



KONGSBERG

HiPAP®

602/502/452/352/102 system

501/451/351/101 system

High Precision Acoustic Positioning

Cable plan and interconnections

Document history

Rev	Date	Written by	Checked by	Approved by
H	21 June 2021	AJ	BU	JEF
New 602 system, Hull Unit Controller and HSC-1x computer added.				

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CABLE SPECIFICATIONS IN THE TABLE

Cable no:	The W-Uxx number (Wire –UNAVxx)
HIPAP cable no.:	001 - xxx: Top system (Ship/Rig) and Hull Unit connections Identical cables same number with a, b, c... Example: W-U00xa, W-U00xb, W-U00xc,...
KM cable ID	W-U001 - W-Uxxx
Core no W-U	The cable core number or colour
Cable from/ Connection type	The name of the unit the cable comes from Plug/Table block etc
Term/Plug Pin no	Terminal (TB) or plug (P) number The connection pin
Cable to/ Connection type	The name of the unit the cable goes to Plug/Table block etc
Term/Plug Pin no	Terminal (TB) or plug (P) number The connection pin
Cable type/spec Signal	Cable type or specification for the cable The signal function Rx, Tx, Up, Down etc
Signal type	Signal type, serial, analogue, Ethernet etc
Ref. plug layout/ cable	Reference to connector illustration/cable overview

CABLE PLAN

HiPAP system cables

→ *HiPAP system cables overview on page 41 and 40.*

→ *Overview Fibre-optic cables on page 45.*

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
Operator Station w/Display/Keyboard/Trackball/ - Computer MPxxxx							
W-U001	LCD display	DVI/VGA/ HDMI	Computer	DVI/VGA/ HDMI	Special (incl.) Video signals	VIDEO	
W-U002	Keyboard		Computer	USB / PS/2 plug Green	Special (incl.) Keyboard	USB / PS/2 interface	
W-U003	Mouse		Computer	USB	Special (incl.) USB Mouse	USB Interface	
W-U004	Trackball		Computer	USB / PS/2 plug Blue	Special (incl.) Trackball	USB / PS/2 interface	
W-U005	Printer		Computer	USB / LPT USB / DB-25	Special (incl.) Printer port	USB/ Parallel comm.	
W-U006a	Mains Socket	Vessel UPS: Fuse : F	LCD Display	IEC	Power	115 / 230 VAC	
W-U006b	Mains Socket	Vessel UPS: Fuse : F	Computer	IEC	Power	115 / 230 VAC	
W-U007	EMC ground	Screw terminal	Computer		EMC optional cable	EMC Ground	

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KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U010a	Computer	Port 1 / 9-pin Male D-con	Attitude sensors/ Telegram output/ External Interface/ 1PPS Converter		Serial line / Split cable 4x2x0.5 w/ screen	RS-232	
		Pin 1 Carrier detect					
		Pin 2 Receive data		Pin 3 Transmit data			
		Pin 3 Transmit data		Pin 2 Receive data			
		Pin 4 Data term ready					
		Pin 5 GND		Pin 5 GND			
		Pin 6 Data set ready					
		Pin 7 Ready to send					
		Pin 8 Clear to send		Pin 8 1PPS			
Pin 9 Ring indicator							
W-U010b	Computer	Port 2 / 9-pin Male D-con	Attitude sensors/ Telegram output/ External Interface		Serial line / Split cable 2x2x0.5 w/ screen	RS-232	
		Pin 2 Receive data					
		Pin 3 Transmit data					
		Pin 5 GND					

Cable plan and interconnections

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U010c	Computer	Port 3 / 9-pin D-con	Attitude sensors/ Telegram output/ External Interface		Serial line / Split cable 2x2x0.5 w/ screen	RS-232	
		Pin 2 Receive data					
		Pin 3 Transmit data					
		Pin 5 GND					
W-U010d	Computer	Port 4 / 9-pin Male D-con	Attitude sensors/ Telegram output/ External Interface		Serial line / Split cable 2x2x0.5 w/ screen	RS-232	
		Pin 2 Receive data					
		Pin 3 Transmit data					
		Pin 5 GND					
W-U010e	Computer	Port 5/ 9-pin Male D-con con	Attitude sensors/ Telegram output/ External Interface/ External sync.		Serial line / Split cable 4x2x0.5 w/ screen	RS-422	
		Pin 1 Reception data+					
		Pin 2 Transm data+					
		Pin 3 Transm data-					
		Pin 4 Reception data-					
		Pin 5 GND					
		Pin 6 CTS -					
		Pin 7 RTS -					
		Pin 8 RTS +					
		Pin 9 CTS +					

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KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U010f	Computer	PORT 6/ 9-pin Male D-con	Attitude sensors/ Telegram output/ External Interface		Serial line / Split cable 3x2x0.5 w/ screen	RS-422	
		Pin 1 Reception data+					
		Pin 2 Transm data+					
		Pin 3 Transm data-					
		Pin 4 Reception data-					
		Pin 5 GND					
W-U010g	Computer	PORT 7/ 9-pin Male D-con	Attitude sensors/ Telegram output/ External Interface		Serial line / Split cable 3x2x0.5 w/ screen	RS-422	
		Pin 1 Reception data+					
		Pin 2 Transm data+					
		Pin 3 Transm data-					
		Pin 4 Reception data-					
		Pin 5 GND					
W-U010h	Computer	PORT 8/ 9-pin Male D-con	Attitude sensors/ Telegram output/ External Interface		Serial line / Split cable 3x2x0.5 w/ screen	RS-422	
		Pin 1 Reception data+					
		Pin 2 Transm data+					
		Pin 3 Transm data-					
		Pin 4 Reception data-					
		Pin 5 GND					
W-U011a	Computer	NET A	KM Network A	RJ45 - A - Port	Cat 7 * 100/ 1000 BaseTX port	Ethernet	

Cable plan and interconnections

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U011b	Computer	NET B	KM Network B	RJ45 - B - Port	Cat 7 * 100/ 1000 BaseTX port	Ethernet	
W-U012	Computer	Ethernet - HiPAP Transceiver	Ethernet switch/Converter	G1, RJ45	Cat 7 * 1000 BaseTX port	Ethernet	
Operator Station w/Display/Keyboard/Trackball/ For computer type HSC 1 -ix							
W-U001	LCD display	DP/DVI/HDMI	Computer	USB-C/DP	Special (incl.) Video signals	VIDEO	
W-U002	Keyboard		Computer	USB	Special (incl.) Keyboard	USB interface	
W-U003	Mouse		Computer	USB	Special (incl.) USB Mouse	USB Interface	
W-U004	Trackball		Computer	USB	Special (incl.) Trackball	USB / PS/2 interface	
W-U005	Printer		Computer	USB	Special (incl.) Printer port	USB	
W-U006a	Mains Socket	Vessel UPS: Fuse: F	LCD Display	IEC	Power	115 / 230 VAC	
W-U006b	Mains Socket	Vessel UPS: Fuse: F	Computer	IEC	Power	115 / 230 VAC	
W-U007	EMC ground	Screw terminal	Computer		EMC optional cable	EMC Ground	

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KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U010a	Computer	Port 1 / 9-pin Male D-con	Attitude sensors/ Telegram output/ External Interface/ 1PPS Converter		Serial line / Split cable 4x2x0.5 w/ screen	RS-232	
		Pin 1 Carrier detect					
		Pin 2 Receive data		Pin 3 Transmit data			
		Pin 3 Transmit data		Pin 2 Receive data			
		Pin 4 Data term ready					
		Pin 5 GND		Pin 5 GND			
		Pin 6 Data set ready					
		Pin 7 Ready to send					
		Pin 8 Clear to send		Pin 8 1PPS			
Pin 9 Ring indicator							
W-U010b	Computer	Port 2 / 9-pin Male D-con	Attitude sensors/ Telegram output/ External Interface		Serial line / Split cable 2x2x0.5 w/ screen	RS-232	
		Pin 2 Receive data					
		Pin 3 Transmit data					
		Pin 5 GND					

Cable plan and interconnections

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U010c	Computer	Port 3 / 9-pin D-con	Attitude sensors/ Telegram output/ External Interface		Serial line / Split cable 2x2x0.5 w/ screen	RS-232	
		Pin 2 Receive data					
		Pin 3 Transmit data					
		Pin 5 GND					
W-U010d	Computer	Port 4 / 9-pin Male D-con	Attitude sensors/ Telegram output/ External Interface		Serial line / Split cable 2x2x0.5 w/ screen	RS-232	
		Pin 2 Receive data					
		Pin 3 Transmit data					
		Pin 5 GND					
W-U010e	Computer	Port 1/ 9-pin Male D-con con	Attitude sensors/ Telegram output/ External Interface		Serial line / Split cable 3x2x0.5 w/ screen	RS-422	
		Pin 1 Transm data-					
		Pin 2 Transm data+					
		Pin 3 Reception data+					
		Pin 4 Reception data-					
		Pin 5 GND					
		Pin 6 nc					
		Pin 7 nc					
		Pin 8 nc					
Pin 9 nc							

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KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U010f	Computer	PORT 2/ 9-pin Male D-con	Attitude sensors/ Telegram output/ External Interface		Serial line / Split cable 3x2x0.5 w/ screen	RS-422	
		Pin 1 Transm data-					
		Pin 2 Transm data+					
		Pin 3 Reception data+					
		Pin 4 Reception data-					
		Pin 5 GND					
W-U010g	Computer	PORT 3/ 9-pin Male D-con	Attitude sensors/ Telegram output/ External Interface		Serial line / Split cable 3x2x0.5 w/ screen	RS-422	
		Pin 1 Transm data-					
		Pin 2 Transm data+					
		Pin 3 Reception data+					
		Pin 4 Reception data-					
		Pin 5 GND					
W-U010h	Computer	PORT 4/ 9-pin Male D-con	Attitude sensors/ Telegram output/ External Interface		Serial line / Split cable 3x2x0.5 w/ screen	RS-422	
		Pin 1 Transm data-					
		Pin 2 Transm data+					
		Pin 3 Reception data+					
		Pin 4 Reception data-					
		Pin 5 GND					
W-U011a	Computer	NET A	KM Network A	RJ45 - A - Port	Cat 7 * 100/ 1000 BaseTX port	Ethernet	

Cable plan and interconnections

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U011b	Computer	NET B	KM Network B	RJ45 - B - Port	Cat 7 * 100/ 1000 BaseTX port	Ethernet	
W-U012	Computer	Transceiver	Ethernet switch/Converter	G1, RJ45	Cat 7 * 1000 BaseTX port	Ethernet	
Ethernet switch/Converter							
W-U020	Ethernet switch/ Converter Alternative 1	Ethernet, RJ45	Responder Driver Unit	Ethernet, RJ45	Cat 7*	Ethernet	
W-U021a	From vessel distribution	Vessel UPS: Fuse : F	MOXA power	TB	Power	115/230 VAC	
				L			
				N			
W-U021b	From MOXA power	TB	Ethernet switch/Converter	PWR1.	Power (option)	12-45 VDC	
				+ V			
				- V			
Responder Driver Unit							
W-U021c	Mains Socket		Responder Driver Unit	Power 115/230 VAC	Power		

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KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U022	Responder 1 Electrical output	Male 9-pin D-sub con	Responder 1, Electrical drive signal				
		Pin 1 Power 1 +24V				Power	
		Pin 2 Drive sign 1				0-24 V pulse	
		Pin 3 GND				GND	
		Pin 4 Screen					
W-U023	Responder 2 Electrical output	Male 9-pin D-sub con	Responder 2, Electrical drive signal				
		Pin 6 Power 2 +24V				Power	
		Pin 7 Drive sign 2				0-24 V pulse	
		Pin 8 GND				GND	
		Pin 9 Screen					
W-U024	Responder 3 Electrical output	Male 9-pin D-sub con	Responder 3, Electrical drive signal				
		Pin 1 Power 3 +24V				Power	
		Pin 2 Drive sign 3				0-24 V pulse	
		Pin 3 GND				GND	
		Pin 4 Screen					
W-U025	Responder 4 Electrical output	Male 9-pin D-sub con	Responder 4, Electrical drive signal				
		Pin 6 Power 4+24V				Power	
		Pin 7 Drive sign 4				0-24 V pulse	
		Pin 8 GND				GND	
		Pin 9 Screen					
W-U026	Responder 5 Fibre optic output	ST	Responder 5, Optical drive signal	ST	Fibre-optic cable	Fibre-optic	
W-U027	Responder 6 Fibre optic output	ST	Responder 6, Optical drive signal	ST	Fibre-optic cable	Fibre-optic	

