

## Quick Reference Guide

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### SCPI Command Summary

The following conventions are used for SCPI command syntax for remote interface programming:

- Square brackets ( [ ] ) indicate optional keywords or parameters.
- Braces ( { } ) enclose parameter choices within a command string.
- Triangle brackets ( < > ) enclose parameters for which you must substitute a value.
- A vertical bar ( | ) separates multiple parameter choices.

### Rules for Using a Channel List

Many of the SCPI commands for the 34970A include a *scan\_list* or *ch\_list* parameter which allow you to specify one or more channels. The channel number has the form (@**sc**), where **s** is the slot number (100, 200, or 300) and **cc** is the channel number. You can specify a single channel, multiple channels, or a range of channels as shown below.

- The following command configures a scan list to include only channel 10 on the module in slot 300.

```
ROUT:SCAN (@310)
```

- The following command configures a scan list to include multiple channels on the module in slot 200. The scan list now contains only channels 10, 12, and 15 (*the scan list is redefined each time you send a new ROUTe:SCAN command*).

```
ROUT:SCAN (@210,212,215)
```

- The following command configures a scan list to include a range of channels. When you specify a range of channels, the range *may* contain invalid channels (they are ignored), but the first and last channel in the range must be valid. The scan list now contains channels 5 through 10 (slot 100) and channel 15 (slot 200).

```
ROUT:SCAN (@105:110,215)
```



## Scan Measurement Commands

(see page 226 in the User's Guide)

**S** MEASure  
:TEMPerature? {**TCouple**|RTD|FRTD|THERmistor|DEF}  
[, {<type>|DEF} [, 1 [, {<resolution>|MIN|MAX|DEF}]]] , (@<scan\_list>)  
:VOLTage:DC? [{<range>|**AUTO**|MIN|MAX|DEF}  
[, <resolution>|MIN|MAX|DEF}] , ] (@<scan\_list>)  
:VOLTage:AC? [{<range>|**AUTO**|MIN|MAX|DEF}  
[, <resolution>|MIN|MAX|DEF}] , ] (@<scan\_list>)  
:RESistance? [{<range>|**AUTO**|MIN|MAX|DEF}  
[, <resolution>|MIN|MAX|DEF}] , ] (@<scan\_list>)  
:FRESistance? [{<range>|**AUTO**|MIN|MAX|DEF}  
[, <resolution>|MIN|MAX|DEF}] , ] (@<scan\_list>)  
:CURRent:DC? [{<range>|**AUTO**|MIN|MAX|DEF}  
[, <resolution>|MIN|MAX|DEF}] , ] (@<scan\_list>)  
:CURRent:AC? [{<range>|**AUTO**|MIN|MAX|DEF}  
[, <resolution>|MIN|MAX|DEF}] , ] (@<scan\_list>)  
:FREQuency? [{<range>|**AUTO**|MIN|MAX|DEF}  
[, <resolution>|MIN|MAX|DEF}] , ] (@<scan\_list>)  
:PERiod? [{<range>|**AUTO**|MIN|MAX|DEF}  
[, <resolution>|MIN|MAX|DEF}] , ] (@<scan\_list>)  
:DIGital:BYTE? (@<scan\_list>)  
:TOTalize? {**READ**|RRESet} , (@<scan\_list>)

## Monitor Commands

(see page 237 in the User's Guide)

ROUTE  
:MONitor (@<channel>)  
:MONitor?  
  
ROUTE  
:MONitor:STATe {**OFF**|ON}  
:MONitor:STATe?  
  
ROUTE:MONitor:DATA?

## Scan Statistics Commands

(see page 233 in the User's Guide)

CALCulate  
:AVERage:MINimum? [ (@<ch\_list>)]  
:AVERage:MINimum:TIME? [ (@<ch\_list>)]  
:AVERage:MAXimum? [ (@<ch\_list>)]  
:AVERage:MAXimum:TIME? [ (@<ch\_list>)]  
:AVERage:AVERage? [ (@<ch\_list>)]  
:AVERage:PTPeak? [ (@<ch\_list>)]  
:AVERage:COUNT? [ (@<ch\_list>)]  
:AVERage:CLEar [ (@<ch\_list>)]  
  
DATA:LAST? [<num\_rdgs> , ] [ (@<channel>)]

**S** This command redefines the scan list when executed.  
Default parameters are shown in **bold**.

## Scan Configuration Commands

(see page 226 in the User's Guide)

ROUTE

**S** :SCAN (@<scan\_list>)  
:SCAN?  
:SCAN:SIZE?

**G** TRIGger  
:SOURce {BUS|**IMMediate**|EXTernal|ALARm1|ALARm2|ALARm3|ALARm4|TIMer}  
:SOURce?

**G** TRIGger  
:TIMer {<seconds>|**MIN**|MAX}  
:TIMer?

**G** TRIGger  
:COUNT {<count>|**MIN**|MAX|INFINITY}  
:COUNT?

ROUTE  
:CHANnel:DELay <seconds> [, (@<ch\_list>)]  
:CHANnel:DELay? [ (@<ch\_list>)]  
:CHANnel:DELay:AUTO {OFF|ON} [, (@<ch\_list>)]  
:CHANnel:DELay:AUTO? [ (@<ch\_list>)]

**G** FORMat  
:READing:ALARm {**OFF**|ON}  
:READing:ALARm?  
:READing:CHANnel {**OFF**|ON}  
:READing:CHANnel?  
:READing:TIME {**OFF**|ON}  
:READing:TIME?  
:READing:UNIT {**OFF**|ON}  
:READing:UNIT?

