



Sailor

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INSTRUKTIONSBOG FOR
SAILOR H1218

INSTRUCTION BOOK FOR
SAILOR H1218



A/S S. P. RADIO · AALBORG · DENMARK

CONTENTS:

GENERAL DESCRIPTION

TECHNICAL DATA

CONTROLS

PRINCIPLE OF OPERATION

PROGRAMMING OF H1218

INSTALLATION

PIN CONFIGURATION

PARTS LISTS

COMPONENT LOCATIONS

MAIN DIAGRAM

GENERAL DESCRIPTION

SAILOR H1218 is a microprocessor controlled automatic radiotelephone keying device for ships' alarm and distress message with the facility of programming the call sign of the ship's station.

SAILOR H1218 will key:

- 1) The radiotelegraph alarm signal which consists of a series of 12 dashes.
- 2) The distress message which consists of:
 - a) the distress signal SOS sent 3 times,
 - b) the word DE,
 - c) the call sign of the ship sent 3 times,
 - d) two dashes for direction finding.

SAILOR H1218 will repeat the keying of the distress message after the required pause.

SAILOR H1218 has possibility for restricting the keying only to the distress message.

SAILOR H1218 ship's station call sign programming can easily be carried out with normal handtools, no instrument is required.

SAILOR H1218 has audio-visual indication of the keyed signal.

SAILOR H1218 can be used as a normally closed or normally opened key.

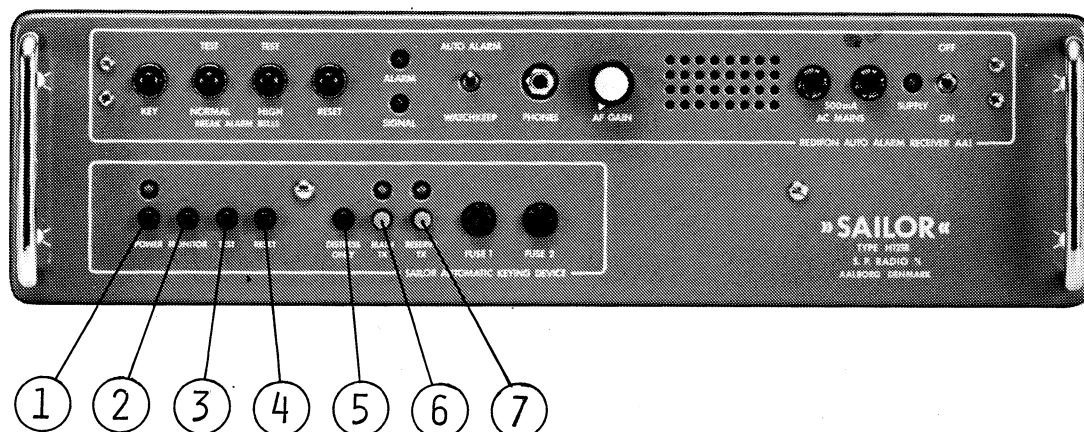
SAILOR H1218 can be connected with handkeys which will be cut off when the automatic key is activated.

SAILOR H1218 is supplied directly with 24V DC.

TECHNICAL DATA H1218

<u>Mode of operation:</u>	Alarm signal and/or distress message.
<u>Alarm signal:</u>	<p>The alarm signal consists of a serie of 12 dashes, each of 4 seconds ± 0.1 second, separated by spaces of 1 second ± 0.1 second.</p> <p>On completion of the alarm signal the automatic keying device continue to key the distress message.</p>
<u>Distress message:</u>	<p>The distress message consists of:</p> <ul style="list-style-type: none">a) the distress signal SOS sent 3 times,b) the word DE,c) the ship's call sign sent 3 times,d) two dashes of 11.6 seconds ± 0.1 second each with an interval of 1.5 second ± 0.1 second.
<u>Repetition time:</u>	The distress message is repeated every eleven minute, until interruption or resetting.
<u>Ship's call sign capacity:</u>	Max. 7 characters (letters or numbers).
<u>Keying speed:</u>	<p>10 bauds (approximately 13 words/min.).</p> <p>The duration of one dot (one bit) is 0.1 second ± 0.01 second.</p>
<u>Keying time:</u>	If the maximum number of characters (7 zeroes) is programmed the total duration of the distress message will be approximately 91 seconds.
<u>External keying current:</u>	Max. 1A ohmic load.
<u>Operation temperature:</u>	-15°C to $+55^{\circ}\text{C}$.
<u>Power supply:</u>	<p>Voltage: 24V DC -10%, +30%</p> <p>Current: 0.4A</p> <p>Reverse polarity protection is incorporated.</p> <p>The unit does not earth either side of the supply.</p>

