WORKING DOCUMENTATION

Document No.: **A-34226-00000-LW**

System: **TANK GAUGING**

Hoppe No.: **CO 34226**
Shipyard: **Jiangnan Shipyard**
NB No.: **H2431**
Ship owner: **Hamburg-Südamerikanische**

Revision: **1.12**
Issue: **09.02.2009**

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Document listing

Document No.	Designation	Rev. Issue
A-34226-00000-LW	**PROJECT / OVERVIEW**	**1.12 09.02.2009**

DELIVERY SPECIFICATION

Document No	Document type	Designation/Type	Rev.	Date
A-34226-00000-DS	Delivery specification	PROJECT OVERVIEW	1.7	21.07.2008

GENERAL INFORMATION

Document No	Document type	Designation/Type	Rev.	Date
A-34226-00000-SC	System cable overview	PROJECT OVERVIEW	2.2	09.05.2008
A-34226-00001-SC	System cable overview	SWITCH CABINET CENTRAL STATION TT	2.2	28.04.2008
A-34226-00000-TLS	Telegram specification	PROJECT OVERVIEW	1.6	09.02.2009

SYSTEM COMPONENTS

Document No	Document type	Designation/Type	Rev.	Date
A-34226-00000-PD	Panel details	PROJECT OVERVIEW	2.5	29.02.2008
A-34226-00001-MP	Layout	SWITCH CABINET CENTRAL STATION TT	2.1	09.05.2008
F-02616-01000-MP	Layout	CONNECTION BOX Ethernet	1.4	05.09.2008
F-02616-01000-ST	Part list	CONNECTION BOX Ethernet	1.2	19.02.2008
F-02616-01000-SP	Current diagram	CONNECTION BOX Ethernet	1.2	19.02.2008

TANK GAUGING

Document No	Document type	Designation/Type	Rev.	Date
A-34226-00001-MP	Layout	SWITCH CABINET CENTRAL STATION TT	2.1	09.05.2008
A-34226-00201-KL	Terminal connection plan	TANK GAUGING CENTRAL STATION TT	2.0	10.12.2007

Document listing

Document No.	Designation	Rev. Issue
A-34226-00000-LW	**PROJECT / OVERVIEW**	**1.12 09.02.2009**

TANK GAUGING

Document No	Document type	Designation/Type	Rev.	Date
A-34226-00201-SP	Current diagram	TANK GAUGING CENTRAL STATION TT	3.3	09.02.2009
A-34226-00201-ST	Part list	TANK GAUGING CENTRAL STATION TT	2.2	09.05.2008
A-34226-00205-SP	Current diagram	TANK GAUGING SUB-STATION TT	1.1	28.04.2008

PROCESS COMPONENTS TANK GAUGING

Document No	Document type	Designation/Type	Rev.	Date
A-34226-00000-TS	Tank sensor list	PROJECT OVERVIEW	1.2	03.03.2008
F-02687-00001-ST	Part list	BALL VALVE KG-25-16-FL-1 48-SS	1.1	12.04.2006
F-03287-00000-TD	Technical data sheet	SENSOR HCG-2011-M04	1.2	23.01.2009
F-02539-00000-SZ	Collection drawing	SENSOR CABLE SK-…	1.0	12.04.2006
F-02555-00001-KD	Configuration document	PARAMETER SHEET TM-SENSORPOSITION	1.0	21.09.2007
F-02550-00000-IZ	Installation drawing	SENSOR INSTALLATION SI-HCG-2011-KS-FU	1.0	12.04.2006
F-02570-00000-IZ	Installation drawing	SENSOR INSTALLATION SI-HCG-2011-FW	1.2	12.04.2006
F-02662-00000-IZ	Installation drawing	SENSOR INSTALLATION SID-BA-HCG-2011-FW	1.0	12.04.2006
F-02664-00000-IZ	Installation drawing	SENSOR INSTALLATION SID-HCG-2011-FW	1.0	10.12.2008
F-02031-12050-GZ	General drawing	TANK FLANGE FL-50A-10K-1 8mm-ST	1.0	12.04.2006
F-02031-12050-ST	Part list	TANK FLANGE FL-50A-10K-1 8mm-ST	1.1	05.05.2006

Document listing

Document No.	Designation	Rev. Issue
A-34226-00000-LW	**PROJECT / OVERVIEW**	**1.12 09.02.2009**

PROCESS COMPONENTS TANK GAUGING

Document No	Document type	Designation/Type	Rev.	Date
F-02030-12020-EZ	Single part drawing	LAPPED FLANGE FL-25A-10K-1 48-ST	1.0	12.04.2006
F-00033-00000-GZ	General drawing	CONNECTION BOX HNA-1-K	1.1	13.08.2008
F-00033-00000-ST	Part list	CONNECTION BOX HNA-1-K	1.6	10.06.2007
F-02635-00000-SZ	Collection drawing	WELDING BLOCK BV;StSt	1.4	27.02.2008
F-02635-01000-ST	Part list	WELDING BLOCK BV;StSt	1.1	27.02.2008
F-02687-00001-GZ	General drawing	BALL VALVE KG-25-16-FL-1 48-SS	1.1	12.04.2006

MANUALS

Document No	Document type	Designation/Type	Rev.	Date
F-03301-01101-HBE	User guide external	MANUAL HOMIP	1.2	04.12.2008

CERTIFICATES

Document No	Document type	Designation/Type	Rev.	Date
F-03285-00604-CE	Certificate	CERTIFICATE 17091-00 HH	1.5	06.06.2008
F-03285-00618-CE	Certificate	CERTIFICATE 20 760 - 04 HH	1.3	06.06.2008
F-03285-00620-CE	Certificate	CERTIFICATE 55 505 - 92 HH	1.4	06.06.2008
F-03285-00204-CE	Certificate	CERTIFICATE BAS01ATEX7145	1.3	09.06.2008
F-03285-00205-CE	Certificate	CERTIFICATE BAS01ATEX7155	1.1	09.06.2008

Document listing

Document No.	Designation	Rev. Issue
A-34226-00000-LW	**PROJECT / OVERVIEW**	**1.12 09.02.2009**

SPARE PARTS

Document No	Document type	Designation/Type	Rev.	Date
F-02291-00005-ST	Part list	SPARE PART KIT ETS-TT	1.1	04.03.2008

DELIVERY SPECIFICATION

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Hoppe Bordmesstechnik GmbH

Delivery specification

Material Number A-34226-00000.DS

Revision 1.6

Item	Quantity		Designation	Material Number
1			**WORKSTATION** **PC Loading Computer** **SR (Yard supply)**	**A-34226-00004**
1.1	1	pcs	CONNECTION BOX Ethernet PC-RJ45;Buzzer	F-02616-01000
2	1	pcs	**SWITCH CABINET** **CENTRAL STATION TT** **-**	**A-34226-00001**
			TANK GAUGING CENTRAL STATION TT TT	A-34226-00201
3			**LOOSE COMPONENTS** **SUB-STATION TT** **-**	**A-34226-00005**
			TANK GAUGING SUB-STATION TT TT	A-34226-00205
3.2	8	pcs	EX-ISOLATING-AMPLIFIER MTL5044, TRANSDUCING FEED UNIT 2x 4-20mA; 24VDC	K-01654-00000
3.3	14	pcs	EX-ISOLATING-AMPLIFIER MTL5015, SWITCH AMPLIFIER TRANSISTOR OUTLET; 2 CHANNELS	K-01656-00000
3.4	6	pcs	EX-ISOLATING-AMPLIFIER MTL5074-RTD, TEMPERATURE TRANSDUCER PT100; INPUT 10-400 Ohm; FOR 4-CONDUCTOR RESISTANCE THERMOMETER; LINEARIZATION SWITCHED ON; MEASURED VALUE: 0-200°C;	K-01658-00000
4			**TANK GAUGING** **TT**	**A-34226-00200**

Delivery specification

Material Number A-34226-00000.DS

Revision 1.6

Item	Quantity		Designation	Material Number
4.1			SENSOR INSTALLATION SET SI-HCG-2011-KS-FU ACC. F-02550-00000.IZ	A-34226-09901
consist of:				
4.1.1	13	pcs	SENSOR HCG-2011-M04 2500; KS	F-03287-00002
4.1.2	13	pcs	CONNECTION BOX HNA-1-K	F-00033-00000
4.1.3			TANK FLANGE FL-50A-10K-1 8mm-ST	F-02031-12050
consist of:				
4.1.3.1	13	pcs	FLANGE FL-50A-10K-1 G1/4-ST	F-02031-12051
4.1.3.2	13	pcs	SCREW JOINT 8-1/4 PTFE;straight 8 mm;1/4"	K-01535-00000
4.1.4	3	pcs	SENSOR CABLE SK-HCG-M02-10 10 m	F-02539-01010
4.1.5	6	pcs	SENSOR CABLE SK-HCG-M02-15 15 m	F-02539-01015
4.1.6	4	pcs	SENSOR CABLE SK-HCG-M02-20 20 m	F-02539-01020
4.2			SENSOR INSTALLATION SET SI-HCG-2011-FW ACC. F-02570-00000.IZ	A-34226-09902
consist of:				

Delivery specification

Material Number A-34226-00000.DS

Revision 1.6

Item	Quantity		Designation	Material Number
4.2.1	23	pcs	SENSOR HCG-2011-M04 2500; FW 25	F-03287-00003
4.2.2	23	pcs	CONNECTION BOX HNA-1-K	F-00033-00000
4.2.3	17	pcs	SENSOR CABLE SK-HCG-M02-5 5 m	F-02539-01005
4.2.4	4	pcs	SENSOR CABLE SK-HCG-M02-10 10 m	F-02539-01010
4.2.5	2	pcs	SENSOR CABLE SK-HCG-M02-25 25 m	F-02539-01025
4.2.6	23	pcs	UNION FLANGE FL-25A-10K-1 48-ST	F-02030-12020
4.3			SENSOR INSTALLATION SET SID-BA-HCG-2011-FW ACC. F-02662-00000.IZ	A-34226-09903
consist of:				
4.3.1	2	pcs	SENSOR HCG-2011-M04 2500; FW 25	F-03287-00003
4.3.2	2	pcs	CONNECTION BOX HNA-1-K	F-00033-00000
4.3.3	2	pcs	BALL VALVE KG-25A-JIS10K-FL-1 48-SS	F-03512-00001

Delivery specification

Material Number A-34226-00000.DS

Revision 1.6

Item	Quantity		Designation	Material Number
4.3.4	2	pcs	SENSOR CABLE SK-HCG-M02-20 20 m	F-02539-01020
4.3.5			TANK FLANGE FL-50A-10K-1 8mm-ST	F-02031-12050
consist of:				
4.3.5.1	2	pcs	FLANGE FL-50A-10K-1 G1/4-ST	F-02031-12051
4.3.5.2	2	pcs	SCREW JOINT 8-1/4 PTFE;straight 8 mm;1/4"	K-01535-00000
4.4			SENSOR INSTALLATION SET SID-HCG-2011-FW ACC. F-02664-00000.IZ	A-34226-09904
consist of:				
4.4.1	2	pcs	SENSOR HCG-2011-M04 2500; FW 25	F-03287-00003
4.4.2	2	pcs	CONNECTION BOX HNA-1-K	F-00033-00000
4.4.3	2	pcs	BALL VALVE KG-25-JIS10K-FL-1 48-..	F-03512-00000
4.4.4	2	pcs	SENSOR CABLE SK-HCG-M02-5 5 m	F-02539-01005
4.5	1	set	SPARE PART KIT ETS-TI	F-02291-20001

Delivery specification

Material Number A-34226-00000.DS

Revision 1.6

Item	Quantity		Designation	Material Number
4.6			TANK FLANGE FL-50A-10K-1 8mm-ST	F-02031-12050
consist of:				
4.6.1	2	pcs	FLANGE FL-50A-10K-1 G1/4-ST	F-02031-12051
4.6.2	2	pcs	SCREW JOINT 8-1/4 PTFE;straight 8 mm;1/4"	K-01535-00000
5	1	pcs	**DOCUMENTATION** **FINAL** **TT; SR; AH**	**A-34226-10000**
6	1	pcs	**DOCUMENTATION** **FINAL-CD** **TT; SR; AH**	**A-34226-10001**
7	1	set	**CERTIFICATE SET** **PROJECT** **TT; SR; AH**	**A-34226-10100**

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GENERAL INFORMATION

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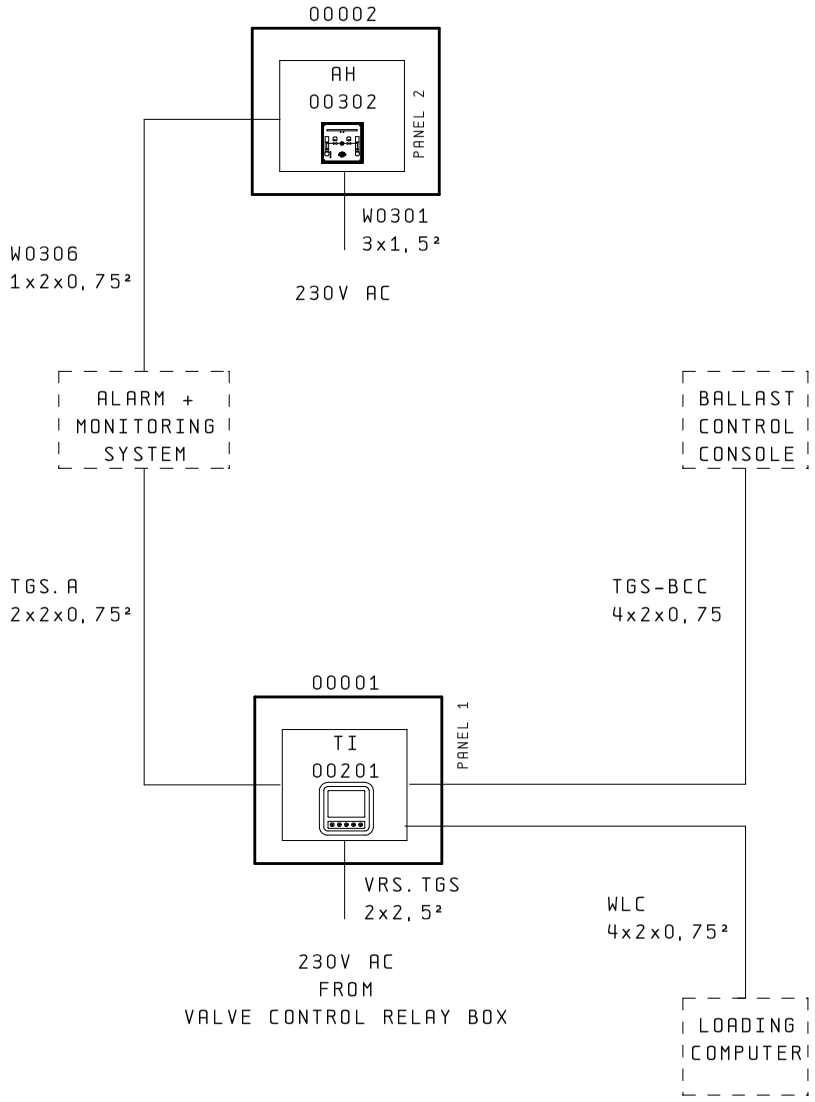
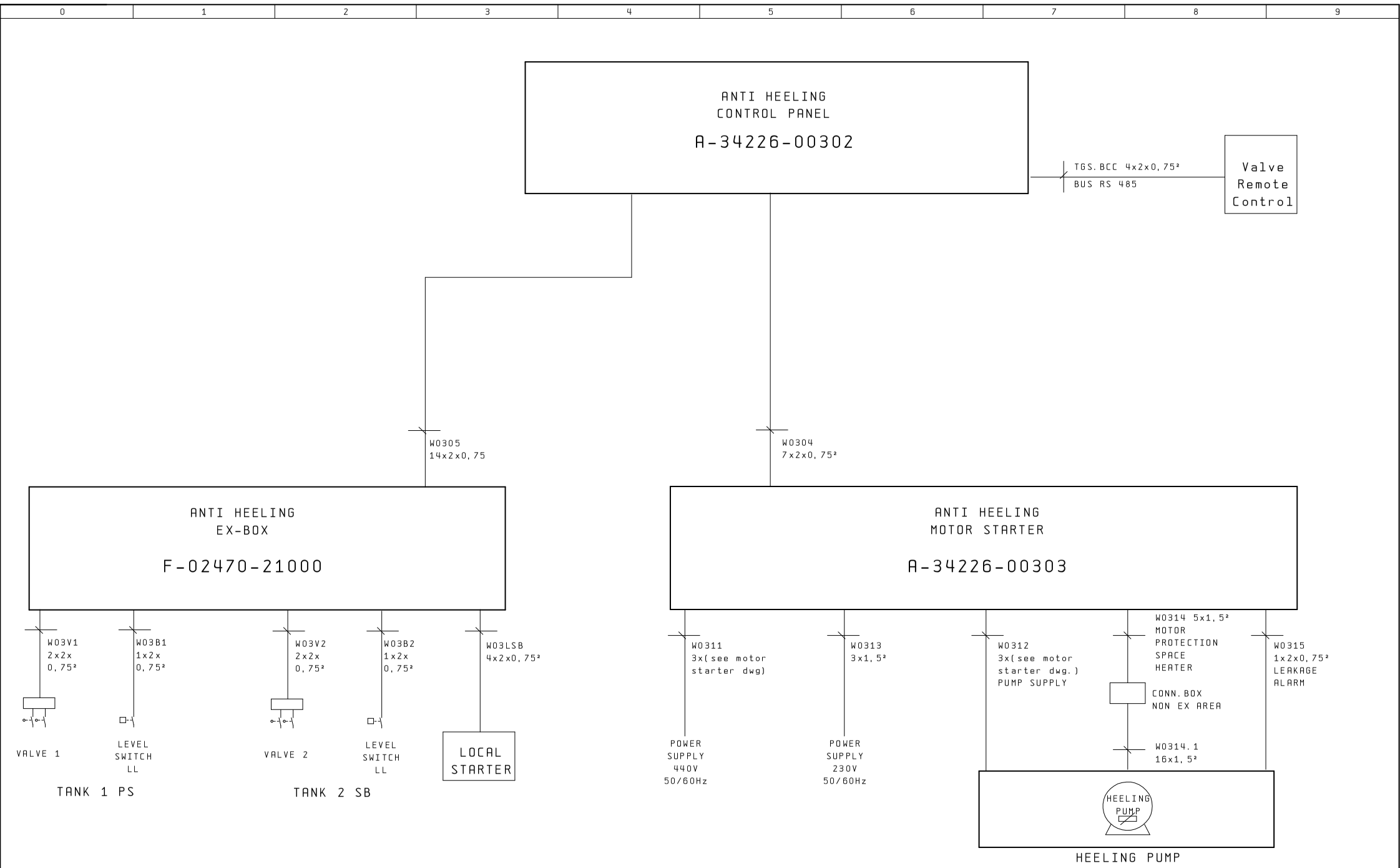


Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	PROJECT / OVERVIEW TT; AH System Cable	System Cable	scale: 1:10
Draw.	HaR				= 00000
Engrn.	T. Meyer				+ SC
Rev. No. 2.2	Rev. Date 09.05.08			A-34226- 00000 - SC	Sheet 1 / 2



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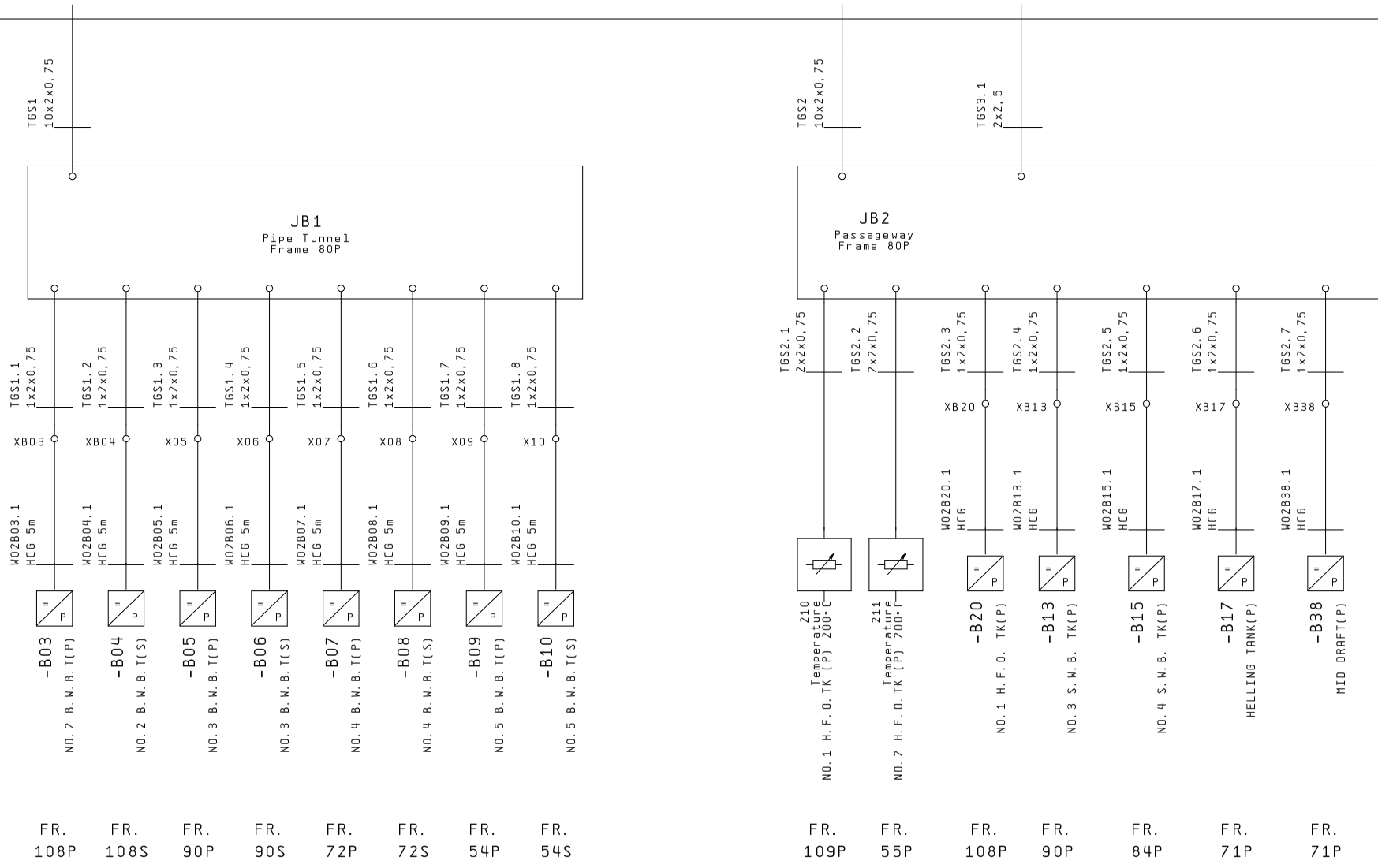
Draw.	HaR				= 00000
Engin.	T. Meyer				+ SC
Rev. No. 2.0	Rev. Date 28.02.08			A-34226- 00000 - SC	Sheet 2 / 2

00001

=00201
Panel 1 Tank Gauging System



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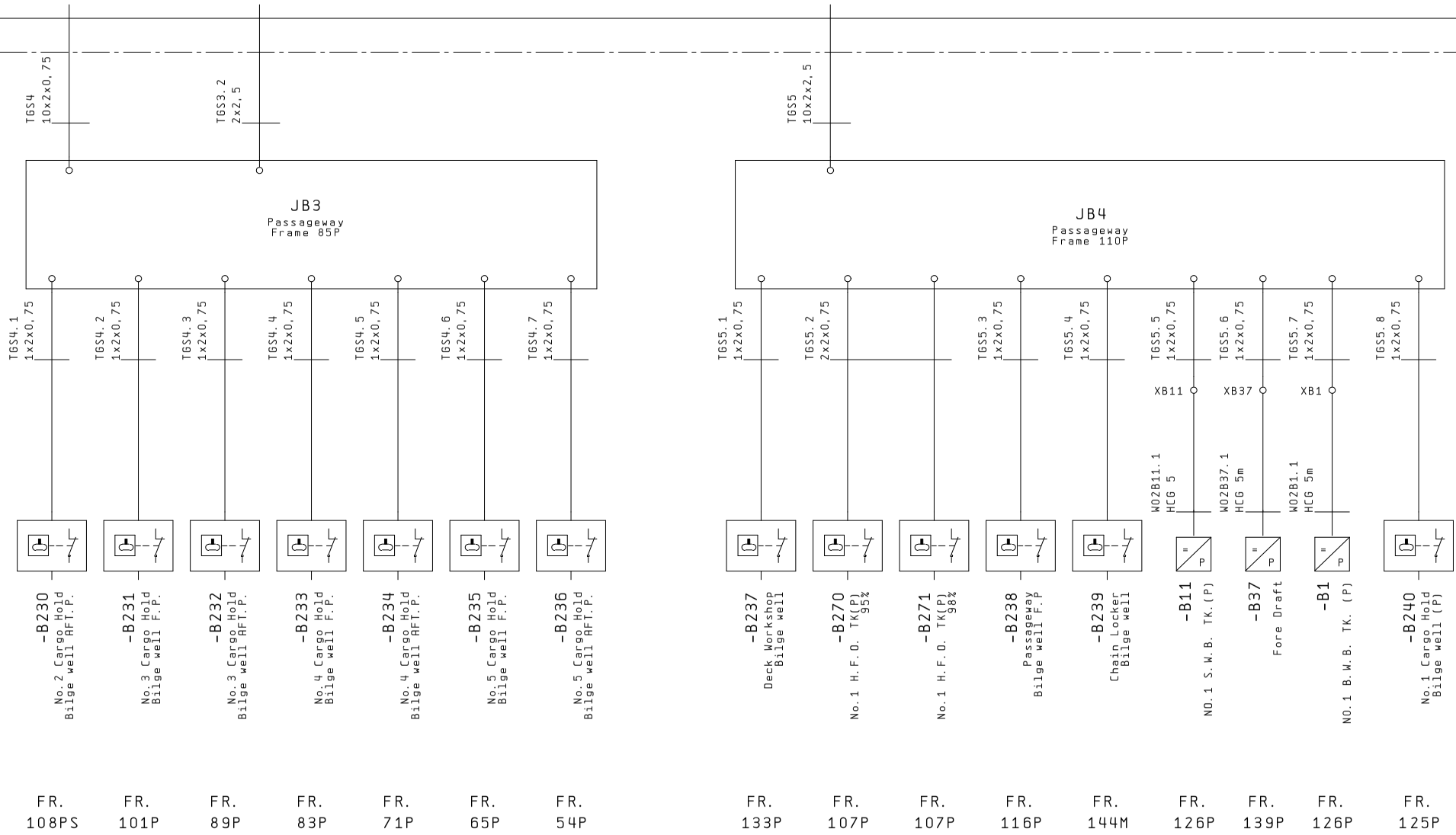
Draw.	HaR				+ SC
Engin.	T. Meyer			A-34226- 00001 - SC	Sheet 1 / 6
Rev. No. 2.1	Rev. Date 28.02.08		System Cable		

00001

=00201
Panel 1 Tank Gauging System



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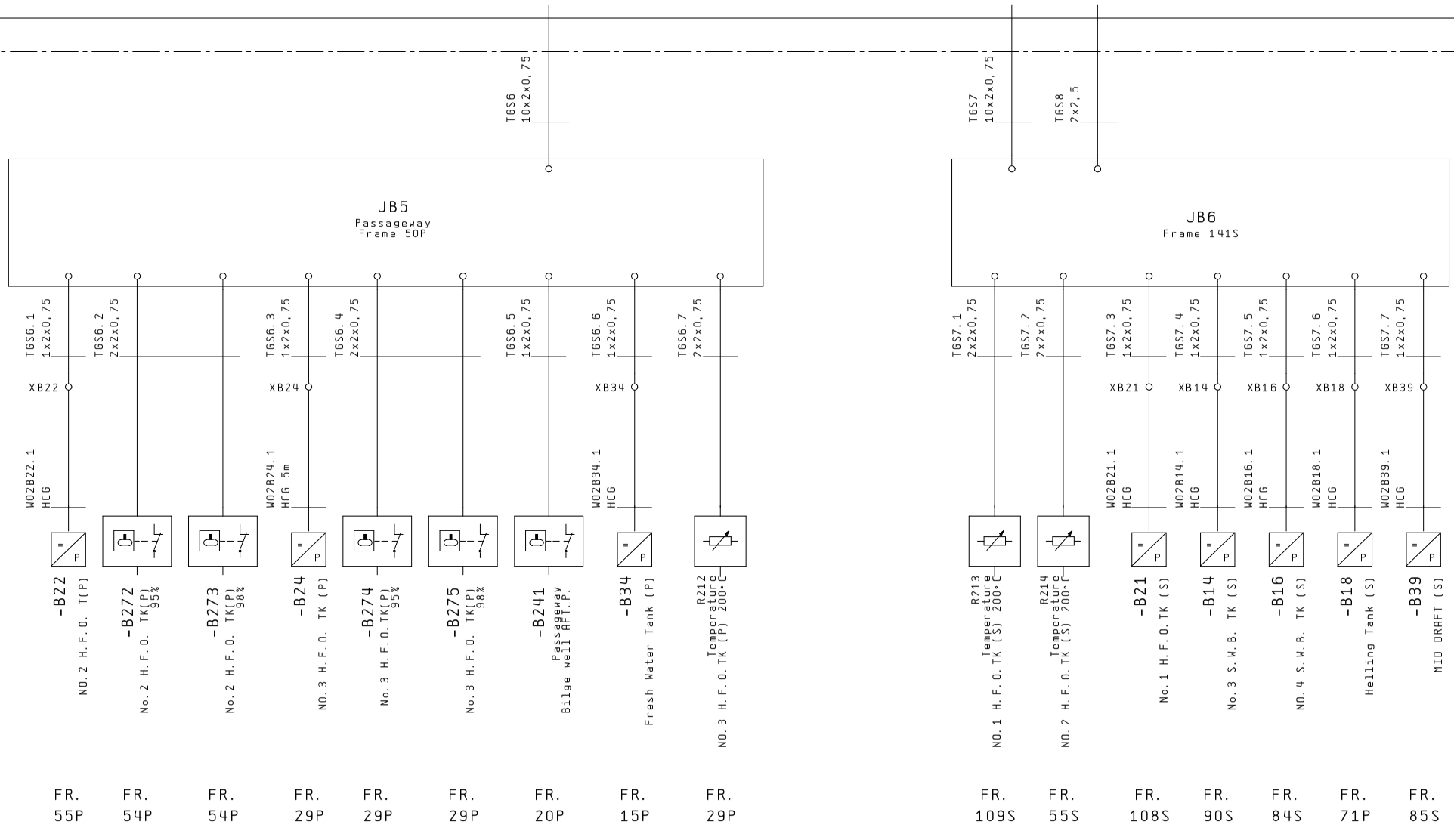
Draw.	HaR				+ SC
Engrn.	T. Meyer		System Cable	A-34226- 00001 - SC	Sheet 2 / 6
Rev. No. 2.0	Rev. Date 28.02.08				

00001

=00201
Panel 1 Tank Gauging System



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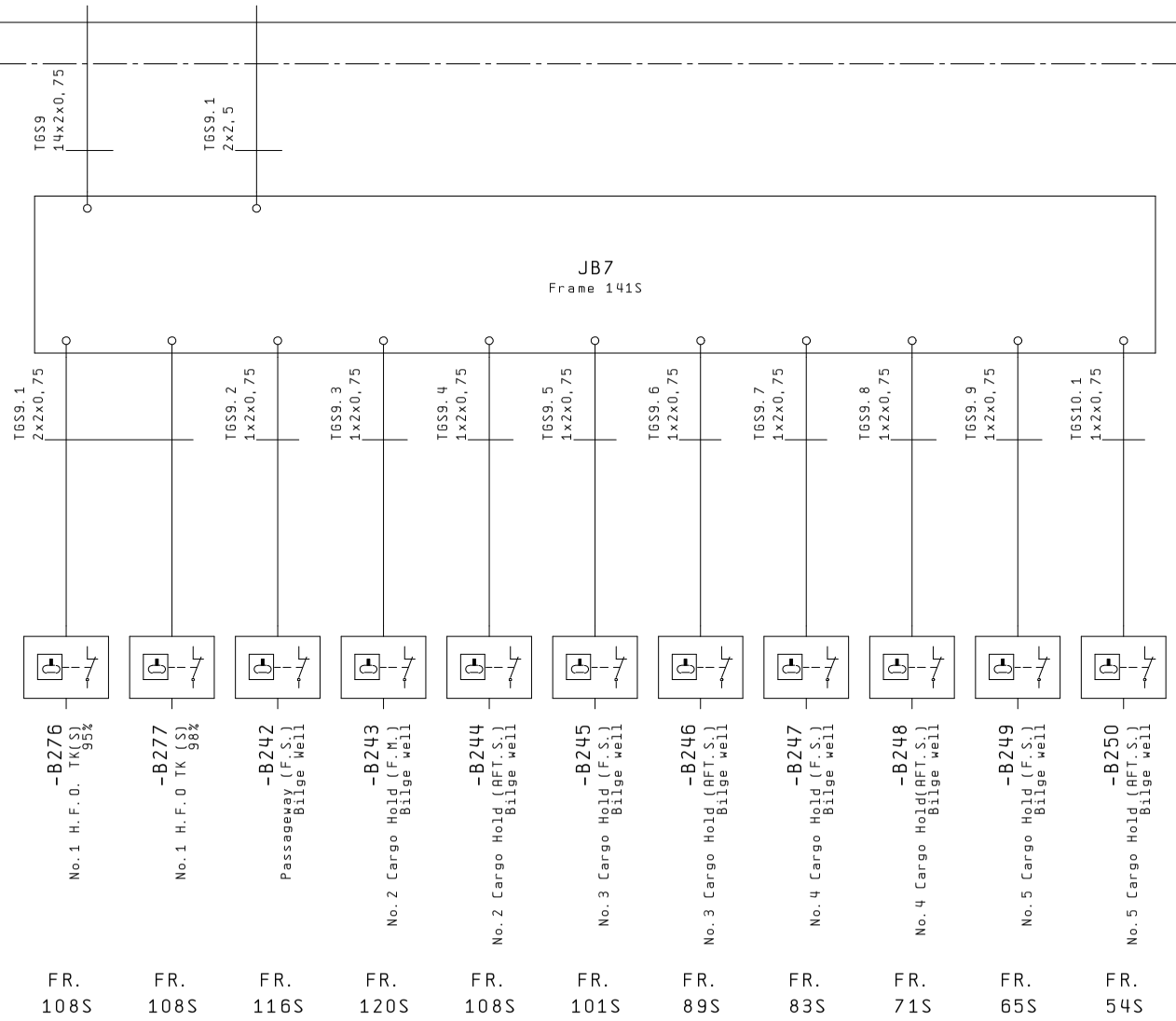
Draw.	HaR				+ SC
Engin.	T. Meyer		System Cable	A-34226- 00001 - SC	Sheet 3 / 6
Rev. No. 2.0	Rev. Date 28.02.08				

00001

=00201
Panel 1 Tank Gauging System



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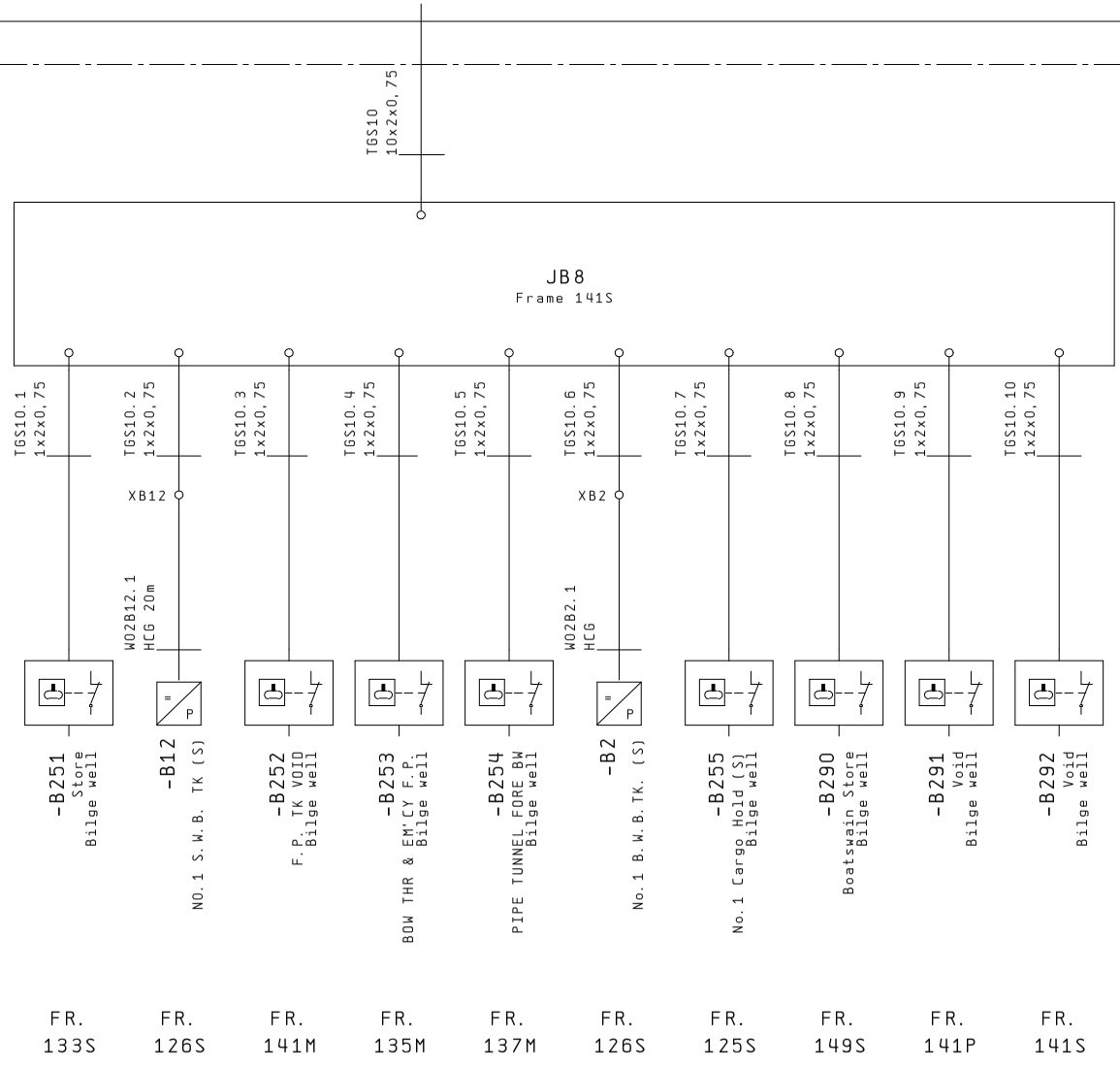
Engrn.	T. Meyer		System Cable	A-34226- 00001 - SC	Sheet 4 / 6
Rev. No. 2.1	Rev. Date 28.02.08				

00001

=00201
Panel 1 Tank Gauging System



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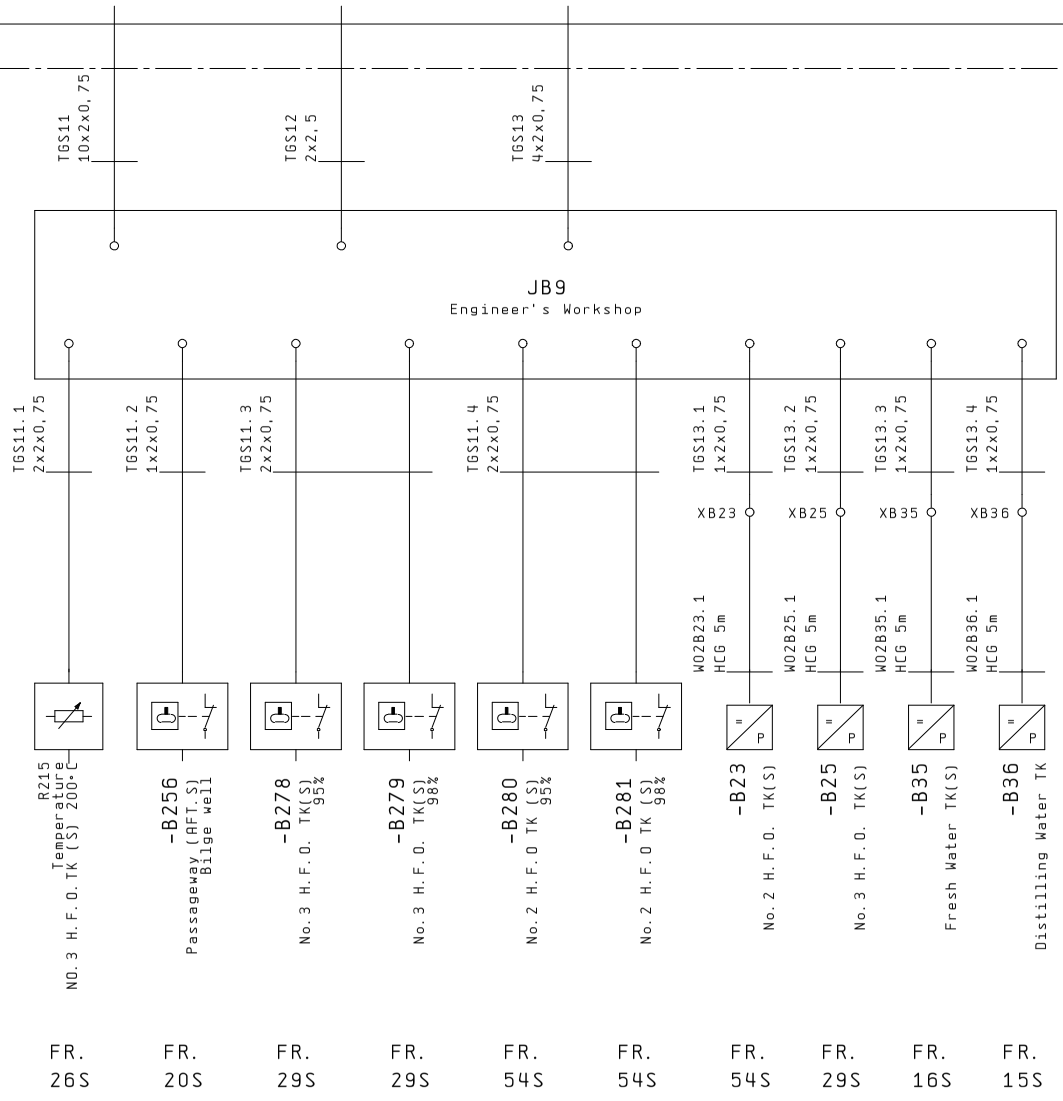
Draw.	HaR				+ SC
Engrn.	T. Meyer			A-34226- 00001 - SC	Sheet 4.1 / 6
Rev. No. 2.2	Rev. Date 28.04.08		System Cable		

00001

=00201
Panel 1 Tank Gauging System



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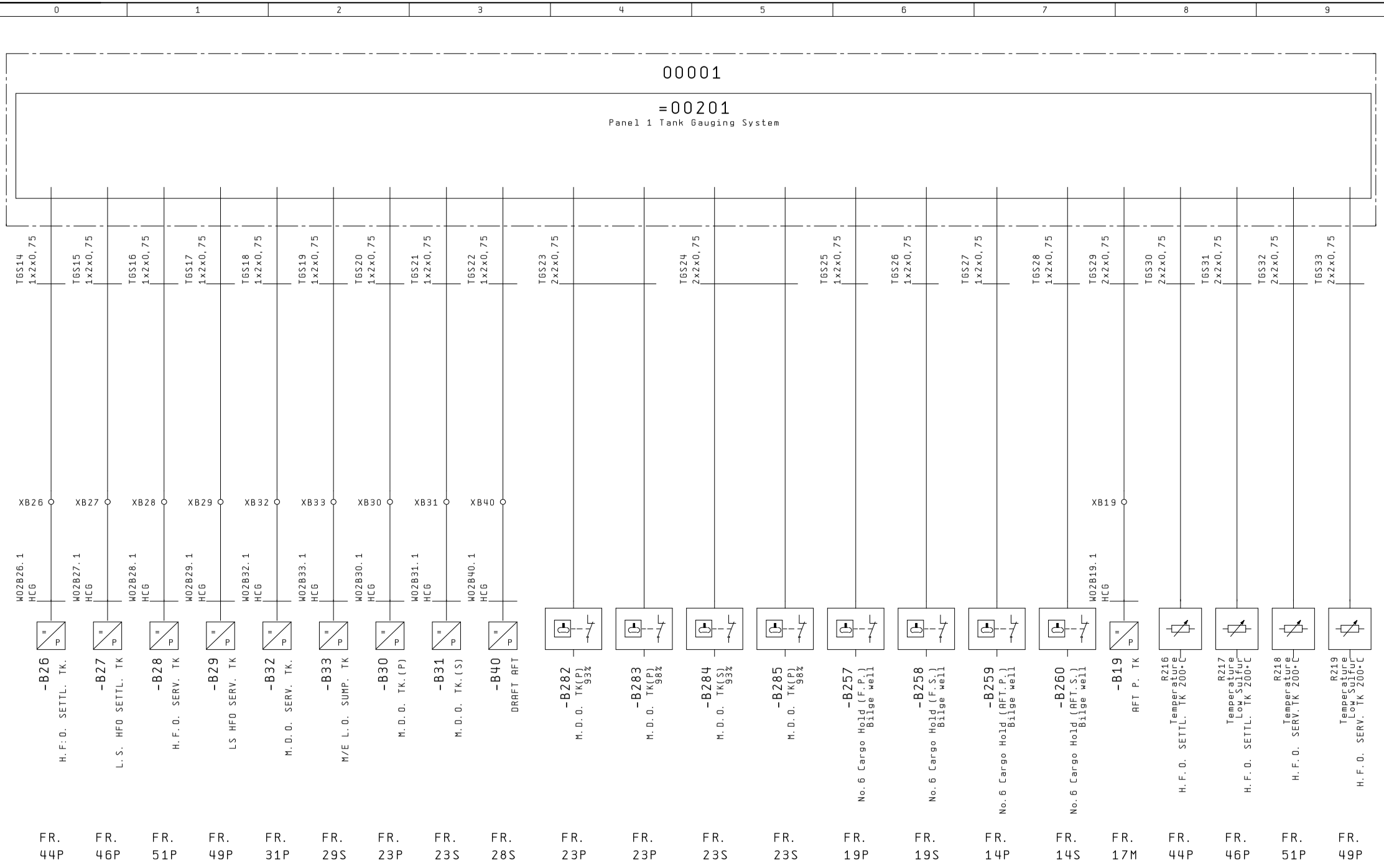
Engrn.	T. Meyer		System Cable	A-34226- 00001 - SC	Sheet 5 / 6
Rev. No. 2.1	Rev. Date 28.02.08				



Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	SWITCH CABINET / CENTRAL STATION - TT	Cable View Tank Gauging System
Draw.	HaR			
Engin.	T. Meyer		System Cable	A-34226- 00001 - SC
Rev. No. 2.0	Rev. Date 28.02.08			scale: = 00001 + SC Sheet 6 / 6

Hoppe Bordmesstechnik
Project 24226
Modbus definition Hoppe
Tankcontrol System

Date	Rev.	name	descr.
14.02.2008	01a	jm	prelimary release, scaling values for tankheight and volumes are not provided yet
25.02.2008	01a2	ZY	added the new max. Values from the Export database
25.03.2008	01a3	jm	added 3 bilge contacts
03.04.2008	01a4	jm	added 10 temperature limit contacts and 10 tanklevel limits
28.04.2008	01a5	tmm	addr. 1044 update name
22.12.2008	01a6	tmm	addr. 1071 added
09.02.2009	01a7	ZY	addr. 1072 added (Leak Steering Geat Room)

shortcuts used for draught measuring values

name	comment
DPP_FWD	Draught at PP fore
DPP_MID	Draught at PP mid, CL
DPP_AFT	Draught at PP aft
DDM_FWD	Draught at draughtmark fore
DDM_MID_P	Draught at draughtmark mid port
DDM_MID_C	Draught at draughtmark mid centerline
DDM_MID_S	Draught at draughtmark mid starboard
DDM_AFT	Draught at draughtmark aft
TF_TrimMet	Trimm betw. Draughtmarks , aft trim =(-) [m], calc. by draught sensors
TF_TrimDeg	Trimm betw. Draughtmarks , aft trim =(-) [deg], calc. by draught sensors
TF_ListMet	List at PP mid [m], calc. by draught sensors, (-)=port
TF_ListDeg	List at PP mid [deg], calc. by draught sensors, (-)=port
SAGG_DM_MID	sagging at PP mid, (+) = sagging; (-)=hogging
EX_TRIMDeg	Trimm betw. PP [deg], calc. by external pendelum
EX_TRIMMet	Trimm betw. PP [m], calc. by external pendelum
EX_ListDeg	List at PP mid [deg], calc. by external pendelum, (-)=port
EX_ListMet	List at PP mid [m], calc. by external pendelum, (-)=port

Hoppe Bordmesstechnik Hamburg
Project TI34226 Tank Control System
Descr. of MODBUS register set for remote indication of Tank Level System

1. Protocol Modbus: RTU **Hoppe PLC is Slave**

2. Supported commands are commands 1-16 which are:

01. read coil status	used
02. read input status	
03. read holding register (= read PLC word register value ,16bit)	used
04. read input register (= read PLC analogue input value , 16bit)	
05. force single coil (= write to PLC output , binary)	
06. preset single register (= write to PLC word register , 16bit)	used
15. Force multiple coils (= write to PLC outputs , binary)	
16. Preset multiple registers (= write to PLC word registers , 16bit)	

3. Electrical Interface: Modbus-TCP OR Modbus RTU via RS485/422
TCP
IP 192.168.2.102
Port 502
Netzwerk Interface Eth0
Response max 100ms

RS485/422
9600 Baud
format 8,n,1
Response max 100ms

4. Slave ID Hoppe PLC is Slave adress 03

5. Additional information:

Level is measured above Tankbottom

6. Data Addresses in Modbus Messages
All data addresses in Modbus messages are referenced to zero. The first occurrence of a data item is addressed as item number zero. For example:
The coil known as ‘coil 1’ in a programmable controller is addressed as coil 0000 in the data address field of a Modbus message.
Coil 127 decimal is addressed as coil 007E hex (126 decimal).
Holding register 40001 is addressed as register 0000 in the data address field of the message. The function code field already specifies a ‘holding register’ operation. Therefore the ‘4XXXX’ reference is implicit.
Holding register 40108 is addressed as register 006B hex (107 decimal).

