# PR-Serie

**Paperless Recorder**

**Modbus Protocoll**

**Thecnical Manual**

**Cod. PR-Serie_Modbus**

**English**

Product Rev & Manual Rev: V10_04

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# 1. Input Register Parameter Table for Modbus RTU Slave / TCP Server

### 1.1 AI / DI / DO / AO Area (Integer Type)

| Modbus Address | Notation | Register Name | Access |
|---|---|---|---|
| 1 | Reserve | Reserve | R |
| 2 | AI1 | AI 1 process value | R |
| 3 | AI2 | AI 2 process value | R |
| 4 | AI3 | AI 3 process value | R |
| 5 | AI4 | AI 4 process value | R |
| 6 | AI5 | AI 5 process value | R |
| 7 | AI6 | AI 6 process value | R |
| 8 | AI7 | AI 7 process value | R |
| 9 | AI8 | AI 8 process value | R |
| 10 | AI9 | AI 9 process value | R |
| 11 | AI10 | AI 10 process value | R |
| 12 | AI11 | AI 11 process value | R |
| 13 | AI12 | AI 12 process value | R |
| 14 | AI13 | AI 13 process value | R |
| 15 | AI14 | AI 14 process value | R |
| 16 | AI15 | AI 15 process value | R |
| 17 | AI16 | AI 16 process value | R |
| 18 | AI17 | AI 17 process value | R |
| 19 | AI18 | AI 18 process value | R |
| 20 | AI19 | AI 19 process value | R |
| 21 | AI20 | AI 20 process value | R |
| 22 | AI21 | AI 21 process value | R |
| 23 | AI22 | AI 22 process value | R |
| 24 | AI23 | AI 23 process value | R |
| 25 | AI24 | AI 24 process value | R |
| 26 | AI25 | AI 25 process value | R |
| 27 | AI26 | AI 26 process value | R |
| 28 | AI27 | AI 27 process value | R |
| 29 | AI28 | AI 28 process value | R |
| 30 | AI29 | AI 29 process value | R |
| 31 | AI30 | AI 30 process value | R |
| 32 | AI31 | AI 31 process value | R |
| 33 | AI32 | AI 32 process value | R |
| 34 | AI33 | AI 33 process value | R |
| 35 | AI34 | AI 34 process value | R |
| 36 | AI35 | AI 35 process value | R |
| 37 | AI36 | AI 36 process value | R |
| 38 | AI37 | AI 37 process value | R |
| 39 | AI38 | AI 38 process value | R |
| 40 | AI39 | AI 39 process value | R |
| 41 | AI40 | AI 40 process value | R |
| 42 | AI41 | AI 41 process value | R |
| 43 | AI42 | AI 42 process value | R |
| 44 | AI43 | AI 43 process value | R |
| 45 | AI44 | AI 44 process value | R |
| 46 | AI45 | AI 45 process value | R |
| 47 | AI46 | AI 46 process value | R |
| 48 | AI47 | AI 47 process value | R |

| 49 | AI48 | AI 48 process value | R |
|---|---|---|---|
| 50 | DI1 | DI 1 process value | R |
| 51 | DI2 | DI 2 process value | R |
| 52 | DI3 | DI 3 process value | R |
| 53 | DI4 | DI 4 process value | R |
| 54 | DI5 | DI 5 process value | R |
| 55 | DI6 | DI 6 process value | R |
| 56 | DI7 | DI 7 process value | R |
| 57 | DI8 | DI 8 process value | R |
| 58 | DI9 | DI 9 process value | R |
| 59 | DI10 | DI 10 process value | R |
| 60 | DI11 | DI 11 process value | R |
| 61 | DI12 | DI 12 process value | R |
| 62 | DI13 | DI 13 process value | R |
| 63 | DI14 | DI 14 process value | R |
| 64 | DI15 | DI 15 process value | R |
| 65 | DI16 | DI 16 process value | R |
| 66 | DI17 | DI 17 process value | R |
| 67 | DI18 | DI 18 process value | R |
| 68 | DI19 | DI 19 process value | R |
| 69 | DI20 | DI 20 process value | R |
| 70 | DI21 | DI 21 process value | R |
| 71 | DI22 | DI 22 process value | R |
| 72 | DI23 | DI 23 process value | R |
| 73 | DI24 | DI 24 process value | R |
| 74 | DO1 | DO 1 process value | R |
| 75 | DO2 | DO 2 process value | R |
| 76 | DO3 | DO 3 process value | R |
| 77 | DO4 | DO 4 process value | R |
| 78 | DO5 | DO 5 process value | R |
| 79 | DO6 | DO 6 process value | R |
| 80 | DO7 | DO 7 process value | R |
| 81 | DO8 | DO 8 process value | R |
| 82 | DO9 | DO 9 process value | R |
| 83 | DO10 | DO 10 process value | R |
| 84 | DO11 | DO 11 process value | R |
| 85 | DO12 | DO 12 process value | R |
| 86 | DO13 | DO 13 process value | R |
| 87 | DO14 | DO 14 process value | R |
| 88 | DO15 | DO 15 process value | R |
| 89 | DO16 | DO 16 process value | R |
| 90 | DO17 | DO 17 process value | R |
| 91 | DO18 | DO 18 process value | R |
| 92 | DO19 | DO 19 process value | R |
| 93 | DO20 | DO 20 process value | R |
| 94 | DO21 | DO 21 process value | R |
| 95 | DO22 | DO 22 process value | R |
| 96 | DO23 | DO 23 process value | R |
| 97 | DO24 | DO 24 process value | R |
| 98 | AO1 | AO 1 process value | R |
| 99 | AO2 | AO 2 process value | R |
| 100 | AO3 | AO 3 process value | R |
| 101 | AO4 | AO 4 process value | R |
| 102 | AO5 | AO 5 process value | R |
| 103 | AO6 | AO 6 process value | R |
| 104 | AO7 | AO 7 process value | R |

| 105 | AO8 | AO 8 process value | R |
| 106 | AO9 | AO 9 process value | R |
| 107 | AO10 | AO 10 process value | R |
| 108 | AO11 | AO 11 process value | R |
| 109 | AO12 | AO 12 process value | R |

✳ *Note: If the register value is 65534, which value represents communication error.*

### 1.2 AI / DI / DO / AO Area (Float Type)

| Modbus Address | Notation | Register Name | Access |
| --- | --- | --- | --- |
| 1001 | Reserve | Reserve | R |
| 1003 | AI1 | AI 1 process value | R |
| 1005 | AI2 | AI 2 process value | R |
| 1007 | AI3 | AI 3 process value | R |
| 1009 | AI4 | AI 4 process value | R |
| 1011 | AI5 | AI 5 process value | R |
| 1013 | AI6 | AI 6 process value | R |
| 1015 | AI7 | AI 7 process value | R |
| 1017 | AI8 | AI 8 process value | R |
| 1019 | AI9 | AI 9 process value | R |
| 1021 | AI10 | AI 10 process value | R |
| 1023 | AI11 | AI 11 process value | R |
| 1025 | AI12 | AI 12 process value | R |
| 1027 | AI13 | AI 13 process value | R |
| 1029 | AI14 | AI 14 process value | R |
| 1031 | AI15 | AI 15 process value | R |
| 1033 | AI16 | AI 16 process value | R |
| 1035 | AI17 | AI 17 process value | R |
| 1037 | AI18 | AI 18 process value | R |
| 1039 | AI19 | AI 19 process value | R |
| 1041 | AI20 | AI 20 process value | R |
| 1043 | AI21 | AI 21 process value | R |
| 1045 | AI22 | AI 22 process value | R |
| 1047 | AI23 | AI 23 process value | R |
| 1049 | AI24 | AI 24 process value | R |
| 1051 | AI25 | AI 25 process value | R |
| 1053 | AI26 | AI 26 process value | R |
| 1055 | AI27 | AI 27 process value | R |
| 1057 | AI28 | AI 28 process value | R |
| 1059 | AI29 | AI 29 process value | R |
| 1061 | AI30 | AI 30 process value | R |
| 1063 | AI31 | AI 31 process value | R |
| 1065 | AI32 | AI 32 process value | R |
| 1067 | AI33 | AI 33 process value | R |
| 1069 | AI34 | AI 34 process value | R |
| 1071 | AI35 | AI 35 process value | R |
| 1073 | AI36 | AI 36 process value | R |
| 1075 | AI37 | AI 37 process value | R |
| 1077 | AI38 | AI 38 process value | R |
| 1079 | AI39 | AI 39 process value | R |
| 1081 | AI40 | AI 40 process value | R |
| 1083 | AI41 | AI 41 process value | R |
| 1085 | AI42 | AI 42 process value | R |
| 1087 | AI43 | AI 43 process value | R |
| 1089 | AI44 | AI 44 process value | R |

| 1091 | AI45 | AI 45 process value | R |
|---|---|---|---|
| 1093 | AI46 | AI 46 process value | R |
| 1095 | AI47 | AI 47 process value | R |
| 1097 | AI48 | AI 48 process value | R |
| 1099 | DI1 | DI 1 process value | R |
| 1101 | DI2 | DI 2 process value | R |
| 1103 | DI3 | DI 3 process value | R |
| 1105 | DI4 | DI 4 process value | R |
| 1107 | DI5 | DI 5 process value | R |
| 1109 | DI6 | DI 6 process value | R |
| 1111 | DI7 | DI 7 process value | R |
| 1113 | DI8 | DI 8 process value | R |
| 1115 | DI9 | DI 9 process value | R |
| 1117 | DI10 | DI 10 process value | R |
| 1119 | DI11 | DI 11 process value | R |
| 1121 | DI12 | DI 12 process value | R |
| 1123 | DI13 | DI 13 process value | R |
| 1125 | DI14 | DI 14 process value | R |
| 1127 | DI15 | DI 15 process value | R |
| 1129 | DI16 | DI 16 process value | R |
| 1131 | DI17 | DI 17 process value | R |
| 1133 | DI18 | DI 18 process value | R |
| 1135 | DI19 | DI 19 process value | R |
| 1137 | DI20 | DI 20 process value | R |
| 1139 | DI21 | DI 21 process value | R |
| 1141 | DI22 | DI 22 process value | R |
| 1143 | DI23 | DI 23 process value | R |
| 1145 | DI24 | DI 24 process value | R |
| 1147 | DO1 | DO 1 process value | R |
| 1149 | DO2 | DO 2 process value | R |
| 1151 | DO3 | DO 3 process value | R |
| 1153 | DO4 | DO 4 process value | R |
| 1155 | DO5 | DO 5 process value | R |
| 1157 | DO6 | DO 6 process value | R |
| 1159 | DO7 | DO 7 process value | R |
| 1161 | DO8 | DO 8 process value | R |
| 1163 | DO9 | DO 9 process value | R |
| 1165 | DO10 | DO 10 process value | R |
| 1167 | DO11 | DO 11 process value | R |
| 1169 | DO12 | DO 12 process value | R |
| 1171 | DO13 | DO 13 process value | R |
| 1173 | DO14 | DO 14 process value | R |
| 1175 | DO15 | DO 15 process value | R |
| 1177 | DO16 | DO 16 process value | R |
| 1179 | DO17 | DO 17 process value | R |
| 1181 | DO18 | DO 18 process value | R |
| 1183 | DO19 | DO 19 process value | R |
| 1185 | DO20 | DO 20 process value | R |
| 1187 | DO21 | DO 21 process value | R |
| 1189 | DO22 | DO 22 process value | R |
| 1191 | DO23 | DO 23 process value | R |
| 1193 | DO24 | DO 24 process value | R |
| 1195 | AO1 | AO 1 process value | R |
| 1197 | AO2 | AO 2 process value | R |
| 1199 | AO3 | AO 3 process value | R |
| 1201 | AO4 | AO 4 process value | R |

| | | | |
|---|---|---|---|
| **1203** | AO5 | AO 5 process value | R |
| **1205** | AO6 | AO 6 process value | R |
| **1207** | AO7 | AO 7 process value | R |
| **1209** | AO8 | AO 8 process value | R |
| **1211** | AO9 | AO 9 process value | R |
| **1213** | AO10 | AO 10 process value | R |
| **1215** | AO11 | AO 11 process value | R |
| **1217** | AO12 | AO 12 process value | R |

∗ _Note: If the register value is 3.0+E38, which value represents communication error._

### 1.3 Math Area (Integer Type)

| Modbus Address | Notation | Register Name | Access |
|---|---|---|---|
| **201** | Math1 | Math 1 process value high word | R |
| **202** | Math1 | Math 1 process value low word | R |
| **203** | Math2 | Math 2 process value high word | R |
| **204** | Math2 | Math 2 process value low word | R |
| **205** | Math3 | Math 3 process value high word | R |
| **206** | Math3 | Math 3 process value low word | R |
| **207** | Math4 | Math 4 process value high word | R |
| **208** | Math4 | Math 4 process value low word | R |
| **209** | Math5 | Math 5 process value high word | R |
| **210** | Math5 | Math 5 process value low word | R |
| **211** | Math6 | Math 6 process value high word | R |
| **212** | Math6 | Math 6 process value low word | R |
| **213** | Math7 | Math 7 process value high word | R |
| **214** | Math7 | Math 7 process value low word | R |
| **215** | Math8 | Math 8 process value high word | R |
| **216** | Math8 | Math 8 process value low word | R |
| **217** | Math9 | Math 9 process value high word | R |
| **218** | Math9 | Math 9 process value low word | R |
| **219** | Math10 | Math 10 process value high word | R |
| **220** | Math10 | Math 10 process value low word | R |
| **221** | Math11 | Math 11 process value high word | R |
| **222** | Math11 | Math 11 process value low word | R |
| **223** | Math12 | Math 12 process value high word | R |
| **224** | Math12 | Math 12 process value low word | R |
| **225** | Math13 | Math 13 process value high word | R |
| **226** | Math13 | Math 13 process value low word | R |
| **227** | Math14 | Math 14 process value high word | R |
| **228** | Math14 | Math 14 process value low word | R |
| **229** | Math15 | Math 15 process value high word | R |
| **230** | Math15 | Math 15 process value low word | R |
| **231** | Math16 | Math 16 process value high word | R |
| **232** | Math16 | Math 16 process value low word | R |
| **233** | Math17 | Math 17 process value high word | R |
| **234** | Math17 | Math 17 process value low word | R |
| **235** | Math18 | Math 18 process value high word | R |
| **236** | Math18 | Math 18 process value low word | R |
| **237** | Math19 | Math 19 process value high word | R |
| **238** | Math19 | Math 19 process value low word | R |
| **239** | Math20 | Math 20 process value high word | R |
| **240** | Math20 | Math 20 process value low word | R |
| **241** | Math21 | Math 21 process value high word | R |
| **242** | Math21 | Math 21 process value low word | R |

| 243 | Math22 | Math 22 process value high word | R |
|---|---|---|---|
| 244 | Math22 | Math 22 process value low word | R |
| 245 | Math23 | Math 23 process value high word | R |
| 246 | Math23 | Math 23 process value low word | R |
| 247 | Math24 | Math 24 process value high word | R |
| 248 | Math24 | Math 24 process value low word | R |
| 249 | Math25 | Math 25 process value high word | R |
| 250 | Math25 | Math 25 process value low word | R |
| 251 | Math26 | Math 26 process value high word | R |
| 252 | Math26 | Math 26 process value low word | R |
| 253 | Math27 | Math 27 process value high word | R |
| 254 | Math27 | Math 27 process value low word | R |
| 255 | Math28 | Math 28 process value high word | R |
| 256 | Math28 | Math 28 process value low word | R |
| 257 | Math29 | Math 29 process value high word | R |
| 258 | Math29 | Math 29 process value low word | R |
| 259 | Math30 | Math 30 process value high word | R |
| 260 | Math30 | Math 30 process value low word | R |
| 261 | Math31 | Math 31 process value high word | R |
| 262 | Math31 | Math 31 process value low word | R |
| 263 | Math32 | Math 32 process value high word | R |
| 264 | Math32 | Math 32 process value low word | R |
| 265 | Math33 | Math 33 process value high word | R |
| 266 | Math33 | Math 33 process value low word | R |
| 267 | Math34 | Math 34 process value high word | R |
| 268 | Math34 | Math 34 process value low word | R |
| 269 | Math35 | Math 35 process value high word | R |
| 270 | Math35 | Math 35 process value low word | R |
| 271 | Math36 | Math 36 process value high word | R |
| 272 | Math36 | Math 36 process value low word | R |
| 273 | Math37 | Math 37 process value high word | R |
| 274 | Math37 | Math 37 process value low word | R |
| 275 | Math38 | Math 38 process value high word | R |
| 276 | Math38 | Math 38 process value low word | R |
| 277 | Math39 | Math 39 process value high word | R |
| 278 | Math39 | Math 39 process value low word | R |
| 279 | Math40 | Math 40 process value high word | R |
| 280 | Math40 | Math 40 process value low word | R |
| 281 | Math41 | Math 41 process value high word | R |
| 282 | Math41 | Math 41 process value low word | R |
| 283 | Math42 | Math 42 process value high word | R |
| 284 | Math42 | Math 42 process value low word | R |
| 285 | Math43 | Math 43 process value high word | R |
| 286 | Math43 | Math 43 process value low word | R |
| 287 | Math44 | Math 44 process value high word | R |
| 288 | Math44 | Math 44 process value low word | R |
| 289 | Math45 | Math 45 process value high word | R |
| 290 | Math45 | Math 45 process value low word | R |
| 291 | Math46 | Math 46 process value high word | R |
| 292 | Math46 | Math 46 process value low word | R |
| 293 | Math47 | Math 47 process value high word | R |
| 294 | Math47 | Math 47 process value low word | R |
| 295 | Math48 | Math 48 process value high word | R |
| 296 | Math48 | Math 48 process value low word | R |
| 297 | Math49 | Math 49 process value high word | R |
| 298 | Math49 | Math 49 process value low word | R |

| | | | |
|---|---|---|---|
| **299** | Math50 | Math 50 process value high word | R |
| **300** | Math50 | Math 50 process value low word | R |
| **301** | Math51 | Math 51 process value high word | R |
| **302** | Math51 | Math 51 process value low word | R |
| **303** | Math52 | Math 52 process value high word | R |
| **304** | Math52 | Math 52 process value low word | R |
| **305** | Math53 | Math 53 process value high word | R |
| **306** | Math53 | Math 53 process value low word | R |
| **307** | Math54 | Math 54 process value high word | R |
| **308** | Math54 | Math 54 process value low word | R |
| **309** | Math55 | Math 55 process value high word | R |
| **310** | Math55 | Math 55 process value low word | R |
| **311** | Math56 | Math 56 process value high word | R |
| **312** | Math56 | Math 56 process value low word | R |
| **313** | Math57 | Math 57 process value high word | R |
| **314** | Math57 | Math 57 process value low word | R |
| **315** | Math58 | Math 58 process value high word | R |
| **316** | Math58 | Math 58 process value low word | R |
| **317** | Math59 | Math 59 process value high word | R |
| **318** | Math59 | Math 59 process value low word | R |
| **319** | Math60 | Math 60 process value high word | R |
| **320** | Math60 | Math 60 process value low word | R |

∗ _Note: If the register value is 4294967294, which value represents communication error._

### 1.4  Math Area (Float Type)

| Modbus Address | Notation | Register Name | Access |
|---|---|---|---|
| **1401** | Math1 | Math 1 process value | R |
| **1403** | Math2 | Math 2 process value | R |
| **1405** | Math3 | Math 3 process value | R |
| **1407** | Math4 | Math 4 process value | R |
| **1409** | Math5 | Math 5 process value | R |
| **1411** | Math6 | Math 6 process value | R |
| **1413** | Math7 | Math 7 process value | R |
| **1415** | Math8 | Math 8 process value | R |
| **1417** | Math9 | Math 9 process value | R |
| **1419** | Math10 | Math 10 process value | R |
| **1421** | Math11 | Math 11 process value | R |
| **1423** | Math12 | Math 12 process value | R |
| **1425** | Math13 | Math 13 process value | R |
| **1427** | Math14 | Math 14 process value | R |
| **1429** | Math15 | Math 15 process value | R |
| **1431** | Math16 | Math 16 process value | R |
| **1433** | Math17 | Math 17 process value | R |
| **1435** | Math18 | Math 18 process value | R |
| **1437** | Math19 | Math 19 process value | R |
| **1439** | Math20 | Math 20 process value | R |
| **1441** | Math21 | Math 21 process value | R |
| **1443** | Math22 | Math 22 process value | R |
| **1445** | Math23 | Math 23 process value | R |
| **1447** | Math24 | Math 24 process value | R |
| **1449** | Math25 | Math 25 process value | R |
| **1451** | Math26 | Math 26 process value | R |
| **1453** | Math27 | Math 27 process value | R |

| 1455 | Math28 | Math 28 process value | R |
|------|--------|-----------------------|---|
| 1457 | Math29 | Math 29 process value | R |
| 1459 | Math30 | Math 30 process value | R |
| 1461 | Math31 | Math 31 process value | R |
| 1463 | Math32 | Math 32 process value | R |
| 1465 | Math33 | Math 33 process value | R |
| 1467 | Math34 | Math 34 process value | R |
| 1469 | Math35 | Math 35 process value | R |
| 1471 | Math36 | Math 36 process value | R |
| 1473 | Math37 | Math 37 process value | R |
| 1475 | Math38 | Math 38 process value | R |
| 1477 | Math39 | Math 39 process value | R |
| 1479 | Math40 | Math 40 process value | R |
| 1481 | Math41 | Math 41 process value | R |
| 1483 | Math42 | Math 42 process value | R |
| 1485 | Math43 | Math 43 process value | R |
| 1487 | Math44 | Math 44 process value | R |
| 1489 | Math45 | Math 45 process value | R |
| 1491 | Math46 | Math 46 process value | R |
| 1493 | Math47 | Math 47 process value | R |
| 1495 | Math48 | Math 48 process value | R |
| 1497 | Math49 | Math 49 process value | R |
| 1499 | Math50 | Math 50 process value | R |
| 1501 | Math51 | Math 51 process value | R |
| 1503 | Math52 | Math 52 process value | R |
| 1505 | Math53 | Math 53 process value | R |
| 1507 | Math54 | Math 54 process value | R |
| 1509 | Math55 | Math 55 process value | R |
| 1511 | Math56 | Math 56 process value | R |
| 1513 | Math57 | Math 57 process value | R |
| 1515 | Math58 | Math 58 process value | R |
| 1517 | Math59 | Math 59 process value | R |
| 1519 | Math60 | Math 60 process value | R |

∗ *Note: If the register value is 3.0+E38, which value represents communication error.*

## 1.5  Controller Area (Integer Type)

| Modbus Address | Notation | Register Name | Access |
|----------------|----------|---------------|--------|
| 401 | C1_PV | Current process value | R |
| 402 | C1_SV | Current set point Value | R |
| 403 | C1_PVMD | PV mode selection[1]<br>0 : PV1<br>1 : PV2<br>2 : PV1 - 2<br>3 : PV2 - 1 | R |
| 404 | C1_IN1U | IN1 unit selection[2]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| 405 | C1_IN2U | IN2 unit selection[3]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| 406 | C1_MV1 | Current output 1 value | R |
| 407 | C1_MV2 | Current output 2 value | R |

| 408 | C1_ALM | Contains conditional code of parameters' resolution and current alarm status[4] | R |
|---|---|---|---|
| 409 | C1_ERROR | Current error code[5] | R |
| 410 | C1_SPMD | Set point mode selection[6]<br>0 : SP1.2<br>1 : MIN.R<br>2 : HR.R<br>3 : PV1<br>4 : PV2<br>5 : PUMP | R |
| 411 | C1_EIFN | Event input function[7]<br>0 : None<br>1 : SP2<br>2 : PID2<br>3 : SP.P2<br>4 : RS.A1<br>5 : RS.A2<br>6 : R.A1.2<br>7 : D.O1<br>8 : D.O2<br>9 : D.O1.2<br>10 : LOCK | R |
| 412 | Reserve | Reserve | R |
| 413 | C1_SP1 | Set point 1 | R |
| 414 | C1_SP2 | Set point 2 | R |
| 415 | C1_Profile | Profile number | R |
| 416 | C1_Segment | Segment number | R |
| 417 | C1_Cycle | Cycle remaining for the current loop | R |
| 418 | C1_Run | Profile running | R |
| 419 | C1_Hold | Profile held | R |
| 420 | C1_Up | Running ramp up segment | R |
| 421 | C1_Down | Running ramp down segment | R |
| 422 | C1_Unit | Current input unit | R |
| 423 | C1_ProfileERROR | Profile error<br>0 : Normal<br>1 : Holdback timeout | R |
| 424 | C2_PV | Current process value | R |
| 425 | C2_SV | Current set point Value | R |
| 426 | C2_PVMD | PV mode selection[1]<br>0 : PV1<br>1 : PV2<br>2 : PV1 - 2<br>3 : PV2 - 1 | R |
| 427 | C2_IN1U | IN1 unit selection[2]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| 428 | C2_IN2U | IN2 unit selection[3]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| 429 | C2_MV1 | Current output 1 value | R |
| 430 | C2_MV2 | Current output 2 value | R |
| 431 | C2_ALM | Contains conditional code of parameters' resolution and current alarm status[4] | R |
| 432 | C2_ERROR | Current error code[5] | R |
| 433 | C2_SPMD | Set point mode selection[6]<br>0 : SP1.2<br>1 : MIN.R<br>2 : HR.R | R |

| | | 3 : PV1<br>4 : PV2<br>5 : PUMP | |
|---|---|---|---|
| 434 | C2_EIFN | Event input function[7]<br>0 : None<br>1 : SP2<br>2 : PID2<br>3 : SP.P2<br>4 : RS.A1<br>5 : RS.A2<br>6 : R.A1.2<br>7 : D.O1<br>8 : D.O2<br>9 : D.O1.2<br>10 : LOCK | R |
| 435 | Reserve | Reserve | R |
| 436 | C2_SP1 | Set point 1 | R |
| 437 | C2_SP2 | Set point 2 | R |
| 438 | C2_Profile | Profile number | R |
| 439 | C2_Segment | Segment number | R |
| 440 | C2_Cycle | Cycle remaining for the current loop | R |
| 441 | C2_Run | Profile running | R |
| 442 | C2_Hold | Profile held | R |
| 443 | C2_Up | Running ramp up segment | R |
| 444 | C2_Down | Running ramp down segment | R |
| 445 | C2_Unit | Current input unit | R |
| 446 | C2_ProfileERROR | Profile error<br>0 : Normal<br>1 : Holdback timeout | R |
| 447 | C3_PV | Current process value | R |
| 448 | C3_SV | Current set point Value | R |
| 449 | C3_PVMD | PV mode selection[1]<br>0 : PV1<br>1 : PV2<br>2 : PV1 - 2<br>3 : PV2 - 1 | R |
| 450 | C3_IN1U | IN1 unit selection[2]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| 451 | C3_IN2U | IN2 unit selection[3]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| 452 | C3_MV1 | Current output 1 value | R |
| 453 | C3_MV2 | Current output 2 value | R |
| 454 | C3_ALM | Contains conditional code of parameters' resolution and current alarm status[4] | R |
| 455 | C3_ERROR | Current error code[5] | R |
| 456 | C3_SPMD | Set point mode selection[6]<br>0 : SP1.2<br>1 : MIN.R<br>2 : HR.R<br>3 : PV1<br>4 : PV2<br>5 : PUMP | R |
| 457 | C3_EIFN | Event input function[7]<br>0 : None<br>1 : SP2<br>2 : PID2 | R |

|  |  | 3 : SP.P2 | |
|  |  | 4 : RS.A1 | |
|  |  | 5 : RS.A2 | |
|  |  | 6 : R.A1.2 | |
|  |  | 7 : D.O1 | |
|  |  | 8 : D.O2 | |
|  |  | 9 : D.O1.2 | |
|  |  | 10 : LOCK | |
| 458 | Reserve | Reserve | R |
| 459 | C3_SP1 | Set point 1 | R |
| 460 | C3_SP2 | Set point 2 | R |
| 461 | C3_Profile | Profile number | R |
| 462 | C3_Segment | Segment number | R |
| 463 | C3_Cycle | Cycle remaining for the current loop | R |
| 464 | C3_Run | Profile running | R |
| 465 | C3_Hold | Profile held | R |
| 466 | C3_Up | Running ramp up segment | R |
| 467 | C3_Down | Running ramp down segment | R |
| 468 | C3_Unit | Current input unit | R |
| 469 | C3_ProfileERROR | Profile error<br>0 : Normal<br>1 : Holdback timeout | R |
| 470 | C4_PV | Current process value | R |
| 471 | C4_SV | Current set point Value | R |
| 472 | C4_PVMD | PV mode selection[1]<br>0 : PV1<br>1 : PV2<br>2 : PV1 - 2<br>3 : PV2 - 1 | R |
| 473 | C4_IN1U | IN1 unit selection[2]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| 474 | C4_IN2U | IN2 unit selection[3]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| 475 | C4_MV1 | Current output 1 value | R |
| 476 | C4_MV2 | Current output 2 value | R |
| 477 | C4_ALM | Contains conditional code of parameters' resolution and current alarm status[4] | R |
| 478 | C4_ERROR | Current error code[5] | R |
| 479 | C4_SPMD | Set point mode selection[6]<br>0 : SP1.2<br>1 : MIN.R<br>2 : HR.R<br>3 : PV1<br>4 : PV2<br>5 : PUMP | R |
| 480 | C4_EIFN | Event input function[7]<br>0 : None<br>1 : SP2<br>2 : PID2<br>3 : SP.P2<br>4 : RS.A1<br>5 : RS.A2<br>6 : R.A1.2<br>7 : D.O1<br>8 : D.O2<br>9 : D.O1.2 | R |

| | | 10 : LOCK | |
|---|---|---|---|
| **481** | Reserve | Reserve | R |
| **482** | C4_SP1 | Set point 1 | R |
| **483** | C4_SP2 | Set point 2 | R |
| **484** | C4_Profile | Profile number | R |
| **485** | C4_Segment | Segment number | R |
| **486** | C4_Cycle | Cycle remaining for the current loop | R |
| **487** | C4_Run | Profile running | R |
| **488** | C4_Hold | Profile held | R |
| **489** | C4_Up | Running ramp up segment | R |
| **490** | C4_Down | Running ramp down segment | R |
| **491** | C4_Unit | Current input unit | R |
| **492** | C4_ProfileERROR | Profile error<br>0 : Normal<br>1 : Holdback timeout | R |
| **493** | C5_PV | Current process value | R |
| **494** | C5_SV | Current set point Value | R |
| **495** | C5_PVMD | PV mode selection[1]<br>0 : PV1<br>1 : PV2<br>2 : PV1 - 2<br>3 : PV2 - 1 | R |
| **496** | C5_IN1U | IN1 unit selection[2]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| **497** | C5_IN2U | IN2 unit selection[3]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| **498** | C5_MV1 | Current output 1 value | R |
| **499** | C5_MV2 | Current output 2 value | R |
| **500** | C5_ALM | Contains conditional code of parameters' resolution and current alarm status[4] | R |
| **501** | C5_ERROR | Current error code[5] | R |
| **502** | C5_SPMD | Set point mode selection[6]<br>0 : SP1.2<br>1 : MIN.R<br>2 : HR.R<br>3 : PV1<br>4 : PV2<br>5 : PUMP | R |
| **503** | C5_EIFN | Event input function[7]<br>0 : None<br>1 : SP2<br>2 : PID2<br>3 : SP.P2<br>4 : RS.A1<br>5 : RS.A2<br>6 : R.A1.2<br>7 : D.O1<br>8 : D.O2<br>9 : D.O1.2<br>10 : LOCK | R |
| **504** | Reserve | Reserve | R |
| **505** | C5_SP1 | Set point 1 | R |
| **506** | C5_SP2 | Set point 2 | R |
| **507** | C5_Profile | Profile number | R |
| **508** | C5_Segment | Segment number | R |

| 509 | C5_Cycle | Cycle remaining for the current loop | R |
|---|---|---|---|
| 510 | C5_Run | Profile running | R |
| 511 | C5_Hold | Profile held | R |
| 512 | C5_Up | Running ramp up segment | R |
| 513 | C5_Down | Running ramp down segment | R |
| 514 | C5_Unit | Current input unit | R |
| 515 | C5_ProfileERROR | Profile error<br>0 : Normal<br>1 : Holdback timeout | R |
| 516 | C6_PV | Current process value | R |
| 517 | C6_SV | Current set point Value | R |
| 518 | C6_PVMD | PV mode selection[1]<br>0 : PV1<br>1 : PV2<br>2 : PV1 - 2<br>3 : PV2 - 1 | R |
| 519 | C6_IN1U | IN1 unit selection[2]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| 520 | C6_IN2U | IN2 unit selection[3]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| 521 | C6_MV1 | Current output 1 value | R |
| 522 | C6_MV2 | Current output 2 value | R |
| 523 | C6_ALM | Contains conditional code of parameters' resolution and current alarm status[4] | R |
| 524 | C6_ERROR | Current error code[5] | R |
| 525 | C6_SPMD | Set point mode selection[6]<br>0 : SP1.2<br>1 : MIN.R<br>2 : HR.R<br>3 : PV1<br>4 : PV2<br>5 : PUMP | R |
| 526 | C6_EIFN | Event input function[7]<br>0 : None<br>1 : SP2<br>2 : PID2<br>3 : SP.P2<br>4 : RS.A1<br>5 : RS.A2<br>6 : R.A1.2<br>7 : D.O1<br>8 : D.O2<br>9 : D.O1.2<br>10 : LOCK | R |
| 527 | Reserve | Reserve | R |
| 528 | C6_SP1 | Set point 1 | R |
| 529 | C6_SP2 | Set point 2 | R |
| 530 | C6_Profile | Profile number | R |
| 531 | C6_Segment | Segment number | R |
| 532 | C6_Cycle | Cycle remaining for the current loop | R |
| 533 | C6_Run | Profile running | R |
| 534 | C6_Hold | Profile held | R |
| 535 | C6_Up | Running ramp up segment | R |
| 536 | C6_Down | Running ramp down segment | R |
| 537 | C6_Unit | Current input unit | R |

| 538 | C6_ProfileERR OR | Profile error 0 : Normal 1 : Holdback timeout | R |
|---|---|---|---|

**Note 1 : PVMD**

| Parameter Value | Display Symbol | Description |
|---|---|---|
| 0 | PV1 | Use PV1 as process value |
| 1 | PV2 | Use PV2 as process value |
| 2 | P1 - 2 | Use PV1 - PV2 (difference) as process value |
| 3 | P2 - 1 | Use PV2 - PV1 (difference) as process value |

**Note 2, 3: IN1/IN2 unit**

| Parameter Value | Display Symbol | Description |
|---|---|---|
| 0 | ℃ | Degree C unit |
| 1 | ℉ | Degree F unit |
| 2 | PU | Process unit |

**Note 4 : ALM**

**ALM LOW BYTE**

```
          LSB
7  6  5  4  3  2   1  0   ←── Bit
```

= ALMK
= 00 : No alarm activated
= 01 : Alarm 1 activated
= 10 : Alarm 2 activated
= 11 : Alarm 1 & Alarm 2 activated

= A1FNK
If A1FN = 8,9 then A1FNK = 0
Otherwise, A1FNK = 1

= A2FNK
If A2FN = 8,9 then A2FNK = 0
Otherwise, A2FNK = 1

= AOFNK
If AOFN = 0,2,3 then AOFNK = 00
If AOFN = 1, then AOFNK = 01
If AOFN = 4,7 then AOFNK = 10
If AOFN = 5,6 then AOFNK = 11

= BPVMDK
If BPVMD = 1, then BPVMDK = 0
Otherwise, BPVMDK = 1

= 0

**ALM HIGH BYTE**

```
MSB
15  14  13  12  11  10   9  8   ←── Bit
```

= DP1K = DP1

= DP2K = DP2

= BIN1K
If BIN1 < 11, then BIN1K = 00
If $11 \leq$ BIN1 < 17, then BIN1K = 01
Otherwise, BIN1K = 10

= BIN2K
If BIN2 = 8 ~ 18, then BIN2K = 00
If BIN2 = 1, then BIN2K = 01
If BIN2 = 19,21,22,23, then BIN2K = 10
Otherwise, BIN2K = 11

**Note 5 : Error Code**

| Error Code | Error Description |
|---|---|
| 1 | Illegal setup values used: PV1 is used for both PVMD and SPMD that is meaningless for control |
| 2 | Illegal setup values used: PV2 is used for both PVMD and SPMD that is meaningless for control |
| 3 | Illegal setup values used: P1-2 or P2-1 is used for PVMD while PV1 or PV2 is used for SPMD. Dependent values are used for PV and SV will produce incorrect result of control |
| 4 | Illegal setup values used: COOL is used for OUT2, but DIRT (cooling action) is already used for OUT1 or PID mode is not used for OUT1 (that is PB1 or PB2 =0, and TI1 or TI2 =0) |
| 5 | Illegal setup values used: unequal IN1U and IN2U or unequal DP1 and DP2 while P1-2 or P2-1 is used for PVMD or, PV1 or PV2 is used for SPMD or, P1.2.H, P1.2.L, D1.2.H or D1.2.L are used for A1FN or A2FN |
| 6 | Illegal setup values used: OUT2 select =AL2 but A2FN select NONE |
| 7 | Illegal setup values used: Dwell timer (TIMR) is selected for both A1FN and A2FN |
| 17 | Computing error: Illegal floating point data |
| 18 | Computing error: Arithmetic result overflow or underflow |
| 19 | Computing error: divided by zero |
| 20 | Computing error: Illegal BCD data entry |
| 21 | Timing error: A to D conversion data error due to overrun |
| 26 | Fail to perform auto-tuning function |
| 27 | Incorrect calibration procedure or tolerance of analog component too big to meet specified accuracy |
| 32 | Cold junction compensation device(s) malfunction |
| 34 | Input 2 ( IN2 ) signal too low |
| 35 | Input 2 ( IN2 ) signal too high |
| 36 | Input 1 ( IN1 ) signal too low |
| 37 | Input 1 ( IN1 ) signal too high |
| 38 | Input 2 ( IN2 ) sensor break, or input 2 current below 1 mA if 4-20 mA is selected, or input 2 voltage below 0.25V if 1 - 5V is selected |
| 39 | Input 1 ( IN1 ) sensor break, or input 1 current below 1 mA if 4-20 mA is selected, or input 1 voltage below 0.25V if 1 - 5V is selected |
| 40 | A to D converter or related component(s) malfunction |

**Note 6: SPMD**

| Parameter Value | Display Symbol | Description |
|---|---|---|
| 0 | SP1.2 | Use SP1 or SP2 (depends on EIFN) as set point |
| 1 | MIN.R | Use minute ramp rate as set point |
| 2 | HR.R | Use hour ramp rate as set point |
| 3 | PV1 | Use IN1 process value as set point |
| 4 | PV2 | Use IN2 process value as set point |
| 5 | PUMP | Selected for pump control |

**Note 7: EIFN**

| Parameter Value | Display Symbol | Description |
|---|---|---|
| 0 | NONE | Event input no function |
| 1 | SP2 | SP2 activated to replace SP1 |
| 2 | PID2 | PB2, TI2, TD2 activated to replace PB1, TI1, TD1 |
| 3 | SP.P2 | SP2, PB2, TI2, TD2 activated to replace SP1, PB1, TI1, TD1 |
| 4 | RS.A1 | Reset alarm 1 output |
| 5 | RS.A2 | Reset alarm 2 output |
| 6 | R.A1.2 | Reset alarm 1 & alarm 2 |
| 7 | D.O1 | Disable Output 1 |
| 8 | D.O2 | Disable Output 2 |
| 9 | D.O1.2 | Disable Output 1 & Output 2 |
| 10 | LOCK | Lock all parameters |

## 1.6 Controller Area (Float Type)

| Modbus Address | Notation | Register Name | Access |
|---|---|---|---|
| 1601 | C1_PV | Current process value | R |
| 1603 | C1_SV | Current set point Value | R |
| 1605 | C1_PVMD | PV mode selection[1]<br>0 : PV1<br>1 : PV2<br>2 : PV1 - 2<br>3 : PV2 - 1 | R |
| 1607 | C1_IN1U | IN1 unit selection[2]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| 1609 | C1_IN2U | IN2 unit selection[3]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| 1611 | C1_MV1 | Current output 1 value | R |
| 1613 | C1_MV2 | Current output 2 value | R |
| 1615 | C1_ALM | Contains conditional code of parameters' resolution and current alarm status[4] | R |
| 1617 | C1_ERROR | Current error code[5] | R |
| 1619 | C1_SPMD | Set point mode selection[6]<br>0 : SP1.2<br>1 : MIN.R<br>2 : HR.R<br>3 : PV1<br>4 : PV2<br>5 : PUMP | R |
| 1621 | C1_EIFN | Event input function[7]<br>0 : None<br>1 : SP2<br>2 : PID2<br>3 : SP.P2<br>4 : RS.A1<br>5 : RS.A2<br>6 : R.A1.2<br>7 : D.O1<br>8 : D.O2<br>9 : D.O1.2<br>10 : LOCK | R |
| 1623 | Reserve | Reserve | R |
| 1625 | C1_SP1 | Set point 1 | R |
| 1627 | C1_SP2 | Set point 2 | R |
| 1629 | C1_Profile | Profile number | R |
| 1631 | C1_Segment | Segment number | R |
| 1633 | C1_Cycle | Cycle remaining for the current loop | R |
| 1635 | C1_Run | Profile running | R |
| 1637 | C1_Hold | Profile held | R |
| 1639 | C1_Up | Running ramp up segment | R |
| 1641 | C1_Down | Running ramp down segment | R |
| 1643 | C1_Unit | Current input unit | R |
| 1645 | C1_ProfileERROR | Profile error<br>0 : Normal<br>1 : Holdback timeout | R |
| 1647 | C2_PV | Current process value | R |
| 1649 | C2_SV | Current set point Value | R |
| 1651 | C2_PVMD | PV mode selection[1]<br>0 : PV1<br>1 : PV2 | R |

| | | 2 : PV1 - 2 | |
| | | 3 : PV2 - 1 | |
| **1653** | C2_IN1U | IN1 unit selection[2] | R |
| | | 0 : ℃ | |
| | | 1 : ℉ | |
| | | 2 : PU | |
| **1655** | C2_IN2U | IN2 unit selection[3] | R |
| | | 0 : ℃ | |
| | | 1 : ℉ | |
| | | 2 : PU | |
| **1657** | C2_MV1 | Current output 1 value | R |
| **1659** | C2_MV2 | Current output 2 value | R |
| **1661** | C2_ALM | Contains conditional code of parameters' resolution and current alarm status[4] | R |
| **1663** | C2_ERROR | Current error code[5] | R |
| **1665** | C2_SPMD | Set point mode selection[6] | R |
| | | 0 : SP1.2 | |
| | | 1 : MIN.R | |
| | | 2 : HR.R | |
| | | 3 : PV1 | |
| | | 4 : PV2 | |
| | | 5 : PUMP | |
| **1667** | C2_EIFN | Event input function[7] | R |
| | | 0 : None | |
| | | 1 : SP2 | |
| | | 2 : PID2 | |
| | | 3 : SP.P2 | |
| | | 4 : RS.A1 | |
| | | 5 : RS.A2 | |
| | | 6 : R.A1.2 | |
| | | 7 : D.O1 | |
| | | 8 : D.O2 | |
| | | 9 : D.O1.2 | |
| | | 10 : LOCK | |
| **1669** | Reserve | Reserve | R |
| **1671** | C2_SP1 | Set point 1 | R |
| **1673** | C2_SP2 | Set point 2 | R |
| **1675** | C2_Profile | Profile number | R |
| **1677** | C2_Segment | Segment number | R |
| **1679** | C2_Cycle | Cycle remaining for the current loop | R |
| **1681** | C2_Run | Profile running | R |
| **1683** | C2_Hold | Profile held | R |
| **1685** | C2_Up | Running ramp up segment | R |
| **1687** | C2_Down | Running ramp down segment | R |
| **1689** | C2_Unit | Current input unit | R |
| **1691** | C2_ProfileERROR | Profile error | R |
| | | 0 : Normal | |
| | | 1 : Holdback timeout | |
| **1693** | C3_PV | Current process value | R |
| **1695** | C3_SV | Current set point Value | R |
| **1697** | C3_PVMD | PV mode selection[1] | R |
| | | 0 : PV1 | |
| | | 1 : PV2 | |
| | | 2 : PV1 - 2 | |
| | | 3 : PV2 - 1 | |
| **1699** | C3_IN1U | IN1 unit selection[2] | R |
| | | 0 : ℃ | |
| | | 1 : ℉ | |
| | | 2 : PU | |
| **1701** | C3_IN2U | IN2 unit selection[3] | R |

| | | 0 : ℃<br>1 : ℉<br>2 : PU | |
|---|---|---|---|
| **1703** | C3_MV1 | Current output 1 value | R |
| **1705** | C3_MV2 | Current output 2 value | R |
| **1707** | C3_ALM | Contains conditional code of parameters' resolution and current alarm status[4] | R |
| **1709** | C3_ERROR | Current error code[5] | R |
| **1711** | C3_SPMD | Set point mode selection[6]<br>0 : SP1.2<br>1 : MIN.R<br>2 : HR.R<br>3 : PV1<br>4 : PV2<br>5 : PUMP | R |
| **1713** | C3_EIFN | Event input function[7]<br>0 : None<br>1 : SP2<br>2 : PID2<br>3 : SP.P2<br>4 : RS.A1<br>5 : RS.A2<br>6 : R.A1.2<br>7 : D.O1<br>8 : D.O2<br>9 : D.O1.2<br>10 : LOCK | R |
| **1715** | Reserve | Reserve | R |
| **1717** | C3_SP1 | Set point 1 | R |
| **1719** | C3_SP2 | Set point 2 | R |
| **1721** | C3_Profile | Profile number | R |
| **1723** | C3_Segment | Segment number | R |
| **1725** | C3_Cycle | Cycle remaining for the current loop | R |
| **1727** | C3_Run | Profile running | R |
| **1729** | C3_Hold | Profile held | R |
| **1731** | C3_Up | Running ramp up segment | R |
| **1733** | C3_Down | Running ramp down segment | R |
| **1735** | C3_Unit | Current input unit | R |
| **1737** | C3_ProfileERROR | Profile error<br>0 : Normal<br>1 : Holdback timeout | R |
| **1739** | C4_PV | Current process value | R |
| **1741** | C4_SV | Current set point Value | R |
| **1743** | C4_PVMD | PV mode selection[1]<br>0 : PV1<br>1 : PV2<br>2 : PV1 - 2<br>3 : PV2 - 1 | R |
| **1745** | C4_IN1U | IN1 unit selection[2]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| **1747** | C4_IN2U | IN2 unit selection[3]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| **1749** | C4_MV1 | Current output 1 value | R |
| **1751** | C4_MV2 | Current output 2 value | R |
| **1753** | C4_ALM | Contains conditional code of parameters' resolution and current alarm status[4] | R |

| 1755 | C4_ERROR | Current error code[5] | R |
|------|----------|----------------------|---|
| 1757 | C4_SPMD | Set point mode selection[6]<br>0 : SP1.2<br>1 : MIN.R<br>2 : HR.R<br>3 : PV1<br>4 : PV2<br>5 : PUMP | R |
| 1759 | C4_EIFN | Event input function[7]<br>0 : None<br>1 : SP2<br>2 : PID2<br>3 : SP.P2<br>4 : RS.A1<br>5 : RS.A2<br>6 : R.A1.2<br>7 : D.O1<br>8 : D.O2<br>9 : D.O1.2<br>10 : LOCK | R |
| 1761 | Reserve | Reserve | R |
| 1763 | C4_SP1 | Set point 1 | R |
| 1765 | C4_SP2 | Set point 2 | R |
| 1767 | C4_Profile | Profile number | R |
| 1769 | C4_Segment | Segment number | R |
| 1771 | C4_Cycle | Cycle remaining for the current loop | R |
| 1773 | C4_Run | Profile running | R |
| 1775 | C4_Hold | Profile held | R |
| 1777 | C4_Up | Running ramp up segment | R |
| 1779 | C4_Down | Running ramp down segment | R |
| 1781 | C4_Unit | Current input unit | R |
| 1783 | C4_ProfileERROR | Profile error<br>0 : Normal<br>1 : Holdback timeout | R |
| 1785 | C5_PV | Current process value | R |
| 1787 | C5_SV | Current set point Value | R |
| 1789 | C5_PVMD | PV mode selection[1]<br>0 : PV1<br>1 : PV2<br>2 : PV1 - 2<br>3 : PV2 - 1 | R |
| 1791 | C5_IN1U | IN1 unit selection[2]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| 1793 | C5_IN2U | IN2 unit selection[3]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| 1795 | C5_MV1 | Current output 1 value | R |
| 1797 | C5_MV2 | Current output 2 value | R |
| 1799 | C5_ALM | Contains conditional code of parameters' resolution and current alarm status[4] | R |
| 1801 | C5_ERROR | Current error code[5] | R |
| 1803 | C5_SPMD | Set point mode selection[6]<br>0 : SP1.2<br>1 : MIN.R<br>2 : HR.R<br>3 : PV1<br>4 : PV2 | R |

| | | | |
|---|---|---|---|
| | | 5 : PUMP | |
| **1805** | C5_EIFN | Event input function[7]<br>0 : None<br>1 : SP2<br>2 : PID2<br>3 : SP.P2<br>4 : RS.A1<br>5 : RS.A2<br>6 : R.A1.2<br>7 : D.O1<br>8 : D.O2<br>9 : D.O1.2<br>10 : LOCK | R |
| **1807** | Reserve | Reserve | R |
| **1809** | C5_SP1 | Set point 1 | R |
| **1811** | C5_SP2 | Set point 2 | R |
| **1813** | C5_Profile | Profile number | R |
| **1815** | C5_Segment | Segment number | R |
| **1817** | C5_Cycle | Cycle remaining for the current loop | R |
| **1819** | C5_Run | Profile running | R |
| **1821** | C5_Hold | Profile held | R |
| **1823** | C5_Up | Running ramp up segment | R |
| **1825** | C5_Down | Running ramp down segment | R |
| **1827** | C5_Unit | Current input unit | R |
| **1829** | C5_ProfileERROR | Profile error<br>0 : Normal<br>1 : Holdback timeout | R |
| **1831** | C6_PV | Current process value | R |
| **1833** | C6_SV | Current set point Value | R |
| **1835** | C6_PVMD | PV mode selection[1]<br>0 : PV1<br>1 : PV2<br>2 : PV1 - 2<br>3 : PV2 - 1 | R |
| **1837** | C6_IN1U | IN1 unit selection[2]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| **1839** | C6_IN2U | IN2 unit selection[3]<br>0 : ℃<br>1 : ℉<br>2 : PU | R |
| **1841** | C6_MV1 | Current output 1 value | R |
| **1843** | C6_MV2 | Current output 2 value | R |
| **1845** | C6_ALM | Contains conditional code of parameters' resolution and current alarm status[4] | R |
| **1847** | C6_ERROR | Current error code[5] | R |
| **1849** | C6_SPMD | Set point mode selection[6]<br>0 : SP1.2<br>1 : MIN.R<br>2 : HR.R<br>3 : PV1<br>4 : PV2<br>5 : PUMP | R |
| **1851** | C6_EIFN | Event input function[7]<br>0 : None<br>1 : SP2<br>2 : PID2<br>3 : SP.P2<br>4 : RS.A1 | R |

| | | 5 : RS.A2<br>6 : R.A1.2<br>7 : D.O1<br>8 : D.O2<br>9 : D.O1.2<br>10 : LOCK | |
|---|---|---|---|
| 1853 | Reserve | Reserve | R |
| 1855 | C6_SP1 | Set point 1 | R |
| 1857 | C6_SP2 | Set point 2 | R |
| 1859 | C6_Profile | Profile number | R |
| 1861 | C6_Segment | Segment number | R |
| 1863 | C6_Cycle | Cycle remaining for the current loop | R |
| 1865 | C6_Run | Profile running | R |
| 1867 | C6_Hold | Profile held | R |
| 1869 | C6_Up | Running ramp up segment | R |
| 1871 | C6_Down | Running ramp down segment | R |
| 1873 | C6_Unit | Current input unit | R |
| 1875 | C6_ProfileERROR | Profile error<br>0 : Normal<br>1 : Holdback timeout | R |

