

DIGITAL OUTPUTS FROM 930 557

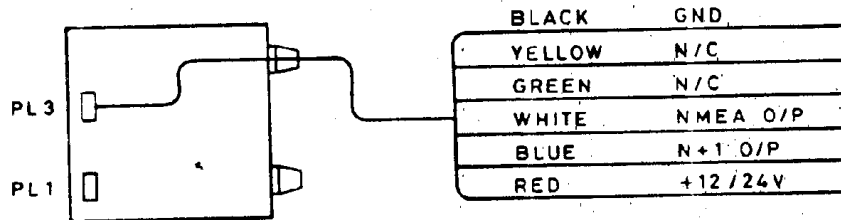
As from January 1st 1989 all 930 557's will be supplied as standard with NMEA and N+1 outputs.

The NMEA messages are:-

1. \$HCHDM,,XXX,M
2. \$HCHSC,,T,XXX,M
3. \$HCHCC,XXX,M
4. \$HCVHW,,T,XXX,M,,N,K

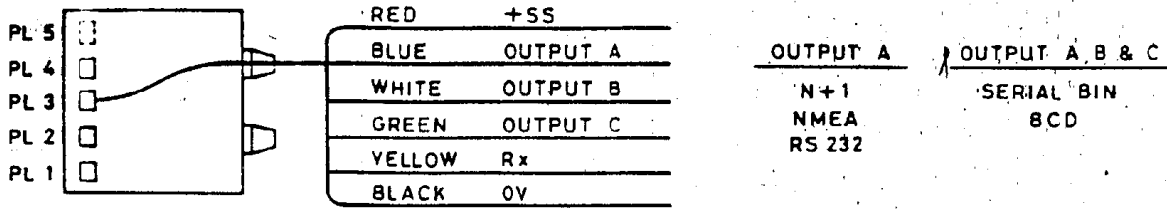
The NMEA messages are output on a 4 second cycle, one message each second.

The N+1 data is output every 110mS.

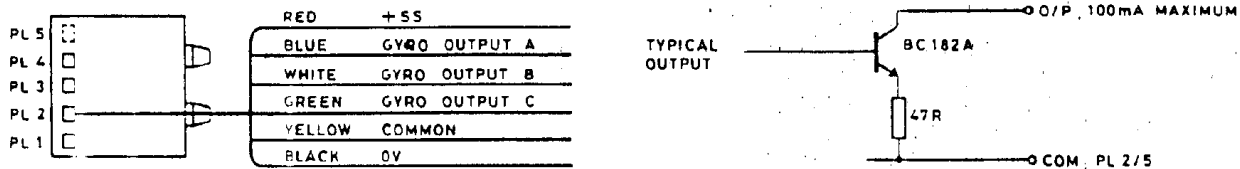


DIGITAL OUTPUTS AND CONNECTIONS FOR 930 550/551

Connections to Digital Output

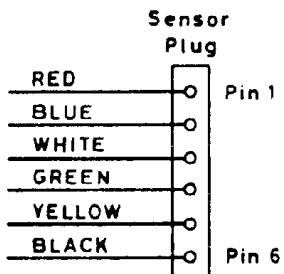


Connections to Gyro Output 930 551 ONLY

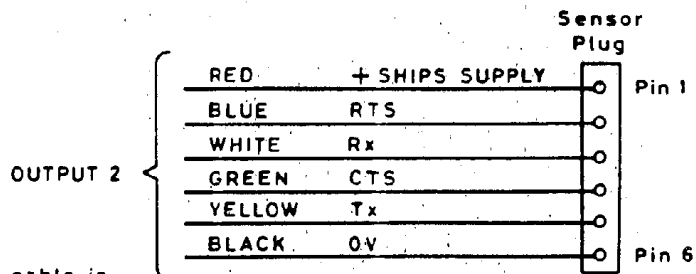


Cable Connections

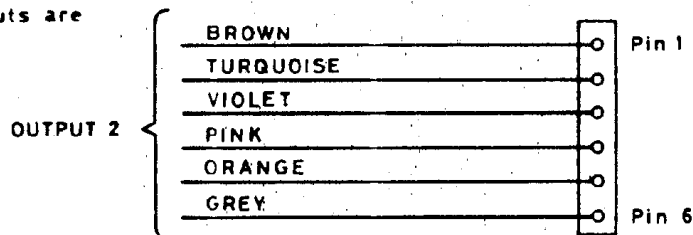
6-WAY CABLE



12-WAY CABLE



The 12-Way cable is only fitted when more than 3 outputs are required.

