Think Automation and beyond...

IDEC

FL1D

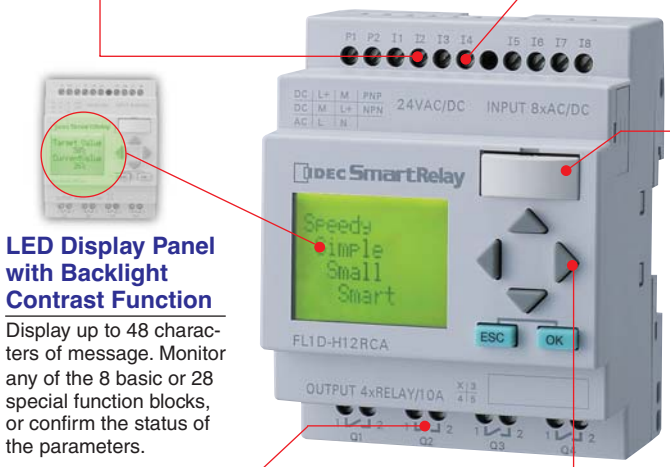
IDEC SmartRelay

LONMARK® PARTNER
LONWORKS®
AS-INTERFACE
AS-Interface

http://smart.idec.com

IDEC CORPORATION

FL1D SmartRelay



NPN/PNP Sensor Input

Output from NPN/PNP sensors can be loaded without external resistance. This enables wider selection of input devices and saves wiring time.

(Available on FL1D-H12RCA, FL1D-B12RCA, and FL1B-M08D2R2)

Digital/Analog Inputs

6 digital plus 2 digital or analog. Multiple inputs provide direct communication with pushbuttons, sensors, switches, etc. (2 kHz max. on I5 and I6)

(Digital and analog compatible inputs: I7 and I8 on FL1D-H12RCE, FL1D-B12RCE, and FL1D-H12SND)

LED Display Panel with Backlight Contrast Function

Display up to 48 characters of message. Monitor any of the 8 basic or 28 special function blocks, or confirm the status of the parameters.

Interfaces for Easy System Changeover

A memory cartridge to copy user programs and the communication cable for WindLGC can be installed/removed easily, allowing easy system changeover.

Digital Output

Use the outputs to control lights, small motors, and solenoid valves up to 10A.

Control Buttons

Easy programming using 6 buttons. No tools necessary for changing parameters even after mounted on a panel.

Major Features

The FL1D SmartRelay contains various functions such as timer, counter, and calender. No more complicated wiring is required. Just use the buttons and the LCD panel to write programs. System changeover that requires parameter changes is easy too.

Programming software WindLGC is available for easy programming. Save your user program, and print it out as a document. Simulation functions make it easy to edit programs and set parameters while confirming on the screen.

FL1D Analog Output Module

New

A new system solution can be realized by combining the FL1D with analog output modules.
Used in wide range of applications such as simple flow control, conveyor control, and air-conditioning control.

Page 4,5

New Function Blocks: 3 Types

New

By using function blocks integrated with calculation functions, programming is possible using analog values.

- PI Control Page 4
- Analog Ramp Function Page 4
- Analog Multiplexer Page 5

WindLGC V.5

New

Programming software for the FL1D is upgraded to WindLGC V.5.

WindLGC is upgraded not only for easier programming but also for more convenience in maintenance work.

Download Demo Version

http://www.idec.com/english/download/

Upward Compatible

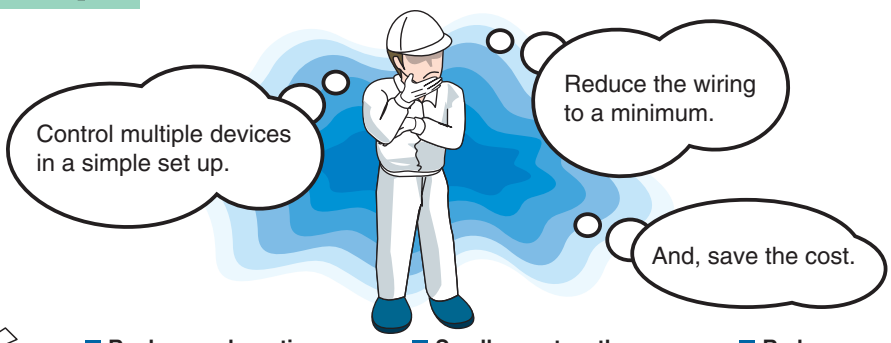
User Program

User programs for preceding FL1A, FL1B, and FL1C IDEC SmartRelays can be imported to the FL1D using WindLGC V.5.

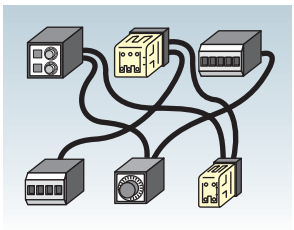
Expansion Modules

Expansion modules allow you to add FL1B I/O modules and communication modules.
(Note: New FL1D analog output module can only be combined with FL1D base modules.)

Smart Concept

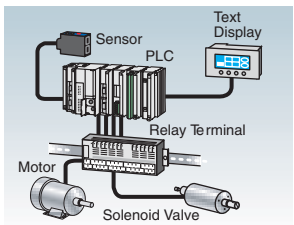


Replaces relays, timers, and counters



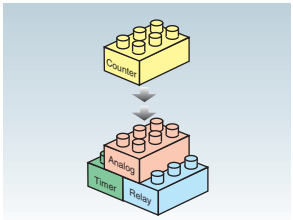
Change your complicated system of multiple relays, timers, and counters to a single IDEC SmartRelay.

Smaller system than using a PLC



The IDEC SmartRelay replaces many functions of peripheral equipment of the programmable logic controller. Features 10A max. output contacts and up to 48 characters of display.

Reduces your workload



36 different types of function blocks make it possible to perform various control operations easily.

Easy Maintenance

LCD display panel and control buttons enable easy monitoring of digital/analog input and output functions, parameter display of timer functions, and parameter changes.
Also, by using message output functions, error messages can be displayed.

Program Size: 2,000 Byte

- Programmable bytes: 2,000 maximum
- Programmable blocks: 130 maximum

Internal relay (Memory marker)	24 maximum
Message display (Message Text)	10 maximum
Timers	Unlimited *
Relays	Unlimited *

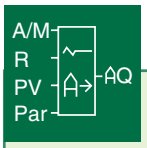
* within the programmable bytes

Memory Cartridge

FL1C-PM3 memory cartridge protects your programs from unintended modification, copying or deletion.
User programs can be easily copied to multiple IDEC SmartRelays.

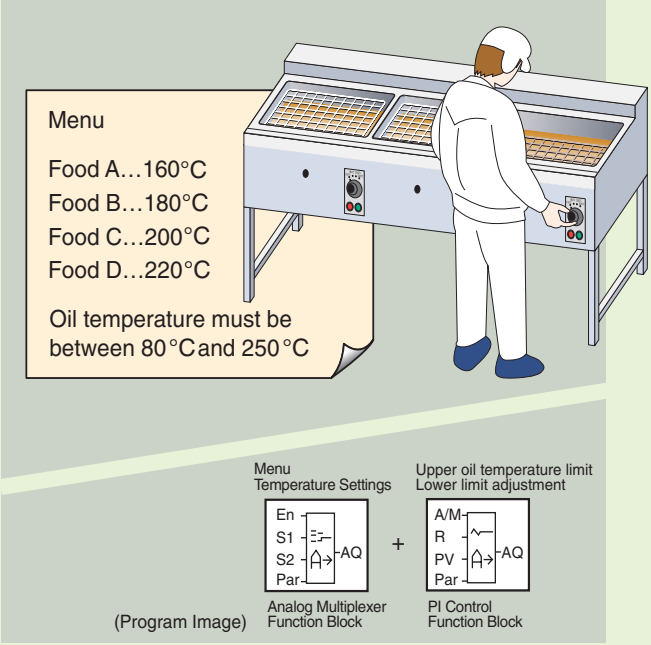
Economical Type

Economical types without display and control buttons are also available.



PI Control

Application Example: Industrial Fryer



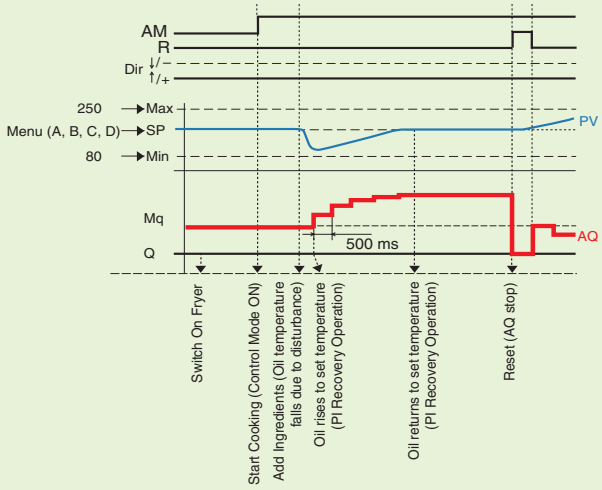
Other application examples:
Simple feedback control such as pressure, flow, and liquid surface detection

Feedback control by combining proportional and integral control actions.

When all the ingredients are added in the oil tank, the oil temperature falls temporarily but automatically goes back to the set temperature by the PI function.

