guiding connections

NOVONET DB

PRODUCT DESCRIPTION

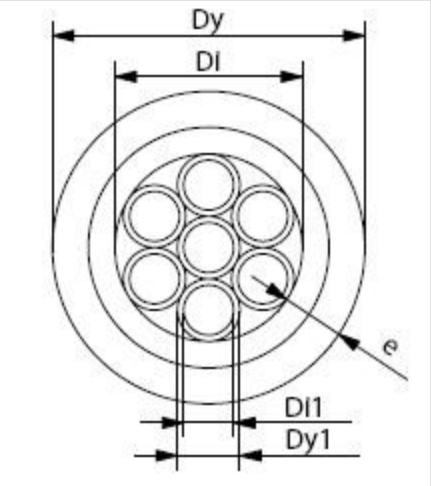
Tight bundled microducts (DI) surrounded by a protective jacket. This Microduct assembly is designed for direct buried (DB) applications.

Can be used for subducting but for subducting the product range Novonet DI is available.

Available for microduct DI sizes 4 – 16 mm.
Design is round and have two layers.

APPLICATION AREA

- Direct buried
- Feeder
- Less suitable for drop
- Creating new line



PRODUCT FEATURES

- Available in lubrication system UD (microcables) or UF (fibre bundles)
- Inner friction of the microducts < 0,1
- Microducts are DI designed for optimal filling.
- The outer skin gives resistance to impact, crush and stones.
- Outer skin can be peeled off, non sticking.
- UV stabilised skin and microducts
- Length differences in microduct on drum is under control by respecting internal undulation test limits
- No fixing of microducts needed at duct ends during laying.

Remark: Novonet DB is more difficult to branch of compared to other solution however a set of specific connectors/branches (PDC boxes) have been developed for this product.

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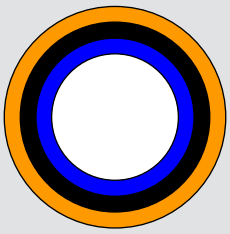
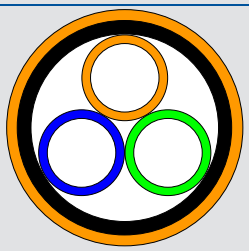
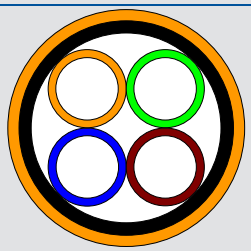
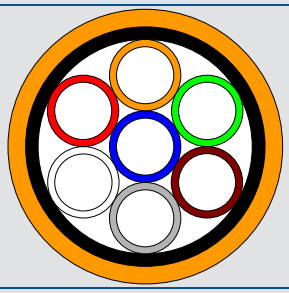
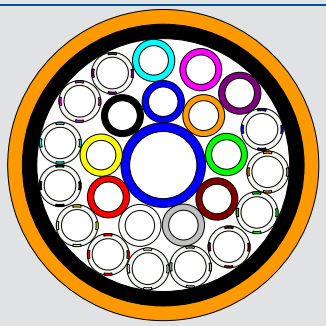
PRODUCT RANGES

Table 1 Standard configuration and colours [1)]

			
1	3	4	7
			
12	19	24+1	

1) For microduct sizes and performance see group TDS Novomicro DI.
First layer (black) made of PP, second layer (orange) made of PE.

PRODUCT COMPONENTS

Part description	No of parts
1. Microducts DI	max 24
2. Assembly sheet	2 layers, first layer black (PP), second layer orange (PE)
3. Central duct	0 or 1 (can be used for cable installation)

PRODUCT SPECIFICATIONS

Materials

1. Microducts DI	HDPE
2. Assembly sheet	PP and HDPE

Dimensions

Sheet thickness:
First layer (PP) ca 1,1-2.5 mm
Second layer (PE) ca 1.0 – 2,5 mm
Total thickness between SDR 9 and 11

Table 2 Dimensions : First layer/ Second layer/Outer diameter (average)

