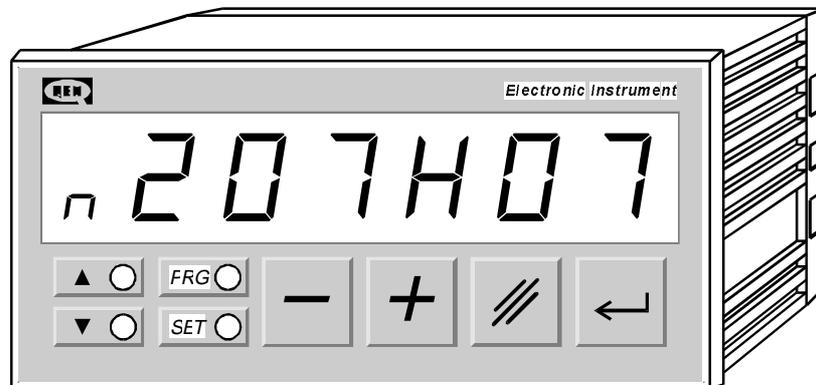


DISPLAYER OF 2 SPEEDS AND THEIR DIFFERENCE IN PERCENTAGE
WITH THE ALARM THRESHOLDS

HM 207.07



User's Manual

Complement to the "Manual of Installation, Maintenance and Assistance"



*Quality in Electronic
Manufacturing*

INDEX OF SUBJECTS IN THIS MANUAL

CHAP. 1 - INTRODUCTION	
- <i>Complementarity</i>	1 - 1
- <i>References</i>	1 - 2
- <i>Responsibility and validity</i>	1 - 3
- <i>Description of operation</i>	1 - 4
CHAP. 2 - OPERATOR / MACHINE INTERFACE	
- <i>Keyboard Description</i>	2 - 1
- <i>Inputs Description</i>	2 - 2
- <i>Outputs Description</i>	2 - 3
CHAP. 3 - STARTUP	
- <i>Programming (set-up)</i>	3 - 1
- <i>Calibrations</i>	3 - 2
CHAP. 4 - USE	
- <i>Working Programs and Auxiliary Functions</i>	4 - 1
- <i>Tables and Graphics of Operation</i>	4 - 2
CHAP. 5 - ASSISTANCE	
- <i>Diagnostic of inputs and outputs</i>	5 - 1
- <i>Instructions on How to Fill Up the Technical Assistance Fax</i>	5 - 2
- <i>Guarantee</i>	5 - 3

CHAPTER 1

INTRODUCTION

Complementarity

References

Responsibility and validity

Description of operation

1 - 1 COMPLEMENTARITY

This manual is to be considered as a complement to the "Manual of installation, maintenance and assistance" which supplies the indications for the performance of wirings, troubleshooting, procedures for startup and maintenance. This manual contains indications for the instrument's use and for a correct programming.

We recommend therefore a careful reading and, in case of misunderstandings, please contact QEM for any further explanation, by sending the Assistance Fax which you find enclosed to the manual.

1 - 2 REFERENCES

The documentation concerning the instruments which are designed and sold by QEM has been divided into various sheets in order to allow an effective and quick reading according to the information being sought.

<i>User's Manual</i>	<i>Hardware Structure</i>	<i>Manual of installation, maintenance and assistance</i>
<i>Explanation of the software described</i>	<i>Basic information concerning the hardware of the series and possibility of customizations.</i>	<i>All what you need for Installation, Maintenance and Assistance.</i>
<p>It is the present manual, which shows all instructions for the comprehension and the use of the instrument described. It is a manual concerning the instrument's software; it shows all instructions for the comprehension, programming, calibrations and use of the instrument described.</p> <p>Once you install the instrument by following the instructions shown on the Manual of Installation, maintenance and assistance, with this User's Manual you are supplied with all necessary instructions for the correct use of the instrument and for its programming.</p>	<p>It is a sheet enclosed to this User's manual, describing the hardware configuration concerning the series of the instrument described.</p> <p>It also shows the electrical, technical and mechanical characteristics, of the series and also the possible hardware customizations according to the software version.</p>	<p>Further explanation of all necessary subjects for a correct installation and maintenance.</p> <p>This is made to allow us to supply valid and safe instructions which shall allow you to perform products with a recognized quality and safe reliability. It is also a valid support for all those who must face a technical assistance on an application which includes a QEM's instrument.</p>

1 - 3 RESPONSIBILITY AND VALIDITY

RESPONSIBILITY

QEM is free from any responsibility for damages to people or things due to unobservance of the instructions and prescriptions contained in this manual and in the "Manual of installation, maintenance and assistance". We also state that the customer/purchaser must use the instrument according to the instructions supplied by QEM and in case of doubt he must send a written application to QEM. Any authorization for further use and replacement shall be deemed as valid by QEM, in case of contestation, only if it has been written by QEM.

