

6100A 6180A



MODELS

Ideal for :



- 21CFR Part II Applications
- Furnaces, NADCAP
- Water/waste water
- Power generation
- Sterilizers, autoclaves

Features :

- Colour touchscreen display
- USB 'plug & play'
- Up to 48 Universal Inputs
- Up to 96MB non-volatile Flash memory
- 125ms Parallel sampling
- Compact Flash or Secure Digital Card
- Modbus master
- Ethernet TCP/IP

Paperless Graphic Recorders Specification Sheet

The 6000 Series offer unrivalled input accuracy with a 125ms total sample rate for up to 48 input channels. Input channels are freely configurable to suit your process requirements. Each instrument has an intuitive, touch screen display to enable operators to clearly view process data in varying formats. All have onboard Flash data storage capability, Ethernet communication and choice of Compact Flash or SD Card. Data is stored in a tamper-resistant binary format that can be used for secure, long term records of your process. The 6000 Series is truly designed for today's networked world and can be accessed via a Local Area Network, dial-up connection, Intranet or Internet.

| Available Features |  |  |
|---------------------------------|--|---|
| | 6100A | 6180A |
| Display | 5.5" 1/4 VGA | 12.1" XGA |
| Channels | 18 | 48 |
| Relays | 16 | 36 |
| Events Inputs | 24 (6 per option card) | |
| Groups | 6 standard (12 optional) | |
| Auditor Features | Lite or Full available | |
| Virtual channels* | 36, 96, 128 | |
| Timers | Fitted as standard | |
| Alarms | 4 per channel | |
| Batch | Optional | |
| Bridge- Remote viewing software | Lite as standard (Full optional) | |
| Screen builder | 24 (optional) | |
| Security | Unlimited unique user names with configurable access permissions and passwords | |
| Configuration software | Standard | |
| Review/Quickchart Lite software | Standard | |
| Standard views | Vertical and horizontal trending, Vertical and Horizontal Bargraphs, Circular Trend and Numeric Values | |

* Virtual channels can be configured as Maths, Totalisers, Counters or Comms

Data Logging and Archiving

The 6000 Series recorders have internal Flash memory for secure data storage. They are also able to accept various removable media types (compact flash, SD card or USB memory stick). Data stored within the internal memory can be archived to the removable media on demand or at preset intervals. The 6000 will give indication of how long its internal memory and that of the removable media installed will last according to the configuration of the recorder.

All 6000s have Ethernet capability. The 6000 can be configured to archive to the removable media and / or over Ethernet. Archiving files over Ethernet effectively gives a secure, infinite archiving capacity.

Approximate duration for continuous recording of one Group of six channels, high compression:

| Archive Media | Sample Rate | | | | | | |
|---|-------------|------------|-----------|----------|----------|----------|---------|
| | 0.125s | 0.5s | 1s | 5s | 10s | 30s | 60s |
| 32Mb Internal Flash (approx. 4 million samples) | 2.83 days | 11.3 days | 22.6 days | 113 days | 226 days | 1.86 yrs | 3.7 yrs |
| 96Mb Internal Flash (approx. 12 million samples) | 8.5 days | 33.98 days | 67.9 days | 339 days | 1.86 yrs | 5.5 yrs | 11 yrs |
| 64Mb CF/SD Card or USB memory stick (approx. 8 million samples) | 5.66 days | 22.6 days | 45.3 days | 226 days | 1.2 yrs | 3.7 yrs | 7.4 yrs |
| 256Mb CF/SD Card or USB memory stick (approx. 32 million samples) | 22.6 days | 90.6 days | 181 days | 2.4 yrs | 4.9 yrs | 14.8 yrs | 20 yrs |
| 1Gb CF/SD Card or USB memory stick (approx. 125 million samples) | 88 Days | 354 days | 1.9 yrs | 9.6 yrs | 19 yrs | 58 yrs | 116 yrs |
| Ethernet (FTP Server) | Infinite | | | | | | |

Time Synchronisation (SNTP)

The 6000 Series support Simple Network Time Protocol which, when enabled, updates the instrument time every 15 minutes from the configured SNTP server. The unit can also act as a Unicast SNTP server on the network, allowing client instruments to synchronise with the 6000 to a resolution of one millisecond.

Batch Recording

Up to six user-defined fields can be used to enter batch specific data.

| Field Descriptor | Operator entered batch information |
|-----------------------|------------------------------------|
| – up to 20 characters | – up to 60 characters |

The user can choose to log any number of the given fields on start and / or stop of a batch. The information will appear on the chart as a message and cannot be separated from the process data to which it relates.

Auditor Features

Designed to meet the requirements of the FDA Regulation 21 CFR Part 11 for Electronic Records and Signatures, this software option provides the 6000 Series with additional security such as password ageing, electronic signatures and time stamped audit trail.

Modbus Master

Allows users to view data from multiple instruments connected either by a local Network connection using Modbus TCP, or a Serial connection using Modbus RTU.

Event Input

The Event Input option offers six isolated event input circuits per board fitted. Triggered externally these discrete inputs can be used to initiate internal actions within the 6000 Series Paperless Graphic Recorder. For example they could be used to remotely start or stop a Batch.

ASCII Printer Output (Reports)

Fitted as standard the ASCII text printer option provides the 6000 Series with the ability to generate up to 10 simple reports that can be directed to a Serial ASCII text printer. Reports, triggered by an event/job can be configured to contain parameters such as time and date, batch names, process values and user defined messages.

Dynamic Host Configuration Protocol (DHCP)

Dynamic Host Configuration Protocol, the successor to BootP, allows a 6000 Series host to obtain Network parameters, such as IP address, Subnet Mask, default gateway and DNS server address dynamically. The implementation of DHCP on the 6000 Series significantly reduces the overhead for maintaining a network of instrumentation.

