

EST110 One Wire Grain Temperature Sensor

PRINCIPLE

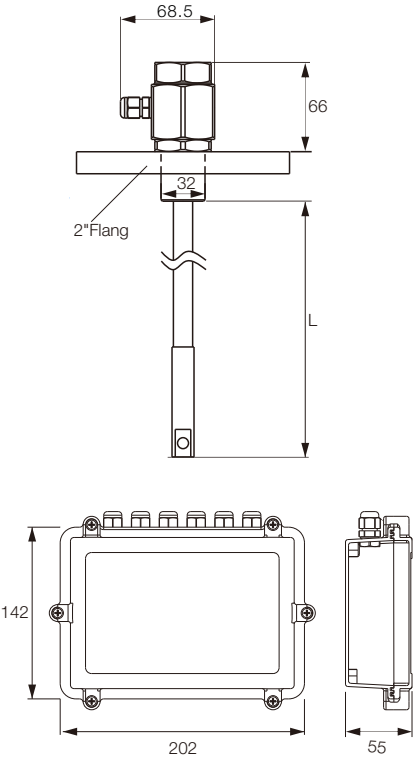
EST110 One wire grain temperature sensor is accomplished by embedded one or more digital temperature sensors into a hollow steel rope. By implementing 1-wire communication protocol, it achieves multi-points monitoring. Furthermore, connecting with FineTek FineLink, temperature information of silo can be translated and transmitted to PC or HMI. Therefore, user can prevent crops from pest and (mold)? by monitoring real-time temperature information in the silo and granary. *(Please refer the item seventh of caution on next page before installation.)*

FEATURE

- Prevent infestation of pest in the storage
- The steel rope increase the capability of impact resisten and extend sensor's life time
- Wide application condition (grain, corn, wheat, flour, cement and coal)
- Customizable span of temperature sensor

SPECIFICATION

(unit:mm)