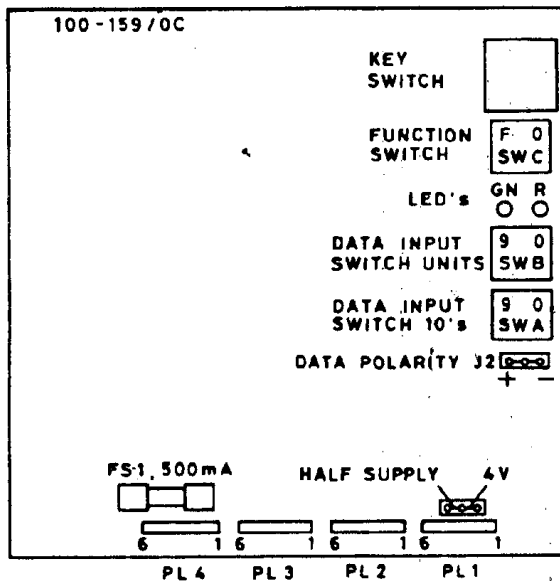


PROGRAMMING AND ADJUSTING THE 930 550, 930 551 SENSOR

Remove lid from sensor by releasing the four retaining screws.

Programming is performed using the following components (see drawing):

1. 2 x 10 position rotary switch for data entry (SWA and SWB)
2. 16 position rotary switch for Function Select (SWC)
3. 2 position Jumper for data polarity (J2)
4. Key switch
5. Red and Green LEDs



PIN OUTPUTS

PL 1, ANALOGUE OUTPUT
 PL 2, GYRO OUTPUT
 PL 3, NMEA / N+1 OUTPUT
 PL 4, 930-555 PILOT OUTPUT

PL 1/1, +SS	PL 2/1, +SS
2, SIN	2, AG
3, REF	3, BG
4, COS	4, CG
5, EXT REF	5, COM
6, 0V	6, 0V

PL 3/1, +SS	PL 4/1, +SS
2, 0/PA	2, Tx
3, 0/PB	3, Rx
4, 0/PC	4, RTS
5, Rx	5, CTS
6, 0V	6, 0V

To Enter Selected Functions

- Set switch SWC to select function required
- Set SWA and SWB if necessary
- Press KEY switch

SWC	FUNCTION	ACTION
0	Normal gain	Leave switch in position 0 or 1 after adjustments completed
1	Low gain	
6	Sin/Cos 45° offset	ON SWA-0 SWB-1 OFF SWA-0 SWB-0
9	Set variation	Set J2, SWA, SWB to required value see below
B	Set deviation coefficient B	Set J2, SWA, SWB to required value see below
C	Set deviation coefficient C	Set J2, SWA, SWB to required value see below
D	Set damping rate	Set SWA-0, to select rate required set SWB to: 0 for 500 ms 1 for 1 sec) 2 for 2 secs) 3 for 4 secs) 4 for 8 secs) 5 for 16 secs) 6 for 32 secs) 7 for 64 secs)
E	Start auto deviation procedure	
F	Set data output format	Set SWA, SWB to select required data as table overleaf

To Set Output Format

The sensor has a maximum of four separate outputs available:-

1. Analogue output - sin/cos output - 930 550, 551
2. Gyro output - stepper gyro output - 930 551 only
3. Data output - selectable data - 930 550, 551
4. Cetrek data - all versions

To select required output data

- Set switch SWC to position 'F'
- Set switches SWA, SWB as per table below
- Press key switch to enter

The green light will go out momentarily to indicate data has been stored. If no further changes are to be made at this stage, turn SWC to position '0' or '1' (as set during Compass Calibration, refer to Section A of this manual).