TECHNICAL SPECIFICATION

Recorder

Environmental performance

| | |
|-------------------------|--|
| Temperature limits | Operation: 0 to +50°C Storage: –20 to 60°C |
| Humidity limits | Operation: 5% to 80% RH Storage: 5% to 90% RH |
| Protection | Bezel and display: IP65 Sleeve: IP20 |
| | 6100A Portable case option: IP21 |
| Shock | BS EN61010 |
| Vibration (10 to 150Hz) | BSEN60873, Section 9,18 |
| Altitude | <2000 metres. |

Approvals

Electromagnetic compatibility CE, cUL (EMC)

| | |
|------------------------|------------|
| UL file number | e57766 |
| Emissions and immunity | BS EN61326 |

Electrical safety

| | |
|--------------|--|
| (BS EN61010) | Installation cat. II; Pollution degree 2 |
|--------------|--|

INSTALLATION CATEGORY II

The rate impulse voltage for equipment on nominal 230V mains is 2500V.

POLLUTION DEGREE 2

Normally, only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation shall be expected

Physical

| | |
|----------------------|---|
| Panel mounting | DIN43700 |
| Panel mounting angle | ±45° |
| 6100A | Bezel size: 144 x 144mm. Panel cutout dimensions: 138 x 138mm (both –0/+1mm) Depth behind bezel rear face: 246.5mm (284 LTC) |
| | Weight: 3kg max. (5kg if fitted in portable case) |
| 6180A | Bezel size: 292 x 292mm Panel cutout dimensions: 281 x 281mm (both –0/+1mm) Depth behind bezel rear face: 261mm Weight: 7kg max. |

Operator interface

| | |
|---------------------|---|
| Type | Colour TFT LCD with cold cathode backlight, fitted with resistive, analogue, Touch-Panel |
| Size and resolution | Model 6100A: 1/4VGA (320 x 240 pixels) 5.5" Model 6180A: XGA (1024 x 768 pixels) 12.1" |

Power requirements

| | |
|-----------------------|---|
| Supply voltage | Standard: 85 to 265V ac; 47 to 63Hz or 110 to 370V dc Low voltage option: 20 to 42V RMS; 45 to 400Hz or 20 to 54V dc |
| Power (Max) | 60VA (Inrush current 36A) |
| Fuse type | None |
| Interrupt protection: | Standard: Holdup >200msec, at 240V ac, with full load Low voltage option: 20msec at 20V dc or RMS, with full load |

Back-up Battery

| | |
|--------------------|---|
| Type | Poly-carbonmonofluoride/lithium (BR2330) Part No. PA261095 |
| Support time (RTC) | 1 year min. with recorder unpowered |
| Replacement period | 3 years |
| Stored data | Time; date; values for totalisers, counters and timers; batch data; Fvalue, Rolling average, Stopwatch etc. |

Ethernet communications

| | |
|-----------|---|
| Type | 10/100baseT Ethernet. (IEEE802.3) |
| Protocols | TCP/IP, FTP, DHCP, BOOTP, SNTP, MODBUS, SMTP, ICMP |
| Cable | Type: CAT5 Maximum length: 100 metres Termination: RJ45 |

Serial Communications Option

| | |
|-----------------------------------|---|
| No of Ports | 2 |
| Protocol | ASCII (typical applications: Input of ASCII string inputs from Barcode readers, Credit card readers etc.) ASCII printer support Modbus RTU Master and Slave |
| Isolation (dc to 65Hz BS EN61010) | Installation category II; Pollution degree 2 |
| Terminals to ground | 50V RMS or dc (basic insulation) |
| Transmission standard | EIA232 or EIA485 (software selectable) |

Input Board

General

| | |
|----------------------------------|--|
| Input types | dc Volts, dc millivolts, dc milliamps (with shunt), Thermocouple, 2/3-wire RTD Contact closure (not Channels 1, 7, 13, 19, 25, 31, 37, 43) >60 ms |
| Input type mix | Freely configurable. |
| Maximum number of inputs | 6 per board |
| A/D conversion method | >16 bits, 2nd order delta sigma |
| Input ranges | See Table1 and Table 2 below. |
| Termination | Edge connector / terminal block |
| Noise rejection (48 to 62 Hz) | Common mode: >140dB (channel to channel and channel to ground). Series mode: >60dB. |
| Maximum common mode voltage | 250 Volts continuous |
| Maximum series mode voltage | 45mV at lowest range; 23.74 Volts peak at highest range. |
| Isolation | |
| Channel to channel: | 300V RMS or dc (double insulation) |
| Channel to common electronics: | 300V RMS or dc (double insulation) |
| Channel to ground: | 300V RMS or dc (basic insulation) |
| Dielectric strength (BS EN61010) | (1 minute type tests) |
| Channel to channel: | 2500V ac |
| Channel to ground: | 1500V ac |
| Insulation resistance | >10MΩ at 500 V dc |
| Input impedance | 38mV, 150 mV, 1 V ranges: >10MΩ; 20V range: 65.3kΩ |
| Over voltage protection | 50 Volts peak (150V with attenuator) |
| Open circuit detection | ± 57nA max. |
| Recognition time | 500msec |
| Minimum break resistance | 10MΩ |

Update/archive rates

| | |
|--------------------------------|---|
| Input/Relay-output sample rate | 8Hz |
| Trend update | 8Hz maximum |
| Archive sample-value | Latest value at archive time |
| Display value | Latest value at display update time (8Hz) |

