Technical Requirement

Aker BP Additional Requirements to Norsok Z-015 - Temporary Equipment

Document no.:	53-000769
Rev. no.:	12.0
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About this document

Purpose	The purpose of this specification is to define Aker BP's specific additional requirements to NORSOK Z-015:2020
Valid for	This specification applies to all organizational units and geographical locations.
Revision Period	3 Years
Non-conformity/ Deviations	If unable to comply with requirements stated in this document, process for deviations and non-conformity applies.

Role	Name
Owner	Narvestad, Ole Jørgen
Verifier	Lilledal, Morten
Coordinator	Olsen, Geir Rønnich

Rev.no.	Date	Description of Change
12.0	2026-11-17	- *Cleaning up chapter 2 with chapter structure for each asset* - *Added info for Munin* - *Updated electro and crane for Ula* - *Updated crane for Ivar Aasen* - *Instrument for Hugin A&B* - *Updated electro for Hugin B* - *Change of verifier* - *Changed from SM to MM fiber on Ula* - *Added fiber information for Tambar* - *Added instrument interface for PWP and Fenris* - *Added information for verification of instrument interface on EG* - *Interface added for electrical Hugin A and B*
11.0	2025-05-07	- *Telecom for PWP, Fenris, Hugin A/B & Munin included* - *Fiber connection information included* - *Limitation on instrument cables to Valhall included (2.1.5.2)* - *Removed 690V, 125A socket outlet from Ivar Aasen intermediate deck.* - *Correction Alvheim Plug - STAHL 8581/12-506* - *Alvheim New Socket 690V/125A TU25 Top Process Deck (Eaton Crouse-Hinds - GHG5154405R3001)*
10.0	2022-01-10	*Major update and revised to align with NORSOK Z-015:2020* *Previous revisions are available in D2*

Table of Contents

1 Scope 5
1.1 Additional Requirements to Process Safety 5
2 Hook-up interfaces 6
2.1 Alvheim Temporary Equipment Information 6
2.1.1 Instruments 6
2.1.2 Telecoms 9
2.1.3 Electrical 10
2.1.4 Utilities 11
2.2 Ivar Aasen Temporary Equipment Information 12
2.2.1 Electrical 12
2.2.2 Instrument 13
2.2.3 Telecom 14
2.2.4 Utilities 14
2.2.5 Lifting capacity offshore cranes 15
2.3 Skarv, Temporary Equipment Information 16
2.3.1 Electro 16
2.3.2 Instrument 17
2.3.3 Telecom 18
2.3.4 Utility Systems, Skarv 19
2.3.5 Hose Connectors 20
2.4 ULA, Temporary Equipment Information 21
2.4.1 Electrical 21
2.4.2 Instrument 23
2.4.3 Telecom 25
2.4.4 Lifting capacity offshore cranes 26
2.5 Valhall, -HOD Temporary Equipment Information 27
2.5.1 Electrical 27
2.5.2 Instrument 28
2.5.3 Telecom 31
2.6 Edvard Grieg 36
2.6.1 Electrical 36
2.6.2 Instrument 39
2.6.3 Telecom 40
2.6.4 Utilities 41
2.6.5 Lifting Capacity Offshore Crane 42
2.7 Yggdrasil Hugin A 43
2.7.1 Electrical 43
2.7.2 Instrument 43
2.7.3 Telecom 44
2.8 Yggdrasil Hugin B 47
2.8.1 Electrical 48
2.8.2 Instrument 50
2.8.3 Telecom 52
2.9 Munin: 53
2.9.1 Electrical 53
2.9.2 Instrument 54

2.9.3 Telecom 56
2.9.4 Utilities 57
2.9.5 Lifting capacity offshore cranes 58

1 Scope

This specification contains Aker BP additional requirements to NORSOK Standard Z-015:2020. It contains the hook-up interfaces for the Aker BP installations.

Reference is made to BMS workflow IDs:

- WF-0294 Request and Inspect Temporary Equipment
- WF-0293 Use of Temporary Equipment

1.1 Additional Requirements to Process Safety

In addition to requirements given NORSOK Z-015 regarding protection of equipment the following applies:

- During hook-up of temporary equipment to the facility process systems both the temporary equipment and the process system shall be sufficiently protected (I.e., Set-points, capacity, and response times) against exceeding their design- parameters according to relevant design codes because of the interconnection.

- NORSOK P-002 shall be used when assessing necessary protection towards the facility process system

- PSV shall be tested and certified prior to shipment of temporary equipment

- Emergency shut-down functions shall be tested prior to start-up of the temporary equipment.

2 Hook-up interfaces

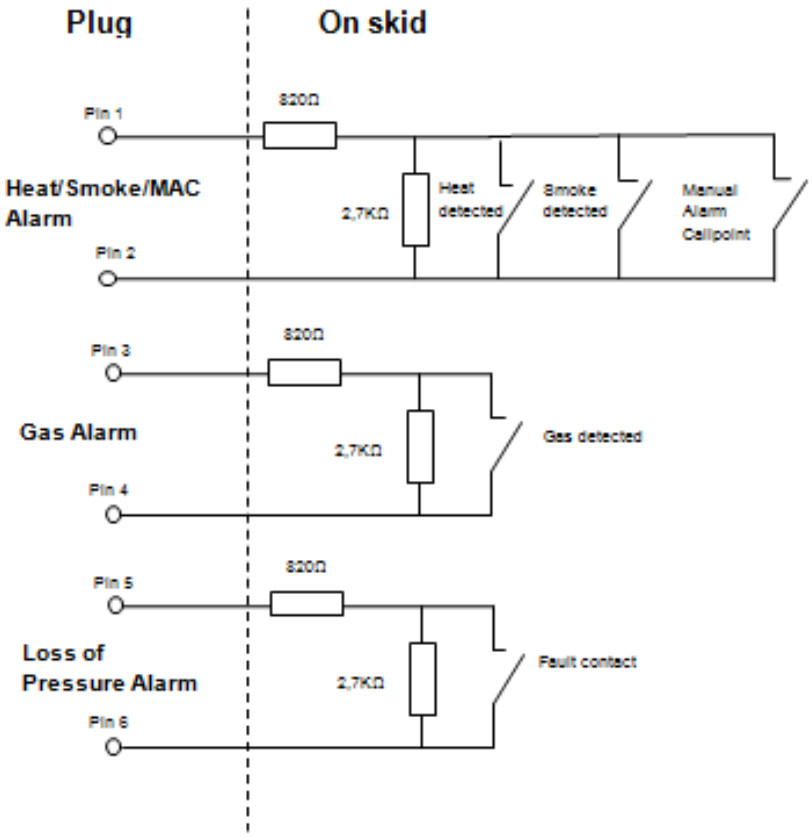
2.1 Alvheim Temporary Equipment Information

Interface for temporary equipment and 3rd party equipment for Alvheim FPSO according to NORSOK Z-015

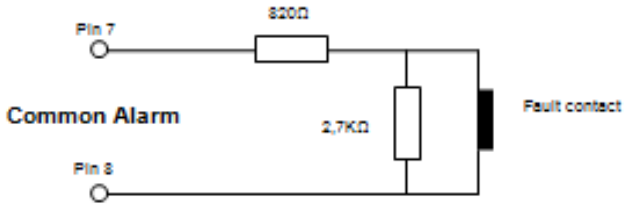
2.1.1 Instruments

Function	Signal type	Connection platform	Connection temp. equip.	Area
		Desc./ Type	Desc./ Type	
Fire (Heat/Smoke/Manual Alarm Callpoint)	N.O. (Digital Input-Open contact for alarm)	Socket: CEAG GHG 511 4906 R0001 6h KU. Pin 1,2	Plug: CEAG GHG 591 2201 R0002 6h pin 1,2	TU20, TU25, TU30
Gas	N.O. (Digital Input-Open contact for alarm)	Socket: CEAG GHG 511 4906 R0001 6h KU. Pin 3,4	Plug: CEAG GHG 591 2201 R0002 6h pin 3,4	TU20, TU25, TU30
Loss of pressure	N.O. (Digital Input-Open contact for alarm)	Socket: CEAG GHG 511 4906 R0001 6h KU. Pin 5,6	Plug: CEAG GHG 591 2201 R0002 6h pin 5,6	TU20, TU25, TU30
Common fault	N.O. (Digital Input-Open contact for alarm)	Socket: CEAG GHG 511 4906 R0001 6h KU. Pin 7,8	Plug: CEAG GHG 591 2201 R0002 6h pin 7,8	TU20, TU25, TU30

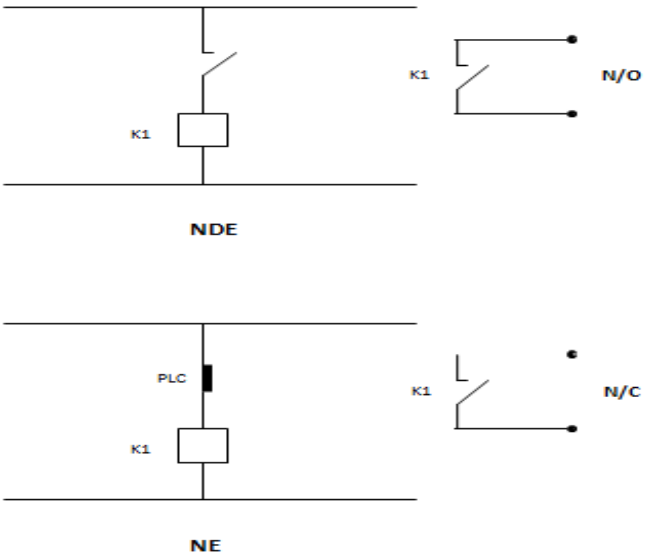
Pin allocation, contact sense and line monitoring for Fire, Gas and Loss of Pressure Alarms (Shown in healthy state or loss of power to skid F&G panel), use N.O. contacts from F&G panel).



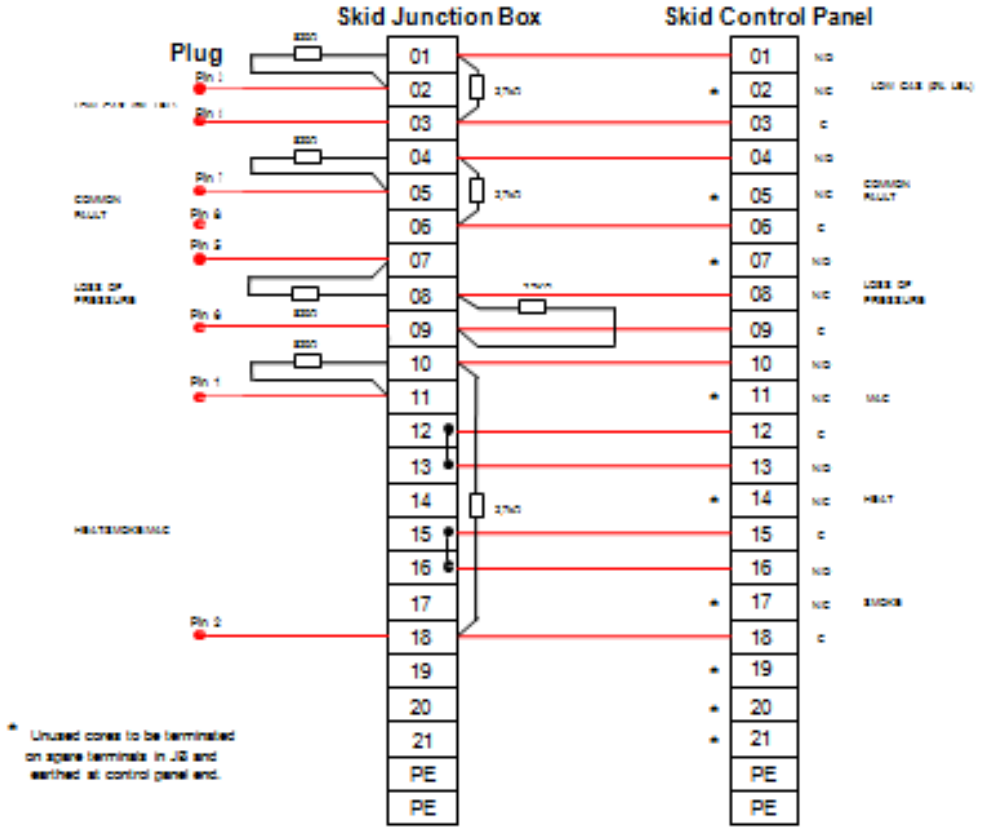
Pin allocation, contact sense and line monitoring for Common Alarm (Shown in alarm state or loss of power to skid, use N.C. contacts).



Fire detection cabinet output relays (shown in healthy state i.e. no alarm)



Example: Supplier wiring providing loop monitoring and socket pin/associated loop configuration.



