



**OM Power**

**Exhibit 11: Tuning procedure and  
Part list**

**External Radio Frequency  
Power Amplifier OM4000HF**

**Model OM4000HF**

**Array Solutions**

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#### 4-5. Tuning

Tuning is possible only in the OPR mode.

##### a. Preliminary Information

Tuning the amplifier involves a procedure of matching the impedance of the antenna and transmission line to the tubes characteristic load resistance. This will ensure maximum plate efficiency and RF gain at nominal output power, with minimal distortion and spurious output. Note that REFLECTED POWER readings depend on the antenna and transmission line impedances only, and not on amplifier tuning. If the load impedance is not a nominally resistive 50 Ohms, the REFLECTED POWER reading will always show a reading, no matter what the tuning settings. Proper tuning is always necessary, however, and will allow you to operate at a high power level, without distortion or any danger to the amplifier. Note also that the real OUTPUT POWER presented to the load (the antenna and transmission line) is equal to the difference between the FORWARD and REFLECTED POWER readings. For instance, with a 2.5:1 VSWR, readings of 800W and 150W FORWARD and REFLECTED POWER respectively, the real OUTPUT POWER is 650W. At very high VSWR levels, such as when no antenna is connected or a badly mismatched antenna is used, the FORWARD and REFLECTED reading will be almost equal, while the real OUTPUT POWER (the difference between them) will be zero. The amplifier can operate safely as long as the REFLECTED POWER is LESS THAN 350W. Matching is assured for loads presenting a REFLECTED POWER of up to 350W. Nevertheless, for some loads and bands, matching is possible at even higher REFLECTED POWER levels, but the drive power must be reduced to prevent the REFLECTED POWER from exceeding 350W. Failure to comply with these guidelines will cause the protection circuits to trip. For example, if the antenna VSWR were 5:1, the maximum attainable FORWARD POWER would be 540W, 240W of reflected power and real output to the antenna and transmission line of only 300W. In the event your antenna cannot be adjusted to produce a lower VSWR, an external antenna tuner may be deployed.

#### CAUTION

At elevated VSWR levels, high voltages and high currents are distributed along the coaxial cable to the antenna, risking internal arcing and heat generation, and likely damage to the cable and any antenna switches that may be used. It is recommended that VSWR levels of more than 2:1 not be permitted with coaxial cable above 14MHz.

It is advisable to adjust amplifier tuning when antennas have been changed, snow has fallen, new objects are in the near field of the antenna, etc. Such changes may affect antenna impedance.

#### NOTE

If you use more than one antenna on a band, the proper antenna must be selected prior to performing the tuning procedure outlined below.

#### CAUTION

To avoid damage not covered under warranty, do not switch the BAND switch knob while transmitting. As discussed above, hot switching will damage the amplifier's band switch.

#### CAUTION

Also, never apply drive longer than one minute continuously without pausing for at least one minute to allow tube to cool.

## b. Tuning procedure

OM4000HF has been design to deliver maximum output power at 50 Ohms load. To deliver maximum output to real load you need to adjust the tuning according to your real antenna impedance.

## TUNING

The OM4000HF amplifier is operated in class AB. Thus it's possible to obtain a maximum output power at an excellent linearity. For this purpose the amplifier has to be tuned carefully.

The operation of a mistuned PA will cause malfunctions, the increase of grid current (the GRID-MAX-LED will light up) and problems with TVI/BCI.

The grid-current is shown with 2 LED diodes. It's normal if the green LED is flashing or may be shining a little bit during peak operation. If you overload the amplifier the output power increases the grid current at very small rates and the red GRID-MAX-LED is shining and the safety devices switch the PA to STBY. You must decrease the input power.

In SSB you will have a good output power if the green LED lights up a bit. The current of screen grid is measured and shown in a Bar graph indicator. The amplifier has to be tuned in such a way that the current is between - 80 mA to +80 mA. At currents beyond these values the operating point will be shifted and IM-products will be rapidly increased. If a value of + 100mA is exceeded, the safety devices will switch the amplifier to STBY mode.

### Tuning instruction :

#### **Please note:**

**Before starting tuning you have to check if the right antenna or a 50 Ohms load resistance is connected at the antenna output!**

#### **Switching on the amplifier:**

- put the switch at the multimeter to HV position
- put the OPR/STBY switch to STBY position
- press the „ON“ button

The amplifier is prepared for operation with the following steps:

- the toroidal transformers are switched step by step.
- the blower of tube is switched on.
- the multimeter bar graph measures the high voltage; the normal value is 3.3 kV
- the WAIT LED lights up

After switching on you have to check the functioning of the blower. Air must be blown out of the ventilating apertures above the tube. ( If there is any failure you have to press the „OFF“-button immediately !)

Heating the tube takes about 150 seconds. After this time the WAIT LED goes out and the amplifier is ready for operation.

## Tuning the amplifier to an output of 1500 W

A tuning table is delivered with the power amplifier. Select a band with band switch and choose the setting of “TUNE” and “LOAD” according to the table.

