



ezManager Program Library for Visual Basic

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Agenda

1	INTRODUCTION	- 4 -
2	DATA STRUCTURES	- 5 -
2.1	vb_lib_env	- 5 -
2.1.1	Overview.....	- 5 -
2.1.2	Parameters.....	- 5 -
2.2	vb_net_env.....	- 6 -
2.2.1	Overview.....	- 6 -
2.2.2	Parameters.....	- 6 -
2.2.3	Remarks	- 9 -
2.3	vb_uart_env	- 10 -
2.3.1	Overview.....	- 10 -
2.3.2	Parameters.....	- 10 -
2.3.3	Remarks	- 10 -
2.4	vb_uart_dev_env.....	- 11 -
2.4.1	Overview.....	- 11 -
2.4.2	Parameters.....	- 11 -
2.5	vb_uart_var_env	- 14 -
2.5.1	Overview.....	- 14 -
2.5.2	Parameters.....	- 14 -
2.5.3	Remarks	- 15 -
2.6	vb_opt_env	- 16 -
2.6.1	Overview.....	- 16 -
2.6.2	Parameters.....	- 16 -
2.7	vb_etc_env.....	- 19 -
2.7.1	Overview.....	- 19 -
2.7.2	Parameters.....	- 19 -
2.7.3	Remarks	- 20 -
2.8	vb_io_env	- 21 -
2.8.1	Overview.....	- 21 -
2.8.2	Parameters.....	- 21 -
2.9	vb_io_var_env	- 23 -
2.9.1	Overview.....	- 23 -
2.9.2	Parameters.....	- 23 -
2.9.3	Remarks	- 25 -
2.10	vb_ip_trap_env	- 26 -
2.10.1	Overview.....	- 26 -
2.10.2	Parameters.....	- 26 -
2.10.3	Remarks	- 26 -
2.11	vb_port_map_env	- 27 -
2.11.1	Overview.....	- 27 -
2.11.2	Parameters.....	- 27 -
2.12	vb_wlan_env.....	- 28 -
2.12.1	Overview.....	- 28 -
2.12.2	Parameters.....	- 28 -
2.13	vb_wlan_opt_env.....	- 29 -
2.13.1	Overview.....	- 29 -
2.13.2	Parameters.....	- 29 -
2.14	vb_wlan_var_env.....	- 32 -
2.14.1	Overview.....	- 32 -
2.14.2	Parameters.....	- 32 -
2.15	vb_csc_hr2_env	- 34 -
2.15.1	Overview.....	- 34 -
2.15.2	Parameters.....	- 34 -
2.16	vb_redundancy_var_env	- 35 -

2.16.1 Overview.....	- 35 -
2.16.2 Parameters.....	- 35 -
2.17 tcp_status_env.....	- 36 -
2.17.1 Overview.....	- 36 -
2.17.2 Parameters.....	- 36 -
3 FUNCTIONS.....	- 37 -
3.1 EzManager_Search.....	- 37 -
3.1.1 Overview.....	- 37 -
3.1.2 Prototype.....	- 37 -
3.1.3 Parameters.....	- 37 -
3.1.4 Return Value.....	- 38 -
3.1.5 Remarks.....	- 38 -
3.2 EzManager_Read.....	- 39 -
3.2.1 Overview.....	- 39 -
3.2.2 Prototype.....	- 39 -
3.2.3 Parameters.....	- 39 -
3.2.4 Return Value.....	- 40 -
3.2.5 Remarks.....	- 40 -
3.3 EzManager_Write.....	- 41 -
3.3.1 Overview.....	- 41 -
3.3.2 Prototype.....	- 41 -
3.3.3 Parameters.....	- 41 -
3.3.4 Return Value.....	- 41 -
3.3.5 Remarks.....	- 42 -
3.4 EzManager_Status.....	- 43 -
3.4.1 Overview.....	- 43 -
3.4.2 Prototype.....	- 43 -
3.4.3 Parameters.....	- 43 -
3.4.4 Return Value.....	- 44 -
3.4.5 Remarks.....	- 44 -
3.5 EzManager_ChangePwd.....	- 45 -
3.5.1 Overview.....	- 45 -
3.5.2 Prototype.....	- 45 -
3.5.3 Parameters.....	- 45 -
3.5.4 Return Value.....	- 46 -
3.5.5 Remarks.....	- 46 -
3.6 EzManager_CloseTCP.....	- 47 -
3.6.1 Overview.....	- 47 -
3.6.2 Prototype.....	- 47 -
3.6.3 Parameters.....	- 47 -
3.6.4 Return Value.....	- 48 -
3.6.5 Remarks.....	- 48 -
3.7 EzManager_RdbOnOff.....	- 49 -
3.7.1 Overview.....	- 49 -
3.7.2 Prototype.....	- 49 -
3.7.3 Parameters.....	- 49 -
3.7.4 Return Value.....	- 50 -
3.7.5 Remarks.....	- 50 -
3.8 EzManager_ReBoot.....	- 51 -
3.8.1 Overview.....	- 51 -
3.8.2 Prototype.....	- 51 -
3.8.3 Parameters.....	- 51 -
3.8.4 Return Value.....	- 52 -
3.8.5 Remarks.....	- 52 -
3.9 GetLibVer.....	- 52 -
3.9.1 Overview.....	- 52 -

3.9.2	<i>Prototype</i>	- 52 -
3.9.3	<i>Return Value</i>	- 52 -
3.10	<i>.GetProductName</i>	- 53 -
3.10.1	<i>Overview</i>	- 53 -
3.10.2	<i>Prototype</i>	- 53 -
3.10.3	<i>Parameters</i>	- 53 -
3.10.4	<i>Return Value</i>	- 53 -
3.11	<i>Exit_Library</i>	- 53 -
3.11.1	<i>Overview</i>	- 53 -
3.11.2	<i>Prototype</i>	- 53 -

1 Introduction

- This library offers main functionality of ezManager program.

WARNING:

- All "**RESERVED**" or "**NOT USED**" members of structure are NOT allowed use.
Please don't use "**RESERVED**" or "**NOT USED**" members.
- Please check ezTCP's MAC Address or IP Address before using "write" function.
If you write wrong information to ezTCP, then it may does not work correctly.
- We DO NOT guarantee any damage occurred by illegal use of this library.



2 Data Structures

2.1 vb_lib_env

2.1.1 Overview

- Basic data structure for library functions.

