Technical Data Sheet

ViaPlate® 500

Learn more at viacongroup.com

VIACON

ViaCon ViaPlate 500

This technical data sheet is valid for the ViaCon Polska Sp. z o.o. production plant in Rydzyna,Poland only. CE Certificate of Factory Production Control No. 1023-CPR-0640 F.

Steel structures and aluminium structures according to EN 1090-1. Issued by notified body no. 1023

Description

Flexible, cold-formed, corrugated steel plates, connected with bolts and nuts, used mainly in civil engineering as soil-steel composite structures, under railway and roadway traffic loads.

Intended use

- Culverts
- Bridges
- Grade separations/viaducts
- Tunnels
- Underpasses
- Ecological crossings
- Pedestrian tunnels
- Shelters
- Hangars
- Underground storage

- **Product features**
- High structural strength
- Wide range of shapes and sizes
- Relatively low weight
- High corrosion protection
- Short installation time

TECHNICAL PROPERTIES

Steel

The steel used for the production of the ViaPlate 500 structures conforms to the European Standards:

- EN 10025-2 "Hot-rolled products of structural steels – Part 2: Technical delivery conditions for non-alloy structural steels"
- EN 10149-2 "Hot-rolled flat products made of high-yield strength steels for cold forming – Part 2: Delivery conditions for thermomechanically rolled steels"

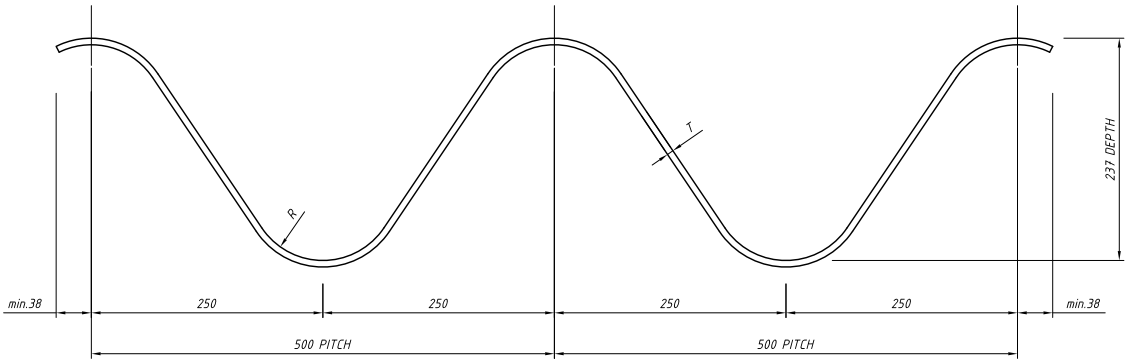
ViaPlate 500 steel mechanical properties

Steel grade	Standard	Minimum yield strength R_e [MPa]	Tensile strength R_m [MPa]
S355MC	EN-10149	355	430 - 550
S420MC	EN-10149	420	480 - 620
S500MC	EN-10149	500	550 - 700

Comment: The steel is delivered with the certificate 3.1 acc. to EN 10204

Corrugation

The ViaPlate 500 corrugation profile is 500 x 237 mm.



T – plate thickness [mm]
R – radius [mm] - (depends on the plate thickness)

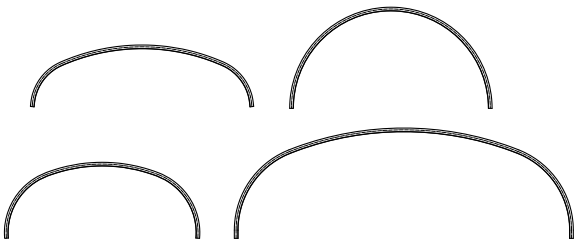
Plates

The ViaPlate 500 structures can be produced from steel plates of thickness from 6.0 mm up to 12.0 mm. The maximum length of plate and minimum radius are limited by plate thickness and steel grade configuration. Production possibilities have to be agreed with ViaCon.

For material properties of ViaPlate 500 plates, please contact with ViaCon.

Profiles

The shapes of ViaPlate 500 structures are as follows:



The basic parameters of the profiles are presented in in TDS Appendix no.1.

Custom shapes are available on request and have to be agreed with the producer.