**Tuning Table** shows proper tuning values for **50 Ohm termination**.

Band	Tune	Load
1.8	30	50
3.5	65	55
7	50	85
10	60	25
14	70	40
18	70	45
21	30	65
24	45	60
28	15	75

1. Reduce the power output of your transceiver to the **0**.
2. Switch **OPR/STBY** to „**OPR**“ position (OPR LED lights up)
3. Choose **TUNE** position of multimeter.
4. Switch the PA and increase driver power to **10W** (OUTPUT power will be abt. 500W)

## Please note!

If the input power is higher than 15 W and the power amplifier is not correctly tuned, the safety devices will switch to STBY.

After switching the amplifier to PTT, the amplifier will automatically reset and switch back to OPR mode after approximately 2 seconds.

5. Set TUNE in such a way, that the TUNE-LED lights up maximum left.
6. Set LOAD in such a way, that the TUNE LED on the TUNE scale lights up under the “V” sign. If it is possible to obtain the LOAD in 2 positions, set the position that is father to the right.
7. Repeat tuning several times according to 5 and 6.
8. Increase the input power until an output power of approximately 1500 W is reached.
9. Repeat steps 6 and 7
10. Set TUNE to maximum output power

After this procedure the amplifier is tuned correctly and ready to give 1500W output power in all operation modes. At optimal tuning and full output power a positive 50mA voltage goes through the second grid. On 24 and 28 MHz bands optimal tuning can be achieved when one or two LEDs are lit up to the left from the position “V”. If less output is desired you can simply decrease the load of the transceiver.

**Please note: Should the amplifier demonstrate any malfunctions during tuning or should it not behave in accordance with the description, interrupt the tuning procedure immediately and check the amplifier!**

**Be sure to have not done any mistakes in choosing bands or TUNE/LOAD values!**

**Be sure that SWR is not higher than 1:2 and input power is LOW!**

**After excluding human mistakes you will be able to work for long time with this amplifier!**

## OM4000HF PARTS LIST

OM4000HF main							
NR.	QTY.	CODE OM-POWER	TYPE	VALUE	PACKAGE	PROVIDER	DELIVERY
1	3 Pcs.	C1,C5,C6	Cap ceramic	4n7 6kV K15-5	D RM15,24	RUSSIA	RUSSIA
2	3 Pcs.	C2,C3,C14	condensator ceramic	10n/500V	C RM5,08	SUNTAN	TME Electronic
3	1 Pcs.	C4	Cap ceramic disc	2n2 10kV KVI-3	Φ 40MM	RUSSIA	RUSSIA
4	1 Pcs.	C7	Cap ceramic disc	470 4kV K15U-1	Φ 45MM	RUSSIA	RUSSIA
5	1 Pcs.	C8 + C12	ROTATING condensator	70 + 250pF		HUNGARY	HUNGARY
6	1 Pcs.	C9	Cap ceramic disc	1K 4kV K15U-1	Φ 63MM	RUSSIA	RUSSIA
7	1 Pcs.	C10 + C13	ROTATING condensator	400 + 400pF		HUNGARY	HUNGARY
8	1 Pcs.	C11	Cap ceramic disc	330 1kV K15U-1	Φ 32MM	RUSSIA	RUSSIA
9	3 Pcs.	D1,D2,D3	Diode Si	1N4007diode 1A 1000V	D RM12,7 DM3	DIOTEC	SOS Electronic Europe
10	1 Pcs.	F1	Fuse 5x20mm Slow	10A Fuse Slow	5x20mm		SOS Electronic Europe
11	2 Pcs.	F2,F3	Fuse 5x20mm Slow	3,15A Fuse Slow	5x20mm		SOS Electronic Europe
12	4 Pcs.	F	Fuse 6,3x32mm Slow	T 20A Fuse Slow	6,3x32mm		SOS Electronic Europe
13	2 Pcs.	K1,K2	Connector NSL25-2G	C1x2	1X02 M 2P 2,54mm		SOS Electronic Europe
14	1 Pcs.	L1	Coil	Stopper coil	1 t Cu strap	OM Power	
15	1 Pcs.	L2 + L3	Coil	anode choke	20 x 150mm	OM Power	
16	2 Pcs.	L4, L5	Coil	choke 150uH	25 x 62mm	OM Power	
17	1 Pcs.	L7	Coil	Air coil	50 x160 mm	OM Power	
18	1 Pcs.	L8	Coil	L coil on ceramics	40x 70mm	OM Power	
19	1 Pcs.	L9	Coil	100uH choke coil	77- A - 101	Fastron	SOS Electronic Europe
20	2 Pcs.	R6	Termistor disk	SL32 1R030	28mm	Farnell	Farnell
21	1 Pcs.	R2	Resistor metal oxide	4 x 220/3W	617	VITROHM	SOS Electronic Europe
22	3 Pcs.	R3,R4,R5	Resistor metal oxide	1M 2W	414	VITROHM	SOS Electronic Europe
23	3 Pcs.	Rel1	Relay	Relay-FINDER-36.11.9.006	LYCA024Y	FINDER	SOS Electronic Europe
24	2 Pcs.	AC Filter	AC filter	B84771A0020A000	80 x 53 x 30 mm	EPCOS	SOS Electronic Europe
25	2 Pcs.	TUBE	TUBE	FU728F		CHINA	CHINA