Cable plan and interconnections

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U028	Responder 7 Fibre optic output	ST	Responder 7, Optical drive signal	ST	Fibre-optic cable	Fibre-optic	
W-U029	Responder 8 Fibre optic output	ST	Responder 8, Optical drive signal	ST	Fibre-optic cable	Fibre-optic	
W-U030	HiPAP TU x81	TB	Responder Driver Unit Male 9-pin D-sub con	Responder sync	1x2x0.75/ with screen	Sync RS-422	
		12 Sync out +		Pin 1 Sync +			
		13 Sync out -		Pin 2 Sync -			
14 GND							
W-U030	HiPAP TU x82	TB	Responder Driver Unit Male 9-pin D-sub con	Responder sync	1x2x0.75/ with screen	Sync RS-422	
		13 Sync out +		Pin 1 Sync +			
		14 Sync out -		Pin 2 Sync -			
15 GND							
1PPS Converter (Option)							
W-U031a	From vessel distribution	Vessel UPS: Fuse : F	1PPS Power	TB	Power	115/230 VAC	
				L			
				N			
		GND					
W-U031b	From 1PPS Power	TB	1PPS Converter	TB	Power	9-15VDC	
		+ V		1			
		- V		2			
W-U031c	From GPS		1PPS Converter	TB	Serial line	RS-232	
		Data Input		3			
		Data Output		4			
		1PPS Input		5			
	Signal Ground	6					
HiPAP Transceiver Unit (TU) Model x82							

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KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U040a	HiPAP TU x82	1000BaseTX port - G1	Ethernet switch/ converter	Fibre Splice Box, Pair1: Conn 1, 2	Fibre-optic cable	Multimode OM2 50/125 µm	
W-U040b (option)	HiPAP TU x82	1000BaseTX port- G2	Ethernet switch/ converter	Fibre Splice Box, Pair 2: Conn 3, 4	Fibre-optic cable	Multimode OM2 50/125 µm	
W-U041	HiPAP TU x82 Internal patch cable		Ethernet switch/ converter		Fibre-optic cable	Multimode OM2 50/125 µm	
W-U042a	Mains	Vessel UPS: Fuse : F	HiPAP TU x82	Terminal block inside through glands (customer mount)	Power 3x1.5-4 mm ²	115/230 VAC	
W-U042b	Mains (option)	Vessel UPS: Fuse : F	HiPAP TU x82	Terminal block inside through glands (customer mount)	Power 3x1.5-4 mm ²	115/230 VAC	
W-U043	EMC ground	Screw terminal	HiPAP TU x82	Screw terminal		EMC Ground	
W-U044	HiPAP TU x82	TB-X2	External sync (Dual HiPAP option)	HiPAP TU x82/TB-X2	External sync 2x2x0.75 / with screen	Sync RS-422	
		11 Sync in +		13 Sync out +			
		12 Sync in -		14 Sync out -			
		13 Sync out +		11 Sync in +			
		14 Sync out -		12 Sync in -			
		15 GND		15 GND			
16 Screen		16 Screen					
W-U045	HiPAP TU x82 Alternative 2	Ethernet, RJ45	Responder Driver Unit	Ethernet, RJ45	Cat 7 (option)*	Ethernet	
W-U046	HiPAP TU x82		Hull unit Junction Box	KM supply Special connector	KM supply Special cable	Analogue transducer signals	
HiPAP Transceiver Unit (TU) Model x81							
W-U040a	HiPAP TU x81	1000BaseTX port - G1	Ethernet switch/ converter	Fibre Splice Box, Pair1: Conn 1, 2	Fibre-optic cable	Multimode OM2 50/125 µm	

Cable plan and interconnections

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U040b (option)	HiPAP TU x81	1000BaseTX port- G2	Ethernet switch/ converter	Fibre Splice Box, Pair 2: Conn 3, 4	Fibre-optic cable	Multimode OM2 50/125 µm	
W-U041	HiPAP TU x81 Internal patch cable		Ethernet switch/ converter		Fibre-optic cable	Multimode OM2 50/125 µm	
W-U042a	Mains	Vessel UPS: Fuse : F	HiPAP TU x81	IEC via strain relief cup (customer mount)	Power 3x1.5 (Junction Box Required for cable 3x2.5)	230 VAC	
W-U042b	Mains (option)	Vessel UPS: Fuse : F	HiPAP TU x81	IEC via strain relief cup (customer mount)	Power 3x1.5 (Junction Box Required for cable 3x2.5)	230 VAC	
W-U043	EMC ground	Screw terminal	HiPAP TU x81	Screw terminal		EMC Ground	
W-U044	HiPAP TU x81	TB1	External sync (Dual HiPAP option)	HiPAP TU x81 / TB1	External sync 2x2x0.75 / with screen	Sync RS-422	
		10 Sync in +		12 Sync out +			
		11 Sync in -		13 Sync out -			
		12 Sync out +		10 Sync in +			
		13 Sync out -		11 Sync in -			
14 GND		14 GND					
W-U045	HiPAP TU x81 Alternative 2	Ethernet, RJ45	Responder Driver Unit	Ethernet, RJ45	Cat 7 (option)*	Ethernet	
W-U046	HiPAP TU x81		Hull unit Junction Box	KM supply Special connector	KM supply Special cable	Analogue transducer signals	

HiPAP Transceiver Unit (TU) Model x21							
W-U040a	HiPAP TU x21	1000BaseTX port - G1	Ethernet switch /converter	Fibre Splice Box, Pair1: Conn 1, 2,	Fibre-optic cable	Multimode OM2 50/125 µm	

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W-U040b (option)	HiPAP TU x21	1000BaseTX port - G2	Ethernet switch /converter	Fibre Splice Box, Pair 2: Conn 3, 4	Fibre-optic cable	Multimode OM2 50/125 µm
W-U042	Mains socket via strain relief cup. (customer mount)	Vessel UPS: Fuse : F	HiPAP TU x21		Power	230 VAC
W-U050	HiPAP TU x21		Ground		Ground	EMC Ground
W-U051	HiPAP TU x21	TB1	External Sync Dual HiPAP option	HiPAP TU x21	2x2x0.75/ with screen	Sync RS-422
		7 Sync in +		9 Sync out +		
		8 Sync in -		10 Sync out -		
		9 Sync out +		7 Sync in +		
		10 Sync out -		8 Sync in -		
		11 GND		11 GND		
W-U052	HiPAP TU x21	TB1	Responder Driver Unit Male 9-pin D-sub con	Responder sync	1x2x0.75/ with screen	Sync RS-422
		9 Sync out +		Pin 1 Sync +		
		10 Sync out -		Pin 2 Sync -		
		11 GND				
W-U045	HiPAP TU x21 Alternative 2	Ethernet, RJ45	Responder Driver Unit	Ethernet, RJ45	Cat 7	Ethernet
W-U053	HiPAP TU x21	KM supply Special connector	Hull unit Junction Box	KM supply Special connector	KM supply Special cable	Analogue transducer signals

* CAT 6 for patch and CAT 7 for installation.

Hull unit system cables

→ *Hull unit system cables overview see page 45.*

Hoist control unit and hydraulic actuator for gate valve both come with or without Ethernet. These cable plans are for either with or without Ethernet, not a mix of both.

Cable plan and interconnections

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
HiPAP hull unit system, no Ethernet – Ref. DWG 824-102993							
W-U060	Mains		HCU	HCTB1	Power/4x1.5	AC power	
		L1		2	1	3-Phase	
		L2		3	2	440, 380	
		L3		4	3	or 230 VAC	
		GND		CABINET	4		
W-U061	HCU	HCTB1	Hoist motor	Junction Box	Power/4x1.5	AC power	
		6		1 U1	1	440, 380	
		7		2 V1	2	or 230 VAC	
		8		3 W1	3		
		Cabinet		4 GND	4		
W-U062	HCU	HCTB1	Junction Box	Limit switch/ Junction Box	6x0.75	Control signals	
		14 LOWER LIGHT		1	1		
		28 GND		2	2		
		18 LOWER LIM. SW1		3	3		
		16 UPPER/LOWER LIM. SW 2/2		4	4		
		17 UPPER LIGHT		5	5		
		15 UPPER LIM. SW1		7	6		

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KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U063	HCU	HCTB1	RCU/ RMTB	RMTB	10x0.75	Control signals	
		27 +24V HLU	TERMINATED IN TB	1 +24V HLU	1		
		23 UP		2 UP	2		
		26 DOWN HOLD		3 DOWN HOLD	3		
		25 DOWN		4 DOWN	4		
		24 UP HOLD		5 UP HOLD	5		
		22 STOP LIGHT		6 STOP LIGHT	6		
		17 UPPER LIGHT		7 UPPER LIGHT	7		
	14 LOWER LIGHT		8 LOWER LIGHT	8			
	HCU	HCTB1	RS F34				
29 GVC No			25 GV closed	9			
20 GVO No			26 GV open	10			
W-U064a	HCU	HCTB1	GATE VALVE OPEN SWITCH		4x0.75		
		20 GVO No		13 GV open (no)	1		
		21 GND		14 GV open (no)	2		
		30 GVO Nc		21 GV open (nc)	3		
		32 GV ref		22 GV open (nc)	4		
W-U064b	HCU	HCTB1	GATE VALVE CLOSED SWITCH		4x0.75		
		29 GVC No		13 GV closed (no)	1		
		28 GND		14 GV closed (no)	2		
		31 GVC Nc		21 GV closed (nc)	3		
		32 GV ref		22 GV closed (nc)	4		
W-U065	HCU		Ground			EMC Ground	

Cable plan and interconnections

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U066	Top of transducer (bottom of the transducer shaft)	KM supply Special connector	Hull unit Junction box	KM supply Special connector	KM supply Special cable		
W-U067	RCU	RMTB	B RCU (optional)	RMTB	9x0.75	Control signals	
	RMTB	1 +24V HLU	RMTB	1 +24V HLU	1		
		2 UP		2 UP	2		
		13		3 DOWN HOLD	3		
		4 DOWN		4 DOWN	4		
		15		5 UP HOLD	5		
		6 STOP LIGHT		6 STOP LIGHT	6		
		7 UPPER LIGHT		7 UPPER LIGHT	7		
		8 LOWER LIGHT		8 LOWER LIGHT	8		
	14		13	9			

HiPAP

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
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Cable plan and interconnections

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
HiPAP hull unit system with hydraulic system for activating the gate valve, no Ethernet – Ref. DWG 323912							
W-U060	Mains		HCU	HCTB1	Power/4x1.5	AC power	
		L1		2	1	3-Phase	
		L2		3	2	440, 380	
		L3		4	3	or 230 VAC	
		GND		CABINET	4		
W-U061	HCU	HCTB1	Hoist motor	Junction Box	Power/4x1.5	AC power	
		6		1 U1	1	440, 380	
		7		2 V1	2	or 230 VAC	
		8		3 W1	3		
		CABINET		4 GND	4		
W-U062	HCU	HCTB1	LIMIT SWITCH JUNCTION BOX	Limit switch/ Junction Box	6x0.75	Control signals	
		14 LOWER LIGHT		1	1		
		28 GND		2	2		
		18 LOWER LIM. SW1		3	3		
		16 UPPER/LOWER LIM. SW 2/2		4	4		
		17 UPPER LIGHT		5	5		
		15 UPPER LIM. SW1		7	6		

HiPAP

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U063	HCU	HCTB1	RCU/ RMTB	RMTB	10x0.75	Control signals	
		27 +24V HLU	TERMINATED IN TB	1 +24V HLU	1		
		23 UP		2 UP	2		
		26 DOWN HOLD		3 DOWN HOLD	3		
		25 DOWN		4 DOWN	4		
		24 UP HOLD		5 UP HOLD	5		
		22 STOP LIGHT		6 STOP LIGHT	6		
		17 UPPER LIGHT		7 UPPER LIGHT	7		
		14 LOWER LIGHT		8 LOWER LIGHT	8		
		HCU	HCTB1	RS F34			
		29 GVC No		25 GV closed	9		
		20 GVO No		26 GV open	10		
W-U065	HCU		Ground			EMC Ground	
W-U066	Top of transducer (bottom of the transducer shaft)	KM supply Special connector	Hull unit Junction box	KM supply Special connector	KM supply Special cable		
W-U067	RCU	RMTB	B RCU (optional)	RMTB	9x0.75	Control signals	
	RMTB	1 +24V HLU	RMTB	1 +24V HLU	1		
		2 UP		2 UP	2		
		13		3 DOWN HOLD	3		
		4 DOWN		4 DOWN	4		
		15		5 UP HOLD	5		
		6 STOP LIGHT		6 STOP LIGHT	6		
		7 UPPER LIGHT		7 UPPER LIGHT	7		
	8 LOWER LIGHT		8 LOWER LIGHT	8			
		14		9	9		