CONTROLS



- ① POWER
Press POWER button to connect power supply with H1218.
- ② MONITOR
The built-in sound transducer will be activated by the automatic key after pressing the MONITOR button.
- ③ TEST
For testing the Automatic Keying Device and the connected Auto Alarm Receiver press the TEST button. H1218 will then key the selected sequence (5) only to the Auto Alarm Receiver.
For monitoring press MONITOR button (2).
- ④ RESET
When pressing the RESET button H1218 will momentarily stop in neutral position. When releasing the RESET button H1218 will start keying from the initial stage of the selected sequence (5).
- ⑤ DISTRESS ONLY
While the DISTRESS ONLY button is pressed H1218 will only key the distress message. In released position H1218 will key the alarm signal followed by the distress message.
- ⑥ MAIN TX
The main telegraph transmitter is keyed by H1218 in the selected mode (5) while the MAIN TX button is pressed. The signal lamp above the button is then activated by the automatic key.
For monitoring press MONITOR button (2).
- ⑦ RESERVE TX
Operation as the MAIN TX button.

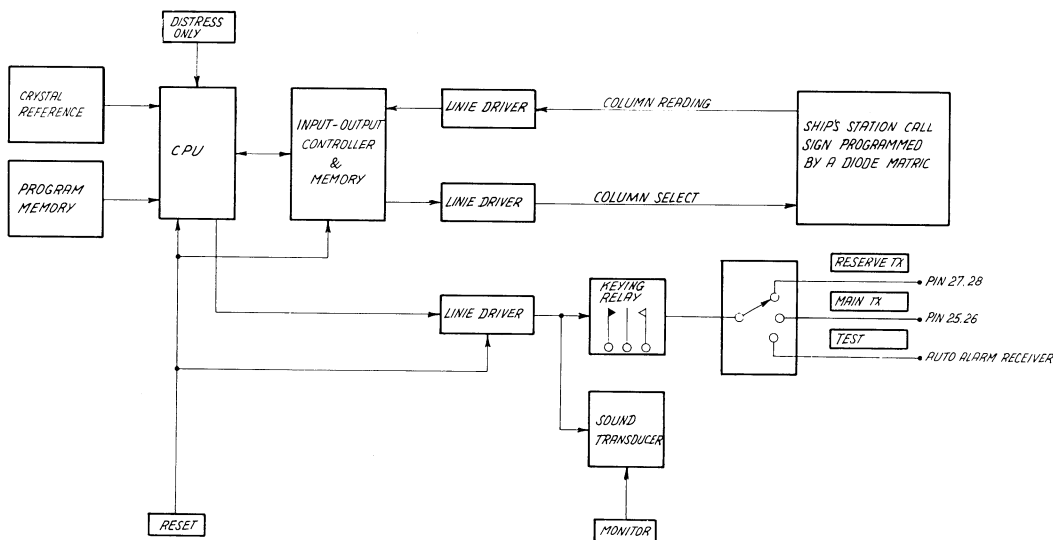
PRINCIPLE OF OPERATION

SAILOR Automatic Keying Device H1218 is to be connected to a transmitter like a handkey. H1218 replaces the handkey with a relay which is controlled by a microprocessor system. See the schematic diagram.

Power is first applied to the system after a transmission switch has been activated. The CPU will then start executing the programme which is stored in the programme memory. One result of this is that H1218 will key: the alarm signal and/or the distress message depending on the manual selected sequence. When the ship's station call sign is to be keyed the CPU has to read the contents of the diode matrix. The characters of the ship's station call sign is fetched from the matrix by reading the contents of the columns one by one through the input/output controller.

By activating the RESET switch the microprocessor system stops momentarily, leaving the keying relay in its neutral position. When releasing the switch the CPU and input/output controller are reset and the keying will start from the initial stage of the selected sequence.

The MONITOR switch enables the sound transducer to be activated by the keying.