No reprinting or republishing or delivery to third parties of this manual or of its parts is authorized unless a written authorization is provided by QEM. Any infraction shall provoke a request of indemnization for damages on behalf of QEM. All rights generated by patents or models are reserved.

QEM reserves the right to partially or integrally modify the characteristics of the instrument described and the enclosed documentation

Purpose

The purpose of this manual is to indicate the general rules to use the instrument described.

Indication

Write down and carefully store all parameters concerning the settings and programming of the instrument in order to make easier the eventual operations of replacement and assistance.

VALIDITY

This manual can be applied to all designed instruments, built and tested by QEM and having the same ordering code. This document is integrally valid except for mistakes or omissions.

<i>Instrument's Release</i>	<i>Manual Release</i>	<i>Modifications made to the Manual</i>	<i>Modifications Date</i>
4	0	New manual	05 / 01 / 97

Issued by the Person in Charge for the Documentation:

Approved by the Person in Charge for the Product:

1 - 4 DESCRIPTION OF OPERATION

The instrument HM 207.07 displays the speed of two systems which send an ON / OFF signal reading their own speed (Fmin. 0.001 Hz, Fmax. 9999 Hz). It is possible to display a decimal value, sexagesimal directly proportional to the input frequency or the difference in percentage of the two speeds. Two outputs signal alarms with programmable thresholds and their activation and de-activation may be timed.

CHAPTER 2

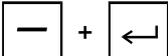
**OPERATOR/MACHINE
INTERFACE**

Keyboard Description

Inputs Description

Outputs Description

2 - 1 KEYBOARD DESCRIPTION

Key	Function
	<p>Normal operation: when pressed for two seconds it allows the programming of the alarm thresholds. Data entering: it confirms the data displayed.</p>
	<p>Normal operation: not used. Data entering: it sets to zero the data displayed.</p>
	<p>Normal operation: scroll of the available displays. Data entering: it increases in an impulsive or continuous way, the blinking digit.</p>
	<p>Normal operation: when pressed for two seconds it allows to display the diagnostic of input and outputs. Data entering: it moves to the right the selection of the digit on the display.</p>
	<p>It is ON during the programming of the set-up parameters.</p>
	<p>Not used.</p>
	<p>It is ON upon the activation of output U1.</p>
	<p>It is ON upon the activation of output U2.</p>
	<p>In set-up mode it indicates the programming of data related to clock 2.</p>
	<p>Access to the functions protected by password.</p>

2 - 2 INPUTS DESCRIPTION

Characteristics of inputs

Please refer to the chapter "Electrical characteristics" of the software leaflet "Hardware structure" enclosed to this manual.

<i>Name</i>				<i>Logical status of activation</i>	<i>Activation mode</i>	<i>Polarizer</i>
I1	ON	I	P1	Clock 1. Signal for the adquisition of the speed or of counts (signal of encoder, proximity or mechanical contacts). Maximum frequency = CLOCK 1 + CLOCK 2 = 12 KHz.		
I2	ON	I	P1	Clock 2. Signal for the adquisition of the speed or of counts (signal of encoder, proximity or mechanical contacts). Maximum frequency = CLOCK 1 + CLOCK 2 = 12 KHz.		
I3	ON	C	P1	Block of readings. It is stopped the adquisition of the two frequencies and the last values read are displayed.		

Legend

C = Continuous signal.

I = Impulsive signal.

<i>Name</i>	<i>Description</i>
+	Positive of transducers' power supply. Positive of voltage supplied by the instrument for the supply of the instruments' inputs and of transducers.
-	Negative of transducers' power supply. Negative of voltage supplied by the instrument for the supply of the instruments' inputs and of transducers.
GND	Ground Connection. We recommend a conductor with Ø 4 mm.
Vac	Voltage of instrument's power supply. Alternated voltage according to the code of your order.
Vac	Voltage of instrument's power supply. Alternated voltage according to the code of your order.

