



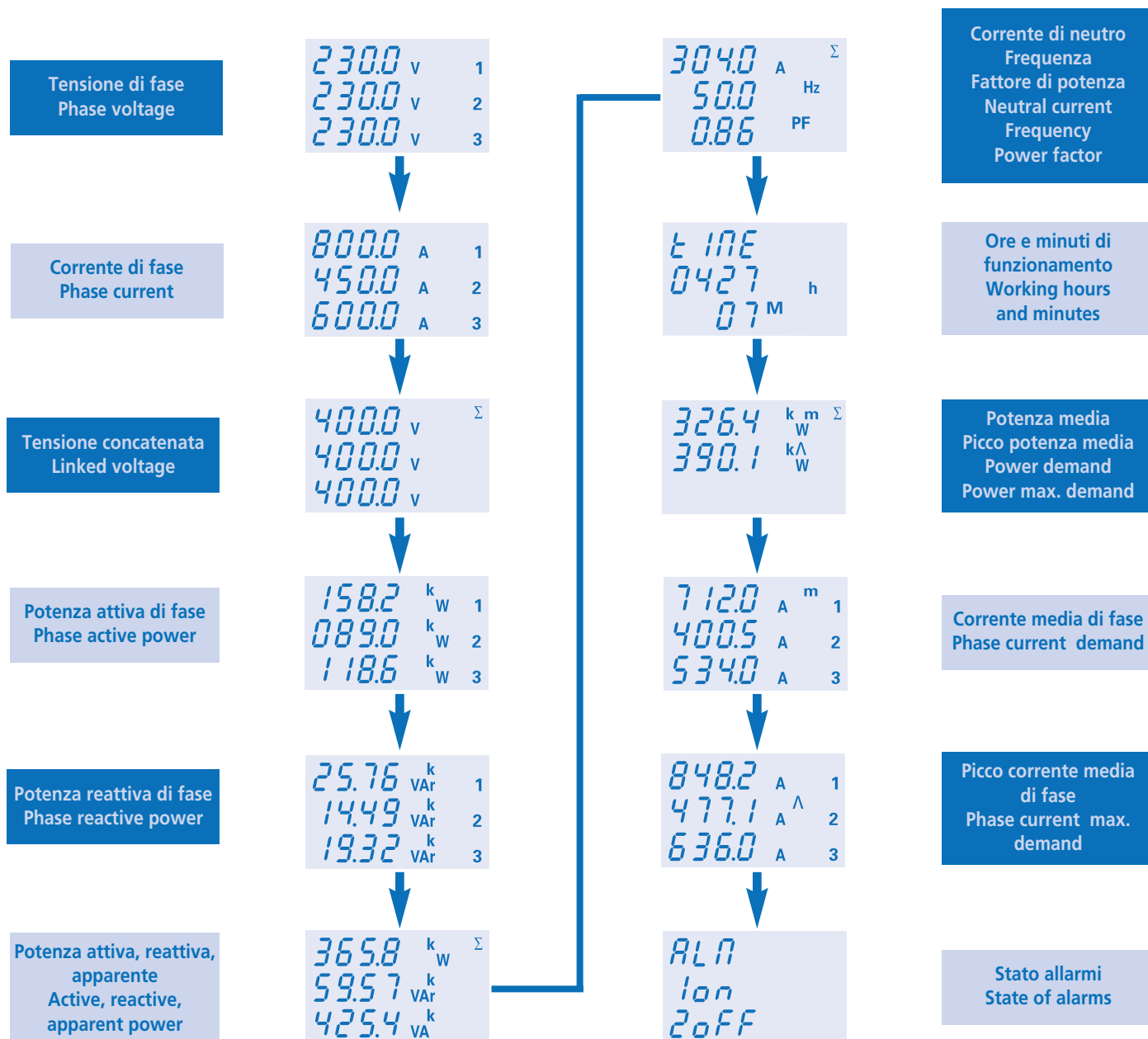
Strumento multifunzione per reti bassa tensione 72x72mm

Network monitor for low voltage 72x72mm

Linea trifase 340...450V (fase - fase)
Linea monofase 195...260V (fase - neutro)
Inserzione su TA dedicati
Primario TA programmabile
Misura in vero valore efficace
Visualizzazione con scansione manuale o automatica
2 Allarmi programmabili
Allarme inversione potenza

Three-phase network 340...450V (phase - phase)
single-phase network 195...260V (phase - neutral)
Connection with dedicated CT
Programmable primary CT
True RMS value measurement
Display with manual or automatic scanning
2 Programmable alarms
Reverse power alarm

Nemo 72-b



	MODELLO MODEL		72-b
	CODICE CODE		MF7G.....A
	NOTA TECNICA TECHNICAL NOTE		NT651
	LINEA NETWORK		bt / LV
INGRESSO INPUT	CONNESSIONE CONNECTION	Monofase / Single-phase	✓
		Trifase, carico equilibrato Three-phase, balanced load	
		Trifase, carico squilibrato Three-phase, unbalanced load	✓
	VALORI NOMINALI RATED VALUE	Tensione (fase-fase) Voltage (phase-phase)	340...450V
		Corrente / Current	1 - 5A
	INGRESSO CORRENTE INPUT CURRENT	TA dedicati (shunt) Dedicated CT (shunt)	✓
		Isolato / Insulated	
	RAPPORTO PROGRAMMABILE PROGRAMMABLE RATIO	TV (kTV) / VT (kVT)	
		TA/CT	Portate / Ranges I _{pn} / I _{sn}
max. kTV x kTA max. kVT x kCT			
Shunt			
VISUALIZZAZIONE DISPLAY	ENERGIA ATTIVA ACTIVE ENERGY	Precisione / Accuracy	
		Positiva, totale e parziale Positive, total and partial	
		Positiva / Positive	
		Negative / Negative	
	ENERGIA REATTIVA REACTIVE ENERGY	Positiva, totale / Positive, total	
		Positiva, parziale/ Positive, partial	
		Negativa, totale / Negative, total	
	TENSIONE VOLTAGE	di Fase e concatenata Phase and linked	✓
	CORRENTE CURRENT	di Fase e di neutro (calcolata) Phase and neutral (computed)	✓
		di Neutro (misurata) Neutral (measured)	
		Media e media massima di fase Phase demand and max. demand	✓
		Ah positivi e negativi Positive and negative Ah	
	FATTORE DI POTENZA POWER FACTOR	Trifase / Three-phase	✓
		Di fase / Phase	
	POTENZA POWER	Attiva, reattiva, apparente Active, reactive, apparent	✓
		Media e media massima Demand and max. demand	✓
		Attiva e reattiva di fase Phase active and reactive	✓
	DISTORSIONE ARMONICA HARMONIC DISTORTION	Corrente / Current	
Tensione / Voltage			
	FREQUENZA / FREQUENCY		✓
	TENSIONE CORRENTE POTENZA C.C / D.C. VOLTAGE CURRENT POWER		
	CONTAORE / RUN HOUR METER		
	SEQUENZA FASI ERRATA / WRONG PHASE SEQUENCE		
USCITE OUTPUT	IMPULSI / PULSES		
	RELE' ALLARMI / ALARM RELAYS		■
	RELE' ALLARMI + INGRESSI DIGITALI / ALARM RELAYS + DIGITAL INPUTS		
	ANALOGICA / ANALOGUE		
COMUNICAZIONE COMMUNICATION	RS232		
	RS485		
	RS485 + MEMORIA / RS485 + MEMORY		
	PROFIBUS		
	LONWORKS		
	M-BUS		
	BACNET		
	ETHERNET		
	DIMENSIONI / DIMENSIONS		72 x 72 x 81mm

