AUTOMATION

C₁

Slim type PLC		Delta	C-1...5
Block type PLC		Delta	C-7...8
Mid-range PLC		Delta	C-9...10
High performance PLC		Delta	C-11...13
Communication cables / Modules		Delta	C-14...15
Industrial PC / SCADA systems		Delta	C-16
HMI (human machine interface)		Delta	C-17
Text panels and HMI/PLC's		Delta	C-18
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C₂

Precision gearboxes		EM	C-22
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DVP14SS...

DVP12SA2...

DVP28SA211R

SS2/SA2 series

Delta's high-performance, high-speed DVP series PLCs are the most efficient and incorporates communication capabilities. Advantages include numerous built-in convenient commands for easy operation access and communication function monitoring.

The module-type unit affords tremendous space-saving, allowing simple, clip-on expansion possibilities. The PLCs high performance and extensive I/O units represent a high-value solution for machine control and industrial automation.

Common characteristics

- 32-bit CPU for high-speed processing
- Compact dimensions *(H) 90 mm x (D) 60 mm* - DIN rail mounting
- Built-in high speed counters up to 100 kHz *(model dependant)*
- Clip-on extension modules - general *(right side)* - high speed *(left side)*
- Plug-in terminals for ease of wiring and maintenance
- Program language: (IL) instruction list, (LD) ladder diagram, (SFC) sequential function chart
- Supports Modbus Master. Can connect up to 16 slaves (VFD, Temp controller, PLC)

type	supply	inputs	outputs	width	description	output
		(DI)	(DO)	(mm)		type

SS2 series - Economic, compact ultra-slim PLC

The DVP-SS2 series slim type PLC provides basic sequential control functions with fast execution speed.

Accepts - general *(right side)* expansion modules only.

- Max. I/O: 480 points
- Program capacity: 8 k steps
- Data register: 5 k words
- Max. execution speed of basic instructions: 0.35 μs
- Built-in RS-232 and RS-485 ports *(Master/Slave)*
- Supports standard MODBUS ASCII / RTU protocol and PLC Link function

High speed functions

- 4 points of 10 kHz pulse output
- 6 x 1phase counters @ 10kHz or 2 x A/B counters @ 20kHz

type	supply	inputs (DI)	outputs (DO)	width (mm)	description	output type
DVP14SS211R	24 VDC	8	6	25.2	compact ultra slim PLC	relay
DVP14SS211T	24 VDC	8	6	25.2	compact ultra slim PLC	transistor (NPN)
DVP12SS211S	24 VDC	8	4	25.2	compact ultra slim PLC	transistor (PNP)

SA2 series - Advanced compact slim PLC

DVP-SA2 series offers larger program capacity and executing efficiency, offering 100 kHz high-speed output and counting functions. Expandable with DVP-S extension modules.

DVP12SA supports general *(right side)* and high speed *(left side)* expansion modules.
DVP28SA supports general expansion modules *(right side)* only.

- Program capacity: 16 k steps
- Data register: 10 k words
- Max. execution speed of basic instructions: 0.35 μs
- Built-in 1 RS-232 and 2 RS-485 ports *(Master/Slave)*
- Supports standard MODBUS ASCII / RTU protocol and PLC Link function
- No battery required; RTC function operates for up to 15 days after power off

High speed functions

- Supports 2-axis linear and arc interpolation
- 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

type	supply	inputs (DI)	outputs (DO)	width (mm)	description	output type
DVP12SA211R	24 VDC	8	4	37.4	advanced slim PLC	relay
DVP12SA211T	24 VDC	8	4	37.4	advanced slim PLC	transistor (NPN)
DVP28SA211R✱	24 VDC	16	12	46	advanced slim PLC	relay
DVP28SA211T✱	24 VDC	16	12	46	advanced slim PLC	transistor (NPN)

✱ *Right hand side expansion only*

SE/SV2 series

Common characteristics

- 32-bit CPU for high-speed processing
- Compact dimensions *(H) 90 mm x (D) 60 mm* - DIN rail mounting
- Built-in high speed counters up to 200 kHz *(model dependant)*
- Clip-on extension modules - general *(right side)* - high speed *(left side)*
- Plug-in terminals for ease of wiring and maintenance
- Program language: (IL) instruction list, (LD) ladder diagram, (SFC) sequential function chart
- Supports Modbus Master. Can connect up to 16 slaves *(32 slaves for DVP-SE)*

DVP12SE11R

type	supply	inputs	outputs	width	description	output
		(DI)	(DO)	(mm)		type

SE series - Network type advanced slim PLC

The most complete network type slim PLC in the industry. Typical applications include remote device monitoring, production line monitoring, building automation, printing machine, container filler *(recipe application)*.

DVP12SE supports "general" *(right side)* and "high speed" *(left side)* expansion modules.
DVP26SE only supports "general" *(right side)* expansion modules.

- Program capacity: 16 k steps
- Data register: 12 k words
- Max. execution speed of basic instructions: 0.64 µs
- No battery required; RTC function operates for up to 15 days after power off
- IP Filter functions as firewall as first line protection against malware and network threats
- Built-in mini USB port, 2 x RS-485 and Ethernet port supports MODBUS TCP and EtherNet/IP
- Built-in Ethernet   **DVP12SE:** MODBUS TCP/IP & Ethernet/IP *(adapter mode)*
                          DVP26SE: MODBUS TCP/IP & Ethernet/IP *(adapter mode)*

DVP26SE11R

High speed functions

- 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
- Supports 2-axis linear and arc interpolation

type	supply	inputs (DI)	outputs (DO)	width (mm)	description	output type
DVP12SE11R	24 VDC	8	4	37.4	network type PLC	relay
DVP12SE11T	24 VDC	8	4	37.4	network type PLC	transistor (NPN)
DVP26SE11R*	24 VDC	14	12	46	network type PLC	relay
DVP26SE11T*	24 VDC	14	12	46	network type PLC	transistor (NPN)

***** *Right hand side expansion only*

SV2 series - "High performance" slim PLC

SV2 series is a high-end PLC providing larger program capacities and data registers for more demanding, complex applications. Increases many motion control instructions to meet high-speed applications, high-precision positioning control for labelling, packaging and printing machines.

- Program capacity: 30 k steps
- Data register: 12 k words
- Max. execution speed of basic instructions: 0.24 µs
- 32-bit CPU + ASIC dual processors

Excellent high speed functions

- High-speed pulse output: 4 axes of 200 kHz pulse output
- Supports 4 hardware 200 kHz high speed counters
- Linear/arc interpolation motion control function
- Provides up to 16 external interrupt pointers

Complete program protection

- Auto backup function prevents program and data loss even when the battery runs out
- Secondary backup function saves an extra copy of programs and data to enhance program safety
- Up to 4 levels of password protection protects your source programs and intellectual property

DVP28SV...

type	supply	inputs (DI)	outputs (DO)	width (mm)	description	output type
DVP28SV11R2	24 VDC	16	12	70	high perform PLC	relay
DVP28SV11T2	24 VDC	16	12	70	high perform PLC	transistor (NPN)
DVP28SV11S2	24 VDC	16	12	70	high perform PLC	transistor (PNP)

SX2/MC series

DVP series PLCs for industrial automation applications have been devoted to delivering more innovative products satisfying customer needs while meeting requirements of a wide variety of applications. Delta PLCs offer a broad range of controllers and modules, all featuring high performance, multiple functions with efficient program editing tools. In addition to user-friendly programming software and faster execution speed, they provide complete industry-focused solutions, motion control solutions, and industrial fieldbus solutions.

type	supply	inputs		outputs		width	output
		(DI)	(AI)	(DO)	(AO)	(mm)	type

SX2 series - Analog I/O slim PLC

Compact PLC with outstanding analog functions with highly efficient PID control function.
Supports "general" *(right side)* and "high speed" *(left side)* expansion modules.

- 32-bit CPU for high-speed processing
- Program capacity: 16 k steps
- Data register: 10 k words
- Max. execution speed of basic instructions: 0.35 μs
- Built-in analog inputs and outputs *(12-bit resolution)*
- Built-in mini USB, RS-232 and 2x RS-485 com ports *(Master/Slave)*
- Supports standard MODBUS ASCII/RTU protocol and PLC Link function
- No battery required, maintenance free *(RTC operates for 10 days after power off)*

Motion control functions

- 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
- Supports 2-axis linear and arc interpolation

type	supply	DI	AI	DO	AO	width	output type
DVP10SX11R*	24 VDC	4	2	2	2	37.4	relay
DVP20SX211R	24 VDC	8	4	6	2	70	relay
DVP20SX211T	24 VDC	8	4	6	2	70	transistor (NPN)
DVP20SX211S	24 VDC	8	4	6	2	70	transistor (PNP)

* *2 x 7 segment display*

MC series - Multi-axis motion controller

CANopen motion controller

16 axis motion controller offering highly stability multi-axis motion control solutions through high-speed CANopen communication.

Supports "general" *(right side)* and "high speed" *(left side)* expansion modules.

- Built-in CANopen and encoder interface
- High precision control with interpolation function
- Synchronization time: 4 axes in 2ms / 8 axes in 4ms
- Built-in Ethernet, RS-232 and RS-485 communication ports
- Up to 16 axes synchronous control through CANopen communication
- Supports electronic gear, E-cam (2.048 points), flying shear and rotary cut instructions
- Built-in 12 I/O points *(8 sets of high-speed inputs, 4 sets of high-speed outputs)*
- Built-in motion control instructions of electronic cam, flying shear, rotary cut for easy operation

type	supply	inputs		output type	
		(DI)	(DO)		
DVP10MC11T	24 VDC	8	4	motion controller	transistor (NPN)

PLC starter kits

Each kit comes complete with programming software for the PLC and HMI products, an I/O simulator board, 24 VDC power supply, all interconnecting cables, and a printed starter kit user manual. A Delta Branded USB memory stick is also included with product user manuals, product instruction sheets, and example application programs – all designed to increase commissioning productivity of feature use and interconnected communication.

- Available as Ethernet based kit or economical serial port based kit
- For learning PLC and HMI programming
- UT-14SS2-A *(Serial Kit- DVP-14SS11R + 7" serial HMI)*
- UT-12SE-A1 *(Ethernet Kit - DVP12SE11R + 7" Ethernet HMI)*

UT-14SS2-A	starter kit for learning programming of PLC /HMI	relay
UT-12SE-A1	as above , but with hardware for Ethernet communication	relay

DVP10SX11R

DVP20SX2...

DVP10MC11T

PLC starter kit

Extension modules for SS2/SA2/SE/SX2/SV2/MC PLC's

Extension modules simply clip onto CPU's to add many additional functions, additional digital and/or Analog I/O's, communication, temperature measurement and load cell monitoring.

General extension modules *(right side mounting)*

type	supply	inputs (DI)	outputs (DO)	description	output type
Digital Input extension modules					
DVP08SM11N	24 VDC	8	–	extension module	–
DVP16SM11N	24 VDC	16	–	extension module	–
DVP32SM11N *	24 VDC	32	–	extension module	–
UB-10-ID32A	MIL con	32		terminal module for above	DVP32SM
UC-ET010-24A	MIL con	1 met		I/O connection cable for above	DVP32SM\SN
Digital Output extension modules					
DVP06SN11R	24 VDC	–	6	extension module	relay (6A)
DVP08SN11R	24 VDC	–	8	extension module	relay (1.2A)
DVP08SN11T	24 VDC	–	8	extension module	transist (NPN)
DVP16SN11T	24 VDC	–	16	extension module	transist NPN)
DVP16SN11TS	24 VDC	–	16	extension module	transist (PNP)
DVP32SN11TN *	24 VDC	–	32	extension module	transist (NPN)
UB-10-OT32A	MIL con	–	32	output terminal module	DVP32SN
UC-ET010-24A	MIL con	1 met		I/O connection cable for above	DVP32SM\SN
UC-ET020-24D	MIL con	2 met		shielded cable for above	DVP32SM\SN
UC-ET030-24D	MIL con	3 met		shielded cable for above	DVP32SM\SN

** Pin head termination. For other cable types and lengths, see **C-14***

type	supply	inputs (DI)	outputs (DO)	description	output type
Digital I/O extension modules					
DVP08SP11R	24 VDC	4	4	extension module	relay
DVP16SP11R	24 VDC	8	8	extension module	relay
DVP08SP11T	24 VDC	4	4	extension module	transist (NPN)
DVP16SP11T	24 VDC	8	8	extension module	transist (NPN)
DVP16SP11TS	24 VDC	8	8	extension module	transist (PNP)

Analog I/O extension modules   ±10V / ±20mA (output: 0 to 10V / 0 to 20mA)

type	supply	(AI)	(AO)	description	output type
• Built-in RS-485 interface					
DVP04AD-S2	24 VDC	4	–	extension module	–
DVP06AD-S	24 VDC	6	–	extension module	–
DVP04DA-S2	24 VDC	–	4	extension module	analog
DVP06XA-S2	24 VDC	4	2	extension module	analog

Temperature measurement modules

type	supply	inputs	outputs	description	sensor
• Resolution:	0.1°C				
DVP04PT-S *	24 VDC	4	–	RTD temperature module	PT100/1000
DVP06PT-S	24 VDC	6	–	RTD temperature module	PT100/1000
DVP04TC-S *	24 VDC	4	–	thermocouple temp. module	(J,K,R,S,T)

* Built-in RS-485 interface

DVP02TU series temperature control modules *(universal input)*

- Analog inputs: 0 - 10V, 0 - 20mA, 4 - 20mA
- Resolution: Analog 16-bit, Sensor: 0.1°C
- Thermocouple: J, K, R, S, T, E, N, B, C, L, U, TXK, PLII
- Output point: Built-in PID program control/manual control
- RTD: Pt100, JPt100, Pt1000, Cu50, Cu100, Ni100, Ni1000, LG-Ni1000
- Configuration: Using TK soft *(embedded in ISP soft)*

type	supply	inputs	outputs	description	output type
DVP02TUL-S	24 VDC	2	2	analog	output voltage/current
DVP02TUN-S	24 VDC	2	4	transistor	NPN output overheat/current
DVP02TUR-S	24 VDC	2	4	relay	output overheat/overcurrent

Positioning control module   *(single axis, 200kHz)*

DVP01PU-S	single-axis, 200kHz			servo position control module	

Communication modules

DVPDT01-S	DeviceNet			slave communication module	
DVPPF01-S	PROFIBUS-DP			slave communication module	

DVP08SM...