Bolts, nuts, anchor bolts, base channel

Bolts, nuts, anchor bolts			
Type	**Dimension**	**Length or thickness**	**Standard**
Bolts	M22 (class 10.9)	60 mm, 80 mm	EN ISO 898-1
	M24 (class 10.9)	60 mm, 80 mm	EN ISO 898-1
Nuts	M22	-	EN ISO 898-2
	M24	-	EN ISO 898-2
Anchor bolts	M22	225 mm, 430 mm	EN 10025-2
Base channels	260 x 310 x 70 x 7 mm 260 x 310 x 70 x 10 mm	1980 mm 1980 mm	EN 10025-2 EN 10025-2

Bolts and nuts shall be galvanised in accordance with EN ISO 1461 and 10684.
Bolts and nuts are delivered with certificate 3.1 acc. to EN 10204 and are individually designed.
Base channels shall be galvanised in accordance with EN ISO 1461.

Tolerances of structure's geometry

The values of the geometric parameters of the structure after assembly should not differ from the designed values more than:

- Span: +2% for open shape structures, ± 2% for closed shape structures
- Rise:+2% /-4% for open shape structures, ± 2% for other type structures
- Length: + 0.5%

The vertical displacement of the structure's crown point during the backfilling process should not exceed 2% of its span measured before backfilling.

DURABILITY

Depending on environmental conditions (aggressivity), calculated durability may be longer than 100 years.

It can be ensured by:

- Zinc coating
- Paint coating
- Sacrificial thickness of the steel plate (increase of the plate thickness)

Individual design

Each application with use of a ViaPlate 380 structure requires individual design.
The design should follow the guidelines issued by ViaCon as well as respective country specific requirements.

Production time

Production time for each structure is calculated individually.

Zinc coating

The structural plates are galvanized in accordance to EN ISO 1461. Table no.1 presents a feasible range of coating thicknesses.The bolts and nuts are galvanized in accordance with EN ISO 1461 and/or 10684. The zinc coat thickness is verified by means of a magnetic method in accordance to EN ISO 2178. Each structure is delivered with the Certificate of Galvanizing.

Extra thicknesses of zinc coating

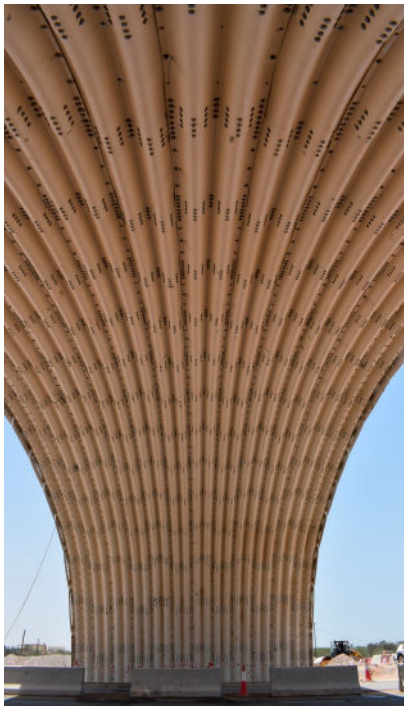
Plate thickness [mm]	Thickness of zinc coating acc. to EN ISO 1461 [µm]		Extra thickness of zinc coating available on customer's demand as a standard [µm]									Extra thickness of zinc coating available on customer's demand by special conditions [µm]						
	70	85	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150
6,00	X	-	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-
7,00	-	X	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X	-
8,00	-	X	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X	-
9,00	-	X	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X	-
10,00	-	X	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X	-
11,00	-	X	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X	-
12,00	-	X	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X	-

X = Available thickness of zinc coating

ViaCoat system

TIn order to achieve the required durability in aggressive environments, paint coatings over the zinc coating are applied. Doubled protection of a structure (zinc coating and paint system) is called ViaCoat system. The minimum adhesion of the paint to the zinc base measured by pull-off method is 4 MPa. In order to obtain proper protection effect, paint coatings are applied in controlled conditions (closed area with defined temperature and humidity), keeping the technological regime.

The color of the ViaCon standard painting system is RAL 1013 or RAL 7035. Each painted structure is always delivered with Certificate of Painting.



