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KT06 MODBUS TOUCHSCREEN

KT06 is a Modbus Touchscreen that works with the CM9001 Alarm/Automation System via the Modbus Protocol. KT06 consists of DOP107BV Touchscreen combined with a UCM/Modbus-485 and a wallmount box

Specifications DOP107BV

- 7 inch TFT LCD with Backlight
- 65636 Colours
- 800 x 480 pixels
- Display Area 154.08 x 85.92 mm
- Flash Rom 256 Mbytes
- RAM 256 Mbytes
- Touch Panel 4-wire resistor > 1 million pressing life
- Buzzer Multitone frequency 2 to 43 Khz /80 dB
- USB (Slave) Type B – for programming
- RS485 COM1 DB9 connector
- CE/UL certification
- Operating Voltage 24V +/- 15 %
- Power Consumption: Max 8.6W
- Operating Temperature 0 to 50 deg C
- Humidity: 10-90 % RH (0 to 40 deg C)
- Dimensions: 215 x 161 x 25.5 (without wallmount box). 215 x 151 x 60 mm with wall-mount box
- Weight: 700 g without box,. 1.4 Kg with wall-mount box

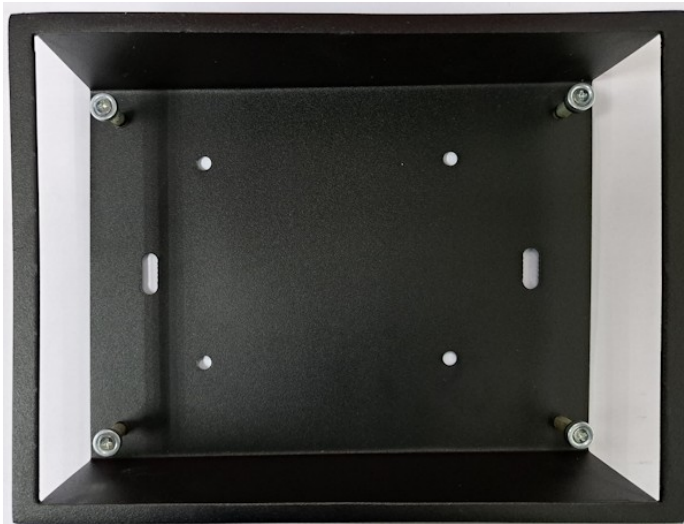
Setup

The package includes

- DOP107BV 7 inch Modbus Touchscreen



- Wall-Mount Box 215 x 60 x 49 mm with Black Powder-coating, with 4 magnets



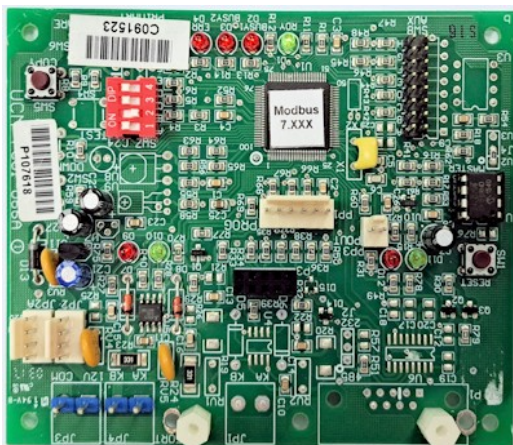
- TT01-0024 Voltage Doubler (12V to 24V DC 800 mA) supplied separately



- DB9 with ribbon cable for RS485 from DOP107BV to UCM/Modbus



- UCM/Modbus-485 (mounted on wall-mount box by Nylon standoffs). JP3 (12V/COM) and JP4 (KA/KB) is connected to CM9001 JP7 (12V/COM) and JP8 (KA/KB). UCM/Modbus JP1 KA/KB is the Modbus RS485 connector which is connected to DOP107BV COM1 DB9 connector. **Note that this is NOT the Comfort RS485 KA/KB signal.**



- Wall Plug and Screw x 2



System Requirements

- Comfort CM9001, firmware 7.xxx
- UCM/Modbus 7.166 and above
- Configurator Version 3.13.6 and above

Connection Procedure



- KT06 is assembled in a metal wall-mount box. Start by removing the DOP107BV touchscreen from the wall-mount box by using both hands to pull it away the top of the touchscreen away from the wall-mount box. The touchscreen is secured to the wall-mount box by 4 magnets on the wall-mount box
- Secure the wall-mount box to the wall using the 2 wall plugs and long screw or by applying cement around the wall-mount box.



- The UCM/Modbus ID is set by default to 2 ie SW7 switch A OFF, B,C,D ON
- Connect the UCM/Modbus to CM9001 using the Blue terminal Blocks 12V/COM (JP3) and KA/KB (JP4). The KT06 is normally too far from CM9001 to use the 4-way white cable from 4-pin header JP2. .
- The Green RDY led on the UCM/Modbus (D1) should light up and remain on. The LEDs

D9 (red) and D10 (green) should blink rapidly showing that RS485 communications has been established between Comfort and the UCM. D9 (green) flashing shows that it is receiving communications from Comfort (poll). D10 (red) comes on when the UCM responds to a poll from Comfort.