DVP04DA-S2

DVP04PT-S

DVPDT01-S

DVP04DA-SL

DVP202LC -SL

RTU-485

DVP08ST11N

DELTA-SW
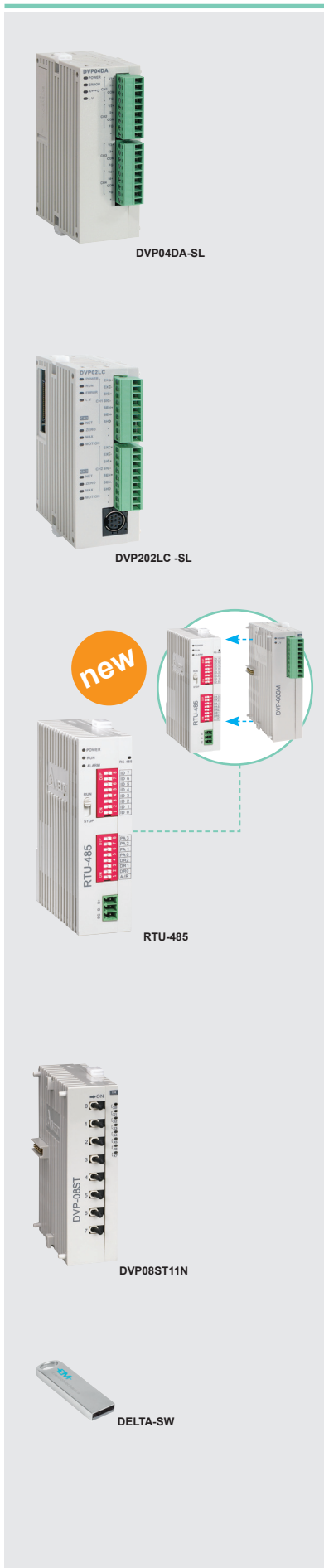
High-speed expansion modules for SA2/SE2/SX2/SV2 PLC's *(left side mount)*

Extension modules simply clip onto CPU's to add many additional functions, additional analog I/O's,communication and load cell monitoring.

• Simply clips onto and derives supply from main CPU

type	supply	inputs (AI)	outputs (AO)	description	output type

Analog I/O extension modules *(left side high-speed)*

• Signal range:	Input: 1- 5V, 0 - 5V, ±5V, 0 - 10V, ±10V, 4 - 20mA, 0 - 20mA, ± 20mA				
	Output: 0 - 10V, ±10V, 4 - 20mA, 0 - 20mA				
• Resolution:	16-bit				
• Conversion time:	250 µs / point				
DVP04AD-SL	24 VDC	4	–	extension module	analog
DVP04DA-SL	24 VDC	–	4	extension module	analog

Load cell modules *(left side high-speed)*

• Resolution:	24-bit				
• Measurable range:	0 - 80mV/V				
• Connectable to:	4-wire / 6-wire load cell sensor				
• Easy to use LC soft for configuration and monitoring load cell module (RS-232, RS-485)					
• DVP211LC-SL has programmable DI/O *(tare, max etc.)* and AO *(retransmission)*					
DVP201LC-SL	24 VDC	1	–	load cell input module	1 channel
DVP211LC-SL	24 VDC	1	1	load cell input mod	1 channel
DVP202LC-SL	24 VDC	2	–	load cell input module	2 channel

Communication modules *(left side high-speed)*

type	supply	description	output type
DVPEN01-SL	Ethernet	communication module	10/100Mbps
DVPDNET-SL	DeviceNet	master communication module	500kbps
DVPCOPM-SL	CANopen	master communication module	1Mbps
DVPPF02-SL	PROFIBUS-DP	slave communication module	12Mbps
DVPSCM12-SL	RS-485/RS-422	serial communication module	460kbps
DVPSCM52-SL	BACnet MS/TP	slave communication module	460kbps

Remote I/O communication modules

RTU-485	Modbus RS-485	max. 8 special modules and 128DI and 128DO
RTU-EN01	Modbus TCP/IP	max. 8 special modules and 128DI and 128DO
RTU-DNET	DeviceNET	max. 8 special modules and 128DI and 128DO
RTU-PD01	PROFIBUS-DP	max. 8 special modules and 128DI and 128DO

Accessories for S series PLC's

Power supply modules *(DIN rail mounting)*

DVPPS01	85-240 VAC to 24 VDC	1A	power supply module
DVPPS02	85-240 VAC to 24 VDC	2A	power supply module
DVPPS05	85-240 VAC to 24 VDC	5A	power supply module

Accessories and cables

UC-PRG020-12A	8-pin mini-DIN+female DB9 connector to USB *(type A)* connector	2 met
UC-PRG030-01A	mini USB connector to USB *(type A)* connector	3 met
UC-MS030-01A	8-pin mini-DIN connector to female DB9 connector RS-232	3 met
IFD6500	RS-485 to USB (type A) converter module	
DVP08ST11N	input point switch module for DVP-S series	
DVPPCC01	program-data backup memory card for all DVP series	*(64k words)*

Software *(windows based)* easy to learn and use with provided "help" file

DELTA-SW	PLC editing software for AH500, AS200/300 and DVP series *(USB)*
	supports 5 programming languages: (LD, FBD, SFC, ST, IL)
	programming software for DVP-PLC *(freely downloadable via internet)*

ISPsoft

DOPsoft

TPEditor

VFDsoft

ASDAsoft

DIADevice

Manuals

INDUSTRIAL AUTOMATION COURSES

LEVEL 1 AND 2 PLC · VFD · SERVO

Successful industrial facilities rely on personnel who have the technical understanding and capability to maintain smooth system operation.

The industrial automation training is recommended for any individual or group that requires more in-depth knowledge on the basic components, implementation and management thereof.

PLC LEVEL 1
(Own laptop required)

Course Content:
- PLC terminology
- How to wire a PLC
- Progam a PLC
- Program analysis
- Basic HMI introduction

Accreditation: 1 CPD Point

Duration: 1 Day

PLC LEVEL 2
(Own laptop required)

Course Content:
- Advanced PLC function
- Analog inputs and outputs
- High-speed signal processing
- Working with real values
- Basic HMI introduction
- Integrated HMI examples

Accreditation: 1 CPD Point

Duration: 1 Day

PLC LEVEL 3
(Own laptop required)

Course Content:
- Fieldbus and communication types
- Data mapping/exchange
- Network topology
- System planning

Accreditation: 1 CPD Point

Duration: 1 Day

VFD LEVEL 1

Course Content:
- Basic motor principles
- Selecting the correct VFD
- Practical operation and wiring of VFD
- Fault finding exercises
- Application examples

Accreditation: 1 CPD Point

Duration: 1 Day

VFD LEVEL 2

Course Content:
- Theory and exercises on the different control modes namely:
  Vector, Speed, Torque
- Position control modes
- Advanced drive features

Accreditation: 1 CPD Point

Duration: 1 Day

SERVO LEVEL 1 & 2
(Own laptop required)

Course Content:
Covers all available control modes
- External position (PLC)
- Internal position (HMI)
- Speed/torque
- Electronic Cam (ECAM)
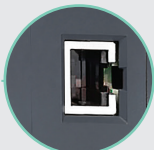
Accreditation: 2 CPD Points

Duration: 2 Day

Visit **www.em.co.za** or scan QR code for more information.

ΔELTA

DVP20ES2...

Top entry Ethernet port

new

DVP20ES200TE

ES2 series PLCs are compact highly efficient, functional instruments with incorporated communication capabilities, advantages such as built-in convenient commands offer easy access to operation and communication function monitoring.

Common characteristics
- 32-bit CPU for high-speed processing
- Built-in 1 x RS-232 and 2 x RS-485 ports
- Max. execution speed of basic instructions: 0.35 µs
- Program capacity: 16 k steps / Data register: 10 k words
- Standard - 16 / 20 / 24 / 32 / 40 / 60 / 80 I/O points for a variety of applications
- Highly efficient processing ability: 1 k steps of programming can be completed within 1ms
- Up to 4 levels of password protection secures your source programs and intellectual property
- **E**- Ethernet CPUs have an additional Ethernet port. Supports Modbus TCP/IP & Ethernet/IP *(adapter mode)*
- Max. 100 kHz pulse control, specific motion control instructions *(mark/masking and instant frequency changing)* for multi-axis applications

type	supply	inputs (DI)	outputs (DO)	width (mm)	description	output type
ES2 series - Standard PLC						
Relay output						
DVP20ES200RE*	100 - 240 VAC	12	8	125	standard PLC	relay
DVP32ES200RE*	100 - 240 VAC	16	16	165	standard PLC	relay
DVP32ES200RC*	100 - 240 VAC	16	16	145	standard PLC	relay
DVP40ES200RE*	100 - 240 VAC	24	16	194	standard PLC	relay
DVP60ES200RE*	100 - 240 VAC	36	24	255	standard PLC	relay
Transistor output						
DVP20ES200TE*	100 - 240 VAC	12	8	125	standard PLC	transist (NPN)
DVP32ES200TE*	100 - 240 VAC	16	16	165	standard PLC	transist (NPN)
DVP32ES200TC*	100 - 240 VAC	16	16	145	standard PLC	transist (NPN)
DVP40ES200TE*	100 - 240 VAC	24	16	194	standard PLC	transist (NPN)
DVP60ES200TE*	100 - 240 VAC	36	24	255	standard PLC	transist (NPN)

* *Last digit "E" with built-in Ethernet interface / "C" with built-in CANopen interface*

EX2 series - Analog I/O PLC

- Built-in 12-bit 4 x analog inputs / 2 x analog output and 14-bit analog I/O extension modules
- Built-in PID auto tuning function, offering a complete analog control solution

		digital I	analog I	digital O	analog O	
DVP20EX200R	100 - 240 VAC	8	4	6	2	relay
DVP20EX200T	100 - 240 VAC	8	4	6	2	transist (NPN)

I/O extension modules for ES2/EX2 series

- Plugs directly into PLC - 24 VDC - supply derived from MPU *(limited to 12W)*

Digital input/output modules

DVP08XM211N	24 VDC	8	–	expansion module	–
DVP16XM211N	24 VDC	16	–	expansion module	–
DVP08XN211R	24 VDC	–	8	expansion module	relay
DVP16XN211R	24 VDC	–	16	expansion module	relay
DVP08XP211R	24 VDC	4	4	expansion module	relay
DVP16XP211R	24 VDC	8	8	expansion module	relay
DVP08XN211T	24 VDC	–	8	expansion module	transist (NPN)
DVP16XN211T	24 VDC	–	16	expansion module	transist (NPN)
DVP08XP211T	24 VDC	4	4	expansion module	transist (NPN)
DVP16XP211T	24 VDC	8	8	expansion module	transist (NPN)

DVP16XP2...

I/O 24/32 point modules *for ES2/EX2 series - 230 VAC power supply required*
- Incorporates 24 VDC output supply 100mA (2.4W) for other modules

DVP24XN200R	100 - 240 VAC	–	24	expansion module	relay
DVP24XP200R	100 - 240 VAC	16	8	expansion module	relay
DVP32XP200R	100 - 240 VAC	16	16	expansion module	relay
DVP24XN200T	100 - 240 VAC	–	24	expansion module	transist (NPN)
DVP24XP200T	100 - 240 VAC	16	8	expansion module	transist (NPN)
DVP32XP200T	100 - 240 VAC	16	16	expansion module	transist (NPN)
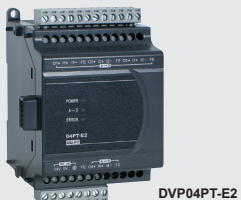
DVP24XN...