OM4000HF G2 board							
NR.	QTY.	CODE OM-POWER	TYPE	VALUE	PACKAGE	PROVIDER	DELIVERY
1	5 Pcs.	C1,C4,C5,C8,C9	condensator ceramic	10n/1000V	C RM5,08	SUNTAN	TME Electronic
2	1 Pcs.	C6	condensator ceramic	100n/50V	C RM5,08		SOS Electronic Europe
3	1 Pcs.	C2	condensator el.	1M /450V	C GRID5,08		SOS Electronic Europe
4	2 Pcs.	D1,D2	Diode Si	1N5384	D RM12,7 DM3	DIOTEC	SOS Electronic Europe
5	2 Pcs.	D6, D9	Diode Si	1N5349	D RM12,7 DM3	DIOTEC	SOS Electronic Europe
6	1 Pcs.	D5	Diode Si	BZW 06-15B Transient Voltage Suppressor Diode	D RM12,7 DM3	DIOTEC	SOS Electronic Europe
7	2 Pcs.	D3,D7	Diode Si	BZW 06-10B Transient Voltage Suppressor Diode	D RM12,7 DM3	DIOTEC	SOS Electronic Europe
8	2 Pcs.	S1,S2	SUPRESOR	SAL 470V		EPCOS	Arrow
9	2 Pcs.	D4,D8	Diode Si	1N5408 GENERAL PURPOSE PLASTIC RECTIFIER Reverse Voltage - 50 to 1000 Volts, Forward Current - 3.0Amperes	267-03	DIOTEC	SOS Electronic Europe
10	1 Pcs.	K1	Connector NSL25-2G	C1x2	1X02 M 2P 2,54mm		SOS Electronic Europe
11	1 Pcs.	K2	Connector NSL25-4G	C1x4	1X04 M 4P 2,54mm		SOS Electronic Europe
12	2 Pcs.	K3,K5	Connector FASTIN	C1x1	FASTIN 2,8x0,5 L12mm		SOS Electronic Europe
13	1 Pcs.	R1	Resistor metal oxide	1k	206	VITROHM	SOS Electronic Europe
14	1 Pcs.	R3	Resistor metal oxide	56/2w	R 2W	VITROHM	SOS Electronic Europe
15	1 Pcs.	R4	Resistor metal oxide	100k/2W	R 2W	VITROHM	SOS Electronic Europe
16	2 Pcs.	R5,R9	Resistor wire	18K/10W	R 10W	VITROHM	SOS Electronic Europe
17	1 Pcs.	R6	Resistor metal oxide	47/2w	R 2W	VITROHM	SOS Electronic Europe
18	1 Pcs.	R7	Resistor metal oxide	1M/2W	R 2W	VITROHM	SOS Electronic Europe
19	1 Pcs.	R8	Resistor metal oxide	10K	206	VITROHM	SOS Electronic Europe
20	2 Pcs.	R2, R10	Resistor metal oxide	220/2W	R 2W	VITROHM	SOS Electronic Europe
21	1 Pcs.	Rel1	Relay	Relay-FINDER-36.11.9.006	LYCA012L	FINDER	SOS Electronic Europe
22	2 Pcs.	T1,T2	Transistor	IRFPG50 6A, 1000V, N-Channel Power MOSFET	TO-247AC	VISHAY	SOS Electronic Europe