- Power to the DOP107BV (24V/COM) is supplied by the Voltage Doubler TT01-0024. The Yellow wire from the TT01-0024 is connected to +24 of the DOP10BV Green terminal block. The black wire (0V) is connected to 0V on the DOP107BV green connector. The other end of the TT01-0024 Voltage doubler cable should be connected to CM9001 12V/COM. The TT01-0024 provides 24V to the DOP107BV
- The DB9 9 way connector from DOP109BV COM1 connector is connected to UCM/Modbus JP1 KA/KB and COM on JP3. The flat cable has been prewired to JP1 and JP3 connectors. **Note that this Modbus RS485 KA/KB signal is NOT the same as the Comfort RS485 KA/KB signals on JP4 or JP2/JP2A . DO NOT connect together**
- Use a USB Type A to Type B cable. Connect the USB Type B to the “Slave” USB connector. The other end of the USB cable should be plugged in to the PC for programming of KT06. This cable is NOT supplied with KT06
- Do configuration/programming of Comfort and UCM/Modbus and DOPSoft. See the next section
- After configuration and testing, disconnect the USB cable.
- Push the DOP107BV touchscreen into the wallmount box until it is fully held by the magnetic force.
- No of wires from CM9001 to KT06 = 6 (12V, COM, KA, KB, 24V/0V)

CONFIGURATION

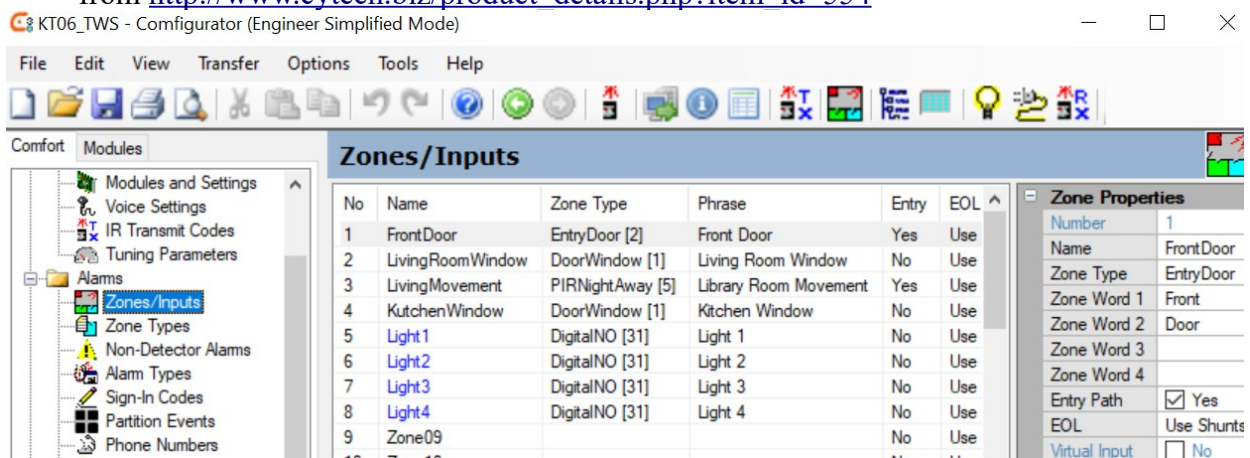
- For DOP107BV configuration, download DOPSoft V4.00.16.30 or above from <https://downloadcenter.deltaww.com/downloadCenterCounter.aspx?DID=9063&DocPath=1&hl=en-US>
- For CM9001 and UCM/Modbus programming, download Comfigurator 3.13.7 and above from <http://www.cytech.biz/comfigurator.html>