Analog I/O extension modules for ES2/EX2 series

• Plugs directly into PLC - 24 VDC - supply derived from MPU *(limited to 12W)*

type	supply	inputs (AI)	outputs (AO)	description	output type

Analog extension modules for ES2/EX2 series

• Analog Input: Voltage (±10V, ±5V) / current (±20mA, 0 - 20mA, 4 - 20mA) input
• Analog Output: Voltage (±10V) / current (0 - 20mA, 4 - 20mA) output
• Resolution: 14-bit

type	supply	analog inputs	analog outputs	description	output type
DVP04AD-E2	24 VDC	4	–	expansion modules	analog/inputs
DVP02DA-E2	24 VDC	–	2	expansion modules	analog/outputs
DVP04DA-E2	24 VDC	–	4	expansion modules	analog/outputs
DVP06XA-E2	24 VDC	4	2	expansion modules	analog I/O

Temperature measurement modules for ES2/EX2

type	supply	description

RTD (Pt100, Pt1000, Ni100, Ni1000) sensor input / 0 - 300Ω resistance input

• Resolution: 16-bit
• Built-in PID temperature control

DVP04PT-E2	24 VDC	4 points resistance (Pt100, Pt1000, Ni 100/1000)

Thermocouple (J, K, R, S, T, E, N type) sensor input/-80mV - +80V voltage input

• Resolution: 16-bit
• Built-in PID temperature control

DVP04TC-E2	24 VDC	4 points of thermocouple (J, K, R, S, T, N type)

DVP-EC3 series - Econo PLC   *100 - 240 VAC*

DVP-EC3 series is the most economical solution for sequential control and communication monitoring for smaller applications with simple RS-485/MODBUS communication.

• Program capacity: 4k steps
• High-speed pulse output: Max. 11kHz pulse output
• Mounting: DIN-rail or chassis mounting
• Built-in high-speed counters: 2 x 20/10kHz, 1 x 20kHz, 1 x 4kHz
• MPU I/O points: 10/16/24/32/40 points *(not expandable)*
• COM ports: Built-in RS-232 & RS-485 *(only for 16/24/32/40 points)*
• Compact: *(H) 90 x (D) 45.5 mm (W)* number of. I/O point dependant

type	supply	inputs (DI)	outputs (DO)	description	output type

DVP-EC3 - Economic series PLC

DVP10EC00R3	100 - 240 VAC	6	4	standard econo PLC	relay
DVP16EC00R3	100 - 240 VAC	8	8	standard econo PLC	relay
DVP24EC00R3	100 - 240 VAC	12	8	standard econo PLC	relay
DVP32EC00R3	100 - 240 VAC	16	16	standard econo PLC	relay
DVP40EC00R3	100 - 240 VAC	24	16	standard econo PLC	relay

Accessories for DVP-ES2/EX2/EC PLC's

DVPPCC01	program-data backup memory card for all DVP series		*(64k words)*	
UC-PRG020-12A	mini-DIN	USB (type-A)	programming cable PLC to PC	2 met
UC-MS030-01A	male mini-DIN	female DB9	programming cable PLC to HMI	3 met
DVPAEXT01-E2	connection kit with cable for DVP-ES2 / EX2 and exp. modules			0.7 met
UC-PRG030-10A	RS-232 program cable for above **DVPAEXT01-E2**			

DELTA-SW   PLC editing software for AH500 and DVP series   *(USB)*
                 supports 5 programming languages: (LD, FBD, SFC, ST, IL)

                 Programming software for DVP-PLC *(freely downloadable via internet)*

ISPsoft   DOPsoft   TPEditor   VFDsoft   ASDAsoft   DIADevice   Manuals

DVP04AD-E2

DVP04PT-E2

DVP16EC00R3

DVPPCC01

DELTA-SW

new

AS228R-A

08AM

AS08AM10N-A

64AN

AS64AN02T-A

The AS series - Compact modular mid-range PLC

The **AS series** is a high performance multi-purpose controller designed for all types of automated equipment. Featuring Delta's self-developed 32-bit SoC CPUs for enhanced execution speed (40k steps/ms) supporting up to 32 extension modules or up to 1.024 Inputs/Outputs. Providing accurate positioning control for up to 8 axes via CANopen motion network and 6 axes via pulse control (200kHz). Widely used in diverse automated equipment, electronics manufacturing, labelling, food packaging, and textile machines.

- 32-bit CPU for high-speed processing
- Max. execution speed of basic instructions: 25 ns
- Built-in mini USB, micro SD slot RS-232 / 2x RS-485 com ports *(Master/Slave),* Ethernet IP *(Adaptor and scanner)*
- Rackless design (no-backplane) direct DIN rail mounting, patented DIN rail clips for fast vertical module installation
- Compact dimensions *(H) 88 mm x (D) 95 mm*

type	supply	digital		analog		description	output
		Inputs	Output	Inputs	Output		type
AS200 series - CPU		*(64k steps / 60k words)*				*(H) 88 x (W) 88 x (D) 95 mm*	

- Program capacity: 64k steps
- Data register: 60k words
- Communication: USB, Ethernet, 2 x RS-485, CANopen
- Plug-in, screwless *(push-in)* terminals for ease of wiring and maintenance

type	supply	Inputs	Output	Inputs	Output	description	type
AS228R-A	24 VDC	16	12	–	–	AS200 CPU module	relay
AS228T-A	24 VDC	16	12	–	–	AS200 CPU module	transist(NPN)
AS228P-A	24 VDC	16	12	–	–	AS200 CPU module	transist (PNP)
AS218TX-A	24 VDC	8	6	2	2	AS200 CPU module	transist (NPN)
AS218RX-A	24 VDC	8	6	2	2	AS200 CPU module	relay
AS218PX-A	24 VDC	8	6	2	2	AS200 CPU module	transist (PNP)
AS300 series - CPU		*(128k steps / 60k words)*				*(H) 88 x (W) 80 x (D) 95 mm*	

- Program capacity: 128k steps / Data register: 60k words
- Communication: USB, Ethernet, 2 x RS-485, *(accepts 2 x AS-F function cards)*
- 2 x Incorporated slots accepting AS-F communication and/or analog function cards
- Plug-in, screwless *(push-in)* terminals for ease of wiring and maintenance

type	supply	Inputs	Output	Inputs	Output	description	type
AS300N-A	24 VDC	–	–	–	–	AS300 CPU module	–
AS320T-B	24 VDC	8	12	–	–	AS300 CPU module	transist (NPN)
AS320P-B	24 VDC	8	12	–	–	AS300 CPU module	transist (PNP)
AS332T-A★	24 VDC	16	16	–	–	AS300 CPU module	transist (NPN)
AS332P-A★	24 VDC	16	16	–	–	AS300 CPU module	transist (PNP)
AS324MT-A❖	24 VDC	12	12	–	–	AS300 CPU module	differential type

❖ *2 axes 4MHz + 4 axes 200kHz output / 2 channels 4MHz + 4 channels 200kHz input*

Power supply modules *(Clips onto left side of CPU)*

AS-PS02	100 - 240 VAC	24 VDC		2A for internal bus	power supply	
AS-PS02A	100 - 240 VAC	24 VDC	1.5A internal bus 0.5A for external I/O		power supply	
AS-ATXB★	–	24 VDC to supply via bottom entry *(side mount)*			power adaptor	

★ *Used with external power supplies for PLC racks which require more then 2A.*

Digital I/O modules - *for AS series PLC's*

Input modules

- Plug-in, screwless *(push-in)* terminals *(32 and 64 I/O modules high density MIL connector)*

		(DI)	(DO)		
AS08AM10N-A	24 VDC	8	–	digital input module (DI)	–
AS16AM10N-A	24 VDC	16	–	digital input module (DI)	–
AS32AM10N-A★	24 VDC	32	–	digital input module (DI)	–
AS64AM10N-A★	24 VDC	64	–	digital input module (DI)	–

Output modules

AS08AN01R-A	24 VDC	–	8	digital output module (DO)	relay
AS08AN01T-A	24 VDC	–	8	digital output module (DO)	transist (NPN)
AS08AN01P-A	24 VDC	–	8	digital output module (DO)	transist (PNP)
AS16AN01R-A	24 VDC	–	16	digital output module (DO)	relay
AS16AN01T-A	24 VDC	–	16	digital output module (DO)	transistor (NPN)
AS16AN01P-A	24 VDC	–	16	digital output module (DO)	transist (PNP)
AS32AN02T-A★	24 VDC	–	32	digital output module (DO)	transist (NPN)
AS64AN02T-A★	24 VDC	–	64	digital output module (DO)	transist (NPN)

Mixed I/O modules

AS16AP11R-A	24 VDC	8	8	digital input/output mod. (DI/O)	relay
AS16AP11T-A	24 VDC	8	8	digital input/output mod. (DI/O)	transist (NPN)
AS16AP11P-A	24 VDC	8	8	digital input/output mod. (DI/O)	transist (PNP)

★ *High density MIL terminal block, see C-15*

Automation

AS series - I/O modules and accessories

type	supply	analog		description
		Inputs	Output	

Analog I/O modules (W) 35 mm

- Single channel on/off setting to enhance overall conversion efficiency
- Wire break detection at 1 - 5V and 4 - 20mA
- **Voltage:** 1 - 5V, 0 - 5V, ±5V, 0 - 10V, ±10V   **Current:** 4 - 20mA, 0 - 20mA, ±20mA

Input module *(analog)*

- Hardware resolution: 16-bit

		(AI)	(AO)	
AS04AD-A	24 VDC	4	–	voltage and current input
AS08AD-B	24 VDC	8	–	voltage input
AS08AD-C	24 VDC	8	–	current input

Output module *(analog)*

- Hardware resolution: 12-bit

AS04DA-A	24 VDC	–	4	voltage and current output

Mixed I/O modules *(analog)*

- Hardware resolution: 16-bit (input) / 12-bit (output)

AS06XA-A	24 VDC	4	2	voltage and current Input/Output

Communication modules

Comm. extension module   *accepts comm. and/or analog function cards*   *(W) 56 mm*

AS00SCM-A	24 VDC	function card module for CPU / remote I/O interface

Communication function cards *(isolated)*

- Plugs directly into **AS300** main CPU or **AS00SCM-A** module

AS-F232	RS-232	serial COM, RS-232 interface for CPU or AS00SCM-A
AS-F422	RS-422	serial COM, RS-422 interface for CPU or AS00SCM-A
AS-F485	RS-485	serial COM, RS-485 interface for CPU or AS00SCM-A
AS-FCOPM*	CANopen	CANopen port, support DS301, for CPU or AS00SCM-A
AS-FEN02*	Ethernet	MODBUS TCP, EtherNet/IP adaptor CPU modules

Analog I/O Function cards   *plugs directly into main **AS300** CPU or **AS00SCM-A** module*

AS-F2AD	24 VDC	2	–	0 - 10V (12-bit), 4 - 20mA *(11-bit)*
AS-F2DA	24 VDC	–	2	0 - 10V, 4 - 20mA *(12-bit)*

DeviceNet communication module   *(W) 35 mm*

AS01DNET-A*	DeviceNet	supports master / slave modes, supports RTU function

* *Can be used as remote I/O modules*

Temperature measurement modules   *resolution: 0.1°C*   *(W) 35 mm*

Pt, Ni temperature sensor   *±0.1% overall accuracy*

- Pt100/1000, Ni100/1000, JPt100, LG-Ni1000, Cu50/100, resistor 0~300/3000Ω

AS04RTD-A	24 VDC	4 CH	PT, NI temperature sensor module
AS06RTD-A	24 VDC	6 CH	PT, NI temperature sensor module

Thermocouple temperature sensor   *±0.5% overall accuracy*

- Thermocouple - J, K, R, S, T, E, N, B; ±100mV

AS04TC-A	24 VDC	4 CH	thermocouple temperature sensor module
AS08TC-A	24 VDC	8 CH	thermocouple temperature sensor module

Load cell module   *selectable signal input ranges*   *(W) 35 mm*

- Resolution: 24-bit for hardware (ADC), 32-bit for data output
- High speed dynamic measurement

AS02LC-A	24 VDC	2 CH	16bit load cell module *(for 4 /6 wire load cell sensors)*

AS04AD-A

AS-FEN02

AS08TC-A

AS02LC-A

AH500 series - High performance PLC system

The new generation AH Series PLC provides automation solutions for high-level applications. The combination of modular hardware structure, advanced functions and highly integrated software provides system solutions for advanced process control. In addition to various function blocks, excellent price/performance ratio and an abundant selection of extension modules, the AH PLC also provides exceptional system expansion ability, greatly reducing system cost for a broad range of applications.

