



## REVELPROG IS

*user manual*



*Last update (v1.8.2): 2020-01-27*

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## 1. Technical data and requirements

**REVELPROG-IS** made by **REVELTRONICS** is a professional tool for serial memory programming. It supports wide range of **EEPROM**, **FLASH** and **FRAM** devices with **I2C**, **SPI**, **1-wire** and **μWire** protocols powered with **1.0V - 5.0V** voltage levels. It has integrated **ZIF** socket (for THT devices) and **SOIC** socket (for SMD devices). It has also connector for **in-circuit serial programming (ICSP)** with buffered I/O. Due to **USB 2.0** interface memory operations are really fast.

### Technical data:

- power supply and communication via USB 2.0 (hardware level, bulk transfer),
- supported protocols: I2C, SPI, 1-WIRE, MICROWIRE,
- supported devices with 1.0V - 5.0V power supply,
- programming device powered from programmer (1.0 - 5.0V, I<sub>max</sub> = 100mA) or from external circuit (1.0 - 5.5V),
- operation speed (read/write) up to 10Mbit/s,
- ZIF-32 + SOIC-8 (150mil) integrated sockets,
- connector for in-circuit serial programming (ICSP) with buffered I/O,
- auto adaptive I/O pins connected only for programming time (Hi-Z in IDLE state),
- short circuit and overload protection,
- device manufactured in EU, made in Poland.

### Requirements:

- USB 2.0 or above,
- Windows XP, Vista, 7, 8 or 10 (32 and 64 bit) + .NET Framework 4<sup>1</sup> installed in OS.

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<sup>1</sup> .NET 4.0 Client Profile can be downloaded from MICROSOFT: <http://www.microsoft.com/en-us/download/details.aspx?id=17718>

## 2. Features and applications

**REVELPROG-IS** is used in many applications such as: **car electronics & automotive** (reprogramming modules, radio-code, mileage correction, immobilizers, gps navigations), **computer service** (data recovery, reflashing/upgrading/programming BIOS chips on motherboards of PC, notebooks, copier & fax machines, printers, SFP/QSFP/XFP transceivers etc.), **RTV/AGD service** (TV & TV tuners, digital cameras, multifunction devices etc.) and many other devices equipped with serial I2C/SPI/MICROWIRE EEPROM and FLASH chips. Due to the possibility of change voltage level (in range of **1.0 - 5.0V**) programmer supports both older and newer devices (e.g. latest devices equipped with 1.2V and 1.8V low-voltage chips). Device is equipped with **ICSP connector** that allows in-circuit serial programming without unsoldering the chip from board - **built in additional protection** (buffered I/O, short circuit and overload protection) increase reliability and safety of such operations.

### Main features:

- reading / writing / erasing functions with user-friendly application interface,
- supported binary files (\*.bin, \*.rom, \*.epp etc.) and Intel-Hex (\*.hex) with possibility to load file to the buffer, edit it, calculate checksums, swap-bytes, save modified bytes as patterns, compare with chip etc.,
- programming in socket or in external circuit (without unsoldering the chip),
- the target application device can be either powered by REVELPROG (possibility to change VPP and logic levels: 1.0V / 1.5V / 1.8V / 2.5V / 2.8V / 3.3V / 5.0V) or powered by an application with external power supply (1.0 – 5.5V),
- build in additional protection: buffered I/O pins internal connected only during programming + short circuit and overload protection (reduces the risk of damaging parts due to connection mistake),
- integrated sockets (ZIF + SOIC) with auto adaptive I/O pins reduces requirement of additional adapters,
- short programming time<sup>2</sup>, e.g. WINBOND W25Q80BV (8Mb): read 0.9s (8,4Mb/s), write 3.3s (2,4Mb/s), MICRON N25Q128A (128Mb): read 12.8s (10Mb/s), write 37.6s (3,4Mb/s),
- useful tools such as: save/load patterns with changes, i2c/spi custom scripts, auto backups, file comparing etc.

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<sup>2</sup> Due to USB 2.0 hardware layer (BULK mode) maximum real transfer is up to 10Mbit/s for read/write operations but in many cases transfer is limited by read/write time cycle from/to memory (e.g. write is always slower than read). Write time does not include chip erase time (you can find tCE in device datasheet) and verification (read) time. There is possibility to change write sequence (e.g. without erasing and verifying) but most devices require at least chip erase before write operation.

### 3. Installation of software and USB drivers

#### Requirements:

PC application is compatible with MS Windows<sup>3</sup> XP, Vista, 7 , 8 and 10 (32 and 64-bit versions). You will need also .NET Framework 4.0 to run application (probably already installed<sup>4</sup> in your OS)

#### Software installation:

Software installation is typical for Windows. Just run setup (*REVELPROG-IS\_v1-x\_Setup*) and follow instructions (next, next, finish;). You may be prompted for USB driver installation (accept it). Shortcut to REVELPROG-IS app will be added to the desktop. Application is ready to run.

#### Drivers installation:

In most cases drivers will be successful installed during application installation. Drivers may be installed also later from application (menu "help" -> "install drivers").

**Windows XP** users will have to install drivers after first device plugged-in - just select drivers location in installation folder (by default it is "C:\Program Files\REVELTRONICS\REVELPROG-IS\drivers\REVELPROG-IS"). If you miss it, you can install drivers later manually (run device manager, find "REVLPROG-IS" device on the list, right click and update driver, select driver location).

**Windows 8/10 x64** users will have to install drivers from REVELPROG-IS application by using "Zadig" installer (menu "help" -> "install drivers with Zadig"). You should select REVELPROG-IS device on the list and install WinUSB driver, video: <https://www.youtube.com/watch?v=6AFD3yBsRnc>

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<sup>3</sup> Windows XP with SP3 installed (service pack 3). Windows 7 with SP1 installed.

In case of "fresh" install of OS you may need also "Microsoft Visual C++ 2010 Redistributable Package" (<http://www.microsoft.com/en-us/download/details.aspx?id=5555>)

<sup>4</sup> if NOT, you can download and install it directly from Microsoft web page: <http://www.microsoft.com/en-us/download/details.aspx?id=17718>



## 4. First steps with REVELPROG-IS application

### 4.1. User interface

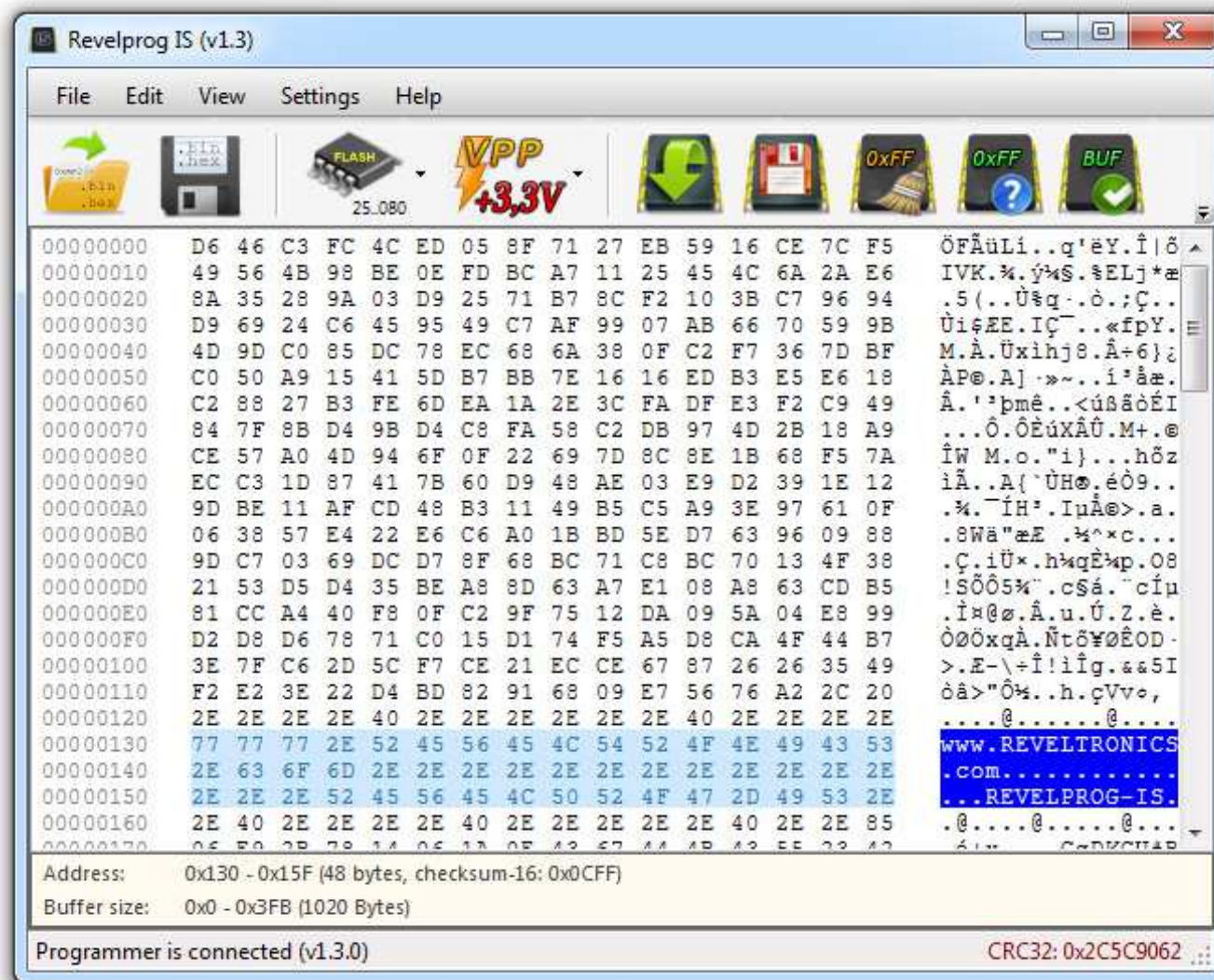
Application interface is user-friendly. All main functions can be run directly from shortcut icons (all icons are activated after device connected). Please move cursor above specific icon to see additional tooltip.



Memory buffer is displayed in hexadecimal + ASCII format. There is possibility to edit buffer as bytes and as ASCII characters.

Additional information is displayed in lower area:

- buffer information: buffer size in bytes, buffer addresses range and current address (or addresses range) of cursor position (selection) with calculated checksum-16 (from selected bytes),
- status bar (programmer version info or last operation info),
- CRC-32 checksum calculated from buffer or opened file (click on "CRC32" to recalculate checksum)



## 4.2. Device programming

Device type should be selected from the device database before any operation ("chip select" icon). Voltage will be set automatically. It can be changed manually by clicking VPP icon. In case of ICSP programming with external power supply, VPP should be set to the same level as memory power supply.

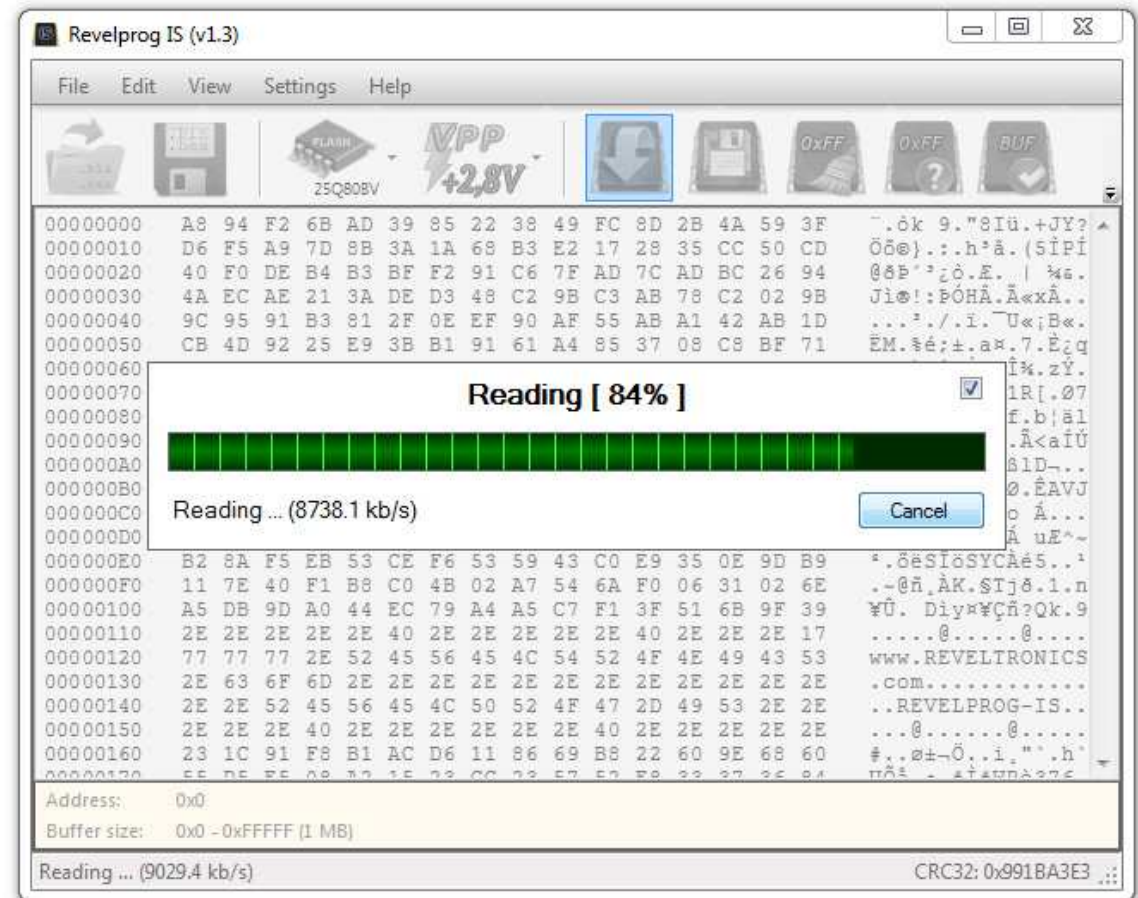
### 4.2.1. Reading

Before device reading operation, memory type should be chosen. Please check also VPP voltage (you may need to change it in case of low-voltage chips). Click READ icon (memory chip with green arrow).

Programmer will read device. Memory content will be loaded into the buffer. Buffer can be saved to external file. You can also edit the buffer and reprogram the device.

Please note at the CRC32 checksum (right corner at the bottom). If checksum is equal after each read than the risk of read with error usually does not exist. It is a good practice to make memory backup to external file before any writing.

The reading may be incorrect due to communication error or broken chip.





#### 4.2.2. Writing

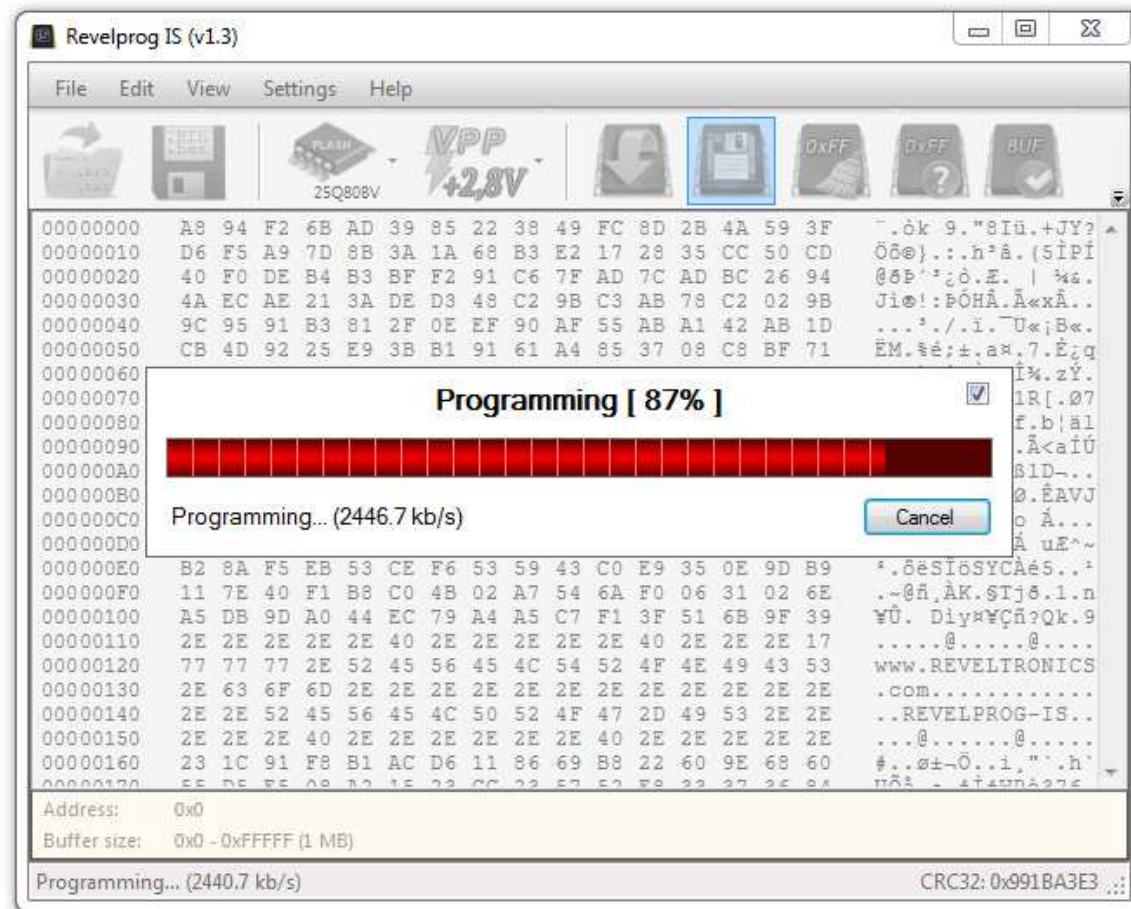
Before device programming operation, (1) memory type should be chosen and (2) buffer should be filled with data. You can load data from external binary (\*.bin, \*.rom, \*.epp etc.) or Intel-Hex (\*.hex) file. Please check also VPP voltage – it may be changed in case of low-voltage chips. Please click “WRITE” icon (memory chip with red-orange floppy disk).

Programmer will erase the device, write data to memory from the buffer and make verification process. There is possibility to change writing sequence from menu: *Settings* -> *Write sequence*. Verification process will read the device after writing and compare reading with the buffer. If verification pass than memory is successful programmer. Verification error may occur due to communication error, secured or broken chip.

#### 4.2.3. Erasing

To erase memory, empty buffer can be loaded and programmed into a memory. In most cases this operation is not necessary, because programmer supports fast erase procedures (Page Erase, Block Erase and Chip Erase). Please click “ERASE” icon (memory chip with 0xFF and broom) for erasing operation.