Principle of Operation

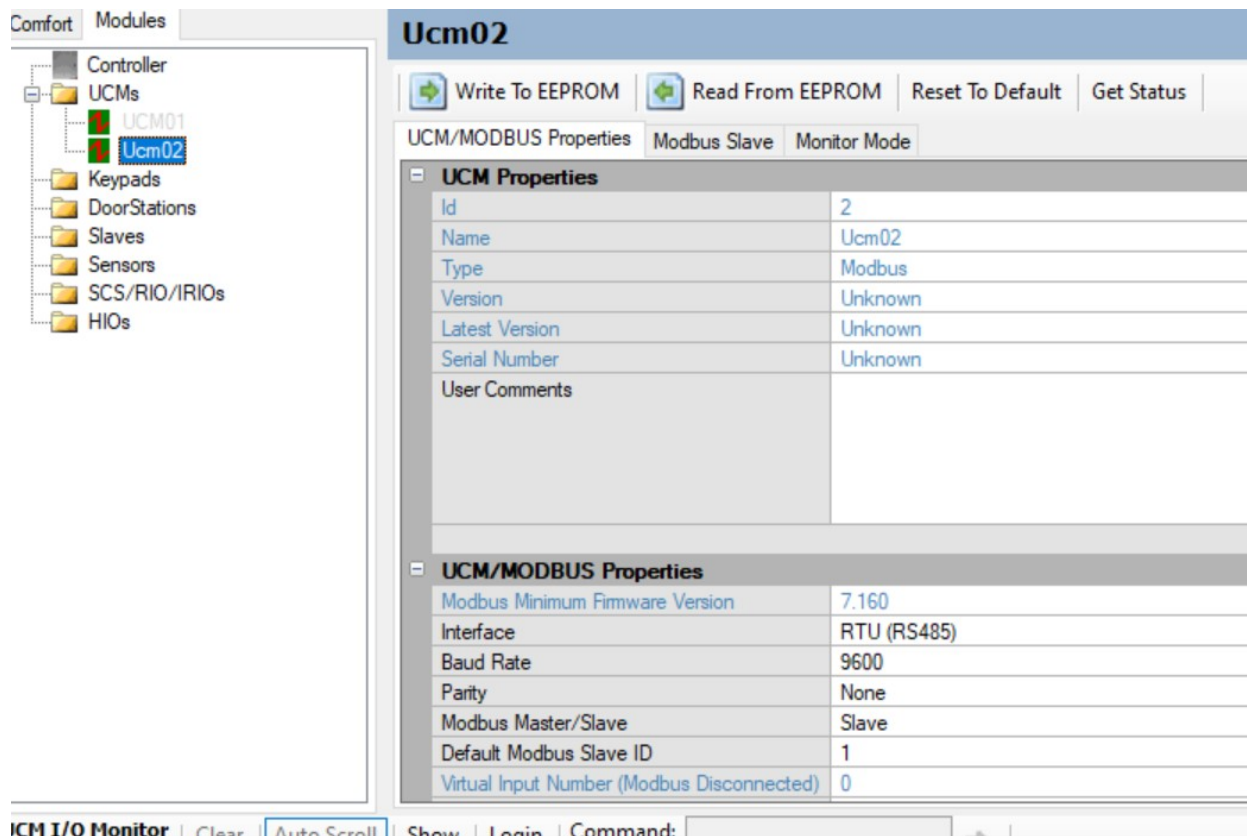
DOP107BV is a Modbus Touchscreen, ie it has an industry-standard Modbus interface by RS485 interface which can be used to communicate with other Modbus products. UCM/Modbus is a Modbus Interface for CM9001 which is included in KT06 to allow communications between CM9001 and DOP107BV. DOP107BV is configured as a Modbus Master, while UCM/Modbus is configured as a Modbus Slave with Modbus ID=1. The UCM/Modbus as Slave allows Comfort Zones/Inputs, Outputs, flags, counters, sensors, Keypad Keys and alarm conditions to be mapped to Modbus Addresses. The DOP107BV Screens can be programmed to have buttons that show the state of any Modbus Address, and to set the value of the Modbus address when the button is pressed. Programming of the DOP107BV involves designing the screen layouts and the buttons that show the state of Comfort values and states.

Configurator Programming

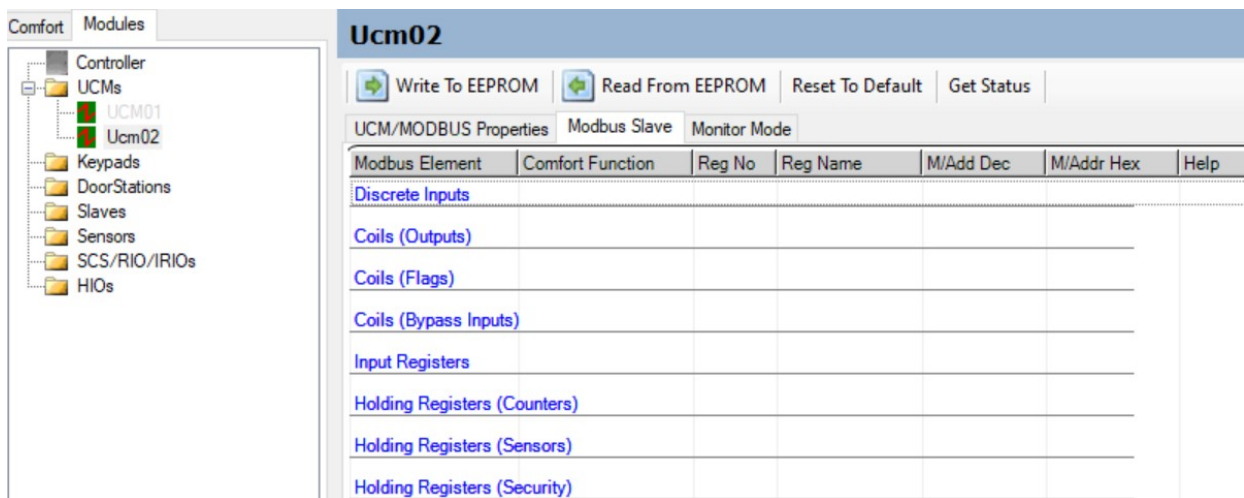
- Open Configurator and load the sample file KT06_TWS.cclx file which can be downloaded from http://www.cytech.biz/product_details.php?item_id=554



- The Zones screen is shown. Zones 1 to 4 are programmed as Entry Door, door/window and PIR zone types
- Zones 5 to 8 are programmed as Two Way Switch Normally Open Zone Types
- Go to Modules Tab > UCM #2. Modbus Properties
- In Modbus Properties, Interface should be RTU (RS485), Baud rate = 9600, Parity=None, Modbus Master/Slave= Slave, Default Modbus Slave ID=1. These properties are set to be compatible to the DOP107BV Modbus properties. DOP107BV is set as Modbus Master, and UCM/Modbus is set as Modbus Slave.



- The Modbus Slave Tab shows the assignment of Modbus Slave registers to Comfort



Inputs , Outputs, Security events etc. This is for information only, and to show what modbus registers to assign to the Touchscreen elements.