- LD/SFC/FBD/IL/ST languages
- Utilizes a dual-core multi-tasking processor
- Reliable operations of the supported modules in severe conditions
- Enhanced flexibility: Max. 100 meters between 2 local extension racks
- Hot-swapping function keeps system running for improved maintainability
- CPU built-in with fully isolated RS-232/422/485, Mini-USB, Ethernet, SD Card 1.0
- Highly integrated software ISPSoft: graphical interface with 5 programming languages IEC61131-3
- MaxI. I/O points: DIO: Max.   4.352 points
                        AIO: Max.   544 channels
                        RIO: Max.   125.440 digital points / 3.920 analog channels
- Program capacity: Max.   256K steps / Data register 64K words
- Excellent program execution speed: 0.3ms / 1k steps

CPU modules   *internal power consumption (2W)*

type	local I/O (points)	program capacity (steps)	data register (K words) D	L	B	function blocks	extension backplane

RS2 series CPU modules

- Built-in RS-232/422/485 multi-modes communication port x 2
- Built-in SD card slot, Mini-USB programming port
- Program execution speed: LD instruction @ 0.02μs / 1K steps @ 0.3ms
- MODBUS RTU/ASCII
- 2048 timers and counters
- No battery required RTC function *(max. 30 days after power off)*

type	local I/O	program capacity	D	L	B	function blocks	extension backplane
AHCPU500-RS2	768	32k	16	16	512	128	0
AHCPU511-RS2	1280	96k	48	48	1024	1024	1

EN series CPU modules *(with built-in EtherNet communication port 100Mbps)*

As RS2 above, but with one less comm. port:
- WEB/E-mail/IP Filter function
- Built-in Ethernet communication port
- NTP network time correction function

type	local I/O	program capacity	D	L	B	function blocks	extension backplane
AHCPU510-EN	1280	64k	32	32	1024	256	1
AHCPU511-EN	1280	96k	48	48	1024	1024	1
AHCPU521-EN	2304	192k	96	96	2048	2048	3
AHCPU531-EN	4352	384k	128	128	4096	4096	7

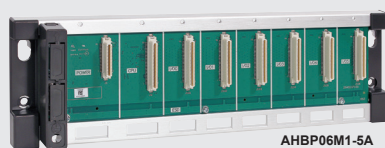### Main backplanes   *internal power consumption (0.01W)*

- Built-in communication port for extension backplanes
- Slot spaces are not occupied by Power/CPU/RTU modules
- Supports CPU modules, remote I/O communication modules (RTU)

type	slots	description
AHBP04M1-5A	4	main backplane suppports CPU, remote I/O modules
AHBP06M1-5A	6	main backplane suppports CPU, remote I/O modules
AHBP08M1-5A	8	main backplane suppports CPU, remote I/O modules
AHBP12M1-5A	12	main backplane suppports CPU, remote I/O modules

Extension backplanes   *internal power consumption (1.41W)*

- For main backplane extension
- Built-in communication port for backplanes

type	slots	description
AHBP06E1-5A*	6	ext. backplane suppports CPU, remote I/O modules
AHBP08E1-5A*	8	ext. backplane suppports CPU, remote I/O modules

Power supply modules   *internal power consumption (1.41W)*

- Power supply for the modules on the racks

type		supply		description
AHPS05-5A	60W	100 - 240 VAC	50/60Hz	power supply module
AHPS15-5A	36W	24 VDC		power supply module

For extension backplane cables, see C-13

AHCPU500-RS2

AHCPU521-EN

AHBP06M1-5A

AHPS05-5A

Automation

AH16AM30N-5A

AH32AN02T-5C

AH16AP11R-5A

AH04PT-5A

AH500 series - Digital I/O modules   *supports hot-swapping function*

type	points In	points Out	signals	terminal type	description

Input modules

- PNP/NPN mixed mode design
- Individual LED status indicator

type	In	Out	signals	terminal type	description
AH16AM10N-5A	16	–	24 VDC 5mA	JIS removable	digital input module
AH16AM30N-5A	16	–	120 - 240 VAC	JIS removable	digital input module
AH16AR10N-5A	16	–	24 VDC 5mA	JIS removable	interruption card
AH32AM10N-5C*	32	–	24 VDC 5mA	MIL terminal	digital input module
AH64AM10N-5C*	64	–	24 VDC 3.2mA	MIL terminal	digital input module

Output modules

- Supports keep-last-value function when CPU shuts down
- Individual LED status indicator

type	In	Out	signals	terminal type	description
AH16AN01R-5A	–	16	Relay 2A	JIS removable	digital output module
AH16AN01T-5A	–	16	NPN *(Sink)*	JIS removable	digital output module
AH16AN01P-5A	–	16	PNP *(Source)*	JIS removable	digital output module
AH16AN01S-5A	–	16	TRIAC	JIS removable	digital output module
AH32AN02T-5C*	–	32	NPN *(Sink)*	MIL terminal	digital output module
AH32AN02P-5C*	–	32	PNP *(Source)*	MIL terminal	digital output module
AH64AN02T-5C*	–	64	NPN *(Sink)*	MIL terminal	digital output module
AH64AN02P-5C*	–	64	PNP *(Source)*	MIL terminal	digital output module

Mixed Input/Output

- PNP/NPN mixed mode design
- Individual LED status indicator
- Supports keep-last-value function when CPU shuts down

type	In	Out	signals	terminal type	description
AH16AP11R-5A	8	8	Relay 2A	JIS removable	digital I/O module
AH16AP11T-5A	8	8	NPN *(Sink)*	JIS removable	digital I/O module
AH16AP11P-5A	8	8	PNP *(Source)*	JIS removable	digital I/O module

** Pin head termination. For other cable types and lengths, see **C-14***

Analog I/O modules   *supports hot-swapping function*

- Conversion time: 150 μs/channel
- Diagnose function
- Module status LED display
- Isolated signal design
- Supports interrupt function

Analog input modules   *Hardware resolution: 16-bit*

- Accuracy (at 25°C)   Voltage mode: ±0.02% *(full scale)*   Current mode: ±0.05% *(full scale)*

type	In	Out	signals	terminal type	description
AH04AD-5A	4	–	0/1-5V, 0-10V, 0/4-20mA	JIS removable	analog input module
AH08AD-5B	8	–	0/1-5V, 0-10V	JIS removable	analog input module
AH08AD-5C	8	–	0/4-20mA	JIS removable	analog input module

Analog Output modules   *Hardware resolution: 16-bit*

- Supports keep-last-value function when CPU shuts down
- Accuracy (at 25°C)   Voltage mode: ±0.05% *(full scale)*   Current mode: ±0.1% *(full scale)*

type	In	Out	signals	terminal type	description
AH04DA-5A	–	4	0/1-5V, 0-10V, 0/4-20mA	JIS removable	analog output module
AH08DA-5B	–	8	0/1-5V, 0-10V	JIS removable	analog output module
AH08DA-5C	–	8	0/4-20mA	JIS removable	analog output module

Mixed Analog Input/Output   *Hardware resolution: 16-bit*

type	In	Out	signals	terminal type	description
AH06XA-5A	4	2	0/1-5V, 0-10V, 0/4-20mA	JIS removable	analog I/O module

Temperature measurement modules   *Hardware resolution: 20-bit*

- Accuracy: ±0.06% *(full scale)*
- Diagnose function
- Module status LED display
- Signal isolated design
- PID function
- Supports disconnection detect function

2/3/4-wire RTD input

type	In	Out	signals	terminal type	description
AH04PT-5A	4	–	PT100/1000, Ni100/1000, 0-300Ω	JIS removable	temperature module

Thermocouple

type	In	Out	signals	terminal type	description
AH04TC-5A	4	–	J,K,R,S,T,E,N	JIS removable	temperature module
AH08TC-5A	8	–	J,K,R,S,T,E,N	JIS removable	temperature module

AH10EN-5A

AHRTU-DNET-5A

AHACAB06-5A

AHASP01-5A

AH500 accessories

type	signals	terminal type	description

Network modules

- Diagnose function
- Module status LED indicator
- Supports hot-swapping function

AH10EN-5A	Ethernet		communication module *(Master/Slave)*

100Mbps comm. port x 2 / Etherlink , MODBUS TCP function / Automatic data exchange function / NTP network time correction function / SNMP/E-mail Filter function

AH10SCM-5A	Serial		communication module *(Master/Slave)*

Full isolation design / Built-in 2x RS422/485 / supports PLC Link function / MODBUS RTU/ASCII / Supports automatic data exchange function

AH10DNET-5A	DeviceNet		communication module *(Master/Slave)*

Supports max. speed of 1 Mbps / Switchable between master and slave / connects up to 63 slaves in master mode / RIO capacity in master mode: 490 words IN/OUT

AH10PFBM-5A	Profibus DP		communication module *(Master)*
AH10PFBS-5A	Profibus DP		communication module *(Slave)*

Remote I/O RTU modules

- Diagnose function
- Supports max. speed of 1Mbps
- Module status LED indicator

AHRTU-PFBS-5A	Profibus DP		remote Input/Output module
AHRTU-DNET-5A	DeviceNet		remote Input/Output module

Motion control modules

High speed counters

- Diagnose function
- UD/PD/AB/4AB modes
- Supports interrupt function
- Module status LED indicator

AH02HC-5A	HDC terminal		2 high speed counter channels (200K Hz) input
AH04HC-5A	HDC terminal		4 high speed counter channels (200K Hz) input

Pulse train motion control modules

- Supports G-Code
- Diagnose function
- Supports Micro SD card
- Module status LED indicator
- Supports hot-swapping function
- Built-in Ethernet communication port
- Built-in Mini USB programming communication port

AH10PM-5A	HDC terminal		6-axis pulse train motion control module
AH20MC-5A	HDC terminal		12-axis DMCNET communication motion control

Cables for AH500 PLC

type	std. length	for which modules

Cables for extending main to extension backplane

type	std. length	for which modules
AHACAB06-5A	0.6 met	AHBP06E1-5A / AHBP08E1-5A
AHACAB10-5A	1.0 met	AHBP06E1-5A / AHBP08E1-5A
AHACAB15-5A	1.5 met	AHBP06E1-5A / AHBP08E1-5A
AHACAB30-5A	3.0 met	AHBP06E1-5A / AHBP08E1-5A

Accessories

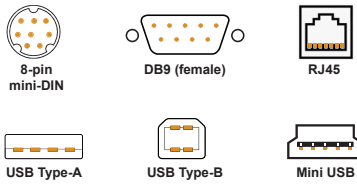|		
AHASP01-5A		space module to protect empty backplane slots
AHADINADP1-5A		DIN rail adaptor for rack installation
FMC-SD1G		SD memory card capacity 1GB
HASP-20-OPC01		Delta OPC server for AH500 series

Automation

Comm. cables connector's type

8-pin mini-DIN   DB9 (female)   RJ45

USB Type-A   USB Type-B   Mini USB

UC-PRG020-12A
(from Mini-DIN + DB9)
(To USB type-A)

UC-PRG015-01A
(To USB type-A)   (from Mini USB type-A)

UC-PRG030-02A
(To USB type-A)   (from USB type-B)

UC-MS010-02A
(from Mini-DIN)
(To DB9)

UC-PRG030-20A

TAP-CN03

Communication cables for PLC's

	8-pin mini-DIN (male)	DB9 (female)	DB9 (male)	RS-485	RS-422	RJ45	Mini USB	USB Type-B	DB9 (female)	DB9 (male)	USB Type-A	RS232	RJ45	Length (met)	DVP-SS2/SA2/SV2	DVP-ES2/EX2/EC3	DVP-SX2	DVP-SE	DVP-MC	AS200/300	AH500	TP SERIES	DOP-100	DOP-112 / DOP-115
from → to																	**for PLC/HMI**							
Programming cables																								
UC-PRG020-12A	•	•									•			2	•	•	•		•	•	•			
UC-PRG015-01A							•				•			1.5			•	•		•	•			•
UC-PRG030-01A							•				•			3			•	•		•	•			•
UC-PRG030-02A								•			•			3								•	•	
UC-PRG030-10A		•							•					3						•	•			
UC-PRG030-20A						•							•	3				•	•	•	•	•	•	•
IFD6500			•								•				•	•	•	•	•	•	•	•		
IFD8500		•	•										•		•	•	•	•				•	•	
Communication cables																								
UC-MS010-02A★	•								•					1	•	•			•			•		
UC-MS020-06A	•									•				2	•	•			•			•	•	
UC-MS030-01A	•								•					3	•	•			•			•		
UC-MS030-03A		•								•				3									•	•
UC-MS030-04A			•							•				3									•	
UC-MS030-06A	•									•				3	•	•			•			•		•