Please note that erasing progress is not displayed at progress bar. For high density FLASH memories erase process may took quite long (even few minutes!).



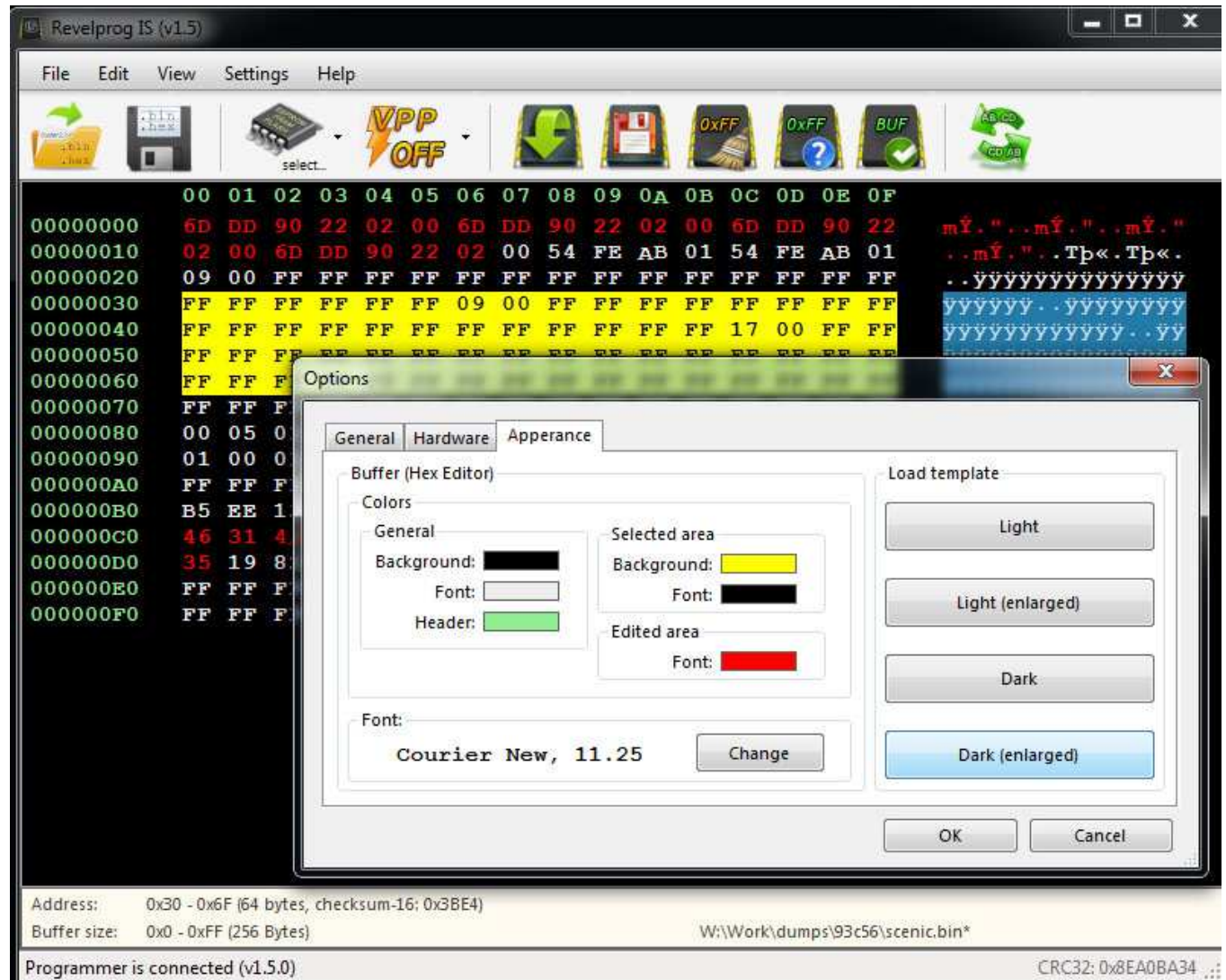
## 4.3. HEX editor features (buffer editing)

### 4.3.1. HEX editor

Buffer can be edited from application level. In the first column there is current address displayed. In the second column there is memory contents displayed (as bytes in hexadecimal mode). In the third column there is ASCII representation of memory contents. All buffer operations are allowed (e.g. CTRL+C, CTRL+V etc.). Modified buffer can be saved to external .bin or .hex file.

### 4.3.2. Appearance

There is possibility to personalize hex editor, e.g. color and font changes. Bigger font and dark contrast colors will enhance your work with editor especially on high resolution displays.

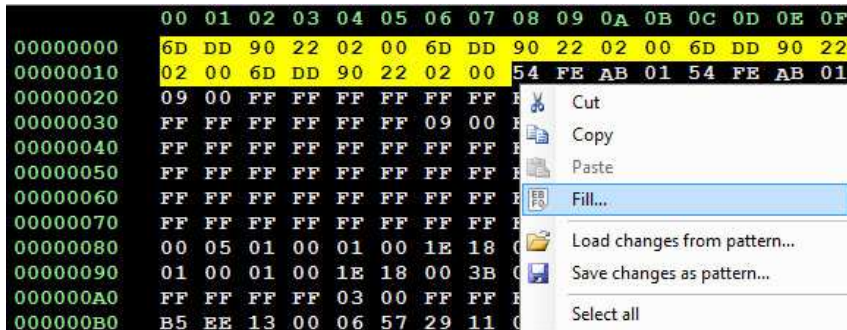




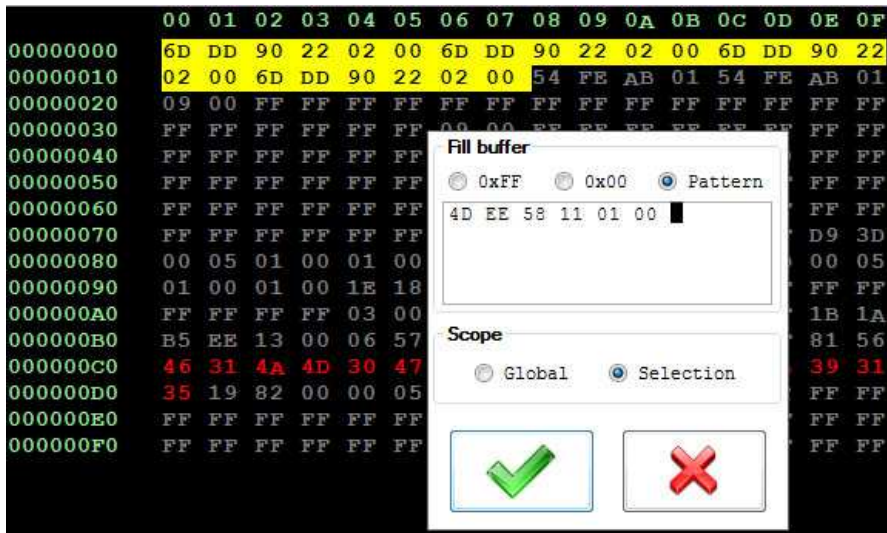
#### 4.3.3. Fill buffer...

Fill selected bytes with constant bytes or defined pattern.

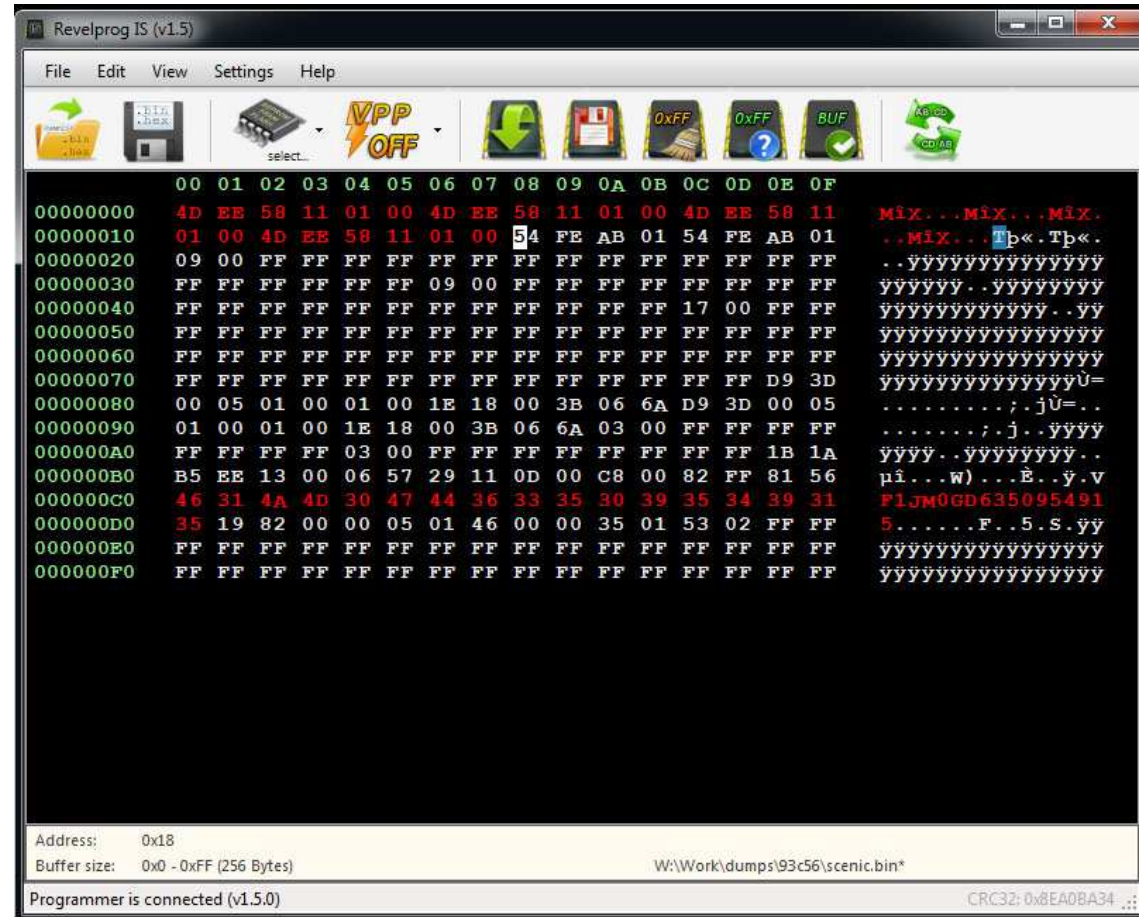
1. Open context menu (right click) and choose fill...



2. Enter pattern...

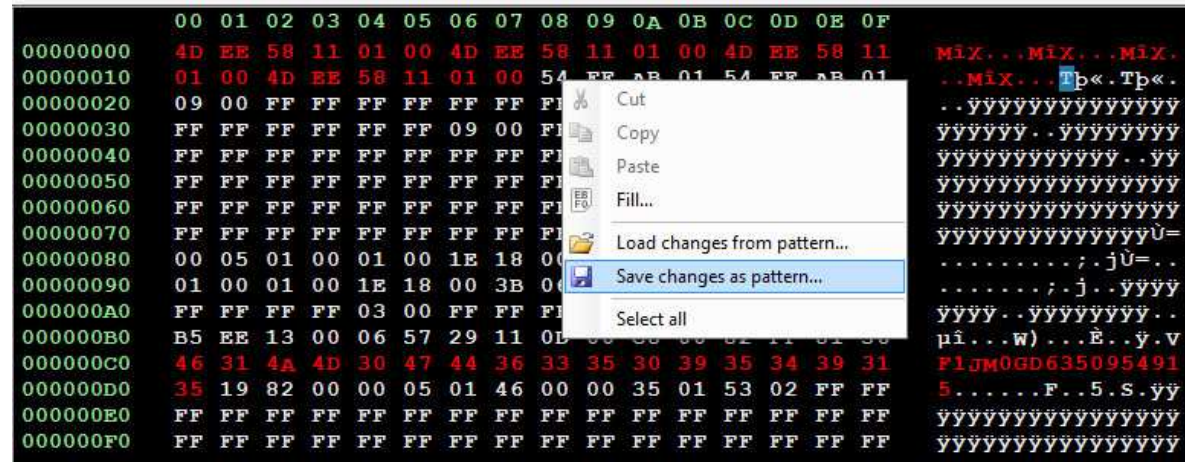


3. Take profit - you have just saved some time...



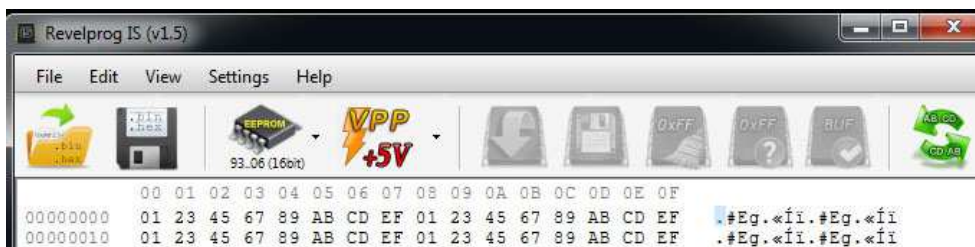
#### 4.3.4. Patterns - export changes to file

All manual changes (highlighted bytes) can be exported to external file (pattern). Later, at any moment there is possibility to load pattern file and all changes will be imported, without modifying other bytes in the buffer. Simple, fast and powerful.



#### 4.3.5. Swap bytes

Swap bytes operation will change byte order in 2-bytes word. For example, swapped word 0xABCD will be equal to 0xDCAB. This functionality is very useful for memories with two addressing modes, e.g. for microwire 93... series 16-bit chips. REVELPROG supports both addressing modes (8-bit and 16-bit) for these devices.

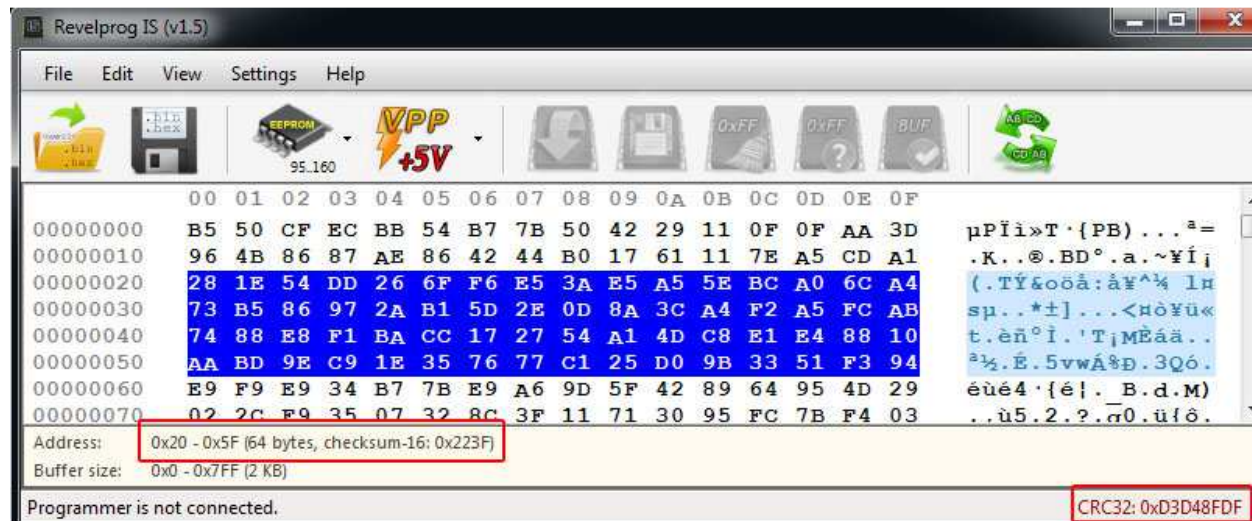


#### 4.3.6. Clear buffer or generate random buffer

There is possibility to clear buffer (0xFF) or generate random buffer from *Edit* menu. Buffer length will be equal to memory size. *CTRL + N* shortcut will clear buffer and *CTRL + R* shortcut will generate random buffer.

#### 4.3.7. CRC32 and Checksum-16

Click "CRC32" in right-bottom corner to calculate CRC32 checksum from the buffer. Changing single byte in the buffer will change CRC32 checksum so this feature is useful in comparison of sequential reads or files. Checksum-16 is calculated in real time from selected bytes in the buffer area and it's displayed in buffer info. This is most common algorithm for checksum used in wide range of devices (checksum of mileage, operation hours, serial numbers etc.) To calculate Checksum-16 from all addresses select all bytes in the buffer area (CTRL+A).



#### 4.3.8. File format conversion: .bin <-> .hex

I Application can be used also as a simple file converter (binary to intel-hex and vice versa). To convert file from one type to another, just open file (load to buffer) and save it in another format.



#### 4.3.9. DiffChecker (file comparing)

DiffChecker tool allows to compare 2 bin or hex files. All differences will be selected and grouped. Press F3/F2 to find next/previous difference region. You can save all differences to external file as a pattern (feature described in Chapter 4.3.4). If files are totally different then first 1000 different regions are marked.

The screenshot shows the DiffChecker application window. It has two main panels for comparing files. The top panel is for 'W:\Work\dumps\93c56\scenic1.bin' (256B (0xA48E)). The bottom panel is for 'W:\Work\dumps\93c56\scenic2.bin' (256B (0xA70B)). Both panels display a hex dump on the left and the corresponding ASCII text on the right. Differences between the two files are highlighted in blue. For example, in the top panel, the hex values 6D DD 90 22 02 00 6D DD 90 22 02 00 are highlighted, and in the bottom panel, the hex values 7D 7A DD 82 33 01 7D 7A DD 82 33 01 are highlighted. The status bar at the bottom indicates 'Files are different (3 different regions). Current address: 0xFF'.

## 4.4. Additional features

### 4.4.1. Blank test

Blank test checks if chip is empty. Test will be canceled as soon as first programmed cells will be detected (there is no need to read full memory).

### 4.4.2. Compare with the buffer

Operation compares buffer with the contents of memory. Operation will be cancelled as soon as first difference will be detected.

### 4.4.3. VPP selection

VPP is set for both: programming voltage and signal levels. VPP can be changed with 0.1V step in range of 1.0 - 5.0 volts. This feature is very useful in few cases:

- in order to program low-voltage variant of the device (e.g. 1.8V instead of 3.3V),
- in case of in-circuit programming with external power supply -> programmer voltage should be the same as external circuit voltage or VPP should be disabled (VPP OFF),
- in case of in-circuit programming without external power supply. In many cases there is no need to set nominal voltage for external board. For example: memory operates in range of 2.6 to 3.6 volts. Nominal voltage for external board is 3.3V. Setting the lowest operational voltage (2.6V) will be enough to power and communicate with the memory and at the same time will be too low to power all circuits around. First of all, if there is main microprocessor on the board than it will not communicate with the external memory (because it will be in "reset" state due to low voltage to operate) so it will be possible to communicate with this memory using external programmer. Secondly, you will save current consumption because devices in reset state consume much less power. This trick is not always possible, so if you can't communicate with the device in external circuit try to plug-in external power supply or unsolder the chip and program it in socket. Please read Chapter 5 for more details.

