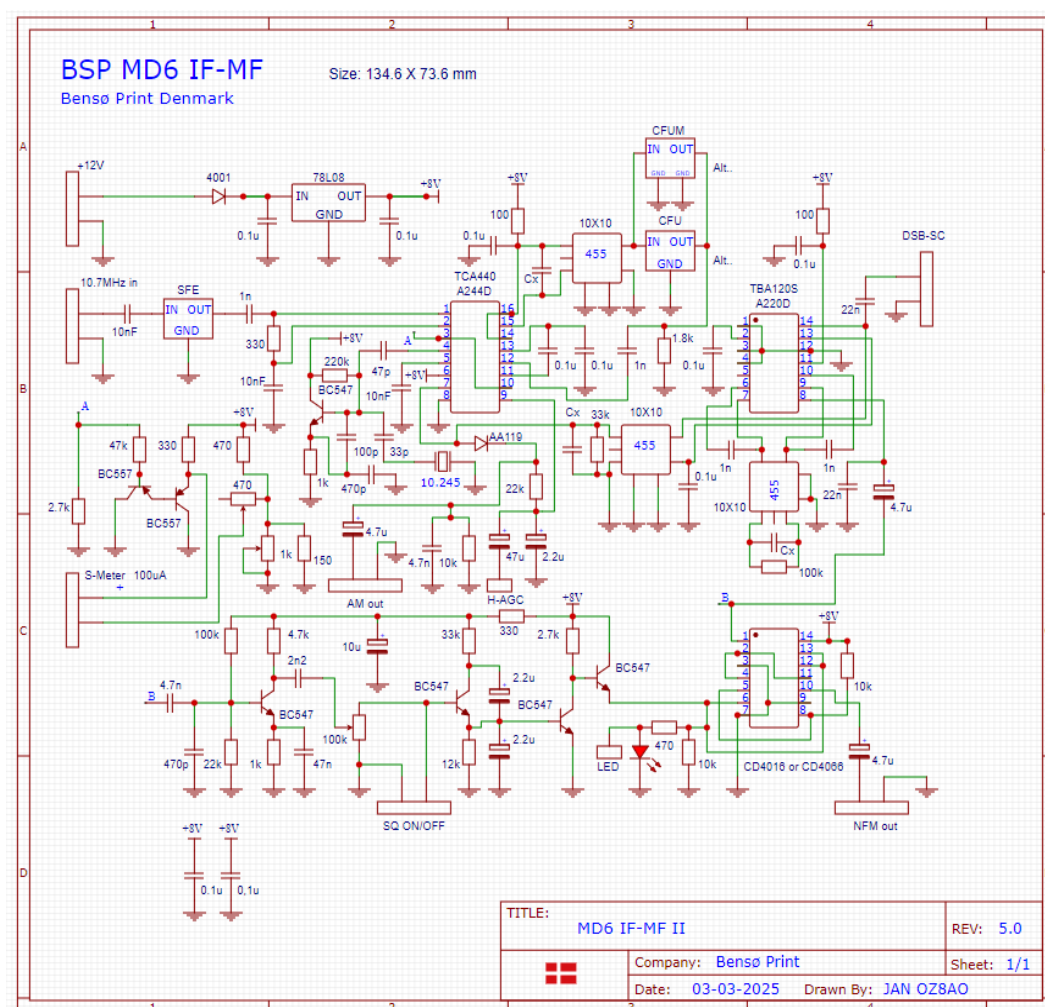




Description:

This description can also largely be used for 'MD6 IF-7x7'.