★ *90° angled connector*
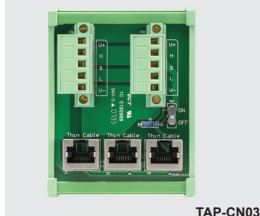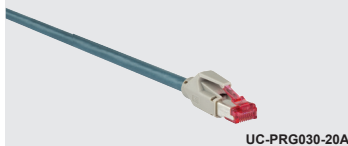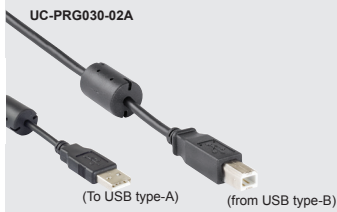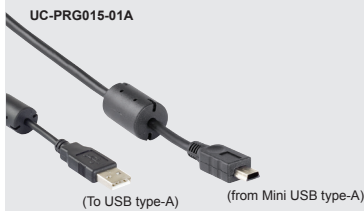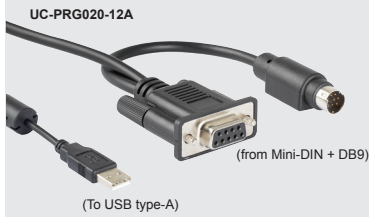
Programming cables   PLC to PC \ HMI to PC

type	from	to	description	length

For PLC's - SS2, SA2, SV2, SX, SX2, MC, ES2, EC3, AS200/300, AH500

| UC-PRG020-12A | mini-DIN | USB (type-A) | program. cable PLC to PC | 2 met |

For PLC's - *SE, SX2, AS200/300, AH500*

UC-PRG015-01A	mini-USB	USB (type-A)	program. cable PLC to PC	1.5 met
UC-PRG030-01A	mini-USB	USB (type-A)	program. cable PLC to PC	3 met
UC-PRG030-02A	USB (type-B)	USB (type-A)	program. cable HMI to PC	3 met
UC-PRG030-20A	RJ45	RJ45	program. cable HMI to PC	3 met
UC-PRG030-10A	DB9 (female)	DB9 (female)	RS-232 program. cable	3 met

Communication cables *(RS-232)*   PLC to HMI

For PLC's - SS2, SA2, SV2, SX2, MC, ES2, EC3, MC

| UC-MS010-02A★ | male mini-DIN | female DB9 | program. cable PLC to HMI | 1 met |
| UC-MS030-01A | male mini-DIN | female DB9 | program. cable PLC to HMI | 3 met |

★ *90° mini-DIN plug (male)*

Exlusive to DOP103 HMI *(RS-232)*

| UC-MS020-06A | male mini-DIN | male DB9 | program. cable PLC to HMI | 2 met |
| UC-MS030-06A | male mini-DIN | male DB9 | program. cable PLC to HMI | 3 met |

For PLC's - SE, MC, AS200/300, AH500 (EN)

| UC-PRG030-20A | RJ45 | RJ45 | program. cable PLC to HMI | 2 met |

Industrial network cables

UC-CMC003-01A	RJ45	RJ45	CANopen comm. cable	0.3 m
UC-CMC005-01A	RJ45	RJ45	CANopen comm. cable	0.5 m
UC-CMC010-01A	RJ45	RJ45	CANopen comm. cable	1.0 m
UC-CMC020-01A	RJ45	RJ45	CANopen comm. cable	2.0 m
UC-CMC030-01A	RJ45	RJ45	CANopen comm. cable	3.0 m

For PLC's - AH500

| UC-PRG030-10A | DB9 (female) | DB9 (female) | RS-232 program. cable | 3 met |

Adaptors, splitters and terminal resistors

TAP-CN01			DeviceNet CANopen distribution box, 1 to 2 *(Terminator 121Ω)*	
TAP-CN02			DeviceNet CANopen distribution box, 1 to 4 *(Terminator 121Ω)*	
TAP-CN03			DeviceNet CANopen distribution box, *(RJ45)* 1 to 4 *(Terminator 121Ω)*	
TAP-TR01			CANopen *(Terminator, 121 W)*	

UC-ET020-24D

UB-10-ID16A   UB-10-ID16A

UB-10-ID32A

UB-10-OR16A

UC-ET010-24A

shielded cable

UC-ET030-24D
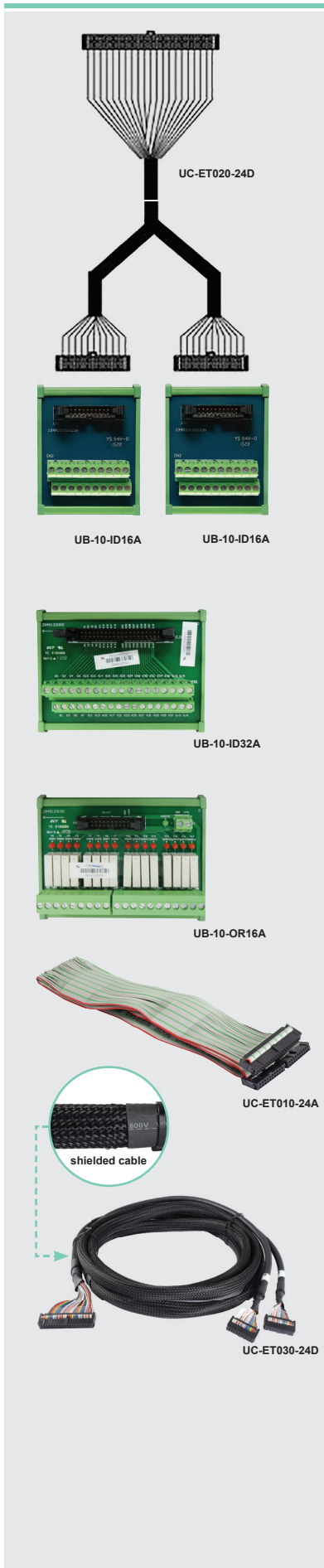
I/O external screw terminal module

terminal module	Input unit	Output unit	applicable module / CPU	cable
UB-10-ID16A *Supports I/O cards through terminal*	16 or 16		AS332 CPU, AS32AM, AS32AN AS64AM, AS64AN, DVP32SN11TN AH32AN, AH64AN	UC-ET0◆0-24D UC-ET010-24C
UB-10-ID32A *Supports I/O cards through terminal*	32	–	AS32AM, AS64AM, DVP32SM AH32AM10N-5C, AH64AM10N-5C	UC-ET0◆0-24B UC-ET010-24A
UB-10-OR16A *Supports Output Cards NPN switching*	–	16 relay	AS332T-A, AS32AN02T-A, AS64AN02T-A, DVP32SN11TN, AH32AN02T-5C, AH64AN02T-5C	UC-ET0◆0-24D UC-ET010-24C
UB-10-OR16B *Supports Output Cards PNP switching*	–	16 relay	AS332P-A, AH32AN02P-5C, AH64AN02P-5C	UC-ET0◆0-24D UC-ET010-24C
UB-10-OT32A *Supports I/O cards through terminal*	–	32	AS32AN02T-A, AS64AN02T-A DVP32SN11TN, AH32AN02T-5C, AH32AN02P-5C, AH64AN02T-5C, AH64AN02P-5C	UC-ET0◆0-24B UC-ET010-24A
UB-10-IO32D *Supports I/O cards through terminal*	16 and 16		AS332 CPU	Adaptor board

Note: Replace (◆) **2** *(meters) or* **3** *(meters) to the part number*

For motion control modules

type	inputs conn.	outputs conn.	output type	cable type	
UB-10-IO16C	differential	MDR36	transistor	**UC-ET010-13B**	–
UB-10-IO24C	differential	MDR50	transistor	**UC-ET010-15B**	–

Cables for terminal modules PLC to terminal board

type	from		to		description	length
UC-ET010-24C	32	ID40	2 x 16	ID20	ribbon cable for terminal module	1 met
UC-ET020-24D	32	ID40	2 x 16	ID20	shielded cable for term. module	2 met
UC-ET030-24D	32	ID40	2 x 16	ID20	shielded cable for term. module	3 met
UC-ET010-24A	32	ID40	32	ID40	ribbon cable for terminal module	1 met
UC-ET020-24B	32	ID40	32	ID40	shielded cable for term. module	2 met
UC-ET030-24B	32	ID40	32	ID40	shielded cable for term. module	3 met
UC-ET010-13B	MDR36		MDR36		cable for **UB-10-IO16C** board	1 met
UC-ET010-15B	MDR50		MDR50		cable for **UB-10-IO24C** board	2 met
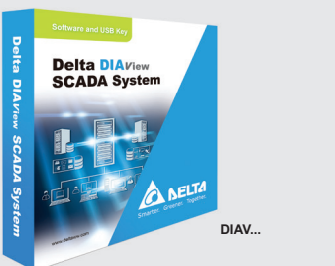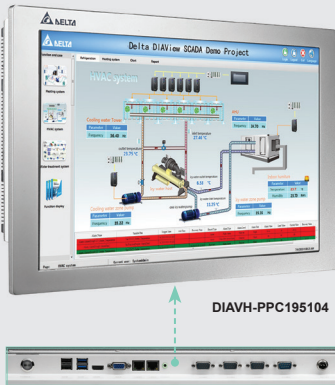
Industrial PCs

In response to the market demands for industrial information management, Delta presents the Industrial Panel PC (PPC) and Industrial box PC (BPC) which provides cost-effective and highly reliable panel computer solutions for industrial applications. It adopts a variety of specifications and supports operating systems such as Windows 7/8/10, Linux, and more.

Applications:　　Factory digitalization
　　　　　　　　　　Logistic applications: Transportation/stereoscopic warehouse
　　　　　　　　　　Inspection and monitoring of electronic equipment
　　　　　　　　　　Equipment monitoring systems

type	display size	hard drive SSD MSATA	(OS) system	CPU intel	dimensions (mm) (H)	(W)	(D)

Industrial Panel PC (PPC)

The Industrial Panel PC (PPC), built with an aluminium case, is composed of a front panel and a rear panel with heat sink. It is slim and sealed with a fanless design, and is suitable for applications in the rubber machinery, solar photovoltaic, automotive control and other industrial fields.

- Audio:　　　　　Input / output × 1
- Max capacity:　　8GB(Celeron) 16GB Icore
- Serial COM　　　Port x 4 (RS-232 x 3, RS-422/485 x 1)
- Software:　　　　Win 10 Professional - where applicable / supports Linux
- Resolution:　　　**10 & 15"** - 1024 x 768 pixels / **19"** - 1440 x 900 pixels
- Supports:　　　　Mini-PCIE bus for WiFi communication expansion and more
- Ports　　　　　　USB 3.0 x 4 Ports/ 4GB RAM / Intel® I211 Gigabit Ethernet Controller × 2

Standard PPC

type	display size	hard drive SSD MSATA	(OS) system	CPU intel	(H)	(W)	(D)
DIAVH-PPC10J103	10"	128GB	No Win	Celeron	58	198	258
DIAVH-PPC15J103	15"	128GB	No Win	Celeron	59	300	380

Advanced PPC

type	display size	hard drive SSD MSATA	(OS) system	CPU intel	(H)	(W)	(D)
DIAVH-PPC153103A	15"	256GB	No Win	I3 (6th GEN)	59	300	380
DIAVH-PPC195104	19"	512GB	Win 10	I5 (6th GEN)	57	308	475

Industrial Box PC (BPC)

The DIAVH Industrial Box PC (BPC) is compact and robust with fanless design and aluminium case featuring cooling effects. Its rugged structure and excellent vibration resistance make it highly protective against pollution, dust, and electromagnetic interference when applied in industrial environments, such as machinery equipment, transportation, and infrastructure.

- Audio:　　　　　Input / output × 1
- Max capacity:　　4GB RAM (up to 16GB)
- Software:　　　　Win 7 32 bit pro / supports Linux
- Serial COM　　　Serial Ports x 6 (RS-232 x 5, RS-422/485 x 1)
- Ports:　　　　　USB 3.0 x 6 Ports / Intel® I211 Gigabit Ethernet Controller x 2
- Supports:　　　　Supports Mini-PCIE bus for WiFi communication expansion
- Anti-Vibration, 5 - 19 Hz / 1.0 mm amplitude; 19 - 200 Hz / 1.0 g acceleration
- Antishock, 10g acceleration, 11ms duration

type	hard drive SSD MSATA	OS	CPU intel	dimensions (mm) (H)	(W)	(D)
DIAVH-IPC005104	512GB SSD	Win Pro	I5 (6th GEN)	211.5	200	67

DIAview SCADA system

The DIAView SCADA system can be widely applied in industries such as machinery, metallurgy, water treatment, HVAC, packaging, central heating control, environmental monitoring, textiles, energy management, transportation, smart buildings and others.

- Friendly graphical demonstration
- Strong and efficient alarm system
- Easy-to-learn VBScript language
- I/O points: 64, 128, 256, 512, 1000, 1500, 3000 and unlimited
- Licensing: via USB hardware key to enable all authorizations
- Stable industrial communication, seamless integration with Delta PLC & other products

type	license type	description	No. tags
DIAV-010640000C	64 points	DIAview SCADA license for	64 tags
DIAV-011280000C	128 points	DIAview SCADA license for	128 tags
DIAV-012560000C	256 points	DIAview SCADA license for	256 tags
DIAV-015120000C	512 points	DIAview SCADA license for	512 tags
DIAV-0101K0000C	1000 points	DIAview SCADA license for	1000 tags
DIAV-011K50000C	1500 points	DIAview SCADA license for	1500 tags
DIAV-0103K0000C	3000 points	DIAview SCADA license for	3000 tags
DIAV-0199K0000C	unlimited	DIAview SCADA license for	unlimited

DIAVH-PPC195104

DIAVH-IPC005104

DIAV...