#### 4.4.4. Device identification (Chip ID) for FLASH SPI, DATAFLASH and 1-wire devices

In order to read Chip ID please select "Tools" -> "Read ID". Operator should know operating voltage for the device because REVELPROG-IS supports also low voltage chips and reading chip ID without knowledge about chip power supply level is risky (setting 3,3V for 1,8V chip will damage it even during chip id reading). For FLASH devices programmer will read 4 identification bytes of data (JEDEC ID)– 1<sup>st</sup> byte is Manufacturer ID, 2<sup>nd</sup> and 3<sup>rd</sup> bytes are Device ID and 4<sup>th</sup> byte is Extended ID. You can read about identification bytes in device datasheet. For 1-wire devices programmer will read 64-bit unique identification number.

#### 4.4.5. Quad SPI (QSPI) configuration for FLASH SPI

Some of FLASH SPI devices may require to enable QSPI mode before soldering it in external device. This will require to change one of configuration or status registers in device memory map.

*TIP: in most cases, specially when you reprogram FLASH SPI there is not necessary to change any configuration bits.*

To enable or disable Quad mode you can use dedicated tool (Tools -> Quad SPI) – it will work with most popular FLASH SPI devices (e.g. Winbond and Spansion). For other devices it may be necessary to write custom script (with Custom Script tool – described in Chapter 6) to enable or disable QSPI mode manually by changing QSPI bits in required registers. You can read how to change Quad SPI mode for your device in device datasheet.

#### 4.4.6. SFP/QSFP/XFP Transceivers support

REVELPROG-IS has dedicated tools for optical transceiver support. There is SFP/QSFP/XFP adapter required with external power supply. MSA Standard is supported (e.g. SFF-8472, SFF-8636, INF-8077i). Dedicated functions allows to enter manufacturer/host password and program write protected transceivers, brute force password (searching password for protected transceivers with unknown password), change manufacturer info, model, serial number etc. and recalculate checksums directly from REVELPROG-IS application. Please check Chapter 7 for more details.

#### 4.4.7. Auto backup

Every read operation there is backup file (.bin) generated (by default it is user documents folder in system). By default maximum 16 files are created (oldest are deleted) and size is limited to 8Mbit devices. You can change these parameters in Settings -> Option -> File -> Autobackup (you can set unlimited number of files and size).

## 5. In-Circuit Serial Programming (ICSP)

**Caution!** Before ICSP programming please read following instructions!

ICSP programming is recommended only for advanced users. There is required technical knowledge and being familiar with specific chip. You should read carefully device datasheet, especially memory pinout, addressing modes and voltage levels.

Programmer is equipped with 10-pin ICSP socket (IDC10). There's only 8 pins used (pin-9 and pin-10 are not internally connected). Pinout numeration (1-8) is the same as memory pinout in datasheet for DIL8/SO8 package.

There will be various signals at these pins during chip programming (digital and analog signals). These signals are assigned automatically after memory chosen (in application) and are set only during memory operation.

### 5.1. Addressing in external circuit

All hardware addressing outputs for EEPROM 24.. series (pin 1,2,3 ie A0, A1, A2) must have low voltage level (GND). If chip in circuit is addressed in other way (e.g. there are few the same chips, which require various addressing) then communication will fail. In this case you can (1) set correct addressing in application ("External addressing" option during memory selection) or (2) set default "0" addressing with the programmer (connect addressing wires to the chip and in the same time disconnect them in external circuit). The safest option is to unsolder the chip and put it to integrated programmer socket.

Addressing 8/16-bit for EEPROM 93 series also needs special care. In circuit addressing wire (pin 6) can be connected to low or high state (it's defining addressing mode if memory support both modes). Depends on your chip selection in application (8/16 bit) programmer gives LOW or HIGH state on this pin. If you choose wrong addressing (e.g. in circuit it is low state and programmer outputs high state) than you will make short circuit. In most cases it's not necessary to connect addressing wire (pin 6) for microwire 93 series - it's enough to select right mode from application (16-bit in most cases).

**If you are not 100% sure about connections, DO NOT program in circuit** – unsolder the chip and program it with integrated socket.

## 5.2. Write protection in circuit (WP/PRE pin)

A lot of serial devices have WP (Write Protect) or PRE (Protection Enable) input. Low state on this pin (ground) protect the device from erasing and writing. Programmer outputs a high state during erase or write operation. If in external circuit write protect pin is connected to ground (common case), and programmer will output high state on this pin, than it will lead to short circuit. There are 3 common solutions in this case: (1) do not connect write protect pin (erase/write will not work), (2) disconnect write protect pin in circuit (connect it only to programmer) or (3) unsolder the chip and program it in programmer's socket.

WP (Write-Protect) or PRE (Protection Enable) pin can be found e.g. in FLASH SPI 25.. (pin 3), FLASH SPI 26... (pin 3), FLASH SPI 45... (pin 5), EEPROM I2C 24... (pin 7), EEPROM SPI 25.. (pin 3), EEPROM SPI 35... (pin 3), EEPROM SPI 95... (pin 3), EEPROM MICROWIRE 93... (pin 7).

## 5.3. Power supply in external circuit

The target application device can be either powered by programmer [voltage level (VPP) can be chosen from: 1.0V – 5.0V - please read Chapter 4.4.3] or powered by an application within a voltage range of 1.0V to 5.5V. If chip is already powered in external circuit, than VPP should be set to the same voltage as external power supply (0,1V accuracy is tolerated). Absolute maximum rating at programmer's I/O pins is 5.5V - exceed this value may damage protection buffers in programmer.

## 5.4. Limits and possible issues during in-circuit programming

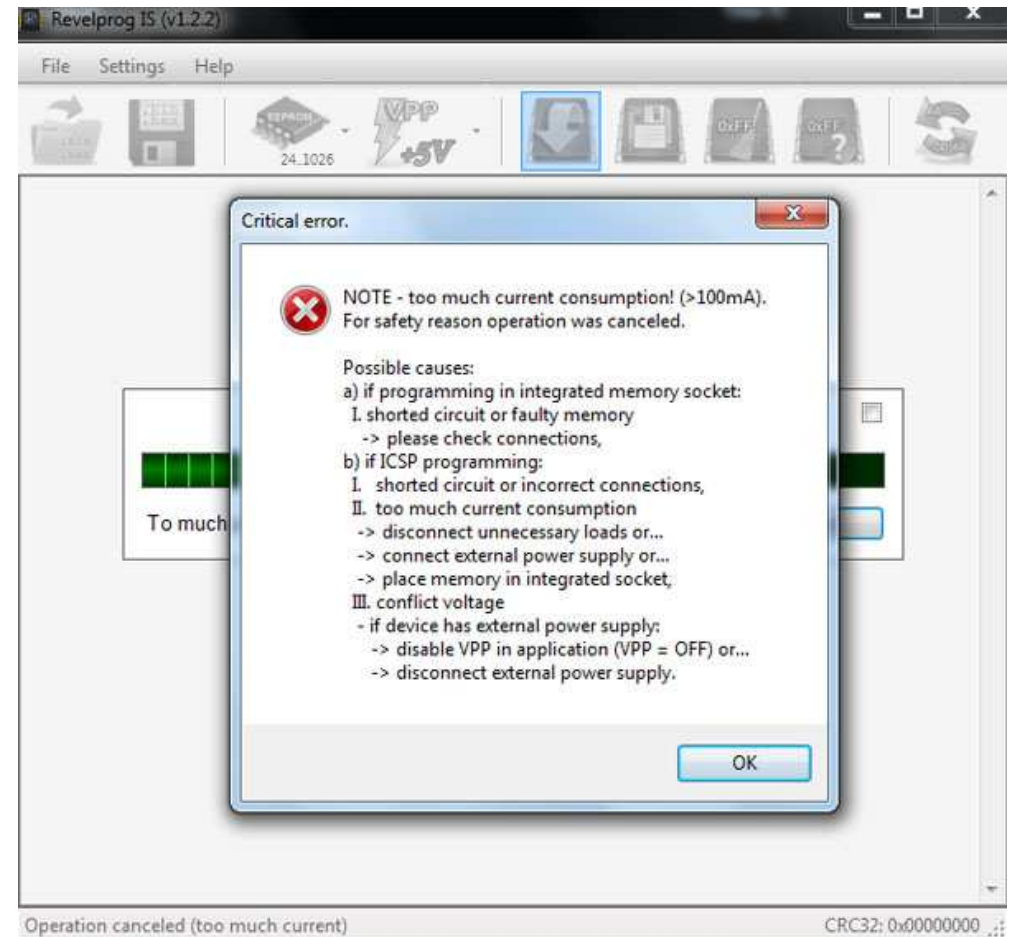
In some cases there is no possibility to program chip in application. This can be due by many reasons, such as:

- to long signal wires,
- too much load capacity in circuit,
- incorrect pull-ups or pull-downs on signal wires,
- incorrect addressing,
- bus conflict (memory is during communication with other device),
- impedance not match,
- additional capacitors, diodes bus-switches etc. in circuit.

In case of power supply from programmer, current is limited to 100mA for safety reason. If application requires more power, than external power supply should be connected.

In case of incorrect connections, short circuit or overload, following error (pict.) will be displayed and all I/O will be disconnected. Delay of protection trigger is 5-35ms so you still have to be careful. Programmer implements "VPP-boost" mode which allows for 3x higher current consumption at the first 30ms of operation (e.g. for capacitor charging). There is also possibility to increase in settings overload protection to 200mA.

**If you are not sure about connections or voltage levels DO NOT program in-circuit. It is much safer to unsolder the chip and program it in the socket.**



## 5.5. SOIC Clip

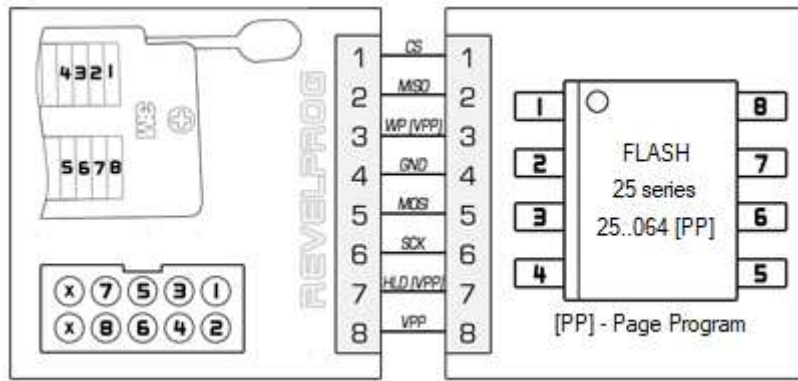
Devices in SOIC package can be connected with SOIC CLIP (e.g. POMONA 5250 for SOIC-8 and POMONA 5252 for SOIC-16). Programming with a clip is recommended only for advanced users (many traps for young players). Clip is a precision measuring device - **before connecting the clip please read chapters 5.1 – 5.4**. Please follow tips below to avoid any accidental damage to the clip:

- clip should be used only with SMD chips with SO-8 package (150mil or 200mil),
- clip should NOT be used with physically damaged chips (not straight pins or excess of tin),
- do NOT touch contact pins – any attempt of mechanical interference will damage contact pins,
- it is NOT recommended to use the clip when device was previously soldered in not professional way (pins may not contact to memory pads; there is also risk of damage to the contact elements). In such case it is recommend to use external adapter SOIC-8 150mil or SOIC-8 200mil,
- it is NOT recommended to use the clip on a desoldered device ("in air") – read and write may be incorrect (specially for fast devices, e.g. FLASH SPI). All devices should be programmed in external circuit or in adapter, because only this method guarantees proper operations (in external circuit there are additional filtering elements while external adapter guarantees the shortest connections). If you really need to connect desoldered device in the clip, please do it very carefully. For FLASH SPI you should use as short wires as possible (5cm) and decrease SCK frequency to 10% (Settings -> Options -> Hardware -> SCK = 10%). It not guarantees success but increases your chances.

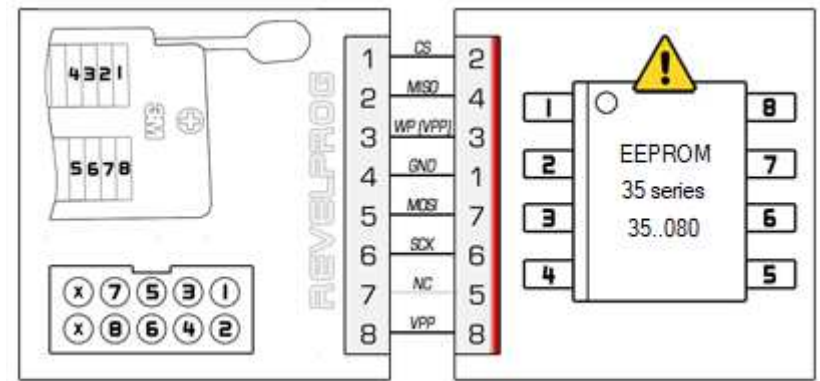


## Connecting the CLIP

Connection schema is displayed in application during device selection. In most cases connection is straight „1 to 1“ as you can see on the left picture (programmer pin 1 should be connected to memory pin 1, programmer pin 2 to memory pin 2, pin 3 to pin 3 etc.). In some cases connection is not straight, e.g. for 35080 memory (programmer pin 1 to memory pin 2, programmer pin 2 to memory pin 4 etc. - picture on the right).



*Straight connection „1 to 1“ for FLASH SPI*



*Not straight connection for 35080*

First of all you should identify PIN 1 in the device<sup>5</sup>. Secondly you should connect wires to the clip and then clamp the clip on the device (so connections will fit to schema). It is recommended to use dedicated ISP 10-pin socket in programmer. Please do not suggest with color of wires in tape – only pin numbers are important. Example movie with POMONA CLIP connecting for 1-wire device: <https://youtu.be/r2T78o7oxfQ?t=145>

<sup>5</sup> Pin no. 1 in the device is pointed with small dot in corner or with milled edge (as you can see at picture in schema above)



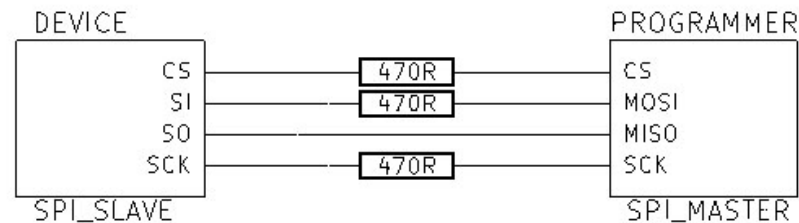
## 5.6. Troubleshooting for in-circuit programming

If you can program device in programmer's socket (or adapter) with success, but you cannot program it in circuit than there are few things that you can check. First of all, make sure that:

- all wires are connected properly (please take special care for pin contact in case of programming with SOIC CLIP),
- external circuit is powered properly and there is no voltage conflict on power bus,
- SPI lines: CS, (MOSI), (MISO) and (SCK) have pull-up resistors to power supply (4.7k - 10k),
- communication lines do not have additional elements, such as diodes, bus-switches, transistors etc.
- there is no communication conflict on the bus (e.g. processor and all other devices connected to shared SPI bus should be in RESET state).

Secondly, if problem still exist, there are still may be some tricky issues. Few examples with solutions below:

- noise and overshooting (communication errors, random read) – possible solutions:
  - decrease SPI clock to 10% for FLASH SPI devices (menu *Settings* -> *Options* -> *Hardware* -> *FLASH SPI SCK*),
  - impedance matching and termination for external circuit (and wires) by using e.g. termination resistors on signal wires. There is no universal value of resistance (each circuit is different) but in most cases 100 - 1000 Ohm resistors in serial for CS, (MOSI) and (SCK) will be enough:



- CS line decoupling (33pF - 220pF to ground as close as possible to the device in-circuit),
- to low voltage level during erasing and/or writing (erase error / communication error):

- when external device (in external circuit) is powered from programmer, than there are also other devices powered too (on the same power line) and due to higher current consumption output voltage may be too low for erase and write operations. In this case it is recommended to set VPP slightly higher (e.g. +0.3V) or use external power source and set the same VPP level in application.
- bus conflict (random read or communication error during read):
  - in some cases after device power up, the main processor is starting communication with slave devices (e.g. with memory you are trying to read) – in this case it will be conflict on the bus (random read or communication error). All devices connected to the same communication bus should be forced to be in RESET state. Sometimes it is enough to use external power supply and wait about 2-3 minutes for initial procedure finished and then try to communicate with the memory (when all devices are in idle state and bus is free). The other tricky way is to use minimum voltage level to communicate with memory and this voltage level may be too low for other devices so they will stay in RESET state and will not interrupt communication. On the other hand, too low voltage level may be not enough to success for erase and write operations.

In some cases design of external circuit does not physically allow for in-circuit programming. In this case chip should be unsoldered and programmed in programmer's socket or adapter.

## 6. Custom Script Programming (I2C / SPI / 1-wire bus)

Custom script programming for I2C/SPI/1-wire bus in case of REVELPROG is a some kind of "bus pirate" tool for serial communication. This tool is still in developement phase but it is already powerful and functional. With REVELPROG-IS Customs Script tool **there is possibility to execute any commands in any sequence with precise delays on SPI, I2C or 1-wire bus**. You can write script to execute commands for unlocking device, read and write hidden (or not) registers, change sector protection bits, write OTP registers and much more.

In practice it is also very useful tool for electronic enginners and embedded programmers, because **there is possibility to communicate with any serial (I2C, SPI and 1-wire) device**. External device or module can be also powered from REVELPROG-IS (1.0 - 5.0V with 0.1V threshold). Only few connection lines are required for communication (4 wires for SPI or 2 wires for I2C + optional 2 wires for external device power supply).

### 6.1. Script construction

Typical script consists of (1) #SCRIPT HEADER - information about software version, (2) #HARDWARE SETTINGS - voltage selection (VPP), bus selection (I2C/SPI) and communication speed, (3) #OPERATION (1 to n). Each script has to have at least one operation defined.

