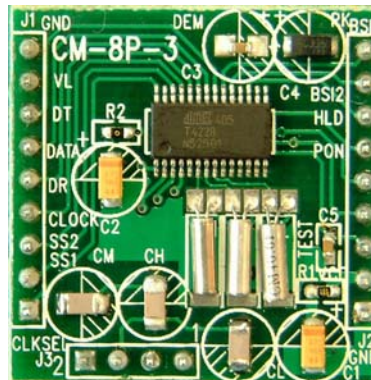# SPECIFICATION
FOR
CMMR-8P
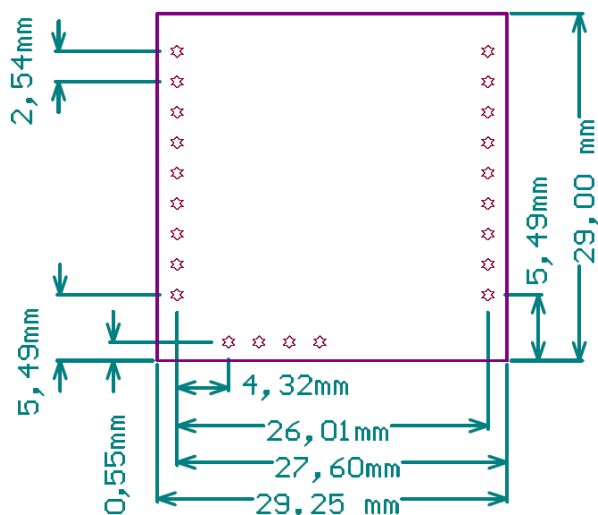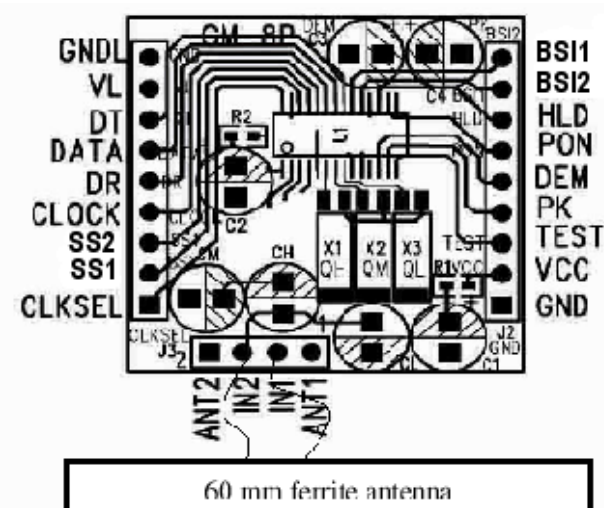# RC Module

1.   CME8000 Description

The CME8000 is a BICMOS integrated straight through receiver with in-built very high sensitivity and a pre-decoding of the time signal transmitted from WWVB, DCF77, JJY MSF and HBG. The receiver is prepared for multi-modus reception by using an integrated logic. Integrated functions such as stand-by mode, integrated antenna switching, integrated crystal switching and a hold function offer features for universal applications.

2.   CMMR-8D Description

Together with the ferrite antenna, the CMMR-8D module forms a complete receiver unit for single, dual or triple frequency radio control signal reception. Depending on the application or evaluation that this module is applied on, the part number for ordering differs. (For detail see part-numbering and ordering section).

This module has pin outs for all available pins on the receiver IC CME8000. Via easy interface with a separate MCU, the module can readily receive, recognize and decode to digital form the selected long wave signal received via the antenna. Output of the decoded stream of digital data is available on the DATA pin of the module and can be fed into the MCU for translation into time information necessary for the intended application.

3.   Dimensions & Outline of Module

No external components related to the CME8000 receiver IC are necessary. This module needs only to be interfaced to a MCU for radio control functionality.

4.   Pinning

Symbol	Function	Remark
ANT2	Antenna switch 2	Antenna connection for 60kHz. Capacitor space CM for capacitor to match connection between ANT2 and IN1 for 60kHz.
IN2	Input antenna	Antenna connection for 40kHz and 77.5kHz. Capacitor space CH for capacitor to match connection between IN1 and IN2 for 77.5kHz
IN1	Input antenna	Antenna connection for 60kHz and 77.5kHz
ANT1	Antenna switch 1	Antenna connection for 40kHz. Capacitor space CL for capacitor to match connection between ANT1 and IN2 for 40kHz.
VCC	Analog part supply voltage	Separate power supply to analog part
QHOUT	Crystal 3 output	Connection for 77.5kHz crystal
QMOUT	Crystal 2 output	Connection for 60kHz crystal
QLOUT	Crystal 1 output	Connection for 40kHz crystal
GND	Analog Ground	separate GND to analog part
QIN	Crystal common input	Common crystal input connection for all crystals
DEM	Capacity for demodulation peak-detector	Capacitor C3 fixed as 100nF for all frequencies at DEM pin
PK	Capacity for AGC regulation	Capacitor C4 fixed as 3.3 µF for all frequencies at PK pin
TEST	Test I/O	Test mode set by setting SS1 and SS2
PON	Power on	Connect to GND for receiver to be activated
HLD	AGC Hold	Active Low hold pin to hold AGC function
GNDL	Digital Ground	Separate GND for digital part
BSI1	Bit Strength Indicator 1 (LSB)	Binary output to show LSB of BSI level
BSI2	Bit Strength Indicator 2 (MSB)	Binary output to show MSB of BSI level
DT	Data Send Clock	Refer to timing diagram in CME8000 datasheet
DATA	Data Output	Refer to timing diagram in CME8000 datasheet
DR	Data Ready in register	Refer to timing diagram in CME8000 datasheet
CLOCK	Clock input 1024 / 4096 Hz	Clock input necessary to drive CME8000, selectable via CLKSEL
SS1	Transmitter Select 1	Different protocols and test modes selectable by this tri-state pin (refer to logical function table for SS1 and SS2 in CME8000 datasheet)
SS2	Transmitter Select 2	Different protocols and test modes selectable by this tri-state pin (refer to logical function table for SS1 and SS2 in CME8000 datasheet)
VL	Digital supply voltage	Separate power supply to digital part
CLKSEL	Clock select	Open/GND connection = 1024 Hz, VCC = 4096 Hz

