Mechtric

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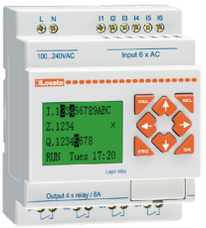
DELTA PHOENIX CONTACT GIC Lovato electric

Base modules



LRD10...
LRD12...

LRD20R D024 P1

Order code	Auxiliary supply voltage	In/Out❶	Qty per pkg	Wt
			n°	[kg]
Base modules.				
LRD12R D024	24VDC	8/4 relay	1	0.241
LRD12T D024	24VDC	8/4 transistor	1	0.220
LRD20R D024	24VDC	12/8 relay	1	0.360
LRD12R A024	24VAC	8/4 relay	1	0.250
LRD20R A024	24VAC	12/8 relay	1	0.368
LRD10R A240	100...240VAC	6/4 relay	1	0.242
LRD20R A240	100...240VAC	12/8 relay	1	0.367
LRD20R D012	12VDC	12/8 relay	1	0.360
Base modules with RS485 onboard.				
LRD20R D024 P1	24VDC	12/8 relay	1	0.360

❶ Inputs/Outputs.

General characteristics
FUNCTIONS
- Addition-Subtraction on variables
- Multiplication-Division on variables
- Comparator on variables
- HMI display for parameter viewing and programming
- PWM output
- High speed input (1kHz)
- PID function
- Multiplexer
- Analog ramp
- Register transfer (numerical variables and status)
- Shift function
- Boolean logic blocks
- LRD20R D024 P1 with RS485 port onboard.

Operational characteristics
- 8A Ith current relay outputs for AC and DC versions
- 0.3A 24VDC transistor outputs for DC version
- 0...10V analog inputs for DC version
- Version: modular for mounting on 35mm DIN rail (IEC/EN 60715) or M4x15mm screw fixing
- Type of terminal: Screw
- IEC degree of protection: IP20.

Certifications and compliance
Certifications obtained: UL Listed, for USA and Canada (cULus - File E300049), as Programmable Controllers. Compliant with standards: IEC/EN 61131-2, UL508, CSA C22.2 n°142.

Expansion and communication modules

LRE...

Order code	Auxiliary supply voltage	In/Out❶	Qty per pkg	Wt
			n°	[kg]
Expansion and communication modules❷.				
LRE02A D024	24VDC	2 analog outputs 0...10V/0...20mA	1	0.160
LRE04A D024	24VDC	4 analog outputs 0...10V/0...20mA	1	0.160
LRE04P D024	24VDC	4 PT100 temp. sensor inputs	1	0.160
LRE08R D024	24VDC	4/4 relay	1	0.171
LRE08T D024	24VDC	4/4 transistor	1	0.151
LRE08R A024	24VAC	4/4 relay	1	0.180
LRE08R A240	100...240VAC	4/4 relay	1	0.180
LRE P00	Modbus-RTU protocol communication unit		1	0.134

❶ Inputs/Outputs.
❷ The expansion modules are supplied with connector for base module.
❸ Expansion modules supplied at 24VDC.

INPUTS/OUTPUTS REFERENCE TABLE

BASE MODULES				BASE + DIGITAL EXPANSIONS
Type	Power supply	Inputs	Outputs	Max I/O
LRD12RD024	24VDC	6 digital + 2 digital/analog	4 relay	12 + 24
LRD12TD024	24VDC	6 digital + 2 digital/analog	4 transistor	12 + 24
LRD20RD012	12VDC	8 digital + 4 digital/analog	8 relay	20 + 24❸
LRD20RD024	24VDC	8 digital + 4 digital/analog	8 relay	20 + 24
LRD20RD024P1	24VDC	8 digital + 4 digital/analog	8 relay	20 + 24
LRD10RA240	100...240VAC	6 digital	4 relay	10 + 24
LRD20RA240	100...240VAC	12 digital	8 relay	20 + 24
LRD12RA024	24VAC	8 digital	4 relay	12 + 24
LRD20RA024	24VAC	12 digital	8 relay	20 + 24
EXPANSION AND COMMUNICATION MODULES				
LRE02AD024	24VDC	—	2 analog	—
LRE04AD024	24VDC	4 analog	—	—
LRE04PD024	24VDC	4 PT100	—	—
LRE08RD024	24VDC	4 digital	4 relay	—
LRE08TD024	24VDC	4 digital	4 transistor	—
LRE08RA240	100...240VAC	4 digital	4 relay	—
LRE08RA024	24VAC	4 digital	4 relay	—
LREP00	24VDC	RS485 Modbus-RTU protocol slave communication unit		

Lovato electric

Accessories

LRX 1V3 D024

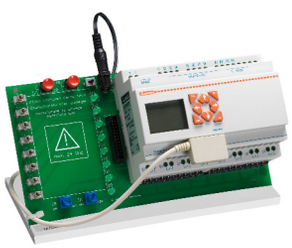
LRX C03

LRX P01

LRX C02

Order code	Description	Qty per pkg	Wt
		n°	[kg]
LRX M00	Program backup memory	1	0.011
LRX C00	PC (RS232)-LRD programming cable	1	0.083
LRX C03	PC (USB)-LRD programming cable and LRX P01 (RS232)-LRD direct connection	1	0.080
LRX SW	Programming and supervision software (CD-ROM)	1	0.057
LRX 1V3 D024	Power supply unit, 100...240VAC/24VDC, 1.3A	1	0.220
LRX D00	User's manual Italian edition (paper)	1	0.400
LRX D01	User's manual English edition (paper)	1	0.400
LRX D02	User's manual Spanish edition (paper)	1	0.400
LRX D03	User's manual French edition (paper)	1	0.400
LRX P01	HMI operator panel, 24VDC, RS232, RS485 (Modbus-RTU Master)	1	0.200
LRX C02	PC-LRX P01 programming cable	1	0.180
LRX SW P01	LRX P01 editor software (CD-ROM)	1	0.057

Starter kits



LRD DEM...

Order code	Description	Qty per pkg	Wt
		n°	[kg]
Starter kits.			
LRDKIT 12R D024	LRD starter kit complete with LRD12R D024 base module, LRX SW software and LRX C03 cable	1	0.424
LRDKIT 12R A024	LRD starter kit complete with LRD12R A024 base module, LRX SW software and LRX C03 cable	1	0.424
LRDKIT 10R A240	LRD starter kit complete with LRD10R A240 base module, LRX SW software and LRX C03 cable	1	0.424
Training kits.			
LRD DEM 12R D024	Training kit with LRD12R D024 mounted on inputs/outputs simulation board	1	0.920
LRD DEM 20R D024	Training kit with LRD20R D024 mounted on inputs/outputs simulation board	1	1.060

Power supply unit and backup memory general characteristics
- The LRX 1V3 D024 power supply produces a direct-current voltage to power the LRD base and expansion modules in circumstances when 24VDC is not available in the application. The power supply can also be used to power eventual 24VDC auxiliary circuits.
- The LRX M00 backup memory allows to save the user's program and to simply and quickly transfer it to the base modules.

HMI panel LRX P01 general characteristics
- 24VDC power supply
- RS232 communication port:
  - Direct connection to LRD using LRX C00
  - Connection to other devices using a standard D-SUB 9 serial cable
- RS485 communication port
- LRX SW P01 editor software for specific pages and easy use
- IEC degree of protection: IP65.

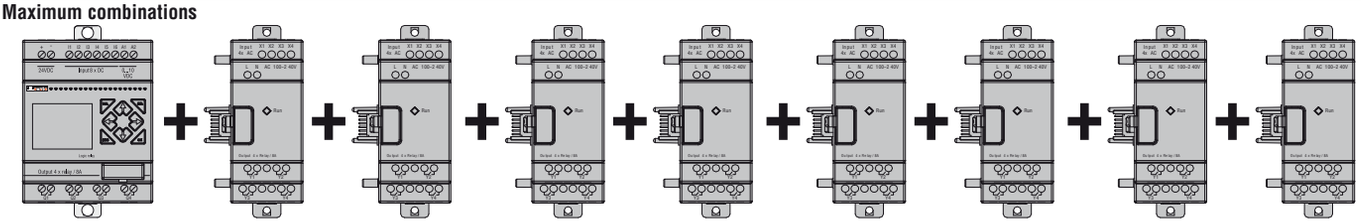
FUNCTIONS
- Send commands
- Read status
- Provide static and dynamic texts
- Write variables
- Read variables:
  - Numerical value
  - Bar graph
  - Trend line.

Programming
At any time and with extreme simplicity, LRD can be set up and reprogrammed to satisfy new requirements and improve the operation of a system.
Programming is simple and intuitive and can be done directly on the base module keypad or by personal computer, connected by LRX C00 (RS232) or LRX C03 (USB) interface and using the relative LRX SW software.
With a personal computer, two programming language locs can be used: FBD (Function Block Diagrams) and LADDER (contact scheme).
Both of the following can be accomplieshed:
- Simulate the program directly "off-line" on a personal computer to test if it runs correctly.
- Use the supervision mode to check the project "on-line".

There are 8 function keys on front, dedicated to on-board adjustment, control and supervision of digital input and output status, analog input values, time and date entry and the operation status of the micro PLC itself.

Certifications and compliance
Certifications obtained: UL Listed, for USA and Canada (cULus - File E300049), as Programmable Controllers for power supply and HMI units anbd base module of kits.
Compliant with standards: IEC/EN 61131-2, UL508, CSA C22.2 n°142.

Maximum combinations

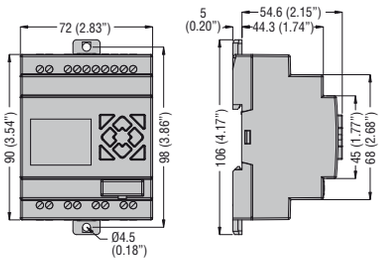


Base unit 12 inputs + 8 outputs | 4 inputs + 4 outputs | 4 inputs + 4 outputs | 4 inputs + 4 outputs | 4 PT100 temperature sensor inputs | 2 outputs, 0...10V or 0...20mA | 2 outputs, 0...10V or 0...20mA | 4 inputs, 0...10V or 0...20mA | RS485 Modbus-RTU (slave)

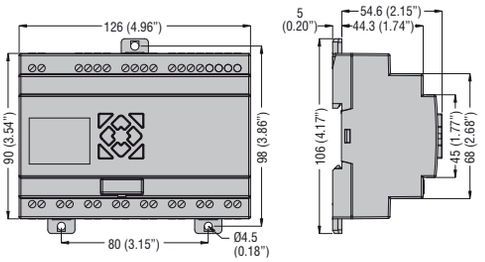
- 24 digital inputs (4 configurable as analog 0...10V input)
- 20 digital outputs (relay, transistor or mixed)
- 4 analog inputs for PT100 temperature sensors
- 4 analog inputs configurable as 0...10V or 0/4...20mA
- 4 analog outputs configurable as 0...10V or 0/4...20mA
- 1 RS485 communication module.

N.B. The sequence and the maximum number of the products given above must be respected for correct operation.

Base Modules

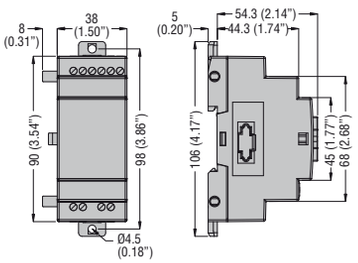


LRD10... - LRD12...



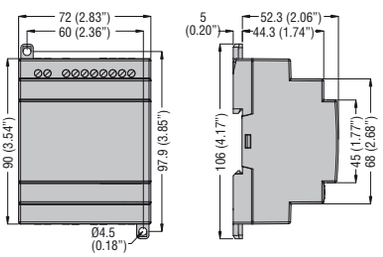
LRD20...

Expansion and Communication Modules

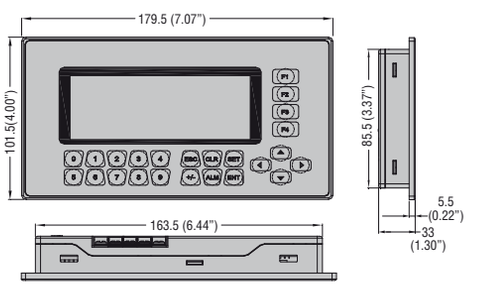


LRE... expansion/communication module

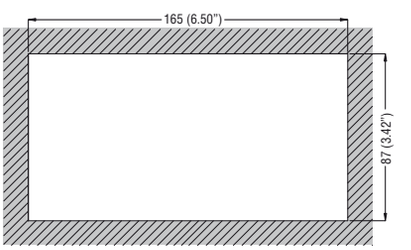
Accessories



LRX1V3 D024 power supply unit



LRX P01 HMI operator panel



Cutout

BASE MODULES		LRD... D012	LRD... D024	LRD... A024	LRD... A240
POWER SUPPLY					
IEC rated voltage Ue (frequency range)		12VDC	24VDC	24VAC (50...60Hz)	100...240VAC (50...60Hz)
Operating limits		10.4...14.4VDC	20.4...28.8VDC	20.4...28.8VAC (47...63Hz)	85...265VAC (47...63Hz)
Average current consumption		265mA	125mA (LRD12...) 185mA (LRD20...)	290mA	100mA
DIGITAL INPUTS					
Rated voltage		12VDC	24VDC	24VAC (50-60Hz)	100-240VAC (50-60Hz)
Input voltage	State 0	<2.5VDC	<5VDC	<6VAC	<40VAC
	State 1	>7.5VDC	>15VDC	>14VAC	>79VAC
Delay time	0 to 1	4ms (0.5ms for high speed)	4ms (0.5ms for high speed)	90ms	50/45ms (Ue=120VAC) - 22/18ms (Ue=240VAC)
	1 to 0	4ms (0.3ms for high speed)	4ms (0.3ms for high speed)	90ms	50/45ms (Ue=120VAC) - 90/85ms (Ue=240VAC)
ANALOG INPUTS FOR DC VERSIONS ONLY					
Input signal range		0...10V		—	—
Display resolution		0.01V		—	—
Conversion		12bit		—	—
Current consumption at 10VDC		<0.17mA		—	—
Input impedance		>40kΩ		—	—
Admissible overload		14VDC	28VDC	—	—
Sampling time		5...20ms (LADDER); 2...10ms (FBD)		—	—
Maximum cable length		≤30m/98ft of screened type		—	—
DIGITAL OUTPUTS					
Type of output / IEC rated current Ith		Relay / 8A (LDR...R... / LRE08R... only) Transistor / 0.3A 24VDC (LRD...T... / LRE08T... only)			
Applied voltage		Max 265VAC/30VDC (LDR...R... / LRE08R... only) 10...28.8VDC (LRD...T... / LRE08T... only)			
AMBIENT CONDITIONS					
Operating temperature		-20...+55°C			
Storage temperature		-40...+70°C			
Relative humidity		20...90% without condensation			
HOUSING					
Version		Modular for mounting on 35mm DIN rail (IEC/EN 60715) or M4x15mm screw fixing			
Connections	Type of terminal	Screw			
	Conductor section	0.14...2.5mm^2 / 26...14AWG			
	Tightening torque	0.6Nm / 0.4lbft			
	Maximum cable length	≤100m/328ft			
IEC degree of protection		IP20			

