

- » Supports IEC61131-3 programming
- » LD, FBD, ST, SFC, IL languages
- » 0.06µs per contact
- » Power remote display

FL-055-0404P-0802U (Ethernet PLC)

## Salient Features

- DIN rail / Back panel mounted PLC
- Transistor outputs
- Expandable up to 16 expansions
- 32 Bit RISC processor
- Built-in RTC
- DC inputs, DC Outputs
- Universal Analog Inputs (Voltage, Current, RTD, Thermocouple)
- Linear Analog Inputs (Current type)
- Analog Output (Voltage, Current)
- One SD card slot
- Support for High Speed Counters / Quadrature (up to 200 KHz) and Timers
- High Speed PWM output (100 KHz)
- Up-to 2 Serial Ports. Support for various PLC protocols
- One ethernet port to connect PLC / Programming port / remote monitoring over Modbus TCP/IP
- 1 USB Device Port
- DC powered unit (24 V DC)
- Simple Ladder programming using Windows<sup>®</sup> based software
- Support for LD, FBD, ST, SFC, IL type IEC61131-3 programming languages
- CE, UL Class1 Div2 approved

# Model Description

**Ethernet Port** - 1 RJ45 connector for remote interface with other devices

**USB Port** - 1 micro USB device for upload download and monitor of application/ logic.

**RS232 Serial Port** - 1 RJ45 connector for RS232 serial interface with other devices.

**5V / 300mA power source**

**Remote Display** - Powered from PLC

**Micro SD** - 1 micro SD port for program upload and download.

**Digital Inputs (4)** - 24VDC inputs includes 2 high speed / 2 quadrature counter inputs which supports 200KHz frequency.

**Digital Outputs (4)** - Digital outputs of transistor type includes high speed pulse outputs of 100KHz frequency.

**Isolated Power Supply** - 24VDC

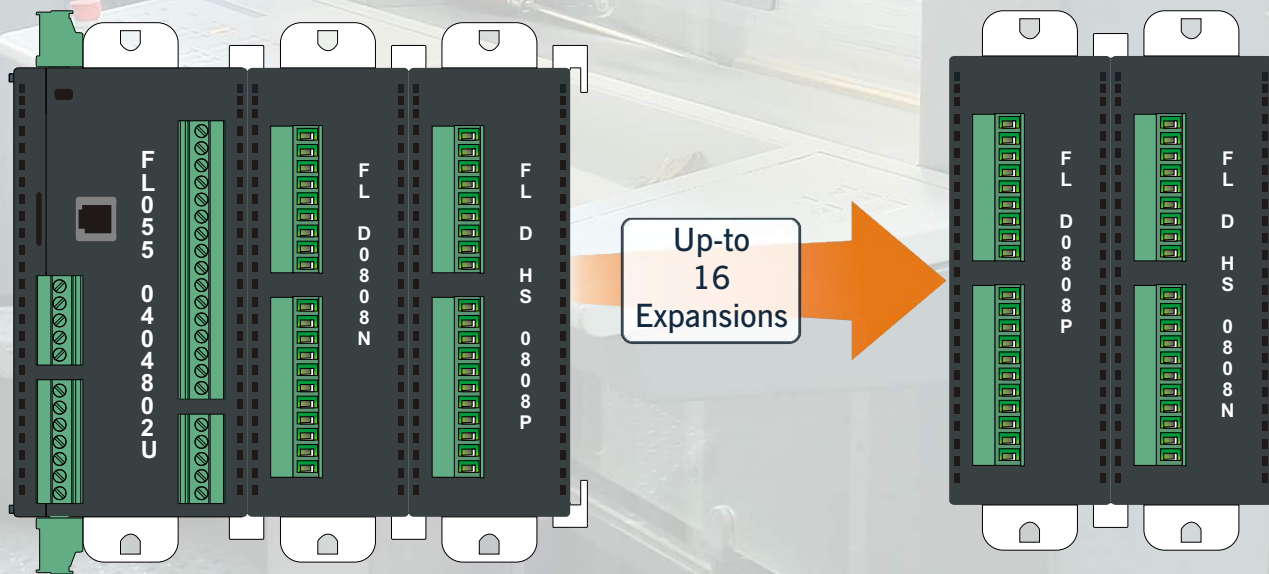
**RS485 Serial Port** - 1 communication port supports 2-wire RS485 serial interface.

