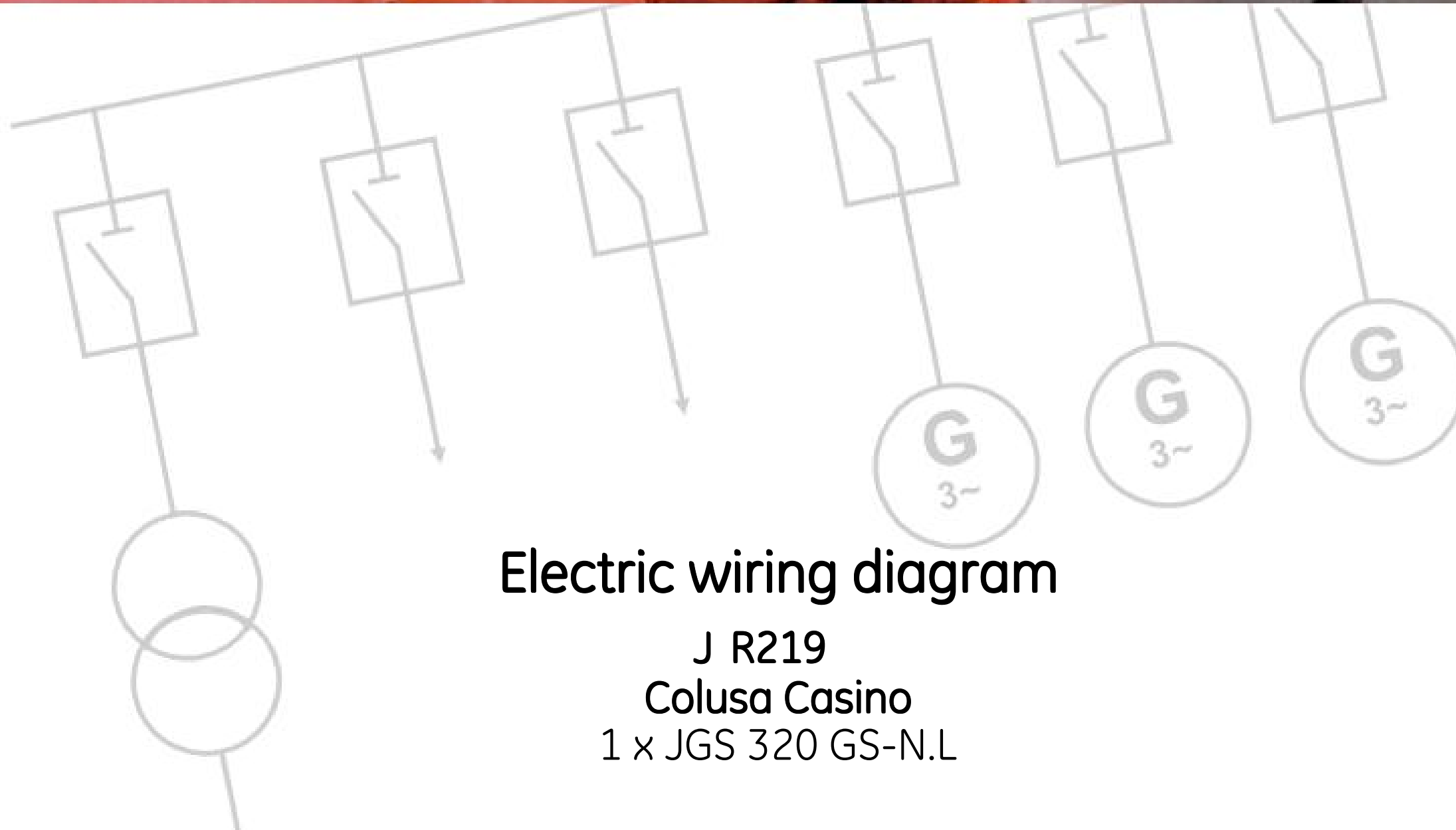




Jenbacher gas engines



Electric wiring diagram

J R219

Colusa Casino

1 x JGS 320 GS-N.L



Jenbacher
gas engines

Wiring diagram

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Colusa Casino

1 x JGS 320 GS-N.L

USA

J R219

The wiring diagram includes 28 Sheets

			Date	04.06.2013	1 x JGS 320 GS-N.L	Jenbacher gas engines	Titel- / Deckblatt	SO-Nr.	14256	=	
			Desig.	Pfanzagl Raffael				Suffix		+ U	
			Print	04.06.2013	Colusa Casino			Wiring Diagram	J R219		
Modification	Date	Name	Check		A:\ANLAGEN\RXXX\R2XX\JR219.elk	EPLAN electric				Page	2

+U Overview

For boundary conditions for GE Jenbacher gas engines, see TI no.: 1100-0110

Design changes reserved.

We reserve the right to change draft plans.

These drawings have been prepared on a CAE system. Changes may only be made by GE Jenbacher using the parameters of the original.

The numbers in the part reference list are in relation with the numbers in the Interface-list and the Technical schema

J R219 00 03

All cables between the generating set and its control equipment must be of flexible construction..

The protective measures against electric shocks, earthing and equipotential bonding must be implemented by the customer during assembly in accordance with local regulations.

Nr. The numbers in circles or boxes refer to the numbers in the interface list.

-SSLxx

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Diagram index

Page	Page description	Modification
+U/1	Titel- / Deckblatt	
+U/2	Titel- / Deckblatt	
+U/3	Titel- / Deckblatt	
+U/4	Diagram index	
+U/5	Structure identifier overview	
+U/6	Electric wiring diagram Version	
+U/7	E-Diagram	
+U/8	Adjustments Mains monitoring device	
+U/9	Protection: Generator	
+U/10	Gangway	
+U/11	Over view Panels	
+U/12	electrical Connections	
+U/13	Equipotential bonding	
+U/14	Diagram 24VDC	
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+U/17	Bus diagram	
+U/18	MODBUS RTU	
+U/19	Over view Software	
+U/20	Legend of Symbols	
+U/21	Legend of Symbols	
+U/22	Requirements: Cabling	
+U/23	Cable	
+U/24	Cable	
+U/25	Over view cables	
+U/26	Wiring colours in panel	
+U/27	caution label	
+U/28	Over view cables (preliminary)	

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		Date	04.06.2013	1 x JGS 320 GS-N.L	 Jenbacher gas engines	Diagram index	SO-Nr.	14256	=	
		Desig.	Pfanzagl Raffael				Suffix	+ U		
		Print	04.06.2013				Wiring Diagram	J R219		
Modification	Date	Name	Check	A:\ANLAGEN\RXXX\R2XX\JR219.elk	 EPLAN electric				Page	4



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Structure identifier overview

Full designation	Structure description
+U	Overview

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			Date	04.06.2013	1 x JGS 320 GS-N.L	 Jenbacher gas engines	Structure identifier overview	SO-Nr.	14256	=	
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			Print	04.06.2013				Colusa Casino			
Modification	Date	Name	Check		A:\ANLAGEN\RXXX\R2XX\JR219.elk			Wiring Diagram	J R219	Page	5

