



SERVICE

Scientific & Analytical Equipment
Test & Measuring Instruments
Industrial Controls
Welding
Industrial Data-processing Systems

**Scientific &
Industrial
Equipment
Division**

1979-11-01

TEST AND MEASURING SYSTEM

OSC 55

OSCILLOSCOPE PM 3211

Already published: OSC 15

Subject: Rectification of manual PM 3211/PM 3211Q (9499 440 19202).

1) For a better X via Y_B deflection the following modifications must be carried out:

- Change R601 into 14k/MR25 (5322 116 54629)
- Change R602 into 8,66k/MR25 (5322 116 54613)
- Change R332 into 11k/MR25 (5322 116 54623)

2) Rectification of code numbers in the manual published on page 90:

- R2/S1a. Code number must be 5322 101 64025
- R6 Code number must be 5322 101 24178

3) The service code numbers for the 24 VDC power unit are cancelled:

This concerns the following code numbers listed on page 85 of the manual.

Converter 24 VDC to 46VDC	5322 216 54185
Transistor BDX77	5322 130 44553
Diode BYX55/350	4822 130 30817
Fuse 2A	4822 253 30025
DC power input socket	4822 265 20051
DC power input plug	4822 266 20014
DC power input cord set	4822 321 20125

4) Survey of spare parts for pushbutton switches

The switch units in the instrument are both available as a complete unit:

- 2 pushbutton unit S3/S4 Ordering code 5322 276 24046
- 11 pushbutton unit S9 ... S17 Ordering code 5322 276 84064

Most of the parts that are used in the switch units mentioned above are separately available:

- Dual change-over switch of the push-on/push-off type (Self releasing)
The ordering code is incorrectly listed in the manual and must be 5322 276 14117. In every instrument 10 pieces are used.
- Dual change-over switch with spring for use with a reset bar (Mutual releasing type).
The ordering code is incorrectly listed in the manual and must be 5322 276 14101. In every instrument 3 pieces are used (S16a, b, c.).
- Reset bar for maximal 6 switches.
Must be used for S16a, b, c. The bar must be sawn to the required size to be suitable for 3 switch elements. When doing this take care that the distance between the last stud and the end of the bar is exactly 4,1mm. The spring for the reset bar will be delivered together with every switch segment 5322 276 14101.
Ordering code of the reset bar 5322 278 74007.



PHILIPS

SERVICE

Cryogenic Equipment / Electro Chemistry /
Electron Optics / Electronic Weighing /
Industrial Data Systems / Numerical Control /
Philips Pollution Measuring / Radiation Measuring Equipment /
Test and Measuring Equipment / Welding Equipment /
X-Ray Analytical Equipment

equipment for science and industry

210580

TEST AND MEASURING EQUIPMENT

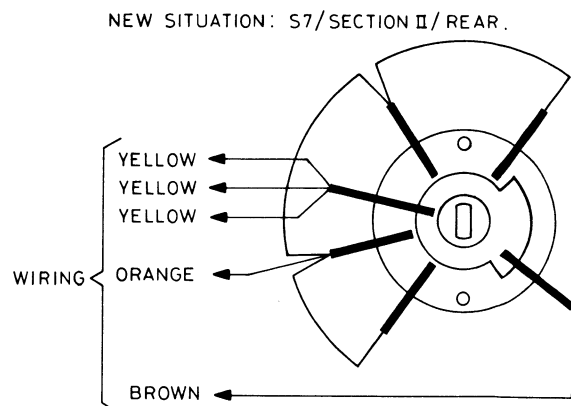
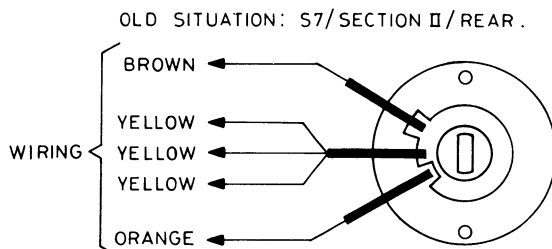
OSC 67

OSCILLOSCOPE PM 3211

RE: MODIFICATION OF TIME BASE SWITCH S7.

