VIPER™

High Performance Micro Cable

GNHL 2-432 fibers G657A1 S12

Features

- Up to 432 fibers
- Super slim design
- Excellent installation performance
- Unique design with robust inner tubes that do not kink
- Temperature range from -45 to +70°C
- Excellent bend performance, ≥70 mm
- Easy to prepare and identify fibers
- Ultra low attenuation in cable

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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 compromizing 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 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.

Product Information

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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

Black fillers can replace empty white tubes.

Technical Information

Product Color	Black sheath
Color Code	S12
Temperature, Operation [°C]	-45 to +70
Temperature, Storage [°C]	-45 to +70
Temperature, Installation [°C]	-15 to +50
Water Blocking	Length water blocking according to IEC 60794-1-2-F5C
Fiber Type	G657A1
Attenuation @Wavelength [nm]	1310/1383/1550

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Typical Attenuation [dB/km]	0.32/0.32/0.18
Average Attenuation [dB/km]	0.33/0.33/0.21
Maximum Attenuation [dB/km]	0.36/0.36/0.23

Conformance

Fiber parameters and tests according to the IEC series 60793-2 and 60793-1. Mechanical and environmental tests in accordance with Family Specification IEC 60794-5-10.

Test standards, conditions and requirements:

- Operational temperature: IEC 60794-1-22 Method F1; max attenuation 0.05dB/km*
- Storage temperature: IEC 60794-1-22 Method F1; max attenuation 0.15dB/km* reversible
- Ageing: IEC 60794-1-22, Method F9; 168h@85°C,+2 cycles, no attenuation after test
- Water blocking: IEC 60794-1-2, Method F5C, 3m sample, 1m head of water, no leakage after 24 hours
- Bend radius: IEC 60794-1-21, Method E11B; 4 turns, 3 cycles, max attenuation 0.05dB*
- Installation tensile load: IEC 60794-1-21, Method E1; max fiber tension 0.6%, reversible attenuation
- Crush: IEC 60794-1-21, Method E3; 1 minute load, 100mm plate, no attenuation after test
- Impact: IEC 60794-1-21, Method E4; 3 different places, max attenuation 0.1dB* after test

* All attenuation measurements performed @ 1550nm

Marking

Example of sheath marking, 1 time/meter:
“HEXATRONIC A35 Viper yymmddhh TOL4019028/432AH GNHL-U-CDGNRV 432/T12 G657A1 S12 xxxxx m”
where yymmddhh = year, month, day and hour of manufacture, xxxxx=running meter marking

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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.

If the cable is installed by blowing the temperature shall be -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 Fibrer 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 |

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Article name	Color	No. of Fibers	Layout	Bend Radius [mm]	Tensile Force, Installation [N]	Crush [N/100 mm]	Impact [J]	Diameter Ø [mm]	Dimensions [mm]	Weight [kg/km]	Length [m]
GNHL 2/T2 G657A1 S12 TOL4019033/2AH	Black	2	1x2	75	430	1000	–	4.2	–	11.5	4000/K7, 8000/K8
GNHL 2/T2 G657A1 S12 T2000 H4019033/2AH-3	Black	2	1x2	75	430	1000	–	4.2	–	11.5	2000/K7
GNHL 2/T2 G657A1 S12 T4000 H4019033/2AH-4	Black	2	1x2	75	430	1000	–	4.2	–	11.5	4000/K7
GNHL 2/T2 G657A1 S12 T8000 H4019033/2AH14	Black	2	1x2	75	430	1000	–	4.2	–	11.5	8000/K8
GNHL 4/T4 G657A1 S12 TOL4019033/4AH	Black	4	1x4	75	430	1000	–	4.2	–	11.5	4000/K7, 8000/K8
GNHL 4/T4 G657A1 S12 T2000 H4019033/4AH-3	Black	4	1x4	75	430	1000	–	4.2	–	11.5	2000/K7
GNHL 4/T4 G657A1 S12 T4000 H4019033/4AH-4	Black	4	1x4	75	430	1000	–	4.2	–	11.5	4000/K7
GNHL 4/T4 G657A1 S12 T8000 H4019033/4AH14	Black	4	1x4	75	430	1000	–	4.2	–	11.5	8000/K8
GNHL 8/T4 G657A1 S12 TOL4019033/8AH	Black	8	2x4	75	430	1000	–	4.2	–	11.5	4000/K7, 8000/K8
GNHL 8/T4 G657A1 S12 T2000 H4019033/8AH-3	Black	8	2x4	75	430	1000	–	4.2	–	11.5	2000/K7
GNHL 8/T4 G657A1 S12 T4000 H4019033/8AH-4	Black	8	2x4	75	430	1000	–	4.2	–	11.5	4000/K7
GNHL 12/T4 G657A1 S12 TOL4019033/12AH	Black	12	3x4	75	430	1000	–	4.2	–	11.5	4000/K7, 8000/K8
GNHL 12/T4 G657A1 S12 T2000 H4019033/12AH-3	Black	12	3x4	75	430	1000	–	4.2	–	11.5	2000/K7
GNHL 12/T4 G657A1 S12 T4000 H4019033/12AH-4	Black	12	3x4	75	430	1000	–	4.2	–	11.5	4000/K7
GNHL 24/T4 G657A1 S12 TOL4019033/24AH	Black	24	6x4	75	430	1000	–	4.2	–	11.5	8000/K8, 4000/K7
GNHL 24/T4 G657A1 S12 T2000 H4019033/24AH-3	Black	24	6x4	75	430	1000	–	4.2	–	11.5	2000/K7
GNHL 24/T4 G657A1 S12 T4000 H4019033/24AH-4	Black	24	6x4	75	430	1000	–	4.2	–	11.5	4000/K7
GNHL 12/T12 G657A1 S12 TOL4019028/12AH	Black	12	1x12	75	1200	2000	2	5.7	–	28	4000/K8, 8000/K10
GNHL 12/T12 G657A1 S12 T2000 H4019028/12AH-3	Black	12	1x12	75	1200	2000	2	5.7	–	28	2000/K7
GNHL 12/T12 G657A1 S12 T4000 H4019028/12AH-4	Black	12	1x12	75	1200	2000	2	5.7	–	28	4000/K8

