V H C   2 0 2 0
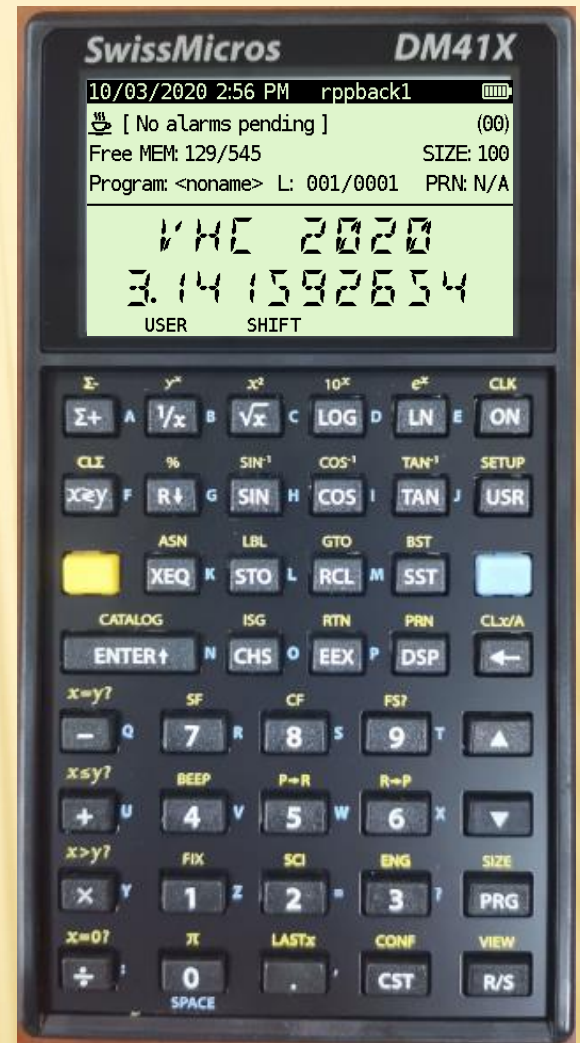
A little late; a *lot* better

SWISS MICROS DM41X

Bob Prosperi

THE DM41X IS...

* An HP-41CX Clone with modern enhancements
* Built on same h/w & DMCP platform as the DM42
* Able to run virtually all 41 family software
    * FOCAL, Synthetics & MCODE
    * ROMs – HP & 3rd Party (any .mod file)
* Fast mode – runs ~50x normal CX (1x also available)
* Able to easily share files with your PC via USB
* Much better than when previewed @ HHC2019
    * https://www.youtube.com/watch?v=0lahGco03xk
* Available now! https://www.swissmicros.com/

41X DESIGN FOCUS / OBJECTIVES

- Pure 41CX – 100% OS compatibility
  - Enormous base of Modules, programs, tools, books, etc.
- Leverage Large LCD to extend 41C UX
- Ease Installation and Mgmt. of ROM Modules
  - No expertise needed to easily install and use ROMs
- Enhance usability of common / tedious features
- Simple/Reliable file exchange with PCs
- Simple backup/restore – safety and sharing

DM41X COMPATIBILITY WITH 41 OS & S/W

- Runs original 41CX OS w/no changes*
  - * Additional features added, none changed
- FOCAL, Synthetics and MCODE all supported
- Full 41 RAM (max. Normal & Ext Mem) available
- All pages (0-F) used in standard ways, no tricks
- Upper pages can be configured as qROM
  - qROM (quasi-ROM) is RAM in ROM address space
    - Writing MCODE, modify existing modules, store programs, etc.
  - Up to 8 pages (8-F) w/separate Load/Save RAM
  - Supports MLDL, RAMBox, HEPAX applications, etc.

DM41X COMPATIBILITY WITH 41 OS & S/W

* All Modules/ROMs/Pacs supported (h/w not incl.)
  * Wand, 82143 Ptr, Card Reader and HP-IL are *not* supported
* Comes pre-loaded w/20 HP Appl. Pac ROMs & PPC
* Additional .mod files easily added via USB FAT drive
  * 3 easy steps to copy, install and 'plug in' a module
* Store *many* ROMs and easily change configuration to use the ones you want as needed (512kB)
* .rom files easily converted to .mod w/MLDL2K, others
* Exotics fully supported
  * HEPAX, CCD, ZenROM, LIB4, All of Angel's Modules, etc.

