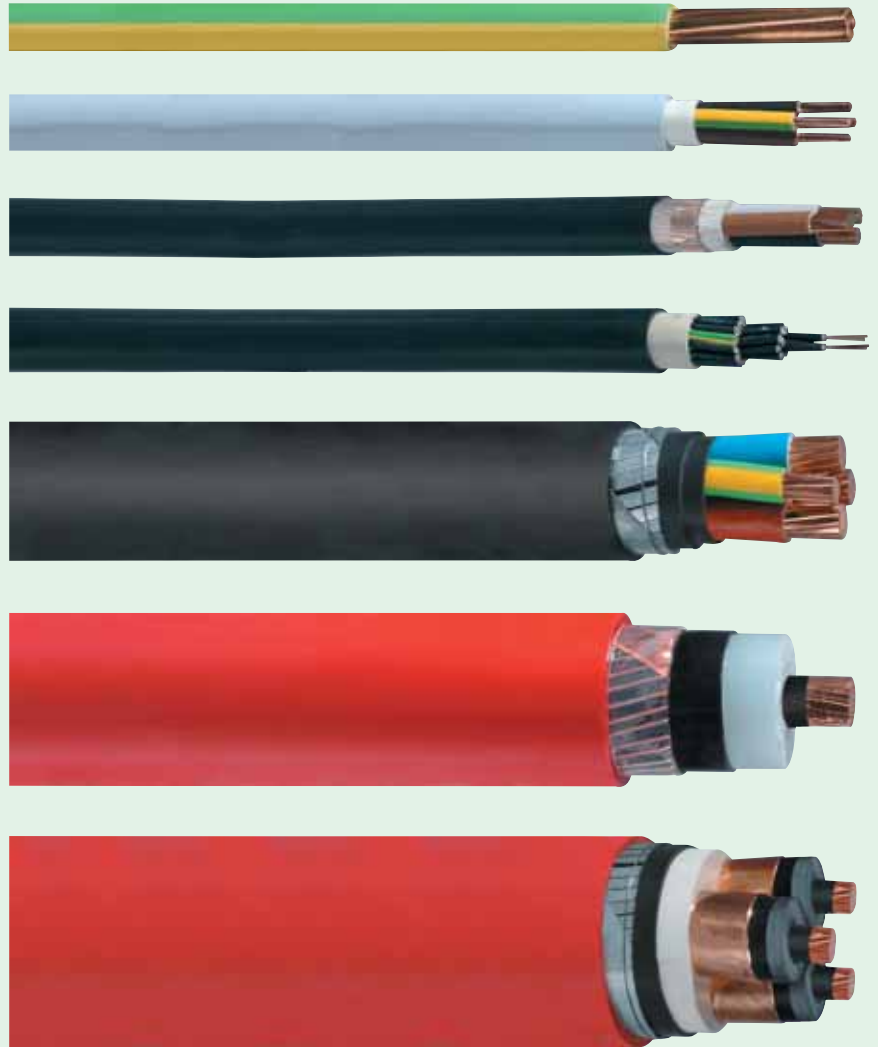




**PROTODUR<sup>®</sup> and PROTOTHEN<sup>®</sup>-X INSULATED CABLES**



**PROTODUR<sup>®</sup>**  
**and**  
**PROTOTHEN<sup>®</sup>-X**  
**Insulated Cables**

## BUILDING WIRES

H05V-U / H07V-U / H07V-R (NYA)  
TS 9758 HD 21.3 S3 (VDE 0281-3)



### CONSTRUCTION

H05V-U / H07V-U / H07V-R  
Protodur® insulated wires with solid or stranded copper conductors.  
H05V-K / H07V-K  
Protodur® insulated wires, fine stranded copper conductors.

H05V-K / H07V-K (NYAF)  
TS 9758 HD 21.3 S3 (VDE 0281-3)



### APPLICATIONS

H05V-U / H07V-U / H07V-R  
Used in covered, dry places, in fixed plants, in distribution panels, on and under plaster as laid in conduit or on insulating supports.  
H05V-K / H07V-K  
Used for the connection of mobile equipments, on and under plaster as laid in conduit.

05V-K 2x (NYFAF)  
Similar to TS 9758 HD 21.3 S3 (VDE 0281-3)



### CONSTRUCTION

05V-K ( Similar )  
Twisted cords with flexible, two- core, Protodur® insulated wires with fine stranded copper conductors.  
03VH-H  
Flat cords with flexible, two-core Protodur® insulated wires with fine stranded copper conductors.

03VH-H (NYFAZ)  
TS 9760 HD 21.5 S3 (VDE 0281-5)



### APPLICATIONS

Used in dry places where mechanical stresses do not exist, at the connections of mobile equipments (lamp, wall light, chandelier, etc.).