Loads

ViaPlate 500 structures can be used for every common class of road and rail traffic loads. The bearing capacity for other loads, e.g., airplanes, industrial or any other special loads can also be evaluated.

LIST OF STANDARDS

EN ISO 898-1 – "Mechanical properties of fasteners made of carbon steel and alloy steel. Bolts, screws and studs with specified property classes. Coarse thread and fine pitch thread".

EN ISO 1090-1 – "Execution of steel structures and aluminum structures. Requirements for conformity assessment of structural components".

EN ISO 1461 – "Hot-dip galvanised coatings on fabricated iron and steel articles. Specifications and test methods".

EN ISO 2178 – "Non-magnetic coatings on magnetic substrates. Measurement of coating thickness. Magnetic method".

EN 10025-2 - "Hot-rolled products of structural steels – Part 2: Technical delivery conditions for non-alloy structural steels".

EN 10149-2 - "Designation hot-rolled flat products made of high yield strength steels for cold forming – Delivery conditions for thermo-mechanically rolled steels".

EN 10204 – "Metallic products. Types of inspection documents'.

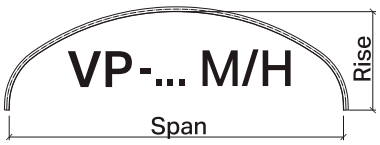
EN ISO 10684 – "Fasteners. Hot-dip galvanised coatings".

TRANSPORT & STORAGE

Unloading and placement of the structure's elements should be performed with the use of light mechanical crane and textile belts. The structure's elements should not be dropped from the transportation unit. Plates can be stored in stacks with wooden or carton spacers.

Any damages to the corrosion protection caused during transportation, unloading or assembly must be repaired in accordance to the "Assembly & Backfilling Guide".

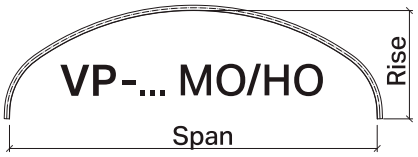
Appendix



ViaCon ViaPlate 500 - M/H, standard profiles - Rmin = 3000 mm - applicable for plate thickness 8,00 mm; 9,00 mm & 10,00 mm ONLY

Name	Span - inner [m]	Rise -inner [m]	Area [m²]
VP5-M1	14.45	3.89	45.05
VP5-H1	14.11	4.23	47.07
VP5-M2	15.27	3.93	46.78
VP5-H2	15.06	4.55	52.56
VP5-M3	16.08	4.32	55.13
VP5-H3	16.17	4.90	63.44
VP5-M4	17.14	4.41	59.60
VP5-H4	17.25	5.08	68.80
VP5-M5	17.99	4.40	61.08
VP5-H5	18.20	5.31	75.08
VP5-M6	19.14	4.80	70.47
VP5-H6	19.06	5.28	76.77
VP5-M7	20.06	4.94	75.80
VP5-H7	20.14	5.88	91.74
VP5-M8	20.89	5.14	82.04
VP5-H8	20.93	6.10	98.82
VP5-M9	22.10	5.44	92.05
VP5-H9	22.08	6.44	110.18
VP5-M10	22.93	5.64	98.89
VP5-H10	22.87	6.65	117.91

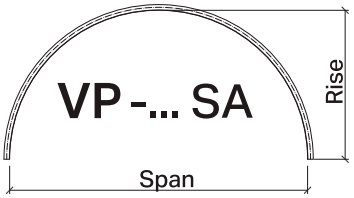
Comment: The DWG file containing all profile cross-sections is available on our website or upon request.



ViaCon ViaPlate 500 - MO/HO, standard profiles - Rmin = 4000 mm - applicable for plate thickness 6,0 mm; 7,0 mm; 8,00 mm; 9,00 mm; 10,00 mm; 11,00 mm & 12,00 mm