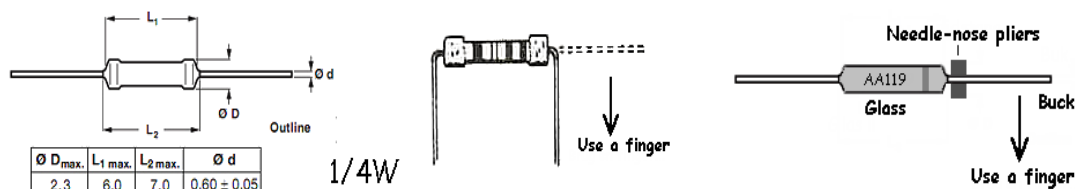
The BSP MD6 IF-MF is a complete sensitive AM receiver with an S-meter circuit and SSB connection, but which can only operate on the frequency 10.7 MHz. In the MD6 system, this is the first intermediate frequency and performs an internal 'downmix' to the second intermediate frequency of 455 kHz. Being included as part of the complete receiver (with connected Frontend module), the receiver is a 'double super'. The printed circuit board allows for mounting of 3 types of ceramic 455 kHz filters CFU / CFUM / LMT.

Remember that only one of them must be installed.

Assembling the PCB:

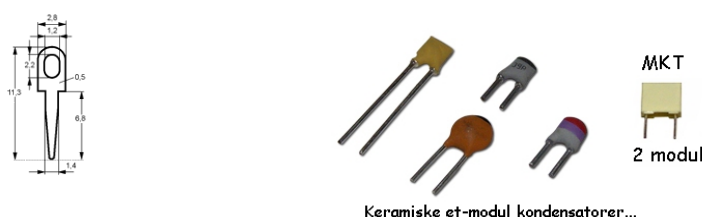
It is recommended that a soldering tip with the same width as the diameter of the small pads (2mm) is used, with 'reasonably thin' solder lead.

Should you happen to misplace a component in the plated solder pad, then use a 'solder wick' or a desoldering pump, first from the top (if possible) and then from the bottom.



To create some distance between the print itself and the bottom of the 'soon-to-be cabinet', start by mounting 3 mm. threaded rods or 'solderable brass tubes' in the four mounting holes. See later in these instructions.

Then mount the 'lowest components' first, resistors, IC socket, one-module ceramic capacitors, two-module capacitors, transistors and finally IF cans, X-tal and filters. For the terminals, it is recommended to use the 'solder pins' shown for 1.2mm holes.



The PCB is laid out for the capacitor types shown. 2 modules are typically for 0.1 uF.

***** NOTE *****

Again, be extra careful when fitting since, as mentioned, the solder pads are 're-plated' and a wrongly fitted component can be difficult to replace.

Perform a nicely mounted module....



Testing:

If the assembly is done correctly and no components are defective, then the module should work immediately when the power is connected for the first time.

Is the line clear?

When the module is fully assembled, connect a wire (as an 'antenna') of a few meters via a 'crocodile beak' to the 10.7 MHz. input, and a AF amplifier at the AM output and 12 – 13.5V to the polarity protected voltage terminals.

You should now be able to hear some 'signals' (if you don't use a signal generator), maybe something RTTY or similar?? 10.7 MHz. is usually a slightly 'boring frequency' where not much happens, but there is probably more to listen to if the test is carried out in the evening hours. PS: Noise from 'electrical devices' can be a little annoying.

Set the squelch:

Remove the 'antenna' from the 10.7 Mhz input and move the AF amplifier to the 'NFM output'. Turn the 100k trim pot all the way anti-clockwise (against GND), then the squelch should be 'fully open' and a hissing sound will be heard. Adjust the IF can at TBA 120 to max noise. NFM also stands for 'Narrow (narrowband) FM' and is used exclusively for communication purposes, usually only on VHF or some FM stations on 27 MHz.

Now turn the 100k trim potentiometer clockwise to the point where the squelch 'exactly' closes, if the 'antenna' is put back on, the squelch will open if there are signals to listen to (maybe stand and 'fart a little'), depending on the sizes of the incoming signals. The squelch can be set to be permanently open by connecting the 'Squelch ON/OFF' terminal to GND.