CODICI CODE	ALLARMI ALARMS	INGR. TA INPUT CT	INGR. TV INPUT VT	LINEA NETWORK	SCHEMA INSERZIONE WIRING DIAGRAM
MF7GM0009A	-	5A	195(340)...260(450)V	monofase e trifase 4 fili <i>single-phase and three-phase 4-wire</i>	S1000/228 - S1000/227 S1000/286 - S1000/285
MF7GM2009A	2				
MF7GM0008A	-	1A			
MF7GM2008A	2				
MF7GT0009A	-	5A	340...450V	trifase 3 e 4 fili <i>three-phase 3 and 4-wire</i>	S1000/227 - S1000/229 - S1000/230 S1000/285 - S1000/287 - S1000/288
MF7GT2009A	2				
MF7GT0008A	-	1A			
MF7GT2008A	2				

VISUALIZZAZIONE

Tipo display: cristallo liquido retroilluminato

Riduzione automatica della retroilluminazione, dopo 20 sec. di inattività della tastiera

Visualizzazione misure: suddivisa in differenti pagine, con scansione manuale o automatica

DISPLAY

Type of display: LCD backlighted

Automatic backlit reduction after 20s from last key activation

Measurement display: subdivided on various pages, with manual or automatic scanning

PAGINE VISUALIZZAZIONE • DISPLAY PAGES			
pagina page	trifase 4 fili three-phase 4-wire	trifase 3 fili three-phase 3-wire	monofase single-phase
1	Tensione di fase Phase voltage	Corrente di fase Phase current	Tensione - Corrente Voltage - Current
2	Corrente di fase Phase current	Tensione concatenata Linked voltage	Potenza attiva, reattiva, apparente Active, reactive, apparent power
3	Tensione concatenata Linked voltage	Potenza attiva, reattiva, apparente Active, reactive, apparent power	Frequenza - Fattore di potenza Frequency - Power factor
4	Potenza attiva di fase Phase active power	Frequenza - Fattore di potenza Frequency - Power factor	Ore e minuti funzionamento Working hours and minutes
5	Potenza reattiva di fase Phase reactive power	Ore e minuti funzionamento Working hours and minutes	Potenza media - Picco potenza media Power demand - Power Max. demand
6	Potenza attiva, reattiva, apparente Active, reactive, apparent power	Potenza media - Picco potenza media Power demand - Power Max. demand	Corrente media, picco corrente media Current demand, max. current demand
7	Corrente di neutro, frequenza, fattore di potenza Neutral current, frequency, power factor	Corrente media di fase Phase current demand	
8	Ore e minuti funzionamento Working hours and minutes	Picco corrente media di fase Phase current max. demand	
9	Potenza media - Picco potenza media Power demand - Power Max. demand		
10	Corrente media di fase Phase current demand		
11	Picco corrente media di fase Phase current max. demand		

Rilevazione sequenza fasi: segnalazione inserzione errata.

Punti di lettura: 10-000 (4 cifre)

Unità ingegneristica: visualizzazione automatica in funzione dei rapporti TA impostati

Risoluzione: automatica, con il maggior numero di decimali possibili

Contaore: ore e minuti

Aggiornamento lettura: 1,2 secondi

Precisione (sulla lettura)

- Tensione: $\pm 0,5\%$ (340...450V fase - fase)
- Corrente: $\pm 0,5\%$ (10...120% In)
- Corrente di neutro: $\pm 2\%$
- Potenze: $\pm 1\%$ P - $\pm 2\%$ Q / S (10...120% Pn/Qn/Sn cos φ 0,5 ind...0,5cap)
- Fattore di potenza: $\pm 2\%$
- Frequenza: $\pm 0,2$ Hz

Voltage sequence diagnostic: wrong connection reporting

N° of display points: 10-000 (4 digits)

Engineering units: automatic display according to the set CT ratios

Resolution: automatic, with the highest possible number of decimals

Run hour meter: hours and minutes

Reading update: 1,2 seconds

Accuracy (of the reading)

- Voltage: $\pm 0,5\%$ (340...450V phase - phase)
- Current: $\pm 0,5\%$ (10...120% In)
- Neutral current: $\pm 2\%$
- Power: $\pm 1\%$ P - $\pm 2\%$ Q / S (10...120% Pn/Qn/Sn cos φ 0,5 ind...0,5cap)
- Power factor: $\pm 2\%$
- Frequency: $\pm 0,2$ Hz

CORRENTE MEDIA - POTENZA MEDIA

Visualizzazione: corrente e potenza attiva media, valore massimo corrente e potenza media

Tempo di media: unico per corrente e potenza

Valori selezionabile: 5/8/10/15/20/30/60 minuti

Calcolo: media fissa sul periodo selezionato

Azzeramento valore massimo: manuale, da tastiera

CURRENT DEMAND - POWER DEMAND

Display: Current and active power demand, max. current demand and max. power demand

Averaging period: only for current and power

Value selectable: 5/8/10/15/20/30/60 minutes

Calculation: average on the selected period

Max. demand reset: by keyboard

PROGRAMMAZIONE

Programmazione parametri: tastiera frontale, 2 tasti
Accesso alla programmazione: combinazione di tasti
Memorizzazione dati e parametri di configurazione: memoria permanente (senza batteria)