Name	Span - inner [m]	Rise -inner [m]	Area [m²]
VP5-MO1	14.39	4.01	46.09
VP5-HO1	14.05	4.30	47.55
VP5-MO2	15.23	4.22	51.03
VP5-HO2	14.88	4.63	53.08
VP5-MO3	15.82	4.49	56.85
VP5-HO3	16.48	4.92	63.56
VP5-MO4	17.05	4.51	60.75
VP5-HO4	17.17	5.17	69.78
VP5-MO5	18.07	4.67	65.78
VP5-HO5	18.06	5.37	75.73
VP5-MO6	18.98	4.87	71.42
VP5-HO6	18.98	5.31	77.22
VP5-MO7	20.05	5.23	81.37
VP5-HO7	19.92	5.73	88.05
VP5-MO8	20.74	5.21	83.21
VP5-HO8	20.71	5.95	95.00
VP5-MO9	21.82	5.56	93.83
VP5-HO9	21.93	6.26	105.76
VP5-MO10	22.71	5.72	100.29
VP5-HO10	23.01	6.40	112.25

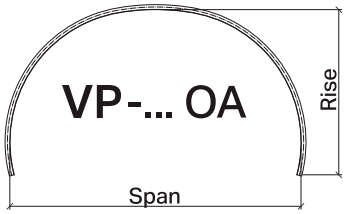
Comment: The DWG file containing all profile cross-sections is available on our website or upon request.



ViaCon ViaPlate 500 structure - SA standard profiles - Rmin = 4000 mm - applicable for plate thickness 6,0 mm; 7,0 mm; 8,00 mm; 9,00 mm; 10,00 mm; 11,00 mm & 12,00 mm

Name	Span - inner [m]	Rise -inner [m]	Area [m²]
VP5-SA1	13.05	6.52	66.86
VP5-SA2	13.36	6.68	70.11
VP5-SA3	13.68	6.84	73.45
VP5-SA4	13.99	7.00	76.86
VP5-SA5	14.30	7.15	80.34
VP5-SA6	14.62	7.31	83.91
VP5-SA7	14.93	7.47	87.55
VP5-SA8	15.24	7.62	91.27
VP5-SA9	15.56	7.78	95.07
VP5-SA10	15.87	7.94	98.94
VP5-SA11	16.19	8.09	102.90
VP5-SA12	16.50	8.25	106.92
VP5-SA13	16.81	8.41	111.03
VP5-SA14	17.13	8.56	115.21
VP5-SA15	17.44	8.72	119.47
VP5-SA16	17.76	8.88	123.81
VP5-SA17	18.07	9.03	128.22
VP5-SA18	18.38	9.19	132.72
VP5-SA19	18.70	9.35	137.29
VP5-SA20	19.01	9.51	141.93
VP5-SA21	19.32	9.66	146.66
VP5-SA22	19.64	9.82	151.46
VP5-SA23	19.95	9.98	156.34
VP5-SA24	20.27	10.13	161.30
VP5-SA25	20.58	10.29	166.33
VP5-SA26	20.89	10.45	171.44
VP5-SA27	21.21	10.60	176.63
VP5-SA28	21.52	10.76	181.90
VP5-SA29	21.84	10.92	187.24
VP5-SA30	22.15	11.07	192.67
VP5-SA31	22.46	11.23	198.16
VP5-SA32	22.78	11.39	203.74
VP5-SA33	23.09	11.55	209.39
VP5-SA34	23.40	11.70	215.12
VP5-SA35	23.72	11.86	220.93
VP5-SA36	24.03	12.02	226.82
VP5-SA37	24.35	12.17	232.78
VP5-SA38	24.66	12.33	238.85

Comment: The DWG file containing all profile cross-sections is available on our website or upon request.



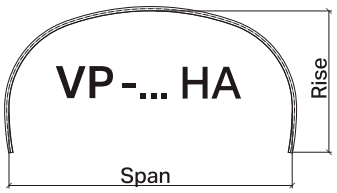
ViaCon ViaPlate 500 structure - OA, standard profiles - Rmin = 4000 mm - applicable for plate thickness 6,0 mm; 7,0 mm; 8,00 mm; 9,00 mm; 10,00 mm; 11,00 mm & 12,00 mm

