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**Ingeteam**

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a complete automation solution

**INGESYS IC3**



## PLC for process control

The INGESYS<sup>®</sup> IC range of PLCs in the INGESYS<sup>®</sup> family offers custom-made automation solutions with user-friendly development and configuration tools designed to meet our clients' requirements.

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**Ingeteam**

## Engineering, Maintenance and Integration

### Easy, user-friendly programming tool based on Codesys

- Support for all five IEC 61131-3 standard languages

### Built-in added engineering value

- Integration with MATLAB/Simulink
- Integration of user-developed C functions and libraries
- Remote firmware and parameter management

### Advanced features

- Integrated RTU features supporting a wide range of telecontrol standard protocols (Modbus, IEC 61850, IEC 60870-5-101 /104, DNP 3.0, etc.)
- Built-in HMI functional features via web services to facilitate supervision, operation and maintenance tasks
- Built-in oscilloscope/register tools

### Easy maintenance

- Advanced diagnostics tools
- Poka-yoke
- Hot-swap
- USB replication
- Local or remote centralised updating via FTP

### Reliability and robustness

- Exhaustive quality control
- Demanding environmental and vibrational tests
- UL certification and CE marking

## INGESYS® IC3



### Modular and flexible control solutions with advanced functional features

- Scalable in terms of power with complete flexibility
- Modular, compact solutions, adapted to each client's requirements
- Flexible topology: Distributed architectures, module expansion, etc
- Extensive connectivity: Modbus, Profibus, CANopen, InterBus-S, Industrial Ethernet, etc
- Minimum task times of 1 ms

## INGESYS® IC3 Compact



### Compact solution with local I/Os and optimised cost for small applications

- DIN rail with built-in I/Os
- Powerful, compact solution
- Up to 24 DIs, 10 DOs, 8 AIs, 4AOs ( $\pm 20$  mA,  $\pm 10$ V) a fast counter
- Connections: 2 Ethernet connectors for ring architectures, USB and RS232C/485 port.
- Built-in power supply: With non-isolated and isolated power supply
- Field buses: Modbus RTU, Industrial Ethernet, etc
- Industrial range of applications

## INGESYS® IC3 Remote I/Os



### Remote compact I/Os to optimise overall project costs in distributed applications

- Assembly on DIN rail
- Up to 16 DIs, 16 DOs, 16 AIs, 4AOs and 3 SSI encoders
- Field buses: Modbus RTU, Industrial Ethernet, RTSX etc
- Offers custom-made solutions, by integrating part of cabinet engineering into the equipment

## CPUS

module type		CPU IC3101-xx / IC3121-xx									
Order No.		IC3101-AA	IC3101-AB	IC3101-BA	IC3101-BB	IC3101-BC	IC3101-CB	IC3101-CC	IC3121-AA	IC3121-BA	IC3121-BB
Microprocessor		Pentium 500 MHz					ARM 400 MHz				
Memory	Data	5 Mb					2 Mb				
	Program	10 Mb					4 Mb				
	I/Os	256 Kb/256 Kb					128 Kb/128 Kb				
	NVRAM	62 Kb					32 Kb				
Processing times	Bit Operations	0,008 us					0,025 us				
	Word Operations	0,008 us					0,025 us				
	Floating Point Operations	0,03 us					0,4 us				
Local I/Os TSX supported		0		8			16			4	
No. of communication ports	Ethernet (10/100Mbit/s)	2		2	1	4		2	4	2	
	Serial ports	1	1	0	1	1	1	1	1	1	1
	USB 2.0	1	1	1	1	1	1	1	1	1	1
	RTSX (10 Mbit/s)	0	1 (Up to 8 units supported in remote rack)	1	0	1	1	1	0	1	1 (Up to 8 units supported in remote rack)
Others		1 CANOpen port (v-pin)			IRIG-B	Display LCD 3 lines	IRIG-B Display LCD 3 lines	Integrated 24 Vdc power supply (non-isolated)	Integrated 24 Vdc power supply (isolated)		
Supported programming languages		IEC 61131-3 all 5 languages: ST (Structured Text) IL (Instruction List) SFC (Sequential Functional Chart) FBD (Function Block Diagram) LD (Ladder Diagram)									