NVV (NYM) 300/500 V  
TS 9759 HD 21.4 S2 (VDE 0250-204)



### CONSTRUCTION

Protodur® insulated wires, fine stranded copper conductors.

### APPLICATIONS

Used in dry, damp, wet places, in workshops, factories, business areas and storerooms, subject to fire and exposure danger, as outdoor, not being laid under ground, but under or on plaster.

H03VV-F / H03VVH2-F (NYLHY-rd/NYLHY-fl)  
TS 9760 HD 21.5 S3 (VDE 0281-5)



### CONSTRUCTION

Protodur® outer sheathed, flexible cables with two to four Protodur® insulated cores with fine stranded copper conductors.

### APPLICATIONS

H05VV-F (NYMHY)  
TS 9760 HD 21.5 S3 (VDE 0281-5)



H03VV-F / H03VVH2-F

Used as mobile connection cables in covered and dry places where the mechanical stresses exist at minimum levels.

H05VV-F

Used in covered and dry places where the mechanical stresses exist, on household appliances, in damp and steamed areas.

## LOW VOLTAGE CABLES

YVV (NYY) 0,6/1 kV  
TS IEC 60502-1 (VDE 0276-603)



### CONSTRUCTION

Single or multi core Protodur® insulated, Protodur® outer sheathed energy cables with solid or stranded copper conductors.

### APPLICATIONS

Used outside as energy, utility and lighting cables, in cable ducts, under ground, under normal and salty water if specially made.

## LOW VOLTAGE CABLES

YV (NYY) 0,6/1 kV  
TS IEC 60502-1 (VDE 0276-627)



### CONSTRUCTION

Multi-cores Protodur® insulated, Protodur® inner and outer sheathed control cables with solid copper conductors.

### APPLICATIONS

Used as control cable under ground, under normal and salty water if specially made. Also used at the control circuits of power plants, train stations, factories, hotels and hospitals. It gives an easy installation because of the numbered cores.

YVMV (NYCY) 0,6/1 kV  
TS IEC 60502-1 (VDE 0276-603)



### CONSTRUCTION

Single or multi-cores Protodur® insulated, Protodur® outer sheathed cables with solid or stranded copper conductors with concentric conductors of copper wires.

### APPLICATIONS

Used generally, for city utilities, street lightings, household appliances and similar reasons under ground. In case of damages caused by dug manner, concentric neutral conductor lets the circuit breaker or the fuse to open the circuit.

YVOV (NYRGY) 0,6/1 kV  
TS IEC 60502-1 (VDE 0271)



### CONSTRUCTION

Three or four core Protodur® insulated, Protodur® sheathed cables with solid copper conductors with armour of galvanized steel wires.

### APPLICATIONS

These cables are resistant against outer mechanical reactions with their armours of galvanized steel wires. They are suitable for heavy operating conditions, laying and installation. Used under ground and under normal and salty water if specially made.

YVŞV (NYFGY) 0,6/1 kV  
TS IEC 60502-1 (VDE 0271)



### CONSTRUCTION

Multi-cores Protodur® insulated, Protodur® outer sheathed cables with stranded copper conductor with armour of galvanized steel wires and galvanized steel tape counter helix.

### APPLICATIONS

These cables are resistant against outer mechanical reactions with their armours of galvanized steel wires. They are suitable for heavy operating conditions, laying and installation. Used under ground and under normal and salty water if specially made.

YE<sub>3</sub>V (N2XY) 0,6/1 kV  
TS IEC 60502-1 (VDE 0276-603)



### CONSTRUCTION

Single or multi core Protothen®-X insulated, Protodur® sheathed cables with solid or stranded copper conductors.

### APPLICATIONS

Used as energy, utility and lighting cables for outdoor installations, in cable ducts, under ground, in normal and salty water if specially made. Also used as ship cables because of their flame retardent outer sheath.

## LOW VOLTAGE CABLES

YE<sub>3</sub>MV (N2XCY) 0,6/1 kV  
TS IEC 60502-1 (VDE 0276-603)



### CONSTRUCTION

Single or multi-core Protothen®-X insulated, Protodur® outer sheathed cables with solid or stranded copper conductors with concentric conductors of copper wires

### APPLICATIONS

Used generally, for city utilities, street lightings, household appliances and similar reasons under ground. In case of damages caused by dug manner, concentric neutral conductor lets the circuit breaker or the fuse to open the circuit

YE<sub>3</sub>OV (N2XRY) 0,6/1 kV  
TS IEC 60502-1 (VDE 0271)



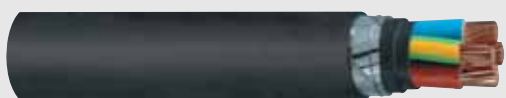
### CONSTRUCTION

Three or four core Protothen®-X insulated, Protodur® sheathed cables with solid copper conductors with armour of galvanized steel wires.