**G** FORMat  
:READing:TIME:TYPE {ABSolute|**RELative**}  
:READing:TIME:TYPE?

ABORT

INITiate

READ?

## Scan Memory Commands

(see page 235 in the User's Guide)

DATA:POINTs?

DATA:REMOve? <num\_rdg>

SYSTem:TIME:SCAN?

FETCH?

R? [<max\_count>]

- S** This command redefines the scan list when executed.
- G** This command applies to all channels in the instrument (Global setting).  
Default parameters are shown in **bold**.

## Scanning With an External Instrument

(see page 239 in the User's Guide)

```

ROUTE
S :SCAN (@<scan_list>)
    :SCAN?
    :SCAN:SIZE?

G TRIGger
    :SOURce {BUS|IMMediate|EXternal|TIMer}
    :SOURce?

G TRIGger
    :TImer {<seconds>|MIN|MAX}
    :TImer?

G TRIGger
    :COUNt {<count>|MIN|MAX|INfinity}
    :COUNt?

ROUTE
    :CHANnel:DElay <seconds> [ , (@<ch_list>) ]
    :CHANnel:DElay? [ (@<ch_list>) ]

G ROUTe
    :CHANnel:ADVance:SOURce {EXTernal|BUS|IMMediate}
    :CHANnel:ADVance:SOURce?

ROUTE
    :CHANnel:FWIRE {OFF|ON} [ , (@<ch_list>) ]
    :CHANnel:FWIRE? [ (@<ch_list>) ]

G INSTRument
    :DMM {OFF|ON}
    :DMM?
    :DMM:INSTalled?
  
```

- S** This command redefines the scan list when executed.  
**G** This command applies to all channels in the instrument (Global setting).  
 Default parameters are shown in **bold**.

## Temperature Configuration Commands

(see page 219 in the User's Guide)

```

S CONFIGure
    :TEMPerature {TCouple|RTD|FRTD|THERmistor|DEF}
    , {<type>|DEF} [, 1 [, {<resolution>|MIN|MAX|DEF}]] , (@<scan_list>)
CONFIGure? [ (@<ch_list>)]

UNIT
    :TEMPerature {C|F|K} [, (@<ch_list>)]
    :TEMPerature? [ (@<ch_list>)]

[SENSe:]TEMPerature:TRANsducer
    :TYPE {TCouple|RTD|FRTD|THERmistor|DEF} [, (@<ch_list>)]
    :TYPE? [ (@<ch_list>)]

[SENSe:]TEMPerature:TRANsducer
    :TCouple:TYPE {B|E|J|K|N|R|S|T} [, (@<ch_list>)]
    :TCouple:TYPE? [ (@<ch_list>)]
    :TCouple:CHECK {OFF|ON} [, (@<ch_list>)]
    :TCouple:CHECK? [ (@<ch_list>)]

[SENSe:]TEMPerature:TRANsducer
    :TCouple:RJUNction:TYPE {INternal|EXternal|FIXed} [, (@<ch_list>)]
    :TCouple:RJUNction:TYPE? [ (@<ch_list>)]
    :TCouple:RJUNction {<temperature>|MIN|MAX} [, (@<ch_list>)]
    :TCouple:RJUNction? [ (@<ch_list>)]

[SENSe:]TEMPerature:RJUNction? [ (@<ch_list>)]

[SENSe:]TEMPerature:TRANsducer
    :RTD:TYPE {85|91} [, (@<ch_list>)]
    :RTD:TYPE? [ (@<ch_list>)]
    :RTD:RESistance[:REfERENCE] <reference> [, (@<ch_list>)]
    :RTD:RESistance[:REfERENCE]? [ (@<ch_list>)]

[SENSe:]TEMPerature:TRANsducer
    :FRTD:TYPE {85|91} [, (@<ch_list>)]
    :FRTD:TYPE? [ (@<ch_list>)]
    :FRTD:RESistance[:REfERENCE] <reference> [, (@<ch_list>)]
    :FRTD:RESistance[:REfERENCE]? [ (@<ch_list>)]

[SENSe:]TEMPerature:TRANsducer
    :THERmistor:TYPE {2252|5000|10000} [, (@<ch_list>)]
    :THERmistor:TYPE? [ (@<ch_list>)]

[SENSe:]
    TEMPerature:NPLC {0.02|0.2|1|2|10|20|100|200|MIN|MAX} [, (@<ch_list>)]
    TEMPerature:NPLC? [ { (@<ch_list>)|MIN|MAX}]