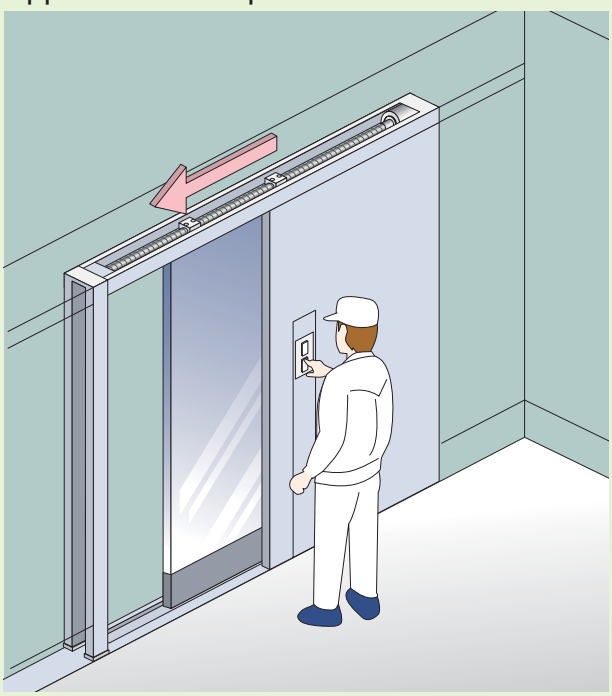
The fryer should be designed so that the oil temperature does not exceed 250°C or fall below 80°C.

• Analog Output Timing Chart



Analog Ramp Function

Application example: Automatic door



Other application examples:
Simple speed control of motors and conveyors

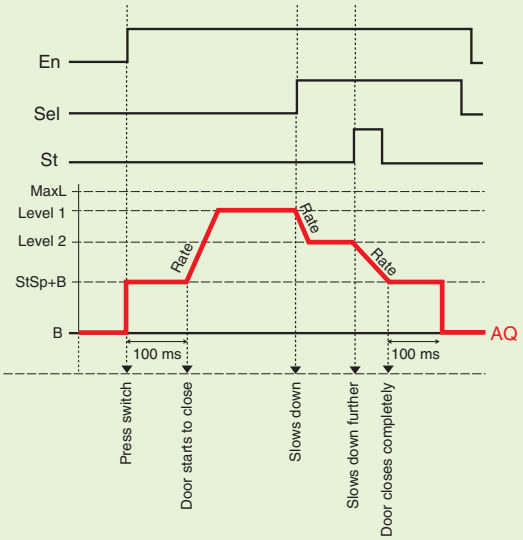
Analog value outputs can be changed for the 2 selected levels.

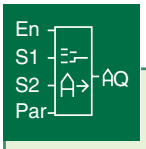
The automatic door closes in 3 speed levels to prevent human injuries.

The ramp function controls the speed of the motor operating the door.

After entering a room, the person presses the pushbutton and closes the door.

• Analog Output Timing Chart





Analog Multiplexer

Application Example: Window Blind Control

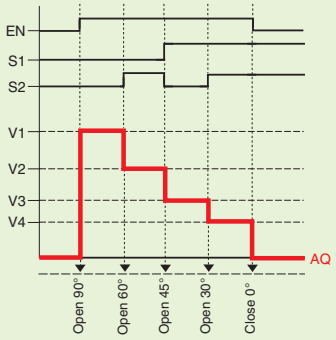
Other application examples: Fan, illumination control

4 analog outputs can be set by combining 2 input conditions (S1/S2).

The slat of window blinds can be controlled to 4 different angles.

The angles of the slat can be adjusted by combining the input conditions of parameters En, S1, and S2 of the multiplexer function block to change the analog output value.

• Analog Output Timing Chart and Input Conditions



En	S1	S2	AQ	
OFF	–	–	–	Close 0°
ON	OFF	OFF	V1	Open 90°
ON	OFF	ON	V2	Open 60°
ON	ON	OFF	V3	Open 45°
ON	ON	ON	V4	Open 30°

Other Application Examples

Cargo lifting equipment
Movement control of patient transfer systems
Automatic ship mast lifting machines
Air shower operating machines
Water sprinkler control
Drainage pump control
Conveyor belts
Sherbet mixer control
Pipe driver control for PVC greenhouse
Normal/reverse motor rotation monitoring buzzer control, tower light control
Semi-automatic wire cutting machines
Monitoring of machine operating time
Analog sensor disconnection detection device, analog value monitoring device
Control panel temperature, humidity monitoring device
Car park warning light control
IC storage box heater control
Operating time adjustment device for game machines in amusement arcades
Fluid level control device

and more!

The SmartRelay is successfully used not only in areas of factory automation but also in various control equipment.

Wide variety of modules enable the IDEC SmartRelay for versatile and flexible use

FL1D Base Modules

FL1D-H12SND

* Including 2 digital/ analog compatible inputs and 2 high-speed inputs.

Power voltage: 24V DC

- DC input: 8 points * (PNP)
- Transistor output: 4 points
- Programming function

FL1D-H12RCE

* Including 2 digital/ analog compatible inputs and 2 high-speed inputs.

Power voltage: 12/24V DC

- DC input: 8 points * (PNP)
- Relay output: 4 points
- Programming function
- Clock function

FL1D-H12RCA

Power voltage: 24V AC/DC

- AC/DC input: 8 points (PNP/NPN)
- Relay output: 4 points
- Programming function
- Clock function

FL1D-H12RCC

Power voltage: 100 to 240V AC/DC

- AC/DC input: 8 points (PNP)
- Relay output: 4 points
- Programming function
- Clock function

FL1D-B12RCE

* Including 2 digital/ analog compatible inputs and 2 high-speed inputs.

Power voltage: 12/24V DC

- DC input: 8 points * (PNP)
- Relay output: 4 points
- Clock function

FL1D-B12RCA

Power voltage: 24V AC/DC

- AC/DC input: 8 points (PNP/NPN)
- Relay output: 4 points
- Clock function

FL1D-B12RCC

Power voltage: 100 to 240V AC/DC

- AC/DC input: 8 points (PNP)
- Relay output: 4 points
- Clock function

Expansion I/O Modules

Use of a base module and expansion I/O modules of the same power voltage rating is recommended, with power supplied to all modules using one power supply.

Maximum number of connectable modules per base module:
4 combination I/O modules + 4 analog input modules + 1 analog output module

Maximum number of I/O points *

Digital input: 24 points	Digital output: 16 points
Analog input: 8 points	Analog output: 2 points

* The maximum number includes the I/O points of the base module and expansion I/O modules.

Combination I/O Modules

FL1B-M08B1S2

Power voltage: 24V DC

- DC input: 4 points (PNP)
- Transistor output: 4 points
- Max. expansion modules: 4

FL1B-M08B2R2

Power voltage: 12/24V DC

- DC input: 4 points (PNP)
- Relay output: 4 points
- Max. expansion modules: 4

FL1B-M08D2R2

Power voltage: 24V AC/DC

- AC/DC input: 4 points (PNP/NPN)
- Relay output: 4 points
- Max. expansion modules: 4

FL1B-M08C2R2

Power voltage: 100 to 240V AC/DC

- AC/DC input: 4 points (PNP)
- Relay output: 4 points
- Max. expansion modules: 4

FL1B-J2B2

Analog Input Module

Power voltage: 12/24V DC

- Analog input: 2 points
- 0-10V DC/0-20 mA input
- Resolution: 10 bits
- Max. expansion modules: 4

FL1D-K2B2

New

Analog Output Module

Power voltage: 24V DC

- Analog output: 2 points
- 0-10V DC output
- Resolution: 10 bits
- Max. expansion modules: 1

Module Combination and Allocation Numbers

(See page 15 for details.)

	FL1D-H12RCE								FL1B-M08B2R2				FL1B-J2B2	
Digital Input: I	1	2	3	4	5	6	7	8	9	10	11	12		
Analog Input: AI	1	2											3	4
Analog Output:AQ														
Digital Output: Q	1	2	3	4					5	6	7	8		

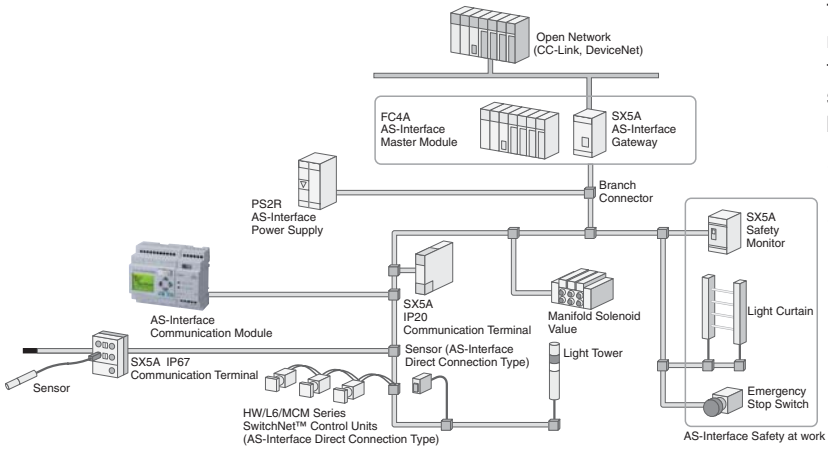
FL1D-K2B2

Base module | Combination I/O module
Analog input module | Analog output module

Note 1: I/O numbers are automatically allocated starting with the base module.

Note 2: When the base module with analog inputs is used, I7, I8, AI1, and AI2 are occupied whether the analog inputs are used or not. For the expansion I/O module, allocation starts with I9 and AI3.

AS-Interface Communication Module FL1B-CAS2



The AS-Interface communication module provides optimum solution for savings in cables, installation space, and wiring cost and possibility for decentralized control.

- Virtual I/O points: 4 input points, 4 output points.
- FL1B-CAS2 is compatible with AS-Interface Ver 2.0.

For SwitchNet™ and IDEC AS-Interface devices, see catalogs No. EP1043 and EP1025.

Module Combination and Allocation Numbers

Using expansion I/O modules (For details, see page 15.)