Cable plan and interconnections

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U068	HCU	HCTB1	Gate valve control unit	X2	4x0.75	Control signals	
		27 +24V HLU		2	1		
		17 UPPER LIGHT		3	2		
		20 GVO No		4	3		
		21 GND		5	4		
W-U069	Mains		Main Control Cabinet		Power/4x1.5	Power 3 phase 440 V/ 50 Hz supply	
		L1		K1 - 1	1		
		L2		K1 - 3	2		
		L3		K1 - 5	3		
		GND		GND	4		
W-U070	Main Control Cabinet	F1	Motor power Pack		Power/4x1.5	Power supply 3 phase 440 V/ 5.5 KW	
		2		U1	1		
		4		V1	2		
		6		W1	3		
		GND		GND	4		
W-U071	Main Control Cabinet	X2: 24 V DC	Solenoid coil B	Opening Valve	2x0.75	Control signals +24 VDC	
		6		1	1		
		7		2	2		
W-U072	Main Control Cabinet	X2: 24 V DC	Solenoid coil A	Closing Valve	2x0.75	Control signals +24 VDC	
		8		1	1		
		9		2	2		
W-U073	Main Control Cabinet	X2: 24 V DC	GV Limit Switch	GV Fully Open	2x0.75	Control signals Switch No	
		23		13 (no)	1		
		24		14 (no)	2		
W-U074	Main Control Cabinet	X2: 24 V DC	GV Limit Switch	GV Fully Closed	2x0.75	Control signals Switch No	
		25		13 (no)	1		
		26		14 (no)	2		

HiPAP

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout		
W-U075	Main Control Cabinet	X2: 24 V DC	Remote Control Cabinet	X3: 24 VDC	7x2x0.75	Control signals			
		10		13				1	
		11		1				2	
		12		2				3	
		13		3				4	
		14		4				5	
		15		5				6	
		16		6				7	
		17		7				8	
		18		8				9	
		19		9				10	
		20		10				11	
		21		11				12	
		22		12				13	
	1	14	14						
W-U080	Laser at the Hull unit (option)	Cable part of the unit	TU Model x81 TB	MOXA power/ ADAM 6217		Control signals	Ref: DWG 329779		
		Bn		17				Bn	V+
		Pi		17				Pi	V+
		Bl		16				Bl	V-
		Gn		18				Gn	AIO-
		Wh		19				Wh	AIO+
		Gr		Not used				Gr	
Ye	Not used	Ye							

Cable plan and interconnections

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U080	Laser at the Hull unit (option)	Cable part of the unit	TU Model x82 TB	MOXA power/ ADAM 6217		Control signals	Ref: DWG 313862
		Bn		18	Bn	V+	
		Pi		18	Pi	V+	
		Bl		17	Bl	V-	
		Gn		19	Gn	AIO-	
		Wh		20	Wh	AIO+	
		Gr		Not used	Gr		
		Ye		Not used	Ye		

HiPAP

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
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Cable plan and interconnections

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
HiPAP hull unit system with Ethernet to HCU – Ref. DWG 343288							
W-U060	Mains		HCU	HCTB1	Power/4x1.5	AC power	
		L1		1 R	1	3-Phase	
		L2		2 S	2	440, 380	
		L3		3 T	3	or 230 VAC	
		GND		PE/CABINET	4		
W-U061	HCU	HCTB1	Hoist motor	Junction Box	Power/4x1.5	AC power	
		4 U1		1 U1	1	440, 380	
		5 V1		2 V1	2	or 230 VAC	
		6 W1		3 W1	3		
		PE/CABINET		4 GND	4		
W-U062	HCU	HCTB1	LIMIT SWITCH JUNCTION BOX	Limit switch/ Junction Box	6x0.75	Control signals	
		7 LLS NO (13)		1	1		
		8 LLS NO (14)		2	2		
		9 LLS NC (21)		3	3		
		10 LLS NC (22)		4	4		
		11 ULS NO (13)		5	5		
12 ULS NC (21)		7	6				
W-U065	HCU		Ground			EMC Ground	

HiPAP

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U066	Top of transducer (bottom of the transducer shaft)	KM supply Special connector	Hull unit Junction box	KM supply Special connector	KM supply Special cable		
W-U073	HCU	HCTB1	GV LIMIT SWITCH	GV Fully Open	2x0.75	Control signals	
		13 GVO NO		13 (no)	1	Switch No	
		14 GVO NO		14 (no)	2	Switch No	
W-U074	HCU	HCTB1	GV LIMIT SWITCH	GV Fully Closed	2x0.75	Control signals	
		17 GVC NO		13 (no)	1	Switch No	
		18 GVC NO		14 (no)	2	Switch No	
W-U090	Ethernet switch	Ethernet, RJ45	Hoist Control Unit	Ethernet, RJ45	Cat 7*	Ethernet	

Cable plan and interconnections

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
HiPAP hull unit system with Ethernet to Hull Unit Controller							
W-U060	Mains		HUC	HUC F1	Power/4x1.5	AC power	
		R		6	1	3-Phase	
		S		4	2	440, 380	
		T		2	3	or 230 VAC	
		GND		PE/CABINET	4		
W-U061	HUC	HUC U5	Hoist motor	Junction Box	Power/4x1.5	AC power	
		2		1 U1	1	440, 380	
		4		2 V1	2	or 230 VAC	
		6		3 W1	3		
		PE/CABINET		4 GND	4		
W-U062	HUC	U2 MEI	JUNCTION BOX	Limit switch/ Junction Box	6x0.75	Control signals	
		171 HU UP (NO)		5	1	Hull unit upper position	
		172 HU UP (NO)		6	2	Hull unit upper position	
		181 HU LO (NO)		1	3	Hull unit lower position	
		182 HU LO (NO)		2	4	Hull unit lower position	
W-U065	HUC		Ground			EMC Ground	
W-U066	Top of transducer (bottom of the transducer shaft)	KM supply Special connector	Hull unit Junction box	KM supply Special connector	KM supply Special cable		
W-U073	HUC	U2 / F3	Gate valve open sensor		Sensor comes with 5 metre cable		

HiPAP

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
		U2 151 GVO NO		Black	4		
		U2 152 GVO NO		Blue	3		
		F3 +24V		Brown	1		
		F3 0V		Blue	3		
W-U074	HUC	U2 / F3	Gate valve close sensor		Sensor comes with 5 metre cable		
		U2 161 GVC NO		Black	4		
		U2 162 GVC NO		Blue	3		
		F3 +24V		Brown	1		
		F3 0V		Blue	3		
W-U090	Ethernet switch	Ethernet, RJ45	Hull Unit Controller	Ethernet, RJ45	Cat 7*	Ethernet	

Cable plan and interconnections

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
HiPAP hull unit system with Ethernet to HCU and Ethernet to gate valve hydraulic system – Ref. DWG 343293							
W-U060	Mains		HCU	HCTB1	Power/4x1.5	AC power	
		L1		1 R	1	3-Phase	
		L2		2 S	2	440, 380	
		L3		3 T	3	or 230 VAC	
		GND		PE/CABINET	4		
W-U061	HCU	HCTB1	HOIST MOTOR	JUNCTION BOX	Power/4x1.5	AC power	
		4 U1		1 U1	1	440, 380	
		5 V1		2 V1	2	or 230 VAC	
		6 W1		3 W1	3		
		PE/CABINET		4 GND	4		
W-U062	HCU	HCTB1	JUNCTION BOX	Limit switch/ Junction Box	6x0.75	Control signals	
		7 LLS NO (13)		1	1		
		8 LLS NO (14)		2	2		
		9 LLS NC (21)		3	3		
		10 LLS NC (22)		4	4		
		11 ULS NO (13)		5	5		
12 ULS NC (21)		7	6				
W-U065	HCU		Ground			EMC Ground	

HiPAP

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U066	Top of transducer (bottom of the transducer shaft)	KM supply Special connector	HULL UNIT JUNCTION BOX	KM supply Special connector	KM supply Special cable		
W-U068	HCU	HCTB1	MAIN CONTROL CABINET	X1	4x0.75	Control signals	
		21 +24V		1	1		
		22 UP		2	2		
		23 GV OPEN		3	3		
		24 GND		4	4		
W-U069	Mains		MAIN CONTROL CABINET	X2: 440 Vac	Power/4x1.5	Power	
		L1		1	1	3 phase 440 V/ 50 Hz supply	
		L2		2	2		
		L3		3	3		
		GND		GND	4		

Cable plan and interconnections

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U070	Main Control Cabinet	X2	MOTOR POWER PACK		Power/4x1.5	Power supply	
		4		U1	1	3 phase 440 V/ 5.5 KW	
		5		V1	2		
		6		W1	3		
	GND	GND	4				
W-U071	Main Control Cabinet	X2: 24 V DC	Solenoid coil B	Opening Valve	2x0.75	Control signals +24 VDC	
		6		1	1		
		7		2	2		
W-U072	Main Control Cabinet	X2: 24 V DC	Solenoid coil A	Closing Valve	2x0.75	Control signals +24 VDC	
		8		1	1		
		9		2	2		
W-U073	Main Control Cabinet	X1: 24 V DC	GV Limit Switch	GV Fully Open	2x0.75	Control signals	
		10		13 (no)	1	Switch No	
		11		14 (no)	2	Switch No	
W-U074	Main Control Cabinet	X1: 24 V DC	GV Limit Switch	GV Fully Closed	2x0.75	Control signals	
		12		13 (no)	1	Switch No	
		13		14 (no)	2	Switch No	
W-U090	Ethernet switch	Ethernet, RJ45	Hoist Control Unit	Ethernet, RJ45	Cat 7*	Ethernet	
W-U091	Ethernet switch	Ethernet, RJ45	Main Control Cabinet	Ethernet, RJ45	Cat 7*	Ethernet	
W-U080	Laser at the Hull unit (option)	Cable part of the unit	TU Model x82 TB	MOXA power/ ADAM 6217		Control signals	Ref: DWG 313862
		Bn		18	Bn	V+	
		Pi		18	Pi	V+	
		Bl		17	Bl	V-	

HiPAP

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
		Gn		19	Gn	AIO-	
		Wh		20	Wh	AIO+	
		Gr		Not used	Gr		
		Ye		Not used	Ye		
W-U080	Laser at the Hull unit (option)	Cable part of the unit	TU Model x81 TB	MOXA power/ ADAM 6217		Control signals	Ref: DWG 329779
		Bn		17	Bn	V+	
		Pi		17	Pi	V+	
		Bl		16	Bl	V-	
		Gn		18	Gn	AIO-	
		Wh		19	Wh	AIO+	
		Gr		Not used	Gr		
		Ye		Not used	Ye		

Cable plan and interconnections

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
HiPAP hull unit system with Ethernet to Hull Unit Controller and Ethernet to gate valve hydraulic system							
W-U060	Mains		HUC	HUC F1	Power/4x1.5	AC power	
		R		6	1	3-Phase	
		S		4	2	440, 380	
		T		2	3	or 230 VAC	
		GND		PE/CABINET	4		
W-U061	HUC	HUC U5	HOIST MOTOR	JUNCTION BOX	Power/4x1.5	AC power	
		2		U1	1	440, 380	
		4		V1	2	or 230 VAC	
		6		W1	3		
		PE/CABINET		4 GND	4		
W-U062	HUC	U2 MEI	JUNCTION BOX	Limit switch/ Junction Box	6x0.75	Control signals	
		171 HU UP (NO)		5	1	Hull unit upper position	
		172 HU UP (NO)		6	2	Hull unit upper position	
		181 HU LO (NO)		1	3	Hull unit lower position	
		181 HU LO (NO)		2	4	Hull unit lower position	
W-U065	HUC		Ground			EMC Ground	

