

## SM2000 Advanced Videographic Recorder Custom Configuration

### 1 Introduction

ABB can supply custom configurations for the SM2000 Advanced Videographic Recorder on request.

Enter the required setting or place a check mark (✓) against the relevant parameters in the following tables and return this document to the Global Sales office at Stonehouse.

### 2 Hardware Configuration

**Number of Channels** (✓ the number required)

1	
6	
12	

**Archive Media Type** (✓ the type required)

None	
SmartMedia	
Compact Flash	

**Software Options** (✓ the option required)

None	
Math & Logic	
Batch Recording	

**Module Options** (✓ the type of module required in each position)

Type	Position			
	A	B	C	D
None	N/A			
Analog Input	✓			
3 Relays	Reserved for analog inputs	Reserved for analog inputs if 12 channels required		
6 Relays				
Hybrid				
Transmitter Power Supply				
Ethernet				

### 3 Common Configuration

#### 3.1 Setup Tab

Referring to Section 4.4.1 of the User Guide (IM/SM2000), enter the settings required for each of the parameters.

**Configuration Type** (✓ the type required)

**Note.** Contact ABB if Advanced configuration required.

Basic	
Advanced	

**Number of Groups** (✓ the number required)

1	
2	

**Language** (✓ the language required)

English	
French	
German	
Italian	
Spanish	

**Global Alarm Acknowledge Source**

(enter a source to acknowledge all alarms)

--

**Instrument Tag**

(enter a tag used to identify the instrument)

--

#### 3.2 Screen Tab

Screen Saver wait time	
Screen Capture	

#### 3.3 Security Tab

**Security System** (✓ the box required)

Basic	
Advanced	

**Configuration Security** (✓ the box required)

Password Protected	
Internal Switch Protected	

**Set up Level security** (✓ the box required)

On	
Off	

**Reconfigure Preset** (✓ the box required)

No	
Yes	

**Password Expiry** (✓ the box required)

Disabled	
7 days	
14 days	
30 days	
60 days	
90 days	
180 days	
360 days	

**User inactivity Disabling** (✓ the box required)

Disabled	
7 days	
14 days	
30 days	
60 days	
90 days	
180 days	
360 days	

**Password Failure limit** (✓ the box required)

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
Infinite	

**Minimum password Length** (✓ the box required)

4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

User 6 Name	
User 6 Access	
User 6 Password	

User 7 Name	
User 7 Access	
User 7 Password	

User 8 Name	
User 8 Access	
User 8 Password	

User 9 Name	
User 9 Access	
User 9 Password	

User 10 Name	
User 10 Access	
User 10 Password	

**3.4 User Tab**

User 1 Name	
User 1 Access	
User 1 Password	

User 11 Name	
User 11 Access	
User 11 Password	

User 2 Name	
User 2 Access	
User 2 Password	

User 12 Name	
User 12 Access	
User 12 Password	

User 3 Name	
User 3 Access	
User 3 Password	

**3.5 Logs**

Alarm log size (10-200)	
Totalizer Log size (10-200)	
Audit Log size (10-200)	

User 4 Name	
User 4 Access	
User 4 Password	

User 5 Name	
User 5 Access	
User 5 Password	

### 3.6 Operator messages

#### Operator Message 1

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

#### Operator Message 8

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

#### Operator Message 2

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

#### Operator Message 9

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

#### Operator Message 3

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

#### Operator Message 10

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

#### Operator Message 4

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

#### Operator Message 11

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

#### Operator Message 5

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

#### Operator Message 12

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

#### Operator Message 6

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

#### Operator Message 13

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

#### Operator Message 7

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

#### Operator Message 14

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

**Operator Message 15**

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

**Operator Message 22**

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

**Operator Message 16**

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

**Operator Message 23**

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

**Operator Message 17**

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

**Operator Message 24**

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

**Operator Message 18**

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

**Operator Message 19**

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

**Operator Message 20**

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

**Operator Message 21**

Message Tag	
Source ID	
Assign to Group 1	
Assign to Group 2	

### 3.7 RS485 (Modbus™) Tab

Referring to Section 4.4.8 of the User Guide (IM/SM2000), enter the settings required for each of the parameters.

**Protocol** (✓ the protocol required)

Modbus	
Modbus Master	

**Type** (✓ the type required)

Four Wire	
Two Wire	

**Baud Rate** (✓ the baud rate required)

1200		19200	
2400		38400	
4800		115200	
9600			

**Parity** (✓ the parity required)

None	
Odd	
Even	

**Address** – *Modbus protocol only*

(enter the address required between 1 and 247)

**Poll Rate (ms)** – *Modbus Master protocol only*

(enter the poll rate required between 0 and 3600000)

**Poll Fail Limit** – *Modbus Master protocol only*

(enter the poll fail limit required between 1 and 4)

**Response Timeout (ms)** – *Modbus Master protocol only*

(enter the timeout required between 0 and 60000)

### 3.7.1 Comms. Analog Input Tab

**Note.** These parameters are configured only if the RS485 Protocol parameter is to be set to *Modbus Master*.

Referring to Section 4.4.9 of the User Guide (IM/SM2000), enter the settings required for each of the parameters.

**Comms.. Analog I/P** (✓ the input required)

Comms.. AIN 1		Comms.. AIN 13	
Comms.. AIN 2		Comms.. AIN 14	
Comms. AIN 3		Comms. AIN 15	
Comms. AIN 4		Comms. AIN 16	
Comms. AIN 5		Comms. AIN 17	
Comms. AIN 6		Comms. AIN 18	
Comms. AIN 7		Comms. AIN 19	
Comms. AIN 8		Comms. AIN 20	
Comms. AIN 9		Comms. AIN 21	
Comms. AIN 10		Comms. AIN 22	
Comms. AIN 11		Comms. AIN 23	
Comms. AIN 12		Comms. AIN 24	

**RTU-Address**

(enter the RTU address required between 1 and 247)

**Register Number**

(enter the register number required between 0 and 65535)

**Type** (✓ the type required)

Input Register		Holding Register	
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**Format** (✓ the format required)

Sint16		Reverse IEEE	
Sint32		Sint16 X 10	
Reverse Sint32		Sint16 X 100	
IEEE		Sint16 X 1000	

### 3.7.2 Comms. Digital Input Tab

**Note.** These parameters are configured only if the RS485 Protocol parameter is to be set to *Modbus Master*.

Referring to Section 4.4.10 of the User Guide (IM/SM2000), enter the settings required for each of the parameters.

**Comms. Digital I/P** (✓ the input required)

Comms. Dig I/P 1		Comms. Dig I/P 14	
Comms. Dig I/P 2		Comms. Dig I/P 15	
Comms. Dig I/P 3		Comms. Dig I/P 16	
Comms. Dig I/P 4		Comms. Dig I/P 17	
Comms. Dig I/P 5		Comms. Dig I/P 18	
Comms. Dig I/P 6		Comms. Dig I/P 14	
Comms. Dig I/P 7		Comms. Dig I/P 19	
Comms. Dig I/P 8		Comms. Dig I/P 20	
Comms. Dig I/P 9		Comms. Dig I/P 21	
Comms. Dig I/P 10		Comms. Dig I/P 22	
Comms. Dig I/P 11		Comms. Dig I/P 23	
Comms. Dig I/P 12		Comms. Dig I/P 24	

**RTU-Address**

(enter the RTU address required between 1 and 247)

**Register Number**

(enter the register number required between 0 and 65535)

**Type** (✓ the type required)

Input Status		Coil Status	
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## 4 Group Configuration

### 4.1 Process Group 1

Referring to Section 4.5.1 of the User Guide (IM/SM2000), enter the settings required for each of the parameters.

#### 4.1.1 Recording Tab

**Tag** (enter a tag used to identify the process group)

**Recording Enable Source**

(enter a source to enable/disable recording)

**Primary Sample Rate**

(enter the primary sampling rate required)

**Secondary Sample Rate**

(enter the secondary sampling rate required)

**Sample Rate Select Source**

(enter a source to enable switching between sample rates)

#### 4.1.2 Archive Tab

**Archive File Format** (✓ the file format required)

Text Format	<input type="checkbox"/>
Binary Format	<input type="checkbox"/>

**Archive File Enables** (✓ the data types to be archived)

Channel Data Files (*.b or *.d)	<input type="checkbox"/>
Alarm Event Log Files (*.e)	<input type="checkbox"/>
Totalizer Log Files (*.t)	<input type="checkbox"/>
Audit Log Files (*.a)	<input type="checkbox"/>

**Filename Tag**

([text format files only] enter the filename required)

**New File Interval**

([text format files only] ✓ the frequency required)

Hourly	<input type="checkbox"/>
Daily	<input type="checkbox"/>
Monthly	<input type="checkbox"/>
None	<input type="checkbox"/>

**Wrap** (✓ the setting required)

Off	<input type="checkbox"/>
On	<input type="checkbox"/>

### 4.2 Process Group 2

Referring to Section 4.5.1 of the User Guide (IM/SM2000), enter the settings required for each of the parameters.