Private Const MAX_COM_PORT	As	Integer = 48
Private Type vb_lib_env		
vb_net_env	As	vb_net_env
vb_ip6_env	As	vb_ip6_env
vb_uart_env (0 To MAX_COM_PORT - 1)	As	vb_uart_env
vb_opt_env	As	vb_opt_env
vb_etc_env	As	vb_etc_env
vb_io_env	As	vb_io_env
vb_ip_trap_env	As	vb_ip_trap_env
vb_port_map_env	As	vb_port_map_env
vb_wlan_env	As	vb_wlan_env
vb_csc_hr2_env	As	vb_csc_hr2_env
End Type		

2.1.2 Parameters

- vb_net_env
[in/out] Basic structure to store network variables.
- vb_net_env
[in/out] Basic structure to store network variables about IP6.
- vb_uart_env
[in/out] Basic structure to store UART variables.
- vb_opt_env
[in/out] Basic structure to store environment variables.
- vb_etc_env
[in/out] Basic structure to store environment variables.
- vb_io_env
[in/out] Basic structure to store environment variables for I/O product.
- vb_ip_trap_env
[in/out] Basic structure to store environment variables about IP address notification.
- vb_port_map_env
[in/out] Basic structure to store TCP port information.
- vb_wlan_env
[in/out] Basic structure to store WLAN variables.
- vb_csc_hr2_env
[in/out] Basic structure for CSC-HR2.

2.2 vb_net_env

2.2.1 Overview

- Basic structure to store network variables.

Private Type	vb_net_env			
mac_addr	(0 To 5)	As	Byte	'READ ONLY. Never modify.
secure	(0 To 5)	As	Byte	'READ ONLY. Never modify.
major		As	Long	'READ ONLY. Never modify.
minor		As	Long	'READ ONLY. Never modify.
rev		As	Long	'READ ONLY. Never modify.
local_ip		As	Long	
net_mask		As	Long	
gate_ip		As	Long	
pppoe_id	(0 To 31)	As	Byte	
pppoe_pwd	(0 To 15)	As	Byte	
socket_ip		As	Long	'READ ONLY. Never modify.
dns_ip		As	Long	
product_id_old		As	Integer	'READ ONLY. Never modify.
product_id_new		As	Integer	'READ ONLY. Never modify.
ddns_id	(0 To 31)	As	Byte	
ddns_pwd	(0 To 15)	As	Byte	
ddns_host_name	(0 To 63)	As	Byte	
ssh_id	(0 To 15)	As	Byte	
ssh_pwd	(0 To 15)	As	Byte	
End Type				

2.2.2 Parameters

- mac_addr
[out] Ethernet address.
RESERVED. NOT allowed write (READ-ONLY). We DO NOT guarantee any damage occurred by using illegal directions and also we DO NOT support any individual use.
eg. The MAC address 00:30:f9:12:34:56 is stored in mac _addr array like this.
mac _adr(0) = &H00, mac _adr(1) = &H30, mac _adr(2) = &Hf9,
mac _adr(3) = &H12, mac _adr(4) = &H34, mac _adr(5) = &H56
- major
[out] Firmware major version.
- minor
[out] Firmware minor version.
- rev
[out] Firmware revision number.
The revision number starts from zero(0). And zero(0) means 'a'.
- local_ip
[in/out] Local IP address.

- net_mask
[in/out] Subnet mask.
- gate_ip;
[in/out] Gateway IP address
- poe_uid
[in/out] PPPoE log-in ID.
- poe_pwd
[in/out] PPPoE log-in password.
- socket_ip
[out] The IP address of TCP/IP socket.
READ ONLY. This IP address is packet's IP address which is received from ezTCP. It is useful when the ezTCP uses DHCP.
- dns_ip
[in/out] DNS(Domain name system) server IP address
- product_id_old
[out] The product ID of ezTCP.
READ ONLY. Do not modify this variable.

Value	Product
0x10	CIE-H10
0x11	CSE-H20 / CSE-H21
0x12	CSE-M32
0x14	CSE-M73
0x15	CSW-H80
0x21	CIE-M10
0x29	CSE-H25
0x2b	CSE-M53
0x2c	CSE-H53
0x2d	CSW-M83
0x2e	CSW-M85
0x2f	CSE-H55
0x30	CSC-HR2
0x34	CIE-H12
0x35	CSW-H85
0x36	CSE-T32
0x37	CSE-M53A
0x39	CSE-T16
0x3a	CSE-T48
0x3b	CSE-H53A
0x3c	CSW-M84
0x3d	CSE-M53N
0x3e	CSE-H53N
0x3f	CSE-H55N

- product_id_new

[out] The product id of ezTCP.

READ ONLY. Do not modify this variable. If this value is zero(0) then use product_id_old.

Value	Product
0x20	CIE-H10
0x21	CIE-M10
0x22	CIE-H14
0x23	CSE-M32
0x24	CSE-H20
0x25	CSE-H21
0x26	CSE-M73
0x27	CSW-H80
0x29	CSE-H25
0x2b	CSE-M53
0x2c	CSE-H53
0x2d	CSW-M83
0x2e	CSW-M85
0x2f	CSE-H55
0x30	CSC-HR2
0x34	CIE-H12
0x35	CSW-H85
0x36	CSE-T32
0x37	CSE-M53A
0x39	CSE-T16
0x3a	CSE-T48
0x3b	CSE-H53A
0x3c	CSW-M84
0x3d	CSE-M53N
0x3e	CSE-H53N
0x3f	CSE-H55N

- ddns_id

[in/out] DDNS service log-in ID.

The user id which is used to log-in DDNS service provider.

- ddns_pwd

[in/out] DDNS service log-in password.

The user password which is used to log-in DDNS service provider.

- ddns_host_name

[in/out] The host name for DDNS service.

※ Please refer to product user's manual for more detail information about DDNS.

- ssh_id, ssh_pwd

[in/out] ID and password for SSH service.

2.2.3 Remarks

- Whole variables are stored by Little Endian(Host byte order), except below parameters.
- local_ip, net_mask, gate_ip, socket_ip and dns_ip are stored by Big Endian(Network Byte Order).

2.3 vb_uart_env

2.3.1 Overview

- Basic structure to store UART variables and use flag.

Private Type	vb_uart_env			
	vb_uart_dev_env	As	vb_uart_dev_env	
	vb_uart_var_env	As	vb_uart_var_env	
	vb_uart_del_env	As	vb_uart_del_env	
	host_name	(0 To 63)	As	Byte
	comment	(0 To 31)	As	Byte
	use_flag		As	Long
End Type				'READ ONLY. Never modify

2.3.2 Parameters

- vb_uart_dev_env
[in/out] Basic structure to store UART hardware related variables.
- vb_uart_var_env
[in/out] Basic structure to store UART operation related variables.
- host_name
[in/out] DNS name of peer host.
It is used when ezTCP runs as a TCP client. If you want to use DNS name instead of IP address then the "peer_ip" parameter in "uart_var_env" should be zero(0).
- comment
[in/out] Short comment for UART.
This option only using with CSE-T16 / T32 / T48.
- use_flag
[out] The flag for indicating that it used or not.
READ ONLY. This parameter indicates whether the UART is valid or not.
Only if this parameter is one(1) then it is valid UART.

2.3.3 Remarks

- The number of available UART is varying according to ezTCP. The "use_flag" represents existence of UART.