PROGRAMMING OF H1218

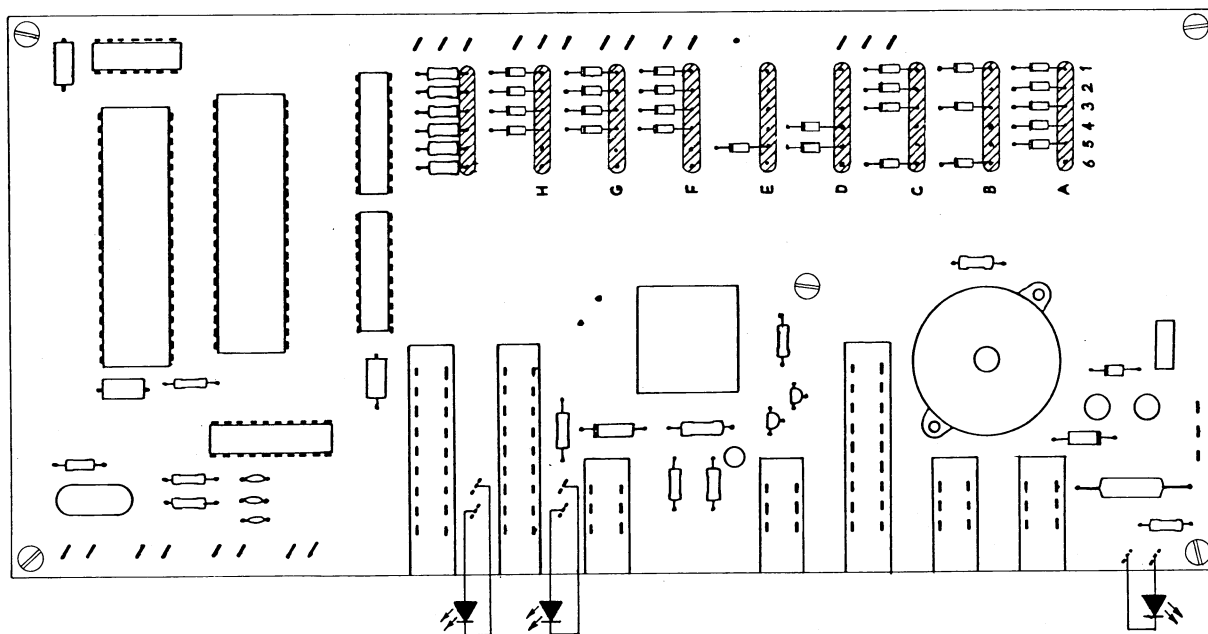
Programming of the Ship's Station Call Sign

The ship's station call sign is programmed by setting up a diode matrix. The diodes are numbered by a letter (A to H) and a number (1 to 6). The letter indicates a column and the number indicates a row.

The programming is done by cutting out diodes in a column in accordance with the following table starting with the column marked by an "A". A cross in the table indicates which diodes that should be left on the printed circuit board.

After programming the call sign remember to program a space. Unused columns should be programmed for "Skip character" so that the keying time is kept to a minimum.

The figure shows the programming for keying OUWH.