**Universal Analog Inputs (4)** - Analog inputs of Voltage, Current, RTD, Thermocouple type.

**Analog Outputs (2)** - Analog output of Voltage and Current type.

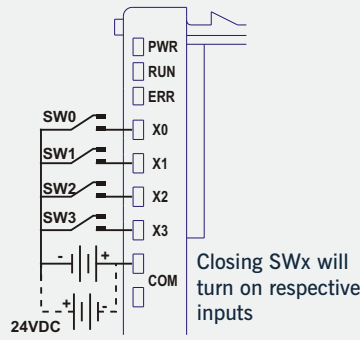
**Linear Analog Inputs (4)** - Analog inputs of Current type.

# Greater Expandability - Up-to 16 Expansions

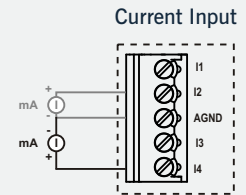


Model		FL-055-0404P-0802U
Power Supply	Rated Power	24VDC
	Isolation	1KV
	Power Consumption (With I/Os)	16W
Digital Inputs	Input Signal	DC Input Bi-directional
	Total Channels	4
	High Speed Channels	4
	Isolation	3.7KV
	High Speed Inputs	2
	Quadrature Inputs	2
	Max. HSC frequency	200KHz each
Digital Outputs	Total Channels	4
	Output Type	PNP
	Isolation	3.7KV
	High Speed Outputs	2
	Max pulse output frequency	100KHZ each
	Maximum transistor output current	0.25A at 24VDC
Universal Analog Inputs	Channels	4 Universal input channels
	Resolution	16-bit
	mA	0 to 20 mA, 4 to 20 mA
	mV	0 to 50mV, 0 to 100mV
	V	0 to 10 VDC, 0 to 5 VDC
	RTD	PT100
	Thermocouple	J & K Type
Linear Analog Inputs	Channels	4 input channels
	Resolution	16-bit
	mA	0 to 20 mA, 4 to 20 mA
Analog Output	Channels	2
	Resolution	12-bit
	mA	4 to 20 mA
	V	0 to 10 VDC
Comm. Ports	Serial	2
	Type	One 3.81 pitch PBT RS485 (2-wire) One RJ45 RS232 with 5V/300 mA power source
	Ethernet	1
	Type	RJ45 10/100 Mbps speed
	USB	1
	Type	USB Micro (Device)
SD Card Slot	Type	microSD HC
	Capacity	High Capacity (4GB to 32GB)
	Speed Class	
	UHS Speed Class	
Expansion Connectivity		Up to 16 modules
RTC		Yes
Dimensions		Fig. A
Certification		CE & UL Class1 Div 2

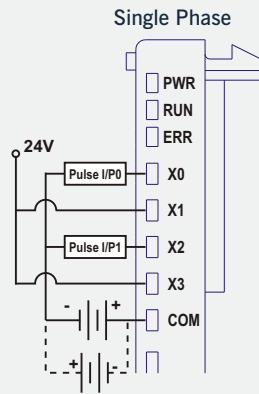
## 1. Digital Inputs



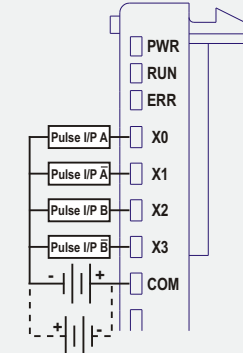
## 4. Analog Inputs (Linear)