```

**S** This command redefines the scan list when executed.  
Default parameters are shown in **bold**.

## Voltage Configuration Commands

(see page 223 in the User's Guide)

```
S CONFigure
:VOLTage:DC [ {<range>|AUTO|MIN|MAX|DEF}
[ ,<resolution>|MIN|MAX|DEF] ] , ( @<scan_list> )
CONFigure? [ ( @<ch_list> ) ]

[SENSe:]
VOLTage:DC:RANGe {<range>|MIN|MAX} [ , ( @<ch_list> ) ]
VOLTage:DC:RANGe? [ { ( @<ch_list> ) |MIN|MAX} ]
VOLTage:DC:RANGe:AUTO {OFF|ON} [ , ( @<ch_list> ) ]
VOLTage:DC:RANGe:AUTO? [ ( @<ch_list> ) ]

[SENSe:]
VOLTage:DC:RESolution {<resolution>|MIN|MAX} [ , ( @<ch_list> ) ]
VOLTage:DC:RESolution? [ { ( @<ch_list> ) |MIN|MAX} ]

[SENSe:]
VOLTage:DC:APERTure {<time>|MIN|MAX} [ , ( @<ch_list> ) ]
VOLTage:DC:APERTure? [ { ( @<ch_list> ) |MIN|MAX} ]

[SENSe:]
VOLTage:DC:NPLC {0.02|0.2|1|2|10|20|100|200|MIN|MAX} [ , ( @<ch_list> ) ]
VOLTage:DC:NPLC? [ { ( @<ch_list> ) |MIN|MAX} ]

INPut
:IMPedance:AUTO {OFF|ON} [ , ( @<ch_list> ) ]
:IMPedance:AUTO? [ ( @<ch_list> ) ]

[SENSe:]
ZERO:AUTO {OFF|ONCE|ON} [ , ( @<ch_list> ) ]
ZERO:AUTO? [ ( @<ch_list> ) ]

S CONFigure
:VOLTage:AC [ {<range>|AUTO|MIN|MAX|DEF}
[ ,<resolution>|MIN|MAX|DEF] ] , ( @<scan_list> )
CONFigure? [ ( @<ch_list> ) ]

[SENSe:]
VOLTage:AC:RANGe {<range>|MIN|MAX} [ , ( @<ch_list> ) ]
VOLTage:AC:RANGe? [ { ( @<ch_list> ) |MIN|MAX} ]
VOLTage:AC:RANGe:AUTO {OFF|ON} [ , ( @<ch_list> ) ]
VOLTage:AC:RANGe:AUTO? [ ( @<ch_list> ) ]

[SENSe:]
VOLTage:AC:BANDwidth {3|20|200|MIN|MAX} [ , ( @<ch_list> ) ]
VOLTage:AC:BANDwidth? [ { ( @<ch_list> ) |MIN|MAX} ]
```

**S** This command redefines the scan list when executed.  
Default parameters are shown in **bold**.

## Resistance Configuration Commands

(see page 224 in the User's Guide)

```

S CONFigure
    :RESistance [{<range>|AUTO|MIN|MAX|DEF}
        [, <resolution>|MIN|MAX|DEF}], ] (@<scan_list>)
CONFigure? [ (@<ch_list>)]

[SENSe:]
    RESistance:RANGe {<range>|MIN|MAX} [, (@<ch_list>)]
    RESistance:RANGe? [{ (@<ch_list>)|MIN|MAX}]
    RESistance:RANGe:AUTO {OFF|ON} [, (@<ch_list>)]
    RESistance:RANGe:AUTO? [ (@<ch_list>)]

[SENSe:]
    RESistance:RESolution {<resolution>|MIN|MAX} [, (@<ch_list>)]
    RESistance:RESolution? [{ (@<ch_list>)|MIN|MAX}]
    RESistance:APERTure {<time>|MIN|MAX} [, (@<ch_list>)]
    RESistance:APERTure? [{ (@<ch_list>)|MIN|MAX}]
    RESistance:NPLC {0.02|0.2|1|2|10|20|100|200|MIN|MAX} [, (@<ch_list>)]
    RESistance:NPLC? [{ (@<ch_list>)|MIN|MAX}]

[SENSe:]
    RESistance:OCOMPensated {OFF|ON} [, (@<ch_list>)]
    RESistance:OCOMPensated? [ (@<ch_list>)]

S CONFigure
    :FRESistance [{<range>|AUTO|MIN|MAX|DEF}
        [, <resolution>|MIN|MAX|DEF}], ] (@<scan_list>)
CONFigure? [ (@<ch_list>)]

[SENSe:]
    FRESistance:RANGe {<range>|MIN|MAX} [, (@<ch_list>)]
    FRESistance:RANGe? [{ (@<ch_list>)|MIN|MAX}]
    FRESistance:RANGe:AUTO {OFF|ON} [, (@<ch_list>)]
    FRESistance:RANGe:AUTO? [ (@<ch_list>)]

[SENSe:]
    FRESistance:RESolution {<resolution>|MIN|MAX} [, (@<ch_list>)]
    FRESistance:RESolution? [{ (@<ch_list>)|MIN|MAX}]
    FRESistance:APERTure {<time>|MIN|MAX} [, (@<ch_list>)]
    FRESistance:APERTure? [{ (@<ch_list>)|MIN|MAX}]
    FRESistance:NPLC {0.02|0.2|1|2|10|20|100|200|MIN|MAX} [, (@<ch_list>)]
    FRESistance:NPLC? [{ (@<ch_list>)|MIN|MAX}]

[SENSe:]
    FRESistance:OCOMPensated {OFF|ON} [, (@<ch_list>)]
    FRESistance:OCOMPensated? [ (@<ch_list>)]