HiPAP

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
W-U066	Top of transducer (bottom of the transducer shaft)	KM supply Special connector	HULL UNIT JUNCTION BOX	KM supply Special connector	KM supply Special cable		
W-U070	HUC	X2	MOTOR POWER PACK		Power/4x1.5	Power supply	
		4		U1	1	3 phase 440 V/ 5.5 KW	
		5		V1	2		
		6		W1	3		
	GND	GND	4				
W-U071	HUC	HUC K8	Solenoid coil Open		2x0.75	Control signals +24 VDC	
		K8 14		+ Open	1		
		F3 4		- Open	2		
W-U072	HUC	HUC K9	Solenoid coil Close		2x0.75	Control signals +24 VDC	
		K9 14		+ Close	1		
		F3 4		- Close	2		
W-U073	HUC	U2 / F3	Gate valve open sensor		Sensor comes with 5 m cable		
		U2 151 GVO (NO)		Black	4		
		U2 152 GVO (NO)		Blue	3		
		F3 +24V		Brown	1		
		F3 0V		Blue	3		
W-U074	HUC	U2 / F3	Gate valve close sensor		Sensor comes with 5 m cable		
		U2 161 GVC (NO)		Black	4		

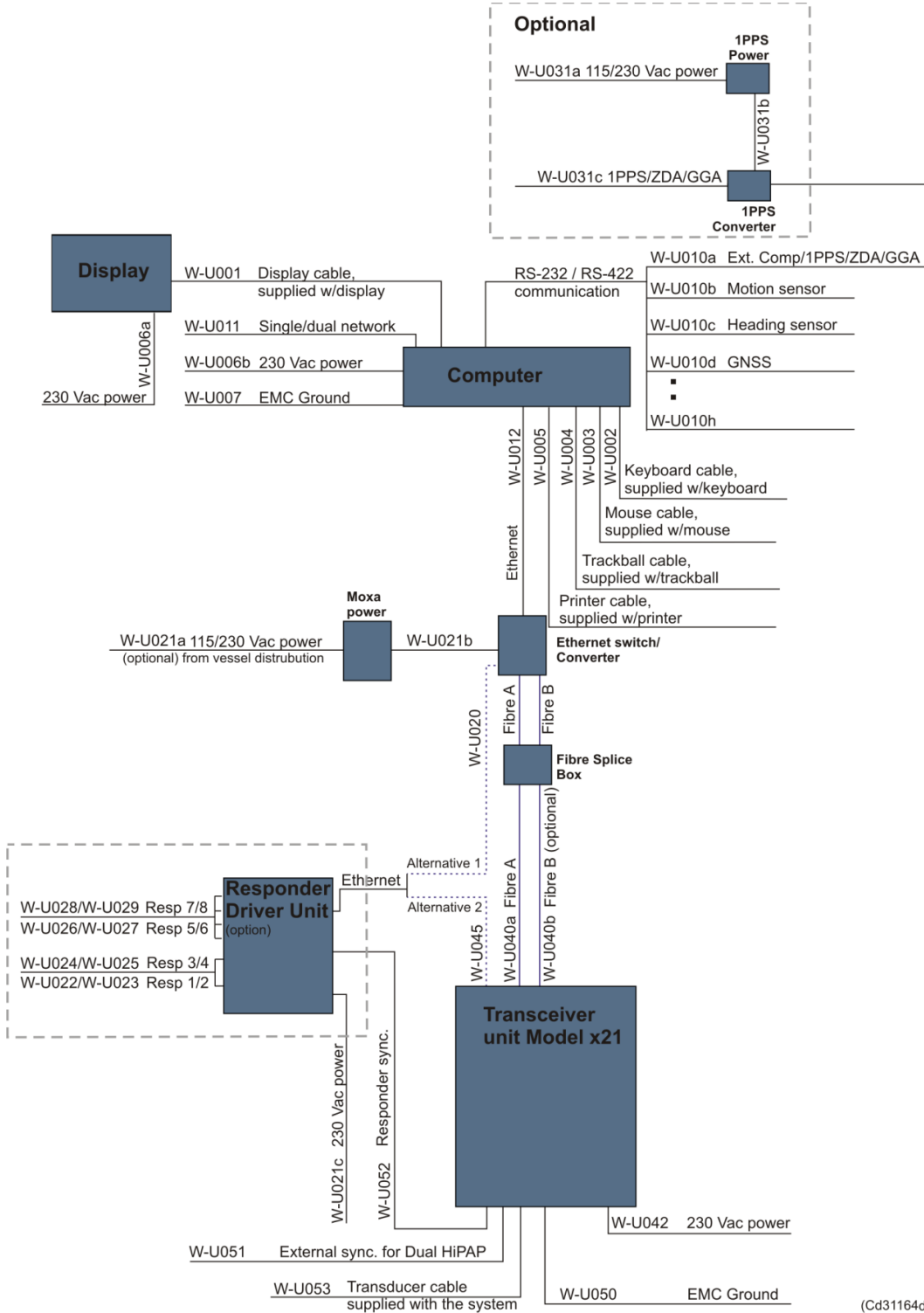
Cable plan and interconnections

KM cable Core no	Cable from/ Connection type	Term/Plug Pin no.	Cable to/ Connection type	Term/Plug Pin no.	Cable type / Spec. signal	Signal type	Ref. Plug layout
		U2 162 GVC (NO)		Blue	3		
		F3 +24V		Brown	1		
		F3 0V		Blue	3		
W-U090	Ethernet switch	Ethernet, RJ45	Hull Unit Controller	Ethernet, RJ45	Cat 7*	Ethernet	
W-U080	Laser at the Hull unit (option)	Cable part of the unit	HUC	U2/F3		Control signals	Ref: DWG 313862
		Brown		F3 +24V	Brown	V+	
		Blue		F3 0V	Blue	V-	
		White		U2 332	White	A10+	
		Blue		U2 333	Blue	A10-	
		Black		Not used			
Gray		Not used					

* CAT 6 for patch and CAT 7 for installation.

