

Z235, ST30 Bidata Round Service Manual

Z235

Warning

CE Marking of Equipment/Replacement Parts

If the Autohelm equipment under repair, test, calibration, installation or setting to work carries the European CE mark, only parts and components supplied or approved for such use by Autohelm should be used in order to maintain compliance with the relevant CE requirements.

Incorporation, use or attachment, by any means, of parts or components not supplied for or not approved for such use by Autohelm or, if supplied or approved for use by Autohelm, not properly fitted in accordance with instructions published, provided or recommended by Autohelm, may cause the equipment to malfunction and, in particular, to become unsafe or to no longer meet the relevant CE requirements. In these circumstances, Raytheon Marine Europe Ltd excludes liability to the fullest extent permissible in law for any loss or damage including any liability for its contribution to such loss or damage by its negligent acts or omissions.

Chapter 1. Special Functions

Special functions available on the ST30 Bidata Round are:

1. Calibration lock/unlock
2. Boatshow mode
3. Damping

For security reasons, extended calibration features are selected by an extended hold (15 seconds) of **depth** and **speed** until CAL is displayed for the second time, followed by momentary depression of both the **depth** and **speed** keys.

To cycle the features, press the **depth** key until the required option is displayed.

1.1 Calibration Lock/Unlock

Calibration lock/unlock eliminates the risk of accidentally changing all but the extended calibration values.

This feature is particularly useful for operators of charter boats who spend a great deal of time tuning the pilot to the vessel, only to find a customer alters the settings at a later date.

This feature is displayed as C1 or C0.

C1 = unlocked (normal access)

C0 = calibration is locked (no access).

The mode is changed by pressing the **speed** key.

Calibration lock/unlock is stored by pressing **depth** and **speed** together for 2 seconds.

1.2 Boatshow Mode

Boatshow mode (S0 = disabled, S1 = enabled) is a demonstration programme to show the features of the instrument.

The mode is changed by pressing **speed**.

Note: Boatshow Mode automatically resets to normal mode if a transducer is connected directly to the instrument or if the instrument is powered down.

However, boatshow mode can be stored by:

