

Mini PLC PL-100

- Supports up to 112 I/Os
- Relay Base & Transistor Low Side Base modules
- Stacking using FRC cable up to maximum 6 Expansion Modules
- Isolated Digital Inputs with sourcing & sinking capability
- Isolated Digital Transistorized Outputs (Low Side and High side driver)
- High Speed Inputs - Single / Quadrature (1x/2x/4x)
- High Speed Outputs (PTO / PWM / S-Profile)
- Analog Voltage/Current Inputs and Outputs of 0-10 V / 4-20 mA
- PC Software for programming, online & offline simulation
- Standard RS232/RS485 port with RJ11 for HMI/SCADA Interface
- Modbus RTU support
- 128 Weekly, Monthly & Yearly Time Switches each
- Multiple Timers, Counters including retentive counters, Hour meters & many more function blocks



Ordering Information

Cat. No.

Base Models:

PC10BD16005D1

PC10BD14006D1

Extension Models:

PC10ED08001N

PC10ED08002N

PC10ED16003N

PC10ED08004N

PC10ED08005N

PC10EA04001N

PC10EA02002N

Application Software:

PC10SN000N

Accessories:

PC10AC2

PC10AC3

PC10AC4

Description

DC Base with 8 Digital I/Ps, 8 Relay Outputs With 2 Port.

DC Base with 8 Digital I/Ps (4 Normal I/Ps + 4 High Speed I/Ps)

6 Transistor Low Side Outputs (4 Normal O/Ps + 2 High Speed O/Ps) With 2 Port.

Extension with 8 Digital Inputs

Extension with 8 Relay Outputs

Extension with 8 Digital Inputs and 8 Relay Outputs

Extension with 8 Transistor Low Side Outputs

Extension with 8 Transistor High Side Outputs

Extension with 4 Analog Inputs (Max. 24, 0-10V / 4-20mA)

Extension with 2 Analog Outputs (Max. 12, 0-10V / 4-20mA)

PL-Soft Pro

RS232 Communication Cable, PL-100 to HMI / SCADA

RS485 Communication Cable, PL-100 to HMI / SCADA (DB9 Female to RJ-11)

Rs485 Communication Cable, PL-100 to HMI / SCADA (DB9 Male to RJ-11)

Mini PLC PL-100



Cat. No.	PC10BD16005D1	PC10BD14006D1
Parameters		
Supply Voltage (Φ)	24 VDC	24 VDC
Supply Tolerance	- 15% to +20%	- 15% to +20%
Internal Current Consumption	65mA @ 24 VDC	60mA @ 24 VDC
Inrush Current	2.5A @ 24VDC	2.5A @ 24VDC
Battery Backup (In Event of Power failure)	5 years	5 years
Separate Power Supply For Output	Not required	(External fuse of 10A is recommended)
Digital Inputs		
No. of Inputs	8	4+4 High Speed (I2,I3,I6,I7)
Grouping	(4+1 Common)*2	(4+1 Common)*2
Type of Inputs	Sinking / Sourcing	Sinking / Sourcing
Input Voltage Range	0 - 28.8 VDC	0 - 28.8 VDC
Level (Logic 0)	Max. 5VDC	Max. 5VDC
Level (Logic 1)	Min. 11VDC	Min. 11VDC
Max. Input Current	1.2 mA per input	1.2 mA per input
Hardware Delay	Max 10 mSec	Max 10 mSec
Digital Filter Time (Sampling Time)	28 mSec	28 mSec
Min. Pulse Width	(Hardware Delay + Digital Filter Time) OR (System Loop Time) whichever is higher.	(Hardware Delay + Digital Filter Time) OR (System Loop Time) whichever is higher.
Max. I/P frequency	10 Hz (for worst case condition)	10 Hz (for worst case condition)
High Speed Level (Logic 0)	-	Max 3 VDC
High Speed Level (Logic 1)	-	Min 11 VDC
Max Input Current	-	1.2 mA per Input
Max High Speed Input Current	-	8 mA per Input
Min. Pulse width for High Speed Inputs (for 'low to high' or 'high to low' transition)	-	50 µSec (Min.)
Max. I/P frequency for high speed inputs.	-	Single Phase Mode - 10 kHz, Quadrature Mode 1X - 10 KHz, 2X - 5 KHz, 4X - 2.5 KHz
Digital Outputs		
No. of Outputs	8	4+2 High Speed
Grouping	(4+1 Common)*2	NA
Output Hardware	Relay (NO)	MOSFET Low Side Driver
Rated Load	5 A (Res.) @ 230 VAC / 30 VDC	24 VDC, 500 mA
Max load per common	10 A	
Max operations	1x10 ⁵	
Protection	External Fuse	Internally Protected (Max 3 A Per output)
Min. load for High Speed Output	-	10% of Rated Load (24 VDC, 500 mA)
HSO frequency	-	High Speed Inputs SPO-25kHz, PWN-5kHz PTO-5kHz
Isolation		
Between Output & Supply	2KV	2KV
Between Input & Supply	2KV	2KV
Communication		
PC Port (USB)	USB Port for PC Communication	Mini USB Port for PC Communication
Isolation for USB Port	2KV between communication lines and internal circuit	
HMI Port (RS-232 / RS-485)	RJ11 Port for HMI (or any MODBUS Device)	
Communication parameters	S/W selectable	
HMI port comm. Protocol	MODBUS Slave / MODBUS Master	
RS-485 Port (COM 2)	GSM alarm Modem	
Functional		
Programming language	Ladder	
Scan Time	50 mSec max.	
User Program memory	256 k	256KB
User Data memory	8 k	8KB
Maximum no. of I/O s	100	
Maximum no. of Extension modules	6	