## 2. Holding Register Parameter Table for Modbus RTU Slave / TCP Server

### 2.1 2 Bytes Type Area (Integer Type)

| Modbus Address | Notation | Register Name | Access |
|---|---|---|---|
| 1 | Ext1 | Measured data on External 1 | R/W |
| 2 | Ext2 | Measured data on External 2 | R/W |
| 3 | Ext3 | Measured data on External 3 | R/W |
| 4 | Ext4 | Measured data on External 4 | R/W |
| 5 | Ext5 | Measured data on External 5 | R/W |
| 6 | Ext6 | Measured data on External 6 | R/W |
| 7 | Ext7 | Measured data on External 7 | R/W |
| 8 | Ext8 | Measured data on External 8 | R/W |
| 9 | Ext9 | Measured data on External 9 | R/W |
| 10 | Ext10 | Measured data on External 10 | R/W |
| 11 | Ext11 | Measured data on External 11 | R/W |
| 12 | Ext12 | Measured data on External 12 | R/W |
| 13 | Ext13 | Measured data on External 13 | R/W |
| 14 | Ext14 | Measured data on External 14 | R/W |
| 15 | Ext15 | Measured data on External 15 | R/W |
| 16 | Ext16 | Measured data on External 16 | R/W |
| 17 | Ext17 | Measured data on External 17 | R/W |
| 18 | Ext18 | Measured data on External 18 | R/W |
| 19 | Ext19 | Measured data on External 19 | R/W |
| 20 | Ext20 | Measured data on External 20 | R/W |
| 21 | Ext21 | Measured data on External 21 | R/W |
| 22 | Ext22 | Measured data on External 22 | R/W |
| 23 | Ext23 | Measured data on External 23 | R/W |
| 24 | Ext24 | Measured data on External 24 | R/W |
| 25 | Ext25 | Measured data on External 25 | R/W |
| 26 | Ext26 | Measured data on External 26 | R/W |
| 27 | Ext27 | Measured data on External 27 | R/W |
| 28 | Ext28 | Measured data on External 28 | R/W |

| 29 | Ext29 | Measured data on External 29 | R/W |
|----|-------|------------------------------|-----|
| 30 | Ext30 | Measured data on External 30 | R/W |
| 31 | Ext31 | Measured data on External 31 | R/W |
| 32 | Ext32 | Measured data on External 32 | R/W |
| 33 | Ext33 | Measured data on External 33 | R/W |
| 34 | Ext34 | Measured data on External 34 | R/W |
| 35 | Ext35 | Measured data on External 35 | R/W |
| 36 | Ext36 | Measured data on External 36 | R/W |
| 37 | Ext37 | Measured data on External 37 | R/W |
| 38 | Ext38 | Measured data on External 38 | R/W |
| 39 | Ext39 | Measured data on External 39 | R/W |
| 40 | Ext40 | Measured data on External 40 | R/W |
| 41 | Ext41 | Measured data on External 41 | R/W |
| 42 | Ext42 | Measured data on External 42 | R/W |
| 43 | Ext43 | Measured data on External 43 | R/W |
| 44 | Ext44 | Measured data on External 44 | R/W |
| 45 | Ext45 | Measured data on External 45 | R/W |
| 46 | Ext46 | Measured data on External 46 | R/W |
| 47 | Ext47 | Measured data on External 47 | R/W |
| 48 | Ext48 | Measured data on External 48 | R/W |
| 49 | Ext49 | Measured data on External 49 | R/W |
| 50 | Ext50 | Measured data on External 50 | R/W |
| 51 | Ext51 | Measured data on External 51 | R/W |
| 52 | Ext52 | Measured data on External 52 | R/W |
| 53 | Ext53 | Measured data on External 53 | R/W |
| 54 | Ext54 | Measured data on External 54 | R/W |
| 55 | Ext55 | Measured data on External 55 | R/W |
| 56 | Ext56 | Measured data on External 56 | R/W |
| 57 | Ext57 | Measured data on External 57 | R/W |
| 58 | Ext58 | Measured data on External 58 | R/W |
| 59 | Ext59 | Measured data on External 59 | R/W |
| 60 | Ext60 | Measured data on External 60 | R/W |
| 61 | Ext61 | Measured data on External 61 | R/W |
| 62 | Ext62 | Measured data on External 62 | R/W |
| 63 | Ext63 | Measured data on External 63 | R/W |
| 64 | Ext64 | Measured data on External 64 | R/W |
| 65 | Ext65 | Measured data on External 65 | R/W |
| 66 | Ext66 | Measured data on External 66 | R/W |
| 67 | Ext67 | Measured data on External 67 | R/W |
| 68 | Ext68 | Measured data on External 68 | R/W |
| 69 | Ext69 | Measured data on External 69 | R/W |
| 70 | Ext70 | Measured data on External 70 | R/W |
| 71 | Ext71 | Measured data on External 71 | R/W |
| 72 | Ext72 | Measured data on External 72 | R/W |
| 73 | Ext73 | Measured data on External 73 | R/W |
| 74 | Ext74 | Measured data on External 74 | R/W |
| 75 | Ext75 | Measured data on External 75 | R/W |
| 76 | Ext76 | Measured data on External 76 | R/W |
| 77 | Ext77 | Measured data on External 77 | R/W |
| 78 | Ext78 | Measured data on External 78 | R/W |
| 79 | Ext79 | Measured data on External 79 | R/W |
| 80 | Ext80 | Measured data on External 80 | R/W |
| 81 | Ext81 | Measured data on External 81 | R/W |
| 82 | Ext82 | Measured data on External 82 | R/W |
| 83 | Ext83 | Measured data on External 83 | R/W |
| 84 | Ext84 | Measured data on External 84 | R/W |

| | | | |
|---|---|---|---|
| 85 | Ext85 | Measured data on External 85 | R/W |
| 86 | Ext86 | Measured data on External 86 | R/W |
| 87 | Ext87 | Measured data on External 87 | R/W |
| 88 | Ext88 | Measured data on External 88 | R/W |
| 89 | Ext89 | Measured data on External 89 | R/W |
| 90 | Ext90 | Measured data on External 90 | R/W |
| 91 | Ext91 | Measured data on External 91 | R/W |
| 92 | Ext92 | Measured data on External 92 | R/W |
| 93 | Ext93 | Measured data on External 93 | R/W |
| 94 | Ext94 | Measured data on External 94 | R/W |
| 95 | Ext95 | Measured data on External 95 | R/W |
| 96 | Ext96 | Measured data on External 96 | R/W |

∗ *Note: If the register value is 65534, which value represents communication error.*

## 2.2 4 Bytes Type Area (Integer Type)

| Modbus Address | Notation | Register Name | Access |
|---|---|---|---|
| 201 | Ext1 | The high word of measured data is on External 1 | R/W |
| 202 | Ext1 | The low word of measured data is on External 1 | R/W |
| 203 | Ext2 | The high word of measured data is on External 2 | R/W |
| 204 | Ext2 | The low word of measured data is on External 2 | R/W |
| 205 | Ext3 | The high word of measured data is on External 3 | R/W |
| 206 | Ext3 | The low word of measured data is on External 3 | R/W |
| 207 | Ext4 | The high word of measured data is on External 4 | R/W |
| 208 | Ext4 | The low word of measured data is on External 4 | R/W |
| 209 | Ext5 | The high word of measured data is on External 5 | R/W |
| 210 | Ext5 | The low word of measured data is on External 5 | R/W |
| 211 | Ext6 | The high word of measured data is on External 6 | R/W |
| 212 | Ext6 | The low word of measured data is on External 6 | R/W |
| 213 | Ext7 | The high word of measured data is on External 7 | R/W |
| 214 | Ext7 | The low word of measured data is on External 7 | R/W |
| 215 | Ext8 | The high word of measured data is on External 8 | R/W |
| 216 | Ext8 | The low word of measured data is on External 8 | R/W |
| 217 | Ext9 | The high word of measured data is on External 9 | R/W |
| 218 | Ext9 | The low word of measured data is on External 9 | R/W |
| 219 | Ext10 | The high word of measured data is on External 10 | R/W |
| 220 | Ext10 | The low word of measured data is on External 10 | R/W |
| 221 | Ext11 | The high word of measured data is on External 11 | R/W |
| 222 | Ext11 | The low word of measured data is on External 11 | R/W |
| 223 | Ext12 | The high word of measured data is on External 12 | R/W |
| 224 | Ext12 | The low word of measured data is on External 12 | R/W |
| 225 | Ext13 | The high word of measured data is on External 13 | R/W |
| 226 | Ext13 | The low word of measured data is on External 13 | R/W |
| 227 | Ext14 | The high word of measured data is on External 14 | R/W |
| 228 | Ext14 | The low word of measured data is on External 14 | R/W |
| 229 | Ext15 | The high word of measured data is on External 15 | R/W |
| 230 | Ext15 | The low word of measured data is on External 15 | R/W |
| 231 | Ext16 | The high word of measured data is on External 16 | R/W |
| 232 | Ext16 | The low word of measured data is on External 16 | R/W |
| 233 | Ext17 | The high word of measured data is on External 17 | R/W |
| 234 | Ext17 | The low word of measured data is on External 17 | R/W |
| 235 | Ext18 | The high word of measured data is on External 18 | R/W |
| 236 | Ext18 | The low word of measured data is on External 18 | R/W |
| 237 | Ext19 | The high word of measured data is on External 19 | R/W |

| 238 | Ext19 | The low word of measured data is on External 19 | R/W |
|---|---|---|---|
| 239 | Ext20 | The high word of measured data is on External 20 | R/W |
| 240 | Ext20 | The low word of measured data is on External 20 | R/W |
| 241 | Ext21 | The high word of measured data is on External 21 | R/W |
| 242 | Ext21 | The low word of measured data is on External 21 | R/W |
| 243 | Ext22 | The high word of measured data is on External 22 | R/W |
| 244 | Ext22 | The low word of measured data is on External 22 | R/W |
| 245 | Ext23 | The high word of measured data is on External 23 | R/W |
| 246 | Ext23 | The low word of measured data is on External 23 | R/W |
| 247 | Ext24 | The high word of measured data is on External 24 | R/W |
| 248 | Ext24 | The low word of measured data is on External 24 | R/W |
| 249 | Ext25 | The high word of measured data is on External 25 | R/W |
| 250 | Ext25 | The low word of measured data is on External 25 | R/W |
| 251 | Ext26 | The high word of measured data is on External 26 | R/W |
| 252 | Ext26 | The low word of measured data is on External 26 | R/W |
| 253 | Ext27 | The high word of measured data is on External 27 | R/W |
| 254 | Ext27 | The low word of measured data is on External 27 | R/W |
| 255 | Ext28 | The high word of measured data is on External 28 | R/W |
| 256 | Ext28 | The low word of measured data is on External 28 | R/W |
| 257 | Ext29 | The high word of measured data is on External 29 | R/W |
| 258 | Ext29 | The low word of measured data is on External 29 | R/W |
| 259 | Ext30 | The high word of measured data is on External 30 | R/W |
| 260 | Ext30 | The low word of measured data is on External 30 | R/W |
| 261 | Ext31 | The high word of measured data is on External 31 | R/W |
| 262 | Ext31 | The low word of measured data is on External 31 | R/W |
| 263 | Ext32 | The high word of measured data is on External 32 | R/W |
| 264 | Ext32 | The low word of measured data is on External 32 | R/W |
| 265 | Ext33 | The high word of measured data is on External 33 | R/W |
| 266 | Ext33 | The low word of measured data is on External 33 | R/W |
| 267 | Ext34 | The high word of measured data is on External 34 | R/W |
| 268 | Ext34 | The low word of measured data is on External 34 | R/W |
| 269 | Ext35 | The high word of measured data is on External 35 | R/W |
| 270 | Ext35 | The high word of measured data is on External 35 | R/W |
| 271 | Ext36 | The high word of measured data is on External 36 | R/W |
| 272 | Ext36 | The low word of measured data is on External 36 | R/W |
| 273 | Ext37 | The high word of measured data is on External 37 | R/W |
| 274 | Ext37 | The low word of measured data is on External 37 | R/W |
| 275 | Ext38 | The high word of measured data is on External 38 | R/W |
| 276 | Ext38 | The low word of measured data is on External 38 | R/W |
| 277 | Ext39 | The high word of measured data is on External 39 | R/W |
| 278 | Ext39 | The low word of measured data is on External 39 | R/W |
| 279 | Ext40 | The high word of measured data is on External 40 | R/W |
| 280 | Ext40 | The low word of measured data is on External 40 | R/W |
| 281 | Ext41 | The high word of measured data is on External 41 | R/W |
| 282 | Ext41 | The low word of measured data is on External 41 | R/W |
| 283 | Ext42 | The high word of measured data is on External 42 | R/W |
| 284 | Ext42 | The low word of measured data is on External 42 | R/W |
| 285 | Ext43 | The high word of measured data is on External 43 | R/W |
| 286 | Ext43 | The low word of measured data is on External 43 | R/W |
| 287 | Ext44 | The high word of measured data is on External 44 | R/W |
| 288 | Ext44 | The low word of measured data is on External 44 | R/W |
| 289 | Ext45 | The high word of measured data is on External 45 | R/W |
| 290 | Ext45 | The low word of measured data is on External 45 | R/W |
| 291 | Ext46 | The high word of measured data is on External 46 | R/W |
| 292 | Ext46 | The low word of measured data is on External 46 | R/W |
| 293 | Ext47 | The high word of measured data is on External 47 | R/W |

| 294 | Ext47 | The low word of measured data is on External 47 | R/W |
|---|---|---|---|
| 295 | Ext48 | The high word of measured data is on External 48 | R/W |
| 296 | Ext48 | The low word of measured data is on External 48 | R/W |
| 297 | Ext49 | The high word of measured data is on External 49 | R/W |
| 298 | Ext49 | The low word of measured data is on External 49 | R/W |
| 299 | Ext50 | The high word of measured data is on External 50 | R/W |
| 300 | Ext50 | The low word of measured data is on External 50 | R/W |
| 301 | Ext51 | The high word of measured data is on External 51 | R/W |
| 302 | Ext51 | The low word of measured data is on External 51 | R/W |
| 303 | Ext52 | The high word of measured data is on External 52 | R/W |
| 304 | Ext52 | The low word of measured data is on External 52 | R/W |
| 305 | Ext53 | The high word of measured data is on External 53 | R/W |
| 306 | Ext53 | The low word of measured data is on External 53 | R/W |
| 307 | Ext54 | The high word of measured data is on External 54 | R/W |
| 308 | Ext54 | The low word of measured data is on External 54 | R/W |
| 309 | Ext55 | The high word of measured data is on External 55 | R/W |
| 310 | Ext55 | The low word of measured data is on External 55 | R/W |
| 311 | Ext56 | The high word of measured data is on External 56 | R/W |
| 312 | Ext56 | The low word of measured data is on External 56 | R/W |
| 313 | Ext57 | The high word of measured data is on External 57 | R/W |
| 314 | Ext57 | The low word of measured data is on External 57 | R/W |
| 315 | Ext58 | The high word of measured data is on External 58 | R/W |
| 316 | Ext58 | The low word of measured data is on External 58 | R/W |
| 317 | Ext59 | The high word of measured data is on External 59 | R/W |
| 318 | Ext59 | The low word of measured data is on External 59 | R/W |
| 319 | Ext60 | The high word of measured data is on External 60 | R/W |
| 320 | Ext60 | The low word of measured data is on External 60 | R/W |
| 321 | Ext61 | The high word of measured data is on External 61 | R/W |
| 322 | Ext61 | The low word of measured data is on External 61 | R/W |
| 323 | Ext62 | The high word of measured data is on External 62 | R/W |
| 324 | Ext62 | The low word of measured data is on External 62 | R/W |
| 325 | Ext63 | The high word of measured data is on External 63 | R/W |
| 326 | Ext63 | The low word of measured data is on External 63 | R/W |
| 327 | Ext64 | The high word of measured data is on External 64 | R/W |
| 328 | Ext64 | The low word of measured data is on External 64 | R/W |
| 329 | Ext65 | The high word of measured data is on External 65 | R/W |
| 330 | Ext65 | The low word of measured data is on External 65 | R/W |
| 331 | Ext66 | The high word of measured data is on External 66 | R/W |
| 332 | Ext66 | The low word of measured data is on External 66 | R/W |
| 333 | Ext67 | The high word of measured data is on External 67 | R/W |
| 334 | Ext67 | The low word of measured data is on External 67 | R/W |
| 335 | Ext68 | The high word of measured data is on External 68 | R/W |
| 336 | Ext68 | The low word of measured data is on External 68 | R/W |
| 337 | Ext69 | The high word of measured data is on External 69 | R/W |
| 338 | Ext69 | The low word of measured data is on External 69 | R/W |
| 339 | Ext70 | The high word of measured data is on External 70 | R/W |
| 340 | Ext70 | The low word of measured data is on External 70 | R/W |
| 341 | Ext71 | The high word of measured data is on External 71 | R/W |
| 342 | Ext71 | The low word of measured data is on External 71 | R/W |
| 343 | Ext72 | The high word of measured data is on External 72 | R/W |
| 344 | Ext72 | The low word of measured data is on External 72 | R/W |
| 345 | Ext73 | The high word of measured data is on External 73 | R/W |
| 346 | Ext73 | The low word of measured data is on External 73 | R/W |
| 347 | Ext74 | The high word of measured data is on External 74 | R/W |
| 348 | Ext74 | The low word of measured data is on External 74 | R/W |
| 349 | Ext75 | The high word of measured data is on External 75 | R/W |

| 350 | Ext75 | The low word of measured data is on External 75 | R/W |
|---|---|---|---|
| 351 | Ext76 | The high word of measured data is on External 76 | R/W |
| 352 | Ext76 | The low word of measured data is on External 76 | R/W |
| 353 | Ext77 | The high word of measured data is on External 77 | R/W |
| 354 | Ext77 | The low word of measured data is on External 77 | R/W |
| 355 | Ext78 | The high word of measured data is on External 78 | R/W |
| 356 | Ext78 | The low word of measured data is on External 78 | R/W |
| 357 | Ext79 | The high word of measured data is on External 79 | R/W |
| 358 | Ext79 | The low word of measured data is on External 79 | R/W |
| 359 | Ext80 | The high word of measured data is on External 80 | R/W |
| 360 | Ext80 | The low word of measured data is on External 80 | R/W |
| 361 | Ext81 | The high word of measured data is on External 81 | R/W |
| 362 | Ext81 | The low word of measured data is on External 81 | R/W |
| 363 | Ext82 | The high word of measured data is on External 82 | R/W |
| 364 | Ext82 | The low word of measured data is on External 82 | R/W |
| 365 | Ext83 | The high word of measured data is on External 83 | R/W |
| 366 | Ext83 | The low word of measured data is on External 83 | R/W |
| 367 | Ext84 | The high word of measured data is on External 84 | R/W |
| 368 | Ext84 | The low word of measured data is on External 84 | R/W |
| 369 | Ext85 | The high word of measured data is on External 85 | R/W |
| 370 | Ext85 | The low word of measured data is on External 85 | R/W |
| 371 | Ext86 | The high word of measured data is on External 86 | R/W |
| 372 | Ext86 | The low word of measured data is on External 86 | R/W |
| 373 | Ext87 | The high word of measured data is on External 87 | R/W |
| 374 | Ext87 | The low word of measured data is on External 87 | R/W |
| 375 | Ext88 | The high word of measured data is on External 88 | R/W |
| 376 | Ext88 | The low word of measured data is on External 88 | R/W |
| 377 | Ext89 | The high word of measured data is on External 89 | R/W |
| 378 | Ext89 | The low word of measured data is on External 89 | R/W |
| 379 | Ext90 | The high word of measured data is on External 90 | R/W |
| 380 | Ext90 | The low word of measured data is on External 90 | R/W |
| 381 | Ext91 | The high word of measured data is on External 91 | R/W |
| 382 | Ext91 | The low word of measured data is on External 91 | R/W |
| 383 | Ext92 | The high word of measured data is on External 92 | R/W |
| 384 | Ext92 | The low word of measured data is on External 92 | R/W |
| 385 | Ext93 | The high word of measured data is on External 93 | R/W |
| 386 | Ext93 | The low word of measured data is on External 93 | R/W |
| 387 | Ext94 | The high word of measured data is on External 94 | R/W |
| 388 | Ext94 | The low word of measured data is on External 94 | R/W |
| 389 | Ext95 | The high word of measured data is on External 95 | R/W |
| 390 | Ext95 | The low word of measured data is on External 95 | R/W |
| 391 | Ext96 | The high word of measured data is on External 96 | R/W |
| 392 | Ext96 | The low word of measured data is on External 96 | R/W |

∗ *Note: If the register value is 4294967294, which value represents communication error.*

## 2.3  4 Bytes Type Area (Float Type)

| Modbus Address | Notation | Register Name | Access |
|---|---|---|---|
| 1001 | Ext1 | Measured data on External 1 | R/W |
| 1003 | Ext2 | Measured data on External 2 | R/W |
| 1005 | Ext3 | Measured data on External 3 | R/W |
| 1007 | Ext4 | Measured data on External 4 | R/W |
| 1009 | Ext5 | Measured data on External 5 | R/W |
| 1011 | Ext6 | Measured data on External 6 | R/W |
| 1013 | Ext7 | Measured data on External 7 | R/W |
| 1015 | Ext8 | Measured data on External 8 | R/W |
| 1017 | Ext9 | Measured data on External 9 | R/W |
| 1019 | Ext10 | Measured data on External 10 | R/W |
| 1021 | Ext11 | Measured data on External 11 | R/W |
| 1023 | Ext12 | Measured data on External 12 | R/W |
| 1025 | Ext13 | Measured data on External 13 | R/W |
| 1027 | Ext14 | Measured data on External 14 | R/W |
| 1029 | Ext15 | Measured data on External 15 | R/W |
| 1031 | Ext16 | Measured data on External 16 | R/W |
| 1033 | Ext17 | Measured data on External 17 | R/W |
| 1035 | Ext18 | Measured data on External 18 | R/W |
| 1037 | Ext19 | Measured data on External 19 | R/W |
| 1039 | Ext20 | Measured data on External 20 | R/W |
| 1041 | Ext21 | Measured data on External 21 | R/W |
| 1043 | Ext22 | Measured data on External 22 | R/W |
| 1045 | Ext23 | Measured data on External 23 | R/W |
| 1047 | Ext24 | Measured data on External 24 | R/W |
| 1049 | Ext25 | Measured data on External 25 | R/W |
| 1051 | Ext26 | Measured data on External 26 | R/W |
| 1053 | Ext27 | Measured data on External 27 | R/W |
| 1055 | Ext28 | Measured data on External 28 | R/W |
| 1057 | Ext29 | Measured data on External 29 | R/W |
| 1059 | Ext30 | Measured data on External 30 | R/W |
| 1061 | Ext31 | Measured data on External 31 | R/W |
| 1063 | Ext32 | Measured data on External 32 | R/W |
| 1065 | Ext33 | Measured data on External 33 | R/W |
| 1067 | Ext34 | Measured data on External 34 | R/W |
| 1069 | Ext35 | Measured data on External 35 | R/W |
| 1071 | Ext36 | Measured data on External 36 | R/W |
| 1073 | Ext37 | Measured data on External 37 | R/W |
| 1075 | Ext38 | Measured data on External 38 | R/W |
| 1077 | Ext39 | Measured data on External 39 | R/W |
| 1079 | Ext40 | Measured data on External 40 | R/W |
| 1081 | Ext41 | Measured data on External 41 | R/W |
| 1083 | Ext42 | Measured data on External 42 | R/W |
| 1085 | Ext43 | Measured data on External 43 | R/W |
| 1087 | Ext44 | Measured data on External 44 | R/W |
| 1089 | Ext45 | Measured data on External 45 | R/W |
| 1091 | Ext46 | Measured data on External 46 | R/W |
| 1093 | Ext47 | Measured data on External 47 | R/W |
| 1095 | Ext48 | Measured data on External 48 | R/W |
| 1097 | Ext49 | Measured data on External 49 | R/W |
| 1099 | Ext50 | Measured data on External 50 | R/W |
| 1101 | Ext51 | Measured data on External 51 | R/W |
| 1103 | Ext52 | Measured data on External 52 | R/W |
| 1105 | Ext53 | Measured data on External 53 | R/W |
| 1107 | Ext54 | Measured data on External 54 | R/W |

| 1109 | Ext55 | Measured data on External 55 | R/W |
|---|---|---|---|
| 1111 | Ext56 | Measured data on External 56 | R/W |
| 1113 | Ext57 | Measured data on External 57 | R/W |
| 1115 | Ext58 | Measured data on External 58 | R/W |
| 1117 | Ext59 | Measured data on External 59 | R/W |
| 1119 | Ext60 | Measured data on External 60 | R/W |
| 1121 | Ext61 | Measured data on External 61 | R/W |
| 1123 | Ext62 | Measured data on External 62 | R/W |
| 1125 | Ext63 | Measured data on External 63 | R/W |
| 1127 | Ext64 | Measured data on External 64 | R/W |
| 1129 | Ext65 | Measured data on External 65 | R/W |
| 1131 | Ext66 | Measured data on External 66 | R/W |
| 1133 | Ext67 | Measured data on External 67 | R/W |
| 1135 | Ext68 | Measured data on External 68 | R/W |
| 1137 | Ext69 | Measured data on External 69 | R/W |
| 1139 | Ext70 | Measured data on External 70 | R/W |
| 1141 | Ext71 | Measured data on External 71 | R/W |
| 1143 | Ext72 | Measured data on External 72 | R/W |
| 1145 | Ext73 | Measured data on External 73 | R/W |
| 1147 | Ext74 | Measured data on External 74 | R/W |
| 1149 | Ext75 | Measured data on External 75 | R/W |
| 1151 | Ext76 | Measured data on External 76 | R/W |
| 1153 | Ext77 | Measured data on External 77 | R/W |
| 1155 | Ext78 | Measured data on External 78 | R/W |
| 1157 | Ext79 | Measured data on External 79 | R/W |
| 1159 | Ext80 | Measured data on External 80 | R/W |
| 1161 | Ext81 | Measured data on External 81 | R/W |
| 1163 | Ext82 | Measured data on External 82 | R/W |
| 1165 | Ext83 | Measured data on External 83 | R/W |
| 1167 | Ext84 | Measured data on External 84 | R/W |
| 1169 | Ext85 | Measured data on External 85 | R/W |
| 1171 | Ext86 | Measured data on External 86 | R/W |
| 1173 | Ext87 | Measured data on External 87 | R/W |
| 1175 | Ext88 | Measured data on External 88 | R/W |
| 1177 | Ext89 | Measured data on External 89 | R/W |
| 1179 | Ext90 | Measured data on External 90 | R/W |
| 1181 | Ext91 | Measured data on External 91 | R/W |
| 1183 | Ext92 | Measured data on External 92 | R/W |
| 1185 | Ext93 | Measured data on External 93 | R/W |
| 1187 | Ext94 | Measured data on External 94 | R/W |
| 1189 | Ext95 | Measured data on External 95 | R/W |
| 1191 | Ext96 | Measured data on External 96 | R/W |

∗ *Note: If the register value is 3.0+E38, which value represents communication error.*

# 3. Holding Register Parameter Table for Remote Command

## 3.1 Command Area

| Modbus Address | Register Name | Note | Access |
|:---:|:---|:---:|:---:|
| 10002 | Start / Stop data log | 0 : Stop<br>1 : Start | R/W |
| 10102 | Batch Name | Include 2 characters for each register○,1 | R/W |
| 10103 | Batch Name | ○,1 | R/W |
| 10104 | Batch Name | ○,1 | R/W |
| 10105 | Batch Name | ○,1 | R/W |
| 10106 | Batch Name | ○,1 | R/W |
| 10107 | Batch Name | ○,1 | R/W |
| 10108 | Batch Name | ○,1 | R/W |
| 10109 | Batch Name | ○,1 | R/W |
| 10110 | Batch Name | ○,1 | R/W |
| 10111 | Batch Name | ○,1 | R/W |
| 10112 | Batch Name | ○,1 | R/W |
| 10113 | Batch Name | ○,1 | R/W |
| 10114 | Batch Name | ○,1 | R/W |
| 10115 | Batch Name | ○,1 | R/W |
| 10116 | Batch Name | ○,1 | R/W |
| 10117 | Batch Name | ○,1 | R/W |
| 10118 | Batch Name | ○,1 | R/W |
| 10119 | Batch Name | ○,1 | R/W |
| 10120 | Lot NO. | 1 ~ 65535 | R/W |
| 10121 | Comment1 | Include 2 characters for each register○,1 | R/W |
| 10122 | Comment1 | ○,1 | R/W |
| 10123 | Comment1 | ○,1 | R/W |
| 10124 | Comment1 | ○,1 | R/W |
| 10125 | Comment1 | ○,1 | R/W |
| 10126 | Comment1 | ○,1 | R/W |
| 10127 | Comment1 | ○,1 | R/W |
| 10128 | Comment1 | ○,1 | R/W |
| 10129 | Comment1 | ○,1 | R/W |
| 10130 | Comment1 | ○,1 | R/W |
| 10131 | Comment1 | ○,1 | R/W |
| 10132 | Comment1 | ○,1 | R/W |
| 10133 | Comment1 | ○,1 | R/W |
| 10134 | Comment1 | ○,1 | R/W |
| 10135 | Comment1 | ○,1 | R/W |
| 10136 | Comment1 | ○,1 | R/W |
| 10137 | Comment1 | ○,1 | R/W |
| 10138 | Comment1 | ○,1 | R/W |
| 10139 | Comment1 | ○,1 | R/W |
| 10140 | Comment1 | ○,1 | R/W |
| 10141 | Comment1 | ○,1 | R/W |
| 10142 | Comment1 | ○,1 | R/W |
| 10143 | Comment1 | ○,1 | R/W |
| 10144 | Comment1 | ○,1 | R/W |

| 10145 | Comment1 | ○,1 | R/W |
|---|---|---|---|
| 10146 | Comment1 | ○,1 | R/W |
| 10147 | Comment1 | ○,1 | R/W |
| 10148 | Comment1 | ○,1 | R/W |
| 10149 | Comment1 | ○,1 | R/W |
| 10150 | Comment1 | ○,1 | R/W |
| 10151 | Comment1 | ○,1 | R/W |
| 10152 | Comment1 | ○,1 | R/W |
| 10153 | Comment1 | ○,1 | R/W |
| 10154 | Comment1 | ○,1 | R/W |
| 10155 | Comment1 | ○,1 | R/W |
| 10156 | Comment1 | ○,1 | R/W |
| 10157 | Comment2 | ○,1 | R/W |
| 10158 | Comment2 | ○,1 | R/W |
| 10159 | Comment2 | ○,1 | R/W |
| 10160 | Comment2 | ○,1 | R/W |
| 10161 | Comment2 | ○,1 | R/W |
| 10162 | Comment2 | ○,1 | R/W |
| 10163 | Comment2 | ○,1 | R/W |
| 10164 | Comment2 | ○,1 | R/W |
| 10165 | Comment2 | ○,1 | R/W |
| 10166 | Comment2 | ○,1 | R/W |
| 10167 | Comment2 | ○,1 | R/W |
| 10168 | Comment2 | ○,1 | R/W |
| 10169 | Comment2 | ○,1 | R/W |
| 10170 | Comment2 | ○,1 | R/W |
| 10171 | Comment2 | ○,1 | R/W |
| 10172 | Comment2 | ○,1 | R/W |
| 10173 | Comment2 | ○,1 | R/W |
| 10174 | Comment2 | ○,1 | R/W |
| 10175 | Comment2 | ○,1 | R/W |
| 10176 | Comment2 | ○,1 | R/W |
| 10177 | Comment2 | ○,1 | R/W |
| 10178 | Comment2 | ○,1 | R/W |
| 10179 | Comment2 | ○,1 | R/W |
| 10180 | Comment2 | ○,1 | R/W |
| 10181 | Comment2 | ○,1 | R/W |
| 10182 | Comment2 | ○,1 | R/W |
| 10183 | Comment2 | ○,1 | R/W |
| 10184 | Comment2 | ○,1 | R/W |
| 10185 | Comment2 | ○,1 | R/W |
| 10186 | Comment2 | ○,1 | R/W |
| 10187 | Comment2 | ○,1 | R/W |
| 10188 | Comment2 | ○,1 | R/W |
| 10189 | Comment2 | ○,1 | R/W |
| 10190 | Comment2 | ○,1 | R/W |
| 10191 | Comment2 | ○,1 | R/W |
| 10192 | Comment2 | ○,1 | R/W |
| 10193 | Comment3 | ○,1 | R/W |
| 10194 | Comment3 | ○,1 | R/W |
| 10195 | Comment3 | ○,1 | R/W |
| 10196 | Comment3 | ○,1 | R/W |

| 10197 | Comment3 | ○,1 | R/W |
|---|---|---|---|
| 10198 | Comment3 | ○,1 | R/W |
| 10199 | Comment3 | ○,1 | R/W |
| 10200 | Comment3 | ○,1 | R/W |
| 10201 | Comment3 | ○,1 | R/W |
| 10202 | Comment3 | ○,1 | R/W |
| 10203 | Comment3 | ○,1 | R/W |
| 10204 | Comment3 | ○,1 | R/W |
| 10205 | Comment3 | ○,1 | R/W |
| 10206 | Comment3 | ○,1 | R/W |
| 10207 | Comment3 | ○,1 | R/W |
| 10208 | Comment3 | ○,1 | R/W |
| 10209 | Comment3 | ○,1 | R/W |
| 10210 | Comment3 | ○,1 | R/W |
| 10211 | Comment3 | ○,1 | R/W |
| 10212 | Comment3 | ○,1 | R/W |
| 10213 | Comment3 | ○,1 | R/W |
| 10214 | Comment3 | ○,1 | R/W |
| 10215 | Comment3 | ○,1 | R/W |
| 10216 | Comment3 | ○,1 | R/W |
| 10217 | Comment3 | ○,1 | R/W |
| 10218 | Comment3 | ○,1 | R/W |
| 10219 | Comment3 | ○,1 | R/W |
| 10220 | Comment3 | ○,1 | R/W |
| 10221 | Comment3 | ○,1 | R/W |
| 10222 | Comment3 | ○,1 | R/W |
| 10223 | Comment3 | ○,1 | R/W |
| 10224 | Comment3 | ○,1 | R/W |
| 10225 | Comment3 | ○,1 | R/W |
| 10226 | Comment3 | ○,1 | R/W |
| 10227 | Comment3 | ○,1 | R/W |
| 10228 | Comment3 | ○,1 | R/W |
| 10229 | Comment4 | ○,1 | R/W |
| 10230 | Comment4 | ○,1 | R/W |
| 10231 | Comment4 | ○,1 | R/W |
| 10232 | Comment4 | ○,1 | R/W |
| 10233 | Comment4 | ○,1 | R/W |
| 10234 | Comment4 | ○,1 | R/W |
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| 10238 | Comment4 | ○,1 | R/W |
| 10239 | Comment4 | ○,1 | R/W |
| 10240 | Comment4 | ○,1 | R/W |
| 10241 | Comment4 | ○,1 | R/W |
| 10242 | Comment4 | ○,1 | R/W |
| 10243 | Comment4 | ○,1 | R/W |
| 10244 | Comment4 | ○,1 | R/W |
| 10245 | Comment4 | ○,1 | R/W |
| 10246 | Comment4 | ○,1 | R/W |
| 10247 | Comment4 | ○,1 | R/W |
| 10248 | Comment4 | ○,1 | R/W |

| 10249 | Comment4 | ○,1 | R/W |
|-------|----------|-----|-----|
| 10250 | Comment4 | ○,1 | R/W |
| 10251 | Comment4 | ○,1 | R/W |
| 10252 | Comment4 | ○,1 | R/W |
| 10253 | Comment4 | ○,1 | R/W |
| 10254 | Comment4 | ○,1 | R/W |
| 10255 | Comment4 | ○,1 | R/W |
| 10256 | Comment4 | ○,1 | R/W |
| 10257 | Comment4 | ○,1 | R/W |
| 10258 | Comment4 | ○,1 | R/W |
| 10259 | Comment4 | ○,1 | R/W |
| 10260 | Comment4 | ○,1 | R/W |
| 10261 | Comment4 | ○,1 | R/W |
| 10262 | Comment4 | ○,1 | R/W |
| 10263 | Comment4 | ○,1 | R/W |
| 10264 | Comment4 | ○,1 | R/W |
| 10265 | Comment5 | ○,1 | R/W |
| 10266 | Comment5 | ○,1 | R/W |
| 10267 | Comment5 | ○,1 | R/W |
| 10268 | Comment5 | ○,1 | R/W |
| 10269 | Comment5 | ○,1 | R/W |
| 10270 | Comment5 | ○,1 | R/W |
| 10271 | Comment5 | ○,1 | R/W |
| 10272 | Comment5 | ○,1 | R/W |
| 10273 | Comment5 | ○,1 | R/W |
| 10274 | Comment5 | ○,1 | R/W |
| 10275 | Comment5 | ○,1 | R/W |
| 10276 | Comment5 | ○,1 | R/W |
| 10277 | Comment5 | ○,1 | R/W |
| 10278 | Comment5 | ○,1 | R/W |
| 10279 | Comment5 | ○,1 | R/W |
| 10280 | Comment5 | ○,1 | R/W |
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| 10282 | Comment5 | ○,1 | R/W |
| 10283 | Comment5 | ○,1 | R/W |
| 10284 | Comment5 | ○,1 | R/W |
| 10285 | Comment5 | ○,1 | R/W |
| 10286 | Comment5 | ○,1 | R/W |
| 10287 | Comment5 | ○,1 | R/W |
| 10288 | Comment5 | ○,1 | R/W |
| 10289 | Comment5 | ○,1 | R/W |
| 10290 | Comment5 | ○,1 | R/W |
| 10291 | Comment5 | ○,1 | R/W |
| 10292 | Comment5 | ○,1 | R/W |
| 10293 | Comment5 | ○,1 | R/W |
| 10294 | Comment5 | ○,1 | R/W |
| 10295 | Comment5 | ○,1 | R/W |
| 10296 | Comment5 | ○,1 | R/W |
| 10297 | Comment5 | ○,1 | R/W |
| 10298 | Comment5 | ○,1 | R/W |
| 10299 | Comment5 | ○,1 | R/W |
| 10300 | Comment5 | ○,1 | R/W |

| 10301 | Comment6 | ○,1 | R/W |
|---|---|---|---|
| 10302 | Comment6 | ○,1 | R/W |
| 10303 | Comment6 | ○,1 | R/W |
| 10304 | Comment6 | ○,1 | R/W |
| 10305 | Comment6 | ○,1 | R/W |
| 10306 | Comment6 | ○,1 | R/W |
| 10307 | Comment6 | ○,1 | R/W |
| 10308 | Comment6 | ○,1 | R/W |
| 10309 | Comment6 | ○,1 | R/W |
| 10310 | Comment6 | ○,1 | R/W |
| 10311 | Comment6 | ○,1 | R/W |
| 10312 | Comment6 | ○,1 | R/W |
| 10313 | Comment6 | ○,1 | R/W |
| 10314 | Comment6 | ○,1 | R/W |
| 10315 | Comment6 | ○,1 | R/W |
| 10316 | Comment6 | ○,1 | R/W |
| 10317 | Comment6 | ○,1 | R/W |
| 10318 | Comment6 | ○,1 | R/W |
| 10319 | Comment6 | ○,1 | R/W |
| 10320 | Comment6 | ○,1 | R/W |
| 10321 | Comment6 | ○,1 | R/W |
| 10322 | Comment6 | ○,1 | R/W |
| 10323 | Comment6 | ○,1 | R/W |
| 10324 | Comment6 | ○,1 | R/W |
| 10325 | Comment6 | ○,1 | R/W |
| 10326 | Comment6 | ○,1 | R/W |
| 10327 | Comment6 | ○,1 | R/W |
| 10328 | Comment6 | ○,1 | R/W |
| 10329 | Comment6 | ○,1 | R/W |
| 10330 | Comment6 | ○,1 | R/W |
| 10331 | Comment6 | ○,1 | R/W |
| 10332 | Comment6 | ○,1 | R/W |
| 10333 | Comment6 | ○,1 | R/W |
| 10334 | Comment6 | ○,1 | R/W |
| 10335 | Comment6 | ○,1 | R/W |
| 10336 | Comment6 | ○,1 | R/W |
| 10337 | Comment7 | ○,1 | R/W |
| 10338 | Comment7 | ○,1 | R/W |
| 10339 | Comment7 | ○,1 | R/W |
| 10340 | Comment7 | ○,1 | R/W |
| 10341 | Comment7 | ○,1 | R/W |
| 10342 | Comment7 | ○,1 | R/W |
| 10343 | Comment7 | ○,1 | R/W |
| 10344 | Comment7 | ○,1 | R/W |
| 10345 | Comment7 | ○,1 | R/W |
| 10346 | Comment7 | ○,1 | R/W |
| 10347 | Comment7 | ○,1 | R/W |
| 10348 | Comment7 | ○,1 | R/W |
| 10349 | Comment7 | ○,1 | R/W |
| 10350 | Comment7 | ○,1 | R/W |
| 10351 | Comment7 | ○,1 | R/W |
| 10352 | Comment7 | ○,1 | R/W |

| 10353 | Comment7 | ○,1 | R/W |
|---|---|---|---|
| 10354 | Comment7 | ○,1 | R/W |
| 10355 | Comment7 | ○,1 | R/W |
| 10356 | Comment7 | ○,1 | R/W |
| 10357 | Comment7 | ○,1 | R/W |
| 10358 | Comment7 | ○,1 | R/W |
| 10359 | Comment7 | ○,1 | R/W |
| 10360 | Comment7 | ○,1 | R/W |
| 10361 | Comment7 | ○,1 | R/W |
| 10362 | Comment7 | ○,1 | R/W |
| 10363 | Comment7 | ○,1 | R/W |
| 10364 | Comment7 | ○,1 | R/W |
| 10365 | Comment7 | ○,1 | R/W |
| 10366 | Comment7 | ○,1 | R/W |
| 10367 | Comment7 | ○,1 | R/W |
| 10368 | Comment7 | ○,1 | R/W |
| 10369 | Comment7 | ○,1 | R/W |
| 10370 | Comment7 | ○,1 | R/W |
| 10371 | Comment7 | ○,1 | R/W |
| 10372 | Comment7 | ○,1 | R/W |
| 10373 | Comment8 | ○,1 | R/W |
| 10374 | Comment8 | ○,1 | R/W |
| 10375 | Comment8 | ○,1 | R/W |
| 10376 | Comment8 | ○,1 | R/W |
| 10377 | Comment8 | ○,1 | R/W |
| 10378 | Comment8 | ○,1 | R/W |
| 10379 | Comment8 | ○,1 | R/W |
| 10380 | Comment8 | ○,1 | R/W |
| 10381 | Comment8 | ○,1 | R/W |
| 10382 | Comment8 | ○,1 | R/W |
| 10383 | Comment8 | ○,1 | R/W |
| 10384 | Comment8 | ○,1 | R/W |
| 10385 | Comment8 | ○,1 | R/W |
| 10386 | Comment8 | ○,1 | R/W |
| 10387 | Comment8 | ○,1 | R/W |
| 10388 | Comment8 | ○,1 | R/W |
| 10389 | Comment8 | ○,1 | R/W |
| 10390 | Comment8 | ○,1 | R/W |
| 10391 | Comment8 | ○,1 | R/W |
| 10392 | Comment8 | ○,1 | R/W |
| 10393 | Comment8 | ○,1 | R/W |
| 10394 | Comment8 | ○,1 | R/W |
| 10395 | Comment8 | ○,1 | R/W |
| 10396 | Comment8 | ○,1 | R/W |
| 10397 | Comment8 | ○,1 | R/W |
| 10398 | Comment8 | ○,1 | R/W |
| 10399 | Comment8 | ○,1 | R/W |
| 10400 | Comment8 | ○,1 | R/W |
| 10401 | Comment8 | ○,1 | R/W |
| 10402 | Comment8 | ○,1 | R/W |
| 10403 | Comment8 | ○,1 | R/W |
| 10404 | Comment8 | ○,1 | R/W |

| 10405 | Comment8 | ○,1 | R/W |
|---|---|---|---|
| 10406 | Comment8 | ○,1 | R/W |
| 10407 | Comment8 | ○,1 | R/W |
| 10408 | Comment8 | ○,1 | R/W |
| 10409 | Comment9 | ○,1 | R/W |
| 10410 | Comment9 | ○,1 | R/W |
| 10411 | Comment9 | ○,1 | R/W |
| 10412 | Comment9 | ○,1 | R/W |
| 10413 | Comment9 | ○,1 | R/W |
| 10414 | Comment9 | ○,1 | R/W |
| 10415 | Comment9 | ○,1 | R/W |
| 10416 | Comment9 | ○,1 | R/W |
| 10417 | Comment9 | ○,1 | R/W |
| 10418 | Comment9 | ○,1 | R/W |
| 10419 | Comment9 | ○,1 | R/W |
| 10420 | Comment9 | ○,1 | R/W |
| 10421 | Comment9 | ○,1 | R/W |
| 10422 | Comment9 | ○,1 | R/W |
| 10423 | Comment9 | ○,1 | R/W |
| 10424 | Comment9 | ○,1 | R/W |
| 10425 | Comment9 | ○,1 | R/W |
| 10426 | Comment9 | ○,1 | R/W |
| 10427 | Comment9 | ○,1 | R/W |
| 10428 | Comment9 | ○,1 | R/W |
| 10429 | Comment9 | ○,1 | R/W |
| 10430 | Comment9 | ○,1 | R/W |
| 10431 | Comment9 | ○,1 | R/W |
| 10432 | Comment9 | ○,1 | R/W |
| 10433 | Comment9 | ○,1 | R/W |
| 10434 | Comment9 | ○,1 | R/W |
| 10435 | Comment9 | ○,1 | R/W |
| 10436 | Comment9 | ○,1 | R/W |
| 10437 | Comment9 | ○,1 | R/W |
| 10438 | Comment9 | ○,1 | R/W |
| 10439 | Comment9 | ○,1 | R/W |
| 10440 | Comment9 | ○,1 | R/W |
| 10441 | Comment9 | ○,1 | R/W |
| 10442 | Comment9 | ○,1 | R/W |
| 10443 | Comment9 | ○,1 | R/W |
| 10444 | Comment9 | ○,1 | R/W |
| 10445 | Comment10 | ○,1 | R/W |
| 10446 | Comment10 | ○,1 | R/W |
| 10447 | Comment10 | ○,1 | R/W |
| 10448 | Comment10 | ○,1 | R/W |
| 10449 | Comment10 | ○,1 | R/W |
| 10450 | Comment10 | ○,1 | R/W |
| 10451 | Comment10 | ○,1 | R/W |
| 10452 | Comment10 | ○,1 | R/W |
| 10453 | Comment10 | ○,1 | R/W |
| 10454 | Comment10 | ○,1 | R/W |
| 10455 | Comment10 | ○,1 | R/W |
| 10456 | Comment10 | ○,1 | R/W |

| | | | |
|---|---|---|---|
| **10457** | Comment10 | ○,1 | R/W |
| **10458** | Comment10 | ○,1 | R/W |
| **10459** | Comment10 | ○,1 | R/W |
| **10460** | Comment10 | ○,1 | R/W |
| **10461** | Comment10 | ○,1 | R/W |
| **10462** | Comment10 | ○,1 | R/W |
| **10463** | Comment10 | ○,1 | R/W |
| **10464** | Comment10 | ○,1 | R/W |
| **10465** | Comment10 | ○,1 | R/W |
| **10466** | Comment10 | ○,1 | R/W |
| **10467** | Comment10 | ○,1 | R/W |
| **10468** | Comment10 | ○,1 | R/W |
| **10469** | Comment10 | ○,1 | R/W |
| **10470** | Comment10 | ○,1 | R/W |
| **10471** | Comment10 | ○,1 | R/W |
| **10472** | Comment10 | ○,1 | R/W |
| **10473** | Comment10 | ○,1 | R/W |
| **10474** | Comment10 | ○,1 | R/W |
| **10475** | Comment10 | ○,1 | R/W |
| **10476** | Comment10 | ○,1 | R/W |
| **10477** | Comment10 | ○,1 | R/W |
| **10478** | Comment10 | ○,1 | R/W |
| **10479** | Comment10 | ○,1 | R/W |
| **10480** | Comment10 | ○,1 | R/W |
| **10481** | Description | ○,1 | R/W |
| **10482** | Description | ○,1 | R/W |
| **10483** | Description | ○,1 | R/W |
| **10484** | Description | ○,1 | R/W |
| **10485** | Description | ○,1 | R/W |
| **10486** | Description | ○,1 | R/W |
| **10487** | Description | ○,1 | R/W |
| **10488** | Description | ○,1 | R/W |
| **10489** | Description | ○,1 | R/W |
| **10490** | Description | ○,1 | R/W |
| **10491** | Description | ○,1 | R/W |
| **10492** | Description | ○,1 | R/W |
| **10493** | Description | ○,1 | R/W |
| **10494** | Description | ○,1 | R/W |
| **10495** | Description | ○,1 | R/W |
| **10496** | Description | ○,1 | R/W |
| **10497** | Description | ○,1 | R/W |
| **10498** | Description | ○,1 | R/W |
| **10499** | Description | ○,1 | R/W |
| **10500** | Description | ○,1 | R/W |
| **10501** | Description | ○,1 | R/W |
| **10502** | Description | ○,1 | R/W |
| **10503** | Description | ○,1 | R/W |
| **10504** | Description | ○,1 | R/W |
| **10505** | Description | ®,1 | R/W |
| **10506** | Description | ○,1 | R/W |
| **10507** | Description | ○,1 | R/W |
| **10508** | Description | ○,1 | R/W |

| 10509 | Description | ○,1 | R/W |
|---|---|---|---|
| 10510 | Description | ○,1 | R/W |
| 10511 | Description | ○,1 | R/W |
| 10512 | Description | ○,1 | R/W |
| 10513 | Description | ○,1 | R/W |
| 10514 | Description | ○,1 | R/W |
| 10515 | Description | ○,1 | R/W |
| 10516 | Description | ○,1 | R/W |
| 10517 | Description | ○,1 | R/W |
| 10518 | Description | ○,1 | R/W |
| 10519 | Description | ○,1 | R/W |
| 10520 | Description | ○,1 | R/W |
| 10521 | Description | ○,1 | R/W |
| 10522 | Description | ○,1 | R/W |
| 10523 | Description | ○,1 | R/W |
| 10524 | Description | ○,1 | R/W |
| 10525 | Description | ○,1 | R/W |
| 10526 | Description | ○,1 | R/W |
| 10527 | Description | ○,1 | R/W |
| 10528 | Description | ○,1 | R/W |
| 10529 | Description | ○,1 | R/W |
| 10530 | Description | ○,1 | R/W |