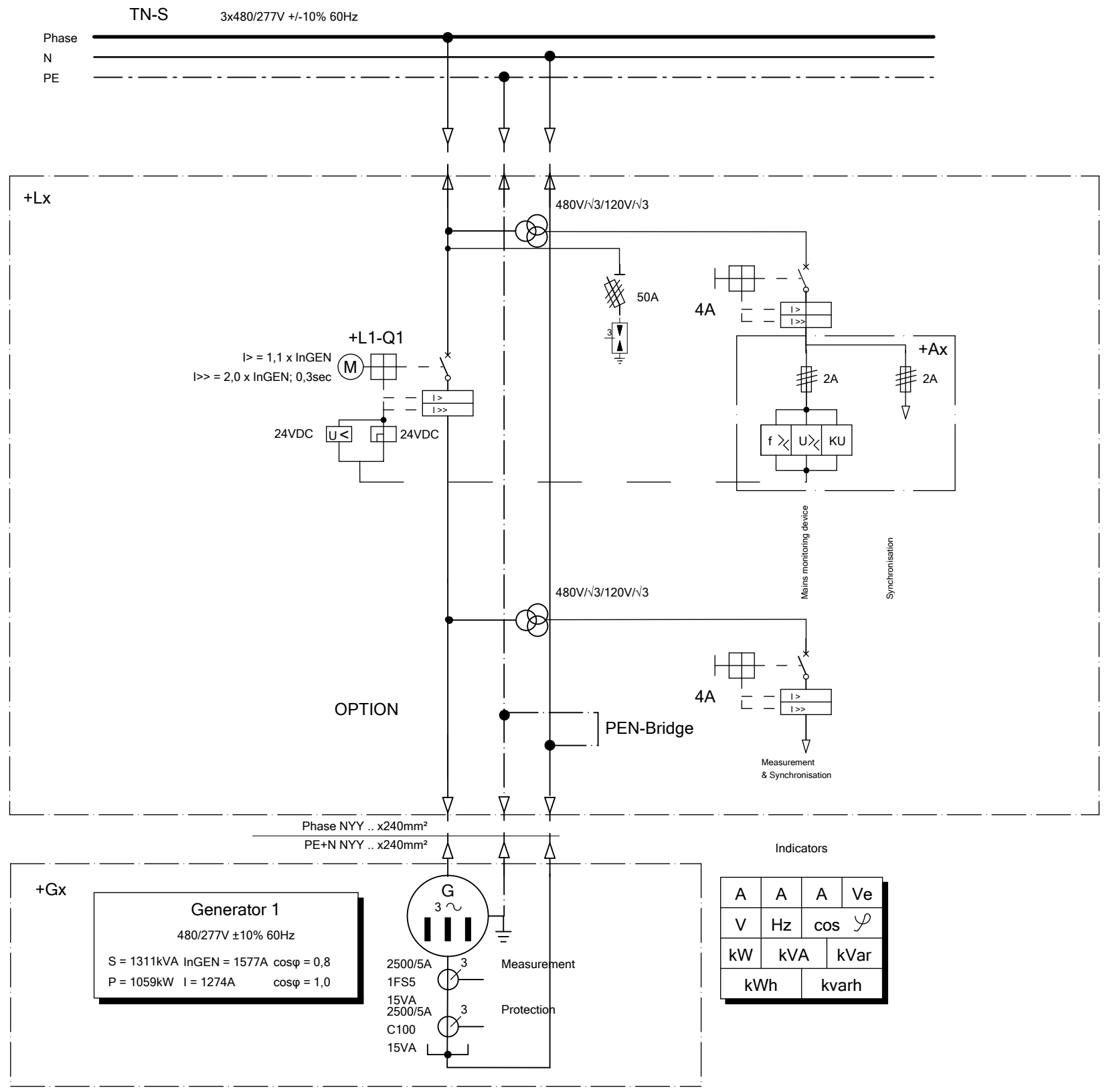
Revision summary

Version	Date:	Revision index 1:	Revision index 2:	Release: Name	Modifications: Groups	Status: Modification	Comment:
	04.06.2013			Pfanzagl Raffael		Vor Fertigung/before manufacturing	preliminary documentation

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Modification	Date	Name	Check	Date	04.06.2013	Design	Pfanzagl Raffael	Print	04.06.2013	1 x JGS 320 GS-N.L	 Jenbacher gas engines	Electric wiring diagram Version	SO-Nr. Project:	14256	=		
										Colusa Casino			Suffix		+ U		
										A:\ANLAGEN\RXXX\R2XX\JR219.elk	2013KW19	 electric	SGMACRO\U_20.emp	Wiring Diagram	J R219	Page	6



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Print	04.06.2013	A:\ANLAGEN\RXXX\R2XX\JR219.elk			Wiring Diagram	J R219		
Modification	Date	Name	Check	2013KW19	SGMACROU_100.emp		Page	7

Switch offVoltage

U<	...	90% (Un)
tU<	...	1 s
U<<	...	80% (Un)
tU<<	...	0,2 s
U>	...	100% (Un)
tU>	...	30 s
U>>	...	115% (Un)
tU>>	...	200 ms



Un ... 120 V

Frequency

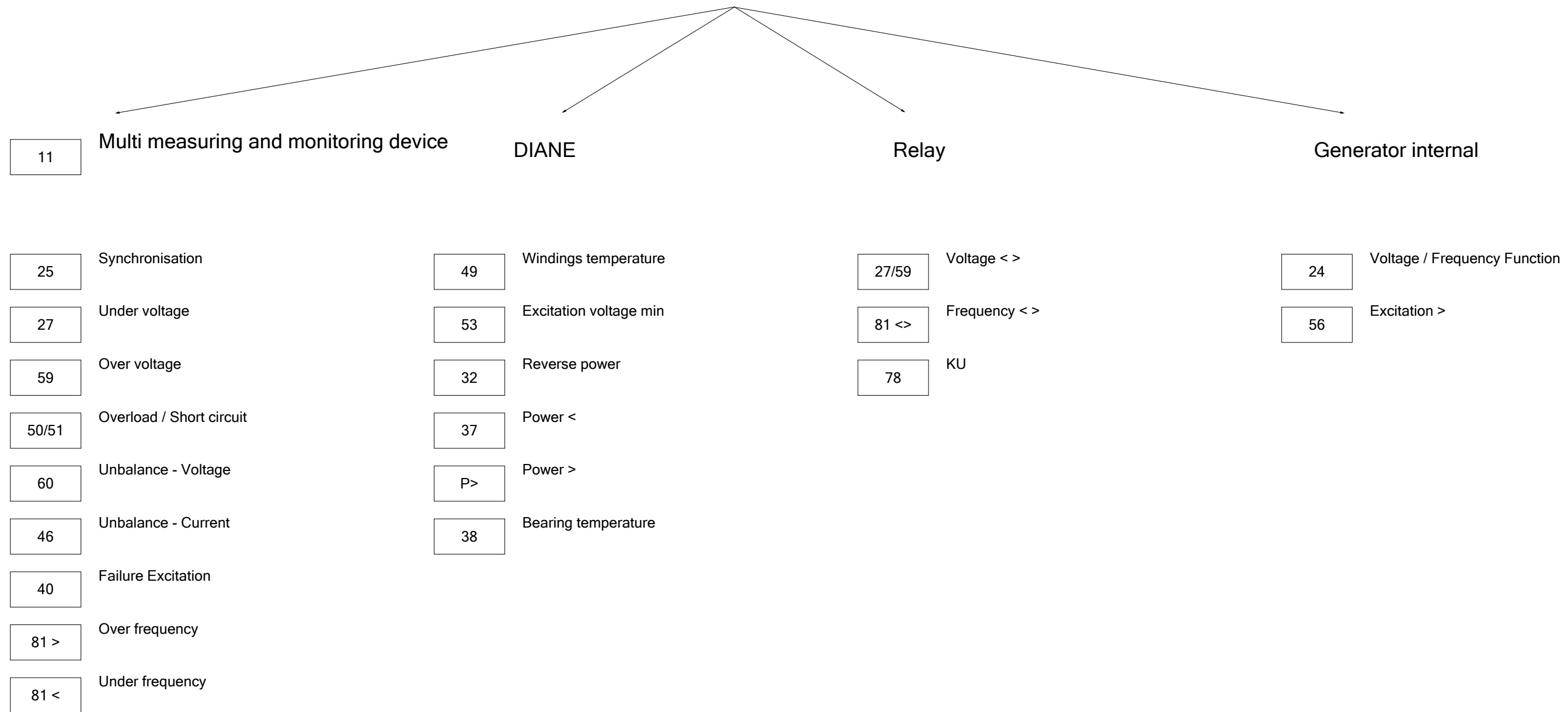
f<	...	-1 Hz (fn)
tf<	...	500 ms
f<<	...	-1,5 Hz (fn)
tf<<	...	100 ms
f>	...	+1,5 Hz (fn)
tf>	...	100 ms
tf	...	4 Cycle

fn ... 60 Hz



Vector shift relay $\Delta \theta$... 8°

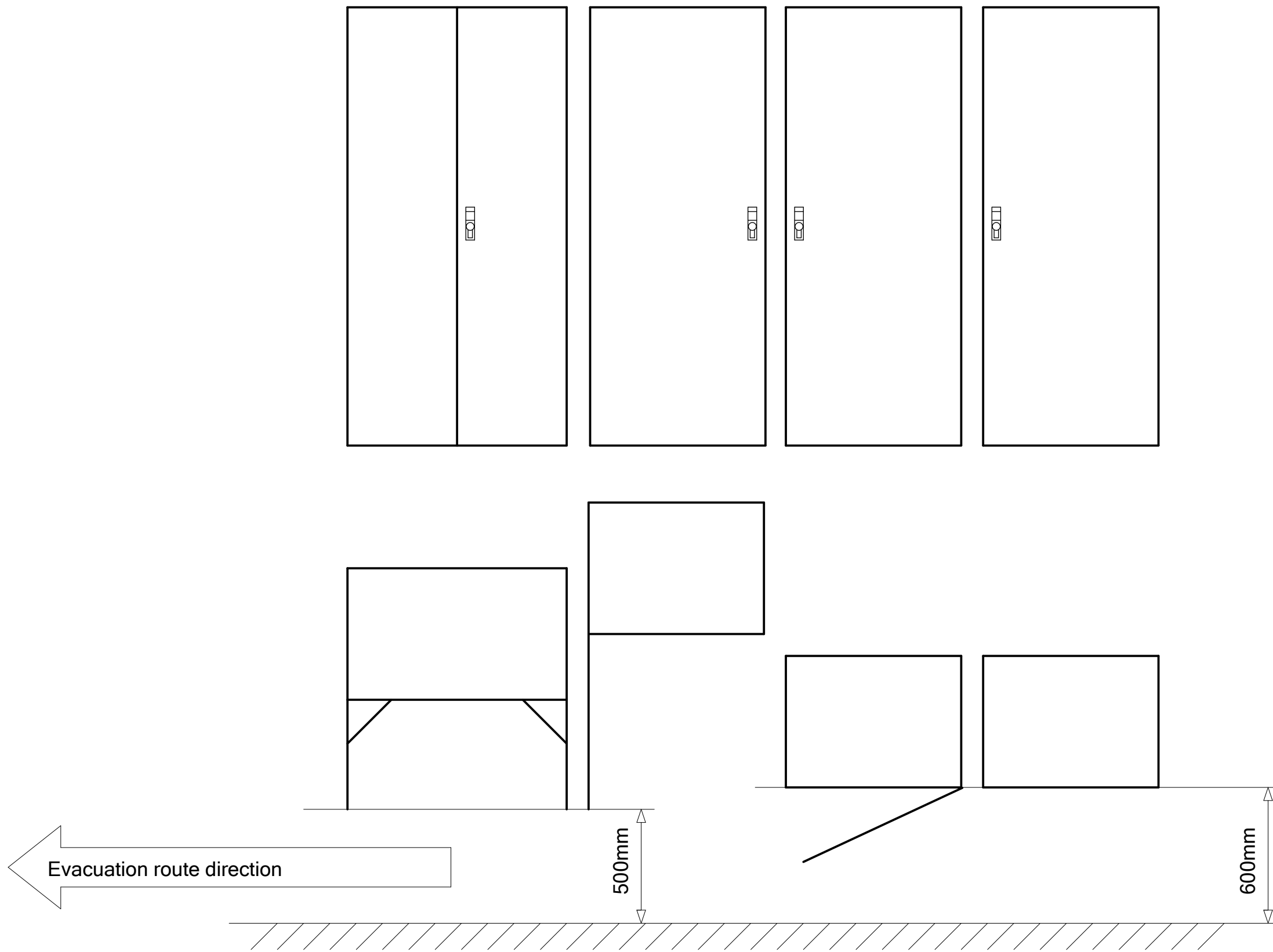
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Modification	Date	Name	Check	A:\ANLAGEN\RXXX\R2XX\JR219.elk	2013KW19	 SGMACRO\U_140_1.emp			Page	8

