PP2CAN skript runtime 3.02

User guide – running compiled PP2CAN scripts without the PP2CAN application

What it is

PP2CAN runtime (`pp2can_script_rt.exe`) runs compiled PP2CAN scripts (`.scr` files) from the command line, without the PP2CAN application. It communicates through a **USB2CAN TRIPLE** or **USB2LIN** interface.

- Up to 4 scripts can run at the same time, just like the 4 script windows of PP2CAN. They share global variables.
- Graph, histogram, datagrid, dataset and gauge windows open the same way as in PP2CAN.
- `print` and `log` output goes to the console window in colour and can optionally be saved to files.
- Everything is set up in an INI configuration file.

Installation

Keep all files in one folder:

File	Description
pp2can_script_rt.exe	the runtime program
CANLAB_Base_x32.dll, CANLAB_Socket_x32.dll, CANLAB_X2CAN_x32.dll	CANLAB libraries
ftd2xx.dll, WinIo.dll	helper libraries (must be present)
libffi.dll	calling DLL functions from scripts

The computer needs **Microsoft Visual C++ 2015–2022 Redistributable (x86)** (a free download from Microsoft, often already installed with other programs) and the interface driver – the interface must appear in the system as a COM port.

Scripts are compiled in PP2CAN as usual. The compiled script is in the PP2CAN working folder: script window 1 saves `script0.scr`, window 2 `script1.scr`, and so on.

Running

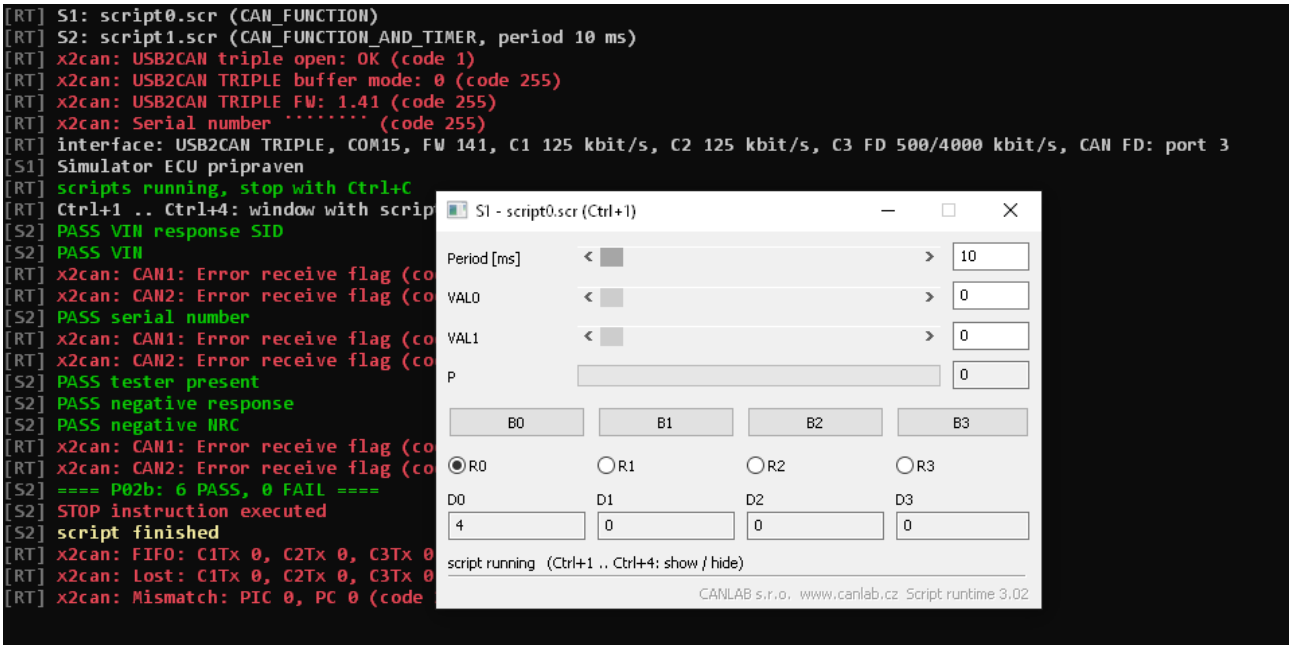
```
pp2can_script_rt.exe project.ini
pp2can_script_rt.exe project.ini --check
pp2can_script_rt.exe project.ini -cz
pp2can_script_rt.exe --help
```

- **project.ini** – the configuration file (see below). You can also drag the INI file onto `pp2can_script_rt.exe` or use a shortcut.
- **--check** – only checks the configuration and the scripts and prints the result; the interface is not opened. Useful before deployment.
- **-cz** – runtime messages in Czech. Without it, runtime messages are in English. Text printed by the scripts themselves is not changed.