Item number	Tag Name	Description of tag (Max 32 Char.)	Signal Unit	Signal Type	PLC ID	Modbus Adress	Function 01-16	Range real	Range Modbus	Scaling factor	PLC Range
1	DPP_FWD	at PP	m	analog	1009	41009	FC03		+32,767	0,001m	7FFF
2	DPP_MID	at PP	m	analog	1010	41010	FC03		+32,767	0,001m	7FFF
3	DPP_AFT	at PP	m	analog	1011	41011	FC03		+32,767	0,001m	7FFF
4	DDM_FWD	at Draught-Mark	m	analog	1012	41012	FC03		+32,767	0,001m	7FFF
5	DDM_MID_P	at Draught-Mark	m	analog	1013	41013	FC03		+32,767	0,001m	7FFF
6	DDM_MID_C	at Draught-Mark	m	analog	1014	41014	FC03		+32,767	0,001m	7FFF
7	DDM_MID_S	at Draught-Mark	m	analog	1015	41015	FC03		+32,767	0,001m	7FFF
8	DDM_AFT	at Draught-Mark	m	analog	1016	41016	FC03		+32,767	0,001m	7FFF
9	TF_TrimMet	between D.-Marks, calc. by draughts	m	analog	1017	41017	FC03		+/-32,767	0,001m	7FFF
10	TF_TrimDeg	between D.-Marks, calc. by draughts	deg	analog	1018	41018	FC03		+/-18	0,000549°	7FFF
11	TF_ListMet	at PP MID, calc. by draughts	m	analog	1019	41019	FC03		+/-32,767	0,001m	7FFF
12	TF_ListDeg	at PP MID, calc. by draughts	deg	analog	1020	41020	FC03		+/-18	0,000549°	7FFF
13	SAGG_DM_MID	at Draught-Mark	m	analog	1021	41021	FC03		+/-32,767	0,001m	7FFF
14	EX_TRIMDeg	external Trim-/List Sensor (pendulum)	deg	analog	1022	41022	FC03		+/-10	0,000305°	7FFF
15	EX_TRIMMet	external Trim-/List Sensor (pendulum)	m	analog	1023	41023	FC03		+/-32,767	0,001m	7FFF
16	EX_ListDeg	external Trim-/List Sensor (pendulum)	deg	analog	1024	41024	FC03		+/-10	0,000305°	7FFF
17	EX_ListMet	external Trim-/List Sensor (pendulum)	m	analog	1025	41025	FC03		+/-32,767	0,001m	7FFF
Tankno.											
1	No1 B WBT(P).h	Level	m	analog	1031	41031	FC 03	9,556	32,767	0,001m	7FFF
1	No1 B WBT(P).v	Volume	m3	analog	1032	41032	FC 03	404,51	3276,7	0,1m³	7FFF
1	No1 B WBT(P).m	Mass	t	analog	1033	41033	FC 03	416,6453	3276,7	0,1t	7FFF
2	No1 B WBT(S).h	Level	m	analog	1034	41034	FC 03	9,556	32,767	0,001m	7FFF
2	No1 B WBT(S).v	Volume	m3	analog	1035	41035	FC 03	404,51	3276,7	0,1m³	7FFF
2	No1 B WBT(S).m	Mass	t	analog	1036	41036	FC 03	416,6453	3276,7	0,1t	7FFF
3	No2 B WBT(P).h	Level	m	analog	1037	41037	FC 03	4,372	32,767	0,001m	7FFF
3	No2 B WBT(P).v	Volume	m3	analog	1038	41038	FC 03	651,62	3276,7	0,1m³	7FFF
3	No2 B WBT(P).m	Mass	t	analog	1039	41039	FC 03	671,1686	3276,7	0,1t	7FFF
4	No2 B WBT(S).h	Level	m	analog	1040	41040	FC 03	4,372	32,767	0,001m	7FFF
4	No2 B WBT(S).v	Volume	m3	analog	1041	41041	FC 03	651,62	3276,7	0,1m³	7FFF
4	No2 B WBT(S).m	Mass	t	analog	1042	41042	FC 03	671,1686	3276,7	0,1t	7FFF
5	No3 B WBT(P).h	Level	m	analog	1043	41043	FC 03	4,372	32,767	0,001m	7FFF
5	No3 B WBT(P).v	Volume	m3	analog	1044	41044	FC 03	1123,63	3276,7	0,1m³	7FFF
5	No3 B WBT(P).m	Mass	t	analog	1045	41045	FC 03	1157,339	3276,7	0,1t	7FFF
6	No3 B WBT(S).h	Level	m	analog	1046	41046	FC 03	4,372	32,767	0,001m	7FFF
6	No3 B WBT(S).v	Volume	m3	analog	1047	41047	FC 03	1123,63	3276,7	0,1m³	7FFF
6	No3 B WBT(S).m	Mass	t	analog	1048	41048	FC 03	1157,339	3276,7	0,1t	7FFF
7	No4 B WBT(P).h	Level	m	analog	1049	41049	FC 03	4,372	32,767	0,001m	7FFF
7	No4 B WBT(P).v	Volume	m3	analog	1050	41050	FC 03	1401,86	3276,7	0,1m³	7FFF
7	No4 B WBT(P).m	Mass	t	analog	1051	41051	FC 03	1443,916	3276,7	0,1t	7FFF
8	No4 B WBT(S).h	Level	m	analog	1052	41052	FC 03	4,372	32,767	0,001m	7FFF
8	No4 B WBT(S).v	Volume	m3	analog	1053	41053	FC 03	1401,86	3276,7	0,1m³	7FFF
8	No4 B WBT(S).m	Mass	t	analog	1054	41054	FC 03	1443,916	3276,7	0,1t	7FFF
9	No5 B WBT(P).h	Level	m	analog	1055	41055	FC 03	4,372	32,767	0,001m	7FFF
9	No5 B WBT(P).v	Volume	m3	analog	1056	41056	FC 03	1172,43	3276,7	0,1m³	7FFF
9	No5 B WBT(P).m	Mass	t	analog	1057	41057	FC 03	1207,603	3276,7	0,1t	7FFF
10	No5 B WBT(S).h	Level	m	analog	1058	41058	FC 03	4,372	32,767	0,001m	7FFF
10	No5 B WBT(S).v	Volume	m3	analog	1059	41059	FC 03	1132,28	3276,7	0,1m³	7FFF
10	No5 B WBT(S).m	Mass	t	analog	1060	41060	FC 03	1166,248	3276,7	0,1t	7FFF
11	No1 S WBT(P).h	Level	m	analog	1061	41061	FC 03	12,96	32,767	0,001m	7FFF
11	No1 S WBT(P).v	Volume	m3	analog	1062	41062	FC 03	895,5	3276,7	0,1m³	7FFF
11	No1 S WBT(P).m	Mass	t	analog	1063	41063	FC 03	922,365	3276,7	0,1t	7FFF
12	No1 S WBT(S).h	Level	m	analog	1064	41064	FC 03	12,96	32,767	0,001m	7FFF

12	No1 S WBT(S).v	Volume	m3	analog	1065	41065	FC 03	895,5	3276,7	0,1m³	7FFF
12	No1 S WBT(S).m	Mass	t	analog	1066	41066	FC 03	922,365	3276,7	0,1t	7FFF
13	No3 S WBT(P).h	Level	m	analog	1067	41067	FC 03	12,96	32,767	0,001m	7FFF
13	No3 S WBT(P).v	Volume	m3	analog	1068	41068	FC 03	1150,34	3276,7	0,1m³	7FFF
13	No3 S WBT(P).m	Mass	t	analog	1069	41069	FC 03	1184,85	3276,7	0,1t	7FFF
14	No3 S WBT(S).h	Level	m	analog	1070	41070	FC 03	12,96	32,767	0,001m	7FFF
14	No3 S WBT(S).v	Volume	m3	analog	1071	41071	FC 03	1150,34	3276,7	0,1m³	7FFF
14	No3 S WBT(S).m	Mass	t	analog	1072	41072	FC 03	1184,85	3276,7	0,1t	7FFF
15	No4 S WBT(P).h	Level	m	analog	1073	41073	FC 03	12,96	32,767	0,001m	7FFF
15	No4 S WBT(P).v	Volume	m3	analog	1074	41074	FC 03	532,67	3276,7	0,1m³	7FFF
15	No4 S WBT(P).m	Mass	t	analog	1075	41075	FC 03	548,6501	3276,7	0,1t	7FFF
16	No4 S WBT(S).h	Level	m	analog	1076	41076	FC 03	12,96	32,767	0,001m	7FFF
16	No4 S WBT(S).v	Volume	m3	analog	1077	41077	FC 03	532,67	3276,7	0,1m³	7FFF
16	No4 S WBT(S).m	Mass	t	analog	1078	41078	FC 03	548,6501	3276,7	0,1t	7FFF
17	HEEL TK (P).h	Level	m	analog	1079	41079	FC 03	12,96	32,767	0,001m	7FFF
17	HEEL TK (P).v	Volume	m3	analog	1080	41080	FC 03	564,54	3276,7	0,1m³	7FFF
17	HEEL TK (P).m	Mass	t	analog	1081	41081	FC 03	581,4762	3276,7	0,1t	7FFF
18	HEEL TK (S).h	Level	m	analog	1082	41082	FC 03	12,96	32,767	0,001m	7FFF
18	HEEL TK (S).v	Volume	m3	analog	1083	41083	FC 03	564,54	3276,7	0,1m³	7FFF
18	HEEL TK (S).m	Mass	t	analog	1084	41084	FC 03	581,4762	3276,7	0,1t	7FFF
19	AFT PEAK TK.h	Level	m	analog	1085	41085	FC 03	6,06	32,767	0,001m	7FFF
19	AFT PEAK TK.v	Volume	m3	analog	1086	41086	FC 03	808,56	3276,7	0,1m³	7FFF
19	AFT PEAK TK.m	Mass	t	analog	1087	41087	FC 03	832,8168	3276,7	0,1t	7FFF
20	No1 HFO (P).h	Level	m	analog	1088	41088	FC 03	12,96	32,767	0,001m	7FFF
20	No1 HFO (P).v	Volume	m3	analog	1089	41089	FC 03	1531,76	3276,7	0,1m³	7FFF
20	No1 HFO (P).m	Mass	t	analog	1090	41090	FC 03	1577,713	3276,7	0,1t	7FFF
21	No1 HFO (S).h	Level	m	analog	1091	41091	FC 03	12,96	32,767	0,001m	7FFF
21	No1 HFO (S).v	Volume	m3	analog	1092	41092	FC 03	1538,76	3276,7	0,1m³	7FFF
21	No1 HFO (S).m	Mass	t	analog	1093	41093	FC 03	1584,923	3276,7	0,1t	7FFF
22	No2 HFO (P).h	Level	m	analog	1094	41094	FC 03	12,96	32,767	0,001m	7FFF
22	No2 HFO (P).v	Volume	m3	analog	1095	41095	FC 03	1163,02	3276,7	0,1m³	7FFF
22	No2 HFO (P).m	Mass	t	analog	1096	41096	FC 03	1197,911	3276,7	0,1t	7FFF
23	No2 HFO (S).h	Level	m	analog	1097	41097	FC 03	12,96	32,767	0,001m	7FFF
23	No2 HFO (S).v	Volume	m3	analog	1098	41098	FC 03	1163,02	3276,7	0,1m³	7FFF
23	No2 HFO (S).m	Mass	t	analog	1099	41099	FC 03	1197,911	3276,7	0,1t	7FFF
24	No3 HFO (P).h	Level	m	analog	1100	41100	FC 03	9,65	32,767	0,001m	7FFF
24	No3 HFO (P).v	Volume	m3	analog	1101	41101	FC 03	453,08	3276,7	0,1m³	7FFF
24	No3 HFO (P).m	Mass	t	analog	1102	41102	FC 03	466,6724	3276,7	0,1t	7FFF
25	No3 HFO (S).h	Level	m	analog	1103	41103	FC 03	9,65	32,767	0,001m	7FFF
25	No3 HFO (S).v	Volume	m3	analog	1104	41104	FC 03	453,08	3276,7	0,1m³	7FFF
25	No3 HFO (S).m	Mass	t	analog	1105	41105	FC 03	466,6724	3276,7	0,1t	7FFF
26	HFO SETTL.h	Level	m	analog	1106	41106	FC 03	8,64	32,767	0,001m	7FFF
26	HFO SETTL.v	Volume	m3	analog	1107	41107	FC 03	124,12	3276,7	0,1m³	7FFF
26	HFO SETTL.m	Mass	t	analog	1108	41108	FC 03	127,8436	3276,7	0,1t	7FFF
27	LS HFO SETTL.h	Level	m	analog	1109	41109	FC 03	8,64	32,767	0,001m	7FFF
27	LS HFO SETTL.v	Volume	m3	analog	1110	41110	FC 03	112,55	3276,7	0,1m³	7FFF
27	LS HFO SETTL.m	Mass	t	analog	1111	41111	FC 03	115,9265	3276,7	0,1t	7FFF
28	HFO SERV TK.h	Level	m	analog	1112	41112	FC 03	7,405	32,767	0,001m	7FFF
28	HFO SERV TK.v	Volume	m3	analog	1113	41113	FC 03	78,53	3276,7	0,1m³	7FFF
28	HFO SERV TK.m	Mass	t	analog	1114	41114	FC 03	80,8859	3276,7	0,1t	7FFF
29	LS HFO SERV.h	Level	m	analog	1115	41115	FC 03	7,405	32,767	0,001m	7FFF
29	LS HFO SERV.v	Volume	m3	analog	1116	41116	FC 03	73,67	3276,7	0,1m³	7FFF
29	LS HFO SERV.m	Mass	t	analog	1117	41117	FC 03	75,8801	3276,7	0,1t	7FFF
30	MDO TK(P).h	Level	m	analog	1118	41118	FC 03	2,67	32,767	0,001m	7FFF
30	MDO TK(P).v	Volume	m3	analog	1119	41119	FC 03	311,16	3276,7	0,1m³	7FFF
30	MDO TK(P).m	Mass	t	analog	1120	41120	FC 03	320,4948	3276,7	0,1t	7FFF
31	MDO TK (S).h	Level	m	analog	1121	41121	FC 03	2,67	32,767	0,001m	7FFF

31	MDO TK (S).v	Volume	m3	analog	1122	41122	FC 03	387,34	3276,7	0,1m³	7FFF
31	MDO TK (S).m	Mass	t	analog	1123	41123	FC 03	398,9602	3276,7	0,1t	7FFF
32	MDO SERV.TK.h	Level	m	analog	1124	41124	FC 03	7,85	32,767	0,001m	7FFF
32	MDO SERV.TK.v	Volume	m3	analog	1125	41125	FC 03	62,29	3276,7	0,1m³	7FFF
32	MDO SERV.TK.m	Mass	t	analog	1126	41126	FC 03	64,1587	3276,7	0,1t	7FFF
33	M/E LO SUMP.h	Level	m	analog	1127	41127	FC 03	2,07	32,767	0,001m	7FFF
33	M/E LO SUMP.v	Volume	m3	analog	1128	41128	FC 03	85,93	3276,7	0,1m³	7FFF
33	M/E LO SUMP.m	Mass	t	analog	1129	41129	FC 03	88,5079	3276,7	0,1t	7FFF
34	FW TK.h	Level	m	analog	1130	41130	FC 03	7,58	32,767	0,001m	7FFF
34	FW TK.v	Volume	m3	analog	1131	41131	FC 03	167,73	3276,7	0,1m³	7FFF
34	FW TK.m	Mass	t	analog	1132	41132	FC 03	172,7619	3276,7	0,1t	7FFF
35	FW TK (S).h	Level	m	analog	1133	41133	FC 03	7,58	32,767	0,001m	7FFF
35	FW TK (S).v	Volume	m3	analog	1134	41134	FC 03	114,75	3276,7	0,1m³	7FFF
35	FW TK (S).m	Mass	t	analog	1135	41135	FC 03	118,1925	3276,7	0,1t	7FFF
36	DIST W TK.h	Level	m	analog	1136	41136	FC 03	7,22	32,767	0,001m	7FFF
36	DIST W TK.v	Volume	m3	analog	1137	41137	FC 03	53,16	3276,7	0,1m³	7FFF
36	DIST W TK.m	Mass	t	analog	1138	41138	FC 03	54,7548	3276,7	0,1t	7FFF

analog Values (functioncode 03)

Item	Tag Name	Description of tag	Signal	Signal	PLC	Modbus	Function	Range	Range	Scaling	PLC
		(Max 32 Char.)	Unit	Type	ID	Adress	01-16	real	Modbus	factor	Range
1	T No.1HFOP	Temperature	° C	analog	1501	41501	FC 03	0 - 200 °C	327,67°C	0.01 °C	7FFF
2	T No.1HFOS	Temperature	° C	analog	1502	41502	FC 03	0 - 200 °C	327,67°C	0.01 °C	7FFF
3	T No.2HFOP	Temperature	° C	analog	1503	41503	FC 03	0 - 200 °C	327,67°C	0.01 °C	7FFF
4	T No.2HFOS	Temperature	° C	analog	1504	41504	FC 03	0 - 200 °C	327,67°C	0.01 °C	7FFF
5	T No.3HFOP	Temperature	° C	analog	1505	41505	FC 03	0 - 200 °C	327,67°C	0.01 °C	7FFF
6	T No.3HFOS	Temperature	° C	analog	1506	41506	FC 03	0 - 200 °C	327,67°C	0.01 °C	7FFF
7	T HFOSETTL	Temperature	° C	analog	1507	41507	FC 03	0 - 200 °C	327,67°C	0.01 °C	7FFF
8	T LSHFOSET	Temperature	° C	analog	1508	41508	FC 03	0 - 200 °C	327,67°C	0.01 °C	7FFF
9	T HFOSERV	Temperature	° C	analog	1509	41509	FC 03	0 - 200 °C	327,67°C	0.01 °C	7FFF
10	T LSHFOSER	Temperature	° C	analog	1510	41510	FC 03	0 - 200 °C	327,67°C	0.01 °C	7FFF

Densities
Parameter: can be read with functioncode 03

Tank number	Tag Name	Description of tag (Max 32 Char.)	Signal Unit	Signal Type	PLC ID	Modbus Adress	Function 01-16	Range real	Range Modbus	Scaling factor	PLC Range
1	No1 B WBT(P).d	Density	t/m³	analog	2001	42001	FC 03	1,025	3,2767	0,0001t/m³	7FFF
2	No1 B WBT(S).d	Density	t/m³	analog	2002	42002	FC 03	1,025	3,2767	0,0001t/m³	7FFF
3	No2 B WBT(P).d	Density	t/m³	analog	2003	42003	FC 03	1,025	3,2767	0,0001t/m³	7FFF
4	No2 B WBT(S).d	Density	t/m³	analog	2004	42004	FC 03	1,025	3,2767	0,0001t/m³	7FFF
5	No3 B WBT(P).d	Density	t/m³	analog	2005	42005	FC 03	1,025	3,2767	0,0001t/m³	7FFF
6	No3 B WBT(S).d	Density	t/m³	analog	2006	42006	FC 03	1,025	3,2767	0,0001t/m³	7FFF
7	No4 B WBT(P).d	Density	t/m³	analog	2007	42007	FC 03	1,025	3,2767	0,0001t/m³	7FFF
8	No4 B WBT(S).d	Density	t/m³	analog	2008	42008	FC 03	1,025	3,2767	0,0001t/m³	7FFF
9	No5 B WBT(P).d	Density	t/m³	analog	2009	42009	FC 03	1,025	3,2767	0,0001t/m³	7FFF
10	No5 B WBT(S).d	Density	t/m³	analog	2010	42010	FC 03	1,025	3,2767	0,0001t/m³	7FFF
11	No1 S WBT(P).d	Density	t/m³	analog	2011	42011	FC 03	1,025	3,2767	0,0001t/m³	7FFF
12	No1 S WBT(S).d	Density	t/m³	analog	2012	42012	FC 03	1,025	3,2767	0,0001t/m³	7FFF
13	No3 S WBT(P).d	Density	t/m³	analog	2013	42013	FC 03	1,025	3,2767	0,0001t/m³	7FFF
14	No3 S WBT(S).d	Density	t/m³	analog	2014	42014	FC 03	1,025	3,2767	0,0001t/m³	7FFF
15	No4 S WBT(P).d	Density	t/m³	analog	2015	42015	FC 03	1,025	3,2767	0,0001t/m³	7FFF
16	No4 S WBT(S).d	Density	t/m³	analog	2016	42016	FC 03	1,025	3,2767	0,0001t/m³	7FFF
17	HEEL TK (P).d	Density	t/m³	analog	2017	42017	FC 03	1,025	3,2767	0,0001t/m³	7FFF
18	HEEL TK (S).d	Density	t/m³	analog	2018	42018	FC 03	1,025	3,2767	0,0001t/m³	7FFF
19	AFT PEAK TK.d	Density	t/m³	analog	2019	42019	FC 03	1,025	3,2767	0,0001t/m³	7FFF
20	No1 HFO (P).d	Density	t/m³	analog	2020	42020	FC 03	1,025	3,2767	0,0001t/m³	7FFF
21	No1 HFO (S).d	Density	t/m³	analog	2021	42021	FC 03	1,025	3,2767	0,0001t/m³	7FFF
22	No2 HFO (P).d	Density	t/m³	analog	2022	42022	FC 03	1,025	3,2767	0,0001t/m³	7FFF
23	No2 HFO (S).d	Density	t/m³	analog	2023	42023	FC 03	1,025	3,2767	0,0001t/m³	7FFF
24	No3 HFO (P).d	Density	t/m³	analog	2024	42024	FC 03	1,025	3,2767	0,0001t/m³	7FFF
25	No3 HFO (S).d	Density	t/m³	analog	2025	42025	FC 03	1,025	3,2767	0,0001t/m³	7FFF
26	HFO SETTL.d	Density	t/m³	analog	2026	42026	FC 03	1,025	3,2767	0,0001t/m³	7FFF
27	LS HFO SETTL.d	Density	t/m³	analog	2027	42027	FC 03	1,025	3,2767	0,0001t/m³	7FFF
28	HFO SERV TK.d	Density	t/m³	analog	2028	42028	FC 03	1,025	3,2767	0,0001t/m³	7FFF
29	LS HFO SERV.d	Density	t/m³	analog	2029	42029	FC 03	1,025	3,2767	0,0001t/m³	7FFF
30	MDO TK(P).d	Density	t/m³	analog	2030	42030	FC 03	1,025	3,2767	0,0001t/m³	7FFF
31	MDO TK (S).d	Density	t/m³	analog	2031	42031	FC 03	1,025	3,2767	0,0001t/m³	7FFF
32	MDO SERV.TK.d	Density	t/m³	analog	2032	42032	FC 03	1,025	3,2767	0,0001t/m³	7FFF
33	M/E LO SUMP.d	Density	t/m³	analog	2033	42033	FC 03	1,025	3,2767	0,0001t/m³	7FFF
34	FW TK.d	Density	t/m³	analog	2034	42034	FC 03	1,025	3,2767	0,0001t/m³	7FFF
35	FW TK (S).d	Density	t/m³	analog	2035	42035	FC 03	1,025	3,2767	0,0001t/m³	7FFF
36	DIST W TK.d	Density	t/m³	analog	2036	42036	FC 03	1,025	3,2767	0,0001t/m³	7FFF

Parameter write:
Parameter can be written only by FC 06, because of the internal data storage procedure

Die folgenden Parameter sind für diesen Schreibzugriff freigeschaltet:

Tank number	Tag Name	Description of tag (Max 32 Char.)	Signal Unit	Signal Type	PLC ID	Modbus Adress	Function 01-16	Range real	Range Modbus	Scaling factor	PLC Range
1	No1 B WBT(P).d	Density	t/m³	analog	2001	42001	FC 06	1,025	3,2767	0,0001t/m³	7FFF
2	No1 B WBT(S).d	Density	t/m³	analog	2002	42002	FC 06	1,025	3,2767	0,0001t/m³	7FFF
3	No2 B WBT(P).d	Density	t/m³	analog	2003	42003	FC 06	1,025	3,2767	0,0001t/m³	7FFF
4	No2 B WBT(S).d	Density	t/m³	analog	2004	42004	FC 06	1,025	3,2767	0,0001t/m³	7FFF
5	No3 B WBT(P).d	Density	t/m³	analog	2005	42005	FC 06	1,025	3,2767	0,0001t/m³	7FFF
6	No3 B WBT(S).d	Density	t/m³	analog	2006	42006	FC 06	1,025	3,2767	0,0001t/m³	7FFF
7	No4 B WBT(P).d	Density	t/m³	analog	2007	42007	FC 06	1,025	3,2767	0,0001t/m³	7FFF
8	No4 B WBT(S).d	Density	t/m³	analog	2008	42008	FC 06	1,025	3,2767	0,0001t/m³	7FFF
9	No5 B WBT(P).d	Density	t/m³	analog	2009	42009	FC 06	1,025	3,2767	0,0001t/m³	7FFF
10	No5 B WBT(S).d	Density	t/m³	analog	2010	42010	FC 06	1,025	3,2767	0,0001t/m³	7FFF
11	No1 S WBT(P).d	Density	t/m³	analog	2011	42011	FC 06	1,025	3,2767	0,0001t/m³	7FFF
12	No1 S WBT(S).d	Density	t/m³	analog	2012	42012	FC 06	1,025	3,2767	0,0001t/m³	7FFF
13	No3 S WBT(P).d	Density	t/m³	analog	2013	42013	FC 06	1,025	3,2767	0,0001t/m³	7FFF
14	No3 S WBT(S).d	Density	t/m³	analog	2014	42014	FC 06	1,025	3,2767	0,0001t/m³	7FFF
15	No4 S WBT(P).d	Density	t/m³	analog	2015	42015	FC 06	1,025	3,2767	0,0001t/m³	7FFF
16	No4 S WBT(S).d	Density	t/m³	analog	2016	42016	FC 06	1,025	3,2767	0,0001t/m³	7FFF
17	HEEL TK (P).d	Density	t/m³	analog	2017	42017	FC 06	1,025	3,2767	0,0001t/m³	7FFF
18	HEEL TK (S).d	Density	t/m³	analog	2018	42018	FC 06	1,025	3,2767	0,0001t/m³	7FFF
19	AFT PEAK TK.d	Density	t/m³	analog	2019	42019	FC 06	1,025	3,2767	0,0001t/m³	7FFF
20	No1 HFO (P).d	Density	t/m³	analog	2020	42020	FC 06	1,025	3,2767	0,0001t/m³	7FFF
21	No1 HFO (S).d	Density	t/m³	analog	2021	42021	FC 06	1,025	3,2767	0,0001t/m³	7FFF
22	No2 HFO (P).d	Density	t/m³	analog	2022	42022	FC 06	1,025	3,2767	0,0001t/m³	7FFF
23	No2 HFO (S).d	Density	t/m³	analog	2023	42023	FC 06	1,025	3,2767	0,0001t/m³	7FFF
24	No3 HFO (P).d	Density	t/m³	analog	2024	42024	FC 06	1,025	3,2767	0,0001t/m³	7FFF
25	No3 HFO (S).d	Density	t/m³	analog	2025	42025	FC 06	1,025	3,2767	0,0001t/m³	7FFF
26	HFO SETTL.d	Density	t/m³	analog	2026	42026	FC 06	1,025	3,2767	0,0001t/m³	7FFF
27	LS HFO SETTL.d	Density	t/m³	analog	2027	42027	FC 06	1,025	3,2767	0,0001t/m³	7FFF
28	HFO SERV TK.d	Density	t/m³	analog	2028	42028	FC 06	1,025	3,2767	0,0001t/m³	7FFF
29	LS HFO SERV.d	Density	t/m³	analog	2029	42029	FC 06	1,025	3,2767	0,0001t/m³	7FFF
30	MDO TK(P).d	Density	t/m³	analog	2030	42030	FC 06	1,025	3,2767	0,0001t/m³	7FFF
31	MDO TK (S).d	Density	t/m³	analog	2031	42031	FC 06	1,025	3,2767	0,0001t/m³	7FFF
32	MDO SERV.TK.d	Density	t/m³	analog	2032	42032	FC 06	1,025	3,2767	0,0001t/m³	7FFF
33	M/E LO SUMP.d	Density	t/m³	analog	2033	42033	FC 06	1,025	3,2767	0,0001t/m³	7FFF
34	FW TK.d	Density	t/m³	analog	2034	42034	FC 06	1,025	3,2767	0,0001t/m³	7FFF
35	FW TK (S).d	Density	t/m³	analog	2035	42035	FC 06	1,025	3,2767	0,0001t/m³	7FFF
36	DIST W TK.d	Density	t/m³	analog	2036	42036	FC 06	1,025	3,2767	0,0001t/m³	7FFF

States of contacts							
to read out use function code 01(ReadMultiCoils)			Signal	Signal	PLC	Modbus	Function
Modbus adr.	Tag	Description of tag	Unit	Type	ID	Adress	01-16
1021	No1 CH BI P	Level switch Bilge (NC), if level is high, signal =0		bin	1021	1021	FC 01
1022	No2 CH BI P	Level switch Bilge (NC), if level is high, signal =0		bin	1022	1022	FC 01
1023	No2 BI AF S	Level switch Bilge (NC), if level is high, signal =0		bin	1023	1023	FC 01
1024	No3 BI FP	Level switch Bilge (NC), if level is high, signal =0		bin	1024	1024	FC 01
1025	No3 BI FS	Level switch Bilge (NC), if level is high, signal =0		bin	1025	1025	FC 01
1026	No3 BI A P	Level switch Bilge (NC), if level is high, signal =0		bin	1026	1026	FC 01
1027	No3 BI A S	Level switch Bilge (NC), if level is high, signal =0		bin	1027	1027	FC 01
1028	No4 BI FP	Level switch Bilge (NC), if level is high, signal =0		bin	1028	1028	FC 01
1029	No4 BI FS	Level switch Bilge (NC), if level is high, signal =0		bin	1029	1029	FC 01
1030	No4 BI A P	Level switch Bilge (NC), if level is high, signal =0		bin	1030	1030	FC 01
1031	No4 BI A S	Level switch Bilge (NC), if level is high, signal =0		bin	1031	1031	FC 01
1032	No5 BI FP	Level switch Bilge (NC), if level is high, signal =0		bin	1032	1032	FC 01
1033	No5 BI FS	Level switch Bilge (NC), if level is high, signal =0		bin	1033	1033	FC 01
1034	No5 BI A P	Level switch Bilge (NC), if level is high, signal =0		bin	1034	1034	FC 01
1035	No5 BI A S	Level switch Bilge (NC), if level is high, signal =0		bin	1035	1035	FC 01
1036	DECK W BW	Level switch Bilge (NC), if level is high, signal =0		bin	1036	1036	FC 01
1037	PASS BW FP	Level switch Bilge (NC), if level is high, signal =0		bin	1037	1037	FC 01
1038	CHAIN BW	Level switch Bilge (NC), if level is high, signal =0		bin	1038	1038	FC 01
1039	PASS BW A P	Level switch Bilge (NC), if level is high, signal =0		bin	1039	1039	FC 01
1040	No6 BI FP	Level switch Bilge (NC), if level is high, signal =0		bin	1040	1040	FC 01
1041	STORE BW	Level switch Bilge (NC), if level is high, signal =0		bin	1041	1041	FC 01
1042	FP TK V BW	Level switch Bilge (NC), if level is high, signal =0		bin	1042	1042	FC 01
1043	BOW THR BW	Level switch Bilge (NC), if level is high, signal =0		bin	1043	1043	FC 01
1044	PIPE TUNNEL FOR BW	Level switch Bilge (NC), if level is high, signal =0		bin	1044	1044	FC 01
1045	PASS BW FS	Level switch Bilge (NC), if level is high, signal =0		bin	1045	1045	FC 01
1046	No6 BI FS	Level switch Bilge (NC), if level is high, signal =0		bin	1046	1046	FC 01
1047	PASS BW A S	Level switch Bilge (NC), if level is high, signal =0		bin	1047	1047	FC 01
1048	1 HFO LAH	Level switch Bilge (NC), if level is high, signal =0		bin	1048	1048	FC 01
1049	1 HFO P LHH	Level switch Bilge (NC), if level is high, signal =0		bin	1049	1049	FC 01
1050	2 HFO P LAH	Level switch Bilge (NC), if level is high, signal =0		bin	1050	1050	FC 01
1051	2 HFO P LAHH	Level switch Bilge (NC), if level is high, signal =0		bin	1051	1051	FC 01
1052	3 HFO P LAH	Level switch Bilge (NC), if level is high, signal =0		bin	1052	1052	FC 01
1053	3 HFO P LAHH	Level switch Bilge (NC), if level is high, signal =0		bin	1053	1053	FC 01
1054	1 HFO S LAH	Level switch Bilge (NC), if level is high, signal =0		bin	1054	1054	FC 01
1055	1 HFO S LAHH	Level switch Bilge (NC), if level is high, signal =0		bin	1055	1055	FC 01
1056	3 HFO S LAH	Level switch Bilge (NC), if level is high, signal =0		bin	1056	1056	FC 01
1057	3 HFO S LAHH	Level switch Bilge (NC), if level is high, signal =0		bin	1057	1057	FC 01
1058	2 HFO S LAH	Level switch Bilge (NC), if level is high, signal =0		bin	1058	1058	FC 01
1059	2 HFO S LAHH	Level switch Bilge (NC), if level is high, signal =0		bin	1059	1059	FC 01
1060	MDO P LAH	Level switch Bilge (NC), if level is high, signal =0		bin	1060	1060	FC 01
1061	MDO P LAHH	Level switch Bilge (NC), if level is high, signal =0		bin	1061	1061	FC 01
1062	MDO S LAH	Level switch Bilge (NC), if level is high, signal =0		bin	1062	1062	FC 01
1063	MDO S LAHH	Level switch Bilge (NC), if level is high, signal =0		bin	1063	1063	FC 01
1064	No2 BI FM	Level switch Bilge (NC), if level is high, signal =0		bin	1064	1064	FC 01
1065	No1 BI S	Level switch Bilge (NC), if level is high, signal =0		bin	1065	1065	FC 01
1066	No6 BI A P	Level switch Bilge (NC), if level is high, signal =0		bin	1066	1066	FC 01
1067	No6 BI A S	Level switch Bilge (NC), if level is high, signal =0		bin	1067	1067	FC 01
1068	BOATSW STOR	Level switch Bilge (NC), if level is high, signal =0		bin	1068	1068	FC 01
1069	VOID FR.141P	Level switch Bilge (NC), if level is high, signal =0		bin	1069	1069	FC 01
1070	VOID FR.141S	Level switch Bilge (NC), if level is high, signal =0		bin	1070	1070	FC 01
1071	FO OVERFLOW LEVEL	Level switch Bilge (NC), if level is high, signal =0		bin	1071	1071	FC 01
1072	Leak Steering Gear Room	Level switch Bilge (NC), if level is high, signal =0		bin	1072	1072	FC 01

1080	HFO SETTL Vol. max1	Tank level limit exceeded, 0=ok, 1= limit exceeded
1081	LS HFO SETTL Vol. max1	Tank level limit exceeded, 0=ok, 1= limit exceeded
1082	HFO SETTL Vol. min1	Tank level limit exceeded, 0=ok, 1= limit exceeded
1083	LS HFO SETTL Vol. min1	Tank level limit exceeded, 0=ok, 1= limit exceeded
1084	HFO SERV TK Vol. min1	Tank level limit exceeded, 0=ok, 1= limit exceeded
1085	LS HFO SERV Vol. min1	Tank level limit exceeded, 0=ok, 1= limit exceeded
1086	MDO SERV.TK Vol. min1	Tank level limit exceeded, 0=ok, 1= limit exceeded
1087	M/E LO SUMP Vol. min1	Tank level limit exceeded, 0=ok, 1= limit exceeded
1088	FW TK (P) Vol. min1	Tank level limit exceeded, 0=ok, 1= limit exceeded
1089	FW TK (S) Vol. min1	Tank level limit exceeded, 0=ok, 1= limit exceeded

bin	1080	1080	FC 01		
bin	1081	1081	FC 01		
bin	1082	1082	FC 01		
bin	1083	1083	FC 01		
bin	1084	1084	FC 01		
bin	1085	1085	FC 01		
bin	1086	1086	FC 01		
bin	1087	1087	FC 01		
bin	1088	1088	FC 01		
bin	1089	1089	FC 01		

1100	T No.1HFOP	Temperature limit exceeded, 0=ok,1=limit exceeded
1101	T No.1HFOS	Temperature limit exceeded, 0=ok,1=limit exceeded
1102	T No.2HFOP	Temperature limit exceeded, 0=ok,1=limit exceeded
1103	T No.2HFOS	Temperature limit exceeded, 0=ok,1=limit exceeded
1104	T No.3HFOP	Temperature limit exceeded, 0=ok,1=limit exceeded
1105	T No.3HFOS	Temperature limit exceeded, 0=ok,1=limit exceeded
1106	T HFOSETTL	Temperature limit exceeded, 0=ok,1=limit exceeded
1107	T LSHFOSET	Temperature limit exceeded, 0=ok,1=limit exceeded
1108	T HFOSERV	Temperature limit exceeded, 0=ok,1=limit exceeded
1109	T LSHFOSER	Temperature limit exceeded, 0=ok,1=limit exceeded

bin	1100	1100	FC 01		
bin	1101	1101	FC 01		
bin	1102	1102	FC 01		
bin	1103	1103	FC 01		
bin	1104	1104	FC 01		
bin	1105	1105	FC 01		
bin	1106	1106	FC 01		
bin	1107	1107	FC 01		
bin	1108	1108	FC 01		
bin	1109	1109	FC 01		

SYSTEM COMPONENTS

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Hoppe Bordmesstechnik GmbH

Panel details

Material Number	A-34226-00000.PD
Designation	Project
Revision	2.5

SWITCH CABINET \ CENTRAL STATION TT

Material No.	A-34226-00001
Yard Designation	-
Install. position	-
Install. direction	-
Protection	IP 44
Color	Munsel 7.5 BG7/2

included systems

TANK GAUGING

Material No A-34226-00201

Remark:

SWITCH CABINET \ CENTRAL STATION AH

Material No.	A-34226-00002
Yard Designation	-
Install. position	-
Install. direction	-
Protection	IP 23
Color	RAL 7035

included systems

ANTI HEELING

Material No A-34226-00302

Remark:

Panel details

Material Number	A-34226-00000.PD
Designation	Project
Revision	2.5

SWITCH CABINET \ MOTOR STARTER AH

Material No.	A-34226-00003
Yard Designation	-
Install. position	-
Install. direction	-
Protection	IP 44
Color	RAL 7035

included systems

ANTI HEELING

Material No A-34226-00303

Remark:

WORKSTATION \ PC Loading Computer (Yard supply)

Material No.	A-34226-00004
Yard Designation	-
Install. position	-
Install. direction	-
Protection	-
Color	-

included systems

LOADING COMPUTER

Material No A-34226-01404

Remark:

Panel details

Material Number	A-34226-00000.PD
Designation	Project
Revision	2.5

LOOSE COMPONENTS \ SUB-STATION TT

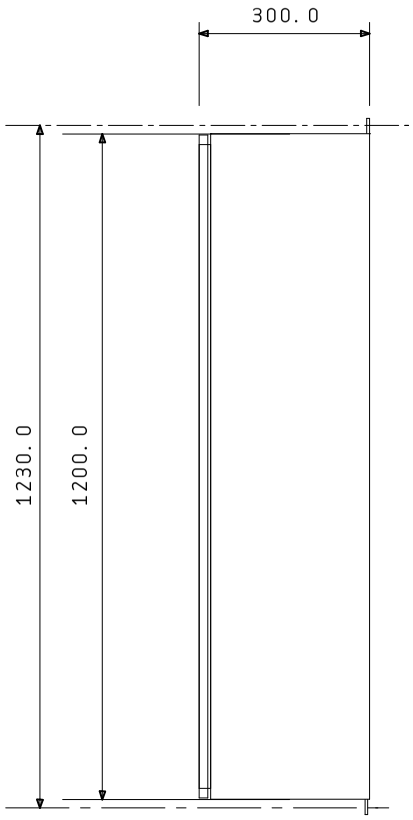
Material No.	A-34226-00005
Yard Designation	-
Install. position	-
Install. direction	-
Protection	-
Color	-

included systems

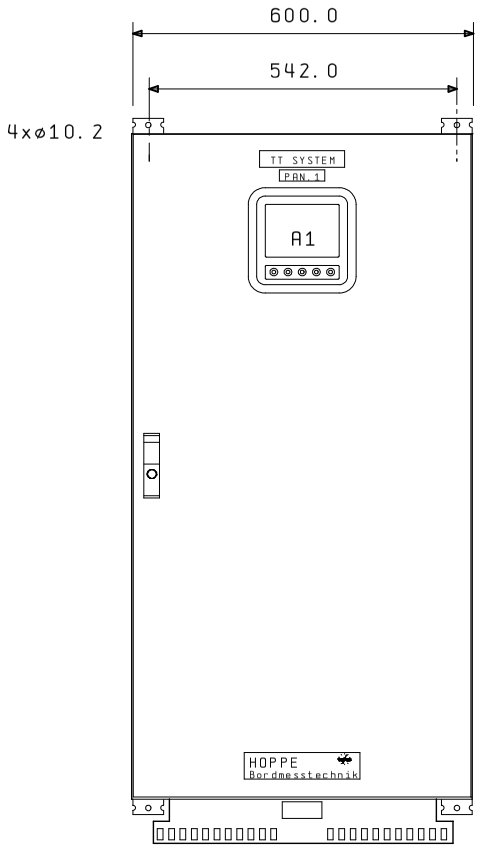
TANK GAUGING

Material No A-34226-00205

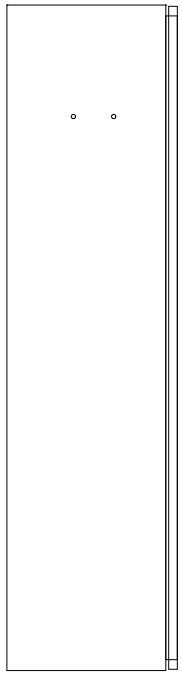
Remark:



RIGHT SIDE

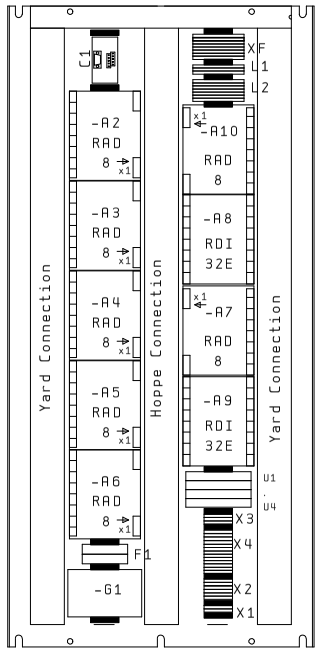


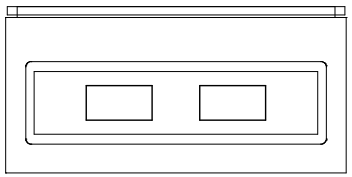
CABLE INLET FLANGE



LEFT SIDE

SIDE WALL
MOUNTED

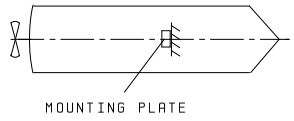




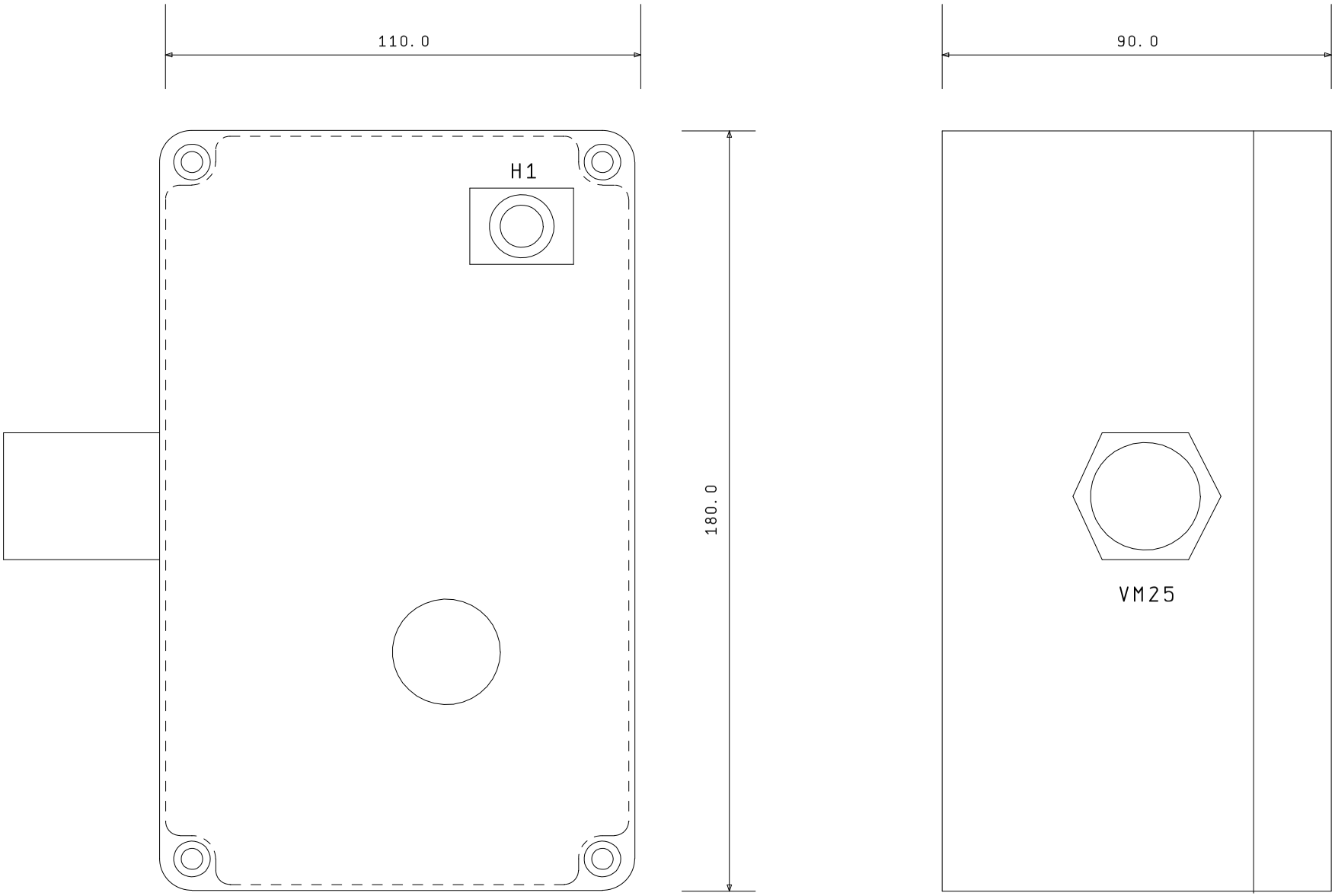
SWITCHBOARD :

AE1260.600 600x1200x300

STANDARD INSTALLATION
OF MOUNTING PLATE



Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	SWITCH CABINET / CENTRAL STATION - TT	PANEL	scale: 1:10
Draw.	HaR				= 00001
Engrn.	T. Meyer				+ MP
Rev. No. 2.1	Rev. Date 09.05.08		Layout	A-34226- 00001 - MP	Sheet 1 / 1



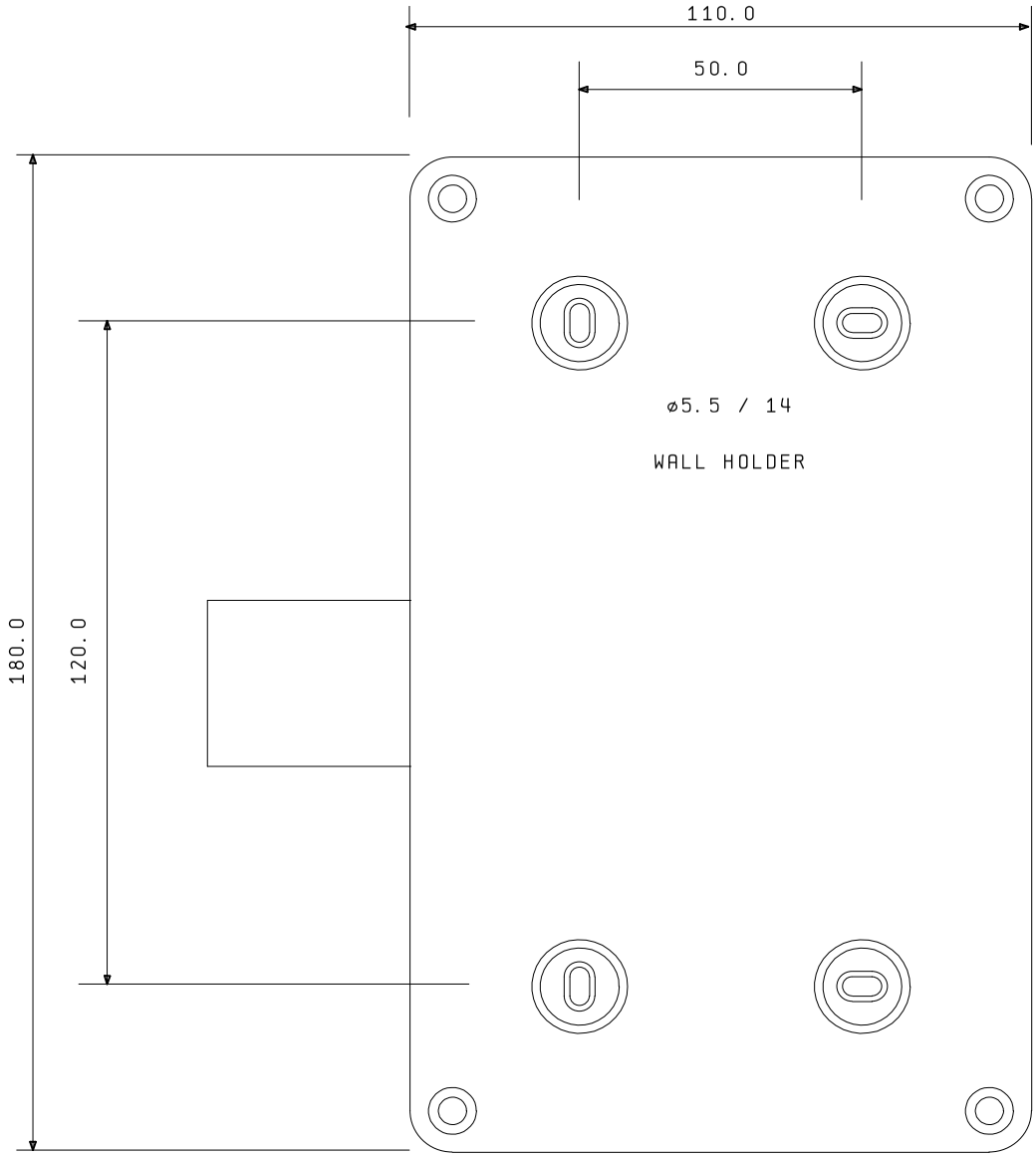
RULES : GL

WEIGHT : 1 Kg

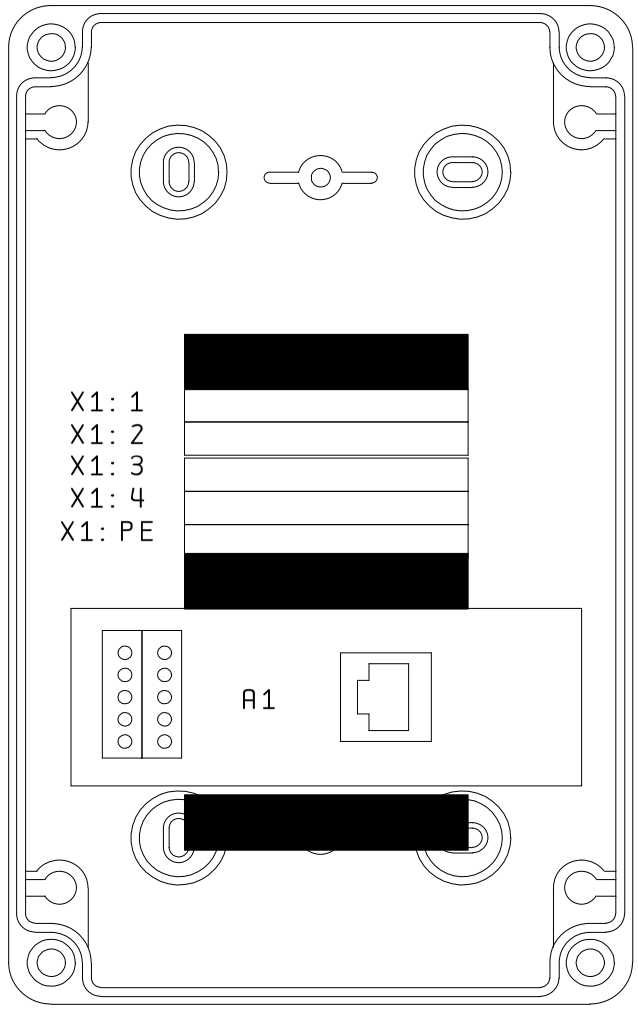
CONNECTION BOX : RITTAL PK9514 180x110x90

BOX

Est. Date	26.01.06	HOPPE Bordmesstechnik GmbH	CONNECTION BOX ETHERNET; PC-RJ45; BUZZER LAYOUT	LAYOUT	scale: 1:1
Draw.	HaR				= 01000
Engrn.	G. Berkes				+ MP
Rev. No. 1.3	Rev. Date 14.02.08			F-02616- 01000 - MP	Sheet 1 / 2



REAR SIDE



INSIDE BOX

RULES : GL

WEIGHT : 1 Kg

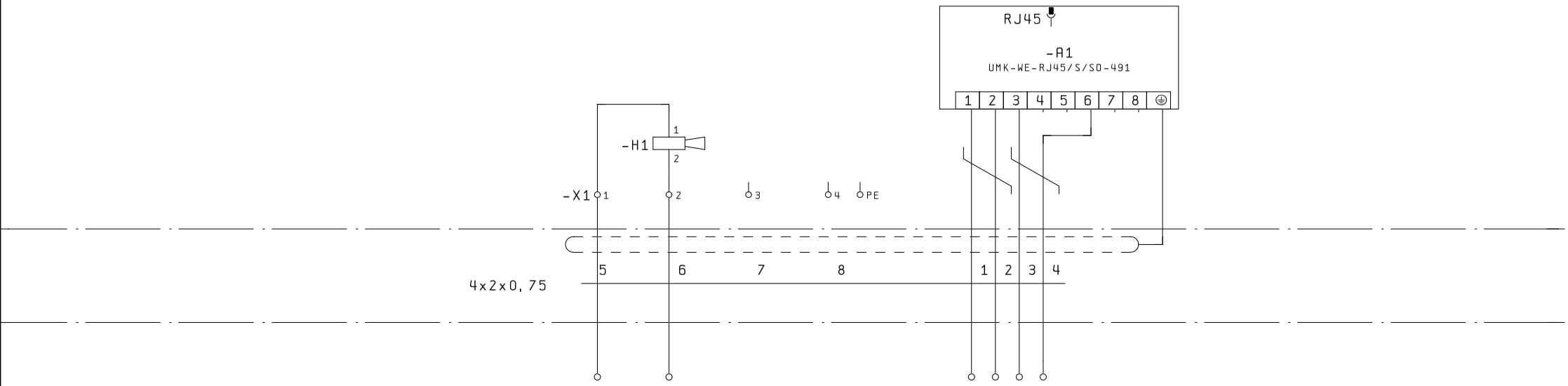
CONNECTION BOX : RITTAL PK9514 180x110x90

Est. Date	26.01.06	HOPPE Bordmesstechnik GmbH	CONNECTION BOX ETHERNET; PC-RJ45; BUZZER LAYOUT	LAYOUT REAR SIDE / MOUNTING PLATE	scale: 1:1
Draw.	HaR				= 01000
Engrn.	G. Berkes				+ MP
Rev. No. 1.3	Rev. Date 14.02.08			F-02616- 01000 - MP	Sheet 2 / 2

PART LIST

DESIGNATION (BMK)	QUANT	DESIGNATION		ARTICEL Nr.	WIRING DIAGR. POSITION
=01000-A1	1	TRANSFER ELEMENT	UMK-WE-RJ45/S/S0491	K-01777-00000	=01000+SP/1.6
=01000-BOX	1	HOUSING	PK 9514	K-00698-00000	=01000+MP/1.186
=01000-BOX	1	CABLE GLAND	V-M25	K-00655-00000	=01000+MP/1.186
=01000-BOX	1	MOUNTING RAIL	PK 9566	K-02328-00000	=01000+MP/1.186
=01000-H1	1	BUZZER	L/S/ 18x24/ 10-26V DC	K-00811-00000	=01000+SP/1.4
=01000-X1	4	TENSION SPRING TERMINAL	ST 4	K-00666-00000	=01000+SP/1.3
=01000-X1	1	TENSION SPRING TERMINAL	ST 4-PE	K-00667-00000	=01000+SP/1.3

Est. Date	26.01.06	HOPPE Bordmesstechnik GmbH	CONNECTION BOX ETHERNET; PC-RJ45; BUZZER PART LIST	PART LIST F-02616- 01000 - ST	scale: = 01000 + ST Sheet 1 / 1
Draw.	HaR				
Engin.	G. Berkes				
Rev. No. 1.2	Rev. Date 15.02.08				



BUZZER

BUS
FROM SWITCH

Est. Date	26.01.06
Draw.	HaR
Engin.	G. Berkes
Rev. No. 1.2	Rev. Date 15.02.08

HOPPE Bordmesstechnik GmbH

CONNECTION BOX
ETHERNET; PC-RJ45; BUZZER

WIRING DIAGRAMS

WIRING DIAGRAM

F-02616- 01000 - SP

scale:
= 01000
+ SP
Sheet 1 / 1

TANK GAUGING

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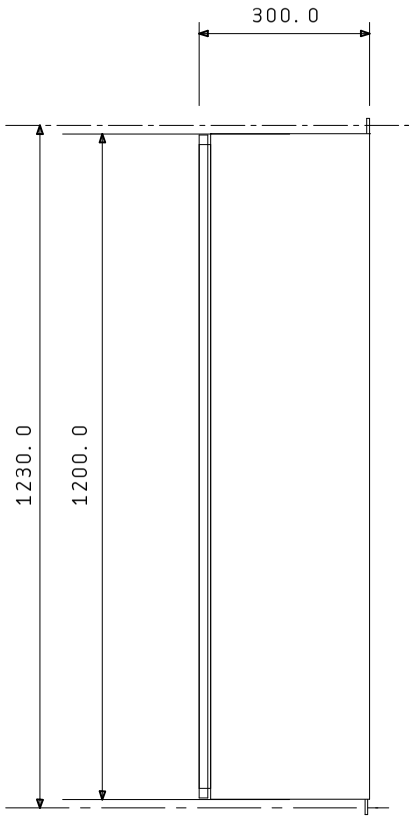
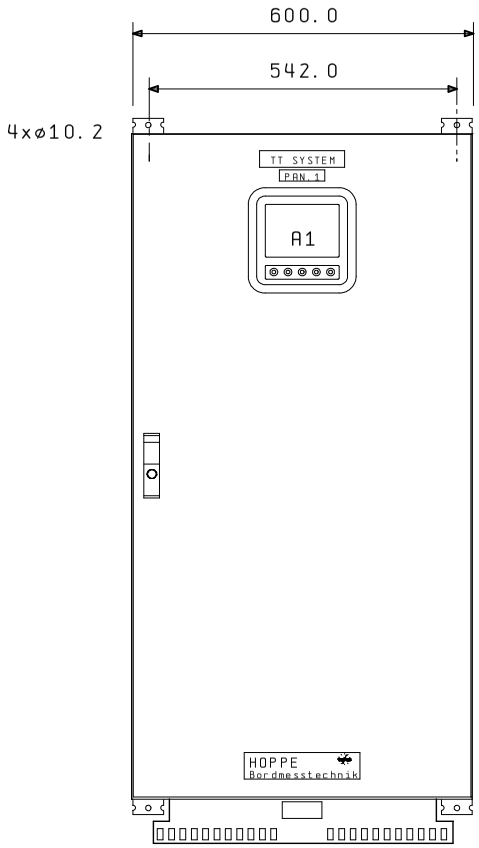
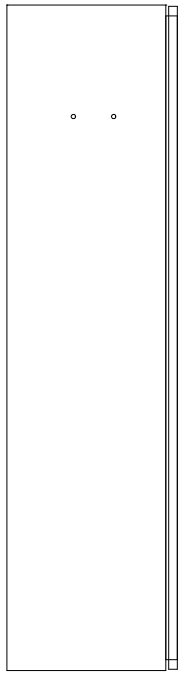


RIGHT SIDE

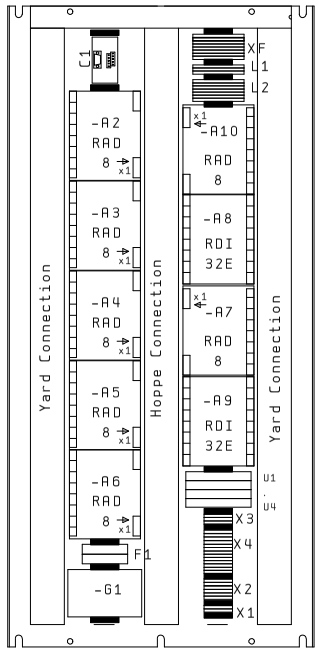


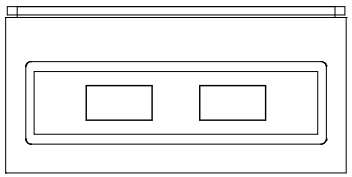
CABLE INLET FLANGE



LEFT SIDE

SIDE WALL
MOUNTED

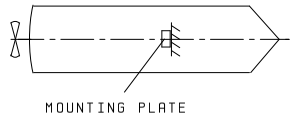




SWITCHBOARD :

AE1260.600 600x1200x300

STANDARD INSTALLATION
OF MOUNTING PLATE



Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	SWITCH CABINET / CENTRAL STATION - TT	PANEL	scale: 1:10
Draw.	HaR				= 00001
Engrn.	T. Meyer				+ MP
Rev. No. 2.1	Rev. Date 09.05.08		Layout	A-34226- 00001 - MP	Sheet 1 / 1

Terminal diagram

Function	Cable designation Cable type								Terminal strip designation							Cable designation Cable type						Page / path
								VRS. TGS 2x2,5 2x	Destination	Connection	Jumper	Terminal no. =00201-X1	Terminal name	Destination	Connection							
Feeding 230V 50/60Hz pre fuse max 6A FROM VALVE CONTROL RELAY BOX								1	=PD-X	L		1		-F1	1							+SP/1.0
=								2	=PD-X	N		2		-F1	3							+SP/1.1

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT Terminal List	=00201-X1
Draw.	HAR			A-34226- 00201 - KL
Engin.	T. Meyer			
Rev. No. 2.0	Rev. Date 07.12.07			

scale:
= 00201
+ KL
Sheet 1 / 5

Terminal diagram

Strip designation

=00201-X2

			TGS12	TGS9.1	TGS8	TGS6	TGS3.2	TGS3.1	Cable name	Target design.	Connection	Terminal number	Jumpers	Connection	Target design.	Connection	Type	0.75mm² bk				Page/ path
Function text			2x2,5 2x	2x2,5 6x	2x2,5 2x	10x2x0,75 10x2x	2x2,5 2x	2x2,5 2x	Type													
24V DC Terminal Box JB2								1		=JB2-JB2-X	1	1	○		-XF	3		X				+SP/1.3
0V								2		=JB2-JB2-X	2	2			-L2	-		X				+SP/1.3
24V DC Terminal Box JB3							1			=JB3-JB3-X	1	3	○		-XF	4		X				+SP/1.4
0V							2			=JB3-JB3-X	2	4										+SP/1.4
24V DC Terminal Box JB5						19				=JB5-JB5-X	1	5	○		-XF	5		X				+SP/1.5
0V						20				=JB5-JB5-X	2	6										+SP/1.5
24V DC Terminal Box JB6					1					=JB6-JB6-X	1	7	○		-XF	6		X				+SP/1.6
0V					2					=JB6-JB6-X	2	8										+SP/1.6
24V DC Terminal Box JB7				1						=JB7-JB7-X	1	9	○		-XF	7		X				+SP/1.7
0V				2						=JB7-JB7-X	2	10										+SP/1.7
24V DC Terminal Box JB9			1							=JB9-JB9-X	1	11	○		-XF	8		X				+SP/1.8
0V			2							=JB9-JB9-X	2	12		OV10: -	-OV10	-		X				+SP/1.8

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT	=00201-X2	scale: = 00201
Draw.	HAR				+ KL
Engin.	T. Meyer		Terminal List	A-34226- 00201 - KL	Sheet 2 / 5
Rev. No. 2.0	Rev. Date 07.12.07				

Terminal diagram

Function	Cable designation Cable type								Terminal strip designation							Cable designation Cable type							Page / path
								0.75mm² bk	Destination	Connection	Jumper	Terminal no. =00201-X3	Terminal name	Destination	Connection								
Internal Distribution COM1								X	-C1	2		1		-A2-X2	3	X							+SP/2.3
														RCOM1.N									
=								X	-C1	1		2		-A2-X2	1	X							+SP/2.4
														RCOM1.P									
=								X	-C1	14		3		-A2-X2	2	X							+SP/2.4
														RCOM1.G									

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT	=00201-X3	scale:
Draw.	HAR				= 00201
Engin.	T. Meyer				+ KL
Rev. No. 2.0	Rev. Date 07.12.07		Terminal List	A-34226- 00201 - KL	Sheet 3 / 5

Terminal diagram

0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9

Strip designation

=00201-X4

BELOW	1 3 5 7 ..	...	.. 99	-	-	
TOP	2 4 6 8 ..	...	.. 100			
TOP	2 4 6 8 ..	...	.. 100			
BELOW	1 3 5 7 ..	...	.. 99	+	+	

Function text	TGS25 (1x2x0,75 1x2x)	TGS10 (10x2x0,75 20x)	TGS11 (10x2x0,75 20x)	TGS9 (14x2x0,75 28x)	TGS6 (10x2x0,75 20x)	TGS5 (10x2x0,75 20x)	TGS4 (10x2x0,75 20x)	TGS.A (2x2x0,75 2x2x)	Cable name / Type	Target design.	Connection	Terminal number	Jumpers	Connection	Target design.	Connection	Cable name / Type	0.75mm² bk				Page/ path
Alarm System								1		=AS-X	1	1	○									+SP/3.1
=								2		=AS-X	2	2	○									+SP/3.1
Bilge well							11			=JB3-U4	12+	3	●		-A9-X6	2		x				+SP/18.7
=						13				=JB4-X	14	4	●		-A9-X8	2		x				+SP/19.3
DECK WORKSHOP						7				=JB4-X	7	5	●									+SP/18.9
PASSAGEWAY (AFT.P.)					9					=JB5-X	7	6	●									+SP/19.4
Bilge well				2						=JB7-X	4	7	●		-A9-X9	2		x				+SP/20.1
NO.2 CARGO HOLD (AFT.S.)				6						=JB7-U1	9+	8	●		-A9-X10	2		x				+SP/20.2
Bilge well				4						=JB7-U1	12+	9	●									+SP/20.2
=				8						=JB7-U2	12+	10	●									+SP/20.3
NO.3 CARGO HOLD (AFT.S.)				10						=JB7-U2	9+	11	●		-A9-X11	2		x				+SP/20.4
NO.4 CARGO HOLD (AFT.S.)				14						=JB7-U3	9+	12	●		-A9-X12	2		x				+SP/20.6
Bilge well				12						=JB7-U3	12+	13	●									+SP/20.5
=				16						=JB7-U4	12+	14	●									+SP/20.7
NO.5 CARGO HOLD (AFT.S.)				18						=JB7-U4	9+	15	●		-A9-X13	2		x				+SP/20.8
Bilge well			4							=JB9-X	4	16	●		-A9-X16	2		x				+SP/21.5
STORE		5								=JB8-X	5	17	●									+SP/20.9
NO.6 CARGO HOLD (F.P.)	1									-B257	1	18	●									+SP/21.5

