

ICP Secure Programming Utility

User's Manual

IMPORTANT NOTE:

- Starting from year 2019 Softlog Systems manufactures ICP2(<u>G3</u>), ICP2-GANG(<u>G3</u>), ICP2-COMBO(<u>G3</u>) and ICP2-Portable(<u>G3</u>) programmers instead of legacy ICP2, ICP2-GANG, ICP2-COMBO and ICP2-Portable
- Due to nearly full compatibility all of them are referred below as ICP2, ICP2-GANG, ICP2-COMBO and ICP2-Portable respectively. If difference is applied then they are referred as "G3 products" and "non-G3 products"
- ICP2-ISO(G3) and ICP2-LAN(G3) products are also referred as ICP2-ISO and ICP2-LAN

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1 Host Computer Requirements

- IBM PC compatible
- Windows-7/8/10/11. Contact Softlog Systems for operation with Win-95/98/NT/2000/XP/Vista/
- Display resolution: 1600x900 or higher
- Free USB port (all programmers excluding ICP2-LAN), free RS-232 port (all programmers excluding ICP2-Portable) or free LAN connection (ICP2-COMBO or ICP2-LAN)

2 Installation

2.1 Software Installation

2.1.1 Software

• Visit our site and get the latest software: <u>https://softlog.com/downloads/</u>

2.1.2 ICP Family Standard Software

The manual assumes that the ICP Family Windows software "ICP for Windows" is installed

- 2.1.3 Secure Programming Utility Installation
- Run "IcpSecureProgADMIN_setup_XXX.exe"

2.2 Hardware Installation

2.2.1 Activated Options

The following options in ICP programmer should be activated to allow operation with the secure programming software:

- DLL/Command Line Activation (D)
- Security Activation (S)

Example: ICP2-DS, ICP2GANG(G3)-DS

2.2.2 Follow ICP Family User's Manual for hardware installation

Glossary 3

| Definition | File | Description |
|------------------|-----------|--|
| | Extension | |
| Programmer Unit | - | ICP2, ICP2-GANG/ICP2-COMBO, ICP2-Portable, ICP2-ISO or ICP2-LAN |
| | | programmer |
| ADMIN | - | The person keeping the vital information: |
| | | - Password |
| | | - HEX file / environment |
| | | - Secure buffer |
| USER | - | The end user with limited access at a remote location |
| Security ID file | *.SID | File created and maintained by ADMIN containing: |
| | | Security ID, Password, Batch Number, Secure buffer (optional), Secure |
| | | buffer properties (optional) |
| Security ID | - | ICP programmer friendly name, 16 characters max: not protected, used |
| | | for convenient visual identification |
| Password | - | Password |
| Batch Number | - | Batch to be programmed. Used to avoid multiple update of the non-volatile |
| | | counter by the same secure environment file |
| Counter | - | Non-volatile down-count counter of programmed units |
| Secure Buffer | - | Buffer inside ICP that contains vital data which will override PM (flash) or |
| | | DM (EEPROM) |
| Standard | *.PJ2 | Standard ICP2 environment file containing HEX file and device (MCU) |
| Environment | | properties (device database, voltages, etc.) |
| Secure | *.SEN | Encrypted environment containing a standard ICP environment, properties |
| Environment | | of the Security ID file (security ID name, password, batch number) and a |
| | | value for non-volatile counter. Prepared by ADMIN to be sent to USER to |
| | | update the environment and/or counter |
| | | |
| | | NOTE: secure environment should be deleted to operate a standard one - |
| | | see chapter 12 |

4 Files and Directories

4.1 Application Directory (with EXE file)

- IcpSec.exe - secure programming utility software EXE file •
- file defining ADMIN or USER mode IcpSec.def •
- IcpDII.dll - ICP family DLL
 - Products.ini - product(s) information
 - application INI file IcpSec.ini
 - last used product (created automatically) Last_num.txt

4.2 Files in a Product Directory (Example for product named "Prod1")

- Prod1.cfg •
 - ICP configuration file - secure programming utility option file
- Prod1.opt Prod1_xxx.sen •
- secure environment files - summary file of the latest secure environment(s) to be sent to ICP programmer
- Prod1.sum • Prod1.log •