2 - 3 OUTPUTS

Characteristics of outputs

Please refer to the chapter "Electrical Characteristics" of the leaflet "Hardware structure" enclosed to this manual.

				<i>Name</i>	<i>Logical status of activation</i>	<i>Polarizer</i>	<i>Activation Mode</i>		
				U1	ON	C1	C	<i>Description</i>	
				U2	ON	C1	C	<p>Scrolling alarm. It is energised when the scrolling in percentage is greater than the absolute value of the value which has been set. The activation and the de-activation of output U1 mau be delayed with the parameters of set-up "U1D" e "U1F".</p> <p>Alarm of programmable speed. With the parameter of set-up "U2" set to 0, it is energised when the speed 1 is greater than the speed 2. With the parameter "U2" set to 1, it is activated when the speed 2 is greater than the speed 1. With "U2" set to 2, it is energised when the speed 1 exceeds the programmed threshold. With "U2" set to 3, it is energised when the speed 2 exceeds the programmed threshold. The energising and de-energising of output U2 may be delayed with the parameters of set-up "U2D" and "U2F".</p>	

Legend

C = Continuous signal.

CHAPTER 3

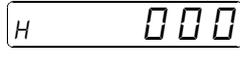
STARTUP

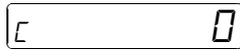
Programming (set-up)

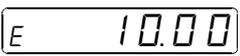
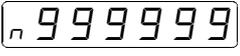
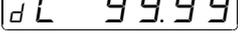
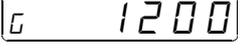
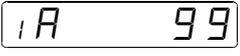
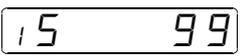
Calibrations

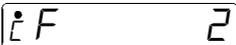
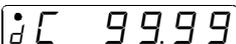
3 - 1 SET-UP

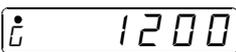
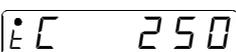
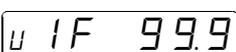
These parameters determine the operation mode of the instrument and therefore their access is reserved to the installer; for the programming we have forecast the introduction of a password as follows:

Description	Keyboard	Display
Access to the set-up programming.	 +  x 1 sec.	
Enter the access code "207" and confirm with ENTER	  	

FUNCTION	DISPLAY	DESCRIPTION
Decimal digits to display the clock speed 1		<p>0 = Maximum display 999999</p> <p>1 = Maximum display 99999.9</p> <p>2 = Maximum display 9999.99</p> <p>3 = Maximum display 999.999</p> <p>4 = Maximum display 99.59.59 (hours, minutes, seconds)</p> <p>5 = Maximum display 9999.59 (hours, minutes, or minutes and seconds)</p> <p>N.B. By setting "C" at 4 or 5, the data introductions are in sexagesimal configuration. If "C" is set to 4 or 5 event the decimal digits of the clock 2 must have the same setting.</p>
Decimal digits frequency of clock 1		<p>2 = It is possible to enter a frequency value at the hundredth of Hz. It is used with reading frequencies included between 100 and 9999 Hz.</p> <p>3 = It is possible to enter a frequency value at the thousandth of Hz. It is used with reading frequencies included between 0.001 and 99 Hz.</p>
Maximum frequency clock 1 Min. 0.001 Max. 9999.99		It is the maximum frequency expressed in Hz which is sent by the transducer when the system is at maximum speed. It is the maximum frequency besides which the display shows the maximum display.

FUNCTION	DISPLAY	DESCRIPTION
Minimum frequency clock 1		It is the minimum frequency expressed in Hz under which the display shows the minimum displaying.
Maximum display clock 1		It indicates the value that the instrument shows at maximum frequency.
Minimum display clock 1		It indicates the value that the instrument shows at minimum frequency.
Duty cycle clock 1		It is the percentage of activation of the input of clock 1 compared to the signal's period. $dC = \text{Time in seconds of activation of input I1} \times \text{Frequency max.} \times 100$ N.B. Please refer to the "Manual of Installation, Maintenance and Assistance".
Cutting frequency clock 1		It is the cutting frequency of the input of clock, besides which no other count is detected. This value must be greater or equal to the maximum frequency (generally at least 5% in excess).
Sampling time of clock 1 Min. 1 Max. 9999		It is the time, expressed in milliseconds, with which it is updated the value to be shown on the display. N.B. By setting zero value, by default it takes 250.
Reading averages in acquisition of clock 1 Max. 99		It indicates every how many readings it is calculated the speed to be shown. The greater is the number of readings, the slower is the speed updating. N.B. Please refer to the "Manual of Installation, Maintenance and Assistance".
Reading averages in stabilization of clock 1 Max. 99		It indicates every how many readings in stabilization, it is calculated the speed to be displayed if the variations of the readings are lower than $\pm 2.5\%$ of maximum speed N.B. Please refer to the "Manual of Installation, Maintenance and Assistance".

