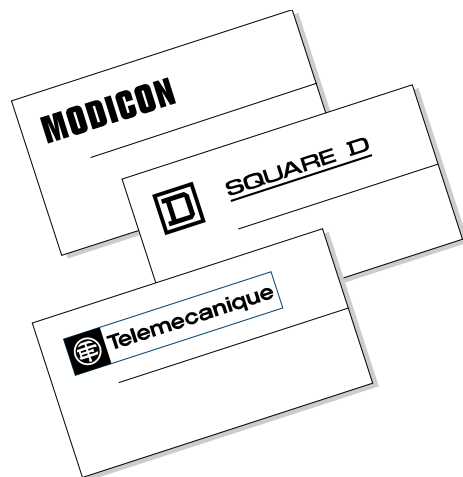
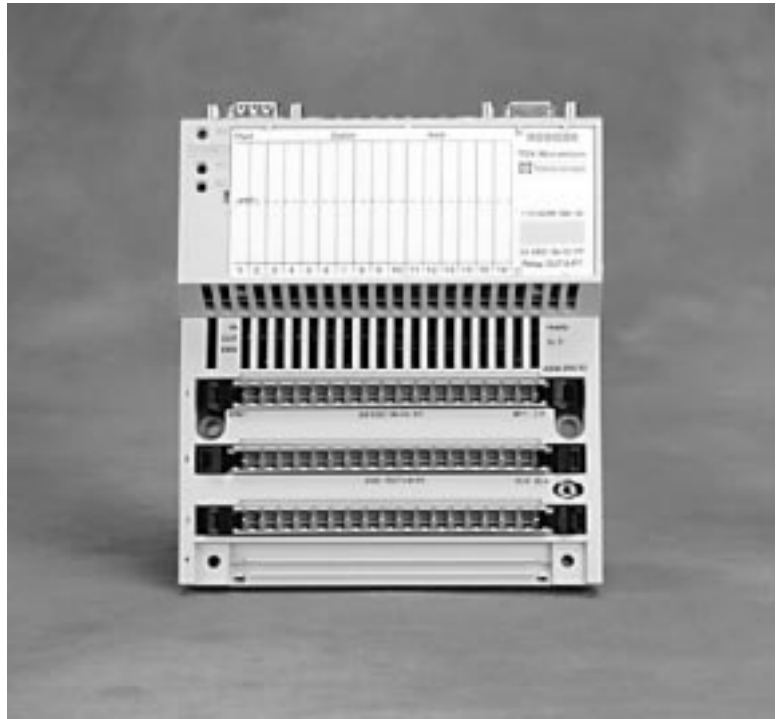


# Momentum I/O Product Line



**GROUPE SCHNEIDER**

■ Merlin Gerin ■ Modicon ■ Square D ■ Telemecanique

# Momentum 24 Volts DC - 32 Point Discrete Input Module Base Model Number 170 ADI 350 00

The model 170 ADI 350 00 input module base has 32 discrete inputs for direct connection to 2, 3, and 4 wire sensors. This module base can connect directly to a number of standard networks for communicating with programmable controllers, industrial computers and other controllers by installing one of the plug-in Momentum Communication Adapters. This module can also be used as the I/O base for Momentum CPUs in a programmable controller system with distributed I/O.

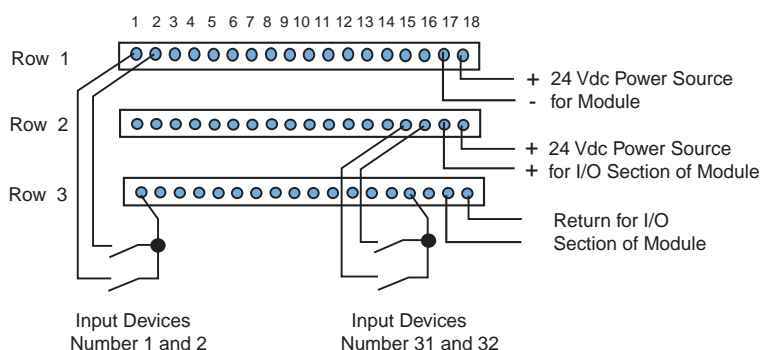
## Product Specifications

Operating Voltage	24 Vdc
Number of Points	32
Number of Groups	1
Points per Group	32
Type of Signal	True High
IEC 1131 I/O Type	1+
Minimum ON Voltage	11 Vdc
Maximum OFF Voltage	5 Vdc
Input Current	1.2 mA max. off current 2.5 mA min. on current
Input Voltage	
Range	- 3 to +30 Vdc
Surge	45 Volt peak for 10 ms
Response Time	2.2 ms OFF to ON 3.3 ms ON to OFF
Isolation	
Point to Point	None
Field to Comm. Interface	Defined by Communication Adapter
External Power Requirements	24 Vdc
Range	20 - 30 Vdc
Current	<250 mA at 24 Vdc
EMC for Industrial Environment	
Immunity	IEC 1131; surge on Aux. Power Supply 500V
Emissions	EN 50081-2
Approvals	UL, CSA, CE, FM class 1, div. 2

## Terminal Assignments

Row No.	Terminal No.	Function
1	1 thru 16	Inputs 1 thru 16
1	17	Return for Module
1	18	+24 Vdc Power for Module
2	1 thru 16	Inputs 17 thru 32
2	17	+24 Vdc for I/O Group 1
2	18	+24 Vdc for I/O Group 2
3	1 thru 16	Sensor /Input Device Power
3	17	Return for I/O Group 1
3	18	Return for I/O Group 2

## Field Wiring Diagram



## Module Configuration

The model 170 ADI 350 00 Input Module Base has 32 discrete inputs and is configured as 2 consecutive 16 bit input words by the control system. Refer to the Reference Guide for the individual Communication Adapters for detailed configuration information.

# Momentum 24 Volts DC - 16 Point Discrete Input Module Base Model Number 170 ADI 340 00

The model 170 ADI 340 00 input module base has 16 discrete inputs for direct connection to 2, 3, and 4 wire sensors. This module base can connect directly to a number of standard networks for communicating with programmable controllers, industrial computers and other controllers by installing one of the plug-in Momentum Communication Adapters. This module can also be used as the I/O base for Momentum CPUs in a programmable controller system with distributed I/O.

