Specification

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

Document no.:	53-000769
Rev. no.:	9.0
Date:	2020-04-21

About this document

Purpose	The purpose of this document is to state the Company's additional requirements to NOKSOK Z-015 and ensure that temporary and 3rd party equipment used on any Aker BP ASA assets are: • Technically and certified in compliance with regulatory requirements and Aker BP technical standards and specification • Ordered, transported, installed, hooked-up, operated, maintained and taken out of service in accordance with BMS requirements and specifications described in APOS.
Valid for	This procedure applies to all organizational units and geographical locations within Company. The procedure is applicable to the following classes of equipment, owned by Aker BP or hired directly/provided by a contractor as part of his offshore service: • Containers for use as offices, workshops, storage, well logging and other purposes but does not include containers/baskets for transportation. • Equipment not permanently installed, with engines or motors, electrical equipment, or equipment for high pressure applications. • Electrical equipment used for adapting transformers, generators, converters, batteries or local UPS
Revision Period	2 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	Haga, Livar
Coordinator	Gausland, Ola Skjærpe

Rev.no.	**Date**	**Description of Change**
9.0	2020-04-20	*Updated drawing in chapter 4.7.2.2. Changed coordinator*
8.0	2020-03-09	*Updated chapter 4.7.5.2 drawing for ABB Safeguard System*
7.0	2019-09-17	*Updated to same rev. as the procedure in Norwegian.*
6.0	2019-09-12	*Updated chapter 4.7.2.2 table with NO contacts for F&G*
5.0	2019-07-04	*Included Electrical and Instrument for Valhall flanke west*
4.0	2019-05-24	*Section 4.4.1 & 4.7 – Hook-up interface changed to be in accordance with upgraded F&G systems on ULA & Valhall*
3.0	2019-05-20	*Included overview of old and new colour codes for hoses in Section 4.7.3*
2.0	2018-12-11	*Replaced reference to BP with Aker BP on page 7. Section 4,8- Removed reference to checklist. Included new requirement in Annex I.*
1.0	2018-10-31	*First issue. Content is based on information in documents superseded during the BMS implementation process (Implemented in APOS)*

Table of Contents

1 Scope

This document contains Aker BP additional requirements to NORSOK Standard Z-015 Edition 4.

A reference to norms and standards applicable to the different existing assets, and a general overview of the basic norms and standards for any new asset, can be found in Section 2.1.

It is therefore of vital importance that the paragraphs are read and understood in conjunction with the appropriate NORSOK paragraphs. All provisions of the above standard which are not revised remain in force

The document is structured in the same way as the NORSOK standards except that sections with no additional requirements are removed.

The specification defines the minimum requirements for design and operation of Temporary Equipment for offshore installations operated by Aker BP located on the Norwegian Continental Shelf.

Any deviation from this standard shall be addressed in accordance with BMS process 77-03-04 Handle Deviation.

2 Normative and Informative References

2.1 Normative references

As systems unit the SI system shall be applied for all electrical applications including control and monitoring components.

2.2 Informative references

None

3 Terms, definitions and abbreviations

3.1 Definitions

For the purposes of the NORSOK standard and “Aker BP Additional Requirements to IEC and NORSOK”, the following terms and definitions apply.

3.1.1 NORMATIVE REFERENCES

Mean normative (a requirement) in the application of the NORSOK standard and “Aker BP Additional Requirements to NORSOK”

3.1.2 INFORMATIVE REFERENCES

Mean informative in the application of the NORSOK standard and “Aker BP Additional Requirements to NORSOK”

3.2 Abbreviations

ABP	Aker BP ASA
CAP	Critical Action Panel
ESD	Emergency Shut Down
FSE	Forskrift om sikkerhet ved arbeid i og drift av elektriske anlegg (Based on EN 50110-1 Regulation for safety in work and operation of electrical plants)
ICAO	International Civil Aviation Organization
IEC	International Electrical Commission
IEEE	Institute of Electrical and Electronics Engineers
MEI	Manuel Electrical Isolation
OS	Operator Station
SCMS	Switchboard Control and Maintenance System
VSD	Variable Speed Drive

The numbering of the following items below corresponds to paragraph numbering of the mentioned standard and reflects additions, deletions, modifications and decisions. All provisions of the above-mentioned standards that are not revised remain in force.

4 Technical Requirements

4.1 Introductions

The contractor is responsible for providing equipment fulfilling the requirements stated in this document.