2.4 vb_uart_dev_env

2.4.1 Overview

- Basic structure to store UART hardware related variables.

```
Private Type vb_uart_dev_env
    max_stype As Long 'RESERVED. Never Modify
    stype As Long
    databit As Long
    stopbit As Long
    parity As Long
    flowctrl As Long
    telcom As Long
    parity2 As Long
    ttl As Long
    tx_delay As Long
    dtrdsr As Long
    max_baud As Long 'READ ONLY. Never modify
    sio_baud As Long
End Type
```

2.4.2 Parameters

- stype
[in/out] Serial port type.

stype	Description
0	RS-232
1	RS-485
2	RS-422

- databit
[in/out] Serial Data Bit.

databit	Description
0	5-Bit
1	6-Bit
2	7-Bit
3	8-Bit

- stopbit
[in/out] Stop Bit.

stopbit	Description
0	1 Stop Bit
1	1.5 Stop Bit
2	2 Stop Bit

- parity
[in/out] Serial Parity Bit.

parity	Description
0	None
1	Even
2	Odd
3	Use parity2 parameter

- flowctrl
[in/out] Serial Flow Control.

flowctrl	Description
0	None
1	RTS / CTS
2	Xon / Xoff

- telcom
[in/out]
Enable / Disable Telnet COM Port Control Option. (RFC2217)
Please see a product user's manual for more detail information.

- parity2
[in/out] Serial Parity Bit.

parity2	Description
0	Mark
1	Space

- ttl
[in/out]
Enable / disable TTL Level output on UART.

This value is only considered below ezTCP products.

LAN Type	Product Name
Wired LAN	CSE-M73(H/W version 1.3 and F/W version 1.4a or higher)
Wireless LAN	

- tx_delay
[in/out]
Please see a product user's manual for more detail information.
- dtrdsr
[in/out] DTR/DSR flow control.
- max_baud
[out] Maximum Serial Baud Rate.
READ ONLY. The max_baud is Maximum Serial Baud Rate of ezTCP.
- sio_baud
[in/out] Serial Baud Rate.
Do not exceed the max_baud. Wrong serial baud rate may cause a problem.

2.5 vb_uart_var_env

2.5.1 Overview

- Basic structure to store UART operation related variables.

```
Private Type vb_uart_var_env
    local_ip      As Long    'NOT USED. Never modify
    peer_ip       As Long
    local_port    As Long
    peer_port     As Long
    mux_type      As Long
    no_delay      As Long
    cod_listen    As Long
    secure        As Long
    water_mark    As Long
    time_mark     As Long
    timeout       As Long
End Type
```

2.5.2 Parameters

- peer_ip
[in/out] Target host's IP address.
It is available when the "mux_type" is COD(2) or U2S(3).
If you want to use DNS host name then you should set it to zero(0).
- local_port
[in/out] Local port number.
It is available when the "mux_type" is T2S(0) or U2S(3).
- peer_port
[in/out] Target host port number.
It is available when the "mux_type" is COD(2) or U2S(3).
- mux_type
[in/out] Mode setting value.

mux_type	Mode	Description
0	T2S	TCP Server mode. ezTCP will wait for a TCP/IP connection.
1	ATC	AT command mode. ezTCP can be a TCP sever or TCP client mode by using AT commands.
2	COD	TCP Client mode. ezTCP will connect to specified peer IP address and peer port, when amount of water mark data on serial port is arrived.
3	U2S	UDP mode. ezTCP will use UDP.

- no_delay
[in/out]
Enable / Disable TCP transmission delay.
- water_mark
[in/out] Amount of data that can allow starting connection.
This value is only considered in COD or U2S mode.
- time_mark
[in/out]
When ezTCP sends data from its serial port to the Ethernet, the "time_mark" is a unit between two packets. If there is no data from its serial port during the specified "time_mark", the ezTCP sends data to Ethernet.
(unit:10ms, minimum value: 4(40ms))
- timeout
[in/out] Time-out value.
In T2S, COD and ATC mode, after time-out value seconds without communication, ezTCP will disconnect the connection automatically. If this value is zero(0), ezTCP will not disconnect automatically.
In the other mode, this value can be set for customization.

2.5.3 Remarks

- Whole variables are stored by Little Endian(Host byte order), except below parameters.
- peer_ip is stored by Big Endian(Network Byte Order).

2.6 vb_opt_env

2.6.1 Overview

- Basic structure to store environment variables.

```
Private Type vb_opt_env
    ezcfcg_lock As Long
    rcfg As Long
    arp As Long
    dhcp As Long
    ppoe As Long
    auto_ns As Long
    ip6 As Long
    ip6_eui As Long
    ip6_gua As Long
    debug As Long
    telnet As Long
    ssl As Long
    ssh As Long
    http As Long
    ddns As Long
    t2smc As Long
    secure As Long ' READ ONLY. Never modify.
    mac_id As Long
    ps As Long
    pd As Long
End Type
```

2.6.2 Parameters

- ezcfcg_lock
[in/out]
If this parameter is one(1), the ezTCP replies to the host that has same MAC or IP address defined in the "allow_mac" or "allow_ip" in "vb_etc_env" structure.
- rcfg
[in/out]
Enable / disable the remote configuration function.
- arp
[in/out]
If this parameter is set, you can temporary set ezTCP's IP address by using ARP packet.
- dhcp
[in/out]
If this parameter is non-zero, dhcp protocol is enabled.
- ppoe
[in/out]
If this parameter is non-zero, ppoe protocol is enabled.

- auto_ns
[in/out]
If ezTCP's IP address is set as a dynamic IP (DHCP or PPPoE), it will automatically receive DNS server address. If this parameter is not set, the IP address designated in the "dns_ip" in "net_env" structure will be used as the DNS server address.
- ip6
[in/out]
Enable / Disable IP6 function.
- ip6_eui
[in/out]
The option to make Link-Local IP6 address.

ip6_eui	Comment
0	ezTCP's MAC address is using to make Link-Local IP6 address.
1	Random number is using to make Link-Local IP6 address.

- ip6_gua
[in/out]

ip6_gua	Comment
0	Obtain an IP Automatically.
1	Use static IP address.

- debug
[in/out]
Enable/Disable the remote debugging function of ezTCP. If this value is set, it will send a debugging message by using UDP broadcast(port 50006).
- telnet
[in/out] Enable/Disable Telnet Console.
If this value is set, the ssh option is disabled.
- ssl
[in/out]
Enable / Disable SSL protocol.
- ssh
[in/out] Enable / Disable SSH protocol.
If this values is set, SSH protocol is required to connect ezTCP's console and telnet option is disabled.
- http
[in/out] Enable / Disable HTTP protocol for controlling or monitoring.

This flag is currently considered in below ezTCP products.

LAN Type	Product Name
Wired LAN	CIE-H10, CIE-M10, CIE-H12
Wireless LAN	

- **ddns**
[in/out] Select DDNS service provider.

ddns	Description
0	DDNS disabled
1	Use DynDNS service provider.
2	TCP
3	UDP

Please see a product user's manual for more detail information.

- **t2smc**
[in/out]
If this value is set, it can accept multiple TCP/IP connection.
This value is only considered in T2S mode and below ezTCP products.