#### 4.2.1 Recording Tab

**Tag** (enter a tag used to identify the process group)

**Recording Enable Source**

(enter a source to enable/disable recording)

**Primary Sample Rate**

(enter the primary sampling rate required)

**Secondary Sample Rate**

(enter the secondary sampling rate required)

**Sample Rate Select Source**

(enter a source to enable switching between sample rates)

#### 4.2.2 Archive Tab

**Archive File Format** (✓ the file format required)

Text Format	<input type="checkbox"/>
Binary Format	<input type="checkbox"/>

**Archive File Enables** (✓ the data types to be archived)

Channel Data Files (*.b or *.d)	<input type="checkbox"/>
Alarm Event Log Files (*.e)	<input type="checkbox"/>
Totalizer Log Files (*.t)	<input type="checkbox"/>
Audit Log Files (*.a)	<input type="checkbox"/>

**Filename Tag**

([text format files only] enter the filename required)

**New File Interval**

([text format files only] ✓ the frequency required)

Hourly	<input type="checkbox"/>
Daily	<input type="checkbox"/>
Monthly	<input type="checkbox"/>
None	<input type="checkbox"/>

**Wrap** (✓ the setting required)

Off	<input type="checkbox"/>
On	<input type="checkbox"/>



### 4.3 Chart (Group 1)

**Chart View enable** (✓ the box required)

Horizontal →	
Horizontal ←	
Vertical	

**Chart Annotation** (✓ the box required)

None	
Alarms	
Alarms & operator Messages	

Major Chart Divs	
Minor Chart Divs	

**Trace Pointers** (✓ the box required)

Enabled	
Disabled	

**Trace Width** (✓ the box required)

1	
2	
3	

**Menu Enables** (✓ the box required)

Message Select	
Alarm Ack	
Scale Select	
Trace Select	
Screen Interval select	
Historical Review	
Chart annotation select	

### 4.4 Bar (Group 1)

**Bar Graph View enable** (✓ the box required)

Off	
Horizontal ←	
Vertical	
Horizontal & Vertical	

**Bar Graph Markers** (✓ the box required)

No Markers	
Max & Min	
Alarm Trips	
Max, min & Alarm trips	

**Menu Enables** (✓ the box required)

Message Select	
Alarm Ack	
Max/min Reset	

### 4.5 Digital (Group 1)

**Digital View Enable** (✓ the box required)

On	
Off	

**Totalizer display enable** (✓ the box required)

On	
Off	

**Menu Enables** (✓ the box required)

Message Select	
Alarm Ack	
Totalizer Reset	
Totalizer Stop/Go	
Channel Select	

#### 4.6 Batch (Group 1)

**Batch** (✓ the box required)

Enable	
Disable	

Start/Stop Source	
-------------------	--

**Operator Login** (✓ the box required)

Start	
Start & Stop	
Disabled	

**Batch Number** (✓ the box required)

Automatic	
Off	
Text	

Field 1	
Field 2	
Field 3	

#### 4.7 Chart (Group 2)

**Chart View enable** (✓ the box required)

Horizontal →	
Horizontal ←	
Vertical	

**Chart Annotation** (✓ the box required)

None	
Alarms	
Alarms & operator Messages	

Major Chart Divs	
Minor Chart Divs	

**Trace Pointers** (✓ the box required)

Enabled	
Disabled	

**Trace Width** (✓ the box required)

1	
2	
3	

**Menu Enables** (✓ the box required)

Message Select	
Alarm Ack	
Scale Select	
Trace Select	
Screen Interval select	
Historical Review	
Chart annotation select	

#### 4.8 Bar (Group 2)

**Bar Graph View enable** (✓ the box required)

Off	
Horizontal <-	
Vertical	
Horizontal & Vertical	

**Bar Graph Markers** (✓ the box required)

No Markers	
Max & Min	
Alarm Trips	
Max, min & Alarm trips	

**Menu Enables** (✓ the box required)

Message Select	
Alarm Ack	
Max/min Reset	

#### 4.9 Digital (Group 2)

**Digital View Enable** (✓ the box required)

On	
Off	

**Totalizer display enable** (✓ the box required)

On	
Off	

**Menu Enables** (✓ the box required)

Message Select	
Alarm Ack	
Totalizer Reset	
Totalizer Stop/Go	
Channel Select	

#### 4.10 Batch (Group 2)

**Batch** (✓ the box required)

Enable	
Disable	

<b>Start/Stop Source</b>	
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**Operator Login** (✓ the box required)

Start	
Start & Stop	
Disabled	

**Batch Number** (✓ the box required)

Automatic	
Off	
Text	
Field 1	
Field 2	
Field 3	

## 5 Channel Configuration

Referring to Section 4.6 of the User Guide (IM/SM2000), enter the settings required for each of the parameters.

### 5.1 Process Group 1

#### 5.1.1 Channel 1.1

**Source ID** (enter the input source required)

**Input Type** (✓ the input type required)

Millivolts		Resistance Thermometer	
Milliamps		Thermocouple	
Volts		Volt-free Digital Input	
Resistance			

**Engineering Range and Units** (enter the values required)

High	
Low	
Units	

**Short Tag** (enter the tag required – 8 characters max.)

**Long Tag** (enter the tag required – 20 characters max.)

**Filter Time Constant** (enter the value required)

**Fault Detect Level** (enter the tolerance level required [between 0 and 100% of the engineering range])

**Broken Sensor Direction** (✓ the drive direction required)

None	
Upscale	
Downscale	

**Alarm A Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm A Tag** (enter the tag required – 20 characters max.)

**Alarm A Trip** (enter the trip point value required)

**Alarm A Hysteresis** (enter the hysteresis value required)

**Alarm A Time Hysteresis** (process and latch alarms only) (enter the time hysteresis value required)

**Alarm A Delay Time** (delayed alarms only) (enter the delay value required)

**Alarm A Deviation** (deviation alarms only) (enter the deviation value required)

**Alarm A Period** (deviation alarms only) (enter the time period required)

**Alarm A Enable Source**

(enter a source to enable/disable the alarm)

**Alarm A Log Enable** (✓ the setting required)

On	
Off	

**Alarm A Alarm Group**

(✓ the group or groups to which to assign the alarm)

Group 1		Group 7	
Group 2		Group 8	
Group 3		Group 9	
Group 4		Group 10	
Group 5		Group 11	
Group 6		Group 12	

**Alarm B Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm B Tag** (enter the tag required – 20 characters max.)

**Alarm B Trip** (enter the trip point value required)

**Alarm B Hysteresis** (enter the hysteresis value required)

**Alarm B Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm B Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm B Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm B Period** (deviation alarms only)  
 (enter the time period required)

**Alarm B Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm B Log Enable** (✓ the setting required)

On	
Off	

**Alarm B Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1		Group 7	
Group 2		Group 8	
Group 3		Group 9	
Group 4		Group 10	
Group 5		Group 11	
Group 6		Group 12	

**Totalizer Enable** (✓ the setting required)

Off	
Count Up	
Count Down	

**Totalizer Wrap** (✓ the setting required)

On	
Off	

**Totalizer Tag** (enter the tag required – 20 characters max.)

**Totalizer Units** (enter the units required)

**Totalizer Stop/Go Recovery** (✓ the action required)

Last	
Stop	
Go	

**Totalizer Stop/Go Source** (enter the source required)

**Totalizer Count Range** (enter the values required)

Preset Count	
Predetermined Count	
Intermediate Count	

**Totalizer Reset Source** (enter the source required)

**Totalizer Log Update Time** (enter the time required)

**Totalizer Log Update Source** (enter the source required)

**Totalizer Count Rate** (enter the count rate value required)

**Totalizer Cut Off** (enter the cut off value required)

5.1.2 Channel 1.2

**Source ID** (enter the input source required)

**Input Type** (✓ the input type required)

Off		Resistance	
Millivolts		Resistance Thermometer	
Milliamps		Thermocouple	
Volts		Volt-free Digital Input	

**Engineering Range and Units** (enter the values required)

High	
Low	
Units	

**Short Tag** (enter the tag required – 8 characters max.)

**Long Tag** (enter the tag required – 20 characters max.)

**Filter Time Constant** (enter the value required)

**Fault Detect Level** (enter the tolerance level required [between 0 and 100% of the engineering range])

**Broken Sensor Direction** (✓ the drive direction required)

None	
Upscale	
Downscale	

**Alarm A Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm A Tag** (enter the tag required – 20 characters max.)

**Alarm A Trip** (enter the trip point value required)

**Alarm A Hysteresis** (enter the hysteresis value required)

**Alarm A Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm A Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm A Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm A Period** (deviation alarms only)  
 (enter the time period required)

**Alarm A Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm A Log Enable** (✓ the setting required)

On	
Off	

**Alarm A Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1		Group 7	
Group 2		Group 8	
Group 3		Group 9	
Group 4		Group 10	
Group 5		Group 11	
Group 6		Group 12	

**Alarm B Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm B Tag** (enter the tag required – 20 characters max.)

**Alarm B Trip** (enter the trip point value required)

**Alarm B Hysteresis** (enter the hysteresis value required)

**Alarm B Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm B Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm B Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm B Period** (deviation alarms only)  
 (enter the time period required)

**Alarm B Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm B Log Enable** (✓ the setting required)

On	<input type="checkbox"/>
Off	<input type="checkbox"/>

**Alarm B Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1	<input type="checkbox"/>	Group 7	<input type="checkbox"/>
Group 2	<input type="checkbox"/>	Group 8	<input type="checkbox"/>
Group 3	<input type="checkbox"/>	Group 9	<input type="checkbox"/>
Group 4	<input type="checkbox"/>	Group 10	<input type="checkbox"/>
Group 5	<input type="checkbox"/>	Group 11	<input type="checkbox"/>
Group 6	<input type="checkbox"/>	Group 12	<input type="checkbox"/>