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- log file for Prod1 - ICP serialization file (optional)
- Prod1.ser *.num
 - ICP serialization file with numbers (optional)

5 Menu Commands

ADMIN Menu (Alt-A)

Product Manager Create Security ID File Send Security ID File To Programmer Create Secure Environment(s)

Product Menu (Alt-D)

Select Product Close Product

Communication/Environment (Alt-C)

Select COM Transfer Secure Environment to Programmer Direct Secure Environment File (SEN) Transfer Create a new product to be programmed Create Security ID File Send Security ID File to ICP programmer Create Secure Environment(s)

Select product to be operated Close active product

Select and save desired COM port Transfer Secure Environment(s) to programmer Transfer Secure Environment directly (no product selected)

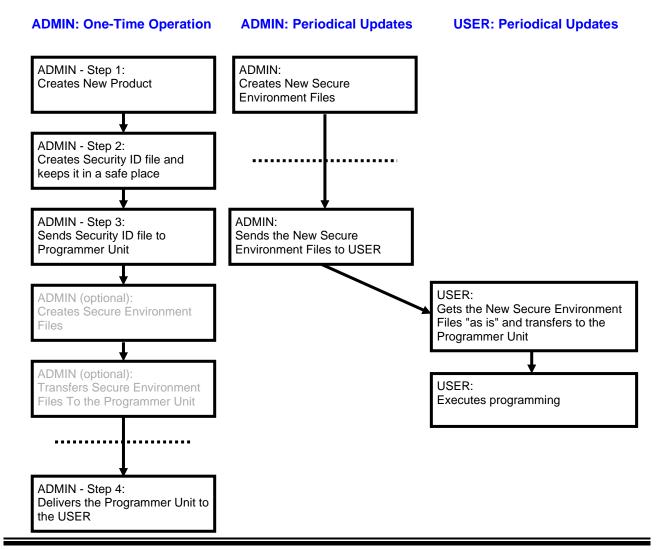
Program Menu (Alt-P) Program

Open dialog to execute programming

Help Menu (Alt-H) User's Manual About

Open this User's Manual Display software versions

6 High-Level Flowchart



7 Quick Start (ADMIN: One-Time Operation)

7.1 ADMIN – Preparations: Prepare ICP Configuration File

- Run standard ICP family software "ICP for Windows"
- Run "Programmer → Quick Start Wizard" and follow on-screen instructions. Press "Finish" or "Next" when "Save Configuration" screen appears and exit the Wizard

| Quick Start Wizard | × |
|--------------------------------|--|
| Save Configu Current config | ration guration will be saved to file "icp01.cfg" |
| | |
| | 🔽 Save Configuration |
| | |
| | |
| | < Back Finish Cancel |

Configuration file "icp01.cfg" is saved in the default directory: C:\Softlog\IcpWin

• Exit "ICP for Windows"

7.2 ADMIN – Step 1: Create New Product

Create a directory for all security products: "C:\Softlog\SecurityProducts"

NOTE: Softlog Systems strongly recommends to use this directory path/name for future compatibility with secure programming Wizard (under development)

- Run "ICP Secure Programming Utility (ADMIN)"
- Select "ADMIN/Product Manager"
- Enter new product name, for example "Prod1"
- Select product directory "C:\Softlog\SecurityProducts"
- Select ICP configuration file "C:\Softlog\IcpWin\Icp01.cfg"
- NOTE: since the latest ICP software/firmware supports fully standalone serialization we don't recommend to enter ICP serialization and number files here

 Press OK. The following files have been created: C:\SecurityProducts\Prod1\Prod1.cfg C:\SecurityProducts\Prod1\Prod1.opt

| Product Manager | × |
|------------------------------------|----------------|
| Existing Product Name D | irectory |
| | |
| | |
| | |
| | |
| | |
| | Delete Product |
| | |
| New Product Name: Prod1 | |
| New Product Directory: | |
| C:\Softlog\SecurityProducts | 2 |
| ICP Configuration File: | |
| C:\Softlog\lcpWin\lcp01.cfg | 2 |
| ICP Serialization File (optional): | |
| | 2 |
| ICP Number File (optional): | |
| | 2 |
| 🔽 Generate Log File | |
| ок | Cancel |
| | |