2.1.2 Telecoms

Function	Signal type	Connection platform	Connection temp. equip.	Area
		Desc./ Type	**Desc./ Type**	
PA “A”	110 V system	Socket outlet: STAHL 8575/11-404 4h (yellow)	Plug: STAHL: 8575/12-404 (yellow) (1475 R – kl.4)	TU20, TU25, TU30
PA “B”	110 V system	Socket outlet: STAHL 8575/11-404 4h (yellow)	Plug: STAHL: 8575/12-404 (yellow) (1475 R – kl.4)	TU20, TU25, TU30
Telephone	48 V Analouge	Socket outlet: STAHL 8575/11-402 2h (green)	Plug: STAHL: 8575/12-402 (green) (1483 R – kl.2)	TU20, TU25, TU30

2.1.3 Electrical

Power	Volt	Freq	Phase Current	Neutral loaded	System earth	Short circuit level		Distribution protection		Connection FPSO	Connection from temporary equipment	Area
*	[V]	[Hz]	[A]	Yes/No	[S/I/R] **	min [kA]	max [kA]	Fuse [A]	Earth fault [mA]	Desc./Type	Desc./Type	Module / Room No.
Main	220 2P+E	60	16	No	S			16		Socket: STAHL 8570/11-306	Plug: STAHL 8570/12-306	All Areas and Utility stations in area
Main	400 3P+N+E	60	63	Yes	S			63		Socket: STAHL 8579/11-506	Plug: STAHL 8579/12-506	All Areas and Utility stations in area
Main	400 3P+N+E	60	125	Yes	S			125		Socket: STAHL 8581/31-506	Plug: STAHL 8581/12-506	Landing areas TU20 and TU30
Main	690 3P+E	60	125	No	R			125		Socket: Eaton Crouse-Hinds - GHG5154405R3001	Plug: Eaton Crouse-Hinds - GHG5157405R0001	TU25 Top Process Deck
*	Main - Main Power Emerg - Emergency Power Ess - Essential power UPS - UPS power				**	S = Solidly earthed system I = Isolated system R = Resistor (resistance earth)						

Cable length for each plug should as a minimum be 30 meters.

2.1.4 Utilities

Function	**Pressure**	**Amount/flow**	**Connection**			**Area**
	BarG	Max. Capacity	Type	Diameter	Material	Module/Room No
Plant air	7.0					
Instrument air	9.5					
Sprinkler						
Seawater						
Freshwater						
Drain						

2.2 Ivar Aasen Temporary Equipment Information

2.2.1 Electrical

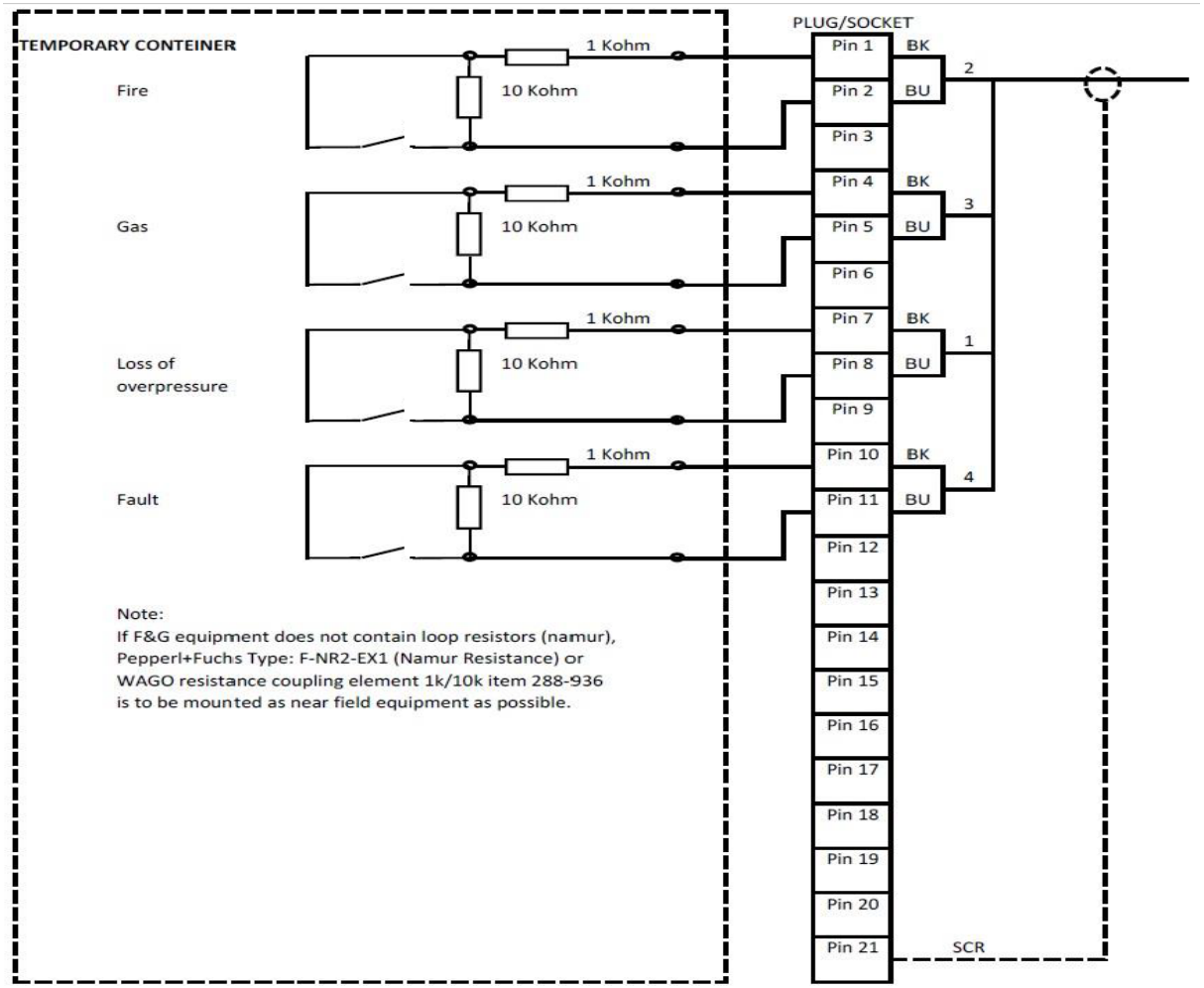
Power	**Volt**	**Freq**	**Phase Curr.**	**Neut Loaded**	**Sys Earth**	**Short Circuit Level**		**Distribution Protection**		**Connection Platform**	**Connection Temporary Equipment**	**Area**
*	V	Hz	A	Yes/No	S/I/R **	Min kA	Max kA	Fuse A	Earth Fault	Desc./Type	Desc./ Type	Module / Utility station
Main	230 1ph+N+PE	60	16	Y	S			16		Stahl 8570/11-306	Stahl 8570/12-306	Weather deck
												Intermediate deck
UPS	230 L1 +L2 +PE	60	16	N	I			16		Stahl 8570/11-306	Stahl 8570/12-306	Weather deck
												Intermediate deck
Main	400 3ph+ N+PE	60	63	Y	S			63		Stahl 8579/31-506	Stahl 8579/12-506	Weather deck
												Intermediate deck
Emerg	690 3ph+ PE	60	125	N	I			125		Stahl 8581/31-405	Stahl 8581/12-405	Weather deck
Emerg	690 3ph+ PE	60	200	N	I			200		Tranberg junction box, terminal connection Weidmueller WWF185	Weidmueller WWF185	Weather deck
												Intermediate deck

*	Main - Main Power Emerg - Emergency Power Ess - Essential power UPS - UPS power	**	S = Solidly earthed system I = Isolated system R = Resistor (resistance earth)

2.2.2 Instrument

Function	Signal Type	Connection Platform	Connection Temp. Equipment	Area
		Desc. / Type	Desc. / Type	Module / Utility station
Loss of pressure	NO (contact closed= alarm)	GHG 511 4906 R0001 6h Pin 7,8,9	GHG 591 2201 R0002 6h Pin 7,8,9	Weather deck Utility station 1 West: 8 outlets Utility station 2 East: 8 outlets
Fire	NO (contact closed= alarm)	GHG 511 4906 R0001 6h Pin 1, 2, 3	GHG 591 2201 R0002 6h Pin 1,2,3	Weather deck Utility station 1 West: 8 outlets Utility station 2 East: 8 outlets
Gas	NO (contact closed= alarm)	GHG 511 4906 R0001 6h Pin 4, 5, 6	GHG 591 2201 R0002 6h Pin 4,5,6	Weather deck Utility station 1 West: 8 outlets Utility station 2 East: 8 outlets
General alarm from Container	NO (contact closed= alarm)	GHG 511 4906 R0001 6h Pin 10, 11, 12	GHG 591 2201 R0002 6h Pin 10,11,12	Weather deck Utility station 1 West: 8 outlets Utility station 2 East: 8 outlets

21 pins connector for instrument signals:



Install loop resistor in container junction box in accordance with SAS HW typical DI-S-41F (defined in DN02-S09011-I-SP-0002). 10 K ohm in parallel and 1 K ohm in series to provide continuous loop monitoring in SAS.

2.2.3 Telecom

Function	Signal type	Connection platform	Connection temp. equip.	Area
		Desc./ Type	Desc./ Type	Modul/ Utility station
PAGA	Audio, 100V line	Hawke Instrument 4 pins N-4WAY BR Pin 1 and 2. Locking position 2	Hawke Instrum 4 pins N-4WAY CP Pin 1 and 2. Locking position 2	Weather deck Utility station 1 West: 5 outlets Utility station 2 East: 5 outlets
Telephone	Audio	Hawke Instrument 4 pins N-4WAY BR Pin 1 and 2. Locking position 1	Hawke Instrum 4 pins N-4WAY CP Pin 1 and 2. Locking position 1	Weather deck Utility station 1 West: 3 outlets Utility station 2 East: 3 outlets
Data (fiber)	SM Fiber	ProBeam 4-Channel PBJR contakt-LC/PC, AXIAL, 9/0S2, 1m	ProBeam Sr panel contact (rig) ProBeam Jr panel contact (unit/container)	Weather deck Utility station 1 West: 3 outlets Utility station 2 East: 3 outlets

2.2.4 Utilities

Funksjon	Normalt trykk	Maks. Trykk	Temp min	Temp maks	Temp normal	Tilkobling	Pipe spek.	Område
	Barg	Barg	°C	°C	°C			Module/ Utility station
Anleggets luftsystem	8	9.5	-7	+60	+35	1” Chicago claw (open ended)	1” 150# RF Flange	Weather deck Utilitystation 1: 3 outlets Utilitystation 2: 3 outlets
								Intermediate deck Utilitystation 1: 3 outlets Utilitystation 2: 3 outlets
Service vann	10	18	-6	+50	+15	1” Snaplock (open ended)	1” 150# RF Flange	Weather deck Utilitystation 1: 3 outlets Utilitystation 2: 3 outlets
								Intermediate deck Utilitystation 1: 3 outlets Utilitystation 2: 3 outlets
HP varmtvann	190	246.4	-7	+100	+80	3/8” BSP (open ended) to fit spray, guns, additional quick coupling	1” 1500# RTJ Flange	Weather deck Utilitystation 1: 3 outlets Utilitystation 2: 3 outlets
								Intermediate deck Utilitystation 1: 3 outlets Utilitystation 2: 3 outlets
Nitrogen	7.5	14	-9	+80	+50	1” Snaptite HST (open ended)	1” 150# RF Flange	Weather deck Utilitystation 1: 3 outlets Utilitystation 2: 3 outlets
								Intermediate deck Utilitystation 1: 3 outlets Utilitystation 2: 3 outlets
Diesel	9.3	13	-6	+50	Amb	1” Snaptite HST (open ended)	2” 150# RF Flange	Weather deck Utilitystation 1: 3 outlets Utilitystation 2: 3 outlets
								Intermediate deck Utilitystation 1: 3 outlets Utilitystation 2: 3 outlets

2.2.5 Lifting capacity offshore cranes

Crane IAA-73MA0001	Hs 1m. max load/ max radius	Hs 2m. max load/ max radius	Hs 2,5m. max load/ max radius	Hs 3m. max load/ max radius	Hs 4m. max load/ max radius	Hs 5m. max load/ max radius	Hs 6m. max load/ max radius
Whip Hoist Single fall	20T / 52,5m 13T / 60m	20T / 50,0m 11T / 60m	-	17,2T/52,5m 9,1T/60m	14,9T/50,0m 7,7T/60m	13,2T/50,0m 6,8/60m	11,9T/50,0m 6,1T/60m
Main Hoist Double fall	35T / 42,5m 17,3T/ 57,6m	35T / 40,0m 14,1T/ 57,6m	-	34,8T/ 37,5m 11,5T/ 57,6m	30,6T/ 37,5m 9,6T/ 57,6m	NA	NA
Main Hoist Triple fall	50T / 32,5m 17,3T/ 57,8m	50T / 30,0m 13,2T/ 57,8m	50T / 25,0m 11,8T/ 57,8m	NA	NA	NA	NA
Main Hoist Triple fall Special lift	55T / 30,0m 17,2T/ 57,8m	55T / 22,5m 14,3T/ 57,8m	51,1T/ 17,5m 12,9T/ 57,8m	NA	NA	NA	NA

Values from D2 doc DN02-S09132-N-CA-0002 rev 10l Load charts

2.3 Skarv, Temporary Equipment Information

Frequency:	50Hz	
Distribution system:	TN-C-S	
Voltage level:	230V	16A, 1P+N+PE
	230V	16A, 3P+N+PE
	400V	63A, 3P+N+PE
	400V	125A, 3P+N+PE
	400V	63A, 3P+PE
Maximum short circuit levels	440V Main distribution	15kA
	230V Sub distribution	10kA
Minimum shot circuit level	3X440 & 480v	125A - 2000A
	3X440 & 480v	63A - 1000A
	2X220 & 230V	16A - 200A

2.3.1 Electro

Plugs for connections of 3rd party equipment

Equipment location shall be clarified prior to shipment. This due to different plug on Top side and Hull. Hull/tank top deck does not have 5-pins 400V receptacle with option for 230V for control. This option is only available for Topside.

