

CERTIFICATE OF COMPLIANCE

Certificate Number 20161202-E48031
Report Reference E48031-20050406
Issue Date 2016-DECEMBER-02

Issued to: PAUL VAHLE GMBH & CO KG
POSTFACH 1720
59172 KAMEN GERMANY

**This is to certify that
representative samples of**

CRANE AND HOIST ELECTRIFICATION SYSTEMS
Crane and Hoist Electrification Systems – Type MKL / MKH
Series enclosed conductor system (continued on the next
page)

Have been investigated by UL in accordance with the
Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL508, Industrial Control Equipment
CSA C22.2 No. 33-M1984, Construction and Test of
Electric Cranes and Hoists
UL857 and CSA C22.2 No. 27-09, Busways

Additional Information: See the UL Online Certifications Directory at
www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's
Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.



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This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Component Description	Type Designation followed by a Number of characters up to 40 letters or numbers	Rating
(See Ill. 1)	MKLD 6,7,8,9,10/40 HS	40 A, 600 Vac
	MKLD6-10/40H	
	MKHD 6,7,8,9,10/40 HS	40 A, 600 Vac
	MKHD6-10/63H	
	MKLD 6,7,8,9,10/40 SS	40 A, 600 Vac
	MKLD6-10/63S	
	MKHD 6,7,8,9,10/40 SS	60 A, 600 Vac
	MKHD6-10/63S	
	MKLD 6,7,8,9,10/60 HS	60 A, 600 Vac
	MKLD6-10/60H	
	MKHD 6,7,8,9,10/63 HS	63 A, 600 Vac
	MKHD6-10/80H	
	MKLD 6,7,8,9,10/100 HS	100 A, 600 Vac
	MKLD6-10/100H	
	MKHD 6,7,8,9,10/100 HS	140 A, 600 Vac, 80% duty cycle
	MKHD6-10/100H	
	MKLD 6,7,8,9,10/140 HS	140 A, 600 Vac, 80% duty cycle
	MKLD6-10/140H	
	MKHD 6,7,8,9,10/140 HS	160 A, 600 Vac, 80% duty cycle
	MKHD6-10/140H	
MKLD 6,7,8,9,10/160 HS	160 A, 600 Vac, 80% duty cycle	
MKLD6-10/160H		
MKHD 6,7,8,9,10/160 HS	200 A, 600 Vac, 80% duty cycle	
MKHD6-10/160H		
MKLD 6,7,8,9,10/200 HS	200 A, 600 Vac, 80% duty cycle	
MKLD6-10/200H		
MKLF 6,7,8/40 HS	40 A, 600 Vac	
MKLF6-8/40H		
MKHF 6,7,8/40 HS	40 A, 600 Vac	
MKHF6-8/63H		
MKLF 6,7,8/40 SS	40 A, 600 Vac	
MKLF6-8/40S		
MKHF 6,7,8/40 SS	60 A, 600 Vac	
MKHF6-8/63S		
MKLF 6,7,8/60 HS	60 A, 600 Vac	
MKLF6-8/60H		



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MKHF 6,7,8/63 HS	63 A, 600 Vac
MKHF6-8/80H	
MKLF 6,7,8/100 HS	
MKLF6-8/100H	
MKHF 6,7,8/100 HS	100 A, 600 Vac
MKHF6-8/100H	
MKLS 6,7,8,9,10/40 SS	
MKLS6-10/40S	
MKLS 6,7,8,9,10/40 HS	
MKLS6-10/40H	
	40 A, 600 Vac
MKHS 6,7,8,9,10/40 SS	
MKHS6-10/63S	
MKHS 6,7,8,9,10/40 HS	
MKHS6-10/63H	
MKLS 6,7,8,9,10/60 HS	60 A, 600 Vac
MKLS6-10/60H	
MKHS 6,7,8,9,10/63 HS	63 A, 600 Vac
MKHS6-10/80H	
MKLS 6,7,8,9,10/100 HS	
MKLS6-10/100H	
MKHS 6,7,8,9,10/100 HS	100 A, 600 Vac
MKHS6-10/100H	
MKLS 6,7,8,9,10/140 HS	
MKLS6-10/140H	
MKHS 6,7,8,9,10/140 HS	140 A, 600 Vac at 80% duty cycle
MKHS6-10/140H	
MKLS 6,7,8,9,10/160 HS	
MKLS6-10/160H	
MKHS 6,7,8,9,10/160 HS	160 A, 600 Vac at 80% duty cycle
MKHS6-10/160H	
MKLS 6,7,8,9,10/200 HS	
MKLS6-10/200H	
MKHS 6,7,8,9,10/200 HS	200 A, 600 Vac at 80% duty cycle
MKHS6-10/200H	
MKLS 4/270 (2xPE) HS	
(shunt connected)	
MKLS4/270H	
(shunt connected)	
MKLS 4/360 (2xPE) HS	
(shunt connected)	
MKLS4/360H	
(shunt connected)	
	270 A, 600 Vac at 80% duty cycle
	360 A, 600 Vac at 80% duty cycle