Protection: Generator





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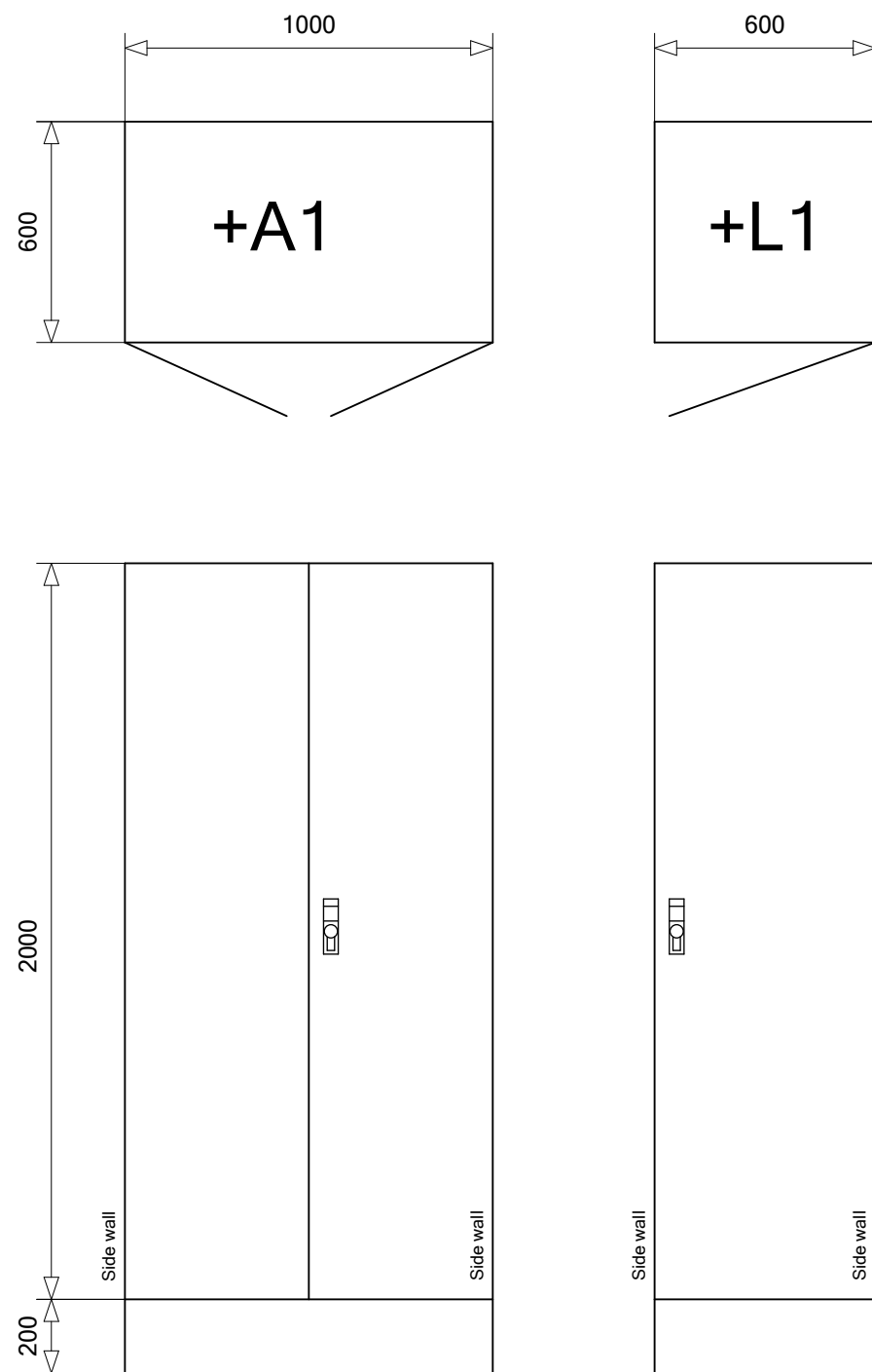
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according : IEC 60364-7-729