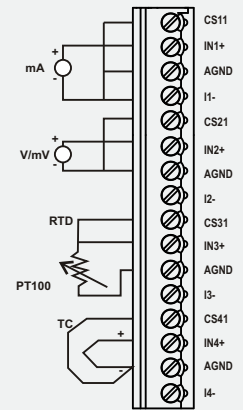
## 2. HSC Inputs



## Quadrature

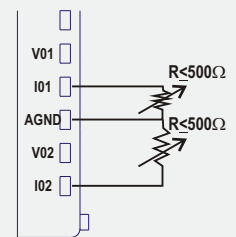


## 5. Analog Inputs (Universal)

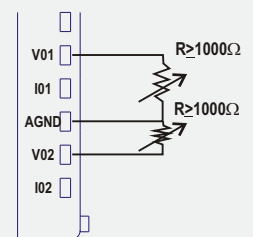


## 6. Analog Outputs

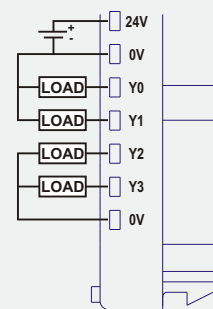
### Current type



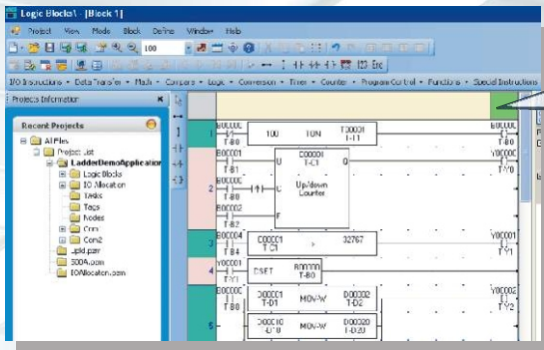
### Voltage type



## 3. Digital Outputs

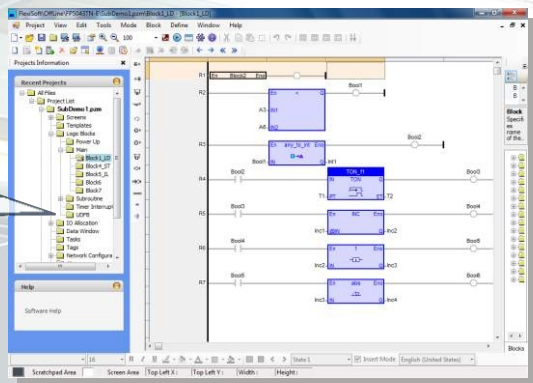


# Software Features

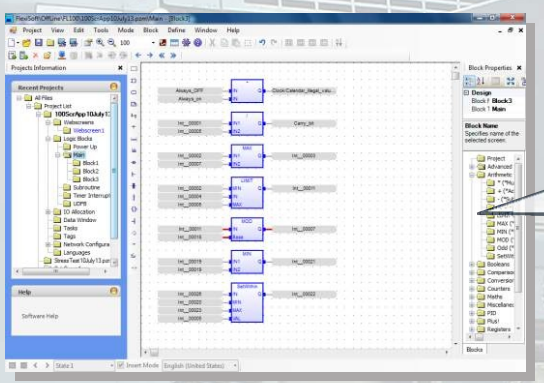


Configuration Software  
FlexiSoft® is a compact, Windows® based software to configure the PLC. Following image from FlexiSoft® shows the snap shot of ladder configuration window:

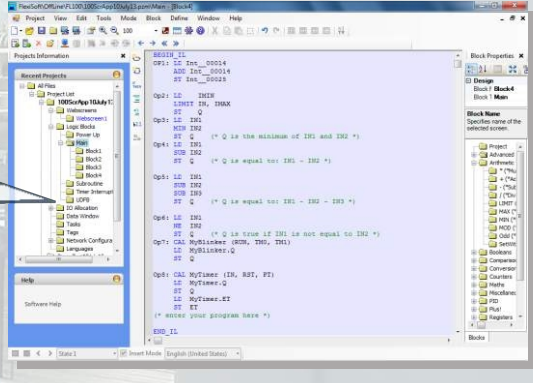
IEC61131-3 Programming Environment  
Create application using LD language