## RACKS

module type		Rack IC35xx									
Order No.		IC3501	IC3502	IC3503	IC3504	IC3505	IC3511	IC3512	IC3513	IC3507	IC3521
Dimensions (Width x Height x Depth)		601.75x 176.7x 21.7mm	181.75x 176.7x 21.7mm	286.75x 176.7x 21.7mm	391.75x 176.7x 21.7mm	234.25x 176.7x 21.7mm	313x 176.7x 21.7mm	208x 176.7x 21.7mm	155.5x 176.7x 21.7mm	601.75x 176.7x 21.7mm	444.25 x 176.7 x 21.7mm
Supported module units		Power Supply + CPU or RTSX Header Module + up to 16 units (*)	Power Supply + CPU	Power Supply + CPU + up to 4 units (*)	Power Supply + CPU + up to 8 units (*)	Power Supply + CPU + up to 2 units (*)	CPU or RTSX Header Module (with integrated PS) + up to 8 units (*)	CPU or RTSX Header Module (with integrated PS) + up to 4 units (*)	CPU or RTSX Header Module (with integrated PS) + up to 2 units (*)	Power Supply + CPU + 1 slot for IC3712 + 3 slots for IC3711 + up to 8 units (*)	Power Supply + CPU + 1 slot for IC3712 + 3 slots for IC3711 + up to 2 units (*)

(\*) Note: Usually IC3' I/Os and communication modules require 1 rack unit. In case more than one unit is required (e.g. 6 port serial communication modules IC3253A and IC3254A require 2 units) a note is attached.

## POWER SUPPLIES

module type		Power supply IC360x			
Order No.		IC3601	IC3602	IC3603	IC3604
Input voltage		24 Vdc +/-25%	24 Vdc +/-25%	110-300 Vdc, 115-250V	48-72 Vdc
Max. Output current		10A	5A	5A	5A
Power		50W			
Signals/Autodiagnosics		Voltage levels LED indicators			

## DIGITAL INPUT MODULES

module type		Digital input module IC3311-xx			
Order No.		IC3311-A		IC3311-AB	
Special features of this module		High density Auto-diagnostics		High density Standard applications	
Suitable for		DC		DC	
Input voltage		+24 Vdc			
Number of digital inputs		32			
Input delay		2 ms			
Auto-diagnostics		Yes		No	
Electrical isolation: Number of groups		1		1	

## DIGITAL OUTPUT MODULES

module type		Digital output module IC3331-xx			
Order No.		IC3331-A	IC3332-AA	IC3331-AB	IC3332-AB
Number of digital outputs		32 outputs High Side Drive	16 outputs High Side Drive	32 outputs High Side Drive	16 outputs High Side Drive
Special features of this module		High density Auto-diagnostics		High density Standard applications	
Suitable for		Solenoid valves DC contactors Signal lamps			
Output voltage		+24 Vdc			
Output current		250 mA			
Auto-diagnostics		Yes		No	
Electrical isolation: Number of groups		2			

## DIGITAL INPUT/OUTPUT MODULES

module type		Digital input/output module IC3393-xx	
Order No.		IC3393-AA	IC3393-AB
Special features of this module		High density Auto-diagnostics	High density Standard applications
Suitable for		Solenoid valves DC contactors Signal lamps	
Input voltage		+24 Vdc	
Output voltage		+24 Vdc	
Output current		250 mA	
Number of digital inputs/outputs		16 inputs + 16 outputs, High Side Drive	
Input delay		2 ms	
Auto-diagnostics		Yes	No
Electrical isolation: Number of groups		2	2