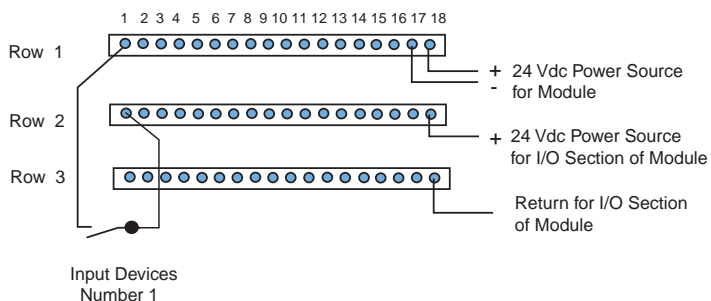
## Product Specifications

Operating Voltage	24 Vdc
Number of Points	16
Number of Groups	1
Points per Group	16
Type of Signal	True High
IEC 1131 I/O Type	1+
Minimum ON Voltage	11 Vdc
Maximum OFF Voltage	5 Vdc
Input Current	1.2 mA max. off current 2.5 mA min. on current
Input Voltage	
Range	- 3 to + 30 Vdc
Surge	45 Volt peak for 10 ms
Response Time	2.2 ms OFF to ON 3.3 ms ON to OFF
Isolation	
Point to Point	None
Field to Comm. Interface	Defined by Communication Adapter
External Power	
Requirements	24 Vdc
Range	20 - 30 Vdc
Current	<250 mA at 24 Vdc
EMC for Industrial Environment	
Immunity	IEC 1131; surge on Aux. Power Supply 500V
Emissions	EN 50081-2
Approvals	UL, CSA, CE, FM class 1, div. 2

## Terminal Assignments

Row No.	Terminal No.	Function
1	1 thru 16	Inputs 1 thru 16
1	17	Return for Module
1	18	+24 Vdc Power for Module
2	1 thru 16	Sensor/Inputs Device Power
2	18	+24 Vdc for I/O
3	18	Return for I/O

## Field Wiring Diagram



## Module Configuration

The model 170 ADI 340 00 Input Module Base has 16 discrete inputs and is configured as a 16 bit input word by the control system. Refer to the Reference Guide for the individual Communication Adapters for detailed configuration information.

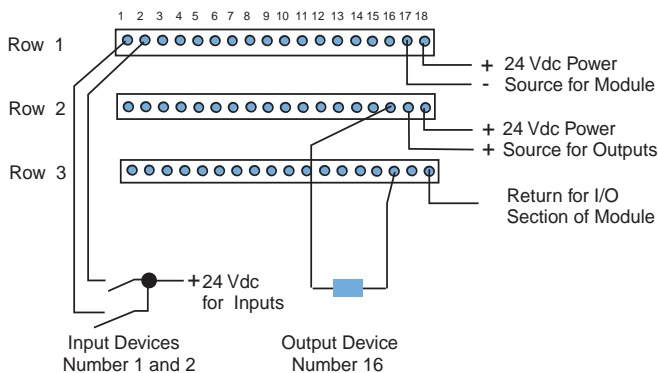
# Momentum 24 Volts DC - 16 Point Input/ 16 Point Output Module Base Model Number 170 ADM 350 10

The model 170 ADM 350 10 input/output module base has 16 discrete inputs and 16 discrete outputs for direct connection to 2, 3, and 4 wire sensors and actuators. This module base can connect directly to a number of standard networks for communicating with programmable controllers, industrial computers and other controllers by installing one of the plug-in Momentum Communication Adapters. This module can also be used as the I/O base for a stand-alone programmable controller when installed with a Momentum CPU.

## Terminal Assignments

Row No.	Terminal No.	Function
1	1 thru 16	Inputs 1 thru 16
1	17	Return for Module
1	18	+24 Vdc Power for Module
2	1 thru 8	Outputs 1 thru 8
2	9 thru 16	Outputs 9 thru 16
2	17	+24 Vdc for I/O Outputs 1 thru 8
2	18	+24 Vdc for I/O Outputs 9 thru 16
3	1 thru 16	Return for Outputs
3	18	Return for I/O

## Field Wiring Diagram



## Module Configuration

The model 170 ADM 350 10 Input/Output Module has 16 discrete inputs and 16 discrete outputs and is configured as a 16 bit input word and a 16 bit output word by the control system. Refer to the Reference Guide for the individual Communication Adapters for detailed configuration information.

## Product Specifications

### Discrete Inputs

Operating Voltage	24 Vdc
Number of Points	16
Number of Groups	1
Points per Group	16
Type of Signal	True High
IEC 1131 I/O Type	1+
Minimum ON Voltage	11 Vdc
Maximum OFF Voltage	5 Vdc
Input Current	1.2 mA max. off current 2.5 mA min. on current
Input Voltage	
Range	- 3 to + 30 Vdc
Surge	45 Volt peak for 10 ms
Response Time	2.2 ms OFF to ON 3.3 ms ON to OFF

### Discrete Outputs

Description	Solid State Switch
Operating Voltage	24 Vdc
Number of Points	16
Number of Groups	2
Points per Group	8
Current capacity	0.5 Amps per point 4 Amps per group 8 Amps per module
Type of Signal	True High
Leakage Current	<1 mA @ 24 Vdc
Surge Current	5 Amps for 1 ms
On State Voltage Drop	<0.5 Vdc at 0.5 amp. current
Fault Sensing	Overload and short circuit
Fault Reporting	LED - indicator per point Fault status bit available for control system
Response Time	<0.1 ms OFF to ON <0.1 ms ON to OFF
Isolation	
Input to Input	None
Output Group to Output Group	None
Input to Output Group	None
Field to Comm. Interface	Defined by Communication Adapter
External Power Requirements	
Range	24 Vdc
Current	20 - 30 Vdc <250 mA at 24 Vdc
EMC for Industrial Environment	
Immunity	IEC 1131; surge on Aux. Power Supply 500V
Emissions	EN 50081-2
Approvals	UL, CSA, CE, FM class 1, div. 2

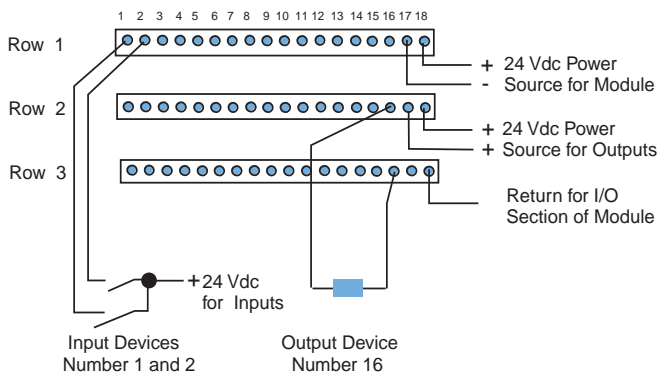
# Momentum 24 Volts DC - 16 Point Input/ 16 Point Output Module Base Model Number 170 ADM 350 11

The model 170 ADM 350 11 input/output module base has 16 discrete inputs and 16 discrete outputs for direct connection to 2, 3, and 4 wire sensors and actuators. This module base is identical to the 170 ADM 350 10 but with faster input response time. It can be connected directly to a number of standard networks for communicating with programmable controllers, industrial computers and other controllers by installing one of the plug-in Momentum Communication Adapters. This module can also be used as the I/O base for a stand-alone programmable controller when installed with a Momentum CPU.

