IDEC SmartRelay

Performance & Features

When you need a product you can rely on, is easy to use, and meets safety standards, look no further than IDEC. Our SmartRelays meet all industry standard approvals including UL, CE, C-tick and ABS (American Bureau of Shipping). Plus they are FM approved for Class 1 Div 2 hazardous locations. The bottom line is IDEC SmartRelays provide the right solution for all your control needs!

Why wait? Replace your complicated system of relays, timers, and counters with just one IDEC SmartRelay! These all-in-one controllers require less space in your control cabinet. And as you know, space in your panel is money in your pocket. Combine that with low maintenance and you've got a cost-effective product you can count on for all your control operations

Applications

Industrial Facility Systems

- Conveyor systems
- Elevator controls
- Liquid level controls
- Motor, pump and valve controls
- Water treatment and irrigation systems

Housing and Building Management

- Lighting controls
- HVAC
- Gate and door controls
- Shutter and sun blind controls
- Water and sprinkler systems

Unique Solutions

- Solar-electric systems
- Traffic light controls
- Ventilation systems on ships

Monitoring Systems

- Access controls
- Alarm systems
- Parking lot control monitoring

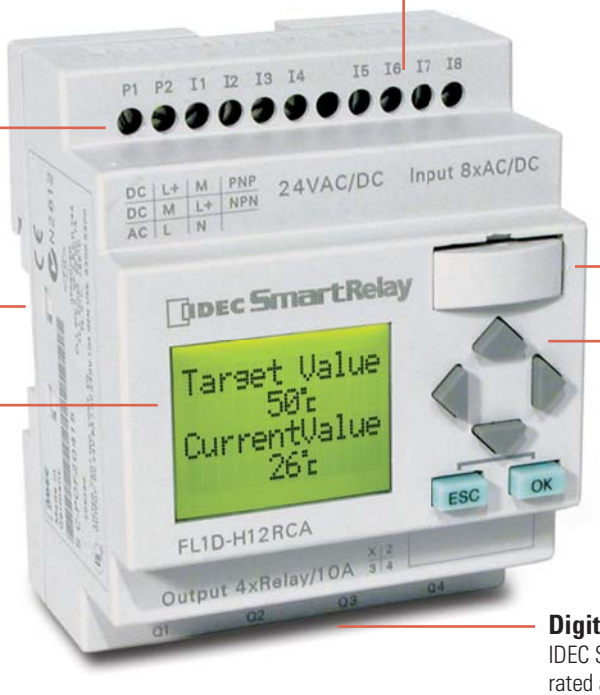
Performance & Features con't

Digital/Analog Inputs
Each SmartRelay is equipped with 8 digital inputs for you to utilize in your applications. On selected models such as FL1D-H12RCE, FL1D-B12RCE and FL1D-H12SND, inputs 5 and 6 can be used as fast inputs up to 2 Khz and inputs 7 and 8 can be configured as 0-10V analog inputs. A maximum of 24 digital inputs can be utilized with this system using digital expansion modules.

Universal Voltages
SmartRelays are available in 12/24VDC, 24VAC/DC, and 100-240VAC/DC voltages.

DIN Rail or Surface Mountable

Backlit LCD Display
System status — input, output, analog values, timers and counters — can be monitored through an embedded 4x12 LCD on your SmartRelay. This allows you to display a predefined message with up to 48 characters chosen from 103 special character types. You can now adjust the contrast on your display screen to your preference. Non-LCD versions are also available.



Multifunction Interface
If you prefer not to program your SmartRelay using the LCD and keypad, simply connect the interface cable to your PC and program with our WindLGC software instead. Or you can plug-in the special memory cartridge (FL1C-PM3) and have your SmartRelay operate the circuit program through the cartridge itself.

Operational Control Buttons
IDEC SmartRelays can be programmed with just the push of a button! Control buttons can be used to program, modify and change preset parameters. The four cursor keys can also be configured as inputs if needed.