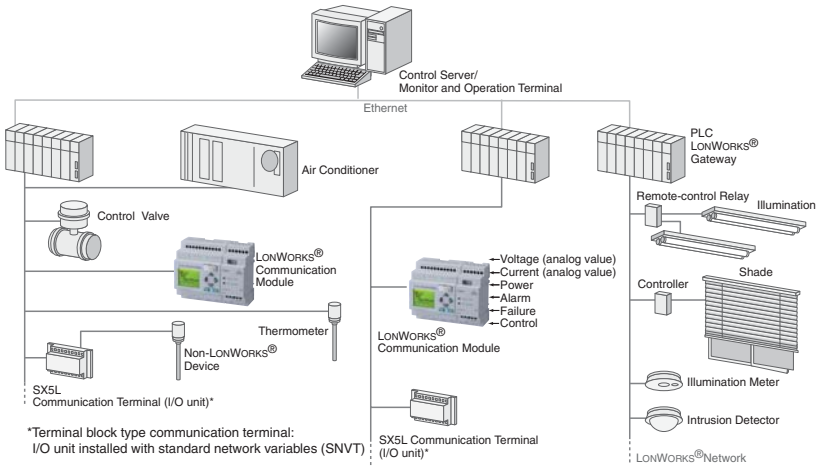
	FL1D-H12RCE								FL1B-M08B2R2						FL1B-CAS2			
Digital Input: I	1	2	3	4	5	6	7	8	9	10	11	12			13	14	15	16
Analog Input: AI	1	2											3	4				
Digital Output: Q	1	2	3	4					5	6	7	8			9	10	11	12

FL1B-J2B2

Base module
Analog input module
Combination I/O module,
AS-Interface communication module

Note 1: I/O numbers are automatically allocated starting with the base module.
Note 2: When the base module with analog inputs is used, I7, I8, AI1, and AI2 are occupied whether the analog inputs are used or not.

LonWorks® Communication Module FL1B-CL1C12



Combination of easy-to-program IDEC SmartRelay and LonWorks® communication module achieves remote control and monitoring on the LonWorks® network.

- Max. virtual input points: 16 points
- Max. virtual output points: 12 points
- Max. virtual analog input points: 8 points

(Number of I/O points depends on the combination of modules.)

- An external interface file (XIF extension) unique to each LonWorks® communication module is needed to communicate through the LonWorks® network. The XIF file can be downloaded from the following website.

http://www.idec.com/english/download/

Module Combination and Allocation Numbers

1. Maximum number of I/O points when using LonWorks® communication module (For details, see page 15.)

	FL1D-H12RCC								FL1B-CL1C12															
Digital Input: I	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Analog Input: AI									1	2	3	4	5	6	7	8								
Digital Output: Q	1	2	3	4					5	6	7	8	9	10	11	12	13	14	15	16				

Base module
LonWorks® communication module
Combination I/O module
Analog input module
Analog output module

2. Using analog inputs on the base module

	FL1D-H12RCE								FL1B-CL1C12															
Digital Input: I	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Analog Input: AI	1	2							3	4	5	6	7	8										
Digital Output: Q	1	2	3	4					5	6	7	8	9	10	11	12	13	14	15	16				

3. Using expansion I/O module

	FL1D-H12RCE								FL1B-M08B2R2						FL1B-CL1C12									
Digital Input: I	1	2	3	4	5	6	7	8	9	10	11	12					13	14	15	16	17	18	19	20	21	22	23	24
Analog Input: AI	1	2											3	4			5	6	7	8								
Analog Output: AI															1	2												
Digital Output: Q	1	2	3	4					5	6	7	8					9	10	11	12	13	14	15	16				

FL1B-J2B2 FL1D-K2B2

Note 1: One LonWorks® communication module can be used with a base module and must be mounted at the far right end of the row.
Note 2: I/O numbers are automatically allocated starting with the base module.
Note 3: When the base module with analog inputs is used, I1 to I8, AI1, and AI2 are occupied whether the analog inputs are used or not.

LonMark® Partner

LonMark®, LonWorks®, LON®, Lon Builder®, Neuron®, 3120®, 3150®, and Echelon® are registered trademarks of Echelon, USA.

For details about SX5L LonWorks® communication terminals, see catalog No. EP995.

Easy Programming using WindLGC
Online test and simulation mode allows convenient programming

WindLGC Programming Software for IDEC SmartRelay

Enhanced functions in WindLGC such as offline simulation and online testing of programs greatly reduces programming time.

Online Test

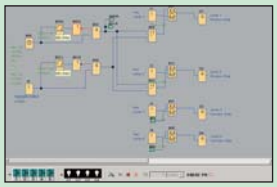
When WindLGC is connected to the IDEC SmartRelay installed in a control panel or equipment, the I/O statuses can be monitored on the WindLGC screen. Downloading user programs and testing operations greatly facilitate maintenance.

Simulation

Wiring status and function block parameters can be confirmed by simulating on the WindLGC programming screen. Simulation is possible for every scan or for a predetermined period of time.

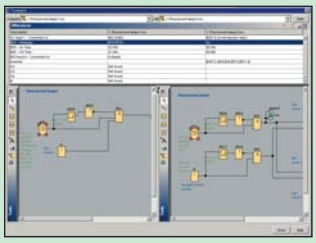
Set Output

New



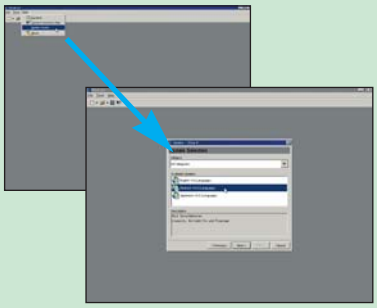
Digital outputs can be turned on or off independently. Useful for confirming operation of subsequent programs.

Compare



When adding or modifying a part of the user program, this function makes it possible to compare two programs on the WindLGC screen.

Update Center

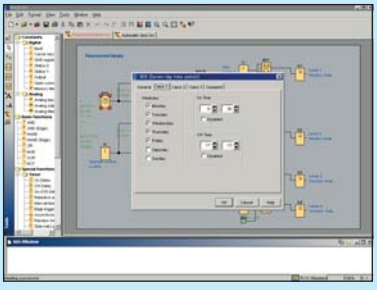


Free upgrade from WindLGC Ver. 3 can be downloaded from the update center or IDEC website through the Internet.

http://www.idec.com/english/download/

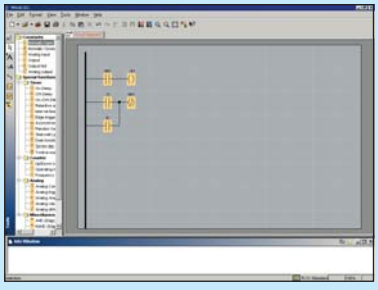
Create function block and ladder diagrams using simple drag and drop functions

Function Block Programming



Function block parameters are entered and modified in the function block dialog boxes.

Ladder Programming



In addition to function block diagrams, WindLGC can program ladder diagrams for the IDEC SmartRelay.

When downloading the user program to the base module, ladder diagrams are converted into function block diagrams.

For details, see the user's manual and FAQ available at the following website.

http://www.idec.com/faq/en/controller/

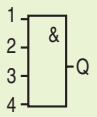
WindLGC Ver. 5 System Requirements

CPU	Pentium III 500 MHz or higher
OS	Windows XP/2000/98/95/Me/NT4.0
Hard disk space	90 MB
RAM	128 MB
Display	800 × 600 pixels, 256 colors (1024 × 768 recommended)

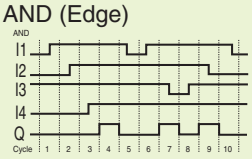
GF General Function Blocks

- AND

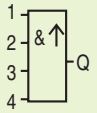
Series connection of normally open contacts



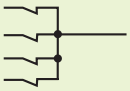
- AND (Edge)



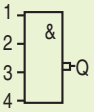
Edge detection with edge evaluation (pos. edge)



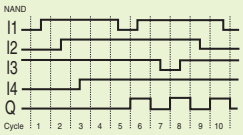
- NAND



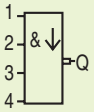
Parallel connection of normally closed contacts



- NAND (Edge)

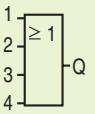


Edge detection with edge evaluation (pos. edge)



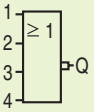
- OR

Parallel connection of normally open contacts

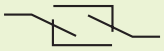


- NOR

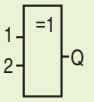
Series connection of normally closed contacts



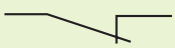
- XOR



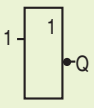
Double changeover contact



- NOT



Connection of closed contact

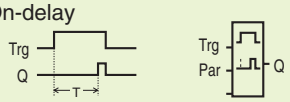


Download Demo Version

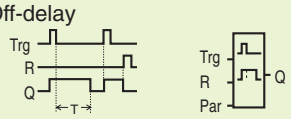
http://www.idec.com/english/download/

SF Special Function Blocks

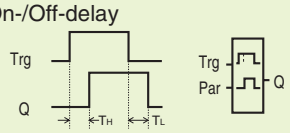
- On-delay



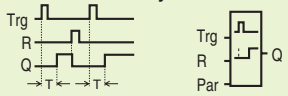
- Off-delay



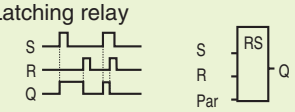
- On-/Off-delay



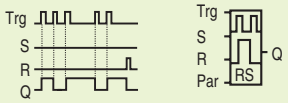
- Retentive on-delay



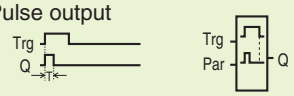
- Latching relay



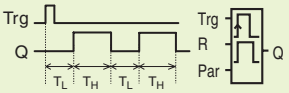
- Current impulse relay



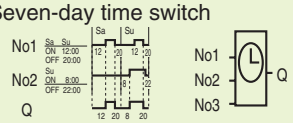
- Interval time-delay relay/ Pulse output