930 550/551 Formats

Format	Code	Format Des.	Rep. Rate	Notes
SWA SWB				
0	0	RS232 4800 BAUD	150 MS	Message A
0	1	RS232 2400 BAUD	210 MS	
0	2	RS232 1200 BAUD	320 MS	555/Pilot affected
0	3	RS232 300 BAUD	900 MS	555/Pilot not operable
0	4	10 Bit Serial Binary	95 MS	Best format for pilot
0	6	16 Bit Serial BCD	95 MS	
0	8	NMEA Message A	150 MS	\$HCHSC,XXX,M,YYY,T,Z, E<CR><LF>
0	9	NMEA Message B	140 MS	\$IHDHDM,XXX,M,Z, E<CR><LF>
1	0	NMEA Message C	120 MS	Special Cetrek Format
1	2	N+1 Slow rep output	100 MS	
1	3	Gyro Stepper slow step		Rep rate depends on turn rate. Max follow rate is 1000 degrees per minute.
1	4	N+1 Fast rep output	40 MS	555 O/P is 120 MS
1	5	Gyro Stepper fast step		Rep rate depends on turn rate. Max follow rate is 1500 degrees per minute.

Switch SWA, SWB

These switches are used to input numerical data for variation and also to select output formats as described above.

To enter variation data

- Set SWC to 9
- Set SWA, SWB to required value
- Set J2 for polarity +ve for EAST, -ve for WEST

Each unit selected SWA, SWB is equal to 0.352°.

$$\text{SWA, SWB setting} = \frac{\text{Correction required } ^\circ}{0.352}$$

Example:

$$\text{Variation correction of } W17^\circ = \frac{17}{0.352} = 48$$

1. Set Jumper J2 +ve
2. Set SWA to 4
3. Set SWB to 8
4. Set SWC to B
5. Press KEY switch

Note: The 555 display is unaffected by variation entry.
The 555 has its own facilities for variation entry.

Table for Quick Selection of SWA, SWB Settings

Degrees	SWA	SWB	Degrees	SWA	SWB
1	0	3	14	4	0
2	0	6	15	4	3
3	0	9	16	4	5
4	1	1	17	4	8
5	1	4	18	5	1
6	1	7	19	5	4
7	2	0	20	5	7
8	2	3	21	6	0
9	2	6	22	6	3
10	2	8	23	6	5
11	3	1	24	6	8
12	3	4	25	7	1
13	3	7			