**Note:**
○,1 Don't input invalid character, such as : 0x00, 0x01 etc..

## 3.2  Decimal Point Area (Word Type)

| Modbus Address | Register Name | Note | Access |
|---|---|---|---|
| 2001 | AI1 Decimal Places | Maximum : 5 | R |
| 2002 | AI2 Decimal Places | | R |
| 2003 | AI3 Decimal Places | | R |
| 2004 | AI4 Decimal Places | | R |
| 2005 | AI5 Decimal Places | | R |
| 2006 | AI6 Decimal Places | | R |
| 2007 | AI7 Decimal Places | | R |
| 2008 | AI8 Decimal Places | | R |
| 2009 | AI9 Decimal Places | | R |
| 2010 | AI10 Decimal Places | | R |
| 2011 | AI11 Decimal Places | | R |
| 2012 | AI12 Decimal Places | | R |
| 2013 | AI13 Decimal Places | | R |
| 2014 | AI14 Decimal Places | | R |
| 2015 | AI15 Decimal Places | | R |
| 2016 | AI16 Decimal Places | | R |
| 2017 | AI17 Decimal Places | | R |
| 2018 | AI18 Decimal Places | | R |
| 2019 | AI19 Decimal Places | | R |
| 2020 | AI20 Decimal Places | | R |
| 2021 | AI21 Decimal Places | | R |
| 2022 | AI22 Decimal Places | | R |
| 2023 | AI23 Decimal Places | | R |
| 2024 | AI24 Decimal Places | | R |
| 2025 | AI25 Decimal Places | | R |
| 2026 | AI26 Decimal Places | | R |

| 2027 | AI27 Decimal Places | | R |
|------|---------------------|---|---|
| 2028 | AI28 Decimal Places | | R |
| 2029 | AI29 Decimal Places | | R |
| 2030 | AI30 Decimal Places | | R |
| 2031 | AI31 Decimal Places | | R |
| 2032 | AI32 Decimal Places | | R |
| 2033 | AI33 Decimal Places | | R |
| 2034 | AI34 Decimal Places | | R |
| 2035 | AI35 Decimal Places | | R |
| 2036 | AI36 Decimal Places | | R |
| 2037 | AI37 Decimal Places | | R |
| 2038 | AI38 Decimal Places | | R |
| 2039 | AI39 Decimal Places | | R |
| 2040 | AI40 Decimal Places | | R |
| 2041 | AI41 Decimal Places | | R |
| 2042 | AI42 Decimal Places | | R |
| 2043 | AI43 Decimal Places | | R |
| 2044 | AI44 Decimal Places | | R |
| 2045 | AI45 Decimal Places | | R |
| 2046 | AI46 Decimal Places | | R |
| 2047 | AI47 Decimal Places | | R |
| 2048 | AI48 Decimal Places | | R |
| 2049 | DI1 Decimal Places | | R |
| 2050 | DI2 Decimal Places | | R |
| 2051 | DI3 Decimal Places | | R |
| 2052 | DI4 Decimal Places | | R |
| 2053 | DI5 Decimal Places | | R |
| 2054 | DI6 Decimal Places | | R |
| 2055 | DI7 Decimal Places | | R |
| 2056 | DI8 Decimal Places | | R |
| 2057 | DI9 Decimal Places | | R |
| 2058 | DI10 Decimal Places | | R |
| 2059 | DI11 Decimal Places | | R |
| 2060 | DI12 Decimal Places | | R |
| 2061 | DI13 Decimal Places | | R |
| 2062 | DI14 Decimal Places | | R |
| 2063 | DI15 Decimal Places | | R |
| 2064 | DI16 Decimal Places | | R |
| 2065 | DI17 Decimal Places | | R |
| 2066 | DI18 Decimal Places | | R |
| 2067 | DI19 Decimal Places | | R |
| 2068 | DI20 Decimal Places | | R |
| 2069 | DI21 Decimal Places | | R |
| 2070 | DI22 Decimal Places | | R |
| 2071 | DI23 Decimal Places | | R |
| 2072 | DI24 Decimal Places | | R |
| 2073 | DO1 Decimal Places | | R |
| 2074 | DO2 Decimal Places | | R |
| 2075 | DO3 Decimal Places | | R |
| 2076 | DO4 Decimal Places | | R |
| 2077 | DO5 Decimal Places | | R |
| 2078 | DO6 Decimal Places | | R |
| 2079 | DO7 Decimal Places | | R |
| 2080 | DO8 Decimal Places | | R |
| 2081 | DO9 Decimal Places | | R |
| 2082 | DO10 Decimal Places | | R |

| | | | |
|---|---|---|---|
| 2083 | DO11 Decimal Places | | R |
| 2084 | DO12 Decimal Places | | R |
| 2085 | DO13 Decimal Places | | R |
| 2086 | DO14 Decimal Places | | R |
| 2087 | DO15 Decimal Places | | R |
| 2088 | DO16 Decimal Places | | R |
| 2089 | DO17 Decimal Places | | R |
| 2090 | DO18 Decimal Places | | R |
| 2091 | DO19 Decimal Places | | R |
| 2092 | DO20 Decimal Places | | R |
| 2093 | DO21 Decimal Places | | R |
| 2094 | DO22 Decimal Places | | R |
| 2095 | DO23 Decimal Places | | R |
| 2096 | DO24 Decimal Places | | R |
| 2097 | AO1 Decimal Places | | R |
| 2098 | AO2 Decimal Places | | R |
| 2099 | AO3 Decimal Places | | R |
| 2100 | AO4 Decimal Places | | R |
| 2101 | AO5 Decimal Places | | R |
| 2102 | AO6 Decimal Places | | R |
| 2103 | AO7 Decimal Places | | R |
| 2104 | AO8 Decimal Places | | R |
| 2105 | AO9 Decimal Places | | R |
| 2106 | AO10 Decimal Places | | R |
| 2107 | AO11 Decimal Places | | R |
| 2108 | AO12 Decimal Places | | R |
| 2109 | Math1 Decimal Places | | R |
| 2110 | Math2 Decimal Places | | R |
| 2111 | Math3 Decimal Places | | R |
| 2112 | Math4 Decimal Places | | R |
| 2113 | Math5 Decimal Places | | R |
| 2114 | Math6 Decimal Places | | R |
| 2115 | Math7 Decimal Places | | R |
| 2116 | Math8 Decimal Places | | R |
| 2117 | Math9 Decimal Places | | R |
| 2118 | Math10 Decimal Places | | R |
| 2119 | Math11 Decimal Places | | R |
| 2120 | Math12 Decimal Places | | R |
| 2121 | Math13 Decimal Places | | R |
| 2122 | Math14 Decimal Places | | R |
| 2123 | Math15 Decimal Places | | R |
| 2124 | Math16 Decimal Places | | R |
| 2125 | Math17 Decimal Places | | R |
| 2126 | Math18 Decimal Places | | R |
| 2127 | Math19 Decimal Places | | R |
| 2128 | Math20 Decimal Places | | R |
| 2129 | Math21 Decimal Places | | R |
| 2130 | Math22 Decimal Places | | R |
| 2131 | Math23 Decimal Places | | R |
| 2132 | Math24 Decimal Places | | R |
| 2133 | Math25 Decimal Places | | R |
| 2134 | Math26 Decimal Places | | R |
| 2135 | Math27 Decimal Places | | R |
| 2136 | Math28 Decimal Places | | R |
| 2137 | Math29 Decimal Places | | R |
| 2138 | Math30 Decimal Places | | R |

| 2139 | Math31 Decimal Places | | R |
|------|------------------------|--|---|
| 2140 | Math32 Decimal Places | | R |
| 2141 | Math33 Decimal Places | | R |
| 2142 | Math34 Decimal Places | | R |
| 2143 | Math35 Decimal Places | | R |
| 2144 | Math36 Decimal Places | | R |
| 2145 | Math37 Decimal Places | | R |
| 2146 | Math38 Decimal Places | | R |
| 2147 | Math39 Decimal Places | | R |
| 2148 | Math40 Decimal Places | | R |
| 2149 | Math41 Decimal Places | | R |
| 2150 | Math42 Decimal Places | | R |
| 2151 | Math43 Decimal Places | | R |
| 2152 | Math44 Decimal Places | | R |
| 2153 | Math45 Decimal Places | | R |
| 2154 | Math46 Decimal Places | | R |
| 2155 | Math47 Decimal Places | | R |
| 2156 | Math48 Decimal Places | | R |
| 2157 | Math49 Decimal Places | | R |
| 2158 | Math50 Decimal Places | | R |
| 2159 | Math51 Decimal Places | | R |
| 2160 | Math52 Decimal Places | | R |
| 2161 | Math53 Decimal Places | | R |
| 2162 | Math54 Decimal Places | | R |
| 2163 | Math55 Decimal Places | | R |
| 2164 | Math56 Decimal Places | | R |
| 2165 | Math57 Decimal Places | | R |
| 2166 | Math58 Decimal Places | | R |
| 2167 | Math59 Decimal Places | | R |
| 2168 | Math60 Decimal Places | | R |
| 2169 | Ext1 Decimal Places | | R |
| 2170 | Ext2 Decimal Places | | R |
| 2171 | Ext3 Decimal Places | | R |
| 2172 | Ext4 Decimal Places | | R |
| 2173 | Ext5 Decimal Places | | R |
| 2174 | Ext6 Decimal Places | | R |
| 2175 | Ext7 Decimal Places | | R |
| 2176 | Ext8 Decimal Places | | R |
| 2177 | Ext9 Decimal Places | | R |
| 2178 | Ext10 Decimal Places | | R |
| 2179 | Ext11 Decimal Places | | R |
| 2180 | Ext12 Decimal Places | | R |
| 2181 | Ext13 Decimal Places | | R |
| 2182 | Ext14 Decimal Places | | R |
| 2183 | Ext15 Decimal Places | | R |
| 2184 | Ext16 Decimal Places | | R |
| 2185 | Ext17 Decimal Places | | R |
| 2186 | Ext18 Decimal Places | | R |
| 2187 | Ext19 Decimal Places | | R |
| 2188 | Ext20 Decimal Places | | R |
| 2189 | Ext21 Decimal Places | | R |
| 2190 | Ext22 Decimal Places | | R |
| 2191 | Ext23 Decimal Places | | R |
| 2192 | Ext24 Decimal Places | | R |
| 2193 | Ext25 Decimal Places | | R |
| 2194 | Ext26 Decimal Places | | R |

| 2195 | Ext27 Decimal Places | | R |
|------|----------------------|---|---|
| 2196 | Ext28 Decimal Places | | R |
| 2197 | Ext29 Decimal Places | | R |
| 2198 | Ext30 Decimal Places | | R |
| 2199 | Ext31 Decimal Places | | R |
| 2200 | Ext32 Decimal Places | | R |
| 2201 | Ext33 Decimal Places | | R |
| 2202 | Ext34 Decimal Places | | R |
| 2203 | Ext35 Decimal Places | | R |
| 2204 | Ext36 Decimal Places | | R |
| 2205 | Ext37 Decimal Places | | R |
| 2206 | Ext38 Decimal Places | | R |
| 2207 | Ext39 Decimal Places | | R |
| 2208 | Ext40 Decimal Places | | R |
| 2209 | Ext41 Decimal Places | | R |
| 2210 | Ext42 Decimal Places | | R |
| 2211 | Ext43 Decimal Places | | R |
| 2212 | Ext44 Decimal Places | | R |
| 2213 | Ext45 Decimal Places | | R |
| 2214 | Ext46 Decimal Places | | R |
| 2215 | Ext47 Decimal Places | | R |
| 2216 | Ext48 Decimal Places | | R |
| 2217 | Ext49 Decimal Places | | R |
| 2218 | Ext50 Decimal Places | | R |
| 2219 | Ext51 Decimal Places | | R |
| 2220 | Ext52 Decimal Places | | R |
| 2221 | Ext53 Decimal Places | | R |
| 2222 | Ext54 Decimal Places | | R |
| 2223 | Ext55 Decimal Places | | R |
| 2224 | Ext56 Decimal Places | | R |
| 2225 | Ext57 Decimal Places | | R |
| 2226 | Ext58 Decimal Places | | R |
| 2227 | Ext59 Decimal Places | | R |
| 2228 | Ext60 Decimal Places | | R |
| 2229 | Ext61 Decimal Places | | R |
| 2230 | Ext62 Decimal Places | | R |
| 2231 | Ext63 Decimal Places | | R |
| 2232 | Ext64 Decimal Places | | R |
| 2233 | Ext65 Decimal Places | | R |
| 2234 | Ext66 Decimal Places | | R |
| 2235 | Ext67 Decimal Places | | R |
| 2236 | Ext68 Decimal Places | | R |
| 2237 | Ext69 Decimal Places | | R |
| 2238 | Ext70 Decimal Places | | R |
| 2239 | Ext71 Decimal Places | | R |
| 2240 | Ext72 Decimal Places | | R |
| 2241 | Ext73 Decimal Places | | R |
| 2242 | Ext74 Decimal Places | | R |
| 2243 | Ext75 Decimal Places | | R |
| 2244 | Ext76 Decimal Places | | R |
| 2245 | Ext77 Decimal Places | | R |
| 2246 | Ext78 Decimal Places | | R |
| 2247 | Ext79 Decimal Places | | R |
| 2248 | Ext80 Decimal Places | | R |
| 2249 | Ext81 Decimal Places | | R |
| 2250 | Ext82 Decimal Places | | R |

| | | | |
|---|---|---|---|
| **2251** | Ext83 Decimal Places | | R |
| **2252** | Ext84 Decimal Places | | R |
| **2253** | Ext85 Decimal Places | | R |
| **2254** | Ext86 Decimal Places | | R |
| **2255** | Ext87 Decimal Places | | R |
| **2256** | Ext88 Decimal Places | | R |
| **2257** | Ext89 Decimal Places | | R |
| **2258** | Ext90 Decimal Places | | R |
| **2259** | Ext91 Decimal Places | | R |
| **2260** | Ext92 Decimal Places | | R |
| **2261** | Ext93 Decimal Places | | R |
| **2262** | Ext94 Decimal Places | | R |
| **2263** | Ext95 Decimal Places | | R |
| **2264** | Ext96 Decimal Places | | R |

## 3.3 Modbus Scale Low Area (DWord Type)

| Modbus Address | Register Name | Note | Access |
|---|---|---|---|
| **4001** | The low word of Scale Low data is on AI1 | ○,1 | R/W |
| **4002** | The high word of Scale Low data is on AI1 | ○,1 | R/W |
| **4003** | The low word of Scale Low data is on AI2 | ○,1 | R/W |
| **4004** | The high word of Scale Low data is on AI2 | ○,1 | R/W |
| **4005** | The low word of Scale Low data is on AI3 | ○,1 | R/W |
| **4006** | The high word of Scale Low data is on AI3 | ○,1 | R/W |
| **4007** | The low word of Scale Low data is on AI4 | ○,1 | R/W |
| **4008** | The high word of Scale Low data is on AI4 | ○,1 | R/W |
| **4009** | The low word of Scale Low data is on AI5 | ○,1 | R/W |
| **4010** | The high word of Scale Low data is on AI5 | ○,1 | R/W |
| **4011** | The low word of Scale Low data is on AI6 | ○,1 | R/W |
| **4012** | The high word of Scale Low data is on AI6 | ○,1 | R/W |
| **4013** | The low word of Scale Low data is on AI7 | ○,1 | R/W |
| **4014** | The high word of Scale Low data is on AI7 | ○,1 | R/W |
| **4015** | The low word of Scale Low data is on AI8 | ○,1 | R/W |
| **4016** | The high word of Scale Low data is on AI8 | ○,1 | R/W |
| **4017** | The low word of Scale Low data is on AI9 | ○,1 | R/W |
| **4018** | The high word of Scale Low data is on AI9 | ○,1 | R/W |
| **4019** | The low word of Scale Low data is on AI10 | ○,1 | R/W |
| **4020** | The high word of Scale Low data is on AI10 | ○,1 | R/W |
| **4021** | The low word of Scale Low data is on AI11 | ○,1 | R/W |
| **4022** | The high word of Scale Low data is on AI11 | ○,1 | R/W |
| **4023** | The low word of Scale Low data is on AI12 | ○,1 | R/W |
| **4024** | The high word of Scale Low data is on AI12 | ○,1 | R/W |
| **4025** | The low word of Scale Low data is on AI13 | ○,1 | R/W |
| **4026** | The high word of Scale Low data is on AI13 | ○,1 | R/W |
| **4027** | The low word of Scale Low data is on AI14 | ○,1 | R/W |
| **4028** | The high word of Scale Low data is on AI14 | ○,1 | R/W |
| **4029** | The low word of Scale Low data is on AI15 | ○,1 | R/W |
| **4030** | The high word of Scale Low data is on AI15 | ○,1 | R/W |
| **4031** | The low word of Scale Low data is on AI16 | ○,1 | R/W |
| **4032** | The high word of Scale Low data is on AI16 | ◎,1 | R/W |
| **4033** | The low word of Scale Low data is on AI17 | ○,1 | R/W |
| **4034** | The high word of Scale Low data is on AI17 | ○,1 | R/W |
| **4035** | The low word of Scale Low data is on AI18 | ○,1 | R/W |
| **4036** | The high word of Scale Low data is on AI18 | ○,1 | R/W |

| 4037 | The low word of Scale Low data is on AI19 | $\bigcirc$,1 | R/W |
|---|---|---|---|
| 4038 | The high word of Scale Low data is on AI19 | $\bigcirc$,1 | R/W |
| 4039 | The low word of Scale Low data is on AI20 | $\bigcirc$,1 | R/W |
| 4040 | The high word of Scale Low data is on AI20 | $\bigcirc$,1 | R/W |
| 4041 | The low word of Scale Low data is on AI21 | $\bigcirc$,1 | R/W |
| 4042 | The high word of Scale Low data is on AI21 | $\bigcirc$,1 | R/W |
| 4043 | The low word of Scale Low data is on AI22 | $\bigcirc$,1 | R/W |
| 4044 | The high word of Scale Low data is on AI22 | $\bigcirc$,1 | R/W |
| 4045 | The low word of Scale Low data is on AI23 | $\bigcirc$,1 | R/W |
| 4046 | The high word of Scale Low data is on AI23 | $\bigcirc$,1 | R/W |
| 4047 | The low word of Scale Low data is on AI24 | $\bigcirc$,1 | R/W |
| 4048 | The high word of Scale Low data is on AI24 | $\bigcirc$,1 | R/W |
| 4049 | The low word of Scale Low data is on AI25 | $\bigcirc$,1 | R/W |
| 4050 | The high word of Scale Low data is on AI25 | $\bigcirc$,1 | R/W |
| 4051 | The low word of Scale Low data is on AI26 | $\bigcirc$,1 | R/W |
| 4052 | The high word of Scale Low data is on AI26 | $\bigcirc$,1 | R/W |
| 4053 | The low word of Scale Low data is on AI27 | $\bigcirc$,1 | R/W |
| 4054 | The high word of Scale Low data is on AI27 | $\bigcirc$,1 | R/W |
| 4055 | The low word of Scale Low data is on AI28 | $\bigcirc$,1 | R/W |
| 4056 | The high word of Scale Low data is on AI28 | $\bigcirc$,1 | R/W |
| 4057 | The low word of Scale Low data is on AI29 | $\bigcirc$,1 | R/W |
| 4058 | The high word of Scale Low data is on AI29 | $\bigcirc$,1 | R/W |
| 4059 | The low word of Scale Low data is on AI30 | $\bigcirc$,1 | R/W |
| 4060 | The high word of Scale Low data is on AI30 | $\bigcirc$,1 | R/W |
| 4061 | The low word of Scale Low data is on AI31 | $\bigcirc$,1 | R/W |
| 4062 | The high word of Scale Low data is on AI31 | $\bigcirc$,1 | R/W |
| 4063 | The low word of Scale Low data is on AI32 | $\bigcirc$,1 | R/W |
| 4064 | The high word of Scale Low data is on AI32 | $\bigcirc$,1 | R/W |
| 4065 | The low word of Scale Low data is on AI33 | $\bigcirc$,1 | R/W |
| 4066 | The high word of Scale Low data is on AI33 | $\bigcirc$,1 | R/W |
| 4067 | The low word of Scale Low data is on AI34 | $\bigcirc$,1 | R/W |
| 4068 | The high word of Scale Low data is on AI34 | $\bigcirc$,1 | R/W |
| 4069 | The low word of Scale Low data is on AI35 | $\bigcirc$,1 | R/W |
| 4070 | The high word of Scale Low data is on AI35 | $\bigcirc$,1 | R/W |
| 4071 | The low word of Scale Low data is on AI36 | $\bigcirc$,1 | R/W |
| 4072 | The high word of Scale Low data is on AI36 | $\bigcirc$,1 | R/W |
| 4073 | The low word of Scale Low data is on AI37 | $\bigcirc$,1 | R/W |
| 4074 | The high word of Scale Low data is on AI37 | $\bigcirc$,1 | R/W |
| 4075 | The low word of Scale Low data is on AI38 | $\bigcirc$,1 | R/W |
| 4076 | The high word of Scale Low data is on AI38 | $\bigcirc$,1 | R/W |
| 4077 | The low word of Scale Low data is on AI39 | $\bigcirc$,1 | R/W |
| 4078 | The high word of Scale Low data is on AI39 | $\bigcirc$,1 | R/W |
| 4079 | The low word of Scale Low data is on AI40 | $\bigcirc$,1 | R/W |
| 4080 | The high word of Scale Low data is on AI40 | $\bigcirc$,1 | R/W |
| 4081 | The low word of Scale Low data is on AI41 | $\bigcirc$,1 | R/W |
| 4082 | The high word of Scale Low data is on AI41 | $\bigcirc$,1 | R/W |
| 4083 | The low word of Scale Low data is on AI42 | $\bigcirc$,1 | R/W |
| 4084 | The high word of Scale Low data is on AI42 | $\bigcirc$,1 | R/W |
| 4085 | The low word of Scale Low data is on AI43 | $\bigcirc$,1 | R/W |
| 4086 | The high word of Scale Low data is on AI43 | $\bigcirc$,1 | R/W |
| 4087 | The low word of Scale Low data is on AI44 | $\bigcirc$,1 | R/W |
| 4088 | The high word of Scale Low data is on AI44 | $\bigcirc$,1 | R/W |

| 4089 | The low word of Scale Low data is on AI45 | ○,1 | R/W |
|---|---|---|---|
| 4090 | The high word of Scale Low data is on AI45 | ○,1 | R/W |
| 4091 | The low word of Scale Low data is on AI46 | ○,1 | R/W |
| 4492 | The high word of Scale Low data is on AI46 | ○,1 | R/W |
| 4093 | The low word of Scale Low data is on AI47 | ○,1 | R/W |
| 4094 | The high word of Scale Low data is on AI47 | ○,1 | R/W |
| 4095 | The low word of Scale Low data is on AI48 | ○,1 | R/W |
| 4096 | The high word of Scale Low data is on AI48 | ○,1 | R/W |
| 4097 | The low word of Scale Low data is on DI1 | | R |
| 4098 | The high word of Scale Low data is on DI1 | | R |
| 4099 | The low word of Scale Low data is on DI2 | | R |
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| 4101 | The low word of Scale Low data is on DI3 | | R |
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| 4112 | The high word of Scale Low data is on DI8 | | R |
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| 4143 | The low word of Scale Low data is on DI24 | | R |
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| 4146 | The high word of Scale Low data is on DO1 | | R |
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| 4264 | The high word of Scale Low data is on Math24 | | R |
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| 4312 | The high word of Scale Low data is on Math48 | | R |

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| 4470 | The high word of Scale Low data is on Ext67 | | R |
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| 4482 | The high word of Scale Low data is on Ext73 | | R |
| 4483 | The low word of Scale Low data is on Ext74 | | R |
| 4484 | The high word of Scale Low data is on Ext74 | | R |
| 4485 | The low word of Scale Low data is on Ext75 | | R |
| 4486 | The high word of Scale Low data is on Ext75 | | R |
| 4487 | The low word of Scale Low data is on Ext76 | | R |
| 4488 | The high word of Scale Low data is on Ext76 | | R |
| 4489 | The low word of Scale Low data is on Ext77 | | R |
| 4490 | The high word of Scale Low data is on Ext77 | | R |
| 4491 | The low word of Scale Low data is on Ext78 | | R |
| 4492 | The high word of Scale Low data is on Ext78 | | R |
| 4493 | The low word of Scale Low data is on Ext79 | | R |
| 4494 | The high word of Scale Low data is on Ext79 | | R |
| 4495 | The low word of Scale Low data is on Ext80 | | R |
| 4496 | The high word of Scale Low data is on Ext80 | | R |
| 4497 | The low word of Scale Low data is on Ext81 | | R |
| 4498 | The high word of Scale Low data is on Ext81 | | R |
| 4499 | The low word of Scale Low data is on Ext82 | | R |
| 4500 | The high word of Scale Low data is on Ext82 | | R |
| 4501 | The low word of Scale Low data is on Ext83 | | R |
| 4502 | The high word of Scale Low data is on Ext83 | | R |
| 4503 | The low word of Scale Low data is on Ext84 | | R |
| 4504 | The high word of Scale Low data is on Ext84 | | R |
| 4505 | The low word of Scale Low data is on Ext85 | | R |
| 4506 | The high word of Scale Low data is on Ext85 | | R |
| 4507 | The low word of Scale Low data is on Ext86 | | R |
| 4508 | The high word of Scale Low data is on Ext86 | | R |
| 4509 | The low word of Scale Low data is on Ext87 | | R |
| 4510 | The high word of Scale Low data is on Ext87 | | R |
| 4511 | The low word of Scale Low data is on Ext88 | | R |
| 4512 | The high word of Scale Low data is on Ext88 | | R |
| 4513 | The low word of Scale Low data is on Ext89 | | R |
| 4514 | The high word of Scale Low data is on Ext89 | | R |
| 4515 | The low word of Scale Low data is on Ext90 | | R |
| 4516 | The high word of Scale Low data is on Ext90 | | R |
| 4517 | The low word of Scale Low data is on Ext91 | | R |
| 4518 | The high word of Scale Low data is on Ext91 | | R |
| 4519 | The low word of Scale Low data is on Ext92 | | R |
| 4520 | The high word of Scale Low data is on Ext92 | | R |
| 4521 | The low word of Scale Low data is on Ext93 | | R |
| 4522 | The high word of Scale Low data is on Ext93 | | R |
| 4523 | The low word of Scale Low data is on Ext94 | | R |
| 4524 | The high word of Scale Low data is on Ext94 | | R |
| 4525 | The low word of Scale Low data is on Ext95 | | R |
| 4526 | The high word of Scale Low data is on Ext95 | | R |
| 4527 | The low word of Scale Low data is on Ext96 | | R |
| 4528 | The high word of Scale Low data is on Ext96 | | R |

**Note:**

○,[1] The Scale Low / High can be modified when the type is Linear.
How to calculate Modbus Scale Low / High:
Step 1: Calculate ΔScale Range, ΔScale Range = Scale High - Scale Low
Step 2: Calculate Modbus Range, Modbus ΔScale Range = ΔScale Range
    * 1.2
Step 3: Calculate Modbus Low: Scale Low - (Modbus ΔScale Range
    - ΔScale Range)
    Calculate Modbus Scale High: Scale High + (Modbus ΔScale Range
    - ΔScale Range)
Step 4: To convert the Modbus Scale Low / High value to DWord value

For example: Scale Low is 0, Scale High is 10
Step 1: ΔScale Range = Scale High - Scale Low = 10 - 0 = 10
Step 2: Modbus ΔScale Range = ΔScale Range * 1.2 = 12

Step 3: Modbus Scale Low = Scale Low - (Modbus ΔScale Range - ΔScale
    Range) = 0 - (12 - 10) = 0 - 2 = -2
    Modbus Scale High = Scale High + (Modbus ΔScale Range -
    ΔScale Range) = 10 + (12 - 10) = 10 + 2 = 12
Step 4: Convert the Modbus Scale Low value to DWord value :
        (((-2 * DP Value) - (-2147483648)) / (2147483647-
    (-2147483648))) * 4294967295
    The DP Value is 1000 when the DP is 3 =>
    (-2000 - (-2147483648)) / (2147483647 - (-2147483648)) *
    4294967295 = 2147481648
        Convert the Modbus Scale High value to DWord value :
        (((12 * DP Value) - (-2147483648)) / (2147483647-
    (-2147483648))) * 4294967295
    The DP Value is 1000 when the DP is 3 =>
    (12000 - (-2147483648)) / (2147483647 - (-2147483648)) *
    4294967295 = 2147495648

_Convert DWord value to real Scale Low value :_
Real Scale Low Value = ((((DWord Value - 0) * 4294967295) / 4294967295) + (-2147483648)) / DP Value

| DP | DP Value |
|----|----------|
| 0 | 1 |
| 1 | 10 |
| 2 | 100 |
| 3 | 1000 |
| 4 | 10000 |
| 5 | 100000 |

## 3.4 Modbus Scale High Area (DWord Type)

| Modbus Address | Register Name | Note | Access |
|---|---|---|---|
| 6001 | The low word of Scale High data is on AI1 | ○,1 | R/W |
| 6002 | The high word of Scale High data is on AI1 | ○,1 | R/W |
| 6003 | The low word of Scale High data is on AI2 | ○,1 | R/W |
| 6004 | The high word of Scale High data is on AI2 | ○,1 | R/W |
| 6005 | The low word of Scale High data is on AI3 | ○,1 | R/W |
| 6006 | The high word of Scale High data is on AI3 | ○,1 | R/W |
| 6007 | The low word of Scale High data is on AI4 | ○,1 | R/W |
| 6008 | The high word of Scale High data is on AI4 | ○,1 | R/W |
| 6009 | The low word of Scale High data is on AI5 | ○,1 | R/W |
| 6010 | The high word of Scale High data is on AI5 | ○,1 | R/W |
| 6011 | The low word of Scale High data is on AI6 | ○,1 | R/W |
| 6012 | The high word of Scale High data is on AI6 | ○,1 | R/W |
| 6013 | The low word of Scale High data is on AI7 | ○,1 | R/W |
| 6014 | The high word of Scale High data is on AI7 | ○,1 | R/W |
| 6015 | The low word of Scale High data is on AI8 | ○,1 | R/W |
| 6016 | The high word of Scale High data is on AI8 | ○,1 | R/W |
| 6017 | The low word of Scale High data is on AI9 | ○,1 | R/W |
| 6018 | The high word of Scale High data is on AI9 | ○,1 | R/W |
| 6019 | The low word of Scale High data is on AI10 | ○,1 | R/W |
| 6020 | The high word of Scale High data is on AI10 | ○,1 | R/W |
| 6021 | The low word of Scale High data is on AI11 | ○,1 | R/W |
| 6022 | The high word of Scale High data is on AI11 | ○,1 | R/W |
| 6023 | The low word of Scale High data is on AI12 | ○,1 | R/W |
| 6024 | The high word of Scale High data is on AI12 | ○,1 | R/W |
| 6025 | The low word of Scale High data is on AI13 | ○,1 | R/W |
| 6026 | The high word of Scale Low data is on AI13 | ○,1 | R/W |
| 6027 | The low word of Scale High data is on AI14 | ○,1 | R/W |
| 6028 | The high word of Scale High data is on AI14 | ○,1 | R/W |
| 6029 | The low word of Scale High data is on AI15 | ○,1 | R/W |
| 6030 | The high word of Scale High data is on AI15 | ○,1 | R/W |
| 6031 | The low word of Scale High data is on AI16 | ○,1 | R/W |
| 6032 | The high word of Scale High data is on AI16 | ○,1 | R/W |
| 6033 | The low word of Scale High data is on AI17 | ○,1 | R/W |
| 6034 | The high word of Scale High data is on AI17 | ○,1 | R/W |
| 6035 | The low word of Scale High data is on AI18 | ○,1 | R/W |
| 6036 | The high word of Scale High data is on AI18 | ○,1 | R/W |
| 6037 | The low word of Scale High data is on AI19 | ○,1 | R/W |
| 6038 | The high word of Scale High data is on AI19 | ○,1 | R/W |
| 6039 | The low word of Scale High data is on AI20 | ○,1 | R/W |
| 6040 | The high word of Scale High data is on AI20 | ○,1 | R/W |
| 6041 | The low word of Scale High data is on AI21 | ○,1 | R/W |
| 6042 | The high word of Scale High data is on AI21 | ○,1 | R/W |
| 6043 | The low word of Scale High data is on AI22 | ○,1 | R/W |
| 6044 | The high word of Scale High data is on AI22 | ○,1 | R/W |
| 6045 | The low word of Scale High data is on AI23 | ○,1 | R/W |
| 6046 | The high word of Scale High data is on AI23 | ○,1 | R/W |
| 6047 | The low word of Scale High data is on AI24 | ◎,1 | R/W |
| 6048 | The high word of Scale High data is on AI24 | ○,1 | R/W |
| 6049 | The low word of Scale High data is on AI25 | ○,1 | R/W |
| 6050 | The high word of Scale High data is on AI25 | ○,1 | R/W |
| 6051 | The low word of Scale High data is on AI26 | ○,1 | R/W |

| 6052 | The high word of Scale High data is on AI26 | ○,1 | R/W |
|---|---|---|---|
| 6053 | The low word of Scale High data is on AI27 | ○,1 | R/W |
| 6054 | The high word of Scale High data is on AI27 | ○,1 | R/W |
| 6055 | The low word of Scale High data is on AI28 | ○,1 | R/W |
| 6056 | The high word of Scale High data is on AI28 | ○,1 | R/W |
| 6057 | The low word of Scale High data is on AI29 | ○,1 | R/W |
| 6058 | The high word of Scale High data is on AI29 | ○,1 | R/W |
| 6059 | The low word of Scale High data is on AI30 | ○,1 | R/W |
| 6060 | The high word of Scale High data is on AI30 | ○,1 | R/W |
| 6061 | The low word of Scale High data is on AI31 | ○,1 | R/W |
| 6062 | The high word of Scale High data is on AI31 | ○,1 | R/W |
| 6063 | The low word of Scale High data is on AI32 | ○,1 | R/W |
| 6064 | The high word of Scale High data is on AI32 | ○,1 | R/W |
| 6065 | The low word of Scale High data is on AI33 | ○,1 | R/W |
| 6066 | The high word of Scale High data is on AI33 | ○,1 | R/W |
| 6067 | The low word of Scale High data is on AI34 | ○,1 | R/W |
| 6068 | The high word of Scale High data is on AI34 | ○,1 | R/W |
| 6069 | The low word of Scale High data is on AI35 | ○,1 | R/W |
| 6070 | The high word of Scale High data is on AI35 | ○,1 | R/W |
| 6071 | The low word of Scale High data is on AI36 | ○,1 | R/W |
| 6072 | The high word of Scale High data is on AI36 | ○,1 | R/W |
| 6073 | The low word of Scale High data is on AI37 | ○,1 | R/W |
| 6074 | The high word of Scale High data is on AI37 | ○,1 | R/W |
| 6075 | The low word of Scale High data is on AI38 | ○,1 | R/W |
| 6076 | The high word of Scale High data is on AI38 | ○,1 | R/W |
| 6077 | The low word of Scale High data is on AI39 | ○,1 | R/W |
| 6078 | The high word of Scale High data is on AI39 | ○,1 | R/W |
| 6079 | The low word of Scale High data is on AI40 | ○,1 | R/W |
| 6080 | The high word of Scale High data is on AI40 | ○,1 | R/W |
| 6081 | The low word of Scale High data is on AI41 | ○,1 | R/W |
| 6082 | The high word of Scale High data is on AI41 | ○,1 | R/W |
| 6083 | The low word of Scale High data is on AI42 | ○,1 | R/W |
| 6084 | The high word of Scale High data is on AI42 | ○,1 | R/W |
| 6085 | The low word of Scale High data is on AI43 | ○,1 | R/W |
| 6086 | The high word of Scale High data is on AI43 | ○,1 | R/W |
| 6087 | The low word of Scale High data is on AI44 | ○,1 | R/W |
| 6088 | The high word of Scale High data is on AI44 | ○,1 | R/W |
| 6089 | The low word of Scale High data is on AI45 | ○,1 | R/W |
| 6090 | The high word of Scale High data is on AI45 | ○,1 | R/W |
| 6091 | The low word of Scale High data is on AI46 | ○,1 | R/W |
| 6492 | The high word of Scale High data is on AI46 | ○,1 | R/W |
| 6093 | The low word of Scale High data is on AI47 | ○,1 | R/W |
| 6094 | The high word of Scale High data is on AI47 | ○,1 | R/W |
| 6095 | The low word of Scale High data is on AI48 | ○,1 | R/W |
| 6096 | The high word of Scale High data is on AI48 | ○,1 | R/W |
| 6097 | The low word of Scale High data is on DI1 | | R |
| 6098 | The high word of Scale High data is on DI1 | | R |
| 6099 | The low word of Scale High data is on DI2 | | R |
| 6100 | The high word of Scale High data is on DI2 | | R |
| 6101 | The low word of Scale High data is on DI3 | | R |
| 6102 | The high word of Scale High data is on DI3 | | R |
| 6103 | The low word of Scale High data is on DI4 | | R |
| 6104 | The high word of Scale High data is on DI4 | | R |

| | | | |
|---|---|---|---|
| 6105 | The low word of Scale High data is on DI5 | | R |
| 6106 | The high word of Scale High data is on DI5 | | R |
| 6107 | The low word of Scale High data is on DI6 | | R |
| 6108 | The high word of Scale High data is on DI6 | | R |
| 6109 | The low word of Scale High data is on DI7 | | R |
| 6110 | The high word of Scale High data is on DI7 | | R |
| 6111 | The low word of Scale High data is on DI8 | | R |
| 6112 | The high word of Scale High data is on DI8 | | R |
| 6113 | The low word of Scale High data is on DI9 | | R |
| 6114 | The high word of Scale High data is on DI9 | | R |
| 6115 | The low word of Scale High data is on DI10 | | R |
| 6116 | The high word of Scale High data is on DI10 | | R |
| 6117 | The low word of Scale High data is on DI11 | | R |
| 6118 | The high word of Scale High data is on DI11 | | R |
| 6119 | The low word of Scale High data is on DI12 | | R |
| 6120 | The high word of Scale High data is on DI12 | | R |
| 6121 | The low word of Scale High data is on DI13 | | R |
| 6122 | The high word of Scale High data is on DI13 | | R |
| 6123 | The low word of Scale High data is on DI14 | | R |
| 6124 | The high word of Scale High data is on DI14 | | R |
| 6125 | The low word of Scale High data is on DI15 | | R |
| 6126 | The high word of Scale High data is on DI15 | | R |
| 6127 | The low word of Scale High data is on DI16 | | R |
| 6128 | The high word of Scale High data is on DI16 | | R |
| 6129 | The low word of Scale High data is on DI17 | | R |
| 6130 | The high word of Scale High data is on DI17 | | R |
| 6131 | The low word of Scale High data is on DI18 | | R |
| 6132 | The high word of Scale High data is on DI18 | | R |
| 6133 | The low word of Scale High data is on DI19 | | R |
| 6134 | The high word of Scale High data is on DI19 | | R |
| 6135 | The low word of Scale High data is on DI20 | | R |
| 6136 | The high word of Scale High data is on DI20 | | R |
| 6137 | The low word of Scale High data is on DI21 | | R |
| 6138 | The high word of Scale High data is on DI21 | | R |
| 6139 | The low word of Scale High data is on DI22 | | R |
| 6140 | The high word of Scale High data is on DI22 | | R |
| 6141 | The low word of Scale High data is on DI23 | | R |
| 6142 | The high word of Scale High data is on DI23 | | R |
| 6143 | The low word of Scale High data is on DI24 | | R |
| 6144 | The high word of Scale High data is on DI24 | | R |
| 6145 | The low word of Scale High data is on DO1 | | R |
| 6146 | The high word of Scale High data is on DO1 | | R |
| 6147 | The low word of Scale High data is on DO2 | | R |
| 6148 | The high word of Scale High data is on DO2 | | R |
| 6149 | The low word of Scale High data is on DO3 | | R |
| 6150 | The high word of Scale High data is on DO3 | | R |
| 6151 | The low word of Scale High data is on DO4 | | R |
| 6152 | The high word of Scale High data is on DO4 | | R |
| 6153 | The low word of Scale High data is on DO5 | | R |
| 6154 | The high word of Scale High data is on DO5 | | R |
| 6155 | The low word of Scale High data is on DO6 | | R |
| 6156 | The high word of Scale High data is on DO6 | | R |
| 6157 | The low word of Scale High data is on DO7 | | R |
| 6158 | The high word of Scale High data is on DO7 | | R |
| 6159 | The low word of Scale High data is on DO8 | | R |
| 6160 | The high word of Scale High data is on DO8 | | R |

| 6161 | The low word of Scale High data is on DO9 | | R |
|------|-------------------------------------------|--|---|
| 6162 | The high word of Scale High data is on DO9 | | R |
| 6163 | The low word of Scale High data is on DO10 | | R |
| 6164 | The high word of Scale High data is on DO10 | | R |
| 6165 | The low word of Scale High data is on DO11 | | R |
| 6166 | The high word of Scale High data is on DO11 | | R |
| 6167 | The low word of Scale High data is on DO12 | | R |
| 6168 | The high word of Scale High data is on DO12 | | R |
| 6169 | The low word of Scale High data is on DO13 | | R |
| 6170 | The high word of Scale High data is on DO13 | | R |
| 6171 | The low word of Scale High data is on DO14 | | R |
| 6172 | The high word of Scale High data is on DO14 | | R |
| 6173 | The low word of Scale High data is on DO15 | | R |
| 6174 | The high word of Scale High data is on DO15 | | R |
| 6175 | The low word of Scale High data is on DO16 | | R |
| 6176 | The high word of Scale High data is on DO16 | | R |
| 6177 | The low word of Scale High data is on DO17 | | R |
| 6178 | The high word of Scale High data is on DO17 | | R |
| 6179 | The low word of Scale High data is on DO18 | | R |
| 6180 | The high word of Scale High data is on DO18 | | R |
| 6181 | The low word of Scale High data is on DO19 | | R |
| 6182 | The high word of Scale High data is on DO19 | | R |
| 6183 | The low word of Scale High data is on DO20 | | R |
| 6184 | The high word of Scale High data is on DO20 | | R |
| 6185 | The low word of Scale High data is on DO21 | | R |
| 6186 | The high word of Scale High data is on DO21 | | R |
| 6187 | The low word of Scale High data is on DO22 | | R |
| 6188 | The high word of Scale High data is on DO22 | | R |
| 6189 | The low word of Scale High data is on DO23 | | R |
| 6190 | The high word of Scale High data is on DO23 | | R |
| 6191 | The low word of Scale High data is on DO24 | | R |
| 6192 | The high word of Scale High data is on DO24 | | R |
| 6193 | The low word of Scale High data is on AO1 | | R |
| 6194 | The high word of Scale High data is on AO1 | | R |
| 6195 | The low word of Scale High data is on AO2 | | R |
| 6196 | The high word of Scale High data is on AO2 | | R |
| 6197 | The low word of Scale High data is on AO3 | | R |
| 6198 | The high word of Scale High data is on AO3 | | R |
| 6199 | The low word of Scale High data is on AO4 | | R |
| 6200 | The high word of Scale High data is on AO4 | | R |
| 6201 | The low word of Scale High data is on AO5 | | R |
| 6202 | The high word of Scale High data is on AO5 | | R |
| 6203 | The low word of Scale High data is on AO6 | | R |
| 6204 | The high word of Scale High data is on AO6 | | R |
| 6205 | The low word of Scale High data is on AO7 | | R |
| 6206 | The high word of Scale High data is on AO7 | | R |
| 6207 | The low word of Scale High data is on AO8 | | R |
| 6208 | The high word of Scale High data is on AO8 | | R |
| 6209 | The low word of Scale High data is on AO9 | | R |
| 6210 | The high word of Scale High data is on AO9 | | R |
| 6211 | The low word of Scale High data is on AO10 | | R |
| 6212 | The high word of Scale High data is on AO10 | | R |
| 6213 | The low word of Scale High data is on AO11 | | R |
| 6214 | The high word of Scale High data is on AO11 | | R |
| 6215 | The low word of Scale High data is on AO12 | | R |
| 6216 | The high word of Scale High data is on AO12 | | R |

| | | | |
|---|---|---|---|
| **6217** | The low word of Scale High data is on Math1 | | R |
| **6218** | The high word of Scale High data is on Math1 | | R |
| **6219** | The low word of Scale High data is on Math2 | | R |
| **6220** | The high word of Scale High data is on Math2 | | R |
| **6221** | The low word of Scale High data is on Math3 | | R |
| **6222** | The high word of Scale High data is on Math3 | | R |
| **6223** | The low word of Scale High data is on Math4 | | R |
| **6224** | The high word of Scale High data is on Math4 | | R |
| **6225** | The low word of Scale High data is on Math5 | | R |
| **6226** | The high word of Scale High data is on Math5 | | R |
| **6227** | The low word of Scale High data is on Math6 | | R |
| **6228** | The high word of Scale High data is on Math6 | | R |
| **6229** | The low word of Scale High data is on Math7 | | R |
| **6230** | The high word of Scale High data is on Math7 | | R |
| **6231** | The low word of Scale High data is on Math8 | | R |
| **6232** | The high word of Scale High data is on Math8 | | R |
| **6233** | The low word of Scale High data is on Math9 | | R |
| **6234** | The high word of Scale High data is on Math9 | | R |
| **6235** | The low word of Scale High data is on Math10 | | R |
| **6236** | The high word of Scale High data is on Math10 | | R |
| **6237** | The low word of Scale High data is on Math11 | | R |
| **6238** | The high word of Scale High data is on Math11 | | R |
| **6239** | The low word of Scale High data is on Math12 | | R |
| **6240** | The high word of Scale High data is on Math12 | | R |
| **6241** | The low word of Scale High data is on Math13 | | R |
| **6242** | The high word of Scale High data is on Math13 | | R |
| **6243** | The low word of Scale High data is on Math14 | | R |
| **6244** | The high word of Scale High data is on Math14 | | R |
| **6245** | The low word of Scale High data is on Math15 | | R |
| **6246** | The high word of Scale High data is on Math15 | | R |
| **6247** | The low word of Scale High data is on Math16 | | R |
| **6248** | The high word of Scale High data is on Math16 | | R |
| **6249** | The low word of Scale High data is on Math17 | | R |
| **6250** | The high word of Scale High data is on Math17 | | R |
| **6251** | The low word of Scale High data is on Math18 | | R |
| **6252** | The high word of Scale High data is on Math18 | | R |
| **6253** | The low word of Scale High data is on Math19 | | R |
| **6254** | The high word of Scale High data is on Math19 | | R |
| **6255** | The low word of Scale High data is on Math20 | | R |
| **6256** | The high word of Scale High data is on Math20 | | R |
| **6257** | The low word of Scale High data is on Math21 | | R |
| **6258** | The high word of Scale High data is on Math21 | | R |
| **6259** | The low word of Scale High data is on Math22 | | R |
| **6260** | The high word of Scale High data is on Math22 | | R |
| **6261** | The low word of Scale High data is on Math23 | | R |
| **6262** | The high word of Scale High data is on Math23 | | R |
| **6263** | The low word of Scale High data is on Math24 | | R |
| **6264** | The high word of Scale High data is on Math24 | | R |
| **6265** | The low word of Scale High data is on Math25 | Maximum : 5 | R |
| **6266** | The high word of Scale High data is on Math25 | | R |
| **6267** | The low word of Scale High data is on Math26 | | R |
| **6268** | The high word of Scale High data is on Math26 | | R |
| **6269** | The low word of Scale High data is on Math27 | | R |
| **6270** | The high word of Scale High data is on Math27 | | R |
| **6271** | The low word of Scale High data is on Math28 | | R |
| **6272** | The high word of Scale High data is on Math28 | | R |

| | | | |
|---|---|---|---|
| **6273** | The low word of Scale High data is on Math29 | | R |
| **6274** | The high word of Scale High data is on Math29 | | R |
| **6275** | The low word of Scale High data is on Math30 | | R |
| **6276** | The high word of Scale High data is on Math30 | | R |
| **6277** | The low word of Scale High data is on Math31 | | R |
| **6278** | The high word of Scale High data is on Math31 | | R |
| **6279** | The low word of Scale High data is on Math32 | | R |
| **6280** | The high word of Scale High data is on Math32 | | R |
| **6281** | The low word of Scale High data is on Math33 | | R |
| **6282** | The high word of Scale High data is on Math33 | | R |
| **6283** | The low word of Scale High data is on Math34 | | R |
| **6284** | The high word of Scale High data is on Math34 | | R |
| **6285** | The low word of Scale High data is on Math35 | | R |
| **6286** | The high word of Scale High data is on Math35 | | R |
| **6287** | The low word of Scale High data is on Math36 | | R |
| **6288** | The high word of Scale High data is on Math36 | | R |
| **6289** | The low word of Scale High data is on Math37 | | R |
| **6290** | The high word of Scale High data is on Math37 | | R |
| **6291** | The low word of Scale High data is on Math38 | | R |
| **6292** | The high word of Scale High data is on Math38 | | R |
| **6293** | The low word of Scale High data is on Math39 | | R |
| **6294** | The high word of Scale High data is on Math39 | | R |
| **6295** | The low word of Scale High data is on Math40 | | R |
| **6296** | The high word of Scale High data is on Math40 | | R |
| **6297** | The low word of Scale High data is on Math41 | | R |
| **6298** | The high word of Scale High data is on Math41 | | R |
| **6299** | The low word of Scale High data is on Math42 | | R |
| **6300** | The high word of Scale High data is on Math42 | | R |
| **6301** | The low word of Scale High data is on Math43 | | R |
| **6302** | The high word of Scale High data is on Math43 | | R |
| **6303** | The low word of Scale High data is on Math44 | | R |
| **6304** | The high word of Scale High data is on Math44 | | R |
| **6305** | The low word of Scale High data is on Math45 | | R |
| **6306** | The high word of Scale High data is on Math45 | | R |
| **6307** | The low word of Scale High data is on Math46 | | R |
| **6308** | The high word of Scale High data is on Math46 | | R |
| **6309** | The low word of Scale High data is on Math47 | | R |
| **6310** | The high word of Scale High data is on Math47 | | R |
| **6311** | The low word of Scale High data is on Math48 | | R |
| **6312** | The high word of Scale High data is on Math48 | | R |
| **6313** | The low word of Scale High data is on Math49 | | R |
| **6314** | The high word of Scale High data is on Math49 | | R |
| **6315** | The low word of Scale High data is on Math50 | | R |
| **6316** | The high word of Scale High data is on Math50 | | R |
| **6317** | The low word of Scale High data is on Math51 | | R |
| **6318** | The high word of Scale High data is on Math51 | | R |
| **6319** | The low word of Scale High data is on Math52 | | R |
| **6320** | The high word of Scale High data is on Math52 | | R |
| **6321** | The low word of Scale High data is on Math53 | | R |
| **6322** | The high word of Scale High data is on Math53 | | R |
| **6323** | The low word of Scale High data is on Math54 | | R |
| **6324** | The high word of Scale High data is on Math54 | | R |
| **6325** | The low word of Scale High data is on Math55 | | R |
| **6326** | The high word of Scale High data is on Math55 | | R |
| **6327** | The low word of Scale High data is on Math56 | | R |
| **6328** | The high word of Scale High data is on Math56 | | R |

| 6329 | The low word of Scale High data is on Math57 | R |
|------|----------------------------------------------|---|
| 6330 | The high word of Scale High data is on Math57 | R |
| 6331 | The low word of Scale High data is on Math58 | R |
| 6332 | The high word of Scale High data is on Math58 | R |
| 6333 | The low word of Scale High data is on Math59 | R |
| 6334 | The high word of Scale High data is on Math59 | R |
| 6335 | The low word of Scale High data is on Math60 | R |
| 6336 | The high word of Scale High data is on Math60 | R |
| 6337 | The low word of Scale High data is on Ext1 | R |
| 6338 | The high word of Scale High data is on Ext1 | R |
| 6339 | The low word of Scale High data is on Ext2 | R |
| 6340 | The high word of Scale High data is on Ext2 | R |
| 6341 | The low word of Scale High data is on Ext3 | R |
| 6342 | The high word of Scale High data is on Ext3 | R |
| 6343 | The low word of Scale High data is on Ext4 | R |
| 6344 | The high word of Scale High data is on Ext4 | R |
| 6345 | The low word of Scale High data is on Ext5 | R |
| 6346 | The high word of Scale High data is on Ext5 | R |
| 6347 | The low word of Scale High data is on Ext6 | R |
| 6348 | The high word of Scale High data is on Ext6 | R |
| 6349 | The low word of Scale High data is on Ext7 | R |
| 6350 | The high word of Scale High data is on Ext7 | R |
| 6351 | The low word of Scale High data is on Ext8 | R |
| 6352 | The high word of Scale High data is on Ext8 | R |
| 6353 | The low word of Scale High data is on Ext9 | R |
| 6354 | The high word of Scale High data is on Ext9 | R |
| 6355 | The low word of Scale High data is on Ext10 | R |
| 6356 | The high word of Scale High data is on Ext10 | R |
| 6357 | The low word of Scale High data is on Ext11 | R |
| 6358 | The high word of Scale High data is on Ext11 | R |
| 6359 | The low word of Scale High data is on Ext12 | R |
| 6360 | The high word of Scale High data is on Ext12 | R |
| 6361 | The low word of Scale High data is on Ext13 | R |
| 6362 | The high word of Scale High data is on Ext13 | R |
| 6363 | The low word of Scale High data is on Ext14 | R |
| 6364 | The high word of Scale High data is on Ext14 | R |
| 6365 | The low word of Scale High data is on Ext15 | R |
| 6366 | The high word of Scale High data is on Ext15 | R |
| 6367 | The low word of Scale High data is on Ext16 | R |
| 6368 | The high word of Scale High data is on Ext16 | R |
| 6369 | The low word of Scale High data is on Ext17 | R |
| 6370 | The high word of Scale High data is on Ext17 | R |
| 6371 | The low word of Scale High data is on Ext18 | R |
| 6372 | The high word of Scale High data is on Ext18 | R |
| 6373 | The low word of Scale High data is on Ext19 | R |
| 6374 | The high word of Scale High data is on Ext19 | R |
| 6375 | The low word of Scale High data is on Ext20 | R |
| 6376 | The high word of Scale High data is on Ext20 | R |
| 6377 | The low word of Scale High data is on Ext21 | R |
| 6378 | The high word of Scale High data is on Ext21 | R |
| 6379 | The low word of Scale High data is on Ext22 | R |
| 6380 | The high word of Scale High data is on Ext22 | R |
| 6381 | The low word of Scale High data is on Ext23 | R |
| 6382 | The high word of Scale High data is on Ext23 | R |
| 6383 | The low word of Scale High data is on Ext24 | R |
| 6384 | The high word of Scale High data is on Ext24 | R |

