

# QUICK START GUIDE

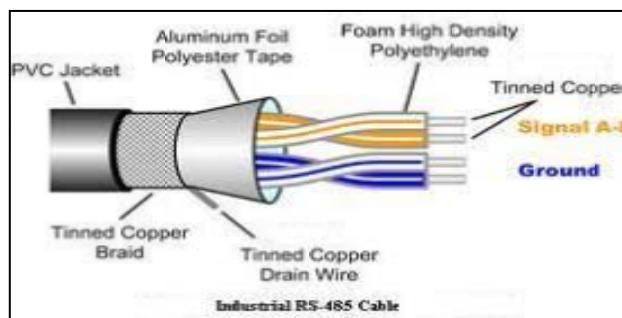
## COMMUNICATION ESTABLISHMENT WITH EPAC-3.XMP MODULE

**WARNING ⚠️: BASED ON THE PREVIOUS SITE EXPERIENCE GAINED BY AUMA, IT IS STRICTLY ADVISED TO FOLLOW THE BELOW GUIDELINES IN ESTABLISHING FIELDBUS COMMUNICATION USING 3.XMP MODULES & TO AVOID COMMUNICATION FAILURES**

### A. CABLING GUIDELINES: (INTERCONNECTION BETWEEN THE FIELD ACTUATORS)

Recommended Cable: Industrial RS-485 cable, 2 pair with shield

Cable cross-section:

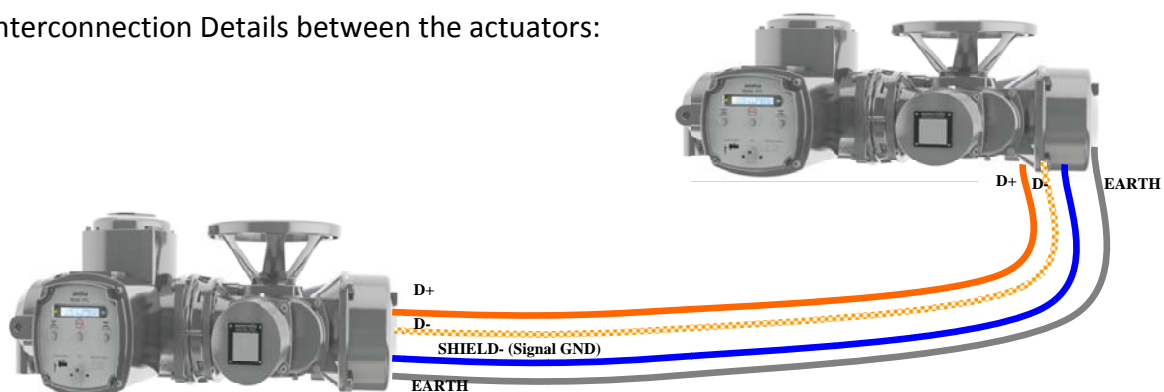


Notation:

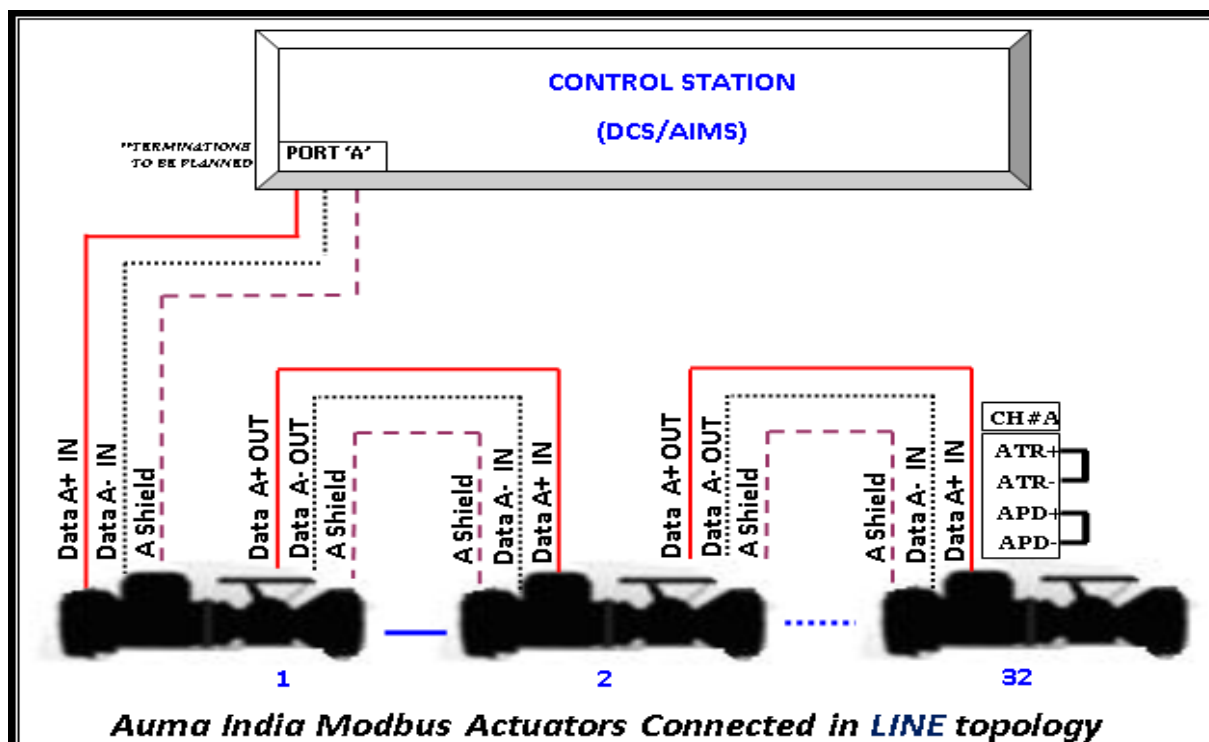
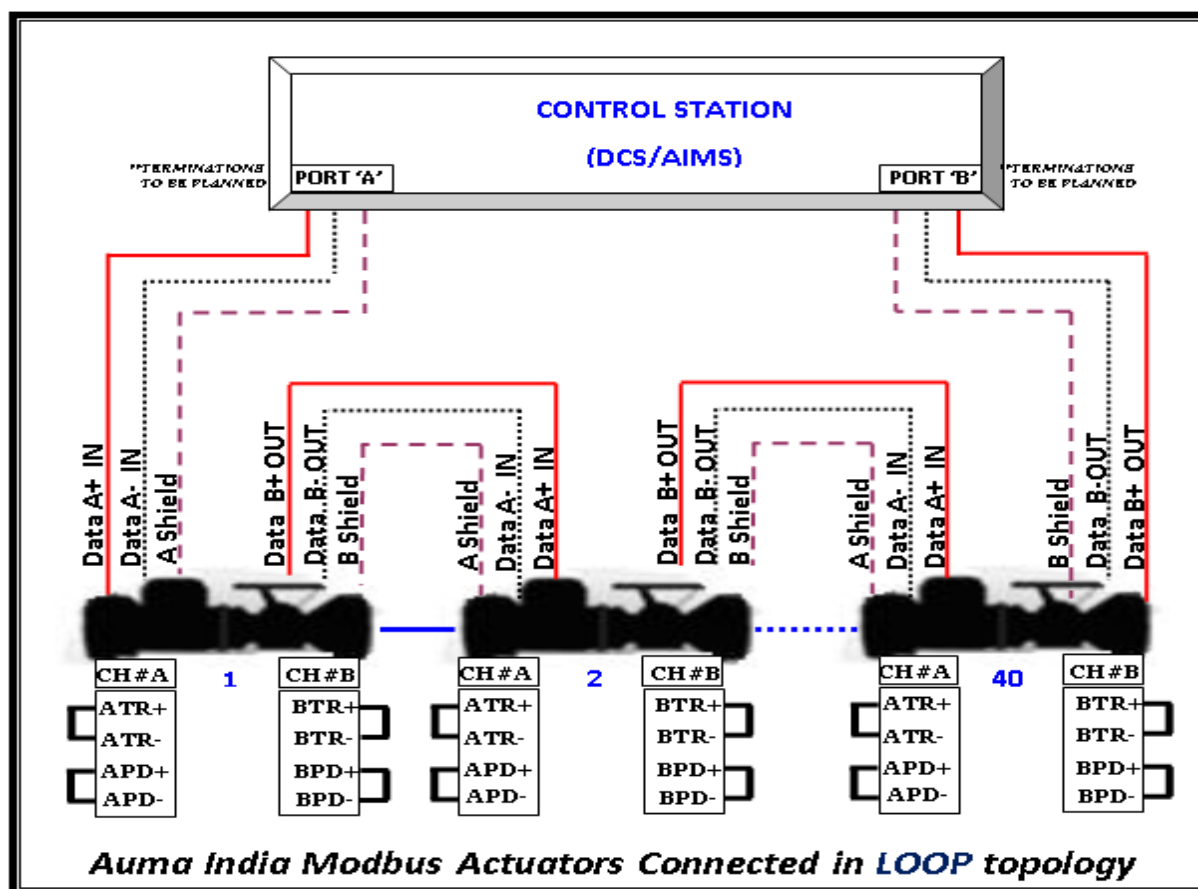
Sl. No	Color Code	Notation	Usage	Auma Actuator Terminals	
				CH-A	CH-B
1	Orange with white stripe		D+	A+	B+
2	White with orange stripe		D-	A-	B-
3	Blue with white stripe		Signal GND	A Shield	B Shield
4	White with blue stripe		Unconnected	-	-
5	Grey wire(Drain wire) or meshed cable (Braid)		EARTH	-	-

