Freelance Distributed Control System
System Controller and I/O Summary

Functional Specifications of AC 700F Controller

AC 700F

CPU	Power PC (I family)
Memory	2 MB SRAM battery backed 8 MB SDRAM
SD card support	For controller backup and firmware update
Task execution	Cyclic (configurable cycle times from 5 ms), event driven (predefined events), as fast as possible (PLC mode)
Serial interface	1 serial interface, RS-232 or RS-485 (from 300 bps to 38400 bps), pluggable terminal block with spring connection Modbus ASCII/RTU, Telecontrol IEC 60870-5-101 1 serial interface, RS-232, D-SUB, 9-pole, female Diagnostics and radio clock
Onboard network interface	1 Ethernet (RJ45) Modbus TCP, Telecontrol IEC 60870-5-104
Fieldbus interfaces	One slot for Fieldbus interface modules: PROFIBUS (CM 772F, CI 930F)
Max. number of direct I/O modules	8 I/O modules
Ambient temperature	0 … 60°C, no forced cooling required
Certificates	CE, GL, c(UL)us, Class 1 Div 2

Functional Specifications of AC 800F Controller

AC 800F

CPU	RISC processor
Memory	4 MB SRAM (PM 802F) or 16 MB SDRAM (PM 803F) application memory battery backed
Task execution	Cyclic (configurable cycle times from 5 ms), event driven (predefined events), as fast as possible (PLC mode)
Interfaces	Ethernet (max. 2) Modbus TCP, Telecontrol IEC 60870-5-104, Redundancy link, Control Net Fieldbus (max. 4) PROFIBUS, FOUNDATION Fieldbus (HSE), Station bus (CAN bus) Serial: RS485/422/232 Modbus protocol (RTU or ASCII),Telecontrol protocol IEC 60870-5-101
Ambient temperature	0 … 60°C, no forced cooling required
Certificates	CE, NAMUR, UL, ISA-S71.04

G3 compliance is optional.

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Functional Specifications of AC 900F Controller

AC 900F

CPU	Power PC (II Pro family)
RAM	8 MB SRAM battery backed 16 MB DDR-RAM
SD card support	For controller backup and firmware update
Display	64x128 Dot Matrix LCD (optional)
Task execution	Cyclic (configurable cycle times from 5 ms), event driven (predefined events), as fast as possible (PLC mode)
Serial interface	2 serial interfaces, RS-232 or RS-485 (from 600 bps to 38400 bps), pluggable terminal block with spring connection Modbus ASCII/RTU, Telecontrol IEC 60870-5-101 1 serial interface, RS-232, D-SUB, 9-pole, female Diagnostics and radio clock
Onboard network interface	4 Ethernet interfaces (RJ45) 3 for Modbus TCP and Telecontrol IEC 60870-5-104, 1 for redundancy link, 1 for Control Net
Fieldbus interfaces	2 slots for Fieldbus interface modules: PROFIBUS (CM 772F, CI 930F)
Max. number of direct I/O modules	10 I/O modules
Ambient temperature	0 … 60°C , no forced cooling required
Certificates	CE, c(UL)us, Class 1 Div 2, ISA-S71.04

All AC 900F Modules are G3 compliant.

Functional Specifications of Communication Interfaces for AC 700F & AC 900F

CM 772F Profibus Master

Protocol	PROFIBUS master, DP-V0/V1 protocol
Baud rate	9.6 kBit/s to 12 MBit/s
Connector	D-SUB, 9-pole, female

CI 930F Communication Interface

Protocol	PROFIBUS master, DP-V0/V1 protocol
Baud rate	9.6 kBit/s to 12 Mbit/s
Connector	D-SUB, 9-pole, female
Slaves	125
Redundancy	Support of PROFIBUS line redundancy Support of AC 900F controller redundancy
Hotplug, hot configuration in run	With AC 900F

Functional Specifications of S700 I/O – Modules

S700 modules can be used for AC 700F and AC 900F. For further details please see the Technical Description 2PAA106303D0002.