## ANALOG INPUT MODULES

module type		Analog input module IC335X-x				
Order No.		IC3353-A	IC3354-A	IC3355-A	IC3356-A	IC3357-A
Number of inputs		16/differential	8/differential	8/differential	16/common ground	16
Type of input/measurement error at 25°C		Voltage / +/-0.2% FS Current / +/-0.3% FS Resistance / +/-0.5% FS PT100 / +/-1°C	Voltage / +/-0.2% FS Current / +/-0.3% FS Resistance / +/-0.5% FS PT100 / +/-1°C	Voltage / +/-0.2% FS Current / +/-0.3% FS	Voltage / +/-0.2% FS Current / +/-0.3% FS	Resistance / +/-0.5% FS PT100 / +/-1°C
ADC Resolution		16 bits	16 bits	16 bits	16 bits	16 bits
Electrical isolation input to input		Yes, between groups of four inputs	Yes, between groups of four inputs	Yes	No	Yes

## ANALOG OUTPUT MODULES

module type		Analog output module IC337X-xx									
Order No.		IC3371-AAA	IC3371-AAB	IC3371-ABA	IC3371-ABB	IC3371-ACA	IC3371-ACB	IC3372-AAA	IC3372-AAB	IC3372-ACA	IC3372-ACB
Special features of this module		High density Auto-diagnostics High resolution & accuracy		High density Auto-diagnostics High resolution		High density Standard applications		Auto-diagnostics High resolution & accuracy		Standard applications	
Number of analog inputs		16 outputs with common ground						8 outputs with common ground			
Maximum output range and Voltage /Current selection		±10 V	±20 mA	±10 V	±20 mA	±10 V	±20 mA	±10 V	±20 mA	±10 V	±20 mA
Maximum total error		0.05%	0.2%	0.075%	0.3%	0.25%	0.75%	0.05%	0.2%	0.25%	0.75%
Resolution		16 bits		15 bits		12 bits		16 bits		12 bits	
Auto-diagnostics		Yes		Yes		No		Yes		No	
Delay time		1.5 ms									
Electrical isolation: Number of groups		1									

## COUNTERS

order No.	Description
IC3325-A	6 configurable channel fast counter (32 bits)
IC3391-A	6 fast counters (32 bits) + 4 AOs (12 bits resolution) Auxiliary power: 24Vdc. Voltage range: +/-10.8V
IC3392-A	3 SSI channels + 4 DIs + 2 DOs + 4 AOs (12 bits resolution, 24Vdc. +/-20mA)
IC3392-B	3 SSI channels + 4 DIs + 2 DOs + 4 AOs (12 bits resolution, 24Vdc. 3x +/-20mA y 1x +/-10V)
IC3392-C	3 SSI channels + 4 DIs + 2 DOs + 4 AOs (12 bits resolution, 24Vdc. +/-10V)

## COMMUNICATION MODULES

order No.	Communication Protocol	Number of channels	Connection type
IC3251-A	RS232/RS485 (Half and Full duplex)	3	Female DB9
IC3251-B		1	
IC3252-A		3	V-LINK
IC3253-A		6 (each module requires 2 rack units)	Female DB9
IC3254-A			V-LINK
IC3261-A	CANOpen	2	DB9 Male
IC3262-A		2	V-LINK
IC3262-B		1	
IC3271	Profibus DP Master	1	DB9 Male
IC3272	Profibus DP Slave	1	DB9 Male
IC3281-A	Interbus-S Master	1	DB9 Male
IC3281-B			V-LINK
IC3282-A	Interbus-S Slave	1	DB9 Male
IC3282-B			V-LINK
IC3291	TCN-MVB class 4 Communication Module (Master and slave) with OGF interface	1	

## REGULATION MODULES

order No.	Description
IC3711	Thyristors' Control Module. NOTE: This module requires 2 rack slots and an special rack. Terminals Plug-In Blocks are included.
IC3712	Vectorial Control Module. NOTE: This module requires 2 rack slots and an special rack. Terminals Plug-In Blocks are included.