## Terminal Assignments

Row No.	Terminal No.	Function
1	1 thru 16	Inputs 1 thru 16
1	17	Return for Module
1	18	+24 Vdc Power for Module
2	1 thru 8	Outputs 1 thru 8
2	9 thru 16	Outputs 9 thru 16
2	17	+24 Vdc for I/O Outputs 1 thru 8
2	18	+24 Vdc for I/O Outputs 9 thru 16
3	1 thru 16	Return for Outputs
3	18	Return for I/O

## Field Wiring Diagram



## Module Configuration

The model 170 ADM 350 11 Input/Output Module has 16 discrete inputs and 16 discrete outputs and is configured as a 16 bit input word and a 16 bit output word by the control system. Refer to the Reference Guide for the individual Communication Adapters for detailed configuration information.

## Product Specifications

### Discrete Inputs

Operating Voltage	24 Vdc
Number of Points	16
Number of Groups	1
Points per Group	16
Type of Signal	True High
IEC 1131 I/O Type	1+
Minimum ON Voltage	11 Vdc
Maximum OFF Voltage	5 Vdc
Input Current	1.2 mA max. off current 2.5 mA min. on current
Input Voltage	
Range	- 3 to + 30 Vdc
Surge	45 Volt peak for 10 ms
Response Time	0.06 ms OFF to ON 0.08 ms ON to OFF

### Discrete Outputs

Description	Solid State Switch
Operating Voltage	24 Vdc
Number of Points	16
Number of Groups	2
Points per Group	8
Current capacity	0.5 Amps per point 4 Amps per group 8 Amps per module
Type of Signal	True High
Leakage Current	<1 mA @ 24 Vdc
Surge Current	5 Amps for 1 ms
On State Voltage Drop	<0.5 Vdc at 0.5 amp. current
Fault Sensing	Overload and short circuit
Fault Reporting	LED - indicator per point Fault status bit available for control system
Response Time	<0.1 ms OFF to ON <0.1 ms ON to OFF
Isolation	
Input to Input	None
Output Group to Output Group	None
Input to Output Group	None
Field to Comm. Interface	Defined by Communication Adapter
External Power Requirements	
Range	20 - 30 Vdc
Current	<250 mA at 24 Vdc
EMC for Industrial Environment	
Immunity	IEC 1131; surge on Aux. Power Supply 500V
Emissions	EN 50081-2
Approvals	UL, CSA, CE, FM class 1, div. 2

# Momentum 24 Volts DC - 16 Point Discrete Output Module Base Model Number 170 ADO 340 00

The model 170 ADO 340 00 output module base has 16 discrete outputs for direct connection to 2 and 3 wire actuators. This module base can be connected directly to a number of standard networks for communicating with programmable controllers, industrial computers and other controllers by installing one of the plug-in Momentum Communication Adapters. This module can also be used as the I/O base for Momentum CPUs in a programmable controller system with distributed I/O.

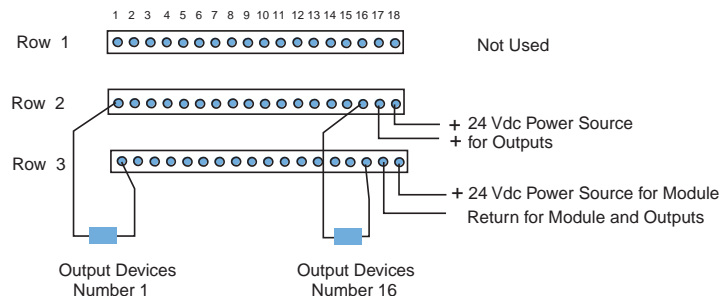
## Product Specifications

Operating Voltage	24 Vdc
Number of Points	16
Number of Groups	2
Points per Group	8
Current capacity	0.5 Amps per point 4 Amps per group 8 Amps per module
Type of Output	Solid State
Type of Signal	True High
Leakage Current	<1 mA @ 24 Vdc
Surge Current	5 amp. for 1 ms, internal to 1 amp. limited
On State Voltage Drop	<0.5 Vdc max. at 0.5 amp. current
Fault Sensing	Overload and short circuit
Fault Reporting	LED - indicator per point Fault status bit available for control system
Response Time	<0.1 ms OFF to ON <0.1 ms ON to OFF
Isolation	
Point to Point	None
Field to Comm. Interface	Defined by Communication Adapter
External Power Requirements	24 Vdc
Range	20 - 30 Vdc
Current	<250 mA at 24 Vdc
EMC for Industrial Environment	
Immunity	IEC 1131; surge on Aux. Power Supply 500V
Emissions	EN 50081-2
Approvals	UL, CSA, CE, FM class 1, div. 2

## Terminal Assignments

Row No.	Terminal No.	Function
1		Not Used
1	1 thru 8	Outputs 1 thru 8
2	9 thru 16	Outputs 9 thru 16
2	17	+ 24 Vdc for I/O Outputs 1 thru 8
2	18	+ 24 Vdc for I/O Outputs 9 thru 16
3	1 thru 16	Return Connections for Outputs
3	17	Return for Module and Outputs
3	18	+24 Vdc Power for Module

## Field Wiring Diagram



## Module Configuration

The model 170 ADO 340 00 Output Module Base has 16 discrete outputs and is configured as a 16 bit output word by the control system. Refer to the Reference Guide for the individual Communication Adapters for detailed configuration information.

# Momentum 24 Volts DC - 32 Point Discrete Output Module Base

## Model Number 170 ADO 350 00

The model 170 ADO 350 00 output module base has 32 discrete outputs for direct connection to 2 and 3 wire actuators. This module base can be connected directly to a number of standard networks for communicating with programmable controllers, industrial computers and other controllers by installing one of the plug-in Momentum Communication Adapters. This module can also be used as the I/O base for a Momentum CPU in a programmable controller system with distributed I/O.

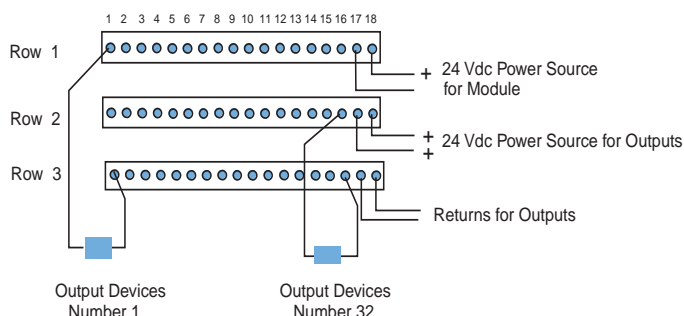
### Product Specifications

Operating Voltage	24 Vdc
Number of Points	32
Number of Groups	2
Points per Group	16
Current capacity	0.5 Amps per point 8 Amps per group 16 Amps per module
Type of Output	Solid State
Type of Signal	True High
Leakage Current	<1 mA @ 24 Vdc
Surge Current	5 amp. for 1 ms, internal to 1 amp. limited
On State Voltage Drop	<0.5 Vdc max. at 0.5 amp. current
Fault Sensing	Overload and short circuit
Fault Reporting	LED - indicator per point Fault status bit available for control system
Response Time	<0.1 ms OFF to ON <0.1 ms ON to OFF
Isolation	
Point to Point	None
Field to Comm. Interface	Defined by Communication Adapter
External Power Requirements	
Range	24 Vdc
Current	20 - 30 Vdc <250 mA at 24 V dc
EMC for Industrial Environment	
Immunity	IEC 1131; surge on Aux. Power Supply 500V
Emissions	EN 50081-2
Approvals	UL, CSA, CE, FM class 1, div. 2

