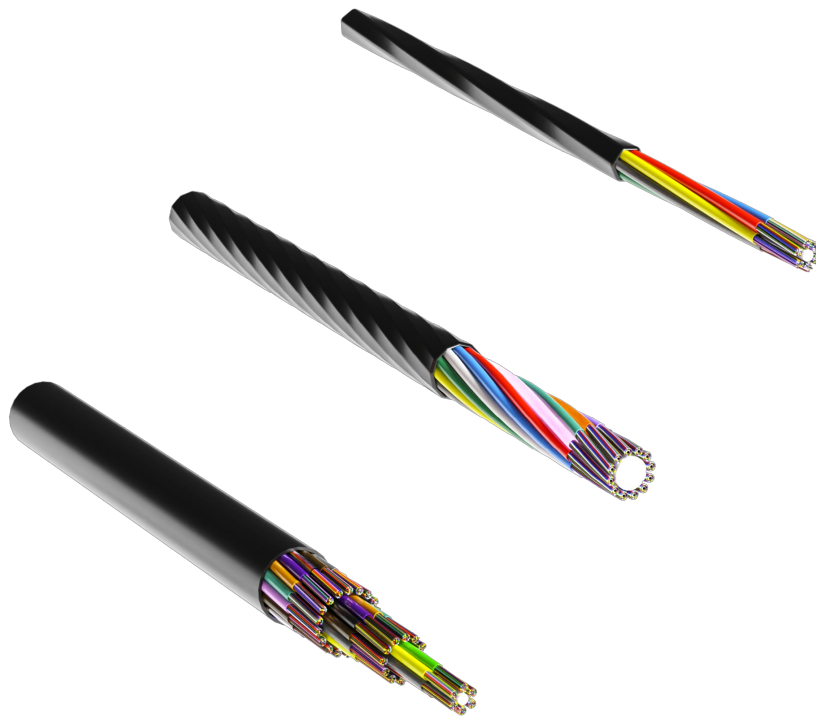


VIPER™



# High Performance Micro Cable – Super Slim

**GNHL 12-864 fibers G657A1 200 µm S12**

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## Features

- Super slim design with 200um fibers
- Up to 864 fibers
- Excellent installation performance
- Unique design with robust inner tubes that do not kink
- Temperature range from -40 to +70°C (12-96f: -35 to +70°C)
- Excellent bend performance,  $\geq 30$  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 36 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 8 to 16 mm, depending on fiber count. 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 compound. The compound gives a special strength to the product, while increasing the bending properties as well as other benefits such as extreme temperature resistance.

To enable installation into smallest possible microducts, the Hexatronic Viper 200 series is designed with 200 µm fibers

Product Information



- 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
- 5 Sheath: Polyethylene, halogen-free

Black fillers can replace empty white tubes.

Technical Information

Product Color	Black Sheath
Color Code	S12
Temperature, Operation [°C]	-40 to +70 (12-96f: -35 to +70)
Temperature, Storage [°C]	-40 to +70
Temperature, Installation [°C]	-15 to +50
Water Blocking	Longitudinal water blocking according to IEC 60794-1-2-F5C
Fiber Type	G657A1

Attenuation @Wavelength [nm]	1310/1383/1550
Typical Attenuation [dB/km]	0.32/0.32/0.19
Average Attenuation [dB/km]	0.33/0.33/0.21
Maximum Attenuation [dB/km]	0.36/0.36/0.23
Conformance	<p>Fiber parameters and tests according to the IEC series 60793-2 and 60793-1.</p> <p>Mechanical and environmental tests in accordance with Family Specification IEC 60794-5-10.</p> <p>Test standards, conditions and requirements:</p> <ul style="list-style-type: none"><li>▪ Operational temperature: IEC 60794-1-22 Method F1; max attenuation 0.10dB/km*</li><li>▪ Storage temperature: IEC 60794-1-22 Method F1; max attenuation 0.15dB/km* reversible</li><li>▪ Ageing: IEC 60794-1-22, Method F9; 168h@85°C,+2 cycles, no attenuation after test</li><li>▪ Water blocking: IEC 60794-1-2, Method F5C, 3m sample, 1m head of water, no leakage after 24 hours</li><li>▪ Bend radius: IEC 60794-1-21, Method E11B; 4 turns, 3 cycles, max attenuation 0.05dB*</li><li>▪ Installation tensile load: IEC 60794-1-21, Method E1; max fiber tension 0.6%, reversible attenuation</li><li>▪ Crush: IEC 60794-1-21, Method E3; 1 minute load, 100mm plate, no attenuation after test</li><li>▪ Impact: IEC 60794-1-21, Method E4; 3 different places, max attenuation 0.1dB* after test</li></ul>

\* All attenuation measurements performed @ 1550nm

Marking	<p>Example of sheath marking, 1 time/meter:</p> <p>"HEXATRONIC A35 Viper yymmddhh TOL4019035/288AH GNHL-U-CDGNRV 288/T24 G657A1 200um S12 xxxx M"</p> <p>where yymmddhh = year, month, day and hour of manufacture, xxxx=running meter marking</p>
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Installation Notes

Typical installation performance:

- Ducts ID 8-10 mm, cable OD ≤6.7 mm: 2000 m
- Ducts ID 12 mm, cable OD ≤8.0 mm: 2000 m
- Ducts ID 15-16 mm, cable OD <11 mm: 2000 m, cable OD 11-12 mm: 1500 m

Installation performance verified on Hexatronic test track, according to IEC 60794. Installation performance is affected by the installed path, environmental conditions, installation equipment etc and actual performance may therefore deviate from the above specified values.