Microduct diameter	Configuration (nr of microducts DI)						
	1	3	4	7	12	19	24
4 (4x0,5)		1,1 1,1 13,0±1					1,5 1,7 30,4±1,1
5 (5x0,75)	1,5 1,0 10±0,9	1,7 1,2 16,6±1	1,7 1,2 17,9±1,1	1,7 1,9 22,2±1,1	2,1 1,5 28±1,2	1,9 2,3 33,4±1,3	1,7 2,5 38,4±2,5
7 (7x0,75)							
10 (10x1)		1,7 1,2 27,4±1,0	1,7 1,5 30,5±1,1	1,7 2,5 38,4±1,7	2,5 2,5 50±1,2		
12 (12x1,2)	1,5 2,0 19±0,9	1,5 2,0 32,3±1,0	2,0 1,7 36,4±1,0	2,0 2,2 44,4±1,1			
14 (14x1,5)							
16 (16x1,5)							

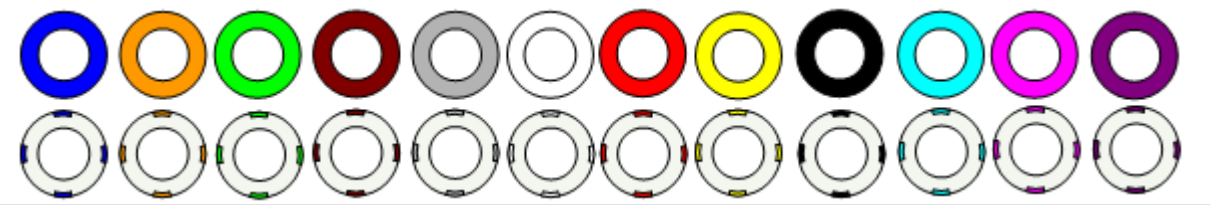
Tools are available
Configuration not possible

Table 3 Weight/length (kg/km)

Microduct diameter	Configuration (nr of microducts DI)						
	1	3	4	7	12	19	24
4	-	89	-	-	-	-	413
5	65	146	167	264	372	545	680
7	-	-	-	-	-	-	
10	-	290	370	610	979		
12	192	429	528	796			
14	-	-	-				
16	-	-	-				

Colours
See for RAL nrs TDS Novomicro DI

Fixed colour sequence:



If more than 12 colours needed, the second set will be striped microducts.

Inner sheath: Black RAL 9017
Outer sheath: Opaque orange RAL 2003.

PRODUCT PERFORMANCE

Lubricant system:	UD for micro cables (on request UF for fibre bundles)
Ovality (Novotech method):	< 5 %
Flexibility (IEC 60794-1-21):	OK (10 loops, 30 min < 15 % deformation)
Nominal hydrostatic pressure resistance:	Identical to TDS Novomicro DI
Minimum bending radius:	Identical to TDS Novomicro DI
Vertical undulation (Novotech method):	< 5 mm
Horizontal undulation (Novotech method):	< 5 cm

Table 4 Crushing resistance (N) at 5% (EN61386-24) / Maximum pulling force (N)

Microduct diameter	Configuration (nr of microducts DI)						
	1	3	4	7	12	19	24
4	-	2500 1120	-	-	-	-	1500 4100
5	>3200 1030	1080 1850	2450 2040	4000 3150	2100 4130	2800 5750	3400 6750
7	-	-	-	-	-	-	
10	-	1100 3100	2300 4100	2100 6750	>2000 12270		
12	>450 3200	2100 4750	1750 5700	2800 7950			
14	-	-	-				
16	-	-	-				

Table 5 Impact -25 °C /50 °C (Joule) (IEC60794-5-10)

Microduct diameter	Configuration (nr of microducts DI)						
	1	3	4	7	12	19	24
4	-	-	-	-	-	-	-
5	>7 / >4	18 / 11	20 / 19	19 / 18	31 / 29	17 / 15	17,5/17,5
7	-	-	-	-	-	-	
10	-	30/ 27	16 / 15	15 / 15	-		
12	-	42 / 31	60 / 45	60 / 28			
14	-	-	-				
16	-	-	-				

Table 6 Punching resistance (NF330) -5 °C / 50 °C (Joule)

Microduct diameter	Configuration (nr of microducts DI)						
	1	3	4	7	12	19	24
4	-	-	-	-	-	-	-
5	>3 / >1.5	9 / 6	14 / 6	10 / 7	17,5/ 13	10 / 7	17 / 9
7	-	-	-	-	-	-	
10	-	17 / 12	11 / 11	10 / 10	-		
12	-	27 / 16	38 / 22	30/ 22,5			
14	-	-	-				
16	-	-	-				

Life time
Products have a expected life time of 50 years when transported, stored and installed in a good way.