Est. Date	21.03.07	TANK GAUGING / CENTRAL STATION - TT	=00201-X4	scale:
Draw.	HAR			= 00201
Engin.	T.Meyer		A-34226- 00201 - KL	+ KL
Rev. No. 2.0	Rev.Date 07.12.07	Terminal List		Sheet 4 / 5

HOPPE Bordmesstechnik GmbH

Terminal diagram

Strip designation

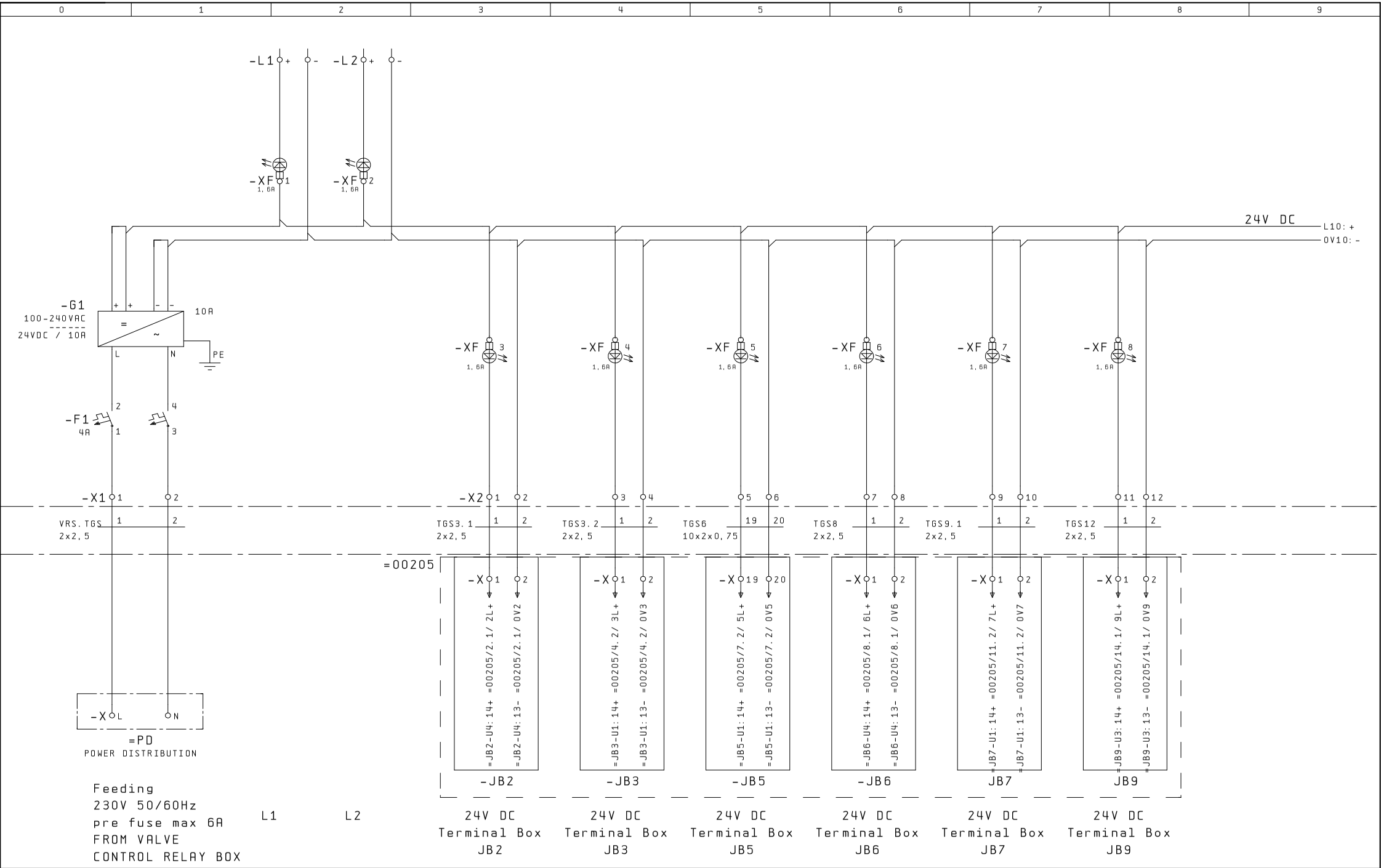
=00201-X4

BELOW	1 3 5 7 ..	...	.. 99
TOP	2 4 6 8 ..	...	.. 100
TOP	2 4 6 8 ..	...	.. 100
BELOW	1 3 5 7 ..	...	.. 99

-	-
+	+

Function text	TGS24 2x2x0,75 4x	TGS27 1x2x0,75 1x2x	TGS23 2x2x0,75 4x	TGS26 1x2x0,75 2x	Cable name Type	Target design.	Connection	Terminal number	Jumpers	Connection	Target design.	Connection	Cable name Type	0.75mm² bk	Page/ path
Bilge well				2		-B258	2	19			-A9-X17	2		X	+SP/21.7
93% LAH			2			-B282	2	20			-A8-X9	2		X	+SP/23.5
NO.6 CARGO HOLD (AFT P)		1				-B259	1	21							+SP/21.7
M.D.O. TK (P)			3			-B283	1	22							+SP/23.6
93% LAH	2					-B284	2	23			-A8-X10	2		X	+SP/23.7
=								24	o						+SP/23.7
M.D.O. TK (S)	3					-B285	1	25							+SP/23.8
98% LAHH								26	o						+SP/23.8

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT	=00201-X4	scale: = 00201
Draw.	HAR				+ KL
Engin.	T. Meyer				
Rev. No. 2.0	Rev. Date 07.12.07		Terminal List	A-34226- 00201 - KL	Sheet 5 / 5



Est. Date	21.03.07
Draw.	HaR
Engin.	T. Meyer
Rev. No. 3.3	Rev. Date 09.02.09

HOPPE Bordmesstechnik GmbH

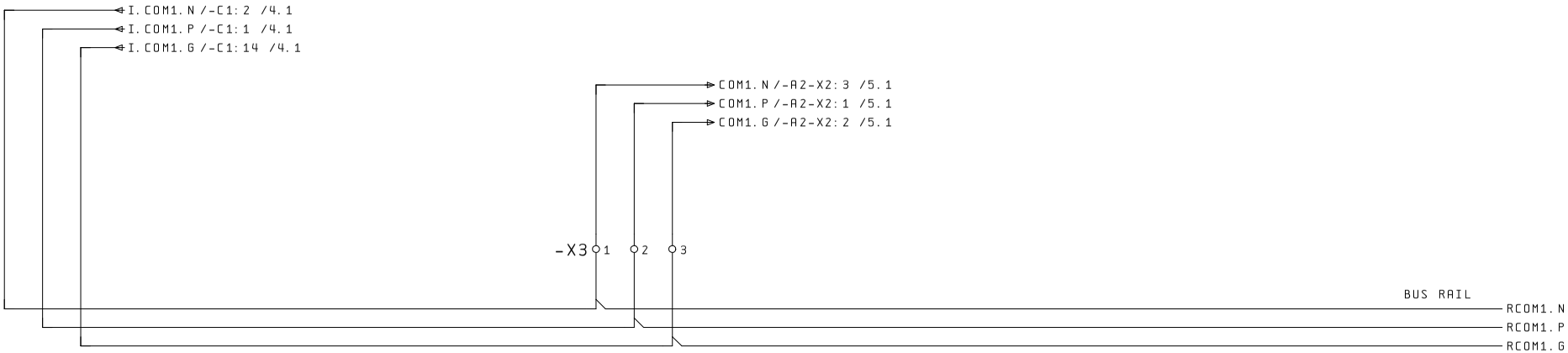
TANK GAUGING / CENTRAL STATION - TT

Wiring Diagram

Control Voltage

A-34226- 00201 - SP

scale:
= 00201
+ SP
Sheet 1 / 25



Internal
Connection COM1

Internal Distribution
COM1

Est. Date	21.03.07
Draw.	HaR
Engrn.	T. Meyer
Rev. No. 2.0	Rev. Date 28.02.08

HOPPE Bordmesstechnik GmbH

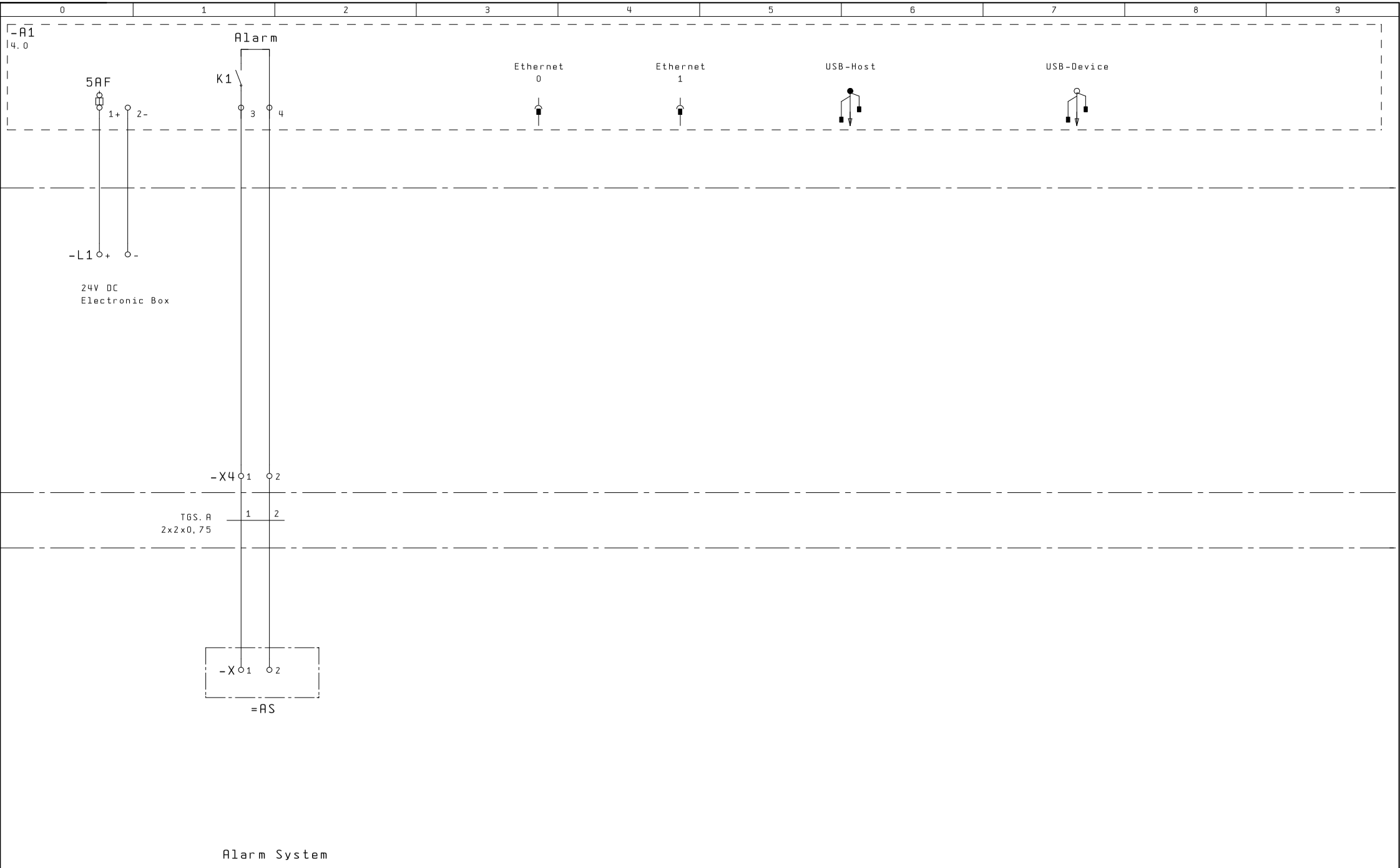
TANK GAUGING / CENTRAL STATION - TT

Wiring Diagram

BUS COM 1

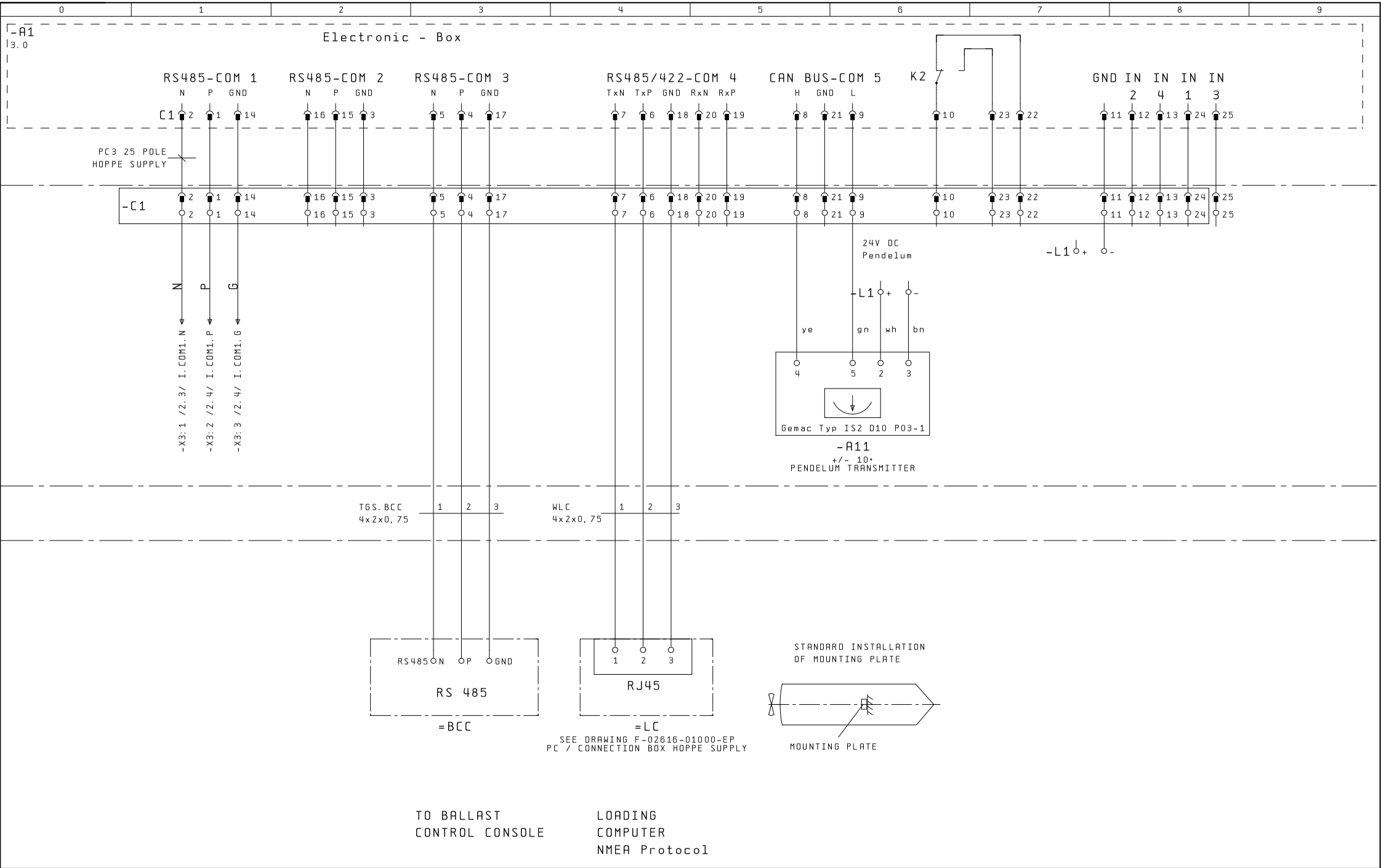
A-34226- 00201 - SP

scale:
= 00201
+ SP
Sheet 2 / 25



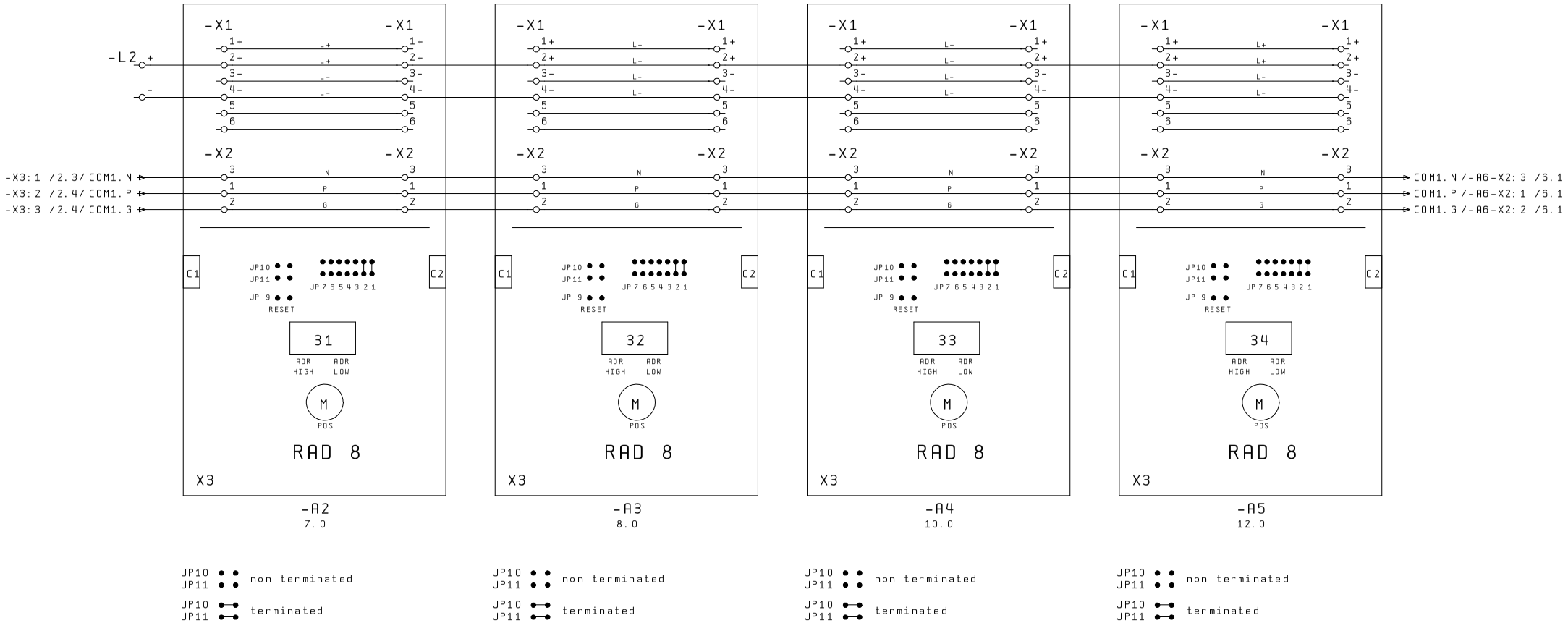
Alarm System

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT	Electronic Box	scale: = 00201
Draw.	HaR				+ SP
Engin.	T. Meyer				
Rev. No. 2.1	Rev. Date 09.05.08		Wiring Diagram	A-34226- 00201 - SP	Sheet 3 / 25

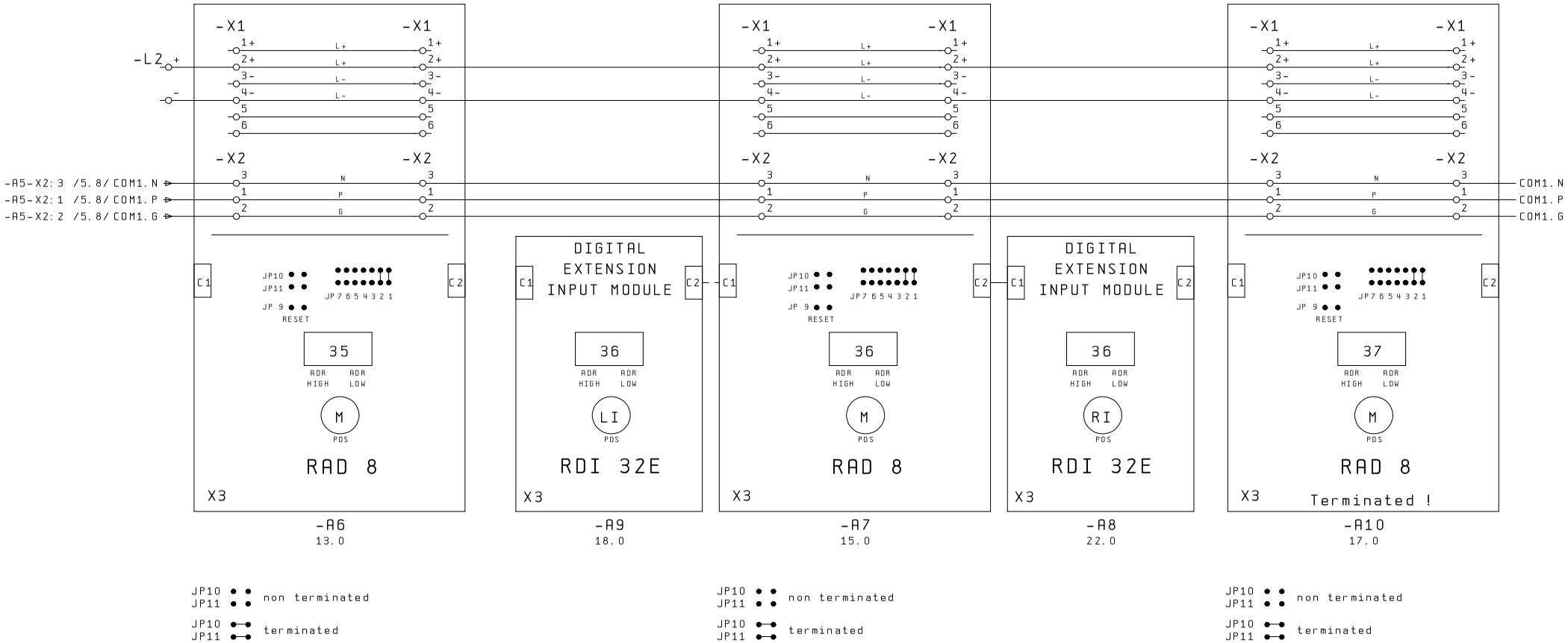


Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT	Electronic Box
Draw.	HaR			
Engin.	T. Meyer			A-34226- 00201 - SP
Rev. No. 2.8	Rev. Date 09.05.08		Wiring Diagram	

scale:
= 00201
+ SP
Sheet 4 / 25



Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT	BUS MODULE	scale: = 00201
Draw.	HaR				+ SP
Engin.	T. Meyer			A-34226- 00201 - SP	Sheet 5 / 25
Rev. No. 2.0	Rev. Date 28.02.08		Wiring Diagram		



Est. Date	21.03.07
Draw.	HaR
Engrn.	T. Meyer
Rev. No. 2.0	Rev. Date 28.02.08

HOPPE Bordmesstechnik GmbH

TANK GAUGING / CENTRAL STATION - TT

Wiring Diagram

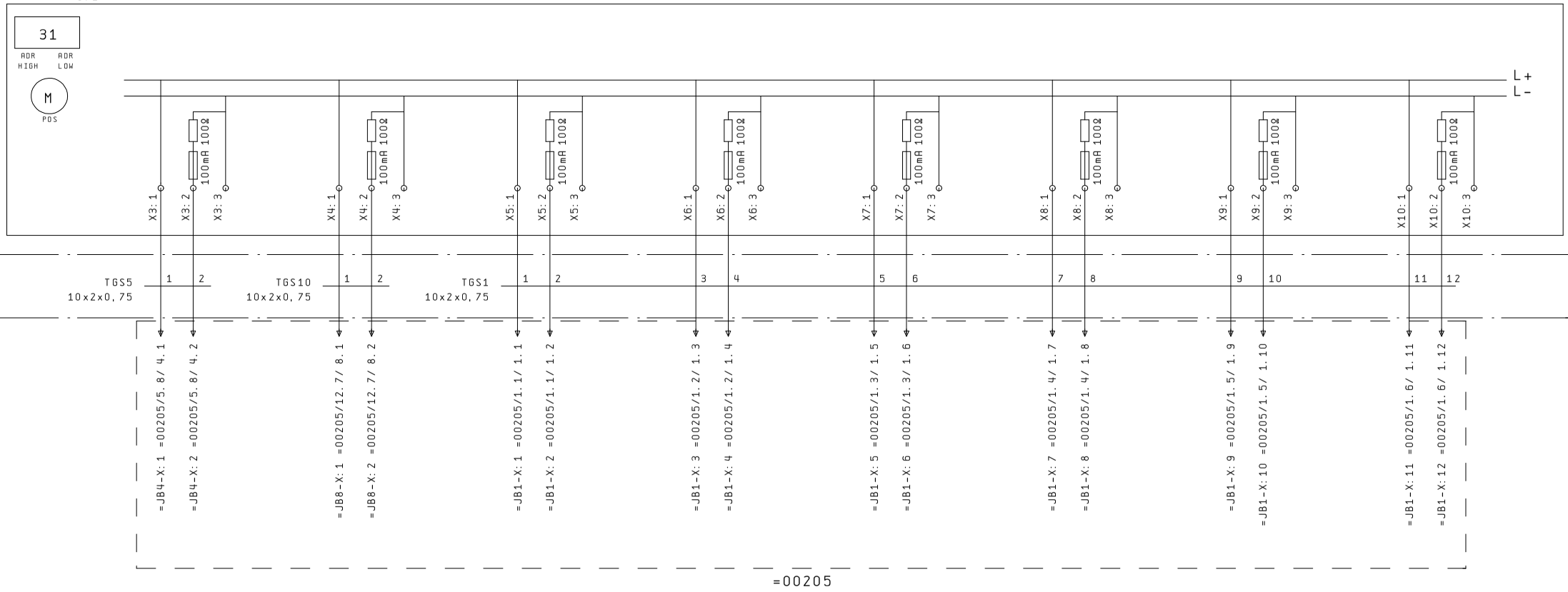
BUS MODULE

A-34226- 00201 - SP

scale:
= 00201
+ SP
Sheet 6 / 25

-A2
5.1

RAD 8



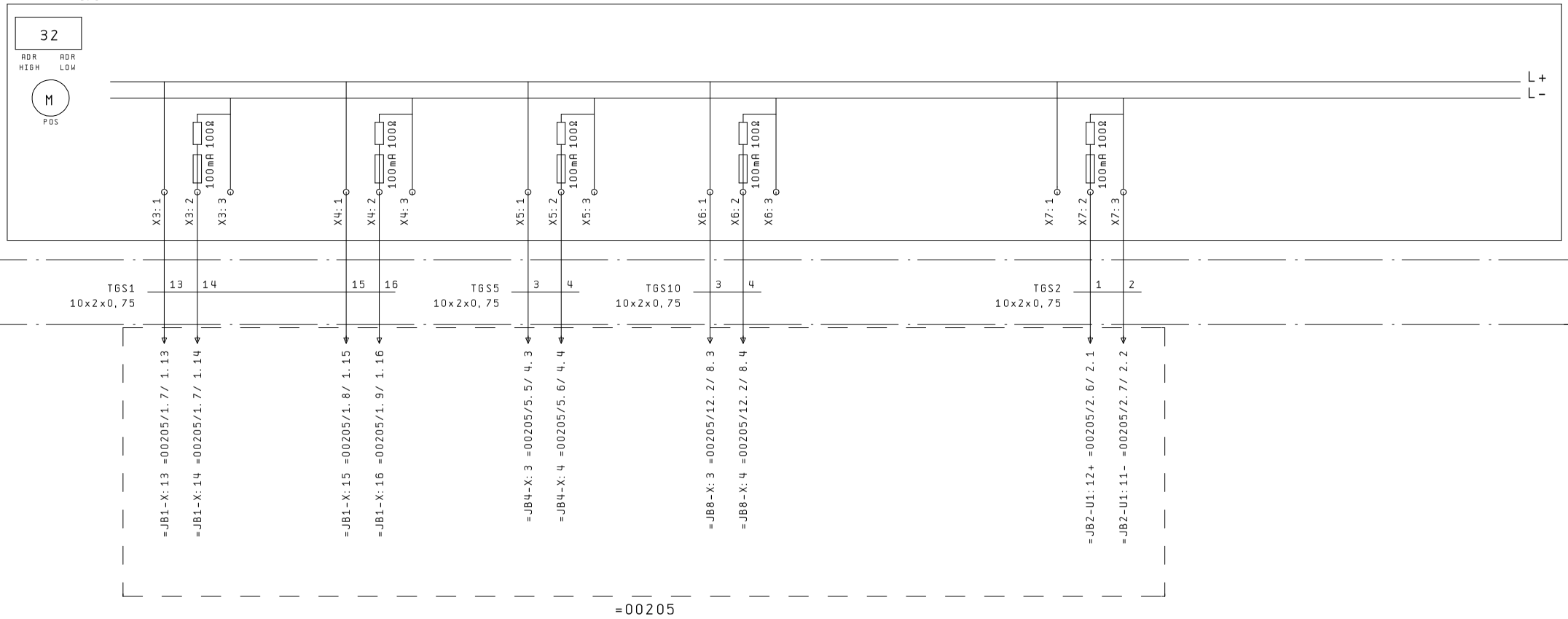
FR. 126P | FR. 126S | FR. 108P | FR. 108S | FR. 90P | FR. 90S | FR. 72P | FR. 72S

NO. 1 B. W. B. T(P) | NO. 1 B. W. B. T(S) | NO. 2 B. W. B. T(P) | NO. 2 B. W. B. T(S) | NO. 3 B. W. B. T(P) | NO. 3 B. W. B. T(S) | NO. 4 B. W. B. T(P) | NO. 4 B. W. B. T(S)

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT	RAD 8	scale: = 00201
Draw.	HaR				+ SP
Engrn.	T. Meyer		Wiring Diagram	A-34226- 00201 - SP	Sheet 7 / 25
Rev. No. 2.7	Rev. Date 28.02.08				

-A3
5.3

RAD 8



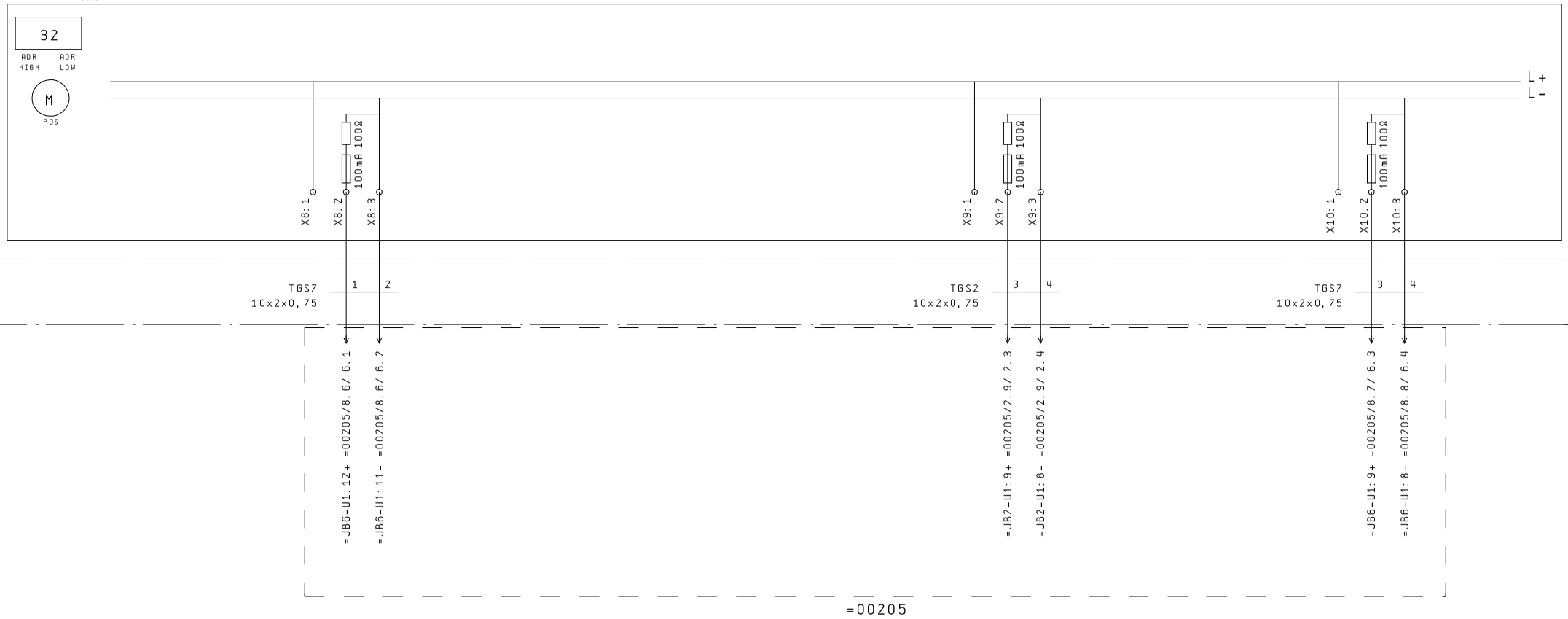
FR. 54P FR. 54S FR. 126P FR. 126S FR. . 90P

NO. 5 B. W. B. T(P) NO. 5 B. W. B. T(S) NO. 1 S. W. B. T(P) NO. 1 S. W. B. T(S) NO. 3 S. W. B. T(P)

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT	RAD 8	scale: = 00201
Draw.	HaR				+ SP
Engrn.	T. Meyer		Wiring Diagram	A-34226- 00201 - SP	Sheet 8 / 25
Rev. No. 2.7	Rev. Date 28.02.08				

-A3
5.3

RAD 8



FR..90S

NO. 3
S.W.B.T(S)

FR..84P

NO. 4
S.W.B.T(P)

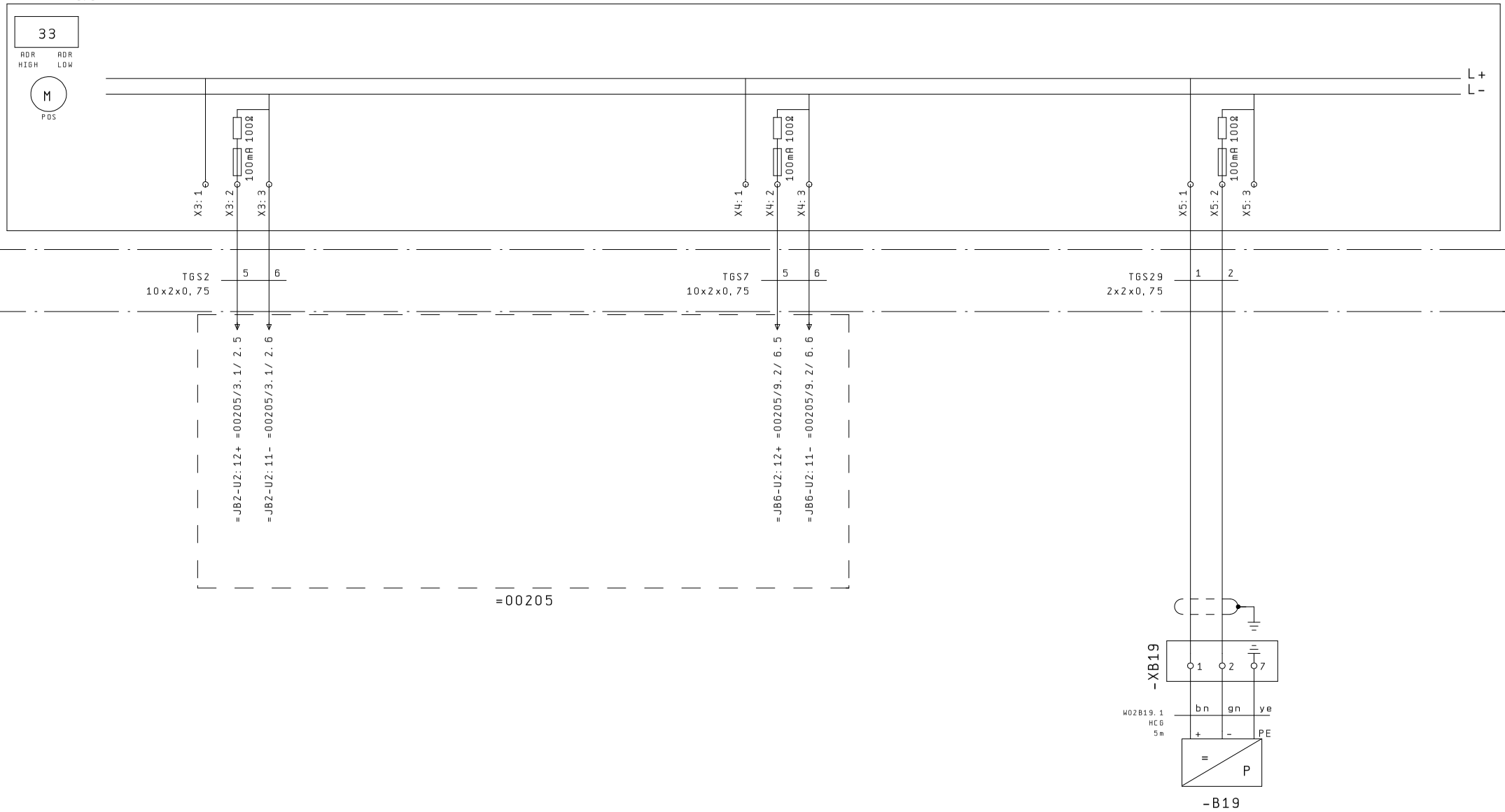
FR..84S

NO. 4
S.W.B.T(S)

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT Wiring Diagram	RAD 8	scale: = 00201
Draw.	HaR				+ SP
Engrn.	T. Meyer			A-34226-00201 - SP	Sheet 9 / 25
Rev. No. 2.7	Rev. Date 28.02.08				

-A4
5.5

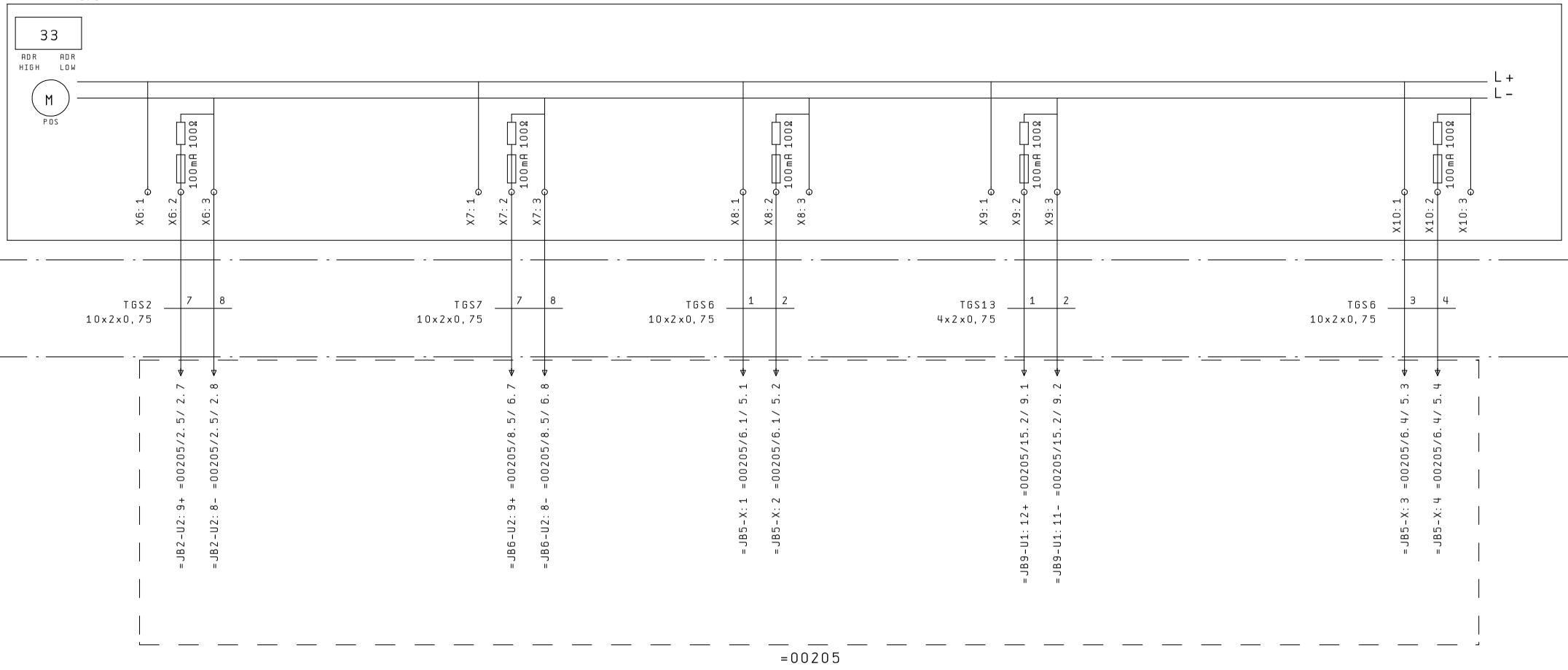
RAD 8



Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT	RAD 8	scale:
Draw.	HaR				= 00201
Engrn.	T. Meyer				+ SP
Rev. No. 2.7	Rev. Date 28.02.08		Wiring Diagram	A-34226- 00201 - SP	Sheet 10 / 25

-A4
5.5

RAD 8



FR. 108P

NO. 1
H. F. O. TK(P)

FR. 108S

NO. 1
H. F. O. TK (S)

FR. 55P

NO. 2
H. F. O. TK (P)

FR. 54S

NO. 2
H. F. O. TK. (S)

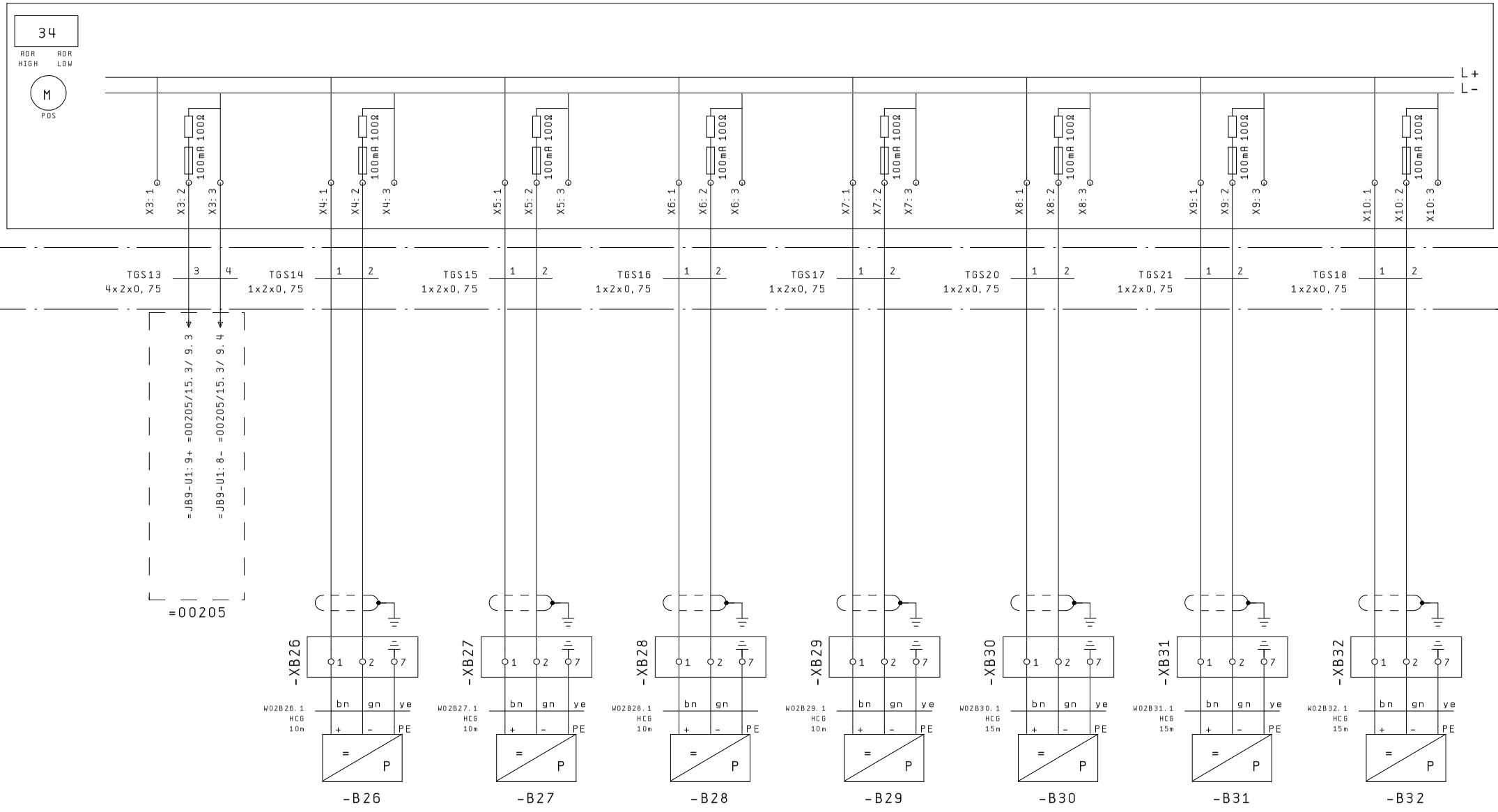
FR. 29P

NO. 3
H. F. O. TK (P)

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT Wiring Diagram	RAD 8	scale:
Draw.	HaR				= 00201
Engrn.	T. Meyer				+ SP
Rev. No. 2.7	Rev. Date 28.02.08			A-34226- 00201 - SP	Sheet 11 / 25

-A5
5.7

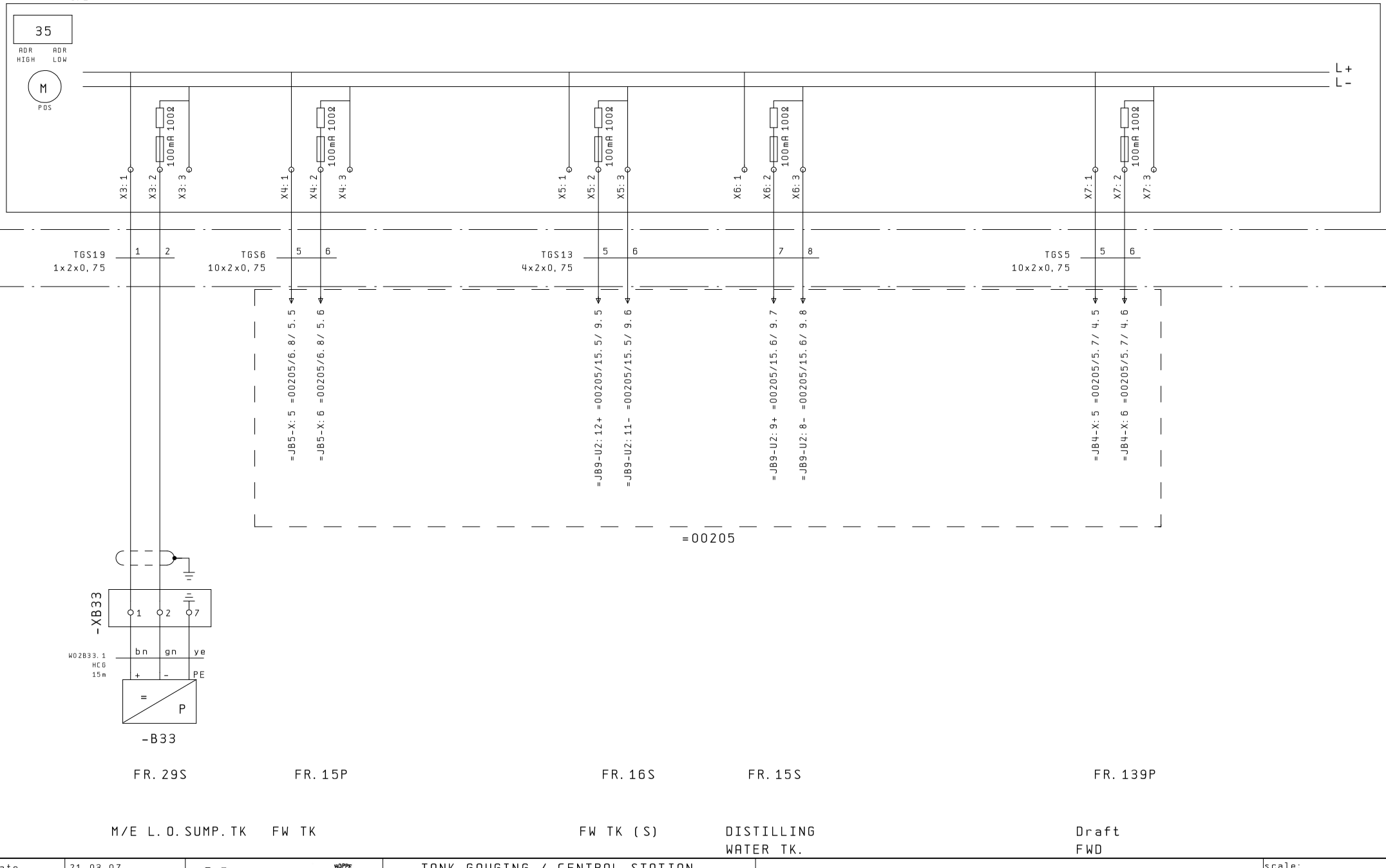
RAD 8



Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT	RAD 8	scale: = 00201
Draw.	HaR				+ SP
Engrn.	T. Meyer		Wiring Diagram	A-34226- 00201 - SP	Sheet 12 / 25
Rev. No. 2.7	Rev. Date 28.02.08				

-A6
6.1

RAD 8



FR. 29S — M/E L.O. SUMP. TK

FR. 15P — FW TK

FR. 16S — FW TK (S)

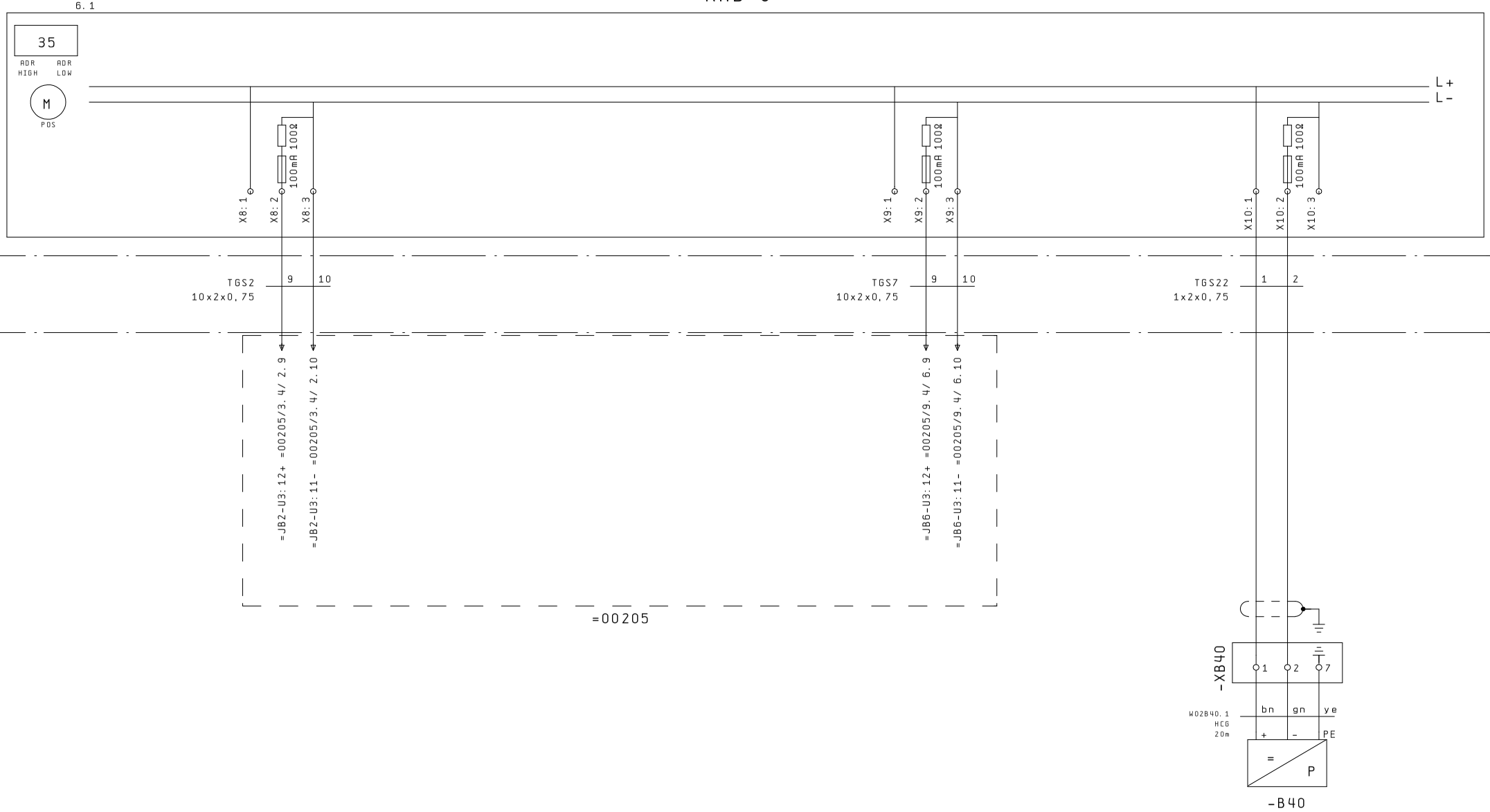
FR. 15S — DISTILLING WATER TK.

