



# R6500 Microcomputer System APPLICATION NOTE

## Low-Cost Crystal Oscillator for Clock Input

### PURPOSE

This application note describes a low cost oscillator circuit which will produce the basic input frequency required by the clock generator circuits in the Rockwell R65XX series microprocessors. This circuit can be constructed around either of two readily-available, low cost crystals. Both crystals are approximately the same cost, depending on source and quantities. These crystals, identified in the table below, may be obtained from Electro Dynamics, 5625 Foxridge Drive, Shawnee Mission, Kansas 66201 by ordering Part No. 333R05-001 (3,579 MHz) or 59672 (4.19 MHz).

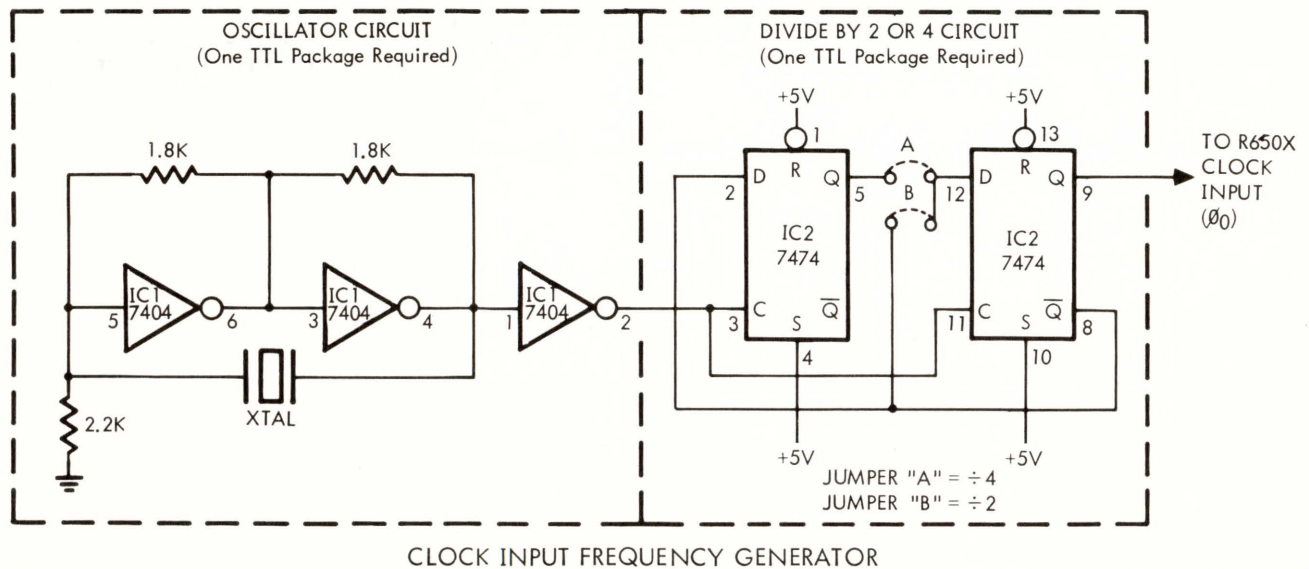
The oscillator output frequency is divided by 2 or by 4 to provide any of the frequency options shown in the table. By trading off the slight deviation in frequency from the standard 1 MHz or 2 MHz clock with cost, this approach can reduce the cost of the oscillator circuit to less than \$2.00 each in quantity buys.

CRYSTAL		OUTPUT FREQUENCY (MHz)	
Primary Use	Frequency	Divided By 2	Divided By 4
Color TV P/N 333R05-001	3.579545 MHz	1.7897	0.894886
Automotive Clock P/N 59672	4.194304 MHz	2.097152	1.048576

### DESCRIPTION

The clock input frequency generator shown in the schematic consists of an oscillator circuit requiring one IC and a divide by 2 or by 4 circuit which also requires only one IC. The output of this circuit is applied to the ( $\theta_0$ ) input of the R650X microcomputer clock generator circuit.

The oscillator circuit uses three of the six drivers in a standard 7404 and a crystal to produce an output. The oscillator output is input to a standard 7474 and the frequency is divided by either 2 or 4 depending on the jumper connections (A or B), as shown in the schematic.



Low-Cost Crystal Oscillator for Clock Input

**ELECTRONIC DEVICES DIVISION REGIONAL ROCKWELL SALES OFFICES**

**HOME OFFICE**

Electronic Devices Division  
Rockwell International  
4311 Jamboree Road  
Newport Beach, California 92660  
Tel: 800-854-8099, 800-854-8090  
In California 800-422-4230  
TWX: 910 591-1698

**UNITED STATES**

Electronic Devices Division  
Rockwell International  
1842 Reynolds  
Irvine, California 92714  
(714) 632-3710  
TWX 910 505-2518

Electronic Devices Division  
Rockwell International  
921 Bowser Road  
Richardson, Texas 75080  
(214) 996-6500  
Telex: 73-307

Electronic Devices Division  
Rockwell International  
10700 West Higgins Rd., Suite 102  
Rosemont, Illinois 60018  
(312) 297-8862  
TWX 910 233-0179 (RI MED ROSM)

Electronic Devices Division  
Rockwell International  
5001B Greentree  
Executive Campus, Rt. 73  
Marlton, New Jersey 08053  
(609) 596-0090  
TWX 710 940-1377

**EUROPE**

Electronic Devices Division  
Rockwell International GmbH  
Fraunhoferstrasse 11  
D-8033 Munchen-Martinsried  
West Germany  
(089) 859-9575  
Telex: 0521/2650 rimd d

Electronic Devices Division  
Rockwell International  
Heathrow House, Bath Rd  
Cranford, Hounslow,  
Middlesex, England  
(01) 759-9911 Ext. 35  
Telex 851-25463

Electronic Devices  
Rockwell Collins  
Via Boccaccio, 23  
20123 Milano  
Italy  
498 74 79

**FAR EAST**

Electronic Devices Division  
Rockwell International Overseas Corp  
Itohpa Hirakawa-cho Bldg  
7-6, 2-chome, Hirakawa-cho  
Chiyoda-ku, Tokyo 102, Japan  
(03) 265-8806  
Telex J22198

**YOUR LOCAL REPRESENTATIVE**