DOP-100 series - HMI *(Human Machine Interface) touch screens*

Delta DOP-100 series HMI's provide various touch screens in multiple dimensions and colours providing fast, convenient control functions for industrial automation machines. DOP-100 series HMI's designed for Delta specific industrial automation products, can be combined with over 30 other brands and models of PLCs or controllers for effortless communication and versatile operation.

- Full 65,536-colour, enhanced resolution for more realistic images and colourful, vivid display
- RS-232/485/422, USB disk, Ethernet, SD card are supported for various applications
- High Flash and SDRAM memory 256 MB   Flash ROM 256MB
- Multitone buzzer - frequency *(2K - 4K Hz)* / 80dB   RAM 256MB *(512MB hi performance)*
- Supports SD memory card - Ethernet *(certain models)*
- Supports VNC for remote access

DOP-B - DOP-100
Transition document

DOP-103WQ

DOP-107EG

DOP-110WS

DOP-W127B

DELTA-SW

type	display size	version	Ethernet	host ports SD/USB	description	
DOP-103	*(H) 103 x (W) 137 x (D) 31 mm*			*panel cutout: 92.8 x 118.8 mm*		
• *Resolution:*	*480 x 272 pixels*					
DOP-103BQ	4.3" (95 x 54)	standard	–	USB	2x COM ports	
DOP-103WQ	4.3" (95 x 54)	hi performance	Yes	USB	2x COM ports	
DOP-107	*(H) 161 x (W) 215 x (D) 51.2 mm*			*panel cutout: 142.9 x 196.9 mm*		
• *Resolution:*	*800 x 480 pixels*					
DOP-107BV	7" (154 x 86)	basic	–	USB	2x COM ports	
DOP-107EV	7" (154 x 86)	standard	Yes	SD/USB	3x COM ports	
Squared version	*(H) 144 x (W) 184 x (D) 51.1 mm*			*panel cutout: 132.4 x 172.4 mm*		
DOP-107EG*	7" (141 x 106)	standard	Yes	SD/USB	3x COM ports	
Narrow border	*(H) 136 x (W) 196 x (D) 32 mm*			*panel cutout: 126.8 x 186.8 mm*		
DOP-107WV	7" (154 x 86)	hi performance	Yes	SD/USB	3x COM ports	
DOP-110	*(H) 200 x (W) 272 x (D) 51.9 mm*			*panel cutout: 189.3 x 261.3 mm*		
• *Resolution:*	*1024 x 600 pixels*					
DOP-110CS	10" (226 x 128)	standard	–	–	3x COM ports	
DOP-110IS*	10" (226 x 128)	standard	Yes	SD/USB	3x COM ports	
Narrow border	*(H) 180 x (W) 270 x (D) 47.75 mm*			*panel cutout: 170.5 x 255.5 mm*		
DOP-110WS	10" (225 x 128)	hi performance	Yes	SD/USB	3x COM ports	

DOP100-MX   *Multi-media type*

DOP100-MX series adopts a "narrow frame", wide screen design with advanced communication capabilities *(multilingual inputs)* and enhanced multi-media functions to meet different applications.

- 1024 x 768 pixel 8GB ROM   • 1G RAM DDR3 1000Mhz   • Colour- 24bit
- Dual core 1GHz speed processor for higher computing performance
- Multi-media functions: Camera *(analog / IP)*, video playback , VGA input, event trigger
- Multiple Interfaces: 4 COM ports, 2 Ethernet ports, 1 Mini USBMini Slave 2.0, 1 USB Host 2.0

12-inch	*(H) 317.4 x (W) 246.4 x (D) 52.7 mm*			*panel cutout: 302.7 x 228.7 mm*		
DOP-112MX	12"(245 x 184)	advanced	Yes	SD/USB	4 x COM ports	
15-inch	*(H) 387.7 x (W) 295.7 x (D) 63.5 mm*			*panel cutout: 372.4 x 283.7 mm*		
DOP-115MX	15" (304 x 228)	advanced	Yes	SD/USB	4 x COM ports	

DOP-W   *Large size HMI's*

The **DOP-W** series offers large-size HMI's with high resolution and high brightness touch screens the ultimate in industrial versatility.

- Multiple Interfaces: 2 COM ports, 2 Ethernet ports, 3 USB Host 2.0 ports, SD card

12-inch	*(H) 313 x (W) 239.5 x (D) 67.5 mm*			*panel cutout: 302.7 x 228.7mm*		
DOP-W127B*	12"(245 x 184)	advanced	Yes	SD/USB	2 x COM ports	
15-inch	*(H) 384.4 x (W) 295.8 x (D) 67.8 mm*			*panel cutout: 372.4 x 283.7 mm*		
DOP-W157B*	15" (304 x 228)	advanced	Yes	SD/USB	2 x COM ports	

* *Incorporates audio stereo output*

Accessories for above HMI's

DELTA-SW   editing\design software for DOP/TP series HMI's

New upgraded configuration software provides complete functions in a very user-friendly operator interface
Note: *For HMI's cables, see **C-14***

Automation

TP04G-AS2

TP series - Text Panel HMI

Text Panel is a monochrome text and graphical panel interface between people and machines, although not a vivid and colourful graphical interface, it can still convert many program codes into text and graphics to display on the Text Panel.

Simple operation and control function, the entire series supports various communication protocols. Light weight, cost-effective and flexibility assist users to quickly control the system and improve working efficiency.

TP series - Operation interface panel (text panel)

type	display size inch / (mm)	function keys	text lines	description

TP Text Panels offer simple operation/control functions to support various communication protocols they offer cost effective, high flexibility solutions In control systems, improving working efficiency.

TP08G-BT2

- STN LCD single colour
- Built-in real time clock
- 256K Flash Memory *(1M for TP08)*
- RS-232/422/485 communication ports
- Numerical keys with user defined functions available

type	display size inch / (mm)	function keys	text lines	description
TP04G-AS2	3.0" (67 x 32)	12	4 line	operational interface panel
TP04G-AL2	4.1" (102 x 35)	10	4 line	operational interface panel
TP04G-AL-C✳	4.1" (102 x 35)	10	4 line	operational interface panel
TP08G-BT2	3.8" (83 x 41)	24	8 line	operational interface panel

✳ *With RS232 communication port only.*

Text Panel with built-in PLC functionality   *4.1" STN-LCD*

- Built-in real time clock
- Screen Size 4.1" *(102 x 35 mm)*
- 2 x RS-485 communication ports
- Program capacity: 8K steps / 5K words
- Built-in USB port for program upload/download
- Integrated PLC and TP in one panel *(adopts core of SS2 series PLC)*
- PLC link capable

TP04P-16TP1R

type	Digital		Analog		function keys	description
	inputs	outputs	inputs	outputs		
TP04P-16TP1R	8	8	–	–	10	text panel/PLC
TP04P-22XA1R	8	8	4	2	10	text panel/PLC
TP04P-32TP1R	16	16	–	–	10	text panel/PLC

Touch panel HMI with built-in PLC   *7" 65535 colour LCD touchscreen*

TP70P HMI/PLC adopts the core of SS2 series PLC combined with a 7-inch HMI touch panel.

- Built-in real time clock
- Screen resolution 800 x 480
- Built-in USB and 2 communication ports
- Provides 2 sets od 10kHz high speed pulse input
- Adopts core of **SS2** series PLC with program of 8K steps and D devices of 5K words

TP70P-16TP1R

type	Digital		Analog		PT100 inputs	description
	inputs	outputs	inputs	outputs		
TP70P-16TP1R	8	8	–	–	–	combination HMI/PLC
TP70P-32TP1R	16	16	–	–	–	combination HMI/PLC
TP70P-21EX1R✳	8	8	2	1	2	combination HMI/PLC
TP70P-22XA1R	8	8	4	2	–	combination HMI/PLC

✳ *Only mA analogs*

Accessories

TP-PCC01	program / data backup module
UC-PRG020-12A	TP series program upload/download cable (RS-232)
UC-PRG030-02A	USB type B to USB type A - programming TP-04P/70P
DELTA-SW	editing\design software for DOP/TP series HMI's

DELTA-SW

ISPsoft   DOPsoft   **TP**Editor   VFDsoft   ASDAsoft   DIADevice   Manuals

DVS series - Unmanaged Industrial Ethernet switches

DVS series industrial 5, 8 and 16-port Ethernet switches support IEEE 802.3/802.3u/802.3x with 10/100M, full/half-duplex, MDI/MDIX auto-sensing RJ45 ports. Specifically designed for harsh and hazardous industrial environments.

- RJ45 connector   10/100Base-T, auto MDI/MDI-X, auto negotiation
- Std compliance: IEEE 802.3 10Base-T, 802.3u 100Base-T(X) and 100Base-FX, 802.3x flow control
- Housing: industrial DIN-rail mounting, IP40 aluminium metal case

type	No. Ports	operating temperature	alarm contact	fibre type	description
Entry level Ethernet switches		*(H) 145.3 x (W) 45 x (D) 108.7 mm*			
• Input voltage: 12 to 48 VDC					
• Dimensions: **DVS-G...** - *(H) 110x (W) 28 x (D) 75 mm*					
DVS-G005I00C ∗	5	-20 to +70ºC	–	–	compact Gigabit Ethernet switch
DVS-005I00	5	-10 to +60ºC	–	–	entry level Ethernet switch
DVS-008I00	8	-10 to +60ºC	–	–	entry level Ethernet switch
DVS-005W01 ∗	5	-40 to +75ºC	yes	–	standard Ethernet switch
∗ *Redundant dual inputs.*					
Standard Ethernet switches		*(H) 145.3 x (W) 75 x (D) 108.7 mm*			
• Supports IEEE 802.1p based QoS for packet forwarding precedence					
• Input Voltage: 2 sets, 12 to 48 VDC redundant terminal block input					
DVS-008W01	8	-40 to +75ºC	yes	–	standard Ethernet switch
DVS-016W01	16	-40 to +75ºC	yes	–	standard Ethernet switch
Fibre series Ethernet switches					
• Fibre Optic Ports: 1 100Base-FX *(SC connector)* MultiMode – 5 km					
DVS-008W01-MC01	8	-40 to +75ºC	yes	1 x SC	Ethernet switch with fibre port
DVS-016W01-MC01	16	-40 to +75ºC	yes	1 x SC	Ethernet switch with fibre port
• Fibre Optic Ports: 1 100Base-FX *(SC connector)* SingleMode – 30 km					
DVS-008W01-SC01	8	-40 to +75ºC	yes	1 x SC	Ethernet switch with fibre port
DVS-016W01-SC01	16	-40 to +75ºC	yes	1 x SC	Ethernet switch with fibre port
Gigabit Ethernet switches		*(H) 145.3 x (W) 45 x (D) 108.7 mm*			
• 10/100/1000Base-T, auto MDI/MDI-X, auto negotiation • 10Gbps, Wired speed					
• Input voltage: 12 to 48 VDC *(1 set)*					
DVS-G005I00A	5	-40 to +75ºC	–	–	Gigabit Ethernet switch
DVS-G008I00A	8	-40 to +75ºC	–	–	Gigabit Ethernet switch
PoE Gigabit Ethernet switches		*(H) 144.3 x (W) 26.1 x (D) 94.9 mm*			
• 10/100/1000Base-T PoE(PSE) ports. 2 x 100/1000Base-SFP (only DVS-G406W01-2-GF)					
• Based on IEEE 802.3at standard up to 30Watts per port. Backward compatible with IEEE 802.3af					
• 48 to 57 VDC redundant terminal block power input					
DVS-G406W01-2GF	6	-40 to +70ºC	yes	2 x SFP	PoE Gigabit Ethernet switch
DVS-G408W01	8	-40 to +70ºC	yes	–	PoE Gigabit Ethernet switch
Managed Ethernet switches		*(H) 145.3 x (W) 75 x (D) 109 mm*			

High-end Layer 2 management, redundant self-healing ring and a wide-operating temperature.

- Supports EtherNet/IP and MODBUS TCP protocols for remote management by SCADA etc.
- IEEE 802.1X, TACACS+, SSH, HTTPS and SNMP v3 for enhanced network security
- Compatible with most industrial protocols, including EtherNet/IP, Profinet, EtherCAT, CC-LINK IE, DNP 3.0
- RJ45 ports: 10/100/1000Base-T, auto MDI/MDI-X, auto negotiation
- SFP Ports: 100/1000Base-SFP (2x DVP108, 3x DVP110)

type	No. Ports	operating temperature	alarm contact	fibre type	description
DVS-108W02-2SFP	6	-40 to +75ºC	yes	2 x SFP	managed Ethernet switch
DVS-110W02-3SFP	7	-40 to +75ºC	yes	3 x SFP	managed Ethernet switch

1-port Gigabit Ethernet SFP fibre transceiver

type	operating temperature	interface		
		connectors	fibre type	max. link distance
LCP-1250A4FDRJ	-5ºC to 70ºC	duplex LC	multi mode	550 m
LCP-1250B4QDRJ	-5ºC to 70ºC	duplex LC	single mode	10 km

DVS-005I00

DVS-016W01

new

DVS-G406W01-2GF

DVS-110W02-3SFP

DVW-W02W2-E2

DX-2300LN-WW

new

DX-3001H9

IFD9507

IFD8500

IFD6500

Communication devices

type	No. Ports	operating temperature	description	
Wireless AP/WDS/Client/Gateway		Industrial IEEE 802.11 a/b/g/n		

The EEE 802.11n with better data rates by Multiple-input and Multiple-output (MIMO) technology. Supporting bandwidths from 20 MHz to 40 MHz doubling the speed of transmission performance.

