

# Signal Sources Selection Guide

## Signal Sources

FLUKE®

Fluke offers a range of function, pulse/function and universal waveform generators that are designed to meet your requirements and stay within your

budget. Whether you require a simple LF function generator, or a powerful multi-channel arb, we have a product designed with you in mind.



|                                             | Function Generators |             |                                | Universal Waveform Generators                |                                              |                                              |
|---------------------------------------------|---------------------|-------------|--------------------------------|----------------------------------------------|----------------------------------------------|----------------------------------------------|
| Model                                       | 80                  | 81          | 271                            | 281                                          | 282                                          | 284                                          |
| Output channels                             | 1                   | 1           | 1                              | 1                                            | 2                                            | 4                                            |
| Maximum amplitude (into 50 $\Omega$ )       | 16 Vpp              | 16 Vpp      | 10 Vpp                         | 10 Vpp                                       | 10 Vpp                                       | 10 Vpp                                       |
| <b>Standard Waveforms</b>                   |                     |             |                                |                                              |                                              |                                              |
| Sine maximum frequency                      | 50 MHz              | 50 MHz      | 10 MHz                         | 16 MHz                                       | 16 MHz                                       | 16 MHz                                       |
| Square maximum frequency                    | 50 MHz              | 50 MHz      | 10 MHz                         | 16 MHz                                       | 16 MHz                                       | 16 MHz                                       |
| Pulse maximum frequency                     | N/A                 | 50 MHz      | 10 MHz                         | 10 MHz                                       | 10 MHz                                       | 10 MHz                                       |
| Pulses                                      | No                  | Single      | Multi-level                    | Pulse Train                                  | Pulse Train                                  | Pulse Train                                  |
| Noise Generator                             | No                  | No          | Random                         | No                                           | No                                           | No                                           |
| Frequency Accuracy                          |                     |             | 10 ppm                         | 10 ppm                                       | 10 ppm                                       | 10 ppm                                       |
| <b>Arbitrary Waveforms</b>                  |                     |             |                                |                                              |                                              |                                              |
| Maximum Sampling Frequency                  |                     |             | 27.48 MS/s                     | 40 MS/s                                      | 40 MS/s                                      | 40 MS/s                                      |
| Waveform length (points)                    |                     |             | 1024                           | 4 - 65536                                    | 4 - 65536                                    | 4 - 65536                                    |
| Waveform memory                             |                     |             | 5 x 1 K blocks                 | 64 k blocks                                  | 64 K                                         | 64 K                                         |
| Vertical resolution                         |                     |             | 10 bits                        | 12 bits                                      | 12 bits                                      | 12 bits                                      |
| Waveform sequencing (max. # of segments)    |                     |             |                                | 16                                           | 16                                           | 16                                           |
| Looping                                     |                     |             | No                             | Yes                                          | Yes                                          | Yes                                          |
| <b>Operating Modes</b>                      |                     |             |                                |                                              |                                              |                                              |
| Triggered                                   | Yes                 | Yes         | Yes                            | Yes                                          | Yes                                          | Yes                                          |
| Gated                                       | Yes                 | Yes         | Yes                            | Yes                                          | Yes                                          | Yes                                          |
| Burst                                       | Yes                 | Yes         | Yes                            | Yes                                          | Yes                                          | Yes                                          |
| Frequency sweep                             | Yes                 | No          | Yes                            | Yes                                          | Yes                                          | Yes                                          |
| Selectable output filter                    |                     |             |                                | 10 MHz Elliptical,<br>10 MHz Bessel,<br>none | 10 MHz Elliptical,<br>10 MHz Bessel,<br>none | 10 MHz Elliptical,<br>10 MHz Bessel,<br>none |
| Modulation source                           |                     |             |                                | External<br>dc-100 kHz                       | External<br>dc-100 kHz                       | External<br>dc-100 kHz                       |
| Modulation                                  | AM, FM              | AM, PWM     | AM, FSK, Tone                  | AM, Tone                                     | AM, Tone, DTMF                               | AM, Tone, DTMF                               |
| Signal summing                              | No                  | No          | No                             | No                                           | No                                           | No                                           |
| VCO/VCA input                               | Yes                 | Yes         | No                             | Yes                                          | Yes                                          | Yes                                          |
| Phase lock to external analog signal        | Yes                 | Yes         | No                             | No                                           | No                                           | No                                           |
| Multi-unit phase lock                       | Yes                 | Yes         | Yes                            | Yes                                          | Yes                                          | Yes                                          |
| <b>General</b>                              |                     |             |                                |                                              |                                              |                                              |
| GPIO interface                              | Yes                 | Yes         | Yes                            | Yes                                          | Yes                                          | Yes                                          |
| RS-232 interface (conventional mode)        | No                  | No          | Yes                            | Yes                                          | Yes                                          | Yes                                          |
| USB                                         | No                  | No          | No                             | No                                           | No                                           | No                                           |
| Ethernet                                    | No                  | No          | No                             | No                                           | No                                           | No                                           |
| Waveform software                           |                     |             | Waveform Mgr.<br>Plus Optional | Waveform Mgr.<br>Plus                        | Waveform Mgr.<br>Plus                        | Waveform Mgr.<br>Plus                        |
| Recommended replacement for obsolete models | HP<br>8116A         | HP<br>8116A | Wavetek<br>29A                 | Wavetek<br>39A                               | Wavetek/Fluke<br>195                         | Wavetek/Fluke<br>195/001                     |