Digital Outputs
IDEC SmartRelays are equipped with 4 relay outputs rated at 10A/pt. A maximum of 16 outputs can be configured with this system using digital expansion modules.

EEPROM memory
Never worry about your program being lost again! With IDEC SmartRelays, your program is stored in a non-volatile EEPROM.

Password Protection
Concerned about your program being copied or altered? IDEC SmartRelays keep you safe with a unique password protection scheme allowing end users to access certain parameters without seeing or modifying the actual program.

Large Program Capacity
Running out of program space is a thing of the past. IDEC SmartRelays can handle up to 130 function blocks (2000 bytes).

Integrated Functions
8 predefined basic function blocks and 28 special function blocks ensure that almost all your conventional switching devices — timers and counters — can be replaced. Three functions include a PI controller (e.g. for temperature control), a two-stage ramp function (e.g. for the control of frequency converters) and an analog multiplexer (e.g. for light control).

Quality
IDEC means quality and dependability you can trust and our SmartRelays are no exception. Each model is UL listed, CE certified, EMC compliant, FM approved for Class 1 Div 2 hazardous locations, C-tick compliant, Lloyds Registered, and ABS approved.

Selection Guide

Base Modules – with LCD

Appearance	Part Number	Voltage	Input Signal	Input	Output	With Clock
	FL1D-H12RCE	12/24V DC	DC I7 and I8 are used for digital/analog	PNP	Relay	Yes
	FL1D-H12SND	24V DC			Transistor Source	—
	FL1D-H12RCA	24V AC/DC	AC/DC	PNP/NPN	Relay	Yes
	FL1D-H12RCC	100-240V AC/DC		PNP		

Base Modules – without LCD

Appearance	Part Number	Voltage	Input Signal	Input	Output	With Clock
	FL1D-B12RCE	12/24V DC	DC I7 and I8 are used for digital/analog	PNP	Relay	Yes
	FL1D-B12RCA	24V AC/DC	AC/DC	PNP/NPN	Relay	Yes
	FL1D-B12RCC	100-240V AC/DC		PNP		

Digital I/O Expansion Modules

- 8-pt expansion module (4 in/4 out)
- Max. 4 digital expansion modules

Appearance	Part Number	Total I/O	Input Power	Input	Output
	FL1B-M08B2R2	8 (4 in/ 4 out)	12/24V DC	DC	Relay
	FL1B-M08B1S2		24V DC		Transistor Sink
	FL1B-M08C2R2		100-240V AC/DC	AC/DC	Relay
	FL1B-M08D2R2		24V AC/DC		

Analog I/O Expansion Modules

- 2-pt Analog input module
- 2-pt Analog output module
- 10-bit resolution
- Max. 4 analog input modules and 1 analog output module

Appearance	Part Number	Total I/O	Input Power	Input	Output
	FL1B-J2B2	2 (2 in/0 Out)	12/24V DC	0-10V, 4-20mA	—
	FL1D-K2B2	2 (0 in/2 Out)	24V DC	—	0-10V

LonWorks® Communication Module

- LonWorks® Communication module contains standard network variable type (SNVT) to achieve open network communication for building automation
- Maximum virtual inputs/analog inputs/outputs: 16/8/12 points
- An external interface file (XIF extension) unique to each LonWorks® module is needed to communicate through the LonWorks® network and can be downloaded at www.idec.com/smartrelay

Appearance	Part Number	Module	Input Power	Total I/O
	FL1B-CL1C12	LonWorks® Communication Module	24V AC/DC	Input: 16 points Analog Input: 8 points Output: 12 points

*LonWorks® is a registered trademark of Echelon

AS-Interface Communication Module

- The AS-Interface communication module provides optimum solutions for decentralized controls and savings in installation space and wiring
- Virtual I/O points: 4 inputs, 4 outputs

Appearance	Part Number	Module	Input Power	Total I/O
	FL1B-CAS2	AS-Interface Communication Module	30V DC	Input: 4 points Output: 4 points

Starter Kits

IDEC SmartRelay Starter Kit is an economical and ideal solution for first time IDEC SmartRelay users

