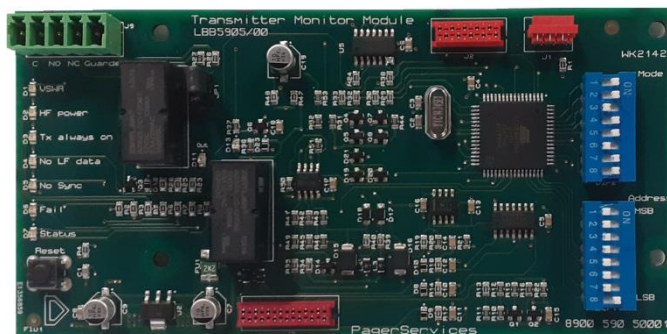




Transmitter Monitoring Module V2 Installation Instructions

II_LBB5905_TMM-V2_En_2205



- ▶ Clear on-board status-indication with LEDs.
- ▶ Fault signalisation by scanning and/or output relays.
- ▶ Selectable transmitter parameters to be monitored.
- ▶ Remote Reset possible.
- ▶ Suitable to work with an Alpha server.
- ▶ Suitable to work with the NEN-controller, DP6000-IP Interface and/or Communication Server.

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About this manual

1.1 Function

These Installation Instructions gives the install engineers the necessary information to install and configure the Transmitter Monitor Module version 2, to be used in a DP6000/PS6000 concept as defined for the Philips/Bosch/Atus paging and Personal Security product range.

1.2 Digital version

The Installation manual is also available as a digital file (Adobe Portable Document File, PDF). When the PDF refers to a location that contains more data, you can click the text to go there.

1.3 Precautions and notes

The Installation manual uses 3 levels of precaution. The precaution shows the result of not obeying the instructions. These are the types:

1. Note A note gives more data.
2. Caution If you do not obey the caution, you can cause damage to the equipment.
3. Warning If you do not obey the warning, you can cause personal injury or severe damage to the equipment.

1.3.1 Signs

The Installation and User Instructions shows each caution, warning and danger with a sign. The sign shows the result of not obeying the instructions.



Warning: General sign for cautions warnings and dangers.



Caution: Risk of electrical shock.



Note: The general sign for a note.

1.4 Examples

The manual contains numerous examples, for instance in the form of screen shots. Please note that the examples may differ more or less from you situation, depending on version differences, settings, configuration details, resolution, etc.



Note: The screenshots shown in this manual may appear different on your PC, depending on windows version, configuration, etc. etc. In some cases the steps may even be slightly different than described. It might also be possible that there are alternative ways that are not described in this manual.

1.5 Disclaimer

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1.5.1 Illustrations

The illustrations in this manual are indicative only and may differ depending on:

- ▶ The operating system.
- ▶ The version of the application software.
- ▶ The activated language on the PC.





2 Introduction

- ▶ The 'Transmitter Monitor Module version 2' (TMM) can be used in to monitor the technical performance of system transmitters.
- ▶ Designed as successor of TMM type WSP-DD-40971.

2.1 Basic Functions

- ▶ Clear on-board transmitter status-indication with LEDs.
- ▶ Fault signalisation by scanning and/or via a fault relays RE1 (output contact).
- ▶ The transmitter parameters to be monitored can be selected.
- ▶ Remote Reset via a special call is possible.
- ▶ Suitable to work with an Alpha server.
- ▶ Suitable to work with the NEN-controller, DP6000-IP Interface and/or Communication Server.





3 Commercial Items

Description Hardware	12NC	Type nr	
Transmitter Monitoring Module version 2.0	8900 590 50001	LBB 5905/00	In each System transmitter a TMM is needed

- ▶ Each TMM is delivered with spacers, screws and a small flat-cable to be mounted in the housing of the system transmitters.

3.1 Ordering

The TMM can be ordered through our website, also the actual price is indicated here.

In case of questions about availability, please contact orders@pagerservices.nl

3.2 Functional Description

- ▶ The TMM monitors several parameters of the system transmitter.
 - If one of the parameters is found not to be OK, an output relays has been activated.
 - The output relays controls, next to potential-free output contacts, also output contacts with an integrated resistor network to support the use of analogue input contacts (LBB5901/00).
 - If programmed that way, and the TMM is scanned by an encoder through its individual address, the TMM will sent a reply-call in order to report the transmitter status to the system. If the encoder is configured that way, an automatic follow-up (technical alarm) can be raised.
 - On board LED indications shows also if/which transmitter parameter is in error.
- ▶ In the Conventional mode, the parameters to be guarded cannot be selected. (Except monitoring the synchronisation signal).
- ▶ In the Extended mode, all transmitter parameters to be monitored are individually selectable.