DC Input ranges

| | |
|------------------------------------|-------------------------------------|
| Shunt | Externally mounted resistor modules |
| Additional error due to shunt | 0.1% of input |
| Additional error due to attenuator | 0.2% of input |
| Performance | |

6100A/6180A See Table 1

| Low Range | High Range | Resolution | Typical error (instrument at 20°C) | Maximum error (Instrument at 20°C) | Worst case temp Performance |
|-----------|------------|------------|------------------------------------|------------------------------------|-----------------------------|
| -38mV | 38mV | 1.4μV | 0.035% I/P + 0.031% range | 0.085% I/P + 0.052% range | 80ppm of I/P per °C |
| -150mV | 150mV | 5.5μV | 0.035% I/P + 0.028% range | 0.084% I/P + 0.039% range | 80ppm of I/P per °C |
| -1V | 1V | 37μV | 0.035% I/P + 0.024% range | 0.084% I/P + 0.029% range | 80ppm of I/P per °C |
| -20V | 20V | 720μV | 0.097% I/P + 0.027% range | 0.448% I/P + 0.033% range | 443ppm of I/P per °C |

Table 1 Voltage ranges - accuracy and resolution

| Low Range | High Range | Resolution | Typical error (instrument at 20°C) | Maximum error (Instrument at 20°C) | Worst case temp Performance |
|-----------|------------|------------|------------------------------------|------------------------------------|-----------------------------|
| 0Ω | 150Ω | 5mΩ | 0.027% I/P +0.034% range | 0.042% I/P + 0.110% range | 35ppm of I/P per °C |
| 0Ω | 600Ω | 22mΩ | 0.027% I/P +0.035% range | 0.042% I/P + 0.065% range | 35ppm of I/P per °C |
| 0Ω | 6kΩ | 148mΩ | 0.030% I/P +0.028% range | 0.045% I/P + 0.035% range | 35ppm of I/P per °C |

Table 2 Resistance ranges - accuracy and resolution

Thermocouple data

| | |
|-------------------------|--|
| Temperature scale | ITS 90 |
| Bias current | 0.05 nA |
| Cold junction types | Off, internal, external, remote |
| CJ error | 1°C max with inst. at 25°C |
| CJ rejection ratio | 50:1 minimum |
| Upscale/downscale drive | High, low or none selectable for each thermocouple channel |
| Additional error: | 0.01°C (typ.) if high or low selected |
| Types and ranges | See Table 3 |

| T/C Type | Overall range (°C) | Standard | Max linearisation error |
|---------------------|--------------------|---------------------------|--|
| B | 0 to +1820 | IEC 584.1 | 0 to 400°C=1.7°C 400 to 1820°C=0.03°C |
| C | 0 to +2300 | Hoskins | 0.12°C |
| D | 0 to +2495 | Hoskins | 0.08°C |
| E | -270 to +1000 | IEC 584.1 | 0.03°C |
| G2 | 0 to +2315 | Hoskins | 0.07°C |
| J | -210 to +1200 | IEC 584.1 | 0.02°C |
| K | -270 to +1372 | IEC 584.1 | 0.04°C |
| L | -200 to +900 | DIN43710:1985 (To IPTS68) | 0.02°C |
| N | -270 to +1300 | IEC 584.1 | 0.04°C |
| R | -50 to +1768 | IEC 584.1 | 0.04°C |
| S | -50 to +1768 | IEC 584.1 | 0.04°C |
| T | -270 to +400 | IEC 584.1 | 0.02°C |
| U | -200 to +600 | DIN43710:1985 | 0.08°C |
| NiMo/NiCo | -50 to +1410 | ASTM E1751-95 | 0.06°C |
| Ni/NiMo | 0 to +1406 | Ipsen | 0.14°C |
| Platinel | 0 to +1370 | Engelhard | 0.02°C |
| Pt20%Rh/ Pt40%Rh | 0 to +1888 | ASTM E1751-95 | 0.07°C |

Table 3 Thermocouple types and ranges

Resistance inputs

| | |
|------------------------------------|-------------------------------------|
| Ranges (including lead resistance) | 0 to 150Ω, 0 to 600Ω, 0 to 6kΩ |
| Influence of lead resistance | Error: Negligible Mismatch: 1Ω/Ω |
| Temperature scale | ITS90 |
| Accuracy and resolution | See Table 2 |
| RTD types and ranges | See Table 4 |

| RTD Type | Overall range (°C) | Standard | Max linearisation error |
|----------|--------------------|------------------------|-------------------------|
| Cu10 | -20 to +400 | General Electric Co. | 0.02 °C |
| Cu53 | -70 to ± 200 | RC21-4-1966 | <0.01°C |
| JPT100 | -220 to +630 | JIS C1604:1989 | 0.01 °C |
| Ni100 | -60 to +250 | DIN43760:1987 | 0.01 °C |
| Ni120 | -50 to +170 | DIN43760:1987 | 0.01 °C |
| Pt100 | -200 to +850 | IEC 751 | 0.01 °C |
| Pt100A | -200 to +600 | Eurotherm Recorders SA | 0.09 °C |
| Pt1000 | -200 to +850 | IEC 751 | 0.01 °C |

Table 4 RTD types and ranges

Analogue Output Board

General

| | |
|------------------------------|--|
| Max. number of output boards | Four |
| Number of outputs per board | Two |
| Output ranges | Voltage: 0 to 10V (source 5mA max.) Current: 0 to 20mA (max. load 1K Ω) |
| Update rate | 8Hz |
| Step response | 250msec (10% to 90%) |
| Linearity | 0.024% of hardware range |
| Performance | See table |

| Performance in instrument at 20°C | | |
|-----------------------------------|---------------|---|
| Range | Accuracy | Temperature drift |
| 0 to 10V | 0.1% of range | $\pm 0.12\text{mV} + 0.022\%$ of reading per °C |
| 0 to 20mA | 0.1% of range | $\pm 1\mu\text{A} + 0.03\%$ of reading per °C |