NORSOK Declaration of Conformity, NORSOK Checklist for temporary Equipment, and approval of any deviations shall be electronically filed and available in accordance with BMS process 53-03-02 and 53-03-03. Required hook-up and safety related documentation shall be electronically attached. Equipment shall be tested, inspected and approved by contractor's qualified personnel, to ensure that all rules and regulations and internal requirements to equipment and documentation are fulfilled.

After this inspection and before shipment to supply base, an approved 3rd party verification of the equipment shall be performed. The 3rd party verification approval is valid for 6 months providing:

- Equipment has only been on Aker BP installations
- NORSOK checklist is attached
- Latest verification report is available

Any dispensations require approval from either the 3rd part verifier or Aker BP Onshore Support Personnel or Asset OIM.

For some types of electrical equipment and electrical power requirements not provided for by the actual installation distribution network, actions must be agreed with Aker BP Onshore Support Personnel.

If compliance to all requirements are not possible, the contractor shall contact the TE requester/Job Officer to agree on further actions as:

A. Stop the delivery
B. Issue an application for dispensation
C. Agree to accept a delay and repair/modify the equipment

4.2 Containers

No further requirements

4.3 Other types of temporary equipment

4.3.1 Type U07: Well service equipment

Hydraulic oil reservoir for temporary equipment used to operate X-mas tree valves or down hole safety valves, shall have cleanliness according to NAS 6.

4.4 Special technical requirements for temporary equipment

4.4.1 Gas and explosion protection

The Fire and Gas Panel shall have the following alarms connected to the platform F&G detection system:

Loss of overpressure (only applicable for containers with overpressure system)

Fire detected

Gas detected

Common fault

Ref chapter 4.7 for detailed hook up details.

4.4.2 Signals to/from CCR and local alarms

Cause & effect requirements

Detection type	Close non EX-equip. Close firedamper	Local Alarm	Alarm in CCR
Gas detection in vent intake	Yes, at Low Alarm*	Yes, at Low Alarm*	Yes, at Low Alarm*
Loss of overpressure (Containers in classified area only)	Yes, after maximum 3 min	Yes, after maximum 30 sec	Yes, after maximum 3 min.
Smoke or heat detection	Yes	Yes	Yes
Manual	Yes, maximum 10 sec delay	Yes	Yes

**** Alarm limits in accordance with NORSOK S-001, low alarm.***

4.4.3 Telecommunication

Aker BP will provide PA speakers, telephones, telecoms, junction boxes and any associated equipment. These will be free issued to the contractor to install at his works. They will remain the property of AKER BP and must be returned at the end of the hire period.

4.4.4 Electrical

For general electrical requirements reference is made to NORSOK Z-015, 4.4.6

Equipment shall be protected by short-circuit and overload relays for each individual unit.

If local starters are used, electrical motors above 1 kW needs thermal protection pre-set to maximum motors current. Motors to have star-coupling and/or internal thermistor protection in windings.

Ex e motors shall be star connected

Multi-voltage starter systems shall be possible to either lock or block for actual installation voltage or have installed an adjustable over under voltage protection system. Actual test showing reliability and correct functionality shall be documented.

One phase of single phase control transformers shall be directly earthed on the secondary side and be protected by fuse up to nominal rating, to prevent overload, in the other.

Platform alarms and safety shutdown signals. Normal power on all assets will be disconnected automatically upon detection of single gas.

For the following design/equipment types it is required that the supplier contacts relevant Aker BP Onshore personnel before any Purchase Order is signed:

1. Any power requirements not listed as available.
2. Applications/requests for sub-division of power distribution.
3. All use of transformers above 1 kVA. In order du enable Aker BP to evaluate that the distribution system downstream the transformer is designed and built in accordance with IEC 61892 and NORSOK E-001, the following document needs to be made available: Schematic/ Wiring Diagrams, calculations (Febdok or equal) including min. short circuit level which as a minimum shall be 10X upstream fuse/ protective device rating. For multi voltage transformers a complete set of calculations and design documents must be available.
4. Use of generators
5. All use of local emergency power, including batteries. NB: Batteries with a maximum rating of 500VA, for backup of PC or equal, located inside certified EXd enclosures can be accepted, any other design needs to be clarified. A certification containing both batteries and battery box shall be provided. All equipment after the batteries shall be zone 1 certified.
6. If there is a request for change involving the automatic gas detection shut-down system.
7. If there is a request for UPS or emergency power (IT system)
8. Use of variable frequency drives and motors (shall be certified together for Exe motors)

If the equipment may be used on different installations, especially locations using different voltage levels, this should be facilitated by choosing equipment that can be easily changed or comes approved and marked for all actual voltages levels and start currents.