FUNCTION	DISPLAY	DESCRIPTION
Decimal digits to display the clock speed 2		<p>0 = Maximum display 999999</p> <p>1 = Maximum display 99999.9</p> <p>2 = Maximum display 9999.99</p> <p>3 = Maximum display 999.999</p> <p>4 = Maximum display 99.59.59 (hours, minutes, seconds)</p> <p>5 = Maximum display 9999.59 (hours, minutes, or minutes and seconds)</p> <p>N.B. By setting "E" at 4 or 5, the data introductions are in sexagesimal configuration</p>
Decimal digits frequency of clock 2		<p>2 = It is possible to enter a frequency value at the hundredth of Hz. It is used with reading frequencies included between 100 and 9999 Hz.</p> <p>3 = It is possible to enter a frequency value at the thousandth of Hz. It is used with reading frequencies included between 0.001 and 99 Hz.</p>
Maximum frequency clock clock 2 Min. 0.001 Max. 9999.99		It is the maximum frequency expressed in Hz which is sent by the transducer when the system is at maximum speed. It is the maximum frequency besides which the display shows the maximum display.
Minimum frequency clock 2		It is the minimum frequency expressed in Hz under which the display shows the minimum displaying.
Maximum display clock 2		It indicates the value that the instrument shows at maximum frequency.
Minimum display clock 2		It indicates the value that the instrument shows at minimum frequency.
Duty cycle clock 2		<p>It is the percentage of activation of the input of clock 2 compared to the signal's period.</p> $dC = \frac{\text{Time in seconds of activation of input I2} \times \text{Frequency max.}}{\text{Period}} \times 100$ <p>N.B. Please refer to the "Manual of Installation, Maintenance and Assistance".</p>

FUNCTION	DISPLAY	DESCRIPTION
Cutting frequency clock 2		It is the cutting frequency of the input of clock, besides which no other count is detected. This value must be greater or equal to the maximum frequency (generally at least 5% in excess).
Sampling time of clock 2 Min. 1 Max. 9999		It is the time, expressed in milliseconds, with which it is updated the value to be shown on the display. N.B. By setting zero value, by default it takes 250.
Reading averages in acquisition of clock 2 Max. 99		It indicates every how many readings it is calculated the speed to be shown. The greater is the number of readings, the slower is the speed updating. N.B. Please refer to the "Manual of Installation, Maintenance and Assistance".
Reading averages in stabilization of clock 2 Max. 99		It indicates every how many readings in stabilization, it is calculated the speed to be displayed if the variations of the readings are lower than $\pm 2.5\%$ of maximum speed N.B. Please refer to the "Manual of Installation, Maintenance and Assistance".
Delay time of energising of output U1		It is the time of delay, expressed in seconds, of energising for output U1 when the scroll exceeds that which has been set.
Delay time of de-energising of output U1		It is the time of delay, expressed in seconds, of de-energising for output U1 when the scroll exceeds that which has been set
Programming the output U2		<p>0 = The output U2 is energised when: $(V1 / r) > V2 + (V2 \times (S1 / 100)) + 0.01$</p> <p>0 = The output U2 is energised when: $(V1 / r) < V2 - (V2 \times (S1 / 100)) - 0.01$</p> <p>2 = The output U2 is energised when the speed 1 exceeds the maximum threshold.</p> <p>3 = The output U2 is energised when the speed 2 exceeds the maximum threshold.</p> <p>4 = The output U2 is energised when $(V1 / r)$ is included between: $V2 - (V2 \times S1) - 0.01$ e $V2 + (V2 \times S1)$</p> <p>S1 = Threshold 2 in percentage.</p>

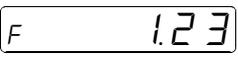
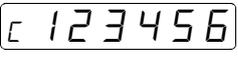
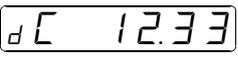
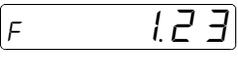