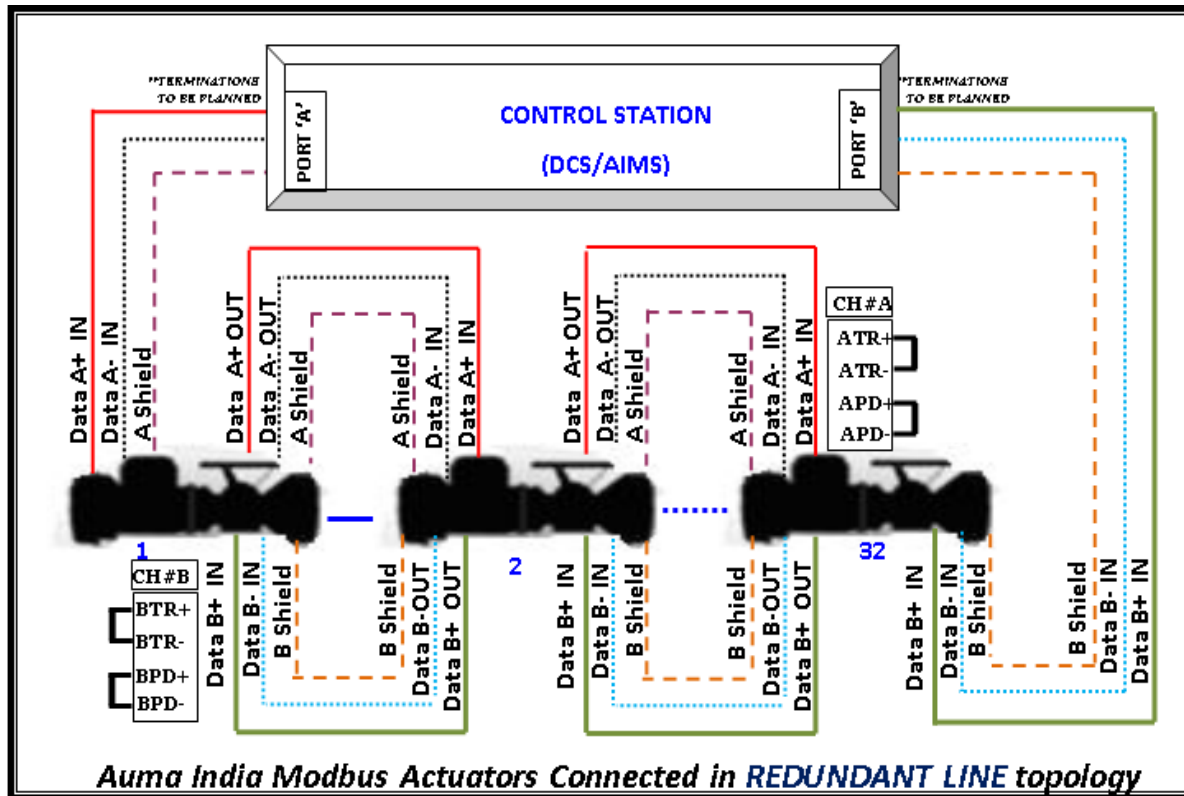
NOTE: Ensure the proper EARTH connection with each of the actuator

Interconnection Details between the actuators:



## B. TOPOLOGY CONNECTION





**NOTE:**

Refer to the Wiring Diagrams for terminal numbers present at customer end connection  
Use the repeaters if the distance between the active adjacent participants exceeds 1.2km

In case of line/redundant line topology, use repeaters after 32 participants, with proper terminations even at repeaters.