```

**S** *This command redefines the scan list when executed.  
Default parameters are shown in **bold**.*

## Current Configuration Commands

(see page 224 in the User's Guide)

Valid only on channels 21 and 22 on the 34901A multiplexer module.

```
S CONFigure
    :CURRENT:DC [{<range>|AUTO|MIN|MAX|DEF}
        [, <resolution>|MIN|MAX|DEF]], ] (@<scan_list>)
CONFigure? [{(@<ch_list>)]

[SENSe:]
    CURRENT:DC:RANGe {<range>|MIN|MAX} [, (@<ch_list>)]
    CURRENT:DC:RANGe? [{(@<ch_list>)|MIN|MAX}]
    CURRENT:DC:RANGe:AUTO {OFF|ON} [, (@<ch_list>)]
    CURRENT:DC:RANGe:AUTO? [{(@<ch_list>)]

[SENSe:]
    CURRENT:DC:RESolution {<resolution>|MIN|MAX} [, (@<ch_list>)]
    CURRENT:DC:RESolution? [{(@<ch_list>)|MIN|MAX}]

[SENSe:]
    CURRENT:DC:APERture {<time>|MIN|MAX} [, (@<ch_list>)]
    CURRENT:DC:APERture? [{(@<ch_list>)|MIN|MAX}]

[SENSe:]
    CURRENT:DC:NPLC {0.02|0.2|1|2|10|20|100|200|MIN|MAX} [, (@<ch_list>)]
    CURRENT:DC:NPLC? [{(@<ch_list>)|MIN|MAX}]

S CONFigure
    :CURRENT:AC [{<range>|AUTO|MIN|MAX|DEF}
        [, <resolution>|MIN|MAX|DEF]], ] (@<scan_list>)
CONFigure? [{(@<ch_list>)]

[SENSe:]
    CURRENT:AC:RANGe {<range>|MIN|MAX} [, (@<ch_list>)]
    CURRENT:AC:RANGe? [{(@<ch_list>)|MIN|MAX}]
    CURRENT:AC:RANGe:AUTO {OFF|ON} [, (@<ch_list>)]
    CURRENT:AC:RANGe:AUTO? [{(@<ch_list>)]

[SENSe:]
    CURRENT:AC:BANDwidth {3|20|200|MIN|MAX} [, (@<ch_list>)]
    CURRENT:AC:BANDwidth? [{(@<ch_list>)|MIN|MAX}]
```

**S** This command redefines the scan list when executed.  
Default parameters are shown in **bold**.

## Frequency and Period Configuration Commands

(see page 214 in the User's Guide)

```

S CONFIGure
    :FREQuency [ {<range>|AUTO|MIN|MAX|DEF}
        [ ,<resolution>|MIN|MAX|DEF} ] , ] (@<scan_list>)
CONFIGure? [ (@<ch_list>) ]

[SENSe:]
    FREQuency:VOLTage:RANGe {<range>|MIN|MAX} [ , (@<ch_list>) ]
    FREQuency:VOLTage:RANGe? [ { (@<ch_list>) |MIN|MAX} ]
    FREQuency:VOLTage:RANGe:AUTO {OFF|ON} [ , (@<ch_list>) ]
    FREQuency:VOLTage:RANGe:AUTO? [ (@<ch_list>) ]

[SENSe:]
    FREQuency:APERTure {0.01|0.1|1|MIN|MAX} [ , (@<ch_list>) ]
    FREQuency:APERTure? [ { (@<ch_list>) |MIN|MAX} ]

[SENSe:]
    FREQuency:RANGe:LOWer {3|20|200|MIN|MAX} [ , (@<ch_list>) ]
    FREQuency:RANGe:LOWer? [ { (@<ch_list>) |MIN|MAX} ]

S CONFIGure
    :PERiod [ {<range>|AUTO|MIN|MAX|DEF}
        [ ,<resolution>|MIN|MAX|DEF} ] , ] (@<scan_list>)
CONFIGure? [ (@<ch_list>) ]

[SENSe:]
    PERiod:VOLTage:RANGe {<range>|MIN|MAX} [ , (@<ch_list>) ]
    PERiod:VOLTage:RANGe? [ { (@<ch_list>) |MIN|MAX} ]
    PERiod:VOLTage:RANGe:AUTO {OFF|ON} [ , (@<ch_list>) ]
    PERiod:VOLTage:RANGe:AUTO? [ (@<ch_list>) ]

[SENSe:]
    PERiod:APERTure {0.01|0.1|1|MIN|MAX} [ , (@<ch_list>) ]
    PERiod:APERTure? [ { (@<ch_list>) |MIN|MAX} ]