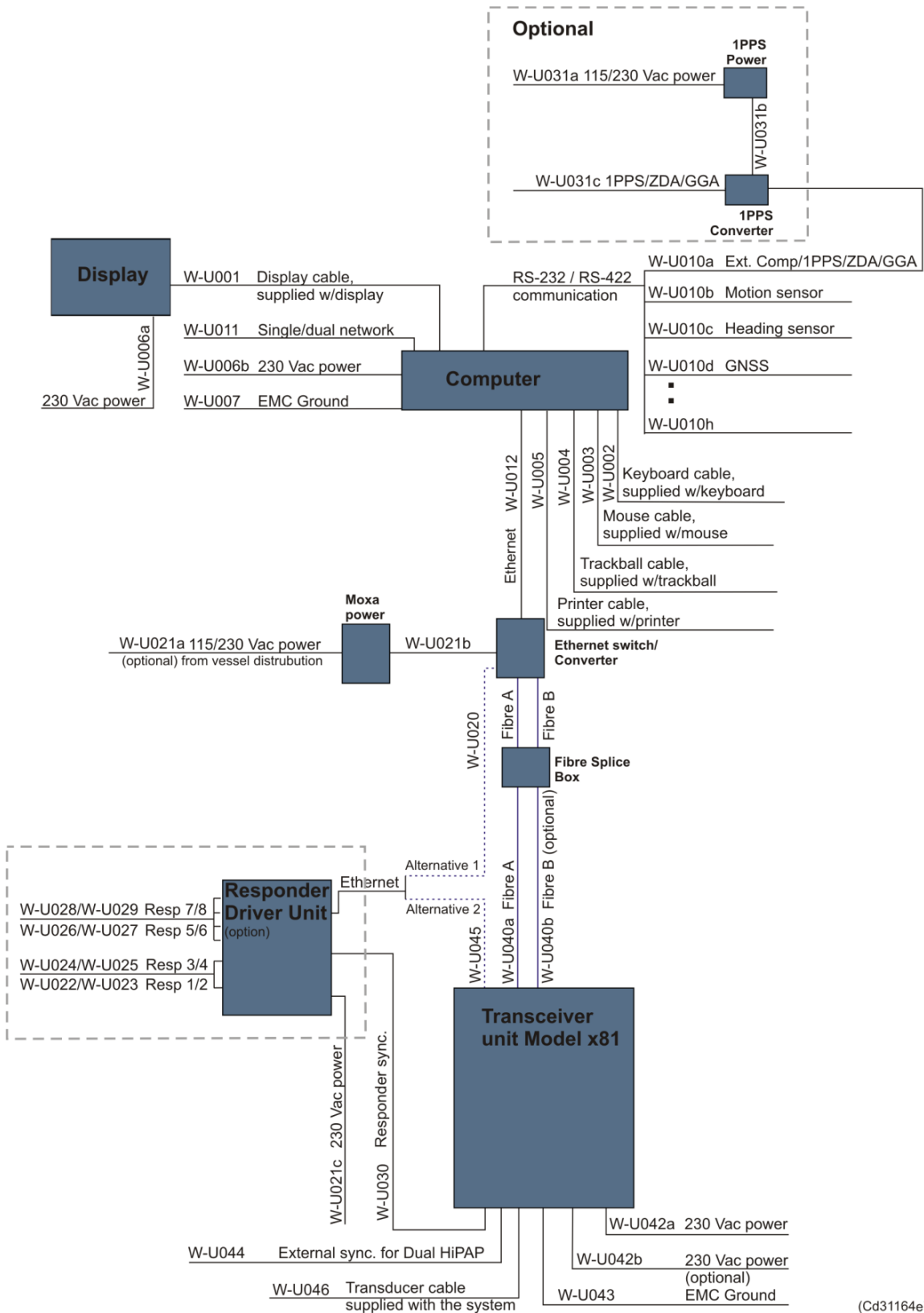
CABLE OVERVIEW

HiPAP system with Transceiver unit Model x21

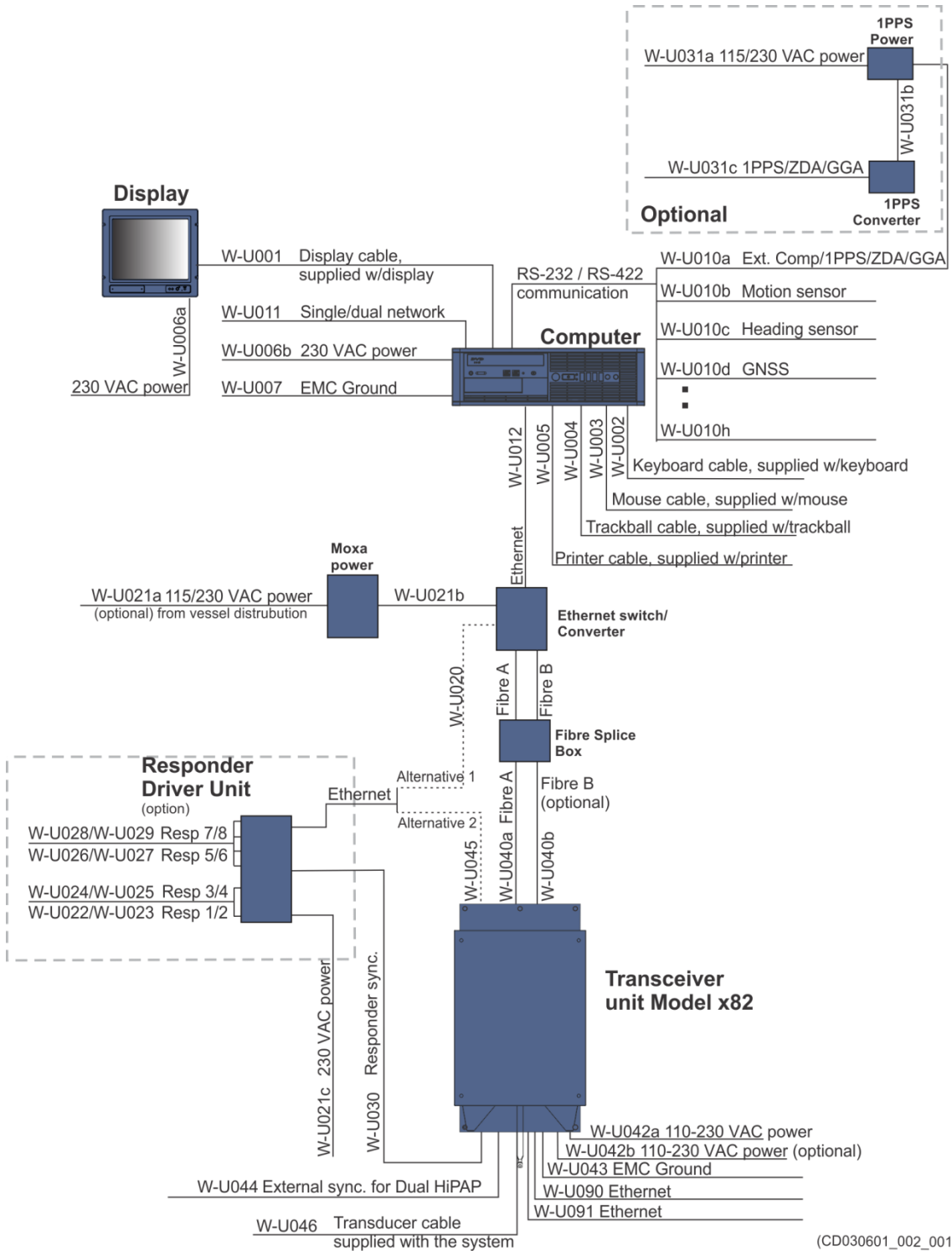


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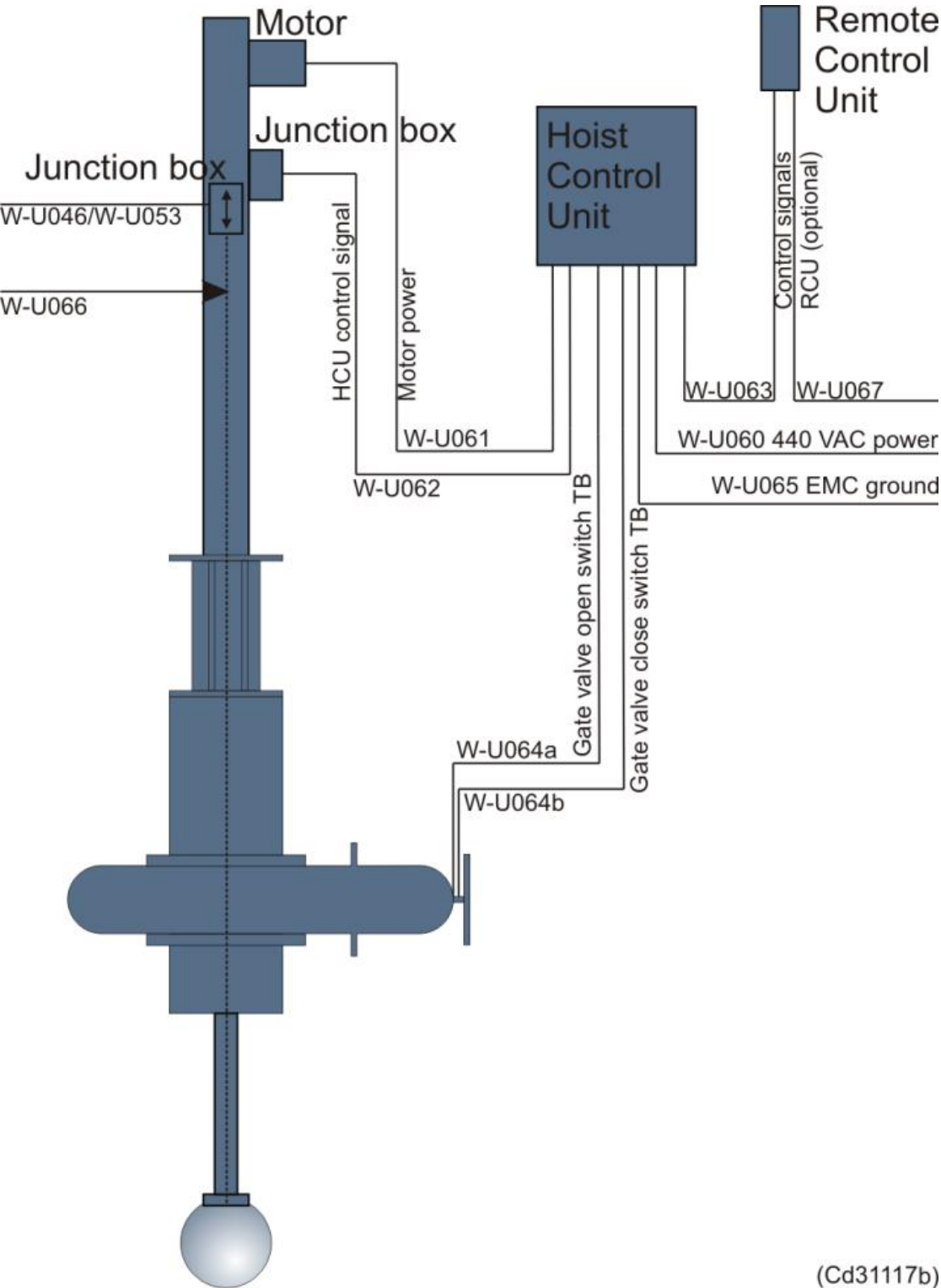
HiPAP system with Transceiver unit Model x81



HiPAP system with Transceiver unit Model x82

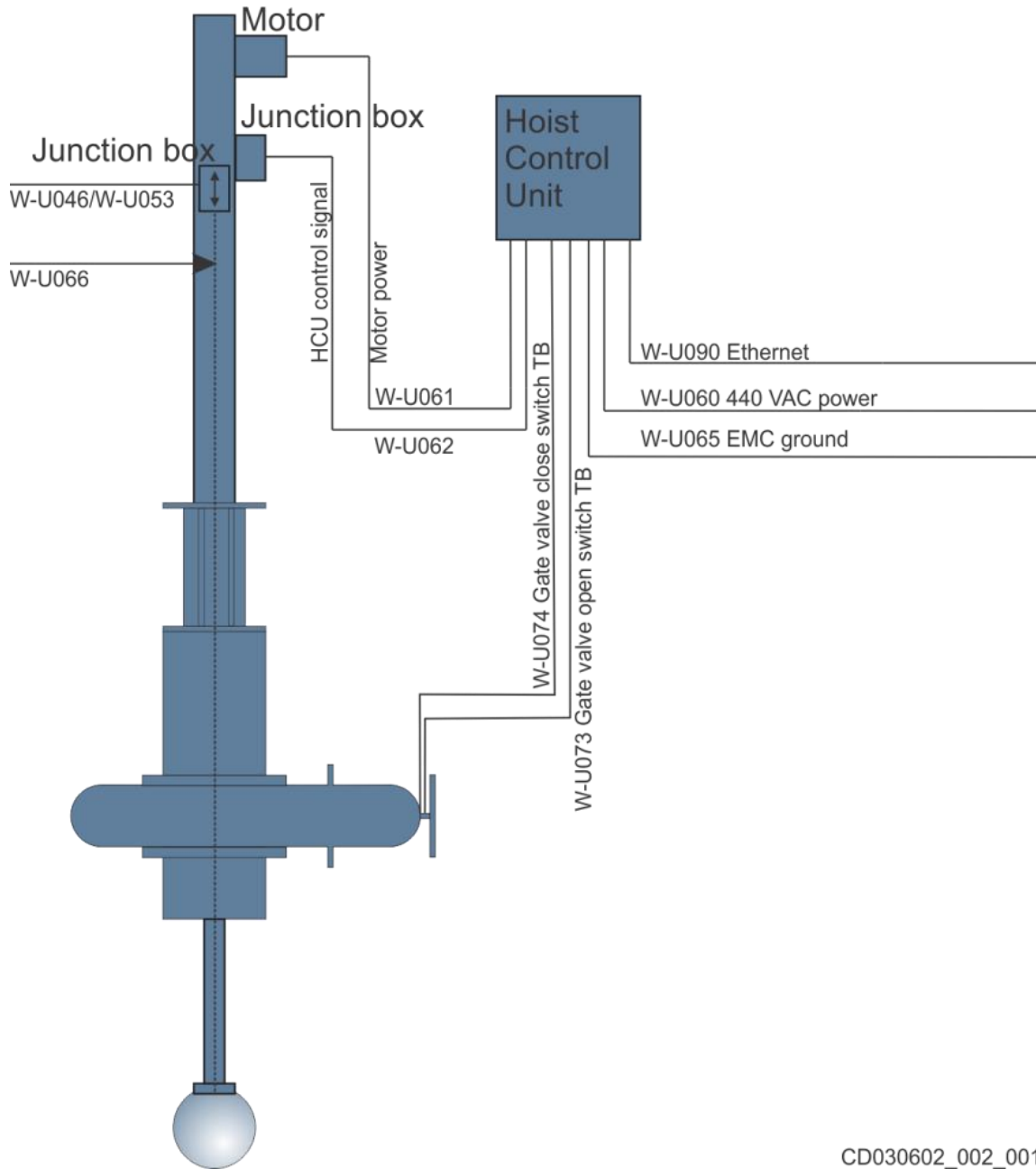


HiPAP system with remote control unit



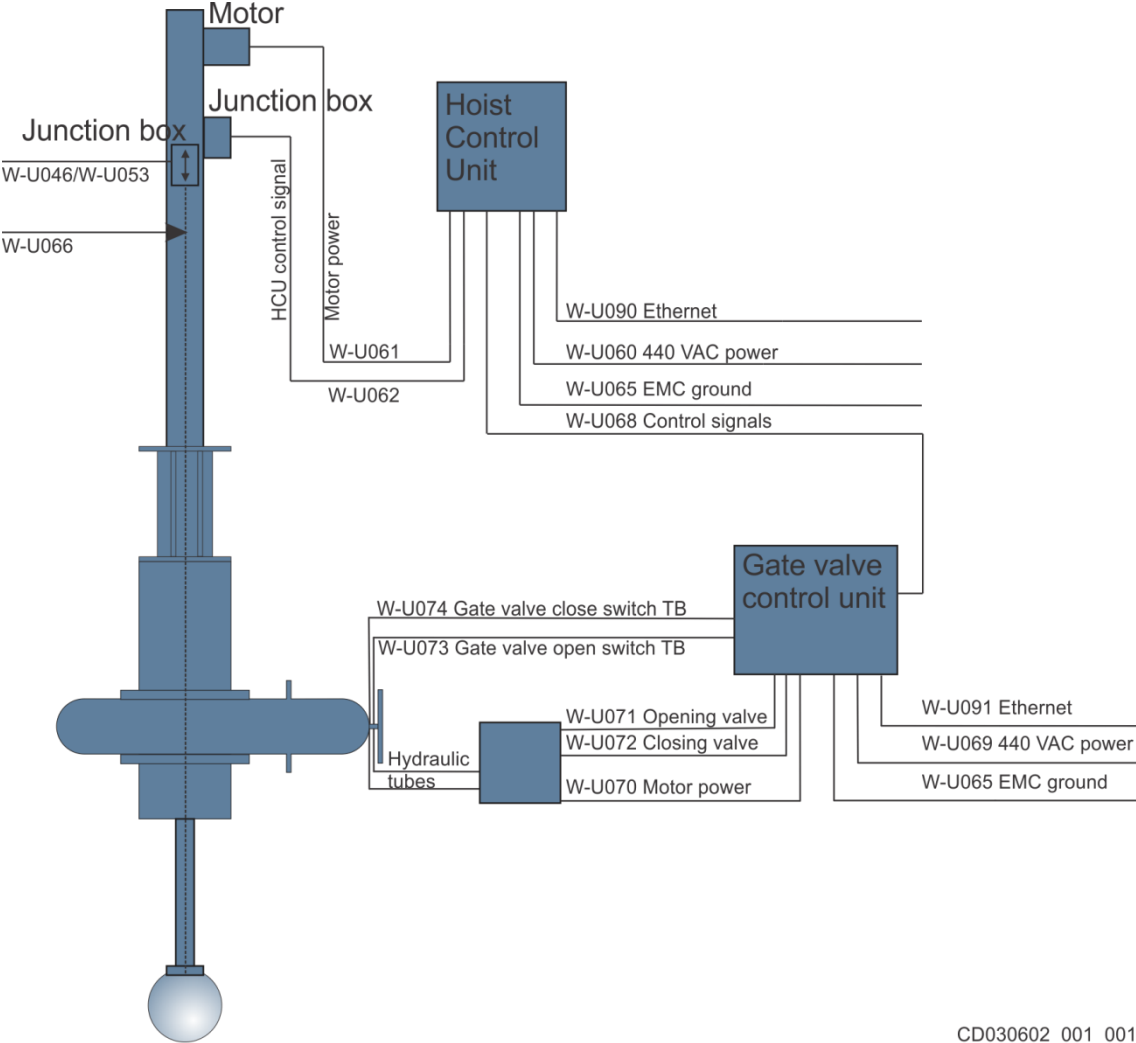
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HiPAP hull unit system with Ethernet