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Joint-Cap (See Ill. 2, 2A)	MVMD VM-MVMD MVMS VM-MVMS	Non-electrical Non-electrical
Joint Connector	Plug-in Joint (Ill. 2, 2A) Omega Connector 600483 (Ill. 10) Bolted Joint 1026608 (Fig. 2)	40 - 100 A, 600 Vac 40 - 100 A, 600 Vac 40 - 200 A, 600 Vac
Hangers Sliding Hanger	MGA / MGH / MGH/K AH-MGA / AH-MGH / AH-MGH/K	Non-electrical
Fixed Hanger	MFN / MFA / MFH/K AH-MFN / AH-MFA / AH-MFH/K	Non-electrical
Sealing Strip	Sealing strip, per pair	Non-electrical
End Cap (Left) (Right)	MSES, MEK EK-MSES, EK-MEK Cap for MSED/L, MHED/L Cap for EK-MSED/L, EK-MHED/L Cap for MSED/R, MHED/R Cap for EK-MSED/R, EK-MHED/R	 Non-electrical Non-electrical
Transfer Funnel (See Ill. 3) (L-R)left or right (L-R)left or right (L-R)left or right	MTN 6,7,8,9,10/40-200 HS ET-MTN6-10/40-200*H MTH 6,7,8/40-100 HS ET-MTH6-8/63-100*H MTH 6,7,8/140-160 HS ET-MTH6-8/140-160*H MTH 6,7,8/200 HS ET-MTH6-8/200*H MTN 6,7,8,9,10/40 SS ET-MTN6-10/40*S MTH 6,7,8/40 SS ET-MTH-6-8/63*S MUN 6,7,8,9,10/40-200 HS UE-MUN6-10/40-200*H	40-200 A, 600 Vac; 140-200 A, 600 Vac at 80% duty cycle 40 A, 600 V 40-200 A, 600 Vac;

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	MUH 6,7,8/40-100 HS	
	UE-MUH6-8/63-100*H	
	MUH 6,7,8/140-160 HS	140-200 A, 600 Vac at 80% duty cycle
	UE-MUH6-8/140-160*H	
	MUN 6,7,8/200 HS	
	UE-MUN6-8/200*H	
(L-R)left or right	MUN 6,7,8,9,10/40 SS	40 A, 600 Vac
	UE-MUN6-10/40*S	
	MUH 6,7,8/40 SS	
	UE-MUH6-8/63*S	
(L-R)left or right	MUNS 6,7,8,9,10/40-200 HS	40-200 A, 600 Vac;
	UE-MUNS6-10/40-200*H	
	MUHS 6,7,8/40-100 HS	
	UE-MUHS6-8/63-100*H	
	MUHS 6,7,8/140-160 HS	140-200 A, 600 Vac at 80% duty cycle
	UE-MUHS6-8/140-160*H	
	MUHS 6,7,8/200 HS	
(L-R)left or right	MUNS 6,7,8,9,10/40 SS	40 A, 600 Vac
	UE-MUNS6-10/40*S	
	MUHS 6,7,8/40 SS	
	UE-MUHS6-8/63*S	
Anti-Condensation Sections (See Ill. 4)	MBF 6,7,8/40 HS	40 A, 600 Vac
	BT-MBF6-8/40H	
	MBF 6,7,8/40 SS	40 A, 600 Vac
	BT-MBF6-8/40S	
	MBF 6,7,8/60 HS	60 A, 600 Vac
	BT-MBF6-8/60H	
	MBF 6,7,8/100 HS	100 A, 600 Vac
	BT-MBF6-8/100H	
	MBS 6,7,8,9,10/40 HS	40 A, 600 Vac
	BT-MBS6-10/40H	
	MBS 6,7,8,9,10/40 SS	40 A, 600 Vac
	BT-MBS6-10/40S	
	MBHS 6,7,8/40 SS	
	BT-BMHS6-8/40S	
	MBS 6,7,8,9,10/60 HS	60 A, 600 Vac
	BT-MBS6-10/60H	
	MBS 6,7,8,9,10/100 HS	100 A, 600 Vac
	BT-MBS6-10/100H	