Safety isolation

| | |
|-------------------------------------|--|
| Isolation (dc to 65 Hz; BS EN61010) | Installation category II; Pollution degree 2 |
| Output channel-to OP channel | 300V RMS or dc (double insulation) |
| Output channel to ground | 150V RMS or dc (basic insulation) |

Transmitter PSU

| | |
|--------------------------------|--|
| Isolated, 6100A recorder only | Three |
| Number of outputs | 25V nominal |
| Output voltage | 20mA per output |
| Maximum current | Installation category II; Pollution degree 2 |
| Isolation (dc to 65Hz BS61010) | Channel to channel: 100V RMS or DC (double insulation) |
| | Channel to ground: 100V RMS or dc (basic insulation) |
| Fuse (20mm Type T) | Supply voltage = 110/120V ac: 100mA |
| | Supply voltage = 220/240V ac: 63mA |

Relay Output Board

General

| | |
|--------------------------------|--|
| Maximum number of relay boards | 6100A 4 (max no of relay outputs = 16) |
| | 6180A 9 (max no of relay outputs = 36) |
| Number of relays per board | 3 per C/O 4 per N/C 4 per N/O |
| Estimated mechanical life | 30,000,000 operations |
| Update rate | See 'Update rates' in 'Recorder Specification' above |

AC load ratings

Derating
The figures give below are for restive loads. for reactive or inductive loads, de-rate in accordance with Graph 1, in which

F1 = Actually measured results on representative samples

F2 = Typical values according to experience

Contact life = Resistive contact life x reduction factor

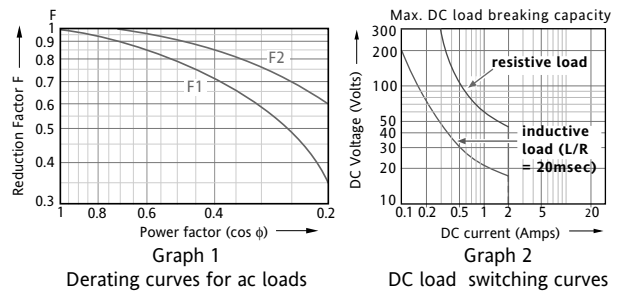
| | |
|-------------------------|---|
| Maximum switching power | 500VA |
| Maximum contact voltage | 250V providing this does not cause the maximum switching power (above) to be exceeded |
| Maximum contact current | 2 Amps providing this does not cause the maximum switching power (above) to be exceeded |

DC load ratings

| | |
|---------------------------------|---|
| Maximum switching power | See Graph 2 for operating volt/amp envelope |
| Maximum contact voltage/Current | See Graph 2 for examples |

Safety isolation

| | |
|------------------------------------|--|
| Isolation (dc to 65Hz; BS EN61010) | Installation category II; Pollution degree 2 |
| Relay to Relay: | 300V RMS or dc (double insulation) |
| Relay to ground: | 300V RMS or dc (basic insulation) |



Event Input

| | |
|----------------------------|--|
| Number of inputs | 6 discrete inputs |
| Maximum No. of boards | 6100A 4 6180A 4 |
| Isolation | Event input to ground: 100V RMS or dc (basic insulation) |
| | Event input to Event input: 0V |
| Recognition levels | 'Active': -30V to +0.8V 'Inactive': +2 to +30V |
| Maximum frequency | 8Hz |
| Minimum pulse width | 62.5ms |
| Contact resistance | Event: Active if resistance <35K Ω Inactive if resistance >200K Ω Status not defined if 35K Ω < resistance <200K Ω between input terminal and 'C' terminal |
| Current sink (voltage I/P) | 10mA |

Safety Isolation

| | |
|----------------------------|-----------------------------------|
| Event input to ground | 100V RMS or dc (basic insulation) |
| Event input to Event input | 0V |

Portable

Portable option



6100A is available as a portable unit with either Thermocouple, General or HTM2010 connections.

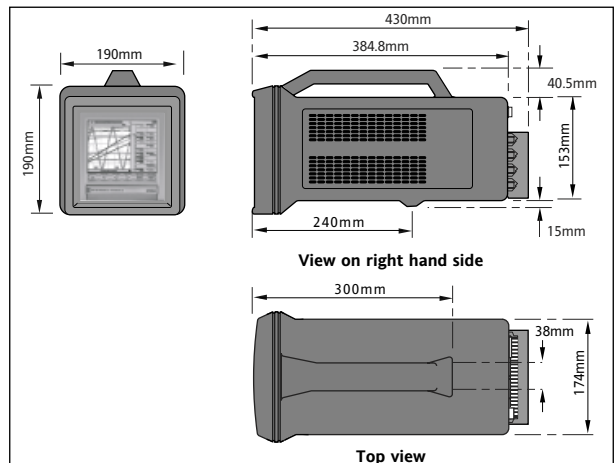


6180A is available with optional carry handle and feet for portability

| 6100A | Max. No of Inputs** | Option Slots** | Relays | Serial Comms | Transm'r PSU | Event I/P | Analogue O/P |
|--------------|---------------------|----------------|--------|--------------|--------------|-----------|--------------|
| General | 18 | 4 | Yes* | Yes | Yes* | Yes* | Yes* |
| Thermocouple | 18 | 0 | No | Yes | No | Yes* | No |
| HTM2010 | 18 | 0 | No | Yes | | No | No |