OM4000HF input board							
NR.	QTY.	CODE OM-POWER	TYPE	VALUE	PACKAGE	PROVIDER	DELIVERY
1	1 Pcs.	AT1	attenuator	6dB / 250W	Flange resistor	AT - tech	CHINA
2	1 Pcs.	C3	condensator ceramic	47/1kV	C RM5,08	SR PASSIVES	TME ELECTRONIC
3	1 Pcs.	C15	condensator ceramic	56/1kV	C RM5,08	SR PASSIVES	TME ELECTRONIC
4	2 Pcs.	C1,C17	condensator ceramic	120/1kV	C RM5,08	SR PASSIVES	TME ELECTRONIC
5	2 Pcs.	C2	condensator ceramic	22/ 1kV	C RM5,08	SR PASSIVES	TME ELECTRONIC
6	1 Pcs.	C4	condensator ceramic	100 /1kV	C RM5,08	SR PASSIVES	TME ELECTRONIC
7	3 Pcs.	C5,C11,C13	condensator ceramic	100n /50V	SMD1206	YAGEO	SOS Electronic Europe
8	1 Pcs.	C7	condensator ceramic	3n3	SMD		FARNELL
9	1 Pcs.	C8	condensator ceramic	1n/1kV	C RM5,08	SR PASSIVES	TME ELECTRONIC
10						SR PASSIVES	TME ELECTRONIC
11	1 Pcs.	C10	condensator ceramic	10n/500V	C RM5,08	SR PASSIVES	TME ELECTRONIC
12	1 Pcs.	C12	condensator ceramic	330n/50V	SMD1206	YAGEO	SOS Electronic Europe
13	1 Pcs.	C14	condensator ceramic	6p8/1kV	C RM5,08	SR PASSIVES	TME ELECTRONIC
14	1 Pcs.	C16	condensator el.	10u/16V	SMD1206	YAGEO	SOS Electronic Europe
15	1 Pcs.	C18	condensator ceramic	1n/50V	SMD1206	YAGEO	SOS Electronic Europe
16							
17	2 Pcs.	D1,D2	Diode Si	BAT41	DO35		SOS Electronic Europe
18	2 Pcs.	D3,D6,D5,D7,D8,D9	Diode Si	TS4148	SMD1206		SOS Electronic Europe
19	1 Pcs.	D4	Diode Si	1N5408 GENERAL PURPOSE PLASTIC RECTIFIER Reverse Voltage - 50 to 1000 Volts, Forward Current - 3.0Amperes	DO201AD	DIOTEC	SOS Electronic Europe
20							
21	1 Pcs.	K1	Connector NSL25-2G	C1x2	1X02		SOS Electronic Europe
22	1 Pcs.	K2	Connector NSL25-4G	C1x4	1X04		SOS Electronic Europe
23	2 Pcs.	L1,L2	AIR Coil	10µH	l= 30 mm		
24	1 Pcs.	L4	Coil	100µH	D4xL9,5mm 100uH 370mA	1 FASTRON	SOS Electronic Europe
25	1 Pcs.	R1	Resistor metal oxide	100k	207	YAGEO	
26	1 Pcs.	R2	Resistor metal oxide	50 / 250W			
27	3 Pcs.	R3,R5,R9	Resistor metal oxide	100K	SMD1206	YAGEO	SOS Electronic Europe
28	1 Pcs.	R4	Resistor metal oxide	10K	R 2W	VITROHM	SOS Electronic Europe
29	1 Pcs.	R10	Resistor metal oxide	4k7	SMD1206	YAGEO	SOS Electronic Europe
30	1 Pcs.	Rel1	Relay	RY12WK	RELAIS-RY	FUJITSU	SOS Electronic Europe
31	2 Pcs.	Rel1,Rel2	Relay	Relay-FINDER-36.11.9.006	LYCA012	FINDER	SOS Electronic Europe
32	1 Pcs.	T2	Transistor npn	BCX56-16	SOT89	NXP	SOS Electronic Europe
33	1 Pcs.	U1	Integrated circuit	PIC12F675(SO8)	SO8 SOT96-1	MICROCHIP TECHNOLOGY	TME ELECTRONIC
34	1 Pcs.	U2	Integrated circuit	TA78L05F	SOT89	NXP	SOS Electronic Europe