- Package includes a base module, WindLGC programming software, programming cable, simulator switch (DC models only) and a user's manual

Starter Kits

Part Number	Description
SMARTSTART-BAC-D	FL1D-B12RCC, WindLGC software and programming cable
SMARTSTART-BDC-D	FL1D-B12RCE, WindLGC software, programming cable, and simulator switch
SMARTSTART-HAC-D	FL1D-H12RCC, WindLGC software and programming cable
SMARTSTART-HDC-D	FL1D-H12RCE, WindLGC software, programming cable, and simulator switch

User's Manual
FL9Y-B966-0

WindLGC Software
FL9Y-LP1CDW

Accessories

Part Number	Description
FL1C-PM3	Memory cartridge, with user defined protection feature
FL9Y-LP1CDW	Programming Software: WindLGC Ver. 5.0 CD w/Online Manual
FL1A-PC1	Programming Cable
BNDN1000	35mm Aluminum DIN Rail, 1m/3.28ft
BNL6	End Clips, Prevents modules from sliding off DIN Rail
MT-101	Memory Cartridge Removal Tool
FL1B-PSP1	Mounts Module Directly to Panel
FL1B-Y1371-SW8	8pt Input Simulator Switch, Used with 12, 24V DC Base Module Only
FL9Y-B966-0	FL1D User's Manual, Available for download at: www.idec.com/smartrelay
FC4A-USB	USB to RS232 Converter, For use with "USB Only" PC's

WindLGC

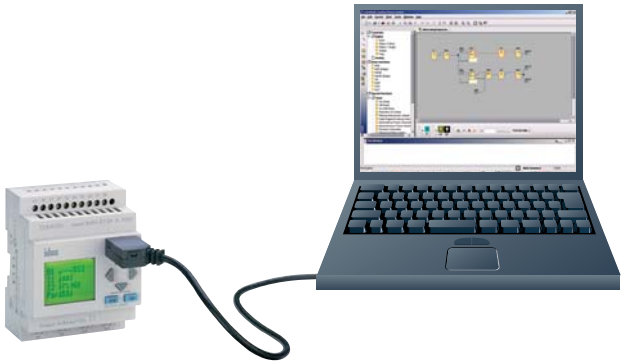
Programming Software

WindLGC is the exclusive programming software for the IDEC SmartRelay using Windows®. Edit, save, and print out your programs.

Features:

- Ladder programming
- Online Monitor
- Program Comparison
- Time Simulation
- Simplified connection of the functions
- Programs can be saved in PDF or JPG format

Just click the function blocks you need and link function blocks for easy wiring. Devise complicated circuits using the convenient functions of WindLGC.



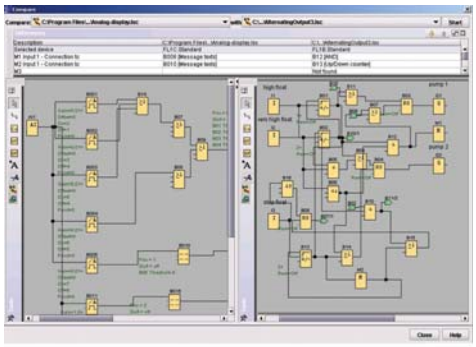
Part Number

Part Number	Description
FL9Y-LP1CDW	WindLGC programming software for IDEC SmartRelay

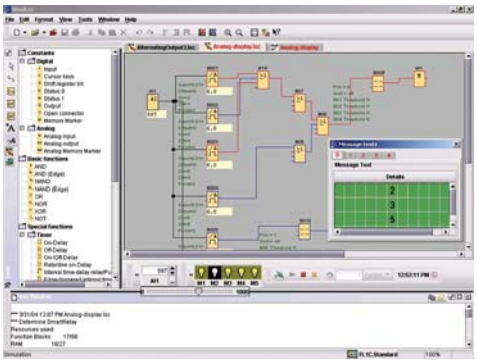
WindLGC system requirements:

- OS: Windows95/98/ME/NT/2000/XP/Vista
- CPU recommendation: Pentium 266MHz or higher
- Memory: 64MB or more
- RAM recommendation: 128MB
- Hard disk space: 90MB or more for installing WindLGC software.
- Monitor Recommendation: Display more than 800 x 600 dots and 256 colors
- Free download service, if upgrading from WindLGC Version 3.0 to Version 5.0, available at www.idec.com/usa

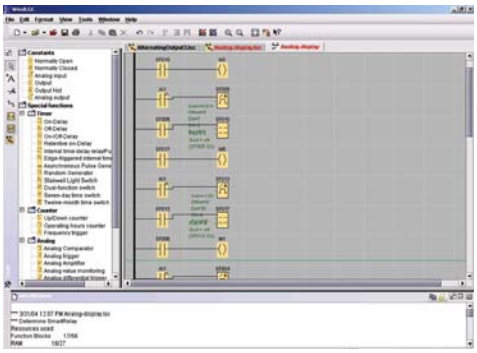
Program Comparison



Simulation Mode/Online Monitor



Ladder Programming



For more information, see the Automation Software section.

Visit **www.idec.com/downloads** for free upgrades or a free demo version.

Specifications

Base Modules

Base Module Part Number			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 63Hz	47 to 63Hz
	Current Draw		30 to 55mA (24V DC)	30 to 140mA (12V DC) 20 to 75mA (24V DC)	40 to 110mA (24V AC) 20 to 75mA (24V DC)	10 to 40mA (100V AC) 10 to 25mA (240V AC) 5 to 25mA (100V DC) 5 to 15mA (240V DC)
	Allowable Momentary Power Interruption		—	2ms (Typ.) (12V DC) 5ms (Typ.) (24V DC)	5ms (Typ.) (24V AC/DC)	10ms (Typ.) (100V AC/DC) 20ms (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 2.7VA (24V AC) 0.4 to 1.8W (24V DC)	1.1 to 4.6VA (100V AC) 2.4 to 6.0VA (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 [1]		2 (I5, I6), 2Khz maximum	2 (I5, I6), 2Khz 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	3.5kΩ	3.5kΩ	4.8kΩ	840kΩ
		Analog Input	78kΩ	76kΩ	—	—
	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	< 0.85mA (I1 to I6) < 0.05mA (I7, I8)	< 0.85mA (I1 to I6) < 0.05mA (I7, I8)	< 1.0mA	< 0.03mA
		ON Current	≥ 2mA (I1 to I6) ≥ 0.15mA (I7, I8)	≥ 1.5mA (I1 to I6) ≥ 0.1mA (I7, I8)	≥ 2.5mA	≥ 0.08mA 100V AC: 50ms (Typ.)
	Turn ON Time		1.5ms (Typ.) (I1 to I4) ≤ 1.0ms (I5, I6) 300ms (Typ.) (I7, I8)	1.5ms (Typ.) (I1 to I4) ≤ 1.0ms (I5, I6) 300ms (Typ.) (I7, I8)	1.5ms (Typ.)	240V AC: 30ms (Typ.) 100V DC: 25ms (Typ.) 240V DC: 125ms (Typ.)
	Turn OFF Time		1.5ms (Typ.) (I1 to I4) ≤ 1.0ms (I5, I6) 300ms (Typ.) (I7, I8)	1.5ms (Typ.) (I1 to I4) ≤ 1.0ms (I5, I6) 300ms (Typ.) (I7, I8)	15ms (Typ.)	100V AC: 65ms (Typ.) 240V AC: 105ms (Typ.) 100V DC: 95ms (Typ.) 240V DC: 125ms (Typ.)
	Wire Length		100 m [2]	100 m [2]	100 m	100 m

1. When selecting frequency trigger function.
2. 10m when connected to analog input (twisted pair cable)

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.