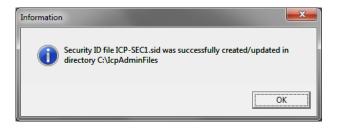
7.3 ADMIN – Step 2: Create Security ID File

- Create a separate directory, for example "C:\lcpAdminFiles" IMPORTANT: Keep Security ID file(s) in a safe place <u>unreachable</u> to the USER
- Run "ADMIN → Create Security ID File"
- Enter Security ID name, for example "ICP-SEC1"
- Enter and repeat password (6-16 characters)
- Enter batch number, for example 1
- Leave "Use Secure Buffer" unchecked. NOTE: see chapter 10 for using Secure Buffer
- Select filename to be saved, for example "C:\IcpAdminFiles\Icp-Sec1.sid"

| ate Security ID File | | | | | | | | | |
|------------------------------------|-------------|----|-------|------|---------|----|----|----|----|
| Base Security ID File | | | | | | _ | | | |
| | | | | | Preload | | | | |
| Security ID (6-16 characters): | ICP-SEC1 | | | | | _ | | | |
| Password (6-16 characters): | ****** | | | | | | | | |
| Repeat Password: | ****** | | | | | | | | |
| Batch Number (1-32767): | 1 | | | | | | | | |
| Use Secure Buffer 🛛 | | | | | | | | | |
| | 0x00: | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| | 0x08: | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| | 0x10: | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| Secure Buffer (0-64 bytes): | 0x18: | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| becare barrer (o or byces). | 0x20: | | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| | 0x28: | | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| | 0x30: | | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| | 0x38: | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| Secure Buffer Length, bytes (0-64) | : | | | | | | | | |
| Secure Buffer Destination: | Flash | ۲ | O EEP | PROM | | | | | |
| Secure Buffer Start Address in PIC | (bytes): 0x | | | | | | | | |
| Script: 0 - default (standard) | | | | | | | | | |
| Save to File: C:\IcpAdminFiles\ICF | P-SEC1.sid | | | | | | | | 2 |
| | ок | | Ca | ncel | | | | | |

NOTE: Base Security ID file may be used (if already exists). If it is, then select and press "Preload"

Press OK

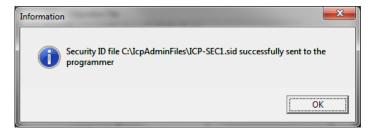


7.4 ADMIN – Step 3: Send Security ID File to Programmer

- Connect Programmer Unit to the PC NOTE: "ICP for Windows" should be kept closed
- Run "Communication/Environment → Select COM" and select the COM. Follow and confirm on-screen instructions
- Select "ADMIN \rightarrow Send Security ID File to Programmer"
- Select Security ID File, for example "C:\IcpAdminFiles\ICP-SEC1.sid"
- Press "Apply" to validate that Security ID name is OK

| Send Security ID File to Programme | r | × |
|------------------------------------|--------------|---------|
| ICP Configuration File: | | |
| C:\Softlog\SecurityProducts\Pro | d1\Prod1.cfg | |
| | | |
| Security ID File: | | |
| C:\lcpAdminFiles\lCP-SEC1.sid | | |
| Security ID: ICP-SEC1 | | |
| | | |
| SEND | Apply | Cancel |
| | | |

• Press "SEND". The Security ID File has been transferred and saved in programmer non-volatile memory



7.5 ADMIN (Optional): Create Secure Environment and Transfer to Programmer See chapter 8 (not required at this stage but may be done)

7.6 ADMIN – Step 4: Deliver the Programmer Unit to the USER

ADMIN: Periodical Updates 8

Admin – Preparations: Create Standard ICP Environment 8.1

- Run standard ICP family software "ICP for Windows" •
- Run "Environment \rightarrow Environment Wizard" and follow on-screen instructions: • Load your HEX file
 Save environment

| Environment Wizard | X |
|----------------------------|----------------------|
| Save Environment | |
| | |
| Save Environment | |
| C:\lcpAdminFiles\Prod1.pj2 | |
| | |
| | |
| | Ţ |
| | < Back Next > Cancel |

