

Single Channel Surface Readout With Optical Isolation Filter (IPC-2221)

ASR200I



The ASR200I is the surface readout unit for the APS400/APS420 series transducers. It has a built-in optical isolation filter per IPC-2221. It is designed to read data from a single TEC cable.

The SRU has a 16-digit LED display with built-in Modbus support. The SRU acts as a RTU slave. There are two Modbus connections available, two wire RS-485 and RS-232. Only one connection can be used at a time. Both connections are optically isolated to prevent ground-based noise and provide electrical protection.

The menu that is accessible from the front panel has options for one or two transducer readouts per transducer and the optional accelerometer. There are several Modbus speeds and different data integration options.

Specifications

| | |
|--------------------------|-------------------------------|
| Power Required | 12-24VDC |
| Display Type | 16 Digit Alphanumeric LED |
| Communication Protocol | Modbus RTU Slave |
| Modbus RS-485 (Isolated) | 3 Wire Standard |
| Modbus RS-232 (Isolated) | 3 Wire, No Handshake Required |
| Operating Temperature | -18°C to 85°C |
| Dimensions | 5.25" x 4.25" x 1.25" |
| Weight | 1.0 Lbs. |

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|-------------------------------------|
| +28V Power Isolator: 3kV |
| +5V COM Port Power Isolator: 1.6kV |
| +5V Power Isolator: 1kV |
| COM and Downhole IO Isolator: 2.5kV |
| Downhole Signal Isolator: 5.3kV |

Ordering Guide

| | |
|----------------|-------------|
| ASR200I | ASR200I |
| DIN Rail Mount | ASR200I-DIN |
| | |

SRU Menu

Menu: ASR200I/240

Overview Menu

On power up, the SRU will enter the overview mode and cycle between the time/ date and the temperature/ pressure readings. If the accelerometer is present, those readings will be displayed.

Press Menu Button 2x
For Settings Menu



Settings Menu

Press Select Button to step through menu items. See menu tables below for SRU models. To change a parameter, press the up or down arrow keys. To save the change, press the menu button.

Press Menu Button for
Save Menu



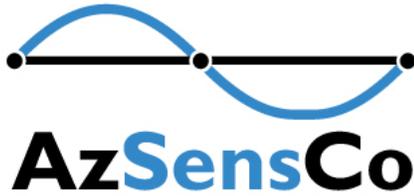
Save Menu

Press Select Button for
Save to Flash Menu



Press the DOWN Arrow key to save the changes or the UP Arrow key to discard the changes. The menu will return to the Overview Menu and will cycle through the readings.





Modbus Registers

| | Surface Readout Menus | User Settable | Defaults | | | | | | | | |
|----|----------------------------|---------------|----------|----|----|----|-----|---|---|---|---|
| | | | Options | | | | | | | | |
| 1 | Gauge Temperature C | No | | | | | | | | | |
| 2 | Gauge Pressure PSIA | No | | | | | | | | | |
| 3 | X Vibration | No | | | | | | | | | |
| 4 | Y Vibration | No | | | | | | | | | |
| 5 | Z Vibration | No | | | | | | | | | |
| 6 | Open | | | | | | | | | | |
| 7 | Open | | | | | | | | | | |
| 8 | Open | | | | | | | | | | |
| 9 | Open | | | | | | | | | | |
| 10 | Open | | | | | | | | | | |
| 11 | Measured Output Voltage | No | | | | | | | | | |
| 12 | Instrument Current | No | 600 | | | | | | | | |
| 13 | Instrument Threshold | No | 600 | | | | | | | | |
| 14 | SRU DC Voltage | No | | | | | | | | | |
| 15 | Total Number of Packets | No | | | | | | | | | |
| 16 | Number Bad Data Packets | No | | | | | | | | | |
| 17 | Output Voltage Set Point | No | 3250 | | | | | | | | |
| 18 | Number of Channels to Read | No | 2 | 4 | 6 | | | | | | |
| 19 | Integration Time | No | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 20 | Modbus Baudrate | Yes | 19.2 | | | | | | | | |
| 21 | Modbus ID | Yes | 101 | | | | | | | | |
| 22 | Modbus Gap Time | Yes | 3 | | | | | | | | |
| 23 | Instrument Pressure Range | Yes | 1K | 3K | 6K | 8K | 10K | | | | |
| 24 | Factory Access Code | | 12345 | | | | | | | | |
| 25 | IP Address 4 | Yes | Set | | | | | | | | |
| 26 | IP Address 3 | Yes | Set | | | | | | | | |
| 27 | IP Address 2 | Yes | Set | | | | | | | | |
| 28 | IP Address 1 | Yes | 28 | | | | | | | | |
| 29 | Clock Year | Yes | Set | | | | | | | | |
| 30 | Clock Day | Yes | Set | | | | | | | | |
| 31 | Clock Month | Yes | Set | | | | | | | | |
| 32 | Clock Seconds | Yes | Set | | | | | | | | |
| 33 | Clock Minutes | Yes | Set | | | | | | | | |
| 34 | Clock Hours | Yes | Set | | | | | | | | |
| 35 | SD Logging Rate (Sec) | Yes | 10 Sec | | | | | | | | |
| 36 | SD Logging Enable | Yes | On | | | | | | | | |
| 37 | SD Logging Flush Card | Yes | Off | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Error Codes