4 TMM Hardware description

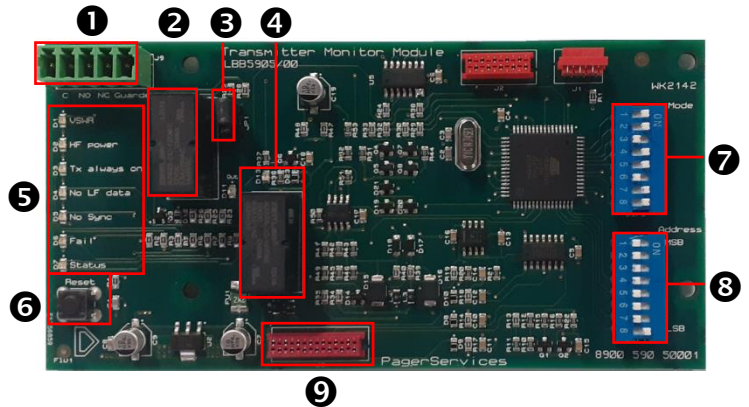
4.1 Introduction

The Transmitter Monitoring Module (TMM) contains embedded firmware and works independent of the system where it is used. Monitoring the transmitters' status takes place by some digital outputs which are present at the LF-panel of the transmitter. If the transmitters' status must be monitored by an encoder, the encoder must be prepared too in order to send scan calls and to process technical alarms. In such cases the communication between the encoder and TMM runs via Paging lines 1-2.

i Note: Encoders are equipment like Alpha server (with SW package LBB6513), Evac Controller LBB5900, DP6000-IP interface (LBB8001) in combination with the Communication server (LBB8000) and similar.

4.2 Hardware description TMM

- ❶ X1; Output contacts
- ❷ Re1; Fault relays
- ❸ Jumper JP1
- ❹ Re2; Paging relays
- ❺ Status LEDs
- ❻ Reset switch
- ❼ Work-mode switches
- ❽ Address setting
- ❾ X2; Connector to interface with transmitter LF-panel



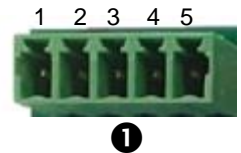
i Note: Use the supplied metal spacers, screws and flat-cable when installing the TMM.

4.3 Paging relay (Re2)

Because the TMM must be able always to receive a reset-call and/or scanning calls and/or sending reporting calls, the TMM is always connected (indirect) with the paging lines, therefore Re2 is continuously activated.

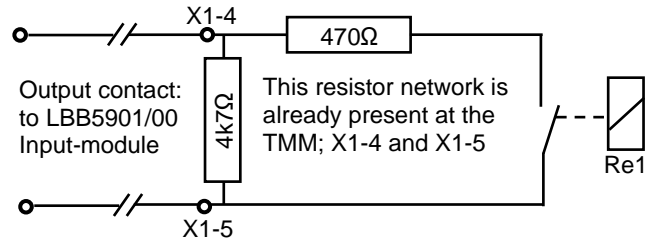
4.4 Output contact (Re1)

- ▶ Once a fault in the transmitters' performance is detected, Re1 is always activated.
 - This is independent of the work-mode settings.
- ▶ In the work-mode settings it is possible to set Re1 in Fail-safe work mode.
- ▶ X1 has 5 connection points coming from the fault relays:
 - X1-1: Common (C)
 - X1-2: Normal Open (NO)
 - X1-3: Normal Closed (NC)



4.4.1 Resistor network integrated

At connector X1-4 and X1-5 a resistor network is already integrated. Therefore connector X1-4 and X1-5 can be used to connect the output contacts directly with the LBB5901/00 (Evac input contact module) without the need to create an external resistor network.



i Note: Re1 works independent of the scanning function from an encoder and is activated at each (selected) error that is detected.