EXPANSION MODULES	LRE02A D024		LRE04A D024	LRE04P D024
POWER SUPPLY				
IEC rated voltage Ue	24VDC		24VDC	24VDC
Operating limits	20.4...28.8VDC		20.4...28.8VDC	20.4...28.8VDC
ANALOGIC INPUTS/OUTPUTS				
Type of channels	2 outputs configurable for voltage or current		4 outputs configurable for voltage or current	4 inputs for PT100 temperature sensors
Operating limits	0...10V	0...20mA	0...10V	-100...+600°C
Display resolution	0.00...10.00V	0.00...20.00mA	0.00...10.00V	-100.0...+600.0°C
Resolution	10mV	40µA	10mV	0.1°C
Accuracy	±2.5%		±2.5%	±1%
Power consumption	70mA		70mA	70mA

COMMUNICATION MODULE	LRE P00
IEC rated voltage Ue	24VDC
RS485 connection	Isolated
Baud rate	4800...38400bps
Terminator resistor	Integrated 120Ohm
Cable length	0.14...1.5mm^2 (26...16AWG)
Tightening torque	0.6Nm (5.4lb-in)

HMI OPERATOR PANEL	**LRX P01**
SUPPLY	
IEC rated voltage Ue	24VDC
Operating limits	20.4…26.4 VDC (-15%...+10%)
Power consumption	1.9 W
AMBIENT CONDITIONS	
Operating temperature	0…+55°C
Storage temperature	-40…+70°C
Altitude	≤2000m
Relative humidity	10…95% (non-condensing)
Maximum pollution degree	2 (IEC/EN 61131-3)
Vibration resistance	15g
Shock resistance	0.5g
Conductor section	0.4…3.3 mm^2 (22-12 AWG)
Tightening torque	1.8 Nm / 10.4 lbin
IEC degree of protection	IP65

POWER SUPPLY UNIT	**LRX 1V3D024**
IEC rated voltage Ue	100...240VAC
Current consumption	0.85A
Output current	1.3A, 24VDC
Cable length	0.14...1.5mm^2 (26...16AWG)
Tightening torque	0.6Nm (5.4lb-in)

SS/SA/SX/SV PLC

SS2 SERIES

- 32-bit CPU
- 14 I/O on MPU (relay or transistor output)
- 8k program steps/Data register 5k words
- High speed pulse output
- Built in RS-232 and RS-485 ports (master or slave)
- PID auto-tuning support
- 4 points of 10 kHz pulse output
- 8 points of high-speed counters: 20 kHz/4 points, 10 kHz/4 points
- RTC

SX SERIES

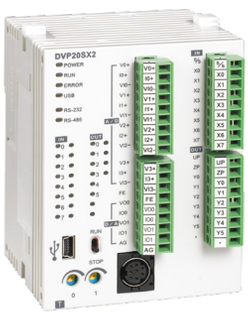
- 6 digital I/O on MPU (relay or transistor output)
- 2 analogue input, 2 analogue output
- 8K program steps
- 2 points of high-speed pulse output: 50 kHz/10 kHz

SA2 SERIES

- 32-bit CPU
- 12 I/O on MPU (relay or transistor output)
- 16k program steps/Data register 10k words
- 4 points of high-speed pulse output: 100 kHz/2 points, 10 kHz/2 points
- 8 points of high-speed pulse input: 100 kHz/2 points, 10 kHz/6 points, 1 set of A/B phase 50 kHz
- RTC (operates for 15 days without battery)
- Built in RS-232 and RS-485 ports (master or slave)
- High speed left side expansion
- Supports PLC-Link

SE SERIES

- 32-bit CPU
- 12 I/O on MPU (relay or transistor output)
- 16K program steps/Data register 12k words
- Built in Ethernet
- 4 points of high-speed pulse output: 100 kHz /2 points, 10 kHz/2 points
- 8 points of high-speed pulse input: 100 kHz/2 points, 10 kHz/6 points
- RTC (operates for 15 days without battery)
- Built in mini USB and RS-485 ports (master or slave)
- High speed left side expansion
- Supports PLC-Link



SX2 SERIES

- 32-bit CPU
- 14 digital I/O on MPU (relay or transistor output)
- 4 analogue input, 2 analogue output
- 16K program steps/Data register 10k words
- 4 points of high-speed pulse output: 100 kHz/2 points, 10 kHz/2 points
- 8 points of high-speed pulse input: 100 kHz/2 points, 10 kHz/6 points
- RTC (operates for 7 days without battery)
- Built in mini USB, RS-232 and RS-485 ports (master or slave)
- High speed left side expansion
- Supports PLC-Link

SV SERIES

- 32-bit CPU ASCIC dual processors
- 28 I/O on MPU
- 30K program steps
- High speed 4 axes of 200 kHz pulse output
- RTC
- Auto backup function to prevent the loss of programs
- 12k word file register + 10k word data register
- Built in RS-232 and RS-485 ports (master or slave)
- High speed left side expansion

Order Code	Digital I/O	Analogue I/O	Comm. Ports	Weight (kg)
DEVDVP14SS211R	8 in/8 out relay	-	RS-232 + RS-485	0.097
DEVDVP14SS211T	8 in/8 out transistor	-		
DEVDVP12SA211R	8 in/4 out relay	-	RS-232 + 2 x RS-485	0.14
DEVDVP12SA211T	8 in/4 out transistor	-		
DEVDVP10SX11R	4 in/2 out relay	2 A in/ 2 A out	RS-232 + RS-485	0.14
DEVDVP10SX11T	4 in/2 out transistor			
DEVDVP20SX211R	8 in/6 out relay	4 A in/ 2 A out	RS-232 + RS-485 + USB	0.243
DEVDVP20SX211T	8 in/6 out transistor			
DEVDVP12SE11R	8 in/4 out relay	-	2 x RS-485 + USB + Ethernet	0.14
DEVDVP12SE11T	8 in/4 out transistor	-		
DEVDVP28SV11R2	16 in/12 out relay	-	RS-232 + RS-485	0.26
DEVDVP28SV11R2	16 in/12 out transistor	-		

SS/SA/SX/SV PLC

DEVDVP06XAS

DEVDVP16SP...

DEVDVP01PUS

DEVDVPCOPMSL

Expansion Modules (right side)

Order Code	Description (dimensions see diagram below H1 = 90mm , W = 25.2mm, W1 = 60mm)	Weight (kg)
DEVDVP08SM11N	8 input module	0.12
DEVDVP16SM11N	16 input module	0.13
DEVDVP32SM11N	32 input module (requires DVPACAB7A10 & DVPAETBID32A)	0.13
DEVDVPACAB7A10	I/O connection Cable for DEVDVP32SM11N	0.08
DEVDVPAETBID32A	I/O terminal block for DEVDVP32SM11N	0.29
DEVDVP06SN11R	6 output module relay	0.16
DEVDVP08SN11R	8 output module relay	0.14
DEVDVP08SN11T	8 output module transistor	0.13
DEVDVP32SN11TN	32 transistor output module (requires DVPACAB7B10 & DVPAETBOR16A x2)	0.74
DEVDVPACAB7B10	I/O connection Cable for DVP32SN11TN	0.08
DEVDVPAETBOR16A	I/O terminal block (16 points), relay output for DEVDVP32SN11TN	0.33
DEVDVP08SP11R	4 input/4 output module relay	0.14
DEVDVP08SP11T	4 input/4 output module transistor	0.13
DEVDVP16SP11R	8 input/8 output module relay	0.15
DEVDVP16SP11T	8 input/8 output module transistor	0.14
DEVDVP04ADS	4 analogue input module (-10~+10V, -20~+20mA, 14 bit, built in RS-485)	0.19
DEVDVP06ADS	6 analogue input module (-10~+10V, -20~+20mA, 14 bit, built in RS-485)	0.19
DEVDVP02DAS	2 analogue output module (0~10V, 0~20mA, 12 bit, built in RS-485)	0.19
DEVDVP04DAS	4 analogue output module (0~10V, 0~20mA, 12 bit, built in RS-485)	0.2
DEVDVP06XAS	4 analogue input (-10~+10V, -20~+20mA, 14 bit) 2 analogue output module (0~10V, 0~20mA, 12 bit, built in RS-485)	0.18
DEVDVP04PTS	4 channel temperature PT100 input module (0.1°C resolution, built in RS-485)	0.2
DEVDVP04TCS	4 channel temperature Thermocouple type J,K,R,S.T input module (0.1°C resolution, built in RS-485)	0.19
DEVDVP01PUS	Servo position control module (single axis, 200kHz)	0.19
DEVDVPDT01S	DeviceNet communication module (Slave)	0.2
DEVDVPPF01S	Profibus communication module (Slave)	0.2

Expansion Modules (left side) high speed

Order Code	Description (dimensions see diagram below H1 = 90mm , W = 31.1mm, W1 = 60mm)	Weight (kg)
DEVDVP04ADSL	4 analogue input module (1~5V, 0~5V, -5~+5V, 0~10~+10V, 4~20mA, 0~20mA, -20~+20mA, 16 bit)	0.22
DEVDVP04DASL	4 analogue output module (0~10~+10V, 4~20mA, 0~20mA, 16 bit)	0.21
DEVDVP02LCSL	2 channel load cell module (20 bit)	0.23
DEVDVPDNETSL	DeviceNet communication module (Master)	0.16
DEVDVPEN01SL	Ethernet (MODBUS TCP/IP) communication module	0.16
DEVDVPCOPMSL	CANopen communication module (Master)	0.17
DVPSCM12-SL	RS-422/RS-485 communication module	0.18
DVPSCM52-SL	RS-422/RS-485 communication module with BACnet	0.16
DEVDVPPF02SL	PROFIBUS DP Slave module	0.17

Remote I/O Modules

Order Code	Description (dimensions see diagram below H1 = 90mm , W = 25.2mm, W1 = 60mm)	Weight (kg)
DEVDVPRTU485	RS-485 remote I/O module	0.22
DEVDVPRTUDNET	DeviceNet remote I/O module	0.22
DEVDVPRTUEN01	Ethernet (Modbus TCP/IP) remote I/O module	0.22
DEVDVPRTUPD01	PROFIBUS remote I/O module	0.22

See also accessories common to all types on page 6-10
For software, programming and application support contact 1800 252 995 or sales@mechtric.com.au

SS/SA/SX/SV PLC

MPU Specifications

Type		DVP-SS2	DVP-SA2	DVP-SX2	DVP-SE	DVP-SV2
Digital I/O		8DI + 6DO	8DI+4DO	8DI+6DO	8DI + 4DO	16DI + 12DO
Analogue I/O		-	-	4AI+2AO	-	-
Max I/O (with ext mod)		480	492	494	492	512
Comms. Ports		RS-232, RS-485	RS-232, 2 x RS-485	RS-232, RS-485, USB	2 x RS-485, USB, Ethernet	RS-232, RS-485
High speed pulse out		4 x 10kHz	2 x 100kHz, 2 x 10kHz	2 x 100kHz, 2 x 10kHz		4 x 200kHz
Right side expansion		Max. 8 modules	Max. 8 modules	Max. 8 modules		Max. 8 modules
Left side expansion		-	-	Max. 8 modules		Max. 8 modules
Program capacity		7920 steps	15872k steps			
Program execution speed		LD: 0.54uS, MOV: 3.4uS			LD: 0.64μs, MOV: 2μs	0.24uS
Control method		Cyclic scan system				
Auxiliary Relay (M)		4096 points		4096 points	4096 points	4096 points
Timers (T)		256 points		256 points	256 points	256 points
Counters (C)		233 points		232 points	232 points	235 points
High speed counters		22 points		23 points	20 points	18 points
Step point (S)		1024 points		1024 points	1024 points	1024 points
Data Register		5k words	10k words	10k words	12k words	10k words + 10k words file register
Input	Type	DC (sink or source)				
	Current	24VDC 5mA				
	Impedance	4.7kΩ				4.7kΩ (200kHz), 3.3kΩ (20kHz)
	Max freq.	X0~X3 – 20kHz X4~X7 – 10kHz	X0~X2 – 100kHz X3~X7 – 10kHz	X0, X2 – 100kHz X1, X3 – 15KHz X4~X7 – 10kHz	X0~X2 – 100kHz X3~X7 – 10kHz	X0, X1, X4, X5 – 200kHz X10, X11, X14, X15 – 20KHz X6, X7, X12, X13, X16, X17 – 10kHz
	Analogue	-		-20 to 20mA -10 to 10V 4 to 20mA	-	-
Output	Type	Relay (NO) or Transistor				
	Max freq.	Relay – 1Hz Transistor Y0~Y3 – 10kHz Y4, Y5 – 1kHz	Relay – 1Hz Transistor Y0, Y2 – 100kHz Y1, Y3 – 10kHz	Relay – 1Hz Transistor Y0, Y2 – 100kHz Y1, Y3 – 10kHz Y4, Y5 – 1kHz	Relay – 1Hz Transistor Y0, Y2 – 100kHz Y1, Y3 – 10kHz	Relay – 1Hz Transistor Y0~Y4, Y6 – 200kHz Y5, Y7, Y10~Y13 – 10kHz Y14~Y17, Y20 – 1kHz
	Voltage	250VAC, <30VDC (relay), 5-30VDC (transistor)				
	Current	1.5A (relay), 0.5A (transistor)				1.5A (relay), 0.3A (transistor)
	Analogue	-	-	-20 to 20mA -10 to 10V 4 to 20mA	-	-
Power Supply		24VDC (-15%~+20%)				
Power Consumption		1.8W	1.8W	4.7W		6W
Dimensions (H x W x D)		90 x 25.2 x 60	90 x 37.4 x 60	101 x 70 x 53.2	90 x 37.4 x 60	101 x 70 x 53.2

