ARKENS PR

Multipurpose digital protection relay
IEC 61850 - Station Bus

A multipurpose, accurate and scalable protection relay

This cost-effective protective device is used to perform advanced protection, control and monitoring for medium and high voltage applications. **ARKENS PR** offers enhanced features such as diagnostics, advanced communications and security as well.

Relay Selection Table **MV Feeder, HV Line**

FEEDER		PR-F110	PR-F210
21FL	Fault Locator	•	•
25	Check synchronising	•	•
27	Undervoltage	•	•
27	Positive sequence Undervoltage	•	•
32	"Phase directional active / reactive power (Forward / Reverse / Under / Over)"	•	•
32 N / 67 W	Wattmetric earth fault	•	•
37	Undercurrent detection (low load)	•	•
46	Negative sequence overcurrent	•	•
46BC	Broken conductor	•	•
47	Negative sequence overvoltage	•	•
49	Thermal overload	•	•
50BF	Circuit Breaker Failure	•	•
50	Definite time overcurrent	•	•
50N	Neutral/Earth definite time over-current (calculated)	•	•
50G	Neutral/Earth definite time over-current (measured)	•	•
50SOTF	Switch onto Fault	•	•
51	IDMT overcurrent	•	•
51N	Neutral/Earth IDMT overcurrent (calculated)	•	•
51G	Neutral/Earth IDMT overcurrent (measured)	•	•
51V	Voltage Restrained/controlled overcurrent	•	•
68	Inrush blocking	•	•
59	Overvoltage	•	•
59V1	Positive sequence Overvoltage	•	•
59N	Residual overvoltage (mesured or derived)	•	•
67	Directional phase overcurrent	•	•
67N	Ground fault directional	•	•
79	Autoreclose (number of shots)	4	4
80V	Undervoltage blocking of frequen-cy protection	•	•
81O	Overfrequency	•	•
81U	Underfrequency	•	•
81Rf	Rate of change of frequency	-	•
86	Latching output contact	•	•
VTS	VT supervision	•	•
CTS	CT supervision	•	•
74TC	Trip circuit supervision	•	•
CBS	Circuit Breaker supervision (open pole detection)	•	•
/	CB monitoring	•	•
/	Setting Group	2	2

LINE		PR-L100	PR-L111	PR-L112	PR-L213	PR-L214	PR-L313
21	Distance Protection Phase Mho/Quad	•	•	•	-	-	•
21N	Distance Protection Ground Mho/Quad	•	•	•	-	-	•
79	Autoreclose 3 Pole	-	•	•	•	•	•
79	Autoreclose 1 Pole	-	-	•	•	•	•
68	Power Swing Blocking	•	•	•	•	•	•
78	Out-of-step tripping	•	•	•	•	•	•
25	Check synchronising	•	•	•	•	•	•
SOTF	Switch On To Fault	•	•	•	•	•	•
87L	Line Differential 2 Terminal	-	-	-	•	-	•
87L	Line Differential 4 Terminal	-	-	-	-	•	-
87N	Neutral Differential	-	-	-	•	•	•
	2nd harmonic Restraint	•	•	•	•	•	•
50	Definite time overcurrent	•	•	•	•	•	•
50N	Neutral/Earth definite time overcurrent (calculated)	•	•	•	•	•	•
50G	Neutral/Earth definite time overcurrent (measured)	•	•	•	•	•	•
51	IDMT overcurrent	•	•	•	•	•	•
51N	Neutral/Earth IDMT overcurrent (calculated)	•	•	•	•	•	•
51G	Neutral/Earth IDMT overcurrent (measured)	•	•	•	•	•	•
68	Inrush blocking	•	•	•	•	•	•
46	Negative sequence overcurrent	•	•	•	•	•	•
46BC	Broken conductor	•	•	•	•	•	•
67	Directional phase overcurrent	•	•	•	•	•	•
67N	Ground fault directional	•	•	•	•	•	•
32N	Wattmetric earth fault	•	•	•	•	•	•
49	Thermal over load	•	•	•	•	•	•
50BF	Circuit Breaker Failure	•	•	•	•	•	•
LOL	Loss of Life and Through Fault	•	•	•	•	•	•
27	Undervoltage	•	•	•	•	•	•
59	Overvoltage	•	•	•	•	•	•
81O	Overfrequency	•	•	•	•	•	•
80U	Underfrequency	•	•	•	•	•	•
86	Latching output contact	•	•	•	•	•	•
VTS	VT supervision	•	•	•	•	•	•
CTS	CT supervision	•	•	•	•	•	•
74TC	Trip circuit supervision	•	•	•	•	•	•
CBS	Circuit Breaker supervision (open pole detection)	•	•	•	•	•	•
/	CB monitoring	•	•	•	•	•	•
/	Setting Group	2	2	2	2	2	2