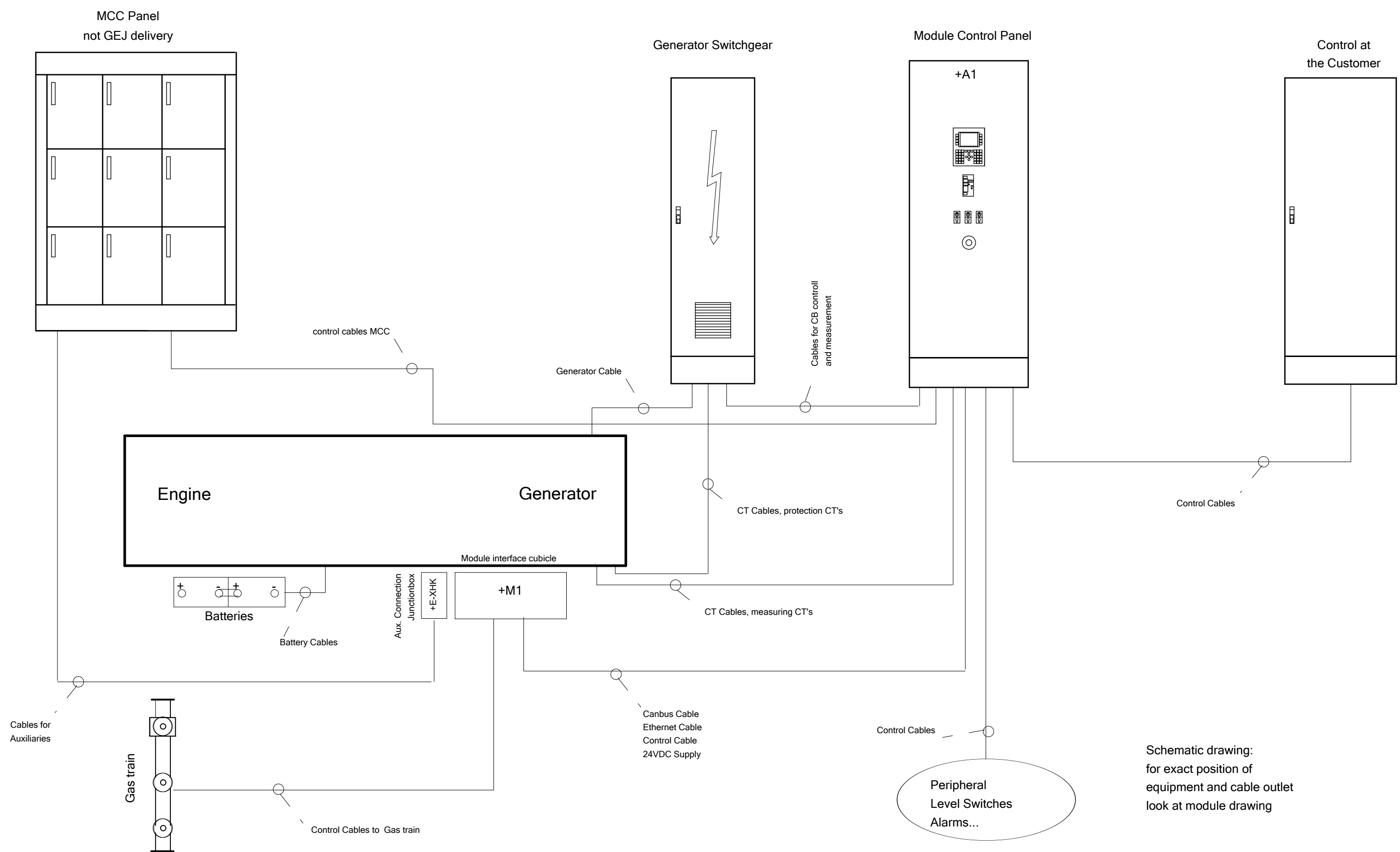
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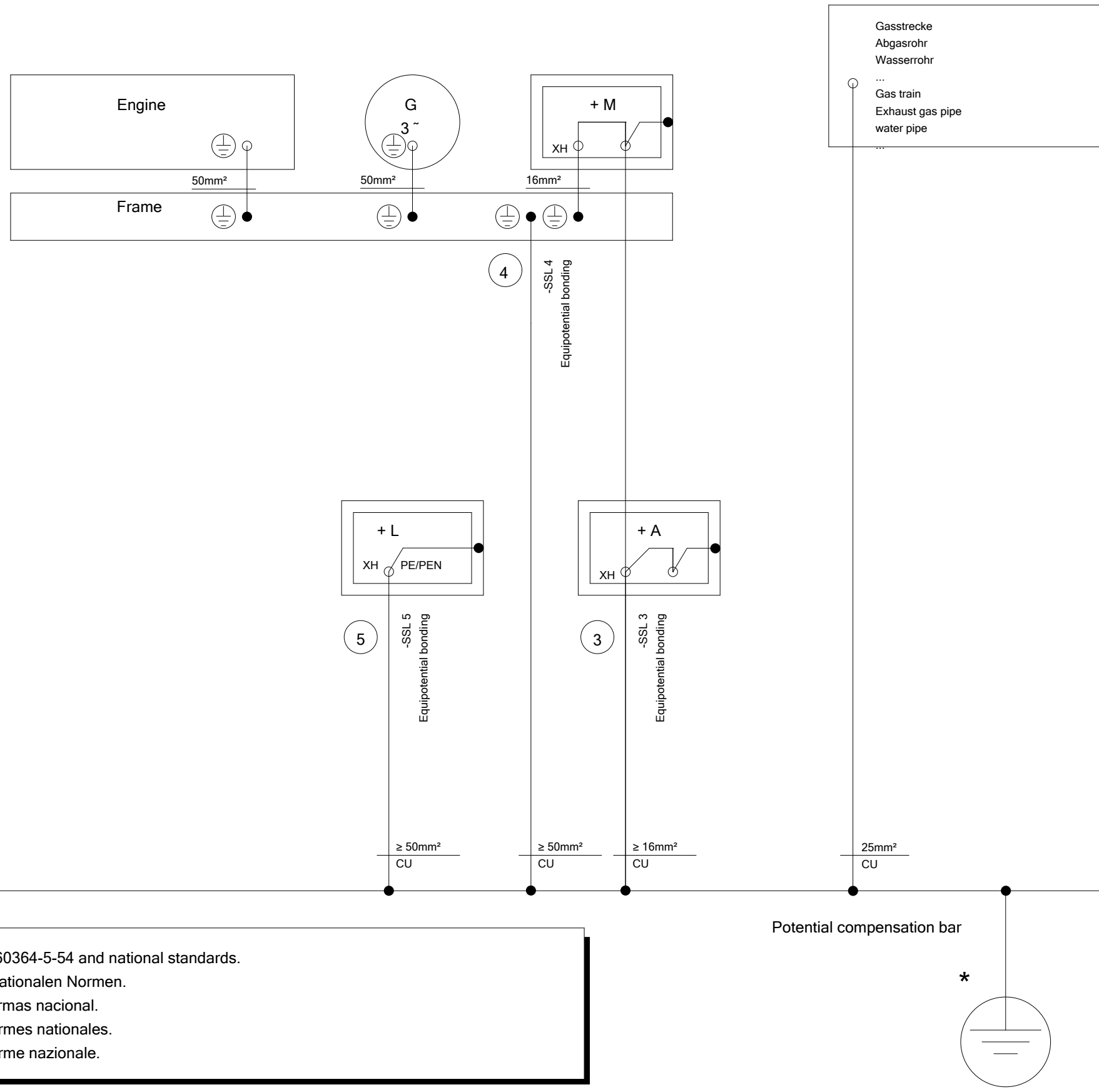
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Date	04.06.2013	1 x JGS 320 GS-N.L	 Jenbacher gas engines	electrical Connections	SO-Nr.	14256	=				
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Print	04.06.2013				Suffix		+ U				
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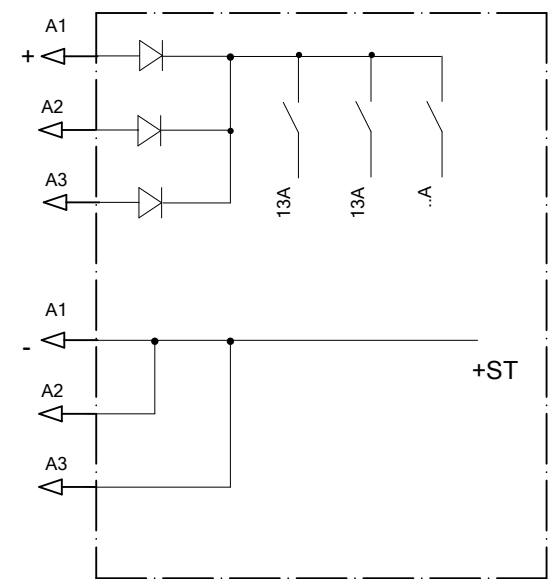
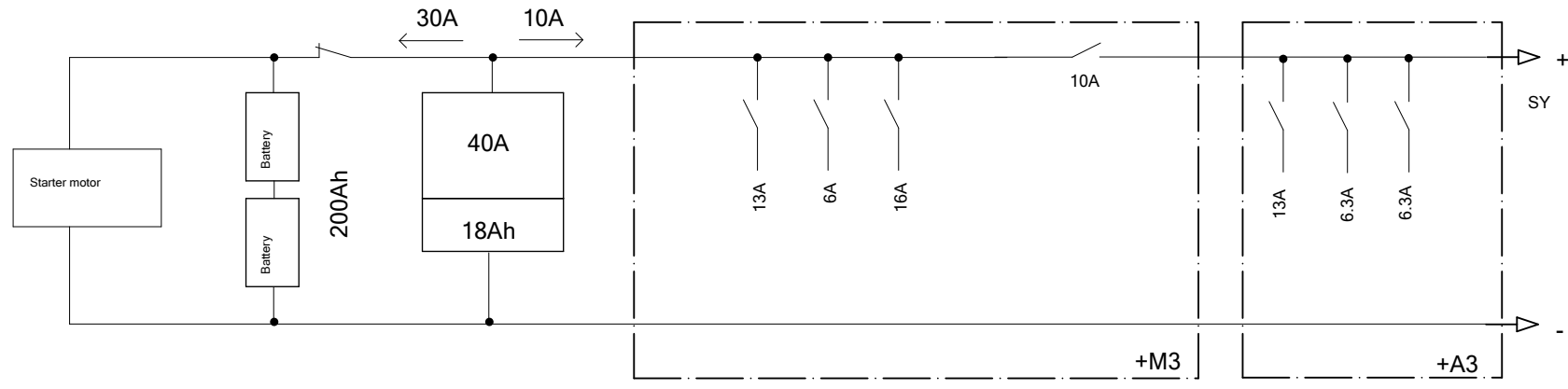
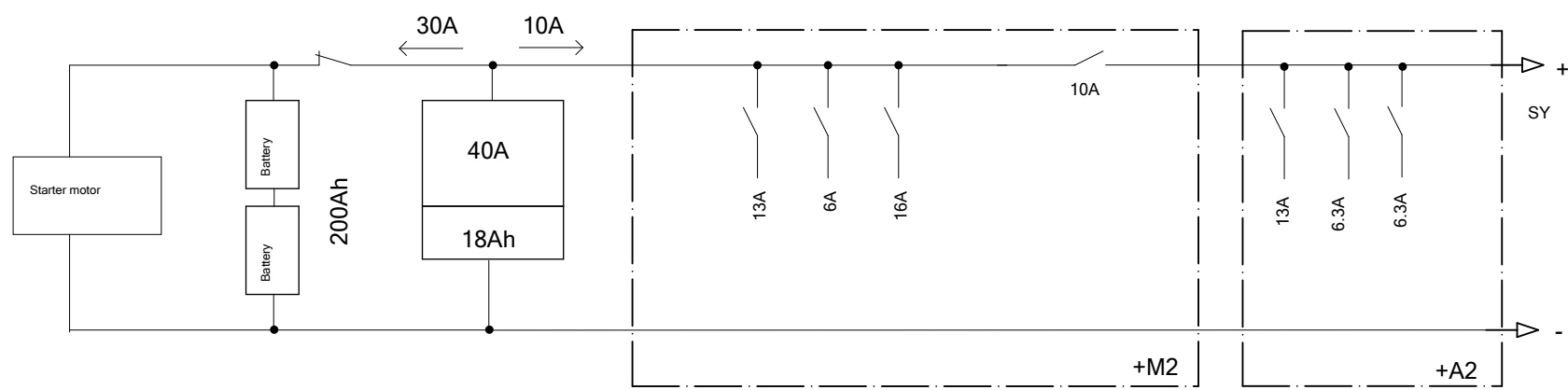
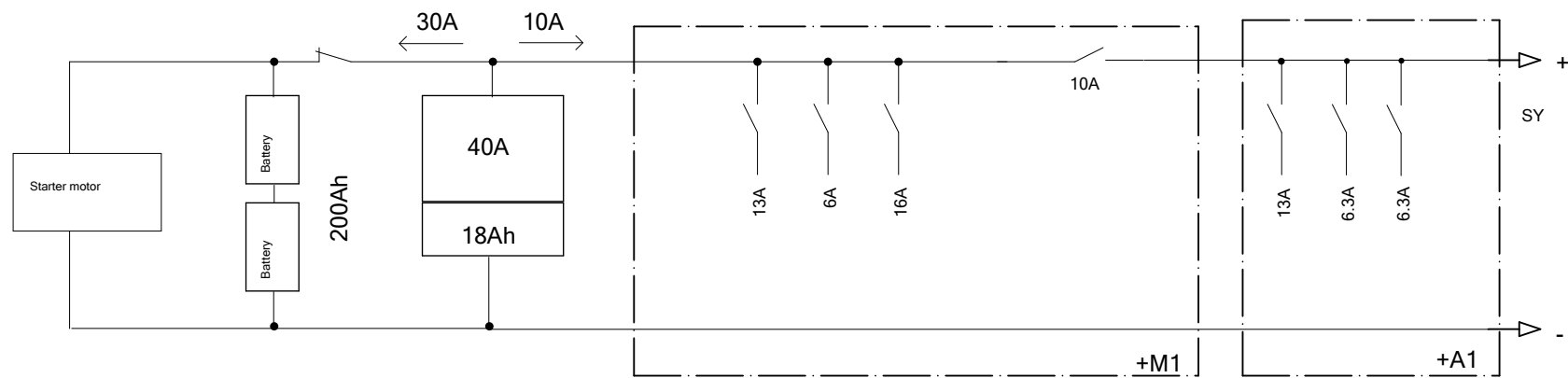
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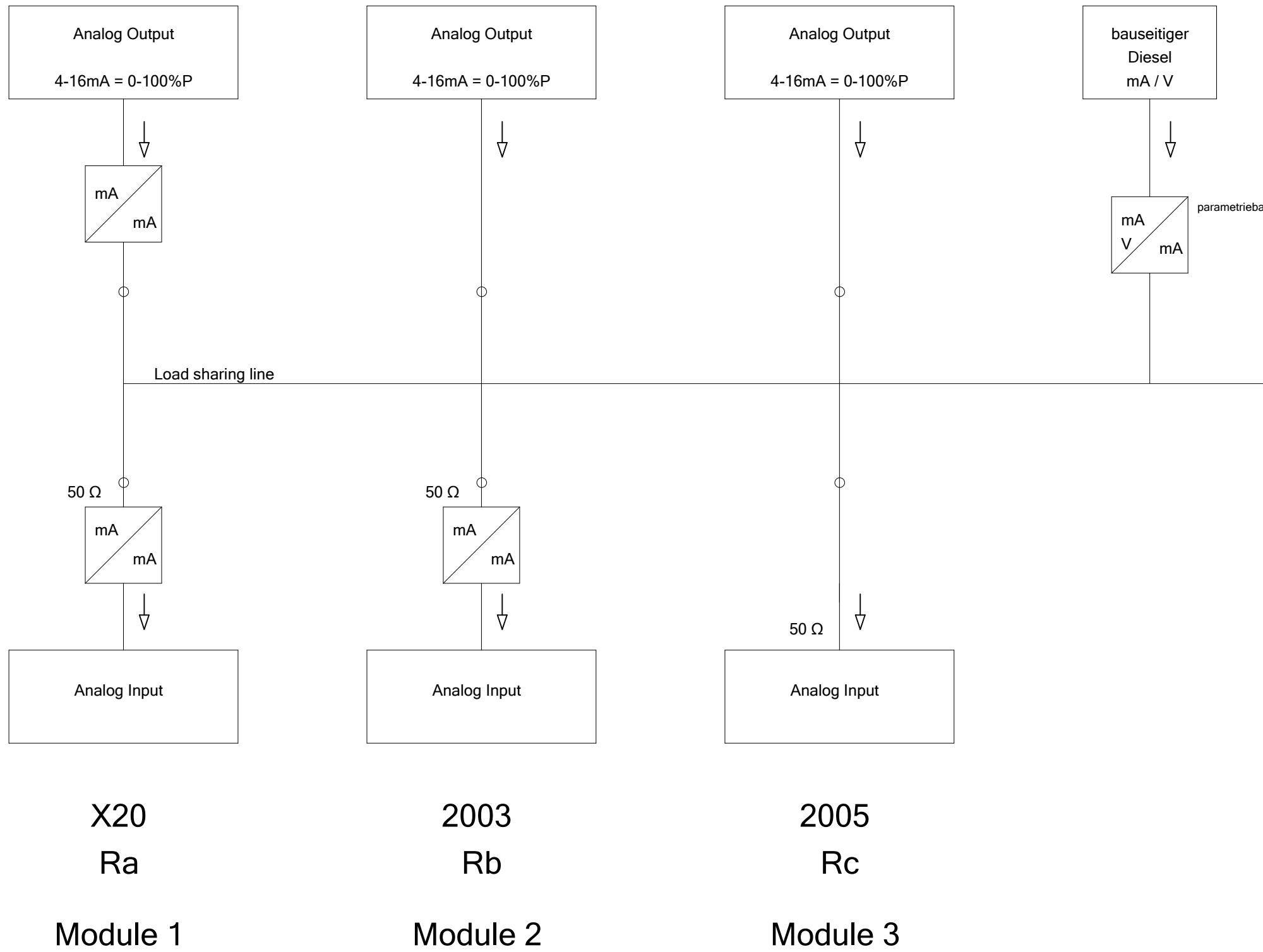
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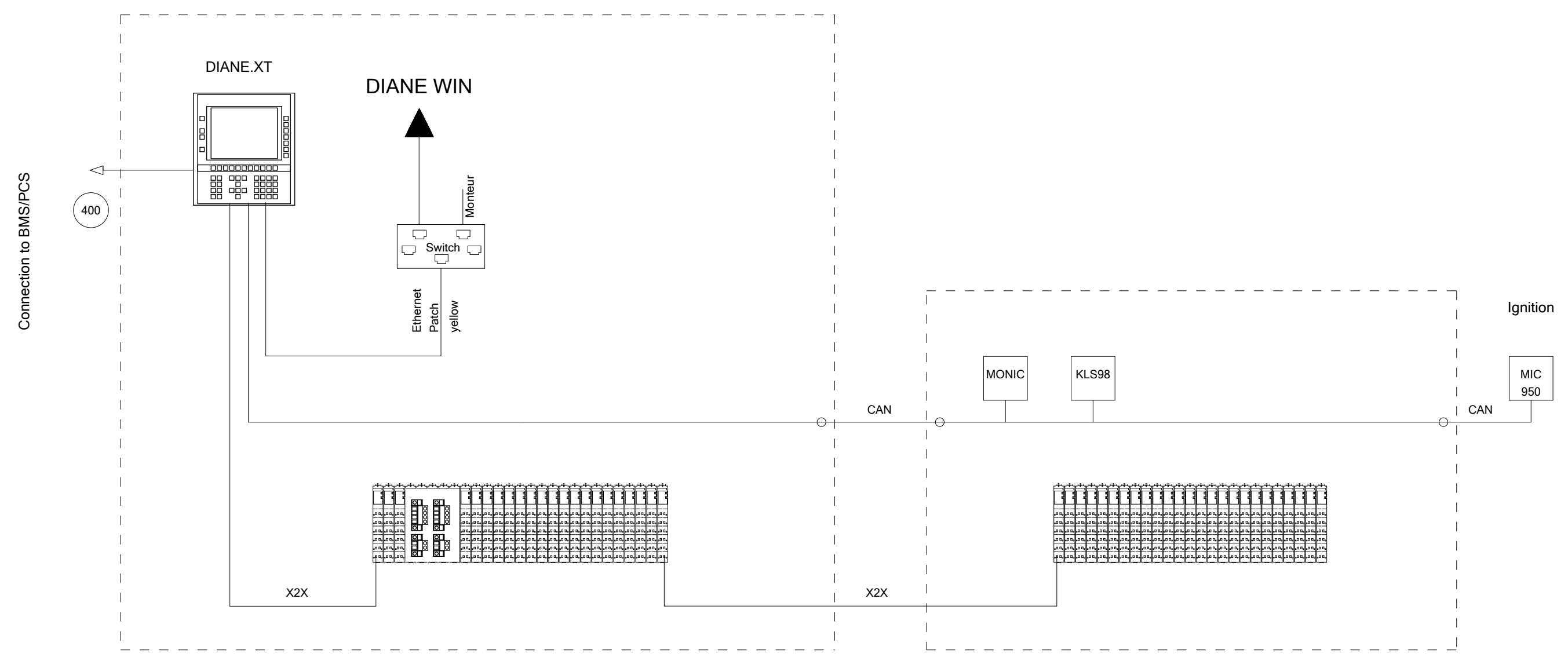
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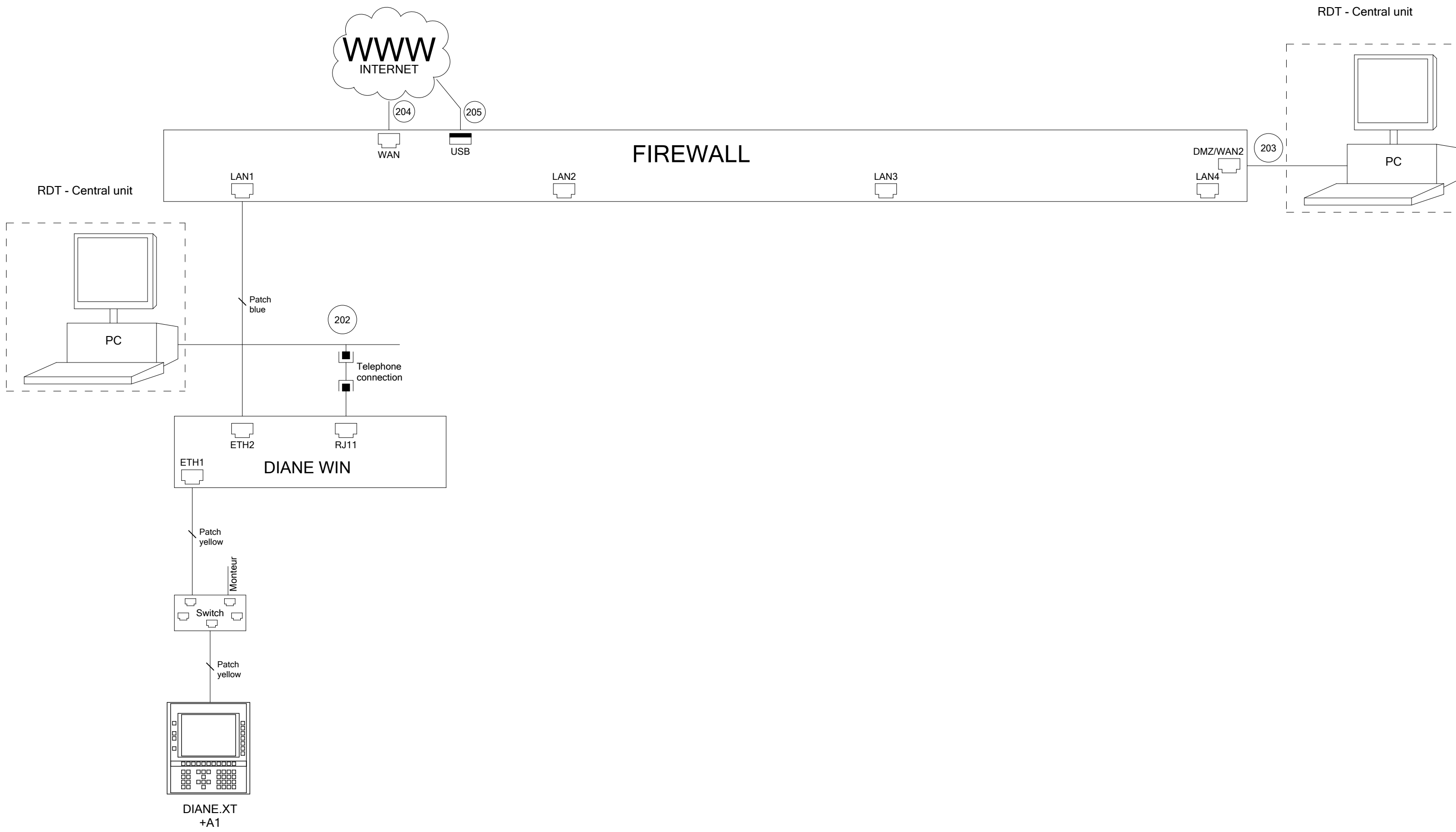
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Module control panel