5. Electrical Characteristics

Parameter	Min	Typical	Max	Unit
Reception frequency range	20		120	kHz
Supply Voltage	1.2		5.0	V
Power consumption				
a) Power on		< 100		µA
b) Receiver off		0.5		µA
Input Sensitivity				
a) Signal generator direct input		0.5	0.8	µV
b) via antenna (interference free)		20**	15**	µV/m
** ferrite antenna: Length = 60mm / diameter = 10mm, with optimised L, C and Q				

Application Circuitry for multi frequency antenna use (3 frequencies: 40kHz, 60kHz, 77.5kHz)
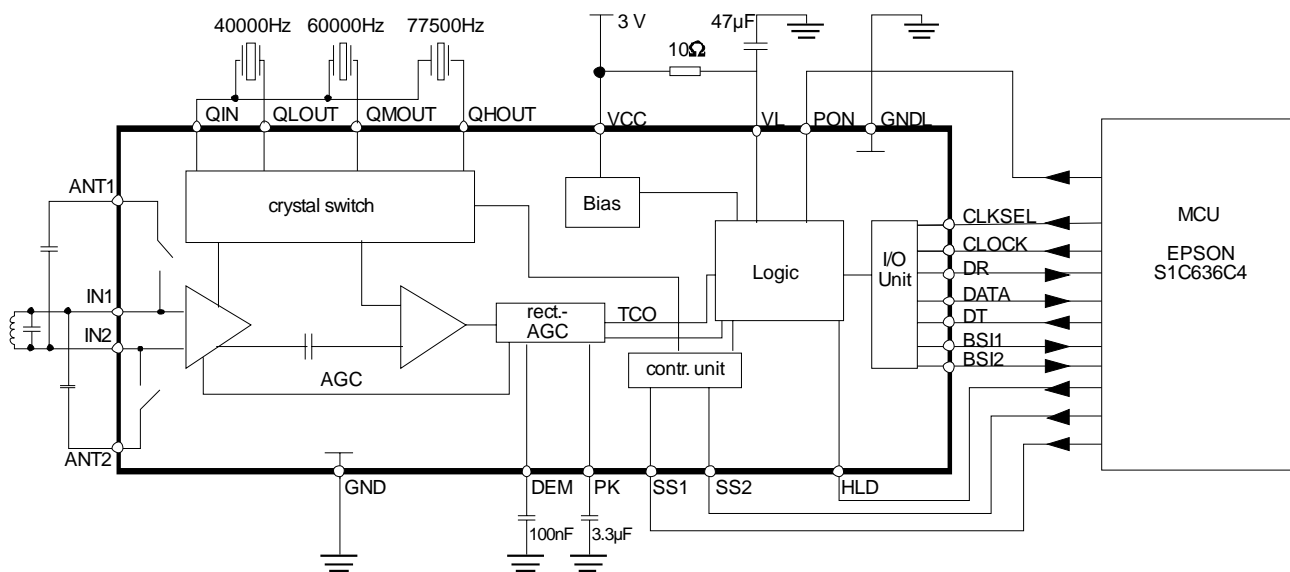
6. Part numbering & Ordering information

Part numbering

CMMR – 8P - MF

D = die P = package

Frequency: **40** = 40kHz **60** = 60kHz **77** = 77.5kHz **MF** = multi frequency 60kHz and 77.5kHz

Ordering information

Please order according to the part numbering shown above. Orders for the above modules can be placed to any one of our C-MAX offices or representatives. For information of your nearest local C-MAX office or representative, please check in the web site:
www.c-max-time.com

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C-MAX Time Solutions GmbH

Carl-Zeiss-Str. 13
74078 Heilbronn

Tel.: +49-7066-900400
Fax: +49-7066-9004029
e-mail: contact@c-max-time.com

Data sheets can also be retrieved from our Internet homepage: www.c-max-time.com