```

**S** This command redefines the scan list when executed.  
Default parameters are shown in **bold**.

## Mx+B Scaling Commands

(see page 244 in the User's Guide)

```
CALCulate
:SCALE:GAIN <gain> [ , (@<ch_list>) ]
:SCALE:GAIN? [ (@<ch_list>) ]
:SCALE:OFFSET <offset> [ , (@<ch_list>) ]
:SCALE:OFFSET? [ (@<ch_list>) ]
:SCALE:UNIT <quoted_string> [ , (@<ch_list>) ]
:SCALE:UNIT? [ (@<ch_list>) ]

CALCulate:SCALE:OFFSET:NULL [ (@<ch_list>) ]

CALCulate
:SCALE:STATE {OFF|ON} [ , (@<ch_list>) ]
:SCALE:STATE? [ (@<ch_list>) ]
```

## Alarm Limit Commands

(see page 247 in the User's Guide)

```
OUTPut
:ALARm[1|2|3|4]:SOURce (@<ch_list>)
:ALARm[1|2|3|4]:SOURce?

CALCulate
:LIMit:UPPer <hi_limit> [ , (@<ch_list>) ]
:LIMit:UPPer? [ (@<ch_list>) ]
:LIMit:UPPer:STATE {OFF|ON} [ , (@<ch_list>) ]
:LIMit:UPPer:STATE? [ (@<ch_list>) ]

CALCulate
:LIMit:LOWer <lo_limit> [ , (@<ch_list>) ]
:LIMit:LOWer? [ (@<ch_list>) ]
:LIMit:LOWer:STATE {OFF|ON} [ , (@<ch_list>) ]
:LIMit:LOWer:STATE? [ (@<ch_list>) ]

SYSTem:ALARm?

G OUTPut
:ALARm:MODE {LATCh|TRACk}
:ALARm:MODE?
:ALARm:SLOPe {NEGative|PositiVe}
:ALARm:SLOPe?

OUTPut
:ALARm{1|2|3|4}:CLEar
:ALARm:CLEar:ALL

STATus
:ALARm:CONDition?
:ALARm:ENABle <enable_value>
:ALARm:ENABle?
:ALARm{:EVENT}?
```

| Ch 01     | Ch 02     | Ch 03     | Ch 04 | Ch 05 |
|-----------|-----------|-----------|-------|-------|
| DIO (LSB) | DIO (MSB) | Totalizer | DAC   | DAC   |

```
CALCulate
:COMPare:TYPE {EQUAL|NEQual} [ , (@<ch_list>) ]
:COMPare:TYPE? [ (@<ch_list>) ]
:COMPare:DATA <data> [ , (@<ch_list>) ]
:COMPare:DATA? [ (@<ch_list>) ]
:COMPare:MASK <mask> [ , (@<ch_list>) ]
:COMPare:MASK? [ (@<ch_list>) ]
:COMPare:STATE {OFF|ON} [ , (@<ch_list>) ]
:COMPare:STATE? [ (@<ch_list>) ]
```

**G** This command applies to all channels in the instrument (Global setting). Default parameters are shown in **bold**.

## Digital Input Commands

(see page 255 in the User's Guide)

| Ch 01<br>DIO (LSB) | Ch 02<br>DIO (MSB) | Ch 03<br>Totalizer | Ch 04<br>DAC | Ch 05<br>DAC |
|--------------------|--------------------|--------------------|--------------|--------------|
|--------------------|--------------------|--------------------|--------------|--------------|

**S** CONFIGure:DiGital:BYTE (@<scan\_list>  
 CONFIGure? [ (@<ch\_list>)]  
 [SENSe:]DiGital:DATA: {**BYTE**|WORD}? [ (@<ch\_list>)]

## Totalizer Commands

(see page 256 in the User's Guide)

| Ch 01<br>DIO (LSB) | Ch 02<br>DIO (MSB) | Ch 03<br>Totalizer | Ch 04<br>DAC | Ch 05<br>DAC |
|--------------------|--------------------|--------------------|--------------|--------------|
|--------------------|--------------------|--------------------|--------------|--------------|

**S** CONFIGure:TOTAlize {**READ**|RRESet} , (@<scan\_list>  
 CONFIGure? [ (@<ch\_list>)]  
 [SENSe:]  
 TOTAlize:TYPE {**READ**|RRESet} [ , (@<ch\_list>)]  
 TOTAlize:TYPE? [ (@<ch\_list>)]  
 [SENSe:]  
 TOTAlize:SLOPe {NEGative|**POSitive**} [ , (@<ch\_list>)]  
 TOTAlize:SLOPe? [ (@<ch\_list>)]  
 [SENSe:]TOTAlize:CLear:IMMediate [ (@<ch\_list>)]  
 [SENSe:]TOTAlize:DATA? [ (@<ch\_list>)]

