

INPUTS

INPUT SIGNALS	CURRENT	VOLTAGE
NOMINAL FREQUENCY RANGE	50, 60 Hz	50, 60 Hz
MEASURING FREQUENCY RANGE	16 – 400 Hz	16 – 400 Hz
NOMINAL VALUE (I _n , U _n)	5 A	500 V _{Un}
MAXIMAL VALUE	12.5 A	750 V _{Un}
CONSUMPTION	< 0.1 VA	< 0.1 VA

ACCURACY

MEASURAND	RANGE	ACCURACY
RMS CURRENT (I1, I2, I3, Iavg, In)	1-5 A	0.5 (OPTIONAL 0.2)
RMS PHASE VOLTAGE (U1, U2, U3, Uavg)	75 – 500 V	0.5 (OPTIONAL 0.2)
PHASE-TO-PHASE VOLTAGE (U12, U23, U31, Uavg)	120 – 800 V	0.5 (OPTIONAL 0.2)
FREQUENCY (f)		10 mHz
	-1...+1	
	U=50...120% Un	
POWER FACTOR (PF)	I = 2...20 % In	2.0
	I = 20...200 % In	1.0
PHASE AND PHASE-TO-PHASE ANGLE (φ, φ12, φ23, φ31)		0.5°
THD	0...400 %	0.5
ACTIVE POWER	75-500 (In=1 A)	0.5 (OPTIONAL 0.2)
	375-2500 (In=5 A)	
REACTIVE AND APPARENT POWER	[W/kvar/VA]	1.0 (OPTIONAL 0.5)

MEASURAND	STANDARD	ACCURACY
ACTIVE ENERGY	EN 62053-21	Class 1
	EN 62053-22	(OPTIONAL 0.5S)
REACTIVE ENERGY	EN 62053-23	Class 2
PULSE OUTPUT	EN 62053-31	Class A & B

ACCURACY IS PRESENTED AS PERCENTAGE FROM RANGE EXCEPT WHEN IT IS STATED AS AN ABSOLUTE VALUE.

POWER SUPPLY

POWER SUPPLY	UNIVERSAL	AC
NOMINAL VOLTAGE AC	48-276 V	57.7 / 63.5 / 100 / 110 / 230 / 400 / 500... V
NOMINAL FREQUENCY	40-70 Hz	40-65 Hz
NOMINAL VOLTAGE DC	20-300 V	-
CONSUMPTION	< 12 VA	< 8 VA

REAL TIME CLOCK (RTC)

- RTC ACCURACY 1 MIN/MONTH (30 PPM)
- TO ENABLE CLOCK OPERATION BACKUP BATTERY OR SUPERCAP IS BUILT-IN.
- SUPERCAP LIFE SPAN APPROX. 2 DAYS
- BATTERY LIFE SPAN APPROX. 6 YEARS (AT 23°C)

REFERENCE CONDITIONS

- AMBIENT TEMPERATURE: -10 ... 23 ... 65 °C
- INPUT: 0...100 % U_n
- CONNECTED TO A MEASURING TRANSFORMER: 0...100 % I_n
- ACTIVE/REACTIVE POWER, FACTOR: COSΦ =1 / SINΦ =1
- WAVEFORM: SINUS