4.4.2 Jumper JP1

- ▶ Jumper JP1 is related to the resistor network that is connected with the output contacts:
 - If Re1 is set to work in 'normal' mode and Re1 is in idle mode, a resistor value of 4k7 is detected at output contacts X1-4 and X1-5. (Which stands for 'not active').
 - If Re1 is set in 'normal' mode and Re1 is activated, a resistor value of 470Ω/4k7 is detected at output contacts X1-4 and X1-5. (Which stand for 'activated').
- ▶ If the work-mode for Re1 is set to 'Fail-safe', then Jumper JP1 must be set also in 'Fail-safe' work-mode, otherwise no correct resistor value detection at the output contacts takes place, which lead in combination with the LBB5901 input contact module to inverse good/fault signalisation.



i Note: In case fault signalling takes place via X1-4 and X1-5, Jumper JP1 and SK 7 must be set equally. i.e. both are set in 'Normal mode' or both are set 'Fail-safe' mode.

4.5 Led indications

- ▶ Several LEDs shows the functional status of transmitter.
 - If the TMM detects an error, the corresponding LED will lit to give a visual indication which error is detected.
 - Next to LED indication(s), Re1 will be activated and if programmed that way, the TMM reports the error(s) to an encoder.

LED	Function	Colour		Remark
D1	VSWR	RD		Indicates if a VSWR error occurred.
D2	HF Power	RD		Indicates if to less HF power is detected.
D3	TX always on	RD		Indicates HF power, while the transmitter is in stand-by.
D4	No LF data	RD		Indicates if no OOR call is received within 1 minute. (Extended mode)
D5	No Sync	RD		Indicates that problems with the Synchronisation occurred.
D6	Fail	RD		Indicates that one or more of the above errors are detected.
D7	Status	RD/GN		RD: if an error is active. GN: blinking when no errors are detected.

i Note: If an encoder doesn't receive a reply to a scan call, and the encoder is programmed that way, a technical alarm (e.g. communication alarm) can be raised. This makes that a connection with the system is monitored in a second way.

LED	Function	Colour	Remark
D11	Re1	Blue	On, when Re1 is activated.
D13	Re2	Blue	On, when Re2 is activated.

4.6 Reset switch

- ▶ Pressing the reset switch will reset all error indicators.
- ▶ If the address or the work-mode is changed press the reset switch to confirm the new setting.

i Note: In case the address or work-mode is changed, the reset switch must be pressed to confirm.

4.7 Prepare the Transmitter and TMM

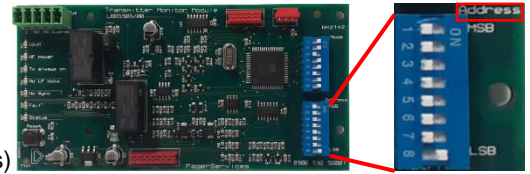
- ▶ Remove the 12V power from the transmitter.
- ▶ Make sure that the jumpers in the transmitter(s) are set correct (LF section and HF- part).
 - Make sure that the antenna is in good order and is connected with the transmitter.
- ▶ Configure the TMM. i.e. Set the [address-](#) and [work-mode](#) switches.
- ▶ Mount the TMM unit just above the transmitters' LF panel.
- ▶ Connect the 14 pole connector of the LF panel (X2) and TMM (X2) with each other, using the supplied flat cable.
- ▶ Reconnect the 12V power with the transmitter and prepare the system transmitter for correct fault detection:
 - Set the transmitter (temporarily) in continue transmitting mode; e.g. set jumper J2 at the LF board in 'test' mode.
 - Make sure that the output power of the transmitter is set to its desired value (R4 at the LF board).
 - Adjust with R47 at the LF panel, the threshold for 'HF power' such that the 'power LED' B5 at the LF panel just lit.
 - Adjust with R51 at the LF panel, the threshold for 'VSWR error', such that the 'VSWR LED' B6 at the LF panel doesn't lit.
- ▶ When finished, set Jumper J2 at the LF Panel back in the normal position and press the reset switch at the TMM.
- ▶ Make sure that each system transmitter (TMM addresses) is configured in the encoder.



