

# ***MAC 600***

***PCB Service Manual***

# WARNINGS

## **Risk of electrical shock**

The PCB carries hazardous high voltages.

# CAUTIONS

## **ESD sensitive components**

To avoid damaging any components due to electrostatic discharges (ESD):

- **Ensure that you have the same potential (earth) as the fixture when removing and replacing the PCB from the fixture.**
- **Ensure that persons and tools have the same potential (earth) as the PCB before removing or inserting any components on the PCBs.**
- **Always store PCBs in antistatic (electrically conducting) bags and ICs in antistatic foam.**

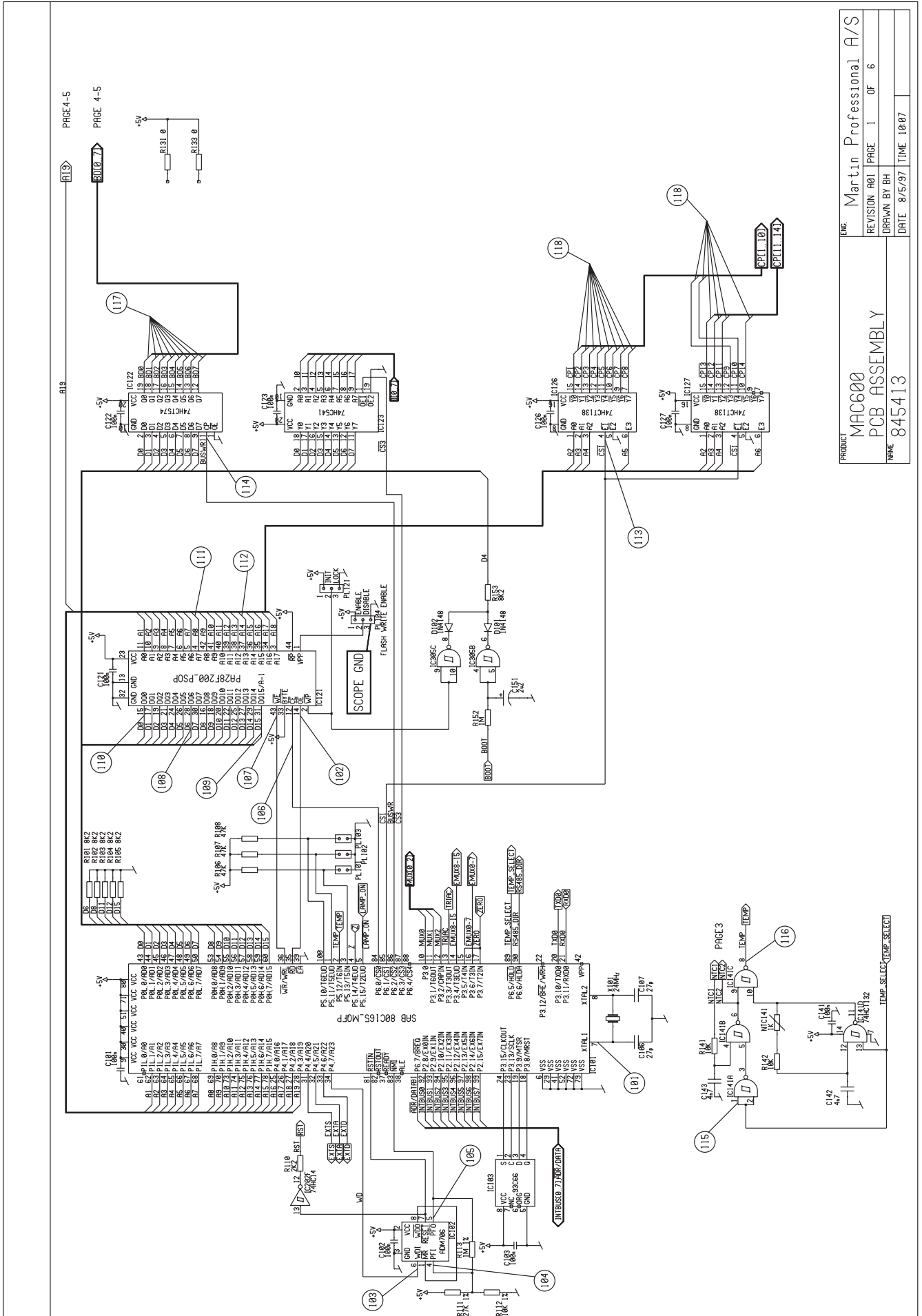
## **Charged capacitors**

- **Always power off the PCB and allow electrolytic capacitors in PSU to discharge before removing or inserting any components.**

## **Inductive loads**

Always power off the fixture before connecting or disconnecting any of the stepper motors on the PCB. Otherwise, damage to the stepper drivers may occur.