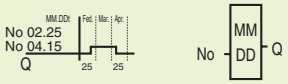
- Edge-triggered interval time-delay relay



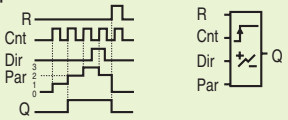
- Seven-day time switch



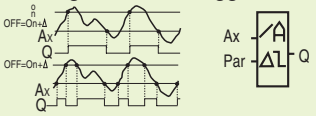
- Twelve-month time switch



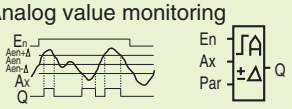
- Up/down counter



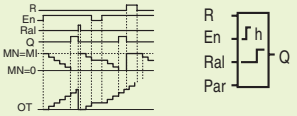
- Analog differential trigger



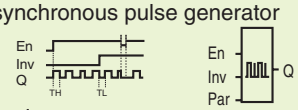
- Analog value monitoring



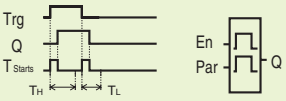
- Operating hours counter



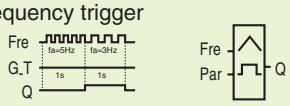
- Asynchronous pulse generator



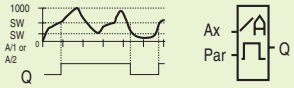
- Random generator



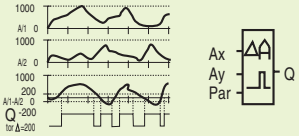
- Frequency trigger



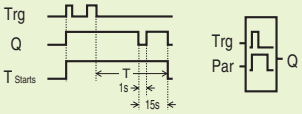
- Analog trigger



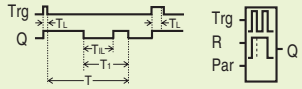
- Analog comparator



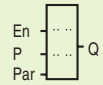
- Stairwell light switch



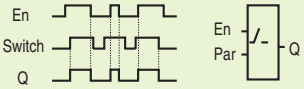
- Dual-function switch



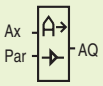
- Message texts



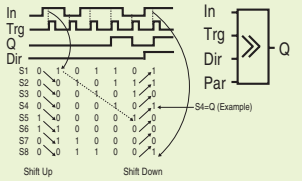
- Softkey



- Analog amplifier

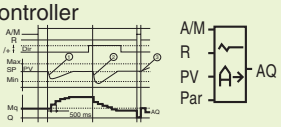


- Shift register



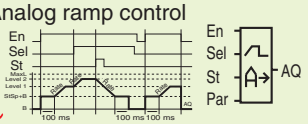
New

- PI controller



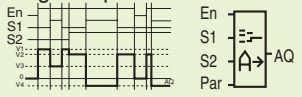
New

- Analog ramp control



New

- Analog multiplexer



Simple button operation enables easy modification of parameter values and confirmation of I/O statuses.

- A maximum of 130 function blocks can be programmed, including 24 internal relays, 10 message displays, and an unlimited number of timers and counters, to achieve powerful control operations (program capacity 2,000 bytes).
- 10A relay outputs eliminate the need for external relays.
- I/O points expandable using expansion I/O modules.
  24 digital inputs, 16 digital outputs, 8 analog inputs, and 2 analog outputs.
  4 I/O modules + 4 analog input modules, and 1 analog output module maximum.
- AS-Interface and LONWORKS® communication modules enable decentralized control.
- All modules can mount on a 35-mm-wide DIN rail and directly on a panel.
- All base and expansion modules are UL/c-UL listed, FM approved, IEC61131/VDE0631 compliant, Australian EMC compliant, and shipbuilding certified (ABS, BV, DNV, GL, Lloyd's Register, and Class NK.) (Note 1, Note 2)

Note 1: For protection against surge noise on DC power supply types (FL1D-H12RCE/B12RCE, FL1D-H12SND, FL1D-H12RCA/B12RCA), use surge absorbers, noise cut transformers, or noise filters.

Note 2: Lloyd's Register needs a surge protection device (DEHN + SÖHNE GmbH + Co, BVT AD 24 Part No. 918 402) when using 12/24V and 24V DC SmartRelay modules.

c UL us LISTED FM APPROVED CE

Types

• Base Module

Rated Power Voltage	Input Signal	Output Signal	Display	Clock	I/O Points	Weight (approx.)	Type No.
24V DC	DC I7 and I8 are used for digital/analog inputs	Transistor	Yes	—	8/4 points	150g	FL1D-H12SND
12/24V DC		Relay	Yes	Yes	8/4 points	190g	FL1D-H12RCE
			—			180g	FL1D-B12RCE
24V AC/DC	AC/DC	Relay	Yes	Yes	8/4 points	190g	FL1D-H12RCA
			—			180g	FL1D-B12RCA
100 to 240V AC/DC	AC/DC		Yes	Yes	8/4 points	195g	FL1D-H12RCC
			—			185g	FL1D-B12RCC

• Expansion I/O Module

Type	Rated Power Voltage	Input Signal	Output Signal	I/O Points	Weight (approx.)	Type No.
Input/Output	24V DC	DC	Transistor	4/4 points	90g	FL1B-M08B1S2
	12/24V DC	DC	Relay	4/4 points	125g	FL1B-M08B2R2
	24V AC/DC	AC/DC	Relay	4/4 points	125g	FL1B-M08D2R2
	100 to 240V AC/DC	AC/DC	Relay	4/4 points	130g	FL1B-M08C2R2
Analog Input	12/24V DC	Analog	—	2/0 points	80g	FL1B-J2B2
Analog Output	24V DC	—	Analog	0/2 points	90g	FL1D-K2B2

- I/O points within the maximum number of expandable I/O points can be used.
- Use of a base module and expansion I/O modules of the same power voltage rating is recommended, with power supplied to all modules using one power supply. When power is supplied to the modules from different power supplies, EMC burst noise is 1 kV (IEC61000-4-4).

• Communication Module

Name	Rated Power Voltage	I/O Points	Weight (approx.)	Type No.
AS-Interface Communication Module	30V DC (AS-Interface rated voltage)	Input: 4 points Output: 4 points	75g	FL1B-CAS2
LONWORKS® Communication Module	24V AC/DC	Input: 16 points Analog input: 8 points Output: 12 points	85g	FL1B-CL1C12

- An external interface file (XIF extension) unique to each LONWORKS® communication module is needed to communicate through the LONWORKS® network. The XIF file can be downloaded from: http://www.idec.com/english/download/

• Option

Name	Type No.	Ordering Type No.	Package Quantity	Remarks
Application Software Program WindLGC	FL9Y-LP1CDW		1	CD-ROM (incl. online help manual)
PC Cable	FL1A-PC1		1	
Memory Cartridge	FL1C-PM3		1	With read/write protect function
Mounting Clip	FL1B-PSP1	FL1B-PSP1PN05	5	A mounting clip is supplied with a module.
Lens Removal Tool	MT-101		1	For removing memory cartridge
IDEC SmartRelay User's Manual	FL9Y-B966		1	Downloadable from: http://idec.com/english/download/
LONWORKS® Communication Module User's Manual	FL9Y-B695		—	

