

square
one



KLARK TECHNIK

The Square ONE range has been conceived by Klark Teknik to offer audio professionals a range of easily accessible, high-performance audio equipment, which combine no-compromise sonic quality with a feature set containing all the essentials.

Square ONE processors represent the very best of British design and engineering, combined with modern, efficient manufacturing methods, backed by an industry-leading 3-year warranty. Your Square ONE processor will give you the tools you need for professional results, and many years of reliable service.

Square ONE Dynamics

The constantly-changing hardware requirements of technical riders are just one of the many issues audio rental companies and live music venues have to deal with. Having to retain a comprehensive inventory of different

devices, as well as reconfiguring outboard processing racks is a costly, time-consuming task, further complicated by the number of hardware options available. The solution: Klark Teknik Square ONE dynamics.

Eight channels of flexible, configurable, high-performance dynamics processing in one 3U package. The right brand, the right combination, the right investment, every time.

Features

Default Compressor: RMS sensing type.

With both mode switches inactive the compressor behaves in the default Soft Knee and RMS mode. This gives the slowest (and most subtle) feel to the compressor envelopes. The soft knee curvature combines with the adaptive RMS attack and release times to produce gentle envelope curvatures that are ideal for compressing sung vocals but which can still be aggressive enough to limit transients when needed. The knee curvature also reduces the adaptive nature of the RMS detection slightly, providing a little more manual control of the envelope timings than is the case below.

When Hard Knee is activated the compressor operates in a more clinical way with a more defined transition between under threshold and over threshold; this is better suited to limiting style compression. A small amount of soft knee is still retained keeping the sound reasonably natural but no modification of the envelope occurs. This means that attacks are more aggressive, but it also allows the adaptive nature of the RMS detection to operate to its fullest extent. This mode is good for natural sounding limiting of speech.

“Vintage” Compressor: Peak sensing type.

When Hard Knee and Vintage are activated the compressor operates with more precise envelope control and a defined transition between under and over threshold. This mode uses faster peak sensing (not RMS) like many older compressor designs with exponential attack and release. This produces aggressive compression that gives good fast control, and/or limiting, of extremely dynamic material. It can also be used to add colour to low frequency signals making it ideal for controlling instruments like bass guitar.

When Vintage is active alone, the compressor employs a dual time constant, linear attack profile. The soft knee blurring of threshold occurs, (as in RMS mode), however, the effect is greatly accentuated and this produces extremely subtle attack and release curves during the onset of compression that are largely independent of the envelope control settings. As the compressor is driven harder (i.e. signals further over threshold) the soft knee effect reduces, gradually returning manual control of the attack and release times to optimise capture of larger transients etc. Thus,

like the RMS modes, this compressor mode is very adaptive making set up of the envelope controls relatively easy. The peak sensing, however, increases harmonic overtones, which add a “vintage” brightness and sparkle to the programme, producing extremely transparent, lively sounding compression of acoustic instruments.

Broadband frequency-conscious compressor

Setup as per compressor, in either RMS or “VINTAGE” modes. Activate FILTER in wide mode, sweep to desired frequency & apply frequency-dependant compression as required

Hi-Q frequency-conscious compressor (De-esser)

Setup as per compressor, in either RMS or “VINTAGE” modes. Activate FILTER in NARROW mode, sweep to desired frequency & apply frequency-dependant compression as required. Excellent for reducing sibilance or other undesirable artefacts from vocals, or for removing specific resonances from instruments or programme material.

Limiter

Set compressor to “VINTAGE” (peak) mode, hard knee, fastest ATTACK, with the RATIO at infinity to one. Adjust RELEASE to suit programme. Set THRESHOLD for onset of process.

Gate

Switch to “GATE” mode, set THRESHOLD, ATTACK, HOLD, and RELEASE times to suit programme, set attenuation depth using “RANGE” control. Use SIDECHAIN FILTER to “tune” the gate to open at selected frequency - “wide” or “NARROW” modes. The attack characteristic of the gate is exponential. This ensures that, even at extremely fast attack settings, the attack envelope seamlessly blends into the audio waveform, ensuring that undesirable audio artefacts are minimised.

i-TS (intelligent threshold shift)

This operates in conjunction with the gate hold function, to reduce chattering within the gate. Chattering is the undesirable condition that occurs when signals (especially low frequency ones) are very close to the gate threshold. In this situation the gate can become indecisive and repeatedly open and shut on the programme. i-TS ensures that the gate remains open by automatically adjusting the threshold downwards the moment the signal goes over the threshold setting.