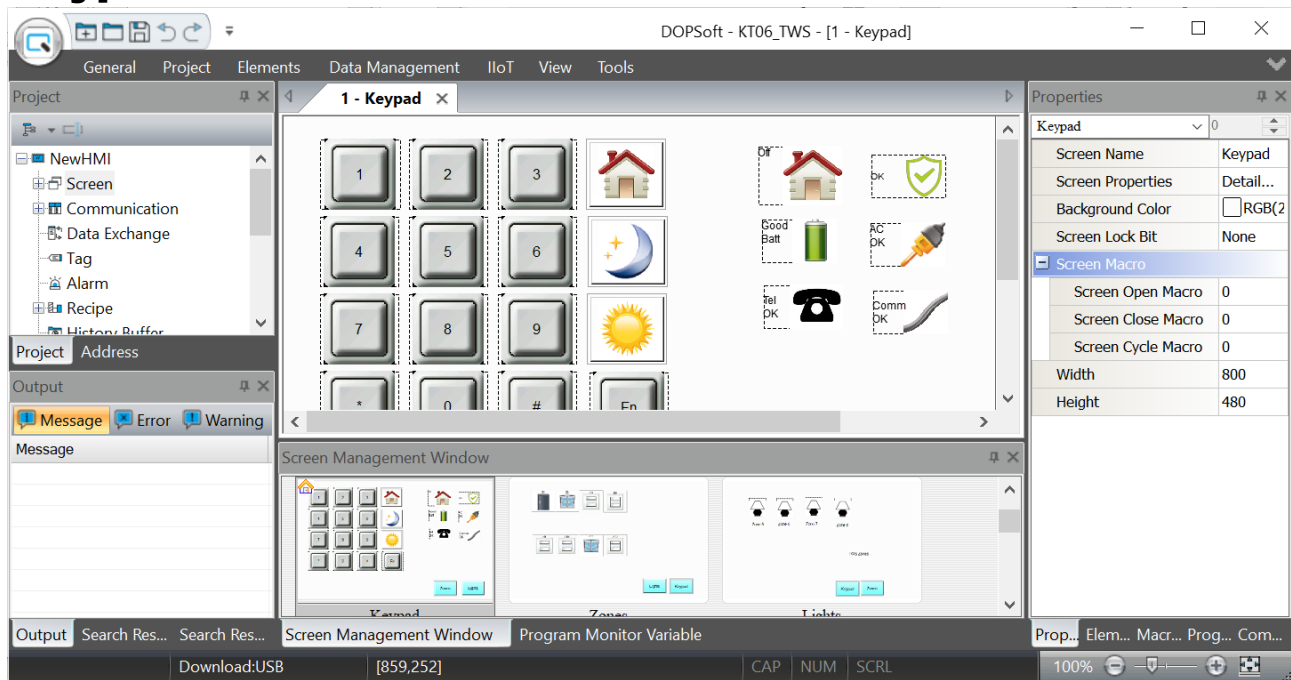
- Power should be turned on for the CM9001 system at this point. Use a UCM/USB or UCM/ETH03 connected to your PC to program CM9001
- Do a Write to EEPROM for UCM/Modbus
- Do a Write to Comfort in the transfer Menu in the Transfer Menu

DOPSoft Programming

DOPSoft allows screens to be designed and different images to be selected. The sample file is an example and can be modified to allow house layouts or different icons to be designed.

Open DOPsoft and load the KT06_TWS.dpa sample file. The main screen below is seen.

Keypad Screen



This is the Keypad page which simulates a Comfort alarm Keypad.

The security system can be disarmed by pressing the numeric keys to enter the user code and the # key.



Press the Away Key to Arm the security system to Away Mode



Press the Moon Key to arm to Night Mode



Press the Sun Key to arm to Day Mode

On the right of the screen the icons are



Different images are displayed based on Secureity Offd, Away, Night, Day Modes



This icons displys the Battery state, ie OK or Low battery



This icons shows if there is a Telephone Line Cut Trouble alarm



This shows one of 4 Alarm State 4 states 0 = Idle, 1 = Trouble, 2 = Alert, 3 = Alarm

Double click one of the keys eg '1' to show the modbus elements.

Set Constant

Write Address (Link1) @ RW-402. Data Type = Word. This is a Write only element corresponding to Modbus Holding Register Address 0x402 which is Keypad Register in the UCM/Modbus Slave.