The modification concerns the contact lay-out and the wiring of Section II/Rear. The old and the new situation are indicated in the figure. Comparison of old and new situation shows that the old switch can be replaced by a new one by means of a simple wiring modification. The old switch will be delivered by Concern Service until the present stock is exhausted. When Concern Service start to deliver new switch types they are also interchangeable for old switches by means of a wiring modification.

The old type of switch and later on the new type will be delivered under the same service code number 5322 105 34046.



MAT 704



PHILIPS



**equipment
for science
and industry**

811117

TEST AND MEASURING EQUIPMENT

OSC106

OSCILLOSCOPE PM3211

Already published OSC: 15, 55, 67

Subject: Improvement of power supply

Starting with the /05 production series the following capacitors on the power supply have been modified to a higher capacitance value:

- C811 and C813 are changed from 33 μ F into 68 μ F/16 Volt (Ord. code 4822 124 20689).
- C816 is changed from 68 μ F into 150 μ F/6,3 Volt (Ord. code 4822 124 20672)

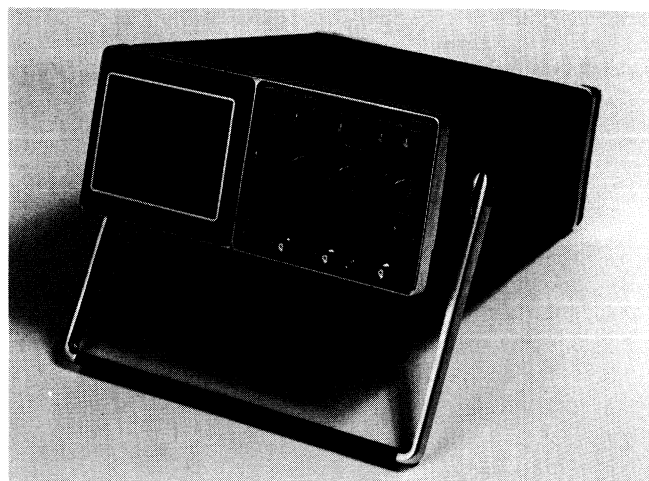
Due to this modification the ripple current on C811, C813 and C816 is reduced to such a value that they don't break down in extreme environmental conditions.

IMPORTANT: This modification is strongly recommended for all the PM3211-oscilloscopes including old production series that come into the workshop for repair or recalibration.

9499 448 18811

PRINTED IN THE NETHERLANDS

PHILIPS



Instruction manual
Gerätehandbuch
Notice d'emploi et d'entretien

15 MHz Dual-channel oscilloscope
15 MHz Zweikanal Oszillograf
Oscilloscope 15 MHz à double trace

PM3211 PM3211Q

This documentation replaces:

9499 440 17802
9499 448 08911
9499 440 18511



Contents

1.	GENERAL INFORMATION	9
1.1.	Introduction	9
1.2.	Characteristics	10
1.2.1.	C.R.T.	10
1.2.2.	Vertical amplifier	10
1.2.3.	Time-base	11
1.2.4.	Triggering	11
1.2.5.	X-Deflection	11
1.2.6.	Probe adjust	11
1.2.7.	Power supply	12
1.2.8.	Environmental conditions	12
1.2.9.	Mechanical data	12
1.3.	Accessories	12
1.3.1.	Supplied with the PM 3211	12
1.3.2.	Supplied with the PM 3211Q	13
1.3.3.	Characteristics of the PM 9326/40 attenuator probe	13
1.3.4.	Optional	14
1.4.	Description of block diagram	15
1.4.1.	Vertical deflection	15
1.4.2.	Triggering and horizontal deflection	15
1.4.3.	C.R.T. display section	16
1.4.4.	Power supply	16
2.	DIRECTIONS FOR USE	17
2.1.	Installation	17
2.1.1.	Safety regulations	17
2.1.2.	Local mains connection and fuse protection	17
2.1.3.	Connection to an external 24 V DC supply	18
2.1.4.	Front cover and instrument position	18
2.2.	Controls and sockets	18
2.2.1.	Cathode-ray tube and power controls	18
2.2.2.	Vertical deflection	19
2.2.3.	Time-base	19
2.2.4.	Horizontal deflection	20
2.2.5.	Miscellaneous: probe adjust, line voltage adapter	20
2.3.	Operating instructions	20
2.3.1.	Switching on the instrument	20
2.3.2.	Preliminary settings of the controls	21
2.3.3.	Input coupling	21
2.3.4.	Use of probes	21
2.3.5.	Adjustment of attenuator probes	21
2.3.6.	Selection of chopped or alternate modes	22
2.3.7.	Differential mode	22
2.3.8.	Trigger source selection	23
2.3.9.	Selection of the trigger mode	23
2.3.10.	X via B measurements	23
2.4.	Removal of fuses, screen bezel, contrast and graticule plate	23
2.4.1.	Removing the instrument covers	23
2.4.2.	Replacing the thermal fuse F802	24
2.4.3.	Replacing the fuse F801	25
2.4.4.	Removing the screen bezel and contrast plate	25
2.4.5.	Removing the graticule plate	25