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|---|---|---|---|
| **6385** | The low word of Scale High data is on Ext25 | | R |
| **6386** | The high word of Scale High data is on Ext25 | | R |
| **6387** | The low word of Scale High data is on Ext26 | | R |
| **6388** | The high word of Scale High data is on Ext26 | | R |
| **6389** | The low word of Scale High data is on Ext27 | | R |
| **6390** | The high word of Scale High data is on Ext27 | | R |
| **6391** | The low word of Scale High data is on Ext28 | | R |
| **6392** | The high word of Scale High data is on Ext28 | | R |
| **6393** | The low word of Scale High data is on Ext29 | | R |
| **6394** | The high word of Scale High data is on Ext29 | | R |
| **6395** | The low word of Scale High data is on Ext30 | | R |
| **6396** | The high word of Scale High data is on Ext30 | | R |
| **6397** | The low word of Scale High data is on Ext31 | | R |
| **6398** | The high word of Scale High data is on Ext31 | | R |
| **6399** | The low word of Scale High data is on Ext32 | | R |
| **6400** | The high word of Scale High data is on Ext32 | | R |
| **6401** | The low word of Scale High data is on Ext33 | | R |
| **6402** | The high word of Scale High data is on Ext33 | | R |
| **6403** | The low word of Scale High data is on Ext34 | | R |
| **6404** | The high word of Scale High data is on Ext34 | | R |
| **6405** | The low word of Scale High data is on Ext35 | | R |
| **6406** | The high word of Scale High data is on Ext35 | | R |
| **6407** | The low word of Scale High data is on Ext36 | | R |
| **6408** | The high word of Scale High data is on Ext36 | | R |
| **6409** | The low word of Scale High data is on Ext37 | | R |
| **6410** | The high word of Scale High data is on Ext37 | | R |
| **6411** | The low word of Scale High data is on Ext38 | | R |
| **6412** | The high word of Scale High data is on Ext38 | | R |
| **6413** | The low word of Scale High data is on Ext39 | | R |
| **6414** | The high word of Scale High data is on Ext39 | | R |
| **6415** | The low word of Scale High data is on Ext40 | | R |
| **6416** | The high word of Scale High data is on Ext40 | | R |
| **6417** | The low word of Scale High data is on Ext41 | | R |
| **6418** | The high word of Scale High data is on Ext41 | | R |
| **6419** | The low word of Scale High data is on Ext42 | | R |
| **6420** | The high word of Scale High data is on Ext42 | | R |
| **6421** | The low word of Scale High data is on Ext43 | | R |
| **6422** | The high word of Scale High data is on Ext43 | | R |
| **6423** | The low word of Scale High data is on Ext44 | | R |
| **6424** | The high word of Scale High data is on Ext44 | | R |
| **6425** | The low word of Scale High data is on Ext45 | | R |
| **6426** | The high word of Scale High data is on Ext45 | | R |
| **6427** | The low word of Scale High data is on Ext46 | | R |
| **6428** | The high word of Scale High data is on Ext46 | | R |
| **6429** | The low word of Scale High data is on Ext47 | | R |
| **6430** | The high word of Scale High data is on Ext47 | | R |
| **6431** | The low word of Scale High data is on Ext48 | | R |
| **6432** | The high word of Scale High data is on Ext48 | | R |
| **6433** | The low word of Scale High data is on Ext49 | | R |
| **6434** | The high word of Scale High data is on Ext49 | | R |
| **6435** | The low word of Scale High data is on Ext50 | | R |
| **6436** | The high word of Scale High data is on Ext50 | | R |
| **6437** | The low word of Scale High data is on Ext51 | | R |
| **6438** | The high word of Scale High data is on Ext51 | | R |
| **6439** | The low word of Scale High data is on Ext52 | | R |
| **6440** | The high word of Scale High data is on Ext52 | | R |

| | | | |
|---|---|---|---|
| **6441** | The low word of Scale High data is on Ext53 | | R |
| **6442** | The high word of Scale High data is on Ext53 | | R |
| **6443** | The low word of Scale High data is on Ext54 | | R |
| **6444** | The high word of Scale High data is on Ext54 | | R |
| **6445** | The low word of Scale High data is on Ext55 | | R |
| **6446** | The high word of Scale High data is on Ext55 | | R |
| **6447** | The low word of Scale High data is on Ext56 | | R |
| **6448** | The high word of Scale High data is on Ext56 | | R |
| **6449** | The low word of Scale High data is on Ext57 | | R |
| **6450** | The high word of Scale High data is on Ext57 | | R |
| **6451** | The low word of Scale High data is on Ext58 | | R |
| **6452** | The high word of Scale High data is on Ext58 | | R |
| **6453** | The low word of Scale High data is on Ext59 | | R |
| **6454** | The high word of Scale High data is on Ext59 | | R |
| **6455** | The low word of Scale High data is on Ext60 | | R |
| **6456** | The high word of Scale High data is on Ext60 | | R |
| **6457** | The low word of Scale High data is on Ext61 | | R |
| **6458** | The high word of Scale High data is on Ext61 | | R |
| **6459** | The low word of Scale High data is on Ext62 | | R |
| **6460** | The high word of Scale High data is on Ext62 | | R |
| **6461** | The low word of Scale High data is on Ext63 | | R |
| **6462** | The high word of Scale High data is on Ext63 | | R |
| **6463** | The low word of Scale High data is on Ext64 | | R |
| **6464** | The high word of Scale High data is on Ext64 | | R |
| **6465** | The low word of Scale High data is on Ext65 | | R |
| **6466** | The high word of Scale High data is on Ext65 | | R |
| **6467** | The low word of Scale High data is on Ext66 | | R |
| **6468** | The high word of Scale High data is on Ext66 | | R |
| **6469** | The low word of Scale High data is on Ext67 | | R |
| **6470** | The high word of Scale High data is on Ext67 | | R |
| **6471** | The low word of Scale High data is on Ext68 | | R |
| **6472** | The high word of Scale High data is on Ext68 | | R |
| **6473** | The low word of Scale High data is on Ext69 | | R |
| **6474** | The high word of Scale High data is on Ext69 | | R |
| **6475** | The low word of Scale High data is on Ext70 | | R |
| **6476** | The high word of Scale High data is on Ext70 | | R |
| **6477** | The low word of Scale High data is on Ext71 | | R |
| **6478** | The high word of Scale High data is on Ext71 | | R |
| **6479** | The low word of Scale High data is on Ext72 | | R |
| **6480** | The high word of Scale High data is on Ext72 | | R |
| **6481** | The low word of Scale High data is on Ext73 | | R |
| **6482** | The high word of Scale High data is on Ext73 | | R |
| **6483** | The low word of Scale High data is on Ext74 | | R |
| **6484** | The high word of Scale High data is on Ext74 | | R |
| **6485** | The low word of Scale High data is on Ext75 | | R |
| **6486** | The high word of Scale High data is on Ext75 | | R |
| **6487** | The low word of Scale High data is on Ext76 | | R |
| **6488** | The high word of Scale High data is on Ext76 | | R |
| **6489** | The low word of Scale High data is on Ext77 | | R |
| **6490** | The high word of Scale High data is on Ext77 | | R |
| **6491** | The low word of Scale High data is on Ext78 | | R |
| **6492** | The high word of Scale High data is on Ext78 | | R |
| **6493** | The low word of Scale High data is on Ext79 | | R |
| **6494** | The high word of Scale High data is on Ext79 | | R |
| **6495** | The low word of Scale High data is on Ext80 | | R |
| **6496** | The high word of Scale High data is on Ext80 | | R |

| | | | |
|---|---|---|---|
| **6497** | The low word of Scale High data is on Ext81 | | R |
| **6498** | The high word of Scale High data is on Ext81 | | R |
| **6499** | The low word of Scale High data is on Ext82 | | R |
| **6500** | The high word of Scale High data is on Ext82 | | R |
| **6501** | The low word of Scale High data is on Ext83 | | R |
| **6502** | The high word of Scale High data is on Ext83 | | R |
| **6503** | The low word of Scale High data is on Ext84 | | R |
| **6504** | The high word of Scale High data is on Ext84 | | R |
| **6505** | The low word of Scale High data is on Ext85 | | R |
| **6506** | The high word of Scale High data is on Ext85 | | R |
| **6507** | The low word of Scale High data is on Ext86 | | R |
| **6508** | The high word of Scale High data is on Ext86 | | R |
| **6509** | The low word of Scale High data is on Ext87 | | R |
| **6510** | The high word of Scale High data is on Ext87 | | R |
| **6511** | The low word of Scale High data is on Ext88 | | R |
| **6512** | The high word of Scale High data is on Ext88 | | R |
| **6513** | The low word of Scale High data is on Ext89 | | R |
| **6514** | The high word of Scale High data is on Ext89 | | R |
| **6515** | The low word of Scale High data is on Ext90 | | R |
| **6516** | The high word of Scale High data is onExt90 | | R |
| **6517** | The low word of Scale High data is on Ext91 | | R |
| **6518** | The high word of Scale High data is on Ext91 | | R |
| **6519** | The low word of Scale High data is on Ext92 | | R |
| **6520** | The high word of Scale High data is on Ext92 | | R |
| **6521** | The low word of Scale High data is on Ext93 | | R |
| **6522** | The high word of Scale High data is on Ext93 | | R |
| **6523** | The low word of Scale High data is on Ext94 | | R |
| **6524** | The high word of Scale High data is on Ext94 | | R |
| **6525** | The low word of Scale High data is on Ext95 | | R |
| **6526** | The high word of Scale High data is on Ext95 | | R |
| **6527** | The low word of Scale High data is on Ext96 | | R |
| **6528** | The high word of Scale High data is on Ext96 | | R |

**Note:**

○,[1] The Scale Low / High can be modified when the type is Linear.

How to calculate Modbus Scale Low / High:

Step 1: Calculate ΔScale Range, ΔScale Range = Scale High - Scale Low

Step 2: Calculate Modbus Range, Modbus ΔScale Range = ΔScale Range * 1.2

Step 3: Calculate Modbus Low: Scale Low - (Modbus ΔScale Range - ΔScale Range)

Calculate Modbus Scale High: Scale High + (Modbus ΔScale Range - ΔScale Range)

Step 4: To convert the Modbus Scale Low / High value to DWord value

For example: Scale Low is 0, Scale High is 10

Step 1: ΔScale Range = Scale High - Scale Low = 10 - 0 = 10

Step 2: Modbus ΔScale Range = ΔScale Range * 1.2 = 12

Step 3: Modbus Scale Low = Scale Low - (Modbus ΔScale Range - ΔScale Range) = 0 - (12 - 10) = 0 - 2 = -2

Modbus Scale High = Scale High + (Modbus ΔScale Range - ΔScale Range) = 10 + (12 - 10) = 10 + 2 = 12

Step 4: Convert the Modbus Scale Low value to DWord value :

$$(((-2 * DP\ Value) - (-2147483648)) / (2147483647 - (-2147483648))) * 4294967295$$

The DP Value is 1000 when the DP is 3 =>

$$(-2000 - (-2147483648)) / (2147483647 - (-2147483648)) * 4294967295 = 2147481648$$

Convert the Modbus Scale High value to DWord value :
$$(((12 * DP\ Value) - (-2147483648)) / (2147483647 - (-2147483648))) * 4294967295$$
The DP Value is 1000 when the DP is 3 =>
$$(12000 - (-2147483648)) / (2147483647 - (-2147483648)) * 4294967295 = 2147495648$$

*Convert DWord value to real Scale High value :*
Real Scale High Value = $((((DWord\ Value - 0) * 4294967295) / 4294967295) + (-2147483648)) / DP\ Value$

| DP | DP Value |
|----|----------|
| 0  | 1        |
| 1  | 10       |
| 2  | 100      |
| 3  | 1000     |
| 4  | 10000    |
| 5  | 100000   |

## 3.5 Others (Word Type)

| Modbus Address | Register Name | Note | Access |
|----------------|---------------|------|--------|
| 11001 | PR Version |  | R |
| 11002 | Plus NO. | ○,1 | R |

**Note:**

○,1:

| Value | Description |
|-------|-------------|
| 0 | Standard |
| 1 | Plus 1 |
| 2 | Plus 2 |
| 3 | Plus 3 |

# 4. Modbus Communication

## 4.1 Read Input Registers (Function 0x04)
The function code is used to read from 1 to 120 contiguous input registers in remote device.

### Query
The query message specifies the starting register and quantity of registers to be read. Registers are addressed starting at zero: register 1 – 16 are addressed as 0 – 15.
Here is an example of a request to read register 0 (register type is Input Register, address is 1) from slave device 1:

| Field Name | RTU example (Hex) |
|---|---|
| Slave Address | 01 |
| Function | 04 |
| Starting Address Hi | 00 |
| Starting Address Lo | 00 |
| Quantity of Registers Hi | 00 |
| Quantity of Registers Lo | 01 |
| Error Check Lo | 31 |
| Error Check Hi | CA |
| Total Bytes | 8 |

### Response
The register data in the response message are packed as two bytes per registers, with the binary contents right justified within each byte. For each register, the first byte contains the high order bits and the second contains the low order bits.
The response is return when the data is completely assembled. Here is an example of a response to the query on the opposite page:

| Field Name | RTU example (Hex) |
|---|---|
| Slave Address | 01 |
| Function | 04 |
| Byte Count | 02 |
| Data Hi | 00 |
| Data Lo | 0A |
| Error Check Lo | 39 |
| Error Check Hi | 37 |
| Total Bytes | 7 |

## 4.2 Preset (Write) Multiple Registers (Function 0x10)
The function code is used to write a block of contiguous registers (1 to 120 registers) in remote device.

### Query
The query message specified the register references to be preset. Registers are addressed starting at zero: register 1 is addressed as 0. The requested preset values are specified in the query data field. Data is packed as two bytes per register.
Here is an example of a request to preset two registers starting at 40001 to 00 0A and 01 02 hex in slave device 1:

| Field Name | RTU example (Hex) |
|---|---|
| Slave Address | 01 |
| Function | 10 |
| Starting Address Hi | 00 |
| Starting Address Lo | 00 |
| Quantity of Registers Hi | 00 |
| Quantity of Registers Lo | 02 |
| Byte Count | 04 |
| Data Hi | 00 |
| Data Lo | 0A |
| Data Hi | 01 |
| Data Lo | 02 |
| Error Check Lo | 53 |

| Error Check Hi | FC |
|---|---|
| Total Bytes | 13 |

**Response**

The normal response returns the slave address, function code, starting address and quantity of registers preset. Here is an example of a response to the query shown above:

| Field Name | RTU example (Hex) |
|---|---|
| Slave Address | 01 |
| Function | 10 |
| Starting Address Hi | 00 |
| Starting Address Lo | 00 |
| Quantity of Registers Hi | 00 |
| Quantity of Registers Lo | 02 |
| Error Check Lo | 41 |
| Error Check Hi | C8 |
| Total Bytes | 13 |

## 4.3 Placing the CRC into message

When the 16 bit CRC (two 8 bit bytes) is transmitted in the message, the low order byte will be transmitted first, followed by the high order byte.

For example, if the CRC value is 1241 hex:

| Slave Address | Function | Data | CRC Lo | CRC Hi |
|---|---|---|---|---|
| -- | -- | -- | **41** | **12** |

∗ *Note: Broadcast is not supported.*

# 5. Sample Code

## 5.1 CRC Generation Function

An example of a C language function performing CRC generation is shown on the following pages. All of the possible CRC values are preloaded into two arrays, which are simply indexed as the function increments through the message buffer. One array contains all of the 256 possible CRC values for the high byte of the 16 bit CRC field, and the other array contains all of the values for the low byte. Indexing the CRC in this way provides faster execution than would be achieved by calculating a new CRC value with each new character from the message buffer.

```c
/************************************************************/
// Parameter:
//          puchMsg -> unsigned char* puchMsg: message to calculate CRC upon
// usDataLne -> unsigned short usDataLen: quantity of bytes in message
/************************************************************/
unsigned short CRC16(puchMsg, usDataLen)
{
      unsigned char uchCRCHi=0xFF; /* high byte of CRC initialized */
      unsigned char uchCRCLo=0xFF; /* low byte of CRC initialized */
      unsigned uIndex; /* will index into CRC lookup table */
      while (usDataLen—) /* pass through message buffer */
      {
            uIndex = uchCRCHi ^ *puchMsgg++; /* calculate the CRC */
            uchCRCHi = uchCRCLo ^ auchCRCHi[uIndex];
            uchCRCLo = auchCRCLo[uIndex] ;
      }
      return (uchCRCHi << 8 | uchCRCLo) ;
}
```

```c
High-Order Byte Table
/* Table of CRC values for high–order byte */
static unsigned char auchCRCHi[] = {
0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81,
0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0,
0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01,
0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41,
0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81,
0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0,
0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01,
0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40,
0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81,
0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0,
0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01,
0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41,
0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81,
0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0,
0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01,
0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41,
0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81,
0x40
} ;
Low-Order Byte Table
/* Table of CRC values for low–order byte */
static char auchCRCLo[] = {
0x00, 0xC0, 0xC1, 0x01, 0xC3, 0x03, 0x02, 0xC2, 0xC6, 0x06, 0x07, 0xC7, 0x05, 0xC5, 0xC4,
0x04, 0xCC, 0x0C, 0x0D, 0xCD, 0x0F, 0xCF, 0xCE, 0x0E, 0x0A, 0xCA, 0xCB, 0x0B, 0xC9, 0x09,
0x08, 0xC8, 0xD8, 0x18, 0x19, 0xD9, 0x1B, 0xDB, 0xDA, 0x1A, 0x1E, 0xDE, 0xDF, 0x1F, 0xDD,
0x1D, 0x1C, 0xDC, 0x14, 0xD4, 0xD5, 0x15, 0xD7, 0x17, 0x16, 0xD6, 0xD2, 0x12, 0x13, 0xD3,
0x11, 0xD1, 0xD0, 0x10, 0xF0, 0x30, 0x31, 0xF1, 0x33, 0xF3, 0xF2, 0x32, 0x36, 0xF6, 0xF7,
0x37, 0xF5, 0x35, 0x34, 0xF4, 0x3C, 0xFC, 0xFD, 0x3D, 0xFF, 0x3F, 0x3E, 0xFE, 0xFA, 0x3A,
```

```
0x3B, 0xFB, 0x39, 0xF9, 0xF8, 0x38, 0x28, 0xE8, 0xE9, 0x29, 0xEB, 0x2B, 0x2A, 0xEA, 0xEE,
0x2E, 0x2F, 0xEF, 0x2D, 0xED, 0xEC, 0x2C, 0xE4, 0x24, 0x25, 0xE5, 0x27, 0xE7, 0xE6, 0x26,
0x22, 0xE2, 0xE3, 0x23, 0xE1, 0x21, 0x20, 0xE0, 0xA0, 0x60, 0x61, 0xA1, 0x63, 0xA3, 0xA2,
0x62, 0x66, 0xA6, 0xA7, 0x67, 0xA5, 0x65, 0x64, 0xA4, 0x6C, 0xAC, 0xAD, 0x6D, 0xAF, 0x6F,
0x6E, 0xAE, 0xAA, 0x6A, 0x6B, 0xAB, 0x69, 0xA9, 0xA8, 0x68, 0x78, 0xB8, 0xB9, 0x79, 0xBB,
0x7B, 0x7A, 0xBA, 0xBE, 0x7E, 0x7F, 0xBF, 0x7D, 0xBD, 0xBC, 0x7C, 0xB4, 0x74, 0x75, 0xB5,
0x77, 0xB7, 0xB6, 0x76, 0x72, 0xB2, 0xB3, 0x73, 0xB1, 0x71, 0x70, 0xB0, 0x50, 0x90, 0x91,
0x51, 0x93, 0x53, 0x52, 0x92, 0x96, 0x56, 0x57, 0x97, 0x55, 0x95, 0x94, 0x54, 0x9C, 0x5C,
0x5D, 0x9D, 0x5F, 0x9F, 0x9E, 0x5E, 0x5A, 0x9A, 0x9B, 0x5B, 0x99, 0x59, 0x58, 0x98, 0x88,
0x48, 0x49, 0x89, 0x4B, 0x8B, 0x8A, 0x4A, 0x4E, 0x8E, 0x8F, 0x4F, 0x8D, 0x4D, 0x4C, 0x8C,
0x44, 0x84, 0x85, 0x45, 0x87, 0x47, 0x46, 0x86, 0x82, 0x42, 0x43, 0x83, 0x41, 0x81, 0x80,
0x40
};
```

## 5.2 Read Data Function

```
/*************************************************************/
// Parameter:
//          Addr -> Slave ID
// StReg -> Starting Register Address
// RegQuantities -> Register Quantities
// MbsBuf -> Receive Data Buffer
/*************************************************************/
bool ReadData(unsigned char Addr, unsigned short StReg,
              unsigned short RegQuantities, unsigned char* MbsBuf)
{
      unsigned char msg[8];
      unsigned char Func = 0x04;
      unsigned short Crc;

      msg[0] = Addr;
      msg[1] = Func;
      msg[2] = HIBYTE(StReg);
      msg[3] = LOBYTE(StReg);
      msg[4] = HIBYTE(RegQuantities);
      msg[5] = LOBYTE(RegQuantities);
      Crc = CRC16(msg,6);
      msg[6] = HIBYTE(Crc);
      msg[7] = LOBYTE(Crc);
      int snd = 8; /* byte number of buffer msg */
      int rcv = (5+(RegQuantities*2));
      /* Send snd bytes content of msg to COMM port */
      /* Receive rcv bytes of response from COMM port to MbsBuf */
      if (receiving data length is same as rcv)
            return true;
      else
            return false;
}
```

## 5.3 Convert Data Function

```
/*************************************************************/
// Parameter:
//          ValueRangeLo -> Minimum value of the value range
// ValueRangeHi -> Maximum value of the value range
// ScaleLo -> Minimum value of the scale value
// ScaleHi -> Maximum value of the scale value
// RegData -> Current register data from remote device
/*************************************************************/
  double ConvertData(double ValueRangeLo,
```

```
                            double ValueRangeHi,
                            double ScaleLo,
                            double ScaleHi,
                            double RegData)
    {
        double ConvertValue;

        ConvertValue = (((RegData*(ScaleHi - ScaleLo))/
                        (ValueRangeHi - ValueRangeLo))
                        + ScaleLo);
     return ConvertValue;
    }
```

## 5.4 Read AI Function[1]

```
    bool ReadAIData(void)
    {
        unsigned char MsgBuf[40];
        unsigned char Addr = 1; /* Slave Id */
        unsigned short StartRegAdd = 2;
            unsigned short RegQuantities = 5;
            int ScaleLo, ScaleHi,
              ValueRangeLo, ValueRangeHi,
              AiData;
            unsigned short RegData;


            // Read register data from remote device
            ReadData(Addr, StartRegAdd, RegQuantities, MsgBuf);

            // Step 1: Parsing data for AI1
            RegData = MAKEWORD(MsgBuf[4], MsgBuf[3]);

            // Step 2: Set value range
            // Because AI data type was set as 2 bytes, the value range would be
            // showing between -32768 to 32767
            ValueRangeLo = -32768;
            ValueRangeHi = 32767;

            // Step 3: Set value range for scale
            // The default of Sensor type in AI1 is set as 『Thermocouple K Type』.
            // Scale low value is showing "-120", scale high value is showing
            // "1000"
            // Please refer to Appendix B, it will explain that how to inquire AI
            // range in PR, as for another scale range of AI, please refer to AI
            // configuration
            ScaleLo = -120;
            ScaleHi = 1000;

            // Step 4: Execute converted function
            AiData = (int)ConvertData(ValueRangeLo,
                                ValueRangeHi,
                                ScaleLo,
                                ScaleHi,
                                RegData);

        // Step 5: Repeat Step 1 to Step 4 for getting another AI data

            ∗ Note: Please refer to Appendix C for more details.
    }
```

## 5.5 Read Math Function[1]

```
bool ReadMathData(void)
{
   unsigned char MsgBuf[120];
   unsigned char i, j;
    unsigned char Addr = 1; /* Slave Id */
   unsigned short StartRegAdd = 201;
       unsigned short RegQuantities = (10*2); // Math data is float type, so each Math value take two
       registers
       double ScaleLo, ScaleHi, ValueRangeLo, ValueRangeHi;
     double RegData, MathData;

       // Read register data from remote device
       ReadData(Addr, StartRegAdd, RegQuantities, MsgBuf);

       // Step 1: Set value range
       // The default of Math data type was set as 4 bytes, the value range
       // will be showing between 0 to 4294967295
       ValueRangeLo = 0;
       ValueRangeHi = 4294967295;

       // Step 2: Set value range for scale
       // When the property of "Transformation" in scale was set as disable,
       // the range will be showing -2147483648 to 2147483647
       // If the property of "Transformation" in Scale was set as "Value" or
       // "Math Channel", please refer to Appendix D
       ScaleLo = -2147483648;
       ScaleHi = 2147483647;

       // Step 3: Please refer to the decimal value for the conversion of each
                 Math
   switch(decimal value)
   {
      case 1:
          ScaleLo = ScaleLo / 10;
                            ScaleHi = ScaleHi / 10;
          break;
      case 2:
          ScaleLo = ScaleLo / 100;
                     ScaleHi = ScaleHi / 100;
          break;
      case 3:
          ScaleLo = ScaleLo / 1000;
                            ScaleHi = ScaleHi / 1000;
          break;
      case 4:
          ScaleLo = ScaleLo / 10000;
                            ScaleHi = ScaleHi / 10000;
          break;
      case 5:
          ScaleLo = ScaleLo / 100000;
                            ScaleHi = ScaleHi / 100000;
          break;
      default:
          break;
                }

       // Step 4: Parsing data for Math1
       RegData = (UINT)MAKELONG(MAKEWORD(MsgBuf[j+1],
                                         MsgBuf[j]),
```

```
                              MAKEWORD(MsgBuf[j+3],
                                          MsgBuf[j+2]));

         // Step 5: Execute converted function
         MathData = ConvertData(ValueRangeLo,
                                    ValueRangeHi,
                                    ScaleLo,
                                    ScaleHi,
                                    RegData);

         // Step 6: Repeat Step 1 to Step 5 for getting another data of Math

           *  Note: Please refer to Appendix D for more details.
   }
```

## 5.6 Read DI Function[1]

```
   bool ReadDIData(void)
   {
        unsigned char MsgBuf[96];
        unsigned char Addr = 1; /* Slave Id */
      unsigned short StartRegAdd = 50;
         unsigned short RegQuantities = 5;
         bool DiData;

         // Read register data from remote device
         ReadData(Addr, StartRegAdd, RegQuantities, MsgBuf);

         // Step 1: Parsing data for DI1
         DiData = (bool)MAKEWORD(MsgBuf[4], MsgBuf[3]);

         // Step 2: Repeat Step 1 for getting another DI data
   }
```

## 5.7 Read AO Function[1]

```
   bool ReadAOData(void)
   {
        unsigned char MsgBuf[48];
        unsigned char Addr = 1; /* Slave Id */
      unsigned short StartRegAdd = 601;
         unsigned short RegQuantities = 5;
         unsigned short RegData;
         float AoData;

         // Read register data from remote device
         ReadData(Addr, StartRegAdd, RegQuantities, MsgBuf);

         // Because the AO expression is specific, so we need using specific
         // expression to convert the value as following:
         // Step 1: Parsing data for AO1
         RegData = MAKEWORD(MsgBuf[4], MsgBuf[3]);

         // Step2: To do converted expression for AO1
         AoData = ((RegData * 65.535)/65535)-32.768;

         // Step 3: Repeat Step 1 to Step 2 for getting another AO data

           *  Note: Please refer to Appendix C for more details.
   }
```

## 5.8 Read DO Function[1]

```
bool ReadDOData(void)
{
    unsigned char MsgBuf[48];
    unsigned char Addr = 1; /* Slave Id */
    unsigned short StartRegAdd = 74;
    unsigned short RegQuantities = 5;
    bool DoData;

    // Read register data from remote device
    ReadData(Addr, StartRegAdd, RegQuantities, MsgBuf);

    // Step 1: Parsing data for DO1
    DiData = (bool)MAKEWORD(MsgBuf[4], MsgBuf[3]);

    // Step 2: Repeat Step 1 for getting another DO data
}
```

## 5.9 Read External Function[1]

```
bool ReadExtData(void)
{
    unsigned char MsgBuf[128];
    unsigned char Addr = 1; /* Slave Id */
    unsigned short StartRegAdd = 401;
    unsigned short RegQuantities = 20;
    unsigned short ExtData;

    // Read register data from remote device
    ReadData(Addr, StartRegAdd, RegQuantities, MsgBuf);

    // Step 1: Parsing data for Ext1
    DiData = MAKEWORD(MsgBuf[4], MsgBuf[3]);

    // Step 2: Repeat Step 1 for getting another Ext data
```

\* Note: Because the Input Register Ext data is same like Holding Register Ext data, so the data type of the ExtData must according to the setting of real case, if the data type of ExtData is 4 bytes, please refer to "ReadMathData" function in Step 1, Step 2, Step 4 and Step 5 to convert data type of customer requirement (Such as: Int32 or UInt32 or float data type).

\* Note: If user went to use Ext register to receive AI, DI, AO, DO and Math data of the PR06 or PR20 or PR48, please refer to Appendix F, Appendix G, Appendix H and Appendix I for more details.

```
}
```

---

\*1: Above sample code is according to the PR20 setting, if user need changing the MsgBuf size and RegQuantities value from PR06 or PR48, please refer to the user manual.

---

# Appendix A

**Modbus RTU Slave / TCP Server Register data type table**

| Field Name | Data Size | Data Type | Note |
|---|---|---|---|
| AI | 2 Bytes | WORD | Little Endian |
| Math | 4 Bytes | UINT32 | Little Endian |
| DI | 2 Bytes | WORD | Little Endian |
| AO | 2 Bytes | WORD | Little Endian |
| DO | 2 Bytes | WORD | Little Endian |
| External | 2 Bytes / 4 Bytes | WORD / DWORD | Little Endian |

**Table A-1**

# Appendix B

**Inquire AI range**

**i.**    Press 『Menu』 -> 『More』 -> 『Config』
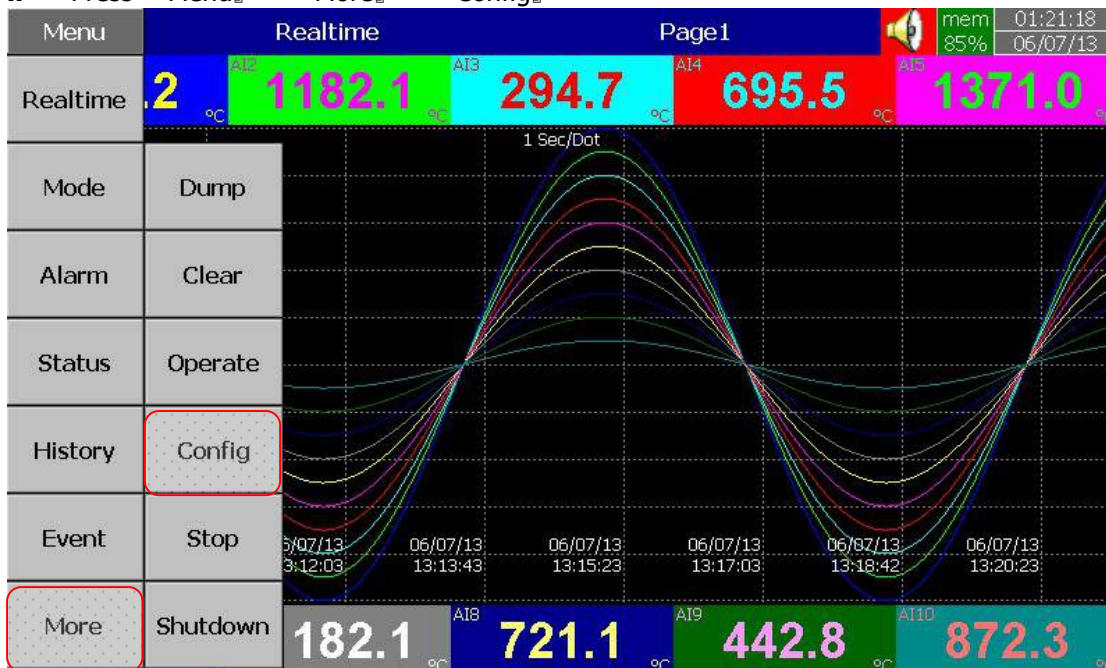


**Fig. B-1**

**ii.**    Please select 『AI』
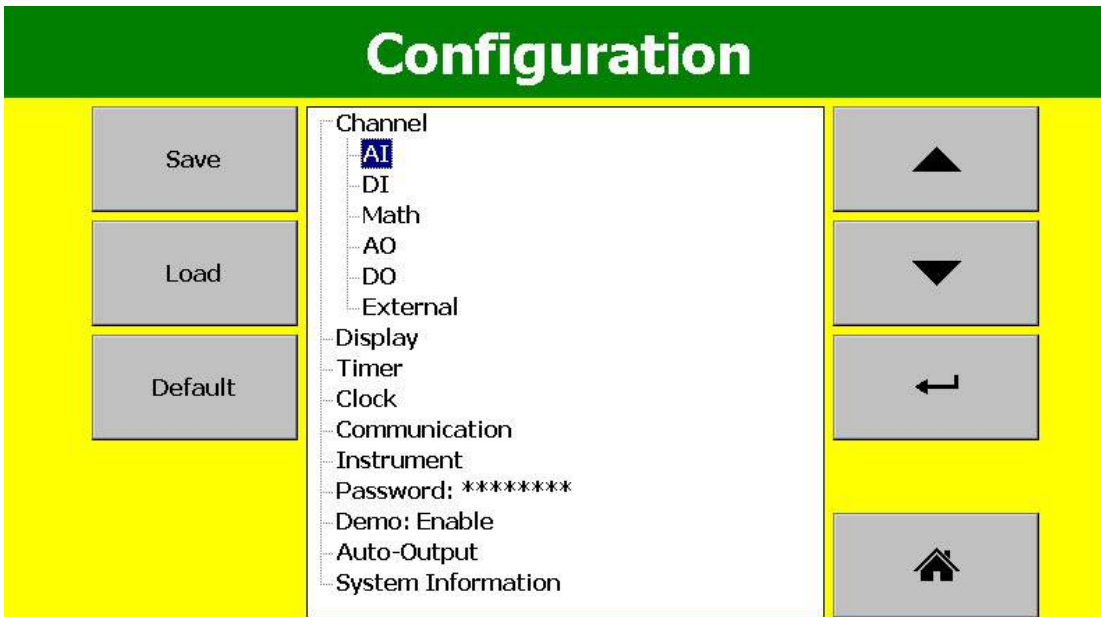
**Fig. B-2**

iii.    We can see the value of AI in following screen
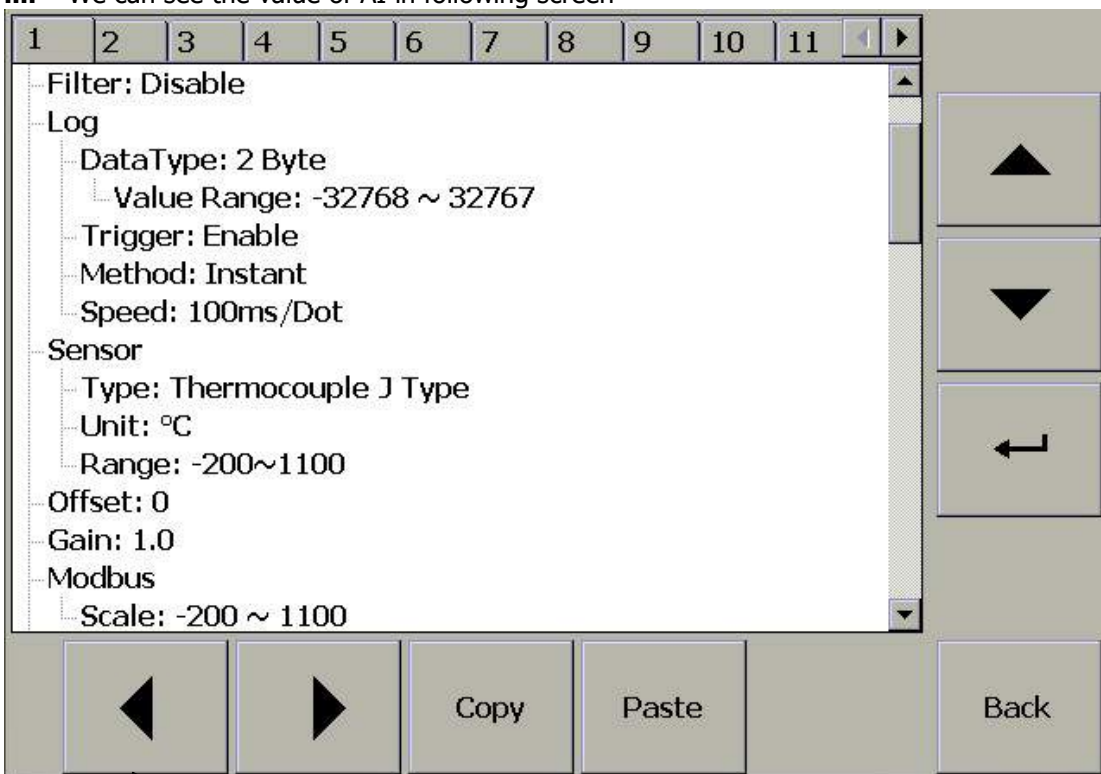


Previous AI        Next AI                    **Fig. B-3**

# Appendix C

## AI Convert Example

How to convert the value of getting from the master site, please refer to the following formula:
When the value of AI1 range is set between -120 ~ 1000 (Please refer to **Fig. B-3**),

If the AI value is set as 0:

$$AI\ value = (((0 * (1000 - (-120)) / 65535) + (-120))$$
$$= ((0 / 65535) + (-120))$$
$$= -120$$

If the AI value is set as 65535:

$$AI\ value = (((65535 * (1000 - (-120)) / 65535) + (-120))$$
$$= (((65535 * 1120) / 65535) + (-120))$$
$$= ((73399200 / 65535) + (-120))$$
$$= (1120 + (-120))$$
$$= 1000$$

If the AI value is set as 32768:

$$AI\ value = (((32768 * (1000 - (-120)) / 65535) + (-120))$$
$$= (((32768 * 1120) / 65535) + (-120))$$
$$= ((36700160 / 65535) + (-120))$$
$$= (560 + (-120))$$
$$= 440$$

# Appendix D

## Math Convert Sample

### i.1  Press 「Menu」 -> 「More」 -> 「Config」
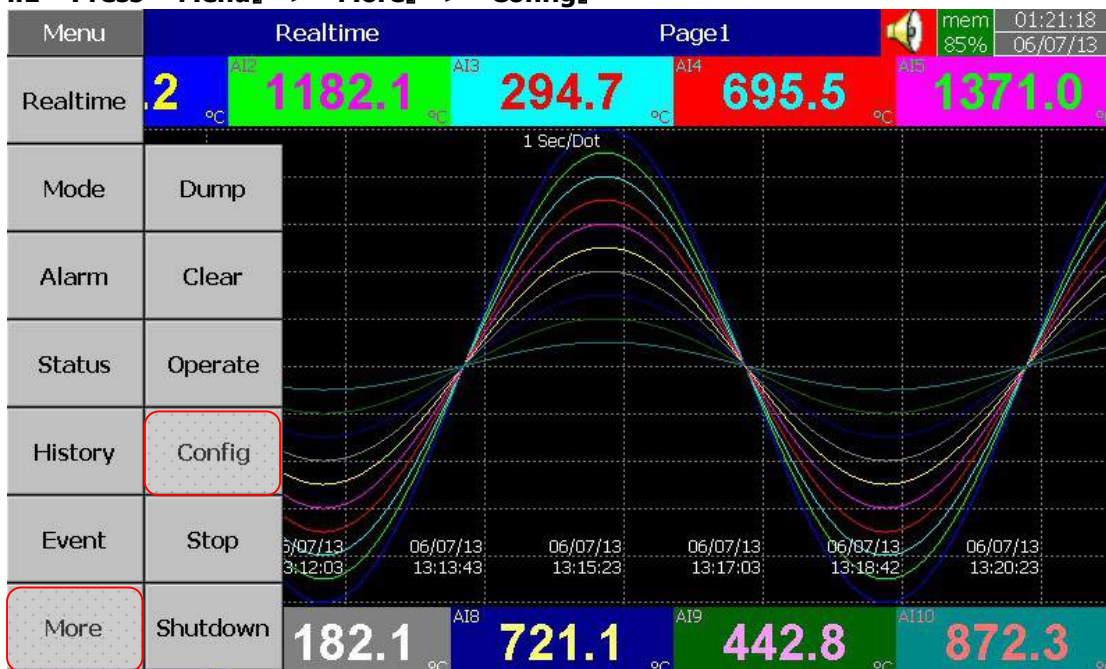


**Fig. D-1**

### ii.1  Please select 「Math」
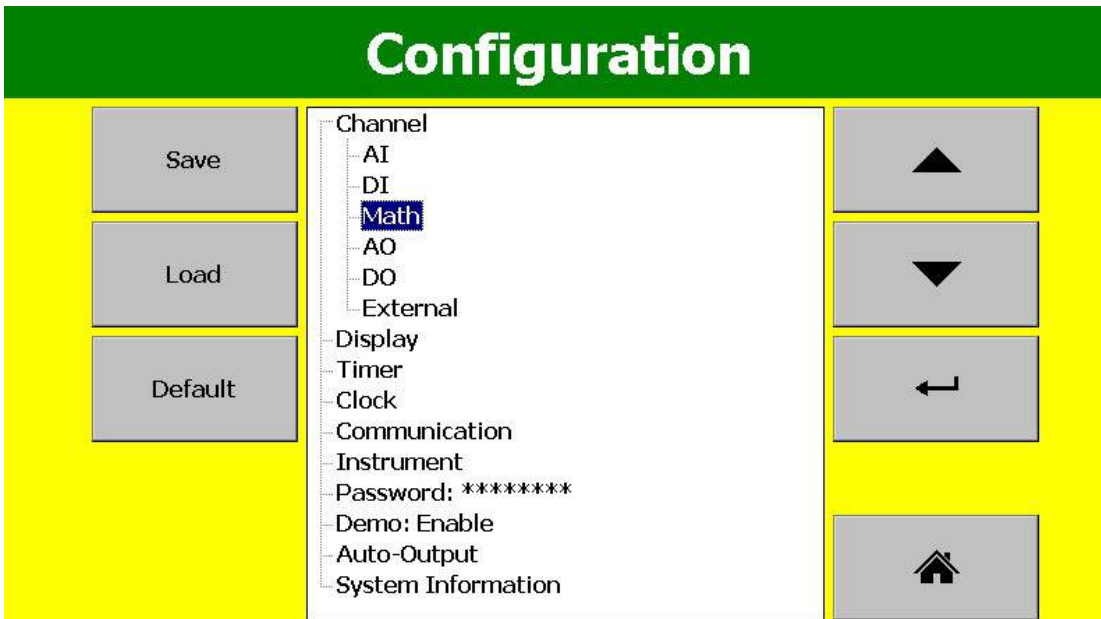
**Fig. D-2**
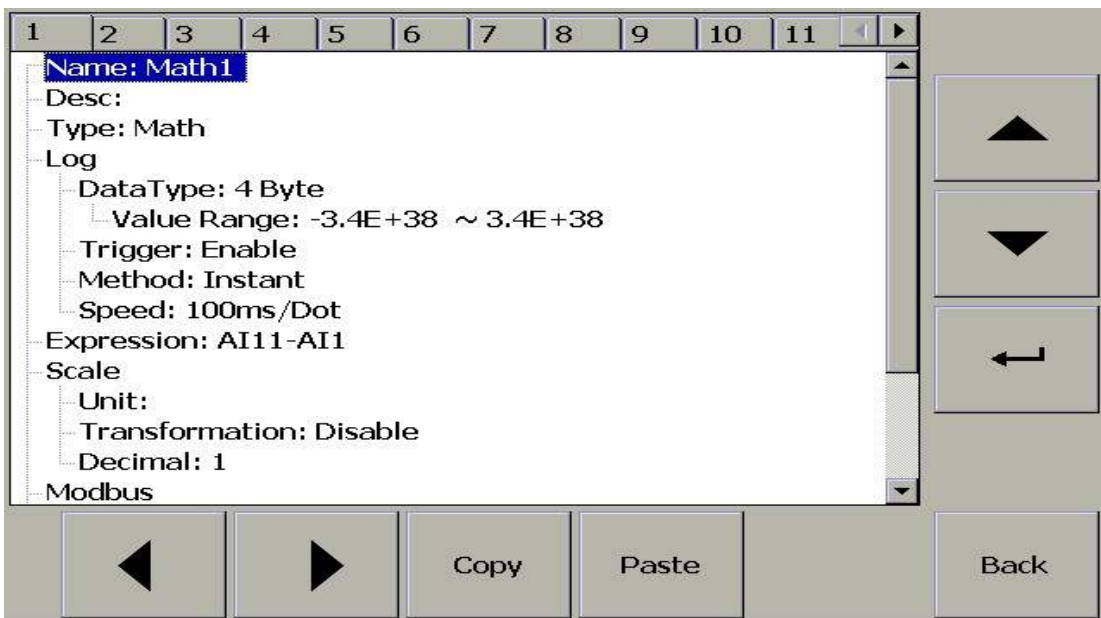


