

WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR HAZARDOUS LOCATIONS

WARNING: Resistance between Intrinsically Safe Ground and earth ground shall be less than 1.0 Ohm

NOTES:

- Installations in the Canada shall be in accordance with C22.1 Canadian Electrical Code, Part 1.
- Associated apparatus must be approved by authority having jurisdiction and must be installed in accordance with manufacturers instructions.
- The FISCO Supply, FISCO Field Device(s) and FISCO Terminators shall be Canadian Approved for installations in Canada.
- FISCO Supply manufacturer's installation drawing shall be followed when installing this equipment.
- Associated apparatus parameters must meet the following requirements:
  - $V_{oc}/U_o \leq V_{max}$ ;
  - $I_{sc}/I_o \leq I_{max}$ ;
  - $P_o$  or  $P_t \leq P_{max}$
  - $C_a \geq C_i + C_{cable}$
  - $L_a \geq L_i + L_{cable}$
- The control room equipment connected to FISCO Supply must not generate more than 250 Vrms or Vdc, or marked Um on the associated apparatus.
- A dust tight seal must be used at the conduit entry when the Transmitter is used in a Class II & III location.
- Suitable separation must be maintained between input wiring and Sensor wiring.
- WARNING: DO NOT DISCONNECT EQUIPMENT WHILE LIVE UNLESS THE AREA IS KNOWN TO BE NON-HAZARDOUS

FISCO CONCEPT

The Fieldbus Intrinsically Safe Concept (FISCO) allows the interconnection one FISCO certified power supply, an unlimited number of FISCO certified intrinsically safe field apparatus, and two FISCO certified terminators, one of each end of the trunk cable. (Note: The FISCO Terminator at the supply end is usually incorporated in to the FISCO Power Supply.)

Each piece of apparatus will be marked with the word "FISCO" followed by the indication of its function, i.e. "Power Supply", "Field Device" or "Terminator".

Interconnection of the FISCO Field Device, FISCO terminators and FISCO Power Supply must be suitable for the same Division or type of protection and Gas Group(s).

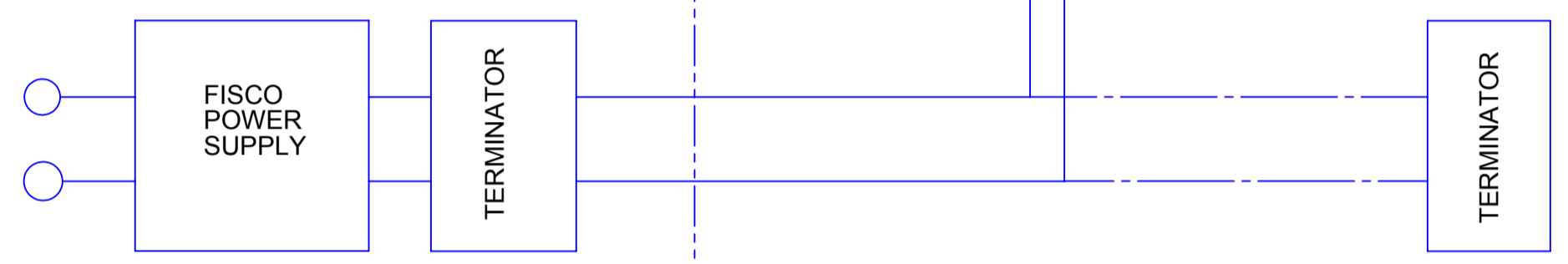
The FISCO power supply shall be located not more than 30m from one end of the trunk. Where the power supply is connected via a spur, then that spur is restricted to a length of 30 m.

The cable used to interconnect the devices needs to comply with the following parameters:

Loop resistance Rc: 15Ω/km to 150 W/km  
 Inductance per unit length Lc: 0.4mH/km to 1mH/km  
 Capacitance per unit length Cc: 45nF/km to 200nF/km  
 Maximum Length of spur Cable: 60m for IIC and IIB (or Group ABC&D);  
 Maximum length of each trunk cable, including the length of all spurs, 1 km in IIC and 5 km in IIB (Groups ABC&D) and IIIC (Group EFG).

