.....3 J  
 432 fiber.....5 J

## Transmission Characteristics

Attenuation	@ 1310nm	@ 1383nm	@ 1550nm
Typical	0.32dB/km	0.32dB/km	0.18dB/km
Average in Cable	0.33dB/km	0.33dB/km	0.21dB/km
Max	0.36dB/km	0.36dB/km	0.23dB/km

## Typical installation performance\*

Ducts, inner diameter 8 mm  
 12- 144 fiber T24 .....2000 m  
 Ducts, inner diameter 10 mm  
 12-144 fiber T24/T12 .....2000 m  
 192 fiber.....1000 m  
 Ducts, inner diameter 12 mm  
 12-192 fiber .....2000 m  
 Ducts, inner diameter 15 & 16 mm  
 12-288 fiber .....2000 m  
 432 fiber.....1500 m

## Delivery Information

Supplied lengths .....2, 4, 8 km

The cable is length water blocking according to IEC 60794-1-2-F5B.  
 Mechanical and environmental test in accordance with IEC 60794-5-10  
 Fiber parameters and tests according to the IEC series 60793-2 and 60793-1  
 The cable shall not be stored in direct sun light. The sun may heat up the cable over the permitted temperature limit

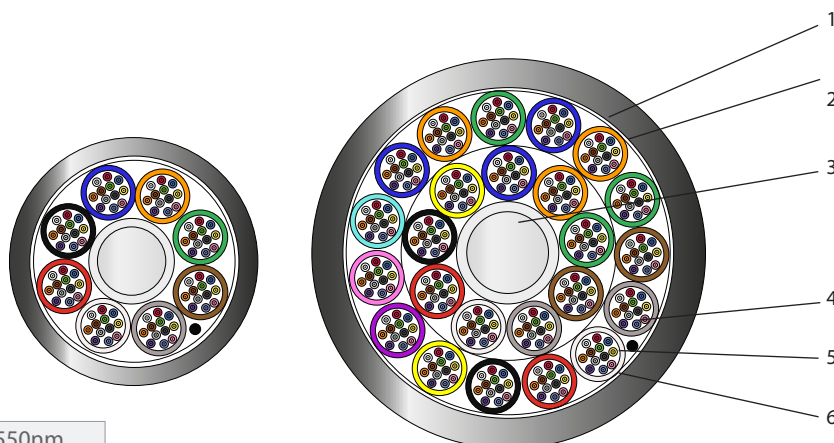
## Color Coding

The cables are available in several versions with different color coding systems: S12, TIA598 (Bellcore), DIN-0888 or FIN2012. Other color code systems are available on request.

Black fillers can replace white tubes.

## Design

1. Primary coated fiber ..... Silica, acrylate
2. Loose tube ..... PA
3. Central strength member ..... Glass fiber reinforced plastic, PE
4. Slit up yarn ..... Aramide yarn
5. Wrapping..... Water blocking yarns
6. Sheath..... Polyethylene, halogen-free





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### Ordering Information

Product No.	Product Name	Tubes/Fibers		Diameter	Weight
		No.	Color Code	ø (mm)	kg/km
TOL4019028/12AH	Micro Cable 12f G657A1 S12	1x12 (12f)	S12	5.7	28
TOL4019028/24AH	Micro Cable 24f G657A1 S12	2x12 (24f)	S12	5.7	28
TOL4019028/48AH	Micro Cable 48f G657A1 S12	4x12 (48f)	S12	5.7	28
TOL4019028/72AH	Micro Cable 72f G657A1 S12	6x12 (72f)	S12	5.7	28
TOL4019032/96AH	Micro Cable 96f G657A1 S12	8x12 (96f)	S12	6.1	28
TOL4019032/144AH	Micro Cable 144f G657A1 S12	6x24 (144f)	S12	6.7	35
TOL4019053/144AH	Micro Cable 144f G657A1 S12	12x12 (144f)	S12	7.9	35
TOL4019028/192AH	Micro Cable 192f G657A1 S12	8x24 (192f)	S12	7.9	47
TOL4019032/192AH	Micro Cable 192f G657A1 S12	16x12 (192f)	S12	8.0	48
TOL4019039/288AH	Micro Cable 288f G657A1 S12	24x12 (288f)	S12	10.5	83
TOL4019028/432AH	Micro Cable 432f G657A1 S12	36x12 (432f)	S12	11.7	98
TOL4019022/12C	Micro Cable 12f G657A1 TIA598	1x12 (12f)	TIA598	5.7	28
TOL4019022/24C	Micro Cable 24f G657A1 TIA598	2x12 (24f)	TIA598	5.7	28
TOL4019022/48C	Micro Cable 48f G657A1 TIA598	4x12 (48f)	TIA598	5.7	28
TOL4019022/72C	Micro Cable 72f G657A1 TIA598	6x12 (72f)	TIA598	5.7	28
TOL4019032/96C	Micro Cable 96f G657A1 TIA598	8x12 (96f)	TIA598	6.1	28
TOL4019032/144C	Micro Cable 144f G657A1 TIA598	6x24 (144f)	TIA598	6.7	35
TOL4019053/144C	Micro Cable 144f G657A1 TIA598	12x12 (144f)	TIA598	7.9	35
TOL4019022/192C	Micro Cable 192f G657A1 TIA598	8x24 (192f)	TIA598	7.9	47
TOL4019032/192C	Micro Cable 192f G657A1 S12	16x12 (192f)	TIA598	8.0	48
TOL4019039/288C	Micro Cable 288f G657A1 TIA598	24x12 (288f)	TIA598	10.5	83
TOL4019028/432C	Micro Cable 432f G657A1 TIA598	36x12 (432f)	TIA598	11.7	98

### Color Code Systems

	1	2	3	4	5	6	7	8	9	10	11	12
S12	Red	Blue	White	Green	Yellow	Slate	Brown	Black	Violet	Orange	Aqua	Rose
Fibers and Tubes	13	14	15	16	17	18	19	20	21	22	23	24
	Red —	Blue —	White —	Green —	Yellow —	Slate —	Brown —	Clear —	Violet —	Orange —	Aqua —	Rose —

	1	2	3	4	5	6	7	8	9	10	11	12
TIA-598	Blue	Orange	Green	Brown	Slate	White	Red	Black	Yellow	Violet	Rose	Aqua
Fibers and Tubes	13	14	15	16	17	18	19	20	21	22	23	24
	Blue —	Orange —	Green —	Brown —	Slate —	White —	Red —	Clear —	Yellow —	Violet —	Rose —	Aqua —

The above chart is a quick reference guide for identification of fibers and tubes in the most common cable designs. For detailed information about the color code systems, please contact Hexatronic.



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