ASR200 Codes

| Hex Code | Decimal Code | Error Name | Error Description | Threshold | Units |
|----------|--------------|---------------------------------|--|-----------|-------|
| 0x00 | 0 | No Error | No error is present, system is operating normally | | |
| 0x01 | 1 | High Temp | Temperature is higher than the maximum | | C |
| 0x02 | 2 | Low Temp | Temperature is lower than the minimum | | C |
| 0x03 | 3 | High Pressure | Pressure is higher than the maximum | | PSIA |
| 0x04 | 4 | Low Pressure | Pressure is lower than the minimum | | PSIA |
| 0x05 | 5 | No Downhole | No downhole module is detected (Output current is 0mA) | 0.1 mA | |
| 0x06 | 6 | Downhole Short | Downhole current is higher than the maximum | | 30mA |
| 0x07 | 7 | High Voltage | Input voltage is higher than the maximum | 26 V | |
| 0x08 | 8 | Low Voltage | Input voltage is lower than the minimum | 10.8 V | |
| 0x09 | 9 | RTC Failure | RTC failed to initialize, or operate correctly | | |
| 0x0A | 10 | FLASH Erase Failure | System has failed to erase flash | | |
| 0x0B | 11 | FLASH Write Failure | System has failed to write to flash | | |
| 0x0C | 12 | Not Implemented | | | |
| 0x0D | 13 | Not Implemented | | | |
| 0x0E | 14 | Not Implemented | | | |
| 0x0F | 15 | Not Implemented | | | |
| 0x10 | 16 | MODBUS: Address | Wrong modbus address | | |
| 0x11 | 17 | MODBUS: Read Memory Address | Invalid modbus memory read address | | |
| 0x12 | 18 | MODBUS: Read Register Quantity | Invalid modbus register read quantity | | |
| 0x13 | 19 | MODBUS: Write Memory Address | Invalid modbus memory write address | | |
| 0x14 | 20 | MODBUS: Write Register Quantity | Invalid modbus register write quantity | | |
| 0x15 | 21 | MODBUS: CRC Read Error | Invalid modbus CRC read calculation | | |
| 0x16 | 22 | MODBUS: CRC Write Error | Invalid modbus CRC write calculation | | |
| 0x17 | 23 | MODBUS: Function Code | Invalid modbus function code | | |
| 0x18 | 24 | ADC Failure | ADC Failed to function | | |
| 0x19 | 25 | SD Failure | SD card had an unrecoverable failure | | |

DownHole Codes

| Hex Code | Decimal Code | Error Name | Error Description |
|----------|--------------|-----------------------|--|
| 0x00 | 0 | No Error | No error is present, system is operating normally |
| 0x01 | 1 | Sensor Init Failure | Cannot initialize any of the Temp/Pressure sensors |
| 0x02 | 2 | RESERVED | |
| 0x03 | 3 | AUSART TX Failure | Failure to transmit data to the SRU |
| 0x04 | 4 | Sensor 1 Read Failure | Failure to read data from Sensor 1 |
| 0x05 | 5 | RESERVED | |
| 0x06 | 6 | Sensor 2 Read Failure | Failure to read data from Sensor 2 |
| 0x07 | 7 | WDT Failure | The Watchdog Timer was triggered |
| 0x08 | 8 | Accel Failure | Failure to read data from the Accelerometer |
| 0x09 | 9 | Accel Init Failure | Cannot initialize the Accelerometer |