Figures

Fig.	Title	
1.1.	15 MHz dual-channel oscilloscope PM 3211	9
1.2.	Matching the attenuator probe PM 9326/40 to the oscilloscope input	14
1.3.	Block diagram of the oscilloscope	15
2.1.	Rear view of the oscilloscope	17
2.2.	Front view of the oscilloscope showing controls and sockets	18
2.3.	Adjustment of attenuator probes	22
2.4.	Suppression of common mode signals	22
2.5.	Mains transformer and position of the thermal fuse	24
2.6.	Removing the screen bezel and contrast plate	25

Inhalt

1.	ALLGEMEINES	27
1.1.	Einleitung	27
1.2.	Kenndaten	28
1.2.1.	Elektronenstrahlröhre	28
1.2.2.	Vertikalverstärker	28
1.2.3.	Zeitablenkung	29
1.2.4.	Triggerung	29
1.2.5.	X-Ablenkung	29
1.2.6.	Messkopf Kalibrierung	29
1.2.7.	Stromversorgung	30
1.2.8.	Einflussgrößen	30
1.2.9.	Mechanische Daten	30
1.3.	Zubehör	31
1.3.1.	Geliefert mit PM 3211	31
1.3.2.	Geliefert mit PM 3211Q	31
1.3.3.	Kenndaten des Abschwächer-Tastkopfs PM 9326/40	31
1.3.4.	Wahlzubehör	32
1.4.	Blockschaltbildbeschreibung	32
1.4.1.	Vertikalablenkung	33
1.4.2.	Triggerung und Horizontalablenkung	33
1.4.3.	Bildteil	34
1.4.4.	Stromversorgung	34
2.	GEBRAUCHSANLEITUNG	35
2.1.	Inbetriebnahme	35
2.1.1.	Sicherheitsvorschriften	35
2.1.2.	Örtlicher Netzanschluss und Sicherungen	35
2.1.3.	Anschluss an eine externe Versorgungsspannung 24 V DC	36
2.1.4.	Abdeckhaube und Betriebslage	36
2.2.	Bedienungselemente und Buchsen	36
2.2.1.	Bildteil und Netzschalter	36
2.2.2.	Vertikalablenkung	37
2.2.3.	Zeitablenkung	37
2.2.4.	Horizontalablenkung	38
2.2.5.	Übrige: Messkopfkalisierung, Netzspannungumschalter	38
2.3.	Bedienungsanleitung	38
2.3.1.	Einschalten des Geräts	38
2.3.2.	Vorbereitende Einstellungen der Bedienungselemente	39
2.3.3.	Eingangskopplung	39
2.3.4.	Anwendung von Messköpfen	39
2.3.5.	Abgleich von Abschwächer-Messköpfen PM 8925, PM 8925L und PM 8932	39
2.3.6.	Wahl der gepulsten oder der alternierenden Darstellungsart	40
2.3.7.	Differentielle Betriebsart	40
2.3.8.	Wahl der Triggerquelle	41
2.3.9.	Wahl der Triggerart	41
2.3.10.	X über B Betriebsart	41
2.4.	Ausbau von Sicherungen, Schirmrahmen, Kontrast und Rasterplatte	41
2.4.1.	Abnehmen der Geräte-Abdeckungen	41
2.4.2.	Ersetzen der Thermosicherung F802	42
2.4.3.	Ersetzen der Sicherung F801	43
2.4.4.	Ausbau von Schirmrahmen und Kontrastplatte	43
2.4.5.	Ausbau der Rasterplatte	43
3.	SERVICE DATA (nur aufs Englisch)	63