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Cat. No.	PC10BD16005D1	PC10BD14006D1
Indication		
Input	Yes (Green LED)	
Output	Yes (Red LED)	
RUN	Yes (Green LED)	
STOP	Yes (Red LED)	
ERROR	Yes (Red LED Blinking)	
Operating Temperature	0°C to 55°C	
Storage Temperature	-40°C to 70°C	
Relative Humidity	10-95% RH (non-condensing)	
Environmental Air	No excessive dust or corrosive gas allowed	
Dimension (W x H x D) (in mm)	72 x 90 x 58	
Weight (unpacked) Approx.	220g	
Mounting	DIN Rail (35 mm)	
Enclosure Material	UL 94 V0	
Degree of Protection	IP 20 for Terminals, IP 40 for Enclosure	
Certification		

EMI / EMC

ESD	IEC 61000-4-2 Level II
Radiated Susceptibility	IEC 61000-4-3 Level III
Electrical Fast Transients	IEC 61000-4-4 Level III
Surge	IEC 61000-4-5 Level III
Conducted Susceptibility	IEC 61000-4-6 Level III
Power Frequency Magnetic Field Test	IEC 61000-4-11
Conducted Emission	CISPR 11:2015+AMD1:2016 CSV Class A
Radiated Emission	CISPR 11:2015+AMD1:2016 CSV Class A

Safety Compliance

Test Voltage between I/P and O/P	UL 508 2 kV
Impulse Voltage between I/P and O/P	IEC 60947-5-1 Level IV
Single Fault	IEC 61010-1
Insulation Resistance	UL 508 > 50 K Ohm
Leakage Current	UL 508 < 3 mA

Environmental Compliance

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6

LED Indication:

Indication For	RUN/Stop LED Indication on Base	RUN/Stop LED Indication on Base
RUN Mode	Green Continuous ON	Green Continuous ON
STOP Mode	Red Continuous ON	Red Continuous ON
Device Online Mode	Alternate blinking of Red & Green LED	Green Continuous ON
Base Short Circuit Error	Red LED blinking	Red Continuous ON
Extension Short Circuit Error	Red LED Continuous ON	Red blinking
Base or Extension does not have valid firmware update in progress	Green LED blinking	All Continuous OFF
GSM functionality ERROR but PL 100 ladder (except GSM block) is executed correctly.	Green LED blinking at the rate of 1 sec and when green LED is OFF, Red LED blinks at the rate of 100 ms	NA