Name	Span - inner [m]	Rise -inner [m]	Area [m²]
VP5-OA1	12.60	5.81	62.09
VP5-OA2	12.72	6.31	68.36
VP5-OA3	12.61	7.00	74.75
VP5-OA4	12.97	5.96	65.54
VP5-OA5	13.09	6.45	71.71
VP5-OA6	13.02	7.33	81.21
VP5-OA7	13.38	6.14	68.91
VP5-OA8	13.15	6.43	71.84
VP5-OA9	13.34	7.57	85.29
VP5-OA10	13.40	6.23	71.38
VP5-OA11	13.42	6.61	75.31
VP5-OA12	13.32	7.48	84.77
VP5-OA13	13.73	6.27	73.96
VP5-OA14	13.80	6.84	79.22
VP5-OA15	13.72	7.73	89.44
VP5-OA16	14.10	6.49	78.07
VP5-OA17	14.20	7.05	85.31
VP5-OA18	14.31	8.01	96.61
VP5-OA19	14.37	6.68	81.65
VP5-OA20	14.30	7.02	85.40
VP5-OA21	14.53	8.24	100.28
VP5-OA22	14.79	6.82	85.58
VP5-OA23	14.64	7.21	89.42
VP5-OA24	14.85	8.31	104.25
VP5-OA25	14.83	6.84	85.36
VP5-OA26	14.98	7.45	93.58
VP5-OA27	14.96	8.48	107.61
VP5-OA28	15.24	7.02	89.76
VP5-OA29	15.38	7.57	97.48
VP5-OA30	15.25	8.65	111.73
VP5-OA31	16.81	9.68	137.61
VP5-OA32	16.36	7.69	105.35
VP5-OA33	17.20	8.18	117.84
VP5-OA34	17.85	10.37	156.35
VP5-OA35	18.89	11.06	176.28
VP5-OA36	18.33	8.85	135.56
VP5-OA37	19.17	9.35	149.65
VP5-OA38	19.93	11.74	197.39
VP5-OA39	20.97	12.43	219.70
VP5-OA40	20.29	10.01	169.51
VP5-OA41	22.00	13.11	243.18

ViaCon ViaPlate 500 structure - OA, standard profiles - Rmin = 4000 mm -
applicable for plate thickness 6,0 mm; 7,0 mm; 8,00 mm; 9,00 mm; 10,00 mm; 11,00 mm & 12,00 mm

Name	Span - inner [m]	Rise -inner [m]	Area [m²]
VP5-OA42	21.42	10.68	190.60
VP5-OA43	22.26	11.18	207.21
VP5-OA44	23.04	13.80	267.86
VP5-OA45	24.08	14.49	293.73
VP5-OA46	23.38	11.84	230.04
VP5-OA47	25.37	15.35	327.73
VP5-OA48	24.50	12.51	254.87
VP5-OA49	26.41	16.03	356.28
VP5-OA50	25.35	13.01	274.00

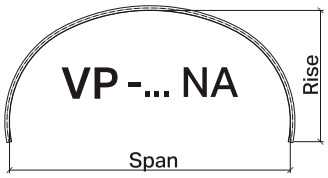
Comment: The DWG file containing all profile cross-sections is available on our website or upon request.



ViaCon ViaPlate 500 structure - HA, standard profiles - Rmin = 4000 mm -
applicable for plate thickness 6,0 mm; 7,0 mm; 8,00 mm; 9,00 mm; 10,00 mm; 11,00 mm & 12,00 mm

Name	Span - inner [m]	Rise -inner [m]	Area [m²]
VP5-HA1	9.33	5.38	42.53
VP5-HA2	10.17	5.49	47.80
VP5-HA3	11.27	6.03	58.78
VP5-HA4	12.13	6.20	64.90
VP5-HA5	13.23	6.60	74.82
VP5-HA6	14.14	7.10	85.47
VP5-HA7	15.02	7.36	93.09
VP5-HA8	16.03	8.00	111.54
VP5-HA9	16.94	8.45	124.12
VP5-HA10	17.91	9.15	141.80
VP5-HA11	19.06	9.60	156.81
VP5-HA12	20.02	10.36	177.12
VP5-HA13	20.94	10.88	193.50
VP5-HA14	21.91	11.31	214.49
VP5-HA15	22.83	11.79	232.58
VP5-HA16	24.02	12.48	257.64
VP5-HA17	24.94	12.98	277.15

Comment: The DWG file containing all profile cross-sections is available on our website or upon request.