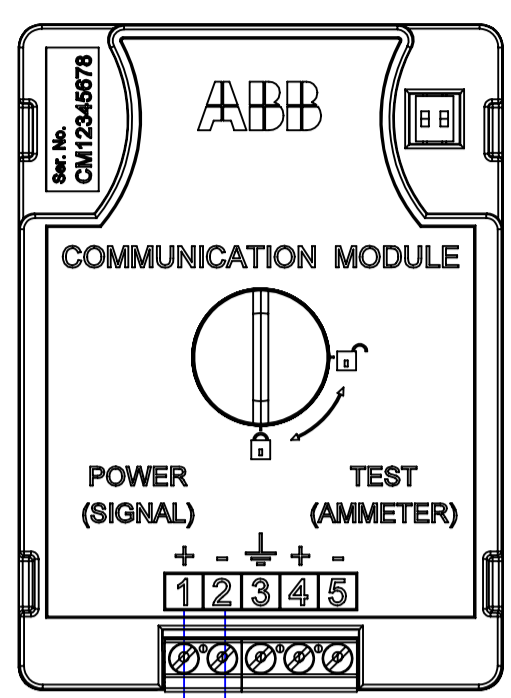
Terminators  
 At each end of the trunk cable a line terminator with the following parameters is suitable:  
 $R = 90\Omega$  to  $102W$   
 $C = 0$  to  $2.2mF$

NON-HAZARDOUS AREA



THIRD ANGLE PROJECTION  
DO NOT SCALE THIS PRINT  
REMOVE ALL BURRS

COMMUNICATION MODULE :-  
Profibus: FISCO  
Fieldbus: FISCO



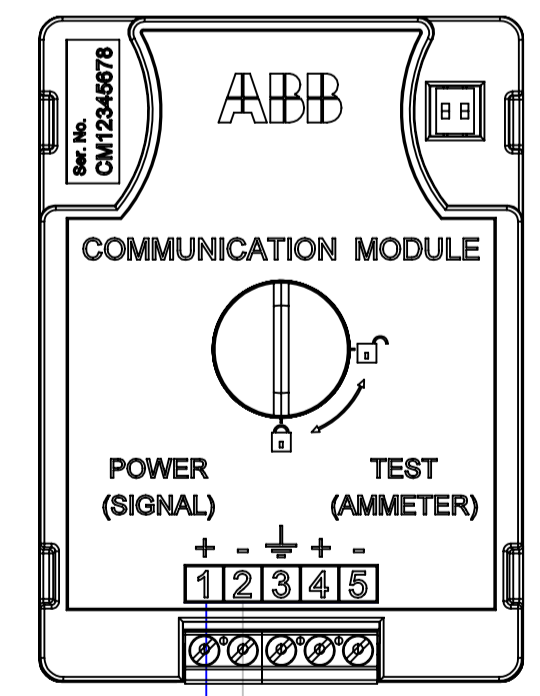
**Fieldbus FISCO Field Device**  
 INPUT PARAMETERS:  
 TERMINALS 1 & 2  
 $V_{max}(U_i) = 17.5V$   
 $I_{max}(I_i) = 380mA$   
 $P_i = 5.32W$   
 $C_i = 1.1nF$   
 $L_i = 0$

**Profibus FISCO Field Device**  
 INPUT PARAMETERS:  
 TERMINALS 1 & 2  
 $V_{max}(U_i) = 17.5V$   
 $I_{max}(I_i) = 360mA$   
 $P_i = 2.52W$   
 $C_i = 1.1nF$   
 $L_i = 0$

HAZARDOUS AREA  
INTRINSICALLY SAFE

CLASS I, DIV1 GROUPS A,B,C,D; T4  
 CLASS II DIV 1, GROUPS E,F,G; T4

COMMUNICATIONS MODULES  
HART  
Fieldbus (Linear)  
Profibus (Linear)