Base Module Part Number		FL1D-H12SND	FL1D-H12RCE FL1D-B12RCE	FL1D-H12RCA FL1D-B12RCA	FL1D-H12RCC FL1D-B12RCC
Output	Output	Transistor source	Relay	Relay	Relay
	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	—	10mA, 12V DC	10mA, 12V DC	10mA, 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, 10Hz)	10 million operations (no load, 10Hz)	10 million operations (no load, 10Hz)
	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	—	10Hz		10Hz
	Electrical Load	10Hz	—	—	—
	Resistive Load/Lamp Load [3]	10Hz	2Hz	2Hz	2Hz
	Inductive Load	0.5Hz	0.5Hz	0.5Hz	0.5Hz

3. For fluorescent lamps, if the inrush current exceeds the allowable value, use an appropriate relay.

Expansion I/O Module

Expansion I/O Module Part Number			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		—	—	50/60Hz (47 to 63Hz)	50/60Hz (47 to 63Hz)	—	—
	Current Draw		30 to 45mA	30 to 140mA (12V DC) 20 to 75mA (24V DC)	40 to 110mA (24V AC) 20 to 75mA (24V DC)	10 to 30mA (100V AC) 10 to 20mA (240V AC) 5 to 15mA (100V DC) 5 to 10mA (240V DC)	25 to 50mA	25 to 50mA
	Allowable Momentary Power Interruption		—	2ms (Typ.) (12V DC) 5ms (Typ.) (24V DC)	5ms (Typ.) (24V AC/DC)	10ms (Typ.) (100V AC/DC) 20ms (Typ.) (240V AC/DC)	2ms (Typ.) (12V AC/DC) 5ms (Typ.) (24V AC/DC)	5ms (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 2.7VA (24V AC) 0.4 to 1.8W (24V DC)	1.1 to 3.5VA (100V AC) 2.4 to 4.8VA (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	≥ 8.5V DC	≥ 12V AC/DC	≥ 79V AC ≥ 79V DC	—	—
		OFF Current	< 0.85mA	< 0.85mA	< 1.0mA	< 0.03mA	—	—
		ON Current	≥ 2mA	≥ 1.5mA	≥ 2.5mA	≥ 0.08mA	—	—
	Turn ON Time		1.5ms (Typ.)	1.5ms (Typ.)	1.5ms (Typ.)	100V AC: 50ms (Typ.) 240V AC: 30ms (Typ.) 100V DC: 25ms (Typ.) 240V DC: 15ms (Typ.)	—	—
	Turn OFF Time		1.5ms (Typ.)	1.5ms (Typ.)	1.5ms (Typ.)	100V AC: 65ms (Typ.) 240V AC: 105ms (Typ.) 100V DC: 95ms (Typ.) 240V DC: 125ms (Typ.)	—	—
	Analog Input Points		—	—	—	—	2	—
	Analog Input Range		—	—	—	—	0 to 10V (max. rated input: 28.8V) 0 to 20mA (max. rated input: 40mA)	—
	Digital Resolution		—	—	—	—	10 bits (0 to 1000)	—
	Input Error		—	—	—	—	±1.5% (of full scale)	—
	Input Impedance		—	—	—	—	76kΩ (0 to 10V) 155 to 250Ω (0 to 20mA)	—
	Sampling Cycle		—	—	—	—	50ms	—

Expansion I/O Module Part Number		FL1B-M08B1S2	FL1B-M08B2R2	FL1B-M08D2R2	FL1B-M08C2R2	FL1B-J2B2	FL1D-K2B2
Output	**Wire Length**	100 m	100 m	100 m	100 m	10 m (twisted-pair shielded cable)	—
	Output	Transistor source	Relay	Relay	Relay	—	Analog
	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	—	10mA, 12V DC	10mA, 12V DC	10mA, 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, 10Hz)	10 million operations (no load, 10Hz)	10 million operations (no load, 10Hz)	—	—
	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	—	—	—	—	—	5kΩ
	Analog Value Conversion Interval	—	—	—	—	—	50ms
	Wire Length	—	—	—	—	—	10 m (twisted-pair shielded cable)
Switching Rate	**Mechanical Load**	—	10Hz	10Hz	10Hz	—	—
	Electrical Load	10Hz	—	—	—	—	—
	Resistive Load/Lamp Load	10Hz	2Hz	2Hz	2Hz	—	—
	Inductive Load	0.5Hz	0.5Hz	0.5Hz	0.5Hz	—	—