### Terminal Assignments

Row No.	Terminal No.	Function
1	1 thru 16	Outputs 1 thru 16
1	17	Return for Module
1	18	+24 Vdc Power for Module
2	1 thru 16	Outputs 17 thru 32
2	17	+24 Vdc Power for Outputs
2	18	+24 Vdc Power for Outputs
3	1 thru 16	Return Connections for Outputs
3	17 and 18	Return for Module and Outputs

### Field Wiring Diagram



### Module Configuration

The model 170 ADO 350 00 Output Module Base has 32 discrete outputs and is configured as 2 - 16 bit output words by the control system. Refer to the Reference Guide for the individual Communication Adapters for detailed configuration information.

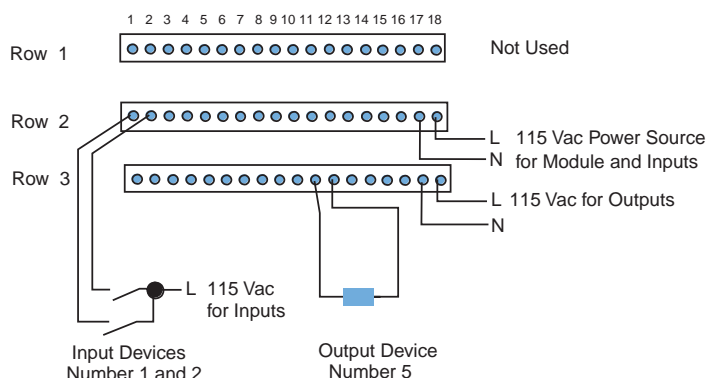
# Momentum 115 Volts AC - 10 Point Input/ 8 Point Output Module Base Model Number 170 ADM 690 50

The model 170 ADM 690 50 input/output module base has 10 discrete inputs and 8 discrete outputs for direct connection to 2, 3, and 4 wire sensors and actuators. This module base can be connected directly to a number of standard networks for communicating with programmable controllers, industrial computers and other controllers by installing one of the plug-in Momentum Communication Adapters. This module can also be used as the I/O base for a stand-alone programmable controller when installed with a Momentum CPU.

## Terminal Assignments

Row No.	Terminal No.	Function
1		Not Used
2	1 thru 10	Inputs 1 thru 10
2	17	Neutral-115 Vac for Module and Inputs
2	18	Line-115 Vac for Module and Inputs
3	1,3,5,7,9,11,13,15	Outputs 1 thru 8
3	2,4,6,8,10,12,14,16	Neutrals for Individual Outputs
3	17	Neutral for Outputs
3	18	Line for Outputs

## Field Wiring Diagram



## Module Configuration

The model 170 ADI 690 50 Input/Output module base has 10 discrete inputs and 8 discrete outputs and is configured as a 16 bit input word and a 16 bit output word by the control system. Refer to the Reference Guide for the individual Communication Adapters for detailed configuration information.

## Product Specifications

### Discrete Inputs

Operating Voltage	115 Vac @ 47 to 63 Hz
Number of Points	10
Number of Groups	1
Points per Group	10 points
Type of Signal	True High
Input Voltage Range	0 - 132 Vac
1 cycle surge	160 Vac
Minimum ON current	6 ma
Maximum OFF current	2.6 mA
Input Impedance	9 k Ohms @ 50 Hz 7.5 k Ohms @ 60 Hz
Switching Level	min. ON voltage: 74 Vac max. OFF voltage: 20 Vac
Response Time	13.3 ms @ 60 Hz ON to OFF the half of one line cycle 13.3 ms @ 60 Hz OFF to ON the half of one line cycle

### Discrete Outputs

Description	Solid State switch
Operating Voltage	115 Vac @ 47 to 63 Hz
Number of Points	8
Number of Groups	1
Points per Group	8
On Current, per point	0.5 Amp continuous
On Current, per group	4 Amp continuous
On Current, per module	4 Amp continuous
Leakage Current	<1.3 mA @ 115 Vac
Min. Load Current	30 mA Min.
Transient	400 Vac
On Voltage Drop	<1.5 Vac max. at .5 amp.
Response Time	<13.3 ms@ 60 Hz ON to OFF less than half one line cycle <13.3 ms@ 60 Hz OFF to ON less than half one line cycle
Fusing	Per Group ( 2 fuses )
Fuse Size	8 amps
Isolation	
Input to Input	None
Output Group to Output Group	None
Input to Output Group	None
Field to Comm. Adapter	1780 Vac
External Power Requirement	115 Vac
Range	100 - 132 Vac RMS @ 47 - 63 Hz
Current	<160 mA at 115 V ac
EMC for Industrial Environment	
Immunity	IEC 1131 surge on Aux. Power Supply 2 KV
Emissions	EN 50081-2
Approvals	UL, CSA, CE, FM class 1, div. 2



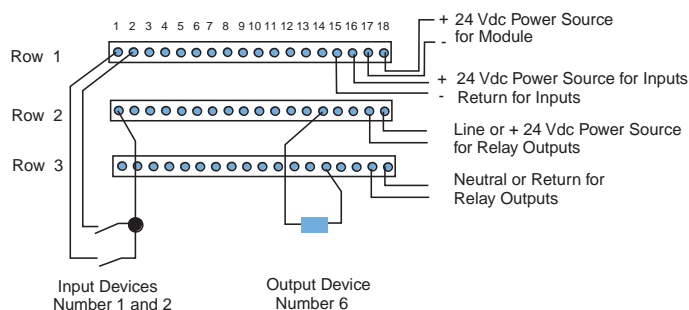
# Momentum 24 Volts DC - 10 Point Input/ 8 Point Relay Output Module Base Model Number 170 ADM 390 30

The model 170 ADM 390 30 input/output module base has 10 discrete inputs and 8 relay outputs for direct connection to 2, 3, and 4 wire sensors and actuators. This module base can be connected directly to a number of standard networks for communicating with programmable controllers, industrial computers and other controllers by installing one of the plug-in Momentum Communication Adapters. This module can also be used as the I/O base for a stand-alone programmable controller when installed with a Momentum CPU.