**Totalizer Enable** (✓ the setting required)

Off	<input type="checkbox"/>
Count Up	<input type="checkbox"/>
Count Down	<input type="checkbox"/>

**Totalizer Wrap** (✓ the setting required)

On	<input type="checkbox"/>
Off	<input type="checkbox"/>

**Totalizer Tag** (enter the tag required – 20 characters max.)

**Totalizer Units** (enter the units required)

**Totalizer Stop/Go Recovery** (✓ the action required)

Last	<input type="checkbox"/>
Stop	<input type="checkbox"/>
Go	<input type="checkbox"/>

**Totalizer Stop/Go Source** (enter the source required)

**Totalizer Count Range** (enter the values required)

Preset Count	<input type="text"/>
Predetermined Count	<input type="text"/>
Intermediate Count	<input type="text"/>

**Totalizer Reset Source** (enter the source required)

**Totalizer Log Update Time** (enter the time required)

**Totalizer Log Update Source** (enter the source required)

**Totalizer Count Rate** (enter the count rate value required)

**Totalizer Cut Off** (enter the cut off value required)

5.1.3 Channel 1.3

**Source ID** (enter the input source required)

**Input Type** (✓ the input type required)

Off		Resistance	
Millivolts		Resistance Thermometer	
Milliamps		Thermocouple	
Volts		Volt-free Digital Input	

**Engineering Range and Units** (enter the values required)

High	
Low	
Units	

**Short Tag** (enter the tag required – 8 characters max.)

**Long Tag** (enter the tag required – 20 characters max.)

**Filter Time Constant** (enter the value required)

**Fault Detect Level** (enter the tolerance level required [between 0 and 100% of the engineering range])

**Broken Sensor Direction** (✓ the drive direction required)

None	
Upscale	
Downscale	

**Alarm A Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm A Tag** (enter the tag required – 20 characters max.)

**Alarm A Trip** (enter the trip point value required)

**Alarm A Hysteresis** (enter the hysteresis value required)

**Alarm A Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm A Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm A Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm A Period** (deviation alarms only)  
 (enter the time period required)

**Alarm A Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm A Log Enable** (✓ the setting required)

On	
Off	

**Alarm A Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1		Group 7	
Group 2		Group 8	
Group 3		Group 9	
Group 4		Group 10	
Group 5		Group 11	
Group 6		Group 12	

**Alarm B Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm B Tag** (enter the tag required – 20 characters max.)

**Alarm B Trip** (enter the trip point value required)

**Alarm B Hysteresis** (enter the hysteresis value required)



**Alarm B Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm B Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm B Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm B Period** (deviation alarms only)  
 (enter the time period required)

**Alarm B Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm B Log Enable** (✓ the setting required)

On	<input type="checkbox"/>
Off	<input type="checkbox"/>

**Alarm B Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1	<input type="checkbox"/>	Group 7	<input type="checkbox"/>
Group 2	<input type="checkbox"/>	Group 8	<input type="checkbox"/>
Group 3	<input type="checkbox"/>	Group 9	<input type="checkbox"/>
Group 4	<input type="checkbox"/>	Group 10	<input type="checkbox"/>
Group 5	<input type="checkbox"/>	Group 11	<input type="checkbox"/>
Group 6	<input type="checkbox"/>	Group 12	<input type="checkbox"/>

**Totalizer Enable** (✓ the setting required)

Off	<input type="checkbox"/>
Count Up	<input type="checkbox"/>
Count Down	<input type="checkbox"/>

**Totalizer Wrap** (✓ the setting required)

On	<input type="checkbox"/>
Off	<input type="checkbox"/>

**Totalizer Tag** (enter the tag required – 20 characters max.)

**Totalizer Units** (enter the units required)

**Totalizer Stop/Go Recovery** (✓ the action required)

Last	<input type="checkbox"/>
Stop	<input type="checkbox"/>
Go	<input type="checkbox"/>

**Totalizer Stop/Go Source** (enter the source required)

**Totalizer Count Range** (enter the values required)

Preset Count	<input type="text"/>
Predetermined Count	<input type="text"/>
Intermediate Count	<input type="text"/>

**Totalizer Reset Source** (enter the source required)

**Totalizer Log Update Time** (enter the time required)

**Totalizer Log Update Source** (enter the source required)

**Totalizer Count Rate** (enter the count rate value required)

**Totalizer Cut Off** (enter the cut off value required)

5.1.4 Channel 1.4

**Source ID** (enter the input source required)

**Input Type** (✓ the input type required)

Off		Resistance	
Millivolts		Resistance Thermometer	
Milliamps		Thermocouple	
Volts		Volt-free Digital Input	

**Engineering Range and Units** (enter the values required)

High	
Low	
Units	

**Short Tag** (enter the tag required – 8 characters max.)

**Long Tag** (enter the tag required – 20 characters max.)

**Filter Time Constant** (enter the value required)

**Fault Detect Level** (enter the tolerance level required [between 0 and 100% of the engineering range])

**Broken Sensor Direction** (✓ the drive direction required)

None	
Upscale	
Downscale	

**Alarm A Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm A Tag** (enter the tag required – 20 characters max.)

**Alarm A Trip** (enter the trip point value required)

**Alarm A Hysteresis** (enter the hysteresis value required)

**Alarm A Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm A Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm A Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm A Period** (deviation alarms only)  
 (enter the time period required)

**Alarm A Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm A Log Enable** (✓ the setting required)

On	
Off	

**Alarm A Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1		Group 7	
Group 2		Group 8	
Group 3		Group 9	
Group 4		Group 10	
Group 5		Group 11	
Group 6		Group 12	

**Alarm B Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm B Tag** (enter the tag required – 20 characters max.)

**Alarm B Trip** (enter the trip point value required)

**Alarm B Hysteresis** (enter the hysteresis value required)

**Alarm B Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm B Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm B Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm B Period** (deviation alarms only)  
 (enter the time period required)

**Alarm B Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm B Log Enable** (✓ the setting required)

On	<input type="checkbox"/>
Off	<input type="checkbox"/>

**Alarm B Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1	<input type="checkbox"/>	Group 7	<input type="checkbox"/>
Group 2	<input type="checkbox"/>	Group 8	<input type="checkbox"/>
Group 3	<input type="checkbox"/>	Group 9	<input type="checkbox"/>
Group 4	<input type="checkbox"/>	Group 10	<input type="checkbox"/>
Group 5	<input type="checkbox"/>	Group 11	<input type="checkbox"/>
Group 6	<input type="checkbox"/>	Group 12	<input type="checkbox"/>

**Totalizer Enable** (✓ the setting required)

Off	<input type="checkbox"/>
Count Up	<input type="checkbox"/>
Count Down	<input type="checkbox"/>

**Totalizer Wrap** (✓ the setting required)

On	<input type="checkbox"/>
Off	<input type="checkbox"/>

**Totalizer Tag** (enter the tag required – 20 characters max.)

**Totalizer Units** (enter the units required)

**Totalizer Stop/Go Recovery** (✓ the action required)

Last	<input type="checkbox"/>
Stop	<input type="checkbox"/>
Go	<input type="checkbox"/>

**Totalizer Stop/Go Source** (enter the source required)

**Totalizer Count Range** (enter the values required)

Preset Count	<input type="text"/>
Predetermined Count	<input type="text"/>
Intermediate Count	<input type="text"/>

**Totalizer Reset Source** (enter the source required)

**Totalizer Log Update Time** (enter the time required)

**Totalizer Log Update Source** (enter the source required)

**Totalizer Count Rate** (enter the count rate value required)

**Totalizer Cut Off** (enter the cut off value required)

5.1.5 Channel 1.5

**Source ID** (enter the input source required)

**Input Type** (✓ the input type required)

Off		Resistance	
Millivolts		Resistance Thermometer	
Milliamps		Thermocouple	
Volts		Volt-free Digital Input	

**Engineering Range and Units** (enter the values required)

High	
Low	
Units	

**Short Tag** (enter the tag required – 8 characters max.)

**Long Tag** (enter the tag required – 20 characters max.)

**Filter Time Constant** (enter the value required)

**Fault Detect Level** (enter the tolerance level required [between 0 and 100% of the engineering range])

**Broken Sensor Direction** (✓ the drive direction required)

None	
Upscale	
Downscale	

**Alarm A Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm A Tag** (enter the tag required – 20 characters max.)

**Alarm A Trip** (enter the trip point value required)

**Alarm A Hysteresis** (enter the hysteresis value required)

**Alarm A Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm A Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm A Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm A Period** (deviation alarms only)  
 (enter the time period required)

**Alarm A Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm A Log Enable** (✓ the setting required)

On	
Off	

**Alarm A Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1		Group 7	
Group 2		Group 8	
Group 3		Group 9	
Group 4		Group 10	
Group 5		Group 11	
Group 6		Group 12	

**Alarm B Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm B Tag** (enter the tag required – 20 characters max.)

**Alarm B Trip** (enter the trip point value required)

**Alarm B Hysteresis** (enter the hysteresis value required)

**Alarm B Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm B Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm B Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm B Period** (deviation alarms only)  
 (enter the time period required)

**Alarm B Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm B Log Enable** (✓ the setting required)

On	<input type="checkbox"/>
Off	<input type="checkbox"/>

**Alarm B Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1	<input type="checkbox"/>	Group 7	<input type="checkbox"/>
Group 2	<input type="checkbox"/>	Group 8	<input type="checkbox"/>
Group 3	<input type="checkbox"/>	Group 9	<input type="checkbox"/>
Group 4	<input type="checkbox"/>	Group 10	<input type="checkbox"/>
Group 5	<input type="checkbox"/>	Group 11	<input type="checkbox"/>
Group 6	<input type="checkbox"/>	Group 12	<input type="checkbox"/>

