Successfully manufactures broadcasting equipment since over 30 years.

# PCM 10 BI

**OVERVIEW** Multimode, multistandard, multifunction exciter / driver / transmitter.
One platform for all broadcasting solutions, **The PCM 10 BI** it's the lowest power transmitter of the PCM family.
In just 1U rack module-19"std up to 10 Wrms and 10 W p.s..

**Key facts:**

- *Multistandard Transmitter: All digital / All analog in the same hardware (ATSC 3.0 READY, only a Firmware upgrade will be needed)*
- *2x INPUT= SAT (S2 with CAMSlot), Ethernet, ASI= Hitless switch*
- *Freq. agile with static or adaptive pre-correction*
- *BUILT in GPS receiver*
- *Easy to use: web graphic interface GUI response.*
- *Broader modulator (30-1000MHz) with final stage VHF and VHF-III*

**DESCRIPTION** The PCM line is the result of more than 30 years of research and experience of SYES Group. PCM line represents the state of the art of the RF transmitter technology. It's the unique investment exciter thanks to its capability to modulate in all Digital standard, TV and Radio as the TV analog too.

It's the cost effective solution for broadcasters which are however transmitting in analog, for broadcasters who are facing the transition from analog to digital without an official digital standard yet, always granting the switch from Analog to Digital via software using the front panel, using LAN connection or remotely even under a time schedule. PCM is finally the solution for broadcasters who are already in digital and need to take advantage of versatility in operation modes, configuration and performance. PCM can be a system driver, low power transmitter (UP to 200Wrms in 2RU), a regenerative transmitter, translator (integrated DVB-S2 receiver), gapfiller and Single Frequency Echo Canceller (perfect for Single Frequency Network), all in a single hardware. PCM already implements DVB-T/T2, ATSC /MH, ISDB-T/Tb, DAB, DTMB and all ATV. It supports also DAB DAB+ for digital radio PCM always embeds linear and non-linear pre-correction, to optimize the global system performance.

Pre-correction can be static, i.e. based on pre-stored tables, or adaptive, with real-time evaluation and compensation of possible distortions in the amplification. PCM can be configured as managed remotely, using a dry contact, via SNMP commands, via TCP/IP or graphic user interface designed by us using whatever of the common web browsers. PCM allows a total remote control of itself and its functionality by serial protocols or TCP/IP ports. Our platform can easily monitored / configured and updated using a LAN connection or a USB Key.

| **REVIEW DATA** | | | |
|---|---|---|---|
| RF frequency range (output) | | VHF Band I (52MHz – 80 MHz) | |
| RF | Output power | 10 W rms | 10 W p.s. |
| | Spurious / Harmonics | EN 302-296-2 | |
| | Shoulders/MER | >40dB / >35 dB | n.a. |
| Mains | Voltage | 90 to 264 Vac ±15% (single phase) @ 47 to 63 Hz (autorange p.s.) | |
| | Power consumption | 100 W | n.a. |
| Cooling system /Air flow rate m3/h | | forced air / 60 m3/h | |
| Size | Width/Height/ Depth | 482 mm / 44 mm / 450 mm | |
| Weight | | 6 kg | |
| Number of Tx / one rack 36U | | More than 10 | |
| **DIGITAL MODULATION** | | | |
| DVB-T | ref. standards | ETS 300 744 / EN 50083-9 / TR 101 190 / TR 101 891 | |
| | RF channel width | 6 MHz, 7 MHz, 8 MHz | |
| DVB-T2 | ref. standards | EN 302 755, TS 102 831, T2-MI | |
| | Streams | Single stream (System A) or up to 8-PLPs (System B) | |
| | RF channel width | 6 MHz, 7 MHz, 8 MHz | |
| ISDB-T SBTVD | ref. standards | ABNT NBR 15601 – ARIB STD B31 | |
| | Multiple segment operation | total 13 segments, distributed over the existing layers (1seg supported) | |
| | RF channel width | 6 MHz | |