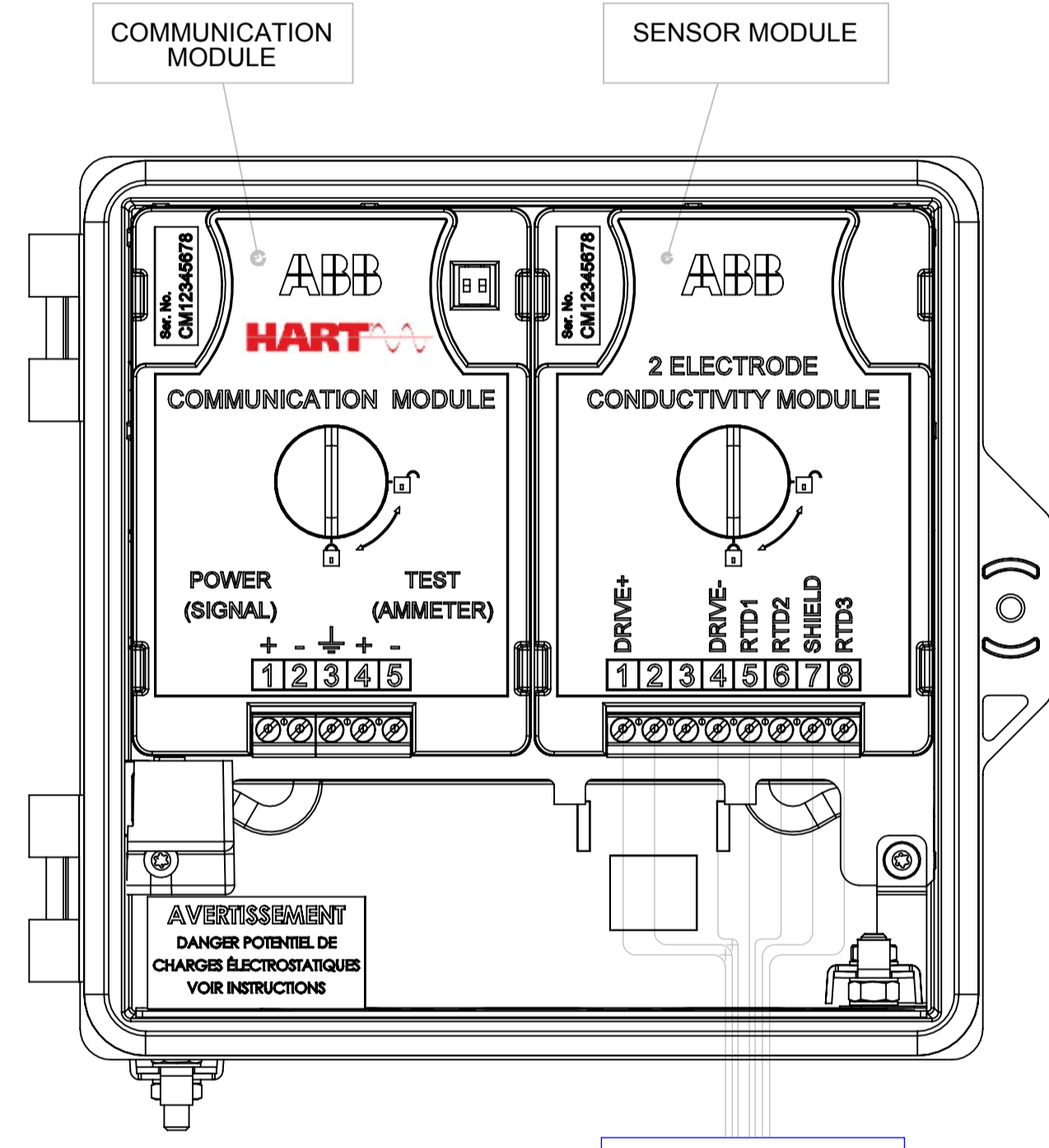
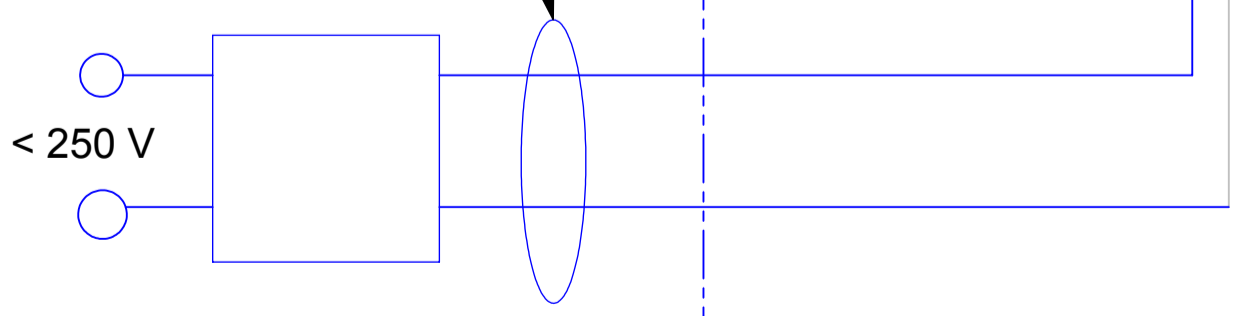
**HART**  
 INPUT PARAMETERS:  
 TERMINALS 1 & 2  
 $V_{max}(U_i) = 30V$   
 $I_{max}(I_i) = 100mA$   
 $P_i = 0.8W$   
 $C_i = 0.56nF$   
 $L_i = 3.3mH$