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GNHL 24/T12 G657A1 S12 TOL4019028/24AH	Black	24	2x12	75	1200	2000	2	5.7	–	28	8000/K10, 4000/K8
GNHL 24/T12 G657A1 S12 T2000 H4019028/24AH-3	Black	24	2x12	75	1200	2000	2	5.7	–	28	2000/K7
GNHL 24/T12 G657A1 S12 T4000 H4019028/24AH-4	Black	24	2x12	75	1200	2000	2	5.7	–	28	4000/K8
GNHL 48/T12 G657A1 S12 TOL4019028/48AH	Black	48	4x12	75	1200	2000	2	5.7	–	28	8000/K10, 4000/K8
GNHL 48/T12 G657A1 S12 T2000 H4019028/48AH-3	Black	48	4x12	75	1200	2000	2	5.7	–	28	2000/K7
GNHL 48/T12 G657A1 S12 T4000 H4019028/48AH-4	Black	48	4x12	75	1200	2000	2	5.7	–	28	4000/K8
GNHL 72/T12 G657A1 S12 TOL4019028/72AH	Black	72	6x12	75	1200	2000	2	5.7	–	28	4000/K8, 8000/K10
GNHL 72/T12 G657A1 S12 T2000 H4019028/72AH-3	Black	72	6x12	75	1200	2000	2	5.7	–	28	2000/K7
GNHL 72/T12 G657A1 S12 T4000 H4019028/72AH-4	Black	72	6x12	75	1200	2000	2	5.7	–	28	4000/K8
GNHL 96/T12 G657A1 S12 TOL4019032/96AH	Black	96	8x12	80	1200	1000	3	6.1	–	28	8000/K10, 4000/K8
GNHL 96/T12 G657A1 S12 T2000 H4019032/96AH-3	Black	96	8x12	80	1200	1000	3	6.1	–	28	2000/K7
GNHL 96/T12 G657A1 S12 T4000 H4019032/96AH-4	Black	96	8x12	80	1200	1000	3	6.1	–	28	4000/K8
GNHL 144/T24 G657A1 S12 TOL4019032/144AH	Black	144	6x24	70	1600	2000	5	6.7	–	35	8000/K12, 4000/K10
GNHL 144/T24 G657A1 S12 T2000 H4019032/144AH-3	Black	144	6x24	70	1600	2000	5	6.7	–	35	2000/K8
GNHL 144/T24 G657A1 S12 T4000 H4019032/144AH-4	Black	144	6x24	70	1600	2000	5	6.7	–	35	4000/K10
GNHL 144/T12 G657A1 S12 TOL4019053/144AH	Black	144	12x12	–	2000	2000	–	7.9	–	35	2000/K8, 4000/K10, 6000, 8000
GNHL 192/T24 G657A1 S12 TOL4019028/192AH	Black	192	8x24	80	2500	5000	3	7.9	–	60	2000/K8, 9600/K12
GNHL 192/T24 G657A1 S12 T2000 H4019028/192AH-3	Black	192	8x24	80	2500	5000	3	7.9	–	60	2000/K8
GNHL 192/T24 G657A1 S12 T4000 H4019028/192AH-4	Black	192	8x24	80	2500	5000	3	7.9	–	60	4000/K10
GNHL 288 T/12 G657A1 S12 TOL4019039/288AH	Black	288	24x12	80	3000	2000	3	10.3	–	86	2000/K10, 4000/K12
GNHL 432/T12 G657A1 S12 TOL4019028/432AH	Black	432	36x12	175	1800	2000	–	11.7	–	98	–

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Article name	Color	No. of Fibers	Layout	Bend Radius [mm]	Tensile Force, Installation [N]	Crush [N/100 mm]	Impact [J]	Diameter Ø [mm]	Dimensions [mm]	Weight [kg/km]	Length [m]
Microduct 2x5/3.5 DI Al FIN BU 3/MPB30211/2T	Blue	–	2x5/3.5	100	800	1000	3	–	9.4 × 14.4	84	2000/K10, 1000/K8, 500/K6

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