Relay Selection Table **Transformer**

TRANSFORMER		PR-T010	PR-T100	PR-T110	PR-T200	PR-T201	PR-T210	PR-T211
90	Voltage Regulation (OLTC)	•	-	•	-	-	•	•
	Three-winding application	-	-	-	-	•	-	•
87T	Transformer Differential	-	-	-	•	•	•	•
87G / 87N / 64	Restricted Earth Fault	-	-	-	•	•	•	•
	Overfluxing/5th harmonic	-	-	-	•	•	•	•
24	Overexcitation	-	-	-	•	•	•	•
	2nd Harmonic Restraint	•	•	•	•	•	•	•
25	Check synchronising	•	•	•	•	•	•	•
27	Undervoltage	•	•	•	•	•	•	•
32	"Phase directional active / reactive power (Forward / Reverse / Under / Over)"	-	-	-	-	-	-	-
46	Negative sequence overcurrent	•	•	•	•	•	•	•
46BC	Broken conductor	•	•	•	•	•	•	•
49	Thermal over load	•	•	•	•	•	•	•
50BF	Circuit Breaker Failure	•	•	•	•	•	•	•
50	Definite time overcurrent	•	•	•	•	•	•	•
50N	Neutral/Earth definite time over-current (calculated)	•	•	•	•	•	•	•
50G	Neutral/Earth definite time over-current (measured)	•	•	•	•	•	•	•
51	IDMT overcurrent	•	•	•	•	•	•	•
51N	Neutral/Earth IDMT overcurrent (calculated)	•	•	•	•	•	•	•
51G	Neutral/Earth IDMT overcurrent (measured)	•	•	•	•	•	•	•
59	Overvoltage	•	•	•	•	•	•	•
64REF	Restricted earth fault	-	-	-	•	•	•	•
67	Directional phase overcurrent	•	•	•	•	•	•	•
67N	Ground fault directional	•	•	•	•	•	•	•
68	Inrush blocking	•	•	•	•	•	•	•
81O	Overfrequency	•	•	•	•	•	•	•
80U	Underfrequency	•	•	•	•	•	•	•
86	Latching output contact	•	•	•	•	•	•	•
LOL	Loss of Life and Through Fault	•	•	•	•	•	•	•
VTS	VT supervision	•	•	•	•	•	•	•
CTS	CT supervision	•	•	•	•	•	•	•
74TC	Trip circuit supervision	•	•	•	•	•	•	•
CBS	Circuit Breaker supervision (open pole detection)	•	•	•	•	•	•	•
/	CB monitoring	•	•	•	•	•	•	•
/	Setting Group	2	2	2	2	2	2	2

Monitoring and measurement :

- Current: Magnitude, Phase, Frequency
- Voltage: Magnitude, Phase, Frequency
- Symetrical components
- Power: P, Q, S
- Current transformer supervision
- Voltage transformer supervision
- Disturbance Recorder: up to 10 analog signals and 64 digital signals @ 3200 Hz

General Features

Intuitive front panel user interface 16 multicolor

320 x 240 LCD screen resolution:
- Mimic diagram fully configurable
- Event log & alarm acknowledgment
- Access rights management
- Measurement / Metering
- I/O cards status
- Control mode
- Settings configuration mode

16 multicolor target LEDs including 14 configurable

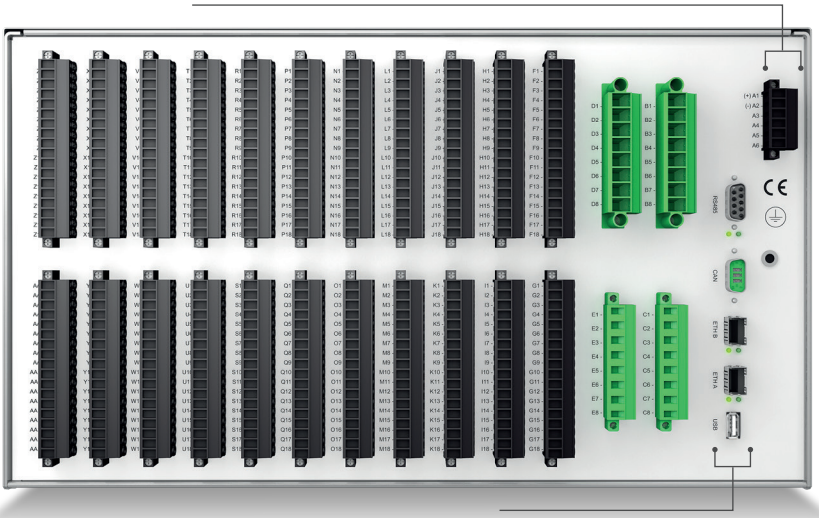
RJ45 Maintenance Port
Max Bitrate 100 Mb / s

