

RTU-COM PSTN AT

User Guide

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1. Introduction

This document is a guide for change settings in the PSTN modem integrated in the RTU-COM.

You have only access to change the PSTN modem settings when you are connected direct to the programmer port. You must stop the B-CON application program, set switch 10 to ON and re-power the RTU-COM module. Now the RTU-COM will enter into modem configuration mode, and you can change modem settings like in any other external modem with a terminal program like MS Hyper Terminal. Note that if you have the terminal window open during setting switch 10, you will get a ":" prompt in your terminal window.

The RTU-COM has 1 LED, which give you an indication of the modems' status:

LED	Colour	Status
Modem	Green	Data Carrier Detect, modem is online and synchronised to another modem.

As with other types of modem the integrated PSTN modem have many different configurations available, possibly only one of which will be suitable for your application. The factory default configuration is a general-purpose type, which in general will work, but you may need to adjust some settings. In most cases only a few changes may be necessary.

NOTE: It is possible to reload factory settings by entering: AT&F0.

2. At Command Summary for RTU-COM PSTN type

Basic AT commands

Command Function (The default values are typed in bold)

A/ Re-execute command. Will repeat all commands in the command buffer.

A Go off-hook and attempt to answer a call.

Bn CCITT or Bell
B0 Select V.22 connection at 1200 bps.
B1 Select Bell 212A connection at 1200 bps.

C1 Return OK message.

Dn Dial modifier, n values.
0-9 DTMF digits 0 to 9
P Force pulse dialing
T Force DTMF dialing
, Dial pause, the time is specified by S8-register
W Wait for dial tone, the time specified by S6-register
; Return to command state
S=n Dial the number stored in the directory (n = 0 to 3)

En Command echo
E0 Turn off command echo.
E1 Turn on command echo.

Fn Command accepted but no action.

Hn Disconnect (hang-Up)
H0 Initiate a hang-up sequence.

H1 If on-hook, go off-hook and enter command mode. The modem will return to on-hook after the time specified in S7.

In Identification:

I0 Report product code.

I1 Report pre-computed checksum.

I2 Report OK.

I3 Report firmware revision, model, and interface type.

I4 Report response programmed by an OEM.

I5 Report the country code parameter.

I6 Report modem data pump model and code revision.

I7 Reports the DAA code (W-class models only).

Nn Automode enable - not valid!

On Return to On-line data mode

O0 Go on-line.

O1 Go on-line and initiate a retrain sequence.

P Force pulse dialing (not supported in hardware)

Qn Quiet result codes control

Q0 Allow result codes to DTE.

Q1 Inhibit result codes to DTE.

Sn Read/Write S-register

Sn Select S-Register as default.

Sn? Return the value of S-Register n.

S=v Set default S-Register to value v.

S? Return the value of default S-Register.

T Force DTMF dialing.

Vn Result code form:

V0 Report short form (numeric) result codes.

V1 Report long form (verbose) result codes.

Wn Connect message control

W0 Report DTE speed in EC mode.

W1 Report line speed, EC protocol and DTE speed.

W2 Report DCE speed in EC mode.

Xn Extended Result Codes:

X0 Report basic call progress result codes, i.e., OK, CONNECT, RING, NO CARRIER (also, for busy, if enabled, and dial tone not detected), NO ANSWER and ERROR.

X1 Report basic call progress result codes and connections speeds (OK, CONNECT, RING, NO CARRIER (also, for busy, if enabled, and dial tone not detected), NO ANSWER, CONNECT XXXX, and ERROR.

X2 Report basic call progress result codes and connections speeds, i.e., OK, CONNECT, RING, NO CARRIER (also, for busy, if enabled, and dial tone not detected), NO ANSWER, CONNECT XXXX, and ERROR.

X3 Report basic call progress result codes and connection rate, i.e., OK, CONNECT, RING, NO CARRIER, NO ANSWER, CONNECT XXXX, BUSY, and ERROR.

X4 Report all call progress result codes and connection rate, i.e., OK, CONNECT, RING, NO CARRIER, NO ANSWER, CONNECT XXXX, BUSY, NO DIAL TONE and ERROR.

Yn Long Space Disconnect

Y0 Disable long space disconnect before on-hook.

Y1 Enable long space disconnect before on-hook.

Zn Soft reset and Restore Profile

Z0 Restore stored profile 0 after warm reset.

Z1 Restore stored profile 1 after warm reset.

&Cn RLSD (DCD) Option

&C0 Force RLSD active regardless of the carrier state.

&C1 Allow RLSD to follow the carrier state.

&Dn DTR Option

&D0 Interpret DTR ON-to-OFF transition per &Qn:

&Q0, &Q5, &Q6 The modem ignores DTR.

&Q1, &Q4 The modem hangs up.

&Q2, &Q3 The modem hangs up.

&D1 Interpret DTR ON-to-OFF transition per &Qn:

&Q0, &Q1, &Q4, &Q5, &Q6 Asynchronous escape (return to command state).

&Q2, &Q3 The modem hangs up.

&D2 Interpret DTR ON-to-OFF transition per &Qn:

&Q0 through &Q6 The modem hangs up.

&D3 Interpret DTR ON-to-OFF transition per &Qn:.

&Q0, &Q1, &Q4, &Q5, &Q6 The modem performs soft reset.

&Q2, &Q3 The modem hangs up.

&Fn Restore factory configuration

&F0 Restore factory configuration 0.

&F1 Restore factory configuration 1.

&Kn Flow Control :

&K0 Disable DTE/DCE flow control.

&K3 Enable RTS/CTS DTE/DCE flow control.

&K4 Enable XON/XOFF DTE/DCE flow control.

&K5 Enable transparent XON/XOFF flow control.