	Module	Type and channel count	Technical Specification
Direct and Remote	DC 732F	16 DI, 16 DI/DO configurable	24 V DC, 1-wire, standard binary signals, all signals share common ground
	AI 723F	16 AI , 12-Bit+Sign	0…10 V, -10…+10 V, 0/4…20 mA, Pt100/1000, Ni1000, DI, standard analog input
	AX 722F	8 AI + 8 AO (2x4), 12 Bit+Sign	0…10 V, -10…+10 V, 0/4…20 mA, Pt100/1000, Ni1000, DI, OCh 0-3: -10…+10 V, 0/4…20 mA, Ch 4-7: -10…+10 V
	AO 723F	16 AO (2x8), 12 Bit+Sign	Ch 0-3: & 8-11: -10…+10 V, 0/4…20 mA, Ch 4-7 & 12-15: -10…+10 V
	DX 722F	8 DI, 8 DO Relay	IN: 24 V DC OUT: 24 V DC, 110 V/ 230 V AC
	DX 731F	8 DI, 4 DO Relay	IN: 110 V/ 230 V AC OUT: 24 V DC, 110 V/ 230 V AC
	AI 731F	8 AI, 15 Bit+Sign	…5 V, 0…10 V, -50 mV…+50 mV, -500 mV…+500 mV, -1 V…+1 V,-5 V…+5 V, -10 V…+10 V, 0…20 mA, 4...20 mA, -20…+20 mA, Pt100/1000,

			Ni1000, Cu50 (1.426), Cu50 (1.428), 0...50 kOhm, Thermocouple J K T N S Type, DI
	DI 724F	32 DI	24 V DC, 1-wire
	AX 721F	4 AI + 4 AO, 12 Bit+Sign	Same as AX 722F, but less channels
	DA 701F	16 DI, 8 DC, 4 AI, 2 AO	24 V DC for DI, AI like AI 731F, small universal module
Remote	DC 705F	FBP Interface, 8DI, 8DC	24 V DC, 1-wire, this is the communication module for Profibus
	AC 722F	8 AI/AO	24 V DC, 2-wire, can be used for input or output
	DC 722F	16 DI/DC	24 V DC, 0.5 A, (2/3-wire DI possible) if only 16 channels are required
	DC 723F	24 DI/DC	24 V DC, 0.5 A, (2/3-wire DI possible) if only 24 channels are required
	CD 722F	2ENC, 2PWM, 2DI, 8DC	RS-422, 5-V-TTL, 24-V-totem-pole, 1-Vpp, SSI interface, PWM, 24 V DC, 0.5 A, frequency (pulse) module

For further details please see the Freelance Product Catalog 3BDD015188.