Each #OPERATION consists of (1) 'SW' operation parameters: number of bytes to read/write, delay settings, (2) 'INSTR' instruction - sequence of bytes for single instruction, (3) 'DATA' data to write (optional) - sequence of optional bytes for write after single instruction

Example construction of typical script with header (software version v.1.6.0), hardware settings (SPI bus, 3.3V voltage, slowest speed) and single operation with 1-byte 9Fh command is presented on right image:



## 6.2. Script syntax

- `"#"` defines sections, e.g. `#SCRIPT HEADER;` (header), `#HARDWARE SETTINGS;` (hardware settings), `#OPERATION;` (for each operation),
- `;"` is placed at the end of each command,
- `:"` is placed directly after command words, e.g. `SCRIPT:` (script version), `HW:` (hardware settings), `SW:` (software settings - operation parameters), `INSTR:` (instruction), `DATA:` (write data);
- `,"` separates parameters for each command (e.g. between `"INSTR:"` and `;"` comma separates instruction bytes)
- `"//"` precedes comments which are ignored by script executor

Each script should have single `#SCRIPT HEADER`, single `#HARDWARE SETTINGS` and at least one `#OPERATION` (or more).

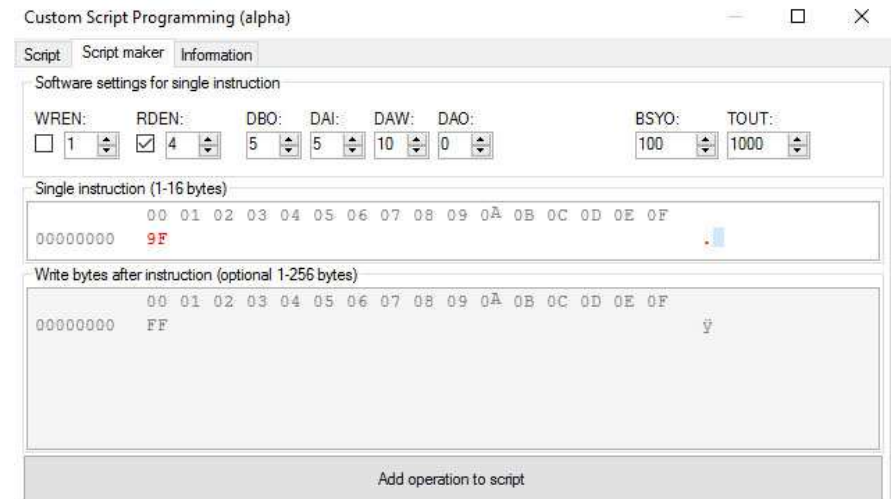
## 6.3. Script maker with GUI

Script maker will help you prepare multiple operations with correct syntax. You need to set few parameters for each operation:

- WREN (Write Enable) + number of bytes to write in single operation,
- RDEN (Read Enable) + number of bytes to read in single operation,
- DBO (Delay Before Operation) - optional delay in ms before operation,
- DAI (Delay After Instruction) - optional delay in ms after instruction,
- DAW (Delay After Write) - optional delay in ms after write,
- DAO (Delay After Operation) - optional delay in ms after operation,
- BSYO (Busy Operation) - maximum time in ms for write end (e.g. maximum wait time for busy flag in FLASH SPI or for ACK in I2C devices)
- TOUT (Timeout) - maximum PC timeout in ms for operation end (it is recommended to set timeout greater than sum of all other delays).

Please note that:

- Read/Write length are 0 based (0 means 1 byte, 255 means 256 bytes) and with `WREN=0/RDEN=0` length parameter is ignored,
- `"SW:"` and `"HW:"` byte format is decimal,



- "INSTR:" and "DATA:" byte format is hexadecimal.

Operation code generated by script maker from above example::

```
#OPERATION;  
SW:0,0,1,3,5,5,10,0,100,1000;  
INSTR:9F;
```

As you can see SW parameters are equal to script maker parameters:

```
SW:WREN[0-1],WriteLength[0-255],RDEN[0-1],ReadLength[0-255],DBO[0-250],DAI[0-250],DAW[0-250],DAO[0-250],BSYO[0-n],TOUT[0-n];
```

## 6.4. Script execution sequence

Each script is executed with following sequence:

1. SET HW (BUS, VPP, SPEED)
2. EXECUTE OPERATION 1 (SET SW -> DBO -> INSTR -> DAI -> WRITE -> DAW -> BSYO -> READ -> DAO)
3. EXECUTE OPERATION 2
4. ...
5. EXECUTE OPERATION N
6. RESET HARDWARE

## 6.5. Script examples

Please take a look at forum tutorial for more information and script examples:

<https://forum.reveltronics.com/viewtopic.php?f=22&t=280>

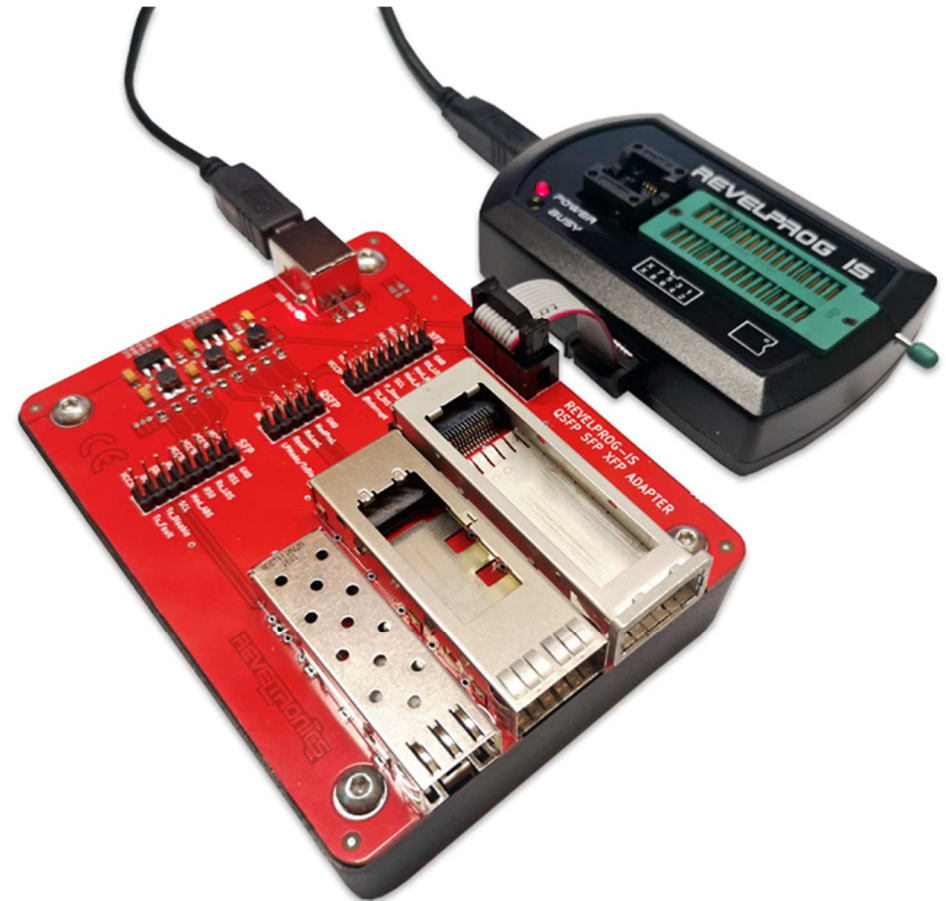
## 7. SFP / QSFP / XFP transceivers

REVELPROG-IS allows programming SFP, QSFP and XFP transceivers. Hardware adapter with SFP/QSFP/XFP connectors and external power supply is required. MSA Standard is supported (e.g. SFF-8472, SFF-8636, INF-8077i). Special features allows to enter manufacturer / host password and program write protected transceivers, brute force password (searching password for protected transceivers with unknown password), change manufacturer info, model, serial number etc. and recalculate checksums directly from REVELPROG-IS application.

### 7.1. Adapter connection

Please connect external QSFP SFP XFP Adapter for REVELPROG-IS using 10-pin connector. Please connect power supply to adapter. Please insert transceiver to dedicated transceiver slot. Only one transceiver should be inserted at the same time.

Example of connected QSFP SFP XFP Adapter (please note that power supply of adapter is also from PC USB port):



## 7.2. Device selection and memory map

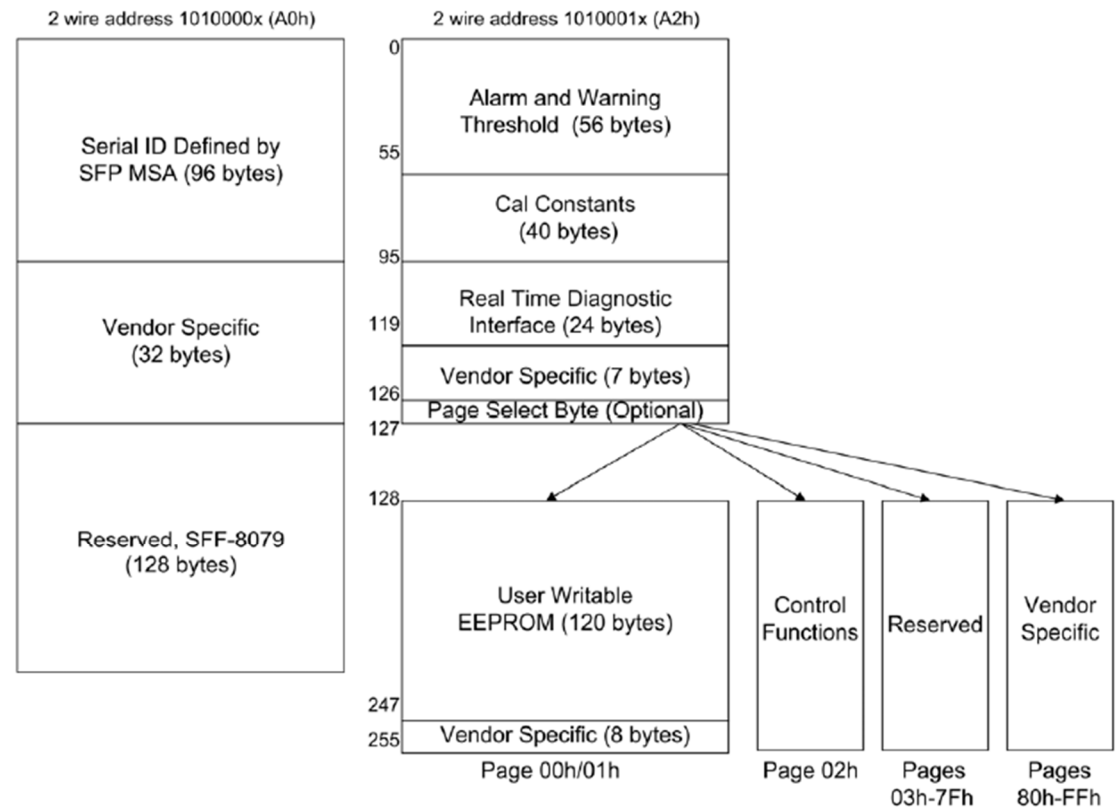
Please select transceiver type from memory database (EEPROM -> Transceivers -> SFP or QSFP or XFP).

### 7.2.1. SFP and SFP+

- **SFP [A0]** and **SFP [A2]** allows to read/erase/write/verify of A0h and A2h blocks of SFP Transceivers. These blocks may contain also diagnostic or write protected sectors, so verify may not pass for protected sectors.
- **SFP [USER]** allows read/erase/write of any block or page in memory map (verification should be done by user). The [USER] mode allows to read/write specific part of memory.

In block A0h (256bytes) first 128bytes (00h – 7Fh) are for serial ID and vendor information. It may be write protected (password may be required). Second 128bytes (80h-FFh) are reserved.

In block A2h (256bytes) first 127bytes (00h – 7Eh) are diagnostic information (alarm and warning thresholds, cal constants, real time diagnostics) and optional password entry area. 128<sup>th</sup> byte (7Fh) is page select byte (only if SFP supports pages). Next 128 bytes (80h-FFh) is page content (depends on selected page). SFP may not support A2h block (it will be communication error) or page select (it may contain only single page). Page 00h or 01h is User Writable EEPROM (120bytes) and vendor specific (8bytes). Page 0 may be write protected (password may be required). Page 02h is for control functions. Pages 03h-7Fh are reserved. Pages 80h-FFh are vendor specific.





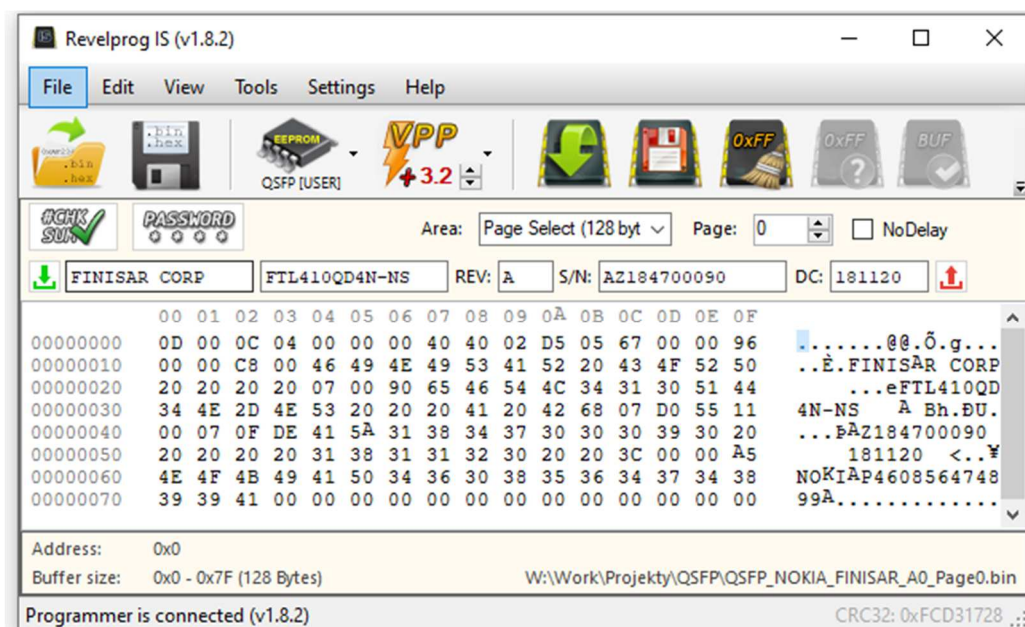
## 7.2.2. QSFP and QSFP+

- **QSFP [USER]** allows to read/erase/write of any block or page in QSFP/QSFP+ memory map (verification should be done by user). The [USER] mode allows to read/write specific part of memory.

QSFP/QSFP+ contains only block A0h (256 bytes) divided into pages (byte 7Fh in block A0h is page select byte). Pages are 128bytes length. Page 00h is required and provides static module identity and capabilities information (it may be write protected with password). Other pages may be optional.

Please check memory map for your QSFP/QSFP+ or in MSA Standard (SFF-8636 specification).

With REVELPROG-IS you can select page from menu (you do not have to change page bytes manually in buffer) and read/write specific pages:



From	To	Content	No. of bytes	Type
<b>2-Wire Serial Address 1010000x</b>				
<b>Lower Page 00h</b>				
0	2	ID and Status	3	Read-Only
3	21	Interrupt Flags (Clear on read)	19	Read-Only
22	33	Free Side Device Monitors	12	Read-Only
34	81	Channel Monitors	48	Read-Only
82	85	Reserved	4	Read-Only
86	99	Control	14	Read/Write
100	106	Free Side Interrupt Masks	7	Read/Write
107	110	Free Side Device Properties	4	Read-Only
111	112	Assigned to PCI Express	2	Read/Write
113	116	Free Side Device Properties	4	Read-Only
117	118	Reserved	2	Read/Write
119	122	Optional Password Change	4	Write-Only
123	126	Optional Password Entry	4	Write-Only
127	127	Page Select Byte	1	Read/Write
<b>Upper Page 00h</b>				
128	128	Identifier	1	Read-Only
129	191	Base ID Fields	63	Read-Only
192	223	Extended ID	32	Read-Only
224	255	Vendor Specific ID	32	Read-Only
<b>Page 01h (Optional)</b>				
128	255	Reserved (previously for SFF-8079 support)	128	Read-Only
<b>Page 02h (Optional)</b>				
128	255	User EEPROM Data	128	Read/Write
<b>Page 03h (Optional)</b>				
128	175	Free Side Device Thresholds	48	Read-Only
176	223	Channel Thresholds	48	Read-Only
224	229	Tx EQ, Rx Output and TC Support	6	Read-Only
230	241	Channel Controls	12	Read/Write
242	251	Channel Monitor Masks	10	Read/Write
252	255	Reserved	4	Read/Write
<b>Pages 04h-1Fh (Optional)</b>				
128	255	Vendor Specific	128	Read/Write
<b>Pages 20h-21h (Optional)</b>				
128	255	PAM-4 and WDM Features	128	Read/Write
<b>Pages 22h-7Fh (Optional)</b>				
128	255	Reserved	128	Read/Write
<b>Pages 80h-FFh (Optional)</b>				
128	255	Vendor Specific	128	Read/Write



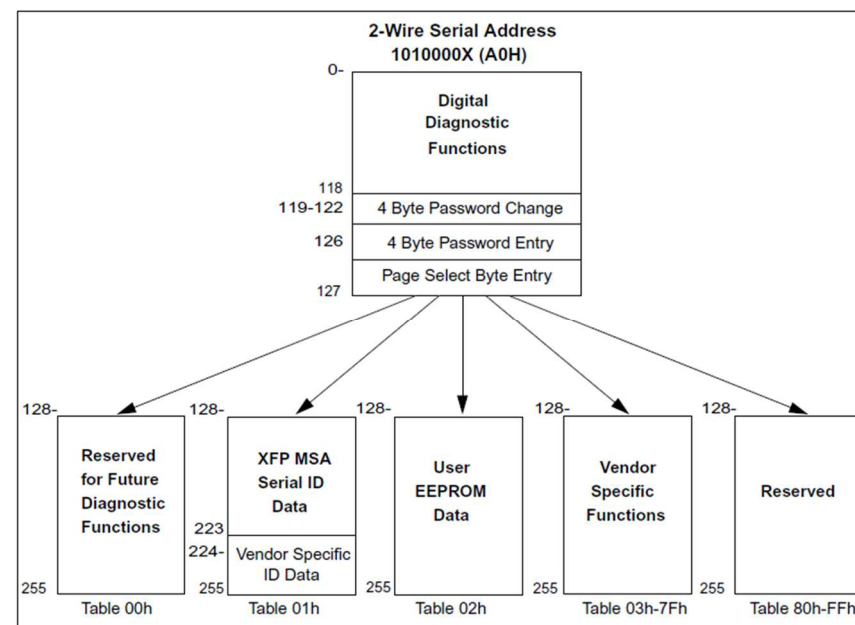
### 7.2.3. XFP

- **XFP [USER]** allows to read/erase/write of any block or table in QSFP/QSFP+ memory map (verification should be done by user). The [USER] mode allows to read/write specific part of memory.