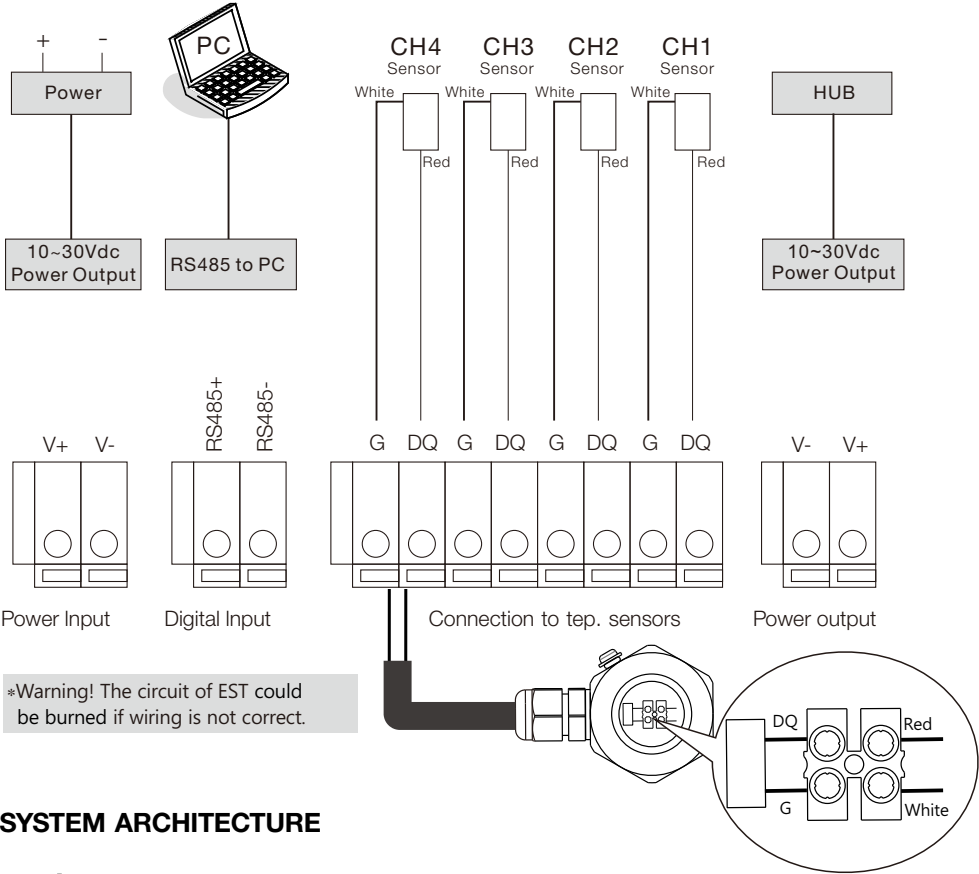
SPECIFICATION

| EST110 1-Wire grain temperature sensor | |
|--|--|
| Measuring range | -10~85°C |
| Resolution | 0.1°C |
| Accuracy | ±0.5°C |
| Length | Max. 30 m |
| Sensor amount | Max. 30 pcs |
| Sensor interval | Every 1 m |
| Cable material | XLPE coating |
| Tensile strength | 4000 kgf |
| IP rating | IP67 |
| Ambient temp. (Ta) | T80°C: -40≤ Ta ≤70°C T95°C: -40≤ Ta ≤80°C |

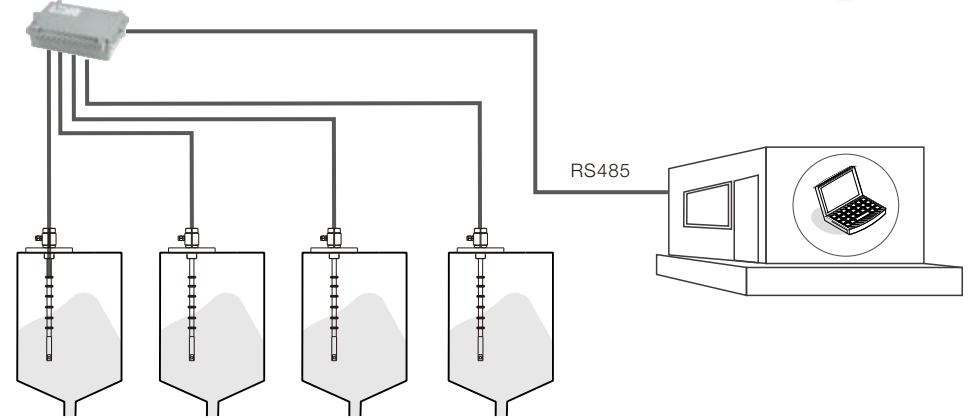
FineLink (1-Wire)

| | |
|-------------------------|-------------------------|
| Supply voltage | 10~30 Vdc |
| Ambient temp. | 40~80°C |
| Connection port | Max. 4 |
| Housing | Aluminum alloy (ADC-12) |
| Communication interface | RS-485 |
| RS-485 baud rate | XLPE coating |
| IP rating | IP67 |

WIRING

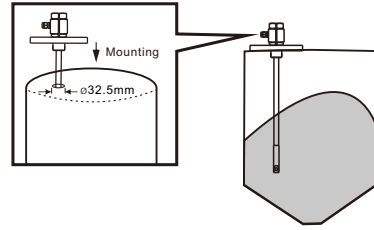


SYSTEM ARCHITECTURE



INSTALLATION

Drill a $\phi 32.5$ mm hole (extending neck or flange), and then mount the device with the flange. Please ensure the O-Ring is water proof when the device is installed out-door.



CAUTION

- (1) EST110 measures temperature of material. Sensor can be mounted directly on the top of the silo by thread connection.