## RTSX HEADER MODULES

order No.	Power supply	Max. number of slaves
IC3201-A	IC360X Power Supply required	16
IC3202-A	Built-in 24 Vdc Power Supply	8

## RTSX ROUTER

order No.	Description
IC3221-A	RTSX router up to 4 channel

## COMPACT FLASH

order No.	Description
IC3581	512 Mb Compact Flash
IC3582	1 Gb Compact Flash
IC3583	2 Gb Compact Flash

## TERMINAL BLOCK CONNECTORS

order No.	Description
IC3571	18 Terminals Plug-In Block Connectors (maximum cable section of 1.5 mm <sup>2</sup> )
IC3574	10 Terminals Plug-In Block Connectors (maximum cable section of 1.5 mm <sup>2</sup> ).
IC3576	3 Terminals Plug-In Block Connectors (maximum cable section of 1.5 mm <sup>2</sup> ).
IC3577	5 Terminals Plug-In Block Connectors (maximum cable section of 1.5 mm <sup>2</sup> ).
IC3589	32 Terminals Plug-In Block Connectors (maximum cable section of 1 mm <sup>2</sup> ). NOTE: 2 units required for each INGESYS IC3 Compact
IC3572	Keying profile
IC3575	Protection cap for rack connector

All IO modules and counters require 2xIC3571, except 16D IO modules and 8A IO modules that require 2xIC3574

## INTERFACES

order No.	Description
IC3562	32 Relay TTB Interface for DO modules (IC3331-xx) with screw terminals.
IC3563-A	32 switchable TTB Interface + PS Distribution without fuses. Screw terminals.
IC3563-B	32 switchable TTB Interface + PS Distribution fuse protected. Screw terminals.
IC3564-A	32 non-switchable TTB Interface + PS Distribution without fuses. Screw terminals.
IC3564-B	32 non-switchable TTB Interface + PS Distribution fuse protected. Screw terminals.
IC3566-A	16 switchable TTB Interface + PS Distribution without fuses. Screw terminals.
IC3566-B	16 switchable TTB Interface + PS Distribution fuse protected. Screw terminals.
IC3567-A	16 Relay TTB Interface for DO and 16 switchable TTB Interface + PS Distribution without fuses. Screw terminals. For IC3393-xx.
IC3567-B	16 Relay TTB Interface for DO and 16 switchable TTB Interface + PS Distribution fuse protected. Screw terminals. For IC3393-xx.
IC3568-A	16 non-switchable TTB Interface + PS Distribution without fuses. Screw terminals.
IC3568-B	16 non-switchable TTB Interface + PS Distribution fuse protected. Screw terminals.

Note: All interfaces are DIN rail. Relays and fuses are not included.  
32 DI/O, 16 AI/O modules and counters require 32 point interfaces.  
16 DI/O and 8 AI/O modules require 16 point interfaces.

## INTERFACES CONNECTORS AND ADAPTORS

order No.	Description
IC3573	32 positions connector adapter
IC33578	16 positions connector adapter
IC3590-A	Cable for IC3573 (32 positions connector). 2m.
IC3592-A	Cable for IC3578 (16 positions connector). 2m.

# INGESYS® IC3 Compact

INGESYS® IC3 Compact	
<b>IC3141-AA</b>	CPU (ARM 400 MHz), DIN rail, 32 MB FLASH for user applications, 128 KB NVRAM, 2 Ethernet, 1 USB 2.0, RS-232C/485 non-isolated port. Up to 24 DI, 10 DO and 8 AI (4x +/-10V + 4x +/-20 mA). 24 VDC non-isolated built-in power supply.
<b>IC3141-BB</b>	CPU (ARM 400 MHz), DIN rail, 32 MB FLASH for user applications, 128 KB NVRAM, 2 Ethernet, 1 USB 2.0, RS-232C/485 port. Up to 24 DI, 10 DO and 8 AI (4x +/-10V + 4x +/-20 mA). 24 VDC isolated built-in power supply.
<b>IC3141-BC</b>	CPU (ARM 400 MHz), DIN rail, 32 MB FLASH for user applications, 128 KB NVRAM, 2 Ethernet, 1 USB 2.0, RS-232C/485 port. Up to 24 DI, 10 DO, 8 AI (4x +/-10V + 4x +/-20 mA), 4 AO (selectable: +/-10V/+/-20 mA) and 3 fast counters. 24 VDC isolated built-in power supply.