Mini PLC PL-100



Cat. No.	PC10ED08001N
Input	
No. Of Inputs	8
Grouping	(4+1 Common)*2
Type of Inputs	Sinking/Sourcing
Input Voltage range	0 - 26.4VDC
Level (Logic 0)	Max 5 VDC
Level (Logic 1)	Min 11 VDC
Max Input Current	1.2mA Per Input
Hardware Delay	5 m Sec
Digital Filter Time (Sampling Time)	28 msec max
Min. Pulse Width	(Hardware Delay + Digital Filter Time) OR (System Loop Time) whichever is higher
Max. I/P frequency	10 Hz (for worst case condition)
Between Inputs & Supply	2 kV
Power Supply	
Supply Voltage	24 VDC
Supply Tolerance	-15% to +20%
Power Consumption	1.20 Watt
Inrush current	0.5A @ 24VDC
Indication	
Input	Yes (Green LED)
Output	Yes (Red LED)
RUN	Yes (Green LED)
STOP	Yes (Red LED)
ERROR	Yes (Red LED Blinking)
Mechanical Specifications	
Enclosure Protection	IP 20 for Terminals, IP 40 for Enclosure
Enclosure type	2 Modular
Method of Fixing	DIN Rail(35mm)
Environmental Specifications	
Operating Temperature	0°C to 55°C
Storage Temperature	-20°C to 70°C
HSO frequency	20-90% RH (Without condensation)
Environmental Air	Environmental No excessive dust or corrosive gas allowed

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Cat. No.	PC10ED08002N
Output	
No. Of Outputs	8
Grouping	(4+1 Common)*2
Output Hardware	Relay
Rated Load	5 A (Res.) @ 230 VAC / 30 VDC
Max load per common	10A
Max operations	1x10 ⁵
Protection	External Fuse
Between Inputs & Supply	2 kV
Power Supply	
Supply Voltage	24 VDC
Supply Tolerance	-15% to +20%
Power Consumption	2.30 Watt
Separate Power Supply For Output	No
Inrush current	0.5A @ 24VDC
Indication	
Output	Yes (Red LED)
RUN	Yes (Green LED)
STOP	Yes (Red LED)
ERROR	Yes (Red LED Blinking)
Mechanical Specifications	
Enclosure Protection	IP 20 for Terminals, IP 40 for Enclosure
Enclosure type	2 Modular
Method of Fixing	DIN Rail(35mm)
Environmental Specifications	
Operating Temperature	0°C to 55°C
Storage Temperature	-20°C to 70°C
HSO frequency	20-90% RH (Without condensation)
Environmental Air	Environmental No excessive dust or corrosive gas allowed

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Cat. No.	PC10ED16003N
Input	
No. Of Inputs	8
Grouping	(4+1 Common)*2
Type of Inputs	Sinking/Sourcing
Input Voltage range	0 - 26.4VDC
Level (Logic 0)	Max 5 VDC
Level (Logic 1)	Min 11 VDC
Max Input Current	1.2mA Per Input
Hardware Delay	5 m Sec
Digital Filter Time (Sampling Time)	28 msec max
Min. Pulse Width	(Hardware Delay + Digital Filter Time) OR (System Loop Time) whichever is higher
Max. I/P frequency	10 Hz (for worst case condition)
Between Inputs & Supply	2 kV
Output	
No. Of Outputs	8
Grouping	(4+1 Common)*2
Output Hardware	Relay
Rated Load	5 A (Res.) @ 230 VAC / 30 VDC
Max load per common	10A
Max operations	1x10 ⁵
Protection	External Fuse
Between Inputs & Supply	2 kV
Power Supply	
Supply Voltage	24 VDC
Supply Tolerance	-15% to +20%
Power Consumption	2.50 Watt
Separate Power Supply For Output	No
Inrush current	1A @ 24VDC
Indication	
Input	Yes (Green LED)
Output	Yes (Red LED)
RUN	Yes (Green LED)
STOP	Yes (Red LED)
ERROR	Yes (Red LED Blinking)
Mechanical Specifications	
Enclosure Protection	IP 20 for Terminals, IP 40 for Enclosure
Enclosure type	4 Modular
Method of Fixing	DIN Rail(35mm)
Environmental Specifications	
Operating Temperature	0°C to 55°C
Storage Temperature	-20°C to 70°C
HSO frequency	20-90% RH (Without condensation)
Environmental Air	Environmental No excessive dust or corrosive gas allowed