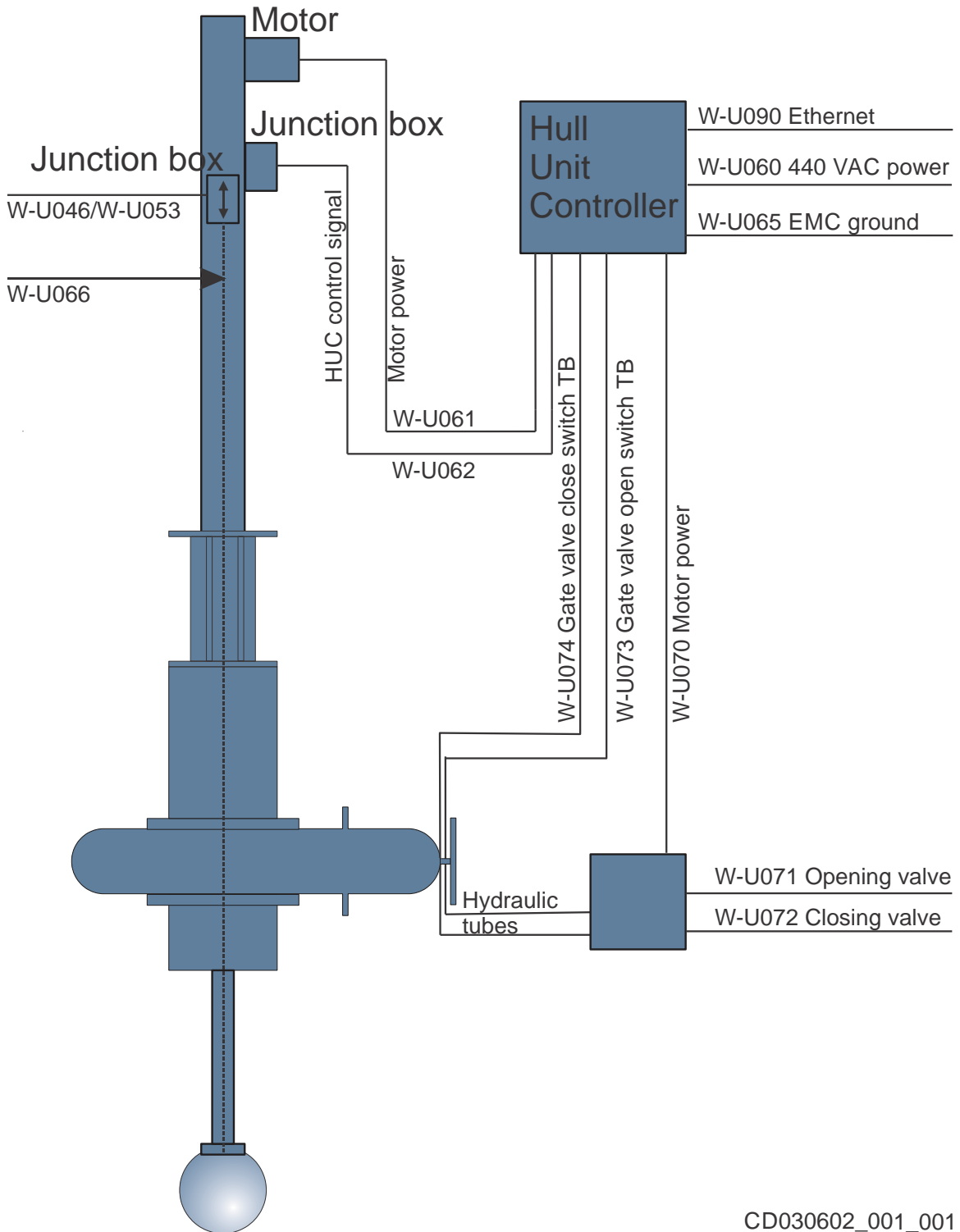
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HiPAP hull unit system with Ethernet and gate valve control unit



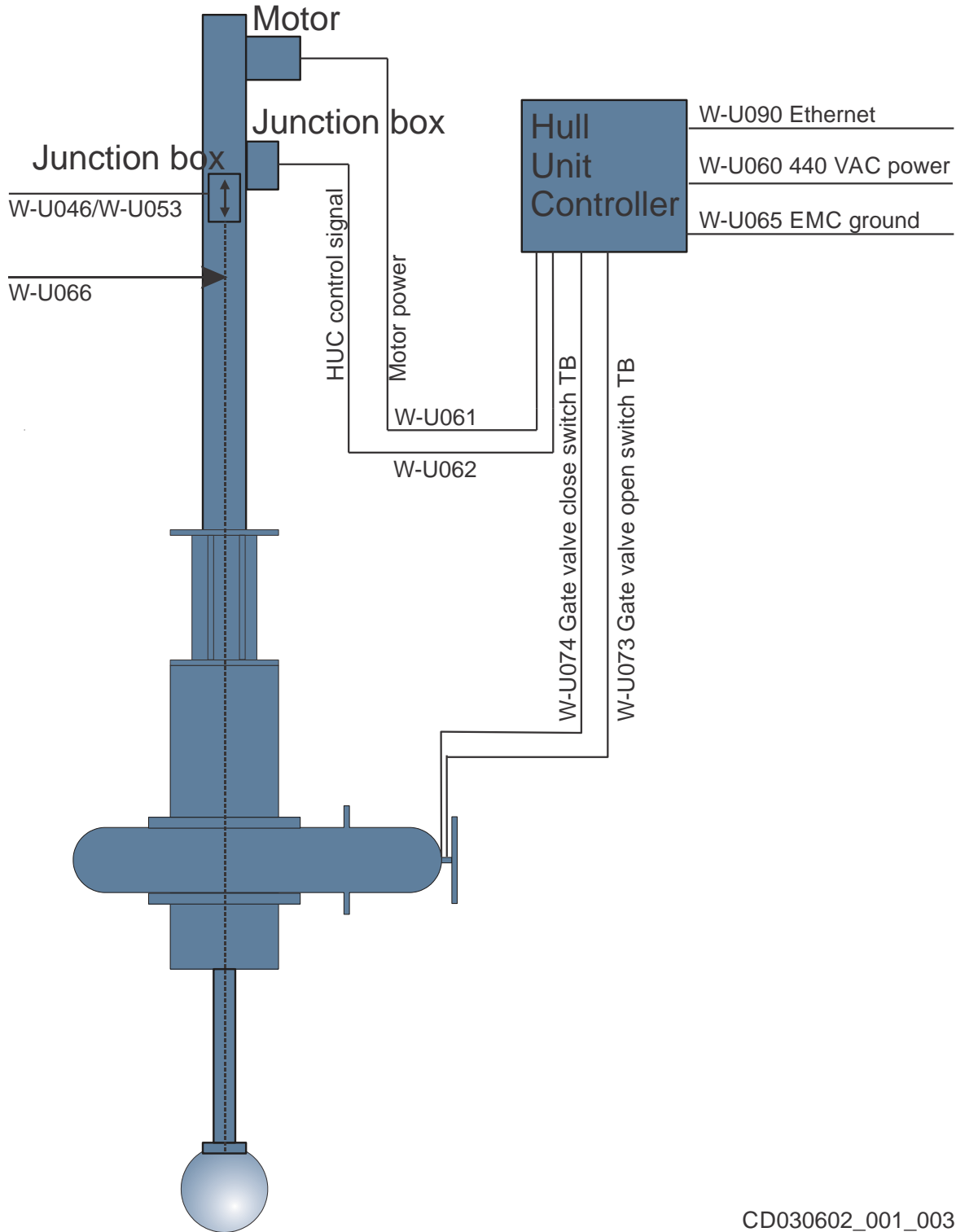
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HiPAP hull unit system with Hull Unit Controller and gate valve control unit



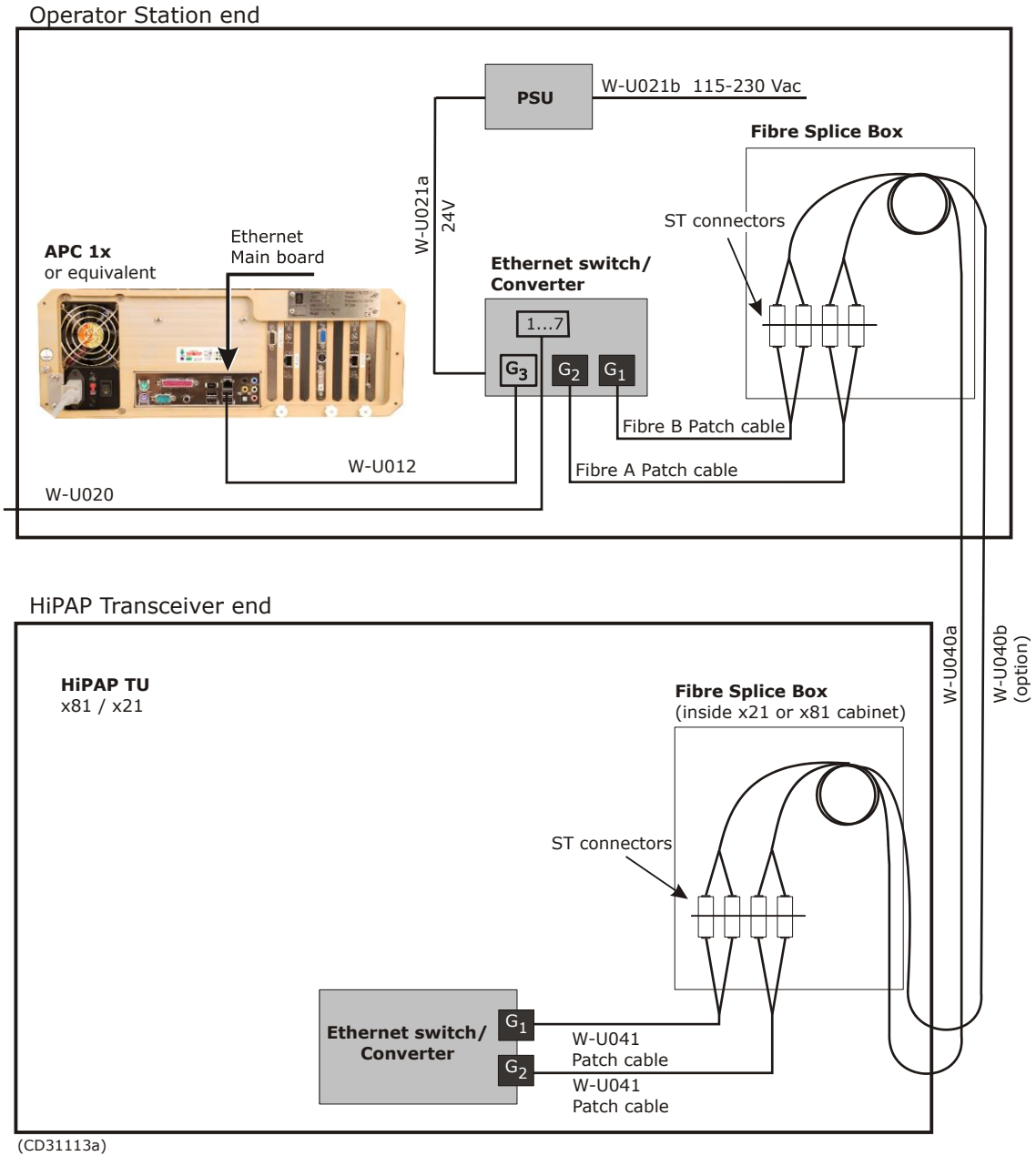
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HiPAP hull unit system with Hull Unit Controller