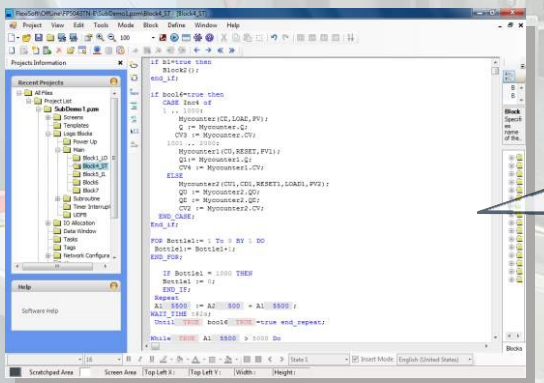
IEC61131-3 Programming Environment  
Create application using FBD language



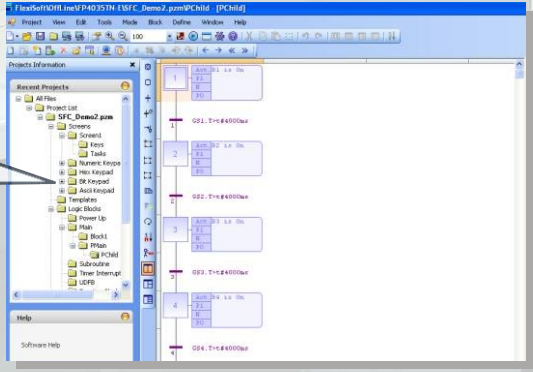
IEC61131-3 Programming Environment  
Create application using IL language



IEC61131-3 Programming Environment  
Create application using ST language



IEC61131-3 Programming Environment  
Create application using SFC language



- System requirements for FlexiSoft® Software are -
- Windows Version : Microsoft Windows® 2000 or above
  - Processor : 266 MHz PENTIUM or higher
  - Mouse : Required
  - RAM : 64 MB or more
  - Display resolution : 800 x 600 (VGA) or better
  - Display colors : 256 colors minimum
  - Serial Port : 1 serial port for FlexiPanels® programming
  - USB Port : 1 USB port (Host) for FlexiPanels® programming
  - Keyboard : Required

# Software Features

Comprehensive Instructions supported in FlexiLogics®:

## Native Ladder Instructions -

Some of the supported Instructions in FlexiLogics® are listed below :

1. Math  
Instructions such as ADD, Subtract, Multiply and Divide. These instructions could be Single word or Double word, signed or unsigned format.
2. Data compare  
Instructions such as Less than, Greater than, Equal to, Less than or Equal to, Greater than or Equal to etc. are supported.
3. Data Transfer Instructions  
Data transfer instruction supports word and double word operands, Multiplexer / demultiplexer instructions.
4. Data conversion  
Data conversion such as hex to ASCII, ASCII to hex, Binary, BCD, 2's Compliment, 7 segment etc. are possible.
5. Shift / Rotate  
Rotate left, Rotate Right, Shift Left, Shift Right for word / double word.
6. I/O Instructions  
Normally Open / Normally Closed contacts, positive pulse contact, negative pulse contact, Leading / Falling edge etc. are implemented.
7. Immediate I/O instruction  
This instruction can be used to sample instantaneous physical inputs and outputs in PLC ladder.
8. Set / Reset  
Coil / Bit / Register Set / Reset Instructions are supported.
9. Program Control  
FlexiLogics® also support subroutine call, MCS / MCR, JCS / JCR, Enable / Disable Interrupts and step sequence instructions.
10. Functions  
The function instructions like Moving average, Digital filter, Function generator, PID , Encode / Decode, Min / Max / Average Value, Lower / Upper Limit, Flip Flop are also supported.