This will make it possible to move equipment directly between platforms.

Connections for:

- Water supplies for sprinkler system
- Water supply for other use.
- Drain connections.
- Plant air at 7 bar gauge pressure.
- Instrument air at 7 bar gauge pressure, dew point -20°C

The contractor is required to interface his own equipment to the above listed services.

It is not permitted to start or connect equipment to any of the systems on the installations before permission has been granted by responsible personnel on the relevant installation. Responsible senior el. technician on the relevant installation provides instructions on electrical connections.

If this requires work to be carried out by BP personnel, a work order is required.

Aker BP will supply services local to the container and/or equipment, as indicated in this Section 4.7.

4.4.5 HVAC

For Containers type B and C in hazardous area, the following features shall be provided in the containers HVAC system: Maintain positive pressure not uncomfortable to personnel (5 mm water gauge/50Pa.) Double door air lock system.

For containers located in hazardous area reference is made to Clause 4.5.2 in NORSOK Z-015.

4.4.6 Process Safety

Equipment (eq for leak –and pressure testing) that potential can

- supply higher pressure than rated design for connected facility system

  AND/OR

- supply higher rate than capacity of PSV on connected facility

shall be equipped PSV to prevent overpressure of facility. PSV shall have capacity to handle rated maximum flow from equipment without exceeding maximum allowable accumulated pressure of connected facility. This also applies if PSV on connected facility system can be isolated from the connection point of the temporary equipment, typically by closing a valve.

For equipment that

- can supply higher pressure than rated design for connected facility system containing hazardous media

  AND

- with a continuous supply rate of more than 0.1 m^3/hr,

the equipment shall have an independent shut-down function preventing overpressurisation of connected facility system.

Equipment that have a lower rated design than the connected facility system shall have PSV installed with sufficient rated capacity to prevent overpressure of equipment unless administrative procedures ensures that overpressurisation cannot occur. Check valve is not considered sufficient. Discharge from PSV must be routed to a safe location.

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

Shut-down functions shall be tested prior to start-up of temporary equipment.

For injection into connected facility, check valve shall be installed at the injection point to minimize potential backflow in case of leakage.

4.5 Ex-rating requirements for temporary equipment

No further requirments

4.6 Marking and tagging

4.6.1 General

All contractors' tools and equipment to be marked with company logo/identification or equivalent. Individual equipment identification (ID) shall be clear and visible. This ID shall be also found on the Statement of Compliance and inspection reports.

Hoses, shackles and sockets to be individually marked.

4.7 Hook-up interfaces

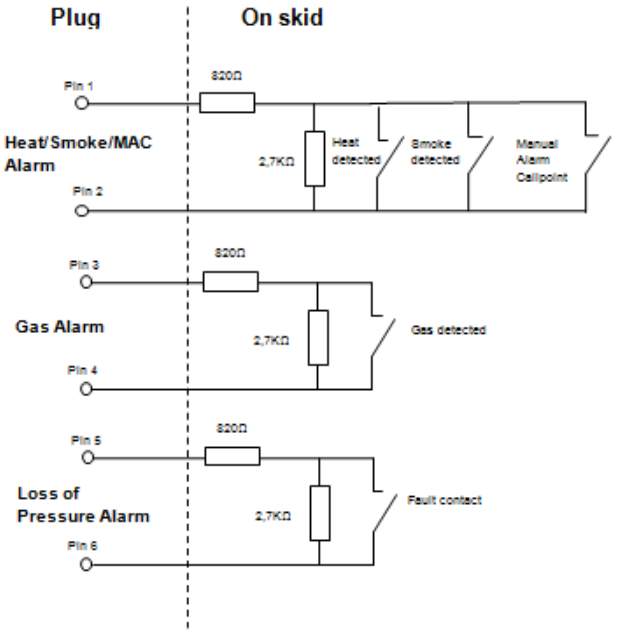
4.7.1 Alvheim Temporary Equipment Information