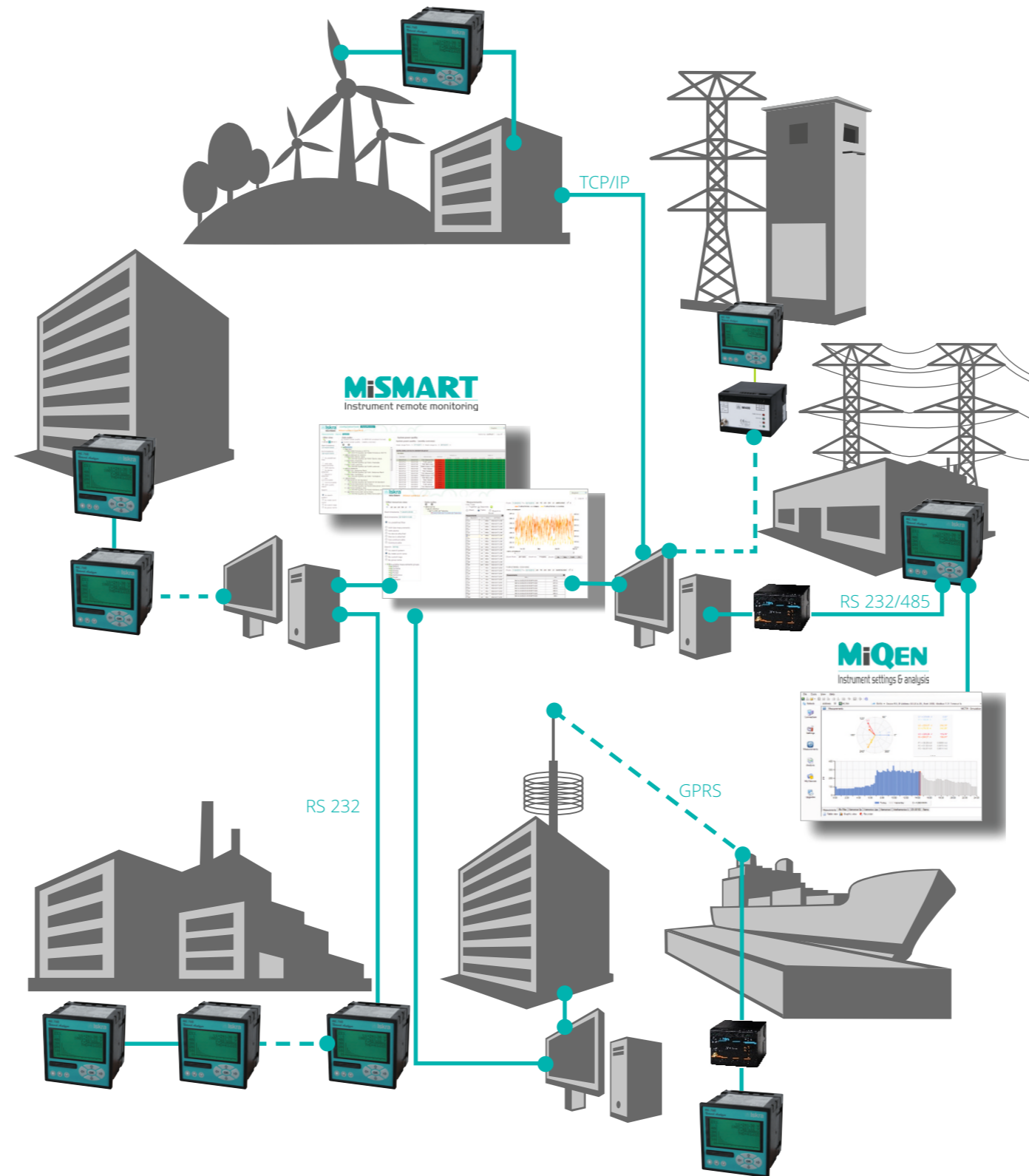
COMMUNICATION TYPES

	ETHERNET	RS485	RS232	USB
TYPE OF CONNECTION	NETWORK		DIRECT	
MAX. CONN. LENGTH	—	1000 m	3 m	5 m
TERMINALS	RJ-45	DB9 FEMALE CONNECTOR OR SCREW TERMINALS	USB-B TYPE	
INSULATION	3.7 kV RMS., 1 MINUTE BETWEEN TERMINALS AND OTHER CIRCUITS			
TRANSFER MODE	ASYNCHRONOUS			
PROTOCOL	MODBUS RTU / DNP3			
TRANSFER RATE	10/100 MB/S AUTODETECT	1.200 TO 115.200 BIT/S		FULL SPEED USB 2.0

I/O MODULE 1 & 2

ANALOGUE OUTPUT
PULSE OUTPUT
RELAY (ALARM) OUTPUT
BISTABLE RELAY (ALARM) OUTPUT
ANALOGUE INPUT (MA DC)
ANALOGUE INPUT (V DC)
ANALOGUE INPUT (R/TEMP.)
DIGITAL INPUT (230 V AC/DC)
DIGITAL INPUT (75 ... 110 V AC/DC)
DIGITAL INPUT (5 ... 48 V AC/DC)
PULSE INPUT (5 ... 48 V DC)
TARIFF INPUT (230 V AC/DC)
TARIFF INPUT (5 ... 48 V AC/DC)
STATUS (WATCHDOG)
COM2 – RS232
COM2 – RS485
COMM. PORT FOR ANALOGUE EXTENDER EX104

APPLICATIONS



MEASURING CENTRES MC 7xx

- **RELEVANT FOR** ELECTRICITY DISTRIBUTION AND ENERGY PRODUCTION COMPANIES, UTILITIES, DWELLINGS, ENERGY MANAGEMENT SOLUTION PROVIDERS, INDUSTRY, BUSINESS BUILDINGS, DESIGNERS OF SMALL POWER STATIONS, PANEL BUILDERS



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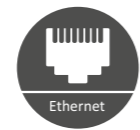
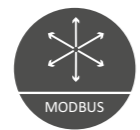
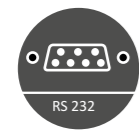
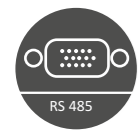