Press Next

| Environment Wizard | | |
|---------------------------|----------------------|--------------|
| Transfer Environment F | ile To Programmer | |
| | | |
| | | |
| Transfer Environment File | | |
| | Transfer Environment | |
| | | |
| | | |
| | | |
| | | Ļ |
| | | ext > Cancel |

- Press Cancel to exit the Wizard •
- Exit "ICP for Windows"

8.2 ADMIN: Create Secure Environment

- Run "ICP Secure Programming Utility (ADMIN)"
- Run "Product \rightarrow Select Product", select "Prod1" and press Select
- Run "ADMIN → Create Secure Environment"
- Select Security ID file "C:\IcpAdminFiles\Icp-Sec1.sid". Don't press "Apply"
- Enter total number of devices to be programmed, for example 1000 NOTE: the following options are also available:
 - "Don't update": counter value inside the programmer unit will be kept
 - "Unlimited"
- Mark "Environment" check box
 - NOTE: "Environment" check box can be unmarked if only counter should be updated
- Press "Apply"

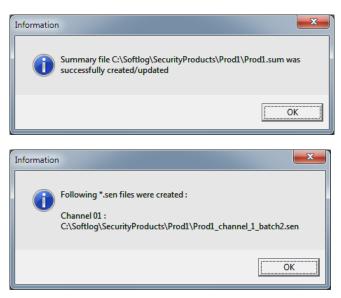
| Delete Cupdate Counter Number of Devices for this Batch Value Environment Selected Channel Batch Number: Number of Devices for this Channel: | Security ID Fil | | |
|--|-----------------|---|------------------------|
| Batch Number Warning : be sure that batch number is higher than previous batch Summary File for Secure Environment(s): Delete Update Counter Number of Devices for this Batch Value 1000 Image: Environment Apply Selected Channel Channels Batch Number: Use for All Channels | C:\lcpAdminF | iles\lcp-Sec1.sid | |
| Summary File for Secure Environment(s): Delete Update Counter Number of Devices for this Batch Value Environment Selected Channel Batch Number: Number of Devices for this Channel: Number of Devices for this Channel: | | Security ID | |
| Summary File for Secure Environment(s): Delete Update Counter Number of Devices for this Batch Value Environment Selected Channel Batch Number: Number of Devices for this Channel: | | Batch Number Warning : be sure that batch number is highe | r than previous batch! |
| Delete C Update Counter Number of Devices for this Batch Value 1000 Environment Selected Channel Channels Use for All Channels Batch Number: Number of Devices for this Channel: | | , | |
| Counter Number of Devices for this Batch Value | Summary File | for Secure Environment(s): | |
| Counter Number of Devices for this Batch Value | | | |
| Value Value Image: Channel Environment Selected Channel Environment Channels Use for All Channels Batch Number: Number of Devices for this Channel: | Delete 🔘 | @ Update | |
| Apply Environment Environment Environment Environment Use for All Channels Batch Number: Number of Devices for this Channel: | | | |
| Environment Selected Channel Image: Channel | | Value _ 1000 | |
| Selected Channel Channels Use for All Channels Batch Number: Number of Devices for this Channel: | - | Environment | Apply |
| Selected Channel Channels Use for All Channels Batch Number: Number of Devices for this Channel: | | | |
| Use for All Channels Batch Number: Number of Devices for this Channel: | | | |
| Use for All Channels Batch Number: Number of Devices for this Channel: | | Environment | |
| Use for All Channels Batch Number: Number of Devices for this Channel: | Selected Cha | | Channels |
| Batch Number: Number of Devices for this Channel: | Selected Cha | nnel 🔽 | |
| Number of Devices for this Channel: | Selected Cha | nnel 🔽 | |
| | Selected Cha | | |
| Save Secure Environment for this Channel to File (*.sen) ; | Selected Cha | unnel | |
| | Selected Cha | unnel | |
| | | nnel | |
| | | nnel | |
| | | nnel | |

• Open file "C:\lcpAdminFiles\Prod1.pj2"