1. Setting the instrument to repeater mode
2. Selecting Boatshow Mode
3. Exiting from repeater mode

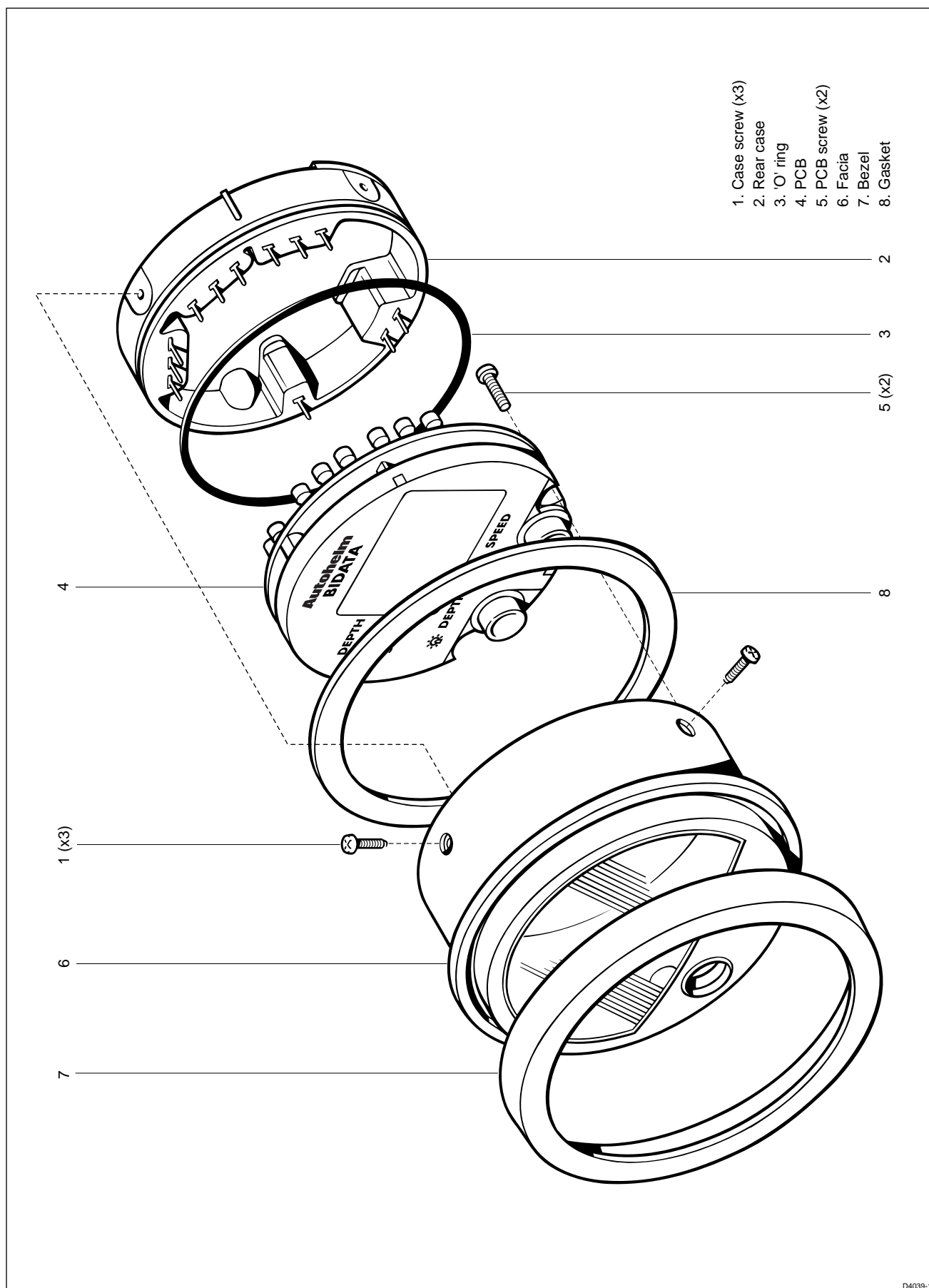
1.3 Damping

Damping controls the sensitivity to speed and depth changes detected by the transducer. The damping range is from 1 to 15; the factory setting is 04.

To change the damping factor, press the **speed** key as required to obtain the desired setting.

Damping is stored by pressing **depth** and **speed** together for 2 seconds.

Chapter 2. Dismantle/Assembly



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Figure 1: ST30 Bidata Round display unit

2.1 Spare Parts List

ST30 Bidata Round display unit

The **item** numbers refer to Figure 1: ST30 Bidata Round display unit.

Item	Spare Description	Part No.	Comments
	Rear case assembly, <i>including</i>	W053	
1	Screw (x3)		
2	Rear case		
3	Label		Affixed to rear case. Not illustrated.
4	PCB assembly	Q161	
6	Facia	W052	
7	Bezel	W051	Black in colour.
7	Bezel	W071	Grey in colour.
8	Gasket	W072	

Chapter 3. PCB Details

3.1 Input/Output Signals (refer to Figure 2 Circuit Diagram)

Wire colour	Circuit diagram reference	Description
Red	P1/P2	+12V nominal dc supply
Yellow	P3/P4	SeaTalk data. Intermittent streams of +12V (nominal) pulses.
Screen	P5/P6	0V supply and signal return
Red	P7	Speed transducer supply. 12V dc nominal.
Green	P8	Speed transducer – Log signal
Screen	P9	Speed transducer, 0V
Blue	P10	Depth +, echoes from transducer
Black	P11	Depth, 0V
(Owner supply)	P12	External light on control