NETWORK ANALYZER MC 760

NETWORK RECORDER MC 750

MULTIFUNCTION METER MC 740



FEATURES

- EVALUATION OF THE **ELECTRIC SUPPLY QUALITY IN COMPLIANCE WITH EN 50160** (ONLY MC 760)
- **MEASUREMENTS OF INSTANTANEOUS VALUES OF MORE THAN 140 QUANTITIES** (U, I, P, Q, PF, PA, f, φ, THD, MD, ENERGY, ENERGY COST BY TARIFFS, ETC.)
- ACCURACY **CLASS 0.5** (OPTIONAL 0.2)
- ACTIVE **ENERGY CLASS 1** (OPTIONAL CLASS 0.5S)
- **32 ADJUSTABLE ALARMS**
- **FREQUENCY RANGE** FROM 16 HZ TO 400 HZ
- **RS 232/RS 485 COMMUNICATION** UP TO 115,200 BIT/S OR **ETHERNET/USB COMMUNICATION**
- **MODBUS AND DNP3 COMMUNICATION** PROTOCOL
- **UP TO 4 INPUTS OR OUTPUTS** (ANALOGUE, PULSE, RELAY AND WATCHDOG OUTPUTS, DIGITAL, TARIFF, PULSE AND ANALOGUE INPUTS)
- **AUTOMATIC RANGE OF NOMINAL CURRENT AND VOLTAGE** (MAX. 12.5 A AND 750 V)
- **ADJUSTABLE TARIFF CLOCK**, DISPLAY OF ELECTRIC ENERGY CONSUMPTION IN OPTIONAL CURRENCY
- **MULTILINGUAL** SUPPORT
- USER-FRIENDLY PC **MIQEN SOFTWARE**

FOR WHOM

- FOR ELECTRICITY DISTRIBUTION AND ENERGY PRODUCTION COMPANIES, UTILITIES, DWELLINGS, ENERGY MANAGEMENT SOLUTION PROVIDERS, INDUSTRY, BUSINESS BUILDINGS, DESIGNERS OF SMALL POWER STATIONS, PANEL BUILDERS, ETC.

EN 50160 STANDARD (ONLY MC 760)

THE **EN 50160 STANDARD SPECIFIES THE MOST IMPORTANT VOLTAGE CHARACTERISTICS OF ELECTRICITY SUPPLIED** BY PUBLIC DISTRIBUTION SYSTEMS AND THE LIMIT VALUES WHERE SUCH CHARACTERISTICS CAN BE EXPECTED. EN 50160 SPECIFIES ALLOWABLE VOLTAGE VALUES AT:

- **VOLTAGE AND FREQUENCY** DEVIATIONS
- **VOLTAGE DIPS**, INTERRUPTIONS AND VOLTAGE UNBALANCE
- **HARMONICS** AND **THD**
- **FAST VOLTAGE CHANGES** (FLICKERS)

MC 760 ELECTRICAL NETWORK ANALYZER - EN 50160 STANDARD

- PERMANENT ANALYSIS OF **POWER QUALITY IN COMPLIANCE WITH EN 50160**
- **LARGE MEMORY CAPACITY OF THE RECORDER:** 8 MB - REPORTS FOR A PERIOD OF SEVEN YEARS AND 170,000 DEVIATIONS FROM THE STANDARD VALUES
- OPTIONAL **SETTING OF LIMIT VALUES OF THE ELECTRICAL NETWORK** CHARACTERISTICS

MC 760 ELECTRICAL NETWORK ANALYZER - FINDING DEVIATIONS FROM THE EN 50160 STANDARD

- **FREQUENCY** DEVIATIONS
- **VOLTAGE** DEVIATIONS
- **FAST VOLTAGE** CHANGES
- **HARMONICS**
- **VOLTAGE** DIPS
- **VOLTAGE** INTERRUPTIONS
- **FLICKER** INTENSITY
- **VOLTAGE** UNBALANCES
- **OVERVOLTAGES**
- **THD**

HANDLING THE COSTS - MC 760, MC 750, MC 740

A SPECIAL FUNCTION OF THE METER IS ENERGY COST EVALUATION (ACTIVE, REACTIVE, TOTAL) BY TARIFFS. THE METER ENABLES TRACING THE ENERGY COSTS IN OPTIONAL CURRENCY. CONSUMPTION IS CALCULATED BY MEANS OF THE ADJUSTABLE TARIFF CLOCK AND ELECTRICITY PRICE BY TARIFFS.