Element Description = Set Constant_001 is the value transmitted by the '1' Key

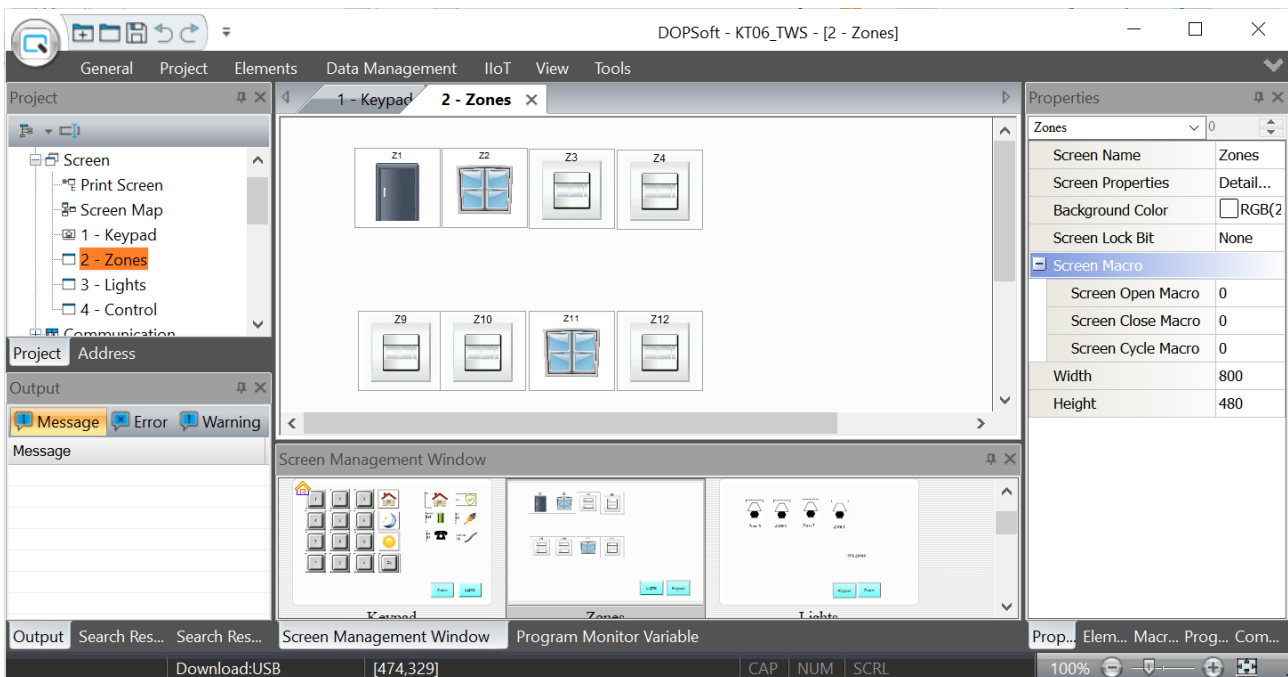
Write To EEPROM Read From EEPROM Reset To Default Get Status						
UCM/MODBUS Properties Modbus Slave Monitor Mode						
Modbus Element	Comfort Function	Reg No	Reg Name	M/Addr Dec	M/Addr Hex	Help
Discrete Inputs						
Coils (Outputs)						
Coils (Flags)						
Coils (Bypass Inputs)						
Input Registers						
Holding Registers (Counters)						
Holding Registers (Sensors)						
Holding Registers (Security)						
Holding Register S...	Key Arm Security			1024	0400	Write Holding Register Key arms security (1=away, 2=night, 3=day, 4= vacation)
Holding Register S...	Auto Arm Security			1025	0401	Write Holding Register Auto arms security (1=away, 2=night, 3=day, 4= vacation)
Holding Register S...	Keypad			1026	0402	Write Holding Register sends a keypad key to Comfort, 0 to 9, 26= Enter Key, 12 = Force Arm (arming), 16 = Panic, 17 = Fire.

Each key in the keypad is assigned to the same Modbus element with different values for each key/Holding Register

Refer to the UCM/Modbus Manual which can be downloaded from http://www.cytech.biz/product_details.php?item_id=555

Zones Screen

The zones screen shows the state of each zone. A different image is displayed for the Off and On state



The zones screen shows the read-only state of each Zone

To show the programming of each element double click on a zone eg Zone 1

Multistate Indicator

Preview	Main	Style	Text	Picture	Operating conds.	Coord.
 State: 0 Language: Language1 Element description: Multistate Indicator_002	Memory Read Address: {Link1}1@RB-0 Read Offset Address: None	Detail Data Type: Bit Data Format: Unsigned Decimal State Counts: 2				

Multistate Indicator is the element type

Read Address = (Link1)1@RB0 – This means 1-bit Read only at Modbus Discrete Input register 0
there are 2 states: State 0 is Closed, State 1 is Open (below)

Multistate Indicator

Preview	Main	Style	Text	Picture	Operating conds.	Coord.
 State: 1 Language: Language1 Element description: Multistate Indicator_002	Memory Read Address: {Link1}1@RB-0 Read Offset Address: None	Detail Data Type: Bit Data Format: Unsigned Decimal State Counts: 2				

The UCM/Modbus Slave Discrete Input screen below shows the modbus addresses for each zone.

Ucm02						
Write To EEPROM Read From EEPROM Reset To Default Get Status						
UCM/MODBUS Properties Modbus Slave Monitor Mode						
Modbus Element	Comfort Function	Reg No	Reg Name	M/Add Dec	M/Addr Hex	Help
Discrete Inputs						
Discrete Inputs	Zone/Input	1	FrontDoor	00	0000	Read Discrete Inputs reads the state (On/Off) of range of Comfort Inputs.
		2	LivingRoomWin...	01	0001	
		3	LivingMovement	02	0002	
		4	KutchenWindow	03	0003	
		5	Light1	04	0004	
		6	Light2	05	0005	
		7	Light3	06	0006	
		8	Light4	07	0007	
		9	Zone09	08	0008	

The Image for each state can be selected in the Picture Tab

Multistate Indicator

Preview

State:
0

Language:
Language1

Element description:
Multistate Indicator_002

Main
Style
Text
Picture
Operating conds.
Coord.