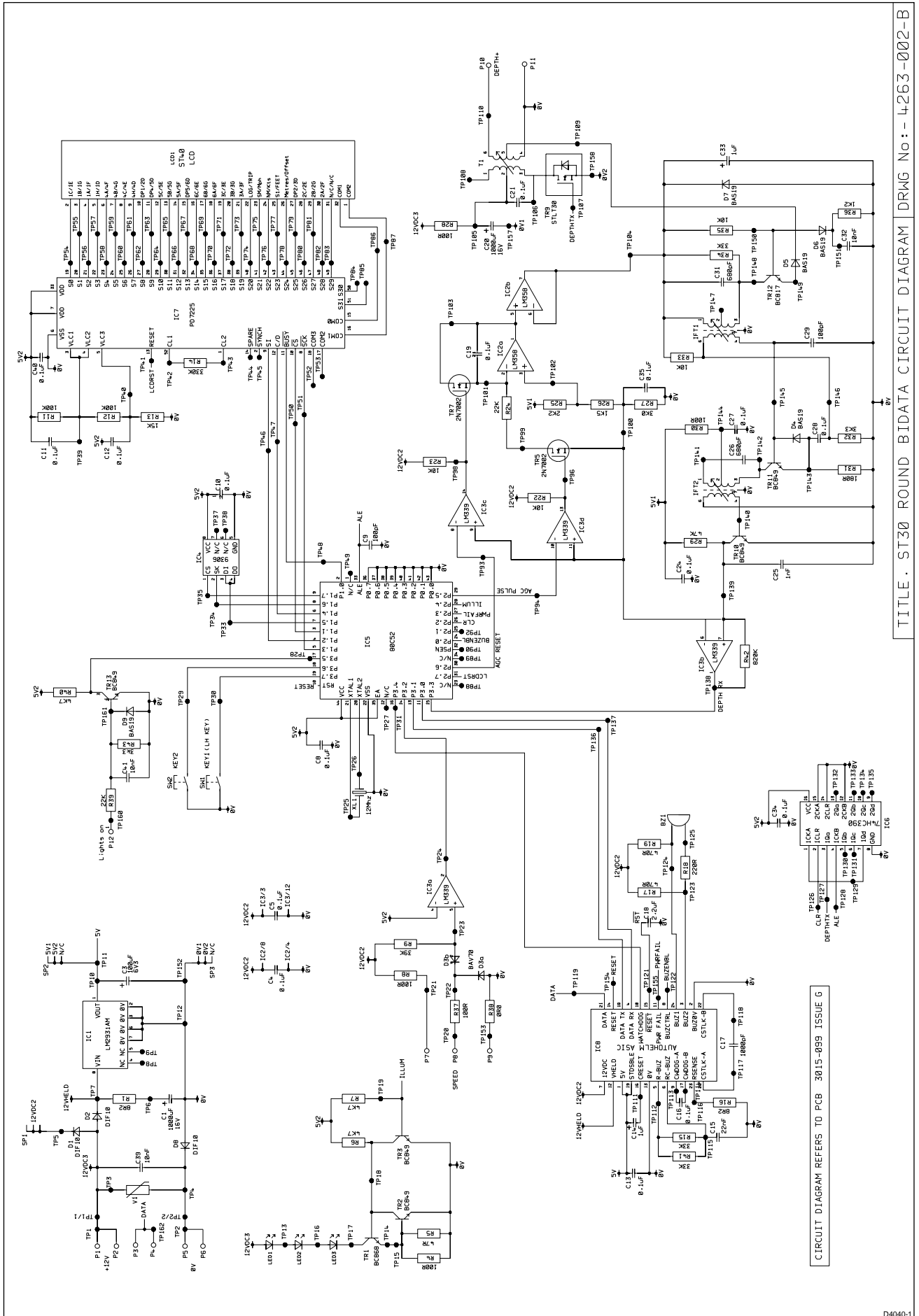


Figure 2: Circuit diagram

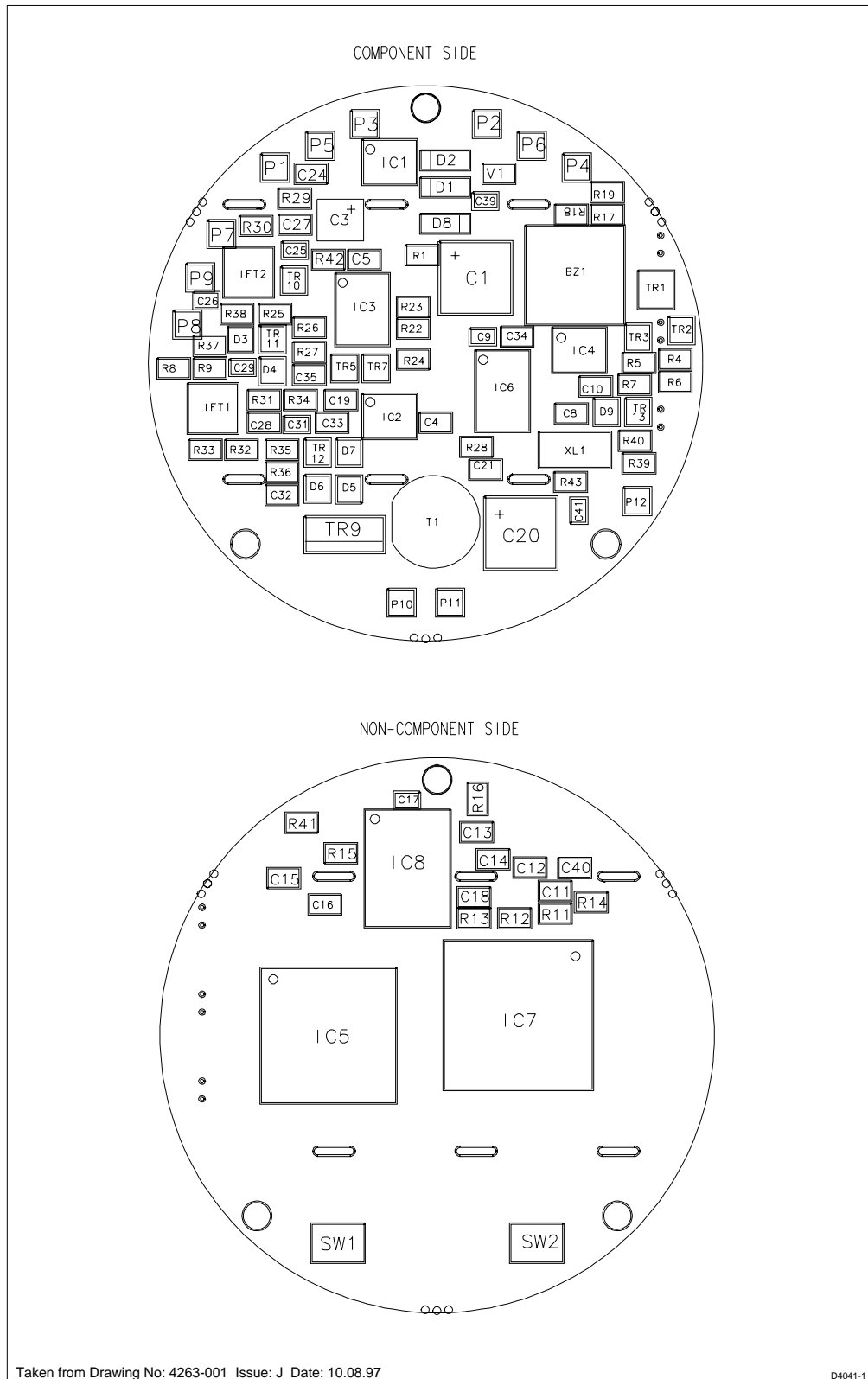
TITLE. ST30 ROUND BIDATA CIRCUIT DIAGRAM DRWG No.:- 4263-002-B

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CIRCUIT DIAGRAM REFERS TO PCB 3015-099 ISSUE G

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3.2 PCB Layout



Taken from Drawing No: 4263-001 Issue: J Date: 10.08.97

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Figure 3: PCB component layout