Output Configuration

Sine/Cosine reference level

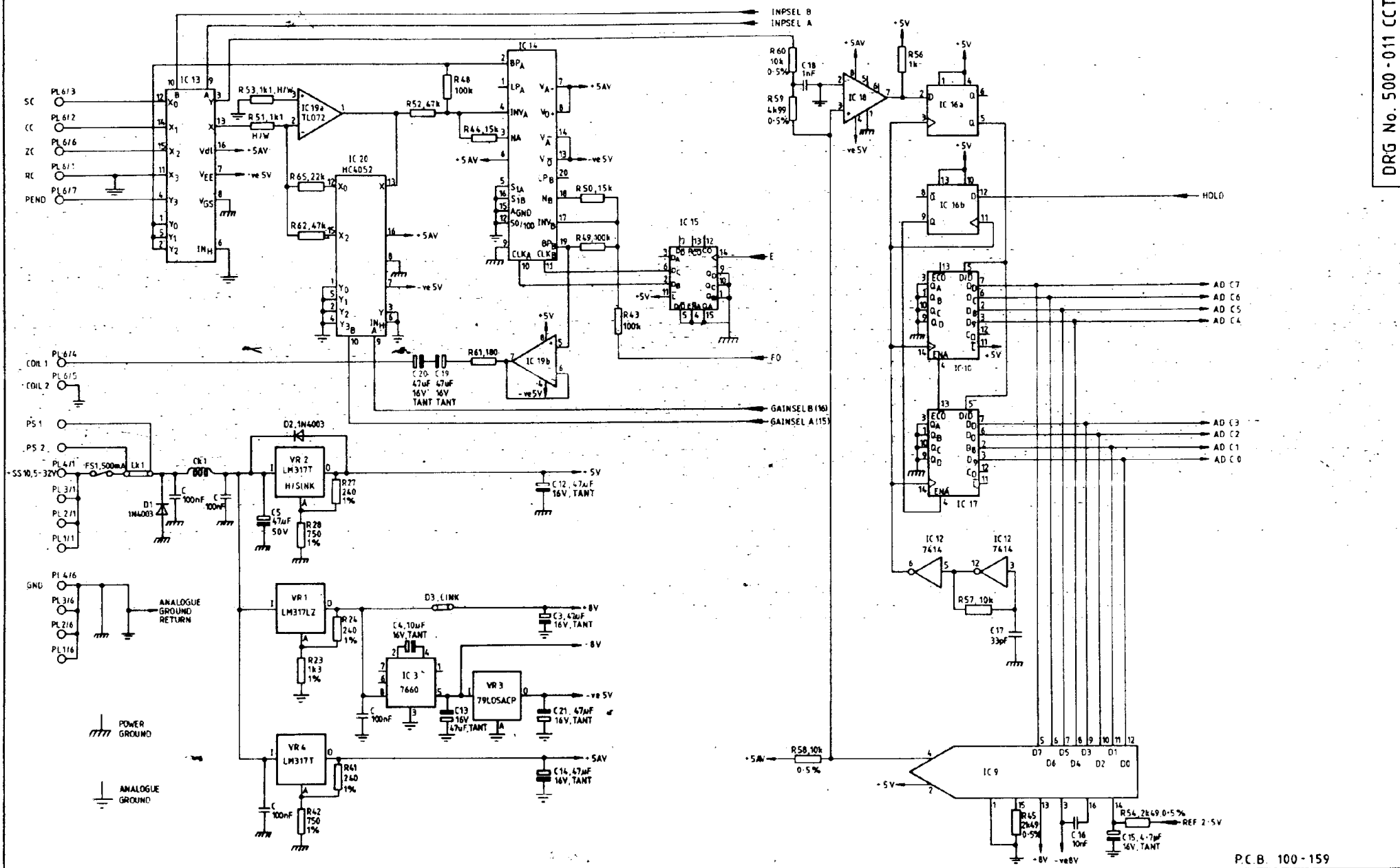
- The Sine/Cosine reference level can be set using jumper J1 - see the drawing on page 135.
- J1 set at 4V gives 4 volts reference level
- J1 set at half supply gives reference of half volts supplied to PIN 5, plug 1 (maximum permissible input 35V)

Digital Outputs (PL3)

- Signals are 5V logic levels
- Max current for each output is 20 MA

Gyro Outputs (PL2)

- Outputs are open collector
- 100 MA max current for each output
- Emitters of each output transistor are connected to common (PL2/5)



P.C.B. 100-159

REVISION	CHKD	REVISION	CHKD
Issue 1, 16/12/86			
Issue 2, CM 0114, 2/2/87			
Issue 3, CM 0121, 8/4/88			
Issue 4, CM 0245, 8/6/88			
Issue 5, CM 0264, 20/9/88			

