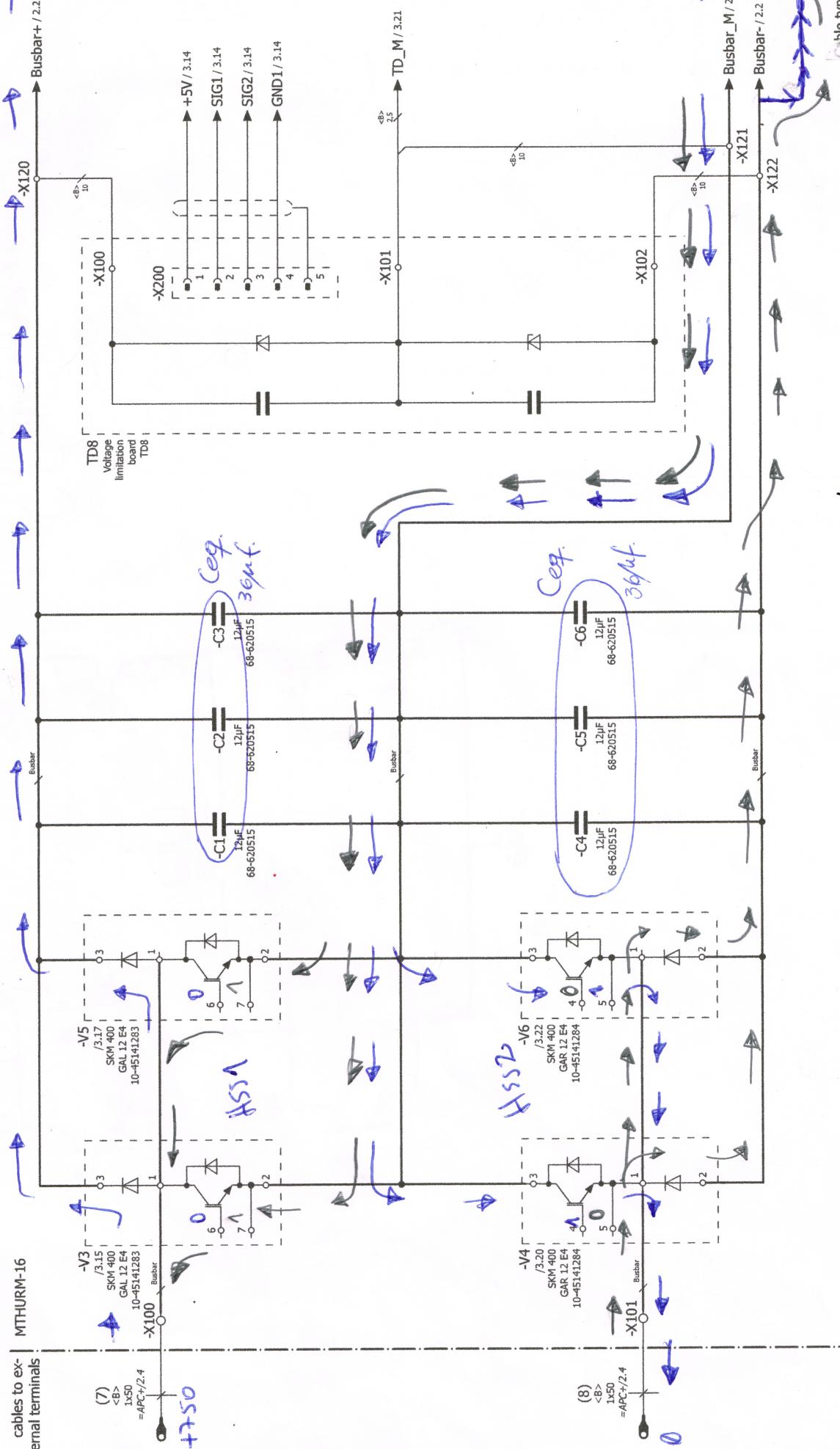


1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Input cables																							



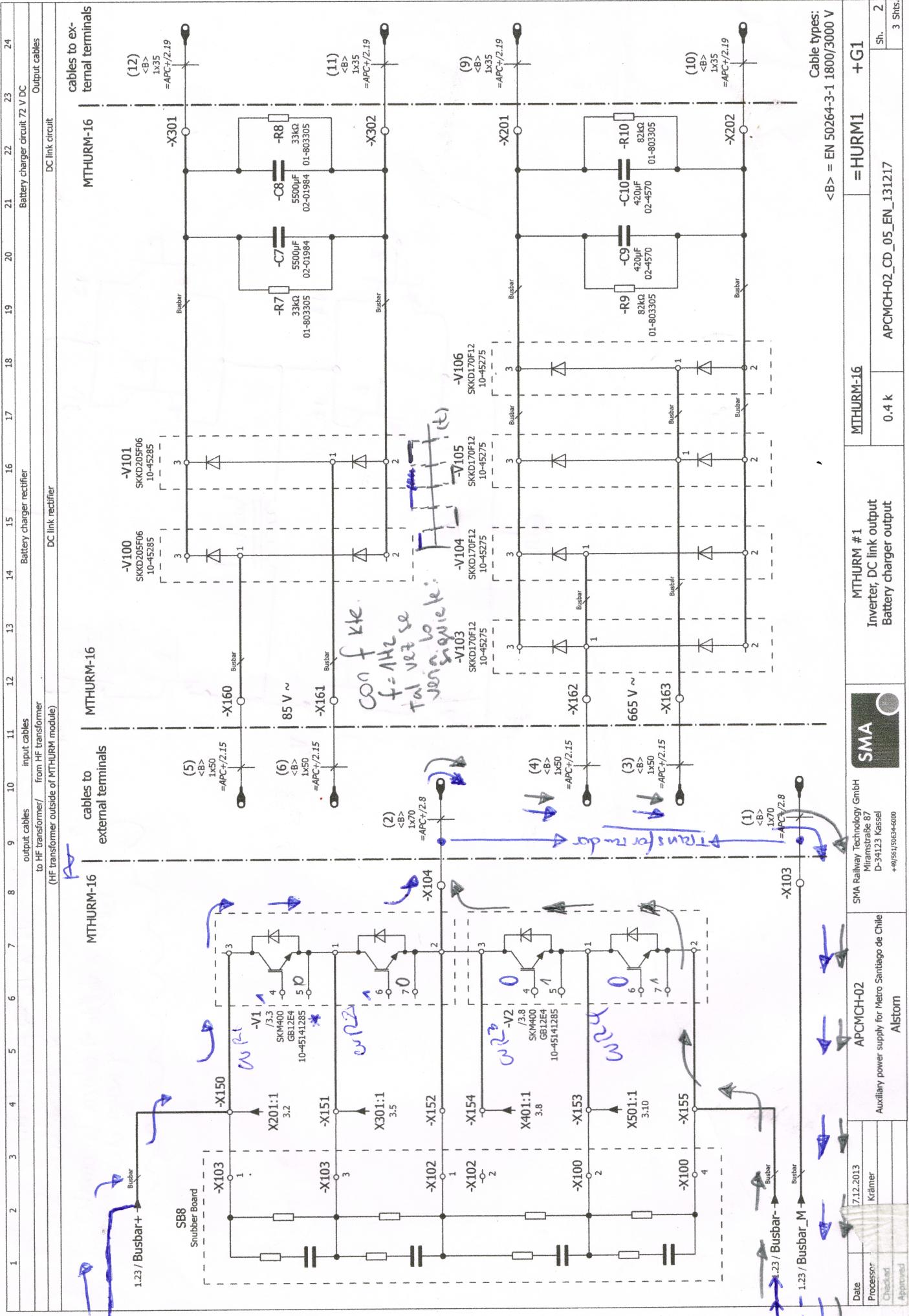
Cable types:
 = EN 50264-3-1
1800/3000 V

Date:	17.12.2013	APCMCH-02	MTHURM-16
Processor:	Krämer	SMA	Boost converter
Checked:		Auxiliary power supply for Metro Santiago de Chile	
Approved:		Alstom	

