

SFAR-S-16DI-M



SPECIFICATION		
Power supply	Voltage	10-38 V DC; 10-28 V AC
	Power consumption	2,4 W @ 24 V DC 3 VA @ 24 V AC
Digital inputs	16x, logical "0": 0-3 V, logical "1": 6-36 V	
Counters	16x, Resolution 32 bits Frequency max 1 kHz	
	Non-volatile counters memory (FRAM)	
Galvanic isolation	Max 1500 V rms	
Interface	RS485, up to 128 devices on the bus	
Baudrate	From 2400 to 115200 bps	
Ingress Protection	IP40 – for indoor installation	
Temperature	Operating -10°C - +50°C; Storage - 40°C - +85°C	
Relative Humidity	5 to 95% RH (without condensation)	
Connectors	Max 2.5 mm ²	
Dimension	119,1 mm x 101 mm x 22,6 mm	
Mounting	DIN rail mounting (DIN EN 50022)	
Housing Material	Plastic, self-extinguishing PC/ABS	

TOP PANEL

DIGITAL INPUTS

Connection of input

Connection of encoder

COMMUNICATION

RS485 Communication

POWER SUPPLY

DC Voltage

AC Voltage

WARNING

- Note, an incorrect wiring of this product can damage it and lead to other hazards. Make sure the product has been correctly wired before turning the power ON.
- Before wiring, or removing/mounting the product, be sure to turn the power OFF. Failure to do so might cause electric shock.
- Do not touch electrically charged parts such as the power terminals. Doing so might cause electric shock.
- Do not disassemble the product. Doing so might cause electric shock or faulty operation.
- Use the product within the operating ranges recommended in the specification (temperature, humidity, voltage, shock, mounting direction, atmosphere etc.). Failure to do so might cause fire or faulty operation.
- Firmly tighten the wires to the terminal. Insufficient tightening of the wires to the terminal might cause fire

TERMINALS OF THE DEVICE

iSMA CONTROLLI S.p.A. – Via Carlo Levi 52, 16010 Sant’Olcese (GE) - Italy | support@ismacontrolli.com

iSMA CONTROLLI

www.ismacontrolli.com

Installation Instruction | 1st Issue rev. 3 | 01/2022

page 1

Registered access

Modbus	Dec	Hex	Register Name	Access	Description
30001	0	0x00	Version/Type	Read	Version and type of the device
30002	1	0x01	Switches	Read	Switches state
40003	2	0x02	Baud rate	Read & Write	RS485 baud rate
40004	3	0x03	Stop Bits & Data Bits	Read & Write	No. of stop bits & data bits (see
40005	4	0x04	Parity	Read & Write	Parity bit
40006	5	0x05	Response Delay	Read & Write	Response delay in ms
40007	6	0x06	Modbus Mode	Read & Write	Modbus mode (ASCII or RTU)
40018	17	0x11	Inputs filter	Read & Write	Configuration of the inputs filter
40033	32	0x20	Received packets LSR (Least Significant Reg.)	Read & Write	No. of received packets
40034	33	0x21	Received packets MSR (Most Significant Reg.)	Read & Write	
40035	34	0x22	Incorrect packets LSR	Read & Write	No. of received packets with error
40036	35	0x23	Incorrect packets MSR	Read & Write	
40037	36	0x24	Sent packets LSR	Read & Write	No. of sent packets
40038	37	0x25	Sent packets MSR	Read & Write	
30051	50	0x32	Inputs	Read	Inputs state
40053	52	0x34	Counter 1 LSR	Read & Write	32-bit counter 1
40054	53	0x35	Counter 1 MSR	Read & Write	
40055	54	0x36	Counter 2 LSR	Read & Write	32-bit counter 2
40056	55	0x37	Counter 2 MSR	Read & Write	
40057	56	0x38	Counter 3 LSR	Read & Write	32-bit counter 3
40058	57	0x39	Counter 3 MSR	Read & Write	
40059	58	0x3A	Counter 4 LSR	Read & Write	32-bit counter 4
40060	59	0x3B	Counter 4 MSR	Read & Write	
40061	60	0x3C	Counter 5 LSR	Read & Write	32-bit counter 5
40062	61	0x3D	Counter 5 MSR	Read & Write	
40063	62	0x3E	Counter 6 LSR	Read & Write	32-bit counter 6
40064	63	0x3F	Counter 6 MSR	Read & Write	
40065	64	0x40	Counter 7 LSR	Read & Write	32-bit counter 7
40066	65	0x41	Counter 7 MSR	Read & Write	
40067	66	0x42	Counter 8 LSR	Read & Write	32-bit counter 8
40068	67	0x43	Counter 8 MSR	Read & Write	
40069	68	0x44	Counter 9 LSR	Read & Write	32-bit counter 9
40070	69	0x45	Counter 9 MSR	Read & Write	