**Totalizer Enable** (✓ the setting required)

Off	<input type="checkbox"/>
Count Up	<input type="checkbox"/>
Count Down	<input type="checkbox"/>

**Totalizer Wrap** (✓ the setting required)

On	<input type="checkbox"/>
Off	<input type="checkbox"/>

**Totalizer Tag** (enter the tag required – 20 characters max.)

**Totalizer Units** (enter the units required)

**Totalizer Stop/Go Recovery** (✓ the action required)

Last	<input type="checkbox"/>
Stop	<input type="checkbox"/>
Go	<input type="checkbox"/>

**Totalizer Stop/Go Source** (enter the source required)

**Totalizer Count Range** (enter the values required)

Preset Count	<input type="text"/>
Predetermined Count	<input type="text"/>
Intermediate Count	<input type="text"/>

**Totalizer Reset Source** (enter the source required)

**Totalizer Log Update Time** (enter the time required)

**Totalizer Log Update Source** (enter the source required)

**Totalizer Count Rate** (enter the count rate value required)

**Totalizer Cut Off** (enter the cut off value required)

5.1.6 Channel 1.6

**Source ID** (enter the input source required)

**Input Type** (✓ the input type required)

Off		Resistance	
Millivolts		Resistance Thermometer	
Milliamps		Thermocouple	
Volts		Volt-free Digital Input	

**Engineering Range and Units** (enter the values required)

High	
Low	
Units	

**Short Tag** (enter the tag required – 8 characters max.)

**Long Tag** (enter the tag required – 20 characters max.)

**Filter Time Constant** (enter the value required)

**Fault Detect Level** (enter the tolerance level required [between 0 and 100% of the engineering range])

**Broken Sensor Direction** (✓ the drive direction required)

None	
Upscale	
Downscale	

**Alarm A Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm A Tag** (enter the tag required – 20 characters max.)

**Alarm A Trip** (enter the trip point value required)

**Alarm A Hysteresis** (enter the hysteresis value required)

**Alarm A Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm A Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm A Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm A Period** (deviation alarms only)  
 (enter the time period required)

**Alarm A Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm A Log Enable** (✓ the setting required)

On	
Off	

**Alarm A Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1		Group 7	
Group 2		Group 8	
Group 3		Group 9	
Group 4		Group 10	
Group 5		Group 11	
Group 6		Group 12	

**Alarm B Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm B Tag** (enter the tag required – 20 characters max.)

**Alarm B Trip** (enter the trip point value required)

**Alarm B Hysteresis** (enter the hysteresis value required)

**Alarm B Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm B Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm B Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm B Period** (deviation alarms only)  
 (enter the time period required)

**Alarm B Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm B Log Enable** (✓ the setting required)

On	<input type="checkbox"/>
Off	<input type="checkbox"/>

**Alarm B Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1	<input type="checkbox"/>	Group 7	<input type="checkbox"/>
Group 2	<input type="checkbox"/>	Group 8	<input type="checkbox"/>
Group 3	<input type="checkbox"/>	Group 9	<input type="checkbox"/>
Group 4	<input type="checkbox"/>	Group 10	<input type="checkbox"/>
Group 5	<input type="checkbox"/>	Group 11	<input type="checkbox"/>
Group 6	<input type="checkbox"/>	Group 12	<input type="checkbox"/>

**Totalizer Enable** (✓ the setting required)

Off	<input type="checkbox"/>
Count Up	<input type="checkbox"/>
Count Down	<input type="checkbox"/>

**Totalizer Wrap** (✓ the setting required)

On	<input type="checkbox"/>
Off	<input type="checkbox"/>

**Totalizer Tag** (enter the tag required – 20 characters max.)

**Totalizer Units** (enter the units required)

**Totalizer Stop/Go Recovery** (✓ the action required)

Last	<input type="checkbox"/>
Stop	<input type="checkbox"/>
Go	<input type="checkbox"/>

**Totalizer Stop/Go Source** (enter the source required)

**Totalizer Count Range** (enter the values required)

Preset Count	<input type="text"/>
Predetermined Count	<input type="text"/>
Intermediate Count	<input type="text"/>

**Totalizer Reset Source** (enter the source required)

**Totalizer Log Update Time** (enter the time required)

**Totalizer Log Update Source** (enter the source required)

**Totalizer Count Rate** (enter the count rate value required)

**Totalizer Cut Off** (enter the cut off value required)

## 5.2 Process Group 2

### 5.2.1 Channel 2.1

**Source ID** (enter the input source required)

**Input Type** (✓ the input type required)

Off		Resistance	
Millivolts		Resistance Thermometer	
Milliamps		Thermocouple	
Volts		Volt-free Digital Input	

**Engineering Range and Units** (enter the values required)

High	
Low	
Units	

**Short Tag** (enter the tag required – 8 characters max.)

**Long Tag** (enter the tag required – 20 characters max.)

**Filter Time Constant** (enter the value required)

**Fault Detect Level** (enter the tolerance level required [between 0 and 100% of the engineering range])

**Broken Sensor Direction** (✓ the drive direction required)

None	
Upscale	
Downscale	

**Alarm A Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm A Tag** (enter the tag required – 20 characters max.)

**Alarm A Trip** (enter the trip point value required)

**Alarm A Hysteresis** (enter the hysteresis value required)

**Alarm A Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm A Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm A Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm A Period** (deviation alarms only)  
 (enter the time period required)

**Alarm A Enable Source**

(enter a source to enable/disable the alarm)

**Alarm A Log Enable** (✓ the setting required)

On	
Off	

**Alarm A Alarm Group**

(✓ the group or groups to which to assign the alarm)

Group 1		Group 7	
Group 2		Group 8	
Group 3		Group 9	
Group 4		Group 10	
Group 5		Group 11	
Group 6		Group 12	

**Alarm B Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm B Tag** (enter the tag required – 20 characters max.)

**Alarm B Trip** (enter the trip point value required)

**Alarm B Hysteresis** (enter the hysteresis value required)



**Alarm B Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm B Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm B Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm B Period** (deviation alarms only)  
 (enter the time period required)

**Alarm B Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm B Log Enable** (✓ the setting required)

On	
Off	

**Alarm B Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1		Group 7	
Group 2		Group 8	
Group 3		Group 9	
Group 4		Group 10	
Group 5		Group 11	
Group 6		Group 12	

**Totalizer Enable** (✓ the setting required)

Off	
Count Up	
Count Down	

**Totalizer Wrap** (✓ the setting required)

On	
Off	

**Totalizer Tag** (enter the tag required – 20 characters max.)

**Totalizer Units** (enter the units required)

**Totalizer Stop/Go Recovery** (✓ the action required)

Last	
Stop	
Go	

**Totalizer Stop/Go Source** (enter the source required)

**Totalizer Count Range** (enter the values required)

Preset Count	
Predetermined Count	
Intermediate Count	

**Totalizer Reset Source** (enter the source required)

**Totalizer Log Update Time** (enter the time required)

**Totalizer Log Update Source** (enter the source required)

**Totalizer Count Rate** (enter the count rate value required)

**Totalizer Cut Off** (enter the cut off value required)

5.2.2 Channel 2.2

**Source ID** (enter the input source required)

**Input Type** (✓ the input type required)

Off		Resistance	
Millivolts		Resistance Thermometer	
Milliamps		Thermocouple	
Volts		Volt-free Digital Input	

**Engineering Range and Units** (enter the values required)

High	
Low	
Units	

**Short Tag** (enter the tag required – 8 characters max.)

**Long Tag** (enter the tag required – 20 characters max.)

**Filter Time Constant** (enter the value required)

**Fault Detect Level** (enter the tolerance level required [between 0 and 100% of the engineering range])

**Broken Sensor Direction** (✓ the drive direction required)

None	
Upscale	
Downscale	

**Alarm A Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm A Tag** (enter the tag required – 20 characters max.)

**Alarm A Trip** (enter the trip point value required)

**Alarm A Hysteresis** (enter the hysteresis value required)

**Alarm A Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm A Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm A Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm A Period** (deviation alarms only)  
 (enter the time period required)

**Alarm A Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm A Log Enable** (✓ the setting required)

On	
Off	

**Alarm A Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1		Group 7	
Group 2		Group 8	
Group 3		Group 9	
Group 4		Group 10	
Group 5		Group 11	
Group 6		Group 12	

**Alarm B Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm B Tag** (enter the tag required – 20 characters max.)

**Alarm B Trip** (enter the trip point value required)

**Alarm B Hysteresis** (enter the hysteresis value required)

**Alarm B Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm B Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm B Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm B Period** (deviation alarms only)  
 (enter the time period required)

**Alarm B Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm B Log Enable** (✓ the setting required)

On	<input type="checkbox"/>
Off	<input type="checkbox"/>

**Alarm B Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1	<input type="checkbox"/>	Group 7	<input type="checkbox"/>
Group 2	<input type="checkbox"/>	Group 8	<input type="checkbox"/>
Group 3	<input type="checkbox"/>	Group 9	<input type="checkbox"/>
Group 4	<input type="checkbox"/>	Group 10	<input type="checkbox"/>
Group 5	<input type="checkbox"/>	Group 11	<input type="checkbox"/>
Group 6	<input type="checkbox"/>	Group 12	<input type="checkbox"/>

**Totalizer Enable** (✓ the setting required)

Off	<input type="checkbox"/>
Count Up	<input type="checkbox"/>
Count Down	<input type="checkbox"/>