# CIRCUIT DIAGRAM

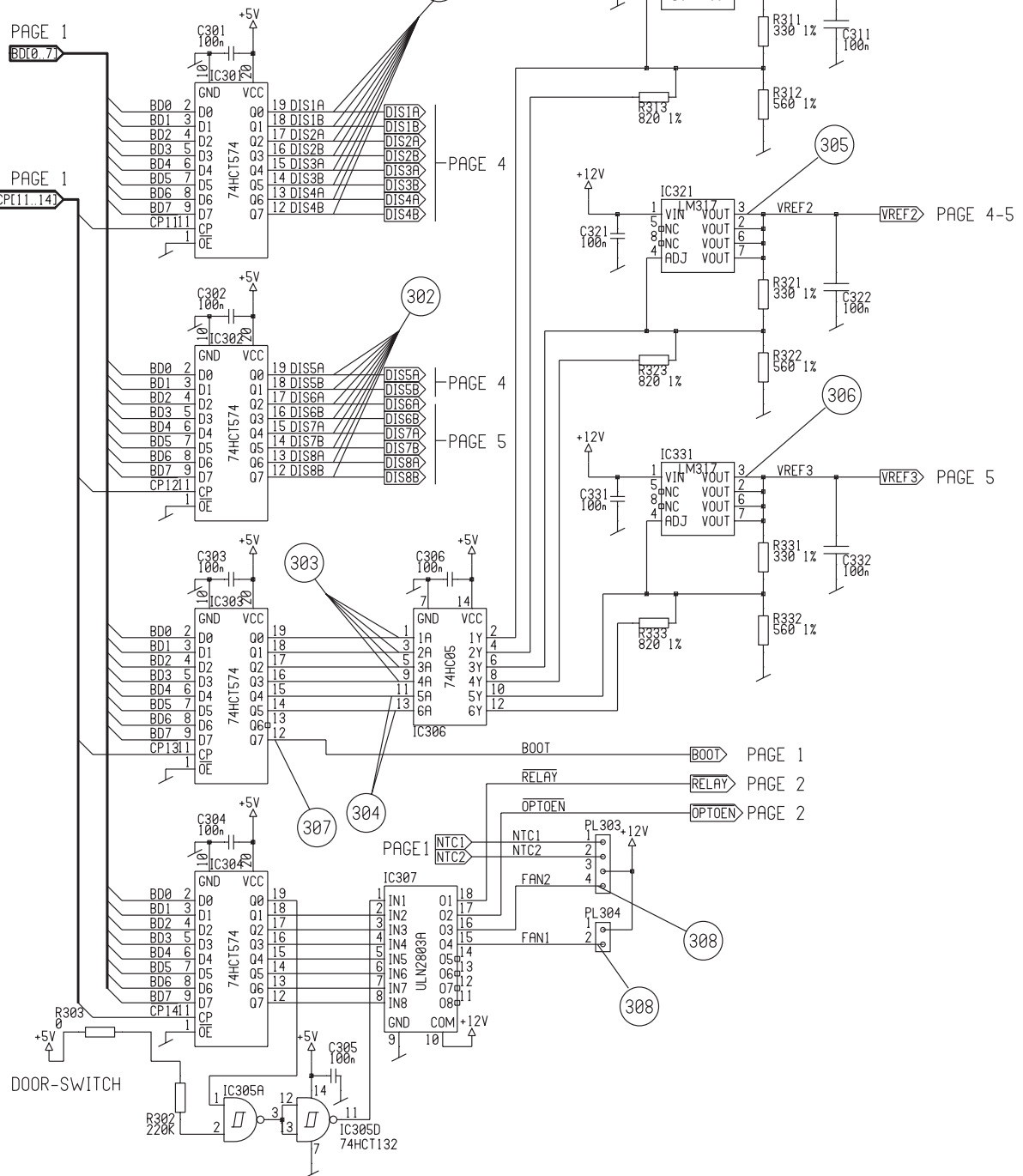




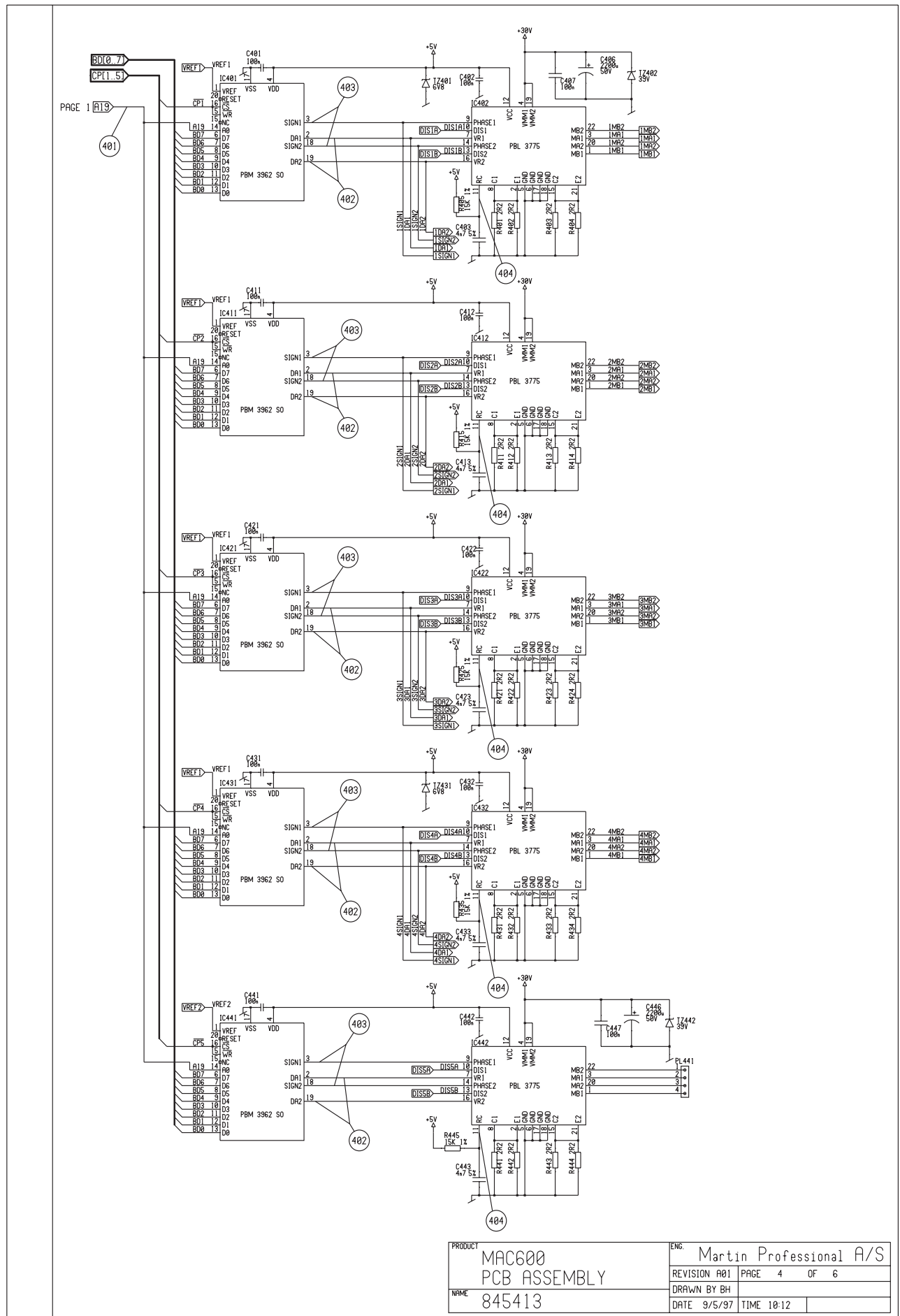
PAGE 1

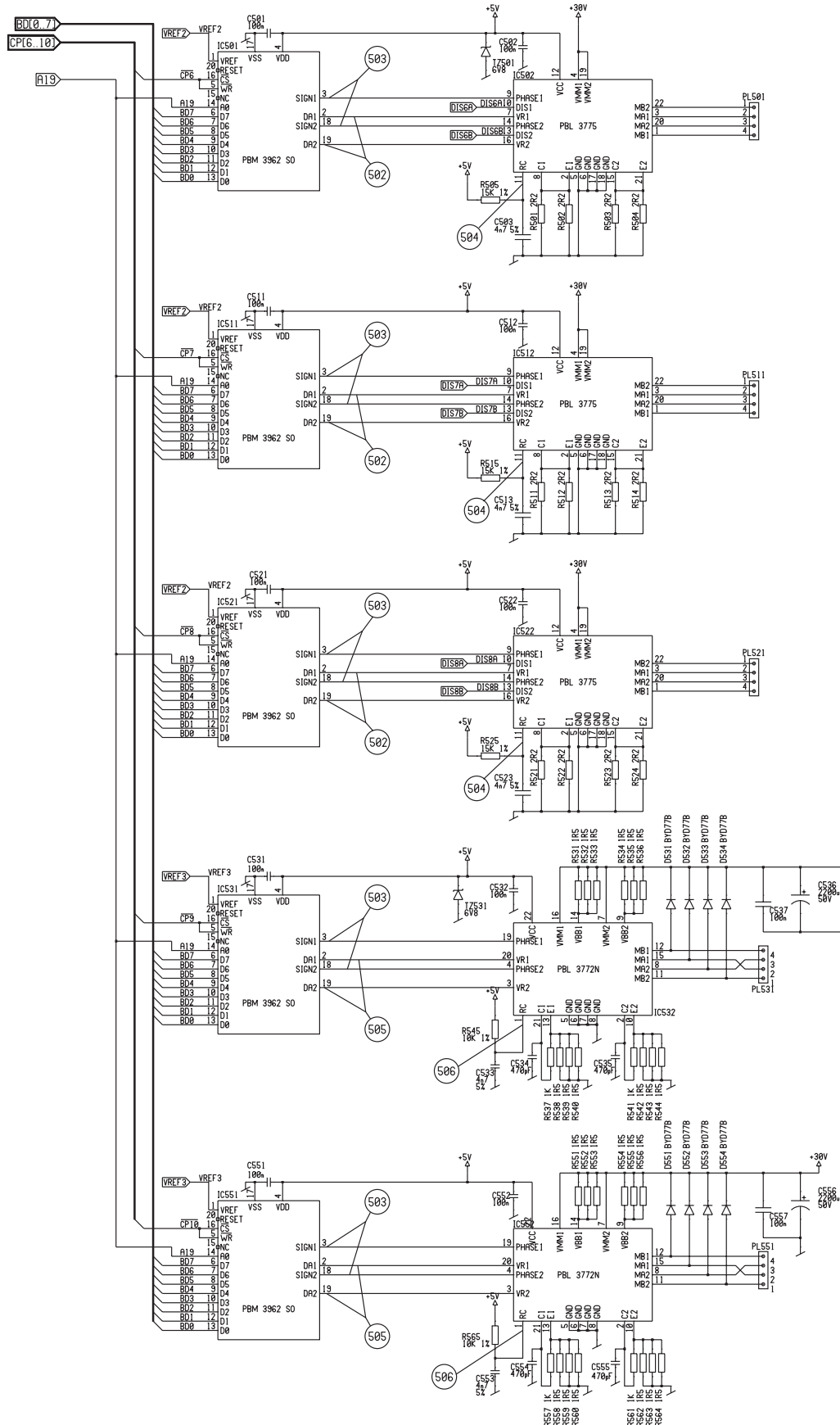
PAGE 1

DOOR-SWITCH



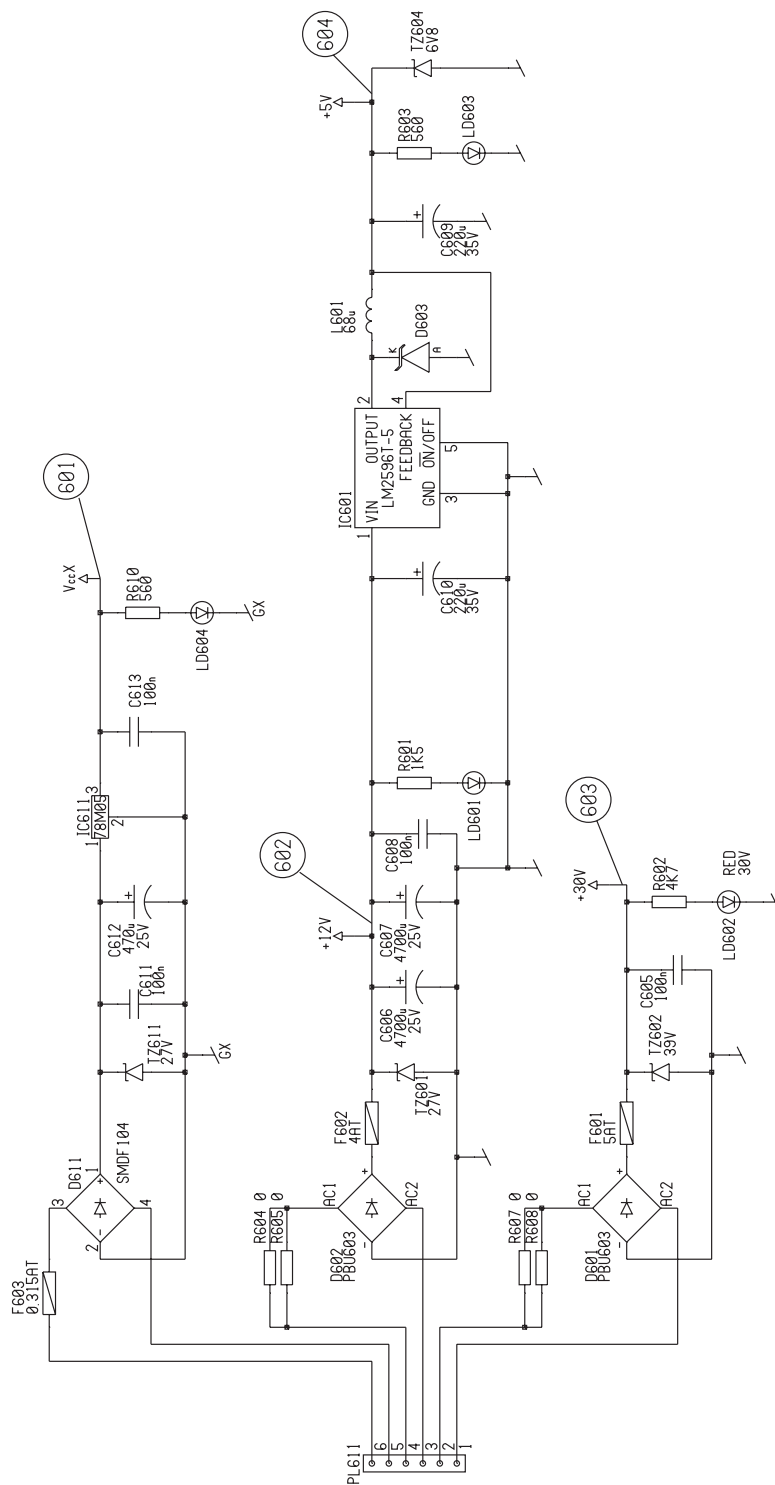
PRODUCT	MAC600			ENG.		Martin Professional A/S	
	PCB ASSEMBLY			REVISION	A01	PAGE	3 OF 6
NAME	845413			DRAWN BY		BH	
				DATE	8/5/97	TIME	10:01





PRODUCT	MAC600	ENG.	Martin Professional A/S
	PCB ASSEMBLY	REVISION	A01
NAME	845413	PAGE	5 OF 6
		DRAWN BY	BH
		DATE	9/5/97
		TIME	10:12





PRODUCT		ENG.	
MAC600		Martin Professional A/S	
PCB ASSEMBLY		REVISION A01	PAGE 6 OF 6
NAME		DRAWN BY BH	
845413		DATE 8/5/97	TIME 10:06

# SCOPE PICTURES - PCB

## About scope pictures

The following table contains scope pictures which refer to the test points in the circuit diagram revision A01. Each scope picture also refer to a test sequence (SPEC/TEST) implemented from MAC 600 software version 1.1.