LAN Type	Product Name
Wired LAN	CSE-M73, CSE-H25
Wireless LAN	

- **secure**
[out]
READ ONLY. This value is represented whether this product support SSL and SSH or not.
- **mac_id**
[in/out]
If this value is set, an ezTCP sends its MAC address to peer when a TCP/IP connection is established.

2.7 vb_etc_env

2.7.1 Overview

- Basic structure to store environment variables.

Private Type	vb_etc_env			
allow_mac	(0 To 5)	As	Byte	
pad0		As	Integer	'NOT USED. Never modify.
allow_ip		As	Long	
allow_subnet		As	Long	
comment	(0 To 63)	As	Byte	
pwd_old	(0 To PASSWD_SIZE - 1)	As	Byte	'RESERVED. Never modify
pwd	(0 To PASSWD_SIZE - 1)	As	Byte	'RESERVED. Never modify
allow_ip6	(0 To 15)	As	Byte	
allow_ip6_prefix			As	Long
End Type				

2.7.2 Parameters

- allow_mac
[in/out]
Host's MAC address that attempts to establish connection to ezTCP may be restricted. When this value is set, hosts with designated MAC address may only connect to ezTCP.

- allow_ip
allow_subnet
[in/out]
If this value is set, host connections can be restricted based on designated "allow_ip" and "allow_subnet" setting value. When "allow_ip" value is selected, "allow_ip" and "allow_subnet" may be bit AND to identify allowed hosts. An example is as follow.

allow_ip	allow_subnet	Allowed Hosts IP address range
10.1.0.1	255.0.0.0	10.1.0.1 ~ 10.255.255.254
10.1.0.1	255.255.255.0	10.1.0.1 ~ 10.1.0.254
192.168.1.4	255.255.255.255	192.168.1.4

- comment
[in/out]
When use multiple ezTCP, the comments option help you distinguish each ezTCP.
- pwd_old, pwd
[out] RESERVED.
This value is used for setting a password to ezTCP. But, it is not using directly. You can set or modify password to ezTCP through ezManager library functions. If pwd_old parameter has "*****" then the ezTCP is protected by password.
- allow_ip6
[in/out]
An IP6 address that is only allowed to connect to the ezTCP.

- prefix
[in/out]
Subnet prefix length of allow_ip6.

2.7.3 Remarks

- You should use Big endian(Network byte order) for allow_ip and allow_subnet parameters.

2.8 vb_io_env

2.8.1 Overview

- Basic structure to store environment variables for I/O product.

```

Private Const MAX_DI           As Integer = 8
Private Const MAX_DO           As Integer = 8
Private Const IO_SCRIPT_LEN    As Integer = 32
Private Const IO_COMMENT_LEN   As Integer = 16

Private Type vb_io_env
    di_num           As Byte    'READ ONLY. Never modify
    do_num           As Byte    'READ ONLY. Never modify
    html_size        As Integer
    script0(0 To 31) As Byte
    script1(0 To 31) As Byte
    script2(0 To 31) As Byte
    script3(0 To 31) As Byte
    script4(0 To 31) As Byte
    script5(0 To 31) As Byte
    script6(0 To 31) As Byte
    script7(0 To 31) As Byte

    di_comment0(0 To 15) As Byte
    di_comment1(0 To 15) As Byte
    di_comment2(0 To 15) As Byte
    di_comment3(0 To 15) As Byte
    di_comment4(0 To 15) As Byte
    di_comment5(0 To 15) As Byte
    di_comment6(0 To 15) As Byte
    di_comment7(0 To 15) As Byte

    do_comment0(0 To 15) As Byte
    do_comment1(0 To 15) As Byte
    do_comment2(0 To 15) As Byte
    do_comment3(0 To 15) As Byte
    do_comment4(0 To 15) As Byte
    do_comment5(0 To 15) As Byte
    do_comment6(0 To 15) As Byte
    do_comment7(0 To 15) As Byte
    host_name(0 To 63)   As Byte
    vb_io_var_env         As vb_io_var_env
    use_flag              As Long    'READ ONLY. Never modify
End Type

```

2.8.2 Parameters

- di_num
[out] Number of available digital input ports.
READ ONLY.



- do_num
[out] Number of available digital output ports.
READ ONLY.
- html_size
[in/out] Memory size for HTML page(Unit : Kilobyte, KB).
This value should be 80, 96 or 112. The 80 is default value.
- script0 ~ script7
[in/out] Macro for its digital output port.
Please see a product user's manual for more detail information.
- host_name
[in/out] DNS name of peer host.
It is used when ezTCP runs as a TCP client. If you want to use DNS name then you should set "peer_ip" parameter in "io_var_env" to zero(0).
- di_comment0 ~ di_comment7
[in/out]
Short comment for digital input port.
- do_comment0 ~ do_comment7
[in/out]
Short comment for digital output port.
- io_var_env
[in/out] Basic structure to store environment variables for a digital input / output ports.
- use_flag
[out] The flag for indicating that it used or not.
READ ONLY. Only if this flag is one(1) then this is valid I/O.

2.9 vb_io_var_env

2.9.1 Overview

- Basic structure to store environment variables for I/O ports.

```
Private Type vb_io_var_env
    modbus           As Long
    macro            As Long
    master           As Long
    active           As Long
    notify           As Long
    conns            As Long
    emacro           As Long
    query            As Long
    ctrl             As Long
    peer_ip          As Long
    peer_port        As Long
    slave_id         As Long
    input_addr       As Long
    output_addr      As Long
    init_output      As Long
    poll_interval    As Long
    input_valid_time (0 To 7) As Long
    output_delay     (0 To 7) As Long
End Type
```

2.9.2 Parameters

- modbus
[in/out] Enable / Disable Modbus/TCP protocol.
- macro
[in/out] Enable / Disable MACRO function.
- master
[in/out]

master	Description
0	Modbus/TCP Slave
1	Modbus/TCP Master

- active
[in/out]

active	Description
0	Passive (TCP Server)
1	Active (TCP Client)

- notify
[in/out]
If this value is one(1) then I/O products will send its input port value to the master when it's input port status changes.
- conns
[in/out] Number of TCP/IP connections for Modbus/TCP
If modbus option is one(1) then this option represents the total number of TCP/IP connections for Modbus/TCP. The maximum value is 8.
※ **F/W version 1.3F or higher.**
- emacro
[in/out] Enable / Disable MACRO function for each output port.
0th bit(LSB) means 0th output port, and the value is one(1) then this function is enabled.
- query
[in/out]
If master option value is one(1) (Modbus/TCP Master) then query is used for Modbus command type.

query	Description
0	FC 16(Multiple) The product controls the output ports and monitors the input ports of slaves with WORD unit by FC 16 (write multiple register) and FC 03 (read multiple register).
1	FC 05(Single) The product controls the output ports and monitors the input ports of slaves with BIT unit by FC 05 (write coil) and FC 02 (read input discrete)

- ctrl
[in/out]
If master option value is one(1) (Modbus/TCP Master) then ctrl is used for how to control its output ports.

ctrl	Description
0	AND
1	OR

- peer_ip
[in/out] Target host IP address.
If active option value is one(1) then peer_ip is used for a target host IP address.