OM4000HF HV supply board							
NR.	QTY.	CODE OM-POWER	TYPE	VALUE	PACKAGE	PROVIDER	DELIVERY
1	10 Pcs.	BR1,BR2,BR3,BR4,BR5,BR6,BR7,BR8,BR9,BR10	BRIDGE RECTIFIER	8A, 1000V	KBU8M		TME Electronic
2	8 Pcs.	C1,C2,C3,C4,C5,C6,C7,C8	condensator el.	330µF 450V	CE30/10	SAMWHA HC 85° C	TME Electronic
3	1 Pcs.	C9	condensator ceramic	3,3nF 3kV	C15		SOS Electronic Europe
4	2 Pcs.	C10,C11	condensator el.	47µF 250V	CE14/5	SAMWHA RD 105° C	SOS Electronic Europe
5	1 Pcs.	C12	condensator el.	10µF 63V	C ELKO RM2,54 DM6	JAMICON TK 105° C	SOS Electronic Europe
6	6 Pcs.	C13,C14,C17,C18,C19,C20	condensator ceramic	10nF 1kV	C RM5,08		SOS Electronic Europe
7	2 Pcs.	CEH - C15,C16	condensator el.	47µF 450V	CE16/7,5	SAMWHA RD 105° C	SOS Electronic Europe
8	8 Pcs.	C21,C22,C23,C24,C25,C26,C27,C28	condensator ceramic	10nF 500V	RM7,62		SOS Electronic Europe
9	10 Pcs.	C29,C30,C31,C32,C33,C34,C35,C36,C37,C38	condensator foil	0,047µF 275V	PP X2 275V 20% RM15	ARCOTRONICS	TME Electronic
10	1 Pcs.	D1	Diode Si	1N5349 12V 5W ZENER DIODE	D RM15,24	DIOTEC	SOS Electronic Europe
11	4 Pcs.	D2,D3,D4,D5	Diode Si	1N5363 Zener 30V 5W 5%	D RM15,24	DIOTEC	SOS Electronic Europe
12	2 Pcs.	D6,D7	Diode Si	ZD 30V	D RM15,24	DIOTEC	SOS Electronic Europe
13	8 Pcs.	F1,F2,F3,F4,F5,F6,F7,F8	Fuse 5x20mm Slow	3,15A	FUSE		SOS Electronic Europe
14	3 Pcs.	FUS - F9,F10,F11	Fuse 5x20mm Slow	6,3A	FUSE		SOS Electronic Europe
15	1 Pcs.	K1FIN28-P	Connector FASTIN	C1x1	FASTIN 2,8x0,8 L10,5mm	LÖTPUNKT	SOS Electronic Europe
16	1 Pcs.	K2	Connector NSL25-3G	C1x3	1X03 M 3P 2,54mm		SOS Electronic Europe
17	2 Pcs.	K3,K5	Connector NSL25-4G	C1x4	1X04 M 4P 2,54mm		SOS Electronic Europe
18	1 Pcs.	K4	Connector NSL25-2G	C1x2	1X02 M 2P 2,54mm		SOS Electronic Europe
19	1 Pcs.	K6	Connector (BLY1/01)	C1x1	1X01 BL1X01G	FISCHER	SOS Electronic Europe
20	4 Pcs.	KL1,KL2,KL3,KL4	Connector	Terminal-Block4polar	PV04-5,08-H-P	EUROCLAMP	SOS Electronic Europe
22	2 Pcs.	KL7,KL8	Connector	Terminal-Block2polar	PV02-5,08-H-P	EUROCLAMP	SOS Electronic Europe
23	8 Pcs.	R1,R2,R3,R4,R5,R6,R7,R8	Resistor metal oxide	150K	R 2W	VITROHM	SOS Electronic Europe
24	4 Pcs.	RWA - R9,R10,R11,R12	Resistor wire	10	R 15W	VITROHM	SOS Electronic Europe
25	2 Pcs.	R13,R22	Resistor metal oxide	1K	R 2W	VITROHM	SOS Electronic Europe
26	3 Pcs.	R14,R15,R17	Resistor metal oxide	1M	R 2W	VITROHM	SOS Electronic Europe
27	2 Pcs.	R16,R19	Resistor wire	10K	R 5W	VITROHM	SOS Electronic Europe
28	1 Pcs.	R18	Resistor metal oxide	10K	207	VITROHM	SOS Electronic Europe
29	1 Pcs.	R20	Resistor metal oxide	10	R 2W	VITROHM	SOS Electronic Europe
30	1 Pcs.	R21	Resistor metal oxide	1500	R 2W	VITROHM	SOS Electronic Europe
31	1 Pcs.	R23	Resistor metal oxide	10	207	VITROHM	SOS Electronic Europe
32	1 Pcs.	R24	Resistor metal oxide	10	R 2W	VITROHM	SOS Electronic Europe
33	1 Pcs.	R25	Resistor metal oxide	150K	414	VITROHM	SOS Electronic Europe
34	1 Pcs.	Rel1	Relay	RelayN4100HS3DC12V 3A/125AC/30VDC	N4100HS3DC12V	TOWARD	SOS Electronic Europe

