OPERATION MANUAL

DIGITAL BAR-GRAPH INDICATOR

MODEL: BMX-22

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DESCRIPTION

The ASHE BMX-22 is a micro-controller based Digital Bar-Graph Indicator with control outputs, offered in a highly compact, rugged and reliable execution. The instrument has three keys on the front panel, with which the operator can set the parameters and configure the instrument as desired. Two four-digit red LED digital displays is provided on the front panel, namely, the CHANNEL 1 AND CHANNEL 2 display which indicates the real time process value. Also two nos. of 100 LED Bar-Graph, namely CH1 AND CH2 indicates 0 to 100% Bar Graph of process inputs. The display on the seven segment display can set from -999 to 9999 units.

The instrument has non-volatile memory (i.e., in case of power failure, the set points and other instrument settings are retained in memory and the indication and control actions resume after power is restored).

The instrument accepts 4 to 20mA DC input signals at the input. The instrument is calibrated as specified. This calibration may be changed by the end-user by following the instructions under the "*CONTROL & PARAMETER SETTINGS*" section].

The BMX-22 provides four control Relay output, two per channel. The set points of which can set in CONTROL SETTINGS menu explained below with it's independent Hysterisis value, through the Keypad on the front panel [see *CONFIGURATION – CONTROL SETTINGS* section]. The BMX-22 provides ALARM control action for all relays. The instrument operates on 90 to 270VAC universal power supply and is offered in standard ¼ DIN panel-mount executions.

For specific inputs, dimensions and power supply requirements please revert to us.

The process display is factory calibrated to the desired operating range of the input through the instrument software and may be changed by the user, whenever desired. The input signal is suitably isolated and conditioned by the micro-controller, which displays the actual process value in real time on the digital display and process bar on the LED Bar-graph.

The micro-controller based process Indicating Controller Model: BMX-22 is an ideal instrument for process measurement and control applications. Other features include it's inherent accuracy and immunity to shocks, dust, ambient temperatures, and humidity.

Further, the instrument is manufactured using selected high-grade components which guarantee it's functionality and long operational life. The instrument carries a performance warranty against manufacturing defects and workmanship defects (see *WARRANTY* clause).

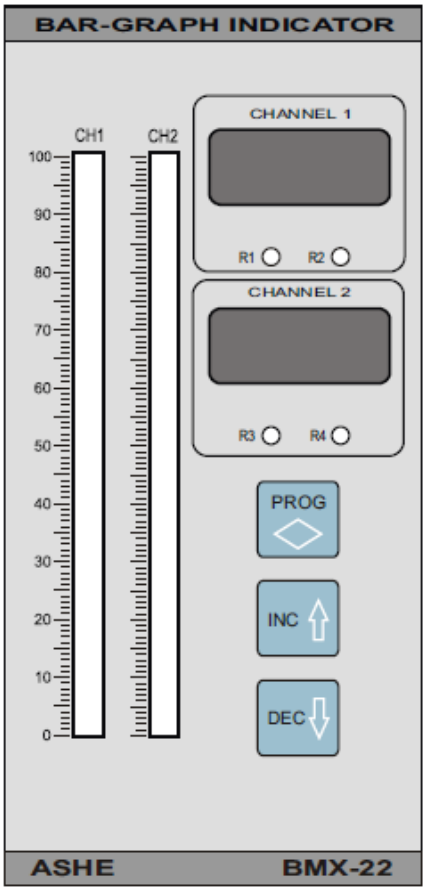
INSTALLATION

The instrument should be first mounted in an appropriate cut-out on the panel [See *TECHNICAL SPECIFICATIONS*]. All interconnections to the instrument should be made with strong multi-strand wire of the order of 2.5 sq.mm. The ends of the wires should be properly ferruled and suitable lugs must be used for effective termination.

The cables carrying the input signal should be routed separately and properly isolated from the power line cables, to prevent any electromagnetic interference in the input signal readings from the mains power line. Use of shielded twisted pair cable is recommended for input signals. The shield must be connected to Earth only at the instrument end. The instrument should be earthed to a proper grounding point before connecting the Power Supply. The voltage between the Earth and Neutral terminals should be negligible (Approx. 1 V AC). The Relay contacts are potential free and any desired voltage may be used in conjunction with the same.