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MBS 6,7,8,9,10/140 HS	140 A, 600 Vac at 80% duty cycle
BT-MBS6-10/140H	
MBS 6,7,8,9,10/160 HS	160 A, 600 Vac at 80% duty cycle
BT-MBS6-10/160H	
MBS 6,7,8,9,10/200 HS	200 A, 600 Vac at 80% duty cycle
BT-MBS6-10/200H	
MBHS 6,7,8/40-100 HS	40-100 A, 600 Vac,
BT-MBHS6-8/40-100H	
MBHS 6,7,8/140-160 HS	140-200 A, 600 Vac at 80% duty cycle
BT-MBHS6-8/140-160H	
MBHS 6,7,8/200 HS	
BT-MBHS6-8/200H	
MBD 6-10/ HS	140-200 A, 80% duty cycle
BT-MBD6-10/H	
MBHD 60-10/HS	
BT-MBHD6-10/H	
all cross-sections	
MBD 6-10/ SS	40 A, 600 Vac
BT-MBD6-10/S	
MBHD 6-10/ SS	
BT-MBHD6-10/S	
all cross-sections	
Tow Arms	
MN-MGR/ MN-MGRK/ MN-MGU/	Non-electrical
MN-MGUK	
MN-MGF/ MN-MGFK	Non-electrical
MN-MFMN	Non-electrical
Cable Glands for Feeds	All diameters (20, 25, 40, 50) Non-electrical.
Flat Copper Bus Cross Sections	For MKLD / MKHD (13 mm wide by var.thick)
10 mm ² (234197)	40 A, 600 Vac
11 mm ² (234198)	40 A, 600 Vac
17 mm ² (234199)	63 A, 600 Vac
26 mm ² (234200)	100 A, 600 Vac
33 mm ² (234201)	140 A, 600 Vac
42 mm ² (234202)	160 A, 600 Vac
51 mm ² (234203)	200 A, 600 Vac
only MKLD	
33 mm ² (parallel)	270 A, 600 Vac at 80% duty

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	only MKLD 51 mm2 (parallel) only MKLD	cycle 360 A, 600 Vac at 80% duty cycle
Flat Stainless Steel Bus Cross Sections	For MKLD / MKHD (13 mm wide by var.thick)	
	11 mm2 (234384) 17 mm2 (234383)	40 A, 600 Vac 60 A, 600 Vac
Sectionalizing 5 mm air gap (dead section)	MSTL1,2,3,4,5,6,7,8,9,10 ST-MSTL1-10 MHTL1,2,3,4,5,6,7,8 ST-MHTL1-8	Non-electrical
*Sectionalizing 35 mm (isolated dead section)	MSTI1,2,3,4,5,6,7,8,9,10 ST-MSTI1-10 MHTI1,2,3,4,5,6,7,8,9,10 ST-MHTI1-10	Non-electrical
End Feed (See Ill. 6)	MKED 6,7,8,9,10/40-60 HS ES-MKED6-10/40-60H MKED 6,7,8,9,10/40-63 HS ES-MKED6-8/63H MKED 6,7,8,9,10/40 SS ES-MKED6-8/63S MKES 6,7,8/40-60 HS ES-MKES6-8/40-60H MKES 6,7,8/40-63 HS ES-MKES6-8/63H MKES 6,7,8/40 SS ES-MKES6-8/63S	40-60 A, 600 Vac 40-63 A, 600 Vac 40 A, 600 Vac 40-60 A, 600 Vac 40-63 A, 600 Vac 40 A, 600 Vac
Line Feed (See Ill. 7)	MNGD 6,7,8,9,10/40-100 HS ES-MNGD6-10/40-100H MHGD 6,7,8,9,10/40-100 HS ES-MHGD6-10/63-100H MNGD 6,7,8,9,10/140-200 HS ES-MNGD6-10/140-200H MHGD 6,7,8,9,10/140-160 HS ES-MHGD*/140-160H MNGD 6,7,8,9,10/40 SS	40-100 A, 600 Vac 140-200 A, 600 Vac at 80% duty cycle 40 A, 600 Vac

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ES-MNGD6-10/40S
MHGD 6,7,8,9,10/40 SS
ES-MHGD6-10/63S

