Free Studio 3.8

A first overview of how to use AVP Display, new Expansions and new features of Advance

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AVP Display

- The wall mounting color touch screen programmable with Free Studio

- Temperature, Humidity and PIR sensors embedded

- Vertical or Horizontal mounting

- Modbus Slave

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AVP Display - Wall mounting color touch screen

Technical Characteristics

- Integrated in Free Studio software
- Same display can be use as room control (Measure, Set and show)
- 3,5 " with 320 x 240 pixels
- 256 colors
- Wall mounting
- Inside usage
- Temperature, humidity and PIR measurement
- Three Models:
- Embedded temperature
- Embedded temperature & humidity
- Embedded temperature, humidity & presence (PIR) sensors
- 24Vac/dc isolated power supply
- RS485 isolated from power supply
- External terminal resistor required
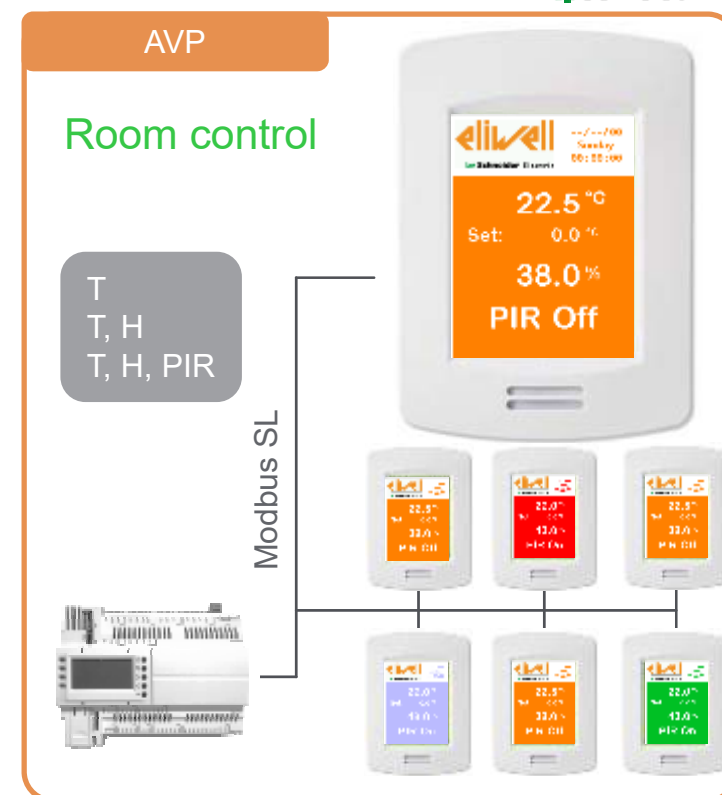
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> Fully integrated in Free Studio 3.8:

- Same Bios for all models, 2 software targets based on the orientation
- Application Project:
  - Programs (e.g. On/Off manager, Time Bands,…)
  - Modbus registers declaration
  - Eeprom parameters declaration
- User Interface for the graphics
- Device for full download

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> User Interface vs Application

- UI and AP projects **have to** be linked through: **"Link PLC project"**
- **"Refresh PLC variables"** if you add new E2 parameters or Status variables to Ap project
- You **can't** link the parameter file of a Advance project, Display is **modbus slave**
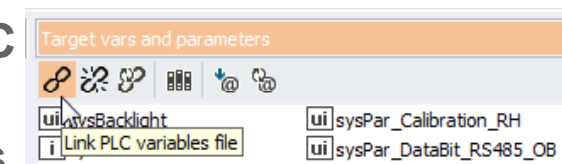
> Connection:

- Connection is not required in case of AVP (but it can be used as usual if you are used to)

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Project Download

> Only **one** file is downloaded on the target:

- When you download Ap also the linked UI project is downloaded (and viceversa)
- In order to have "Source Ok" it is suggested to perform the last download from Ap (also because E2 is downloaded from Device…)
- Max Project size:
  - 736KB for code, 64KB for data, 4MB for fonts and images
  - Eeprom 4096 Word, Status Variables 5000 Word

> From Device the overall file can be downloaded in one shot

> Physical connection to target through:

- microUSB, Modbus protocol address 1
- Modbus RTU, default address 1, 38.4,E,8,1
- Ethernet bridge through Advance/Evolution controller
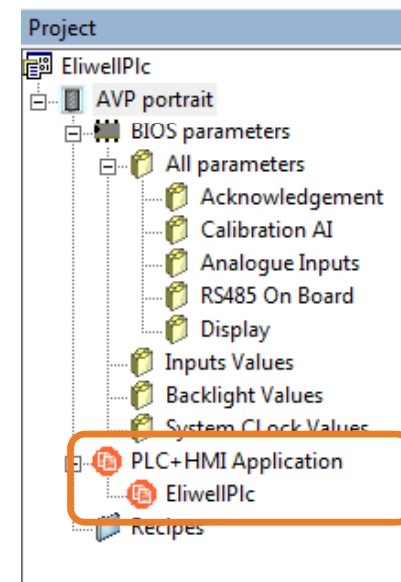
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Sensors & Display