Base Module Specifications

Base Module Type No.			FL1D-H12SND	FL1D-H12RCE FL1D-B12RCE	FL1D-H12RCA FL1D-B12RCA	FL1D-H12RCC FL1D-B12RCC
Power Supply	Rated Power Voltage		24V DC	12/24V DC	24V AC/DC	100 to 240V AC/DC
	Allowable Voltage Range		20.4 to 28.8V DC	10.8 to 28.8V DC	20.4 to 26.4V AC 20.4 to 28.8V DC	85 to 265V AC 100 to 253V DC
	Rated Frequency		—	—	47 to 63 Hz	47 to 63 Hz
	Current Draw		30 to 55 mA (24V DC)	30 to 140 mA (12V DC) 20 to 75 mA (24V DC)	40 to 110 mA (24V AC) 20 to 75 mA (24V DC)	10 to 40 mA (100V AC) 10 to 25 mA (240V AC) 5 to 25 mA (100V DC) 5 to 15 mA (240V DC)
	Allowable Momentary Power Interruption		—	2 ms (Typ.) (12V DC) 5 ms (Typ.) (24V DC)	5 ms (Typ.) (24V AC/DC)	10 ms (Typ.) (100V AC/DC) 20 ms (Typ.) (240V AC/DC)
	Power Consumption		0.7 to 1.3W (24V DC)	0.3 to 1.7W (12V DC) 0.4 to 1.8W (24V DC)	0.9 to 2.7 VA (24V AC) 0.4 to 1.8W (24V DC)	1.1 to 4.6 VA (100V AC) 2.4 to 6.0 VA (240V AC) 0.5 to 2.9W (100V DC) 1.2 to 3.6W (240V DC)
	Reverse Polarity Protection		Yes	Yes	—	—
Clock	Backup Duration		—	80 hours (25°C)	80 hours (25°C)	80 hours (25°C)
	Clock Accuracy		—	±5 sec/day maximum	±5 sec/day maximum	±5 sec/day maximum
Input	Input Signal		DC	DC	AC/DC	AC/DC
	Input Points		8 (I1 to I8)	8 (I1 to I8)	8 (I1 to I8)	8 (I1 to I8)
	Analog Input Points		2 (I7, I8)	2 (I7, I8)	—	—
	High-speed Input (Note 1)		2 (I5, I6), 2 kHz maximum	2 (I5, I6), 2 kHz maximum	—	—
	Analog Input Range		0 to 10V DC (max. rated input: 28.8V DC)	0 to 10V DC (max. rated input: 28.8V DC)	—	—
	Analog Input Error		±1.5 (of full scale)	±1.5 (of full scale)	—	—
	Analog Input Resolution		10 bits (0 to 1000)	10 bits (0 to 1000)	—	—
	Allowable Voltage Range		0 to 28.8V DC	0 to 28.8V DC	0 to 26.4V AC 0 to 28.8V DC	0 to 265V AC 0 to 253V DC
	Input Impedance	Digital Input	3.5 kΩ	3.5 kΩ	4.8 kΩ	840 kΩ
		Analog Input	78 kΩ	76 kΩ	—	—
	Isolation		—	—	—	—
	Operating Range	OFF Voltage	< 5V DC	< 5V DC	< 5V AC/DC	< 40V AC < 30V DC
		ON Voltage	≥ 12V DC	≥ 8.5 V DC	≥ 12V AC/DC	≥ 79V AC ≥ 79V DC
		OFF Current	< 0.85 mA (I1 to I6) < 0.05 mA (I7, I8)	< 0.85 mA (I1 to I6) < 0.05 mA (I7, I8)	< 1.0 mA	< 0.03 mA
		ON Current	≥ 2 mA (I1 to I6) ≥ 0.15 mA (I7, I8)	≥ 1.5 mA (I1 to I6) ≥ 0.1 mA (I7, I8)	≥ 2.5 mA	≥ 0.08 mA
	Turn ON Time		1.5 ms (Typ.) (I1 to I4) ≤ 1.0 ms (I5, I6) 300 ms (Typ.) (I7, I8)	1.5 ms (Typ.) (I1 to I4) ≤ 1.0 ms (I5, I6) 300 ms (Typ.) (I7, I8)	1.5 ms (Typ.)	100V AC: 50 ms (Typ.) 240V AC: 30 ms (Typ.) 100V DC: 25 ms (Typ.) 240V DC: 125 ms (Typ.)
	Turn OFF Time		1.5 ms (Typ.) (I1 to I4) ≤ 1.0 ms (I5, I6) 300 ms (Typ.) (I7, I8)	1.5 ms (Typ.) (I1 to I4) ≤ 1.0 ms (I5, I6) 300 ms (Typ.) (I7, I8)	15 ms (Typ.)	100V AC: 65 ms (Typ.) 240V AC: 105 ms (Typ.) 100V DC: 95 ms (Typ.) 240V DC: 125 ms (Typ.)
	Wire Length		100 m (Note 2)	100 m (Note 2)	100 m	100 m
Output	Output Signal		Transistor source output	Relay output	Relay output	Relay output
	Output Points/ Contact Configuration		4 points (separate)	4NO contacts	4NO contacts	4NO contacts
	Isolation		—	Isolated	Isolated	Isolated
	Dielectric Strength (between power/input terminals and output terminals)		—	2500V AC, 1 minute 500V DC, 1 minute	2500V AC, 1 minute 500V DC, 1 minute	2500V AC, 1 minute 500V DC, 1 minute
	Output Voltage		External power voltage	—	—	—
	Maximum Load Current		0.3A	Resistive load 10A at 12/24V AC/DC 10A at 100/120V AC 10A at 230/240V AC Inductive load 2A at 12/24V AC/DC 3A at 100/120V AC 3A at 230/240V AC	Resistive load 10A at 12/24V AC/DC 10A at 100/120V AC 10A at 230/240V AC Inductive load 2A at 12/24V AC/DC 3A at 100/120V AC 3A at 230/240V AC	Resistive load 10A at 12/24V AC/DC 10A at 100/120V AC 10A at 230/240V AC Inductive load 2A at 12/24V AC/DC 3A at 100/120V AC 3A at 230/240V AC
	Surge Current		—	30A maximum	30A maximum	30A maximum
	Short-circuit Protection		Built-in current limiting resistor: Approx. 1A	External fuse required: 16A maximum	External fuse required: 16A maximum	External fuse required: 16A maximum
	Minimum Switching Load		—	10 mA, 12V DC	10 mA, 12V DC	10 mA, 12V DC
	Initial Contact Resistance		—	100 mΩ maximum (at 1A, 24V DC)	100 mΩ maximum (at 1A, 24V DC)	100 mΩ maximum (at 1A, 24V DC)
	Mechanical Life		—	10 million operations (no load, 10 Hz)	10 million operations (no load, 10 Hz)	10 million operations (no load, 10 Hz)
	Electrical Life		—	100,000 operations (rated resistive load) 1800 operations/hour	100,000 operations (rated resistive load) 1800 operations/hour	100,000 operations (rated resistive load) 1800 operations/hour
Switching Rate	Mechanical Load (Note 3)		—	10 Hz	10 Hz	10 Hz
	Electrical Load		10 Hz	—	—	—
	Resistive Load/Lamp Load		10 Hz	2 Hz	2 Hz	2 Hz
	Inductive Load		0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz

Note 1: When selecting frequency trigger function.
Note 2: 10 m when connected to analog input (twisted pair cable)
Note 3: For fluorescent lamps, if the inrush current exceeds the allowable value, use an appropriate relay.

Initialization Time: After power-up, the FL1D takes a maximum of 10 seconds (9 seconds without using a memory cartridge) for initialization. When initialization is complete, the FL1D can be set to RUN mode.

Expansion I/O Module Specifications

Expansion I/O Module Type No.			FL1B-M08B1S2	FL1B-M08B2R2	FL1B-M08D2R2	FL1B-M08C2R2	FL1B-J2B2	FL1D-K2B2
Power Supply	Rated Power Voltage		24V DC	12/24V DC	24V AC/DC	100 to 240V AC/DC	12/24V DC	24V DC
	Allowable Voltage Range		20.4 to 28.8V DC	10.8 to 28.8V DC	20.4 to 26.4V AC 20.4 to 28.8V DC	85 to 265V AC 100 to 253V DC	10.8 to 28.8V DC	20.4 to 28.8V DC
	Rated Frequency		—	—	50/60 Hz (47 to 63 Hz)	50/60 Hz (47 to 63 Hz)	—	—
	Current Draw		30 to 45 mA	30 to 140 mA (12V DC) 20 to 75 mA (24V DC)	40 to 110 mA (24V AC) 20 to 75 mA (24V DC)	10 to 30 mA (100V AC) 10 to 20 mA (240V AC) 5 to 15 mA (100V DC) 5 to 10 mA (240V DC)	25 to 50 mA	25 to 50 mA
	Allowable Momentary Power Interruption		—	2 ms (Typ.) (12V DC) 5 ms (Typ.) (24V DC)	5 ms (Typ.) (24V AC/DC)	10 ms (Typ.) (100V AC/DC) 20 ms (Typ.) (240V AC/DC)	2 ms (Typ.) (12V AC/DC) 5 ms (Typ.) (24V AC/DC)	5 ms (Typ.)
	Power Consumption		0.8 to 1.1W	0.3 to 1.7W (12V DC) 0.4 to 1.8W (24V DC)	0.9 to 2.7 VA (24V AC) 0.4 to 1.8W (24V DC)	1.1 to 3.5 VA (100V AC) 2.4 to 4.8 VA (240V AC) 0.5 to 1.8W (100V DC) 1.2 to 2.4W (240V DC)	0.3 to 0.6W (12V DC) 0.6 to 1.2W (24V DC)	0.6 to 1.2W (24V DC)
	Reverse Polarity Protection		Yes	Yes	—	—	Yes	Yes
Input	Input Signal		DC input	DC input	AC/DC input	AC/DC input	Analog input	—
	Input Points		4	4	4	4	—	—
	Isolation		—	—	—	—	—	—
	Allowable Voltage Range		0 to 28.8V DC	0 to 28.8V DC	0 to 26.4V AC 0 to 28.8V DC	0 to 265V AC 0 to 253V DC	—	—
	Operating Range	OFF Voltage	< 5V DC	< 5V DC	< 5V AC/DC	< 40V AC < 30V DC	—	—
		ON Voltage	≥ 12V DC (Note 1)	≥ 8.5V DC (Note 4)	≥ 12V AC/DC	≥ 79V AC ≥ 79V DC	—	—
		OFF Current	< 0.85 mA (Note 2)	< 0.85 mA (Note 5)	< 1.0 mA	< 0.03 mA	—	—
		ON Current	≥ 2 mA	≥ 1.5 mA	≥ 2.5 mA	≥ 0.08 mA	—	—
	Turn ON Time		1.5 ms (Typ.)	1.5 ms (Typ.)	1.5 ms (Typ.)	100V AC: 50 ms (Typ.) 240V AC: 30 ms (Typ.) 100V DC: 25 ms (Typ.) 240V DC: 15 ms (Typ.)	—	—
	Turn OFF Time		1.5 ms (Typ.)	1.5 ms (Typ.)	1.5 ms (Typ.)	100V AC: 65 ms (Typ.) 240V AC: 105 ms (Typ.) 100V DC: 95 ms (Typ.) 240V DC: 125 ms (Typ.)	—	—
	Analog Input Points		—	—	—	—	2	—
	Analog Input Range		—	—	—	—	0 to 10V (max. rated input: 28.8V) 0 to 20 mA (max. rated input: 40 mA)	—
	Digital Resolution		—	—	—	—	10 bits (0 to 1000)	—
	Input Error		—	—	—	—	±1.5% (of full scale)	—
	Input Impedance		—	—	—	—	76 kΩ (0 to 10V) 155 to 250Ω (0 to 20 mA)	—
	Sampling Cycle		—	—	—	—	50 ms	—
Output	Wire Length		100 m	100 m	100 m	100 m	10 m (twisted-pair shielded cable)	—
	Output Signal		Transistor source output	Relay output	Relay output	Relay output	—	Analog output
	Output Points/ Contact Configuration		4 points (separate)	4NO contacts	4NO contacts	4NO contacts	—	—
	Isolation		—	Isolated	Isolated	Isolated	—	—
	Dielectric Strength (between power/input terminals and output terminals)		—	2500V AC, 1 minute 500V DC, 1 minute	2500V AC, 1 minute 500V DC, 1 minute	2500V AC, 1 minute 500V DC, 1 minute	—	—
	Output Voltage		External power voltage (20.4 to 28.8V DC)	—	—	—	—	—
	Maximum Load Current		0.3A	Resistive load 5A at 12/24V AC/DC 5A at 100/120V AC 5A at 230/240V AC Inductive load 2A at 12/24V AC/DC 3A at 100/120V AC 3A at 230/240V AC	Resistive load 5A at 12/24V AC/DC 5A at 100/120V AC 5A at 230/240V AC Inductive load 2A at 12/24V AC/DC 3A at 100/120V AC 3A at 230/240V AC	Resistive load 5A at 12/24V AC/DC 5A at 100/120V AC 5A at 230/240V AC Inductive load 2A at 12/24V AC/DC 3A at 100/120V AC 3A at 230/240V AC	—	—
	Short-circuit Protection		Built-in current limiting resistor: Approx. 1A	External fuse required: 16A maximum	External fuse required: 16A maximum	External fuse required: 16A maximum	—	Yes
	Minimum Switching Load		—	10 mA, 12V DC	10 mA, 12V DC	10 mA, 12V DC	—	—
	Initial Contact Resistance		—	100 mΩ maximum (at 1A, 24V DC)	100 mΩ maximum (at 1A, 24V DC)	100 mΩ maximum (at 1A, 24V DC)	—	—
	Mechanical Life		—	10 million operations (no load, 10 Hz)	10 million operations (no load, 10 Hz)	10 million operations (no load, 10 Hz)	—	—
	Electrical Life		—	100,000 operations (rated resistive load) 1800 operations/hour	100,000 operations (rated resistive load) 1800 operations/hour	100,000 operations (rated resistive load) 1800 operations/hour	—	—
	Analog Output Points		—	—	—	—	—	2
	Analog Output Range		—	—	—	—	—	0 to 10V
	Digital Resolution		—	—	—	—	—	10 bits (0 to 1000V)
	Output Error		—	—	—	—	—	±2.5% (of full scale)
	Output Impedance		—	—	—	—	—	5 kΩ
	Analog Value Conversion Interval		—	—	—	—	—	50 ms
	Wire Length		—	—	—	—	—	10 m (twisted-pair shielded cable)
Switching Rate	Mechanical Load (Note 6)		—	10 Hz	10 Hz	10 Hz	—	—
	Electrical Load		10 Hz	—	—	—	—	—
	Resistive Load/Lamp Load		10 Hz	2 Hz	2 Hz	2 Hz	—	—
	Inductive Load		0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz	—	—