When the signal eventually falls below the (new) temporarily adjusted threshold, the i-TS re-sets, ready for the next gate opening. This hysteresis means more decisive operation of the gate, ensuring that gating is rock solid. Attacks start instantly and consistently, even on signals that are only slightly over threshold.

Stereo & multiple-channel operation

Channels can be linked (in all modes) for stereo, or multi-channel operation.

When any number of channels are linked, the linked channels all adopt the mode of the left-hand channel of the linked group. This channel’s settings now control all the members of that group, only the make-up gain and Side chain filter are independent.

Solo Buss

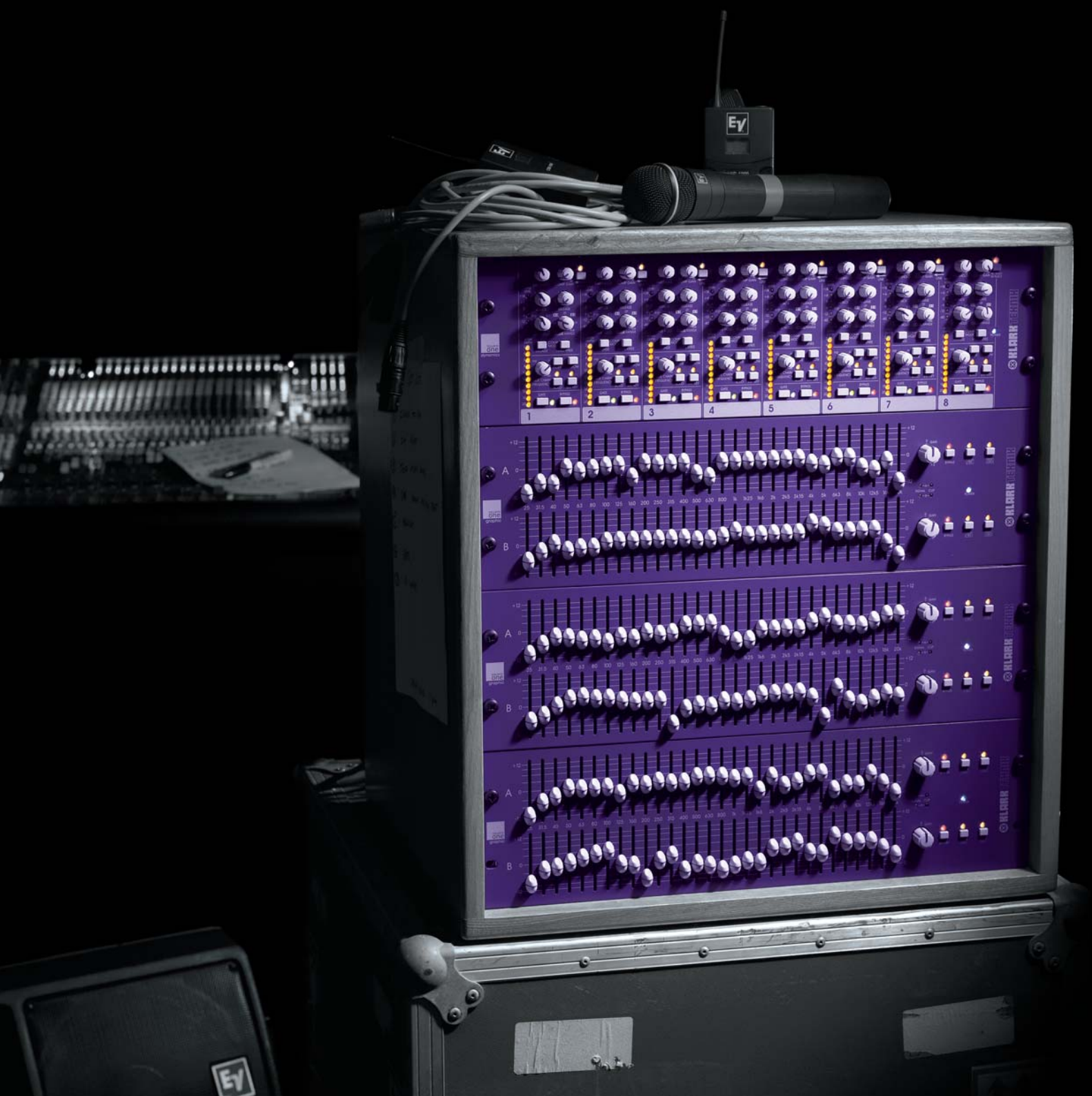
Monitor the sidechain filter during the performance, using the dedicated SOLO OUTPUT. Connect the SOLO OUTPUT to a spare input channel, line return, FX return, etc. on your mixing console. Any SOLO button press will route that processors’ SIDECHAIN MONITOR to the SOLO OUTPUT, allowing monitoring of the sidechain filter without interrupting the audio output of the processor.