XFP contains only block A0h (256 bytes) divided into tables (byte 7Fh in block A0h is table select byte). Tables are 128bytes length. Table 01h is default and contains Serial ID Data. Table 02h is User EEPROM. Tables may be write protected (password may be required for erase or write). Other pages may be optional.

Please check memory map for your XFP or in MSA Standard (INF-8077i specification).

With REVELPROG-IS you can select table from menu (you do not have to change page bytes manually in buffer) and read/write specific tables.



### 7.3. Protected transceivers: manufacturer password and host password

Some transceivers also provides an optional password entry location that may be used to protect vendor internal function or user writable memory. Password shall not be required to read any data, but it may be used for write protection for specific areas. Nor shall passwords be required to write any controls defined in the digital diagnostics functions. Passwords may be used by vendors to control write access to MSA defined read only data for factory setup, or to OEMs to limit write access in the User EEPROM area. Finally, passwords may be used to control read or write access to the vendor specific pages or tables. Separate passwords value ranges will be defined to prevent accidental writing to critical module control areas. There are 2 types of passwords: manufacturer password and host password (also known as user password). You can enter password using password tool in REVEPLROG-IS application.

### 7.3.1. Host/User password

Host password is protecting User Writable EEPROM. Entering valid user password will unlock only user eeprom for erase and write operations. Location of this area depends on transceiver type (please check memory map for your transceiver). In most cases user can change this password (if current password is known). All factory new transceivers should have default host password: 00h 00h 10h 11h.

### 7.3.2. Manufacturer password

Manufacturer password is protecting whole memory map, e.g. serial number, product name, manufacturer name, vendor specific areas etc. Entering valid manufacturer password will unlock all memory map for erase and write operations. Only manufacturer know this password, but REVELPROG-IS provides tool for searching password with brute force method.

### 7.3.3. Hacking password (brute-force method)

REVELPROG-IS password tool for transceivers can be also used to search password using brute force method (checking all combinations or limited range of combinations). It uses smart algorithm with auto-adjusting communication speed and delays to check as many password as possible in shortest time. For fastest MCU based transceivers it's possible to check 4000 password combinations per second. Please check more details and on REVELTRONICS forum:

<https://forum.reveltronics.com/viewtopic.php?f=31&t=527>

The screenshot shows a software window titled "Password tool for SFP/QSFP/XFP Transceivers". It has a close button (X) in the top right corner. The window is divided into several sections:

- Password**: Contains two checkboxes, "Enter current password" and "Write new password". Below each checkbox is a text input field showing "00 00 10 11". The "Enter current password" field has a blue information icon (i), and the "Write new password" field has a yellow warning icon (⚠). Below these fields is a large grey button labeled "Execute".
- Search Password (brute force)**: Contains several dropdown menus and input fields:
  - Location**: A dropdown menu showing "A2h,7Bh (SFP)".
  - Access type**: A dropdown menu showing "Host/User (user eeprom)".
  - Range limit**: A dropdown menu showing "ASCII letters, number and special chars".
  - Below the range limit dropdown are two text input fields: "20 20 20 20" and "7E 7E 7E 7E".
  - A checkbox labeled "Apply range to single bytes" is checked, with a blue information icon (i) to its right.
  - Write delay**: A dropdown menu showing "User select".
  - Below the write delay dropdown is a spin box showing "0" and a label "[ ms ]" with a blue information icon (i) to its right.
  - Start from**: A text input field showing "20 20 20 20".
- At the bottom of the "Search Password (brute force)" section are two large buttons: "START" and "STOP".
- Below the buttons is a status area with a yellow background. It contains the text "Searching SFP host/user password..." followed by "checked 152500 from 81450625 (4013/s)" and "20h 30h 75h 38h ASCII: 0u8". At the very bottom of this area are two timestamps: "00d00h00m38s" on the left and "00d05h37m38s" on the right.

## 8. Updates

New trends on the market and latest devices require from users newer and newer programming devices. Customer's satisfaction is our number one priority and we share updates free of charge for all users of REVELPROG-IS. Update consist of software update (pc application) and firmware update (software inside the device). Latest software can be downloaded directly from manufacturer's webpage. You will be informed by the software about possible updates after connecting out of date device.

**Caution!** If a firmware update process is interrupted, your programmer may not function properly. Updates are optional – warranty does not cover damage due improper care.

During update process, device will start in DFU (Device Firmware Upgrade) mode. First time it may be necessary to install additional drivers (for DFU mode). Windows should find drivers automatically on the Internet (if not, there are also available in /drivers/DFU subdirectory in the installation folder). Installing drivers process should take about 30 seconds. If DFU drivers are installed, application will update the firmware device. Appropriate instructions will be displayed before.

*Please close all other applications and disable antivirus software during update process. Do not disconnect and do not connect any USB devices during update process. Make sure that you have stable power supply for PC.*

Update process may take about half a minute. Progress will be displayed on the screen. There is no possibility to cancel this process! After successful update, device will restart and will be ready to use.



## 9. Research and development

We are keen to still develop and improve the device. Please contact us at [lab@reveltronics.com](mailto:lab@reveltronics.com) or visit our contact page at [www.reveltronics.com](http://www.reveltronics.com) if you have any comments or tips about REVELPROG-IS.

Very welcome are ideas:

- how to improve REVELPROG-IS - what functionality add to it,
- what chips add to supported device list in the next update (please suggest only serial I2C, SPI, uWire devices).

Repeated suggestions from many users will have more chance for implementation in the future. We encourage you to contact us because in this way we already added many devices popular only in small segments of automotive market, computer service, RTV/AGD devices etc.

## 10. APPENDIX A - List of supported devices

The following list details the family of supported devices (left column) with selected examples of supported memories (right column). Most chips have the same programming procedures – programmer supports more devices than the examples given in the list.

### 9.1. EEPROM I2C 24... series

24..01 (1kb)	24AA01   24AA014   24AA014H   24AA01H   24C01   24C01A   24C01B   24C01C   24LC01   24LC014   24LC014H   24LC01B   24LC01BH   AF24BC01   AT24C01   AT24C01A   AT24C01B   BR24A01AF   BR24A01AFJ   BR24C01   BR24C01A   BR24C01AF   BR24C01AFJ   BR24C01AFV   BR24C21F   BR24C21FJ   BR24C21FV   BR24G01   BR24G01F   BR24G01FJ   BR24G01FV   BR24G01FVT   BR24L01   BR24L01A   BR24L01AF   BR24L01AFJ   BR24L01AFV   BR24L01AFVM   BR24L01AFVT   BR24T01A   CAT24AA01   CAT24C01   CAT24C01B   CAT24C21   CAT24FC01   CAT24LC01   CAT24WC01   CR24C01   CY24C01   FM24C01   FT24C01   FT24C01A   GE24C01   GP24BC01   HM24LC01   HT24C01   HT24LC01   IS24C01   IS24C01B   LT24C01   LX24C01   M24C01   MM24C01   S-24C01A   S-24C01B   S-24C01C   S-24CS01A   SLA24C01   SLE24C01   ST24C01   ST24W01   TMC24A01   TU24C01B   UG24C01   X24012   X24C01   X24C01A   XL24C01A
24..02 (2kb)	24AA02   24AA024   24AA024H   24AA025   24AA02H   24C02   24C02A   24C02B   24C02C   24LC02   24LC024   24LC024H   24LC025   24LC02B   24LC02BH   24LC02W   24LLC02   A24C02   ACE24C02   ACE24LC02   AF24BC02   AM24LC02   AT24C02   AT24C02A   AT24C02B   AT24C02C   AT24HC02B   AT24HC04B   AX24C02A   BJX25LC02   BL24C02   BR24A02F   BR24A02FJ   BR24A02FVM   BR24C02   BR24C02F   BR24C02FV   BR24G02F   BR24G02FJ   BR24G02FVT   BR24L02   BR24L02F   BR24L02FJ   BR24L02FV   BR24L02FVM   BR24L02FVT   BR24T02   CAT24AA02   CAT24C02   CAT24C03   CAT24LC02   CAT24LC02A   CAT24LC02AZ   CAT24LC02Z   CAT24WC02   CAT24WC03   CKD24A02   CR24C02   CW24C02   CW24C02B   CY24C02   EC24C02   EC24C02A   EM24LC02   FM24C02   FM24C02U   FM24C02UF   FM24C03U   FM24C03UF   FT24C02   FT24C02A   GE24C02   GM24LC02B   GP24BC02   HM24LC02   HN58X2402   HT24C02   HT24LC02   IN24AA02A   IN24AA02B   IN24LC02B   IS24C02   IS24C02A   IS24C02B   IS24C02E   K24C02   KK24LC02B   L24C02   L24W02   LE24C0221   LE24C023   LE24L0221   LT24C02   LX24C02   LY24C02   M24C02   MAX24A02   MC24C02   MC24LC02   MM24C02   NM24C02   NM24C02F   NM24C02U   NM24C03   NM24C03F   NM24W02   NSC24C02   PCF8582C-2   PTK24A02T   RT24A02   S-24C02A   S-24C02B   S-24C02C   S-24CS02A   SLA24C02   SLE24C02   SM24C02   ST24C02   ST24W02   T24C02   T24C02A   TMC24A02   TU24C02B   UG24C02   WS24C02   X24022   X24C02   XL24C02   Y24LC02
24..04 (4kb)	24AA04   24AA04H   24C04   24C04A   24LC04   24LC04B   24LC04BH   A24C04   ACE24C04   ACE24LC02   AF24BC04   AM24LC04   AT24C04   AT24C04A   AT24C04B   AX24C04A   BJX24LC04   BL24C04   BR24A04F   BR24A04FJ   BR24C04   BR24C04F   BR24C04FJ   BR24C04FV   BR24G04F   BR24G04FJ   BR24G04FV   BR24G04FVT   BR24L04   BR24L04F   BR24L04FJ   BR24L04FV   BR24L04FVM   BR24L04FVT   BR24T04   CAT24C04   CAT24C05   CAT24LC04   CAT24WC04   CAT24WC05   CR24C04   CW24C04   CW24C04A   CY24C04   EC24C04   EC24C04A   FM24C04   FM24C04U   FM24C04UF   FM24C05U   FM24C05UF   FM24CL04   FT24C04   FT24C04A   GE24C04   GM24LC04B   HM24LC04   HN58X2404   HT24C04   HT24LC04   IN24LC04B   IS24C04   IS24C04A   IS24C04B   K24C04   KK24LC04   KK24LC04B   L24C04   L24W04

	LE24C042   LE24C043   LT24C04   LX24C04   LY24C04   M24C04   M24LC04   MM24C04   NM24C04   NM24C04F   NM24C04U   NM24C05   NM24C05F   NM24W04   S-24C04A   S-24C04B   S-24CS04A   SLA24C04   SLE24C04   ST24C04   ST24W04   T24C04   T24C04A   TMC24A04   TU24C04B   UG24C04   WS24W04   X24042   X24C04   XL24C04   Y24LC04
24..08 (8kb)	24AA08   24AA08H   24C08   24C08B   24LC08   24LC08B   24LC08BH   24LLC08   A24C08   ACE24C08   ACE24C08A   ACE24LC08   ACE24LC08A   AF24BC08   AM24LC08   AT24C08   AT24C08A   AT24C08B   AT24RF08C   AX24C08A   BL24C08   BR24A08F   BR24A08FJ   BR24C08   BR24C08F   BR24C08FJ   BR24C08FV   BR24G08F   BR24G08FJ   BR24G08FV   BR24G08FVT   BR24L08   BR24L08F   BR24L08FJ   BR24L08FV   BR24L08FVM   BR24L08FVT   BR24T08   CAT24C08   CAT24LC08   CAT24WC08   CR24C08   CW24C08   CW24C08B   CY24C08   EC24C08   EC24C08A   FM24C08   FM24C08U   FM24C08UF   FM24C09UF   FM24CL08   FT24C08   FT24C08A   GM24LC08B   GP24BC08   HN58X2408   HT24C08   HT24LC08   IN24AA08B   IN24LC08B   IS24C08   IS24C08A   K24C08   KK24LC08   KK24LC08B   L24M08   L24W08   LE24C081   LE24C082   LE24L082   LT24C08   LX24C08   LY24C08   M24C08   MAX24A08   MC24C08   MC24LC08   MM24C08   MTV24C08   MTV24LC08   NM24C08   NM24C08F   NM24C08U   NM24C09   NM24C09F   NM24C09U   NM24W08   NSC24C08   P24S08   PCA24S08   PS08   PTK24A08T   S-24C08A   S-24C08C   S-24CS08A   SLA24C08   SLE24C08   ST24C08   ST24W08   T24C08   T24C08A   TMC24A08   TU24C08B   UG24C08   WS24W08   X24C08   XL24C08   Y24LC08
24..16 (16kb)	24AA16   24AA16H   24C16   24C16B   24LC16   24LC164   24LC16B   24LC16BH   24LLC16   24U17   A24C16   ACE24C16   ACE24LC16   AF24BC16   AM24LC16   AT24C16   AT24C164   AT24C16A   AT24C16B   AT24C16C   AX24C16A   BJX24LC16   BL24C16   BR24A16F   BR24A16FJ   BR24C16   BR24C16F   BR24C16FJ   BR24C16FV   BR24E16   BR24E16F   BR24E16FJ   BR24E16FV   BR24G16F   BR24G16FJ   BR24G16FV   BR24G16FVT   BR24L16   BR24L16F   BR24L16FJ   BR24L16FV   BR24L16FVT   BR24S16F   BR24S16FJ   BR24S16FV   BR24S16FVM   BR24S16FVT   BR24T16   CAT24C16   CAT24C16L   CAT24C16Z   CAT24FC16   CAT24FC17   CAT24WC16   CAT24WC17   CR24C16   CW24C16   CW24C16A   CY24C16   EC24C16   EC24C16A   FM24C16   FM24C16U   FM24C16UF   FM24C17   FM24C17U   FM24C17UF   FM24CL16   FT24C16   FT24C16A   GM24LC16B   GP24BC16   HM24LC16   HN58X2416   HT24C16   HT24LC16   IN24LC16B   IS24C16   IS24C16A   KK24LC16   KK24LC16B   L24W16   LE24C162   LE24L162   LT24C16   LX24C16   LY24C16   M24C16   MAX24A16   MC24C16   MC24LC16   MM24C16   MTV24C16   MTV24LC16   NM24C16   NM24C16F   NM24C16U   NM24C17   NM24C17F   NM24C17U   NM24W16   NSC24C16   PTK24A16T   S-24C16A   S-24CS16A   SLA24C16   SLE24C16   SLE24C164   ST24C16   ST24W16   T24C16   T24C16A   TMC24A16   TU24C16B   UG24C16   WS24W16   X24164   X24165   X24C16   XL24C16   XL24C164   Y24LC16
24..32 (32kb)	24AA32   24AA32A   24C32   24LC32   24LC32A   24LC32B   A24C32   ACE24C32   ACE24C32A   AF24BC32   AT24C32   AT24C32A   AT24C32B   AT24C32C   AT24C32D   AX24C32A   BR24A32F   BR24A32FJ   BR24C32   BR24C32F   BR24G32F   BR24G32FJ   BR24G32FV   BR24G32FVT   BR24L32   BR24L32F   BR24L32FJ   BR24L32FV   BR24L32FVT   BR24S32F   BR24S32FJ   BR24S32FV   BR24S32FVM   BR24S32FVT   BR24T32   CAT24C32   CAT24FC32   CAT24FC32A   CAT24WC32   CAT24WC33   CR24C32   CW24C32   EC24C32   EC24C32A   FM24C32   FM24C32U   FM24C32UF   FT24C32   FT24C32A   HM24LC32   HN58X2432   HT24C32   HT24LC32   IN24AA32A   IS24C32   IS24C32A   IS24C32B   IS24C32C   K24C32   L24W32   LE24C322   LE24L322   M24C32   MC24C32   MM24C32   NM24C32   NM24C32U   NM24C32UF   NSC24C32   PTK24A32T   S-24C32C   SLA24C32   SLE24C32   ST24C32   T24C32   T24C32A   TU24C32   WS24W32   X24320
24..64 (64kb)	24AA64   24AA64F   24AA65   24C64   24C65   24FC64   24LC64   24LC64B   24LC64F   24LC65   A24C64   ACE24C64   ACE24C64A   AF24BC64   AT24C64   AT24C64A   AT24C64B   AT24C64C   AT24C64D   AX24C64A   BR24A64F   BR24A64FJ   BR24C64   BR24C64F   BR24G64F   BR24G64FJ   BR24G64FV   BR24G64FVT   BR24L64   BR24L64F   BR24L64FJ   BR24S64F   BR24S64FJ   BR24S64FV   BR24S64FVM   BR24S64FVT   BR24T64   CAT24C64   CAT24FC64   CAT24FC65   CAT24FC66   CAT24WC64   CAT24WC65   CR24C64   CW24C64   EC24C64   EC24C64A   FM24C64   FM24C64F   FM24CL64   FT24C64   FT24C64A   HM24LC64   HN58X2464   HT24C64   HT24LC64   IS24C64

	IS24C64A   IS24C64B   K24C64   L24W64   LE24CB642   M24C64   MM24C64   NM24C65   NM24C65F   NSC24C64   PTK24A64T   S-24C64C   SLA24C64   SLE24C64   ST24C64   T24C64   T24C64A   TU24C64B   WS24W64   X24640   X24641   X24645
24..128 (128kb)	24AA128   24C128   24FC128   24LC128   24LC21   24LC21A   24LCS21A   ACE24C128   AF24BC128   AT24C128   AT24C128B   AT24C128C   AT24CS128   AX24C128A   BL24C128   BR24G128F   BR24G128FJ   BR24G128FV   BR24G128FVT   BR24S128F   BR24S128FJ   BR24S128FV   BR24S128FVT   BR24T128   CAT24C128   CAT24WC128   CAT24WC129   CR24C128   CW24C128   EC24C128   EC24C128A   FM24C128   FM24C128F   FM24CL128   FT24C128   FT24C128A   HN58X24128   HT24C128   HT24LC128   IS24C128   IS24C128A   IS24C128B   IS24L128   LE24CB1283   M24128   S-24C128C   T24C128   T24C128A   TU24C128
24..256 (256kb)	24AA256   24C256   24FC256   24LC256   A24C256   ACE24C256   AT24C256   AT24C256B   AT24C256C   AT24CS256   AX24C256A   BL24C256   BR24S256F   BR24S256FJ   BR24T256   CAT24C256   CAT24FC256   CAT24WC256   CAT24WC257   CW24C256   EC24C256A   FM24C256   FM24C256F   FM24CL256   FT24C256   FT24C256A   HN58X24256   HT24C256   HT24LC256   IS24C256   IS24C256A   IS24L256   M24256   MC24C256   T24C256   T24C256A   TU24C256
24..512 (512kb)	24AA512   24C512   24FC512   24LC512   AT24C512   AT24C512B   AT24C512C   CAT24C512   CAT24WC512   FM24C512   FM24CL512   FT24C512A   HN58X24512   HT24C512   HT24LC512   IS24C512   M24512   SA24C512
24..1024 (1Mb)	24AA1024   24C1024   24FC1024   24LC1024   AT24C1024   AT24C1024B   CAT24C1024   CAT24WC1024   FM24C1024   FM24CL1024   M24M01   HT24C1024   HT24LC1024   IS24C1024
24..1025 (1Mb)	24AA1025   24C1025   24LC1025
24..1026 (1Mb)	24AA1026   24C1026   24LC1026
24..2048 (2Mb)	M24M02

