

Engineering Note: EN0060 Sensor Cable Wiring Information (Hydronix Part no. 0975A and 0975AT)

Summary: Connection information for wiring Hydronix probes and sensors

Products affected: HM07, HM08, HMXT01, HMHT01, ORB2, ORB3, HP02, HP04, HPXT, HPXT02, HPSE (Post 2013), SE02, SE03, HPBX, CA0022 models only

Revision Date: June 2024

1 Summary

Note: This engineering note refers only to the models specified above. Connection information for all other models can be found on Engineering Note EN0035.

The 0975A and 0975AT Sensor Cable has been designed to replace the 0090A cable and is suitable for all current Hydronix sensors. 0975AT cables are suitable for the last (or if only 1) node as it contains an RS485 terminating resistor. 0975A cables should be used for all other nodes.

It consists of a Female MIL-C-26482 to flying lead for simple connection to terminal blocks.

2 Safe handling

The 0975A and 0975AT Sensor Cable contains quantities of REACH SVHCs in some of the components. Locations and safe usage instructions are listed below

Location of SVHC	SVHC name	CAS	Article Manufacturers Safe Usage Advice
Leaded copper alloy contacts in connector	Lead UK RoHS Exemption 18 EU RoHS Exemption 6c	7439-92-1	Lead (Pb) is not readily skin absorbable (source: INRS – National Institute of Research and Security). The main route of entry into the body is via inhalation of dust or vapour, followed by ingestion. Inhalation or ingestion exposure is unlikely for “as delivered” products. Item disposal to be handled as WEEE.
Heat Shrink on connector	DBMC (1.42% in component part) (EU List only)	119-47-1	Wash hands thoroughly after handling. Item disposal to be handled as WEEE.

3 Connection information

In order to convert the 0 – 20mA output to linear 0 – 10V (with the sensor set to 0 – 10V output type using Hydro-Com software) connect a 500Ω resistor between the analogue positive and return. This should be connected as close to the analogue input card of the control system as possible.

Twisted Pair Number	MIL spec pins	Sensor & Probe connections	Cable colour
1	A	+15-30V DC	Red
1	B	0V	Black
2	C	1st Digital input	Yellow
2	--	-	Black (Cut back)
3	D	1st Analogue Positive (+)	Blue
3	E	1st Analogue Return (-)	Black
4	F	RS485 A	White
4	G	RS485 B	Black
5	J	2nd Digital input	Green
5	--	-	Black (Cut back)
6	K	2nd Analogue Positive (+)	Brown
6	E	2nd Analogue Return (-)	Black
	H	Screen	Screen

It is recommended that the cable is connected, using a sealed junction box with secure protected connections, to a cable of similar type (see Cable Specifications). The junction box should be of a metal construction and bolted to a metal framework. If it is not possible to secure the box to framework, then the box must be earthed.

Cables should be placed in separate cable trays to cables carrying AC (mains and 3 phase in particular)

The two analogue outputs are current sources and use a common negative.

4 Cable Specification

Six twisted pairs: (12 cores total) screened (shielded) cable with 22 AWG, 0.35mm² conductors.

Screen (shield): Braid with 65% minimum coverage plus aluminium/polyester foil

Maximum cable run: 100m, separate to any heavy equipment power cables.

Cable Type	Manufacturer	Manufacturer Part Number
6 twisted pair PVC insulated cable	Belden	8306
6 twisted pair PVC insulated cable	Alpha	6377
6 twisted pair PVC insulated cable	General Cable	CO654
6 twisted pair PVC insulated cable	Electrocables	538225685TFT4

5 Wiring Diagram

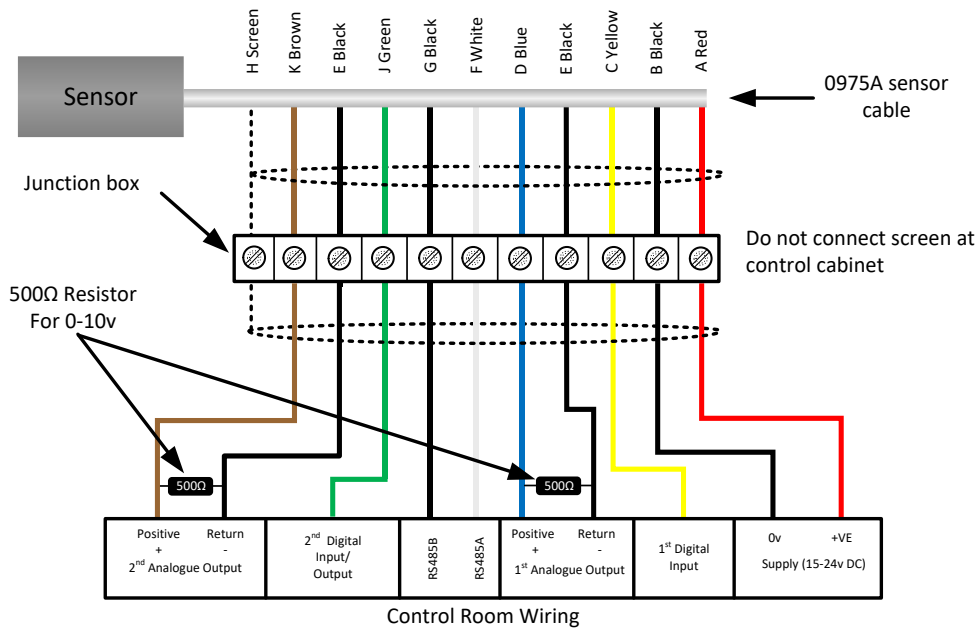


Figure 1 – 0975A Sensor cable connections

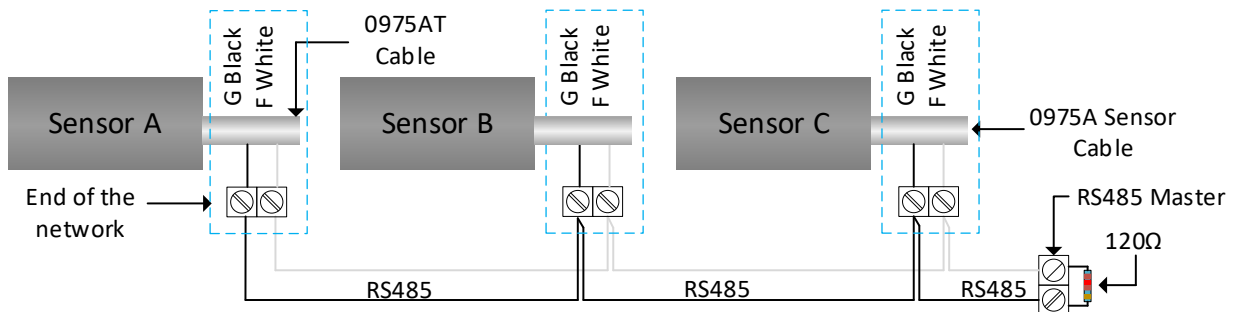


Figure 2 - RS485 Network wiring

Note: The Sensor Interface Module (Models SIM01 and SIM02) would be considered the RS485 Master