## Test equipment

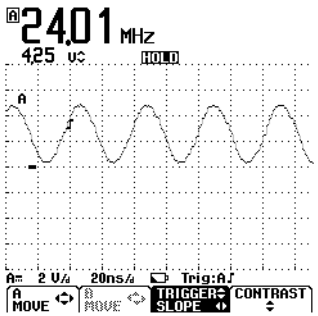
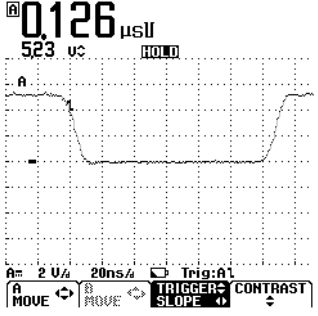
- FLUKE 123 Scope Meter w. 1/10 probe (For certain readings it is not recommended to use the standard probe that comes with the Fluke 123 Scope Meter).

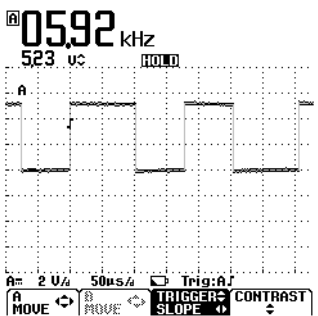
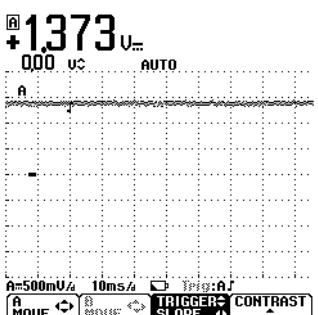
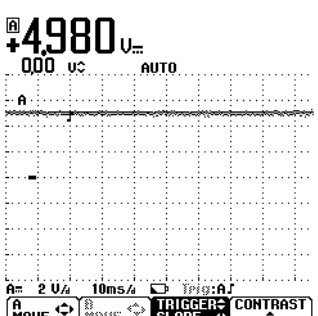
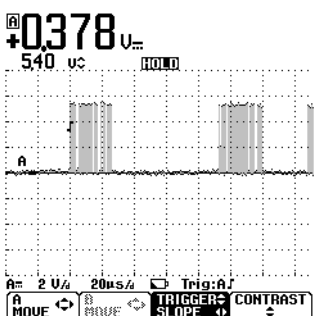
## Test conditions

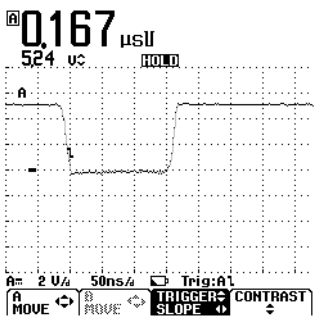
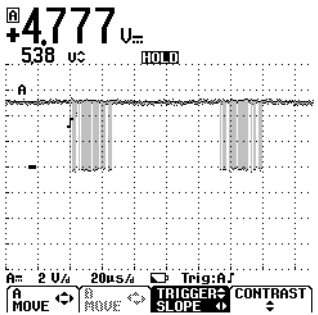
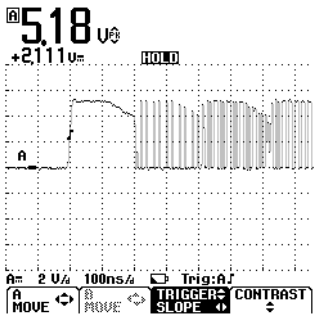
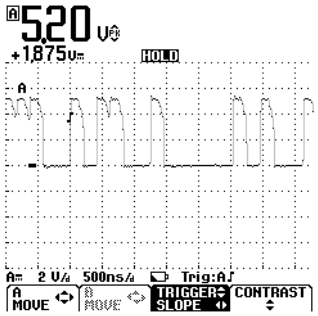
- Mains input supply = 230V/50Hz.
- Transformer setting = 230V
- Ballast setting = 230V/50Hz
- All motors, fans etc. connected to the PCB.