UV resistance and storage conditions : See TG 12.

INSTALLATION
For installation guidelines see IDS04, IDS07 and IDS 18.
Tips for near surface installation are given in TG 07.

PRACTICAL RECOMMENDATIONS
Ends of Novonet must be protected by appropriate end-stop shrinkable materials, in order to prevent ducts from environment pollution

PACKAGING AND LABELLING

Packaging

Standard: Lost wooden drum
Length: 1000 or 2000 meter (see tables 7 and 8)

Table 7 Drum size delivery 1000 meter

Microduct diameter	Configuration (nr of microducts DI)						
	1	3	4	7	12	19	24
4	-	A	-	-	-	-	N117
5	A (3000)	N060	N060	N060	N088	N117	N265
7	-	-	-	-	-	-	
10	-	N130	N265	N265	N270		
12	N060	N117	N265	N270			
14	-	-					
16	-	-	-				

Lost wooden drums codes:

A	1000x520x460	N130	1900x1000x1000
N255B	1300x520x500	N140	2100x1100x1000
N117	1800x1200x1000	N180	2400x1200x1000
N060	1400x800x600	N270	2400x1400x1000
N074	1450x600x670	N265	2000x1200x1000
N088	1600x1100x1000		

Table 8 Drum size delivery 2000 meter

Microduct diameter	Configuration (nr of microducts DI)						
	1	3	4	7	12	19	24
4	-	N255B	-	-	-	-	N140
5	A (3000)	N074	N072	N086	N130	N140	N180
7	-	-	-	-	-	-	
10	-	N130	N140	N180			
12	N072	N180	N180				
14	-	-	-				
16	-	-	-				

See table above

Labelling

Elementary duct: "0000 m – YYYY/MM/DD" (every 1 m)
Central duct: "0000 m – YYYY/MM/DD" (every 1 m)
Assembly sheet: "0000 m WAVIN 35 NOVONET DB nr ducts*diameter duct* wall thickness(+central duct size) *lubrication code YYYY/MM/DD" (every 1 m).

ALTERNATIVES

New development

In case the following parameters are requested a new development has to be started.

- Combination of different pipe sizes, or assemblies with central duct
- Other assembly configurations
- Sizes exceed maxim duct size as given in the table
- Non-standard colours or stripes
- Other Microduct designs

Easy ordering

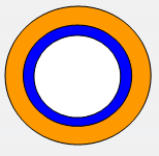
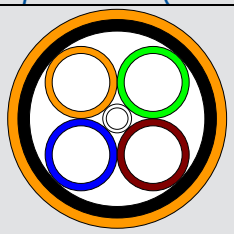
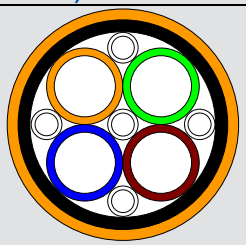
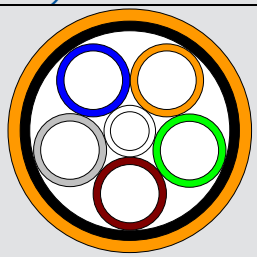
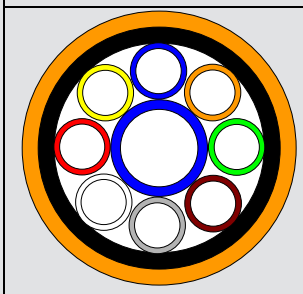
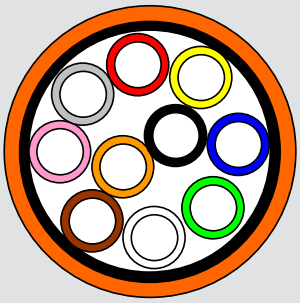
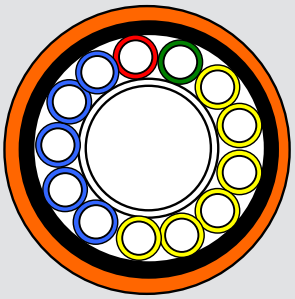
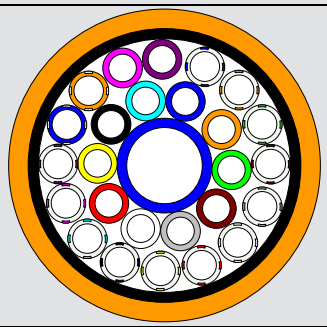
Small changes like the following, do not need a development.