- (2) To avoid the cable damage, please fix the cable to the bottom of tank. The tensile force does not exceed 30 kgf.
- (3) EST110 temperature sensor can't work alone, must use it with one-wire FineLink together.
- (4) For signal stable, FineTek recommend customer use CAT5E or CAT6 UTP cable and connect with insulated ICD connector.
- (5) In order not to damage the temperature sensor, please don't use multi-meter's omic mode nor any mode which provide voltage source to test 1-Wire Grain Temperature Sensor.
- (6) The total length of sensor cable and wiring cable is not longer than 100 meters.
- (7) Please reset/reconnect the system & sensor after first installation or hardware changing.

Instructions are as following.

a. Connected with MMS System: Please press "RESCAN" button after installation or hardware changing.

b. Not Connected with MMS System: Please refer to the table below to reset/reconnect.

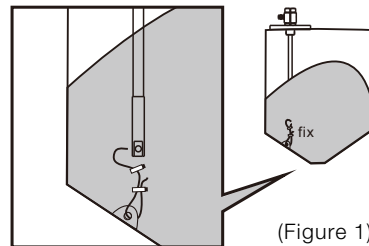
| Addr(Hex) | Addr(Dec) | NAME | Fomat |
|-----------|-----------|----------------------|--------|
| 1110 | 4368 | MODBUS BAUDRATE(*1) | Long |
| 1117 | 4375 | TEMPERATURE SCAN(*2) | Sigend |
| 111B | 4379 | SAVE SYSTEM DATA(*3) | Sigend |

*1:9600,19200,34800,57600,115200 value only.