General on Skarv (Hull & Topside):	
230 V	16A 1P+N+PE, Type: CEAG, GHG511 7306 R0001
Hull and Tank deck 400V:	
63A	3P+PE, CEAG (4-Pins 3fas without neutral), GHG518 7406 R0001
Toppside, U800, T700, P100-P600 400V	
63A	3P+N+PE, Type: CEAG, GHG514 7506 R0001 (5- Pins 3fas with neutral)
125A	3P+N+PE, Type: CEAG, GHG515 7506 R0001

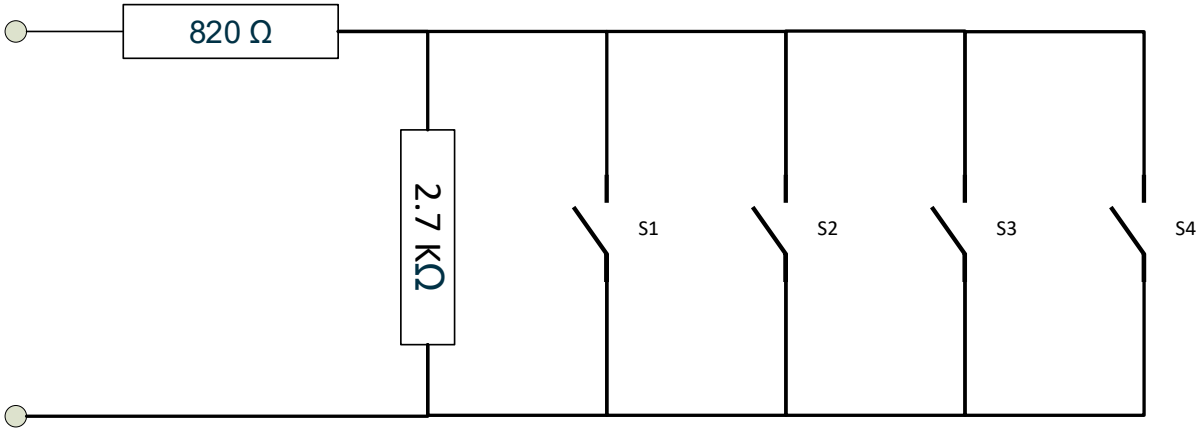
2.3.1.1 Sketch Socket Outlets



2.3.2 Instrument

S1 – NO with overpressure function (closes on loss of overpressure)
S2 – NO with no Heat, Smoke or MAC detected (closes on alarm)
S3 – NO with no Gas detected (closes on alarm)
S4 – NO Common fault (closes on alarm)

Line monitoring for Fire & Gas
Alarms (shown in healthy state) NO contact set to be used



2.3.3 Telecom

Function	Signal type	Connection Platform	Connection temp. equip.	Area
			Des./Type	
PAGA	Audio - 110 V	Socket outlet: STAHL 8575/11-404 4h (yellow)	Socket plug: STAHL 8575/12-404 4h (yellow)	P100 4 outlets U800 4 outlets L908 2 outlets
Telephone	Audio Analogue	Socket outlet: STAHL 8575/11-410 10h (green) + 86-RPB-9301 Terminal Block	Socket plug: STAHL 8575/12-410 10h (green) + Terminal Block	P100 2 outlets U800 2 outlets L908 2 outlets in JB 86-RPB-930
Fiber SM	Singlemode	86-RQB-9301 Wallbox DIN ODF 24 LC/PC SM 9/125-Blue + Probeam 6-fiber PBSR JB-fixed	LC/PC SM 9/125 Probeam 6-fiber PBSR plug	L908 24 outlets in JB 86-RQB-9301 L908 1 outlet at JB 86-RQB-9302
Fiber MM	Multimode	86-RQB-9301Wallbox DIN ODF 24 LC/PC MM 50/125-Turquoise	LC/PC MM 50/125	L908 24 outlets in JB 86-RQB-9301
Copper	Data	86-RQB-9301 Cat 7 RJ45 female	Cat 7 RJ45 male	L908 2 outlets in JB 86-RQB-9301
Miscellaneous	Miscellaneous BFOU 2x2,5mm2	86-RQB-9301 Terminal Block 2,5mm2	Terminal Block 2,5mm2	L908 8 outlets in JB 86-RQB-9301

2.3.4 Utility Systems, Skarv

Function	Normal pressure	Max pressure	Temp min	'Temp max	Normal temp	Pipe spec	Connection
	Barg	Barg	°C	°C	°C		
Air System	9,0	9,6				1# 150*	COUPLING, QUICK RECTUS, 3/4 IN, NPT INSIDE 3/4 IN, AISI 316 VITON S.38, FEMALE WITH CHECK VALVE, FOR AIR
Service water	9,5	10,9				1# 150*	CAMLOCK
HP warm water	200 Bar					12mm	FAST
Nitrogen	9,0	9,2				1# 150*	SNAPTITE
Diesel	7,0	7,2				JIS	TODOMATIC

2.3.5 Hose Connectors

Connector types have changed for Skarv. In a transition period both old and new connector will be found in the field.

Old and new connector are not interchangeable.

Hoses are color coded according to medium used for.

Old and new color coding with associated connector

	Hose **Old color**	**Hose** **New color**	**Connector** **Old type**	**Connector** **New type**
Fresh water	Green	Blue	Glenclok quick connector	Camlock connector • Female end: without check-valve • Male end: without check-valve
Air	Blue	Yellow	Glenclok quick connector	Rectus/tema Quick link connector • Female end: with check-valve • Male end: without check-valve
Nitrogen	Yellow	Orange (stripes)	Glenclok quick connector	Snaptite connector • Female end: with check-valve • Male end: with check-valve
Diesel	Brown	Brown	Glenclok quick connector	Todamatic connector • Female ende: with check-valve • Male ende: with check-valve



Ref 53-000629 «Management and use of flexible hose assemblies» Table 5 which also include couplings for media beyond these 4, incl N2 High pressure. https://styring/Properties.aspx?Q=794163792&C=586

2.4 ULA, Temporary Equipment Information

2.4.1 Electrical

Applicable for Ula, Tambar

Power	Volt	Freq.	Phase curr.	Neut. loaded	System earth	Short circuit level		Distribution protection		Connection platform	Connection temp. equip.	Area
*	[V]	[Hz]	[A]	Yes/ No	[S/I/ R] **	min [kA]	max [kA]	Fuse [A]	Earth fault [mA]	Description/ Type	Description/ Type	Modu-le No. /Room No.
Main	230V 2P+PE	60	16	No	S	0,2	5	16	30	Socket: STAHL 8570/11-306 6h	Plug: STAHL 8570/12-306 6h	All areas
Main	440V 3P+PE	60	63	No	S	1	20	63		Socket: STAHL 8579/11-411 11h	Plug: STAHL 8579/12-411 11h	All areas
Main	440V 3P+PE	60	125	No	S	2	20	125		Socket: STAHL 8581/11-411 11h	Plug: STAHL 8581/12-411 11h	P01, P02, P07, D05x2, D04, Q15*, T15
*Must be connected to Swbd, needs SC-calculations if not provided with equipment All socket outlets at Ula trips on single gas detection, for other alternatives contact disipline engineer												

*	Main - Main Power Emerg - Emergency Power Ess - Essential power UPS - UPS power	**	S = Solidly earthed system I = Isolated system R = Resistor (resistance earth)

All plugs will be supplied and connected by the contractor.

230V, 1 phase emergency power and UPS (max 16A): All Aker BP installations, but only as agreed with Onshore Support personell

Plugs for Ula, Tambar

All plugs will be supplied and connected by the contractor.

Access to 125A Socket Outlet

ULA	Switchboard	Layout Drawing
P01	S-1013-107-01	P01-10-EL-1307-000
P02	S-1015-204-01	P02-10-EL-1303-00
P07	S-1080-03-G-01	P07-10-EL-10005-001
D05	S-1008-1009-1	D05-10-EL-1314-01
D05	S-1008-907-8 & 9	D05-10-EL-1316-01/ 1317-01
D04	S-1008-907-5 & 6 & 7	D04-10-EL-1300-01/1301-01
Q15	S-1012-506 *	
Tambar		
T15	S-10102-06-LQ-01	T15-29-EL-0500-001

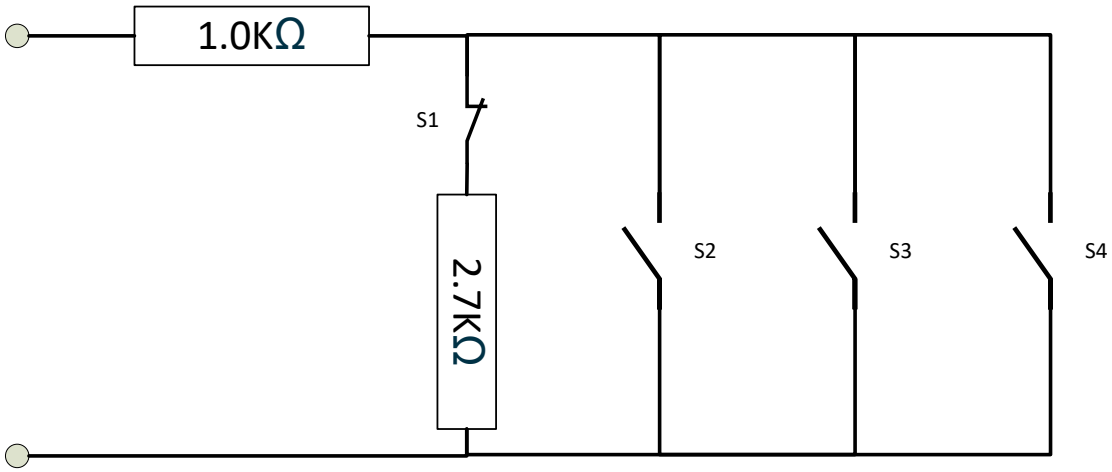
- Must be connected to Swbd, needs SC-calculations if not provided with equipment

2.4.2 Instrument

Ula P; D & Q – ABB 800xA

S1 – NC with overpressure function (closes on loss of overpressure)
S2 – NO with no Heat, Smoke or MAC detected (closes on alarm)
S3 – NO with no Gas detected (closes on alarm)
S4 – NO Common fault (closes on alarm)

Line monitoring for Fire & Gas
Alarms (shown in healthy state) NO contact set to be used



Motstandsverdier ved endeterminaler:

Åpen krets eller tap av overtrykk: ∞Ω

Kortslutning: 0Ω

Normal status uten tap av overtrykk: 3K7Ω

Varme, røyk, gass eller manuell knapp: 1KΩ

Tambar – ABB SafeGuard:

Midlertidig utstyr kobles opp via eksiterende MAC sløyfe.