- Other (standard) Microduct colours or colour sequence
- Alternative colour sequence + pipe numbering

First layer	1	1	1 up to 7	
Second layer	2	2	1 up to 6	1 up to 7

- Other colour outer sheet
- Including a detection wire or rib cord
- Other marking
- Other lengths on standard drums
- The (non-standard) configurations as given in table 9.

Table 9. Non standard products (tools available, colours are examples)

			
1x5 one PE layer	4x10+1x4 4x12+1x5	4x12+5x5	5x10+1x7 5x12+1x8
			
8x7+1x12	10x10	13x5+1x16	26x5+1x12

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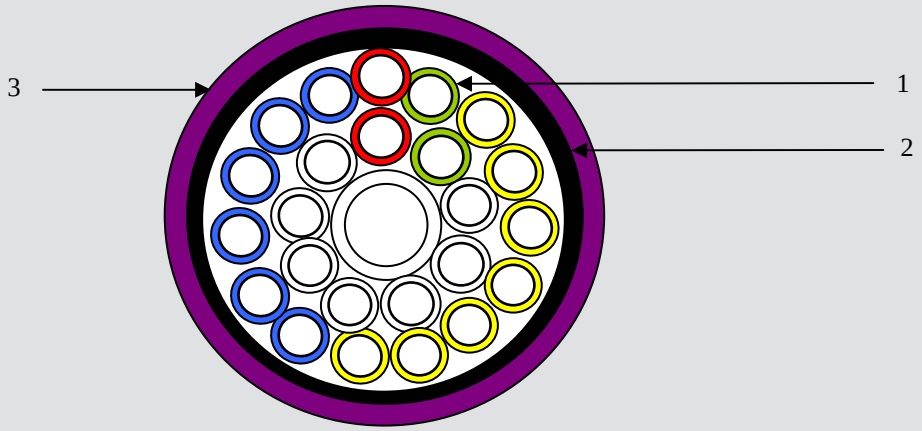
NOVONET DB 24 X 5*0.75 UD



Component	Key number	Nominal outside diameter (mm)	Nominal thickness (mm)
Elementary duct	1	5 ± 0.1	0.75 ± 0.1
Inner sheath	2	33.4± 0.9	1.7 ± 0.2
Outer sheath	3	38.4 ±1.3	2.5 ± 0.2

1 CHARACTERISTICS at 23°C (Nominal average values, indicated for information)

A Novonet

Crush resistance at 5% (according to NF EN 50086-2-4):	~ 3400 N
Minimum bending radius (on drum):	~ 0.6 m
Nominal weight:	~ 680 kg/km
Maximum pulling force (on sheath):	~ 675 daN

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NOVONET DB 24 X 5*0.75 UD

Impact resistance SPEC.TECHN-003-FRA-1 / IEC 60794-5-10		**Punching resistance** SPEC.TECHN-003-FRA-1	
- 25°C	+ 50°C	- 5°C	+ 50°C
17.5 Joule	17.5 Joule	17 Joule	9 Joule

B **Elementary Duct** (5*0.75)

Crush resistance at 5% (NF EN 50086-2-4):	~ 280 N
Maximum pulling force:	~ 130 N
Nominal hydrostatic pressure resistance:	PN 18
Minimum bending radius (on drum):	~ 400 mm
Pre-lubrication class:	UD smooth

2 COLOUR IDENTIFICATION (see drawing)

Elementary duct: Green n°1 to 2 RAL 6017, Red n°1 to 2 RAL 3016
White n°1 to 7 RAL 9010, Blue n°1 to 6 RAL 5015
Yellow n° 1 to 7 RAL 1023