- **peer_port**
[in/out]
If active option value is one(1) then peer_port is used for target host's port number. Otherwise, it is used for local port number.

- **slave_id**
[in/out]
It has different meaning according to "master" variable.

master	Description
0 - Slave Mode	Product's Unit ID.
1 - Master Mode	Remote device's Unit ID.

- **input_addr**
[in/out]
It has different meaning according to "master" variable.

master	Description
0 - Slave Mode	Product's input port address.
1 - Master Mode	Slave device's input port address.

- **output_addr**
[in/out]
It has different meaning according to "master" variable.

master	Description
0 - Slave Mode	Product's output port address.
1 - Master Mode	Slave device's output port address.

- **init_output**
[in/out]
Output port value when product is booted.
"1" then output port is on, "0" then output port is off.
- **poll_interval**
[in/out]
Interval in millisecond between each query to a master. (Unit : millisecond)
- **input_valid_time**
[in/out]
Refer to product user's manual for detail information.
- **output_delay**
[in/out]
Refer to product user's manual for detail information

2.9.3 Remarks

- You should use Big endian(Network byte order) for peer_ip parameter.

2.10 vb_ip_trap_env

2.10.1 Overview

- Basic structure to store environment variables about IP address notification.

```
Private Type vb_ip_trap_env
    level As Long
    peer_ip As Long
    peer_port As Long
    interval As Long
End Type
```

2.10.2 Parameters

- level
[in/out]
If “ddns” parameter in “vb_opt_env” is 2(TCP) or 3(UDP) then it decides the type of data.

level	Description
0	ASCII
1	Binary

- peer_ip
[in/out] The host IP addresses to send a data.
- peer_port
[in/out] The host port number to send a data
- interval
[in/out] The interval for sending a data

2.10.3 Remarks

- You should use Big endian(Network byte order) for peer_ip parameter.

2.11 vb_port_map_env

2.11.1 Overview

- Basic structure to store TCP port information.

```
Private Type vb_port_map_env
    http_port As Long
    reserved1 As Long 'REVERVED. Never modify
    reserved2 As Long 'REVERVED. Never modify
    reserved3 As Long 'REVERVED. Never modify
    reserved4 As Long 'REVERVED. Never modify
End Type
```

2.11.2 Parameters

- http_port
[in/out] The HTTP port number
This value is only considered below ezTCP products.

LAN Type	Product Name
Wired LAN	CIE-H10, CIE-M10, CIE-H12
Wireless LAN	

2.12 vb_wlan_env

2.12.1 Overview

- Basic structure to store WLAN variables.

Private Type	vb_wlan_env		
vb_wlan_opt_env	As	vb_wlan_opt_env	
vb_wlan_var_env	As	vb_wlan_var_env	
use_flag	As	Long	'READ ONLY. Never modify
End Type			

2.12.2 Parameters

- vb_wlan_opt_env
[in/out] Basic structure to store WLAN variables.
- vb_wlan_var_env
[in/out] Basic structure to store WLAN variables.
- use_flag
[out] The flag for indicating that is used or not.
READ ONLY. This parameter indicates this WLAN is valid or not. Only if this parameter is one(1) then it is valid WLAN.

2.13 vb_wlan_opt_env

2.13.1 Overview

- Basic structure to store WLAN variables.

```
Private Type vb_wlan_opt_env
    cctype As Long
    channel As Long
    wep As Long
    wep_id As Long
    bg_scan As Long
    auth As Long
    wpa As Long
    cipher As Long
    antenna As Long
    phy As Long
    short_preamble As Long
    short_slot As Long
    cts_protection As Long
End Type
```

2.13.2 Parameters

- cctype
[in/out] Connection Control Type

cctype	Description
0	AD-HOC
1	Infrastructure

- channel
[in/out] Wireless LAN channel
It is valid only if cctype is AD-HOC.

- wep
[in/out] Encryption Method

wep	Description
0	Disable
1	WEP - 64 bits
2	WEP - 128 bits

※ WEP(Wired Equivalent Privacy)

- wep_id
[in/out] WEP Key index number (0, 1, 2, 3)



This parameter is used for choosing a WEP Key when “wep” parameter is “1” or “2”.

- **auth**
[in/out] Authentication mode for infrastructure network.

auth	Description
0	Disable
1	Open System
2	Shared Key
3	Both

- **wpa**
[in/out] WPA(Wi-Fi Protected Access) authentication mode.

wpa	Description
0	Disable
1	EAP TLS
2	WPA-PSK
3	EAP TTLS
4	WPA2-PSK
5	PEAP

- **cipher**
[in/out] WPA Encryption Strength

cipher	Description
0	Disable
1	TKIP (Temporal Key Integrity Protocol)
2	AES (Advanced Encryption Standard)
3	TKIP / AES

- **antenna**
[in/out]

antenna	Description
0	Internal antenna.
1	External antenna.

※ **Currently, antenna is only valid for CSW-M85.**

- passive, bg_scan, phy, short_preamble, short_slot, cts_protection
[in/out]

These are advanced settings for WIRELESS LAN products.

Please refer to product user's manual for more detail information.



2.14 vb_wlan_var_env

2.14.1 Overview

- Basic structure to store WLAN variables.

Private Type	vb_wlan_var_env			
ssid	(0 To 31)	As	Byte	
key40_key0	(0 To 4)	As	Byte	
key40_key1	(0 To 4)	As	Byte	
key40_key2	(0 To 4)	As	Byte	
key40_key3	(0 To 4)	As	Byte	
key104_key0	(0 To 12)	As	Byte	
key104_key1	(0 To 12)	As	Byte	
key104_key2	(0 To 12)	As	Byte	
key104_key3	(0 To 12)	As	Byte	
wpa_passphrase	(0 To 63)	As	Byte	
wpa_psk	(0 To 31)	As	Byte	'READ ONLY. Never modify
power_table	(0 To 15)	As	Byte	'READ ONLY. Never modify
key_flag		As	Long	'READ ONLY. Never modify
eap_id	(0 To 31)	As	Byte	
eap_pwd	(0 To 15)	As	Byte	
End Type				

2.14.2 Parameters

- ssid
[in/out] SSID for wireless network
ssid is ASCII string end with NULL(0x00). So, its maximum length is 31.
- key40_key0 ~ key40_key3
[in/out] 4-sets of 40 bits key value
- key104_key0 ~ key104_key3
[in/out] 4-sets of 104 bits key value
- wpa_passphrase
[in/out] WPA(Wi-Fi Protected Access) passphrase.
wpa_passphrase is ASCII string end with NULL(0x00). So, its maximum length is 63. It is used to make WPA-PSK. You should fill at least 8 bytes with A~Z, a~z or 0~9.