Some of the supported IEC 61131-3 instructions are listed below:

1. Advanced-Instructions such as Alarm\_A, Alarm\_M, Average, Derivate, Hyster ,RAMP etc .are supported.
2. Arithmetic-Instructions such as Multiply .Divide, Addition Substraction, MOD etc .are supported.
3. Booleans-Boolean And, F\_TRIG, OR, FlipFlop, R\_TRIG, XOR etc .are supported.
4. Comparisons-Less than ,Less or equal, Is not equal ,Greater than etc. are supported.
5. Conversions-Conversions such as Any to bool, Any to dint, Any to int ,Any to real etc. are possible.
6. Counters-CTD(Down Counter) ,CTU(UP Counter), TUD(Up-Down Counter), CTDr(Down counter with rising edge detection) ,CTUDr(UP/DOWN counter with rising edge detection) are supported.
7. Maths-Abs, modR, root trunc, Trigonometric functions.
8. Miscellaneous-ActiveRTSwitch, EnableEvents are supported instructions.
9. PID-PID instruction is supported.
10. Registers-And\_mask, Habyte, Hiword, Lobbyte etc.
11. Selectors-MUX, SEL, MUX4, MUX8.
12. Standard-Instructions such as 1, DEC, INC, Neg etc are supported.
13. Timers-Blink, PLS, TMD, TMU, TOF, TON etc. instructions are supported.
14. Strings-Instructions such as ASCII, CONCAT, AtoH, Char, Mlen etc. are supported.

# General Specifications

Functional	
Program Capacity	40K Steps
Total Program Memory	440KB (Application + Ladder)
Execution Speed	60.0 ns / contact
	240.01 ns/coil
	373.35 ns/16 bit transfer
	366.68 ns/16 bit signed addition
Clock-Calendar	Year, month, day, hour, minute, second, & Day of the week

#Additional retentive memory is 2KB.

Maximum 30000 EEPROM write cycles are allowed. Above this performance may degrade.

Environmental	
Temperature	0 to 55° C (operating), -20 to 85° C (storage)
Humidity	10 to 90 % non condensing
Vibration immunity	IEC60068-2-6
Shock immunity	IEC60068-2-27
Dimensions (mm)	100mm(H) X 52mm(W) X 70mm(D)
Isolation	Isolation between communication ports, power and I/O is 500 V DC for 1 Min.

EMI/EMC	
Immunity to ESD	as per IEC61000-4-2
Immunity to Fast Transients	as per IEC61000-4-4
Immunity to Radiated electromagnetic field	as per IEC61000-4-3
Immunity to Conducted disturbances	as per IEC61000-4-6
Surge	as per IEC61000-4-5
Radiated emission	as per EN55011

# Protocols Supported for FL-055-0404P-0802U

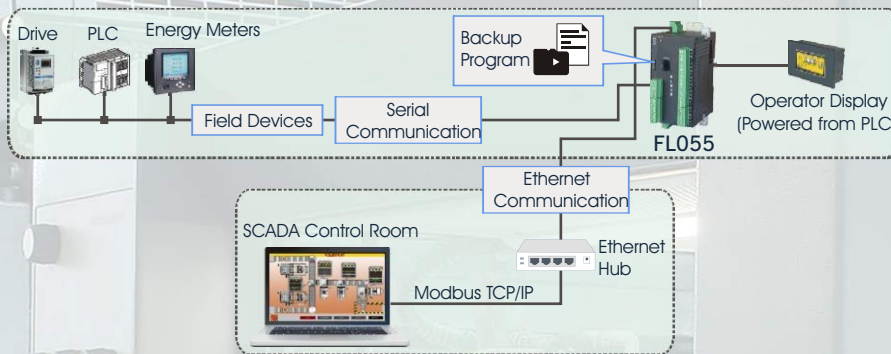
Serial Driver
ABB PLCs
Allen Bradley DF1
Aromat FP Series
Baldor
Danfoss Drive
Delta PLCs
Fatek PLCs
FlexiLogics Slave Driver*
GE SNP
GE SNP- X
Idec PLCs
LG Master K Series PLC
LG Master K 300S
Mitsubishi FX
Mitsubishi Q Series PLCs
Modbus ASCII (Unit as Master)
Modbus RTU (Unit as Master)