PARAMETRI PROGRAMMABILI

Visualizzazione: scansione manuale o automatica
Scansione manuale: cambio pagine agendo sulla tastiera.
All'accensione lo strumento visualizza l'ultima pagina selezionata
Scansione automatica: cambio pagine automatico
Connessione: rete monofase - trifase 3 e 4 fili
Primario TA esterno: vedi tabelle

Correnti primarie programmabili (1A) • <i>Selectable primary current (1A)</i>															
1						2			3		4	5	6		8
10	12		14	15	16	20	24	25	30	32	40	50	60	75	80
100	120	125	140	150	160	200	240	250	300	320	400	500	600	640	800
1000	1200		1400	1500	1600										

Correnti primarie programmabili (5A) • <i>Selectable primary current (5A)</i>																
5						10				15		20	25	30		40
50	60		70	75	80	100	120	125	150	160	200	250	300			400
500	600		700	750	800	1000	1200	1250	1500	1600	2000	2500	3000	3200		4000
5000	6000		7000	7500	8000											

Corrente - Potenza media: tempo di media, azzeramento valore massimo
Contaore: azzeramento

INGRESSO

Rete monofase e trifase 4 fili (MF7GM)
Trifase 3 e 4 fili (MF7GT)
Tensione trifase: 340...450V (fase-fase)
Tensione monofase: 195...260V
Corrente nominale In: 5A oppure 1A
Sovraccarico permanente: 1,2In
Sovraccarico istantaneo: 20In / 0,5 secondi
Inserzione su trasformatori di corrente dedicati
Gli ingressi hanno un punto comune
Frequenza nominale fn: 50Hz
Variazione ammessa: 47...63Hz
Tipo di misura: vero valore efficace
Contenuto armonico: fino alla 21ª armonica
Autoconsumo tensione misura: ≤ 0,5VA (per fase)
Autoconsumo corrente: ≤ 0,5VA (per fase)

ALIMENTAZIONE AUSILIARIA

Derivata dalla misura, autoalimentato: L(1) - N (mod. MF7GM)
Derivata dalla misura, autoalimentato: L1 - L2 (mod. MF7GT)
Autoconsumo: ≤ 2VA - ≤ 2,5VA (con allarmi)

ISOLAMENTO (EN/IEC 61010-1)

Categoria di installazione: III
Grado di inquinamento: 2
Tensione di riferimento per l'isolamento: 300V
Prova a tensione alternata 2kV valore efficace 50Hz/1min
Circuiti considerati: misura / uscita relè 1 / uscita relè 2
Prova a tensione alternata 4kV valore efficace 50Hz/1min
Circuiti considerati: tutti i circuiti e massa (involucro)

PROVE DI COMPATIBILITA' ELETTROMAGNETICA

Prova di emissione in accordo con EN/IEC 61326-1
Prove di immunità in accordo con EN/IEC 61326-1

PROGRAMMING

Parameters programming: front keyboard, 2 keys
Programming access: key combination
Data and configuration parameters retention: non volatile memory (no battery)

PROGRAMMABLE PARAMETERS

Display: manual or automatic scanning
Manual scanning: page change using the keyboard.
At the turning on, the meter displays the last selected page
Automatic scanning: automatic page change
Connection: single-phase - three-phase 3 and 4 wire
External CT primay: see tables

Current - Power max. demand: averaging time, max. demand reset
Working hours: reset

INPUT

Single-phase and three-phase 4-wire network (MF7GM)
Three-phase 3 and 4-wire network (MF7GT)
Three-phase voltage: 340...450V (phase-phase)
Single-phase voltage: 195...260V
Current rating In: 5A or 1A
Continuous overload: 1,2In
Instantaneous overload: 20In/0,5 seconds
Connection with external dedicated current transformer
Inputs have a common point
Frequency rating fn: 50Hz
Tolerance: 47...63Hz
Type of measurement: true RMS
Harmonic content: up to the 21st harmonic
Measuring voltage rated burden: ≤ 0,5VA (each phase)
Current rated burden: ≤ 0,5VA (each phase)

AUXILIARY SUPPLY

Taken from measurement, selfsupplied: L(1) - N (mod. MF7GM)
Taken from measurement, selfsupplied: L1 - L2 (mod. MF7GT)
Rated burden: ≤ 2VA - ≤ 2,5VA (with alarms)

INSULATION (EN/IEC 61010-1)

Installation category: III
Pollution degree: 2
Insulation voltage rating: 300V
A.C. voltage test 2kV r.m.s.value 50Hz/1min
Considered circuits: measuring / relay output 1 / relay output 2
A.C. voltage test 4kV r.m.s. value 50Hz/1min
Considered circuits: all circuits and earth (enclosure)

TESTS FOR ELETROMAMAGNETIC COMPATIBILITY

Emission tests according to EN/IEC 61326-1
Immunity tests according to EN/IEC 61326-1

ALLARMI

2 allarmi indipendenti e isolati, programmabili singolarmente
Grandezza associata: vedi tabella in accordo con il tipo di inserzione programmato sullo strumento
Tipo allarme: minima o massima
Isteresi: 0...99%
Ritardo intervento: 0...99s
Uscita: 2 relè con contatto SPST-NO libero da potenziale
Portata contatti: 5A 250Vca cosφ 1 - 3A 250Vca cosφ 0,4 - 5A 30Vcc
Relè normalmente diseccitati
Segnalazione intervento allarme: visualizzazione "ALM on"
Stato allarmi: visualizzazione accessibile da tastiera

Grandezza Associata / Associated Quantity		1n1E	3-2E	3n3E
U1	Tensione fase L1 / Phase voltage L1			=
U2	Tensione fase L2 / Phase voltage L2			=
U3	Tensione fase L3 / Phase voltage L3			=
U1	Tensione / Voltage	=		
A1	Corrente fase L1 / Phase current L1		=	=
A2	Corrente fase L2 / Phase current L2		=	=
A3	Corrente fase L3 / Phase current L3		=	=
A1	Corrente / Current	=		
U12	Tensione concatenata L1 - L2 / Linked voltage L1 - L2		=	=
U23	Tensione concatenata L2 - L3 / Linked voltage L2 - L3		=	=
U31	Tensione concatenata L3 - L1 / Linked voltage L3 - L1		=	=
P1	Potenza attiva fase L1 / Phase active power L1			=
P2	Potenza attiva fase L2 / Phase active power L2			=
P3	Potenza attiva fase L3 / Phase active power L3			=
VAr1	Potenza reattiva fase L1 / Phase reactive power L1			=
VAr2	Potenza reattiva fase L2 / Phase reactive power L2			=
VAr3	Potenza reattiva fase L3 / Phase reactive power L3			=
P	Potenza attiva / Active power	=	=	=
VAr	Potenza reattiva / Reactive power	=	=	=
PF	Fattore di potenza / Power factor	=	=	=
FrEq	Frequenza / Frequency	=	=	=
retP	Inversione potenza ¹ / Reverse power ¹	=	=	=

¹ allarme associato alla inversione della potenza.