LEVERAGE LARGE LCD TO EXTEND 41 UI

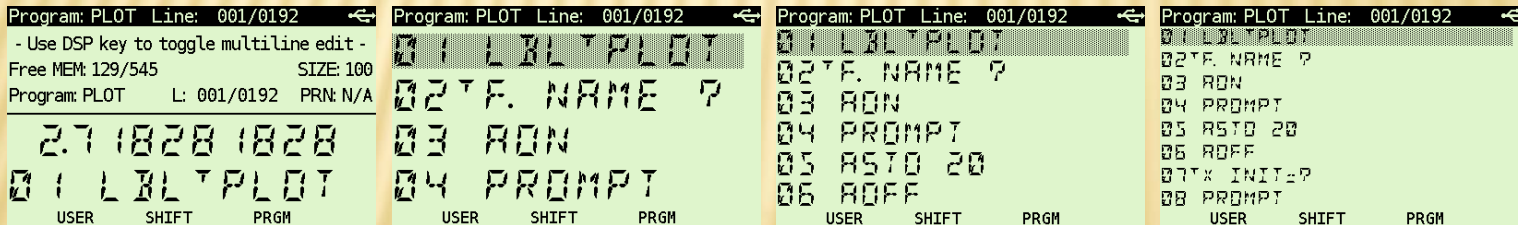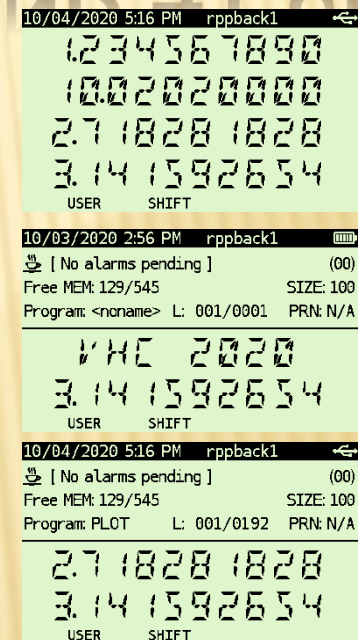- ✕ 3 Stack views – toggle any time
  - ✚ Full 4-level RPN Stack
  - ✚ SysInfo* + X & Alpha
  - ✚ SysInfo* + X & Y
    - * See 2019 video for details

- ✕ Multiline editor for PRGM mode
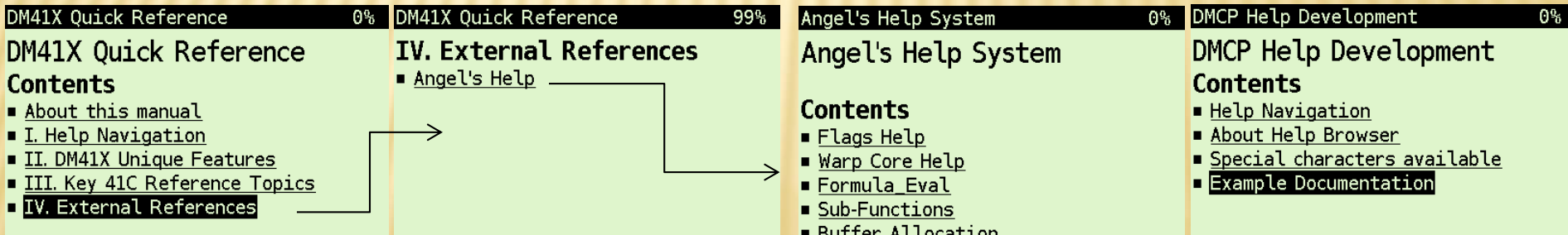 - ✚ Enhanced to 1-, 4-, 6- and 8-line views !

LEVERAGE LARGE LCD TO EXTEND 41 UI

- High density data display
  - e.g. Status of all 41 Flags
- Built-in Help
 - Lightweight html browser, navigate w/links
  - Extensible via user created content
  - Detailed docs on how to author content included

EASE INSTALL. & MGMT. OF ROM MODULES

- ✖ Current device solns. require tech skills & patience
  - ✚ 41CL, CLONIX / NoV, MLDL2K, RAMBox, etc.
  - ✚ Simplicity of emulators is desired, but on a real device
- ✖ 41X uses easy 3-step process to load a module
  - ✚ 1. Copy .mod file from PC to 41X FAT drive
  - ✚ 2. Import file from FAT drive to Flash storage
  - ✚ 3. Plug files into 41X Pages
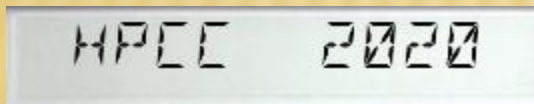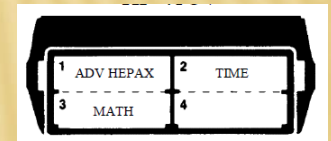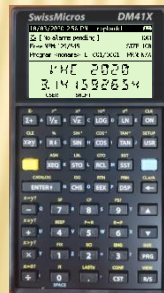
EASE INSTALL. & MGMT. OF ROM MODULES