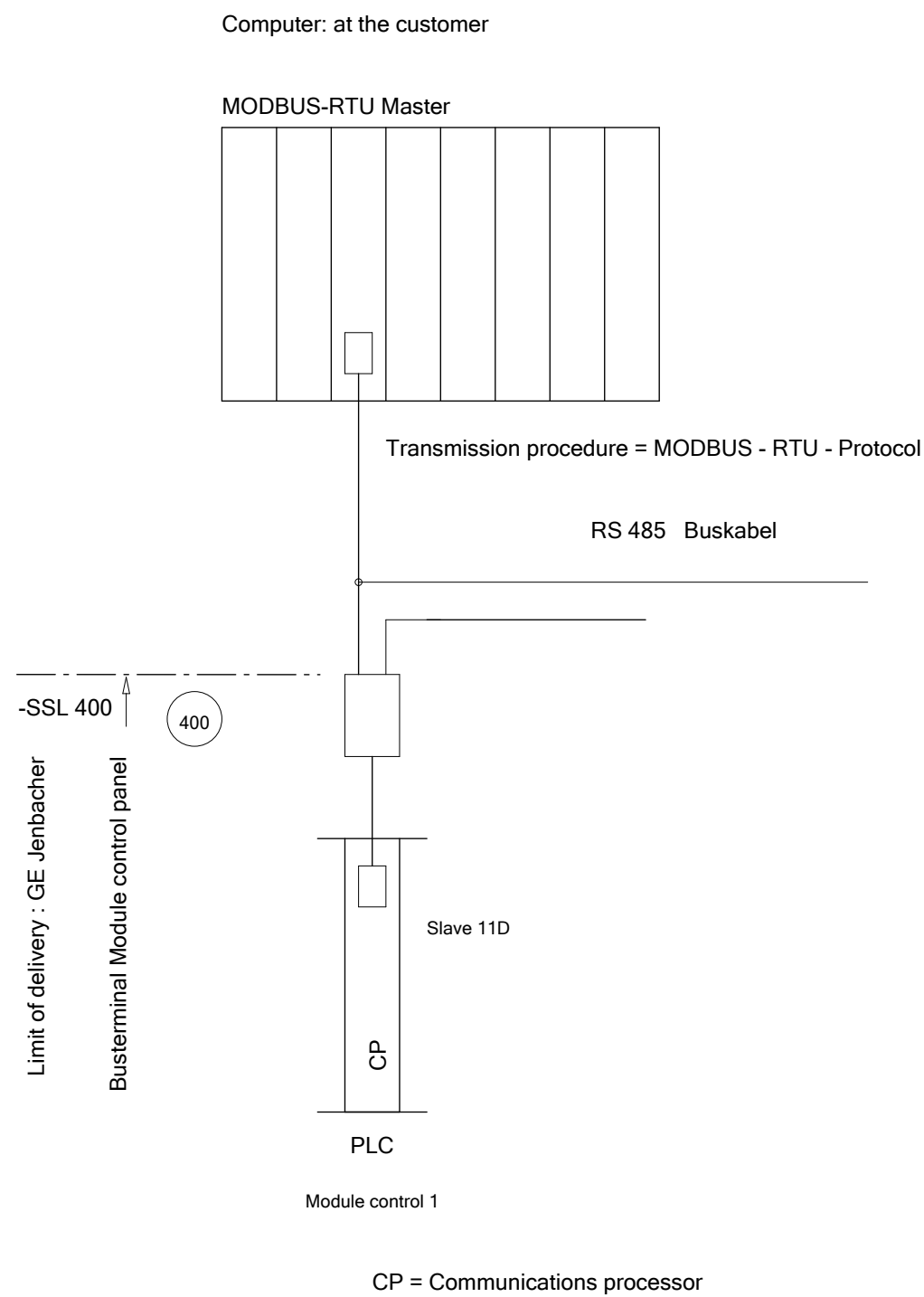
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Over view Software

