

TLS2 Exchange Rate Board



PRIVREDNA BANKA ZAGREB

TEČAJNA LISTA - EXCHANGE RATES

ZEMLJA	VALUTA	KUPOVNI	SREDNJI	PRODAJNI
 AUSTRALIJA	1 AUD	4207397	4226467	4270508
 KANADA	1 CAD	4486984	4507321	4554289
 ČEŠKA	1 CZK	0216341	0229657	0232766
 DANSKA	1 DKK	0990126	0994613	1004978
 MAĐARSKA	100 HUF	2793904	2965869	3019535
 JAPAN	100 JPY	5539666	5564773	5622761
 NORVEŠKA	1 NOK	0880878	0884870	0894091
 SLOVAČKA	1 SKK	0175708	0186523	0189048
 SLOVENIJA	100 SIT	3031910	3092032	3124252
 ŠVEDSKA	1 SEK	0801935	0805570	0813964
 ŠVICARSKA	1 CHF	4861616	4883650	4934540
 V. BRITANIJA	1 GBP	11094362	11144646	11260777
 SAD	1 USD	6113405	6159592	6247900
 EMU	1 EUR	7360000	7393358	7470400
 POLJSKA	1 PLN	0216341	0229657	0232766

1. Features

- Customer logo and user name
- Number of rows: 8, 16 or 24
- Number of columns: 1,2,3 or 4
- 14,2 mm LED displays
- Readability up to 7 m
- Floating decimal point
- 6 or 8 digits per rate
- Intensity adjustable in 3 levels
- Wireless IR remote control
- RS232C interface
- Software for downloading rates from computers
- Simple communication protocol, described in details
- Battery back up data retention
- Dimensions 960 * 640 * 55 mm (24 rows x 2 columns)
- Mass 10,5 kg
- Power supply ~230V/50 Hz
- Power dissipation 50W

2. Serial communication

RS232C asynchronous serial communication is supported. Computer equipped with RS232C port is a master and exchange rate board is a slave. Baud rate: 2400 bauds; 8+1 bit; no parity; full duplex.

While powered, exchange rate board activates DTR signal, and waits for receiving data. All data received according to simple protocol will be displayed. Only ASCII codes for next characters can be accepted:

. 0 1 2 3 4 5 6 7 8 9 'SP'

Other codes will be displayed as 'SPACE'.

Protocol requires no special control codes. Master starts sending byte by byte and checks echo. If time-out longer then 100 msec occurs, master stops sending and waits 300 msec before retry. Exchange rate board (slave) sends back every received character. If time-out longer than 300 msec occurs, it discards all received data and waits for new transmission. After all expected data are received, exchange rate board will display it.

2.1 Data structure

Exchange rate board displays rates in small windows. Content of every window is described by 11 bytes, including dot. 1st byte is positioned leftmost in window, and 11th rightmost. Unused digits must be filled with "SP". Windows data are received from left to right, and from top to bottom, respectively. All boards expect data for 24 rows regardless of how many rows are actually displayed. Number of expected columns is the number of board columns. Boards always expects complete set of data to be displayed plus date, list number and intensity:

DATA[24xNB_OF_COLUMNSx11] rates data
DATE [4] DDMM*
LIST NB[3] BBB*
INTENSITY [1] (ASCII code for '1','2' ili '3')

*(D,M,B .. ASCII code 'SP' or '0'-'9')

After all data are received, they will be displayed with no content checking.

Software application for PC computers is available, which enables easy data entry to exchange rate board. Application starts with "TLS-UNOS 1<ENTER>" for COM#1, or "TLS-UNOS 2<ENTER>" for COM#2 serial port.

2.2 Connection to RS232C computer port

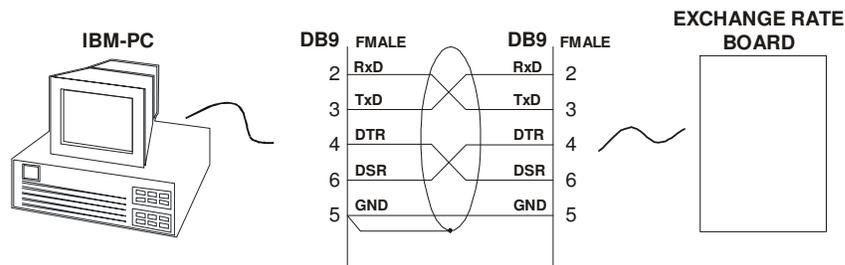


Figure 1 Communication cable DB9 to DB9

3. Remote control

PD-44 remote control unit can be used for data entry.



Digits, arrows, KRAJ (END) and keys in frame “TEČAJ” and “CLOCK” are used for entry data to exchange rate board.

3.1.1 Keys in “TEČAJ” frame

UNOS data entry is activated (leftmost-uppermost window blinks)

TEST test of LED displays

I+ increment of LED intensity: 3 levels

I- decrement of LED intensity

3.1.2 Editing keys

0-9 digits

. decimal point

RECTANGLE clear window content

3.1.3 Other keys

KRAJ end of entry

ARROWS window selection

3.1.4 Keys in “CLOCK” frame

A/R activate CLOCK adjusting mode

+ increment digit

- decrement digit

SEC and T not in use.

3.2 Using IR remote control unit

Data entry is activated by "UNOS" key: active window starts blinking (except empty window). Other window can be selected using arrows. Contents is entered by keys: ., RECTANGLE, 0-9. First typed key clears all window content, and next scrolls content from right to left.

After editing of all the wanted windows, data entry must be finished by key "KRAJ". No window blink any more, and entered data are saved. If data entry is not finished correctly, after 2 minutes all windows will display “≡”.

Remark: “KRAJ” key must not be used after every windows, but when you finish editing the whole contents of the board. Using arrows keys you can skip from window to window.

"TEST" key is used for test of 7-seg LED displays. Segments are turned on and off in a cyclic way, and visual control is possible. Test mode ends by key "KRAJ". Exchange rates data are not lost during the test.