OM4000HF Control board							
NR.	QTY.	CODE OM-POWER	TYPE	VALUE	PACKAGE	PROVIDER	DELIVERY
1	2 Pcs.	C1,C2	condensator ceramic	22	C RM5,08		SOS Electronic Europe
2	12 Pcs.	C3,C4,C14,C17,C18,C19,C27,C29,C31,C41,C43,C44	condensator ceramic	100n	C RM5,08		SOS Electronic Europe
3	9 Pcs.	C5,C6,C9,C11,C13,C16,C21,C39,C40	condensator ceramic	10n	C RM5,08		SOS Electronic Europe
4	5 Pcs.	C7,C8,C12,C15,C23	condensator ceramic	1n	C RM5,08		SOS Electronic Europe
5	1 Pcs.	C10	condensator ceramic	10n/500V	C RM5,08		SOS Electronic Europe
6	2 Pcs.	C20,C22	condensator ceramic	10n/500	C RM5,08		SOS Electronic Europe
7	4 Pcs.	C24,C25,C45,C46	condensator el.	470M	C ELKO RM5,08 DM10		SOS Electronic Europe
8	3 Pcs.	C26,C28,C30	condensator el.	10M	C ELKO RM2,54 DM6		SOS Electronic Europe
9	4 Pcs.	C32,C33,C34,C35	condensator el.	1µF	C ELKO RM2,54 DM6		SOS Electronic Europe
10	1 Pcs.	C36	condensator ceramic	M47	C RM5,08		SOS Electronic Europe
11	3 Pcs.	C37,C47,C48	condensator ceramic	100n	C RM5,08		SOS Electronic Europe
12	1 Pcs.	C38	condensator ceramic	10n/500V	C RM5,08		SOS Electronic Europe
13	1 Pcs.	C42	condensator el.	10µF	C ELKO RM2,54 DM6		SOS Electronic Europe
14	1 Pcs.	C49	condensator ceramic	100	C RM5,08		SOS Electronic Europe
15	5 Pcs.	D1,D2,D3,D4,D16	Diode Si	ZD 5V1	D RM12,7 DM5,4	DIOTEC	SOS Electronic Europe
16	2 Pcs.	D5,D6	Diode Si	1N4148 Small Signal Diode	DO41	DIOTEC	SOS Electronic Europe
17	7 Pcs.	D7,D10,D17,D19,D20,D21,D22	Diode Si	1N4148 Small Signal Diode	DO35	DIOTEC	SOS Electronic Europe
18	2 Pcs.	D8,D9	Diode Si	ZD10V	DO41	DIOTEC	SOS Electronic Europe
19	1 Pcs.	D11	Diode Si	ZD 5V1	DO41	DIOTEC	SOS Electronic Europe
20	4 Pcs.	D12,D13,D14,D15	Diode Si	1N5408 GENERAL PURPOSE PLASTIC RECTIFIER Reverse Voltage - 50 to 1000 Volts, Forward Current - 3,0Amperes	DO201AD	DIOTEC	SOS Electronic Europe
21	2 Pcs.	GEH1,GEH2		PT15LV Resistor trimer	PT15LV	PHER	SOS Electronic Europe
22	2 Pcs.	IC1,IC3	Integrated circuit	SN74LS14	DIL14	TI	SOS Electronic Europe
23	1 Pcs.	IC2	Integrated circuit	18F4525 procesor	DIL40	MICROCHIP	SOS Electronic Europe
24	2 Pcs.	IC4,IC5	Integrated circuit	LM324	DIL14	ST	SOS Electronic Europe
25	1 Pcs.	IC6	Integrated circuit	LM324N	DIL14	ST	SOS Electronic Europe
26	1 Pcs.	IC7	Integrated circuit	7812	TO220	ST	SOS Electronic Europe
27	1 Pcs.	IC8	Integrated circuit	78105	TO220	ST	SOS Electronic Europe
28	1 Pcs.	IC9	Integrated circuit	MAX232	DIL16	TI	SOS Electronic Europe
29	1 Pcs.	K1	Connector NSL25-8G	C1x8	1X08 M 8P 2,54mm		SOS Electronic Europe
30	4 Pcs.	K2,K5,K11,K15	Connector NSL25-3G	C1x3	1X03 M 3P 2,54mm		SOS Electronic Europe
31	9 Pcs.	K3,K4,K9,K10,K13,K14,K16,K17,K18	Connector NSL25-2G	C1x2	1X02 M 2P 2,54mm		SOS Electronic Europe
32	3 Pcs.	K6,K7,K8	Connector NSL25-4G	C1x4	1X04 M 4P 2,54mm		SOS Electronic Europe
33	1 Pcs.	K12	Connector	Card/ribbon connector 20 standing		HARTIG	SOS Electronic Europe
34	2 Pcs.	L1,L2	Coil	100µH	207	FASTRON	SOS Electronic Europe
35	1 Pcs.	Q1	Quartz	20MHz	HC-49/U		SOS Electronic Europe
36	33 Pcs.	R1,R2,R3,R4,R9,R10,R12,R13,R14,R16,R17,R20,R21,R22,R23,R24,R25,R31,R32,R33,R34,R35,R36,R64,R72,R74,R87,R88,R89,R95,R97,R98,R100	Resistor metal oxide	10K	207	VITROHM	SOS Electronic Europe
37	4 Pcs.	R5,R6,R7,R8	Resistor metal oxide	5K	207	VITROHM	SOS Electronic Europe
38	18 Pcs.	R11,R15,R26,R27,R28,R29,R30,R43,R44,R48,R53,R60,R67,R83,R93,R99,R101,R102	Resistor metal oxide	1K	207	VITROHM	SOS Electronic Europe
39	1 Pcs.	R18	Resistor metal oxide	2k2	207	VITROHM	SOS Electronic Europe
40	2 Pcs.	R19,R37	Resistor metal oxide	100	207	VITROHM	SOS Electronic Europe
41	1 Pcs.	R38	Resistor metal oxide	1M	207	VITROHM	SOS Electronic Europe
42	6 Pcs.	R39,R42,R47,R52,R59,R66	Resistor metal oxide	1K5	207	VITROHM	SOS Electronic Europe
43	1 Pcs.	R40	Resistor metal oxide	5K	PT10LV	PHER	SOS Electronic Europe
44	10 Pcs.	R41,R49,R54,R55,R61,R62,R68,R69,R81,R82	Resistor metal oxide	100K	PT10LV	PHER	SOS Electronic Europe
45	17 Pcs.	R45,R46,R50,R51,R56,R57,R63,R65,R70,R71,R73,R75,R86,R90,R91,R92,R94	Resistor metal oxide	100K	207	VITROHM	SOS Electronic Europe
46	2 Pcs.	R58,R79	Resistor metal oxide	47K	207	VITROHM	SOS Electronic Europe
47	1 Pcs.	R76	Resistor metal oxide	5K6	207	VITROHM	SOS Electronic Europe
48	1 Pcs.	R77	Resistor metal oxide	220K	207	VITROHM	SOS Electronic Europe
49	1 Pcs.	R78	Resistor metal oxide	56K	207	VITROHM	SOS Electronic Europe
50	1 Pcs.	R80	Resistor metal oxide	33k	207	VITROHM	SOS Electronic Europe
51	1 Pcs.	R84	Resistor metal oxide	39	207	VITROHM	SOS Electronic Europe
52	1 Pcs.	R85	Resistor metal oxide	47	207	VITROHM	SOS Electronic Europe
53	1 Pcs.	R96	Resistor metal oxide	560	414	VITROHM	SOS Electronic Europe
54	1 Pcs.	Rel1	Relay	RY12WK	RELAIS-FINDER-SERIE3	FINDER	SOS Electronic Europe