> Sensors:

- Temperature: 0.1°C Resolution
- Humidity: 1% Resolution (-32767 if sensor not present)
- PIR: 1=Presence (-32767 if sensor not present)

- Backlight configuration:

Backlight Values

Address	Name	Value	Um	Default	Min	Max	Description
8211	sysBacklight	2=Timed ▼	num	2=Timed	0	2	Display backlight

0=Min
1=On
2=Timed

Display

Address	Name	Value	Um	Default	Min	Max	Description
8204	Par_Orientation	1=Portrait		1=Portrait	0	1	Display orientation
8205	Par_Language	1	num	1	0	65535	System Language
8207	Par_BackLightTime	30	sec	30	0	3600	Backlight time
8250	Par_BackLightMinValue	5	%	5	0	100	Backlight minimum value

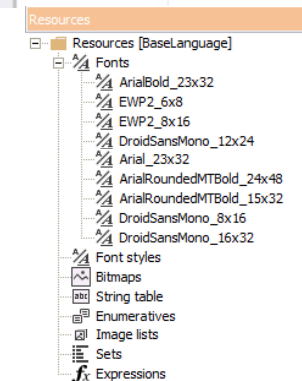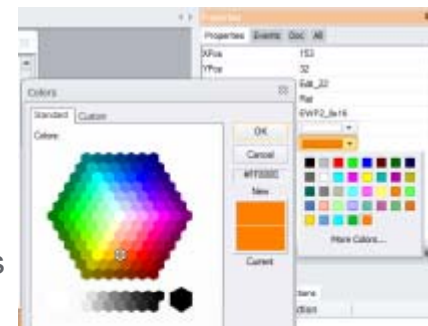# AVP Display - Wall mounting color touch screen

User Interface

> Graphic managed via User Interface in the usual way but with more features:

- Colors

- Fonts

  – Proportional fonts are supported

  – A font can be linked to a language through the Font styles

- Check Box ☑

- Button properties:

  – Type: Normal / Toggle

  – Press variable is set when button is pressed

  – Selection variable allows to use a button as Led

Press variable	bRun
Selection variable	On press
Type	Toggle

Selection variable	bRun
Type	Normal

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Value Editing

> When you enter in edit mode a virtual keyboard is shown:

Numbers

1	2	3	Esc
4	5	6	⌫x
7	8	9	↵
.	0	-	

Strings

1	2	3	Esc
4	5	6	⌫x
7	8	9	↵
abc	0	ABC	

@.?,	ABC	DEF	Esc
GHI	JKL	MNO	⌫x
PQRS	TUV	WXYZ	↵
123	␣	abc	

@.?,	abc	def	Esc
ghi	jkl	mno	⌫x
pqrs	tuv	wxyz	↵
123	␣	ABC	

Enumeratives

| Esc |
| ⌃ |
| ⌄ |
| ↵ |

| Esc | ⌃ | ⌄ | ↵ |

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Useful New Target Vars

> sysLCDPressed: gives coordinates of last press, last release and if LCD is currently pressed

- It could be used for page timeout

> sysMODBUS_msg_received: counter of modbus messages received

- It could be used for communication alarm

> sysPar_Orientation: display orientation

AVP Display - References

Eliwell Part No	Eliwell Name
AVP11000W0500	FREE AVP1100 /C
AVP12000W0500	FREE AVP1200 /C
AVP13000W0500	FREE AVP1300 /C
AVP100W0P0500	FREE AVP1000 /P WHITE (coming soon)
~~AVP100G0P0500~~	FREE AVP1000 /P GREY (coming soon)
AVA00WMRC0000	FREE AVP WALL REAR COVER WHITE
AVA00WMRC0001	FREE AVP WALL REAR COVER GREY

New Expansions
EVE6000 and EVE10200

- 12 or 28 I/Os in 4 DIN

- Different I/O mix

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Expansions EVE6000 and EVE10200

Connection

> Same Bios:

> Easy configuration inside Connection (similar to EVE4200):

- IO Model can be switched by radio button
- Due the new 28 IO exp. the maximum number of expansion is 7.
- Wit mix of expansion, consider that the limit is related to the maximum IOs that can be reference in Connection (AI=72, DI=96 ,AO=60 ,DO=84).
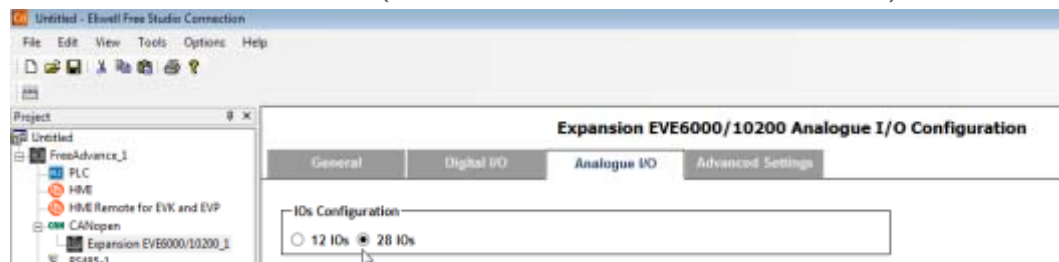
Expansions EVE6000 and EVE10200