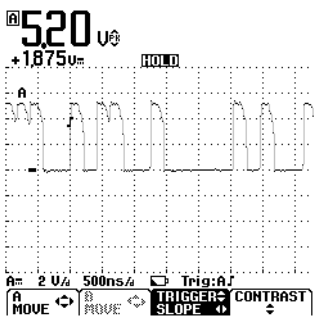
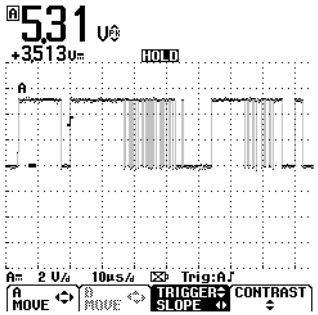
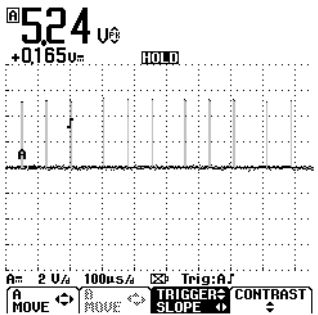
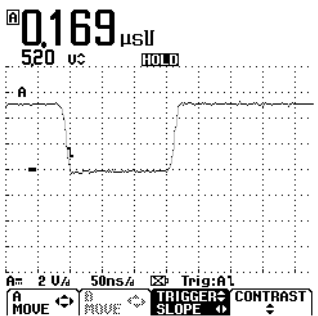
## Explanation of scope pictures

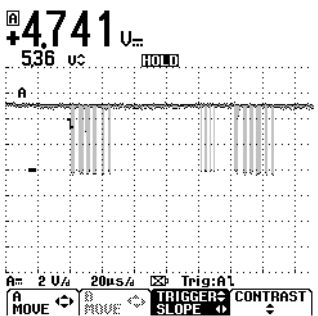
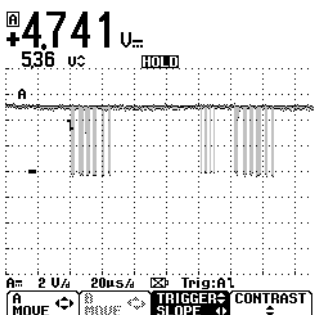
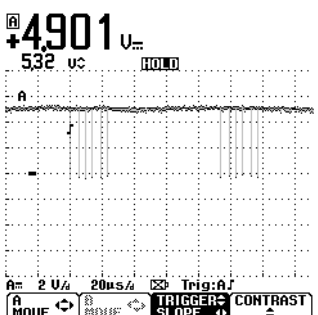
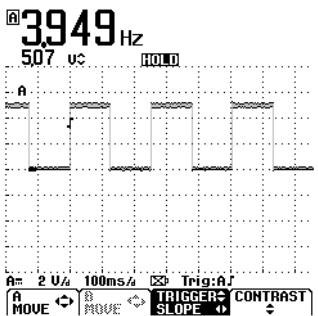
Please note that the picture on your scope may not always be identical to the ones shown in the table.

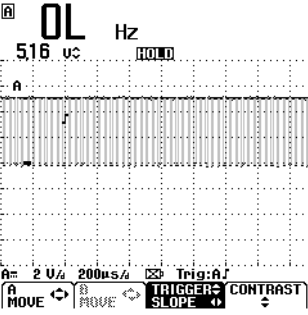
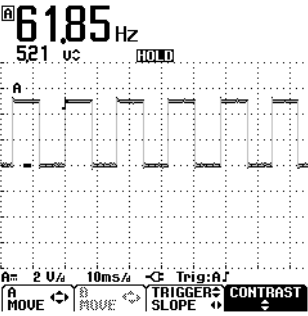
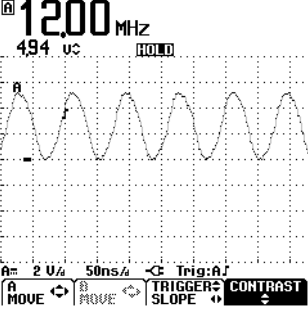
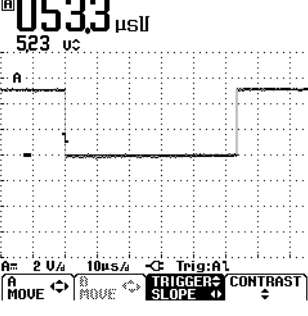
Scope picture	Test point	Test program.	Notes
	101	T1	Use high impedance 1/10 probe.
	102	T1	

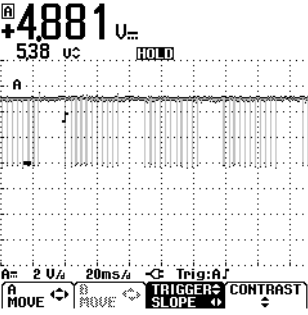
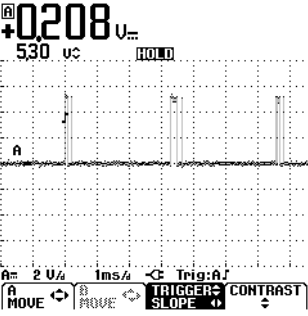
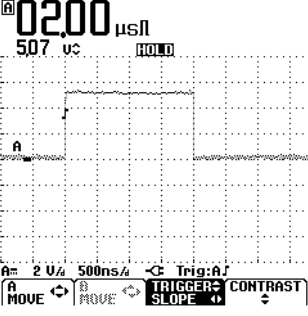
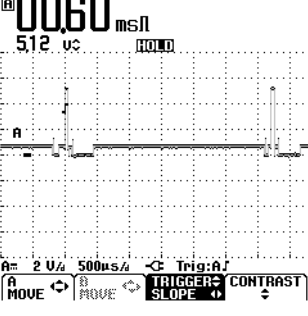
Scope picture	Test point	Test program.	Notes
	103	T1	
	104	T1	
	105	T1	
	106	T1	

Scope picture	Test point	Test program.	Notes
	107	T1	
	107	T1	
	108	T1	Data bus (D6) with pull down.
	109	T1	Data bus (D15) with pull down.