La soglia impostata si riferisce al valore della potenza negativa

CONDIZIONI AMBIENTALI

Temperatura di riferimento: 23°C ± 2°C
Campo di funzionamento specificato: -5...55°C
Campo limite per l'immagazzinamento e trasporto: -25...70°C
Variazione indice di classe: ≤ 0,1% /°C
Adatto all'utilizzo in climi tropicali
Massima potenza dissipata¹: ≤ 6,8W
¹ Per il dimensionamento termico dei quadri

CUSTODIA

Custodia: incasso (foratura pannello 68x68mm)
Frontale: 72x72mm
Profondità: 81mm
Portata morsetti: cavo rigido min.0,05mm ² / max. 4mm ² cavo flessibile min.0,05mm ² / max. 2,5mm ²
Portata morsetti relè: cavo rigido max.4,5mm ² cavo flessibile max.2,4mm ²
Materiale custodia: makrolon autoestinguente
Grado di protezione (EN60529): IP54 frontale, IP20 morsetti
Peso: 250 grammi

ALARMS

2 allarmi indipendenti e isolati, programmabili singolarmente
Associated quantity: see table, according to the connection programmed on the meter
Type of alarm: min. or max.
Hysteresis: 0...99%
Delay: 0...99s
Output: 2 relays with potential free SPST-NO contact
Contact range: 5A 250Vac cosφ 1 - 3A 250Vac cosφ 0,4 - 5A 30Vdc
Normally de-energised relay
Alarm intervention detecting: display "ALM on"
State of alarms: display accessible by keyboard

¹ alarm combined to the reverse power.

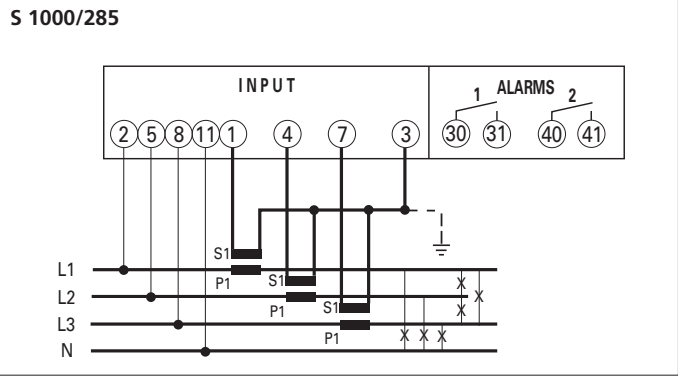
The loaded threshold is referred to the negative power value.

ENVIRONMENTAL CONDITIONS

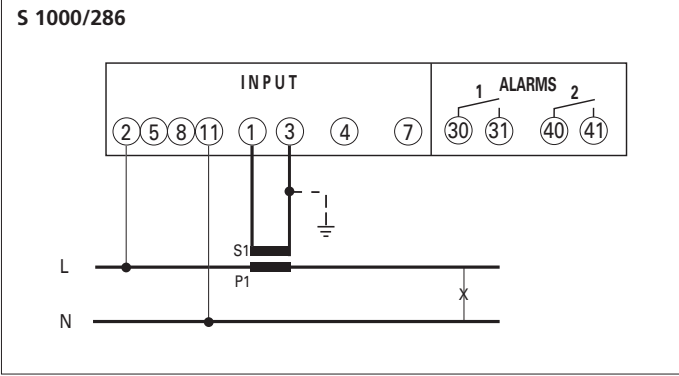
Reference temperature: 23°C ± 2°C
Specified operating range: -5...55°C
Limit range for storage and transport: -25...70°C
Variation to the class index: ≤ 0,1% /°C
Suitable for tropical climates
Max. power dissipation¹: ≤ 6,8W
¹ For switchboard thermal calculation

HOUSING

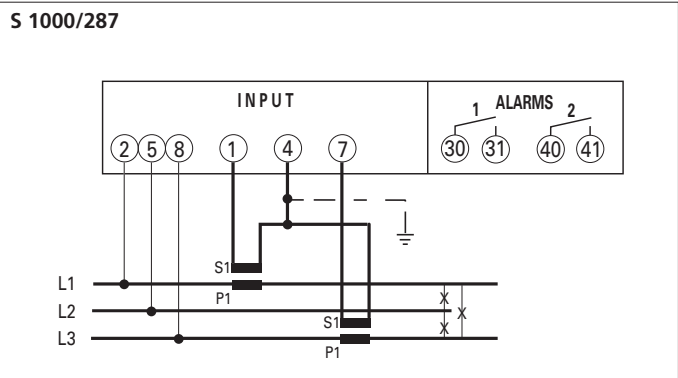
Housing: flush mounting (panel cutout 68x68mm)
Front frame: 72x72mm
Depth: 81mm
Terminals range: rigid cable min.0,05mm ² / max. 4mm ² flexible cable min.0,05mm ² / max. 2,5mm ²
Relays terminals range: rigid cable max.4,5mm ² flexible cable max.2,4mm ²
Housing material: self-extinguishing makrolon
Protection degree (EN60529): IP54 front frame, IP20 terminals
Weight: 250 grams



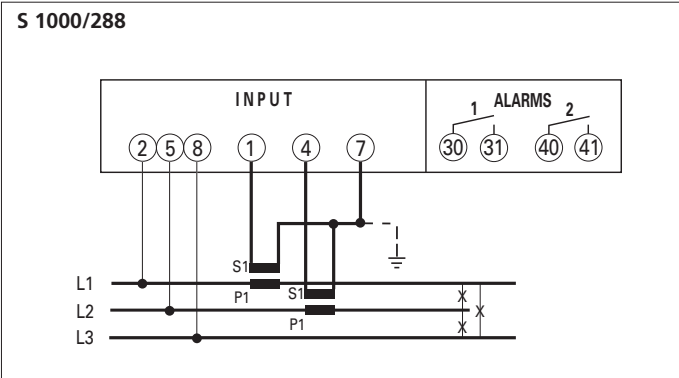
Linea trifase 4 fili, carico squilibrato
Three-phase network 4-wire, unbalanced load



Linea monofase
Single-phase network



Linea trifase 3 fili, carico squilibrato (ARON L1-L3)
Three-phase network 3-wire, unbalanced load (ARON L1-L3)

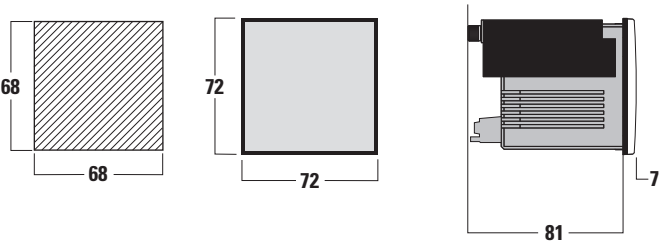


Linea trifase 3 fili, carico squilibrato (ARON L1-L2)
Three-phase network 3-wire, unbalanced load (ARON L1-L2)

NOTA: negli schemi sono sempre indicate le configurazioni con allarmi.
Nelle versioni che non prevedono allarmi non si deve tenere conto dei relativi collegamenti.