MNGF 6,7,8/40 HS 40 A, 600 Vac
ES-MNGF6-8/40H
MHGF 6,7,8/40 HS
ES-MHGF6-8/63H
MNGF 6,7,8/60 HS 60 A, 600 Vac
ES-MNGF6-8/60H
MHGF 6,7,8/63 HS 63 A, 600 Vac
ES-MHGF6-8/80H
MNGF 6,7,8/100 HS 100 A, 600 Vac
ES-MNGF6-8/100H
MHGF 6,7,8/100 HS
ES-MHGF6-8/100H
MNGF 6,7,8/40 SS 40 A, 600 Vac
ES-MNGF6-8/40S
MHGF 6,7,8/40 SS
ES-MHGF6-8/63S

MNGS 6,7,8/40 HS 40 A, 600 Vac
ES-MNGS6-8/40H
MHGS 6,7,8/40 HS
ES-MHGS6-8/63H
MNGS 6,7,8/60 HS 60 A, 600 Vac
ES-MNGS6-8/60H
MHGS 6,7,8/63 HS 63 A, 600 Vac
ES-MHGS6-8/80H
MNGS 6,7,8/100 HS 100 A, 600 Vac
ES-MNGS6-8/100H
MHGS 6,7,8/100 HS
ES-MHGS6-8/100H
MNGS 6,7,8/140 HS 140 A, 600 Vac at 80% duty
ES-MNGS6-8/140H cycle
MHGS 6,7,8/140 HS
ES-MHGS6-8/140H

MNGS 6,7,8/160 HS 160 A, 600 Vac at 80% duty
ES-MNGS6-8/160H cycle
MHGS 6,7,8/160 HS
ES-MHGS6-8/160H
MNGS 6,7,8/200 HS 200 A, 600 Vac at 80% duty



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	ES-MNGS6-8/200H	cycle
	MHGS 6,7,8/200 HS	
	ES-MHGS6-8/200H	
	MNGS 6,7,8/40 SS	40 A, 600 Vac
	ES-MNGS6-8/40S	
	MHGS 6,7,8/40 SS	
	ES-MHGS6-8/63S	
Line Feed	MNLD 6,7,8,9,10/40-100 HS	40-100 A, 600 Vac
	ES-MNLD6-10/40-100H	
	MHLD 6,7,8,9,10/40-100 HS	
	ES-MHLD6-10/63-100H	
(See Ill. 7)	MNLD 6,7,8,9,10/40 SS	40 A, 600 Vac
	ES-MNLD6-10/40S	
	MHLD 6,7,8,9,10/40 SS	
	ES-MHLD6-10/63S	
	MNLD 6,7,8,9,10/140-200 HS	140-200 A, 600 Vac at 80% duty cycle
	ES-MNLD6-10/140-200H	
	MNLD 6,7,8,9,10/140-160 HS	
	ES-MNLD6-10/140-160H	
	MNLF 6,7,8/40 HS	40 A, 600 Vac
	ES-MNLF6-8/40H	
	MHLF 6,7,8/40 HS	
	ES-MHLF6-8/63H	
	MNLF 6,7,8/40 SS	40 A, 600 Vac
	ES-MNLF6-8/40S	
	MHLF 6,7,8/40 SS	
	ES-MHLF6-8/63S	
	MNLF 6,7,8/60 HS	60 A, 600 Vac
	ES-MNLF6-8/60H	
	MHLF 6,7,8/63 HS	63 A, 600 Vac
	ES-MHLF6-8/80H	
	MNLF 6,7,8/100 HS	100 A, 600 Vac
	ES-MNLF6-8/100H	
	MHLF 6,7,8/100 HS	
	ES-MHLF6-8/100H	
	MNLS 6,7,8/40 HS	40 A, 600 Vac
	ES-MNLS6-8/40H	
	MHLS 6,7,8/40 HS	
	ES-MHLS6-8/63H	