- Compliant with IEEE 802.11n wireless technology capable of up to 450Mbps data rate
- Multiple Wireless modes: AP, Client CPE, WDS P-T-P, WDS P-T-MP, Repeater
- Supports 2 x ports RS-232/422/485-to-Ethernet Device Server
- Built-in 2 x ports MODBUS ASCII/RTU to MODBUS TCP Gateway
- Built-in 20MB buffer memory to avoid data loss when connection is down
- SNTP *(simple network time protocol)* for network clock synchronization
- USB console interface for easy connection with laptops
- Antennas: 3 x 2dBi omni-directional, RP-SMA*(male)* connector

DVW-W02W2-E2	2	-40 to +75ºC	wireless AP/WDS/Client/Gateway	
DX-series - Industrial cloud solutions		*(Industrial DIN-rail and wall mounting)*		

- Data acquisition equipment connected to cloud servers.
- Supports a two-way data collection channel between the device and the cloud
- Supports MODBUS TCP and MODBUS RTU protocols
- Various peripheral interfaces include RS-485, RS-232 and LAN ports
- Built-in RTC and supports NTP time synchronization over a network
- Supports TCP/IP, UDP, ICMP, DHCP, HTTP, DNS, SSH, TCP and Modbus RTU protocols

Industrial Ethernet cloud router		*(4-Port LAN FE + 1-Port WAN FE + 1 RS-232 + 1 R-S485)*		

Wired industrial router with multiple application interfaces, including Ethernet, RS-232 and RS-485 serial interfaces. For mobile network interconnection, industrial automation, video surveillance. Safe, reliable data transmission, remote management/configuration, maintenance can be realized.

- Flexible connection method over WAN ports, e.g. static IP, DHCP client and more
- Customisable SMS alarm functions
- SD card for data backup and quick installation

DX-2300LN-WW	5	-20 to +70ºC	cloud based Industrial VPN router	
Industrial 3G cloud router		*(1-Port FE + 1-Port RS-232 + 1-Port RS-485)*		

- UMTS/HSPA+ 3G technology, supports a wide range of bands
  - Downward compatible with GSM / GPRS / EDGE 2G network

DX-2100RW-WW	1	-20 to +70ºC	cloud based Industrial 3G router	
Industrial 3G/WAN		*(1-Port FE + 1-Port RS-232 + 1-Port RS-485)*		

As above but with following additions:
- Dual redundancy design : seamless switch between two 3G/VPN for continuous online

DX-3001H9	5	-20 to +70ºC	cloud based industrial 3G/WAN router	
Industrial FieldBus solution				

Industrial automation applications for converting communication signals of automation, servo and control devices. IFD communication modules are robust, high quality devices offering stable communication with in-built protection.

Excellent signal processing and isolation properties ensure correct, reliable data transmission.

type	from	to	description	
Ethernet to serial Modbus RS-232/485 converters *(full isolation)*				
IFD9506	RS-232/485	MODBUS TCP	converter *(inc. power supply)*	
IFD9507	RS-232/485	EtherNet/IP	MODBUS converter *(inc. power supply)*	

Note: To configure IFD devices you need to install DCISoft

Serial to serial communication converters

IFD6500	USB	RS-485	converter *(no ext. power supply required)*	
IFD6530	USB	RS-485	with 9V power supply *(115.2k bps Max.)*	
IFD8500	RS-232	RS-422/485	RS-232 isolated converter	
IFD8520	RS-232	RS-422/485	isolated *(addressable)* converter	
IFD8510	RS-485		isolated repeater/amplifier *(extends transmission to 1.2 km)*	

Note: IFD65xx requires special driver to work with Windows OS, available on Delta website.

CAN / Devicenet to serial converters

IFD6503	USB	CAN	CAN to serial converter	
IFD9502	RS-232/485	DeviceNet	Devicenet to serial converter	
IFD9503	RS-232/485	CANopen	CANopen to serial converter	

ASD servo drives (200W - 15kW)   *high precision, total control*
- Speed, Torque and position modes
- Digital keypad for parameter input and operational data
- External Pulse input control , 200kpps Open Collector and 500 k / 4M kpps Line driver
- ASD-A2 and B2 servo drives can be used with 17bit *(160.000ppr)* or 20 bit *(1.280.000 ppr)* servo motors

type	input power	input power	bandwidth	description
B2 series - Econo servo drives *(Modbus communication)*				
• Digital - 9x Inputs 6x Outputs / Analog - 2x I/O's				
ASD-B2-0221-B	200W	220V 1ph	550Hz	B2 series econo servo drives
ASD-B2-0421-B	400W	220V 1ph	550Hz	B2 series econo servo drives
ASD-B2-0721-B	700W	220V 1ph	550Hz	B2 series econo servo drives
ASD-B2-1021-B	1.0kW	220V 1ph	550Hz	B2 series econo servo drives
ASD-B2-1521-B	1.5kW	220V 1ph	550Hz	B2 series econo servo drives
A2 series - Advanced servo drives *(Modbus, CANopen, USB communication)*				
• Flexible position register control Mode PR mode				
• Digital - 9x Inputs 5x Outputs / Analog - 2x I/O's				
ASD-A2-0121-M	100W	220V 1ph	1kHz	A2 high advanced servo drives
ASD-A2-0221-M	200W	220V 1ph	1kHz	A2 high advanced servo drives
ASD-A2-0421-M	400W	220V 1ph	1kHz	A2 high advanced servo drives
ASD-A2-0721-M	750W	220V 1ph	1kHz	A2 high advanced servo drives
ASD-A2-1021-M	1.0kW	220V 1ph	1kHz	A2 high advanced servo drives
ASD-A2-1521-M	1.5kW	220V 1ph	1kHz	A2 high advanced servo drives
ASD-A2-2043-M	2.0kW	400V 3ph	1kHz	A2 high advanced servo drives
ASD-A2-3043-M	3.0kW	400V 3ph	1kHz	A2 high advanced servo drives
ASD-A2-4543-M	4.5kW	400V 3ph	1kHz	A2 high advanced servo drives
ASD-A2-5543-M	5.5kW	400V 3ph	1kHz	A2 high advanced servo drives
ASD-A2-7543-M	7.5kW	400V 3ph	1kHz	A2 high advanced servo drives
ASD-A2R-1B43-M	11.0kW	400V 3ph	1kHz	A2 high advanced servo drives
ASD-A2R-1F43-M	15.0kW	400V 3ph	1kHz	A2 high advanced servo drives

ECMA Motors   *(for above servo drives)*

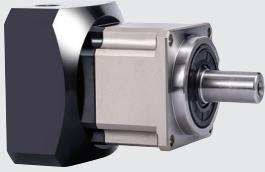| type	rated			dimensions (mm)		
	output power	RPM	torque Nm	PCD	flange	shaft Ø
Econo servo motors - 17 bit						
ECMA-C20401RS	100W	3000	0.32	46	40 x 40	8
ECMA-C20602RS	200W	3000	0.64	70	60 x 60	14
ECMA-C20604RS	400W	3000	1.27	70	60 x 60	14
ECMA-C20807RS	750W	3000	2.39	90	80 x 80	19
ECMA-C21010RS	1.0kW	3000	3.18	115	100 x 100	22
ECMA-E21315RS	1.5kW	3000	7.16	145	130 x 130	22
With built-in (24 VDC) brake						
ECMA-C20401SS	100W	3000	0.32	46	40 x 40	8
ECMA-C20604SS	400W	3000	1.27	70	60 x 60	14
High resolution servo motors - 20 bit *superior resolution encoder (1.280.000 pulses/revolution)*						
ECMA-C10604RS	400W	3000	1.27	70	60 x 60	14
ECMA-C10807RS	750W	3000	2.39	90	80 x 80	19
ECMA-C11010RS	1.0kW	3000	3.18	115	100 x 100	22
ECMA-E11315RS	1.5kW	2000	7.16	145	130 x 130	22
ECMA-K11320RS	2.0kW	2000	9.55	145	130 x 130	22
ECMA-L11830RS	3.0kW	1500	19.10	200	180 x 180	35
ECMA-L11845RS	4.5kW	1500	28.65	200	180 x 180	35
ECMA-L11855R3	5.5kW	1500	35.00	200	180 x 180	42
ECMA-L11875R3	7.5kW	1500	47.74	200	180 x 180	42
ECMA-L1221BR3	11kW	1500	70.00	235	220 x 220	42
ECMA-L1221FRS	15kW	1500	95.40	235	220 x 220	55
With built-in (24 VDC) brake						
ECMA-C10807SS	750W	3000	2.36	90	80 x 80	19
ECMA-C11010SS	1.0kW	3000	3.18	115	100 x 100	22
ECMA-E11315SS	1.5kW	2000	7.16	145	130 x 130	22
ECMA-K11320SS	2.0kW	2000	9.55	145	130 x 130	22
ECMA-L11830SS	3.0kW	1500	19.10	200	180 x 180	35
ECMA-L11845SS	4.5kW	1500	28.65	200	180 x 180	35

ASD-B2-0421-B

ASD-A2-0421-M

ECMA-C21010RS

ECMA-E11315RS

Above prices do not include VAT. E&OE

C₂

Automation

WAB...

WPFR...

ASD-CAPW...

ASD-CAEN...

new

Gearboxes for ECMA series servo motors

- Low noise, helical gears allows for smooth and quite gear meshing
- Planetary wheel with needle design increases the contact area to improve the rigidity and output torque
- Synthetic lubricating grease and sealed IP65 design requires no maintenance during the products lifetime
- Gears are carburized and quenched to HRC62 with low carbon steel surface for optimum wear and impact toughness

type	ECMA motor	ratio	rated torque	backlash arcmin	dimensions (mm)		
					PCD	flange	shaft Ø
Straight gearboxes	**(helical gears)**						
WAB-060-005-K-P1	200 - 400W	5:1	60	≤3	70	60 x 60	16
WAB-060-007-K-P1	200 - 400W	7:1	50	≤3	70	60 x 60	16
WAB-060-010-K-P1	200 - 400W	10:1	40	≤3	70	60 x 60	16
WAB-090-003-K-P1	750W	3:1	130	≤3	100	90 x 90	22
WAB-090-007-K-P1	750W	7:1	140	≤3	100	90 x 90	22
WAB-115-003-K-P1	1.5 - 2kW	3:1	208	≤3	130	115 x 115	32
WAB-142-003-K-P1	3 - 4.5kW	3:1	342	≤3	165	142 x 142	40
Angle gearboxes	**(spur gears)**						
WPFR-060-005-K-P2	200 - 400W	5:1	40	≤15	70	60 x 60	14
WPFR-060-007-K-P2	200 - 400W	7:1	20	≤15	70	60 x 60	14
WPFR-060-010-K-P2	200 - 400W	10:1	12	≤15	70	60 x 60	14
WPFR-090-003-K-P2	750W	3:1	40	≤15	100	92 x 92	20
WPFR-090-007-K-P2	750 W	7:1	40	≤15	100	92 x 92	20
WPFR-120-003-K-P2	1.5 - 2kW	3:1	125	≤15	130	120 x 120	35

Note: Other ratios, frame sizes and precision options available on request.