Note 1: 8V DC for ver. 1 to 4 Note 2: 1.0 mA for ver. 1 to 4 Note 3: 1.5 mA DC for ver. 1 to 4 Note 4: 8V DC for ver. 1 to 5 Note 5: 1.0 mA for ver. 1 to 5
Note 6: For fluorescent lamps, if the inrush current exceeds the allowable value, use an appropriate relay.
When mounting more than two expansion I/O modules, see “Initialization after Power-up” on page 15.

AS-Interface Communication Module

• Specifications

Module Type	AS-Interface slave module
Slave Type	Standard
Profile	I/O code: 7 ID code: F ID2 code: F
Input/Output	Virtual input: 4 Virtual output: 4
Rated AS-Interface Voltage	30V DC (26.5 to 31.6V DC)
Current Draw	70 mA maximum (AS-Interface)

• I/O Allocation

Input		Output	
AS-Interface	SmartRelay	SmartRelay	AS-Interface
Output Data Bit D0	Input In	Output Qm	Input Data Bit D0
Output Data Bit D1	Input In+1	Output Qm+1	Input Data Bit D1
Output Data Bit D2	Input In+2	Output Qm+2	Input Data Bit D2
Output Data Bit D3	Input In+3	Output Qm+3	Input Data Bit D3

- I/O point numbers “n” and “m” of the SmartRelay are automatically allocated by the base module according to the mounted position of the AS-Interface communication module.
- AS-Interface communication module is IP20 terminal type.
- AS-Interface cable is connected to the terminal block.

LONWORKS® Communication Module

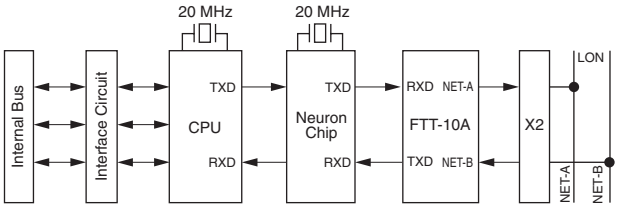
• Specifications

Rated Power Voltage		24V AC/DC (20.4 to 26.4V AC / 20.4 to 28.8V DC)
Rated Frequency		50/60 Hz (47 to 63 Hz)
Current Draw		33 mA max.
Communication System		LON® system
Transceiver		FTT-10A
Topology		Bus topology / Free topology
Transmission Rate		78 kbps
Neuron Chip		TMPN3120FE5M (Toshiba)
CPU Clock Frequency		20 MHz
Transmission Distance	Bus topology	1,400 m (only FTT-10A transceiver, when using Level 4 AWG22 cable)
	Free topology	500 m total, 400 m between nodes (when using Level 4 AWG22 cable)

• Network Variables

	SNVT Type	Application
Input Network Variable	SNVT_obj_request: (Quantity 1)	Request object mode
	SNVT_switch: (Quantity 14)	Switch light, alarm, window contact, free inputs/outputs
	SNVT_occupancy: (Quantity 2)	Occupancy
	SNVT_temp_p: (Quantity 1)	Room temperature (°C)
	SNVT_lux: (Quantity 1)	Brightness - lightening level (lux)
	SNVT_lev_percent: (Quantity 6)	Position (%)
Output Network Variable	SNVT_obj_status: (Quantity 1)	Output object status
	SNVT_switch: (Quantity 8)	Switch light, alarm, window contact, free inputs/outputs
	SNVT_occupancy: (Quantity 2)	Occupancy
	SNVT_tod_event: (Quantity 2)	Scheduler program Just current state

• Block Diagram



• Configuration Property

	SCPT Type	Application
Configuration Property	SCPTmaxSendTime: (Quantity 12)	Send heartbeat

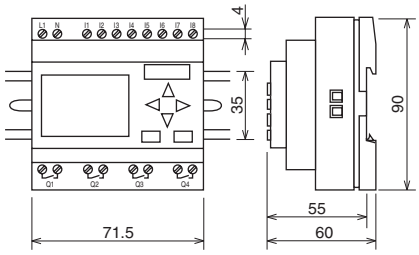
General Specifications

Item		Specifications	Standard
Operating Temperature	Horizontal Mounting	0 to 55°C	Cold: IEC60068-2-1 Hot: IEC60068-2-2
	Vertical Mounting	0 to 55°C	
Storage/Transportation Temperature		–40 to +70°C (Note 1)	—
Relative Humidity		10 to 95% (Note 2)	IEC60068-2-30
Atmospheric Pressure		795 to 1080 hPa	—
Operating Condition		No corrosive gas	—
Degree of Protection		IP20	—
Vibration Resistance		5 to 9 Hz, amplitude 3.5 mm 9 to 150 Hz, acceleration 9.8 m/s^2	IEC60068-2-6
Shock Resistance		147 m/s^2	IEC60068-2-27
Drop Test		50 mm	IEC60068-2-31
Drop Test (packaged)		1 m	IEC60068-2-32
Emission		Class B Group 1 (Note 3)	EN55011
Electrostatic Discharge		8 kV air discharge 6 kV contact discharge (Note 4)	IEC61000-4-2
Electromagnetic Fields		10 V/m	IEC61000-4-3
Burst Pulses		2 kV (power line) 1 kV (I/O signal line) (Note 5)	IEC61000-4-4
Energy Carriers Single Pulse (Surge) (Note 6) (FL1B-H12RCC, FL1B-B12RCC only)		1 kV (power line) normal 2 kV (power line) common	IEC61000-4-5
Communication Cable		0.5 to 2.5 mm^2 (one wire) 0.5 to 1.5 mm^2 (two wires)	—
Terminal Style		Finger-safe type (Note 7)	—

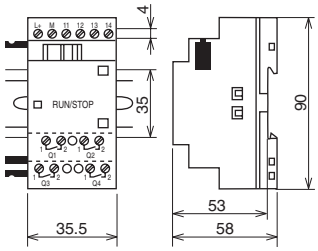
Note 1: No freezing
Note 2: No condensation
Note 3: Class A for AS-Interface communication module
Note 4: 8 kV (air discharge), 4 kV (contact discharge) for AS-Interface communication module
Note 5: 1 kV (criteria A), 2 kV (criteria B) for AS-Interface communication module
Note 6: For protection against surge noise on DC power supply types (FL1D-H12RCE/B12RCE, FL1D-H12SND, FL1D-H12RCA/B12RCA), use surge absorbers, noise cut transformers, or noise filters.
Note 7: Tightening torque 0.4 to 0.5 N·m

Dimensions

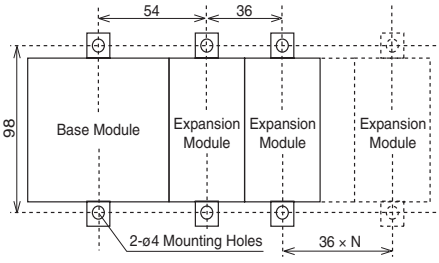
• Base Module



• Expansion I/O Module, Communication Module



• Mounting Hole Layout (Using Mounting Slides)

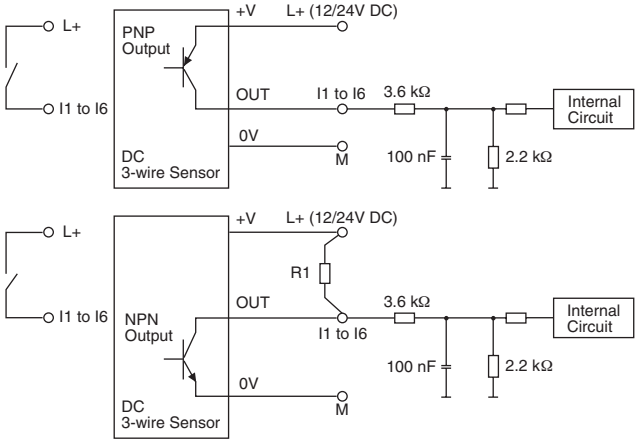


All dimensions in mm.