Secure Programming Utility: User's Manual

| ate Secure Environment(s) | |
|---|---|
| Security ID File: | |
| C:\lcpAdminFiles\lcp-Sec1.sid | |
| ICP-SEC1 Security ID | |
| 2 Batch Number Warning : be sure that batch number is higher than previous batch! | |
| Summary File for Secure Environment(s): | |
| C:\Softlog\SecurityProducts\Prod1\Prod1.sum | |
| Delete C Ø Update | |
| Counter Number of Devices for this Batch | |
| Value 👤 1000 | |
| Environment Apply | |
| | Starting from version 1.3.4 number |
| Environment | of devices per channel can be |
| Selected Channel 1 ICP2 | updated after "Apply" button is pressed: |
| C:\lcpAdminFiles\Prod1.pi2 | <u>Don't</u> press "Use for all |
| | channels" if you want secure |
| 2 Batch Number: | environments with different PJ2 file and/or secure counter |
| 1000 Vumber of Devices for this Channel: | Enter number 16777215 for |
| Save Secure Environment for this Channel to File (*.sen) : | "Unlimited" (equivalent to |
| C:\Softlog\SecurityProducts\Prod1_Channel_1_batch2.sen | 0xFFFFF) |
| | |
| OK Cancel | |
| | |

• Press OK to confirm on-screen messages



NOTE 1: the following files were created in directory "C:\Softlog\SecurityProducts\Prod1":

- Prod1.sum
- Prod1_channel_1_batch2.sen

NOTE 2: batch number in Security ID file was automatically incremented

8.3 ADMIN: Send Setup and Secure Environment Files to USER

8.3.1 The 1st time

• The following files should be sent to USER:

"IcpSecureProgUSERsetup_XXX.exe"

C:\Softlog\IcpSecurity(ADMIN)**Products.ini** C:\Softlog\IcpSecurity(ADMIN)**IcpSec.ini**

C:\Softlog\SecurityProducts\Prod1\<All files>

8.3.2 Updates Only

• The following files should be sent to USER:

C:\Softlog\SecurityProducts\Prod1**Prod1.sum** C:\Softlog\SecurityProducts\Prod1**<all or last>.sen**

9 USER

9.1 USER: Software installation

- Double-click "IcpSecureProgUSERsetup_XXX.exe" and follow the on-screen instructions
- Copy files received from ADMIN as follows:
 C:\Softlog\lcpSecurity(USER)\Products.ini
 C:\Softlog\lcpSecurity(USER)\lcpSec.ini

C:\Softlog\SecurityProducts\Prod1\<All files>

9.2 USER: Hardware installation

- Connect the supplied programmer unit to the PC
- Follow "USB Driver Installation" or "USB Driver (FTDI) Installation" manual to install USB driver. This
 operation is not required for RS-232 (COM) connection
- Run "ICP Secure Programming Utility (USER)"
- Select "Prod1" (as prompted or "Product → Select Product")
- Exit "Program" dialog (if appears)
- Run "Communication/Environment → Select COM" and select the COM. Follow and confirm on-screen instructions
- Exit "ICP Secure Programming Utility (USER)"

9.3 USER: Transfer Secure Environment to Programmer Unit

NOTE: This operation can be done by both ADMIN and USER

- Run "ICP Secure Programming Utility (USER)"
- Select "Prod1" (as prompted or "Product → Select Product")
- Exit "Program" dialog (if appears)
- Run "Communication/Environment → Transfer Secure Environment to Programmer"
- Select suggested "C:\SecurityProducts\Prod1\Prod1.sum" file
- Press "Preload"

| Transfer Secure Environment to Programmer | × |
|--|---|
| Preload Summary File for Secure Environment(s) (*.sum) | |
| C:\Softlog\SecurityProducts\Prod1\Prod1.sum | 2 |
| Preload | |
| Secure Environment (*.sen) | |
| Channel 1 ICP2 C:\Softlog\SecurityProducts\Prod1\Prod1_channel_1_batch2.sen | |
| Send | |

• Press "Send"



Programmer is ready for operation

• Exit "ICP Secure Programming Utility (USER)"