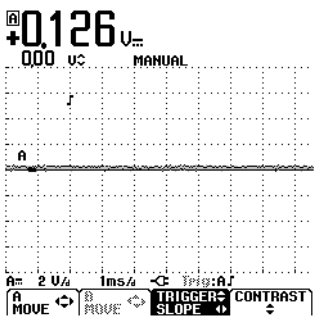
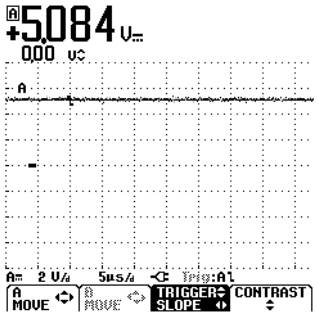
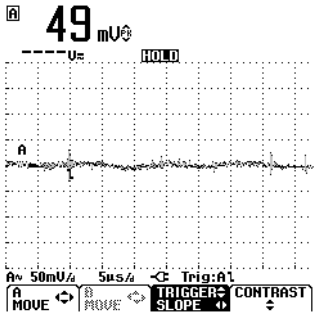
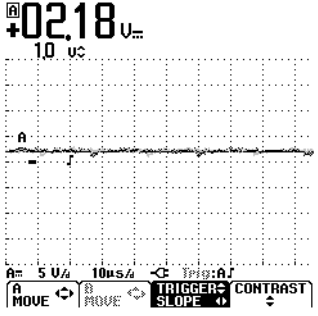
Scope picture	Test point	Test program.	Notes
	110	T1	Data bus D0 without pull down.
	111	T1	
	112	T1	
	113	T1	

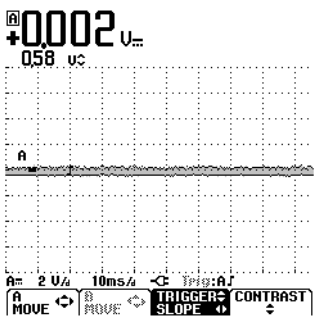
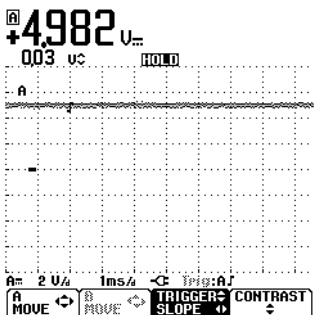
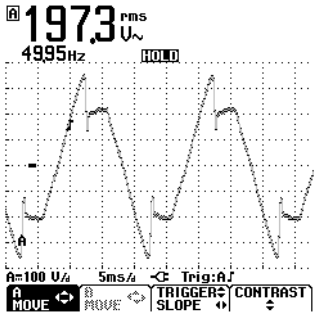
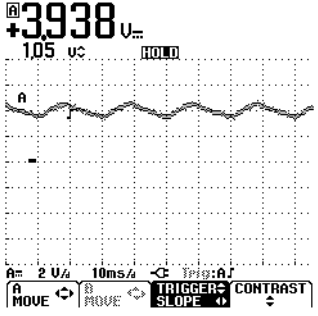
Scope picture	Test point	Test program.	Notes
	113	T1	
	114	T1	
	114	T1	
	115	T1	

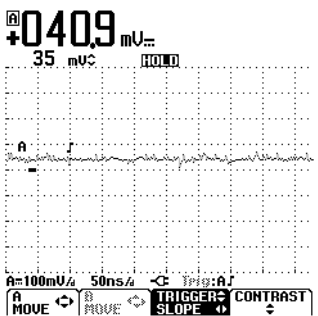
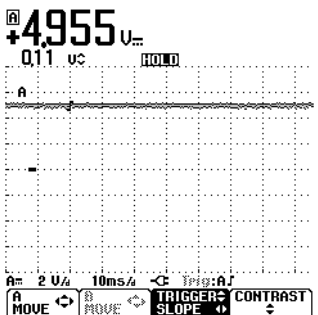
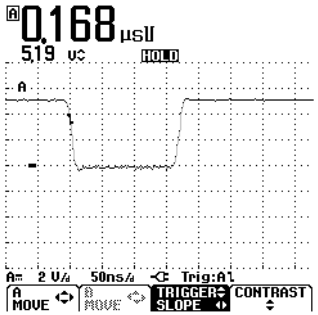
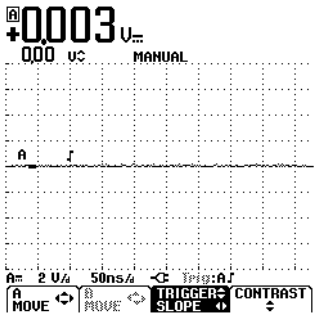
Scope picture	Test point	Test program.	Notes
	116	T1	
	201	T3	Signal only present periodically.
	202	T1	X-tal microcontroller tacho feedback circuit
	203		

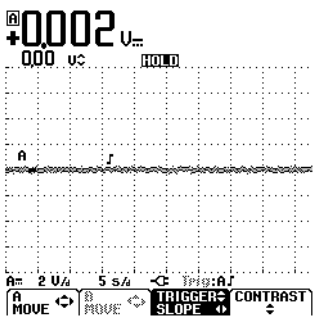
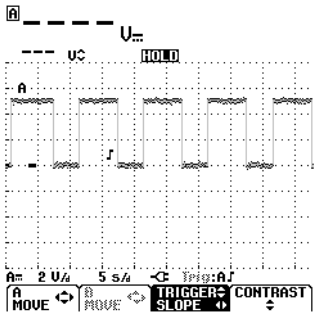
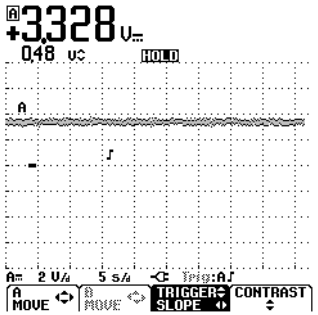
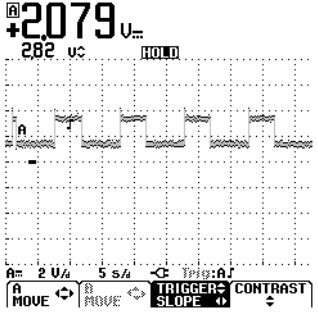
Scope picture	Test point	Test program.	Notes
	204		
	205		
	206		
	207	T1	Data bus - remaining data pins should provide a similar... picture.

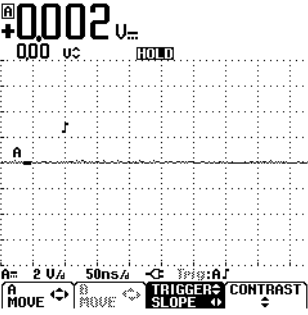
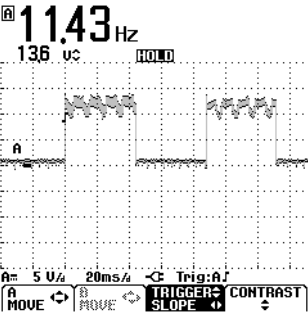
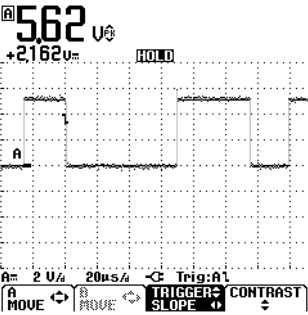
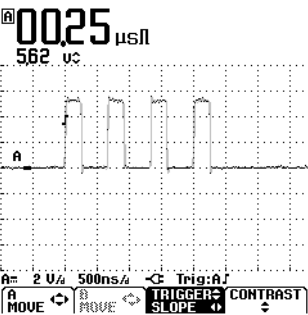


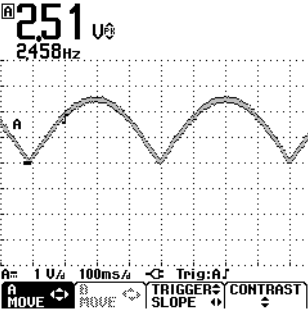
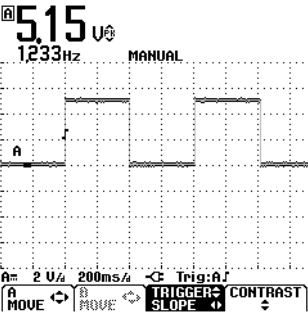
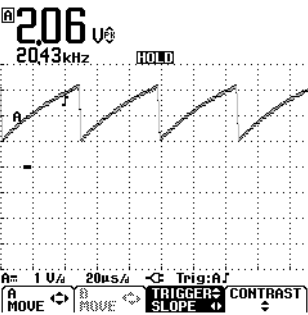
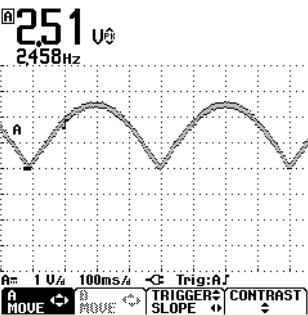
Scope picture	Test point	Test program.	Notes
	208	T1	NOTE: Relative to PL232 pin 3 (GND ISO). Transceiver direction (RX).
	601	T1	+5V ISO DC
	601	T1	+5V ISO Ripple
	209		NOTE: Without link termination.