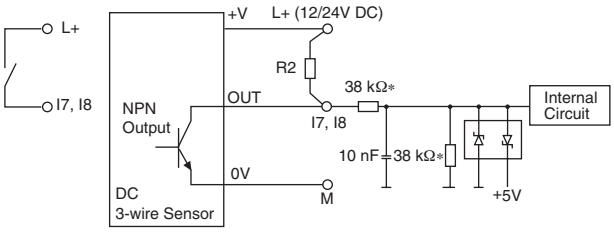
Input Internal Circuits

DC Input

- **FL1D-H12SND / -H12RCE / -B12RCE**
- **FL1B-M08B1S2 / -M08B2R2**



Note 1: When using an NPN output sensor, connect an external resistor (I1 to I6):
For power voltage 24V DC: R1 = 7.5 kΩ, 1/4W minimum
For power voltage 12V DC: R1 = 1.8 kΩ, 1/4W minimum

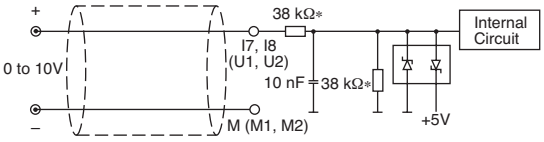


*For FL1D-H12SND, the value is 39 kΩ.

Note 2: When using an NPN output sensor, connect an external resistor (I7, I8):
For power voltage 24V DC: R2 = 100 kΩ, 1/8W minimum
For power voltage 12V DC: R2 = 24 kΩ, 1/8W minimum

Analog Voltage Input

- **FL1D-H12SND / -H12RCE / -B12RCE**
- **FL1B-J2B2**

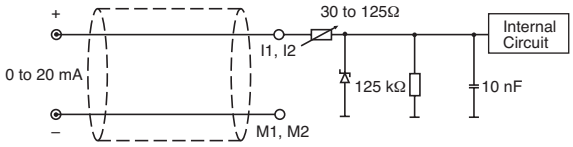


*For FL1D-H12SND, the value is 39 kΩ.

Note 3: I7 and I8 accept both digital and analog inputs. When connecting an analog input, use a twisted pair cable, and keep the cable as short as possible.

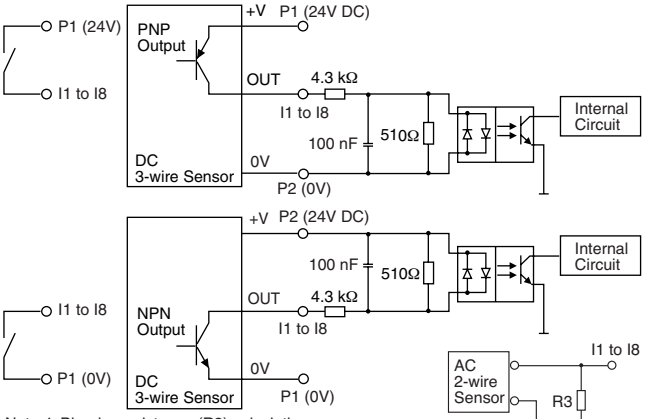
Analog Current Input

- **FL1B-J2B2**



24V AC/DC Input

- **FL1D-H12RCA / -B12RCA**
- **FL1B-M08D2R2**



Note 4: Bleeder resistance (R3) calculation
R3 must satisfy the following three conditions.

Condition 1: $R3\ (\Omega) \leq \dfrac{\text{Maximum input OFF voltage (= 5V AC)}}{\text{Maximum sensor leakage current (A)}}$

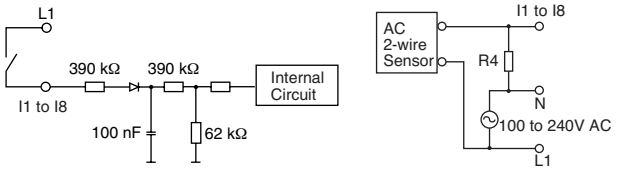
Condition 2: $R3\ (\Omega) \leq \dfrac{\text{Sensor power voltage (V)}}{\text{Minimum sensor load current (A)}}$

The voltage drop across the load (R3) must be less than 5V while the sensor is turned off.

Condition 3: $P_{R3}\ (W) \geq \dfrac{\{\text{Sensor power voltage (V)}\}^2}{\text{R3 resistance }(\Omega)} \times 3$ (3: recommended allowance)

100 to 240V AC/DC Input

- **FL1D-H12RCC / -B12RCC**
- **FL1B-M08C2R2**



Note 5: Bleeder resistance (R4) calculation
R4 must satisfy the following three conditions.

Condition 1: $R4\ (\Omega) \leq \dfrac{\text{Maximum input OFF voltage (= 40V AC)}}{\text{Maximum sensor leakage current (A)}}$

Condition 2: $R4\ (\Omega) \leq \dfrac{\text{Sensor power voltage (V)}}{\text{Minimum sensor load current (A)}}$

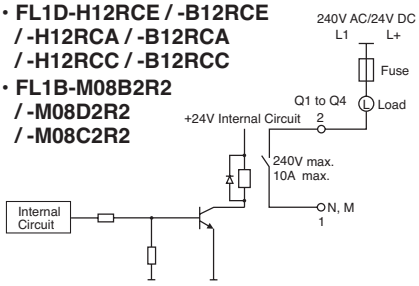
The voltage drop across the load (R4) must be less than 40V while the sensor is turned off.

Condition 3: $P_{R4}\ (W) \geq \dfrac{\{\text{Sensor power voltage (V)}\}^2}{\text{R4 resistance }(\Omega)} \times 3$ (3: recommended allowance)

Output Internal Circuits

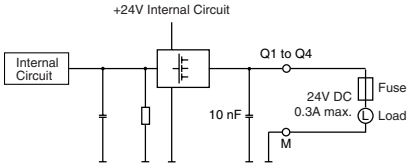
Relay Output

- **FL1D-H12RCE / -B12RCE / -H12RCA / -B12RCA / -H12RCC / -B12RCC**
- **FL1B-M08B2R2 / -M08D2R2 / -M08C2R2**



DC Output (Transistor Source Output)

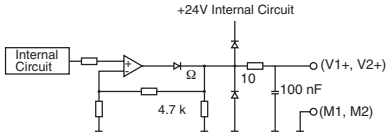
- **FL1D-H12SND**
- **FL1B-M08B1S2**



Note 6: When connecting to a DC input type PLC, use a negative common sink input type.

Analog Output

- **FL1D-K2B2**

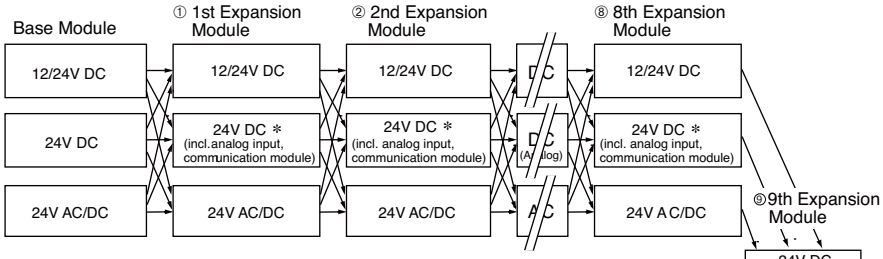


Instructions

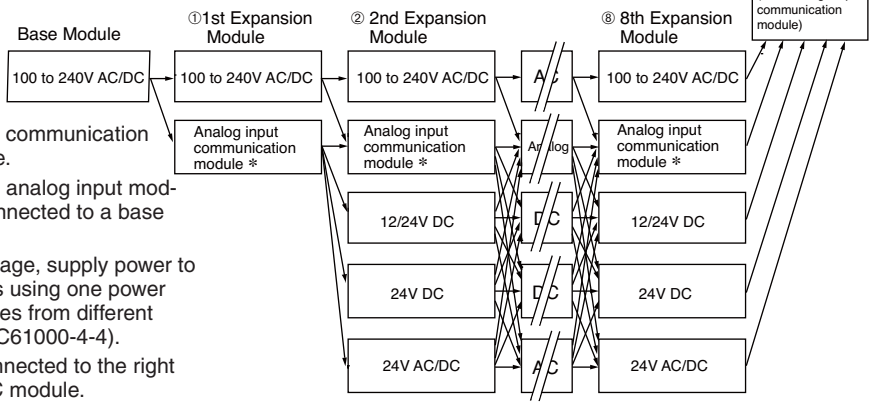
Module Expansion

Use the base module, expansion I/O modules, and communication modules according to the combinations shown on the right.

Base module of rated operating voltage 12/24V DC, 24V DC, and 24V AC/DC



Base module of rated operating voltage 100 to 240V AC/DC



LONWORKS® communication module:

＊ Only one LONWORKS® communication module can be installed at the far right end of the row.