Navigation push buttons

4 programmable function pushbuttons & LEDs

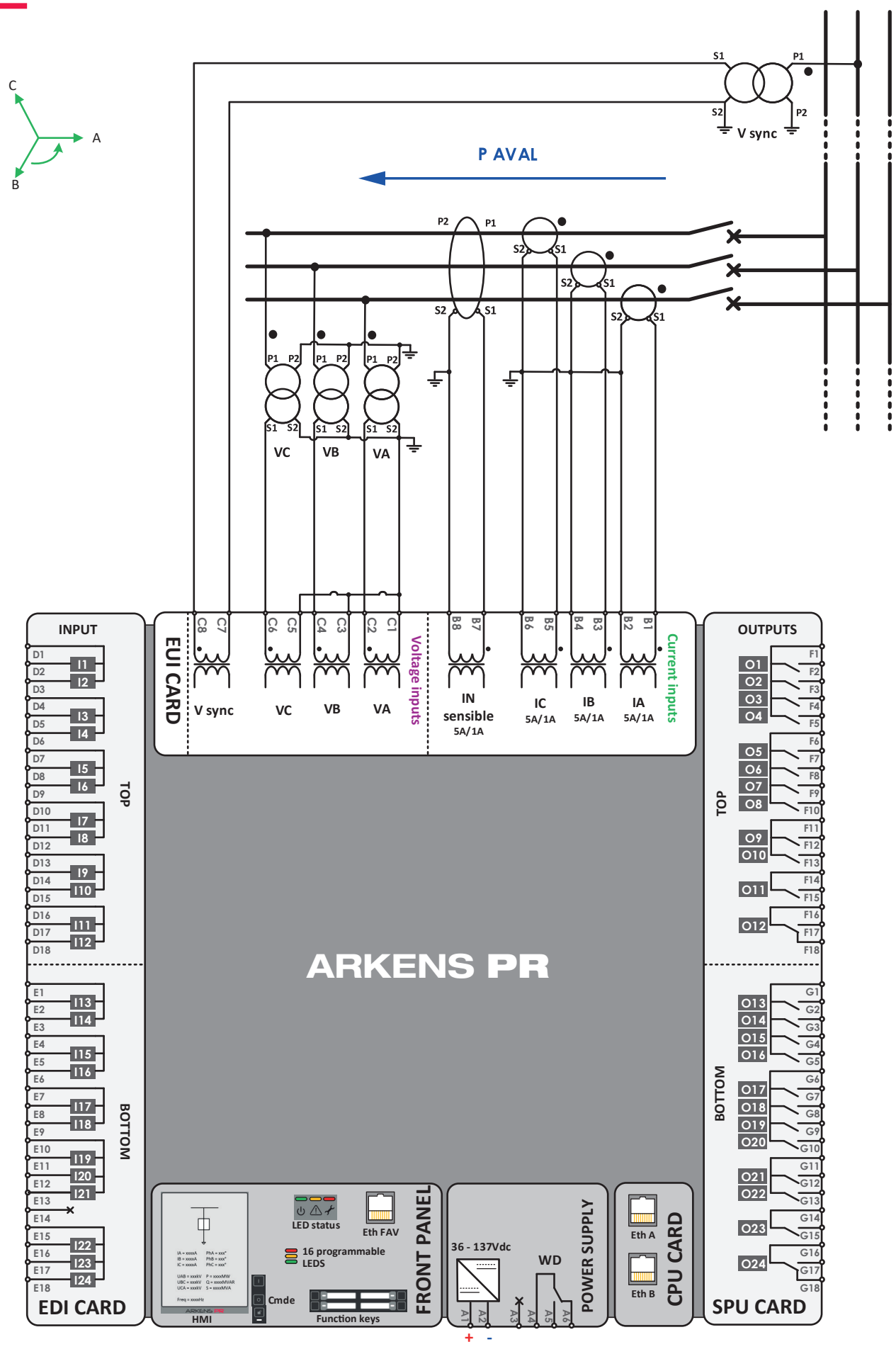
13 available slots for 84TE version model

Power supply: 36 V to 137 VDC
Maximum interruption time without resetting: 50 ms
Ripple in the DC auxilary voltage supply: Max 12 % of the DC value