FUNCTION	DISPLAY	DESCRIPTION
Delay time of energising of output U2		It is the time of delay, expressed in seconds, of energising for output U2 when the scroll exceeds that which has been set
Delay time of de-energising of output U2		It is the time of delay, expressed in seconds, of de-energising for output U2 when the scroll exceeds that which has been set
Ratio V1 / V2		It is a coefficient used for the calculation of the toggling thresholds of outputs U1 and U2.
Sampling time, difference percentage (min. 1 Max. 9999)		It is the time expressed in milliseconds, with which it is updated the value of the difference percentage to be shown on the display. N.B. By setting zero value by default it takes 250.
Reading averages in acquisition of difference percentage		It indicates every how many readings it is calculated the difference percentage. The greater is the number of readings, the slower is the updating of the difference percentage of the 2 speeds.
Reading averages in stabilization of the difference percentage		It indicates every how many readings in stabilization, it is calculated the percentage of difference of the readings if the changes in the readings are lower than the value 5 (5.0 or 5.00).
Decimal digits to display the difference percentage Max. 2		It specifies the number of digits after the comma with which you wish to display the difference percentage.
Once the programming of the last function is achieved, the display in use before entering the set-up is shown again		

3 - 2 CALIBRATIONS

CALIBRATING TACHOMETER CLOCK 1

To make easier the installation and introduction of values of set-up which determine the speed display, it is possible to display the frequencymeter (Hz) and the total count of the clock pulses.

Description	Keyboard	Display
Access to the phase of tachometer calibration.	 +  X 1 sec.	
Enter access code "456" and press ENTER .	  	
The frequencymeter is displayed.		
By pressing the key in the figure it is displayed the number of clock pulses (the count is set to zero upon each access of the tachometer calibration).		
To reset to zero the count press the key in the figure.		
By pressing the key in the figure it is displayed the duty cycle of the clock signal (max. 99.99%).		
By pressing the key in the figure it is displayed again the frequencymeter.		
To exit in any moment press the key in the figure.		

CALIBRATION DESCRIPTION

In order to obtain a correct displaying it is necessary to define the parameters of maximum frequency, display at maximum frequency and duty cycle. In order to determine the maximum frequency (pulses per second) which are sent by the transducer you only need to bring the transducer at maximum speed and, under tachometer calibration, read the frequency that the instrument shows. This value shall be introduced in set-up in the parameter "Maximum frequency". At this frequency it shall be calculated the value that you wish to display. You must then determine the value in an engineering unit of each clock pulse. This data may be already known by the installer or it must be experimentally calculated; in order to do so you must access again the tachometer calibration, turn the system which shall move the actuator devices up to a measure which is known by the installer (example 1 meter, 10 meters, 100 meters, etc.) and get the number of clock pulses read by the instrument.

N° of measures = Maximum frequency / Number of impulses which are read
 Max. display = Number of measures \times known measure

The value of the maximum calculated display must be entered in the corresponding parameter of set-up. adapting it to the unit of time in use.

N.B. The calculated value must be adapted to the number of decimal digits which you wish to display.

Example with a maximum frequency equal to 1638.4 Hz

At 100 millimeters the calculation you got is equal to 200 impulses, then: $(1638.4 / 200) = 8.192$ (n° measures / second).

In the period of 1 second the system goes through:
 $8.192 \times 100 = 819.2$ millimeters / second.

The value to be entered in set-up upon maximum display may be transformed into:

millimeters / minute = 49152
 meters / second = 0.8192
 meters / minute = 49.152

N.B. If the system is moving at a speed of 0.2 meters / second (real speed), the input frequency shall be:

$$(\text{max. Freq.} / \text{max disp.}) \times \text{Real disp.} = (1638.4 / 0.8192) \times 0.2 = 400 \text{ Hz}$$

The value of minimum frequency and minimum display to enter in the set-up parameters must be determined by considering the reading range you wish to obtain. With a maximum frequency of 1000 Hz and a maximum display of 750 it may be enough a range of 950 Hz. The minimum frequency and the minimum display shall be:

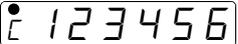
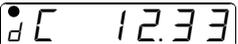
Min Freq. = Freq. max. range = $1000 - 950 = 50$ Hz

Min disp. = $(\text{Max. disp.} \times \text{Min. Freq.}) / \text{Max Freq.} = (750 \times 50) / 1000 = 37.5$

In the set-up parameter "Minimum display" it is possible to enter a value included between 37.5 and 0.