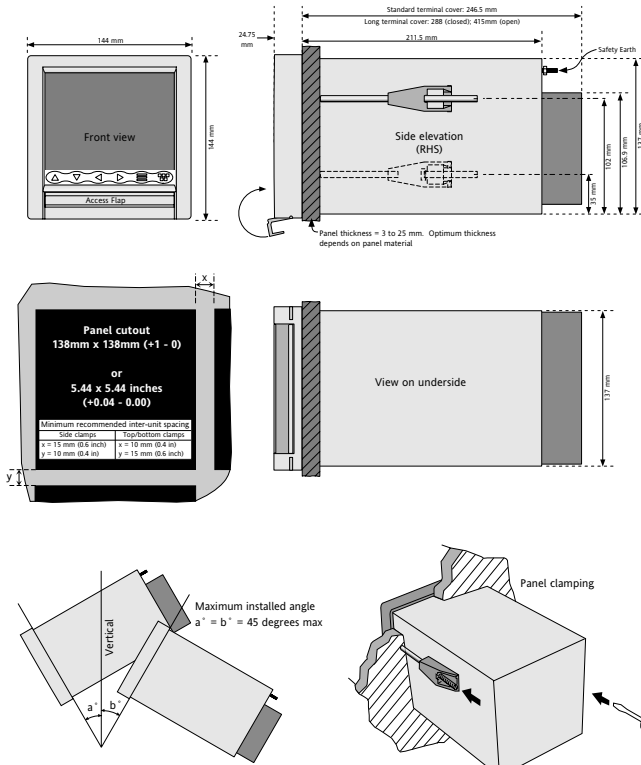
** Mutually exclusive * Requires one option slot

PORTABLE MECHANICAL INSTALLATION

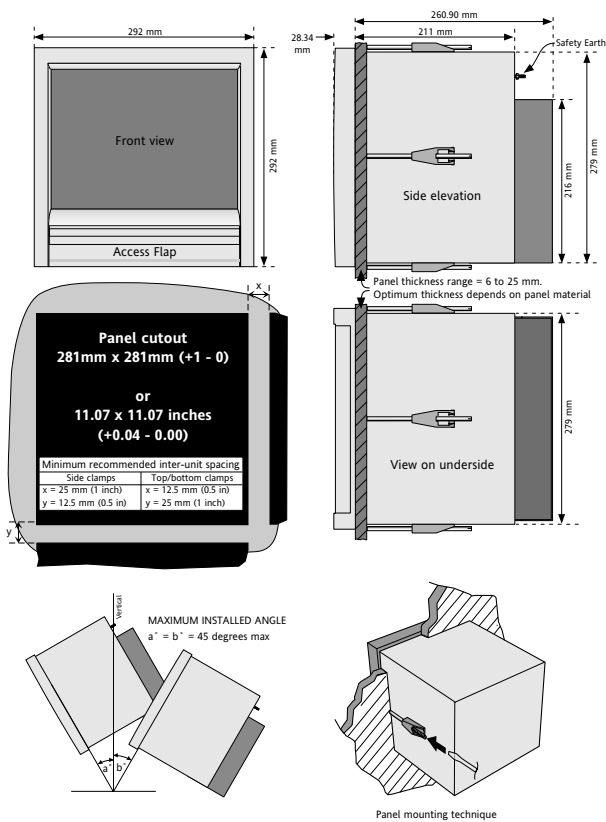


MECHANICAL INSTALLATION

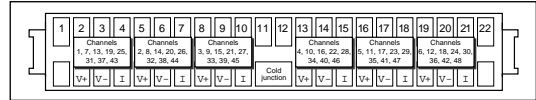
6100A



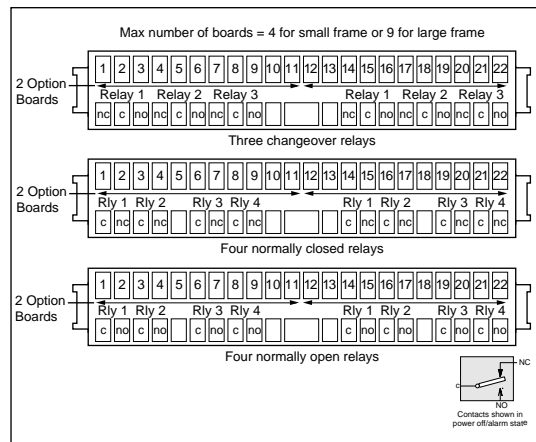
6180A



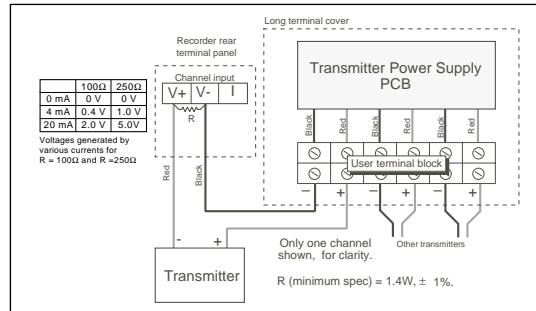
INPUT BOARD WIRING



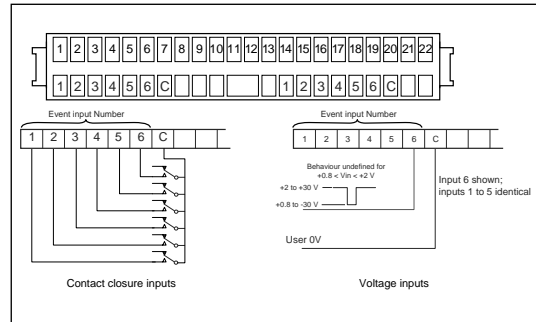
RELAY BOARD WIRING



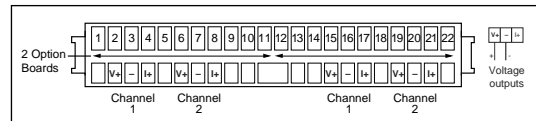
ISOLATED TRANSMITTER POWER SUPPLY WIRING (6100A only)