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PCB Components

3030-035	SOLDER BUCKETS	P1-11
15166	CRYSTAL 12MHz	XL1
15136	BUZZER AT-17	BZ1
15133	COIL	IFT1,2
15134	TRANSFORMER	T1
9108VC180400	VARISTOR VC180400	V1
94077225G	IC LCD DISPLAY DRIVER 7225	IC7
940074HC390	IC DUAL BCD COUNTER 74HC390	IC6
9407583C154	IC MICROCONTROLLER 83C154	IC5
9401RLA80	IC RAYTHEON ASIC	IC8
940093061	IC EEPROM M93061M1	IC4
9400LM339	IC QUAD OPAMP LM339D	IC3
9400LM358	IC DUAL OPAMP LM358M	IC2
9400LM2931AM	IC REGULATOR LM2931AM 5V LOW DROP OUT	IC1
05038	TRANSISTOR STL130	TR9
95002N7002	TRANSISTOR 2N7002 MOSFET	TR5,7
9500BC849C	TRANSISTOR SOT23 BC849C MULLARD	TR2,3,10,11,13
9501BC868	TRANSISTOR SOT89 BC868 MULLARD	TR1
9500BC817	TRANSISTOR SOT23 BC817 MULLARD	TR12
9301680P	CAPACITOR CER 680pF 5% 50V 0805	C26,31
9302100P	CAPACITOR CER 100pF 10% 50V 0805	C9,29
93102U2	CAPACITOR TANT 2.2uF 20% 6V3 TANTA	C18
93041000P	CAPACITOR CER 1000pF 10% 50V 0805	C17,25
03066	CAPACITOR CER 1000uF 16V	C1,20
9307U01	CAPACITOR CER 10nF 20% 50V 1206	C32
93040U01	CAPACITOR CER 10nF 10% 50V 0805	C39,41
93070U1	CAPACITOR CER 0.1uF 20% 50V 1206	C4,5,8,10,11,12,13,16,19,21,24,27,28,34,35,40
930522N	CAPACITOR CER 22nF 5% 50V 1206	C15
03062	CAPACITOR ELEC 100uF +/-20% 6V3	C3
93091U	CAPACITOR TANT 1uF 10% 16V TANTA	C14,33
9200BAS19	DIODE BAS19 SOT23	D4,5,6,7,9
9204DIF10	DIODE RECTIFIER DIF10 1A 100V	D1,2,8
9200BAV70	DIODE BAV70 SOT23	D3
91060R0	RESISTOR WCR 1206 0R0	R38
91033K0	RESISTOR WCR 1206 3K0 1% 0.125W	R27
9106330K	RESISTOR WCR 1206 330K 5% 0.125W	R14
910315K	RESISTOR WCR 1206 15K 1% 0.125W	R13
9106100K	RESISTOR WCR 1206 100K 5% 0.125W	R11,12
910622K	RESISTOR WCR 1206 22K 5% 0.125W	R24,39
91062K2	RESISTOR WCR 1206 2K2 5% 0.125W	R25
91031K5	RESISTOR WCR 1206 1K5 1% 0.125W	R26
91031K2	RESISTOR WCR 1206 1K2 1% 0.125W	R36
910610K	RESISTOR WCR 1206 10K 5% 0.125W	R22,23,33,35
91063K3	RESISTOR WCR 1206 3K3 5% 0.125W	R32,43
9106180R	RESISTOR WCR 1206 180R 5% 0.125W	R31
910647K	RESISTOR WCR 1206 47K 5% 0.125W	R29
9106820K	RESISTOR WCR 1206 820K 5% 0.125W	R42
9106220R	RESISTOR WCR 1206 220R 5% 0.125W	R18
9106470R	RESISTOR WCR 1206 470R 5% 0.125W	R17,19
910333K	RESISTOR WCR 1206 33K 1% 0.125W	R15,34,41
910639K	RESISTOR WCR 1206 39K 5% 0.125W	R9
91064K7	RESISTOR WCR 1206 4K7 5% 0.125W	R6,7,40
910647R	RESISTOR WCR 1206 47R 5% 0.125W	R5
9103100R	RESISTOR WCR 1206 100R 1% 0.125W	R4,8,28,30,37
91068R2	RESISTOR WCR 1206 8R2 5% 0.125W	R1,16
06030	SWITCH ALPMIN TACTILE	SW1,2
3015-099	PCB ST30 BIDATA	

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