Assembly sheaths: Innersheath (2): Black RAL 9017
Outersheath (3): Opaque Violet RAL 4005

3 MARKING

Elementary duct: " Metering – Date – n° 1 to 7 " *(every 10 cm)*

Assembly sheath: " 0000m WAVIN 35 Novonet DB 24x5*0.75*UD Date " (every 1 m)

***** Option: numbering and/or specific text in accordance to customer's specification.***

NOVONET DB 24 X 5*0.75 UD

4 PACKAGING

Lost wooden drum (2400 x 1200 x 1000) mm.

Length: 2000 m.

***** Option Pre-lubrication and/or assembly sheath colour: Please contact Wavin Novotech for article code***

5 PRACTICAL RECOMMENDATIONS

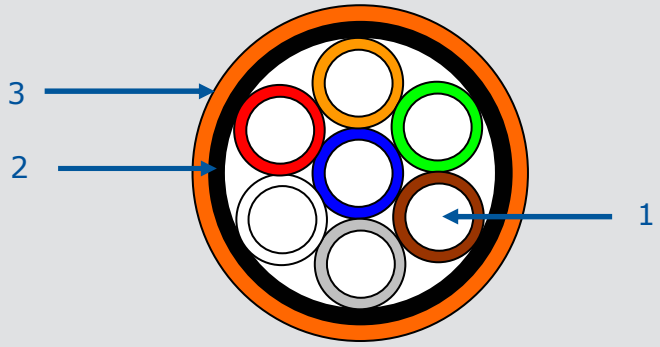
1/ Ends of Novonet must be protected by appropriate end-stops shrinkable materials, in order to prevent ducts from environment pollution.

2/ The order of colored (or numbered) assembly ducts must be strictly respected when positioning the Novonet reels in order to avoid connection misdoings resulting in twisted ducts for instance.

3/ Novonet can be connected on line or in derivation by means of Novotech straight or Y connection boxes.

guiding connections

NOVONET DB 7x 12x1 UD



Component	Key number	Nominal outside diameter (mm)	Nominal thickness (mm)
Elementary duct	1	12 ± 0.1	1 ± 0.1
Inner sheath	2	40 ± 0.7	2 ± 0.2
Outer sheath	3	44.4 ± 1.1	2.2 ± 0.2

1 CHARACTERISTICS at 23°C (Nominal average values, indicated for information)

A NOVONET

Crush resistance at 5% (according to IEC 61386-24): ~ 2800 N

Weight: ~ 734 kg/km

Maximum pulling force (on sheath): ~ 795 daN

Impact resistance SPEC.TECHN-003-FRA-1 / IEC 60794-5-10		Punching resistance SPEC.TECHN-003-FRA-1	
- 25°C	+ 50°C	- 5°C	+ 50°C
60 Joule	28 Joule	30 Joule	22 Joule

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NOVONET DB 7x 12x1 UD

B Elementary Duct (12x1)

Crush resistance 5% (IEC 61386-24):	~ 270 N
Maximum pulling force:	~ 510 N
Nominal hydrostatic pressure resistance:	PN 10
Pre-lubrication class:	UD

2 COLOUR IDENTIFICATION (see drawing)

Elementary duct: Blue RAL 5015, Orange RAL 2003, Green RAL 6017
Brown RAL 8011, Grey RAL 7031, White RAL 9010
Red RAL 3016

Assembly sheaths: Innersheet (2): Black RAL 9017
Outersheet (3)*: Orange RAL 2003

Option: other colours for the external sheath possible in accordance with the customer's specification. Ex: Opaque Green RAL 6017.

3 MARKING

Elementary duct:** " 0000 m – Date " *(every 1 m)*

Assembly sheath: " 0000 m WAVIN 35 Novonet DB 7*12x1*UD Date "
(every 1 m)

*** Option: numbering and/or specific text in accordance with customer's specification.***

4 PACKAGING

Lost wooden drum (2800 x 1400 x 1000) mm.
Lenght : 2000 m.

Lost wooden drum (2400 x 1400 x 1000) mm.
Lenght : 1000 m.