× UI for installing a .mod file
  + 41X FAT drive /MODS (6MB)
    × Drag-n-drop from PC
    × MMF [Imprt] opens file list
  + Import from FAT to Flash (MMF)
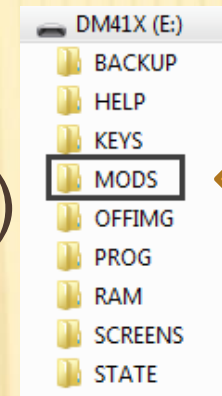   × Import and mgmt. tools for Flash area
    × Mods in Flash shown in alpha order
  + Plug-in modules (AM)
    × Plug, Unplug, Re-arrange MODs
    × Page load sequence is from top-down


```
DM41X (E:)
  BACKUP
  HELP
  KEYS
  MODS
  OFFIMG
  PROG
  RAM
  SCREENS
  STATE
```

```
MOD Import to Flash              /MODS
<Parent>        DIR  HEP-MEM.MOD    11K
41Z_BS_2X2...   21K  HEPAX_4H.MOD   31K
Advantage.mod   16K  ladybug.mod    11K
boost.mod       11K  lb-test.mod    11K
EVAL_3K.MOD    5.8K  LIBRARY4.MOD  5.8K
FINANCE.MOD    5.8K  MACHINE.MOD   5.8K
GAMES.MOD      5.8K  MATH.MOD      5.8K
HEP-2MEM.MOD    21K  MATHSTAT.MOD   11K
```

```
Manage Modules in Flash
AMC OS/X Module - 4P7 -BS4      MOD 4P
Library#4 Rev.R55              MOD 1P
Modified HEPAX_4H+ Module      MOD 6P
PPC ROM                       MOD 2P
SM DM--41X                      OS 6P
Thermal Printer               MOD 1P
Warp_Core BS++                MOD 3P
Imprt  Mod  ROMs Flash  Del  ClrFl
```

```
Active Modules
Library#4 Rev.R55             MOD 1P
AMC OS/X Module - 4P7 -BS4     MOD 4P
Modified HEPAX_4H+ Module      MOD 6P
Warp_Core BS++                MOD 3P
PPC ROM                       MOD 2P
Plug   Mod  Move↑ Move↓ Unplg ClrAM
```

✖ ROM-Map view of installed modules

  ✚ 8 Pages x 4 banks per screen

  ✚ Each cell is 1 x 4K ROM block

  ✚ "Mx-y" ⇨ Module x, bank y as defined in the .mod file. R=RAM

  ✚ Toggle Page / List views

  ✚ 1-key access to AM view

    ✖ Bounce btwn AM/ROM-Map views to adjust/confirm load sequence

```
Module ROM Map
P|bank1|bank2|bank3|bank4| Modules by page:
0|M1-0 | --- | --- | --- | -> SM_NUT-CXX
1|M1-1 | --- | --- | --- | -> SM_NUT-CXX
2|M1-2 | --- | --- | --- | -> SM_NUT-CXX
3|M1-3 | --- | --- | --- | -> SM_NUT-CXX
4|M2-0 | --- | --- | --- | -> LIBRARY4
5|M1-4 |M1-5 | --- | --- | -> SM_NUT-CXX
6|M4-0 |M4-1 |M4-2 |M4-3 | -> HEPAX_4H
7|M3-0 |M3-1 |M3-2 |M3-3 | -> OSX_BS4X-P7
Pg 8-F| ROM-id | =>AM |       ModLst
Module ROM Map
P|bank1|bank2|bank3|bank4| Modules by page:
8|M4-4R|     |     |     | -> HEPAX_4H
9|M4-5R|     |     |     | -> HEPAX_4H
A|M5-0 |M5-1 |M5-2 | --- | -> WARP_BS3
B| --- | --- | --- | --- |
C|M6-0 | --- | --- | --- | -> PPC
D|M6-1 | --- | --- | --- | -> PPC
E| --- | --- | --- | --- |
F| --- | --- | --- | --- |
Pg 0-7| ROM-id | =>AM |       ModLst
Module ROM Map
P|bank1|bank2|bank3|bank4| Module list:
8|M4-4R|     |     |     | M1-SM_NUT-CXX
9|M4-5R|     |     |     | M2-LIBRARY4
A|M5-0 |M5-1 |M5-2 | --- | M3-OSX_BS4X-P7
B| --- | --- | --- | --- | M4-HEPAX_4H
C|M6-0 | --- | --- | --- | M5-WARP_BS3
D|M6-1 | --- | --- | --- | M6-PPC
E| --- | --- | --- | --- |
F| --- | --- | --- | --- |
Pg 0-7| ROM-id | =>AM |       ModPg
```