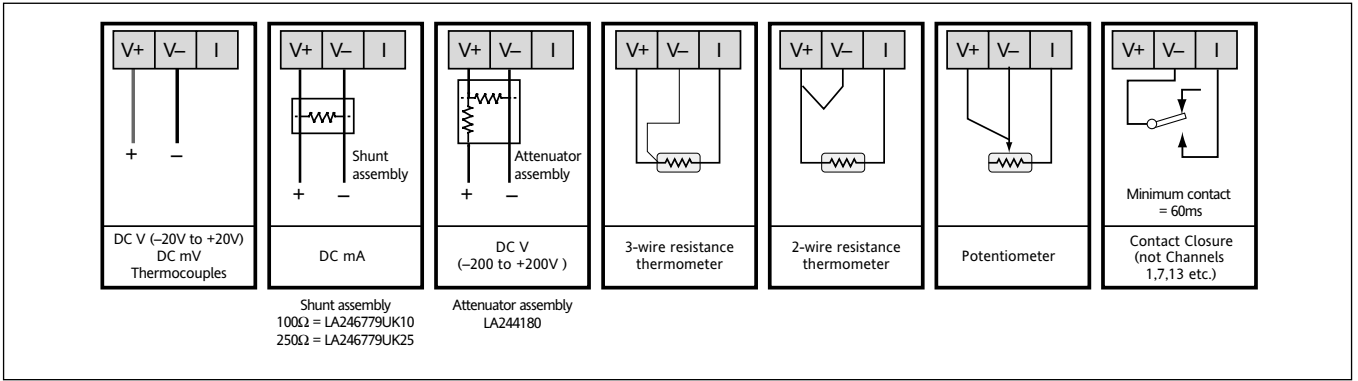
EVENT INPUT BOARD WIRING



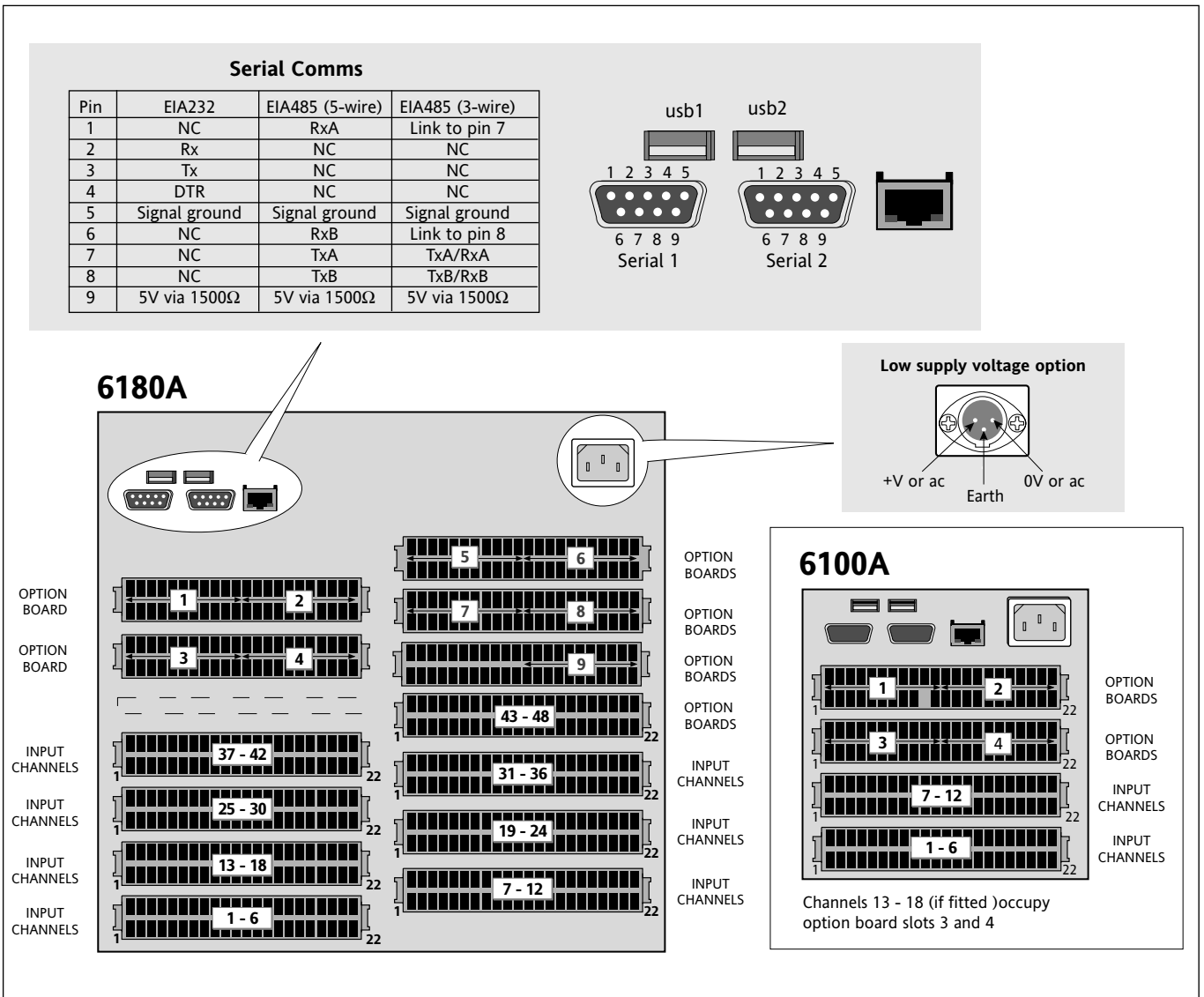
ANALOGUE OUTPUT WIRING



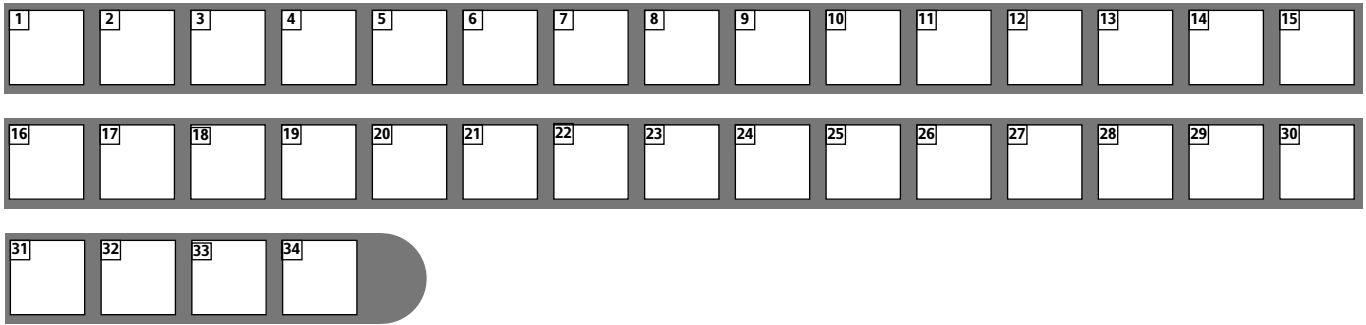
INPUT BOARD SIGNAL WIRING



REAR TERMINAL CONNECTIONS



ORDERING CODE



| | | |
|--|-------|-----------------|
| 0 Model | | |
| 6100A 100mm TFT 1/4VGA Display | ..... | .6100A |
| 6180A 180mm TFT XGA Display | ..... | .6180A |
| 1 Number of channels | | |
| 0 Input channels | ..... | .U00 |
| 6 Input Channels | ..... | .U06 |
| 12 Input Channels | ..... | .U12 |
| 18 Input Channels | ..... | .U18 |
| 24 Input Channels (6180A only) | ..... | .U24 |
| 30 Input Channels (6180A only) | ..... | .U30 |
| 36 Input Channels (6180A only) | ..... | .U36 |
| 42 Input Channels (6180A only) | ..... | .U42 |
| 48 Input Channels (6180A only) | ..... | .U48 |
| 2 Not Used | ..... | .XXX |
| 3 Case Options | | |
| Panel mounting | ..... | .PANEL |
| General Portable (6100A only) | ..... | .PORTGEN |
| Type T Thermocouple Portable (6100A only) | ..... | .PORTTTC |
| Type K Thermocouple Portable (6100A only) | ..... | .PORTKTC |
| Type J Thermocouple Portable (6100A only) | ..... | .PORTJTC |
| Voltage Input only Portable (6100A only) | ..... | .PORTVTC |
| HTM2010/2030 Portable Test kit (6100A only) | ..... | .HTM2010 |
| Carry Handle (Bezel Colour Silver, 6180A only) | ..... | .CH |
| Panel Mounting with Heavy Duty Case clamps (6180A only) | ..... | .PMHD |
| Panel Mounting with Thin panel mounting kit (6180A only) | ..... | .PMTN |