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Cat. No.	PC10ED08004N
Output	
No. Of Outputs	8
Grouping	NA
Output Form	MOSFET Low Side Driver
Rated Load	24 VDC, 500 mA
Protection	Internally Protected (Max 3 A per Output)
Between Inputs & Supply	2 kV
Power Supply	
Supply Voltage	24 VDC
Supply Tolerance	-15% to +20%
Power Consumption	1.70 Watt
Separate Power Supply For Output	Yes (20.4 to 28.8VDC) (External fuse of 10A is recommended)
Inrush current	0.5A @ 24VDC
Indication	
Output	Yes (Red LED)
RUN	Yes (Green LED)
STOP	Yes (Red LED)
ERROR	Yes (Red LED Blinking)
Mechanical Specifications	
Enclosure Protection	IP 20 for Terminals, IP 40 for Enclosure
Enclosure type	2 Modular
Method of Fixing	DIN Rail(35mm)
Environmental Specifications	
Operating Temperature	0°C to 55°C
Storage Temperature	-20°C to 70°C
HSO frequency	20-90% RH (Without condensation)
Environmental Air	Environmental No excessive dust or corrosive gas allowed

Cat. No.	PC10ED08005N
Output	
No. Of Outputs	8
Grouping	NA
Output Form	MOSFET High Side Driver
Rated Load	24 VDC, 500 mA
Protection	Internally Protected (Max 1.5 A per Output)
Between Inputs & Supply	2 kV
Power Supply	
Supply Voltage	24 VDC
Supply Tolerance	-15% to +20%
Power Consumption	1.20 Watt
Separate Power Supply For Output	Yes (20.4 to 28.8VDC) (External fuse of 10A is recommended)
Inrush current	0.5A @ 24VDC
Indication	
Output	Yes (Red LED)
RUN	Yes (Green LED)
STOP	Yes (Red LED)
ERROR	Yes (Red LED Blinking)
Mechanical Specifications	
Enclosure Protection	IP 20 for Terminals, IP 40 for Enclosure
Enclosure type	2 Modular
Method of Fixing	DIN Rail (35mm)
Environmental Specifications	
Operating Temperature	0°C to 55°C
Storage Temperature	-20°C to 70°C
HSO frequency	20-90% RH (Without condensation)
Environmental Air	Environmental No excessive dust or corrosive gas allowed

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Cat. No.	PC10EA04001N
Input	
No. Of Inputs	4
Grouping	2 Groups (2 Voltage OR 2 Current in each Group)
Type of Inputs	Unipolar Analog Voltage & Current
Input Range	0-10V & 4-20mA
Type of Inputs	Single Ended
Input Impedance	910kΩ in Voltage & 232Ω in Current
Max. Input Voltage	+12 VDC
Max Input Current	25 mA
Conversion	
Method	Successive Approximation
Resolution	Voltage-2.5mV(1/4000) Current-4uA(1/4000)
Accuracy	Voltage - ±0.5% max. of FSO Current - ±1% max. of FSO
Sample per second	15
Between Inputs & Supply	2 kV
Between Inputs	No
Power Supply	
Supply Voltage	24 VDC
Voltage Range	20.4 VDC to 28.8VDC
Power Consumption	1.30 Watt
Inrush current	2.5A @ 24VDC
Indication	
Channel Mode (Voltage / Current)	Yes (Red LED for Current & Green LED for Voltage)
RUN	Yes (Green LED)
STOP	Yes (Red LED)
ERROR	Yes (Red LED Blinking)
Mechanical Specifications	
Enclosure Protection	IP 20 for Terminals, IP 40 for Enclosure
Enclosure type	2 Modular
Method of Fixing	DIN Rail(35mm)
Environmental Specifications	
Accuracy Vs. Temperature	±50ppm/°C full scale
Operating Temperature	0°C to 55°C
Storage Temperature	-20°C to 70°C
Relative Humidity	5-90% RH (Without condensation)
Environmental Air	Environmental No excessive dust or corrosive gas allowed