OM4000HF SW ON board							
NR.	QTY.	CODE OM-POWER	TYPE	VALUE	PACKAGE	PROVIDER	DELIVERY
1	2 Pcs.	BR1,BR2	BRIDGE RECTIFIER	B1,5A/800V RD	BRIDGE ROUND GRID5	DIOTEC	SOS Electronic Europe
2	2 Pcs.	C1,C3	condensator el.	47µF /100V	C ELKO RM5,08 DM10,5		SOS Electronic Europe
3	1 Pcs.	C2	condensator el.	470µF /63V	C ELKO RM5,08 DM10,5		SOS Electronic Europe
4	1 Pcs.	C7	condensator ceramic	10n /500V	C RM5,08	SUNTAN	SOS Electronic Europe
5	5 Pcs.	C4,C5,C6,C16,C15	condensator ceramic	0,1µF /50V	C RM5,08		SOS Electronic Europe
6	1 Pcs.	C8	condensator ceramic	10nF /1KV	C RM5,08		SOS Electronic Europe
7	4 Pcs.	C9,C10,C11,C12	condensator foil	0,047µF 275V	PP X2 275V 20% RM15	ARCOTRONICS	SOS Electronic Europe
8	1 Pcs.	C18	condensator el.	47µF /100V	C ELKO GRID5,08		SOS Electronic Europe
9	1 Pcs.	C17	condensator el.	1000µF /35V	C ELKO GRID5,08		SOS Electronic Europe
10	2 Pcs.	C13,C14	condensator foil	2,2nF/ 300V	PP X2 300V 20% RM12,7	ARCOTRONICS	SOS Electronic Europe
11	2 Pcs.	C15,C16	condensator ceramic	0,1µF /50V	SMD SOD123		SOS Electronic Europe
12	2 Pcs.	D15,D16	Diode Si	1N4148 Small Signal Diode	SMD SOD123	DIOTEC	SOS Electronic Europe
13	2 Pcs.	D9,D10	Diode Si	1N4007diode 1A 1000V	D RM12,7 DM3	DIOTEC	SOS Electronic Europe
14	2 Pcs.	D11,D12	Diode Si	ZPY5,1V	D RM10,16	DIOTEC	SOS Electronic Europe
15	3 Pcs.	F1,F2,F3	Fuse 5x20	6,3A	SICHERUNG-HALTER 5X22		SOS Electronic Europe
16	1 Pcs.	IC3	Integrated circuit	12F675 procesor	DIL8	MICROCHIP	SOS Electronic Europe
17	1 Pcs.	K1	Connector NSL25-5G	C1x5	1X05 M 5P 2,54mm		SOS Electronic Europe
18	4 Pcs.	K2,K3,K4,K7	Connector NSL25-3G	C1x3	1X03 M 3P 2,54mm		SOS Electronic Europe
19	1 Pcs.	K5	Connector	Terminal-Block4polar	PV04-5,08-H-P	EUROCLAMP	SOS Electronic Europe
20	1 Pcs.	KL3	Connector	Terminal-Block2polar	PV02-5,08-H-P	EUROCLAMP	SOS Electronic Europe
21	4 Pcs.	KL1,KL2,KL4,KL5	Connector	45° 16A 2,5mm2 RM5	RM5	WAGO	SOS Electronic Europe
22	2 Pcs.	R1,R12	Resistor wire	1K/5W	R 5W	VITROHM	SOS Electronic Europe
23	2 Pcs.	R2,R25	Resistor wire	2x3k3/5W	R 5W	VITROHM	SOS Electronic Europe
24	1 Pcs.	R3	Resistor wire	3K3/5W	R 5W	VITROHM	SOS Electronic Europe
25	4 Pcs.	R4,R5,R9,R10	Resistor wire	10/10W	R 10W	VITROHM	SOS Electronic Europe
26	2 Pcs.	R6,R20	Resistor metal oxide	390	207	VITROHM	SOS Electronic Europe
27	2 Pcs.	R7,R8	Resistor metal oxide	560	207	VITROHM	SOS Electronic Europe
28	1 Pcs.	R11	Resistor metal oxide	470	207	VITROHM	SOS Electronic Europe
29	2 Pcs.	R13,R17	Resistor metal oxide	1k	207	VITROHM	SOS Electronic Europe
30	1 Pcs.	R14	Resistor metal oxide	10 /2W	R 2W	VITROHM	SOS Electronic Europe
31	3 Pcs.	R15,R16,R22	Resistor metal oxide	10k	207	VITROHM	SOS Electronic Europe
32	3 Pcs.	R18,R24,R21	Resistor metal oxide	10	207	VITROHM	SOS Electronic Europe
33	2 Pcs.	R19,R23	Resistor metal oxide	100K	207	VITROHM	SOS Electronic Europe
34	6 Pcs.	Rel1,Rel2,Rel3,Rel4,Rel5,Rel6	Relay	Relay-FINDER-36.11.9.012	FTR-F1	FINDER	SOS Electronic Europe
35	3 Pcs.	Rel8,Rel9	Relay	Relay-FINDER-36.11.9.024	NY-24-WK	FINDER	SOS Electronic Europe
36	3 Pcs.	T1,T2,T3	Transistor npn	2N3904	T092	FAI	SOS Electronic Europe