OPERATION & SETTINGS

The front panel of the Digital Bar-Graph Indicator is as shown below:



CHANNEL 1 - Four Digit Seven Segment Display shows process value of Input 1.
CHANNEL 2 - Four Digit Seven Segment Display shows process value of Input 2.
CH1 - 100 LED Bar-Graph shows process bar of Input 1.
CH2 - 100 LED Bar-Graph shows process bar of Input 2.
R1 - Red LED shows status of Relay-1 for Input 1.
R2 - Red LED shows status of Relay-2 for Input 2.

CONTROL KEYS

The instrument has three keys on the front panel, functions of which are described below

PROG	The PROG or PROGRAM key is the central co-ordinating key to access the settings of the instrument. Pressing this Key allows the operator to sequentially view, change and save the control parameters.
INC	The INC or increment key allows the operator to select the numeral in the digit being set on a decreasing scale. The digit will sequentially display 9, 8, 7….1 on each pressing of the DEC key. The decrementing speed increases if the key is kept pressed.
DEC	The DEC or decrement key allows the operator to select the numeral in the digit being set on an increasing scale. The digit will sequentially display 0, 1, 2….9 on each pressing of the INC key. The incrementing speed increases if the key is kept pressed.

CONTROL & PARAMETER SETTINGS

The following is the sequence of settings on the Digital Indicator / Controller:

CONTROL SETTINGS

KEY Pressed	UPPER DISPLAY (CHANNEL1)	LOWER DISPLAY (CHANNEL 2)	100 LED Bar-Graph (CH 1)	100 LED Bar-Graph (CH 2)	FUNCTION
(POWER ON)	ASHE	-	Process Bar	Process Bar	Initialization of internal controller.
	Process Value	Process Value	Process Bar	Process Bar	The instrument shows process value on Seven Segment display and Process Bar on LED Bar-graph corresponds to inputs feed.
Press INC & DEC keys	0100	LO-1	-	-	This is the Zero calibration of Channel-1 Input. [Not Applicable to User]
PROG	0100	HI-1	-	-	This is the Span calibration of Channel-1 Input. [Not Applicable to User]
PROG	0164	LO-2	-	-	This is the Zero calibration of Channel-2 Input. [Not Applicable to User]
PROG	0164	HI-2	-	-	This is the Span calibration of Channel-2 Input. [Not Applicable to User]
PROG	100.0	dp-1	-	-	Set Decimal Position for Channel -1. Options are- 1000,100.0,10.0,1.000.
PROG	000.0	rL-1	-	-	This is the Range Low setting for Channel-1. It can be set from -999 to 9999 by using INC & DEC keys.
PROG	100.0	rH-1	-	-	This is the Range High setting for Channel-1. It can be set from -999 to 9999 by using INC & DEC keys.
PROG	100.0	dp-2	-	-	Set Decimal Position for Channel -2. Options are- 1000,100.0,10.0,1.000.
PROG	000.0	rL-2	-	-	This is the Range Low setting for Channel-2. It can be set from -999 to 9999 by using INC & DEC keys.
PROG	100.0	rH-2	-	-	This is the Range High setting for Channel-2. It can be set from -999 to 9999 by using INC & DEC keys.
PROG	0250	Zr-1	-	-	[Not Applicable to User]
PROG	0580	SP-1	-	-	[Not Applicable to User]

PROG	0250	Zr-2	-	-	[Not Applicable to User]
PROG	0580	SP-2	-	-	[Not Applicable to User]
PROG	Process Value	Process Value	Process Bar	Process Bar	The instrument come out of control setting mode and display process value on Seven Segment display and Process Bar on LED Bar-graph corresponds to input feed.