**Totalizer Wrap** (✓ the setting required)

On	<input type="checkbox"/>
Off	<input type="checkbox"/>

**Totalizer Tag** (enter the tag required – 20 characters max.)

**Totalizer Units** (enter the units required)

**Totalizer Stop/Go Recovery** (✓ the action required)

Last	<input type="checkbox"/>
Stop	<input type="checkbox"/>
Go	<input type="checkbox"/>

**Totalizer Stop/Go Source** (enter the source required)

**Totalizer Count Range** (enter the values required)

Preset Count	<input type="text"/>
Predetermined Count	<input type="text"/>
Intermediate Count	<input type="text"/>

**Totalizer Reset Source** (enter the source required)

**Totalizer Log Update Time** (enter the time required)

**Totalizer Log Update Source** (enter the source required)

**Totalizer Count Rate** (enter the count rate value required)

**Totalizer Cut Off** (enter the cut off value required)

5.2.3 Channel 2.3

**Source ID** (enter the input source required)

**Input Type** (✓ the input type required)

Off		Resistance	
Millivolts		Resistance Thermometer	
Milliamps		Thermocouple	
Volts		Volt-free Digital Input	

**Engineering Range and Units** (enter the values required)

High	
Low	
Units	

**Short Tag** (enter the tag required – 8 characters max.)

**Long Tag** (enter the tag required – 20 characters max.)

**Filter Time Constant** (enter the value required)

**Fault Detect Level** (enter the tolerance level required [between 0 and 100% of the engineering range])

**Broken Sensor Direction** (✓ the drive direction required)

None	
Upscale	
Downscale	

**Alarm A Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm A Tag** (enter the tag required – 20 characters max.)

**Alarm A Trip** (enter the trip point value required)

**Alarm A Hysteresis** (enter the hysteresis value required)

**Alarm A Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm A Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm A Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm A Period** (deviation alarms only)  
 (enter the time period required)

**Alarm A Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm A Log Enable** (✓ the setting required)

On	
Off	

**Alarm A Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1		Group 7	
Group 2		Group 8	
Group 3		Group 9	
Group 4		Group 10	
Group 5		Group 11	
Group 6		Group 12	

**Alarm B Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm B Tag** (enter the tag required – 20 characters max.)

**Alarm B Trip** (enter the trip point value required)

**Alarm B Hysteresis** (enter the hysteresis value required)

**Alarm B Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm B Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm B Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm B Period** (deviation alarms only)  
 (enter the time period required)

**Alarm B Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm B Log Enable** (✓ the setting required)

On	<input type="checkbox"/>
Off	<input type="checkbox"/>

**Alarm B Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1	<input type="checkbox"/>	Group 7	<input type="checkbox"/>
Group 2	<input type="checkbox"/>	Group 8	<input type="checkbox"/>
Group 3	<input type="checkbox"/>	Group 9	<input type="checkbox"/>
Group 4	<input type="checkbox"/>	Group 10	<input type="checkbox"/>
Group 5	<input type="checkbox"/>	Group 11	<input type="checkbox"/>
Group 6	<input type="checkbox"/>	Group 12	<input type="checkbox"/>

**Totalizer Enable** (✓ the setting required)

Off	<input type="checkbox"/>
Count Up	<input type="checkbox"/>
Count Down	<input type="checkbox"/>

**Totalizer Wrap** (✓ the setting required)

On	<input type="checkbox"/>
Off	<input type="checkbox"/>

**Totalizer Tag** (enter the tag required – 20 characters max.)

**Totalizer Units** (enter the units required)

**Totalizer Stop/Go Recovery** (✓ the action required)

Last	<input type="checkbox"/>
Stop	<input type="checkbox"/>
Go	<input type="checkbox"/>

**Totalizer Stop/Go Source** (enter the source required)

**Totalizer Count Range** (enter the values required)

Preset Count	<input type="text"/>
Predetermined Count	<input type="text"/>
Intermediate Count	<input type="text"/>

**Totalizer Reset Source** (enter the source required)

**Totalizer Log Update Time** (enter the time required)

**Totalizer Log Update Source** (enter the source required)

**Totalizer Count Rate** (enter the count rate value required)

**Totalizer Cut Off** (enter the cut off value required)

5.2.4 Channel 2.4

**Source ID** (enter the input source required)

**Input Type** (✓ the input type required)

Off		Resistance	
Millivolts		Resistance Thermometer	
Milliamps		Thermocouple	
Volts		Volt-free Digital Input	

**Engineering Range and Units** (enter the values required)

High	
Low	
Units	

**Short Tag** (enter the tag required – 8 characters max.)

**Long Tag** (enter the tag required – 20 characters max.)

**Filter Time Constant** (enter the value required)

**Fault Detect Level** (enter the tolerance level required [between 0 and 100% of the engineering range])

**Broken Sensor Direction** (✓ the drive direction required)

None	
Upscale	
Downscale	

**Alarm A Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm A Tag** (enter the tag required – 20 characters max.)

**Alarm A Trip** (enter the trip point value required)

**Alarm A Hysteresis** (enter the hysteresis value required)

**Alarm A Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm A Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm A Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm A Period** (deviation alarms only)  
 (enter the time period required)

**Alarm A Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm A Log Enable** (✓ the setting required)

On	
Off	

**Alarm A Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1		Group 7	
Group 2		Group 8	
Group 3		Group 9	
Group 4		Group 10	
Group 5		Group 11	
Group 6		Group 12	

**Alarm B Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm B Tag** (enter the tag required – 20 characters max.)

**Alarm B Trip** (enter the trip point value required)

**Alarm B Hysteresis** (enter the hysteresis value required)

**Alarm B Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm B Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm B Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm B Period** (deviation alarms only)  
 (enter the time period required)

**Alarm B Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm B Log Enable** (✓ the setting required)

On	<input type="checkbox"/>
Off	<input type="checkbox"/>

**Alarm B Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1	<input type="checkbox"/>	Group 7	<input type="checkbox"/>
Group 2	<input type="checkbox"/>	Group 8	<input type="checkbox"/>
Group 3	<input type="checkbox"/>	Group 9	<input type="checkbox"/>
Group 4	<input type="checkbox"/>	Group 10	<input type="checkbox"/>
Group 5	<input type="checkbox"/>	Group 11	<input type="checkbox"/>
Group 6	<input type="checkbox"/>	Group 12	<input type="checkbox"/>

**Totalizer Enable** (✓ the setting required)

Off	<input type="checkbox"/>
Count Up	<input type="checkbox"/>
Count Down	<input type="checkbox"/>

**Totalizer Wrap** (✓ the setting required)

On	<input type="checkbox"/>
Off	<input type="checkbox"/>

**Totalizer Tag** (enter the tag required – 20 characters max.)

**Totalizer Units** (enter the units required)

**Totalizer Stop/Go Recovery** (✓ the action required)

Last	<input type="checkbox"/>
Stop	<input type="checkbox"/>
Go	<input type="checkbox"/>

**Totalizer Stop/Go Source** (enter the source required)

**Totalizer Count Range** (enter the values required)

Preset Count	<input type="text"/>
Predetermined Count	<input type="text"/>
Intermediate Count	<input type="text"/>

**Totalizer Reset Source** (enter the source required)

**Totalizer Log Update Time** (enter the time required)

**Totalizer Log Update Source** (enter the source required)

**Totalizer Count Rate** (enter the count rate value required)

**Totalizer Cut Off** (enter the cut off value required)

5.2.5 Channel 2.5

**Source ID** (enter the input source required)

**Input Type** (✓ the input type required)

Off		Resistance	
Millivolts		Resistance Thermometer	
Milliamps		Thermocouple	
Volts		Volt-free Digital Input	

**Engineering Range and Units** (enter the values required)

High	
Low	
Units	

**Short Tag** (enter the tag required – 8 characters max.)

**Long Tag** (enter the tag required – 20 characters max.)

**Filter Time Constant** (enter the value required)

**Fault Detect Level** (enter the tolerance level required [between 0 and 100% of the engineering range])

**Broken Sensor Direction** (✓ the drive direction required)

None	
Upscale	
Downscale	

**Alarm A Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm A Tag** (enter the tag required – 20 characters max.)

**Alarm A Trip** (enter the trip point value required)

**Alarm A Hysteresis** (enter the hysteresis value required)

**Alarm A Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm A Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm A Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm A Period** (deviation alarms only)  
 (enter the time period required)

**Alarm A Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm A Log Enable** (✓ the setting required)

On	
Off	

**Alarm A Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1		Group 7	
Group 2		Group 8	
Group 3		Group 9	
Group 4		Group 10	
Group 5		Group 11	
Group 6		Group 12	

**Alarm B Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm B Tag** (enter the tag required – 20 characters max.)

**Alarm B Trip** (enter the trip point value required)

**Alarm B Hysteresis** (enter the hysteresis value required)



**Alarm B Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

--

**Alarm B Delay Time** (delayed alarms only)  
 (enter the delay value required)

--

**Alarm B Deviation** (deviation alarms only)  
 (enter the deviation value required)

--

**Alarm B Period** (deviation alarms only)  
 (enter the time period required)

--

**Alarm B Enable Source**  
 (enter a source to enable/disable the alarm)

--

**Alarm B Log Enable** (✓ the setting required)

On	
Off	

**Alarm B Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1		Group 7	
Group 2		Group 8	
Group 3		Group 9	
Group 4		Group 10	
Group 5		Group 11	
Group 6		Group 12	