Termination resistors to be planned at each port of the DCS (AIMS has termination built within)

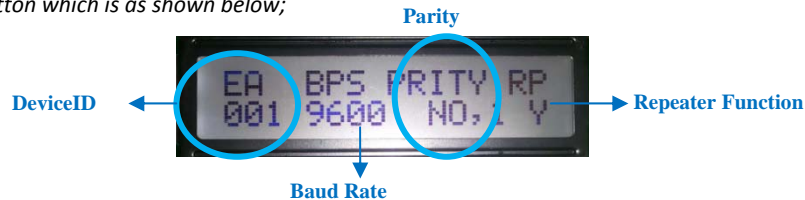
**C. TERMINATION CONNECTION/SETTING DETAILS**

TOPOLOGY TYPE	LOOP	LINE	REDUNDANT LINE
Interconnection at customer end terminals	<p>Short the below said terminals of <b>all</b> the actuators</p> <ol style="list-style-type: none"> <li>ATR+ with ATR-</li> <li>BTR+ with BTR-</li> <li>APD+ with APD-</li> <li>BPD+ with BPD-</li> </ol> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px;"> <p><b>CH#A</b></p> <p>ATR+ ATR- APD+ APD-</p> </div> <div style="border: 1px solid black; padding: 5px;"> <p><b>CH#B</b></p> <p>BTR+ BTR- BPD+ BPD-</p> </div> </div>	<p>Short the below said terminals of the actuators which are present <b>only at the end of the line segment</b></p> <ol style="list-style-type: none"> <li>ATR+ with ATR-</li> <li>APD+ with APD-</li> </ol> <div style="border: 1px solid black; padding: 5px;"> <p><b>CH#A</b></p> <p>ATR+ ATR- APD+ APD-</p> </div>	<p>Short the below said terminals of the actuators which are present <b>only at the end of the line segment</b></p> <ol style="list-style-type: none"> <li>ATR+ with ATR-</li> <li>APD+ with APD-</li> <li>BTR+ with BTR-</li> <li>BPD+ with BPD-</li> </ol> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px;"> <p><b>CH#A</b></p> <p>ATR+ ATR- APD+ APD-</p> </div> <div style="border: 1px solid black; padding: 5px;"> <p><b>CH#B</b></p> <p>BTR+ BTR- BPD+ BPD-</p> </div> </div>

#### D. MODBUS SETTINGS AT ACTUATORS:

Default Modbus Setting of the actuators with the auma supplies are - Device ID: 1, Baud Rate: 9600, Parity: None, Repeater: No, Com Rx bytes: 20. Based on the topology used at site ensure that these settings are altered to meet the site requirement.

Note: Modbus settings of the actuators can be viewed on LCD, by keeping the selector switch in "REMOTE" & then pressing the "CLOSE" push button which is as shown below;



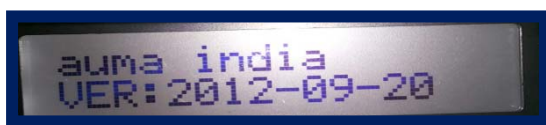
#### E. MODBUS REGISTER DETAILS:

For reading the status of the actuator: Use the function Code "04" (Read Input Register). The details of the data associated with each address are as tabulated below;

