E·T·N

ELC-ACPGMXFR

Program Transfer Module

Instruction Sheet

1	WARNING

⚠ Please set the RD/WR switch before operating the ACPGMXFR.

⚠ Do NOT disconnect ACPGMXFR before Transmission end; otherwise, it may cause data loss in ACPGMXFR

⚠ It will not take effect in RD/WR switch during ACPGMXFR operating.

2	INTRODUCTION

● ACPGMXFR can read or write ELC program, devices (coils and registers) and password to all series of ELC via COM. It provides rapidly and safely data transmission to ELC.

● Applicable Models and Read/Write Device Types:

Device type / Models	Program area	ELC device area		
	Program (Steps)	D register	M device	File register
ELC-PB	4K	D0~D599	M0~M1279	N/A
ELC-PC/PA/PH	8K	D0~D4999	M0~M4095	1600

● Product Profile
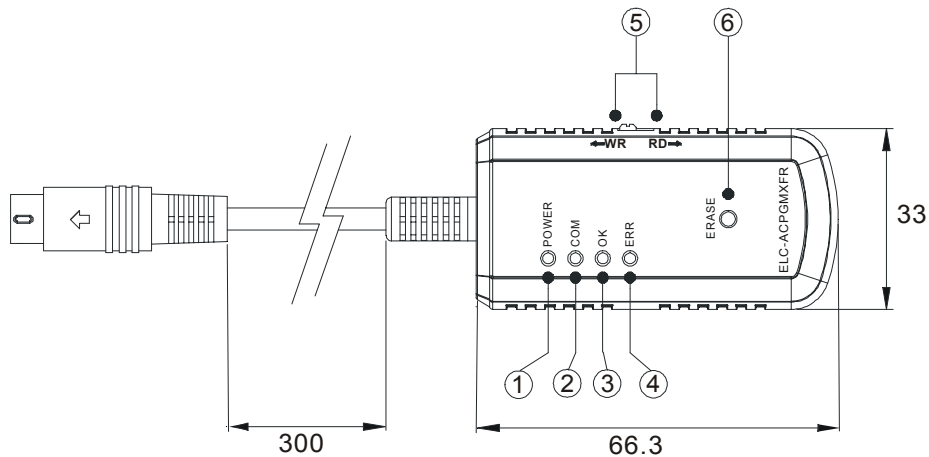
Unit: mm

1. Power LED	4. Error LED
2. Communication Indicator LED	5. Operation mode: read/write functional switch
3. Operation completed LED	6. ACPGMXFR Data Erase button

● Specification

Data Retention	10 years
Write Cycles	At Least 10,000 times
Transmission speed	9600 /19200 bps (PB: 9600 bps only)
Storage	-25℃~70℃ (Temperature), 5~95% (Humidity)
Operation	0℃~55℃ (Temperature), 50~95% (Humidity), Pollution degree 2
Noise Immunity	ESD: ±4KV Air Discharge EFT: Power Line: 2KV RS: 0.15MHz~80MHz, 10V/m Surge : ±1KV
Vibration / Shock Resistance	International Standard: IEC1131-2, IEC 68-2-6（TEST Fc） IEC1131-2 & IEC 68-2-27 (TEST Ea)

3	Operation and Function Description

3.1 Read/Write Operation Sequence:

Step	(ELC→ACPGMXFR) RD (Read)	(ELC←ACPGMXFR) WR (Write)
1	Set RD/WR switch to "RD" mode	Set RD/WR switch to "WR" mode and confirm ELC is STOP status
2	Connect ACPGMXFR to ELC COM with 5 sec. waiting.	Connect ACPGMXFR to ELC COM with 5 sec. waiting.
3	After reading data from ELC, "OK" LED will light	After Writing data to ELC, "OK" LED will light
4	Disconnect ACPGMXFR when read process is done.	Disconnect ACPGMXFR when write process is done.

3.2 Password Function

● ACPGMXFR contain password function. If ELC protected by password and ACPGMXFR connect to ELC, ACPGMXFR will verify password with ELC. Only if ACPGMXFR verify password correctly with ELC, ACPGMXFR can write data to ELC. ACPGMXFR password setting method as follows:

1. Write the password to D1086 and D1087 and set M1086 on in ELC by ELCSoft or ELC-HHP.

2. Set the WR/RD switch to "RD" mode, and connect the ACPGMXFR to ELC. Then ACPGMXFR will read data from ELC.

3. After Reading from ELC, ACPGMXFR will check M1086 status. If M1086 is on, ACPGMXFR keep on reading D1086 and D1087. ACPGMXFR take D1086 and D1087 as the password key. After reading D1086 and D1087, ACPGMXFR finish the transmission and turn on "OK" LED. If M1086 is off, ACPGMXFR turn on "OK" LED immediately. When "OK" LED is on, disconnect the ACPGMXFR from ELC.