S1 – NC with overpressure function (closes on loss of overpressure)

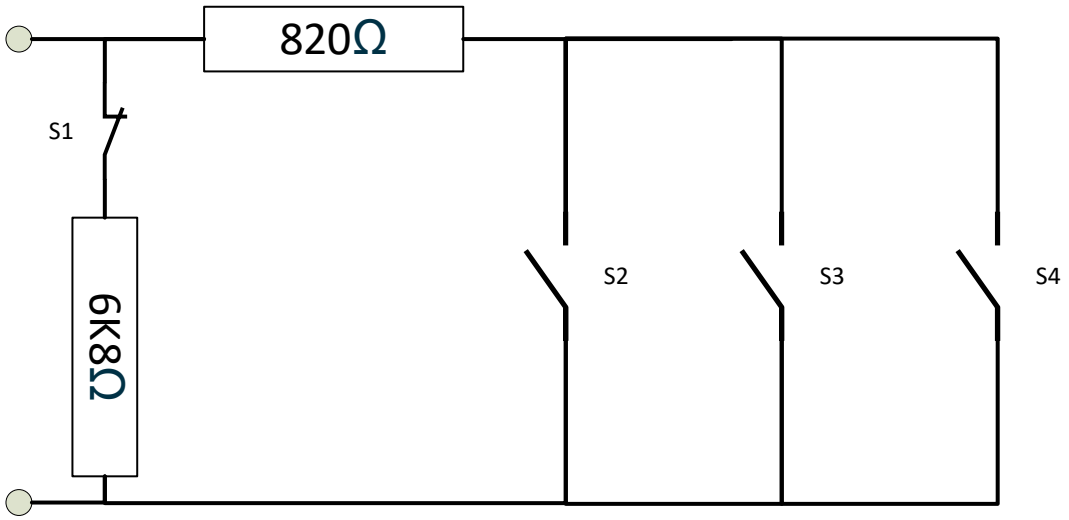
S2 – NO with no Heat, Smoke or MAC detected (closes on alarm)

S3 – NO with no Gas detected (closes on alarm)

S4 – NO Common fault (closes on alarm)

Line monitoring for Fire & Gas

Alarms (shown in healthy state) NO contact set to be used



Motstandsverdier ved endeterminaler:

Åpen krets eller tap av overtrykk: ∞Ω

Kortslutning: 0Ω

Normal status uten tap av overtrykk: 6K8Ω

Varme, røyk, gass eller manuell knapp: 732Ω

2.4.3 Telecom

Ula

Function	Signal type	Connection platform	Temporary eq. connection	Area
PAGA	110V	Junction box Marked PA A/B to container.	Cable with «skritt»	BOP Deck Weatherdeck.
Telephone	Analogue telephone line	Junction box Marked TLF to container.	Cable with «skritt»	BOP Deck Weatherdeck.
Data (fiber) MM	MM Fiber	Fiber ProBeam 4-Channel PBJR Contact-LC/PC, AXIAL, 9/0S2, 1m	ProBeam Sr panelcontact (rig) ProBeam Jr panelcontact (unit/container)	Weatherdeck BOP Deck

Tambar

Function	Signal type	Connection platform	Temporary eq. connection	Area
PAGA	110V	N/A		
Telephone	Analogue telephone line	Junction box marked TJ-10064	Cable with «skritt»	Weather deck, east side
Data (fiber) SM	SM Fiber	Junction box TJ-27102 Fiber ProBeam 4-Channel PBJR Contact-LC/PC, AXIAL, 9/0S2, 1m	ProBeam Sr panelcontact (rig) ProBeam Jr panelcontact (unit/container)	JUR bridge landing.

2.4.4 Lifting capacity offshore cranes

Crane	**1 m significant wave height max. load/max. radius**	**2 m significant wave height max. load/max. radius**	**3 m significant wave height max. load/max. radius**
Ula, CR-1902, CR-1904 og CR-1906 3fall	45t / 20mtr	45t / 17,5mtr	25,5t / 20mtr
Ula, CR-1905 3fall	45t / 22mtr	45t / 16mtr	25,5t / 22mtr
Tambar CR-19101 1fall	12,3t / 28mtr	9,5t / 28mtr	7,5t / 28mtr
Tambar CR-19101 3fall	50t / 20mtr	43,9t / 18mtr	32,7t / 16mtr

2.5 Valhall, -HOD Temporary Equipment Information

Applicable for Hod, Valhall (WP, IP and PH), and Valhall Flank North, Valhall Flank South Hod-B and Valhall Flank West:

Frequency:	60 Hz
Distribution system:	All main power is TN-system (TN-C-S/ TN-S) – Solid earthed neutral up to 480V and high resistance earthed neutral for 690V
Voltage levels:	230V, 1 phase general power (Max 16A) with integrated earth fault trip rated 30mA 440V, 3 phase main power: Valhall (PH, IP and Flank South and North) & Hod-B 480V, 3 phase: Valhall WP and Hod 230V, 1 phase emergency power and UPS (max 16A): All Aker BP installations, but only as agreed with Onshore Support personell

Max short circuit level:	20 kA on 440/480V 5 kA on 220/230V.	
Minimum short circuit level:	3X440 & 480V 3X440 & 480V 2X220 & 230V	125A - 2000A 63A - 1000A 16A - 200A

2.5.1 Electrical

Plugs for Valhall (WP, IP, PH, PWP), Flank South, Flank West, Hod B and Flank North

All plugs will be supplied and connected by the contractor

Plugs, Valhall – PH, IP, Flank North,
Flank South, Hod-B and Flank West:

230V	16A STAHL - 8575/12-306
440V	63A STAHL - 8579/12-411
440V	125A STAHL - 8581/12-411

Plugs, Valhall –WP** og Hod*:

220-230V	16A STAHL - 8575/12-306
480V	63A BBC GHG 534 2405V**
480V	125A BBC GHG 535 2507V*

* Hod does not have 125A available.

Higher consumption than 40 Amp. from 63A socket must be clarified in advance since this varies somewhat from platform to platform.

In some areas 440/480V can be supplied via a 125A socket.

220-230V, 1phase: socket fuse size 16A

** NB! Valhall Wellhead Platform (WP) have only 125A socket outlets from 3 phase 480V distribution system

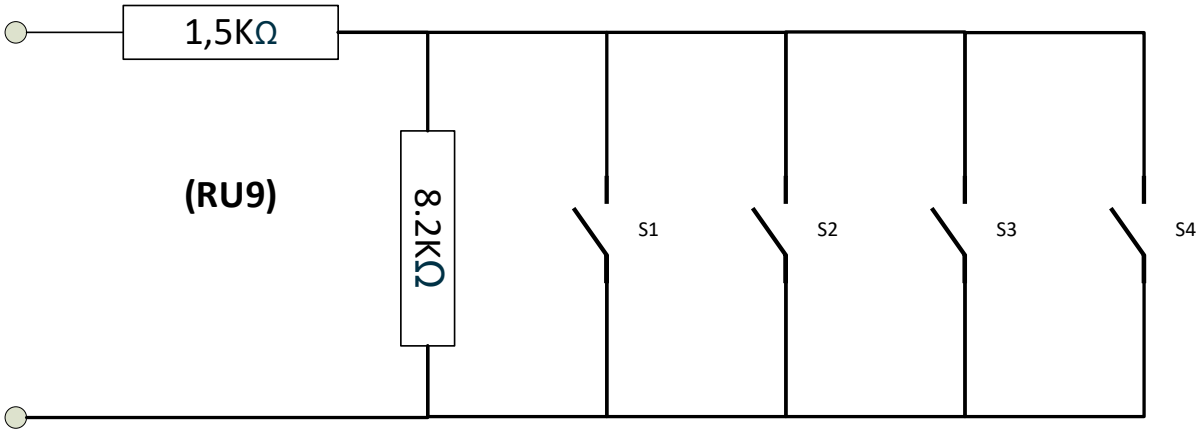
2.5.2 Instrument

Due to space constraints when entering junction box, instrument cables for connection to the installation shall be limited to 1 pair + ground.

Valhall IP, Valhall Flanke Nord, Valhall Flanke Sør & HOD-B

S1 – NO with overpressure function (closes on loss of overpressure)
S2 – NO with no Heat, Smoke or MAC detected (closes on alarm)
S3 – NO with no Gas detected (closes on alarm)
S4 – NO Common fault (closes on alarm)

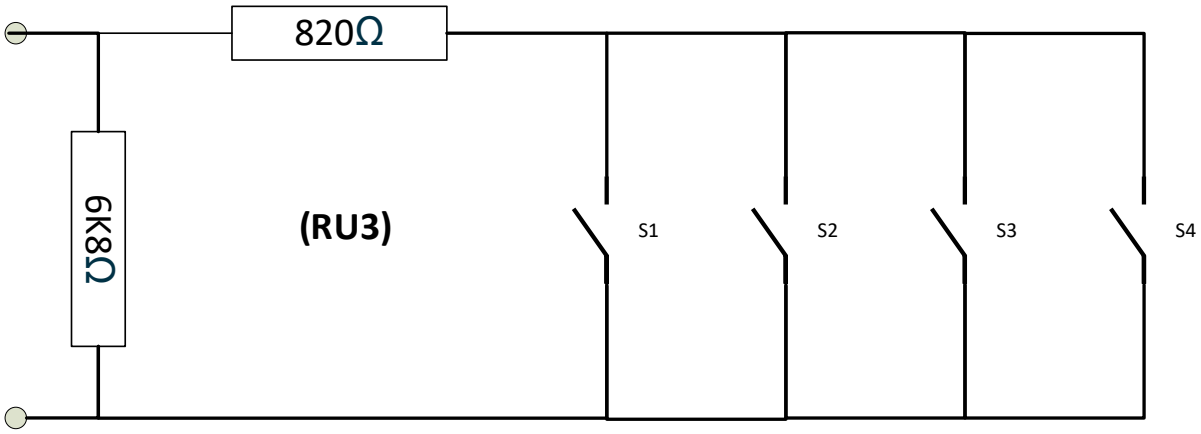
Line monitoring for Fire & Gas
Alarms (shown in healthy state) NO contact set to be used



Valhall WP

S1 – NO with overpressure function (closes on loss of overpressure)
S2 – NO with no Heat, Smoke or MAC detected (closes on alarm)
S3 – NO with no Gas detected (closes on alarm)
S4 – NO Common fault (closes on alarm)

Line monitoring for Fire & Gas
Alarms (shown in healthy state) NO contact set to be used

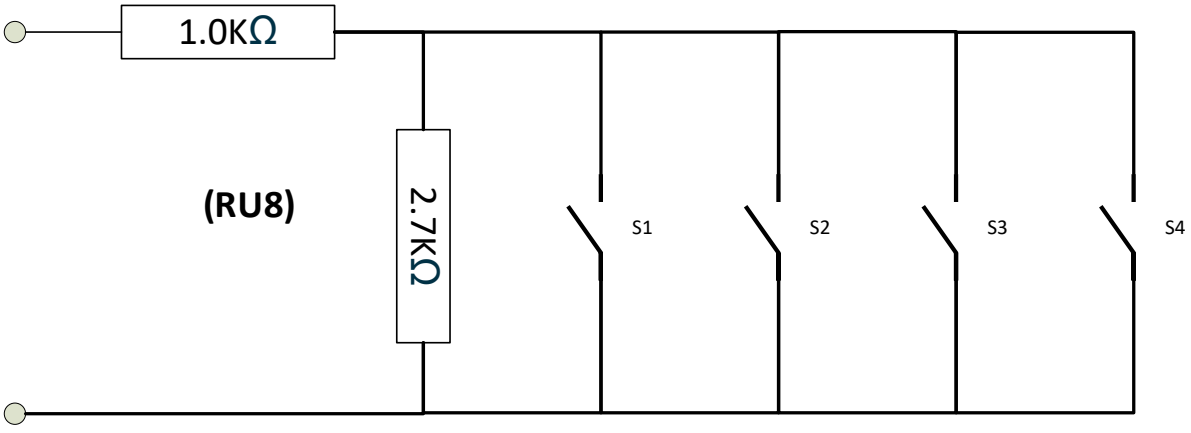


Valhall PH & Valhall Flanke Vest

Valhall PH & Valhall Flanke Vest

S1 – NO with overpressure function (closes on loss of overpressure)
S2 – NO with no Heat, Smoke or MAC detected (closes on alarm)
S3 – NO with no Gas detected (closes on alarm)
S4 – NO Common fault (closes on alarm)

Line monitoring for Fire & Gas
Alarms (shown in healthy state) NO contact set to be used



Valhall PWP and Fenris

Depending on the configuration of the container or equipment, the following signals shall be transmittable from temporary equipment to F&G:

— Loss of pressure (loss of overpressure)

— Fire (Heat, smoke, MAC detected)

— Gas (Gas detected)

— Other (Common Alarm, Condition Monitoring Alarm, Manual Alarm)

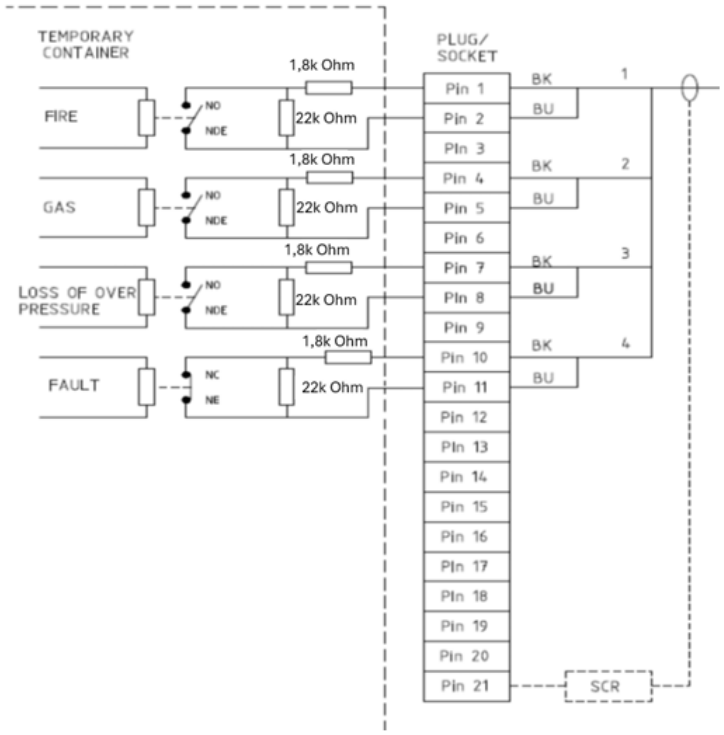


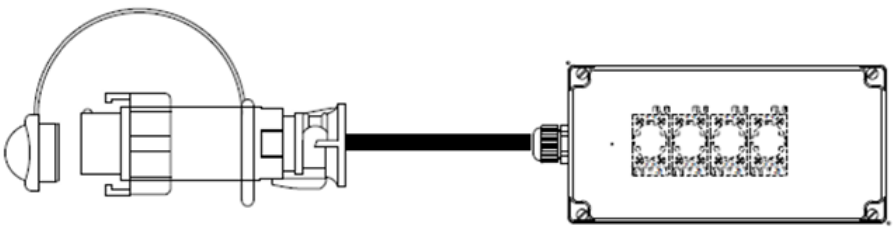
Fig 13 F&G Temporary Equipment Container Plug/Socket wiring Configuration

The Line monitoring resistors (22K ohm in parallel and 1.8K ohm in series) shall be provided for continuous loop monitoring in the PWP SAS and are installed in the temporary Container.