EH-3 PLC

- 32-bit CPU ASCIC dual processors
- Up to 80 I/O on MPU
- 30K program steps
- High speed 4 axes of 200 kHz pulse output
- RTC
- Auto backup function to prevent the loss of programs
- 10k word file register + 12k word data register
- Built in RS-232 and RS-485 ports (master or slave)
- High speed expansion modules (for –L type)
- Supports PLC-Link
- Supports 2 –axis linear/arc interpolation motion control
- AC power supply

Order Code	Digital I/O	High Speed I/O	Weight (kg)
DEVDVP16EH00R3	8 in/8 out relay	2 x 200kHz input	0.5
DEVDVP16EH00R3	8 in/8 out transistor	2 x 200kHz input, 2 x 200kHz output	
DEVDVP20EH00R3	12 in/8 out relay	2 x 200kHz input	0.52
DEVDVP20EH00R3	12 in/8 out transistor	2 x 200kHz input, 2 x 200kHz output	
DEVDVP32EH00R3	16 in/16 out relay	4 x 200kHz input	0.652
DEVDVP32EH00T3	16 in/16 out transistor	4 x 200kHz input, 2 x 200kHz output	
DEVDVP32EH00R3-L	16 in/16 out relay – left side expansion	4 x 200kHz input	0.652
DEVDVP32EH00T3-L	16 in/16 out transistor – left side expansion	4 x 200kHz input, 2 x 200kHz output	
DEVDVP40EH00R3	24 in/16 out relay	4 x 200kHz input	0.71
DEVDVP40EH00T3	24 in/16 out transistor	4 x 200kHz input, 4 x 200kHz output	
DEVDVP64EH00R3	32 in/32 out relay	4 x 200kHz input	0.836
DEVDVP64EH00T3	32 in/32 out transistor	4 x 200kHz input, 4 x 200kHz output	
DEVDVP80EH00R3	40 in/40 out relay	4 x 200kHz input	0.948
DEVDVP80EH00T3	40 in/40 out transistor	4 x 200kHz input, 4 x 200kHz output	

Expansion Modules (right side)

Order Code	Description (dimensions see diagram below H x W x W2 mm)	Weight (kg)
DEV DVP08HM11N	8 input module 24VDC power supply (90 x 40 x 82)	0.124
DEVDVP16HM11N	16 input module 24VDC power supply (90 x 55 x 82)	0.16
DEVDVP32HM11N	32 input module 24VDC power supply (90 x 143.5 x 82)	0.355
DEVDVP08HN11R	8 output module relay 24VDC power supply (90 x 40 x 82)	0.13
DEVDVP08HN11T	8 output module transistor 24VDC power supply (90 x 40 x 82)	0.12
DEVDVP32HN00R	32 output module relay 24VDC power supply (90 x 143.5 x 82)	0.66
DEVDVP32HN00T	32 output module transistor 24VDC power supply (90 x 143.5 x 82)	0.59
DEVDVP08HP11R	4 input/4 output module relay 24VDC power supply (90 x 40 x 82)	0.136
DEVDVP08HP11T	4 input/4 output module transistor 24VDC power supply (90 x 40 x 82)	0.116
DEVDVP16HP11R	8 input/8 output module relay 24VDC power supply (90 x 55 x 82)	0.225
DEVDVP16HP11T	8 input/8 output module transistor 24VDC power supply (90 x 55 x 82)	0.21
DEVDVP32HP00R	16 input/16 output module relay AC power supply (90 x 143.5 x 82)	0.436
DEVDVP32HP00T	16 input/16 output module transistor AC power supply (90 x 143.5 x 82)	0.398
DEVDVP48HP00R	24 input/24 output module relay AC power supply (90 x 174 x 82)	0.616
DEVDVP48HP00T	24 input/24 output module transistor AC power supply (90 x 174 x 82)	0.576
DEVDVP04ADH3	4 analogue input module (-10~+10V, -20~+20mA, 14 bit, built in RS-485) (90 x 60 x 82)	0.3
DEVDVP04DAH3	4 analogue output module (0~ 10V, 0~20mA, 12 bit, built in RS-485) (90 x 60 x 82)	0.3
DEVDVP06XAH3	4 analogue input (-10~+10V, -20~+20mA, 14 bit) 2 analogue output module (0~ 10V, 0~20mA, 12 bit, built in RS-485) (90 x 60 x 82)	0.3
DEVDVP04PTH2	4 channel temperature PT100 input module (0.1°C resolution, built in RS-485) (90 x 60 x 82)	0.3
DEVDVP04TCH2	4 channel temperature Thermocouple type J,K,R,S.T input module (0.1°C resolution, built in RS-485)	0.3
DEVDVP01PU-H2	Servo position control module (single axis, 200kHz) (90 x 60 x 82)	0.3
DEV DVP01HCH2	1 channel high-speed counter module (90 x 40 x 82)	0.3
DEV DVPPF02H2	Profibus communication module (Slave) (90 x 40 x 82)	0.3

For left side high speed expansion modules see page 6-7

Function Cards

Order Code	Description	Weight (kg)
DEVDVPF232	RS-232 port conversion (COM 2)	0.03
DEVDDVPF422	RS-422 port conversion (COM 2)	0.03
DEVDVPF232S	RS-232 port extension (COM 3)	0.03
DEVDVPF485S	RS-485 port extension (COM 3)	0.03
DEVDVPF2AD	2 analogue input card (-10~+10V, -20~+20mA, 12 bit)	0.03
DEVDVPF2DA	2 analogue output card (0~ 10V, 0~20mA, 12 bit)	0.03
DVP-FEN01	Ethernet (Modbus TCP)	0.03
DVP-512FM	Data Backup Memory Card	0.03

EH-3 PLC

EH3 MPU Specifications

Type		DVP16EH00*3	DVP20EH00*2	DVP32EH00*2L	DVP40EH00*2	DVP64EH00*2	DVP80EH00*2
Digital I/O		8DI+8DO	12DI+8DO	16DI+16DO	24DI + 16DO	32DI + 32DO	40DI + 40DO
Max I/O (with ext mod)		512					
Comms. Ports		RS-232, RS-485					
High speed pulse out (transistor out)		2 x 200kHz			4 x 200kHz		
Right side expansion		Max. 8 modules					
Left side expansion		-		Max. 8 modules	-		
Program capacity		<32k steps					
Program execution speed		0.24uS					
Control method		Cyclic scan system					
Auxiliary Relay (M)		4096 points					
Timers (T)		256 points					
Counters (C)		235 points					
High speed counters		18 points					
Step point (S)		1024 points					
Data Register		12k words + 10k words file register					
Input	Type	DC (sink or source)					
	Current	24VDC 5mA					
	Impedance	4.7kΩ (200kHz), 3.3kΩ (20kHz), 4.7kΩ (10kHz)					
	Max freq.	X0, X1, X4, X5, X10, X11 and X15 – 200kHz (excluding X10 and X11 on DVP20EH) X10, X11 – 20kHz on DVP20EH X2, X3, X6, X7, X12, X13, X16 and X17 – 10kHz X20 and above are normal input points					
Output	Type	Relay (NO) or Transistor					
	Max freq.	Relay – 1Hz Transistor Y0, Y2 – 200kHz Y1 and Y3~Y7 – 10kHz Y10 and above are normal output points		Relay – 1Hz Transistor Y0, Y2, Y4 and Y6 – 200kHz Y1, Y3, Y5 and Y7 – 10kHz	Relay – 1Hz Transistor Y0~Y3, Y4, Y6 – 200kHz Y5 and Y7 – 10kHz Y10 and above are normal output points		
	Voltage	250VAC, <30VDC (relay), 5-30VDC (transistor)					
	Current	2A (relay), 0.5A (transistor)					
Power Supply		100~240VAC (-15%~+20%)					
Power Consumption		50VA		60VA		80VA	
Dimensions (H x W x W2 mm)		90 x 113 x 82		90 x 143.5 x 82	90 x 153.5 x 82	90 x 202 x 82	90 x 266 x 82

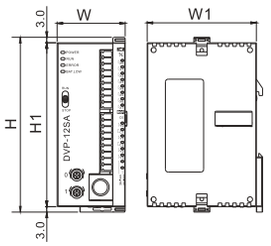
***Specify output type R = relay, T = transistor**

Accessories all types

Order Code	Description (dimensions see diagram left H x W x W1 mm)
DEVDVPACAB2A30	Program upload/download cable, PC (9 PIN D-SUB)<->PLC / 3M
DEVDVPPS01	Power supply 85-264VAC input – 1A 24VDC output (90 x 36.5 x 82)
DEVDVPPS02	Power supply 85-264VAC input – 2A 24VDC output (90 x 55 x 82)
DEVDVPPS05	Power supply 85-264VAC input – 5A 24VDC output (90 x 60 x 140)
DEVDVPPCC01	Memory card
DEVDVPDU01	Set up unit with digital display
DEVDVPTAPCN01	DeviceNet/CANopen distribution box (1 into 2)
DEVTAPCN02	DeviceNet/CANopen distribution box (1 into 4)

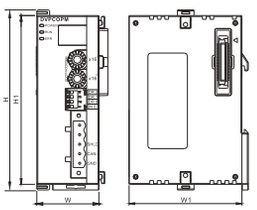
* Software is available for free download from www.delta.com.tw

SE/SX/SS2/SA2 Series PLC



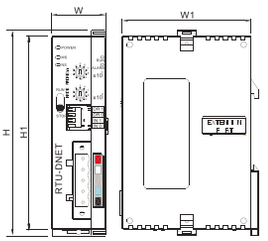
Model Name	H	H1	W	W1
DVP14SS211R/T	96	90	25.2	60
DVP12SS211S	96	90	25.2	60
DVP12SA211R/T	96	90	37.4	60
DVP12SE11R/T	96	90	37.4	60
DVP10SX11R/T	96	90	37.4	60

Left-Side High-Speed Extension Modules



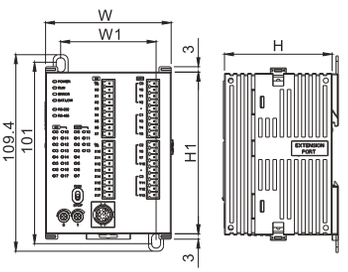
Model Name	H	H1	W	W1
DVPEN01-SL	96	90	33.1	60
DVPCOPM-SL	96	90	33.1	60
DVPDNET-SL	96	90	33.1	60
DVPPF02-SL	96	90	33.1	60
DVPSCM12-SL	96	90	33.1	60
DVPSCM52-SL	96	90	33.1	60
DVP04 AD-SL	96	90	33.1	60
DVP04DA-SL	96	90	33.1	60
DVP01LC-SL	96	90	33.1	60
DVP02LC-SL	96	90	33.1	60
DVP201LC-SL	96	90	33.1	60
DVP202LC-SL	96	90	33.1	60
DVP211LC-SL	96	90	33.1	60

Remote I/O Modules



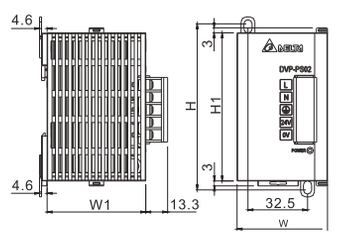
Model Name	H	H1	W	W1
RTU-DNET	96	90	25.2	60
RTU-485	96	90	25.2	60
RTU-EN01	96	90	25.2	60
RTU-PD01	96	90	25.2	60

SV2/SX2/MC Series PLC



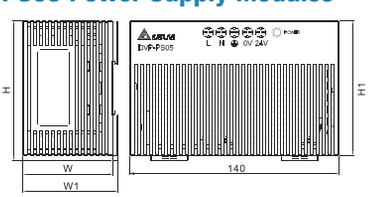
Model Name	H	H1	W	W1
DVP28SV11R2/T2	60	90	70	53.2
DVP20SX211R/T/S	60	90	70	53.2
DVP10MC11T	60	90	70	53.2

PS01/02 Power Supply Modules



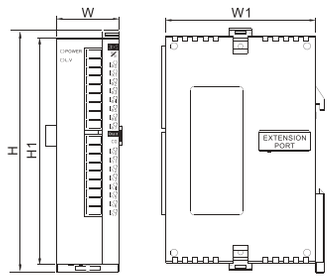
Model Name	H	H1	W	W1
DVPPS01	100	90	36.5	60
DVPPS02	100	90	55	60