The cable should be installed at a temperature between -15 to +40°C. The cable shall not be stored in direct sunlight. The sun may heat up the cable over the permitted temperature limit.

Ordering Information

Supplied lengths: 2, 4, 8 km

Technical Details

S12 Fibers och rör Fibers and tubes	1	2	3	4	5	6	7	8	9	10	11	12
	Röd Red	Blå Blue	Vit White	Grön Green	Gul Yellow	Grå Grey	Brun Brown	Svart Black	Violett Violet	Orange	Turkos Turquoise	Rosa Pink
	13	14	15	16	17	18	19	20	21	22	23	24
	Röd Red	Blå Blue	Vit White	Grön Green	Gul Yellow	Grå Grey	Brun Brown	Klar Clear	Violett Violet	Orange	Turkos Turquoise	Rosa Pink

Articles 14

Article name	EL-No.	Color	No. of Fibers	Layout	Bend Radius [mm]	Tensile Force [N]	Crush [N/100 mm]	Impact [J]	Diameter Ø [mm]	Weight [kg/km]	Length [m]
<b>GNHL 12/T12 G657A1 200um S12</b> TOL4019038/12AH		Black	12	1x12	80	600	1000	3	4.3	14	2000/K7, 4000/K7, 6000/K8, 8000/K8
<b>GNHL 24/T12 G657A1 200um S12</b> TOL4019038/24AH		Black	24	2x12	80	600	1000	3	4.3	14	2000/K7, 4000/K7, 6000/K8, 8000/K8
<b>GNHL 48/T12 G657A1 200um S12</b> TOL4019038/48AH		Black	48	4x12	80	800	1000	3	4.3	14	2000/K7, 4000/K7, 6000/K8, 8000/K8
<b>GNHL 72/T12 G657A1 200um S12</b> TOL4019038/72AH		Black	72	6x12	80	800	1000	3	4.3	14	2000/K7, 4000/K7, 6000/K8, 8000/K8
<b>GNHL 96/T12 G657A1 200um S12</b> TOL4019038/96AH		Black	96	8x12	80	1500	1000	2	5.1	17	2000/K7, 4000/K7, 6000/K10, 8000/K10
<b>GNHL 144/T24 G657A1 200um S12</b> TOL4019035/144AH	1001219	Black	144	6x24	100	1500	3000	5	5.6	26	2000/K7, 4000/K8, 6000/K10, 8000/K10
<b>GNHL 192/T24 G657A1 200um S12</b> TOL4019035/192AH	1001220	Black	192	8x24	100	2000	3000	5	6.7	38	2000/K7, 4000/K10, 6000/K10, 8000/K12
<b>GNHL 192/T24 G657A1 200um S12 T4000</b> H4019035/192AH-4	1001220	Black	192	8x24	100	2000	3000	5	6.7	38	4000/K10
<b>GNHL 288/T24 G657A1 200um S12</b> TOL4019035/288AH	1030043	Black	288	12x24	100	3000	3000	5	8.5	57	2000/K10, 4000/K12, 6000/K12
<b>GNHL 288/T12 G657A1 200um S12</b> TOL4019098/288AH		Black	288	24x12	100	2000	1500	5	7.5	65	2000/K8, 4000/K10, 6000/K12, 8000/K12
<b>GNHL 288/T12 G657A1 200um S12</b> TOL4019038/288AH	1001221	Black	288	24x12	100	2000	2000	5	7.95	65	2000/K8, 4000/K10, 6000/K12, 8000/K12
<b>GNHL 432 G657A1 200um(18x24f) S12</b> TOL4019035/432AH		Black	432	18x24	100	2500	1500	10	8.8	56	2000/K10, 4000/K12, 6000/K12

Article name	EL-No.	Color	No. of Fibers	Layout	Bend Radius [mm]	Tensile Force [N]	Crush Force, Installation [N]	Impact [J]	Diameter Ø [mm]	Weight [kg/km]	Length [m]
GNHL 576 G657A1 200um(24x24f) S12 TOL4019035/576AH		Black	576	24x24	120	3800	1500	10	10.5	80	2000/K10, 4000/K12
GNHL 864/T24 G657A1 200um S12 TOL4019035/864AH		Black	864	36x24	120	4500	1800	10	11.7	100	2000/K10, 4000/K12