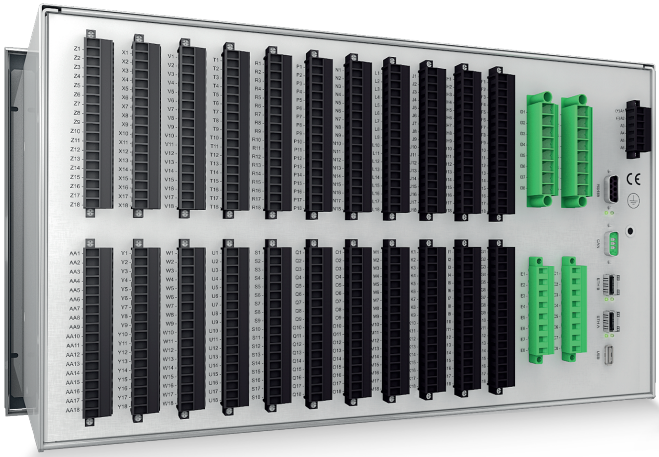


SYF Card : Modular Ethernet ports SFP type
GOOSE MMS : IEC 61850-8-1 Ed 2.1 / PRP : IEC 62439-3 / SNMP / NTP
Bitrates : 10 - 100 - 1,000 Mb / s

Wiring Diagram



Interface cards features



SPU DIGITAL OUTPUT CARD
24 binary outputs
8 A (30 Vdc) / 8 A (250 Vac)
Max 250 A / 30 ms

SPR HIGH SPEED OUTPUD CARD
4 High Speed relays (operating time < 2 ms)
17 Fast relays (operating time < 5 ms)
3 Low Power relays
10 A (48 Vdc) / 4 A (127 Vdc) (except LP relays)
Max 250 A / 30 ms (except LP relays)

EUI MEASUREMENT CARD

Standard current input: 3 x 1 A / 5 A, sensitive current input 1 x 1 A / 5 A, Voltage input x 4

VOLTAGE	RANGE	ACCURACY (1)
Range 1	0 Veff to 28 Veff	< 1 % or 50 mV
Range 2	28 Veff to 104 Veff	0.50 %
Range 2'	50 Veff to 80 Veff	0.25 %
Range 3	104 Veff to 140 Veff	1 %

CURRENT 1/5A	RANGE	ACCURACY (1)
Range 1	0 Aeff to 1 Aeff	<2 % or 5 mA
Range 2	1 Aeff to 7,5 Aeff	0.50 %
Range 3	7,5 Aeff to 150 Aeff	1 %

SENSITIVE CURRENT	RANGE	ACCURACY (1)
Range 1	0 Aeff to 100m Aeff	< 2% or 1 mA
Range 2	100 mAeff to 1 Aeff	0.50 %
Range 3	1 Aeff to 15 Aeff	1 %

EDI / EDC BINARY INPUT CARD
24 binary inputs
Maximum input voltage: 200 Vdc
Selectable thresholds by software configuration: • 48 V configuration: 11 V < threshold < 34 V • 127 V configuration: 29 V < threshold < 79 V
Recognition time < 1 ms
Filtering (1 to 10 ms) and oscillatory detection (2 to 99 changes between 1 to 60 s)
Hysteresis > 0.5 V
In case of EDC card, 3 input are dedicated to capacitive divider (neon indicators)

EII MEASUREMENT CARD

3 PHASE 150AEFF, 3 PHASE 15AEFF AND -20 /+20 MA CURRENT LOOP

CURRENT 1/5A	RANGE	ACCURACY (1)
Range 1	0 Aeff to 1 Aeff	< 2 % or 5 mA
Range 2	1 Aeff to 7.5 Aeff	0.50 %
Range 3	7.5 Aeff to 150 Aeff	1 %