**Fieldbus**  
 INPUT PARAMETERS:  
 TERMINALS 1 & 2  
 $V_{max}(U_i) = 24V$   
 $I_{max}(I_i) = 250mA$   
 $P_i = 1.2W$   
 $C_i = 1.1nF$   
 $L_i = 0mH$

**Profibus**  
 INPUT PARAMETERS:  
 TERMINALS 1 & 2  
 $V_{max}(U_i) = 24V$   
 $I_{max}(I_i) = 250mA$   
 $P_i = 1.2W$   
 $C_i = 1.1nF$   
 $L_i = 0mH$

" 2 WIRE HOOKUP"

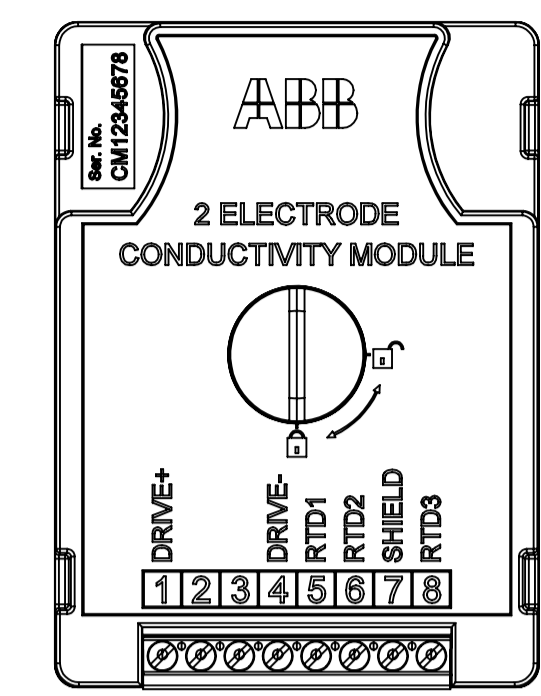
ASSOCIATED APPARATUS



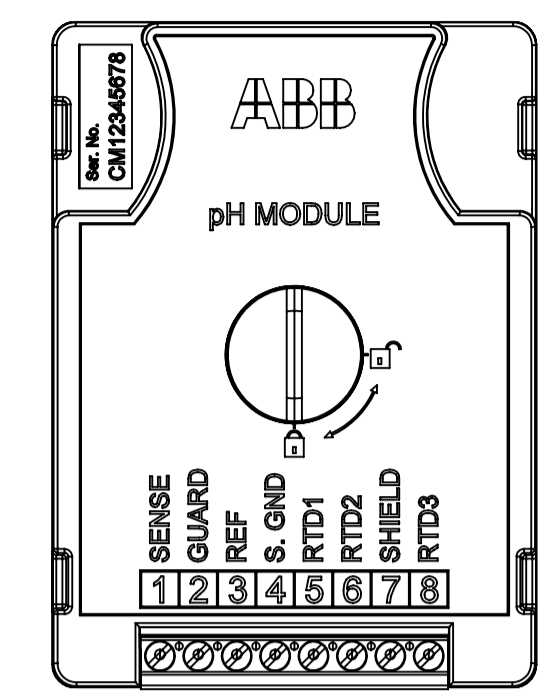
AWT210 FOR CONNECTION TO:

- OTHER SENSORS CERTIFIED FOR USE IN CANADA SUITABLE FOR THE HAZARDOUS LOCATION WITH ENTITY PARAMETERS  $V_{max}/U_i \geq V_{oc}/U_o$ ;  $I_{max}/I_i \geq I_{sc}/I_o$ ;  $P_i \geq P_o$ ;  $C_o \geq C_i + C_{cable}$ ;  $L_o \geq L_i + L_{cable}$
- SIMPLE APPARATUS; PASSIVE DEVICE THAT DOES NOT CONTAIN ENERGY STORING COMPONENTS AND DOES NOT GENERATE MORE THAN 1.5V, 100mA, OR 25mW