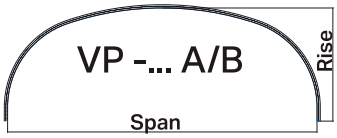


ViaCon ViaPlate 500 structure - NA, standard profiles - Rmin = 4000 mm - applicable for plate thickness 6,0mm; 7,0 mm; 8,00 mm; 9,00 mm; 10,00 mm; 11,00 mm & 12,00 mm

Name	Span - inner [m]	Rise -inner [m]	Area [m²]
VP5-NA1	12.58	4.82	50.00
VP5-NA2	13.08	5.94	65.29
VP5-NA3	13.50	4.79	52.12
VP5-NA4	13.74	5.18	58.26
VP5-NA5	14.00	6.54	75.93
VP5-NA6	14.50	5.21	60.78
VP5-NA7	15.04	5.32	63.60
VP5-NA8	14.92	6.97	86.20
VP5-NA9	15.19	5.77	70.66
VP5-NA10	15.83	5.20	68.13
VP5-NA11	15.96	6.65	88.98
VP5-NA12	15.79	5.48	72.05
VP5-NA13	16.76	5.40	74.10
VP5-NA14	17.07	6.76	95.90
VP5-NA15	17.08	5.57	77.61
VP5-NA16	17.51	5.68	80.84
VP5-NA17	17.93	6.96	103.19
VP5-NA18	17.89	5.81	84.23
VP5-NA19	19.01	5.97	90.53
VP5-NA20	19.04	7.12	110.62
VP5-NA21	19.41	6.12	94.23
VP5-NA22	19.64	6.31	98.45
VP5-NA23	19.90	7.37	118.61
VP5-NA24	20.32	6.39	101.68
VP5-NA25	20.64	6.79	110.70
VP5-NA26	20.91	8.41	141.87
VP5-NA27	21.07	6.95	114.87
VP5-NA28	21.85	6.12	108.13
VP5-NA29	21.89	8.19	149.67
VP5-NA30	22.35	6.22	111.85
VP5-NA31	22.87	6.87	127.21
VP5-NA32	22.98	8.90	170.28
VP5-NA33	23.41	6.96	131.09
VP5-NA34	24.01	7.28	140.57
VP5-NA35	24.08	9.05	179.70
VP5-NA36	24.57	7.38	144.68
VP5-NA37	25.12	7.48	148.86
VP5-NA38	24.95	9.26	189.66
VP5-NA39	25.43	7.64	153.79
VP5-NA40	26.00	7.97	164.42
VP5-NA41	27.20	8.63	186.58
VP5-NA42	28.02	9.12	204.01
VP5-NA43	29.17	9.78	228.32

ViaCon ViaPlate 500 structure - NA, standard profiles - Rmin = 4000 mm - applicable for plate thickness 6,0mm; 7,0 mm; 8,00 mm; 9,00 mm; 10,00 mm; 11,00 mm & 12,00 mm			
VP5-NA44	30.03	10.28	247.37
VP5-NA45	30.89	10.77	267.11
VP5-NA46	32.05	11.42	294.49

Comment: The DWG file containing all profile cross-sections is available on our website or upon request.



ViaCon ViaPlate 500 structure - A & B, standard profiles - Rmin = 4000 mm - applicable for plate thickness 6,0 mm; 7,0 mm; 8,00 mm; 9,00 mm; 10,00 mm; 11,00 mm & 12,00 mm			
Name	**Span - inner [m]**	**Rise -inner [m]**	**Area [m²]**
VP5-A1	23.41	8.56	168.60
VP5-A2	28.51	9.79	225.67
VP5-B1	22.19	7.13	131.09
VP5-B2	25.68	8.05	167.21
VP5-B3	28.91	8.69	205.40

Comment: The DWG file containing all profile cross-sections is available on our website or upon request.

VIACON

Constructing connections.
Consciously.

www.viacongroup.com

ViaCon is a leader in infrastructure construction solutions. Built on strong Nordic roots, ViaCon embodies a practical, human perspective that brings together technology and verifiable sustainability. The long-term view defines our vision, and by driving smart, future-friendly construction solutions for bridges and culverts, geotechnical and stormwater solutions, we will continue to shape and lead our industry.

ViaCon Group HQ | Björklundabacken 3, 436 57 Hovås, Sweden
+46 10 484 94 00 | info@viacongroup.com | www.viacongroup.com

V-1802-PLVPL500-TDS-EN-A02