FR. 139P — Draft FWD

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT	RAD 8	scale: = 00201
Draw.	HaR				+ SP
Engrn.	T. Meyer		Wiring Diagram	A-34226- 00201 - SP	Sheet 13 / 25
Rev. No. 2.7	Rev. Date 28.02.08				

-A6
6.1

RAD 8



FR. 85P

FR. 85S

FR. 28S

MID DRAFT(P)

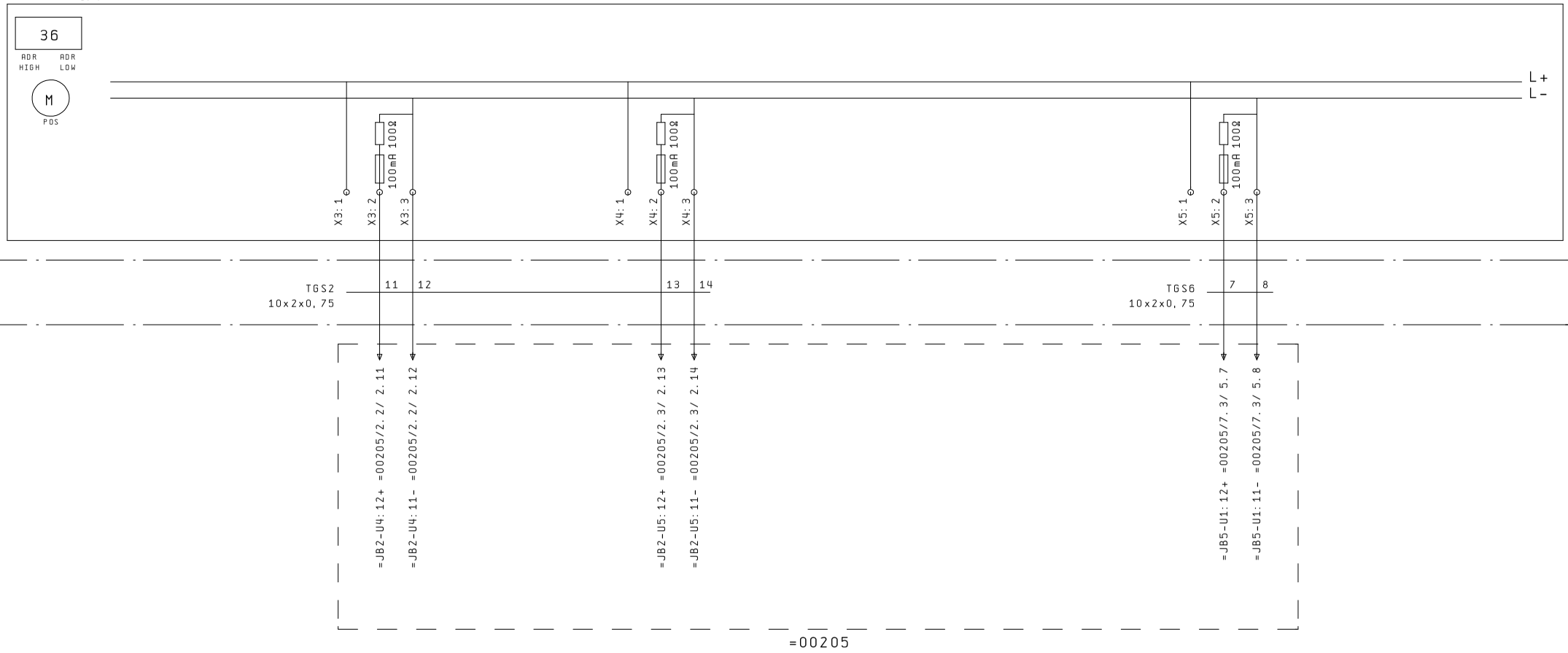
MID DRAFT (S)

Draft AFT

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT	RAD 8	scale:
Draw.	HaR				= 00201
Engrn.	T. Meyer				+ SP
Rev. No. 2.7	Rev. Date 28.02.08		Wiring Diagram	A-34226- 00201 - SP	Sheet 14 / 25

-A7
6.4

RAD 8



FR. 109P

PT 100 TEMPERATURE
NO. 1 H. F. O. TK (P) 200°C

FR. 55P

PT 100 TEMPERATURE
NO. 2 H. F. O. TK (P) 200°C

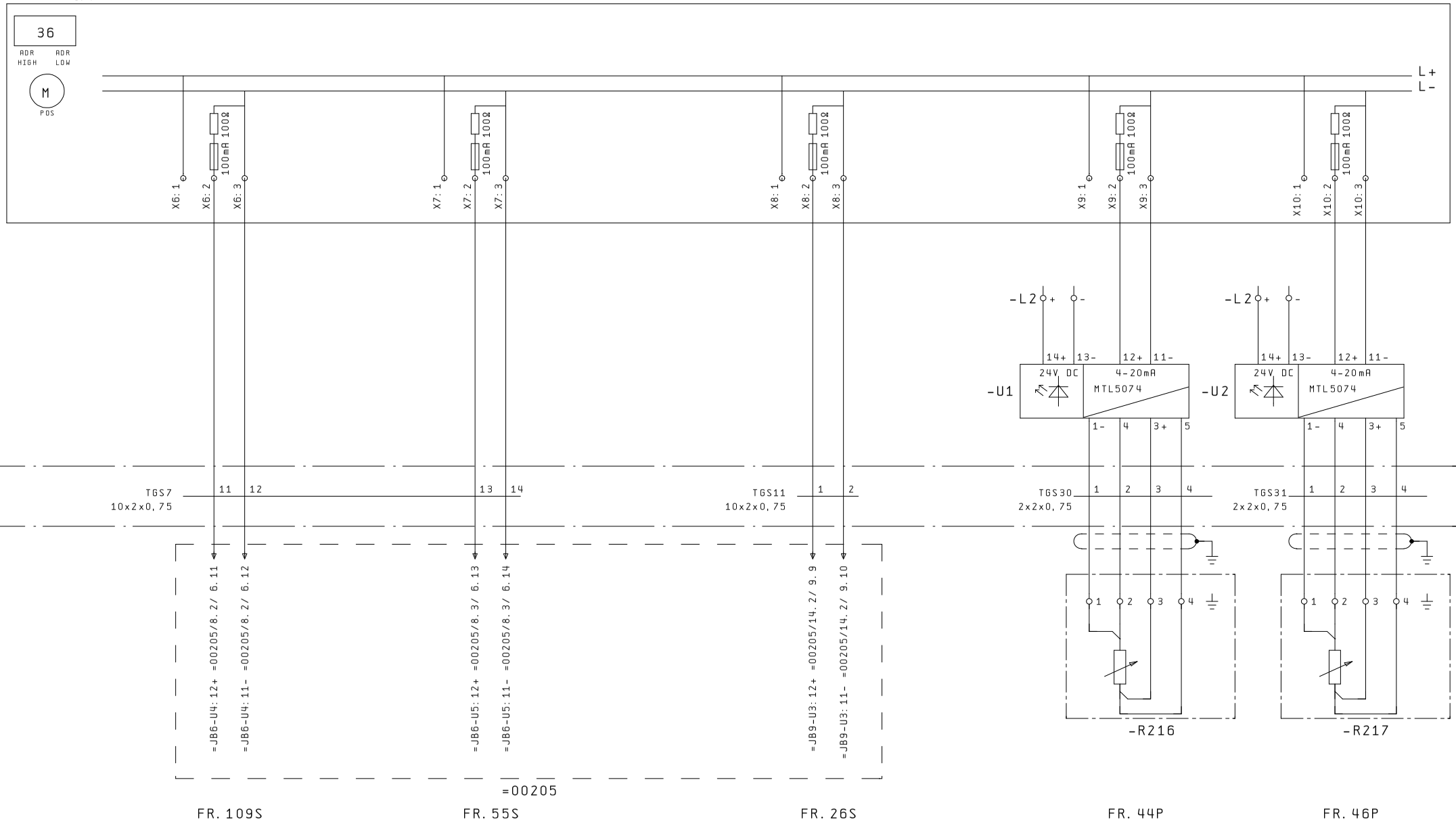
FR. 29P

PT 100 TEMPERATURE
NO. 3 H. F. O. TK (P) 200°C

Est. Date	21. 03. 07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT Wiring Diagram	RAD 8	scale: = 00201
Draw.	HaR				+ SP
Engrn.	T. Meyer			A-34226- 00201 - SP	Sheet 15 / 25
Rev. No. 2. 7	Rev. Date 28. 02. 08				

-A7
6.4

RAD 8



PT 100 TEMPERATURE NO. 1 H.F.O. TK (S) 200°C

PT 100 TEMPERATURE NO. 2 H.F.O. TK (S) 200°C

PT 100 TEMPERATURE NO. 3 H.F.O. TK (S) 200°C

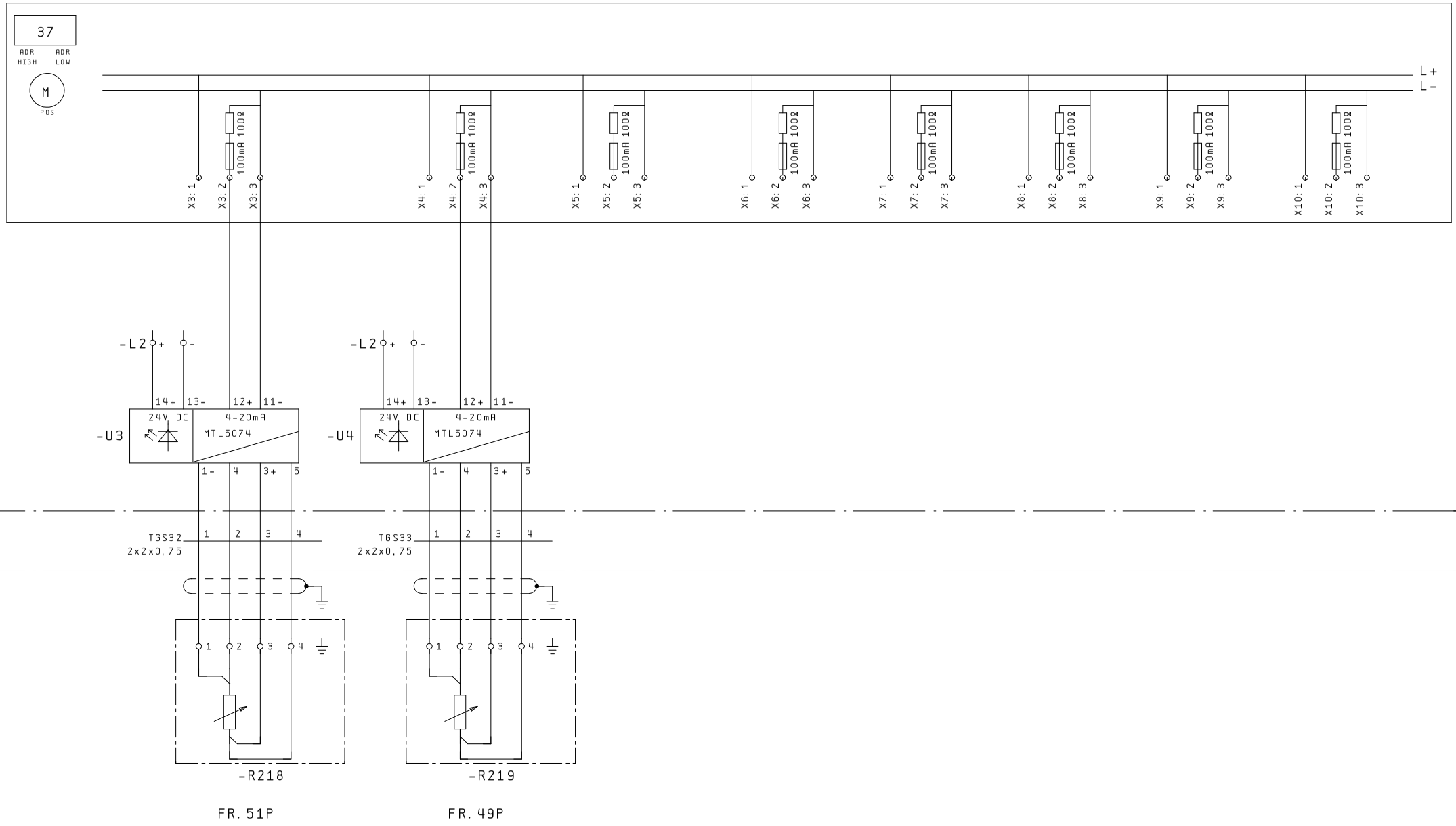
PT 100 TEMPERATURE H.F.O. SETTL. TK 200°C

PT 100 TEMPERATURE LS H.F.O. SETTL. TK 200°C

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT Wiring Diagram	RAD 8	scale: = 00201
Draw.	HaR				+ SP
Engrn.	T. Meyer			A-34226- 00201 - SP	Sheet 16 / 25
Rev. No. 2.7	Rev. Date 28.02.08				

-A10
6.7

RAD 8



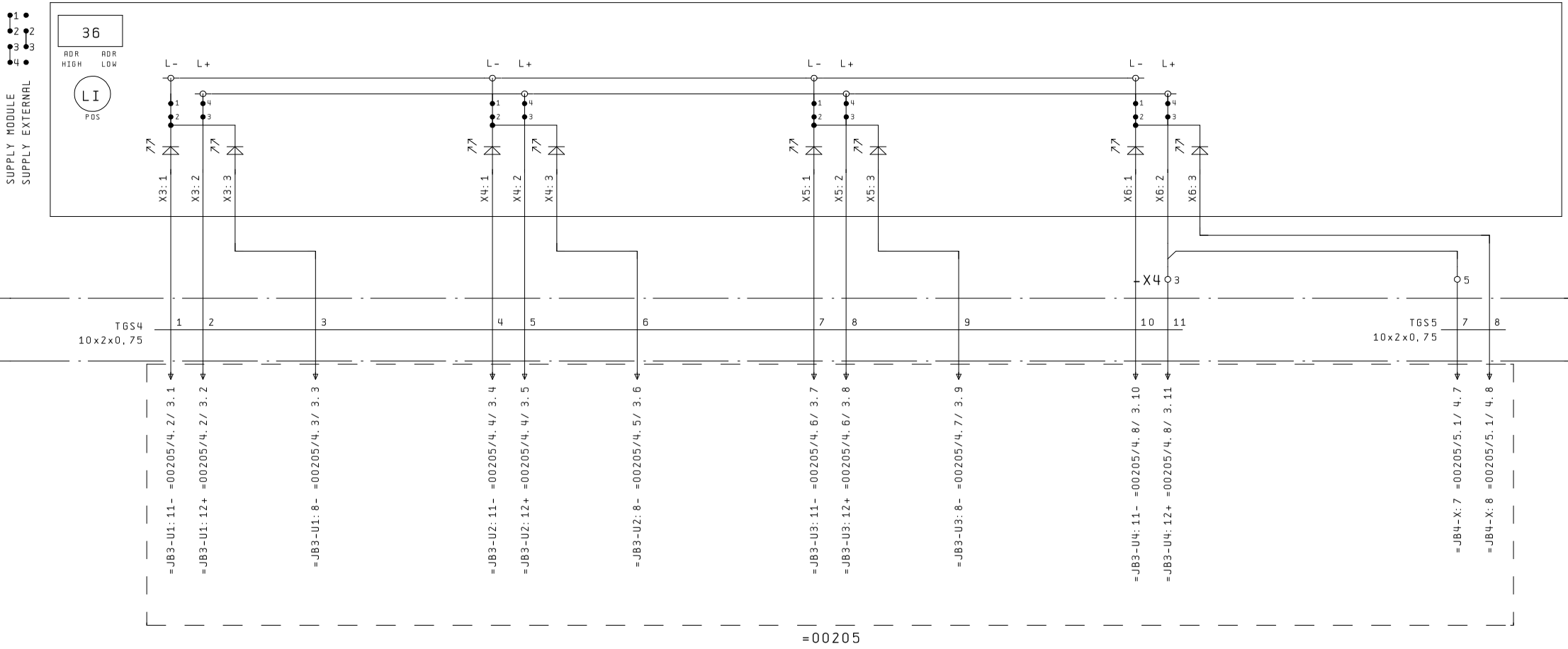
PT 100 TEMPERATURE
H. F. O. SERV. TK 200°C

PT 100 TEMPERATURE
LS H. F. O. SERV. TK 200°C

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT	RAD 8	scale: = 00201
Draw.	HaR				+ SP
Engrn.	T. Meyer		Wiring Diagram	A-34226- 00201 - SP	Sheet 17 / 25
Rev. No. 2.0	Rev. Date 28.02.08				

-A9
6.3

RDI32E

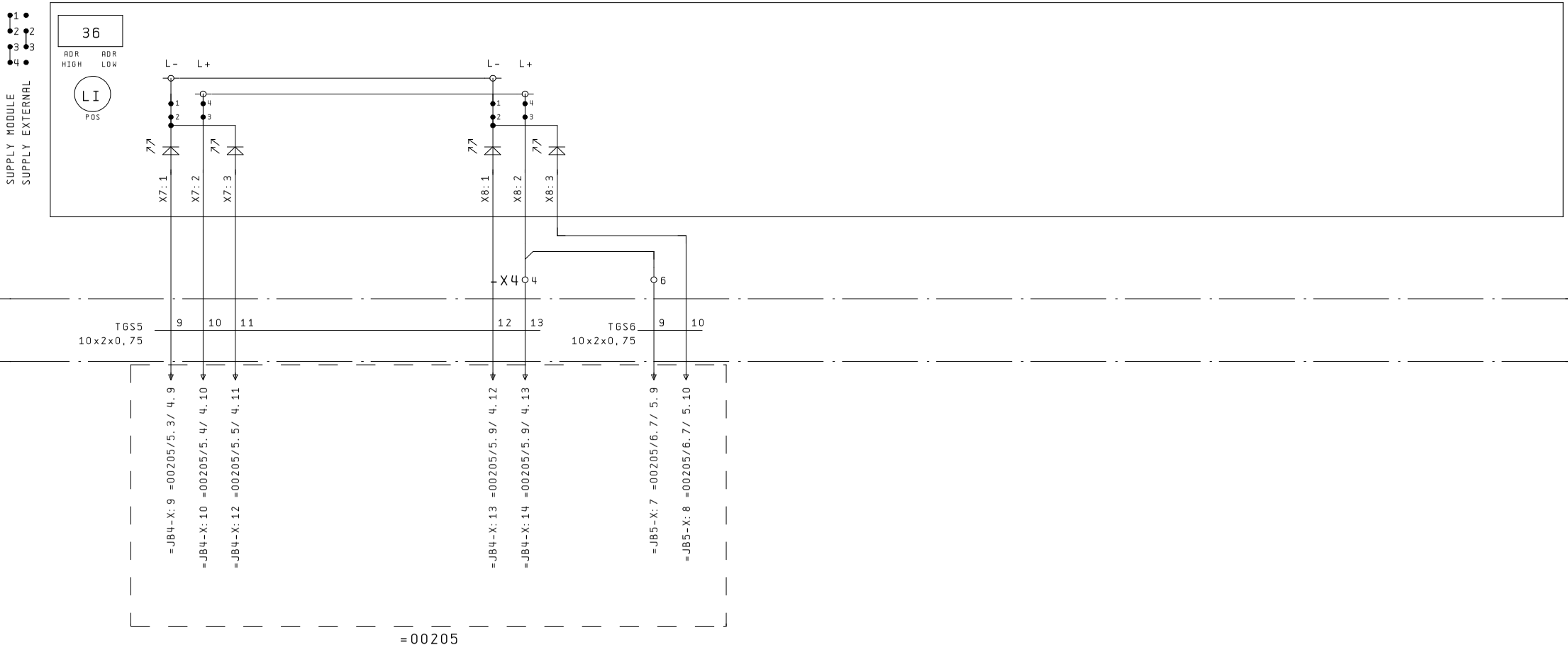


FR. 108P	FR. 101P	FR. 89P	FR. 83P	FR. 71P	FR. 65P	FR. 54P	FR. 133P
NO. 2 CARGO HOLD	NO. 3 CARGO HOLD (F. P.)	NO. 3 CARGO HOLD (AFT. P.)	NO. 4 CARGO HOLD (FP)	NO. 4 CARGO HOLD (AFT. P.)	NO. 5 CARGO HOLD (F. P.)	NO. 5 CARGO HOLD (AFT. P.)	DECK WORKSHOP
Bilge well	Bilge well	Bilge well	Bilge well	Bilge well	Bilge well	Bilge well	Bilge well

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT	RDI32E	scale: = 00201
Draw.	HaR				+ SP
Engrn.	T. Meyer			A-34226- 00201 - SP	Sheet 18 / 25
Rev. No. 2.7	Rev. Date 28.02.08		Wiring Diagram		

-A9
6.3

RDI32E

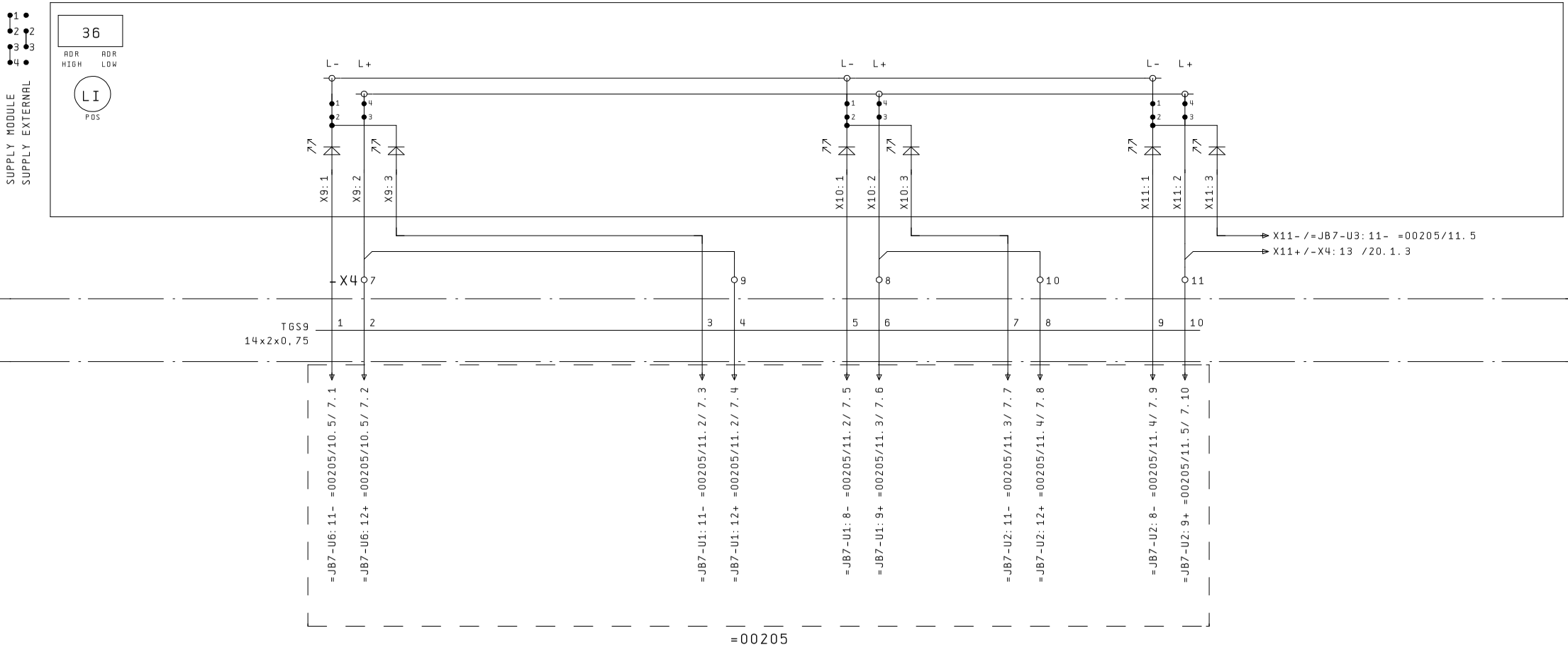


FR. 116P	FR. 144M	FR. 125P	FR. 20P
PASSAGEWAY (F.P.)	CHAIN LOCKER	NO.1 CARGO HOLD (P)	PASSAGEWAY (AFT.P.)
Bilge well	Bilge well	Bilge well	Bilge well

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT Wiring Diagram	RDI32E	scale: = 00201
Draw.	HaR				+ SP
Engin.	T. Meyer			A-34226- 00201 - SP	Sheet 19 / 25
Rev. No. 2.7	Rev. Date 28.02.08				

-A9
6.3

RDI32E

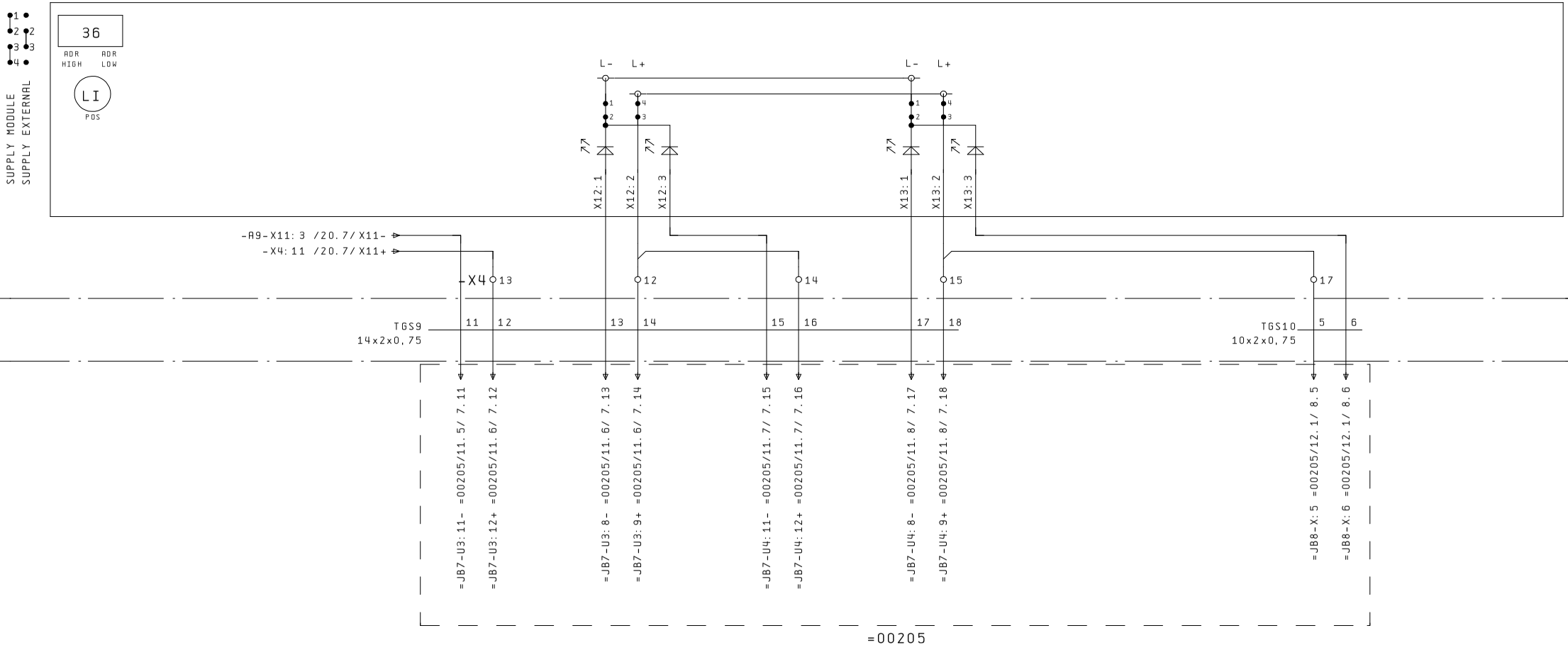


FR. 116S	FR. 120S	FR. 108S	FR. 101S	FR. 89S
PASSAGEWAY (F.S.)	NO. 2 CARGO HOLD (F.M.)	NO. 2 CARGO HOLD (AFT.S.)	NO. 3 CARGO HOLD (F.S.)	NO. 3 CARGO HOLD (AFT.S.)
Bilge well	Bilge well	Bilge well	Bilge well	Bilge well

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT Wiring Diagram	RDI32E A-34226- 00201 - SP
Draw.	HaR			scale: = 00201 + SP
Engin.	T. Meyer			Sheet 20 / 25
Rev. No. 2.7	Rev. Date 28.02.08			

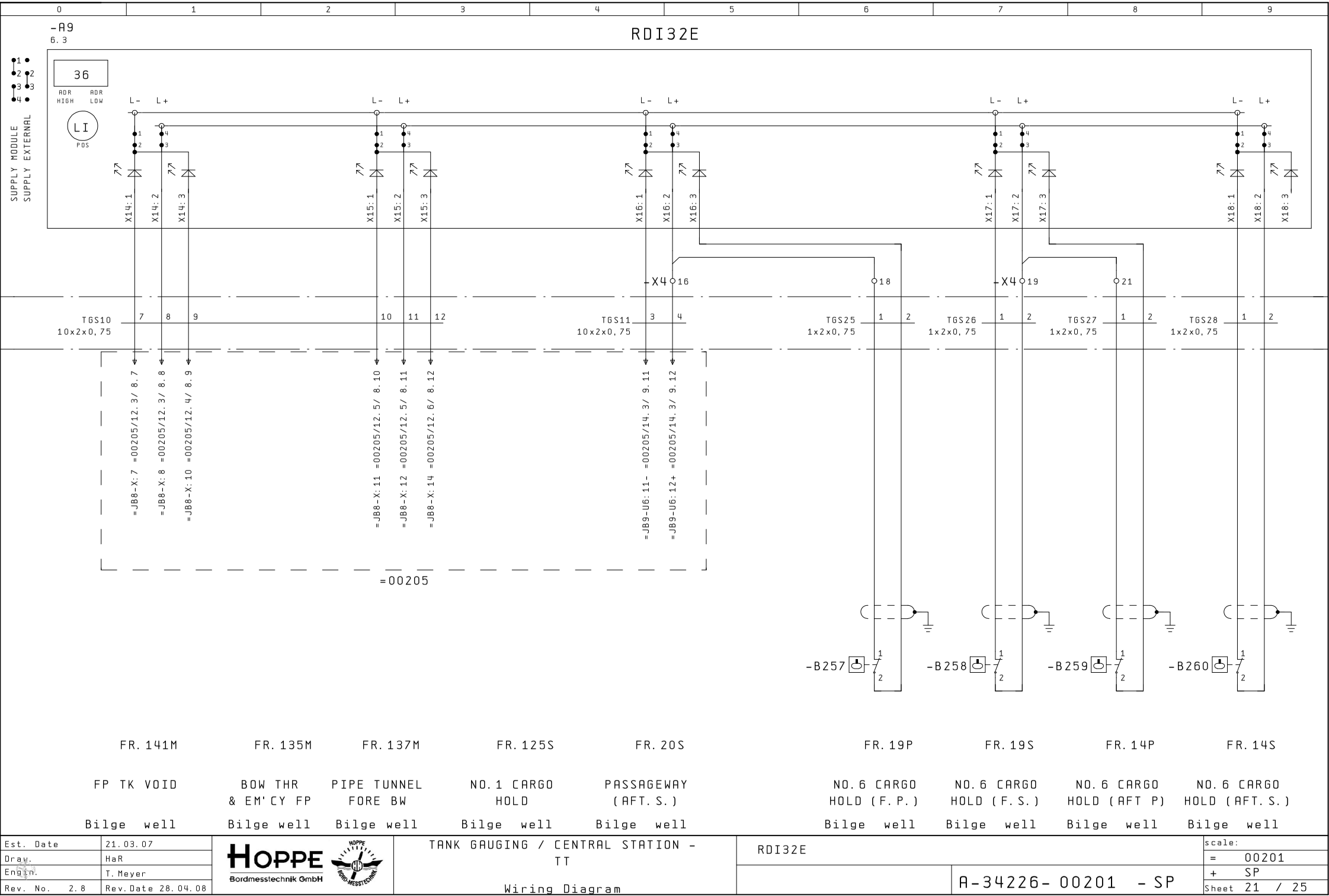
-A9
6.3

RDI32E



FR. 83S	FR. 71S	FR. 65S	FR. 54S	FR. 133S
NO. 4 CARGO HOLD (F.S.)	NO. 4 CARGO HOLD (AFT.S.)	NO. 5 CARGO HOLD (F.S.)	NO. 5 CARGO HOLD (AFT.S.)	STORE
Bilge well	Bilge well	Bilge well	Bilge well	Bilge well

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT	RDI32E	scale: = 00201
Draw.	HaR				+ SP
Engrn.	T. Meyer		Wiring Diagram	A-34226- 00201 - SP	Sheet 20.1/ 25
Rev. No. 2.7	Rev. Date 28.02.08				



Est. Date	21.03.07
Draw.	HaR
Engrn.	T. Meyer
Rev. No. 2.8	Rev. Date 28.04.08

HOPPE Bordmesstechnik GmbH

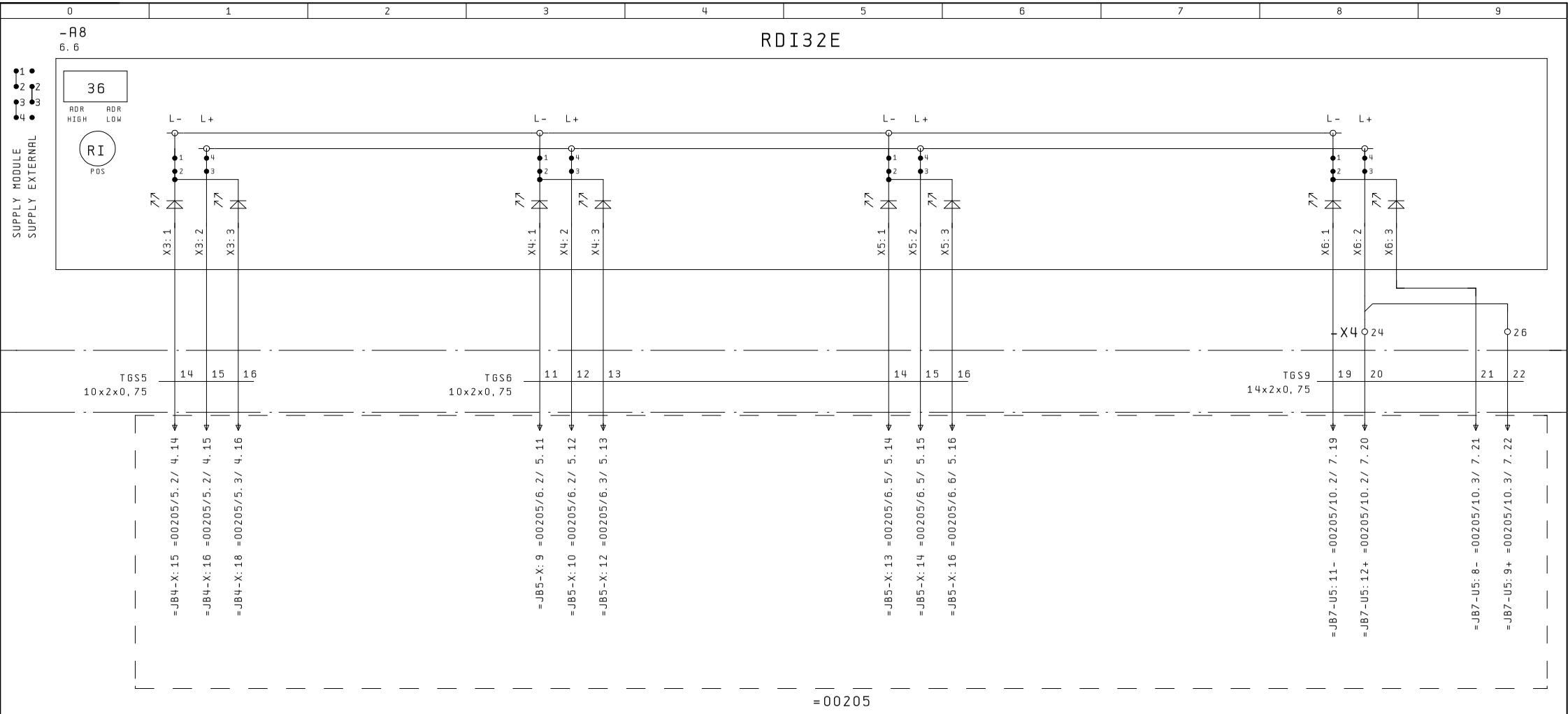
TANK GAUGING / CENTRAL STATION - TT

Wiring Diagram

RDI32E

A-34226- 00201 - SP

scale:
= 00201
+ SP
Sheet 21 / 25

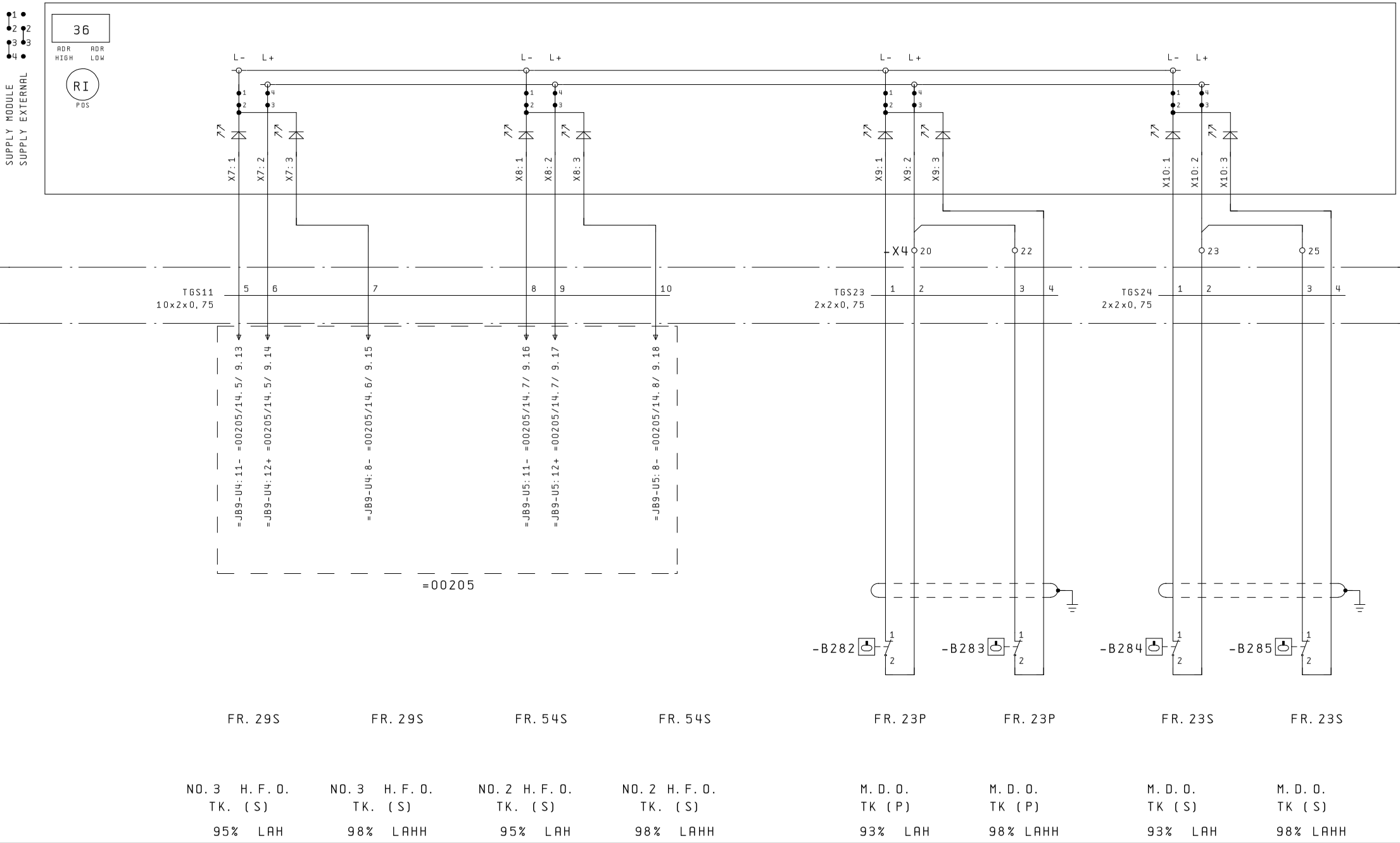


FR. 107P	FR. 107P	FR. 54P	FR. 54P	FR. 29P	FR. 29P	FR. 108S	FR. 108S
NO. 1 H. F. O. TK. (P) 95% LAH	NO. 1 H. F. O. TK. (P) 98% LAHH	NO. 2 H. F. O. TK. (P) 95% LAH	NO. 2 H. F. O. TK. (P) 98% LAHH	NO. 3 H. F. O. TK. (P) 95% LAH	NO. 3 H. F. O. TK. (P) 98% LAHH	NO. 1 H. F. O. TK. (S) 95% LAH	NO. 1 H. F. O. TK. (S) 98% LAHH

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT	RDI32E
Draw.	HaR			
Engin.	T. Meyer		Wiring Diagram	A-34226- 00201 - SP
Rev. No. 2.7	Rev. Date 28.04.08			scale: = 00201 + SP Sheet 22 / 25

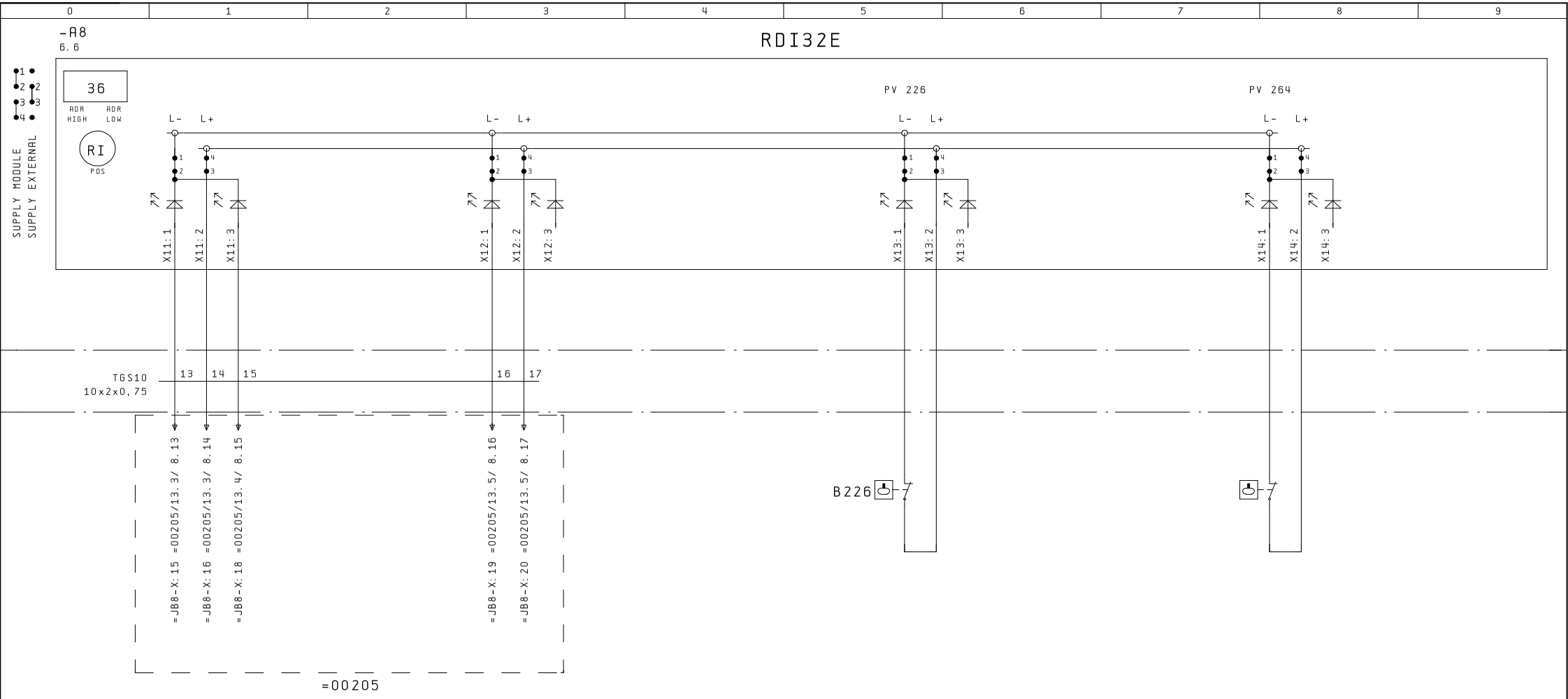
-A8
6.6

RDI32E



FR. 29S	FR. 29S	FR. 54S	FR. 54S	FR. 23P	FR. 23P	FR. 23S	FR. 23S
NO. 3 H. F. O. TK. (S) 95% LAH	NO. 3 H. F. O. TK. (S) 98% LAHH	NO. 2 H. F. O. TK. (S) 95% LAH	NO. 2 H. F. O. TK. (S) 98% LAHH	M. D. O. TK (P) 93% LAH	M. D. O. TK (P) 98% LAHH	M. D. O. TK (S) 93% LAH	M. D. O. TK (S) 98% LAHH

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT Wiring Diagram	RDI32E A-34226- 00201 - SP
Draw.	HaR			scale: = 00201 + SP
Engrn.	T. Meyer			Sheet 23 / 25
Rev. No. 2.7	Rev. Date 28.02.08			



FR. 149S

BOATSWAIN STORE

Bilge well

FR. 141P

VOID

Bilge well

FR. 141S

VOID

Bilge well

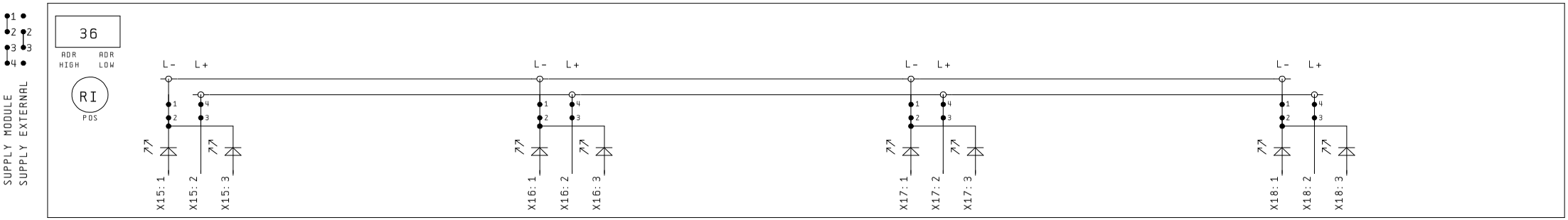
Frame 54P
FO. Overflow TK Level

Seawater Leakage
At Steering Gear
Room

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT Wiring Diagram	RDI32E	scale: = 00201
Draw.	HaR				+ SP
Engrn.	T. Meyer			A-34226- 00201 - SP	Sheet 24 / 25
Rev. No. 3.3	Rev. Date 09.02.09				

-A8
6.6

RDI32E



Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT Wiring Diagram	RDI32E	scale: = 00201
Draw.	HaR				+ SP
Engrn.	T. Meyer			A-34226- 00201 - SP	Sheet 25 / 25
Rev. No. 2.0	Rev. Date 28.02.08				

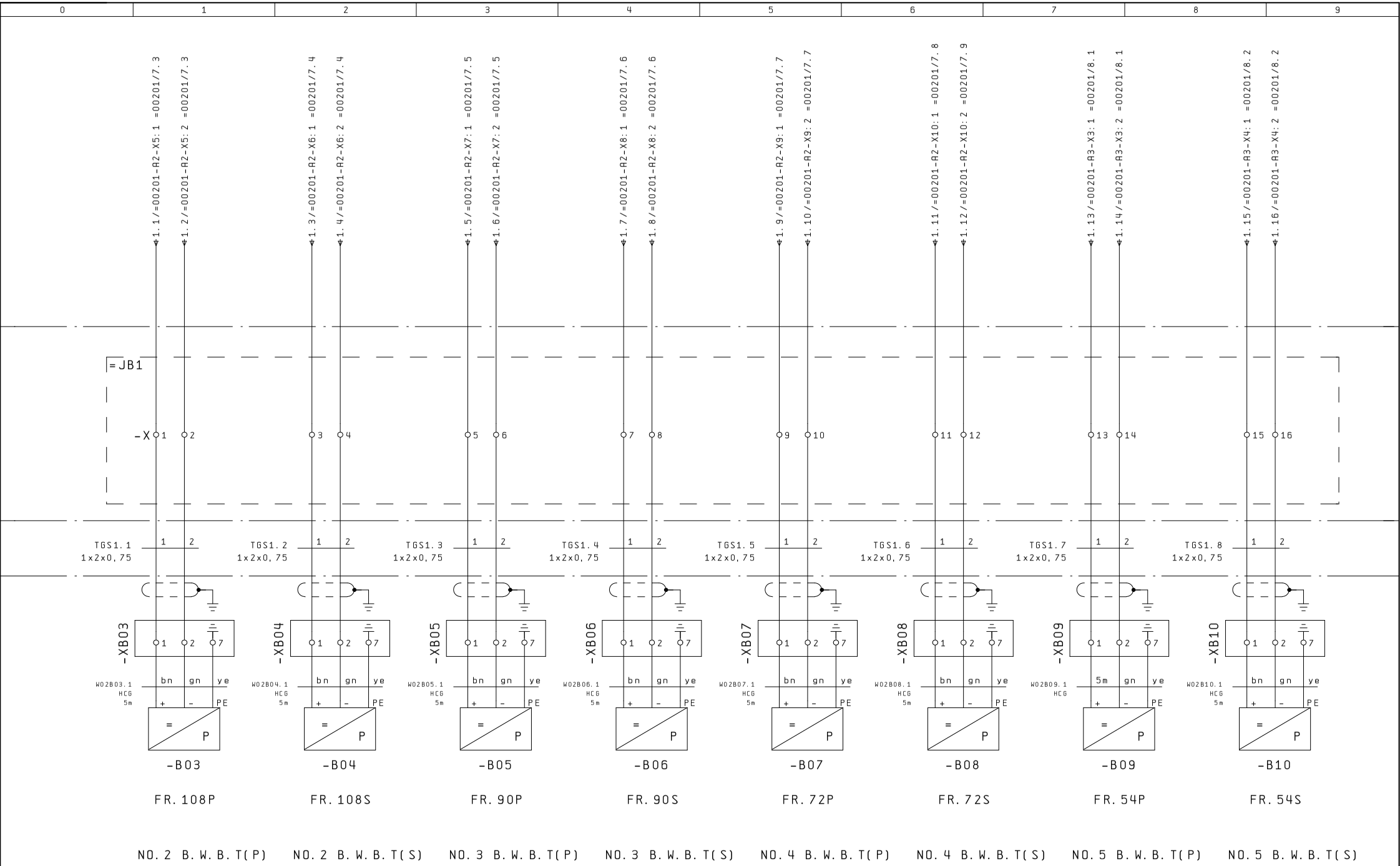
PART LIST

DESIGNATION (BMK)	QUANT	DESIGNATION		ARTICEL Nr.	WIRING DIAGR. POSITION
=00201-A1	1	POWER CABLE SET	HOMIP Supply	F-02536-10009	=00201+SP/3.0
=00201-A1	1	CABLE	HOMIP Sub-D-25	F-02536-10007	=00201+SP/3.0
=00201-A1	1	PROCESS CONTROL UNIT	HOMIP-IFC-144	F-02497-14003	=00201+SP/3.0
=00201-A2	1	ANALOG INPUT BOARD	RAD-8	F-02536-03003	=00201+SP/5.1
=00201-A3	1	ANALOG INPUT BOARD	RAD-8	F-02536-03003	=00201+SP/5.3
=00201-A4	1	ANALOG INPUT BOARD	RAD-8	F-02536-03003	=00201+SP/5.5
=00201-A5	1	ANALOG INPUT BOARD	RAD-8	F-02536-03003	=00201+SP/5.7
=00201-A6	1	ANALOG INPUT BOARD	RAD-8	F-02536-03003	=00201+SP/6.1
=00201-A7	1	ANALOG INPUT BOARD	RAD-8	F-02536-03003	=00201+SP/6.4
=00201-A8	1	DIGITAL INPUT BOARD	RDI-32-E	F-02536-01002	=00201+SP/6.6
=00201-A9	1	DIGITAL INPUT BOARD	RDI-32-E	F-02536-01002	=00201+SP/6.3
=00201-A10	1	ANALOG INPUT BOARD	RAD-8	F-02536-03003	=00201+SP/6.7
=00201-A11	1	BIAS SENSOR	IS2D10P03	K-03302-00000	=00201+SP/4.5
=00201-A11	1	CONNETION CABLE	120 Ohm	K-03478-00000	=00201+SP/4.5
=00201-A11	1	BRACKET	ISxx10P18	F-03382-01000	=00201+SP/4.5
=00201-C1	1	TRANSFER ELEMENT 25 POLE	UM 45-D 25SUB/S	K-01497-00000	=00201+SP/4.0
=00201-C1	1	CABLE	MIP Sub-D-25	F-02536-10005	=00201+SP/4.0
=00201-F1	1	POWER CIRCUIT BREAK CUTOUT	FAZ-C4/2	K-01885-00000	=00201+SP/1.0
=00201-G1	1	POWER SUPPLY	QUINT-PS-100-240AC/24DC/10	K-00877-00000	=00201+SP/1.0
=00201-L1	4	TERMINAL	QTC 1,5-TG	K-02563-00000	=00201+SP/1.2
=00201-L2	7	TERMINAL	QTC 1,5-TG	K-02563-00000	=00201+SP/1.2
=00201-U1	1	EX-ISOLATING-AMPLIFIER	MTL5074-RTD, TEMPERATURE TRANSDUCER	K-01658-00000	=00201+SP/16.7

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / CENTRAL STATION - TT	PART LIST	scale:
Draw.	DK				= 00201
Engin.	T. Meyer				+ ST
Rev. No. 2.2	Rev. Date 09.05.08		Part Lsit	A-34226- 00201 - ST	Sheet 1 / 2

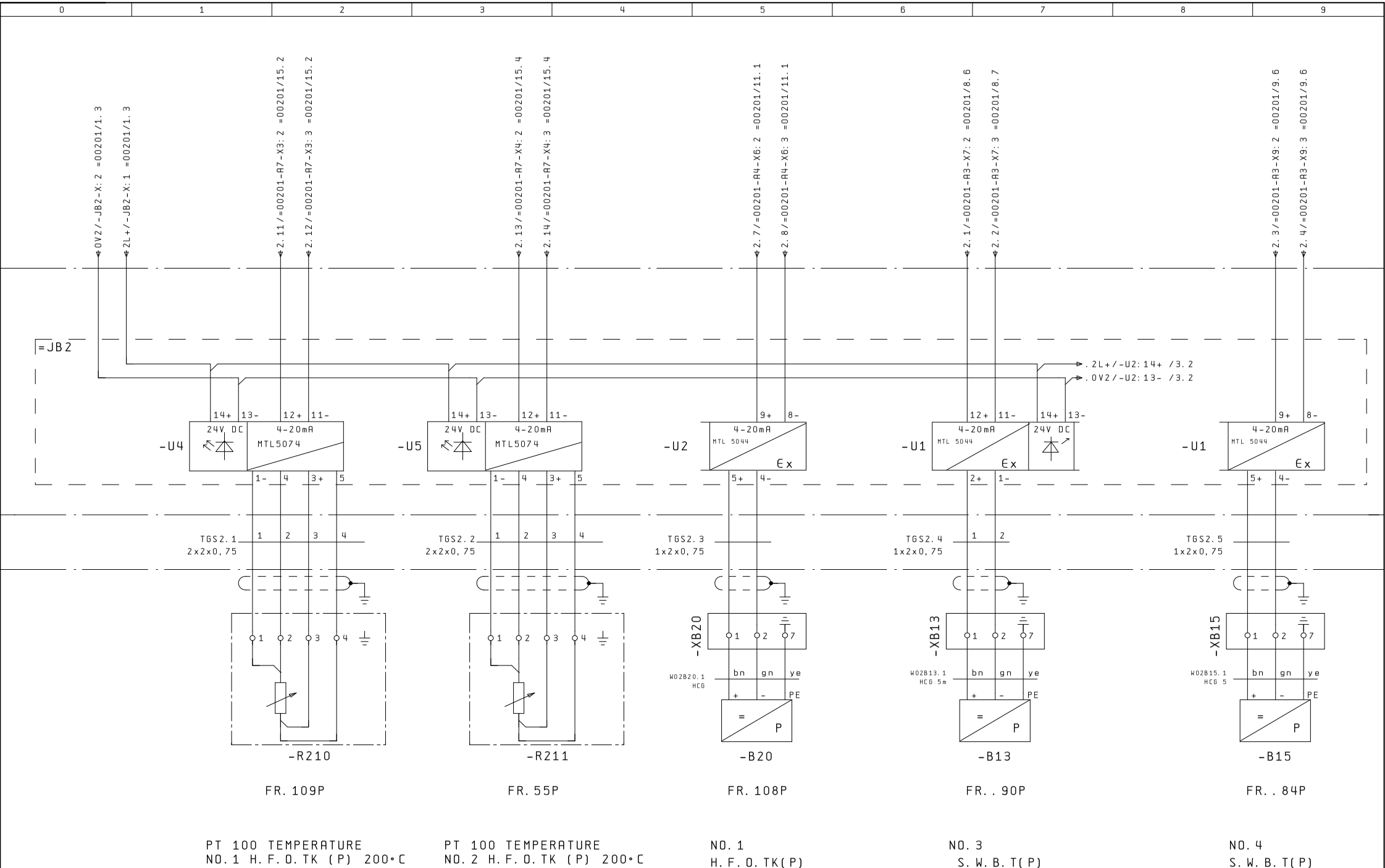
PART LIST

DESIGNATION (BMK)	QUANT	DESIGNATION		ARTICEL Nr.	WIRING DIAGR. POSITION
=00201-U2	1	EX-ISOLATING-AMPLIFIER	MTL5074-RTD, TEMPERATURE TRANSDUCER	K-01658-00000	=00201+SP/16.8
=00201-U3	1	EX-ISOLATING-AMPLIFIER	MTL5074-RTD, TEMPERATURE TRANSDUCER	K-01658-00000	=00201+SP/17.1
=00201-U4	1	EX-ISOLATING-AMPLIFIER	MTL5074-RTD, TEMPERATURE TRANSDUCER	K-01658-00000	=00201+SP/17.2
=00201-X1	2	TENSION SPRING TERMINAL	ST 4	K-00666-00000	=00201+SP/1.0
=00201-X1	2	TENSION SPRING TERMINAL	ST 4-PE	K-00667-00000	=00201+SP/1.0
=00201-X2	6	TENSION SPRING TERMINAL	STTB 2,5	K-00669-00000	=00201+SP/1.3
=00201-X3	3	DISCONNECTING TERMINAL	ST 2,5-MT	K-01465-00000	=00201+SP/2.3
=00201-X4	13	TENSION SPRING TERMINAL	STTB 2,5	K-00669-00000	=00201+SP/3.1
=00201-XF	8	FUSE TERMINAL	ST 4-HESILED 24 (5X20)	K-01348-00000	=00201+SP/1.2
=00201-XF	8	FUSE	5x20-1,6A-T	K-02292-00000	=00201+SP/1.2



Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / SUB-STATION TT TT Wiring Diagram	JB1
Draw.	DK			
Engrn.	T. Meyer			A-34226- 00205 - SP
Rev. No. 1.0	Rev. Date 28.02.08			

scale:
= 00205
+ SP
Sheet 1 / 15



PT 100 TEMPERATURE NO. 1 H. F. O. TK (P) 200°C

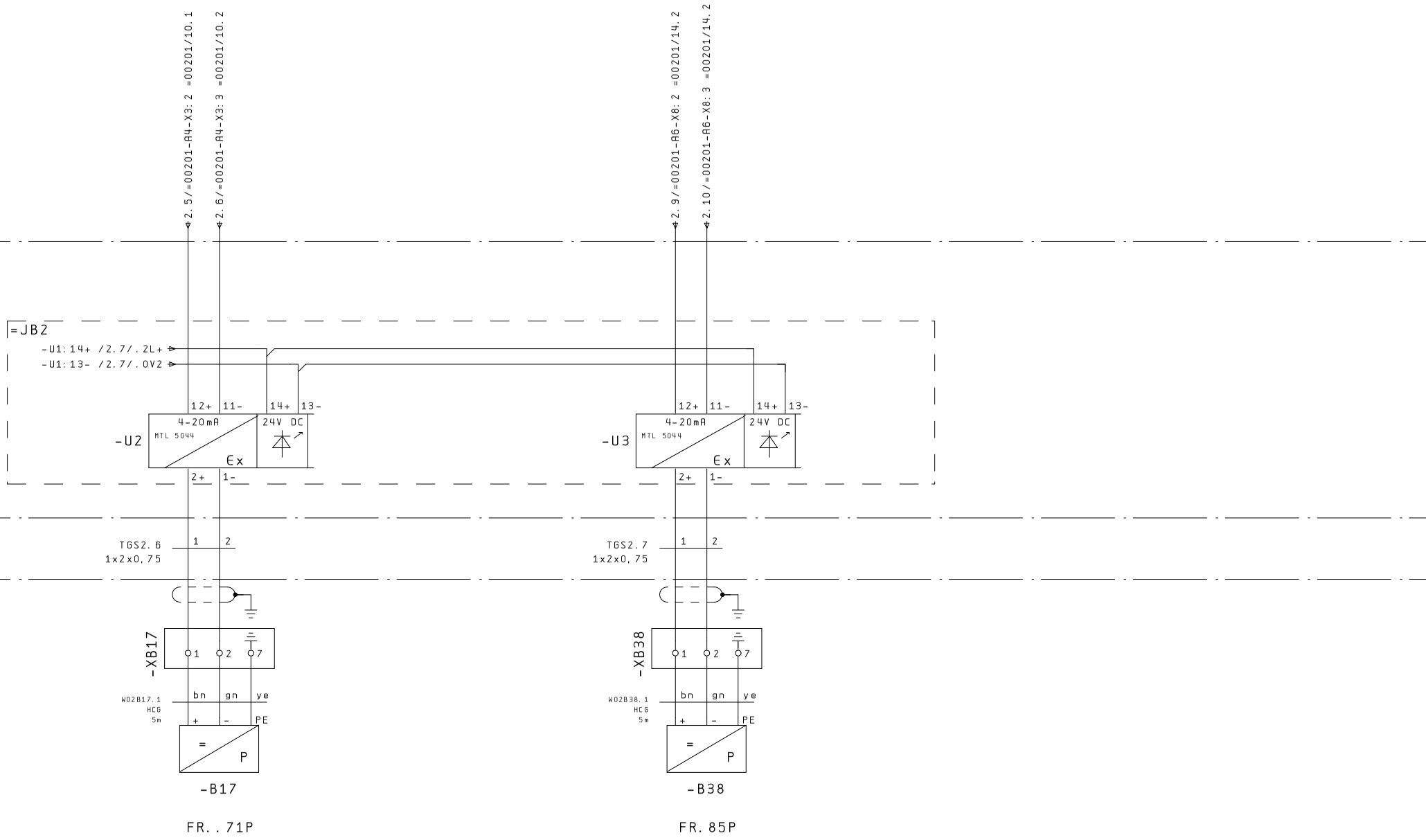
PT 100 TEMPERATURE NO. 2 H. F. O. TK (P) 200°C