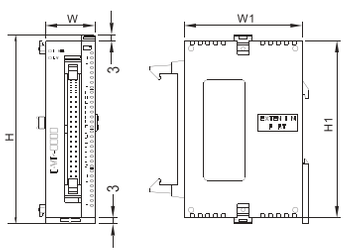
PS05 Power Supply Modules



Model Name	H	H1	W	W1
DVPPS05	93.3	90	60	63.4

S Series I/O & Extension Modules

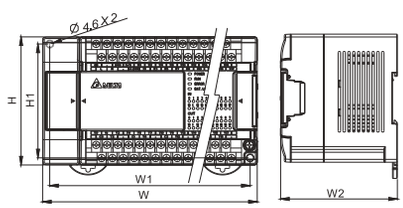




Model Name	H	H1	W	W1
DVP08SM11N	96	90	25.2	60
DVP06SN11R	96	90	25.2	60
DVP08SN11R/T/TS	96	90	25.2	60
DVP08SP11R/T/TS	96	90	25.2	60
DVP16SP11R/T/TS	96	90	25.2	60
DVP16SN11T	96	90	25.2	60
DVP16SN11TS	96	90	25.2	60
DVP04 AD-S	96	90	25.2	60
DVP04 AD-S2	96	90	25.2	60
DVP06 AD-S	96	90	25.2	60
DVP02DA-S	96	90	25.2	60
DVP04DA-S	96	90	25.2	60
DVP04DA-S2	96	90	25.2	60
DVP06XA-S	96	90	25.2	60
DVP06XA-S2	96	90	25.2	60
DVP04PT-S	96	90	25.2	60
DVP06PT-S	96	90	25.2	60
DVP04TC-S	96	90	25.2	60
DVP01PU-S	96	90	25.2	60
DVPPF01-S	96	90	25.2	60
DVPDT01-S	96	90	25.2	60

Model Name	H	H1	W	W1
DVP32SN11TN	96	90	25.2	60
DVP32SM11N	96	90	25.2	60

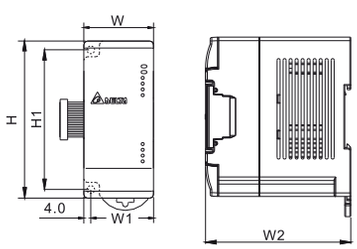
EH3 Series PLC



Model Name	H	H1	W	W1	W2
DVP16EH00R3/T3	90	80	113	103	82
DVP20EH00R3/T3	90	80	113	103	82
DVP32EH00M3	90	80	143.5	133.5	82
DVP32EH00R3/T3	90	80	143.5	133.5	82
DVP32EH00R3-L	90	80	143.5	133.5	82
DVP32EH00T3-L	90	80	143.5	133.5	82
DVP40EH00R3/T3	90	80	158.8	153.8	82
DVP48EH00R3/T3	90	80	174	164	82
DVP64EH00R3/T3	90	80	212	202	82
DVP80EH00R3/T3	90	80	276	266	82

* The dimension of DVP-EH3 series is the same as DVP-EH2 series

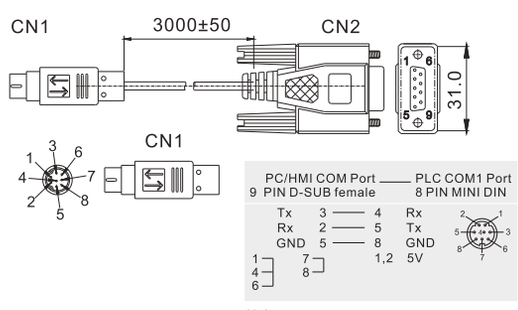
EH3 Series I/O & Extension Modules



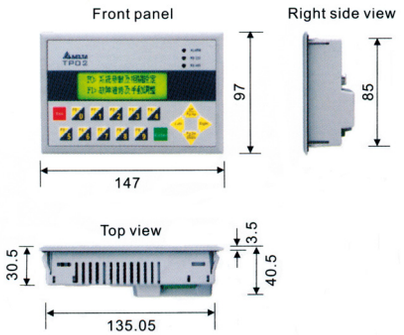
Model Name	H	H1	W	W1	W2
DVP08HM11N	90	80	40	36	82
DVP16HM11N	90	80	55	51	82
DVP32HM11N	90	80	143.5	133.5	82.2
DVP08HN11R/T	90	80	40	36	82
DVP32HN00R/T	90	80	143.5	133.5	82.2
DVP08HP11R/T	90	80	40	36	82
DVP16HP11R/T	90	80	50	51	82
DVP32HP00R/T	90	80	143.5	133.5	82.2
DVP48HP00R/T	90	80	174	164	82.2
DVP04 AD-H2	90	80	60	56	82
DVP04DA-H2	90	80	60	56	82
DVP06XA-H2	90	80	60	56	82
DVP04PT-H2	90	80	60	56	82
DVP04TC-H2	90	80	60	56	82
DVP01PU-H2	90	80	60	56	82
DVPDT02-H2	90	80	40	46	82
DVPCP02-H2	90	80	40	46	82
DVPPF02-H2	90	80	40	46	82
DVP04 AD-H3	90	80	60	56	82
DVP04DA-H3	90	80	60	56	82
DVP06XA-H3	90	80	60	56	82

* The dimension of DVP-EH3 series is the same as DVP-EH2 series

PIN Definition of DVPACAB2 A30

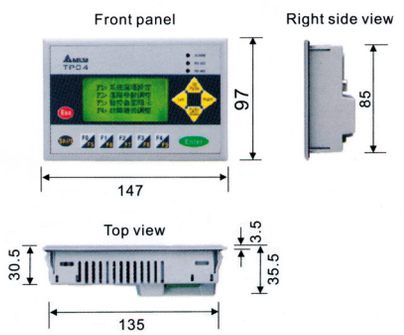


TP Series Text Panel

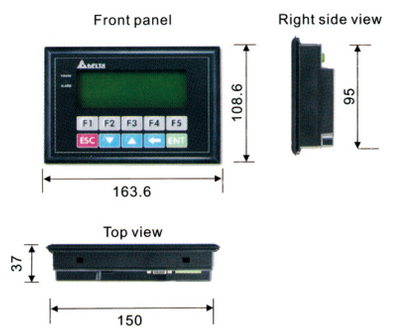


- Backlit LCD display
- Text and picture panel
- Built in RS-232 and RS-485 ports
- TP04P series with built PLC 8k steps
- Built in software functions, value input/display options, text, meter, and graphics
- Real time clock (Except TP02G)
- Password function

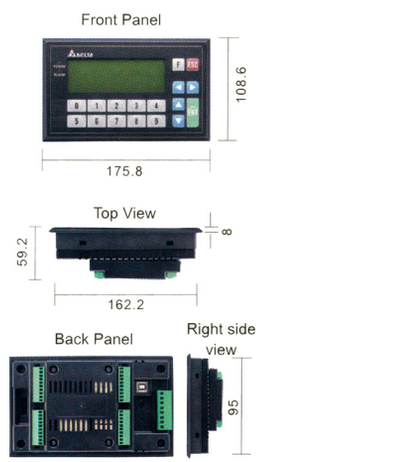
TP02G-AS1



TP04G-AS2



TP04G-AL2



TP04P

Order Code	Description	Weight (kg)
DEVTP02GAS1	Text panel 71 x 22mm display 10 function keys	0.24
DEVTP04GAS2	Text panel 67 x 32mm display 5 function keys	0.24
DEVTP04GAL2	Text panel 101 x 35mm display 5 function keys	0.27
DEVTP04P16TP1R	Text panel 101 x 35mm display 5 function keys with PLC 8I/80	0.45

Software is available for free download from www.delta.com.tw

Specifications:

Model	TP02G-AS1	TP04G-AS2	TP04G-AL2	TP04P-16TP1R
Display Type	STN LCD			
Display Colour	Monochromatic			
Screen Pixels	160 x 32 pixels	128 x 64 pixels	192 x 64	
Back-light Life	50,000 hours @ 25°C			
Display Size	72 x 22mm	67 x 32mm	101.8 x 35.24mm	
Program Memory	256K Bytes			1M Bytes
Ports for Download	COM1 (RS-232)			
Communication Port	COM1 (RS-232) COM2 (RS-485)	COM1 (RS-232/RS-422) COM2 (RS-485)	COM1 (RS-232/RS-422) COM2 (RS-485)	COM 2 (RS-485) COM 3 (RS-485)
Extension Slot	Slot for program copy card			
Real Time Clock	None	Built in		
System Keys	6	7	5	7
Function Keys	10	5	5	10
Operation Voltage	24Vdc (-10% to +20%)			
Power Consumption	3W max	3.5W max	4W max	5.2W max
Back Up Battery	3V lithium CR2032 – battery life 5 years			
Buzzer	85dB			
Operating Temperature	0 to 50°C			
Storage Temperature	-20 to + 60°C			
IP Rating	IP65 from front			
Panel cutout	136 x 85 mm		151 x 96 mm	163 x 96 mm
Dimensions	147 x 97 x 35.5 mm		163.6 x 108.6 x 37mm	163.6 x 108.6 x 59.2mm

DOP B Series HMI

DOP-B03...211

DOP-B05S111

DOP-B07E415

- Backlit TFT LCD touch screen display.
- 65k colour display on all models
- Powerful CPU
- Three communications ports, RS-232, RS-485 and USB
- Ethernet available on some models
- Real time clock
- Master slave function to construct network
- Password function
- DOPSoft screen editor and configuration software
- eServer data collection software
- eRemote remote control software allows viewing and monitoring on remote PC or Android device
- 10" VGA version supports video input for live video

Order Code	Description	Weight (kg)
DEVDOPB03S211	4.3" TFT LCD HMI	0.23
DEVDOPB03E211	4.3" TFT LCD HMI with Ethernet	0.27
DEVDOPB05S111	5.6" TFT LCD HMI	0.67
DEVDOPB07S515	7" TFT LCD HMI	0.8
DEVDOPB07E515	7" TFT LCD HMI with Ethernet	0.8
DEVDOPB08S515	8" TFT LCD HMI	1.23
DEVDOPB08E515	8" TFT LCD HMI with Ethernet	1.23
DEVDOPB10S615	10.1" widescreen TFT LCD HMI	1.52
DEVDOPB10E615	10.1" widescreen TFT LCD HMI with Ethernet	1.52

Software is available for free download from www.delta.com.tw

Specifications (3.5", 5.6" and 7")

Model		DOP-B03S211	DOP-B03E211	DOP-B05S111	DOP-B07S515	DOP-B07E415
Display Type		4.3" TFT LCD		5.6" TFT LCD	7" TFT LCD	
Display Colour		65,536 colours				
Screen Resolution		480 x 272 pixels		320 x 234 pixels	800 x 600 pixels	
Back-light Life		<20000 hours half-life @ 25°C				
Display Size mm		95.04 x 53.85		113.28 x 84.7	141 x 105.75	
CPU Type		32-bit RISC				
Operating System		Delta Real Time OS				
NOR Flash ROM		128MB				
SDRAM		64MB				
Back up memory		16MB				
USB		1 USB client V2.0, 1 USB host V1.1				
Serial COM Port	COM 1	RS-232/RS-485		RS-232		
	COM 2	RS-485/RS-422		RS-485/RS-422	RS-232/RS-485/RS-422	
	COM 3	-		RS-485/RS-422	RS-232/RS-485/RS-422	
Ethernet		-	IEEE802.3/ IEEE802.3u 10/100Mbps	-		IEEE802.3/ IEEE802.3u 10/100Mbps
Memory Card		-			SD Card	
Real Time Clock		Built In				
Operation Voltage		24Vdc (-10% to +15%) (requires isolated power supply)				
Power Consumption		2.64W		3W	7.68W	
Back Up Battery		3V lithium CR2032 (approx.. 3 years life)				
Buzzer		Multi-Tone 85dB				
Aux Sound Output						Stereo jack
Operating Temperature		0 to 50°C				
Storage Temperature		-20 to + 60°C				
IP Rating		IP65 from front				
Dimensions w x h x d mm		129 x 103 x 39		184 x 144 x 50		
Panel Cutout Size mm		118.8 x 92.8		172.4 x 132.4		

DOP B Series HMI

DOP-B08E515

DOP-B10E615

Specifications (8" and 10")

Model		DOP-B08S515	DOP-B08E515	DOP-B10S615	DOP-B10E615
Display Type		8" TFT LCD		10.1" Widescreen TFT LCD	
Display Colour		65,536 colours			
Screen Resolution		800 x 600 pixels		1024 x 600 pixels	
Back-light Life		<10000 hours half-life @ 25°C			
Display Size mm		162 x 121.5		226 x 128.7	
CPU Type		32-bit RISC			
Operating System		Delta Real Time OS			
NOR Flash ROM		128MB			
SDRAM		64MB			
Back up memory		16MB			
USB		1 USB client V2.0, 1 USB host V1.1			
Serial COM Port	COM 1	RS-232			
	COM 2	RS-232/RS-485/RS-422		RS-232/RS-485/RS-422 with built in isolated power circuit	
	COM 3	RS-232/RS-485/ RS-422	RS-232/RS-485		
Ethernet		-	IEEE802.3/ IEEE802.3u 10/100Mbps	-	IEEE802.3/ IEEE802.3u 10/100Mbps
Memory Card		SD Card support			
Real Time Clock		Built In			
Operation Voltage		24Vdc (-10% to +15%) – built in isolated power supply			
Power Consumption		5.2W	7.8W	12W	
Back Up Battery		3V lithium CR2032 (approx.. 3 years life)			
Buzzer		Multi-Tone 85dB			
Aux Sound Output		-	Stereo jack	-	Stereo jack
Operating Temperature		0 to 50°C			
Storage Temperature		-20 to + 60°C			
IP Rating		IP65 from front			
Dimensions w x h x d mm		227.1 x 174.1 x 61		272 x 200 x 61	
Panel Cutout Size		219.4 x 166.5		261.3 x 189.3	

Accessories all types

Order Code	Description
DEVDVPACAB2A30	RS-232 communication cable for DVP (9 PIN D-SUB)<->PLC / 3M (male)
DEVDOPCA232DP	RS-232 communication cable for DVP (9 PIN D-SUB)<->PLC / 1.5M (female)
DEVDOPCAUSBAB	DOP series program upload/download cable (USB)
DEVDVPACAB530	TP series program upload/download cable (RS-232)
DEVTPPCC01	TP series program / data backup module