## Digital Output Commands

(see page 258 in the User's Guide)

| Ch 01<br>DIO (LSB) | Ch 02<br>DIO (MSB) | Ch 03<br>Totalizer | Ch 04<br>DAC | Ch 05<br>DAC |
|--------------------|--------------------|--------------------|--------------|--------------|
|--------------------|--------------------|--------------------|--------------|--------------|

SOURce  
 :DiGital:DATA[: {**BYTE**|WORD}] <data> , (@<ch\_list>)  
 :DiGital:DATA[: {**BYTE**|WORD}]? (@<ch\_list>)  
 SOURce:DiGital:STATe? (@<ch\_list>)

## DAC Output Commands

(see page 258 in the User's Guide)

| Ch 01<br>DIO (LSB) | Ch 02<br>DIO (MSB) | Ch 03<br>Totalizer | Ch 04<br>DAC | Ch 05<br>DAC |
|--------------------|--------------------|--------------------|--------------|--------------|
|--------------------|--------------------|--------------------|--------------|--------------|

SOURce  
 :VOLTage <voltage> , (@<ch\_list>)  
 :VOLTage? (@<ch\_list>)

**S** This command redefines the scan list when executed.  
 Default parameters are shown in **bold**.

## Switch Control Commands

(see page 259 in the User's Guide)

```
ROUTe
:CLOSe (@<ch_list>)
:CLOSe:EXCLusive (@<ch_list>)
:CLOSe? (@<ch_list>)

ROUTe
:OPEN (@<ch_list>)
:OPEN? (@<ch_list>)

ROUTe:DONe?

SYSTem:CPON {100|200|300|ALL}
```

## Scan Triggering Commands

(see page 228 in the User's Guide)

```
G TRIGger
:SOURCE {BUS|IMMEDIATE|EXTernal|ALARm1|ALARm2|ALARm3|ALARm4|TIMer}
:SOURCE?

G TRIGger
:TIMer {<seconds>|MIN|MAX}
:TIMer?

G TRIGger
:COUNT {<count>|MIN|MAX|INFIinity}
:COUNT?

*TRG

INITiate

READ?
```

## State Storage Commands

(see page 261 in the User's Guide)

```
*SAV {0|1|2|3|4|5}
*RCL {0|1|2|3|4|5}

MEMory:STATe
:NAME {1|2|3|4|5} [, <name>]
:NAME? {1|2|3|4|5}

MEMory:STATe:DELeTe {0|1|2|3|4|5}

MEMory:STATe
:RECall:AUTO {OFF|ON}
:RECall:AUTO?

MEMory:STATe:VALId? {0|1|2|3|4|5}

MEMory:NStates?
```

**G** This command applies to all channels in the instrument (Global setting).  
Default parameters are shown in **bold**.

## System-Related Commands

(see page 264 in the User's Guide)

```
SYSTem
:DATE <yyyy> , <mm> , <dd>
:DATE?
:TIME <hh> , <mm> , <ss.sss>
:TIME?

FORMat
:READing:TIME:TYPE {ABSolute|RELative}
:READing:TIME:TYPE?

*IDN?

SYSTem:CTYPE? {100|200|300}

DIAGnostic
:POKE:SLOT:DATA {100|200|300} , <quoted_string>
:PEEK:SLOT:DATA? {100|200|300}

DISPlay {OFF|ON}
DISPlay?

DISPlay
:TEXT <quoted_string>
:TEXT?
:TEXT:CLEar

*RST

SYSTem:PRESet

SYSTem:CPON {100|200|300|ALL}

SYSTem:ERRor?

SYSTem:ALARm?

SYSTem:VERSion?

*TST?
```

## Interface Configuration Commands

(see page 269 in the User's Guide)

```
SYSTem:INTerface {GPIB|RS232}

SYSTem:LOCal

SYSTem:REMote

SYSTem:RWLock
```

*Default parameters are shown in **bold**.*

## Status System Commands

(see page 286 in the User's Guide)

```
*STB?
*SRE <enable_value>
*SRE?

STATus
:QUESTionable:CONDition?
:QUESTionable[:EVENT]?
:QUESTionable:ENABle <enable_value>
:QUESTionable:ENABle?

*ESR?
*ESE <enable_value>
*ESE?

STATus
:ALARm:CONDition?
:ALARm[:EVENT]?
:ALARm:ENABle <enable_value>
:ALARm:ENABle?

STATus
:OPERation:CONDition?
:OPERation[:EVENT]?
:OPERation:ENABle <enable_value>
:OPERation:ENABle?

DATA:POINTS
:EVENT:THReshold <num_rdgs>
:EVENT:THReshold?

*CLS

*PSC {0|1}
*PSC?

*OPC
```

## Calibration Commands

(see page 292 in the User's Guide)

```
CALibration?

CALibration:COUNT?

CALibration
:SECure:CODE <new_code>
:SECure:STATe {OFF|ON} , <code>
:SECure:STATe?

CALibration
:STRing <quoted_string>
:STRing?

CALibration
:VALue <value>
:VALue?
```