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|                                             | Arbitrary Waveform Generators        |                                      |                                      |                              |                              |
|---------------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|------------------------------|------------------------------|
| Model                                       | 291                                  | 292                                  | 294                                  | 396                          | 397                          |
| Output channels                             | 1                                    | 2                                    | 4                                    | 1                            | 2                            |
| Maximum amplitude (into 50 $\Omega$ )       | 10 Vpp                               | 10 Vpp                               | 10 Vpp                               | 10 Vpp                       | 10 Vpp                       |
| <b>Standard Waveforms</b>                   |                                      |                                      |                                      |                              |                              |
| Sine maximum frequency                      | 40 MHz                               | 40 MHz                               | 40 MHz                               | 50 MHz                       | 50 MHz                       |
| Square maximum frequency                    | 50 MHz                               | 50 MHz                               | 50 MHz                               | 50 MHz                       | 50 MHz                       |
| Pulse maximum frequency                     | 10 MHz                               | 10 MHz                               | 10 MHz                               | 10 MHz                       | 10 MHz                       |
| Pulses                                      | Pulse Train                          | Pulse Train                          | Pulse Train                          | No                           | No                           |
| Noise generator                             | No                                   | No                                   | No                                   | Yes                          | Yes                          |
| Frequency accuracy                          | 10 ppm                               | 10 ppm                               | 10 ppm                               | 1 ppm                        | 1 ppm                        |
| <b>Arbitrary Waveforms</b>                  |                                      |                                      |                                      |                              |                              |
| Maximum sampling frequency                  | 100 MS/s                             | 100 MS/s                             | 100 MS/s                             | 125 MS/s                     | 125 MS/s                     |
| Waveform length (points)                    | 1 M                                  | 1 M                                  | 1 M                                  | 16 to 4 M                    | 16 to 4 M                    |
| Waveform memory                             | Removable compact FLASH card         | Removable compact FLASH card         | Removable compact FLASH card         | 1 MByte memory               | 4 MByte memory               |
| Vertical resolution                         | 12 bit                               | 12 bit                               | 12 bit                               | 14 bits                      | 14 bits                      |
| Waveform sequencing (max. # of segments)    | 1024                                 | 1024                                 | 1024                                 | 4096                         | 4096                         |
| Looping                                     | Yes                                  | Yes                                  | Yes                                  | Yes                          | Yes                          |
| <b>Operating Modes</b>                      |                                      |                                      |                                      |                              |                              |
| Triggered                                   | Yes                                  | Yes                                  | Yes                                  | Yes                          | Yes                          |
| Gated                                       | Yes                                  | Yes                                  | Yes                                  | Yes                          | Yes                          |
| Burst                                       | Yes                                  | Yes                                  | Yes                                  | Yes                          | Yes                          |
| Frequency sweep                             | Yes                                  | Yes                                  | Yes                                  | Yes                          | Yes                          |
| Selectable output filter                    | 40 MHz Elliptic, 20 MHz Bessel, none | 40 MHz Elliptic, 20 MHz Bessel, none | 40 MHz Elliptic, 20 MHz Bessel, none | 50 MHz, 25 MHz, both or none | 50 MHz, 25 MHz, both or none |
| Modulation source                           | External dc-100 kHz                  | External dc-100 kHz                  | External dc-100 kHz                  | Internal dc-200 kHz          | Internal dc-200 kHz          |
| Modulation                                  | AM, SCM, Tone                        | AM, SCM, Tone                        | AM, SCM, Tone                        | AM, FM, FSK, Ramped FSK      | AM, FM, FSK, Ramped FSK      |
| Signal summing                              | Yes                                  | Yes                                  | Yes                                  | No                           | No                           |
| VCO/VCA input                               | Yes                                  | Yes                                  | Yes                                  | No                           | No                           |
| Phase lock to external analog signal        | Yes                                  | Yes                                  | Yes                                  | Yes                          | Yes                          |
| Multi-unit phase lock                       | Yes                                  | Yes                                  | Yes                                  | Yes                          | Yes                          |
| <b>General</b>                              |                                      |                                      |                                      |                              |                              |
| GPIO interface                              | Yes                                  | Yes                                  | Yes                                  | Yes                          | Yes                          |
| RS-232 interface (conventional mode)        | Yes                                  | Yes                                  | Yes                                  | Yes                          | Yes                          |
| USB                                         | Yes                                  | Yes                                  | Yes                                  | Yes                          | Yes                          |
| Ethernet                                    | No                                   | No                                   | No                                   | No                           | Yes                          |
| Waveform software                           | Waveform Mgr. Plus                   | Waveform Mgr. Plus                   | Waveform Mgr. Plus                   | ArbExplorer software         | ArbExplorer software         |
| Recommended replacement for obsolete models |                                      |                                      |                                      | Wavetek 395                  |                              |

**Fluke.** *Keeping your world up and running.*

### Fluke Corporation

PO Box 9090, Everett, WA USA 98206

Fluke Europe B.V.

PO Box 1186, 5602 BD

Eindhoven, The Netherlands

For more information call:

In the U.S.A. (800) 443-5853 or

Fax (425) 446-5116

In Europe/M-East/Africa (31 40) 2 675 200 or

Fax (31 40) 2 675 222

In Canada (800) 36-FLUKE or

Fax (905) 890-6866

From other countries +1 (425) 446-5500 or

Fax +1 (425) 446-5116

Web access: <http://www.fluke.com>

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### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9