When the temporary equipment is not connected, plugs with suitable resistors 23.8K ohm for NO signals and 1.8K ohm for NC signals shall be connected to the F&G Sockets to avoid loop faults.

Dedicated F&G interface junction boxes are installed on the EIT utility stations to connect the F&G signals through utility socket.

Refer PWP-AK-I-03725-001 document for termination details of F&G Utility station signals.



2.5.3 Telecom

Valhall Field Centre – PH & IP

Function	Signal Type	Platform Connection	Temporary Eq. Connection	Area
		Desc./Type	**Desc./Type**	**Module / Utility Station**
PAGA	Audio, 100V Line	CEAG / Crouse-Hinds GHG 513 4312 R0001 Wall socket 3-pole	CEAG / Crouse-Hinds GHG 542 2312 V0000 Plug 3-pole	WP: Cellar Deck, by stairtower SE. WP: Main Deck, behind stairtower NW. U30, Utility Area U30, East by firewall to W30
Telephone Utilities	Analogue Telephone line	CEAG / Crouse-Hinds GHG 513 4312 R0001 Wall socket 3-pole	CEAG / Crouse-Hinds GHG 542 2312 V0000 Plug 3-pole	WP: Main Deck, behind stairtower NW. U30, Utility Area U30, East by firewall to W30
		Junction box, Terminal blocks		U30, South East by stairtower
Data (Fiber)	Fiber, Singlemode	ProBeam 4-channel PBJR contact-LC/PC, AXAI, 9/125, 2m	ProBeam 4-fiber PBJR plug 9/OS2	IP W30: Simops Container
	Fiber, Multimode	Junction box, Patchpanel SC-connector		
		ProBeam 4-kanal PBJR kontakt-SC, AXAI, 62.5/OM1	ProBeam 4-fiber, PBJR plug 9/OS2	IP D23: Hose room
Data (Fiber) Rig	Fiber, Singlemode	NA	NA	NA

Valhall Field Centre – PWP

Functional	Signal Type	Platform Connection:	Area		Temporary Equipment Connection
System	Desc./Type	Desc./Type	Module / Utility Station		Desc./Type
PAGA Utility	Audio, 100V Line	CEAG / Crouse-Hinds GHG 511 4306 R0001 Wall socket 3-pole	W200-I-US01 W200-I-US02 W200-I-US03 W200-I-US04		CEAG / Crouse-Hinds GHG 511 7306 R0001 Plug 3-pole
Telephony Utility	Analogue telephone line	CEAG / Crouse-Hinds GHG 511 4304 R0001 Wall socket 3-pole	W200-I-US01 W200-I-US02 W200-I-US03 W200-I-US04		CEAG / Crouse-Hinds GHG 511 7304 R0001 Plug 3-pole
Data (Fiber) Utility	Fiber, Single Mode	ProBeam 4-kanal PBJR kontakt-LC/PC, AXAI, 9/125, 2m	W200-I-US01 W200-I-US02		ProBeam 4-fiber PBJR plug 9/OS2
Telephony (Hotlines) Rig	Analogue telephone line	Amphenol Panel Mount Receptacle, 10-poles EFP-17-1-12-1016F	Wellbay Lower Deck (SE)		Amphenol Inline Plug, EFP-13-3-12-1016M
Data (Fiber) Rig	Fiber, Single Mode	ProBeam 8-kanal PBSR kontakt-LC/PC, AXAI, 9/125, 2m	Wellbay Lower Deck (NE) Wellbay Lower Deck (SE)		ProBeam 8-fiber PBSR plug 9/OS2, PUR

Telephony Hotline Wiring Configuration:

Connector Pin Number	Signal Description
1	Rig Emergency Control Centre / +
2	Rig Emergency Control Centre / -
3	Rig Emergency Control Centre / Screen
4	Rig Engine Control Room / +
5	Rig Engine Control Room / -
6	Rig Engine Control Room / Screen
7	Rig Drilling Control Room / +
8	Rig Drilling Control Room / -
9	Rig Drilling Control Room / Screen
10	Screen Common for all pairs

Drilling Rigs (D&W): 3 hotlines, CCR, ECCR and Drillers Cabin.
Intervention Rigs: 2 hotlines, CCR, ECCR.

Valhall Flank North

Function	Signal Type	Platform Connection	Temporary Eq. Connection	Area
		Desc./Type	**Desc./Type**	**Module / Utility Station**
PAGA	Audio, 100V Line	CEAG / Crouse-Hinds GHG 513 4312 R0001 Wall socket 3-pole	CEAG / Crouse-Hinds GHG 542 2312 V0000 Plug 3-pole	Weather Deck
		Junctionbox, Terminal blocks		Weather Deck
Telephone Utilities	Analogue Telephone line	CEAG / Crouse-Hinds GHG 513 4312 R0001 Wall socket 3-pole	CEAG / Crouse-Hinds GHG 542 2312 V0000 Plug 3-pole	Weather Deck
		Junctionbox, Terminal blocks		Weather Deck
Data (Fiber)	Fiber, Single Mode	ProBeam 4-kanal PBJR contact-LC/PC, AXAI, 9/125, 2m	ProBeam 4-fiber PBJR plug 9/OS2	Weather Deck
Telephone (Hotline) Rig	Analogue Telephone line	Junctionbox, Terminal blocks		
Data (Fiber) Rig	Fiber, Single Mode	ProBeam 8-kanal PBSR contact-LC/PC, AXAI, 9/125, 2m	ProBeam 8-fiber PBSR plug 9/OS2, PUR	Weather Deck

Valhall Flank West

Function	Signal Type	Platform Connection	Temporary Eq. Connection	Area
		Desc./Type	**Desc./Type**	**Module / Utility Station**
PAGA	Audio, 100V Line	CEAG / Crouse-Hinds GHG 513 4312 R0001 Wall socket 3-pole	CEAG / Crouse-Hinds GHG 542 2312 V0000 Plug 3-pole	Weather Deck
Telephone Utilities	Analogue Telephone line	CEAG / Crouse-Hinds GHG 513 4312 R0001 Wall socket 3-pole	CEAG / Crouse-Hinds GHG 542 2312 V0000 Plug 3-pole	Weather Deck
Data (Fiber)	Fiber, Single Mode	ProBeam 4-Channel PBJR contact-LC/PC, AXAI, 9/125, 2m	ProBeam 4-fiber PBJR plug 9/OS2	Weather Deck
Telephone (Hotline) Rig	Analogue Telephone line	Junctionbox, Terminal blocks		
Data (Fiber) Rig	Fiber, Single Mode	ProBeam 8-channel PBSR contact-LC/PC, AXAI, 9/125, 2m	ProBeam 8-fiber PBSR plug 9/OS2, PUR	Weather Deck

Valhall Flank South

Function	Signal Type	Platform Connection	Temporary Eq. Connection	Area
		Desc./Type	Desc./Type	Module / Utility Station
PAGA	Audio, 100V Line	CEAG / Crouse-Hinds GHG 513 4312 R0001 Wall socket 3-pole	CEAG / Crouse-Hinds GHG 542 2312 V0000 Plug 3-pole	Weather Deck
		Junction box, Terminal blocks		Weather Deck
Telephone Utilities	Analogue Telephone line	CEAG / Crouse-Hinds GHG 513 4312 R0001 Wall socket 3-pole	CEAG / Crouse-Hinds GHG 542 2312 V0000 Plug 3-pole	Weather Deck
		Junction box, Terminal blocks		Weather Deck
Data (Fiber)	Fiber, Single Mode	ProBeam 4-channel PBJR contact-LC/PC, AXAI, 9/125, 2m	ProBeam 4-fiber PBJR plug 9/OS2	Weather Deck
Telephone (Hotline) Rig	Analogue Telephone line	Junction box, Terminal blocks		
Data (Fiber) Rig	Fiber, Single Mode	ProBeam 8-kanal PBSR contact-LC/PC, AXAI, 9/125, 2m	ProBeam 8-fiber PBSR plug 9/OS2, PUR	Weather Deck

Hod-B

Function	Signal Type	Platform Connection	Temporary Equipment Connection	Area
		Desc./Type	**Desc./Type**	**Module / Utility Station**
PAGA	Audio, 100V Line	CEAG / Crouse-Hinds GHG 513 4312 R0001 Wall socket 3-pole	CEAG / Crouse-Hinds GHG 542 2312 V0000 Plug 3-pole	Weather Deck
Telephone Utilities	Analogue Telephone line	CEAG / Crouse-Hinds GHG 513 4312 R0001 Wall socket 3-pole	CEAG / Crouse-Hinds GHG 542 2312 V0000 Plug 3-pole	Weather Deck
Data (Fiber)	Fiber, Single Mode	ProBeam 4-channel PBJR contact-LC/PC, AXAI, 9/125, 2m	ProBeam 4-fiber PBJR plug 9/OS2	Weather Deck
Telephone (Hotline) Rig	Analogue Telephone line	Junctionbox, Terminal blocks		
Data (Fiber) Rig	Fiber, Single Mode	ProBeam 8-channel PBSR contact-LC/PC, AXAI, 9/125, 2m	ProBeam 8-fiber PBSR plug 9/OS2, PUR	Weather Deck

Fenris

Functional	Signal Type	Platform Connection:	Area		Temporary Equipment Connection
System	Desc./Type	Desc./Type	Module / Utility Station		Desc./Type
PAGA Utility	Audio, 100V Line	CEAG / Crouse-Hinds GHG 511 4306 R0001 Wall socket 3-pole	Utility Station 00-XU-20403 Utility Station 00-XU-20404 Below floodlight tower		CEAG / Crouse-Hinds GHG 511 7306 R0001 Plug 3-pole
Telephony Utility	Analogue telephone line	CEAG / Crouse-Hinds GHG 511 4304 R0001 Wall socket 3-pole	Utility Station 00-XU-20403 Utility Station 00-XU-20404 Below floodlight tower		CEAG / Crouse-Hinds GHG 511 7304 R0001 Plug 3-pole
Data (Fiber) Utility	Fiber, Single Mode	ProBeam 4-kanal PBJR kontakt-LC/PC, AXAI, 9/125, 2m	Below floodlight tower		ProBeam 4-fiber PBJR plug 9/OS2
Telephony (Hotlines) Rig	Analogue telephone line	Amphenol Panel Mount Receptacle, 10-poles EFP-17-1-12-1016F	Below floodlight tower		Amphenol Inline Plug, EFP-13-3-12-1016M
Data (Fiber) Rig	Fiber, Single Mode	ProBeam 8-kanal PBSR kontakt-LC/PC, AXAI, 9/125, 2m	Utility station 00-XU-20402		ProBeam 8-fiber PBSR plug 9/OS2, PUR

Telephony Hotline Wiring Configuration:

Connector Pin Number	Signal Description
1	Rig Emergency Control Centre / +
2	Rig Emergency Control Centre / -
3	Rig Emergency Control Centre / Screen
4	Rig Engine Control Room / +
5	Rig Engine Control Room / -
6	Rig Engine Control Room / Screen
7	Rig Drilling Control Room / +
8	Rig Drilling Control Room / -
9	Rig Drilling Control Room / Screen
10	Screen Common for all pairs

Drilling Rigs (D&W): 3 hotlines, CCR, ECCR and Drillers Cabin.
Intervention Rigs: 2 hotlines, CCR, ECCR.