Serial Driver
Modbus RTU (Unit as Slave)
Modbus TCP Master
Modbus TCP Slave
Omron Host Link
Omron Inverter Memobus
Serial Monitor*
Serial Printer
Siemens Gas analyzer (Master)
Siemens micromaster driver (USS)
Toshiba (Link Port) Series PLCs
Toshiba Inverters PLCs
Toshiba T Series
TriPLC
Twido PLCs
Unitelway PLCs
Universal Serial Driver(ASCII)

Ethernet Driver
AB PLC EIP PCCC (Ethernet IP)
FlexiLogics
FlexiLogics Slave Driver
G9 SP safety controller
Modbus/ TCP Master (Client)
Modbus/ TCP Slave (Server)
Toshiba PLC Ethernet Driver
Universal Ethernet Driver (ASCII)

\*Supported with native programming environment

## PLC Based Control Application



## Expansion Models

### Digital Expansion Modules

Model	Digital I/P	Digital O/P	Digital O/P
FLD1600	16	0	16 Digital Inputs
FLD0016P	0	16	16 Digital Outputs (PNP)
FLD0016N	0	16	16 Digital Outputs (NPN)
FLD0016R	0	16	16 Digital Outputs (Relay)
FLD0808P	8	8	8 Digital Inputs, 8 PNP type Transistor Outputs Digital module
FLD0808N	8	8	8 Digital Inputs, 8 NPN type Transistor Outputs Digital module
FLD0808R	8	8	8 Digital Inputs, 8 Relay type Outputs Digital module
FLD-HS-0808P	8	8	8 Digital Inputs, 8 Digital Outputs (PNP), 4 High Speed Inputs (Single phase & Quadrature counter), 2 PWM Outputs
FLD-HS-0808N	8	8	8 Digital Inputs, 8 Digital Outputs (NPN), 4 High Speed Inputs (Single phase & Quadrature counter), 2 PWM Outputs

### Analog Expansion Modules

Model	Analog I/P	Analog O/P	Digital O/P
FLA0800L	8	0	8 Analog Inputs (0-10 VDC / 4-20 mA), 16 Bits
FLA0402U	4	2	4 Universal Inputs (0-10 V / 0-100 mV / 0-50 mV / 0-20 mA / 4-20 mA / RTD PT-100 / Thermocouple - B, R, S, E, J, K, N, T) 2 Analog Outputs (0-10 V / 4-20mA), 16 Bits
FLA0004	0	4	4 Analog Outputs (0-10 VDC / 4-20 mA), 16 Bits

N: Transistor output (NPN 500mA), R: Relay O/P, ( 6 Relay + 2 OC ) P: PNP output (500mA)

Please contact factory for more information. We welcome an opportunity to develop new, custom drivers and customized units.

## Dimensions

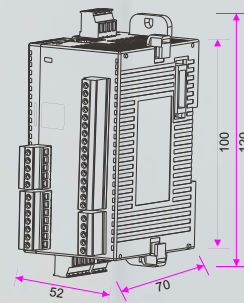


Fig. A FlexiLogics® controller module

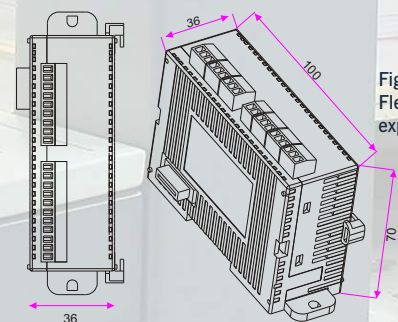


Fig. B FlexiLogics® expansion module

All dimensions are in mm.




**www.esis.com.au**  
 Ph 02 9481 7420  
 Fax 02 9481 7267  
 esis.enq@esis.com.au  
 Industrial Electronics  
 Website: www.renuelectronics.com

An ISO 9001:2008 and ISO 14001:2004 certified company

(Specifications subject to change without prior notice. DS-FL055-Expandable-Rev.B)