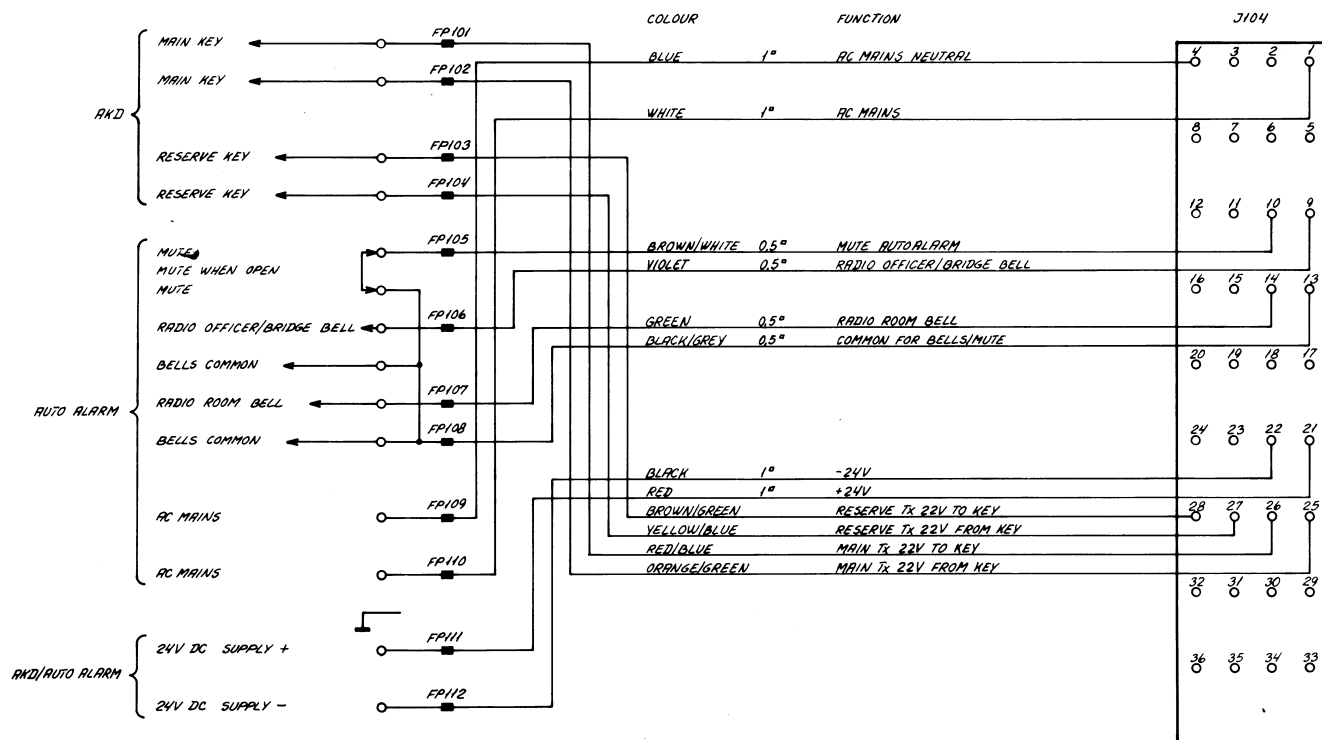
PROGRAMMING EXAMPLE

OUWH

CHARACTER SENT IN MORSE	DIODE ROW NO.					
	6	5	4	3	2	1
0						
1						X
2					X	
3					X	X
4				X		
5				X		X
6				X	X	
7				X	X	X
8			X			
9			X			X
A		X				X
B		X			X	
C		X			X	X
D		X		X		
E		X		X		X
F		X		X	X	
G		X		X	X	X
H		X	X			
I		X	X			X
J		X	X		X	
K		X	X		X	X
L		X	X	X		
M		X	X	X		X
N		X	X	X	X	
O		X	X	X	X	X
P	X					
Q	X					X
R	X				X	
S	X				X	X
T	X			X		
U	X			X		X
V	X			X	X	
W	X			X	X	X
X	X		X			
Y	X		X			X
Z	X		X		X	
SPECIAL						
....--	X		X		X	X
.....	X		X	X		
Skip Character			X	X	X	X
Space		X				

INSTALLATION

The external connections to the SAILOR H1218 are attached to the rear contact board.



REAR CONTACTBOARD H1218

AKD

Main key: The terminals are connected to the keying relay when the MAIN TX button is pressed.
The terminals are connected for normal open operation from the factory. A normal closed contact can be established by moving the orange/green wire to the soldering terminal called Main TX, 22V from key (BREAK) on the H1218 PCB.

Reserve key: The terminals are connected to the keying relay when the RESERVE TX button is pressed.
The terminals are connected for normal open operation from the factory. A normal closed contact can be established by moving the yellow/blue wire to the soldering terminal called Reserve TX, 22V from key (BREAK) on the H1218 PCB.

AUTO ALARM

Mute: The Auto Alarm Receiver is muted when the terminals are not short-circuited.

Bells: The external bells connection from the Auto Alarm Receiver are connected to these four terminals.
See instruction book for Auto Alarm Receiver for max. current.