### APPLICATIONS

These cables are resistant against outer mechanical reactions with their armours of galvanized steel wires. They are suitable for heavy operating conditions, laying and installation. Used under ground and under normal and salty water if specially made.

YE<sub>3</sub>ŞV (N2XFGY) 0,6/1 kV  
TS IEC 60502-1 (VDE 0271)



### CONSTRUCTION

Single or multi core Protothen®-X insulated, Protodur® sheathed cables with solid or stranded copper conductors with armour of galvanized steel wires and galvanized steel tape counter helix

### APPLICATIONS

These cables are resistant against outer mechanical reactions with their armours of galvanized steel wires. They are suitable for heavy operating conditions, laying and installation. Used under ground and under normal and salty water if specially made

## MEDIUM VOLTAGE CABLES

YE<sub>3</sub>SV (N2XSY) 3,6/6 kV  
YE<sub>3</sub>SV (N2XSY) 6/10 kV  
YE<sub>3</sub>SV (2XSY) 8,7/15 kV  
TS IEC 60502-2 (VDE 0276-620)  
YE<sub>3</sub>SV (2XSY) 20,3/35 kV  
TSEK 16/381



### CONSTRUCTION

Single-core Protothen®-X insulated, Protodur® outer sheathed medium voltage cables with stranded copper conductor, inner and outer conductive layers on conductors and insulation, copper wire screen and helix

### APPLICATIONS

These cables with very low electrical losses besides their similars are used in cable ducts, outdoor and indoor installations, under ground where the short circuit levels are high such as urban and industrial areas fed by electrical energy. They are also used under normal and salty water if specially made

YE<sub>3</sub>SHŞV (N2XSEYFGY) 3,6/6 kV  
YE<sub>3</sub>SHŞV (N2XSEYFGY) 6/10 kV  
YE<sub>3</sub>SHŞV (2XSEYFGY) 8,7/15 kV  
TS IEC 60502-2 (VDE 0276-620)  
YE<sub>3</sub>SŞV (2XSEYFGY) 20,3/35 kV  
TSEK 16/381



### CONSTRUCTION

Three-cores Protothen®-X insulated, Protodur® outer sheathed medium voltage cables with stranded copper conductor, inner and outer conductive layers on conductors and insulation, copper tape screen and helix, with armour of galvanized steel wires and steel tape counter helix

### APPLICATIONS

These cables with very low electrical losses besides their similars are used in cable ducts, outdoor and indoor installations, under ground where the short circuit levels are high such as urban and industrial areas fed by electrical energy. They are also used under normal and salty water if specially made

## CURRENT CARRYING CAPACITIES

Voltage	300/500 V - 450/750 V				500 V		300/500 V - 450/750 V	
Cable Type	H05V-U / H07V-U H07V-R		H05V-K / H07V-K		NYM		05V-K / 03VH-H H03VV-F / H03VVH2-F H05VV-F	
No of Cores	1		1		2-3	4-5	2-3	4-5
Cross Section	Application		Application		air	air	air	air
	cable tube	air	cable tube	air				
0,5	-	12	-	12	-	-	3	3
0,75	-	15	-	15	-	-	6	6
1	-	19	11	19	-	-	10	10
1,5	14,5*	24	14,5*	24	22	18,5	16	16
2,5	19,5	32	19,5	32	30	25	25	25
4	26	42	26	42	40	34	-	-
6	34	54	34	54	51	43	-	-
10	46	73	46	73	70	60	-	-
16	61	98	61	98	94	80	-	-
25	80	129	80	129	-	-	-	-
35	99	158	99	158	-	-	-	-
50	119	198	119	198	-	-	-	-
70	151	245	151	245	-	-	-	-
95	182	292	182	292	-	-	-	-
120	210	344	210	344	-	-	-	-
150	240	391	240	391	-	-	-	-
185	273	448	273	448	-	-	-	-
240	320	528	320	528	-	-	-	-

### Installation Method

TS HD 384.5.523 S2 Table	52-C1/2	-	52-C1/2	-	52-C9/2	52-C9/3	-	-
DIN VDE 0298-4 Table	3/2	11/2	3/2	11/2	4/4	4/5	11/3	11/4

\* Given as 15,5 A in DIN VDE 0298-4 Table 3/2.