9.4 USER: Program Target Device

9.4.1 Programming with PC

NOTE: This operation can be done by both ADMIN and USER

- Run "ICP Secure Programming Utility (USER)"
- Select "Prod1" (as prompted or "Product \rightarrow Select Product")
- Run "Program \rightarrow Program" if "Program" dialog does not appear
- Connect the target device

| F | rogram | | | | | × |
|---|---------------|---------------------|---|-------------------------|---------------|-------------|
| | Channel | Hex File Name | | Hex File Checksum (HEX) | Counter Limit | Security ID |
| l | Channel1/ICP2 | 18F2520.hex | | 2712 | 1000 | ICP-SEC1 |
| | | | | | | |
| L | | | | | | |
| l | | | | | | |
| l | | | | | | |
| l | | | | | | |
| | , Cu | rrent Session | _ | | | |
| | Passed: | 00000 | | 1 | | |
| L | Failed: | 00000 | | _ | | |
| L | Total: | 00000 | | Pro | gram (F5) | |
| | Limit All Cha | annels: 1000 | | | | |

- Press "Program(F5)"
- Repeat programming with new target devices
- Exit "ICP Secure Programming Utility (USER)"

9.4.2 Programming without PC

• The programmer is ready for standalone operation by a push-button "GO" to be connected between pins "GO" and "GND" of the programmer connector

10 Direct Secure Environment File (SEN) Transfer

Direct secure environment file (SEN) transfer allows transfer SEN file to a programmer w/o product mechanism. All settings are done in a single window

| Direct Secure Environment File (SEN) Transfer | × |
|---|--|
| Programmer Settings Select Programmer ICP2/ICP2(HC) Select COM COM18 Select Environment Environment 1 | GANG/COMBO Channel Box Number 1 Channel Number 1 |
| Secure Environment (SEN) File C:\Softlog\SecurityProducts\ICP3M_1826\ICP3M_1826_channel_1_batch7.sen | Transfer |
| Cancel | |

11 Appendix A: Secure Buffer and Scripts

Secure buffer provides additional protection for your IP. Contact Softlog Systems for more information

11.1 Limitations

11.1.1 Script 0 (standard): no limitations

11.1.2 Script 1 (optimized for secure buffer)

- Maximum 64-byte page size is supported
- Entire flash or EEPROM write page should be selected as a secure buffer see datasheet and programming specification for your device or contact Softlog Systems

11.2 Example: Script 1, PIC18F2520

Task: use minimum secure buffer in flash starting from address 0x120

Solution: write buffer of PIC18F2520 is 32 bytes. It means that Secure Buffer size should be 32 (shown below) or 64 and start address in PIC should be multiple of 32 (0x20)

- Run "ADMIN → Create Security ID File" and follow paragraph 7.3
- Mark "Use Secure Buffer"
- Fill-in the first 32 bytes of the secure buffer with values taken from the original HEX files starting from address 0x120
- Select "Secure Buffer Length": 32
- Select "Secure Buffer Destination": Flash

- Select "Secure Buffer Start Address in MCU: 0x120 (in fact, byte offset)
- Select "Script": 1 optimized for secure buffer

| reate Security ID File | | | | | | | | | x |
|---------------------------------------|--------------------|-------|----------|--------|-------|----|----|--------|-----------|
| Base Security ID File | | | | | | | | | |
| C:\IcpAdminFiles\Icp-Sec1.sid | | | | | 2 | | P | reload | |
| Security ID (6-16 characters): | ICP-SEC1 | | | | | _ | | | |
| Password (6-16 characters): | ****** | | | | | | | | |
| Repeat Password: | **** | | | | | | | | |
| | 2 | | | | | | | | |
| Batch Number (1-32767): | 2 | | | | | | | | |
| Use Secure Buffer 🔽 | | | | | | | | | |
| | 0x00: | 53 | 12 | 57 | 61 | 51 | 51 | 75 | 72 |
| | 0x08: | | | 65 | 23 | 73 | 42 | 35 | 42 |
| | 0x10: | | | 23 | 74 | 23 | 54 | 23 | 72 |
| Secure Buffer (0-64 bytes): | 0x18: | | | 52 | 37 | 47 | 23 | 52 | 75 |
| | 0x20: 0x28: | | | 00 | 00 | 00 | 00 | 00 | 00 |
| | 0x28: | | | 00 | 00 | 00 | 00 | 00 | 00 |
| | 0x30. | | | 00 | 00 | 00 | 00 | 00 | 00 |
| Secure Buffer Length, bytes (0-64): | 32 | | | | | | - | | |
| Secure Buffer Destination: | Flash | œ | C EEF | ROM | | | | | |
| Secure Buffer Start Address in PIC (b | oytes): 0x 120 | | | | | | | | |
| Script: | 1 - opt | imize | d for se | cure b | uffer | | • | | |
| Save to File: C:\IcpAdminFiles\Icp- | Sec1_with_SecBuf.s | sid | | | | | | | 2 |
| | ОК | | Ca | ncel | | | | | |