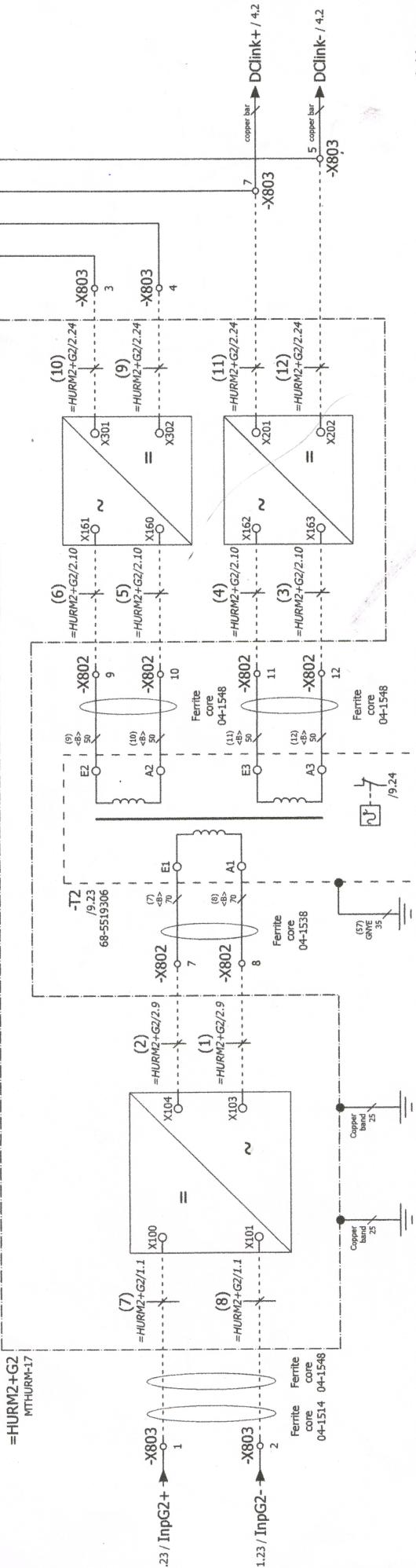
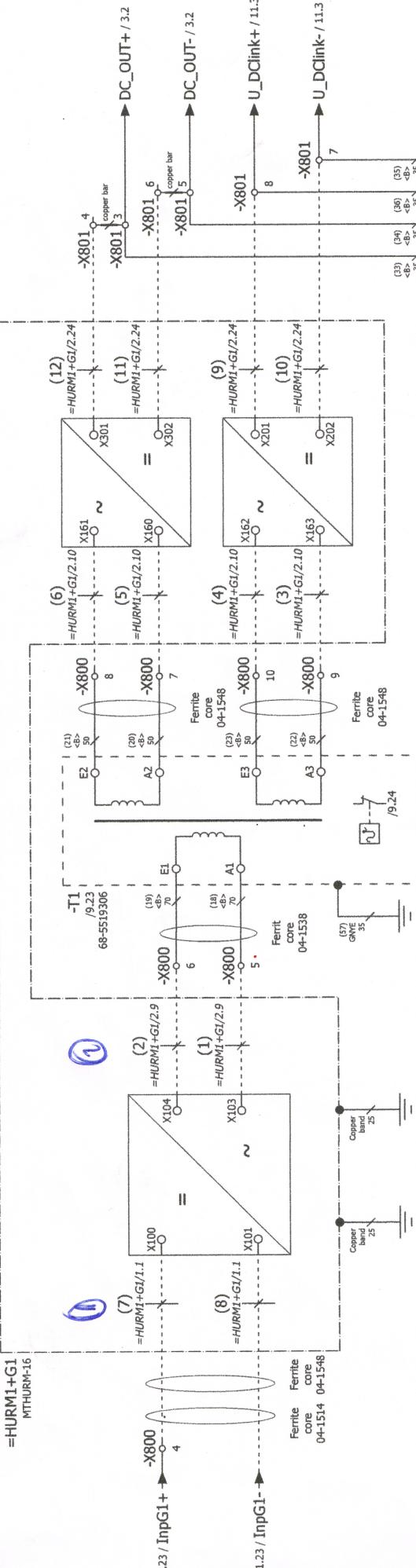
=HURM1
+G1

Sh. 1
3 Shts.