General

Item		Specification	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 [1]	—
Relative Humidity		10 to 95% RH [2]	IEC60068-2-30
Atmospheric Pressure		795 to 1080 hPa	—
Operating Condition		No corrosive gas	—
Degree of Protection		IP20	—
Vibration Resistance		5 to 9Hz, amplitude 3.5mm 9 to 150Hz, acceleration 9.8m/s^2 (1G)	IEC60068-2-6
Shock Resistance		147m/s^2 (15G)	IEC60068-2-27
Drop Test		50mm	IEC60068-2-31
Drop Test (packaged)		1m	IEC60068-2-32
Emission		Class B Group 1 [3]	EN55011
Electrostatic Discharge		8kV air discharge 6kV contact discharge [4]	IEC61000-4-2
Electromagnetic Fields		10V/m	IEC61000-4-3
Burst Pulses		2kV (power line) 1kV (I/O signal line) [5]	IEC61000-4-4
Energy Carriers Single Pulse (Surge) [6] (FL1B-H12RCC, FL1B-B12RCC only)		1kV (power line) normal 2kV (power line) common	IEC61000-4-5
Communication Cable		0.5 to 2.5mm^2 (one wire) 0.5 to 1.5mm^2 (two wires)	—
Terminal Style		Finger-safe type [7]	—

1. No freezing
2. No condensation
3. Class A for AS-Interface communication module
4. 8kV (air discharge), 4kV (contact discharge) for AS-Interface communication module
5. 1kV (criteria A), 2kV (criteria B) for AS-Interface communication module
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.
7. Tightening torque 0.4 to 0.5 N·m

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
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

1. 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.
2. AS-Interface communication module is IP20 terminal type.
3. AS-Interface cable is connected to the terminal block.

LonWorks® Communication Module

Specifications

Power Voltage		24V AC/DC (20.4 to 26.4V AC / 20.4 to 28.8V DC)
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)

Configuration Property

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

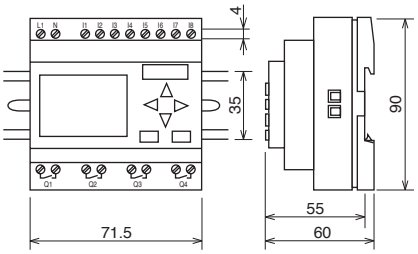
Network Variables

	SNVT Type	Application
Input Network	SNVT_obj_request: (Quantity 1)	Request object mode
Variable	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	SNVT_obj_status: (Quantity 1)	Output object status
Variable	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

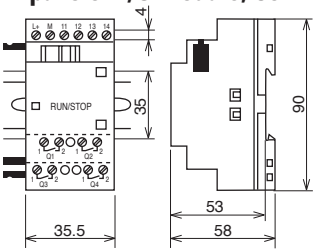
Block Diagram

Dimensions (mm)

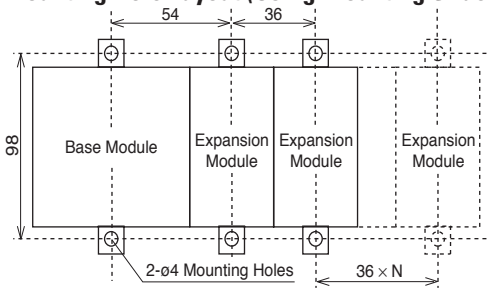
Base Module



Expansion I/O Module, Communication Module



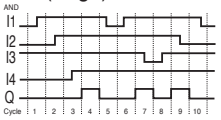
Mounting Hole Layout (Using Mounting Slides)



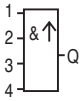
Function Blocks

General

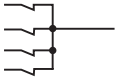
• AND (Edge)