NOTE: the wiring diagrams, show the device complete with alarms.
In case of version without alarms, the corresponding terminals must not be considered.

DIMENSIONI DIMENSIONS



Centrale de mesure multifonctions pour réseau basse tension 72x72mm

Network monitor for low voltage 72x72mm

Nemo 72-b



Réseau triphasé 340...450V
(phase - phase)
Réseau monophasé 195...260V
(phase - neutre)
Raccordement sur TC dédié
Primaire du TC programmable
Mesure de la valeur efficace vraie (TRMS)
Affichage à sélection manuelle
ou automatique
2 alarmes programmables
Alarmes au retour de puissance

Three-phase network 340...450V
(phase - phase)
single-phase network 195...260V
(phase - neutral)
Connection with dedicated CT
Programmable primary CT
True RMS value measurement
Display with manual or
automatic scanning
2 Programmable alarms
Reverse power alarms

Tension par phase
Phase voltage

230.0 V 1
230.0 V 2
230.0 V 3

Courant par phase
Phase current

800.0 A 1
450.0 A 2
600.0 A 3

Tension composée
Linked voltage

400.0 V Σ
400.0 V
400.0 V

Puissance active par phase
Phase active power

158.2 kW 1
089.0 kW 2
118.6 kW 3

Puissance réactive par phase
Phase reactive power

25.76 kVAr 1
14.49 kVAr 2
19.32 kVAr 3

Puissance active, réactive,
apparente
Active, reactive,
apparent power

365.8 kW Σ
59.57 kVAr
425.4 kVA

304.0 A Σ
50.0 Hz
0.86 PF

Courant du neutre
Fréquence
Facteur de puissance
Neutral current
Frequency
Power factor

Heures et minutes de
fonctionnement
Working hours
and minutes

61h 17m
0427 h
07 m

Puissance moyenne
Valeur max. de
la puissance moyenne
Power demand
Power max. demand

326.4 kW Σ
390.1 kW

Courant moyen par phase
Phase current demand

712.0 A 1
400.5 A 2
534.0 A 3

Valeur max. du courant
moyen par phase
Phase current max.
demand

848.2 A 1
477.1 A 2
636.0 A 3

Etat des alarmes
State of alarms

ALN
1on
2off

MODELE MODEL		72-b		
REFERENCE CODE		9017 9...		
NOTICE TECHNIQUE TECHNICAL NOTE		NT651		
RESEAU NETWORK		bt / LV		
ENTREE INPUT	RACCORDEMENT CONNECTION	Monophasé / <i>single-phase</i>	✓	
		Triphasé, équilibré <i>Three-phase, balanced load</i>		
		Triphasé, non équilibré <i>Three-phase, unbalanced load</i>	✓	
	VALEUR NOMINALE RATED VALUE	Tension (phase-phase) <i>Voltage (phase - phase)</i>	340...540V	
		Courant / <i>Current</i>	1 - 5A	
	ENTREE COURANT INPUT CURRENT	TC dédié (shunt) <i>Dedicated CT (shunt)</i>	✓	
		Isolé / <i>Insulated</i>		
	RAPPORT PROGRAMMABLE PROGRAMMABLE RATIO	TT (kTT) / VT (KVT)		
		TC / CT	Calibres / <i>Ranges</i>	voir tableaux / <i>see tables</i>
			Ipn / Isn	
		max. kTT x kTC <i>max. kVT x kCT</i>		
		Shunt		
ENERGIE ACTIVE ACTIVE ENERGY	Précision / <i>Accuracy</i>			
	Positive, totale et partielle <i>Positive, totale and partial</i>			
	Positive / <i>Positive</i>			
	Négative / <i>Negative</i>			
ENERGIE RÉACTIVE REACTIVE ENERGY	Positive totale / <i>Positive, total</i>			
	Positive partielle / <i>Positive, partlal</i>			
	Négative, totale / <i>Negative, total</i>			
TENSION VOLTAGE	Simple et composée <i>Phase and linked</i>	✓		
COURANT CURRENT	Par phase et du neutre (calculé) <i>Phase and neutral (computed)</i>	✓		
	du neutre (mesuré) <i>Neutral (measured)</i>			
	Moyenne et moyenne max. <i>Phase demand and max. demand</i>	✓		
	Ah positif et négatif <i>Positive and negative Ah</i>			
FACTEUR DE PUISSANCE POWER FACTOR	Triphasé / <i>Three-phase</i>	✓		
	Par phase / <i>Phase</i>			
PUISSANCE POWER	Active, réactive, apparente <i>Active, reactive, apparent</i>	✓		
	Moyenne et moyenne max. <i>Demand and max. demand</i>	✓		
	Active et réactive par phase <i>Phase active and reactive</i>	✓		
DISTORSION HARMONIQUE HARMONIC DISTORTION	Courant / <i>Current</i>			
	Tension / <i>Voltage</i>			
FREQUENCE / <i>FREQUENCY</i>		✓		
TENSION COURANT PUISSANCE D.C. / <i>D.C.VOLTAGE CURRENT POWER</i>				
COMPTEUR HORAIRE / <i>RUN HOUR METER</i>				
SEQUENCE DE PHASE ERRONEE / <i>WRONG PHASE SEQUENCE</i>				
SORTIES OUTPUTS	IMPULSIONS / <i>PULSES</i>			
	RELAIS ALARMES / <i>ALARM RELAYS</i>		■	
	RELAIS ALARMES + ENTREE NUMERIQUE / <i>ALARM RELAYS + DIGITAL INPUTS</i>			
	ANALOGIQUE / <i>ANALOGUE</i>			
COMMUNICATION	RS232			
	RS485			
	RS485 + MEMOIRE / <i>RS485 + MEMORY</i>			
	PROFIBUS			
	LONWORKS			
	M-BUS			
	BACNET			
	ETHERNET			
	DIMENSIONS / <i>DIMENSIONS</i>		72 x 72 x 81mm	