Picture

Picture Name: Private/NewHMI00019

Alignment (Hori./Vert.): Horiz. Centering / Align Bottom

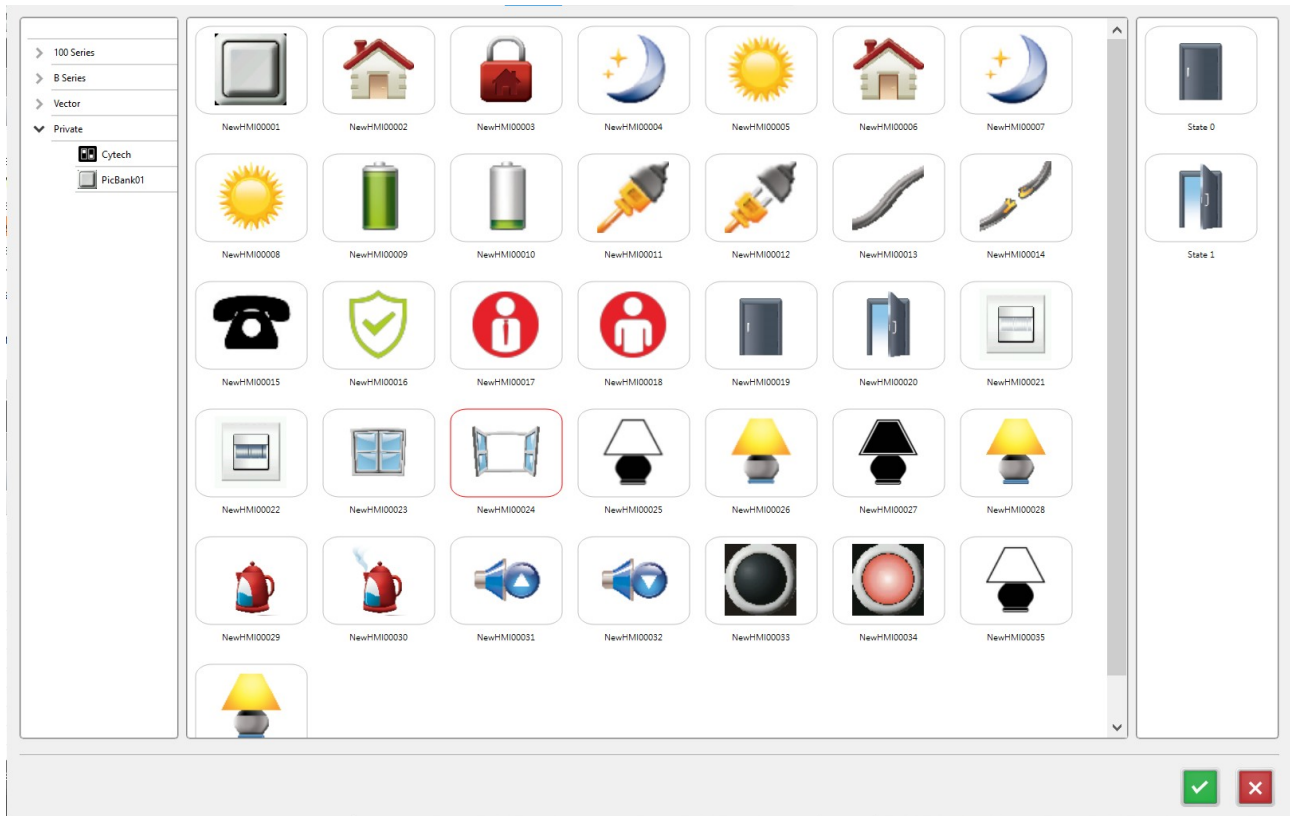
Stretch Mode: Stretch 1:1
☐ Process pictures of all states

Transparent Color: No

Click the 3 dots to the right of Picture Name.

On the Left pane, select “100 Series” or “Private > Cytech” which contain customised images from Cytech.

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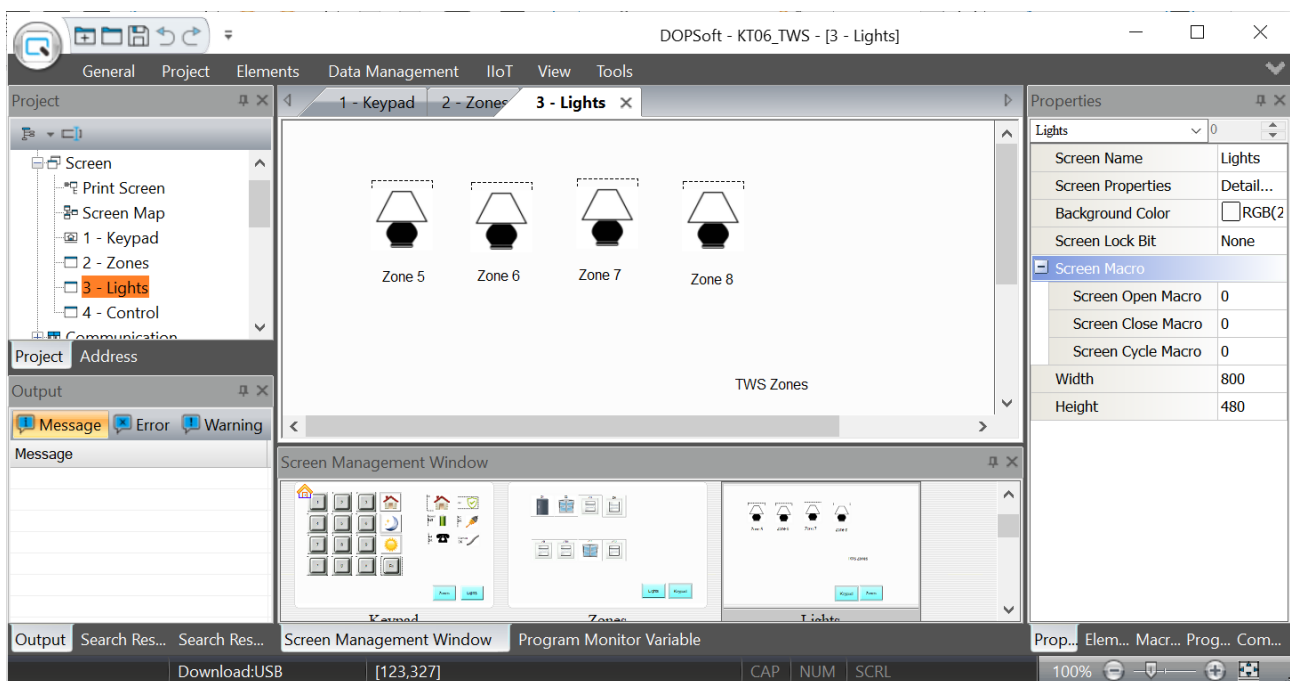