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MNLS 6,7,8/40 SS	40 A, 600 Vac
ES-MNLS6-8/40S	
MHLS 6,7,8/40 SS	
ES-MHLS6-8/63S	
MNLS 6,7,8/60 HS	60 A, 600 Vac
ES-MNLS6-8/60H	
MHLS 6,7,8/63 HS	63 A, 600 Vac
ES-MHLS6-8/80H	
MNLS 6,7,8/100 HS	100 A, 600 Vac
ES-MNLS6-8/100H	
MHLS 6,7,8/100 HS	
ES-MHLS6-8/100H	
MNLS 6,7,8/140 HS	140 A, 600 Vac at 80% duty cycle
ES-MNLS6-8/140H	
MHLS 6,7,8/140 HS	
ES-MHLS6-8/140H	
MNLS 6,7,8/160 HS	160 A, 600 Vac at 80% duty cycle
ES-MNLS6-8/160H	
MHLS 6,7,8/160 HS	
ES-MHLS6-8/160H	
MNLS 6,7,8/200 HS	200 A, 600 Vac at 80% duty cycle
ES-MNLS6-8/200H	
MHLS 6,7,8/200 HS	
ES-MHLS*/200H	
MNLS4/270 HS	270 A, 600 Vac at 80% duty cycle
ES-MNLS4/270H	
MNLS4/360 HS	360 A, 600 Vac at 80% duty cycle
ES-MNLS4/360H	
Expansion Joint Section	MDD / MDHD 6-8 HS As per bus bars
(See Fig. 3)	DT-MDD6-8H / DT-MDHD6-8H
	all cross-sections
	MDD / MDHD 9 HS As per bus bars
	DT-MDD9H / DT-MDHD9H
	all cross-sections
	MDD / MDHD 10 HS As per bus bars
	DT-MDD10H / DT-MDHD10H
	all cross-sections
	MDD / MDHD 6-8 SS As per bus bars
	DT-MDD6-8S / DT-MDHD6-8S
	all cross-sections
	MDD / MDHD 9 SS As per bus bars

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DT-MDD9S / DT-MDHD9S all cross-sections MDD / MDHD 10 SS	As per bus bars	
DT-MDD10H / DT-MDHD10S all cross-sections		
MDS 6,7,8/40-100 HS DT-MDS6-8/40-100H MDHS 6,7,8/40-100 HS DT-MDHS6-8/40-100H	40-100 A, 600 Vac	
MDS 6,7,8/40 SS MDS 6,7,8/140-200 HS DT-MDS6-8/140-200H MDHS 6,7,8/140-160 HS DT-MDHS6-8/140-160H MDHS 6,7,8/200 HS DT-MDHS6-8/200H	40 A, 600 Vac 140-200 A, 600 Vac at 80% duty cycle	
MDS 4/270 HS DT-MDS4/270H MDS 4/360 HS DT-MDS4/360H	270 A, 600 Vac at 80% duty cycle 360 A, 600 Vac at 80% duty cycle	
Collector Trolleys (See Ill. 8)	SA-MSW/ SA-MSWA/ SA-MSWS/ SA-MSWAS 6,7,8,9,10/50HS SA-MSW/ SA-MSWA/ SA-MSWS/ SA-MSWAS 6,7,8,9,10/25ST	50 A, 600 Vac, 60% duty cycle 25 A, 600 Vac, 60% duty cycle
(See Ill. 16)	SA-DMSW/ SA-DMSWA 6,7,8,9,10/100HS SA-DMSW/ SA-DMSWA 6,7,8,9,10/50ST	100 A, 600 Vac, 60% duty cycle 50 A, 600 Vac, 60% duty cycle
Heating System	Heating Output [Watt/m] $N = U^2 / (R \times L)^2$	Optional. Heating cable 0.15 - 3.0 Ohm/m. 0.1 - 5.6 Ohm/m



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	MATH 6,7,8/40-100 HS	40-100 A, 600 Vac
	AT-MATH6-8/63-100H	
	RVT-MRT6-8/63-100H	
	MATH 6,7,8/140-160 HS	140-160 A, 600 Vac at 80% duty cycle
	AT-MATH6-8/140-160H	
	RVT-MRT6-8/140-160H	
	MATH 6,7,8/200 HS	200 A, 600 Vac at 80% duty cycle
	AT-MATH6-8/200H	
	RVT-MRT6-8/200H	
	MATH 6,7,8/40 SS	40 A, 600 Vac
	AT-MATH6-8/63S	
	RVT-MRT/63S	
	MATHD 6,7,8/40-100 HS	40-100 A, 600 Vac
	AT-MATHD6-8/63-100H	
	MATHD 6,7,8/140-160 HS	140-160 A, 600 Vac at 80% duty cycle
	AT-MATHD6-8/140-160H	
	MATHD 6,7,8/200 HS	200 A, 600 Vac at 80% duty cycle
	AT-MAH6-8/200H	
	MATHD 6,7,8/40 SS	40 A, 600 Vac
	AT-MATHD6-8/40S	



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