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Cat. No.	PC10EA02002N
Output	
No. Of Outputs	2
Grouping	2 Groups (1 Voltage OR 1 Current in each Group)
Type of Outputs	Unipolar Analog Voltage & Current
Output Range	0-10V & 4-20mA
Rated Load	Current-650Ω(max) Voltage-1000Ω(min)
Protection	Voltage- Short Circuit
Cable Length	1000 Meter for Current and 250 Meter for voltage. Note: Recommended to use twisted shielded cable
Conversion	
Method	Successive Approximation
Resolution	Voltage-2.5 mV (1/4000) Current-4 uA (1/4000)
Accuracy	1.5% FSO
Between Outputs & Supply	2 kV
Between Outputs	No
Power Supply	
Nominal Voltage	24 VDC
Voltage Range	20,4 VDC to 28,8VDC
Power Consumption	1.30 Watt
Inrush current	2.5A @ 24VDC
Indication	
Channel Mode (Voltage / Current)	Yes (Red LED for Current & Green LED for Voltage)
RUN	Yes (Green LED)
STOP	Yes (Red LED)
ERROR	Yes (Red LED Blinking)
Mechanical Specifications	
Enclosure Protection	IP 20 for Terminals, IP 40 for Enclosure
Enclosure type	2 Modular
Method of Fixing	DIN Rail(35mm)
Environmental Specifications	
Accuracy Vs. Temperature	±50ppm/°C full scale
Operating Temperature	0°C to 55°C
Storage Temperature	-20°C to 70°C
Relative Humidity	20-90% RH (Without condensation)
Environmental Air	Environmental No excessive dust or corrosive gas allowed

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FUNCTION BLOCKS:

Sr. No.	Contact Blocks	Max. Available*
1	Positive Edge Contact	128
2	Negative Edge Contact	128
3	Not Contact	128
4	First Scan Contact	1
5	Auxiliary Relay State change	512
6	Auxiliary Relay Level change	512
7	Auxiliary Relay Bistable Set Reset	512

Sr. No.	Special I/O	Max. Available*
1	Timed I/O	1
2	Interrupt I/O	1

Sr. No.	Arithmetic Functions	Max. Available*
1	Arithmetic ADD	128
2	Arithmetic SUB	128
3	Arithmetic MUL	128
4	Arithmetic DIV	128
5	Arithmetic INC	128
6	Arithmetic DEC	128
7	Arithmetic MOD	128

Sr. No.	High Speed Output	Max. Available*
1	High Speed Output (PTO01)	1
2	High Speed Output (PTO02)	1
3	High Speed Output (PWM01)	1
4	High Speed Output (PWM02)	1
5	High Speed Output (SPO01)	1

Sr. No.	Move & Convert Functions	Max. Available*
1	Move	128
2	Block Move	8
3	Block Set	8
4	Compare	128
5	Conversion	128
6	Scale Converter	16
7	Shift Left (SHL)	128
8	Shift Right (SHR)	128

Sr. No.	Timer & Time Switch Blocks	Max. Available*
1	ON Delay Timer	128
2	OFF Delay Timer	128
3	Cyclic ON/Off	128
4	Cyclic OFF/ON	128
5	Accumulative Delay ON Signal Timer	128
6	Accumulative Impulse ON Signal Timer	128
7	Impulse ON/OFF Timer	128
8	Signal OFF/ON Timer	128
9	Leading Edge Impulse 1 Timer	128
10	Leading Edge Impulse 2 Timer	128
11	Trailing Edge Impulse 1 Timer	128
12	Trailing Edge Impulse 2 Timer	128
13	Delayed Impulse Timer	128
14	Retentive ON Delay Timer	128
15	Retentive OFF Delay Timer	128
16	Time switch Weekly	128
17	Time switch Monthly	128
18	Time switch Yearly	128

Sr. No.	Logical Functions	Max. Available*
1	NOT	128
2	AND	128
3	OR	128
4	EXOR	128

Sr. No.	Hour & Counter blocks	Max. Available*
1	Up counter	128
2	Down counter	128
3	Up-Down counter	128
4	Retentive Up counter	128
5	Retentive Down counter	128
6	Retentive Up-Down counter	128
7	Hour meter	128
8	High Speed Counter 1	1
9	High Speed Counter 2	1
10	High Speed Counter 3	1
11	High Speed Counter 4	1

Sr. No.	MODBUS Functions	Max. Available*
1	MODBUS INIT (Slave / Master)	1
2	MODBUS MASTER	16
3	Variable	1024**

*Maximum number of blocks that can be used in ladder depends on the user program memory.