To select an Image, Drag and Drop the selected Image to the right

Lights Screen

The Lights Screen shows the state of each of the Lighting points assuming the TWS (Two Way Lighting Module) is used to control the lights.

A different image is displayed depending on whether the Light state is ON or POFF based on the Zone/Input state. Pressing the Light icon will toggle the Output.

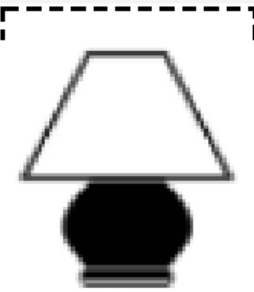


Double click on a light eg Light 1 to show the configuration.

Element is "Maintained" ie not momentary

The image and settings for the 2 states 0 and 1 are shown below
 Light 1 is controlled by Output 5, and status is Zone 5 in Comfort.

Maintained

Preview	Main	Style	Text	Picture	Operating conds.	Macro	Coord.
	Memory Write Address: {Link1}1@RWB-4 Read Address: {Link1}1@RB-4 Write Offset Address: None Read Offset Address: None						
State: 0							
Language: Language1							
Element description: Maintained_011							

Maintained

Preview	Main	Style	Text	Picture	Operating conds.	Macro	Coord.
	Memory Write Address: {Link1}1@RWB-4 Read Address: {Link1}1@RB-4 Write Offset Address: None Read Offset Address: None						
State: 1							
Language: Language1							
Element description: Maintained_011							

Write Address is RWB-4 which means Read/write Bit 4. This is Modbus Coil Modbus address 4 which is mapped to Comfort Output 5, see below. Modbus coils 0 to 8 are mapped to Comfort

Output 1 to 9

The Picture Tab allows different images to be selected, as well as customised images. This is explained in the previous section for Zones Screen

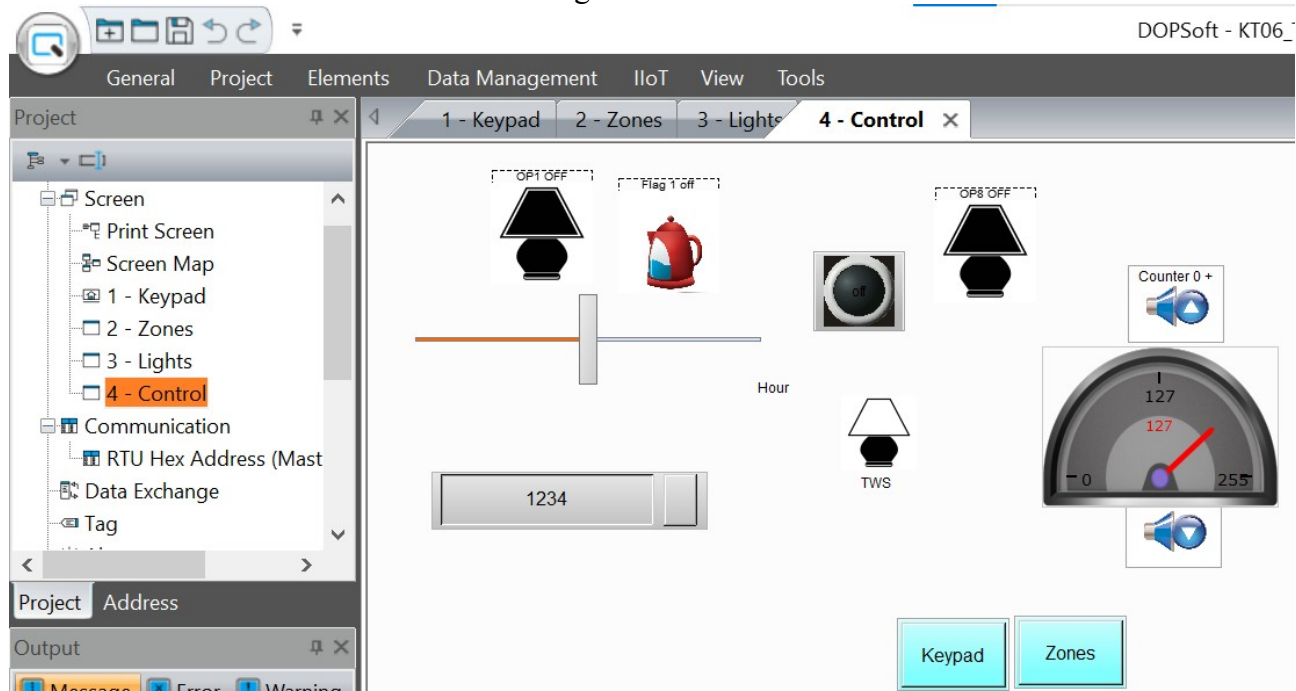
Write To EEPROM		Read From EEPROM		Reset To Default		Get Status	
UCM/MODBUS Properties		Modbus Slave		Monitor Mode			
Modbus Element	Comfort Function	Reg No	Reg Name	M/Addr Dec	M/Addr Hex	Help	
Discrete Inputs							
Coils (Outputs)							
Coils	Outputs	1	Output001	00	0000	Write Single Coil sets or clears Output.	
		2	Output002	01	0001	Read Coils reads the on/off state of range of Outputs.	
		3	Output003	02	0002		
		4	Output004	03	0003		
		5	Output005	04	0004		
		6	Output006	05	0005		
		7	Output007	06	0006		
		8	Output008	07	0007		
		9	Output009	08	0008		
		10	Output010	09	0009		