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

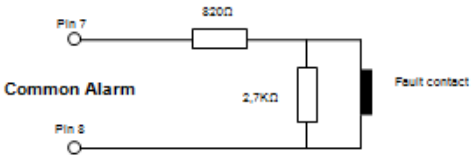
4.7.1.1 Instruments

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

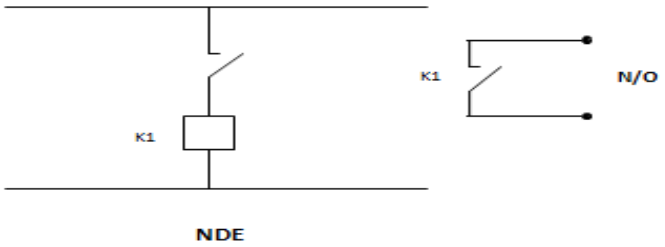
Pin allocation, contact sense and line monitoring for Fire, Gas and Loss of Pressure Alarms (Shown in healthy state or loss of power to skid F&G panel), use N.O. contacts from F&G panel).

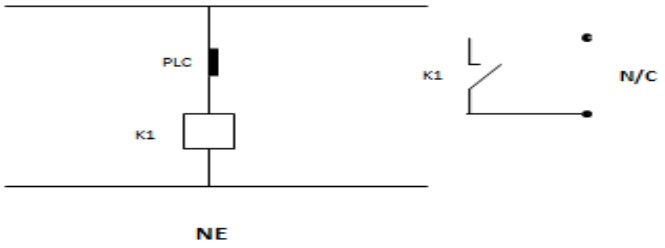


Pin allocation, contact sense and line monitoring for Common Alarm (Shown in alarm state or loss of power to skid, use N.C. contacts).

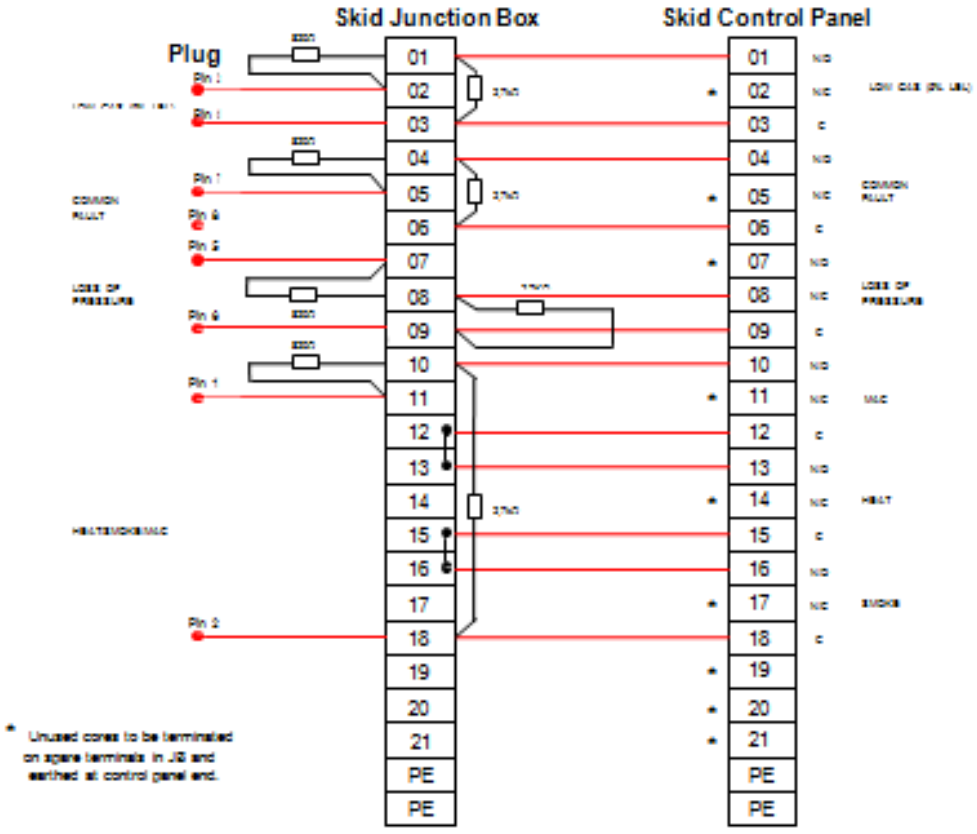


Fire detection cabinet output relays (shown in healthy state i.e. no alarm)





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



4.7.1.2 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

4.7.1.3 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 - 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.