● The password key has four digits. Each digit is 8bits number and form with ASCII in D1086 and D1087. Example as follows:

Password Key	D1086		D1087	
Password setting	High byte	Low byte	High byte	Low byte
ASCII code (HEX)	Byte 1	Byte 2	Byte 3	Byte 4
	1 (0x31=H31)	2 (0x32=H32)	3 (0x33=H33)	4 (0x34=H34)

3.3 The conditions when ACPGMXFR read/write to ELC:(w/ PW: with password; w/o PW: without password)

ACPGMXFR ELC Status		Read		Write	
		w/o PW	w/ PW	w/o PW	w/ PW
RUN	w/o PW	Able to read	Password verify error	Unable to write	Unable to write
	w/ PW	Unable to read	Unable to read	Unable to write	Unable to write
STOP	w/o PW	Able to read	Password verify error	Able to write	Able to write and write password to ELC
	w/ PW	Unable to read	Unable to read	Password verify error	Able to write after verification

3.4 ACPGMXFR Data Erase function:

Once ACPGMXFR connects to ELC, please press the data erase bottom within 5 seconds. After "OK" LED turning on, release the bottom and disconnect the ACPGMXFR from ELC.

3.5 Data Duplication Function

● ACPGMXFR can read/write program and parameters (coils and registers) from/to ELC. During ACPGMXFR reading operating, ACPGMXFR check M1085 status to deciding whether reading the parameters or not. When M1085 is on, ACPGMXFR will not read the parameters from ELC, otherwise it will read the parameters. During ACPGMXFR Writing operating, ACPGMXFR check M1085 status to deciding whether writing the parameters or not. When M1085 is on, ACPGMXFR will not write the parameters to ELC, otherwise it will write the parameters.

● Data Duplication steps:

1.) Set M1085 On/Off in ELC

2.) Select ACPGMXFR RD/WR switch in reading or writing mode.

3.) Connect ACPGMXFR to ELC COM communication port

4.) After operation is completed, "OK" LED will turn on.

5.) Disconnect ACPGMXFR with the ELC.

3.6 Estimation of Read/Write Operating Time

Model	M1085=OFF		M1085=ON	
	Read	Write	Read	Write
ELC-PB	35 sec.	45 sec.	30 sec.	35 sec.
ELC-PC/PA/PH	1 min. 10 sec.	1 min. 15 sec.	1 min. 5 sec.	1 min. 10 sec.

4   Error Message

●   ACPGMXFR will show error or warning status by Indicator LED. Below is the summary:

Error Message	Indicator		Recommend
	ERR	OK	
ACPGMXFR Internal memory error	☼ On	● Off	ACPGMXFR hardware may be damaged, please replace it.
Incompatible model or syntax error	◑ Blinking	● Off	Make sure ACPGMXFR model record is compatible with ELC model. Check ELC program syntax.
Operation error – unable to write	◑	◑ Synchronous blinking	ACPGMXFR doesn't contain any data and in "WR" mode. ACPGMXFR in "WR" mode, and ELC is in RUN mode. Please keep ELC in STOP mode. Communication protocol error! Please confirm ELC in STOP mode and reboot the ELC.
Operation error – unable to read	◐	◑ Cross blinking	ELC protect with password. Communication protocol error! Please confirm ELC in STOP mode and reboot the ELC.
Password verify error	☼ On	◑ Blinking	ACPGMXFR is in "RD" mode, and is protected by password. Please push erase button when ACPGMXFR connect to ELC. For more detail operation of erasure, please reference to section 3.4. ACPGMXFR is in "WR" mode, and ELC is protected by password. Please disable the password in ELC, or set the same ELC's password in ACPGMXFR. For more detail operation , please reference to section 3.2.
ERASE completed	● Off	☼ On	Please refer to section 3.4.

5   Troubleshooting

●   If ERR LED is always ON or blinking. Please refer to section 4.

●   Disconnect ACPGMXFR or power down the ELC when the operation in progress. It will cause some unexpected conditions:

   ■   ACPGMXFR in "RD" mode:
      ACPGMXFR data will be invalid. Please reboot the ELC again or re-connect ACPGMXFR to ELC.

   ■   ACPGMXFR in "WR" mode:
      ELC program will be invalid. Please reboot ELC again or re-connect the ACPGMXFR to ELC.

6   Appendix: ASCII Table

The password composes of 4 bytes. Each byte is an ASCII consisting of '0'~'9', 'A'~'Z'. 'a' ~'z'. ELC and ACPGMXFR verify password with case-sensitive. Below is ASCII table.

HEX	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
ASCII	⌧	⌧	⌧	⌧	⌧	⌧	⌧	⌧	⌧	⌧	⌧	⌧	⌧	⌧	⌧	⌧
HEX	10	11	12	13	14	15	16	17	18	19	1A	1B	1C	1D	1E	1F
ASCII	⌧	⌧	⌧	⌧	⌧	⌧	⌧	⌧	⌧	⌧	⌧	⌧	⌧	⌧	⌧	⌧
HEX	20	21	22	23	24	25	26	27	28	29	2A	2B	2C	2D	2E	2F
ASCII	SP	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/

HEX	30	31	32	33	34	35	36	37	38	39	3A	3B	3C	3D	3E	3F
ASCII	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
HEX	40	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F
ASCII	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
HEX	50	51	52	53	54	55	56	57	58	59	5A	5B	5C	5D	5E	5F
ASCII	P	Q	R	S	T	U	V	W	X	Y	Z	⊠	⊠	⊠	⊠	⊠
HEX	60	61	62	63	64	65	66	67	68	69	6A	6B	6C	6D	6E	6F
ASCII	`	a	b	C	d	e	f	g	h	i	j	k	l	M	n	o
HEX	70	71	72	73	74	75	76	77	78	79	7A	7B	7C	7D	7E	7F
ASCII	p	q	r	s	t	u	v	w	x	y	z	{			}	~	⊠

Note: '⊠' can't be used in password. It is an illegal number.