 = EN 50264-3-1
1800/3000 V



DC link voltage measurement											
110 V DC and battery output											
DC link											
Output rectifiers											
HF Transformers											
Boost converter modules											
Input inverter											
1	2	3	4	5	6	7	8	9	10	11	12



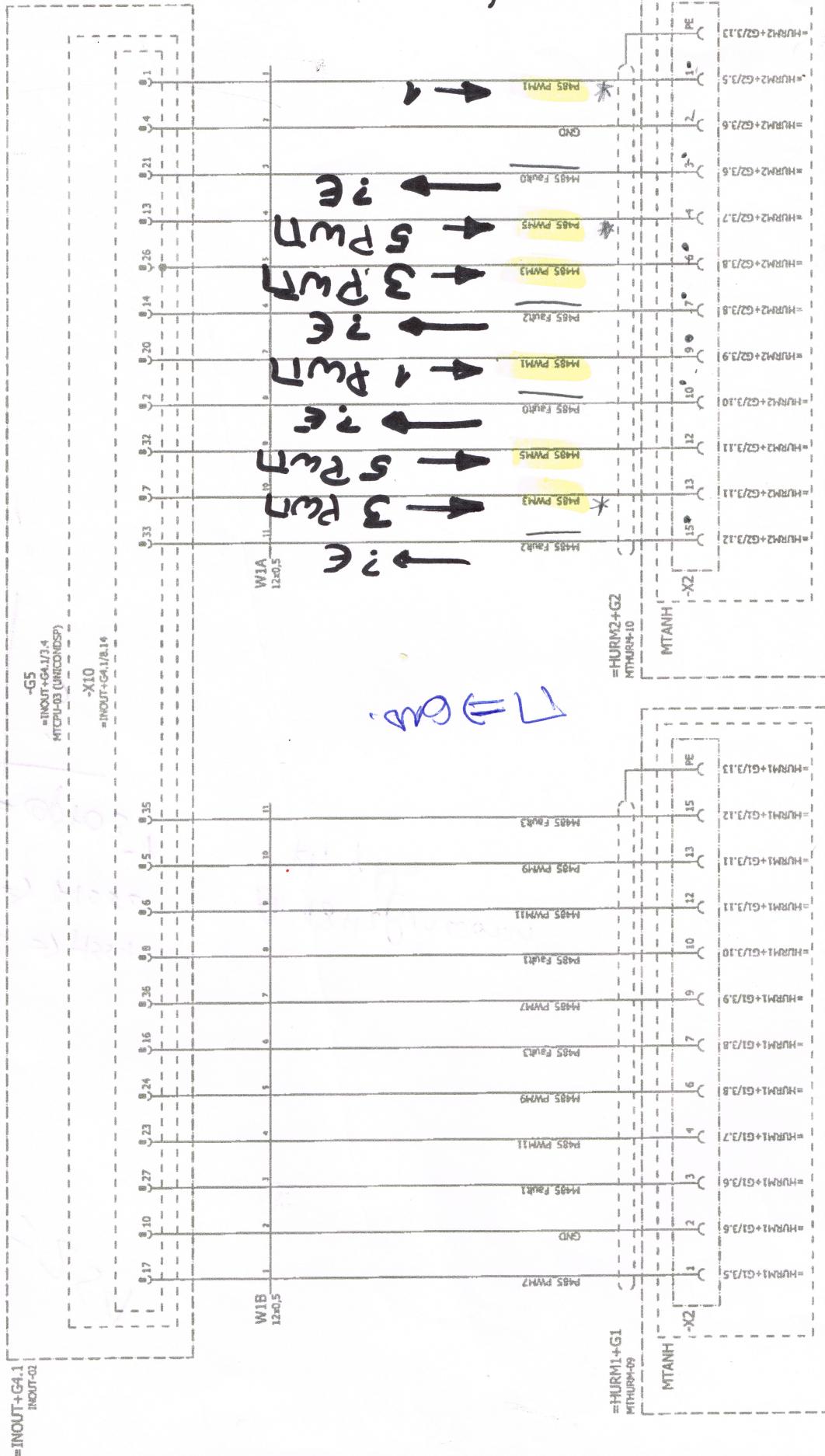
Note: In this chapter (APC-1), internal wiring of modules G1, G2 and G3 is shown simplified (dashed lines). For more details see circuit diagrams of the modules following after figure 14-14.

 = EN 50264-3-1 1800/3000 V
 +
 APC +
 Sh. 2
 15 Shrs
 131217

Processor Checked Approved	Krämer	Auxiliary power supply for Metro Santiago de Chile Alstom	Input converter and transformers Rectifiers for 72 V output and DC link	0.5	APCMCH-02_CD_05_EN_131217	Sh. 2 15 Shs.
		D-34123 Kassel +49 561/50634-2000				

WONEN DATUZAS?