CD030602_001_003

Fibre-optic cables



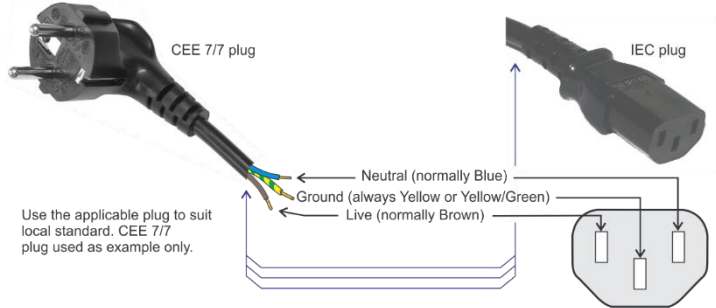
Fibre optic cable – connector type ST



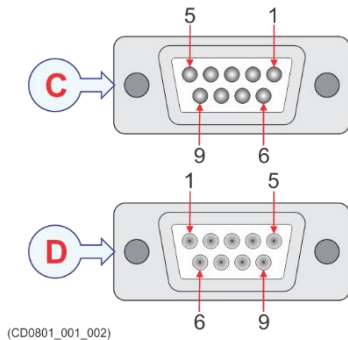
RJ45 plug for Ethernet cable



Standard plug for AC power cable

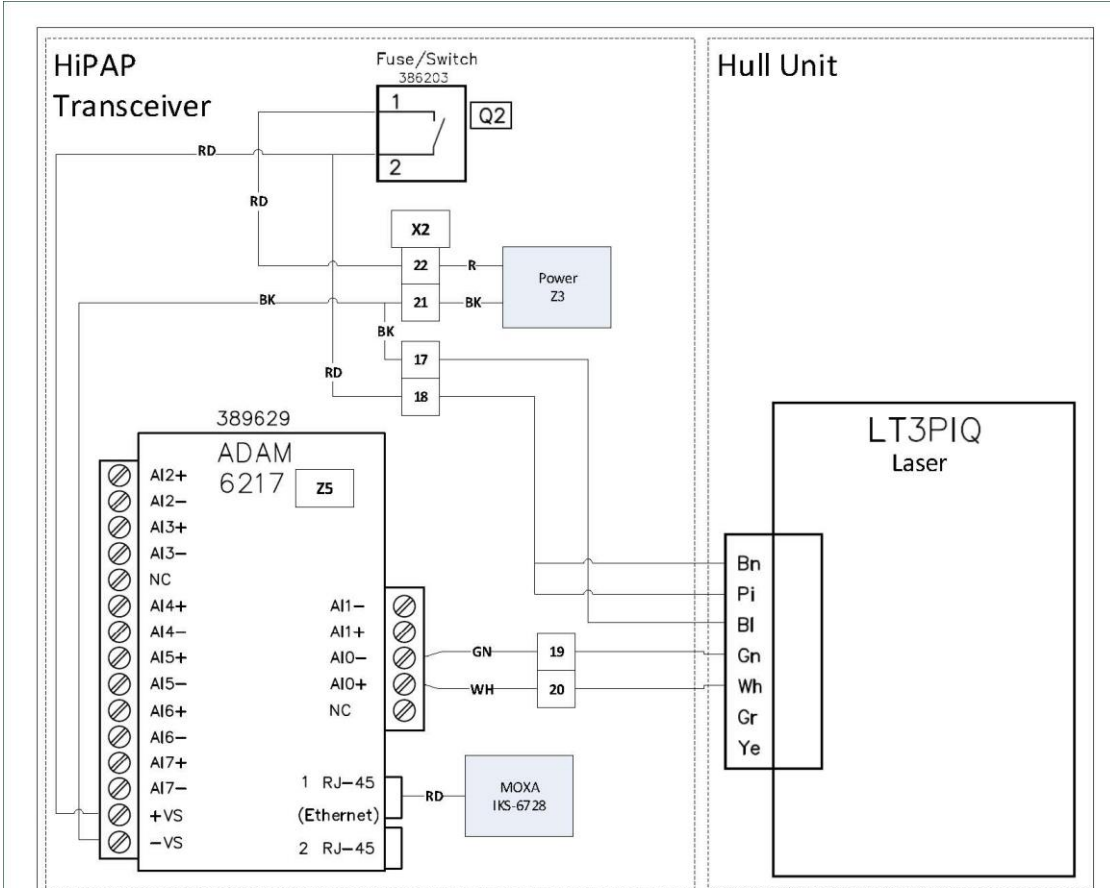


DSUB plug for RS 232/422



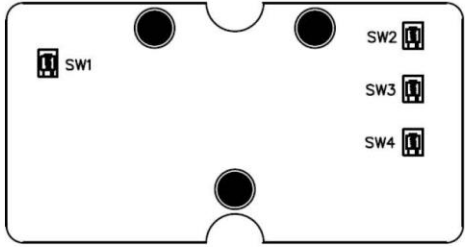
Where C is the female plug and D the male plug.

Hoist laser indicator x82 – wiring diagram



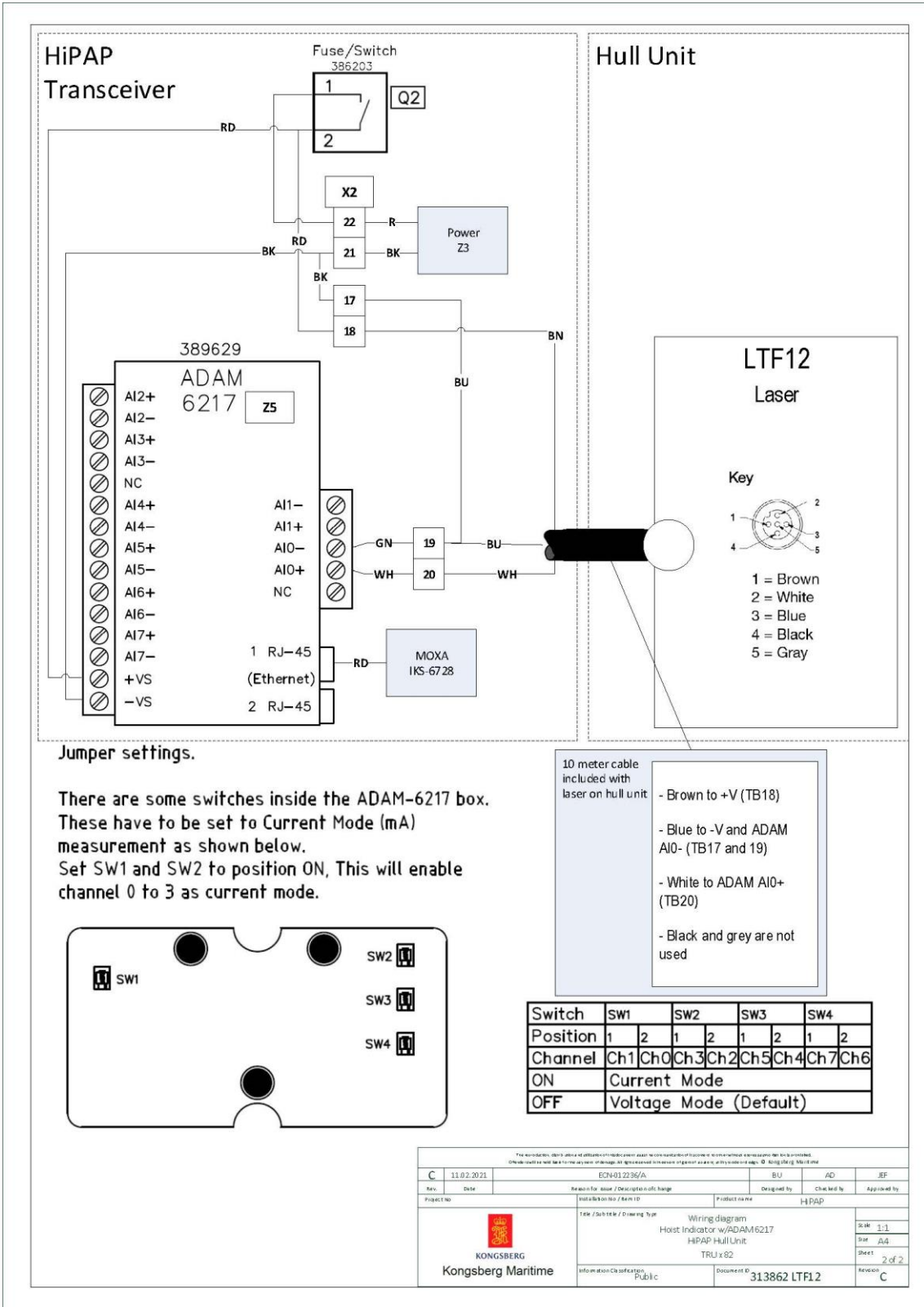
Jumper settings.

There are some switches inside the ADAM-6217 box. These have to be set to Current Mode (mA) measurement as shown below. Set SW1 and SW2 to position ON, This will enable channel 0 to 3 as current mode.

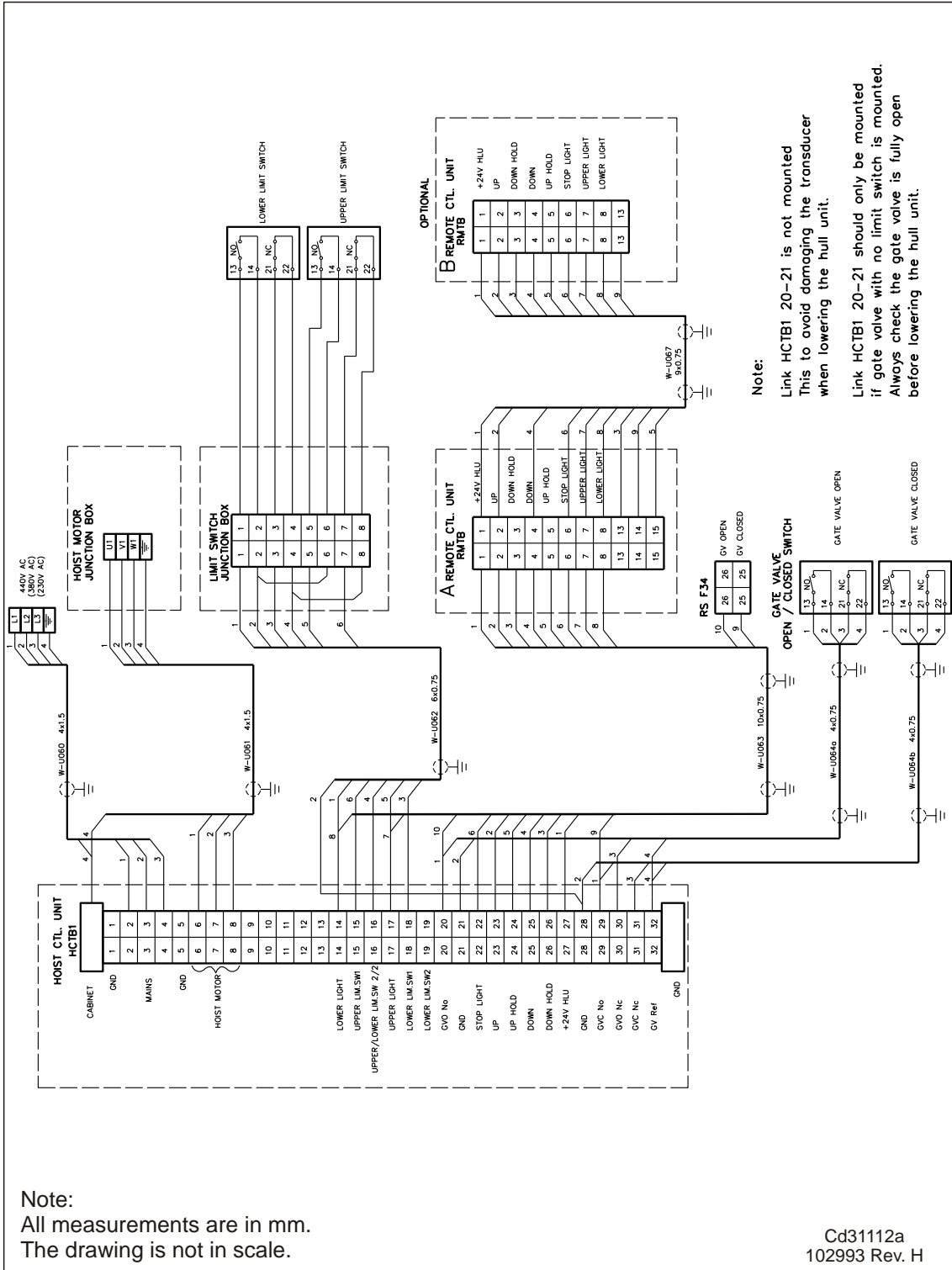


Switch	SW1		SW2		SW3		SW4	
Position	1	2	1	2	1	2	1	2
Channel	Ch1	Ch0	Ch3	Ch2	Ch5	Ch4	Ch7	Ch6
ON	Current Mode							
OFF	Voltage Mode (Default)							