**Fig. D-3**

In the **_Fig. D-4_** and **_Fig. D-5_**, we can see the Transformation of Scale in Math have three types can choose, so we will be showing three samples for explanation, to make the value in the master site can match with the value of PR site.
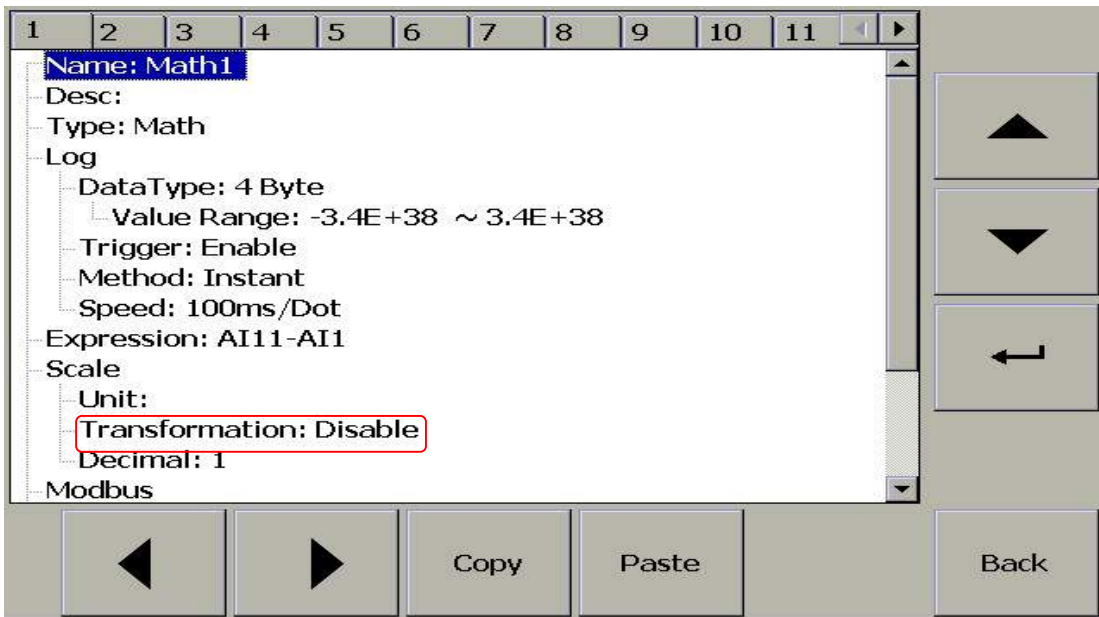
**Fig. D-4**



**Fig. D-5**

**iii.1   Transformation : Disable**
   **iii.1.1**          Modify the content of expression in Math1 to 10 as following showing
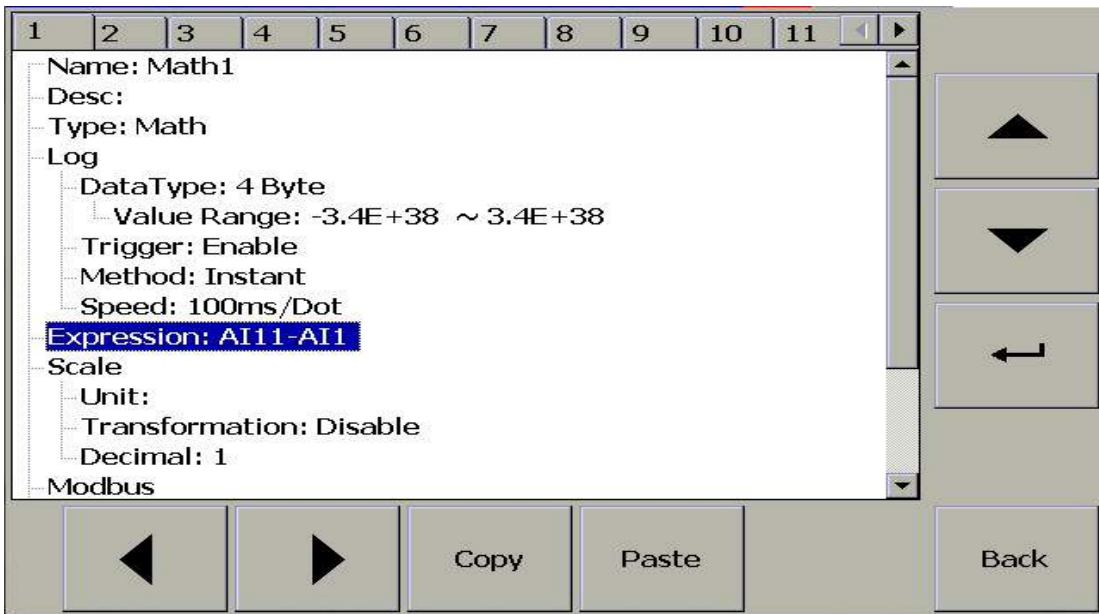
**Fig. D-6**
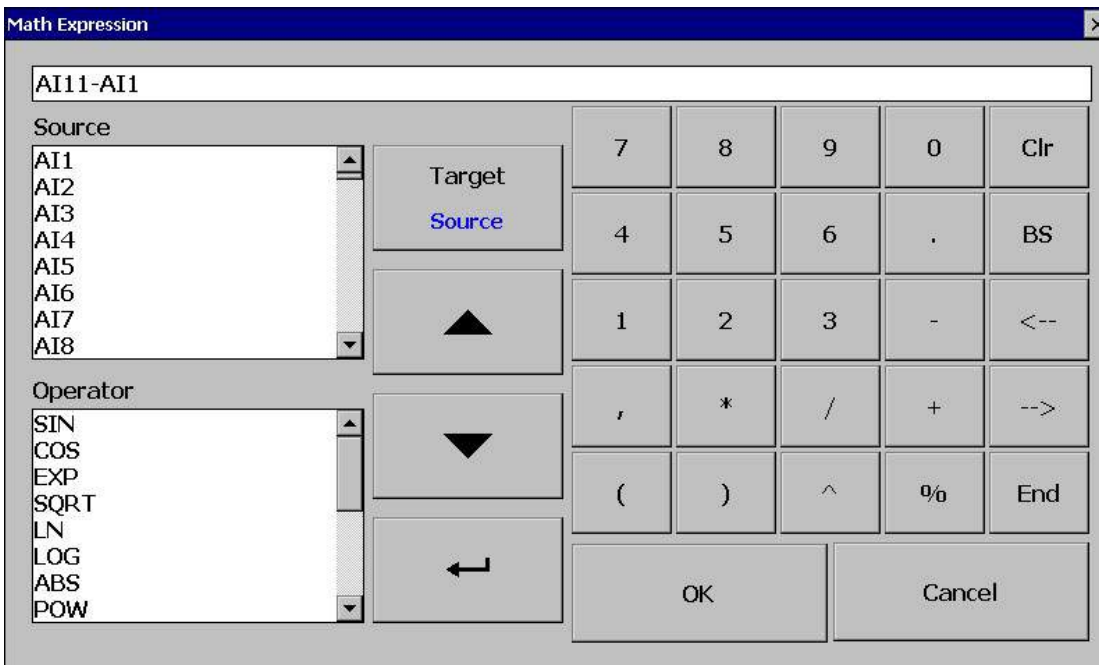


**Fig. D-7**
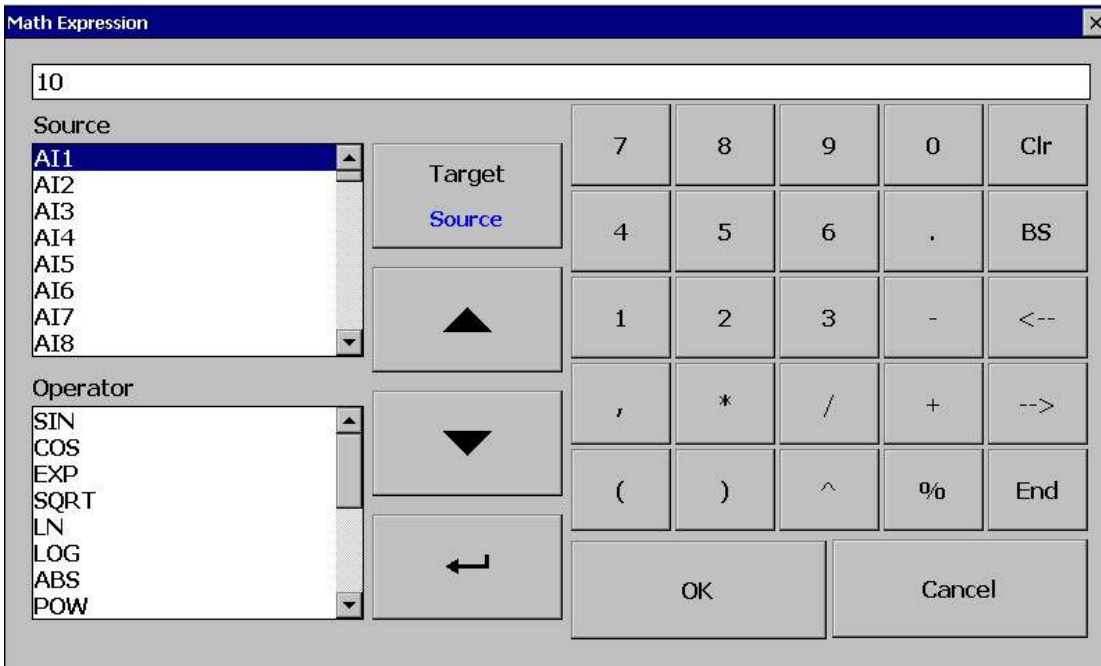
**Fig. D-8**
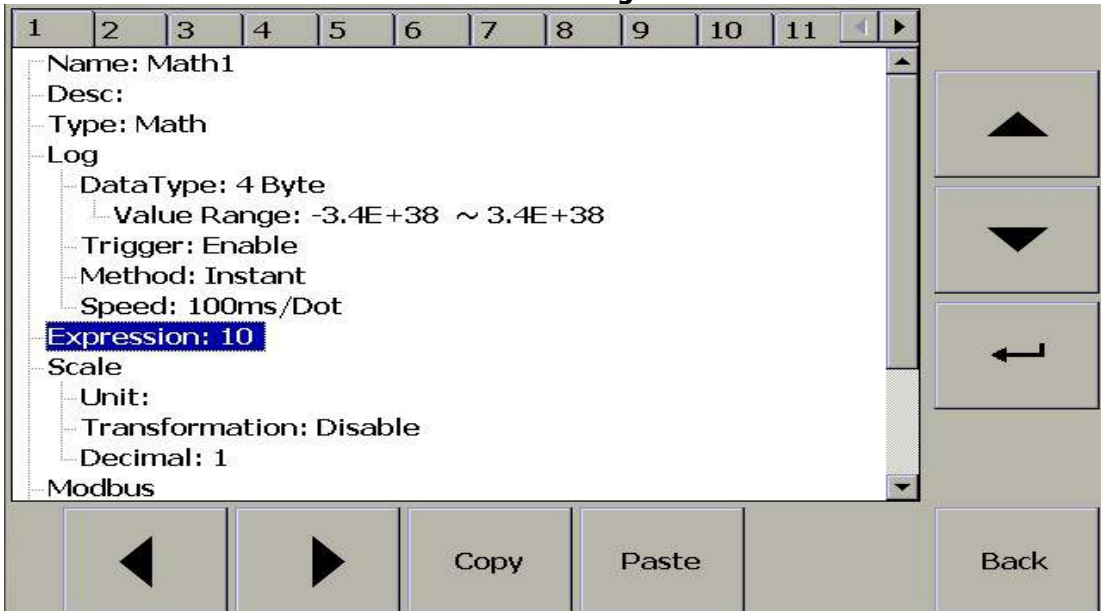


**Fig. D-9**

**iii.1.2** Please come back to the "Overview" page, we can see the value
In Math1 is showing "10"

**Fig. D-10**


**Fig. D-11**

**iii.1.3** Please go to the configuration of Math1 page and check the decimal value
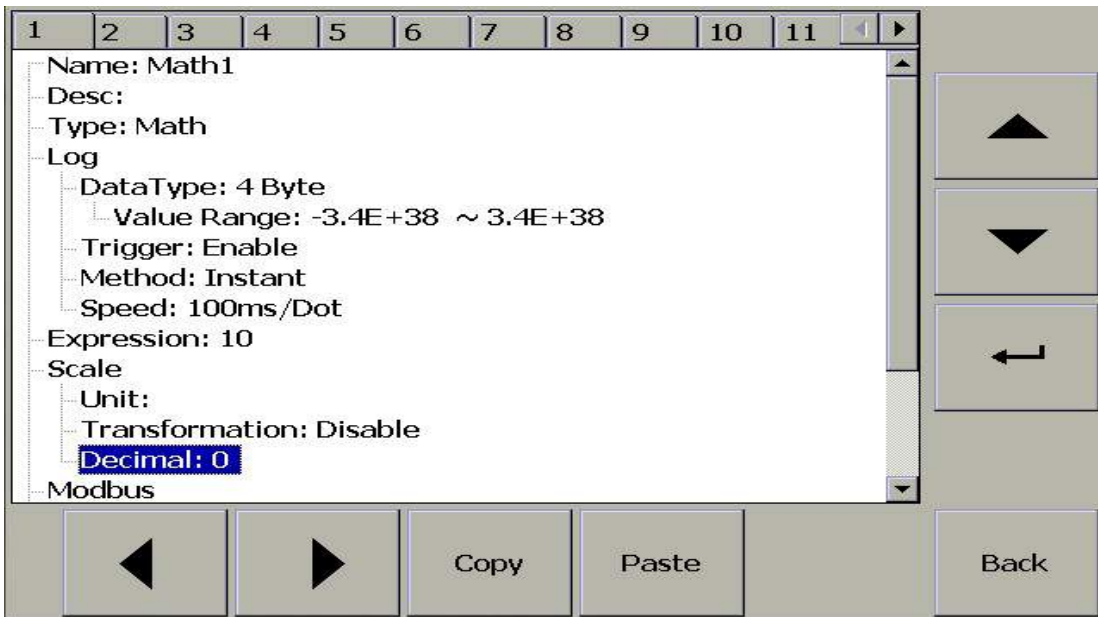
**Fig. D-12**

If the decimal value is set as "0", the value don't need to do any conversion in the master site, if the decimal value is set as "1", the value of getting from the master site must to be divided 10 then it just can match with the value in Math1 of PR, if the decimal value is set as "2", then the value of getting from the master site must to be divided 100, the it just can match with the value in Marth1 of PR, if the decimal value is set as "5", the value of getting from the master site must to be divided 10000, then it just can match with the value in Math1 PR.

### iii.2   Transformation : Value
**iii.2.1**        Change the Transformation type to "Value"
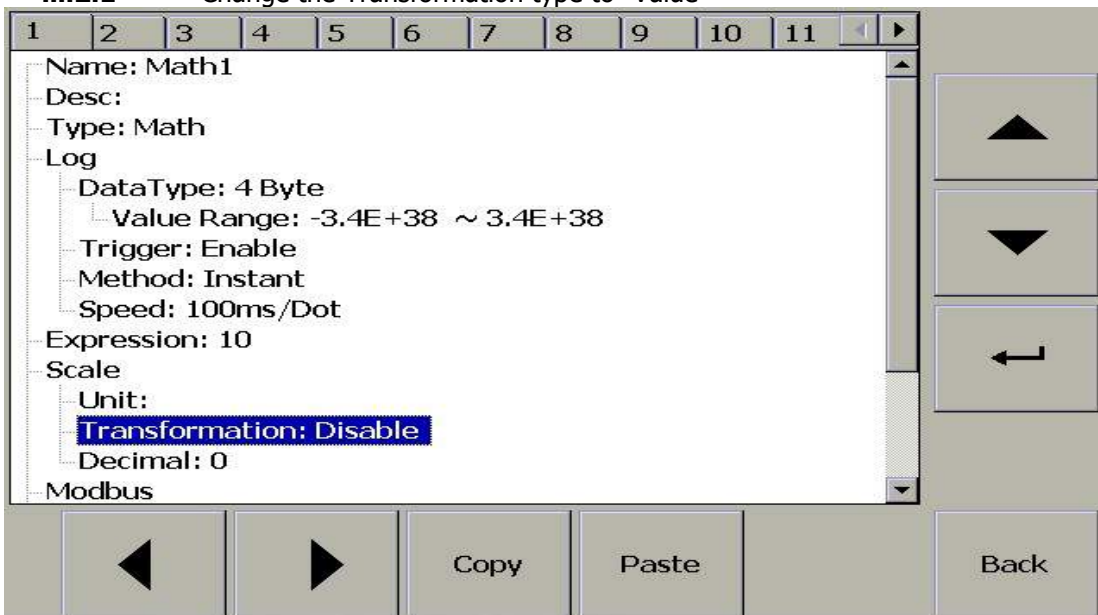

**Fig. D-13**

**Fig. D-14**
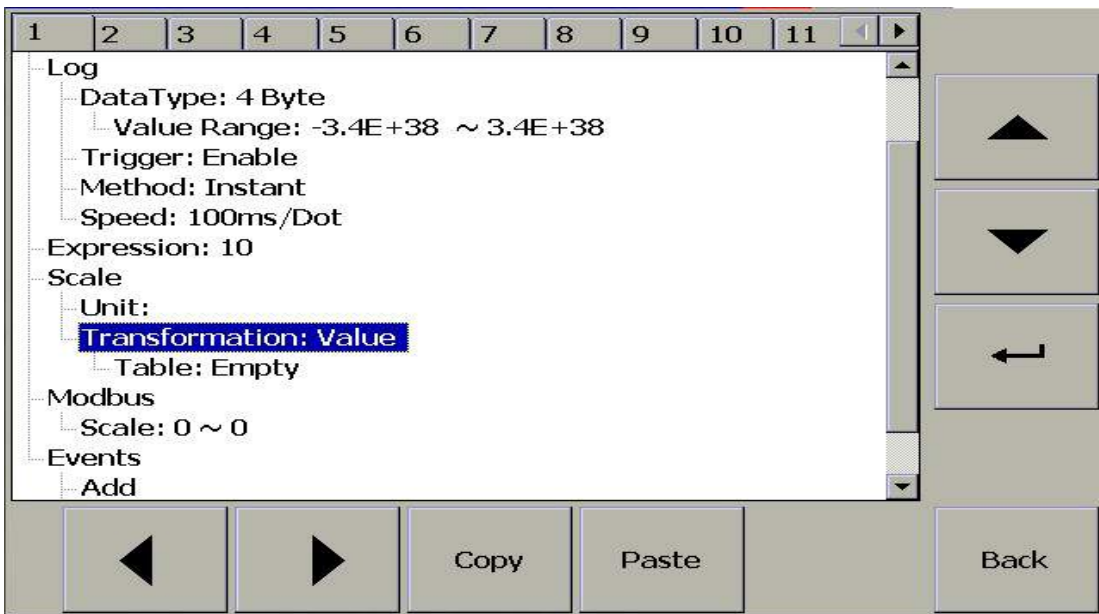


**Fig. D-15**

**iii.2.2**          Create table of scale range table for conversion in Math1
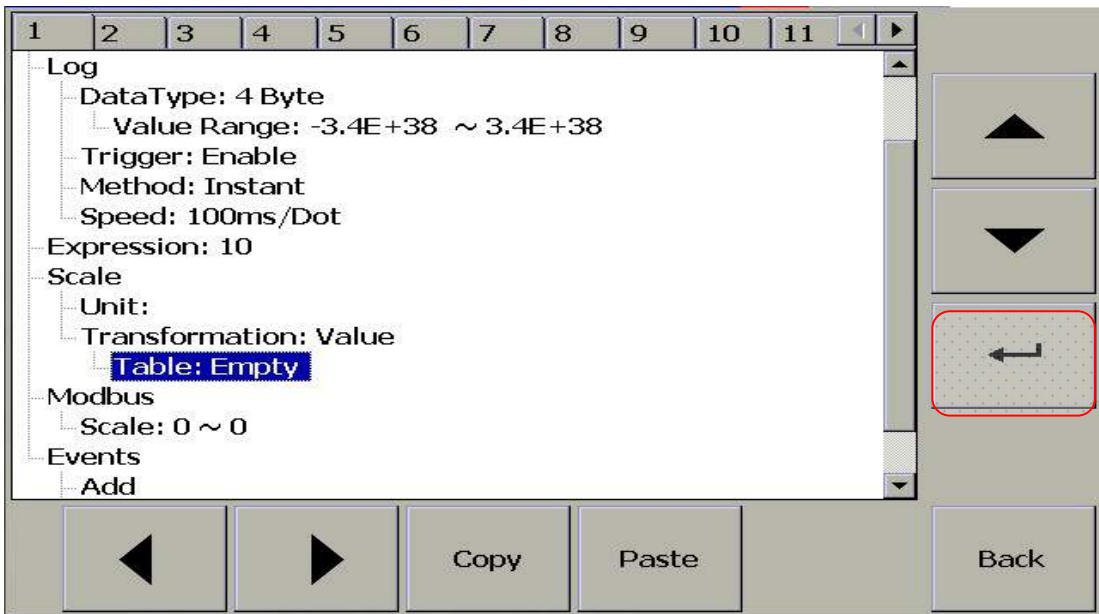
**Fig. D-16**

Press "Add" button to add scale range
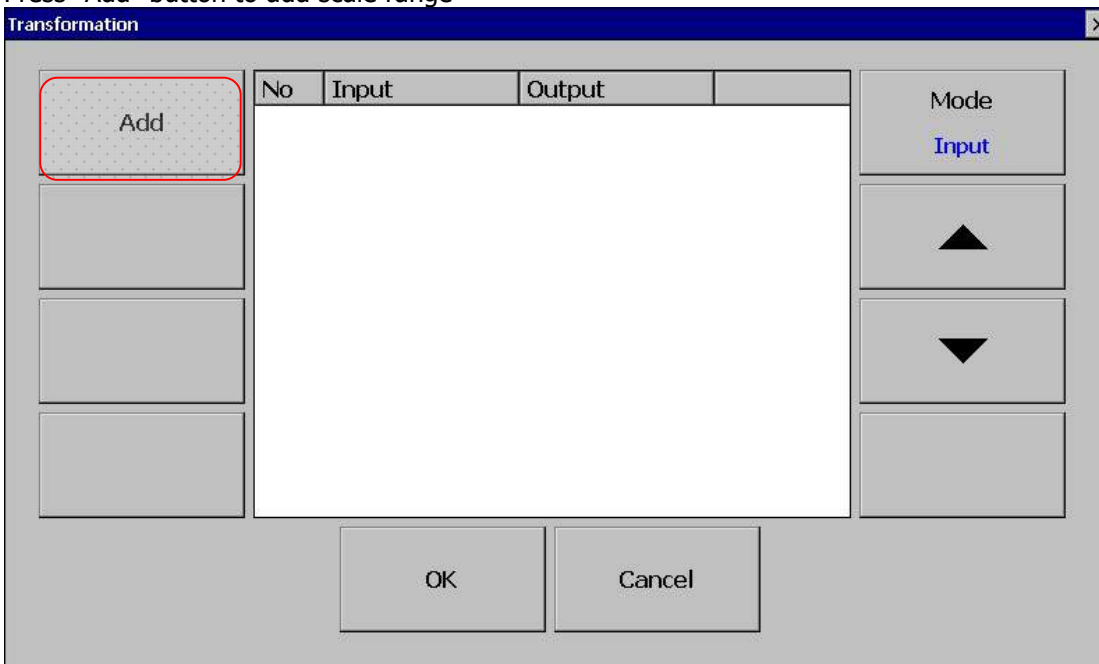


**Fig. D-17**

Press "Enter" button to modify "Input" value
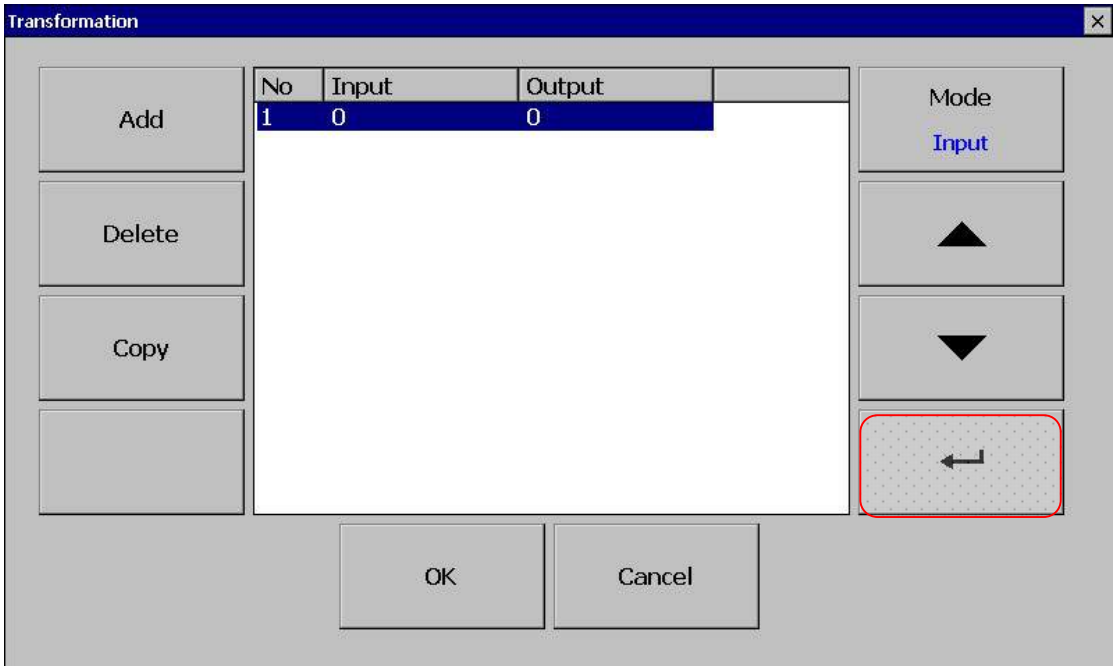
**Fig. D-18**
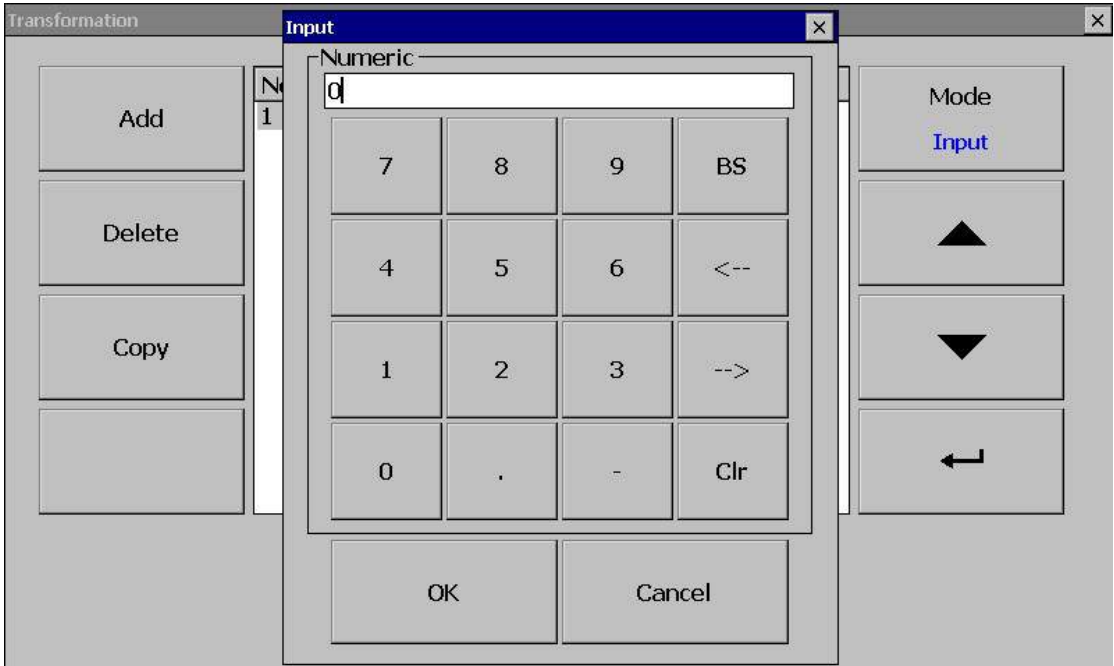


**Fig. D-19**
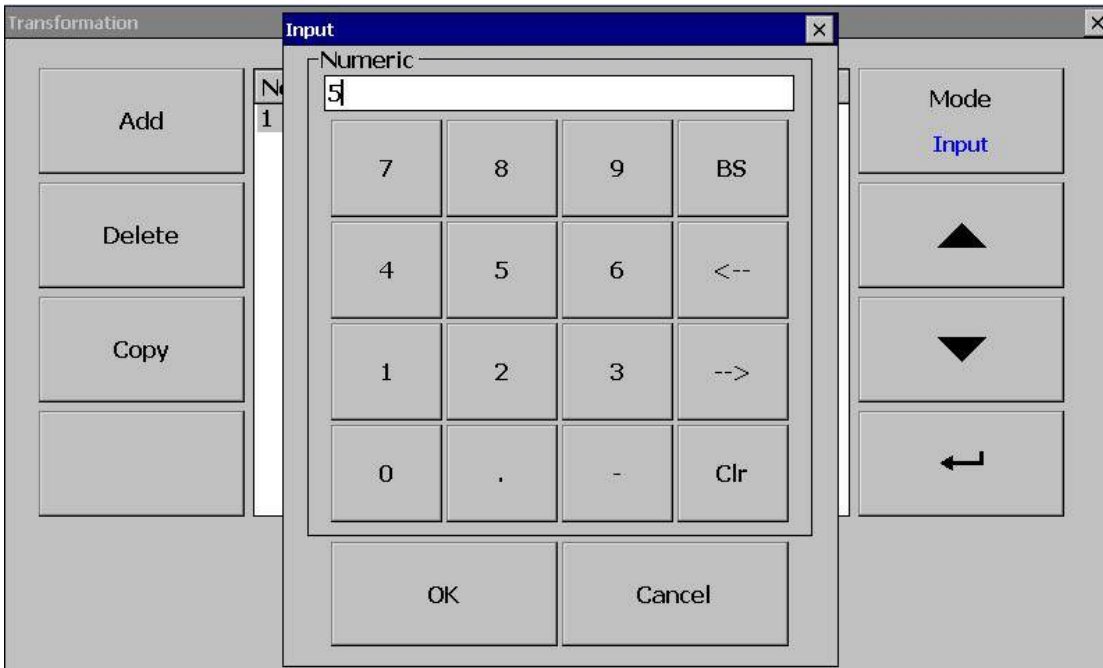
**Fig. D-20**

Press "Mode" button from "Input" to "Output"



**Fig. D-21**

**Transformation**

| No | Input | Output | | | Mode |
|----|-------|--------|--|--|------|
| 1  | 5     | 0      | | | Input |

Add

Delete

Copy

OK    Cancel

▲

▼

↵

**Fig. D-22**

**Transformation**

| No | Input | Output | | | Mode |
|----|-------|--------|--|--|------|
| 1  | 5     | 0      | | | Output |

Add

Delete

Copy

OK    Cancel

▲

▼

↵
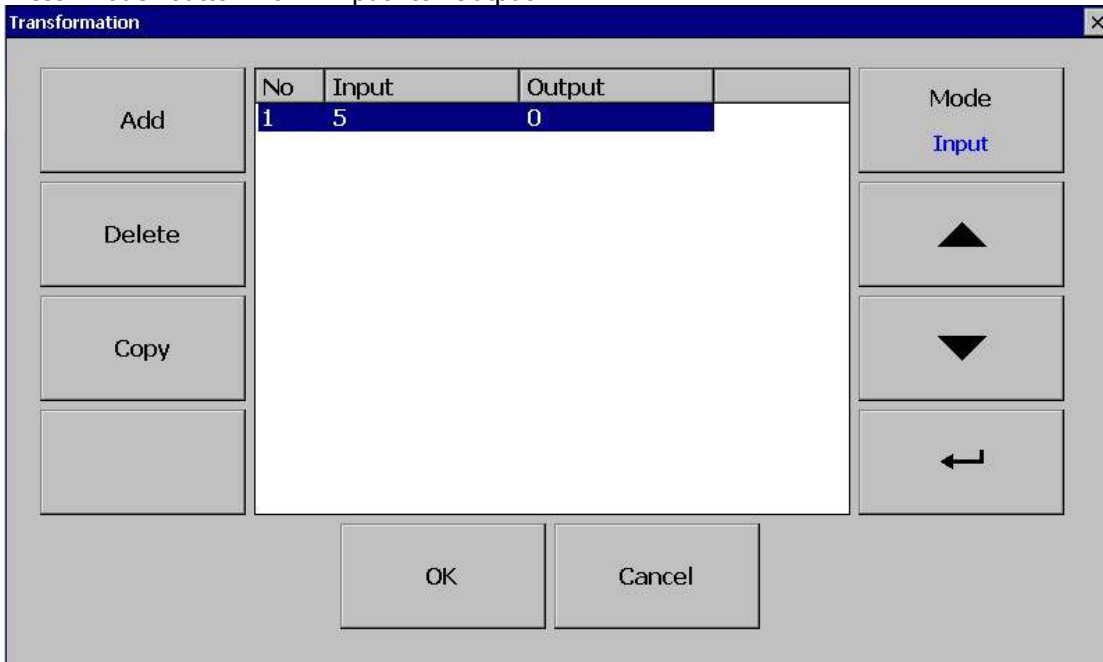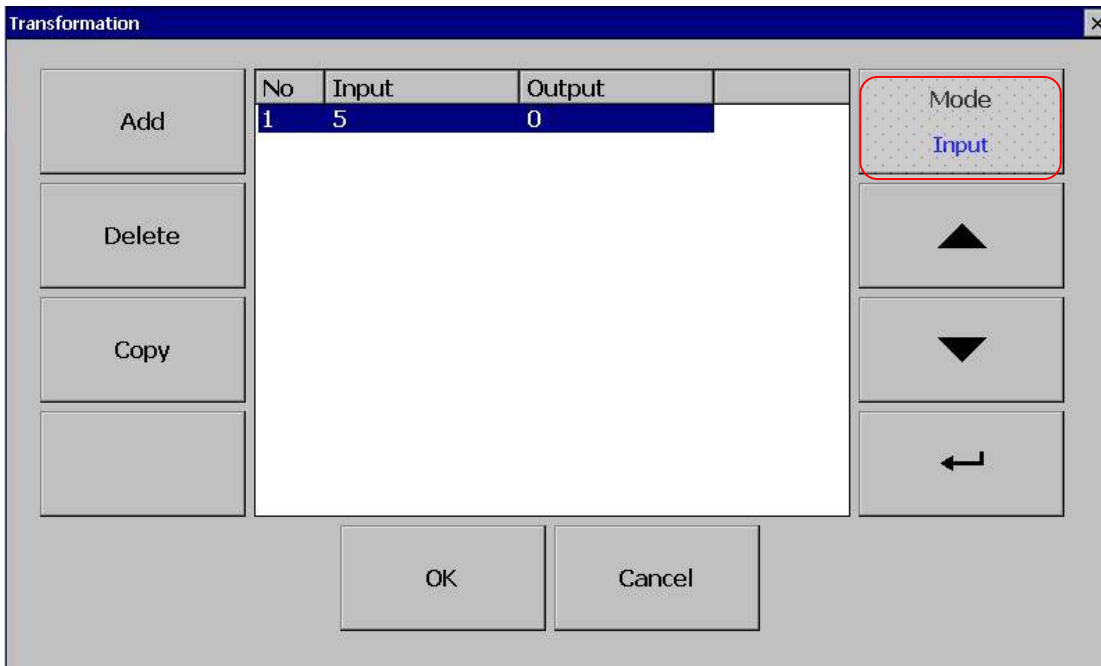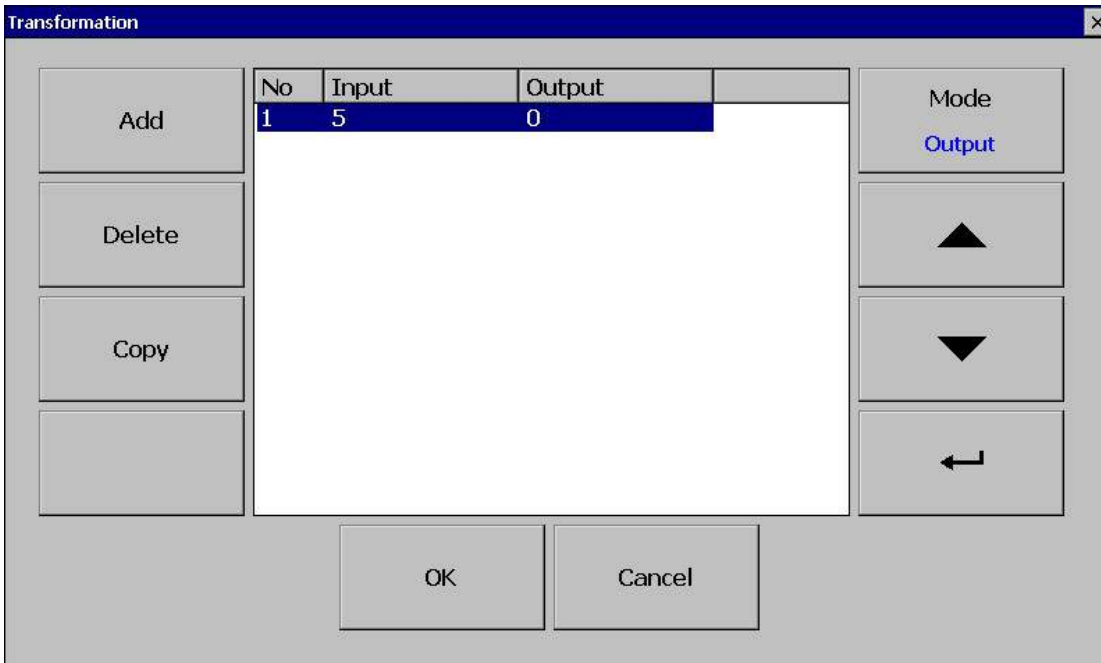
**Fig. D-23**

Press "Enter" button to modify "Output" value
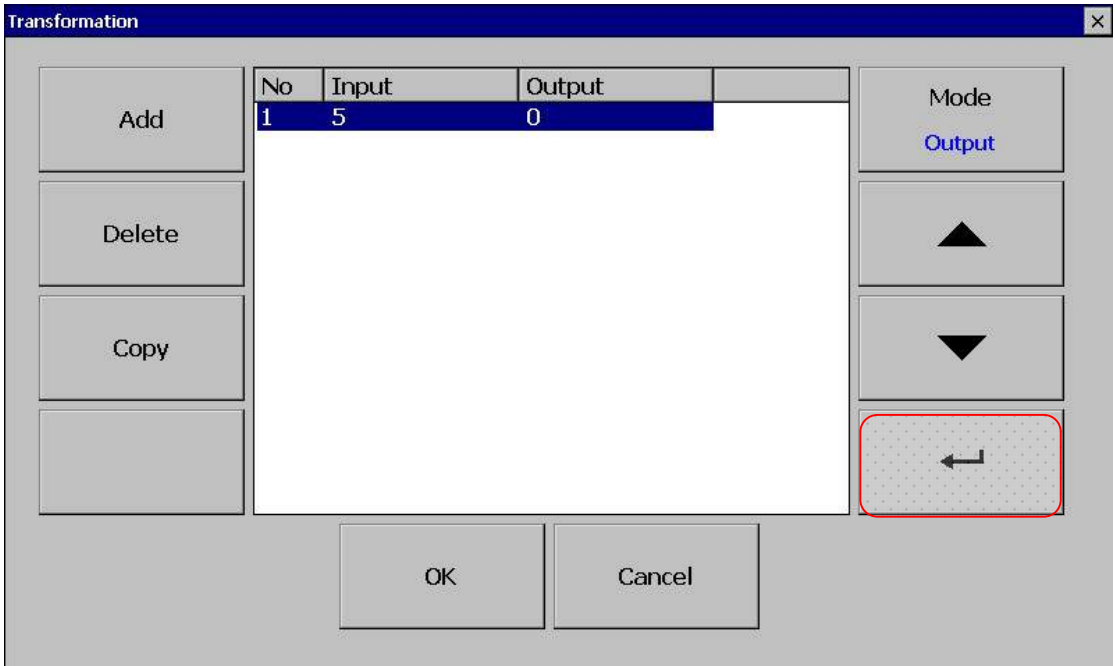
**Fig. D-24**
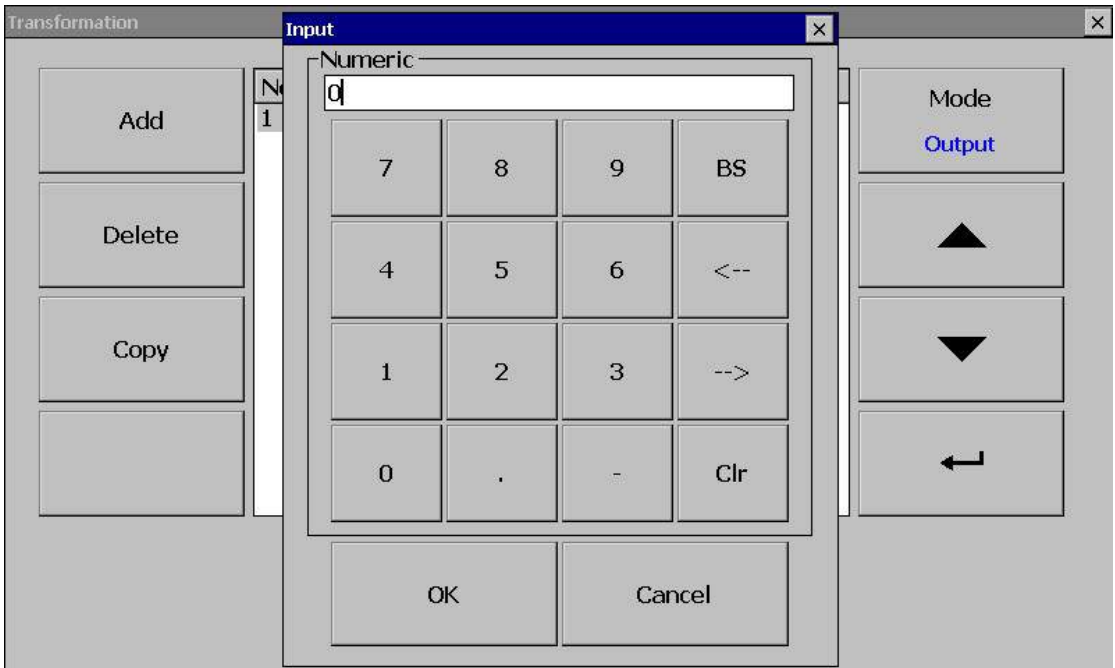
**Fig. D-25**
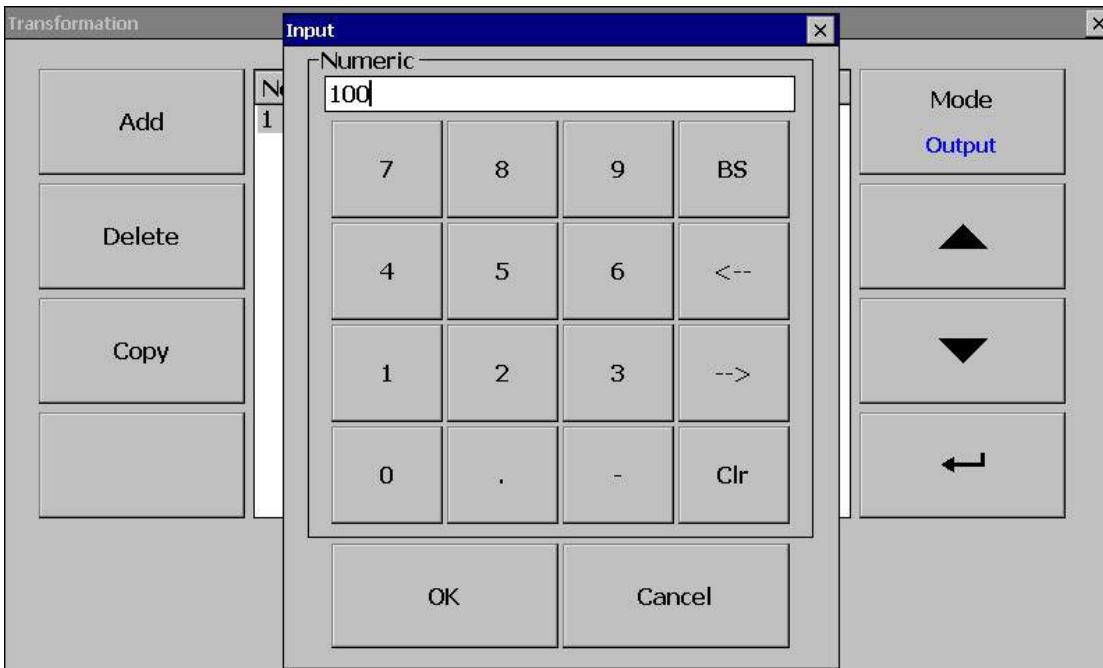
**Fig. D-26**
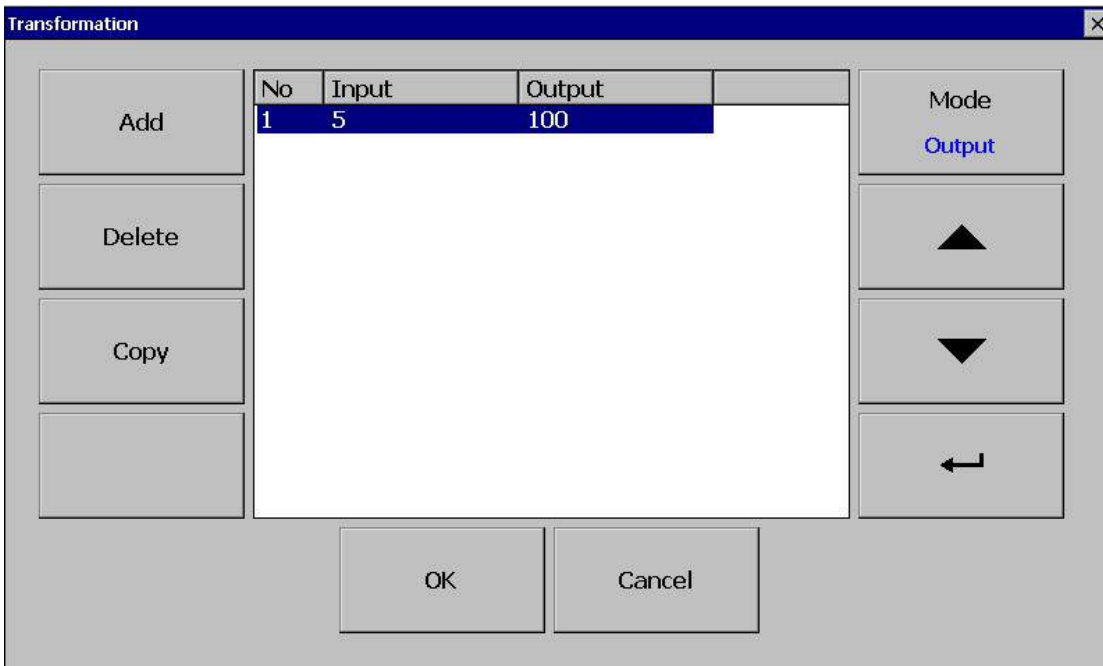


**Fig. D-27**

Please repeat **Fig. D-17** to **Fig D-27** step to add another scale range, and please notice the scale range need two points at least to convert value.