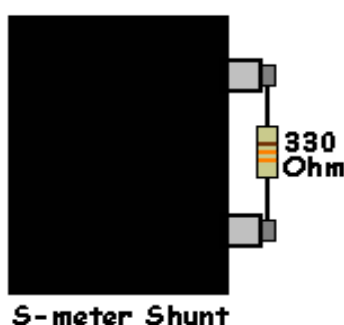
Set up the S-meter circuit:

Connect a 100 uA. S-meter for the terminals 'S-meter'. Connect a 330 Ohm resistor between the two terminals of the meter. Please note that the 'plus' of the instrument must be connected to the terminal marked '+'. Set both trim potentiometers to the center position.

Now without 'antenna'. Turn on the IF module.... If the meter does not read '0' or it showing 'backwards', adjust the '1k potmeter' until the pointer reads '0'. The 470 Ohm potentiometer is the sensitivity setting. If you do not have a calibrated measuring transmitter, leave it in the middle position at first.

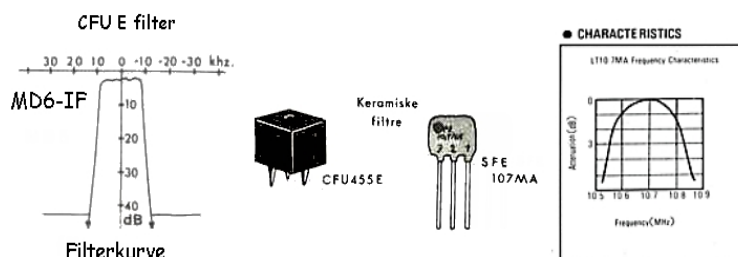
When a frontend module is later connected, turn the 'listening area' through and check the '0 setting' (without antenna). If you thought the meter was too 'live', try a 220/150 Ohm shunt resistor instead of 330 Ohm..

S9 is = 50.2 uV. / -73 dBm. See also: [S meter - Wikipedia](#)



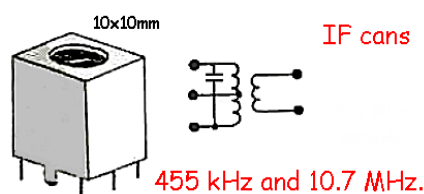
If you think the meter is 'too live', try a 220/150 Ohm instead.

*** In general ***



The CFU / CFUM / LMT 455 (E = +/- 7.5 kHz.) filters provide the 'listening bandwidth', whereas the SFE 10.7 MA filter ensure that only 10.7 MHz. is dropped into the IF module.

If the terminal 'H-AGC' (hang AGC) is connected to GND via a switch, the AGC will have a slower 'hang process'. This is an advantage when listening to SSB and is used when our MD6 module 'DSB-SC' via the '455 terminals' is connected to the IF module.



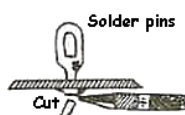
The IF-cans cannot yet be properly adjusted until a 'frontend module' is connected. They are quite wide when adjusting and only need to be set to the max S-meter range when a signal is connected. This can already happen here if you have a 10.7 MHz. signal available.

The capacitors marked 'Cx' allow the use of 455 IF cans without a built-in capacitor. Use the reverse PCB side for capacitor testing and finish with the correct mounting.



Do not mount the module directly on a 'base plate'. Mount 4 pieces instead. Brass 'stays / bushings' on the print's 3.2mm mounting holes.

This creates a little distance to the base plate. If you use brass tubes without threads, you can initially screw them into the 'mounting holes' with a 3 mm screw and nut, solder the tube onto the print and remove the bolt and nut again, be careful... A soldered brass tube stays hot for quite a while 'Ouch'.



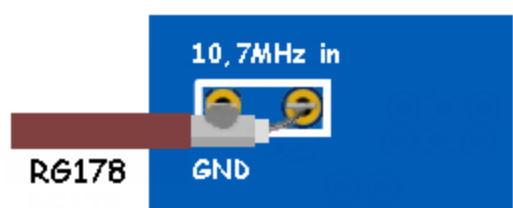
For the internal 'screen cable' mounting, we recommend using '50 Ohm Teflon cable RG 178', both for the internal RF and AF connections. If the distance is not 'too large', then a 'single wire' can be used for the AF connections, AF GND connection is obtained via the assembly.

The internal connections in the cabinet..