| 4 Lock | | |
| Media lock not fitted | ..... | .NOLCK |
| Electronic Lock Fitted | ..... | .LOCK |
| 5 Bezel Colour | | |
| Silver including portable options | ..... | .SLV |
| Eurotherm Green | ..... | .GRN |
| Black | ..... | .BLK |
| 6 Power Supply | | |
| 90- 264 Vac (110-370Vdc) 45 –65 Hz | ..... | .VH |
| 20 – 42 Vac (20 – 54Vdc) | ..... | .VL |
| 240Vac 45 –65 Hz with low inrush current to meet NAMUR | ..... | .VH-NMR |
| 24Vdc with low inrush current to meet NAMUR | ..... | .VL-NMR |
| 7 24V Isolated Transmitter Power Supply | | |
| Not fitted | ..... | .NONE |
| 110 – 120Vac 3channel TPS (6100A only) | ..... | .115TPS |
| 220 – 240Vac 3 channel TPS (6100A only) | ..... | .230TPS |
| 8 Non Standard | | |
| Non Standard Option | ..... | .XXXXXX |
| No logo | ..... | .NLG |
| 9 Internal Memory | | |
| 32M Byte for history – approximately 4 million samples | ..... | .032M |
| 96M Byte for history – approximately 12 million samples | ..... | .096M |
| 10 Removable Media | | |
| Compact Flash and Front USB port | ..... | .CF |
| Secure Digital and Front USB port | ..... | .SD |
| 11 Memory Card Size | | |
| Not fitted | ..... | .NOMC |
| 128M byte Card (CF or SD, dependant on removable media type) | ..... | .128M |
| 256M byte Card (CF or SD, dependant on removable media type) | ..... | .256M |
| 512M byte Card (CF or SD, dependant on removable media type) | ..... | .512M |
| 1Gbyte Card (CF or SD, dependant on removable media type) | ..... | .001G |