Product	The maximum length of WPA passphrase
CSW-H80	31-byte
CSW-M83 / M85	63-byte

- wpa_psk
[out] WPA(Wi-Fi Protected Access) PSK(Pre-shared Key).
The “ssid” and “wpa_key” are used for making WPA PSK.
This value is automatically calculated when a program call the
“EzManager_Write” library function.
 ※ READ ONLY. Never modify this variable.
- power_table
[out] Signal Strength
It is a signal strength for each channel.
 ※ READ ONLY. Never modify this variable.
- key_flag
[out] The type of WEP key.

key_flag	Description
0	Hexadecimal code.
1	ASCII code.

- eap_id, eap_pwd
[in/out]
It is using when WPA authentication mode is EAP TLS, EAP TTLS or PEAP.
Please refer to product user’s manual for more detail information.

2.15 vb_csc_hr2_env

2.15.1 Overview

- This basic structure for CSC-HR2

```
Private Type    vb_csc_hr2_env
    vb_uart_dev_env           As    vb_uart_dev_env
    mux_type                  As    Long
    csc_hr2_id                (0 To 15) As    Byte
    server_host_name1         (0 To 63) As    Byte
    server_host_name2         (0 To 63) As    Byte
    vb_redundancy_var_env     As    vb_redundancy_var_env
End Type
```

2.15.2 Parameters

- vb_uart_dev_env
[in/out]
Basic structure to store UART hardware related variables. Please refer to 2.4 vb_uart_dev_env for detail information.
- mux_type
[in/out] Mode setting value

mux_type	Description
0	Automation mode : The CSC-HR2 is always a TCP client.
1	Firmware download mode for EZU-100 : It is using for downloading a firmware to EZU-100 through RS232 port.

- csc_hr2_id
[in/out] ID of CSC-HR2
This parameter is for a server which is using several CSC-HR2.
- server_host_name1
[in/out] First server address
If you want to use this parameter then the “peer_ip[0]” parameter in “redundancy_var_env” should be zero(0).
- server_host_name2
[in/out] Second server address
If you want to use this parameter then the “peer_ip[1]” parameter in “redundancy_var_env” should be zero(0).
- vb_redundancy_var_env
[in/out] Basic structure for redundancy function.

2.16 vb_redundancy_var_env

2.16.1 Overview

- Basic structure for redundancy function.

Private Type	vb_redundancy_var_env		
peer_ip1	As	Long	
peer_ip2	As	Long	
peer_port1	As	Long	
peer_port2	As	Long	
timeout1	As	Long	
timeout2	As	Long	
threshold1	As	Long	
threshold2	As	Long	
check_port	As	Long	
End Type			

2.16.2 Parameters

- peer_ip1
[in/out] First server IP address
- peer_ip2
[in/out] Second server IP address
- peer_port1
[in/out] First server port number
- peer_port2
[in/out] Second server port number
- timeout1
[in/out] Network transfer timeout [Unit : Second]
This parameter is the reference time when switching from the wired LAN to 3G network.
- timeout2
[in/out] Change server timeout [Unit : Second]
This parameter is the reference time when changing the destination server.
- threshold1
[in/out] Network transfer byte count [Unit : Byte]
This parameter is the reference byte count when switching from the wired LAN to 3G network.
- threshold2
[in/out] Change server byte count [Unit : Byte]
This parameter is the reference byte count when changing the destination server.
- check_port
[in/out] TCP port to investigate the quality of communication.

2.17 tcp_status_env

2.17.1 Overview

- This data structure is to store status of TCP/IP session of ezTCP.

Private Type vb_tcp_status_env

stat	As	Long	'READ ONLY. Never modify
winq_out	As	Long	'NOT USED. Never modify
session_name(0 To 7)	As	Byte	'READ ONLY. Never modify
local_ip	As	Long	'READ ONLY. Never modify
peer_ip	As	Long	'READ ONLY. Never modify
local_port	As	Integer	'READ ONLY. Never modify
peer_port	As	Integer	'READ ONLY. Never modify

End Type

2.17.2 Parameters

- stat
[out] TCP/IP connection status.

stat	Description	
0	CLOSED	Connection is closed.
1	LISTEN	Wait a TCP/IP connection from peer.
2	SYN_SENT	SYN packet sent.
3	SYN_RCVD	SYN packet received.
4	ESTABLISHED	a TCP/IP Connection is established.
5	FIN_WAIT1	FIN packet sent.
6	FIN_WAIT2	ACK packet received when it is in FIN_WAIT1.
7	CLOSE_WAIT	FIN packet received when it is in ESTABLISHED.
8	CLOSING	FIN packet received when it is in FIN_WAIT1.
9	LAST_ACK	FIN packet sent when it is in CLOSE_WAIT.
10	TIME_WAIT	Wait for starting new TCP/IP session.
11	END	Connection is closed.

- name
[out] The name of TCP/IP session.
- local_ip
[out] Local IP address of ezTCP.
- peer_ip
[out] The IP address of target host.
- local_port
[out] Local port number of ezTCP.
- peer_port
[out] Port number of target host.

3 Functions

3.1 EzManager_Search

3.1.1 Overview

- Basic function to search ezTCPs on local or remote network.
- Each ezTCP is discriminated by MAC or IP address.

3.1.2 Prototype

```
Private Declare Function EzManager_Search Lib "ezManagerLib" (
    ByVal mode As Long,
    ByVal ip As Long,
    ByRef vb_lib_env As vb_lib_env,
    ByRef nResultCount As Long,
    ByRef nErrNum As Long,
    ByVal port As Long,
    ByVal bind_ip As Long
) As Long
```

3.1.3 Parameters

- mode
[in]

mode	Description
0	Search from local network
1	Search from remote network

- ip
[in] The ezTCP's local ip address to read environment values.
This parameter should be passed by using Big-Endian.
- vb_lib_env
[out] "vb_lib_env" structure to store environment values.
- nResultCount
[out] The number of founded ezTCP.
- nErrNum
[out] Error number.
- port
[in] The UDP port number for ezManager library.
Default UDP port numbers are 50005 and 50007.

- `bind_ip`
[in] The library associates “bind_ip” with a TCP/IP socket.
If this value is zero(0) then the O/S associates one of its local address with a TCP/TCP socket.
This parameter has to use Big-Endian.

3.1.4 Return Value

- If no error occurred, `EzManager_Search` returns 1.
- When error is occurred, the return value is `EZTCP_ERR(-1)` and the error number is stored in `eErrNum`.

3.1.5 Remarks

- Before using this function, you have to reserve enough space for *lib_env* structure.
eg. `Private vb_lib_env(256) As vb_liv_env`
- This function takes at least 2 seconds to complete running.
- You should call `Exit_Library` function to release dynamically allocated memory when your application is closed

3.2 EzManager_Read

3.2.1 Overview

- Basic function to read environment values from ezTCP.