DIA.NE WIN: WINSERVER 1

File:

R219



Module control

RPS 3.3

CPU	Enable	Overview	Name	Application
M01 (0B)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	M01	R219 W_A
M02 (0C)	<input type="checkbox"/>	<input type="checkbox"/>	M02	0000 W_A
M03 (0D)	<input type="checkbox"/>	<input type="checkbox"/>	M03	0000 W_A
M04 (0E)	<input type="checkbox"/>	<input type="checkbox"/>	M04	0000 W_A
M05 (0F)	<input type="checkbox"/>	<input type="checkbox"/>	M05	0000 W_A
M06 (10)	<input type="checkbox"/>	<input type="checkbox"/>	M06	0000 W_A
M07 (11)	<input type="checkbox"/>	<input type="checkbox"/>	M07	0000 W_A
M08 (12)	<input type="checkbox"/>	<input type="checkbox"/>	M08	0000 W_A
M09 (13)	<input type="checkbox"/>	<input type="checkbox"/>	M09	0000 W_A
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S01 (1F)	<input type="checkbox"/>	<input type="checkbox"/>	S01	0000 W_ST
Overview	<input checked="" type="checkbox"/>		ALL	R219 W_Z

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		Desig.	Pfanzagl Raffael			Colusa Casino	 ePLAN electric		Suffix	+ U
		Print	04.06.2013							Wiring Diagram
Modification	Date	Name	Check	A:\ANLAGEN\RXXX\R2XX\JR219.elk	2013KW19	SGMACRO\U_400.emp			Page 19	

	NO Contact		Emergency push button extern (interface)
	NC Contact		flow switch NC extern (interface)
	push button NO		pressure switch COC extern (interface)
	push button NC		temperature switch COC extern (interface)
	camshaft switch lockable NO		miniature circuit breaker
	Emergency push button		fuse
	temperature switch NC		temperature sensor thermo couple
	pressure switch NO		temperature sensor PT100
	pressure switch NC		temperature sensor PTC
	NO Contact extern (interface)		resistor
	NC Contact extern (interface)		potentiometer

	coil for relay/ contactor
	coil for coupling relay
	electromagnetic valve
	terminal
	fuse clip
	diode
	three-phase motor
	battery
	measuring transducer (pressure/current)
	pick up
	coil

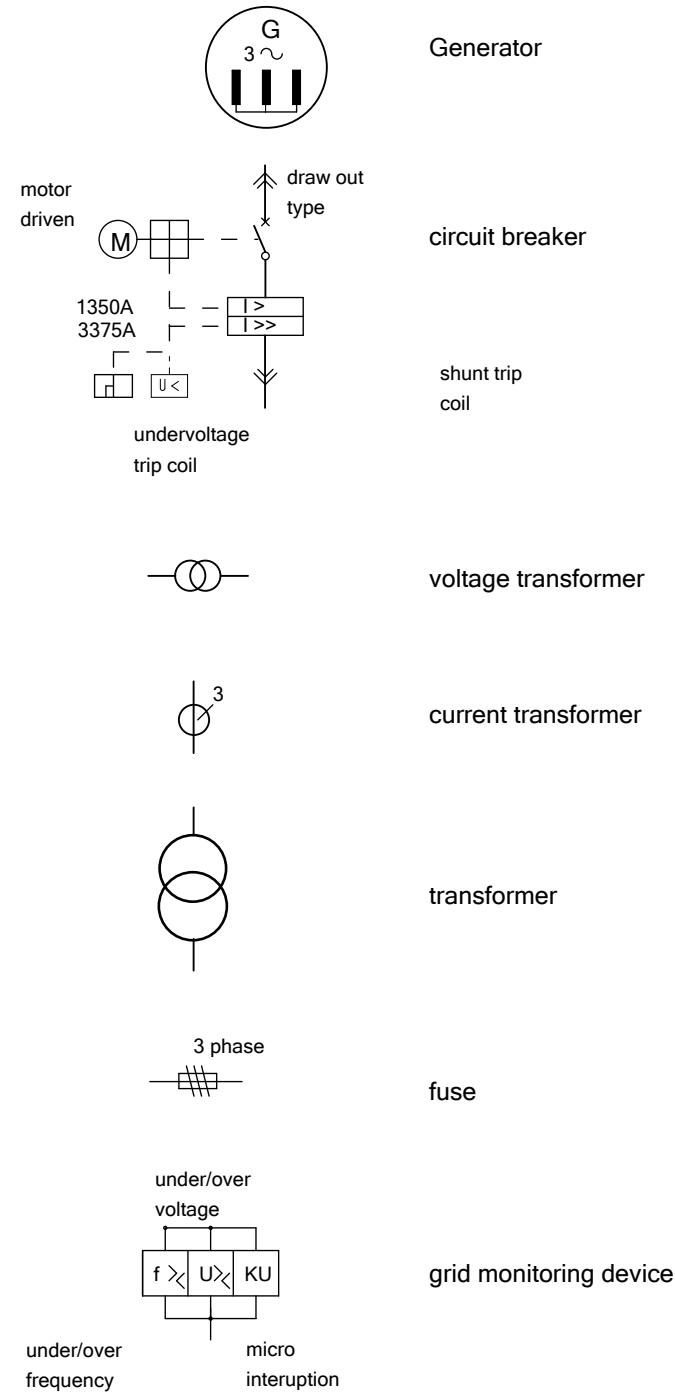
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Desig.	Pfanzagl Raffael				Suffix	+ U		
Print	04.06.2013				Wiring Diagram	J R219		
Modification	Date	Name	Check	A:\ANLAGEN\RX\X\JR219.elk	2013KW19	SGMACROU_403.emp	Page	20