## Terminal Assignments

Row No.	Terminal No.	Function
1	1 thru 10	Inputs 1 thru 10
1	13 thru 15	Return for Input Group
1	16	+24 Vdc Power for Input Group
1	17	Return for Module
1	18	+24 Vdc Power for Module
2	1 thru 8	Sensor/Input Device Power
2	9 thru 16	Relay Outputs 1 thru 8
2	17/18	Line or +24 Vdc for Relay Outputs
3	1 thru 8	Return for Inputs
3	9 thru 16	Neutral or Return for Relays 1 thru 8
3	17/18	Neutral or Return for Relay Outputs

## Field Wiring Diagram



## Module Configuration

The model 170 ADI 390 30 Input/Output module base has 10 discrete inputs and 8 relay outputs and is configured as a 16 bit input word and a 16 bit output word by the control system. Refer to the Reference Guide for the individual Communication Adapters for detailed configuration information.

## Product Specifications

### Discrete Inputs

Operating Voltage	24 Vdc
Number of Points	10
Number of Groups	1
Points per Group	10
Type of Signal	True High
IEC 1131 I/O Type	1+
Minimum ON Voltage	11 Vdc
Maximum OFF Voltage	5 Vdc
Input Current	1.2 mA max. off current 2.5 mA min. on current
Input Voltage Range	-3 to +30 Vdc
Surge	45 Volt peak for 10 ms
Response Time	2.2 ms OFF to ON 3.3 ms ON to OFF

### Discrete Outputs

Description	Relay Normally Open Output
Operating Voltage	24-230 Vac & 20-115 Vdc
Number of Points	8
Number of Groups	2
Points per Group	4
Switching Capability	460V A @ 230 Vac
Relay Type	Normally Open
Max Current Load	16 amp Per Module 8 amp Per Group 2 amp Per Point
Surge Current	5 amp per point
Min. Load Current	5 mA
Internal protective circuitry:	66 ohms + 15 nF in parallel with each contact
Off State Leakage Current	1.2 mA RMS @ 240 Vac
Max. Response Time	10 ms @ 60 Hz ON to OFF 10 ms @ 60 Hz OFF to ON
Isolation	None
Input to Input	None
Output Group to Output Group	1780 Vac RMS
Input to Output Group	1780 Vac RMS
Output group to Comm. Adapter	1780 Vac RMS
External Power Requirement	24 Vdc
Range	20 - 30 Vdc
Current	<250 mA at 24 Vdc
EMC for Industrial Environment	
Immunity	IEC 1131; surge on Aux. Power Supply 500V
Emissions	EN 50081-2
Approvals	UL, CSA, CE, FM class 1, div. 2

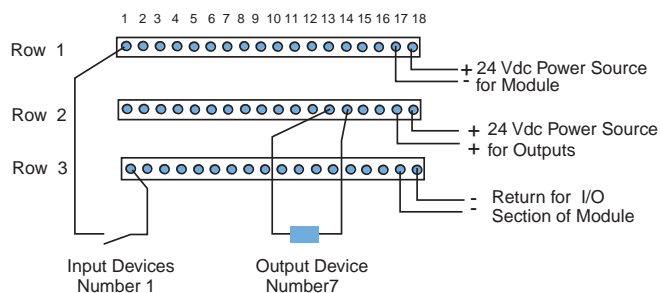
# Momentum 24 Volts DC - 16 Point Input/ 8 Point Output Module Base Model Number 170 ADM 370 10

The model 170 ADM 370 10 input/output module base has 16 discrete inputs and 8 discrete outputs for direct connection to 2, 3, and 4 wire sensors and actuators. This module base can be connected directly to a number of standard networks for communicating with programmable controllers, industrial computers and other controllers by installing one of the plug-in Momentum Communication Adapters. This module can also be used as the I/O base for a stand-alone programmable controller when installed with a Momentum CPU.

## Terminal Assignments

Row No.	Terminal No.	Function
1	1 thru 16	Inputs 1 thru 16
1	17	Return for Module
1	18	+24 Vdc Power for Module
2	1,3,5,7	Outputs 1 thru 4
2	2,4,6,8	Return for Outputs 1 thru 4
2	9,11,13,15	Outputs 5 thru 8
2	10,12,14,16	Return for Outputs 5 thru 8
2	17 and 18	+24 Vdc for I/O
3	1 thru 4	Sensor/Input Device Power 1 thru 4
3	5 thru 8	Sensor/Input Device Power 5 thru 8
3	9 thru 12	Sensor/Input Device Power 9 thru 12
3	13 thru 16	Sensor/Input Device Power 13 thru 16
3	17/18	Return for I/O

## Field Wiring Diagram



## Module Configuration

The model 170 ADM 370 10 Input/Output module base has 16 discrete inputs and 8 discrete outputs and is configured as a 16 bit input word and a 16 bit output word by the control system. Refer to the Reference Guide for the individual Communication Adapters for detailed configuration information.

## Product Specifications

### Discrete Inputs

Operating Voltage	24 Vdc
Number of Points	16
Number of Groups	1
Points per Group	16
Type of Signal	True High
IEC 1131 I/O Type	1+
Minimum ON Voltage	11 Vdc
Maximum OFF Voltage	5 Vdc
Input Current	1.2 mA max. off current 2.5 mA min. on current
Input Voltage Range	- 3 to + 30 Vdc
Surge	45 Volt peak for 10 ms
Response Time	2.2 ms OFF to ON 3.3 ms ON to OFF

### Discrete Outputs

Description	Solid State Switch
Operating Voltage	24 Vdc
Number of Points	8
Number of Groups	2
Points per Group	4
Current capacity	2.0 Amps per point 8.0 Amps per Group 16 Amps per module
Type of Signal	True High
Leakage Current	<1 mA @ 24 Vdc
Surge Current	2.8 amps for 10 sec. max.
On State Voltage Drop	<0.5 Vdc at 2 amp. current
Fault Sensing	Overload and short circuit
Fault Reporting	LED indicator per point - Fault status bit available for control system
Response Time	<0.1 ms OFF to ON <0.1 ms ON to OFF
Isolation	
Input to Input	None
Output Group to Output Group	500 Vac (via OptoBarriers)
Input to Output Group	500 Vac (via OptoBarriers)
Field to Comm. Interface	Defined by Communication Adapter
External Power Requirements	24 Vdc
Range	20 - 30 Vdc
Current	<250 mA at 24 Vdc
EMC for Industrial Environment	
Immunity	IEC 1131; surge on Aux. Power Supply 500V
Emissions	EN 50081-2
Approvals	UL, CSA, CE, FM class 1, div. 2

# Momentum 115 Volts AC - 16 Point Discrete Input Module Base Model Number 170 ADI 540 50

The model 170 ADI 540 50 input module base has 16 discrete inputs for direct connection to 2, 3, and 4 wire sensors. This module base can be connected directly to a number of standard networks for communicating with programmable controllers, industrial computers and other controllers by installing one of the plug-in Momentum Communication Adapters. This module can also be used as the I/O base for a Momentum CPU in a programmable controller system with distributed I/O.