2.6 Edvard Grieg

2.6.1 Electrical

Power	Volt	Freq	Phase Curr.	Neut. Loaded	System Earth	Short Circuit Level		Distribution Protection		Connection Platform	Connection Temporary Equipment	Area
*	V	Hz	A	Yes/No	S/I/R **	Min kA	Max kA	Fuse A	Earth Fault	Desc./Type	Desc./Type	Module No / Room No
Main	230 1ph+ N+PE	60	16	Y	S			16		CEAG GHG 511 4306 R 0019 (BLUE) 6H	CEAG GHG 511 7306 R 0019 (BLUE) 6H	C11 (5 stk) C12 (5 stk) C21 (4 stk) C22 (2 stk) C23 (12 stk) C31 (8 stk) C32 (6 stk) C33 (1 stk) P10 (9 stk) P20 (18 stk) P30 (8 stk) P40 (8 stk) U10 (6 stk) U20 (12 stk) U30 (15 stk) U40 (9 stk)
Emerg	230 1ph+ N+PE	60	16	Y	S			16		CEAG GHG 511 4306 R 0019 (BLUE) 6H	CEAG GHG 511 7306 R 0019 (BLUE) 6H	C11 (2 stk) C12 (3 stk) C23 (2 stk) C31 (1 stk) C32 (1 stk) P10 (1 stk) P20 (3 stk) P30 (1 stk) P40 (1 stk) U30 (2 stk)

Power	Volt	Freq	Phase Curr.	Neut. Loaded	System Earth	Short Circuit Level		Distribution Protection		Connection Platform	Connection Temporary Equipment	Area
*	V	Hz	A	Yes/No	S/I/R **	Min kA	Max kA	Fuse A	Earth Fault	Desc./Type	Desc./Type	Module No / Room No
Main	400 3ph+ N+PE	60	63	N	S			63		CEAG GHG 514 4506 R 0001 (RED) 6H	CEAG GHG 514 7506 R 0001 (RED) 6H	C11 (4 stk) C12 (3 stk) C21 (3 stk) C22 (2 stk) C23 (2 stk) C31 (7 stk) C32 (6 stk) C33 (1 stk) L60 (1 stk) P10 (7 stk) P20 (8 stk) P30 (8 stk) P40 (8 stk) U10 (3 stk) U20 (2 stk) U30 (4 stk) U40 (8 stk)
Main	400 3ph+ N+PE	60	125	N	S			125		CEAG GHG 515 4506 R 3008 (RED) 6H	CEAG GHG 515 7506 R 3008 (RED) 6H	C31 (1 stk) C32 (1 stk) P10 (1 stk) P20 (1 stk) P30 (1 stk) P40 (1 stk) U40 (1 stk)
Main	690 3ph+ N+PE	60	63	N	S			63		Junction box GHG 745 0202 R3003		C31 (1stk) C23 (1stk) C32 (1stk) P10 (1stk) P20 (2stk) P40 (1stk) U30 (1stk) U40 (1stk)
Emerg	690 3ph+ N+PE	60	125	N	S			125		Junction box GHG 746 0302 R3409		C23 (2stk) P20 (2stk) U30 (2stk)

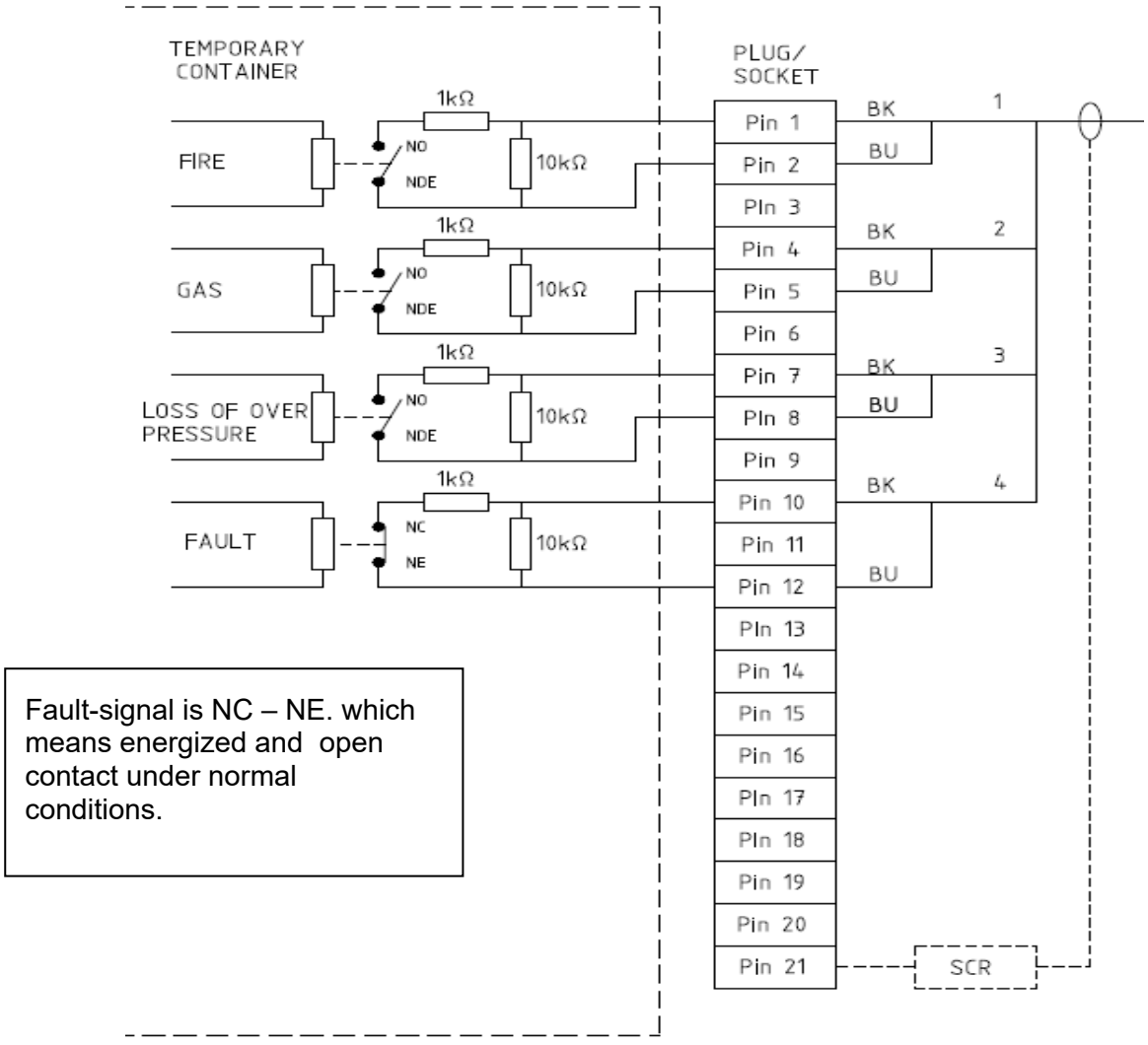
* Main – Main Power (hovedkraft)
Emerg – Emergency Power (nødkraft)

** S – Solidity (direkte jordet)
I – Isolated (isolert)
R – Resistor (resistansjordet)

2.6.2 Instrument

Function	Signal Type	Connection Platform	Connection Temp. Equipment	Area
		Desc. / Type	**Desc. / Type**	**Module No / Room No**
Loss of pressure	NDE	Cooper Crouse-Hinds/ GHG5114906R3001	Cooper Crouse-Hinds/ GHG5912201R0002	P10, P20, P30, P40, U30, U40, C23, C31, C32
Fire	NDE	Cooper Crouse-Hinds/ GHG5114906R3001	Cooper Crouse-Hinds/ GHG5912201R0002	P10, P20, P30, P40, U30, U40, C23, C31, C32
Gas	NDE	Cooper Crouse-Hinds/ GHG5114906R3001	Cooper Crouse-Hinds/ GHG5912201R0002	P10, P20, P30, P40, U30, U40, C23, C31, C32
Fault	NE	Cooper Crouse-Hinds/ GHG5114906R3001	Cooper Crouse-Hinds/ GHG5912201R0002	P10, P20, P30, P40, U30, U40, C23, C31, C32

21 pins connector for Instrument signals:



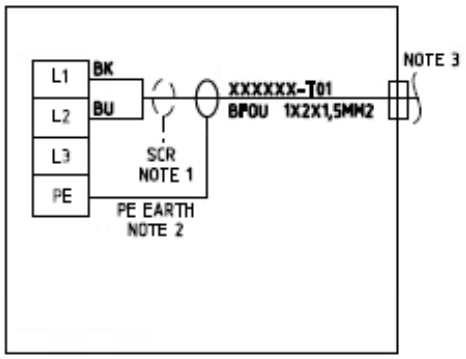
Install loop resistors in container junction box. 10 K ohm in parallel and 1 K ohm in series.

Verify interfaces before connecting the instrument connector. Only FAULT signal is active when container is de-energized.

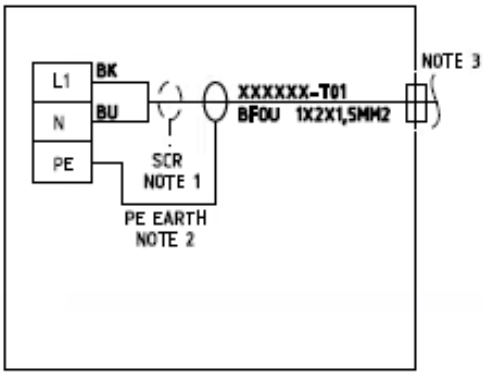
2.6.3 Telecom

Function	Signal Type	Connection Platform	Connection Temp. Equipment	Area
		Desc. / Type	**Desc. / Type**	**Module No / Room No**
PAGA		Cooper Crouse-Hinds/ GHG5114407R0001	Cooper Crouse-Hinds/ GHG5117407R0001	P10, P20, P30, P40, U30, U40, C23, C31, C32
Telephone		Cooper Crouse-Hinds/ GHG5114304R0001	Cooper Crouse-Hinds/ GHG5117304R0001	P10, P20, P30, P40, U30, U40, C23, C31, C32
Data (fiber)		GIZMA 40 40.00.2.04.3.10	GIZMA 40 40.99.1.3.130	P10, P20, P30, P40, U30, U40, C23, C31, C32

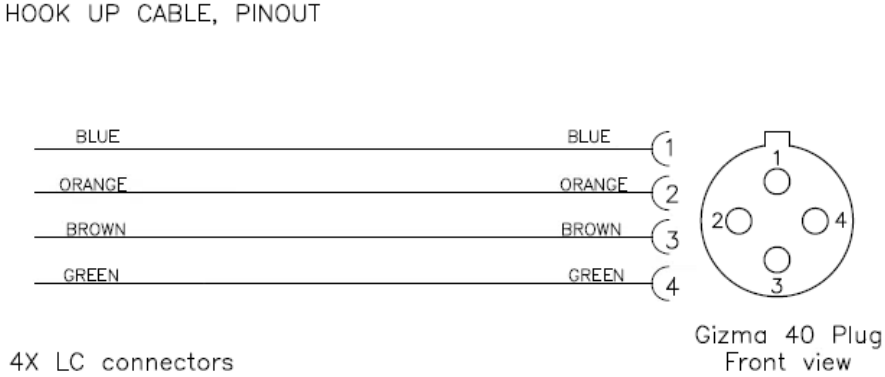
PAGA:



Telephone:



Fiber:



2.6.4 Utilities

Function	Normal Pressure	Max Pressure	Temp min	Temp max	Temp Normal	Connection	Pipe Spec.	Area
	barg	barg	°C	°C	°C			
Plant air	9,2	14	-6	70	40	3/4'' Claw Couplings	FR70K	C11, C12, C21, C22, C23, C24, C31, C32,C33, L10, L60, U10, U20, U40, P10, P30, P40
Freshwater	10	18	-6	50	15	Hose real ¾" valve	FR70K	C11, C12, C21, C22, C23, C24, C31, C32,C33, L10, L60, U10, U20, U40, P10, P30, P40
Hotwater	170	210	-6	90	65	Snap tite male	FR70K	C11, C12, C21, C23, C31, C32,C33, L10, L60, U10, U20, U30, P10, P20, P30, P40
Nitrogen	7.5	14	-9	80	50	3/4'' Claw Couplings	AD20	C11, C12, C21, C23, C31, C32,C33, U10, U20,U30, P10, P20, P30, P40
Diesel	9.3	13	-6	50	Amb	Glenlock male	FR70K	C11, C12, C23, C31, C32, U30, P20,
MEG	10	90	-6	50	Amb	Snap tite male	FR70K	C23,C24,U30,P20

2.6.5 Lifting Capacity Offshore Crane

Driftsbegrensninger for hurtigløft med enkel wire			
Crane	**1 Meter Significant Wavehight Max. Load / Max. Radius**	**2 Meters Significant Wavehight Max. Load / Max. Radius**	**3 Meters Significant Wavehight Max. Load / Max. Radius**
Krane 73MA001	16.8 t / 60 meter	14.5 t / 60 meter	12.9 t / 60 meter

Max last for hovedløft med trippel wire			
Crane	**1 Meter Significant Wavehight Max. Load / Max. Radius**	**2 Meters Significant Wavehight Max. Load / Max. Radius**	**3 Meters Significant Wavehight Max. Load / Max. Radius**
Krane 73MA001	60 t / 30 meter	60 t / 25 meter	51,7 t / 25 meter

Korrekt vekt på utstyret er avgjørende for sikker løfting mellom skip og installasjon. Leverandør er ansvarlig for å angi korrekt vekt på alle kolli som leveres basen, om nødvendig må det sørges for veiesertifikat på enheten.

Correctly stated weight on the equipment is essential for safe lifting operations between vessel and installation. The supplier is responsible for giving correct weight on all packages delivered to the base, and if necessary a weight certificate must be provided for the unit.