## 9.2. EEPROM SPI 25... series

25..010 (1kb)	25010   25AA010   25AA010A   25C010   25LC010   25LC010A   A25010A   AT25010   BR25H010-W   BR25L010-W   CAT25C01   CAT25C11   CY25C01   IS25C01   S-25A010A   ST25C01   ST25W01   XC25010
25..020 (2kb)	25020   25AA020   25AA020A   25C020   25LC020   25LC020A   AT25020   AT25020A   BR25H020-W   BR25L020-W   CAT25C02   CAT25C03   CY25C02   FM25C020U   FM25C020UL   IS25C02   NM25C020   S-25A020A   ST25C02   ST25W02   X25020   XC25020
25..040 (4kb)	25040   25AA040   25AA040A   25C040   25C040A   25LC040   25LC040A   AT25040   AT25040ACAT25C04   BR25H040-W   BR25L040-W   CAT25C05   CY25C04   FM25C040U   FM25C040UL   FM25C041U   FM25L04   IN25AA040   IS25C04   NM24C040   NM24C041   S-25A040A   ST25C04   ST25W04   X25040   X25041   XC25040
25..080 (8kb)	25080   25AA080   25AA080A   25AA080B   25C080   25LC080   25LC080A   25LC080B   AT25080   AT25080A   AT25080B   BR25H080-W   BR25L080-W   CAT25C08   CAT25C09   CY25C08   FM25L08   IN25AA080   IS25C08   S-25A080A   ST25C08   ST25W08   X25080   X25F008   XC25080
25..160 (16kb)	25160   25AA160   25AA160A   25AA160B   25C160   25LC160   25LC160A   25LC160B   AT25160   AT25160A   AT25160B   BR25H160-W   BR25L160-W   CAT25C16   CAT25C17   CY25C16   FM25C160   FM25C160U   FM25C160UL   FM25L016   IN25AA160   IS25C16   NM24C160   S-25A160A   ST25C16   ST25W16   X25160   X25170   X25F016   XC25160
25..320 (32kb)	25320   25AA320   25AA320A   25C320   25LC320   25LC320A   AT25320   AT25320A   AT25320B   BR25H320-W   BR25L320-W   CAT25C32   CAT25C33   FM25C320U   FM25C320UL   IS25C32   IS25C32A   IS25C32B   S-25A320A   TI2532   X25320   X25F032   XC25320
25..640 (64kb)	25640   25AA640   25C640   25LC640   AT25640   AT25640A   AT25640B   BR25L640-W   CAT25C64   CAT25C65   FM25C640U   FM25CL64   FM25L64   IS25C64   IS25C64A   IS25C64B   NM24C640   S-25A640A   TI2564   X25640   X25642   X25650   X25F064   XC25640
25..128 (128kb)	25128   25AA128   25C128   25LC128   AT25128   AT25128A   CAT25C128   IS25C128   IS25C128A   S-25C128A   X25128   X25138   X25F128   XC25128
25..256 (256kb)	25256   25AA256   25C256   25LC256   AT25256   AT25256A   CAT25C256   FM25L256   IS25C256   IS25C256A   X25256   XC25256
25..512 (512kb)	25512   25AA512   25C512   25LC512   AT25512   XC25512
25..1024 (1Mb)	251024   25AA1024   25C1024   25LC1024   AT251024   XC251024



### 9.3. EEPROM SPI 35... series

NOTE: Incremental register (first 32 bytes) can be written only with higher value.

35..080 (8kb)	D80D0WQ   D80DOWQ   M35080   M35080-3   M35080-6   M35080V6   M35080-VP
35..160 (16kb)	D160D0WQ   D160D0WT   D160DOWQ   D160DOWT   M35160

### 9.4. EEPROM SPI 90... series

(1kbit – 4kbit)	ROHM: BR9010   BR9020   BR9040
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### 9.5. EEPROM SPI 95... series

(1kbit – 2Mbit)	M95010, M95020, M95040, M95080, M95160, M95320, M95640, M95128, M95256, M95512, M95M01, M95M02
95P08 (8kbit)	5P08   5P08C3   95P08

## 9.6. EEPROM MICROWIRE 93... series

Supported both addressing (8-bit and 16-bit) modes.

93..06 (256b)	9306   93C06   KM93C06   KM93C06GD   M93C06   NMC9306   NMC93C06L   NMC93C06LZ
93..46 (1kb)	93AA46   93AA46A   93AA46B   93AA46C   93C46   93C46A   93C46B   93C46C   93CX46   93LC46   93LC46A   93LC46B   93LC46C   93X46   A93C46(x16)   A93C46(x8)   AF93BC46(x16)   AF93BC46(x8)   AK93C46   AM93LC46   AT93C46(x16)   AT93C46(x8)   AT93C46A   AT93C46B   AT93C46C   AT93C46D(x16)   AT93C46D(x8)   AT93C46E   BL93C46(x16)   BL93C46(x8)   BR93A46   BR93C46   BR93H76   BR93L46   BR93LC46   CAT93C46(x16)   CAT93C46(x8)   CAT93C46A   CAT93C46AH   CAT93C46B(x16)   CAT93C46B(x8)   CAT93C46H(x16)   CAT93C46H(x8)   CAT93C46R(x8)   CAT93HC46(x16)   CAT93HC46(x8)   CR93C46(x16)   CR93C46(x8)   EC93C46A(x16)   EC93C46A(x8)   EM93LC46(x16)   EM93LC46(x8)   FM93C46   FM93C46A(x16)   FM93C46A(x8)   FT93C46(x16)   FT93C46(x8)   FT93C46A(x16)   FT93C46A(x8)   GSC93BC46A(x16)   GSC93BC46A(x8)   GT93C46(x16)   GT93C46(x8)   GT93C46A(x16)   GT93C46A(x8)   HT93LC46-A(x16)   HT93LC46-A(x8)   IN93AA46A   IN93AA46B   IN93AA46C(x16)   IN93AA46C(x8)   IN93LC46A   IN93LC46B   IN93LC46C(x16)   IN93LC46C(x8)   IS93C46-3   IS93C46A(x16)   IS93C46A(x8)   IS93C46AGR(x16)   IS93C46AGR(x8)   IS93C46B   IS93C46BGR   IS93C46D(x16)   IS93C46D(x8)   IS93C46DGR(x16)   IS93C46DGR(x8)   K93C46   KM93C46   KM93C46GD   KM93C46V   KM93C46VGD   LC46   M93C46(x16)   M93C46(x8)   MAX93LC46   MC93C46   MM93C46-3   MM93C46-3GR   NM93C46   NM93C46A   NM93C46A(x16)   NM93C46A(x8)   NM93C46L   NM93C46LZ   NMC9346   PTK93LC46(x16)   PTK93LC46(x8)   RH76   RT93LC46(x16)   RT93LC46(x8)   S93462   S93463   S93A46   S-93A46A   S-93A46B   S-93L46AD   S93VP462   S93VP463   S93WD462   S93WD463   T93C46(x16)   T93C46(x8)   T93C46A(x16)   T93C46A(x8)   TMC93LC46   TMC93LC46(x16)   TMC93LC46(x8)   TU93C46(x16)   TU93C46(x8)   UG93C46-A(x16)   UG93C46-A(x8)   W93C46   W93C46B(x16)   W93C46B(x8)   XL93C46   XL93LC46   XL93LC46A   XL93LC46ARY   XL93LC46B(x16)   XL93LC46B(x8)   XL93LC46BRY(x16)   XL93LC46BRY(x8)   XL93LC46RY   Y93LC46(x16)
93S46 (1kb)	93S46   M93S46   NM93CS46
93..56 (2kb)	93AA56   93AA56A   93AA56B   93AA56C   93C56   93C56A   93C56B   93C56C   93CX56   93LC56   93LC56A   93LC56B   93LC56C   93X56   A93C56(x16)   A93C56(x8)   AF93BC56(x16)   AF93BC56(x8)   AK93C56   AM93LC56   AT93C56(x16)   AT93C56(x8)   AT93C56A   AT93C56B   AT93C56C   AT93C56D(x16)   AT93C56D(x8)   AT93C56E   AT93C57(x16)   AT93C57(x8)   BL93C56(x16)   BL93C56(x8)   BR93A56   BR93C56   BR93L56   BR93LC56   CAT93C56(x16)   CAT93C56(x8)   CAT93C56A   CAT93C56AH   CAT93C56B(x16)   CAT93C56B(x8)   CAT93C56H(x16)   CAT93C56H(x8)   CAT93C56R(x8)   CAT93C57(x16)   CAT93C57(x8)   CAT93HC56(x16)   CAT93HC56(x8)   CR93C56(x16)   CR93C56(x8)   EC93C56A(x16)   EC93C56A(x8)   EM93LC56(x16)   EM93LC56(x8)   EM93LC57(x16)   EM93LC57(x8)   FM93C56   FM93C56A(x16)   FM93C56A(x8)   FT93C56(x16)   FT93C56(x8)   FT93C56A(x16)   FT93C56A(x8)   GSC93BC56A(x16)   GSC93BC56A(x8)   GT93C56(x16)   GT93C56(x8)   GT93C56A(x16)   GT93C56A(x8)   HT93LC56-A(x16)   HT93LC56-A(x8)   IN93AA56A   IN93AA56B   IN93AA56C(x16)   IN93AA56C(x8)   IN93LC56A   IN93LC56B   IN93LC56C(x16)   IN93LC56C(x8)   IS93C56-3   IS93C56A(x16)   IS93C56A(x8)   IS93C56AGR(x16)   IS93C56AGR(x8)   IS93C56B   IS93C56BGR   IS93C56D(x16)   IS93C56D(x8)   IS93C56DGR(x16)   IS93C56DGR(x8)   K93C56   KM93C56   KM93C56GD   KM93C56V   KM93C56VGD   KM93C57(x16)   KM93C57GD(x16)   KM93C57V(x16)   M93C56(x16)   M93C56(x8)   MC93C56   MM93C56-3   MM93C56-3GR   NM93C56   NM93C56A   NM93C56A(x16)   NM93C56A(x8)   NM93C56L   NM93C56LZ   PTK93LC56(x16)   PTK93LC56(x8)

	S-93A56A   S-93A56B   S-93L56AD   T93C56(x16)   T93C56(x8)   T93C56A(x16)   T93C56A(x8)   TMC93LC56   TMC93LC56(x16)   TMC93LC56(x8)   TMC93LC57(x16)   TMC93LC57(x8)   TU93C56(x16)   TU93C56(x8)   UG93C56-A(x16)   UG93C56-A(x8)   UG93C56-C   W93C56   W93C56B(x16)   W93C56B(x8)   XL93C56   XL93LC56   XL93LC56A   XL93LC56ARY   XL93LC56B(x16)   XL93LC56B(x8)   XL93LC56BRY(x16)   XL93LC56BRY(x8)   XL93LC56RY   Y93LC56-A(x16)
93S56 (2kb)	93S56   M93S56   NM93CS56   ST93CS56   ST93CS57
93..66 (4kb)	93AA66   93AA66A   93AA66B   93AA66C   93C66   93C66A   93C66B   93C66C   93CX66   93LC66   93LC66A   93LC66B   93LC66C   93X66   A93C66(x16)   A93C66(x8)   AF93BC66(x16)   AF93BC66(x8)   AK93C66   AM93LC66   AT93C66(x16)   AT93C66(x8)   AT93C66A   AT93C66B   AT93C66C   AT93C66D(x16)   AT93C66D(x8)   AT93C66E   BL93C66(x16)   BL93C66(x8)   BR93A66   BR93C66   BR93L66   BR93LC66   CAT93C66(x16)   CAT93C66(x8)   CAT93C66A   CAT93C66AH   CAT93C66B(x16)   CAT93C66B(x8)   CAT93C66H(x16)   CAT93C66H(x8)   CAT93C66R(x8)   CAT93HC66(x16)   CAT93HC66(x8)   CR93C66(x16)   CR93C66(x8)   EC93C66A(x16)   EC93C66A(x8)   EM93LC66(x16)   EM93LC66(x8)   FM93C66   FM93C66A(x16)   FM93C66A(x8)   FT93C66(x16)   FT93C66(x8)   FT93C66A(x16)   FT93C66A(x8)   GSC93BC66A(x16)   GSC93BC66A(x8)   GT93C66(x16)   GT93C66(x8)   GT93C66A(x16)   GT93C66A(x8)   HT93LC66-A(x16)   HT93LC66-A(x8)   IN93AA66A   IN93AA66B   IN93AA66C(x16)   IN93AA66C(x8)   IN93LC66A   IN93LC66B   IN93LC66C(x16)   IN93LC66C(x8)   IS93C66-3   IS93C66A(x16)   IS93C66A(x8)   IS93C66AGR(x16)   IS93C66AGR(x8)   IS93C66B   IS93C66BGR   IS93C66D(x16)   IS93C66D(x8)   IS93C66DGR(x16)   IS93C66DGR(x8)   K93C66   KM93C66   KM93C66GD   KM93C66V   KM93C66VGD   KM93C67(x16)   KM93C67GD(x16)   KM93C67V(x16)   M93C66(x16)   M93C66(x8)   MC93C66   MM93C66-3   MM93C66-3GR   NM93C66   NM93C66A   NM93C66A(x16)   NM93C66A(x8)   NM93C66L   NM93C66LZ   PTK93LC66(x16)   PTK93LC66(x8)   S93662   S93663   S93A66   S93A66A   S-93A66A   S-93A66B   S-93L66AD   S93VP662   S93VP663   S93WD662   S93WD663   T93C66(x16)   T93C66(x8)   T93C66A(x16)   T93C66A(x8)   TMC93LC66   TMC93LC66(x16)   TMC93LC66(x8)   TU93C66(x16)   TU93C66(x8)   UG93C66-A(x16)   UG93C66-A(x8)   W93C66   W93C66B(x16)   W93C66B(x8)   XL93C66   XL93LC66   XL93LC66A   XL93LC66ARY   XL93LC66B(x16)   XL93LC66B(x8)   XL93LC66BRY(x16)   XL93LC66BRY(x8)   XL93LC66RY   Y93LC66-A(x16)
93S66 (4kb)	93S66   M93S66   NM93CS66
93..76 (8kb)	93AA76   93AA76A   93AA76B   93AA76C   93C76   93C76A   93C76B   93C76C   93CX76   93LC76   93LC76A   93LC76B   93LC76C   93X76   A93C76(x16)   A93C76(x8)   AF93BC76(x16)   AF93BC76(x8)   AK93C76   AM93LC76   AT93C76(x16)   AT93C76(x8)   AT93C76A   AT93C76B   AT93C76C   AT93C76D(x16)   AT93C76D(x8)   AT93C76E   BL93C76(x16)   BL93C76(x8)   BR93A76   BR93C76   BR93L76   BR93LC76   CAT93C76(x16)   CAT93C76(x8)   CAT93C76A   CAT93C76AH   CAT93C76B(x16)   CAT93C76B(x8)   CAT93C76H(x16)   CAT93C76H(x8)   CAT93C76R(x8)   CAT93HC76(x16)   CAT93HC76(x8)   CR93C76(x16)   CR93C76(x8)   EC93C76A(x16)   EC93C76A(x8)   EM93LC76(x16)   EM93LC76(x8)   FM93C76   FM93C76A(x16)   FM93C76A(x8)   FT93C76(x16)   FT93C76(x8)   FT93C76A(x16)   FT93C76A(x8)   GSC93BC76A(x16)   GSC93BC76A(x8)   GT93C76(x16)   GT93C76(x8)   GT93C76A(x16)   GT93C76A(x8)   HT93LC76-A(x16)   HT93LC76-A(x8)   IN93AA76A   IN93AA76B   IN93AA76C(x16)   IN93AA76C(x8)   IN93LC76A   IN93LC76B   IN93LC76C(x16)   IN93LC76C(x8)   IS93C76-3   IS93C76A(x16)   IS93C76A(x8)   IS93C76AGR(x16)   IS93C76AGR(x8)   IS93C76B   IS93C76BGR   IS93C76D(x16)   IS93C76D(x8)   IS93C76DGR(x16)   IS93C76DGR(x8)   K93C76   KM93C76   KM93C76GD   KM93C76V   KM93C76VGD   M93C76(x16)   M93C76(x8)   MC93C76   MM93C76-3   MM93C76-3GR   NM93C76   NM93C76A   NM93C76A(x16)   NM93C76A(x8)   NM93C76L   NM93C76LZ   PTK93LC76(x16)   PTK93LC76(x8)   S-93A76A   S-93A76B   S-93L76AD   T93C76(x16)   T93C76(x8)   T93C76A(x16)   T93C76A(x8)   TMC93LC76   TMC93LC76(x16)   TMC93LC76(x8)   W93C76   W93C76B(x16)   W93C76B(x8)