For consumers above 63A no fixed installation is available, hence larger consumers' needs to be reported to Onshore maintenance supervisor

4.7.1.4 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						

4.7.2 Ivar Aasen Temporary Equipment Information

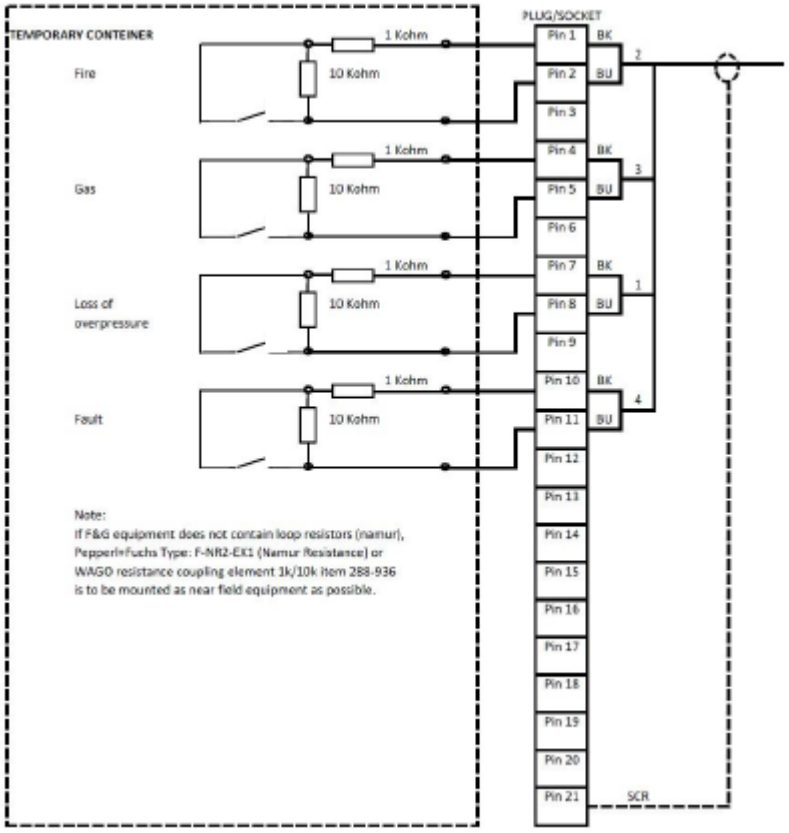
4.7.2.1 Electrical

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 8579/3♣1-506	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
												Intermediate deck
Emerg	690 3ph+ PE	60	200	N	I			200		Tranberg junction box, termina♣l 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)						

4.7.2.2 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.

4.7.2.3 Telecom

Funksjon	**Signal type**	**Plattform tilkobling**	**Midl. Utstyr tilkobling**	**Område**
		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
Telefon	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	Q-ODC-4 hex bulkhead connector with 9/125 SM pigtal	Q-ODC-4 plug	Weather deck Utility station 1 West: 3 outlets Utility station 2 East: 3 outlets

4.7.2.4 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

4.7.3 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
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

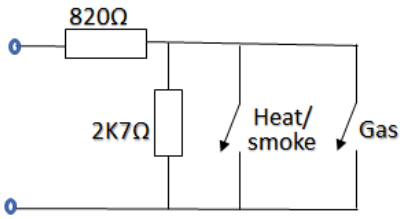
4.7.3.1 Electro

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 R001
Hull and Tank deck 400V:	
63A	3P+PE, CEAG (4-Pins 3fas without neutral), CHG518 7406 R0001
Toppside, U800, T700, P100-P600 400V	
63A	3P+N+PE, Type: CEAG, GHG514 7506 R001 (5-Pins 3fas without neutral)
125A	3P+N+PE, Type: CEAG, GHG515 7506 R001