**Totalizer Enable** (✓ the setting required)

Off	
Count Up	
Count Down	

**Totalizer Wrap** (✓ the setting required)

On	
Off	

**Totalizer Tag** (enter the tag required – 20 characters max.)

--

**Totalizer Units** (enter the units required)

--

**Totalizer Stop/Go Recovery** (✓ the action required)

Last	
Stop	
Go	

**Totalizer Stop/Go Source** (enter the source required)

--

**Totalizer Count Range** (enter the values required)

Preset Count	
Predetermined Count	
Intermediate Count	

**Totalizer Reset Source** (enter the source required)

--

**Totalizer Log Update Time** (enter the time required)

--

**Totalizer Log Update Source** (enter the source required)

--

**Totalizer Count Rate** (enter the count rate value required)

--

**Totalizer Cut Off** (enter the cut off value required)

--

5.2.6 Channel 2.6

**Source ID** (enter the input source required)

**Input Type** (✓ the input type required)

Off		Resistance	
Millivolts		Resistance Thermometer	
Milliamps		Thermocouple	
Volts		Volt-free Digital Input	

**Engineering Range and Units** (enter the values required)

High	
Low	
Units	

**Short Tag** (enter the tag required – 8 characters max.)

**Long Tag** (enter the tag required – 20 characters max.)

**Filter Time Constant** (enter the value required)

**Fault Detect Level** (enter the tolerance level required [between 0 and 100% of the engineering range])

**Broken Sensor Direction** (✓ the drive direction required)

None	
Upscale	
Downscale	

**Alarm A Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm A Tag** (enter the tag required – 20 characters max.)

**Alarm A Trip** (enter the trip point value required)

**Alarm A Hysteresis** (enter the hysteresis value required)

**Alarm A Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

**Alarm A Delay Time** (delayed alarms only)  
 (enter the delay value required)

**Alarm A Deviation** (deviation alarms only)  
 (enter the deviation value required)

**Alarm A Period** (deviation alarms only)  
 (enter the time period required)

**Alarm A Enable Source**  
 (enter a source to enable/disable the alarm)

**Alarm A Log Enable** (✓ the setting required)

On	
Off	

**Alarm A Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1		Group 7	
Group 2		Group 8	
Group 3		Group 9	
Group 4		Group 10	
Group 5		Group 11	
Group 6		Group 12	

**Alarm B Type** (✓ the alarm type required)

Off		High Annunciate	
High Process		Low Annunciate	
Low Process		Fast Rate	
High Latch		Slow Rate	
Low Latch		Delayed High Process	
		Delayed Low Process	

**Alarm B Tag** (enter the tag required – 20 characters max.)

**Alarm B Trip** (enter the trip point value required)

**Alarm B Hysteresis** (enter the hysteresis value required)

**Alarm B Time Hysteresis** (process and latch alarms only)  
 (enter the time hysteresis value required)

--

**Alarm B Delay Time** (delayed alarms only)  
 (enter the delay value required)

--

**Alarm B Deviation** (deviation alarms only)  
 (enter the deviation value required)

--

**Alarm B Period** (deviation alarms only)  
 (enter the time period required)

--

**Alarm B Enable Source**  
 (enter a source to enable/disable the alarm)

--

**Alarm B Log Enable** (✓ the setting required)

On	
Off	

**Alarm B Alarm Group**  
 (✓ the group or groups to which to assign the alarm)

Group 1		Group 7	
Group 2		Group 8	
Group 3		Group 9	
Group 4		Group 10	
Group 5		Group 11	
Group 6		Group 12	

**Totalizer Enable** (✓ the setting required)

Off	
Count Up	
Count Down	

**Totalizer Wrap** (✓ the setting required)

On	
Off	

**Totalizer Tag** (enter the tag required – 20 characters max.)

--

**Totalizer Units** (enter the units required)

--

**Totalizer Stop/Go Recovery** (✓ the action required)

Last	
Stop	
Go	

**Totalizer Stop/Go Source** (enter the source required)

--

**Totalizer Count Range** (enter the values required)

Preset Count	
Predetermined Count	
Intermediate Count	

**Totalizer Reset Source** (enter the source required)

--

**Totalizer Log Update Time** (enter the time required)

--

**Totalizer Log Update Source** (enter the source required)

--

**Totalizer Count Rate** (enter the count rate value required)

--

**Totalizer Cut Off** (enter the cut off value required)

--

## 6 Functions

### 6.1 Custom Linearizer 1

Break points (If % known please complete if not completed by factory)

Number	Eng Range	%	Elect Range	%
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

### 6.2 Custom Linearizer 1

Break points (If % known please complete if not completed by factory)

Number	Eng Range	%	Elect Range	%
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

**Real Time Alarm 1**

Monday (✓)	
Tuesday (✓)	
Wednesday (✓)	
Thursday (✓)	
Friday (✓)	
Saturday (✓)	
Sunday (✓)	
1st of Month (✓)	

On Time	
Duration	
Log Enable	

**Real Time Alarm 4**

Monday (✓)	
Tuesday (✓)	
Wednesday (✓)	
Thursday (✓)	
Friday (✓)	
Saturday (✓)	
Sunday (✓)	
1st of Month (✓)	

On Time	
Duration	
Log Enable	

**Real Time Alarm 2**

Monday (✓)	
Tuesday (✓)	
Wednesday (✓)	
Thursday (✓)	
Friday (✓)	
Saturday (✓)	
Sunday (✓)	
1st of Month (✓)	

On Time	
Duration	
Log Enable	

**Real Time Alarm 3**

Monday (✓)	
Tuesday (✓)	
Wednesday (✓)	
Thursday (✓)	
Friday (✓)	
Saturday (✓)	
Sunday (✓)	
1st of Month (✓)	

On Time	
Duration	
Log Enable	

## 7 Relay Module Configuration

Referring to Section 4.7.2 of the User Guide (IM/SM2000), enter the settings required for each of the outputs.

**Relay 1 Source** (enter the source required)

--

**Relay 1 Polarity** (✓ the polarity required)

Positive		Negative	
----------	--	----------	--

**Relay 2 Source** (enter the source required)

--

**Relay 2 Polarity** (✓ the polarity required)

Positive		Negative	
----------	--	----------	--

**Relay 3 Source** (enter the source required)

--

**Relay 3 Polarity** (✓ the polarity required)

Positive		Negative	
----------	--	----------	--

**Relay 4 Source** (enter the source required)

--

**Relay 4 Polarity** (✓ the polarity required)

Positive		Negative	
----------	--	----------	--

**Relay 5 Source** (enter the source required)

--

**Relay 5 Polarity** (✓ the polarity required)

Positive		Negative	
----------	--	----------	--

**Relay 6 Source** (enter the source required)

--

**Relay 6 Polarity** (✓ the polarity required)

Positive		Negative	
----------	--	----------	--

## 8 Hybrid Module Configuration

Referring to Section 4.7.3 of the User Guide (IM/SM2000), enter the settings required for each of the outputs.

**Digital Output 1 Source** (enter the source required)

--

**Digital Output 1 Polarity** (✓ the polarity required)

Positive		Negative	
----------	--	----------	--

**Digital Output 2 Source** (enter the source required)

--

**Digital Output 2 Polarity** (✓ the polarity required)

Positive		Negative	
----------	--	----------	--

**Digital Output 3 Source** (enter the source required)

--

**Digital Output 3 Polarity** (✓ the polarity required)

Positive		Negative	
----------	--	----------	--

**Digital Output 4 Source** (enter the source required)

--

**Digital Output 4 Polarity** (✓ the polarity required)

Positive		Negative	
----------	--	----------	--

**Digital Output 5 Source** (enter the source required)

--

**Digital Output 5 Polarity** (✓ the polarity required)

Positive		Negative	
----------	--	----------	--

**Digital Output 6 Source** (enter the source required)

--

**Digital Output 6 Polarity** (✓ the polarity required)

Positive		Negative	
----------	--	----------	--

**Analog Output 1 Source** (enter the source required)

--

**Analog Output 1 Range** (enter the values required)

Engineering Low		Electrical Low	
Engineering High		Electrical High	

**Analog Output 2 Source** (enter the source required)

--

**Analog Output 2 Range** (enter the values required)

Engineering Low		Electrical Low	
Engineering High		Electrical High	

## 9 Ethernet Module Configuration

Referring to Section 3.1 of the User Guide Supplement – Ethernet Communications Option (IM/SMENET), enter the settings required for each of the parameters.

**IP Address** (enter the address required)

--

**Subnet Mask** (enter the subnet mask required)

--

**Default Gateway** (enter the default gateway required)

--

**FTP User 1** (enter the settings required)

Name				
Password				
<b>Access Level</b> (✓ the setting required)				
<input type="checkbox"/> Full	<input type="checkbox"/>	<input type="checkbox"/> Read Only		
<b>Remote Operation</b> (✓ the setting required)				
<input type="checkbox"/> None	<input type="checkbox"/>	<input type="checkbox"/> Operator	<input type="checkbox"/>	<input type="checkbox"/> Configuration

**FTP User 2** (enter the settings required)

Name				
Password				
<b>Access Level</b> (✓ the setting required)				
<input type="checkbox"/> Full	<input type="checkbox"/>	<input type="checkbox"/> Read Only		
<b>Remote Operation</b> (✓ the setting required)				
<input type="checkbox"/> None	<input type="checkbox"/>	<input type="checkbox"/> Operator	<input type="checkbox"/>	<input type="checkbox"/> Configuration

**FTP User 3** (enter the settings required)

Name				
Password				
<b>Access Level</b> (✓ the setting required)				
<input type="checkbox"/> Full	<input type="checkbox"/>	<input type="checkbox"/> Read Only		
<b>Remote Operation</b> (✓ the setting required)				
<input type="checkbox"/> None	<input type="checkbox"/>	<input type="checkbox"/> Operator	<input type="checkbox"/>	<input type="checkbox"/> Configuration

**FTP User 4** (enter the settings required)

Name				
Password				
<b>Access Level</b> (✓ the setting required)				
<input type="checkbox"/> Full	<input type="checkbox"/>	<input type="checkbox"/> Read Only		
<b>Remote Operation</b> (✓ the setting required)				
<input type="checkbox"/> None	<input type="checkbox"/>	<input type="checkbox"/> Operator	<input type="checkbox"/>	<input type="checkbox"/> Configuration

## 9.1 e-mail Configuration

Referring to Section 3.5 of the User Guide Supplement – Ethernet Communications Option (IM/SMENET), enter the settings required for each of the parameters.