DOP W Series HMI

DOP-W105B

DOP-W157B

- Backlit TFT LCD touch screen display
- 65k colour display on all models
- Powerful Cortex A8 CPU
- 2 x COM ports, RS-232, RS-485
- 3 x USB ports
- 2 x Ethernet ports
- 256MB Flash ROM
- Video player (MPEG1, MPEG2, WMV)
- Password function
- DOPSoft screen editor and configuration software
- eServer data collection software
- eRemote remote control software allows viewing and monitoring on remote PC or Android device

Order Code	Description	Weight (kg)
DEVDOPW105B	10.4" TFT LCD HMI	1.75
DEVDOP-W127B	12.1" TFT LCD HMI	2.83
DEVDOPW157B	15" TFT LCD HMI	3.88

Software is available for free download from www.delta.com.tw

Specifications

Model		DOP-W105B	DOP-W127B	DOP-W157B
Display Type		10.4" TFT LCD	12.1" TFT LCD	15" TFT LCD
Display Colour		65,536 colours		
Screen Resolution		800 x 600 pixels	1024 x 768 pixels	
Back-light Life half-life @ 25°C		10,000 hours	30,000 hours	100,000 hours
Display Size mm		95.04 x 53.85	113.28 x 84.7	141 x 105.75
CPU Type		Cortex 1GHz		
Operating System		Windows® CE 6.0		
NOR Flash ROM		256MB		
SDRAM		256MB		
Back up memory		800000 numbers of data (alarm data + historical)		
USB		1 USB hostV2.0	3 USB hostV2.0	
Serial COM Port	COM 1	N/A		
	COM 2	RS-232/RS-485/RS-422		
	COM 3	RS-232/RS-485/RS-422		
Ethernet		2 Ports IEEE 802.3(10BASE-T) IEEE 802.3u(100BASE-TX) IEEE 802.3x (Full Duplex and flow control)		
Memory Card		SD card		
Real Time Clock		Built In		
Operation Voltage		24Vdc (-10% to +15%) (requires isolated power supply)		
Power Consumption		13.5W	18.5W	21.6W
Back Up Battery		Capacitor provides up to 7 days RTC		
Buzzer		Multi-Tone Frequency 2K ~ 4K Hz 80dB		
Aux Sound Output		I2S Decode, Stereo Headphone jack only	I2S Decode, Stereo Headphone jack + Built in 1.5W Speaker	
Operating Temperature		0 to 50°C		
Storage Temperature		-20 to + 60°C		
IP Rating		IP65 from front		
Dimensions w x h x d mm		299 x 224 x 46.8	313 x 239.5 x 67	384.4 x 295.8 x 67
Panel Cutout Size mm		285.2 x 210.2	302.7 x 228	372.4 x 283.7

DOP H Series HMI

- Handheld 7" HMI
- Backlit wide screen TFT LCD touch screen display.
- 65k colour display
- Emergency stop button
- 3 position rotary switch
- Hand wheel 50ppr output available
- Choice of 5 or 10m cable length
- DOPSoft screen editor and configuration software
- eServer data collection software
- eRemote remote control software allows viewing and monitoring on remote PC or Android device

DOP-H...

Order Code	Description	Weight* (kg)
DEVDOPH07S425	Handheld HMI w/o hand wheel 5m cable, RS-422/RS-485	0.75
DEVDOPH07S42A	Handheld HMI w/o hand wheel 10m cable, RS-422/RS-485	0.75
DEVDOPH07S465	Handheld HMI with hand wheel 5m cable, RS-422/RS-485	0.75
DEVDOPH07S46A	Handheld HMI with hand wheel 10m cable, RS-422/RS-485	0.75
DEVDOPH07E425	Handheld HMI w/o hand wheel 5m cable, Ethernet	0.75
DEVDOPH07E42A	Handheld HMI w/o hand wheel 10m cable, Ethernet	0.75
DEVDOPH07E465	Handheld HMI with hand wheel 5m cable, Ethernet	0.75
DEVDOPH07E46A	Handheld HMI with hand wheel 10m cable, Ethernet	0.75

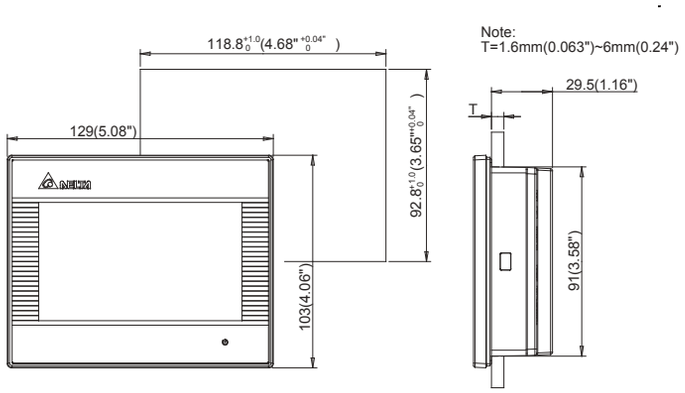
* Weight does not include cable

Software is available for free download from www.delta.com.tw

Specifications:

Model	**DOP-H07S425 DOP-H07S42A**	**DOP-H07S465 DOP-H07S46A**	**DOP-H07E425 DOP-H07E42A**	**DOP-H07E465 DOP-H07E46A**
Display Type	7" wide screen TFT LCD			
Display Colour	65,536 colours			
Screen Resolution	800 x 480 pixels			
Back-light Life half-life @ 25°C	20,000 hours			
Display Size mm	95.04 x 53.85	113.28 x 84.7	141 x 105.75	
CPU Type	400 MHz			
Operating System	Delta Real Time OS			
NOR Flash ROM	128MB			
SDRAM	64MB			
Back up memory	16MB			
USB	1 USB client V2.0			
Serial COM Port	RS-485/RS-422		NA	
Ethernet	NA		1 Ports IEEE 802.3 (10BASE-T) IEEE 802.3u(100BASE-TX) IEEE 802.3x (Full Duplex and flow control)	
Memory Card	SD card			
Function Key	15			
Cable Length & Type	End of Model Name: 5 - 5 m. End of Model Name: A - 10 m			
Emergency Stop	2 x B contact, DC30V 1A max (min 5V 1mA)			
3-Position Operation Switch	1 x A contact DC30V 700mA max (min 3V/5mA)			
Hand wheel	NA	square output pulse 50ppr A, B phase, 200Hz	NA	square output pulse 50ppr A, B phase, 200Hz
Real Time Clock	Built In			
Operation Voltage	24Vdc (-10% to +15%) (built in isolated power supply)			
Power Consumption	5.6W			
Back Up Battery	1 x 3V lithium battery CR2450 5 years RTC			
Buzzer	Multi-Tone Frequency 2K ~ 4K Hz 80dB			
Aux Sound Output	NA			
Operating Temperature	0 to 40°C			
Storage Temperature	-20 to + 60°C			
IP Rating	IP55			
Dimensions w x h x d mm	257.4 × 170.3 × 71.8 (Emergency stop switch and hook are included.)			

DOP-B Series



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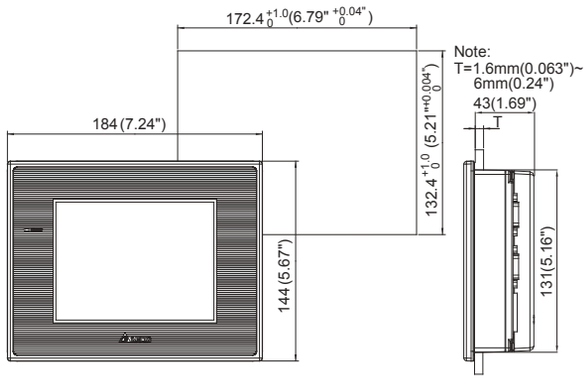

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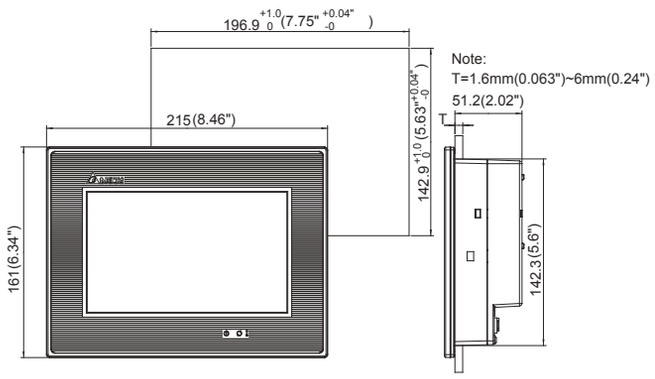

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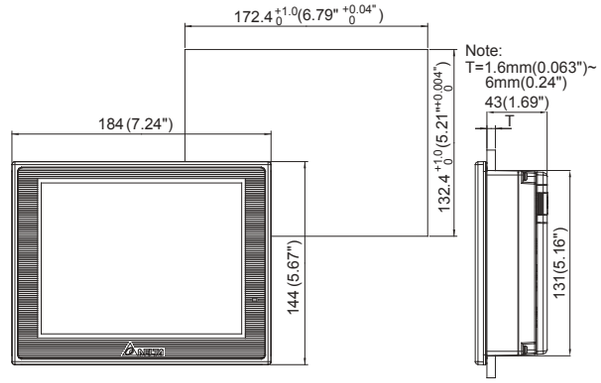

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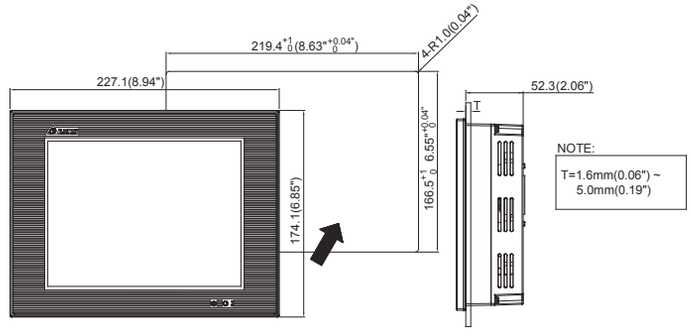

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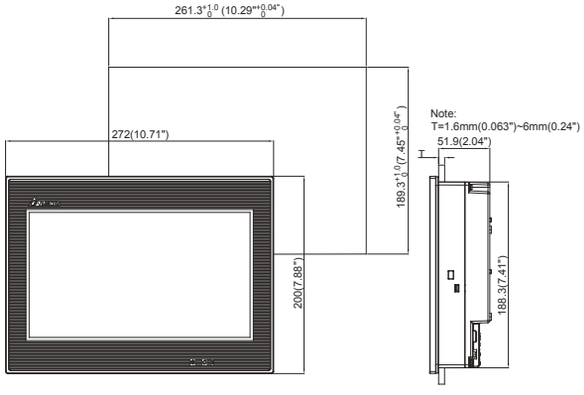
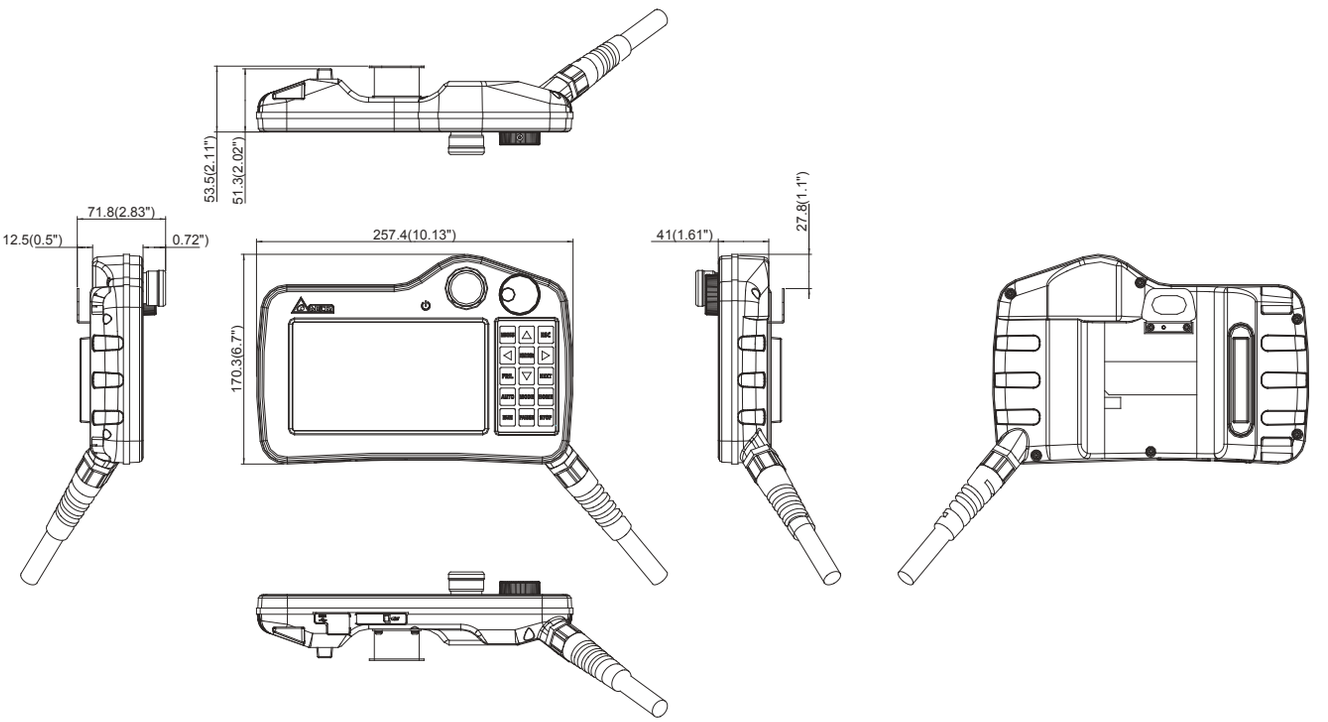