Modbus	Dec	Hex	Register Name	Access	Description
40071	70	0x46	Counter 10 LSR	Read & Write	32-bit counter 10
40072	71	0x47	Counter 10 MSR	Read & Write	
40073	72	0x48	Counter 11 LSR	Read & Write	32-bit counter 11
40074	73	0x49	Counter 11 MSR	Read & Write	
40075	74	0x4A	Counter 12 LSR	Read & Write	32-bit counter 12
40076	75	0x4B	Counter 12 MSR	Read & Write	
40077	76	0x4C	Counter 13 LSR	Read & Write	32-bit counter 13
40078	77	0x4D	Counter 13 MSR	Read & Write	
40079	78	0x4E	Counter 14 LSR	Read & Write	32-bit counter 14
40080	79	0x4F	Counter 14 MSR	Read & Write	
40081	80	0x50	Counter 15 LSR	Read & Write	32-bit counter 15
40082	81	0x51	Counter 15 MSR	Read & Write	
40083	82	0x52	Counter 16 LSR	Read & Write	32-bit counter 16
40084	83	0x53	Counter 16 MSR	Read & Write	
40085	84	0x54	CCounter 1 LSR	Read & Write	32-bit value of captured counter 1
40086	85	0x55	CCounter 1 MSR	Read & Write	
40087	86	0x56	CCounter 2 LSR	Read & Write	32-bit value of captured counter 2
40088	87	0x57	CCounter 2 MSR	Read & Write	
40089	88	0x58	CCounter 3 LSR	Read & Write	32-bit value of captured counter 3
40090	89	0x59	CCounter 3 MSR	Read & Write	
40091	90	0x5A	CCounter 4 LSR	Read & Write	32-bit value of captured counter 4
40092	91	0x5B	CCounter 4 MSR	Read & Write	
40093	92	0x5C	CCounter 5 LSR	Read & Write	32-bit value of captured counter 5
40094	93	0x5D	CCounter 5 MSR	Read & Write	
40095	94	0x5E	CCounter 6 LSR	Read & Write	32-bit value of captured counter 6
40096	95	0x5F	CCounter 6 MSR	Read & Write	
40097	96	0x60	CCounter 7 LSR	Read & Write	32-bit value of captured counter 7
40098	97	0x61	CCounter 7 MSR	Read & Write	
40099	98	0x62	CCounter 8 LSR	Read & Write	32-bit value of captured counter 8
40100	99	0x63	CCounter 8 MSR	Read & Write	
40101	100	0x64	CCounter 9 LSR	Read & Write	32-bit value of captured counter 9
40102	101	0x65	CCounter 9 MSR	Read & Write	
40103	102	0x66	CCounter 10 LSR	Read & Write	32-bit value of captured counter 10
40104	103	0x67	CCounter 10 MSR	Read & Write	