Servo drive and motor accessories

ASD-CNSC0050	50 pin solder plug	for series	ASD-A2
ASD-IF-SC5020	20 pin adaptor, push in term.	for series	ASD-A2
ASD-BM-50A	50 pin breakout board	for series	ASD-A2
UC-CMC003-01A	CANopen comms cable RJ45 (0.3m)	for series	ASD-A2
UC-CMC010-01A	CANopen comms cable RJ45 (1m)	for series	ASD-A2
TAP-CN03	Canopen distribution box	for series	ASD-A2
UC-PRG030-02A	USB type A - USB type B	for series	ASD-A2
ASD-CARS0003	9 pin D-SUB female - Firewire	for series	ASD-A2/B2
ASD-CNIE0B06	RS-485 Splitter 2x RJ45	for series	ASD-A2/B2
ASD-CNUS0A08	USB type A - Firewire	for series	ASD-B2
ASDBCNDS0044	D-SUB 44 Pin solder plug	for series	ASD-B2

ASDA and ECMA connecting cables

type	ECMA range	power cable	encoder cable	brake motor	for drive series	cable length
ASDBCAPW0000	100 - 750W	•	–	–	ASD-A2	plug
ASD-ABEN0000	100 - 750W	–	•	•	ASD-A2	plug
ASD-ABEN0003	100 - 750W	–	•	•	ASD-A2	3m
ASD-ABPW0005*	100 - 750W	•	–	–	ASD-A2	5m
ASD-ABPW0105	100 - 750W	•	–	•	ASD-A2	5m
ASD-ABEN0005*	100 - 750W	–	•	•	ASD-A2	5m
ASD-CAPW1000	1kW	•	–	•	ASD-A2	plug
ASD-CAEN1000	1 - 15kW	–	•	•	ASD-A2	plug
ASD-CAPW1005*	1kW	•	–	–	ASD-A2	5m
ASD-CAPW1105	1kW	•	–	•	ASD-A2	5m
ASD-CAEN1005*	1 - 15kW	–	•	•	ASD-A2	5m
ASD-CAPW1205	2kW	•	–	–	ASD-A2	5m
ASD-CAPW1305	2kW	•	–	•	ASD-A2	5m
ASD-CAPW2205	3 - 5.5kW	•	–	–	ASD-A2	5m
ASD-CAPW3205	7.5kW	•	–	–	ASD-A2	5m
ASD-CAPW4000	11 - 15kW	•	–	•	ASD-A2	plug
ASD-CAPW4505	11kW	•	–	–	ASD-A2	5m
ASD-CAPW4605	15kW	•	–	–	ASD-A2	5m
ASDBCAPW0000	100 - 750W	•	–	–	ASD-B2	plug
ASDBCAEN0000	100 - 750W	–	•	•	ASD-B2	plug
ASDBCAPW0205*	100 - 750W	•	–	–	ASD-B2	5m
ASDBCAEN0005*	100 - 750W	–	•	•	ASD-B2	5m
ASD-CAPW1000	1 - 1.5kW	•	–	•	ASD-B2	plug
ASDBCAEN1000	1 - 1.5kW	–	•	•	ASD-B2	plug
ASDBCAPW1205	1 - 1.5kW	•	–	–	ASD-B2	5m
ASDBCAEN1005	1 - 1.5kW	–	•	•	ASD-B2	5m

For 3m length cables, replacement (5) with 3

HTR series - Incremental encoders

HTR series encoders, provide precise positioning and speed sensing functions. They convert rotary motion or position data to electronic pulses for speed and position detection.

Common characteristics

- Output phase: ABZ phase *(std)*
- Output form: **P**: Push Pull   **HL:** Line Driver 5 - 26 VDC
- Resolution: 5 - 5000 ppr *(pulse per revolution)*   *model and output dependant*
- Protection: against polarity reversal

type	resolution (ppr)	supply voltage	detection system	description	dimensions body	Ø mm shaft
Solid shaft type						
Medium duty incremental encoders		*(IP50)*		*push-pull type*		
HTR-3A-100A-P	100	5 - 26 VDC	incremental	rotary encoder	38	6
HTR-3A-360A-P	360	5 - 26 VDC	incremental	rotary encoder	38	6
HTR-3A-500A-P	500	5 - 26 VDC	incremental	rotary encoder	38	6
HTR-3A-1024A-P	1024	5 - 26 VDC	incremental	rotary encoder	38	6
HTR-5B-360A-P	360	5 - 26 VDC	incremental	rotary encoder	50	8
HTR-5B-1024A-P	1024	5 - 26 VDC	incremental	rotary encoder	50	8
HTR-5B-2000A-P	2000	5 - 26 VDC	incremental	rotary encoder	50	8
Medium duty incremental encoders		*(IP50)*		*line driver type*		
HTR-5B-360A-H	360	5 - 26 VDC	incremental	rotary encoder	50	8
HTR-5B-1024A-H	1024	5 - 26 VDC	incremental	rotary encoder	50	8
HTR-5B-2000A-H	2000	5 - 26 VDC	incremental	rotary encoder	50	8

Other (ppr) resolution available on request.

type	resolution (ppr)	supply voltage	detection system	description	dimensions body	Ø mm shaft
Heavy duty incremental encoders		*(IP64)*		*push-pull type*		
• HPN square flange mount *(63.5 x 63.5 mm ☐)*						
HPN-6A-2500-3-PP	2500	8 - 26 VDC	incremental	rotary encoder	63.5 ☐	10

Other (ppr) resolution available on request.

type	resolution (ppr)	supply voltage	detection system	description	dimensions body	hole
Hollow shaft incremental encoders		*(IP50)*		*push-pull type*		
HTR-HN-8-360A-P	360	5 - 26 VDC	incremental	rotary encoder	38	8
HTR-HN-8-500A-P	500	5 - 26 VDC	incremental	rotary encoder	38	8
HTR-HN-8-1024A-P	1024	5 - 26 VDC	incremental	rotary encoder	38	8
HTR-HM15-600-3-PP	600	8 - 26 VDC	incremental	rotary encoder	59	15
HTR-HM15-1024-3-PP	1024	8 - 26 VDC	incremental	rotary encoder	59	15
HTR-HD30-600-3-PP	600	8 - 26 VDC	incremental	rotary encoder	100	30
HTR-HD30-1024-3-PP	1024	8 - 26 VDC	incremental	rotary encoder	100	30

Other (ppr) resolution available on request.

A series - Absolute encoders   *(IP50)*

- Signal output   **G:** Gray code
- Output form   **C:** NPN open-collector

| type	resolution (ppr)	supply voltage	detection system	description	dimensions body	Ø mm shaft
A3-G-256-C	256	10 - 26 VDC	absolute	rotary encoder	60	8
A3-G-1024-C	1024	10 - 26 VDC	absolute	rotary encoder	60	8

Other (ppr) resolution available on request.

Encoder accessories

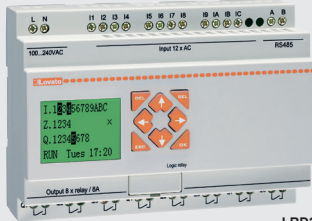| type	material	rated torque (N.m)	bore (mm) hole Ø1	bore (mm) hole Ø2	wrench torque (N.m)	dimensions Ø mm body Ø	dimensions Ø mm length
Flexible couplings							
HJ-6X6	plastic	1.0	6	6	0.3	16	23
SCT-16-6X6	aluminium	0.3	6	6	0.7	16	23
SCT-20-8X8	aluminium	0.5	8	8	0.7	20	26
SCT-25-8X10	aluminium	1.0	8	10	1.7	25	31
SCT-25-10X10	aluminium	2.0	10	10	1.7	25	31

HTR-3A...

HTR-5B...

HPN-6A-2500-3-PP
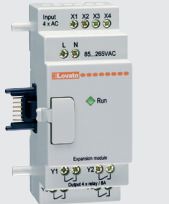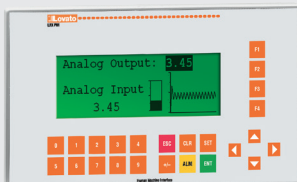
HTR-HN...

HJ-6X6

SCT...
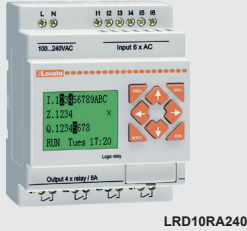
LRD10RA240

LRD20R...

LRE08R...

LRXP01

Lovato's micro PLC is a compact, flexible, easy to use and highly cost effective "intelligent relay". Base units are available with 10,12 or 20 I/O points and can be expanded up to 44 digital I/O points with plug-in expansion modules.

Programming is simple and intuitive and can be done directly with the built-in keypad/display or by personal computer with LRX SW software and LRX C03 programming USB cable.

Two common language logics are available for programming:
– LD *(relay ladder)* up to 300 lines of four instructions each
– FBD *(function block diagram)* up to 260 programmable blocks

Advantages:

System control and supervision
– Contact status viewing in simple and small screen display
– Possibility to add the micro PLC equipped with **LREP00** Modbus to systems integrated on data networks by using Synergy *(supervision and energy management software)*

Quick control board installation
– Fewer number of components
– Less wiring with minor number of connections

Repetitiveness
– Less errors during panel building
– Considerable time saving

Flexibility
– Quick correction of abnormal conditions at final testing
– Fast changes on control boards

type	supply	inputs	outputs	description
Base units				
LRD10RA240	100 - 240 VAC	6	4	intelligent relay
LRD20RA240	100 - 240 VAC	12	8	intelligent relay
LRD12RD024	24 VDC	8*	4	intelligent relay
LRD20RD024	24 VDC	12*	8	intelligent relay
LRD20RD012	12 VDC	12*	8	intelligent relay
LRD20RD024P1❖	24 VDC	12*	8	intelligent relay

* *2/4 inputs can be analog (0-10 VDC)*
❖ *With built-in RS485 modbus port*

Expansion modules *(plug-in)*

Inputs and outputs of the base relay unit can be increased with plug-in expansion modules. Up to three expansion modules, can be added.

type	supply	inputs	outputs	description
LRE08RA240	100 - 240 VAC	4	4	expansion module
LRE08RD024	24 VDC	4	4	expansion module
LREP00				modbus - RTU protocol communication unit

Accessories

LRXC03	cable: PC (USB) to LRD relay connecting cable *(1.5 meter)*
LRXSW	programming and supervision software (CD-ROM)
LRXM00	plug-in program back-up memory module
LRXP01	HMI operator panel, 24 VDC, RS232, RS485
LRXSWP01	LRXP01 editor software (CD-ROM)
LRXC02	cable: PC (RS232) - LRXP01 programming cable

Maximum combinations

| Base relay 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 |

• 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 outputs configurable as 0...10V or 0/4...20mA
• 4 analog inputs configurable as 0...10V or 0/4...20mA
• 1 RS485 slave communication module

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

Automation

Klemsan®

C₂

601400

Micro SIM Card slot

601440

601450

601432

new

Ethernet gateways

An Ethernet gateway coverts data between different protocols ensuring consistent flow of information. **ETOR, WTOR** and **GTOR** gateways provide fast *(up to 115Kbps)* data transmission for serial devices.

- First class quality to fulfil all communication requirements with quick view of status via frontal LED's
- Bidirectional protocol converting with client and server mode
- Converting between Modbus TCP and Modbus RTU/ASCII
- Automatic or manual IP addressing and Ping blocking
- Line protection by galvanic isolation
- Compact modular *(H) 90.4 x (W) 17.5 x (D) 66.5 mm (same dimensions as single pole MCB)*

type	supply voltage	serial standard	connector type	No. Serial devices server	client	description	
ETOR		**Ethernet / Serial Gateway**					

- Converts between MODBUS and Ethernet protocols to permit user to control and monitor:
  - a) Serial devices in a plant over Internet or local area network in server mode
  - b) Devices which support Ethernet-based protocols, over the serial interface in client mode
- Mini USB port or WEB interface configuration
- Dual supply option: 18 - 50 VAC/DC or can be powered up through a mini USB cable

ETOR-4		**Ethernet gateway (TCP/IP - RS485)**					
601400	18 - 50 VAC/DC	RS485	RJ45	64	1	Ethernet - Serial Gateway	
ETOR-2		**Ethernet gateway** *(TCP/IP - RS232)*					
601401	18 - 50 VAC/DC	RS232	RJ45	1	1	Ethernet - Serial Gateway	
GTOR		**GPRS to RS485 Gateway**					

GTOR series products connect to serial MODBUS devices with TCP/IP based systems to remotely control and monitor devices via GPRS. GTOR can be easily integrated into existing MODBUS networks due to their wide range of configuration options. GTOR series products works as a TCP/IP server.

- Micro SIM Card slot
- Supports up to 64 devices
- APN configuration with Mini USB
- 8 facia LED's indicate: power, signal strength level, operating status

601440	11 - 30 VDC	RS485	Micro USB	32	1	GPRS - RS485 Gateway	
WTOR		**Wi-Fi to RS485 Gateway**					

WTOR series products connect to serial MODBUS devices with TCP/IP based systems to remotely control and monitor devices connected to the MODBUS network via a WI-FI service and can be easily integrated into existing MODBUS networks due to their wide range of configuration options. WTOR series products works as a TCP/IP server.

- RS485
- Point or station mode
- Operating with access
- Configuring via web interface

601450	11 - 30 VDC	RS485	RS485	64	1	WI-FI - RS485 Gateway	
UTOR		**Converters - USB to RS485, RS232 and TTL**					

UTOR is powered from the USB port without external power supply requirements, they incorporate an isolation barrier providing electrical isolation between the PC and serial devices.

- Removable terminal block with screw connection
- Baudrate: 300 ... 115200 bps
- Connector: USB type A

type	supply voltage	serial standard	USB	converter from	to	description	
601430	USB port	RS485	1.1 + 2.0	RS485	USB	USB/RS485 converter	
601431	USB port	RS232	1.1 + 2.1	RS232	USB	USB/RS232 converter	
601432	USB port	TTL(5V)	1.1 + 2.2	TTL(5V)	USB	USB/TTL (5V) converter	
601433	USB port	TTL(3V)	1.1 + 2.3	TTL(3V)	USB	USB/TTL (3V) converter	

Notes