3.XMP-Version 1.0			3.XMP-Version 2.0		
ADDRESS	0x3E8	0x3E9	0x3E8	0x3E9	0x3EA
DATA DETAILS			DATA DETAILS		
BIT POSITION	DESCRIPTION		DESCRIPTION		
0	LOCAL POSITION	TSC	LOCAL POSITION	TSC	Valve Position (0-1000)
1	REMOTE POSITION	TSO	REMOTE POSITION	TSO	
2	RUNNING OPEN	LSC	RUNNING OPEN	LSC	
3	RUNNING CLOSE	LSO	RUNNING CLOSE	LSO	
4	STOPPED	LOCAL POSITION	STOPPED	LOCAL POSITION	
5	OPENED POSITION	REMOTE POSITION	OPENED POSITION	REMOTE POSITION	
6	CLOSED POSITION	LOSS OF PHASE	CLOSED POSITION	LOSS OF PHASE	
7	TSO	TH FAULT	TSO	TH FAULT	
8	TSC	COMMON FAULT	TSC	COMMON FAULT	
9	TH FAULT	PHASE REVERSE	TH FAULT	PHASE REVERSE	
10	TOLR	RUNNING CLOSE	TOLR	RUNNING CLOSE	x
11	JAMMED VALVE	RUNNING OPEN	JAMMED VALVE	RUNNING OPEN	x
12	-	ESD-HARDWIRED	PHASE SEQ. ERROR	ESD-HARDWIRED	x
13	PHASE SEQ. ERROR	SET POINT REACHED	SET POINT REACHED	SET POINT REACHED	x
14	FAULT	CLOSED	FAULT	CLOSED	x
15	PROGRAM MODE	OPENED	LCS ACTIVATED	OPENED	x

Note: "3.XMP-Version 1.0" refers to 1<sup>st</sup> Series of Controller in CPU card & "3.XMP-Version 2.0" refers to 2<sup>nd</sup> Series of Controller in CPU card & to view the program version use the below procedure;

Keep the selector switch in "REMOTE" & then press the "OPEN" push button. The program version will be displayed on the LCD screen as below;



Here "VER2: 2014-04-06" indicates

- VER2: 2<sup>nd</sup> Series of Controller in 3.XMP CPU card
- 2014-04: 'Year & Month' of software release
- 06: Program Version
- &
- VER: Indicates 1<sup>st</sup> Series of Controller in 3.XMP CPU card

For writing the command to the actuator: Use the function Code “06” (Write Holding Register).

The details of the data associated with each address are as tabulated below;

ADDRESS		DATA		
DESCRIPTION	VALUE	RANGE (MIN-MAX)	NOTE (MEANING)	
REMOTE COMMAND	0x03E8		BIT 8=1	OPEN
			BIT 9=1	CLOSE
			BIT 12=1	STOP
			BIT 10=1	SET POINT BIT
READ VALVE POSITION	0x03E9	0-1000		
SET VALVE POSITION	0x03EA	0-1000		
**REMOTE COMMAND (ESD)	0x0001		BIT 0=1	ESD

The byte sequence for \*broadcast ESD (SOFT ESD) command in hexadecimal is:

Broadcast Address	Function Code	Start Address High	Start Address Low	Register Value High	Register Value Low	CRC High	CRC Low
0xF1	0x06	0x00	0x01	0x00	0x01	0x0D	0x3A

*Note: \*: Broadcast ESD is available with the 3.XMP modules having 2<sup>nd</sup> Series of controller in CPU card*

*\*\* : Soft ESD at individual actuator is available with 3.XMP modules having 2<sup>nd</sup> Series of controller in CPU card, starting with the program version “VER2:2014-04-06”*

*For the complete details regarding the Programming (Modbus Setting) & Calibration of the 3.XMP- EPAC, please refer to the manual “EPAC OPERATION & SPARE PARTS MANUAL (V3.XMP) – DD/MN-013 ISSUE 09/2013”*

*To integrate AumaIndia actuators with AumaIndia Master Station (AIMS), please refer to the instruction manual “Quick Start Guide: COMMUNICATION WITH AIMS –DD/MN.020 ISSUE 01/14”*

## F. OTHER GUIDELINES TO BE FOLLOWED AFTER THE CABLING TO AVOID WATER ENTRY:

Ensure the following

- Cable gland are properly sealed with the sealing material
- Unused cable gland entries are fixed with appropriate blanking plugs
- O-ring is in good condition & is used while fixing of terminal cover
- Tightening of fasteners during the fixing of the terminal cover
- Customer end cables are used with proper lugs during termination
- Cables are routed and tied properly to avoid the over hanging
- Cable is not damaged with twisting & pinching
- Actuator mounting should be such that the cable entry & the display are not facing sky (to the extent possible). For the unavoidable cases, where the display is facing the sky, suitably arrange the shade for the LCD

*Note: Correct transport, proper storage, mounting and installation, as well as careful commissioning will yield the desired smooth performance of the actuators at field.*