Modbus	Dec	Hex	Register Name	Access	Description
40105	104	0x68	CCounter 11 LSR	Read & Write	32-bit value of captured counter 11
40106	105	0x69	CCounter 11 MSR	Read & Write	
40107	106	0x6A	CCounter 12 LSR	Read & Write	32-bit value of captured counter 12
40108	107	0x6B	CCounter 12 MSR	Read & Write	
40109	108	0x6C	CCounter 13 LSR	Read & Write	32-bit value of captured counter 13
40110	109	0x6D	CCounter 13 MSR	Read & Write	
40111	110	0x6E	CCounter 14 LSR	Read & Write	32-bit value of captured counter 14
40112	111	0x6F	CCounter 14 MSR	Read & Write	
40113	112	0x70	CCounter 15 LSR	Read & Write	32-bit value of captured counter 15
40114	113	0x71	CCounter 15 MSR	Read & Write	
40115	114	0x72	CCounter 16 LSR	Read & Write	32-bit value of captured counter 16
40116	115	0x73	CCounter 16 MSR	Read & Write	
40117	116	0x74	Counter Config 1	Read & Write	Counter Configuration +1 – time measurement (if 0 counting impulses) +2 – autocatch counter every 1 sec +4 – catch value when input low +8 – reset counter after catch +16 – reset counter if input low +32 – encoder
40118	117	0x75	Counter Config 2	Read & Write	
40119	118	0x76	Counter Config 3	Read & Write	
40120	119	0x77	Counter Config 4	Read & Write	
40121	120	0x78	Counter Config 5	Read & Write	
40122	121	0x79	Counter Config 6	Read & Write	
40123	122	0x7A	Counter Config 7	Read & Write	
40124	123	0x7B	Counter Config 8	Read & Write	
40125	124	0x7C	Counter Config 9	Read & Write	
40126	125	0x7D	Counter Config 10	Read & Write	
40127	126	0x7E	Counter Config 11	Read & Write	
40128	127	0x7F	Counter Config 12	Read & Write	
40129	128	0x80	Counter Config 13	Read & Write	
40130	129	0x81	Counter Config 14	Read & Write	
40131	130	0x82	Counter Config 15	Read & Write	
40132	131	0x83	Counter Config 16	Read & Write	
40133	132	0x84	Catch	Read & Write	Catch counter
40134	133	0x85	Status	Read & Write	Captured counter



Please read the instruction before use or operating the device. In case of any questions after reading this document, please contact the iSMA CONTROLLI Support Team (support@ismacontrolli.com).



- Before wiring or removing/mounting the product, make sure to turn the power off. Failure to do so might cause an electric shock.
- Improper wiring of the product can damage it and lead to other hazards. Make sure that the product has been correctly wired before turning the power on.
- Do not touch electrically charged parts such as power terminals. Doing so might cause an electric shock.

• Do not disassemble the product. Doing so might cause an electric shock or faulty operation.



- Use the product only within the operating ranges recommended in the specification (temperature, humidity, voltage, shock, mounting direction, atmosphere, etc.). Failure to do so might cause a fire or faulty operation.

- Firmly tighten the wires to the terminal. Failure to do so might cause a fire.

- Avoid installing the product in close proximity to high-power electrical devices and cables, inductive loads, and switching devices. Proximity of such objects may cause an uncontrolled interference, resulting in an instable operation of the product.
- Proper arrangement of the power and signal cabling affects the operation of the entire control system. Avoid laying the power and signal wiring in parallel cable trays. It can cause interferences in monitored and control signals.
- It is recommended to power controllers/modules with AC/DC power suppliers. They provide better and more stable insulation for devices compared to AC/AC transformer systems, which transmit disturbances and transient phenomena like surges and bursts to devices. They also isolate products from inductive phenomena from other transformers and loads.
- Power supply systems for the product should be protected by external devices limiting overvoltage and effects of lightning discharges.
- Avoid powering the product and its controlled/monitored devices, especially high power and inductive loads, from a single power source. Powering devices from a single power source causes a risk of introducing disturbances from the loads to the control devices.
- If an AC/AC transformer is used to supply control devices, it is strongly recommended to use a maximum 100 VA Class 2 transformer to avoid unwanted inductive effects, which are dangerous for devices.
- Long monitoring and control lines may cause loops in connection with the shared power supply, causing disturbances in the operation of devices, including external communication. It is recommended to use galvanic separators.
- To protect signal and communication lines against external electromagnetic interferences, use properly grounded shielded cables and ferrite beads.
- Switching the digital output relays of large (exceeding specification) inductive loads can cause interference pulses to the electronics installed inside the product. Therefore, it is recommended to use external relays/contactors, etc. to switch such loads. The use of controllers with triac outputs also limits similar overvoltage phenomena.
- Many cases of disturbances and overvoltage in control systems are generated by switched, inductive loads supplied by alternating mains voltage (AC 120/230 V). If they do not have appropriate built-in noise reduction circuits, it is recommended to use external circuits such as snubbers, varistors, or protection diodes to limit these effects.



Electrical installation of this product must be done in accordance with national wiring codes and conform to local regulations.