Read Address is (link1)[1@RB4](#) which means Discrete Input address 4. This is mapped to UCM/Modbus Zzone 5

ie Write address is Modbus coil address = Comfort Output, and Read Address is Modbus Discrete Input = Comfort Input

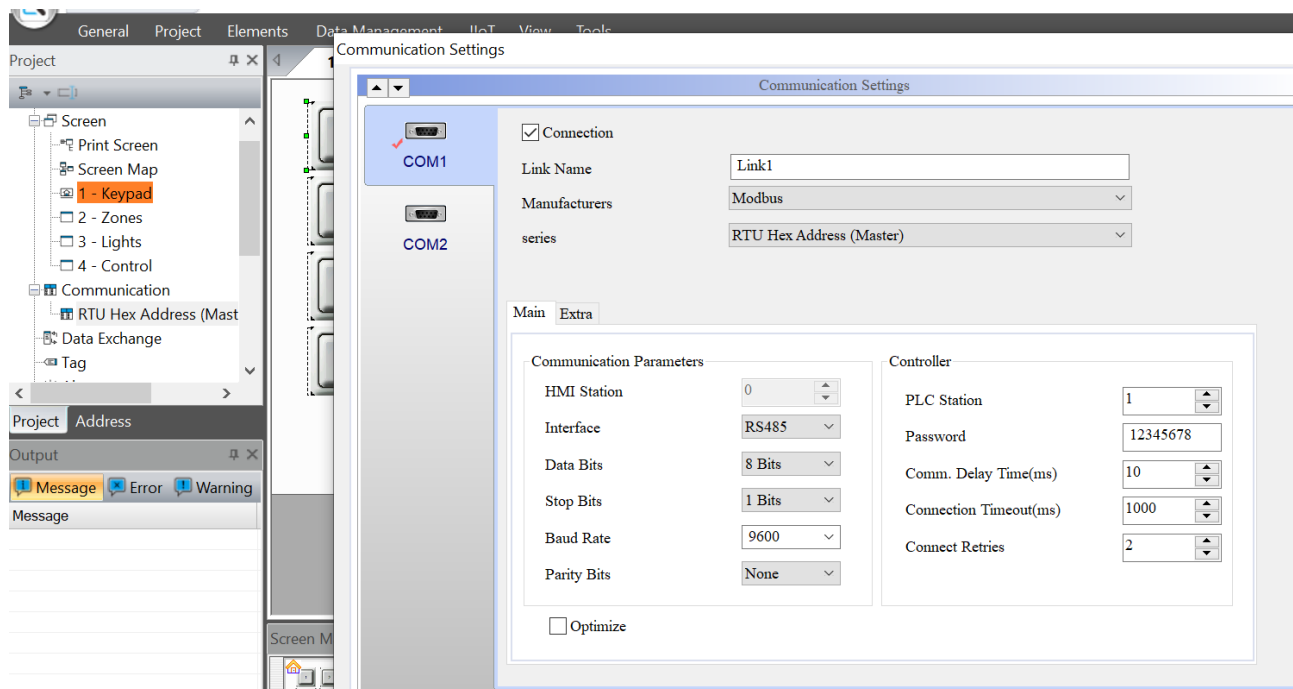
Control Screen

The Control Screen is a sample screen with various controls, meters and sliders. This screen is not active as there is no button to jump to the page. It is a sample to show how to program these items. Double click on each item to show the configuration.



Communication Settings

On the left pane, select Communication to change the communication settings if necessary



Select COM1 on the left as the communication Interface for Modbus

For Connection in the middle pane, Link name is “Link1”. Manufacturer should select “Modbus” from the drop-down list. Series should select RTU Hex Address (Master). For the lower screen follow the settings displayed;

Interface = RS485, Data Bits = 8, Stop Bits=1, Baud Rate = 9600, Parity Bits=None. These settings should match the UCM/Modbus properties

Paswpord = 1234565768 is the password that shouyld be used when a password is requiored by the softwatre

Document History

12 December 2022 Initial Release