SETTINGS

KEY Pressed	UPPER DISPLAY (CHANNEL1)	LOWER DISPLAY (CHANNEL 2)	100 LED Bar-Graph (CH 1)	100 LED Bar-Graph (CH 2)	FUNCTION
(POWER ON)	ASHE		Process Bar	Process Bar	Initialization of internal controller.
PROG	Set1		Process Bar Flashing	Process Bar Flashing	The SET-POINT "Set1" for Relay-1 is displayed alternately with the factory preset value.
PROG	Hys1		Process Bar Flashing	Process Bar Flashing	The HYSTERESIS value for Relay-1 can be set using Increment (⮝) and Decrement (⮟) keys from 0000 to 0099.
PROG		Set1	Process Bar Flashing	Process Bar Flashing	The SET-POINT "Set1" for Relay-2 is displayed alternately with the factory preset value.
PROG		Hys1	Process Bar Flashing	Process Bar Flashing	The HYSTERESIS value for Relay-2 can be set using Increment (⮝) and Decrement (⮟) keys from 0000 to 0099.
PROG	Process Value	Process Value	Process Bar	Process Bar	The instrument come out of control setting mode and display process value on Seven Segment display and Process Bar on LED Bar-graph corresponds to input feed.

All settings to be done using DEC (↓) and INC (⮝) keys.

While Parameter Setting Mode the both Bar-Graphs and all Relays are OFF.

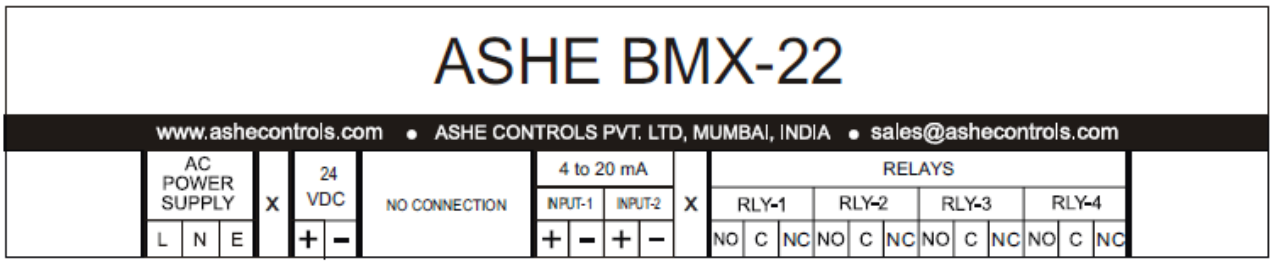
This completes the entire settings of the BMX-22 Digital Bar-graph Indicator.

DISPLAY MENU

The explanation of the various Displays and Messages that would be visible on the instrument Menu are as follows:-

SR.	MESSAGE	DESCRIPTION
1.	IPLO	Input signal below lower range setting
2.	IPHI	Input Signal higher than higher range setting
3.	LED Bar-graph Flashing	No Signal or I/P Wire Break or Sensor Burn Out or Input Low or Input High

TERMINAL DIAGRAM



TECHNICAL SPECIFICATIONS

Model	:	BMX-22.
Type	:	Microcontroller based Digital Bar-graph Indicator with Control option
No. of Channel	:	Two Nos.
Input Signal	:	2 x 4 to 20mADC
Display	:	100 LED Bar-graph and Seven-segment, red LED display
Indications	:	Two LEDs for status of Relays.
Scale Range	:	0 to 100% on 100 LED Bar-graph and -999 to 9999 on Seven Segment Display
Decimal point	:	Selectable.
Response time	:	Typically 100mS
Output	:	Four control relay change-over contacts – One Relay per Channel
Contact rating	:	10 Ampere @ 230 V AC (Res. Loads).
Memory	:	Non-Volatile (on EEPROM).
Settings	:	By means of Tact Switches on front panel.
Accuracy	:	± 1% FS for Bar-Graph ± 0.25% for Display
Power Supply	:	90 to 270 V AC (± 20%), 50 Hz.
Enclosure	:	Panel mounting.
Dimensions	:	160 x 80 x 150 mm.
Weight	:	Approximately 1 kgs

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