At start-up the runtime checks the configuration and the scripts. If it finds a problem, it lists **all** problems at once (with the INI line number) and does not start. Otherwise it opens the interface, runs the `init` sections of all scripts and the scripts keep running.

Stopping

Press **Ctrl+C** or close the console window. The runtime stops the scripts (runs their `stop` section), closes the windows and the interface. If all scripts finish on their own (`stop` instruction), the runtime exits too.



Exit codes

For use in batch files (`%ERRORLEVEL%`):

Code	Meaning
0	OK
1	configuration error or wrong parameter
2	a script cannot be loaded (damaged or not compiled .scr file)
3	a script cannot run in the runtime (type DATA_GENERATOR)
4	the interface cannot be opened (not connected, wrong COM port, used by another program)
5	initialisation error

Configuration file

A plain-text INI file that you can edit in Notepad. A comment starts with `;` or `#` (also at the end of a line). Names are not case-sensitive. File paths may be relative – they are relative to the folder of the INI file. A misspelled key is reported as a warning.

Example

```
[INTERFACE]
type = TRIPLE          ; interface
com  = 5               ; COM port

[CAN]
speed1   = 500         ; kbit/s
fd_speed = 500/4000

[SCRIPT1]              ; script0.scr
period = 100           ; timer period in ms

[SCRIPT2]
```

```
file = gateway.scr
```

[INTERFACE] – interface

Key	Default	Description
type	–	TRIPLE or USB2LIN (required)
com	–	COM port number of the interface (required), see Device Manager; -1 or auto = the interface is found automatically (as in PP2CAN)
listen_only	No	Yes = the interface only listens (does not transmit or acknowledge)

[CAN] – CAN bus

Key	Default	Description
speed1	–	speed in kbit/s (required): 10, 12.5, 20, 25, 33.3, 40, 50, 62.5, 83.3, 100, 125, 200, 250, 333, 500, 667, 800, 833, 1000. Channel 1 of TRIPLE, the only CAN of USB2LIN.
speed2	same as speed1	channel 2 of TRIPLE
fd_speed	500/4000	channel 3 of TRIPLE (CAN FD): nominal/data speed in kbit/s, e.g. 500/2000, 1000/8000
fd_esi, fd_iso_crc	No, Yes	CAN FD settings as in PP2CAN
precise_time_stamp	Yes	precise message time stamps from the interface
absolute_time_stamp	No	No = the time stamp is the time since the previous message
loopback	No	Yes = a message sent by one script is also received by the other scripts

For special cases you can also set a user CAN FD bit timing (keys fd_nbrp, fd_ntseg1, fd_ntseg2, fd_nsjw, fd_dbrp, fd_dtseg1, fd_dtseg2, fd_dsjw, fd_tdco, fd_tdcv, fd_tdcmod) with the same meaning as in the CAN FD settings of PP2CAN. Normally they are left out.

[LIN1], [LIN2] – LIN bus

USB2LIN interface only. The section can be left out – the script then sets up LIN itself with `lin_config`.

Key	Default	Description
mode	master	master, slave or monitor
speed	19200	speed in bit/s
version	20	20 = LIN 2.x, 13 = LIN 1.3
table	–	LIN table (.lin) saved with the Save button of the PP2CAN LIN table window; it is uploaded to the interface at start-up
inter_frame_delay, data_delay, error_mode	5, 0, 0	delays and error mode as in the LIN table window
enabled	Yes	No = the port is not set up

The easiest way to prepare a table is in PP2CAN (LIN table window, Save). Values given in the INI take precedence over the values stored in the table.

[SCRIPT1] to [SCRIPT4] – scripts

Key	Default	Description
file	script0.scr …	compiled script; without the file key the file name of the PP2CAN working folder is used: [SCRIPT1] = script0.scr, [SCRIPT2] = script1.scr, [SCRIPT3] = script2.scr, [SCRIPT4] = script3.scr
period	100	period of the timer script body in ms (1–10000), the same as the period slider of the PP2CAN script window; the script can change it itself
ui_b0 … ui_b3	No	initial state of buttons B0–B3 in the script controls window
ui_r	0	initial radio selection (0–3)
ui_val0, ui_val1	0	initial position of sliders VAL0, VAL1 (0–10000)
ui_label_b0 … ui_label_b3	B0 … B3	button labels
ui_label_r0 … ui_label_r3	R0 … R3	radio labels (labels set by the script with ui_set_name_r take precedence)
ui_label_val0, ui_label_val1	VAL0, VAL1	slider labels
ui_label_d0 … ui_label_d3	D0 … D3	labels of the value displays (ui_set_d0 … ui_set_d3)
ui_label_p	P	progress bar label (ui_set_p)

A script runs only if its section is present in the INI (an empty section such as `[SCRIPT2]` is enough). The script type (timer, CAN function, LIN function) is stored in the compiled file and is not configured.