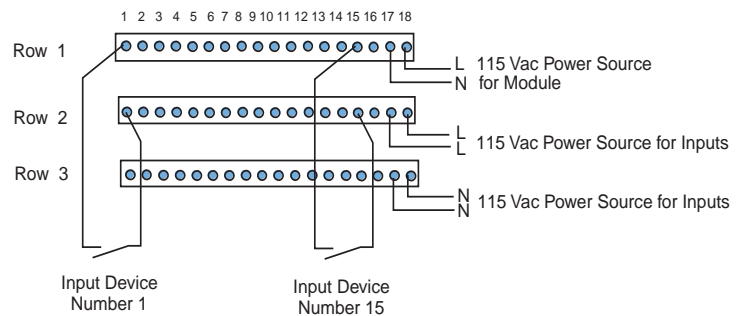
## Product Specifications

Operating Voltage	115 Vac @ 47 to 63 Hz
Number of Points	16
Number of Groups	2
Points per Group	8
Type of Signal	True High
Input Voltage	
Range	0 - 132 Vac
1 cycle surge	160 Vac
Minimum ON current	10.0 mA
Maximum OFF current	2.0 mA
Input Impedance	9.5 k Ohms @ 50 Hz 7.5 k Ohms @ 60 Hz
Switching Level	min. ON voltage: 74 Vac max. OFF voltage: 20 Vac
Response Time	20 ms @ 60 Hz ON to OFF 10 ms @ 60 Hz OFF to ON
Isolation	
Point to Point	None
Group to Group	1780 Vac
Field to Comm. Adapter	1780 Vac
External Power Requirement	115 Vac
Range	85 - 132 Vac RMS @ 47 - 63 Hz
Current	<70 mA at 115 Vac
EMC for Industrial Environment	
Immunity	IEC 1131 surge on Aux. Power Supply 2 KV
Emissions	EN 55011
Approvals	UL, CSA, CE, FM class 1, div. 2

## Terminal Assignments

Row No.	Terminal No.	Function
1	1 thru 8	Inputs 1 thru 8 (group 1)
1	9 thru 16	Inputs 9 thru 16 (group 2)
1	17	Neutral-115 Vac for Module
1	18	Line-115 Vac for Module
2	1 thru 8	Input Group 1 - Line
2	9 thru 16	Input Group 2 - Line
2	17	Line for Inputs (Group 1)
2	18	Line for Inputs (Group 2)
3	1 thru 8	Input Group 1 - Neutral
3	9 thru 16	Input Group 2 - Neutral
3	17	Neutral for Inputs (Group 1)
3	18	Neutral for Inputs (Group 2)

## Field Wiring Diagram



## Module Configuration

The model 170 ADI 540 50 Input module base has 16 discrete inputs and is configured as a 16 bit input word by the control system. Refer to the Reference Guide for the individual Communication Adapters for detailed configuration information.

# Momentum 115 Volts AC - 16 Point Discrete Output Module Base

## Model Number 170 ADO 540 50

The model 170 ADO 540 50 output module base has 16 discrete outputs for direct connection to 2 and 3 wire actuators. This module base can be connected directly to a number of standard networks for communicating with programmable controllers, industrial computers and other controllers by installing one of the plug-in Momentum Communication Adapters. This module can also be used as the I/O base for a Momentum CPU in a programmable controller system with distributed I/O.

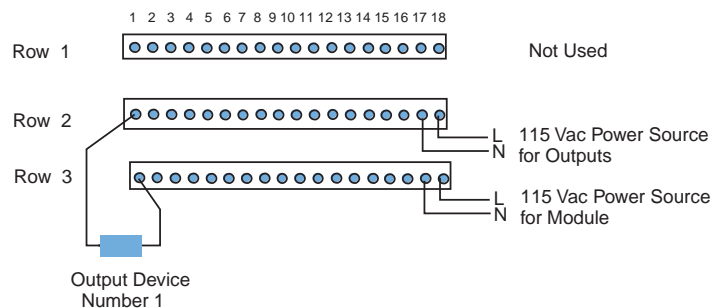
### Product Specifications

Operating Voltage	115 Vac @ 47 to 63 Hz
Number of Points	16
Number of Groups	2
Points per Group	8
Type of Signal	True High
On Current, per point	0.5 Amp continuous
On Current, per group	4 Amps continuous
On Current, per module	8 Amps continuous
Leakage Current	1.9 mA @ 115 Vac
Min. Load Current	30 mA Min.
Transient	400 Vac
On Voltage Drop	1.5 Vac max. at 0.5 amp current
Response Time	<8.3 ms @ 60 Hz ON to OFF <8.3 ms @ 60 Hz OFF to ON
Fusing	Per Group ( 2 fuses )
Fuse Size	4 Amps
Isolation	
Point to Point	None
Group to Group	None
Field to Comm. Adapter	1780 Vac
External Power Requirement	115 Vac
Range	85 - 132 Vac RMS @ 47 - 63 Hz
Current	70 mA at 115 Vac
EMC for Industrial Environment	
Immunity	IEC 1131 surge on Aux. Power Supply 2 KV
Emissions	EN 55011
Approvals	UL, CSA, CE, FM class 1, div. 2

### Terminal Assignments

Row No.	Terminal No.	Function
1		Not Used
2	1 thru 8	Outputs 1 thru 8 (Group 1)
2	9 thru 16	Outputs 9 thru 16 (Group 2)
2	17	Neutral for Outputs
2	18	Line for Outputs
3	1 thru 16	Neutrals for Individual Outputs
3	17	Neutral - 115 Vac for Module
3	18	Line - 115 Vac for Module

### Field Wiring Diagram



### Module Configuration

The model 170 ADO 540 50 Output module base has 16 discrete outputs and is configured as a 16 bit output word by the control system. Refer to the Reference Guide for the individual Communication Adapters for detailed configuration information.

# Momentum 115 Volts AC - 8 Point Discrete Output Module Base

## Model Number 170 ADO 530 50

The model 170 ADO 530 50 output module base has 8 discrete outputs for direct connection to 2 and 3 wire actuators. This module base can be connected directly to a number of standard networks for communicating with programmable controllers, industrial computers and other controllers by installing one of the plug-in Momentum Communication Adapters. This module can also be used as the I/O base for a Momentum CPU in a programmable controller system with distributed I/O.