## Service-Related Commands

(see page 294 in the User's Guide)

```
INSTRument
:DMM {OFF|ON}
:DMM?
:DMM:INSTalled?

DIAGnostic
:DMM:CYCLes?
:DMM:CYCLes:CLEar {1|2|3}

DIAGnostic
:RELay:CYCLes? [ (@<ch_list>)]
:RELay:CYCLes:CLEar [ (@<ch_list>)]

*RST

SYSTEM:PRESet

SYSTEM:CPON {100|200|300|ALL}

SYSTEM:VERSion?

*TST?
```

## IEEE 488.2 Common Commands

```
*CLS

*ESR?
*ESE <enable_value>
*ESE?

*IDN?

*OPC

*OPC?

*PSC {0|1}
*PSC?

*RST

*SAV {0|1|2|3|4|5}
*RCL {0|1|2|3|4|5}

*STB?
*SRE <enable_value>
*SRE?

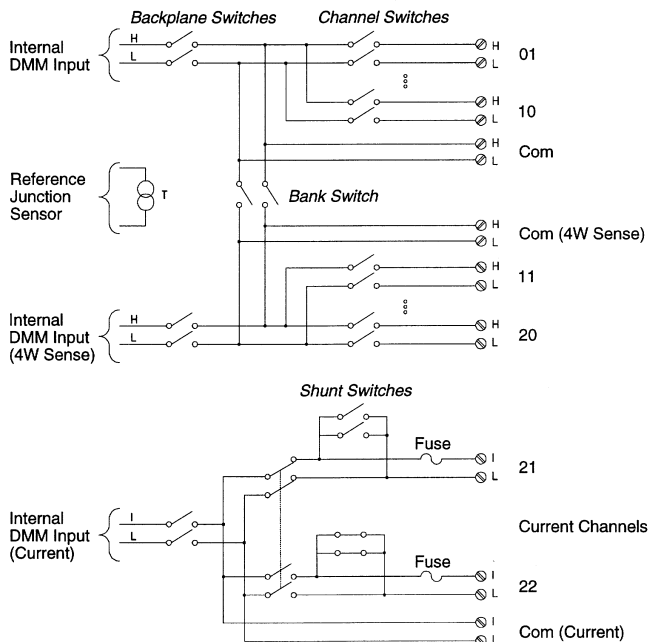
*TRG

*TST?
```

Default parameters are shown in **bold**.

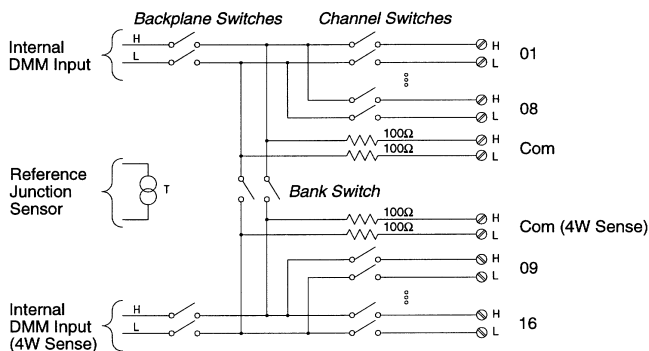
## Agilent 34901A 20-Channel Multiplexer

(see page 164 in the User's Guide)



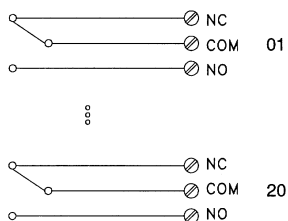
## Agilent 34902A 16-Channel Multiplexer

(see page 166 in the User's Guide)



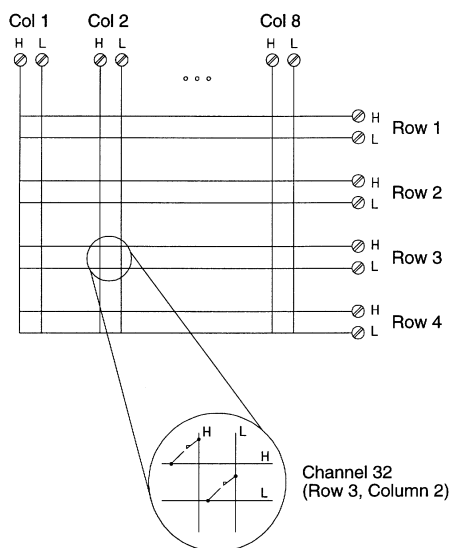
### Agilent 34903A 20-Channel Actuator

(see page 168 in the User's Guide)



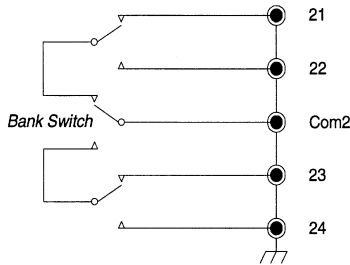
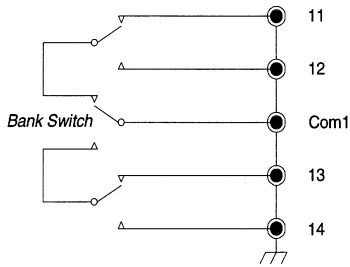
### Agilent 34904A 4x8 Matrix