፩፻፲፭ ዓ.ም. ከተማውን ተሸጠኝ ስራ ነው



Note: in this chapter (APC-1), internal wiring of modules G1...G4 is shown simplified. For more details see circuit diagrams of the modules following after the APC chapter.

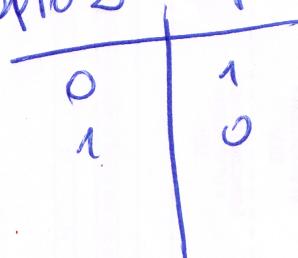
Date	17.09.2012	APCMCH01	APCMCH01	= APC	+
Processor	A Müller				
Checked	B Koenig				
Approved	B Koenig				
		CAF			
		SMA	Control circuit IGBT control HURM1, HURM2 PWM signals for MTANH	APCMCH01_CD_06_EN_20120917	Sk. 10 11 Skn
			SMA Railway Technology GmbH Hunzenstrasse 87 D-34123 Kassel +49/5241/505-4000		

$$f = 25^A$$

Opto 2 \Rightarrow HSS1

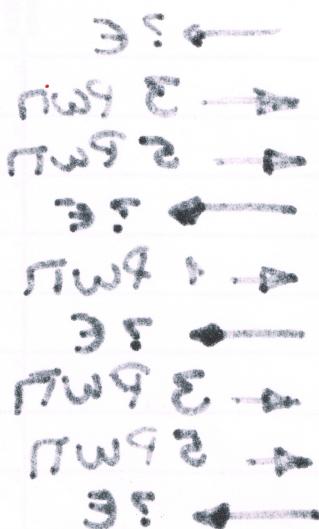
Opto 3 \Rightarrow HSS2

Opto 2 = Opto 3⁻¹



A 18 Hz funktion
H1, 4 Hz.

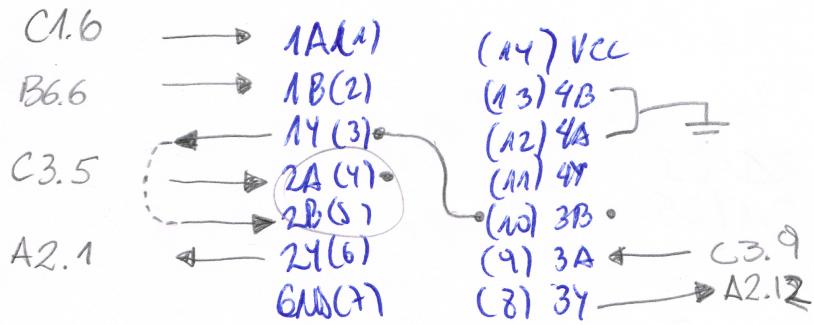
$$\Delta \theta = 17^\circ$$



$$1 \rightarrow$$

zu Z N3 $\pi\omega\delta$ wird $\pi\omega\delta$ zu Z N3
 FÜR STABILISATION

C4. (AND GATE).



$$2A = 2B^{-1} \rightarrow 2A = 2B$$

$$\Gamma \neq \Gamma \rightarrow \Gamma = \Gamma$$

Señal de B6.2 debe cambiar de estado a uno
previsto.

Físico

$$PWN5 \Rightarrow S10N \xrightarrow{\text{And}} \text{cte}$$

$$PWN1 \Rightarrow S3 \xrightarrow{\text{And}} \text{cte}$$

$$PWN3 \Rightarrow S5 *$$

$$PWN5 \Rightarrow S10N$$

And.

$$OPTO_1 \Rightarrow PWN3 \Rightarrow S1 \rightarrow PIN3$$

$$OPTO_2 \Rightarrow PWN1 \Rightarrow S3 \rightarrow PIN3$$

$$OPTO_3 \Rightarrow PWN5 \Rightarrow S5$$

$$PWN1 \neq PWN3 =$$

Q13 OK ✓
Q14 OK ✓
Q15 OK ✓
Q16 OK ✓
Q17 OK ✓
Q18 Desviación
Notaria.
Q19 OK ✓

Q20 Desviación
Notaria.
Q21 OK ✓
Q22 OK ✓
Q23 Desviación
Notaria.
Q24 ~~Desviación~~
Notaria.
Q25 OK.
Q26 OK

Q27 OK ✓
Q28 OK ✓
Q29. OK ✓