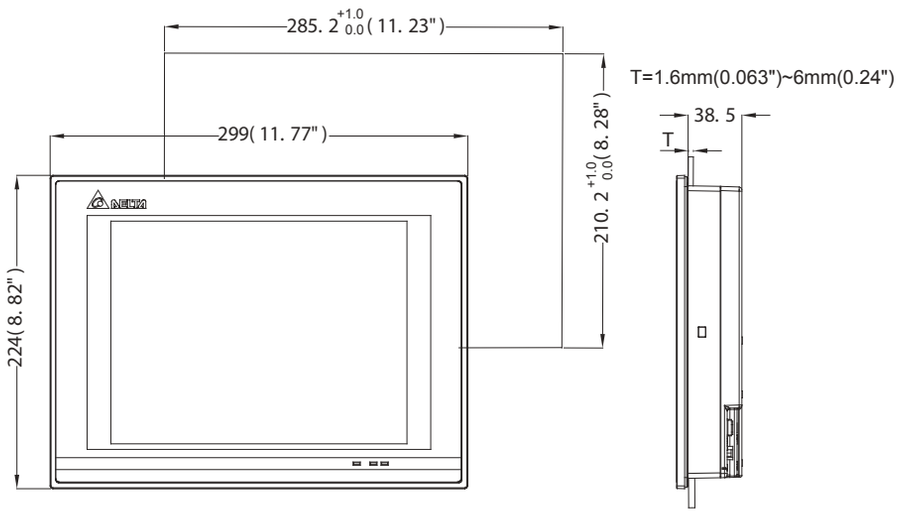
DOP-B10S(E)615

DOP-H Series



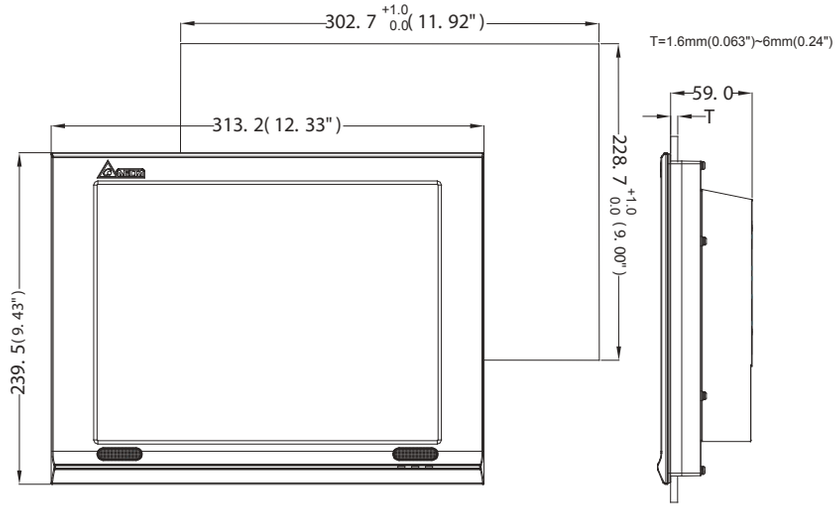
DOP-H07X4XX

DOP-W Series

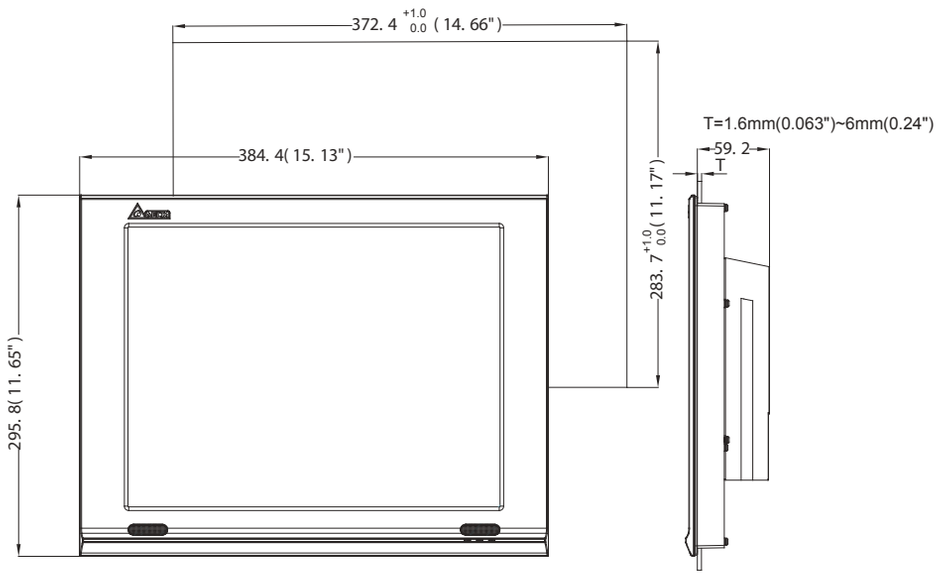


DOP-W105B

DOP-W Series



DOP-W127B



DOP-W157B

IFD Series RS-485/RS-422 Converters

- RS-232 to RS-485/RS-422 or RS-485/RS-422 to RS-232
- Repeater module for long distance transmission
- Modules can be easily piggybacked to save panel space
- High signal isolation
- Baud rates up to 115200bps

Specifications

Model	IFD8500	IFD8510	IFD8520	IFD6500	IFD6503
Order Code	**DEVIFD8500**	**DEVIFD8510**	**DEVIFD8520**	**DEVIFD6500**	**DEVIFD6503**
Function	Converts RS-232 to RS-485/RS-422	Amplifies RS-485/RS-422 signals for extending range up to 1.2km	RS-232 to RS-422/485 isolated converter, addressable	USB 2.0 to RS-485 converter	USB 2.0 to CAN converter
Power supply	9-35VDC			Plug and play	
Power consumption	1.2W	1.6 W	1.0W	0.4W	0.6W
Isolation voltage	3000VDC			2500VDC	100VDC
Baud rate/data rate	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200			75-115200	1Mbps max
RS232 connector or USB	9pin D-SUB	NA	9pin D-SUB	Type A	Type A
RS-485/422 terminal	10pin terminal		10pin terminal	RJ-45	RJ-45
Dimensions (L x W x H)	102 x 71 x 22 mm			80 x 22.5 x 21.2 mm	

Model	IFD6530	IFD9502	IFD9503	IFD9506	IFD9507
Order Code	**DEVIFD6530**	**DEVIFD9502**	**DEVIFD9503**	**DEVIFD9506**	**DEVIFD9507**
Function	USB V2.0 to RS-485 converter with 9V power supply	RS-232/485 to DeviceNet converter	RS-232/485 to CANopen converter	RS-232/485 to Ethernet Modbus TCP converter	RS-232/485 to Ethernet IP converter
Power supply	Plug and play	11-25VDC			
Power consumption	1.5W	1.0 W	1.0W	3W	3W
Isolation voltage	2500VDC	500VDC			
Baud rate/data rate	75-115200	125, 250, 500Kbps	10k-1Mbps	10/100Mbps	1Mbps max
Interface connector	USB Type A	9pin D-SUB	9PIN D-SUB	RJ-11	RJ-11
RS-485/422 terminal	RJ45	6pin terminal	6pin terminal	10pin terminal	10pin terminal
Dimensions (L x W x H)	80 x 22.5 x 21.2 mm	117.7 x 71 x 33 mm			

FL SWITCH SFNB

- 5 and 8 port unmanaged Ethernet switches
- 10/100Mbps auto detection
- Fiber optic ports for SC multi-mode, SC single mode and ST multimode versions
- High signal isolation
- DIN rail mounting
- 12-48VDC power supply (9-32VDC for SFNB 8TX)
- Fiber optic segment length up to 12km 100Mbps multimode, up to 25km 100Mbps single mode

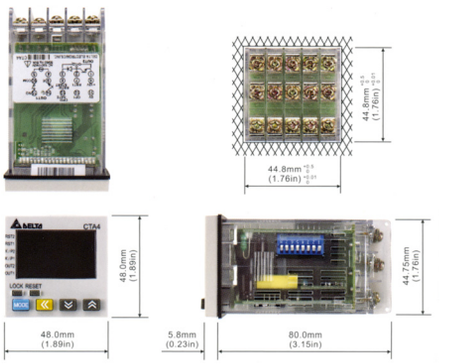
Order Code	RJ45 Ports	Fiber Ports	Weight (kg)
PH2891001	5	-	0.205
PH2891002	8	-	0.291
PH2891027	4	1 x multi-mode SC format	0.205
PH2891028	4	1 x multi-mode ST format	0.205
PH2891029	4	1 x SC single mode	0.205

Model	2891001	2891002	2891002	2891028	2891029
Ports	5 x RJ45	8 x RJ45	4 x RJ45 + 1 x SC	4 x RJ45 + 1 x ST	4 x RJ45 + 1 x SC
Power supply	12-48Vdc	9-32VDC	12-48Vdc		
Power consumption	4.3W	3.3 W	4.4W		
Dimensions (L x W x H)	110 x 28 x 70 mm	110 x 50 x 70 mm	110 x 28 x 70 mm		

CTA Counter/Timer/Tachometer

DELTA

- 3 in 1 Counter/Timer/Tachometer
- Mixed timer + counter function
- 6 digit LCD display
- NPN or PNP input
- Dual outputs



Specifications

Model	CTA4000A	CTA4000D	CTA4001A	CTA4100A	CTA4101D
Order Code	**DEVCTA4000A**	**DEVCTA4000D**	**DEVCTA4001A**	**DEVCTA4100A**	**DEVCTA4101D**
Power supply	100-240VAC 50/60Hz	24VDC (21.6-26.4V)	100-240VAC 50/60Hz	100-240VAC 50/60Hz	24VDC (21.6-26.4V)
Power consumption	10VA	5W	10VA	10VA	5W
Sensor supply	12VDC ±10% 100mA				
Display	2 Line 6 digit LCD				
Counter function	1 stage (1 SV), 2 stage (2 SV and 2 PV), Batch, Total and dual counter (addition or subtraction of CP1 and CP2 Count up, Count down, Count up and down				
Max. count speed	10K cps				
Timer ranges	10 ranges 0.01 sec to 999,999 hour				
Timer functions	12 functions				
Tachometer input	Max. 10kHz				
Input	NPN or PNP				
Output 1	Relay: SPST 250VAC 5A NPN: open collector 100mA 30VDC				
Output 2	NPN	NPN	NPN	Relay	Relay
RS-485	No	No	Yes	No	Yes
Protection	IP65 from front panel				
Operating temperature	0-50°C				

CR36 Impulse Counter

GIC

- 7 digit non resettable
- Shock and vibration proof

Model	QD12A	QD22A
Order Code	**GIQD11A**	**GIQD22A**
Power supply	12VDC -15% +10%	24VDC -15% +10%
Power consumption	0.25VA	
Display	7 digit white on black (3.6mm high)	
Max. count speed	10Hz	
Range	9999999	
Accuracy	± 1 count	
Reset	Electrical	
Input	Pulse at same voltage as supply	
Protection	IP65 from front panel	
Operating temperature	-5 to +50°C	
Mounting	Rectangular 2 hole bezel	
Dimensions (mm)	B = 52W x 26.2H x 56D	
Panel cut-out (mm)	36.8 x 24.1	

Z series Digital Counter

- 6 digit LCD
- Remote reset
- Available in 3 bezel shapes

Model	Z72FB*	ZJ2FB*
Order Code	**GIZ72FB***	**GIZJ2FB***
Power supply	85-265VAC 50/60Hz	12-48VAC/DC
Power consumption	0.8VA	0.4W
Display	6 digit LCD	
Max. count speed	10Hz	
Range	999999	
Accuracy	± 1 count	
Reset	Electrical	
Input	Pulse at same voltage as supply	
Memory	Min 10 years	
Protection	IP54 from front panel	
Operating temperature	-10 to +50°C	
Dimensions (mm)	A = 58.4Ø x 42.5D, B = 48W x 24H x 36.5D C= 48W x 31.1H x 36.5D	
Panel cut-out (mm)	A= 37 x 24.6, B= 45.5 x 23, C= 37 x 24.6	

* Specify bezel type A= round bezel, B= 24 x 48 bezel, C= screw mount bezel

Z series Digital Hour Counter

- 6 digit LCD
- Remote start and reset
- Available in 3 bezel shapes

Model	Z71FB*	ZJ1FB*
Order Code	**GIZ71FB***	**GIZJ1FB***
Power supply	85-265VAC 50/60Hz	12-48VAC/DC
Power consumption	0.8VA	0.4W
Display	6 digit LCD	
Resolution	1/10h	
Range	99999.9h	
Accuracy	± 0.02%	
Reset	Electrical	
Terminals	1,2: Input supply, 3: enable, 4: reset	
Memory	Min 10 years	
Protection	IP54 from front panel	
Operating temperature	-10 to +50°C	
Dimensions (mm)	A = 58.4Ø x 42.5D B = 48W x 24H x 36.5D C= 48W x 31.1H x 36.5D	
Panel cut-out (mm)	A= 37 x 24.6, B= 45.5 x 23, C= 37 x 24.6	

* Specify bezel type A= round bezel, B= 24 x 48 bezel, C= screw mount bezel

HM36 series Hour Counter

- 6 digit
- Total sealed from dust and moisture
- Available in 3 bezel shapes

Model	LA2*F1	LD1*F1
Order Code	**GILA2*F1**	**GILD1*F1**
Power supply	90-265VAC 50/60Hz	10-80VDC
Power consumption	0.5VA	0.25VA
Display	6 digit white on black (3.6mm high)	
Resolution	1/10h	
Range	99999.9h	
Accuracy	± 0.02%	
Reset	NA	
Protection	IP66 from front panel	
Operating temperature	-40 to +85°C	
Panel cut-out (mm)	1= 45 x 45, 2= 36.8 x 24.1, 4= 50.8Ø	

* Specify bezel type 1= rectangular bezel, 2= rectangular 2 hole bezel, 4= round 3 hole bezel

FM series Time Switch

- Surface or flush mount versions
- Daily or weekly programming
- 1 minute switching time
- High switching capacity
- Override facility