**No of variables can be varied according to defined variable types.

i. Byte / SByte Type Variables - 1024. ii. Word / Sword Type Variables - 512. iii. Dword / SDword Type Variables - 256.

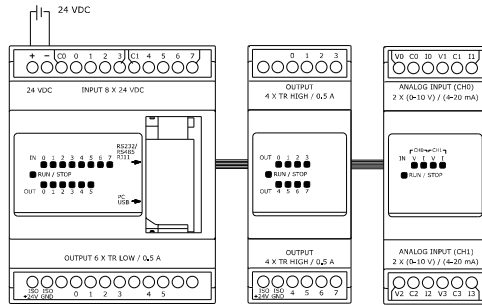
iv. Maximum size of Byte / Sbyte Type Array - 999

Mini PLC PL-100

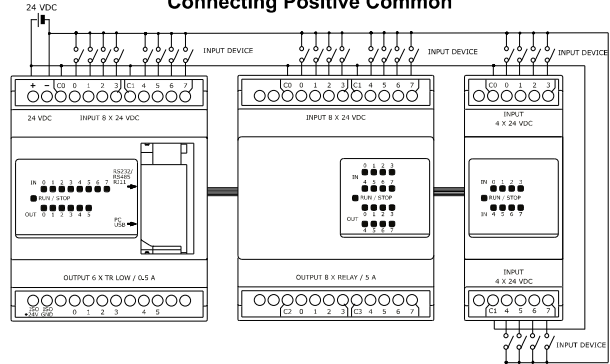


CONNECTION DIAGRAM

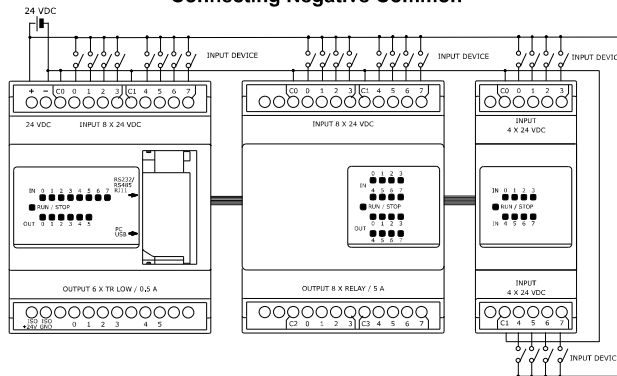
Connecting Power Supply to PL-100 Units



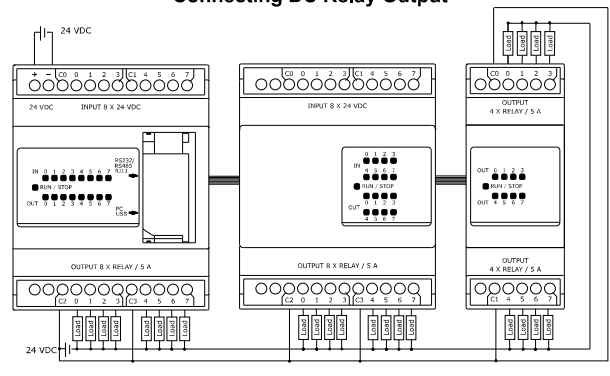
Connecting Positive Common



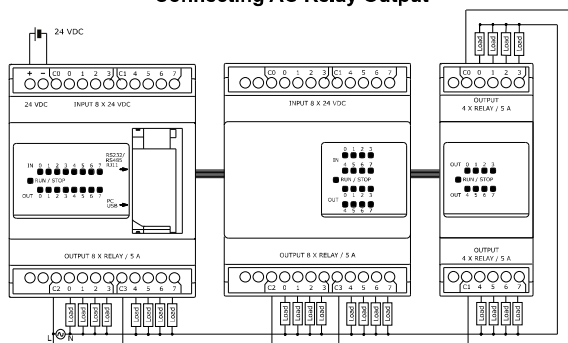
Connecting Negative Common



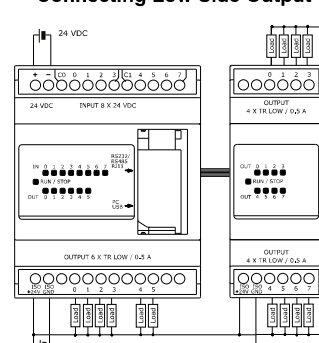
Connecting DC Relay Output



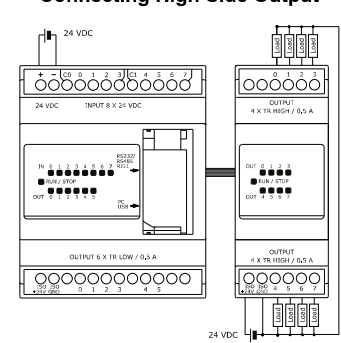
Connecting AC Relay Output



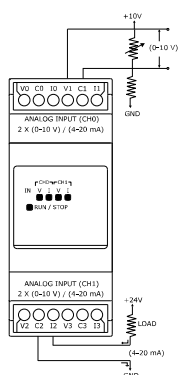
Connecting Low Side Output



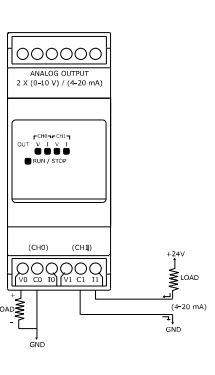
Connecting High Side Output



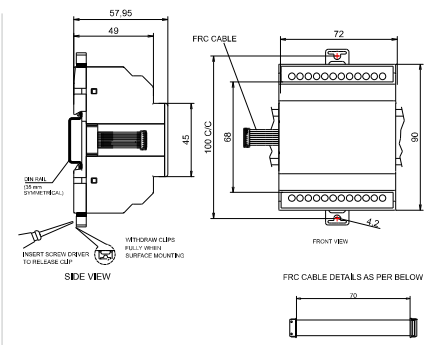
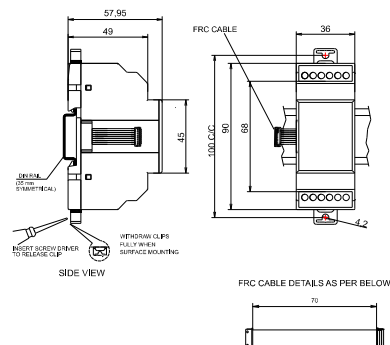
Connecting Analog Input Model



Connecting Analog Output Model



MOUNTING DIMENSIONS (mm)



GSM Alarm Modem

- GSM Alarm Modem is specifically designed to provide GSM features to Mini PLC PL-100
- GSM Alarm Modem enables monitoring of inputs, outputs and controlling of outputs of Mini PLC PL-100 through SMS facility
- The preset and current value related to special function blocks (SFB) that are available in the ladder logic can be monitored