NO. 1 H. F. O. TK(P)

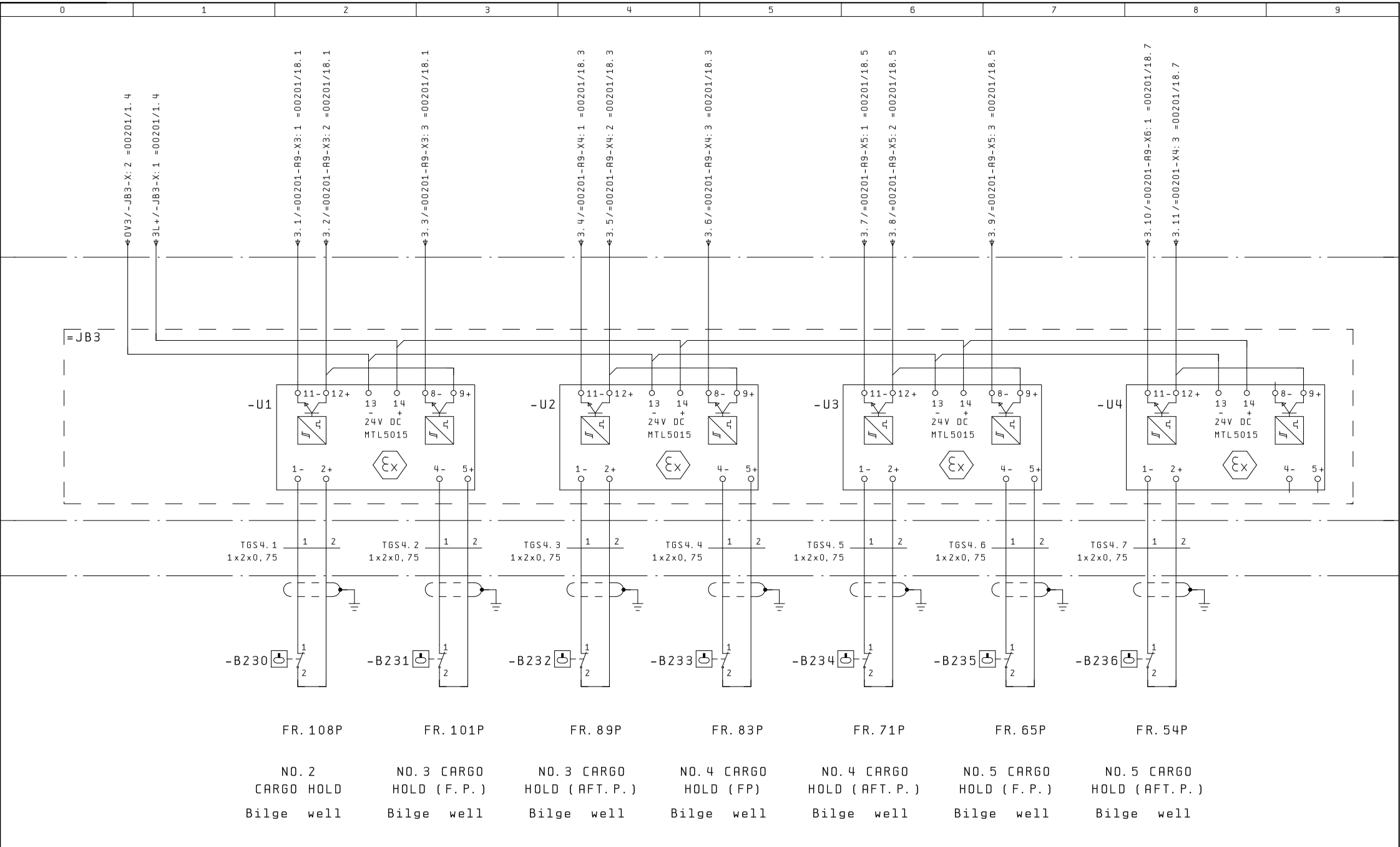
NO. 3 S. W. B. T(P)

NO. 4 S. W. B. T(P)

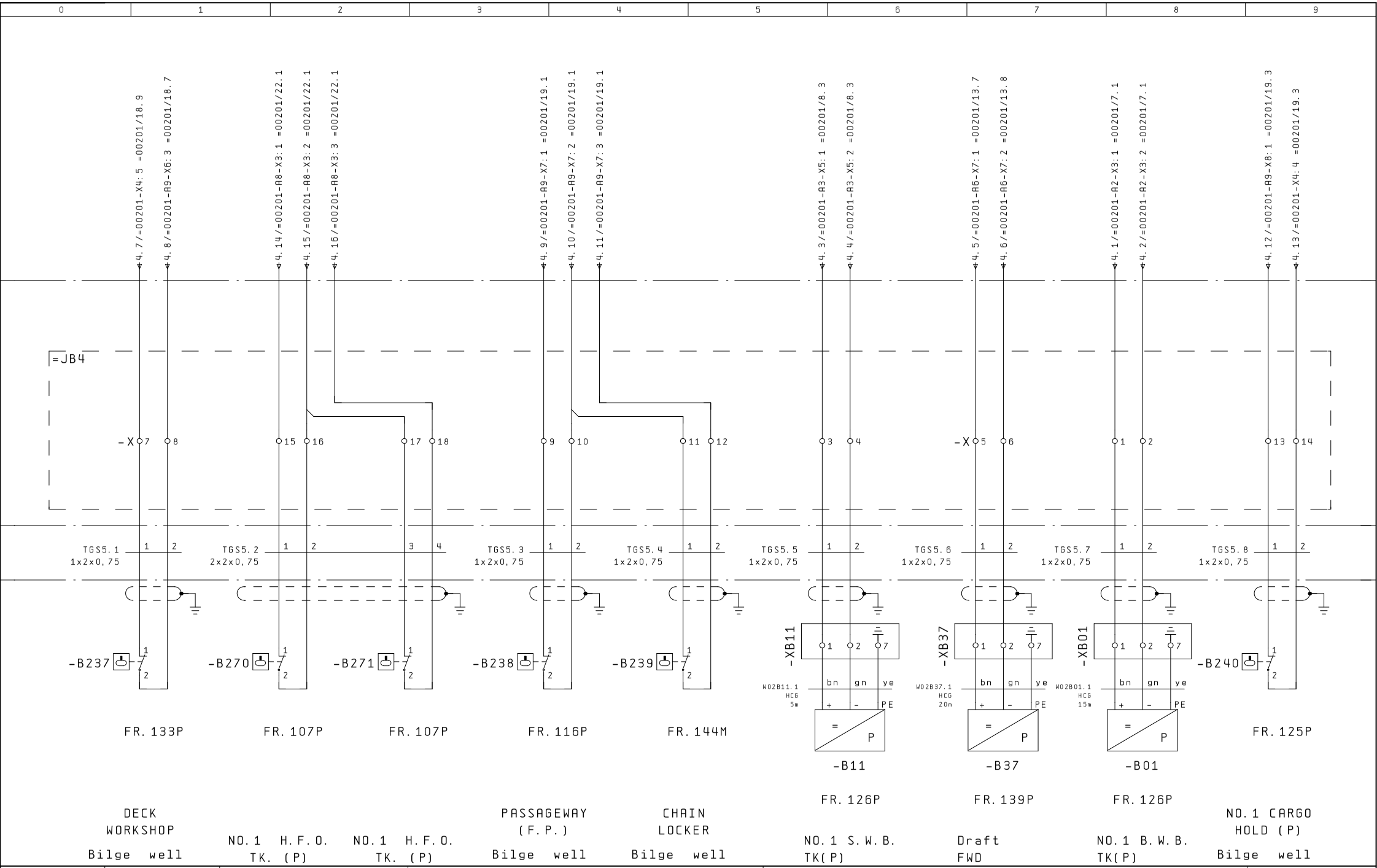
Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / SUB-STATION TT TT Wiring Diagram	JB2
Draw.	DK			
Engrn.	T. Meyer			A-34226- 00205 - SP
Rev. No. 1.0	Rev. Date 28.02.08			scale: = 00205 + SP Sheet 2 / 15



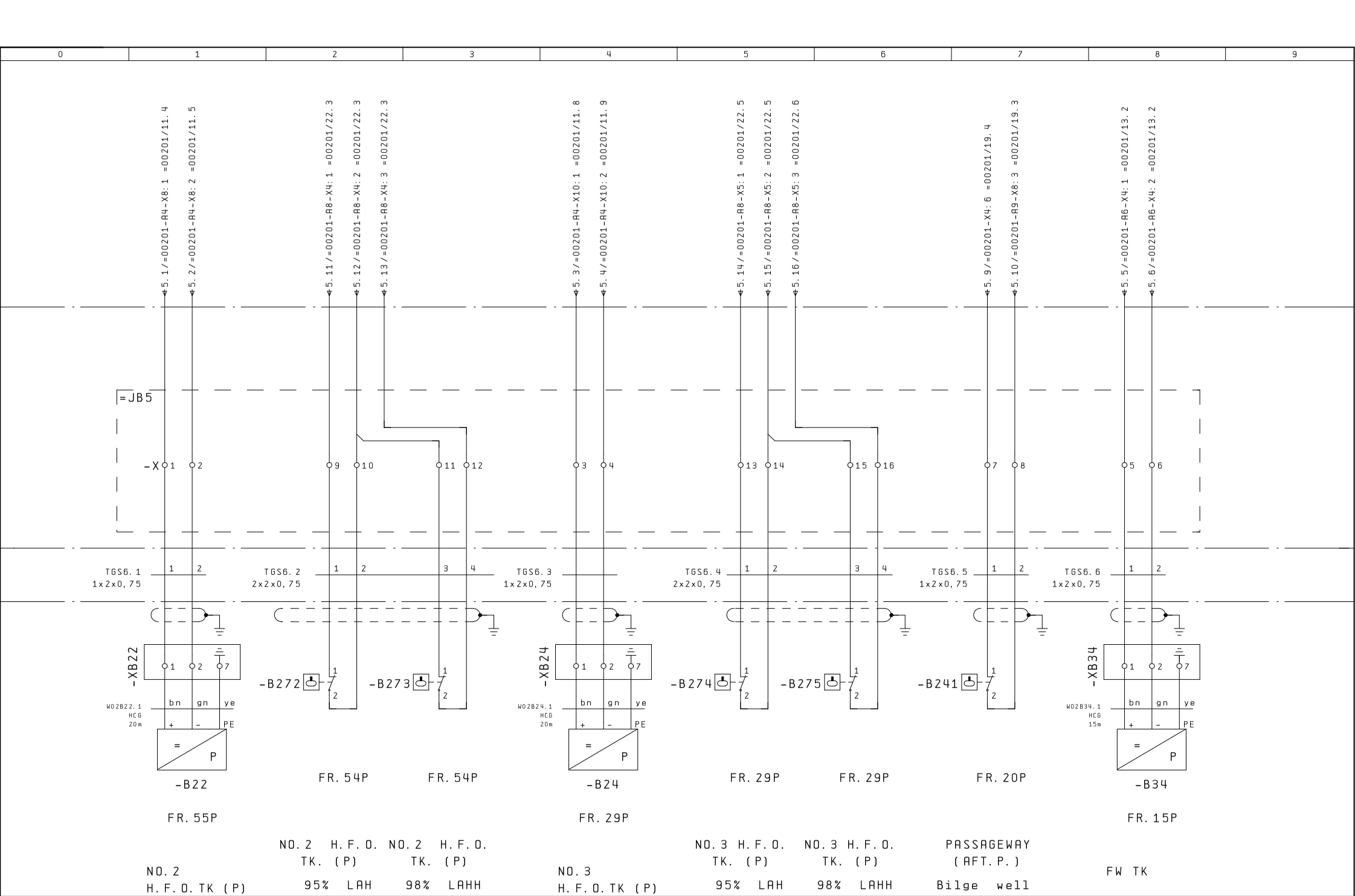
Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / SUB-STATION TT	JB2	scale:
Draw.	DK		TT		= 00205
Engrn.	T. Meyer				+ SP
Rev. No. 1.0	Rev. Date 28.02.08		Wiring Diagram	A-34226- 00205 - SP	Sheet 3 / 15



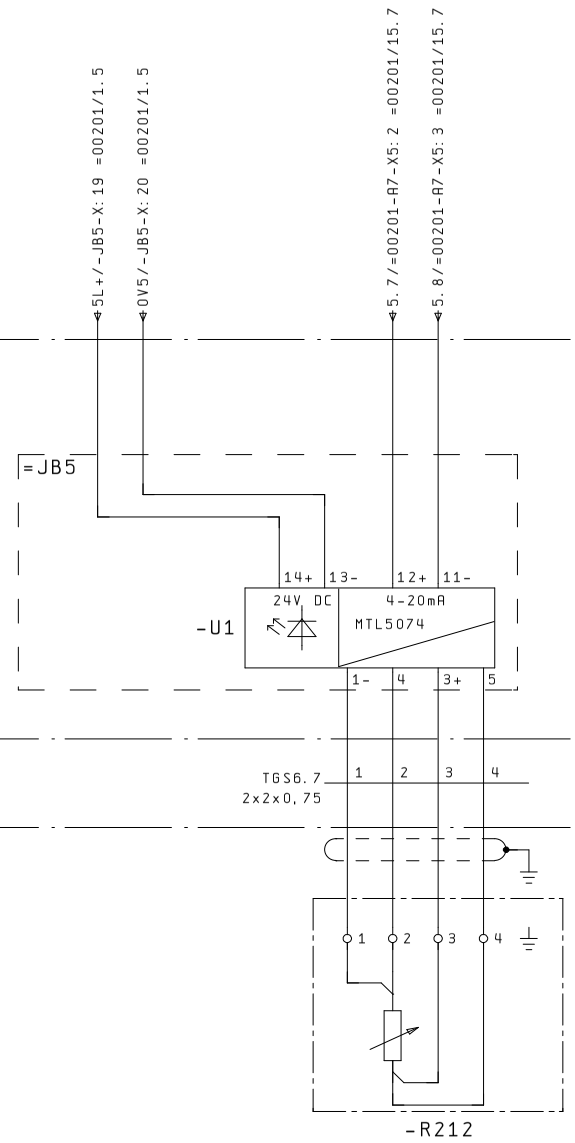
Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / SUB-STATION TT	JB3	scale:
Draw.	DK		TT		= 00205
Engin.	T. Meyer				+ SP
Rev. No. 1.0	Rev. Date 28.02.08		Wiring Diagram	A-34226- 00205 - SP	Sheet 4 / 15



Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / SUB-STATION TT TT Wiring Diagram	JB4
Draw.	DK			
Engin.	T. Meyer			A-34226- 00205 - SP
Rev. No. 1.0	Rev. Date 28.02.08			scale: = 00205 + SP Sheet 5 / 15



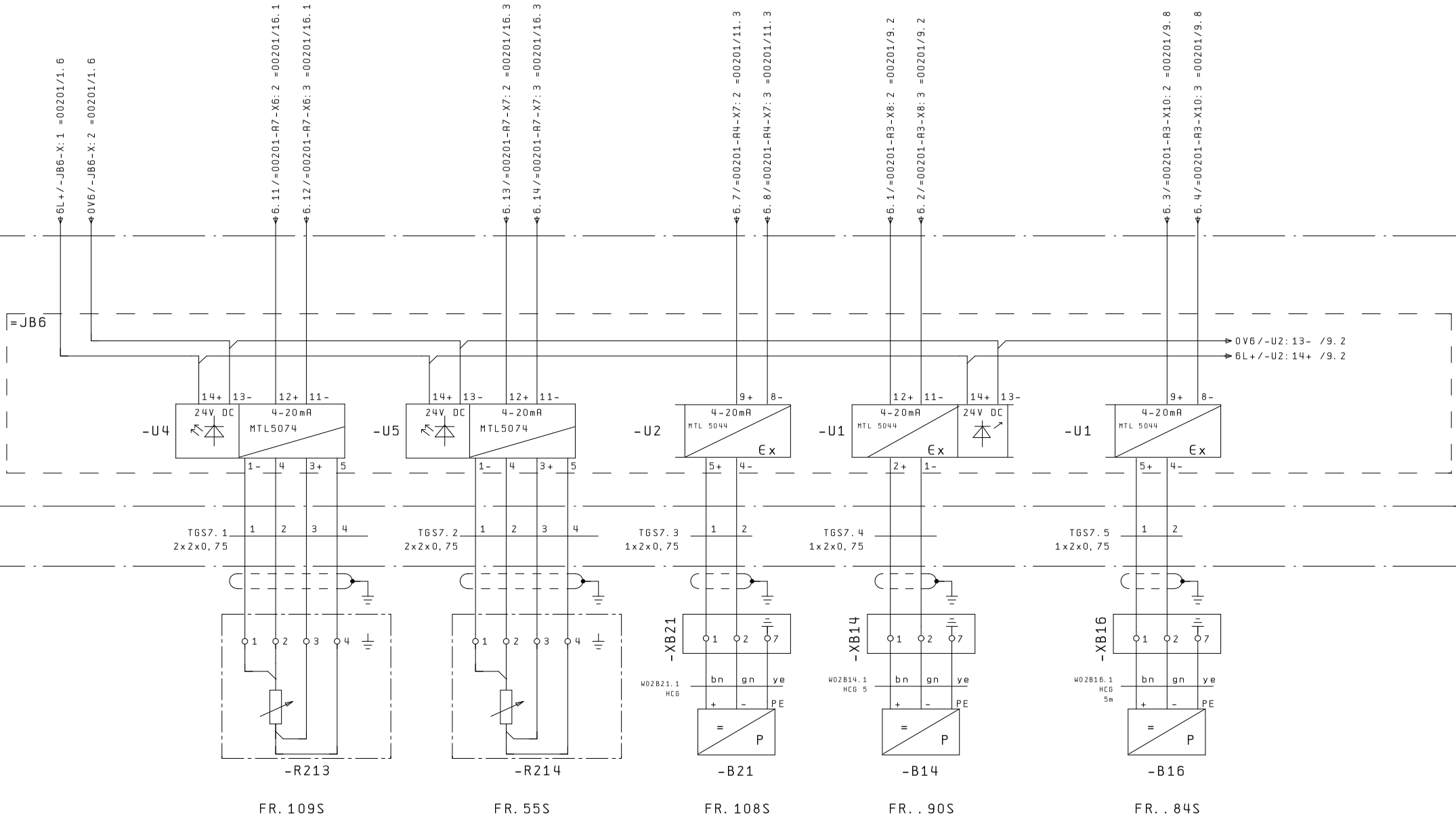
Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / SUB-STATION TT TT Wiring Diagram	JB5
Draw.	DK			
Engin.	T. Meyer			A-34226- 00205 - SP
Rev. No. 1.0	Rev. Date 28.02.08			scale: = 00205 + SP Sheet 6 / 15



FR. 29P

PT 100 TEMPERATURE
NO. 3 H.F.O. TK (P) 200°C

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / SUB-STATION TT TT Wiring Diagram	JB5	scale: = 00205 + SP
Draw.	DK				
Engrn.	T. Meyer			A-34226- 00205 - SP	Sheet 7 / 15
Rev. No. 1.0	Rev. Date 28.02.08				



PT 100 TEMPERATURE NO.1 H.F.O.TK (S) 200°C

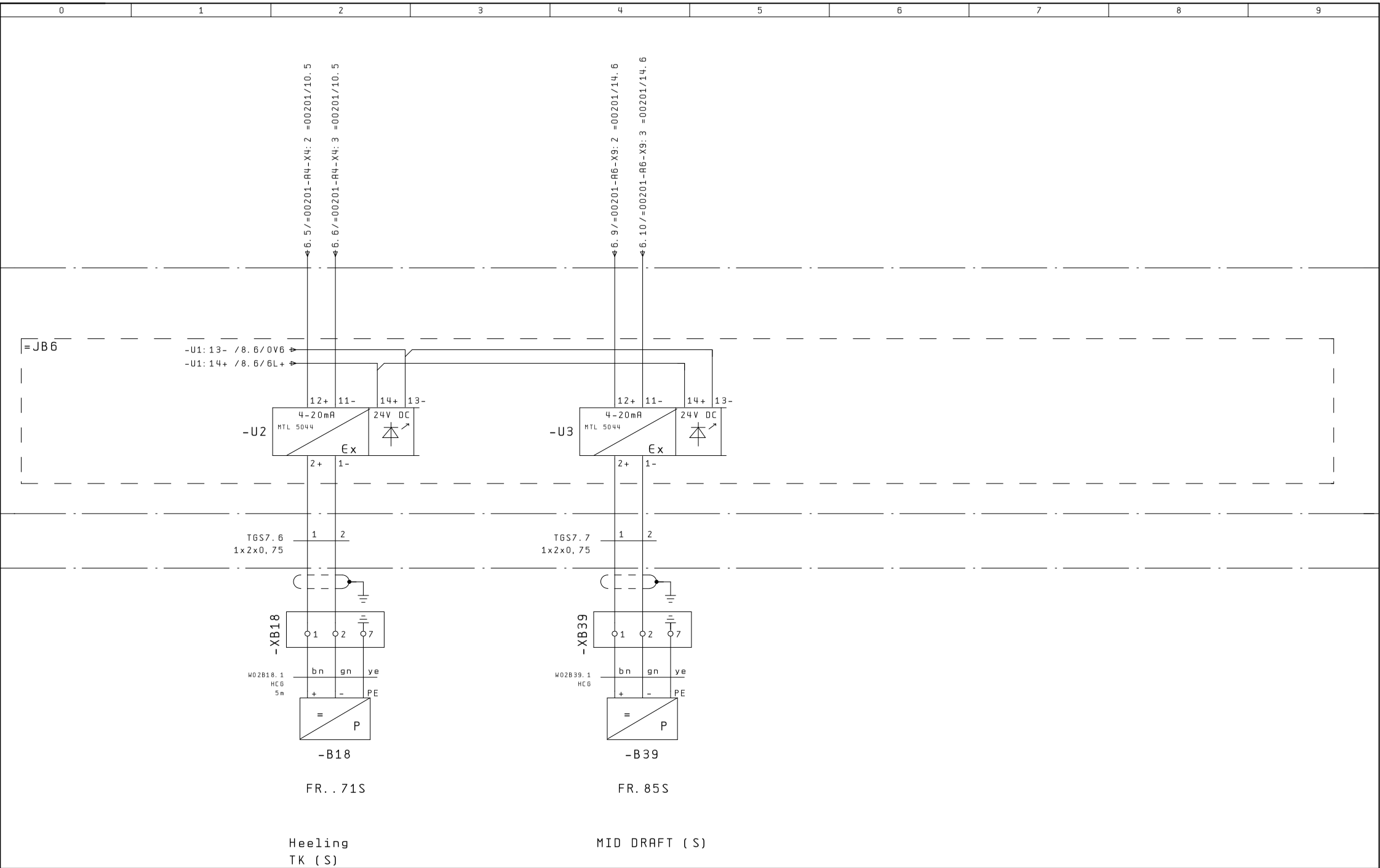
PT 100 TEMPERATURE NO.2 H.F.O.TK (S) 200°C

NO.1 H.F.O.TK (S)

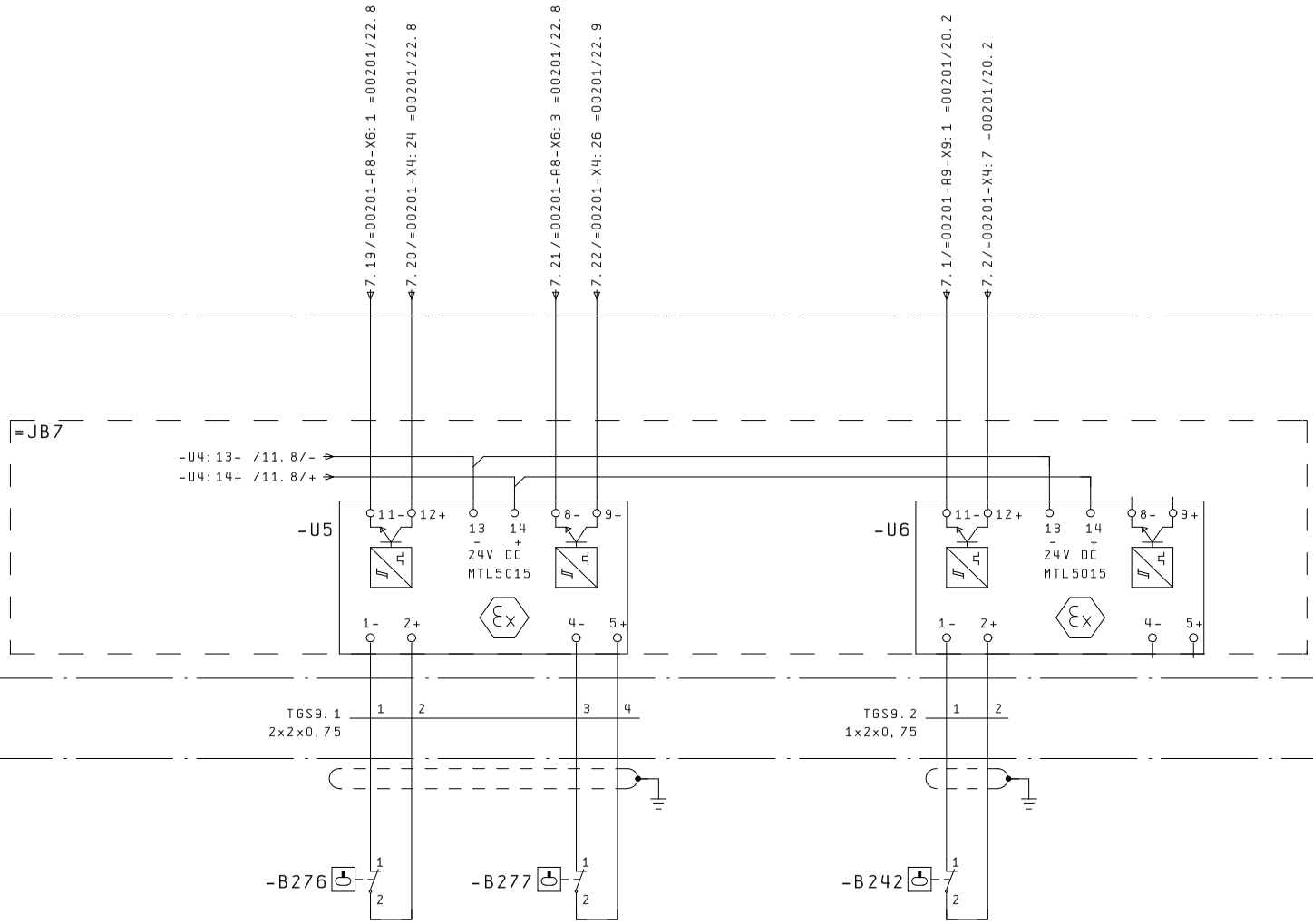
NO.3 S.W.B.T(S)

NO.4 S.W.B.T(S)

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / SUB-STATION TT TT Wiring Diagram	JB6	scale: = 00205 + SP
Draw.	DK				
Engrn.	T. Meyer			A-34226- 00205 - SP	Sheet 8 / 15
Rev. No. 1.0	Rev. Date 28.02.08				



Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / SUB-STATION TT	JB6	scale:
Draw.	DK		TT		= 00205
Engrn.	T. Meyer				+ SP
Rev. No. 1.0	Rev. Date 28.02.08		Wiring Diagram	A-34226- 00205 - SP	Sheet 9 / 15



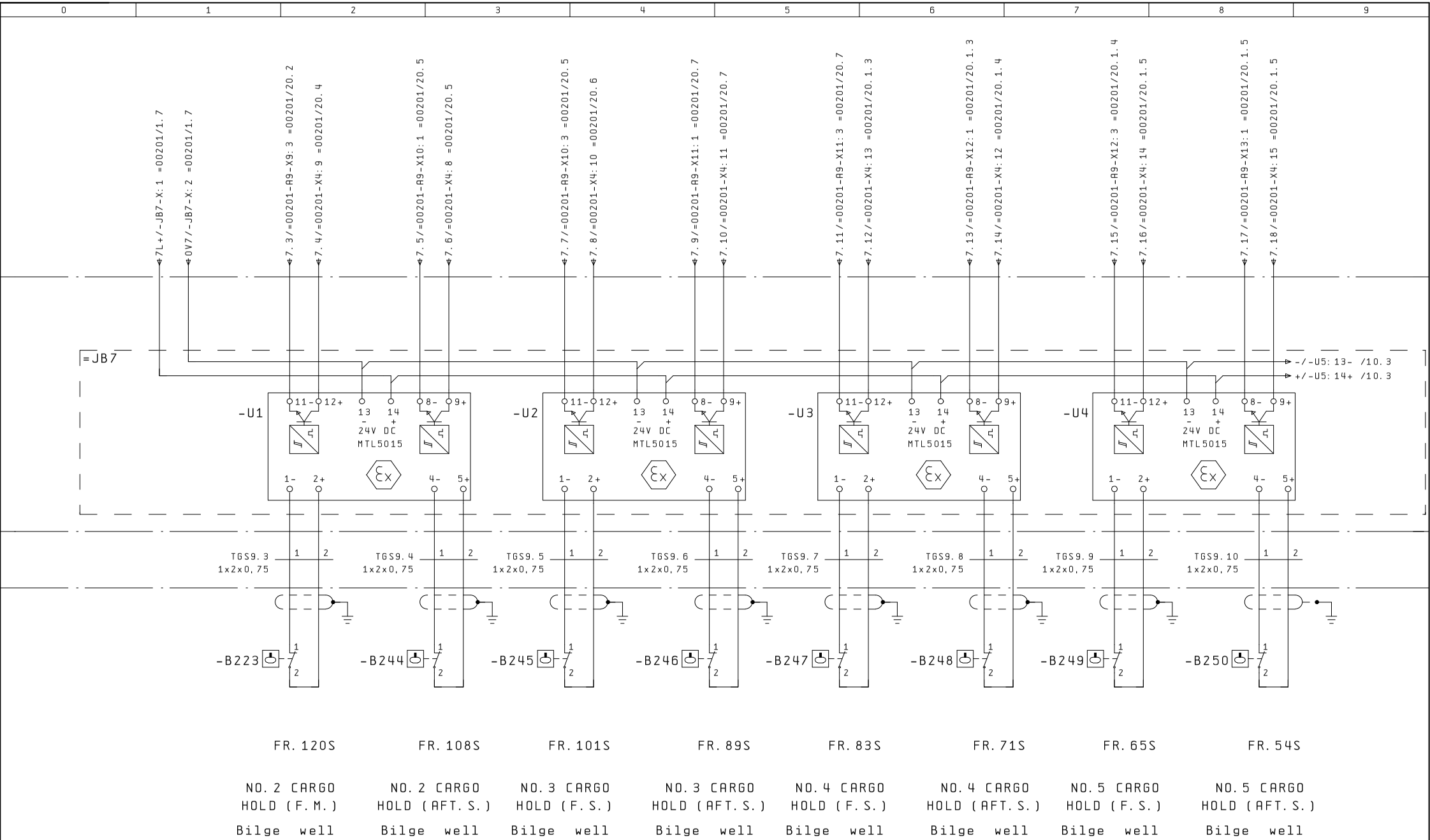
FR.108S FR.108S FR.116S

NO.1 H.F.O. TK. (S) 95% LAH

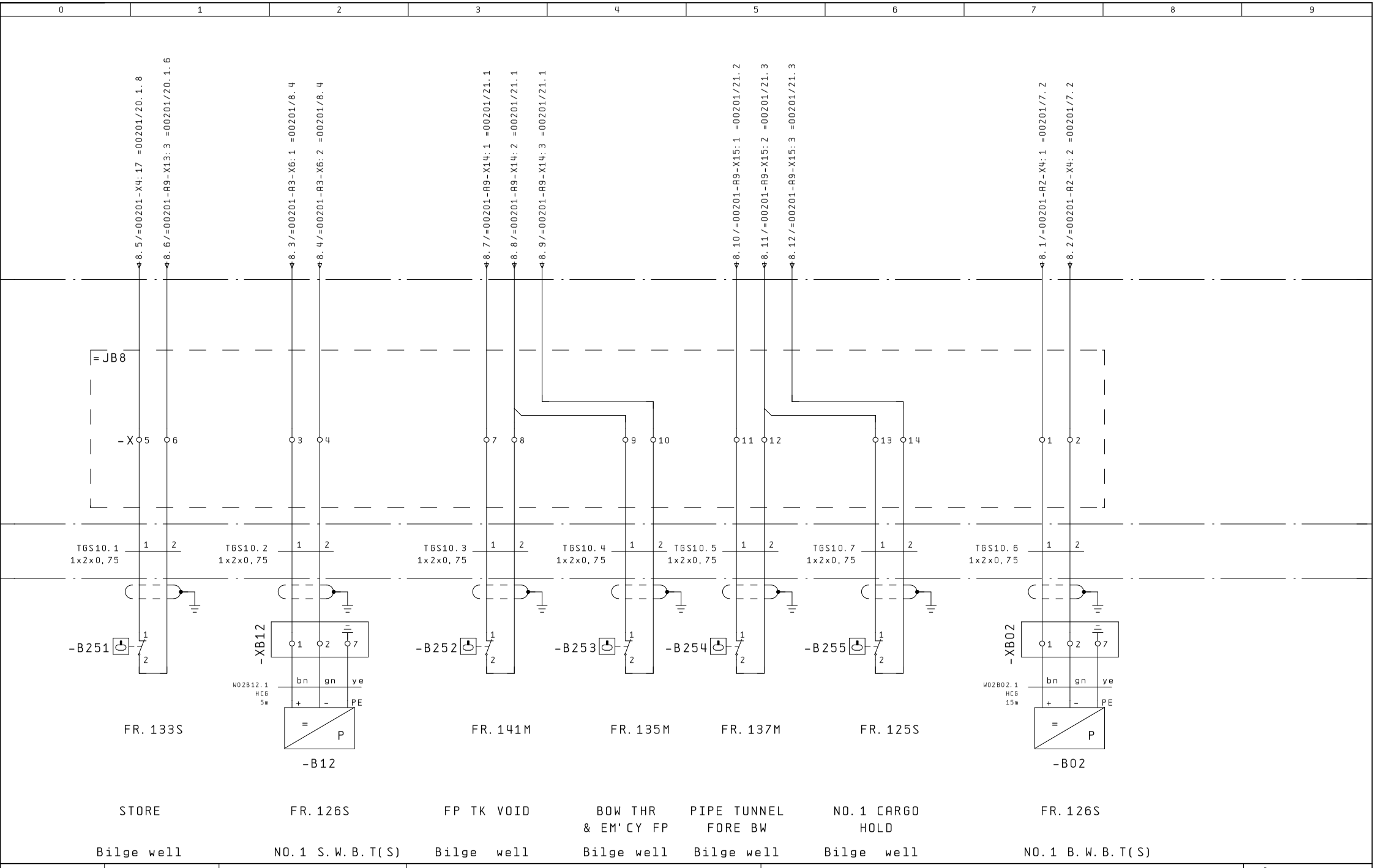
NO.1 H.F.O. TK. (S) 98% LAHH

PASSAGEWAY (F.S.) Bilge well

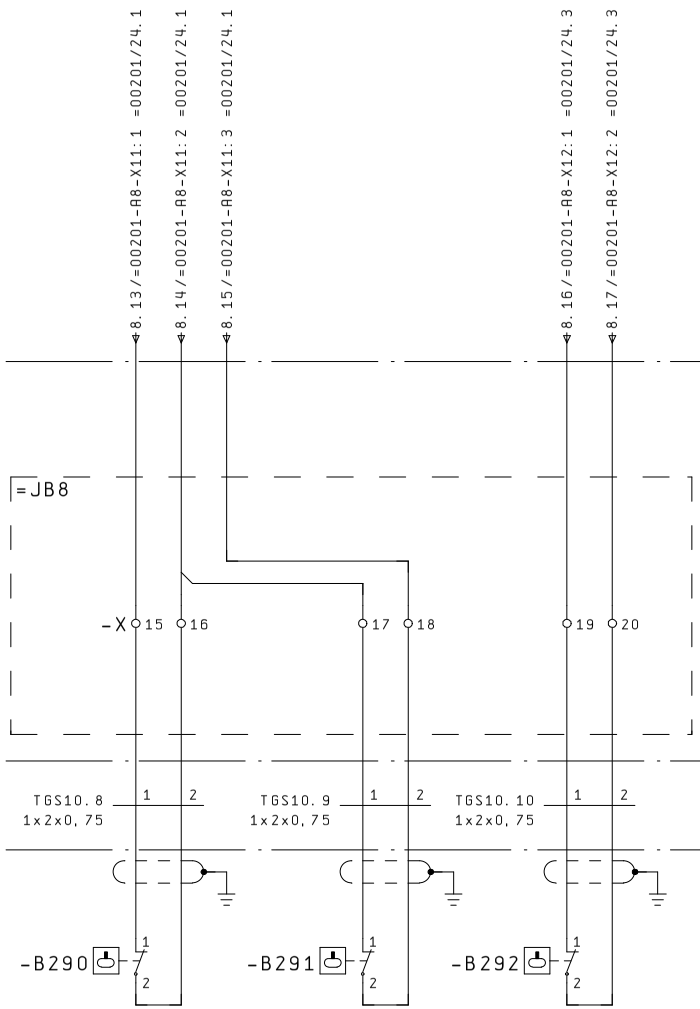
Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / SUB-STATION TT TT Wiring Diagram	JB7	scale: = 00205
Draw.	DK				+ SP
Engrn.	T. Meyer			A-34226- 00205 - SP	Sheet 10 / 15
Rev. No. 1.0	Rev. Date 28.02.08				



Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / SUB-STATION TT	JB7	scale:
Draw.	DK		TT		= 00205
Engrn.	T. Meyer				+ SP
Rev. No. 1.0	Rev. Date 28.02.08		Wiring Diagram	A-34226-00205 - SP	Sheet 11 / 15



Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / SUB-STATION TT	JB8	scale:
Draw.	DK		TT		= 00205
Engrn.	T. Meyer				+ SP
Rev. No. 1.1	Rev. Date 28.04.08		Wiring Diagram	A-34226- 00205 - SP	Sheet 12 / 15

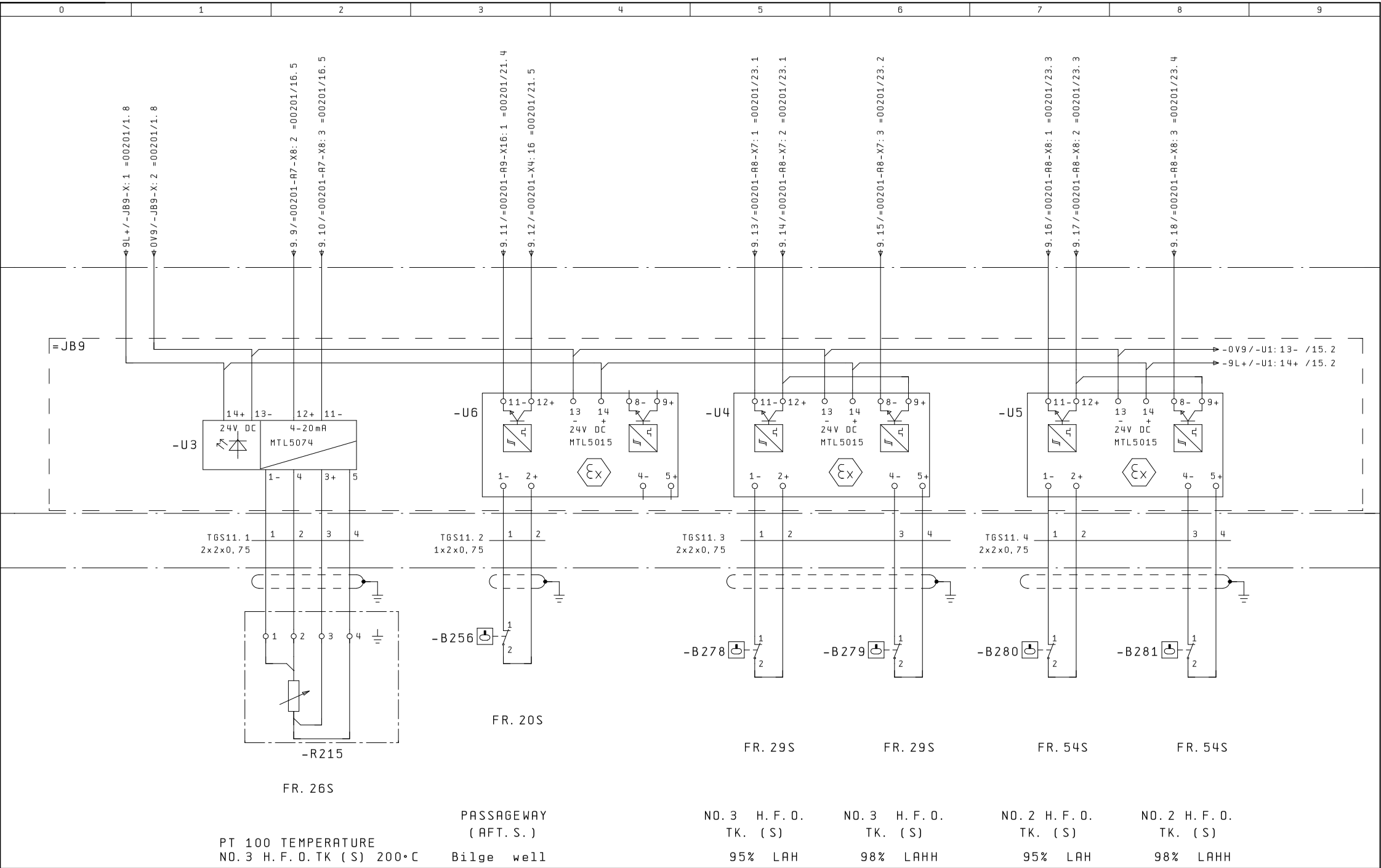


FR. 149S FR. 141P FR. 141S

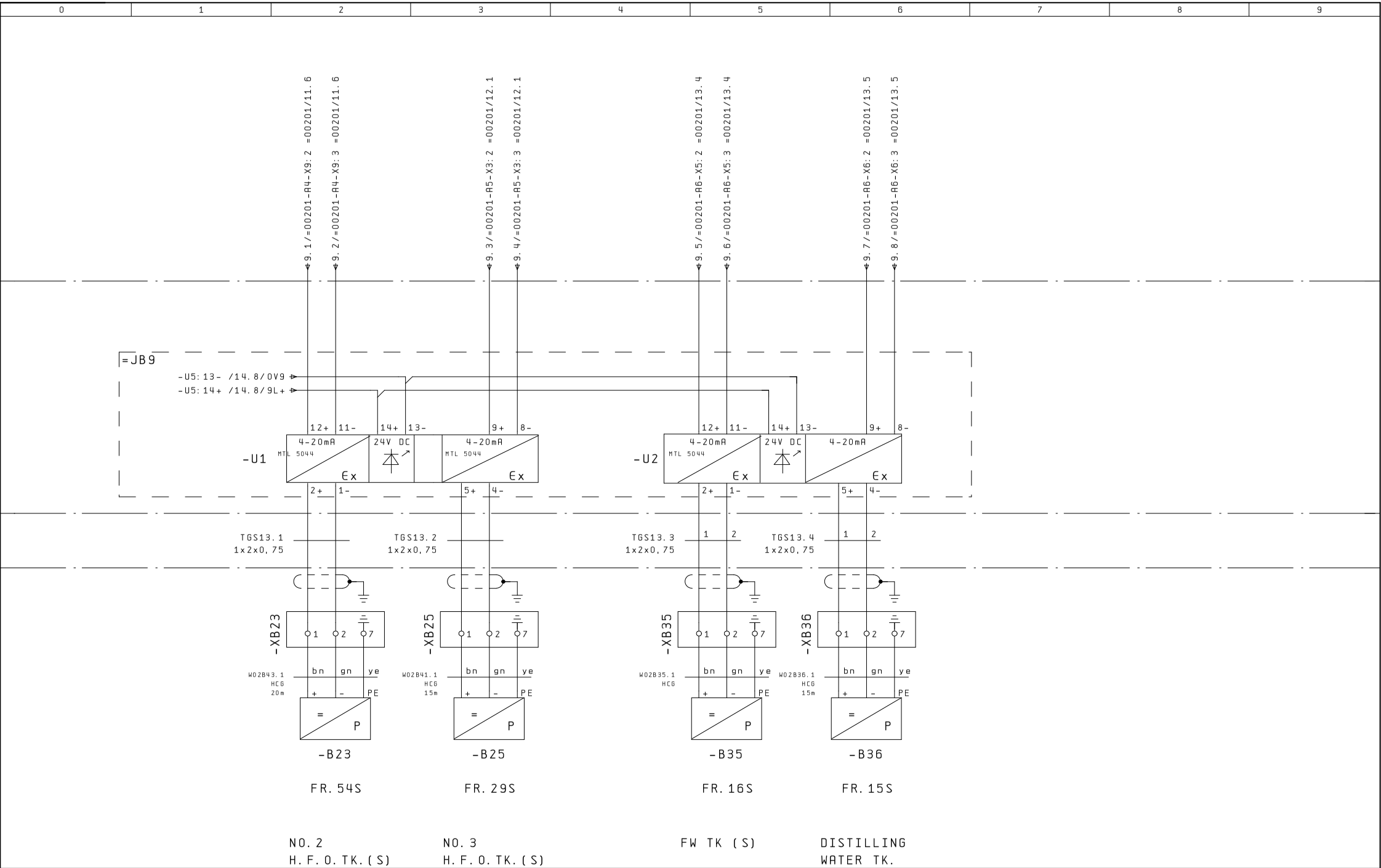
BOATSWAIN STORE VOID VOID

Bilge well Bilge well Bilge well

Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / SUB-STATION TT TT Wiring Diagram	JB8	scale: = 00205
Draw.	DK				+ SP
Engrn.	T. Meyer			A-34226- 00205 - SP	Sheet 13 / 15
Rev. No. 1.0	Rev. Date 28.02.08				



Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / SUB-STATION TT TT Wiring Diagram	JB9	scale: = 00205 + SP
Draw.	DK				
Engin.	T. Meyer			A-34226- 00205 - SP	Sheet 14 / 15
Rev. No. 1.0	Rev. Date 28.02.08				



Est. Date	21.03.07	HOPPE Bordmesstechnik GmbH	TANK GAUGING / SUB-STATION TT	JB9	scale: = 00205
Draw.	DK		TT		+ SP
Engrn.	T. Meyer		Wiring Diagram	A-34226- 00205 - SP	Sheet 15 / 15
Rev. No. 1.0	Rev. Date 28.02.08				

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PROCESS COMPONENTS TANK GAUGING

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Hoppe Bordmeßtechnik

Tank Sensor List CO 34226

Yard: JIEL Jason International Engineerin

Hull-No.: H2431

No	Tank Name	Display	Yard Code	EX	Tp	Sensor Typ	Tank H[m]	Range [mbar]	LC [mm]	Density [kg/l]	Cable [m]	Adr. BG51	Protect Pipe [m]	z-Pos [mm]	Cab No	mfs [m]	Tank Vol.[m³]	Adr. long	Adr. short
1	NO.1 B.W.B.T(P)	No1 B WBT(P)				**HCG 2011/4 KS**	9,556	1200,00	0	1,025	**15,2**		0,0	0	P1	0	404,51		
2	NO.1 B.W.B.T(S)	No1 B WBT(S)				**HCG 2011/4 KS**	9,556	1200,00	0	1,025	**15,2**		0,0	0	P1	0	404,51		
3	NO.2 B.W.B.T(P)	No2 B WBT(P)				**HCG 2011/4 FW**	4,372	600,00	0	1,025	**5,2**		0,0	0	P1	0	651,62		
4	NO.2 B.W.B.T(S)	No2 B WBT(S)				**HCG 2011/4 FW**	4,372	600,00	0	1,025	**5,2**		0,0	0	P1	0	651,62		
5	NO.3 B.W.B.T(P)	No3 B WBT(P)				**HCG 2011/4 FW**	4,372	600,00	0	1,025	**5,2**		0,0	0	P1	0	1123,63		
6	NO.3 B.W.B.T(S)	No3 B WBT(S)				**HCG 2011/4 FW**	4,372	600,00	0	1,025	**5,2**		0,0	0	P1	0	1123,63		
7	NO.4 B.W.B.T(P)	No4 B WBT(P)				**HCG 2011/4 FW**	4,372	600,00	0	1,025	**5,2**		0,0	0	P1	0	1401,86		
8	NO.4 B.W.B.T(S)	No4 B WBT(S)				**HCG 2011/4 FW**	4,372	600,00	0	1,025	**5,2**		0,0	0	P1	0	1401,86		
9	NO.5 B.W.B.T(P)	No5 B WBT(P)				**HCG 2011/4 FW**	4,372	600,00	0	1,025	**5,2**		0,0	0	P1	0	1172,43		
10	NO.5 B.W.B.T(S)	No5 B WBT(S)				**HCG 2011/4 FW**	4,372	600,00	0	1,025	**5,2**		0,0	0	P1	0	1132,28		
11	NO.1 S.W.B.T(P)	No1 S WBT(P)				**HCG 2011/4 FW**	12,96	1400,00	0	1,025	**5,2**		0,0	0	P1	0	895,5		
12	NO.1 S.W.B.T(S)	No1 S WBT(S)				**HCG 2011/4 FW**	12,96	1400,00	0	1,025	**5,2**		0,0	0	P1	0	895,5		
13	NO.3 S.W.B.T(P)	No3 S WBT(P)		X		**HCG 2011/4 FW**	12,96	1400,00	0	1,025	**5,2**		0,0	0	P1	0	1150,34		
14	NO.3 S.W.B.T(S)	No3 S WBT(S)		X		**HCG 2011/4 FW**	12,96	1400,00	0	1,025	**5,2**		0,0	0	P1	0	1150,34		
15	NO.4 S.W.B.T(P)	No4 S WBT(P)		X		**HCG 2011/4 FW**	12,96	1400,00	0	1,025	**5,2**		0,0	0	P1	0	532,67		
16	NO.4 S.W.B.T(S)	No4 S WBT(S)		X		**HCG 2011/4 FW**	12,96	1400,00	0	1,025	**5,2**		0,0	0	P1	0	532,67		
17	Heeling TK (P)	HEEL TK (P)		X		**HCG 2011/4 FW**	12,96	1400,00	0	1,025	**5,2**		0,0	0	P1	0	564,54		
18	Heeling TK (S)	HEEL TK (S)		X		**HCG 2011/4 FW**	12,96	1400,00	0	1,025	**5,2**		0,0	0	P1	0	564,54		
19	AFT Peak TK	AFT PEAK TK				**HCG 2011/4 FW**	6,06	800,00	0	1,025	**5,2**		0,0	0	P1	0	808,56		
20	NO.1 HFO TK (P)	No1 HFO (P)		X		**HCG 2011/4 FW**	12,96	1400,00	0	0,98	**25,2**		0,0	0	P1	0	1531,76		
21	NO.1 HFO TK (S)	No1 HFO (S)		X		**HCG 2011/4 FW**	12,96	1400,00	0	0,98	**25,2**		0,0	0	P1	0	1531,76		
22	NO.2 HFO TK (P)	No2 HFO (P)				**HCG 2011/4 KS**	12,96	1400,00	0	0,98	**20,2**		0,0	0	P1	0	1163,02		
23	NO.2 HFO TK (S)	No2 HFO (S)		X		**HCG 2011/4 KS**	12,96	1400,00	0	0,98	**20,2**		0,0	0	P1	0	1163,02		
24	NO.3 HFO TK (P)	No3 HFO (P)				**HCG 2011/4 KS**	9,65	1200,00	0	0,98	**20,2**		0,0	0	P1	0	453,08		
25	NO.3 HFO TK (S)	No3 HFO (S)		X		**HCG 2011/4 KS**	9,65	1200,00	0	0,98	**15,2**		0,0	0	P1	0	453,08		
26	HFO SETTL.TK.	HFO SETTL				**HCG 2011/4 FW**	8,64	1000,00	0	0,98	**10,2**		0,0	0	P1	0	124,12		
27	Low Sulfur H.F.O.SET	LS HFO SETTL				**HCG 2011/4 FW**	8,64	1000,00	0	0,98	**10,2**		0,0	0	P1	0	112,55		

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modified: 29.02.2008 14:06:30

TM

Hoppe Bordmeßtechnik

Tank Sensor List CO 34226

Yard: JIEL Jason International Engineerin

Hull-No.: H2431

No	Tank Name	Display	Yard Code	EX	Tp	Sensor Typ	Tank H[m]	Range [mbar]	LC [mm]	Density [kg/l]	Cable [m]	Adr. BG51	Protect Pipe [m]	z-Pos [mm]	Cab No	mfs [m]	Tank Vol.[m³]	Adr. long	Adr. short
28	HFO SERV.TK	HFO SERV TK				**HCG 2011/4 FW**	7,405	1000,00	0	0,98	**10,2**		0,0	0	P1	0	78,53		
29	Low Sulfur HFO SERV	LS HFO SERV				**HCG 2011/4 FW**	7,405	1000,00	0	0,98	**10,2**		0,0	0	P1	0	73,67		
30	MDO TK.(P)	MDO TK(P)				**HCG 2011/4 KS**	2,67	400,00	0	0,85	**15,2**		0,0	0	P1	0	311,16		
31	MDO TK.(S)	MDO TK (S)				**HCG 2011/4 KS**	2,67	400,00	0	0,85	**15,2**		0,0	0	P1	0	387,34		
32	MDO SERV.TK.	MDO SERV.TK				**HCG 2011/4 KS**	7,85	900,00	0	0,85	**15,2**		0,0	0	P1	0	62,29		
33	M/E L.O. SUMP. TK	M/E LO SUMP				**HCG 2011/4 KS**	2,07	300,00	0	0,85	**10,2**		0,0	0	P1	0	85,93		
34	FW TK (P)	FW TK (P)				**HCG 2011/4 KS**	7,58	900,00	0	1	**20,2**		0,0	0	P1	0	167,73		
35	FW TK (S)	FW TK (S)		X		**HCG 2011/4 KS**	7,58	900,00	0	1	**10,2**		0,0	0	P1	0	114,57		
36	Distilling Water TK	DIST W TK		X		**HCG 2011/4 KS**	7,22	900,00	0	1	**10,2**		0,0	0	P1	0	53,16		
37	Draft FWD	Draft FWD				**HCG 2011/4 FW**		1600,00	0	1,025	**5,2**		0,0	0	P1	0			
38	Draft MID-P	Draft MID-P		X		**HCG 2011/4 FW**		1600,00	0	1,025	**20,2**		0,0	0	P1	0			
39	Draft MID-S	Draft MID-S		X		**HCG 2011/4 FW**		1600,00	0	1,025	**20,2**		0,0	0	P1	0			
40	Draft AFT	Draft AFT				**HCG 2011/4 FW**		1600,00	0	1,025	**5,2**		0,0	0	P1	0			

generated:: 21.03.2007

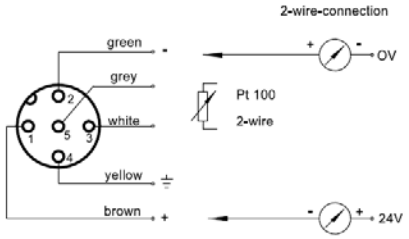
modified: 29.02.2008 14:06:30

TM

Material Number	F-02687-00001.ST
Designation	BALL VALVE
Typ	KG-25-16-FL-1 48-SS
Revision	1.1

Item	Quantity	Designation	Typ	Material Number
1	1 pcs	BALL VALVE	DN25 Type 2019 CF8M Flange PN16	K-00734-00000
2	1 pcs	LAPPED FLANGE	FL-25-16-1 48-SS	F-02030-21020
3	4 pcs	HEXAGON HEAD SCREW	DIN 933-M12x60-A4	K-01262-00000
4	4 pcs	HEXAGON NUT	DIN 934-M12-A4	K-00848-00000
5	4 pcs	WASHER	DIN 125-A13-A4	K-01099-00000
6	1 pcs	GASKET	DIN 2690- DN25- PN10	K-02264-00000

- Measuring ranges from 160 mbar to 3200 mbar
- Piezoresistive sensor element
- Output signal: 4...20 mA, 2-wire
- Programmable, communication FSK BUS
- On-board temperature measurement Pt 100
- Quickly disconnectable cable attachment
- Immersion case, material stainless steel epoxy resin coated diaphragm seal technology with non-stick coating
- GL/LR approval
- Explosion protection II 2G EEx ia IIC T6



The digital level transmitter submersible is designed for hydrostatic measurement of level in tanks. Due to its robust construction and proven reliability, the HCG2011_MO4 is especially suited for use in rough environments on ships and on off-shore plants.

Measuring range 0 bar ….4 bar

nominal range	measuring mode	measuring ranges	measuring spans		overload limits
			min. span	max. span	
2500 mbar	level	0...+2500 mbar	160 mbar	2500 mbar	6000 mbar
3200 mbar	relative	-800...+3200 mbar	600 mbar	4000 mbar	10000 mbar
2500 mbar abs	absolut	0...+2500 mbar abs	500 mbar	2500 mbar	6000 mbar abs

Housing design

Immersion case

degree of protection: IP 68, submersible, up to 10 bar

Materials

case: stainless steel epoxy resin coated
option: titanium

gaskets: FKM (Viton), Fluorcarbon-Elastomer

pluggable electrical connection: cable connection: stainless steel mat.no. 1.4462, NBR
stainless steel plug 5 poles

cable: pluggable, with polyamide plastic tube protection

Process connection

Type:

KS for standard applications
FW with flange adapter, see order details
GW with screw adapter, see order details

Measuring system

Sensor: piezoresistive measuring element, diaphragm seal technology with non-stick coating. System aeration via connection cable.

Supply

12…30 VDC

Housing design

type	ambient temperature	process temperature	storage temperature
KS	-20	-20 to 85 °C	-40
FW	to	-20 to	to
GW	85 °C	120 °C	85 °C

Output

Pressure

signal:	4...20 mA, 2-wire
current range:	3.8...20.8 mA
current limitation:	approx. 21.8 mA
alarm state:	< 3.6 mA, option: > 21 mA
response time:	160 ms
damping:	0...120 seconds
max. load at 24 V:	545 Ω

Temperature

signal:	Pt 100, 2-wire circuitry
accuracy:	class B according to EN 60751
application range:	-40...120 °C
response time:	approx. 10 min.