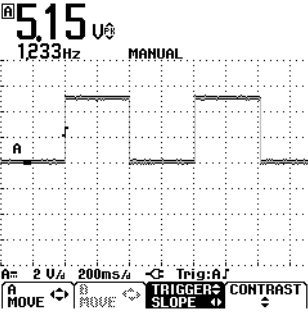
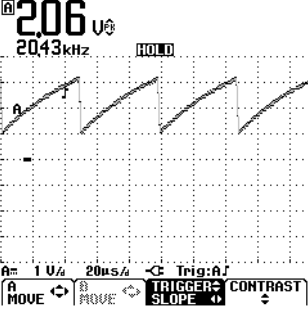
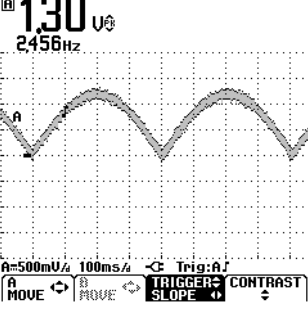
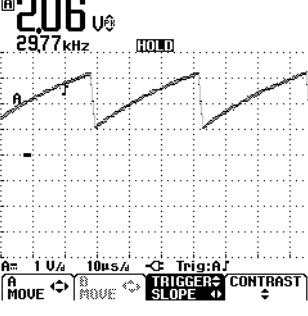
Scope picture	Test point	Test program.	Notes
	210		NOTE: Without link termination.
	211	T1	
	212	Adj/L On	NOTE: Wait 2 minutes until lamp voltage is stable. Relative to PL221.
	213	Adj/L On	NOTE: Wait 2 minutes until lamp voltage is stable. NOTE: Across TZ221.

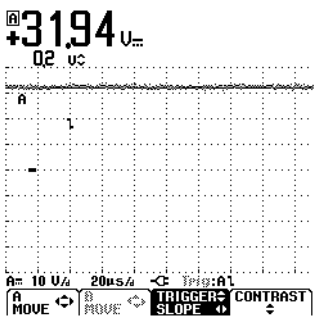
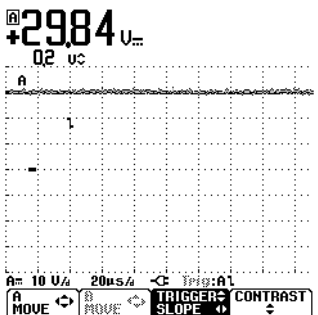
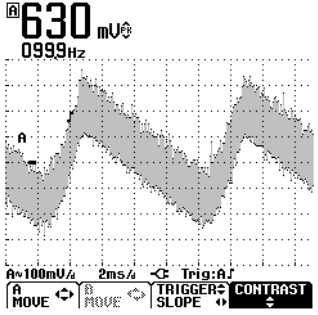
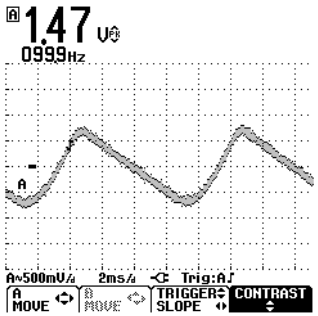
Scope picture	Test point	Test program.	Notes
	214	AdJ/L On	
	214	AdJ/LoFF	
	118	T1	
	302	T2	

Scope picture	Test point	Test program.	Notes
	303	T3	
	304	T3	
	305	T3	
	306	T3	Pan/tilt reference voltage

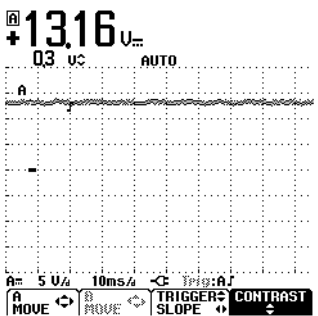
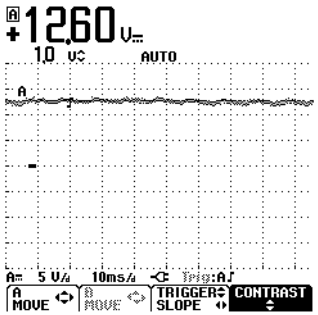
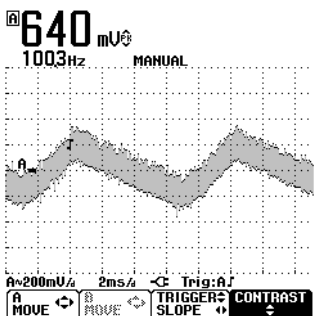
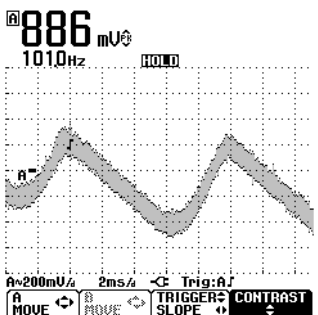
Scope picture	Test point	Test program.	Notes
	307	T1	
	308	T2	
	117	T2	Random signal
	401	T1	

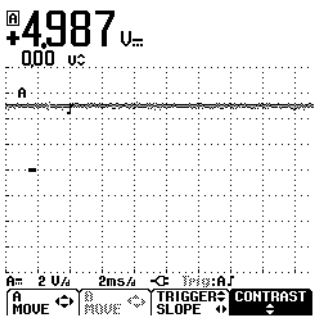
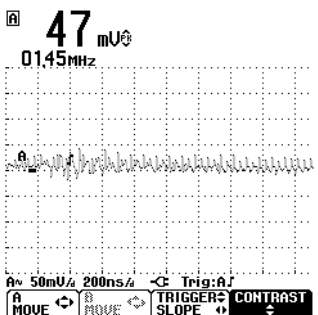
Scope picture	Test point	Test program.	Notes
	402	T2	
	403	T2	
	44	T2	
	404	T2	Oscillator
		T2	
	502	T2	