- Analog input and output values can also be effectively monitored and controlled
- Diagnostic information about all the inputs & outputs of devices connected in the System is available for users
- Device and Clock settings can be configured by sending respective queries to the device
- User can integrate Special Function Blocks such as Send and Receive SMS along with others like Timers, Time Switches, Counters, etc. for various applications
- Alert messages can be received from the GSM Alarm modem depending on the ladder logic
- Power Failure condition can also be effectively reported



Ordering Information

Cat. No.	Description
40B2BBVAA	24 VDC, Module for GSM Alarm Modem with wire type antenna

GSM Alarm Modem



Cat. No.	40B2BBVAA
Parameters	
Supply Voltage (Φ)	24 VDC
Supply Variation	-20% to +10% (of Φ)
Interface Port	RJ11
Interface	RS485
Signal	D+, D-
Power Fail SMS	Yes
Power ON SMS	Yes
Communication Break SMS	Yes
Power ON	Yes (Green LED)
Transmit Data	Yes (Green LED)
Receive Data	Yes (Green LED)
Network	Yes (Green LED)
Error	Yes (Red LED Blinking)
Enclosure type	4 Modular
Operating Temperature	-5 °C to 55 °C
Storage Temperature	-10 °C to 60 °C
Relative Humidity	20-90% RH (Without condensation)
Environmental Air	No excessive dust or corrosive gas allowed
Mounting	Base / DIN rail
Certification	  
Degree of Protection	IP 20 for Terminals, IP 40 for Enclosure