CALIBRATING TACHOMETER CLOCK 2

To make easier the installation and introduction of values of set-up which determine the speed display, it is possible to display the frequencymeter (Hz) and the total count of the clock pulses.

Description	Keyboard	Display
Access to the phase of tachometer calibration.	 + 	
Enter access code "654" and press ENTER ..	  	
The frequencymeter is displayed.		
By pressing the key in the figure it is displayed the number of clock pulses (the count is set to zero upon each access of the tachometer calibration).		
To reset to zero the count press the key in the figure.		
By pressing the key in the figure it is displayed the duty cycle of the clock signal (max. 99.99%).		
By pressing the key in the figure it is displayed again the frequencymeter.		
To exit in any moment press the key in the figure.		

In order to obtain a correct displaying it is necessary to define the parameters of maximum frequency, display at maximum frequency and duty cycle. In order to determine the maximum frequency (pulses per second) which are sent by the transducer you only need to bring the transducer at maximum speed and, under tachometer calibration, read the frequency that the instrument shows. This value shall be introduced in set-up in the parameter "Maximum frequency". At this frequency it shall be calculated the value that you wish to display. You must then determine the value in an engineering unit of each clock pulse. This data may be already known by the installer or it must be experimentally calculated; in order to do so you must access again the tachometer calibration, turn the system which shall move the actuator devices up to a measure which is known by the installer (example 1 meter, 10 meters, 100 meters, etc.) and get the number of clock pulses read by the instrument.

N° of measures = Maximum frequency / Number of impulses which are read
 Max. display = Number of measures \times known measure

The value of the maximum calculated display must be entered in the corresponding parameter of set-up. adapting it to the unit of time in use.

N.B. The calculated value must be adapted to the number of decimal digits which you wish to display.

Example with a maximum frequency equal to 1638.4 Hz

At 100 millimeters the calculation you got is equal to 200 impulses, then: $(1638.4 / 200) = 8.192$ (n° measures / second).

in the period of 1 second the system goes through:
 $8.192 \times 100 = 819.2$ millimeters / second.

The value to be entered in set-up upon maximum display may be transformed into:

millimeters / minute = 49152
 meters / second = 0.8192
 meters / minute = 49.152

N.B. If the system is moving at a speed of 0.2 meters / second (real speed), the input frequency shall be:

$(\text{max. Freq.} / \text{max disp.}) \times \text{Real disp.} = (1638.4 / 0.8192) \times 0.2 = 400 \text{ Hz}$

The value of minimum frequency and minimum display to enter in the set-up parameters must be determined by considering the reading range you wish to obtain. With a maximum frequency of 1000 Hz and a maximum display of 750 it may be enough a range of 950 Hz. The minimum frequency and the minimum display shall be:

Min Freq. = Freq. max. range = $1000 - 950 = 50 \text{ Hz}$

in disp. = $(\text{Max. disp.} \times \text{Min. Freq.}) / \text{Max Freq.} = (750 \times 50) / 1000 = 37.5$

In the set-up parameter "Minimum display" it is possible to enter a value included between 37.5 and 0.

CHAPTER 4

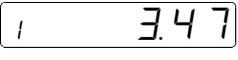
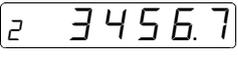
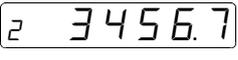
USE

Working programs and auxiliary functions

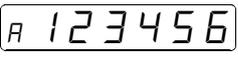
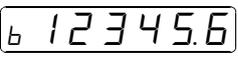
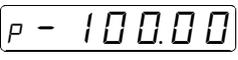
Tables and diagrams of operation