	XL93C76   XL93LC76   XL93LC76A   XL93LC76ARY   XL93LC76B(x16)   XL93LC76B(x8)   XL93LC76BRY(x16)   XL93LC76BRY(x8)   XL93LC76RY
93..86 (16kb)	93AA86   93AA86A   93AA86B   93AA86C   93C86   93C86A   93C86B   93C86C   93CX86   93LC86   93LC86A   93LC86B   93LC86C   93X86   A93C86(x16)   A93C86(x8)   AF93BC86(x16)   AF93BC86(x8)   AK93C86   AM93LC86   AT93C86(x16)   AT93C86(x8)   AT93C86A   AT93C86B   AT93C86C   AT93C86D(x16)   AT93C86D(x8)   AT93C86E   BL93C86(x16)   BL93C86(x8)   BR93A86   BR93C86   BR93L86   BR93LC86   CAT93C86(x16)   CAT93C86(x8)   CAT93C86A   CAT93C86AH   CAT93C86B(x16)   CAT93C86B(x8)   CAT93C86H(x16)   CAT93C86H(x8)   CAT93C86R(x8)   CAT93HC86(x16)   CAT93HC86(x8)   CR93C86(x16)   CR93C86(x8)   EC93C86A(x16)   EC93C86A(x8)   EM93LC86(x16)   EM93LC86(x8)   FM93C86   FM93C86A(x16)   FM93C86A(x8)   FT93C86(x16)   FT93C86(x8)   FT93C86A(x16)   FT93C86A(x8)   GSC93BC86A(x16)   GSC93BC86A(x8)   GT93C86(x16)   GT93C86(x8)   GT93C86A(x16)   GT93C86A(x8)   HT93LC86-A(x16)   HT93LC86-A(x8)   IN93AA86A   IN93AA86B   IN93AA86C(x16)   IN93AA86C(x8)   IN93LC86A   IN93LC86B   IN93LC86C(x16)   IN93LC86C(x8)   IS93C86-3   IS93C86A(x16)   IS93C86A(x8)   IS93C86AGR(x16)   IS93C86AGR(x8)   IS93C86B   IS93C86BGR   IS93C86D(x16)   IS93C86D(x8)   IS93C86DGR(x16)   IS93C86DGR(x8)   K93C86   KM93C86   KM93C86GD   KM93C86V   KM93C86VGD   M93C86(x16)   M93C86(x8)   MC93C86   MM93C86-3   MM93C86-3GR   NM93C86   NM93C86A   NM93C86A(x16)   NM93C86A(x8)   NM93C86L   NM93C86LZ   PTK93LC86(x16)   PTK93LC86(x8)   S93A86   S93A86A   S-93A86A   S-93A86B   S-93L86AD   T93C86(x16)   T93C86(x8)   T93C86A(x16)   T93C86A(x8)   TMC93LC86   TMC93LC86(x16)   TMC93LC86(x8)   W93C86   W93C86B(x16)   W93C86B(x8)   XL93C86   XL93LC86   XL93LC86A   XL93LC86ARY   XL93LC86B(x16)   XL93LC86B(x8)   XL93LC86BRY(x16)   XL93LC86BRY(x8)   XL93LC86RY

## 9.7. EEPROM 1-Wire

24..30 (256b)	DS2430A
24..31 (1kb)	DS2431
24..33 (4kb)	DS2433   DS24B33
Other	DS2436

## 9.8. FLASH SPI 25... series

Supports low-voltage serial flash memories (1.5V, 1.8V, 2.5V) and standard (3.3V)

25..05 (512kb)	A25L05P   A25L512   A25L512A   A25LS512A   AC25LV512   AT25DL5121   AT25DN512C   AT25F512   AT26DF5121   EN25B05   EN25F05   EN25P05   F25D512Q   F25L0512   F25L05P   F25L05PA   F25L512P   F25L512Q   GD25D05C   GD25Q05   GD25WD05C   KH25L512   M25P05   M25P05-A   MS25X512   MX25L512   MX25L5121   MX25L5121E   MX25L512C   MX25L512E   MX25R512F   MX25U5121E   MX25V512   MX25V5121E   MX25V512C   MX25V512E   MX25V512F   PM25LD512   PM25LV512   PM25LV512A   SA25F005   SST25VF512   SST25VF512A   SST25WF512   SST25WF512B   W25Q05CL   W25Q05CV   W25X05CL
25..010 (1Mb)	A25L010   A25L010A   A25L01P   AC25LV010   AT24F1024   AT25DN011   AT25FS010   EN24LF10   EN25B10   EN25F10   EN25LF10   EN25P10   EN25S10   ES25P10   F25L01P   F25L01PA   GD25D10C   GD25Q10   GD25WD10C   IS25CD010   IS25LQ010B   KH25L1005   LE25FU106   LE25FU106B   M25P10   M25P10-A   M25PE10   MS25X10   MX25L1005   MX25L1005C   MX25L1005ZM   MX25L1006   MX25L1006E   MX25L1021   MX25L1021E   MX25L1025   MX25L1025C   MX25L1026   MX25L1026E   MX25R1035F   MX25U1001E   MX25V1006   MX25V1006E   MX25V1035F   NX25P10   PM25LD010   PM25LV010   PM25LV010A   S25FL001D   SA25F010   SST25VF010   SST25VF010A   SST25WF010   TS25L010A   W25D10V   W25P10V   W25Q10BV   W25Q10CL   W25Q10CV   W25Q10EW   W25X10AV   W25X10BL   W25X10BV   W25X10CL   W25X10L   W25X10V
25..020 (2Mb)	A25L020   A25L020C   A25L20P   AT25DF021   AT25F2048   AT25F2048N   EN25B20   EN25F20   EN25LF20   EN25P20   EN25S20   ES25P20   F25D02P   F25D02QA   F25L02P   F25L02PA   GD25D20C   GD25Q20B   GD25Q21B   GD25WD20C   IS25LQ020   IS25WD020   IS25WP020D   IS25WQ020   KH25L2005   LE25FU206   LE25S20   LE25U20   M25P20   M25PE20   M25U2033E   MS25X20   MX25L2005   MX25L2005C   MX25L2005ZM   MX25L2006   MX25L2025C   MX25L2026E   MX25L26C   MX25R2035F   MX25U2032E   MX25U2033E   MX25U2035F   MX25V2006E   MX25V2033F   MX25V2035F   NX25P20   PM25LD020   PM25LV020   S25FL002D   SA25F020   SST25VF020   SST25VF020A   SST25VF020B   SST25WF020   SST25WF020B   TS25L020A   W25D20V   W25P20V   W25Q20BW   W25Q20CL   W25Q20CV   W25Q20EW   W25X20BL   W25X20BV   W25X20CL   XM25QU20B
25PExx (2Mb)	AT25PE20   AT25PE20[P264]
25..040 (4Mb)	A25L040   A25L040A   A25L40P   AT25DF041   AT25DF041A   AT25F4096   AT25FF041A   AT25FS040   AT25SF041   AT26F004   EN25B40   EN25F40   EN25LF40   EN25P40   EN25Q40   EN25S40   EN25T40   ES25M40   ES25P40   F25D04Q   F25D04QA   F25L004   F25L04P   F25L04PA   GD25D40C   GD25LQ40   GD25Q40B   GD25Q41B   GD25WD40C   IS25LD040   IS25LQ040B   IS25WD040   IS25WP040   IS25WP040D   IS25WQ040   KH25L4005A   KH25L4006E   LE25FS406   LE25FU406B   LE25S40   LE25U40   M25P40   M25PE40   MS25X40   MX25L4005   MX25L4005A   MX25L4005C   MX25L4006E   MX25L4025C   MX25L4026E   MX25R4035F   MX25U4032F   MX25U4033E   MX25U4035   MX25U4035F   MX25V4005   MX25V4005C   MX25V4006E   MX25V4035   NX25P40   PM25LD040   PM25LV040   S25FL004   S25FL004A   S25FL004K   S25FL204K   SA25F040   SST25VF040   SST25VF040A   SST25VF040B   SST25WF040   SST25WF040B   W25D40V   W25P40V   W25Q40BL   W25Q40BV   W25Q40BW   W25Q40CL   W25Q40EW   W25X40AL   W25X40AV   W25X40BL   W25X40BV   W25X40CL   W25X40L   W25X40V   XM25QH40B   XM25QU40B
25PExx (4Mb)	AT25PE40   AT25PE40[P264]
25..080 (8Mb)	A25L080   A25L80P   AT25DF081   AT25DF081A   AT25DL081   AT25FF081A   AT25SF081   AT26DF081   EN25B80   EN25D80   EN25F80   EN25P80   EN25Q80   EN25Q80A   EN25S80   EN25T80   ES25M80   ES25P80   F25D08QA   F25L08QA   FM25Q08   FM25Q08A   GD25D80C   GD25LQ80   GD25Q80B   GD25Q80C   GD25WD80C   IS25LP080D   IS25LQ080   IS25LQ080B   IS25WP080   IS25WP080D   KH25L8005   KH25L8006E   KH25L8036D   LE25S81   M25P80   M25PE80   M25PX80   M25X80

	MS25X80   MX25L8005   MX25L8005ZM   MX25L8006E   MX25L8008E   MX25L8035E   MX25L8036E   MX25L8073E   MX25L8075E   MX25R8035F   MX25U8032E   MX25U8033E   MX25U8035   MX25U8035E   MX25U8035F   MX25V8005   MX25V8006E   MX25V8035F   NX25P80   PM25LV080   PM25LV080B   S25FL008A   S25FL008K   S25FL208K   SST25VF080B   SST25WF080   SST25WF080B   TS25L80P   W25D80V   W25P80V   W25Q40CL   W25Q80BL   W25Q80BV   W25Q80BW   W25Q80DL   W25Q80DV   W25Q80EW   W25Q80FV   W25Q80JV   W25X80AL   W25X80AV   W25X80BV   W25X80L   W25X80V   XM25QH80B   XM25QU80B
25PExx (8Mb)	AT25PE80   AT25PE80[P264]
25..016 (16Mb)	A25L016   A25L16P   A25LQ16   AT25DF161   AT25DL161   AT25FF161A   AT25SF161   AT26DF161   EN25B16   EN25D16   EN25F16   EN25P16   EN25Q16A   EN25QA16   EN25QH16   EN25S16   EN25T16   ES25M16   ES25P16   F16   F25L016   F25L16P   F25L16PA   F25L16Q   F25L16QA   FM25Q16   FM25Q16A   FM25Q16B   FM25S16A   GD25LQ16   GD25Q16B   IS25LP016D   IS25LQ016B   IS25WP016   IS25WP016D   KH25L1605A   KH25L1605D   KH25L1606E   KH25L1635D   LE25S161   M25P16   M25PE16   M25PX16   M25X16   MS25X16   MX25L1605   MX25L1605A   MX25L1605D   MX25L1606E   MX25L1608D   MX25L1608E   MX25L1633E   MX25L1635D   MX25L1635E   MX25L1636D   MX25L1636E   MX25L1673E   MX25L1675E   MX25R1635F   MX25U1633F   MX25U1635E   MX25U1635F   MX25V1635F   N25Q016   NX25P16   PM25LV016   PM25LV016B   Q16   QB25F016S33B   QH25F016S33B   S25FL016   S25FL016A   S25FL016K   S25FL116K   S25FL216K   SA25F160   SST25VF016B   TS25L16AP   TS25L16BP   TS25L16P   W25Q16BF   W25Q16BV   W25Q16CL   W25Q16CV   W25Q16DV   W25Q16DW   W25Q16FW   W25Q16JL   W25Q16JV   W25Q16VF   W25X16AL   W25X16AV   W25X16BV   W25X16V   XM25QH16B   XM25QU16B
25PExx (16Mb)	AT25PE16   AT25PE16[P528]
25..032 (32Mb)	A25L032   A25LQ32A   AT25DF321   AT25DF321A   AT25FF321A   AT25QL321   AT25SF321   AT25SL321   AT26DF321   AT26SD321   EN25B32   EN25F32   EN25P32   EN25Q32B   EN25QA32   EN25QH32   EN25S32   ES25P32   F25L32P   F25L32PA   F25L32Q   F25L32QA   F32   FM25Q32   FM25Q32A   GD25B32C   GD25LB32D   GD25LQ32   GD25LQ32C   GD25Q32B   GD25Q32C   IS25CQ032   IS25CQ032A   IS25LP032D   IS25LQ032B   IS25WP032   IS25WP032D   KH25L3205D   KH25L3206E   M25P32   M25PE32   M25PX32   M25X32   MX25L3205A   MX25L3205D   MX25L3206   MX25L3206E   MX25L3208D   MX25L3208E   MX25L3225D   MX25L3233F   MX25L3235D   MX25L3235E   MX25L3236D   MX25L3236E   MX25L3236F   MX25L3237D   MX25L3239E   MX25L3255E   MX25L3273E   MX25L3273F   MX25L3275E   MX25R3235F   MX25U3235E   MX25U3235F   MX25U3273F   N25Q032   NX25P32   Q32   QB25F320S33B   QH25F320S33B   S25FL032   S25FL032A   S25FL032K   S25FL032P   S25FL132K   SA25F320   SST25VF032B   W25Q32BV   W25Q32DW   W25Q32FV   W25Q32FW   W25Q32JV   W25Q32JW   W25Q32V   W25Q32VF   W25X32AV   W25X32BV   W25X32V   XM25QH32B   XM25QU32B   XM25QW32C
25..064 (64Mb)	A25LMQ64   A25LQ64   AT25DF641A   AT25QF641   AT25QL641   AT25SF641   AT25SL641   EN25F64   EN25Q64   EN25QA64   EN25QH64   EN25S64   F25D64QA   F25L64QA   F64   FM25Q64   FM25Q64A   GD25B64   GD25B64C   GD25LB64C   GD25LQ64B   GD25LQ64C   GD25Q64B   GD25Q64C   IS25LP064   IS25LP064A   IS25WP064   IS25WP064A   KH25L6405D   KH25L6406E   M25P64   M25PX64   MT25QL064A   MT25QU064A   MX25L64   MX25L6405   MX25L6405D   MX25L6406E   MX25L6408   MX25L6408D   MX25L6408E   MX25L6433   MX25L6433F   MX25L6435   MX25L6435E   MX25L6436E   MX25L6436F   MX25L6439   MX25L6439E   MX25L6445E   MX25L6455E   MX25L6456   MX25L6456E   MX25L6456F   MX25L6465E   MX25L6473E   MX25L6473F   MX25L6475E   MX25R6435F   MX25U6435   MX25U6435E   MX25U6435F   MX25U6473   MX25U6473F   N25Q064   N25Q064A11   N25Q064A13   Q64   QB25F640S33B   QH25F640S33B   S25FL064A   S25FL064K   S25FL064L   S25FL064P   S25FL164K   S25FS064S   S64   SST25VF064C   W25Q64BV   W25Q64CV   W25Q64DW   W25Q64FV   W25Q64FW   W25Q64JV   W25Q64JW   W25Q64VF   W25X64BV   W25X64V   XM25QH64A   XM25QU64A   XM25QW64C
25..128	AT25QL128A   AT25SL128A   EN25Q128   EN25QA128   EN25QH128   EN25QH128A   F25D128QA   F25L128QA   GD25B127D   GD25B128   GD25LB128D   GD25LQ128

(128Mb)	GD25LQ128C   GD25LQ128D   GD25Q127   GD25Q128B   GD25Q128C   IS25LP128   IS25LP128F   IS25WP128   IS25WP128F   KH25L12845E   M25P128   MT25QL128A   MT25QU128A   MX25L128   MX25L12805D   MX25L12835E   MX25L12835F   MX25L12836E   MX25L12839F   MX25L12845E   MX25L12845G   MX25L12850F   MX25L12855E   MX25L12855F   MX25L12865E   MX25L12865F   MX25L12873F   MX25L12873G   MX25L12875F   MX25LM12845G   MX25U128   MX25U12835F   MX25U12873F   MX25U12890F   MX25UM12845G   N25Q128   N25Q128A11   N25Q128A13   Q128   S25FL127S   S25FL128K   S25FL128L   S25FL128P   S25FL128S   S25FL129P   S25FS128S   W25Q128BV   W25Q128FV   W25Q128FW   W25Q128JV   W25Q128JW   XM25QH128A   XM25QU128C   XM25QW128C
ATXPxx (32-128Mb)	ATXP32, ATXP64, ATXP128
25..256 (256Mb)	EN25QA256   EN25QH256   EN25QH256A   EN25S256   GD25B256D   GD25B257D   GD25LB256D   GD25LQ256   GD25LQ256C   GD25LQ256D   GD25Q256   GD25Q257D   IS25LP256D   IS25LP256E   IS25WP256D   MT25QL256A   MT25QU256A   MX25L25635E   MX25L25635F   MX25L25639F   MX25L25645G   MX25L25655E   MX25L25655F   MX25L25673G   MX25L25735E   MX25L25735F   MX25L25835E   MX25L25855E   MX25LM25645G   MX25U25635F   MX25U25645G   MX25UM25645G   N25Q256A11   N25Q256A13   N25Q256A33   N25Q256A73   N25Q256A81   N25Q256A83   S25FL256L   S25FL256P   S25FL256S   S25FS256S   W25Q256FV   W25Q256JV   W25Q256JW   W25Q257FV   W25Q257JV   XM25QH256B   XM25QU256B   XM25QW256C
25..512 (512Mb)	GD25Q512   IS25LE512M   IS25LP512M   IS25WP512M   MT25QL512A   MT25QU512A   MX25L51237G   MX25L51245G   MX25L51255G   MX25LM51245G   MX25U51245G   MX25UM51245G   MX66L51235F   MX66U51235F   S25FL512S   S25FS512S   W25Q512JV
25..01 (1Gb)	MT25QL01G   MT25QU01G   W25Q01JV
25..02 (2Gb)	MT25QL02G   MT25QU02G
25..05 (512kb)	A25L05P   A25L512   A25L512A   A25LS512A   AC25LV512   AT25DL5121   AT25DN512C   AT25F512   AT26DF5121   EN25B05   EN25F05   EN25P05   F25D512Q   F25L0512   F25L05P   F25L05PA   F25L512P   F25L512Q   GD25D05C   GD25Q05   GD25WD05C   KH25L512   M25P05   M25P05-A   MS25X512   MX25L512   MX25L5121   MX25L5121E   MX25L512C   MX25L512E   MX25R512F   MX25U5121E   MX25V512   MX25V5121E   MX25V512C   MX25V512E   MX25V512F   PM25LD512   PM25LV512   PM25LV512A   SA25F005   SST25VF512   SST25VF512A   SST25WF512   SST25WF512B   W25Q05CL   W25Q05CV   W25X05CL
25..010 (1Mb)	A25L010   A25L010A   A25L10P   AC25LV010   AT24F1024   AT25DN011   AT25FS010   EN24LF10   EN25B10   EN25F10   EN25LF10   EN25P10   EN25S10   ES25P10   F25L01P   F25L01PA   GD25D10C   GD25Q10   GD25WD10C   IS25CD010   IS25LQ010B   KH25L1005   LE25FU106   LE25FU106B   M25P10   M25P10-A   M25PE10   MS25X10   MX25L1005   MX25L1005C   MX25L1005ZM   MX25L1006   MX25L1006E   MX25L1021   MX25L1021E   MX25L1025   MX25L1025C   MX25L1026   MX25L1026E   MX25R1035F   MX25U1001E   MX25V1006   MX25V1006E   MX25V1035F   NX25P10   PM25LD010   PM25LV010   PM25LV010A   S25FL001D   SA25F010   SST25VF010   SST25VF010A   SST25WF010   TS25L010A   W25D10V   W25P10V   W25Q10BV   W25Q10CL   W25Q10CV   W25Q10EW   W25X10AV   W25X10BL   W25X10BV   W25X10CL   W25X10L   W25X10V
25..020 (2Mb)	A25L020   A25L020C   A25L20P   AT25DF021   AT25F2048   AT25F2048N   EN25B20   EN25F20   EN25LF20   EN25P20   EN25S20   ES25P20   F25D02P   F25D02QA   F25L02P   F25L02PA   GD25D20C   GD25Q20B   GD25Q21B   GD25WD20C   IS25LQ020   IS25WD020   IS25WP020D   IS25WQ020   KH25L2005   LE25FU206   LE25S20   LE25U20   M25P20   M25PE20   M25U2033E   MS25X20   MX25L2005   MX25L2005C   MX25L2005ZM   MX25L2006   MX25L2025C   MX25L2026E   MX25L26C