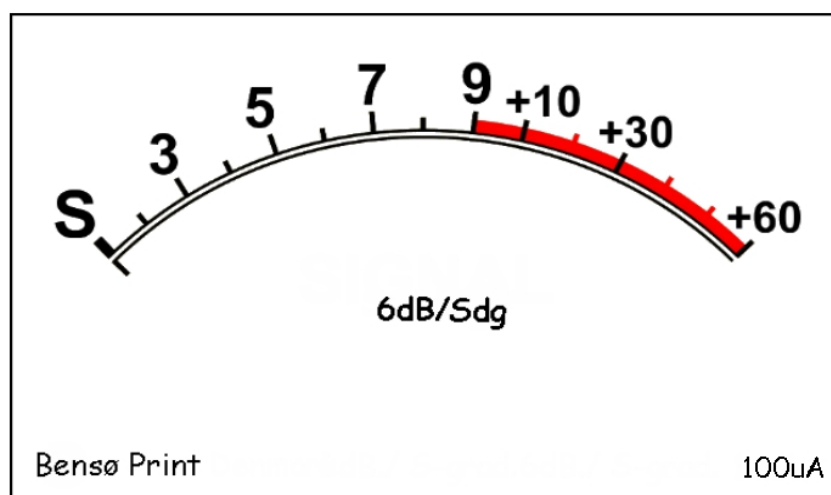
Installation of RG 178:



Turn the 'solder pins' as shown



Solder the cable as shown

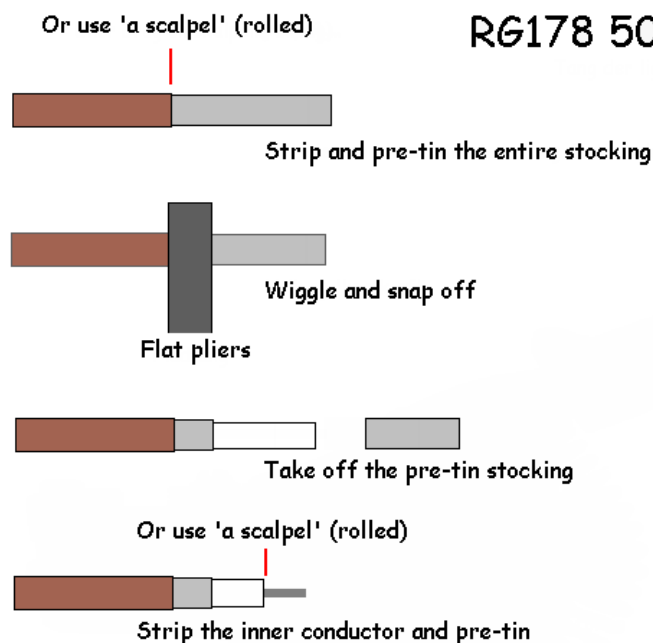


Scale for your S-meter.

Use a 'Screendump' and printout via an image processing program to get the right size.

PS:

The MD 6 IF/MF is also available in a 'smaller version' for 7x7 IF cans. The technical specifications are the same as those described here, but only with space for one CFU filter. The print is slightly smaller, only 125x71 mm.



RG178 50 Ohm Teflon 1,8mm/ø



Practice with some bits and pieces first

*** Parts list ***

Resistors: (1/4 W 7 mm):

100 2 pcs. 150 1 pcs. 330 3 pcs. 470 2 pcs. 1k 2 pcs. 1,8k 1 pcs. 2,7k 2 pcs. 4,7k 1 pcs.
10k 3 pcs. 12k 1 pcs. 22k 2 pcs. 33k 2 pcs. 47k 1 pcs. 100k 2 pcs. 220k 1 pcs.

Trim potms.: (10 mm):

470 1 pcs. 1k 1 pcs. 100k 1 pcs.

Capacitors: (keramik 1 module):

33pF 1 pcs. 47pF 1 pcs. 100pF 1 pcs. 470pF 1 pcs. 1nF 4 pcs. 2,2nF 1 pcs.
4,7nF 2 pcs. 10nF 3 pcs. 22nF 2 pcs.