EMI / EMC Tests

ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surge	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips	IEC 61000-4-29
Conducted Emission	CISPR 11:2015
Radiated Emission	CISPR 11:2015

Safety Compliance

Single Fault	IEC 61010-1
Insulation Resistance	UL 508
Leakage Current	UL 508

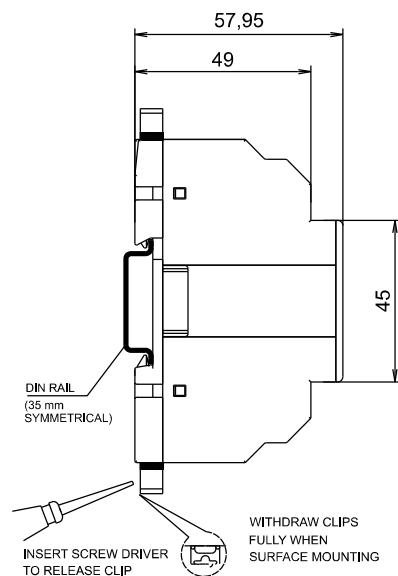
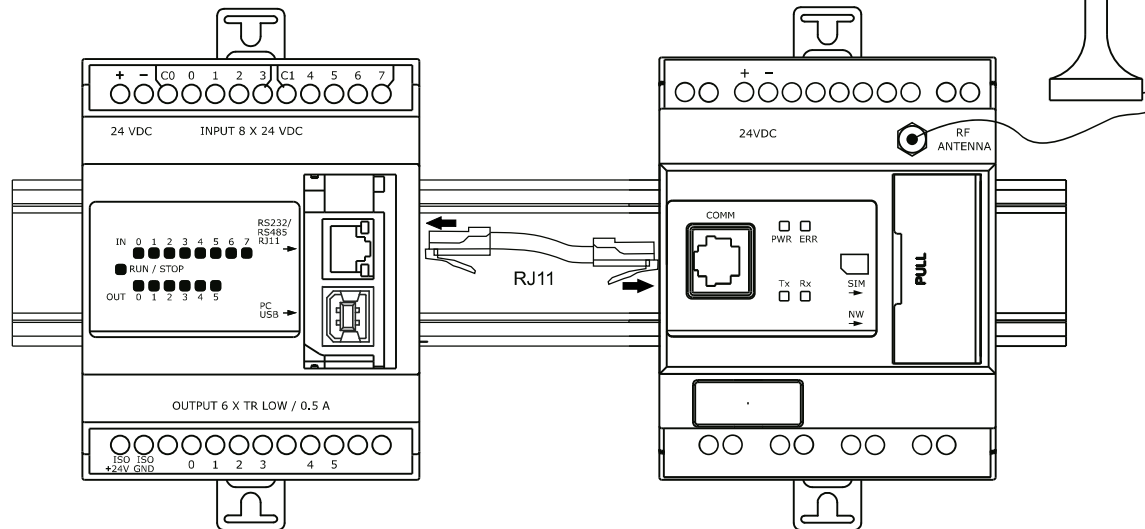
Environmental Compliance

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-repetitive Shock	IEC 60068-2-27

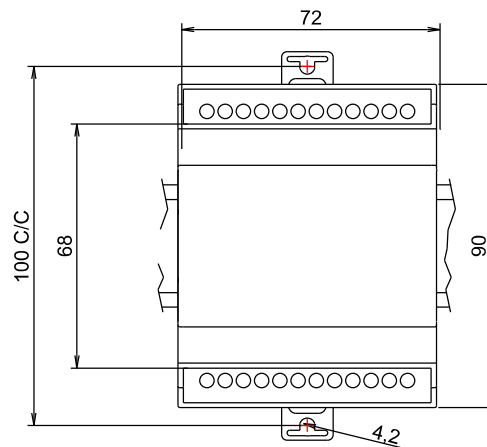
GSM Alarm Modem



MOUNTING DIMENSIONS (mm)

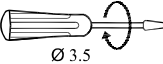


SIDE VIEW



FRONT VIEW

TERMINAL TORQUE & CAPACITY

 Ø 3.5	0.54 N.m (6 Lb.in)
	1 x 2.5 mm ² Solid Wire/Stranded
AWG	1 x 24 to 12