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|---|---|---|---|
| ATSC 8VSB | Standards | ATSC DOC.A/53 | |
| | Modulation mode | 8-VSB | |
| | Channel spacing | 6 MHz | |
| DTMB | Standard | DTMB (GB20200/2006) | |
| | Symbol rate / Modulation | Symbol rate: 7.56Msps / TDS-OFDM | |
| | Channel bandwidth | 8 MHz or 6 MHz | |
| Inputs | | 2xASI (BNC f, 75W) – seamless/hitless switching (SFN) / BTS / SMPTE / T2 MI / AA/VV | |
| IP input | | 2xGBE (ProMPEG Cop3) – Electrical + 1XSFP GBE – Opt./Elec.* | |
| **ANALOGUE MODULATION** | | | |
| TV System | | PAL std. B/G, H, K, I, I1, M, N – NTSC std. M – SECAM D/K | |
| Ref. Standard | | ITU-R BT.470-6 | |
| Audio system | | MONO/ IRT | |
| Video input | Level | 1V $_{pp}$ ( 0.5 to 2 V)(DC component level in the range -5 to 5 V) | |
| | Ret. loss | better than -30 dB (0 to 6 MHz) (75 W) | |
| | Connector | 1xBNC female, 75 W | |
| Audio input | Level | 6 dBm ± 6 dB (Df= 25 to 50 kHz ) | |
| | Ret. loss | better than -30 dB (40 Hz to 15 kHz) (600 W, bal.) | |
| | Connector | DB9 with patch cable for 2xXLR female, 600 W (IRT config. : 2 inputs) | |
| **REPEATER** | | **SFN gap-filler** | **MFN re-transmitter** |
| *RF input* | RFin frequency range | 46 to 861 MHz | |
| | Input level | -10dBm to -60dBm | -20dBm to -70dBm (QEF reception) |
| | Input ret. loss | better than -16 dB | |
| | RF in connector | N female, 50 W | |
| *Echo Canceller* | residual echo suppression | up to more than 30 dB (30dB are obtained at 0dB input echo) | n.a. |
| Noise figure | | max 10 dB | max 8 dB |
| immunity to other chan | N+1 | OFDM/OFDM > 30 dB | |
| | others | OFDM/OFDM > 40 dB | |
| **SATELLITE TRANSPOSER** | | | |
| SatTV standard | | DVB-S — DVB-S2 – EN300421 | |
| Frequency range | | 950 – 2150 MHz | |
| Signal level | | -65 to -25 dBm | |
| Connector – Cond. Access | | SMA f – CAM slot | |
| LNB control | | available, through RF input PS, polarity / band selection: by standard 13/18VDC and 22kHz signalling | |
| **MONITORING** | | | |
| RF Monitoring Connectors | | FWD/REF: SMA female , 50 W | |
| Local Control | | front panel (keys/display/USB port) / standard web browser | |
| Remote Control | Netw. Mgmt. | web browser / SNMP agent – upgrade also through ASI TS (OTA) | |
| | Direct signalling | IEC 60864-1 | |
| **TIME & REFERENCE** | | | |
| *Built-in ref.* | Frequency | 10 MHz OCXO | |
| | Stability | time: max ±$10^{-7}$ /year – temperature: max ±2.5 $10^{-8}$ (-20° to 70°C) | |
| *Ext. ref.* | Frequency | 10 MHz – 1pps | |
| | Level | 1 $V_{pp}$ (0.7 to 1.4 V) | |
| VCO tuning step | | 1 Hz | |
| **ENVIRONMENTAL** | | | |
| Operating temp. range | | 0° to 50°C* | |
| Max rel. air humidity | | 95% @ 30°C, no condensation | |
| Max altitude | | 4000 m *a.s.l.* | |
| Immunity | bursts | | |
| | surges | | |

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|---|---|
| Safety | EN 60215 (IEC 215) |