CONVERSION TABLE:

AWG Number	dia. inch	dia. mm	mm ²
6/0 = 000000	0,58	14,73	170,30
5/0 = 00000	0,517	13,12	135,10
4/0 = 0000	0,46	11,7	107
3/0 = 000	0,41	10,4	85
2/0 = 00	0,365	9,26	67,4
1/0 = 0	0,325	8,25	53,5
1	0,289	7,35	42,4
2	0,258	6,54	33,6
3	0,229	5,83	26,7
4	0,204	5,19	21,1
5	0,182	4,62	16,8
6	0,162	4,11	13,3
7	0,144	3,66	10,5
8	0,128	3,26	8,36
9	0,144	2,91	6,63
10	0,102	2,59	5,26
11	0,0907	2,30	4,17
12	0,0808	2,05	3,31
13	0,072	1,83	2,62
14	0,0641	1,63	2,08
15	0,0571	1,45	1,65
16	0,0571	1,45	1,65
17	0,0453	1,15	1,04
18	0,0403	1,02	0,823
19	0,0359	0,912	0,653
20	0,032	0,812	0,518
21	0,0285	0,723	0,41
22	0,0253	0,644	0,326
23	0,0226	0,573	0,258
24	0,0201	0,511	0,205
25	0,0179	0,455	0,162
26	0,0159	0,405	0,129
27	0,0142	0,361	0,102
28	0,0126	0,321	0,081
29	0,0113	0,286	0,0642
30	0,01	0,255	0,0509
31	0,00893	0,227	0,0404
32	0,00795	0,202	0,0320
33	0,00708	0,180	0,0254
34	0,00631	0,160	0,0201
35	0,00562	0,143	0,0160
36	0,00500	0,127	0,0127
37	0,00445	0,113	0,0100
38	0,00397	0,101	0,00797
39	0,00353	0,0897	0,0063
40	0,00314	0,0799	0,00501

Single Line Diagram



- LED
- A-meter
- volt meter
- device
- earth
- protection earth
- ground
- shield
- feeding extern (interface)
- interface see Interface List

LABELING

- IFL.. = Interface (see Interface List)
- NO = Normal open contact
- NC = Normal closed contact
- COC = change over contact

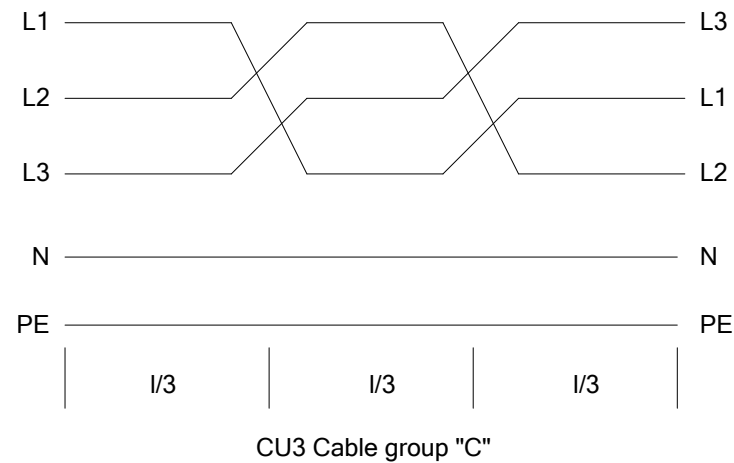
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Desig.	Pfanzagl Raffael				Suffix	+ U	
Print	04.06.2013				Wiring Diagram	J R219	
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Requirements: Cabling

in acc. with TI No.: 1000-0505

The conductors shall be of copper



Cable groups:

TA-Nr.: 1000-0505

CU1 Cable group A : Shielded analog cables
 Cable unshielded AC/DC ≤ 60 V
 Cable shielded AC/DC ≤ 277 V

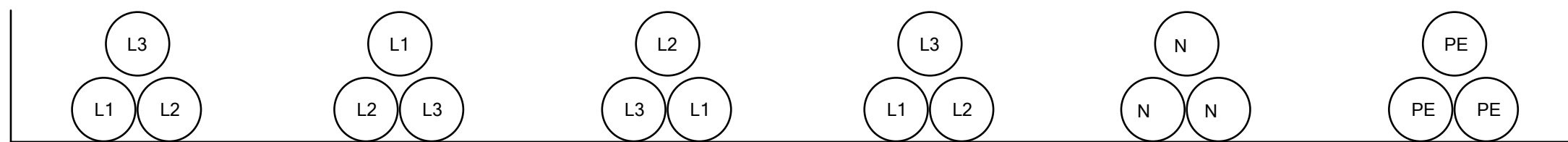
CU2 Cable group B : Cable unshielded AC/DC > 60 V, ≤ 277 V

CU3 Cable group C : Cable unshielded AC/DC > 277 V, ≤ 1000 V
 Cable shielded AC > 277 V, ≤ 1000 V

Bus cables must be laid separately!

D = Cable diameter

Cable configuration according NEC 392-20-c.



Metallic cable tray

Cable:	Diameter:
XHHW 250kcmil	0,7"
XHHW 300kcmil	0,75"
XHHW 350kcmil	0,8"
XHHW 400kcmil	0,85"
XHHW 500kcmil	0,93"
XHHW 600kcmil	1,04"



Cable group CU3-"C"

Cable group CU2-"B"

Cable group CU1-"A"

Bus cable



Metallic cable tray

>100mm, 4"

>100mm, 4"

>100mm, 4"

Date	04.06.2013	1 x JGS 320 GS-N.L	 Jenbacher gas engines	Requirements: Cabling	SO-Nr.	14256	=		
Desig.	Pfanzagl Raffael	Colusa Casino			Suffix		+ U		
Print	04.06.2013				Wiring Diagram	J R219			
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Cable GE Jenbacher

Cabling proposal



Cable GE Jenbacher Electric wiring diagram	VDE / IEC			USA	Ital. CEI 20-22	Spain
YSLY-OZ	NYSLYö-OZ VDE 250	HO5VV5-F.X..	SiHF Silikon	THWN		RV-K 0,6/1KV
YSLY-JZ	NYSLYö-JZ VDE 250	HO5VV5-F.G..	SiHF Silikon	THWN		RV-K 0,6/1KV incl. PE
YSLCY-OZ	NYSLCYö-OZ VDE 250	H05VVC4V5-K.X..		1PR16S		RV-K 0,6/1KV apantallado
YSLCY-JZ	NYSLCYö-JZ VDE 250	H05VVC4V5-K.G..		1PR16S		RV-K 0,6/1KV incl PE y apantallado
NY Y	NY Y 1x185 rm 0,6/1KV-VDE 271	NY Y 1x185 rm 0,6/1KV -VDE 271		THWN up to 600V	NIVVK	RV-K 0,6/1KV
H07RNF		H07RNF VDE 0282			H07RNF	H07RNF
H07V-K		H07V-K VDE 0281			H07V-K	H07V-K
NICRNI-gesch. für Thermolemente	90 N ... DIN IEC 584			ANSI MC 96.1 for thermocouples	90 N ... DIN IEC 584	90 N ... DIN IEC 584
NSGAFÖU-3kV	NSGAFÖU-3kV			MV-90 >5KV		
NY Y 0,6/1KV	All cables flexible, power cables at least stranded				Tutti i cavi con fili fini cavi di potenza almeno di fino multipolare	Todos los cables con hilos finos cables de potencia por lo menos de hilos multiples
Cable for medium-voltage generator (>1kV)	Cable as per generator manufacturer e.g. SIEMENS PROTOLON-NTMCGCWÖU			See technical specifications		