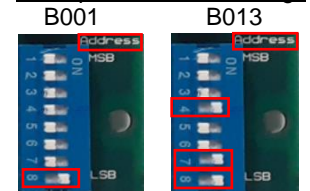
5 Configure the TMM

5.1 Set the address of the TMM

- ▶ Each TMM must have its own unique 4 digit individual address.
- ▶ The address is set with the binary coded 'Address' switches.
 - The selectable address range is B001 to B03B.
 - The digits 'B0' of the address are hardcoded and cannot be changed.
 - Only the last 2 digits in the range 01-B3^{hex} can be set.
- ▶ SK8 is the LSB; this means that SK8-SK5 are used to set X1-X9 (units)
- ▶ SK1 is the MSB; this means that SK4-SK1 are used to set 1X -BX (tens).
- ▶ To confirm the selected address, press the reset-switch.



Examples Address settings



Examples:

- To set address B001; only SK8 is set to 'ON'.
- To set address B013; SK4 is set to 'ON' (1^{hex}), and SK8 and SK7 are set to 'ON' (3^{hex}).

i Note: In order to support transmitter monitoring with encoder, make sure that the address of the TMM is programmed in that encoder to.

5.2 Set the Work-mode of the TMM

- ▶ The work-mode of the TMM is set by the 'Mode' switches 1-8. Here it is important to distinguish the setting of Work-mode switch SK8:
 - SK8 = OFF; the TMM works in the conventional mode.
 - SK8 = ON; the TMM works in the extended mode.



5.2.1 Conventional mode

SK	Setting	Function	Explanation
1	ON ¹⁾	Standalone mode	ON = Signalisation only via Re1.
2	ON ¹⁾	Scanning	ON = Scanning from encoder activated.
3	OFF	Not used	n.a.
4	ON	No Sync	ON = synchronisation monitored (multi transmitter systems).
5	OFF	Not used	n.a.
6	OFF	Not used	n.a.
7	ON ²⁾	Fail-safe mode Re1	ON = Fail-safe mode Re1.
8	OFF	Conventional mode	OFF = Conventional mode.



- ▶ In the Conventional mode, the transmitter parameters below are monitored by the TMM: (see also ["LED indications"](#))
 - VSWR; Error if the VSWR is higher than the threshold set at the transmitters' LF panel.
 - HF power; Error if the transmitted HF power is less than the threshold set at the transmitters' LF panel.
 - No Sync; Error if the synchronisation signal is not locked; Only applicable for multi transmitter systems.
 - No LF data; Error if no reply to a scan-call is received (Encoder generates a communication/scan error).
- ▶ Standalone mode; If SK1 is set to 'ON', the TMM doesn't reply to scan calls from encoders.
- ▶ Scanning; If SK2 is set to 'ON', the TMM expects scan calls from an encoder and reply's to scan calls.
- ▶ No Sync; If SK4 is set to 'ON', the LF-Synchronisation signal is monitored.
- ▶ Fail-safe mode RE1; If SK7 is set to 'ON', Re1 works in Fail-safe mode.
- ▶ After changing the work-mode switches, the reset-switch must be pressed to confirm the new settings.
- ▶ No LF data; If SK2 is set to 'ON'; AND scanning/monitoring is activated in the encoder, the connection between TMM and LF-lines is monitored, while the encoder expects a reply from the TMM (thus there is LF-data exchanged between encoder and TMM).
If these settings are not done this way, a correct exchange of LF-data is NOT monitored.

i Note: ¹⁾ In the conventional work-mode it is forbidden to set SK1 and SK2 both to 'ON', therefore Re1 and the status LEDs are activated and activated in a 1 second interval. Correct the faulty setting to solve this.
²⁾ If SK7 is set to 'ON' in order to activate the Fail-safe mode for Re1, and contacts X1-4 and X1-5 are used, then Jumper JP1 must also be set in Fail-safe mode!



5.2.2 Extended mode

- ▶ When SK8 is set to 'ON', the TMM works in Extended mode, The Extended mode offers extra options.
 - For each transmitter parameter, the monitoring function can be activated individually.
 - Some extra monitor options can be activated.
 - If desired the TMM replies with alphanumeric information (German).



SK	Setting	Function	Explanation
1	ON	VSWR	ON = VSWR detection.
2	ON	HF power	ON = Loss of HF power.
3	ON	No LF data	ON = OOR call detection.
4	ON	No Sync	ON = Synchronisation monitored (multi transmitter systems).
5	ON	TX always on	ON = HF power when transmitter is in stand-by.
6	ON ³⁾	Short reply	ON = TMM reply doesn't contain German alpha numeric message
7	ON ²⁾	Fail-safe mode Re1	ON = Fail-safe mode for Re1.
8	ON	Extended mode	ON = Extended mode.