2.7 Yggdrasil Hugin A

2.7.1 Electrical

Power	Volt	Freq.	Phase curr.	Neut. loaded	System earth	Short circuit level		Distribution protection		Connection platform	Connection temp. equip.	Area
*	[V]	[Hz]	[A]	Yes/ No	[S/I/ R] **	min [kA]	max [kA]	Fuse [A]	Earth fault [mA]	Description/ Type	Description/ Type	Module
Main	230	50	16 1ph+ N+P E	Y	S			16	30	STAHL 8570/11-306-C2705	STAHL 8570/12-306	
Main	400	50	63 3ph+ N+PE	Y	S			63	30	STAHL 8579/31-506-C2752	8579/12-506	
Main	400	50	125 3ph+ N+PE	Y	S			125	30	STAHL 8581/31-506-C2753	8581/12-506	
Main	690	50	125 3ph+PE	N	R			125	30	Junction Box for Well Intervention		DW350

*	**	***
Main - Main Power	S = Solidly (direkte jordet)	• The maximum permitted length of 1-phase extension cables is 25m (230 V) • The maximum allowed length of 3-phase extension cables is 40m (400V)
Emg - Emergency Power	I = Isolated (isolert)	
Ess - Essential Power	R = Resistor (resistansjord)	
UPS - UPS Power		

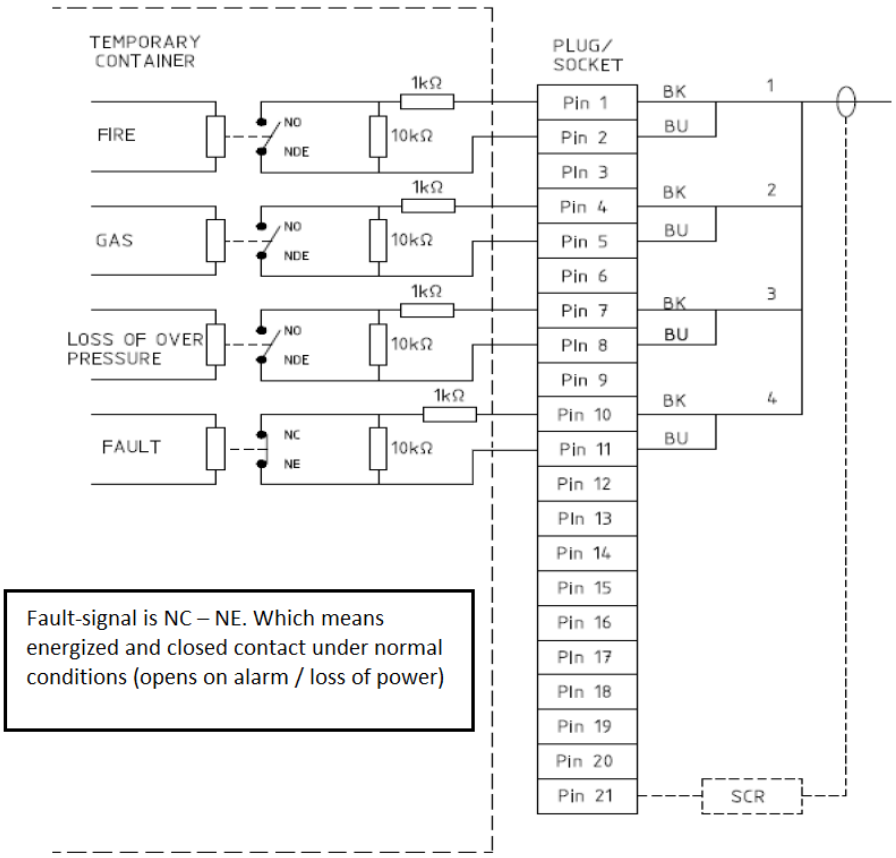
2.7.2 Instrument

Function	Signal type	Connection platform	Connection temp. equip.	Area
		Description/Type	Description/Type	Module No./Room No.
Fire	NO / NDE (contact closed= alarm)	GHG 511 4906 R3001, Pin 1, 2	GHG 591 2201 R0002 Pin 1, 2	DU510, Weather Deck South, D-00XU500 (4 ea) DU510, Weather Deck North D-00XU507 (4 ea) DP540, Weather Deck East, D-00XU502 (3 ea) DW350, Lower Deck North East, D-00XU503 (4 ea) DW350, Lower Deck South East, D-00XU504 (4 ea) DW250, Tree Deck North, D-00XU506, (3 ea) DP130, Cellar Deck South East, D-00XU501 (3 ea) DP130, Cellar Deck North West, D-00XU505 (2 ea)
Gas	NO / NDE (contact closed= alarm)	GHG 511 4906 R3001, Pin 4, 5	GHG 591 2201 R0002 Pin 4, 5	
Loss of pressure	NO / NDE (contact closed= alarm)	GHG 511 4906 R3001, Pin 7, 8	GHG 591 2201 R0002 Pin 7, 8	
General, Common	NC / NDE (contact open = alarm)	GHG 511 4906 R3001, Pin 10, 11	GHG 591 2201 R0002 Pin 10, 11	

TERMINATION DETAIL DRAWING FOR DUMMY PLUGS AND RECEPTACLES: FPQ-AKSO-I-XT-00025-01

Overview of the Instrument Utility Stations in Aize

Overview of F&G Socket Outlets in Aize



2.7.3 Telecom

Functional	Signal Type	Platform Connection:	Area		Temporary Equipment Connection
System	Desc./Type	Desc./Type	Module / Utility Station		Desc./Type
PAGA Utility	Audio, 100V Line	CEAG / Crouse-Hinds GHG 511 4306 R0001 Wall socket 3-pole	DU510, D-00XU500 (A & B, 3 ea) DU510, D-00XU507 (A & B, 3 ea) DP130, D-00XU501 (A & B, 3 ea) DP130, D-00XU505 (A & B, 1 ea) DP540, D-00XU502 (A & B, 3 ea) DW350, D-00XU503 (A & B, 3 ea) DW350, D-00XU504 (A & B, 3 ea)		CEAG / Crouse-Hinds GHG 511 7306 R0001 Plug 3-pole
Telephony Utility	Analogue telephone line	CEAG / Crouse-Hinds GHG 511 4304 R0001 Wall socket 3-pole	DU510, D-00XU500 (3 ea) DU510, D-00XU507 (3 ea) DP130, D-00XU501 (3 ea) DP130, D-00XU505 (1 ea) DP540, D-00XU502 (3 ea) DW350, D-00XU503 (3 ea) DW350, D-00XU504 (3 ea)		CEAG / Crouse-Hinds GHG 511 7304 R0001 Plug 3-pole
Data (Fiber) Utility	Fiber, Single Mode	ProBeam 4-kanal PBJR kontakt-LC/PC, AXAI, 9/125, 2m	DU510, D-00XU500 (1 ea) DU510, D-00XU507 (1 ea) DP130, D-00XU501 (1 ea) DP130, D-00XU505 (1 ea) DP540, D-00XU502 (1 ea) DW350, D-00XU503 (1 ea) DW350, D-00XU504 (1 ea) DW250, D-00XU506 (1 ea)		ProBeam 4-fiber PBJR plug 9/OS2
Telephony (Hotlines) Rig	Analogue telephone line	Amphenol Panel Mount Receptacle, 10-poles EFP-17-1-12-1016F	DW350, D-00XU503 (1 ea) DW350, D-00XU504 (1 ea)		Amphenol Inline Plug, EFP-13-3-12-1016M
Data (Fiber) Rig / Floatel	Fiber, Single Mode	ProBeam 8-kanal PBSR kontakt-LC/PC, AXAI, 9/125, 2m	DW350, D-86JBE0509 (3 ea) DW350, D-86JBE0510 (3 ea) DU110, D-86JBE0508 (3 ea)		ProBeam 8-fiber PBSR plug 9/OS2, PUR

Telephony Hotline Wiring Configuration:

Connector Pin Number	Signal Description
1	Rig Emergency Control Centre / +
2	Rig Emergency Control Centre / -
3	Rig Emergency Control Centre / Screen
4	Rig Engine Control Room / +
5	Rig Engine Control Room / -
6	Rig Engine Control Room / Screen
7	Rig Drilling Control Room / +
8	Rig Drilling Control Room / -
9	Rig Drilling Control Room / Screen
10	Screen Common for all pairs

Drilling Rigs (D&W): 3 hotlines, CCR, ECCR and Drillers Cabin.
Intervention Rigs: 2 hotlines, CCR, ECCR.

2.8 Yggdrasil Hugin B

Information for Hugin B EIT utility stations is given in the asset specific document:
FRO-AKSO-Z-RA-00003 EIT UTILITY STATION MATRIX

EIT UTILITY STATIONS
This chapter provides a description of systems, components, and requirements for EIT utility stations.
Hook-up of temporary equipment shall follow Norsok Z-015 and 53-000769 (where applicable).
The following EIT Utility Stations are defined for the Hugin B project:
- Five Utility Stations are located on GW50 Weather Deck
- Two Utility Stations are located on GW35 Mezzanine Deck
- Three Utility Stations are located on GW11 Cellar Deck

The Utility Stations are strategically placed for hookup to temporary equipment and containers.

2.8.1 Electrical

Utility stations for hook-up of temporary equipment (e.g., equipped containers) shall be equipped with sockets for electrical power and be located close to container lay down areas. Socket outlets shall be of IEC 60309 harmonized type, 6h, Ex ed IIC T6. Electrical

Power	**Volt**	**Freq.**	**Phase curr.**	**Neut. loaded**	**System earth**	**Short circuit level**		**Distribution protection**		**Connection platform**	**Connection temp. equip.**	**Area**
*	[V]	[Hz]	[A]	Yes/ No	[S/I/ R] **	min [kA]	max [kA]	Fuse [A]	Earth fault [mA]	Description/ Type	Description/ Type	Module
Main	230	50	16 1ph+ N+P E	Y	S			16	30	STAHL 8570/11-306-C2705	STAHL 8570/12-306	
Main	400	50	63 3ph+ N+PE	Y	S			63	30	STAHL 8579/31-506-C2752	8579/12-506	
Main	690	50	125 3ph+PE	N	R			125	30	Junction Box for Wireline	JB FRO-AKSO-E-XX-00006-01	GW11-07

*	**	***
Main - Main Power	S = Solidly (direkte jordet)	• The maximum permitted length of 1-phase extension cables is 25m (230 V) • The maximum allowed length of 3-phase extension cables is 40m (400V)
Emg - Emergency Power	I = Isolated (isolert)	
Ess - Essential Power	R = Resistor (resistansjord)	
UPS - UPS Power		

Stahl 8570/11-306 Female plug



Stahl 8570/12-306 Male plug



Stahl 8579/31-506 Female plug



Stahl 8579/12-506 Male plug



2.8.2 Instrument

2.8.2.1 Fire & Gas system

Depending on the configuration of the container or equipment, the following signals shall be transmittable from temporary equipment to F&G:

- Loss of pressure (loss of overpressure)
- Fire (Heat, smoke, MAC detected)
- Gas (Gas detected)
- Other (Common Alarm, Condition Monitoring Alarm, Manual Alarm)

Temporary equipment that cannot be left unattended and where operator may need to call for assistance shall be fitted with a manual alarm for attracting attention if other arrangements have not been made for calling for assistance in work operations.

Temporary equipment, which has local monitoring system, can have a condition monitoring signal output to the control room if the equipment can be operated unmanned. The requirement for such monitoring signal shall be specified by the Company when required. Condition monitoring alarms can be connected to a common alarm to IOC.

Function	**Signal Type**	**Connection Platform**	**Connection from temporary equipment**	**Area**
		Desc. / Type	Desc. / Type	Module / Utility station
Loss of pressure	NO / NDE (contact closed = alarm)	CEAG / Crouse-Hinds GHG 511 4906 R3001 6h Pin 7, 8	CEAG / Crouse-Hinds GHG 591 2201 R0002 6h Pin 7, 8	US-W50-03_HUB US-W50-04_HUB US-W50-05_HUB US-W35-02_HUB US-W11-03_HUB
Fire	NO / NDE (contact closed = alarm)	CEAG / Crouse-Hinds GHG 511 4906 R3001 6h Pin 1, 2	CEAG / Crouse-Hinds GHG 591 2201 R0002 6h Pin 1, 2	
Gas	NO / NDE (contact closed = alarm)	CEAG / Crouse-Hinds GHG 511 4906 R3001 6h Pin 4, 5	CEAG / Crouse-Hinds GHG 591 2201 R0002 6h Pin 4, 5	
Common alarm	NC / NE (contact open = alarm)	CEAG / Crouse-Hinds GHG 511 4906 R3001 6h Pin 10, 11	CEAG / Crouse-Hinds GHG 591 2201 R0002 6h Pin 10, 11	

Table: F&G Temporary Equipment information table

Note 1: Stahl is the preferred supplier for sockets, but Stahl does not have a suitable product to replace CEAG 511 4906 R3001. The CEAG model, together with the dummy plug with end-of-line resistors (Note 3), is “proven-in-use”.

Note 2: Loop resistors required to provide continuous loop monitoring when temporary equipment is connected (10K ohm in parallel and 1K ohm in series). Ref. HW typical DI-9400F.v01.

Note 3: Dummy plug with end-of-line resistors shall be provided to avoid loop fault when temporary equipment is not connected. Plug type GHG 591 2201 R0002 with end-of-line resistors pre-installed + plug cap type GHG 530 1935 R0008 to be used for this purpose.