MARINEX IND LTD, 1 FACTORY RD, UPTON, POOLE. ©

DRAWN	TRACED	CHECKED	APPROVED	DATE	ISSUE
				4/12/86	5

930-551 CIRCUIT DIAGRAM

DRAWING No. 500-011 CCT
Sht 1 of 2

Cetech LTD
 1 FACTORY ROAD,
 UPTON, POOLE,
 DORSET BH16 5JJ

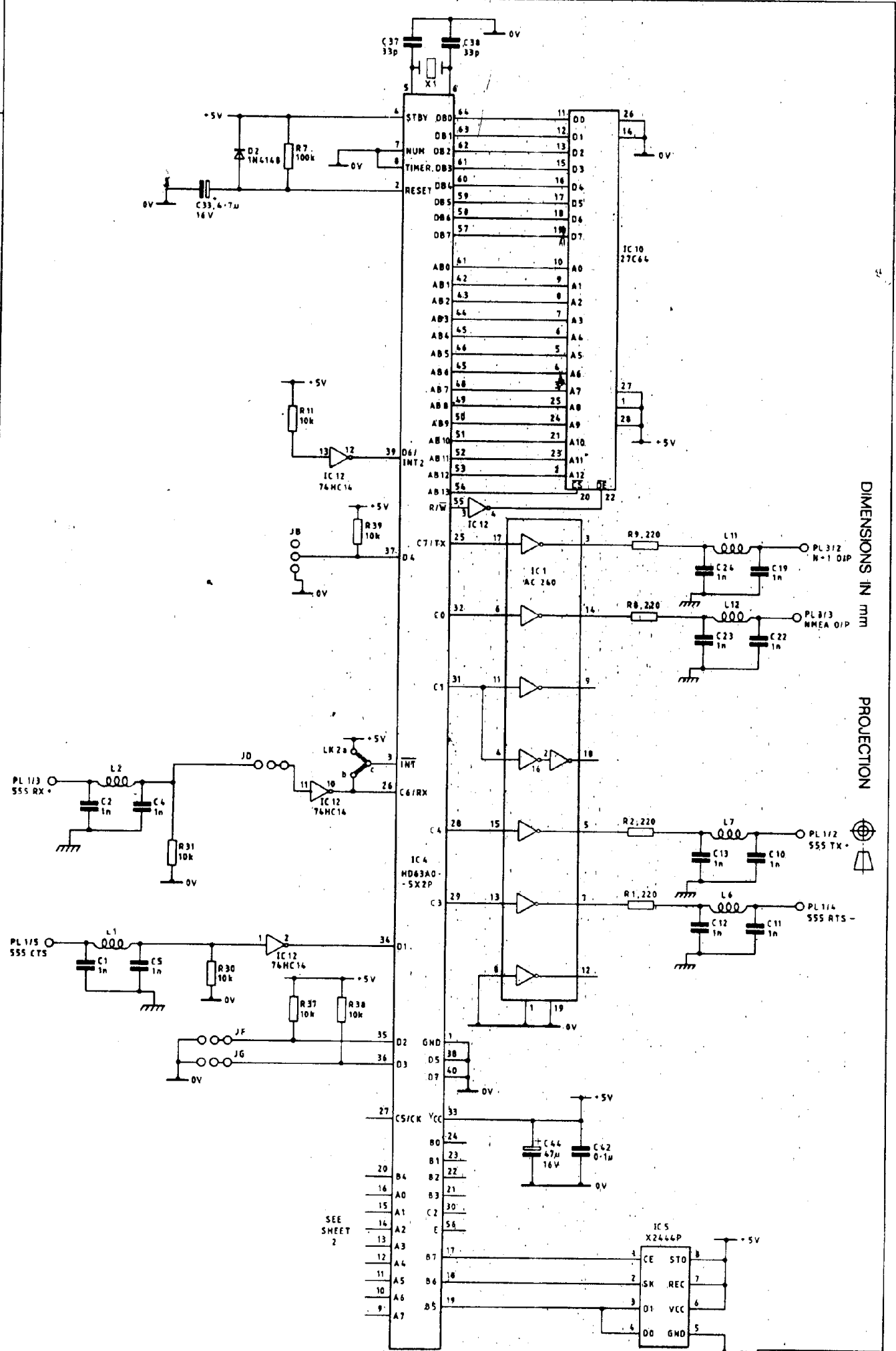
THIS DRAWING MUST NOT BE USED FOR
 ANY PURPOSE OTHER THAN THAT FOR
 WHICH IT IS SUPPLIED.
 © Cetech LTD. All Rights Reserved.
 Cetech Engineering Ltd
 POOLE, DORSET