- A maximum of 9 expansion I/O modules and communication modules can be connected to a base module.
- A maximum of 4 combination I/O modules, 4 analog input modules, and 1 analog output module can be connected to a base module.
- When using modules of the same power voltage, supply power to the base module and expansion I/O modules using one power supply. When power is supplied to the modules from different power supplies, EMC burst noise is 1 kV (IEC61000-4-4).
- A 100 to 240V AC/DC module cannot be connected to the right side of a 12/24V DC, 24V DC, or 24V AC/DC module.
- For analog input module and AS-Interface communication module, a module of any voltage can be connected to the left side. To the right side, however, a 100 to 240V AC/DC module cannot be connected.
- Before connecting and disconnecting modules, turn power off.

AS-Interface Communication Module

- A maximum of 4 AS-Interface communication modules can be connected to a base module.
- AS-Interface communication module can be connected to any base module and expansion I/O modules.
- A 100 to 240V AC/DC module cannot be connected to the right side of AS-Interface communication module.

LONWORKS® Communication Module

- LONWORKS® communication module can be connected to any base module and expansion I/O modules.
- Only one LONWORKS® communication module can be installed. Always install the module at the far right end.

⚠ Initialization after Power-up

- Initialization starts when the FL1D base module is powered up. When using the FL1D base module with display, an hourglass appears on the display during the initialization. When using the FL1D without display, the red LED flashes during the initialization.
- Initialization time

  When a memory cartridge is used: 10 seconds maximum
  When a memory cartridge is not used: 9 seconds maximum
- When more than 2 expansion I/O modules are connected to the base module, because the expansion I/O modules perform initialization after the power-up, the user program may take time to receive input signals of the expansion I/O module. For more information on expansion I/O units, see the following website.

  http://www.idec.com/faq/en/controller/fl1d01/

Wiring

Base Module and Expansion I/O Module

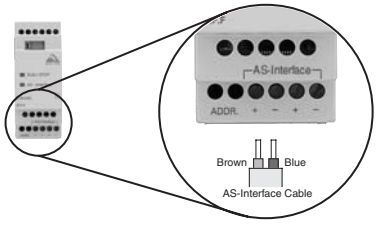
- Connect an IEC60127 approved fuse to the power supply for protection against overload and short circuit.
- Do not connect input wire and communication cable in parallel or near the power line, output line, or motor line. Also make sure that any noise source is not present nearby.
- Use 0.5 to 2.5 mm^2 wires (for one-wire) or 0.5 to 1.5 mm^2 wires (for two-wire) for power line, input line, and output line (tightening torque: 0.4 to 0.5 N·m).

LONWORKS® Communication Module

- Use LONWORKS® compatible cables for network wiring of the LONWORKS® communication module.

AS-Interface Communication Module

- When connecting AS-Interface cable to an AS-Interface communication module, make sure that the brown cable is connected to terminal +, and the blue cable to terminal –. The two + terminals and two – terminals are both connected internally.



Recommended Crimping Terminal

Stranded wires, single wires, and wires with ferrules can be connected to the FL1D SmartRelay.

When using ferrules, we recommend the following crimping terminals and crimping tools.

- For single wires

Cross section area	AWG	Phoenix Contact Type No.
0.3	22	AI0,5-10 WH
0.5	20	AI0,5-10 WH
0.75	18	AI0,75-8 GY
1.25	18	AI1,5-8 BK
2.0	16	AI2,5-8 BU
Crimping tool		CRIMPFOX ZA 3

- For 2 wires

Cross section area	AWG	Phoenix Contact Type No.
0.3	22	AI-TWIN 2 x 0,5-8 WH
0.5	20	AI-TWIN 2 x 0,5-8 WH
0.75	18	AI-TWIN 2 x 0,75-8 GY
1.25	18	AI-TWIN 2 x 1,5-8 BK
Crimping tool		CRIMPFOX ZA 3

MICROSmart Programmable Controller

All-in-one and slim type CPU modules
Powerful communication functions and flexible system expansion

WindLDR Ver. 4.7
Programming and Monitoring

• CPU Module

Type	Type No.	I/O Points
Slim	FC4A-D20K3	12 in / 8 out
	FC4A-D20S3	
	FC4A-D20RK1	
	FC4A-D20RS1	
	FC4A-D40K3	24 in / 16 out
	FC4A-D40S3	
All-in-One	FC4A-C10R2	6 in / 4 out
	FC4A-C16R2	9 in / 7 out
	FC4A-C24R2	14 in / 10 out

• I/O Modules

Module	I/O Points	Models
Input	8 in	2
	16 in	2
	32 in	1
Output	8 out	3
	16 out	3
	32 out	2
I/O	4 in / 4 out	1
	16 in / 8 out	1
Analog	2 in / 1 out	2
	2 in	1
	1 out	1

• AS-Interface Master Module

Type No.	AS-Interface Version
FC4A-AS62M	Ver. 2.1

• Option

Type No.	Models
HMI Module	1
HMI Base Module	1
Communication Adapter	3
Communication Module	3
Memory Cartridge	2
Clock Cartridge	1

c UL us LISTED

TÜV

CE

For details about the MicroSmart, see the catalog.

PS5R Switching Power Supply

SEMI-F47 compliant (120W/240W only). Certified by ERPI PEAC, an North American organization for testing and certifying SEMI-F47.

DIN rail mounting power supply. Width: 36 mm (30W/60W), 46 mm (90W), 50 mm (120W), 80 mm (240W)
Finger-safe spring-up terminals, AC universal input voltage (100V to 240V AC)

c UL us LISTED

TÜV

CE

• Specifications

Output	Input Voltage	Output Voltage	Output Current	Dimensions (mm)		
				H	W	D
30W	100 to 240V AC (85 to 264V AC / 100 to 370V DC compatible)	12 V	2.5 A	95	36	108
60W		24 V	1.3 A	95	36	108
90W			2.5 A	95	36	108
120W			3.75 A	115	46	121
240W	100 to 240V AC (85 to 264V AC / 100 to 350V DC compatible)		5.0 A	115	50	129
			10.0 A	125	80	149.5

Note: DC does not comply with safety standards.

⚠ Safety Precautions

- All IDEC SmartRelay devices are manufactured under IDEC's rigorous quality control system, but users must add a backup or fail-safe provision to the control system using the device in applications where heavy damage or personal injury may be caused in case the device should fail.
- Turn off the power to the device before starting installation, removal, wiring, maintenance, and inspection of the device. Failure to turn power off may cause electric shocks or fire hazard.
- Special expertise is required to install, wire, program, and operate the IDEC SmartRelay devices. People without such expertise must not use the IDEC SmartRelay devices.
- Read the user's manual or operating instruction sheet attached to the product to make sure of correct operation.

Specifications and other descriptions in this catalog are subject to change without notice.

IDEC

IDEC CORPORATION
7-31, Nishi-Miyahara 1-Chome, Yodogawa-ku, Osaka 532-8550, Japan
Tel: +81-6-6398-2571, Fax: +81-6-6392-9731
E-mail: products@idec.co.jp

IDEC CORPORATION (USA)
1175 Elko Drive, Sunnyvale, CA 94089-2209, USA
Tel: +1-408-747-0550 / (800) 262-IDEC (4332)
Fax: +1-408-744-9055 / (800) 635-6246
E-mail: opencontact@idec.com

IDEC CANADA LIMITED
Unit 22-151, Brunel Road Mississauga, Ontario, L4Z 1X3, Canada
Tel: +1-905-890-8561, Toll Free: (888) 317-4332
Fax: +1-905-890-8562
E-mail: sales@ca.idec.com

IDEC AUSTRALIA PTY. LTD.
2/3 Macro Court, Rowville, Victoria 3178, Australia
Tel: +61-3-9763-3244, Toll Free: 1800-68-4332
Fax: +61-3-9763-3255
E-mail: sales@au.idec.com

IDEC ELECTRONICS LIMITED
Unit 2, Beechwood, Chineham Business Park, Basingstoke, Hampshire RG24 8WA, UK
Tel: +44-1256-321000, Fax: +44-1256-327755
E-mail: sales@uk.idec.com

IDEC ELEKTROTECHNIK GmbH
Wendenstrasse 331, D-20537 Hamburg, Germany
Tel: +49-40-25 30 54 10, Fax: +49-40-25 30 54 24
E-mail: service@idec.de

IDEC (SHANGHAI) CORPORATION
Room 608-609, 6F, Gangtai Plaza, No. 700, Yan'an East Road, Shanghai 200030, P.R.C.
Tel: +86-21-5353-1000, Fax: +86-21-5353-1263
E-mail: idec@cn.idec.com

IDEC (SHANGHAI) CORPORATION
Beijing Office
Unit 1002, No. 10 Kuntai Building, Zhaowai Dajie, Zhao Yang District, Beijing, 100020, P.R.C.
Tel: +86-10-6599-5541, Fax: +86-10-6599-5540

IDEC (SHENZHEN) CORPORATION
Unit AB-3B2, Tian Xiang Building, Tian'an Shuma Cheng, Fu Tian District, Shenzen, Guang Dong 518040, P.R.C.
Tel: +86-755-8356-2977, Fax: +86-755-8536-2944

IDEC IZUMI (H.K.) CO., LTD.
Unit 1505-07, DCH Commercial Centre No. 25, Westlands Road, Quarry Bay, Hong Kong
Tel: +852-2803-8989, Fax: +852-2565-0171
E-mail: info@hk.idec.com

IDEC TAIWAN CORPORATION
8F-1, No. 79, Hsin Tai Wu Road, Sec. 1, Hsi-Chih, Taipei County, Taiwan
Tel: +886-2-2698-3929, Fax: +866-2-2698-3931
E-mail: service@idectwn.com.tw

IDEC IZUMI ASIA PTE. LTD.
No. 31, Tannery Lane #05-01, Dragon Land Building, Singapore 347788
Tel: +65-6746-1155, Fax: +65-6844-5995
E-mail: info@sg.idec.com

www.idec.com

Cat. No. EP1106-0 FEBRUARY 2006 14DNP PRINTED IN JAPAN