Capacitors 2 module:

47nF 1 pcs. 100nF 10 pcs.

Electrolytes 1 modul vertical:

2,2uF 3 pcs. 4,7uF 3 pcs. 10uF 1 pcs. 47uF 1 pcs.

Diodes:

AA119 1 pcs. 1N4001 1 pcs. SQ-LED 1 pcs.

Transistors:

BC547 / 548 4 pcs. BC557 2 pcs.

ICs:

78L08 1 pcs. TCA440 1 pcs. TBA120S 1 pcs.

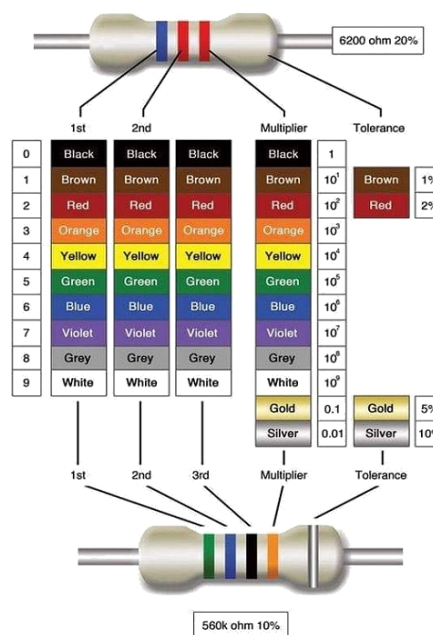
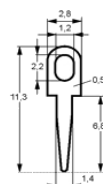
CD4016 or CD4066 1 pcs.

IC-sockets:

16pin 1 pcs. 14pin 2 pcs.

Solder pins:

1,2mm hul 16 pcs.



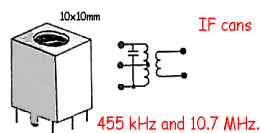
Keramik filters:

SFE10,7 1 pcs.

CFU455E / LTM455 / CFUM455 (E = +/- 7,5 kHz.) 1 pcs.

X-tal 30pF parallel (standard):

10.245 MHz HC49 1 pcs.

IF-cans 455 kHz. 10X10: 3 pcs.

20k / 5k black core.

Cx = space for external capacitor.
(1mH. - 520uH.).**PCB:**

BSP MD6 IF-MF.

SPECIFICATIONS**CFU 455KHz**

Part Number	Nominal Center Frequency (KHz)	6dB Bandwidth (KHz) min.	40dB Bandwidth (KHz) max.	Attenuation 455±100KHz (dB) min.	Ripple (dB) max. KHz	Insertion Loss (dB) max.	Input/Output Impedance (Ω)
*CFU455B2	455 ± 2	±15	±30	27	3 (455 ± 10)	4	1500
*CFU455C2	455 ± 2	±12.5	±24	27	4 (455 ± 8)	4	1500
*CFU455D2	455 ± 1.5	±10	±20	27	2 (455 ± 7)	4	1500
*CFU455E2	★ 455 ± 1.5	±7.5	±15	27	1.5 (455 ± 5)	6	1500
*CFU455F2	★ 455 ± 1.5	±6	±12.5	27	1.5 (455 ± 4)	6	2000
*CFU455G2	455 ± 1	±4.5	±10	25	1.5 (455 ± 3.0)	6	2000
*CFU455H2	455 ± 1	±3	±9	25	2 (455 ± 2.0)	6	2000
*CFU455I2	455 ± 1	±2	±7.5	25	2 (455 ± 1.5)	6	2000
CFU455HT	455 ± 1	±3	±9	35	3 (455 ± 2)	6	2000
CFU455IT	455 ± 1	±2	±7.5	35	2 (455 ± 1.5)	6	2000

455 kHz. CFU, CFUM og CFWS keramiske filtre.

Component purchase:**Bensø Print:**[Project2024](#)[Price List](#)

and

Your local dealers in your country...**[Projekt2024](#)**