NOVONET DB 7x 12x1 UD

5 PRACTICAL RECOMMENDATIONS

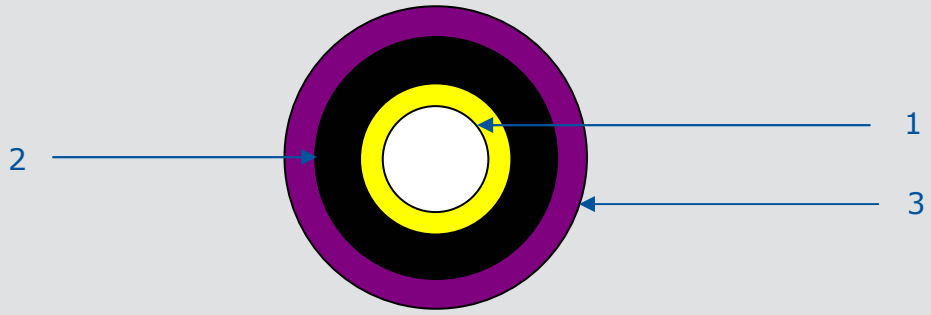
1/ Ends of Novonet must be protected by appropriate end-stops shrinkable materials, in order to prevent ducts from environment pollution.

2/ The order of colored (or numbered) assembly ducts must be strictly respected when positioning the Novonet reels in order to avoid connection misdoings resulting in twisted ducts for instance.

3/ Novonet can be connected on line or in derivation by means of Novotech straight or Y connection boxes.

guiding connections

NOVONET SINGLE DB 1 x 5*0.75 UD



Component	Key number	Nominal outside diameter (mm)	Nominal thickness (mm)
Elementary duct	1	5 ± 0.1	0.75 ± 0.1
Inner sheath	2	8 ± 0.5	1.5 ± 0.2
Outer sheath	3	10 ± 0.9	1.0 ± 0.2

1 CHARACTERISTICS at 23°C (Nominal average values, indicated for information)

A Novonet

Crush resistance at 5% (according to NF EN 50086-2-4):	> 1400 N
Crush resistance (according to IEC 60794-1-2):	2 200 N / 1 min. / 100 mm
Minimum bending radius (on drum):	~ 0.26 m
Nominal weight:	~ 65 kg/km
Maximum pulling force (on sheath):	~ 88 daN

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NOVONET SINGLE DB 1 x 5*0.75 UD

Impact resistance SPEC.TECHN-003-FRA-1 / IEC 60794-5-10		**Punching resistance** SPEC.TECHN-003-FRA-1	
- 25°C	+ 50°C	- 5°C	+ 50°C
7 Joules	4 Joules	3 Joules	1.5 Joules

B **Elementary Duct** (5*0.75)

Crush resistance 5% (NF EN 50086-2-4):	~ 280 N
Maximum pulling force:	~ 130 N
Nominal hydrostatic pressure resistance:	PN 18
Minimum bending radius (on drum):	~ 400 mm
Pre-lubrication class:	UD smooth

2 COLOUR IDENTIFICATION (see drawing)

Elementary duct: Yellow RAL 1023 (1)

Assembly sheath: Opaque Violet RAL 4005 (3)

NOVONET SINGLE DB 1 x 5*0.75 UD

3 MARKING

Elementary duct: " Metering – Date " *(every 10 cm)*

Assembly sheath: " 0000m WAVIN 35 Novonet SINGLE DB*1x5*0.75*UD Date " *(every 1 m)*

***** Option: numbering and/or specific text in accordance to customer's specification.***

4 PACKAGING

Lost wooden drum (1000 x 520 x 460) mm.

Length: 2000 m.

***** Option Pre-lubrication and/or assembly sheath colour: Please contact Wavin Novotech for article code***

5 PRACTICAL RECOMMENDATIONS

1/ Ends of Novonet must be protected by appropriate end-stops shrinkable materials, in order to prevent ducts from environment pollution.

2/ The order of colored (or numbered) assembly ducts must be strictly respected when positioning the Novonet reels in order to avoid connection misdoings resulting in twisted ducts for instance.

3/ Novonet can be connected on line or in derivation by means of Novotech straight or Y connection boxes.