In here, we will create 3 points to do conversion for this sample.
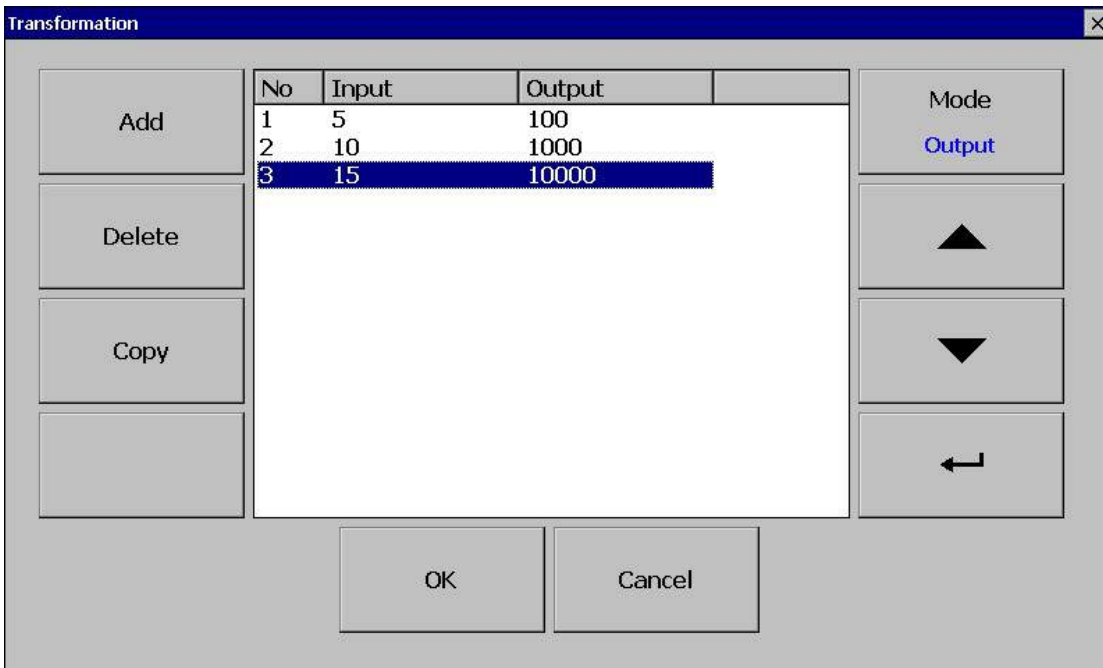
**Fig. D-28**
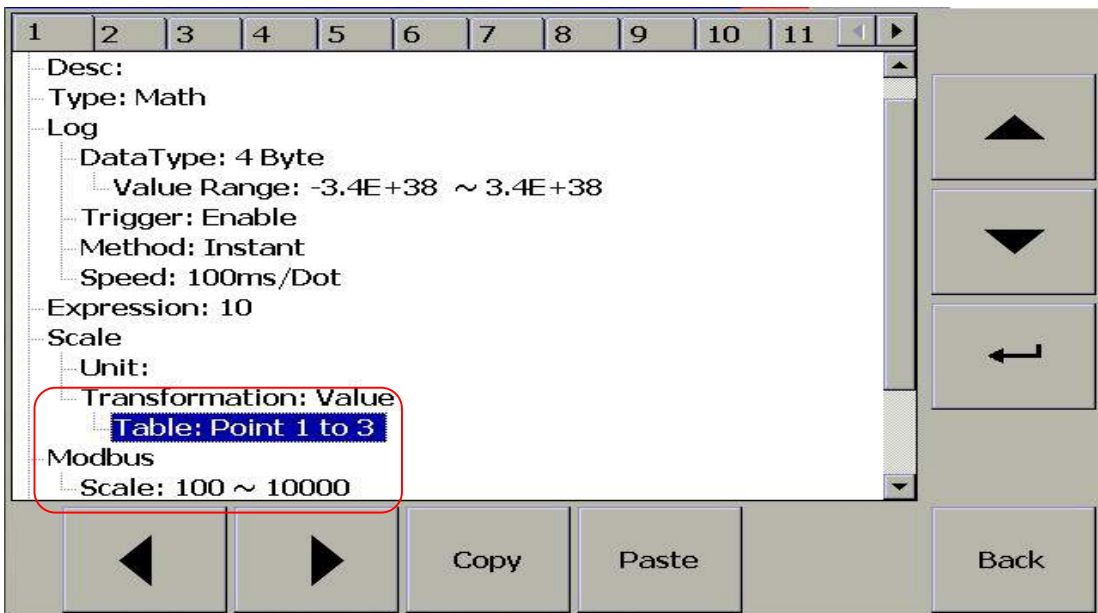


**Fig. D-29**

**iii.2.3** Modify expression value to "5" and check the Math1 value in "Overview" page

**Fig. D-30**



**Fig. D-31**

In order to make the value in the master site can match with the value of PR site, so we will get value from the master site to do conversion.

Math value = (((Register value * (ScaleHi - ScaleLo)) / 4294967295) + ScaleLo)
*In this sample, the ScaleLo value is set as "10", ScaleHi value is set as "30", please refer to **Fig.D-28**.

Now we are aware the value of Math1 at the PR is showing "100" and the value of input register at address 50 is showing "0"
We will take the value "0" into the expression as following:

Math value = (((0 * (10000 - 100)) / 4294967295) + 100)
= ((0 / 4294967295) + 100)
= 100

We got the value" 0" from the input register at address 50 in master site via above formula, the value "0" has been converted as "100".

**iii.2.4**  Modify expression value to "10" and check the Math1 value in "Overview" page



**Fig. D-32**



**Fig. D-33**

Now we are aware the value of Math1 at the PR is showing "1000" and the value of input register at address 50 is showing "390451572"

We will take the value "390451572" into the expression as following:

Math value = (((390451572* (10000 - 100)) / 4294967295) + 100)
= ((3865470562800/4294967295) + 100)
= 900 + 100
= 1000

We got the value "390451572" from the input register at address 50 in master site via above formula, the value "390451572" has been converted as "1000".

**iii.2.5**  Modify expression value to "15" and check the Math1 value in "Overview" page

**Fig. D-34**



**Fig. D-35**

Now we are aware the value of Math1 at the PR is showing "10000" and the value of input register at address 50 is showing "4294967295"

We will take the value "4294967295" into the expression as following:

$$\text{Math value} = (((4294967295 * (10000 - 100)) / 4294967295) + 100)$$
$$= ((42520176220500/4294967295) + 9900)$$
$$= 9900 + 100$$
$$= 10000$$

We got the value "4294967295" from the input register at address 50 in master site via above formula the value "4294967295" has been converted as "10000".

### iii.3   Transformation : Math Channel
**iii.3.1** Change the transformation type to "Math Channel"
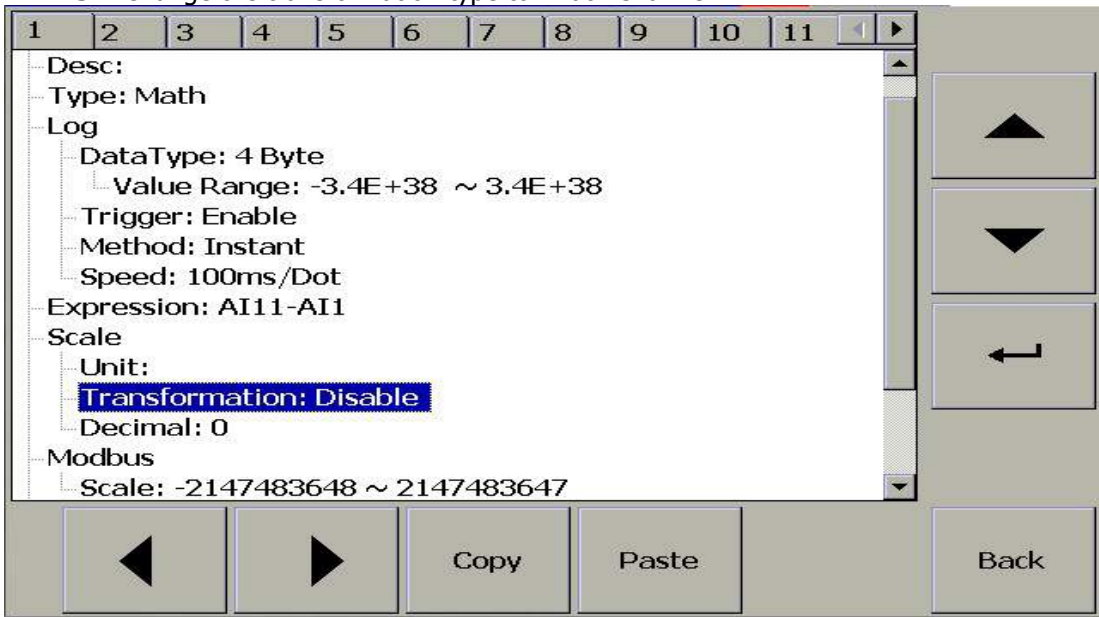


**Fig. D-36**
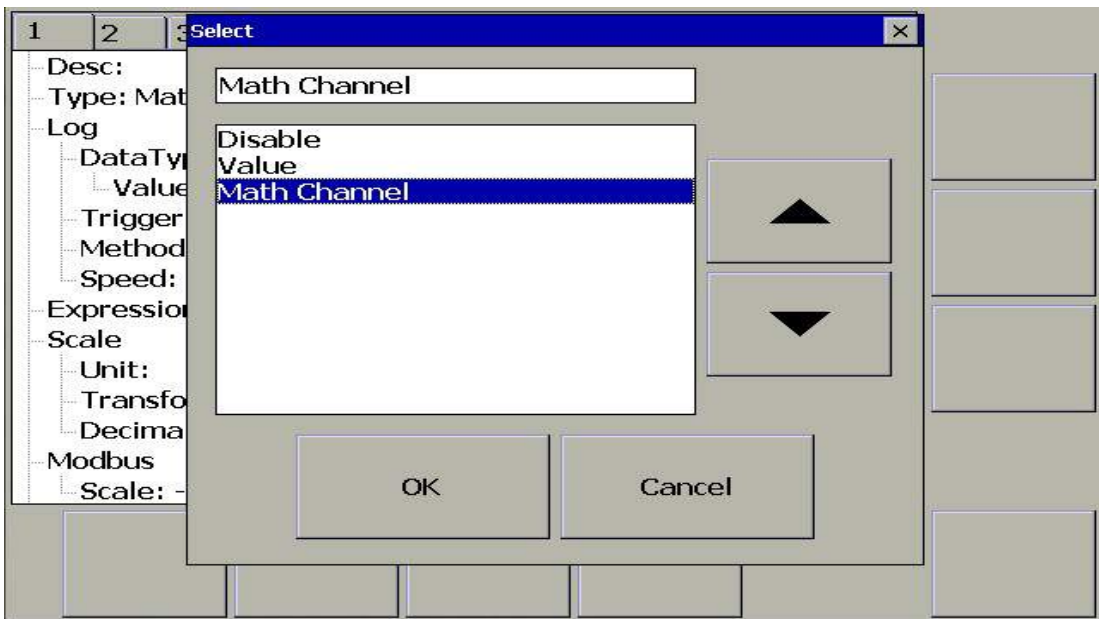


**Fig. D-37**
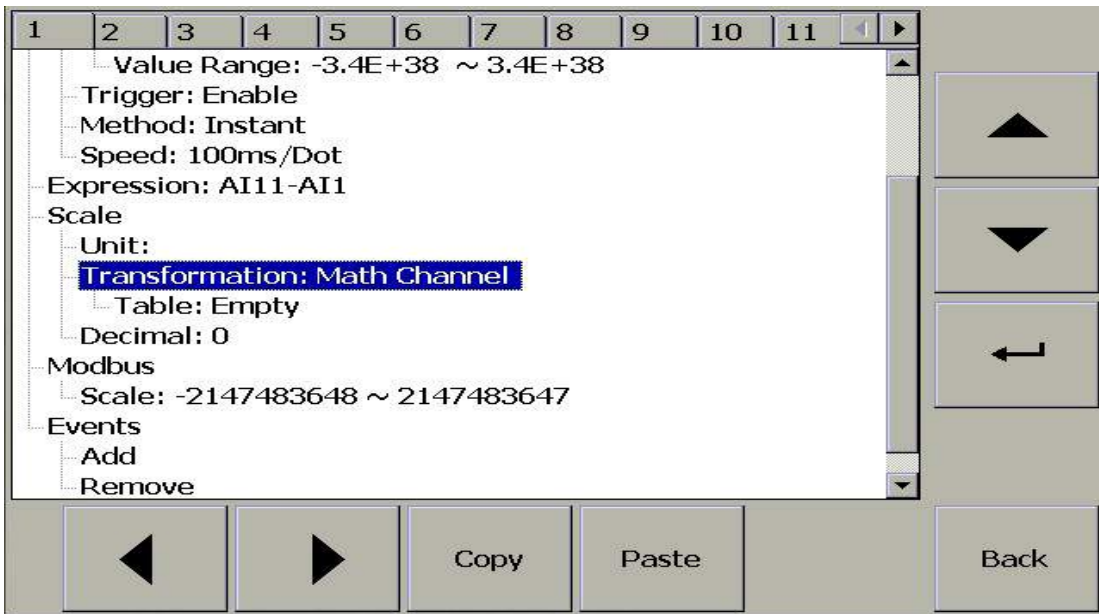
**Fig. D-38**

**iii.3.2** Create scale range table for conversion
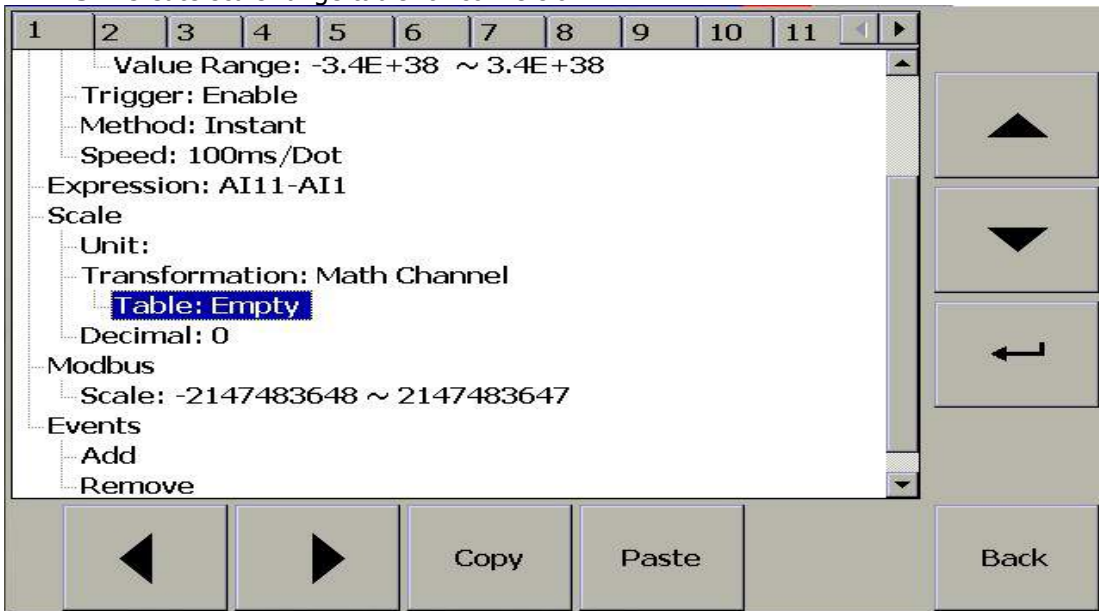


**Fig. D-39**

Press "Add" button to add scale range
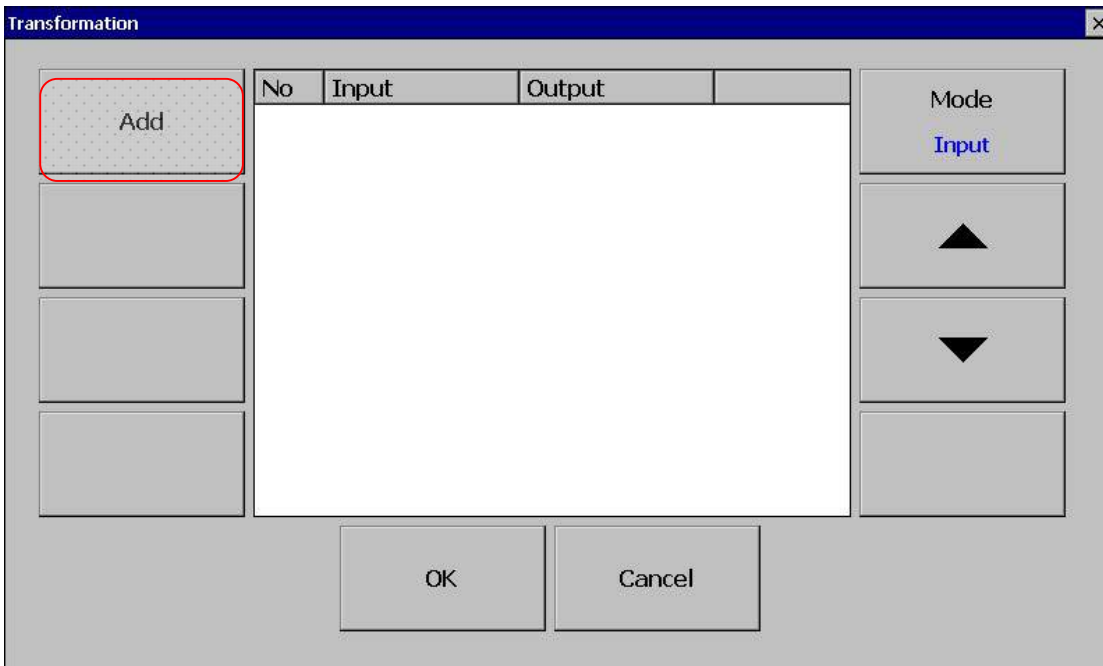
**Fig. D-40**

Press "Enter" button to modify "Input" value
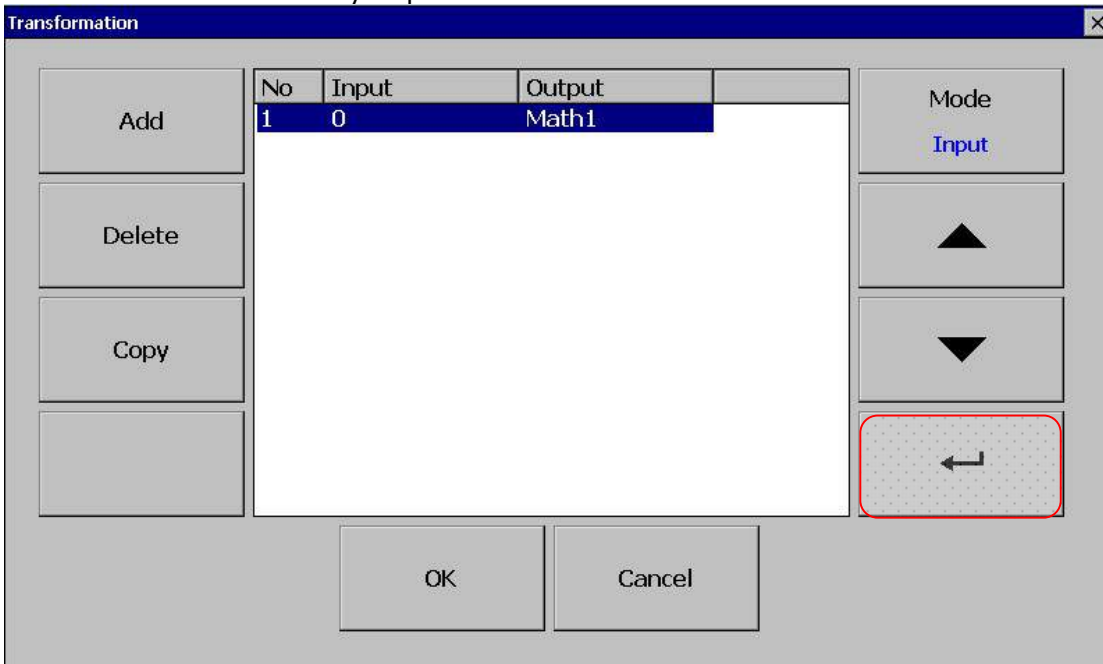


**Fig. D-41**
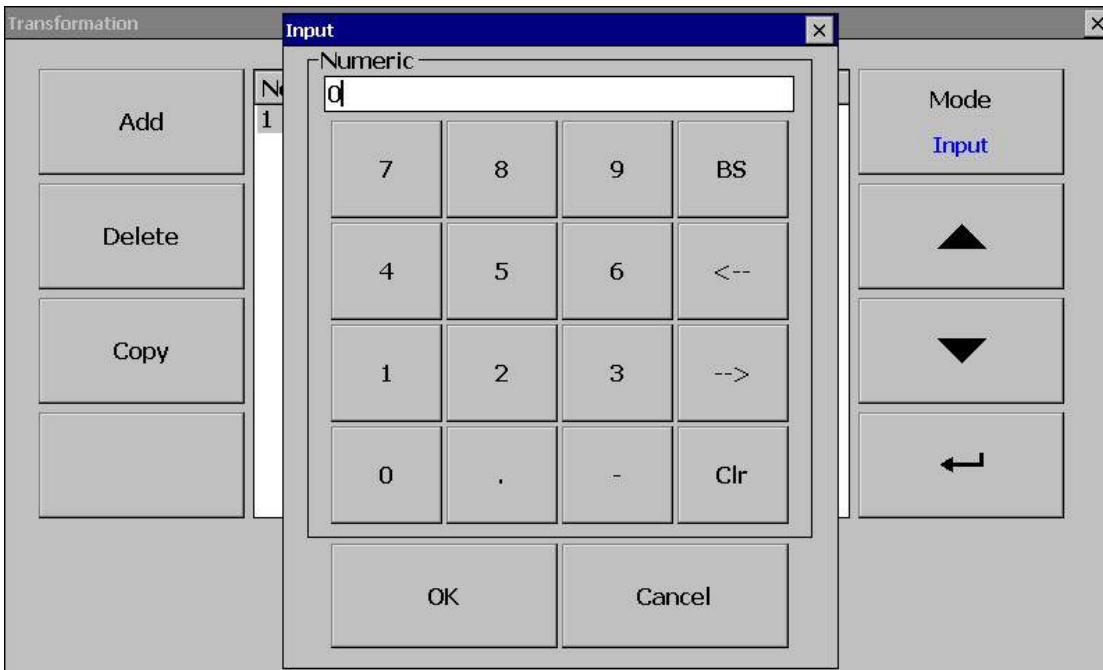
**Fig. D-42**
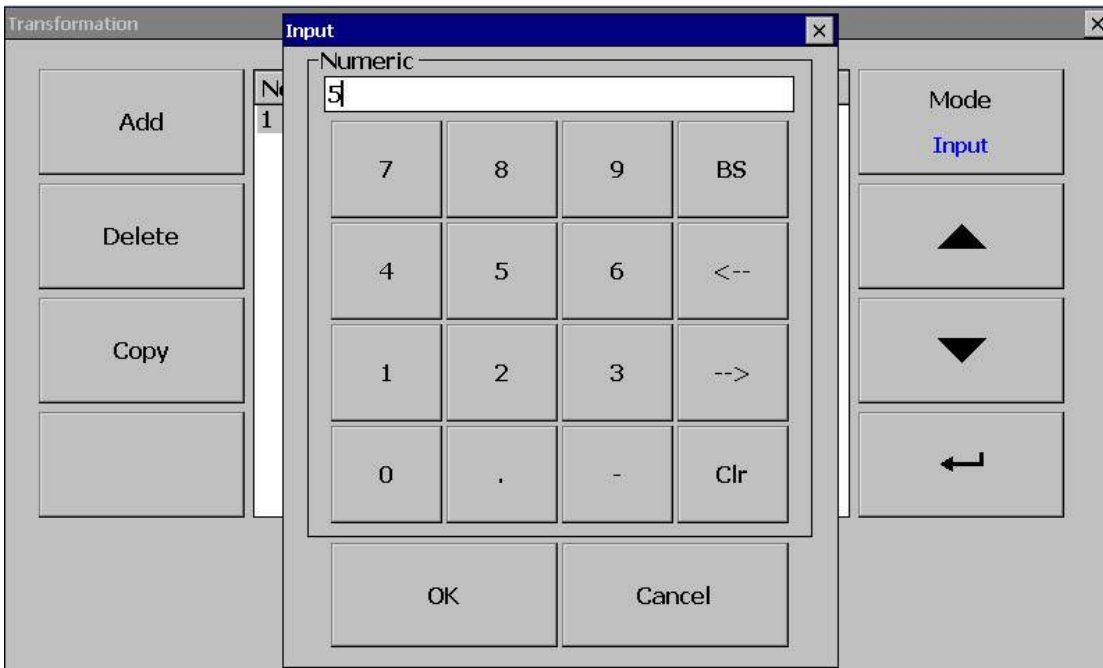
**Fig. D-43**

Press "Mode" button from "Input" to "Output"

**Fig. D-44**



**Fig. D-45**

**Transformation** ✕

| | No | Input | Output | |
|---|---|---|---|---|
| **Add** | 1 | 5 | Math1 | |
| **Delete** | | | | |
| **Copy** | | | | |
| | | | | |

**Mode**
Output

▲

▼

↵

**OK**    **Cancel**
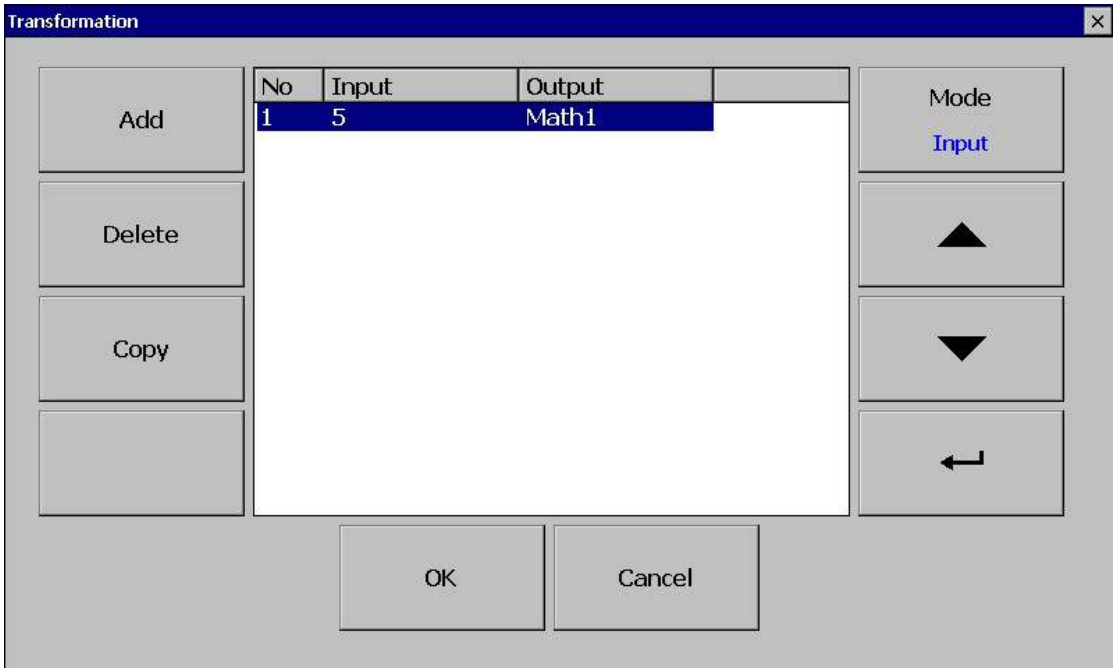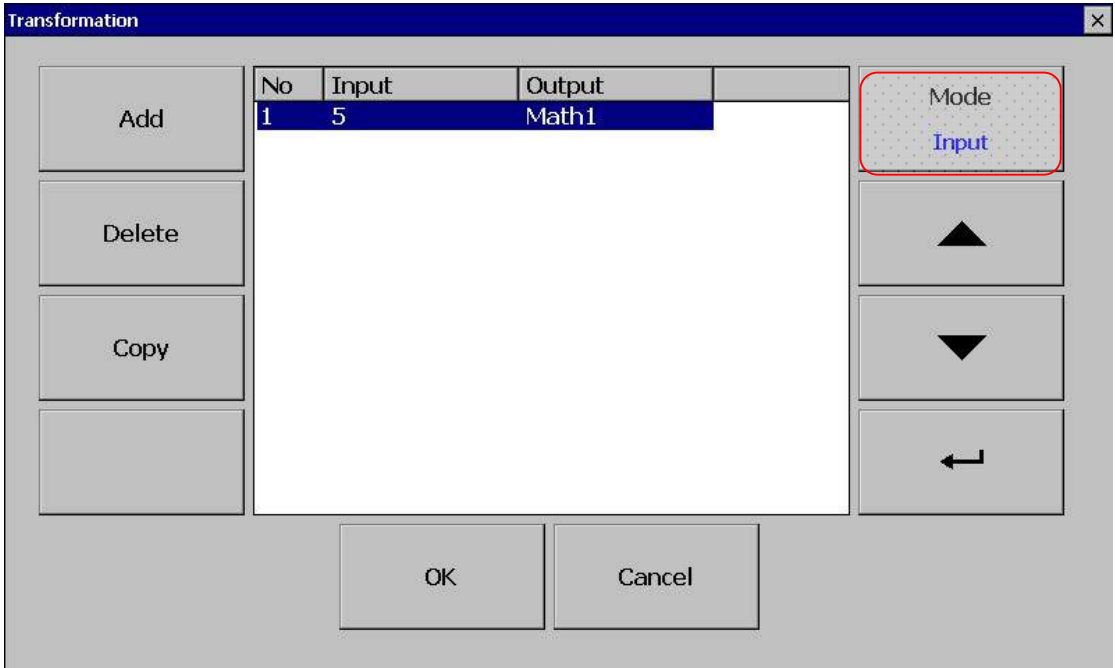
**Fig. D-46**

Press "Enter" button to modify "Output" value

**Transformation** ✕

| | No | Input | Output | |
|---|---|---|---|---|
| **Add** | 1 | 5 | Math1 | |
| **Delete** | | | | |
| **Copy** | | | | |
| | | | | |

**Mode**
Output

▲

▼

↵

**OK**    **Cancel**

**Fig. D-47**

**Transformation**                                                          [×]

| | | |
|---|---|---|
| Add | | Mode |
| | | Output |

**Select**                                                          [×]

Math1

| Math1 | ▲ |
| Math2 | |
| Math3 | |
| Math4 | |
| Math5 | |
| Math6 | |
| Math7 | |
| Math8 | |
| Math9 | |
| Math10 | |
| Math11 | ▼ |

Delete

▲

Copy

▼

↵

[ OK ]        [ Cancel ]
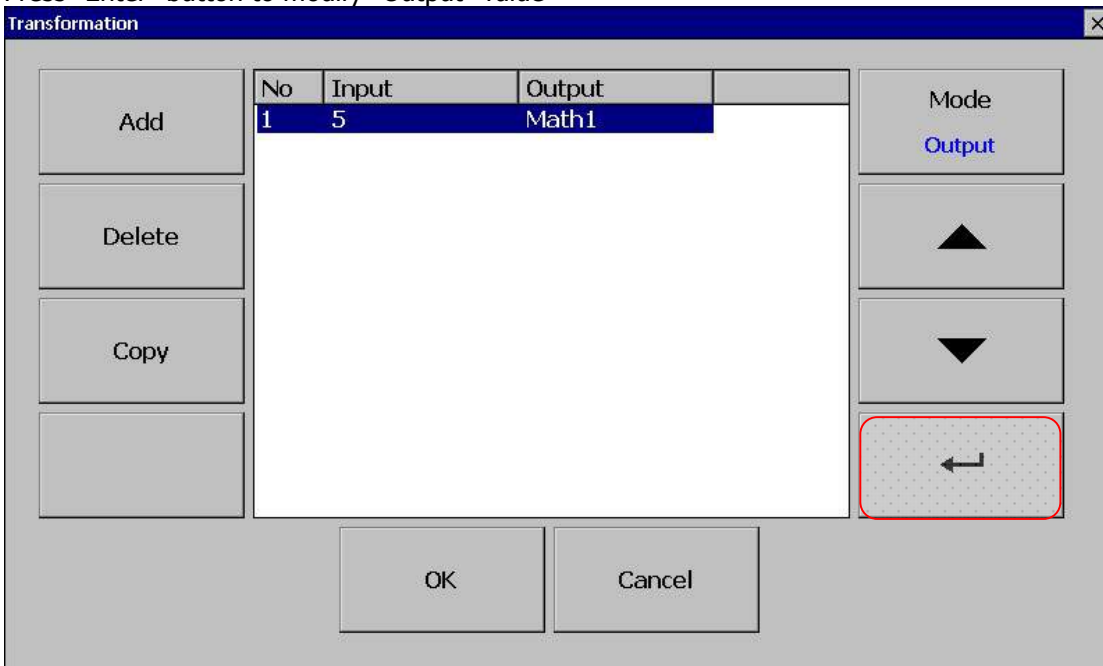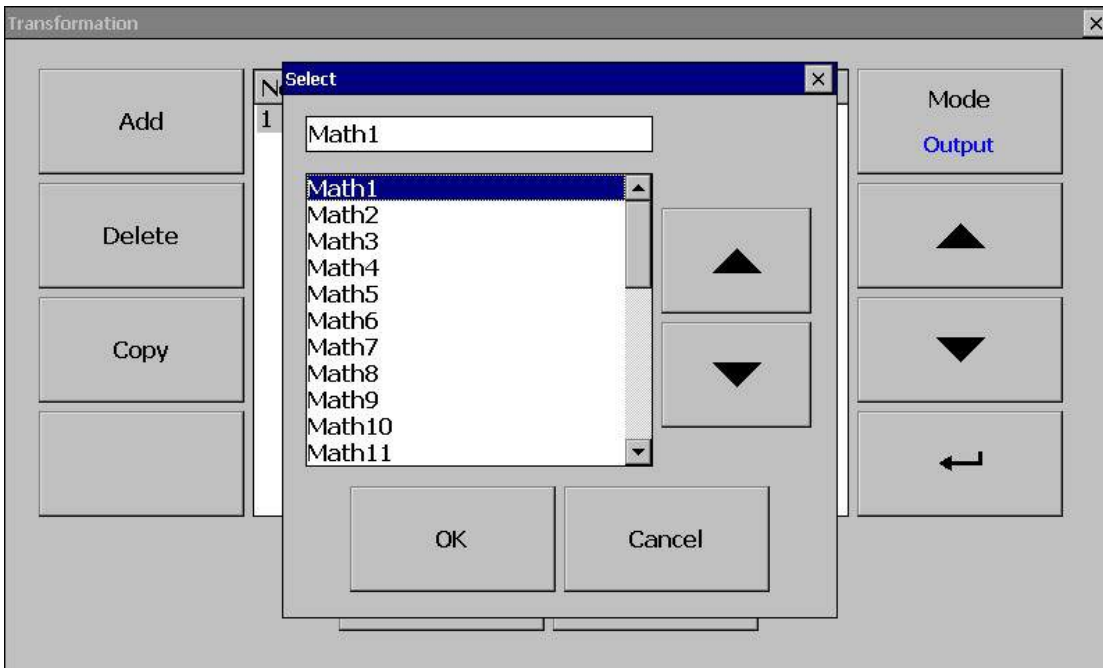
**Fig. D-48**

Press select output channel is "Math2"

**Transformation**                                                          [×]

| | | |
|---|---|---|
| Add | | Mode |
| | | Output |

**Select**                                                          [×]

Math2

| Math1 | ▲ |
| Math2 | |
| Math3 | |
| Math4 | |
| Math5 | |
| Math6 | |
| Math7 | |
| Math8 | |
| Math9 | |
| Math10 | |
| Math11 | ▼ |

Delete

▲

Copy

▼

↵

[ OK ]        [ Cancel ]
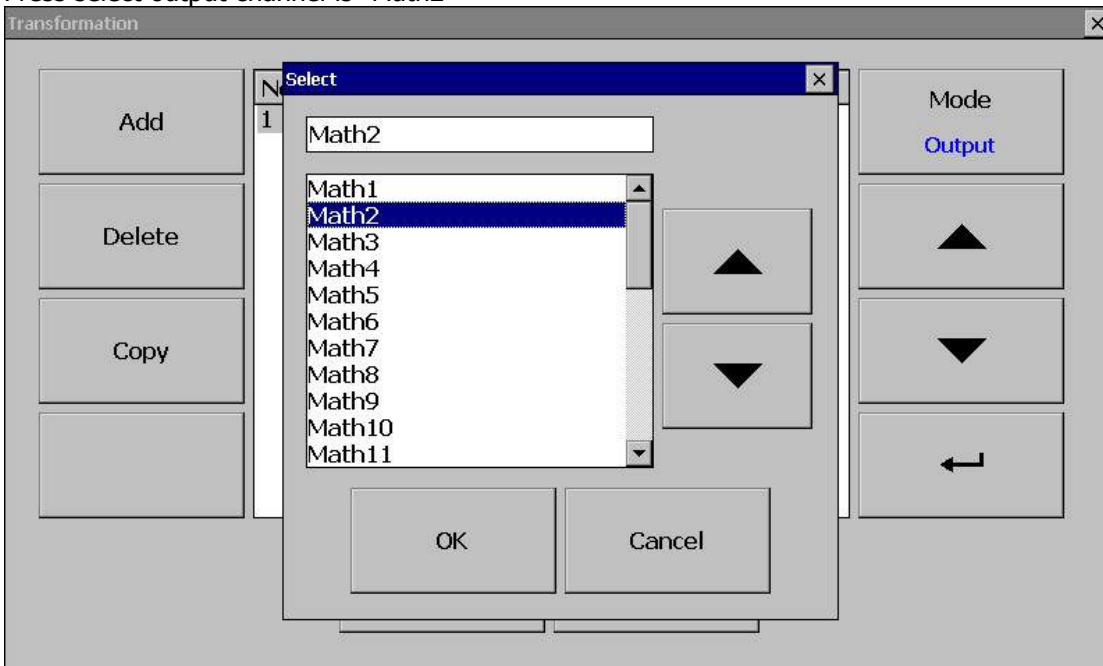
**Fig. D-49**

**Fig. D-50**

Please repeat *Fig. D-40* to *Fig D-50* to add another scale range.
In here, we use 3 points to do conversion for this sample, so please set output channel as "Math2", "Math3" and "Math4".



**Fig. D-51**

**iii.3.3** Modify the content of expression in Math2 to "5"
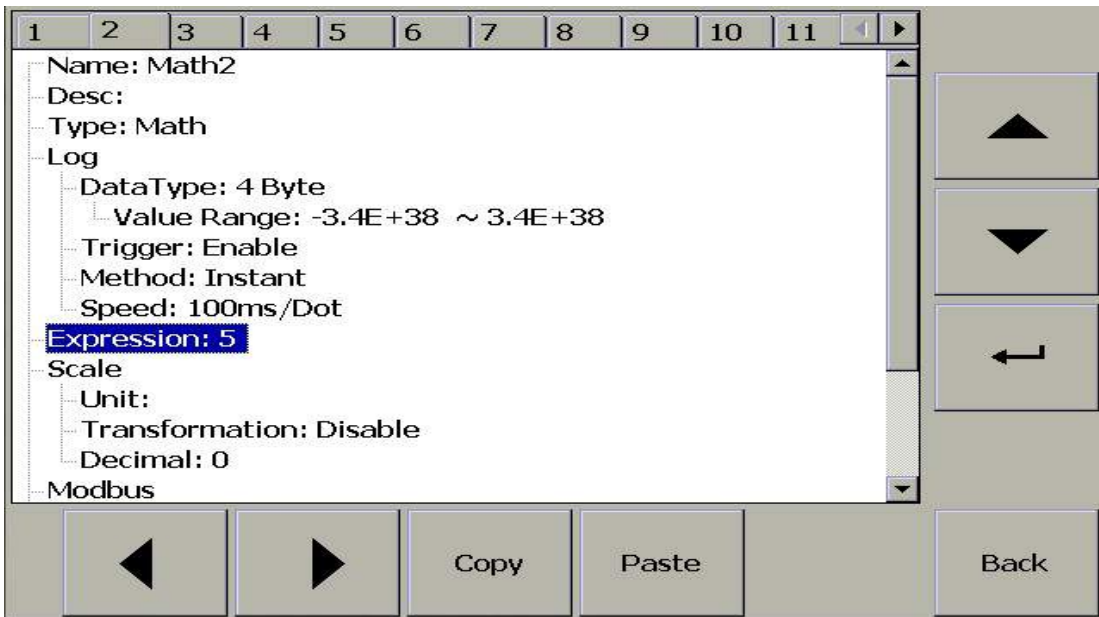
**Fig. D-52**

**iii.3.4** Create the table of scale range in Math2

*Note: Create the table of scale range for step, please refer to **Fig. D-17** to **Fig. D-28** step.
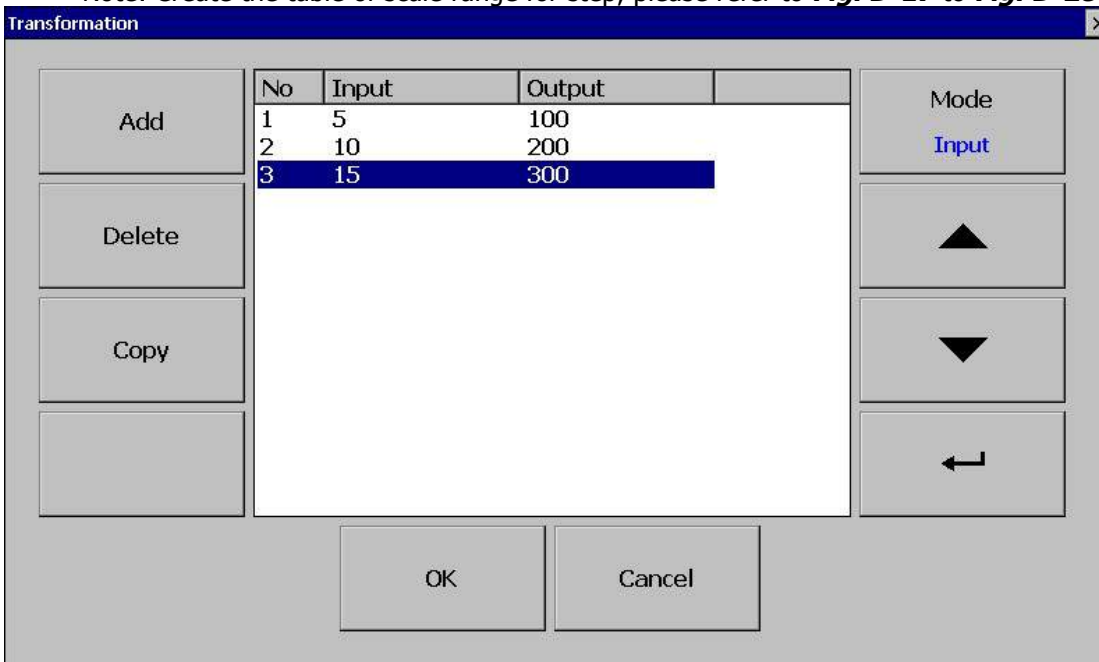