ISSUES

1.	21/3/88
2.	7/12/88 CM 0273 2.07
3.	12/6/89 CM 0319 2.1
4.	10/6/89 CM 0324

REV	DATE	BY	CHKD

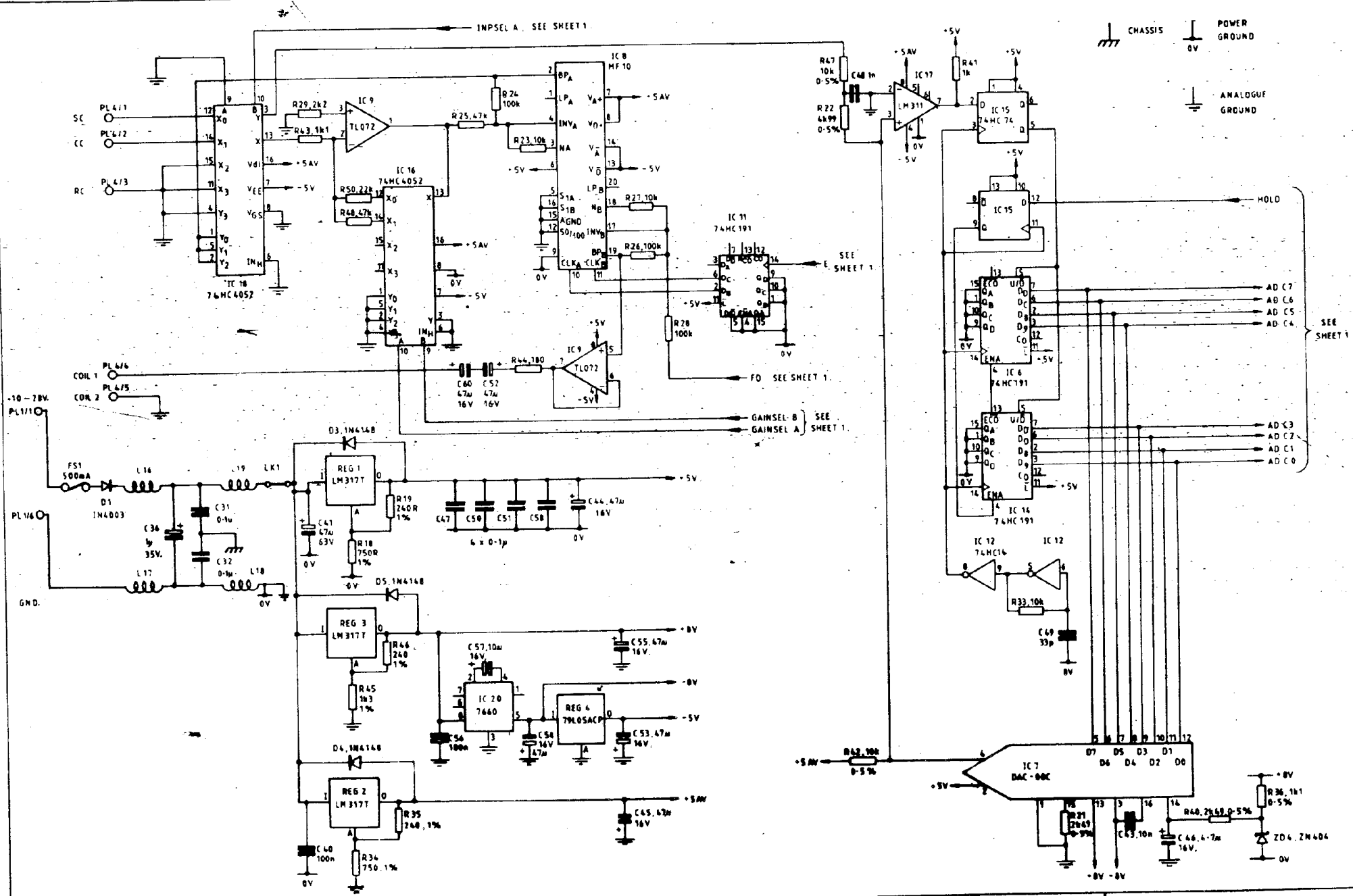
TITLE
930-557 CIRCUIT DIAGRAM
 DIMENSIONS TOLERANCES:
 ALL & OVER UNLESS STATED
 DIMENSIONS IN mm
 PROJ. SHEET 1 OF 2
 500-027 CCT
 4



DIMENSIONS IN mm

PROJECTION





Cetrek LTD.
1 FACTORY ROAD,
UPTON, POOLE,
DORSET, BH16 5J

© THIS DRAWING MUST NOT BE USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS SUPPLIED
1988
CETREK LTD. CHICHESTER
10007 807375
CETREK ENGINEERING LTD
FLEETS IND. ESTATE
10007 810094

ISSUES
1. 31.3.88
2. 10/5/88
CN 0284

DATE
100
CHD

SCALE
1ST LITE
FINISH

MATERIAL

TITLE
930-557 CIRCUIT DIAGRAM
DIMENSION TOLERANCES
HOLE ± 0.15
PLATE ± 0.5
TWO PLACES ± 0.15
UNLESS OTHERWISE STATED
DWD No Sheet 2 of 2
500-027 CCT
02/2573/C