- Save SID file and transfer to the programmer
- Programmer initialized with security ID file above will operate as follows:
 - Program flash excluding addresses 0x120-0x13E
 - Program EEPROM and User ID
 - Verify flash, EEPROM and User ID
 - Program and verify secure buffer (flash addresses 0x120-0x13E)
 - Program and verify configuration bits

12 Appendix B: Deleting Secure Environment from Programmer Unit

There are several ways to delete Secure Environment inside the programmer:

 ADMIN only: enter "ADMIN → Send Security ID File to Programmer" and send a *.SID file to the programmer

NOTE for ICP2-Portable: only selected environment will be physically deleted, other environments will be open for standard environment operation

 ADMIN or USER: create new secure environment valid for a designated programmer unit with parameter "Delete" (by ADMIN, ADMIN → Create Secure Environment, see attached PDF) and transfer to the programmer

| Create Secure Environment(s) | × |
|---|--------------|
| Security ID File: | |
| C:\lcpAdminFiles\lcp-Sec1.sid | 2 |
| Security ID | |
| Batch Number Warning : be sure that batch number is higher than pre | vious batch! |
| Summary File for Secure Environment(s): | |
| | |
| Delete 🙃 🔿 Update | |
| Counter Number of Devices for this Batch | |
| Value | |
| Environment | Apply |
| | |
| Environment | Channels |
| | Channels |
| | |
| Use for All Channels | |
| Batch Number: | |
| Number of Devices for this Channel: | |
| Save Secure Environment for this Channel to File (*.sen) : | |
| | |
| | |
| OK Cancel | |

13 Appendix C: Viewing Environment inside Programmer Unit

- Run standard ICP family software "ICP for Windows"
- Switch "Control Center" to "Standalone Mode"
- Click "Step1: Get Environment Info"
- Double-click desired channel
- Review environment info

| | ICP2 | | | _ | |
|----------------------------|-----------------|------------------------------|------------------------|---|--------------------------------------|
| Driven Mode | e Standalone | Mode | | | |
| Channel ICP2 | Env. No. 1 | Hex File PIC18F2520_all.h | Checksum CDD7 (hex) | | Double-click desired channel here |
| | | | | | |
| | ep 2: double-cl | lick on a channel for o | details | | |
| | | et Environments Info | | | |
| _ | 00 (55) | Get Latest | Results | | |
| Prog | gram=GO (F5) | | | | |
| Pro | gram=GU (F5) | | | - | |
| Prog Passed: Failed: | (| 00000 | | | |

| Details for ICP2 | | |
|--|--|---|
| Programmer Options/Support Environment/Counter Device/Hex File Gap Eliminator(TM), PM Gap Eliminator(TM), DM Voltages Misc. Security Security Security PIC32M2 Boot Regions ICP2(G3) | Name Security Mode Security ID Batch Number Non-Volatile Counter | Value ON (Secure Environment) ICP-SEC1 2 1000 |
| | ОК | |

14 Appendix D: Non-Volatile Counter and Environment

| Parameter | ICP2, ICP2-ISO, ICP2-LAN | ICP2-GANG | ICP2-COMBO | ICP2-Portable | | |
|---|-----------------------------|--------------------------------|--------------------------------|------------------------------|--|--|
| Number of environments per channel | 6 | 6 | 6 | 6 | | |
| Counter type | Non-volatile, down count | | | | | |
| Endurance (counter defined as "unlimited") | Unlimited | | | | | |
| Data retention | | 40 y | ears | | | |
| Individual counter per environment | No | No | No | Yes | | |
| Endurance, minimum (any value excluding "unlimited") | 800,000 | 800,000 per channel | 800,000 per channel | 100,000 per environment | | |
| Endurance, typical (any value excluding "unlimited") | 8,000,000 | 8,000,000 per channel | 8,000,000 per channel | 1,000,000 per environment | | |
| Maximum counter value for single environment (limited by software) | 999,999 | Total 999,999 for all channels | Total 999,999 for all channels | 9,999 | | |