F&G hook-up sketch and dummy plug with end-of-line resistors (when socket is not in use)

HOLD

2.8.2.2 ESD battery system

Depending on the configuration of the container or equipment, the following signals shall be transmittable from ESD system to temporary equipment (ref. Norsok Z-015):

- Emergency stop (ESD) from control room, normally a 230 V signal (e.g., for shut down of rotating machinery - Note 1

- Other shutdown, e.g., battery systems (voltage-free contact, activated signal) – Note 2

Note 1: This 230 V AC signal will normally come from a socket on the installation, whereby the socket is connected to the lowest level ignition source disconnection system. Emergency stop shall be activated through loss of 230 V voltage (e.g., diesel engine shutdown). The temporary equipment needs to be equipped with cable and plug which fits into the socket.

Note 2: If the container or equipment contains combustion engines or a battery system that needs isolation (as part of ignition source control), the container or equipment should automatically disconnect battery breaker and/or diesel supply by loss of main power (ref. Note 1). Therefore, no dedicated ESD interface junction boxes will be installed on the EIT utility stations.

2.8.3 Telecom

Hugin B:

Functional	Signal Type	Platform Connection:	Area		Temporary Equipment Connection
System	Desc./Type	Desc./Type	Module / Utility Station		Desc./Type
PAGA Utility	Audio, 100V Line	CEAG / Crouse-Hinds GHG 511 4306 R0001 Wall socket 3-pole	East, US-W50-05-FRO (A & B, 2 ea) West, US-W50-04-FRO (A & B, 2 ea) South, US-W50-01-FRO (A & B, 2 ea)		CEAG / Crouse-Hinds GHG 511 7306 R0001 Plug 3-pole
Telephony Utility	Analogue telephone line	GHG 511 4304 R0001 Wall socket 3-pole	North, US-W50-03-FRO (3 ea) East, US-W50-05-FRO (3 ea) West, US-W50-05-FRO (3 ea)		CEAG / Crouse-Hinds GHG 511 7304 R0001 Plug 3-pole
Data (Fiber) Utility	Fiber, Single Mode	ProBeam 4-kanal PBJR kontakt-LC/PC, AXAI, 9/125, 2m	North, US-W50-03-FRO (3 ea) East, US-W50-05-FRO (3 ea) West, US-W50-05-FRO (3 ea)		ProBeam 4-fiber PBJR plug 9/OS2
Telephony (Hotlines) Rig	Analogue telephone line	Amphenol Panel Mount Receptacle, 10-poles EFP-17-1-12-1016F	South, US-W50-02-FRO (1 ea)		Amphenol Inline Plug, EFP-13-3-12-1016M
Data (Fiber) Rig / Floatel	Fiber, Single Mode	ProBeam 8-kanal PBSR kontakt-LC/PC, AXAI, 9/125, 2m	South, US-W50-02-FRO (2 ea)		ProBeam 8-fiber PBSR plug 9/OS2, PUR

Telephony Hotline Wiring Configuration:

Connector Pin Number	Signal Description
1	Rig Emergency Control Centre / +
2	Rig Emergency Control Centre / -
3	Rig Emergency Control Centre / Screen
4	Rig Engine Control Room / +
5	Rig Engine Control Room / -
6	Rig Engine Control Room / Screen
7	Rig Drilling Control Room / +
8	Rig Drilling Control Room / -
9	Rig Drilling Control Room / Screen
10	Screen Common for all pairs

Drilling Rigs (D&W): 3 hotlines, CCR, ECCR and Drillers Cabin.
Intervention Rigs: 2 hotlines, CCR, ECCR

2.9 Munin:

2.9.1 Electrical

Power	**Volt**	**Freq.**	**Phase curr.**	**Neut. loaded**	**System earth**	**Short circuit level**		**Distribution protection**		**Connection platform**	**Connection temp. equip.**	**Area**
*	[V]	[Hz]	[A]	Yes/ No	[S/I/ R] **	min [kA]	max [kA]	Fuse [A]	Earth fault [mA]	Description/ Type	Description/ Type	Module
Main	230	50	16 1ph+ N+P E	Y	S	5,6	8	16	30	STAHL 8570/11-306-C2705	STAHL 8570/12-306	AP200 AP500
Main	400	50	63 3ph+ N+PE	N	S	5,6	7	63	30	STAHL 8579/31-506-C2752	8579/12-506	AP200 AP500 AU300 AU350 AU400
Main	400	50	125 3ph+ N+PE	N	S	5,6	7	125	NA	STAHL 8581/31-506-C2753	8581/12-506	AP200 AP500
Main	690	50	250 3ph+PE		R	19	33	250	2 A / 0,1 s	Junction Box for temporary equipment A-82EN001B-138FM-B01	UKH 240 Terminal block USLKG 95 Protective conductor terminal, Green-yellow	AU300

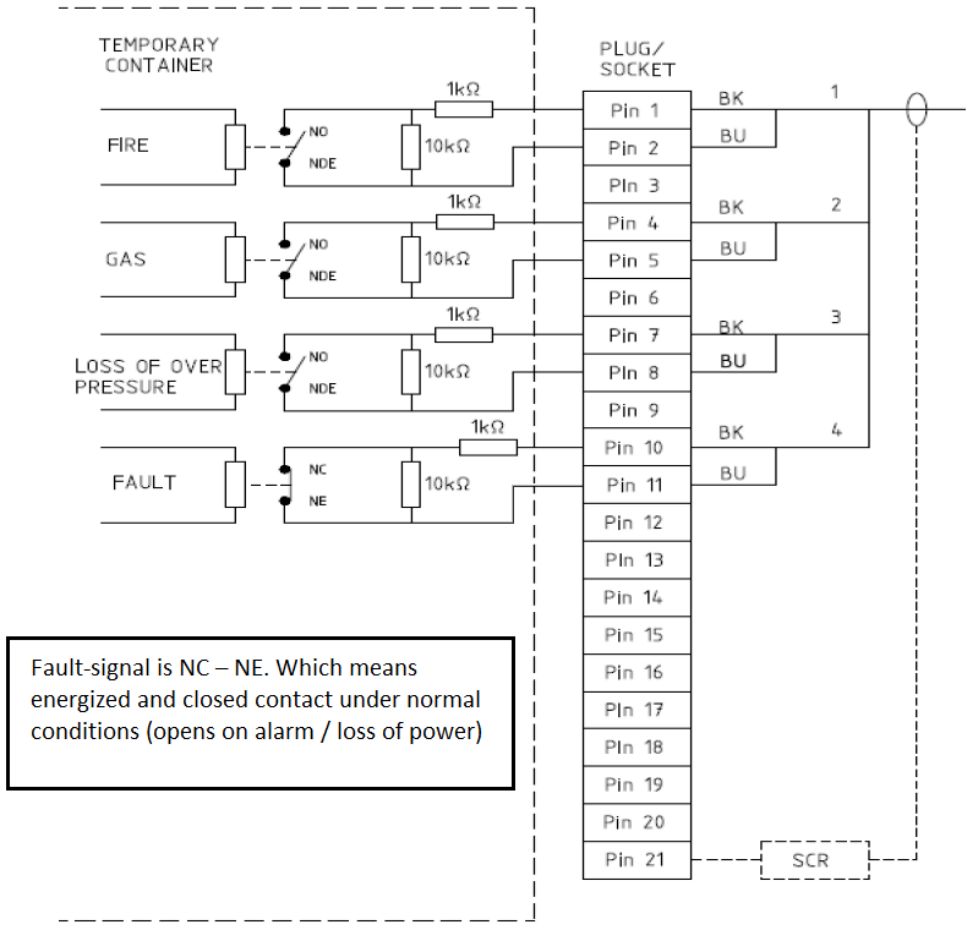
*	**	***
Main - Main Power	S = Solidly (direkte jordet)	• The maximum permitted length of 1-phase extension cables is 25m (230 V) • The maximum allowed length of 3-phase extension cables is 40m (400V)
Emg - Emergency Power	I = Isolated (isolert)	
Ess - Essential Power	R = Resistor (resistansjord)	
UPS - UPS Power		

2.9.2 Instrument

Function	**Signal Type**	**Connection Platform**	**Connection from temporary equipment**	**Utility Station**
		Desc. / Type	Desc. / Type	Utility station tag.no / no. of outlets
Loss of pressure	NO / NDE (contact closed= alarm)	CEAG / Crouse-Hinds GHG 511 4906 R3001 6h Pin 7, 8	CEAG / Crouse-Hinds GHG 591 2201 R0002 6h Pin 7, 8	**A-00XU020:** 1 outlet **A-00XU021:** 1 outlet **A-00XU022:** 1 outlet **A-00XU023:** 1 outlet
Fire	NO / NDE (contact closed= alarm)	CEAG / Crouse-Hinds GHG 511 4906 R3001 6h Pin 1, 2	CEAG / Crouse-Hinds GHG 591 2201 R0002 6h Pin 1, 2	
Gas	NO / NDE (contact closed= alarm)	CEAG / Crouse-Hinds GHG 511 4906 R3001 6h Pin 4, 5	CEAG / Crouse-Hinds GHG 591 2201 R0002 6h Pin 4, 5	
Common alarm	NC / NE (contact open= alarm)	CEAG / Crouse-Hinds GHG 511 4906 R3001 6h Pin 10, 11	CEAG / Crouse-Hinds GHG 591 2201 R0002 6h Pin 10, 11	

Notes:

1) Loop resistors are required to provide continuous loop monitoring when temporary equipment is connected.
2) F&G Socket/Plug with resistors included to avoid loop fault when temporary equipment is not connected.



Fault-signal is NC – NE. Which means energized and closed contact under normal conditions (opens on alarm / loss of power)

2.9.3 Telecom

Functional	Signal Type	Platform Connection:	Area		Temporary Equipment Connection
System	Desc./Type	Desc./Type	Module / Utility Station		Desc./Type
PAGA Utility	Audio, 100V Line	CEAG / Crouse-Hinds GHG 511 4306 R0001 Wall socket 3-pole	AP500, Weather Deck Utility Station #1, North		CEAG / Crouse-Hinds GHG 511 7306 R0001 Plug 3-pole
Telephony Utility	N/A	N/A	N/A		N/A
Data (Fiber) Utility	Fiber, Single Mode	ProBeam 4-kanal PBJR kontakt-LC/PC, AXAI, 9/125, 2m	AP500, Weather Deck Utility Station #1, North (3 ea)		ProBeam 4-fiber PBJR plug 9/OS2
Telephony (Hotlines) Rig	N/A	N/A	N/A		N/A
Data (Fiber) SOV /Floatel	Fiber, Single Mode	ProBeam 8-kanal PBSR kontakt-LC/PC, AXAI, 9/125, 2m	AP100, W2W Deck Landing, N/E (3 ea) Landing, S/E (3 ea)		ProBeam 8-fiber PBSR plug 9/OS2, PUR

2.9.4 Utilities

Compressed air, LP nitrogen, fresh water and hot pressurised fresh water on Munin topside utility stations are supplied from the SOV. This means that the utility stations on Munin topside are in operation only during maintenance campaigns.

Function	**Normal Pressure** (barg)	**Design Pressure** (barg)	**Flowrate** (Sm^3/h or m^3/h)	**Connection**			**Area** [5]	**Utility Station**
				Type	Dia.	Material		
Compressed air	6	19,5	250 [1]	Chicago claw coupling, NPT male	1”	SS316	Cellar Deck	A-00XU001 A-00XU002 A-00XU003 A-00XU004
Fresh water	8 [2]	19,5	12 [3]	Cam-lock, NPT male Fig. F Male Part	1”	SS316	Mezzanine Deck	A-00XU005 A-00XU006
							Intermediate Mezz. Deck	A-00XU014
HP hot water	180 [2]	257	4,5 [4]	Snap-tite, Series H, Unvalved Male part	$^1/_2$”	SS316	Process Deck	A-00XU007 A-00XU008
LP Nitrogen	10	19,5	225 [1]	Snap-tite, Series H, Unvalved Male part	1”	SS316	Weather Deck	A-00XU009 A-00XU010 A-00XU011 A-00XU012
HP Nitrogen [8]	170	258	250	NA			Crane Platform	A-00XU013

Notes:

3) Capacity is sufficient to operate three utility stations (each requiring 75 Sm^3/h) simultaneously.
4) Pressure @ Weather deck EL 526 000.
5) Capacity is based on operation of two utility stations at a time, each having a capacity of 6 m^3/h.
6) Capacity is based on simultaneously supplying three water guns with capacity of 1,5 m^3/h.
7) Compressed air, LP nitrogen, fresh water and hot pressurized fresh water are available at all utility stations, except LP nitrogen which is not available on the Crane Platform (A-00XU013).
8) High pressure nitrogen will be supplied from SOV to pressurize gas export riser. HP nitrogen will not be available at any utility stations. Total nitrogen capacity to be checked with SOV.

2.9.5 Lifting capacity offshore cranes

Crane	**1 m** significant wave height max. load/max. radius	**2 m** significant wave height max. load/max. radius	**3 m** significant wave height max. load/max. radius
1 FALL Main winch	15 t / 42 meter	12,4 t / 42 meter	9,5 t / 42 meter
2 FALL Main winch	19,2 t / 42 meter	15,8 t / 42 meter	N/A