3.2.2 Prototype

```
Private Declare Function EzManager_Read Lib "ezManagerLib" (
    ByVal mode As Long,
    ByRef mac_addr As Byte,
    ByVal ip As Long,
    ByRef vb_lib_env As vb_lib_env, _
    ByRef nErrNum As Long,
    ByVal port As Long,
    ByVal bind_ip As Long
) As Long
```

3.2.3 Parameters

- mode
[in]

mode	Description
0	Read from local network
1	Read from remote network

- mac_addr
[in] The MAC address of ezTCP.
- ip
[in] The ezTCP's local ip address to read.
This parameter should be passed by using Big-Endian.
- vb_lib_env
[out] "vb_lib_env" structure to store ezTCP environment values.
- nErrNum
[out] Error number.
- port
[in] The UDP port number for ezManager library.
Default UDP port numbers are 50005 and 50007.
- bind_ip
[in] The library associates "bind_ip" with a TCP/IP socket.
If this value is zero(0) then the O/S associates one of its local address with a TCP/TCP socket.
This parameter has to use Big-Endian.

3.2.4 Return Value

- If no error occurred, EzManager_Read returns 1.
- When error has occurred, the return value is EZTCP_ERR(-1) and the error number is stored in eErrNum.

3.2.5 Remarks

- Before using this function, you have to reserve enough space for *lib_env* structure.
eg. Private vb_lib_env(256) As vb_liv_env
- This function takes 2 seconds to complete running.
- You should call Exit_Library function to release dynamically allocated memory when your application is closed.

3.3 EzManager_Write

3.3.1 Overview

- Basic function to write environment values to ezTCP.

3.3.2 Prototype

```
Private Declare Function EzManager_Write Lib "ezManagerLib" (
    ByVal mode As Long,
    ByRef vb_lib_env As vb_lib_env,
    ByRef cur_pwd As Byte,
    ByRef nErrNum As Long,
    ByVal port As Long,
    ByVal bind_ip As Long
) As Long
```

3.3.3 Parameters

- mode
[in]

mode	Description
0	Write to local network
1	Write to remote network

- vb_lib_env
[in] "vb_lib_env" structure containing environment value to be written.
- cur_pwd
[in] Current password of ezTCP.
- nErrNum
[out] Error number.
- port
[in] The UDP port number for ezManager library.
Default UDP port numbers are 50005 and 50007.
- bind_ip
[in] The library associates "bind_ip" with a TCP/IP socket.
If this value is zero(0) then the O/S associates one of its local address with a TCP/TCP socket.
This parameter has to use Big-Endian.

3.3.4 Return Value

- If no error occurred, EzManager_Write returns 1.



- When error has occurred, the return value is EZTCP_ERR(-1) and the error number is stored in nErrNum.

nErrNum	Description
EZTCP_ERR_PWD	Password mismatch error.
EZTCP_ERR_RES	No response from ezTCP
EZTCP_ERR_LOCAL_IP	Unavailable local IP address
EZTCP_ERR_CIE_H10_SCRIPT	Macro syntax error of I/O products.
EZTCP_ERR_CIE_H10_IO_ADDR	I/O addresses error of I/O products.
EZTCP_ERR_LOCAL_PORT_100	Local Port number is duplicated.
EZTCP_ERR_LOCAL_PORT_101	The port number 23 is not available for Local Port.
EZTCP_ERR_LOCAL_PORT_102	Local Port and Modbus/TCP numbers are duplicated.
EZTCP_ERR_LOCAL_PORT_103	The port number 80 is not available for Local Port.
EZTCP_ERR_LOCAL_PORT_104	The port number 50005 is not available for Local Port.
EZTCP_ERR_LOCAL_PORT_105	The port number 50006 is not available for Local Port.
EZTCP_ERR_PRODUCT_MISMATCH	Wrong product id.
EZTCP_ERR_UNKNOWN	Unknown error.
EZTCP_ERR_NO_INFO	If you try to write before using EzManager_Search function then this error will be caused.
EZTCP_ERR_NO_NETWORK	There is no proper network adapter.

3.3.5 Remarks

- Before using this function, you have to call EzManager_Search function for reliable data transmitting.
- This function waits a reply from ezTCP for 3 seconds.
- You should call Exit_Library function to release dynamically allocated memory when your application is closed.

3.4 EzManager_Status

3.4.1 Overview

- Basic function to read status information from ezTCP.
- The status information is composed by plain text.

3.4.2 Prototype

```
Private Declare Function EzManager_Status Lib "ezManagerLib" (
    ByVal mode As Long,
    ByRef vb_lib_env As vb_lib_env,
    ByRef stat_buf As Byte,
    ByVal stat_buf_len As Long,
    ByRef vb_tcp_status_env As vb_tcp_status_env,
    ByRef nErrNum As Long,
    ByVal port As Long,
    ByVal bind_ip As Long
) As Long
```

3.4.3 Parameters

- mode
[in]

mode	Description
0	Send a query to local network
1	Send a query to remote network

- vb_lib_env
[in] "vb_lib_env" structure which has target ezTCP's environment values.
- stat_buf
[out] ezTCP's status information.
- stat_buf_len
[in] The size of stat_buf.
- vb_tcp_status_env
[in] "vb_tcp_status_env" structure to store TCP/IP session status.
- tcp_session_count
[out] The number of TCP/IP sessions of ezTCP.
- nErrNum
[out] Error number.
- port
[in] The UDP port number for ezManager library.
Default UDP port numbers are 50005 and 50007

- `bind_ip`
[in] The library associates “bind_ip” with a TCP/IP socket.
If this value is zero(0) then the O/S associates one of its local address with a TCP/TCP socket.
This parameter has to use Big-Endian.

3.4.4 Return Value

- If no error occurred, `EzManager_Status` returns 1.
- When error is occurred, the return value is `EZTCP_ERR(-1)` and the error number is stored in `eErrNum`.

3.4.5 Remarks

- Before using this function, you have to call `EaManager_Search` function for reliable data transmitting.
- Before using this function, you have to reserve enough space for `tcp_status_env` structure.
eg. `Private vb_tcp_status_env (MAC_TCP_SESSION) As vb_tcp_status_env`
- The maximum TCP/IP session is defined 16.
- This function waits a reply from ezTCP for 2 seconds.
- You should call `Exit_Library` function to release dynamically allocated memory when your application is closed.

3.5 EzManager_ChangePwd

3.5.1 Overview

- Basic function to change or erase password of ezTCP.

3.5.2 Prototype

```
Private Declare Function EzManager_ChangePwd Lib "ezManagerLib" (
    ByVal mode As Long,
    ByRef vb_lib_env As vb_lib_env,
    ByRef cur_pwd As Byte,
    ByRef new_pwd As Byte,
    ByRef nErrNum As Long,
    ByVal port As Long,
    ByVal bind_ip As Long
) As Long
```

3.5.3 Parameters

- mode
[in]

mode	Description
0	Send a query to local network
1	Send a query to remote network

- vb_lib_env
[in] “vb_lib_env” structure which has target ezTCP’s environment values.
- cur_pwd
[in] Current password.
- new_pwd
[in] New password.
- nErrNum
[out] Error number.
- port
[in] The UDP port number for ezManager library.
Default UDP port numbers are 50005 and 50007.
- bind_ip
[in] The library associates “bind_ip” with a TCP/IP socket.
If this value is zero(0) then the O/S associates one of its local address with a TCP/TCP socket.