(see page 170 in the User's Guide)



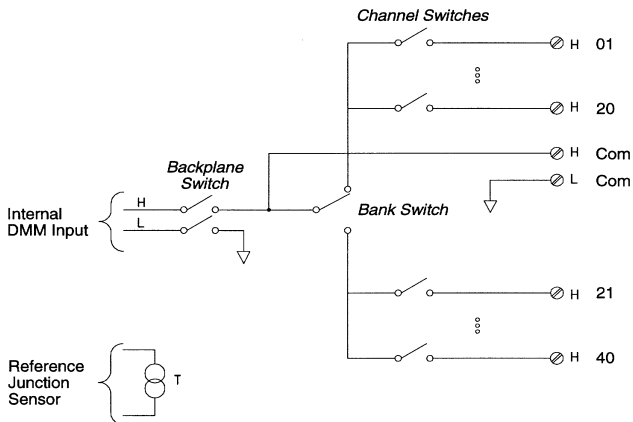
## Agilent 34905A/6A Dual 4-Channel RF Multiplexers

(see page 172 in the User's Guide)



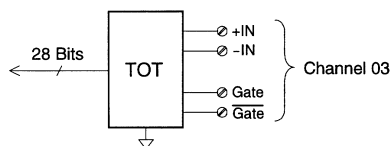
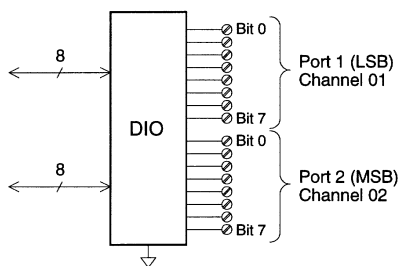
## Agilent 34908A 40-Channel Single-Ended Multiplexer

(see page 174 in the User's Guide)



## Agilent 34907A Multifunction Module

(see page 176 in the User's Guide)



## Factory Reset State

The table below shows the state of the instrument after a FACTORY RESET from the *Sto/Rcl* menu or \*RST command from the remote interface.

|                                  |                                                                |
|----------------------------------|----------------------------------------------------------------|
| <b>Measurement Configuration</b> | <b>Factory Reset State</b>                                     |
| Function                         | DC Volts                                                       |
| Range                            | Autorange                                                      |
| Resolution                       | 5½ digits                                                      |
| Integration Time                 | 1 PLC                                                          |
| Input Resistance                 | 10 M $\Omega$ (fixed for all DCV ranges)                       |
| Channel Delay                    | Automatic Delay                                                |
| Totalizer Reset Mode             | Count Not Reset When Read                                      |
| Totalizer Edge Detect            | Rising Edge                                                    |
| <b>Scanning Operations</b>       | <b>Factory Reset State</b>                                     |
| Scan List                        | Empty                                                          |
| Reading Memory                   | All Readings are Cleared                                       |
| Min, Max, and Average            | All Statistical Data is Cleared                                |
| Scan Interval Source             | Immediate                                                      |
| Scan Interval                    | Front Panel = 10 Seconds                                       |
|                                  | Remote = Immediate                                             |
| Scan Count                       | Front Panel = Continuous                                       |
|                                  | Remote = 1 Scan Sweep                                          |
| Scan Reading Format              | Reading Only (No Units, Channel, Time)                         |
| Monitor in Progress              | Stopped                                                        |
| <b>Mx+B Scaling</b>              | <b>Factory Reset State</b>                                     |
| Gain Factor ("M")                | 1                                                              |
| Scale Factor ("B")               | 0                                                              |
| Scale Label                      | Vdc                                                            |
| <b>Alarm Limits</b>              | <b>Factory Reset State</b>                                     |
| Alarm Queue                      | Not Cleared                                                    |
| Alarm State                      | Off                                                            |
| HI and LO Alarm Limits           | 0                                                              |
| Alarm Output                     | Alarm 1                                                        |
| Alarm Output Configuration       | Latched Mode                                                   |
| Alarm Output State               | Output Lines are Cleared                                       |
| Alarm Output Slope               | Fail = Low                                                     |
| <b>Module Hardware</b>           | <b>Factory Reset State</b>                                     |
| 34901A, 34902A, 34908A           | Reset: All Channels Open                                       |
| 34903A, 34904A                   | Reset: All Channels Open                                       |
| 34905A, 34906A                   | Reset: Channels s11 and s21 Selected                           |
| 34907A                           | Reset: Both DIO Ports = Input, Count = 0,<br>Both DACs = 0 Vdc |
| <b>System-Related Operations</b> | <b>Factory Reset State</b>                                     |
| Display State                    | On                                                             |
| Error Queue                      | Errors Not Cleared                                             |
| Stored States                    | No Change                                                      |