Functional Specifications of S800 I/O – Modules

	Module	Type and channel count	Technical Specification
Digital and Pulse	DI810	16 ch DI	24 V DC, current sink
	DI811	16 ch DI	48 V DC, current sink
	DI814	16 ch DI	24 V DC, current source
	DI818	32 ch DI	24V DC, current sink
	DI820	8 ch DI	Individually galvanic isolated channels, separate returns, 110 V DC, 120 V AC
	DI821	8 ch DI	Individually galvanic isolated channels, separate returns, 220 V DC, 230 V AC
	DI828	16 ch DI	Separate returns, 110 V d.c., 120 V a.c / d.c
	DP820	2 ch Digital Pulse	Individually galvanic isolated channels, separate returns
	DO810	16 ch DO	24 V DC, max 0.5 A, current source, short circuit proof
	DO814	16 ch DO	24 V DC, max 0.5 A, current sink, short circuit proof
	DO815	8 ch DO	With wire fault detection, 24 V DC, max 2 A, current source, short circuit proof
	DO818	32 ch DO	24 V d.c., max 0.5 A, transistor, current source, short-circuit-proof
	DO820	8 ch DO	Individually galvanic isolated channels, 5-250 V DC, max. 3 A, relay (N.O.)
	DO821	8 ch DO	Individually galvanic isolated channels, 5-250 V DC, max. 3 A, relay (N.C.)
	DO828	16 ch DO	Individually galvanic isolated channels, 5-250V a.c. / 5-125V d.c. max 2A a.c./d.c., relay (N.C.)
Analog and	AI810	8 ch AI	Single ended with common return, 0(4)-20 mA, 0(2)-10 V, 12 bits
	AI815	8 ch AI	With HART interface, Single ended with common return, 0(4)-20 mA, 0(1)-5 V, 12 bits
	AI820	4 ch AI	Differential inputs, bipolar differential
	AI825	4 ch AI	Individually galvanic isolated channels, separated returns, isolated bipolar
	AI830A	8 ch AI	RTD inputs with wire fault detection
	AI835A	8 ch AI	TC inputs with open circuit detection
	AO810V2	8 ch AO	With open circuit detection
	AO815	8 ch AO	With HART interface and open circuit detection
	AO820	4 ch AO	Individually galvanic isolated channels with HART interface and open circuit detection
Intrinsic safe I/O	DI890	8 ch DI	Individually galvanic isolated digital input channels with wire-fault detection, 24 V DC, current sink
	DO890	4 ch DO	Individually galvanic isolated digital output channels with wire-fault detection, current source, short-circuit proof
	AI890	8 ch AI	Single ended with common return
	AI893	8 ch TC/RTD inputs	TC/RTD inputs with wire fault detection
	AI895	8 ch AI	Analog inputs with HART interface
	AO890	8 ch AO	Analog outputs with open circuit detection
	AO895	8 ch AO	Analog outputs with HART interface and open circuit detection
Redundancy	DI890	8 ch DI	Individually galvanic isolated digital input channels with wire-fault detection, 24 V DC, current sink
	DO890	4 ch DO	Individually galvanic isolated digital output channels with wire-fault detection, current source, short-circuit proof
	AI890	8 ch AI	Single ended with common return
	AI893	8 ch TC/RTD inputs	TC/RTD inputs with wire fault detection
	AI895	8 ch AI	Analog inputs with HART interface
	AO890	8 ch AO	Analog outputs with open circuit detection
	AO895	8 ch AO	Analog outputs with HART interface and open circuit detection
S800 L	DI801	16 ch DI	24 V DC, current sink
	DI802	8 ch DI	Individually galvanic isolated channels, 110 V DC, 120 V AC
	DI803	8 ch DI	Individually galvanic isolated channels, 220 V DC, 230 V AC
	DO801	16 ch DO	Current source, short-circuit proof
	DO802	8 ch DO	Individually galvanic isolated channels, relay (N.O.)
	AI801	8 ch AI	0(4)-20 mA, single ended with common return
	AO801	8 ch AO	0(4)-20 mA

All S800 I/O Modules are G3 compliant.

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Functional Specifications of S900 I/O – Modules

	Module	Type and channel count	Technical Specification
Analog	AI910	4 ch AI	N – Non Ex, B – Ex Zone 2, S – Ex Zone 1
	AI930	4 ch AI	HART, N – Non Ex, B – Ex Zone 2, S – Ex Zone 1
	AI931	4 ch AI	Passive analog input, HART, N – Non Ex, B – Ex Zone 2, S – Ex Zone 1
	AO910	4 ch AO	N – Non Ex, B – Ex Zone 2, S – Ex Zone 1
	AO920	4 ch AO	Isolated, N – Non Ex, B – Ex Zone 2, S – Ex Zone 1
	AO930	4 ch AO	HART, N – Non Ex, B – Ex Zone 2, S – Ex Zone 1
Digital	DO910	4 ch DO	DO for I.S. valves, N – Non Ex, B – Ex Zone 2, S – Ex Zone 1
	DX910	8 ch DI/DO	DI or DO for dry contact or output for low power I.S. valves, N – Non Ex , B – Ex Zone 2, S – Ex Zone 1
	DO930	6 ch DO	Relay module for digital signals, N – Non Ex only
Special	AI950	4 ch Temperature	Pt100, Pt1000, Ni100 in 2-/3-/4-technology thermocouples type B, E, J, K, L, N, R, S, T, isolated inputs channel by channel, N – Non Ex, B – Ex Zone 2, S – Ex Zone 1
	DP910	2 ch Frequency input	Input for dry contact or NAMUR initiator, N – Non Ex, B – Ex Zone 2, S – Ex Zone 1
	CB220	Compact box	TConnects 4 I/O modules, IP66, N – Non Ex, B – Ex Zone 2, S – Ex Zone 1

All S900 I/O Modules are G3 compliant.