4.7.3.2 Instrument



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

4.7.3.3 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

4.7.3.4 Hose Connectors

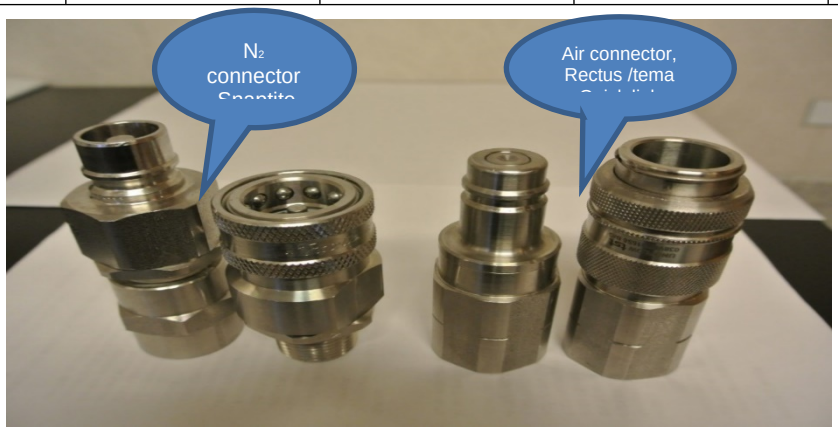
Connector types have changed for Skarv. In a transition period both old and new connector will be found in the field.

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

4.7.4 ULA, Temporary Equipment Information

Applicable for Ula, Tambar

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: Ula/ Tambar and Valhall (PH, IP and Flank South and North) 480V, 3 phase: Valhall (PCP, DP, QP, 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

4.7.4.1 Electrical

Plugs for Ula, Tambar

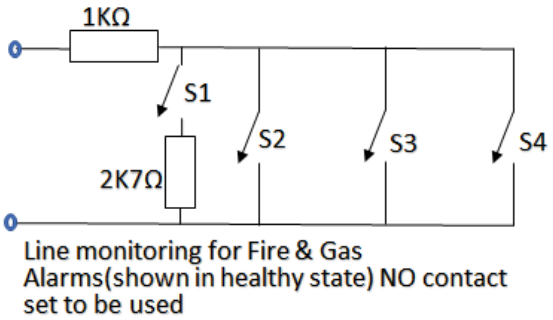
All plugs will be supplied and connected by the contractor.

Plugs, Ula and Tambar:

230V	16A STAHL - 8570/12-306 h 6 IP66
440V	63A STAHL - 8579/12-411
440V	125A STAHL - 8581/12-411

4.7.4.2 Instrument

Ula P; D & Q – ABB 800xA



S1 – NC with overpressure function(opens on loss of overpressure)
S2 – NO with no Heat or Smoke detected
S3 – NO with no Gas detected (closes on alarm)
S4 – NO, closes on maually actuated PB

Motstandsverdier ved endeterminaler:

Åpen krets eller tap av overtrykk: ∞Ω

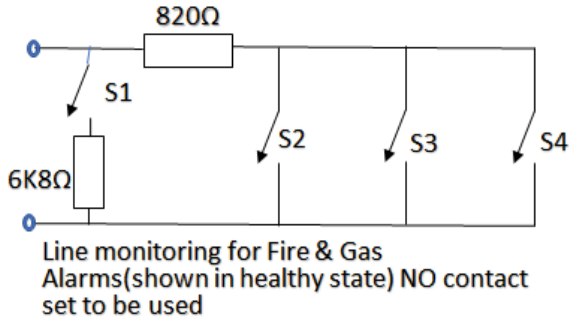
Kortslutning: 0Ω

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(opens on loss of overpressure)
S2 – NO with no Heat or Smoke detected
S3 – NO with no Gas detected (closes on alarm)
S4 – NO, closes on maually actuated PB

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

4.7.5 Valhall, -HOD Temporary Equipment Information

Applicable for Hod, Valhall (DP, WP, IP and PH), and Valhall Flank North, Valhall Flank South 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: Ula/ Tambar and Valhall (PH, IP and Flank South and North) 480V, 3 phase: Valhall (PCP, DP, QP, 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

4.7.5.1 Elektrical

Plugs for Valhall (DP, WP, IP, PH), Flank South and Flank North

All plugs will be supplied and connected by the contractor

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

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

Plugs, Valhall – DP, 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.

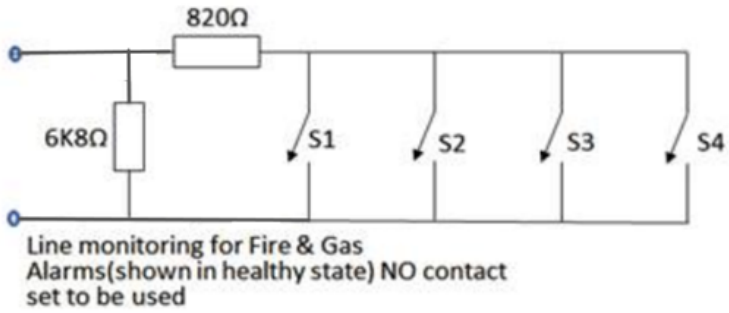
In some areas 440/480V can be supplied via a 125A socket.