Bildverzeichnis

1.1.	15 MHz Zweikanal-Oszillograf PM 3211	27
1.2.	Anpassung des Abschwächer-Tastkopfs PM 9326/40 an den Oszilloskopeingang	32
1.3.	Blockschaltbild des Oszillografen	15
2.1.	Rückansicht des Oszillografen	35
2.2.	Vorderansicht des Oszillografen mit Bedienungsorganen und Buchsen	36
2.3.	Abgleich von Abschwächer-Messköpfen	40
2.4.	Gleichtaktunterdrückung	40
2.5.	Netztransformator und Lage der Thermosicherung	42
2.6.	Ausbau von Schirmrahmen und Kontrastplatte	43

Tables des matières

1.	GENERALITES	45
1.1.	Introduction	45
1.2.	Caractéristiques techniques	46
1.2.1.	Tube à rayons cathodiques	46
1.2.2.	Amplificateur vertical	46
1.2.3.	Base de temps	47
1.2.4.	Déclenchement	47
1.2.5.	Déviation X	47
1.2.6.	Etalonnage des sondes	47
1.2.7.	Alimentation	48
1.2.8.	Conditions ambiantes	48
1.2.9.	Caractéristiques mécaniques	48
1.3.	Accessoires	48
1.3.1.	Fournis avec le PM 3211	48
1.3.2.	Fournis avec le PM 3211Q	49
1.3.3.	Caractéristiques techniques de la sonde atténuatrice PM 9326/40	49
1.3.4.	En option	50
1.4.	Description du schéma synoptique	50
1.4.1.	Déviation verticale	51
1.4.2.	Déclenchement et déviation horizontale	51
1.4.3.	Section affichage T.R.C.	52
1.4.4.	Alimentation	52
2.	MODE D'EMPLOI	53
2.1.	Installation	53
2.1.1.	Règlements de sécurité	53
2.1.2.	Branchement sur le secteur et fusibles	53
2.1.3.	Connexion à une tension d'alimentation externe 24 V en continu	54
2.1.4.	Couvercle avant et position de l'instrument	54
2.2.	Commandes et prises.	54
2.2.1.	Tube cathodique et commandes de puissance	54
2.2.2.	Déviation verticale	55
2.2.3.	Base de temps	55
2.2.4.	Déviation horizontale	56
2.2.5.	Divers: étalonnage des sondes, adaptateur de tension secteur	56
2.3.	Instructions d'utilisation	56
2.3.1.	Mise de l'instrument en circuit	56
2.3.2.	Réglage préliminaire des commandes	56
2.3.3.	Couplage d'entrée	57
2.3.4.	Emploi des sondes	57
2.3.5.	Réglage des sondes atténuatrices	57
2.3.6.	Choix entre modes découpé et alterné	58
2.3.7.	Mode différentiel	58
2.3.8.	Sélection de la source de déclenchement	58
2.3.9.	Sélection du mode de déclenchement	59
2.3.10.	Mode X via B	59
2.4.	Dépose des fusibles, de la visière, de la plaque de contraste et du graticule	59
2.4.1.	Dépose des couvercles	59
2.4.2.	Remplacement du fusible thermique F802	60
2.4.3.	Remplacement du fusible F801	61
2.4.4.	Dépose de la visière et de la plaque de contraste	61
2.4.5.	Dépose du graticule	61
3.	NOTICE D'ENTRETIEN (seulement en anglais)	63

Figures

1.1.	Oscilloscope 15 MHz à double trace PM 3211	45
1.2.	Réglage de la sonde atténuatrice PM 9326/40	50
1.3.	Schéma synoptique de l'oscilloscope	15
2.1.	Vue arrière de l'oscilloscope	53
2.2.	Vue avant de l'oscilloscope montrant les commandes et douilles	54
2.3.	Réglage des sondes aténuatrices	57
2.4.	Réjection en mode commun	58
2.5.	Transformateur secteur et position du fusible thermique	60
2.6.	Dépose de la visière et de la plaque de contraste	61