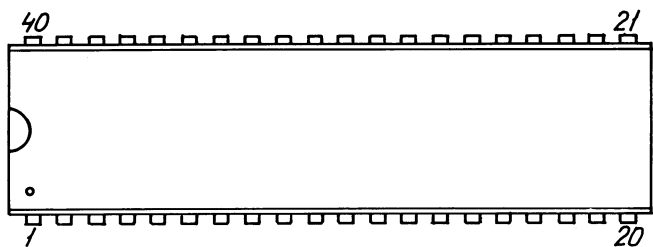
AC MAINS: Connect AC power for the Auto Alarm Receiver to these two terminals.

AKD/AUTO ALARM

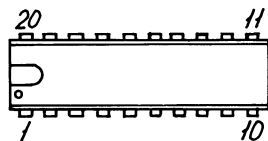
24V DC: Connect 24V DC supply for the AKD and Auto Alarm Receiver to these two terminals.

PIN CONFIGURATIONS

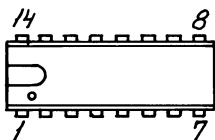
TOP VIEW



INS 8060 N
INS 8154 N



TBP 18S42N
SN 74 LS 241 N



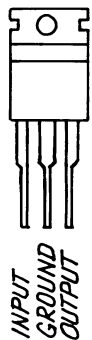
SN 74 LS 132 N

BOTTOM VIEW



BC 547

FRONT VIEW



LM 7805 CT

b		AUTOMATIC KEYING DEVICE H1218			(100)	1/3
Symbol	Description			Manufact.		
R101	Resistor	4.7Kohm $\pm 5\%$	0.33W	Philips	2322 211 13472	
R102	Resistor	1Mohm $\pm 5\%$	0.33W	Philips	2322 211 13105	
R103	Resistor	1Kohm $\pm 5\%$	0.33W	Philips	2322 211 13102	
R104	Resistor	18Kohm $\pm 5\%$	0.33W	Philips	2322 211 13183	
R105	Resistor	47Kohm $\pm 5\%$	0.33W	Philips	2322 211 13473	
R106	Resistor	330 ohm $\pm 5\%$	0.5W	Philips	2322 212 13331	
R107	Resistor	1Kohm $\pm 5\%$	0.5W	Philips	2322 212 13102	
R108	Resistor	1.8Kohm $\pm 5\%$	0.33W	Philips	2322 211 13182	
R109	Resistor	1.8Kohm $\pm 5\%$	0.33W	Philips	2322 211 13182	
R110	Resistor	1.8Kohm $\pm 5\%$	0.33W	Philips	2322 211 13182	
R111	Resistor	1.8Kohm $\pm 5\%$	0.33W	Philips	2322 211 13182	
R112	Resistor	1.8Kohm $\pm 5\%$	0.33W	Philips	2322 211 13182	
R113	Resistor	1.8Kohm $\pm 5\%$	0.33W	Philips	2322 211 13182	
R114	Resistor	4.7Kohm $\pm 5\%$	0.33W	Philips	2322 211 13472	
R115	Resistor	1Kohm $\pm 5\%$	0.33W	Philips	2322 211 13102	
R116	Resistor	47Kohm $\pm 5\%$	0.33W	Philips	2322 211 13473	
R117	Resistor	180 ohm $\pm 5\%$	0.33W	Philips	2322 211 13181	
R118	Resistor	330 ohm $\pm 5\%$	0.33W	Philips	2322 211 13331	
R119	Resistor	12 ohm $\pm 5\%$	4.2W	Philips	2322 330 22129	
R120	Resistor	470Kohm $\pm 5\%$	0.33W	Philips	2322 211 13474	
C101	Capacitor, ceramic	33pF $\pm 10\%$	500V	KCK	HM60SJSH330K	
C102	Capacitor, ceramic	150pF $\pm 10\%$	50V	KCK	HE80SJSH151K	
C103	Capacitor, polyester	470nF $\pm 10\%$	100V	Siemens	B32512-D1474-K	
C104	Capacitor, polyester	470nF $\pm 10\%$	100V	Siemens	B32512-D1474-K	
C105	Capacitor, polyester	470nF $\pm 10\%$	100V	Siemens	B32512-D1474-K	
C106	Capacitor, electrolytic	10uF $\pm 20\%$	35V	ROE	EKI 00 AA 210F	
C107	Capacitor, electrolytic	10uF $\pm 20\%$	35V	ROE	EKI 00 AA 210F	
C108	Capacitor, electrolytic	47uF $\pm 20\%$	25V	ROE	EKI 00 BB 247E	
C109	Capacitor, polyester	220nF $\pm 20\%$	100V	Philips	2222 344 24224	
C110	Capacitor, ceramic	10nF $-20/+80\%$	50V	KCK	HE70SJYF103Z	
D101	Diode, silicon			Motorola	1N4002	
D102	Diode, silicon			Philips	1N4148	
D103	Diode, silicon			Philips	1N4148	
D104	Diode, silicon			Philips	1N4148	
D105	Diode, silicon			Philips	1N4148	
D106	Diode, silicon			Philips	1N4148	
D107	Diode, silicon			Philips	1N4148	