Use of FDI

If you use FDI, remember to configure the refresh period used by expansions to send updated value to the PLC:

Expansions EVE6000 and EVE10200

> Can Network wiring:

- Can Serial not isolated (like Advance)
- Same prescriptions about Can G of the EVE4200

> Green Led helps understand Can node status:

- Closed to power supply connectors,
- On when expansion is powered and microcontroller runs.
  - At power-on/reset the Led blinks at high frequency for a while
- Blinks when expansion is Operational
- Blinks at high frequency during a firmware upgrade.
- Off when there is no power or the microcontroller is not working
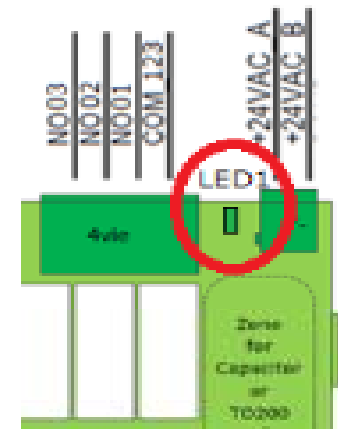
New features of Advance

- Modbus TCP Master

- FTP client / server

- Cybersecurity

- SNTP

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Free Studio 3.8 & Advance Firmware Enhancements

Modbus TCP Master

> Easy Management through Connection Software:

- Same use as Master RS485
  - IP address and Unit ID instead of rs485 slave address
- Binding still available for back compatibility
- Up to 3 slaves (server) can be managed
- Added Command 5 Write Single Coil (also on RS485)
- sysMbTcp* target vars allows monitoring node status

Ethernet Configuration

Modbus/TCP
- ○ Slave
- ○ Master (for binding) and Slave
- ● Master (for field) and Slave

Generic Modbus node

General

Settings

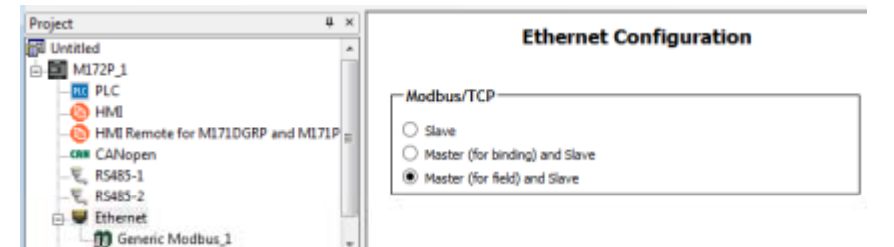|		
Name:	Generic Modbus_1	
IP address:	10.0.0.55	
Node number:	0	(0 .. 15)
Unit ID	255	(1 .. 255)
Wait before send	10	ms(1 .. 255)

Catalog

Device name	Version	Description
Modbus FC-01	1	Read Coils - Function 01 (0x01)
Modbus FC-02	1	Read Discrete Inputs - Function 02 (0x02)
Modbus FC-03	1	Read Holding Register - Function 03 (0x03)
Modbus FC-04	1	Read Input Registers - Function 04 (0x04)
Modbus FC-05	1	Write Single Coil - Function 05 (0x05)
Modbus FC-06	1	Write Single Register - Function 06 (0x06)
Modbus FC-15	1	Write Multiple Coils - Function 15 (0x0F)
Modbus FC-16	1	Write Multiple Register - Function 16 (0x10)

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FTP Server / Client

> FTP server features :

- Service enable/disable run time using *sysFTP_Service()*

- Configurable of user and password using *sysFTP_Authentication()*

- Configurable list of up to 3 IP addresses which will be allowed to connect using *sysFTP_AcceptClient()*. If not used or list is empty any client is accepted

- Up to 3 additional guest users with filtered access to up to 10 files using *sysFTP_AuthentGuest()*

> FTP client commands using *sysFTP_ClientCommand()* :

- Puts a file on FTP server

- Retrieves a file from FTP server

- Append or Delete file on FTP server

- Makes or Remove an empty directory on FTP server

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Cybersecurity

> HTTP:

- Service enable/disable run time using *sysHTTP_Service()*

- Configurable of user and password using *sysHTTP_Authentication()*

- Configurable list of up to 3 IP addresses which will be allowed to connect using *sysHTTP_AcceptClient().* If not used or list is empty any client is accepted

- Up to 3 additional guest users with not allowed access to up to 10 files using *sysHTTP_AuthentGuest().*

- Dedicated home page to the guest user with automatic redirect to page index<guest index>.htm

> Modbus TCP Slave:

- Service enable/disable by parameter Port_ETH_PI (65535=Disabled)

- Configurable list of up to 3 IP addresses which will be allowed to connect using sysMbS_AcceptClient(). If not used or list is empty any client is accepted

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Other

> SNTP - Simple Network Time Protocol:

- Get current date & time using *sysSNTP_GetTime()*

> New Target Vars:

- sysTskTmdMaxExeTime maximum execution time of Timed Task

- sysTskBckMaxExeTime maximum execution time of Background Task

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