HPCC 2020

10 October 2020

ENHANCE USABILITY

* 19 Additional OS Functions (thanks Angel)
  + System control, Alpha and Ext Mem functions
  + ED$ - ED enhanced with lower case & special chars
* Custom commands – like a 2nd shift
  + [CST]-[key] invokes custom command
  + e.g. [CST]-[A] performs XEQ "ALENG"
  + Exec. in calc; inserted in PRGM modes
  + 1-6 keys for freq. used system features
* Configure screen to tailor settings
  + 19 keys including Alpha and cursors
  + Load and Save available – share 'em

```
DM41X Custom Menu
1.Help      A.ALENG    I.SIZE?
2.ROM Map   B.BFCAT    J.JUMP
3.Load RAW  C.PGCAT    K.
4.Save RAW  D.HEPDIR   L.CLA
5.USB Disk  E.ED$      M.HEPROOM
6.Flags     F.FILL     N.TRNG
            G.RDN      O.ON
            H.HSAVEP   P.HPURFL
```

```
DM41X Custom Menu Edit
[Shift][alph]: A.ALENG   I.SIZE?
 PACK          B.BFCAT   J.JUMP
[Shift][▲]:    C.PGCAT   K.
 FAST          D.HEPDIR  L.CLA
[Shift][▼]:    E.ED$     M.HEPROOM
 SLOW          F.FILL    N.TRNG
1.Load         G.RDN     O.ON
2.Save         H.HSAVEP  P.HPURFL
```

SIMPLE/RELIABLE FILE EXCHANGE WITH PC/MAC/LINUX

DM41X (E:)
- BACKUP
- HELP
- KEYS
- MODS
- OFFIMG
- PROG
- RAM
- SCREENS
- STATE

- ✖ Easily connect & transfer files to/from PC
- ✖ 41X Appears as a new Drive on PC side
- ✖ No PC s/w needed, native OS supports
- ✖ Easily drag-n-drop files either way
- ✖ 41x ⇨ PC: SCREENS (e.g. a PowerPoint deck…)
- ✖ PC ⇨ 41X: HELP, OFFIMG
- ✖ PC ⇔ 41X: BACKUP, KEYS, MODS, PROG, RAM, STATE
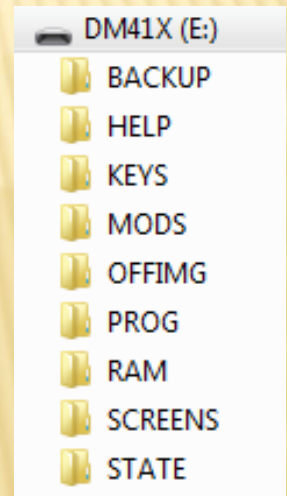
SIMPLE/RELIABLE FILE EXCHANGE WITH PC/MAC/LINUX

> State: contains Program Mem, Ext Mem, Flags, Key Assignments & Registers

✖ Easy Backup / Restore

  ✚ Protect and *share* your 41X contents

   ✕ Share your programs (or full state) on the Forum

  ✚ Save / Load data components with named files

   ✕ CST Keys, RAM (Upper), State, Individual Progs (.raw)

   ✕ Module configuration* (List of MODs & load sequence)

   ✕ * .mod files must be imported into Flash prior to Load

  ✚ Full Backup

   ✕ All of the above contents saved under a single name

   ✕ Maintain and swap among multiple 41X "personalities"

    ★ Each personality has totally different modules, programs, data, etc.

    ★ e. g. Writing MCODE, Refinance Estimates, EE Power Calcs.

NO TIME TO DISCUSS (PLZ. CHECK-OUT)

- ✖ Printer Line Delay (same as IR "DELAY")
  - ✚ Throttle interline delay when printing via IR
  - ✚ Easily "Print" to C. Giessilink's virtual IR Printer
    https://hp.giesselink.com/hp82240b.htm
  - ✚ See Meindert Kuipers' article on building inexpensive IR receiver based on Martin Hepperle's earlier work
    - ✖ https://www.hpmuseum.org/forum/thread-14858-post-130564.html
    - ✖ https://www.mh-aerotools.de/hp/red-eye/index.htm
- ✖ Export / Restore system settings
  - ✚ Ptr line delay, display modes, mute, etc.

THANKS TO:

- Michael & David – The reason these great machines exist

- Godwin and Angel – For lots of ideas, testing and mostly patience during some long design discussions

- All the 41X Beta customers that provided bug reports, feedback, motivation, and some good ideas

- The HHC, HPCC, Allschwil, MoHPC and SM Forum communities for fellowship, contributions by some really smart people and keeping this hobby fresh and interesting

- HPCC – For planning and hosting this VHC

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