*2:Set value "1" to start scan.

*3:Set value "1" to save data. after temperature scan.

- (8) For the best and stable performance on signal connection, strongly recommend EST temperature cable "must" be equipped with IPC (Industrial computer) which has MMS software installed already. It will generate cost and charge to the customers who WITHOUT FineTek's IPC, but requesting after service for commissioning and troubleshooting for signal connection.



(Figure 1)

- 9) It will take 15 seconds to warm up for each time the power turned off. Please refer to the seventh point of "CAUTION", also need to rescan and save the data.

MODBUS ADDRESS TABLE

| PARAMETER | ADDRESS | | TYPE | UNITS | PROPERTY |
|---------------------------------|---------|------|---------|-------|----------|
| | HEX | DEC | | | |
| CH 1 - 1st point's temperature | 0x1020 | 4128 | FLOAT32 | °C | R |
| CH 1 - 2nd point's temperature | 0x1022 | 4130 | FLOAT32 | °C | R |
| CH 1 - 3rd point's temperature | 0x1024 | 4132 | FLOAT32 | °C | R |
| CH 1 - 4th point's temperature | 0x1026 | 4134 | FLOAT32 | °C | R |
| CH 1 - 5th point's temperature | 0x1028 | 4136 | FLOAT32 | °C | R |
| CH 1 - 6th point's temperature | 0x102A | 4138 | FLOAT32 | °C | R |
| CH 1 - 7th point's temperature | 0x102C | 4140 | FLOAT32 | °C | R |
| CH 1 - 8th point's temperature | 0x102E | 4142 | FLOAT32 | °C | R |
| CH 1 - 9th point's temperature | 0x1030 | 4144 | FLOAT32 | °C | R |
| CH 1 - 10th point's temperature | 0x1032 | 4146 | FLOAT32 | °C | R |
| CH 1 - 11th point's temperature | 0x1034 | 4148 | FLOAT32 | °C | R |
| CH 1 - 12th point's temperature | 0x1036 | 4150 | FLOAT32 | °C | R |
| CH 1 - 13th point's temperature | 0x1038 | 4152 | FLOAT32 | °C | R |
| CH 1 - 14th point's temperature | 0x103A | 4154 | FLOAT32 | °C | R |
| CH 1 - 15th point's temperature | 0x103C | 4156 | FLOAT32 | °C | R |
| CH 1 - 16th point's temperature | 0x103E | 4158 | FLOAT32 | °C | R |
| CH 1 - 17th point's temperature | 0x1040 | 4160 | FLOAT32 | °C | R |
| CH 1 - 18th point's temperature | 0x1042 | 4162 | FLOAT32 | °C | R |
| CH 1 - 19th point's temperature | 0x1044 | 4164 | FLOAT32 | °C | R |
| CH 1 - 20th point's temperature | 0x1046 | 4166 | FLOAT32 | °C | R |
| CH 1 - 21th point's temperature | 0x1048 | 4168 | FLOAT32 | °C | R |
| CH 1 - 22th point's temperature | 0x104A | 4170 | FLOAT32 | °C | R |
| CH 1 - 23th point's temperature | 0x104C | 4172 | FLOAT32 | °C | R |
| CH 1 - 24th point's temperature | 0x104E | 4174 | FLOAT32 | °C | R |
| CH 1 - 25th point's temperature | 0x1050 | 4176 | FLOAT32 | °C | R |
| CH 1 - 26th point's temperature | 0x1052 | 4178 | FLOAT32 | °C | R |
| CH 1 - 27th point's temperature | 0x1054 | 4180 | FLOAT32 | °C | R |
| CH 1 - 28th point's temperature | 0x1056 | 4182 | FLOAT32 | °C | R |
| CH 1 - 29th point's temperature | 0x1058 | 4184 | FLOAT32 | °C | R |
| CH 1 - 30th point's temperature | 0x105A | 4186 | FLOAT32 | °C | R |
| CH 2 - 1st point's temperature | 0x105C | 4188 | FLOAT32 | °C | R |
| CH 2 - 2nd point's temperature | 0x105E | 4190 | FLOAT32 | °C | R |
| CH 2 - 3rd point's temperature | 0x1060 | 4192 | FLOAT32 | °C | R |
| CH 2 - 4th point's temperature | 0x1062 | 4194 | FLOAT32 | °C | R |
| CH 2 - 5th point's temperature | 0x1064 | 4196 | FLOAT32 | °C | R |
| CH 2 - 6th point's temperature | 0x1066 | 4198 | FLOAT32 | °C | R |
| CH 2 - 7th point's temperature | 0x1068 | 4200 | FLOAT32 | °C | R |
| CH 2 - 8th point's temperature | 0x106A | 4202 | FLOAT32 | °C | R |
| CH 2 - 9th point's temperature | 0x106C | 4204 | FLOAT32 | °C | R |
| CH 2 - 10th point's temperature | 0x106E | 4206 | FLOAT32 | °C | R |
| CH 2 - 11th point's temperature | 0x1070 | 4208 | FLOAT32 | °C | R |
| CH 2 - 12th point's temperature | 0x1072 | 4210 | FLOAT32 | °C | R |
| CH 2 - 13th point's temperature | 0x1074 | 4212 | FLOAT32 | °C | R |
| CH 2 - 14th point's temperature | 0x1076 | 4214 | FLOAT32 | °C | R |
| CH 2 - 15th point's temperature | 0x1078 | 4216 | FLOAT32 | °C | R |
| CH 2 - 16th point's temperature | 0x107A | 4218 | FLOAT32 | °C | R |
| CH 2 - 17th point's temperature | 0x107C | 4220 | FLOAT32 | °C | R |
| CH 2 - 18th point's temperature | 0x107E | 4222 | FLOAT32 | °C | R |
| CH 2 - 19th point's temperature | 0x1080 | 4224 | FLOAT32 | °C | R |
| CH 2 - 20th point's temperature | 0x1082 | 4226 | FLOAT32 | °C | R |
| CH 2 - 21th point's temperature | 0x1084 | 4228 | FLOAT32 | °C | R |
| CH 2 - 22th point's temperature | 0x1086 | 4230 | FLOAT32 | °C | R |
| CH 2 - 23th point's temperature | 0x1088 | 4232 | FLOAT32 | °C | R |
| CH 2 - 24th point's temperature | 0x108A | 4234 | FLOAT32 | °C | R |
| CH 2 - 25th point's temperature | 0x108C | 4236 | FLOAT32 | °C | R |
| CH 2 - 26th point's temperature | 0x108E | 4238 | FLOAT32 | °C | R |
| CH 2 - 27th point's temperature | 0x1090 | 4240 | FLOAT32 | °C | R |
| CH 2 - 28th point's temperature | 0x1092 | 4242 | FLOAT32 | °C | R |
| CH 2 - 29th point's temperature | 0x1094 | 4244 | FLOAT32 | °C | R |
| CH 2 - 30th point's temperature | 0x1096 | 4246 | FLOAT32 | °C | R |