If the SOLO IN PLACE mode is active, the SOLO IN PLACE LED will illuminate. In this mode the SIDECHAIN MONITOR signal will replace the audio output when the SOLO button is pressed.

Metering

When mixing live sound, it is essential to be able to see at-a-glance, how the outboard processing is performing. Therefore, each channel of the Square ONE dynamics features a 6-segment 3-colour input meter, and a 10-segment attenuation depth meter. The attenuation depth meter operates in both compressor and gate modes. The use of vertically oriented high-intensity LEDs makes for easy peripheral-vision awareness of each channel’s status.





Square ONE Graphic

Klark Teknik has been designing audio equalisers since 1975, and has an impressive back catalogue, which includes the DN27, DN360 and DN370 three of the industry's finest and longest-established designs.

The Square ONE graphic represents 30-years of Klark Teknik's design expertise, offered at a more accessible price point, bringing superb audio performance within reach of the most budget-sensitive applications.

Features

45mm faders with integral dust guards

Long-throw faders for maximum accuracy and resolution.

Signal present & Clip LEDs

Maximum input capability of +22dBu.

Universal Power Supply

Auto voltage-sensing, operates anywhere between 100-240V \pm 10%.

Fully balanced inputs & Outputs

XLR & TRS connectors, both feature extremely high CMRR.

Relay activated bypass

Continues to pass audio in the event of power failure.

Roadworthy 3U steel chassis

Designed to withstand the rigours of the road.

PROportional Q filters

The "Q" or bandwidth of the Square ONE's filters is proportional to the gain applied, and so gives increasing focus on real problem frequencies. This also means that adjacent filters sum together with minimum phase error, providing smooth, ripple-free summation. This filter mapping is also implemented on the World-leading Klark Teknik DN370, and is the most appropriate for live sound reinforcement.

High Pass Filters

The HPF on graphic equalisers are used to remove unwanted subsonic frequencies (traditionally about 30Hz). The HPF on the Square ONE graphic is set at 80Hz. If using your Square ONE graphic with a large speaker system, then you will almost certainly be using an active crossover, which should provide appropriate subsonic protection. In this case, leave the HPF out of circuit.

When using more compact loudspeakers, use the 80Hz. knee of the Square ONE HPF for maximising

their headroom and efficiency (If using your Square ONE graphic with foldback loudspeakers which have an extended bass response, the HPF can still be used, in fact, useful results can be obtained by "bending" the knee of the HPF, by boosting the 63Hz fader on the graphic).

Low Pass Filters

The Square ONE graphic's LPF is fixed at 12kHz. This is optimal for stage monitoring applications, both loudspeaker and IEM systems, and will increase available headroom as well as providing HF drivers with some thermal protection against ultrasonic frequencies.

When engaged simultaneously, the Square ONE graphic's HPF & LPF give optimal control of the operating bandwidth of most foldback (floor wedge & IEM) transducer systems.

Square ONE Dynamics

Architects and Engineers Specification.

The Dynamics Processor shall provide eight complete channels of either compression or gating, with push button selection and LED status indication of operational mode on an individual channel basis.

The compressor section on each channel shall provide for adjustment of Threshold, Make-Up Gain, Attack and Release times and Ratio. There shall be push button selection of RMS or Vintage Emulation (Peak) response and push button selection of Soft or Hard knee mode on each channel.

The gate section on each channel shall provide for adjustment of Threshold, Attack, Hold and Release times and Range.

The Threshold, Attack and Release controls shall be operable by the same rotary control knobs in compression and gating modes. Control of Ratio and Range shall be performed using the same rotary control knob. There shall be individual rotary control knobs for Make-Up Gain and Hold.