**Fig. D-53**
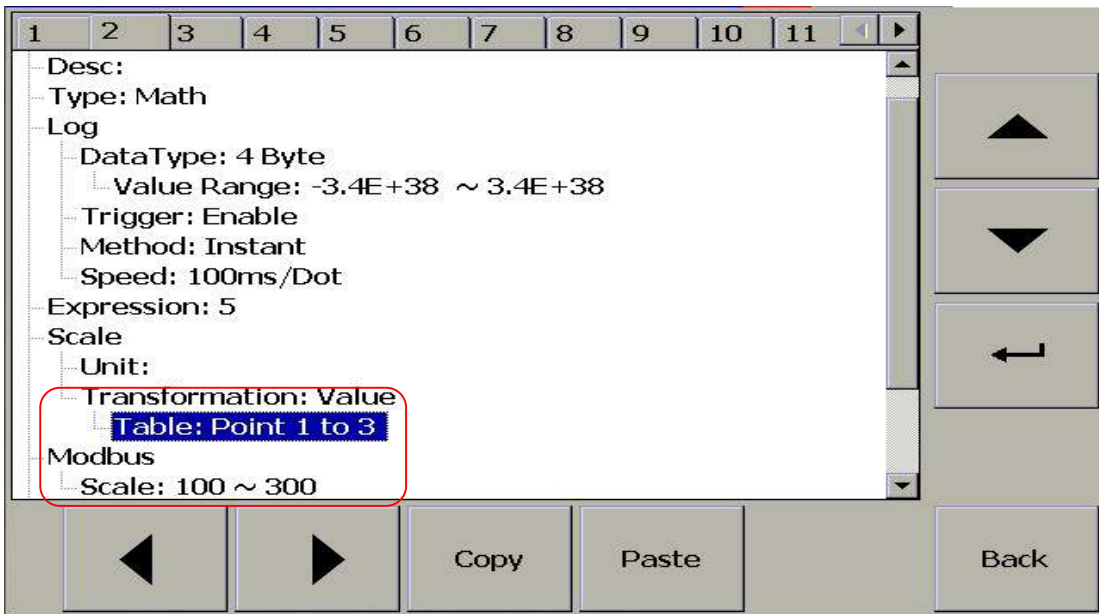
**Fig. D-54**

**iii.3.5** Modify the content of expression in Math3 to "10"
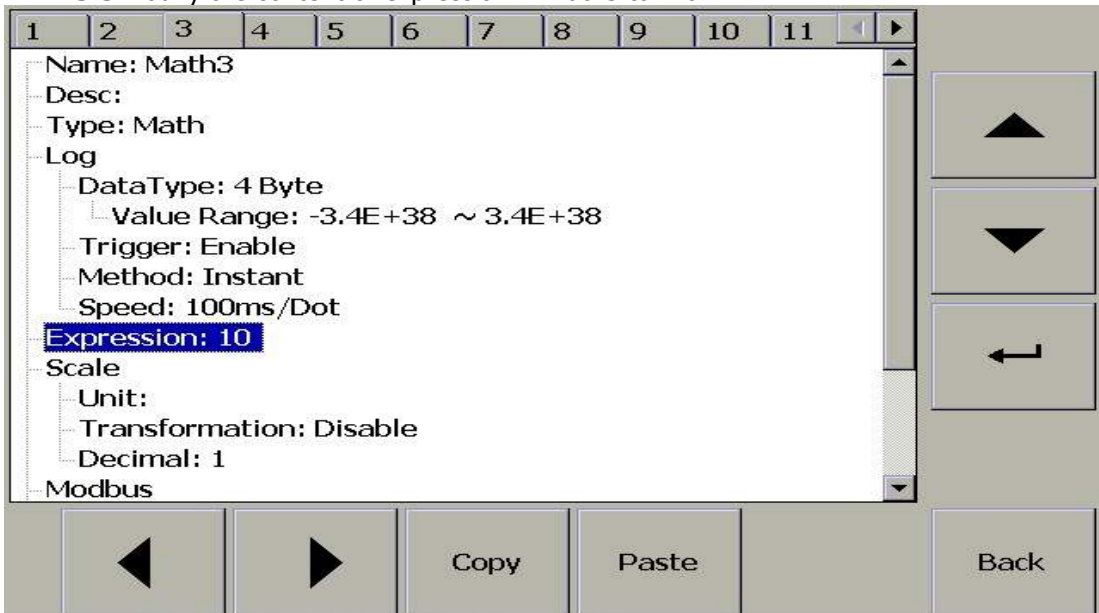


**Fig. D-55**

**iii.3.6** Create table of scale range in Math3

**Fig. D-56**
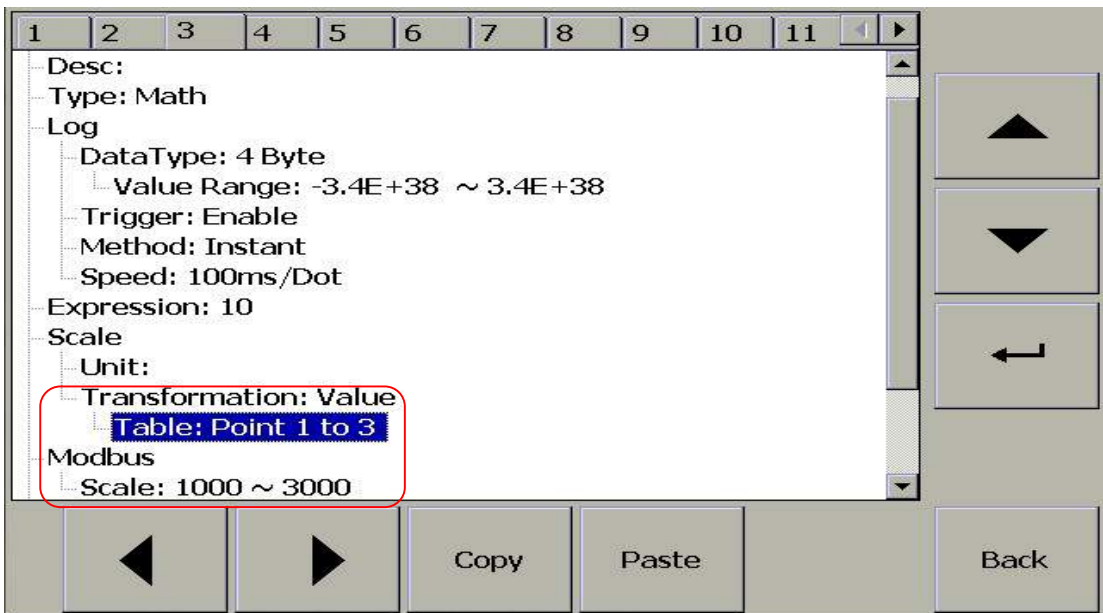


**Fig. D-57**

**iii.3.7** Modify the content of expression in Math4 to "15"
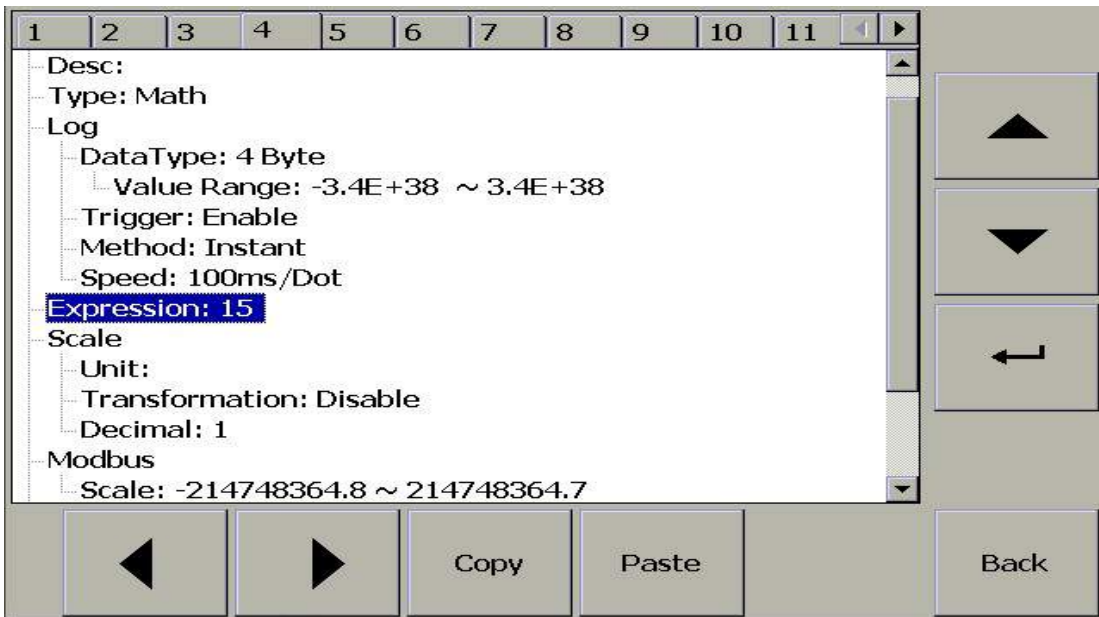
**Fig. D-58**

**iii.3.8** Create table of scale range in Math4
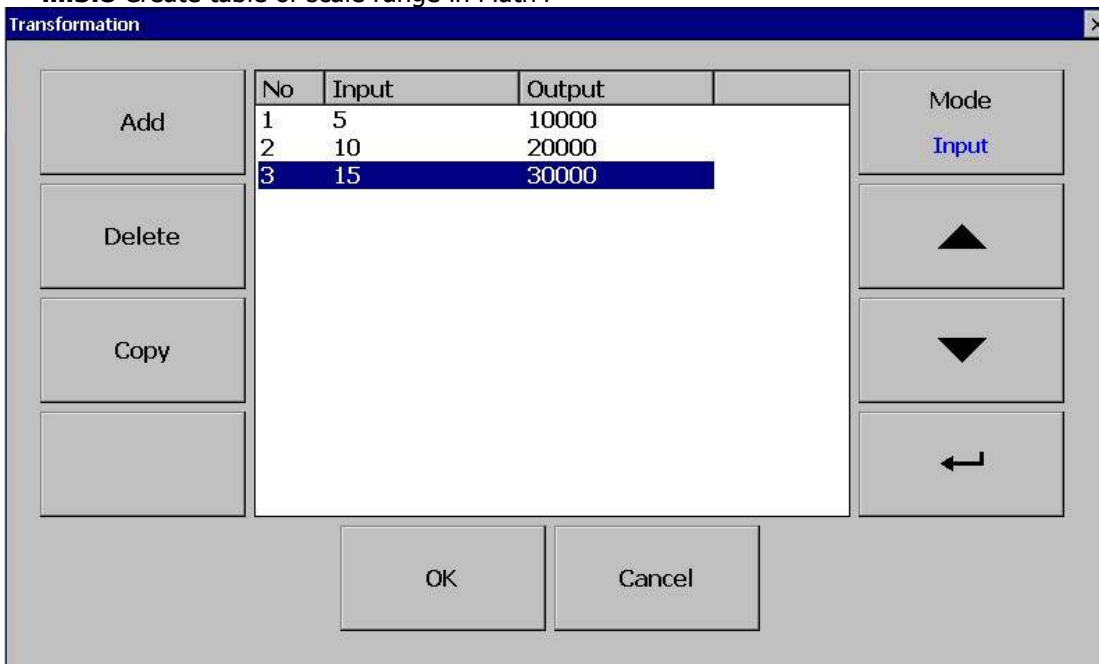


**Fig. D-59**
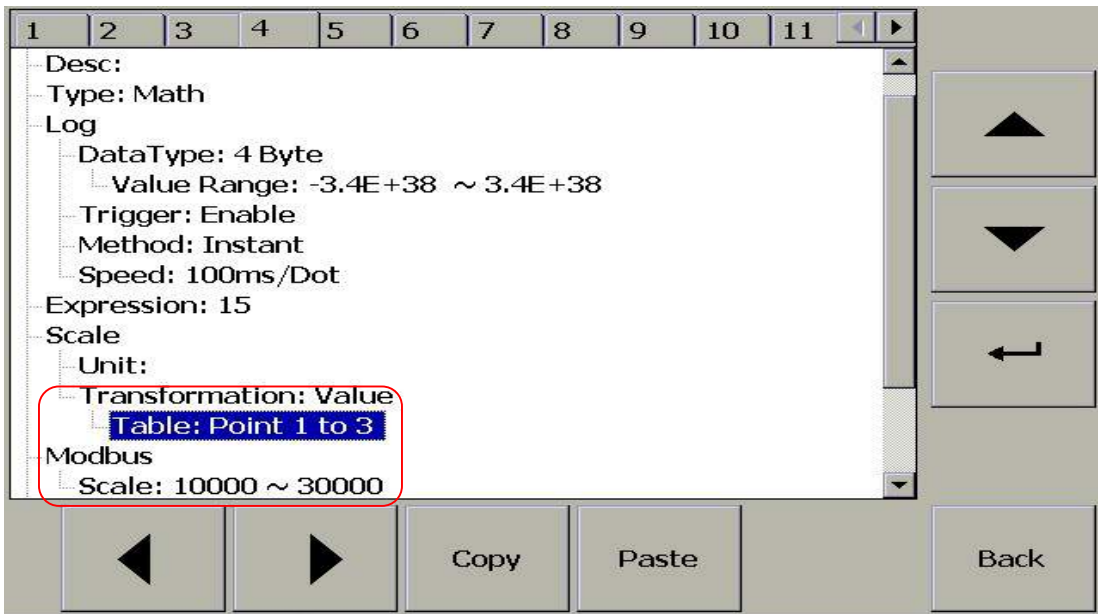
**Fig. D-60**

**iii.3.9** Modify the content of expression in Math1 to "5"
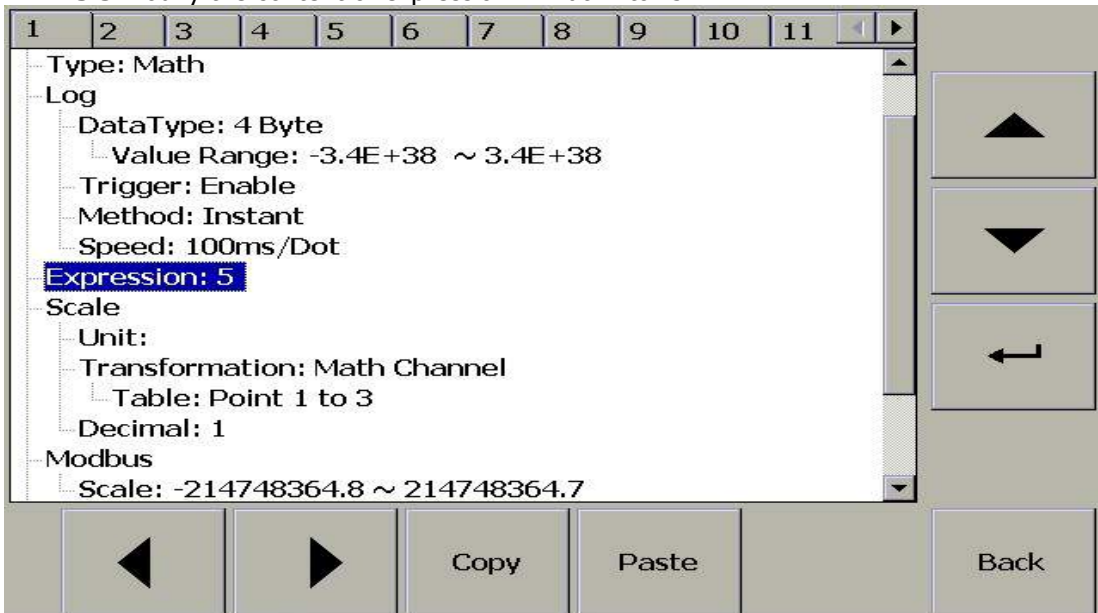


**Fig. D-61**

**iii.3.10** Modify decimal value to "0"
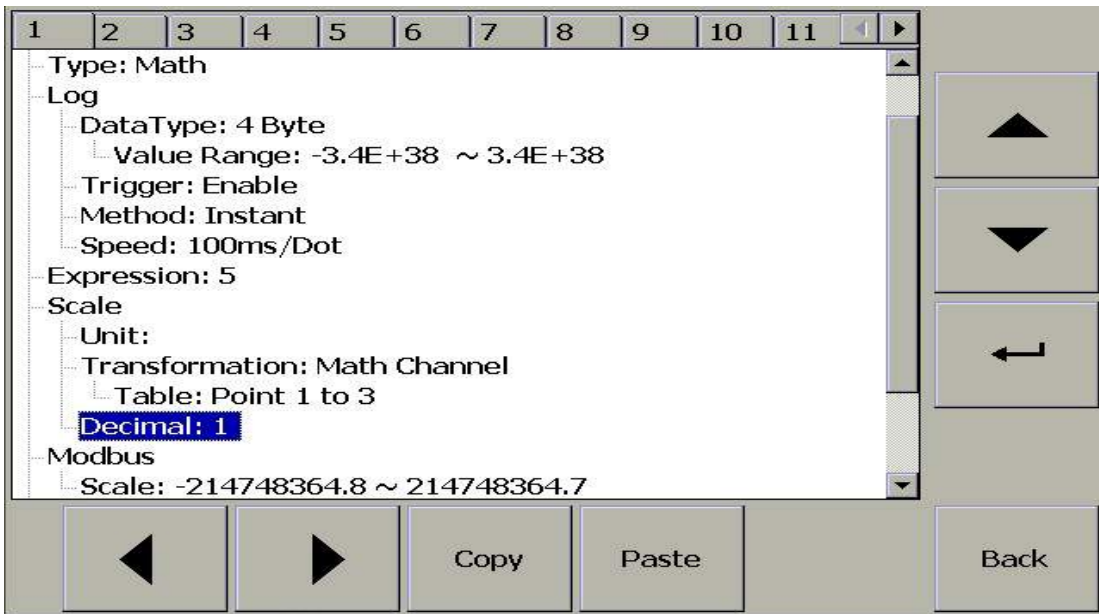
**Fig. D-62**
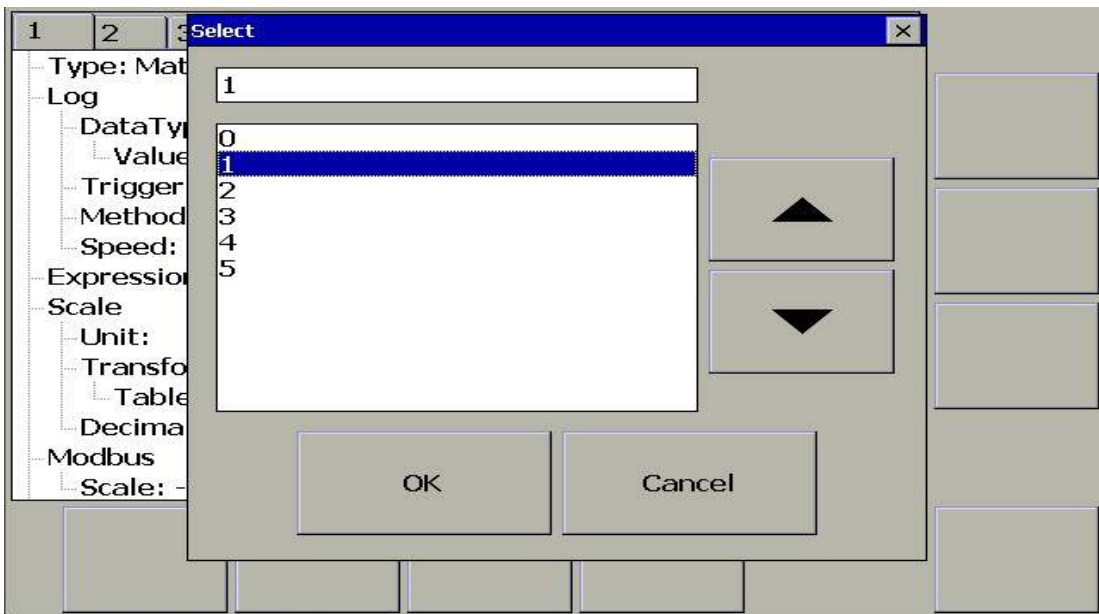


**Fig. D-63**

Please select "0"
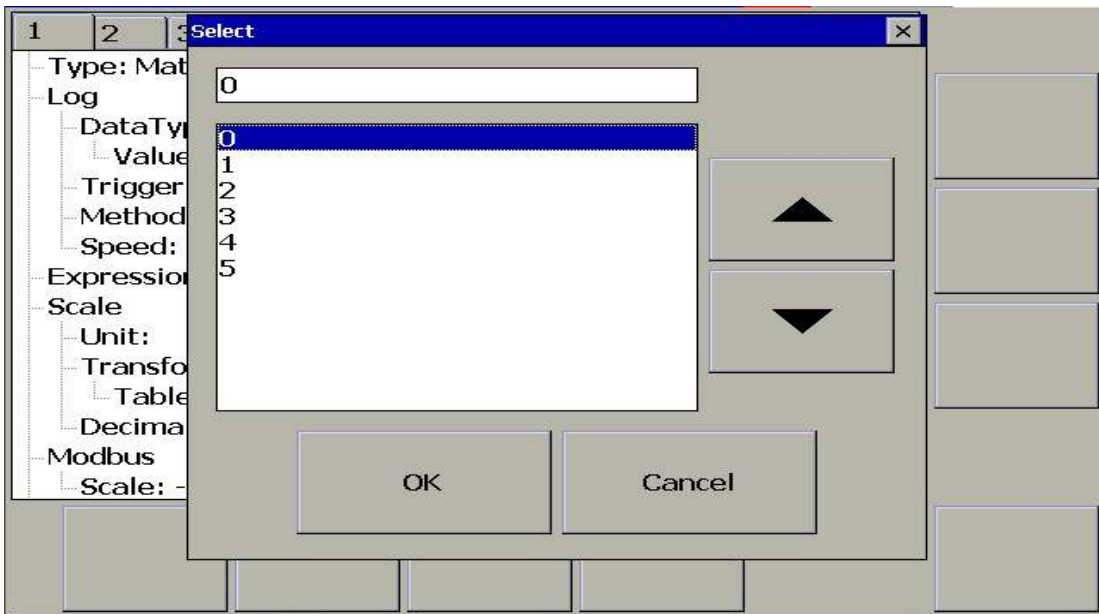
**Fig. D-64**
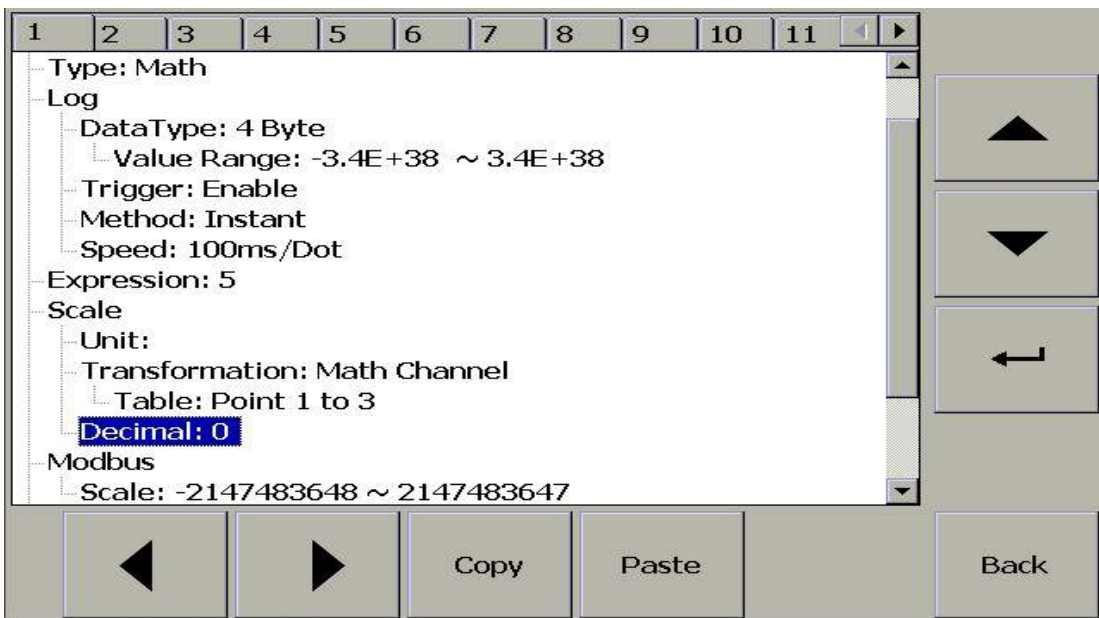

**Fig. D-65**

**iii.3.11** Check the Math1 value in "Overview" page

**Fig. D-66**

If the decimal value in Math1 is set as "0", we don't need to do conversion.
Because the value of PR site in Math1 is the same as the value at input register address 50 in master site.

If the decimal value of Math1 is not set as "0", please refer to Page 30 Step2 to do conversion.

Base on the table of conversion in Math1, the input value "5" is converted to output "Math2", so the result of output value in Math1 will refer to Math2's operation result.

Now we are aware Math2's input value "5" is converted output "100", so Math2's output value "100" will be taked into the Math1 as Math1's output result.

In above "Overview" page, we can see the Math1 value is showing "100".

    **iii.3.12** Modify content of expression in Math1 to "10" and check the Math1
             value in "Overview" page

**Fig. D-67**



**Fig. D-68**

Base on the table of conversion in Math1, the input value "10" is converted to output "Math3", so the result of output value in Math1 will refer to Math3's operation result.

Now we are aware Math3's input value "10" is converted output "2000", so Math3's output value "2000" will be taked into the Math1 as Math1's output result.

In above "Overview" page, we can see the Math1 value is showing "2000".

> **iii.3.13** Modify the content of expression in Math1 to "15" and check the Math1 value in "Overview" page

**Fig. D-69**



**Fig. D-70**

Base on the table of conversion in Math1, the input value "15" is converted to output "Math4", so the result of output value in Math1 will refer to Math4's operation result.

Now we are aware Math4's input value "15" is converted output "30000", so Math4's output value "30000" will be taked into the Math1 as Math1's output result.

In above "Overview" page, we can see the Math1 value is showing "30000".

# Appendix E

**AO Convert Example**

**i.** Press 『Menu』 -> 『More』 -> 『Config』
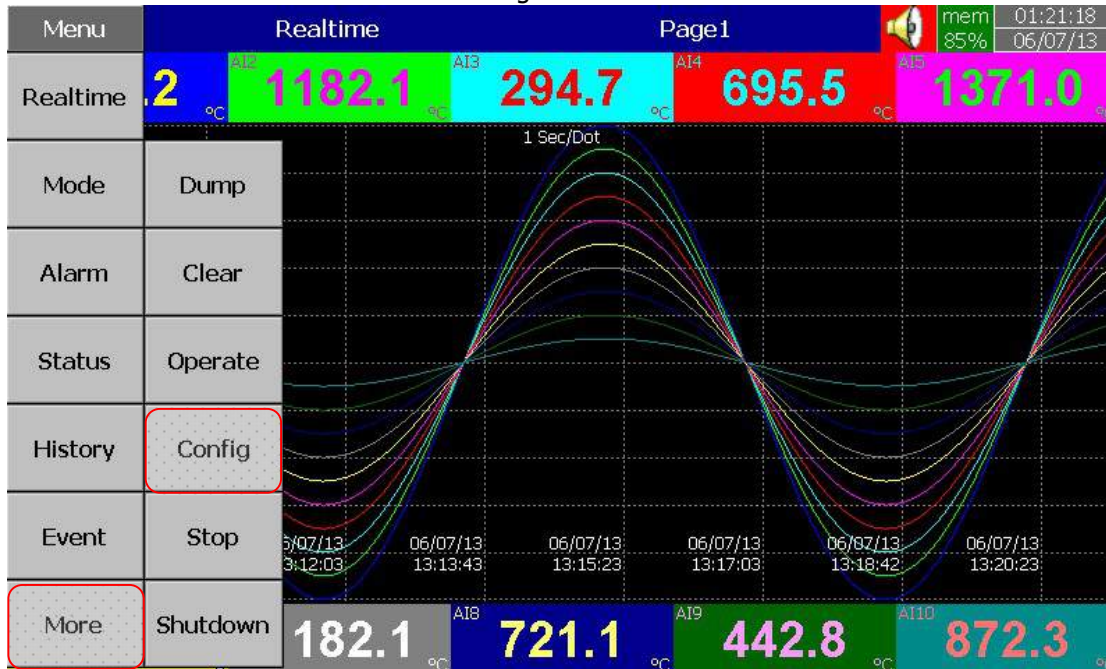


**Fig. E-1**

**ii.** Please select 『AO』
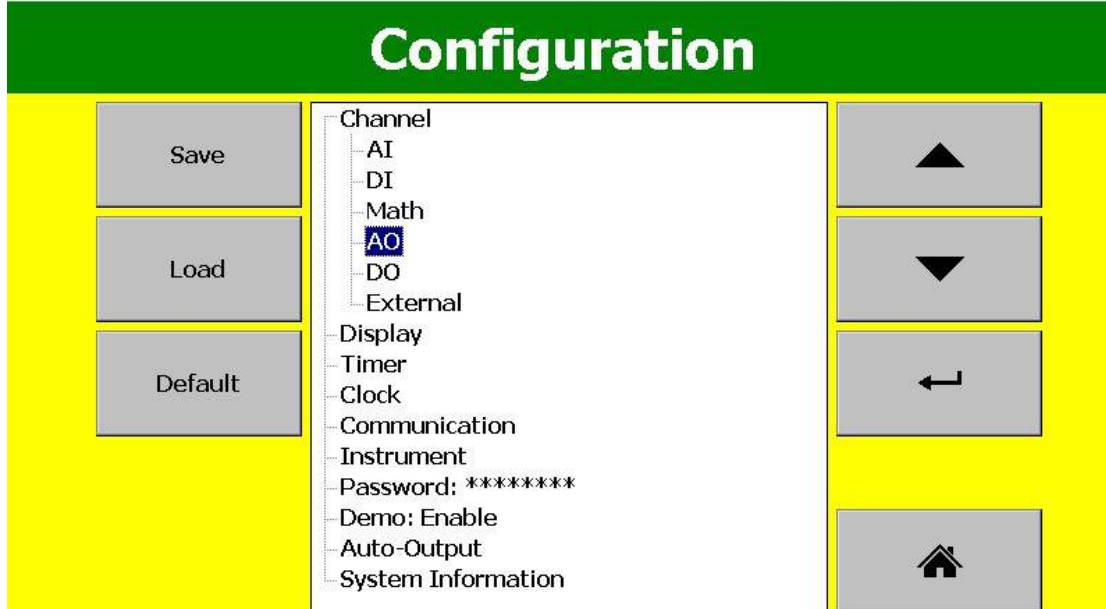


**Fig. E-2**

**iii.** We can see the expression of AO in following screen

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | ◀ ▶ |

Desc:
Type: Current
Output: 4-20mA
Expression: 4+(20-4)*(AI1-(-200))/(1100-(-200))
Modbus
  Scale: -32.768 ~ 32.767

▲

▼

↵

◀   ▶   Copy   Paste   Back
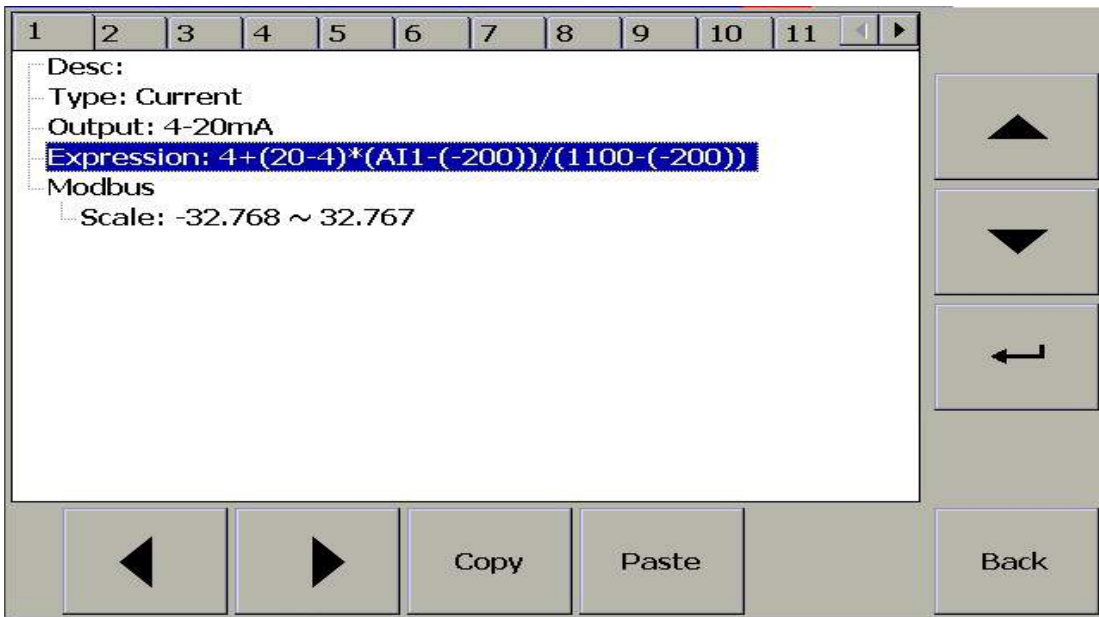
**Fig. E-3**

Please change the content of expression from AI1 to 10 as following showing

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | ◀ ▶ |

Desc:
Type: Current
Output: 4-20mA
Expression: 4+(20-4)*(10-(-200))/(1100-(-200))
Modbus
  Scale: -32.768 ~ 32.767

▲

▼

↵

◀   ▶   Copy   Paste   Back
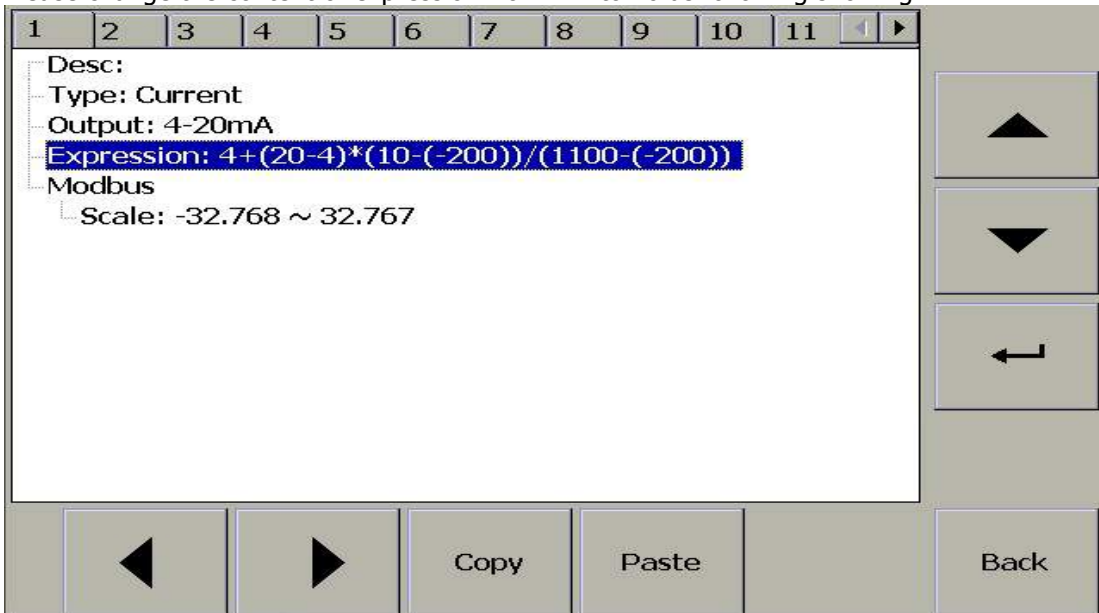
**Fig. E-4**

**iv.**    Please come back to the main screen and press 『Menu』 -> 『Status』
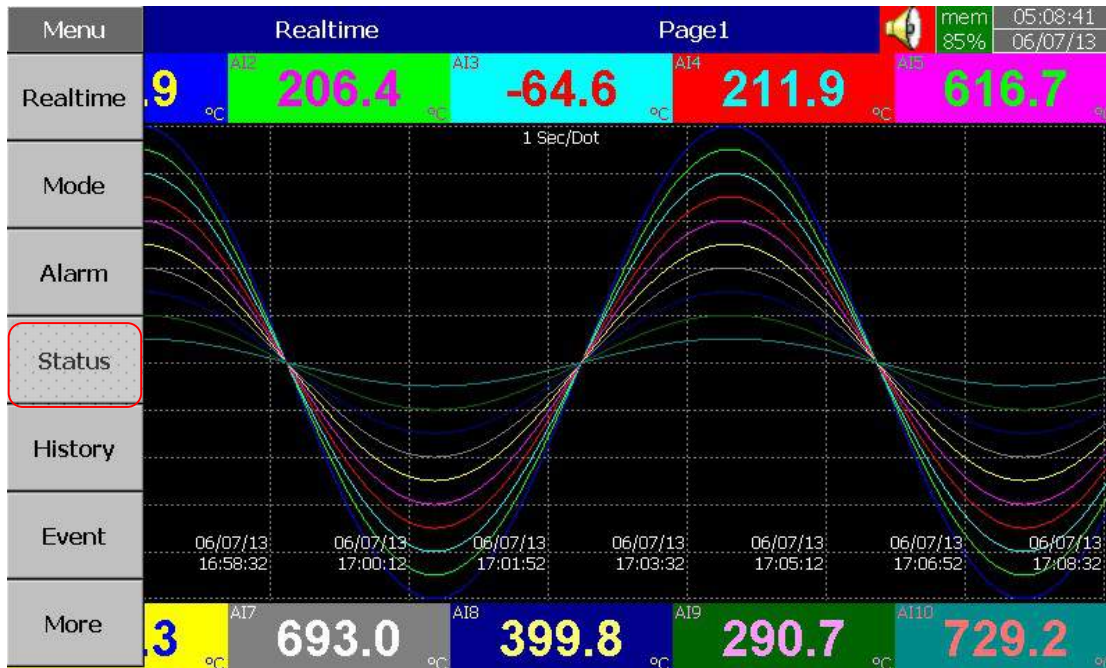
**Fig. E-5**

**v.**   Press 『AO』 page as following showing



| DI | DO | AO | Counter | Totalizer | | |
|----|-----|---------|---------|-----------|--|--|
| No. | Name | | Value | | Description | |
| 1 | AO1 | | 5.857 | | | |
| 2 | AO2 | | 6.033 | | | |
| 3 | AO3 | | 6.698 | | | |
| 4 | AO4 | | 7.358 | | | |
| 5 | AO5 | | 8.021 | | | |
| 6 | AO6 | | 8.684 | | | |
| 7 | AO7 | | 9.347 | | | |
| 8 | AO8 | | 10.010 | | | |
| 9 | AO9 | | 10.673 | | | |
| 10 | AO10 | | 11.337 | | | |
| 11 | AO11 | | 8.975 | | | |
| 12 | AO12 | | 9.278 | | | |

**Fig. E-6**

In here we can see the value is showing "5.857", but at the Input Register address 601 is showing "38625", so we need using specific expression to convert the value as following:

$$\text{AO value} = (((\text{Register value} * 65.535) / 65535) - 32.768)$$

Now the Register value is "38625", please take the value "38625" into the expression as following:

$$\text{AO value} = (((38625 * 65.535)/65535) - 32.768)$$
$$= ((2531289.375/65535) - 32.768)$$
$$= 38.625 - 32.768$$
$$= 5.857$$

# Appendix F

**Ext Convert Example for AI**

**i.** Press 『Menu』 -> 『More』 -> 『Config』
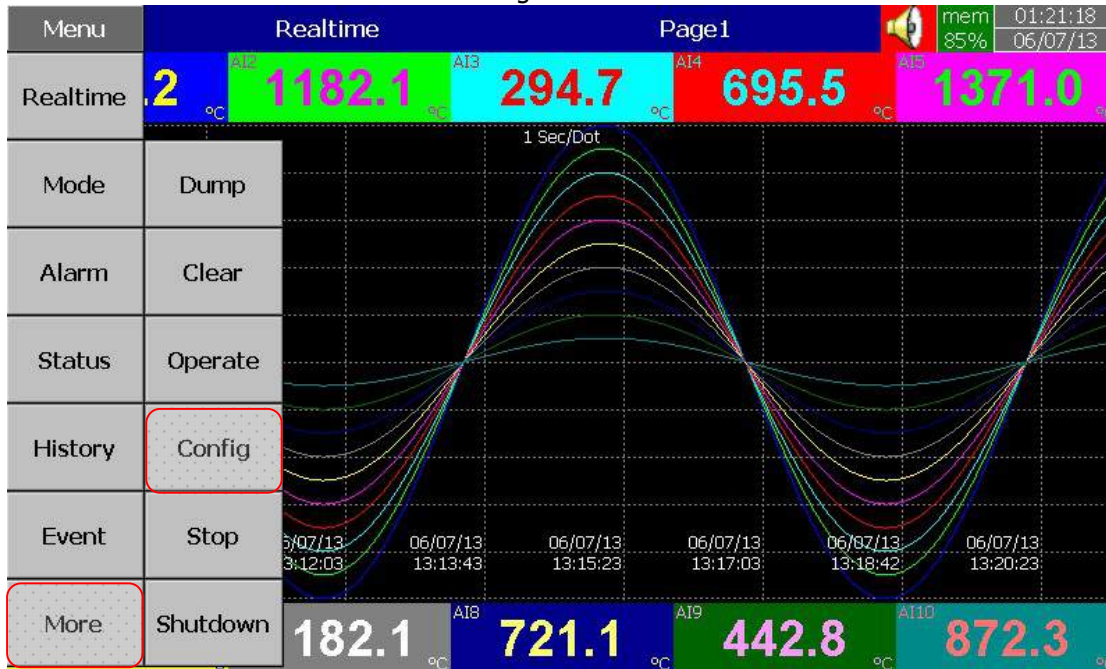


**Fig. F-1**

**ii.** Please select 『External』
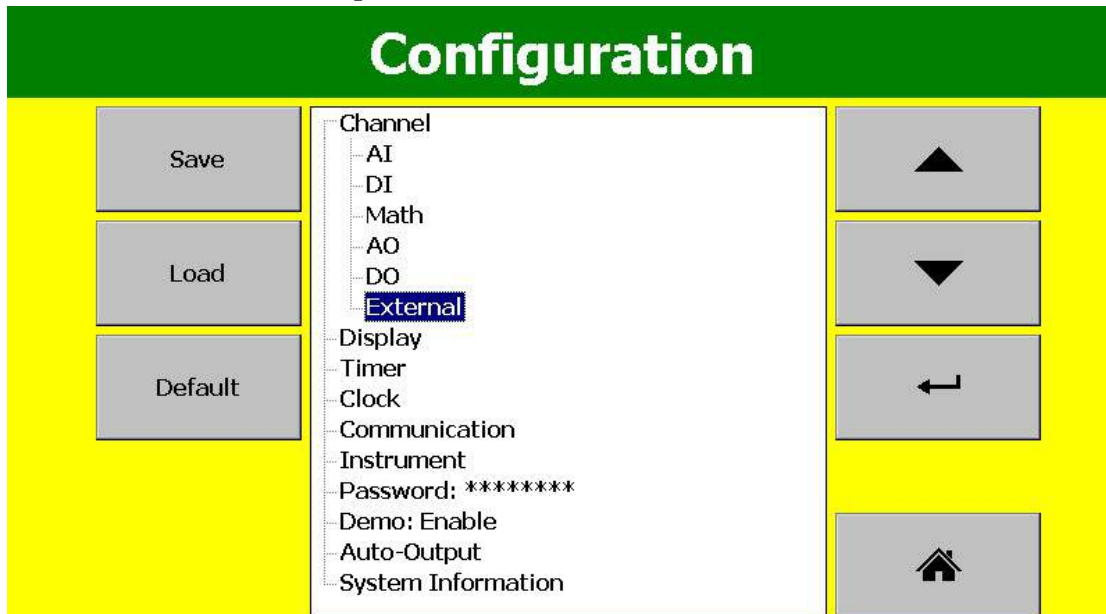


**Fig. F-2**

**iii.** Please modify the 『DataType』 from 『4 Byte』 to 『2 Byte』
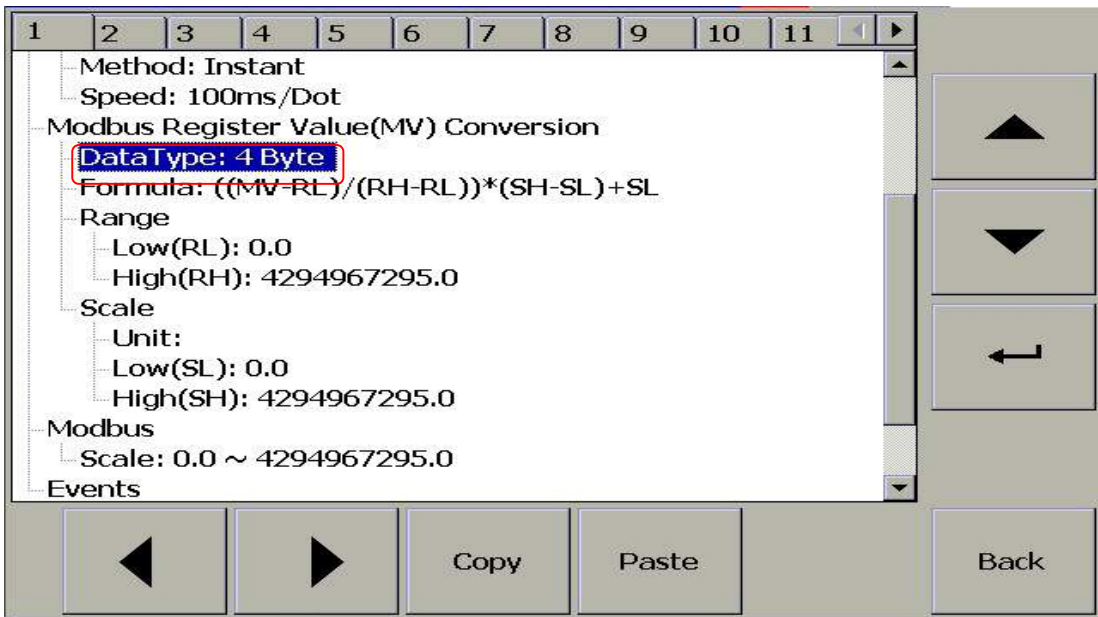
**Fig. F-3**
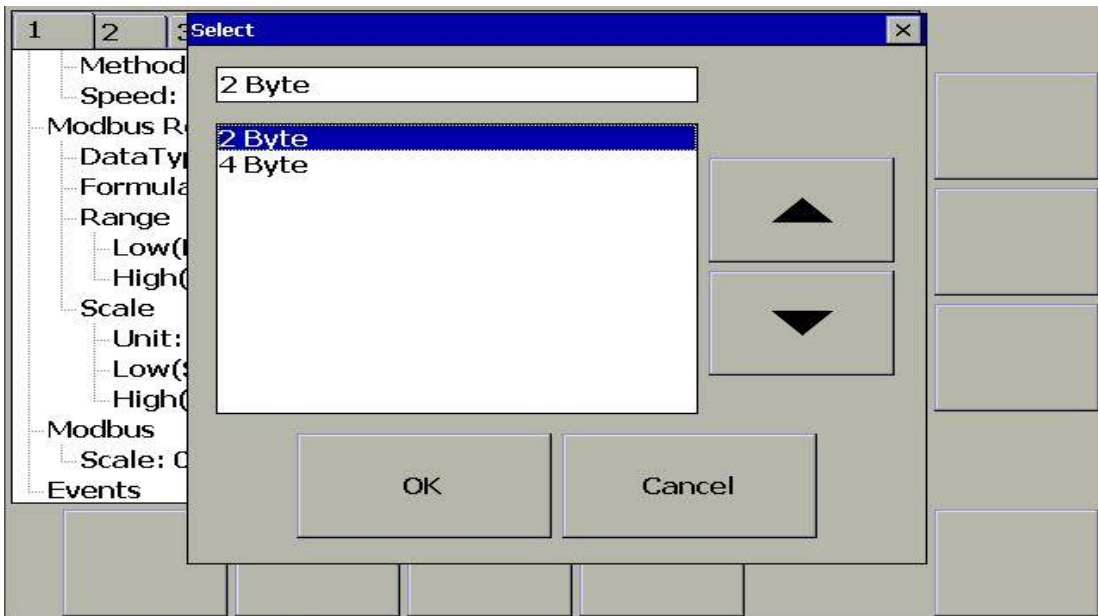


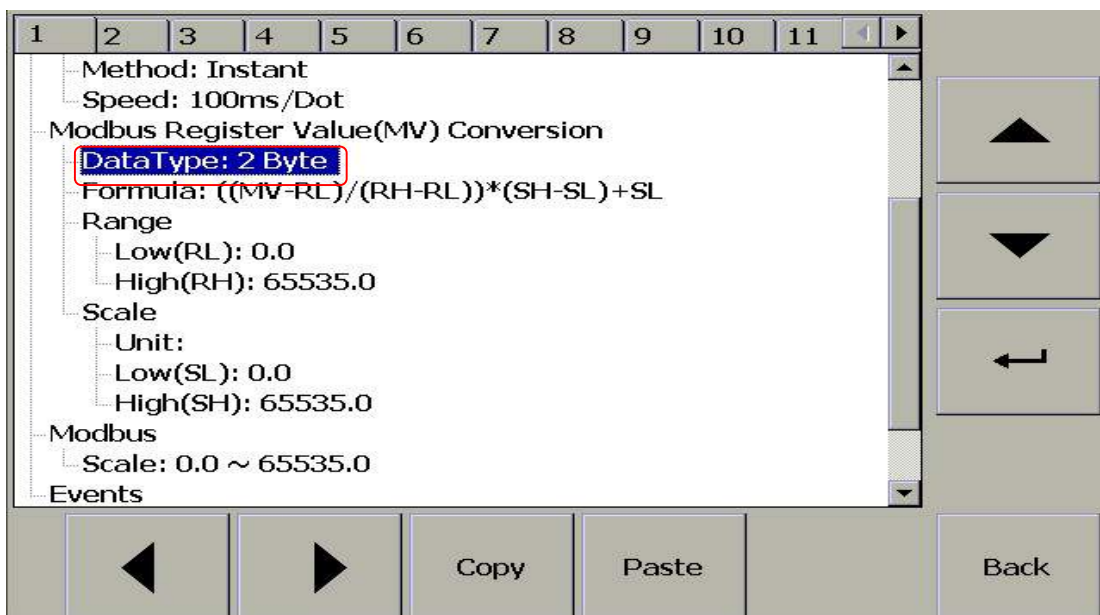**Fig. F-4**
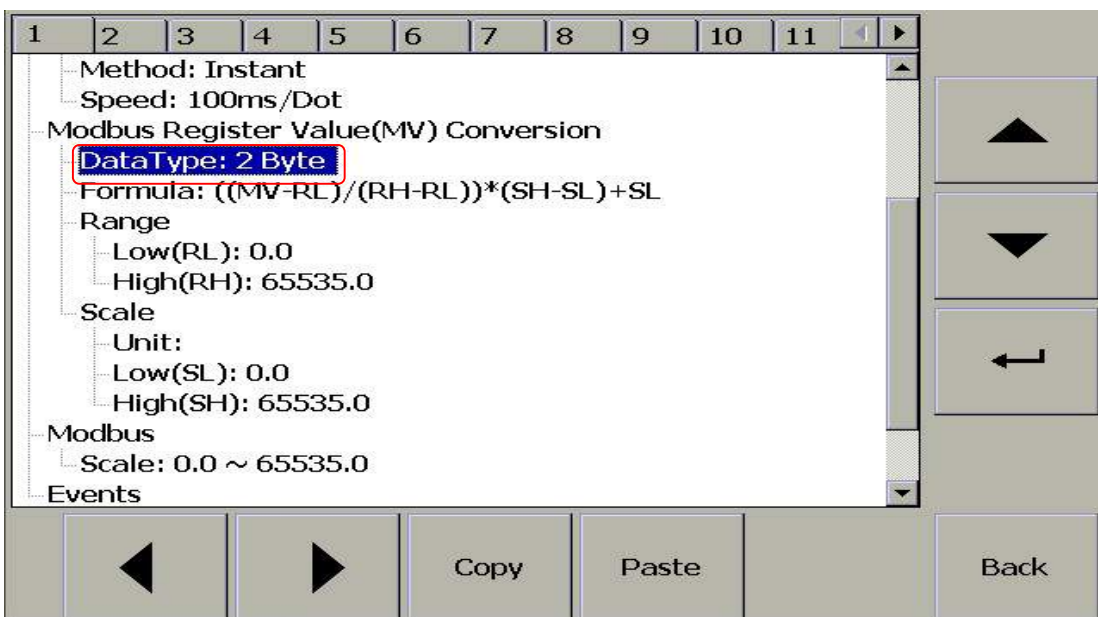
**Fig. F-5**

**iv.**   Please modify the 『Scale』 range
Because the AI1 sensor range is -120.0 ~ 1000.0, so please modify Ext Scale Low(SL) from 0.0 to -120.0 and Scale High(SH) from 65535.0 to 1000.0
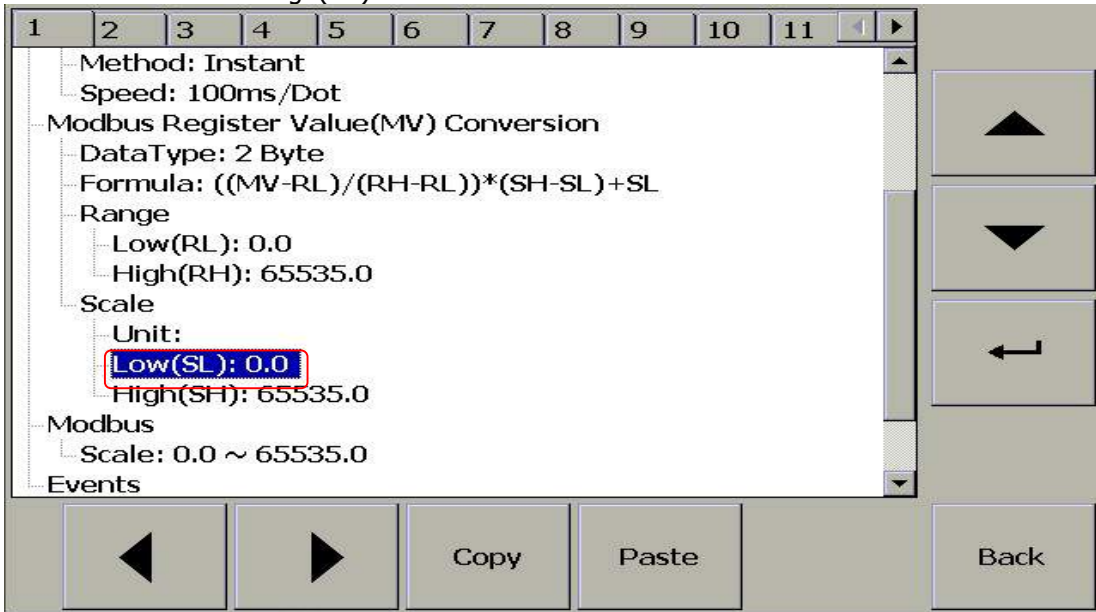