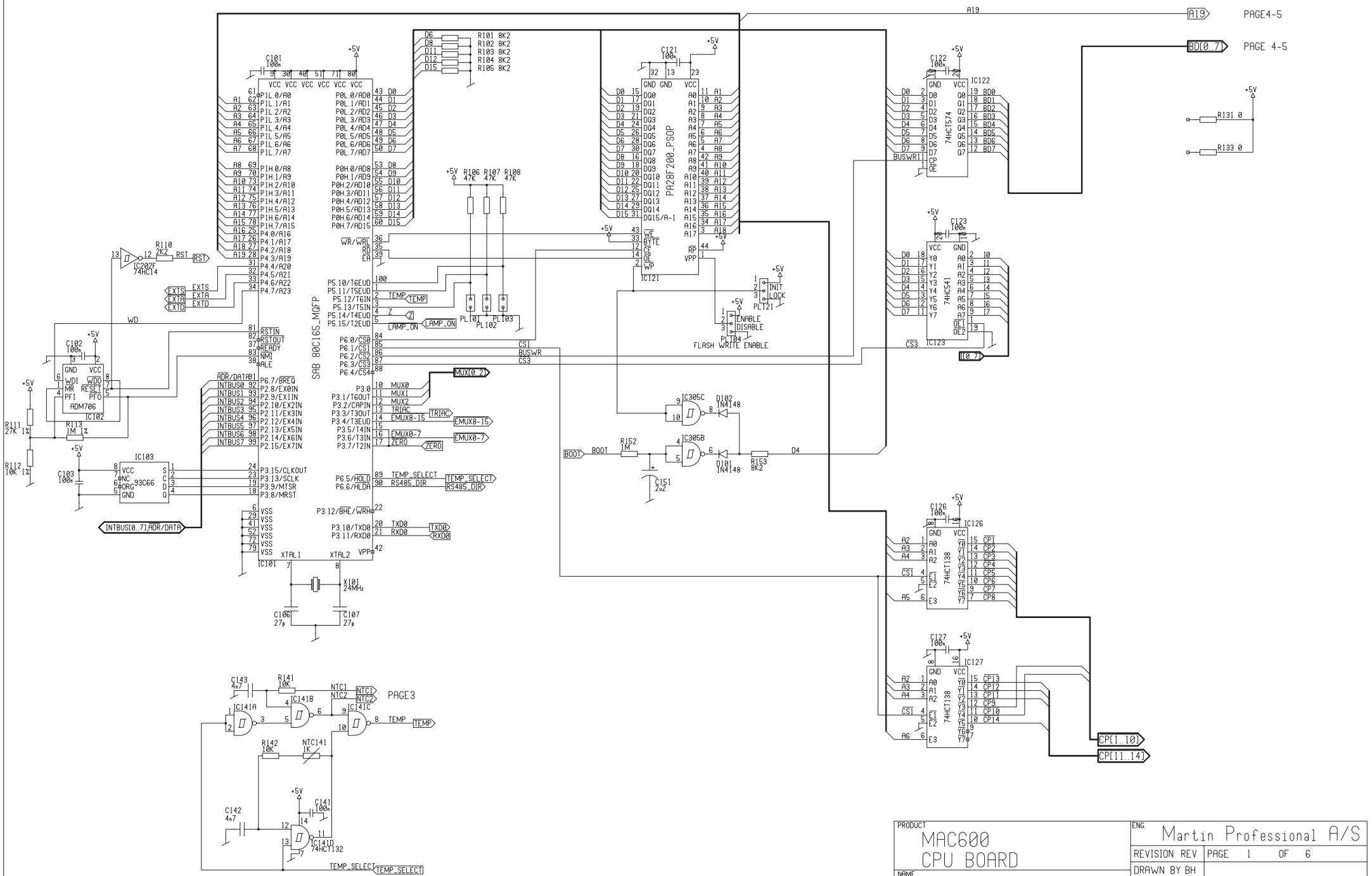
Scope picture	Test point	Test program.	Notes
	503		
	504		
	505		
	506		

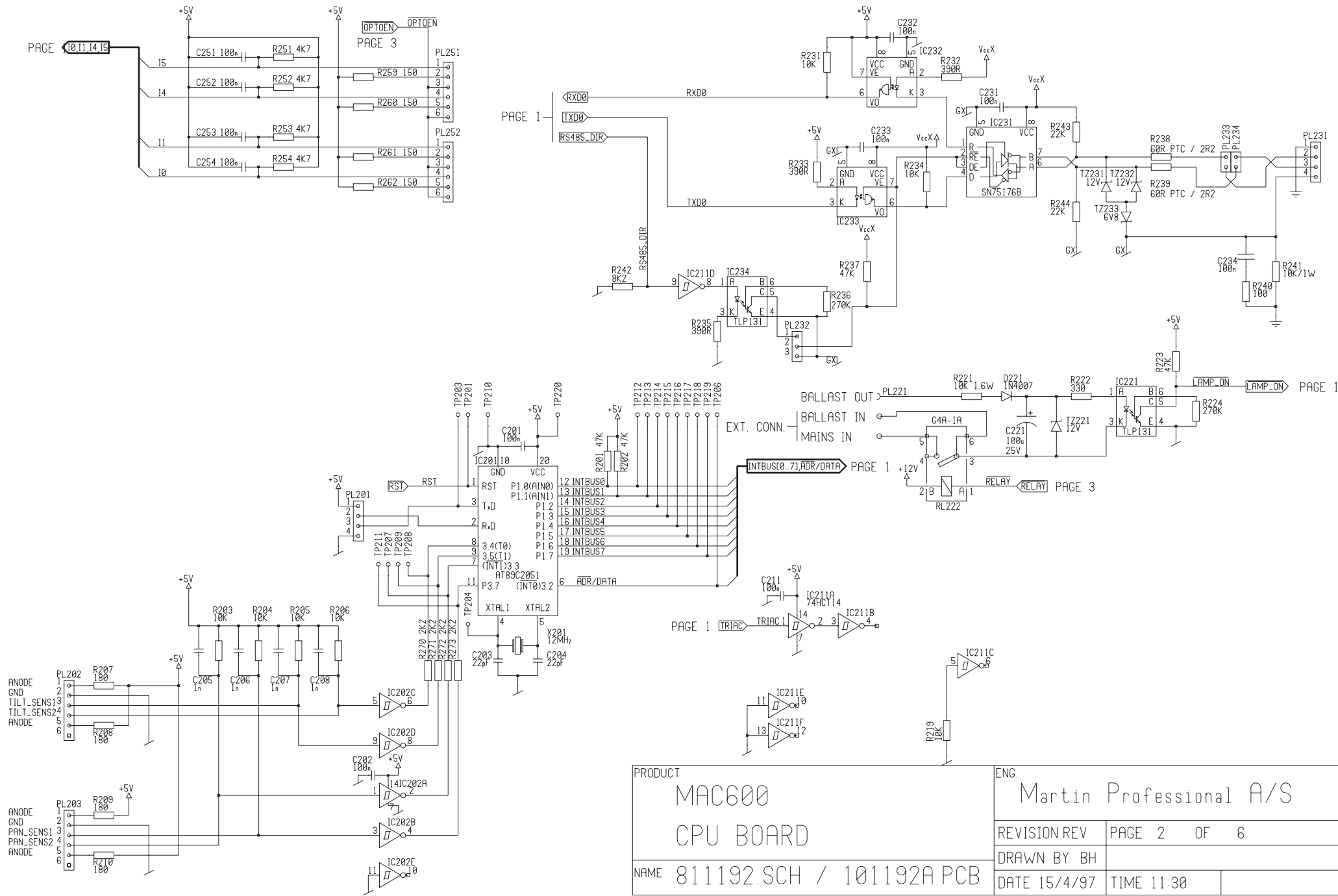
Scope picture	Test point	Test program.	Notes
	603	T1	
	603	T2	
	603	T1	
	603	T2	