OM4000HF SWR board							
NR.	QTY.	CODE OM-POWER	TYPE	VALUE	PACKAGE	PROVIDER	DELIVERY
1	1 Pcs.	Bu1	Connector	Cinch-connecting-port 2-polar	SO239	CHINA	CHINA
2	1 Pcs.	L1	Coil	toroid coil	TOROID FT50-43	Amidon	Amidon USA
3	1 Pcs.	C2	condensator ceramic	120 1kV	C RM5,08		TME Electronic
4	6 Pcs.	C3,C4,C6,C7,C8,C9	condensator ceramic	1n 1kV	C RM5,08		SOS Electronic Europe
5	1 Pcs.	C5	c. trimmer	22pF	C RM5,08		SOS Electronic Europe
6	4 Pcs.	D1,D2,D3,D4	Diode Si	BAT41 SMALL SIGNAL SCHOTTKY DIODE	D035	DIOTEC	SOS Electronic Europe
7	1 Pcs.	K1	Connector NSL25-3G	C1x3	1X03 M 3P 2,54mm		SOS Electronic Europe
8	1 Pcs.	L2	Coil	1000µH	207	FASTRON	SOS Electronic Europe
9	4 Pcs.	R1,R2,R3,R4	Resistor metal oxide	100 /2W	R 2W	VITROHM	SOS Electronic Europe
10	2 Pcs.	R5,R7	Resistor metal oxide	330K	204	VITROHM	SOS Electronic Europe
11	2 Pcs.	R6,R8	Resistor metal oxide	68K	204	VITROHM	SOS Electronic Europe

OM4000HF display LED board							
NR.	QTY.	CODE OM-POWER	TYPE	VALUE	PACKAGE	PROVIDER	DELIVERY
1	16 Pcs.	C1,C3,C4,C13,C14,C15,C16,C17,C18,C19,C20,C21,C22,C23,C24,C25	condensator ceramic	100n /50V	C RM5,08		SOS Electronic Europe
2	1 Pcs.	C2,C1	condensator ceramic	470nV/50V	C RM5,08		SOS Electronic Europe
3	8 Pcs.	C5,C6,C7,C8,C9,C10,C11,C12	condensator ceramic	10n /50V	C RM5,08		SOS Electronic Europe
4	5 Pcs.	D1,D3,D4,D6,D7	LED	LED green grid1,27	LED_RM2,54	KINGBRIGHT	SOS Electronic Europe
5	3 Pcs.	D2,D5,D8	LED	LED red grid1,27	LED_RM2,54	KINGBRIGHT	SOS Electronic Europe
6	1 Pcs.	D9	Diode Si	1N4148 Small Signal Diode	D035	DIOTEC	SOS Electronic Europe
7	1 Pcs.	DC1	LED	DC7G3HWA	DIL20	KINGBRIGHT	SOS Electronic Europe
8	8 Pcs.	DC2,DC3,DC4,DC5,DC7,DC8,DC9,DC10	LED	DC10GWA	DIL20	KINGBRIGHT	SOS Electronic Europe
9	2 Pcs.	DC6,DC11	LED	DC7G3HWA	DIL20	KINGBRIGHT	SOS Electronic Europe
10	11 Pcs.	IC1,IC2,IC3,IC4,IC5,IC6,IC7,IC8,IC9,IC10,IC11	Integrated circuit	LM3914N	DIL18	NATIONAL SEMICONDUCTOR	SOS Electronic Europe
11	1 Pcs.	K1	Connector	Card/ribbon connector_20_standing	WANNENSTECKER 20 STEHEND		SOS Electronic Europe
12	4 Pcs.	L1,L2,L3,L4	Coil	470µH	207		SOS Electronic Europe
13	4 Pcs.	R1,R8,R15,R17	Resistor metal oxide	220K	204	VITROHM	SOS Electronic Europe
14	11 Pcs.	R2,R3,R4,R5,R6,R9,R10,R11,R12,R13,R18	Resistor metal oxide	1K2	204	VITROHM	SOS Electronic Europe
15	4 Pcs.	R7,R14,R16,R19	Resistor metal oxide	5K	PT10LV	VITROHM	SOS Electronic Europe
16	8 Pcs.	R20,R21,R22,R23,R24,R25,R26,R27	Resistor metal oxide	390	204	VITROHM	SOS Electronic Europe
17	2 Pcs.	R28,R29	Resistor metal oxide	22k	204	VITROHM	SOS Electronic Europe
18	1 Pcs.	R30	Resistor metal oxide	10K	204	VITROHM	SOS Electronic Europe