**Fig. F-6**
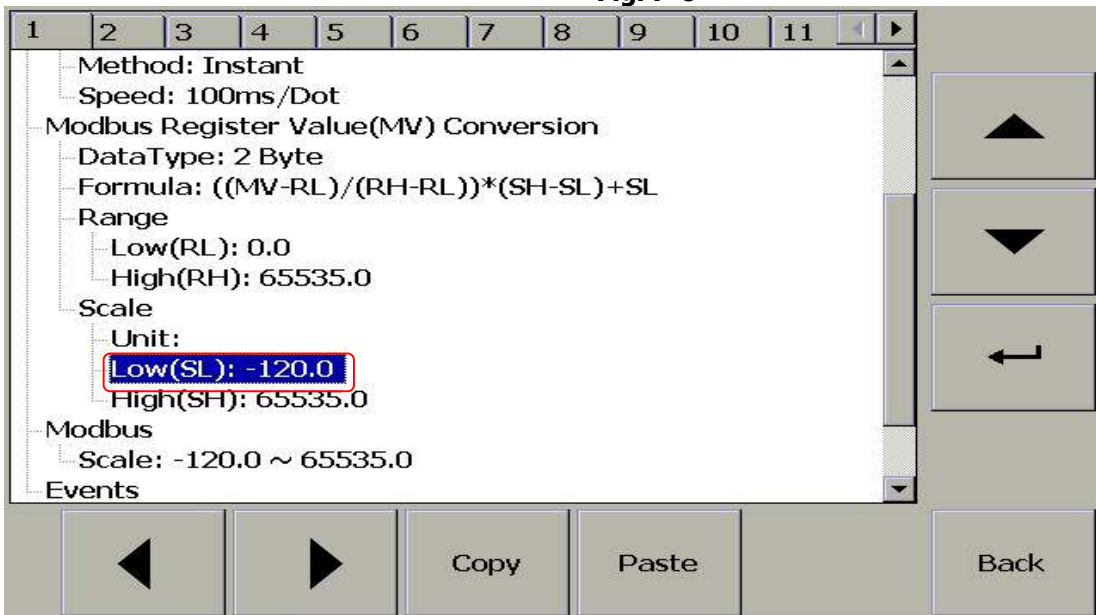


**Fig. F-7**
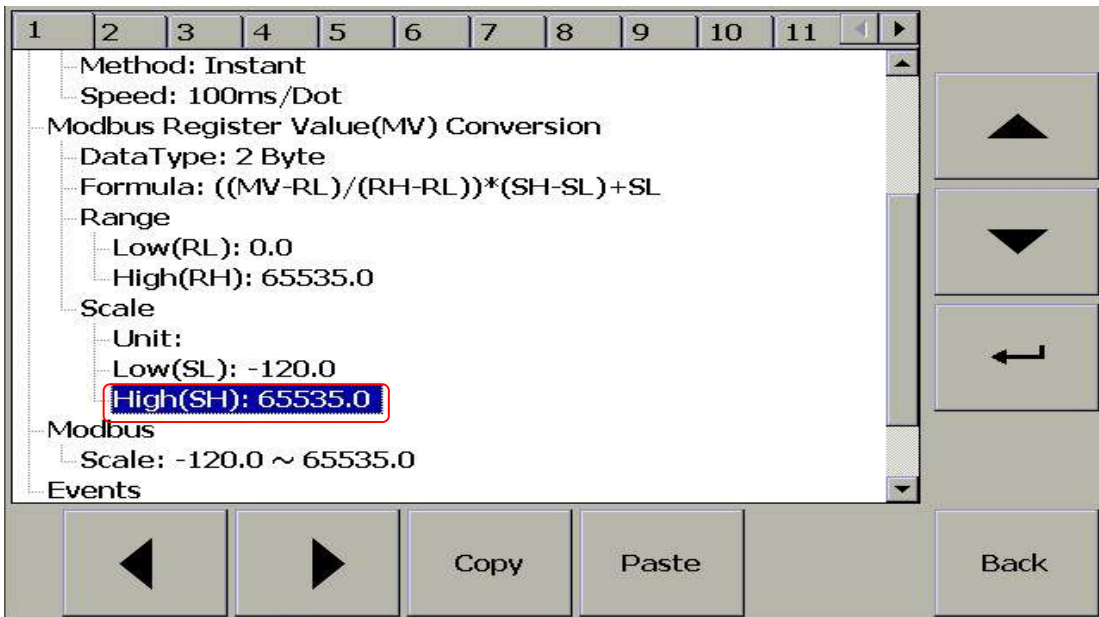
**Fig. F-8**
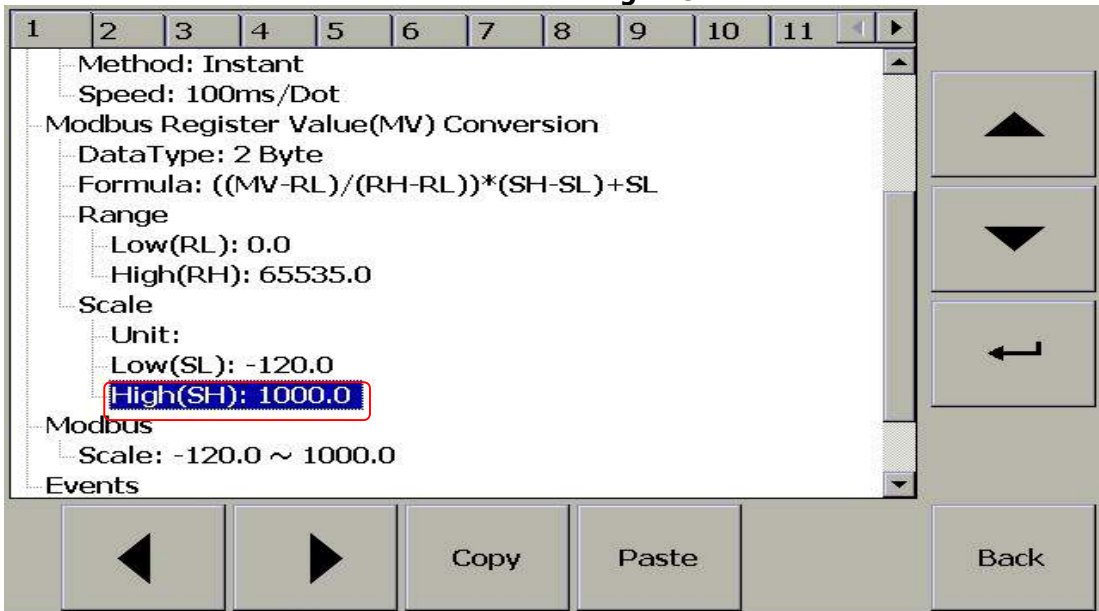


**Fig. F-9**

**v.** Repeat Step **iii** to Step **iv** for convert another AI value.

# Appendix G

### Ext Convert Example for DO and DO

**i.** Press 『Menu』 -> 『More』 -> 『Config』
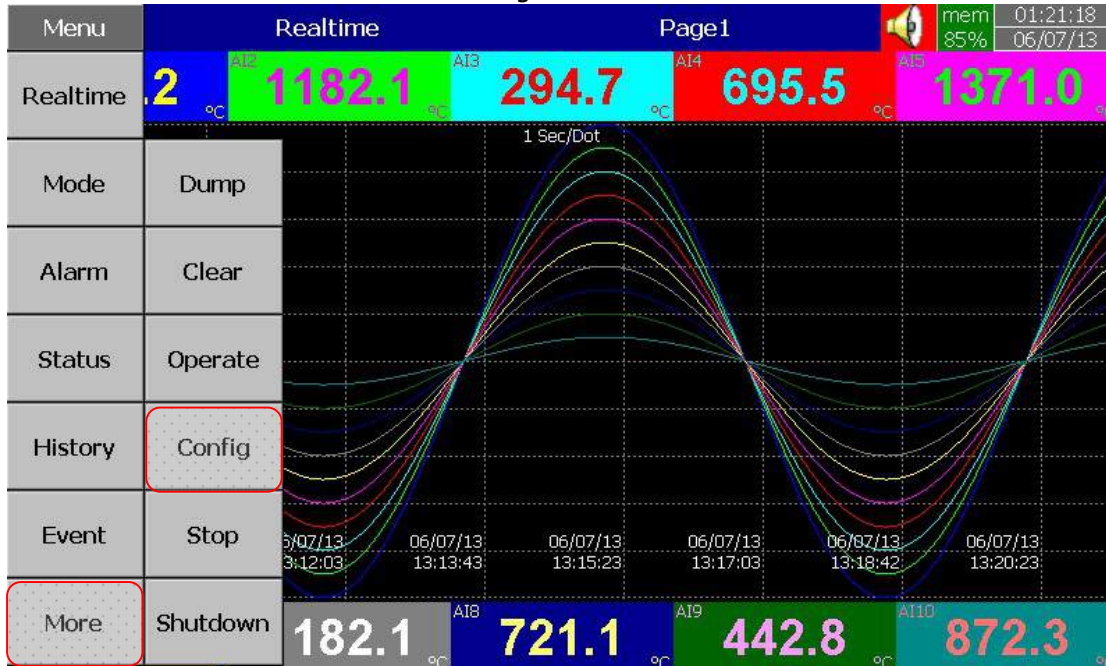


**Fig. G-1**

**ii.** Please select 『External』
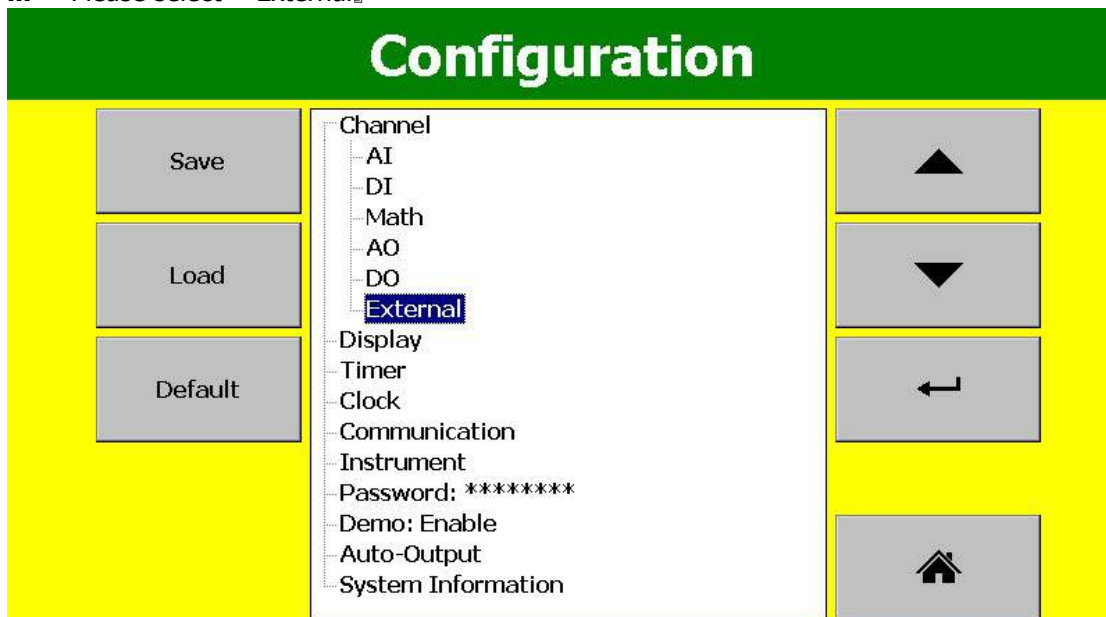


**Fig. G-2**

**iii.** Please modify the 『DataType』 from 『4 Byte』 to 『2 Byte』
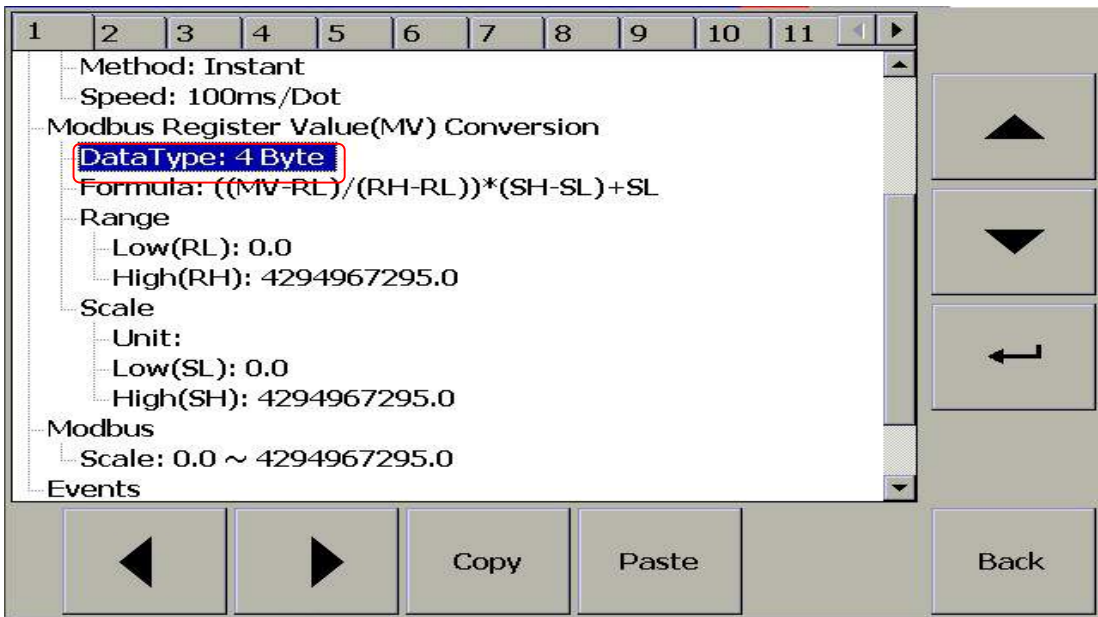
**Fig. F-3**

**Fig. G-3**
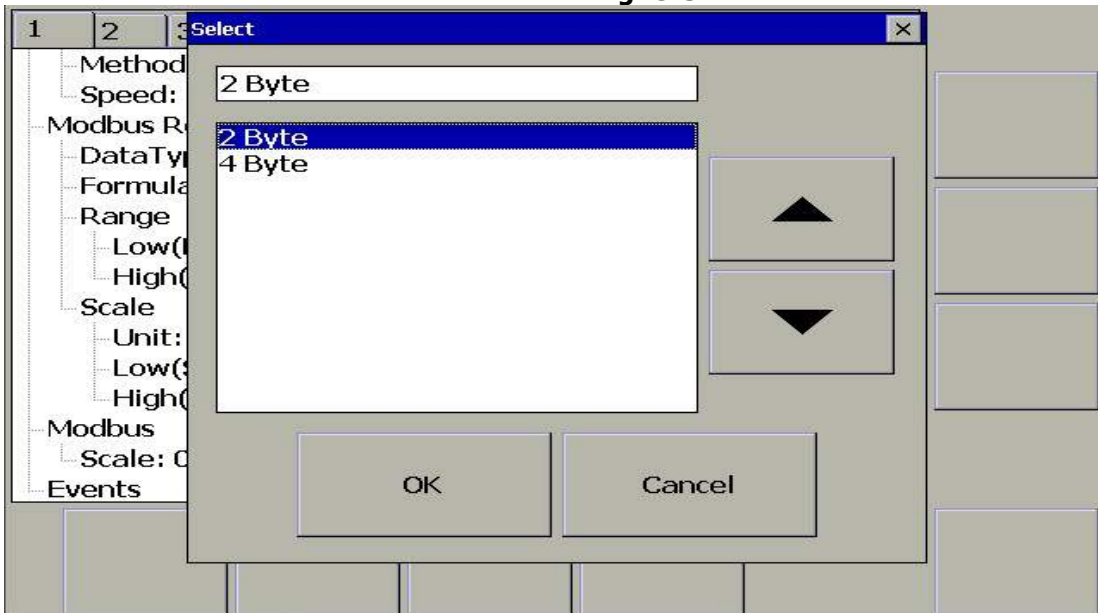


**Fig. G-4**
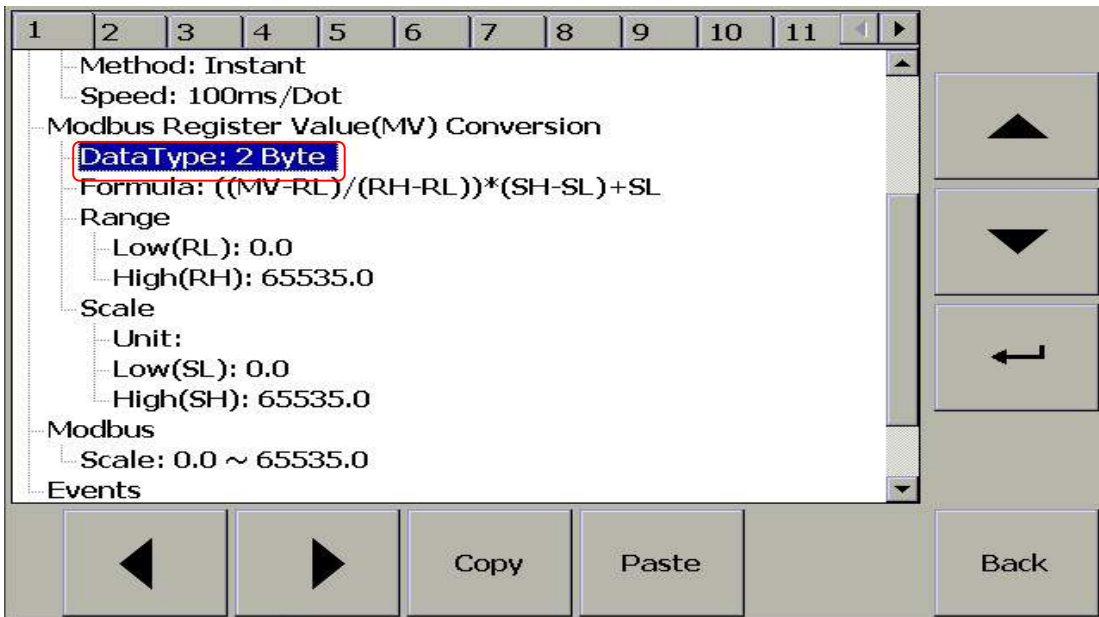
**Fig. G-5**

**iv.** Please modify the 『Scale』 range
Because the DI and DO data not need to do convert, so please make sure Range Low(RL) and Scale Low(SL) is same and Range High(RH) and Scale High(SH) is same
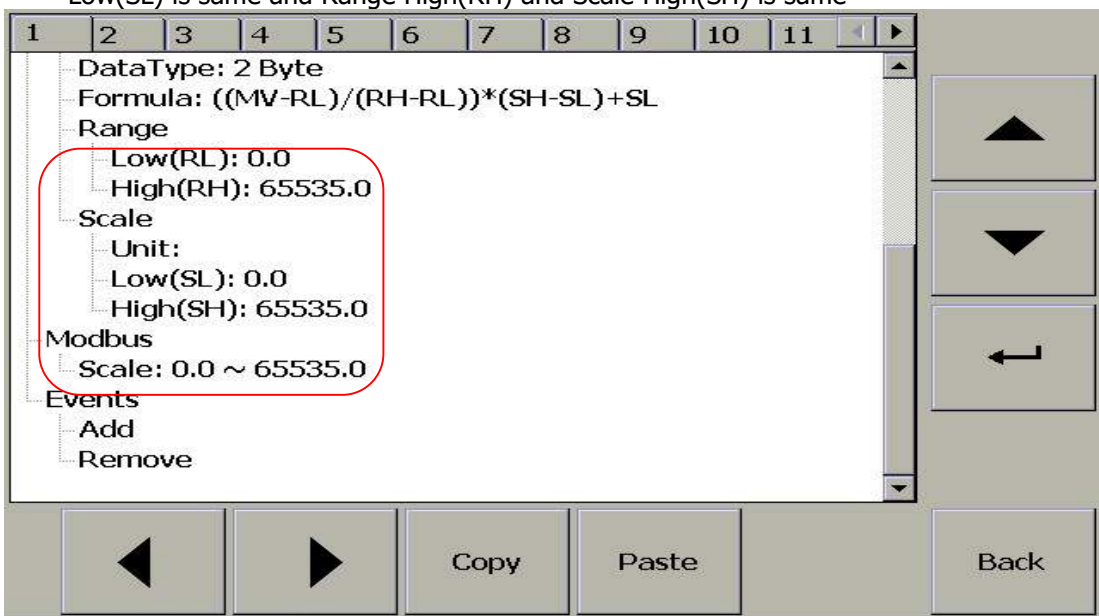


**Fig. G-6**

# Appendix H

## Ext Convert Example for AO

**i.**    Press 『Menu』 -> 『More』 -> 『Config』
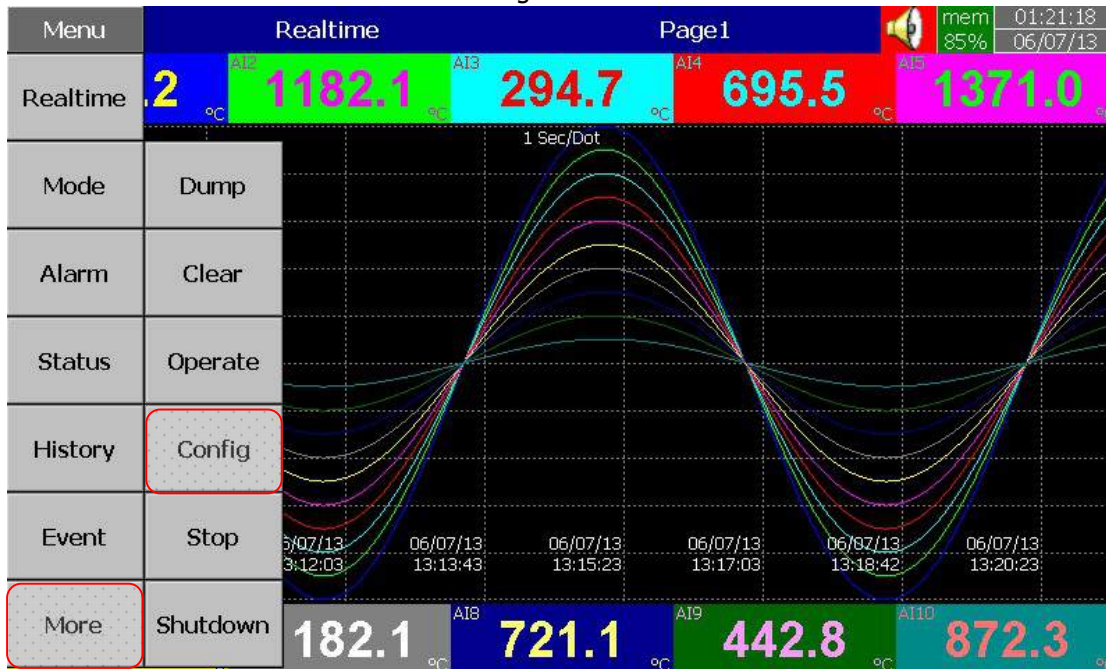


**Fig. H-1**

**ii.**    Please select 『External』
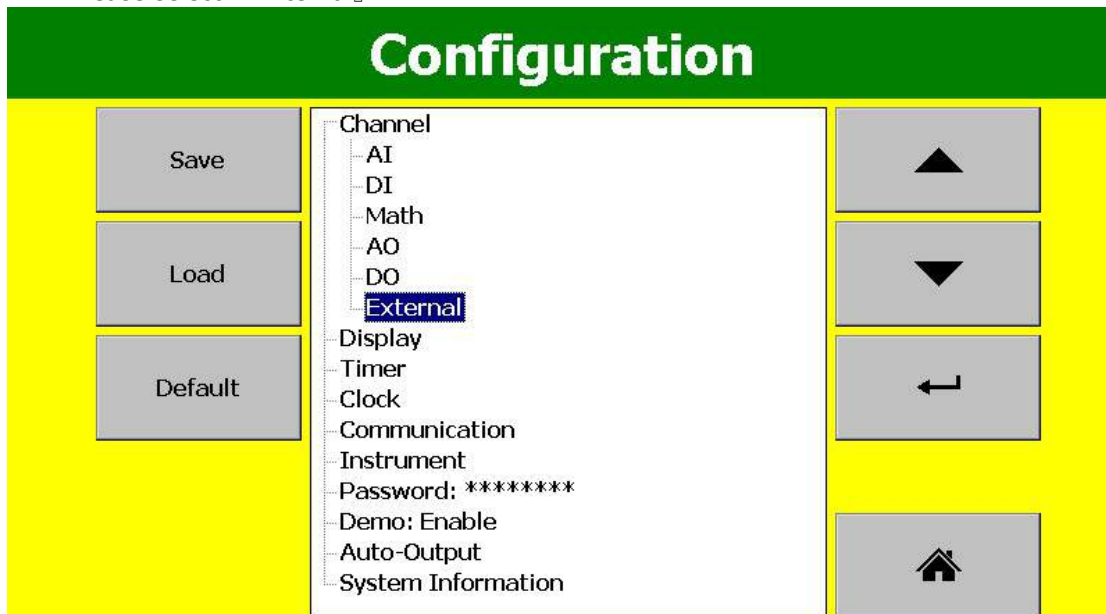


**Fig. H-2**

**iii.**    Please modify the 『DataType』 from 『4 Byte』 to 『2 Byte』
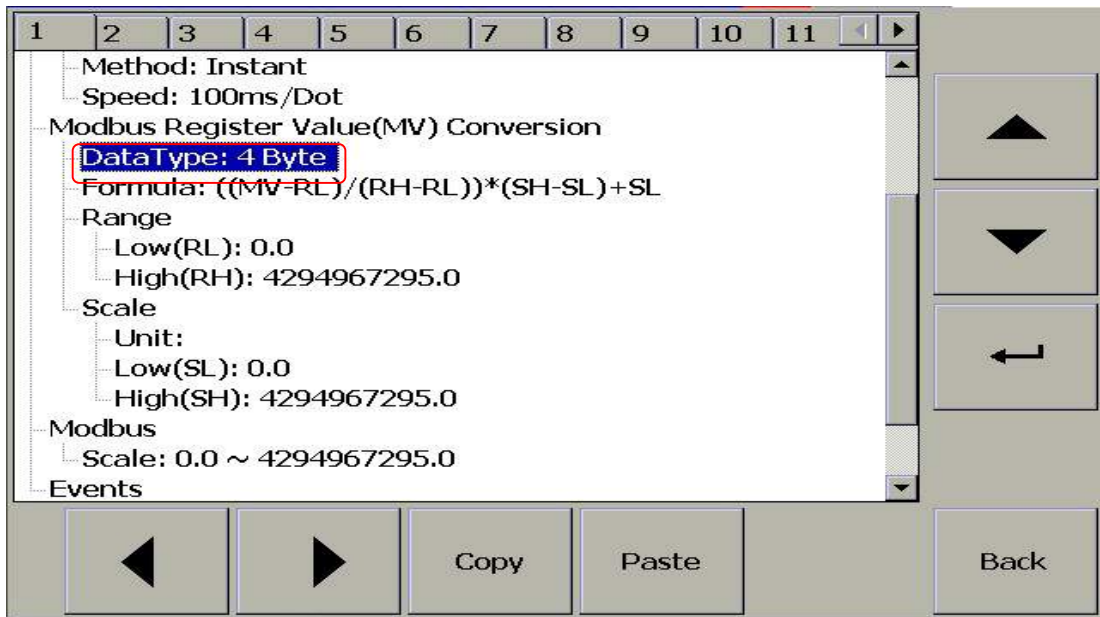
**Fig. H-3**
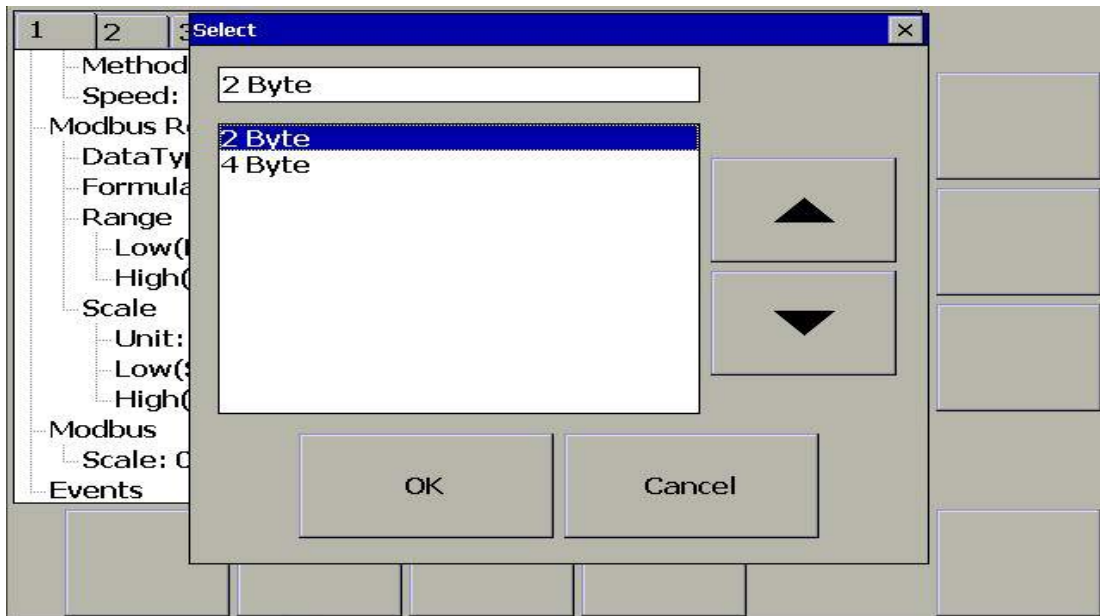


**Fig. H-4**

**Fig. H-5**

**iv.** Please modify the 『Scale』 range
Please modify Ext Scale Low(SL) from 0.0 to -32.768 and Scale High(SH) from 65535.0 to 32.767
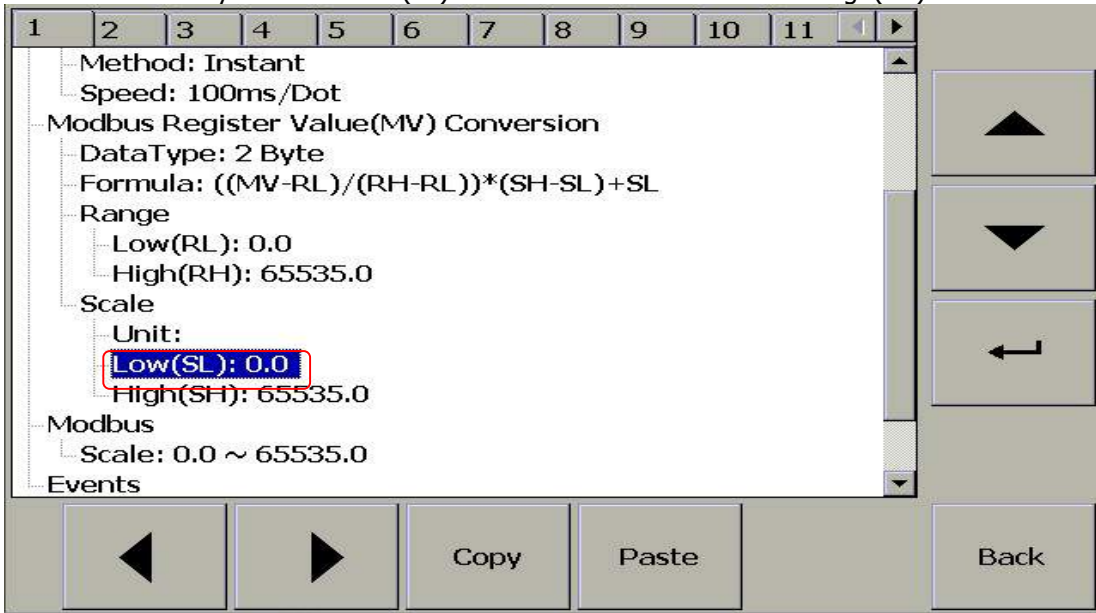


**Fig. H-6**
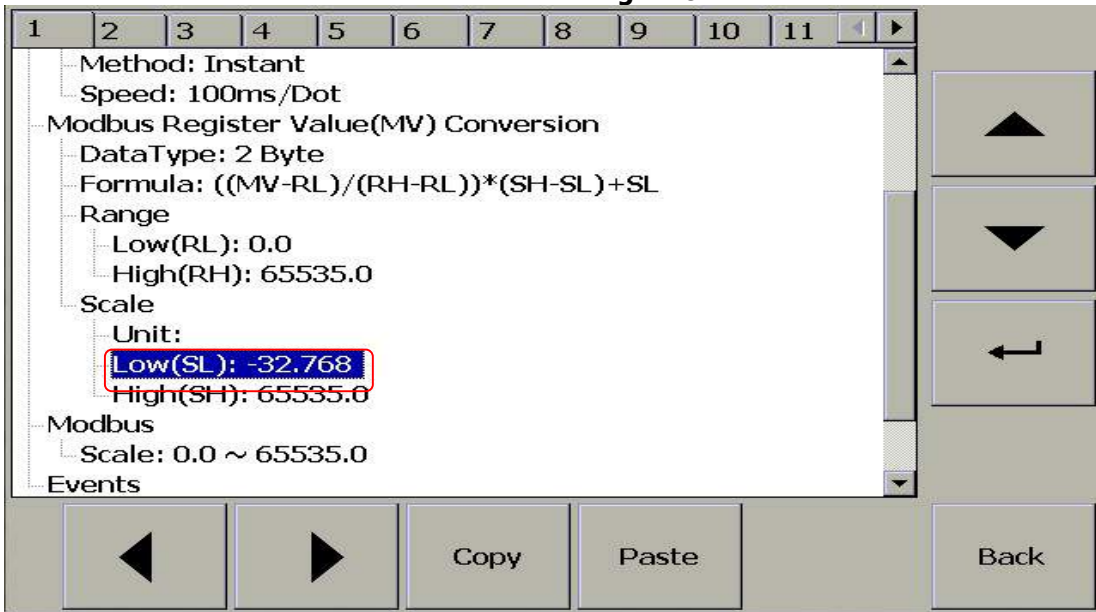


**Fig. H-7**
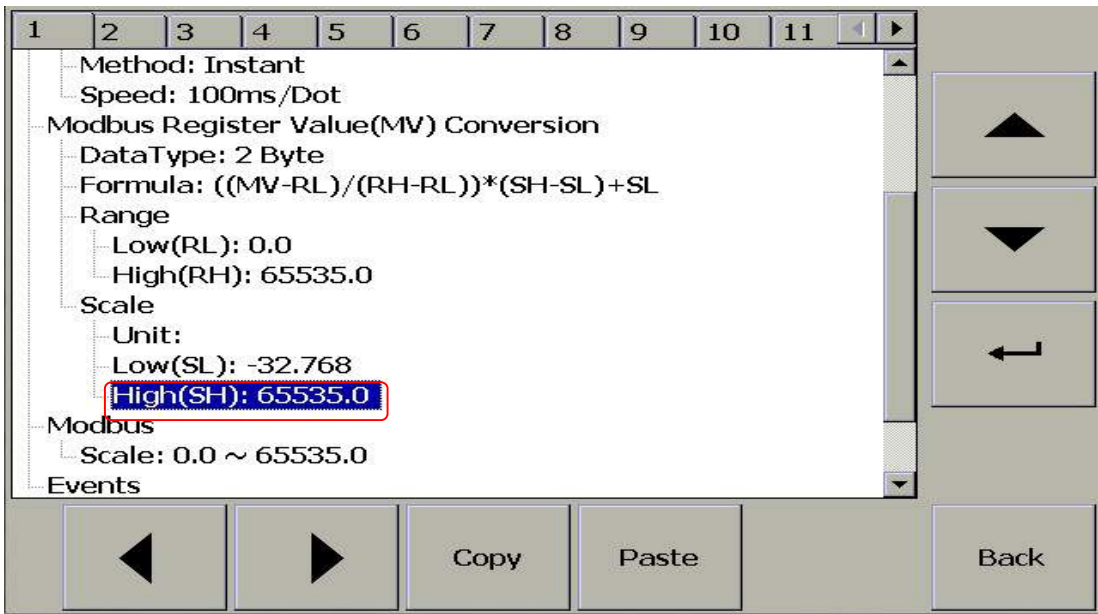
**Fig. H-8**
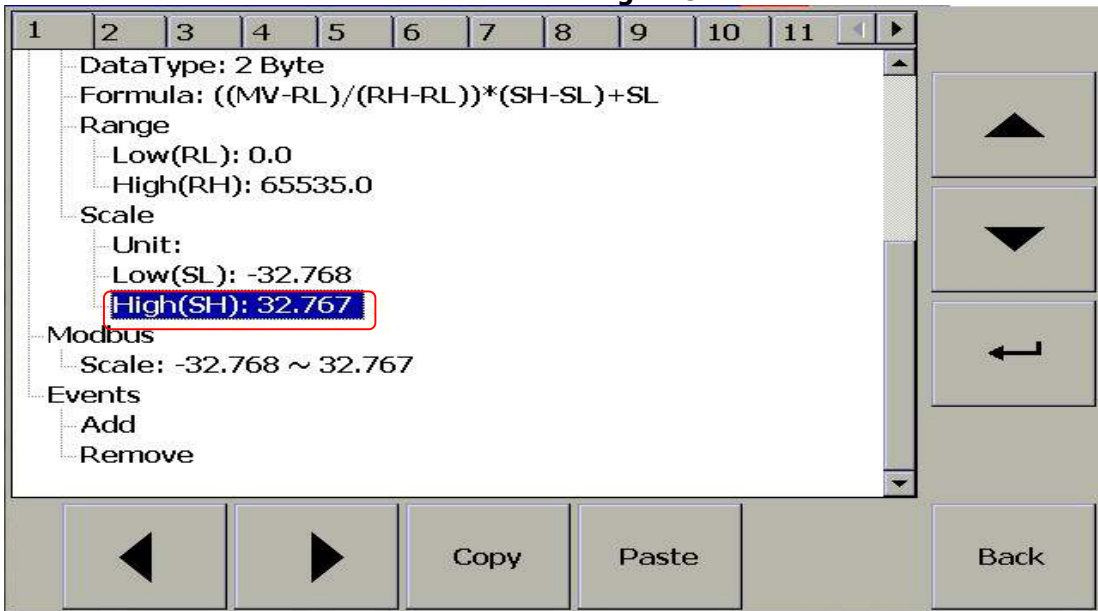


**Fig. H-9**

# Appendix I

**Ext Convert Example for Math**
**i.** Press 『Menu』 -> 『More』 -> 『Config』
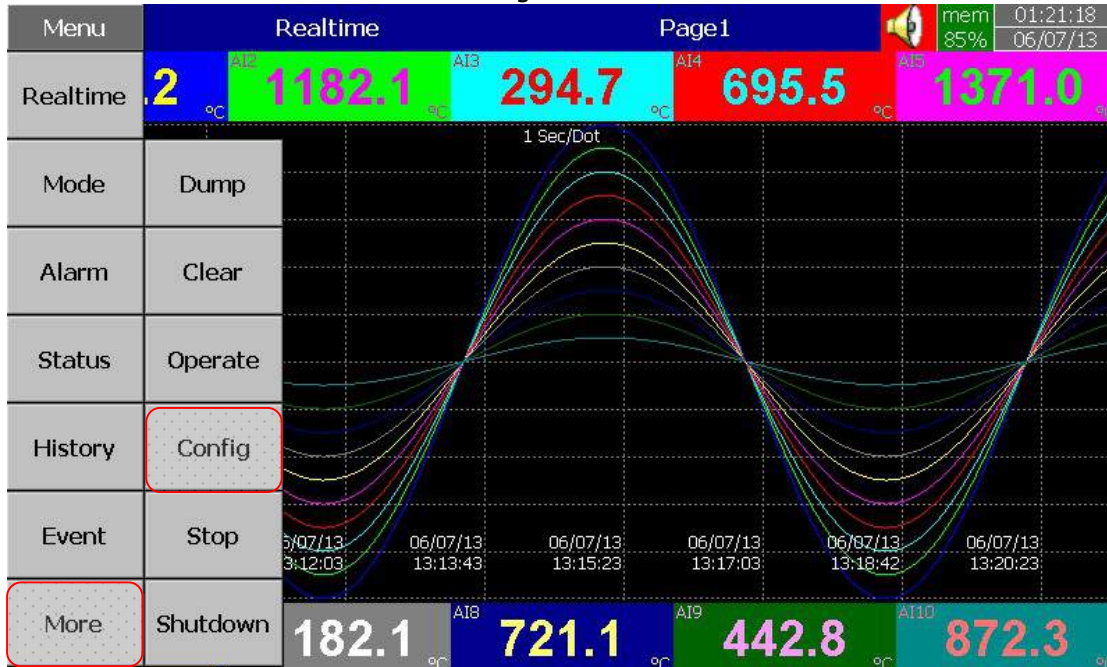

**Fig. I-1**

**ii.** Please select 『External』
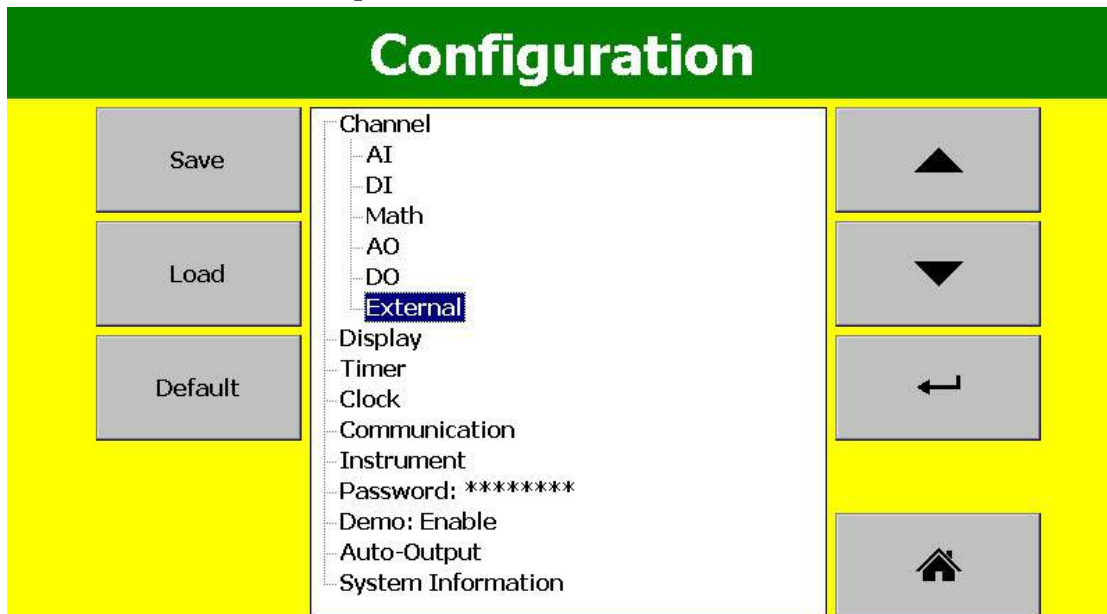

**Fig. I-2**

**iii.** Please set the 『DataType』 is 『4 Byte』
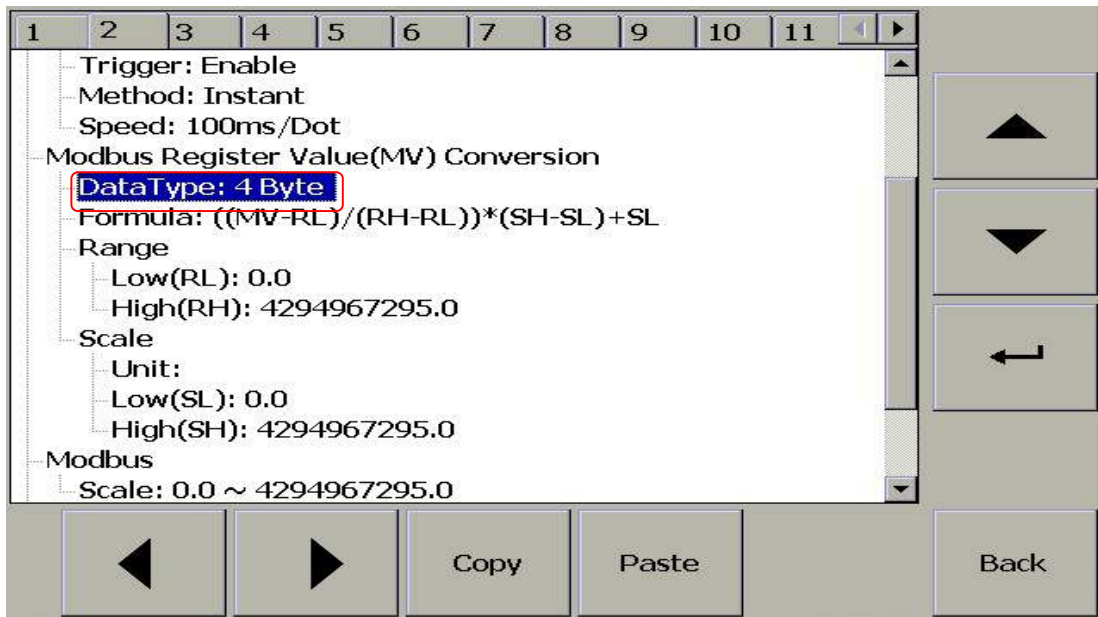
**Fig. I-3**

**iv.** Please modify the 『Scale』 range
Please modify the Ext Scale Low(SL) from 0.0 to -2147483648.0 and the Scale High(SH) from 4294967295.0 to 2147483647.0

**Note:** Because the Math can set "Decimal" value, so if the decimal is 0,
please setting Scale Low(SL) to -2147483648.0 and Scale High(SH) to 2147483648.0.
If the decimal value is 1, please setting Scale Low(SL) to -2147478364.8 and Scale High(SH) to 214748364.8.
If the decimal value is 2, please setting Scale Low(SL) to -21474836.48 and Scale High(SH) to 21474836.47.
If the decimal value is 3, please setting Scale Low(SL) to -2147483.648 and Scale High(SH) to 2147483.647.
If the decimal value is 4, please setting Scale Low(SL) to -214748.3648 and Scale High(SH) to 214748.3647.
If the decimal value is 5, please setting Scale Low(SL) to -21474.83648 and Scale High(SH) to 21474.83647.
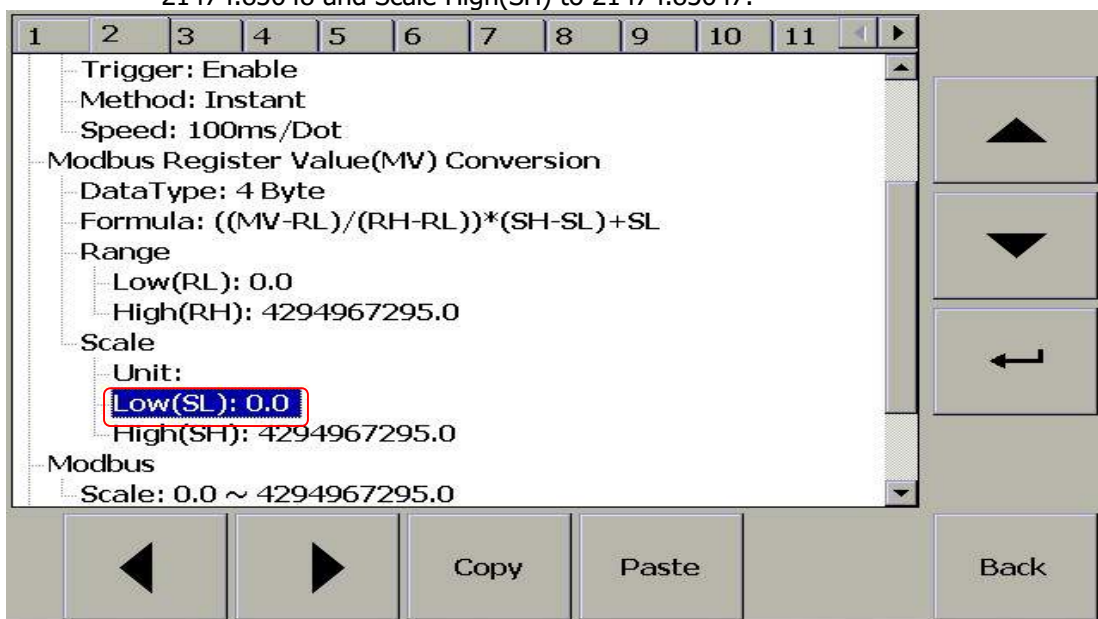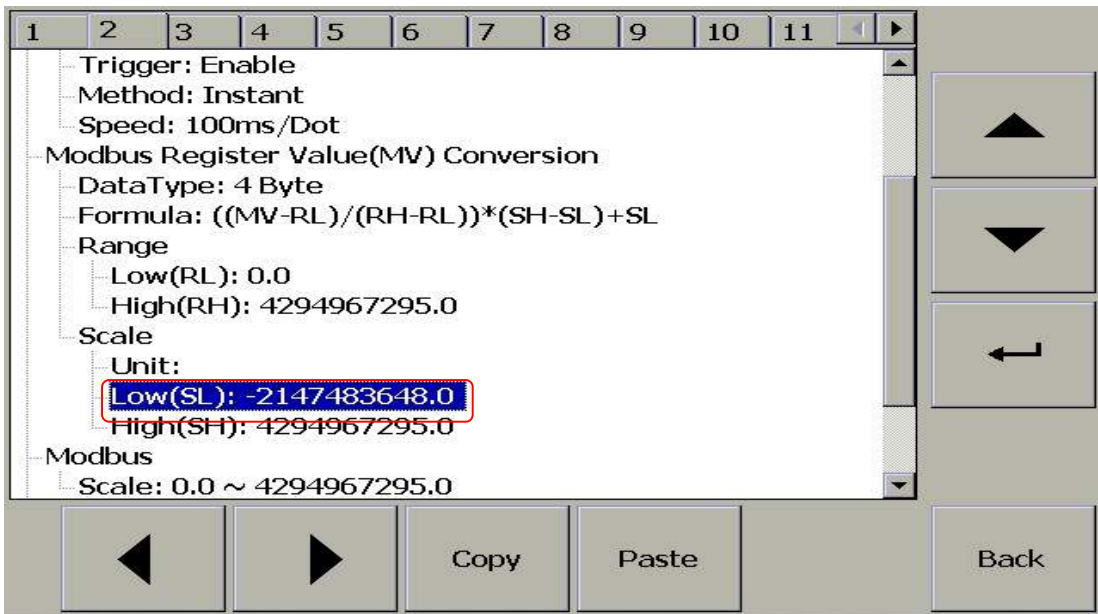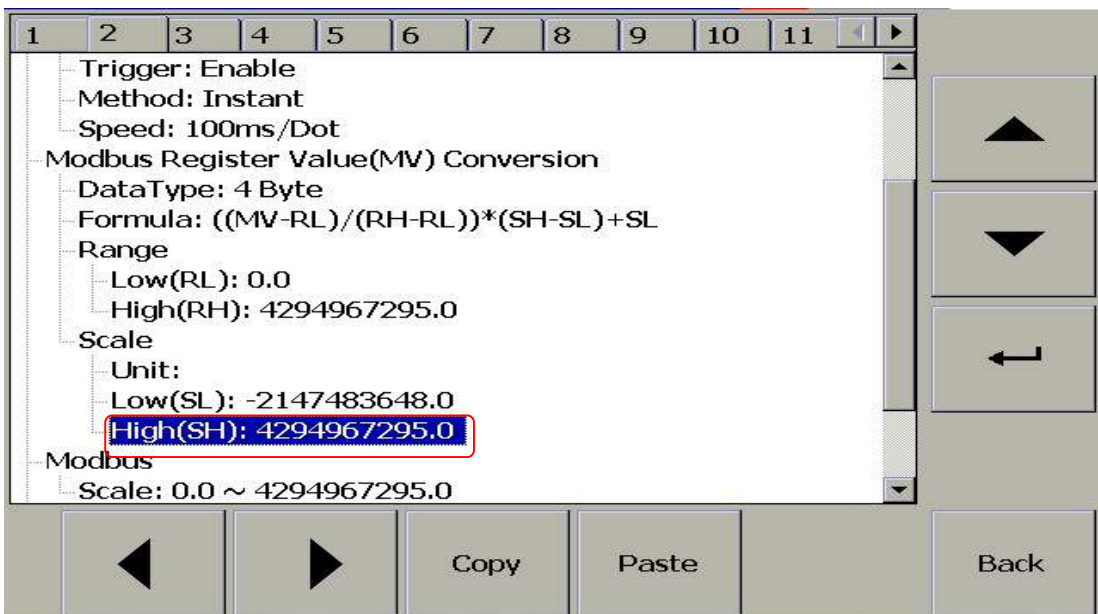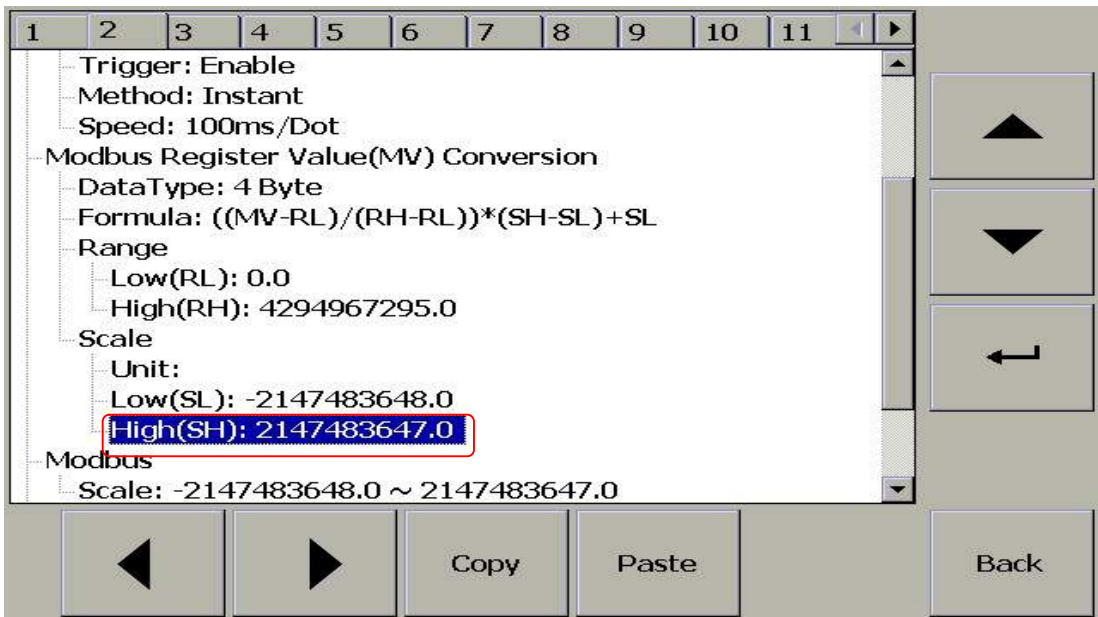


**Fig. I-4**

**Fig. I-5**



**Fig. I-6**

**Fig. I-7**

**v.** Repeat Step **iii** to Step **iv** for convert another Math value.

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