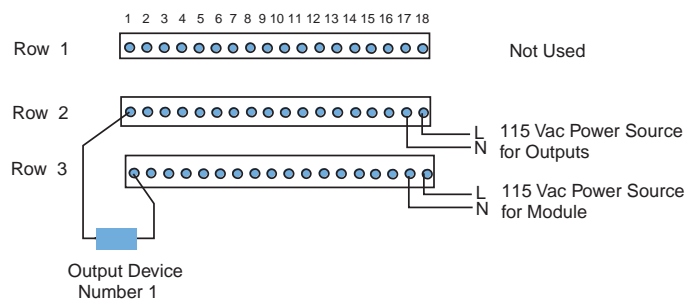
### Product Specifications

Operating Voltage	115 Vac @ 47 to 63 Hz
Number of Points	8
Number of Groups	2
Points per Group	4
Type of Signal	True High
On Current, per point	2 Amps continuous
On Current, per group	4 Amps continuous
On Current, per module	8 Amps continuous
Leakage Current	1.9 mA @ 115 Vac
Min. Load Current	5 mA
Transient	400 Vac
On Voltage Drop	1.5 Vac max. at 2 amp current
Response Time	<13.3 ms @ 60 Hz ON to OFF
	<13.3 ms @ 60 Hz OFF to ON
Fusing	Per Group ( 2 fuses )
Fuse Size	5 Amps
Isolation	
Point to Point	None
Group to Group	None
Field to Comm. Adapter	1780 Vac
External Power Requirement	115 Vac
Range	85 - 132 Vac RMS @ 47 - 63 Hz
Current	70 mA at 115 Vac
EMC for Industrial Environment	
Immunity	IEC 1131 surge on Aux. Power Supply 2 KV
Emissions	EN 55011
Approvals	UL, CSA, CE, FM class 1, div. 2

### Terminal Assignments

Row No.	Terminal No.	Function
1		Not Used
2	1,3,5,7	Outputs 1 thru 4 (Group 1)
2	9,11,13,15	Outputs 5 thru 8 (Group 2)
2	17	Neutral - 115 Vac
2	18	Line - 115 Vac
3	1 thru 16	Neutrals for Individual Outputs
3	17	Neutral for Outputs
3	18	Line for Outputs

### Field Wiring Diagram



### Module Configuration

The model 170 ADO 530 50 Output module base has 8 discrete outputs and is configured as a 16 bit output word by the control system. Refer to the Reference Guide for the individual Communication Adapters for detailed configuration information.

# Momentum Analog - 16 Channel Single-Ended Input Module Base Model Number 170 AAI 140 00

The model 170 AAI 140 00 analog input module base has 16 single-ended inputs capable of direct connection to analog sensors that have  $\pm 10$  V,  $\pm 5$  V, and 4 - 20 mA signals. This module base can be connected directly to a number of standard networks for communicating with programmable controllers, industrial computers and other controllers by installing one of the plug-in Momentum Communication Adapters. This module can also be used as the I/O base for a Momentum CPU in a programmable controller system with distributed I/O.

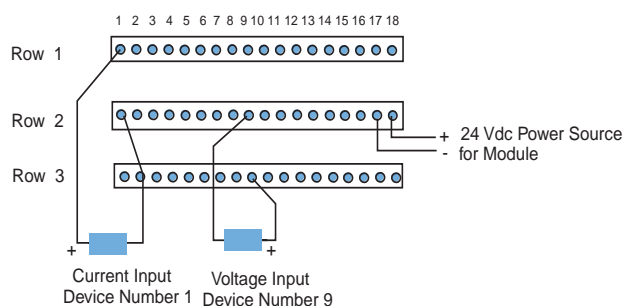
## Product Specifications

Number of Channels	16
Input Ranges	$\pm 10$ Vdc
Software Selectable	$\pm 5$ Vdc 4 - 20 mA
Input Type	Single-ended
Resolution	12 bit plus sign
Conversion Times	25 ms maximum for 16 input channels (1.5 ms per input channel + 1ms )
Accuracy - max. error @ 25°C	0.15% for Voltage Inputs 0.25% for Current Inputs
Accuracy - max. error @ 60°C	0.25% for Voltage Inputs 0.45% for Current Inputs
Input Resistance	2.2 Mohms for Voltage Inputs 250 Ohms for Current Inputs
Max. Temperature Drift @ 60°C	30 ppm of full scale per °C - voltage input 60 ppm of full scale per °C - current input
Crosstalk Between Channels	<Lowest Significant Bit
Maximum Input Signal	$\pm 30$ Vdc for Voltage Input $\pm 25$ mA for Current Input
Common Mode Rejection Channel to Ground	250 Vac @ 47 to 63 Hz or 100 Vdc
Isolation	
Channel to Channel	None
Field to Comm. Adapter	1780 Vac
Field to Ground	1780 Vac
Comm. Adapter to Ground	500 Vac
External Power Requirement	24 Vdc
Range	20.4 - 28.8 Vdc
Current	<250 mA at 24 Vdc
EMC for Industrial Environment	
Immunity	IEC 1131 surge on Aux. Power Supply 2 KV
Emissions	EN 50081-2
Approvals	UL, CSA, CE, FM class 1, div. 2

## Terminal Assignments

Row No.	Terminal No.	Function
1	1 thru 16	Current Inputs 1 thru 16
2	1 thru 16	Analog Ground Connections
2	17	Return for Module
2	18	+24 Vdc Power for Module
3	1 thru 16	Voltage Inputs 1 thru 16

## Field Wiring Diagram



## Module Configuration

The model 170 AAI 140 00 analog input module base has 16 single-ended analog inputs and is configured as 16 input words and 4 output words by the control system. Refer to the Reference Guide for the individual Communication Adapters for detailed configuration information.

# Momentum Analog - 4 Channel Output Module Base Model Number 170 AAO 120 00

The model 170 AAO 120 00 analog output module base has 4 outputs capable of direct connection to analog actuators with a  $\pm 10$  V, and 0 - 20 mA signals. This module base can be connected directly to a number of standard networks for communicating with programmable controllers, industrial computers and other controllers by installing one of the plug-in Momentum Communication Adapters. This module can also be used as the I/O base for a Momentum CPU in a programmable controller system with distributed I/O.

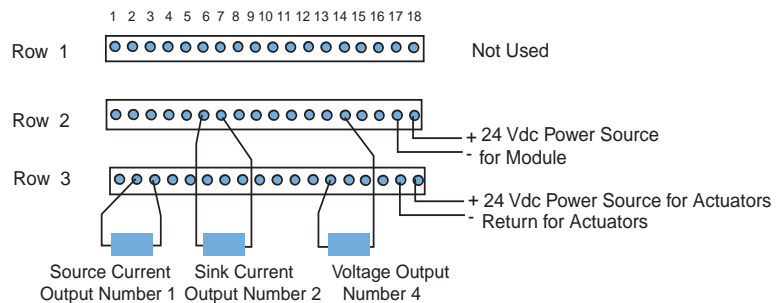
## Product Specifications

Number of Channels	4
Output Ranges	$\pm 10$ Vdc
Software Selectable	0 - 20mA
Resolution	12 bit plus sign
Conversion Times	2 ms for all channels
Output Settling Time	150 m second to 0.1% of final value
Accuracy - max. error @ 25°C	0.20% for Voltage Output 0.25% for Current Output
Accuracy - max. error @ 60°C	0.25% for Voltage Output 0.40% for Current Output
Max. Temp. Drift @ 60°C	10 ppm of full scale per °C - voltage output 30 ppm of full scale per °C - current output
Crosstalk Between Channels	<Lowest Significant Bit
Load	1 k Ohms min. @ $\pm 10$ Vdc 600 Ohm max. @ 0-20 mA
Common Mode Rejection Channel to Ground	250 Vac @ 47 to 63 Hz or 250 Vdc
Fail States	Default to Zero
User Selectable (per Channel)	Default to last state Default to full scale
Isolation	
Channel to Channel	None
Field to Comm. Adapter	1780 Vac
Field to Ground	1780 Vac
Comm. Adapter to Ground	500 Vac
External Power Requirement	24 Vdc
Range	20.4 - 28.8 Vdc
Current	<250 mA at 24 Vdc
EMC for Industrial Environment	
Immunity	IEC 1131 surge on Aux. Power Supply 2 KV
Emissions	EN 50081-2
Approvals	UL, CSA, CE, FM class 1, div. 2