Accuracy

Referring to nominal range 2500 mbar (typical)

measuring range	2500 mbar	250 mbar	160 mbar
turndown	1 : 1	10 : 1	16 : 1
linearity/hysteresis/ repeatability	0,1 %	0,2 %	0,4 %
temperature influence	0,1 % 2,5 mbar	0,3 % 0,75 mbar	0,6 % 0,96 mbar

Calibration position: factory adjusted vertical mounting

Approval / Test

EMV tested: IACS E10
Ex-approval: TÜV 96 ATEX 1137 X

Electrical data

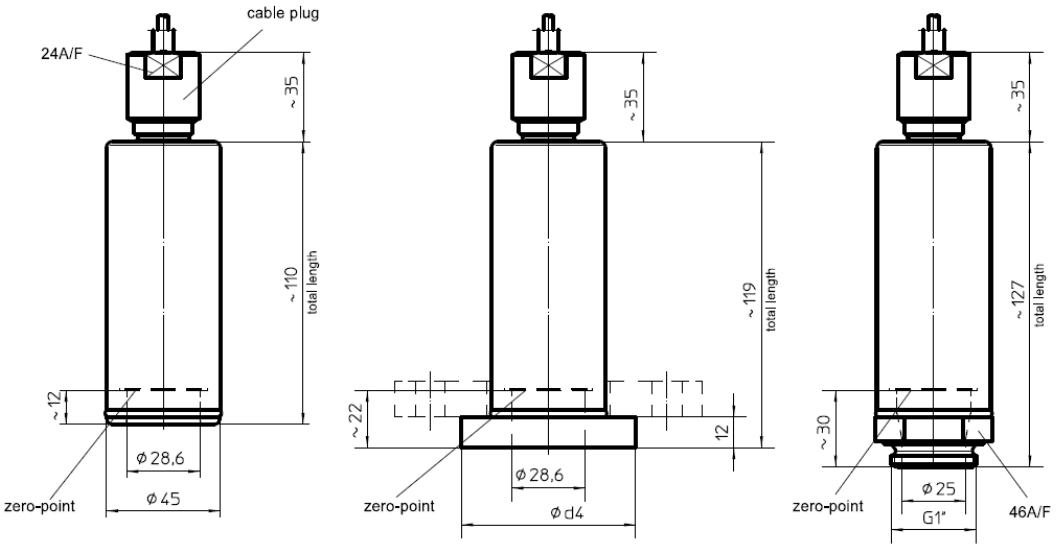
Input circuit: Intrinsic Safety II 2G EEx ia IIC T6
maximum values:
Ui = 30 V
Ii = 150 mA
Pi = 0.7 W

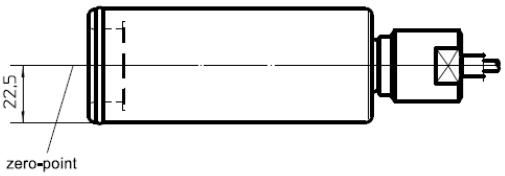
Pt 100 circuit: Intrinsic Safety II 2G EEx ia IIC T6
maximum values:
Ui = 20 V
Ii = 320 mA
Pi = 0.1 W

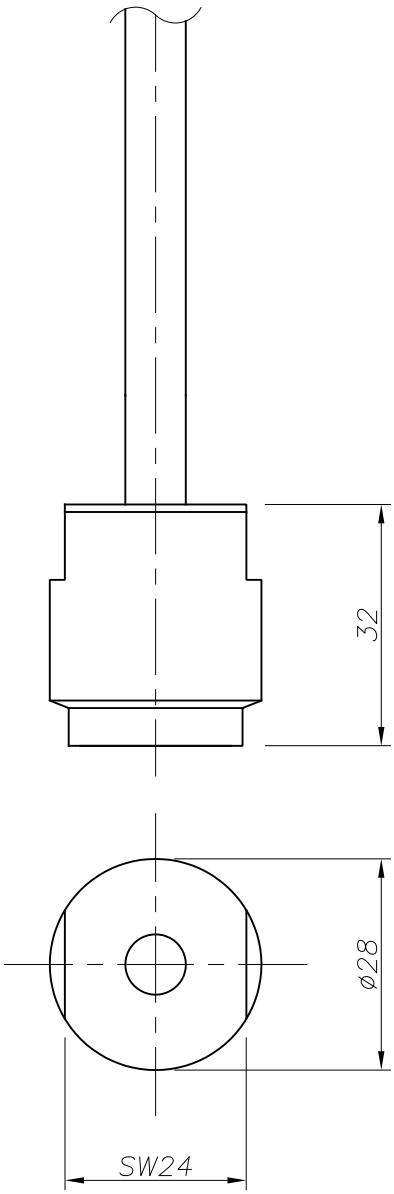
Parameterization

Adjustable with the software

Parameters		variabilty/range	default
span	range:	from 160 to 3200 mbar (see instrument ranges	nominal range
zero point	range:	-800...0...	0
pressure	unit:	mbar, mm WS (mm H20), mm LC	mbar
density	range:	0.5 t/m³ - 2.0 t/m³	1 t/m³
damping	range:	0...120 sec.	0.0 sec.
installation	position:	VERTICAL, HORIZONTAL, OVERARM	VERTICAL
alarm	current:	LO <3.6 mA, Hi >21.0 mA	LO
loop test	-	4...20 mA	—


cable plug
24A/F
~ 35
~ 110
total length
12
ø 28,6
ø 45
zero-point
type KS
standard design
~ 35
~ 119
total length
~ 22
12
ø 28,6
ø d4
zero-point
type FW
flange adapter acc. to
DIN EN 1092-1 form B1
~ 35
~ 127
total length
~ 30
ø 25
G1"
zero-point
46A/F
type GW
screw adapter
connection G 1"


22,5
zero-point



Material Number	Typ	Cable length
F-02539-01002	SK-HCG-M02-2,5	2,5 m
F-02539-01005	SK-HCG-M02-5	5 m
F-02539-01010	SK-HCG-M02-10	10 m
F-02539-01015	SK-HCG-M02-15	15 m
F-02539-01020	SK-HCG-M02-20	20 m
F-02539-01025	SK-HCG-M02-25	25 m
F-02539-01030	SK-HCG-M02-30	30 m
F-02539-01035	SK-HCG-M02-35	35 m
F-02539-01040	SK-HCG-M02-40	40 m

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	rev.No	date	name
draw.	est.	5.1.06	JMe
eng.	est.	6.1.06	GB
rev.			

HOPPE Bordmesstechnik GmbH

F-02539-00000.SZ

Sensor Cable

SK-HCG-M02-...

General View

Order: Standard

Source:

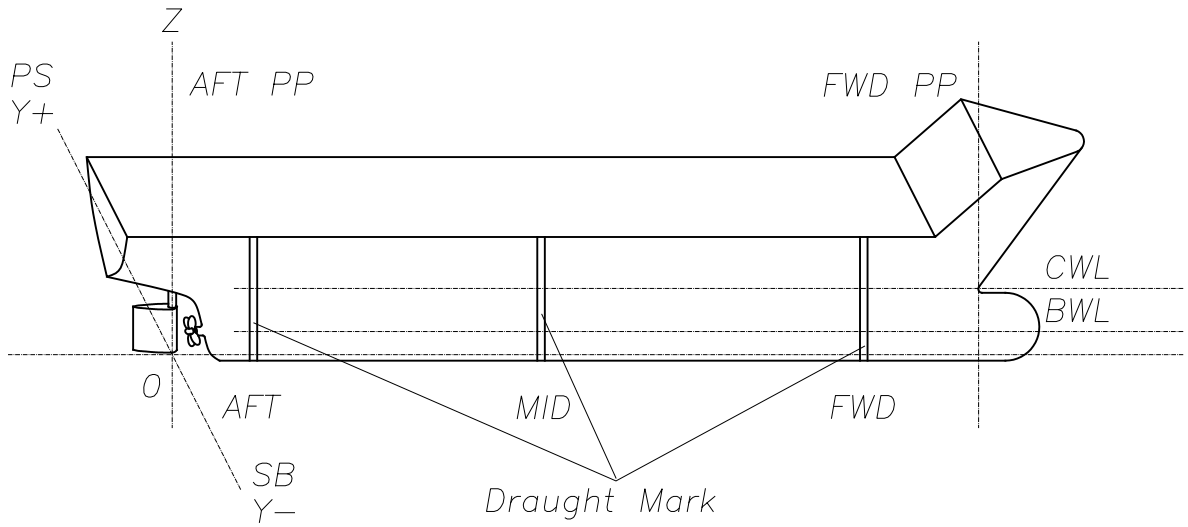
Scale: no scaling

Material:

Tolerances(mm):

Surface:

Page: 1/1



Sensor Installation

Ship's data

length (bPP): _____ m

breadth (max) _____ m

draught (max) _____ m

draught (min) _____ m

Sensor

sensor range _____ mB

	aft	mid(PS)	mid(SB)	fwd
X	m	m	m	m
Y	m	m	m	m
Z	m	m	m	m

Draught mark

	aft	mid(PS)	mid(SB)	fwd
X	m	m	m	m

Please indicate aft draught mark on seperate table if the mark do not follow a straight line !

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	rev.No	date	name
draw.	est.	21.9.07	JMe
eng.	est.	21.9.07	JMe
rev.	1.0	21.9.07	JMe

HOPPE Bordmesstechnik GmbH

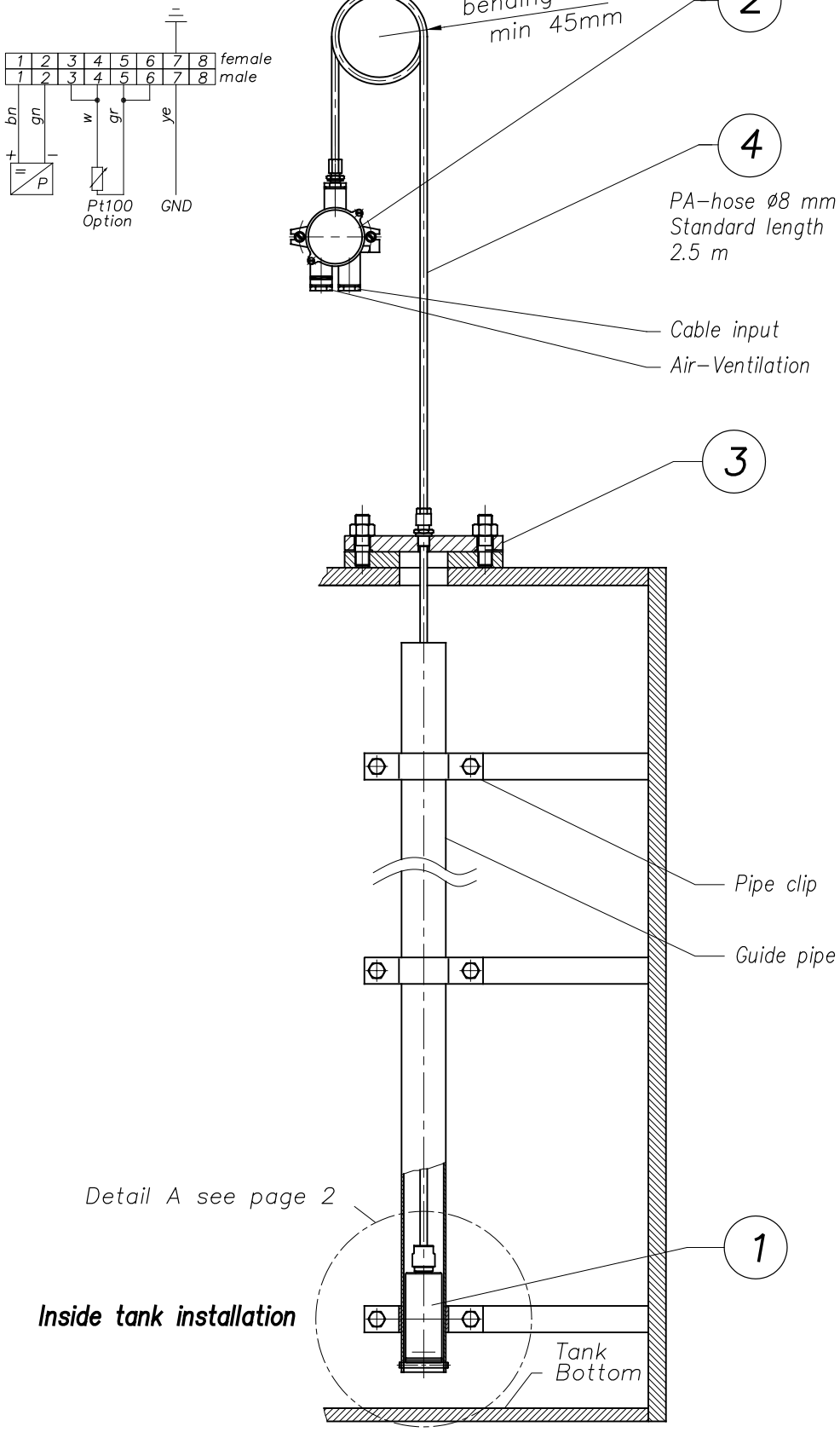
F−02555−00001.KD

DRAUGHT−MEASURING−SYST

TM−SENSORPOSITION PARAMETER SHEET

Order: Standard | Source: | Page: 1/1

Scale | Material | Tolerances(mm) | Surface



Inside tank installation

Hoppe delivery see delivery specification

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	rev.No	date	name
draw.	est.	10.1.06	JMe
eng.	est.	10.1.06	GB
rev.			

HOPPE Bordmesstechnik GmbH

F–02550–00000.IZ

Sensor Installation

SI–HCG–2011–KS–FU

Installation Drawing

Scale: no scaling

Material:

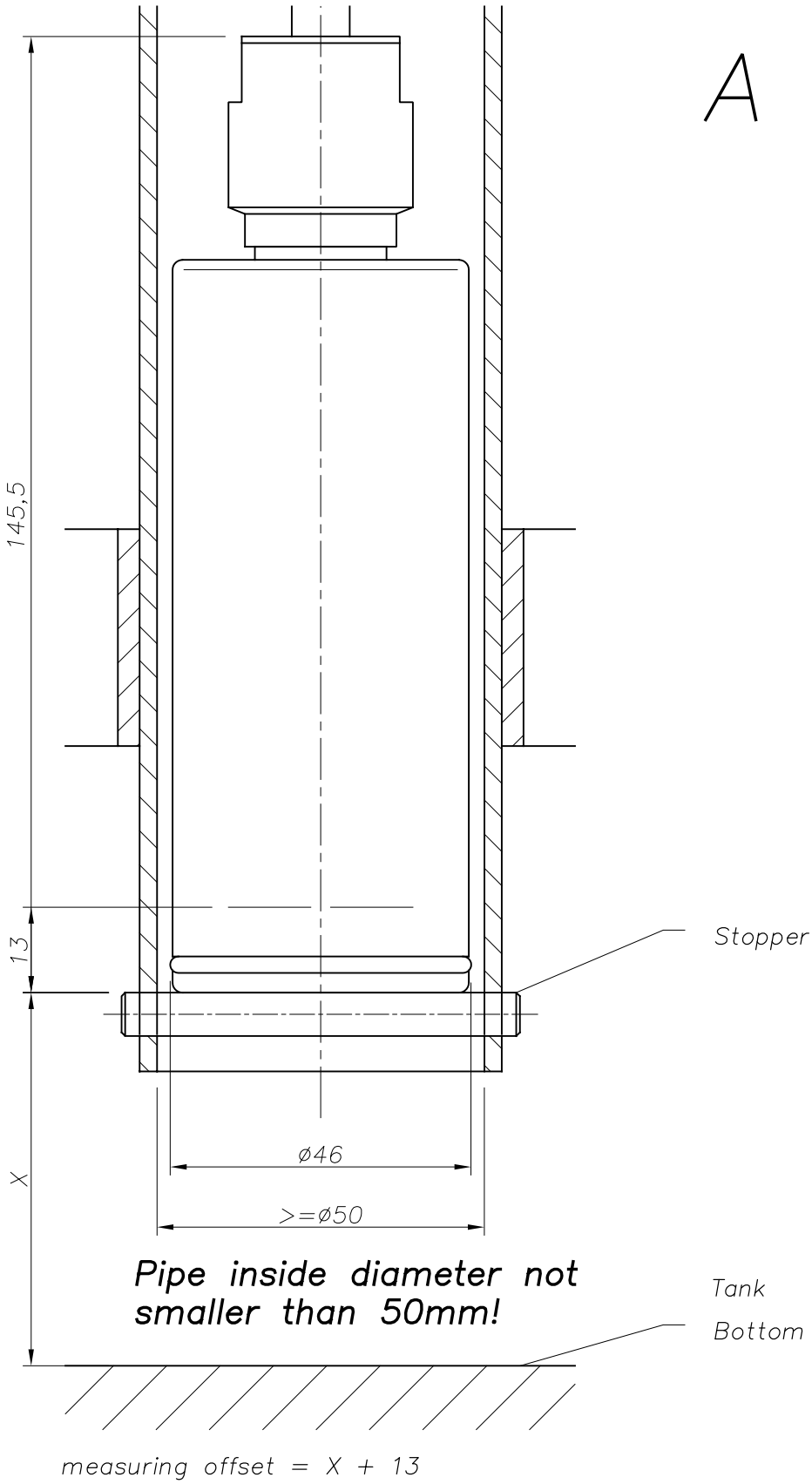
Tolerances(mm):

Surface:

Order: Standard

Source:

Page: 1/2



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eng.	est.	10.1.06	GB
rev.			

HOPPE Bordmesstechnik GmbH

F-02550-00000.IZ

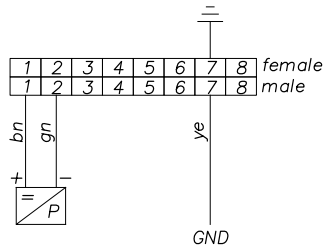
Sensor Installation

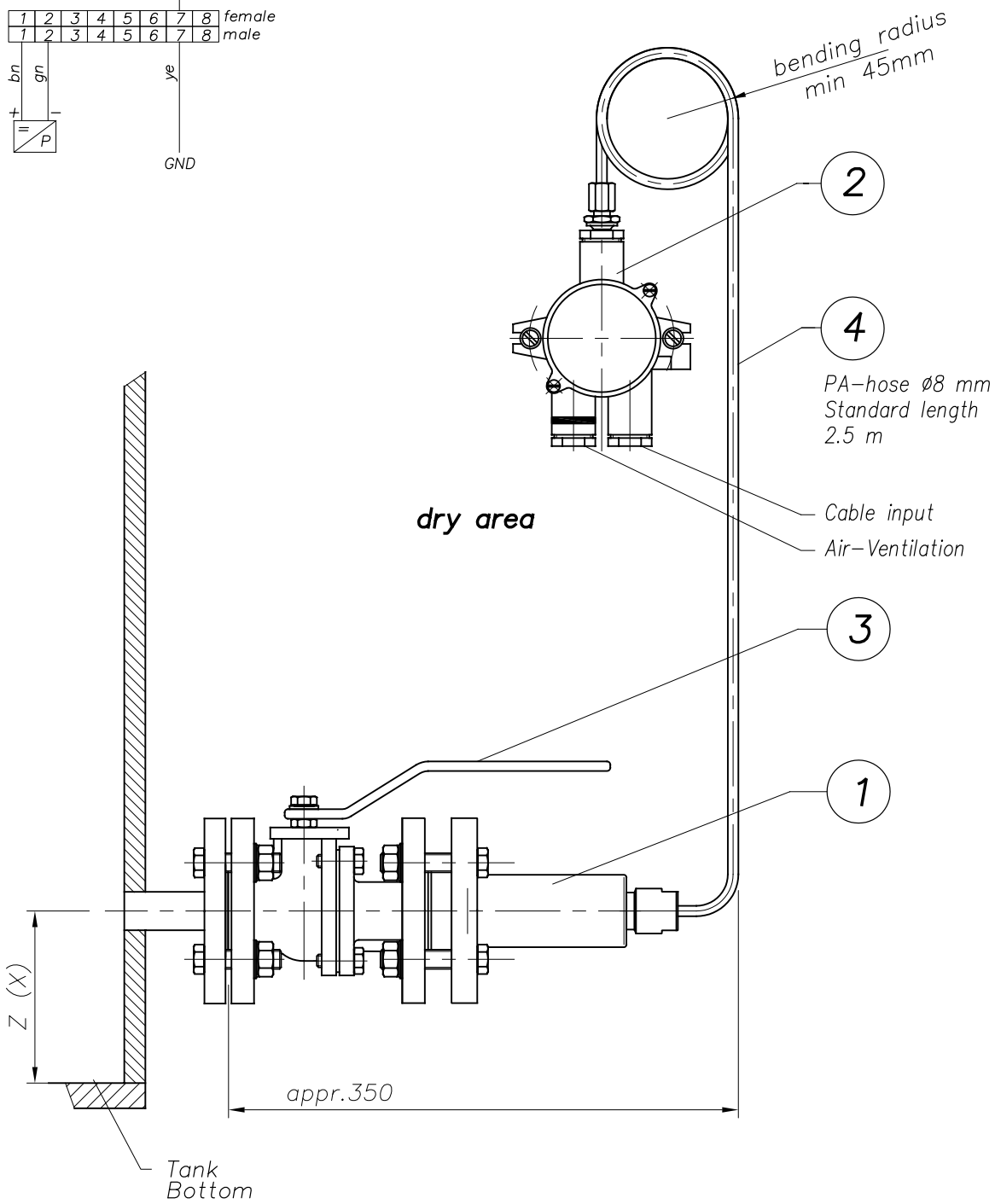
SI-HCG-2011-KS-FU

Installation Drawing

Scale	Material	Tolerances(mm)	Surface
no scaling			

Order	Source	Page
Standard		2/2





Z = measuring offset
X = Installation hight

Hoppe delivery see delivery specification

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	rev.No	date	name
draw.	est.	13.1.06	JMe
eng.	est.	13.1.06	GB
rev.	1.2	13.3.06	JMe

HOPPE Bordmesstechnik GmbH

F–02570–00000.IZ

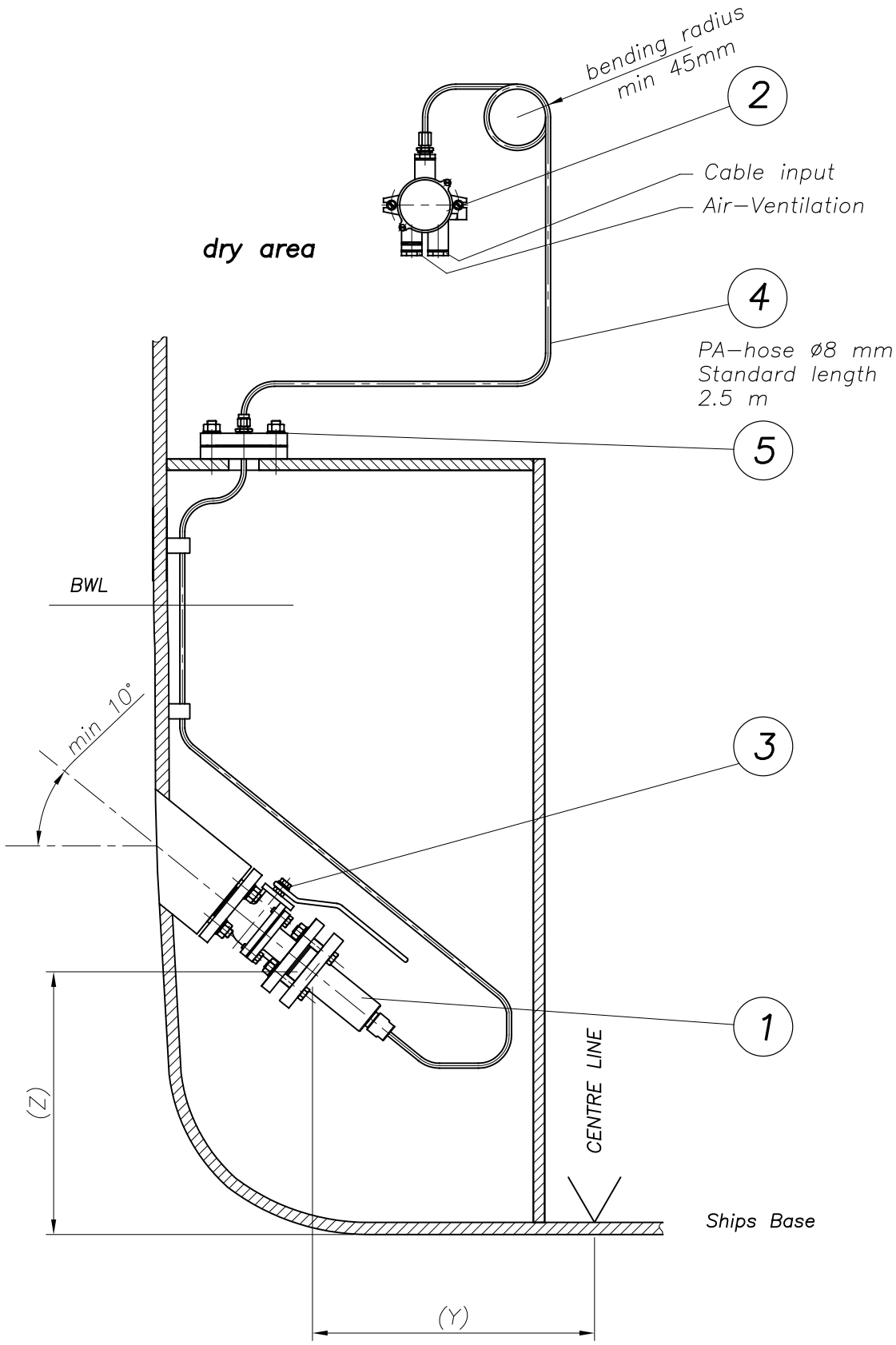
Sensor Installation

SI–HCG–2011–FW

Installation Drawing

Scale: no scaling | Material | Tolerances(mm) | Surface

Order: Standard | Source | Page: 1/1



Hoppe delivery see delivery specification

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eng.	est.	28.2.06	GB
rev.			

HOPPE Bordmesstechnik GmbH

F–02662–00000.IZ

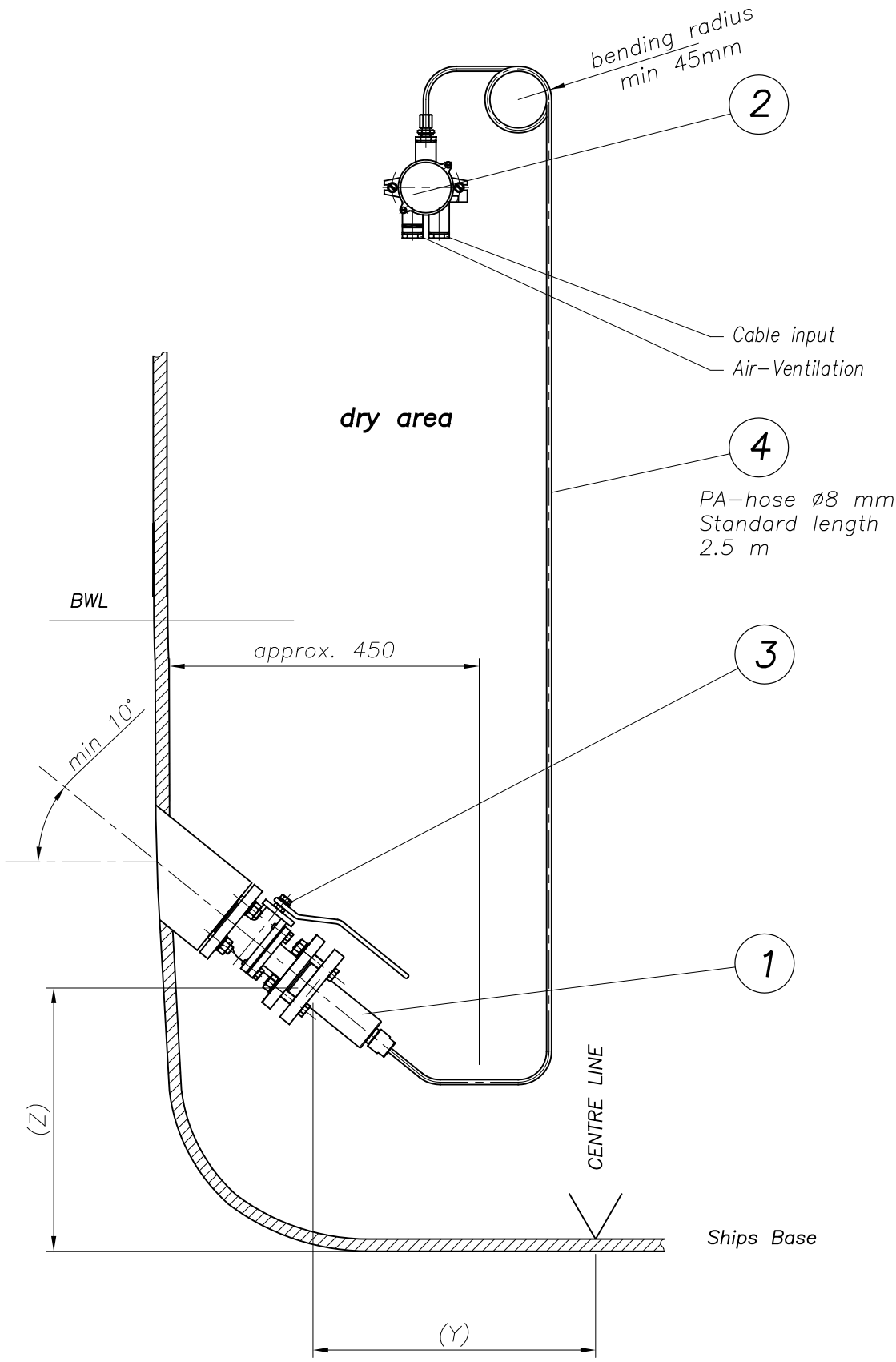
Sensor Installation

SI–BA–HCG–2011–FW

Installation Drawing

Scale	Material	Tolerances(mm)	Surface
no scaling			

Order	Source	Page
Standard		1/1



Hoppe delivery see delivery specification

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	rev.No	date	name
draw.	est.	28.2.06	JMe
eng.	est.	28.2.06	GB
rev.			

HOPPE Bordmesstechnik GmbH

F–02664–00000.IZ

Sensor Installation

SID–HCG–2011–FW

Installation Drawing

Scale: no scaling

Material:

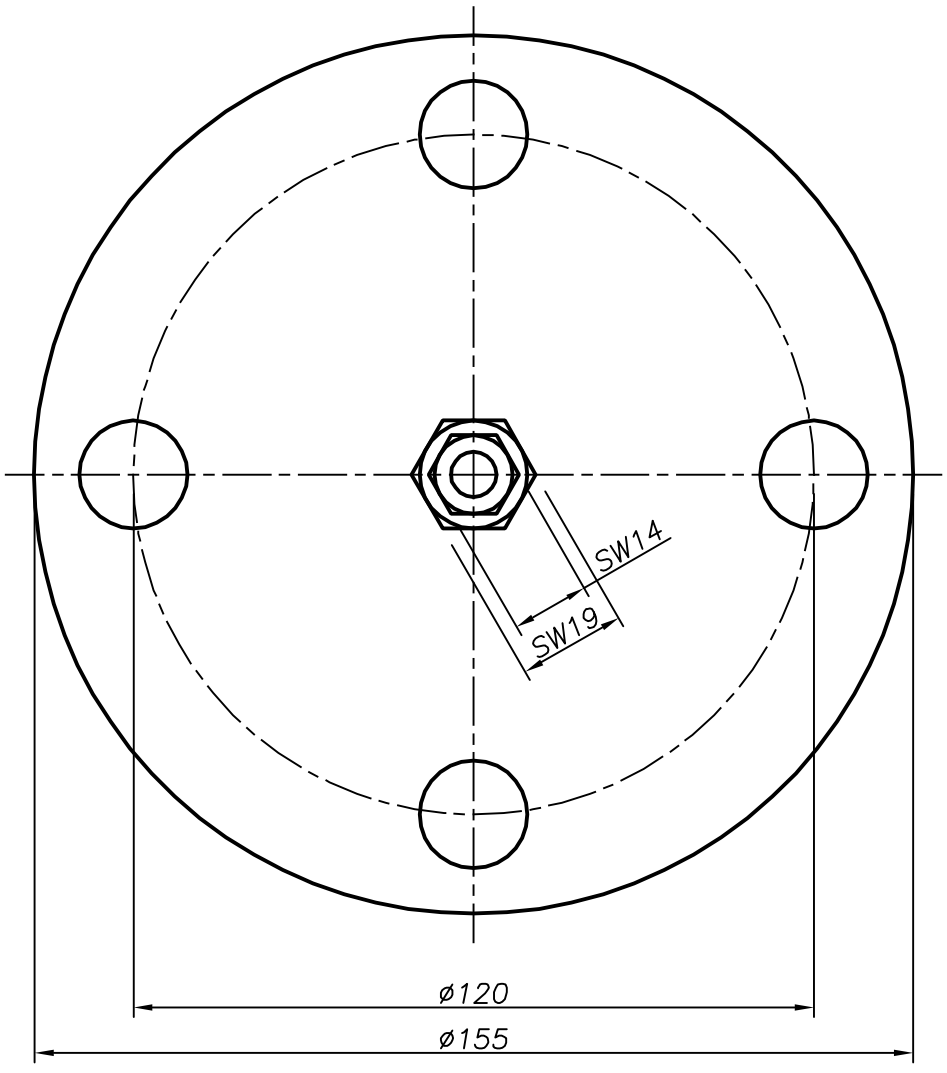
Tolerances(mm):

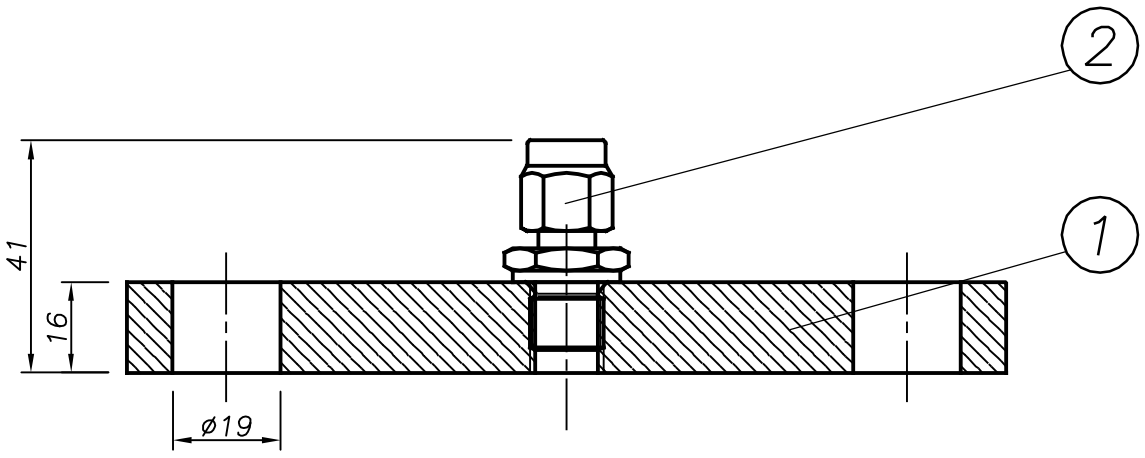
Surface:

Order: Standard

Source:

Page: 1/1





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	rev.No	date	name
draw.	est.	20.7.05	GB
eng.	est.	20.7.05	GB
rev.			

HOPPE Bordmesstechnik GmbH

F-02031-12050.GZ

Tank Flange

FL-50A-10K-1 8mm-ST

Dimension Drawing

Order: Standard

Source:

Scale: scaled

Material: ST37; gal vz.

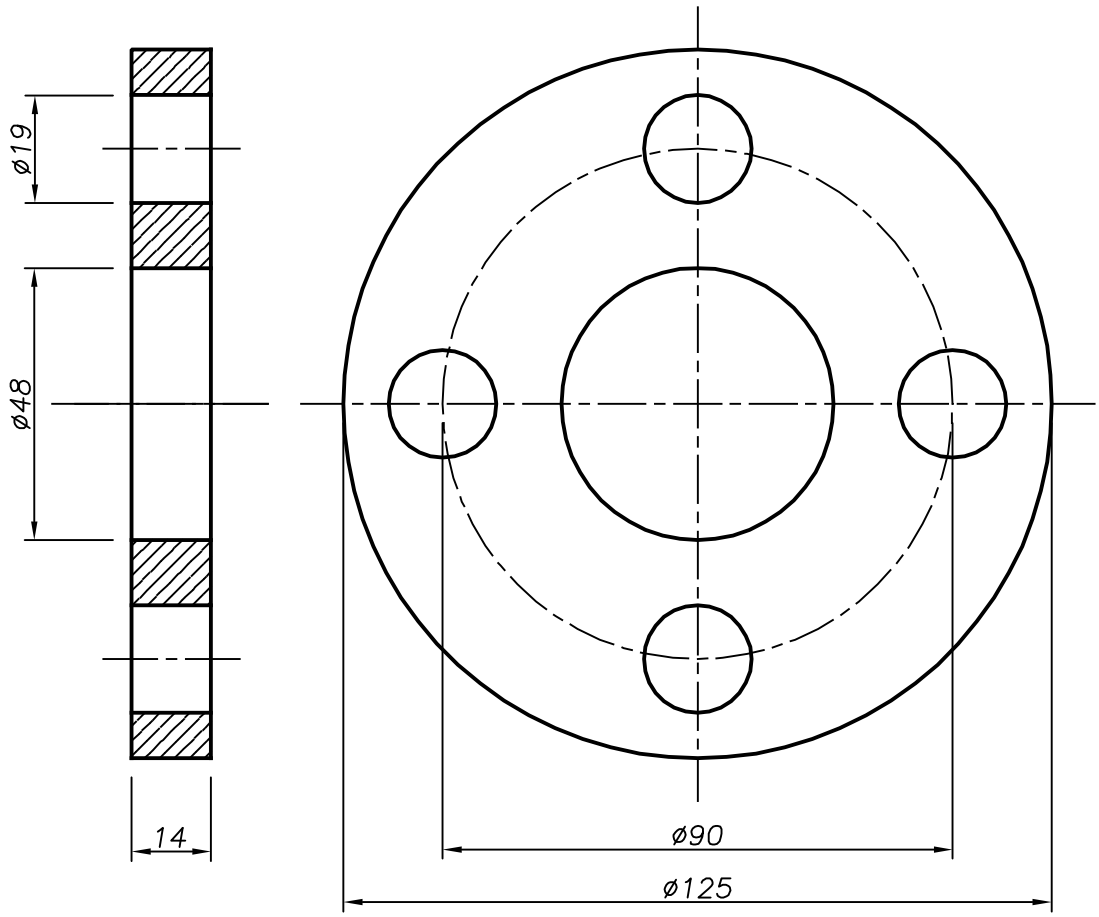
Tolerances(mm):

Surface:

Page: 1/1

Material Number	F-02031-12050.ST
Designation	TANK FLANGE
Typ	FL-50A-10K-1 8mm-ST
Revision	1.1

Item	Quantity	Designation	Typ	Material Number
1	1 pcs	FLANGE	FL-50A-10K-1 G1/4-ST	F-02031-12051
2	1 pcs	MALE ADAPTER UNION	8-1/4 PTFE	K-01535-00000



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	rev.No	date	name
draw.	est.	23.6.05	GB
eng.	est.	23.6.05	GB
rev.			

HOPPE Bordmesstechnik GmbH

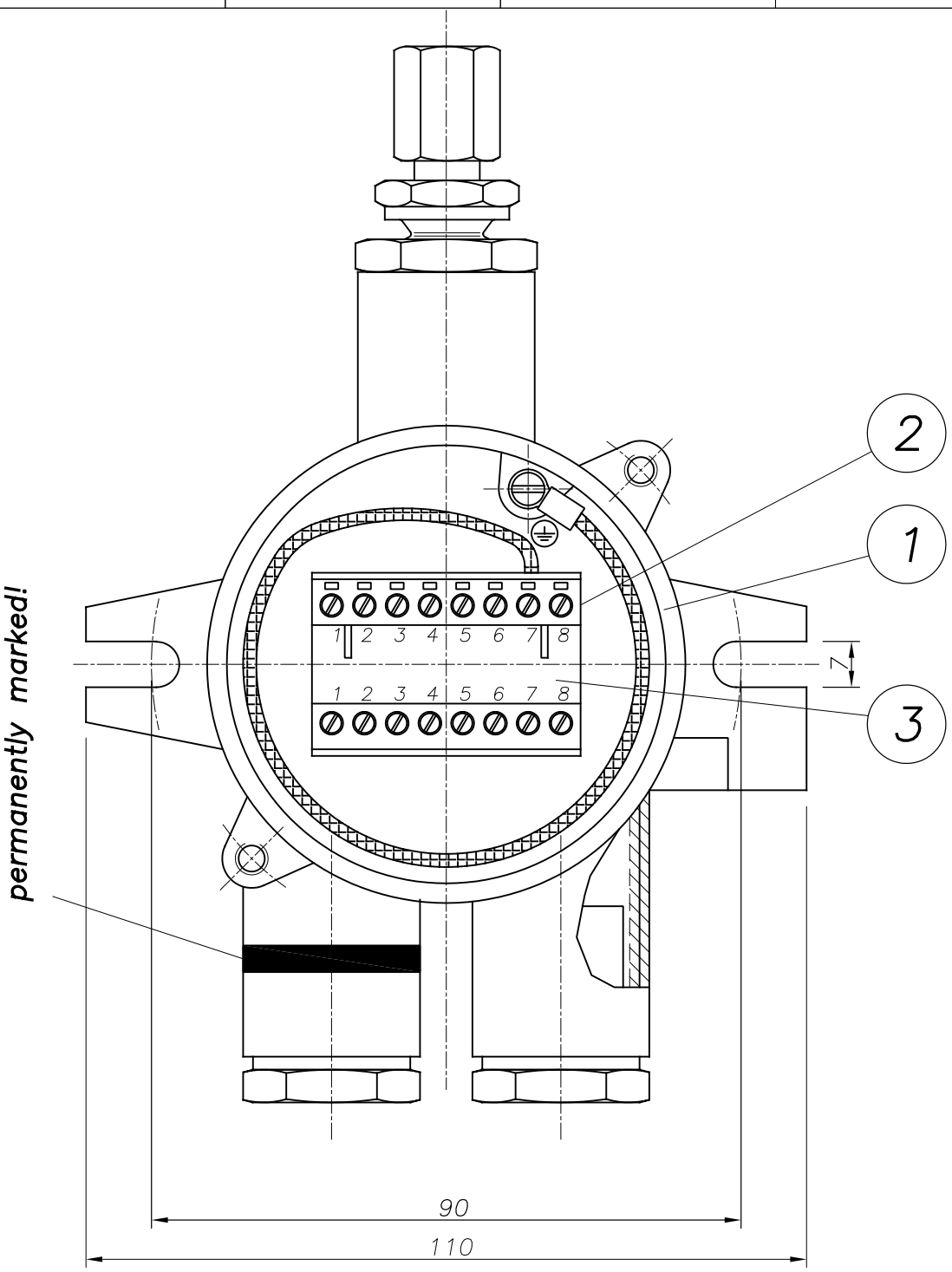
F-02030-12020.EZ

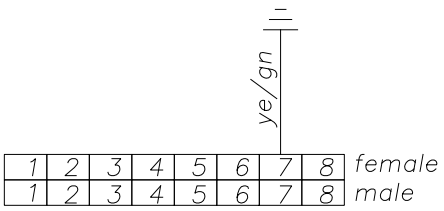
Lapped Flange

FL-25A-10K-1 48-ST

Dimension Drawing

Scale	scaled
Material	ST37; gal vz.
Tolerances(mm)	
Surface	
Order	Standard
Source	
Page	1/1





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	rev.No	date	name
draw.	est.	27.12.05	GB
eng.	est.	27.12.05	GB
rev.	1.1	10.06.07	GB

HOPPE Bordmesstechnik GmbH

F-00033-00000.GZ

Connection Box

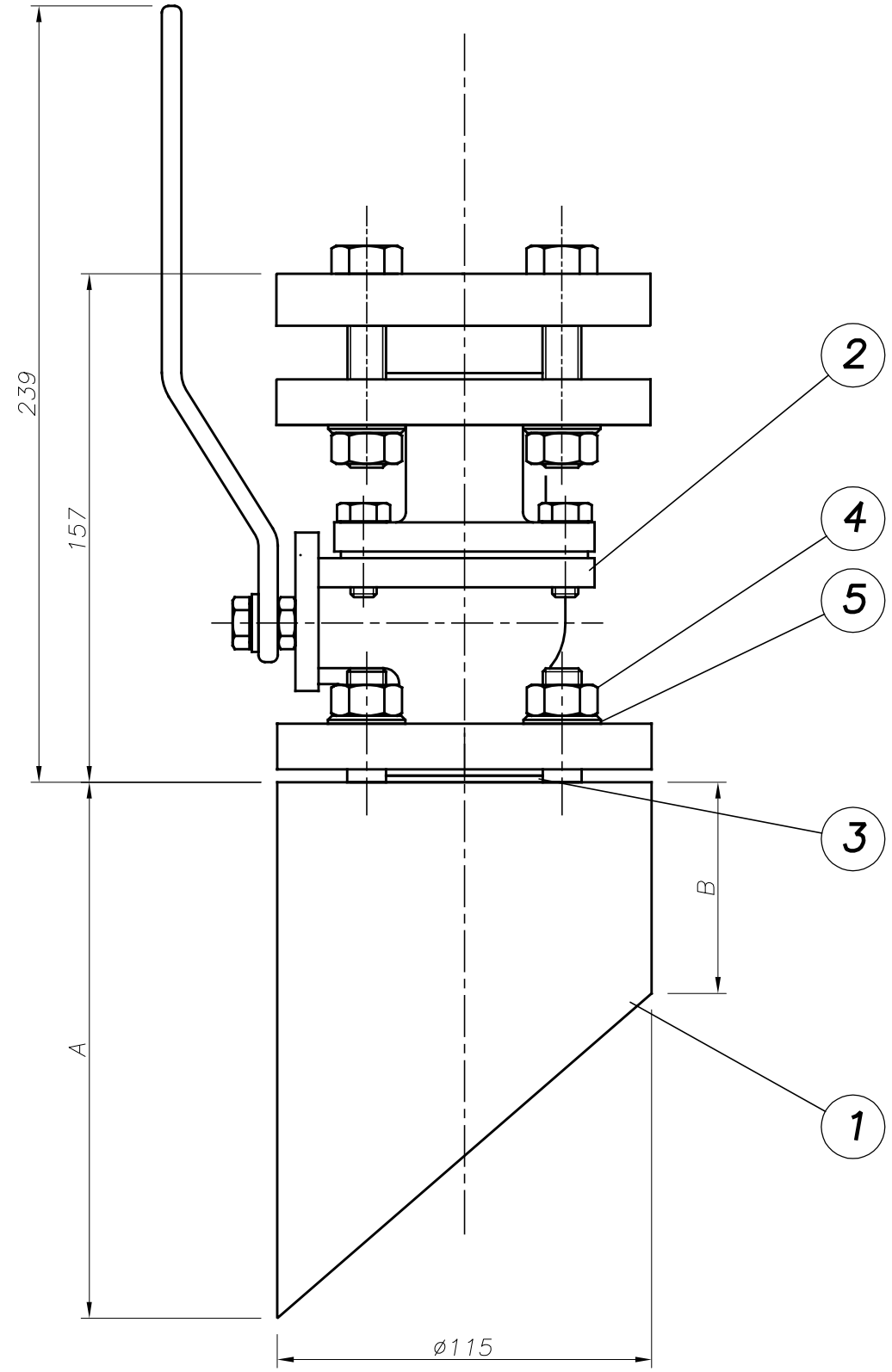
HNA-1-K

General View

Scale	1:1		
Material			
Tolerances(mm)			
Surface			
Order	Standard	Source	Page 1/1

Material Number	F-00033-00000.ST
Designation	CONNECTION BOX
Typ	HNA-1-K
Revision	1.6

Item	Quantity	Designation	Typ	Material Number
1	1 pcs	CONNECTION BOX	HNA-1	F-00033-02000
2	1 pcs	CONNECTOR PART	MSTB 2,5/ 8-ST-5,08	K-01399-00000
3	1 pcs	CONNECTOR PART	IC 2,5/ 8-ST-5,08	K-01398-00000



Material Number	A	B
F-02635-01000	165	65
F-02635-02000	115	65
F-02635-03000	85	65
F-02635-04000	165	140

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	rev.No	date	name
draw.	est.	03.02.06	GB
eng.	est.	06.02.06	GB
rev.	1.4	27.02.08	GB

HOPPE Bordmesstechnik GmbH

F-02635-00000.SZ

Ball Valve

TM-BV-25-FW

General View

Scale: no scaling

Material:

Tolerances(mm):

Surface:

Order: Standard

Source:

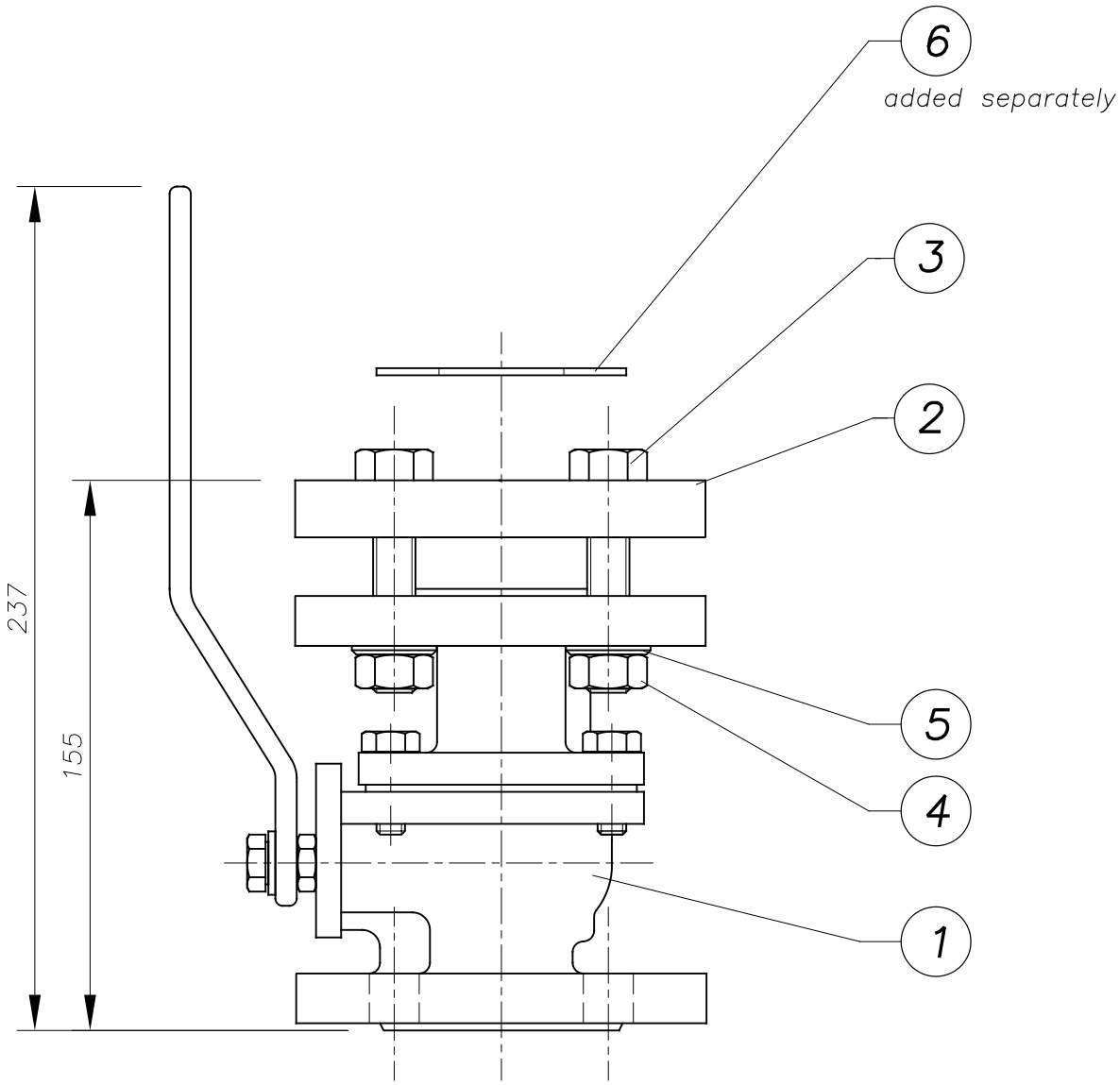
Page: 1/1

Hoppe Bordmesstechnik GmbH

Material Number	F-02635-01000 .ST
Designation	WELDING BLOCK
Typ	BV;StSt
Revision	1.1

Part list

Item	Quantity	Designation	Typ	Material Number
1	1 pcs	WELDING BLOCK	TMK-115-165-65	F-02700-01000
2	1 pcs	BALL VALVE	KG-25-16-FL-1 48-SS	F-02687-00001
3	1 pcs	GASKET	DIN 2690- DN25- PN10	K-02264-00000
4	4 pcs	HEXAGON NUT	DIN 934-M12-A4	K-00848-00000
5	4 pcs	WASHER	DIN 125-A13-A4	K-01099-00000



Hoppe delivery see delivery specification

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	rev.No	date	name
draw.	est.	27.2.06	JMe
eng.	est.	13.3.06	GB
rev.	1.1	16.3.06	JMe

HOPPE Bordmesstechnik GmbH

F-02687-00001.GZ

Ball Valve

KG-25-16-FL-1 48-SS

Installation Drawing

Scale	Material
no scaling	
Tolerances(mm)	Surface
Order: Standard	Source
Page: 1/1	

MANUALS

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HOMIP

Hoppe Monitor Interact Process

Product Manual

Type: HOMIP-IFC-144-EXT1

Article No. F-02497-14006

Issue 1.01

Content

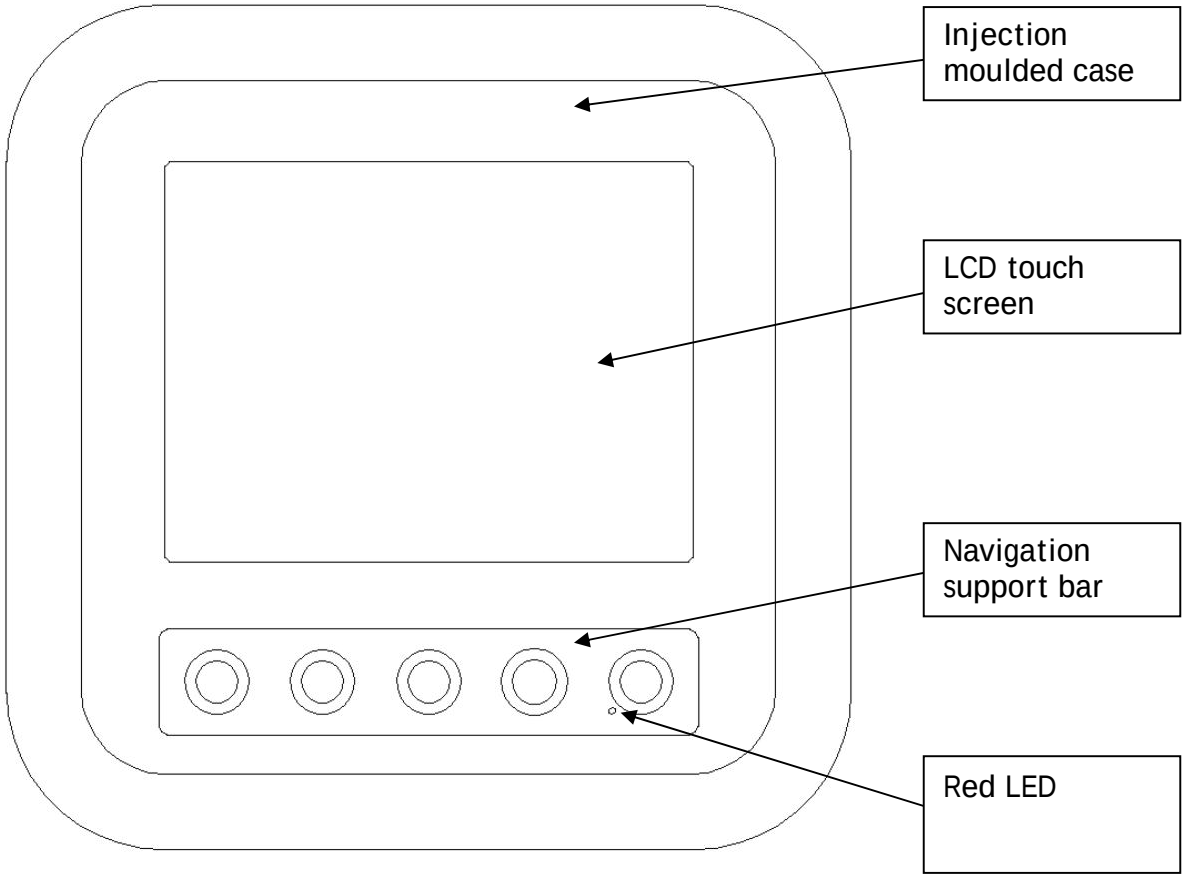
Brief product explanation

The **HOMIP** is a powerful combination of visualizing SOFT-SPS, COMMUNICATION-MASTER and the important function of CONTROL and REPORT. **HOMIP** combines the PLC and control system with systems to operate, observe and communicate.
All hard- and software components are pre-tested on our premises and ready for installation.

The **HOMIP** consists of a powerful CPU unit securely fixed onto a compact injection moulded frame. The back of the unit is a folded high grade stainless steel casing with a service lid and openings for various interfaces.

All **HOMIPs** are supplied with a 320 x 240 high resolution LCD touch screen. Also, an independent watch dog circuit is constantly monitoring the CPU and will signal a system failure by relay contact and red glowing LED in the navigation support bar.
These modules are equipped with a custom made visualization interface that makes operating the **HOMIP** a very dynamic and easy process.

Frontpanel description



Operating

Basics

The **HOMIP** is equipped with a 320x240 colour LCD touch screen as well as five push buttons. All important functions can be executed using the five push buttons (Navigation support bar) but a more convenient way is also possible by using the touch screen. After the start up process a start window will appear on the screen. The various touch buttons displayed on the screen will lead to the relevant dialog windows.

Power on

The **HOMIP** always boots after switching on the power. This process will take up to 50 seconds. During this process the system alarm relay will open and a LED (refer to front panel discription) will glow red. This LED will stop glowing red once the boot up process is completed.

Technical terms

This chapter explains the different dialog window operating elements used by HOMIP including a description of all icons and how to navigate the different touch screens. In case of uncertainty about your input the back icon  will always bring you back to the previous screen. Pressing the back icon several times will lead you back to the start menu.

Focus

The touch button in focus is always indicated with a surrounding dotted line. The "Focus" is changeable using the up or down icons   on the touch screen. Touching the enter icon  will lead the user to the dialog window that is related to the button in "Focus".