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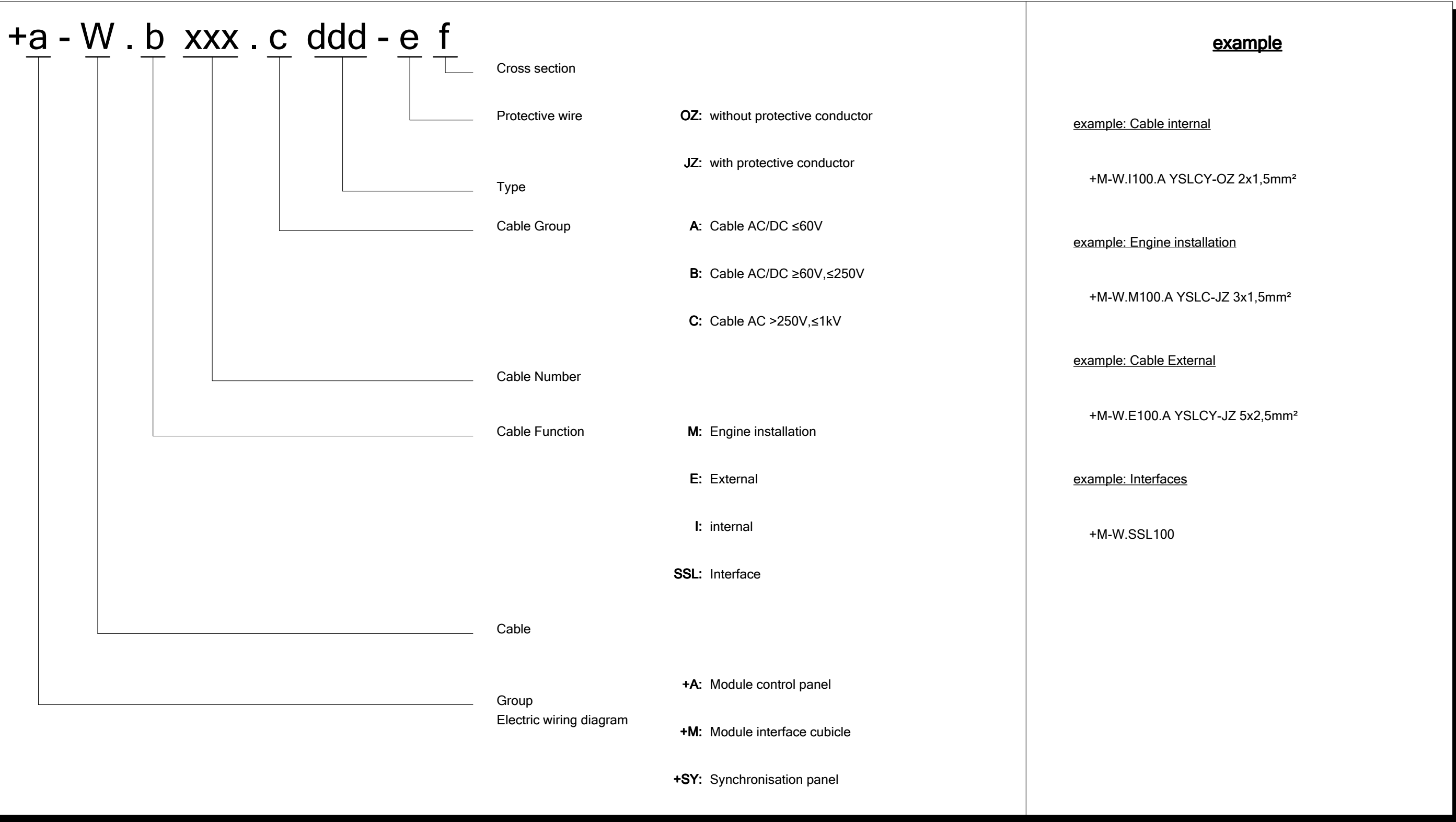
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Desig.	Pfanzagl Raffael	Colusa Casino			Suffix		+ U	
Print	04.06.2013				Wiring Diagram	J R219		
Modification	Date	Name	Check	A:\ANLAGEN\RX\X\R2XX\JR219.elk	2013KW19	SGMACRO\U_409.emp	Page	23

Austria	European Standard	IEC
YSLY - OZ - JZ	H05VV5-F.X.. H05VV5-F.G.. (CENELEC HD 21.13) Core identification: black cores with white numbers	Type 227 IEC 75 or Type 60227 IEC 75 acc. to IEC 60227-7
YSLCY - OZ - JZ	H05VVC4V5-K.X.. H05VVC4V5-K.G.. (CENELEC HD 21.13) Core identification: black cores with white numbers	Type 227 IEC 74 or Type 60227 IEC 74 acc. to IEC 60227-7
H07RN-F	H07RN-F (CENELEC HD 22.4) Core identification by colours according to HD 308	Type 245 IEC 66 or Type 60245 IEC 66 acc. to IEC 60245-4
H05V-K	H05V-K (CENELEC HD 21.3)	Type 227 IEC 06 or Type 60227 IEC 06 acc. to IEC 60227-3
H07V-K	H07V-K (CENELEC HD 21.3)	Type 227 IEC 02 or Type 60227 IEC 02 acc. to IEC 60227-3
H07V2-K	H07V2-K (CENELEC HD 21.7)	Type 227 IEC 08 or Type 60227 IEC 08 acc. to IEC 60227-3
Kabel für Mittelspannungsgenerator (>1kV) Cable for middle voltage generator (>1kV)	Cable as per generator manufacturer e.g. SIEMENS PROTOLON-NTMCGCWÖU	See technical specifications

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		Desig.	Pfanzagl Raffael	Colusa Casino		Suffix		+ U	
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Over view cables





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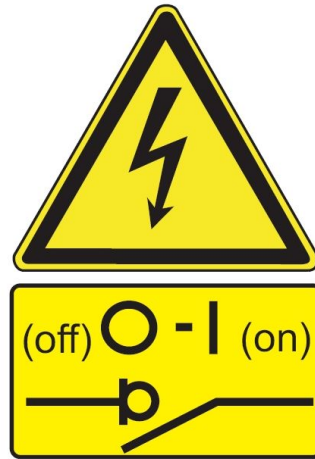
Wiring colours in panel	
AC	
Outer conductor before auxiliaries - main breaker:	(or) orange [L1 / L2 / L3]
	
Outer conductor after auxiliaries - main breaker:	(sw) black [L1 / L2 / L3]
	##### (or) orange
Protective wire [PE] :	(gegn) yellow / green
N - Conductor [N] :	(hbl) light blue
Function ground :	(tr) transparent
24V AC :	(gr) grey
Standard Type:	H05V-K (≤ 1,0mm ²) H07V-K (≥ 1,5mm ²)
NSGAFÖU-Cable:	gusw

Wiring colours in panel	
DC	
Plus :	(rt) red
Minus :	(br) brown
Control :	(ws) white
	##### (or) orange
Voltage free contacts	
Thermo compensation cable :	(gn) + green (ws) - white
Standard Type:	H05V-K (≤ 1,0mm ²) H07V-K (≥ 1,5mm ²)

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	Desig.	Pfanzagl Raffael	Colusa Casino			Suffix		+ U	
	Print	04.06.2013				Wiring Diagram	J R219		
Modification	Date	Name	Check	A:\ANLAGEN\RXXX\R2XX\JR219.elk	2013KW19		SGMACROU_412_1.emp	Page	26

see TI-No 2300-0005



If you see this warning near the mains isolating device, this means that the mains isolating device has not switched off all the electrical circuits.



#####



If you see this warning near the mains isolating device, this means that the mains isolating device has not switched off all the electrical circuits.

#####



			Date	04.06.2013	1 x JGS 320 GS-N.L	 Jenbacher gas engines	caution label	SO-Nr.	14256	=	
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			Print	04.06.2013				Wiring Diagram	J R219		
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80% Status. This pages shows only the external connections between GE Jenbacher equipment.
 Interface cables and GE Jenbacher internal cables are not shown on this page.
 For interface cables see to the interface list.

This page will be replaced after finishing the complete wiring diagram with an automatically generated cable list.

Over view cables (preliminary)

Cable	Type	Wire	mm²	AWG	from	to	Comment	Page
+M1-W.E5.A	NSGAFÖU	1	120	350	+E1-.W2	+P1-.G.	Battery 24V +, Pb	
+M1-W.E6.A	NSGAFÖU	1	120	350	+E1-.W2	+P1-.G.	Battery 24V -, Pb	
+M1-W.E8.A	YSLY-JZ	5/PE	4	12	+M1-X	+A1-X	Module control panel	
+M1-W.E10.A	Ethernet	8+SS	-	-	+M1-.A2	+A1-.A2	Delivery GE Jenbacher	
+M1-W.E12.B	YSLY-OZ	2	1.5	16	+M1-XE	+A1-XH	Voltage matching	
+M1-W.E20.A	YSLY-OZ	2	1.5	16	+M1-X	+P1-.S1	Gas pressure low Gas train 1	
+M1-W.E21.A	YSLY-OZ	2	1.5	16	+M1-X	+P1-.S2	Gas pressure high Gas train 1	
+M1-W.E25.A	YSLY-JZ	4/PE	1.5	16	+M1-X	+P1-.F1	Gassafety device 1	
+M1-W.E30.A	YSLY-JZ	4/PE	2.5	14	+M1-X	+P1-.Y1	Gas valves Gas 1	
+A1-W.E13.C	H07V-K	1/PE	16	6	+M1-XH	+A1-XH	Equipotential Module interface	
+A1-W.E33.A	CAN-BUSKABEL	4+SS	-	-	+M1-XS	+A1-XS	Delivery GE Jenbacher	
+A1-W.E81.A	YSLY-JZ	5/PE	1.5	16	+M1-X	+A1-X	Emergency stop Module interface	

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Desig.	Pfanzagl Raffael				Suffix		+ U				
Print	04.06.2013				Wiring Diagram	J R219					
Modification	Date	Name	Check	A:\ANLAGEN\RXXX\R2XX\JR219.elk	2013KW19					Page	28