Voltage	0,6/1 kV											
Cable Type	NYY										NYCY / NYRY NYFGY	
No of Cores	1 ⊙ ⊙ ⊙		1 ⊙ ⊙ ⊙		2		3-4		5		3-4	
Cross Section	Application		Application		air	ground	air	ground	air	ground	air	ground
	air	ground	air	ground								
1,5	-	-	-	-	22	32	18,5	27	18,5	27	19,5	27
2,5	-	-	-	-	30	42	25	36	25	36	26	36
4	45	59	33	50	40	54	34	47	34	47	34	47
6	59	73	43	62	51	68	43	59	43	59	44	59
10	81	97	60	83	70	90	60	79	60	79	60	79
16	110	125	82	107	94	116	80	102	80	102	80	102
25	146	161	110	138	119	150	101	133	101	133	108	133
35	181	192	137	164	148	181	126	159	126	159	132	160
50	219	227	167	195	180	-	153	188	153	188	160	190
70	281	278	216	238	232	-	196	232	196	232	202	234
95	341	332	264	325	282	-	238	280	238	280	249	280
120	396	377	308	365	328	-	276	318	276	318	289	319
150	456	423	356	413	379	-	319	359	319	359	329	357
185	521	478	409	479	434	-	364	406	364	406	377	402
240	615	555	485	541	514	-	430	473	430	473	443	463

# PROTODUR® and PROTOTHEN®-X INSULATED CABLES

## CURRENT CARRYING CAPACITIES

Voltage	0,6/1 kV											
Cable Type	N2XY										N2XCXY / N2XRXY N2XFGY	
No of Cores	1		1		2		3-4		5		3-4	
Application	○○○		○○○									
	air	ground	air	ground	air	ground	air	ground	air	ground	air	ground
1,5	-	-	-	-	26	37	23	31	23	31	25	31
2,5	-	-	-	-	36	49	32	40	32	40	33	40
4	56	66	40	54	49	64	42	52	42	52	43	52
6	73	82	53	67	63	79	54	64	54	64	54	65
10	101	109	74	89	86	106	75	86	75	86	75	87
16	137	139	101	115	115	137	100	112	100	112	100	113
25	182	179	135	148	149	176	127	145	127	145	136	146
35	226	213	169	177	185	213	158	174	158	174	165	176
50	275	251	207	209	225	252	192	206	192	206	201	208
70	353	307	268	256	289	310	246	254	246	254	255	256
95	430	366	328	307	352	361	298	305	298	305	314	307
120	500	416	383	349	410	412	346	348	346	348	364	349
150	577	465	444	393	473	464	399	392	399	392	416	391
185	661	526	510	445	542	525	456	444	456	444	480	442
240	781	610	607	517	641	608	538	517	538	517	565	509

Voltage	3,6/6 kV				6/10 kV				8,7/15 kV				20,3/35 kV											
Cable Type	N2XSXY / N2XSSEYFGY				N2XSXY / N2XSSEYFGY				2XSXY / 2XSSEYFGY				2XSXY / 2XSSEYFGY											
No of Cores	○○○		○○○		○○○		○○○		○○○		○○○		○○○		○○○		○○○							
Application	○○○		○○○		○○○		○○○		○○○		○○○		○○○		○○○		○○○							
	air	ground	air	ground	air	ground	air	ground	air	ground	air	ground	air	ground	air	ground	air	ground						
25	180	185	167	154	141	149	194	179	163	157	147	151	191	179	162	157	143	148	-	-	-	-	-	-
35	238	201	199	191	171	176	235	212	197	187	178	181	235	213	200	189	173	178	233	214	202	192	176	181
50	285	241	241	227	196	208	282	249	236	220	213	213	282	250	239	222	206	210	282	251	241	225	210	214
70	356	301	301	277	249	255	350	302	294	268	265	261	351	303	297	271	257	256	350	304	299	274	262	261
95	435	364	365	331	307	307	426	359	358	320	322	312	426	360	361	323	313	307	425	362	363	327	319	313
120	496	424	419	379	353	353	491	405	413	363	370	355	491	407	416	367	360	349	488	409	418	371	364	356
150	554	479	479	422	406	396	549	442	468	405	420	399	549	445	470	409	410	392	548	449	472	414	418	400
185	637	549	543	476	464	447	625	493	535	456	481	451	625	498	538	461	469	443	624	502	539	466	478	441
240	746	595	640	550	548	523	731	563	631	526	566	523	731	568	634	532	553	513	728	574	635	539	562	510
300	-	-	-	-	-	-	831	626	722	591	648	590	830	633	724	599	633	578	828	640	725	606	643	575
400	-	-	-	-	-	-	920	675	827	662	-	-	923	685	829	671	-	-	922	695	831	680	-	-
500	-	-	-	-	-	-	1043	748	949	744	-	-	1045	760	953	754	-	-	1045	773	953	765	-	-



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