### 9.1.1 e-mail 1

**SMTP Server IP Address** (enter the address required)

--

**Recipients** (enter the addresses of the email recipients)

Recipient 1	
Recipient 2	
Recipient 3	

**Options Enabled** (✓ the option(s) required)

Channels Report	
Totalizers Report	
External Media Report	
Report in ALL emails	
Trigger 6 Inverted	
Trigger 7 Inverted	
Trigger 8 Inverted	
Trigger 9 Inverted	
Trigger 10 Inverted	

#### Event Triggers

(enter up to 10 event source types to generate an email)

Trigger 1	
Trigger 2	
Trigger 3	
Trigger 4	
Trigger 5	
Trigger 6	
Trigger 7	
Trigger 8	
Trigger 9	
Trigger 10	

### 9.1.2 e-mail 2

**SMTP Server IP Address** (enter the address required)

--

**Recipients** (enter the addresses of the email recipients)

Recipient 1	
Recipient 2	
Recipient 3	

**Options Enabled** (✓ the option(s) required)

Channels Report	
Totalizers Report	
External Media Report	
Report in ALL emails	
Trigger 6 Inverted	
Trigger 7 Inverted	
Trigger 8 Inverted	
Trigger 9 Inverted	
Trigger 10 Inverted	

#### Event Triggers

(enter up to 10 event source types to generate an email)

Trigger 1	
Trigger 2	
Trigger 3	
Trigger 4	
Trigger 5	
Trigger 6	
Trigger 7	
Trigger 8	
Trigger 9	
Trigger 10	



## 10 Logic Equations

**Logic Equation 1** (x if not inverted\*)

Operand 1		Invert*
Operator 1		
Operand 2		Invert*
Operator 2		
Operand 3		Invert*
Operator 3		
Operand 4		Invert*
Operator 4		
Operand 5		Invert*
Operator 5		
Operand 6		Invert*
Operator 6	End	

**Logic Equation 2** (x if not inverted\*)

Operand 1		Invert*
Operator 1		
Operand 2		Invert*
Operator 2		
Operand 3		Invert*
Operator 3		
Operand 4		Invert*
Operator 4		
Operand 5		Invert*
Operator 5		
Operand 6		Invert*
Operator 6	End	

**Logic Equation 3** (x if not inverted\*)

Operand 1		Invert*
Operator 1		
Operand 2		Invert*
Operator 2		
Operand 3		Invert*
Operator 3		
Operand 4		Invert*
Operator 4		
Operand 5		Invert*
Operator 5		
Operand 6		Invert*
Operator 6	End	

**Logic Equation 4** (x if not inverted\*)

Operand 1		Invert*
Operator 1		
Operand 2		Invert*
Operator 2		
Operand 3		Invert*
Operator 3		
Operand 4		Invert*
Operator 4		
Operand 5		Invert*
Operator 5		
Operand 6		Invert*
Operator 6	End	

**Logic Equation 5** (x if not inverted\*)

Operand 1		Invert*
Operator 1		
Operand 2		Invert*
Operator 2		
Operand 3		Invert*
Operator 3		
Operand 4		Invert*
Operator 4		
Operand 5		Invert*
Operator 5		
Operand 6		Invert*
Operator 6	End	

**Logic Equation 6** (x if not inverted\*)

Operand 1		Invert*
Operator 1		
Operand 2		Invert*
Operator 2		
Operand 3		Invert*
Operator 3		
Operand 4		Invert*
Operator 4		
Operand 5		Invert*
Operator 5		
Operand 6		Invert*
Operator 6	End	

**Logic Equation 7 (x if not inverted\*)**

Operand 1		Invert*
Operator 1		
Operand 2		Invert*
Operator 2		
Operand 3		Invert*
Operator 3		
Operand 4		Invert*
Operator 4		
Operand 5		Invert*
Operator 5		
Operand 6		Invert*
Operator 6	End	

**Logic Equation 10 (x if not inverted\*)**

Operand 1		Invert*
Operator 1		
Operand 2		Invert*
Operator 2		
Operand 3		Invert*
Operator 3		
Operand 4		Invert*
Operator 4		
Operand 5		Invert*
Operator 5		
Operand 6		Invert*
Operator 6	End	

**Logic Equation 8 (x if not inverted\*)**

Operand 1		Invert*
Operator 1		
Operand 2		Invert*
Operator 2		
Operand 3		Invert*
Operator 3		
Operand 4		Invert*
Operator 4		
Operand 5		Invert*
Operator 5		
Operand 6		Invert*
Operator 6	End	

**Logic Equation 11 (x if not inverted\*)**

Operand 1		Invert*
Operator 1		
Operand 2		Invert*
Operator 2		
Operand 3		Invert*
Operator 3		
Operand 4		Invert*
Operator 4		
Operand 5		Invert*
Operator 5		
Operand 6		Invert*
Operator 6	End	

**Logic Equation 9 (x if not inverted\*)**

Operand 1		Invert*
Operator 1		
Operand 2		Invert*
Operator 2		
Operand 3		Invert*
Operator 3		
Operand 4		Invert*
Operator 4		
Operand 5		Invert*
Operator 5		
Operand 6		Invert*
Operator 6	End	

**Logic Equation 12 (x if not inverted\*)**

Operand 1		Invert*
Operator 1		
Operand 2		Invert*
Operator 2		
Operand 3		Invert*
Operator 3		
Operand 4		Invert*
Operator 4		
Operand 5		Invert*
Operator 5		
Operand 6		Invert*
Operator 6	End	

# 11 Math Equations

## 11.1 Math Block 1

**Math Block Type** (✓ the box required)

Standard	
Trigonometric	
Statistical	
Logarithmic	
Special	
Switch	
Power	

**Standard Math Block set up** (note equation here)

--

### Trigonometric

Cos (variable X)	
Sin (variable X)	
Tan (Variable X)	

### 11.1.1 Statistical Functions

#### Average

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

#### Rolling Average

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

#### Standard Deviation

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

#### Logarithmic Functions

Log (Variable X)	
Natural Log (Variable X)	
Exponential (variable X)	

### 11.1.2 Special Functions

#### Relative humidity function

Wet Bulb source	
Dry Bulb Source	

#### F0 calculation

Measured temp (X)	
Target Temp (y)	
Z factor (z)	

### 11.1.3 Switch Functions

#### High Selector

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

#### Median Selector

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

#### Low Selector

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

#### Multiplexer

Source 1 (x)	
Digital Source	
Source 2 (y)	

### 11.1.4 Power Functions

#### Power

Variable (x)	
Power (a)	

#### Square Root

Variable (x)	
--------------	--

## 11.2 Math Block 2

**Math Block Type** (✓ the box required)

Standard	
Trigonometric	
Statistical	
Logarithmic	
Special	
Switch	
Power	

**Standard Math Block set up** (note equation here)

--

### Trigonometric

Cos (variable X)	
Sin (variable X)	
Tan (Variable X)	

### 11.2.1 Statistical Functions

#### Average

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

#### Rolling Average

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

#### Standard Deviation

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

#### Logarithmic Functions

Log (Variable X)	
Natural Log (Variable X)	
Exponential (variable X)	

### 11.2.2 Special Functions

#### Relative humidity function

Wet Bulb source	
Dry Bulb Source	

#### F0 calculation

Measured temp (X)	
Target Temp (y)	
Z factor (z)	

### 11.2.3 Switch Functions

#### High Selector

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

#### Median Selector

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

#### Low Selector

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

#### Multiplexer

Source 1 (x)	
Digital Source	
Source 2 (y)	

### 11.2.4 Power Functions

#### Power

Variable (x)	
Power (a)	

#### Square Root

Variable (x)	
--------------	--

### 11.3 Math Block 3

**Math Block Type** (✓ the box required)

Standard	
Trigonometric	
Statistical	
Logarithmic	
Special	
Switch	
Power	

**Standard Math Block set up** (note equation here)

--

**Trigonometric**

Cos (variable X)	
Sin (variable X)	
Tan (Variable X)	

#### 11.3.1 Statistical Functions

**Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Rolling Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Standard Deviation**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Logarithmic Functions**

Log (Variable X)	
Natural Log (Variable X)	
Exponential (variable X)	

#### 11.3.2 Special Functions

**Relative humidity function**

Wet Bulb source	
Dry Bulb Source	

**F0 calculation**

Measured temp (X)	
Target Temp (y)	
Z factor (z)	

#### 11.3.3 Switch Functions

**High Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Median Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Low Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Multiplexer**