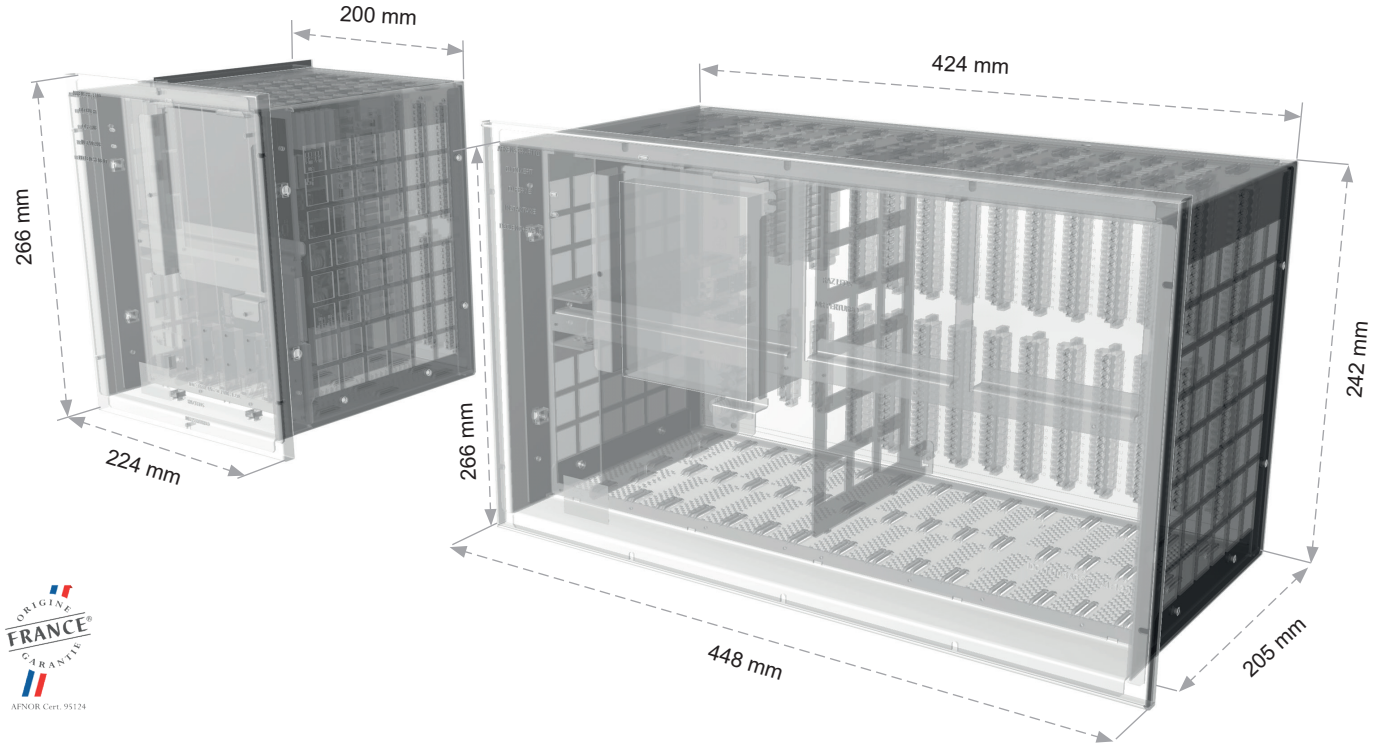
SENSITIVE CURRENT	RANGE	ACCURACY (1)
Range 1	0 Aeff to 100 mAeff	< 2 % or 1 mA
Range 2	100 mAeff to 1 Aeff	0.50 %
Range 3	1 Aeff to 15 Aeff	1 %

BOUCLE DE COURANT	PLAGE	ACCURACY (1)
Range 1	-20 mA to 20 mA	50 µA

(1) in % of injected value

Mechanical features

FEATURES	ARKENS PR 6U - 42 TE	ARKENS PR 6 U - 84 TE
Front panel dimensions	L 224 mm x H 266 mm	L 448 mm x H 266 mm
Housing dimensions	L 200 mm x H 242 mm	L 424 mm x H 242 mm
Depth	205 mm	205 mm
Protection ingress	Front Panel: IP 52 - Others: IP 32	
Shock protection	IK 07	
Weight	7-8 kg	12-14 kg



Quality to sustainable performance

- Our specific design and production process allow us to reduce the impact of our products and systems on the environment (RoHS, Reach, etc.).
- Our products are tested at each manufacturing stage to guarantee a zero fault quality.
- We control the obsolescence of the components in order to design sustainable equipments.

Compliance with standards

- IEC 60255-26
- IEC 61000-6-2
- IEC 61000-6-4
- IEC 61000-4-2
- IEC 61000-4-3
- IEC 61000-4-4
- IEC 61000-4-5
- IEC 61000-4-6
- IEC 61000-4-8
- IEC 61000-4-11
- IEC 61000-4-16
- IEC 61000-4-17
- IEC 61000-4-18
- IEC 61000-4-29
- CISPR 11
- CISPR 22
- IEC 60255-5
- NF EN 60068-2-6
- IEC 60255-21-1
- IEC 60255-21-2
- IEC 60255-21-3
- NF EN 60068-2-2
- NF EN 60068-2-1
- NF EN 60068-2-30
- NF EN 60068-2-14

SCLE SFE Décembre 2021 - CAT_FR_143_SCLE_2.1 (Fiche Arkens PR) - Crédits-photos : Fab&Fab, SCLE - Document non contractuel

L'engagement pour une performance durable

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