4 - 1 WORKING PROGRAMS AND AUXILIARY FUNCTIONS

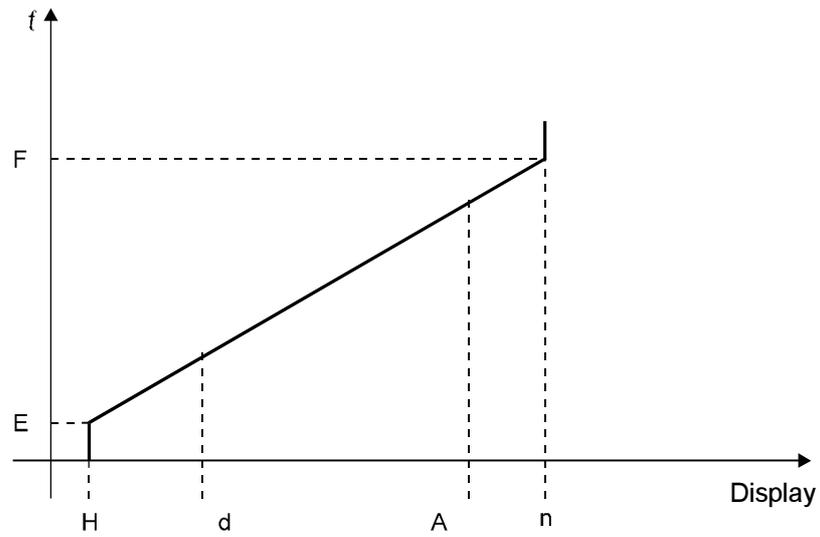
ENTERING THE ALARM THRESHOLDS

Description	Keyboard	Display
Access to the introduction of the alarm thresholds.	 × 2 sec.	
It is required to enter the difference in percentage of the two speeds besides which the output U1 is energised. The operator may enter the desired value and press ENTER .	  	
If the set-up parameter "U2" is set to 2 or 3 it is required the introduction of a threshold of one of the two speeds (S1) besides which the output U2 is energised. If the set-up parameters "U2" is set to 0, 1 or 4 the setting of the threshold in percentage is (99.99 %). The operator may enter the desired preselection and press ENTER .	  	

DISPLAYINGS

Description	Keyboard	Display
Speed of clock 1.		
Speed of clock 2.		
Percentage difference of "b" compared to "A". $P = (b \times 100 / A) - 100$		
With "A" e "b" = 0.		
With "A" = 0.		
With "b" = 0.		

4 - 2 TABLES AND DIAGRAMS OF OPERATION



F = Maximum frequency.

E = Minimum frequency.

H = Minimum display.

n = Maximum display.

d = Threshold of minimum display.

A = Threshold of maximum display.

CHAPTER 5

ASSISTANCE

Diagnostic of inputs and outputs

Instructions on How to Fill Up the Technical Assistance Fax

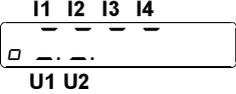
Guarantee

5 - 1 DIAGNOSTIC OF INPUTS AND OUTPUTS

The instrument offers a diagnostic of the logical status of digital inputs and outputs; according to the segments of the display which are ON, it is possible to understand whether an input arrives to the instrument and whether the output has been energised.

As for the status of the inputs, if it is displayed the upper segment of the first display from the left, it means that the input 1 has been activated; if it is displayed the upper segment of the second display from the left, it means that the input 2 has been activated, and so on.

As for the digital outputs, please consider as valid the description made for the inputs, but consider the lower segments of the display

Description	Keyboard	Display
Access to the display of the diagnostic for inputs/outputs.	 X 2 sec.	
Status of inputs and outputs. When the upper segments of the display are ON it indicates the acquisition of the related inputs (" "). When the lower segments of the display are On it indicates the energising of the related outputs (" ").		

INSTRUCTIONS ON HOW TO FILL UP THE FAX FOR TECHNICAL ASSISTANCE

In order to be able to provide a quick, specific and quality assistance, we need your help. If you need QEM's assistance to face the eventual troubleshooting in your applications and even though you performed all instructions indicated in the manual of "Installation, maintenance and assistance", the problem still continues, please fill up every blank of the fax enclosed to the manual of Installation, maintenance and assistance and send it to QEM's Assistance Department. In this way you shall allow our technicians to get the necessary elements to understand your problem (avoiding thus expensive telephone calls). We thank you for your cooperation and here at QEM's we really wish you a good job.

REMARK

- If you must send an instrument to be repaired, please strictly follow our instructions indicated here below:
- If possible, use the original packaging; in any case the packaging must protect the instrument against shocks due to transport.
 - Insert into the package a detailed description of the malfunction you found and the part of wiring diagram which includes the instrument. In case the problem you discovered concerns data storage, please also include the instrument's programming (set-up, working levels, auxiliary parameters, etc.).
 - If you need it, please explicitly require the quotation of charges for the repairing: if you do not ask for it, the charges shall be calculated as a whole.
 - Our technicians shall give priority to the repairing of those instruments which have been sent according to the items listed above.

5 - 3 GUARANTEE

The guarantee is conform to the definitions of the general sales conditions.



REMARKS



REMARKS



REMARKS