MC 750 - ELECTRICAL NETWORK RECORDER

- RECORDING **UP TO 64 MEASURING QUANTITIES AND 32 ALARMS** IN THE INTERNAL MEMORY (8 MB FLASH)
- **MEASURING INSTANTANEOUS VALUES OF MORE THAN 140 ELECTRICAL QUANTITIES** (ALSO THD, MD, ENERGY, ELECTRICITY PRICE BY TARIFFS, HARMONICS)
- DISPLAY OF **ELECTRIC CONSUMPTION** IN OPTIONAL CURRENCY
- **RS232/RS485 OR ETHERNET/USB** COMMUNICATION

MC 740 - MULTIFUNCTION METER

- **MONITORING AND MEASURING OVER 130 ELECTRICAL QUANTITIES** OF THREE-PHASE ELECTRIC-ENERGY DISTRIBUTION SYSTEM
- **32 PROGRAM ADJUSTABLE ALARMS**
- **UP TO 4 INPUTS OR OUTPUTS**
- **RS232/RS485 OR ETHERNET/USB** COMMUNICATION
- **SETTINGS OF A TARIFF CLOCK** (FOUR PERIODS, FOUR WORKING GROUPS, ELECTRICITY PRICE FOR EACH PERIOD AND A WORKING GROUP, 16 DIFFERENT PRICE PERIODS)

INPUT / OUTPUT MODULES

THE MODULES ARE AVAILABLE WITH DOUBLE INPUTS/OUTPUTS. EACH MODULE HAS THREE CONNECTION CONTACTS. THE METER IS AVAILABLE WITHOUT, WITH ONE OR WITH TWO MODULES. THE FOLLOWING MODULES ARE AVAILABLE:

- **RELAY OUTPUT** - 2 OUTPUTS
- **ANALOGUE OUTPUT** - 2 x 20 mA OUTPUTS
- **PULSE OUTPUT** - 2 OUTPUTS CHANGES
- **BISTABLE ALARM OUTPUT** - 1 OUTPUT
- **ANALOGUE INPUT** - 2 INPUT
- **PULSE INPUT** - 2 INPUTS
- **DIGITAL INPUT** - 2 INPUTS
- **TARIFF INPUT** - 2 INPUTS
- **ADDITIONAL COMMUNICATION PORT (COM2)** - 1 PORT
- **COMMUNICATION PORT FOR ANALOGUE EXTENDER EX 104** - 1 PORT

INSTRUMENT	MC 740	MC 750	MC 760
HARDWARE CONFIGURATION			
BACKLIGHT LCD 128X64	●	●	●
KEYBOARD KEYS	5	5	5
MMC CARD	●	●	●
POWER SUPPLY (UNIV./AC)	o/o	o/o	o/o
ENERGY COUNTERS	4	4	4
REAL TIME CLOCK	●	●	●
MEMORY SIZE	–	8 MB	8 MB
AUTO RANGE CURRENT	●	●	●
AUTO RANGE VOLTAGE	●	●	●
COMMUNICATION (COM1)			
COMMUNICATION PORTS	1	1	1
RS232 & RS485 / ETHERNET & USB	o/o	o/o	o/o
MODBUS AND DNP3	●	●	●
AVAILABLE FUNCTIONS			
SETUP WIZARD	●	●	●
WRONG CONNECTION WARNING	●	●	●
CUSTOM SCREENS	●	●	●
RESET DEFAULT SETTINGS	●	●	●
PROGRAMMABLE REFRESH TIME (LCD , COMM.)	●/●	●/●	●/●
MD CALCULATION (TF, FW, SW)	●/●/●	●/●/●	●/●/●
TARIFF CLOCK	●	●	●
COST MANAGEMENT	●	●	●
PROGRAMMABLE ALARMS	32	32	32
ALARMS RECORDING	–	●	●
MEASUREMENTS RECORDING	–	●	●
EN 50160 ANALYSIS	–	–	●
PC SOFTWARE	MIQEN	MIQEN	MIQEN
SYSTEM SOFTWARE	MISMART	MISMART	MISMART
AVAILABLE MEASUREMENTS			
ACTUAL VALUES: U, I, P, Q, S, PF, PA, F, φ	●	●	●
ENERGY	●	●	●
MAXIMUM DEMANDS	●	●	●
MINIMUM VALUES: U, I, P, Q, S, PF, PA, F, φ	●	●	●
MAXIMUM VALUES: U, I, P, Q, S, PF, PA, F, φ	●	●	●
THD (ACTUAL)	●	●	●
HARMONICS	UP TO 63 rd	UP TO 63 rd	UP TO 63 rd
I/O MODULES			
I/O MODULE 1 (SEE NEXT PAGE)	○	○	○
I/O MODULE 2 (SEE NEXT PAGE)	○	○	○

LEGEND: ○ FEATURE NOT SUPPORTED ● MC HAS FEATURE ○ OPTIONAL FEATURE