Model	D847B2	D847F2
Order Code	**GID847B2**	**GID847F2**
Power supply	240VAC 50/60Hz	
Power consumption	4.VA	
Display	2 line/4 digit 5mm LCD	
Relay output	1 CO 16A 250VAC AC1, 4A AC3	
Min switching time	1 min	
Accuracy	± 1s/day @ 20°C	
Reserve	8 years @ 20°C	
Memory locations	20	
Mounting	Surface/DIN rail	Flush
Operating temperature	-10 to +55°C	
Dimensions (mm)	72W x 102.5H x 52D	72W x 72H x 34.5D
Weight	185g	

Chrono-Pulse Digital Time Switch

- Daily/weekly/pulse switching
- 25 on/off programs
- Weekend exclusion and weekly off program
- 12/24h display
- Keypad lock feature
- 24VDC power supply available on request

Model	67DDT0 Chrono	67DDT9 Pulse
Order Code	**GI67DDT0**	**GI67DDT9**
Power supply	110-240VAC -20%+10% 50/60Hz	
Power consumption	6VA	
Display	3 line text LCD	
Relay output	1 CO 16A 250VAC AC1, 4A AC3	
Min switching time	1 min	1s
Pulse duration	NA	1 to 59s
Number of programs	25 on/off	16 pulse programs
Operating modes	5	3
Accuracy	± 2s/day @ 20°C	
Reserve	5 years @ 20°C	
Protection	IP20	
Mounting	Surface/DIN rail	
Operating temperature	-10 to +55°C	
Dimensions (mm)	36W x 90H x 65D	
Weight	120g	

Astro Time Switch

- Time switch for on/off control of lighting according to location
- Latitude/Longitude precise to the minute with time zone
- Sunrise/sunset or twilight rise/set trigger modes
- 12/24h display format
- High switching capacity
- Override facility

Model	T2DD17 Astro mini	T2DDT0 Astro
Order Code	**GIT2DD17**	**GIT2DDT0**
Power supply	110-240VAC -20%+10% 50/60Hz	
Power consumption	6VA	
Display	3 line text LCD	Backlit LCD
Relay output	1 CO 16A 250VAC AC1, 4A AC3	2NO 8A @ 250VAC AC1 5A @ 30VDC
Trigger modes	Sunrise/sunset or twilight rise/set	
Offset	1 min to 10h 59m	
Min switch time	1 min	
Operating modes	3 (auto, on auto, auto off)	
Accuracy	± 2s/day @ 20°C	± 1s/day @ 20°C
Reserve	5 years @ 20°C	1000 h
Protection	IP20	
Mounting	Surface/DIN rail	
Operating temperature	-10 to +55°C	
Dimensions (mm)	36W x 90H x 65D	72W x 90.5H x 65D
Weight	110g	190g

Accessories

Order Code	Description
GICT2DDT6	Software for Astro
GICGFDNN1	USB interface cable
GICGFDNN2S	Serial interface cable
GICGFDNN3M	Memory card

Eliro Digital Timer

- 3 digit LCD display for preset time and run time
- Multi-voltage 24-240VAC/DC
- 8 functions
- 17.5mm width
- Key lock feature

Model	V0DDTS	V0DDTD
Order Code	**GIV0DDTS**	**GIV0DDTD**
Power supply	24-240VAC/DC -15%+10% 50/60Hz	
Power consumption	10VA	
Display	3 digit LCD	
Relay output	1CO	2NO
	8A 250VAC AC1, 24VDC	
No. functions	1) On delay: 2) Cyclic off/on: 3) Cyclic on/off: 4) Signal on/off: 5) Signal off delay: 6) Interval: 7) Signal off/on: 8) One shot output	
Time range	0.1s to 999h	
Reset time	200ms	
Repeat accuracy	±0.5%	
LED indication	Red LED = relay on	
Protection	IP20	
Mounting	Surface/DIN rail	
Operating temperature	-10 to +55°C	
Dimensions (mm)	17.5W x 89H x 76D	
Weight	85g	

On delay time relay. Multiscale. Multivoltage

TM P

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TM P	0.1...1s 1...10s 6...60s 1...10min 6min...1h 1...10h 0.1...1 day 1...10 days ON only OFF only	24...48VDC 24...240VAC	1	0.048
TM P A440	0.1...1s 1...10s 6...60s 1...10min	380...440VAC	1	0.090

General characteristics
- Electronic time relay, multiscale, multivoltage. On delay, delay on make, with start at relay energising for TM P
- Electronic time relay, multiscale with 2 normally open (N/O-SPST) contacts with common pole for TM P A 440.
- 1 relay output with 1 changeover contact (SPDT)
- Delay time adjustable on front by rotary switch: 10...100%
- Green LED indicator for power on
- Red LED indicator for relay state; flashing for delay and steady when relay energised
- Modular DIN 43880 housing, 1 module
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance
Certifications obtained: EAC; UL Listed, for USA and Canada (cULus - File E93601) as Auxiliary Devices - Timers.
Compliant with standards: IEC/EN 61812-1, UL508, CSA C22.2 n° 14.

Operational diagram
See page 6-30.

Multifunction time relay. Multiscale. Multivoltage. 1 relay output

TM M1

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TM M1	0.1...1s 1...10s 6...60s 1...10min 6min...1h 1...10h 0.1...1 day 1...10 days ON only OFF only	12...240V AC/DC	1	0.086

General characteristics
- Electronic time relay, multifunction, multiscale, multivoltage
- Enabling input
- 1 relay output with 1 changeover contact (SPDT)
- Selectable functions: (a) On delay; delay on make with start at relay energising. (b) Pulse on relay energising with start when energised. (c) Flasher starting with OFF interval. Equal timing recycle. (d) Flasher starting with ON interval. Equal timing recycle. (e) Off delay; relay energising at external contact closing with start on break. (f) Pulse on relay energising with start on external contact closing. (g) Pulse on relay energising with start on external contact opening. (h) On-off delay. Delay on make, with start at external contact closing, and delay at break, with start at external contact opening. (i) Internal ON/OFF trigger with relay contact closing or operating at each closing of an external contact. (j) Pulse generator, unequal timing recycle; starting with OFF pulse time and 0.5s ON pulse.
- Delay time adjustable on front by rotary switch: 10...100%
- Green LED indicator for power on
- Red LED indicator for relay state; flashing for delay and steady when relay energised
- Modular DIN 43880 housing, 1 module suitable for fixing on 35mm DIN rail (IEC/EN 60715)
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance
Certifications obtained: EAC; UL Listed, for USA and Canada (cULus - File E93601) as Auxiliary Devices - Timers.
Compliant with standards: IEC/EN 61812-1, UL508, CSA C22.2 n° 14.

Operational diagram
See page 6-30.

Lovato electric

Multifunction time relay. Multiscale. Multivoltage. 2 relay outputs

TM M2

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TM M2	0.1...1s 1...10s 6...60s 1...10min 6min...1h 1...10h 0.1...1 day 1...10 days ON only OFF only	12...240V AC/DC	1	0.094

General characteristics
- Electronic time relay, multifunction, multiscale, multivoltage
- Enabling input
- 2 relay outputs, one with 1 delayed changeover (C/O-SPDT) contact and the other with 1 normally open (N/O-SPST) contact, programmable as instantaneous or delayed
- Selectable functions: (a) On delay; delay on make with start at relay energising. (b) Pulse on relay energising with start when energised. (c) Flasher starting with OFF interval. Equal timing recycle. (d) Flasher starting with ON interval. Equal timing recycle. (e) Off delay; relay energising at external contact closing with start on break. (f) Pulse on relay energising with start on external contact closing. (g) Pulse on relay energising with start on external contact opening. (h) On-off delay. Delay on make, with start at external contact closing, and delay at break, with start at external contact opening. (i) Internal ON/OFF trigger with relay contact closing or operating at each closing of an external contact. (j) Pulse generator, unequal timing recycle; starting with OFF pulse time and 0.5s ON pulse.
- Delay time adjustable on front by rotary switch: 10...100%
- Green LED indicator for power on
- Red LED indicator for relay state; flashing for delay and steady when relay energised
- Modular DIN 43880 housing, 1 module suitable for fixing on 35mm DIN rail (IEC/EN 60715)
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance
Certifications obtained: EAC; UL Listed, for USA and Canada (cULus - File E93601) as Auxiliary Devices - Timers. Compliant with standards: IEC/EN 61812-1, UL508, CSA C22.2 n° 14.

Operational diagram
See page 6-31.

Recycle time relay, independent timings. Multiscale. Multivoltage

TM PL

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TM PL	0.1...1s 1...10s 6...60s 1...10min 6min...1h 1h...10h 0.1...1 day 1...10 days 3...30 days 10...100 days	12...240V AC/DC	1	0.082

General characteristics
- Programmable asymmetrical recycle time relay, multiscale, multivoltage. Flasher with independent timing for ON and OFF intervals
- Enabling input of ON or OFF interval
- 1 relay output with 1 changeover contact (SPDT)
- Delay time for OFF (pause) interval, adjustable on front by rotary switch: 10...100%
- Delay time for ON (work) interval, adjustable on front by rotary switch: 10...100%
- Green LED indicator for power on
- Red LED indicator for relay state; flashing for delay
- Modular DIN 43880 housing, 1 module; suitable for fixing on 35mm DIN rail (IEC/EN 60715)
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance
Certifications obtained: EAC; UL Listed, for USA and Canada (cULus - File E93601) as Auxiliary Devices - Timers. Compliant with standards: IEC/EN 61812-1, UL508, CSA C22.2 n° 14.

Operational diagram
See page 6-32.

Off delay time relay. Multiscale. Multivoltage

TM D

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TM D	0.06...0.6s 0.6...6s 6...60s 18...180s	24...240V AC/DC	1	0.080

General characteristics
- Electronic time relay, multiscale, multivoltage. True off delay; delay on break with start at relay de-energising
- 1 relay output with 1 changeover contact (SPDT)
- Delay time adjustable on front by rotary switch: 10...100%
- Green LED indicator for power on
- Modular DIN 43880 housing, 1 module; suitable for fixing on 35mm DIN rail (IEC/EN 60715)
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance
Certifications obtained: EAC; UL Listed, for USA and Canada (cULus - File E93601) as Auxiliary Devices - Timers. Compliant with standards: IEC/EN 61812-1, UL508, CSA C22.2 n° 14.

Operational diagram
See page 6-32.

Time relay for starting. Multiscale. Multivoltage

TM ST

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TM ST	0.1...1s 1...10s 6...60s 1...10min	24...48VDC 24...240VAC	1	0.090
TM ST A440	0.1...1s 1...10s 6...60s 1...10min	380...440VAC	1	0.090

General characteristics
- Electronic time relay, multiscale, multivoltage for starting (star-delta, impedance, autotransformer, etc) of induction motors (squirrel cage), 2 separate timings
- 1 relay output with 2 normally open (N/O-SPST) contacts with common pole
- Delay time adjustable on front by rotary switch: 10-100% for star connection
- Starting and transition (20...300ms time scale - from star to delta), time adjustable on front by rotary switch
- Green LED indicator for power on
- Red LED indicator for relay state; flashing during delay and steady at delay lapsing
- Modular DIN 43880 housing, 1 module; suitable for fixing on 35mm DIN rail (IEC/EN 60715)
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance
Certifications obtained: EAC; UL Listed, for USA and Canada (cULus - File E93601) as Auxiliary Devices - Timers.
Compliant with standards: IEC/EN 61812-1, UL508, CSA C22.2 n° 14.

Operational diagram
See page 6-32.

Staircase time relay

TM LS

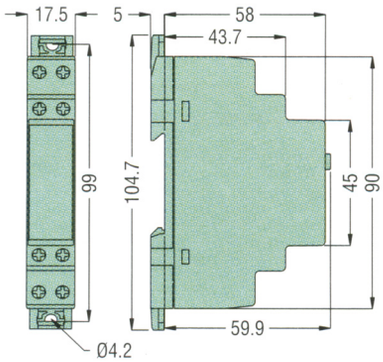
Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TM LS	0.5...20min	220...240VAC	1	0.080

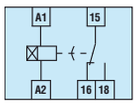
General characteristics
- Electronic time relay single scale and voltage for staircase illumination
- 1 relay output with 1 powered normally open (N/O-SPST) contact
- Delay time adjustable on front by rotary switch
- Suitable for 3 or 4-wire systems
- 1 slide switch for timed or constant lighting operation
- Function for one hour lighting and fast switch off
- Green LED indicator for power on
- Connection with up to 50 light-up switches maximum; ≤ 1mA each
- Modular DIN 43880 housing, 1 module suitable for fixing on 35mm DIN rail (IEC/EN 60715)
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance
Certifications obtained: EAC; UL Listed, for USA and Canada (cULus - File E93601) as Auxiliary Devices - Timers.
Compliant with standards: IEC/EN 61812-1, UL508, CSA C22.2 n° 14.

Operational diagram
See page 6-32.

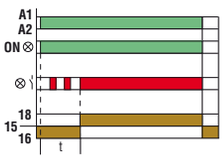
TM...

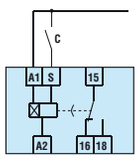




TM P

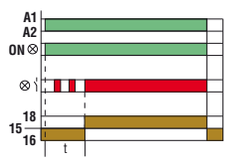
On delay. Delay on make, with start at relay energising.