Navigation Support Bar

The navigation support bar consists of 5 push buttons. These buttons are located in a slightly recessed area below the LCD touch screen. All push buttons are directly related to the touch buttons (Navigation bar) displayed on the screen above.

Navigation bar

is located at the bottom of the touch screen and consist of up to five touch buttons located exactly above the related push buttons (refer to navigation support bar). The displayed icons explain the function of each touch button. Each touch button is related to the push button underneath. Activating the push button or touching the related button on the screen will result in exactly the same action. The following icons are used in the navigation bar:

 Back: Moves one dialog window back. Dialog on the same level or numerical input is not affected by the back function.

 Up: Moves the "Focus" one element up. It therefore moves one element backwards towards the beginning of each window or list.

 Down: Moves the "Focus" one element down. It therefore moves one element forwards towards the end of each window or list.

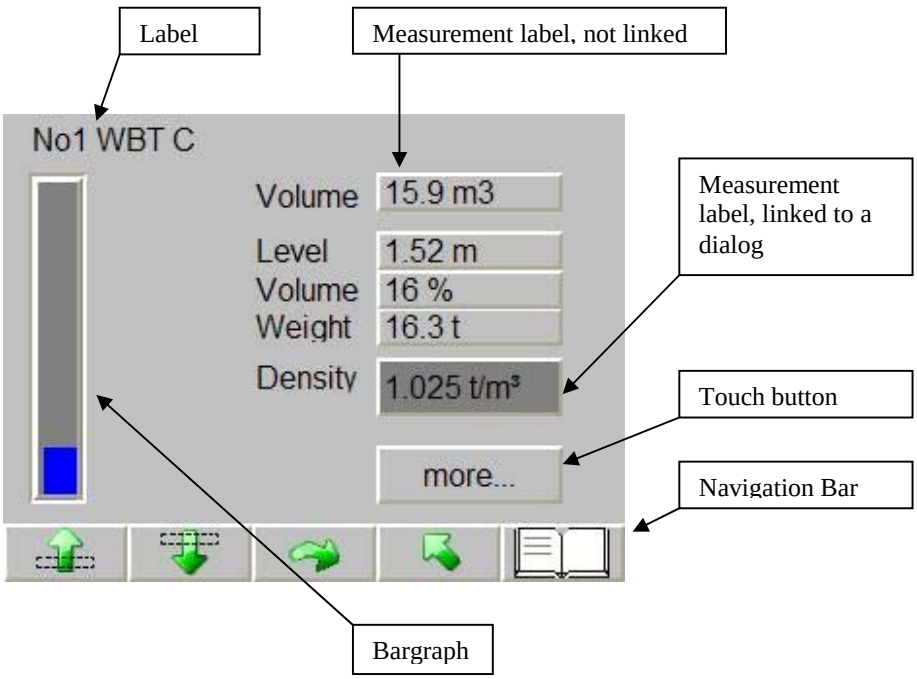
 Enter: Moves one dialog window further. If a dialog function is in "Focus" this button will lead the user to the next sub dialog containing the related information.

 Checkmark: Acknowledges alarm list entries.

 Up selection: Moves the selection (coloured bar) one list element up. It therefore moves one element backwards towards the beginning of the list.

 Down selection: Moves the selection (coloured bar) one list element down. It therefore moves one element forward towards the end of the list.

Other screen elements:



Label

An unchangeable alphanumerical text label with no push or touch button function at all.

Measurement label

An alphanumerical text label that will change according to changes in the related process. These labels are used throughout to indicate the requested measurements or the variability of conditions. i.e.: open, close, fail, 37 degree, etc …

Measurement label, linked

The same as a measurement label but with the added function of the label linked to a sub dialog. Touching the label on the screen or pushing the related button will open the sub dialog.

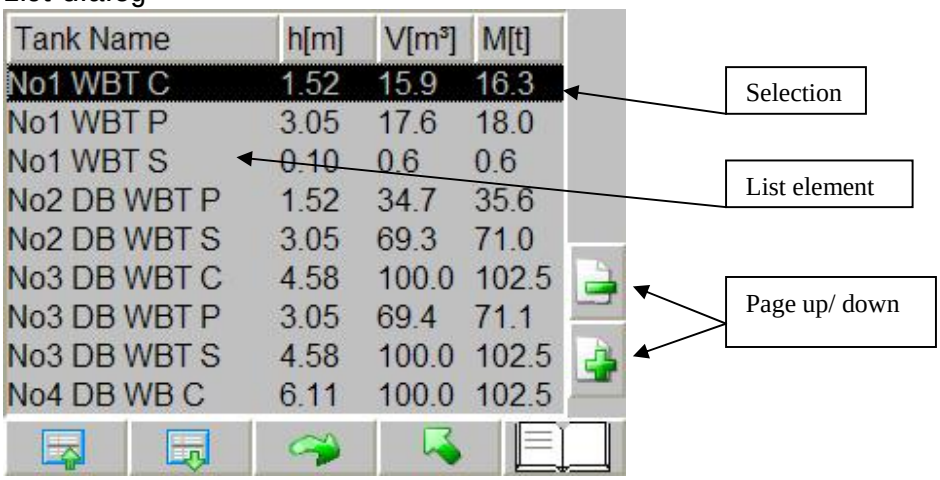
Touch button

Element with written information and touch function. Touching the element on the screen or pressing the enter button  if the desired element is in "Focus" will lead to the sub dialog or a function as indicated on the element i.e.: start, stop, open, clear, etc …

Bar graph

Indicates, as a coloured bar, an analog measurement in relation to the absolute value. A scale as well as the indication of the max/min values makes the reading of the measurement very simple.

List dialog



List element

Clearly displays all main measurements of many sensors. A selection cursor is used to scroll through the list and to activate actions or related sub dialog windows. The selection cursor can be scrolled up and down by touching these icons  .

Selection

A coloured bar over a list element is called a selection. It is a selection from the entire list. It is of similar function as the "Focus" used elsewhere. Icons and their functions in the navigation bar then relate to the highlighted selection.

Page up/down

These icons  allow the user to speed scroll a list page by page.

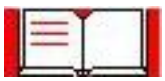
Alarm list

This list displays exceeding limits and faulty system conditions. If the **HOMIP** detects an error in the controlled environment it will create a message in the alarm list. The created message will consist off a text, time (t rise) and be under laid in red. Also, the icon in the right hand corner of the navigation bar will change to alarm  . Simultaneously an acoustic warning will go off.

Lifecycle of an alarm:

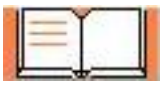
A new alarm is added to the alarm list. An acoustic signal goes off. (icon is flashing)

Touching the button will reset the acoustic signal. The current display will change to the alarm list



At least one unacknowledged alarm is displayed. These alarms are under laid in red. (icon is flashing red)

Touching the checkmark acknowledges the selected alarm. Only then will the red under laid colour of the list element change back to normal.



All alarms are acknowledged, but not all are rectified. (icon under laid orange)

The icon will change automatically once all alarms return to normal.

No alarms are listed. Normal state (icon grey)

Touching the  will change the screen to the alarm list. Also, the buzzer will switch off and the icon  will change to the red flashing icon  .

The message will stay in the alarm list at least as long as it is acknowledged by touching the checkmark  on the screen.

Touching the checkmark  with the alarm still valid (i.e.: the max value is still to high) the **HOMIP** will change the red under laid list element into orange and record the time (t ack) for future reference.

If all alarms are acknowledged the red icon  will change to the orange one  . Only when the reported error is attended to or changes to normal on it's own will the message automatically disappear from the alarm list. Also, the displayed orange icon  will change to the grey icon  .

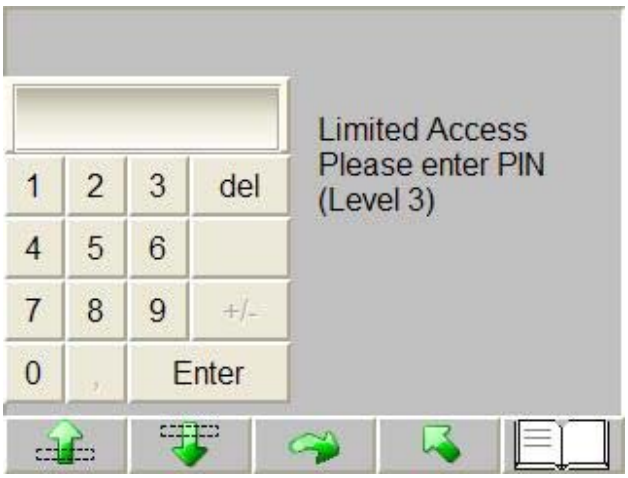
To acknowledge a message the red under laid message must be selected. This can happen by touching the error message on the screen or moving the selection with the up/down icons  or  onto the message. Touching the checkmark  on the screen will acknowledge the message.

Acoustic warning

The internal alarm buzzer and the output relay are activated every time a new acknowledgeable message is recorded by the **HOMIP**. Both can be de-activated by touching the icon  on the screen. This action will result in the immediate display of the alarm list and the red flashing icon  will appear in the bottom right hand corner of the LCD screen.

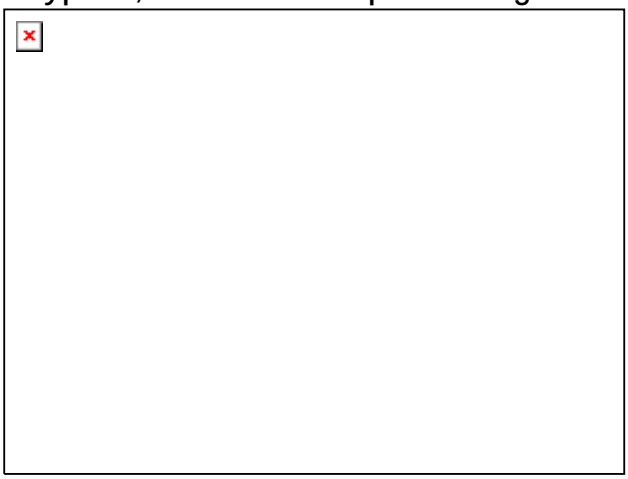
Pin pad

Certain functions and parameters are, for safety reasons, only accessible via pin codes. These areas are divided into three access levels. Level 3 is the highest possible level and therefore also able to access the two lesser levels, i.e.: Level 2 and level 1. The same applies for Level 2 and therefore this level is also allowed to access level 1. As such, level 1 can only call up screens related to this safety level and is not permitted from accessing any level above.
The pin must only be entered once and stays valid till it is set back or overridden by a higher level in the system/pin/log off dialog.



Resembling a keyboard this dialog is used to enter the restricted areas. A four digit number is required to access the next dialog window. Entering the right code allows the user to remain in or move between restricted areas as long as the required changes are performed.

Keypad , Parameter input dialog



Resembling a PC keyboard this dialog is used for the numerical parameter input. Numbers, decimal points and algebraic signs can be entered via the touch screen.

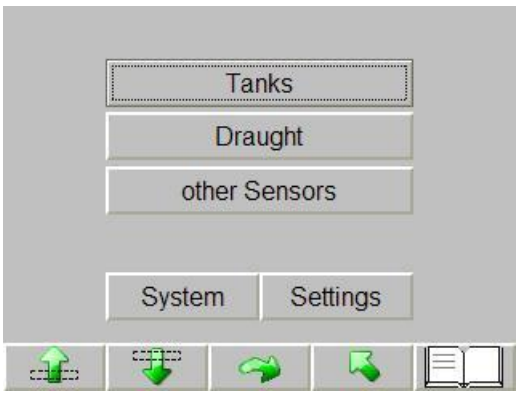
The name and the max/min value of the parameter in question will be displayed as added information in the same dialog. Exceeding of the max/min values will result in the blocking of the input keyboard and a red coloured underlay of the measurement in the label.

The correct value will only be accepted once the enter button is touched. To delete the wrong input touch the del-button. To discard the input simply touch the back icon and the old value will remain.

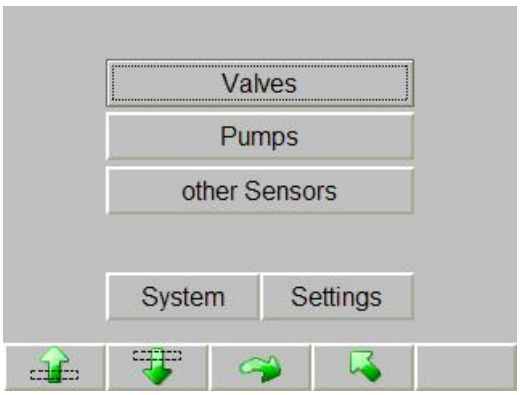
Start dialog

This screen is the first visible dialog after the power initiation and depending on the software application installed it allows you to proceed with the various options.

Start screen TankControl



Startscreen ValveControl



This dialog will lead the user via the various touch buttons to the related sub groups. The touch buttons are stacked according to importance, i.e.: the most important one is always on top and automatically has the focus. The display will always come back to this dialog after pressing the back button  several times.

Tanks

Principles of tank measuring

From using a tape measure (by hand) to highly sophisticated sounding equipment many possibilities are available to measure the exact tank filling. This chapter describes the state of the art methods used by **HOMIP**.

Hydrostatic pressure measure in an open tank

A pressure sensor is fixed to the bottom of the tank and measures the hydrostatic pressure of the liquid contained in the tank. It is important that the liquids surface is ventilated and is therefore under atmospheric pressure. If this is not the case a correction sensor must be installed inside the tank (also refer to pressure measure by closed tank).
The established measurement calculates as follows:

P = rho x g x h

rho : liquid density
g : 9,81 m/s²
h : height of liquid column

The liquid column height and pressure can therefore be established if the density is known. h = P / (rho x g)

As it is often impossible to mount a sensor right at the bottom of a tank the sensor position above the tank bottom (Z – Axis) must be established and registered during commission of the ship. No changes to this parameter are expected as long as the sensor remains in the same position.

As seen in the formula the calculation liquid column for a specific pressure depends directly on the density of the liquid.
The wrong density input will lead to the wrong measurement!
For example: If the density input is fresh water (1.000) instead of salt water (1.025) a discrepancy of 20cm in a 8m high liquid column will be displayed.
The correct density input is therefore of outmost importance!

Hydrostatic pressure measure in a closed tank

If a tank is not ventilated (i.e.: Cargo tank for mineral oil products) a correction sensor must be mounted in the upper area of the tank and measures the gas pressure above the loaded liquid. This measurement (gas pressure above tank) will then be deducted from the value of the bottom sensor and will give the user therefore the pure hydrostatic pressure inside the tank. As a to high/low pressure might result in technical operation problems the **HOMIP** can, on request, be equipped with added monitor functions to report pressure exceeds.

Volume calculation

If the volume curve of the tank (tank curve) is known the volume and weight of the liquid can easily be calculated using the level of the medium. A correction due to the different trim positions of the ship is possible as **HOMIP** calculates the shifted volume in a not straight tank. To do this calculation an electronic pendulum is needed to establish the trim angle of the ship. Further more the tank curve has to be a collection of trim corrected tables.

Automatic density correction

Density and volume of the loaded liquid inside a tank will change if the temperature changes drastically. To provide for this contingency it is recommended to automatically correct the measurement. For this another sensor is needed to read the temperature. If little liquid movement happens inside the tank it might come to a layering of the temperature. To still come to a correct reading more then one sensor is to be mounted inside the tank to measure the temperature in the different thermolayers. From all these sensors a middle value is taken. By using this temperature value the density and therefore the volume measurement can be corrected with the various functions (depending on the liquid) of the **HOMIP**. As the different liquids extend differently and mineral oil never extends linear the HoMIP uses various custom designed methods to correct the measurements.

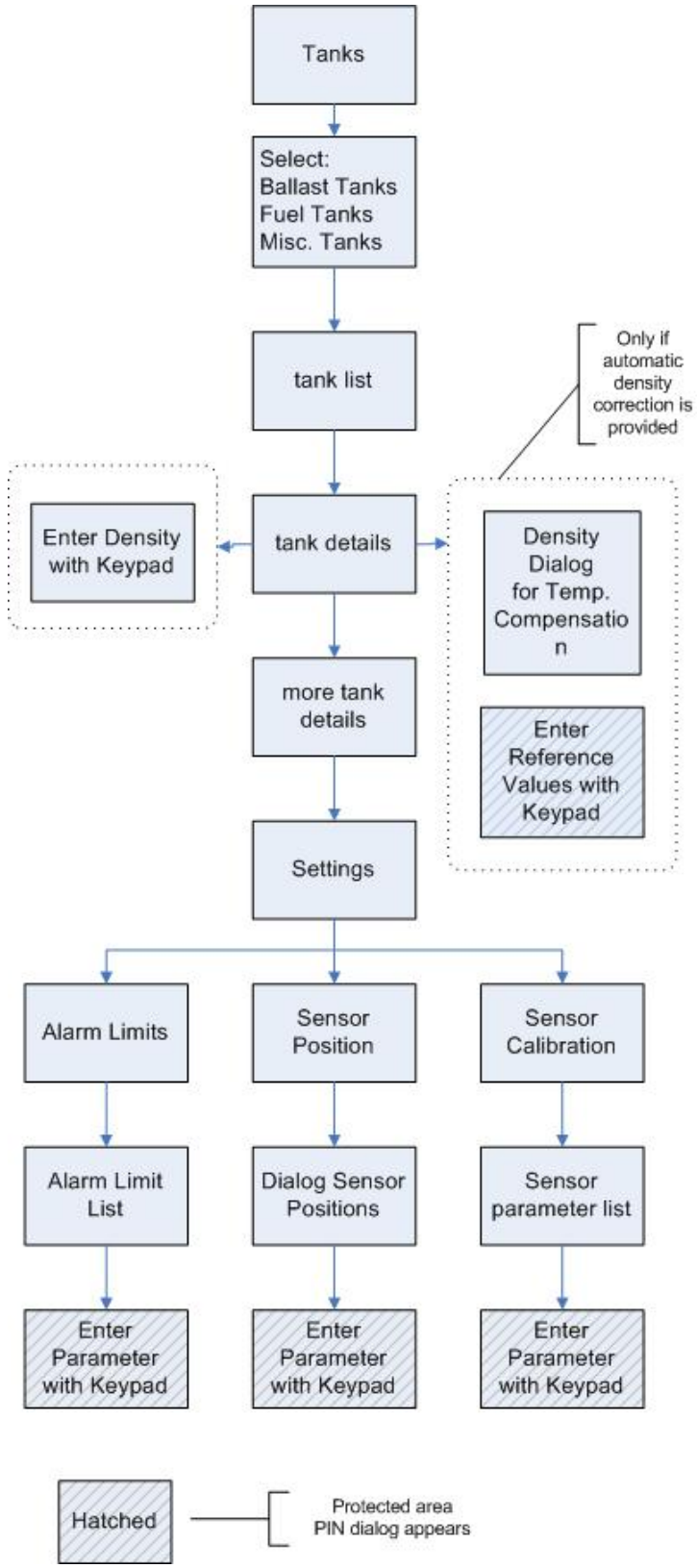
Density correction for mineral oil with reference density & temperature

For this the actual temperature as well as a reference density at a given reference temperature (i.e.: 15°C) is needed. These values are normally supplied with the product specifications. Using these values a standard correction curve for mineral oils is positioned and the change in density for the actual temperature can be calculated.

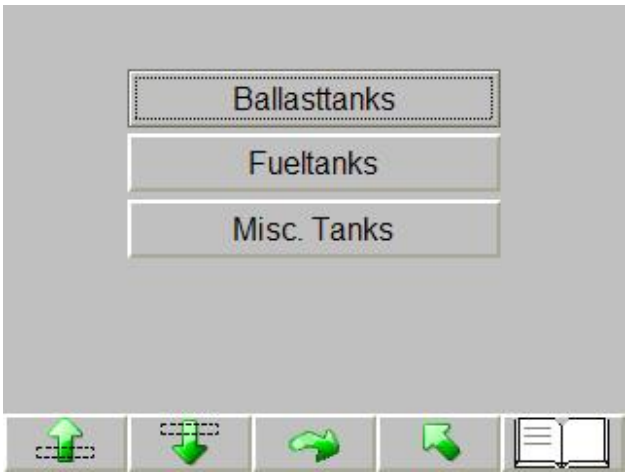
Density correction using ASTM charts

Comprehensive ASTM charts are available for the different oil products. In these lists, among others, is the relation between density and temperature explained. Using this process allows for a very precise correction but is more intensive as the charts for the specific product have to be programmed in the HoMIP.

Tanks dialog flow chart

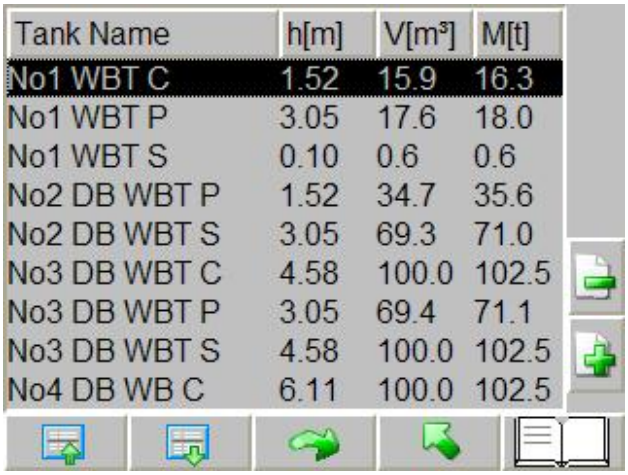


Select tank group dialog



This dialog window shows the first step after touching the “Tanks” button on the start screen. To get quick access to a specific tank, the tanks are divided into three different groups depending on their function.

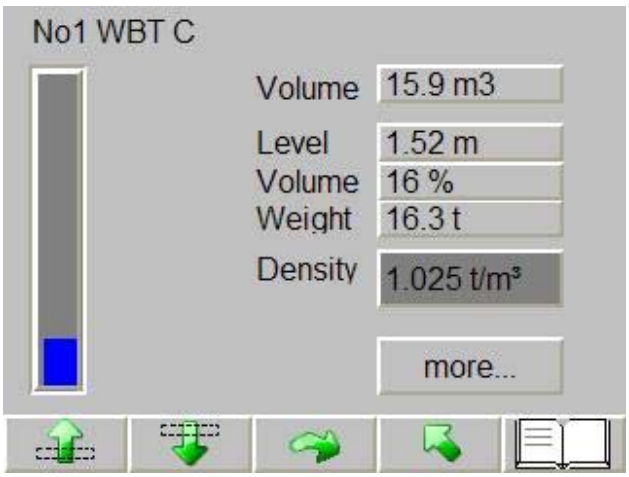
Select specific tank from the list



Tank Name	h[m]	V[m³]	M[t]
No1 WBT C	1.52	15.9	16.3
No1 WBT P	3.05	17.6	18.0
No1 WBT S	0.10	0.6	0.6
No2 DB WBT P	1.52	34.7	35.6
No2 DB WBT S	3.05	69.3	71.0
No3 DB WBT C	4.58	100.0	102.5
No3 DB WBT P	3.05	69.4	71.1
No3 DB WBT S	4.58	100.0	102.5
No4 DB WB C	6.11	100.0	102.5

Indicated in this dialog are all the important measurements related to the selected tank group. This information is shown as list elements. To access a detail the list element must be selected (,) and entered with .

Specific data of a tank dialog



It displays, in more detail, all measurements of the previously selected tank element.
The density value is a “linked” value and leads to an input keypad for entering the actual density value.

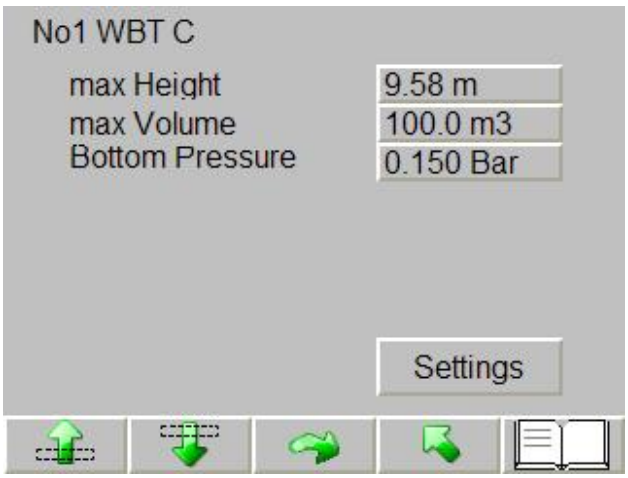
By touching the “more” button it allows the user to access further detail related information.

Density setting for tanks with automatic density correction

For this the actual temperature as well as a reference density at a given reference temperature (i.e.: 15°C) is needed. These values are normally supplied with the product specifications. Using these values a standard correction curve for mineral oils is positioned and the change in density for the actual temperature can be calculated.

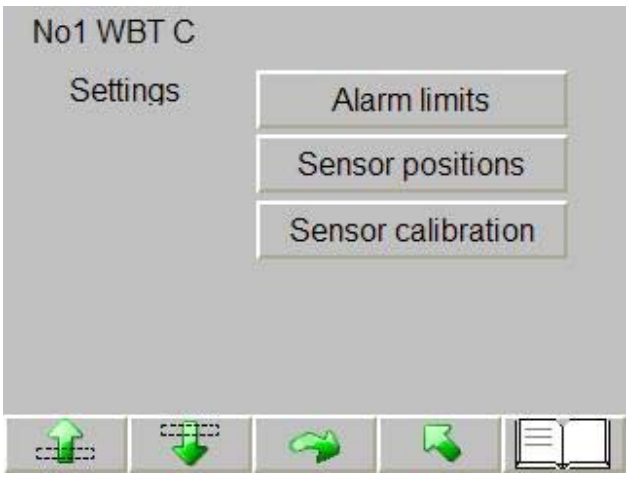
This is an optional feature and is not always be implemented.

More specific tank data dialog



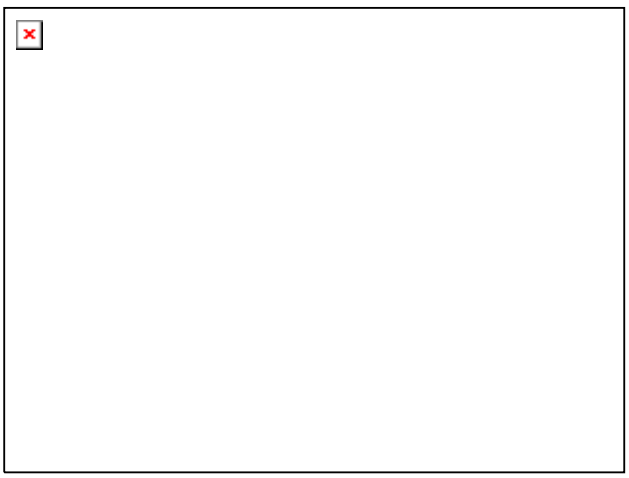
Same as the previous dialog window, it shows more details of the selected tank. The information provided here depends on the type and number of installed sensors and may differ from the printed example.
This dialog also allows the user by touching the “Settings” button to enter the next sub dialog.

Settings for the tank dialog



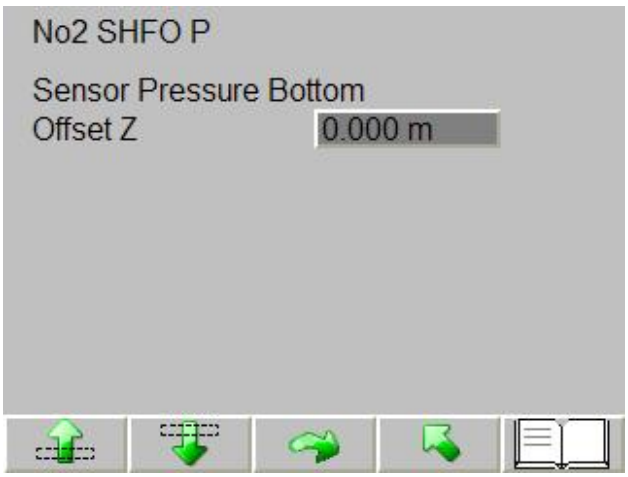
Displays all possible settings for the selected tank. Touching the indicated buttons (in Focus) will lead to the various sub dialogs.

Alarm limits dialog



It displays the various limits of the selected tank as list elements. To access a detail the list element must be selected (Selection) and entered. The selected list element might be a restricted parameter and therefore the keypad has to be accessed via a pinpad.

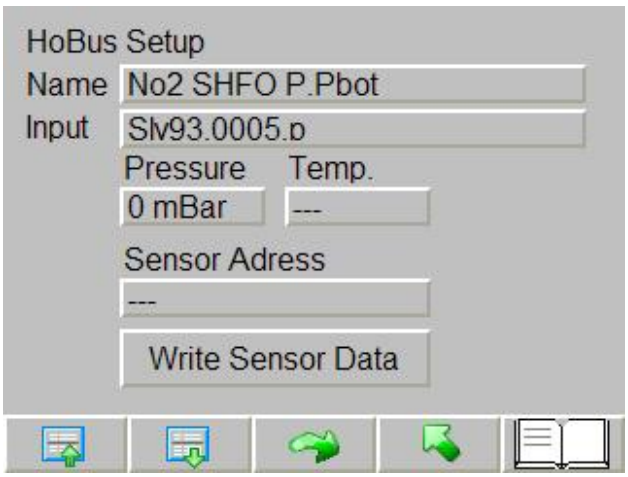
Sensor position list dialog



Some calculations need the sensors geometrical position. Depending on the sensor function one, two or all three axis are required. For the tank calculation these reference points are needed:

- x : (distance from PP AFT)
- y : (distance from centre line ship)
- z : (distance from bottom of tank)

Sensor calibration dialog



Zero and Gain adjustments can be done using this dialog window. If the sensor is a digital model it is also possible to configure the address of the sensor. This only happens if the sensor in question was faulty and has been replaced.

Draught

Principles of draught measurement

Following method is used to establish the draught of the ship:
The outer hydrostatic seawater pressure is taken using various electronic pressure sensors distributed around the ships hull. Also, the ships angle is measured against the straight 90º with at least one electronic pendulum. If the sensor positions on the hull are dimensioned correctly and at least three readings (i.e.: two sensors & one angle) are sent to the **HOMIP** an exact condition of the hull in the water can be given. If more then three sensors are established around the ship (i.e.: 3 pressure sensors & 1pendulum or 4 pressure sensors) it is then also possible to establish the exact length deflection of the hull. This way the precision of the calculation can be immensely increased. To find the exact depth of the sensor after measuring the pressure the system needs the exact input of the density. This happens normally by consulting the relevant port documents.
Following factors result in the precision of the process:

- Exact sensor dimension during manufacture (yard time)
- Exact calibration (yard time/service)
- Exact water density input (staff)

While the ship is in motion the water flow might effect the hydrostatic measurement negatively and as such draught measurement should only happen while the ship is stationary.

Draught meter, 3 sensors

Using a draught measurement system with only three sensors the hull deflection can not be reflected. The mathematical concept behind this is a plane with three points in space.

Draught meter, 4 sensors

If four sensors are used a perfect curve can be drawn through the measurement points and such the mid point deflection of the ship is calculated. (Hogging/sagging)
For this a spline interpolation is used as basis for the calculation. The calculation plane in this case is therefore as warped as the ships hull. As such it is accepted that the point of maximum deflection is located on the LPP/2 axis.

Operation parameter

The only parameter ever to change during operation is the density of the sea water. Depending on the ship operational areas the density can change between 1.000 t/m³ and 1.025 t/m³. This density variation will immediately affect the measurement result and can become an error measurement of up to 2.5%! If the draught of the ship is 10m it would result in a mistake of 25cm! Therefore outmost care is expected while entering the right water density into the HoMIP after consulting the relevant port manuals! The linked density value (refer also to the technical terms chapter) on the draught dialog main window allows the density adjustment via the keypad.

Service parameter

Each pressure sensor position needs to be exactly dimensioned during manufacturing of the ship. The dimensions must relate to these coordinates:

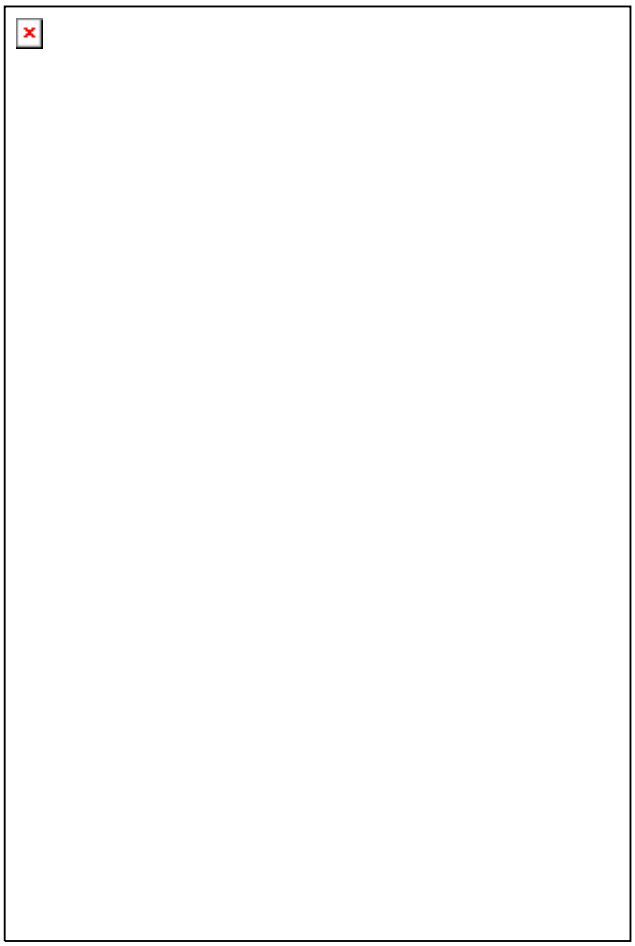
- Aft PP (x = 0; position behind PP Aft are negative values)
- Centreline (y = 0; position on port are positive, on starboard negative)
- Underside keel (z = 0)

These parameters are put into the SPS while commissioning the ship and should never change. The first calibrations of the pressure and angle sensors happen also during this time. Through age or the exchange of sensors it is remotely possible that the sensor calibration needs to be repeated. This normally happens using experienced HOPPE staff.
Further parameter inputs are related to the position of the draught marks around the hull and the main dimensions of the ship. The same coordinate source applies as per the sensors:

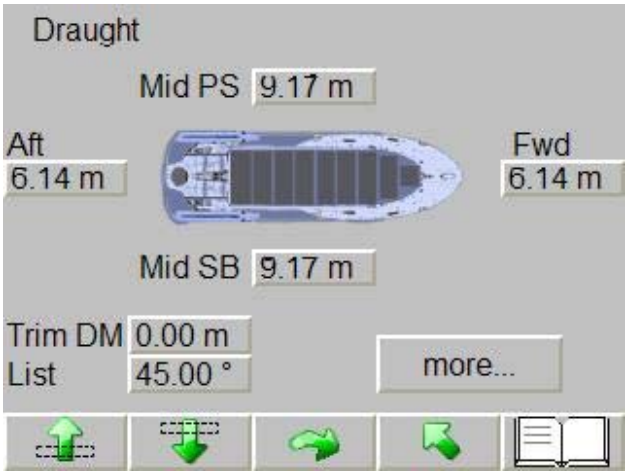
- X position draught mark AFT
- X position draught mark MID
- X position draught mark FWD
- Width of ship at draught mark MID
- Length of ship PP

All these values are entered only once during installation.

Draught dialog flow chart



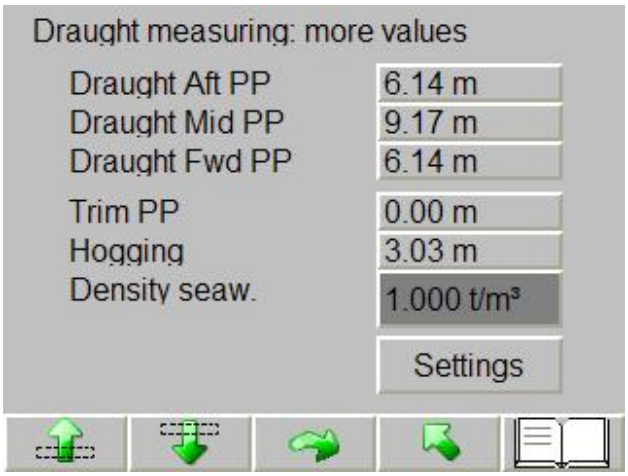
Draught dialog



Touching the “draught” button on the start screen will lead straight to this dialog window showing various draught related changeable measurements (not linked).

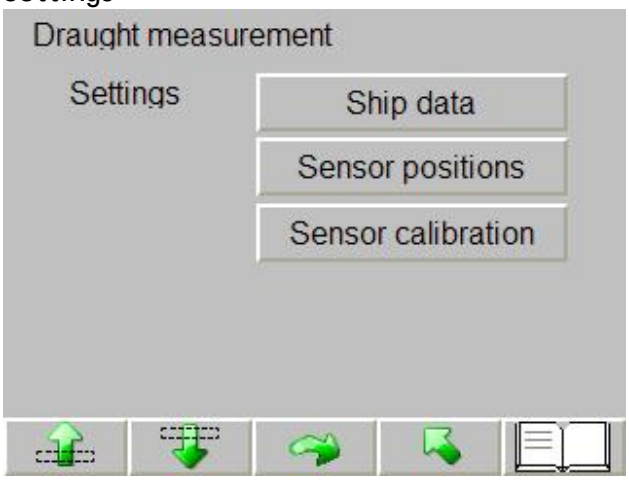
The relevant sub dialogs are reached with the “more…” Button:

More values

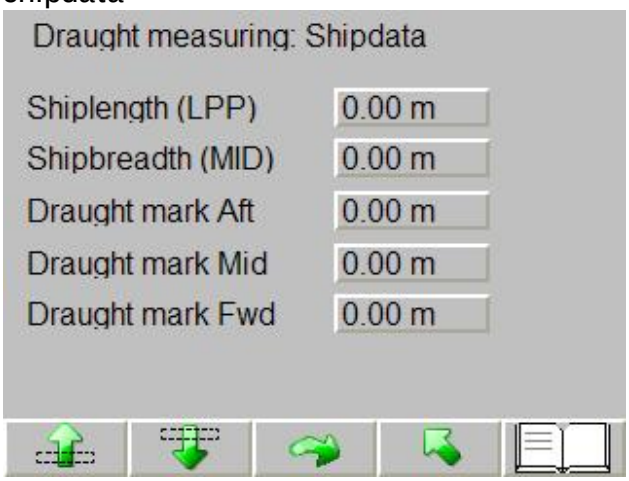


The Settings button opens the dialog to the calibration parameter. This should only be done only in service cases.

Settings

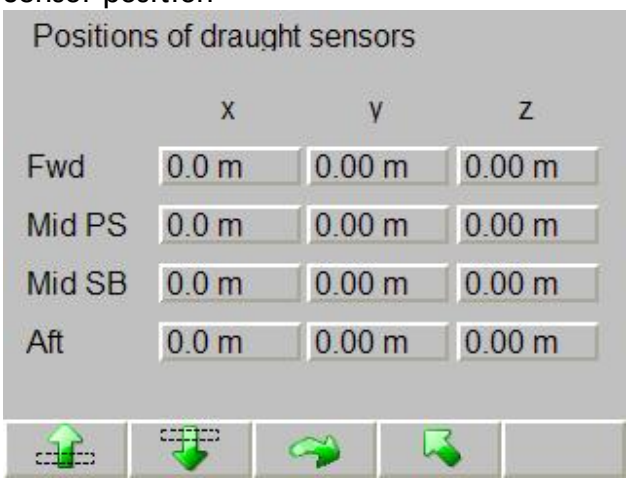


Shipdata



Enter the ship main dimensions and the X-Position of the draught marks

Sensor position

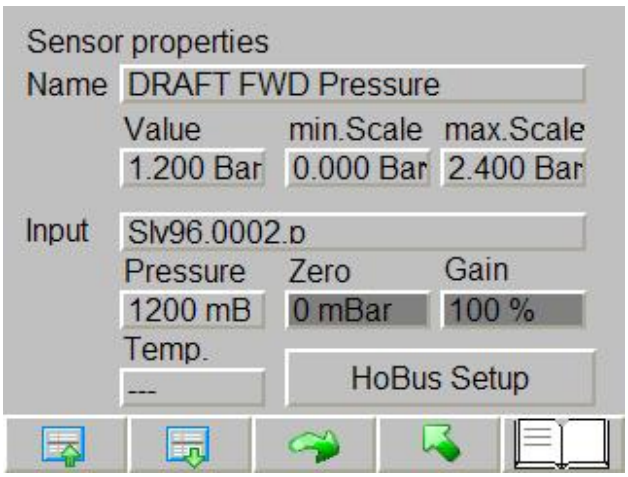


Enter the xyz-coords of the installed sensors for draught measurement

Sensor calibration: selection

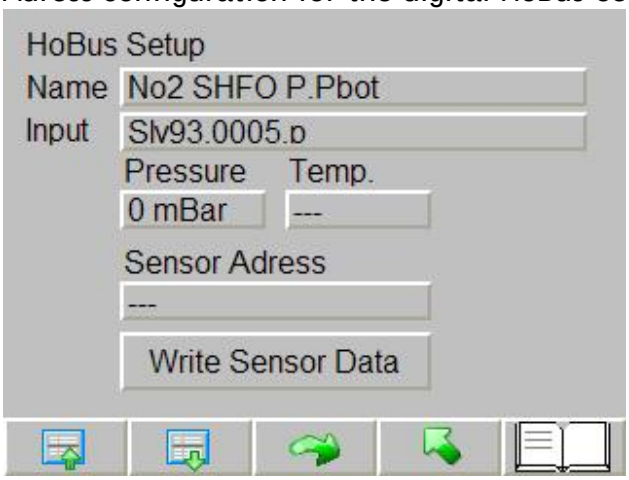
Select a sensor for calibration/configuration

Sensor calibration: Calibrate the sensor



Zero and gain sensor adjustment can be done using this dialog window. If the sensor is the digital HoBus an additional address set up dialog is available to configure the digital connection to a newly installed sensor.

Adress configuration for the digital HoBus-Sensor

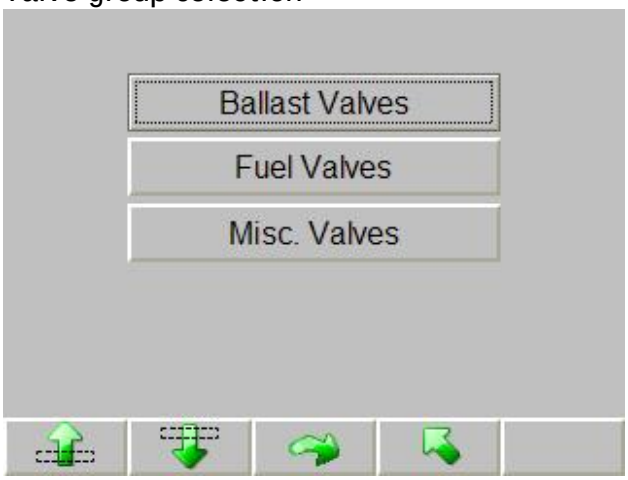


Valves

HOMIP controls and monitors the different kind of valves on board the ship by controlling the relais or transistor output to the valve actuator and receives limit switches or the analog position indicator mode in return. The indicators are mounted on top of the valve to report the actual position. The actuator can be driven hydraulically, pneumatic, electric or as a combination of these. As such the output signal of the HOMIP depends on the type of actuator and can be pulse, steady signal or a pulse pattern. For the end user, it is not necessary to understand these complex signals as the controlling and monitoring function for all valves always remains the same.

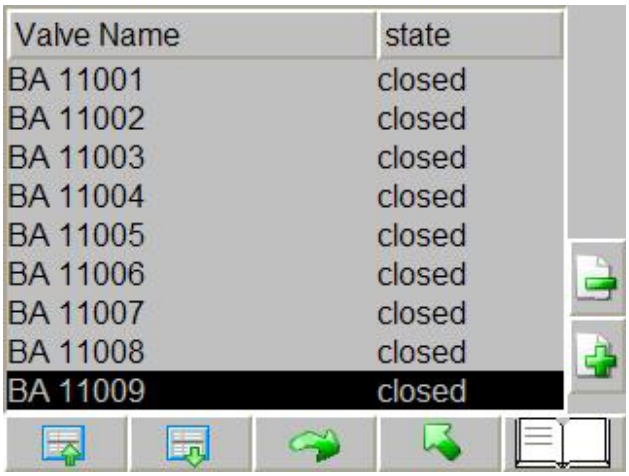
The HOMIP divides all valves into two groups: open/closed valves and position controlled valves, i.e.: Throttle valves (TV) that can be put in every position between 0…100%. To make operating as easy as possible all valves are listed in three different groups. Ballast Valves, Fuel Valves and Misc. Valves

Valve group selection



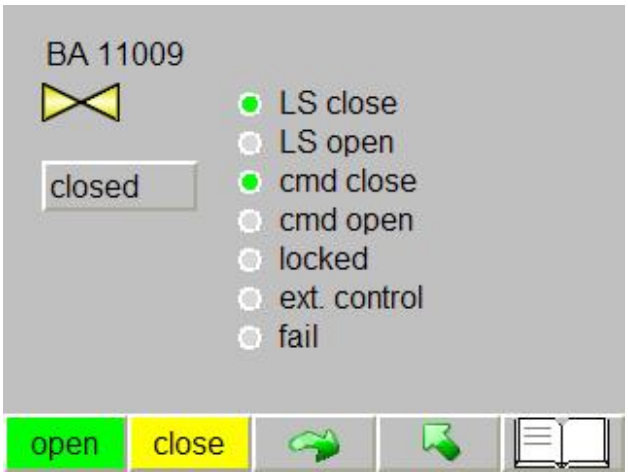
Pressing one of the buttons will show a list dialog with an overview of all valves belonging to that group.

Valve selection



The actual state of the valve is shown with the valve name and can be closed, opening, open, closing, fail or a percentage value (0..100%) if it is a Throttle Valve. The state “opening” and “closing” means the valve has not achived its final position, because it is still moving or blocked. Should the valve not reach the final position in a time shorter than the maximum allowed rotating time, an alarm goes off and the state changes to “fail”. The maximum rotating time is a preprogrammed parameter that is determined by the size of the valve and the type of the actuator. To control a valve or to read more details the following dialog can be shown after selecting a valve in the list and pressing the enter button  .

Valve details



Different valve conditions are displayed within the valve symbol in different colours and flashing mode:

Yellow	valve is closed
Green	valve is open
Yellow flashing	valve is moving to the close position
Green flashing	valve is moving to the open position
Red	fail, refer “Fail” below

Also, the display shows signal lights indicating the state of the different input and output signals:

LS close	limit switch engaged in the closed position of the valve
LS open	limit switch engaged in the open position of the valve
Cmd close	internal state of the actuator, position to achive is closed
Cmd open	internal state of the actuator, position to achive is open
Locked	it is not possible to control the valve, because it is controled by an internal automation logic or an external signal forbids to move the valve.
Ext. control	the valve is under control of an external system. It can not be controlled by the HOMIP
Fail	the valve is not reacting correctly. The max. rotation time was exeeded in the last try to operate the valve or the input signals of the limit switches are faulty.

To control the valve the touch buttons “open” and “close” are used.

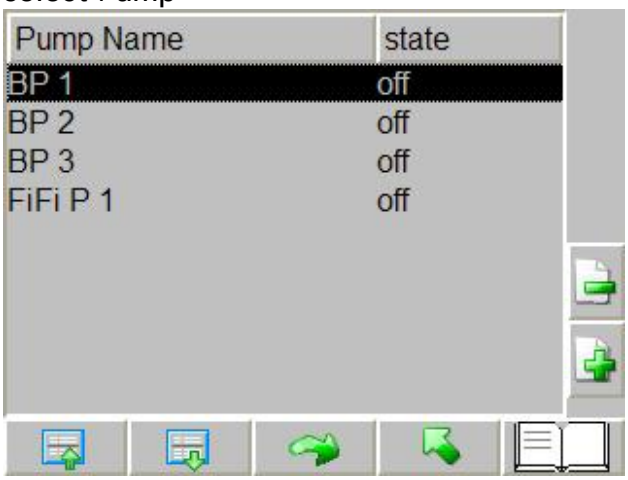
If the valve requires special access authentication a PIN dialog window will appear.

If the valve is a Throttle valve, the dialog contains additional information about the actual position in percent and the input field for the new position to achive.

Pumps

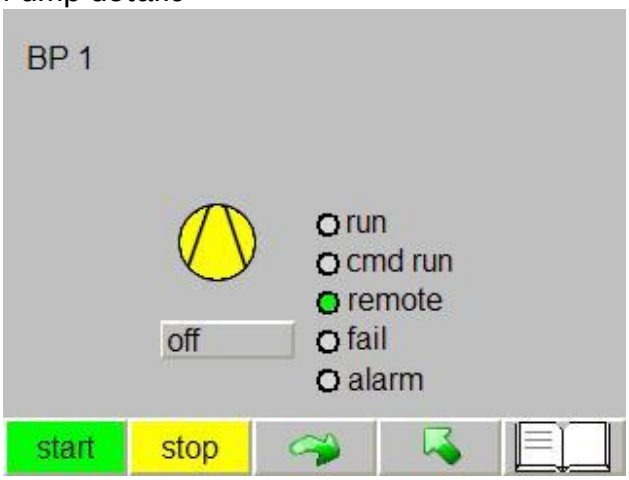
HOMIP controls and monitors the different kind of pumps on board the ship by controlling the relais or transistor output to the main pump control unit and receives analog signals of pressure, RPM and other pump process related data. Depending on the data available the dialog window may look different.
Touching the ‘pump’ button on the start dialog HOMIP will display the overview of all pumps. Each pump name is followed by the mode it is in; off, run or fail.

Select Pump



By selecting one pump and pressing the Enter button  , further details will be displayed.

Pump details



Different pump conditions are displayed within the pump symbol in different colours and flashing mode:

Yellow	pump stopped
Green	pump is running
Yellow flashing	command “stop” was send, but the run signal is still active
Green flashing	command “start” was send, but the run signal is not active
Red	fail, refer “Alarm” below

The optical signals indicate the following:

Run	the pump control unit signals that the pump is running
Cmd run	internal command that was send last to the pump control unit
Remote	the pump control unit is able to receive control signals
Fail	the control unit is sending a failure signal
Alarm	the run signal is not in the same state as the last command for a time longer than the max. pump start time or the fail signal appeared

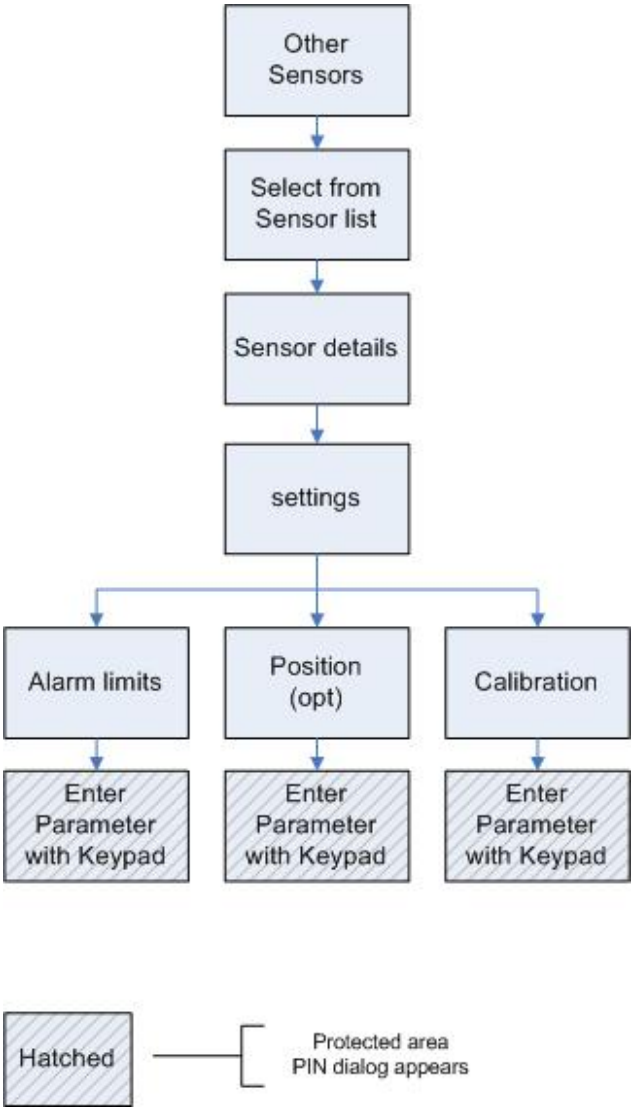
To control the pump the touch buttons “start” and “stop” are used. If the pump requires special access authentication a PIN dialog window will appear.

Other sensors

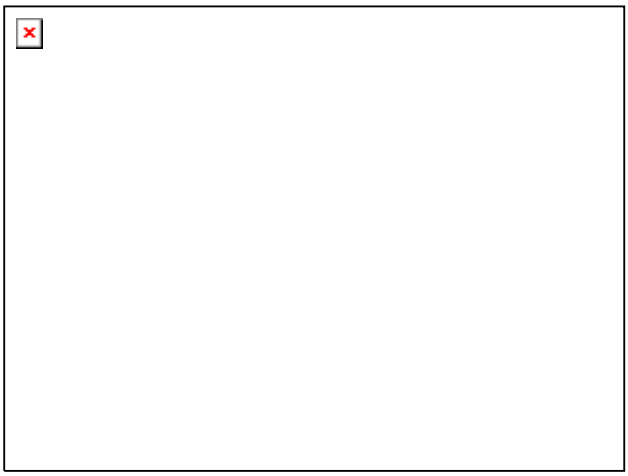
Principle of other sensors

This category compiles all sensors not covered by any of the main chapters. It could be air pressure measurement, system sensors for air or hydraulic. Relevant adjustment possibilities are found in the sub dialog window.

Other sensors dialog flow chart



Other sensors dialog

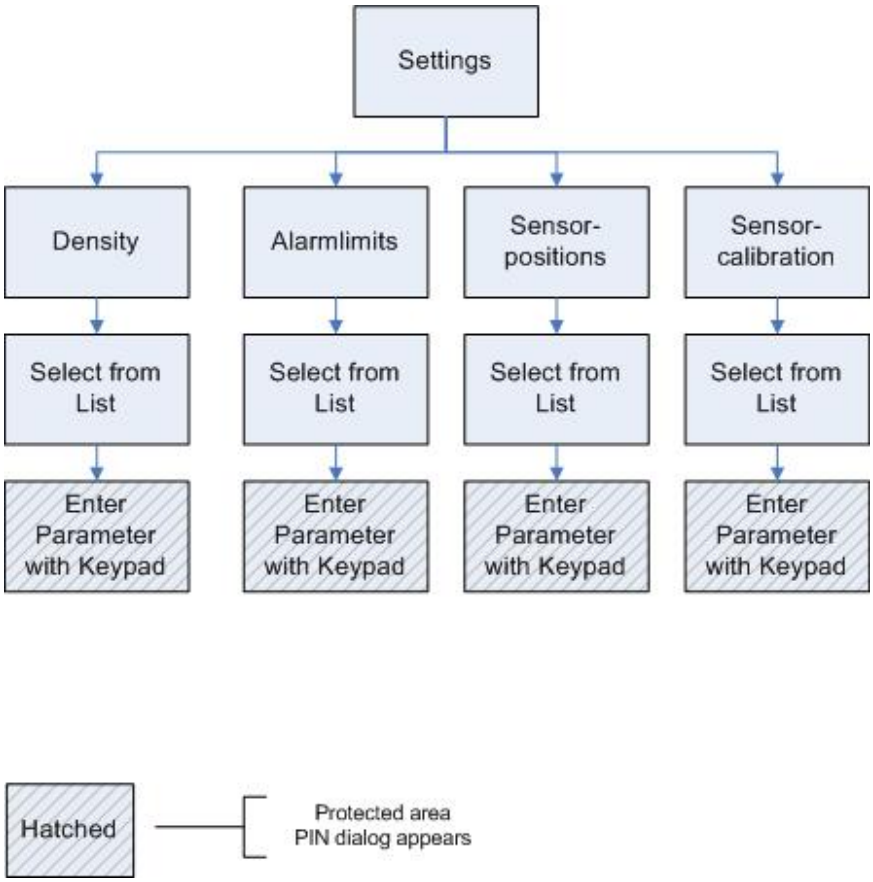


Touching the “other sensors” button on the start screen will lead straight to this dialog window. Here, various other measurements are displayed as list elements. If the  Enter Button is pressed, the sensor calibration dialog for the selected sensor shows up. This may be a restricted area, so the PIN Dialog may open before you can acess the calibration values.

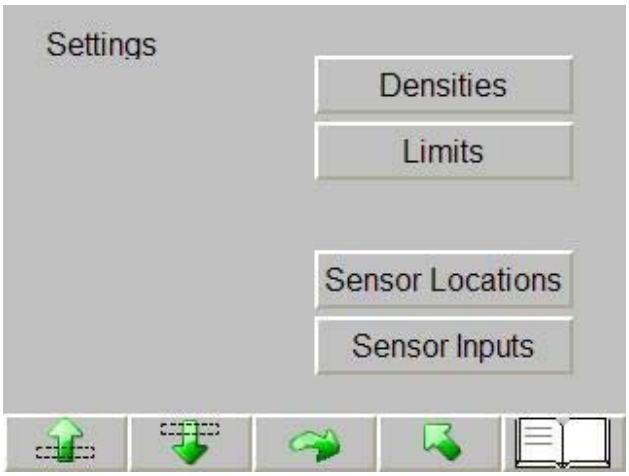
Settings

Often appearing system settings are compiled as lists in this dialog. Easy to call up and if necessary easy to change. For this, all parameters are compiled in different lists and therefore it is possible to control or adjust bigger amounts of parameter easily. The possible groups are: sensor positions, densities, alarm limits, and more.

Settings dialog flow chart

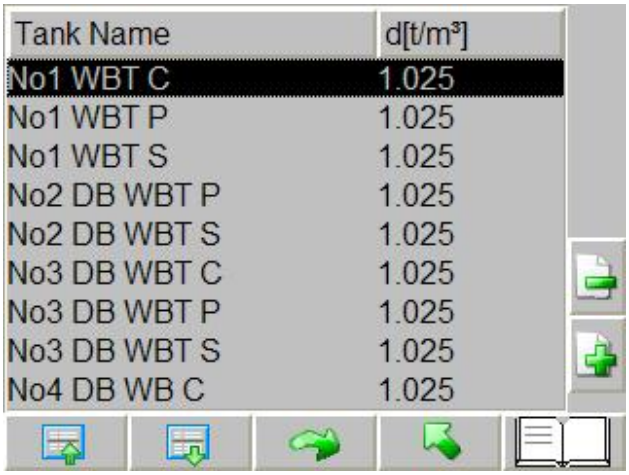


Settings dialog



Touching the “Settings” button on the start screen will open this dialog window. Different touch buttons lead from here to the various setting related dialog windows.