| PARAMETER | ADDRESS | | TYPE | UNITS | PROPERTY |
|---------------------------------|---------|------|---------|-------|----------|
| | HEX | DEC | | | |
| CH 3 - 1st point's temperature | 0x1098 | 4248 | FLOAT32 | °C | R |
| CH 3 - 2nd point's temperature | 0x109A | 4250 | FLOAT32 | °C | R |
| CH 3 - 3rd point's temperature | 0x109C | 4252 | FLOAT32 | °C | R |
| CH 3 - 4th point's temperature | 0x109E | 4254 | FLOAT32 | °C | R |
| CH 3 - 5th point's temperature | 0x10A0 | 4256 | FLOAT32 | °C | R |
| CH 3 - 6th point's temperature | 0x10A2 | 4258 | FLOAT32 | °C | R |
| CH 3 - 7th point's temperature | 0x10A4 | 4260 | FLOAT32 | °C | R |
| CH 3 - 8th point's temperature | 0x10A6 | 4262 | FLOAT32 | °C | R |
| CH 3 - 9th point's temperature | 0x10A8 | 4264 | FLOAT32 | °C | R |
| CH 3 - 10th point's temperature | 0x10AA | 4266 | FLOAT32 | °C | R |
| CH 3 - 11th point's temperature | 0x10AC | 4268 | FLOAT32 | °C | R |
| CH 3 - 12th point's temperature | 0x10AE | 4270 | FLOAT32 | °C | R |
| CH 3 - 13th point's temperature | 0x10B0 | 4272 | FLOAT32 | °C | R |
| CH 3 - 14th point's temperature | 0x10B2 | 4274 | FLOAT32 | °C | R |
| CH 3 - 15th point's temperature | 0x10B4 | 4276 | FLOAT32 | °C | R |
| CH 3 - 16th point's temperature | 0x10B6 | 4278 | FLOAT32 | °C | R |
| CH 3 - 17th point's temperature | 0x10B8 | 4280 | FLOAT32 | °C | R |
| CH 3 - 18th point's temperature | 0x10BA | 4282 | FLOAT32 | °C | R |
| CH 3 - 19th point's temperature | 0x10BC | 4284 | FLOAT32 | °C | R |
| CH 3 - 20th point's temperature | 0x10BE | 4286 | FLOAT32 | °C | R |
| CH 3 - 21th point's temperature | 0x10C0 | 4288 | FLOAT32 | °C | R |
| CH 3 - 22th point's temperature | 0x10C2 | 4290 | FLOAT32 | °C | R |
| CH 3 - 23th point's temperature | 0x10C4 | 4292 | FLOAT32 | °C | R |
| CH 3 - 24th point's temperature | 0x10C6 | 4294 | FLOAT32 | °C | R |
| CH 3 - 25th point's temperature | 0x10C8 | 4296 | FLOAT32 | °C | R |
| CH 3 - 26th point's temperature | 0x10CA | 4298 | FLOAT32 | °C | R |
| CH 3 - 27th point's temperature | 0x10CC | 4300 | FLOAT32 | °C | R |
| CH 3 - 28th point's temperature | 0x10CE | 4302 | FLOAT32 | °C | R |
| CH 3 - 29th point's temperature | 0x10D0 | 4304 | FLOAT32 | °C | R |
| CH 3 - 30th point's temperature | 0x10D2 | 4306 | FLOAT32 | °C | R |
| CH 4 - 1st point's temperature | 0x10D4 | 4308 | FLOAT32 | °C | R |
| CH 4 - 2nd point's temperature | 0x10D6 | 4310 | FLOAT32 | °C | R |
| CH 4 - 3rd point's temperature | 0x10D8 | 4312 | FLOAT32 | °C | R |
| CH 4 - 4th point's temperature | 0x10DA | 4314 | FLOAT32 | °C | R |
| CH 4 - 5th point's temperature | 0x10DC | 4316 | FLOAT32 | °C | R |
| CH 4 - 6th point's temperature | 0x10DE | 4318 | FLOAT32 | °C | R |
| CH 4 - 7th point's temperature | 0x10E0 | 4320 | FLOAT32 | °C | R |
| CH 4 - 8th point's temperature | 0x10E2 | 4322 | FLOAT32 | °C | R |
| CH 4 - 9th point's temperature | 0x10E4 | 4324 | FLOAT32 | °C | R |
| CH 4 - 10th point's temperature | 0x10E6 | 4326 | FLOAT32 | °C | R |
| CH 4 - 11th point's temperature | 0x10E8 | 4328 | FLOAT32 | °C | R |
| CH 4 - 12th point's temperature | 0x10EA | 4330 | FLOAT32 | °C | R |
| CH 4 - 13th point's temperature | 0x10EC | 4332 | FLOAT32 | °C | R |
| CH 4 - 14th point's temperature | 0x10EE | 4334 | FLOAT32 | °C | R |
| CH 4 - 15th point's temperature | 0x10F0 | 4336 | FLOAT32 | °C | R |
| CH 4 - 16th point's temperature | 0x10F2 | 4338 | FLOAT32 | °C | R |
| CH 4 - 17th point's temperature | 0x10F4 | 4340 | FLOAT32 | °C | R |
| CH 4 - 18th point's temperature | 0x10F6 | 4342 | FLOAT32 | °C | R |
| CH 4 - 19th point's temperature | 0x10F8 | 4344 | FLOAT32 | °C | R |
| CH 4 - 20th point's temperature | 0x10FA | 4346 | FLOAT32 | °C | R |
| CH 4 - 21th point's temperature | 0x10FC | 4348 | FLOAT32 | °C | R |
| CH 4 - 22th point's temperature | 0x10FE | 4350 | FLOAT32 | °C | R |
| CH 4 - 23th point's temperature | 0x1100 | 4352 | FLOAT32 | °C | R |
| CH 4 - 24th point's temperature | 0x1102 | 4354 | FLOAT32 | °C | R |
| CH 4 - 25th point's temperature | 0x1104 | 4356 | FLOAT32 | °C | R |
| CH 4 - 26th point's temperature | 0x1106 | 4358 | FLOAT32 | °C | R |
| CH 4 - 27th point's temperature | 0x1108 | 4360 | FLOAT32 | °C | R |
| CH 4 - 28th point's temperature | 0x110A | 4362 | FLOAT32 | °C | R |
| CH 4 - 29th point's temperature | 0x110C | 4364 | FLOAT32 | °C | R |
| CH 4 - 30th point's temperature | 0x110E | 4366 | FLOAT32 | °C | R |



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