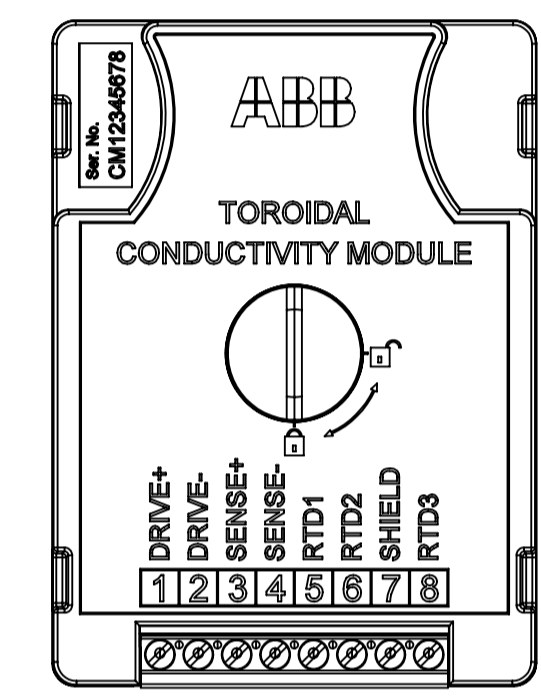
SENSOR MODULES



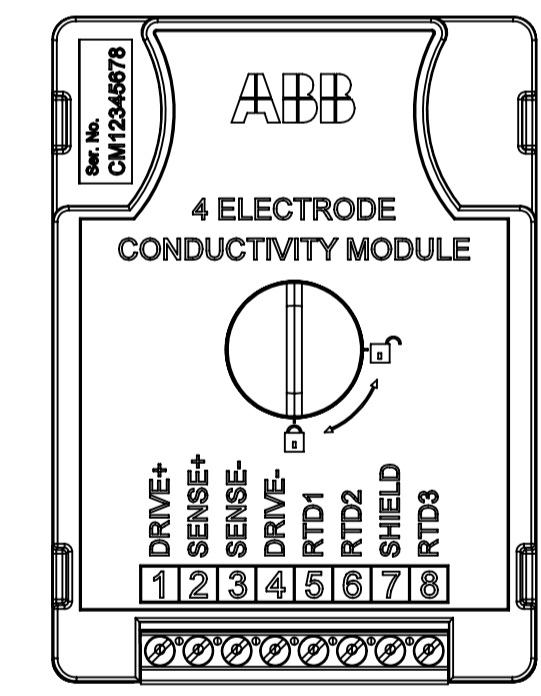
OUTPUT PARAMETERS - 2 ELECTRODE  
 $V_{oc}(U_o) = 11.8V$   
 $I_{sc}(I_o) = 11.8mA$   
 $P_o = 36mW$   
 $Ca(Co) = 1.5uF$   
 $La = 1H$



OUTPUT PARAMETERS - pH  
 $V_{oc}(U_o) = 11.8V$   
 $I_{sc}(I_o) = 11.8mA$   
 $P_o = 36mW$   
 $Ca(Co) = 1.5uF$   
 $La = 1H$



OUTPUT PARAMETERS - TOROIDAL  
 $V_{oc}(U_o) = 11.8V$   
 $I_{sc}(I_o) = 11.8mA$   
 $P_o = 36mW$   
 $Ca(Co) = 1.5uF$   
 $La = 1H$



OUTPUT PARAMETERS - 4 ELECTRODE  
 $V_{oc}(U_o) = 11.8V$   
 $I_{sc}(I_o) = 11.8mA$   
 $P_o = 36mW$   
 $Ca(Co) = 1.5uF$   
 $La = 1H$

CERTIFIED PRODUCT  
 NO MODIFICATION IS PERMITTED WITHOUT REFERENCE TO THE APPROVAL AUTHORITY

THIS DRAWING WAS CREATED ON A COMPUTER AIDED DESIGN (CAD) SYSTEM TO ENSURE THE INTEGRITY OF THE DATA BASE ALL CHANGES/REVISIONS MUST BE MADE ON THE CAD SYSTEM.

MATERIAL FINISH	SCALE DIMS. IN mm	J 500 PRO & 500 PRO HT added	CEH	08/02/19	F	SENSOR MODULE OPTIONS ADDED	CEH	30-05-18
CONFIDENTIAL	TOLERANCES LINEAR DIMS X = ± 0.5 X.X = ± 0.1 ANGULAR DIMS ± 0.5° UNLESS OTHERWISE STATED	H Connection notes changed to include sensor types	CEH	21/01/19	L	Notes corrected	CEH	13-06-19
ABB Ltd 2018		G Output parameters added for each sensor module	CEH	12/11/18	K	FF & PA Module options added with FISCO parameters	CEH	11/06/19
ABB Ltd St Neots, Cambs, PE19 8EU, UK		TITLE AWT210 CSA INTRINSIC SAFETY CONTROL DRAWING		AMENDMENTS MOD No DRAWN CHYKD D & D M.E.D. DATE		AMENDMENTS MOD No DRAWN CHYKD D & D M.E.D. DATE		
						DRAWING No. AWT200032		