REFERENCE CODE	ALARMES ALARMS	ENTREE TC INPUT CT	ENTREE TT INPUT VT	RESEAU NETWORK	SCHEMA DE RACCORDEMENT WIRING DIAGRAM
9017 9300	-	5A	195(340)...260(450)V	monophasé et triphasé 4 fils <i>single-phase and three-phase 4-wire</i>	S1000/228 - S1000/227 S1000/286 - S1000/285
9017 9350	2				
9017 9100	-	1A			
9017 9150	2				
9017 9400	-	5A	340...450V	triphasé 3 et 4 fils <i>three-phase 3 and 4-wire</i>	S1000/227 - S1000/229 - S1000/230 S1000/285 - S1000/287 - S1000/288
9017 9450	2				
9017 9200	-	1A			
9017 9250	2				

AFFICHAGE

Type d'affichage: cristaux liquides rétroéclairés (LCD)

Extinction automatique du rétroéclairage, temporisation 20 secondes

Affichage des mesures: afficheur divisé en différentes pages, à sélection manuelle ou automatique

DISPLAY

Type of display: LCD backlighted

Automatic backlit reduction after 20s from last key activation

Measurement display: subdivided on various pages, with manual or automatic scanning

AFFICHAGE DES PAGES • DISPLAY PAGES

page page	Triphasé 4 fils <i>three-phase 4-wire</i>	Triphasé 3 fils <i>three-phase 3-wire</i>	monophasé <i>single-phase</i>
1	Tension par phase <i>Phase voltage</i>	Courant par phase <i>Phase current</i>	Tension- Courant <i>Voltage - Current</i>
2	Courant par phase <i>Phase current</i>	Tension composée <i>Linked voltage</i>	Puissance active, réactive, apparente <i>Active, reactive apparent power</i>
3	Tension composée <i>Linked voltage</i>	Puissance active, réactive, apparente <i>Active, reactive apparent power</i>	Fréquence - Facteur de puissance <i>Fréquency - Power factor</i>
4	Puissance active par phase <i>Phase active power</i>	Fréquence - Facteur de puissance <i>Fréquency - Power factor</i>	Heures et minutes de fonctionnement <i>Working hours and minutes</i>
5	Puissance réactive par phase <i>Phase reactive power</i>	Heures et minutes de fonctionnement <i>Working hours and minutes</i>	Puissance moyenne - Valeur max. puissance moyenne <i>Power demand - Power Max. demand</i>
6	Puissance active, réactive, apparente <i>Active, reactive apparent power</i>	Puissance moyen.-Valeur max.puis.moyen. <i>Power demand - Power Max. demand</i>	Courant moyen et valeur max. du courant moyen <i>Current demand, max. current demand</i>
7	Courant du neutre, fréquence, facteur de puissance <i>Neutral current, frequency, power factor</i>	Courant moyen par phase <i>Phase current demand</i>	
8	Heures et minutes de fonctionnement <i>Working hours and minutes</i>	Valeur max. du courant moyen par phase <i>Phase current max. demand</i>	
9	Puissance moyen.-Valeur max.puis.moyen. <i>Power demand - Power Max. demand</i>		
10	Courant moyen par phase <i>Phase current demand</i>		
11	Valeur max. du courant moyen par phase <i>Phase current max. demand</i>		

Diagnostic séquence de phase : signalisation raccordement erroné

Nb de points d'affichage: 10 000 (4 chiffres)

Unité de mesure: affichage automatique selon le rapport des TC sélectionné

Résolution: changement automatique du calibre

Compteur horaire: heures et minutes

Echantillonnage: 1,2 secondes

Précision (sur la lecture)

- Tension: $\pm 0,5\%$ (340...450V phase-phase)
- Courant: $\pm 0,5\%$ (10...120% In)
- Courant du neutre: $\pm 2\%$
- Puissance: $\pm 1\%$ P - $\pm 2\%$ Q / S / (10...120% Pn/Qn/Sn $\cos\varphi$ 0,5 ind...0,5 cap.)
- Facteur de puissance: $\pm 2\%$
- Fréquence: $\pm 0,2$ Hz

Voltage sequence diagnostic : wrong connection reporting

N° of display points: 10 000 (4 digits)

Engineering units: automatic display according to the set CT ratios

Resolution: automatic, with the highest possible number of decimals

Run hour meter: hours and minutes

Reading update: 1,2 seconds

Accuracy (of the reading)

- Voltage: $\pm 0,5\%$ (340...450V phase - phase)
- Current: $\pm 0,5\%$ (10...120% In)
- Neutral current: $\pm 2\%$
- Power: $\pm 1\%$ P - $\pm 2\%$ Q / S / (10...120% Pn/Qn/Sn $\cos\varphi$ 0,5 ind...0,5 cap.)
- Power factor: $\pm 2\%$
- Frequency: $\pm 0,2$ Hz

COURANT MOYEN

Affichage: courant moyen et puissance active moyenne, valeur max. du courant moyen et valeur max. de la puissance moyenne

Temps d'intégration: uniquement pour le courant et la puissance

Valeurs sélectionnables: 5/8/10/15/20/30/60 minutes

Calcul: moyenne sur la période sélectionnée

Remise à zéro de la valeur maxi: l'aide de touches en face avant

CURRENT DEMAND - POWER DEMAND

Display: Current and active power demand, max. current demand and max. power demand

Averaging period: only for current and power

Value selectable: 5/8/10/15/20/30/60 minutes

Calculation: average on the selected period

Max. demand reset: by keyboard

PROGRAMMATION

Programmation des paramètres: 2 touches en face avant
Accès à la programmation: combinaison de touches
Conservation des valeurs et des paramètres: mémoire E-PROM

PARAMETRES PROGRAMMABLES

Affichage: à sélection manuelle ou automatique
La sélection manuelle: permet le changement de la page à l'aide des touches.
A l'allumage, l'appareil affiche la dernière page sélectionnée
La sélection automatique: permet le changement automatique de la page
Raccordement: réseau monophasé - triphasé 3 et 4 fils
Primaire TC externe: voir tableaux