b AUTOMATIC KEYING DEVICE H1218 (100) 2/3			
<i>Symbol</i>	<i>Description</i>	<i>Manufact.</i>	
D108	Diode, silicon	Philips	1N4148
D109	Diode, silicon	Philips	1N4148
D110	Diode, silicon	Philips	1N4148
D111	Diode, silicon	Philips	1N4148
D112	Diode, silicon	Philips	1N4148
D113	Diode, silicon	Philips	1N4148
D114	Diode, silicon	Philips	1N4148
D115	Diode, silicon	Philips	1N4148
D116	Diode, silicon	Philips	1N4148
D117	Diode, silicon	Philips	1N4148
D118	Diode, silicon	Philips	1N4148
D119	Diode, silicon	Philips	1N4148
D120	Diode, silicon	Philips	1N4148
D121	Diode, silicon	Philips	1N4148
D122	Diode, silicon	Philips	1N4148
D123	Diode, silicon	Philips	1N4148
D124	Diode, silicon	Philips	1N4148
D125	Diode, silicon	Philips	1N4148
D126	Diode, silicon	Philips	1N4148
D127	Diode, silicon	Philips	1N4148
D128	Diode, silicon	Philips	1N4148
D129	Diode, silicon	Philips	1N4148
D130	Diode, silicon	Philips	1N4148
D131	Diode, silicon	Philips	1N4148
D132	Diode, silicon	Philips	1N4148
D133	Diode, silicon	Philips	1N4148
D134	Diode, silicon	Philips	1N4148
D135	Diode, silicon	Philips	1N4148
D136	Diode, silicon	Philips	1N4148
D137	Diode, silicon	Philips	1N4148
D138	Diode, silicon	Philips	1N4148
D139	Diode, silicon	Philips	1N4148
D140	Diode, silicon	Philips	1N4148
D141	Diode, silicon	Philips	1N4148
D142	Diode, silicon	Philips	1N4148
D143	Diode, silicon	Philips	1N4148
D143	Diode, silicon	Philips	1N4148
D144	Diode, silicon	Philips	1N4148
D145	Diode, silicon	Philips	1N4148
D146	Diode, silicon	Philips	1N4148
D147	Diode, silicon	Philips	1N4148

Symbol	Description	Manufact.	
D148	Diode, silicon	Philips	1N4148
D149	Diode, silicon	Philips	1N4148
D150	Diode, germanium	ITT	AA143
D151	Diode, zener 6,2V $\pm 10\%$	Philips	BZX 79 C6V2
D152	Diode, silicon	Motorola	1N4002
T101	Transistor	Philips	BC547
T102	Transistor	Philips	BC547
IC101	Integrated circuit	National	MM74C00N
IC102	Integrated circuit	National	INS8060N
IC103	Integrated circuit	National	INS8154N
IC104	Integrated circuit	Texas	TBP18S42N
IC105	Integrated circuit	Texas	SN74LS24 1N
IC106	Integrated circuit	Texas	SN74LS24 1N
X101	Crystal f = 1MHz	Croven	A3300RX-00
A101	Sound transducer	Sonitron	Sm2
RE101	Relay	Danotherm	MS/K, BV749
S101	Switch	Schadow	11084 06003