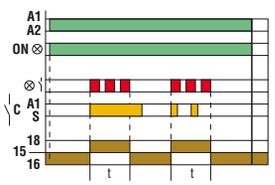


TM M1

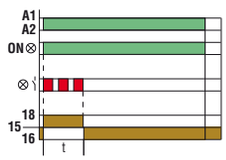
On delay. Delay on make, with start at relay energising



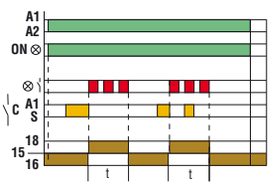
Pulse on relay energising with start at external contact closing



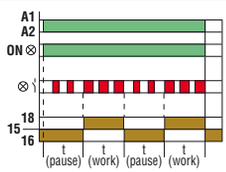
Pulse on relay energising with start on energising



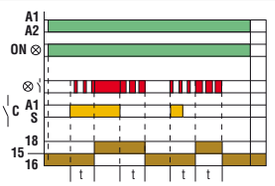
Pulse on relay energising with start at external contact opening



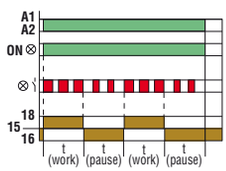
Flasher, starting with OFF (pause) interval. Equal timing recycle.



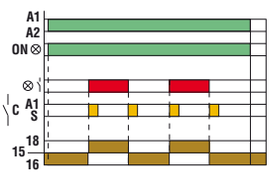
On-Off delay. Delay on make, with start at external contact closing, and delay at break, with start at external contact opening.



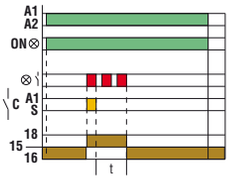
Flasher, starting with ON (work) interval. Equal timing recycle.



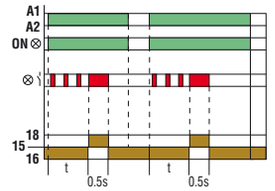
Internal trigger ON/OFF. Relay contact either closes or opens at each external contact closing.



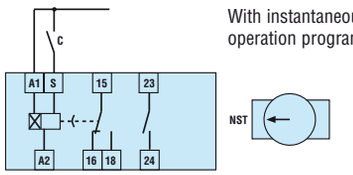
Off delay. Relay energising at external contact closing with start on break



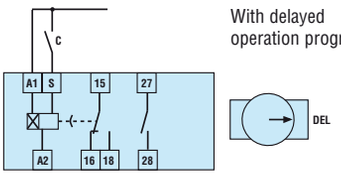
Pulse generator. Unequal timing recycle, starting with OFF pulse time and 0.5sec ON time.



TM M2

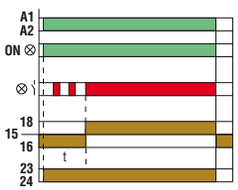


With instantaneous operation programmed

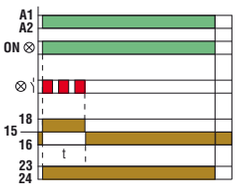


With delayed operation programmed

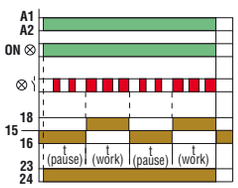
On delay. Delay on make, with start at relay energising



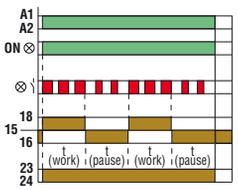
Pulse on relay energising with start on energising



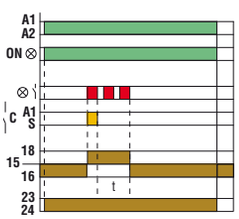
Flasher, starting with OFF (pause) interval. Equal timing recycle



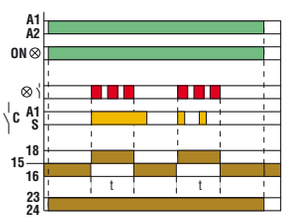
Flasher, starting with ON (work) interval. Equal timing recycle



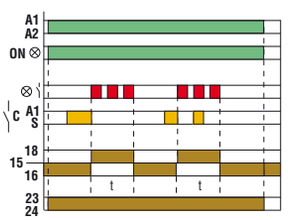
Off delay. Relay energising at external contact closing with start on break



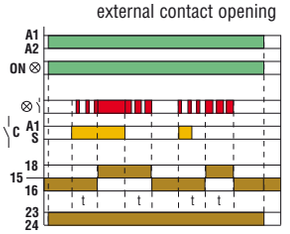
Pulse on relay energising with start on external contact closing



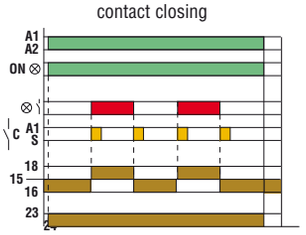
Pulse on relay energising with start on external contact opening



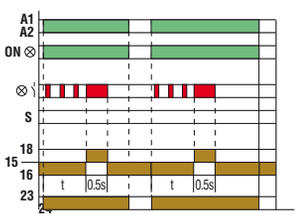
On-off delay. Delay make, with start at external contact closing and delay at break, with start at external contact opening



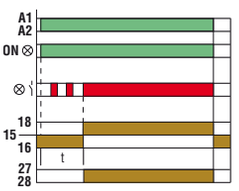
Internal trigger ON/OFF. Relay contact either closes or opens at each external contact closing



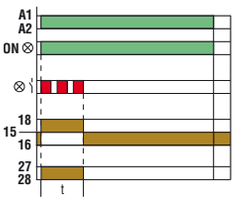
Pulse generator. Unequal timing recycle, starting with ON pulse time



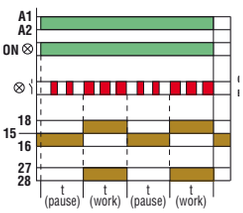
On delay. Delay on make, with start at relay energising



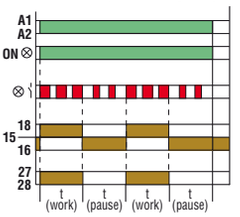
Pulse on relay energising with start on energising



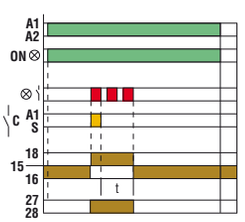
Flasher, starting with OFF (pause) interval. Equal timing recycle



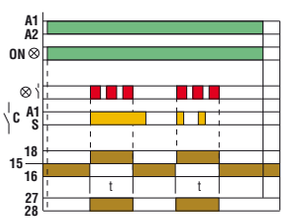
Flasher, starting with ON (work) interval. Equal timing recycle



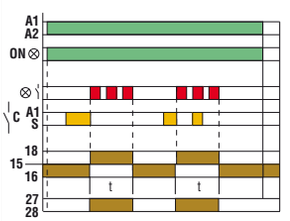
Off delay. Relay energising at external contact closing with start on break



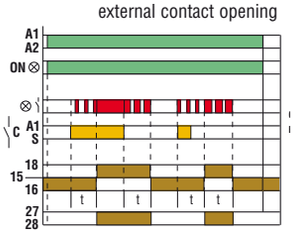
Pulse on relay energising with start on external contact closing



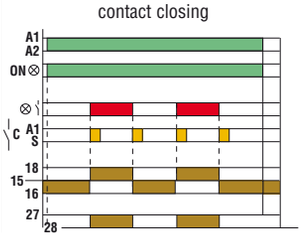
Pulse on relay energising with start on external contact opening



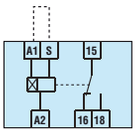
On-off delay. Delay make, with start at external contact closing and delay at break, with start at external contact opening



Internal trigger ON/OFF. Relay contact either closes or opens at each external contact closing

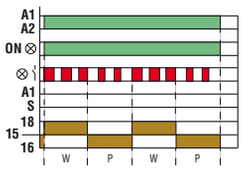


Pulse generator. Unequal timing recycle, starting with ON pulse time



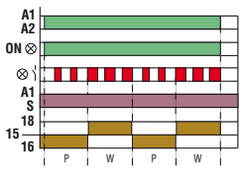
TM PL

Flasher, starting with ON interval.
Equal timing recycle, ON first

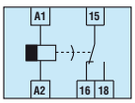


W = Work (ON)
P = Pause (OFF)

Flasher, starting with OFF interval.
Equal timing recycle, OFF first

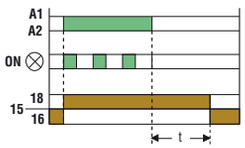


W = Work (ON)
P = Pause (OFF)

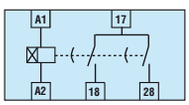


TM D

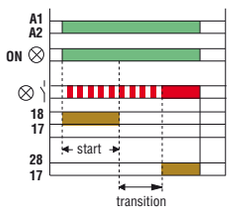
True off delay. Delay on break, starting at relay de-energising



For starting

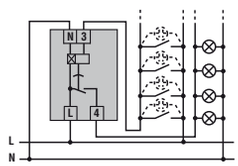


TM ST

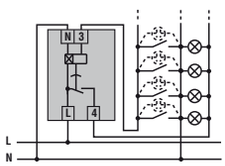


Staircase lighting

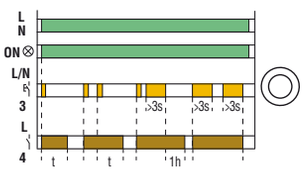
4-wire connection



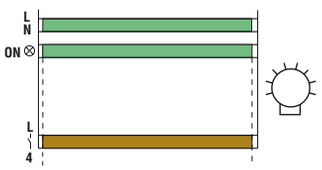
3-wire connection



Timed lighting



Constant lighting



TM LS

TYPE	TM P	TM P A440	TM M1	TM M2	TM PL	TM D	TM ST	TM LS
DESCRIPTION								
	On delay	On delay	Programmable multifunction	Programmable multifunction timing	Asymmetrical recycle	True off delay	For starting	Staircase illumination
	Multiscale	Multiscale	Multiscale	Multiscale	Multiscale	Multiscale	Multiscale	Single scale
	Multivoltage		Multivoltage	Multivoltage	Multivoltage	Multivoltage	Multivoltage	Single voltage
CONTROL CIRCUIT								
Rated auxiliary supply voltage Us	24...48VDC 24...240VAC	380...440VAC	12...240VAC/DC			24...240VAC/DC	24...48VDC 24...240VAC 380...440VAC	220...240VAC
Rated frequency	50/60Hz							
Operating voltage range	0.85-1.1 Us							
Power consumption (maximum)	1.2VA/0.8W max (24...48VAC/DC) 16VA/0.9W max (110...240VAC/DC)	19VA/1.7W max	0.6VA/0.3W max (12...48VAC/DC) 1.6VA/1.2W max (110...240VAC/DC)	1.1VA/0.8W max (12...48VAC/DC) 1.8VA/1.2W max (110...240VAC/DC)	0.6VA/0.3W max (12...48VAC/DC) 1.6VA/1.2W max (110...240VAC/DC)	0.1VA/0.1W (24...48VAC/DC) 1.1VA/0.8W (110...240VAC/DC)	1.2VA/0.8W max (24...48VAC/DC) 1.6VA/0.9W max (110...240VAC)❶	De-energised 5VA/0.5W max Energised 12VA/0.8W max
TIMING CIRCUIT								
Time setting range	Multiscale 0.1...1s 1...10s 6s...60s 1...10min 6min...1h 1...10h 0.1...1day 1...10days ON only OFF only	Multiscale 0.1...1s 1...10s 6s...60s 1...10min	Multiscale 0.1...1s 1...10s 6s...60s 1...10min 6min...1h 1...10h 0.1...1day 1...10days ON only OFF only	Multiscale 0.1...1s 1...10s 6s...60s 1...10min 6min...1h 1...10h 0.1...1day 1...10days ON only OFF only	Multiscale 0.1...1s 1...10s 6s...60s 1...10min 6min...1h 1h...10h 0.1...1day 1...10days 3...30days 10...100days	Multiscale 0.06...0.6s 0.6...6s 6s...60s 18s...180s	Multiscale 0.1...1s 1...10s 6s...60s 1...10min	Single scale 0.5...20min
Setting accuracy	< ±9%							
Repeat accuracy	< ±0,1%	< ±0,5%	< ±0,5%	< ±0,2%		< ±0,5%		
Influence of voltage variation	< ±0.01%							< ±0.5%
Average variation of set delays related to +20°C condition at –20°C	< ±0.2%							< ±0.25%
Minimum power time	—	—	—	—	—	≥ 200ms	—	—
Minimum ON time	—	—	25ms (no maximum limit)			—	—	≥ 60ms (no max lim.)
Resetting time during timing	≥ 100ms	≥ 100ms	≥ 100ms	≥ 100ms	≥ 100ms	—	≥ 100ms	≥ 100ms
Resetting time elapsed time	≥ 50ms	≥ 50ms	≥ 50ms	≥ 50ms	≥ 50ms	—	≥ 50ms	—
Immunity time for microbreakings	≤ 50ms	—	≤ 25ms	≤ 15ms	≤ 25ms	—	≤ 40ms❷	≤ 20ms
RELAY OUTPUTS								
Contact arrangement	1 delayed changeover	2 delayed changeover	1 delayed changeover	1 inst./delayed N/O + 1 delayed c/o	1 delayed changeover	1 delayed changeover	2 delayed N/O	1 delayed N/O
Maximum switching voltage	250VAC							
IEC conventional free air thermal current (Ith)	8A	8A	8A	8A	8A	5A	8A	16A
UL/CSA and IEC/EN 60947-5-1 designation	B300							16A AC1 240VAC
Electrical life (with rated load)	10^5 cycles							
Mechanical life	$30x10^6$ cycles							
Tightening torque maximum	0.8Nm (7lbin; 7...9lbin per UL)							
Conductor section min-max	0.2...4mm² (24...12 AWG; 12...18 AWG per UL)							
INSULATION (input-output)								
IEC rated insulation voltage	250V							
IEC rated impulse withstand voltage	4kV							
IEC power frequency withstand voltage	2kV							
AMBIENT CONDITIONS								
Operating temperature	–20...+60°C							
Storage temperature	–30...+80°C							
Housing material	Self-extinguishing polyamide							

❶ For 380...440VAC types: 19VA/1.7W max.

❷ Used at 24...48VDC or 24...240VAC; ≤30ms at 380...440VAC.

NOTE: N/O = normally open / SPST
c/o = changeover / SPDT; inst. = instantaneous.