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

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

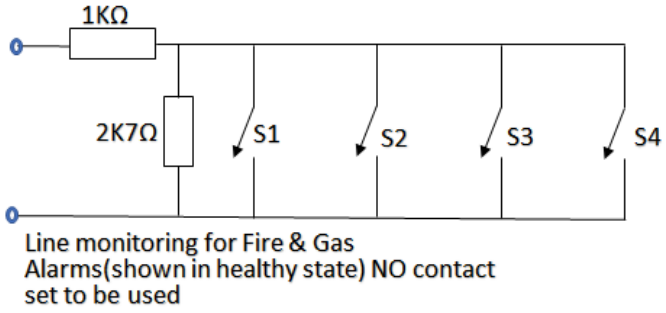
4.7.5.2 Instrument

HOD, Valhall DP, WP & IP, Valhall Flank South & Flank North – ABB Safeguard System



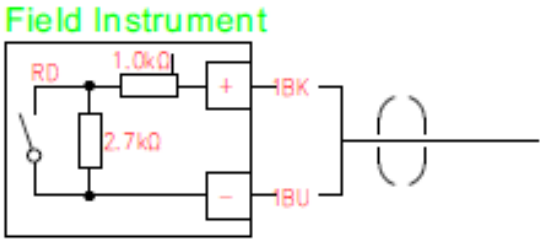
S1 – NO with overpressure function (closes on loss of overpressure)
S2 – NO with no Heat, Smoke or MAC detected (closes on alarm)
S3 – NO with no Gas detected (closes on alarm)
S4 – NO Common fault (closes on alarm)

Valhall PH - ABB 800Xa system:

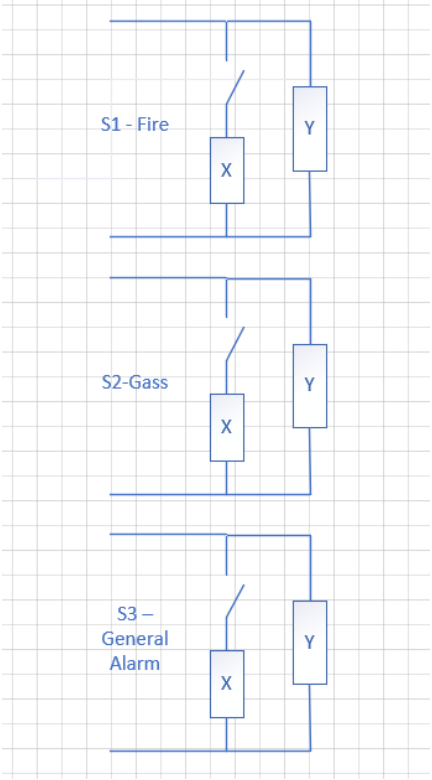


S1 – NO with overpressure function (closes on loss of overpressure)
S2 – NO with no Heat, Smoke or MAC detected (closes on alarm)
S3 – NO with no Gas detected (closes on alarm)
S4 – NO Common fault (closes on alarm)

Valhall Flank West



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



S1-NO with no Heat, Smoke or MAC detected (closes on alarm)
S2-NO with no Gas detected (closes on alarm)
S3-NO Common fault (closes on alarm)

4.8 Documentation

No further requirements

Annex A (Normative and Informative) Administrative guidelines

No further requirements

Annex B (Normative) Z-015 Data Sheet for installation

No further requirements

Annex C (Normative) Checklist matrices

No further requirements

Annex D (Informative) Equipment not registered as temporary equipment

No further requirements

Annex E (Normative) Qualification requirements for supplier personnel who operate, maintain and repair electrical equipment

No further requirements

Annex F (Normative) Mono cable

No further requirements

Annex G (Normative) Z-015 Declaration of conformity

No further requirements

Annex H (Normative) Z-015 Data sheet for temporary equipment

No further requirements

Annex I (Normative) Maintenance

Pressure Hoses shall be added to list of components requiring documented maintenance program and history