	MX25R2035F   MX25U2032E   MX25U2033E   MX25U2035F   MX25V2006E   MX25V2033F   MX25V2035F   NX25P20   PM25LD020   PM25LV020   S25FL002D   SA25F020   SST25VF020   SST25VF020A   SST25VF020B   SST25WF020   SST25WF020B   TS25L020A   W25D20V   W25P20V   W25Q20BW   W25Q20CL   W25Q20CV   W25Q20EW   W25X20BL   W25X20BV   W25X20CL   XM25QU20B
25PExx (2Mb)	AT25PE20   AT25PE20[P264]
25..040 (4Mb)	A25L040   A25L040A   A25L40P   AT25DF041   AT25DF041A   AT25F4096   AT25FS040   AT25SF041   AT26F004   EN25B40   EN25F40   EN25LF40   EN25P40   EN25Q40   EN25S40   EN25T40   ES25M40   ES25P40   F25D04Q   F25D04QA   F25L004   F25L04P   F25L04PA   GD25D40C   GD25LQ40   GD25Q40B   GD25Q41B   GD25WD40C   IS25LD040   IS25LQ040B   IS25WD040   IS25WP040   IS25WP040D   IS25WQ040   KH25L4005A   KH25L4006E   LE25FS406   LE25FU406B   LE25S40   LE25U40   M25P40   M25PE40   MS25X40   MX25L4005   MX25L4005A   MX25L4005C   MX25L4006E   MX25L4025C   MX25L4026E   MX25R4035F   MX25U4032F   MX25U4033E   MX25U4035   MX25U4035F   MX25V4005   MX25V4005C   MX25V4006E   MX25V4035   NX25P40   PM25LD040   PM25LV040   S25FL004   S25FL004A   S25FL004K   S25FL204K   SA25F040   SST25VF040   SST25VF040A   SST25VF040B   SST25WF040   SST25WF040B   W25D40V   W25P40V   W25Q40BL   W25Q40BV   W25Q40BW   W25Q40CL   W25Q40EW   W25X40AL   W25X40AV   W25X40BL   W25X40BV   W25X40CL   W25X40L   W25X40V   XM25QH40B   XM25QU40B
25PExx (4Mb)	AT25PE40   AT25PE40[P264]
25..080 (8Mb)	A25L080   A25L80P   AT25DF081   AT25DF081A   AT25DL081   AT25SF081   AT26DF081   EN25B80   EN25D80   EN25F80   EN25P80   EN25Q80   EN25Q80A   EN25S80   EN25T80   ES25M80   ES25P80   F25D08QA   F25L08QA   FM25Q08   FM25Q08A   GD25D80C   GD25LQ80   GD25Q80B   GD25Q80C   GD25WD80C   IS25LP080D   IS25LQ080   IS25LQ080B   IS25WP080   IS25WP080D   KH25L8005   KH25L8006E   KH25L8036D   LE25S81   M25P80   M25PE80   M25PX80   M25X80   MS25X80   MX25L8005   MX25L8005ZM   MX25L8006E   MX25L8008E   MX25L8035E   MX25L8036E   MX25L8073E   MX25L8075E   MX25R8035F   MX25U8032E   MX25U8033E   MX25U8035   MX25U8035E   MX25U8035F   MX25V8005   MX25V8006E   MX25V8035F   NX25P80   PM25LV080   PM25LV080B   S25FL008A   S25FL008K   S25FL208K   SST25VF080B   SST25WF080   SST25WF080B   TS25L80P   W25D80V   W25P80V   W25Q40CL   W25Q80BL   W25Q80BV   W25Q80BW   W25Q80DL   W25Q80DV   W25Q80EW   W25Q80FV   W25Q80JV   W25X80AL   W25X80AV   W25X80BV   W25X80L   W25X80V   XM25QH80B   XM25QU80B
25PExx (8Mb)	AT25PE80   AT25PE80[P264]
25..016 (16Mb)	A25L016   A25L16P   A25LQ16   AT25DF161   AT25DL161   AT25SF161   AT26DF161   EN25B16   EN25D16   EN25F16   EN25P16   EN25Q16A   EN25QA16   EN25QH16   EN25S16   EN25T16   ES25M16   ES25P16   F16   F25L016   F25L16P   F25L16PA   F25L16Q   F25L16QA   FM25Q16   FM25Q16A   FM25Q16B   FM25S16A   GD25LQ16   GD25Q16B   IS25LP016D   IS25LQ016B   IS25WP016   IS25WP016D   KH25L1605A   KH25L1605D   KH25L1606E   KH25L1635D   LE25S161   M25P16   M25PE16   M25PX16   M25X16   MS25X16   MX25L1605   MX25L1605A   MX25L1605D   MX25L1606E   MX25L1608D   MX25L1608E   MX25L1633E   MX25L1635D   MX25L1635E   MX25L1636D   MX25L1636E   MX25L1673E   MX25L1675E   MX25R1635F   MX25U1633F   MX25U1635E   MX25U1635F   MX25V1635F   N25Q016   NX25P16   PM25LV016



	PM25LV016B   Q16   QB25F016S33B   QH25F016S33B   S25FL016   S25FL016A   S25FL016K   S25FL116K   S25FL216K   SA25F160   SST25VF016B   TS25L16AP   TS25L16BP   TS25L16P   W25Q16BF   W25Q16BV   W25Q16CL   W25Q16CV   W25Q16DV   W25Q16DW   W25Q16FW   W25Q16JL   W25Q16JV   W25Q16VF   W25X16AL   W25X16AV   W25X16BV   W25X16V   XM25QH16B   XM25QU16B
25PExx (16Mb)	AT25PE16   AT25PE16[P528]
25..032 (32Mb)	A25L032   A25LQ32A   AT25DF321   AT25DF321A   AT25QL321   AT25SF321   AT25SL321   AT26DF321   AT26SD321   ATXP32   EN25B32   EN25F32   EN25P32   EN25Q32B   EN25QA32   EN25QH32   EN25S32   ES25P32   F25L32P   F25L32PA   F25L32Q   F25L32QA   F32   FM25Q32   FM25Q32A   GD25B32C   GD25LB32D   GD25LQ32   GD25LQ32C   GD25Q32B   GD25Q32C   IS25CQ032   IS25CQ032A   IS25LP032D   IS25LQ032B   IS25WP032   IS25WP032D   KH25L3205D   KH25L3206E   M25P32   M25PE32   M25PX32   M25X32   MX25L3205A   MX25L3205D   MX25L3206   MX25L3206E   MX25L3208D   MX25L3208E   MX25L3225D   MX25L3233F   MX25L3235D   MX25L3235E   MX25L3236D   MX25L3236E   MX25L3236F   MX25L3237D   MX25L3239E   MX25L3255E   MX25L3273E   MX25L3273F   MX25L3275E   MX25R3235F   MX25U3235E   MX25U3235F   MX25U3273F   N25Q032   NX25P32   Q32   QB25F320S33B   QH25F320S33B   S25FL032   S25FL032A   S25FL032K   S25FL032P   S25FL132K   SA25F320   SST25VF032B   W25Q32BV   W25Q32DW   W25Q32FV   W25Q32FW   W25Q32JV   W25Q32JW   W25Q32V   W25Q32VF   W25X32AV   W25X32BV   W25X32V   XM25QH32B   XM25QU32B   XM25QW32C
25..064 (64Mb)	A25LMQ64   A25LQ64   AT25DF641A   AT25QF641   AT25QL641   AT25SF641   AT25SL641   ATXP64   EN25F64   EN25Q64   EN25QA64   EN25QH64   EN25S64   F25D64QA   F25L64QA   F64   FM25Q64   FM25Q64A   GD25B64   GD25B64C   GD25LB64C   GD25LQ64B   GD25LQ64C   GD25Q64B   GD25Q64C   IS25LP064   IS25LP064A   IS25WP064   IS25WP064A   KH25L6405D   KH25L6406E   M25P64   M25PX64   MT25QL064A   MT25QU064A   MX25L64   MX25L6405   MX25L6405D   MX25L6406E   MX25L6408   MX25L6408D   MX25L6408E   MX25L6433   MX25L6433F   MX25L6435   MX25L6435E   MX25L6436E   MX25L6436F   MX25L6439   MX25L6439E   MX25L6445E   MX25L6455E   MX25L6456   MX25L6456E   MX25L6456F   MX25L6465E   MX25L6473E   MX25L6473F   MX25L6475E   MX25R6435F   MX25U6435   MX25U6435E   MX25U6435F   MX25U6473   MX25U6473F   N25Q064   N25Q064A11   N25Q064A13   Q64   QB25F640S33B   QH25F640S33B   S25FL064A   S25FL064K   S25FL064L   S25FL064P   S25FL164K   S25FS064S   S64   SST25VF064C   W25Q64BV   W25Q64CV   W25Q64DW   W25Q64FV   W25Q64FW   W25Q64JV   W25Q64JW   W25Q64VF   W25X64BV   W25X64V   XM25QH64A   XM25QU64A   XM25QW64C
25..128 (128Mb)	AT25QL128A   AT25SL128A   ATXP128   EN25Q128   EN25QA128   EN25QH128   EN25QH128A   F25D128QA   F25L128QA   GD25B127D   GD25B128   GD25LB128D   GD25LQ128   GD25LQ128C   GD25LQ128D   GD25Q127   GD25Q128B   GD25Q128C   IS25LP128   IS25LP128F   IS25WP128   IS25WP128F   KH25L12845E   M25P128   MT25QL128A   MT25QU128A   MX25L128   MX25L12805D   MX25L12835E   MX25L12835F   MX25L12836E   MX25L12839F   MX25L12845E   MX25L12845G   MX25L12850F   MX25L12855E   MX25L12855F   MX25L12865E   MX25L12865F   MX25L12873F   MX25L12873G   MX25L12875F   MX25LM12845G   MX25U128   MX25U12835F   MX25U12873F   MX25U12890F   MX25UM12845G   N25Q128   N25Q128A11   N25Q128A13   Q128   S25FL127S   S25FL128K   S25FL128L   S25FL128P   S25FL128S   S25FL129P   S25FS128S   W25Q128BV   W25Q128FV   W25Q128FW   W25Q128JV   W25Q128JW   XM25QH128A   XM25QU128C   XM25QW128C
25..256 (256Mb)	EN25QA256   EN25QH256   EN25QH256A   EN25S256   GD25B256D   GD25B257D   GD25LB256D   GD25LQ256   GD25LQ256C   GD25LQ256D   GD25Q256   GD25Q257D   IS25LP256D   IS25WP256D   MT25QL256A   MT25QU256A   MX25L25635E   MX25L25635F   MX25L25639F   MX25L25645G   MX25L25655E   MX25L25655F   MX25L25673G

	MX25L25735E   MX25L25735F   MX25L25835E   MX25L25855E   MX25LM25645G   MX25U25635F   MX25U25645G   MX25UM25645G   N25Q256A11   N25Q256A13   N25Q256A33   N25Q256A73   N25Q256A81   N25Q256A83   S25FL256L   S25FL256P   S25FL256S   S25FS256S   W25Q256FV   W25Q256JV   W25Q256JW   W25Q257FV   W25Q257JV   XM25QH256B   XM25QU256B   XM25QW256C
25..512 (512Mb)	GD25Q512   IS25LP512M   IS25WP512M   MT25QL512A   MT25QU512A   MX25L51237G   MX25L51245G   MX25L51255G   MX25LM51245G   MX25U51245G   MX25UM51245G   MX66L51235F   MX66U51235F   S25FL512S   S25FS512S   W25Q512JV
25..01 (1Gb)	MT25QL01G   MT25QU01G   W25Q01JV
25..02 (2Gb)	MT25QL02G   MT25QU02G

## 9.9. FLASH SPI 26... series

Supports low-voltage serial flash memories (1.8V) and standard (3.3V)

26.. (4 - 64MBit)	SST26WF040B   SST26WF040BA   SST26WF080B   SST26WF080BA   SST26VF016   SST26VF016B   SST26WF016B   SST26WF016BA   SST26VF032   SST26VF032B   SST26VF032BA   SST26VF064B   SST26VF064BA   SST26VF064C   SST26VF064CA   SST26WF064C   SST26WF064CA
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## 9.10. FLASH SPI 45... series (DATA FLASH)

45.. (1 - 64MBit)	Atmel / Adesto: AT45DB021   AT45DB021D   AT45DB021E   AT45DB041   AT45DB041D   AT45DB041E   AT45DB081   AT45DB081D   AT45DB081E   AT45DB161   AT45DB161D   AT45DB161E   AT45DQ161   AT45DB321   AT45DB321D   AT45DB321E   AT45DQ321   AT45DB642   AT45DB642D   AT45DB641E Micron: M45PE10   M45PE20   M45PE40   M45PE80   M45PE16
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## 9.11. FLASH SPI NAND

1Gb	GD5F1GQ4RB   GD5F1GQ4RC   GD5F1GQ4RE   GD5F1GQ4RF   GD5F1GQ4UB   GD5F1GQ4UC   GD5F1GQ4UE   GD5F1GQ4UF   IS37SML01G1   IS38SML01G1   MT29F1G01AAADD   MT29F1G01ABAFD   MT29F1G01ABAGD   MT29F1G01ABBFD   MT29F1G01ABBGD   TC58CVG0S3HRA   TC58CYG0S3HRA   W25N01GV   W25N01GW   W25N01JW
2Gb	GD5F2GQ4RB   GD5F2GQ4RC   GD5F2GQ4RE   GD5F2GQ4RF   GD5F2GQ4UB   GD5F2GQ4UC   GD5F2GQ4UE   GD5F2GQ4UF   MT29F2G01AAAED   MT29F2G01ABAGD   MT29F2G01ABBGD   TC58CVG1S3HRA   TC58CYG1S3HRA   W25N02JW   W25N02KV
4Gb	MT29F4G01ABAFD   MT29F4G01ABBFD   MT29F4G01ADAGD   TC58CVG2S0HRA   TC58CYG2S0HRA

## 9.12. FRAM I2C 24... series

24..04 (4kb)	FM24C04   FM24C04B   FM24CL04   FM24CL04B   MB85RC04V
24..16 (16kb)	FM24C16   FM24C16B   FM24CL16   FM24CL16B   FM25C160B   MB85RC16   MB85RC16V
24..64 (64kb)	FM24C64   FM24C64B   FM24CL64   FM24CL64B   MB85RC64   MB85RC64A   MR44V064B
24..01 (128kb)	FM24V01   MB85RC128   MB85RC128A
24..02 (256kb)	FM24V02   FM24V02A   FM24W256   MB85RC256V
24..05 (512kb)	FM24V05
24..10 (1Mb)	FM24V10   FM24VN10   MR44V100A

### 9.13. FRAM SPI 25... series

25..040 (4kb)	FM25040   FM25040B   FM2504B   FM25CL04B   FM25L04   FM25L04B
25..160 (16kb)	FM25C160   FM25C160B   FM25L16   FM25L16B
25..320 (32kb)	MR45V032A
25..640 (64kb)	FM25640   FM25640B   FM25CL64   FM25CL64B   MB85RS64   MB85RS64A   MR45V064B
25..01 (128kb)	FM25V01   FM25V01A   MB85RS128A   MB85RS128B
25..02 (256kb)	FM25V02   FM25V02A   FM25W256   MB85RS256A   MB85RS256B   MR45V256A
25..05 (512kb)	FM25V05
25..10 (1Mb)	FM25V10   FM25VN10   MR45V100
25..20 (2Mb)	CY15B102Q   CY15V102Q   FM25H20   FM25V20   FM25V20A   MR45V200
25..40 (4Mb)	CY15B104Q   CY15V104Q
25..80 (8Mb)	CY15B108Q   CY15V108Q

## 9.14. Optical and ethernet modules (SFP/SFP+ transceivers)

Please note!

- there is SFP/QSFP/XFP adapter required with external power supply,
- MSA standard is supported (e.g. SFF-8472, SFF-8636, INF-8077i),
- possibility to enter manufacturer/host password and program write protected transceivers,
- brute force password tool (searching password for protected transceivers with unknown password),
- change manufacturer info, model, serial number etc. and recalculate checksums directly from REVELPROG-IS application

SFP / SFP+	SFP and SFP+, read/write block 0xA0 (256B), read block 0xA2 (256B), read/write page 0-255 (128B), standard MSA example manufacturers: GBC, HUAWEI, GPON, JDSU, MIKROTIK, OPTEC, OPTION, WTD and other OEM
QSFP / QSFP+	QSFP and QSFP+, read/write A0h block (256B), read/write 0-255 page (128B), standard MSA example manufacturers: CISCO, HP, FINISAR, NOKIA, HUAWEI, JDSU and other OEM
XFP	XFP, read/write A0h block (256B), read/write 0-255 table (128B), standard MSA example manufacturers: 10GTEK, CISCO, FINISAR, OPNEXT, JDSU and other OEM

## 9.15. Your suggestions

If you have any suggestion for supported device list please contact us at [lab@reveltronics.com](mailto:lab@reveltronics.com). There is possibility to add any serial device with I2C, SPI or uWire interface (EEPROM/FLASH/FRAM).

## **11. APPENDIX B - video tutorials and technical support**

Programming examples on youtube:

[https://www.youtube.com/playlist?list=PLKdrjJPMLd8KBX12vHdyCg\\_0JfNT0Aw7U](https://www.youtube.com/playlist?list=PLKdrjJPMLd8KBX12vHdyCg_0JfNT0Aw7U)

REVELTRONICS' forum:

<https://forum.reveltronics.com/viewforum.php?f=17>