## Terminal Assignments

Row No.	Terminal No.	Function
1		Not Used
2	2,6,10,14	24 Vdc to Actuators
2	3,7,11,15	Current Output Sink 1 thru 4
2	17	Return for Module
2	18	+24 Vdc Power for Module
3	1,5,9,13	Voltage Outputs 1 thru 4
3	2,6,10,14	Return for Actuators
3	3,7,11,15	Current Output Source 1 thru 4
3	17	Return for Actuators - Current Output Only
3	18	+24 Vdc Power for Actuators Output Only

## Field Wiring Diagram



## Module Configuration

The model 170 AAO 120 00 analog output module base has 4 analog outputs and is configured as 5 output words by the control system. Refer to the Reference Guide for the individual Communication Adapters for detailed configuration information.

# Momentum InterBus-S Communication Adapter Model Number 170 INT 110 00

The Model 170 INTI 110 00 InterBus-S Communication Adapter for the Momentum I/O product line provides a direct connection to the InterBus-S Network across the full family of Momentum I/O modules. This connectivity enables the Momentum I/O to be used in open architecture control systems that utilize either a programmable controller or industrial computer as the network master. In these applications, InterBus-S serves as the communication network that connects Momentum I/O modules, along with other InterBus-S compatible control devices, allowing the communication of input and output information with a single master controller.

The InterBus-S communication adapter is a single package designed to plug on to any of the Momentum Input/Output module bases, thus allowing the I/O module to be accessed over the InterBus-S Communication Network.

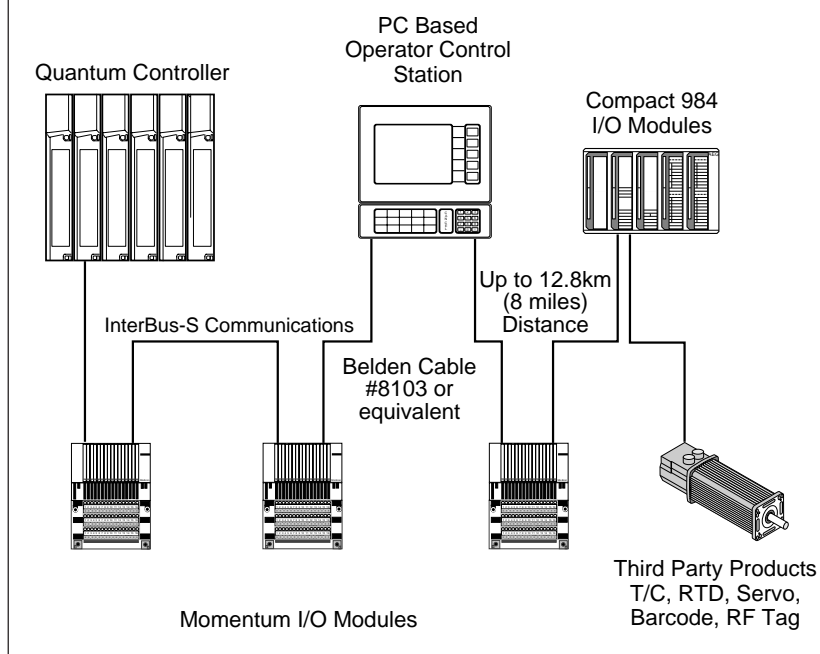
Each Momentum I/O module is an individual node or device on the InterBus-S network with its address set either by its physical location on the network, or by menu driven software that is available with some InterBus-S master devices. InterBus-S is a cost-effective method of distributing I/O modules over a wide area (256 devices and up to 42,000 feet via twisted pair cable). Figure No. 1 illustrates a typical control system using Momentum I/O modules on the InterBus-S network with a programmable controller as the network master and an operator control station.

## Product Specifications

Communication Network	InterBus-S
Communication Rate(s)	500 K baud
Number of Nodes (devices)	Up to 256 devices
Media	Twisted Pair
Distance 1200 ft between nodes	Up to 42,000 ft,
Connectors	2 - 9 Pin "D" connectors
Error Checking	CRC-16 error check
Error & Fail States	Fail safe
Addressing	Physical location or software
Mode of Operation	Master-Slave, continuous shift register
Watchdog Timer	640 ms for shut down on loss of communications
Topology	Ring
Packaging	Standard Momentum Top Hat Enclosure - IP20 environment
Indicator Lights	Diagnostic and status lights standard
Power Source	Power supply on-board the I/O base

**Figure No. 1**

Momentum I/O Modules used in a distributed control system with a programmable controller as the network master.





# Momentum Profibus DP Communication Adapter Model Number 170 DNT 110 00

The Model 170 DNT 110 00 Profibus DP Communication Adapter for the Momentum I/O product line provides a direct connection to the Profibus DP Communication Network across the full family of Momentum I/O modules. This connectivity enables the Momentum I/O to be used in open architecture control systems with other Profibus DP compatible control products, including programmable controllers, industrial computers, operator control stations, drive systems, and other controls. It provides a flexible, cost-effective solution for distributing I/O modules throughout a large area.

The Profibus DP communication adapter is a single package that is designed to plug on to the base of any Momentum Input/Output module, thus allowing it full access to the Profibus DP Communication Network.

Each Momentum I/O module is an individual node on the network with its address user selected via the dual rotary switch on the front of the communication adapter. Figure No.1 illustrates a typical control system using Momentum I/O modules on the Profibus DP network with programmable controllers and industrial computer systems.

## Product Specifications

Communication Network	Profibus DP
Communication Rate(s)	12 M baud
Number of Nodes (devices)	Up to 127 devices
Media	Twisted Pair, Fiber Optic
Distance	Up to 4000 ft
Connectors	9 Pin "D" connector
Error Checking	CRC-16 error check
Error & Fail States	Fail safe
Addressing	Switch selectable
Mode of Operation	Master-Slave
Watchdog Timer	User selectable, defaults is 250 ms for shutdown on loss of communications
Topology	Multi Drop, Ring
Packaging	Standard Momentum Top Hat Enclosure - IP20 environment
Indicator Lights	Diagnostic and status lights standard
Power Source	Power supply on-board the I/O base

**Figure No. 1**

Momentum I/O Modules used in a distributed control system with programmable controllers and industrial computers.