| | | |
|---|-------|----------------|
| 12 USB Memory Stick Size | | |
| Not fitted | ..... | .NOMS |
| 64M byte USB Memory Stick | ..... | .064MMS |
| 256M byte USB Memory Stick | ..... | .256MMS |
| 512M byte USB Memory Stick | ..... | .512MMS |
| 1G byte USB Memory Stick | ..... | .001GMS |
| 13 Rear USB | | |
| No rear USB ports | ..... | .0RUSB |
| Two USB ports at rear of product | ..... | .2RUSB |
| 14 Serial Communication Ports | | |
| Not fitted | ..... | .0SRL |
| Two EIA 232/422/485 Serial Ports | ..... | .2SRL |
| 15 Not Used | ..... | .XXXX |
| 16 Calibration Certificates | | |
| Not required | ..... | .NOCAL |
| Calibration certificate | ..... | .CAL |
| 17 Changeover Relays | | |
| Not fitted | ..... | .00 |
| 3 changeover relays (1 option board) | ..... | .03 |
| 6 changeover relays (2 option boards) | ..... | .06 |
| 9 changeover relays (3 option boards) | ..... | .09 |
| 12 changeover relays (4 option boards) | ..... | .12 |
| 15 changeover relays (5 option boards, 6180A only) | ..... | .15 |
| 18 changeover relays (6 option boards, 6180A only) | ..... | .18 |
| 21 changeover relays (7 option boards, 6180A only) | ..... | .21 |
| 24 changeover relays (8 option boards, 6180A only) | ..... | .24 |
| 27 changeover relays (9 option boards, 6180A only) | ..... | .27 |
| 18 Normally Closed Relays | | |
| Not fitted | ..... | .00 |
| 4 Normally Closed relays (1 option board) | ..... | .04 |
| 8 Normally Closed relays (2 option boards) | ..... | .08 |
| 12 Normally Closed relays (3 option boards) | ..... | .12 |
| 16 Normally Closed relays (4 option boards) | ..... | .16 |
| 20 Normally Closed relays (5 option boards, 6180A only) | ..... | .20 |
| 24 Normally Closed relays (6 option boards, 6180A only) | ..... | .24 |
| 28 Normally Closed relays (7 option boards, 6180A only) | ..... | .28 |
| 32 Normally Closed relays (8 option boards, 6180A only) | ..... | .32 |
| 36 Normally Closed relays (9 option boards, 6180A only) | ..... | .36 |
| 19 Normally Open Relays | | |
| Not fitted | ..... | .00 |
| 4 Normally Open relays (1 option board) | ..... | .04 |
| 8 Normally Open relays (2 option boards) | ..... | .08 |
| 12 Normally Open relays (3 option boards) | ..... | .12 |
| 16 Normally Open relays (4 option boards) | ..... | .16 |
| 20 Normally Open relays (5 option boards, 6180A only) | ..... | .20 |
| 24 Normally Open relays (6 option boards, 6180A only) | ..... | .24 |
| 28 Normally Open relays (7 option boards, 6180A only) | ..... | .28 |
| 32 Normally Open relays (8 option boards, 6180A only) | ..... | .32 |
| 36 Normally Open relays (9 option boards, 6180A only) | ..... | .36 |
| 20 Event Inputs | | |
| Not fitted | ..... | .00 |
| 06 Event Inputs (1 board) | ..... | .06 |
| 12 Event Inputs (2 boards) | ..... | .12 |
| 18 Event Inputs (3 boards) | ..... | .18 |
| 24 Event Inputs (4 boards) | ..... | .24 |
| 21 Analogue Outputs | | |
| None | ..... | .00 |
| 2 Analogue Outputs (1 option board) | ..... | .02 |
| 4 Analogue Outputs (2 option boards) | ..... | .04 |
| 6 Analogue Outputs (3 option boards) | ..... | .06 |
| 8 Analogue Outputs (4 option boards) | ..... | .08 |
| 22 Quantity of Shunts | | |
| Enter quantity required | ..... | __ |

| | |
|---|--------|
| 23 Shunt Value | |
| Not required | .NOS |
| 100 ohm shunts | .100 |
| 250 ohm shunts | .250 |
| 24 Quantity of Attenuators (100:1) | |
| Enter quantity required | __ _ |
| 25 Warranty | |
| Standard warranty | .XXXXX |
| Extended warranty | .WL005 |
| 26 Bridge | |
| Bridge Lite (supplied as standard) | .BLITE |
| Bridge Full | .BFULL |
| 27 Review and Quickchart | |
| Review and Quickchart Lite (supplied as standard) | .RLITE |
| Review and Quickchart Full | .RFULL |
| 28 Auditor | |
| Not required | .NOADT |
| Audit Trail | .ALITE |
| Auditor Full | .AFULL |

| | |
|--|----------|
| 29 Security Manager | |
| Not required | .NOSM |
| Security Manager | .SECMAN |
| 30 Groups | |
| 6 Groups (supplied as standard) | .06GROUP |
| 12 Groups | .12GROUP |
| 31 Maths, Totalisers and Counters | |
| Not required | .MTC00 |
| 36 Virtual Channels | .MTC36 |
| 96 Virtual Channels | .MTC96 |
| 128 Virtual Channels | .MTC128 |
| 32 Batch | |
| Not required | .NOBTCH |
| Batch | .BATCH |
| 33 Screen Builder | |
| Not required | .NOSB |
| Advanced Screen Builder | .ADSB |
| 34 Master Communications | |
| Not required | .NOMSTR |
| Modbus Master Communications | .MODBUS |