Each channel shall have a six-segment input level meter and a ten-segment attenuation depth meter, which will show the gain reduction being applied in both compression and gating modes.

Each channel shall have a sidechain band-pass filter with a rotary control knob for frequency control and shall be enabled by a push button switch. The band-pass filter shall have two different bandwidth settings, selectable by a push button switch. There shall be provision for an external sidechain input selected by the External Key switch with LED status indication.

The Bypass switch shall set the signal path to unity gain on each channel and provide LED status.

Each channel shall have a Solo switch with LED status indication that sends the sidechain signal to the Solo Bus Output connector.

A Solo Bus Input connector shall allow multiple Dynamics units to be chained together to form a common Solo Bus Output.

The Side Chain Solo In Place switch shall have LED status indication and change the function of each Solo switch; when selected the sidechain signal shall be sent to the channel output connector instead of the Solo Bus Output.

The Dynamics Processor shall have the ability to link the operation of any number of adjacent channels, which shall all be summed into the sidechain of the left-hand linked channel which shall control the gain of each of the linked channels. The selection of either compression or gating for the left-hand linked channel shall override the push button settings for all channels linked to it.

A Power On Led shall be provided.

The Dynamics Processor shall meet or exceed the following specifications:

Distortion
(THD+N) <0.02% @ 1kHz, +4dBu

Frequency response
±0.5dB (20Hz-20kHz)

Dynamic Range
(20Hz-20kHz unweighted) >117dB

Each channel shall have XLR connectors for the input and output and a 1/4" TRS jack socket for the external side chain input. All audio connections shall be electronically balanced.

The Dynamics Processor shall be 19" standard rack mountable and 3U high.

The Dynamics Processor shall be capable of operating from a 100-240V +/- 10% 50/60Hz a.c. power source.

The Dynamics Processor shall be the Klark Teknik Square ONE Dynamics, and no alternative specification option is available.

Technical Specification

Dynamics Inputs

Type
Impedance (Ω)

Ext Key Inputs

Type
Impedance (Ω)

Solo Bus Input

Type
Impedance (Ω)

Dynamics Outputs

Solo Bus Output
Type
Minimum load impedance
Source impedance
Maximum level

Performance

Frequency response
Distortion (THD+N)
Noise Floor
Dynamic range
Compressor
Threshold (Hard Knee)
Gain
Attack
Release
Ratio

Gate

Threshold
Attack
Release
Hold
Range

Sidechain Bandpass filter

Frequency Range
Slope (Wide)

Terminations

Audio
Power

Power Requirements

Voltage
Consumption

Dimensions

Height
Width
Depth

Weight

Nett
Shipping

Eight

Electronically balanced XLR (pin 2 hot)
10k

Eight

Electronically balanced TRS Jack (Tip hot)
20k

One

Electronically balanced XLR (pin 2 hot)
20k

Eight

One
Electronically balanced XLR (pin 2 hot)
600 Ω
<60 Ω
+22dBu into >2k Ω

20Hz – 20kHz ± 0.5 dBu

<0.02% @ 1kHz, +4 dBu

< -95 dBu @ Unity Gain

(20Hz-20kHz unweighted) >117 dB

-50dB to +25dBu

0dB to +30dB

100us to 20ms

50ms to 2.5s

∞ to 1:1

∞ to 1:1

-50dB to +25dBu

10 μ s to 10ms

2ms to 2s

2ms to 2s

∞ to 0dB

40Hz - 16kHz

6dB per Octave

3-pin XLR and 1/4" TRS jack

3-pin IEC

100V-240V a.c. $\pm 10\%$

<35W

133mm (5.25 inch) – 3U High

482mm (19 inch)

205mm (8 inch)

4.4kg

5.4kg



Square ONE Graphic

Architects and Engineers Specification.

The Graphic Equaliser shall provide ± 12 dB of boost and cut at 30 1/3 octave ISO centre frequencies from 25Hz-20kHz.

A Power On Led shall be provided.

The Graphic Equaliser shall meet or exceed the following performance specifications:

Frequency Response

+/- 0.5dB (20Hz-20kHz)

Distortion

(THD+N) <0.005% @1kHz, +4dBu

Dynamic Range

>112 dB (20Hz-20kHz unweighted)

The Graphic Equaliser shall allow have one fixed second-order high pass filter with an 80Hz corner frequency and one fixed second-order low pass filter per channel with a 12kHz corner frequency.