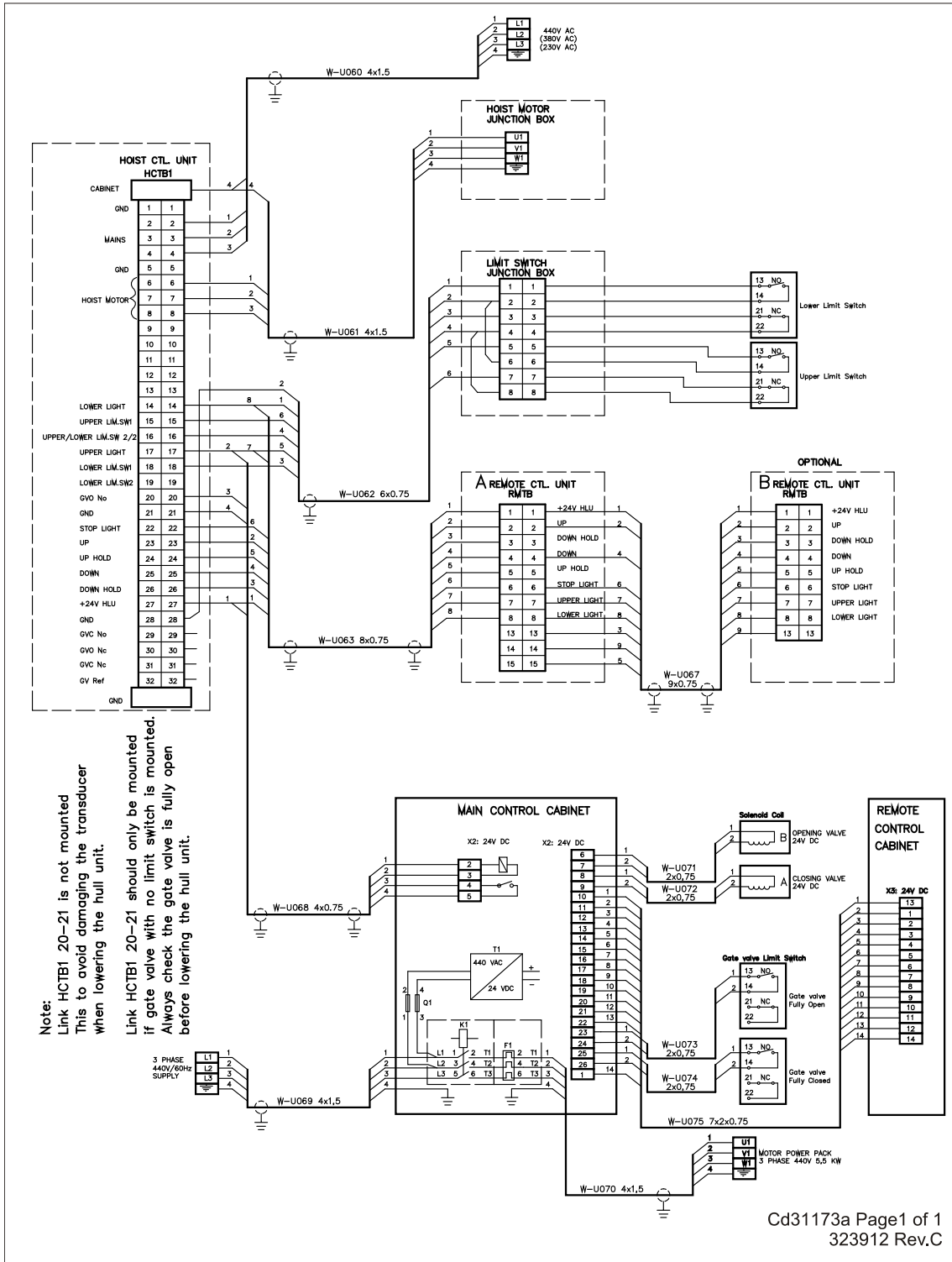
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Rev.	Date	Reason for issue / Description of change				Designed by	Checked by	Approved by		
Project No.	Installation No. / Item ID				Product name	HiPAP				
		Title / Subtitle / Drawing type				Wiring diagram				
						Hoist Indicator w/ADAM6217				
						HiPAP Hull Unit				
						TRU x82				
Information Classification		Public				Document No.		313862 LT3PIQ		
Scale					Sheet	1 of 2				
Rev.					Revision	C				



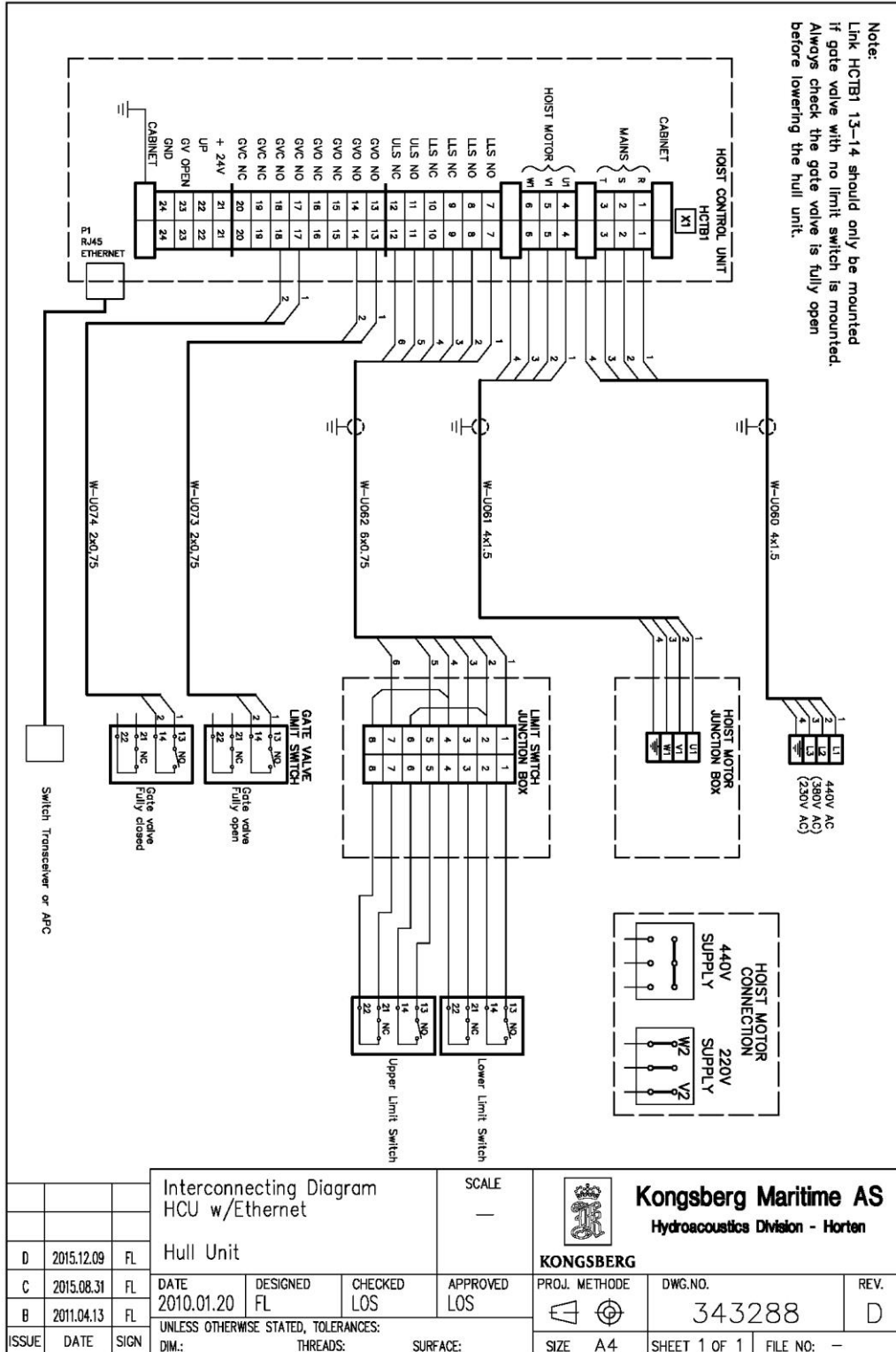
Hull unit system, no Ethernet – wiring diagram



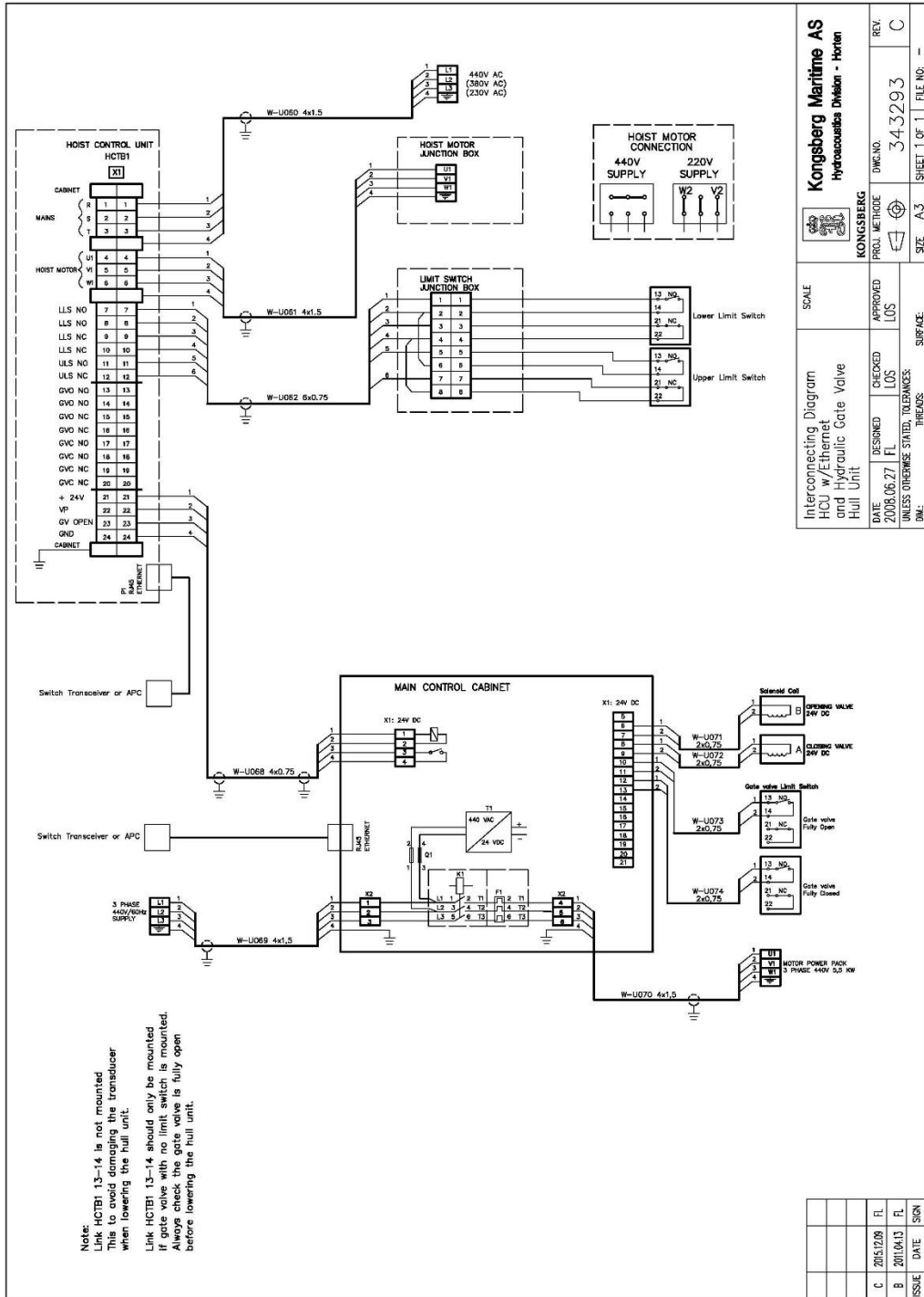
Hull unit system with hydraulic system for activating the gate valve, no Ethernet



Hull unit system with Ethernet



Hull unit system with Ethernet to HCU and Ethernet to gate valve hydraulic system



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