- ▶ In the Extended mode, the transmitter parameters listed below are monitored by the TMM: (see also the chapter "[LED indications](#)").
 - VSWR; Error if the VSWR is higher than the threshold set at the transmitters' LF panel.
 - HF power; Error if the transmitted HF power is less than the threshold set at the transmitters' LF panel.
 - No LF data; Error if the periodical OOR call is not received (via lines 1 and 2).
 - No Sync; Error if the LF-synchronisation signal is not locked; applicable for multi transmitter systems.
 - HF power; Error if HF power is transmitted while the transmitter is idle.
- ▶ Short reply; If set to 'ON', The TMM replies without alpha-numeric error description.
- ▶ Fail-safe mode; If set to 'ON', Re1 works in Fail-safe mode.
- ▶ After changing the work-mode switches, the reset-switch must be pressed to confirm the new settings.
- ▶ The Out of Range (OOR) option must also be activated in the encoder!

i Note: ²⁾ If SK7 is set to 'ON' in order to activate the Fail-safe mode for Re1, and contacts X1-4 and X1-5 are used, then Jumper JP1 must also be set in Fail-safe mode!

i Note: ³⁾ The setting 'Short reply' is only relevant in combination with the alpha server. If set to 'OFF', the TMM will reply to a scan call including alphanumeric information in the German language. This alphanumeric information is visible when in the alpha server the line monitoring function is activated. If the TMM is not used in combination with an Alpha server set SK6 to 'ON'.



5.3 Calls and reporting

- ▶ Calls to the TMM have the format <address><bleep-code><numeric info>. The Modeword is ignored, however in the reply from the TMM a mode word can be present. Depending of the work-mode settings an alphanumeric part can be present to. All communication from/to the TMM takes place over the paging lines.

5.3.1 Manual calls

- ▶ Scan call
 - To send a scan call to TMM with address B001, use the format: B001 0 00000.
 - The TMM will respond with a call: B001 0 0X000 (and optionally an alpha text).
- ▶ Reset call
 - To send a reset call to clear the error status of the TMM use the format: B001 0 FF000
 - In this case the TMM will not sent a reply in return.
- ▶ Firmware version
 - It is possible to check the Firmware version of the TMM, the alphanumeric part of the reply from the TMM includes the firmware version and a date stamp.
 - To send a 'FW request call' to an TMM with address B001, use the format: B001 F 00000.

5.3.2 Status calls

- ▶ The table below shows the content of the status calls as a result to a scan call: (as example address B001 is used).
 - The format of an automatic or manual scan call is: B001 0 00000.
 - If in the extended mode 'short reply' is set, no alphanumeric part in the scanning reply, the mode word is 00000 then.
 - Note that the error indication is reported through the numeric info of the call.

Address	Bleep code	Numeric Info	Modeword ⁴⁾	Alphanumeric part ⁵⁾	Remark (see also " LED indications ")
B001	0	01000	00006	SENDER GETASTED OK	No errors detected
B001	0	03000	00006	REGELSPANNUNG NOK	No correct sync signal
B001	0	04000	00006	6,6Khz FAILED	No sync
B001	0	05000	00006	HF LEISTUNG ZU GERING	HF power
B001	0	08000	00006	ANTENNE ERROR	VSWR
B001	0	06000	00006	HF LEISTUNG IN STAND-BY	TX Always on
B001	0	0A000	00006	DP CODE NOK	No LF data (only in extended mode)

Other calls:	Bleep code	Numeric Info	Modeword ¹⁾	Alphanumeric part	Remark
B001	0	00000	-	-	Scan call (manual or automatic)
B001	0	FF000	-	-	To reset the error indicators
B001	F	00000	-	-	FW request call
B001	F	00000	00006	e.g. 014 and a date stamp	Result of a 'FW request call'

i Note: ⁴⁾ The content of the mode word is dependant of the setting of SK6 in the extended mode.
⁵⁾ The presence of the alphanumeric text is content is dependant of the setting of SK6 in the extended mode.



International Pager Services B.V.
Willem de Haasstraat 5
5421 TN Gemert
The Netherlands
<https://www.pagerservices.nl>

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