Courant primaire sélectionnable (1A) • Selectable primary current (1A)															
1						2			3		4	5	6		8
10	12		14	15	16	20	24	25	30	32	40	50	60	75	80
100	120	125	140	150	160	200	240	250	300	320	400	500	600	640	800
1000	1200		1400	1500	1600										

Courant primaire sélectionnable (5A) • Selectable primary current (5A)															
5						10			15		20	25	30		40
50	60		70	75	80	100	120	125	150	160	200	250	300		400
500	600		700	750	800	1000	1200	1250	1500	1600	2000	2500	3000	3200	4000
5000	6000		7000	7500	8000										

Courant - puissance moyenne: temps d'intégration, remise à zéro
Compteur horaire: remise à zéro

ENTREE

Réseau monophasé et triphasé 4 fils (90179300 - 90179350 - 90179100 - 90179150)
Triphasé 3 et 4 fils (90179400 - 90179450 - 90179200 - 90179250)
Tension triphasée: 340...450V (phase-phase)
Tension monophasée: 195...260V
Courant nominal In: 5A ou 1A
Surcharge permanente: 1,2In
Surcharge instantanée: 20In / 0,5 secondes
Raccordement sur transformateur de courant dédié
Points communs sur les entrées
Fréquence nominale fn: 50Hz
Variation admissible: 47...63Hz
Type de mesure: valeur efficace vraie (TRMS)
Taux d'harmoniques: jusqu'aux harmoniques du rang 21
Autoconsommation tension: ≤ 0,5VA (par phase)
Autoconsommation courant: ≤ 0,5VA (par phase)

ALIMENTATION AUXILIAIRE

Dérivée de la mesure, autoalimentée: L(1) - N (901793.. - 901791..)
Dérivée de la mesure, autoalimentée: L1 - L2 (90179400.. - 901792..)
Autoconsommation: ≤ 2VA - ≤ 2,5VA (avec alarmes)

ISOLEMENT (EN 61010-1-1)

Catégorie de l'installation: III
Degré de pollution: 2
Tension de référence pour l'isolement: 300V
Tension d'essai 2kV valeur efficace 50Hz/1min
Circuits considérés: mesures; sortie relais 1, sortie relais 2
Tension d'essai 4kV valeur efficace 50Hz/1min
Circuits considérés: tous les circuits et la masse

TEST DE COMPATIBILITE ELECTROMAGNETIQUE

Test d'émission selon la norme EN/IEC 61326-1
Test d'immunité selon la norme EN/IEC 61326-1

PROGRAMMING

Parameters programming: front keyboard, 2 keys
Programming access: key combination
Data and configuration parameters retention: non volatile memory (no battery)

PROGRAMMABLE PARAMETERS

Display: manual or automatic scanning
Manual scanning: page change using the keyboard.
At the turning on, the meter displays the last selected page
Automatic scanning: automatic page change
Connection: single-phase - three-phase 3 and 4 wire
External CT primary: see tables

Current - Power max. demand: averaging time, max. demand reset
Working hours: reset

INPUT

Single-phase and three-phase 4-wire network (901793.. - 901791..)
Three-phase 3 and 4-wire network (90179400.. - 901792..)
Three-phase voltage: 340...450V (phase-phase)
Single-phase voltage: 195...260V
Current rating In: 5A or 1A
Continuous overload: 1,2In
Instantaneous overload: 20In/0,5 seconds
Connection with external dedicated current transformer
Inputs have a common point
Frequency rating fn: 50Hz
Tolerance: 47...63Hz
Type of measurement: true RMS
Harmonic content: up to the 21st harmonic
Measuring voltage rated burden: ≤ 0,5VA (each phase)
Current rated burden: ≤ 0,5VA (each phase)

AUXILIARY SUPPLY

Taken from measurement, selfsupplied: L(1) - N (901793.. - 901791..)
Taken from measurement, selfsupplied: L1 - L2 (901794.. - 901792..)
Rated burden: † 2VA - † 2,5VA (with alarms)

INSULATION (EN 61010-1)

Installation category: III
Pollution degree: 2
Insulation voltage rating: 300V
A.C. voltage test 2kV r.m.s.value 50Hz/1min
Considered circuits: measuring, relay output 1, relay output 2
A.C. voltage test 4kV r.m.s. value 50Hz/1min
Considered circuits: all circuits and earth (enclosure)

TESTS FOR ELETROMAMAGNETIC COMPATIBILITY

Emission tests according to EN/IEC 61326-1
Immunity tests according to EN/IEC 61326-1

ALARMES

2 alarmes indépendantes et isolées, programmables individuellement
Grandeurs associées: voir tableau, selon le type de raccordement programmé sur la centrale de mesure
Type d'alarme: min. ou max.
Hystérésis: 0...99%
Délai: 0...99s
Sortie: 2 relais avec contact SPST-NO libre de potentiel
Pouvoir de coupure: 5A 250Vca cosφ 1 - 3A 250Vca cosφ 0,4 - 5A 30Vdc
Relais normalement désexcité
Signalisation de l'intervention de l'alarme: affichage "ALM on"
Etat des alarmes: affichage accessible par touches

Grandeurs associées / Associated Quantity	
U1	Tension par phase L1 / Phase voltage L1
U2	Tension par phase L2 / Phase voltage L2
U3	Tension par phase L3 / Phase voltage L3
U1	Tension / Voltage
A1	Courant par phase L1 / Phase current L1
A2	Courant par phase L2 / Phase current L2
A3	Courant par phase L3 / Phase current L3
A1	Courant / Current
U12	Tension composée L1 - L2 / Linked voltage L1 - L2
U23	Tension composée L2 - L3 / Linked voltage L2 - L3
U31	Tension composée L3 - L1 / Linked voltage L3 - L1
P1	Puissance active par phase L1 / Phase active power L1
P2	Puissance active par phase L2 / Phase active power L2
P3	Puissance active par phase L3 / Phase active power L3
VAR1	Puissance réactive par phase L1 / Phase reactive power L1
VAR2	Puissance réactive par phase L2 / Phase reactive power L2
VAR3	Puissance réactive par phase L3 / Phase reactive power L3
P	Puissance active / Active power
VAR	Puissance réactive / Reactive power
PF	Facteur de puissance / Power factor
FrEq	Fréquence / Frequency
retP	Puissance inversée ¹ / Reverse power ¹

¹ alarme associée à l'inversion de puissance.
Le seuil sélectionné est référé à la valeur négative de la puissance