&K6 Enable both RTS/CTS and XON/XOFF flow control.

&Ln **&L0** Select dial up line operation -always default in UCM-81/82

&Qn Sync/Async Mode

&Q0 Select direct asynchronous mode.

&Q1 Select sync connect with async off-line command mode.

&Q2 Select sync connect with async off-line command mode and enable DTR dialing of directory zero.

&Q3 Select sync connect with async off-line command mode and enable DTR to act as

Talk/ Data witch.

&Q4 Select Hayes AutoSync mode.

&Q5 Modem negotiates an error corrected link.

&Q6 Select asynchronous operation in normal mode.

&Rn RTS/CTS Option

&R0 CTS tracks RTS (async) or acts per V.25 (sync).

&R1 CTS is always active.

&Sn DSR Override

&S0 DSR is always active.

&S1 DSR acts per V.25.

&V Display current configurations. Example is shown in the beginning of this section.

&Wn Store Current Configuration:

&W0 Store the active profile in NVRAM profile 0.

&W1 Store the active profile in NVRAM profile 1.

&Yn Designate a Default reset Profile

&Y0 Recall stored profile 0 upon power up.

&Y1 Recall stored profile 1 upon power up.

&Zn=x Store dial string x to location n (0 to 3).

%En Enable/Disable Line Quality Monitor and Auto-Retrain or Fallback/FallForward

%E0 Disable line quality monitor and auto retrain.

%E1 Enable line quality monitor and auto retrain.

%E2 Enable line quality monitor and fallback/fall forward.

%L Return received line signal level.

%Q Report the line signal quality.

\Gn Data flow control between modems (XON/XOFF).

\G0 Disables XON/XOFF flow control.

\G1 Enables XON/XOFF flow control.

\Kn Controls break handling during three states:

1. When modem receives a break from the DTE:

\K0,2,4 Enter on-line command mode, no break sent to the remote modem.

\K1 Clear buffers and send break to remote modem.

\K3 Send break to remote modem immediately.

\K5 Send break to remote modem in sequence with transmitted data.

2. When modem receives \B in on-line command state:

\K0,1 Clear buffers and send break to remote modem.

\K2,3 Send break to remote modem immediately.

\K4,5 Send break to remote modem in sequence with transmitted data.

3. When modem receives break from the remote modem:

\K0,1 Clear data buffers and send break to DTE.

\K2,3 Send a break immediately to DTE.

\K4,5 Send a break with received data to the DTE.

\Nn Select Operating mode

\N0 Select normal speed buffered mode.

\N1 Select direct mode.

\N2 Select reliable link mode.

\N3 Select auto reliable mode.

\N4 Force LAPM mode.

\N5 Force MNP mode.

+MS Select Modulation

The command format is :

+MS=<mod>[, [<automode>] [, [<min_rate>] [, [<max_rate>]]]] <CR>

+MS=? Returns information on supported options

(0,1,2,3,9,10,11,64,69),(0,1),(300-33600),(300-33600) +MS? Returns selecte options:
11,1,300,33600

The modulation parameter options are:

<mod>	Modulation	Possible Rates	Notes
0	V.21	300	
1	V.22	1200	
2	V.22bis	2400 or 1200	
3	V.23	1200	
9	V.32	9600 or 4800	
10	V.32bis	14400, 12000, 9600, 7200 or 4800	UCM-81 default
11	V.34bis	33600, 28800, 26400, 24000, 21600,19200, 16800, 14400, 12000, 9600, 7200, 4800 or 2400	UCM-82 default
64	Bell 103		
69	Bell 212		
Notes: 1. For V.23, originating modes transmit 75bps and receive at 1200 bps, answering modes transit at 1200 bps and receive at 75 bps. The rate is always specified as 1200 bps. Please note that Half Duplex is not supported.			

ECC Commands

%Cn Enable/Disable Data Compression

%C0 Disable data compression.

%C1 Enable MNP 5 data compression.

%C2 Enable V.42 bis data compression.

%C3 Enable both V.42 bis and MNP 5 compression.

/An Select Maximum MNP Block Size

\A0 Set maximum block size in MNP to 64.

\A1 Set maximum block size in MNP to 128.

\A2 Set maximum block size in MNP to 192.

\A3 Set maximum block size in MNP to 256.

\Bn Send break of n x 100 ms. (n= 1....9) (default=3)

MNP 10 Commands

-Kn MNP Extended Services

-K0 Disable MNP 10 extended services.

-K1 Enable MNP 10 extended services.

-K2 Enable MNP 10 extended services detection only.

SEC=n Enable/Disable MNP10-EC

-SEC=0 Disable MNP10-EC.

-SEC=1, [<tx level>] Enable MNP10-EC and set transmit level <tx level> 0 to 30
(0 dBm to -30dBm).

W-Class Commands

*B Display list of permanently blacklisted numbers (none).

*D Display list of delayed numbers (none).

*NCn Change country to one of eight in NVRAM (always=6).

Useful AT commands

There are some other useful commands you can use to obtain information or test the modem:

Test Commands

ATDnnnn This causes the modem to dial a number (nnnnnn)

ATH Hang up

ATA Answer an incoming call (If S0 is set to 0)

Informative Commands

AT&V Will display the modem current configuration

AT&F0 This command is used to restore the factory settings from EEPROM, this will take you back to square one, regardless of any changes you have made.

AT%Q Report the line signal quality.

Applicable documents

RTU-COM Data Sheet.

RTU-COM Mounting and Installation Instructions.

RTU-COM GSM User notes and short form AT Command survey.

GSM Integration modem - At Command Manual.

- find all the documents at the Brodersen Controls A/S homepage:

WWW.BRODERSENCONTROLS.COM

or contact your local distributor for further info and support.