Density settings dialog

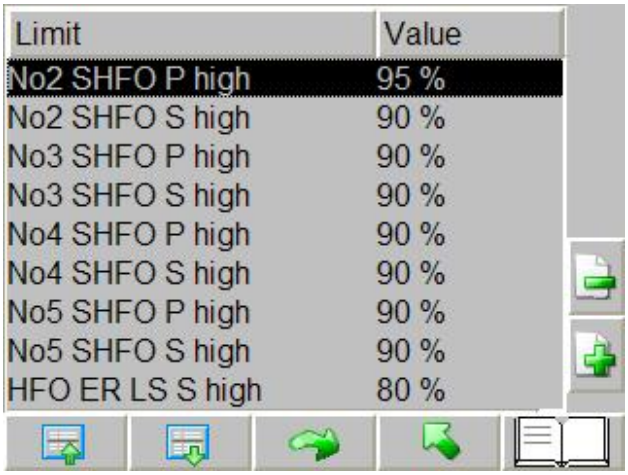


It displays the various densities as list elements. To access the list element it must be selected (Selection) and entered. This action will lead straight to the keypad and will allow the user to change the setting.

Pinpad – Keypad

Refer to the technical terms chapter for further details.

Limit Settings dialog



It displays the various limits (in %) as list elements. To access the list element it must be selected (Selection) and entered. This action will lead straight to the keypad and will allow the user to change the setting.

Keypad

Refer to the technical terms chapter for further details.

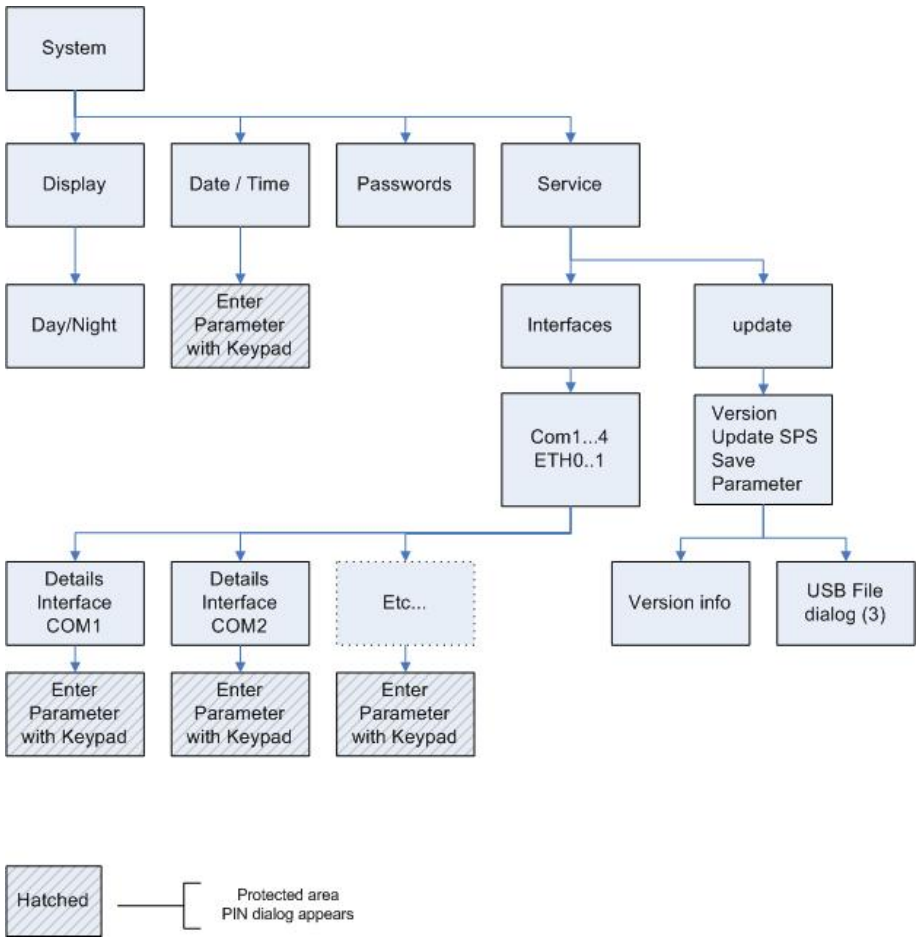
Sensor positions dialog

It displays the various sensor positions as list elements. To access the list element it must be selected (Selection) and entered. This action will lead straight to the keypad and will allow the user to change the setting if the programmed setting differentiates from the original.

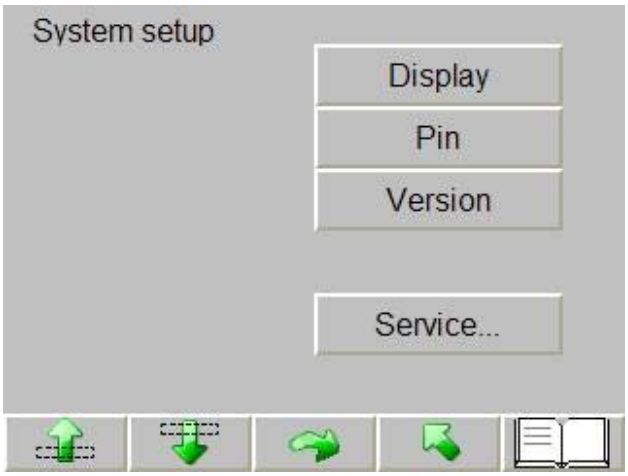
System

This category containes system settings like time, date, day/night mode and service dialogs. The most service dialogs are restricted and require a PIN before accessing the keypad.
The day/night screen adjustment are not restricted and do not require a PIN. Adjustments in the service area are of high importance and affect the entire system. Inputs should only be done by experienced staff and under strict technical advice. The service dialogs consist of interface configuration, update and information memory.

System flow chart

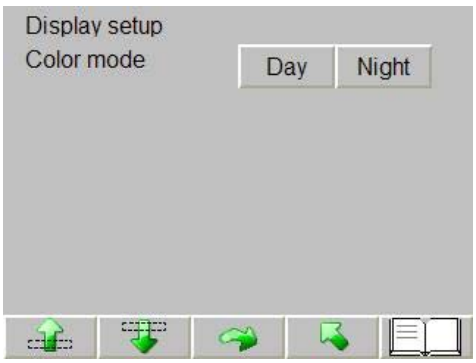


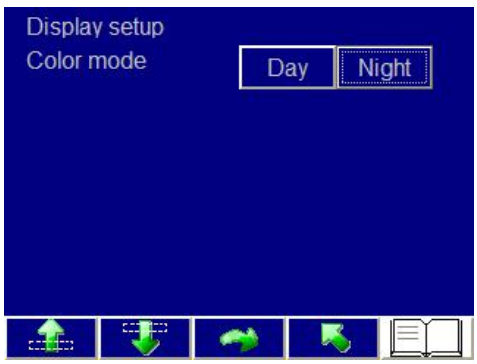
System dialog



Touching the “System” button on the start screen will open this dialog window. Different touch buttons lead from here to the various system related sub dialog windows.

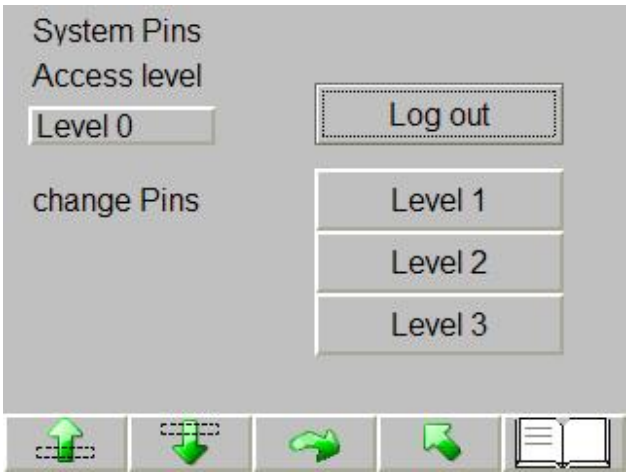
Display dialog





This dialog will let the user choose between day or night mode. Night mode is usefull when you work in a dark envirement, i.e. wheelhouse at night.

Pin Administration



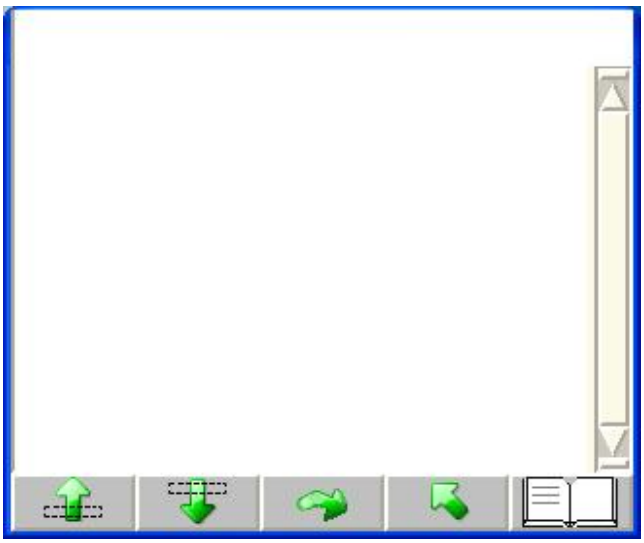
This dialog window will permit the user to clear the actual access level to level 0 so that all restricted operations can only be executed after the appropriate PIN input. Also, changing the PINs for level 1, 2 &3 can be done here. To change a PIN the minimum requirement is the PIN for level 3.

The following PINs are assigned as default factory settings:

Level 1: 1111
Level 2: 2222
Level 3: 3333

Version

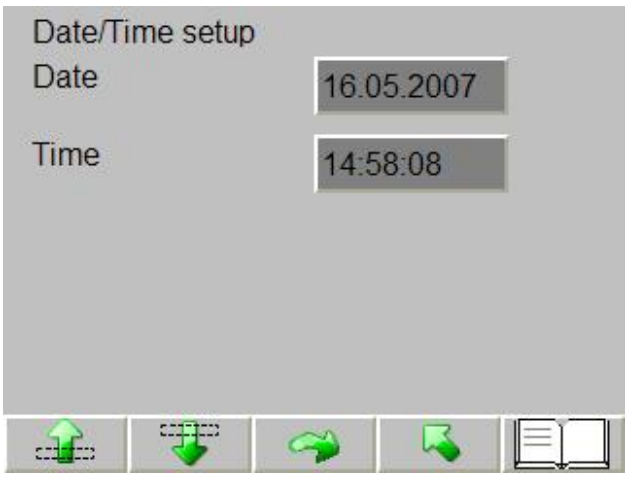
This dialog window displays all the relevant information regarding the installed hardware and software on the HOMIP. Version number of the installed PLC and graphic application is shown on top of the display and followed by detailed information about the operating system and the used graphic library. Please note that all this information is only required for service or maintenance operations



Service

This is the portal to all service related areas of the configuration. Most of the functions are only useful to trained HOPPE service personal and should not be accessed by unauthorized personal. For a brief overview all important functions are listed below

Date/Time



The actual system time of the HOMIP is shown on this dialog window. The true time/date input can be done via the key pad and should always be set to GMT = 0. During times of power outage the internal clock is powered by a lithium battery.

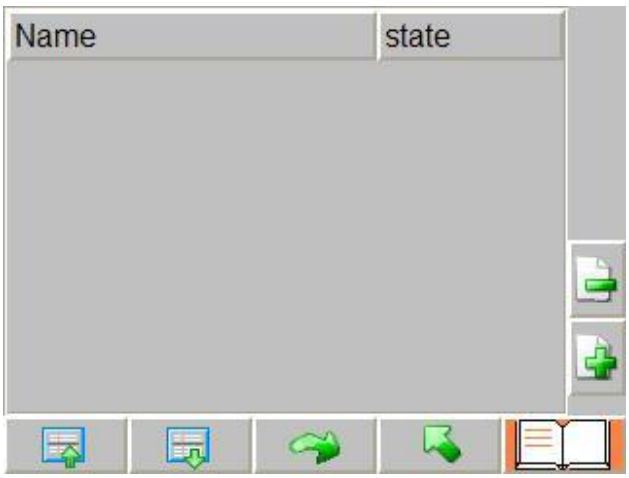
NOTE: Changing the system time is a serious intervention for a time based application like a PLC and might result in unforeseen and unwanted actions!

System time change is only permitted during safe operation mode! Never adjust the time during bunkering or loading / unloading when the HOMIP is needed!

After adjusting the time it is necessary to boot the system by switching the power off and on!

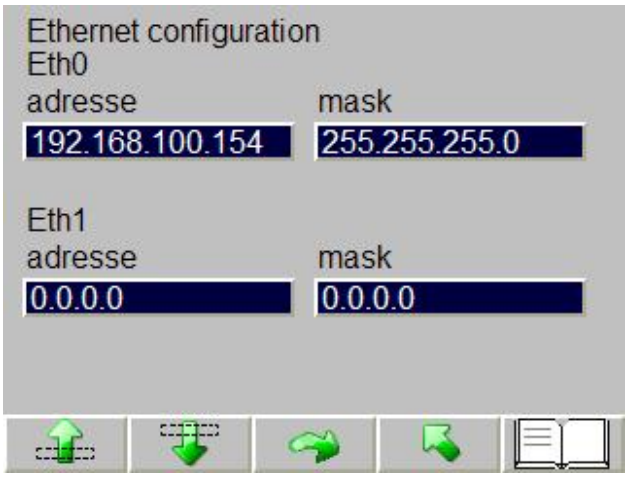
Moduls

This dialog shows the state of connected external moduls in form of a list. Further information is provided by pressing  after selecting the modul in the list with the  and  buttons.



Depending on the typ of modul, there are different interfaces provided for the different moduls. Each screen supplies detailed data about the connection quality and other service parameters of the selected modul.

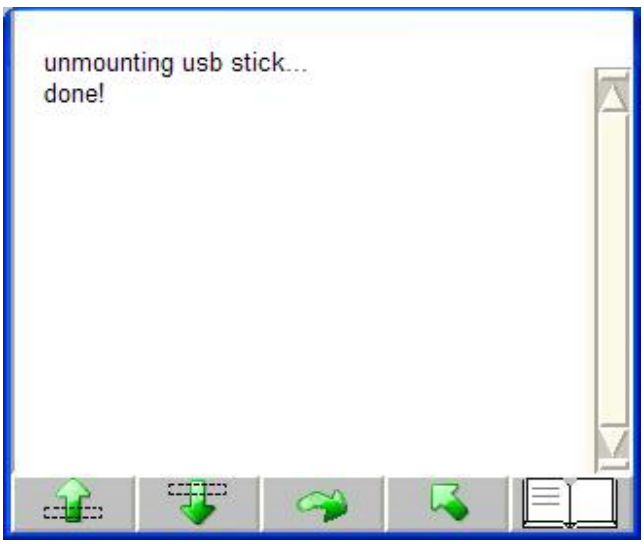
Network



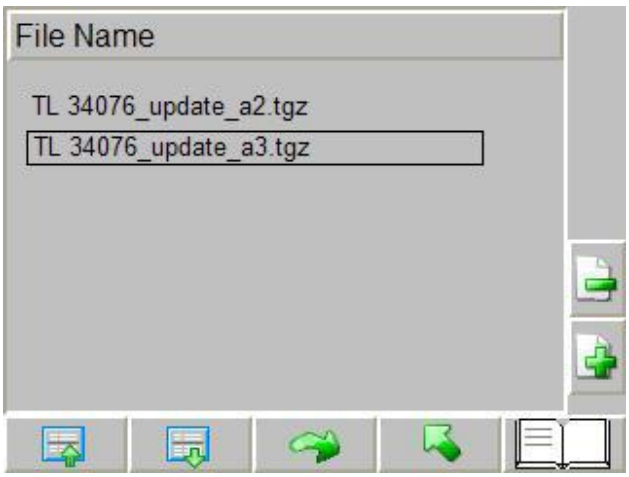
Configuration of IP - adresses und Netmasks for the two ethernet interfaces

Release USB

If a USB stick has been used to update or store information parameter it has to be “released” by the software before it can be physically removed. Touching this button starts the script to finalize writing all information onto the USB stick and disconnects. Only then is it safe to remove the stick.



Update



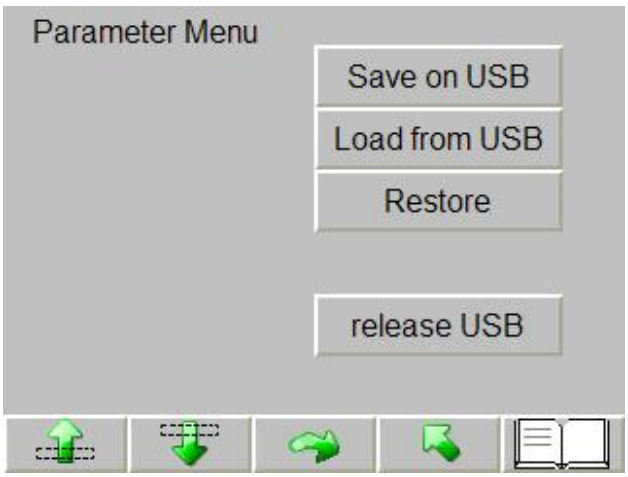
Software updates consist of one or more data files. These files must be copied into the basic folder (\) of the USB stick. NOTE: Read below safety instruction carefully before proceeding! Then push the USB stick into the middle port on the underside of the running HOMIP and call up the system/service/update window.After a few seconds a list of all possible update files on the USB stick will appear on the screen. Choose the to be installed update by scrolling with the / and, after the correct choice, start the update by touching the enter icon . If more then one update is supplied please read the attached installation instructions carefully and follow accordingly. The update will only be valid after the next re-boot of the system.

NOTE: Installing of software is a serious intervention for a time based application like a PLC and might result in unforeseen and unwanted actions during the update process!

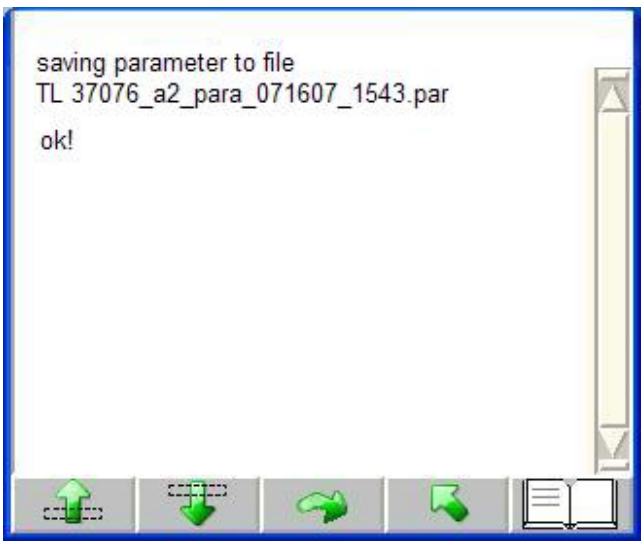
Updateing is only permitted during safe operation mode! Never update the software during bunkering or loading / unloading when the HOMIP is needed!

After updateing the software it is necessary to boot the system by switching the power off and on!

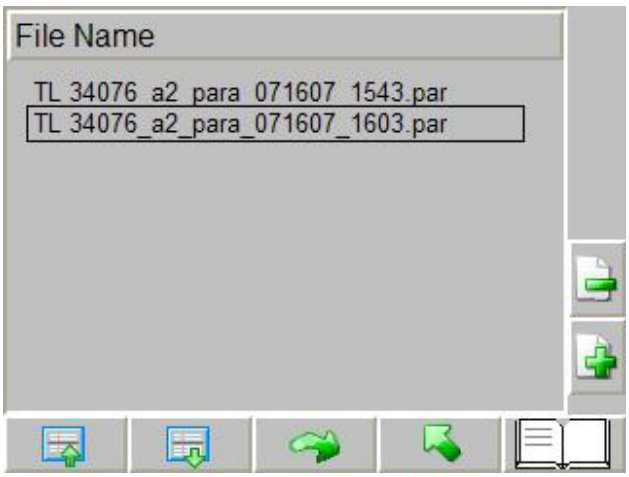
Paramter save/restore/load



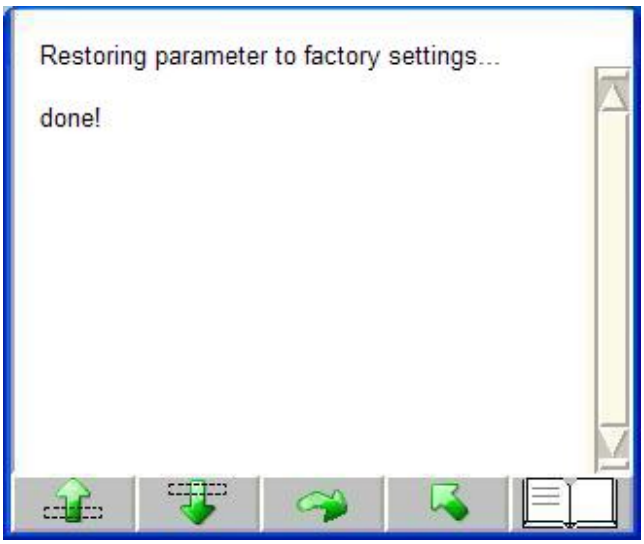
save parameter



load paramter from USB Stick



Restoring parameters to factory settings



Diagnosis and Service functions

Fuse change


The **HOMIP** supply current is protected with a 20mm fuse. This fuse is accessible from the outside. (Refer also to the access panel, back of unit chapter) In case of the **HOMIP,** in defiance of the power being on, not starting (all LED's dark & no LCD display) the fuse should be checked. For this, please unscrew the fuse insert and remove the fuse. In case of the fuse being faulty please replace with exactly the same. If the new fuse trips within a short time period again one should presume that the **HOMIP** is faulty. Never replace the fuse with a stronger type!

USB

For the service function update, store parameters, transfer data and software onto the **HOMIP** a standard USB stick can be used. This can also be used to back up or copy existing **HOMIP** data onto the USB stick. Both USB ports can be used simultaneously or separately. For more information please refer to the service manual.

System monitoring

System alarm

System errors can be reported to the superior units via the systemalarm relay. This relay will open if an internal electronically error happens to the system. A red LED is located on the front panel (refer also to the front panel description chapter) and indicates the condition of the relay. The alarm will be activated also if the system looses power supply. In this case the LED will stay dark. Please be aware that the relay is open and the LED will glow red also during the start up process (refer also to the power on chapter). In case of the **HOMIP** only partly operating the LED will glow and an acoustic warning signal will go off.

System Alarm Modulbus interface

If a bus module (RAD8, RDIO12, HoBus, etc…) is not responding in the interchange of data any longer it will be reported to the alarm list after 10 seconds as a system alarm. This will result in the acoustic alarm going off as well as triggering the “system alarm” relay (Connector X1:3-4). The message will remain in the alarm list till it is acknowledged and the connection is back to normal. A later error analysis is possible as each master module in the **HOMIP** is equipped with an error counter. This report can be viewed on the screen and set back to zero with a touch button if necessary. To take electric measurements on the modulbus, a service function is added that allows switching the bus into an idle state.

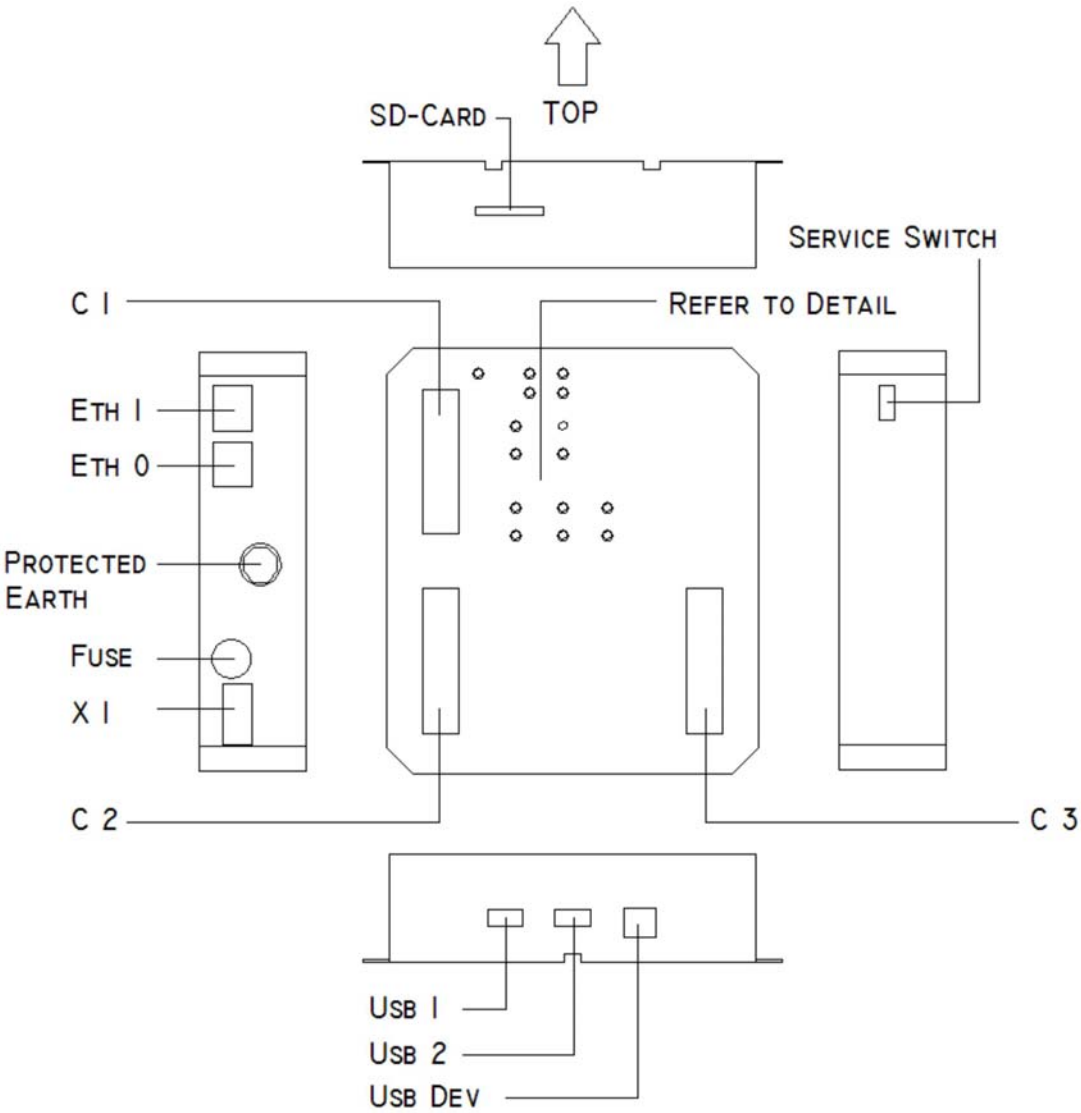
Other system alarms

Additional to the internal failures and databus malefunction there might be several external conditions that can trigger a system alarm. Control air supply, hydraulic pressure supply, power supply of subunits are good examples for such additional signals that are so important to treat them like a “part of the control system”. Faulty conditions in one of this signal can also triger the systemalarm relay and the front LED. An entry in the alarm list will show the cause of the alarm.

Dead man alarm

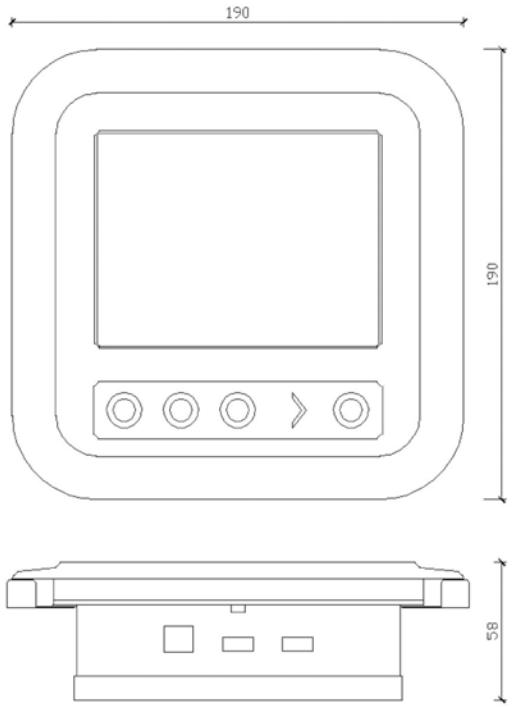
The **HOMIP** will activate a full system alarm if the acoustic warning of an operational alarm is not acknowledged within 3 minutes. An entry in the alarm list will show the occurrence of of this special condition

Access Panel, back of unit

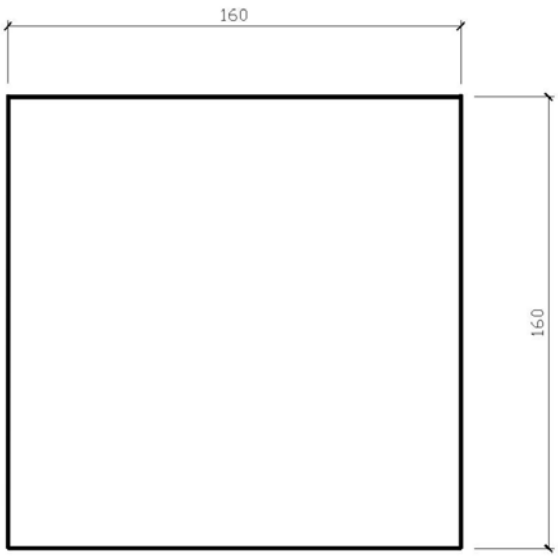


Appendix

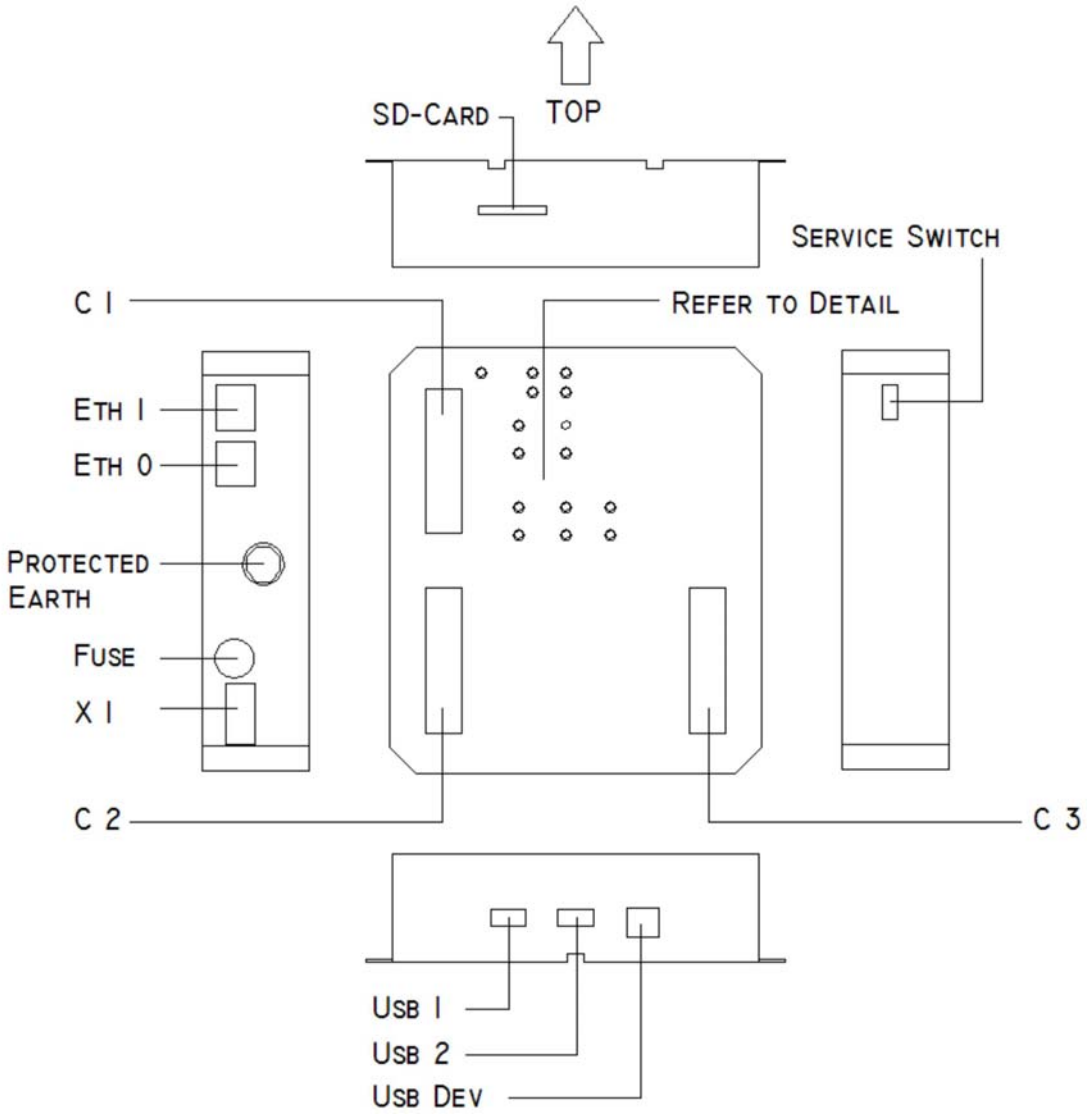
Technical drawing



Panel cut out



Back of HOMIP



Warning: Do not operate service switch, only for internal use!

Opening the back cover

Before accessing the internal pc boards switch off the power and unplug the C1 – C3 terminals. Proceed by loosening all screws around the top edge of the lid.
Once the lid feels loose remove it gently without damaging the pc board inside.

Technical Specification

STANDARD DATA

SIZE (W x H x D)	190 x 190 x 58 mm
CUT OUT	160 x 160 mm
INSTALLATION DISTANCE	left, top, right: 50 mm Bottom: 80 mm
WEIGHT	1.1 kg
MAX. OPERATIONAL TEMP.	+5 - +55 degree Celcius
MAX. STORE/TRANSPORT TEMP.	-20 - +60 degree Celcius
MAX. STORE/TRANSPORT HUMIDITY	10% - 85% not condensing

MECHANICAL REQUIREMENT

VIBRATION TEST	
SHOCK TEST	

DISPLAY DATA

RESOLUTION	320 X 240
DISPLAY	LCD
COLOUR RANGE	65000
BRIGHTNESS	Typ. 280 cd / m²
TOUCH SCREEN	INDUSTRIAL STANDARD RESITIV

COMPUTER DATA

PROCESSOR	ARM 9, 200 MHZ, 32 BIT, 16k CACHE
OPERATING SYSTEM	LINUX
BOOT ROM	1MB
RAM	64 MB
FILE SYSTEM	NAND FLASH, 256 MB
FUSE	5 AMP, FAST
POWER SUPPLY UNIT	24 / 48V (18V-53V)
INPUT POWER	15W, aprox. (30W max.)

INTERFACE

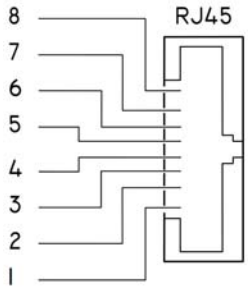
POWER SUPPLY & SYSTEM ALARM	PHOENIX, 4 PIN
NETWORK	2 x ETHERNET RJ 45 10/100MBit
USB	1 x V 1.1 DEVICE & 2 x V 1.1 HOST
CARD INTERFACE	SD / MMC
SERIAL INTERFACES	1 x RS 422 & 3 x RS 485, 1x CAN 500Kbit ALL INTERFACES ISOLATED 250VDC
Relais Systemalarm + K2	1A / 50 VDC resistiv load 0.5A /125 VAC
Opto Inputs (E1..E4)	max. 50VDC Input Voltage max. OFF:12VDC min. ON 14V

TERMINALS

C1: Sub-D 25 female

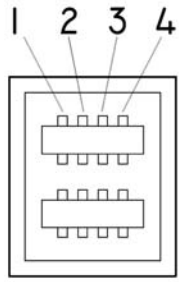
Pin	Function	Pin	Function
1	Com1-p	14	Com1-Gnd
2	Com1-n	15	Com2-p
3	Com2-gnd	16	Com2-n
4	Com3-p	17	Com3-Gnd
5	Com3-n	18	Com4-Gnd
6	Com4-Txd-p	19	Com4-Rxd-p
7	Com4-Txd-n	20	Com4-Rxd-n
8	CAN+	21	CAN-Gnd
9	CAN-	22	Relais-NC
10	Relais-com	23	Relais-NO
11	Digital In1..4 Gnd	24	Digital In1+
12	Digital In2+	25	Digital In3+
13	Digital In4+		

Ethernet



Pin	Signal
1	RD+
2	RD-
3	TD+
4	Not used
5	Not used
6	TD-
7	Not used
8	Not used

USB



Pin	Signal
1	V cc (+5 V DC)
2	Data -
3	Data +
4	GND

Mechanical installation specification

Panel fixture

Each **HOMIP** is supplied with 4 custom designed spring clips fixed onto the injection moulded case with screws. After pushing the **HOMIP** through the 160x160mm pre-cut opening loosen the screws and swing the clips out. Once the clips are positions in a right angle to the case, tighten the screws.

Icons used

 Back: Moves one dialog window back. Dialog on the same level or numerical input is not affected by the back function.

 Up: Moves the “Focus” one element up. It therefore moves one element backwards towards the beginning of each window or list.

 Down: Moves the “Focus” one element down. It therefore moves one element forwards towards the end of each window or list.

 Enter: Moves one dialog window further. If a dialog function is in “Focus” this button will lead the user to the next sub dialog containing the related information.

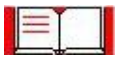
 Up selection: Moves the selection (coloured bar) one list element up. It therefore moves one element backwards towards the beginning of the list.

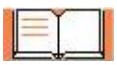
 Down selection: Moves the selection (coloured bar) one list element down. It therefore moves one element forward towards the end of the list.

 These icons allow the user to speed scroll a list page by page.

 Checkmark: Acknowledges alarm list entries.

 A new alarm is added to the alarm list. An acoustic signal goes off. (icon is flashing)

 At least one unacknowledged alarm is displayed. These alarms are under laid in red. (icon is flashing red)

 All alarms are acknowledged, but not all are rectified. (icon under laid orange)

 No alarms are listed. Normal state (icon grey)

CERTIFICATES

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Type Approval Certificate

Germanischer Lloyd

This is to certify that the undernoted product(s) has/have been tested in accordance with the relevant requirements of the GL Type Approval System.

Certificate No.	**17 091 - 00 HH**
Company	**Hoppe Bordmesstechnik GmbH** **Kieler Straße 318** **D-22525 Hamburg**
Product Description	**Electronic Moduls**
Type	**AH- +UNI-MIP, HOP-O-01A+I-01A, RDU BG51+7S2, RAD6+6U, RDA8, RDO8+16E +32TE, RDI16+32E, RDIO12, RAD8, RDCE, HCG4010/KS, HOBUS-D, HOPAC, HOHAC**
Environmental Category	**C; EMC2**
Technical Data / Range of Application	**AH-MIP:** Anti Heeling Electronic Unit / Microcontroller 80C537 **HOP-O-01A:** Digital Output Modul for AH-MIP **HOP-I-01A:** Digital Input and Power Supply Modul for AHMIP **UNI-MIP:** Universal Electronic Unit / Microcontroller 80C537 **RDU BG51:** Bargraph Indicator **RAD6, RAD6-U, RAD8:** Analog Input Modules **RDA8:** Analog Output Module 0(4) - 24 mA/ 0-10V **RDU 7S2:** Numeric LED Indicator **RDO8, RDO16E, RDO32TE:** Digital Output Modul (E = Extension) **RDI16, RDI32E:** Digital Input Modul (E = Extension) **RDIO12:** Digital Input Output Modul **RDCE:** Remote Digital Controler Extension Modul **HCG4010/KS:** Bus Sensor Tanktransmitter **HOBUS-D:** Junction Box **HOPAC, HOHAC:** Position Indicator **Pendulum:** Pendulum Transmitter PE 4000
Test Standard	**Guidelines for the Performance of Type Approvals, Part 2, Edition 2003**
Documents	**Test report : Pb-Nr. 3438 / 00 dated 18-08-2000 and Pb-Nr. 3439 / 00 dated 10-08-2000; EMC Protocol 000107 dated 22-07-2000 and 04895.168.04 dated 20-10-2004 System Documentation 9190-... and 9191- ... dated May 2000**
Remarks	**None**
Valid until	**2010-09-11**

Page 1 of 1

Type Approval Symbol GL

File No. I.A.03

Hamburg, 2005-09-12

Germanischer Lloyd

i.V. J. Wittburg

i. A. A. Grün

This certificate is issued on the basis of "Guidelines for the Performance of Type Approvals Part 1, Procedure".

Type Approval Certificate

Germanischer Lloyd

This is to certify that the undernoted product(s) has/have been tested in accordance with the relevant requirements of the GL Type Approval System.

Certificate No.	20 760 - 04 HH
Company	Hoppe Bordmesstechnik GmbH Kieler Straße 318 D-22525 Hamburg
Product Description	Tank Content & Draught Measuring System
Type	HOTAG / HODRA
Environmental Category	None
Technical Data / Range of Application	Tank Content Measuring System Tank Meter UNI MIP-TI Remote Indicator RDU BG 51 Voltage Supply : 24 V DC Serial Connection RS 485 Sensor Output Signal 4-20 mA Draught Measuring System Draught Meter UNI MIP-TM Serial Connection RS 485 Sensor Output Signal 4-20 mA Software Version: 9140 V0.0. dated 22-09-2000 Software Version: 9110 V0.0. dated 22-09-2000 Test and Evidence regarding Requirement Class 3
Test Standard	Regulations for the Use of Computers and Computer Systems
Documents	Test report : 9140-0005 and 9110-0005 ; Software Description 9110-0002 and 9140-0002; Functional Description 9140-0003 and 9110-0003; Operation Manuals: 9140-0007 and 9110-0007 9110 dated 14-09-2000 and 9140 dated 10-01-2001
Remarks	Documents for all applications on board to be sent for approval. Use of type approved hardware (GL-Certificate 17 091-00 HH) only
Valid until	2009-07-09

Page 1 of 1

Type Approval Symbol

File No. I.A.03

Hamburg, 2004-07-10

i.V. J. Wittburg

i.A. A. Grün

Germanischer Lloyd

This certificate is issued on the basis of "Regulations for the Performance of Type Tests, Part 0, Procedure".

Type Approval Certificate

Germanischer Lloyd

This is to certify that the undernoted product(s) has/have been tested in accordance with the relevant requirements of the GL Type Approval System.

Certificate No.	55 505 - 92 HH
Company	Hoppe Bordmesstechnik GmbH Kieler Straße 318 22525 Hamburg, GERMANY
Product Description	Tank Pressure Transmitter
Type	CX 1001 HCG 2011 - FW, - FU,- GW, - GU, - KS, - KR, - PR, - PS.
Environmental Category	D, EMC2
Technical Data / Range of Application	Power supply: 24 V DC, two - wire connection Output signal: 4 mA to 20 mA within measuring range, max. 32 mA Ranges: 0 - 250 mbar, 0 - 400 mbar, 0 - 600 mbar, 0 - 1.0 bar, 0 - 2.5 bar, 0 - 4 bar. Failure sensor: < 0.4 % (-10 to 70 °C), < 0.8 % (70 to 90 °C) Media: freshwater, seawater, oil with flashpoint above 60 °C Flange types: CX 1001, HCG 2011- FW, - FU,- GW, - GU. Cable types: HCG 2011 - KR, - KS, - PR, - PS. Type HCG 2011 PR and HCG 2011 PS with separate Pt 100 sensor Accuracy: Class B according to DIN 43760 Degree of protection: IP 68 Series HCG 2011 - xx : certified safe type EEx ia II C T6 Drawings: E 2314/20534-40; 9240-50-0100/-0250/-0350/-0450/-0500
Test Standard	Guidelines for the Performance of Type Approvals, Part 2, Edition 2003
Documents	Test report: Aqua Signal QTR F10, TÜV: GEM1-EV-.2/3/1518/92, KV96.8.1 dated 24-09-1998; TÜV96 ATEX1137X; DASA Doc. No. 03379.136.92, CX 200/920415 Labom, GLR-250HC, - 1.6HC; EMC No. 3895/02 and No. 3896/02 dated 23-05-2002; Circuit diagram: ECB 1020-xxS1,-GES2,-AES1,-NES1
Remarks	None
Valid until	2012-05-15

Page 1 of 1

Type Approval Symbol GL

File No. I.D.01

Hamburg, 2007-05-16

i.V. Jürgen Wittburg

i.A. Andrea Grün

Germanischer Lloyd

This certificate is issued on the basis of "Guidelines for the Performance of Type Approvals Part 1, Procedure".

EC-TYPE EXAMINATION CERTIFICATE

1

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 EC-Type Examination Certificate Number : **BAS01ATEX7145**

4 Equipment or Protective System: **MTL5015 TWO CHANNEL SWITCH/PROXIMITY DETECTOR INTERFACE WITH LINE FAULT DETECTION AND PHASE REVERSAL**

5 Manufacturer: **MEASUREMENT TECHNOLOGY LIMITED**

6 Address: **Luton, Bedfordshire, LU1 3JJ**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service, notified body number 600 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report N°

01(C)0220 dated 18 December 2001 (held on EECS 0703/02/299)

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + Amds 1 & 2 **EN 50020: 1994**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign **"X"** is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

12 The marking of the equipment or protective system shall include the following:-

Ex II (1) GD [EEx ia] IIC (-20°C ≤ T_a ≤ +60°C)

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0703/02/320

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44(0)1298 28000 Fax: +44(0)1298 28244
internet: www.buxefa.com e-mail: buxefa.info.eecs@hsl.gov.uk

pp I M CLEARE
DIRECTOR
29 April 2002

Re-issued 5 July 2002 to correct drawing numbers.

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7145**

15 **Description of Equipment or Protective System**

An MTL5015 Two Channel Switch/Proximity Detector Interface with line fault detection and phase reversal enables two safe area loads to be controlled by two switches or proximity detectors located in the hazardous area. Two floating solid state on/off switches compatible with logic circuits are provided for connection in the safe area circuit. The MTL5015 is designed to restrict the transfer of energy from unspecified safe-area apparatus to two independent intrinsically safe circuits by the limitation of voltage and current.

LED indication is provided to indicate power-on, line-fault and the status of each output. Switches permit the operator to specify the line fault detection and phase reversal requirements.

The MTL5015 apparatus comprises of three isolating transformers which provide galvanic isolation between the hazardous area and the non-hazardous area circuitry and two independent detection circuits each with zener diode/diode/resistance combinations to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for the hazardous area and non-hazardous area connections.

CON 3, Pins 7, 8, 9; CON 4, Pins 10, 11, 12 and CON 5, Pins 13 &14

U_m = 250V

The circuit connected to the safe area terminals CON 3, CON 4 and CON 5 are designed to operate from a d.c. supply voltage of up to 35V.

Channel 1, CON 1, pins 2/3 wrt 1
Or
Channel 2, CON 2, pins 5/6 wrt 4

U_o = 10.5V
I_o = 14mA
P_o = 37mW

C_i = 0
L_i = 0

Each channel may be considered as a separate Intrinsically Safe circuit.

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the hazardous area load must not exceed the following values:

13 Schedule

14 EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7145

GROUP	CAPACITANCE in µF	INDUCTANCE in mH	OR	L/R RATIO in µH/ohm
IIC	2.41	175		983
IIB	16.8	680		1333
IIA	75	1000		1333

Equipment referred to in this certificate having the same type number as items in BASEEFA Certificate No Ex 97D2266 may be used as a direct substitute in a system provided that the cable parameters used are within the limits shown on this certificate.

VARIATION 0.1

To permit the removal of components associated with the second channel thus forming the MTL5012 One Channel Switch/Proximity Detector Interface with line fault detection and phase reversal.

Channel 1, CON 1, pins 2/3 wrt 1

U_o = 10.5V
I_o = 14mA
P_o = 37mW

$C_i = 0$
$L_i = 0$

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the hazardous area load must not exceed the values for a single channel of an MTL 5015 above.

VARIATION 0.2

To permit the connection of MTL5000 Ring Terminal assemblies in place of the safe and hazardous area screw terminals. The enclosure remains IP20 whether or not the Ring Terminal is fitted. The following MTL5000 Ring Terminals may be connected to the MTL5015 and MTL5012. Blanking covers may be removed if necessary.

Hazardous Area Terminal	MTL5015 pins	1, 2, 4, 5
	HAZ-RT-1-5	1, 2, 3, 4
Safe Area Terminal	MTL5015 pins	8, 9, 11, 12
	SAF-RT-8-12	5, 6, 7, 8

Hazardous Area Terminal	MTL5012 pins	1, 2, 3
	HAZ-RT-1-3	1, 2, 3
Safe Area Terminal	MTL5012 pins	11, 12
	SAF-RT-11-12	7, 8

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7145**

16 **Report No.**

01(C)0220

17 **Special Conditions For Safe Use**

None.

18 **Essential Health and Safety Requirements**

ESSENTIAL HEALTH & SAFETY REQUIREMENTS not covered by standards listed in Section 9		
Clause	**Subject**	**Compliance**
1.1.3	Changes in characteristics of materials and combinations thereof	Report No 01(C)0220 Clause 5.1.1.3
1.2.2	Components for incorporation or replacement	Report No 01(C)0220 Clause 5.1.2.2
1.2.5	Additional means of protection	Report No 01(C)0220 Clause 5.1.2.5
1.2.7	Protection against other hazards	Report No 01(C)0220 Clause 5.1.2.7
1.4.2	Withstanding attack by aggressive substances	Report No 01(C)0220 Clause 5.1.4.2

19 **DRAWINGS**

Number	Sheet	Issue	Date	Description
CI5015	1	2	11.01	MTL5015 Parts List
CI5015	2	1	04.97	MTL5015 Circuit Diagram
CI5015	3	1	04.97	MTL5015 Component Layout
CI5015	4	2	11.01	MTL5015 General Assembly
CI5015	5	1	04.97	MTL5015 PCB Track Layout
CI5015	6	2	11.01	MTL5015 Transformer Winding Details
*CI5000-2	1	3	07.00	IS Transformer TFR300
*CI5000-2	2	3	07.00	IS Transformer TFR300
**CI5000-6	1	5	07.00	IS Transformer TFR309
**CI5000-6	2	5	07.00	IS Transformer TFR309

Drawings marked * are associated with and are held on BASEEFA Certificate BAS01ATEX7157
Drawings marked ** are associated with and are held on BASEEFA Certificate BAS01ATEX7147

Drawing associated with Variation 0.1

Number	Sheet	Issue	Date	Description
CI5012	1	2	11.01	MTL5012 Parts List
CI5012	2	1	04.97	MTL5012 Circuit Diagram

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7145**

Number	Sheet	Issue	Date	Description
CI5012	3	1	04.97	MTL5012 Component Layout
CI5012	4	2	11.01	MTL5012 General Assembly
CI5012	5	1	04.97	MTL5012 PCB Track Layout
CI5012	6	2	11.01	MTL5012 Transformer Winding Details

Drawing associated with Variation 0.2

Number	Sheet	Issue	Date	Description
***CI5000-12	1 to 4	1	02.02	MTL5000 Ring Terminal

Drawing marked *** is associated with and held on BASEEFA Certificate BAS01ATEX7144

This certificate may only be reproduced in its entirety and without any change, schedule included.

BASEEFA List Keywords
2ISOLBAR

1 # EC-TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 EC-Type Examination Certificate Number : **BAS01ATEX7155**

4 Equipment or Protective System: **MTL5044 TWO CHANNEL REPEATER POWER SUPPLY 4/20mA**

5 Manufacturer: **MEASUREMENT TECHNOLOGY LIMITED**

6 Address: **Luton, Bedfordshire, LU1 3JJ**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service, notified body number 600 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report N°

01(C)0220 dated 18 December 2001 (held on EECS 0703/02/299)

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + Amds 1 & 2 **EN 50020: 1994**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

12 The marking of the equipment or protective system shall include the following:-

Ex **II (1) GD** **[EEx ia] IIC** **(-20°C ≤ T_a ≤ +60°C)**

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0703/02/330

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44(0)1298 28000 Fax: +44(0)1298 28244
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I M CLEARE
DIRECTOR
29 April 2002

Re-issued 5 July 2002 to correct drawing issue numbers and dates.

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7155**

15 **Description of Equipment or Protective System**

An MTL5044 Two Channel Repeater Power Supply, 4/20mA provides a common fully floating d.c. supply for energising two conventional 4-20 mA transmitters which are located in the hazardous area. It then repeats the current in two independent floating circuits so as to drive loads situated within the safe area. It restricts the transfer of energy from unspecified safe-area apparatus to an intrinsically safe circuit by the limitation of voltage and current. Four transformers provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The apparatus comprises of two power transformers, two current transformers, and two output channels each protected by duplicated zener diodes chains and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for the hazardous and non-hazardous area connections.

CON 3, Pins 7, 8, 9; CON 4, Pins 10, 11, 12 and CON 5, Pins 13 &14

$U_m = 250V$

The circuit connected to the safe area terminals on CON 3, CON 4 and CON 5 is designed to operate from a d.c. supply voltage of up to 35V.

Channel 1 - CON 1, Pin 2 w.r.t. Pin 1
Or
Channel 2 - CON 2, Pin 5 w.r.t. Pins 4

$U_o = 28V$
$I_o = 93mA$
$P_o = 0.65W$

$C_i = 0$
$L_i = 0$

Each channel may be considered as a separate intrinsically safe circuit.

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the hazardous area load must not exceed the following values for either channel:

GROUP	CAPACITANCE (μF)	INDUCTANCE OR (mH)	L/R RATIO (μH/ohm)
IIC	0.083	3.05 (4.2)	55
IIB	0.650	9.15 (12.6)	210
IIA	2.150	24.4 (33.6)	444

13 Schedule

14 EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7155

When the external circuit contains no lumped inductance greater than 10µH i.e. the L_i of any attached apparatus is less than 10µH, the cable inductance may be increased to the values within parentheses.

Equipment referred to in this certificate having the same type number as items in BASEEFA Certificate No Ex 95D2339 may be used as a direct substitute in a system provided that the cable parameters used are within the limits shown on this certificate.

VARIATION 0.1

To permit the formation of a single channel version by omitting appropriate components thus forming an MTL 5041 Repeater Power Supply 4/20mA.

CON 4, Pins 10, 11, 12 and CON 5, Pins 13 &14

$U_m = 250V$

The circuit connected to the safe area terminals on CON 4 and CON 5 is designed to operate from a d.c. supply voltage of up to 35V.

CON 1, Pin 2 w.r.t. Pin 1

$U_o = 28$ V
$I_o = 93$mA
$P_o = 0.65$ W
$C_i = 0$
$L_i = 0$

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the hazardous area load must not exceed the values for a single channel of an MTL 5044 above.

VARIATION 0.2

To permit the connection of MTL5000 Ring Terminal assemblies in place of the safe and hazardous area screw terminals. The enclosure remains IP20 whether or not the Ring Terminal is fitted. The following MTL5000 Ring Terminals may be connected to the MTL5044 and MTL5041. Blanking covers may be removed if necessary.

Hazardous Area Terminal	MTL5044 pins	1, 2, 4, 5
	HAZ-RT-1-5	1, 2, 3, 4
Safe Area Terminal	MTL5044 pins	8, 9, 11, 12
	SAF-RT-8-12	5, 6, 7, 8

Hazardous Area Terminal	MTL5041 pins	1, 2
	HAZ-RT-1-2	1, 2
Safe Area Terminal	MTL5041 pins	11, 12
	SAF-RT-11-12	7, 8

13 Schedule

14 EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7155

16 Report No

01(C)0220

17 Special Conditions For Safe Use

None.

18 Essential Health and Safety Requirements

ESSENTIAL HEALTH & SAFETY REQUIREMENTS not covered by standards listed in Section 9		
Clause	Subject	Compliance
1.1.3	Changes in characteristics of materials and combinations thereof	Report No 01(C)0220 Clause 5.1.1.3
1.2.2	Components for incorporation or replacement	Report No 01(C)0220 Clause 5.1.2.2
1.2.5	Additional means of protection	Report No 01(C)0220 Clause 5.1.2.5
1.2.7	Protection against other hazards	Report No 01(C)0220 Clause 5.1.2.7
1.4.2	Withstanding attack by aggressive substances	Report No 01(C)0220 Clause 5.1.4.2

19 DRAWINGS

Number	Sheet	Issue	Date	Description
CI5044-1	2	4	11.01	MTL5044 Parts List
CI5044-1	3	4	12.01	MTL5044 Circuit Diagram
CI5044-1	4	4	04.97	MTL5044 Component Layout
CI5044-1	5	1	06.95	MTL5044 General Assembly
CI5044-1	6	2	11.01	MTL5044 Internal Construction
CI5044-1	7	5	04.97	MTL5044 PCB Track Layout
CI5044-1	8	1	06.95	MTL5044 Transformer Winding Details
*CI 5000-1	1	1	05.95	I.S. Transformer TRF301
*CI 5000-1	2	1	05.95	I.S. Transformer TFR301
*CI 5000-2	1	1	05.95	I.S. Transformer TFR300
*CI 5000-2	2	1	05.95	I.S. Transformer TFR300

Drawings marked * are associated with and are held on BASEEFA Certificate BAS01ATEX7157

Drawing associated with Variation 0.1

Number	Sheet	Issue	Date	Description
CI5041-1	2	3	11.01	MTL5041 Parts List
CI5041-1	3	4	11.00	MTL5041 Circuit Diagram

13 Schedule

14 EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7155

Number	Sheet	Issue	Date	Description
CI5041-1	4	5	12.01	MTL5041 Component Layout
CI5041-1	5	1	06.95	MTL5041 General Assembly
CI5041-1	6	2	11.01	MTL5041 Internal Construction
CI5041-1	7	5	4.97	MTL5041 PCB Track Layout
CI5041-1	8	2	11.01	MTL5041 Transformer Winding Details

Drawing associated with Variation 0.2

Number	Sheet	Issue	Date	Description
**CI5000-12	1 to 4	1	02.02	MTL5000 Ring Terminal

Drawing marked ** is associated with and held on BASEEFA Certificate BAS01ATEX7144

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BASEEFA List Keywords
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SPARE PARTS

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Hoppe Bordmesstechnik GmbH

Material Number	F-02291-00005.ST
Designation	SPARE PART KIT
Typ	ETS-TT
Revision	1.1

Part list

Item	Quantity	Designation	Typ	Material Number
1	5 pcs	FUSE	5x20-800 mA-T	K-02963-00000
2	5 pcs	FUSE	5x20-3,15A-T	K-02494-00000
3	10 pcs	FUSE	RAD8;SENS	K-01805-00000