CONDITIONS D'EMPLOI

Température de référence: 23°C ± 2°C
Température de fonctionnement spécifique: -5...55°C
Température limite pour le stockage et le transport: -25...70°C
Variation de l'indice de classe: ≤ 0,1% /°C
Adapté pour les climats tropicaux
Puissance max. dissipée ¹ : ≤ 6,8W
¹ Pour le dimensionnement thermique du coffret

BOÎTIER

Boîtier: encastré (découpe 68x68mm)	
Face avant: 72x72mm	
Profondeur: 81 mm	
Circuit mesure :	fil rigide min.0,05mm ² / max. 4mm ²
	fil souple min.0,05mm ² / max. 2,5mm ²
Circuit relais:	fil rigide max. 4,5mm ²
	fil souple max. 2,4mm ²
Matériau du boîtier: makrolon autoextinguible	
Degré de protection (EN60529): IP54 face avant, IP20 bornes	
Poids: 250 grammes	

ALARMS

2 allarmi indipendenti e isolati, programmabili singolarmente
Associated quantity: see table, according to the connection programmed on the meter
Type of alarm: min. or max.
Hysteresis: 0...99%
Delay: 0...99s
Output: 2 relays with potential free SPST-NO contact
Contact range: 5A 250Vac cosφ 1 - 3A 250Vac cosφ 0,4 - 5A 30Vdc
Normally de-energised relay
Alarm intervention detecting: display "ALM on"
State of alarms: display accessible by keyboard

1n1E	3-2E	3n3E
		=
		=
		=
=		
	=	=
	=	=
	=	=
=		
	=	=
	=	=
	=	=
		=
		=
		=
=	=	=
=	=	=
=	=	=
=	=	=
=	=	=

¹ alarm combined to the reverse power.
The loaded threshold is referred to the negative power value.

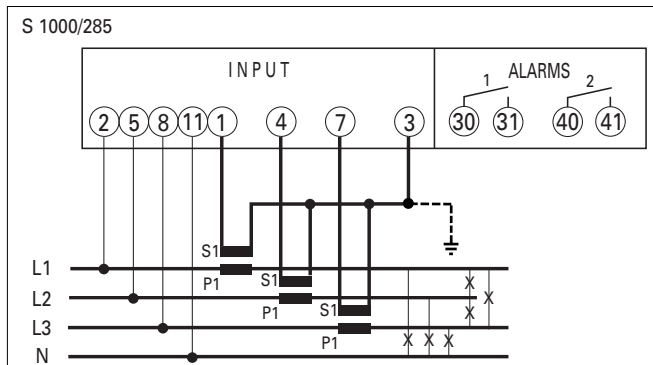
ENVIRONMENTAL CONDITIONS

Reference temperature: 23°C ± 2°C
Specified operating range: -5...55°C
Limit range for storage and transport: -25...70°C
Variation to the class index: ≤ 0,1% /°C
Suitable for tropical climates
Max. power dissipation ¹ : ≤ 6,8W
¹ For switchboard thermal calculation

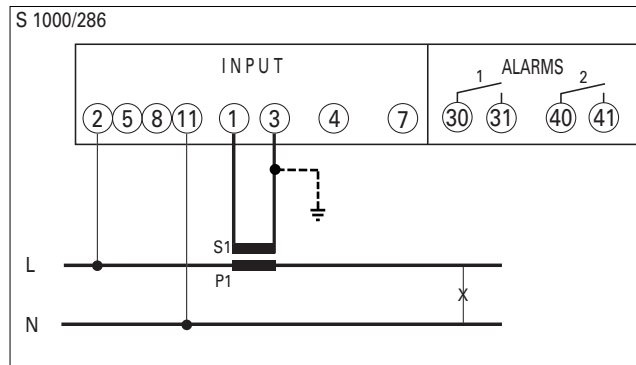
HOUSING

Housing: flush mounting (panel cutout 68x68mm)	
Front frame: 72x72mm	
Depth: 81mm	
Terminals range:	rigid cable min. 0,05mm ² / max. 4mm ² flexible cable min.0,05mm ² / max. 2,5mm ²
Relays terminals range:	rigid cable max.4,5mm ² flexible cable max.2,4mm ²
Housing material: self-extinguishing makrolon	
Protection degree (EN60529): IP54 front frame, IP20 terminals	
Weight: 250 grams	

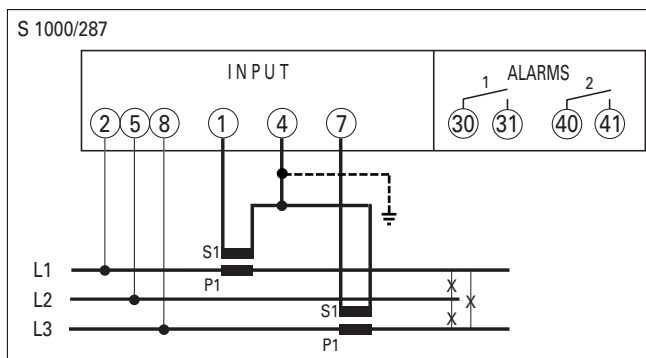
SCHEMA DE RACCORDEMENT WIRING DIAGRAMS



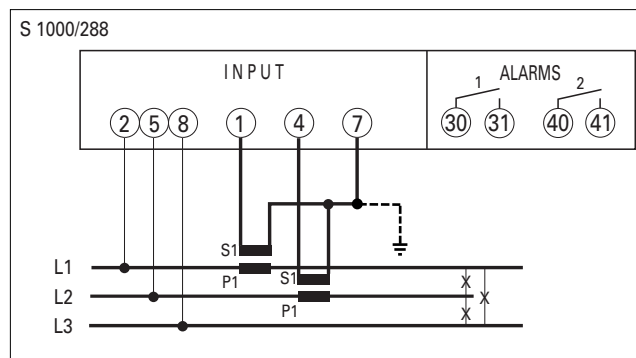
Réseau triphasé 4 fils non équilibré
Three-phase network 4-wire, unbalanced load



Réseau monophasé
Single-phase network



Réseau triphasé 3 fils, non équilibré (ARON L1-L3)
Three-phase network 3-wire, unbalanced load (ARON L1-L3)



Réseau triphasé 3 fils, non équilibré (ARON L1-L2)
Three-phase network 3-wire, unbalanced load (ARON L1-L2)

NOTE : les schémas de raccordement se réfèrent aux centrales de mesures complètes avec alarmes
Pour les versions sans alarmes, ne pas tenir compte des bornes de sorties concernées.

NOTE : the wiring diagrams, show the device complete with alarms.
In case of version without alarms, the corresponding terminals must not be considered.

DIMENSIONS DIMENSIONS