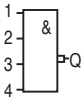
Edge detection with edge evaluation (pos. edge)



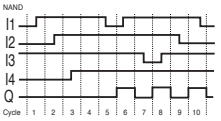
• NAND



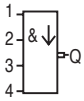
Parallel connection of normally closed contacts



• NAND (Edge)

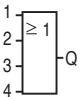


Edge detection with edge evaluation (pos. edge)



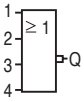
• OR

Parallel connection of normally open contacts

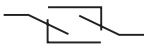


• NOR

Series connection of normally closed contacts



• XOR



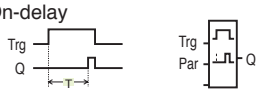
Double changeover contact

• NOT

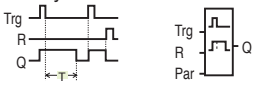
Connection of closed contact

Special

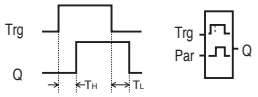
• On-delay



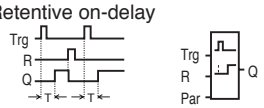
• Off-delay



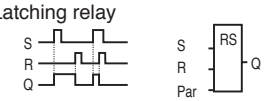
• On-/Off-delay



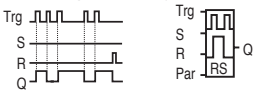
• Retentive on-delay



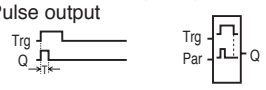
• Latching relay



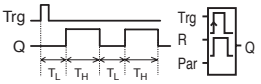
• Current impulse relay



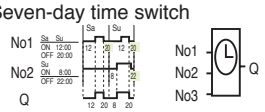
• Interval time-delay relay/ Pulse output



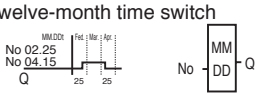
• Edge-triggered interval time-delay relay



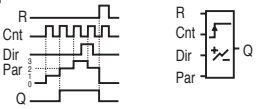
• Seven-day time switch



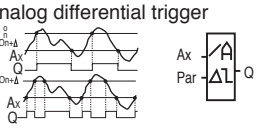
• Twelve-month time switch



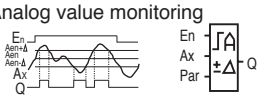
• Up/down counter



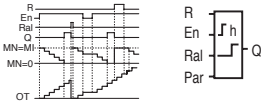
• Analog differential trigger



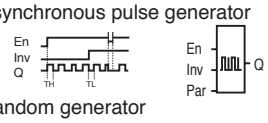
• Analog value monitoring



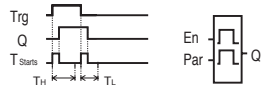
• Operating hours counter



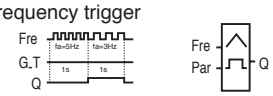
• Asynchronous pulse generator



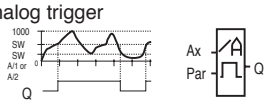
• Random generator



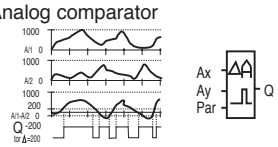
• Frequency trigger



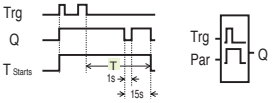
• Analog trigger



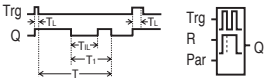
• Analog comparator



• Stairwell light switch

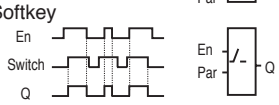


• Dual-function switch



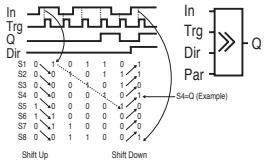
• Message texts

• Softkey

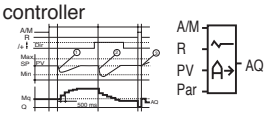


• Analog amplifier

• Shift register



• PI controller



• Analog ramp control

• Analog multiplexer