15 Appendix E: Study Case - Using and Disabling Batch Mechanism

<u>Issue</u>

- There are 2 products to be programmed by ICP
- When we generate a new batch and it is set on the ICP, it works fine in production
- After that we change to different product and it also works as expected
- Now, if we get back to the first product, "incorrect batch" error message appears

Solution

This is not an issue; secure programming works this way to prevent repeated use of the same SEN file with active non-volatile counter

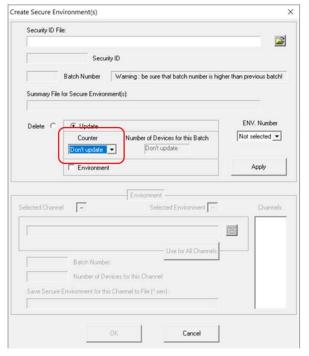
You can workaround the issue as follows:

Option 1: create and transfer environment again

Option 2: use 2 environment destinations and just switch between them (no new transfer is required)

| Security ID Fil | e: | |
|-----------------|---|------------------------------|
| | Security ID | - |
| Summary File | Batch Number Warning : be sure that batch number i for Secure Environment(s): | is higher than previous batc |
| Delete C | © Update | ENV. Number |
| | Counter Number of Devices for this Batch | Not selected |
| | Environment | 2345 |
| elected Channe | Environment Selected Environment | - Channe |
| | | |
| [| Batch Number. | els |
| Save Secure | Number of Devices for this Channel. Environment for this Channel to File (*.sen) : | _ |
| 1 | | |

Option 3: don't use counter, it should be defined as "Don't update". In this case the batch control is disabled



16 Revision History

- Revision 2.1.1 (Feb-22):
 - added support for ICP2-ISO(G3) and ICP2-LAN(G3) programmers in single-channel and multi-channel mode
 - removed reference to ICP2(HC)
 - done support for multi-channel programmers with partly disabled channels
 - updated table "Non-Volatile Counter and Environment"
- Revision 1.3.6 (Jan-22):
 - allowed 6 environments for all programmers
 - firmware 33.12 (Oct-20) and higher: fixed counter limit issue for ICP2-Portable
 - (new: counter is not affected if "Don't update, old: "Don't update" forced "Unlimited")
 - added paragraph "Study Case Using and Disabling Batch Mechanism
- Revision 1.3.5 (Jan-20): minor document corrections, no software changes
- Revision 1.3.5 (Mar-19)
 - maximum batch number = 65,535 (old: 32,767)
 - added "Direct Secure Environment File (SEN) Transfer"
- Revision 1.3.4 (Jul-18):
 - number of COMs increased to 256
 - different counter value can be set see 8.2
 - the program window can be resized
 - status bar is visible under Win-10
- Revision 1.3.1 (Apr-17): improved user interface, added environment selection for ICP2-COMBO
- Revision 1.2.5 (Jan-16): bug fix: "Select COM" does not crash on PCs with Bluetooth COMs
- Revision 1.2.4 (Aug-13): bug fix: "Select COM" does not crash for COM numbers > 63

17 Warranty

Softlog Systems (2006) Ltd. warrants this product against defects in materials and workmanship for a period of 1 (one) year. This warranty will not cover programmers that, in the opinion of Softlog Systems, have been damaged due to abuse, improper use, disassembly, replacement of parts or attempted repair by anyone other than an authorized Softlog Systems service technician.

Softlog Systems emphasizes that Secure Programming software is intended to reduce a risk but can't completely prevent unauthorized reconstruction of your HEX file or/and unauthorized breach of limitation of devices to be programmed. In no event shall Softlog Systems be liable to you for any loss due to reconstruction of the HEX file or breaching limitation of the programmed devices

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18 Contact

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