INTERCONNECTION BOARD (300) H1218

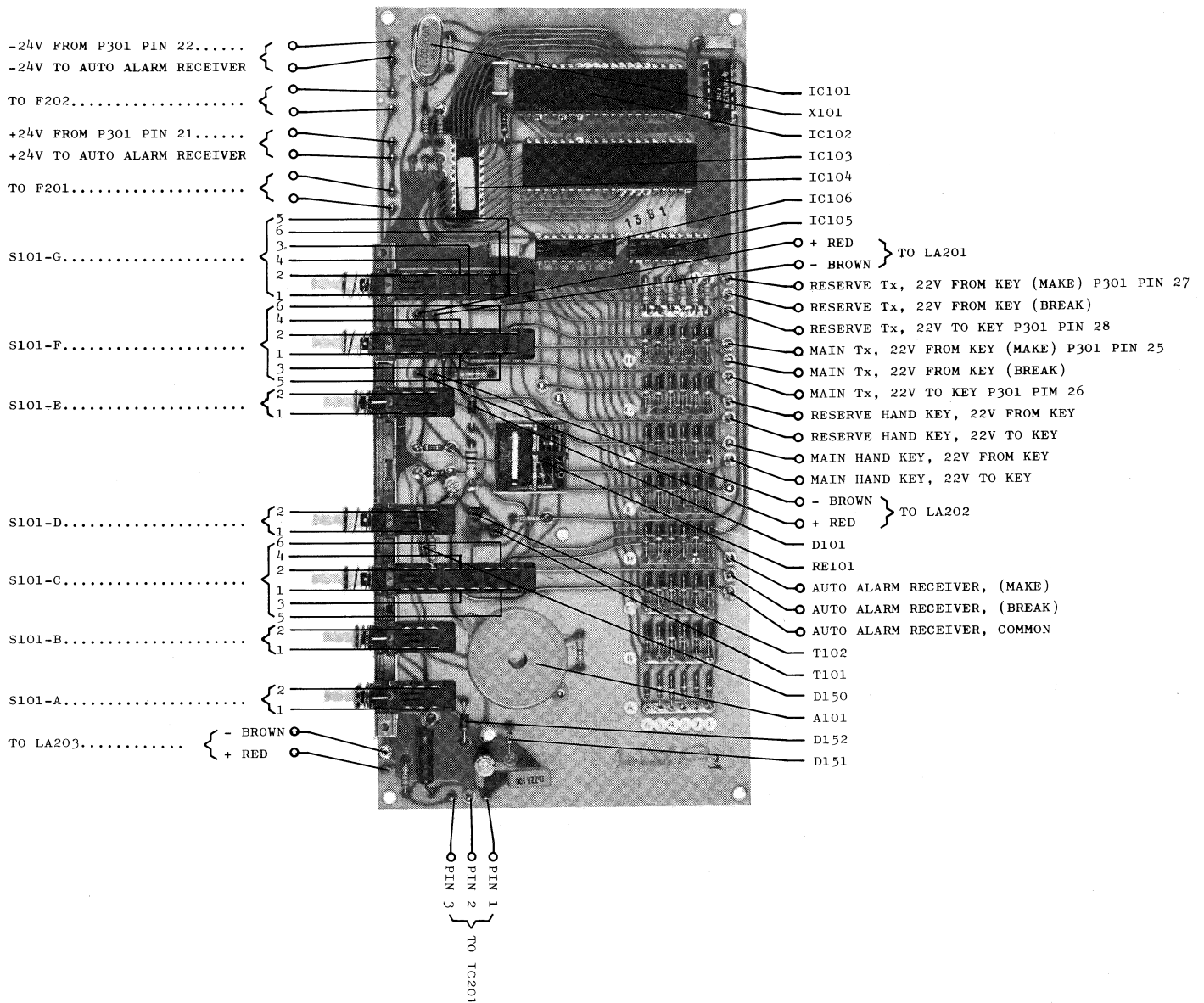
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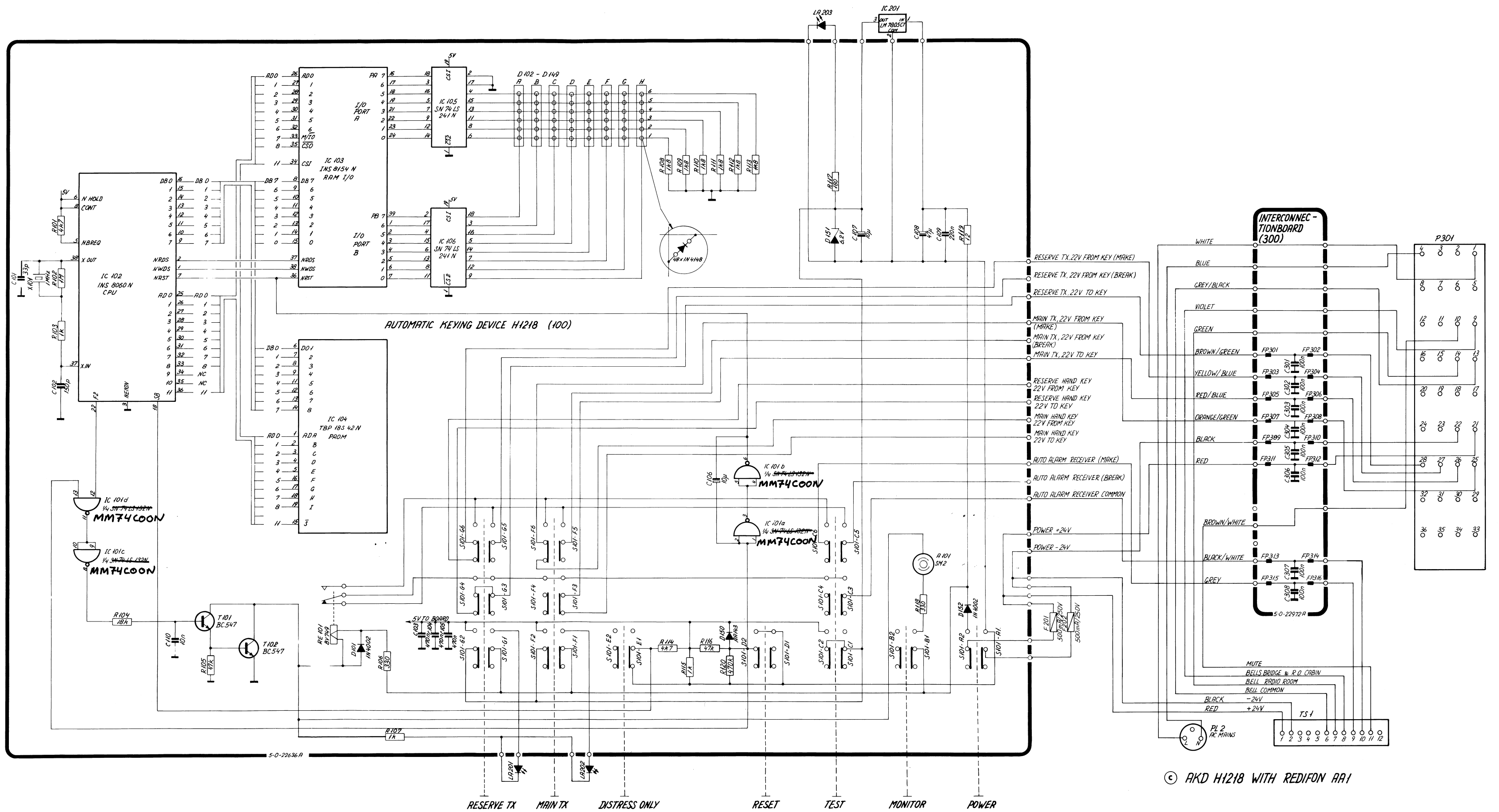
Symbol	Description	Manufact.	
C301	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
C302	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
C303	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
C304	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
C305	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
C306	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
C307	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
C308	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
FP301 to FP316	Ferrit bead	Kaschke	K3/1200/0.1Hz ⁴ /2/7A

INTERCONNECTION BOARD (400) H1218

1/1

Symbol	Description	Manufact.	
C401	Capacitor, ceramic 4.7nF 5KV	Ferroperm	9/0138.9
C402	Capacitor, ceramic 4.7nF 5KV	Ferroperm	9/0138.9
C403	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
C404	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
C405	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
C406	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
C407	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
C408	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
C409	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
C410	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
C411	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
C412	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
C413	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
C414	Capacitor, polyester 0.1uF $\pm 20\%$ 100V	Philips	2222 344 24104
FP401 to FP422	Ferrit bead	Kaschke	K3/1200/0.1Hz4/2/7A
D401	Diode, silicon	Motorola	1N4002
RE401	Relay Takamizawa	ITT	LZ24H/LZ24/LZ24W





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