This parameter has to use Big-Endian.

3.5.4 Return Value

- If no error occurred, EzManager_ChangePwd returns 1.
- When error is occurred, the return value is EZTCP_ERR(-1) and the error number is stored in nErrNum.

3.5.5 Remarks

- Before using this function, you have to call EzManager_Search function for reliable data transmitting.
- This function waits a reply from ezTCP for 3 seconds.
- You should call Exit_Library function to release dynamically allocated memory when your application is closed.

3.6 EzManager_CloseTCP

3.6.1 Overview

- Basic function to close TCP/IP session of ezTCP.

3.6.2 Prototype

```
Private Declare Function EzManager_CloseTCP Lib "ezManagerLib" (
    ByVal mode As Long,
    ByRef vb_lib_env As vb_lib_env,
    ByRef vb_tcp_status_env As vb_tcp_status_env,
    ByRef cur_pwd As Byte,
    ByRef nErrNum As Long,
    ByVal port As Long,
    ByVal bind_ip As Long
) As Long
```

3.6.3 Parameters

- mode
[in]

mode	Description
0	Send a query to local network
1	Send a query to remote network

- vb_lib_env
[in] "vb_lib_env" structure which has target ezTCP's environment values.
- vb_tcp_status_env
[in] "vb_tcp_status_env" structure which has TCP/IP session information.
- cur_pwd
[in] Current password of ezTCP.
- nErrNum
[out] Error number.
- port
[in] The UDP port number for ezManager library.
Default UDP port numbers are 50005 and 50007.
- bind_ip
[in] The library associates "bind_ip" with a TCP/IP socket.
If this value is zero(0) then the O/S associates one of its local address with a TCP/TCP socket.

This parameter has to use Big-Endian.

3.6.4 Return Value

- If no error occurred, EzManager_CloseTCP returns 1.
- When error has occurred, the return value is EZTCP_ERR(-1) and the error number is stored in nErrNum.

3.6.5 Remarks

- Before using this function, you have to call EzManager_Status function for getting TCP/IP session information of ezTCP
- This function waits a reply from ezTCP for 2 seconds.
- You should call Exit_Library function to release dynamically allocated memory when your application is closed.

3.7 EzManager_RdbOnOff

3.7.1 Overview

- Basic function to start or stop send DEBUG message.
- ezTCP broadcast DEBUG message to local network after completely booted up when its debug function is enabled.
- You can make a ezTCP that start or stop send DEBUG message to specific host by using "EzManager_RdbOnOff"
- This function is currently considered in below ezTCP products.

LAN type	Product
Wired LAN	CSE-M53
Wireless LAN	

3.7.2 Prototype

```
Private Declare Function EzManager_RdbOnOff Lib "ezManagerLib" (
    ByVal mode As Long,
    ByRef mac_addr As Byte,
    ByVal eztcp_ip As Long,
    ByVal onoff As Byte,
    ByVal rcvd_ip As Long,
    ByRef nErrNum As Long,
    ByVal port As Long,
    ByVal bind_ip As Long
) As Long
```

3.7.3 Parameters

- mode
[in]

mode	Description
0	Send a query to local network
1	Send a query to remote network

- mac_addr
[in] The MAC address of ezTCP.
- eztcp_ip
[in] The IP address of ezTCP
This parameter should be passed by using Big-Endian.

- onoff
[in]

onoff	Description
0	Stop sending DEBUG message.
1	Start sending DEBUG message.

- rcvd_ip
[in] PC's IP address to receive DEBUG message.
This parameter should be passed by using Big-Endian.
- nErrNum
[out] Error number.
- port
[in] The UDP port number for ezManager library.
Default UDP port numbers are 50005 and 50007.
- bind_ip
[in] The library associates "bind_ip" with a TCP/IP socket.
If this value is zero(0) then the O/S associates one of its local address with a TCP/TCP socket.
This parameter has to use Big-Endian.

3.7.4 Return Value

- If no error occurred, EzManager_RdbOnOff returns 1.
- When any error has occurred, the return value is EZTCP_ERR(-1) and the error number is stored in nErrNum.

3.7.5 Remarks

- This function waits a reply from ezTCP for 2 seconds.
- You should call Exit_Library function to release dynamically allocated memory when your application is closed.

3.8 EzManager_ReBoot

3.8.1 Overview

- Basic function to reboot ezTCP.
- This function is currently considered in below ezTCP products.

LAN type	Product
Wired LAN	CSE-M53
Wireless LAN	

3.8.2 Prototype

```
Private Declare Function EzManager_ReBoot Lib "ezManagerLib" (
    ByVal mode As Long,
    ByRef mac_addr As Byte,
    ByVal eztcp_ip As Long,
    ByRef nErrNum As Long,
    ByVal port As Long,
    ByVal bind_ip As Long
) As Long
```

3.8.3 Parameters

- mode
[in]

mode	Description
0	Send a query to local network
1	Send a query to remote network

- mac_addr
[in] The MAC address of ezTCP.
- eztcp_ip
[in] The IP address of ezTCP
This parameter should be passed by using Big-Endian.
- nErrNum
[out] Error number.
- port
[in] The UDP port number for ezManager library.
Default UDP port numbers are 50005 and 50007.

- **bind_ip**
[in] The library associates “bind_ip” with a TCP/IP socket.
If this value is zero(0) then the O/S associates one of its local address with a TCP/TCP socket.
This parameter has to use Big-Endian.

3.8.4 Return Value

- If no error occurred, EzManager_ReBoot returns 1.
- When any error has occurred, the return value is EZTCP_ERR(-1) and the error number is stored in nErrNum.

3.8.5 Remarks

- This function waits a reply from ezTCP for 2 seconds.
- You should call Exit_Library function to release dynamically allocated memory when your application is closed.

3.9 GetLibVer

3.9.1 Overview

- Basic function to get library version information

3.9.2 Prototype

```
Private Declare Function GetLibVer Lib "ezManagerLib" () As Long
```

3.9.3 Return Value

- The text of library version information

3.10 .GetProductName

3.10.1 Overview

- Basic function to get a product name.

3.10.2 Prototype

```
Private Declare Function GetProductName Lib "ezManagerLib" (ByVal product_id As Long) As Long
```

3.10.3 Parameters

- product_id
[in] This value should be "product_id_old" or "product_id_new" in "vb_net_env" structure. If "product_id_new" is zero(0) then "product_id_old" parameter should be used.

3.10.4 Return Value

- The text of a product name.

3.11 Exit_Library

3.11.1 Overview

- This library dynamically allocates some memory block to store data. These memory blocks should be explicitly released by this function before terminating applications.

3.11.2 Prototype

```
Private Declare Sub Exit_Library Lib "ezManagerLib" ()
```