Source 1 (x)	
Digital Source	
Source 2 (y)	

#### 11.3.4 Power Functions

**Power**

Variable (x)	
Power (a)	

**Square Root**

Variable (x)	
--------------	--

### 11.4 Math Block 4

**Math Block Type** (✓ the box required)

Standard	
Trigonometric	
Statistical	
Logarithmic	
Special	
Switch	
Power	

**Standard Math Block set up** (note equation here)

--

**Trigonometric**

Cos (variable X)	
Sin (variable X)	
Tan (Variable X)	

#### 11.4.1 Statistical Functions

**Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Rolling Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Standard Deviation**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Logarithmic Functions**

Log (Variable X)	
Natural Log (Variable X)	
Exponential (variable X)	

#### 11.4.2 Special Functions

**Relative humidity function**

Wet Bulb source	
Dry Bulb Source	

**F0 calculation**

Measured temp (X)	
Target Temp (y)	
Z factor (z)	

#### 11.4.3 Switch Functions

**High Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Median Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Low Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Multiplexer**

Source 1 (x)	
Digital Source	
Source 2 (y)	

#### 11.4.4 Power Functions

**Power**

Variable (x)	
Power (a)	

**Square Root**

Variable (x)	
--------------	--

**11.5 Math Block 5**

**Math Block Type** (✓ the box required)

Standard	
Trigonometric	
Statistical	
Logarithmic	
Special	
Switch	
Power	

**Standard Math Block set up** (note equation here)

--

**Trigonometric**

Cos (variable X)	
Sin (variable X)	
Tan (Variable X)	

**11.5.1 Statistical Functions**

**Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Rolling Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Standard Deviation**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Logarithmic Functions**

Log (Variable X)	
Natural Log (Variable X)	
Exponential (variable X)	

**11.5.2 Special Functions**

**Relative humidity function**

Wet Bulb source	
Dry Bulb Source	

**F0 calculation**

Measured temp (X)	
Target Temp (y)	
Z factor (z)	

**11.5.3 Switch Functions**

**High Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Median Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Low Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Multiplexer**

Source 1 (x)	
Digital Source	
Source 2 (y)	

**11.5.4 Power Functions**

**Power**

Variable (x)	
Power (a)	

**Square Root**

Variable (x)	
--------------	--

### 11.6 Math Block 6

**Math Block Type** (✓ the box required)

Standard	
Trigonometric	
Statistical	
Logarithmic	
Special	
Switch	
Power	

**Standard Math Block set up** (note equation here)

--

**Trigonometric**

Cos (variable X)	
Sin (variable X)	
Tan (Variable X)	

#### 11.6.1 Statistical Functions

**Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Rolling Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Standard Deviation**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Logarithmic Functions**

Log (Variable X)	
Natural Log (Variable X)	
Exponential (variable X)	

#### 11.6.2 Special Functions

**Relative humidity function**

Wet Bulb source	
Dry Bulb Source	

**F0 calculation**

Measured temp (X)	
Target Temp (y)	
Z factor (z)	

#### 11.6.3 Switch Functions

**High Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Median Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Low Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Multiplexer**

Source 1 (x)	
Digital Source	
Source 2 (y)	

#### 11.6.4 Power Functions

**Power**

Variable (x)	
Power (a)	

**Square Root**

Variable (x)	
--------------	--



### 11.7 Math Block 7

**Math Block Type** (✓ the box required)

Standard	
Trigonometric	
Statistical	
Logarithmic	
Special	
Switch	
Power	

**Standard Math Block set up** (note equation here)

--

**Trigonometric**

Cos (variable X)	
Sin (variable X)	
Tan (Variable X)	

#### 11.7.1 Statistical Functions

**Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Rolling Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Standard Deviation**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Logarithmic Functions**

Log (Variable X)	
Natural Log (Variable X)	
Exponential (variable X)	

#### 11.7.2 Special Functions

**Relative humidity function**

Wet Bulb source	
Dry Bulb Source	

**F0 calculation**

Measured temp (X)	
Target Temp (y)	
Z factor (z)	

#### 11.7.3 Switch Functions

**High Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Median Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Low Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Multiplexer**

Source 1 (x)	
Digital Source	
Source 2 (y)	

#### 11.7.4 Power Functions

**Power**

Variable (x)	
Power (a)	

**Square Root**

Variable (x)	
--------------	--

### 11.8 Math Block 8

**Math Block Type** (✓ the box required)

Standard	
Trigonometric	
Statistical	
Logarithmic	
Special	
Switch	
Power	

**Standard Math Block set up** (note equation here)

--

**Trigonometric**

Cos (variable X)	
Sin (variable X)	
Tan (Variable X)	

#### 11.8.1 Statistical Functions

**Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Rolling Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Standard Deviation**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Logarithmic Functions**

Log (Variable X)	
Natural Log (Variable X)	
Exponential (variable X)	

#### 11.8.2 Special Functions

**Relative humidity function**

Wet Bulb source	
Dry Bulb Source	

**F0 calculation**

Measured temp (X)	
Target Temp (y)	
Z factor (z)	

#### 11.8.3 Switch Functions

**High Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Median Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Low Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Multiplexer**

Source 1 (x)	
Digital Source	
Source 2 (y)	

#### 11.8.4 Power Functions

**Power**

Variable (x)	
Power (a)	

**Square Root**

Variable (x)	
--------------	--

### 11.9 Math Block 9

**Math Block Type** (✓ the box required)

Standard	
Trigonometric	
Statistical	
Logarithmic	
Special	
Switch	
Power	

**Standard Math Block set up** (note equation here)

--

**Trigonometric**

Cos (variable X)	
Sin (variable X)	
Tan (Variable X)	

#### 11.9.1 Statistical Functions

**Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Rolling Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Standard Deviation**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Logarithmic Functions**

Log (Variable X)	
Natural Log (Variable X)	
Exponential (variable X)	

#### 11.9.2 Special Functions

**Relative humidity function**

Wet Bulb source	
Dry Bulb Source	

**F0 calculation**

Measured temp (X)	
Target Temp (y)	
Z factor (z)	

#### 11.9.3 Switch Functions

**High Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Median Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Low Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Multiplexer**

Source 1 (x)	
Digital Source	
Source 2 (y)	

#### 11.9.4 Power Functions

**Power**

Variable (x)	
Power (a)	

**Square Root**

Variable (x)	
--------------	--

### 11.10 Math Block 10

**Math Block Type** (✓ the box required)

Standard	
Trigonometric	
Statistical	
Logarithmic	
Special	
Switch	
Power	

**Standard Math Block set up** (note equation here)

--

**Trigonometric**

Cos (variable X)	
Sin (variable X)	
Tan (Variable X)	

#### 11.10.1 Statistical Functions

**Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Rolling Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Standard Deviation**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Logarithmic Functions**

Log (Variable X)	
Natural Log (Variable X)	
Exponential (variable X)	

#### 11.10.2 Special Functions

**Relative humidity function**

Wet Bulb source	
Dry Bulb Source	

**F0 calculation**

Measured temp (X)	
Target Temp (y)	
Z factor (z)	

#### 11.10.3 Switch Functions

**High Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Median Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Low Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Multiplexer**

Source 1 (x)	
Digital Source	
Source 2 (y)	

#### 11.10.4 Power Functions

**Power**

Variable (x)	
Power (a)	

**Square Root**

Variable (x)	
--------------	--

### 11.11 Math Block 11

**Math Block Type** (✓ the box required)

Standard	
Trigonometric	
Statistical	
Logarithmic	
Special	
Switch	
Power	

**Standard Math Block set up** (note equation here)

--

**Trigonometric**

Cos (variable X)	
Sin (variable X)	
Tan (Variable X)	

#### 11.11.1 Statistical Functions

**Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Rolling Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Standard Deviation**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Logarithmic Functions**

Log (Variable X)	
Natural Log (Variable X)	
Exponential (variable X)	

#### 11.11.2 Special Functions

**Relative humidity function**

Wet Bulb source	
Dry Bulb Source	

**F0 calculation**

Measured temp (X)	
Target Temp (y)	
Z factor (z)	

#### 11.11.3 Switch Functions

**High Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Median Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Low Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Multiplexer**

Source 1 (x)	
Digital Source	
Source 2 (y)	

#### 11.11.4 Power Functions

**Power**

Variable (x)	
Power (a)	

**Square Root**

Variable (x)	
--------------	--

### 11.12 Math Block 12

**Math Block Type** (✓ the box required)

Standard	
Trigonometric	
Statistical	
Logarithmic	
Special	
Switch	
Power	

**Standard Math Block set up** (note equation here)

--

**Trigonometric**

Cos (variable X)	
Sin (variable X)	
Tan (Variable X)	

#### 11.12.1 Statistical Functions

**Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Rolling Average**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Standard Deviation**

Source to average (X)	
Number of Samples (n)	
Sample rate (t)	

**Logarithmic Functions**

Log (Variable X)	
Natural Log (Variable X)	
Exponential (variable X)	

#### 11.12.2 Special Functions

**Relative humidity function**

Wet Bulb source	
Dry Bulb Source	

**F0 calculation**

Measured temp (X)	
Target Temp (y)	
Z factor (z)	

#### 11.12.3 Switch Functions

**High Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Median Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Low Selector**

Source 1 (x)	
Source 2 (y)	
Source 3 (z)	

**Multiplexer**

Source 1 (x)	
Digital Source	
Source 2 (y)	

#### 11.12.4 Power Functions

**Power**

Variable (x)	
Power (a)	

**Square Root**

Variable (x)	
--------------	--

## Notes

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