The Graphic Equaliser shall have an equalisation section by-pass and shall be fail-safe, that is the unit shall return automatically to the by-pass condition in the event of power supply interruption.

The Graphic Equaliser shall use centre-detented slide potentiometers arranged to give a graphical display of frequency plotted against level. The slide potentiometers shall have protective covers to inhibit the ingress of dirt and dust.

All audio connections shall be electronically balanced and use XLR and 1/4" TRS jack connectors.

The Graphic Equaliser shall be capable of operating from a 100-240V +/- 10% 50/60Hz a.c. power source.

The Graphic Equaliser shall be the Klark Teknik Square ONE Graphic, and no alternative specification option is available.

Technical Specification

Inputs

Type
Impedance (Ω)

Two

Electronically balanced (pin 2 hot)
20k

Outputs

Type
Minimum load impedance
Source impedance
Maximum level

Two

Electronically balanced (pin 2 hot)
600 Ω
<60 Ω
+22dBu into >2k Ω

Performance

Frequency response
EQ out
EQ in (flat)
Distortion (THD+N)
Noise Floor
Overload indicator
Gain

± 0.5 dBu
 ± 0.5 dBu
< 0.005% @ 1kHz, +4 dBu
< -90 dBu
+19 dBu
- ∞ to +6dBu

Equalisation

Centre Frequencies

30 Bands

To BS EN ISO 266:1997

Tolerance
Maximum Boost/Cut
High Pass Filter Slope
Low Pass Filter Slope

25Hz-20kHz, 1/3 octave
 $\pm 5\%$
 ± 12 dB
12 dB/octave
12 dB/octave

Terminations

Audio
Power

3-pin XLR and 1/4" TRS jack
3-pin IEC

Power Requirements

Voltage
Consumption

100V-240V a.c. $\pm 10\%$
<25W

Dimensions

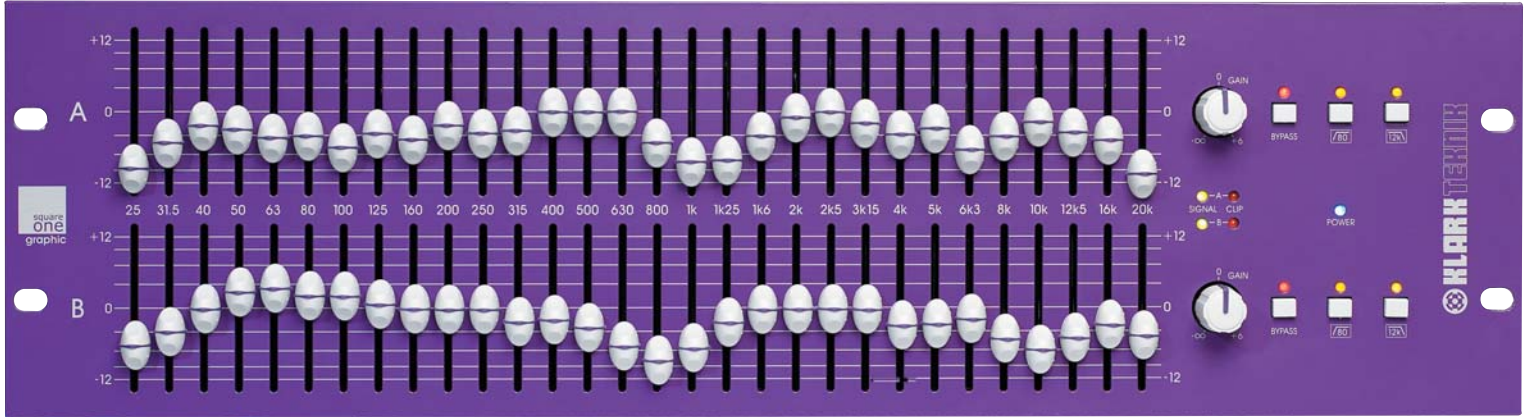
Height
Width
Depth

133mm (5.25 inch) – 3U High
482mm (19 inch)
205mm (8 inch)

Weight

Nett
Shipping

4.4kg
5.4kg





KLARK TEKNIK
SIGNAL PROCESSING BY DEFINITION

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