[OUTPUT] – output

Key	Default	Description
color	Yes	coloured console output
log	No	Yes = the output is also saved to files (the console output stays): runtime.log for runtime messages and script1.log to script4.log for each script; every line has date and time
log_dir	INI folder	log folder (relative to the INI); it is created if it does not exist
log_append	No	No = logs are overwritten at every start, Yes = new lines are appended
log_time_names	No	Yes = start date and time in the file name (runtime_20261107_174100.log), so logs are never overwritten

What scripts can use

Supported as in PP2CAN

- scripts of type TIMER, CAN_FUNCTION, LIN_FUNCTION and their combinations, sections init, body, stop, functions
- CAN and CAN FD messages, LIN, UDS (ISO-TP), J1939, containers, files (cfg, csv, log), memory, PID, time points
- CAN FD only on a port that supports it: USB2CAN TRIPLE port 3; USB2LIN has no CAN FD (1x CAN, 2x LIN). A CAN FD message (`fd = true` or longer than 8 bytes) to another port is not sent and the interpreter prints

the error `CAN FD is not supported on port N` (once per run of the script for each port). The runtime prints the CAN FD ports at startup after the interface description.

- graph, histogram, datagrid, dataset (value entry with the Set button) and gauge windows
- RS232, TCP/UDP server and client, calling DLL functions
- file dialogs, message_box, key_state, command, joystick, global variables
- changing the period from the script (ui_set_timer_script_period) and changing the CAN speed from the script (x2can_reset)

Script controls window

The controls of the PP2CAN script window (buttons, radio buttons, sliders, period, value displays) are available in a separate window for each script. Press **Ctrl+1** (script 1) to **Ctrl+4** (script 4) in the console window or in any open controls window to show or hide it. The digit works both on the top row and on the numeric keypad. The runtime version is shown at the bottom of the window.

Control	Script functions
Period [ms] – slider and field 1–10000	ui_get_timer_script_period, ui_set_timer_script_period; a change applies when the slider is released or Enter is pressed
VAL0, VAL1 – sliders and fields 0–10000	ui_get_val0, ui_get_val1, ui_set_val0, ui_set_val1
P – progress bar 0–10000	ui_set_p
buttons B0 … B3	ui_get_b0 … ui_get_b3, ui_set_b0 … ui_set_b3
radio buttons with 4 options	ui_get_r, ui_set_r, labels ui_set_name_r
displays D0 … D3	ui_set_d0 … ui_set_d3

Initial values (buttons, radio, sliders, period) and control labels are set in the script section of the configuration. The script reads and sets the controls as in PP2CAN even when the window is closed. At start-up the runtime lists the scripts that use the controls.

Not supported

- scripts of type DATA_GENERATOR (PP2CAN data generator) – the runtime does not start,
- interfaces other than USB2CAN TRIPLE and USB2LIN,
- LIN with the TRIPLE interface (the runtime warns, LIN functions have no effect).

Output

Every line starts with its source: `[S1]` to `[S4]` for scripts 1–4, `[RT]` for runtime messages. Colours are the same as in the PP2CAN script window: errors and log_end_color(1) red, log_end_color(2) green, log_end_color(3) cyan, runtime warnings yellow.

```
[RT] PP2CAN runtime 3.02
[RT] configuration: project.ini
[RT] S1: script0.scr (TIMER, period 100 ms)
[RT] interface: USB2CAN TRIPLE, COM5, FW 312, C1 500 kbit/s, C2 500 kbit/s, C3 FD 500/4000
kbit/s, CAN FD: port 3
[RT] scripts running, stop with Ctrl+C
[RT] Ctrl+1 .. Ctrl+4: window with script controls (buttons, sliders, period)
[S1] measured 12.5 V
```

Saving to files

With `log = Yes` in the [OUTPUT] section the output is also saved to files – the console output stays the same. The runtime creates `runtime.log` with the runtime messages (including the start-up check) and a separate file `script1.log` to `script4.log` with the output of each script. Every line starts with date and time:

```
2026-11-07 17:56:52.368  configuration: project.ini
2026-11-07 17:56:53.370  measured 12.5 V
```

The files are written continuously, so they stay complete even when the window is closed. The keys log_dir, log_append and log_time_names set the folder, overwriting and file names.

Common problems

Message	Solution
USB2CAN TRIPLE on COMx not found or cannot be opened	check the COM port number in Device Manager, the interface connection and that no other program (e.g. PP2CAN) is using it
[SCRIPT1] file: file does not exist	check the script path; a relative path is relative to the folder of the INI file
script cannot be loaded	compile the script again in PP2CAN version 3.02
unsupported speed	use a speed from the list in the [CAN] table
unknown key, ignored	misspelled key – correct it according to this guide
the program reports missing VCRUNTIME140.dll	install Visual C++ 2015–2022 Redistributable (x86)
[OUTPUT] log: cannot create log file	the log folder cannot be created or the file is open in another program; check log_dir and permissions