Scope picture	Test point	Test program.	Notes
	602	T1	
	602	T2	
	602	T1	
	602	T2	

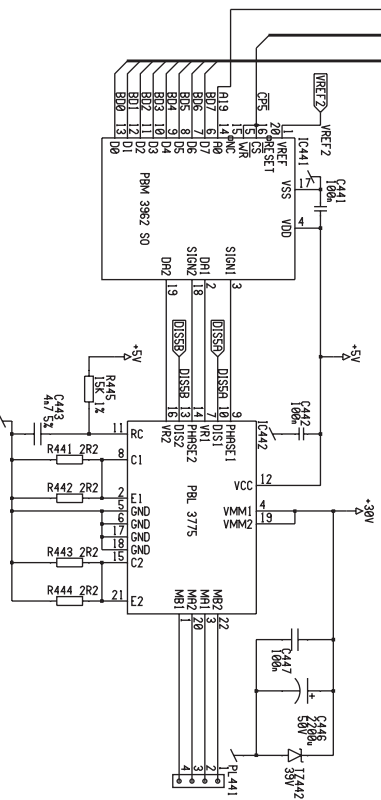
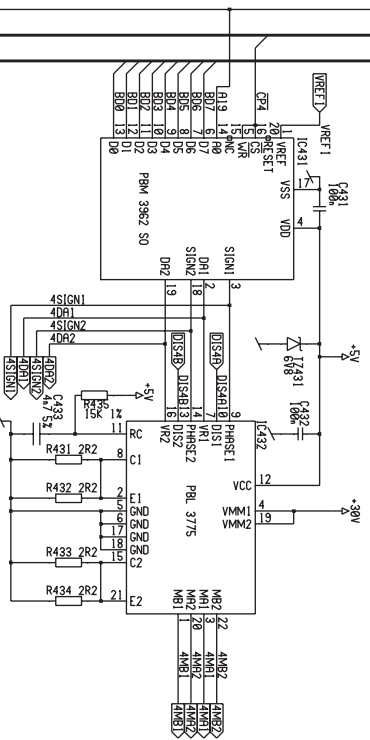
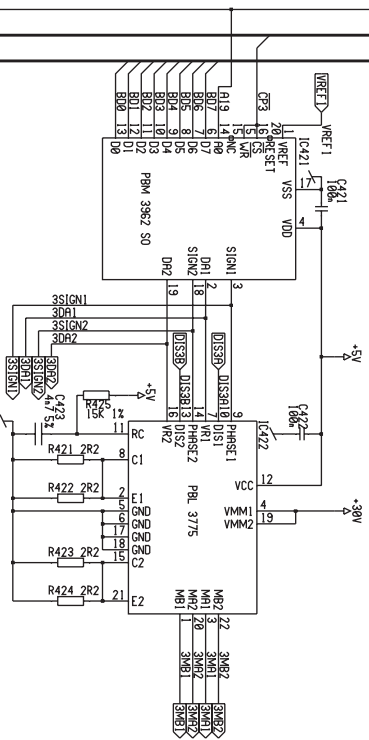
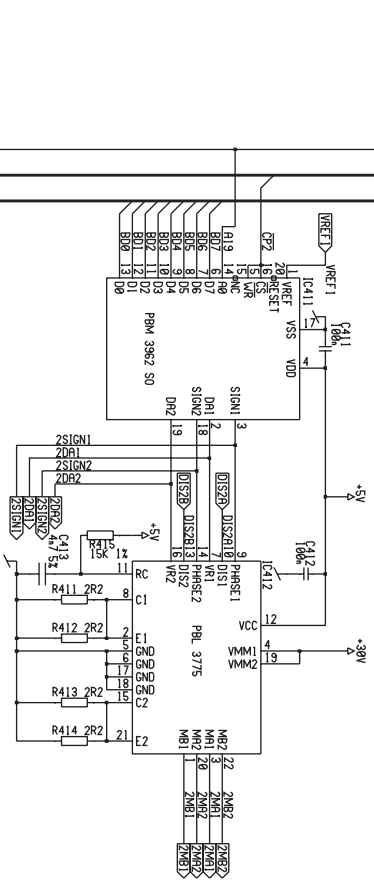
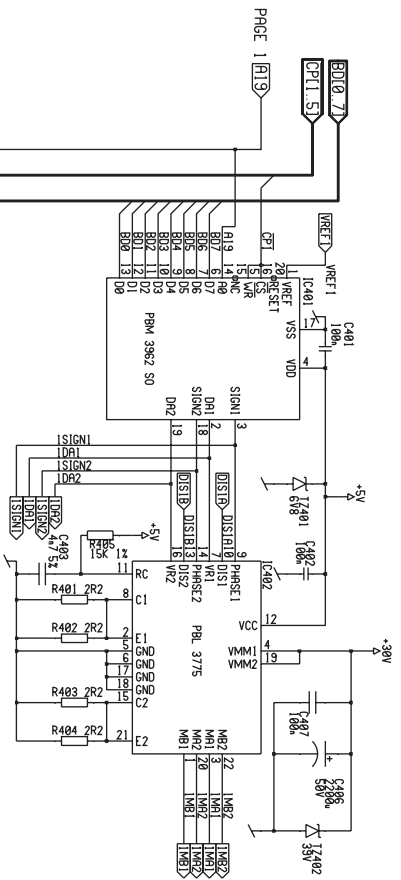
Scope picture	Test point	Test program.	Notes
	604	T2	
	604	T2	



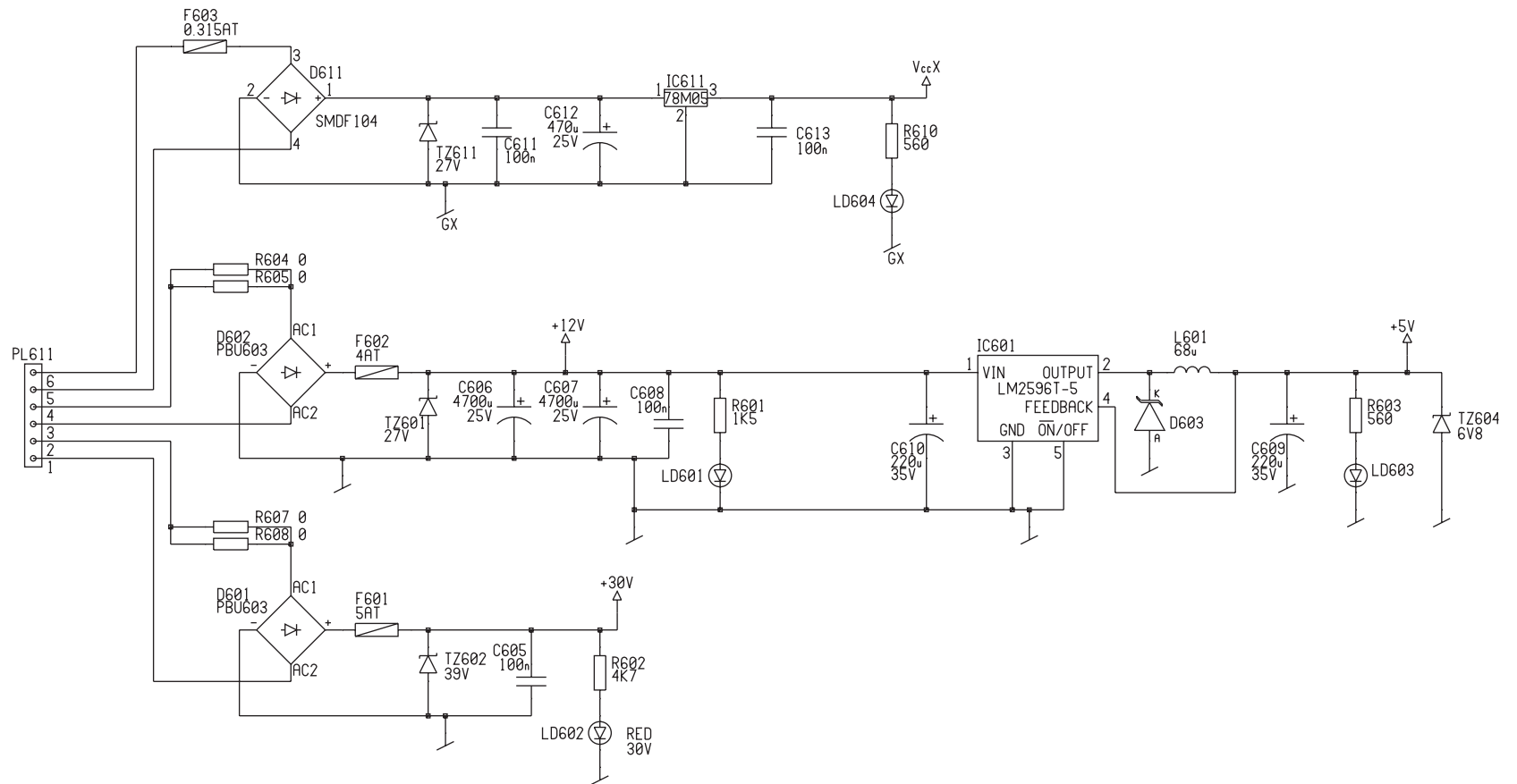


PRODUCT MAC600 CPU BOARD NAME 811192.SCH / 101192A.PCB	ENG. Martin Professional A/S		
	REVISION REV	PAGE 2	OF 6
	DRAWN BY BH		
	DATE 15/4/97	TIME 11:30	









PRODUCT	MAC600			ENG.		Martin Professional A/S	
	CPU BOARD			REVISION	REV	PAGE	6 OF 6
NAME	811193.SCH / 101192A.PCB			DRAWN BY		BH	
				DATE	15/4/97	TIME	11:30



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